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15 August 2006

TECHNICAL MANUAL

INSTALLATION AND REPAIR PRACTICES

VOLUME II
AIRCRAFT CIRCULAR ELECTRICAL CONNECTORS AND ACCESORIES

This volume is one of a series of four volumes and is incomplete without Volume I (NAVAIR 01-1A-505-1).

For U.S. Air Force Users Only - It is incomplete without TO 00-25-255-2.

This manual supersedes NAVAIR 01-1A-505.6 dated 15 October 1988, NAVAIR 01-1A-505.7 dated 15 October 1988, NAVAIR 01-1A-505.8 dated 01 December 1989, NAVAIR 01-1A-505.9 dated 01 December 1989, NAVAIR 01-1A-505.10 dated 01 December 1989, NAVAIR 01-1A-505.11 dated 01 December 1989, NAVAIR 01-1A-505.12 dated 01 December 1989, NAVAIR 01-1A-505.13 dated 01 December 1989, NAVAIR 01-1A-505.14 dated 01 December 1989, NAVAIR 01-1A-505.29 dated 01 December 1989, TO 00-25-255-1 dated 01 February 2003, and TO 1-1A-14-1 dated 09 September 2004.

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VOLUME II

AIRCRAFT CIRCULAR ELECTRICAL

CONNECTORS AND ACCESORIES

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INTRODUCTION
INSTALLATION AND REPAIR PRACTICES
AIRCRAFT CIRCULAR ELECTRICAL CONNECTORS AND ACCESSORIES

1. PURPOSE AND SCOPE.

2. This manual was prepared for the following reasons:

a. To gather under one cover the recommended practices and techniques to be used for installing, repairing, and maintaining aircraft circular electrical connectors and accessories.

b. To standardize these techniques and methods so that electrical installations will be done in a uniform manner.

c. To indoctrinate all personnel with the importance of good workmanship.

d. To point out the failures which may result from poor workmanship.

e. To promote safety by pointing out and prohibiting unsafe practices.

3. This manual provides updated data and procedures on the most commonly encountered, general and special purpose circular electrical connectors and accessories employed on military aircraft. It also includes applicable tooling, consumables and equipment required to maintain these circular connectors, cables and accessories.

4. ARRANGEMENT AND USE.

5. This manual is divided into work packages (WPs) which are self–contained procedures that may be used to support specific tasks.

6. Each WP is maintained separately. The WPs are identified by five–digit numbers in the upper right corner of each page. This number aids in rapid assembly of a complete manual and is used for referencing within a manual.

7. REQUISITIONING AND AUTOMATIC DISTRIBUTION.

8. Procedures to be used by Naval activities and other Department of Defense activities requiring NAVAIR technical manuals are defined in NAVAIR 00-25-100.

9. QUALITY ASSURANCE.

10. Maintenance procedure steps, essential to equipment performance or to the safety of personnel, are highlighted by the addition of the abbreviation (QA) following the procedure. Quality Assurance action shall be taken on all steps designated (QA) prior to proceeding to the next step.

11. SUPPORT EQUIPMENT REQUIRED.

12. Each individual WP identifies the support equipment required to maintain the components covered within it. When alternate repair procedures exist, different tools may be required. Where possible, the alternate tools are identified.

13. CONSUMABLE MATERIALS REQUIRED.

14. Each individual WP identifies the consumable materials required to maintain the components covered within it. The materials required for each maintenance task are listed in the corresponding WP. When alternate repair procedures exist, different materials may be required. Where possible, the alternate materials are identified.

15. REFERENCE MATERIAL.

16. Each WP identifies the applicable list of reference material required to install, maintain or repair the applicable circular connector and/or accessory.

17. TECHNICAL DIRECTIVES.

18. A record of applicable technical directives will also appear in each WP in this manual, but will list only technical directives that affect the text and illustrations of that particular WP.

19. WARNINGS, CAUTIONS, AND NOTES.

20. Warnings, Cautions, and Notes are used throughout this manual. They are defined as follows:

WARNING

An operating or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in injury to, or death of personnel.

CAUTION

An operating or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in damage to, or destruction of, equipment or loss of mission effectiveness.

NOTE

An essential operating or maintenance procedure, condition, or statement, which must be highlighted.

SAFETY

Reference Material

None

Alphabetical Index

Subject **Page No.**

General Safety Precautions 1
Introduction 1

Record of Applicable Technical Directives

None

Support Equipment Required

None

Materials Required

None

1. INTRODUCTION. This work package lists the general safety precautions that must be practiced when working with circular connectors. Other work packages will reference this one and may add to or emphasize particular safety precautions.

2. GENERAL SAFETY PRECAUTIONS. The following general safety precautions shall apply:

a. Observe and follow all written safety precautions given in the methods of this and other work packages contained within this manual.

b. Observe and adhere to all Warning/Caution/Advisory signs on equipment and materials.

c. Observe and adhere to all Warning/Caution/Advisories/Notes in the applicable Type/ Model/ Series aircraft manuals for repair of and operational verification of circular connector repair.

3. GENERAL WARNINGS AND CAUTIONS.

WARNING

Do not perform hot work without specific authorization of activity Aviation Gas Free Engineer (AVGFE) or Gas Free Engineer(GFE).

The HT-900B, HT-920B, HT-71002 and MCH-100-A heat guns are the only authorized heat guns to be used when working on aircraft that have not been defueled and purged. The aircraft must be defueled and purged before using any other heat guns listed in this manual.

Aircraft with open fuel cells or broken or open fuel lines shall be certified gas free in accordance with NAVAIR 01-1A-35, or AF T.O. 1-1-3. Only the HT-900B / HT-920B, HT-71002, MCH-100-A heating tools are authorized for use on any aircraft whenever AVGAS, JP-4 or the presence of any type of fuel is imposing an immediate danger.

When using heat guns with electric motors, recertification may be required as work progresses, as directed by the Aviation Gas Free Engineering Technician (AVGFET).

The MCH-100-A heat gun has been electromagnetic interference (EMI) qualified for flight line or flight deck use. All other electric motor type heat guns are not authorized for flight line or flight deck use due to electromagnetic interference (EMI). The electric motor type heating tools are safe for use by personnel at the organizational maintenance level to repair aircraft wiring in a hangar or hangar deck / flight line environment, provided the aircraft meets the gas-free environment criteria (NAVAIR 01-1A-35, or AF T.O. 1-1-3), and there are no EMI restrictions.

Do not perform wire repair while using explosive solvent/paint products on the aircraft.

When using a heat tool, do not use electrical power from the aircraft being repaired. Use electrical power from a ground power unit.

Use of nitrogen with the HT-900B/HT-920B heat gun in an enclosed area can be hazardous. Discharge of nitrogen into a poorly ventilated area can result in asphyxiation.

CAUTION

Be careful if using metal tools (M81969). These tools can damage the wire sealing grommet in the connector. Plastic tools are preferred. Inspect tool tips for damage or distortion before use. Damage to the connector wire sealing grommet can occur.

Avoid using metal tooling to remove and install backshells. These tools can damage the backshell and connector. Non-metallic tools are designed to wear before damaging connector or backshell.

Do not remove a contact attached to a broken wire with an unwired contact removal tool. The tool and connector may be damaged. Wire strands may be encountered at any point up to $\frac{5}{16}$ inch of tool insertion. Do not force tool if wire strands are encountered. Withdraw tool any time it cannot be advanced into connector. Inspect tool tip for nicks, cracks, mushrooming, and other damage that will prevent proper functioning. Replace removal tool and repeat procedure if required.

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CONNECTORS MIL-DTL-38999 SERIES I, II, III, IV

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Connectors, MIL-DTL-38999 Series I, II, III, IV	003 02
Introduction	003 01

INTRODUCTION
INSTALLATION PRACTICES
CONNECTORS MIL-DTL-38999 SERIES I, II, III, IV

1. PURPOSE AND SCOPE.

2. This manual covers all connectors manufactured in accordance with General Specification MIL-DTL-38999. It includes: power, thermocouple, coaxial, twinax contacts and all associated tooling and accessories. For fiber optic termini and connector data refer to the NA01-1A-505-4.

3. SPECIFICATION UPDATES (ASSIST SEARCH).

4. The most up to date government specifications and Qualified Products Lists (QPLs) can be obtained from the Quick Search section of the ASSIST website, the address is http://assist.daps.mil/quicksearch. Non-government standards can be obtained through a license with a document service such as Information Handling Services (IHS) or purchased individually from the Society of Automotive Engineers (SAE).

5. QUALIFIED PRODUCTS LIST (QPL).

6. The Qualified Products List (QPL) is a list of products which have met the qualification requirements stated in the applicable specification. These requirements include appropriate product identification and performance/testing parameters. The list contains the government part number and the manufacturer's part number. The name of the manufacturer, office and manufacturing plant address, CAGE (Commercial and Government Entity) code, assembly plant, or distributor as applicable, is also included in the back of the QPL. The component specification will identify the appropriate quality assurance provisions such as QPL, First Article testing, or user verified test results. NAVAIR Patuxent River (http://www.navair.navy.mil/qpl/) now has an operational website where the latest QPL revision can be accessed, along with all outstanding QPL change letters as they are written. This enables all users to have access to the latest procurement information without relying on the publication of a new QPL revision. When the QPL is revised, all outstanding QPL change letters are incorporated in the latest revision.

CONNECTORS
MIL-DTL-38999
SERIES I, II, III, IV

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Connectors, Electrical, Circular, Miniature, High Density, Quick
Disconnect, Environment Resistant, Removable Crimp and
Hermetic Solder Contacts, General Specification for MIL-DTL-38999
Contacts, Electrical Connector, General Specification for AS39029
Insulation Sleeving, Electrical, Heat Shrinkable SAE-AMS-DTL-23053
Installing and Removal Tools, Connector Electrical Contact,
Type III, Class 2, Composition B MIL-I-81969
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Record of Applicable Technical Directives

None

Support Equipment Required

Part No. / Type Designation	Nomenclature
DRK105-12	Unwired Removal Tool
DRK105-20	Unwired Removal Tool
HT-900B (or equivalent)	Heat Gun
L-5217	Gripper Filter Line
L-9038	Frame Filter Line
M22520/l0-01	Crimp Tool Frame
M22520/l0-07	Die Set
M22520/l-01	Crimp Tool Frame
M22520/104	Turret
M22520/2-01	Crimp Tool Frame
M22520/2-07	Positioner
M22520/2-09	Positioner
M22520/2-10	Positioner
M22520/2-31	Positioner
M22520/2-34	Positioner
M22520/2-35	Positioner
M22520/31-01	Crimp Tool Frame
M22520/31-02	Positioner
M22520/3-1	Gage
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M22520/3-15	Gage
M22520/4-01	Crimp Tool Frame
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M22520/5-01	Crimp Tool Frame
M22520/5-05	Die Set
M22520/5-200	Die Set
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M81969/8-09	Insertion Tool, Metal
M81969/8-10	Removal Tool, Metal
M81969/14-01	Insertion/Removal Tool, Plastic
M81969/14-02	Insertion/Removal Tool, Plastic
M81969/14-03	Insertion/Removal Tool, Plastic
M81969/14-04	Insertion/Removal Tool, Plastic

Support Equipment Required (Cont.)

Part No. / Type Designation	Nomenclature
M81969/14-05	Insertion/Removal Tool, Plastic
M81969/14-06	Insertion/Removal Tool, Plastic
M81969/30	Tool, Extraction, Unwired contacts
11-120134	Tool Kit Expander
1716P-1	Crimp Tool
45-1924	Stripper Filter Line
45-1924-1	Blade Set Filter Line

Materials Required

Specification / Part No.	Nomenclature
None	

1. INTRODUCTION.

2. This work package (WP) covers four series of miniature, high density, circular, environment resistant electrical connectors. Depending upon series they are coupled either by bayonet, breech, or threads. The contacts used are either removable crimp, or fixed hermetic solder, and are capable of continuous operation within a temperature range of -65°C to 200°C.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, (the Society of Automotive Engineers (SAE) will become the preparing activity and the Navy will adopt the documents), the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacement, each case was reviewed and some information has been retained in this volume "for reference use only".

3. DESCRIPTION. This connector displays the following characteristics:

a. All series employ rear release removable pin and socket contacts with crimp terminations.

Table 1. Wire Sizes and Diameters

Contact size	Wine size (AWG)	Finished wire outside dimensions			
		minimum		maximum	
		Inches	mm	Inches	mm
22D	28. 26, 24, 22	.030	0.76	054	1.37
22M M	28, 26, 24	.030	0.76	.050	1.27
22 V	26, 24, 22	.034	0.86	.060	1.52
20	24, 22, 10	.040	1.02	.083	211
16	20, 18, 16	.065	1.65	.109	2.77
12	14,12	.097	2.46	142	3.61
10	10	.135	3.42	162	412
8 coax	M17/95-RG-180 2/	.135	3.43	155	394
8 twinax	M17/176-00002 3/	.124	3.15	.134	340

1/ Inactive for new design.
2/ MIL-C-17.
3/ The applicable insert arrangements are: 19-18, 21-75, 9-1, 17-2, 25-7, 25-8, 25-20, 25-46 and 25-90.

b. All series are designed to ensure proper orientation of the mating halves prior to closure.

c. All series include hermetically sealed receptacles with fixed solder contacts.

d. All series include EMI shielding.

e. Series I, III, and IV provide electrical continuity between mated shells prior to contact engagement with the contacts so located as to be protected from handling damage and inadvertent electrical contact (scoop proof).

f. Series II provide low silhouette for minimum size and weight.

4. WIRE SEALING. Wire sealing is accomplished by the use of a grommet seal designed to seal against the inserted wire outside diameter. The outer diameter shall be within the applicable size range as specified (Table 1).

NOTE

All unwired contacts shall have sealing plugs installed.

5. GROMMET SEALING PLUGS. The grommets of environment resistant connectors are designed to accept sealing plugs in accordance with MS27488 to be used where unwired contacts are placed. The connector when ordered as a unit, will have sealing plugs enclosed so as to equal 10% of the number of contacts but not less than one.

6. MATING SEAL. Plugs and receptacles with pin inserts have a resilient face with individual pin barriers so as to seal against the hard face socket insert. The resilient interface seal provides individual contact seals in the mated condition between each contact and the shell. Series I, II, and III are provided with a peripheral seal, and Series IV incorporates an o-ring seal.

7. SHELL. Shells, including mounting flanges, are of one piece construction and designed to retain their inserts in one position by a mechanical means. Each plug and receptacle has at least one blue color band, which indicates rear release retention system, located so as to be readily visible.

8. COUPLING. Connectors shall be capable of being fully coupled and uncoupled without the use of tools.

9. Series I and II. A detent is provided in the coupling mechanism so that an audible click is heard when proper coupling is complete.

10. Series III. Complete coupling is accomplished by clockwise rotation of 360° of the coupling nut to provide metal to metal contact.

11. Series IV. Complete coupling is accomplished by a clockwise rotation of 90° to a detent and provides an audible click and an indication is felt.

12. Visual Indication. On Series I and II, provision will be made for visual determination of complete coupling. On Series III and IV, a red band is visible when not mated and not visible when fully mated.

13. INTERCHANGEABILITY. Series I, II, III, and IV connectors are not interchangeable or intermateable.

14. POLARIZATION. Series I, II, III, and IV connectors are polarized as denoted by their part numbers. This means that the master keyway is rotated to prevent mismating of similar connectors in a similar location. A plug with a given polarization letter will mate with' a receptacle with the same letter. The inserts do not rotate, only the keyway is rotated.

15. CONNECTOR ACCESSORIES. Connector accessories are added to a connector to maintain its operational characteristics. These accessories are divided into the following base categories:

a. Backshells.

b. Conduit Fittings.

c. Dummy Receptacles.

d. Dust Caps and Plugs.

e. Gaskets for Flange Mount Receptacles.

f. Mounting Nuts for Jam Nut Receptacles.

g. Mounting Plates for Flange Mount Receptacles.

h. Rubber Bushings.

i. Sealing Plugs.

NOTE

Refer to NAVAIR 01-1A-505-1, WP 011 01, for torque value information on AS85049 connector backshells.

16. CONNECTOR ACCESSORY APPLICATION. Connector accessories are applied to all connectors to one degree or another. Detailed applications and uses are covered in WP 003 03.

17. MIL-DTL-38999 SERIES I.

18. Series I connectors are scoop proof with bayonet coupling, or lanyard release for use where a quick disconnect coupling system is required in blind or problem mating areas. When equipped with the proper accessories, these connectors provide high tolerance to vibration and are suitable for Severe Wind And Moisture Problem (SWAMP) areas.

19. PART NUMBER. The part number contains the information necessary for the proper selection and procurement (Figure 1).

20. Military Specification. The military specification will denote the shell style.

21. Class. The class indicates the environment resisting abilities along with mounting type.

22. Shell Size. The shell size is indicated by a progressive numbering system.

23. Finish. The finish denotes composition and operating temperature range.

24. Insert Arrangement. The insert arrangement is shown as a number denoting the number and size of contacts used.

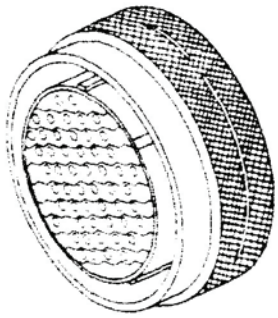
25. Contact Style. The contact style denotes the type of contact used.

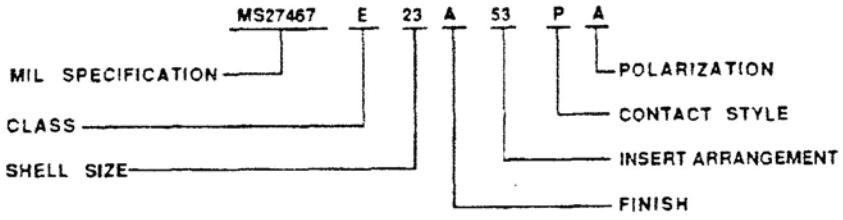
26. Polarization. The polarization letter shows that plugs and receptacles with the same letter can be mated.

27. DESIGN AND CONSTRUCTION. The connectors and accessories are designed and constructed to withstand normal handling during installation and maintenance.

28. INSERTS. The entire insert of the environment resisting assemblies is essentially one integral part designed to provide suitable sealing and support around the wires, and is non-removable.

29. Rigid Dielectric. The rigid dielectric is one molded piece or not more than two pieces bonded together. The design is such that contacts are able to be inserted and removed to facilitate installation and maintenance except hermetic receptacles.





MS27486 WALL MOUNT RECEPTACLE
MS27468 JAM NUT RECEPTACLE
MS27470 HERMETIC JAM NUT RECEPTACLE
MS27496 BOX MOUNT RECEPTACLE
MS27467 STRAIGHT PLUG, EMI GROUNDING
MS27652 WALL MOUNT RECEPTACLE
MS27661 STRAIGHT PLUG, LANYARD RELEASE
MS27662 THRU-BULKHEAD RECEPTACLE
MS27467 STRAIGHT PLUG, EMI GROUNDING
MS27469 HERMETIC WALL MOUNT RECEPTACLE
MS27471 HERMETIC SOLDER MOUNT RECEPTACLE
MS27505 BOX MOUNT RECEPTACLE, REAR PANEL MOUNTING
MS27656 WALL MOUNT RECEPTACLE, REAR PANEL MOUNTING

CLASS

E ENVIRONMENT RESISTING - BOX AND THRU – BULKHEAD MOUNTING TYPES ONLY (SEE CLASS T)
G ENVIRONMENT RESISTING - WALL AND JAMNUT MOUNTING RECEPTACLE AND PLUG (SPACE GRADE)
H HERMATICALLY SEALED (SPACE GRADE)
P POTTING - INCLUDES POTTING FORM AND SHORT REAR GROMMET
T ENVIRONMENT RESISTING - WALL AND JAM-NUT MOUNTING RECEPTACLE AND PLUG TYPES; THREAD AND TEETH FOR ACCESSORY ATTACHMENT
Y HERMETICALLY SEALED

SHELL SIZE

9,11.13,15.17,19,21,23, OR 25 (TABLE 2 AND FIGURE 4)

FINISH

A SILVER TO LIGHT IRIDESCENT YELLOW COLOR CADMIUM PLATE OVER NICKEL (CONDUCTIVE). –65°C TO +150°C (INACTIVE FOR NEW DESIGN)
B OLIVE DRAB CADMIUM PLATE OVER SUITABLE UNDERPLATE (CONDUCTIVE), -65°C TO +175°C
C ANODIC (NONCONDUCTIVE), -65°C TO +175°C
D FUSED TIN, CARBON STEEL (CONDUCTIVE), -65°C TO +150°C
E CORROSION RESISTANT STEEL (CRES), PASSIVATED (CONDUCTIVE), -65°C TO +200°C
F ELECTROLESS NICKEL COATING (CONDUCTIVE), -65°C TO+200°C
N HERMETIC SEAL OR ENVIRONMENT RESISTING CRES (CONDUCTIVE PLATING), -65°C TO +200°C
R SAME AS F BUT HIGHER CORROSION REQUIREMENT
U SAME AS A BUT HIGHER CORROSION REQUIREMENT
X SAME AS B BUT HIGHER CORROSION REQUIREMENT

INSERT ARRANGEMENT

(TABLE 2 AND FIGURE 4)

CONTACT STYLE

A WITHOUT PIN CONTACTS
C FEEDTHROUGH
B WITHOUT SOCKET CONTACTS
P PIN CONTACTS-INCLUDING HERMETICS WITH SOLDER CUPS
S SOCKET CONTACTS - INCLUDING HERMETICS WITH SOLDER CUPS
X PIN CONTACTS WITH EYELET (HERMETIC)
Z SOCKET CONTACTS WITH EYELET (HERMETIC)

Figure 1. MIL-DTL-38999 Connectors (Sheet 1 of 2)

NOTE
- The A and B designators are used to indicate that the connectors will be used with other than standard contacts as indicated in MIL-STD-1560 (example: shielded, coaxial thermocouple, fiber optic contacts).
- The A and B designators are part of the connector Part Numbers and should be marked on the connectors.
- The standard contacts should not be supplied with the connectors. The contacts that will be used with the connectors must be ordered separately.
- When other than standard power contacts are used, the requirements stated herein may not be met.

POLARIZATION
A, B, C, OR D — NORMAL - NO LETTER REQUIRED

Figure 1. MIL-DTL-38999 Connectors (Sheet 2 of 2)

30. Contact Locking Device. The contact locking devices are contained in the rigid dielectric and securely hold the contacts during normal coupling (Figure 2).

31. Rotation. The inserts are secured in a manner so as to prevent rotation or movement.

32. Interface Seal. All pin contact inserts will have a resilient interface seal bonded to the front face to prevent water intrusion.

33. Hermetic Receptacles. A vitreous or glass-like material is used to insulate and seal the contacts and all pin contacts will have an interface seal. The contacts are not removable.

34. Conical Riser. The conical riser is a raised portion of the interface seal around each contact which ensures sealing.

35. Chamfered Socket Lead-In. The chamfered socket lead-in aids in coupling, allowing the pins to line up with the socket. They also aid in sealing the pin to the conical riser of the socket.

36. INSERT ARRANGEMENTS. The insert arrangement is the number and size of the contacts available by shell size (Table 2).

37. INSERT CONFIGURATION. The insert configuration is the manner in which the contacts are placed within the insert in a standard configuration. All arrangements identified in Table 2 are illustrated (Figure 3). The connector's service rating shows the connectors' maximum operating voltage (Table 3).

38. CONTACTS. Contacts may be fixed or crimp removable.

39. Fixed Contacts. Contacts in hermetically sealed or through-bulkhead receptacle are fixed, non-removable and solder-able, or feed through.

40. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

41. Contact Availability. Crimp contacts are supplied with each connector unit package and consist of a full compliment plus 1 spare per size for connectors of 26 contacts or less and those connectors with more than 26 contacts will have 2 spares of each size used. Contacts may also be ordered in individual quantities when necessary.

42. Installation and Removal Tools. The proper installation and removal tools must be used to assemble or disassemble the connector. The connector when ordered as a unit package will include one MIL-I-81969/14-XX tool.

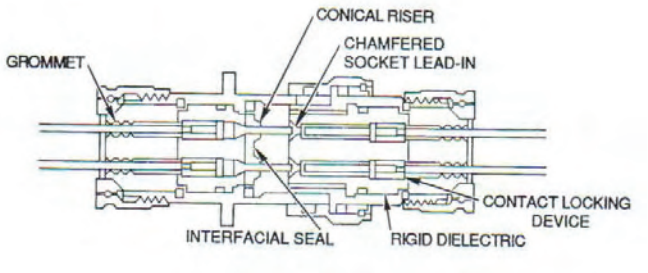


Figure 2. Construction

43. CONTACT APPLICATION. Contacts used in Series I connectors are manufactured in accordance with AS39029. The part number breakdown is illustrated (Figure 4).

44. Basic Identification Number. The basic identification number (BIN) or last three digits of the contact part number match the standard resistor color code. The BIN code is affixed to the connector end of the contact and is read left to right starting at the wide band (Figure 5). BIN code numbering is allowed for size 16 and larger contacts. If stamped or printed numbers are used, the digits must be a minimum of .060 inches high.

45. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts range from size 10 through 22M and are of crimp, rear-release design. Contacts are listed by size. Match the required size to the connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with the corresponding color bands (Table 4).

46. THERMOCOUPLE CONTACTS. Temperature sensing systems utilize two dissimilar metal conductors with matched lengths. When joined at the point where temperature will he sensed, a voltage difference develops. This voltage is directly proportional to the temperature change. Thermocouple contacts are either nickel-aluminum/silicon (formerly alumel), nickel-chromium (formerly chromel), iron, or copper-nickel alloy (formerly constantan). Match the required size to the connector application, wire gage and composition. Socket and pin contact part numbers are listed along with the corresponding color bands (Table 4).

47. TOOLING. The procedures for attaching power and thermocouple contacts to a single conductor .wire is the same for this connector series and contacts. Select the proper tooling for the specific contact part number and refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures (Table 5).

48. STEP STRIPPING FILTER LINE. Termination of AWG-22 filter line in MIL-DTL-38999 connectors with size 22 contacts requires 8 step stripping procedure to reduce the insulation diameter in the grommet area to allow clearance for the contact removal and insertion tool (NAVAIR 01-1A-505-1, WP 009 00).

49. COAXIAL CONTACTS. When routing coaxial cable through connectors, coaxial contacts are superior to other coaxial cable shield termination methods. The shield integrity is maintained across the contact body. The coaxial cable groups listed in Table 6 can be interconnected through MIL-DTL-38999 connector size 8, 12, and 16 contact cavities. Match the required contact size to the connector application and cable group. When crimping the center contact for these cables, use the crimp tool selector knob settings specified. Socket and pin contact part numbers are listed along with the corresponding color bands. Socket coaxial contacts have a pin center contact. Pin coaxial contacts have a socket center contact (Figures 6 and 7).

50. CABLE AND COAXIAL CONTACT ASSEMBLY. To assemble the coaxial contacts to the applicable cable identify the cable by group (Table 6). Select the proper contact by size and cable group (Table 7). Select the proper tooling and determine the required strip dimensions (Table 8).

51. Strip coaxial cable to the dimension specified in Table 8, according to stripping procedures in NAVAIR 01-1A-505-1, WP 009 00. Build-up crimp tools as specified according to NAVAIR 01-1A-505-1, WP 013 00. Size 12 and size 16 contacts are assembled using the procedures (Figure 8). Size 8 contacts are assembled using the procedures (Figure 9).

52. CONCENTRIC TWINAX CONTACTS. Concentric twinax contacts are used to interconnect shielded, twisted pair cable through connectors. Application is listed (Table 9). The twisted pair is connected to the center and intermediate contacts while the shield integrity is maintained across the contact body. These contacts are used with M17/176-00002 Type D, class B twin, flexible, radio frequency cable (Figure 10).

53. CABLE AND CONCENTRIC TWINAX CONTACT ASSEMBLY. To assemble the concentric twinax contact to the applicable cable select the proper contact (Table 7). Select the proper tooling required (Table 10). A cross-reference table is enclosed (Table 11).

54. Strip the cable to the dimensions specified in Figure 9, according to the stripping procedures in NAVAIR 01-1A-505-1, WP 009 00. Build-up crimp tools as specified in Table 10, according to NAVAIR 01-1A-505-1, WP 013 00. The contact is assembled using the following procedures (Figure 11) and the contact manufacturer's instructions.

Table 2. MIL-DTL-38999 Insert Configurations (Sheet 1 of 2)

SHELL SIZE				NUMBER OF CONTACTS										
NO. OF				INSERT CONFIGU-RATION	TOTAL	CONTACT SIZE								
I	II	III	IV			22M	22D	22	20	16	12	10	12 COAX	8 COAX
9	8	A	A	3	3				3					
9	8	A	A	35	6		6							
9	8	A	A	98	3				3					
9	8	A	A	6	6	6		4						
9	8	A	A	44	44									
11	-	B	B	2	2					2				
11	-	B	B	4	4				4					
11	10	B	B	5	5				5					
11	10	B	B	35	13		13							
11	10	B	B	98	6				6					
11	10	B	B	99	7				7					
11	10	B	B	13	13	13								
-	12	-	-	3	3					3				
13	12	C	C	4	4					4				
13	12	C	C	8	8				8					
13	12	C	C	35	22		22							
13	12	C	C	98	10				10					
13	12	C	C	22	22	22								
15	14	D	D	5	5					5				
15	14	D	D	15	15				14	1				
15	14	D	D	18	18				18					
15	-	D	D	19	19				19					
15	14	D	D	35	37		37							
15	14	D	D	97	12				8	4				
15	14	D	D	37	37	37								
17	16	E	E	6	6						6			
-	16	-	-	7	6								6	
17	16	E	E	8	8					8				
17	16	E	E	26	26				26					
17	16	E	E	35	55		55							
	16			42	42			42						
17	16	E	E	99	23				21	2				
17	16	E	E	55	55	55								
17	-	E	E	2	39		38						1 /1	
17	16	E	E	11	11				8			1 /2		
19	18	F	F	11						11				
19	-	F	F	18			14							4
19	18	F	F	28					26	2				
19	18	F	F	30					29	1				
19	18	F	F	32					32					
19	18	F	F	35			66							
19	18	F	F	67										
19	18	F	F	66		66								
19	18	F	F	67		67								

Table 2. MIL-DTL-38999 Insert Configurations (Sheet 2 of 2)

SHELL SIZE					NUMBER OF CONTACTS										
SERIES				INSERT CONFIGURATION	TOTAL	CONTACT SIZE									
I	II	III	IV			22M	22D	22	20	16	12	10	12 COAX	8 COAX
-	18	-	-	53	53			53						
-	18	-	-	96	9					9				
-	20	-	-	2	65			65						
21	20	G	G	1	79	79								
21	-	G	G	11	11						11			
21	20	G	G	16	16					16				
21	20	G	G	24	24			24						
21	20	G	G	25	25			25						
21	20	G	G	27	27			27						
21	20	G	G	35	79	79								79
21	20	G	G	39	39			37	2					
-	20	-	-	41	41			41						
23	22	H	H	2	85		85							
23	22	H	H	21	21				21					
23	22	H	H	32	32			32						
23	22	H	H	34	34			34						
23	22	H	H	35	100	100								100
23	22	H	H	36	36			36						
23	22	H	H	53	53			53						
-	22	-	-	55	55			55						
23	22	H	H	97	16				16					
23	22	H	H	1	100		100							
23	22	H	H	99	11				11					
25	24	J	J	4	56			48	8					
25	24	J	J	1	128	128								
25	24	J	J	2	100		4							
25	24	J	J	19	19					19				
25	24	J	J	24	24				12	12				
25	24	J	J	29	29				29					
25	24	J	J	35	128	128								128
25	-	J	J	43	43			23	20					
25	-	J	J	46	46			40	4				2	
25	24	J	J	61	61			61						

1 / Inactive for new designs
2 / MIL-C-17

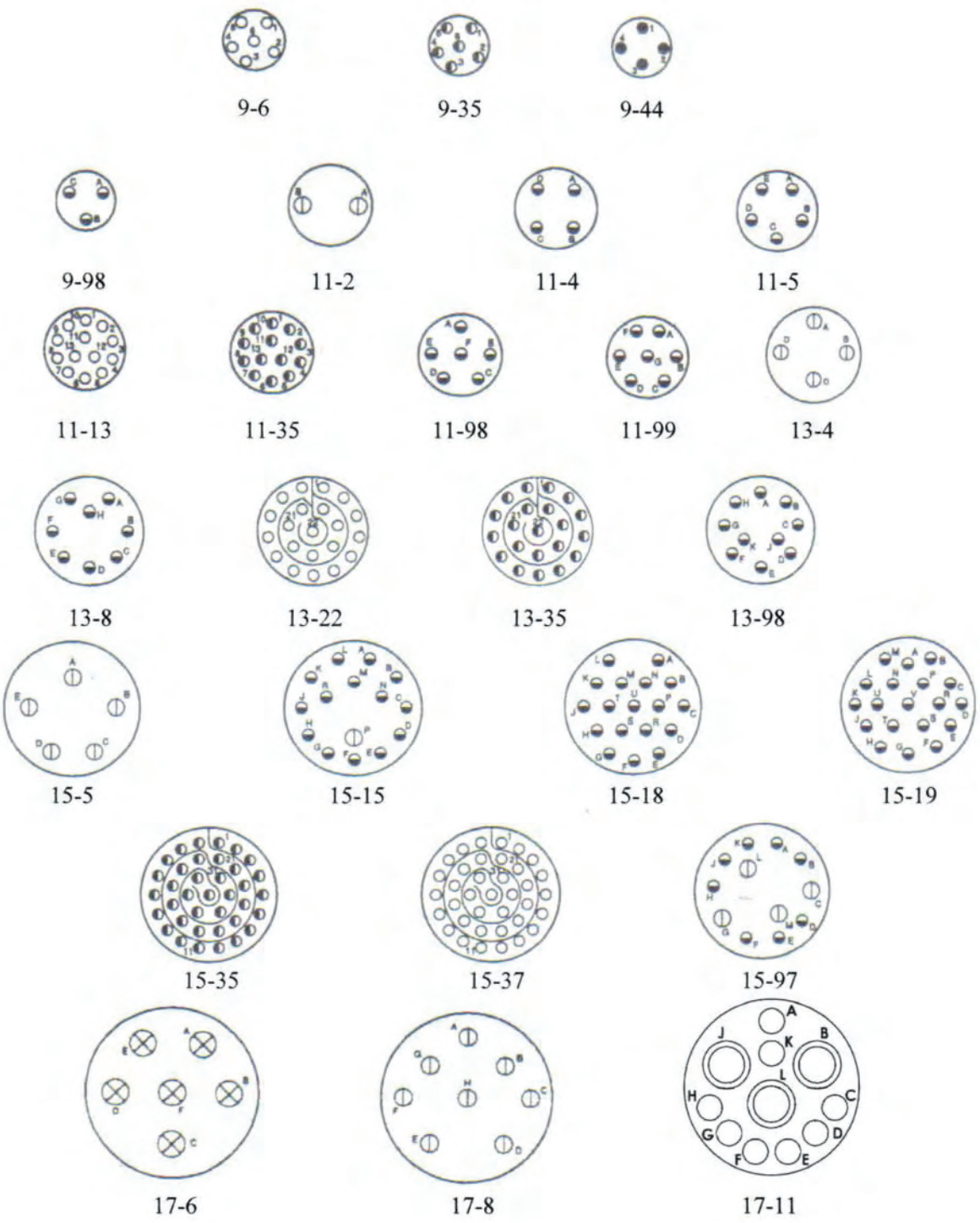


Figure 3. Insert Configuration (Sheet 1 of 5)

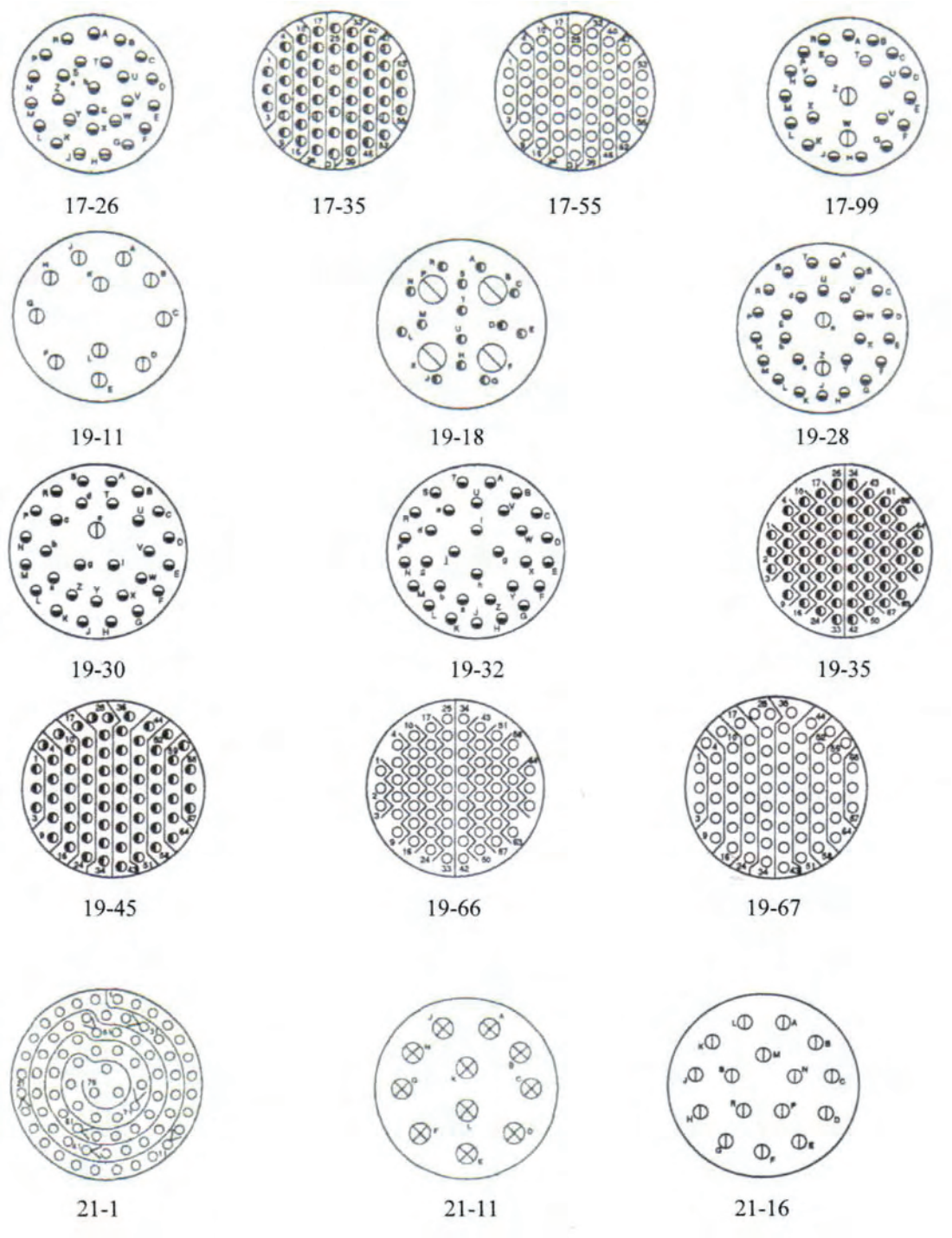


Figure 3. Insert Configuration (Sheet 2 of 5)

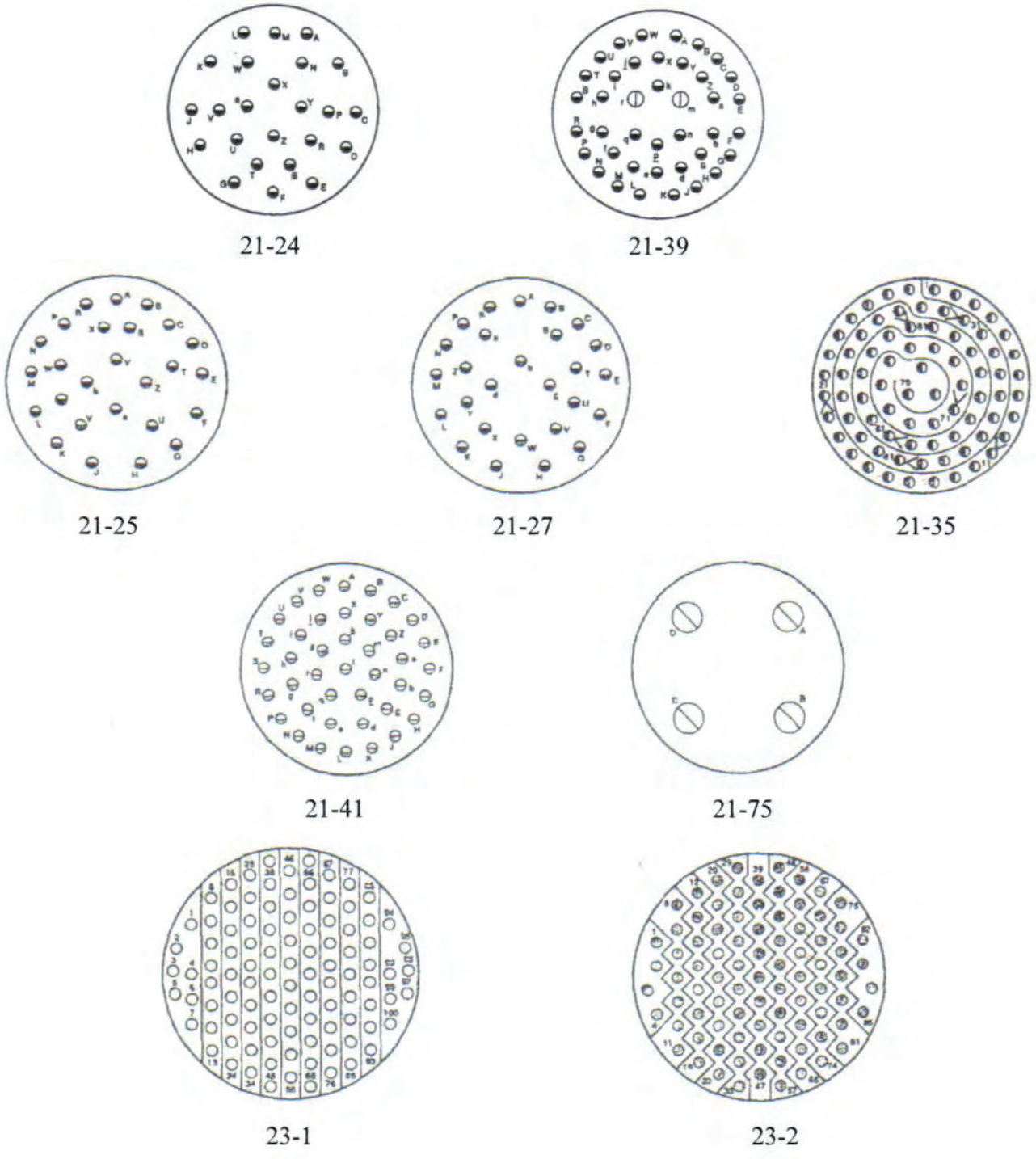


Figure 3. Insert Configuration (Sheet 3 of 5)

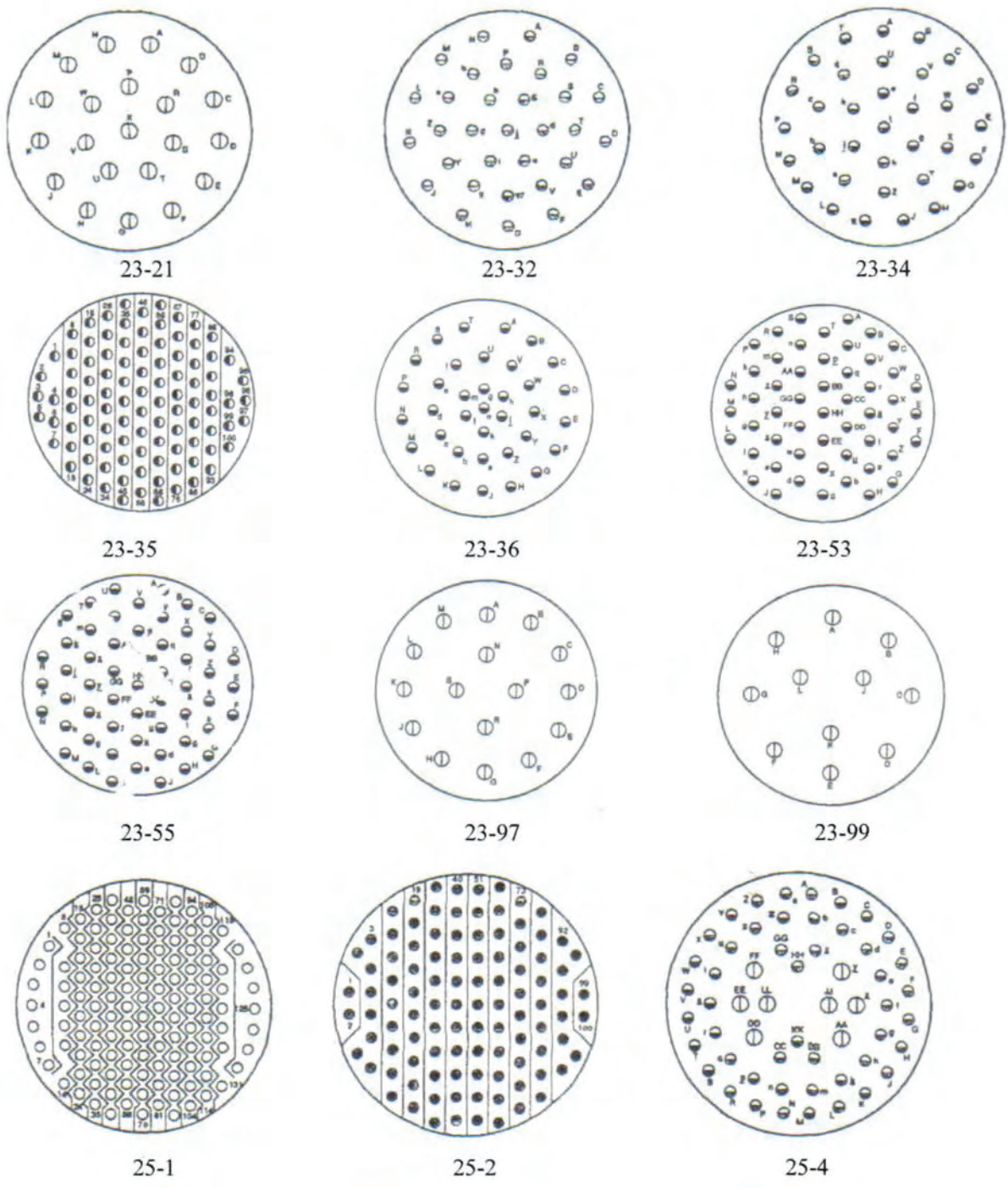


Figure 3. Insert Configuration (Sheet 4 of 5)

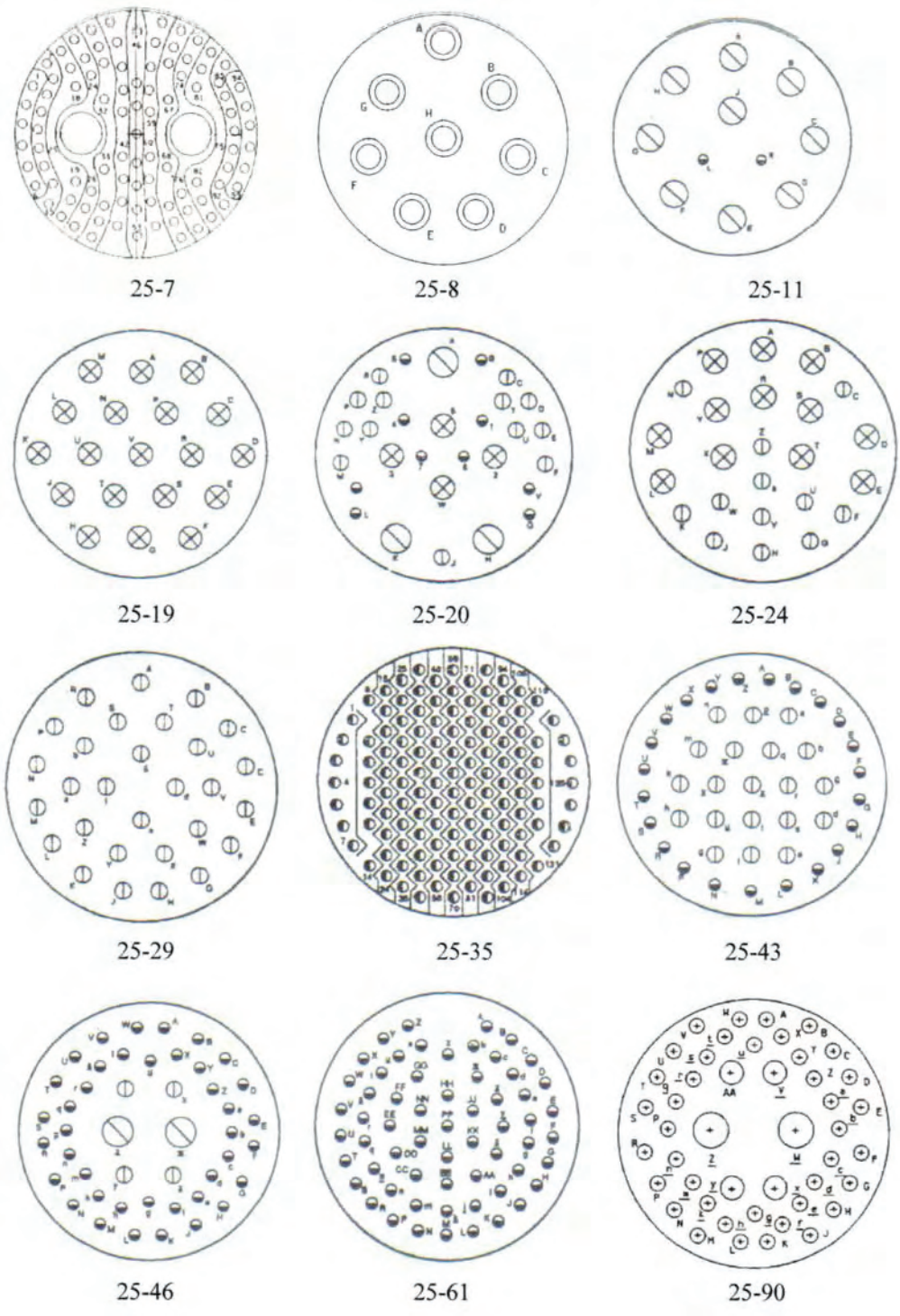


Figure 3. Insert Configuration (Sheet 5 of 5)

Table 3. Series 1 through 4 Voltage Ratings

NOTES: 1. Service Ratings	Sea Level Operating Voltage (Suggested)	
	AC(RMS)	DC
M	400	550
I	600	850
II	900	1250

2. C - Coaxial or standard contacts
F - Two contacts dedicated to fiber optics
T - Twinax contacts

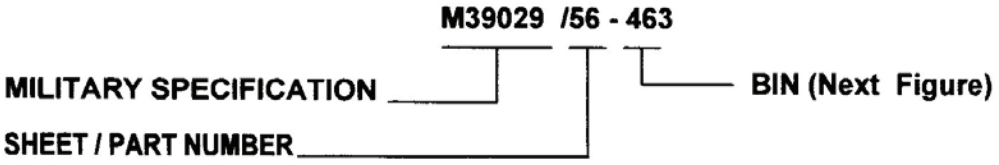


Figure 4. Part Number Breakdown

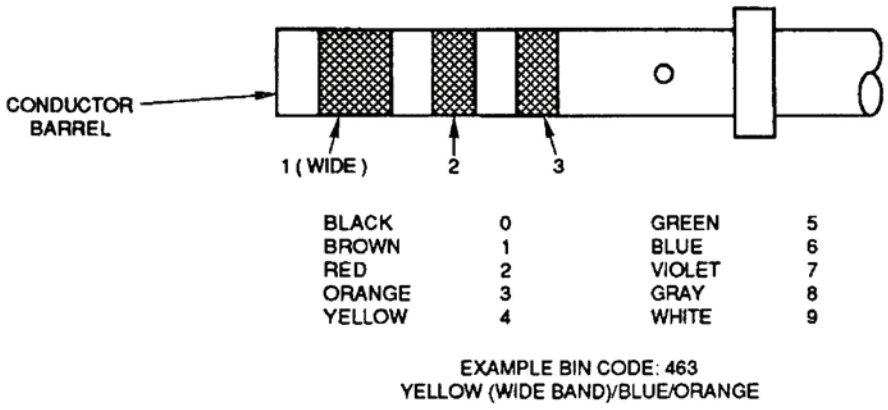


Figure 5. Basic Identification Number and Color Bands

Table 4. Power and Thermocouple Contact Application Series I

Contact Size	Wire Gage	Remarks	Socket Contacts		Pin Contacts	
			M39029/	Color Bands 1 2 3	M39029/	Color Bands 1 2 3
22M	24 to28		56-349	ORN YEL WHT	58-361	ORN BLU BRN
22D	22 to28	.	56-348	ORN YEL GRA	58-360	ORN BLU BLK
22	22 to26	.	56-350	ORN GRN BLK	58-362	ORN BLU RED
22	22 to 26	Copper-Nickel	88-482	YEL GRA RED	87-470	YEL VIO BLK
22	22 to26	Nickel-Aluminum	88-483	YEL GRA ORN	87-471	YEL VIO BRN
22	22 to26	Nickel-Chromium	88-484	YEL GRA YEL	87-472	YEL VIO RED
22	22 to 26	Iron	88-485	YEL GRA GRN	87-473	YEL VIO ORN
20	20 to 24	.	56-351	ORN GRN BRN	58-363	ORN BLU ORN
20	20 to 24	Copper-Nickel	88-486	YEL GRA BLU	87-474	YEL VIO YEL
20	20 to 24	Nickel-Aluminum	88-487	YEL GRA VIO	87-475	YEL VIO GRN
20	20 to 24	Nickel-Chromium	88-488	YEL GRA GRA	87-476	YEL VIO BLU
20	20 to24	Iron	88-489	YEL GRA WHT	87-477	YEL VIO VIO
16	16 to 20	.	56-352	ORN GRN RED	58-364	ORN BLU YEL
16	16 to 20	Copper-Nickel	88-490	YEL WHT BLK	87-478	YEL VIO GRA
16	16 to 20	Nickel-Aluminum	88-491	YEL WHT BRN	87-479	YEL VIO WHT
16	16 to 20	Nickel-Chromium	88-492	YEL WHT RED	87-480	YEL GRA BLK
16	16 to 20	Iron	88-493	YEL WHT ORN	87-481	YEL GRA BRN
12	12 to 14	.	56-353	ORN GRN ORN	58-365	ORN BLU GRN
10	10 to l2	-	56-527	GRN RED VIO	58-528	GRN RED GRA

NOTE
New terminology applies to thermocouple conductors as follows:
Constantan: Copper - Nickel Alloy
Alumel: Nickel - Aluminum Alloy
Chromel: Nickel - Chromium

Table 5. Power and Thermocouple Contact Tooling Series I

Contact M39029/	Crimp Tool Frame M22520/	Turret Head or Positioner M22520/	Insertion Tool M81969/	Removal Tool M81969/	Unwired Removal Tool Probe
56-348	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
56-349	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
56-350	2-01 or 7-01	2-07 or 7-05	8-03	8-04	M81969/30
56-351	1-01, 2-01, or 7-01	1-04 RED, 2- 10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
56-352	1-01 or 7-01	1-04BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
56-353	1-01	1-04 YEL	8-09 or 14-04	8-10 or 14-04	DRK105-12
56-527	1716P-1 (NOTE 1)		14-05	14-05	(NOTE 2)
58-360	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
58-361	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
58-362	2-01 or 7-01	2-09 or 7-07	8-03	8-04	M81969/30
5S-363	1-01 , 2-01, or 7-01	3-04 RED, 2-10, or 748	8-05 or 14-02	8-06 or 14-02	DRK105-20
58-364	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
58-365	1-01	1-04 YEL	8-09 or 14-04	8-10 or 14-04	DRK105-12
58-528	17 16P-1 (NOTE 1)	-	14-05	14-05	(NOTE 2)
87-470	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
87-471	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
87-472	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
87-473	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
87-474	1-01, 2-01, or 7-01	1-04 RED, 2- 10, or 7-08	8-05 or 14-02	8-08 or 14-02	DRK105-20
87-475	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
87-476	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
87-477	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
87-478	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
87-479	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
87-480	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
87-181	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
88-482	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
88-483	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
88-484	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
88-485	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
88-486	1-01, 2-01, or 7-01	1-04 RED, 2- 10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
88-487	1-01, 2-01, or 7-01	1-04 RED, 2- 10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
88-488	1-01, 2-01, or 7-01	1-04 RED, 2- 10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
88-489	1-01,2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
88-490	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
88-491	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
88-492	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
88-493	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30

NOTES:

1. Daniels Manufacturing Corporation special purpose crimp tool 716P-1 with G415 gage, or equivalent.
2. Tool part numbers not available at time of publication.

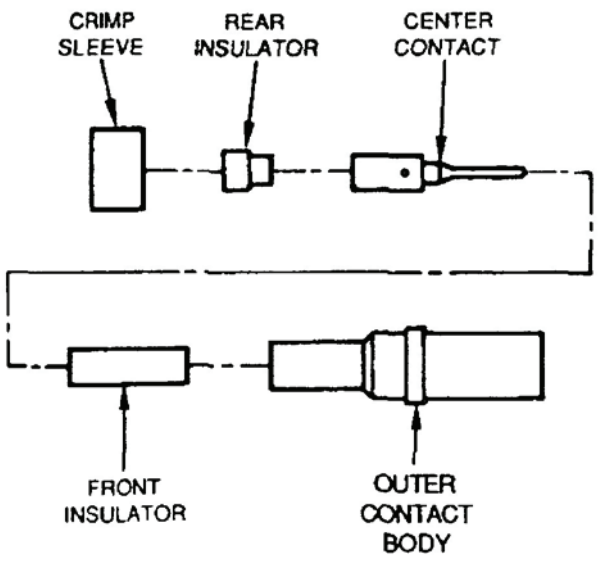


Figure 6. Coaxial Contact Components (Size 12 and 16)

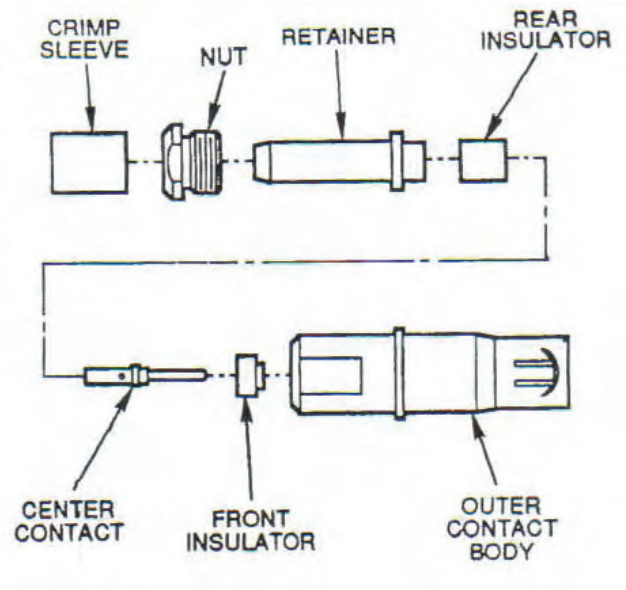


Figure 7. Coaxial Contact Components (Size 8)

Table 6. Cable Selection by Group

Group	Cable	Inner Contact Tool Selector Setting
A	M17/119-RG174	4
A	M17/113-RG316	5
A	M17/094-RG179	3
A	Times AA3248 (See Note)	4
A	Teledyne 11299 (See Note)	4
A	Thermax 75-738-BCCWXE (See Note)	4
A	Tensolite 30888/L707YX-1 (See Note)	4
A	Haveg 8100207 (See Note)	4
B	M17/095-RG180	3
C	Raychem 9527D1514-2L (See Note)	5
C	Raychem 9528A1318 (See Note)	4
C	Microdot 293-3922 (See Note)	3
D	Microdot 250-4070 (See Note)	4
E	Raychem 48-502 (See Note)	4
E	Raychem 5022E5111 (See Note)	4
F	Raychem 48-950 (See Note)	3
F	Raychem 9530D5117 (See Note)	3
G	Raychem 7624D1311 (See Note)	5
G	Raychem 9527A1318 (See Note)	5
H	Gore GWN1159A (See Note)	4
I	1S50MU-16 (MIL-C-915/42)	4
I	1S50MU-20 (MIL-C-915/42)	4
I	1S50MU-40 (MIL-C-915/42)	4
I	1S50MU-70 (MIL-C-915/42)	4
J	M17/093-RG178	3
K	Haveg 61-02051 (See Note)	4
K	Revere WH95623 (Red Shielded) (See Note)	4
L	Haveg 30-02024 (See Note)	4
L	Haveg 30-02033 (See Note)	4
L	Tensolite 24713/A955KK1 (See Note)	3
L	Tensolite 26723/A955KK1 (See Note)	3

NOTE:
Superseded cable type. Refer to MIL-C-17, or MIL-DTL-17 for replacement cable.

Table 7. Coaxial Contact Selection Series I

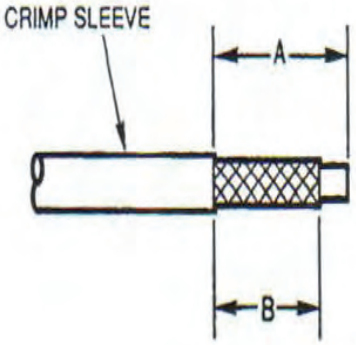
Contact Size	Cable Group	Socket Contacts		Mating Pin Contacts	
		M39029/	Color Bands 1 2 3	M39029/	Color Bands 123
16	A	77-428	YEL RED GRA	76-424	YEL RED YEL
16	J	77-429	YEL RED WHT	76-425	YEL RED GRN
16	K	77-430	YEL ORN BLK	76-426	YEL RED BLU
16	L	77-431	YEL ORN BRN	76-427	YEL RED VIO
12	A	75-416	YEL BRN BLK	28-211	RED BRN BRN
12	B,C	75-417	YEL BRN VIO	28-409	YEL BLK WHT
12	D	75-418	YEL BRN GRA	28-410	YEL BRN BLK
12	E	75-419	YEL BRN WHT	28-411	YEL BRN BRN
12	F	75-420	YEL RED BLK	28-412	YEL BRN RED
12	G	75-421	YEL RED BRN	28-413	YEL BRN ORN
12	H	75-422	YEL RED RED	28-414	YEL BRN YEL
12	I	75-423	YEL RED ORN	28-415	YEL BRN GRN
8	B	59-366	ORN BLU BLU	60-367	ORN BLU VIO

Table 8. Coaxial Contact Tooling Series I

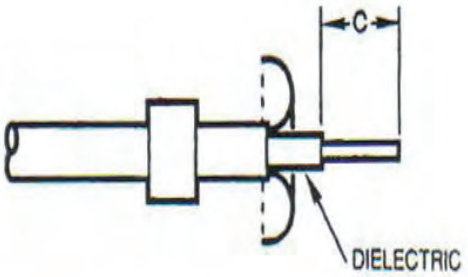
	Strip Dimension			Center Contact		Crimp Sleeve			
Contact M39029/	A	B	C	Crimp Tool Frame M22520/	Positioner M22520/	Crimp Tool Frame M22520/	Turret Head or Die Set Positioner M22520/	Insertion Tool M81969/	Removal Tool M81969/
28-211	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-409	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8- 10 or 14-04
28-410	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-411	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-412	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-413	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-414	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-415	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
59-366	3/4	.	-	2-01	2-31	5-0 or 10-01	15-05(B-) or 10-07(B)	8-09 or 14-04	8-10 or 14-04
60-367	3/4	-	-	2-01	2-31	5-0 or 10-01	15-05(B-) or 10-07(B)	8-09 or 14-04	8-10 or 14-04
75-416	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-417	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-418	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-419	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 1404
75-420	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-421	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-422	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-07 or 14-03	8-08 or 14-03
75-423	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-07 or 14-03	8-08 or 14-03
76-424	17/64	3/16	9/64	2-01	2-36	4-01	4-02	8-07 or 14-03	8-08 or 14-03
76-425	1/4	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 1403
76-426	1/4	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
76-427	1/4	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
77-428	19/32	3/16	15/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
77-429	19/32	3/16	15/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
77-430	19/32	3/16	15/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
77-431	19/32	3/16	15/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03

1. CUT CABLE END SQUARE, LEAVING ENOUGH CABLE FOR ADEQUATE STRAIN RELIEF WITHOUT EXCESS SLACK.

2. SLIDE CRIMP SLEEVE OVER CABLE. USING COAXIAL CABLE STRIPPER, STRIP JACKET DIMENSION A FROM END AND TRIM SHIELD TO DIMENSION B FROM JACKET.



3. FLARE SHIELD. DO NOT COMB OUT INDIVIDUAL SHIELD STRANDS. USING SHARP KNIFE, STRIP DIELECTRIC TO DIMENSION C.



4. SLIDE REAR INSULATOR, LARGE DIAMETER FIRST, OVER CENTER CONDUCTOR. SEAT REAR INSULATOR AGAINST DIELECTRIC.

5. INSERT CENTER CONDUCTOR INTO CENTER CONTACT, TRIM CENTER CONDUCTOR AS REQUIRED TO SEAT CENTER CONTACT AGAINST REAR INSULATOR. ENSURE CENTER CONDUCTOR REMAINS VISIBLE IN CONTACT INSPECTION HOLE.

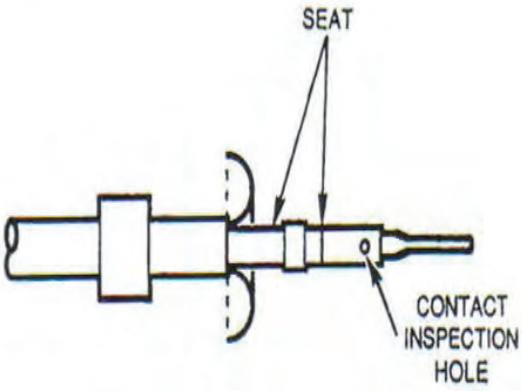
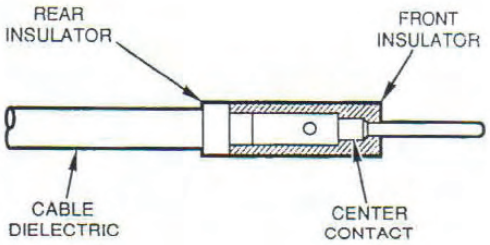


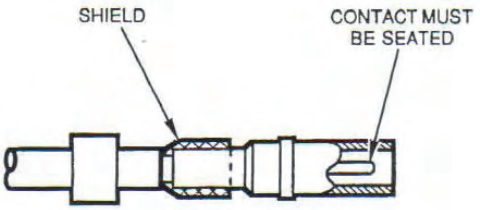
Figure 8. Size 12 and 16 Coaxial Contact Assembly (Sheet 1 of 2)

6. CRIMP CENTER CONTACT USING CRIMP TOOL FRAME AND POSITIONER SPECIFIED AND SELECTOR KNOB SETTING FOR CABLE.

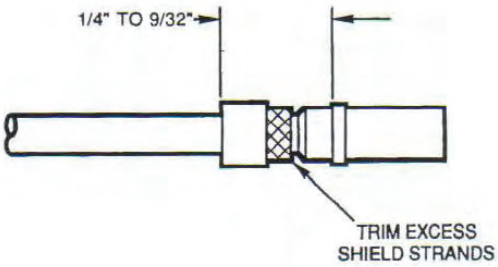
7. IF FRONT INSULATOR IS NOT CAPTIVATED INSIDE CONTACT BODY, SLIDE FRONT INSULATOR, LARGE INSIDE DIAMETER FIRST, OVER CENTER CONTACT.



8. SLIDE CONTACT BODY OVER CENTER CONTACT ASSEMBLY AND UNDER SHIELD UNTIL FULLY SEATED.



9. ARRANGE SHIELD AS CLOSE TO ORIGINAL LAY AS POSSIBLE. SLIDE CRIMP SLEEVE OVER SHIELD AND OBTAIN 1/4 TO 9/32 INCH DIMENSION. TRIM EXCESS SHIELD AHEAD OF CRIMP SLEEVE.



10. AFTER CORRECTLY LOCATING CRIMP SLEEVE, CRIMP USING SPECIFIED TOOLING.

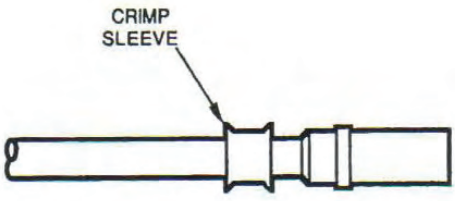
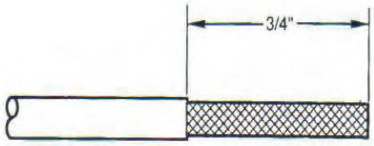
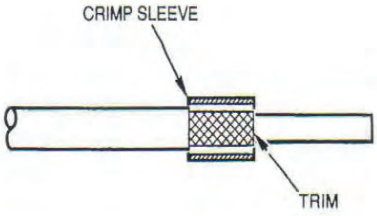


Figure 8. Size 12 and 16 Coaxial Contact Assembly (Sheet 2 of 2)

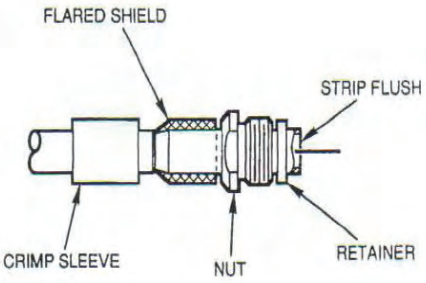
1. CUT CABLE END SQUARE, LEAVING ENOUGH CABLE FOR ADEQUATE STRAIN RELIEF WITHOUT EXCESS SLACK. USING COAXIAL CABLE STRIPPER, STRIP JACKET 3/4 INCH FROM END.



2. SLIDE CRIMP SLEEVE OVER SHIELD UNTIL FLUSH WITH EDGE OF JACKET. TRIM SHIELD FLUSH WITH EDGE OF CRIMP SLEEVE.

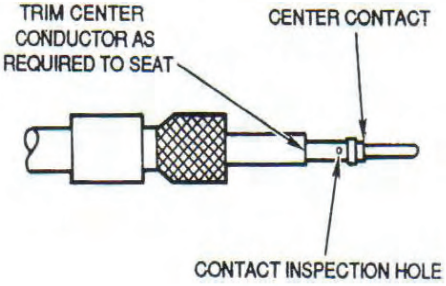


3. FLARE SHIELD. DO NOT COMB OUT INDIVIDUAL SHIELD STRANDS. SLIDE NUT OVER RETAINER. SLIDE RETAINER ASSEMBLY OVER DIELECTRIC AND UNDER SHIELD UNTIL SEATED AGAINST SHIELD AND JACKET. USING SHARP KNIFE, STRIP DIELECTRIC FLUSH WITH END OF RETAINER.



4. REMOVE RETAINER ASSEMBLY. INSERT CENTER CONDUCTOR INTO CENTER CONTACT. TRIM CENTER CONDUCTOR AS REQUIRED TO SEAT CENTER CONTACT AGAINST DIELECTRIC. ENSURE CENTER CONDUCTOR REMAINS VISIBLE IN CONTACT INSPECTION HOLE.

5. CRIMP CENTER CONTACT USING M22520/2-01 CRIMP TOOL FRAME AND M22520/2-31 POSITIONER. ENSURE CENTER CONDUCTOR REMAINS VISIBLE IN CONTACT INSPECTION HOLE.



6. SLIDE RETAINER ASSEMBLY OVER CENTER CONTACT AND UNDER SHIELD. RETAINER MUST SEAT AGAINST SHIELD.

7. ARRANGE SHIELD AS CLOSE TO ORIGINAL LAY AS POSSIBLE. SLIDE CRIMP SLEEVE OVER SHIELD AND RETAINER UNTIL GAP OF 1/64 TO 3/64 INCH EXISTS BETWEEN NUT AND CRIMP SLEEVE.

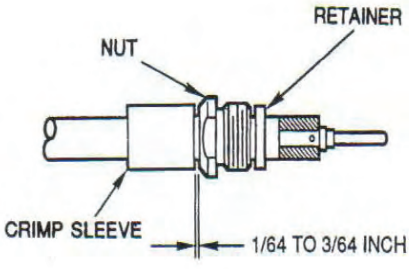
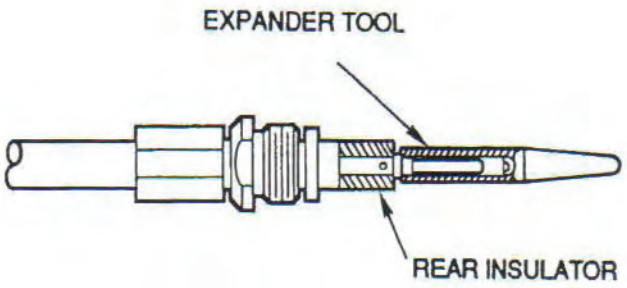


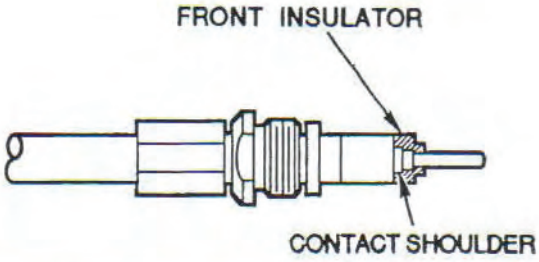
Figure 9. Size 8 Coaxial Contact Assembly (Sheet 1 of 2)

8. USING M22520/5-01 CRIMP TOOL FRAME AND M22520/5-05 DIE SET, OR M22520/10-01 CRIMP TOOL FRAME AND M22520/10-07 DIE SET, SECURE CRIMP SLEEVE BY CRIMPING IN DIE CLOSURE B. NUT MUST ROTATE FREELY AFTER CRIMPING.

9. INSTALL EXPANDER TOOL FROM EXPANDER TOOL KIT OVER CENTER CONTACT. SLIDE REAR INSULATOR OVER EXPANDER TOOL UNTIL SEATED BEHIND CONTACT SHOULDER. REMOVE EXPANDER TOOL.



10. SLIDE FRONT INSULATOR, LARGE DIAMETER FIRST, OVER CENTER CONTACT UNTIL SEATED AGAINST CONTACT SHOULDER.



11. SLIDE CONTACT BODY OVER CENTER CONTACT ASSEMBLY. THREAD NUT INTO CONTACT BODY UNTIL RETAINER IS SEATED IN CONTACT BODY.

12. USING 1/4 INCH OPEN END WRENCH, HOLD OUTER CONTACT BODY. USING 10 TO 50 INCH/OUNCE TORQUE HANDLE AND 7/32 INCH OPEN END ADAPTER, TIGHTEN NUT 30 TO 36 INCH/OUNCES.

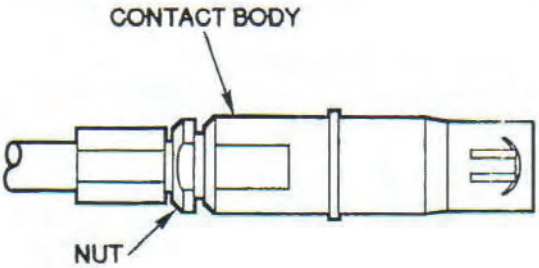


Figure 9. Size 8 Coaxial Contact Assembly (Sheet 2 of 2)

Table 9. Concentric Twinax Contact Application Series I

Contact Size	Cable Group	Socket Contacts				Pin Contacts			
		M39029/	Color Bands			M39029/	Color Bands		
			1	2	3		1	2	3
8	M17/176-00002 Type D, Class B	91-530	CRN	ORN	BLK	90-529	GRN	RED	WHT

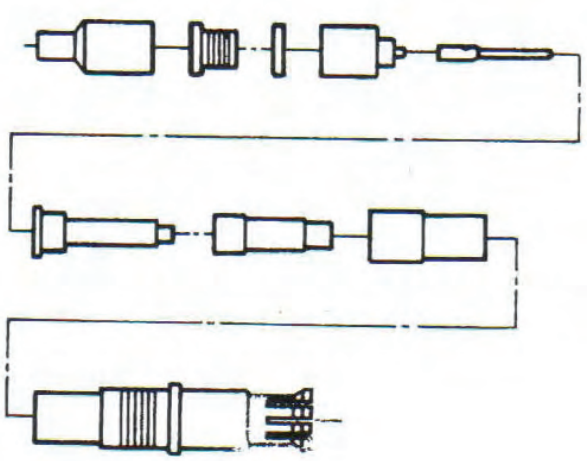


Figure 10. Concentric Twinax Contact Components (Size 8)

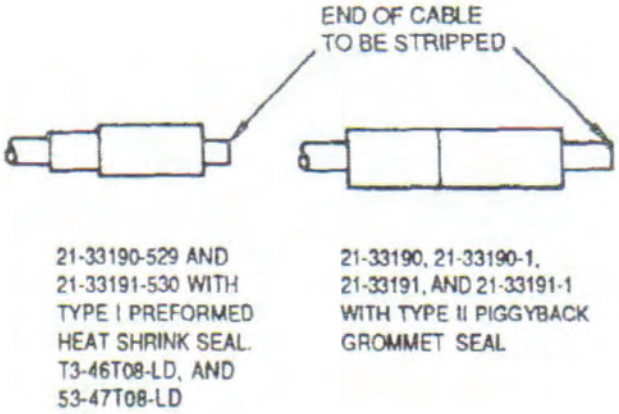
Table 10. Concentric Twinax Contact Tooling Series I

BIN Code	Center Contact Tooling		Intermediate Contact Tooling		Outer Crimp Sleeve Tooling	
	Basic Crimping Tool	Contact Positioner	Basic Crimp Tool	Die Part Number	Basic Crimping Tool	Die Part Number
529 and 530	MS22520/2-01	K-709	MS22520/5-01	Y631 Die Closure B	MS22520/5-01	Y631 Die Closure A

Table 11. Power and Thermocouple Contact Application Series I

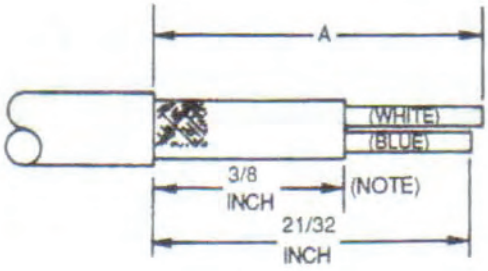
Contact Size	Wire Gage	Remarks	Socket Contacts				Pin Contacts			
			M39029/	Color Bands 1	2	3	M39029/	Color Bands 1	2	3
22M	24 to 28		57-355	ORN	GRN	GRN	58-361	ORN	BLU	BRN
22D	22 to 28		57-354	ORN	GRN	YEL	58-360	ORN	BLU	BLK
22	22 to 26		89-356	ORN	GRN	BLU	58-362	ORN	BLU	RED
22	22 to 26	Copper-Nickel	89-494	YEL	WHT	YEL	87-470	YEL	VIO	BLK
22	22 to 26	Nickel-Aluminum	89-495	YEL	WHT	GRN	87-471	YEL	VIO	BRN
22	22 to26	Nickel-Chromium	89-496	YEL	WHT	BLU	87-472	YEL	VIO	RED
22	22 to 26	Iron	89-497	YEL	WHT	VIO	87-473	YEL	VIO	ORN
20	20 to 24	.	57-357	ORN	GRN	VIO	58-363	ORN	BLU	ORN
20	20 to 24	Copper-Nickel	89-498	YEL	WHT	GRA	87-474	YEL	VIO	YEL
20	20 to 24	Nickel-Aluminum	89-499	YEL	WHT	WHT	87-475	YEL	VIO	GRN
20	20 to24	Nickel-Chromium	89-500	GRN	BLK	BLK	87-476	YEL	VIO	BLU
20	20 to24	Iron	89-501	GRN	BLK	BRN	87-477	YEL	VIO	VIO
16	16 to 20	.	57-358	ORN	GRN	GRA	58-364	ORN	BLU	YEL
16	16 to 20	Copper-Nickel	89-502	GRN	BLK	RED	87-478	YEL	VIO	GRA
16	16 to 20	Nickel-Aluminum	89-503	GRN	BLK	ORN	87-479	YEL	VIO	WKT
16	16 to 20	Nickel-Chromium	89-504	GRN	BLK	YEL	87-480	YEL	GRA	BLK
16	16 to 20	Iron	89-505	GRN	BLK	GRN	87-481	YEL	GRA	BRN
12	12 to 14		57-359	ORN	GRN	WHT	58-365	ORN	BLU	GRN

NOTE
New terminology applies to thermocouple conductors as follows:
Constantan: Copper - Nickel Alloy
Alumel: Nickel - Aluminum Alloy
Chromel: Nickel - Chromium



1. SLIDE SEAL OVER CABLE, SMALL DIAMETER END FIRST.

2. USING SHARP KNIFE, SCORE OUTER JACKET DIMENSION A FROM END. DO NOT CUT THROUGH JACKET. FLEX CABLE AT SCORE MARKS UNTIL JACKET SEPARATES. REMOVE JACKET.



3. TWIST CRIMP SUPPORT SLEEVE OVER SHIELD AND SEAT OVER JACKET. FLARE SHIELD AROUND CRIMP SUPPORT SLEEVE. TRIM SHIELD FLUSH WITH EDGE. CUT FILLERS AS CLOSE AS POSSIBLE.

4. STRIP WHITE WIRE TO DIMENSION B AND BLUE WIRE TO DIMENSION C.

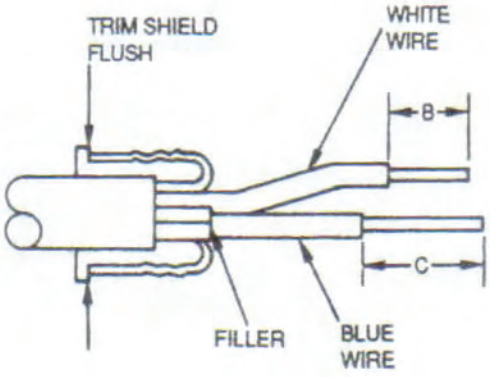
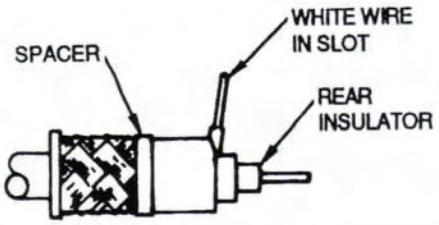
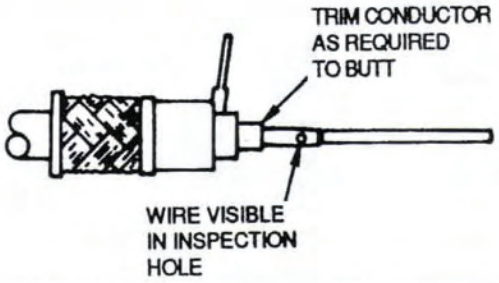


Figure 11. Concentric Twinax Contact Assembly (Sheet 1 of 3)

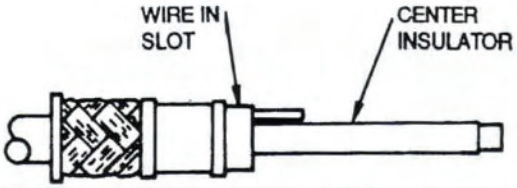
5. SLIDE REAR INSULATOR OVER BLUE WIRE UNTIL SEATED AGAINST WIRE INSULATION AND SHIELD OR SPACER. FEED WHITE WIRE THROUGH SLOT IN REAR INSULATOR.



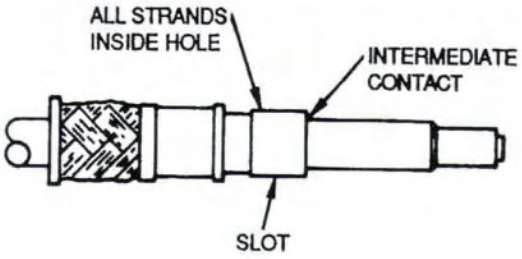
6. INSERT BLUE WIRE CONDUCTOR INTO CENTER CONTACT. TRIM CONDUCTOR AS REQUIRED TO BUTT CONTACT AGAINST INSULATOR. ENSURE CONDUCTOR REMAINS VISIBLE IN INSPECTION HOLE. CRIMP CONTACT TO WIRE USING M22520/2-01 CRIMP TOOL FRAME AND M22520/2-37 POSITIONER.



7.SLIDE CENTER INSULATOR OVER CENTER CONTACT AND SEAT OVER REAR INSULATOR. LAY WHITE WIRE IN SLOT.



8. SLIDE INTERMEDIATE CONTACT OVER CENTER INSULATOR AND FEED WHITE WIRE CONDUCTOR INTO HOLE. ENSURE ALL WIRE STRANDS ENTER HOLE. CRIMP CONTRACT TO WIRE USING M22520/5-01 CRIMP TOOL FRAME AND M22520/5-01 CRIMP TOOL FRAME AND M22520/5-200 DIE SET.



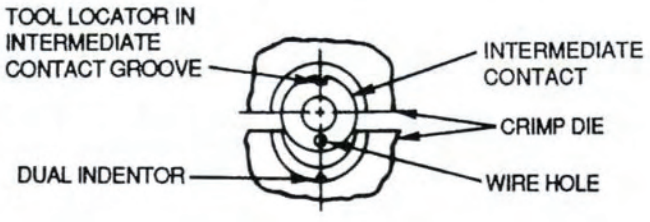
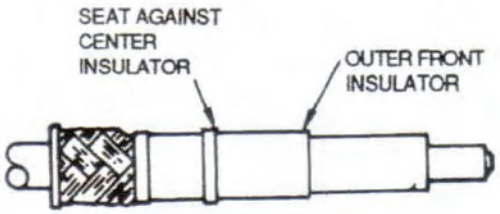
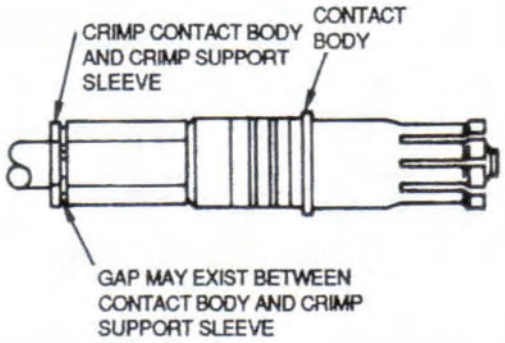


Figure 11. Concentric Twinax Contact Assembly (Sheet 2 of 3)

9. SLIDE OUTER FRONT INSULATOR OVER INTERMEDIATE CONTRACT AND SEAT AGAINST CENTER INSULATOR.



10. INSERT CONTACT AND CABLE ASSEMBLY INTO CONTACT BODY. ENSURE CONTACT FULLY SEATS IN CONTACT BODY. A SMALL GAP MAY EXIST BETWEEN CRIMP SUPPORT SLEEVE AND CONTACT. CRIMP OUTER CONTACT BODY AND CRIMP SUPPORT SLEEVE USING M22520/5-01 CRIMP TOOL FRAME AND M22520/5-200 DIE SET.



WARNING

FOR COMPLETE WARNING REFER TO WP 002 01

DO NOT USE HEAT GUNS WITH ELECTRIC MOTORS WHEN WORKING ON AIRCRAFT THAT HAVE NOT BEEN DEFUELED AND PURGED. USE HEAT GUN HT-900B.

NOZZLE AND OUTPUT AIR OF HEAT GUN GET VERY HOT. USE EXTREME CARE WHEN OPERATING HEAT GUN TO AVOID SERIOUS BURNS.

USE OF NITROGEN WITH THE HT-900B HEAT GUN IN AN ENCLOSED AREA CAN BE HAZARDOUS. DISCHARGE OF NITROGEN INTO A POORLY VENTILATED AREA CAN RESULT IN ASPHYXIATION.

NOTE

IF USING ALLIED AMPHENOL PIGGYBACK GROMMET SEAL, SLIDE SEAL DOWN CABLE UNTIL SEATED FIRMLY ON CONTACT.

11. SLIDE PREFORMED HEAT SHRINK SEAL OVER CONTACT UNTIL LARGE END IS EVEN WITH BASE OF CHAMFER ON CONTACT BODY. SHRINK IN PLACE USING HT-900B HEAT GUN.

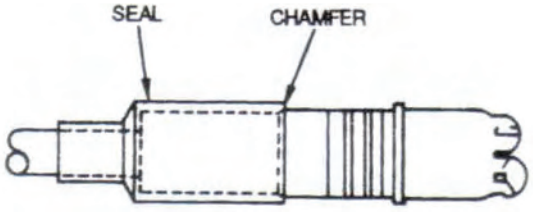


Figure 11. Concentric Twinax Contact Assembly (Sheet 3 of 3)

55. MIL-DTL-38999 SERIES II.

56. Series II connectors are circular, non scoop proof environment resistant connectors with bayonet coupling. These connectors are of a low silhouette design for minimum size and weight with high density. Series II connectors are for general application within weapon systems which are not subjected to high vibration or SWAMP areas.

57. CONSIDERATIONS. Series II connectors are not suited to all applications and require special handling in some instances. The following considerations in application should be followed:

a. Series II connectors are vulnerable to pin contact bending from scooping, with size 22, the smallest contact being the most vulnerable.

b. Use in areas of blind mating should be avoided.

c. Locations should minimize the amount of cable bending; large cables which must be bent at right angles must have the bend permanently established.

d. Heavy jacketed cable and excessive overhang should not be used because of possible damage.

e. Use in areas of rough handling experienced near engine removal, generators, support equipment, portable equipment, etc., should be avoided.

f. During engagement, care must be exercised to ensure all bayonet pins are engaged by the coupling ring; it is possible to only engage one bayonet pin and therefore only partially couple.

g. When mating in areas of difficult visibility, care must be exercised to ensure that connector plugs with pins are not mated to receptacles with pins resulting in contacts touching.

58. PART NUMBER. The part number contains the information necessary for the proper selection and procurement (Figure 12).

59. Military Specification. The military specification will denote the shell style.

60. Class. The class indicates the environment resistance along with mounting type.

61. Shell Size. The shell size is indicated by a progressive number system.

62. Finish. The finish denotes the composition and operating temperature range.

63. Insert Arrangement. The insert arrangement is shown as a number denoting the number of contacts used.

64. Contact Style. The contact style denotes the type of contact used.

65. Polarization. The polarization letter shows that plugs and receptacles with the same letter can be mated.

66. DESIGN AND CONSTRUCTION. The connectors and accessories are designed and constructed to withstand normal handling during maintenance and installation.

67. INSERTS. The entire insert of the environment resisting assemblies is essentially one integral part designed to provide suitable sealing and support around the wires and to be non-removable.

68. Rigid Dielectric. The rigid dielectric is one molded piece or not more than two pieces bonded together. The design is such that contacts are able to be inserted and removed to facilitate installation and maintenance except hermetic receptacles.

69. Contact Locking Device. The contact locking devices are contained in the rigid dielectric and securely hold the contacts during normal coupling.

70. Rotation. The inserts are secured in a manner so as to prevent rotation or movement.

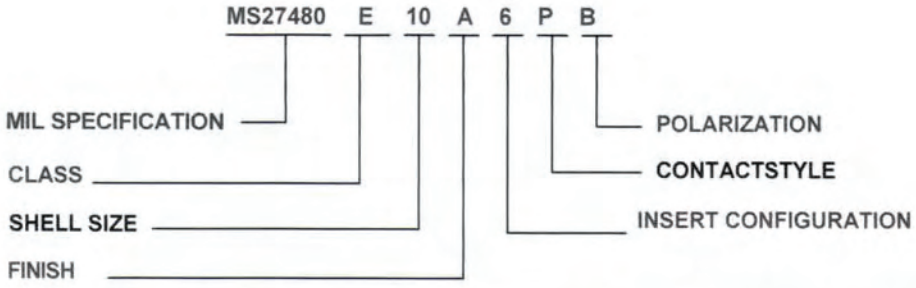
71. Interface Seal. All pin contact inserts will have a resilient interface seal bonded to the front face to prevent water intrusion.

72. Hermetic Receptacles. A vitreous or glasslike material issued, to insulate and seal the contacts, and all pin contacts will have an interface seal. The contacts are not removable.

73. INSERT ARRANGEMENTS. The insert arrangement is the number and size of the contacts available by shell size (Table 2).

74. INSERT CONFIGURATION. The insert configuration is the manner in which the contacts are placed within the insert in a standard configuration. All arrangements identified in Table 2 are illustrated (Figure 13).





MS27472	WALL MOUNT RECEPTACLE
MS27473	STRAIGHT PLUG
MS27474	JAM NUT RECEPTACLE
MS27475	HERMETIC WALL MOUNT RECEPTACLE
MS27476	HERMETIC BOX MOUNT RECEPTACLE
MS27477	HERMETIC JAM NUT RECEPTACLE
MS27478	HERMETIC SOLDER MOUNT RECEPTACLE
MS27482	HERMATIC WALL MOUNT RECEPTACLE (NOTE 1)
MS27483	HERMATIC JAM NUT RECEPTACLE (NOTE 1)
MS27484	STRAIGHT PLUG, EMI GROUNDING
MS27497	WALL RECEPTACLE, BACK PANEL MOUNTING
MS27499	BOX MOUNT RECEPTACLE
MS27503	HERMETIC SOLDER MOUNT RECEPTACLE (NOT: 1)
MS27508	BOX MOUNT RECEPTACLE, BACK PANEL MOUNTING
MS27513	BOX MOUNT RECEPTACLE, LONG GROMMET
MS27664	WALL RECEPTACLE, BACK PANEL MOUNTING (NOTE 1)
MS27667	THRU-BULKHEAD RECEPTACLE

Note: 1

ACTIVE	SUPERSEDES
MS27474	MS27482
MS27477	MS27483
MS27274	MS27274
MS27507 Elbow	
MS27478	MS27503
MS27479	MS27664

Figure 12. MIL-C-38999 Series II Connectors (Sheet 1 of 2)

CLASS

E ENVIRONMENT RESISTING - BOX AND THRU - BULKHEAD MOUNTING RECEPTACLES TYPES. OTHER TYPES WITH REAR ACCESSORIES ARE INACTIVE FOR NEW DESIGN.
G ENVIRONMENT RESISTING – WALL AND JAM NUT MOUNTING RECEPTACLE AND PLUG TYPES. SPACE GRADE
H HERMAYTICALLY SEALED - SPACE GRADE
P FOR POTTING - INCLUDES POTTING FORM AND SHORT REAR GROMMET. (INACTIVE FOR NEW DESIGN FOR AIR FORCE).
T ENVIRONMENT RESISTING - WALL AND JAM-NUT MOUNTING RECEPTACLE AND PLUG TYPES; THESE DESIGNS INCORPORATE (THREAD AND TEETH) FOR ACCESSORY ATTACHMENT
Y HERMETICALLY SEALED

SHELL SIZE

8,10,12.14,16,18, 20, 22, OR 24 (TABLE 11 AND FIGURE 13)

FINISH

A SILVER TO LIGHT IRIDESCENT YELLOW COLOR CADMIUM PLATE OVER NICKEL (CONDUCTIVE), -65°CTO +150°C (INACTIVE FOR NEW DESIGN)
B OLIVE DRAB CADMIUM PLATE OVER SUITABLE UNDERPLATE (CONDUCTIVE), -65°C TO +175°C
C ANODIC (NONCONDUCTIVE), -65°C TO +175°C
D FUSED TIN, CARBON STEEL (CONDUCTIVE), -65°CTO+150°C

FINISH (CONT)

E CORROSION RESISTANT STEEL (CRES), PASSIVATED (CONDUCTIVE), -65°C TO 4-200°C
F ELECTROLESS NICKEL COATING (CONDUCTIVE),-65°CTO+200°C
N HERMETIC SEAL OR ENVIRONMENT RESISTING CRES (CONDUCTIVE PLATING), -65°C TO +200°C
R Same as F, but higher corrosion requirement.
U Same as A, but higher corrosion requirement.
X Same as B, but higher corrosion requirement.

INSERT ARRANGEMENT

(TABLE 11 AND FIGURE 13)

CONTACT STYLE

A WITHOUT PIN CONTACTS
B WITHOUT SOCKET CONTACTS
C FEEDTHROUGH
P PIN CONTACTS -INCLUDING HERMETICS WITH SOLDER CUPS
S SOCKET CONTACTS - INCLUDING HERMETICS WITH SOLDER CUPS
X PIN CONTACTS WITH EYELET (HERMETIC)
Z SOCKET CONTACTS WITH EYELET (HERMETIC)

The A and B designators are used to indicate that trie connectors will be used with other than standard contacts as indicated in MIL-STD-1560 {example: shielded, coaxial thermocouple, fiber optic contacts). The A and B designators are part of the connector PINs and should be marked on the connectors.
The standard contacts should not be supplied with the connectors. The contacts that will be used with the connectors must be ordered separately.
Note: When other than standard power contacts are used, the requirements stated herein may not be met.

POLARIZATION

A, B, C, OR D NORMAL - NO LETTER REQUIRED

Figure 12. MIL-C-38999 Series II Connectors (Sheet 2 of 2)

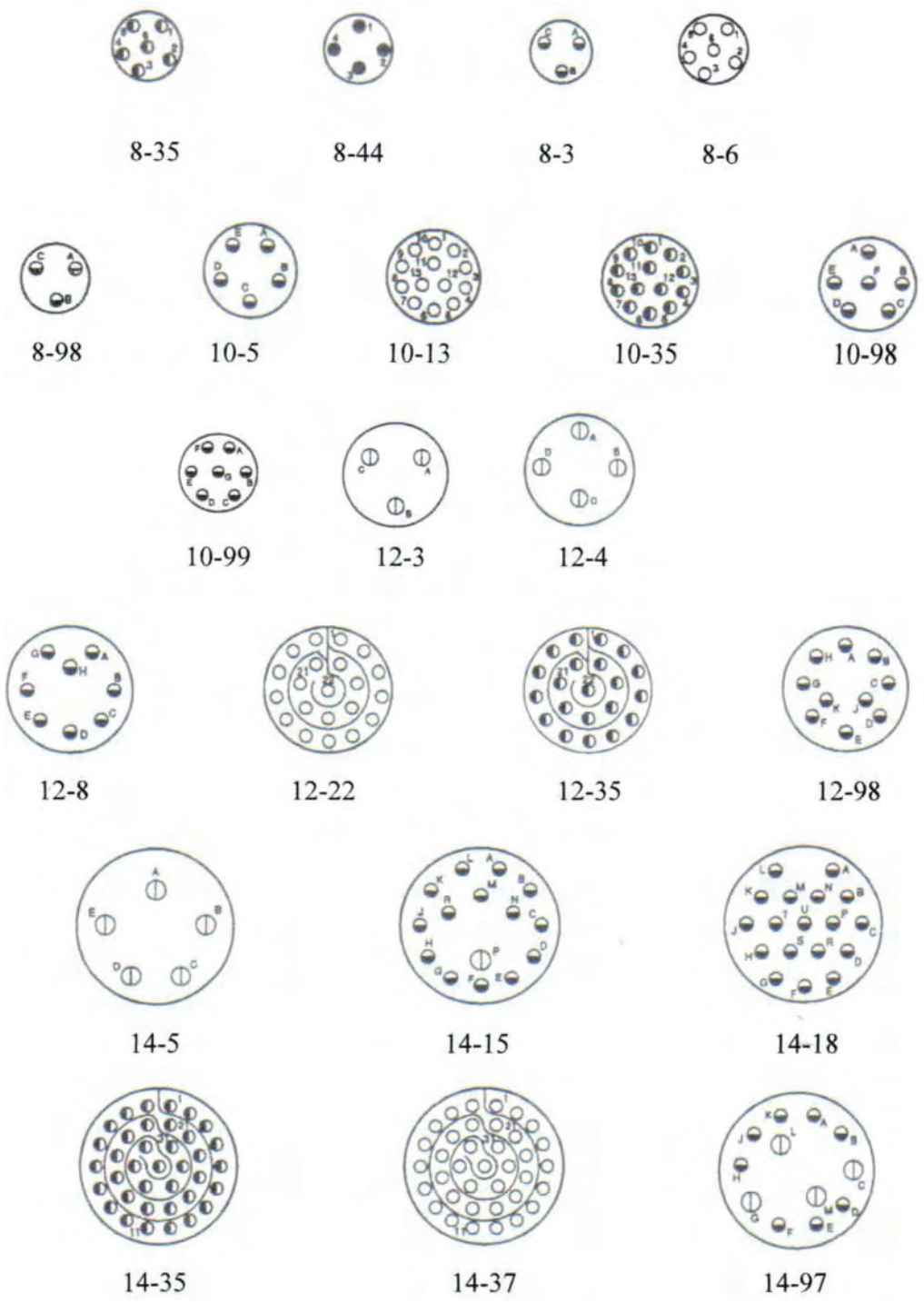


Figure 13. Insert Configuration Series II (Sheet 1 of 5)

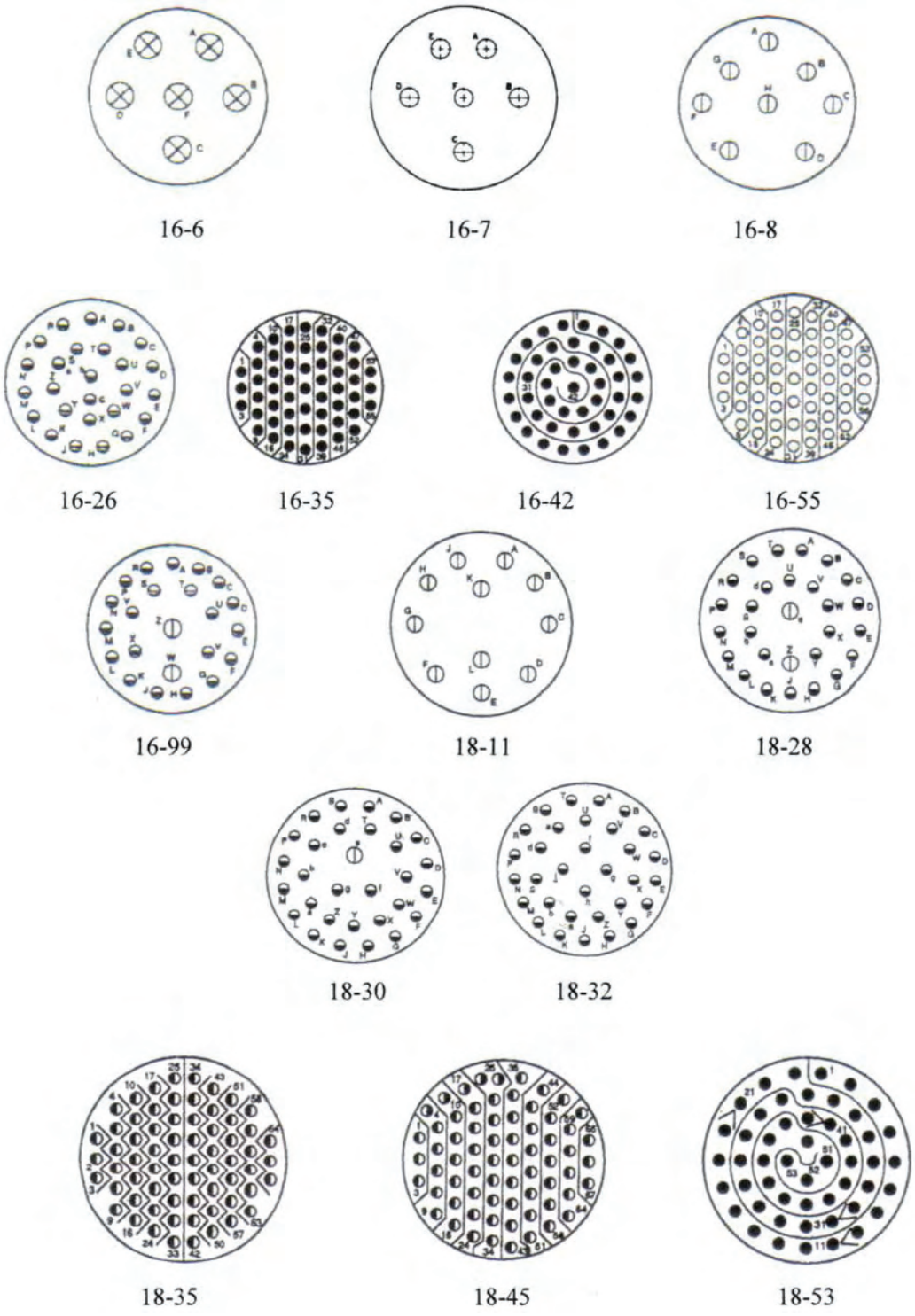


Figure 13. Insert Configuration Series II (Sheet 2of 5)

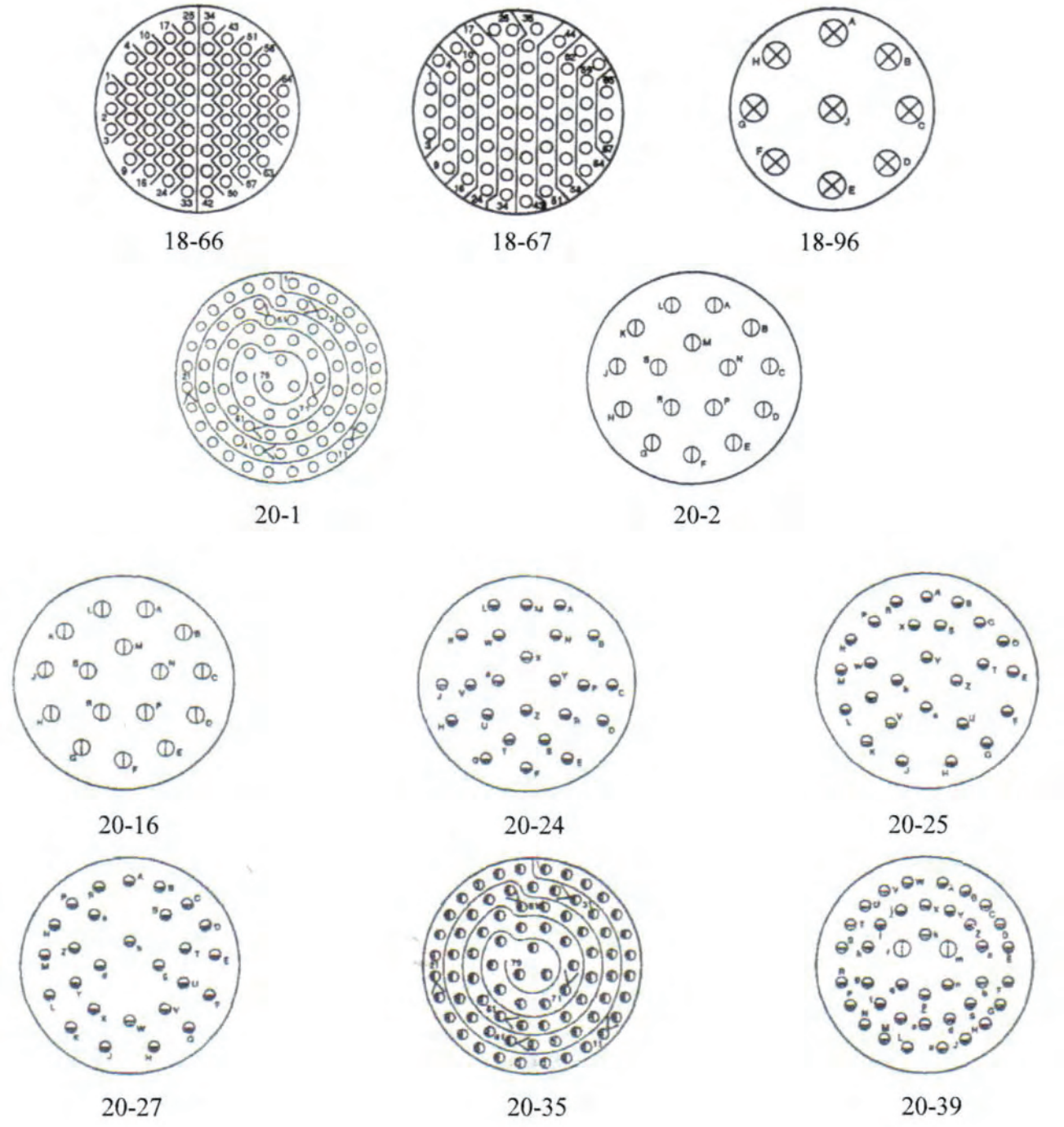


Figure 13. Insert Configuration Series II (Sheet 3of 5)

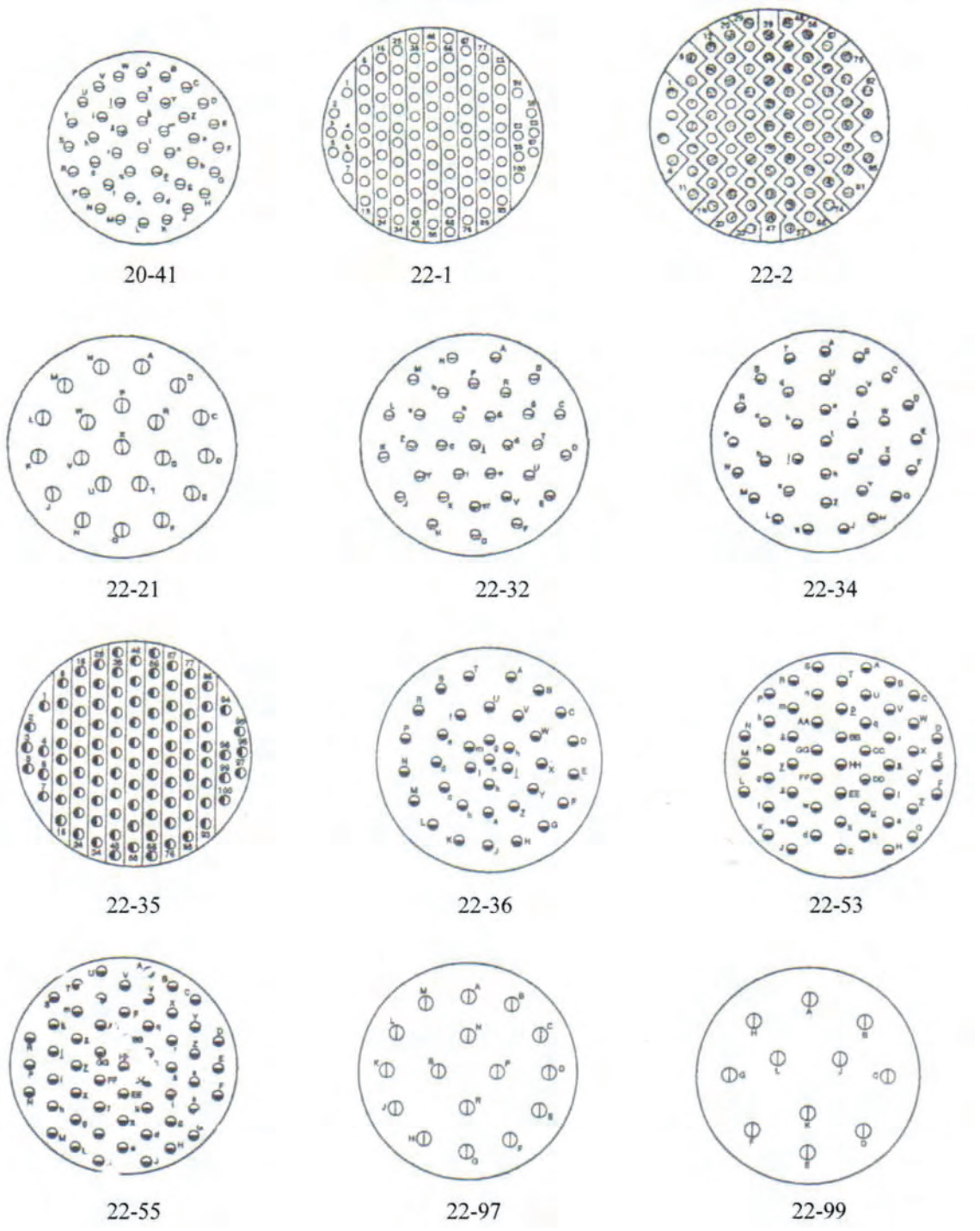


Figure 13. Insert Configuration Series II (Sheet 4 of 5)

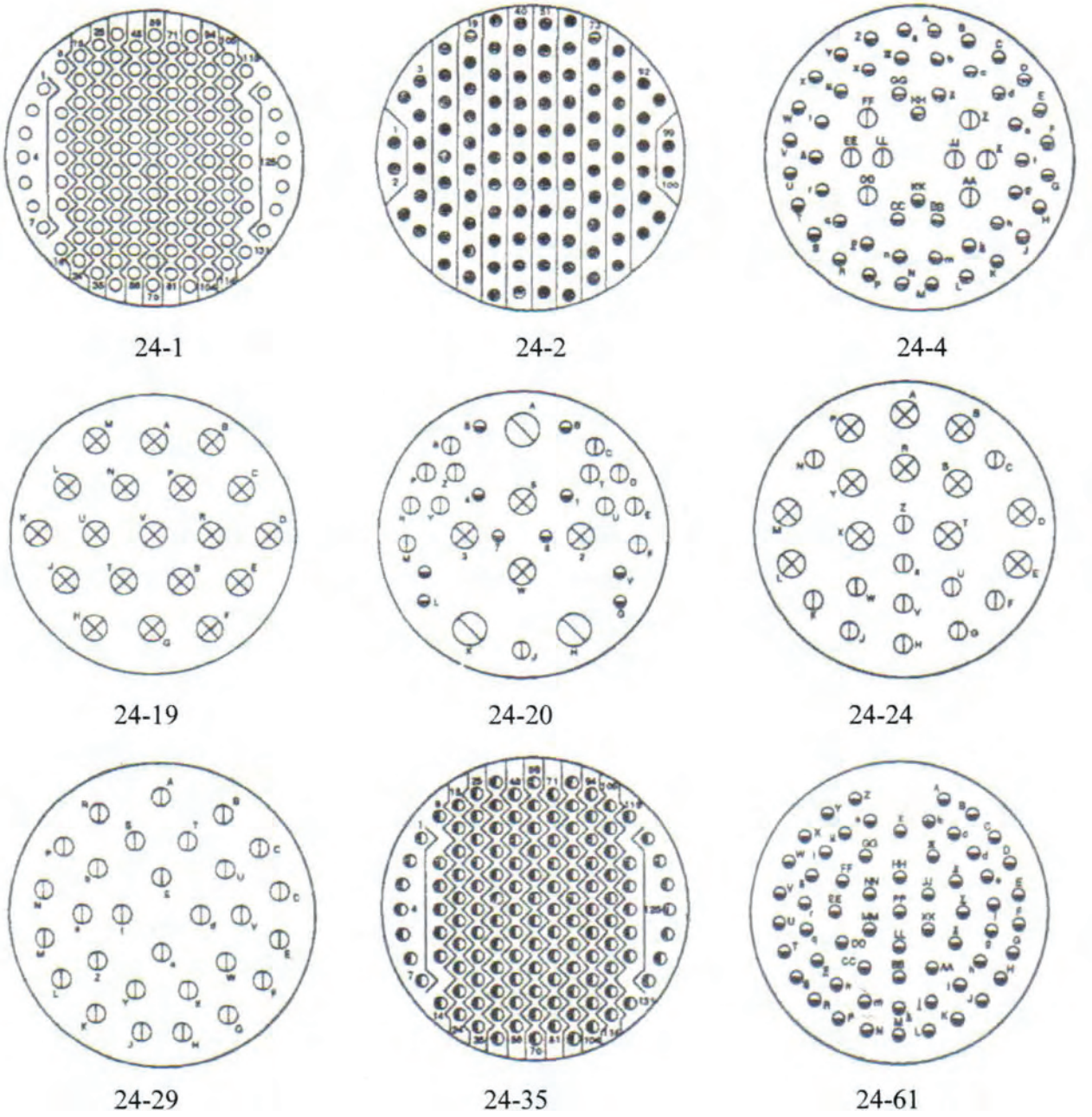


Figure 13. Insert Configuration Series II (Sheet 5 of 5)

75. CONTACTS. Contacts may be fixed or crimp removable.

76. Fixed Contacts. Contacts in hermetically sealed or through-bulkhead receptacles are fixed, non-removable and solder-able, or feed through.

77. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

78. Contact Availability. Crimp contacts are supplied with each connector unit package and consist of a full compliment plus 1 spare per size for connectors of 26 contacts or less. Connectors with more than 26 contacts will have 2 spares of each size used. Contacts may also be ordered in individual quantities when necessary.

79. Installation and Removal Tools. The proper installation and removal tools must be used to assemble or disassemble the connector. The connector when ordered as a unit package will include one MIL-I-81969/14 tool.

80. CONTACT APPLICATION. Contacts used in Series II connectors are manufactured in accordance with AS39029. The Basic Identification Number (BIN) or last three digits of the contact part number, matches the standard resistor color code (Figure 14). BIN code numbering is allowed for size 16 and larger contacts. If stamped or printed numbers are used, the digits must be a minimum of .060 inches high.

81. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts range from size 10 through 22M and are of crimp, rear-release design. Contacts are listed by size. Match the required size to the connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with the corresponding color bands (Table 11).

82. THERMOCOUPLE CONTACTS. Temperature sensing systems utilize two dissimilar metal conductors with matched lengths. When joined at the point temperature will be sensed, a voltage difference develops. This voltage is directly proportional to the temperature change. Thermocouple contacts are either nickel-aluminum/silicon (formerly alumel), nickel-chromium (formerly chromel), iron, or copper-nickel alloy (formerly constantan) Match the required size to the connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with the corresponding color bands (Table 11).

83. TOOLING. The procedures for attaching power and thermocouple contacts to a single conductor wire are the same for this connector series and contacts. Select the proper tooling for the specific contact part number and refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures (Table 12).

84. STEP STRIPPING FILTER LINE. Refer to NAVAIR 01-1A-505-1, WP 009 00.

85. COAXIAL CONTACTS. When routing coaxial cable through connectors, coaxial contacts are superior to other coaxial cable shield termination methods. The shield integrity is maintained across the contact body. The coaxial cable groups listed in Table 13 can be interconnected through MIL-DTL-38999 connector size 8, 12, and 16 contact cavities. Match the required contact size to the connector application and cable group. When crimping the center contact for these cables, use the crimp tool selector knob settings specified. Socket and pin contact part numbers are listed along with the corresponding color bands. Socket coaxial contacts have a pin center contact. Pin coaxial contacts have a socket center contact (Figure 15).

86. CABLE AND COAXIAL CONTACT ASSEMBLY. To assemble the coaxial contacts to the applicable cable, identify the cable by group (Table 13). Select the proper contact by size and cable group (Table 14). Select the proper tooling and determine the required strip dimensions (Table 15).

87. Strip coaxial cable to the dimensions specified in Table 15, according to the stripping procedures in NAVAIR 01-1A-505-1, WP 009 00. Build-up crimp tools as specified in Table 15, according to NAVAIR 01-1A-505-1, WP 013 00. Coaxial contacts and cable are assembled using the procedures outlined for Series I connectors (Paragraph 51).

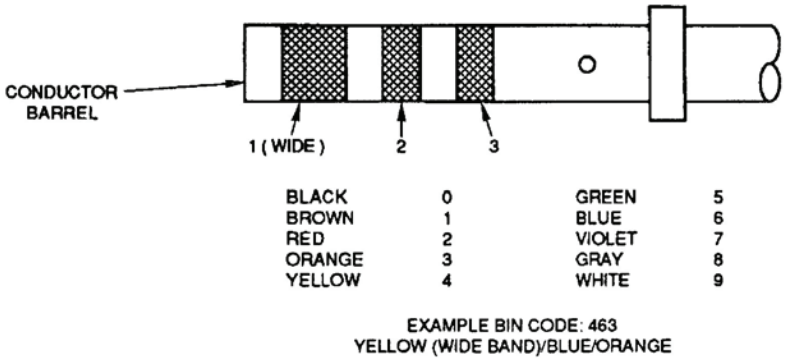


Figure 14. Basic Identification Number and Color Bands

Table 12. Power and Thermocouple Contact Tooling Series II

Contact M39029/	Crimp Tool Frame M22520/	Turret Head or Positioner M22520/	Insertion Tool M81989/	Removal Tool M81969/	Unwired Removal Tool	Unwired Removal Probe
57-354	2-01 or 7-01	2-08 or 7-06	8-01 or 14-01	8-02 or 14-01	M81969/30	
57-365	2-01 or 7-01	2-08 or 7-06	8-01 or 14-01	8-02 or 14-01	M81969/30	
57-356	2-01 or 7-01	2-08 or 7-06	8-03	8-04	M81969/30	
57-357	1-01, 2-01, or 7-01	1-04 RED, 2- 10, or 7-08	8-05 or 14-02	8-08 or 14-02	DRK105-20	
57-358	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30	
57-359	1-01	1-04 YEL	8-09 or 14-04	8-10 or 14-04	DRK105-12	
58-360	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30	
58-361	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30	
58-362	2-01 or 7-01	2-09 or 7-07	8-03	8-04	M81969/30	
58-363	1-01, 2-01, or 7-01	1-04 RED, 2- 10. or 7-08	8-05 or 14-02	8-08 or 14-02	DRK105-20	
58-364	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30	
58-365	1-01	1-04 YEL	8-09 or 14-04	8-10 or 14-04	DRK105-12	
87-470	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30	
87-171	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30	
87-472	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30	
87-473	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30	
87-474	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20	
87-475	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20	
87-476	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-08 or 14-02	DRK105-20	
87-477	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20	
87-478	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30	
87-479	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30	
87-480	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30	
87-481	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30	
89-494	2-01 or 7-01	2-08or7-O8	8-01 or 14-01	8-02 or 14-01	M81969/30	
89-495	2-01 or 7-01	2-06 or 7-08	8-01 or 14-01	8-02 or 14-01	M81969/30	
89-498	2-01 or 7-01	2-06 or 7-08	8-01 or 14-01	8-02 or 14-01	M81969/30	
89-497	2-01 or 7-01	2-06 or 7-06	8-01 or 14-01	8-02 or 14-01	M81969/30	
89-498	1-01, 2-01, or 7-01	1-04, RED 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20	
89-499	1-01, 2-01, or 7-01	1-04, RED 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20	
89-600	1-01, 2-01, or 7-01	1-04, RED 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK.105-20	
89-501	1-01, 2-01, or 7-01	1-04, RED 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20	
89-502	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30	
89-503	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30	
89-504	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30	
89-505	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30	

Table 13. Cable Selection by Group

Group	Cable	Inner Contact Tool Selector Setting
A	M17/119-RG174	4
A	M17/113-RG316	5
A	M17/094-RG179	3
A	Times AA3248 (See Note)	4
A	Teledyne 11299 (See Note)	4
A	Thermax 75-738-BCCWXE (See Note)	4
A	Tensolite 30888/L707YX-1 (See Note)	4
A	Haveg 8100207 (See Note)	4
B	M17/095-RG180	3
C	Raychem 9527D1514-2L (See Note)	5
C	Raychem 9528A1318 (See Note)	4
C	Microdot 293-3922 (See Note)	3
D	Microdot 250-4070 (See Note)	4
E	Raychem 48-502 (See Note)	4
E	Raychem 5022E5111 (See Note)	4
F	Raychem 48-950 (See Note)	3
F	Raychem 9530D5117 (See Note)	3
G	Raychem 7624D1311 (See Note)	5
G	Raychem 9527A1318 (See Note)	5
H	Gore GWN1159A (See Note)	4
I	1S50MU-16 (MIL-C-915/42)	4
I	1S50MU-20 (MIL-C-915/42)	4
I	1S50MU-40 (MIL-C-915/42)	4
I	1S50MU-70 (MIL-C-915/42)	4
J	M17/093-RG178	3
K	Haveg 61-02051 (See Note)	4
K	Revere WH95623 (Red Shielded) (See Note)	4
L	Haveg 30-02024 (See Note)	4
L	Haveg 30-02033 (See Note)	4
L	Tensolite 24713/A955KK1 (See Note)	3
L	Tensolite 26723/A955KK1 (See Note)	3

NOTE:
Superseded cable type. Refer to MIL-C-17, or MIL-DTL-17 for replacement cable.

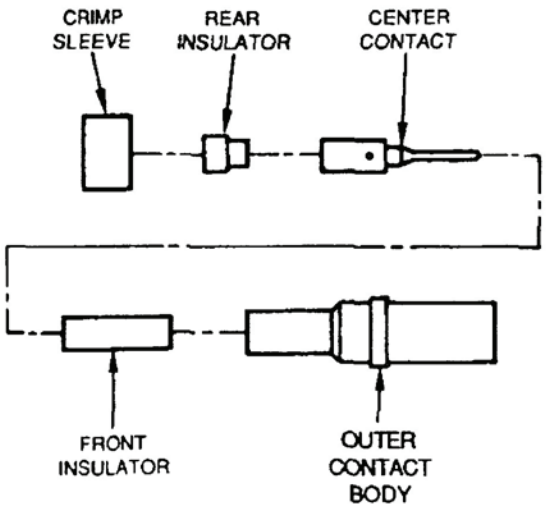


Figure 15. Coaxial Contact Components for Series 1 (Size 12and 16)

Table 14. Coaxial Contact Selection Series II

Contact Size	Cable Group	Socket Contacts				Mating Pin Contacts			
		M39029/	Color Bands 1	2	3	M39029/	Color Bands 1	2	3
16	A	78-432	YEL	ORN	RED	76-424	YEL	RED	YEL
16	J	78-433	YEL	ORN	ORN	76-425	YEL	RED	GRN
16	K	78-434	YEL	ORN	YEL	76-426	YEL	RED	BLU
16	L	78-435	YEL	ORN	GRN	76-427	YEL	RED	VIO
12	A	27-210	RED	BRN	BLK	28-211	RED	BRN	BRN
12	B, C	27-402	RED	BRN	BLK	28-409	YEL	BLK	WHT
12	D	27-403	YEL	BLK	ORN	28-410	YEL	BRN	BLK
12	E	27-404	YEL	BLK	YEL	28-411	YEL	BRN	BRN
12	F	27-405	YEL	BLK	GRN	28-412	YEL	BRN	RED
12	G	27-406	YEL	BLK	BLU	28-413	YEL	BRN	ORN
12	H	27-407	YEL	BLK	VIO	28-414	YEL	BRN	YEL
12	I	27-408	YEL	BLK	GRA	28-415	YEL	BRN	GRN

Table 15. Coaxial Contact Tooling Series II

	Strip Dimension			Center Contact		Crimp Sleeve			
Contact M39029/	A	B	C	Crimp Tool Frame M22520/	Positioner M22520/	Crimp Tool Frame M22520/	Turret Head or Die Set Positioner, M22520/	Insertion Tool M81969/	Removal Tool M81969/
27-210	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
27-402	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
27-403	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
27-404	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
27-405	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
27-406	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
27-407	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
27-408	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-211	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-409	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-410	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-411	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-412	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-413	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-414	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-415	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
76-424	17/64	3/16	9/64	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
76-425	1/4	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
76-426	1/4	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
76-427	1/4	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
78-432	17/64	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
78-433	17/64	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
78-434	17/64	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
78-435	17/64	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03

88. MIL-DTL-38999 SERIES III.

89. Series III connectors are scoop proof connectors with a triple start, self locking, threaded coupling system or with a pull lanyard release. These connectors are for general applications where a quick disconnect coupling system is required in blind or problem mating areas. When equipped with the proper accessories these connectors provide high tolerance to vibration and are suitable for SWAMP applications.

90. PART NUMBER. The part number contains the information necessary for the proper selection and procurement (Figure 16).

91. Military Specification. The military specification will denote the shell style and type release.

92. Class. The class indicates the environment resisting ability, the type finish and the operating temperature range.

93. Shell Size. The shell size is indicated by an alpha code which converts to a progressive number system.

94. Insert Arrangement. The insert arrangement is shown as a number denoting the number of contacts used.

95. Contact Style. The contact style denotes the type of contact used.

96. Polarization. The polarization letter shows that plugs and receptacles with the same letter can be mated.

97. Lanyard Length. The letter indicated denotes lanyard length and can be converted to inches or millimeters.

98. DESIGN AND CONSTRUCTION. The connectors and accessories are designed and constructed to withstand normal handling during installation and maintenance.

99. INSERTS. The entire insert of the environment resistant assemblies is essentially one integral part designed to provide suitable sealing and support around the wires and to be non-removable.

100. Rigid Dielectric. The rigid dielectric is one molded piece or not more than two pieces bonded together. The design is such that contacts are able to be inserted and removed to facilitate installation and maintenance except hermetic receptacles.

101. Contact Locking Device. The contact locking devices are contained in the rigid dielectric and securely hold the contacts during normal coupling.

102. Rotation. The inserts are secured in a manner so as to prevent rotation or movement.

103. Interface Seal. All pin contact inserts will have a resilient interface seal bonded to the front face to prevent water intrusion.

104. Hermetic Receptacles. A vitreous or glasslike material is used to insulate and seal the contacts, and all pin contacts will have an interface seal. The contacts are not removable.

105. INSERT ARRANGEMENTS. The insert arrangement is the number and size of the contacts available by shell size (Table 2).

106. INSERT CONFIGURATION. The insert configuration is the manner in which the contacts are placed within the insert in a standard configuration. All arrangements identified in Table 2 are illustrated (Figure 17).

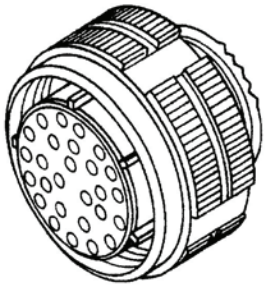
107. CONTACTS. Contacts may be fixed or crimp removable.

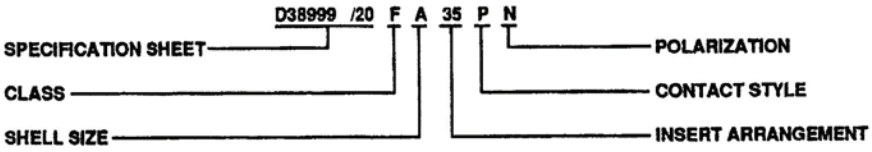
108. Fixed Contacts. Contacts in hermetically sealed or through-bulkhead receptacle are fixed non-removable and solder-able, or feed through.

109. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

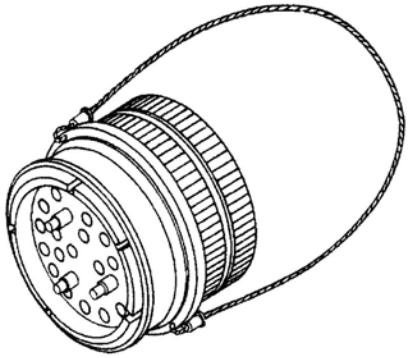
110. Contact Availability. Crimp contacts supplied with each connector unit package consists of full compliment plus 1 spare per size for connectors of 26 contacts or less. Those connectors with more than 26 contacts will have 2 spares of each size used. Contacts may also be ordered in individual quantities when necessary.

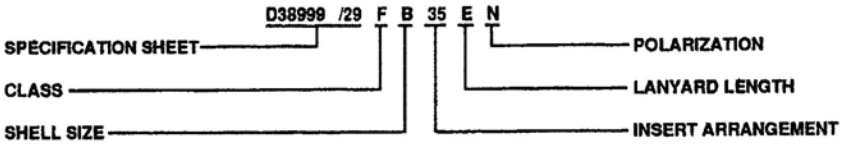
111. Installation and Removal Tools. The proper installation and removal tools must be used to assemble or disassemble the connector. The connector when ordered as a unit package will include one MIL-I-81969/14 tool.





/20 WALL MOUNT RECEPTACLE
/21 HERMETIC SEAL BOX MOUNT RECEPTACLE
/22 DUMMY STOWAGE RECEPTACLE
/23 HERMETIC SEAL JAM NUT RECEPTACLE
/24 JAM NUT RECEPTACLE
/25 HERMETIC SEAL SOLDER MOUNT RECEPTACLE
/26 STRAIGHT PLUG
/27 HERMETIC SEAL WELD MOUNT RECEPTACLE





/29 LANYARD RELEASE PLUG, PIN CONTACTS
/30 LANYARD RELEASE PLUG, SOCKET CONTACTS
/31 LANYARD RELEASE PLUG, MIL-STD-1760 PIN CONTACTS AVAILABLE IN SHELL SIZE 25 ONLY

MIL-DTL-38999/34 - Connectors, Receptacle, Electrical, Circular, Breakaway, Jam-Nut Mounting, Removable Crimp Contacts, Sockets, Series III, Shell size 25, Metric.
MIL-DTL-38999/35 - Connectors, Receptacle, Electrical, Circular, Breakaway Wall Mounting Flange, Removable Crimp Contacts, Sockets, Series III, Shell Size 25, Metric.

Figure 16. MIL-DTL-38999 Series III Connectors (Sheet 1 of 3)

CLASS:

C - Anodic (nonconductive) -65°C to +200°C.
F - Electroless nickel coating (conductive) -65°C to +200°C.
G - Same as F but space grade.
H - Same as Y but space grade.
J - Olive-drab cadmium plate, composite, (conductive) -65°C to +175°C.
K - Corrosion resistant steel passivated (conductive) -65°C to +200°C.
M - Electroless nickel coating, composite, (conductive) -65°C to +200°C.
N - Corrosion resistant steel with electrodeposited nickel plating (conductive) -65°C to +200°C.
R - Same as F, but higher corrosion requirement.
S - Corrosion resistant steel with electrodeposited nickel plating (conductive) -65C° to +200°C.
W - Olive-drab cadmium plate over a suitable under plate (conductive) -65°C to +175°C.
X - Same as W, but higher corrosion requirement.
Y - Corrosion resistant steel passivated (conductive) -65°C to +200°C.

SHELL SIZE:

CODE LETTER	A	B	C	D	E	F	G	H	J
SHELL SIZE	9	11	13	15	17	19	21	23	25

D38999/31 – J ONLY (Table and Figure 17)

INSERT ARRANGEMENT
D38999/31-J11 AND J20 ONLY (Table 2 and Figure 17)

CONTACT STYLE:

(1) Contact designators for connectors using standard contact arrangements as indicated in MIL-STD-1560 are as follows:

P - Pin - Including hermetics with solder cups, 500-eycle contact.
S - Socket - Including hermetics with solder cups, 500-cycle contact.
H - Pin - 1500-cycle contact.
J - Socket-1500-cycle contact.
X - Pin-With eyelet (hermetic).
Z - Socket - With eyelet (hermetic).
C - Feed through.

The P, S, H, J, X, Z, or C designators are used to indicate that connectors will be used with full compliments of the applicable standard contacts as indicated in MIL-STD-1560.

The connectors that accommodate crimp removable contacts (P, S, H, and J) may be ordered without standard contacts by adding an appropriate note on the purchase order; however, the connector Part or Identifying Number (PIN) and the marking requirements remain. The connectors that accommodate crimp removable contacts (P, S, H, and J) may be ordered without standard contacts by adding an appropriate note on the purchase order, however the marking requirements remain unchanged

(2) Contact designators for connectors using other than standard contact arrangements as indicated in MIL-STD-1560 are as follows:

A - Pin contact insert.
B -Socket contact insert.

The A and B designators are used to indicate that the connectors will be used with other than standard contacts as indicated in MIL-STD-1560 (example: shielded, coaxial thermocouple, fiber optic contacts). The A and B designators are part of the connector PINs and should be marked on

Figure 16. MIL-DTL-38999 Series III Connectors (Sheet 2 of 3)

the connectors. The standard contacts should not be supplied with the connectors. The contacts that will be used with the connectors must be ordered separately {see 3.4.1.1, 3.43, and 6.2).

Note: When other than standard power contacts are used, the requirements stated herein may not be met.

LANYARD LENGTH

CODE	MM ±6	INCHES
A	102	4.016
B	115	4.528
C	127	5.000
D	140	5.512
E	153	6.024
F	166	6.535
G	178	7.008
H	191	7.520
I	203	7.992
J	216	8.503
K	229	9.016
L	242	9.528

CODE	MM ±6	INCHES
M	254	10.000
N	267	10.512
P	280	10.024
R	293	10.535
Q	305	12.008
T	318	12.520
U	331	13.031
V	356	14.016
w	381	15.000
X	407	16.024
Y	432	17.008
Z	458	18.031

POLARIZATION
N, A, B, C, OR D

Figure 16. MIL-DTL-38999 Series III Connectors (Sheet 3 of 3)

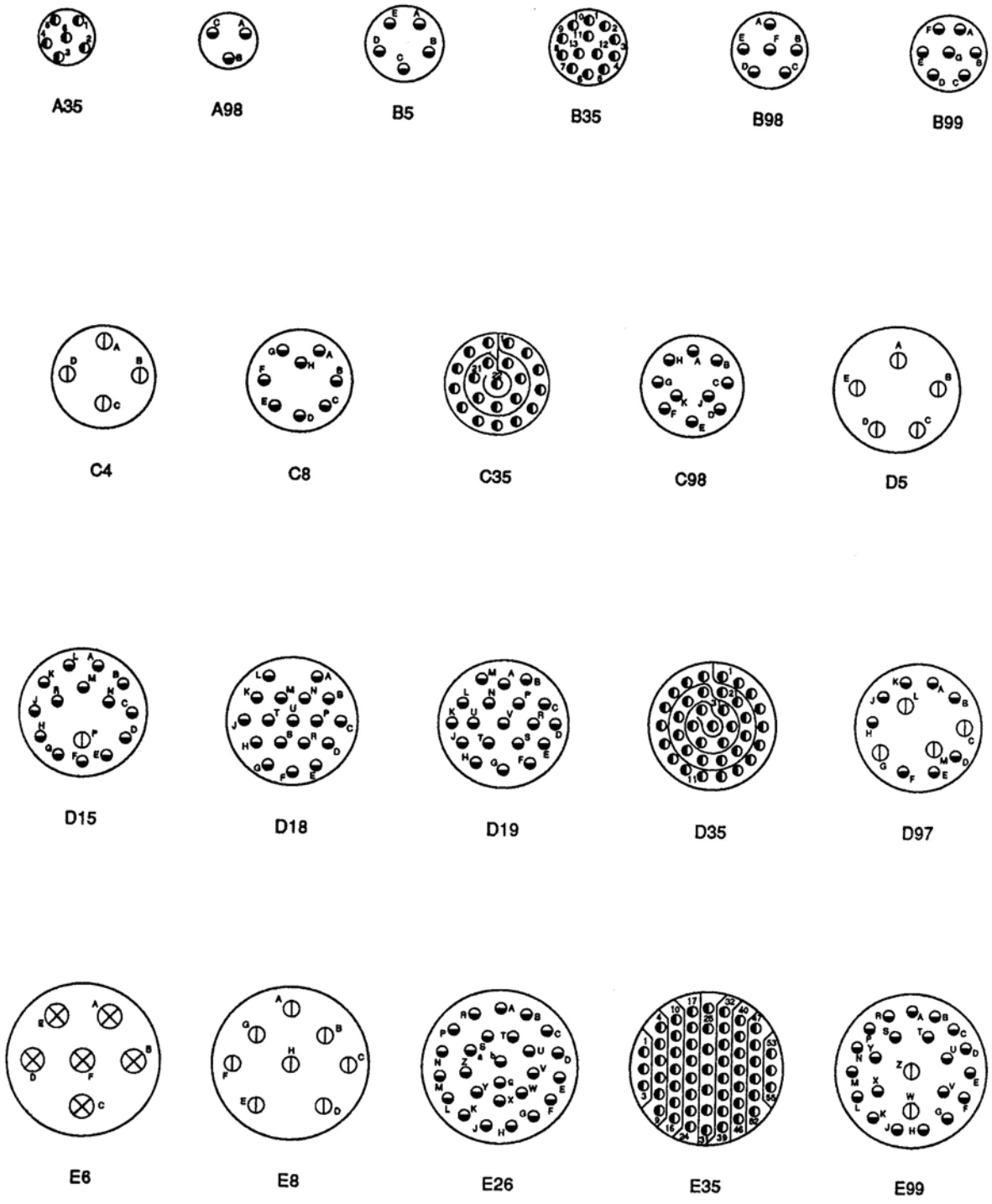


Figure 17. Insert Configuration Series III (Sheet 1 of 4)

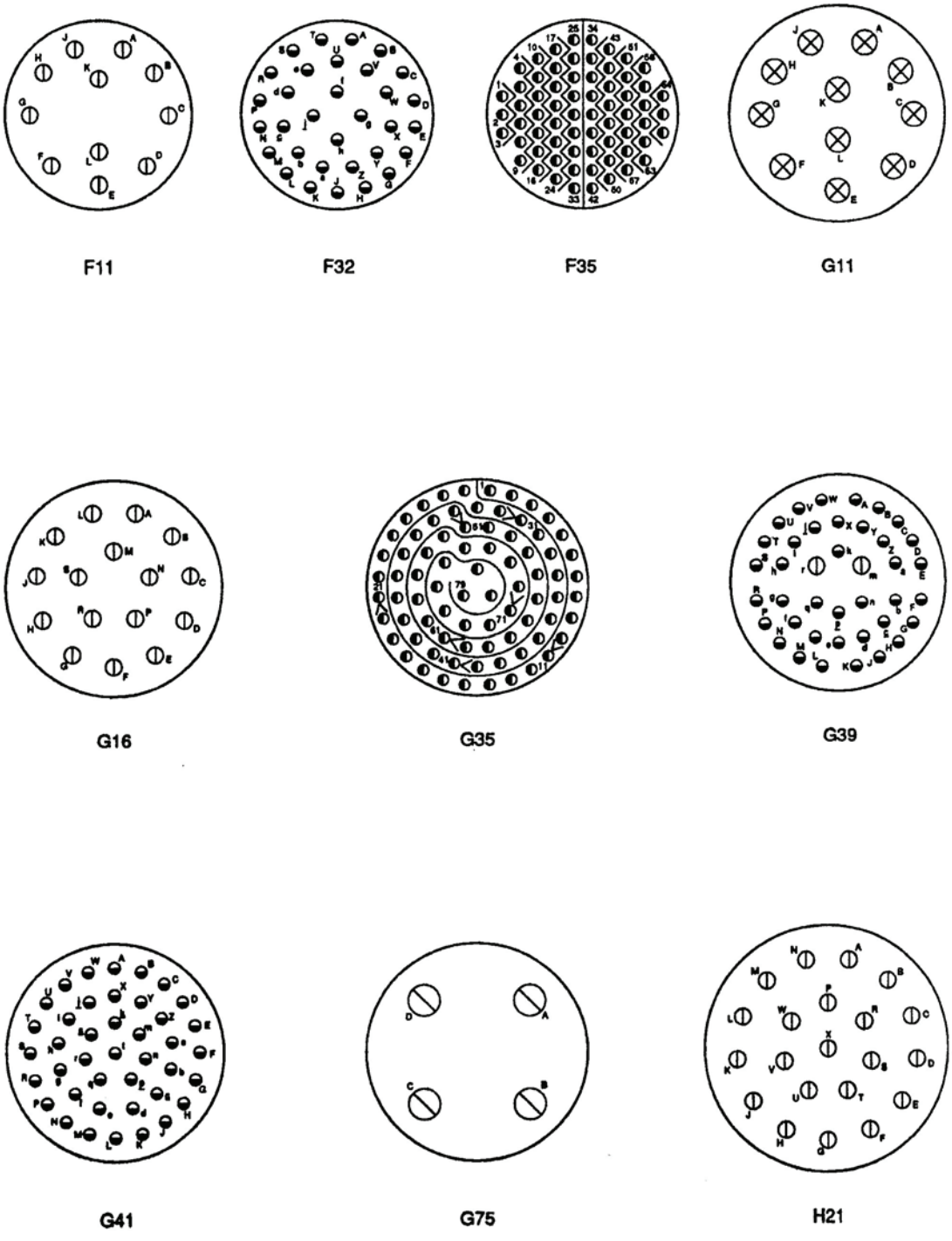
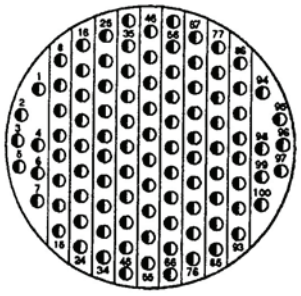
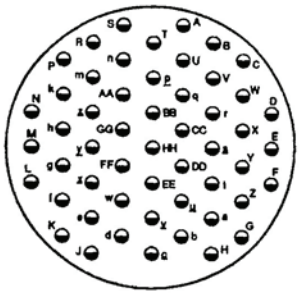


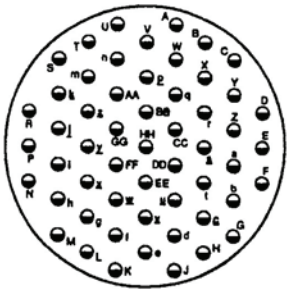
Figure 17. Insert Configuration Series III (Sheet 2 of 4)



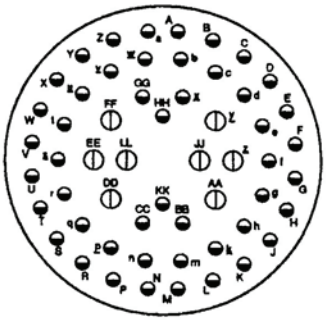
H35



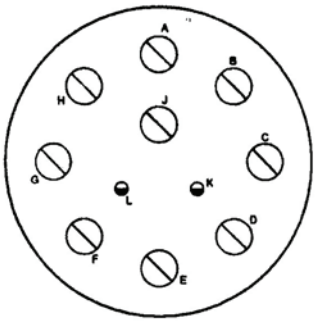
H53



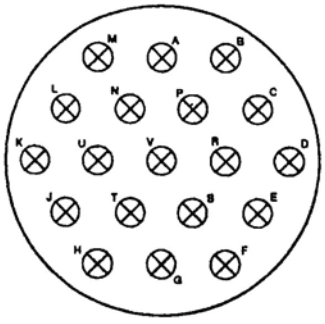
H55



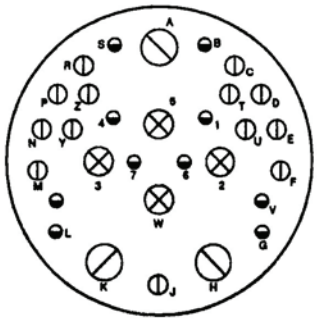
J4



J11

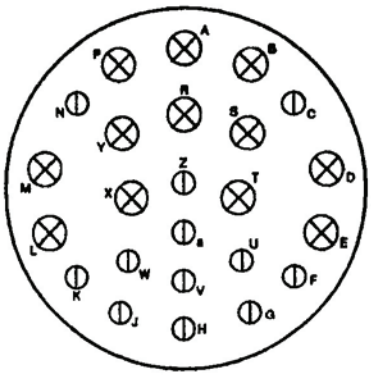


J19

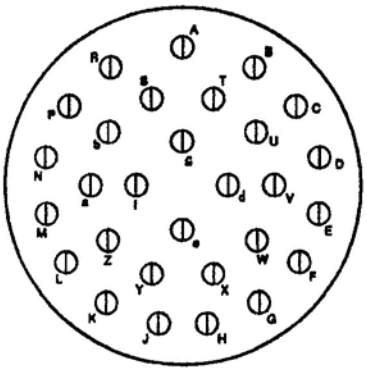


J20

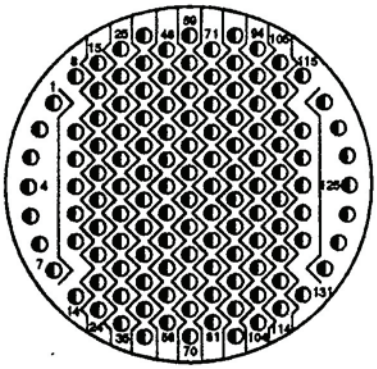
Figure 17. Insert Configuration Series III (Sheet 3 of 4)



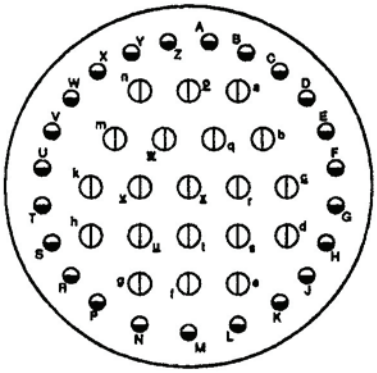
J24



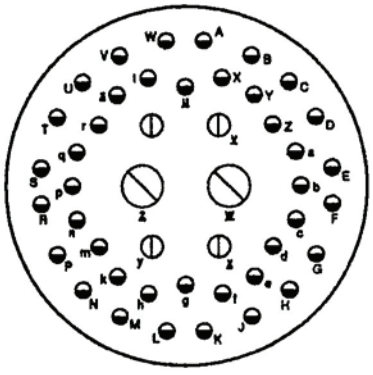
J29



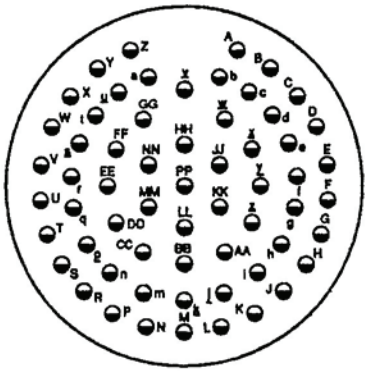
J35



J43



J46



J61

Figure 17. Insert Configuration Series III (Sheet 4 of 4)

112. CONTACT APPLICATION. Contacts used in Series III connectors are manufactured in accordance with AS39029. The Basic Identification Number (BIN) or last three digits of the contact part number, matches the standard resistor color code (Figure 18). BIN code numbering is allowed for size 16 and larger contacts. If stamped or printed numbers are used, the digits must be a minimum of 0.060 inches high.

113. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts range from size 10 through 22M and are of crimp, rear-release design. Contacts are listed by size. Match the required size to the connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with the corresponding color bands (Table 16).

114. THERMOCOUPLE CONTACTS. Temperature sensing systems utilize two dissimilar metal conductors with matched lengths. When joined at the point temperature will be sensed, a voltage difference develops. This voltage is directly proportional to the temperature change. Thermocouple contacts are either nickel-aluminum/silicon (formerly alumel), nickel-chromium (formerly chromel), iron, or copper-nickel alloy (formerly constantan) Match the required size to the connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with the corresponding color bands (Table 16).

115. TOOLING. The procedure for attaching power and thermocouple contacts to a single conductor wire is the same for this connector series and contacts. Select the proper tooling for the specific contact part number and refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures (Table 17).

116. STEP STRIPPING FILTER LINE. Refer to NAVAIR 01-1A-505-1, WP 009 00.

117. COAXIAL CONTACTS. When routing coaxial cable through connectors, coaxial contacts are superior to other coaxial cable shield termination methods. The shield integrity is maintained across the contact body. The coaxial cable groups listed in Table 18 can be interconnected through MIL-DTL-38999 connector size 8, 12, and 16 contact cavities. Match the required contact size to the connector application and cable group. When crimping the center contact for these cables, use the crimp tool selector knob settings specified. Socket and pin contact part numbers are listed along with the corresponding color bands. Socket coaxial contacts have a pin center contact. Pin coaxial contacts have a socket center contact (Figures 19 and 20).

118. CABLE AND COAXIAL CONTACT ASSEMBLY. To assemble the coaxial contacts to the applicable cable, identify the cable by group (Table 18). Select the proper contact by size and cable group (Table 19). Select the proper tooling and determine the required strip dimensions (Table 20).

119. Strip coaxial cable to the dimensions specified in Table 20, according to the stripping procedures in NAVAIR 01-1A-505-1, WP 009 00. Build-up crimp tools as specified in Table 20, according to NAVAIR 01-1A-505, WP 013 00. Assemble size 12 and 16 contacts as outlined for Series I connectors in (Figure 8).

120. CONCENTRIC TWINAX CONTACTS. Concentric twinax contacts are used to interconnect shielded, twisted pair cable through connectors. The twisted pair is connected to the center and intermediate contacts while the shield integrity is maintained across the contact body. These contacts are used with M17/176-00002 Type D, class B twin, flexible, radio frequency cable (Figure 21).

121. CABLE AND CONCENTRIC TWINAX CONTACT ASSEMBLY. To assemble the concentric twinax contact to the applicable cable, select the proper contact (Table 21). Select the proper tooling required (Table 22).

122. Strip the cable to the dimensions specified in Figure 11, according to the stripping procedures in NAVAIR 01-1A-505-1, WP 009 00. Build-up crimp tools as specified in Table 20, according to NAVAIR 01-1A-505-1, WP 013 00. The contact is assembled using the procedures outlined for Series I connectors (Paragraph 51).

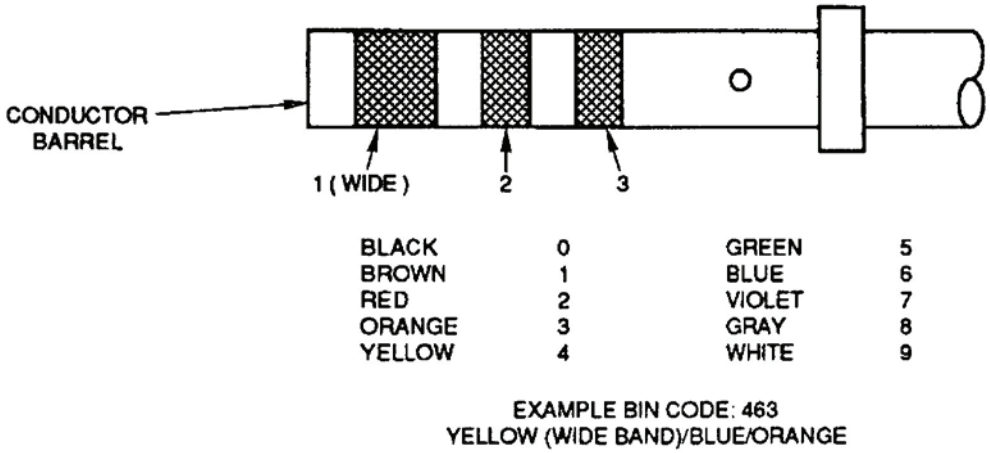


Figure 18. Basic Identification Number and Color Bands

Table 16. Power and Thermocouple Contact Application Series I

Contact Size	Wire Gage	Remarks	Socket Contacts		Pin Contacts	
			M39029/	Color Bands 1 2 3	M39029/	Color Bands 1 2 3
22M	24 to28		56-349	ORN YEL WHT	58-361	ORN BLU BRN
22D	22 to28	.	56-348	ORN YEL GRA	58-360	ORN BLU BLK
22	22 to26	.	56-350	ORN GRN BLK	58-362	ORN BLU RED
22	22 to 26	Copper-Nickel	88-482	YEL GRA RED	87-470	YEL VIO BLK
22	22 to26	Nickel-Aluminum	88-483	YEL GRA ORN	87-471	YEL VIO BRN
22	22 to26	Nickel-Chromium	88-484	YEL GRA YEL	87-472	YEL VIO RED
22	22 to 26	Iron	88-485	YEL GRA GRN	87-473	YEL VIO ORN
20	20 to 24	.	56-351	ORN GRN BRN	58-363	ORN BLU ORN
20	20 to 24	Copper-Nickel	88-486	YEL GRA BLU	87-474	YEL VIO YEL
20	20 to 24	Nickel-Aluminum	88-487	YEL GRA VIO	87-475	YEL VIO GRN
20	20 to 24	Nickel-Chromium	88-488	YEL GRA GRA	87-476	YEL VIO BLU
20	20 to24	Iron	88-489	YEL GRA WHT	87-477	YEL VIO VIO
16	16 to 20	.	56-352	ORN GRN RED	58-364	ORN BLU YEL
16	16 to 20	Copper-Nickel	88-490	YEL WHT BLK	87-478	YEL VIO GRA
16	16 to 20	Nickel-Aluminum	88-491	YEL WHT BRN	87-479	YEL VIO WHT
16	16 to 20	Nickel-Chromium	88-492	YEL WHT RED	87-480	YEL GRA BLK
16	16 to 20	Iron	88-493	YEL WHT ORN	87-481	YEL GRA BRN
12	12 to 14	.	56-353	ORN GRN ORN	58-365	ORN BLU GRN
10	10 to l2	-	56-527	GRN RED VIO	58-528	GRN RED GRA

NOTE
New terminology applies to thermocouple conductors as follows:
Constantan: Copper - Nickel Alloy
Alumel: Nickel - Aluminum Alloy
Chromel: Nickel - Chromium

Table 17. Power and Thermocouple Contact Tooling Series III

Contact M39029/	Crimp Tool Frame M22520/	Turret Head or Positioner M22520/	Insertion Tool M81969/	Removal Tool M81969/	Unwired Removal Tool Probe
56-348	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
56-349	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
56-350	2-01 or 7-01	2-07 or 7-05	8-03	8-04	M81969/30
56-351	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
56-352	1-01 or 7-01	1-04BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
56-353	1-01	1-04 YEL	8-09 or 14-04	8-10 or 14-04	DRK105-12
56-527	1716P-1 (NOTE 1)		14-05	14-05	(NOTE 2)
58-360	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
58-361	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
58-362	2-01 or 7-01	2-09 or 7-07	8-03	8-04	M81969/30
58-363	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
58-364	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
58-365	1-01	1-04 YEL	8-09 or 14-04	8-10 or 14-04	DRK105-12
58-528	17 16P-1 (NOTE1)	-	14-05	14-05	(NOTE 2)
87-470	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
87-471	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
87-472	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
87-473	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
87-474	1-01, 2-01, or 7-01	1-04 RED, 2- 10, or 7-08	8-05 or 14-02	8-08 or 14-02	DRK105-20
87-475	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
87-476	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
87-477	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
87-478	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
87-479	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
87-480	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
87-181	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
88-482	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
88-483	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
88-484	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
88-485	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
88-486	1-01, 2-01, or 7-01	1-04 RED, 2- 10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
88-487	1-01, 2-01, or 7-01	1-04 RED, 2- 10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
88-488	1-01, 2-01, or 7-01	1-04 RED, 2- 10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
88-489	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
88-490	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
88-491	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
88-492	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
88-493	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30

NOTES:

1. Daniels Manufacturing Corporation special purpose crimp tool 716P-1 with G415 gage, or equivalent.
2. Tool part numbers not available at time of publication.

Table 18. Cable Selection by Group

Group	Cable	Inner Contact Tool Selector Setting
A	M17/119-RG174	4
A	M17/113-RG316	5
A	M17/094-RG179	3
A	Times AA3248 (See Note)	4
A	Teledyne 11299 (See Note)	4
A	Thermax 75-738-BCCWXE (See Note)	4
A	Tensolite 30888/L707YX-1 (See Note)	4
A	Haveg 8100207 (See Note)	4
B	M17/095-RG180	3
C	Raychem 9527D1514-2L (See Note)	5
C	Raychem 9528A1318 (See Note)	4
C	Microdot 293-3922 (See Note)	3
D	Microdot 250-4070 (See Note)	4
E	Raychem 48-502 (See Note)	4
E	Raychem 5022E5111 (See Note)	4
F	Raychem 48-950 (See Note)	3
F	Raychem 9530D5117 (See Note)	3
G	Raychem 7624D1311 (See Note)	5
G	Raychem 9527A1318 (See Note)	5
H	Gore GWN1159A (See Note)	4
I	1S50MU-16 (MIL-C-915/42)	4
I	1S50MU-20 (MIL-C-915/42)	4
I	1S50MU-40 (MIL-C-915/42)	4
I	1S50MU-70 (MIL-C-915/42)	4
J	M17/093-RG178	3
K	Haveg 61-02051 (See Note)	4
K	Revere WH95623 (Red Shielded) (See Note)	4
L	Haveg 30-02024 (See Note)	4
L	Haveg 30-02033 (See Note)	4
L	Tensolite 24713/A955KK1 (See Note)	3
L	Tensolite 26723/A955KK1 (See Note)	3

NOTE:
Superseded cable type. Refer to MIL-C-17, or MIL-DTL-17 for replacement cable.

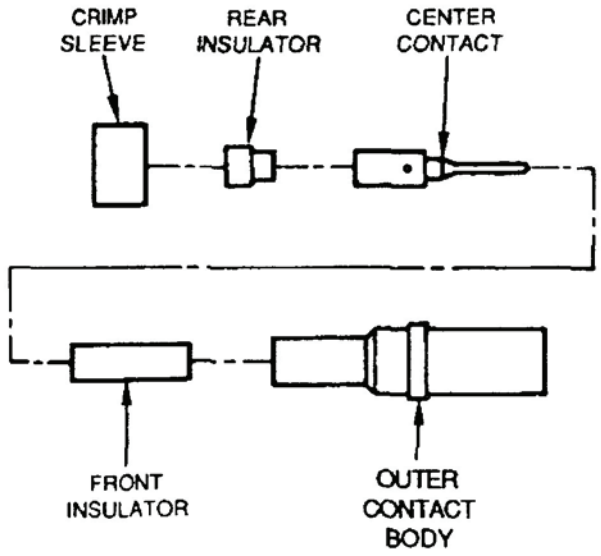


Figure 19. Coaxial Contact Components for Series III (Size 12)

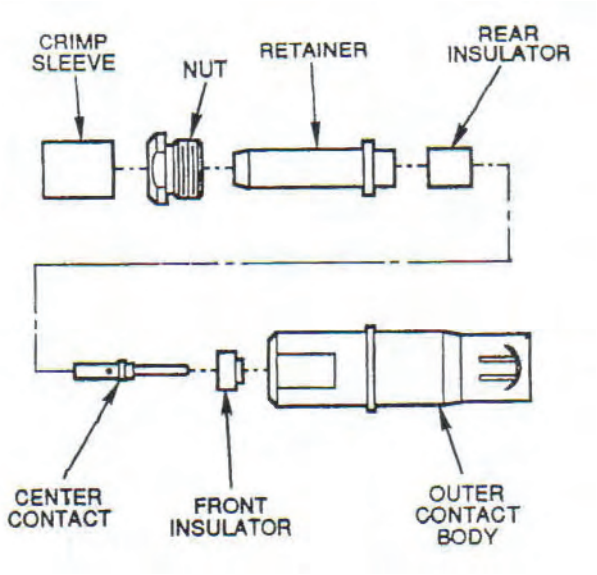


Figure 20. Coaxial Contact Components (Size 8)

Table 19. Coaxial Contact Selection Series III

Contact Size	Cable Group	Socket Contacts		Mating Pin Contacts	
		M39029/	Color Bands 1 2 3	M39029/	Color Bands 123
16	A	77-428	YEL RED GRA	76-424	YEL RED YEL
16	J	77-429	YEL RED WHT	76-425	YEL RED GRN
16	K	77-430	YEL ORN BLK	76-426	YEL RED BLU
16	L	77-431	YEL ORN BRN	76-427	YEL RED VIO
12	A	75-416	YEL BRN BLK	28-211	RED BRN BRN
12	B,C	75-417	YEL BRN VIO	28-409	YEL BLK WHT
12	D	75-418	YEL BRN GRA	28-410	YEL BRN BLK
12	E	75-419	YEL BRN WHT	28-411	YEL BRN BRN
12	F	75-420	YEL RED BLK	28-412	YEL BRN RED
12	G	75-421	YEL RED BRN	28-413	YEL BRN ORN
12	H	75-422	YEL RED RED	28-414	YEL BRN YEL
12	I	75-423	YEL RED ORN	28-415	YEL BRN GRN
8	B	59-366	ORN BLU BLU	60-367	ORN BLU VIO

Table 20. Coaxial Contact Tooling Series III

	Strip Dimension			Center Contact		Crimp Sleeve			
Contact M39029/	A	B	C	Crimp Tool Frame M22520/	Positioner M22520/	Crimp Tool Frame M22520/	Turret Head or Die Set Positioner M22520/	Insertion Tool M81969/	Removal Tool M81969/
28-211	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-409	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8- 10 or 14-04
28-410	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-411	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-412	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-413	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-414	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-415	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
59-366	3/4	.	-	2-01	2-31	5-0 or 10-01	15-05(B-) or 10-07(B)	8-09 or 14-04	8-10 or 14-04
60-367	3/4	-	-	2-01	2-31	5-0 or 10-01	15-05(B-) or 10-07(B)	8-09 or 14-04	8-10 or 14-04
75-416	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-417	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-418	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-419	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 1404
75-420	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-421	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-422	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-07 or 14-03	8-08 or 14-03
75-423	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-07 or 14-03	8-08 or 14-03
76-424	17/64	3/16	9/64	2-01	2-36	4-01	4-02	8-07 or 14-03	8-08 or 14-03
76-425	1/4	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 1403
76-426	1/4	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
76-427	1/4	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
77-428	19/32	3/16	15/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
77-429	19/32	3/16	15/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
77-430	19/32	3/16	15/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
77-431	19/32	3/16	15/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03

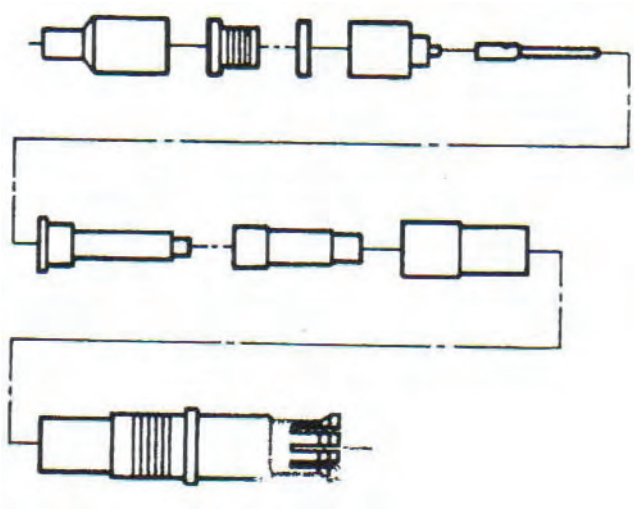


Figure 21. Concentric Twinax Contact Components (Size 8)

Table 21. Concentric Twinax Contact Application Series III

Contact Size	Cable Group	Socket Contacts		Pin Contacts	
		M39029/	Color Bands 1 2 3	M39029/	Color Bands 1 2 3
8	M17/176-00002 Type D, Class B	91-530	CRN ORN BLK	90-529	GRN RED WHT

Table 22. Concentric Twinax Contact Tooling Series III

BIN Code	Center Contact Tooling		Intermediate Contact Tooling		Outer Crimp Sleeve Tooling	
	Basic Crimping Tool	Contact Positioner	Basic Crimp Tool	Die Part Number	Basic Crimping Tool	Die Part Number
529 and 530	MS22520/2-01	K-709	MS22520/5-01	Y631 Die Closure B	MS22520/5-01	Y631 Die Closure A

123. MIL-C-29600 CONNECTORS.

124. PART NUMBER. The part number contains all the information necessary for proper selection and procurement. The part number breakdown is illustrated (Figure 22).

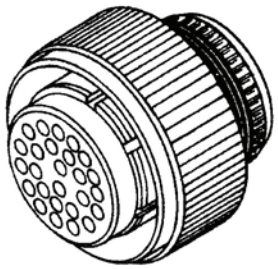
125. DESIGN AND CONSTRUCTION. The connector and accessories are designed and constructed to withstand normal handling during installation and maintenance. The connector is manufactured from a metalized composite material that resists corrosion, has exceptional durability, extremely light weight, and affords excellent EMI shielding. The MIL-C-29600 connectors have two series types. Series A utilizes MIL-DTL-38999 insert arrangements and series B utilizes MIL-C-81511 insert arrangements.

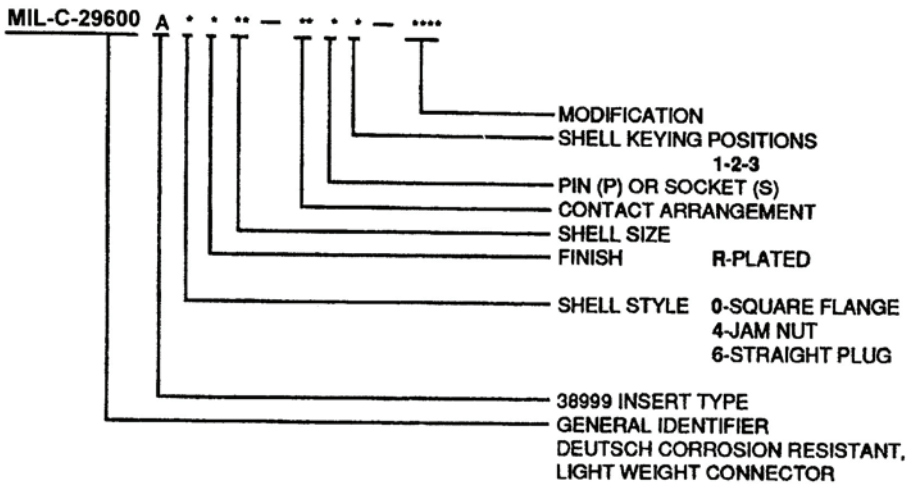
126. CONTACT AND TOOL DATA. Contacts shall be designed for crimp termination and shall be as specified to MIL-C-29600/13, /14, /23, and /24. The connectors specified herein are also capable of operating with contacts specified In AS39029/17, /18, /56 and /58, as applicable. However, when AS39029 contacts are used, the durability level of the connector system shall be 500 cycles. The quantity of contacts to be supplied with each connector unit package shall consist of a full complement of contacts plus 1 spare contact for each size used In the arrangement utilizing 26 contacts or less. For arrangements utilizing more than 26 contacts, 2 spare contacts for each size used in the arrangement shall be used.

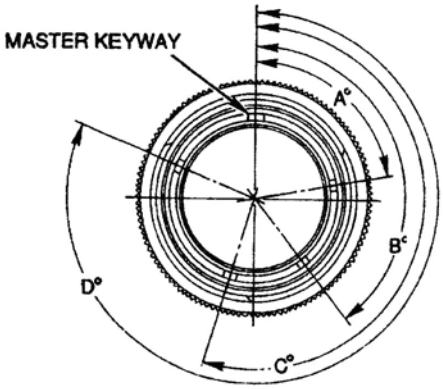
127. INSERTS. The contact is retained in the shell by a composite insert. The insert construction utilizes redundant silicone sealing techniques. The insert is retained by molded retention fingers that are not subject to corrosion and offer retention and durability greater than other retention methods.

128. INSERT ARRANGEMENTS. The insert arrangement is the number and size of the contacts available by shell size (For Series A see Table 23, for Series B, see Table 24).

129. INSERT CONFIGURATION. The insert configuration is the manner in which the contacts are placed within the insert in a standard configuration. All arrangements identified in Table 23 and 24 are illustrated (Figures 23 and 24).







PLUG FACE SHOWN
(KEYS IN RECEPTACLE
SHELLS ARE COUNTERCLOCKWISE)

SHELL SIZE	KEY & KEYWAY ARRANGEMENT	A° BSC	B° BSC	C° BSC	D° BSC
9	1	102	132	248	320
	2	80	118	230	312
	3	105	140	215	265
11 THRU 15	1	113	156	182	292
	2	90	145	195	252
	3	95	141	208	236
17 THRU 25	1	135	170	200	310
	2	49	169	200	244
	3	80	142	196	293

Figure 22. Part Number Breakdown MIL-C-29600 Series Connectors

Table 23. MIL-C-29600 Insert Arrangements for Series A

Shell Size Insert Arrangement Series A	Contact Size					Total Contacts
	8	12	16	20	22D	
09-35					6	6
09-98				3		3
11-05				5		5
11-35					13	13
11-99				7		7
13-04			4			4
13-35					22	22
13-98				10		10
15-05			5			5
15-18				18		18
15-35					37	37
15-97			4	8		12
17-06		6				6
17-08			8			8
17-26				26		26
17-35					55	55
19-11			11			11
19-32				32		32
19-35					66	66
21-11		11				11
21-16			16			16
21-35					79	79
21-41				41		41
23-21			21			21
23-35					100	100
23-53				53		53
23-55				55		55
25-04			8	48		56
25-19		19				19
25-20	3	4	13	10		30
25-24		12	12			24
25-29			29			29
25-35					128	128
25-61				61		61

Table 24. MIL-C-29600 Insert Arrangements for Series B

Shell Size Insert Arrangement Series B	Contact Size					Total Contacts
	8	12	16	20	22D	
08-04					4	4
10-3			3			3
10-5				5		5
10-12				12		12
14-04		4				4
14-09			9			9
14-19				19		19
14-37					37	37
16-07		7				7
16-14			14			14
16-27				27		27
16-55					55	55
18-09		9				9
18-21			21			21
18-38				38		38
18-85					85	85
20-11		11				11
20-24			24			24
20-45				45		45
20-92					92	92
22-14		14				14
22-32			32			32
22-61				61		61
22-121					121	121
24-19		19				19
24-41			41			41
24-74				74		74
24-155					155	155

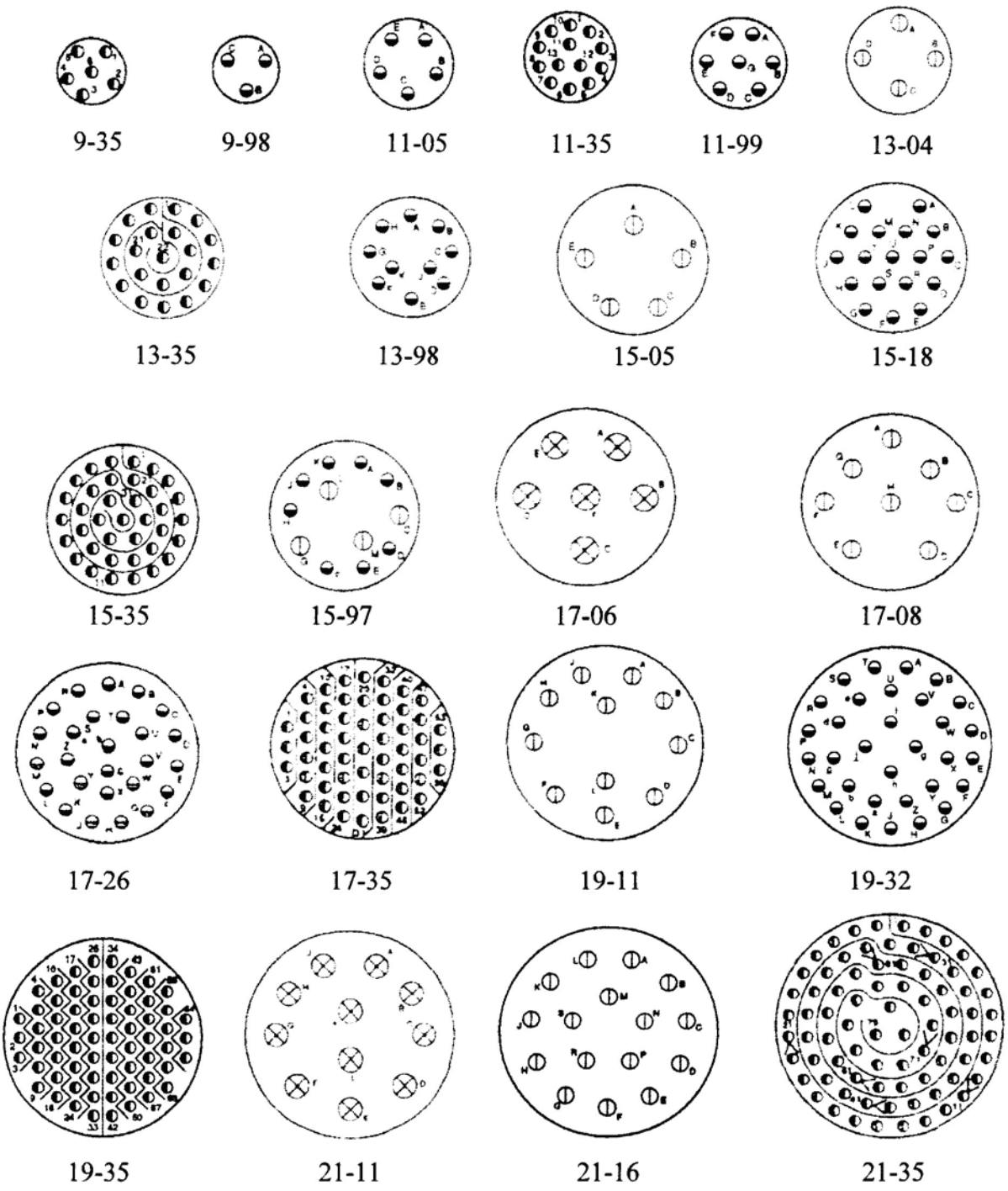


Figure 23. Insert Configuration MIL-C-29600 Series A (Sheet 1 of 2)

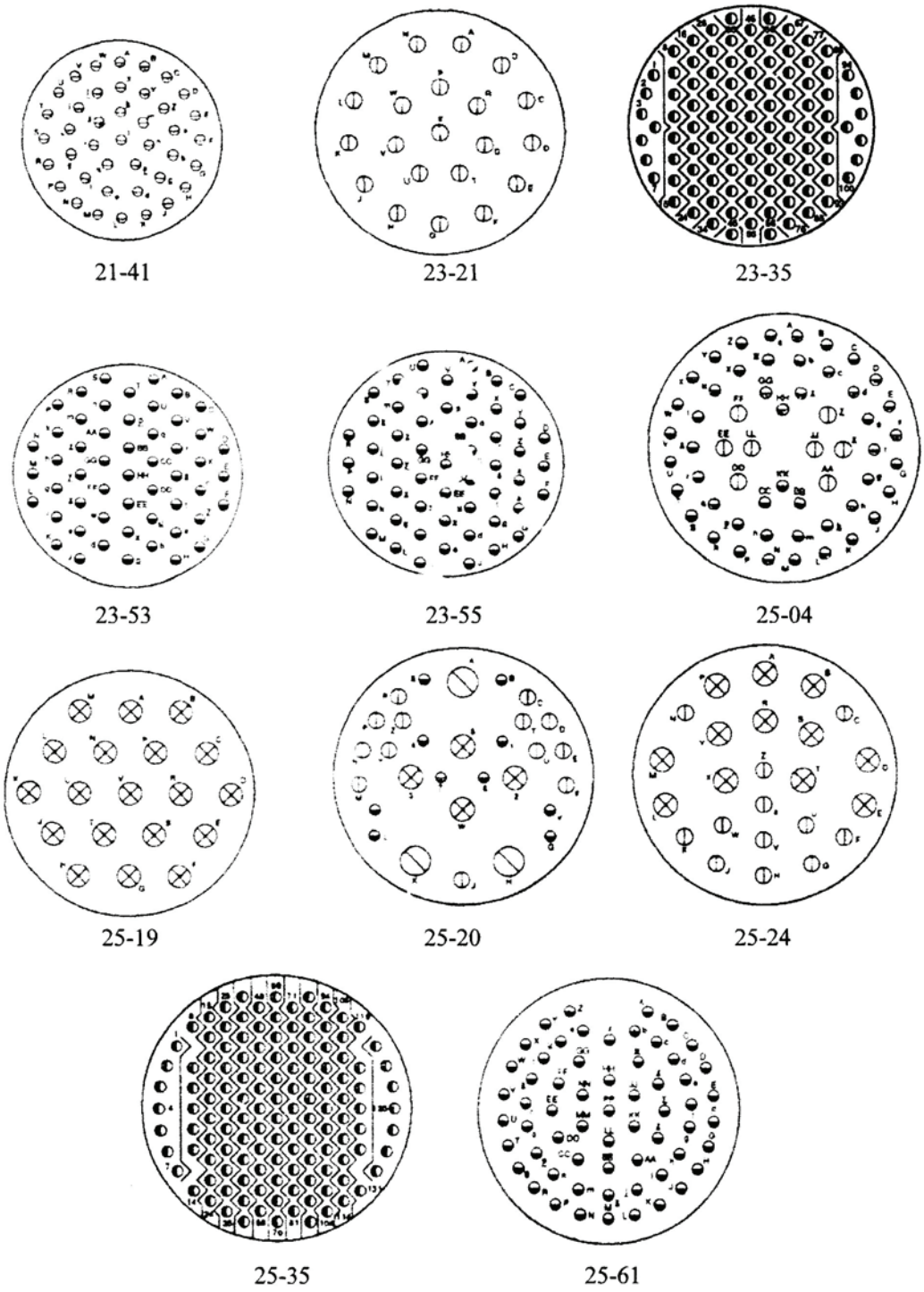


Figure 23. Insert Configuration MIL-C-29600 Series A (Sheet 2 of 2)

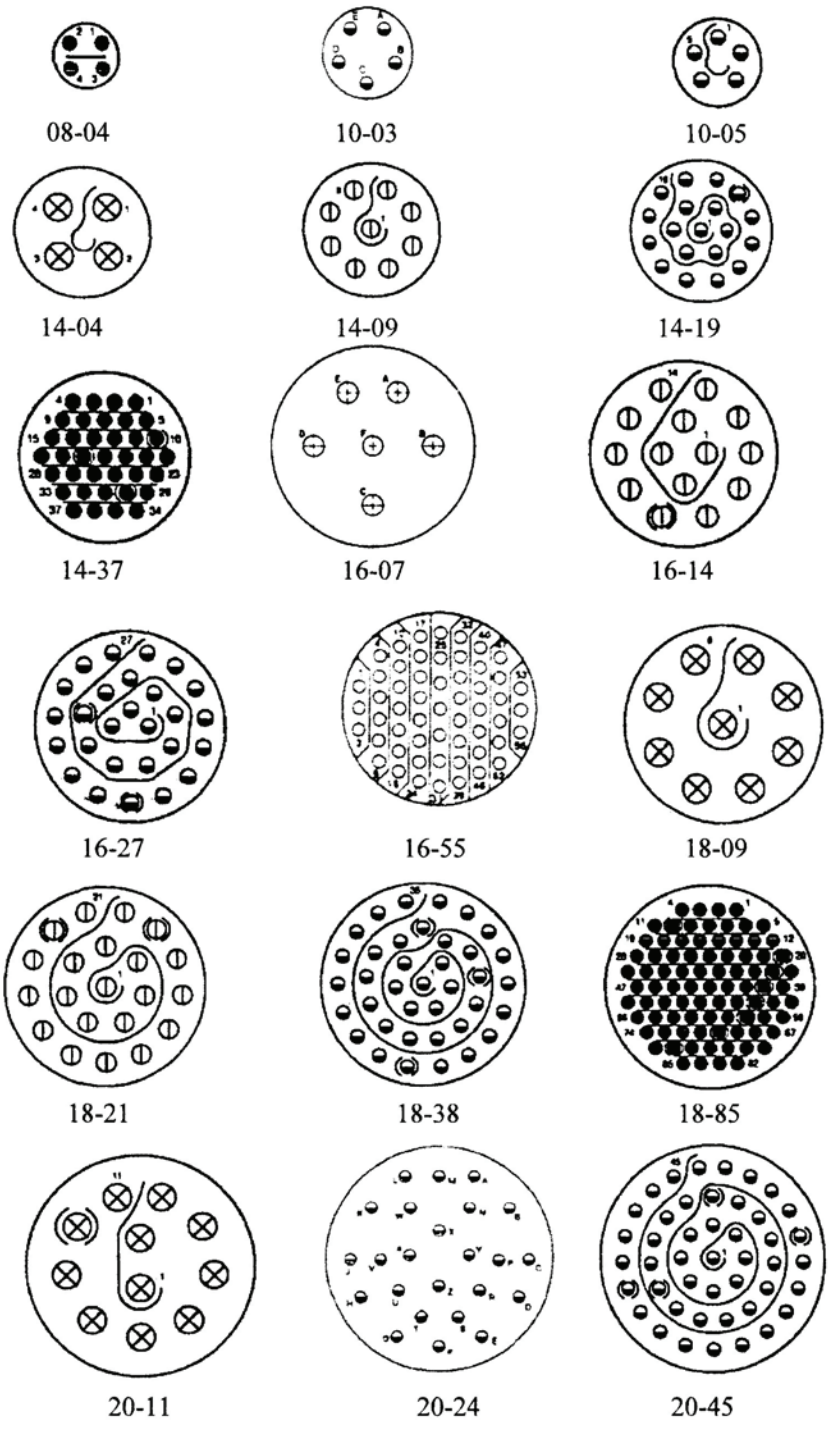


Figure 24. Insert Configuration MIL-C-29600 Series B (Sheet 1 of 2)

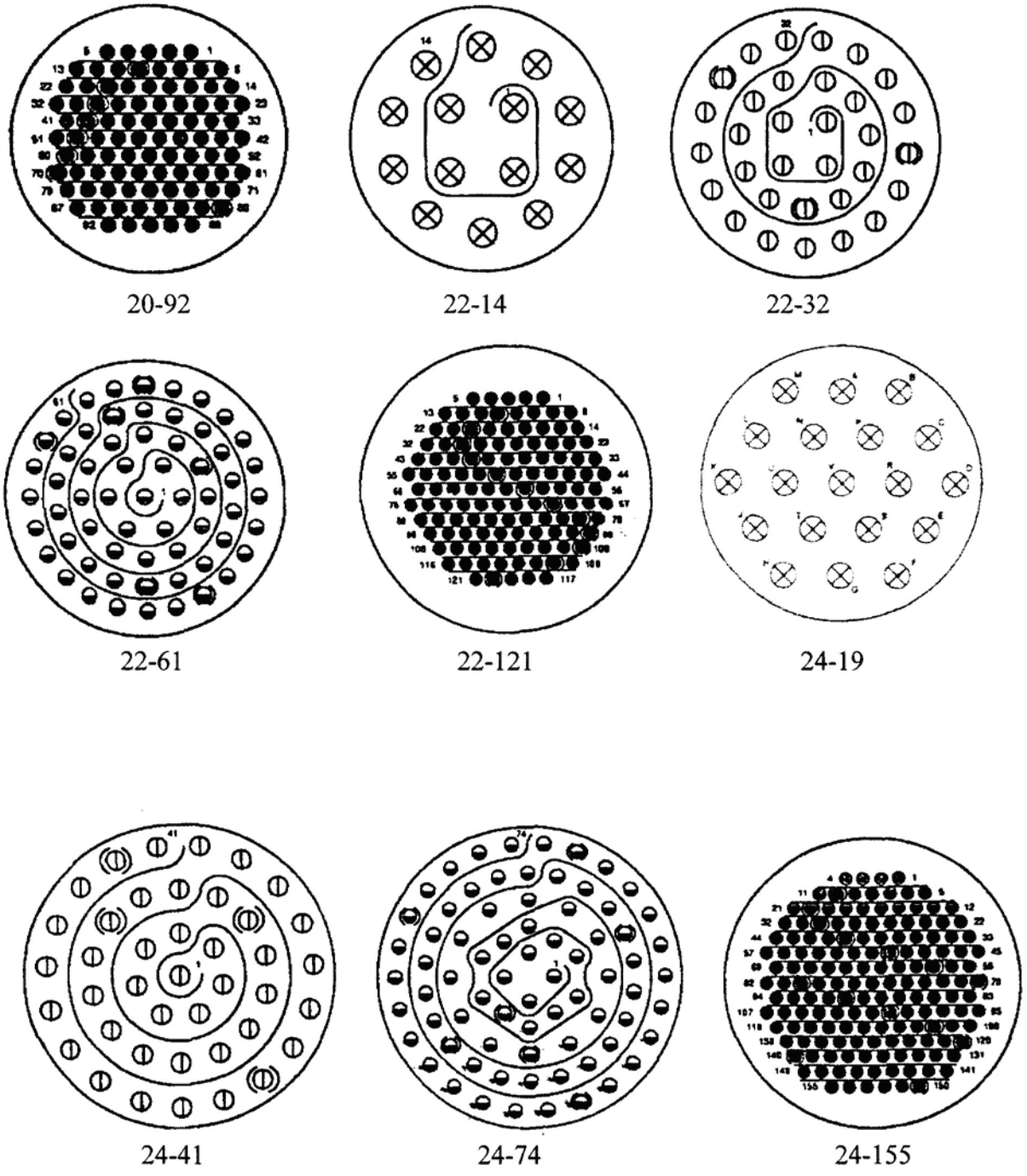


Figure 24. Insert Configuration MIL-C-29600 Series B (Sheet 2 of 2)

130. MIL-DTL-38999 SERIES IV.

131. Series IV connectors are circular, scoop proof connectors with breech coupling systems for use in general applications where a quick disconnect coupling system is required in blind or problem areas. When equipped with the proper accessories these connectors provide high tolerance to vibration and are suitable for SWAMP areas. The coupling mechanism must be properly positioned prior to mating the connector.

132. PART NUMBER. The part number contains the information necessary for the proper selection and procurement (Figure 25).

133. Military Specification. The military specification will denote the shell style.

134. Class. The class indicates the environment resisting abilities, the composition, and the operating temperature range.

135. Shell Size. The shell size is indicated by an alpha character and can be converted to a progressive numbering system.

136. Insert Arrangement. The insert arrangement is shown as a number which denotes the number of contacts used.

137. Contact Style. The contact style shows which type of contact used.

138. Polarization. The polarization letter shows that only plugs and receptacles with the same letter can be mated.

139. DESIGN AND CONSTRUCTION. The connectors and accessories are designed and constructed to withstand normal handling during installation and maintenance.

140. INSERTS. The insert of the environment resistant assemblies is essentially one integral part designed to provide suitable sealing and support around the wires and is non-removable.

141. Rigid Dielectric. The rigid dielectric is one molded piece or not more than two pieces bonded together. The design is such that contacts are able to be inserted and removed to facilitate installation and maintenance except hermetic receptacles.

142. Contact Locking Device. The contact locking devices are contained in the rigid dielectric and securely hold the contacts during normal coupling.

143. Rotation. The inserts are secured in a manner so as to prevent rotation or movement.

144. Interface Seal. All pin contact inserts will have a resilient interface seal bonded to the front face to prevent water intrusion.

145. Hermetic Receptacles. A vitreous or glasslike material is used to insulate and seal the contacts, and all pin contacts will have an interface seal. The contacts are not removable.

146. INSERT ARRANGEMENTS. The insert arrangement is the number and size of the contacts available by shell size (Table 2).

147. INSERT CONFIGURATION. The insert configuration is the manner in which the contacts are placed within the insert in a standard configuration. All arrangements identified in Table 2 are illustrated (Figure 26).

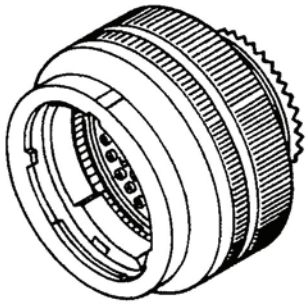
148. CONTACTS. Contacts may be fixed or crimp removable.

149. Fixed. Contacts in hermetically sealed or through-bulkhead receptacles are fixed non-removable and solder-able, or feed through.

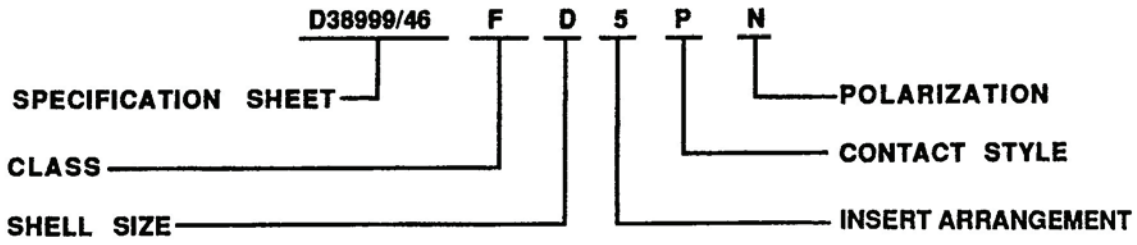
150. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

151. Contact Availability. Crimp contacts are supplied with each connector unit package and consist of a full compliment plus 1 spare per size for connectors of 26 contacts or less. Those connectors with more than 26 contacts will have 2 spares of each size used. Contacts may also be ordered in individual quantities when necessary.

152. Installation and Removal Tools. The proper installation and removal tools must be used to assemble or disassemble the connector. The connector when ordered as a unit package will include one MIL-I-81969/14-XX tool.



PART NUMBER DESIGNATION



/40 WALL MOUNT RECEPTACLE
/41 HERMETIC BOX MOUNT RECEPTACLE
/42 BOX MOUNT RECEPTACLE
/43 HERMETIC JAM NUT RECEPTACLE
/44 JAM NUT RECEPTACLE
/45 HERMETIC SOLDER MOUNT RECEPTACLE
/46 EMI STRAIGHT PLUG
/47 STRAIGHT PLUG
/48 HERMETIC WELD MOUNT RECEPTACLE
/49 IN-LINE RECEPTACLE
/50 DUMMY STOWAGE RECEPTACLE

Figure 25. MIL-DTL-38999 Series IV Connectors (Sheet 1 of 2)

CLASS:

C - Anodic (nonconductive) -65°C to +200°C.
F - Electroless nickel coating (conductive) -65°C to +200°C.
G - Same as F but space grade.
H - Same as Y but space grade.
J - Olive-drab cadmium plate, composite, (conductive) -65°C to +175°C.
K - Corrosion resistant steel passivated (conductive) -65°C to +200°C.
M - Electroless nickel coating, composite, (conductive) -65°C to +200°C.
N - Corrosion resistant steel with electrodeposited nickel plating (conductive) -65°C to +200°C.
R - Same as F, but higher corrosion requirement.
S - Corrosion resistant steel with electrodeposited nickel plating (conductive) -65C° to +200°C.
W - Olive-drab cadmium plate over a suitable under plate (conductive) -65°C to +175°C.
X - Same as W, but higher corrosion requirement.
Y - Corrosion resistant steel passivated (conductive) -65°C to +200°C.

SHELL SIZE:

CODE LETTER	A	B	C	D	E	F	G	H	J
SHELL SIZE	9	11	13	15	17	19	21	23	25

D38999/31 – J ONLY (Table 2 and Figure 17)

INSERT ARRANGEMENT
D38999/31-J11 AND J20 ONLY (Table 2 and Figure 17)

CONTACT STYLE:

(1) Contact designators for connectors using standard contact arrangements as indicated in MIL-STD-1560 are as follows:

P - Pin - Including hermetics with solder cups, 500-eycle contact.
S - Socket - Including hermetics with solder cups, 500-cycle contact.
H - Pin - 1500-cycle contact.
J - Socket-1500-cycle contact.
X - Pin-With eyelet (hermetic).
Z - Socket - With eyelet (hermetic).
C - Feed through.

The P, S, H, J, X, Z, or C designators are used to indicate that connectors will be used with full compliments of the applicable standard contacts as indicated in MIL-STD-1560.

The connectors that accommodate crimp removable contacts (P, S, H, and J) may be ordered without standard contacts by adding an appropriate note on the purchase order; however, the connector Part or Identifying Number (PIN) and the marking requirements remain. The connectors that accommodate crimp removable contacts (P, S, H, and J) may be ordered without standard contacts by adding an appropriate note on the purchase order, however the marking requirements remain unchanged

(2) Contact designators for connectors using other than standard contact arrangements as indicated in MIL-STD-1560 are as follows:

A - Pin contact insert.
B -Socket contact insert.

The A and B designators are used to indicate that the connectors will be used with other than standard contacts as indicated in MIL-STD-1560 (example: shielded, coaxial thermocouple, fiber optic contacts). The A and B designators are part of the connector PINs and should be marked on the connectors. The standard contacts should not be supplied with the connectors. The contacts that will be used with the connectors must be ordered separately.

Note: When other than standard power contacts are used, the requirements stated herein may not be met.

POLARIZATION

N, A, B, C, OR D

Figure 25. MIL-DTL-38999 Series IV Connectors (Sheet 2 of 2)

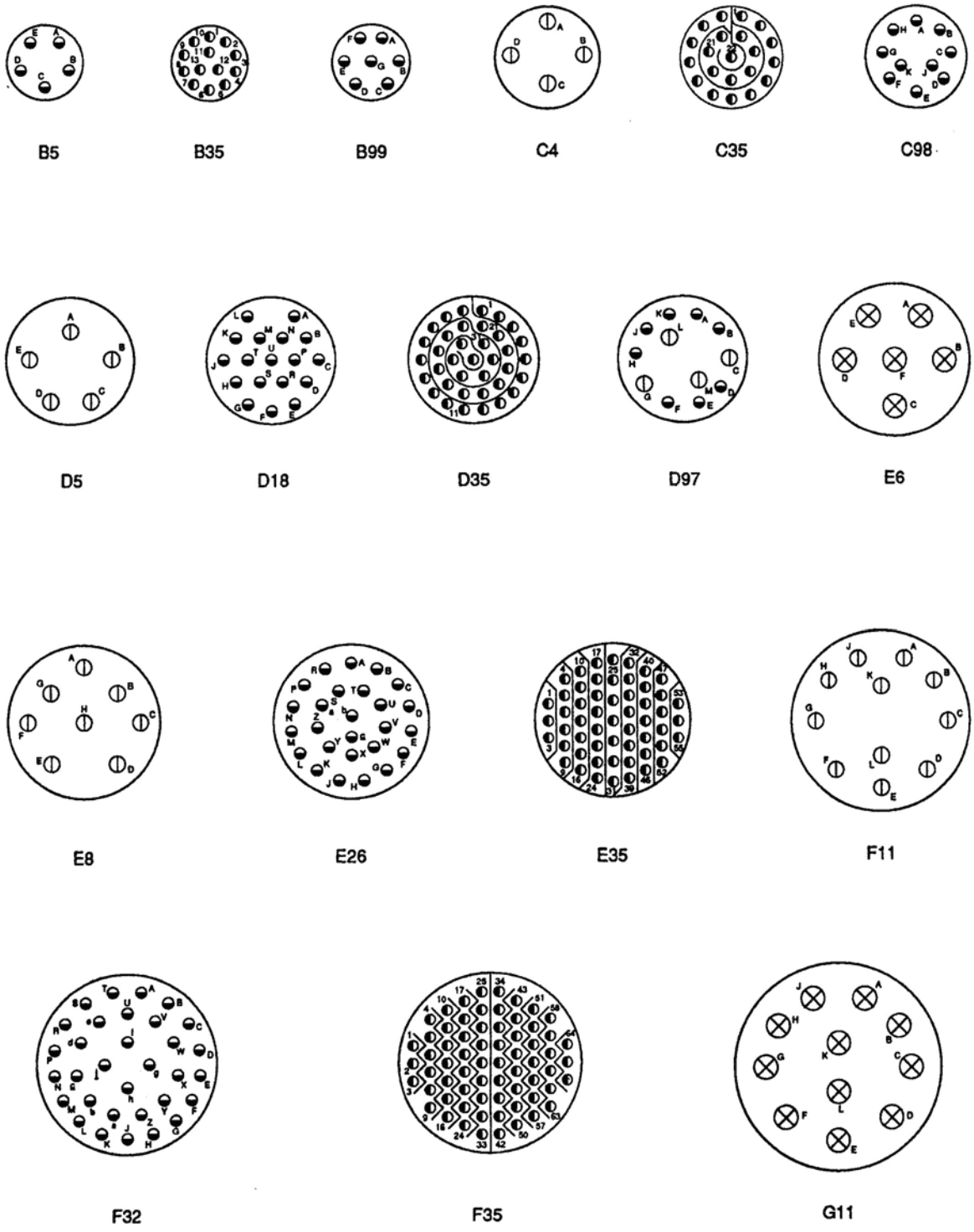
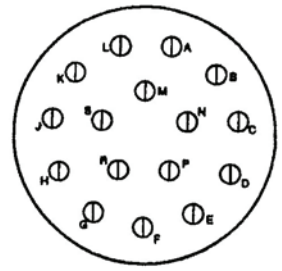
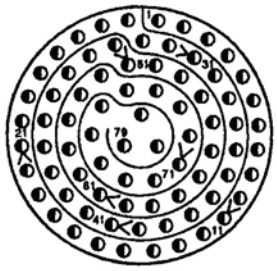


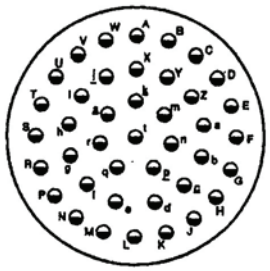
Figure 26. Insert Configuration Series IV (Sheet 1 of 3)



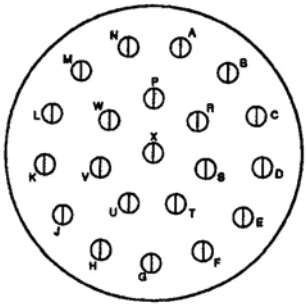
G16



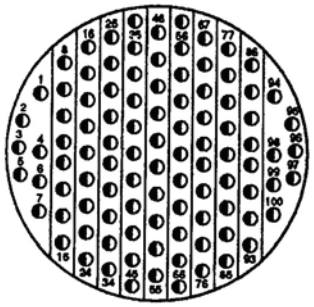
G35



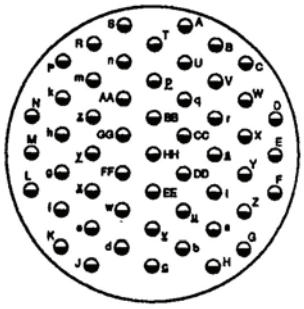
G41



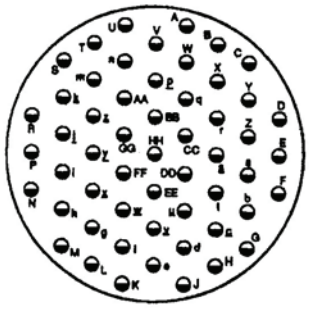
H21



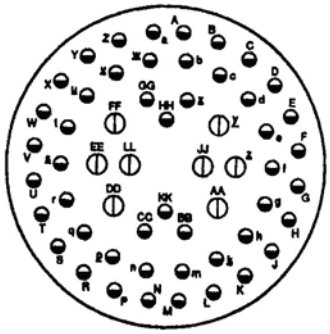
H35



H53

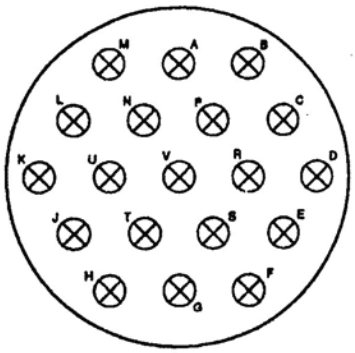


H55

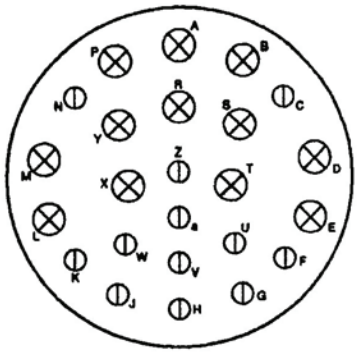


J4

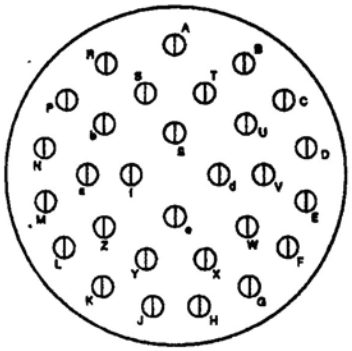
Figure 26. Insert Configuration Series IV (Sheet 2 of 3)



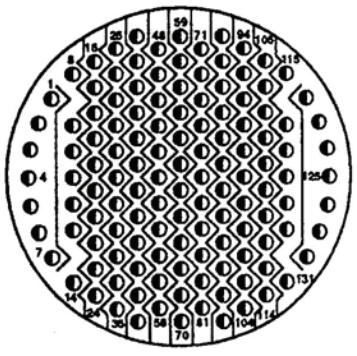
J19



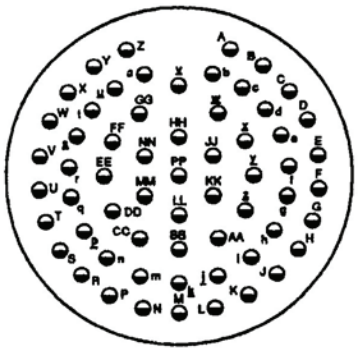
J24



J29



J35



J61

Figure 26. Insert Configuration Series IV (Sheet 3 of 3)

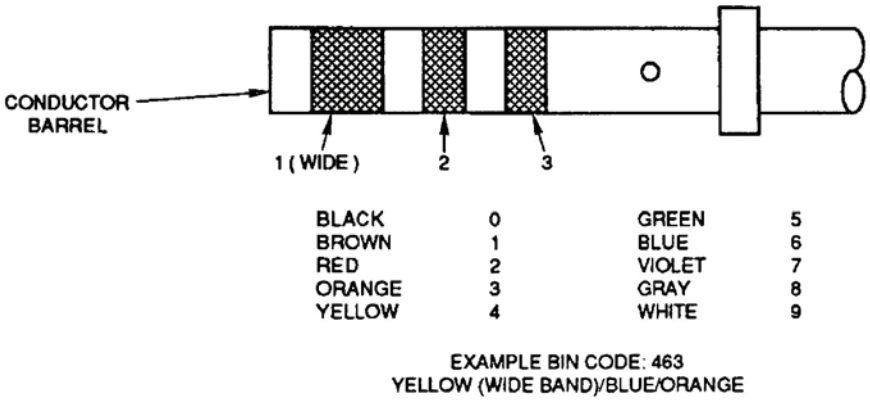


Figure 27. Basic Identification Number and Color Bands

153. CONTACT APPLICATION. Contacts used in Series IV connectors are manufactured in accordance with AS39029. The Basic Identification Number (BIN) or last three digits of the contact part number, matches the standard resistor color code (Figure 27). BIN code numbering is allowed for size 16 and larger contacts. If stamped or printed numbers are used, the digits must be a minimum of .060 inches high.

154. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts range from size 10 through 22M and are of crimp, rear-release design. Contacts are listed by size. Match the required size to the connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with the corresponding color bands (Table 25).

155. THERMOCOUPLE CONTACTS. Temperature sensing systems utilize two dissimilar metal conductors with matched lengths. When joined at the point temperature will be sensed, a voltage difference develops. This voltage is directly proportional to the temperature change. Thermocouple contacts are either nickel-aluminum/silicon (formerly alumel), nickel-chromium (formerly chromel), iron, or copper-nickel alloy (formerly constantan) Match the required size to the connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with the corresponding color bands (Table 25).

156. TOOLING. The procedures for attaching power and thermocouple contacts to a single conductor wire is the same for this connector series and contacts. Select the proper tooling for the specific contact part number and refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures (Table 26).

157. STEP STRIPPING FILTER LINE. Refer to NAVAIR 01-1A-505-1, WP 009 00.

158. COAXIAL CONTACTS. When routing coaxial cable through connectors, coaxial contacts are superior to other coaxial cable shield termination methods. The shield integrity is maintained across the contact body. The coaxial cable groups listed in Table 27 can be interconnected through MIL-DTL-38999 connector size 12, and 16 contact cavities. Match the required contact size to the connector application and cable group. When crimping the center contact for these cables, use the crimp tool selector knob settings specified. Socket and pin contact part numbers are listed along with the corresponding color bands. Socket coaxial contacts have a pin center contact. Pin coaxial contacts have a socket center contact (Figure 28).

159. CABLE AND COAXIAL CONTACT ASSEMBLY. To assemble the coaxial contacts to the applicable cable, identify the cable by group (Table 27). Select the proper contact by size and cable group (Table 28). Select the proper tooling and determine the required strip dimensions (Table 29).

160. Strip coaxial cable to the dimensions specified in Table 29, according to the stripping procedures in NAVAIR 01-1A-505-1, WP 009 00. Build up crimp tools as specified in Table 29 according to NAVAIR 01-1A-505-1, WP 013 00. Assemble the contact as outlined for Series I connector (Figure 8).

Table 25. Power and Thermocouple Contact Application Series IV

Contact Size	Wire Gage	Remarks	Socket Contacts		Pin Contacts	
			M39029/	Color Bands 1 2 3	M39029/	Color Bands 1 2 3
22M	24 to28		56-349	ORN YEL WHT	58-361	ORN BLU BRN
22D	22 to28	.	56-348	ORN YEL GRA	58-360	ORN BLU BLK
22	22 to26	.	56-350	ORN GRN BLK	58-362	ORN BLU RED
22	22 to 26	Copper-Nickel	88-482	YEL GRA RED	87-470	YEL VIO BLK
22	22 to26	Nickel-Aluminum	88-483	YEL GRA ORN	87-471	YEL VIO BRN
22	22 to26	Nickel-Chromium	88-484	YEL GRA YEL	87-472	YEL VIO RED
22	22 to 26	Iron	88-485	YEL GRA GRN	87-473	YEL VIO ORN
20	20 to 24	.	56-351	ORN GRN BRN	58-363	ORN BLU ORN
20	20 to 24	Copper-Nickel	88-486	YEL GRA BLU	87-474	YEL VIO YEL
20	20 to 24	Nickel-Aluminum	88-487	YEL GRA VIO	87-475	YEL VIO GRN
20	20 to 24	Nickel-Chromium	88-488	YEL GRA GRA	87-476	YEL VIO BLU
20	20 to24	Iron	88-489	YEL GRA WHT	87-477	YEL VIO VIO
16	16 to 20	.	56-352	ORN GRN RED	58-364	ORN BLU YEL
16	16 to 20	Copper-Nickel	88-490	YEL WHT BLK	87-478	YEL VIO GRA
16	16 to 20	Nickel-Aluminum	88-491	YEL WHT BRN	87-479	YEL VIO WHT
16	16 to 20	Nickel-Chromium	88-492	YEL WHT RED	87-480	YEL GRA BLK
16	16 to 20	Iron	88-493	YEL WHT ORN	87-481	YEL GRA BRN
12	12 to 14	.	56-353	ORN GRN ORN	58-365	ORN BLU GRN
10	10 to l2	-	56-527	GRN RED VIO	58-528	GRN RED GRA

NOTE
New terminology applies to thermocouple conductors as follows:
Constantan: Copper - Nickel Alloy
Alumel: Nickel - Aluminum Alloy
Chromel: Nickel - Chromium

Table 26. Power and Thermocouple Contact Tooling Series IV

Contact M39029/	Crimp Tool Frame M22520/	Turret Head or Positioner M22520/	Insertion Tool M81969/	Removal Tool M81969/	Unwired Removal Tool Probe
56-348	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
56-349	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
56-350	2-01 or 7-01	2-07 or 7-05	8-03	8-04	M81969/30
56-351	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
56-352	1-01 or 7-01	1-04BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
56-353	1-01	1-04 YEL	8-09 or 14-04	8-10 or 14-04	DRK105-12
56-527	1716P-1 (NOTE 1)		14-05	14-05	(NOTE 2)
58-360	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
58-361	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
58-362	2-01 or 7-01	2-09 or 7-07	8-03	8-04	M81969/30
58-363	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
58-364	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
58-365	1-01	1-04 YEL	8-09 or 14-04	8-10 or 14-04	DRK105-12
58-528	17 16P-1 (NOTE1)	-	14-05	14-05	(NOTE 2)
87-470	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
87-471	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
87-472	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
87-473	2-01 or 7-01	2-09 or 7-07	8-01 or 14-01	8-02 or 14-01	M81969/30
87-474	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-08 or 14-02	DRK105-20
87-475	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
87-476	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
87-477	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
87-478	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
87-479	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
87-480	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
87-181	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
88-482	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
88-483	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
88-484	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
88-485	2-01 or 7-01	2-07 or 7-05	8-01 or 14-01	8-02 or 14-01	M81969/30
88-486	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
88-487	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
88-488	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
88-489	1-01, 2-01, or 7-01	1-04 RED, 2-10, or 7-08	8-05 or 14-02	8-06 or 14-02	DRK105-20
88-490	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
88-491	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
88-492	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30
88-493	1-01 or 7-01	1-04 BLU or 7-04	8-07 or 14-03	8-08 or 14-03	M81969/30

NOTES:

1. Daniels Manufacturing Corporation special purpose crimp tool 716P-1 with G415 gage, or equivalent.
2. Tool part numbers not available at time of publication.

Table 27. Cable Selection by Group

Group	Cable	Inner Contact Tool Selector Setting
A	M17/119-RG174	4
A	M17/113-RG316	5
A	M17/094-RG179	3
A	Times AA3248 (See Note)	4
A	Teledyne 11299 (See Note)	4
A	Thermax 75-738-BCCWXE (See Note)	4
A	Tensolite 30888/L707YX-1 (See Note)	4
A	Haveg 8100207 (See Note)	4
B	M17/095-RG180	3
C	Raychem 9527D1514-2L (See Note)	5
C	Raychem 9528A1318 (See Note)	4
C	Microdot 293-3922 (See Note)	3
D	Microdot 250-4070 (See Note)	4
E	Raychem 48-502 (See Note)	4
E	Raychem 5022E5111 (See Note)	4
F	Raychem 48-950 (See Note)	3
F	Raychem 9530D5117 (See Note)	3
G	Raychem 7624D1311 (See Note)	5
G	Raychem 9527A1318 (See Note)	5
H	Gore GWN1159A (See Note)	4
I	1S50MU-16 (MIL-C-915/42)	4
I	1S50MU-20 (MIL-C-915/42)	4
I	1S50MU-40 (MIL-C-915/42)	4
I	1S50MU-70 (MIL-C-915/42)	4
J	M17/093-RG178	3
K	Haveg 61-02051 (See Note)	4
K	Revere WH95623 (Red Shielded) (See Note)	4
L	Haveg 30-02024 (See Note)	4
L	Haveg 30-02033 (See Note)	4
L	Tensolite 24713/A955KK1 (See Note)	3
L	Tensolite 26723/A955KK1 (See Note)	3

NOTE:
Superseded cable type. Refer to MIL-C-17, or MIL-DTL-17 for replacement cable.

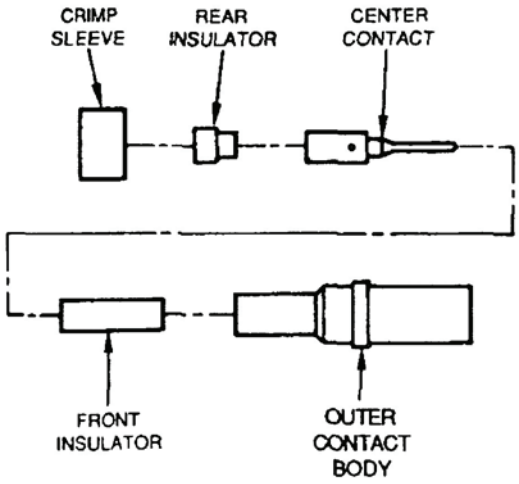


Figure 28. Coaxial Contact Components for Series IV (Size 12 and 16)

Table 28. Coaxial Contact Selection Series IV

Contact Size	Cable Group	Socket Contacts				Mating Pin Contacts			
		M39029/	Color Bands 1	2	3	M39029/	Color Bands 1	2	3
16	A	78-432	YEL	ORN	RED	76-424	YEL	RED	YEL
16	J	78-433	YEL	ORN	ORN	76-425	YEL	RED	GRN
16	K	78-434	YEL	ORN	YEL	76-426	YEL	RED	BLU
16	L	78-435	YEL	ORN	GRN	76-427	YEL	RED	VIO
12	A	27-210	RED	BRN	BLK	28-211	RED	BRN	BRN
12	B, C	27-402	RED	BRN	BLK	28-409	YEL	BLK	WHT
12	D	27-403	YEL	BLK	ORN	28-410	YEL	BRN	BLK
12	E	27-404	YEL	BLK	YEL	28-411	YEL	BRN	BRN
12	F	27-405	YEL	BLK	GRN	28-412	YEL	BRN	RED
12	G	27-406	YEL	BLK	BLU	28-413	YEL	BRN	ORN
12	H	27-407	YEL	BLK	VIO	28-414	YEL	BRN	YEL
12	I	27-408	YEL	BLK	GRA	28-415	YEL	BRN	GRN

Table 29. Coaxial Contact Tooling Series IV

	Strip Dimension			Center Contact		Crimp Sleeve			
Contact M39029/	A	B	C	Crimp Tool Frame M22520/	Positioner M22520/	Crimp Tool Frame M22520/	Turret Head or Die Set Positioner M22520/	Insertion Tool M81969/	Removal Tool M81969/
28-211	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-409	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8- 10 or 14-04
28-410	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-411	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-412	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-413	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-414	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
28-415	5/16	1/4	3/16	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
59-366	3/4	.	-	2-01	2-31	5-0 or 10-01	15-05(B-) or 10-07(B)	8-09 or 14-04	8-10 or 14-04
60-367	3/4	-	-	2-01	2-31	5-0 or 10-01	15-05(B-) or 10-07(B)	8-09 or 14-04	8-10 or 14-04
75-416	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-417	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-418	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-419	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 1404
75-420	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-421	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-09 or 14-04	8-10 or 14-04
75-422	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-07 or 14-03	8-08 or 14-03
75-423	5/8	1/4	1/2	2-01	2-34	31-01	31-02	8-07 or 14-03	8-08 or 14-03
76-424	17/64	3/16	9/64	2-01	2-36	4-01	4-02	8-07 or 14-03	8-08 or 14-03
76-425	1/4	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 1403
76-426	1/4	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
76-427	1/4	3/16	5/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
77-428	19/32	3/16	15/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
77-429	19/32	3/16	15/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
77-430	19/32	3/16	15/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03
77-431	19/32	3/16	15/32	2-01	2-35	4-01	4-02	8-07 or 14-03	8-08 or 14-03

161. CRIMP REMOVABLE CONTACT CONNECTOR BUILD-UP.

162. Connector build-up is the process of assembly to the point of usability, and falls into different categories. Each of these categories will be explained along with the applicable procedural steps.

163. GENERAL WARNINGS AND CAUTIONS. Before proceeding with maintenance, repair, or installation, become familiar with the following warnings, cautions, and notes as each of these are pertinent throughout this section.

WARNING

Isopropyl alcohol is highly flammable. Use only with adequate ventilation. Avoid prolonged breathing of vapors.

Do not perform hot work without specific authorization of activity Aviation Gas Free Engineer (AVGFE) or Gas Free Engineer(GFE).

The HT-900B, HT-920B, HT-71002 and MCH-100-A heat guns are the only authorized heat guns to be used when working on aircraft that have not been defueled and purged. The aircraft must be defueled and purged before using any other heat guns listed in this manual.

Aircraft with open fuel cells or broken or open fuel lines shall be certified gas free in accordance with NAVAIR 01-1A-35, or AFT.O. 1-1-3. Only the HT-900B/HT-920B, HT-71002, MCH-100-A heating tools are authorized for use on any aircraft whenever AVGAS, JP-4 or the presence of any type of fuel is imposing an immediate danger.

When using heat guns with electric motors, recertification may be required as work progresses, as directed by the Aviation Gas Free Engineering Technician (AVGFET).

The MCH-100-A heat gun has been electromagnetic interference (EMI) qualified for flight line or flight deck use. All other electric motor type heat guns are not authorized for flight line or flight deck use due to electromagnetic interference (EMI). The electric motor type heating tools are safe for use by personnel at the organizational maintenance level to repair aircraft wiring in a hangar or hangar deck / flight line environment, provided the aircraft meets the gas-free environment criteria (NAVAIR 01-1A-35, or AFT.O. 1-1-3), and there are no EMI restrictions.

Do not perform wire repair while using explosive solvent/paint products on the aircraft.

When using a heat tool, do not use electrical power from the aircraft being repaired. Use electrical power from a ground power unit.

Use of nitrogen with the HT-900B/HT-920B heat gun in an enclosed area can be hazardous. Discharge of nitrogen into a poorly ventilated area can result in asphyxiation.

CAUTION

Be careful if using metal tools (M81969). These tools can damage the wire sealing grommet in the connector. Plastic tools are preferred. Inspect tool tips for damage or distortion before use. Damage to the connector wire sealing grommet can occur.

Avoid using metal tooling to remove and install backshells. These tools can damage the backshell and connector. Non-metallic tools are designed to wear before damaging connector or backshell.

Do not remove a contact attached to a broken wire with an unwired contact removal tool. The tool and connector may be damaged. Wire strands may be encountered at any point up to $\frac{5}{16}$ inch of tool insertion. Do not force tool if wire strands are encountered. Withdraw tool any time it cannot be advanced into connector. Inspect tool tip for nicks, cracks, mushrooming, and other damage that will prevent proper functioning. Replace removal tool and repeat procedure if required.

Table 30. Sealing Plug Selection

Contact Size	Sealing Plug Part Number	Color
8	MS27488-8	Red
12	MS27488-12	Yellow
16	MS27488-16	Blue
20	MS27488-20	Red
22, 22D, And 22M	MS27488-22	Black

164. CONNECTOR BUILD-UP. For new connector build-up assemble tools required along with applicable necessary contacts and applicable necessary wire and cable. Refer to applicable drawings or diagrams to ensure correct build-up and wiring procedures. Refer to the Table by Series to determine the proper tooling and contacts.

165. WIRE DIAMETER BUILD-UP. In cases where the wire outside diameter does not fill the grommet sealing holes, environment resistance will be severely degraded. The wire diameter must be built up to provide proper sealing prior to contact insertion.

a. Select proper heat shrinkable insulation sleeving in accordance with SAE-AMS-DTL-23053.

b. Cut to length necessary to extend ¼ inch beyond grommet.

c. Do not apply so as to cover crimp contact area.

d. Using proper reflector apply heat using HT-900B to shrink.

e. Repeat above steps until diameter is built up to seal in the connector grommet.

166. SEALING PLUGS. Sealing plugs are used where unwired contacts are placed to maintain environmental resistance. Sealing plugs are sized according to contact size (Table 30).

167. CONTACT INSERTION. The following procedure covers insertion of wired or unwired, power, thermocouple, coaxial and twinax, contacts:

a. Assemble the contact and wire, crimp contact in accordance with NAVAIR 01-1A-505-1, WP 013 00.

b. Select insertion tool specified for contact size (Figure 29).

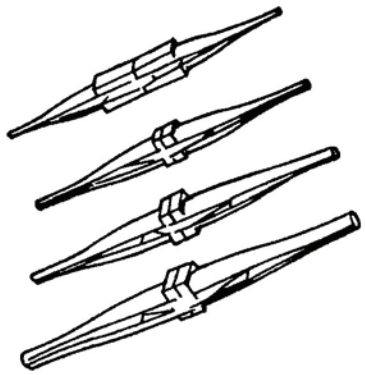


Figure 29. Insertion and Extraction Tools

c. Lay wire in groove of insertion tool colored tip. Slide contact into front of tool until properly located and seated (Figure 30).

d. Insert contacts using either the alternate row, or center outward method.

(1) Alternate Row Method. Insert contact in one row at center, skip one row insert contacts repeat until all contacts are installed (Figure 31).

(2) Center Outward Method. Insert center contact largest letter or number first, insert others following pattern (Figure 32).

e. Working from rear of connector hold tool with contact at right angles to the grommet, place contact into proper hole (Figure 33).

f. Keep contact and tool centered in hole, apply smooth even pushing pressure until contact is seated. A faint audible snap may be heard when contact seats (Figure 34).

g. Withdraw tool only at right angle to grommet face until completely free.

h. Insert all wired contacts first, install unwired contacts in remaining holes.

i. Insert sealing plug behind each unwired contact. Push sealing plug (large end first) until seated (Figure 35).

j. Provide a moisture barrier and seal connector in accordance with NAVAIR 01-1A-505-1, WP 026 00.

k. Install backshell in accordance with WP 003 03.

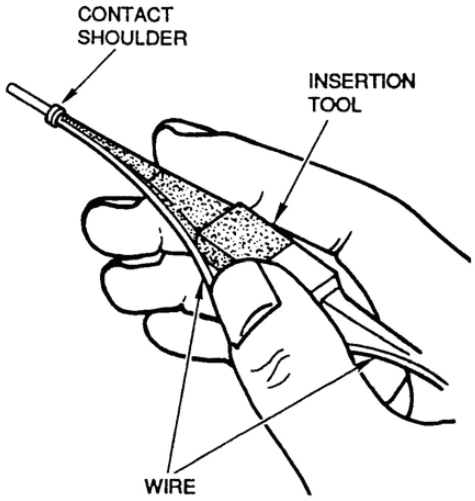


Figure 30. Inserting Contact into Tool

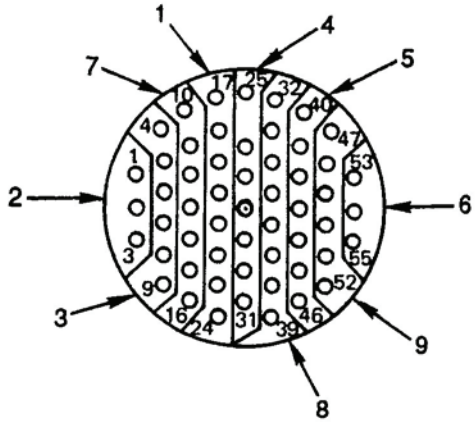


Figure 31. Alternate Row Method

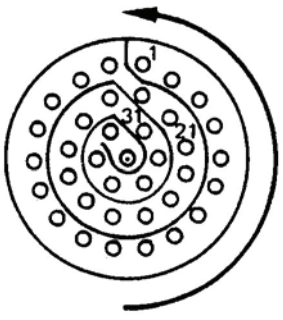


Figure 32. Center Outward Method

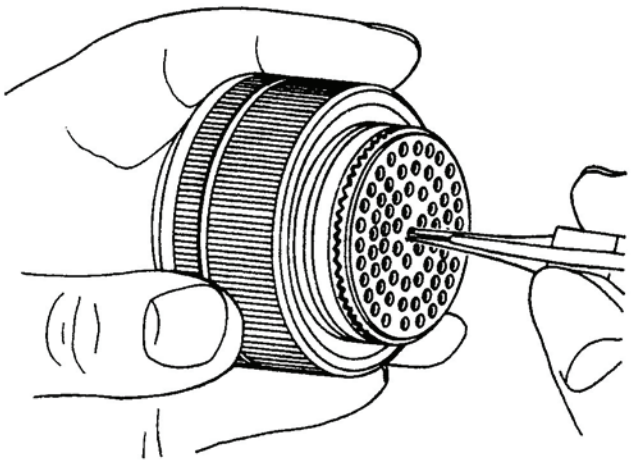


Figure 33. Contact Insertion

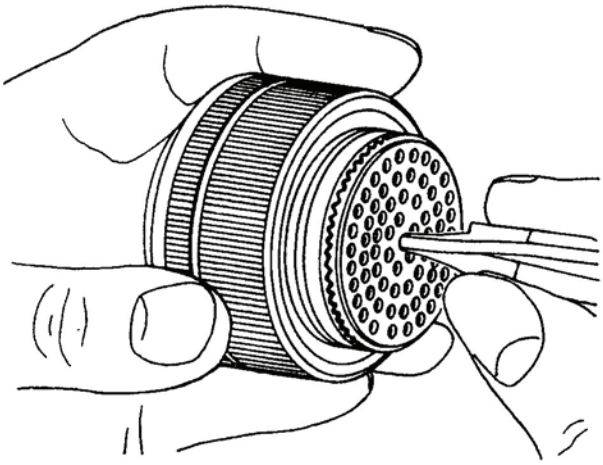


Figure 34. Contact Seating

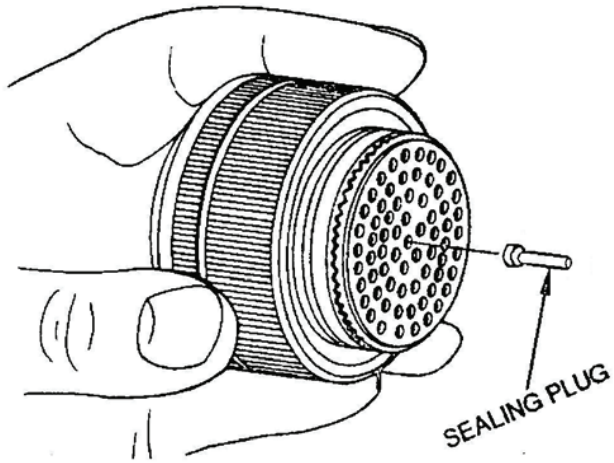


Figure 35. Sealing Plug Insertion

168. CRIMP REMOVABLE CONTACT CONNECTOR REPAIR.

169. Connector repair includes contact removal where necessary, to include wired, unwired, broken, power, thermocouple, coaxial, twinax, and fiber optic, for modification and system repair.

170. WIRED CONTACT REMOVAL. To remove contacts assembled and crimped to wires, the following procedure applies:

a. Remove backshell and accessories in accordance with WP 003 03.

b. Select proper removal tools by referring to Table by Series (Figure 29).

c. Using the white tip of removal tool per contact size, hold at right angle to grommet face centered over contact being removed and push wire into groove of tool (Figure 36). For smaller diameter wires, be careful the tool does not collapse around the wire when inserted and cause the tool tip to hit the contact crimp barrel instead of sliding over it. A collapsing tool can also damage grommet sealing wafers.

d. Slide end of removal tool over contact and push into insert hole until retention clip is fully opened (Figure 37).

e. Grasp wire and removal tool and pull contact from rear of connector (Figure 38).

f. A cross sectional view of contact removal is shown which repeats the above steps (Figure 39).

171. UNWIRED CONTACT REMOVAL. Unwired contacts are inserted to complete the connector configuration and to maintain mating integrity as well as environment resistance.

a. Select proper tool as specified in the Tables by Series (Figure 40).

b. Depress plunger, hold tool at right angle to grommet face and push into hole of contact to be removed until bottomed and contact is released.

c. Remove contact from connector by pulling both plunger and probe straight back.

d. Eject contact from unwired contact removal tool by pressing plunger.

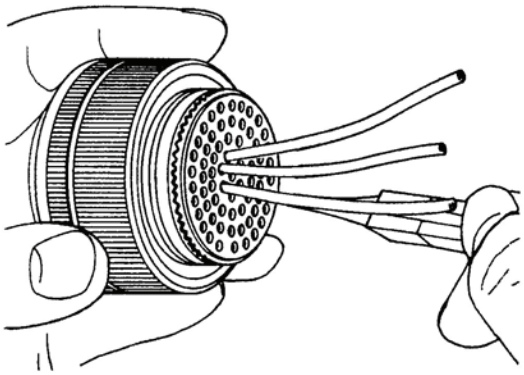


Figure 36. Removal Tool Insertion

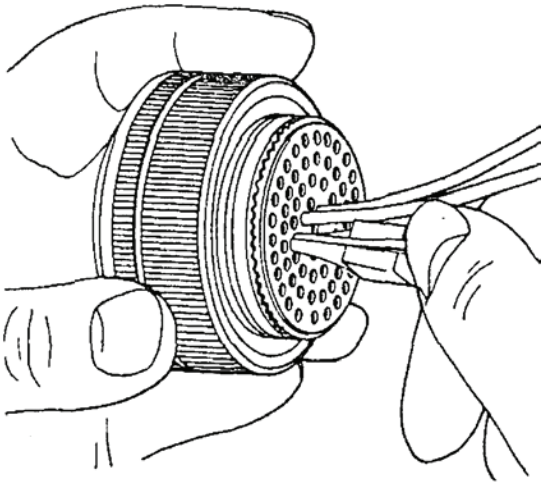


Figure 37. Unlocking Retention Clip

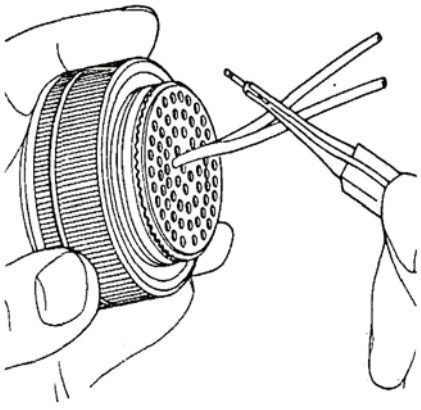


Figure 38. Contact Removal

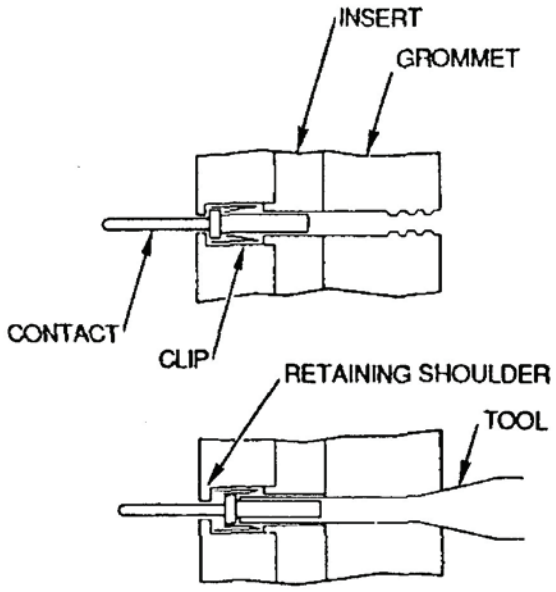


Figure 39. Cross Section Removal



Figure 41. Tool Insertion

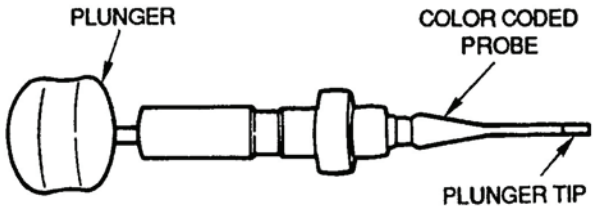


Figure 40. Unwired Contact Removal Tool

172. BROKEN WIRE CONTACT REMOVAL. It is possible that when removing contacts the wire may be broken. To remove the contact when the wire is broken proceed as follows:

a. Using the insertion removal tool insert white tip ⅛ inch into rear of connector at right angle to grommet face (Figure 41).

b. If resistance is felt, withdraw tool slightly and rotate tool ⅙ of a turn, re-insert. Repeat this step until tool passes resistance area. Continue until a positive stop is felt.

c. Exert pressure on mating end of contact with pin or socket. Push contact out of connector before disengaging tool from connector (Figure 42).

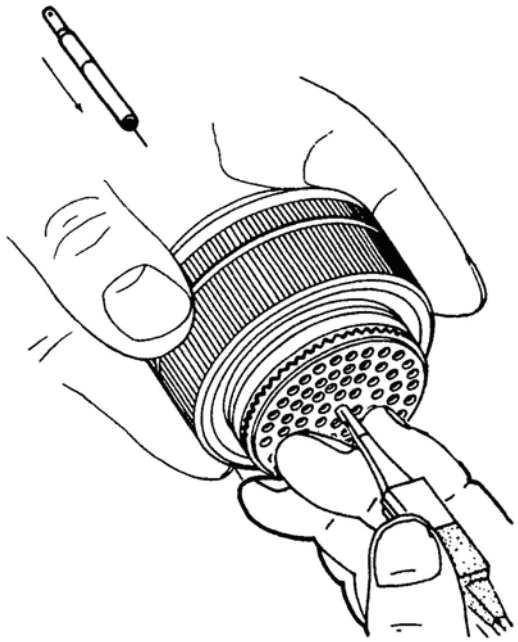


Figure 42. Broken Contact Removal

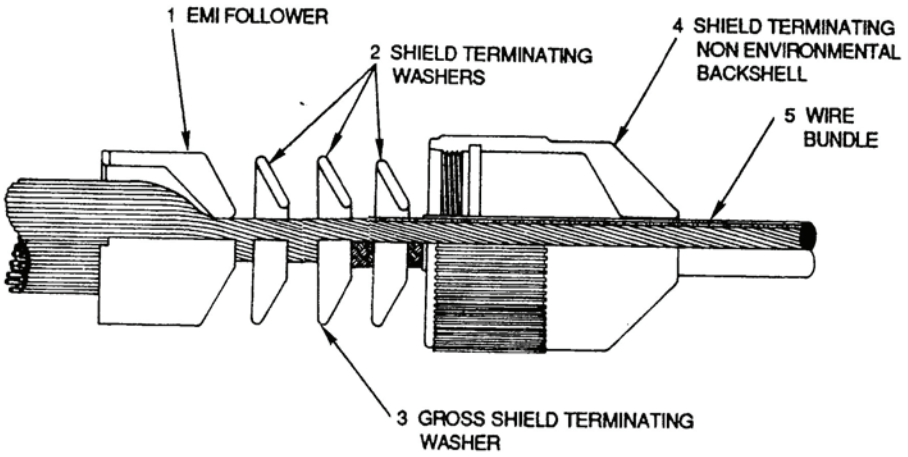


Figure 43. Feeding Wire Bundle Through Backshell

173. CONNECTOR REMOVAL AND INSTALLATION. If the connector cannot be repaired or is severely damaged, perform the following:

a. Starting from the outside of damaged connector tag all wires and remove all contacts.

b. When contact cannot be removed cut wire or cable as close to connector as possible. Install new contact to wire (NAVAIR 01-1A-505-1, WP 013 00).

c. Install wires with crimped contacts from damaged connector to a new connector.

d. Seal connector in accordance with NAVAIR 01-1A-505-1, WP 026 00.

174. FIXED CONTACT CONNECTOR BUILD-UP.

175. Connectors that are hermetically sealed or are through-bulkheads have fixed contacts which are non-removable with solder cup wire barrels. Wires are soldered to contacts in accordance with solder procedures NAVAIR 01-1A-505-1, WP 016 00.

176. REPAIR. The procedures for repair are in accordance with standard maintenance practices and solder procedures (NAVAIR 01-1A-505-1, WP 016 00). Seal the connector and provide for moisture barrier in accordance with NAVAIR 01-1A-505-1, WP 026 00.

177. MIL-C-29600 CONNECTOR SYSTEM BUILD-UP.

178. CONTACT INSERTION. The following procedure covers the insertion of wired and unwired contacts for the MIL-C-29600 connector system:

a. Select proper contact, tooling and strip dimensions from Table 31.

b. Assemble contact and wire in accordance with NAVAIR 01-1A-505-1, WP 013 00.

c. Select proper insertion tool from Table 31.

d. Feed wire bundle through backshell, terminating washers, and follower (Figure 43).

e. Place wire in insertion tool groove and place into position.

f. Pull wire back into insertion tool until contact shoulder seats against face of tool (Figure 44).

g. Hold insertion tool perpendicular to grommet and center contact in proper cavity (Figure 45).

h. Apply smooth, even pressure until a faint click is heard or a solid stop is felt (Figure 46).

i. Carefully remove insertion tool by pulling back at a slight angle.

j. Fill all unused cavities with unwired contacts.

k. Push sealing plugs, large end first, into grommet until sealing plug bottoms (Figure 47).

Table 31. Contact and Tooling Data (MIL-C-29600)

Size	Contact Part Number M39029/	Style	Crimp Tool Positioner M22520/ (See Note)	Strip Length ±0.003"	Insertion/Extraction Tool M81969/	Sealing Plug M27488	Unwired Contact Removal M81969/
22D	107-620	PIN	*1 7-07	5/32-3/16	14-01	-22	30-01
22D	106-614	SOCKET	*1 7-05	5/32-3/16	14-01	-22	30-01
20	107-621	PIN	*2 1-04	15/64-1/4	14-10	-20	30-02
20	106-615	SOCKET	*2 1-04	15/64	14-10	-20	30-02
16	107-622	PIN	*2 1-04	15/64	14-03	-16	30-03
16	106-616	SOCKET	*2 1-04	15/64	14-03	-16	30-03
12	107-623	PIN	*2 1-04	15/64	14-04	-12	30-04
12	106-617	SOCKET	*2 1-04	15/64	14-04	-12	30-04

NOTE:
1. Basic Crimping Tool M22520/7-01
2. Basic Crimping Tool M22520/1-01

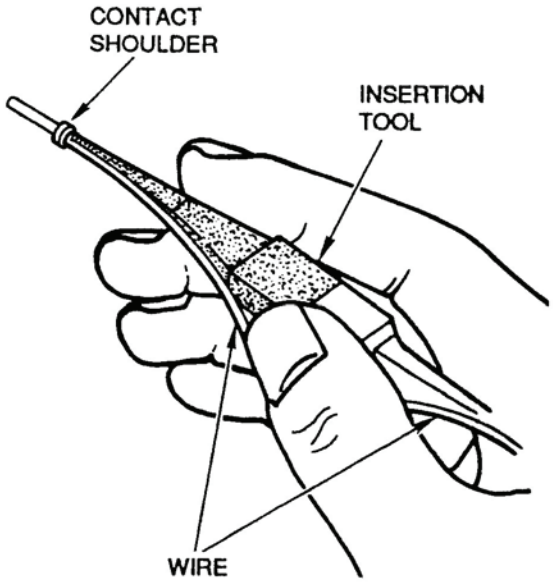
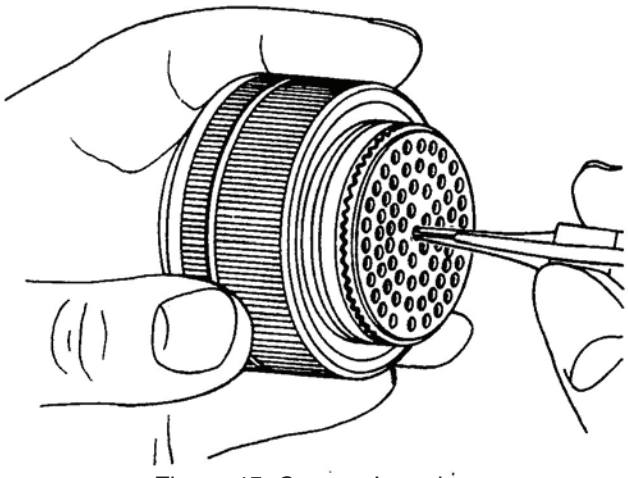
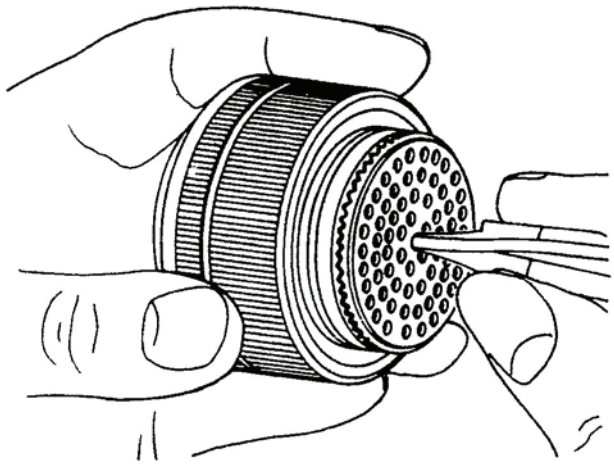


Figure 44. Inserting Contact into Tool


Figure 45. Contact Insertion


Figure 46. Contact Seating

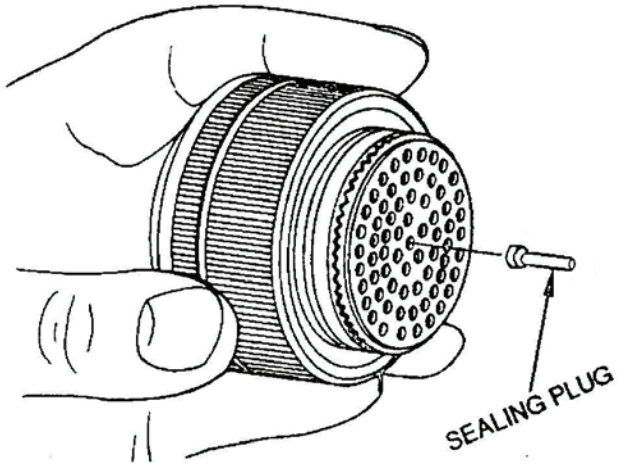


Figure 47. Sealing Plug Insertion

179. MIL-C-29600 CONNECTOR SYSTEM REPAIR.

180. WIRED CONTACT REMOVAL. The following procedure covers the removal of wired contacts for the MIL-C-29600 connector system:

a. Remove backshell in accordance with WP 003 03.

b. Select proper removal tool from Table 31.

c. Hold removal tool at a slight angle to wire end slide along wire until it surrounds the wire.

d. Hold removal tool perpendicular to grommet face and slide tool into cavity until it stops against the contact shoulder (Figure 48).

e. Hold wire firmly in removal tool and pull wire and tool from grommet maintaining tool and wire perpendicular to grommet (Figure 49).

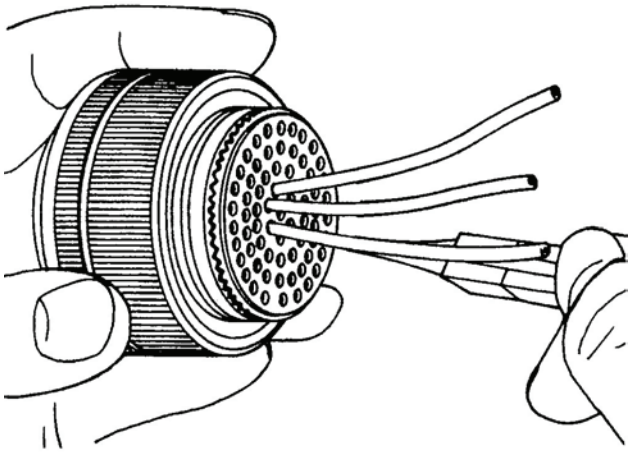


Figure 48. Removal Tool Insertion

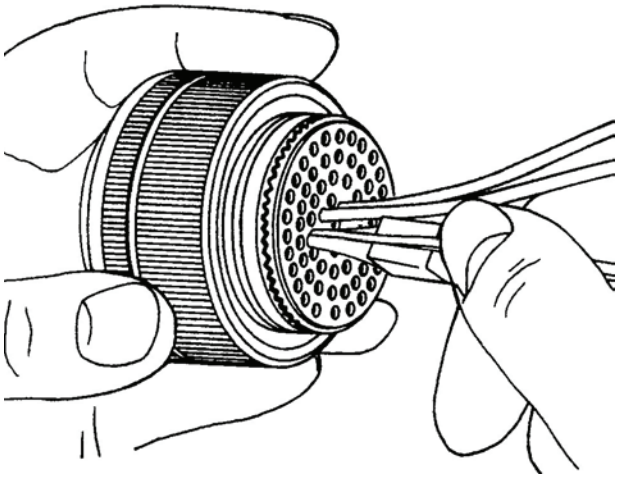


Figure 49. Contact Removal

CONNECTOR ACCESSORIES
MIL-DTL-38999
SERIES I, II, III, IV

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Connectors, Electrical, Circular, Miniature, High Density, Quick Disconnect,
Environment Resistant, Removable Crimp and Hermetic Solder
Contacts, General Specification for MIL-DTL-38999H
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Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
BT-BS-601	Strap Wrench
BT-HT-100	T-Handle
BT-S-264R	Tool Set Adapter
BT-S-38913	Tool Set Adapter
BT-S-389BR	Tool Set Adapter
BT-S-389L	Tool Set Adapter
BT-S-389LR	Tool Set Adapter
BT-S-389S	Tool Set Adapter
BT-S-389T	Tool Set Adapter
GS-590	Die Set
GS-710	Die Set
GS-840	Die Set
GS-1010	Die Set
GS-1130	Die Set
GS-1250	Die Set
GS-1670	Die Set
GS-1920	Die Set
GS-2170	Die Set
GS-2420	Die Set
GS-2670	Die Set
GS-2920	Die Set
GS-1440	Die Set
HT-900B (or equivalent)	Heat Gun
13640	Crimp Tool

Materials Required

Specification/ Part No.	Nomenclature
TT-I-735	Alcohol, Isopropyl
S1009	Glue Epoxy
SAE-AMS-DTL-23053	Insulating Sleeving, Heat Shrinkable
MS3118 Series	Shrink Boot
P-2740FR	Tape Silicone Rubber

GENERAL WARNINGS

Do not perform hot work without specific authorization of activity Aviation Gas Free Engineer (AVGFE) or Gas Free Engineer(GFE).

The HT–900B, HT–920B, HT–71002 and MCH–100–A heat guns are the only authorized heat guns to be used when working on aircraft that have not been defueled and purged. The aircraft must be defueled and purged before using any other heat guns listed in this manual.

Aircraft with open fuel cells or broken or open fuel lines shall be certified gas free in accordance with NAVAIR 01-1A-35, or AF T.O. 1-1-3. Only the HT-900B / HT-920B , HT–71002, MCH–100–A heating tools are authorized for use on any aircraft whenever AVGAS, JP-4 or the presence of any type of fuel is imposing an immediate danger.

When using heat guns with electric motors, recertification may be required as work progresses, as directed by the Aviation Gas Free Engineering Technician (AVGFET).

The MCH-100-A heat gun has been electromagnetic interference (EMI) qualified for flight line or flight deck use. All other electric motor type heat guns are not authorized for flight line or flight deck use due to electromagnetic interference (EMI). The electric motor type heating tools are safe for use by personnel at the organizational maintenance level to repair aircraft wiring in a hangar or hangar deck / flight line environment, provided the aircraft meets the gas-free environment criteria (NAVAIR 01-1A-35, or AF T.O. 1-1-3), and there are no EMI restrictions.

Do not perform wire repair while using explosive solvent/paint products on the aircraft.

When using a heat tool, do not use electrical power from the aircraft being repaired. Use electrical power from a ground power unit.

Use of nitrogen with the HT-900B / HT-920B heat gun in an enclosed area can be hazardous. Discharge of nitrogen into a poorly ventilated area can result in asphyxiation.

Do not let saddle, or clamps directly contact cable or harness. The amount of tape used must be at least one layer plus the amount needed to build up cable for a secure fit of clamp to bundle when screws are tightened and there is metal-to-metal contact.

For best results when applying silicone rubber tape, keep hands free of dirt and oil. When assembly is completed leading edge of tape should protrude $\frac{1}{8}$ inch through clamp.

White dot on adapter tool must be in line with master key of connector before tool and connector are mated. Spinning adapter tool on to connector until it slips into place causes unnecessary wear on tools, keys, and keyways.

When cutting heat-shrink sleeve with a sharp tool, do not nick or scrape wire insulation.

1. INTRODUCTION.

2. This work package (WP) covers connector accessories used with MIL-DTL-38999 Series connectors, their function, associated tools, assembly, and procurement information. A cross-reference of all connector accessories for MIL-DTL-38999 connector series I thru IV is in Table 1.

Table 1. MIL-DTL-38999 Connector Accessory Reference (Sheet 1 of 2)

ACCESSORY 1/ DESCRIPTION	SERIES				PART NO. 4/	
	I	II	III	IV	CURRENT	PREVIOUS 2/
CABLE CLAMP/STRAIN RELIEF						
Straight Strain Relief	X	X			M85049/49	MS27342 MS27506
Straight Strain Relief (long)	X	X			M85049/45	MS27663
Straight Strain Relief			X	X	M85049/38	
Straight Strain Relief (2 piece)	X	X			M85049/64	
90° Strain Relief	X	X			M85049/47	MS27507
90° Strain Relief (with support)	X	X			M85049/46	MS27663
90° Strain Relief (2 piece)	X	X			M85049/65	
90° Strain Relief			X	X	M85049/39	
Straight Quick Tye	X	X			M85049/56	MS27668
90° Quick Tye	X	X			M85049/63	MS27670
45° Quick Tye	X	X			M85049/57	MS27669
POTTING BOOTS AND RINGS						
Potting Ring	X	X			M85049/58	MS27485
Potting Boot	X	X			M85049/75	MS27486
SHRINK BOOTS AND ADAPTER						
Boot Adapter	X	X			M85049/62	M38999/2
Boot Adapter			X	X	M85049/69	
Straight Shrink Boot	X	X			AS31091	M85049/68
90° Shrink Boot	X	X			AS31171	M85049/68
EMI/RFI GROUNDING TERMINATORS						
Bonding Ring	X	X	X	X	AN3111	
Insulated Outer Ferrule	X	X	X	X	MS18121	
Outer Ferrule	X	X	X	X	MS21980	
Inner Ferrule	X	X	X	X	MS21981	
NON-ENVIRONMENTAL EMI/RFI BACKSHELLS						
Straight Shielded Termination	X	X			M85049/30	M38999/4
Straight with Cable Clamp	X	X			M85049/36	M38999/7
Straight with Cable Clamp			X	X	M85049/19	
Straight			X	X	M85049/20	
Straight Adapter	X	X			M85049/33	M38999/3 MS27487
Straight Adapter Reducer	X	X			M85049/32	MS27489
90° Adapter	X	X			M85049/32	MS27487
90° Adapter with Clamp	X	X			M85049/37	M38999/8
ENVIRONMENTAL EMI/RFI BACKSHELL						
Straight with Clamp	X	X			M85049/17	M38999/5
Straight with Clamp			X	X	M85049/18	

Table 1. MIL-DTL-38999 Connector Accessory Reference (Sheet 2 of 2)

ACCESSORY 1/ DESCRIPTION	SERIES				PART NO. 4/	
	I	II	III	IV	CURRENT	PREVIOUS 2/
NON-ENVIRONMENTAL BACKSHELLS						
Straight with Clamp	X	X			M85049/29	M38999/6
Straight	X	X			M85049/27	M38999/1
Straight with Clamp			X	X	M85049/21	
Straight Adapter	X	X			MS27342	M85049/35
DUST CAPS						
Metal, for Plug	X				MS27501	MS20048
Metal, for Plug		X			MS27510	MS27352
Metal, for Plug			X		D38999/32	
Metal, for Jack	X				MS27502	MS20047
Metal, for Jack		X			MS27511	MS27353
Metal, for Jack			X		D38999/33	
Plastic/ESD, for Plug or Jack	X	X	X	X	AS90376	
MISCELLANEOUS						
Rubber Bushings	X	X	X	X	MS3420	MS39056 MS39057
Nut for Jam Nut Jack	X	X			MS3186	
Nut for Jam Nut Jack			X	X	D38999/28	
Sealing Plugs	X	X	X	X	MS27488	MS25251
CONDUIT FITTINGS	X	X	X	X	AN3050 through AN3068	MS39072 through MS39081
CRIMP CONTACTS 3/						
Pin, Size 12-22M	X	X	X	X	M39029/58	
Pin, Shielded	X	X	X	X	M39029/20	
Socket, Size 12-22M	X		X	X	M39029/56	
Socket, Size 12-22M		X			M39029/57	
Socket, Shielded	X	X	X	X	M39029/75	
CRIMP CONTACT EXTRACTION AND INSERTION TOOLS 3/						
Extraction Only	X	X	X	X	M81969/8	
Insertion Only	X	X	X	X	M81969/8	
Extraction or Insertion	X	X	X	X	M81969/14	
CRIMP TOOLS 3/	X	X	X	X	M22520	

1/ For accessory details, refer to WP 003 03
2/ Previous part numbers are listed for reference only. When requirements exists, the current part number should be ordered.
3/ See the Crimp Contact Table in WP 003 02, for the complete part number. Crimping tool details are also in the same WP.
4/ Refer to WP 003 02 to construct the complete part number.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, (the Society of Automotive Engineers (SAE) will become the preparing activity and the Navy will adopt the documents), the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacement, each case was reviewed and some information has been retained in this volume "for reference use only".

3. CONNECTOR ACCESSORIES. Connector accessories are components added to a connector to maintain its operational characteristics. These accessories are divided into the following categories:

a. Backshells.

b. Connector Assembly Tools.

c. Dummy Receptacles.

d. Dust Caps.

4. BACKSHELLS. Backshells are the most complex connector accessories and simply stated they are any device added to the rear or wiring side of a connector. Backshells may be divided into the following categories:

a. Grommet Nuts.

b. Cable Clamps and Strain Reliefs.

c. Potting Boots and Rings.

d. Shrink Boots and Adapters.

e. Non-Environmental Backshells.

f. Environmental Backshells.

g. EMI-RFI Grounding Terminators.

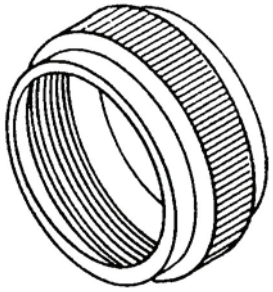


Figure 1. Grommet Nut (Typical)

h. Non-Environmental EMI-RFI Backshells.

i. Environmental EMI-RFI Backshells.

5. GROMMET NUTS. The grommet nut is a threaded ring nut utilized to securely hold the connector grommet in place (Figure 1).

6. CABLE CLAMP. A cable, or saddle clamp is a cable support or clamping device which requires the use of an intermediate component for attachment to the back of the connector.

7. STRAIN RELIEF. A strain relief is a cable support or clamping device which attaches directly to the connector (Figure 2).

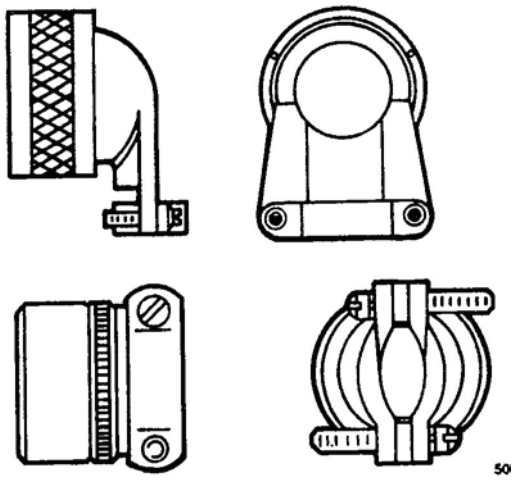


Figure 2. Strain Relief (Typical)

8. POTTING BOOTS AND RINGS. Potting boots are plastic molds held in place by a threaded potting ring. They are used together to form a neat potting seal when used with potting or sealing compound (Figure 3).

9. SHRINK BOOTS AND ADAPTERS. Shrink boots are heat shrinkable insulation sleeving used to insulate and seal the connector. These boots are procured by the recovered or shrunk diameter. The adapter is a threaded coupling which attaches to the connector to which the shrink boot seals (Figure 4).

10. NON-ENVIRONMENTAL BACKSHELL. The non-environmental backshell is used when moisture entry protection is not required, but when the need for additional space is required for maintenance (Figure 5).

11. ENVIRONMENTAL BACKSHELLS. The environmental backshell is used when moisture entry protection is required. The protection is afforded by the use of o-rings, extra grommets, and other sealing devices (Figure 6).

12. EMI/RFI GROUNDING TERMINATORS. The grounding terminators are a two piece unit used to ground the shields or shield terminations to a common point using a common ground lead (Figure 7).

13. NON-ENVIRONMENTAL EMI/RFI BACKSHELL. This type of backshell is used when moisture entry protection is not required but the need for EMI/RFI protection is needed (Figure 8).

14. ENVIRONMENTAL EMI/RFI BACKSHELL. This type of backshell is used when moisture entry and EMI/RFI protection is needed (Figure 9).

15. EMI/RFI. EMI/RFI relate to interference either Electro Magnetic or Radio Frequency. The introduction of foreign electronic energy into an electrical circuit can be a significant problem.

16. EMI/RFI REDUCTION. The most common method of reducing EMI/RFI is to employ a physical and electrical shield which is terminated at one or both ends to a ground potential or some other predetermined point with respect to ground. Shields can be applied to individual wires, cables, bundles, or harnesses.

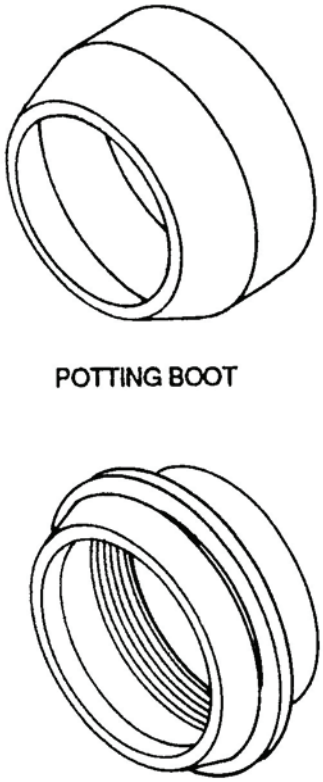


Figure 3. Potting Ring and Boot (Typical)

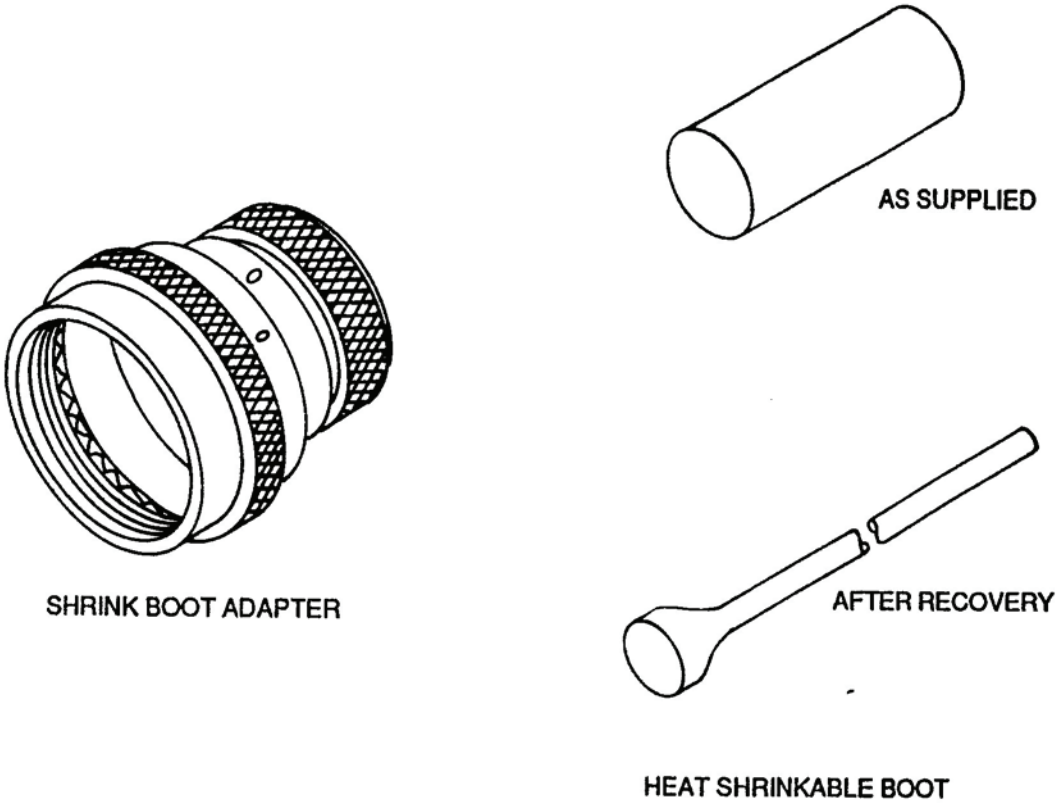


Figure 4. Shrink Boot and Adapter (Typical)

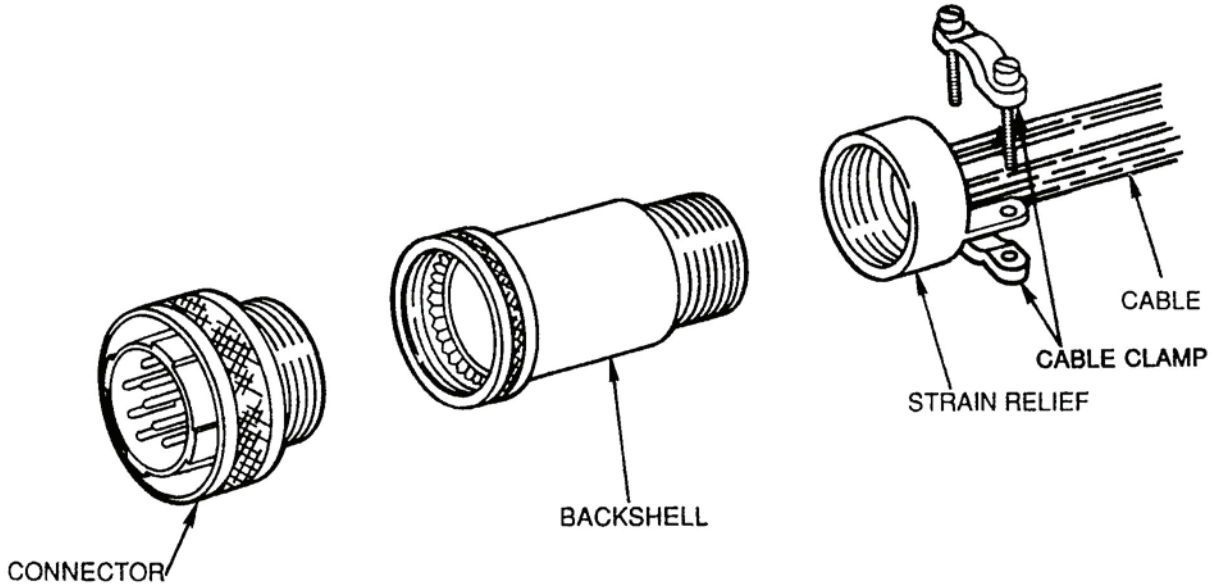


Figure 5. Non-Environmental Backshell (Typical)

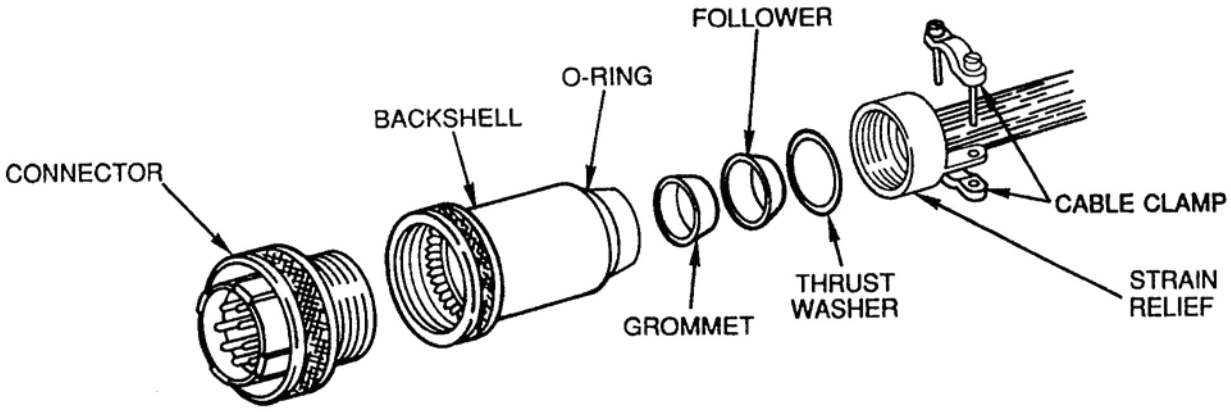


Figure 6. Environmental Backshell (Typical)

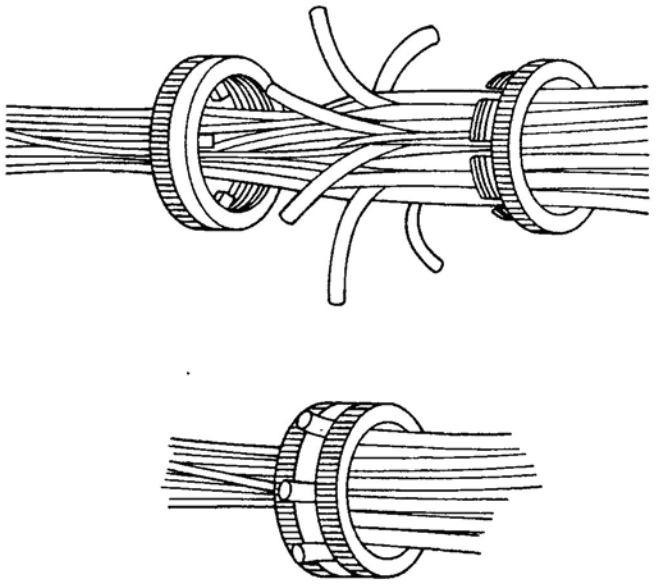


Figure 7. Grounding Terminator

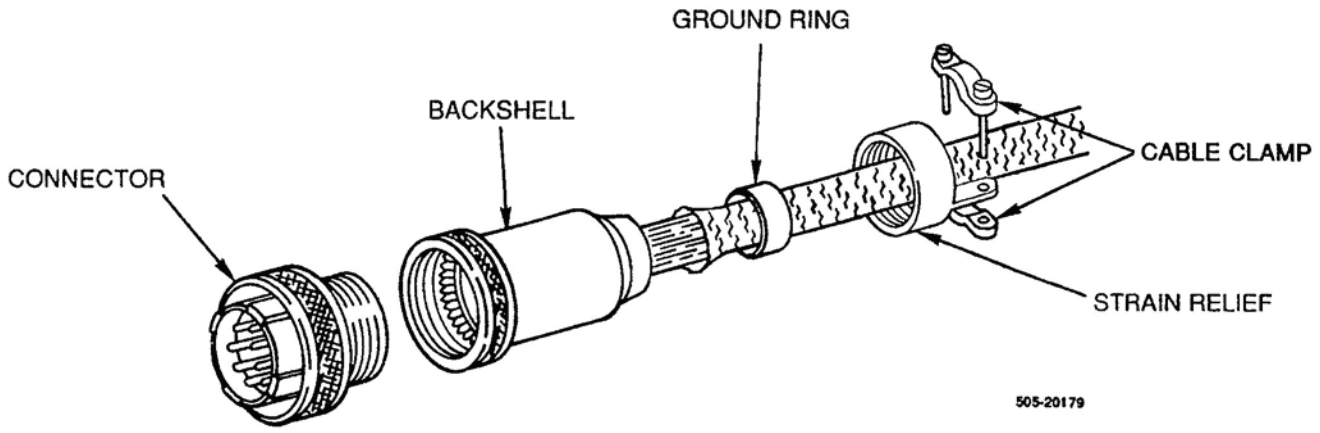


Figure 8. Non-Environmental EMI-RFI Backshell (Typical)

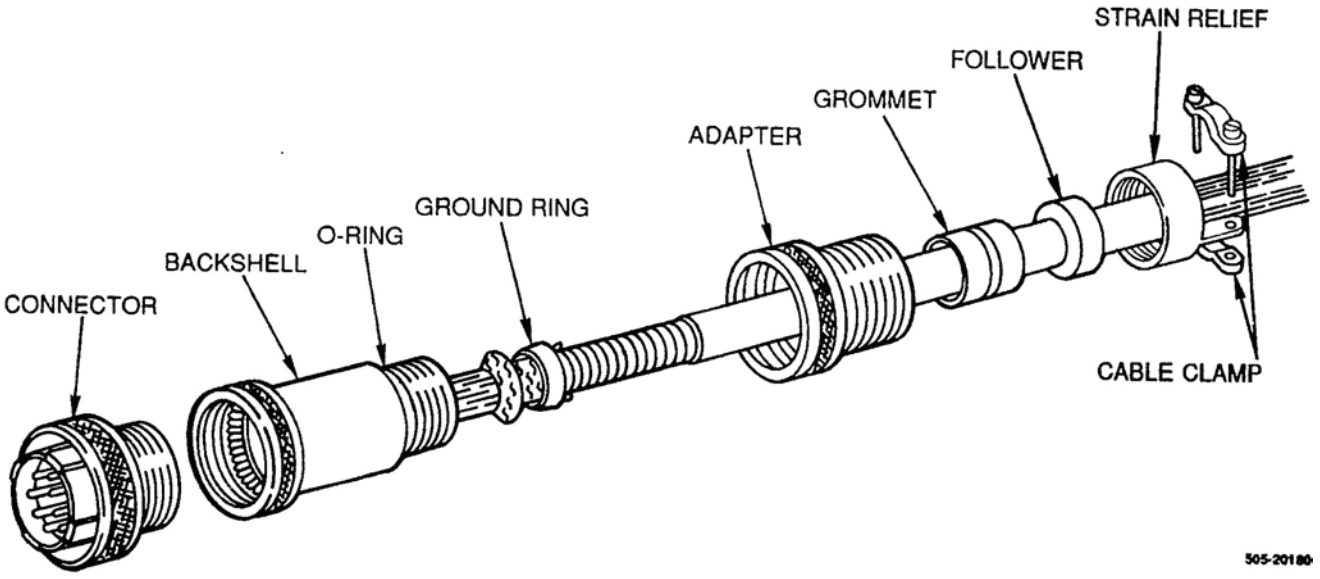


Figure 9. EMI-RFI Environmental Backshell (Typical)

17. MIL-DTL-38999 SERIES I AND SERIES II CONNECTOR ACCESSORIES.

18. The connector accessories in this section pertain to Series I and Series II connectors which are the same and interchangeable. Crimp tools, insertion tools, removal tools are not covered in this section. These tools are utilized in connector buildup and are to be found in NAVAIR 01-1A-505-1 WP 013, 020, 021 and 022. WP 024 00 pertains to accessories and tools used on the back side or wire side of the connector to include the following:

a. Adapter Tools.

b. Strap Wrench.

c. Cable Clamps and Strain Reliefs.

d. Potting Boots and Rings.

e. Shrink Boots and Adapters.

f. Non-Environmental Backshells.

g. EMI/RFI Grounding Terminators.

h. Non-Environmental EMI/RFI Backshells.

i. Environmental EMI/RFI Backshells.

19. SPECIAL TOOLS. Connector backshells come in a wide variety of types depending on the application. To install backshells or accessories adapter tools and a strap wrench are needed. Adapter tools are used to hold the connector during backshell installation and removal. The strap wrench is, used to tighten or loosen the backshell. Special tools are used so as not to damage connector shells, wires, or accessories.

20. ADAPTER TOOL SELECTION. To select the proper tool, the shell size, and series, the type of either plug, or receptacle needs to be known. Select the applicable tool for Series I from Table 2, and Series II from Table 3. The adapter tool is illustrated (Figure 10).

21. BACKSHELL REMOVAL Backshells are used to protect, shield, and add support to connectors. When modification or repair to the connector is necessary the backshell must be removed. Proceed using the following steps:

a. Select the correct adapter tool Tables 2 or 3 by series, T-handle, and strap wrench (Figure 11).

b. Mate adapter tool to connector. Ensure white dot on adapter tool lines to master key of connector. Spinning tool on connector will cause damage to tool and/or connector (Figure 12).

CAUTION

Spinning tool on connector will cause damage to tool and/or connector (Figure 12).

c. Install strap wrench around part to be removed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 12).

d. Insert T-handle into socket of adapter tool to provide holding (Figure 12).

e. To loosen backshell apply force counterclockwise as viewed from connector rear (Figure 13).

f. Secure backshell and associated hardware to bundle to prevent loss.

22. BACKSHELL INSTALLATION. Upon completion of maintenance or modification the backshell must be replaced. Proceed using the following steps:

a. Remove tape from backshell and wire bundle.

b. Start backshell on connector by hand to prevent cross threading. Continue tightening by hand until the backshell serrated teeth engage the teeth on the back of the connector.

Table 2. Series I Adapter Tool Selection

Individual Tool Part Numbers For Plugs	Shell Size	Keying Positions	Color Coding	Individual Tool Part Numbers For Receptacles	Shell Size	Keying Positions	Color Coding
BT389L-9	9	All	Blue	BT389LR-9	9	All	Blue
BT389L-11	11			BT389LR-11	11		
BT389L-13	13			BT389LR-13	13		
BT389L-15	15			BT389LR-15	15		
BT389L-17	17			BT389LR-17	17		
BT389L-19	19			BT389LR-19	19		
BT389L-21	21			BT389LR-21	21		
BT389L-23	23			BT389LR-23	23		
BT389L-25	25			BT389LR-25	25		

Table 3. Series II Adapter Tool Selection

Individual Tool Part Numbers For Plugs	Shell Size	Keying Positions	Color Coding	Individual Tool Part Numbers For Receptacles	Shell Size	Keying Positions	Color Coding
BT389S-8	8	All	Gray	BT264R-8	8	All	Orange
BT389S-10	10			BT264R-10	10		
BT389S-12	12			BT264R-12	12		
BT389S-14	14			BT264R-14	14		
BT389S-16	16			BT264R-16	16		
BT389S-18	18			BT264R-18	18		
BT389S-20	20			BT264R-20	20		
BT389S-22	22			BT264R-22	22		
BT389S-24	24			BT264R-24	24		

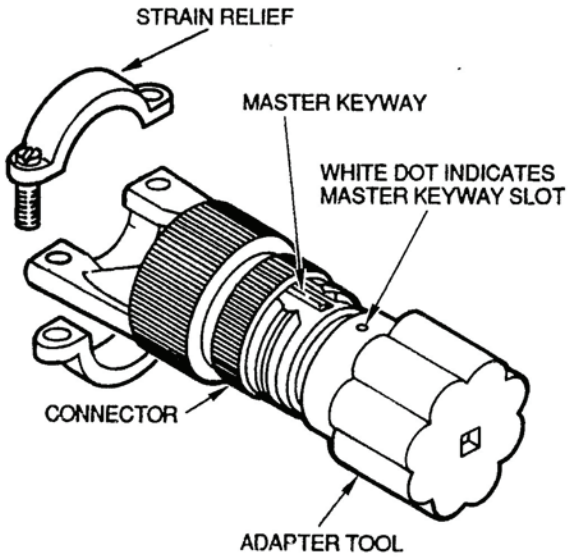


Figure 10. Adapter Tool (BT-S-389)

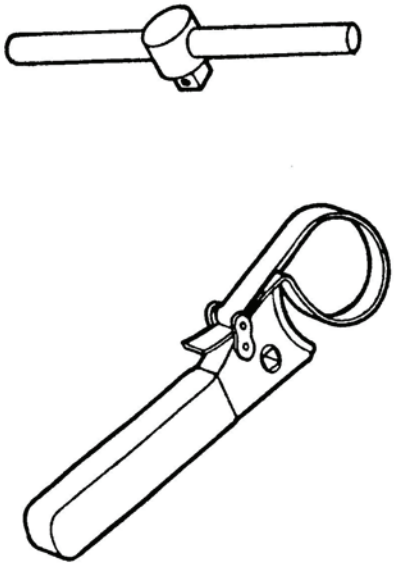


Figure 11. Adapter Tool Accessories

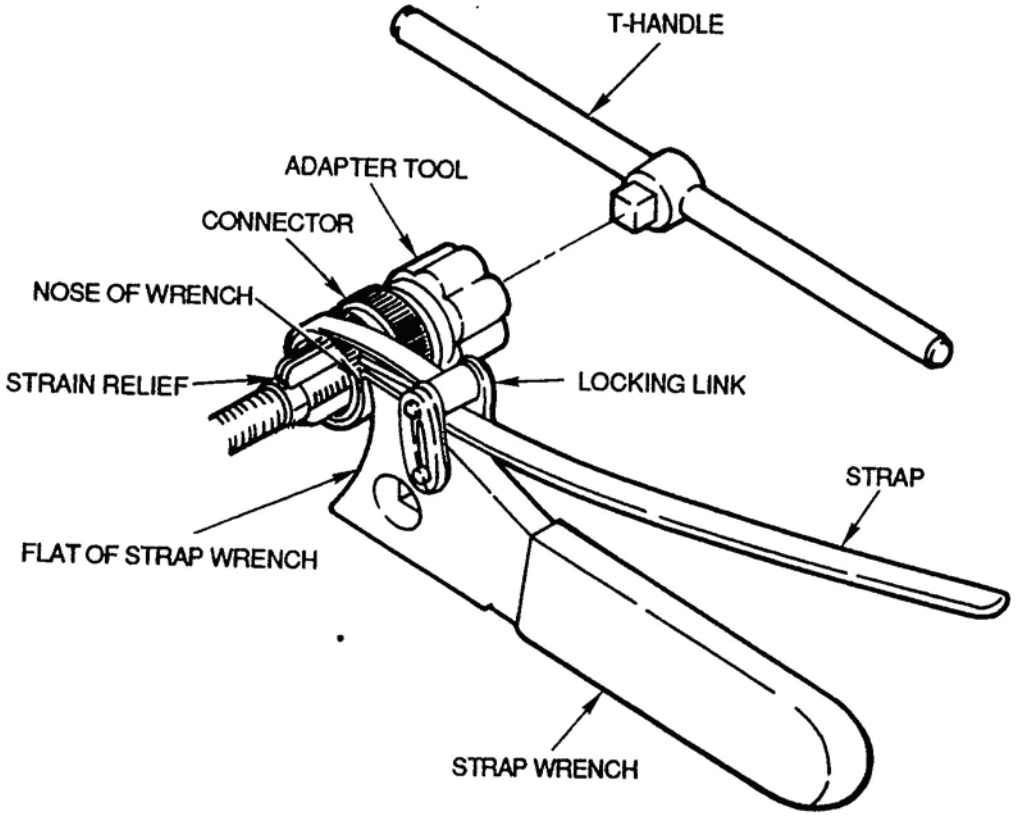


Figure 12. Strap Wrench Setup and Adjustment

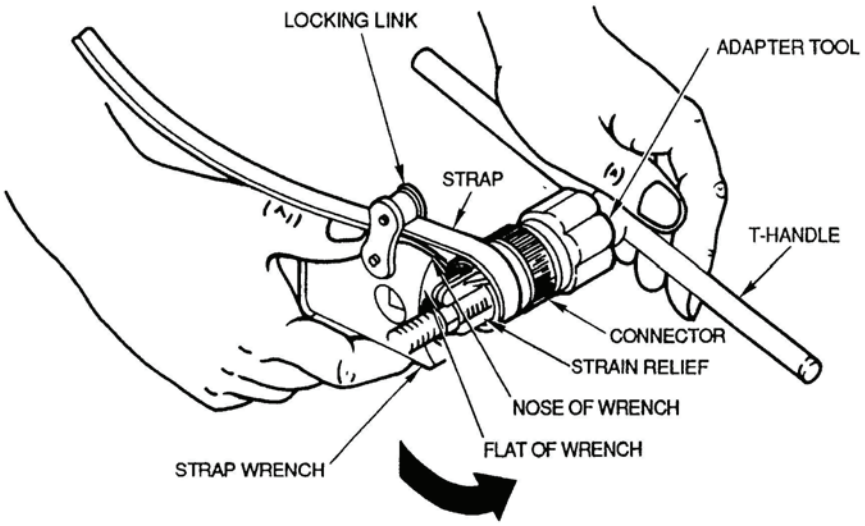


Figure 13. Loosening Position of Wrench

c. Select the correct adapter tool Table 2 or 3, T-handle, and strap wrench (Figure 11).

CAUTION

Spinning tool on connector will cause damage to tool and/or connector.

d. Mate adapter tool to connector. Ensure white dot on adapter tool lines to master keyway of connector (Figure 12).

e. Install strap wrench around part to be installed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 12).

f. Insert T-handle into socket of adapter tool to provide holding (Figure 12).

NOTE

Refer to NAVAIR 01-1A-505-1, WP 011 01, for torque value information on AS85049 connector backshells.

g. To tighten backshell apply force clockwise as viewed from connector rear (Figure 14).

23. CABLE CLAMPS AND STRAIN RELIEFS. Cable clamp type strain reliefs are supports or clamping devices used to support the weight of cables and wires to the connector. The strain reliefs attach to the connector and absorb vibration and shock transmitted by the wires or cable to the contact connection.

24. CABLE CLAMP AND STRAIN RELIEF AVAILABILITY. Cable clamps and strain reliefs are available in many types to perform different functions. Refer to applicable drawings and diagrams to select the proper part. The following is a part number breakdown of availability:

25. Straight Strain Relief MS27342-2. This is a straight strain relief adapter available in two series. Series I is an open adapter without a clamp, Series II has a clamp. The strain relief, along with dimensions and part number breakdown, is illustrated (Figure 15).

26. Straight Strain Relief M85049/49-2. These are straight strain relief adapters. The strain relief, along with dimensions and part number breakdown is illustrated (Figure 16).

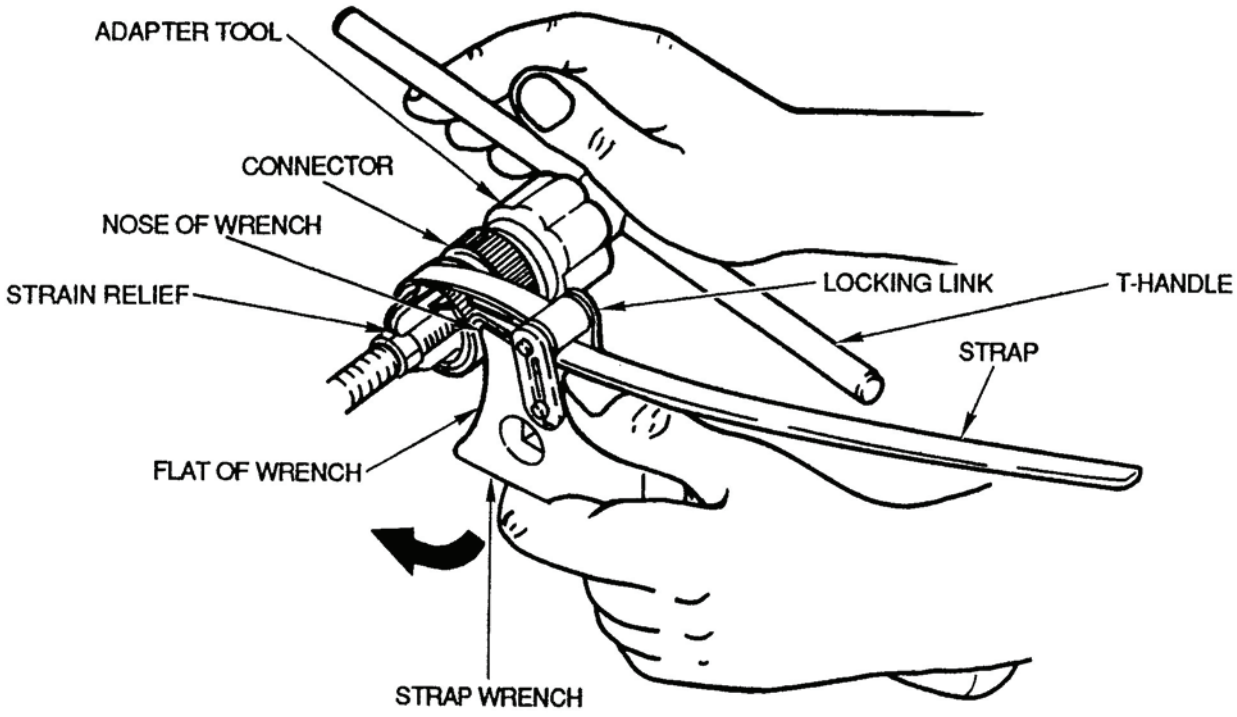
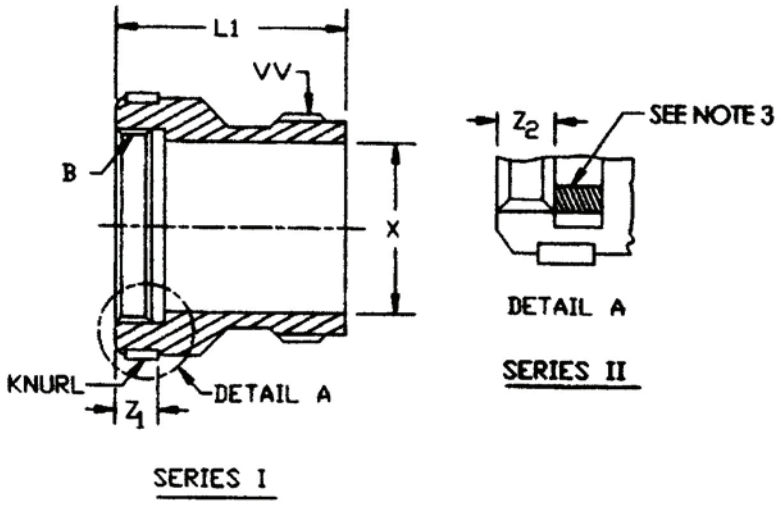


Figure 14. Tightening Position of Wrench



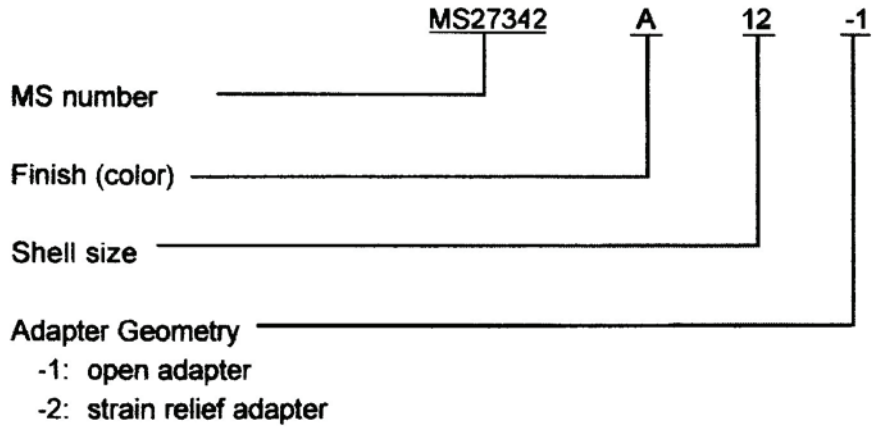


Figure 15. Part Number Breakdown MS27342 Straight Strain Relief (Sheet 1 of 3)

Shell size series I	Shell size series II	B Thread class 2B UNEF	L_1 max	X dia min	Z_1 +.000, -.015 series I	Z_2 +.005, -.010 series II	V V Thread class 2A UNEF
9	8	7/16-28	.688	.281	.219	.114	1/2-28
11	10	9/16-24		.406			5/8-24
13	12	11/16-24		.531			3/4-20
15	14	13/16-20		.656			7/8-20
17	16	15/16-20		.781			1-20
19	18	1 1/16-18		.875			1 3/16-18
21	20	1 3/16-18	.750	1.000			
23	22	1 5/16-18		1.125			1 7/16-18
25	24	1 7/16-18		1.250			

NOTES:
1. Dimensions are in inches.
2. Materials: Adapter body: aluminum alloy.
3. On series II adapters, the Z_2 dimension may be achieved by two-piece construction.

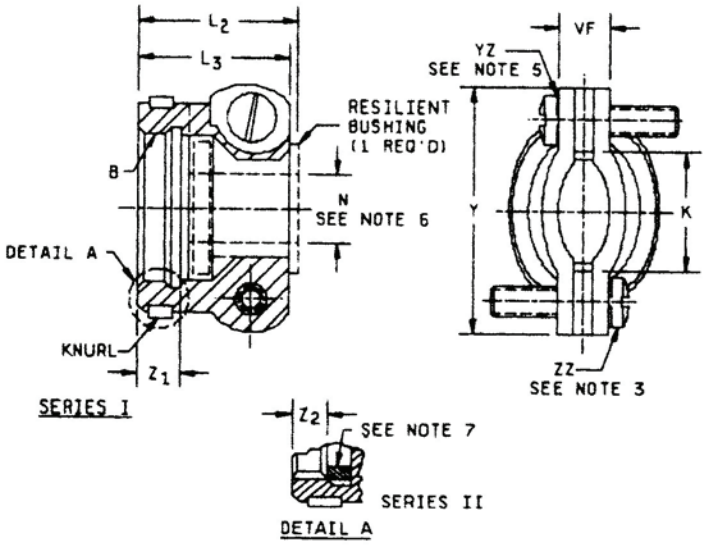


Figure 15. Part Number Breakdown MS27342 Straight Strain Relief (Sheet 2 of 3)

Shell size series I	Shell size series II	B Thread class 2B UNEF	N free dia +.010 -.025	L_2 max	L_3 max	X dia min open	Y max
9	8	7/16-28	.125	.875	.781	.234	.628
11	10	9/16-24	.188			.297	.981
13	12	11/16-24	.312			.422	1.016
15	14	13/16-20	.375	.938	.844	.547	1.141
17	16	15/16-20	.500			.609	1.203
19	18	11/16-18	.625			.734	1.469
21	20	13/16-18		1.000	.906		
23	22	15/16-18	.750			.922	1.656
25	24	17/16-18	.800			.964	1.750

Shell size series I	Shell size series II	Z_1 +.000, -.015 Series I	Z_2 +.005, -.010 Series II	VF max closed	ZZ Screws MS35271 see note 3	YZ Lockwashers see note 5
9	8	.219	.114	.187	-30	MS35338-98 or MS35338-41
11	10					
13	12			.261		
15	14			.325	-32	AN936-A6B or AN936-A6
17	16			.356		
19	18			.456	-48	MS35338-99 or MS35338-42
21	20			.519		
23	22				-50 see note 4	AN936-A8B or AN936-A8
25	24			.657		

NOTES:

1. Dimensions are in inches
2. Materials: Adapter body and clamping bars: Aluminum alloy. Resilient bushing: Silicone.
3. Drill hole in head is optional.
4. Except that length of screw under head shall be 1.125 +.000 -.062.
5. Lockwashers may be captivated.
6. Use MS3420 bushing if reduced opening is required.
7. On series II adapters, the Z_2 dimension may be achieved by two-piece construction.

Figure 15. Part Number Breakdown MS27342 Straight Strain Relief (Sheet 3 of 3)

PART NUMBER DESIGNATION

M85049/	49	-2	S	10	W

MIL SPEC

SPACIFICATION SHEET

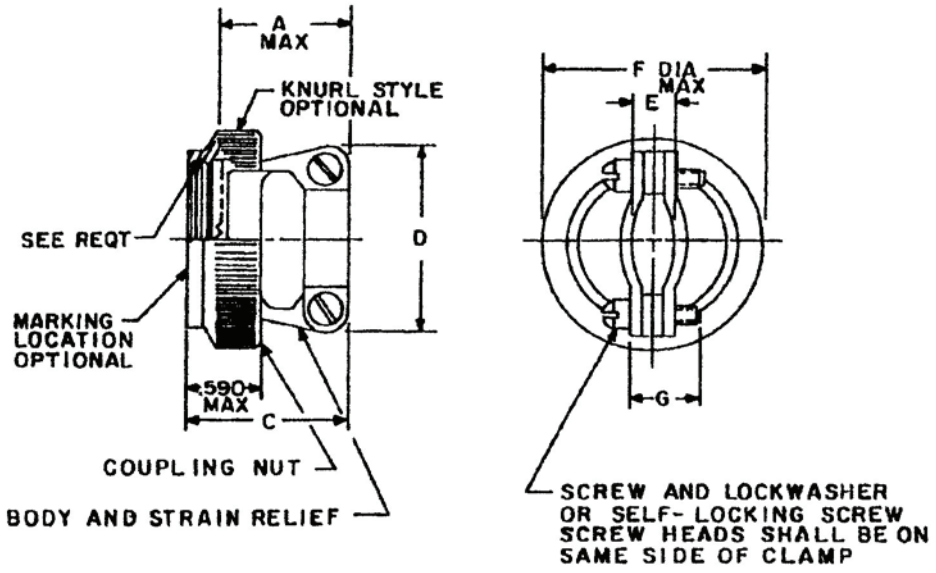
NONSIGNIFICANT (Used in previous part number)

CONFIGURATION "S" (For detented self locking)

CONFIGURATION "N" (For non-detented self locking)
"-" (For non-self locking)

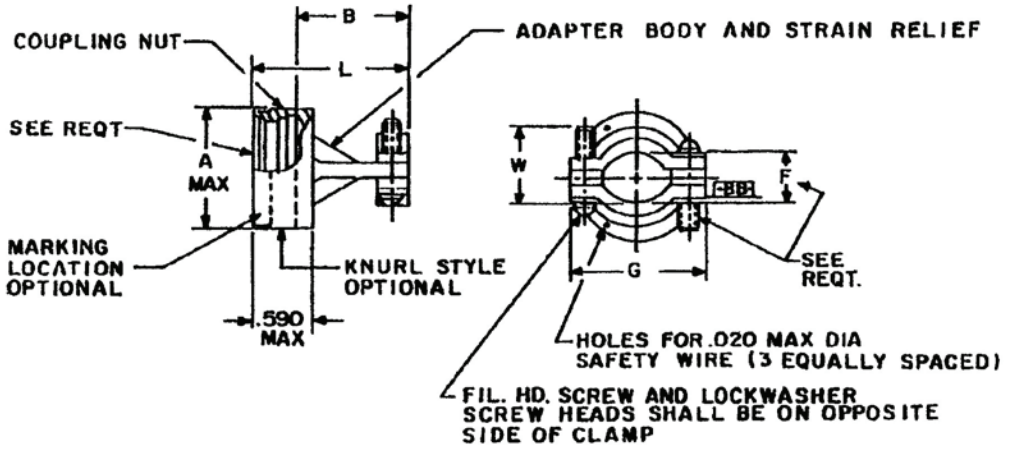
DASH NUMBER (See Figures)

FINISH (See table)



DIMENSIONS AND CONFIGURATION (SELF-LOCKING ONLY)

Figure 16. Part Number Breakdown MS85049/49-2 Straight Strain Relief (Sheet 1 of 3)



DIMENSIONS AND CONFIGURATIONS (NON-SELF-LOCKING ONLY)

Dash number	Connector shell size		A maximum diameter of coupling ring	B maximum (See note 7)	Wire bundle accommodation range (See note 6)		G maximum	L maximum	W +.000 -.062 screw length	Screw size
	Series II	Series I			Min	Max				
8	8	9	.75 (19.1)	.91 (23.1)	.093 (2.49)	.234 (5.49)	.85 (21.6)	1.10 (27.9)	.500 (12.70)	6-32
10	10	11	.85 (21.5)	.91 (23.1)	.153 (3.89)	.234 (6.49)	.90 (22.9)	1.10 (27.9)	.500 (12.70)	6-32
12	12	13	1.00 (25.4)	1.01 (25.9)	.190 (4.83)	.328 (8.33)	1.10 (27.9)	1.20 (30.5)	.625 (15.88)	6-32
14	14	15	1.10 (27.9)	1.06 (26.7)	.260 (6.60)	.457 (11.61)	1.15 (29.2)	1.25 (31.8)	.750 (19.05)	6-32
16	16	17	1.25 (31.8)	1.16 (29.5)	.283 (7.19)	.614 (15.60)	1.30 (33.0)	1.356 (34.3)	.750 (19.05)	6-32
18	18	19	1.40 (35.6)	1.41 (35.8)	.325 (8.26)	.634 (16.10)	1.50 (38.1)	1.60 (40.6)	.750 (19.05)	8-32
20	20	21	1.50 (38.1)	1.51 (38.4)	.343 (8.71)	.698 (17.73)	1.60 (40.6)	1.701 (43.2)	.875 (22.23)	8-32
22	22	23	1.65 (41.9)	1.66 (42.2)	.381 (9.68)	.823 (20.90)	1.70 (43.2)	1.85 (47.0)	1.000 (25.40)	8-32
24	24	25	1.75 (44.5)	1.76 (44.7)	.418 (10.62)	.853 (21.67)	1.80 (45.7)	1.951 (49.5)	1.125 (28.58)	8-32

Figure 16. Part Number Breakdown MS85049/49-2 Straight Strain Relief (Sheet 2 of 3)

Dash number	Connector shell size		A max	C max	D max	E Wire bundle accommodation range (See note 6)		F max dia	G +.000 -.062 screw length	Screw size
	Series II	Series I				Min	Max			
8	8	9	.91 (23.1)	1.15 (29.2)	.85 (21.6)	.098 (2.49)	.234 (5.94)	.859 (21.82)	.500 (12.70)	6-32
10	10	11	.91 (23.1)	1.15 (29.2)	.90 (22.9)	.153 (3.89)	.234 (5.94)	.984 (24.99)	.500 (12.70)	6-32
12	12	13	1.01 (25.7)	1.25 (31.8)	1.10 (22.9)	.190 (4.83)	.328 (8.33)	1.156 (29.36)	.625 (15.88)	6-32
14	14	15	1.06 (26.9)	1.30 (33.0)	1.15 (29.2)	.260 (6.60)	.457 (11.61)	1.281 (32.54)	.750 (19.05)	6-32
16	16	17	1.16 (29.5)	1.40 (35.6)	1.30 (33.0)	.283 (7.19)	.614 (15.60)	1.406 (35.71)	.750 (19.05)	6-32
18	18	19	1.41 (35.9)	1.65 (42.0)	1.50 (38.1)	.325 (8.26)	.634 (16.10)	1.516 (38.51)	.750 (19.05)	8-32
20	20	21	1.51 (38.4)	1.75 (44.5)	1.60 (40.6)	.343 (8.71)	.698 (17.73)	1.641 (41.68)	.875 (22.23)	8-32
22	22	23	1.66 (42.2)	1.90 (48.3)	1.70 (43.2)	.381 (9.68)	.823 (20.90)	1.766 (44.86)	1.000 (25.40)	8-32
24	24	25	1.76 (44.7)	2.00 (50.8)	1.80 (45.7)	.418 (10.62)	.853 (21.66)	1.891 (48.03)	1.125 (28.58)	8-32

NOTES:
1. Dimensions are in inches.
2. Dimensions apply after plating.
3. Metric equivalents are to nearest .01 mm for information only.
4. Millimeters are in parentheses.
5. Metric equivalent are based on 25.4 mm = 1 inch.
6. Wire bundle accommodation range dimension is defined as the envelope area of the wire bundle. This dimension is not meant to define the clamp hardware limits.

DIMENSIONS AND CONFIGURATIONS (SELF-LOCKING ONLY)

MATERIAL AND FINISH

Figure	Material	Finish
1 & 2	Aluminum alloy in accordance with SAE AS85049	A 1/ N 2/ W
1 & 2	Corrosion resistant steel, 300 series, in accordance with SAE AS85049	S

1/ Not for Navy use. Air Force use is for space applications only. W is the preferred finish.
2/ W is not for use in space application.

Figure 16. Part Number Breakdown MS85049/49-2 Straight Strain Relief (Sheet 3 of 3)

27. Straight Strain Relief M85049/45. These are straight nonmetallic strain reliefs. The strain relief, along with dimensions and part number breakdown, is illustrated (Figure 17).

28. Straight Two Piece Strain Relief M85049/64. This is a straight two piece strain relief. The strain relief, along with dimensions and part number breakdown, is illustrated (Figure 18).

29. Straight Quick-Tie (Cancelled) M85049/56. This is a Straight Quick-Tie strain relief . The strain relief, along with dimensions and part number breakdown, is illustrated (Figure 19).

30. 45° Quick-Tie Strain Relief (Cancelled) M85049/57. This is a 45° Quick-Tie strain relief. The strain relief, along with dimensions and part number breakdown, is illustrated (Figure 20).

31. 90° Strain Relief (Cancelled) M55049/47. This is a 90° strain relief The strain relief, along with dimensions and part number breakdown, is illustrated (Figure 21).

32. 90° Strain Relief M85049/46. This is a nonmetallic 90° strain relief. The strain relief, along with dimensions Find part number breakdown, is illustrated (Figure 22).

33. 90° Two Piece Strain Relief M85049/65. This is a 90° two piece strain relief. The Strain relief, along with dimensions and part number breakdown is illustrated (Figure 23).

34. 90° Quick-Tie Strain Relief M85049/63. This is a 90° Quick-Tie strain relief. The strain relief, along with dimensions and part number breakdown, is illustrated (Figure 24).

35. CABLE CLAMP-TYPE STRAIN RELIEF REMOVAL. To remove this type of strain relief use the following Procedure (Figure 25):

a. Loosen saddle clamp screws.

b. Unwrap any reinforcing silicone tape.

c. Remove strain relief using tools and tool procedure for backshell removal (paragraph 21).

d. Perform connector repair per NAVAIR 01-1A-505-1.

36. CABLE CLAMP-TYPE STRAIN RELIEF INSTALLATION. Upon the completion of connector repair install the strain relief using the following procedure (Figure 25):

a. Wrap cable with reinforcing silicone tape to build cable diameter where necessary.

b. Install strain relief using tools and tool procedure for backshell installation (paragraph 22).

c. Restore proper dress of wire at connector. Wire should not elongate grommet holes, pull tightly, or be kinked (Figure 26).

d. Tighten screws in saddle clamp to provide firm gripping action preventing wire movement without damage or crushing.

37. QUICK-TIE STRAIN RELIEFS. Quick-Tie strain reliefs are installed with lacing tape securing the wires instead of saddle clamps. The use of this type eliminates frequent tape wrapping to alter cable diameters for secure clamping (Figure 27).

38. QUICK-TIE STRAIN RELIEF REMOVAL. When connector repair is necessary remove the Quick-Tie strain relief using the following procedure:

a. Cut lacing tape securing cable or wires to strain relief.

b. Remove strain relief using tools and procedures for backshell removal (paragraph 21).

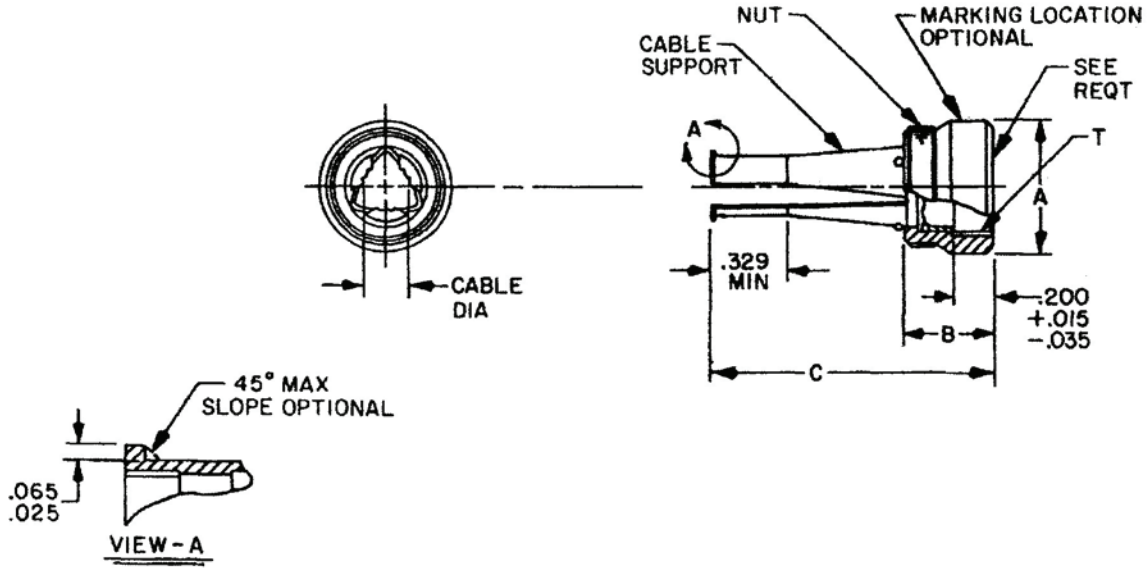
c. Perform connector repair.

PART NUMBER DESIGNATION



MATERIAL:

1. NUT ALUMINUM ALLOY CABLE SUPPORT NONMETALLIC
2. PARTS WILL BE IDENTIFIED WITH THE SERIES II NUMBERS FOR SERIES I APPLICATIONS. USE THE EQUIVALENT SERIES II PART (E.G. FOR SERIES II SIZE 9 APPLICATION, USE SERIES II SIZE 8 PART)



FINISH CODES:

W	CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS)
A	BLACK ANODIZE
N	ELECTROLESS NICKEL (NOT FOR NAVY USE)

Figure 17. Part Number Breakdown M85049/45 Straight Strain Relief (Sheet 1 of 2)

Dash number	SHELL SIZE		A MAX	B MAX	C MAX	CABLE DIAMETER	
	Series II	Series I				MIN	MAX
8	8	9	.578	.422	1.344	.094	.203
10	10	11	.703	.422	1.344	.141	.250
12	12	13	.828	.422	1.344	.172	.323
14	14	15	.953	.422	1.344	.203	.422
16	16	17	1.078	.422	1.344	.234	.500
18	18	19	1.203	.422	1.344	.265	.562
20	20	21	1.328	.422	1.422	.297	.625
22	22	23	1.453	.422	1.422	.328	.703
24	24	25	1.578	.344	1.422	.359	.765

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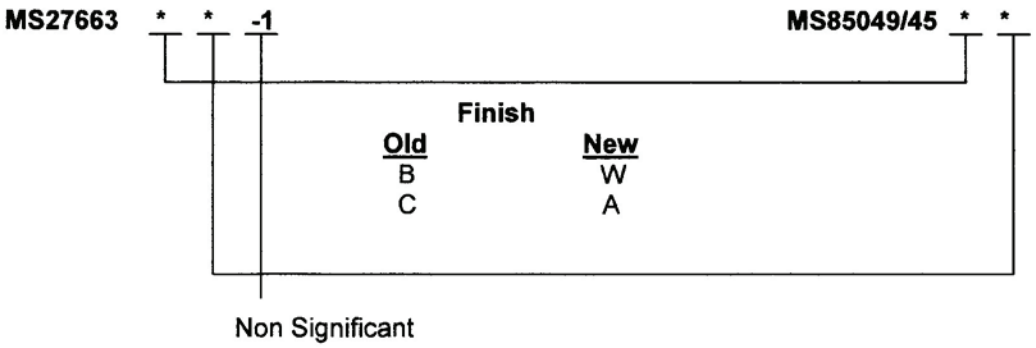
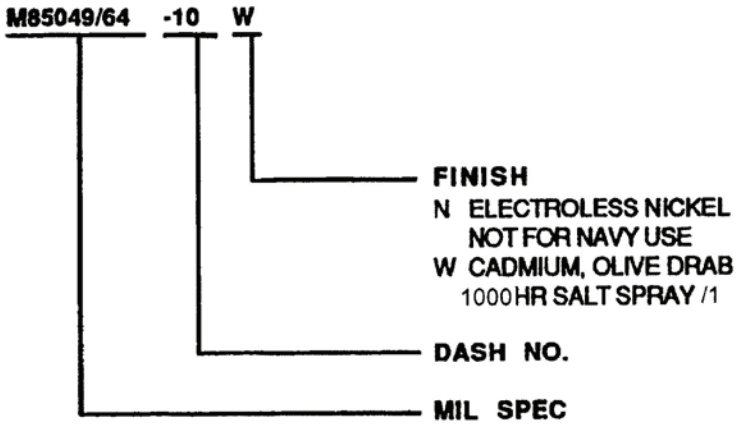
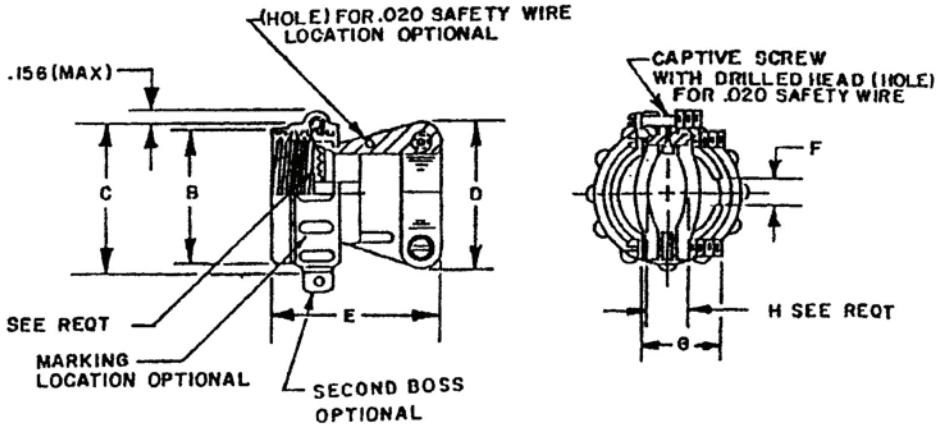


Figure 17. Part Number Breakdown M85049/45 Straight Strain Relief (Sheet 2 of 2)

PART NUMBER DESIGNATION



NOTE: 1 NOT FOR USE IN SPACE APPLICATIONS



DIMENSIONS AND CONFIGURATION.

MATERIAL AND FINISH

MATERIAL	FINISH
Aluminum alloy in accordance with SAE AS85049	1/ N 2/ W
Corrosion resistant steel. 300 series, in accordance with SAE AS85049	S

1/ Not for Navy use. Air Force use is for space applications only.
2/ W is not for use in space application.

Figure 18. Part Number Breakdown M85049/64 Straight Two Piece Strain Relief (Sheet 1 of 2)

Accessory shell size	Fits connector shell size		B ±.000 -.062 dia	C max dia	D max dia	E max dia	F min slot	G ±.032 screw length	Screw size	H wire bundle accommodation	
	Series II	Series I								Min	Max
8	8	9	.562 (14.3)	.75 (19.1)	.85 (21.6)	1.10 (27.9)	.125 (3.18)	.625 (15.9)	6-32	.098 (2.49)	.234 (5.94)
10	10	11	.688 (17.5)	.85 (21.6)	.90 (22.9)	1.10 (27.9)	.125 (3.18)	.625 (15.9)	6-32	.153 (3.87)	.234 (5.94)
12	12	13	.812 (20.6)	1.00 (25.4)	1.10 (27.9)	1.20 (30.4)	.188 (4.78)	.625 (15.9)	6-32	.190 (4.83)	.328 (8.33)
14	14	15	.938 (23.8)	1.10 (27.9)	1.15 (29.2)	1.25 (31.8)	.188 (4.78)	.750 (19.1)	6-32	.260 (6.60)	.457 (11.61)
16	16	17	1.062 (27.0)	1.25 (31.8)	1.30 (33.0)	1.35 (34.2)	.188 (4.78)	.750 (19.1)	6-32	.283 (7.19)	.634 (15.60)
18	18	19	1.188 (30.2)	1.40 (35.6)	1.50 (38.1)	1.60 (40.6)	.250 (6.35)	.750 (19.1)	8-32	.325 (8.26)	.614 (16.10)
20	20	21	1.312 (33.3)	1.50 (38.1)	1.60 (40.6)	1.70 (43.1)	.250 (6.35)	.875 (22.2)	8-32	.343 (8.71)	.698 (17.73)
22	22	23	1.438 (36.5)	1.65 (41.9)	1.70 (43.2)	1.85 (47.0)	.312 (7.92)	1.000 (25.4)	8-32	.381 (9.68)	.823 (20.90)
24	24	25	1.562 (39.7)	1.75 (44.4)	1.80 (45.7)	1.95 (49.5)	.312 (7.92)	1.125 (28.6)	8-32	.418 (10.62)	.853 (21.66)

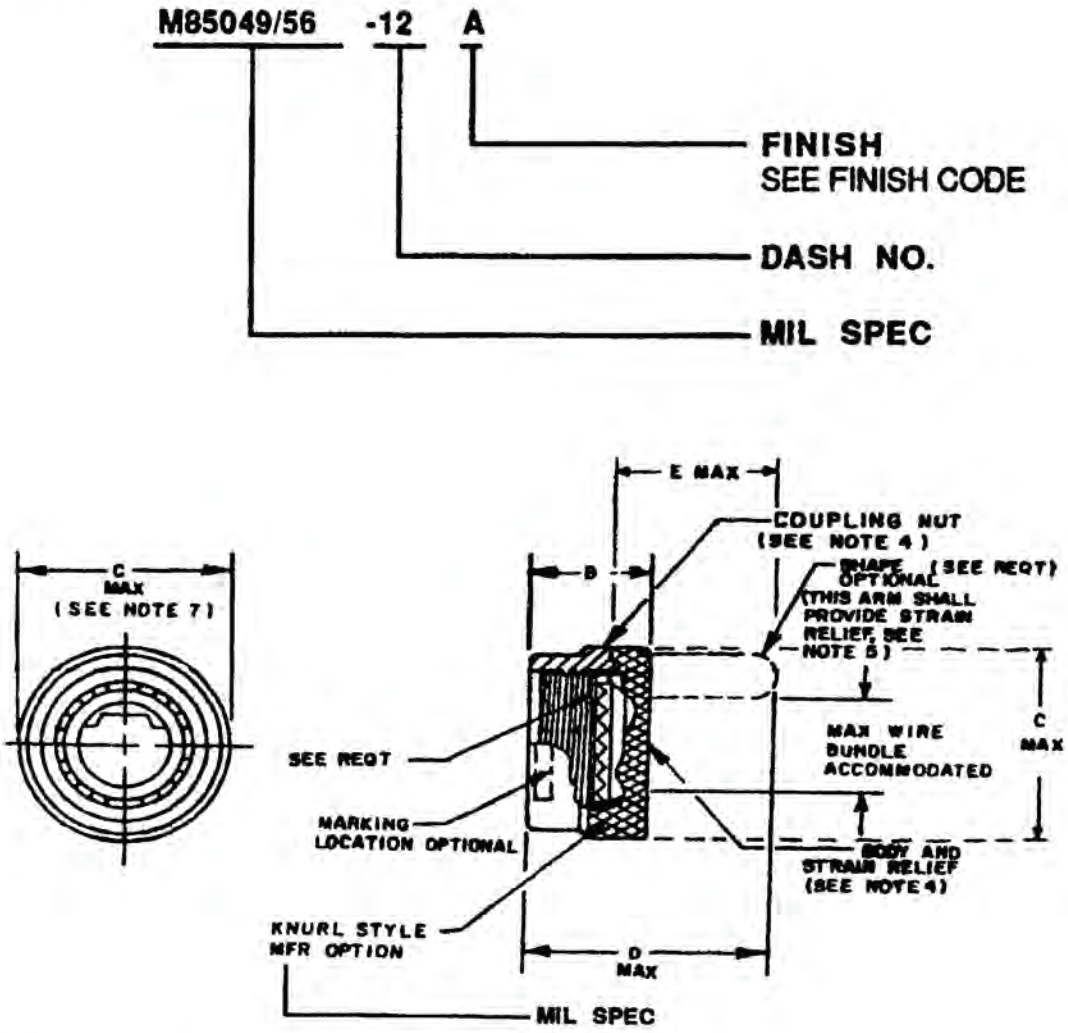
NOTES:

1. Dimensions are in inches.
2. Dimensions apply after plating.
3. Metric equivalents are given for information only
4. Thus accessory will not accommodate connectors using 8, 4, and 0 contacts.

Figure with dimension Hmax is applicable when the end of the screw is flush with -BB- or a maximum of two screw threads protrude.

Figure 18. Part Number Breakdown M85049/64 Straight Two Piece Strain Relief (Sheet 2 of 2)

PART NUMBER DESIGNATION



MATERIAL:
Coupling nut and follower; Aluminum alloy in accordance with AS85049.
Tie mount: Polyamide (optional).
Fastener: Stainless steel (optional).
Finish: In accordance with AS85049, A, N or W. (See Finish Code Table)

FINISH CODES:

W	CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS)
A	BLACK ANODIZE
N	ELECTROLESS NICKEL (NOT FOR NAVY USE)

Figure 19. Part Number Breakdown M85049/56 Straight Quick-Tie Strain Relief (Sheet 1 of 2)

Dash Number (Accessory Shell Size)	Fits Connector Shell Size		B Maximum	C Maximum	D Maximum	Maximum Wire Bundle Accommo-dated	E Maximum
	Series II	Series I					
08	8	9	.54	.86	1.09	.264	.90
10	10	11	.54	.98	1.09	.392	.90
12	12	13	.54	1.16	1.15	.506	.96
14	14	15	.54	1.28	1.33	.631	1.14
16	16	17	.54	1.41	1.33	.756	1.14
18	18	19	.54	1.52	1.39	.844	1.20
20	20	21	.54	1.64	1.52	.970	1.33
22	22	23	.54	1.77	1.54	1.094	1.45
24	24	25	.54	1.89	1.78	1.219	1.59

NOTES:

1. Dimensions are In Inches.
2. Tolerances shall be: xx = *.03 and .xxx = *.015 angular tolerances x= *2
3. Metric equivalents are given for general information only.
4. Complete strain relief unit consists of coupling nut and body with strain relief arm. The coupling nut shall be captivated to the body and free to rotate.
5. Strain relief unit is used with MS3367-1-X plastic strap, MH-T-713 lacing twine or MIL-T-43435 lacing tape or equivalent, not supplied with the backshell.
6. This accessory will not accommodate connectors using 8, 4, and 0 contacts.
7. C Max Is the maximum envelope dimensions of the strain relief.

SUPERSESSION DATA:

MS27668 * * R **M85049/56 - * ***

Old	New
B	W
C	A
F	N

Figure 19. Part Number Breakdown M85049/56 Straight Quick-Tie Strain Relief (Sheet 2 of 2)

PART NUMBER DESIGNATION

M85049/ 57 S 10 W

MIL SPEC

SPECIFICATION SHEET

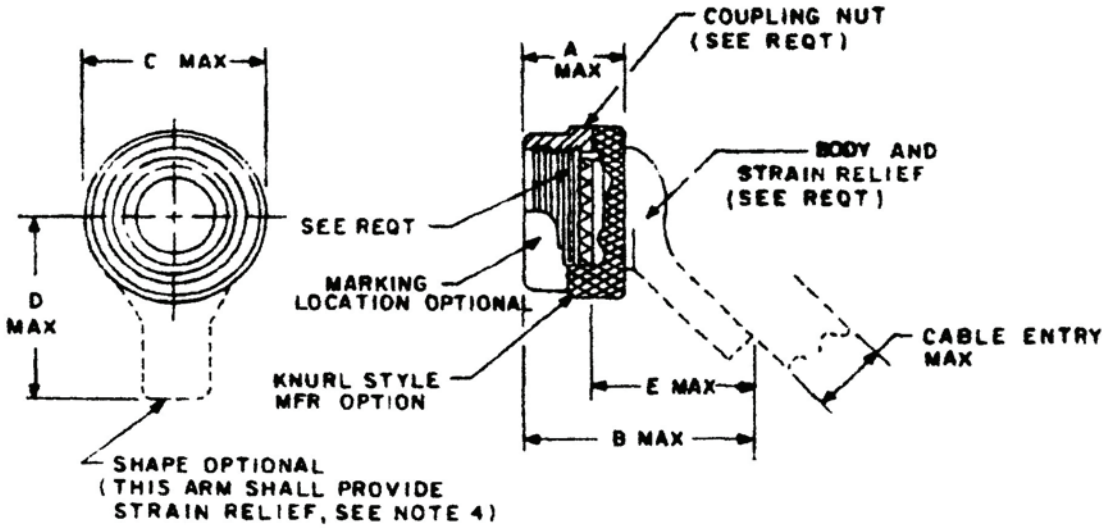
CONFIGURATION "S" (For self locking)

CONFIGURATION "G" (For self locking with grounding lug use 0 dash for non-self locking)

DASH NUMBER (See Figures)

FINISH (See table)

M85049/57 Dimensions and Configuration for Self-Locking and Non Self-Locking (See M85049/57A next, for option with a grounding lug)



MATERIAL:
Coupling nut and follower; Aluminum alloy in accordance with AS85049. W is the preferred finish.
Tie mount: Polyamide (optional).
Fastener: Stainless steel (optional).
Finish: In accordance with AS85049, A, N or W. (See Finish Code Table)

FINISH CODES:

W	CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS),
A	BLACK ANODIZE
N	ELECTROLESS NICKEL (NOT FOR NAVY USE)

Figure 20. Part Number Breakdown M85049/57 45° Quick-Tie Strain Relief (Sheet 1 of 3)

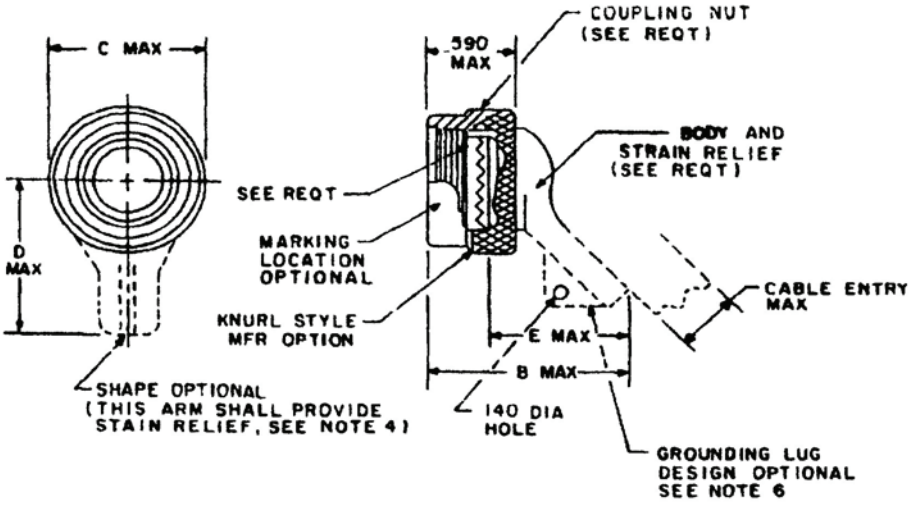
Dash number	Connector shell size		A max		B max	C max		D max	E max	Cable entry max
	Series II	Series I	Non-self-locking	Self-locking		Non-self-locking	Self-locking			
8	8	9	.540 (13.7)	.590 (14.99)	1.25 (31.8)	.75 (19.1)	.86 (21.8)	.88 (22.3)	1.03 (26.2)	.264 (6.71)
10	10	11	.540 (13.7)	.590 (14.99)	1.25 (31.8)	.85 (21.6)	.98 (24.9)	.88 (22.3)	1.03 (26.2)	.392 (9.96)
12	12	13	.540 (13.7)	.590 (14.99)	1.25 (31.8)	1.00 (25.4)	1.16 (29.5)	.94 (23.9)	1.03 (26.2)	.506 (12.9)
14	14	15	.540 (13.7)	.590 (14.99)	1.31 (33.3)	1.10 (27.9)	1.28 (32.5)	1.25 (31.8)	1.09 (27.7)	.631 (16.0)
16	16	17	.540 (13.7)	.590 (14.99)	1.33 (33.8)	1.25 (31.8)	1.41 (35.8)	1.31 (33.3)	1.11 (28.2)	.756 (19.2)
18	18	19	.540 (13.7)	.590 (14.99)	1.43 (36.3)	1.40 (35.6)	1.52 (38.6)	1.38 (35.1)	1.21 (30.7)	.845 (21.5)
20	20	21	.540 (13.7)	.590 (14.99)	1.48 (37.6)	1.50 (38.1)	1.64 (41.7)	1.50 (38.1)	1.26 (32.0)	.970 (24.6)
22	22	23	.540 (13.7)	.590 (14.99)	1.52 (38.6)	1.65 (41.9)	1.77 (45.0)	1.69 (42.9)	1.30 (33.0)	1.095 (27.81)
24	24	25	.540 (13.7)	.590 (14.99)	1.56 (39.6)	1.75 (44.5)	1.89 (48.0)	1.75 (44.5)	1.34 (34.0)	1.220 (30.99)

NOTES:

1. Dimensions are in Inches.
2. Tolerances shall be: xx = *.03 and .xxx = *.015 angular tolerances x= *2
3. Metric equivalents are given for general information only.
4. Strain relief unit is used with MS3367-1-X plastic strap, MH-T-713 lacing twine or MIL-T-43435 lacing tape or equivalent, not supplied with the backshell.
5. This accessory will not accommodate connectors using 8, 4, and 0 contacts.

Figure 20. Part Number Breakdown M85049/57 45° Quick-Tie Strain Relief (Sheet 2 of 3)

M85049/57A Dimensions and Configuration for Self-Locking and Non Self-Locking with a Grounding Lug (See M85049/57 above, for option without a grounding lug)



Dash Number (Accessory Shell Size)	Fits Connector Shell Size		B Max	C Max	D Max	E Max	Cable Entry	Dash Nr.	Connector Shell Size		B Max	C Max	D Max	E Max	Cable Entry
	Series II	Series I							Series II	Series I					
08	8	9	1.40	.859	.88	1.21	.264	16	16	17	1.58	1.406	1.31	1.39	.756
10	10	11	1.40	.984	.88	1.21	.392	18	18	19	1.58	1.516	1.38	1.39	.845
12	12	13	1.58	.94	.94	1.39	.506	20	20	21	1.58	1.641	1.50	1.39	.970
14	14	15	1.58	1.25	1.25	1.39	.631	22	22	23	1.58	1.756	1.69	1.39	1.095
-	-	-	-	-	-	-	-	24	24	25	1.58	1.891	1.75	1.39	1.220

SUPERSESSION DATA:

MS27669 * * **M85049/57 - * ***

Old	New
B	W
C	A
F	N

Figure 20. Part Number Breakdown M85049/57 45° Quick-Tie Strain Relief (Sheet 3 of 3)

PART NUMBER DESIGNATION

M85049/ 47 S W 10

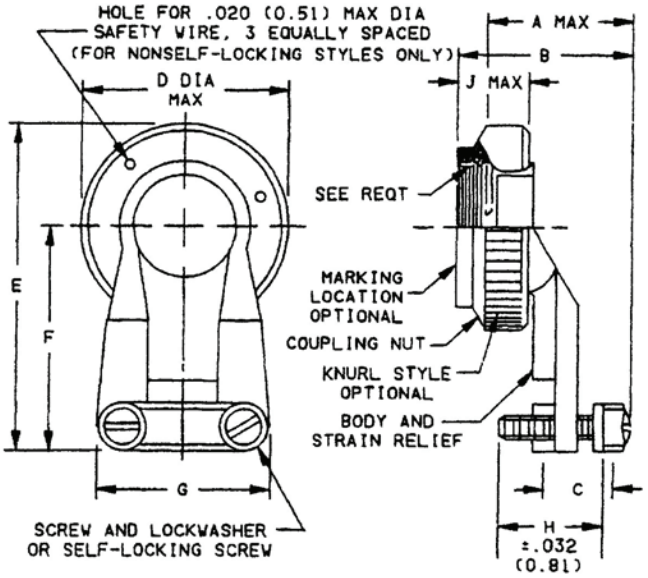
MIL SPEC

SPECIFICATION SHEET

CONFIGURATION "S" (For self locking)
(Leave blank for non-self locking)

DASH NUMBER (See Figures)

FINISH (See table)



MATERIAL:
Coupling nut: Aluminum alloy in accordance with MIL-C -85049. (See Finish Note: W, N, S)
Corrosion resistant steel, 300 series in accordance with QQ-S-763 (See Finish Note: S)
Finish: In accordance with MIL-C-85049, S, N or W.
Clamp, screws and lock washers: 300 series corrosion-resistant steel, passivate.

MATERIAL AND FINISH

MATERIAL	FINISH
Aluminum alloy in accordance with SAE AS85049	N 1/ W
Corrosion resistant steel. 300 series, in accordance with SAE AS85049	S

1/ Not for Navy use. Air Force use is for space applications only.

Figure 21. Part Number Breakdown M85049/47 90° Strain Relief (Sheet 1 of 3)

FINISH CODES:

W	CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS)
N	ELECTROLESS NICKEL (NOT FOR NAVY USE)
S	CORROSION RESISTANT STEEL

NOTES:

1. Dimensions are in Inches.
2. Millimeters are in parenthesis
3. Metric equivalents are given for general information only
4. Dimensions apply after plating
5. Unless otherwise specified, tolerances shall be +/- .005 (0.13 mm)
6. This accessory will not accommodate connectors using 8, 4, and 0 contacts.

SUPERSESSION DATA:

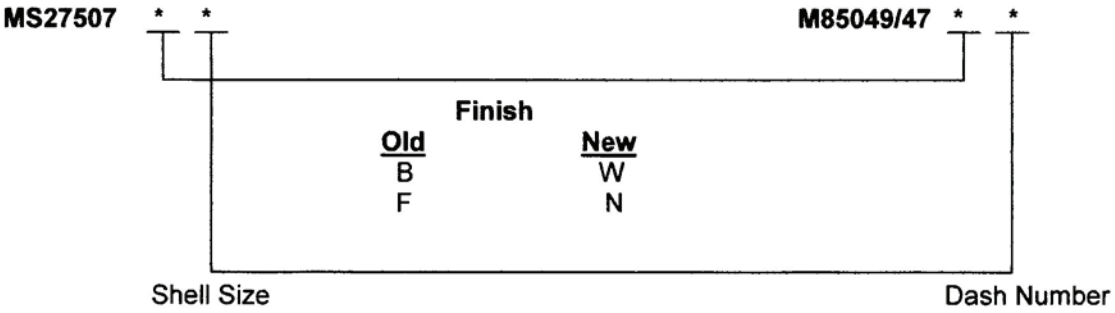
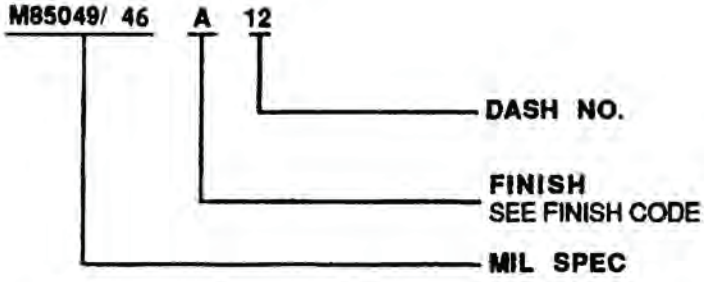


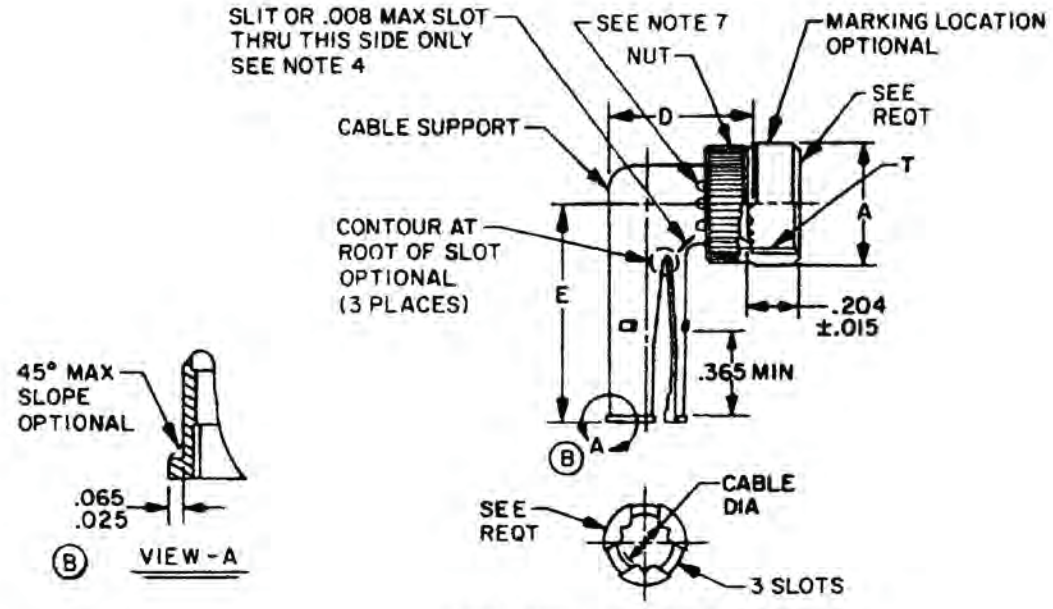
Figure 21. Part Number Breakdown M85049/47 90° Strain Relief (Sheet 2 of 3)

Dash no	Connector shell size		A max	B max open	C		D max		E max	F max	G max	H Screw length	Screw size	J max	
	Series II	Series I			Max	Min	Self-locking	Non-self-locking						Self-locking	Non-self-locking
8	8	9	1.16 (29.5)	1.38 (35.1)	.234 (5.94)	.098 (2.49)	.86 (21.8)	.75 (19.1)	1.38 (35.1)	1.00 (25.4)	.85 (21.6)	.500 (12.70)	6-32	.590 (14.99)	.540 (13.72)
10	10	11	1.16 (29.5)	1.38 (35.1)	.234 (5.94)	.153 (3.89)	.98 (24.9)	.85 (21.6)	1.53 (38.9)	1.10 (27.9)	.90 (22.9)	.500 (12.70)	6-32	.590 (14.99)	.540 (13.72)
12	12	13	1.24 (31.5)	1.46 (37.1)	.328 (8.33)	.190 (4.83)	1.16 (29.5)	1.00 (25.4)	1.60 (40.6)	1.10 (27.9)	1.10 (27.9)	.625 (15.88)	6-32	.590 (14.99)	.540 (13.72)
14	14	15	1.41 (35.8)	1.63 (41.4)	.457 (11.61)	.260 (6.60)	1.28 (32.5)	1.10 (27.9)	1.80 (45.7)	1.25 (31.8)	1.15 (29.2)	.750 (19.05)	6-32	.590 (14.99)	.540 (13.72)
16	16	17	1.58 (40.1)	1.80 (45.7)	.634 (16.10)	.283 (7.19)	1.41 (35.8)	1.25 (31.8)	1.93 (49.0)	1.30 (33.0)	1.30 (33.0)	.750 (19.05)	6-32	.590 (14.99)	.540 (13.72)
18	18	19	1.60 (40.6)	1.82 (46.2)	.614 (15.60)	.325 (8.26)	1.52 (38.6)	1.40 (35.6)	2.05 (52.1)	1.35 (34.3)	1.50 (38.1)	.750 (19.05)	8-32	.590 (14.99)	.540 (13.72)
20	20	21	1.68 (42.7)	1.90 (48.3)	.698 (17.73)	.343 (8.71)	1.64 (41.7)	1.50 (38.1)	2.36 (59.7)	1.60 (40.6)	1.60 (40.6)	.875 (22.23)	8-32	.590 (14.99)	.540 (13.72)
22	22	23	1.82 (46.2)	2.04 (51.1)	.823 (20.90)	.381 (9.68)	1.77 (45.0)	1.65 (41.9)	2.58 (65.5)	1.75 (44.5)	1.70 (43.2)	1.000 (25.40)	8-32	.590 (14.99)	.540 (13.72)
24	24	25	1.93 (49.0)	2.15 (54.6)	.853 (21.67)	.418 (10.62)	1.89 (48.0)	1.75 (44.5)	2.73 (69.3)	1.85 (47.0)	1.80 (45.7)	1.125 (28.58)	8-32	.590 (14.99)	.540 (13.72)

Figure 21. Part Number Breakdown M85049/47 90° Strain Relief (Sheet 3 of 3)

PART NUMBER DESIGNATION





RIGHT ANGLE ADAPTER

MATERIAL:
Nut: Aluminum alloy in accordance with AS85049.
Cable support: Non-metallic
Finish, nut: In accordance with AS85049, A or W. (See Finish Code Table)

FINISH CODES:

A	BLACK ANODIZE
W	CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS)

Figure 22. Part Number Breakdown M85049/46 90° Strain Relief (Sheet 1 of 2)

Dash number	Shell size		A MAX	D MAX	E MAX	Cable diameter (ref)	
	Series II	Series I				MIN	MAX
8	8	9	.578	,656	1.015	.094	.203
10	10	11	.703	.688	1.062	.141	.250
12	12	13	.828	.750	1.125	.172	.323
14	14	15	.953	.859	1.328	.203	.422
16	16	17	1.078	.937	1.392	.234	.500
18	18	19	1.203	1.000	1.453	.265	.562
20	20	21	1.328	1.062	1.609	.297	.625
22	22	23	1.453	1.141	1.656	.328	.703
24	24	25	1.578	1.203	1.719	.359	.765

NOTES:
1. Dimensions are in inches.
2. Dimensions apply after plating
3. A slit or slot must pass through elbow in area indicated to facilitate assembly or disassembly of support from nut.
4. Unit may be supplied with nut and support unattached for assembly by user
5. Existing parts manufactured to MIL-C-85049/46 may be used until one year after date of this document
6. The cable support must contain a minimum of three drain holes on -8 thru -12 and a minimum of 7 drain holes on -14 thru -24. Each drain hole must have a minimum cross section of .005 sq. in. (.13 sq. mm).

SUPERSESSION DATA:

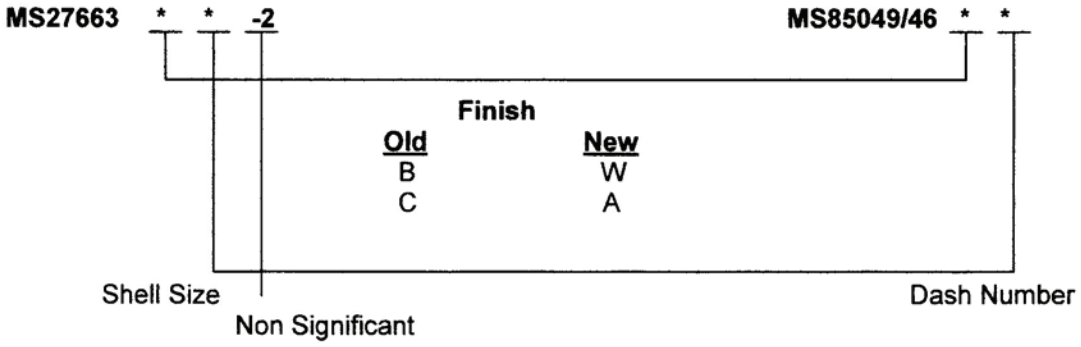
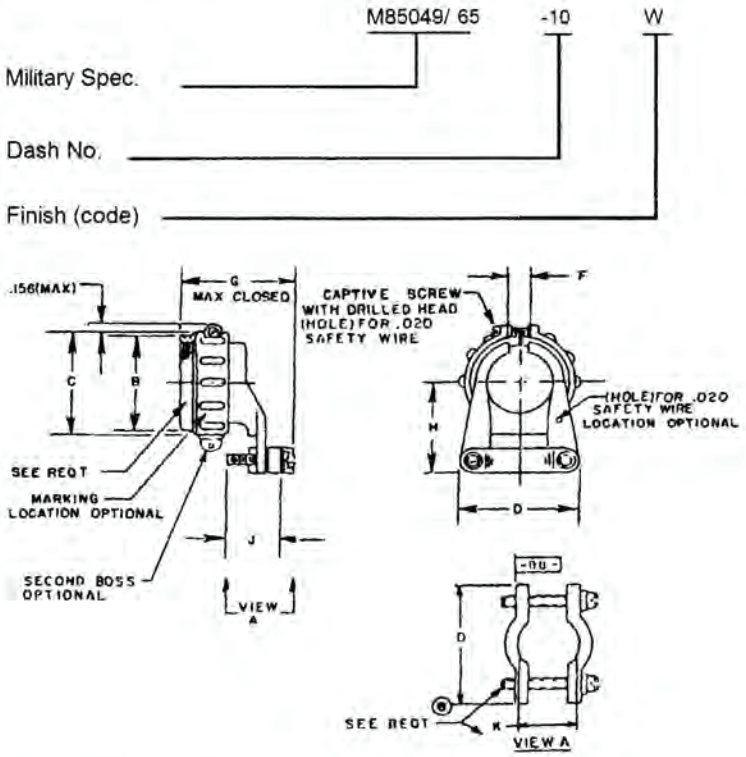


Figure 22. Part Number Breakdown M85049/46 90° Strain Relief (Sheet 2 of 2)

PART NUMBER DESIGNATION



MATERIAL:
Coupling nut, ring, clamp, saddle bars; Aluminum alloy in accordance with AS85049.
Fastener: 300 series corrosion-resistant steel, passivate.
Finish: In accordance with AS85049, N or W. (See Finish Code Table)

FINISH CODES:
N ELECTROLESS NICKEL (NOT FOR NAVY USE)
W CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS)

Dash Number (Accessory Shell Size)	Fits Connector Shell Size		B +000 -.062	C Max Dia	D Max Dim	F Min Slot	G Max Dia	H Max Dia	J +/- .032 Screw Length	Screw Size	K Max Wire Bundle Accommo-dated
	Series II	Series I									
08	8	9	.562	.688	.85	.125	1.20	1	.625	6-32	.264
10	10	11	.54	.98	.90	.125	1.20	1.10	.625	6-32	.392
12	12	13	.54	1.16	1.10	.188	1.40	1.10	.625	6-32	.506
14	14	15	.54	1.28	1.15	.188	1.45	1.25	.750	6-32	.631
16	16	17	.54	1.41	1.30	.188	1.60	1.30	.750	6-32	.756
18	18	19	.54	1.52	1.50	.250	1.70	1.35	.750	8-32	.844
20	20	21	.54	1.64	1.60	.250	1.85	1.60	.875	8-32	.970
22	22	23	.54	1.77	1.70	.312	1.95	1.75	1	8-32	1.094
24	24	25	.54	1.89	1.80	.312	2.10	1.85	1.125	8-32	1.219

Figure 23. Part Number Breakdown M85049/65 90° Two Piece Strain Relief

PART NUMBER DESIGNATION

M85049/ 63 S 10 W

MIL SPEC

SPECIFICATION SHEET

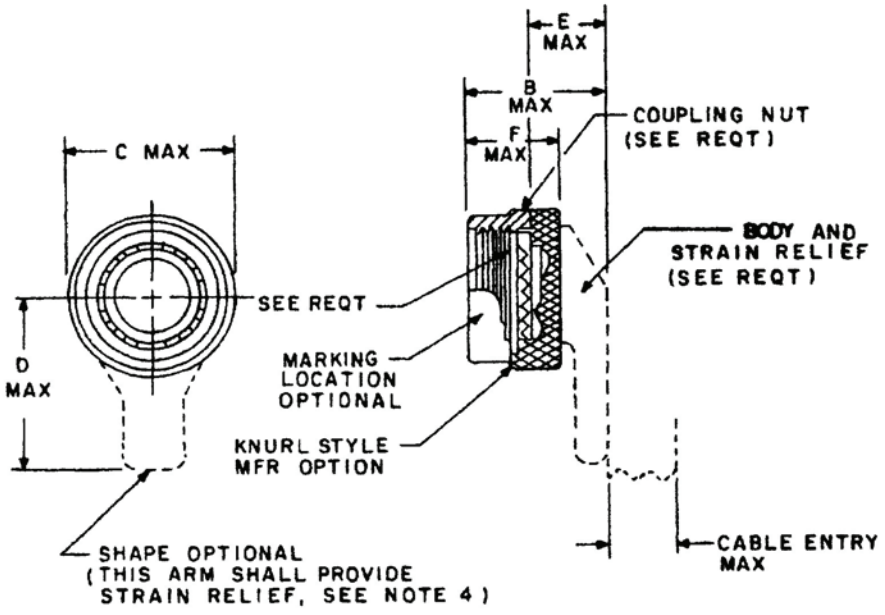
CONFIGURATION "S" (For self locking)

CONFIGURATION "G" (For self locking with grounding lug use a dash for non-self locking)

DASH NUMBER (See Figures)

FINISH (See table)

M85049/63 Dimensions and Configuration for Self-Locking and Non Self-Locking (See next figure, for option with a grounding lug)



MATERIAL:
Coupling nut and follower; Aluminum alloy in accordance with AS85049. W is the preferred finish.
Tie mount: Polyamide (optional).
Finish: In accordance with AS85049, A, N or W. (See Finish Code Table)

FINISH CODES:

W	CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS),
A	BLACK ANODIZE
N	ELECTROLESS NICKEL (NOT FOR NAVY USE)

Figure 24. Part Number Breakdown M85049/63 90° Quick-Tie Strain Relief (Sheet 1 of 4)

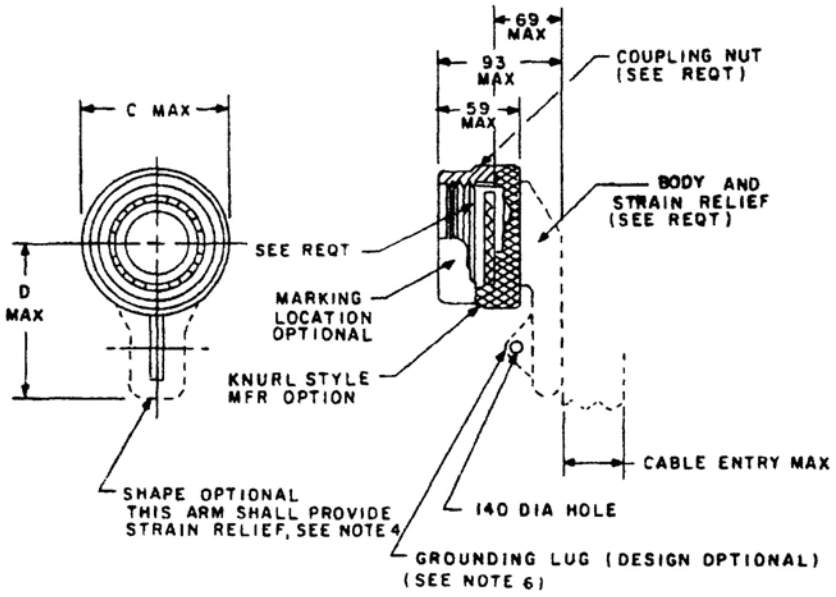
Dash number	Connector shell size		A max		B max	C max		D max	E max	Cable entry max
	Series II	Series I	Non-self-locking	Self-locking		Non-self-locking	Self-locking			
8	8	9	.540 (13.7)	.590 (14.99)	1.25 (31.8)	.75 (19.1)	.86 (21.8)	.88 (22.3)	1.03 (26.2)	.264 (6.71)
10	10	11	.540 (13.7)	.590 (14.99)	1.25 (31.8)	.85 (21.6)	.98 (24.9)	.88 (22.3)	1.03 (26.2)	.392 (9.96)
12	12	13	.540 (13.7)	.590 (14.99)	1.25 (31.8)	1.00 (25.4)	1.16 (29.5)	.94 (23.9)	1.03 (26.2)	.506 (12.9)
14	14	15	.540 (13.7)	.590 (14.99)	1.31 (33.3)	1.10 (27.9)	1.28 (32.5)	1.25 (31.8)	1.09 (27.7)	.631 (16.0)
16	16	17	.540 (13.7)	.590 (14.99)	1.33 (33.8)	1.25 (31.8)	1.41 (35.8)	1.31 (33.3)	1.11 (28.2)	.756 (19.2)
18	18	19	.540 (13.7)	.590 (14.99)	1.43 (36.3)	1.40 (35.6)	1.52 (38.6)	1.38 (35.1)	1.21 (30.7)	.845 (21.5)
20	20	21	.540 (13.7)	.590 (14.99)	1.48 (37.6)	1.50 (38.1)	1.64 (41.7)	1.50 (38.1)	1.26 (32.0)	.970 (24.6)
22	22	23	.540 (13.7)	.590 (14.99)	1.52 (38.6)	1.65 (41.9)	1.77 (45.0)	1.69 (42.9)	1.30 (33.0)	1.095 (27.81)
24	24	25	.540 (13.7)	.590 (14.99)	1.56 (39.6)	1.75 (44.5)	1.89 (48.0)	1.75 (44.5)	1.34 (34.0)	1.220 (30.99)

NOTES:

1. Dimensions are in inches.
2. Tolerances shall be: xx = *.03 and .xxx = *.015 angular tolerances x= *2
3. Metric equivalents are given for general information only.
4. Strain relief unit is used with MS3367-1-X plastic strap, MH-T-713 lacing twine or MIL-T-43435 lacing tape or equivalent, not supplied with the backshell.
5. This accessory will not accommodate connectors using 8, 4, and 0 contacts.
6. Not for Navy use. Not for new design for Air Force.

Figure 24. Part Number Breakdown M85049/63 90° Quick-Tie Strain Relief (Sheet 2 of 4)

M85049/63 Dimensions and Configuration for Self-Locking and Non Self-Locking with a Grounding Lug (See figure above, for option without a grounding lug)



Dash number	Connector shell size		C dia max	D max	Cable entry max
	Series II	Series I			
8	8	9	.859 (21.82)	1.22 (31.0)	.254 (6.71)
10	10	11	.984 (24.99)	1.29 (32.8)	.392 (9.96)
12	12	13	1.156 (29.36)	1.62 (41.1)	.506 (12.85)
14	14	15	1.281 (32.54)	1.66 (42.2)	.631 (16.03)

Dash number	Connector shell size		C dia max	D max	Cable entry max
	Series II	Series I			
16	16	17	1.406 (35.71)	1.72 (43.7)	.756 (19.20)
18	18	19	1.516 (38.51)	1.72 (43.7)	.845 (21.46)
20	20	21	1.641 (41.68)	1.79 (45.5)	.970 (24.64)
22	22	23	1.766 (44.86)	1.85 (47.0)	1.095 (27.81)
24	24	25	1.891 (40.03)	1.91 (48.5)	1.220 (30.99)

NOTES:
1. Dimensions are in inches.
2. Tolerances shall be: xx = *.03 and .xxx = *.015 angular tolerances x= *2
3. Metric equivalents are given for general information only.
4. Strain relief unit is used with MS3367-1-X plastic strap, MH-T-713 lacing twine or MIL-T-43435 lacing tape or equivalent, not supplied with the backshell.
5. This accessory will not accommodate connectors using 8, 4, and 0 contacts.
6. Not for Navy use. Not for new design for Air Force.

Figure 24. Part Number Breakdown M85049/63 90° Quick-Tie Strain Relief (Sheet 3 of 4)

SUPERSESSION DATA:

MS27670 * * **M85049/63** * *

Dash Number

Finish

Finish

Old	New
B	W
C	A
F	N

Figure 24. Part Number Breakdown M85049/63 90° Quick-Tie Strain Relief (Sheet 4 of 4)

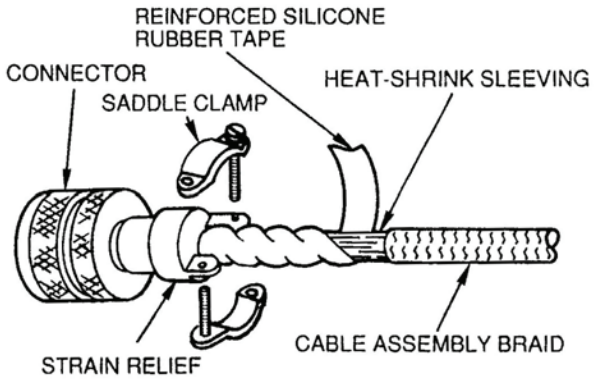


Figure 25. Saddle Clamp Removal and Installation

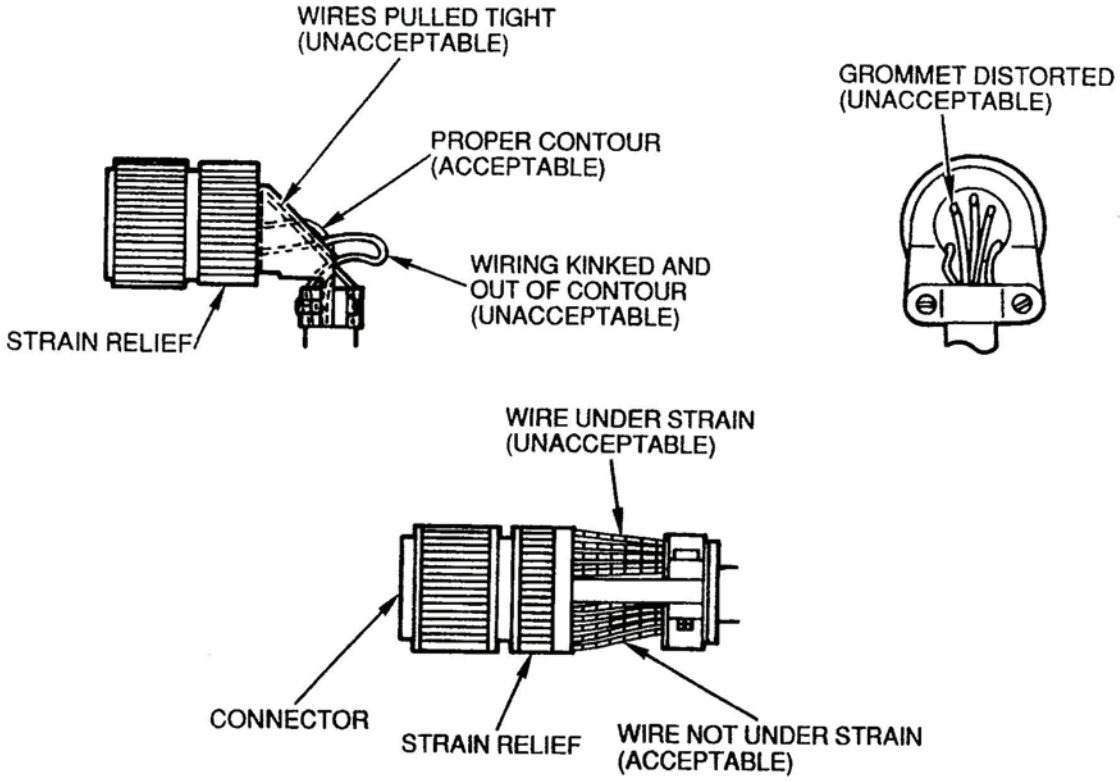


Figure 26. Proper Dress of Wire Into Connector

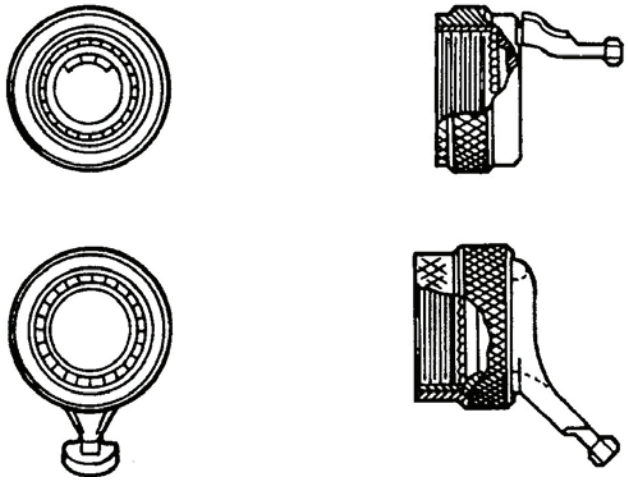


Figure 27. Quick-Tie Strain Reliefs

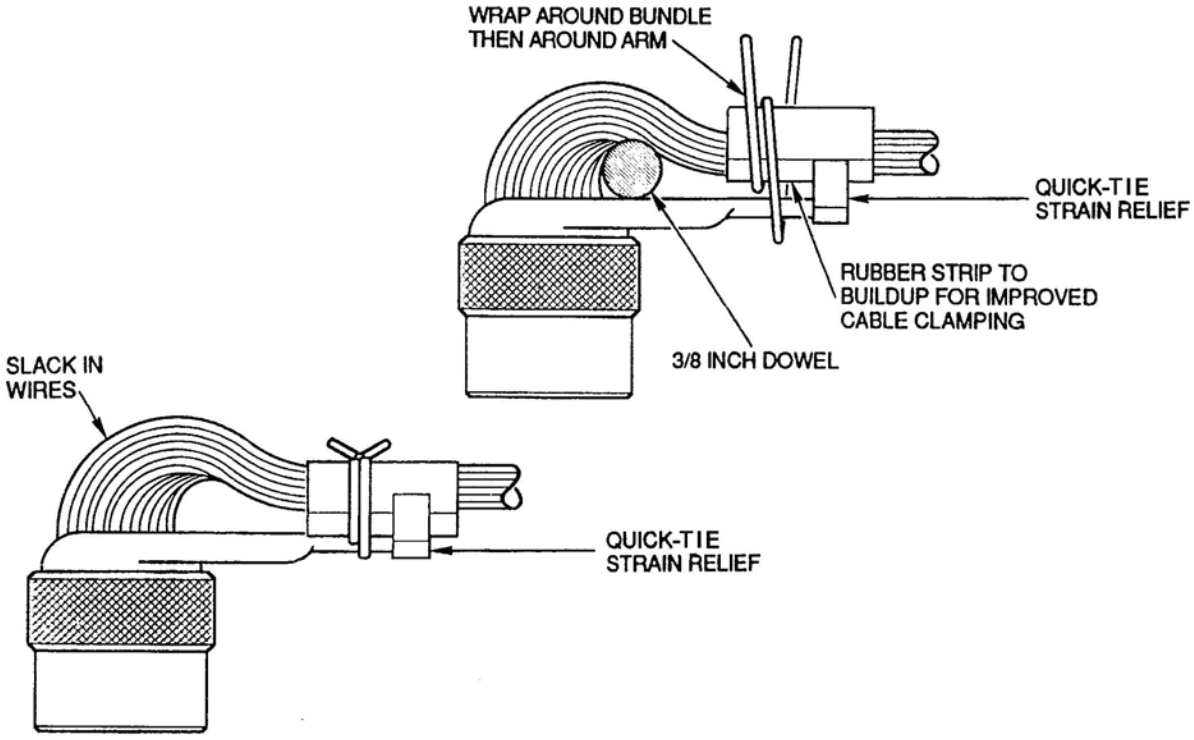


Figure 28. Lacing a Quick-Tie Strain Relief

39. QUICK-TIE STRAIN RELIEF INSTALLATION. Upon the completion of connector repair install the Quick-Tie strain relief as follows (Figure 28):

a. Install Quick-Tie strain relief using tools and procedures for backshell installation (paragraph 22).

b. Using silicone tape, wrap a cushion strip around wire bundle where wire bundle contacts Quick-Tie arm.

c. Use a $\frac{3}{8}$ inch dowel or similar spacer aid between connector and 90° type Quick-Tie arm.

d. Using lacing tape, wrap tape around wires then around Quick-Tie arm. Keep wires slack so as not to distort connector grommet.

e. Tie lacing tape so as not to damage or crush wire or insulation, but tighten enough to prevent wire shifting.

f. Remove spacer.

40. GROMMETS AND GROMMET NUTS. Grommets are pliable seals placed on the cable side of the connector, with a hold pattern matching the insert configuration. The grommet holes are sized to seal to the wire upon insertion to prevent moisture and dirt contamination. The grommet nut is used to secure the grommet when a strain relief, backshell, shrink adapter, or potting ring is not used.

41. GROMMET NUT. There is only one style of grommet nut available for use with Series I and II connectors. The grommet nut, along with applicable dimensions and part number breakdown, is illustrated (Figure 29).

42. GROMMET NUT REMOVAL AND INSTALLATION. When a grommet nut is used there are no other accessories. Removal and installation are accomplished using the tools and tool procedures in paragraphs 21 and 22.

43. POTTING BOOT AND RING. Potting boots composed of plastic or nylon molds or forms are used when a connector is sealed with potting compound. Potting rings are an intermediate assembly which holds the potting boot to the connector.

PART NUMBER DESIGNATION

M85049/ 27 S 10 W

MIL SPEC

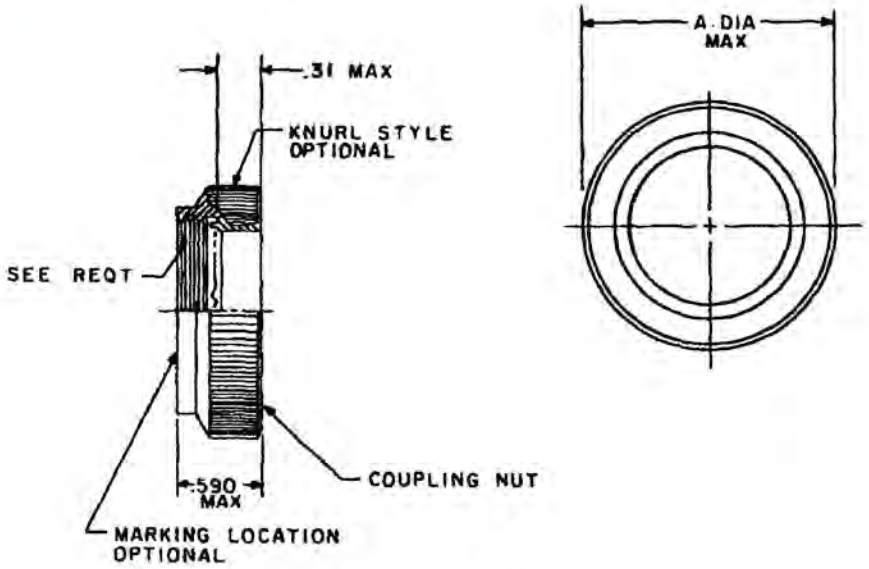
SPECIFICATION SHEET

CONFIGURATION "S" (For self locking)
(use a dash for non-self locking)

DASH NUMBER (See Figures)

FINISH (See table)

M85049/27 Dimensions and Configuration for Self-Locking (See next figure for Non Self-Locking)



MATERIAL:
Grommet nut; Aluminum alloy in accordance with AS85049.
Finish: In accordance with AS85049, N or W. (See Finish Code Table)

FINISH CODES:
W CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS)
N ELECTROLESS NICKEL (NOT FOR NAVY USE)

Figure 29. Part Number Breakdown M38999/1 and M95049/27 Grommet Nut (Sheet 1 of 4)

Dash Number	Shell Size		A Maximum Diameter
	Series II	Series I	Self -locking only
8	8	9	.859 (21.82)
10	10	11	.984 (24.99)
12	12	13	1.156 (29.36)
14	14	15	1.281 (32.54)
16	16	17	1.406 (35.71)
18	18	19	1.516 (38.50)
20	20	21	1.641 (41.68)
22	22	23	1.766 (44.86)
24	24	25	1.891 (48.03)

NOTES:
1. Dimensions are in inches.
2. Dimensions apply after plating
3. Millimeters are in parenthesis. Metric equivalents are given for general information only

Figure 29. Part Number Breakdown M38999/1 and M95049/27 Grommet Nut (Sheet 2 of 4)

M85049/27 Dimensions and Configuration for Non Self-Locking (See previous figure for Self-Locking)

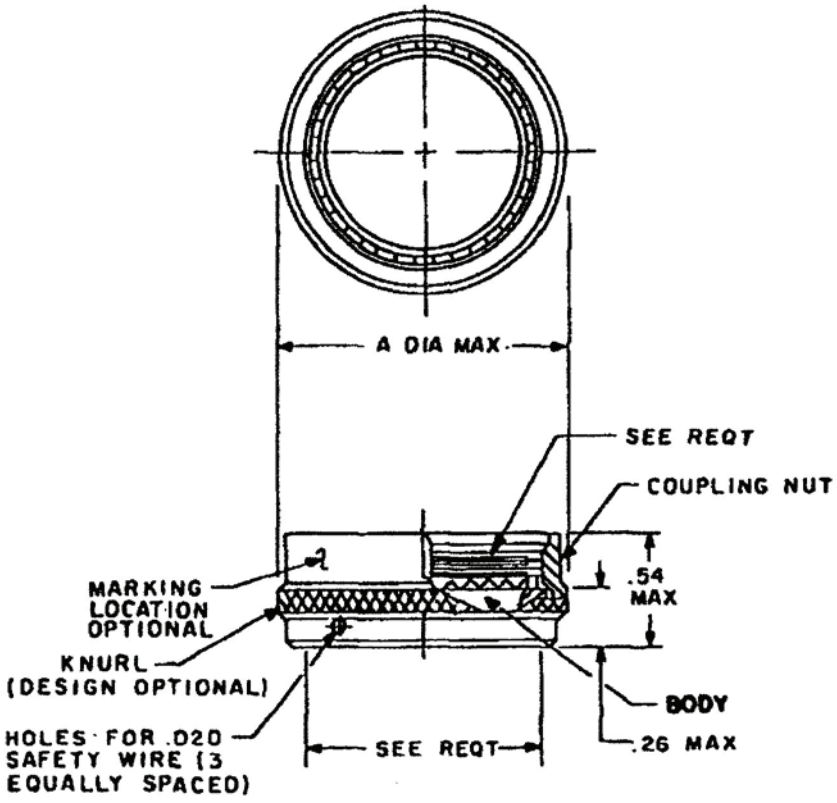
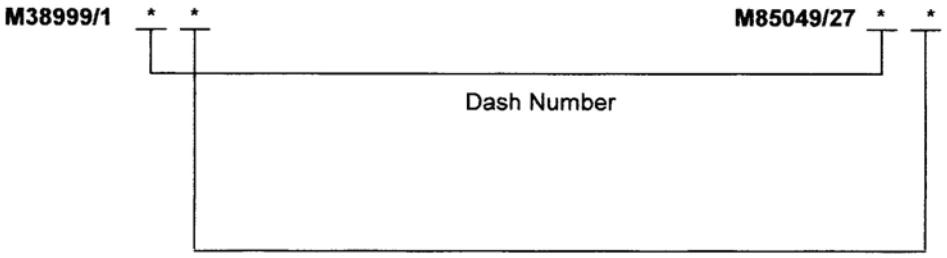


Figure 29. Part Number Breakdown M38999/1 and M95049/27 Grommet Nut (Sheet 3 of 4)

Dash Number	Shell Size		A Maximum Diameter
	Series II	Series I	Non Self-locking only
8	8	9	.75 (19.1)
10	10	11	.85 (21.61
12	12	13	1.00 (25.4)
14	14	15	1.10 (27.9)
16	16	17	1.25 (31.8)
18	18	19	1.40 (35.6)
20	20	21	1.50 (38.1)
22	22	23	1.65 (41.9)
24	24	25	1.75 (44.5)

NOTES:
1. Dimensions are in inches.
2. Dimensions apply after plating
3. Millimeters are in parenthesis. Metric equivalents are given for general information only

SUPERSESSION DATA:



Finish

Old	New
C	W
F	N

Figure 29. Part Number Breakdown M38999/1 and M95049/27 Grommet Nut (Sheet 4 of 4)

Table 4. Potting Boot and Ring Usage

Description	Part No.	Use With	Part No.
Potting Boot	M85049/74	Potting Ring	M85049/61
Potting Boot	M85049/75	Potting Ring	M85049/58

44. POTTING BOOT AND RING AVAILABILITY. Potting boots and rings are matched and are not interchangeable as shown (Table 4).

45. Potting Boot M85049/74. The potting boot, along with dimensions and part number breakdown, is illustrated (Figure 30).

46. Potting Boot M85049/75. The potting boot, along with dimensions and part number breakdown, is illustrated (Figure 31).

47. Potting Ring M85049/61. The potting ring, along with dimensions and part number breakdown, is illustrated (Figure 32).

48. Potting Ring M85049/58. The potting ring, along with dimensions and part number breakdown, is illustrated (Figure 33).

49. POTTING BOOT AND RING REMOVAL. To gain access to the connector for repair the potting ring and boot must be removed using the following procedures:

a. Using diagonal cutters, cut potting boot lengthwise.

b. Peel boot and sealant from connector.

c. Remove potting ring using tools and tool procedure (paragraph 21).

d. When connector plug is removed, slide new potting boot and ring on cable.

e. When connector is not removed, do not discard potting boot. Salvage boot.

f. Perform connector repair per NAVAIR 01-1A-505-1.

50. POTTING BOOT AND RING INSTALLATION. Upon completion of connector repair install the potting boot and ring using the following procedures:

a. When connector was not removed for repair:

(1) Install potting ring using tools and tool procedure (paragraph 22).

(2) Remove old potting compound from salvaged boot.

(3) Place cleaned salvaged boot over lip of potting ring and tape in position.

(4) Apply potting compound in accordance with NAVAIR 01-1A-505-1, WP 026 00.

b. When connector was removed:

(1) Install potting ring using tools and tool procedure (paragraph 23).

(2) Snap potting boot over lip of potting ring.

(3) Apply potting compound in accordance with NAVAIR 01-1A-505-1, WP 026 00.

51. SHRINK BOOT AND ADAPTER. Shrink boots are protective jackets of heat shrinkable tube that seal to the cable and an adapter to prevent moisture entry. The adapter is a threaded intermediate device which contains a serrated lip to provide a gripping surface for the shrinkable boot.

52. SHRINK BOOT AND ADAPTER AVAILABILITY. Shrink boots will be either straight or 90° type while there is one style of adapter.

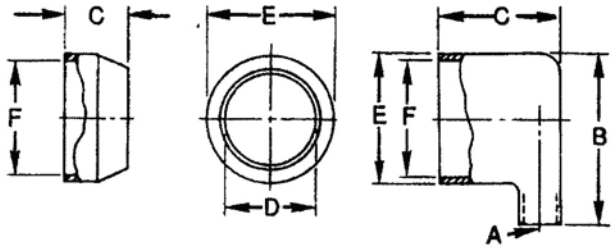
PART NUMBER DESIGNATION

M85049/74 -12 -1

MIL SPEC

DASH NR. (See Figure)

BOOT GEOMETRY
1 STRAIGHT
2 90° ELBOW



STRAIGHT BOOT 90° BOOT

Dash No.	A Min. Cross-Section Area In. Sq.	B Max.	C Straight Min.	C Straight Max.	C 90°	D Min. ID	E Max. OD	F +.000 -.010 Dia.
8	.110	1.000	.450	.500	.766	.317	.608	.516
10	.200	1.125			.922	.434	.734	.642
12	.290				1.031	.548	.858	.766
14	.400	1.297			1.016	.673	.984	.892
16	.490	1.375				.798	1.110	1.018
18	.590	1.469			1.078	.899	1.234	1.142
20	.730	1.625	.550	.594	1.094	1.024	1.360	1.268
22	.860	1.703				1.149	1.484	1.392
24	1.070	2.047			1.281	1.274	1.610	1.518
28	---	---			---	1.399	1.734	1.642

Figure 30. Part Number Breakdown M85049/74 Potting Boot

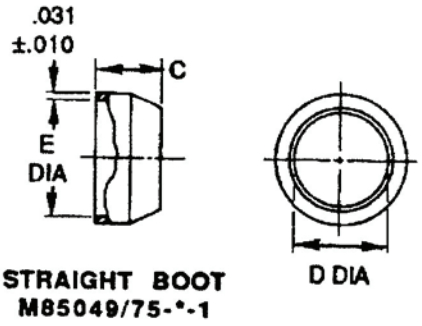
PART NUMBER DESIGNATION

M85049/75 -12 -1

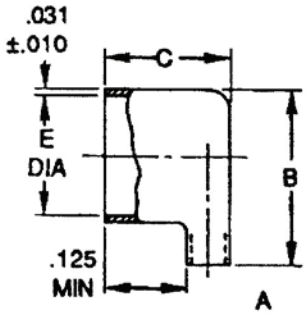
MIL SPEC

DASH NR. (See Figure)

BOOT GEOMETRY
1 STRAIGHT
2 90° ELBOW



STRAIGHT BOOT
M85049/75-*-1



90° ELBOW
M85049/75-*-2

Dash No.	A Min. Cross-Section Area In. Sq.	B Max.	C Max.		D Min. ID	E +.000 -.010 Dia.
			Straight	90°		
8	.073	.766	.297	.438	.434	.532
10	.117	.891		.469	.548	.657
12	.206	1.031		.562	.673	.781
14	.384	1.156		.719	.798	.903
16	.443	1.287		.781	.899	1.021
18	.561	1.406		.844	1.024	1.145
20	.693	1.531		.906	1.149	1.270
22	.840	1.656		.938	1.274	1.349
24	.999	1.781		1.031	1.399	1.520

Figure 31. Part Number Breakdown M85049/75 Potting Boot

PART NUMBER DESIGNATION

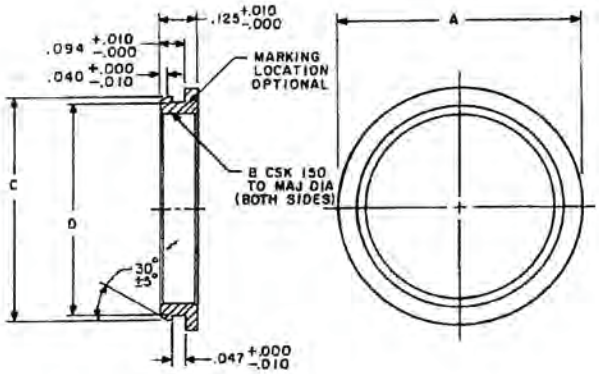
M85049/ 61 10 N

MIL SPEC

SPECIFICATION SHEET

DASH NR.

FINISH (See Below)
Omit for Finish W



MATERIAL:
Potting Ring: Aluminum alloy in accordance with AS85049.
Finish: In accordance with AS85049; N ,W (See Finish Code)

FINISH CODES:
W CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS)
N ELECTROLESS NICKEL (NOT FOR NAVY USE)

DASH NUMBER	FITS CONNECTOR SHELL SIZE		A MAXIMUM DIAMETER	B THREAD UNEF CLASS 2B	C +.010 -.000 DIAMETER	D ±.010 DIAMETER
	SERIES II	SERIES I				
8	8	9	.594	.4375-28	.516	.476
10	10	11	.734	.5625-24	.642	.602
12	12	13	.844	.6875-24	.766	.726
14	14	15	.969	.8125-20	.892	.852
16	16	17	1.094	.9375-20	1.018	.978
18	18	19	1.234	1.062-18	1.142	1.102
20	20	21	1.344	1.187-18	1.268	1.228
22	22	23	1.469	1.312-18	1.392	1.352
24	24	25	1.594	1.437-18	1.518	1.478

Figure 32. Part Number Breakdown M85049/61 Potting Ring (Sheet 1 of 2)

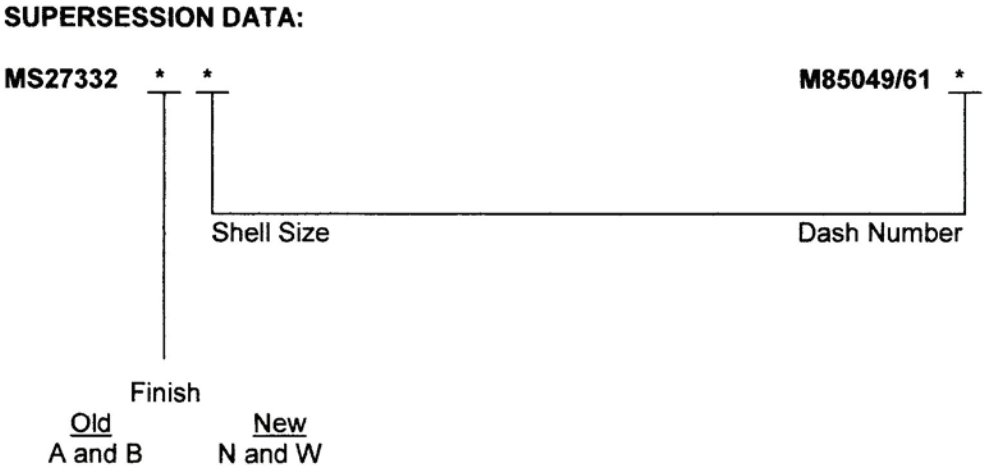
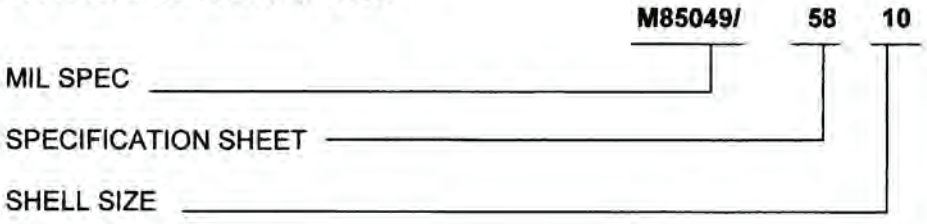
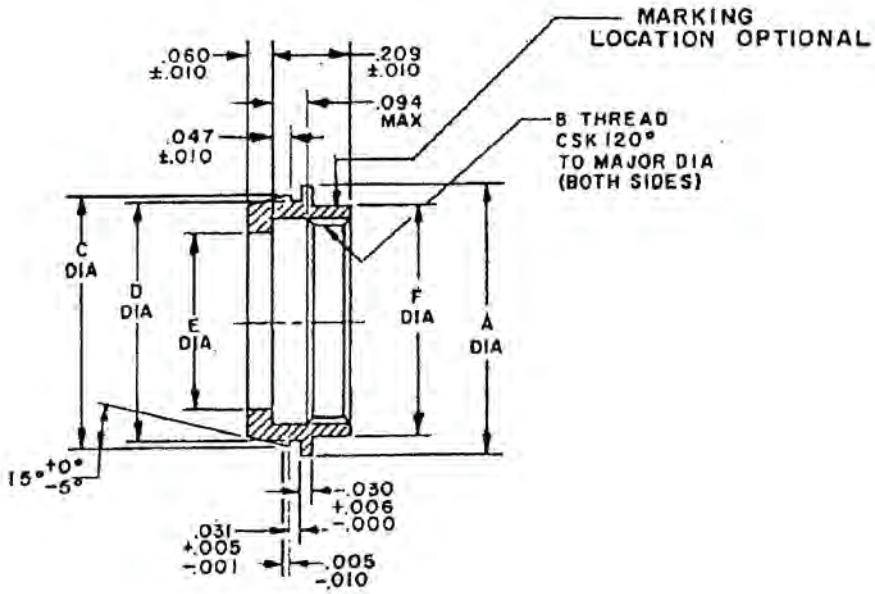


Figure 32. Part Number Breakdown M85049/61 Potting Ring (Sheet 2 of 2)

PART NUMBER DESIGNATION





MATERIAL:
Potting Ring; Aluminum alloy in accordance with AS85049.
Finish: In accordance with AS85049; W (See Finish Code)

FINISH CODES:
W CADMIUM, OLIVE DRAB

Figure 33. Part Number Breakdown M85049/58 Potting Ring (Sheet 1 of 2)

Accessory shell size	Fits connector shell size Series II	Series I	A maximum diameter	B thread UNEF class 2B	C ±.001 -.005 diameter	D ±.003 -.002 diameter	E ±.005 diameter	F ±.006 -.005 diameter
8	8	9	.600	.4375-28	.541	.518	.344	.500
10	10	11	.726	.5625-24	.666	.643	.472	.625
12	12	13	.850	.6875-24	.790	.767	.586	.750
14	14	15	.975	.8125-20	.915	.892	.711	.875
16	16	17	1.102	.9375-20	1.033	1.005	.836	1.000
18	18	19	1.226	1.0625-18	1.157	1.126	.942	1.125
20	20	21	1.352	1.1875-18	1.282	1.251	1.067	1.250
22	22	23	1.476	1.3125-18	1.407	1.376	1.192	1.375
24	24	25	1.602	1.4375-18	1.532	1.501	1.317	1.500

NOTES:
1. Dimensions are in Inches.
2. Metric equivalents are given for general information only
3. Dimensions apply after plating

SUPERSESSION DATA:

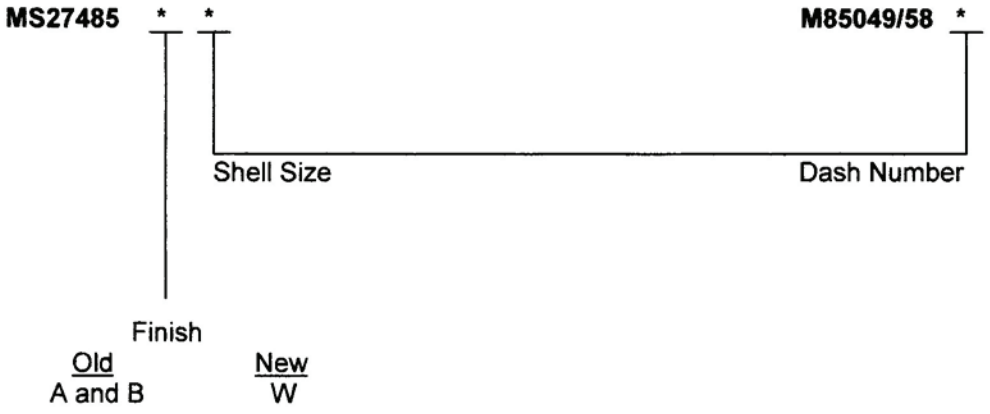


Figure 33. Part Number Breakdown M85049/58 Potting Ring (Sheet 2 of 2)

53. Shrink Boot Adapter M85049/62. The shrink boot adapter, along with dimensions and part number breakdown, is illustrated (Figure 34).

54. Straight Shrink Boot Adapter AS3109. As with all shrink boots, the recovered diameter is critical to ensure proper sealing. The recovered diameter is the diameter after shrinking. Straight shrink boots, along with supplied and recovered dimensions and part number breakdown, are illustrated (Figure 35).

55. 90° Shrink Boot AS3117. The 90° shrink boot when supplied will be as a tube. When shrunk the tube will recover to a 90° bend as required. The 90° shrink boot, along with applicable supplied and recovered dimensions and part number breakdown, is illustrated (Figure 36).

56. SHRINK BOOT AND ADAPTER REMOVAL. To gain access to the connector rear, the shrink boot and adapter are removed using the following procedures:

a. To salvage boot, apply heat using HT-900B heat gun until pliable.

b. Using flat screwdriver, gently pry boot from adapter and wires.

c. Slide boot away from connector.

d. Remove adapter using tools and tool procedure (paragraph 21).

e. Perform connector repair per NAVAIR 01-1A-505-1.

57. SHRINK BOOT AND ADAPTER INSTALLATION. Upon completion of the connector repair install the shrink boot and adapter using the following procedures:

a. Install the adapter using the tools and tool procedure (paragraph 22).

b. Slide the shrink boot to connector.

c. Apply a coat of epoxy glue to the adapter lip and inside of shrink boot.

d. Seat shrink boot on adapter lip.

e. Apply heat to shrink boot, using HT-900B heat gun, to shrink boot to adapter and cable.

58. NON-ENVIRONMENTAL BACKSHELL. Non-environmental backshells or extenders are used when moisture entry is not a problem. They are used when additional space is required for maintenance.

59. NON-ENVIRONMENTAL BACKSHELL AVAILABILITY. There are two styles of backshells available for use. There is a backshell with a cable clamp and a backshell adapter.

60. Straight Backshell with Cable Clamp M85049/29. This straight backshell, along with dimensions and part number breakdown, is illustrated (Figure 37).

61. Straight Adapter MS27342. The straight adapter is also called an intermediate adapter. The adapter is threaded to couple with the connector, and threaded to accept other connector accessories. The adapter, along with dimensions and part number breakdown, is illustrated (Figure 38).

62. NON-ENVIRONMENTAL BACKSHELL REMOVAL AND INSTALLATION. The backshell is removed and replaced using the tools and tool procedures in paragraphs 21 and 22.

63. EMI/RFI GROUNDING TERMINATORS. The EMI/RFI grounding terminators are either bonding rings or ferrule assemblies. These grounding terminators are not to be confused with EMI/RFI backshells. Their function is to place all the shields within the cable at the same potential eliminating EMI or RFI potentials within the cable.

64. Bonding Rings. Bonding rings are used with cable clamps or flexible conduit coupling nuts to ground wire shielding.

a. Shields are separated from wires.

b. All separated shields are gathered.

c. Crimp gathered shields to bonding ring tongue.

d. Solder crimped tongue and insulate.

65. Bonding Ring AN3111. This type of bonding ring, along with applicable dimensions, is illustrated (Figure 39).

PART NUMBER DESIGNATION

M85049/ 62 -10 W D

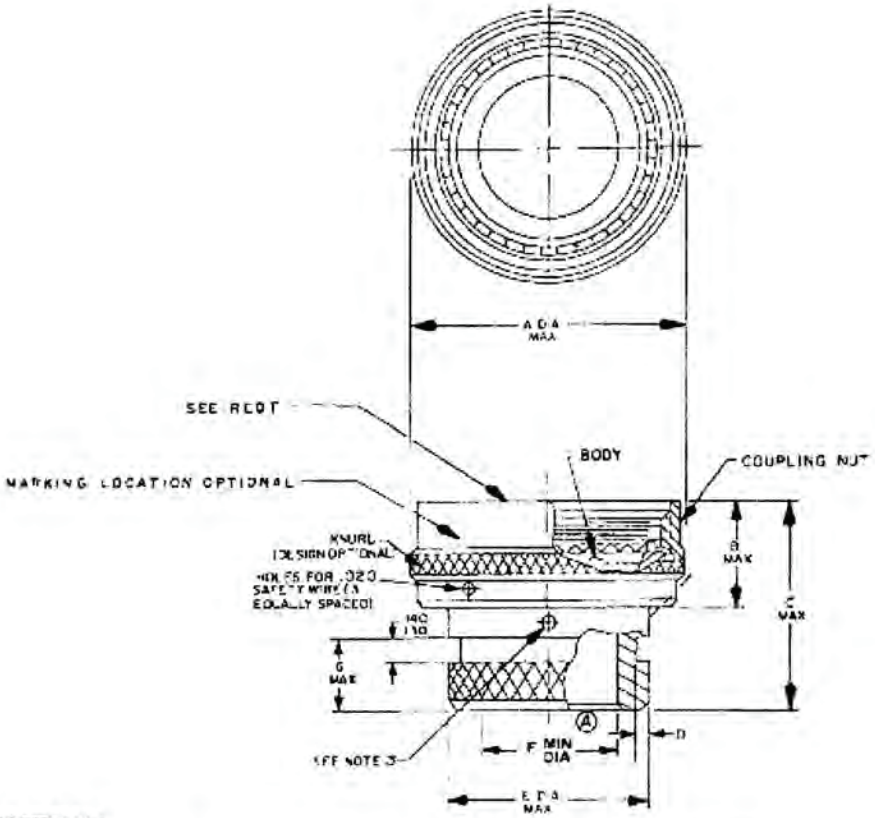
MIL SPEC

SPECIFICATION SHEET

DASH NR.

FINISH (See table)

DRAIN HOLE OPTION (If Required)



MATERIAL:
Shrink Boot Adapter; nut and body; Aluminum alloy in accordance with AS85049.
Tie mount: Polyamide (optional).
Fastener: Stainless steel (optional).
Finish: In accordance with AS85049, A, N or W. (See Finish Code Table)

FINISH CODES:

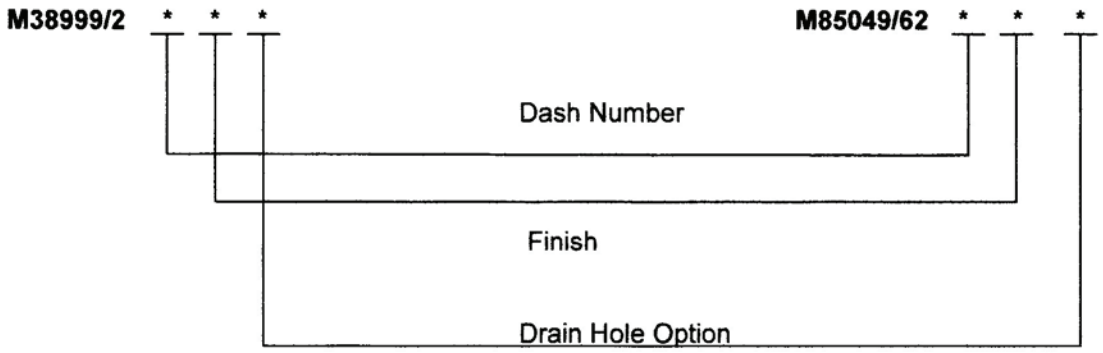
W	CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS)
A	BLACK ANODIZE
N	ELECTROLESS NICKEL (NOT FOR NAVY USE)

Figure 34. Part Number Breakdown M85049/62 Shrink Boot Adapter (Sheet 1 of 2)

Dash number	Fits connector shell size Series II	Series I	A diameter maximum	B maximum	C maximum	D ±.008 -.000	E diameter maximum	F minimum	G maximum
08	8	9	.75	.54	1.000	.044	.533	.250	.425
10	10	11	.85	.54	1.000	.044	.605	.375	.425
12	12	13	1.00	.54	1.000	.044	.774	.500	.425
14	14	15	1.10	.54	1.000	.044	.838	.625	.425
16	16	17	1.25	.54	1.000	.044	.963	.750	.425
18	18	19	1.40	.54	1.000	.044	1.049	.812	.425
20	20	21	1.50	.54	1.000	.069	1.217	.937	.425
22	22	23	1.65	.54	1.000	.069	1.355	1.069	.425
24	24	25	1.75	.54	1.000	.069	1.443	1.188	.425

NOTES:
1. Dimensions are in Inches.
2. Metric equivalents are given for general information only
3. Dimensions apply after plating

SUPERSESSION DATA:

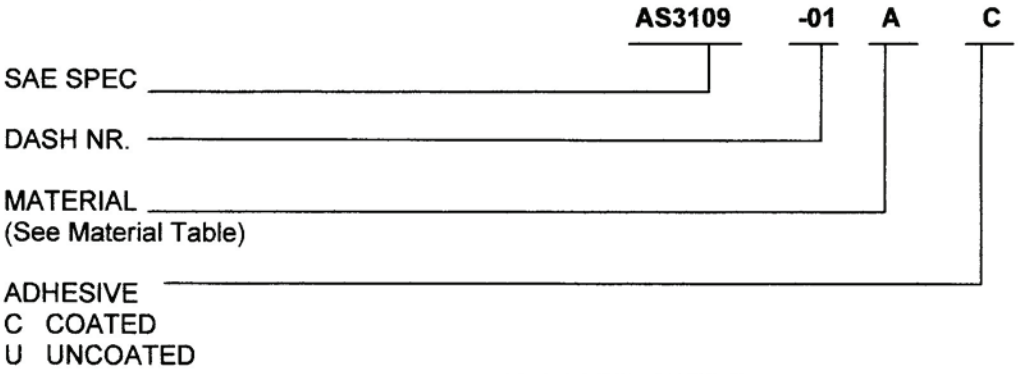


Finish

Old	New
A	W
B	W
C	A
D	-
E	-
F	N

Figure 34. Part Number Breakdown M85049/62 Shrink Boot Adapter (Sheet 2 of 2)

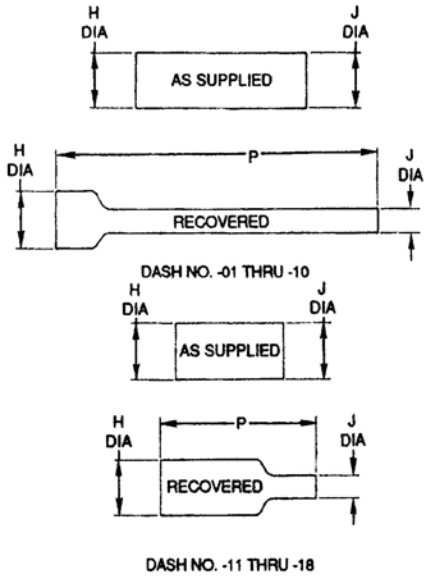
PART NUMBER DESIGNATION



MATERIAL CODES

Material Designation	Material Type	Color Stripe	Continuous Operating Temp. Range	Flexibility
A	MIL-C-81 765/1 TYPE II	RED	-55°C to+135°C	FLEXIBLE
B	MIL-1-81765/1 TYPEI	WHITE	-55°C to +135°C	SEMI-RIGID
C	MIL-1-81765/4	YELLOW	-55°C to +200°C	FLEXIBLE

Figure 35. Part Number Breakdown AS3109 Straight Shrink Boot (Sheet 1 of 2)

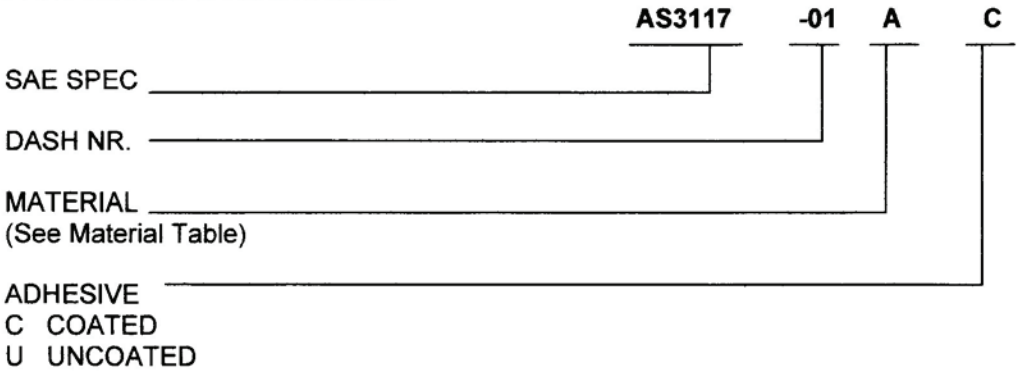


Dash No.	H Dia. As Supplied Min.	H Dia. Recovered Max.	J Dia. As Supplied A & B *	J Dia. As Supplied Min. C*	J Dia. Recovered Max.	P
-01	.88	.45	.88	.55	.25	4.17
-02	1.01	.59	1.01	.63	.29	4.77
-03	1.16	.74	1.16	.72	.33	5.46
-04	1.34	.90	1.34	.84	.38	6.28
-05	1.47	1.16	1.47	.91	.41	7.00
-06	1.72	1.34	1.72	1.07	.48	8.00
-07	1.97	1.62	1.97	1.24	.56	8.00
-08	2.47	1.85	2.47	1.54	.69	8.00
-09	2.73	2.35	2.73	1.70	.77	8.00
-10	3.22	2.64	3.22	2.01	.90	8.00
-11	.92	.41	.92	.47	.22	1.50
-12	1.12	.56	1.12	.58	.26	2.16
-13	1.22	.70	1.22	.63	.28	2.63
-14	1.42	.88	1.42	.73	.33	3.15
-15	1.68	1.11	1.68	.87	.39	4.08
-16	2.04	1.38	2.04	1.39	.62	5.13
-17	2.60	1.75	2.60	1.80	.80	6.50
-18	3.22	2.38	3.22	2.25	1.00	7.00

* MATERIAL TYPE

Figure 35. Part Number Breakdown AS3109 Straight Shrink Boot (Sheet 2 of 2)

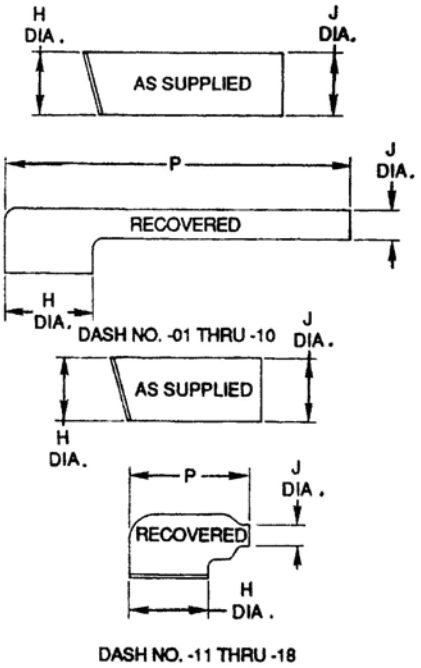
PART NUMBER DESIGNATION



MATERIAL CODES

Material Designation	Material Type	Color Stripe	Continuous Operating Temp. Range	Flexibility
A	MIL-C-81 765/1 TYPE II	RED	-55°C to+135°C	FLEXIBLE
B	MIL-1-81765/1 TYPEI	WHITE	-55°C to +135°C	SEMI-RIGID
C	MIL-1-81765/4	YELLOW	-55°C to +200°C	FLEXIBLE

Figure 36. Part Number Breakdown AS3117 90° Shrink Boot (Sheet 1 of 2)



DASH NO. -11 THRU -18

Dash No.	H Dia. As Supplied Min.	H Dia. Recovered Max.	J Dia. As Supplied Min. A & B *	J Dia. As Supplied Min. C*	J Dia. Recovered Max.	P
-01	.88	.45	.88	.55	.25	4.14
-02	1.01	.59	1.01	.63	.29	4.88
-03	1.16	.74	1.16	.72	.33	5.76
-04	1.34	.90	1.34	.84	.38	6.78
-05	1.47	1.16	1.47	.91	.41	7.29
-06	1.72	1.34	1.72	1.07	.48	8.41
-07	1.97	1.62	1.97	1.24	.56	8.84
-08	2.47	1.85	2.47	1.54	.69	8.95
-09	2.73	2.35	2.73	1.70	.77	9.19
-10	3.22	2.64	3.22	2.01	.90	9.33
-11	.92	.41	.92	.47	.22	1.08
-12	1.12	.56	1.12	.58	.26	1.65
-13	1.22	.70	1.22	.63	.28	1.84
-14	1.42	.88	1.42	.73	.33	2.20
-15	1.68	1.11	1.68	.87	.39	2.71
-16	2.04	1.38	2.04	1.39	.62	3.84
-17	2.60	1.75	2.60	1.80	.80	4.81
-18	3.22	2.38	3.22	2.25	1.00	5.90

* MATERIAL TYPE

Figure 36. Part Number Breakdown AS3117 90° Shrink Boot (Sheet 2 of 2)

PART NUMBER DESIGNATION

M85049/29 -10 N 10 A

MIL SPEC

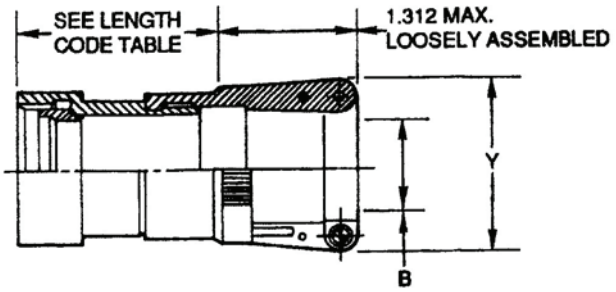
DASH NO.

FINISH
(See Finish Table)

CLAMP SIZE
(See Clamp Size Table)
LENGTH
(See Length Code)

FINISH CODES:

A	BLACK ANODIZE
N	ELECTROLESS NICKEL (NOT FOR NAVY USE)
W	CADMIUM, OLIVE DRAB, 500 HR SALT SPRAY (NOT FOR USE IN SPACE APPLICATIONS)



CLAMP SIZE

Clamp Size	B Cable Range		Y
	Min.	Max.	Max.
01	.062	.125	.781
02	.125	.250	.969
03	.250	.375	1.062
04	.312	.500	1.156
05	.437	.625	1.250
06	.562	.750	1.375
07	.687	.875	1.500
08	.812	1.000	1.625
09	.937	1.125	1.750
10	1.062	1.250	1.875

Figure 37. Part Number Breakdown M85049/29 Straight Backshell with Cable Clamp (Sheet 1 of 2)

DASH NUMBER

Dash Number	Connector Shell Size		Clamp Size Range*	
	Series II	Series I	Min.	Max.
-08	8	9	01	02
-10	10	11	01	03
-12	12	13	02	04
-14	14	15	02	05
-16	16	17	02	06
-18	18	19	03	07
-20	20	21	03	08
-22	22	23	03	09
-24	24	25	04	10

LENGTH CODES

Code	Shell Size	Length ±.032 One Piece Construction
BLANK	8 THRU 24	1.00
A	8 THRU 24	2.00
B	14 THRU 24	3.00
C	20 THRU 24	4.00

Figure 37. Part Number Breakdown M85049/29 Straight Backshell with Cable Clamp (Sheet 2 of 2)

PART NUMBER DESIGNATION

MS27342 A 12 -1

MIL SPEC

FINISH
(See Finish Table)

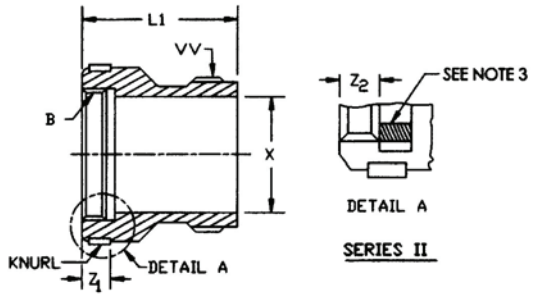
SHELL SIZE

SERIES
1 OPEN ADAPTER
2 STRAIN RELIEF ADAPTER

FINISH CODES:

A	CADMIUM, OLIVE DRAB
C	BLACK ANODIZE
F	ELECTROLESS NICKEL (NOT FOR NAVY USE)
B	CADMIUM, OLIVE DRAB, 500 HR SALT SPRAY (NOT FOR USE IN SPACE APPLICATIONS)

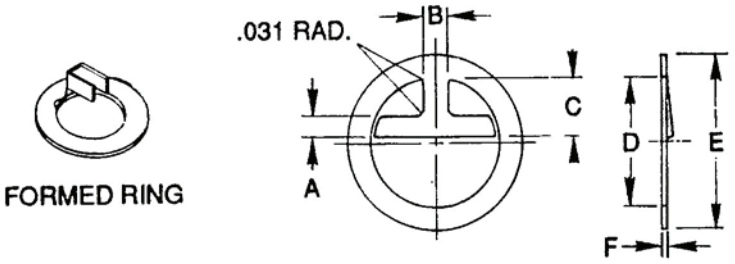
NOTE: PARTS WILL BEIDENTIFIED WITH THE SERIES II NUMBERS. FOR SERIES I APPLICATIONS USE THE EQUIVALENT SERIES II PART (E.G. FOR SERIES I SIZE 9 APPLICATIONS USE SERIES II SIZE 8 PART)



Shell size series I	Shell size series II	B Thread class 2B UNEF	L_1 max	X dia min	Z_1 +.000, -.015 series I	Z_2 +.005, -.010 series II	V V Thread class 2A UNEF
9	8	7/16-28	.688	.281	.219	.114	1/2-28
11	10	9/16-24		.406			5/8-24
13	12	11/16-24		.531			3/4-20
15	14	13/16-20		.656			7/8-20
17	16	15/16-20		.781			1-20
19	18	1 1/16-18		.875			1 3/16-18
21	20	1 3/16-18	.750	1.000			
23	22	1 5/16-18		1.125			1 7/16-18
25	24	1 7/16-18		1.250			

NOTES:
1. Dimensions are in inches.
2. Materials: Adapter body: aluminum alloy.
3. On series II adapters, the Z_2 dimension may be achieved by two-piece construction.

Figure 38. Part Number Breakdown MS27342 Straight Adapter



AN Part No.	Use With MIL-C-5015 Solder Shell Size	A	B	C	D ± .005 Dia	E ± .005 Dia	F + .005 - .002
AN3111-1	8S ± 10S	.062	.062	.156	.323	.448	
AN3111-2	10SL, 12 ± 12S	.062	.062	.188	.441	.556	
AN3111-1	14 ± 14S	.062	.062	.188	.557	.682	
AN3111-2	16 ± 16S	.094	.094	.406	.620	.807	.020
AN3111-1	18	.125	.125	.312	.682	.932	
AN3111-2	20 ± 22	.125	.125	.500	.914	1.105	
AN3111-1	24 ± 28	.125	.125	.438	1.105	1.355	
AN3111-2	32	.125	.125	.562	1.418	1.668	
AN3111-1	36	.125	.125	.562	1.668	1.918	
AN3111-2	40	.125	.125	.562	1.910	2.160	.032
AN3111-1	44	.125	.125	.688	2.160	2.410	
AN3111-2	48	.125	.125	.688	2.660	2.910	

Figure 39. Bonding Ring Dimensions

66. FERRULE GROUNDING TERMINATORS. Ferrule grounding terminators are two piece crimp-able units. Their function is that of solder sleeves in that they place the shields within the cable at ground potential or some other predetermined potential by use of a ground wire, which then is terminated to the bonding ring.

67. NON-ENVIRONMENTAL EMI/RFI BACK-SHELLS. This type of backshell is used when moisture entry protection is not required but the need for EMI/RFI protection is needed. There is more than one type in that some require parts other than the backshell and other backshells are complete.

68. NON-ENVIRONMENTAL EMI/RFI BACKSHELL AVAILABILITY. This type of backshell is of various shapes, sizes, and shielding ability. Although external appearance may be similar to other backshell types, there remains a difference internally.

69. Straight Backshell M85049/33-2. This backshell requires the use of an additional grounding ring. The backshell, along with dimensions and part number breakdown, is .illustrated (Figure 40). The additional grounding ring, along with applicable dimensions, crimp tools, and part number breakdown, is illustrated (Figure 41).

70. Straight Backshell M85049/30. This is a straight backshell self-contained to provide EMI/RFl shielding. The backshell, along with dimensions and part number breakdown, is illustrated (Figure 42).

71. Straight Backshell with Cable Clamp M85049/36. This is a straight backshell with a cable clamp, and is self-contained to provide EMI/RFI shielding. The backshell, along with dimensions and part number breakdown, is illustrated (Figure 43).

72. Straight and 90° Adapter M85049/33-1 or M85049/32-1 and M85049/32-2. These adapters are either straight or 90° depending upon the part number. These adapters must also be used with a reducing adapter to provide EMI/RFI shielding. The adapter, along with dimensions and part number breakdown, is illustrated (Figure 44). The reducing adapter, along with dimensions and part number breakdown, is illustrated (Figure 45).

73. Split 90° Backshell with Cable Clamp. This backshell is a two piece dual type backshell that is self-contained to provide EMI/RFI shielding. The backshell, along with dimensions and part number breakdown, is illustrated (Figure 46). This type backshell is used when cable diameter exceeds inside diameter of the connector shell.

74. NON-ENVIRONMENTAL EMI/RFI BACKSHELL REMOVAL AND INSTALLATION. These backshells are removed and replaced using the tools and procedures in paragraphs 22 and 23, except the internal parts are removed to facilitate connector repair. These internal parts are installed in their original configuration to ensure proper shielding.

75. ENVIRONMENTAL EMI/RFI BACKSHELLS. This type of backshell is used where moisture and EMI/RFI protection is required. The moisture protection is afforded by the use of o-rings, grommets, and other sealing devices.

76. ENVIRONMENTAL EMI/RFI BACKSHELL M85049/17. This backshell is self-contained to provide for environmental protection and EMI/RFI shielding. The backshell, along with dimensions and part number breakdown, is illustrated (Figure 47).

77. ENVIRONMENTAL EMI/RFI BACKSHELL REMOVAL AND INSTALLATION. The backshell is removed and installed using the tools and tool procedures in paragraphs 22 and 23. The sealing and shielding internal parts are removed to facilitate maintenance. The internal parts are installed in their original configuration to ensure proper sealing and shielding.

PART NUMBER DESIGNATION

M85049/33-2 12 W

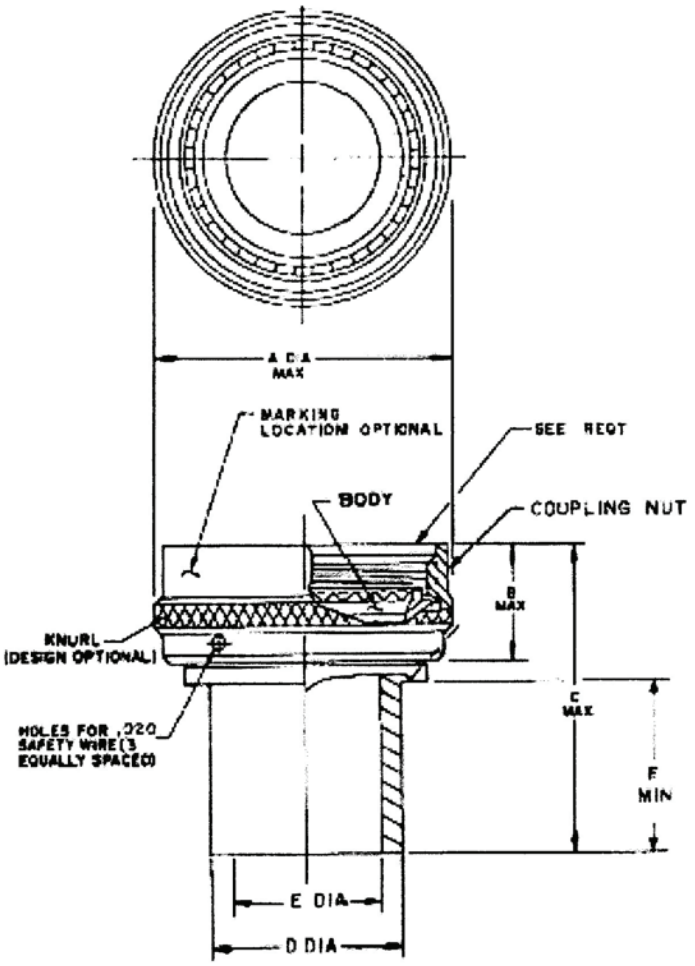
MIL SPEC

DASH NO.

FINISH
(See Finish Table)

FINISH CODES:

N ELECTROLESS NICKEL (NOT FOR NAVY USE)
W CADMIUM, OLIVE DRAB, 500 HR SALT SPRAY (NOT FOR USE IN SPACE APPLICATIONS)



MATERIAL:
ALUMINUM ALLOY IN ACCORDANCE WITH AS85049

Figure 40. Part Number Breakdown M85049/33-2 Straight Backshell (Sheet 1 of 2)

Dash no.	Fits connector shell size		A diameter maximum	B maximum	C maximum	D diameter ±.010	E ±.015	M85049/26-2 ring, shield crimp (ref) see requirements	F minimum
	Series II	Series I							
08	8	9	.75	.54	1.14	.337	.250	-8	.285
10	10	11	.85	.54	1.14	.488	.325	-10	.475
12	12	13	1.00	.54	1.14	.500	.420	-12	
14	14	15	1.10	.54	1.14	.620	.540	-14	
16	16	17	1.25	.54	1.14	.750	.670	-16	
18	18	19	1.40	.54	1.14	.880	.789	-18	
20	20	21	1.50	.54	1.14	1.000	.914	-20	
22	22	23	1.65	.54	1.14	1.120	1.039	-22	
24	24	25	1.75	.54	1.14	1.192	1.112	-24	

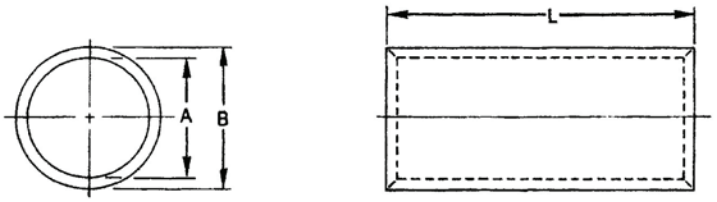
Figure 40. Part Number Breakdown M85049/33-2 Straight Backshell (Sheet 2 of 2)

PART NUMBER DESIGNATION

M85049/26-2 12

MIL SPEC

DASH NO.



FINISH:
TIN PLATE; IN ACCORDANCE WITH MIL-T-10727, TYPE 1, COLOR CODED PER TABLE (SEE FIGURE)

MATERIAL:
COPPER; ASTM B75, TYPE DLP-WW-T-799 ROCKWELL F-50 MAX, OR OFHC COPPER, CDA 102 OR APPROVED EQUIVALENT

Dash No.	Color Code	A Dia		B Dia		L +.020	For Use With Backshells (Ref)	For Use With Backshells (Ref)	For Use With Backshells (Ref)	Installing Die Cat. No. See Note 5
		Min	Max	Min	Max					
-8	Green	.400	.410	.448	.458	.250	M85049/26-1-8	M85049/20-9	M85049/33-2-8	GS405
-10	Red	.585	.595	.660	.680	.440	M85049/26-1-10	M85049/20-11	M85049/33-2-10	GS590
-12							M85049/26-1-12	M85049/20-13	M85049/33-2-12	GS590
-14	Blue	.705	.715	.780	.800		M85049/26-1-14	M85049/20-15	M85049/33-2-14	GS710
-16	Gray	.835	.845	.910	.930		M85049/26-1-16	M85049/20-17	M85049/33-2-16	GS840
-18	Brown	1.005	1.015	1.080	1.100		M85049/26-1-18	M85049/20-19	M85049/33-2-18	GS1010
-20	Green	1.125	1.135	1.200	1.220		M85049/26-1-20	M85049/20-21	M85049/33-2-20	GS1130
-22	Pink	1.245	1.255	1.320	1.340		M85049/26-1-22	M85049/20-23	M85049/33-2-22	GS1250
-24	Yellow	1.312	1.322	1.387	1.407		M85049/26-1-24	M85049/20-25	M85049/33-2-24	GS1250
-28	Red	1.665	1.675	1.740	1.760		M85049/26-1-28			GS1670
-32	Gray	1.915	1.925	1.990	2.010		M85049/26-1-32			GS1920
-36	Green	2.165	2.175	2.240	2.260		M85049/26-1-36			GS2170
-40	Orange	2.415	2.425	2.490	2.510		M85049/26-1-40			GS2420
-44	Yellow	2.665	2.675	2.740	2.760		M85049/26-1-44			GS2670
-48	Blue	2.915	2.925	2.990	3.010		M85049/26-1-48			GS2920
-61	Purple	1.435	1.445	1.510	1.530		M85049/26-1-61			GS1440

NOTE:
1. USE CRIMP TOOL THOMAS & BETTS, INSTALLING HEAD CAT. NO. 13640, OR EQUIVALENT
2. USE INSTALLING DIES THOMAS & BETTS CAT.NO.13640, OR EQUIVALENT

Figure 41. Part Number Breakdown M85049/26-2 Crimp Ring

PART NUMBER DESIGNATION

M85049/30 12 W

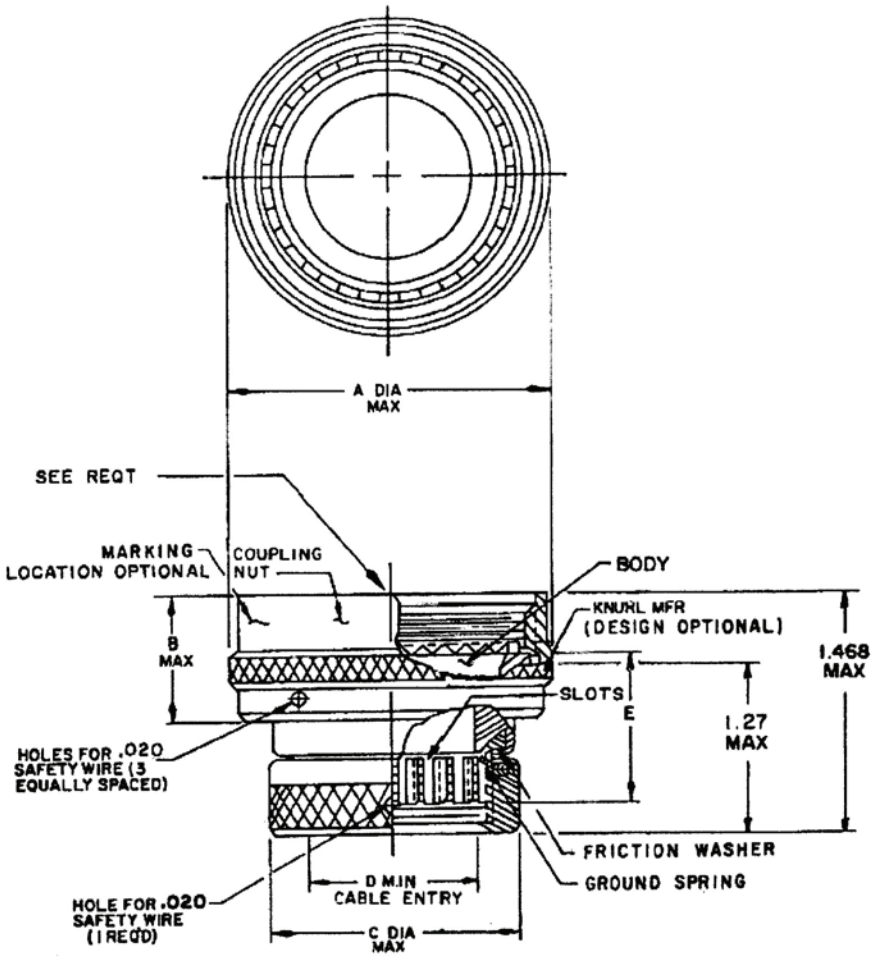
MIL SPEC

DASH NO.

FINISH
(See Finish Table)

FINISH CODES:

N ELECTROLESS NICKEL (NOT FOR NAVY USE)
W CADMIUM, OLIVE DRAB, 1000 HR SALT SPRAY (NOT FOR USE IN SPACE APPLICATIONS)



MATERIAL:

SHELL: ALUMINUM ALLOY IN ACCORDANCE WITH AS85049
GROUND SPRING: COPPER ALLOY, GOLD PLATED
FRICTION WASHER: TEFLON

Figure 42. Part Number Breakdown M85049/30 Straight Backshell (Sheet 1 of 2)

Dash no.	Fits connector shell size		A diameter maximum	B maximum	C diameter maximum	D minimum	E ±.060	No. of slots
	Series II	Series I						
08	8	9	.75	.54	.55	.250	1.00	3
10	10	11	.85	.54	.67	.375	1.00	4
12	12	13	1.00	.54	.80	.500	1.00	6
14	14	15	1.10	.54	.92	.625	1.00	8
16	16	17	1.25	.54	1.05	.750	1.00	10
18	18	19	1.40	.54	1.17	.844	1.00	10
20	20	21	1.50	.54	1.30	.970	1.00	12
22	22	23	1.65	.54	1.42	1.094	1.00	15
24	24	25	1.75	.54	1.67	1.219	1.00	15

SUPERSESSION DATA:

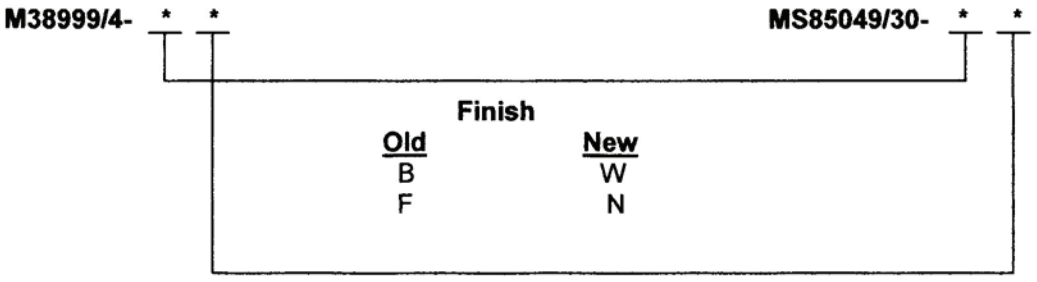


Figure 42. Part Number Breakdown M85049/30 Straight Backshell (Sheet 2 of 2)

PART NUMBER DESIGNATION

M85049/36 -10 N 10 A

MIL SPEC

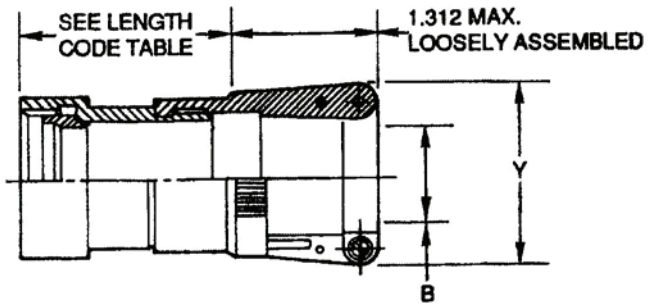
DASH NO.

FINISH
(See Finish Table)

CLAMP SIZE
(See Clamp Size Table)
LENGTH
(See Length Code)

FINISH CODES:

N ELECTROLESS NICKEL (NOT FOR NAVY USE)
W CADMIUM, OLIVE DRAB, 500 HR SALT SPRAY (NOT FOR USE IN SPACE APPLICATIONS)



CLAMP SIZE

Clamp Size	B Cable Range		Y
	Min.	Max.	Max.
01	.062	.125	.781
02	.125	.250	.969
03	.250	.375	1.062
04	.312	.500	1.156
05	.437	.625	1.250
06	.562	.750	1.375
07	.687	.875	1.500
08	.812	1.000	1.625
09	.937	1.125	1.750

Figure 43. Part Number Breakdown M85049/36 Straight Backshell with Cable Clamp (Sheet 1 of 2)

DASH NUMBER

Dash Number	Connector Shell Size		Clamp Size Range*	
	Series II	Series I	Min.	Max.
-08	8	9	01	02
-10	10	11	01	03
-12	12	13	02	04
-14	14	15	02	05
-16	16	17	02	06
-18	18	19	03	07
-20	20	21	03	08
-22	22	23	03	09
-24	24	25	04	10

LENGTH CODES

Code	Shell Size	Length ±.032 One Piece Construction
BLANK	8 THRU 24	1.50
A	8 THRU 24	2.50
B	14 THRU 24	3.50
C	20 THRU 24	4.50

Figure 43. Part Number Breakdown M85049/36 Straight Backshell with Cable Clamp (Sheet 2 of 2)

PART NUMBER DESIGNATION

M85049/33 -1 -10
M85049/32 -1 -10

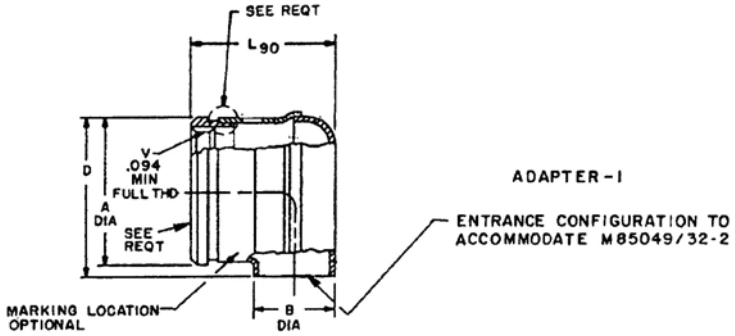
MIL SPEC

FIGURE NO.

SHELL SIZE
(See Table Below)

MATERIAL: COPPER ALLOY

FINISH: TIN – LEAD SOLDER PLATED PER QQ-S-571



Adapter shell size	Fits connector shell size		A Dia. Max	B Dia. Max	D Dia. Max	L_{90} Max
	Series II	Series I				
8	8	9	.594	.359	.656	.719
10	10	11	.719	.406	.781	.766
12	12	13	.844	.500	.938	.859
14	14	15	.969	.578	1.062	.938
16	16	17	1.094	.641	1.219	1.000
18	18	19	1.219	.688	1.344	1.047
20	20	21	1.344	.734	1.469	1.094
22	22	23	1.469	.796	1.594	1.156
24	24	25	1.594	.859	1.719	1.219

NOTES:
1. Dimensions are in inches.
2. Dimensions apply after plating.
3. Metric equivalents are given for general information only.

SUPERSESSION DATA:

MS27487- * -2 MS85049/32-1- *

ADAPTER SHELL SIZE

Figure 44. Part Number Breakdown M85049/32-1 and M85049/33-1 Straight and 90° Adapter

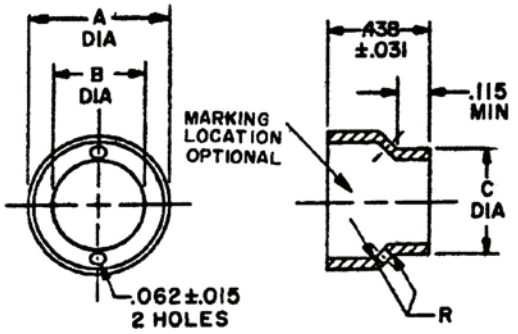
PART NUMBER DESIGNATION

M85049/32 -2 -101

MIL SPEC

FIGURE NO.

SHELL SIZE
(See Table Below)



MATERIAL: COPPER ALLOY
FINISH: TIN – LEAD SOLDER PLATED PER QQ-S-571

Fits adapter shell size	Dash No	A +.001 -.005	B +.010 -.001	C Max Dia	Fits adapter shell size	Dash No	A +.001 -.005	B +.010 -.001	C Max Dia
	-81		.164	.219		-181		.217	.266
	-82		.172	.234		-182		.290	.344
8	-83	.291	.188	.250	18	-183	.616	.343	.391
						-184		.381	.430
						-185		.451	.500
						-186			
	-101		.217	.266		-201		.328	.375
						-202		.391	.453
10		.346			20	-203	.664	.445	.500
						-204		.406	.469
						-205		.484	.531
						-206		.500	.547
	-121		.198	.250		-221		.359	.406
	-122		.217	.266		-222		.438	.484
12	-123	.441	.280	.328	22	-223	.738	.453	.500
	-124					-224		.469	.516
						-225		.562	.609
	-141		.217	.266		-241		.594	.641
	-142		.290	.344					
14	-143	.506	.312	.359	24		.796		
	-144		.343	.391					
	-145		.360	.406					
	-146		.387	.438					
	-161		.217	.266					
	-162		.290	.344					
16	-163	.571	.343	.391					
	-164		.406	.453					
	-165		.328	.375					

NOTES:
1. Dimensions are in inches.
2. Dimensions apply after plating.
3. Metric equivalents are given for general information only.

Figure 45. Part Number Breakdown M85049/32-2 Reducing Adapter (Sheet 1 of 2)

SUPERSESSION DATA:

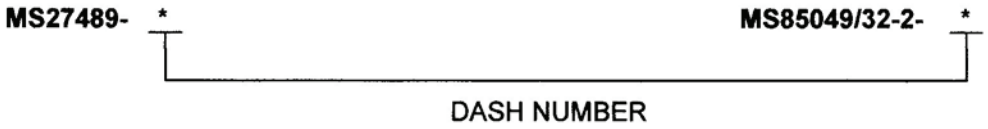


Figure 45. Part Number Breakdown M85049/32-2 Reducing Adapter (Sheet 2 of 2)

PART NUMBER DESIGNATION

M85049/37 -10 N 07 L

MIL SPEC

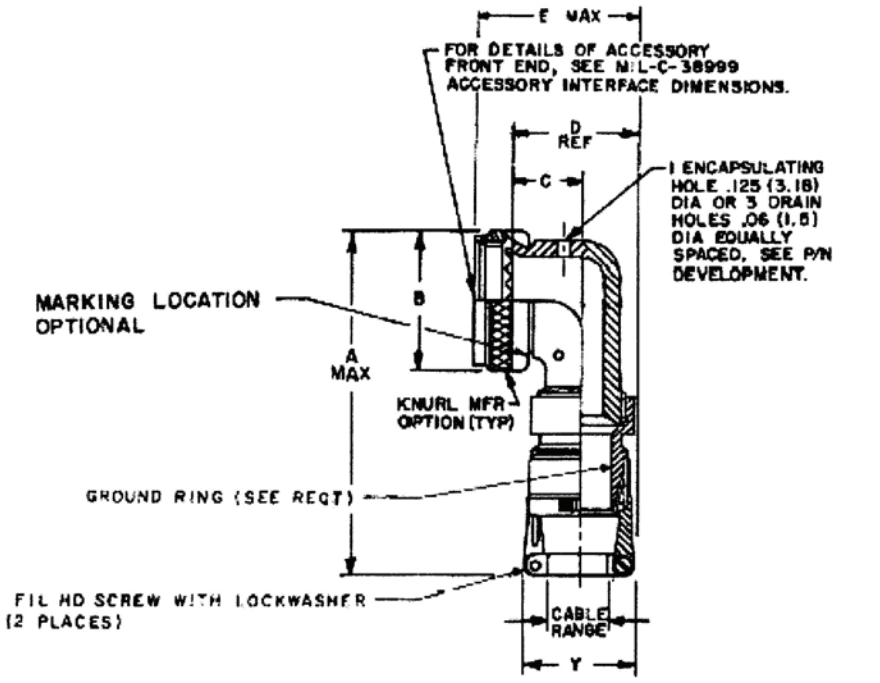
DASH NO.
(See Dash No. Table)

FINISH
(See Finish Code)

CLAMP SIZE
(See Clamp Size Table)

HOLE CONFIGURATION
D 3 DRAIN HOLES
L ENCAPSULATING HOLES

FINISH CODES:
N ELECTROLESS NICKEL (NOT FOR NAVY USE)
W CADMIUM, OLIVE DRAB, 500 HR SALT SPRAY (NOT FOR USE IN SPACE APPLICATIONS)



NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Backshell must be direct coupled (no loose follower and set screws). Rear adapter may be omitted when dash number and clamp size permits.
4. See table I for minimum and maximum clamp size available with each accessory shell size. See table II for cable range for each clamp size.

Figure 46. Part Number Breakdown M85049/37 90° Split Backshell (Sheet 1 of 3)

DASH NUMBER

Accessory shell size	Fits connector shell size Series II	Series I	Clamp size (see table II)	A maximum	B maximum	C maximum	D reference	E maximum
8	8	9	01 through 02	2.88	.75	.72	1.21	1.45
10	10	11	01 through 03	2.92	.85	.72	1.25	1.49
12	12	13	02 through 04	3.06	1.00	.80	1.36	1.60
14	14	15	02 through 05	3.24	1.10	.85	1.47	1.71
16	16	17	02 through 06	3.44	1.25	.91	1.60	1.84
18	18	19	03 through 06	3.73	1.40	1.00	1.75	1.99
20	20	21	03 through 07	3.94	1.50	1.05	1.82	2.06
22	22	23	03 through 08	4.14	1.65	1.10	1.97	2.21
24	24	25	04 through 09	4.19	1.75	1.20	2.15	2.30

CLAMP SIZE

Clamp size	Y maximum	Cable range minimum	maximum
01	.781 (19.84)	.062 (1.57)	.125 (3.18)
02	.969 (24.61)	.125 (3.18)	.250 (6.35)
03	1.062 (26.97)	.250 (6.35)	.375 (9.52)
04	1.156 (29.36)	.312 (7.92)	.500 (12.70)
05	1.250 (31.75)	.437 (11.10)	.625 (15.88)
06	1.375 (34.92)	.562 (14.27)	.750 (19.05)
07	1.500 (38.10)	.687 (17.45)	.875 (22.22)
08	1.625 (41.28)	.812 (20.62)	1.000 (25.40)
09	1.750 (44.45)	.937 (23.80)	1.125 (28.58)

Figure 46. Part Number Breakdown M85049/37 90° Split Backshell (Sheet 2 of 3)

SUPERSESSION DATA:

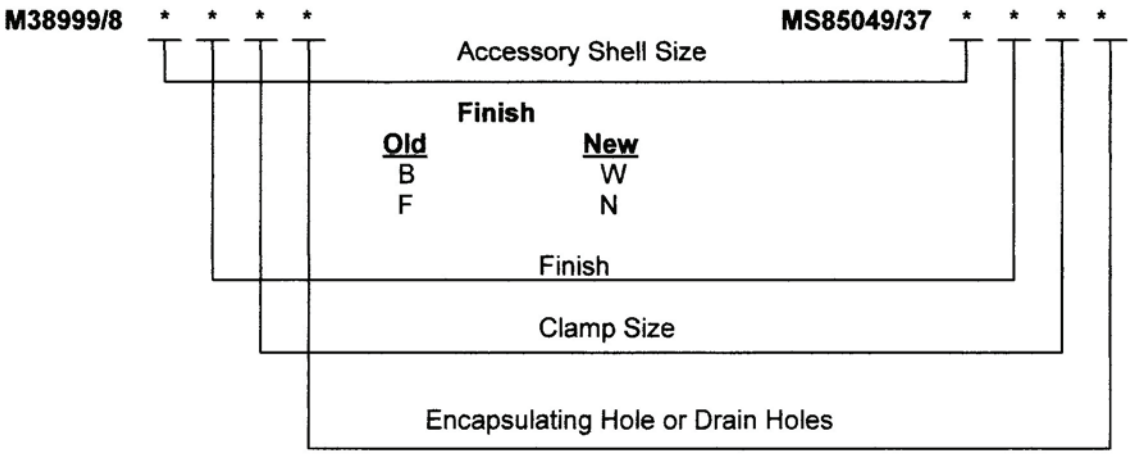


Figure 46. Part Number Breakdown M85049/37 90° Split Backshell (Sheet 3 of 3)

PART NUMBER DESIGNATION

M85049/17 -10 N 10 A

MIL SPEC

DASH NO.

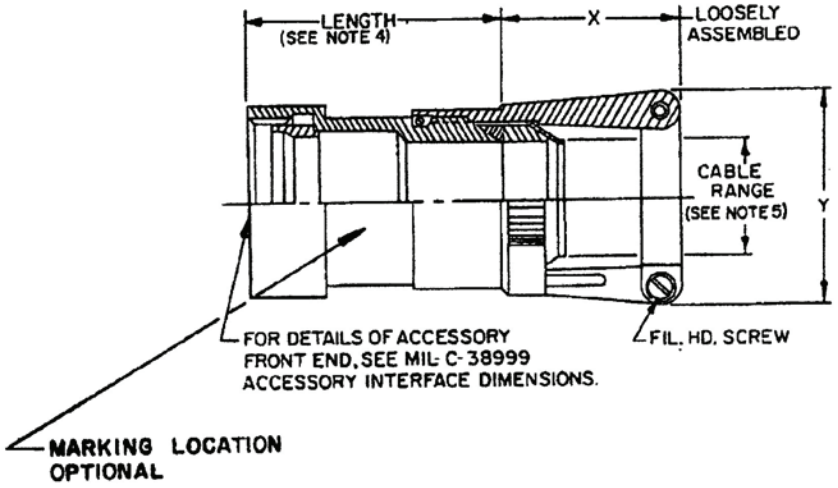
FINISH
(See Finish Codes)

CLAMP SIZE
(See Clamp Size Table)

LENGTH
(See Length Code)

FINISH CODES:

N ELECTROLESS NICKEL (NOT FOR NAVY USE)
W CADMIUM, OLIVE DRAB, 500 HR SALT SPRAY (NOT FOR USE IN SPACE APPLICATIONS)



CLAMP SIZE

Clamp Size	B Cable Range		Y	X
	Min.	Max.	Max.	Max.
01	.062	.125	.781	1.250
02	.125	.250	.969	1.250
03	.250	.375	1.062	1.250
04	.312	.500	1.156	1.250
05	.437	.625	1.250	1.312
06	.562	.750	1.375	1.375
07	.687	.875	1.500	1.500
08	.812	1.000	1.625	1.625
09	.937	1.125	1.750	1.625
10	1.062	1.250	1.875	1.625

Figure 47. Part Number Breakdown M85049/17 Environmental EMI-RFI Backshell (Sheet 1 of 2)

DASH NUMBER

Dash Number	Connector Shell Size		Clamp Size Range*	
	Series II	Series I	Min.	Max.
-08	8	9	01	02
-10	10	11	01	03
-12	12	13	02	04
-14	14	15	02	05
-16	16	17	02	06
-18	18	19	03	07
-20	20	21	03	08
-22	22	23	03	09
-24	24	25	04	10

LENGTH CODES

Code	Shell Size	Length ±.032 One Piece Construction
BLANK	8 THRU 24	1.50
A	8 THRU 24	2.50
B	14 THRU 24	3.50
C	20 THRU 24	4.50

Figure 47. Part Number Breakdown M85049/17 Environmental EMI-RFI Backshell (Sheet 2 of 2)

78. DUMMY RECEPTACLES AND CONNECTOR COVERS, SERIES I.

79. This section contains the information pertaining to dummy receptacles, connector covers, and their procurement as related to Series I connectors only.

80. DUMMY RECEPTACLE. Dummy receptacles are provided and shall be used to stow unmated plugs caps or protective covers when the related component is not in operational use. The dummy receptacle shall be marked and located to permit easy location and access.

81. Dummy Receptacle M38999/9. This dummy receptacle is to be used where necessary. The dummy receptacle, along with dimensions and part number breakdown, is illustrated (Figure 48).

82. PROTECTIVE COVERS. Protective covers are more commonly called dust caps. These are connector covers for plugs and receptacles.

83. Connector Covers for Plugs MS27501. The connector cover for plugs, along with part number breakdown, is illustrated (Figure 49).

84. Connector Covers for Receptacles MS27502. The connector covers for receptacles, along with part number breakdown, is illustrated (Figure 50).

PART NUMBER DESIGNATION

M38999/9 9 11 B

MIL SPEC

DASH NO.
(See Dash No. Table)

SHELL SIZE
(See Shell Size Table)

FINISH
(See Finish Code)

FINISH CODES:

B – CADMIUM PLATE, OLIVE DRAB, OVER A SUITABLE UNDERPLATE (CONDUCTIVE) -65°C to +175°C.

X – SAME AS B, BUT HIGHER CORROSION REQUIREMENT.

MATERIAL:

SHELL: ALUMINUM ALLOY AS SPECIFIED IN MIL-DTL-38999 WITH FINISHES: B or X.

SEALING GASKET: NON-CORROSIVE SILICONE, OR FLUOROSILICONE ELASTOMETER.

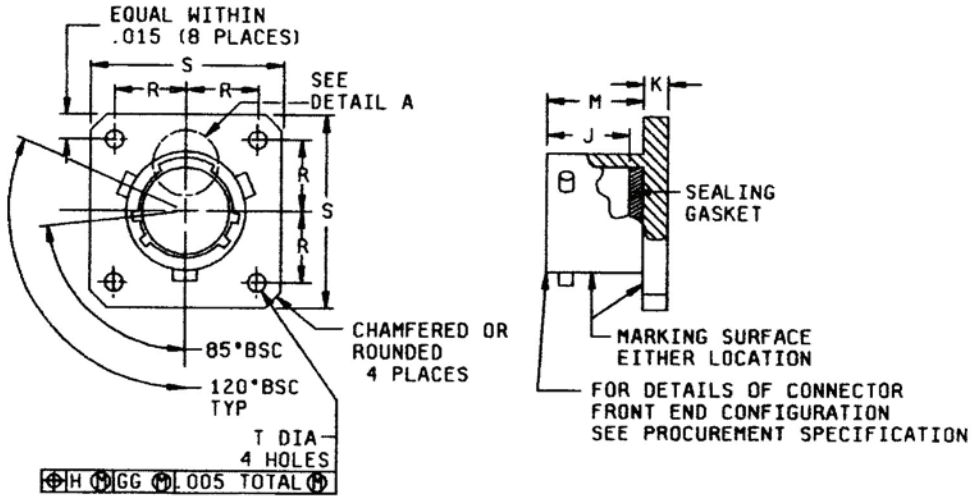


Figure 48. Part Number Breakdown M38999/9 Dummy Receptacle (Sheet 1 of 2)

CLAMP SIZE

Dimensions								
Shell size	K +.015 -.000	M ±.010	T dia +.010 -.005	R BSC	S ±.020	J +.010 -.015	X (TP)	Y (TP)
9	.085	.727	.128	.3595	.938	.567	77°	113°
11				.406	1.031		67°	123°
13				.453	1.125		63°	127°
15				.4845	1.219		61°	129°
17				.531	1.312		65°	125°
19				.578	1.438		65°	125°
21	.115	697		.625	1.562		65°	125°
23			.147	.6875	1.688		69°	121
25				.750	1.812		69°	121°

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. The gage features for GG shall be .010 (0.25 mm) smaller than the MMC size at baste location.
4. Flange is solid.
5. Dummy receptacles are used when unmated plugs must be protected.

Figure 48. Part Number Breakdown M38999/9 Dummy Receptacle (Sheet 2 of 2)

PART NUMBER DESIGNATION

MS27501 B 11 C L

MIL SPEC

FINISH
(See Finish Code)

SHELL SIZE
(See Shell Size Table)

STYLE
C – Chain
A – Without Chain

LENGTH
(Omit style A or C with standard chain lengths)
(Tolerance: +.500, -.250)
L – 5 inch chain in lieu of standard length
M – 6 inch chain in lieu of standard length
N – 7 inch chain in lieu of standard length

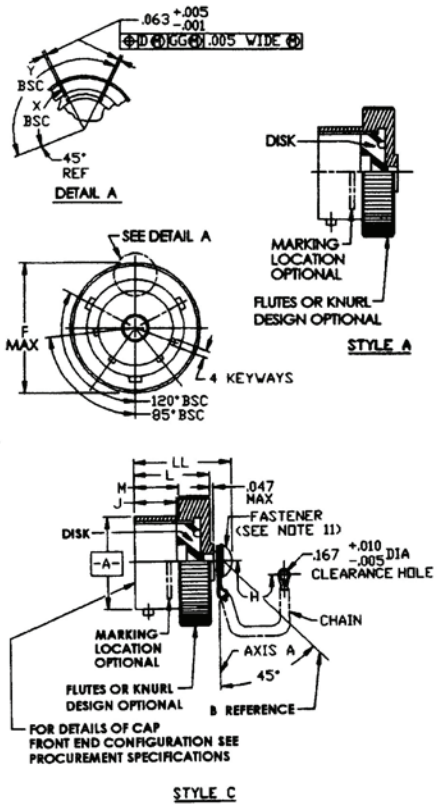
FINISH CODES:

B – CADMIUM PLATE, OLIVE DRAB, OVER A SUITABLE UNDERPLATE (CONDUCTIVE) -65°C to +175°C.
X – SAME AS B, BUT HIGHER CORROSION REQUIREMENT.

MATERIAL:

CAP: ALUMINUM ALLOY OR MACHINED ALUMINUM ALLOY.
DISK: NON-CORROSIVE SILICONE, OR FLUOROSILICONE ELASTOMETER.
CHAIN: STAINLESS STEEL, PASSIVATED.
FASTENER: STAINLESS STEEL, PASSIVATED.

Figure 49. Part Number Breakdown MS27501 Connector Covers (Sheet 1 of 2)



SHELL SIZE

Shell size	A dia +.001 -.005	F max dia	H +.500 -.250 Standard chain length	J +.010 -.015	L max	M min	X	Y	LL max
9	.572	.82	3.0	.567	.9	.58	77°	113°	1.16
11	.700	.94					67°	123°	
13	.850	1.07	3.5				63°	127°	
15	.975	1.19					61°	129°	
17	1.100	1.32					65°	125°	
19	1.207	1.44							
21	1.332	1.57	4.0				69°	121°	
23	1.457	1.69							
25	1.582	1.82							

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only
3. Finish: See MIL-DTL-38999.
4. BSC dimensions apply at Maximum Material Condition (MMC)
5. The gauge features for GG shall be .004 inches (0.10 mm) smaller than MMC size at basic location.
6. Not for space born applications.

Figure 49. Part Number Breakdown MS27501 Connector Covers (Sheet 2 of 2)

PART NUMBER DESIGNATION

MS27502 A 15 C L

MIL SPEC

FINISH
(See Finish Code)

SHELL SIZE
(See Shell Size Table)

STYLE
C – Chain
N – With Chain and Ring
A – Without Chain

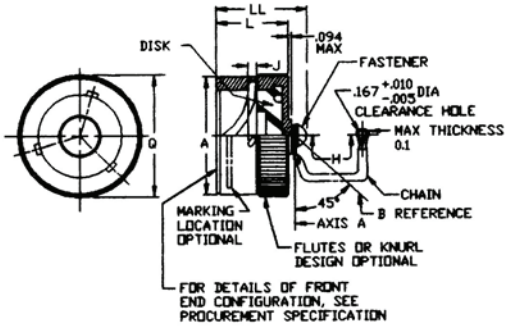
LENGTH
(Omit style A or C and N with standard chain lengths)
(Tolerance: +.500, -.250)
L – 5 inch chain in lieu of standard length

FINISH CODES:

B – CADMIUM PLATE, OLIVE DRAB, OVER A SUITABLE UNDERPLATE (CONDUCTIVE) -65°C to +175°C.
X – SAME AS B, BUT HIGHER CORROSION REQUIREMENT.

MATERIAL:

CAP: ALUMINUM ALLOY OR MACHINED ALUMINUM ALLOY.
DISK: NON-CORROSIVE SILICONE, OR FLUOROSILICONE ELASTOMETER.
CHAIN: STAINLESS STEEL, PASSIVATED.
FASTENER: STAINLESS STEEL, PASSIVATED.



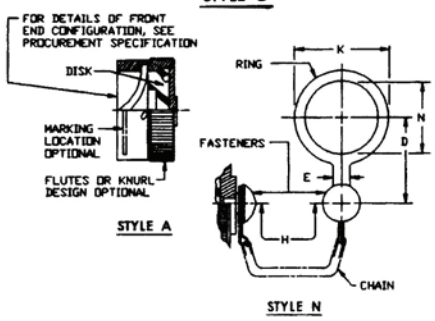


Figure 50. Part Number Breakdown MS27502 Connector Covers for Receptacles (Sheet 1 of 2)

SHELL SIZE

Shell size	A max dia	D		E min ring throat	H +.50, -.25 Standard chain length	J ±.015	K max dia	L max	LL max	N min dia	Q max dia
		min	max								
9	.82	.71	1.03	.23	3.0	.105	1 03	.82	1.1	.70	.86
11	.94	.74	1.13				1.21			.84	.98
13	1.10	.93	1.23		3.5		1.40			1.01	1 16
15	1.22	.99	1.29				1.60			1.14	1.28
17	1.34	1.05	1.35				1.70			1.26	1.41
19	1.46	1.11	1.41				1.80			1.39	1.52
21	1.58	1.18	1 47		4.0		1.92			1.51	1.65
23	1.70	1.24	1.54				2.10			1.64	1.77
25	1 83	1 30	1 60			138	220			1.76	1.89

NOTES:

1. **Dimensions are in inches.**
2. **Metric equivalents are given for general information only.**
3. **Finish: See MIL-DTL-38999.**
4. **Not for space born applications.**

Figure 50. Part Number Breakdown MS27502 Connector Covers for Receptacles (Sheet 2 of 2)

85. DUMMY RECEPTACLES AND CONNECTOR COVERS, SERIES II.

86. This section contains the information pertaining to dummy receptacles, connector covers, and their procurement as related to Series II connectors only.

87. DUMMY RECEPTACLES. Dummy receptacles are provided and shall be used to stow unmated plugs, caps or protective covers when the related component is not in operational use. The dummy receptacle shall be marked and located to permit easy location and access.

88. Dummy Receptacle M38999/10. This dummy receptacle is to be used where necessary. The dummy receptacle, along with dimensions and part number breakdown, is illustrated (Figure 51).

89. PROTECTIVE COVERS. Protective covers are more commonly called dust caps. There are dust caps for plugs and receptacles.

90. Connector Covers for Plugs MS27510. The connector cover for plugs, along with part number breakdown, is illustrated (Figure 52).

91. Connector Covers for Receptacles MS27511. The covers for receptacles, along with part number breakdown, is illustrated (Figure 53).

PART NUMBER DESIGNATION

M38999/10 10 B

MIL SPEC

SHELL SIZE
(See Shell Size Table)

FINISH
(See Finish Code)

FINISH CODES:

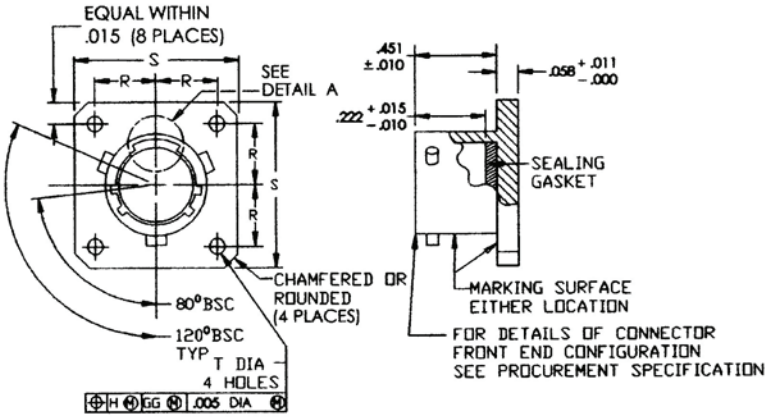
B – CADMIUM PLATE, OLIVE DRAB, OVER A SUITABLE UNDERPLATE (CONDUCTIVE) -65°C to +175°C.

X – SAME AS B, BUT HIGHER CORROSION REQUIREMENT.

MATERIAL:

SHELL: ALUMINUM ALLOY AS SPECIFIED IN MIL-DTL-38999 WITH FINISHES: B or X.

SEALING GASKET: NON-CORROSIVE SILICONE, OR FLUOROSILICONE ELASTOMETER.



CLAMP SIZE

Dimensions					
Shell size	R BSC	S max	T dia +.010 -.005	X (TYP)	Y (TYP)
8	.297	.828	.120	82°	118°
10	.3595	.954		72°	128°
12	.406	1.047		68°	132°
14	.453	1.141		66°	134°
16	.4845	1.234		70°	130°
18	.531	1.328		70°	130°
20	.578	1.453		70°	130°
22	.625	1.578		74°	126°
24	.6875	1.703	.147	74°	126°

Figure 51. Part Number Breakdown M38999/10 Dummy Receptacle (Sheet 1 of 2)

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. The gage features for GG shall be .010 (0.25 mm) smaller than the MMC size at baste location.
4. Flange is solid.
5. Dummy receptacles are used when unmated plugs must be protected.

Figure 51. Part Number Breakdown M38999/10 Dummy Receptacle (Sheet 2 of 2)

PART NUMBER DESIGNATION

MS27510 A 10 C L

MIL SPEC

FINISH
(See Finish Code)

SHELL SIZE
(See Shell Size Table)

STYLE
C – Chain
A – Without Chain

LENGTH
(Omit style A or C and N with standard chain lengths)
(Tolerance: +.500, -.250)
L – 5 inch chain in lieu of standard length
M – 6 inch chain in lieu of standard length
N - 7 inch chain in lieu of standard length

FINISH CODES:
A – CADMIUM, BRIGHT
B – CADMIUM OLIVE DRAB
C – HARD ANODIZE
F – ELECTROLESS NICKEL (NOT FOR NAVY USE)
N – ELECTRODEPOSITED NICKEL (NOT FOR NAVY USE)

MATERIAL:
CAP: ALUMINUM ALLOY OR MACHINED ALUMINUM ALLOY.
DISK: NON-CORROSIVE SILICONE, OR FLUOROSILICONE ELASTOMETER.
CHAIN: STAINLESS STEEL, PASSIVATED.
FASTENER: STAINLESS STEEL, PASSIVATED.

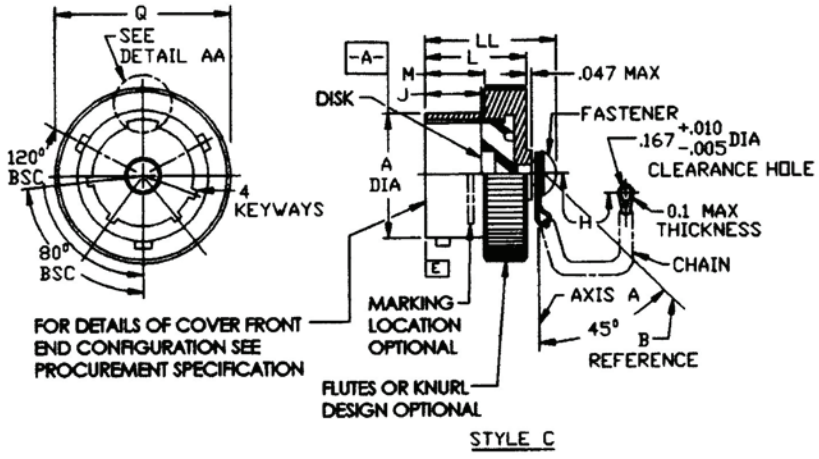
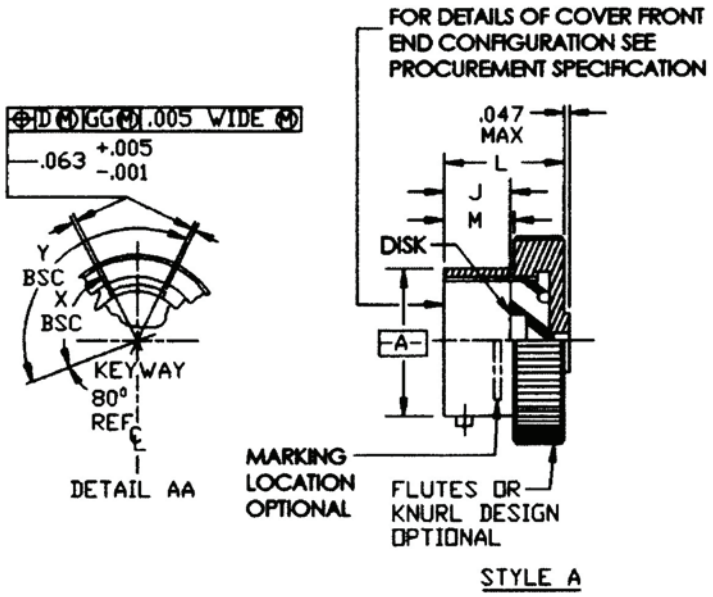


Figure 52. Part Number Breakdown MS27510 Connector Covers for Plugs (Sheet 1 of 2)



SHELL SIZE

Shell size	A dia +.001 -.005	H +.500 -.250 standard chain length	J +.010 -.015	L max	M min	Q max dia	X BSC degree	Y BSC degree	LL max
8	.473	3.0	.222	.57	.31	.72	82°	118°	.82
10	.590					.85	72°	128°	
12	.750	3.50				1.00	68°	132°	
14	.875					1.13	66°	134°	
16	1.000					1.25	70°	130°	
18	1.125					1.38			
20	1.250	4.0				1.50			
22	1.375					1.63	74°	126°	
24	1.500					1.75			

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Finish: See MIL-DTL-38999.
4. Not for space born applications.
5. BSC dimensions apply at maximum material condition (MMC).
6. The gauge features for GG shall be .004 inch (0.10 mm) smaller than MMC size at basic location.

Figure 52. Part Number Breakdown MS27510 Connector Covers for Plugs (Sheet 2 of 2)

PART NUMBER DESIGNATION

MS27511 F 12 C L

MIL SPEC

FINISH
(See Finish Code)

SHELL SIZE
(See Shell Size Table)

STYLE
C – Chain
N – With Chain and Ring
R - Rope
A – Without Chain

LENGTH
L – 5 inch chain in lieu of standard length
Leave blank for standard length
Applicable to chain only. Not applicable to style R.

FINISH CODES:
A – CADMIUM, BRIGHT
B – CADMIUM OLIVE DRAB
C – HARD ANODIZE
F – ELECTROLESS NICKEL (NOT FOR NAVY USE)
N – ELECTRODEPOSITED NICKEL (NOT FOR NAVY USE)

MATERIAL:
CAP: ALUMINUM ALLOY OR MACHINED ALUMINUM ALLOY.
DISK: NON-CORROSIVE SILICONE, OR FLUOROSILICONE ELASTOMETER.
CHAIN: STAINLESS STEEL, PASSIVATED.
FASTENER: STAINLESS STEEL, PASSIVATED.
ROPE: INSOLATED, BRAIDED STEEL WIRE
RING: STAINLESS STEEL, PASSIVATED, .030 MAX THICKNESS

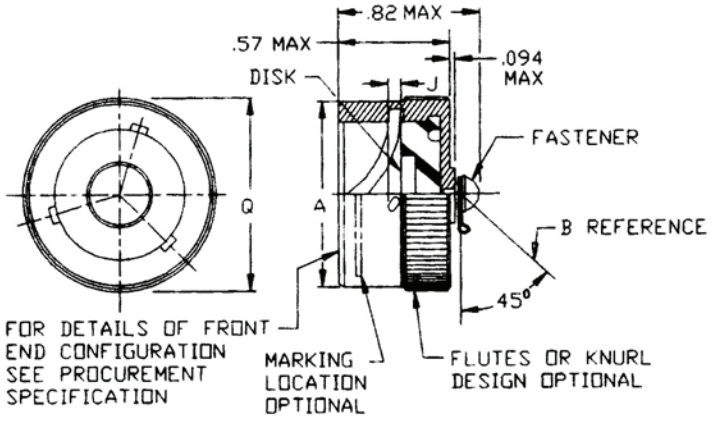
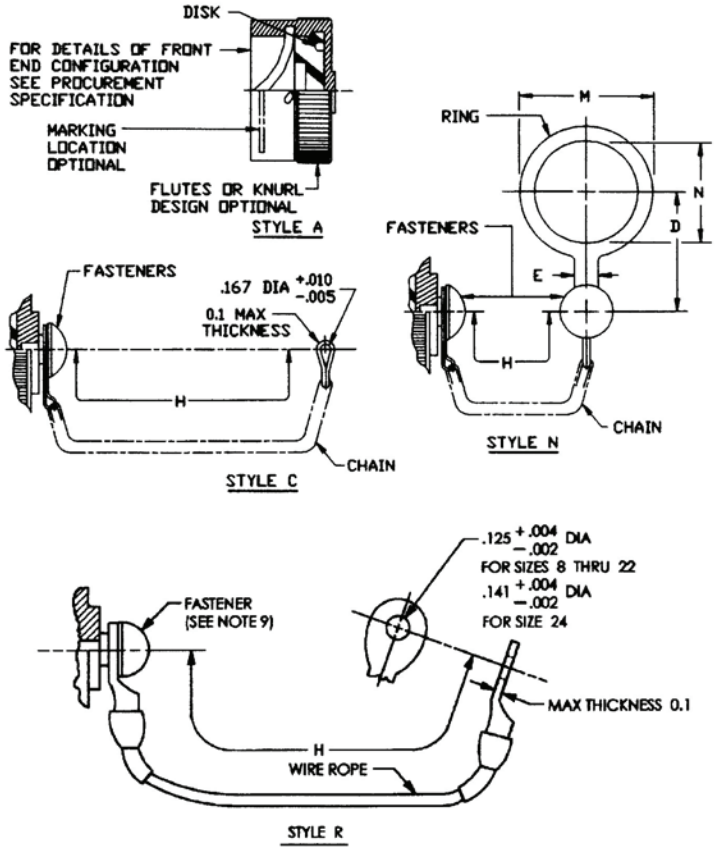


Figure 53. Part Number Breakdown MS27511 Connector Covers for Receptacles (Sheet 1 of 2)



SHELL SIZE

Shell size	A dia max	D max	D min	E min ring throat	H +.500 -.250 standard chain or rope length	J +.015	M max dia	N min dia	Q max dia
8	.630	1.13	.80	.23	3.0	.082	1.22	.89	.750
10	.761	1.23	.93				1.42	1.01	.859
12	.936	1.29	.99				1.55	1.14	1.031
14	1.074	1.35	1.05		3.50		1.68	1.26	1.156
16	1.172	1.41	1.11				1.80	1.39	1.281
18	1.304	1.47	1.18				1.92	1.51	1.406
20	1.435	1.54	1.24		4.0	.107	2.05	1.64	1.531
22	1.560	1.60	1.30				2.18	1.76	1.641
24	1.688	1.66	1.36				2.30	1.89	1.766

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Finish: See MIL-DTL-38999.
4. Not for space born applications.

Figure 53. Part Number Breakdown MS27511 Connector Covers for Receptacles (Sheet 2 of 2)

92. MIL-DTL-38999 SERIES III AND SERIES IV CONNECTOR ACCESSORIES.

93. The connector accessories in this section pertain to Series III and IV which are the same and interchangeable. Crimp tools, insertion tools, and removal tools are not covered in this section. These are used in connector build-up and are to be found in NAVAIR 01-1A-505-1 WP 013 00, 020, 021 and 022. WP 024 00 pertains to accessories and tools used on the backside or wire side of the connector to include the following:

a. Adapter Tools.

b. Strap Wrench.

c. Strain Reliefs.

d. Shrink Boots and Adapters.

e. Non-Environmental Backshells.

f. EMI/RFI Grounding Terminators.

g. Non-Environmental EMI/RFI Backshells.

h. Environmental EMI/RFI Backshells.

94. SPECIAL TOOLS. Connector backshells come in a wide variety of types depending on the application, To install backshells or accessories, adapter tools and a strap wrench are needed. Adapter tools are used to hold the connector during backshell installation and removal. The strap wrench is used to tighten or loosen the backshell. Special tools are used so as not to damage the connector or accessories.

95. ADAPTER TOOL SELECTION. To select the proper adapter tool, the shell size, series, and the type, either plug or receptacle, needs to be known. The adapter tool is illustrated (Figure 54).

96. Series III Adapter Tool. Adapter tools for Series III plugs are available. Series III receptacles will require a spare mating plug and strap wrench in place of the adapter tool.

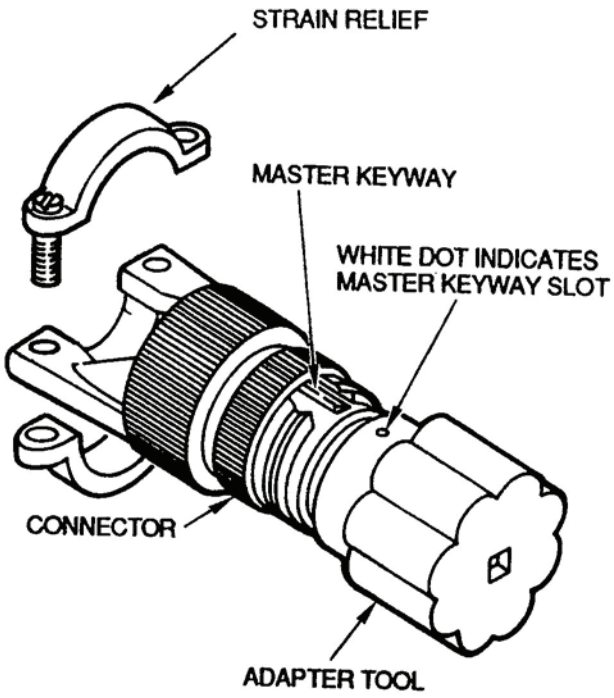


Figure 54. Adapter Tool (BT-S-389)

a. Determine the polarization letter for proper tool selection.

b. Convert letter shell size code to a numeric shell size.

c. Adapter tools for plugs are shown (Table 5).

97. Series IV Adapter Tool. Adapter tools for Series IV plugs are available.

a. Convert letter shell size code to a numeric shell size.

b. Adapter tools for plugs and receptacles are shown (Table 6).

Table 5. Series III Adapter Tool Selection for Plugs

Individual Tool Part Numbers	Shell Size	Keying Positions (Figure 6)	Color Coding
BT389T-9A	9	N,C,D	Lavender
BT389T-11A	11	N,D,E	
BT389T-13A	13	N,D,E	
BT389T-15A	15	N,D,E	
BT389T-17A	17	N,A,B	
BT389T-19A	19	N,A,B	
BT389T-21A	21	N,A,B	
BT389T-23A	23	N,A,B	
BT389T-25A	25	N,A,B	
BT389T-9B	9	A,B,E	
BT389T-11B	11	A,B,C	
BT389T-13B	13	A,B,C	
BT389T-15B	15	A,B,C	
BT389T-17B	17	C,D,E	
BT389T-19B	19	C,D,E	
BT389T-21B	21	C,D,E	
BT389T-23B	23	C,D,E	
BT389T-25B	25	C,D,E	

Table 6. Series IV Adapter Tool Selection

Individual Tool Part Numbers For Plugs	Shell Size	Keying Positions	Color Coding	Individual Tool Part Numbers For Receptacles	Shell Size	Keying Positions	Color Coding
BT389B-11	11	All	Beige	BT389BR-11	11	All	Beige
BT389B13	13			BT389BR-13	13		
BT389B-15	15			BT389BR-15	15		
BT389B-17	17			BT389BR-17	17		
BT389B-19	19			BT389BR-19	19		
BT389B-21	21			BT389BR-21	21		
BT389B-23	23			BT389BR-23	23		
BT389B-25	25			BT389BR-25	25		

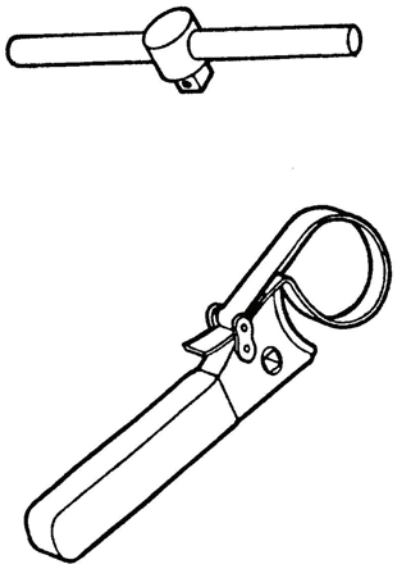


Figure 55. Adapter Tool Accessories

98. ADAPTER TOOL ACCESSORIES. To hold the adapter tool and to keep the connector from turning when installing or removing backshells, the use of a ¼ inch drive T-handle is recommended. A strap wrench is used for installation and removal of backshells to apply even pressure without causing damage to accessories (Figure 55).

99. BACKSHELL REMOVAL. Backshells are used to protect, shield, and add strength to connectors. When modification or repair to the connector is necessary the backshell must be removed. Proceed using the following steps:

a. Select the correct adapter tool Tables 5 or 6 by series, T-handle and strap wrench (Figure 55).

(1) Select two strap wrenches for Series III receptacles (Figure 55).

b. Mate adapter tool to connector. Ensure white dot on adapter tool lines to master keyway of connector. Spinning tool on connector will cause damage to tool and or connector (Figure 56).

(1) Series III receptacles use a mating plug and a second strap wrench. Mount strap wrench opposite to step c on mating plug to provide holding.

c. Install strap wrench around part to be removed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 56).

d. Insert T-handle into socket of adapter tool to provide holding (Figure 57).

e. To loosen backshell apply force counterclockwise as viewed from connector rear (Figure 57).

f. Tape backshell to bundle to prevent loss.

100. BACKSHELL INSTALLATION. Upon completion of maintenance or modification the backshell must be replaced. Proceed using the following steps:

a. Remove tape from backshell and wire bundle. Start backshell on connector by hand to prevent cross threading.

b. Continue tightening by hand until the backshell serrated teeth engage the teeth on the back of the connector.

c. Select the correct adapter tool (Tables 5 or 6) by series, T-handle and strap wrench (Figure 56).

NOTE

Select two strap wrenches for Series III receptacles.

d. Mate adapter tool to connector. Ensure white dot on adapter lines to master keyway of connector. Spinning tool on connector will cause damage to tool and/or connector.

NOTE

Series III receptacles use a mating plug and a second strap wrench.

e. Mount strap wrench opposite to step (d) on mating plug to provide holding.

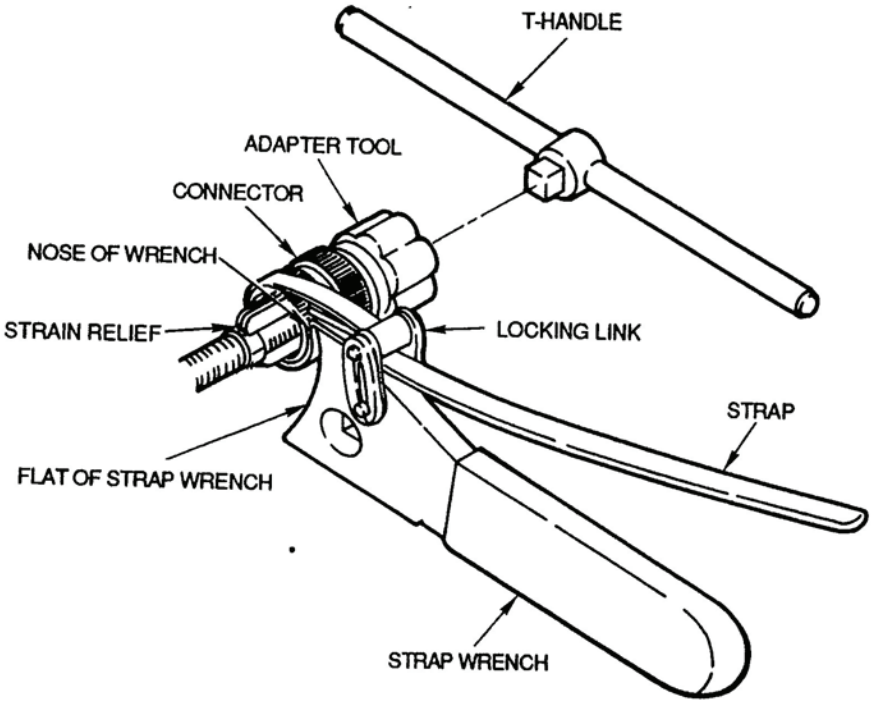


Figure 56. Strap Wrench Setup and Adjustment

f. Install strap wrench around part to be installed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 56).

g. Install T-handle into socket of adapter tool to provide holding (Figure 57).

h. To tighten backshell apply force clockwise as viewed from connector rear (Figure 58).

101. STRAIN RELIEFS. Strain reliefs are supports which attach to the connector and absorb vibration and shock transmitted by the wires or cable to the contact connection as well as to support cable and wire weight.

102. STRAIN RELIEF AVAILABILITY. Strain reliefs are available in either straight or 90°.

103. Straight Strain Relief M85049/38 This is a straight strain relief, The strain relief, along with dimensions and part number breakdown, is illustrated (Figure 59).

104. 90° Strain Relief M85049/39. This is a 90° strain relief. The strain relief, along with dimensions and part number breakdown, is illustrated (Figure 60).

105. STRAIN RELIEF REMOVAL. To remove either strain relief use the following procedure (Figure 61).

a. Loosen saddle clamp screws.

b. Unwrap any reinforcing silicone tape.

c. Remove strain relief using tools and tool procedure for backshell removal (paragraph 21).

d. Perform connector repair per NAVAIR 01-1A-505-1.

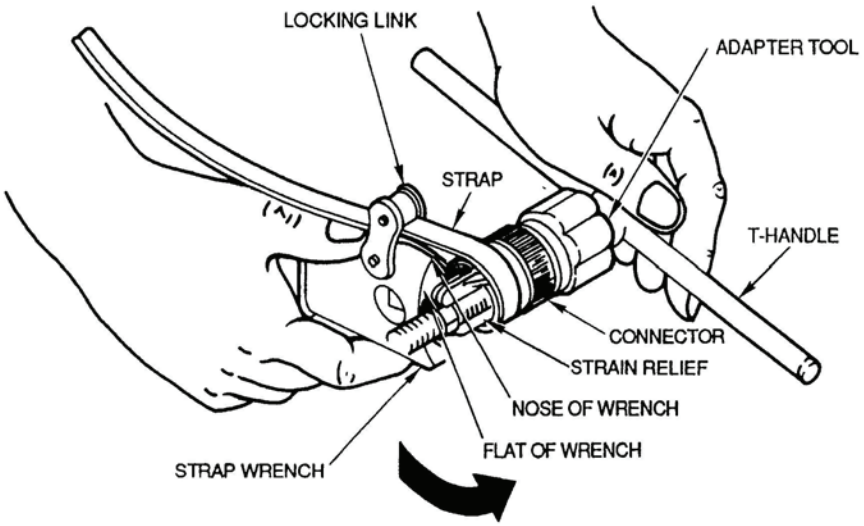


Figure 57. Loosening Position of Wrench

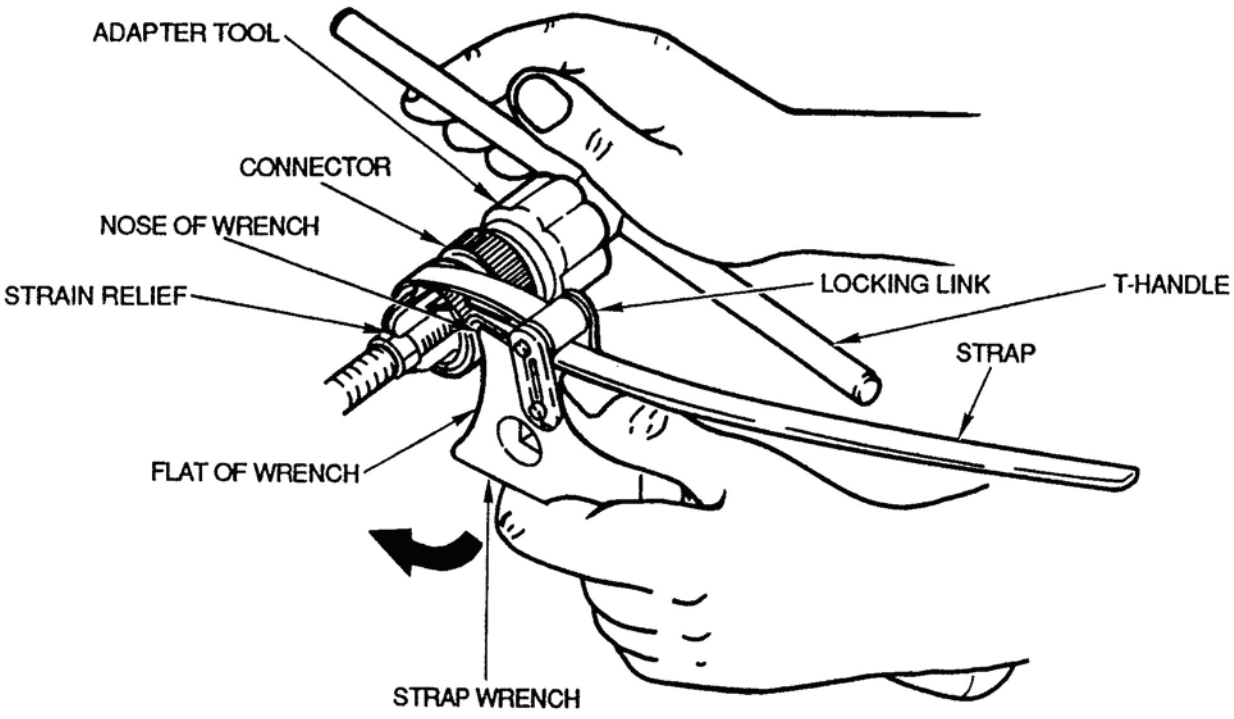


Figure 58. Tightening Position of Wrench

PART NUMBER DESIGNATION

M85049/ 38 S 10 W

MIL SPEC

SPECIFICATION SHEET.

CONFIGURATION
(S for detented self locking)
(Use a dash for non-self locking)

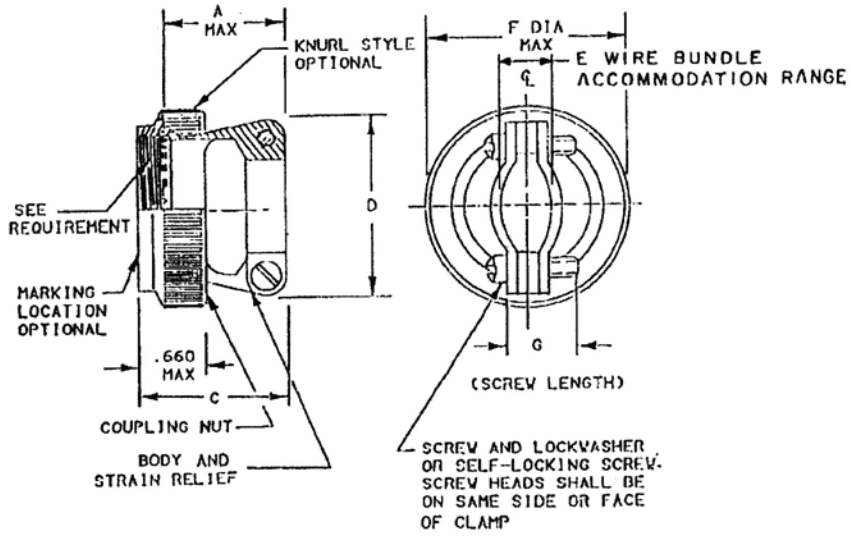
SHELL SIZE
(See Table)

FINISH

MATERIAL:
Coupling nut, clamp, saddle bars; Aluminum alloy in accordance with SAE AS85049.
Fastener: 300 series corrosion-resistant steel, passivate.
Finish: In accordance with SAE AS85049, N, S or W. (See Finish Codes)

FINISH CODES:

N	ELECTROLESS NICKEL (NOT FOR NAVY USE). AIR FORCE USE IN SPACE APPLICATIONS ONLY.
W	CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS). W IS PREFERRED FINISH.
S	CORROSION RESISTANT STEEL 300 SERIES IN ACCORDANCE WITH SAE AS85049.



SELF LOCKING STRAIGHT STRAIN RELIEF

Figure 59. Part Number Breakdown M85049/38 Straight Strain Relief (Sheet 1 of 4)

SHELL SIZE FOR
SELF LOCKING STRAIGHT STRAIN RELIEF

Connector shell size	Shell size code (REF)	C max overall length	D max	wire bundle accommodation range See Note 5		E max dia	G screw length	Screw threads	A max
				Min	Max				
9	A	1.21 (30.7)	.85 (21.6)	.098 (2.49)	.234 (5.94)	.858 (21.79)	.500 (12.70)	6-32	.91 (23.1)
11	B	1.21 (30.7)	.90 (22.9)	.153 (3.87)	.234 (5.94)	.984 (24.99)	.500 (12.70)	6-32	.91 (23.1)
13	C	1.31 (33.3)	1.10 (27.9)	.190 (4.83)	.328 (8.33)	1.157 (29.39)	.625 (15.88)	6-32	1.01 (25.70)
15	D	1.36 (34.5)	1.15 (29.2)	.260 (6.60)	.457 (11.61)	1.279 (32.49)	.750 (19.05)	6-32	1.06 (26.9)
17	E	1.45 (36.8)	1.30 (33.0)	.283 (7.19)	.614 (15.60)	1.406 (35.71)	.750 (19.05)	6-32	1.16 (29.5)
19	F	1.71 (43.4)	1.50 (38.1)	.325 (8.26)	.634 (16.10)	1.516 (34.50)	.750 (19.05)	8-32	1.41 (35.8)
21	G	1.81 (46.0)	1.60 (40.6)	.343 (8.71)	.698 (17.73)	1.642 (41.70)	.875 (22.23)	8-32	1.51 (38.4)
23	H	1.95 (49.5)	1.70 (43.2)	.381 (9.68)	.823 (20.90)	1.768 (44.91)	1.000 (25.40)	8-32	1.66 (42.2)
25	J	2.05 (52.1)	1.80 (45.7)	.418 (10.62)	.853 (21.66)	1.869 (47.98)	1.125 (28.58)	8-32	1.76 (44.7)

NOTES:
1. Dimensions are in inches.
2. Dimensions apply after plating.
3. Metric equivalents are given for general information only.
4. Millimeters are in parentheses.
5. Wire bundle accommodation range dimension is defined as the envelope area of the wire bundle. This dimension is not meant to define the clamp hardware limits.

Figure 59. Part Number Breakdown M85049/38 Straight Strain Relief (Sheet 2 of 4)

NON-SELF LOCKING STRAIGHT STRAIN RELIEF

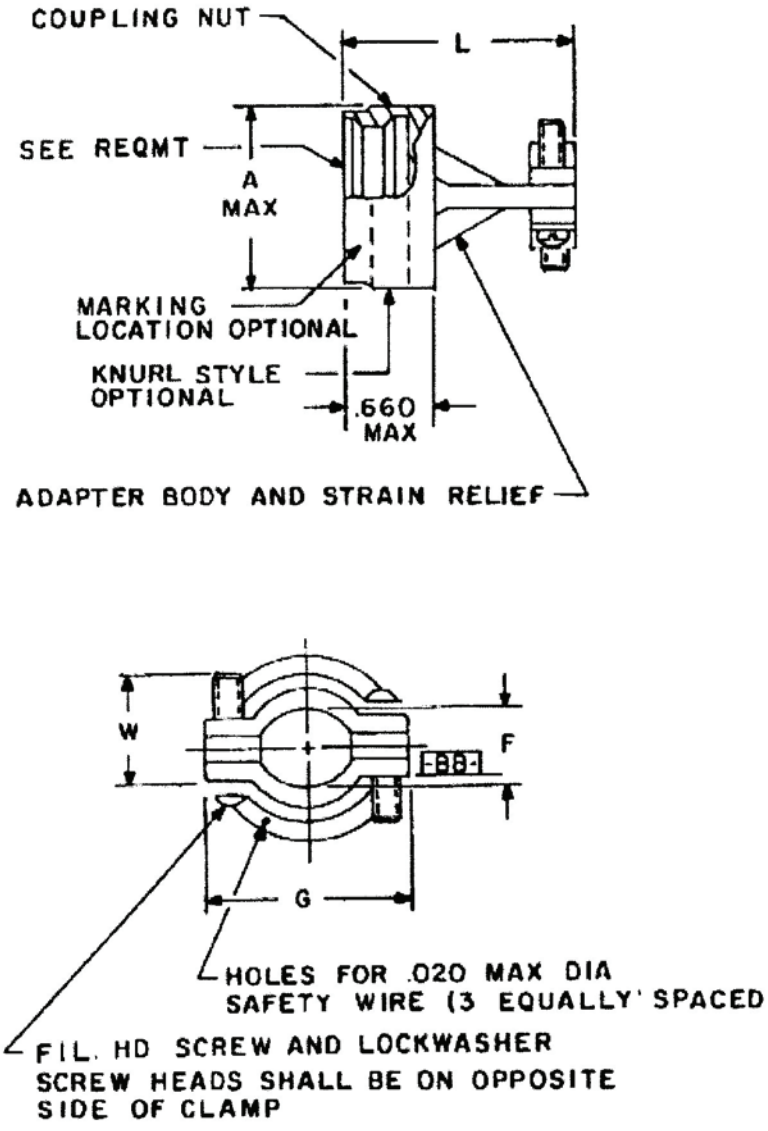


Figure 59. Part Number Breakdown M85049/38 Straight Strain Relief (Sheet 3 of 4)

SHELL SIZE FOR
NON-SELF LOCKING STRAIGHT STRAIN RELIEF

Shell size	A max dia of coupling ring	F Wire bundle accommodation range		G max dia	L max	W +.000 -.062 screw length	Screw size
		Min	Max				
9	.75 (19.1)	.098 (2.49)	.234 (5.94)	.85 (21.6)	1.10 (27.9)	.500 (12.70)	6-32
11	.85 (21.6)	.153 (3.87)	.234 (5.94)	.90 (22.9)	1.10 (27.9)	.500 (12.70)	6-32
13	1.00 (25.4)	.190 (4.83)	.328 (8.33)	1.10 (27.9)	1.20 (30.5)	.625 (15.88)	6-32
15	1.10 (27.9)	.260 (6.60)	.457 (11.61)	1.15 (29.2)	1.25 (31.8)	.750 (19.05)	6-32
17	1.25 (33.0)	.283 (7.19)	.614 (15.60)	1.30 (33.0)	1.35 (34.3)	.750 (19.05)	6-32
19	1.40 (38.1)	.325 (8.26)	.634 (16.10)	1.50 (38.1)	1.60 (40.6)	.750 (19.05)	8-32
21	1.50 (40.6)	.343 (8.71)	.698 (17.73)	1.60 (40.6)	1.70 (43.2)	.875 (22.23)	8-32
23	1.65 (43.2)	.381 (9.68)	.823 (20.90)	1.70 (43.2)	1.85 (47.0)	1.000 (25.40)	8-32
25	1.75 (45.7)	.418 (10.62)	.853 (21.67)	1.80 (45.7)	1.95 (49.5)	1.125 (28.58)	8-32

NOTES:
1. Dimensions are in inches.
2. Dimensions apply after plating.
3. Metric equivalents are given for general information only.
4. Millimeters are in parentheses.

Figure 59. Part Number Breakdown M85049/38 Straight Strain Relief (Sheet 4 of 4)

PART NUMBER DESIGNATION

M85049/	39	S	10	W

MIL SPEC

SPECIFICATION SHEET.

CONFIGURATION
(S for detented self locking)
(Leave blank for non-self locking)

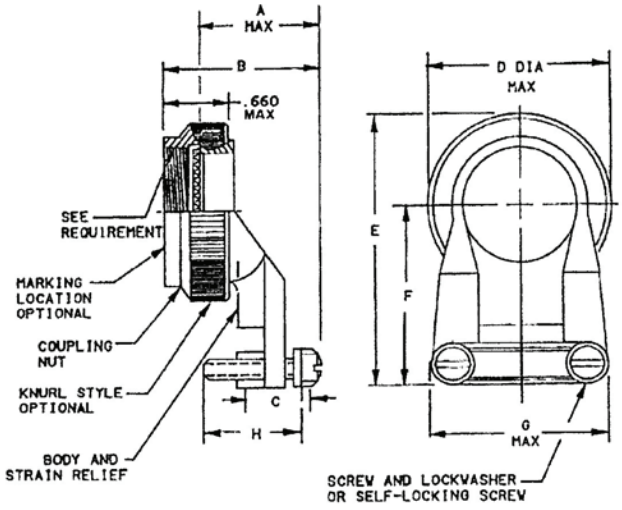
SHELL SIZE
(See Table)

FINISH

MATERIAL:
Coupling nut, clamp, saddle bars; Aluminum alloy in accordance with SAE AS85049.
Fastener: 300 series corrosion-resistant steel, passivate.
Finish: In accordance with SAE AS85049, N, S or W. (See Finish Codes)

FINISH CODES:

N	ELECTROLESS NICKEL (NOT FOR NAVY USE). AIR FORCE USE IN SPACE APPLICATIONS ONLY.
W	CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS). W IS PREFERRED FINISH.
S	CORROSION RESISTANT STEEL 300 SERIES IN ACCORDANCE WITH SAE AS85049.



SELF LOCKING 90° STRAIN RELIEF

Figure 60. Part Number Breakdown M85049/39 90° Strain Relief (Sheet 1 of 5)

SHELL SIZE FOR
SELF LOCKING 90° STRAIN RELIEF (TABLE 1 of 2)

Connector shell size	Shell size code (REF)	A max	B max overall length	C wire bundle accommodation range See Note 5		D max dia	E max	F max size	G max	H screw length	Screw size
				Min	Max						
9	A	1.01 (25.7)	1.31 (33.3)	.098 (2.49)	.234 (5.94)	.858 (21.79)	1.38 (35.1)	1.00 (25.4)	.85 (21.6)	.500 (12.70)	6-32
11	B	1.01 (25.7)	1.31 (33.3)	.153 (3.87)	.234 (5.94)	.984 (24.99)	1.53 (38.9)	1.10 (27.9)	.90 (22.9)	.500 (12.70)	6-32
13	C	1.21 (30.7)	1.51 (38.4)	.190 (4.83)	.328 (8.33)	1.157 (29.39)	1.60 (40.6)	1.15 (27.5)	1.10 (27.9)	.625 (15.88)	6-32
15	D	1.26 (32.0)	1.55 (39.1)	.260 (6.60)	.457 (11.61)	1.279 (32.45)	1.80 (45.7)	1.25 (31.8)	1.15 (29.2)	.750 (19.05)	6-32
17	E	1.41 (35.8)	1.71 (48.4)	.283 (7.19)	.614 (15.60)	1.406 (35.71)	1.93 (49.0)	1.30 (33.0)	1.30 (33.0)	.750 (19.05)	6-32

Figure 60. Part Number Breakdown M85049/39 90° Strain Relief (Sheet 2 of 5)

SHELL SIZE FOR
SELF LOCKING 90° STRAIN RELIEF (TABLE 2 of 2)

Connector shell size	Shell size code (REF)	A max	B max overall length	C wire bundle accommodation range		D max dia	E max	F max size	G max	H screw length	Screw size
				Min	Max						
19	F	1.51 (38.4)	1.81 (46.0)	.325 (8.26)	.634 (16.10)	1.516 (38.50)	2.05 (52.1)	1.35 (34.3)	1.50 (38.1)	.750 (19.05)	8-32
21	G	1.65 (42.2)	1.95 (49.5)	.343 (8.71)	.698 (17.73)	1.642 (41.70)	2.35 (59.7)	1.50 (40.6)	1.60 (40.5)	.875 (22.23)	8-32
23	H	1.76 (44.7)	2.10 (53.3)	.382 (9.68)	.823 (20.90)	1.768 (44.91)	2.56 (65.5)	1.75 (44.5)	1.70 (43.2)	1.000 (25.40)	8-32
25	J	1.91 (48.5)	2.21 (56.1)	.418 (10.62)	.853 (22.66)	1.869 (47.98)	2.73 (69.3)	1.85 (49.5)	1.80 (45.7)	1.125 (28.58)	8-32

NOTES:
1. Dimensions are in inches.
2. Dimensions apply after plating.
3. Metric equivalents are given for general information only.
4. Millimeters are in parentheses.
5. Wire bundle accommodation range is determined as the envelope area of the wire bundle. This dimension is not meant to define the clamp hardware limits.

Figure 60. Part Number Breakdown M85049/39 90° Strain Relief (Sheet 3 of 5)

SHELL SIZE FOR
NON-SELF LOCKING 90° STRAIN RELIEF

Shell size	A max dia of coupling ring	F wire bundle accommodation range		G max	Screw size	Y max	Z max	W [illegible]	H max
		Min	Max						
9	.75 (19.1)	.099 (2.49)	.234 (5.94)	.85 (21.6)	6-32	1.20 (30.5)	1.00 (25.4)	.500 (12.70)	1.38 (35.1)
11	.85 (21.6)	.153 (3.87)	.234 (5.94)	.90 (22.9)	6-32	1.20 (30.5)	1.10 (27.9)	.500 (12.70)	1.53 (38.9)
13	1.00 (25.4)	.190 (4.83)	.328 (8.33)	1.10 (27.9)	6-32	1.40 (35.6)	1.10 (27.9)	.625 (15.88)	1.60 (40.6)
15	1.10 (27.9)	.260 (6.60)	.457 (11.61)	1.15 (29.2)	6-32	1.45 (36.8)	1.25 (31.8)	.750 (19.05)	1.80 (45.7)
17	1.25 (31.8)	.283 (7.19)	.614 (15.60)	1.30 (33.0)	6-32	1.60 (40.6)	1.30 (33.02)	.750 (19.05)	1.93 (49.0)
19	1.40 (35.6)	.325 (8.26)	.634 (16.10)	1.50 (38.1)	8-32	1.70 (43.2)	1.35 (34.3)	.750 (19.05)	2.05 (52.1)
21	1.50 (38.1)	.343 (8.71)	.698 (17.73)	1.60 (40.6)	8-32	1.85 (47.0)	1.60 (40.6)	.875 (22.23)	2.35 (59.7)
23	1.65 (41.9)	.381 (9.68)	.823 (20.90)	1.70 (43.2)	8-32	1.95 (49.5)	1.75 (44.5)	1.000 (25.40)	2.58 (65.5)
25	1.75 (44.5)	.418 (10.62)	.853 (21.67)	1.80 (45.7)	8-32	2.10 (53.3)	1.85 (47.0)	1.125 (28.58)	2.73 (69.3)

NOTES:
1. Dimensions are in inches.
2. Dimensions apply after plating.
3. Metric equivalents are given for general information only.
4. Millimeters are in parentheses.

Figure 60. Part Number Breakdown M85049/39 90° Strain Relief (Sheet 4 of 5)

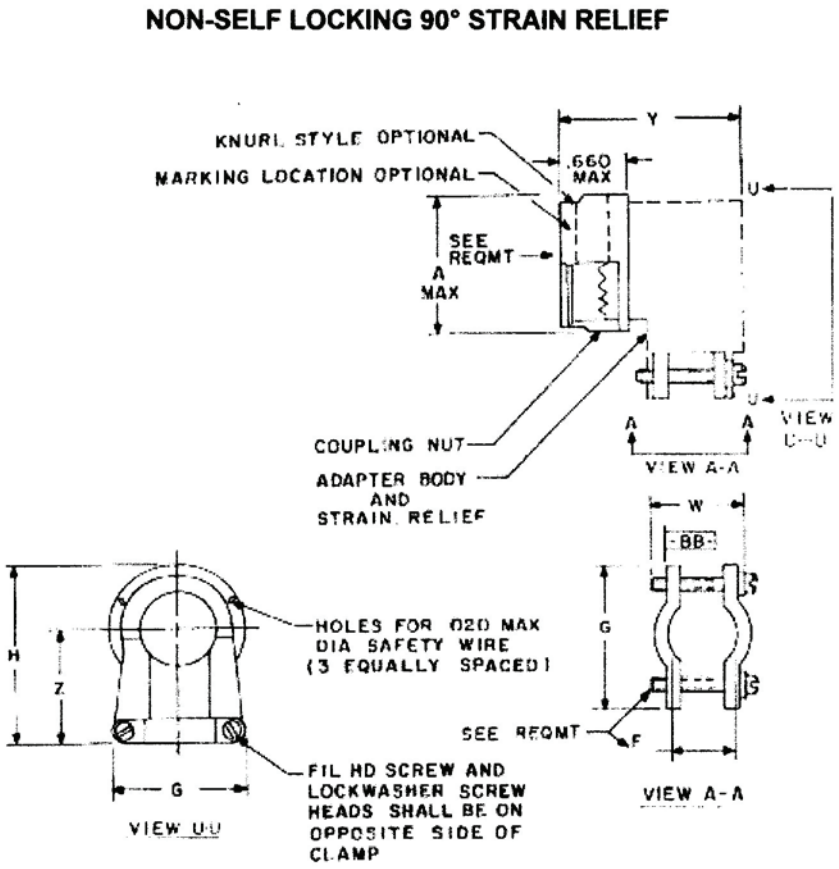


Figure 60. Part Number Breakdown M85049/39 90° Strain Relief (Sheet 5 of 5)

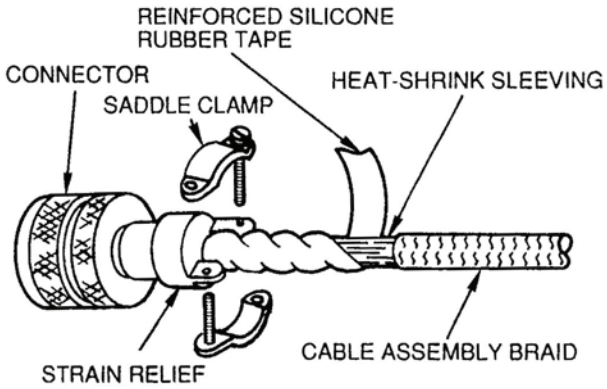


Figure 61. Saddle Clamp Removal and Installation

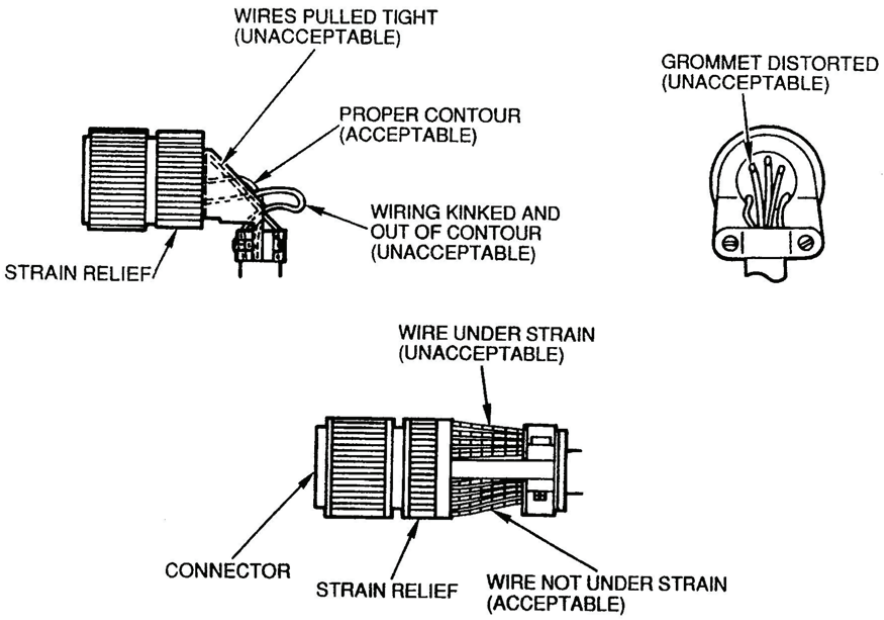


Figure 62. Proper Dress of Wire into Connector

106. STRAIN RELIEF INSTALLATION. Upon the completion of connector repair install the strain relief using the following procedure (Figure 61):

a. Wrap cable with reinforcing silicone tape to build cable diameter where necessary.

b. Install strain relief using tools and tool procedure for backshell installation (paragraph 22).

c. Restore proper dress of wire at connector. Wire should not elongate grommet holes, pull tightly to prevent misalignment (Figure 62).

d. Tighten screws in saddle clamp to provide firm gripping action preventing wire movement without damage or crushing.

107. SHRINK BOOT AND ADAPTER. Shrink boots are protective jackets of heat shrinkable tube that seal to the cable and adapter to prevent moisture entry. The adapter is a threaded intermediate device which contains a serrated lip to provide a gripping surface for the shrinkable tube.

108. SHRINK BOOT ADAPTER M85049/69. The shrink boot adapter, along with dimensions and part number breakdown, is illustrated (Figure 63).

109. SHRINK BOOT. There is no pre-manufactured shrink boot for these series. Shrink boots should be assembled from MS3118 shrink tube using the dimensions of the adapter in Figure 63 and the shrink tube dimensions in Figure 64.

110. SHRINK BOOT AND ADAPTER REMOVAL. To remove the shrink boot and adapter use the following procedure:

a. To salvage boot, apply heat using HT-900B heat gun until pliable.

b. Using a flat screwdriver, gently pry boot from adapter and wires.

c. When boot cannot be salvaged, carefully cut boot from cable.

d. Slide boot away from connector.

e. Remove adapter using tools and procedure (paragraph 99).

f. Perform connector repair per NAVAIR 01-1A-505-1.

PART NUMBER DESIGNATION

M85049/ 69 -11 A D

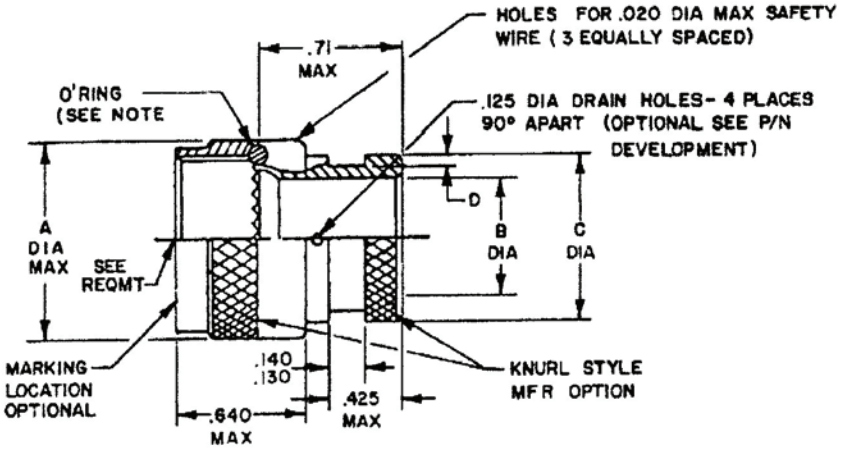
MIL SPEC

SPECIFICATION SHEET

SHELL SIZE

FINISH
A – Black Anodize

DRAIN HOLE
Omit if not required



MATERIAL:
Coupling nut and follower; Aluminum alloy in accordance with AS85049.
Finish: In accordance with AS85049, A

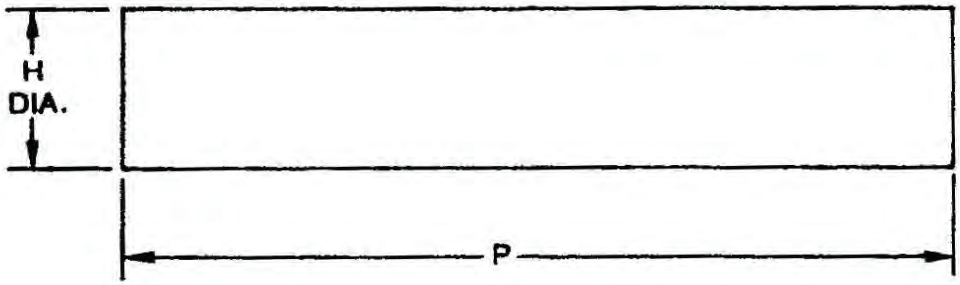
Figure 63. Part Number Breakdown M85049/69 Shrink Boot Adapter (Sheet 1 of 2)

SHELL SIZE

Shell Size	A Dia. Max.	B Dia. Min.	C Dia. Max.	D +.008 -.000
09	.75 (19.1)	.250 (6.35)	.533 (13.54)	.044 (1.12)
11	.85 (21.6)	.375 (9.52)	.605 (15.37)	.044 (1.12)
13	1.00 (25.4)	.500 (12.70)	.774 (19.66)	.044 (1.12)
15	1.10 (27.9)	.625 (15.88)	.838 (21.29)	.044 (1.12)
17	1.25 (31.8)	.750 (19.05)	.963 (24.46)	.044 (1.12)
19	1.40 (35.6)	.812 (20.62)	1.042 (26.47)	.044 (1.12)
21	1.50 (38.1)	.937 (23.80)	1.217 (30.91)	.069 (1.75)
23	1.65 (41.9)	1.062 (26.97)	1.355 (34.42)	.069 (1.75)
25	1.85 (47.00)	1.188 (30.18)	1.443 (36.65)	.069 (1.75)

NOTES:
1. Dimensions are in Inches.
2. Metric equivalents are given in parenthesis
3. Metric equivalents are given for general information only
4. O-ring not required when part has drain holes
5. Dimensions apply after plating

Figure 63. Part Number Breakdown M85049/69 Shrink Boot Adapter (Sheet 2 of 2)



Part Number	Cable Dia. Nom.	H Dia.		P
		As Supplied	Recovered	
MS3118-1-20	.37-1.00	1.20	.37	20.0
MS3118-2-20	.50-1.30	1.50	.50	20.0
MS3118-3-20	.65-1.50	1.90	.59	20.0
MS3118-4-20	1.10-2.30	2.80	1.10	20.0
MS3118-5-20	1.50-3.00	3.50	1.50	20.0

MS3118 has been cancelled - For reference use only

Figure 64. Shrink Tube Dimensions

111. SHRINK BOOT AND ADAPTER INSTALLATION. Upon completion of the connector repair install the shrink boot and adapter using the following procedure:

a. Install the adapter using tools and tool procedures (paragraph 100).

b. If boot was salvaged, proceed with steps c through f.

c. Slide boot to connector.

d. Apply a coat of epoxy glue to the adapter lip and inside of shrink boot.

e. Seat boot on adapter lip.

f. Apply heat to boot using HT-900B beat gun, to shrink boot to adapter and cable.

g. If boot was not salvaged, refer to NAVAIR 01-1A-505-1, WP 011 01 to fabricate new boot.

112. NON-ENVIRONMENTAL BACKSHELL. A non-environmental backshell or extender is used when moisture entry is not a problem. They are used when additional space is required for maintenance.

113. NON-ENVIRONMENTAL BACKSHELL AVAILABILITY.

114. Straight Backshell with Cable Clamp M85049/21. This is a straight backshell with a cable clamp. The backshell, along with dimensions and part number breakdown, is illustrated (Figure 65).

PART NUMBER DESIGNATION

M85049/ 21 -9 A 02 A

MIL SPEC

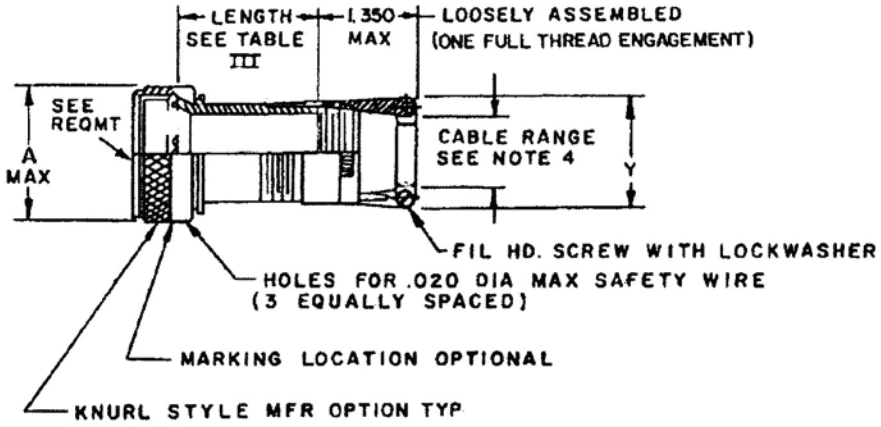
SPECIFICATION SHEET

SHELL SIZE
(See table I)

FINISH
A – Black Anodize

CLAMP SIZE
(See table II)

LENGTH CODE
(See table III, omit for standard)



NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
3. Metric equivalents are in parentheses.
4. See table I for minimum and maximum clamp size available with each shell size. See table II for cable range for each clamp size.

MATERIAL:
Adapter body and coupling nut; Aluminum alloy in accordance with AS85049.
Clamp screws and washers: Corrosion resisting steel, passivate.
Finish: In accordance with AS85049.
A – Black Anodize

Figure 65. Part Number Breakdown M85049/21 Straight Backshell with Clamp (Sheet 1 of 3)

CLAMP SIZE (Table II)

Clamp Size	Cable Range		Y Dim. Max.
	Min.	Max.	
01	.062 (1.57)	.125 (3.18)	.80 (20.30)
02	.125 (3.18)	.250 (6.35)	1.00 (25.40)
03	.250 (5.35)	.375 (9.53)	1.10 (27.90)
04	.312 (7.92)	.500 (12.70)	1.20 (30.50)
05	.437 (11.10)	.625 (15.88)	1.25 (31 .80)
06	.562 (14.27)	.750 (19.05)	.1.40 (35.60)
07	.687 (17.45)	.875 (22.23)	1.50 (38.10)
OB	.812 (20.62)	1.000 (25.40)	1.65 (41 .90)
09	.937 (23.80)	1.125 (28.58)	1.75 (44.50)
10	1.062 (26.97)	1.250 (31.75)	1.90 (48.31)

LENGTH CODE (Table III)

Shell Size	Code	Length In Inches +.032 (.81)
9 THRU 25	STANDARD	1.50(38.1)
9 THRU 25	A	2.50 (63.5)
15THRU25	B	3.50 (88.9)
21 THRU 25	C	4.50(114.3)

Figure 65. Part Number Breakdown M85049/21 Straight Backshell with Clamp (Sheet 2 of 3)

SHELL SIZE (Table I)

Shell Size	Clamp Size		A Max.Dia.Of Couping Ring
	Min.	Max.	
9	01	02	.75 (19.1)
11	01	03	.85 (21.6)
13	02	04	1.00 (25.4)
15	02	05	1.10 (27.9)
17	02	06	1.25 (31.8)
19	03	07	1.40 (35.6)
21	03	08	1.50 (38.1)
23	03	09	1.65 (41.9)
25	04	10	1.75 (44.5)

Figure 65. Part Number Breakdown M85049/21 Straight Backshell with Clamp (Sheet 3 of 3)

115. NON-ENVIRONMENTAL BACKSHELL REMOVAL AND INSTALLATION. The backshell is removed and replaced using the tools and tool procedures in paragraphs 99 and 100.

116. EMI/RFI GROUNDING TERMINATORS. The EMI/RFI grounding terminators for Series III and IV are the same as for Series I and It. Refer to paragraphs 63 and 66 for types and procurement information.

117. NON-ENVIRONMENTAL EMI/RFI BACKSHELLS. This type of backshell is used when moisture entry protection is not required but the need for EMI/RFI protection is needed.

118. NON-ENVIRONMENTAL EMI/RFI BACKSHELL AVAILABILITY. There are two types available: a self contained backshell and one that uses a shield crimping.

119. Straight Backshell with Cable M85049/19. This backshell is a self-contained straight backshell with cable clamp. The backshell, along with dimensions and part number breakdown, is illustrated (Figure 66).

120. Straight Shield Termination Backshell M85049/20. This is a straight backshell that uses a shield crimp ring for shield termination. The shield crimp ring is an MS85049/26-2. The crimp ring, along with dimensions and applicable tools, is illustrated (Figure 41). The backshell, along with dimensions and part number breakdown, is illustrated (Figure 67).

121. NON-ENVIRONMENTAL EMI/RFI BACKSHELL REMOVAL AND INSTALLATION. These backshells are removed and replaced using the tools and procedures in paragraphs 99 and 100 except the internal parts are removed to facilitate connector repair. These internal parts are installed in their original configuration to ensure proper shielding.

122. ENVIRONMENTAL EMI/RFI BACKSHELLS. This type of backshell is used where .moisture and EMI/RFI protection is required. The moisture protection is afforded by the use of o-ring grommets, and other sealing devices.

123. ENVIRONMENTAL EMI/RFI BACKSHELL M85049/18. This backshell is self-contained. The backshell, along with dimensions and part number breakdown, is illustrated (Figure 68).

124. ENVIRONMENTAL EMI/RFI BACKSHELL REMOVAL AND INSTALLATION. The backshell is removed and installed using the tools and tool procedures in paragraphs 99 and 100. The seating and shielding internal parts are removed to facilitate maintenance. The internal parts are installed in their original configuration to ensure proper sealing and shielding.

PART NUMBER DESIGNATION

M85049/ 19 -9 W 02 A

MIL SPEC

SPECIFICATION SHEET

SHELL SIZE
(See table I)

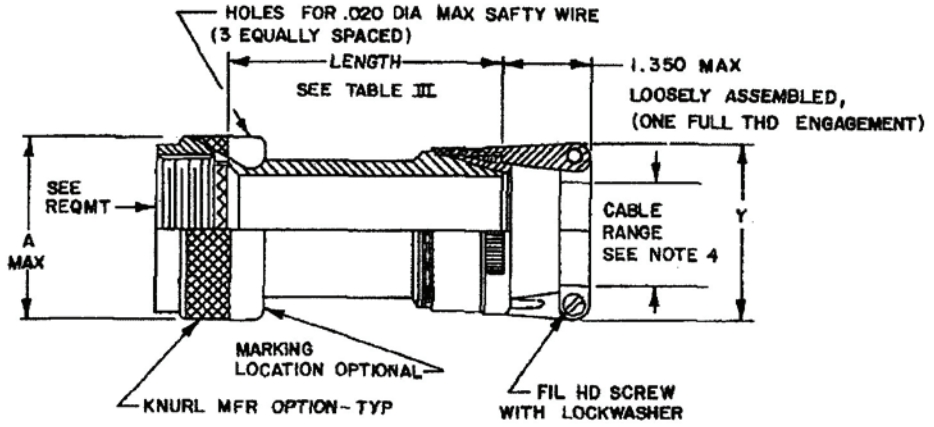
FINISH
(See Finish Code)

CLAMP SIZE
(See table II)

LENGTH CODE
(See table III, omit for standard)

MATERIAL AND FINISH CODES:

N ALUMINUM; ELECTROLESS NICKEL (NOT FOR NAVY USE)
W ALUMINUM; CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS)
S STAINLESS STEEL; PASSIVATE



NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
3. Metric equivalents are in parentheses.
4. See table I for minimum and maximum clamp size available with each shell size. See table II for cable range for each clamp size.

Figure 66. Part Number Breakdown M85049/19 Straight Backshell with Clamp (Sheet 1 of 3)

SHELL SIZE (Table I)

Shell Size	Clamp Size		A Max.Dia.Of Couping Ring
	Min.	Max.	
9	01	02	.75 (19.1)
11	01	03	.85 (21.6)
13	02	04	1.00 (25.4)
15	02	05	1.10 (27.9)
17	02	06	1.25 (31.8)
19	03	07	1.40 (35.6)
21	03	08	1.50 (38.1)
23	03	09	1.65 (41.9)
25	04	10	1.75 (44.5)

Figure 66. Part Number Breakdown M85049/19 Straight Backshell with Clamp (Sheet 2 of 3)

CLAMP SIZE (Table II)

Clamp Size	Cable Range		Y Dim. Max.
	Min.	Max.	
01	.062 (1.57)	.125 (3.18)	.80 (20.30)
02	.125 (3.18)	.250 (6.35)	1.00 (25.40)
03	.250 (5.35)	.375 (9.53)	1.10 (27.90)
04	.312 (7.92)	.500 (12.70)	1.20 (30.50)
05	.437 (11.10)	.625 (15.88)	1.25 (31 .80)
06	.562 (14.27)	.750 (19.05)	.1.40 (35.60)
07	.687 (17.45)	.875 (22.23)	1.50 (38.10)
OB	.812 (20.62)	1.000 (25.40)	1.65 (41 .90)
09	.937 (23.80)	1.125 (28.58)	1.75 (44.50)
10	1.062 (26.97)	1.250 (31.75)	1.90 (48.31)

LENGTH CODE (Table III)

Shell Size	Code	Length In Inches +.032 (.81)
9 THRU 25	STANDARD	1.50(38.1)
9 THRU 25	A	2.50 (63.5)
15THRU25	B	3.50 (88.9)
21 THRU 25	C	4.50(114.3)

Figure 66. Part Number Breakdown M85049/19 Straight Backshell with Clamp (Sheet 3 of 3)

PART NUMBER DESIGNATION

M85049/ 20 10 W

MIL SPEC

SPECIFICATION SHEET.

SHELL SIZE
(See Table)

FINISH
(See Finish Code)

MATERIAL:
Coupling nut, clamp; in accordance with SAE AS85049.
Finish: In accordance with SAE AS85049, N, S or W. (See Finish Codes)

FINISH CODES:

N	ALUMINUM; ELECTROLESS NICKEL (NOT FOR NAVY USE).
S	STAINLESS STEEL; PASSIVATE
W	CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS).

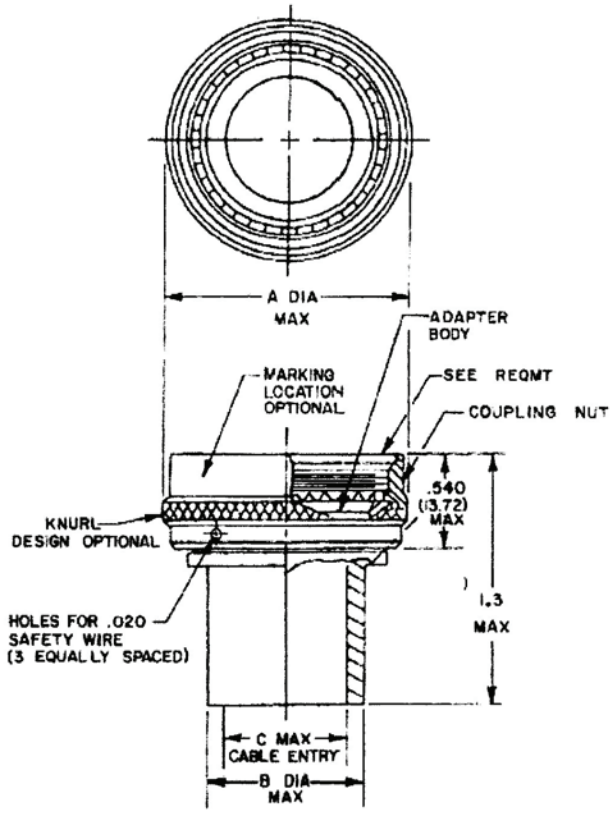


Figure 67. Part Number Breakdown M85049/20 Straight Shield Termination Backshell (Sheet 1 of 2)

SHELL SIZE

Shell size	A DIA MAX	B DIA MAX	C MAX Cable Entry	M85049/26-2 Ring, shield crimp (Ref)
9	.75 (19.1)	.347 (8.81)	.265 (6.73)	-8
11	.85 (21.6)	.498 (12.65)	.343 (8.71)	-10
13	1.00 (25.4)	.510 (12.95)	.437 (11.10)	-12
15	1.10 (27.9)	.630 (16.00)	.562 (14.27)	-14
17	1.25 (31.8)	.760 (19.30)	.687 (17.45)	-16
19	1.40 (35.6)	.890 (22.61)	.812 (20.62)	-18
21	1.50 (38.1)	1.010 (25.65)	.937 (23.80)	-20
23	1.65 (41.9)	1.130 (28.70)	1.046 (26.57)	-22
25	1.75 (44.5)	1.202 (30.53)	1.125 (28.58)	-24

NOTES:
1. Dimensions are in inches.
2. Dimensions apply after plating.
3. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
4. Metric equivalents are in parentheses.
5. Crimp tool is Burndy Y40LH or equivalent.

Figure 67. Part Number Breakdown M85049/20 Straight Shield Termination Backshell (Sheet 2 of 2)

PART NUMBER DESIGNATION

M85049/ 18 -9 W 02 A

MIL SPEC

SPECIFICATION SHEET

SHELL SIZE
(See table I)

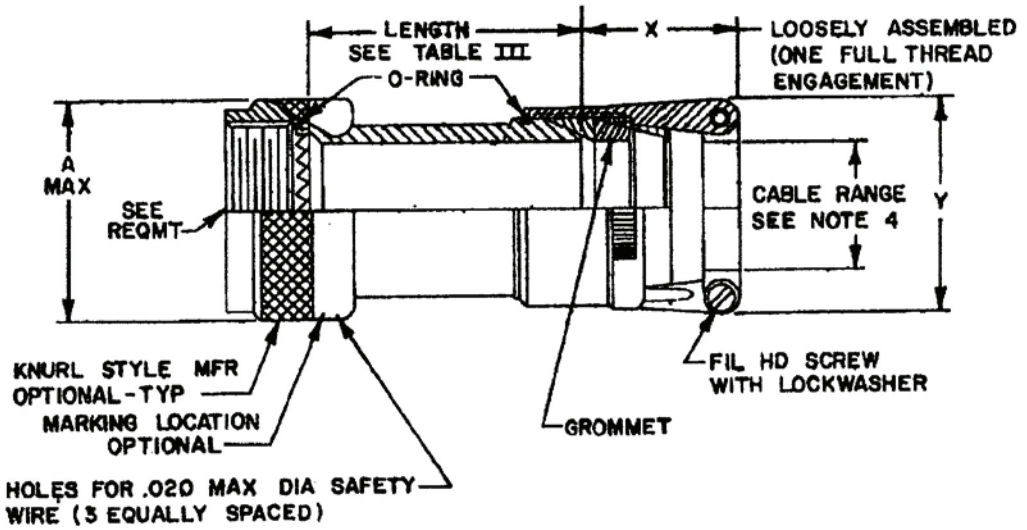
FINISH
(See Finish Code)

CLAMP SIZE
(See table II)

LENGTH CODE
(See table III, omit for standard)

MATERIAL AND FINISH CODES:

N	ALUMINUM; ELECTROLESS NICKEL (NOT FOR NAVY USE)
W	ALUMINUM; CADMIUM, OLIVE DRAB (NOT FOR USE IN SPACE APPLICATIONS)
S	STAINLESS STEEL; PASSIVATE



NOTE:
1. See table I for minimum and maximum clamp size available with each shell size. See table II for cable range for each clamp size.

Figure 68. Part Number Breakdown M85049/18 Environmental EMI-RFI Backshell (Sheet 1 of 3)

SHELL SIZE (Table I)

Shell Size	Clamp Size		A Max.Dia.Of Couping Ring
	Min.	Max.	
9	01	02	.75 (19.1)
11	01	03	.85 (21.6)
13	02	04	1.00 (25.4)
15	02	05	1.15 (29.2)
17	02	06	1.25 (31.8)
19	03	07	1.40 (35.6)
21	03	08	1.55 (39.4)
23	03	09	1.65 (41.9)
25	04	10	1.85 (47.0)

Figure 68. Part Number Breakdown M85049/18 Environmental EMI-RFI Backshell (Sheet 2 of 3)

CLAMP SIZE (Table II)

Clamp size	Cable Range		Y	X
	Min	Max	Dim Max	Max
01	.062 (1.57)	.125 (3.18)	.80 (20.3)	1.250 (31.75)
02	.125 (3.18)	.250 (6.35)	1.00 (25.4)	1.250 (31.75)
03	.250 (6.35)	.375 (9.53)	1.10 1 (27.9)	1.250 (31.75)
04	.375 (9.53)	.500 (12.70)	1.20 (30.5)	1.250 (31.75)
°5	.500 (12.70)	.625 (15.88)	1.25 (31.8)	,1.350 (34.29)
06	.625 (15.88)	.750 (19.05)	1.40 (35.6)	1.375 (34.93)
07	.750 (19.05)	.875 (22.23)	1.50 (38.1)	1.500 (38.10)
08	.875 (22.23)	1.000 (25.40)	1.65 (41.9)	1.625 (41.28)
09	1.000 (25.40)	1.125 (28.58)	1.75 (44.5)	1.625 (41.28)
10	1.125 (28.58)	1,250 (31.75)	1.90 (48.3)	1.625 (41.28)

LENGTH CODE (Table III)

Shell Size	Code	Length In Inches +.032 (.81)
9 THRU 25	STANDARD	1.50(38.1)
9 THRU 25	A	2.50 (63.5)
15THRU25	B	3.50 (88.9)
21 THRU 25	C	4.50(114.3)

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Metric equivalents are in parentheses.

Figure 68. Part Number Breakdown M85049/18 Environmental EMI-RFI Backshell (Sheet 3 of 3)

125. DUMMY RECEPTACLES, PROTECTIVE COVERS, AND DUST CAPS, SERIES III.

126. This section contains the information pertaining to dummy receptacles, protective covers, and dust caps their procurement as related to Series III only.

127. DUMMY RECEPTACLE. Dummy Receptacles are provided and shall be used to stow unmated plugs caps or protective covers when the related component is not in operational use. The dummy receptacle shall be marked and located to permit easy location and access.

128. Dummy Receptacle D38999/22. This dummy receptacle is to be used where necessary. The dummy receptacle, along with dimensions and part number breakdown, is illustrated (Figure 69).

129. PROTECTIVE COVERS. There are protective covers for plugs and receptacles. Protective covers are used to provide environmental protection for connectors not mated to their respective plugs or receptacles. Protective covers have resilient seals that resist moisture intrusion and are required to pass altitude immersion testing when mated to the connector plug or receptacle.

130. The connector cover for the plug is D38999/32 (Metric). The protective cover , along with dimensions and part number breakdown, is illustrated (Figure 70).

131. The protective cover for the receptacle is D38999/33 (Metric). The protective cover, along with dimensions and part number breakdown, is illustrated (Figure 71).

132. DUST CAPS. These plastic covers (M85049/138) do not have environmental sealing capability and are used to keep dust and contaminants out of connectors (not illustrated).

PART NUMBER DESIGNATION

D38999/ 22 B W

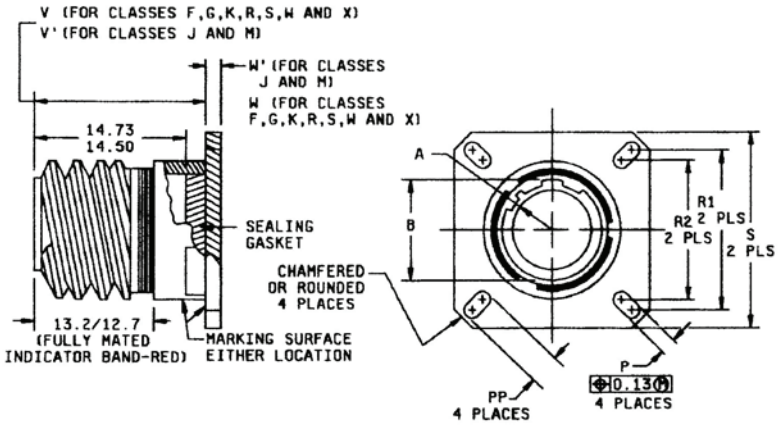
DoD NUMBER PREFIX

SPECIFICATION SHEET

SHELL SIZE
(See Table)

CLASS / FINISH
(See Codes)

Class F is not for Navy use and inactive for Air Force new design use.



CLASS / FINISH CODES:

Series I and II:

E - Environment resisting - Box and thru-bulkhead mounting receptacle types. Other types with rear accessories are inactive for new design.
G - Environment resisting - wall and jam nut mounting receptacle and plug types, space grade.
H - Hermetically sealed - space grade.
P - For potting - Includes potting form and short rear grommet. (inactive for new design for Air Force).
T - Environment resisting - Wall and jam-nut mounting receptacle and plug types. These designs incorporate provision (thread and teeth) for rear accessory attachment.
Y - Hermetically sealed.

Series III and IV:

C - Environment resisting - Nonconductive plating.
F - Environment resisting - Conductive plating (Not for Navy use or for AF new design use)
G - Environment resisting - Conductive plating, space grade.
H - Hermetically sealed - Corrosion resistant steel, passivated, space grade.
J - Environment resisting - Conductive, Corrosion resistant composite.
K - Environment resisting - Corrosion resistant steel with Firewall barrier. .
M - Environment resisting - Conductive, Corrosion resistant composite.
N - Hermetically sealed - Corrosion resistant steel, electro-deposited nickel.
R - Same as F, but higher corrosion requirement.
S - Environment resisting with firewall barrier, corrosion resistant steel – Electrodeposited nickel (not for Navy use)
X - Same as W, but higher corrosion requirement.
W - Environment resisting - Corrosion resistant plating.
Y - Hermetically sealed - Corrosion resistant steel, passivated.

Figure 69. Part Number Breakdown D38999/22 Dummy Receptacle (Sheet 1 of 2)

SHELL SIZE

Shell size	Shell size code	P ± .20	PP ± .20	R1 (see note 4)	R2 (see note 5)
9 (See note 6)	A	3.25	5.49	18.26	15.09
9 (See note 7)	AA	3.25	5.49	18.26	15.09
11	B	3.25	4.93	20.62	18.26
13	C	3.25	4.93	23.01	20.62
15	D	3.25	4.39	24.61	23.01
17	E	3.25	4.93	26.97	24.61
19	F	3.25	4.93	29.36	26.97
21	G	3.25	4.93	31.75	29.36
23	H	3.91	6.15	34.93	31.75
25	J	3.91	6.15	38.10	34.93

Dimensions						
Shell size	Shell size code	S ± .3	V + 0.00 - 0.13	V' + 1.4 - 0.0	W ± .3	W'
9	A	23.8	20.83	19.5	2.5	3.65/2.2
9	AA	23.8	20.83	19.5	2.5	3.65/2.2
11	B	26.2	20.83	19.5	2.5	3.65/2.2
13	C	28.6	20.83	19.5	2.5	3.65/2.2
15	D	31.0	20.83	19.5	2.5	3.65/2.2
17	E	33.3	20.83	19.5	2.5	3.65/2.2
19	F	36.5	20.83	19.5	2.5	3.65/2.2
21	G	39.7	20.07	18.7	3.2	4.35/2.9
23	H	42.9	20.07	18.7	3.2	4.35/2.9
25	J	46.0	20.07	18.7	3.2	4.35/2.9

NOTES:
1. Dimensions are in millimeters.
2. Flange is solid.
3. Dummy receptacles are used when unmated plugs must be protected.
4. Dimensions required for intermountability with front or rear mounting series I.
5. Dimensions required for intermountability with front mounting series II.
6. Key arrangement C, E, N.
7. Key arrangement A, B, D.

Figure 69. Part Number Breakdown D38999/22 Dummy Receptacle (Sheet 2 of 2)

PART NUMBER DESIGNATION

D38999/	32	W	15	R

DoD NUMBER PREFIX

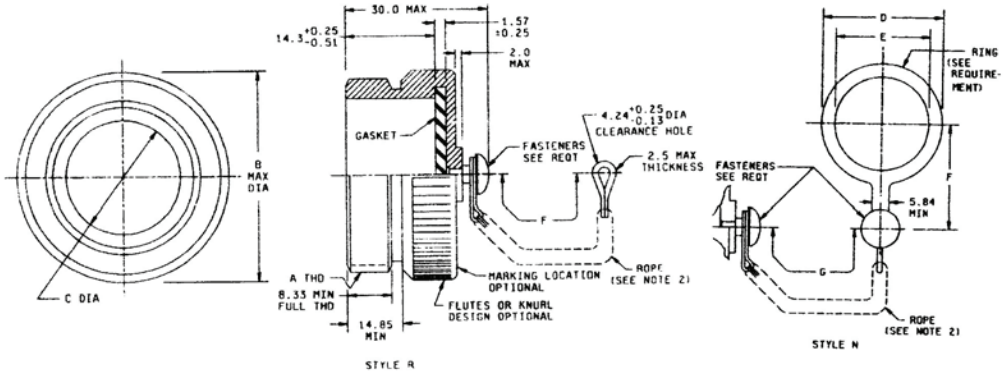
SPECIFICATION SHEET

CLASS / FINISH
(See Codes)

SHELL SIZE
(See Table)

STYLE
R – Rope
N – With Rope and Ring

NOTE:
Navy: Entire specification sheet inactive for new design
Air Force: For ground equipment only



MATERIAL
Cover - Classes C, F, G, R, W and X: Impact extruded or machined aluminum alloy.
Classes H, K, N, S and Y: Corrosion resistant steel.
Classes J and M: High performance resin in accordance with M1L-DTL-38999.
(Class F inactive for new design.)
Gasket - Silicone elastomer.
Ring - Corrosion resistant steel, passivated, 1.020 maximum thickness.
Rope - Insulated stainless steel, passivated. Insulation shall withstand 200°C environment.
Fastener - Stainless steel, passivated.
Option: Aluminum integral to cover.

CLASS / FINISH CODES:
Series I and II:
E - Environment resisting - Box and thru-bulkhead mounting receptacle types.
Other types with rear accessories are inactive for new design.
G - Environment resisting - wall and jam nut mounting receptacle and plug types, space grade.
H - Hermetically sealed - space grade.
P - For potting - Includes potting form and short rear grommet. (inactive for new design for Air Force).
T - Environment resisting - Wall and jam-nut mounting receptacle and plug types. These designs incorporate provision (thread and teeth) for rear accessory attachment.
Y - Hermetically sealed.

Figure 70. Part Number Breakdown D38999/32 Dummy Receptacle (Sheet 1 of 2)

Series III and IV:
C - Environment resisting - Nonconductive plating.
F - Environment resisting - Conductive plating (Not for Navy use or for AF new design use)
G - Environment resisting - Conductive plating, space grade.
H - Hermetically sealed - Corrosion resistant steel, passivated, space grade.
J - Environment resisting - Conductive, Corrosion resistant composite.
K - Environment resisting - Corrosion resistant steel with Firewall barrier. .
M - Environment resisting - Conductive, Corrosion resistant composite.
N - Hermetically sealed - Corrosion resistant steel, electro-deposited nickel.
R - Same as F, but higher corrosion requirement.
S - Environment resisting with firewall barrier, corrosion resistant steel – Electrodeposited nickel (not for Navy use)
X - Same as W, but higher corrosion requirement.
W - Environment resisting - Corrosion resistant plating.
Y - Hermetically sealed - Corrosion resistant steel, passivated.

SHELL SIZE

Dimensions							
Shell size	A THD-2A	B Max. dia.	C dia +.00 -.15	D Max. dia.	E Min. dia.	F	G +13.0 -7.0
9	.6250-0. 1P-0.3L-TS	23.0	12.50	24.0	13.0	24.00 14.50	127.00
11	.7500-0. 1P-0.3L-TS	26.0	15.75	27.0	18.0	20.50 18.00	127.00
13	.8750-0. 1P-0.3L-TS	31.0	19.53	30.0	20.0	27.00 20.00	127.00
15	1. 0000-0. 1P-0.3L-TS	33.0	22.71	31.0	23.0	22.50 18.00	127.00
17	1.1 875-0. 1P-0.3L-TS	37.0	25.88	37.0	26.0	30.50 23.50	127.00
19	1. 2500-0. 1P-0.3L-TS	40.0	28.55	40.0	29,0	31.50 25.00	127.00
21	1. 3750-0. 1P-0.3L-TS	44.0	31.72	44.0	32.0	33.00 26.50	127.00
23	1. 5000-0. 1P-0.3L-TS	46.0	34.90	46.0	34.0	34.00 27.50	127.00
25	1. 6250-0.1 P-0.3L-TS	50.0	38.07	49.0	39.0	38.00 30.00	127.00

NOTES:
1. Dimensions are in millimeters, except "A threads" which are in inches.
2. Method of attachment to cover and or ring is optional.

Figure 70. Part Number Breakdown D38999/32 Dummy Receptacle (Sheet 2 of 2)

PART NUMBER DESIGNATION

D38999/ 33 W 15 R

DoD NUMBER PREFIX

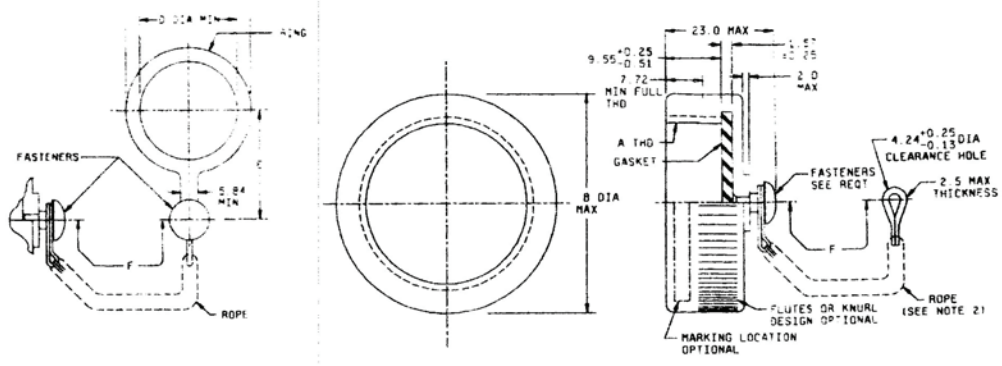
SPECIFICATION SHEET

CLASS / FINISH
(See Codes)

SHELL SIZE
(See Table)

STYLE
R – Rope
N – With Rope and Ring

NOTE:
Navy: Entire specification sheet inactive for new design
Air Force: For ground equipment only



MATERIAL
Cover - Classes C, F, G, R, W and X: Impact extruded or machined aluminum alloy.
Classes H, K, N, S and Y: Corrosion resistant steel.
Classes J and M: High performance resin in accordance with M1L-DTL-38999.
(Class F inactive for new design.)
Ring - Corrosion resistant steel, passivated, 1.020 maximum thickness.
Gasket - Silicone elastomer.
Rope - Insulated stainless steel, passivated. Insulation shall withstand 200°C environment.
Fastener - Stainless steel, passivated.
Option: Aluminum integral to cover.

CLASS / FINISH CODES:
Series I and II:
E - Environment resisting - Box and thru-bulkhead mounting receptacle types.
Other types with rear accessories are inactive for new design.
G - Environment resisting - wall and jam nut mounting receptacle and plug types, space grade.
H - Hermetically sealed - space grade.
P - For potting - Includes potting form and short rear grommet. (inactive for new design for Air Force).
T - Environment resisting - Wall and jam-nut mounting receptacle and plug types. These designs incorporate provision (thread and teeth) for rear accessory attachment.
Y - Hermetically sealed.

Figure 71. Part Number Breakdown D38999/33 Dust Cap for Receptacles (Sheet 1 of 2)

Series III and IV:
C - Environment resisting - Nonconductive plating.
F - Environment resisting - Conductive plating (Not for Navy use or for AF new design use)
G - Environment resisting - Conductive plating, space grade.
H - Hermetically sealed - Corrosion resistant steel, passivated, space grade.
J - Environment resisting - Conductive, Corrosion resistant composite.
K - Environment resisting - Corrosion resistant steel with Firewall barrier. .
M - Environment resisting - Conductive, Corrosion resistant composite.
N - Hermetically sealed - Corrosion resistant steel, electro-deposited nickel.
R - Same as F, but higher corrosion requirement.
S - Environment resisting with firewall barrier, corrosion resistant steel – Electrodeposited nickel (not for Navy use)
X - Same as W, but higher corrosion requirement.
W - Environment resisting - Corrosion resistant plating.
Y - Hermetically sealed - Corrosion resistant steel, passivated.

SHELL SIZE

Dimensions							
Shell size	A THD-2A	B Max. dia.	C dia +.00 -.15	D Max. dia.	E Min. dia.	F	G +13.0 -7.0
9	.6250-0. 1P-0.3L-TS	23.0	12.50	24.0	13.0	24.00 14.50	127.00
11	.7500-0. 1P-0.3L-TS	26.0	15.75	27.0	18.0	20.50 18.00	127.00
13	.8750-0. 1P-0.3L-TS	31.0	19.53	30.0	20.0	27.00 20.00	127.00
15	1. 0000-0. 1P-0.3L-TS	33.0	22.71	31.0	23.0	22.50 18.00	127.00
17	1.1 875-0. 1P-0.3L-TS	37.0	25.88	37.0	26.0	30.50 23.50	127.00
19	1. 2500-0. 1P-0.3L-TS	40.0	28.55	40.0	29,0	31.50 25.00	127.00
21	1. 3750-0. 1P-0.3L-TS	44.0	31.72	44.0	32.0	33.00 26.50	127.00
23	1. 5000-0. 1P-0.3L-TS	46.0	34.90	46.0	34.0	34.00 27.50	127.00
25	1. 6250-0.1 P-0.3L-TS	50.0	38.07	49.0	39.0	38.00 30.00	127.00

NOTES:
1. Dimensions are in millimeters, except "A threads" which are in inches.
2. Method of attachment to cover and or ring is optional.

Figure 71. Part Number Breakdown D38999/33 Dust Cap for Receptacles (Sheet 2 of 2)

133. DUMMY RECEPTACLES, PROTECTIVE COVERS, AND DUST CAPS, SERIES IV.

134. This section contains the information pertaining to dummy receptacles and dust caps for Series IV connectors only.

135. DUMMY RECEPTACLES. Dummy receptacles are provided and shall be used to stow unmated plugs, caps, or protective covers when the related component is not in operational use. The dummy receptacle shall be marked and located to permit easy location and access.

136. Dummy Receptacle D38999/50. This dummy receptacle is used where necessary. The dummy receptacle, along with dimensions and part number breakdown, is illustrated (Figure 72).

137. PROTECTIVE COVERS. There are protective covers for plugs and receptacles.

138. Protective Covers. Dust cap DCR10 and DCP10 are used for plugs and receptacles. The protective covers, part numbers, along with dimensions and technical data are shown in Figure 73 and Figure 74. Table 7 addresses plating composition information, Table 8 addresses the gasket material used, and Table 9 shows the method of external attachment.

PART NUMBER DESIGNATION

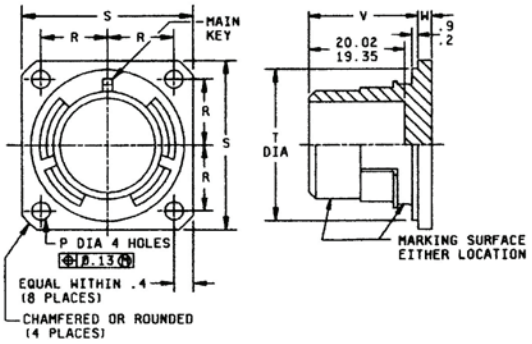
D38999/ 50 B W

DoD NUMBER PREFIX

SPECIFICATION SHEET

SHELL SIZE
(See Table)

CLASS / FINISH
(See Codes)



NOTES: Dummy Receptacle, Class: W and X
1. Dimensions are in millimeters.
2. Flange is solid.
3. Dummy receptacles are used when unmated plugs must be protected.

MATERIAL

Cover - Classes C, F, G, R, W and X: Impact extruded or machined aluminum alloy.
Classes H, K, N, S and Y: Corrosion resistant steel.
Classes J and M: High performance resin in accordance with M1L-DTL-38999.
(Class F inactive for new design.)
Ring - Corrosion resistant steel, passivated, 1.020 maximum thickness.
Gasket - Silicone elastomer.
Rope - Insulated stainless steel, passivated. Insulation shall withstand 200°C environment.
Fastener - Stainless steel, passivated.
Option: Aluminum integral to cover.

CLASS / FINISH CODES:

Series I and II:
E - Environment resisting - Box and thru-bulkhead mounting receptacle types.
Other types with rear accessories are inactive for new design.
G - Environment resisting - wall and jam nut mounting receptacle and plug types, space grade.
H - Hermetically sealed - space grade.
P - For potting - Includes potting form and short rear grommet. (inactive for new design for Air Force).
T - Environment resisting - Wall and jam-nut mounting receptacle and plug types. These designs incorporate provision (thread and teeth) for rear accessory attachment.
Y - Hermetically sealed.

Series III and IV:
C - Environment resisting - Nonconductive plating.
F - Environment resisting - Conductive plating (Not for Navy use or for AF new design use)
G - Environment resisting - Conductive plating, space grade.
H - Hermetically sealed - Corrosion resistant steel, passivated, space grade.

Figure 72. Part Number Breakdown D38999/50 Dummy Receptacle (Sheet 1 of 2)

J - Environment resisting - Conductive, Corrosion resistant composite.
K - Environment resisting - Corrosion resistant steel with Firewall barrier. .
M - Environment resisting - Conductive, Corrosion resistant composite.
N - Hermetically sealed - Corrosion resistant steel, electro-deposited nickel.
R - Same as F, but higher corrosion requirement.
S - Environment resisting with firewall barrier, corrosion resistant steel – Electrodeposited nickel (not for Navy use)
X - Same as W, but higher corrosion requirement.
W - Environment resisting - Corrosion resistant plating.
Y - Hermetically sealed - Corrosion resistant steel, passivated.

SHELL SIZE

Shell size	Shell size code	P dia	R BSC	S	T dia	V	W
11	B	3.5 3.1	10.31	26.7 25.6	20.15 19.76	20.8 19.2	2.6 2.1
13	C		11.51	29.1 28.0	23.35 22.96		
15	D		12.31	31.5 30.4	26.52 26.13		
17	E		13.49	33.9 32.8	29.72 29.33		
19	F		14.68	37.1 36.0	32.87 32.48		
21	G		15.88	40.2 39.1	36.05 35.66		
23	H	4.0 3.6	17.46	43.4 42.3	39.22 38.83		3.4 2.9
25	J		19.05	46.6 45.5	42.40 40.01		

NOTES:
1. Dimensions are in millimeters, except "A threads" which are in inches.
2. Method of attachment to cover and or ring is optional.

Figure 72. Part Number Breakdown D38999/50 Dummy Receptacle (Sheet 2 of 2)

PART NUMBER DESIGNATION

DCP 10 A 17 S C 8 -04

DUST CAP STYLE
DCP Dust Cap for Plug
DCR Dust Cap for Receptacle

MATING CONNECTOR SERIES
MIL-C-38999 Series IV

PLATING
(See table)

SHELL SIZE

END FITTING DESIGNATION
(See table)

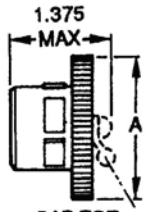
LENGTH OF ATTACHMENT (+ / - .250)
Designate in ½" Increments
Always use two Digits, i.e. 08=4", 12= 6", etc.

ATTACHMENT TYPE
(See table)

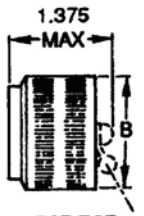
GASKET MATERIAL
(See table)

SHELL SIZE

Shell Size Code	Mates With Shell Size	A	B Max
11	B	1.365	.916
13	C	1.555	1.041
15	D	1.645	1.213
17	E	1.775	1.338
19	F	1.905	1.463
21	G	2.045	1.573
23	H	2.235	1.698
25	J	2.365	1.823



DCP10



DCR10

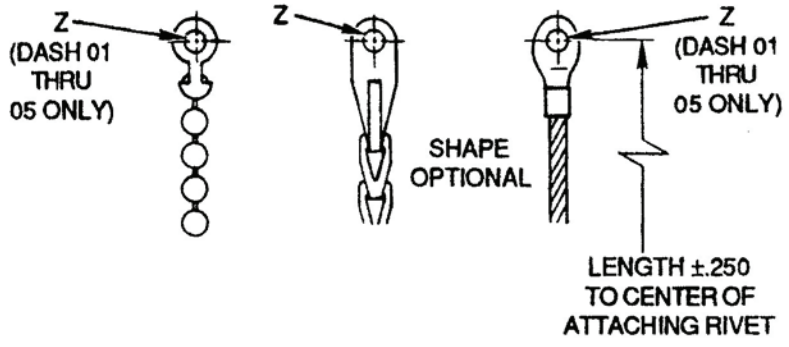
Figure 73. Part Number Breakdown DCP 10 and DCR 10

END STYLES AND SIZES

USED WITH ATTACHMENT CODES:

USED WITH ATTACHMENT CODES:

B, E, I **C** **R & W**



Z Ref. Dia.	Dash No. Code
.125	01
.141	02
.167	03
.188	04
.219	05
.250	06

ALL RING FITTINGS ARE AVAILABLE AS SEPARATE ITEMS

Z Range	Dash No. Code	Ring Part Number	Z Range	Dash No. Code	Ring Part Number
.401-.391	33	†	1.698-1.678	20	229142-10
.454-.444	34	†	1.822-1.802	21	229142-11
.464-.454	35	†	1.948-1.928	22	229142-12
.526-.516	36	†	2.026-2.016	23	†
.604/.584	11	229142-01	2.088-2.078	24	†
.651-.641	37	†	2.151-2.141	25	229431-09†
.729/.709	12	229142-02	2.276-2.266	26	†
.885/.865	13	229142-03	2.338-2.328	27	†
.948/.918	14	229142-04	2.401-2.391	28	229431-10†
1.072-1.052	15	229142-05	2.526-2.516	29	†
1.198-1.178	16	229142-06	2.651-2.641	30	229431-11†
1.322-1.302	17	229142-07	2.901-2.891	31	229431-12†
1.448-1.428	18	229142-08	3.026-3.016	32	†
1.572-1.552	19	229142-09			

† = CONSULT FACTORY FOR AVAILABILITY.

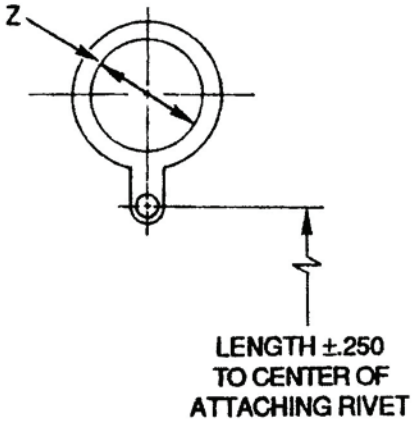


Figure 74. End Fitting Designation

Table 7. Plating Code

PLATING CODE

PLATING CODE	DESCRIPTION
A	CADMIUM, OLIVE DRAB, PER QQ-P-416, TYPE II, OVER ELECTROLESS NICKEL, PER MIL-C-26074 (500 HOUR SALT SPRAY FINISH)
B	CADMIUM, BLACK, PER QQ-P-416, TYPE II, CLASS 3
C	CADMIUM, OLIVE DRAB, PER QQ-P-416, TYPE H, CLASS 3
F	ANODIZE, SULPHURIC, BLACK, PER MIL-A-8625, TYPE II, CLASS 2
G	CHROMIUM PLATE, PER QQ-C-320, CLASS 2 a, TYPE H (.0002 TO .0005 THICK
H	ANODIZE, HARD, BLACK, PER MIL-A-8625, TYPE IH, CLASS 2
I	CHEMICAL FILM, PER MIL-C-5541
J	CADMIUM, CLEAR, PER QQ-P-416, TYPE H, CLASS 3
K	NICKEL, ELECTRODEPOSITED, PER QQ-N-290, CLASS 2 (.0001 TO .0002 THICK)
N	ELECTROLESS NICKEL PER MIL-C-26074, CLASS 4, GRADE B (.0005 TO .0008 THICK)
R	ANODIZE, HARD, GRAY, PER MIL-A-8625, TYPE II, CLASS 1
S	ANODIZE, SULPHURIC, GRAY, PER MIL-A-8625, TYPE II, CLASS 1
X	CADMIUM, GOLD, PER QQ-P-416, TYPE U, CLASS 3
Y	CADMIUM, BRIGHT, PER QQ-P-416, TYPE II, OVER ELECTROLESS NICKEL, PER MIL-C-26074
Z	ANODIZE, HARD, GRAY, PER MIL-A-8625, TYPE III, CLASS 1 (.0008 TO .0010 THICK)

Table 8. Gasket Material

MATL CODE	MATERIAL DESCRIPTION
A	FLUOROSILICONE, BLUE, SPECIAL BLEND, QUALIFIED TO MIL-C-26482 SERIES II FLUID IMMERISON
N	NEOPRENE, BLACK, MIL-R-3065
O	NONE REQUIRED
S	SILICONE, RED ZZ-4-765

Table 9. Attachment Codes

ATCHMT CODE	MATERIAL DESCRIPTION
A	NO ATTACHMENT REQUIRED
B	BEAD CHAIN, BRASS, NICKEL PLATED
C	SASH CHAIN, SST, PASSIVATED
E	BEAD CHAIN, BRASS, CADMIUM PLATED, OLIVE DRAB
I	BEAD CHAIN, BRASS BLACK OXIDE FINISH
R	WIRE ROPE, SST, PVC COVERED, GREEN COLOR
W	NYLON CORD, GREEN COLOR, SST TERMINAL

139. MIL-C-29600 CONNECTOR/BACKSHELLS.

140. DESCRIPTION. The MIL-C-29600 backshell-to-backshell EMI/RFI shielding protection equals or exceeds the connector only, class W shielding effectiveness offered on the MIL-DTL-38999 Series III and IV connectors.

141. MIL-C-29600 CONNECTOR SYSTEM BACKSHELL BUILD-UP. The following procedure covers the backshell build-up for the MIL-C-29600 connector system:

a. Pull inner follower over wire bundle until seated against back of connector (Figure 75 and Figure 76).

b. Flare end of outer (gross shield) braid and fold over center washer (Figure 77).

c. Wrap braid from any shielded wires within the wire bundle around washer nearest to connector (Figure 78).

d. Push third washer (farthest from connector) against braid-wrapped washer (Figure 79).

e. Slide backshell outer coupling nut over washers, braid, and inner follower and hand tighten until firmly secured against connector back (Figure 80).

f. Torque backshell coupling nut in accordance with Table 10.

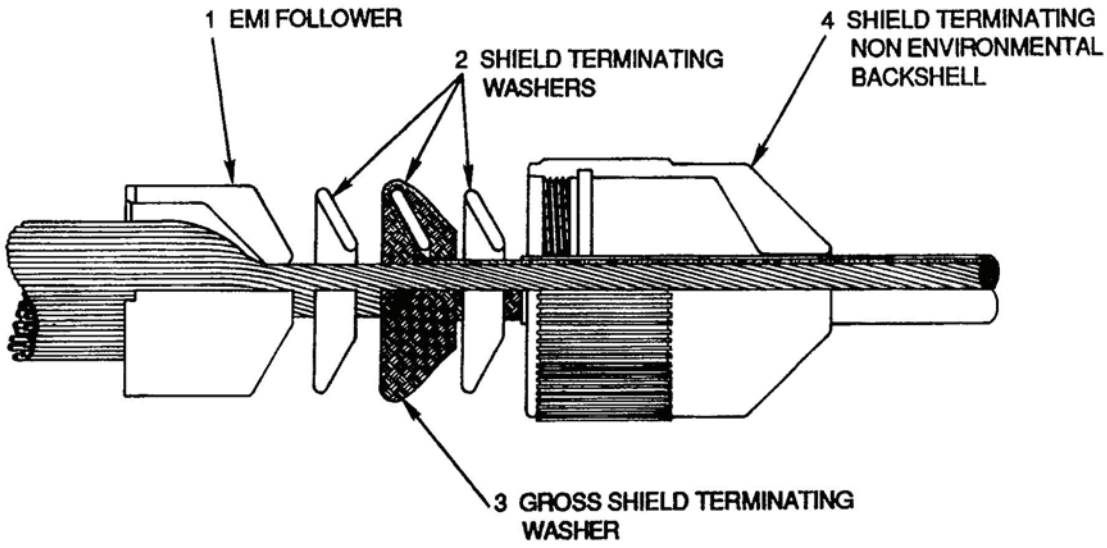


Figure 75. MIL-C-29600 Backshell to Backshell

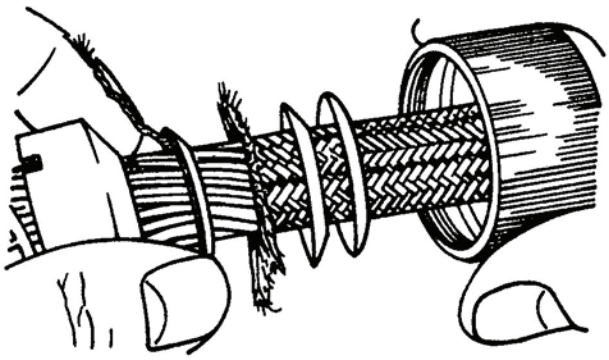


Figure 76. Inner Follower Seated Against Connector

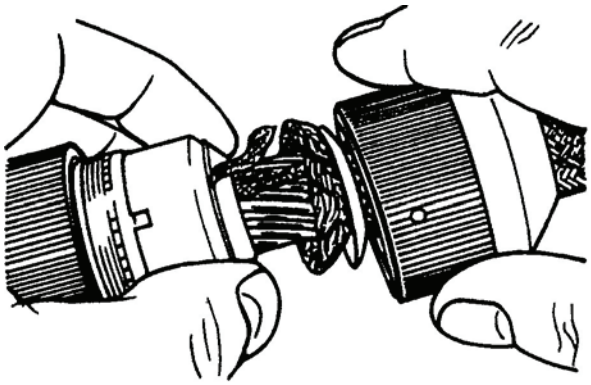


Figure 78. Individual Shield Over Nearest Washer

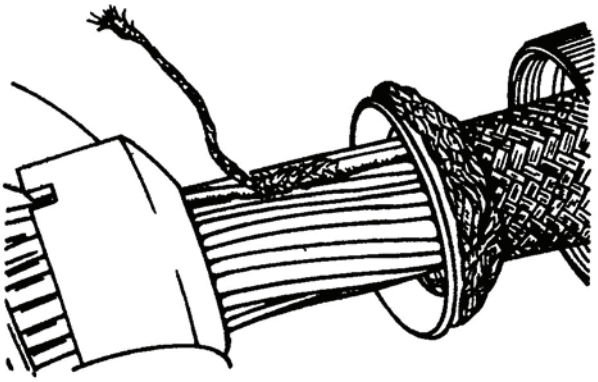


Figure 77. Outer Braid Over Center Washer

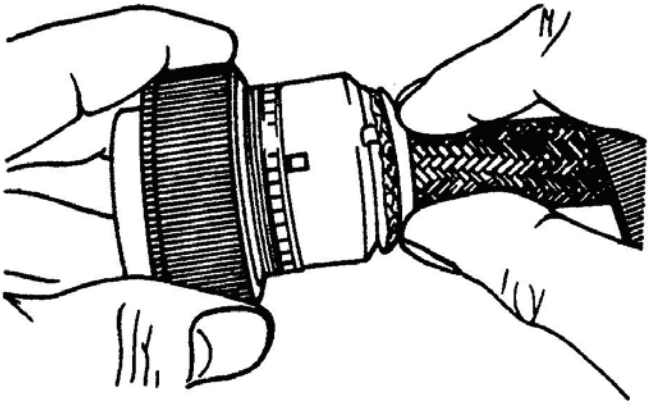


Figure 79. Washer Against Braid - Wrapped Washer

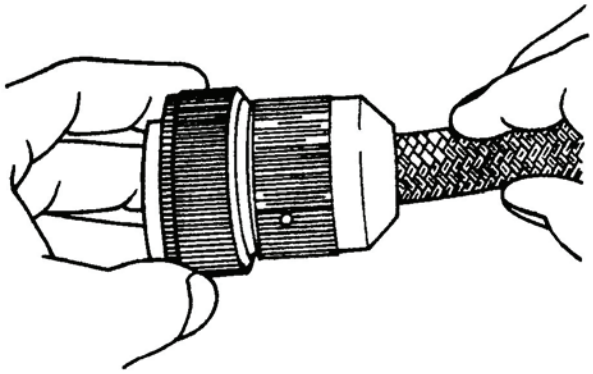


Figure 80. Coupling Nut Secured to Connector

Table 10. MIL-C-29600 Backshell Torque Values

Shell Size	Torque in/lbs Min.	Max.
08 thru 16	20	30
18 thru 24	20	50

142. MIL-C-29600 CONNECTOR SYSTEM BACKSHELL REMOVAL. To facilitate repair of a MIL-C-29600 connector, the backshell must be removed (see Figures 75-80). Use the following procedure to remove the backshell for the MIL-C-29600 connector system:

a. Unscrew and slide backshell coupling nut from follower, braid, and washers.

b. Slide third washer (farthest from connector) back over outer braid.

c. Carefully unwrap outer braid from center washer and slide washer toward coupling nut.

d. Carefully unwrap individual shields from washer closest to connector and slide back toward coupling nut.

e. Slide follower back from connector toward coupling nut to expose wires in wire bundle.

ALPHABETICAL INDEX
INSTALLATION PRACTICES
CONNECTORS MIL-C-81511 SERIES 1, 2, 3 AND 4

Title	WP Number
Connector Accessories, MIL-C-81511 Series 1, 2, 3 and 4	004 03
Connectors, MIL-C-81511 Series 1, 2, 3 and 4	004 02
Introduction	004 01

INTRODUCTION
INSTALLATION PRACTICES
CONNECTORS MIL-C-81511 SERIES 1, 2, 3 AND 4

1. PURPOSE AND SCOPE.

2. This manual covers all connectors manufactured in accordance with MIL-C-81511. It includes power, thermocouple, and coaxial contacts and all associated tooling.

3. SPECIFICATION UPDATES (ASSIST SEARCH).

4. The most up to date government specifications and Qualified Products Lists (QPLs) can be obtained from the Quick Search section of the ASSIST website, the address is http://assist.daps.mil/quicksearch. Non-government standards can be obtained through a license with a document service such as Information Handling Services (IHS) or purchased individually from the Society of Automotive Engineers (SAE).

5. QUALIFIED PRODUCTS LIST (QPL).

6. The Qualified Products List (QPL) is a list of products which have met the qualification requirements stated in the applicable specification. These requirements include appropriate product identification and performance/testing parameters. The list contains the government part number and the manufacturer's part number. The name of the manufacturer, office and manufacturing plant address, CAGE (Commercial and Government Entity) code, assembly plant, or distributor as applicable, is also included in the back of the QPL. The component specification will identify the appropriate quality assurance provisions such as QPL, First Article testing, or user verified test results. NAVAIR Patuxent River (http://www.navair.navy.mil/qpl/) now has an operational website where the latest QPL revision can be accessed, along with all outstanding QPL change letters as they are written. This enables all users to have access to the latest procurement information without relying on the publication of a new QPL revision. When the QPL is revised, all outstanding QPL change letters are incorporated in the latest revision.

CONNECTORS
MIL-C-81511
SERIES 1, 2,3 AND 4

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Contacts, Electrical Connector, General Specifications for AS39029
Connectors, Electrical Circular, High Density, Quick Disconnect,
Environment Resistant and Accessories MIL-C-81511
Connector Accessories 004 03

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Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
BT-S-815L (11851)	Tool Set, Adapter, Plastic
BT-S-815S (11851)	Tool Set, Adapter, Plastic
HT900B (0690)	Heating Tool, Compressed Air/Nitrogen
M81969/2-01	Tool, Insertion, Metal
M81969/2-02	Tool, Insertion, Metal
M81969/2-03	Tool, Insertion, Metal I
M81969/2-04	Tool, Insertion, Metal
M81969/3-01	Tool, Removal, Front Ganged Socket, Metal
M81969/3-02	Tool, Removal, Front Ganged Socket, Metal
M81969/3-03	Tool, Removal, Front Ganged Socket, Metal
M81969/3-04	Tool, Removal, Front Ganged Socket, Metal
M81969/3-05	Tool, Removal, Front Ganged Pin, Metal T -1 Removal Tool, Removal, Front Ganged Pin, Metal
M81969/3-07	Tool, Removal, Front Ganged Pin, Metal
M81969/3-08	Tool, Removal, Front Ganged Pin, Metal
BT815 Series	Set, Adapter
CM815 Series	Set, Adapter
D12LS	Positioner
D12P	Positioner
D12S	Positioner
D16LS	Positioner
D16P	Positioner
D16S	Positioner
K372	Positioner
K373	Positioner
M22520/1-01	Tool, Crimp, Frame
M22520/1-09	Positioner

M22520/1-10	Positioner
M22520/2-01	Tool, Crimp, Frame
M22520/2-13	Positioner
M22520/2-14	Positioner
M22520/2-15	Positioner
M22520/2-16	Positioner
M22520/2-17	Positioner
M22520/2-18	Positioner
M22520/19-01	Tool, Crimp, Frame
M22520/21-01	Tool, Crimp, Frame
M22520/3-1	Gage, Inspection
M81969/16-01	Tool, Insertion/Removal
M81969/16-02	Tool, Insertion/Removal
M81969/16-03	Tool, Insertion/Removal
M81969/16-04	Tool, Insertion/Removal
M81969/30-01	Tool, Removal, Unwired
M81969/30-02	Tool, Removal, Unwired
M81969/30-03	Tool, Removal, Unwired
M81969/30-04	Tool, Removal, Unwired
M81969/30-21	Probe, Removal, Unwired
M81969/30-22	Probe, Removal, Unwired
M81969/30-23	Probe, Removal, Unwired
M81969/30-24	Probe, Removal, Unwired
MH801	Tool, Crimp, Frame
MH803	Tool, Crimp, Frame

Materials Required

Specification/ Part No.	Nomenclature
M81511/15-12	Plug, Sealing
M81511/15-13	Plug, Sealing
M81511/15-20	Plug, Sealing
M81511/15-22	Plug, Sealing

1. INTRODUCTION.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, the Society of Automotive Engineers (SAE) will become the preparing activity and the Navy will adopt the documents, and the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

2. This Work Package (WP) covers all pertinent data necessary for the use and maintenance of connectors manufactured in accordance with MIL-C-81511, Series 1, 2, 3 and 4. These connectors are circular, high density, quick disconnect, and environment resistant. MIL-C-81511 connectors have been declared inactive for use in new design. This does not preclude use for maintenance, repair, or re-supply purposes, or use in designs where the connectors must interface with Government Furnished Equipment (GFE)

3. DESCRIPTION. The MIL-C-81511 specification covers four series of electrical connectors (plugs and receptacles) with removable crimp and solder contacts, and accessories. Series 1 is intermateable with Series 3 and Series 2 is intermateable with Series 4. Series 1 and 3 are not intermateable with Series 2 and 4. Coupling is a three pin bayonet. Full engagement is indicated by an audible sound at the end of the coupling cycle. The ends of the bayonet pins will be visible through holes in the coupling ring. A sealing ring is provided to achieve a peripheral seal around the mated shells. Electrical, mechanical, and environmental features of these connectors include:

a. Environment resisting at sea level and high altitude.

b. Quick disconnect bayonet coupling.

c. Electromagnetic Interference (EMI)/Radio Frequency Interference (RFI) protection through shell to shell grounding spring members.

d. High density insert arrangements.

e. Low level circuit capacities.

f. Scoop proof to the extent specified in the individual series.

g. Fluid resistant classes.

h. High temperature classes.

i. Voltage service ratings I and II.

j. Designed to prevent inadvertent electrical contact and provide contact protection during mating.

4. Series 1 and 2 have a "ganged" contact retention and release mechanism (Figure 1). To lock contacts, the retention mechanism is operated by rotating the rear retention ring clockwise (cw) until the yellow color

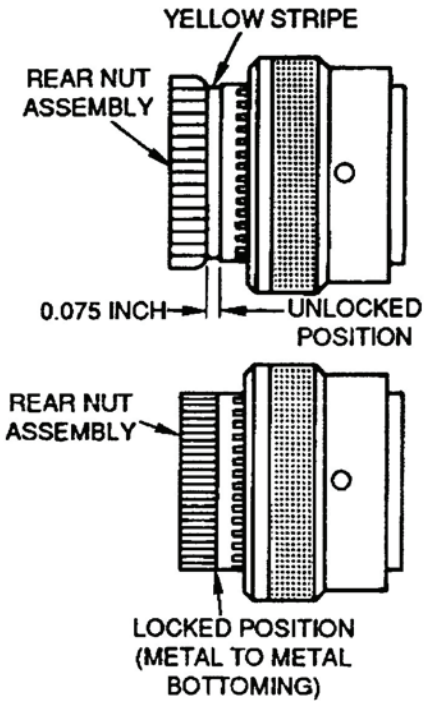


Figure 1. Ganged Contact Retention

band is not exposed. Metal to metal contact will occur between the shell and retention ring, Unlocking contacts is accomplished by rotating the rear retention ring counterclockwise (ccw) from the locked position. The yellow color band will be fully exposed. Contacts are inserted and removed from the rear of the connector, however the removal tool releases the contact from the front (front release, rear removal and insertion). Series 3 have a long shell design which are scoop proof. Series 4 are a light-weight, short shell design, which are also scoop proof. Neither series 3 or 4 employ the ganged contact retention mechanism, but rather, the conventional contact locking and retention configuration.

5. MIL-C-81511 SERIES 1 AND 2.

6. Series 1 connectors are long shell design in sizes 8 through 24. These connectors are scoop proof when pin contacts are installed in either the plug or receptacle. Plugs contain the grounding spring members. Configurations available under Series 1 are identified in Figure 2, along with the corresponding specification sheets and part number breakdown.

7. Series 2 connectors are short shell design in sizes 8 through 18, These connectors are scoop proof when pin contacts are installed in the receptacle, and non-scoop proof when pins are installed in the plug. Receptacles contain the grounding spring members. Configurations available under Series 2 are identified in Figure 3 along with the corresponding specification sheets and part number breakdown.

8. PART NUMBER. The part number contains the information necessary for the proper selection and procurement and includes the following (Figure 2 and Figure 7):

9. Prefix. The prefix denotes the military specification.

10. Shell Style. The shell style denotes the type of and mounting of the connector.

11. Service Class. The class indicates the environment resisting abilities.

12. Shell Size. The shell size is indicated by a progressive lettering system (Table 1 and 2).

13. Insert Configuration. The insert configuration denotes service rating and the number of contacts.

14. Contact Style. The contact style denotes the type of contact used.

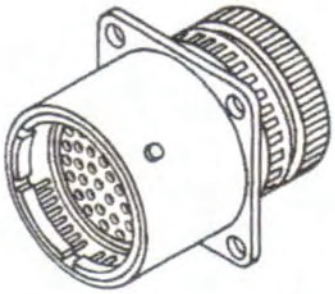
15. Alternate Key Position. The alternate position number shows that plugs and receptacles with the same number can be mated.

16. DESIGN AND CONSTRUCTION. The connectors and accessories are designed and constructed to withstand normal handling during installation and maintenance.

17. INSERTS. The entire insert of the environment resisting assemblies is essentially one integral part designed to provide suitable sealing and support around the wires and is non-removable

18. Rigid Dielectric. The rigid dielectric is one molded piece or not more than two pieces bonded together. The design is such that contacts are able to be inserted and removed to facilitate installation and maintenance except ‘hermetic receptacles.

19. Contact Locking Device. The contact locking devices are contained in the rigid dielectric and securely hold the contacts during normal coupling. The series 1 and 2 connectors employ a ganged retention and release mechanism. Refer to paragraph 4 for the operation description and Figure 1 for the graphical representation.



M81511 /21 E F 01 P 1

PREFIX
SHELL STYLE
SERVICE CLASS
SHELL SIZE
ALTERNATE KEY POSITION
CONTACT STYLE
INSERT CONFIGURATION

SHELL STYLE

/21 WALL MOUNT RECEPTACLE
/22 HERMETIC SEAL SOLDER MOUNT RECEPTACLE
/23 JAM NUT RECEPTACLE
/24 HERMETIC SEAL JAM NUT RECEPTACLE
/25 IN-LINE RECEPTACLE
/26 STRAIGHT PLUG
/27 HERMETIC SEAL JAM NUT RECEPTACLE, BULKHEAD FEEDTHRU CONTACTS
/35 WALL MOUNT RECEPTACLE, POTTING SEAL
/36 JAM NUT RECEPTACLE, POTTING SEAL
/37 IN-LINE RECEPTACLE, POTTING SEAL
/38 STRAIGHT PLUG, POTTING SEAL

SERVICE CLASS

302°F (150°C) OPERATING TEMPERATURE
E GROMMETSEAL
H HERMETIC SEAL
P POTTING SEAL
347°F (175°C) OPERATING TEMPERATURE
F GROMMETSEAL
G HERMETIC SEAL
T POTTING SEAL
392°F (200°C) OPERATING TEMPERATURE
A GROMMETSEAL
B HERMETIC SEAL
C POTTING SEAL

SHELL SIZE

CODE LETTER	A	B	D	E	F	G	H	J
SHELL SIZE	8	10	14	16	18	20	22	24

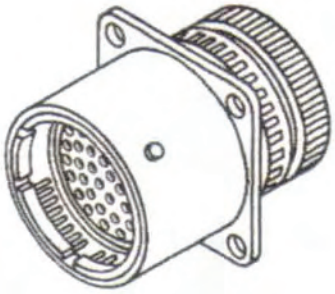
INSERT CONFIGURATION
(TABLE 1 AND FIGURE 5)

CONTACT STYLE

A WITHOUT PIN CONTACTS
B WITHOUT SOCKET CONTACTS
C FEEDTHRU CONTACTS
P PIN CONTACTS
S SOCKET CONTACTS

KEY POSITION
1, 2, 3, 4, 5, OR 6

Figure 2. Part Number Breakdown - MIL-C-81511, Series 1



M81511 /06 E F 01 P 1

PREFIX
SHELL STYLE
SERVICE CLASS
SHELL SIZE
ALTERNATE KEY POSITION
CONTACT STYLE
INSERT CONFIGURATION

SHELL STYLE

/01	WALL MOUNT RECEPTACLE
/02	HERMETIC SEAL SOLDER MOUNT RECEPTACLE
/03	JAM NUT RECEPTACLE
/04	HERMETIC SEAL JAM NUT RECEPTACLE
/05	IN-LINE RECEPTACLE
/06	STRAIGHT PLUG
/28	HERMETIC SEAL JAM NUT RECEPTACLE, BULKHEAD FEEDTHRU CONTACTS
/31	WALL MOUNT RECEPTACLE. POTTING SEAL
/32	JAM NUT RECEPTACLE, POTTING SEAL
/33	IN-LINE RECEPTACLE, POTTING SEAL
/34	STRAIGHT PLUG, POTTING SEAL

SERVICE CLASS

302°F (150°C) OPERATING TEMPERATURE

E	GROMMETSEAL
H	HERMETIC SEAL
P	POTTING SEAL

347°F (175°C) OPERATING TEMPERATURE

F	GROMMETSEAL
G	HERMETIC SEAL
T	POTTING SEAL

392°F (200°C) OPERATING TEMPERATURE

A	GROMMETSEAL
B	HERMETIC SEAL
C	POTTING SEAL

SHELL SIZE

CODE LETTER	A	B	D	E	F
SHELL SIZE	8	10	14	16	18

INSERT CONFIGURATION
(TABLE 1 AND FIGURE 5)

CONTACT STYLE

A	WITHOUT PIN CONTACTS
B	WITHOUT SOCKET CONTACTS
C	FEEDTHRU CONTACTS
P	PIN CONTACTS
S	SOCKET CONTACTS

KEY POSITION
1, 2, 3, 4, 5, OR 6

Figure 3. Part Number Breakdown - MIL-C-81511, Series 2

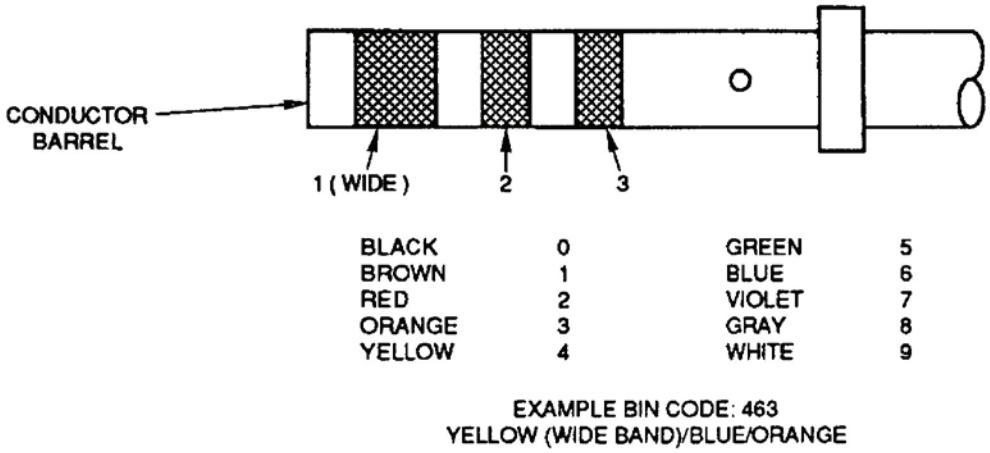


Figure 4. Basic Identification Number and Color Band

Table 1. MIL-C-81511, Series 1 and 3 Insert Arrangements

Shell Size / Insert Arrangement Series 1	Service Rating (NOTE)	Number of Contacts				
		Contact Size				Total Contacts
		12	16	20	23	
A01	I	-	-	-	4	4
B01	I	-	-	-	12	12
B02	I	-	-	5	-	5
BO3	II	-	3	-	-	3
D01	I	-	-	-	37	37
D02	I	-	-	19	-	19
D03	II	-	9	-	-	9
E01	I	-	-	.	55	55
E02	I	-	-	27	-	27
EO3	II	-	14	-	-	14
F01	I	-	-	-	85	85
F02	I	-	-	38	-	38
F03	II	-	21	-	-	21
F04	II	9	-	-	-	9
G01	I	-	-	-	92	92
G02	I	-	-	45	-	45
G03	II	-	24	-	-	24
G04	II	11	-	-	-	11
HOI	I	-	-	-	121	121
H02	I	-	-	61	-	61
H03	II	-	32	-	-	32
H04	II	14	-	-	-	14
J01	I	-	-	-	155	155
J02	I	-	-	74	-	74
J03	II	-	41	-	-	41
J04	II	19	-	-	-	19

NOTE:
Maximum recommended working voltage (AC, RMS):

Condition	Service Rating I	Service Rating II
Sea Level	600	1000
50,000 Feet	300	450
70,000 Feet	300	450
110,000 Feet	300	450

Table 2. MIL-C-81511, Series 2 and 4 Insert Arrangements

Shell Size Insert Arrangement Series 2	Service Rating (NOTE)	Number of Contacts				
		Contact Size				Total Contacts
		12	16	20	23	
A01	I	-	-	-	4	4
B01	I	-	-	-	12	12
B02	I	-	-	5	-	5
BO3	II	-	3	-	-	3
D01	I	-	-	-	37	37
D02	I	-	-	19	-	19
D03	II	-	9	-	-	9
E01	I	-	-	.	55	55
E02	I	-	-	27	-	27
EO3	II	-	14	-	-	14
F01	I	-	-	-	85	85
F02	I	-	-	38	-	38
F03	II	-	21	-	-	21
F04	II	9	-	-	-	9

NOTE:
Maximum recommended working voltage (AC, RMS):

Condition	Service Rating I	Service Rating II
Sea Level	600	1000
50,000 Feet	300	450
70,000 Feet	300	450
110,000 Feet	300	450

20. Rotation. The inserts are secured in a manner so as to prevent rotation or movement.

21. Interface Seal. All pin contact inserts will have a resilient interface seal bonded to the front face to prevent water intrusion.

22. Hermetic Receptacles. A glass-like material is used to insulate and seal the contacts and all pin contacts will have an interface seal, The contacts are not removable.

23. INSERT ARRANGEMENT. The insert arrangement is the number and size of the contacts available by shell size (Table 1 and 2).

24. INSERT CONFIGURATION. The insert configuration is the manner in which the contacts are placed within the insert in a standard configuration, All arrangements identified in Table 1 and 2 are illustrated (Figure 4).

25. CONTACTS. Contacts may be fixed or crimp removable.

26. Fixed Contacts. Contacts in hermetically sealed or thru-bulkhead receptacles are fixed non-removable and solder-able, or feed through.

27. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

28. Contact Availability. Crimp contacts are supplied with each connector unit package and consist of a full compliment plus 1 spare per size for connectors of 26 contacts or less and those connectors with more than 26 contacts will have 2 spares of each size used. Contacts may also be ordered in individual quantities when necessary.

29. CONTACT APPLICATION. Contacts used in MIL-C-81511 connectors are manufactured in accordance with basic specification AS39029. When the insert arrangement designates a particular size contact, the appropriate military specification contact can be found in the applicable contact application table. The contact part number breakdown is illustrated in Figure 5 and 6. The Basic Identification Number (BIN), or last three digits of contact part number, matches the standard resistor color code (Figure 7). Pin contacts are interchangeable between all series.

30. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts in Table 3 and 4 range from size 12 thru 23-22 and are of rear insertion, front release design. Contacts are listed by size. Match the required size to the connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with the corresponding color bands.

31. THERMOCOUPLE CONTACTS. Temperature sensing systems utilize two dissimilar metal conductors with matched lengths. When joined at the point temperature will be sensed, a voltage difference develops. This voltage is directly proportional to the temperature change. Thermocouple contacts are listed in Table 5 and 6, they are: nickel-aluminum/silicon (formerly alumel), nickel-chromium (formerly chromel), iron, or copper-nickel alloy (formerly constantan). Match the required size to the connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with the corresponding color bands.

32. TOOLING. The procedures for attaching power and thermocouple contacts to a single conductor wire is the same for this connector series and contacts. Select the proper tooling for the specific contact part number (Table 5 and 6) and refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures.

33. STEP STRIPPING FILTER LINE. Termination of AWG-22 filter line in MIL-C-81511 connectors with size 22 contacts may require a step stripping procedure to reduce the insulation diameter in the grommet area to allow clearance for the contact removal and insertion tool (NAVAIR 01-1A-505-1 WP 009 00, see coaxial cable stripping)

34. COAXIAL CONTACTS. When routing coaxial cable through connectors, coaxial contacts are superior to other coaxial cable shield termination methods. The shield integrity is maintained across the contact body. Socket coaxial contacts have a pin center contact. Pin coaxial contacts have a socket center contact (Figure 8).

35. CABLE AND COAXIAL CONTACT ASSEMBLY. To assemble the coaxial contacts to the applicable cable, identify the cable by part number. Select the proper contact by size (Table 7), and proper crimping tools (Table 8 and 9).

36. BACKSHELL REMOVAL AND INSTALLATION. For removal and installation refer to WP 004 03.

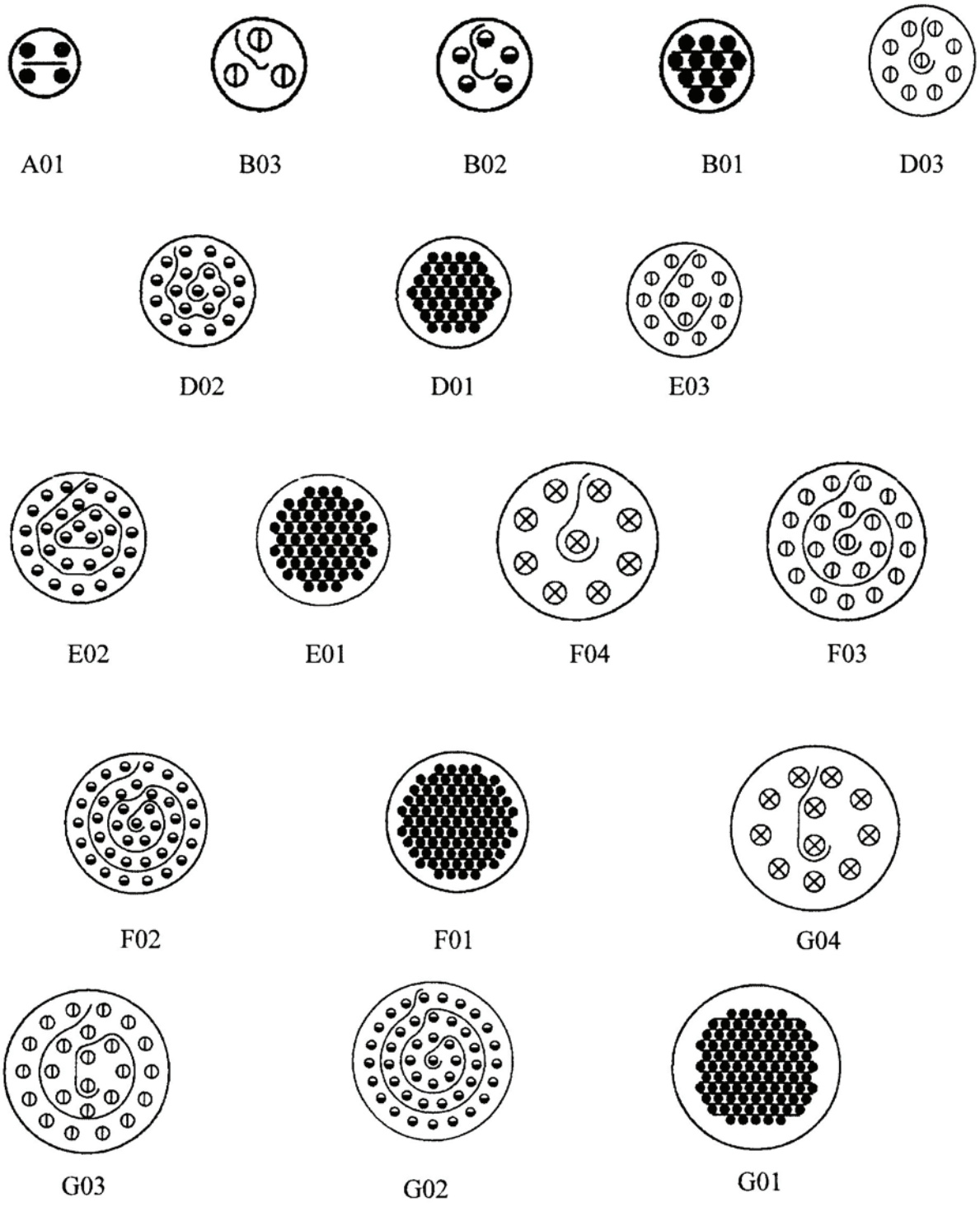


Figure 5. Insert Configurations, MIL-C-81511 Series 1 and 2 (Sheet 1 of 2)

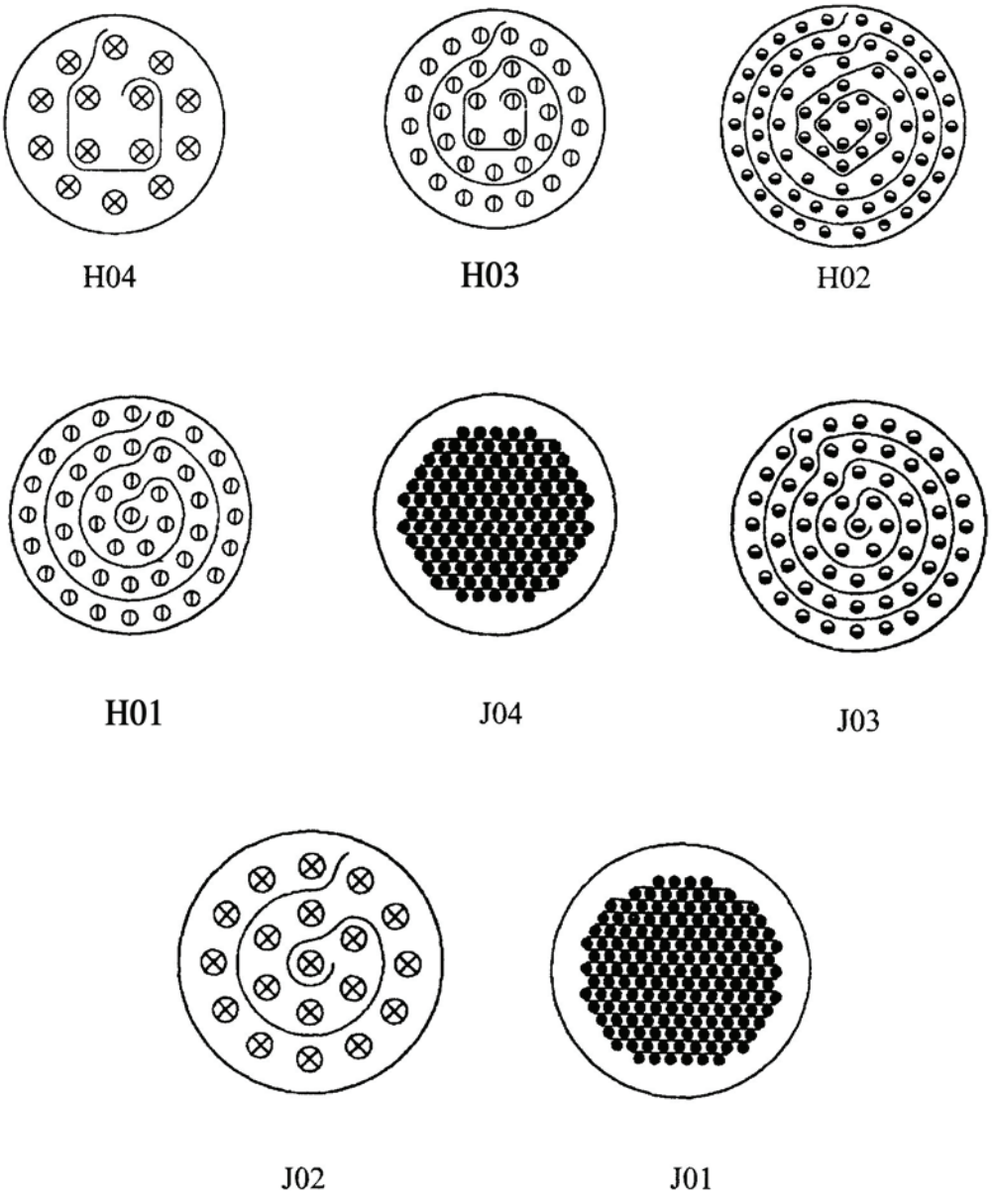


Figure 5. Insert Configurations, MIL-C-81511 Series 1 and 2 (Sheet 2 of 2)

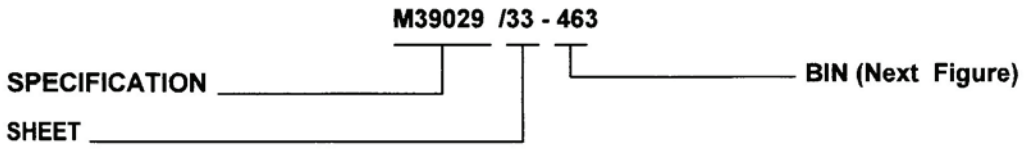


Figure 6. Part Number Breakdown MIL-C-39029 Series 1

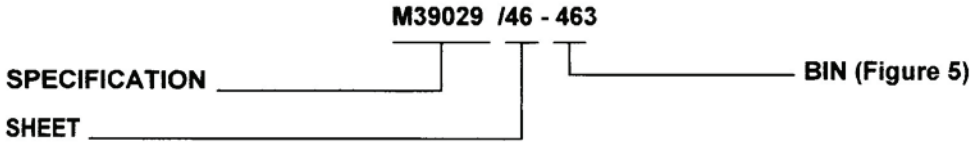


Figure 7. Part Number Breakdown MIL-C-39029 Series 2

Table 3. Power Contact Application Series 1

Contact Size	Wire Gage (AWG)	Socket Contacts				Pin Contacts			
		M39029/	Color Bands			M39029/	Color Bands		
			1	2	3		1	2	3
23	22-28	33-263	RD	BL	OR	47-313	OR	BN	OR
23	22-28	33-264	RD	BL	YE	47-314	OR	BN	YE
20	20-24	33-265	RD	BL	GN	47-315	OR	BN	GN
20	20-24	33-266	RD	BL	BL	47-316	OR	BN	BL
16	16-20	33-267	RD	BL	VI	47-336	OR	OR	BL
16	16-20	33-268	RD	BL	GY	47-337	OR	OR	VI
12	12-14	33-269	RD	BL	WH	47-338	OR	OR	GY
12	12-14	33-270	RD	VI	BK	47-339	OR	OR	WH

Table 4. Power Contacts Application Series 2

Contact Size	Wire Gage (AWG)	Socket Contacts				Pin Contacts			
		M39029/	Color Bands			M39029/	Color Bands		
			1	2	3		1	2	3
23	22-28	46-303	OR	BK	OR	47-313	OR	BN	OR
23	22-28	46-304	OR	BK	YE	47-314	OR	BN	YE
20	20-24	46-305	OR	BK	GN	47-315	OR	BN	GN
20	20-24	46-306	OR	BK	BL	47-316	OR	BN	BL
16	16-20	46-307	OR	BK	VI	47-336	OR	OR	BL
16	16-20	46-308	OR	BK	GY	47-337	OR	OR	VI
12	12-14	46-309	OR	BK	WH	47-338	OR	OR	GY
12	12-14	46-310	OR	BN	BK	47-339	OR	OR	WH

Table 5. Power and Thermocouple Tooling Series 1

Socket Contact	Pin Contacts	Crimp Tool Frame M22520/	Turret Head/ Positioner M22520/	Insertion Tool M81969/	Removal Tool M81969/
M39029/33-263	M39029/47-313	2-01	2-03	2-01	3-01
M39029/33-264	M39029/47-314	2-01	2-03	2-01	3-01
M39029/33-265	M39029/47-315	1-01	1-08 RD	2-02	3-02
M39029/33-266	M39029/47-316	1-01	1-08 RD	2-02	3-02
M39029/33-267	M39029/47-336	1-01	1-08 BL	2-03	3-03
M39029/33-268	M39029/47-337	1-01	1-08 BL	2-03	3-03
M39029/33-269	M39029/47-338	1-01	1-08 YE	2-04	3-04
M39029/33-270	M39029/47-339	1-01	1-08 YE	2-04	3-04

Table 6. Power and Thermocouple Tooling Series 2

Socket Contact	Pin Contacts	Crimp Tool Frame M22520/	Turret Head/ Positioner M22520/	Insertion Tool M81969/	Removal Tool M81969/
M39029/46-303	M39029/47-313	2-01	2-03	2-01	3-01
M39029/46-304	M39029/47-314	2-01	2-03	2-01	3-01
M39029/46-305	M39029/47-315	1-01, 7-01	1-08 RD, 7-09	2-02	3-02
M39029/46-306	M39029/47-316	1-01, 7-01	1-08 RD, 7-09	2-02	3-02
M39029/46-307	M39029/47-336	1-01, 7-01	1-08 BL, 7-10	2-03	3-03
M39029/46-308	M39029/47-337	1-01, 7-01	1-08 BL, 7-10	2-03	3-03
M39029/46-309	M39029/47-338	1-01	1-08 YE	2-04	3-04
M39029/46-310	M39029/47-339	1-01	1-08 YE	2-04	3-04

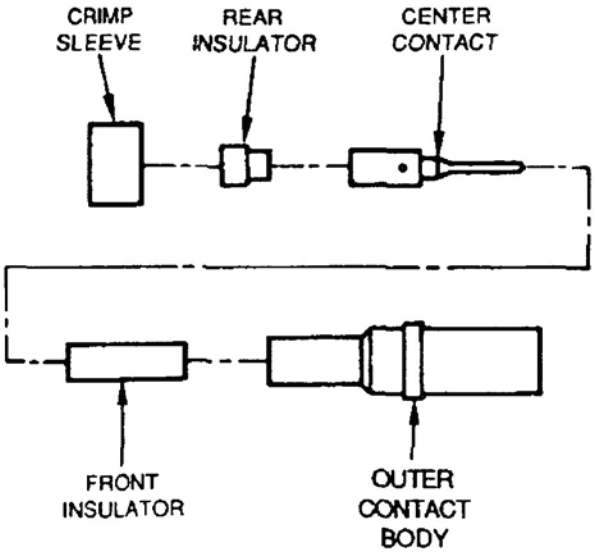


Figure 8. Coaxial Contact Components (Size 12 and 16)

Table 7. Shielded Contact Application Series 1 and 2

Contact Size	Cable Type	Socket Contact	Pin Contact
16	M17/93-RG178 or M17/93-0001	M39029/13	M39029/6
12	RG-187A/U, RG-188A/U, or 179B/U	M39029/13	M39029/6
12	Raychem 9530D5117	M39029/13	M39029/6
12	RG-180B/U, RG-195A/U, or Microdot 293-3922	M39029/13	M39029/6
12	Microdot 250-4070	M39029/13	M39029/6
12	Raychem 5022E5111	M39029/13	M39029/6

Table 8. Tools for MIL-C-81511 Connectors Series 1

BIN Code	Inner Contact		Shield Crimp Sleeve		Outer Contact		Installing Tool	Removal Tool
	Basic Crimping Tool	Positioner	Basic Crimping Tool	Die	Basic Crimping Tool	Die		
120	M22520/2-01	M22520/2- 26	M22520/5-01	M22520/5-02 Cavity B	M22520/5-01	M22520/5-02 Cavity A	MS3323-16	MS3342-16
121	M22520/2-01	M22520/2-25	M22520/5-01	M22520/5-04 Cavity A	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3342-16
122	M22520/2-01	M22520/2-25	M22520/5-01	M22520/5-04 Cavity A	M22520/5-01 M22520/ 10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3342-16
123	M22520/2-01	M22520/2-25	M22520/5-01 M22520/10-01	M22520/5-04 Cavity B M22520/10-04 Cavity B	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3342-16
124	M22520/2-01	M22520/2-25	M22520/5-01 M22520/10-01	M22520/5-04 Cavity B M22520/10-04 Cavity B	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3342-16
125	M22520/2-01	M22520/2-25	M22520/5-01	M22520/5-04 Cavity A	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3342-16
152	M22520/2-01	M22520/2-26	M22520/5-01	M22520/5-02 Cavity B	M22520/5-01	M22520/5-02 Cavity A	MS3323-16	MS3344-16
153	M22520/2-01	M22520/2-25	M22520/5-01	M22520/5-04 Cavity A	M22520/5-01 M22520/10-01	M22520/5 -04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3344-12
154	M22520/2-01	M22520/2-25	M22520/5-01	M22520/5 -04 Cavity A	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3344-12
155	M22520/2-01	M22520/2-25	M22520/5-01 M22520/10-01	M22520/5-04 Cavity B M22520/10-04 Cavity B	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3344-12
156	M22520/2-01	M22520/2-25	M22520/5-01 M22520/10-01	M22520/5-04 Cavity B M22520/10-04 Cavity B	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3344-12
157	M22520/2-01	M22520/2-25	M22520/ 5-01	M22520/5-04 Cavity A	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3344-12

Table 9. Tools for MIL-C-81511 Connector Series 2

BIN Code	Inner Contact		Shield Crimp Sleeve		Outer Contact		Installing Tool	Removal Tool
	Basic Crimping Tool	Positioner	Basic Crimping Tool	Die	Basic Crimping Tool	Die		
120	M22520/2-01	M22520/2-26	M22520/5-01	M22520/5-02 Cavity B	M22520/5-01	M22520/5-02 Cavity A	MS3323-16	MS3342-16
121	M22520/2-01	M22520/2-25	M22520/5-01	M22520/5-04 Cavity A	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/ 10-04 Cavity A	MS3323-12	MS3342-16
122	M22520/2-01	M22520/2-25	M22520/5-01	M22520/5-04 Cavity A	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3342-16
123	M22520/2-01	M22520/2-25	M22520/5-01 M22520/10-01	M22520/5-04 Cavity B M22520/10-04 Cavity B	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3342-16
124	M22520/2-01	M22520/2-25	M22520/5-01 M22520/10-01	M22520/5-04 Cavity B M22520/10-04 Cavity B	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3342-16
125	M22520/2-01	M22520/2-25	M22520/S-01	M22520/5- 04 Cavity A	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3342-16
158	M22520/2-01	M22520/2-26	M22520/5-01	M22520/5-02 Cavity B	M22520/5-01	M22520/5-02 Cavity A	MS3323-16	MS3344-16
159	M22520/2-01	M22520/2-25	M22520/5-01	M22520/5-04 Cavity A	M22520/5-01 M22520/ 10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3344-12
160	M22520/2-01	M22520/2-25	M22520/5-01	M22520/5-04 Cavity A	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3344-12
161	M22520/2-01	M22520/2-25	M22520/5-01 M22520/10-01	M22520/5-04 Cavity B M22520/10-04 Cavity B	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3344-12
162	M22520/2-01	M22520/2-25	M22520/5-01 M22520/10-01	M22520/5-04 Cavity B M22520/10-04 Cavity B	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3344-12
163	M22520/2-01	M22520/2-25	M22520/5-01	M22520/5-04 Cavity A	M22520/5-01 M22520/10-01	M22520/5-04 Cavity A M22520/10-04 Cavity A	MS3323-12	MS3344-12

37. CONNECTOR BUILD-UP SERIES 1 AND 2.

WARNING

Do not perform hot work without specific authorization of activity Aviation Gas Free Engineer (AVGFE) or Gas Free Engineer(GFE).

The HT-900B, HT-920B, HT-71002 and MCH-100-A heat guns are the only authorized heat guns to be used when working on aircraft that have not been defueled and purged. The aircraft must be defueled and purged before using any other heat guns listed in this manual.

Aircraft with open fuel cells or broken or open fuel lines shall be certified gas free in accordance with NAVAIR 01-1A-35, or AF T.O. 1-1-3. Only the HT-900B/HT-920B, HT-71002, MCH-100-A heating tools are authorized for use on any aircraft whenever AVGAS, JP-4 or the presence of any type of fuel is imposing an immediate danger.

When using heat guns with electric motors, recertification may be required as work progresses, as directed by the Aviation Gas Free Engineering Technician (AVGFET).

The MCH-100-A heat gun has been electromagnetic interference (EMI) qualified for flight line or flight deck use. All other electric motor type heat guns are not authorized for flight line or flight deck use due to electromagnetic interference (EMI). The electric motor type heating tools are safe for use by personnel at the organizational maintenance level to repair aircraft wiring in a hangar or hangar deck/flight line environment, provided the aircraft meets the gas-free environment criteria (NAVAIR 01-1A-35, or AF T.O. 1-1-3), and there are no EMI restrictions.

Do not perform wire repair while using explosive solvent/paint products on the aircraft.

When using a heat tool, do not use electrical power from the aircraft being repaired. Use electrical power from a ground power unit.

Use of nitrogen with the HT-900B/HT-920B heat gun in an enclosed area can be hazardous. Discharge of nitrogen into a poorly ventilated area can result in asphyxiation.

CAUTION

Be careful if using metal tools (M81969). These tools can damage the wire sealing grommet in the connector. Plastic tools are preferred.

Inspect tool tips for damage such as nicks, burrs, or distortion before use. Damage to the connector wire sealing grommet can occur.

Avoid using metal tooling to remove and install backshells. These tools can damage the backshell and connector. Non-metallic tools are designed to wear before damaging connector or backshell.

Do not remove a contact attached to a broken wire with an unwired contact removal tool. The tool and connector may be damaged,

Wire strands may be encountered at any point up to $\frac{5}{16}$ inch of tool insertion. Do not force tool if wire strands are encountered.

Withdraw tool any time it cannot be advanced into connector. Inspect tool tip for nicks, cracks, mushrooming, and other damage that will prevent proper functioning. Replace removal tool and repeat procedure if required.

38. WIRE DIAMETER BUILD-UP. If wire outside diameter is not large enough to fill wire sealing grommet holes, build up wire outside diameter by applying heat-shrinkable insulating sleeving. This must be accomplished prior to contact insertion.

39. SINGLE CONDUCTOR WIRE AND CONTACT ASSEMBLY. The procedures for attaching power and thermocouple contacts to single conductor wire are the same for all connector specifications in series 1 and 2. After selecting tooling for a specific contact part number (Tables: 5, 6, 8, or 9), refer to (NAVAIR 01-1A-505-1, WP 013 00) for assembly procedures.

40. WIRE STRIPPING.

a. Cut wire to proper length. Ensure enough wire remains for adequate strain relief without leaving excess slack.

b. Strip insulation from end (NAVAIR 01-1A-505-1 WP 009 00) to dimension given for applicable connector. Select contact from Table 3, 4, or 7.

c. Insert stripped wire into contact conductor barrel. Ensure all wire strands are inside contact conductor barrel and visible in contact inspection hole (Figure 9).

d. If insulation gap is too large, trim conductor as required. If insulation gap is too small, trim insulation as required (NAVAIR 01-1A-505-1, WP 009 00)

41. CONTACT CRIMPING.

a. Select crimp tool frame and positioner (Table 5, 6, 8 or 9).

b. Perform die closure check, install positioner, and set selector knob for gage of wire. Crimp contact to wire (NAVAIR 01-1A-505-1, WP 013 00).

42. CONTACT INSERTION. The following procedure covers installation of wired or unwired, power, thermocouple, and coaxial contacts:

NOTE

Series 1 and 2 connectors are front release type, and ganged retention. The contacts are inserted and removed from the rear of the connector.

a. If not previously removed, remove backshell from rear of connector. Turn rear nut assembly counterclockwise until slight resistance is felt (2 ½ turns or 5/64 inch space, minimum). Yellow stripe will be visible (Figure 10).

b. Remove sealing plug and/or contact from contact cavity.

c. Route wire or cable through backshell.

NOTE

Start contact insertion near center contact cavities and work outward.

d. Hand insert contact into corresponding hole until only crimp barrel portion of contact extends from grommet (Figure 11).

e. Select insertion tool specified in applicable contact tooling table (Table 5, 6, 8 or 9).

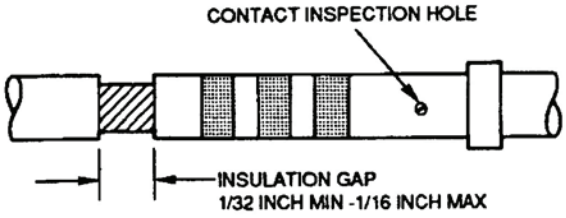


Figure 9. Insulation Gap

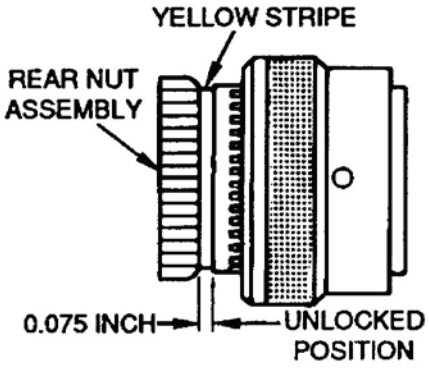


Figure 10. Unlocking Connector

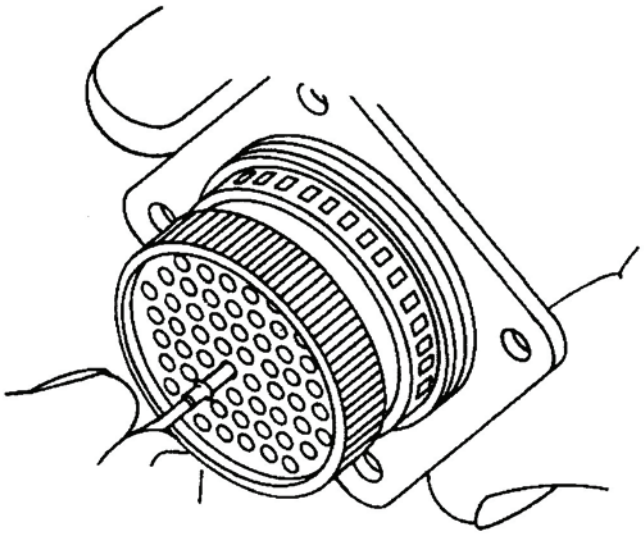


Figure 11. Inserting Contacts into Connector

NOTE

Take care not to disturb or dislodge seated contacts by putting strain on wires or cable while inserting other contacts.

f. Position insertion tool around rear of contact (Figure 12). Contact and tool should be aligned within hole as straight as possible to avoid damage to wire sealing grommet. Press insertion tool against contact shoulder firmly to seat contact in cavity.

g. Remove insertion tool by sliding back along wire insulation until it clears grommet.

h. Seal connector (Paragraph 43), and install backshell (WP 004 03),

43. CONNECTOR SEALING.

44. Sealing Plugs.

a. Fill all unused cavities with un-crimped contacts and sealing plugs.

NOTE

All MIL-C-81511 connectors use a straight sealing plug, without a knob at the end (Figure 13).

b. Select sealing plug according to size of contact (Table 10).

c. Insert sealing plug until bottomed in contact cavity (Figure 13). Fill all cavities that have un-crimped contacts. NAVAIR 01-1A-505-1, WP 026 00.

d. After all contacts and sealing plugs are inserted, rotate rear nut assembly by hand until nut is fully bottomed against rear shell (Figure 14).

45. Moisture Barrier. For connector sealing procedures, refer to NAVAIR 01-1A-505-1, WP 025 00.

46. CONTACT REMOVAL. Contacts requiring removal from connectors may be wired, unwired, or attached to broken wires.

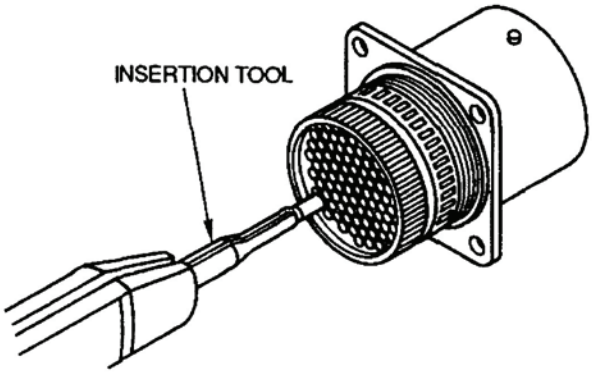


Figure 12. Seating Contact with Insertion Tool

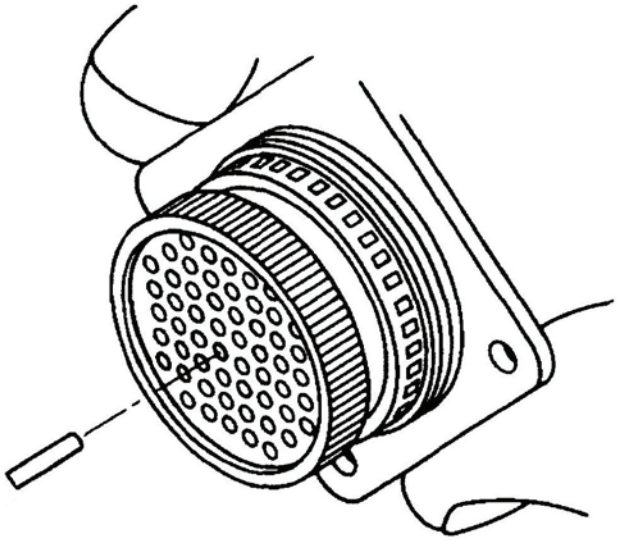


Figure 13. Sealing Plug Insertion

Table 10. Sealing Plug Selection

Contact Size	Sealing Plug Part Number	Color
12	M81511/15-12	Yellow
16	M81511/15-16	Blue
20	M81511/15-20	Red
22	M81511/15-22	White

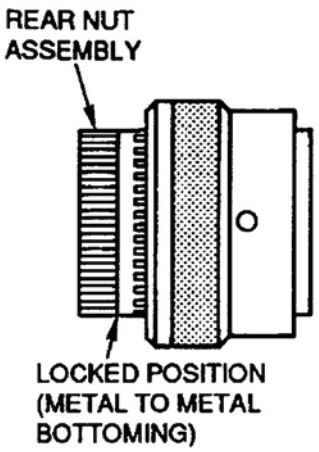


Figure 14. Locking Contacts

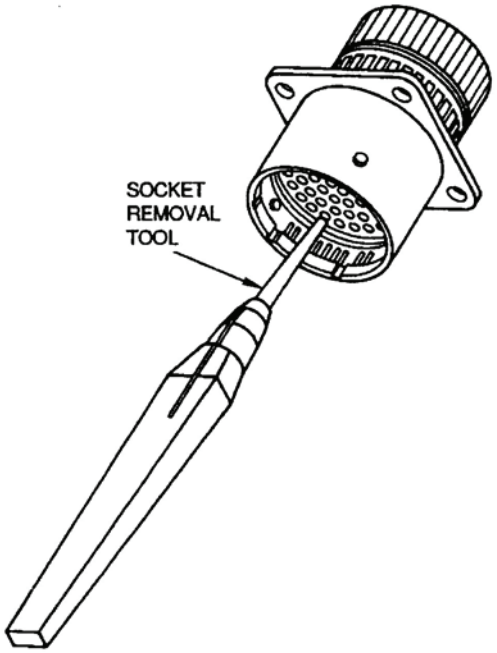


Figure 15. Unlocking Contact Retention Mechanism of Socket Contact

CAUTION

Inspect tool tips for damage such as nicks, burrs, or distortion before use. Failure to do so may damage the wire or connector.

a. If not previously removed, remove backshell from rear of connector (WP 004 03). Turn rear nut assembly counterclockwise until slight resistance is felt (2 ½ turns or 5/64 inch space, minimum). Yellow stripe will be visible (Figure 10).

b. Select removal tool specified in applicable contact tooling table (Tables 5, 6, 8 or 9).

c. Remove sealing plug, if installed.

d. To remove socket contacts, insert tool through insert and into socket contact (Figure 15).

e. To remove pin contacts, align and place tool over exposed pin (Figure 16).

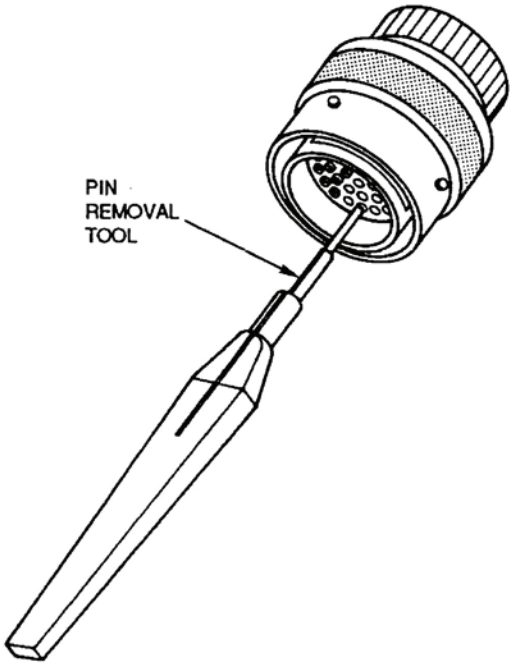


Figure 16. Unlocking Contact Retention Mechanism of Pin Contact

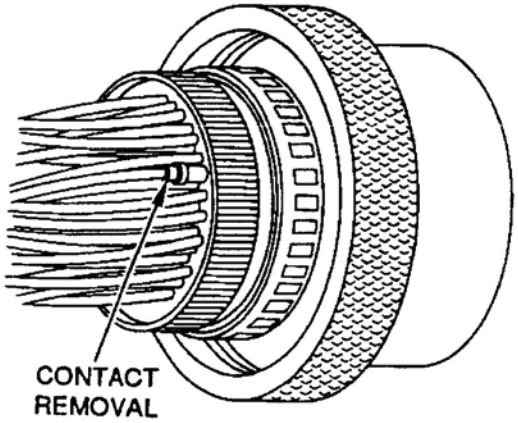


Figure 17. Contact Removal

CAUTION

Withdraw tool any time it cannot be advanced into connector. Inspect tool tip for nicks, cracks, mushrooming, and other damage that will prevent proper functioning. Replace removal tool and repeat procedure if required.

Remove only one contact at a time to prevent damaging wire sealing grommet.

NOTE

Protective sleeve of removal tool will retract into tool as force is applied.

f. Apply force with a straight axial motion perpendicular to insert face. When tool has bottomed against insert face, wire barrel of contact will appear at wire sealing grommet end of connector. Contact may then be removed by band (Figure 17).

47. CONNECTOR REMOVAL AND INSTALLATION. If the connector is damaged and no longer serviceable, proceed as follows:

a. Starting from outside of damaged connector, tag wires and remove all contacts from connector paragraph 46). If contact cannot be removed, cut wire or cable as close to connector as possible and attach a new contact. (Refer to applicable contact assembly procedure).

b. Starting from center of new connector, maintain a smooth wire dress and insert contact into correct cavity. Remove tag from wire. Repeat procedure until all contacts are installed in a new connector.

48. CONNECTOR CLEANING AND PRESERVATION.

49. For connector cleaning and corrosion control procedures, refer to (NAVAIR 01-1A-505-1, WP 026 00).

50. MIL-C-81511 SERIES 3 AND 4.

WARNING

Do not perform hot work without specific authorization of activity Aviation Gas Free Engineer (AVGFE) or Gas Free Engineer(GFE).

The HT-900B, HT-920B, HT-71002 and MCH-100-A heat guns are the only authorized heat guns to be used when working on aircraft that have not been defueled and purged. The aircraft must be defueled and purged before using any other heat guns listed in this manual.

Aircraft with open fuel cells or broken or open fuel lines shall be certified gas free in accordance with NAVAIR 01-1A-35, or AF T.O. 1-1-3. Only the HT-900B/HT-920B, HT-71002, MCH-100-A heating tools are authorized for use on any aircraft whenever AVGAS, JP-4 or the presence of any type of fuel is imposing an immediate danger.

When using heat guns with electric motors, recertification may be required as work progresses, as directed by the Aviation Gas Free Engineering Technician (AVGFET).

The MCH-100-A heat gun has been electromagnetic interference (EMI) qualified for flight line or flight deck use. All other electric motor type heat guns are not authorized for flight line or flight deck use due to electromagnetic interference (EMI). The electric motor type heating tools are safe for use by personnel at the organizational maintenance level to repair aircraft wiring in a hangar or hangar deck/flight line environment, provided the aircraft meets the gas-free environment criteria (NAVAIR 01-1A-35, or AF T.O. 1-1-3), and there are no EMI restrictions.

Do not perform wire repair while using explosive solvent/paint products on the aircraft.

When using a heat tool, do not use electrical power from the aircraft being repaired. Use electrical power from a ground power unit.

Use of nitrogen with the HT-900B/HT-920B heat gun in an enclosed area can be hazardous. Discharge of nitrogen into a poorly ventilated area can result in asphyxiation.

CAUTION

Do not use electrical power from aircraft being repaired. Use electrical power from ground power unit.

Be careful if using metal tools (M81969). These tools can damage the wire sealing grommet in the connector. Plastic tools are preferred.

Inspect tool tips for damage such as nicks, burrs, or distortion before use. Damage to the connector wire sealing grommet can occur.

Avoid using metal tooling to remove and install backshells. These tools can damage the backshell and connector. Non-metallic tools are designed to wear before damaging connector or backshell.

Do not remove a contact attached to a broken wire with an unwired contact removal tool. The tool and connector may be damaged,

Wire strands may be encountered at any point up to 5/16 inch of tool insertion. Do not force tool if wire strands are encountered.

Withdraw tool any time it cannot be advanced into connector. Inspect tool tip for nicks, cracks, mushrooming, and other damage that will prevent proper functioning. Replace removal tool and repeat procedure if required.

51. Series 3 and 4 (Figure 18 and 19) are available in two shell styles: a long shell version (Series 3), commonly called 100% scoop-proof, and a short shell version (Series 4), commonly called 50% scoop-proof. The long shell version will prevent scooping damage with pins installed in either the plug or receptacle. The short version will prevent scooping damage provided the pin contacts are installed in the receptacle half of the connector. Receptacles contain the grounding spring members used to ground both direct current and RFI signals. Configurations available under Series 3 and 4 are identified in Figure 20, along with the corresponding specification sheets and part number breakdown.

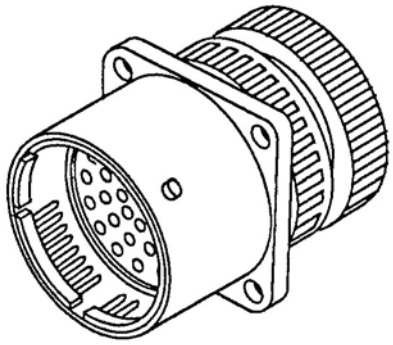


Figure 18. MIL-C-81511 Series 3 Typical Connector



Figure 19. MIL-C-81511 Series 4 Typical Connector

52. PART NUMBER. The part number contains the information necessary for the proper selection and procurement (Figure 20) and includes the following:

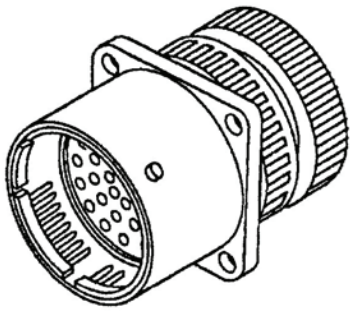
53. Prefix. The prefix denotes the military specification.

54. Shell Style. The shell style denotes the type and mounting to the connector.

55. Class. The class indicates the environment resisting abilities along with mounting type.

56. Shell Size. The shell size is indicated by a progressive lettering system .

MIL-C-81511 SERIES 3 CONNECTOR



MIL-C-81511 SERIES 4 CONNECTOR



M81511 /41 W F 01 P 1

MILITARY PREFIX
SHELL STYLE
SERVICE CLASS
SHELL SIZE
INSERT CONFIGURATION
CONTACT STYLE
ALTERNATE KEY POSITION
(POLARIZATION)

SHELL STYLE
SERIES 3 – LONG SHELL (100% SCOOP PROOF)
/41 WALL MOUNT RECEPTACLE.
/45 IN-LINE RECEPTACLE.
/46 STRAIGHT PLUG.
/49 JAM NUT RECEPTACLE

SERIES 4 – SHORT SHELL (50% SCOOP PROOF)
/51 WALL MOUNT RECEPTACLE.
/53 JAM NUT RECEPTACLE
/55 IN-LINE RECEPTACLE.
/56 STRAIGHT PLUG.

SERVICE CLASS
347°F (175°C) OPERATING TEMPERATURE
F GROMMET SEAL, FLUID RESISTANT
D HERMETIC SEAL, SOLDER CONTACTS
L HERMETIC SEAL, CRIMP CONTACTS
W CADMIUM PLATE

392°F (200°C) OPERATING TEMPERATURE
A GROMMET SEAL, FLUID RESISTANT

SHELL SIZE

CODE LETTER	A	B	D	E	F	G	H	J
SHELL SIZE	8	10	14	16	18	20	22	24

INSERT CONFIGURATION
(FIGURE 22)

CONTACT STYLE
P PIN CONTACTS.
S SOCKET CONTACTS.
A LESS PIN CONTACTS
B LESS SOCKET CONTACTS

ALTERNATE KEY POSITION (POLARIZATION)
1, 2, 3, 4, 5, OR 6 (FIGURE 21)

Figure 20. MIL-C-81511 Series 3 and 4 Part Number Breakdown

57. Insert Arrangement. The insert arrangement denotes service rating and number of contacts (Figure 21).

58. Contact Style. The contact style denotes the type of contact used.

59. Alternate Key Position. The alternate position number shows that plugs and receptacles with the same number can be mated (Figure 22).

60. DESIGN AND CONSTRUCTION. The connectors and accessories are designed and constructed to withstand normal handling during maintenance and installation (Figure 23).

61. INSERTS. The entire insert of the environment resisting assemblies is essentially one integral part designed to provide suitable sealing and support around the wires and to be non-removable.

62. Rigid Dielectric. The rigid dielectric is one molded piece or not more than two pieces bonded together. The design is such that contacts are able to be inserted and removed to facilitate installation and maintenance except hermetic receptacles.

63. Contact Locking Device. The contact locking devices are contained in the rigid dielectric and securely hold the contacts during normal coupling.

64. Rotation. The inserts are secured in a manner so as to prevent rotation or movement.

65. Interface Seal. All pin contact inserts will have a resilient interface seal bonded to the front face to prevent water intrusion.

66. Hermetic Receptacles. A vitreous or glasslike material is used to insulate and seal the contacts, and all pin contacts will have an interface seal. The contacts are not removable.

67. INSERT ARRANGEMENT. The insert arrangement is the number and size of the contacts available by shell size (Table 1 and 2).

68. INSERT CONFIGURATION. The insert configuration is the manner in which the contacts are placed within the insert in a standard configuration. All arrangements identified in Table 1 and 2 are illustrated (Figure 21).

69. CONTACTS. Contacts may be fixed or crimp removable.

70. Fixed Contacts. Contacts in hermetically sealed or thru-bulkhead receptacles are fixed, non-removable, and solderable, or feed through.

71. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

72. Contact Availability. Crimp contacts are supplied with each connector unit package and consist of a full compliment plus 1 spare per size for connectors of 26 contacts or less and those connectors with more than 26 contacts will have 2 spares of each size used. Contacts may also be ordered in individual quantities.

73. CONTACT APPLICATION. Contacts used in MIL-C-81511 connectors are manufactured in accordance with AS39029. When the insert arrangement designates a particular size contact, the appropriate military specification contact can be found in the applicable contact application table. The contact part number breakdown is illustrated in Figure 24 and 25. The Basic Identification Number (BIN), or last three digits of contact part number, matches the standard resistor color code (Figure 26). MIL-C-81511 Series 3 and 4 may be configured with power, thermocouple, or shielded contacts.

74. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts in Table 11 and 13 range from size 12 thru 23-22 and are of rear insertion, front release design. Contacts are listed by size. Match the required size to the connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with the corresponding color bands.

75. THERMOCOUPLE CONTACTS. Temperature sensing systems utilize two dissimilar metal conductors with matched lengths. When joined at the point temperature will be sensed, a voltage difference develops. This voltage is directly proportional to the temperature change. Thermocouple contacts are listed in Table 12 and 14, they are: nickel-aluminum/silicon (formerly alumel), nickel-chromium (formerly chromel), iron, copper, or copper-nickel alloy (formerly constantan). Match the required size to the connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with the corresponding color bands.

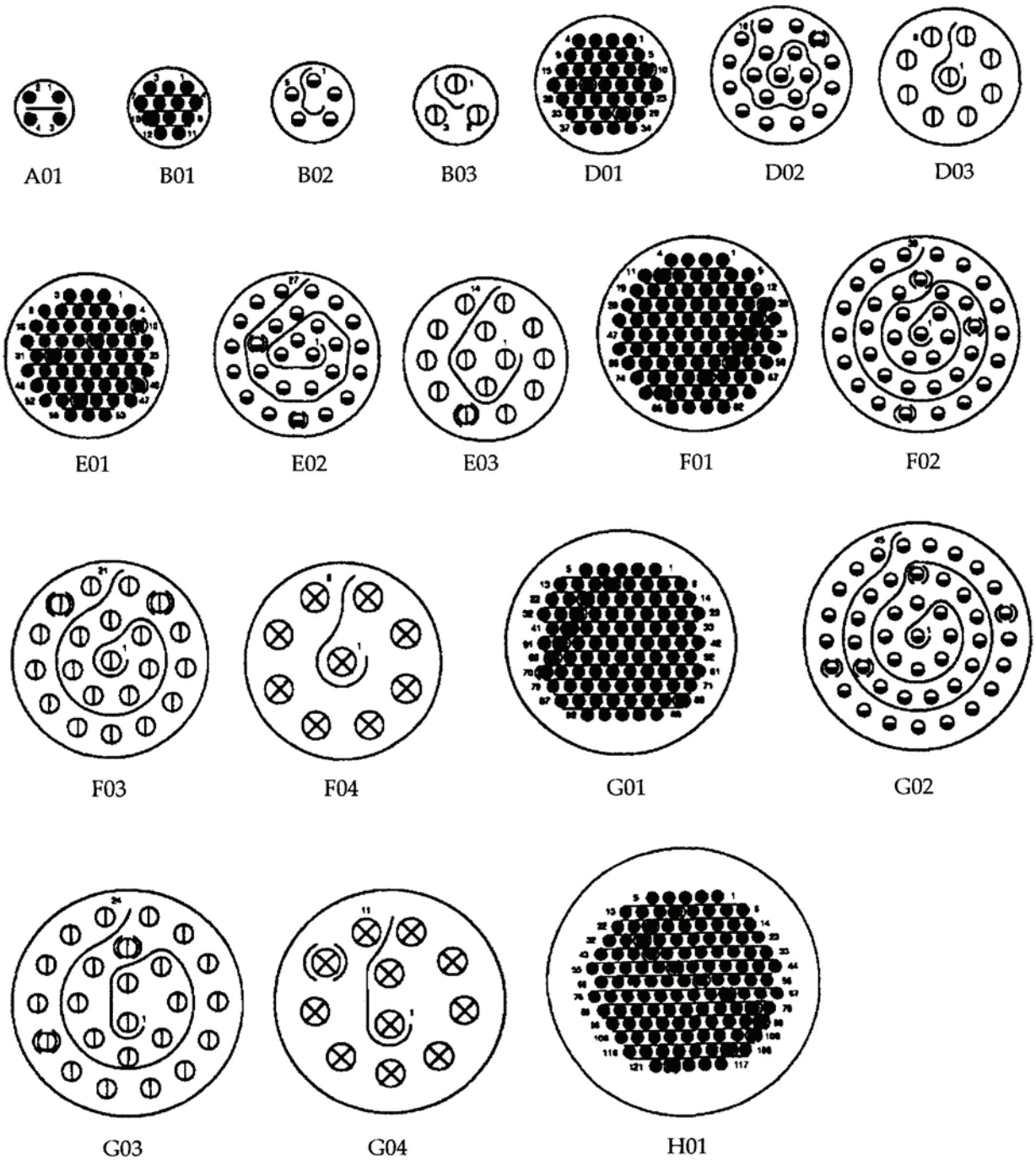


Figure 21. MIL-C-81511 Series 3 and 4 Insert Configuration (Sheet 1 of 2)

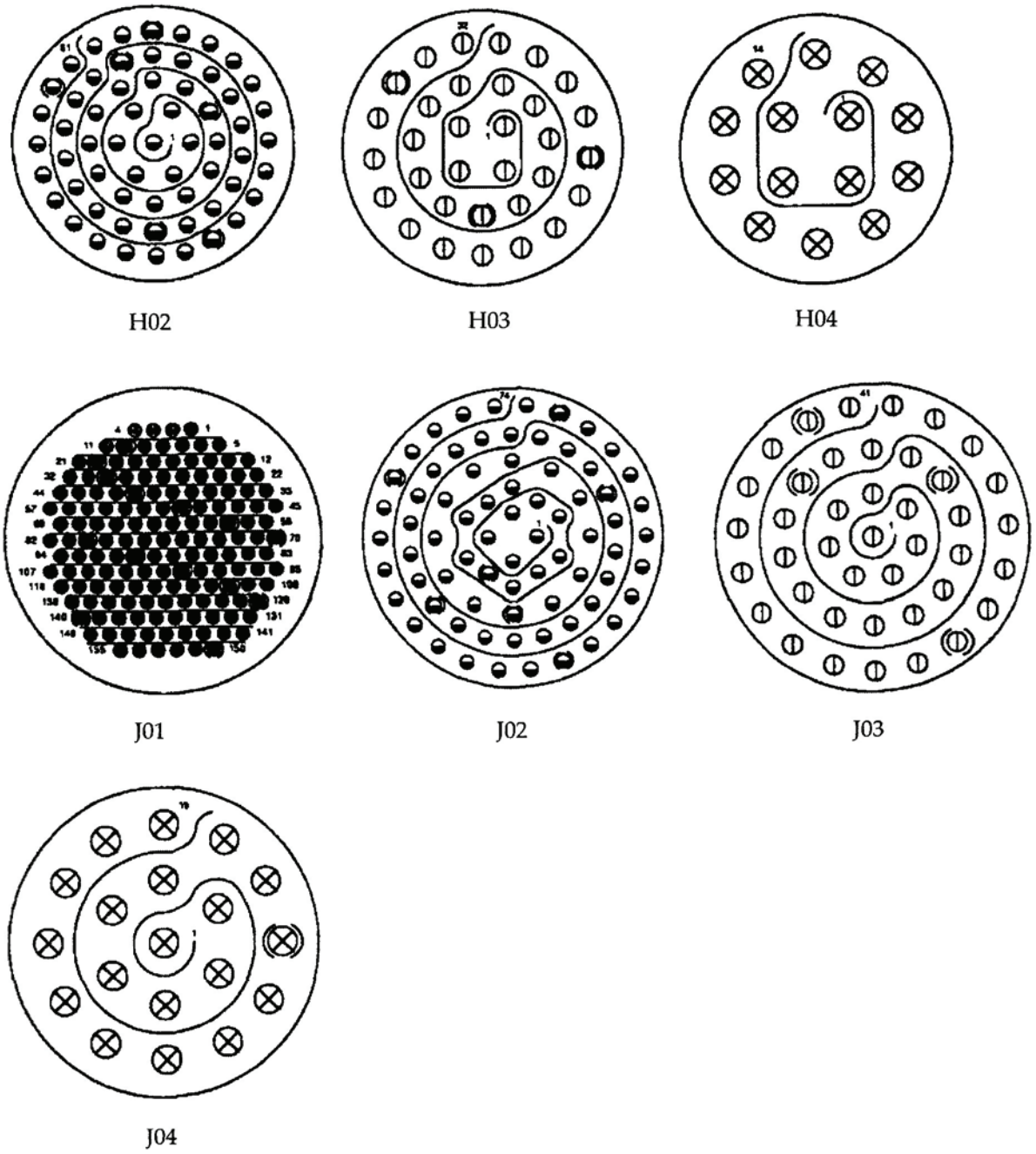
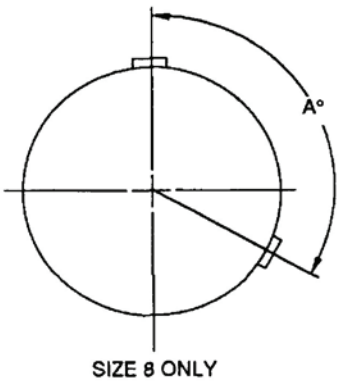
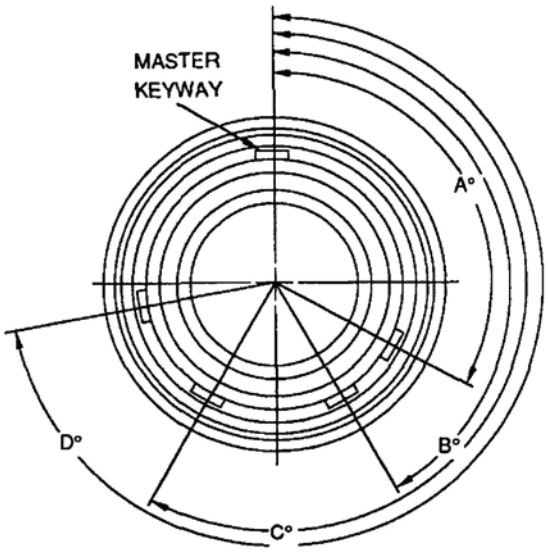


Figure 21. MIL-C-81511 Series 3 and 4 Insert Configuration (Sheet 2 of 2)





PLUG FACE SHOWN
(KEYWAYS IN RECEPTACLE SHELLS ARE OPPOSITE.)

Series 3 Key/Keyway Locations																
Keying Position	Shell Size 8				Shell Sizes 10 & 14				Shell Sizes 16 & 18				Shell Sizes 20, 22 & 24			
	A°	B°	C°	D°	A°	B°	C°	D°	A°	B°	C°	D°	A°	B°	C°	D°
1	105	140	215	265	95	141	208	236	80	142	196	293	80	142	196	293
2	102	132	248	320	113	156	182	292	135	170	200	310	135	170	200	310
3	80	118	230	312	90	145	195	252	49	169	200	244	49	169	200	244
4	35	140	205	275	53	156	220	255	66	140	200	257	66	140	200	257
5	65	155	234	304	119	146	176	298	62	145	180	280	62	145	180	280
6	91	131	197	240	51	141	184	242	79	153	197	272	79	153	197	272

Series 4 Key/Keyway Locations												
Keying Position	Shell Size 8				Shell Sizes 10 & 14				Shell Sizes 16 & 18			
	A°	B°	C°	D°	A°	B°	C°	D°	A°	B°	C°	D°
1	128	—	—	—	105	140	215	265	105	140	215	265
2	190	—	—	—	102	132	248	320	18	149	192	259
3	205	—	—	—	80	118	230	312	92	152	222	342
4	220	—	—	—	35	140	205	275	84	152	204	334
5	235	—	—	—	64	155	235	304	24	135	199	240
6	250	—	—	—	35	115	220	270	98	152	268	338

Figure 22. Alternate Key Positions MIL-C-81511 Series 3 and 4

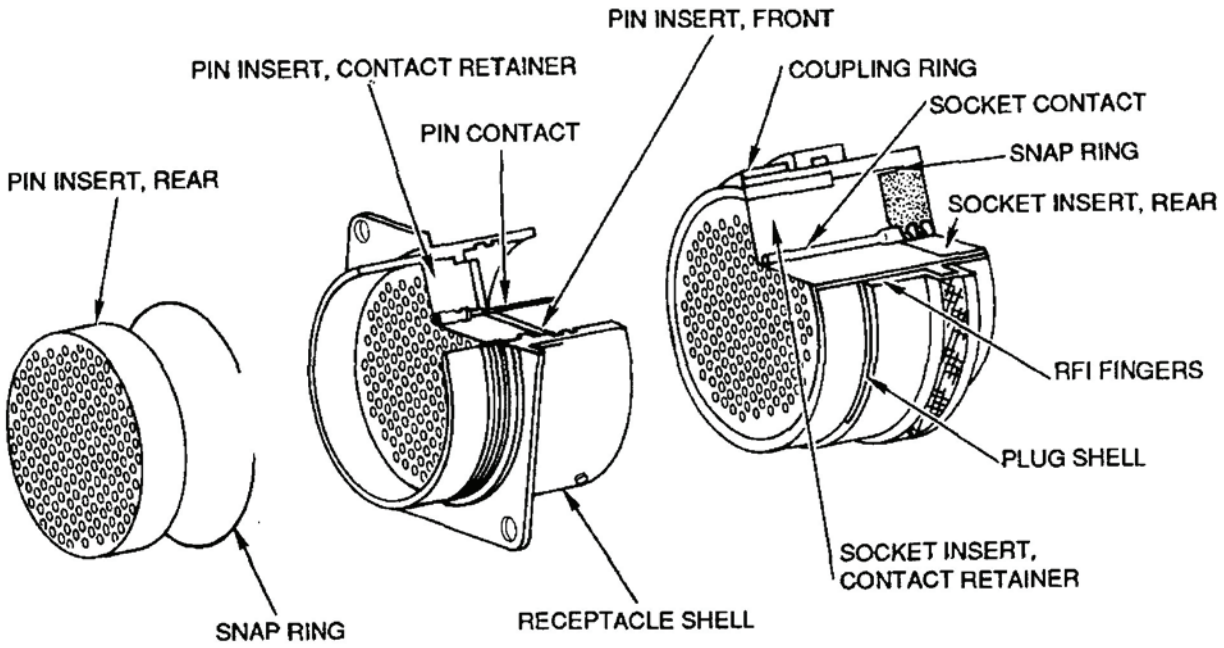


Figure 23. MIL-C-81511 Design Features

Table 11. MIL-C-81511, Series 4 Power Contact Application

Contact Size	Wire Gage (AWG)	Socket Contacts				Pin Contacts			
		M39029/	Color Bands			M39029/	Color Bands		
			1	2	3		1	2	3
23	28-32	16-166	BN	BL	BL	18-176	BN	VI	BL
23	22-28	16-167	BN	BL	VI	18-177	BN	VI	VI
23	28-32	22-190	BN	WH	BK	-----	-----	-----	-----
23	22-28	22-191	BN	WH	BN	-----	-----	-----	-----
20	20-24	16-168	BN	BL	GY	18-178	BN	VI	GY
20	20-24	22-192	BN	WH	RD	-----	-----	-----	-----
16	16-20	16-169	BN	BL	WH	18-179	BN	VI	WH
16	16-20	22-193	BN	WH	OR	-----	-----	-----	-----
12	12-14	16-170	BN	VI	BK	18-180	BN	GY	BK

Table 12. MIL-C-81511, Series 3 Thermocouple Contact Application

Contact Size	Wire Size	Socket Contact	Pin Contact	Remarks
20	20-24	81563-200	81561-200	Copper
20	20-24	81563-201	81561-201	Iron
20	20-24	81563-202	81561-202	Nickel - Aluminum Alloy (Alumel)
20	20-24	81563-203	81561-203	Nickel – Chromium (Chromel)
20	20-24	81563-204	81561-204	Copper - Nickel Alloy (Constantan)
20	20-24	81563-205	81561-205	Iron - Nickel Alloy (Constantan)

NOTE
New terminology applies to thermocouple conductors as follows:
Constantan: Copper - Nickel Alloy
Alumel: Nickel - Aluminum Alloy
Chromel: Nickel - Chromium

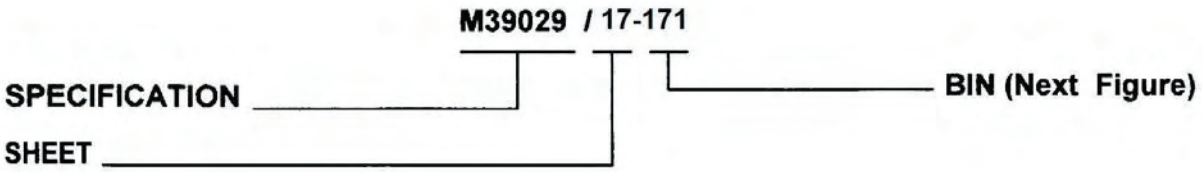


Figure 24. Part Number Breakdown MIL-C-39029 Series 3

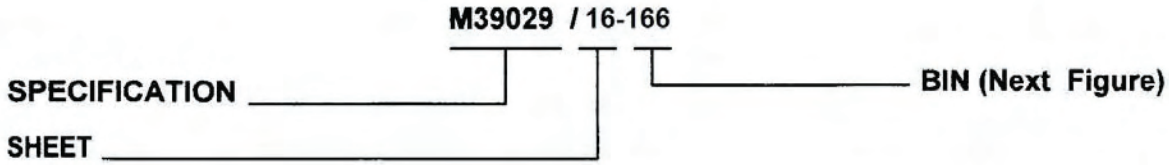


Figure 25. Part Number Breakdown MIL-C-39029 Series 4

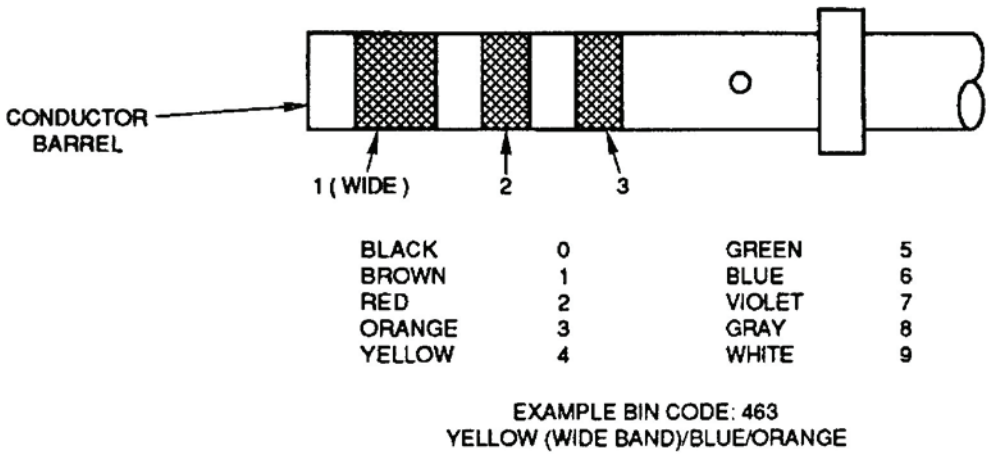


Figure 26. Basic Identification Number and Color Band

Table 13. MIL-C-81511, Series 3 Power Contact Application

Contact Size	Wire Gage (AWG)	Socket Contacts				Pin Contacts			
		M39029/	Color Bands			M39029/	Color Bands		
			1	2	3		1	2	3
23	28-32	17-171	BN	VI	BN	18-176	BN	VI	BL
23	22-28	17-172	BN	VI	RD	18-177	BN	VI	VI
23	28-32	22-190	BN	WH	BK	-----	-----	-----	-----
23	22-28	22-191	BN	WH	BN	-----	-----	-----	-----
20	20-24	17-173	BN	VI	OR	18-178	BN	VI	GY
20	20-24	22-192	BN	WH	RD	-----	-----	-----	-----
16	-----	17-174	BN	VI	YE	18-179	BN	VI	WH
16	16-20	22-193	BN	WH	OR	-----	-----	-----	-----
12	-----	17-175	BN	VI	GN	18-180	BN	GY	BK

Table 14. MIL-C-81511, Series 4 Thermocouple Contact Application

Contact Size	Wire Size	Socket Contact	Pin Contact	Remarks
20	20-24	81562-200	81561-200	Copper
20	20-24	81562-201	81561-201	Iron
20	20-24	81562-202	81561-202	Nickel - Aluminum Alloy (Alumel)
20	20-24	81562-203	81561-203	Nickel – Chromium (Chromel)
20	20-24	81562-204	81561-204	Copper - Nickel Alloy (Constantan)
20	20-24	81562-205	81561-205	Iron - Nickel Alloy (Constantan)

NOTE
New terminology applies to thermocouple conductors as follows:
Constantan: Copper - Nickel Alloy
Alumel: Nickel - Aluminum Alloy
Chromel: Nickel - Chromium

Table 15. MIL-C-81511, Series 3 Power and Thermocouple Tooling

Socket Contact	Pin Contact	Crimp Tool Frame M22520/	Positioner M22520/	Insertion Tool M81969/	Removal Tool M81969/	Unwired Removal Tool M81969/
M39029/17-171	M39029/18-176	2-01	2-16	16-04	16-04	30-01
M39029/17-172	M39029/18-177	2-01	2-16	16-04	16-04	30-01
M39029/22-190	-	2-01, 7-01	2-19, 7-11	16-04	16-04	-
M39029/22-191	-	2-01, 7-01	2-19, 7-11	16-04	16-04	-
M39029/17-173	M39029/18-178	2-01, 7-01	2-17, 7-02	16-01	16-01	30-02
M39029/22-192	-	2-01, 7-01	2-20, 7-12	16-01	16-01	-
M39029/17-174	M39029/18-179	2-01, 7-01	2-18, 7-03	16-02	16-02	30-03
M39029/22-193	-	2-01, 7-01	2-21, 7-13	16-02	16-02	-
M39029/17-175	M39029/18-180	1-01	1-10	16-03	16-03	30-04
81563-200	81561-200	2-01, 7-01	2-17, 7-02	16-01	16-01	30-02
81563-201	81561-201	2-01, 7-01	2-17, 7-02	16-01	16-01	30-02
81563-202	81561-202	2-01, 7-01	2-17, 7-02	16-01	16-01	30-02
81563-203	81561-203	2-01, 7-01	2-17, 7-02	16-01	16-01	30-02
81563-204	81561-204	2-01, 7-01	2-17, 7-02	16-01	16-01	30-02
81563-205	81561-205	2-01, 7-01	2-17, 7-02	16-01	16-01	30-02

76. TOOLING. The procedures for attaching power and thermocouple contacts is the same for both Series 1 and 2. Select the proper tooling for the specific contact part number (Table 15 and 16). Refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures.

77. STEP STRIPPING FILTER LINE. Termination of AWG-22 filter line in MIL-C-81511 connectors with size 22 contacts may require a step stripping procedure to reduce the insulation diameter in the grommet area to allow clearance for the contact removal and insertion tool (NAVAIR 01-1A-505-1 WP 009 00, see coaxial cable stripping).

78. COAXIAL CONTACTS. When routing coaxial cable through connectors, coaxial contacts are superior to other coaxial cable shield termination methods. The shield integrity is maintained across the contact body. Socket coaxial contacts have a pin center contact. Pin coaxial contacts have a socket center contact (Figure 27).

79. CABLE AND COAXIAL CONTACT ASSEMBLY. To assemble the coaxial contacts to the applicable cable identify the cable by part number. Select the proper contact by size and cable part number (Table 17 and 18). Assemble as shown in Figure 28.

80. BACHSHELL REMOVAL AND INSTALLATION. For removal and installation refer to WP 004 03.

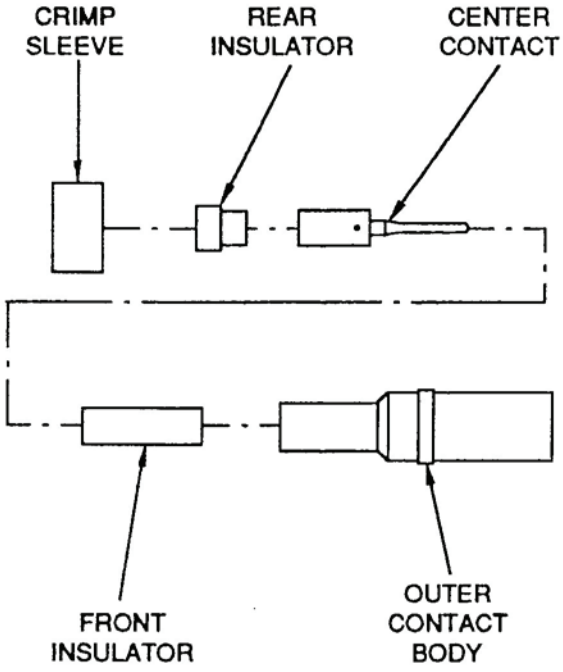


Figure 27. MIL-C-81511 Series 3 and 4 Coaxial Contact Components (Size 12 and 16)

Table 16. MIL-C-81511, Series 4 Power and Thermocouple Tooling

Socket Contact	Pin Contact	Crimp Tool Frame M22520/	Positioner M22520/	Insertion Tool M81969/	Removal Tool M81969/	Unwired Removal Tool M81969/
M39029/16-166	M39029/18-176	2-01	2-13	16-04	16-04	30-01
M39029/16-167	M39029/18-177	2-01	2-13	16-04	16-04	30-01
M39029/22-190	–	2-01, 7-01	2-19, 7-11	16-04	16-04	–
M39029/22-191	–	2-01, 7-01	2-19, 7-11	16-04	16-04	–
M39029/16-168	M39029/18-178	2-01, 7-01	2-14, 7-02	16-01	16-01	30-02
M39029/22-192	–	2-01, 7-01	2-20, 7-12	16-01	16-01	–
M39029/16-169	M39029/18-179	2-01, 7-01	2-15, 7-03	16-02	16-02	30-03
M39029/22-193	–	2-01, 7-01	2-21, 7-13	16-02	16-02	–
M39029/16-170	M39029/18-180	1-01	1-09	16-03	16-03	30-04
81562-200	81561-200	2-01, 7-01	2-17, 7-02	16-01	16-01	30-02
81562-201	81561-201	2-01, 7-01	2-17, 7-02	16-01	16-01	30-02
81562-202	81561-202	2-01, 7-01	2-17, 7-02	16-01	16-01	30-02
81562-203	81561-203	2-01, 7-01	2-17, 7-02	16-01	16-01	30-02
81562-204	81561-204	2-01, 7-01	2-17, 7-02	16-01	16-01	30-02
81562-205	81561-205	2-01, 7-01	2-17, 7-02	16-01	16-01	30-02

Table 17. MIL-C-81511, Series 3 Shielded Contact Application

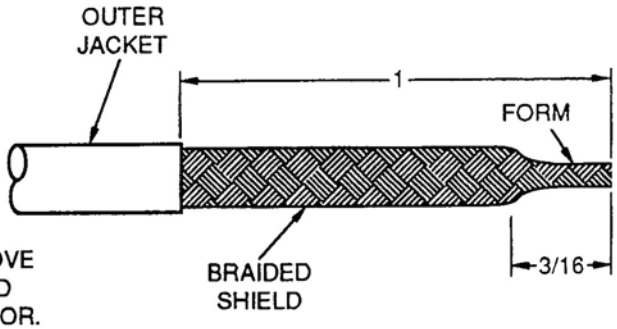
Contact Size	Cable Type	Socket Contact	Pin Contact
16	M81044/18-22 shielded	M39029/20-184	M39029/19-181
12	RG-180B/U Microdot 293-3922 Raychem 9530D5117	M39029/20-185	M39029/19-182
12	RG-188A/U	M39029/13	M39029/6-02
12	M81044/18-22 Microdot 250-4070 Raychem 5022E511	M39029/20-186	M39029/20-183

Table 18. MIL-C-81511, Series 4 Shielded Contact Application

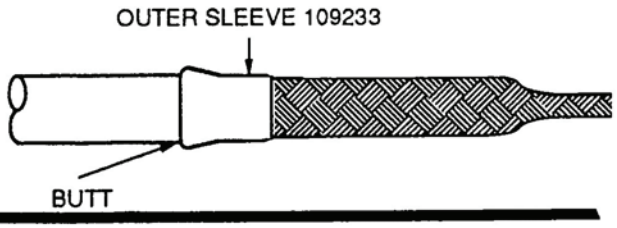
Contact Size	Cable Type	Socket Contact	Pin Contact
16	M81044/18-22 shielded	M39029/21-187	M39029/19-181
12	RG-180B/U Microdot 293-3922 Raychem 9530D5117	M39029/21-188	M39029/19-182
12	RG-188A/U, M17/187-00001	M39029/13	M39029/6-02
12	M81044/18-22 Microdot 250-4070 Raychem 5022E511	M39029/21-189	M39029/19-183

CAUTION

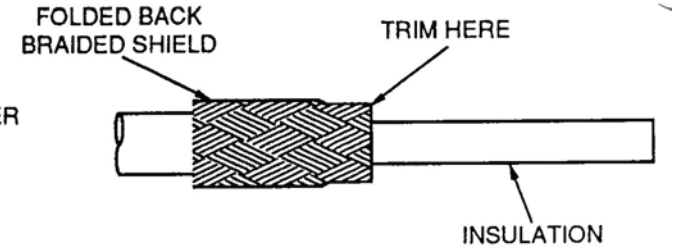
WHEN STRIPPING CABLE, ONLY AMOUNT OF MATERIAL NECESSARY SHALL BE REMOVED. DO NOT CUT TOO DEEP; BRAIDED SHIELD OR INSULATION MAY BE DAMAGED. STRIP DIMENSIONS SHALL BE AS ACCURATE AS POSSIBLE. INCORRECT STRIP DIMENSIONS ARE THE GREATEST CAUSE OF CONTACT FAILURE.



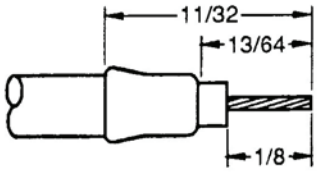
1. CUT CABLE END SQUARE WITH END CUTTERS. REMOVE 1 INCH OF OUTER JACKET AND PUSH BRAIDED SHIELD BACK TO EXPOSE INSULATION OF CENTER CONDUCTOR. STRIP 3/16 INCH OF INSULATION AND CENTER CONDUCTOR. SLIDE BRAIDED SHIELD BACK IN PLACE AND FORM END, TO AID IN SLEEVE INSTALLATION.



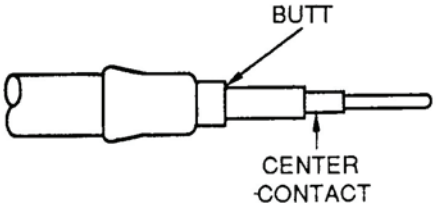
2. SLIDE OUTER SLEEVE 109233 OVER BRAIDED SHIELD TO BUTT CUT END OF OUTER JACKET AS SHOWN.



3. FOLD BRAIDED SHIELD BACK TIGHTLY OVER OUTER SLEEVE AND TRIM BRAID AT FOLD LINE.



4. STRIP 1/8 INCH OF INSULATION FROM CENTER CONDUCTOR, ALLOWING 13/64 INCH BETWEEN EDGE OF BRAIDED SHIELD AND END OF CENTER CONDUCTOR. TWIST CENTER CONDUCTOR TO PREVENT SPLAYED WIRE STRANDS.



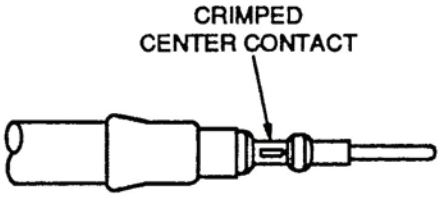
5. INSTALL CENTER CONTACT ONTO CENTER CONDUCTOR TO BUTT INSULATION. ENSURE THAT ALL WIRE STRANDS ENTER CENTER CONTACT WIRE BARREL.

Figure 28. M39029/19-181 Contact Assembly (Sheet 1 of 20)

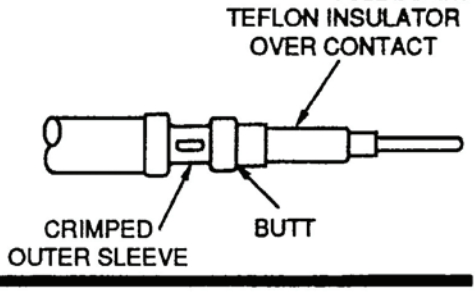
CAUTION

WHEN CRIMPING CENTER CONTACT, PUSH CABLE INTO SPACER AND CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.

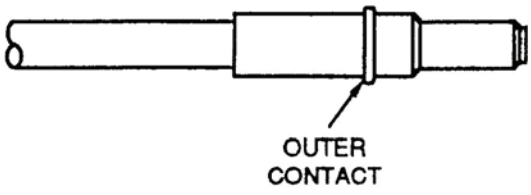
6. CRIMP CENTER CONTACT TO CENTER CONDUCTOR USING CRIMP TOOL HANDLE M22520/2-01 AND POSITIONER MS22520/2-28.



7. INSTALL TEFLON INSULATOR OVER CONTACT UNTIL IT BOTTOMS. SLIDE OUTER SLEEVE TO BUTT SPACER AND CRIMP IN PLACE USING CRIMP TOOL HANDLE M22520/20-01 AND POSITIONER M22520/20-02.



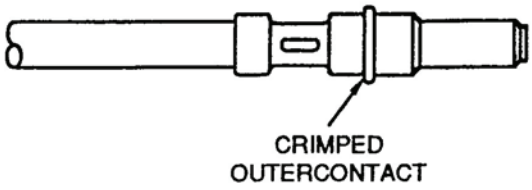
8. INSTALL CENTER CONTACT AND CABLE ASSEMBLY INTO OUTER CONTACT UNTIL IT BOTTOMS.



CAUTION

WHEN CRIMPING OUTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.

9. CRIMP OUTER CONTACT TO CABLE ASSEMBLY USING CRIMP TOOL HANDLE M22520/19-01 AND POSITIONER M22520/19-02.



10. INSPECT COMPLETED ASSEMBLY TO ENSURE THAT CENTER CONTACT IS NOT RECESSED MORE THAN 1/64 INCH.

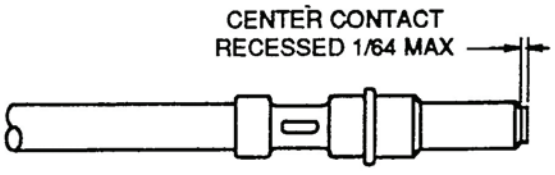
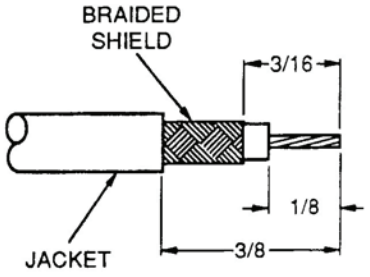


Figure 28. M39029/19-181 Contact Assembly (Sheet 2 of 20)

CAUTION

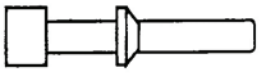
WHEN STRIPPING CABLE, ONLY AMOUNT OF MATERIAL NECESSARY SHALL BE REMOVED. DO NOT CUT TOO DEEP; BRAIDED SHIELD OR INSULATION MAY BE DAMAGED. STRIP DIMENSIONS SHALL BE AS ACCURATE AS POSSIBLE. INCORRECT STRIP DIMENSIONS ARE THE GREATEST CAUSE OF CONTACT FAILURE.



1. CUT CABLE END SQUARE WITH END CUTTERS. STRIP 3/8 INCH OF CABLE JACKET, 3/16 INCH OF BRAIDED SHIELD, AND 1/8 INCH OF INSULATION FROM CENTER CONDUCTOR. TWIST CENTER CONDUCTOR TO PREVENT SPLAYED WIRE STRANDS.

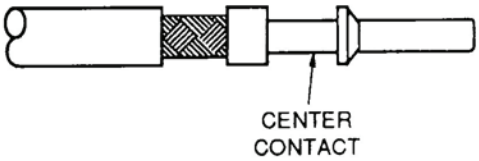
CAUTION

CENTER CONTACT IS ONE ASSEMBLY COMPOSED OF CENTER CONTACT AND TEFLON INSULATOR. UNDER NO CIRCUMSTANCES SHALL THEY BE TAKEN APART.



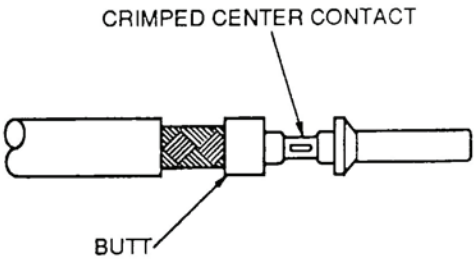
CENTER CONTACT WITH INSULATOR

2. INSTALL CENTER CONTACT ONTO CENTER CONDUCTOR TO BUTT INSULATION. ENSURE THAT ALL WIRE STRANDS ENTER CENTER CONTACT WIRE BARREL AND NO BRAIDED SHIELD STRANDS ENTER CENTER CONTACT INSULATOR.



CAUTION

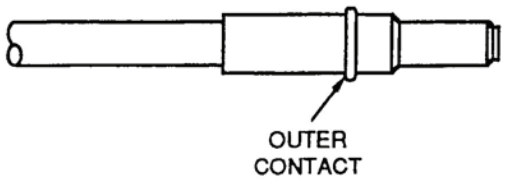
WHEN CRIMPING CENTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.



3. CRIMP CENTER CONTACT (THROUGH TEFLON INSULATOR) TO CENTER CONDUCTOR, USING CRIMP TOOL HANDLE M22520/2-01 AND POSITIONER M22520/2-29

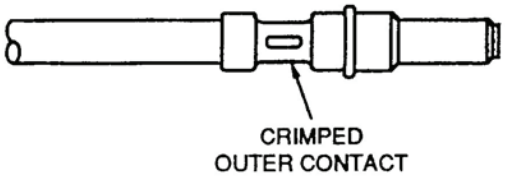
Figure 28. M39029/19-181 Contact Assembly (Sheet 3 of 20)

4. INSTALL CENTER CONTACT AND CABLE ASSEMBLY INTO OUTER CONTACT. ENSURE THAT ALL BRAIDED SHIELD STRANDS ENTER INSIDE OUTER CONTACT.



WHEN CRIMPING OUTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.

5. CRIMP OUTER CONTACT TO BRAIDED SHIELD OF CABLE, USING CRIMP TOOL HANDLE M22520/21-01 AND POSITIONER M22520/21-02.



6. INSPECT COMPLETED ASSEMBLY TO ENSURE THAT CENTER CONTACT INSULATOR DOES NOT PROTRUDE MORE THAN 1/64 INCH.

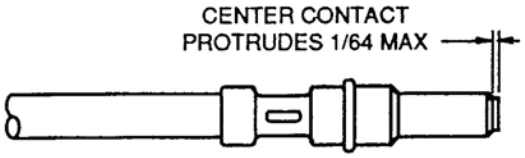
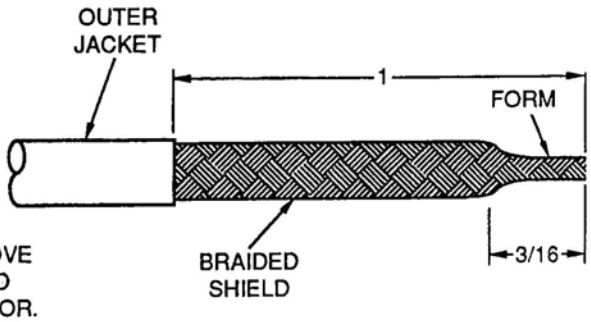


Figure 28. M39029/19-181 Contact Assembly (Sheet 4 of 20)

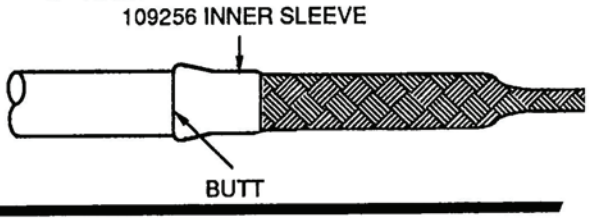
CAUTION

WHEN STRIPPING CABLE, ONLY AMOUNT OF MATERIAL NECESSARY SHALL BE REMOVED. DO NOT CUT TOO DEEP; BRAIDED SHIELD OR INSULATION MAY BE DAMAGED. STRIP DIMENSIONS SHALL BE AS ACCURATE AS POSSIBLE. INCORRECT STRIP DIMENSIONS ARE THE GREATEST CAUSE OF CONTACT FAILURE.

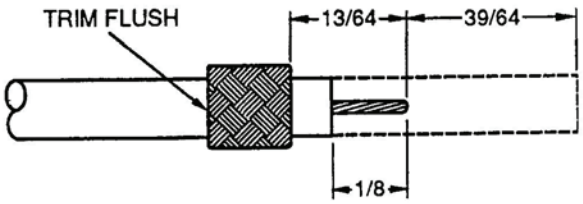


1. CUT CABLE END SQUARE WITH END CUTTERS. REMOVE 1 INCH OF OUTER JACKET AND PUSH BRAIDED SHIELD BACK TO EXPOSE INSULATION OF CENTER CONDUCTOR. REMOVE STRIP 3/16 INCH OF INSULATION AND CENTER CONDUCTOR. SLIDE BRAIDED SHIELD BACK IN PLACE AND FORM BRAIDED SHIELD TO AID IN SLEEVE INSTALLATION.

2. SLIDE INNER SLEEVE, 109256 OVER BRAIDED SHIELD TO BUTT CUT END OF OUTER JACKET AS SHOWN.

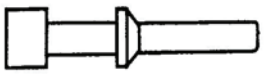


3. FOLD BRAIDED SHIELD BACK TIGHTLY OVER INNER SLEEVE AND TRIM BRAID FLUSH WITH BACK END OF SLEEVE.



CAUTION

CENTER CONTACT IS ONE ASSEMBLY COMPOSED OF CENTER CONTACT AND TEFLON INSULATOR. UNDER NO CIRCUMSTANCES SHALL THEY BE TAKEN APART.



CENTER CONTACT WITH INSULATOR

4. INSTALL CENTER CONTACT ONTO CENTER CONDUCTOR TO BUTT INSULATION. ENSURE THAT ALL WIRE STRANDS ENTER CENTER CONTACT WIRE BARREL.

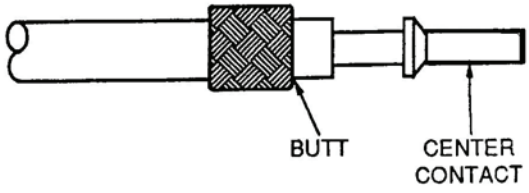
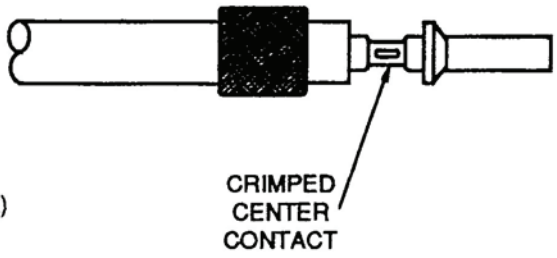


Figure 28. M39029/19-181 Contact Assembly (Sheet 5 of 20)

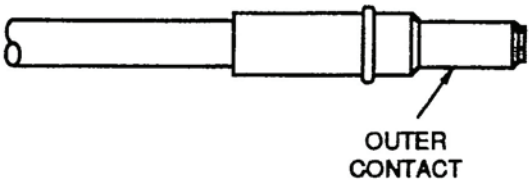
CAUTION

WHEN CRIMPING CENTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.

5. CRIMP CENTER CONTACT (THROUGH TEFLON INSULATOR) TO CENTER CONDUCTOR USING CRIMP TOOL HANDLE M22520/2-01 AND POSITIONER M22520/2-29.



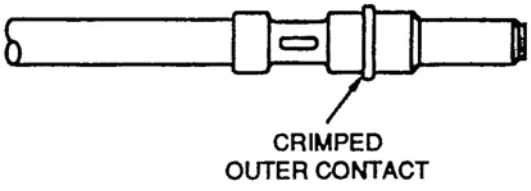
6. INSTALL CENTER CONTACT AND CABLE ASSEMBLY INTO OUTER CONTACT UNTIL IT BOTTOMS.



CAUTION

WHEN CRIMPING OUTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.

7. CRIMP OUTER CONTACT TO BRAIDED SHIELD OF CABLE USING CRIMP TOOL HANDLE M22520/21-01 AND POSITIONER M22520/21-02.



8. INSPECT COMPLETED ASSEMBLY TO ENSURE THAT CENTER CONTACT INSULATOR DOES NOT PROTRUDE THAN 1/64 INCH.

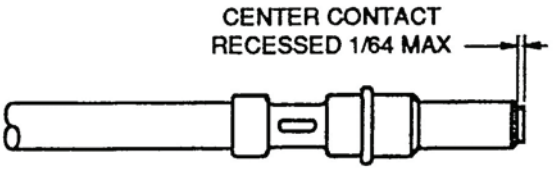
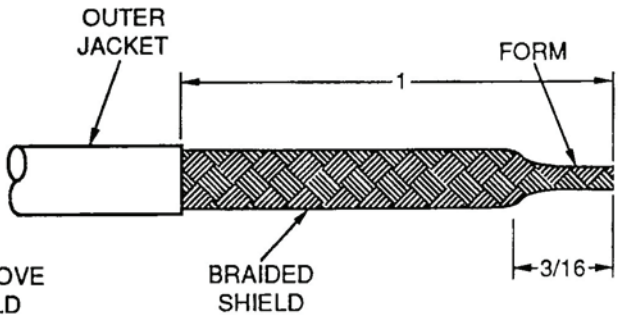


Figure 28. M39029/19-181 Contact Assembly (Sheet 6 of 20)

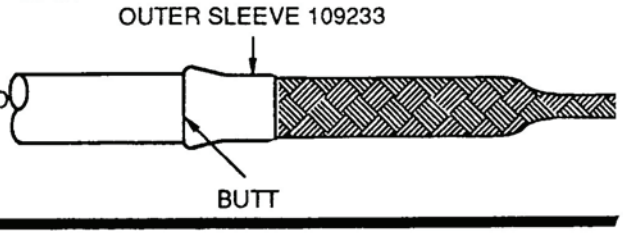
CAUTION

WHEN STRIPPING CABLE, ONLY AMOUNT OF MATERIAL NECESSARY SHALL BE REMOVED. DO NOT CUT TOO DEEP; BRAIDED SHIELD OR INSULATION MAY BE DAMAGED. STRIP DIMENSIONS SHALL BE AS ACCURATE AS POSSIBLE. INCORRECT STRIP DIMENSIONS ARE THE GREATEST CAUSE OF CONTACT FAILURE.

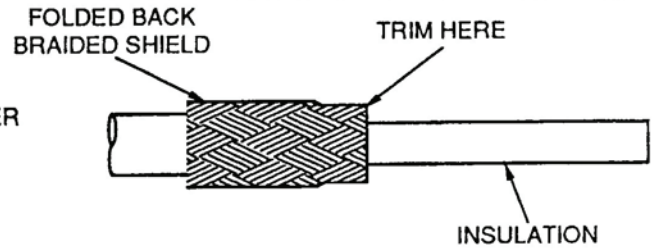


1. CUT CABLE END SQUARE WITH END CUTTERS. REMOVE 1 INCH OF OUTER JACKET AND PUSH BRAIDED SHIELD BACK TO EXPOSE INSULATION OF CENTER CONDUCTOR. REMOVE 3/16 INCH OF INSULATION AND CENTER CONDUCTOR. SLIDE BRAIDED SHIELD BACK IN PLACE AND FORM END TO AID IN SLEEVE INSTALLATION.

2. SLIDE OUTER SLEEVE 109233 OVER BRAIDED SHIELD TO BUTT CUT END OF OUTER JACKET.



3. FOLD BRAIDED SHIELD BACK TIGHTLY OVER OUTER SLEEVE AND TRIM BRAID AT FOLD LINE.



4. STRIP 7/16 INCH OF INSULATION FROM CENTER CONDUCTOR, ALLOWING 33/64 INCH BETWEEN EDGE OF BRAIDED SHIELD AND END OF CENTER CONDUCTOR. TWIST CENTER CONDUCTOR TO PREVENT SPLAYED WIRE STRANDS.

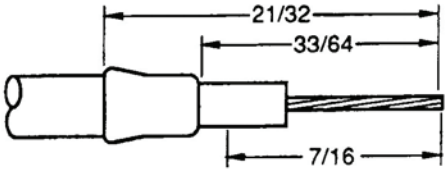
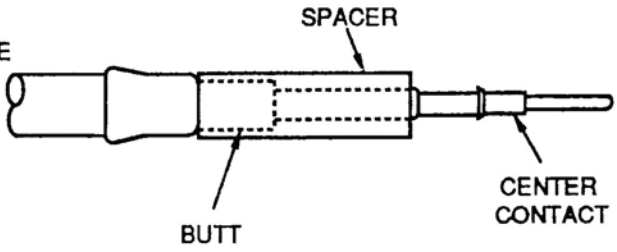


Figure 28. M39029/19-181 Contact Assembly (Sheet 7 of 20)

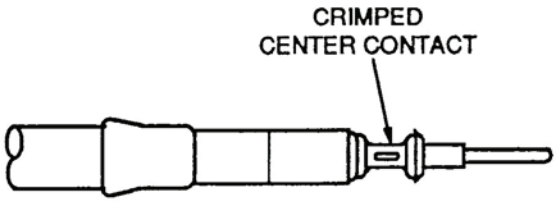
5. INSTALL SPACER AND CENTER CONTACT ONTO CENTER CONDUCTOR TO BUTT INSULATION. ENSURE THAT ALL WIRE STRANDS ENTER CENTER CONTACT WIRE BARREL.



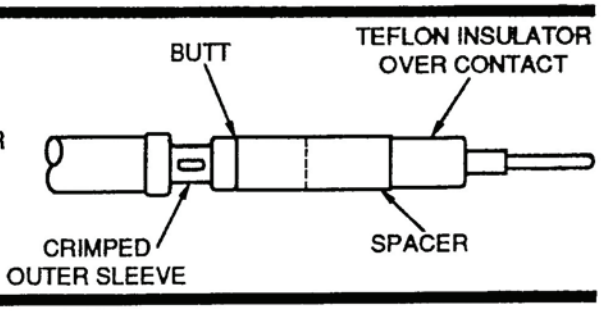
CAUTION

WHEN CRIMPING CENTER CONTACT, PUSH CABLE INTO SPACER AND CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.

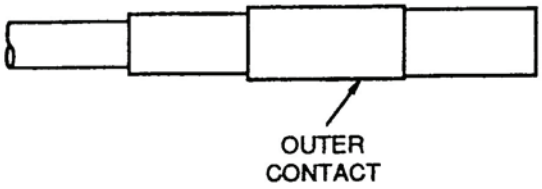
6. CRIMP CENTER CONTACT TO CENTER CONDUCTOR USING CRIMP TOOL HANDLE M22520/2-01 AND POSITIONER M22520/2-28.



7. INSTALL TEFLON INSULATOR OVER CONTACT UNTIL IT BOTTOMS. SLIDE OUTER SLEEVE TO BUTT SPACER AND CRIMP IN PLACE USING CRIMP TOOL HANDLE M22520/20-01 AND POSITIONER M22520/20-03.



8. INSTALL CENTER CONTACT AND CABLE ASSEMBLY INTO OUTER CONTACT UNTIL IT BOTTOMS.



CAUTION

WHEN CRIMPING OUTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.

9. CRIMP OUTER CONTACT TO CABLE ASSEMBLY USING CRIMP TOOL HANDLE M22520/19-01 AND POSITIONER M22520/19-04.

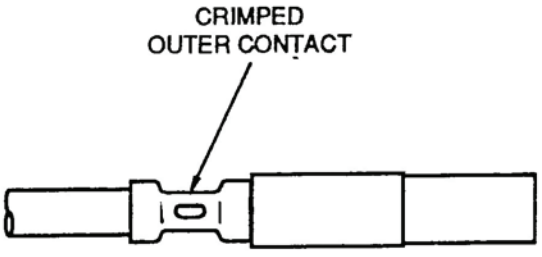


Figure 28. M39029/19-181 Contact Assembly (Sheet 8 of 20)

10. INSPECT COMPLETED ASSEMBLY TO ENSURE THAT CENTER CONTACT IS NOT RECESSED MORE THAN 1/64 INCH.

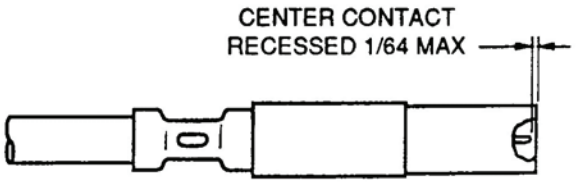
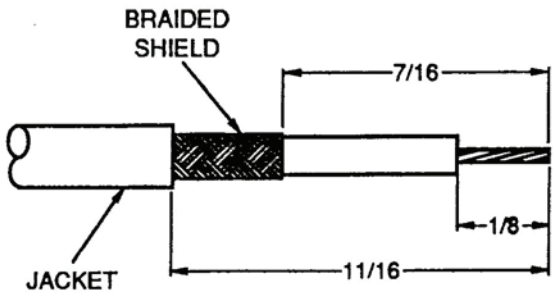


Figure 28. M39029/19-181 Contact Assembly (Sheet 9 of 20)

CAUTION

WHEN STRIPPING CABLE, ONLY AMOUNT OF MATERIAL NECESSARY SHALL BE REMOVED. DO NOT CUT TOO DEEP; BRAIDED SHIELD OR INSULATION MAY BE DAMAGED. STRIP DIMENSIONS SHALL BE AS ACCURATE AS POSSIBLE. INCORRECT STRIP DIMENSIONS ARE THE GREATEST CAUSE OF CONTACT FAILURE.

1. CUT CABLE END SQUARE WITH END CUTTERS. STRIP 11/16 INCH OF CABLE JACKET, 7/16 INCH OF BRAIDED SHIELD, AND 1/8 INCH OF INSULATION FROM CENTER CONDUCTOR. TWIST CENTER CONDUCTOR TO PREVENT SPLAYED WIRE STRANDS.



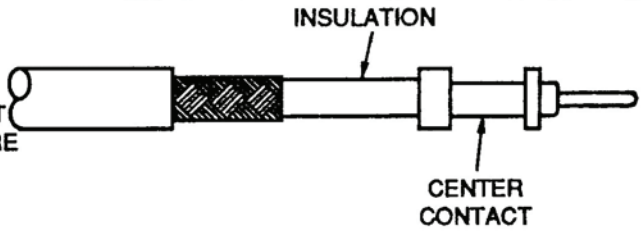
CAUTION

CENTER CONTACT IS ONE ASSEMBLY COMPOSED OF CENTER CONTACT AND TEFLON INSULATOR. UNDER NO CIRCUMSTANCES SHALL THEY BE TAKEN APART.



CENTER CONTACT WITH INSULATOR

2. INSTALL CENTER CONTACT ONTO CENTER CONDUCTOR TO BUTT INSULATION. ENSURE THAT ALL WIRE STRANDS ENTER CENTER CONTACT WIRE BARREL.



CAUTION

WHEN CRIMPING CENTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.

3. CRIMP CENTER CONTACT (THROUGH TEFLON INSULATOR) TO CENTER CONDUCTOR, USING CRIMP TOOL HANDLE M22520/2-01 AND POSITIONER M22520/2-29

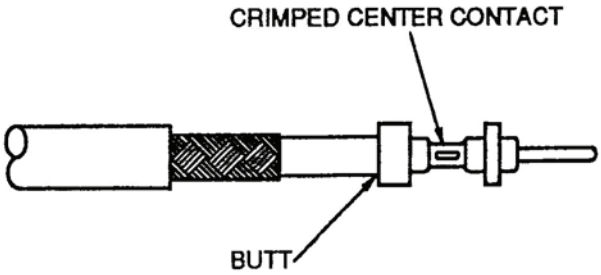
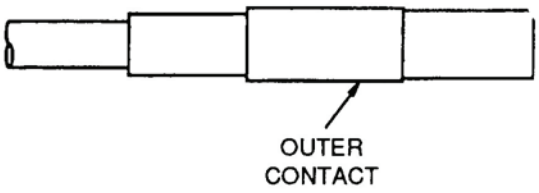


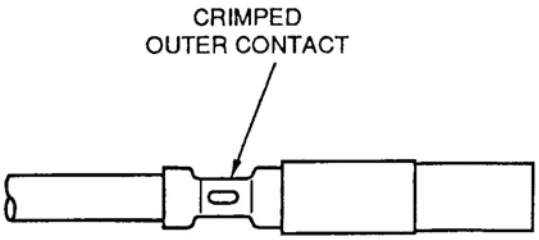
Figure 28. M39029/19-181 Contact Assembly (Sheet 10 of 20)



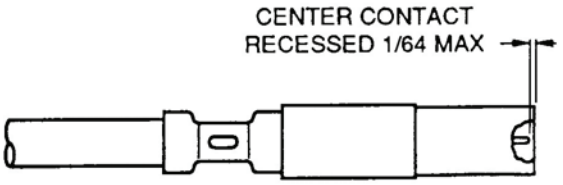
4. INSTALL CENTER CONTACT AND CABLE ASSEMBLY INTO OUTER CONTACT, UNTIL IT BOTTOMS.

CAUTION

WHEN CRIMPING OUTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.



5. CRIMP OUTER CONTACT TO BRAIDED SHIELD OF CABLE, USING CRIMP TOOL HANDLE M22520/21-01 AND POSITIONER M22520/21-04.

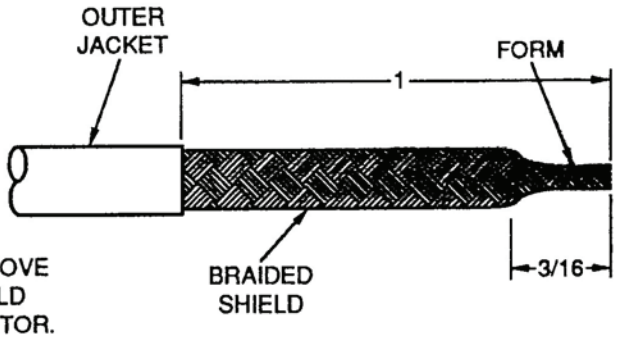


6. INSPECT COMPLETED ASSEMBLY TO ENSURE THAT CENTER CONTACT IS NOT RECESSED MORE THAN 1/64 INCH.

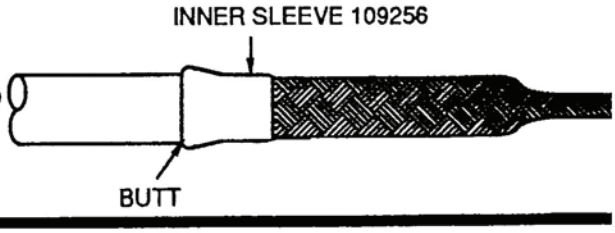
Figure 28. M39029/19-181 Contact Assembly (Sheet 11 of 20)

CAUTION

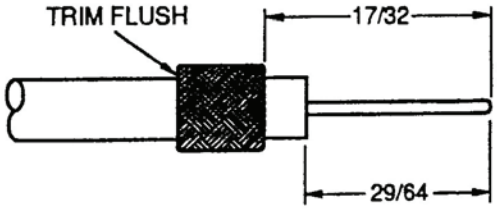
WHEN STRIPPING CABLE, ONLY AMOUNT OF MATERIAL NECESSARY SHALL BE REMOVED. DO NOT CUT TOO DEEP; BRAIDED SHIELD OR INSULATION MAY BE DAMAGED. STRIP DIMENSIONS SHALL BE AS ACCURATE AS POSSIBLE. INCORRECT STRIP DIMENSIONS ARE THE GREATEST CAUSE OF CONTACT FAILURE.



1. CUT CABLE END SQUARE WITH END CUTTERS. REMOVE 1 INCH OF OUTER JACKET AND PUSH BRAIDED SHIELD BACK TO EXPOSE INSULATION OF CENTER CONDUCTOR. STRIP 3/16 INCH OF INSULATION AND CENTER CONDUCTOR. SLIDE BRAIDED SHIELD BACK IN PLACE AND FORM END TO AID IN SLEEVE INSTALLATION.



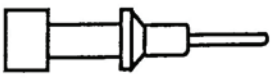
2. SLIDE INNER SLEEVE, 109256 OVER BRAIDED SHIELD TO BUTT CUT END OF OUTER JACKET AS SHOWN.



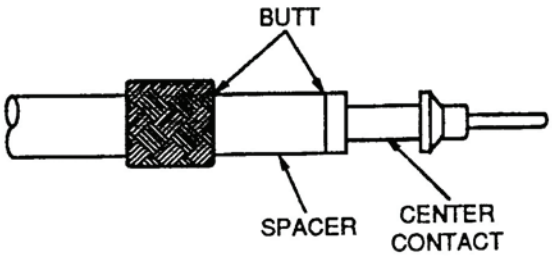
3. FOLD BRAIDED SHIELD BACK TIGHTLY OVER INNER SLEEVE AND TRIM BRAID FLUSH WITH BACK END OF SLEEVE. STRIP 29/64 INCH OF INSULATION FROM CENTER CONDUCTOR ALLOWING 17/32 INCH BETWEEN EDGE OF BRAID AND END OF CENTER CONDUCTOR. TWIST CENTER CONDUCTOR TO PREVENT SPLAYED WIRE STRANDS.

CAUTION

CENTER CONTACT IS ONE ASSEMBLY COMPOSED OF CENTER CONTACT AND TEFLON INSULATOR. UNDER NO CIRCUMSTANCES SHALL THEY BE TAKEN APART.



CENTER CONTACT WITH INSULATOR



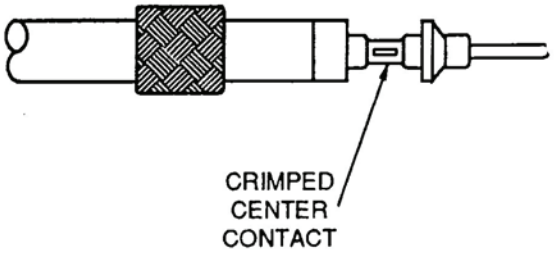
4. INSTALL SPACER AND CENTER CONTACT ONTO CENTER CONDUCTOR TO BUTT INSULATION. ENSURE THAT ALL WIRE STRANDS ENTER CENTER CONTACT WIRE BARREL.

Figure 28. M39029/19-181 Contact Assembly (Sheet 12 of 20)

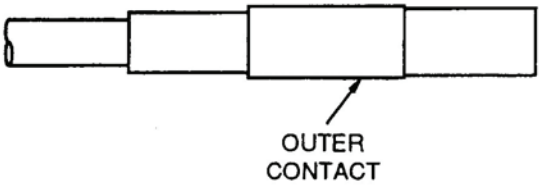
CAUTION

WHEN CRIMPING CENTER CONTACT, PUSH CABLE INTO SPACER AND CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.

5. CRIMP CENTER CONTACT (THROUGH TEFLON INSULATOR) TO CENTER CONDUCTOR, USING CRIMP TOOL HANDLE M22520/2-01 AND POSITIONER MS22520/2-29

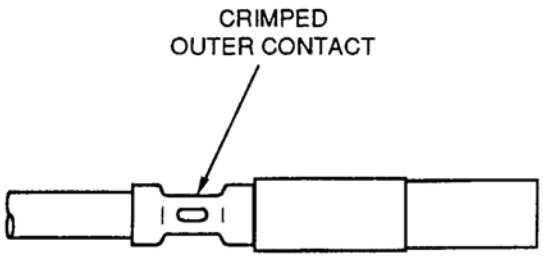


6. INSTALL CENTER CONTACT AND CABLE ASSEMBLY INTO OUTER CONTACT UNTIL IT BOTTOMS.



CAUTION

WHEN CRIMPING OUTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.



7. CRIMP OUTER CONTACT TO BRAIDED SHIELD OF CABLE, USING, CRIMP TOOL HANDLE M22520/21-01 AND POSITIONER M22520/21-04.

8. INSPECT COMPLETED ASSEMBLY TO ENSURE THAT CENTER CONTACT IS NOT RECESSED MORE THAN 1/64 INCH.

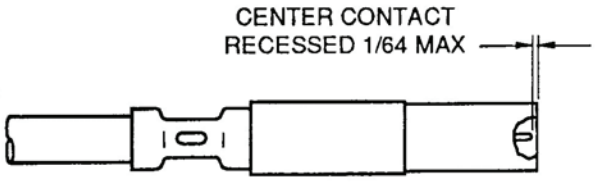
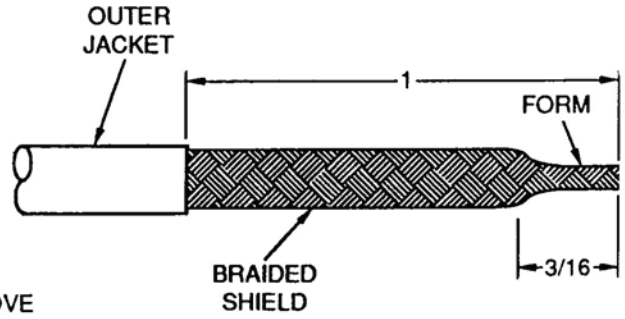


Figure 28. M39029/19-181 Contact Assembly (Sheet 13 of 20)

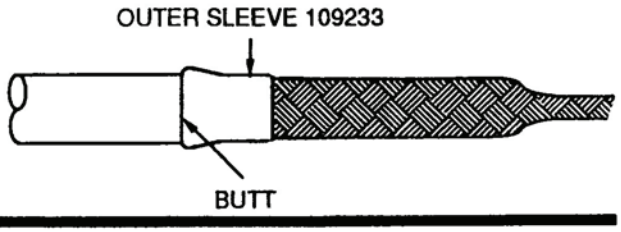
CAUTION

WHEN STRIPPING CABLE, ONLY AMOUNT OF MATERIAL NECESSARY SHALL BE REMOVED. DO NOT CUT TOO DEEP; BRAIDED SHIELD OR INSULATION MAY BE DAMAGED. STRIP DIMENSIONS SHALL BE AS ACCURATE AS POSSIBLE. INCORRECT STRIP DIMENSIONS ARE THE GREATEST CAUSE OF CONTACT FAILURE.

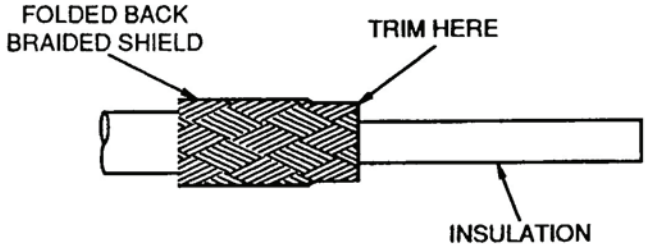


1. CUT CABLE END SQUARE WITH END CUTTERS. REMOVE 1 INCH OF OUTER JACKET AND PUSH BRAIDED SHIELD BACK TO EXPOSE INSULATION OF CENTER CONDUCTOR. REMOVE 3/16 INCH OF INSULATION AND CENTER CONDUCTOR. SLIDE BRAIDED SHIELD BACK IN PLACE AND FORM END TO AID IN SLEEVE INSTALLATION.

2. SLIDE OUTER SLEEVE 109233 OVER BRAIDED SHIELD TO BUTT CUT END OF OUTER JACKET AS SHOWN.



3. FOLD BRAIDED SHIELD BACK TIGHTLY OVER OUTER SLEEVE AND TRIM BRAID AT FOLD LINE.



4. STRIP 1/8 INCH OF INSULATION FROM CENTER CONDUCTOR, ALLOWING13/64 INCH BETWEEN EDGE OF BRAIDED SHIELD AND END OF CENTER CONDUCTOR. TWIST CENTER CONDUCTOR TO PREVENT SPLAYED WIRE STRANDS.

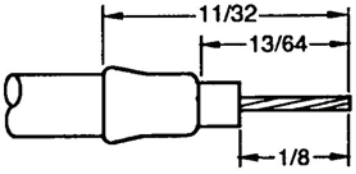
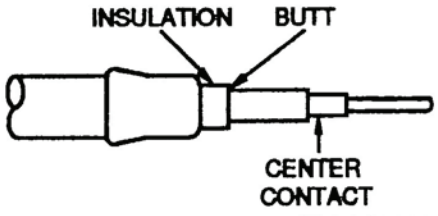


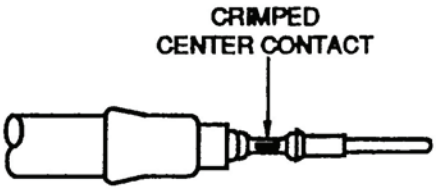
Figure 28. M39029/19-181 Contact Assembly (Sheet 14 of 20)

5. INSTALL CENTER CONTACT ONTO CENTER CONDUCTOR TO BUTT INSULATION. ENSURE THAT ALL WIRE STRANDS ENTER CENTER CONTACT WIRE BARREL.



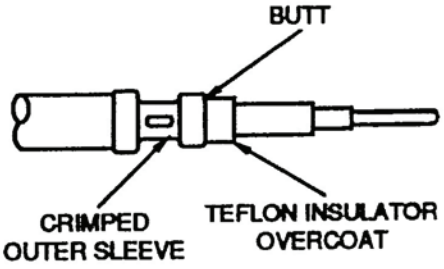
CAUTION

WHEN CRIMPING CENTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.



6. CRIMP CENTER CONTACT TO CENTER CONDUCTOR USING CRIMP TOOL HANDLE M22520/2-01 AND POSITIONER M22520/2-28.

7. INSTALL TEFLON INSULATOR OVER CONTACT UNTIL IT BOTTOMS. SLIDE OUTER SLEEVE TO BUTT INSULATION AND CRIMP IN PLACE USING CRIMP TOOL HANDLE M22520/20-01 AND POSITIONER M22520/20-02.



8. INSTALL CENTER CONTACT AND CABLE ASSEMBLY INTO OUTER CONTACT, UNTIL IT BOTTOMS.

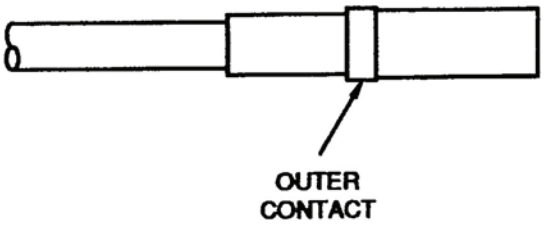
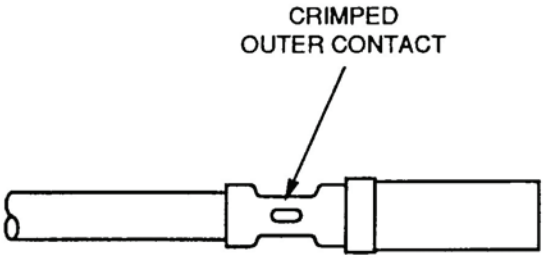


Figure 28. M39029/19-181 Contact Assembly (Sheet 15 of 20)

CAUTION

WHEN CRIMPING OUTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.

9. CRIMP OUTER CONTACT TO CABLE ASSEMBLY USING CRIMP TOOL HANDLE M22520/19-01 AND POSITIONER M22520/19-03.



10. INSPECT COMPLETED ASSEMBLY TO ENSURE THAT CENTER CONTACT IS NOT RECESSED MORE THAN 1/64 INCH.

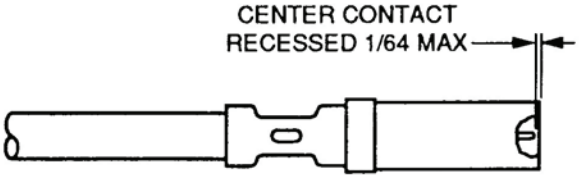
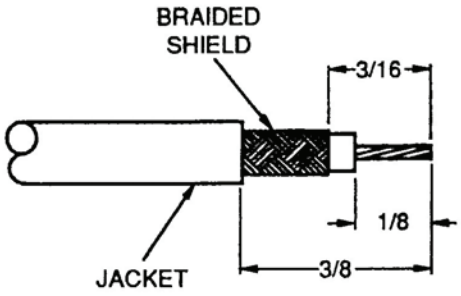


Figure 28. M39029/19-181 Contact Assembly (Sheet 16 of 20)

CAUTION

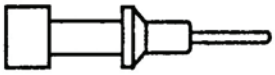
WHEN STRIPPING CABLE, ONLY AMOUNT OF MATERIAL NECESSARY SHALL BE REMOVED. DO NOT CUT TOO DEEP; BRAIDED SHIELD OR INSULATION MAY BE DAMAGED. STRIP DIMENSIONS SHALL BE AS ACCURATE AS POSSIBLE. INCORRECT STRIP DIMENSIONS ARE THE GREATEST CAUSE OF CONTACT FAILURE.



1. CUT CABLE END SQUARE WITH END CUTTERS. STRIP 3/8 INCH OF CABLE JACKET, 3/16 INCH OF BRAIDED SHIELD, AND 1/8 INCH OF INSULATION FROM CENTER CONDUCTOR. TWIST CENTER CONDUCTOR TO PREVENT SPLAYED WIRE STRANDS.

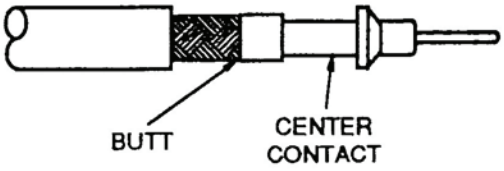
CAUTION

CENTER CONTACT IS ONE ASSEMBLY COMPOSED OF CENTER CONTACT AND TEFLON INSULATOR. UNDER NO CIRCUMSTANCES SHALL THEY BE TAKEN APART.



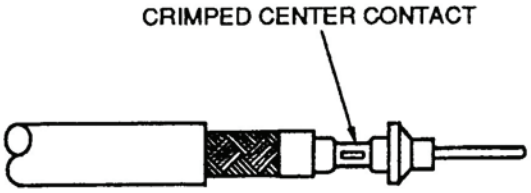
CENTER CONTACT WITH INSULATOR

2. INSTALL CENTER CONTACT ONTO CENTER CONDUCTOR TO BUTT INSULATION. ENSURE THAT ALL WIRE STRANDS ENTER CENTER CONTACT WIRE BARREL AND NO BRAIDED SHIELD STRANDS ENTER CENTER CONTACT INSULATOR.



CAUTION

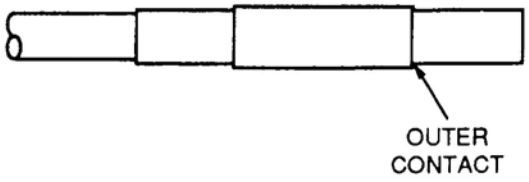
WHEN CRIMPING CENTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.



3. CRIMP CENTER CONTACT (THROUGH TEFLON INSULATOR) TO CENTER CONDUCTOR, USING CRIMP TOOL HANDLE M22520/2-01 AND POSITIONER M22520/2-29.

Figure 28. M39029/19-181 Contact Assembly (Sheet 17 of 20)

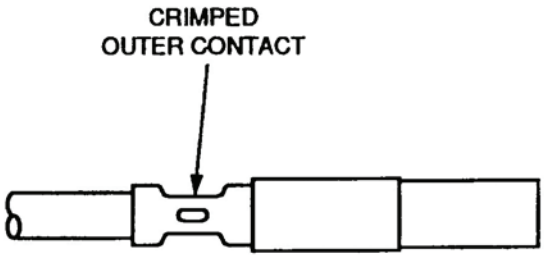
4. INSTALL CENTER CONTACT AND CABLE ASSEMBLY INTO OUTER CONTACT. ENSURE THAT ALL BRAIDED SHIELD STRANDS ENTER INSIDE OUTER CONTACT.



CAUTION

WHEN CRIMPING OUTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.

5. CRIMP OUTER CONTACT TO BRAIDED SHIELD OF CABLE, USING CRIMP TOOL HANDLE M22520/21-01 AND POSITIONER M22520/21-03.



6. INSPECT COMPLETED ASSEMBLY TO ENSURE THAT CENTER CONTACT IS NOT RECESSED MORE THAN 1/64 INCH.

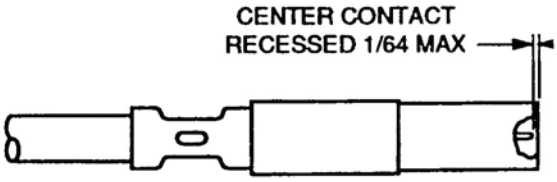
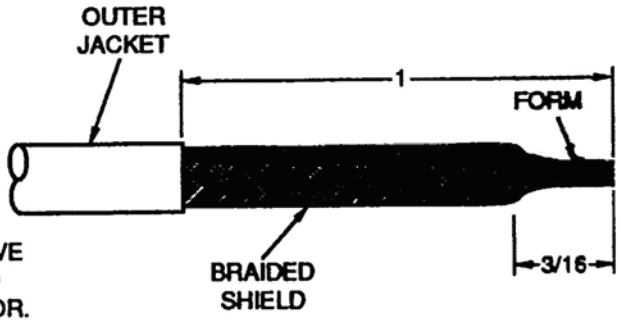


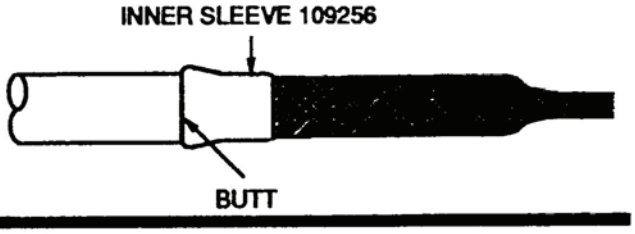
Figure 28. M39029/19-181 Contact Assembly (Sheet 18 of 20)

CAUTION

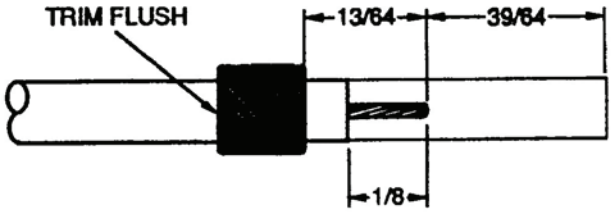
WHEN STRIPPING CABLE, ONLY AMOUNT OF MATERIAL NECESSARY SHALL BE REMOVED. DO NOT CUT TOO DEEP; BRAIDED SHIELD OR INSULATION MAY BE DAMAGED. STRIP DIMENSIONS SHALL BE AS ACCURATE AS POSSIBLE. INCORRECT STRIP DIMENSIONS ARE THE GREATEST CAUSE OF CONTACT FAILURE.



1. CUT CABLE END SQUARE WITH END CUTTERS. REMOVE 1 INCH OF OUTER JACKET AND PUSH BRAIDED SHIELD BACK TO EXPOSE INSULATION OF CENTER CONDUCTOR. REMOVE 3/16 INCH OF INSULATION AND CENTER CONDUCTOR. SLIDE BRAIDED SHIELD BACK IN PLACE AND FORM BRAIDED SHIELD TO AID IN SLEEVE INSTALLATION.



2. SLIDE INNER SLEEVE 109256 OVER BRAIDED SHIELD TO BUTT CUT END OF OUTER JACKET.



3. FOLD BRAIDED SHIELD BACK TIGHTLY OVER INNER SLEEVE AND TRIM BRAID FLUSH WITH BACK END OF SLEEVE. REMOVE 39/64 INCH OF CENTER CONDUCTOR AND INSULATION, LEAVING 13/64 INCH FROM EDGE OF INNER SLEEVE AND END OF CENTER CONDUCTOR. STRIP 1/8 INCH OF INSULATION FROM CENTER CONDUCTOR. TWIST CENTER CONDUCTOR TO PREVENT SPLAYED WIRE STRANDS.

CAUTION

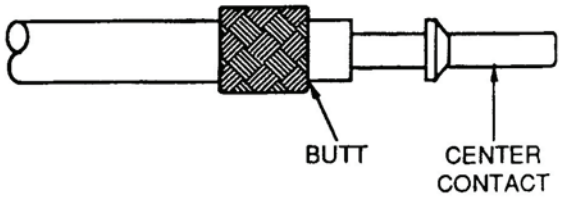
CENTER CONTACT IS ONE ASSEMBLY COMPOSED OF CENTER CONTACT AND TEFLON INSULATOR. UNDER NO CIRCUMSTANCES SHALL THEY BE TAKEN APART.



CENTER CONTACT WITH INSULATOR

Figure 28. M39029/19-181 Contact Assembly (Sheet 19 of 20)

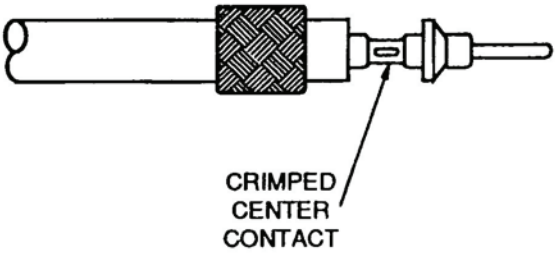
4. INSTALL CENTER CONTACT ONTO CENTER CONDUCTOR TO BUTT INSULATION. ENSURE THAT ALL WIRE STRANDS ENTER CENTER CONTACT WIRE BARREL.



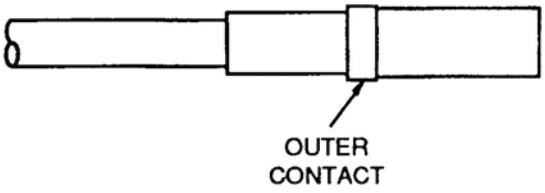
CAUTION

WHEN CRIMPING CENTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.

5. CRIMP CENTER CONTACT (THROUGH TEFLON INSULATOR) TO CENTER CONDUCTOR, USING CRIMP TOOL HANDLE M22520/2-01 AND POSITIONER M22520/2-29



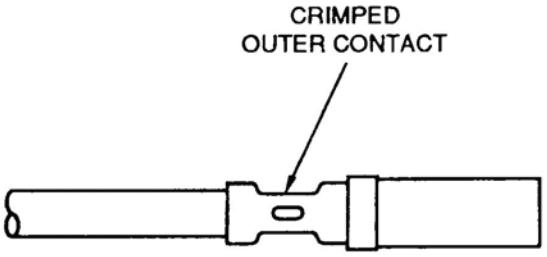
6. INSTALL CENTER CONTACT AND CABLE ASSEMBLY INTO OUTER CONTACT, UNTIL IT BOTTOMS.



CAUTION

WHEN CRIMPING OUTER CONTACT, PUSH CABLE INTO CONTACT AND MAINTAIN SLIGHT PRESSURE DURING CRIMP CYCLE.

7. CRIMP OUTER CONTACT TO BRAIDED SHIELD OF CABLE USING CRIMP TOOL HANDLE M22520/21-01 AND POSITIONER M22520/21-03.



8. INSPECT COMPLETED ASSEMBLY TO ENSURE THAT CENTER CONTACT IS NOT RECESSED MORE THAN 1/64 INCH.

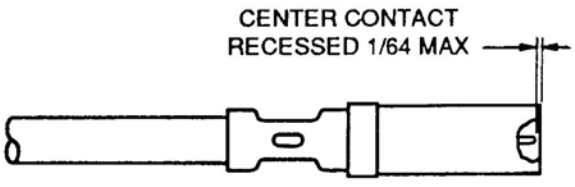


Figure 28. M39029/19-181 Contact Assembly (Sheet 20 of 20)

81. CONNECTOR BUILD-UP SERIES 3 AND 4.

82. WIRE DIAMETER BUILD-UP. If wire outside diameter is not large enough to fill wire sealing grommet holes, build up wire outside diameter by applying heat-shrinkable insulating sleeving. This must be accomplished prior to contact insertion.

83. SINGLE CONDUCTOR WIRE AND CONTACT ASSEMBLY. The procedures for attaching power and thermocouple contacts to single conductor wire are the same for all connector specifications in series 1 and 2. After selecting a specific contact part number (Tables: 11, 12, 13, or 14), select tooling (Tables: 15, 16) and refer to (NAVAIR 01-1A-505-1, WP 013 00) for assembly procedures.

84. WIRE STRIPPING.

a. Cut wire to proper length. Ensure enough wire remains for adequate strain relief without leaving excess slack.

b. Strip insulation from end (NAVAIR 01-1A-505-1 WP 009 00) to dimension given for applicable connector. Select contact from Table 11, 12, 13, or 14.

c. Insert stripped wire into contact conductor barrel. Ensure all wire strands are inside contact conductor barrel and visible in contact inspection hole (Figure 9).

d. If insulation gap is too large, trim conductor as required. If insulation gap is too small, trim insulation as required (NAVAIR 01-1A-505-1, WP 009 00).

85. CONTACT CRIMPING.

a. Select crimp tool frame and positioner (Table 15, 16).

b. Perform die closure check, install positioner, and set selector knob for gage of wire. Crimp contact to wire (NAVAIR 01-1A-505-1, WP 013 00).

86. CONTACT INSERTION. The following procedure covers installation of wired or unwired, power, thermocouple, and coaxial contacts:

a. If not previously removed, remove backshell from rear of connector.

b. Remove sealing plug and/or contact from contact cavity.

c. Route wire or cable through backshell.

d. Select insertion tool specified in applicable contact tooling table (Table 15, 16, for shielded contacts see Figure 28).

NOTE

Insertion is accomplished from the rear of the connector.

e. Place wire and and contact assembly into colored tip of insertion tool (Figure 29). Ensure tool tip is over conductor the conductor barrel and butted up against the contact shoulder.

NOTE

Start contact insertion near center contact cavities and work outward.

f. Position insertion tool around rear of contact (Figure 30). Contact and tool should be aligned within hole as straight as possible to avoid damage to wire sealing grommet. Press insertion tool against contact shoulder firmly to seat contact in cavity.

g. Remove insertion tool by sliding back along wire insulation until it clears grommet.

h. Seal connector (Paragraph 85), and install backshell (WP 004 03).

87. CONNECTOR SEALING.

88. Sealing Plugs.

a. Fill all unused cavities with un-crimped contacts and sealing plugs.

NOTE

All MIL-C-81511 connectors use a straight sealing plug, without a knob at the end (Figure 31).

b. Select sealing plug according to size of contact (Table 10).

c. Fill all cavities with un-crimped contacts. Insert sealing plug until bottomed in each contact

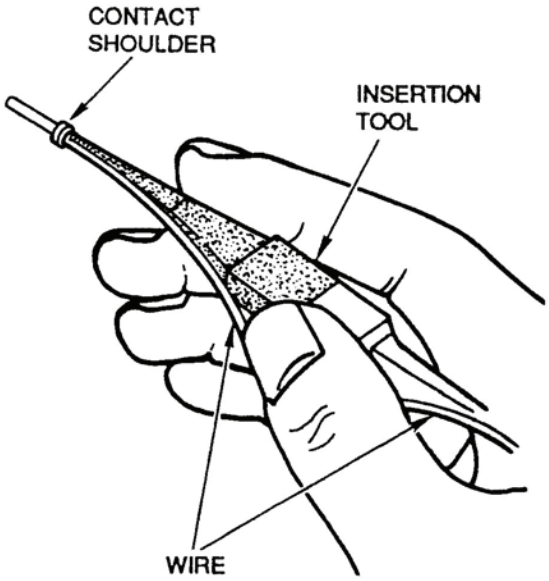


Figure 29. Inserting Contact into Insertion Tool



Figure 30. Contact Insertion

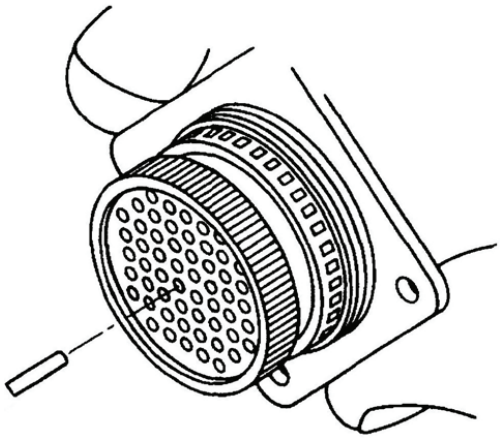


Figure 31. Sealing Plug Insertion

cavity (Figure 31). Preserve connector in accordance with NAVAIR 01-1A-505-1, WP 026 00.

89. Moisture Barrier. For connector sealing procedures, refer to NAVAIR 01-1A-505-1, WP 025 00.

90. CONTACT REMOVAL. Contacts requiring removal from connectors may be wired, unwired, or attached to broken wires.

CAUTION

Inspect tool tips for damage such as nicks, burrs, or distortion before use. Failure to do so may damage the wire or connector. Replace removal tool and repeat procedure if required.

Be careful if using metal tools (M81969). These tools can damage the wire sealing grommet in the connector. Plastic tools are preferred. Inspect tool tips for damage or distortion before use. Damage to the connector wire sealing grommet can occur.

Do not remove a contact attached to a broken wire with an unwired contact removal tool. The tool and connector may be damaged. Wire strands may be encountered at any point up to $\frac{5}{16}$ inch of tool insertion.

Do not force tool if wire strands are encountered.

Withdraw tool any time it cannot be advanced into connector. Inspect tool tip for nicks, cracks, mushrooming, and other damage that will prevent proper functioning. Replace removal tool and repeat procedure if required.

91. WIRED CONTACT REMOVAL. To remove contacts assembled and crimped to wires, the following procedure applies:

a. Remove backshell and accessories in accordance with WP 004 03.

b. Select proper removal tools by referring to Tables 15 and16.

c. Using the white tip of removal tool per contact size, hold at right angle to grommet face centered over contact being removed and push wire into groove of tool (Figure 32). For smaller diameter wires, be careful the tool does not collapse around the wire when inserted and cause the tool tip to hit the contact crimp barrel instead of sliding over it. A collapsing tool can also damage grommet sealing wafers.

d. Slide end of removal tool over contact and push into insert hole until retention clip is fully opened.

e. Grasp wire and removal tool and pull contact from rear of connector (Figure 33).

92. UNWIRED CONTACT REMOVAL. Unwired contacts are inserted to complete the connector configuration and to maintain mating integrity as well as environment resistance. See Figure 34 for a typical unwired contact removal tool.

a. Select proper tool as specified in the Tables 18 and 19).

b. Depress plunger, hold tool at right angle to grommet face and push into hole of contact to be removed until bottomed and contact is released.

c. Remove contact from connector by pulling both plunger and probe straight back (Figure 35).

d. Eject contact from unwired contact removal tool by pressing plunger.

93. BROKEN WIRE CONTACT REMOVAL. It is possible that when removing contacts the wire may be broken. To remove the contact when the wire is broken proceed as follows:

a. Using the insertion removal tool insert white tip $\frac{1}{8}$ inch into rear of connector at right angle to grommet face (Figure 36).

b. If resistance is felt, withdraw tool slightly and rotate tool $\frac{1}{6}$ of a turn, re-insert. Repeat this step until tool passes resistance area. Continue until a positive stop is felt.

c. Exert pressure on mating end of contact with pin or socket. Push contact out of connector before disengaging tool from connector (Figure 37).

94. CONNECTOR REMOVAL AND INSTALLATION. If the connector cannot be repaired or is severely damaged, perform the following:

a. Starting from the outside of damaged connector tag all wires and remove all contacts.

b. When contact cannot be removed cut wire or cable as close to connector as possible. Install new contact to wire (NAVAIR 01-1A-505-1, WP 013 00).

c. Install wires with crimped contacts from damaged connector to a new connector.

d. Seal connector in accordance with NAVAIR 01-1A-505-1, WP 026 00.

95. SOLDERED CONTACT CONNECTOR BUILD-UP.

96. Connectors that are hermetically sealed or are thru bulkheads have fixed contacts which are non-removable with solder cup wire barrels. Wires are soldered to contacts in accordance with solder procedures NAVAIR 01-1A-505-1, WP 016 00.

97. REPAIR. The procedures for repair are in accordance with standard maintenance practices and solder procedures (NAVAIR 01-1A-505-1, WP 016 00). Seal the connector and provide for moisture barrier in accordance with NAVAIR 01-1A-505-1, WP 025 00.

98. CONNECTOR CLEANING AND PRESERVATION.

99. For connector cleaning and corrosion control procedures, refer to (NAVAIR 01-1A-505-1, WP 026 00).

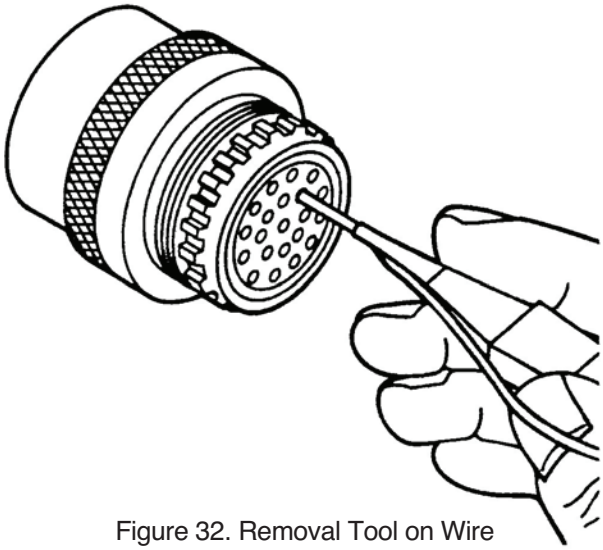


Figure 32. Removal Tool on Wire



Figure 33. Removing Contact from Connector

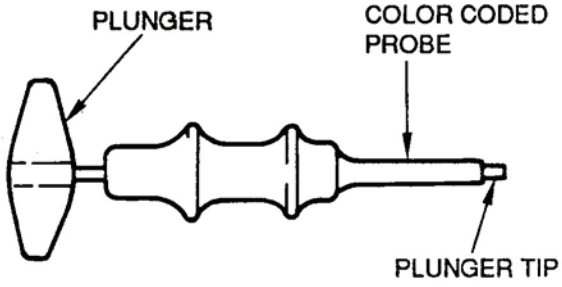


Figure 34. Typical Unwired Contact Removal Tool

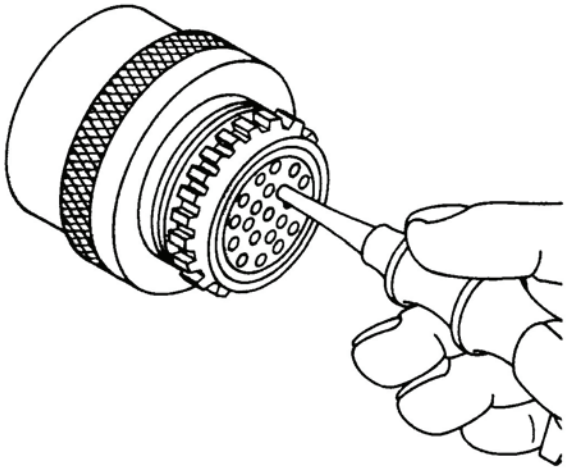


Figure 35. Unwired Contact Removal

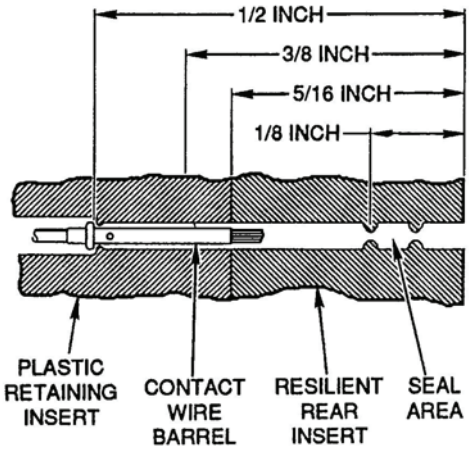


Figure 36. Typical Connector Dimensions



Figure 37. Broken Wire Contact Removal

CONNECTOR ACCESSORIES
MIL-C-81511
SERIES 1, 2, 3 AND 4

Reference Material

Connectors, Electrical, Circular, High Density, Quick Disconnect,
Environment Resistant and Accessories MIL-C-81511

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Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
AT508K	Pliers, Connector
BT-BS-601	Strap Wrench
BT815L-8A	Plastic Adapter
BT815L-10A	Plastic Adapter
BT815L-14A	Plastic Adapter
BT815L-16A	Plastic Adapter
BT815L-18A	Plastic Adapter
BT815L-20A	Plastic Adapter
BT815L-22A	Plastic Adapter
BT815L-24A	Plastic Adapter
BT815L-8B	Plastic Adapter
BT815L-10B	Plastic Adapter
BT815L-14B	Plastic Adapter
BT815L-16B	Plastic Adapter
BT815L-18B	Plastic Adapter
BT815L-20B	Plastic Adapter
BT815L-22B	Plastic Adapter
BT815L-24B	Plastic Adapter
BT815S-8	Plastic Adapter
BT815S-10A	Plastic Adapter
BT815S-14A	Plastic Adapter
BT815S-16A	Plastic Adapter
BT815S-18A	Plastic Adapter
BT815S-10B	Plastic Adapter
BT815S-14B	Plastic Adapter
BT815S- 16B	Plastic Adapter
BT815S- 18B	Plastic Adapter
CM815L-8A	Metal Adapter
CM815L-10A	Metal Adapter
CM815L-14A	Metal Adapter
CM815L-16A	Metal Adapter
CM815L-18A	Metal Adapter
CM815L-20A	Metal Adapter
CM815L-22A	Metal Adapter
CM815L-24A	Metal Adapter
CM815L-8B	Metal Adapter
CM815L-10B	Metal Adapter
CM815L-14B	Metal Adapter
CM815L–16B	Metal Adapter
CM815L-18B	Metal Adapter
CM8151,20B	Metal Adapter
CM815L-22B	Metal Adapter
CM815L-24B	Metal Adapter
CM815S-8A	Metal Adapter
CM815S-10A	Metal Adapter
CM815S-14A	Metal Adapter
CM815S-16A	Metal Adapter
CM815S-18A	Metal Adapter
CM815S-10B	Metal Adapter
CM815S-14B	Metal Adapter

Support Equipment Required

Part No./ Type Designation	Nomenclature
CM815S-16B	Metal Adapter
CM815S-18B	Metal Adapter
13640	Crimp Tool
600-050	Hand Banding Tool

Materials Required

Specification/ Part No.	Nomenclature
SAE-AMS-DTL-23053/5	Sleeving, Heat-Shrink
SAE-AMS-DTL-23053/8	Sleeving, Heat-Shrink
P-2740FR	Tape, Silicone Rubber
4529670544	Tape, Silicone Rubber

WARNING

Do not perform hot work without specific authorization of activity Aviation Gas Free Engineer (AVGFE) or Gas Free Engineer(GFE).

The HT-900B, HT-920B, HT-71002 and MCH-100-A heat guns are the only authorized heat guns to be used when working on aircraft that have not been defueled and purged. The aircraft must be defueled and purged before using any other heat guns listed in this manual.

Aircraft with open fuel cells or broken or open fuel lines shall be certified gas free in accordance with NAVAIR 01-1A-35, or AF T.O. 1-1-3. Only the HT-900B/HT-920B, HT-71002, MCH-100-A heating tools are authorized for use on any aircraft whenever AVGAS, JP-4 or the presence of any type of fuel is imposing an immediate danger.

When using heat guns with electric motors, recertification may be required as work progresses, as directed by the Aviation Gas Free Engineering Technician (AVGFET).

The MCH-100-A heat gun has been electromagnetic interference (EMI) qualified for flight line or flight deck use. All other electric motor type heat guns are not authorized for flight line or flight deck use due to electromagnetic interference (EMI). The electric motor type heating tools are safe for use by personnel at the organizational maintenance level to repair aircraft wiring in a hangar or hangar deck / flight line environment, provided the aircraft meets the gas-free environment criteria (NAVAIR 01-1A-35, or AFT.O. 1-1-3), and there are no EMI restrictions.

Do not perform wire repair while using explosive solvent/paint products on the aircraft.

When using a heat tool, do not use electrical power from the aircraft being repaired. Use electrical power from a ground power unit.

Use of nitrogen with the HT-900B/HT-920B heat gun in an enclosed area can be hazardous. Discharge of nitrogen into a poorly ventilated area can result in asphyxiation.

CAUTION

Avoid using metal tooling to remove and install backshells. These tools can damage the backshell and connector. Non-metallic tools are designed to wear before damaging connector or backshell.

Do not let saddle clamps directly contact cable or harness. The amount of tape used must be at least one layer plus the amount needed to build up cable for a secure fit of clamp to bundle when screws are tightened and there is metal-to-metal contact.

For best results when applying silicone rubber tape, keep hands free of dirt and oil. When assembly is completed leading edge of tape should protrude 1/8 inch through clamp.

White dot on adapter tool must be in line with master key of connector before tool and connector are mated. Spinning adapter tool onto connector until it slips into place causes unnecessary wear on tools, keys, and keyways.

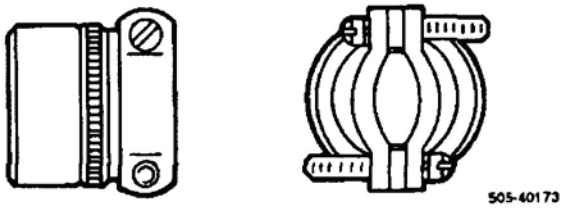


Figure 1. Typical Strain Relief

1. INTRODUCTION.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, the Society of Automotive Engineers (SAE), will become the preparing activity and the Navy will adopt the documents, the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

2. This Work Package (WP) covers connector accessories used with MIL-C-81511 Series 1, 2, 3 and 4 connectors, their function, associated tools, assembly, and procurement information.

3. CONNECTOR ACCESSORIES. Connector accessories are components added to a connector to enhance its operational characteristics.

4. CABLE CLAMP. A cable clamp is a cable support or clamping device which requires the use of an intermediate component for attachment to the back of the connector.

5. STRAIN RELIEF. A strain relief (backshell) is a cable support or clamping device which attaches directly to the connector (Figure 1).

6. ENVIRONMENTAL EMI/RFI BACKSHELL. This type of backshell is used when moisture entry and EMI/RFI protection is needed.

7. EMI/RFI. EMI/RFI relate to interference either Electro Magnetic or Radio Frequency. The introduction of foreign electronic energy into an electrical circuit can be a significant problem.

8. EMI/RFI REDUCTION. The most common method of reducing EMI/RFI is to employ a physical and electrical shield which is terminated at one or both ends to a ground potential or some other predetermined point with respect to ground. Shields can be applied to individual wires, cables, bundles, or harnesses.

9. MIL-C-81511 SERIES 1, 2, 3 AND 4 CONNECTOR ACCESSORIES.

10. The connector accessories in this section pertain to Series 1, 2, 3 and 4 connectors; see reference Table 1. This section applies to accessories and tools used on the back side or wire side of the connector. These accessories are divided into the following categories:

a. Cable Clamps/Strain Reliefs.

b. Environmental EMI/RFI Backshells.

c. Conduit Fittings.

d. Dummy Receptacles.

e. Dust Caps.

f. Gasket for Flange Mount Receptacle.

g. Mounting Plate for Flange Mount Receptacle.

h. Rubber Bushings.

11. SPECIAL TOOLS. Connector backshells come in a wide variety of types depending on the application. To install backshells or accessories, adapter tools and a strap wrench are needed. Adapter tools (Figure 2) are used to hold the connector during backshell installation and removal. Special tools are used to prevent damage to connector shells and accessories.

12. ADAPTER TOOL SELECTION. To select the proper tool, the shell size, and the type, either plug or receptacle, needs to be known; then select the applicable tool. Refer to Tables 2 and 3 Adapter Tool Selection.

13. ADAPTER TOOL ACCESSORIES. To hold the adapter tool and to keep the connector from turning when installing or removing backshells, the use of a 1/4 inch drive T-handle is recommended. A strap wrench is used on the backshell for installation and removal to apply even pressure without causing damage to accessories (Figure 3).

14. BACKSHELL REMOVAL. Backshells are used to protect, shield, and add strength to connectors. When modification or repair to the connector is necessary, the backshell must be removed. First remove the cable clamp/strain relief (Paragraph: 17) then proceed using the following steps to remove the backshell:

a. Select the correct adapter tool by series, T-handle, and strap wrench (Tables 2 or 3).

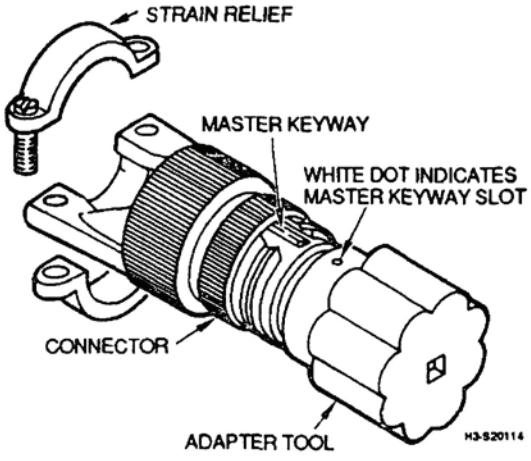


Figure 2. Adapter Tool (BT-S-389)

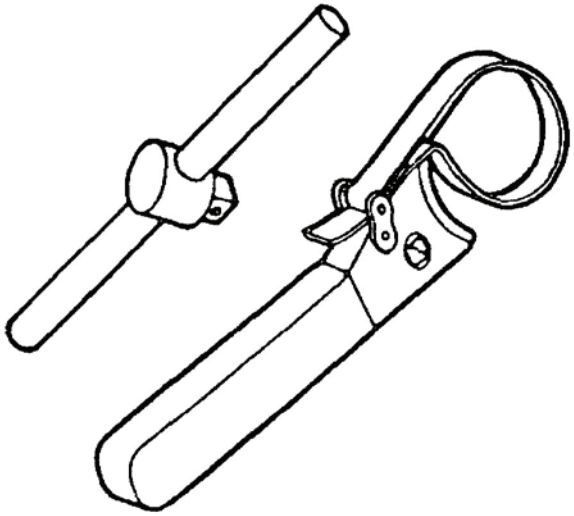


Figure 3. Adapter Tool Accessories

Table 1. MIL-C-81511 Accessories Reference

ACCESSORY DESCRIPTION 1/	SERIES				PART NO.	
	I	II	III	IV	CURRENT 4/	PREVIOUS 2/
CABLE CLAMPS/STRAIN RELIEFS						
Straight Strain Relief	X	X	X	X	M81511/13	
ENVIRONMENTAL EMI/RFI BACKSHELLS						
Straight Backshell	X	X	X	X	M81511/14	
CRIMP CONTACTS 3/						
Pin, Size 12 - 23			X	X	M39029/18	
Pin, Size 12 - 23	X	X			M39029/47	MS90461
Socket, Size 16 - 22 (Class L)			X	X	M39029/22	M39029/15
Socket, Size 12 - 23				X	M39029/16	
Socket, Size 12 - 23			X		M39029/17	
Socket, Size 12 - 23	X				M39029/33	MS3343
Socket, Size 12 - 23		X			M39029/46	MS90460
CRIMP CONTACT EXTRACTION & INSERTION TOOLS 3/						
Extraction Only (Pins)	X	X	X	X	M81969/3	MS3342
Extraction Only (Sockets)	X	X	X	X	M81969/3	MS3344
Extraction or Insertion	X	X	X	X	M81969/16	MS3160
Insertion Only	X	X	X	X	M81969/2	MS3323
CRIMP TOOLS 3/						
Size 12 - 20 Contacts	X	X	X	X	M22520	
DUST CAPS						
Metal, For plug		X		X	M81511/17	
Metal, For jack	X	X	X	X	M81511/18	
Plastic ESD, For plug or jack	X	X	X	X	MS90376	
Plastic, For rear accessory threads	X	X	X	X	M81511/16	
SEALING PLUGS						
Size 16 - 23	X	X	X	X	MS27488	M81511/15
Size 12 - 23	X	X	X	X	MS27488	M81511/39
CONDUIT FITTINGS	X	X	X	X	AN3050 through AN3054, AN3056 MS3057 AN3058 through AN3063 AN3066 through AN3068	AN3057
RUBBER BUSHINGS	X	X	X	X	MS3420	
SLOTTED JAM NUT	X	X			M81511/20	

1/ For accessory details, refer to this WP.
2/ Previous part numbers are listed for reference only. When a requirement exists, the current part number should be ordered.
3/ See the crimp contact table in WP 004 02 for details. Crimping tool details are available in same WP.
4/ Refer to this WP to construct complete part number.

Table 2. Series 1 and 3 Adapter Tool Selection

Individual Tool Part Numbers for Plugs	Shell Size	Keying Positions	Color Coding
BT815L-8A	8	1,2,3	YELLOW
BT815L-10A	10	1,2,6	YELLOW
BT815L-14A	14	1,2,6	YELLOW
BT815L-16A	16	1,2,3	YELLOW
BT815L-18A	18	1,2,3	YELLOW
BT815L-20A	20	1,2,3	YELLOW
BT815L-22A	22	1,2,3	YELLOW
BT815L-24A	24	1,2,3	YELLOW
BT815L-8B	8	4,5,6	YELLOW
BT815L-10B	10	3,4,5	YELLOW
BT815L-14B	14	3,4,5	YELLOW
BT815L-16B	16	4,5,6	YELLOW
BT815L-18B	18	4,5,6	YELLOW
BT815L-20B	20	4,5,6	YELLOW
BT815L-22B	22	4,5,6	YELLOW
BT815L-24B	24	4,5,6	YELLOW
CM815L-8A	8	1,2,3	YELLOW
CM815L-10A	10	1,2,6	YELLOW
CM815L-14A	14	1,2,6	YELLOW
CM815L-16A	16	1,2,3	YELLOW
CM815L-18A	18	1,2,3	YELLOW
CM815L-20A	20	1,2,3	YELLOW
CM815L-22A	22	1,2,3	YELLOW
CM815L-24A	24	1,2,3	YELLOW
CM815L-8B	8	4,5,6	YELLOW
CM815L-10B	10	3,4,5	YELLOW
CM815L-14B	14	3,4,5	YELLOW
CM815L-16B	16	4,5,6	YELLOW
CM815L-18B	18	4,5,6	YELLOW
CM815L-20B	20	4,5,6	YELLOW
CM815L-22B	22	4,5,6	YELLOW
CM815L-24B	24	4,5,6	YELLOW

Table 3. Series 2 and 4 Adapter Tool Selection

Individual Tool Part Numbers for Plugs	Shell Size	Keying Positions	Color Coding
CM815S-8A	8	ALL	RED
CM815S-10A	10	1,4,5	RED
CM815S-14A	14	1,4,5	RED
CM815S-16A	16	1,2,4	RED
CM815S-18A	18	1,2,4	RED
CM815S-10B	10	2,3,6	RED
CM815S-14B	14	2,3,6	RED
CM815S-16B	16	3,5,6	RED
CM815S-18B	18	3,5,6	RED
BT815S-8	8	ALL	RED
BT815S-10A	10	1,4,5	RED
BT815S-14A	14	1,4,5	RED
BT815S-16A	16	1,2,4	RED
BT815S-18A	18	1,2,4	RED
BT815S-10B	10	2,3,6	RED
BT815S-14B	14	2,3,6	RED
BT815S-16B	16	3,5,6	RED
BT815S-18B	18	3,5,6	RED

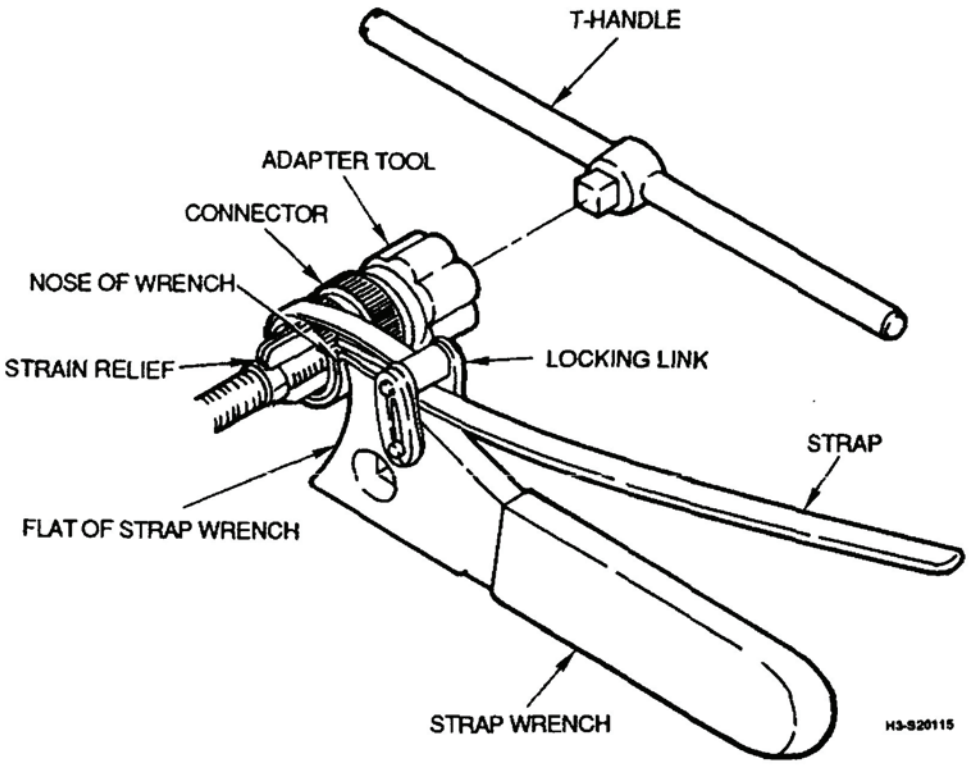


Figure 4. Strap Wrench Setup and Adjustment

b. Mate adapter tool to connector. Ensure white dot on adapter tool aligns with master key of connector. Spinning tool on connector will cause damage to tool and/or connector (Figure 4).

c. Install strap wrench around part to be removed. Draw strap tightly through locking link. Backshell will rest on nose of wrench.

d. Insert T-handle into socket of adapter tool to provide holding.

e. To loosen backshell apply force counterclockwise as viewed from connector rear (Figure 5).

f. Place backshell and associated hardware in parts bag and secure to bundle to prevent loss.

15. BACKSHELL INSTALLATION. Upon completion of maintenance or modification the backshell must be replaced. Proceed using the following steps:

a. Acquire the correct and associated hardware and backshell. Start backshell on connector by hand to prevent cross threading.

b. Select the correct adapter tool, T-handle, and strap wrench (Tables 2 or 3).

c. Mate adapter tool to connector. Ensure white dot on adapter tool align with master key of connector. Spinning tool on connector will cause damage to tool and/or connector.

d. Install strap wrench around part to be installed. Draw strap tightly through locking link. Backshell will rest on nose of wrench.

e. Insert T-handle into socket of adapter tool to provide holding.

NOTE

Refer to NAVAIR 01-1A-505-1, WP 011 01, for torque value information on AS85049 connector backshells.

f. To tighten a backshell apply force clockwise as viewed from connector rear (Figure 6).

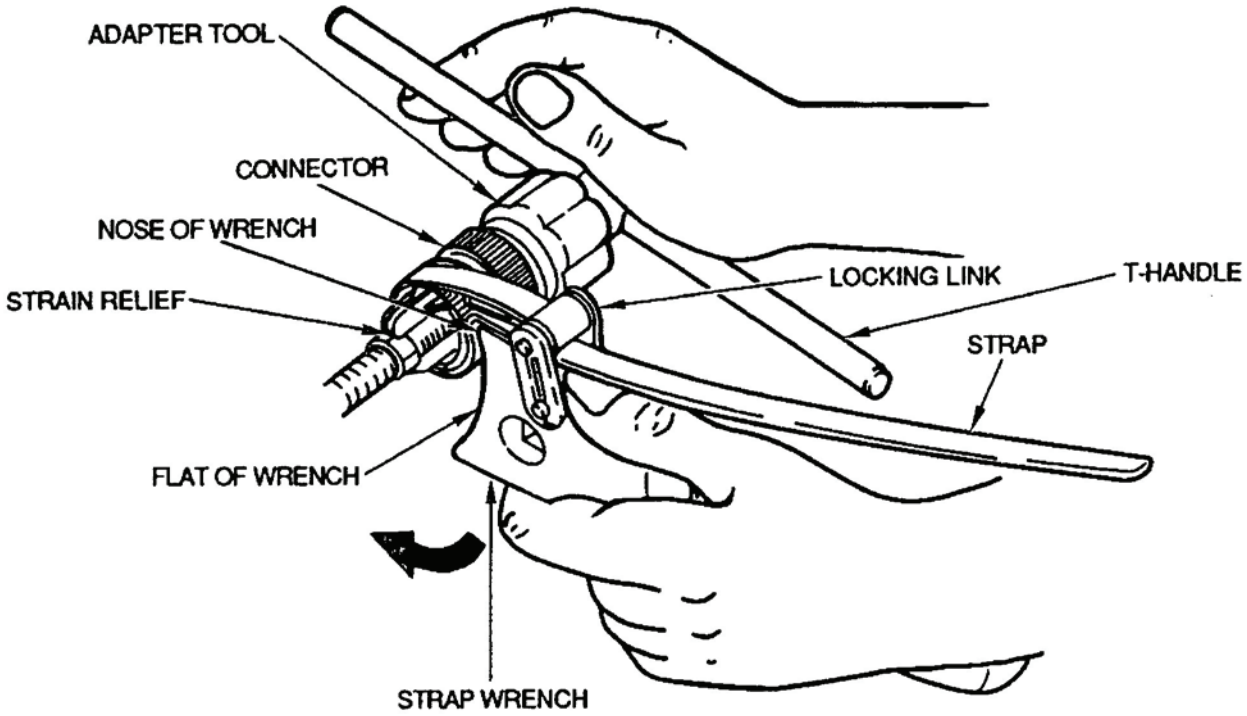


Figure 5. Loosening Position of Wrench

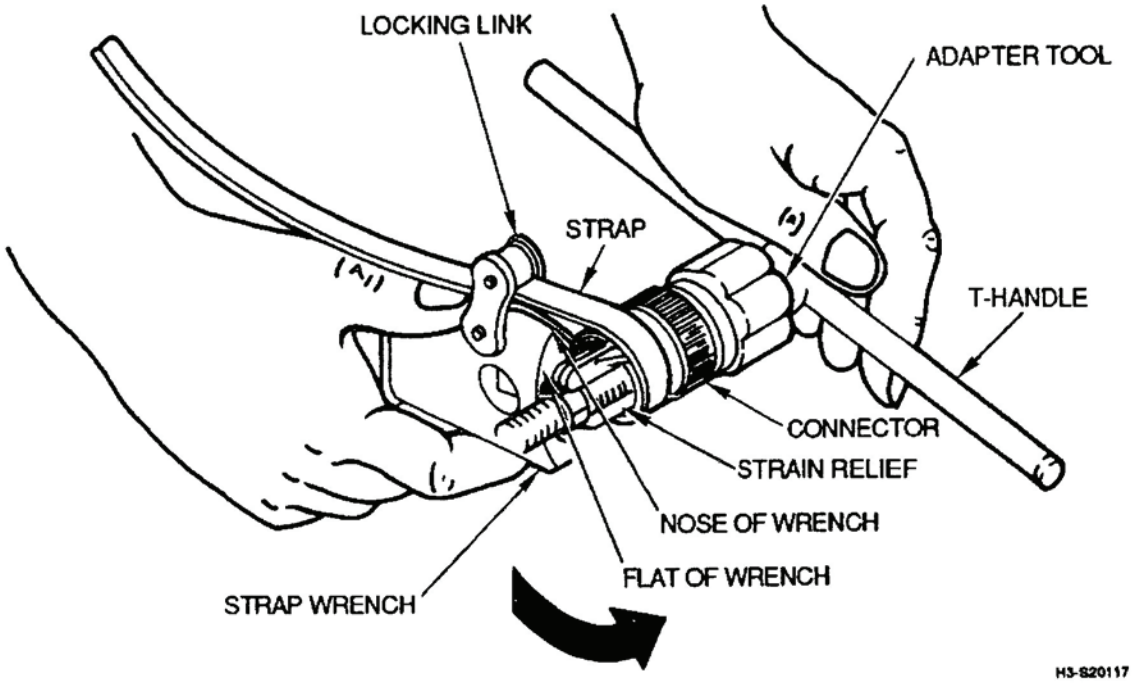


Figure 6. Tightening Position of Wrench

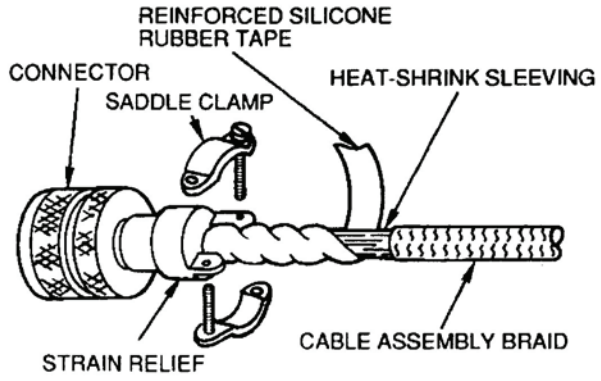


Figure 7. Saddle Clamp Removal and Installation

16. CABLE CLAMP/STRAIN RELIEF. A cable clamp is a cable supporting or clamping device which requires the use of an intermediate component for attachment to the back of the connector. A strain relief is a cable support or clamping device which attaches directly to the connector (Figure 7).

17. CABLE CLAMP-TYPE STRAIN RELIEF REMOVAL. To remove this type of strain relief use the following procedure (Figure 7):

a. Loosen saddle clamp screws.

b. Unwrap any reinforcing silicone tape.

c. Remove strain relief using tools and tool procedure for backshell removal (Paragraph 12).

d. Perform connector repair.

18. CABLE CLAMP-TYPE STRAIN RELIEF INSTALLATION. Upon the completion of connector repair install the strain relief using the following procedure (Figure 7):

a. Wrap cable with reinforcing silicone tape to build cable diameter where necessary.

b. Install strain relief using tools and tool procedures for backshell installation (Paragraph 15).

c. Restore proper position of wire/s to reduce strain. Wire should not elongate grommet holes, pull tightly, or be kinked.

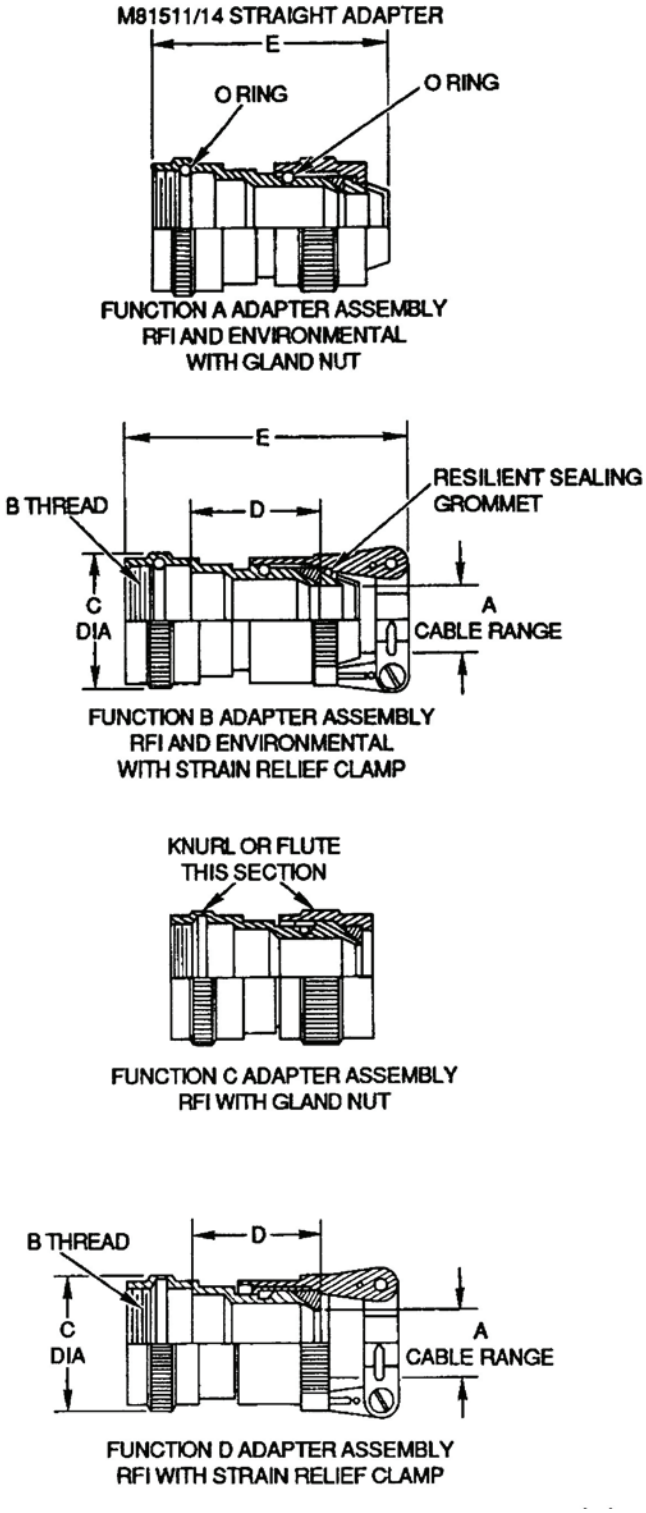


Figure 8. Environmental EMI/RFI Backshell (Sheet 1 of 7)

Part Number	Shell Size	Function Symbol	A CABLE RANGE		B Thread Class 2B	C Dia.	D Min. Working Room	E Max.
			Min.	Max.				
M81511/14-001	8	A	.062	.125	1/2-28UNEF		1.125	2.22
M81511/14-002			.125	.250				
M81511/14-003		B	.062	.125		.640		2.72
M81511/14-004			.125	.250				
M81511/14-005		A	.062	.125		.620	1.625	2.72
M81511/14-006			.125	.250				
M81511/14-007		B	.062	.125				3.22
M81511/14-008			.125	.250				
M81511/14-009	10	A	.125	.250	5/8-28UN		1.125	2.22
M81511/14-010			.250	.375				
M81511/14-011			.375	.500				
M81511/14-012		B	.125	.250				2.72
M81511/14-013			.250	.375		.765		
M81511/14-014			.375	.500				
M81511/14-015		A	.125	.250		.745	1.625	2.72
M81511/14-016			.250	.375				
M81511/14-017			.375	.500				
M81511/14-018		B	.125	.250				3.22
M81511/14-019			.250	.375				
M81511/14-020			.375	.500				
M81511/14-021	14	A	.250	.375	7/8-28UN		1.125	2.22
M81511/14-022			.375	.500				
M81511/14-023			.500	.625				
M81511/14-024		B	.250	.375				2.72
M81511/14-025			.375	.500		1.015		
M81511/14-026			.500	.625				
M81511/14-027		A	.250	.375		.995	1.625	2.72
M81511/14-028			.375	.500				
M81511/14-029			.500	.625				
M81511/14-030		B	.250	.375				3.22
M81511/14-031			.375	.500				
M81511/14-032			.500	.625				
M81511/14-033	16	A	.250	.375	1-28UN		1.125	2.22
M81511/14-034			.375	.500				
M81511/14-035			.500	.625				
M81511/14-036		B	.250	.375				2.72
M81511/14-037			.375	.500		1.140		
M81511/14-038			.500	.625				
M81511/14-039		A	.250	.375			1.625	2.72
M81511/14-040			.375	.500		1.120		
M81511/14-041			.500	.625				
M81511/14-042		B	.250	.375				3.22
M81511/14-043			.375	.500				
M81511/14-044			.500	.625				
M81511/14-045	18	A	.375	.500	1-1/8-28UN		1.125	2.22
M81511/14-046			.500	.625				
M81511/14-047			.625	.750				
M81511/14-048		B	.375	.500				2.72
M81511/14-049			.500	.625		1.265		
M81511/14-050			.625	.750				
M81511/14-051		A	.375	.500			1.625	2.72
M81511/14-052			.500	.625		1.245		
M81511/14-053			.625	.750				
M81511/14-054		B	.375	.500				3.22
M81511/14-055			.500	.625				
M81511/14-056			.625	.750				
M81511/14-057	8	C	.062	.125	1/2-28UN		1.125	1.71
M81511/14-058			.125	.250		.640		
M81511/14-059		D	.062	.125				2.47
M81511/14-060			.125	.250				
M81511/14-061		C	.062	.125			1.625	2.21
M81511/14-062			.125	.250		.620		
M81511/14-063		D	.062	.125				2.97
M81511/14-064			.125	.250				

Figure 8. Environmental EMI RFI Backshell (Sheet 2 of 7)

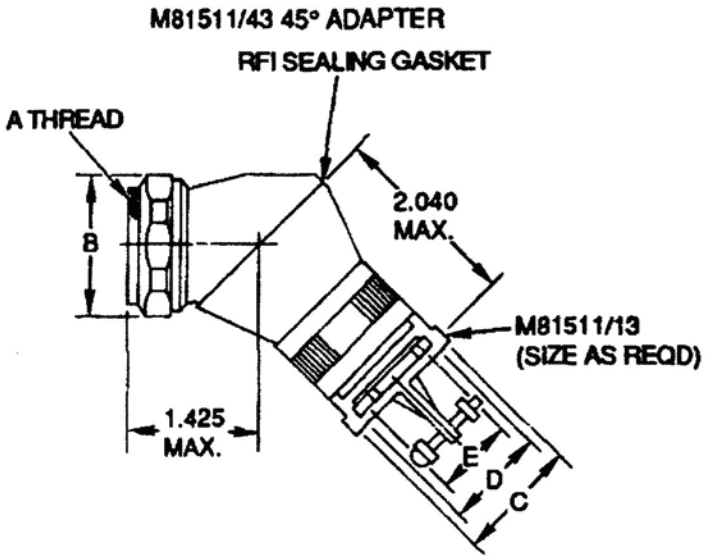
Part Number	Shell Size	Function Symbol	A CABLE RANGE		B Thread Class 2B	C Dia.	D Min. Working Room	E Max.
			Min.	Max.				
M81511/14-065	10	C	.125	.250	5/8-28UN		1.125	1.71
M81511/14-066			.250	.375				
M81511/14-067			.375	.500				
M81511/14-068		D	.125	.250				2.47
M81511/14-069			.250	.375		.765		
M81511/14-070			.375	.500				
M81511/14-071		C	.125	.250			1.625	2.21
M81511/14-072			.250	.375		.745		
M81511/14-073			.375	.500				
M81511/14-074		D	.125	.250				2.97
M81511/14-075			.250	.375				
M81511/14-076			.375	.500				
M81511/14-077	14	C	.250	.375	7/8-28UN		1.125	1.71
M81511/14-078			.375	.500				
M81511/14-079			.500	.625				
M81511/14-080		D	.250	.375				2.47
M81511/14-081			.375	.500		.765		
M81511/14-082			.500	.625				
M81511/14-083		C	.250	.375			1.625	2.21
M81511/14-084			.375	.500		.745		
M81511/14-085			.500	.625				
M81511/14-086		D	.250	.375				2.97
M81511/14-087			.375	.500				
M81511/14-088			.500	.625				
M81511/14-089	16	C	.250	.375	1-28UN		1.125	1.71
M81511/14-090			.375	.500				
M81511/14-091			.500	.625				
M81511/14-092		D	.250	.375				2.47
M81511/14-093			.375	.500		1.015		
M81511/14-094			.500	.625				
M81511/14-095		C	.250	.375			1.625	2.21
M81511/14-096			.375	.500		.995		
M81511/14-097			.500	.625				
M81511/14-098		D	.250	.375				2.97
M81511/14-099			.375	.500				
M81511/14-100			.500	.625				
M81511/14-101	18	C	.375	.500	1-1/8-28UN		1.125	1.71
M81511/14-102			.500	.625				
M81511/14-103			.625	.750				
M81511/14-104		D	.375	.500				2.47
M81511/14-105			.500	.625		1.265		
M81511/14-106			.625	.750				
M81511/14-107		C	.375	.500			1.625	2.21
M81511/14-108			.500	.625		1.245		
M81511/14-109			.625	.750				
M81511/14-110		D	.375	.500				2.97
M81511/14-111			.500	.625				
M81511/14-112			.625	.750				
M81511/14-113	20	A	.500	.625	1-1/4-28UN		1.125	2.30
M81511/14-114			.625	.750				
M81511/14-115			.750	.875				
M81511/14-116		B	.500	.625				2.80
M81511/14-117			.625	.750		1.390		
M81511/14-118			.750	.875				
M81511/14-119		A	.500	.625			1.625	2.80
M81511/14-120			.625	.750		1.370		
M81511/14-121			.750	.875				
M81511/14-122		B	.500	.625				3.30
M81511/14-123			.625	.750				
M81511/14-124			.750	.875				

Figure 8. Environmental EMI RFI Backshell (Sheet 3 of 7)

Part Number	Shell Size	Function Symbol	A CABLE RANGE		B Thread Class 2B	C Dia.	D Min. Working Room	E Max.
			Min.	Max.				
M81511/14-125	22	A	.625	.750	1-3/8-28UN		1.125	2.30
M81511/14-126			.750	.875				
M81511/14-127			.875	1.000				
M81511/14-128		B	.625	.750				2.80
M81511/14-129			.750	.875		1.515		
M81511/14-130			.875	1.000				
M81511/14-131		A	.625	.750			1.625	2.80
M81511/14-132			.750	.875		1.495		
M81511/14-133			.875	1.000				
M81511/14-134		B	.625	.750				3.30
M81511/14-135			.750	.875				
M81511/14-136			.875	1.000				
M81511/14-137	24	A	.750	.875	1-1/2-28UN		1.125	2.30
M81511/14-138			.875	1.000				
M81511/14-139			1.000	1.125				
M81511/14-140		B	.750	.875				2.80
M81511/14-141			.875	1.000		1.640		
M81511/14-142			1.000	1.125				
M81511/14-143		A	.750	.875			1.625	2.80
M81511/14-144			.875	1.000		1.620		
M81511/14-145			1.000	1.125				
M81511/14-146		B	.750	.875				3.30
M81511/14-147			.875	1.000				
M81511/14-148			1.000	1.125				
M81511/14-149	20	C	.500	.625	1-1/4-28UN		1.125	1.78
M81511/14-150			.625	.750		1.390		
M81511/14-151			.750	.875				
M81511/14-152		D	.500	.625				2.55
M81511/14-153			.625	.750		1.370		
M81511/14-154			.750	.875				
M81511/14-155	20	C	.500	.625	1-1/4-28UN		1.625	2.28
M81511/14-156			.625	.750		1.390		
M81511/14-157			.750	.875				
M81511/14-158		D	.500	.625				3.05
M81511/14-159			.625	.750		1.370		
M81511/14-160			.750	.875				
M81511/14-161	22	C	.625	.750	1-3/8-28UN		1.125	1.78
M81511/14-162			.750	.875				
M81511/14-163			.875	1.000				
M81511/14-164		D	.625	.750				2.55
M81511/14-165			.750	.875		1.515		
M81511/14-166			.875	1.000				
M81511/14-167		C	.625	.750			1.625	2.28
M81511/14-168			.750	.875		1.495		
M81511/14-169			.875	1.000				
M81511/14-170		D	.625	.750				3.05
M81511/14-171			.750	.875				
M81511/14-172			.875	1.000				
M81511/14-173	24	C	.750	.875	1-1/2-28UN		1.125	1.78
M81511/14-174			.875	1.000				
M81511/14-175			1.000	1.125				
M81511/14-176		D	.750	.875				2.55
M81511/14-177			.875	1.000		1.640		
M81511/14-178			1.000	1.125				
M81511/14-179		C	.750	.875			1.625	2.28
M81511/14-180			.875	1.000		1.620		
M81511/14-181			1.000	1.125				
M81511/14-182		D	.750	.875				3.05
M81511/14-183			.875	1.000				
M81511/14-184			1.000	1.125				

Figure 8. Environmental EMI RFI Backshell (Sheet 4 of 7)

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY



45° ADAPTER

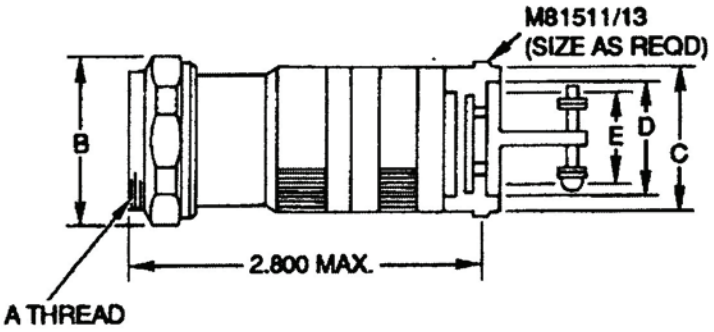
Part Number	Shell Size	A Thread Class 2	B Dia.	C Dia.	D Dia.	E Gland ID Max. Open	E Gland ID Min. Closed	Connector Class Applicability
M81511/43-08A3	8	1/2-28UNEF	.850	.625	.435			A, B, AND C
M81511/43-08B3	8		.830	.605	.415			F, G, T, E, H, AND P
M81511/43-10A3	10	5/8-28UN	.975	.750	.560	.325	.200	A, B, AND C
M81511/43-10B3	10		.955	.730	.540			F, G, T, E, H, AND P
M81511/43-14A3	14	7/8-28UN	1.225	1.000	.810	.550	.440	A, B, AND C
M81511/43-14B3	14		1.205	.980	.790			F, G, T, E, H, AND P
M81511/43-16A3	16	1-28UN	1.350	1.125	.935	.675	.530	A, B, AND C
M81511/43-16B3	16		1.330	1.105	.915			F, G, T, E, H, AND P
M81511/43-18A3	18	1-1/8-28UN	1.475	1.250	1.060	.800	.665	A, B, AND C
M81511/43-18B3	18		1.455	1.230	1.040			F, G, T, E, H, AND P
M81511/43-20A3	20	1-1/4-28UN	1.600	1.375	1.185	.925	.780	A, B, AND C
M81511/43-20B3	20		1.580	1.355	1.165			F, G, T, E, H, AND P
M81511/43-22A3	22	1-3/8-28UN	1.725	1.500	1.310	1.050	.910	A, B, AND C
M81511/43-22B3	22		1.705	1.480	1.290			F, G, T, E, H, AND P
M81511/43-24A3	24	1-1/2-28UN	1.840	1.630	1.435	1.175	1.035	A, B, AND C
M81511/43-24B3	24		1.820	1.610	1.415			F, G, T, E, H, AND P

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

Figure 8. Environmental EMI RFI Backshell (Sheet 5 of 7)

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

M81511/43 STRAIGHT ADAPTER



STRAIGHT ADAPTER

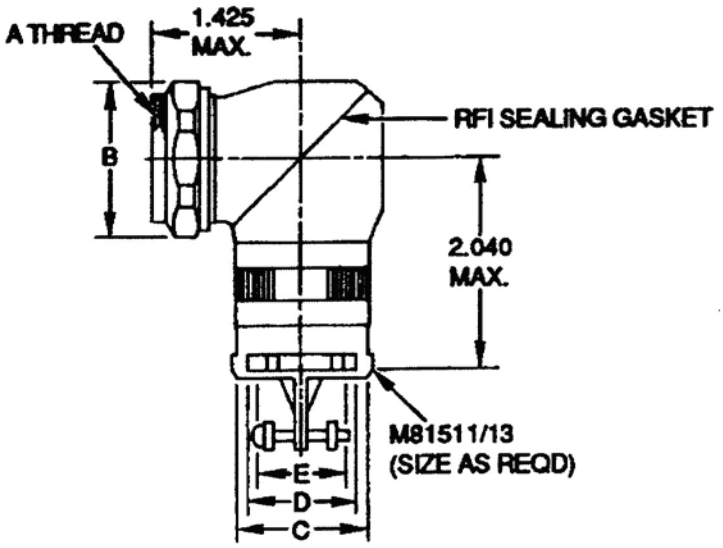
Part Number	Shell Size	A Thread Class 2	B Dia.	C Dia.	D Dia.	E Gland ID Max. Open	E Gland ID Min. Closed	Connector Class Applicability
M81511/43-08A1	8	1/2-28UNEF	.850	.625	.435			A, B, AND C
M81511/43-08B1	8		.830	.605	.415			F, G, T, E, H, AND P
M81511/43-10A1	10	5/8-28UN	.975	.750	.560	.325	.200	A, B, AND C
M81511/43-10B1	10		.955	.730	.540			F, G, T, E, H, AND P
M81511/43-14A1	14	7/8-28UN	1.225	1.000	.810	.550	.440	A, B, AND C
M81511/43-14B1	14		1.205	.980	.790			F, G, T, E, H, AND P
M81511/43-16A1	16	1-28UN	1.350	1.125	.935	.675	.530	A, B, AND C
M81511/43-16B1	16		1.330	1.105	.915			F, G, T, E, H, AND P
M81511/43-18A1	18	1-1/8-28UN	1.475	1.250	1.060	.800	.665	A, B, AND C
M81511/43-18B1	18		1.455	1.230	1.040			F, G, T, E, H, AND P
M81511/43-20A1	20	1-1/4-28UN	1.600	1.375	1.185	.925	.780	A, B, AND C
M81511/43-20B1	20		1.580	1.355	1.165			F, G, T, E, H, AND P
M81511/43-22A1	22	1-3/8-28UN	1.725	1.500	1.310	1.050	.910	A, B, AND C
M81511/43-22B1	22		1.705	1.480	1.290			F, G, T, E, H, AND P
M81511/43-24A1	24	1-1/2-28UN	1.840	1.630	1.435	1.175	1.035	A, B, AND C
M81511/43-24B1	24		1.820	1.610	1.415			F, G, T, E, H, AND P

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

Figure 8. Environmental EMI RFI Backshell (Sheet 6 of 7)

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

M81511/43 90° ADAPTER



90° ADAPTER

Part Number	Shell Size	A Thread Class 2	B Dia.	C Dia.	D Dia.	E Gland ID Max. Open	E Gland ID Min. Closed	Connector Class Applicability
M81511/43-08A2	8	1/2-28UNEF	.850	.625	.435			A, B, AND C
M81511/43-08B2	8		.830	.605	.415			F, G, T, E, H, AND P
M81511/43-10A2	10	5/8-28UN	.975	.750	.560	.325	.200	A, B, AND C
M81511/43-10B2	10		.955	.730	.540			F, G, T, E, H, AND P
M81511/43-14A2	14	7/8-28UN	1.225	1.000	.810	.550	.440	A, B, AND C
M81511/43-14B2	14		1.205	.980	.790			F, G, T, E, H, AND P
M81511/43-16A2	16	1-28UN	1.350	1.125	.935	.675	.530	A, B, AND C
M81511/43-16B2	16		1.330	1.105	.915			F, G, T, E, H, AND P
M81511/43-18A2	18	1-1/8-28UN	1.475	1.250	1.060	.800	.665	A, B, AND C
M81511/43-18B2	18		1.455	1.230	1.040			F, G, T, E, H, AND P
M81511/43-20A2	20	1-1/4-28UN	1.600	1.375	1.185	.925	.780	A, B, AND C
M81511/43-20B2	20		1.580	1.355	1.165			F, G, T, E, H, AND P
M81511/43-22A2	22	1-3/8-28UN	1.725	1.500	1.310	1.050	.910	A, B, AND C
M81511/43-22B2	22		1.705	1.480	1.290			F, G, T, E, H, AND P
M81511/43-24A2	24	1-1/2-28UN	1.840	1.630	1.435	1.175	1.035	A, B, AND C
M81511/43-24B2	24		1.820	1.610	1.415			F, G, T, E, H, AND P

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

Figure 8. Environmental EMI RFI Backshell (Sheet 7 of 7)

NOTE

Refer to NAVAIR 01-1A-505-1, WP 011 01, for torque value information on AS85049 connector backshells.

d. Tighten screws in saddle clamp to provide firm gripping action preventing wire movement without damage or crushing.

19. ENVIRONMENTAL EMI/RFI BACKSHELLS. The backshells shown are cancelled without replacement. The information provided is for reference use only. The backshell is removed and installed using the tools and tool procedures (Paragraphs 14 and 15). The sealing and shielding internal parts are removed to facilitate maintenance. The internal parts are installed in their original configuration to ensure proper sealing and shielding (Figure 8).

20. CONDUIT FITTINGS. Conduit fittings are used to connect a conduit to a connector, and may be either a ferrule or hex nut (Figure 9).

21. DUMMY RECEPTACLE. Dummy receptacles are provided and shall be used to stow unmated plugs caps or protective covers when the related component is not in operational use. The dummy receptacle shall be marked and located to permit easy location and access.

22. Dummy Receptacle M81511/19. This dummy receptacle is to be used where necessary. The dummy receptacle, along with dimensions and part number breakdown, is illustrated (Figure 10).

23. Dummy Receptacle M81511/30. This dummy receptacle is cancelled without replacement. The information provided is for reference use only. The dummy receptacle, along with dimensions and part number breakdown, is illustrated (Figure 11).

24. PROTECTIVE COVERS. Protective covers are more commonly called dust caps. There are dust caps for plugs and receptacles.

25. Dust Caps for Plugs, along with the part number breakdown, are illustrated for; M81511/17 (Figure 12) and M81511/18 (Figure 12).

26. GASKET FOR FLANGE MOUNT RECEPTACLE. MS90484 gaskets are made from (1) silicone rubber or (2) conductive rubber, (1) or (2) will be the last dash number of the part number (Figure 13).

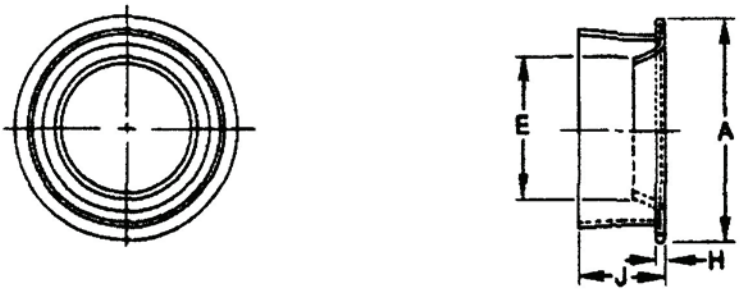
29. MOUNTING PLATES FOR FLANGE MOUNT RECEPTACLE. M85049/96 plates are light duty perimeter flanges used to secure receptacles to structures. M85049/95 plates are medium duty, partial perimeter flanges and M85049/94 are heavy duty, full perimeter flanges. (See WP 007 03).

30. RUBBER BUSHINGS. MS3420 standard material and color is black neoprene. Primary use is cushion for wires at connector exit to aid strain relief (Figure 14).

31. SEALING PLUGS. Sealing plugs are inserted to fill a cavity in a connector insert. The function of a sealing plug is to seal all cavities not occupied by contacts (Figure 15).

PART NUMBER DESIGNATION





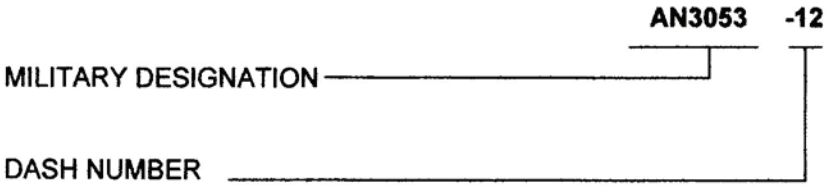
MATERIAL: ALUMINUM ALLOY
FINISH: NONE

DIMENSIONS

Conduit Size	E Dia.	J	AN3050	A Dia.	H	AN3051	A Dia.	H	AN3052	A Dia.	H
3/16	1/8	7/16	-3	.448	.040	-3	.566	.040	-4	.807	.040
1/4	3/16	7/16	-4	.568	.040	-4	.682	.040	-6	.932	.040
3/8	5/16	7/16	-6	.682	.040	-6	.807	.040	-8	1.105	.040
1/2	7/16	7/16	-8	.807	.040	-8	.932	.040	-10	1.355	.040
5/8	9/16	7/16	-10	.932	.040	-10	1.105	.040	-12	1.668	.040
3/4	11/16	1/2	-12	1.105	.040	-12	1.355	.040	-16	1.918	.060
1	15/16	5/8	-16	1.355	.040	-16	1.668	.060	-20	2.160	.060
1-1/4	1-3/16	5/8	-20	1.668	.040	-20	1.918	.060	-24	2.410	.060
1-1/2	1-7/16	3/4	-24	1.918	.040	-24	2.160	.060	-28	2.910	.060
1-3/4	1-11/16	7/8	-28	2.160	.040	-28	2.410	.060			
2	1-15/16	1	-32	2.410	.040	-32	2.910	.060			
2-1/2	2-7/16	1	-40	2.910	.040						

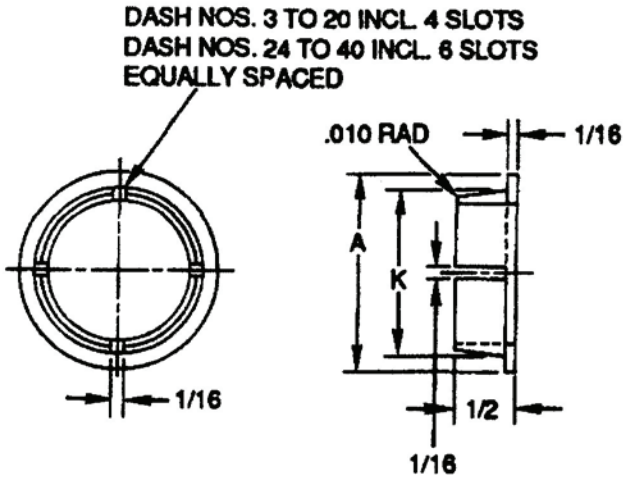
Figure 9. Conduit Fittings (Sheeet 1 of 9)

PART NUMBER DESIGNATION



MATERIAL: ALUMINUM

FINISH: CADMIUM, OLIVE DRAB



DIMENSIONS

Dash No.	Conduit Size	A Dia.	K Dia.
-3	3/16	.448	.332
-4	1/4	.566	.394
-6	3/8	.682	.519
-8	1/2	.807	.669
-10	5/8	.932	.794
-12	3/4	1.105	.929
-16	1	1.355	1.214
-20	1-1/4	1.668	1.469
-24	1-1/2	1.918	1.724
-28	1-3/4	2.160	1.976
-32	2	2.410	2.229
-40	2-1/2	2.910	2.744

Figure 9. Conduit Fittings (Sheeet 2 of 9)

PART NUMBER DESIGNATION

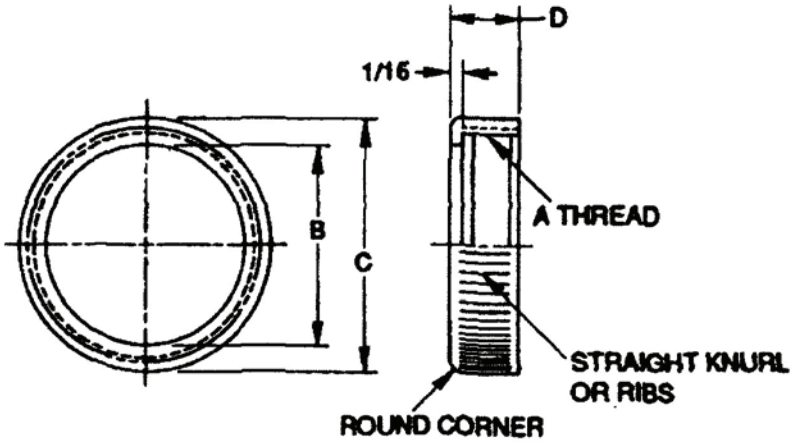
AN3054 -12

MILITARY DESIGNATION

DASH NUMBER (See DIMENSIONS)

MATERIAL: ALUMINUM

FINISH: CADMIUM, OLIVE BRAD



DIMENSIONS

Dash No.	Conduit Size	A Thread	B	C ±3/64	D
-3	3/16	1/2-28UNEF-2B	.396	5/8	7/16
-4	1/4	5/8-24NEF-2B	.458	3/4	7/16
-5	5/16	11/16-24NS-2B	.458	25/32	7/16
-6	3/8	3/4-20UNEF-2B	.583	7/8	7/16
-8	1/2	7/8-20UNEF-2B	.708	1-1/32	7/16
-10	5/8	1-20UNEF-2B	.833	1-5/32	7/16
-12	3/4	1-3/16-18NEF-2B	.993	1-11/32	7/16
-16	1	1-7/16-18NEF-2B	1.278	1-19/32	7/16
-20	1-1/4	1-3/4-18NS-2B	1.533	1-29/32	1/2
-24	1-1/2	2-18NS-2B	1.788	2-5/32	9/16
-28	1-3/4	2-1/4-16UN-2B	2.040	2-13/32	9/16
-32	2	2-1/2-16UN-2B	2.293	2-21/32	5/8
-40	2-1/2	3-16UN-2B	2.808	3-5/32	11/16

Figure 9. Conduit Fittings (Sheeet 3 of 9)

PART NUMBER DESIGNATION

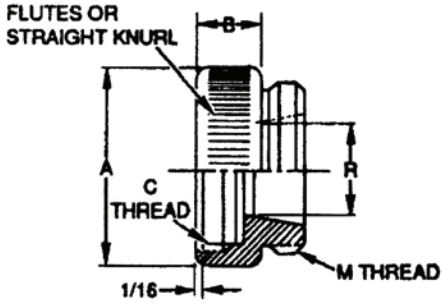
AN3055 -12-3

MILITARY DESIGNATION

DASH NUMBER (See DIMENSIONS)

MATERIAL: ALUMINUM

FINISH: CADMIUM, OLIVE DRAB



DIMENSIONS

Dash No.	A +3/32 -1/32 Dia.	B ±1/32	C Thread	M Thread	R ±.005 Dia.
-10-3	19/32	7/8	1/2-28UNEF-2B	1/2-28UNEF-2A	.178
-10-4	5/8	7/8	1/2-28UNEF-2B	5/8-24NEF-2A	.240
-12-3	23/32	7/8	5/8-24NEF-2B	1/2-28UNEF-2A	.178
-12-4	23/32	7/8	5/8-24NEF-2B	5/8-24NEF-2A	.240
-14-4	27/32	7/8	3/4-20UNEF-2B	5/8-24NEF-2A	.240
-14-6	27/32	7/8	3/4-20UNEF-2B	3/4-20UNEF-2A	.365
-16-4	1	7/8	7/8-20UNEF-2B	5/8-24NEF-2A	.240
-16-6	1	7/8	7/8-20UNEF-2B	3/4-20UNEF-2A	.365
-16-8	1	7/8	7/8-20UNEF-2B	7/8-20UNEF-2A	.515
-18-6	1-1/8	7/8	1-20UNEF-2B	3/4-20UNEF-2A	.365
-18-8	1-1/8	7/8	1-20UNEF-2B	7/8-20UNEF-2A	.515
-18-10	1-1/8	7/8	1-20UNEF-2B	1-20UNEF-2A	.640
-22-8	1-5/16	7/8	1-3/16-18NEF-2B	7/8-20UNEF-2A	.515
-22-10	1-5/16	7/8	1-3/16-18NEF-2B	1-20UNEF-2A	.640
-22-12	1-5/16	7/8	1-3/16-18NEF-2B	1-3/16-18NEF-2A	.775
-28-10	1-9/16	7/8	1-7/16-18NEF-2B	1-20UNEF-2A	.640
-28-12	1-9/16	7/8	1-7/16-18NEF-2B	1-3/16-18NEF-2A	.775
-28-16	1-9/16	7/8	1-7/16-18NEF-2B	1-7/16-18NEF-2A	1.060
-32-12	1-7/8	15/16	1-3/4-18NS-2B	1-3/16-18NEF-2A	.775
-32-16	1-7/8	15/16	1-3/4-18NS-2B	1-7/16-18NEF-2A	1.060
-32-20	1-7/8	15/16	1-3/4-18NS-2B	1-3/4-18NS-2	1.315
-36-16	2-1/8	1-1/16	2-18NS-2B	1-7/16-18NEF-2A	1.060
-36-20	2-1/8	1-1/16	2-18NS-2B	1-3/4-18NS-2	1.315
-36-24	2-1/8	1-1/16	2-18NS-2B	2-18NS-2	1.570
-40-20	2-3/8	1-1/16	2-1/4-16UN-2B	1-3/4-18NS-2	1.315
-40-24	2-3/8	1-1/16	2-1/4-16UN-2B	2-18NS-2	1.570
-40-28	2-3/8	1-1/16	2-1/4-16UN-2B	2-1/4-16UN-2A	1.822
-44-24	2-5/8	1-3/16	2-1/2-16UN-2B	2-18NS-2	1.570
-44-28	2-5/8	1-3/16	2-1/2-16UN-2B	2-1/4-16UN-2A	1.822
-44-32	2-5/8	1-3/16	2-1/2-16UN-2B	2-1/2-16UN-2A	2.075
-48-28	3-1/8	1-5/16	3-16UN-2B	2-1/4-16UN-2A	1.822
-48-32	3-1/8	1-5/16	3-16UN-2B	2-1/2-16UN-2A	2.075
-48-40	3-1/8	1-5/16	3-16UN-2B	3-16UN-2A	2.590

Figure 9. Conduit Fittings (Sheeet 4 of 9)

PART NUMBER DESIGNATION

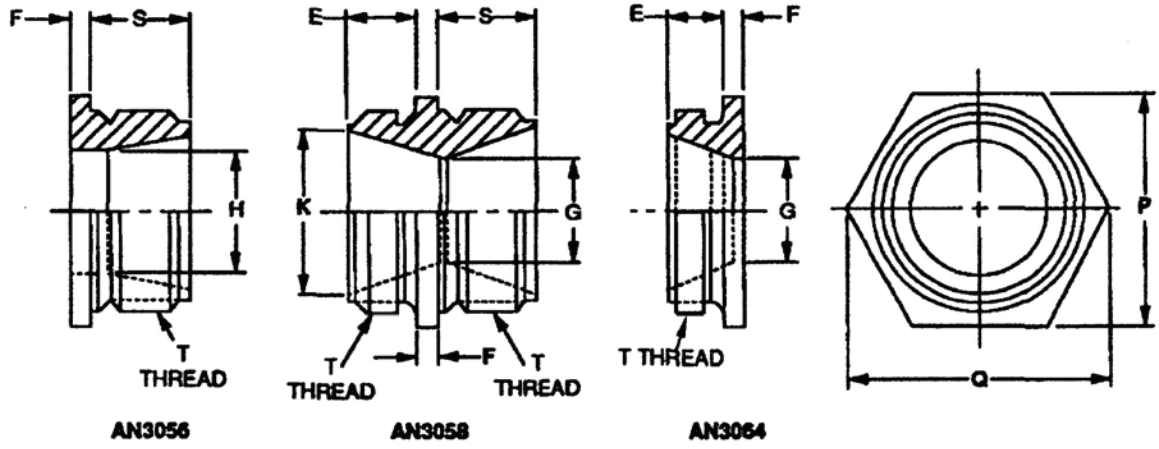
AN3056 -12
AN3058 -12
AN3064 -12

MILITARY DESIGNATION

DASH NUMBER (See DIMENSIONS)

MATERIAL: ALUMINUM

FINISH: CADMIUM



DIMENSIONS

Dash No.	AN3056, AN3058, AN3064					AN3058, AN3064		AN3056 AN3058	AN3056
	Conduit Size	T Thread	F	P	Q Approx	E	G	S	H
-3	3/16	1/2-28UNEF-2A	1/8	11/16	51/64	3/8	.198	5/8	.187
-4	1/4	5/8-24UNEF-2A	1/8	13/16	15/16	3/8	.260	5/8	.229
-6	3/8	3/4-20UNEF-2A	1/8	15/16	1-3/32	3/8	.385	5/8	.354
-8	1/2	7/8-20UNEF-2A	3/16	1-1/16	1-15/64	3/8	.510	11/16	.479
-10	5/8	1-20UNEF-2A	3/16	1-1/4	1-7/16	3/8	.635	11/16	.604
-12	3/4	1-3/16-18NEF-2A	3/16	1-3/8	1-19/32	3/8	.760	11/16	.729
-16	1	1-7/16-18NEF-2A	3/16	1-5/8	1-7/8	1/2	1.010	11/16	.979
-20	1-1/4	1-3/4-18NS-2A	3/16	2	2-5/16	1/2	1.261	3/4	1.229
-24	1-1/2	2-18NS-2A	3/16	2-3/16	2-17/32	1/2	1.511	13/16	1.479
-28	1-3/4	2-1/4-16UN-2A	1/4	2-7/16	2-13/16	1/2	1.761	7/8	1.729
-32	2	2-1/2-16UN-2A	1/4	2-13/16	3-1/4	9/16	2.011	15/16	1.979
-40	2-1/2	3-16UN-2A	1/4	3-3/8	3-57/64	5/8	2.512	1	2.479

Figure 9. Conduit Fittings (Sheeet 5 of 9)

PART NUMBER DESIGNATION

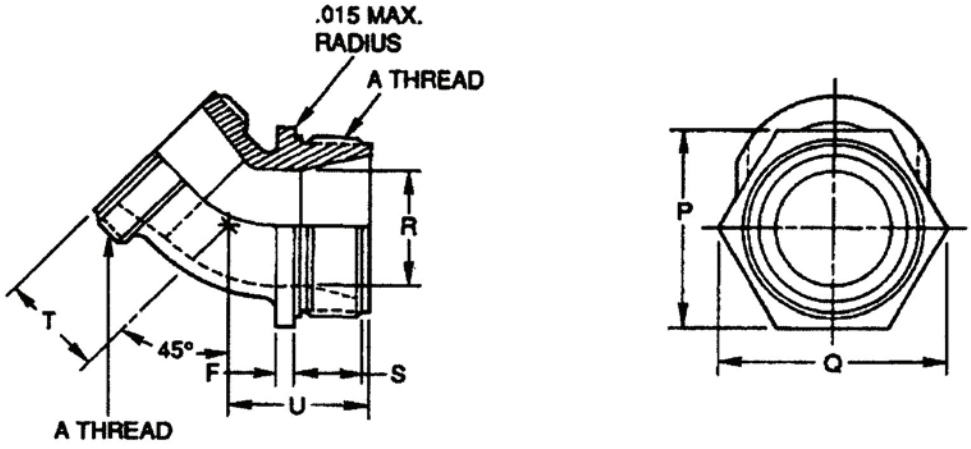
AN3060 -12
AN3061 -12

MILITARY DESIGNATION

DASH NUMBER (See DIMENSIONS)

MATERIAL: ALUMINUM

FINISH: CADMIUM, OLIVE DRAB



DIMENSIONS

Dash No.	AN3060, AN3061							AN3060		AN3061	
	Conduit Size	A Thread	F	P	Q Approx	R ±.010 Dia	T	S	U	S	U
-3	3/16	1/2-28UNEF-2A	1/8	11/16	51/64	.167	5/8	5/8	29/32	9/32	9/16
-4	1/4	5/8-24NEF-2A	1/8	13/16	15/16	.229	21/32	5/8	15/16	9/32	19/32
-6	3/8	3/4-20UNEF-2A	1/8	15/16	1-3/32	.354	11/16	5/8	31/32	9/32	5/8
-8	1/2	7/8-20UNEF-2A	3/16	1-1/16	1-15/64	.479	3/4	11/16	1-1/8	11/32	25/32
-10	5/8	1-20UNEF-2A	3/16	1-1/4	1-7/16	.604	3/4	11/16	1-5/32	11/32	13/16
-12	3/4	1-3/16-18NEF-2A	3/16	1-3/8	1-19/32	.729	25/32	11/16	1-3/16	11/32	27/32
-16	1	1-7/16-18NEF-2A	3/16	1-5/8	1-7/8	.979	31/32	11/16	1-1/4	11/32	29/32
-20	1-1/4	1-3/4-18NS-2A	3/16	2	2-5/16	1.229	1-1/16	3/4	1-13/32	3/8	1-1/32
-24	1-1/2	2-18NS-2A	3/16	2-3/16	2-17/32	1.479	1-5/32	13/16	1-9/16	13/32	1-5/32
-28	1-3/4	2-1/4-16UN-2A	1/4	2-7/16	2-13/16	1.729	1-7/32	7/8	1-11/16	7/16	1-1/4
-32	2	2-1/2-16UN-2A	1/4	2-13/16	3-1/4	1.979	1-1/4	15/16	1-27/32	15/32	1-3/8
-40	2-1/2	3-16UN-2A	1/4	3-3/8	3-57/64	2.479	1-3/8	1	2	1/2	1-1/2

Figure 9. Conduit Fittings (Sheeet 6 of 9)

PART NUMBER DESIGNATION

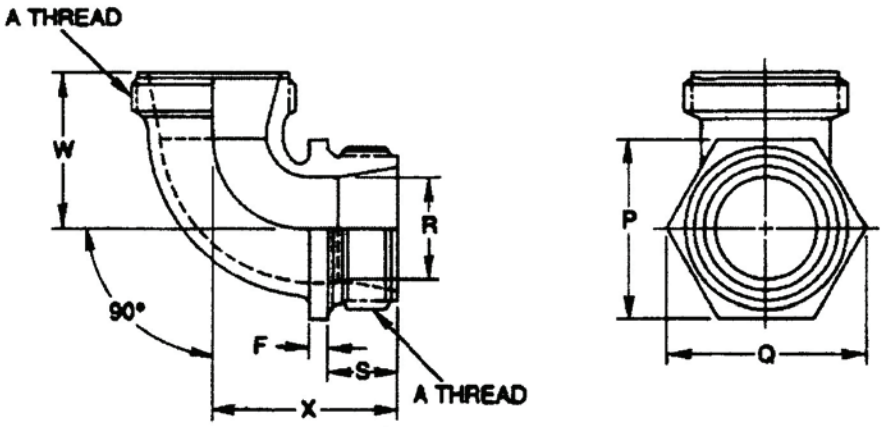
AN3062 -12
AN3063 -12

MILITARY DESIGNATION

DASH NUMBER (See DIMENSIONS)

MATERIAL: ALUMINUM

FINISH: CADMIUM, OLIVE DRAB



DIMENSIONS

Dash No.	AN3062, AN3063							AN3062		AN3063	
	Conduit Size	A Thread	F	P	Q Approx	R ±.010 Dia	W	S	X	S	X
-3	3/16	1/2-28UNEF-2A	1/8	11/16	51/64	.167	13/16	5/8	1-1/8	9/32	25/32
-4	1/4	5/8-24NEF-2A	1/8	13/16	15/16	.229	29/32	5/8	1-3/16	9/32	27/32
-6	3/8	3/4-20UNEF-2A	1/8	15/16	1-3/32	.354	31/32	5/8	1-1/4	9/32	29/32
-8	1/2	7/8-20UNEF-2A	3/16	1-1/16	1-15/64	.479	1-3/32	11/16	1-1/2	11/32	1-5/32
-10	5/8	1-20UNEF-2A	3/16	1-1/4	1-7/16	.604	1-5/32	11/16	1-9/16	11/32	1-7/32
-12	3/4	1-3/16-18NEF-2A	3/16	1-3/8	1-19/32	.729	1-7/32	11/16	1-5/8	11/32	1-9/32
-16	1	1-7/16-18NEF-2A	3/16	1-5/8	1-7/8	.979	1-1/2	11/16	1-13/16	11/32	1-15/32
-20	1-1/4	1-3/4-18NS-2A	3/16	2	2-5/16	1.229	1-23/32	3/4	2-1/16	3/8	1-11/16
-24	1-1/2	2-18NS-2A	3/16	2-3/16	2-17/32	1.479	1-29/32	13/16	2-5/16	13/32	1-29/32
-28	1-3/4	2-1/4-16UN-2A	1/4	2-7/16	2-13/16	1.729	2-1/32	7/8	2-9/16	7/16	2-1/8
-32	2	2-1/2-16UN-2A	1/4	2-13/16	3-1/4	1.979	2-5/32	15/16	2-3/4	15/32	2-9/32
-40	2-1/2	3-16UN-2A	1/4	3-3/8	3-57/64	2.479	2-7/16	1	3-1/16	1/2	2-9/16

Figure 9. Conduit Fittings (Sheeet 7 of 9)

PART NUMBER DESIGNATION

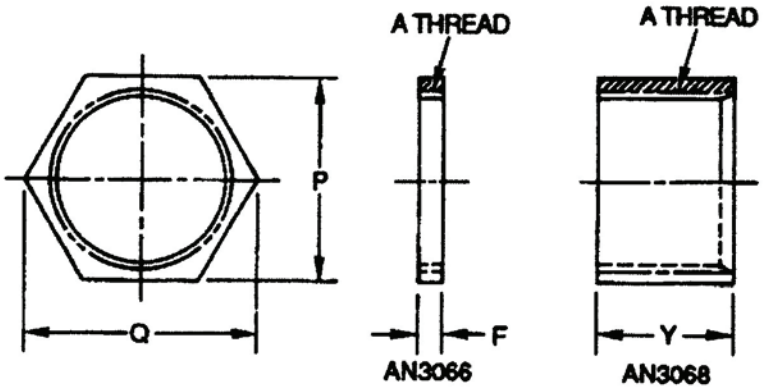
AN3068 -12

MILITARY DESIGNATION

DASH NUMBER (See DIMENSIONS)

MATERIAL: ALUMINUM

FINISH: CADMIUM, OLIVE DRAB



DIMENSIONS

Dash No.	Conduit Size	A Thread	P	Q Approx	F	Y
-3	3/16	1/2-28UNEF-2B	11/16	51/64	1/8	1-1/16
-4	1/4	5/8-24NEF-2B	13/16	15/16	1/8	1-1/16
-6	3/8	3/4-20UNEF-2B	15/16	1-3/32	1/8	1-1/8
-8	1/2	7/8-20UNEF-2B	1-1/16	1-15/64	3/16	1-1/8
-10	5/8	1-20UNEF-2B	1-1/4	1-7/16	3/16	1-1/8
-12	3/4	1-3/16-18NEF-2B	1-3/8	1-19/32	3/16	1-1/8
-16	1	1-7/16-18NEF-2B	1-5/8	1-7/8	3/16	1-1/8
-20	1-1/4	1-3/4-18NS-2B	2	2-5/16	3/16	1-1/4
-24	1-1/2	2-18NS-2B	2-3/16	2-17/32	3/16	1-3/8
-28	1-3/4	2-1/4-16UN-2B	2-7/16	2-7/8	1/4	1-7/16
-32	2	2-1/2-16UN-2B	2-13/16	3-1/4	1/4	1-9/16
-40	2-1/2	3-16UN-2B	3-3/8	3-57/64	1/4	1-11/16

Figure 9. Conduit Fittings (Sheeet 8 of 9)

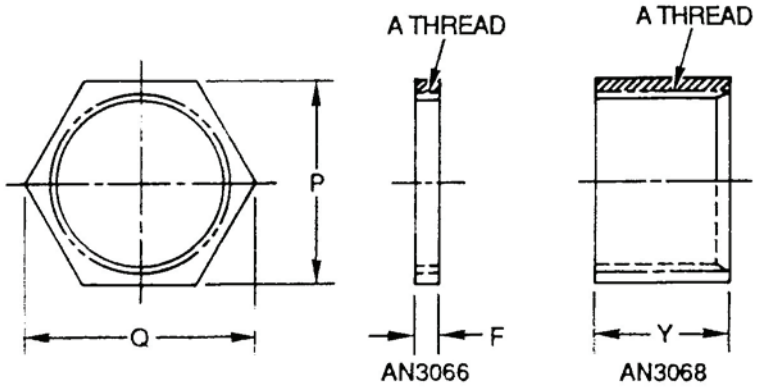
PART NUMBER DESIGNATION

AN3066 - 12
AN3068 - 12

PREFIX
AN/MS MILITARY SPECIFICATION

DASH NO.
SEE DIMENSIONS

MATERIAL: ALUMINUM
FINISH: CADMIUM OLIVE DRAB



DIMENSIONS

Dash No.	Conduit Size	A Thread	P	Q Approx	F	Y
-3	3/16	1/2-28UNEF-2B	11/16	51/64	1/8	1-1/16
-4	1/4	5/8-24NEF-2B	13/16	15/16	1/8	1-1/16
-6	3/8	3/4-20UNEF-2B	15/16	1-3/32	1/8	1-1/8
-8	1/2	7/8-20UNEF-2B	1-1/16	1-15/64	3/16	1-1/8
-10	5/8	1-20UNEF-2B	1-1/4	1-7/16	3/16	1-1/8
-12	3/4	1-3/16-18NEF-2B	1-3/8	1-19/32	3/16	1-1/8
-16	1	1-7/16-18NEF-2B	1-5/8	1-7/8	3/16	1-1/8
-20	1-1/4	1-3/4-18NS-2B	2	2-5/16	3/16	1-1/4
-24	1-1/2	2-18NS-2B	2-3/16	2-17/32	3/16	1-3/8
-28	1-3/4	2-1/4-16UN-2B	2-7/16	2-13/16	1/4	1-7/16
-32	2	2-1/2-16UN-2B	2-13/16	3-1/4	1/4	1-9/16
-40	2-1/2	3-16UN-2B	3-3/8	3-57/64	1/4	1-11/16

Figure 9. Conduit Fittings (Sheeet 9 of 9)

M81511/19 DUMMY RECEPTACLE

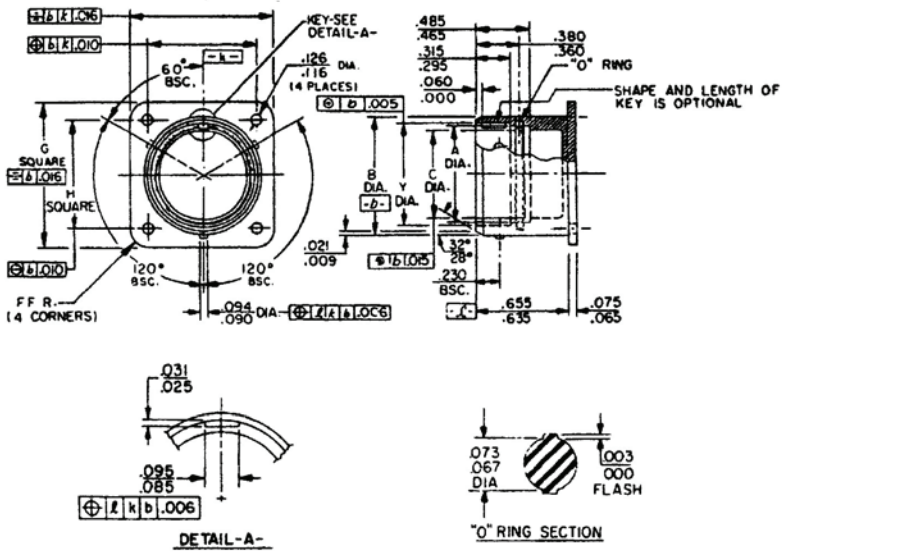
PART NUMBER DESIGNATION

M81511/19 -08

MIL SPEC — **DASH NO.**

M81511/19 FOR SERIES 2 50% SCOOP PROOF

MATERIAL: RECEPTACLE - ALUMINUM
GASKET-SILICONE RUBBER
FINISH: CADMIUM PLATE, OLIVE DRAB, 500 HOUR SALT SPRAY



Part number	Shell size	A dia	B dia	C dia	G square	H square	Y dia	FF rad	Approx weight in lbs
M81511/19-08	8	.392 (9.96) .386 (9.80)	.553 (14.05) .547 (13.89)	,301 (7.65) .292 (7.42)	.820 (20.83) .804 (20.42)	.599 (15.21) .589 (14.96)	.465 (11.81) .455 (11.56)	,120 (3.05) .100 (2.54)	.0118
M81511/19-10	10	.517 (13.13) .511 (12.98)	.678 (17.22) .672 (17.07)	.426 (10.82) .417 (10.59)	.945 (24.00) .929 (23.60)	.724 (18.39) .714 (18.14)	.590 (14.99) .580 (14.73)	.120 (3.05) .100 (2.54)	.0148
M81511/19-14	14	.767 (19.48) .761 (19.33)	.928 (23.57) .922 (23.42)	.676 (17.17) .667 (16.94)	1.133 (28.78) 1.117 (28.37)	.911 (23.14) .901 (22.89)	.840 (2U4) .830 (21.08)	.120 (3.05) .100 (2.54)	.020
S81511/19-16	16	.893 (22.68) .887 (22.53)	1.054 (26.77) 1.048 (2642)	.802 (20,37) .793 (20.14)	1.258 (31.95) 1.242 (31.55)	.974 (24.74) .964 (24.49)	566 (24.54) .956 (24.28)	.150 (3.81) .130 (3 JO)	.023
M81511/19-18	18	1.017 (25.83) 1.011 (25.68)	i.178 (29.92) 1.172 (29.77)	.926 (23.52) .917 (23.29)	1.351 (34.32) 1.335 (33.91)	1.067 (27.10) 1.057 (26.85)	1.090 (27.69) 1.080 (27.43)	.150 (3.81) .130 (3.30)	.025

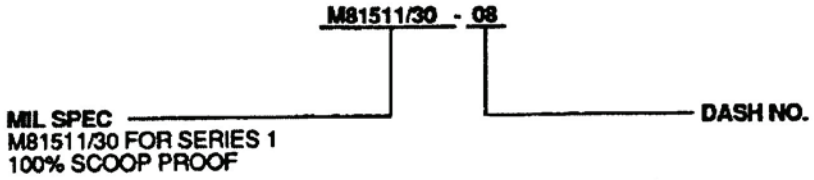
Figure 10. Dummy Receptacle M81511/19

This specification is cancelled without replacement, for reference use only

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

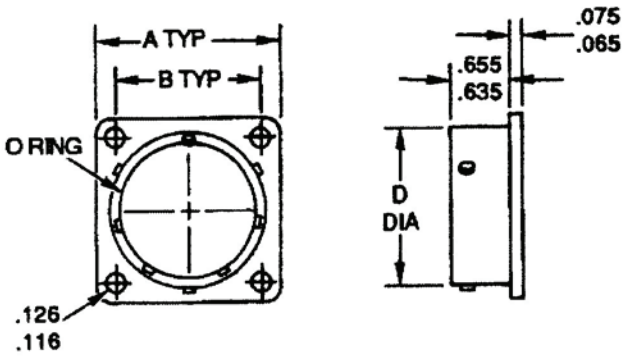
M81511/30 DUMMY RECEPTACLE

PART NUMBER DESIGNATION



MATERIAL: RECEPTACLE - ALUMINUM
GASKET - SILICONE

FINISH: CADMIUM PLATE, OLIVE DRAB,
500 HOUR SALT SPRAY



M81511/30 Dash No.	Shell Size	A ±.008	B ±.005	D ±.003
-08	8	.812	.594	.550
-10	10	.937	.719	.675
-14	14	1.125	.906	.925
-16	16	1.250	.969	1.051
-18	18	1.343	1.062	1.175
-20	20	1.467	1.156	1.300
-22	22	1.562	1.250	1.425
-24	24	1.703	1.375	1.550

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

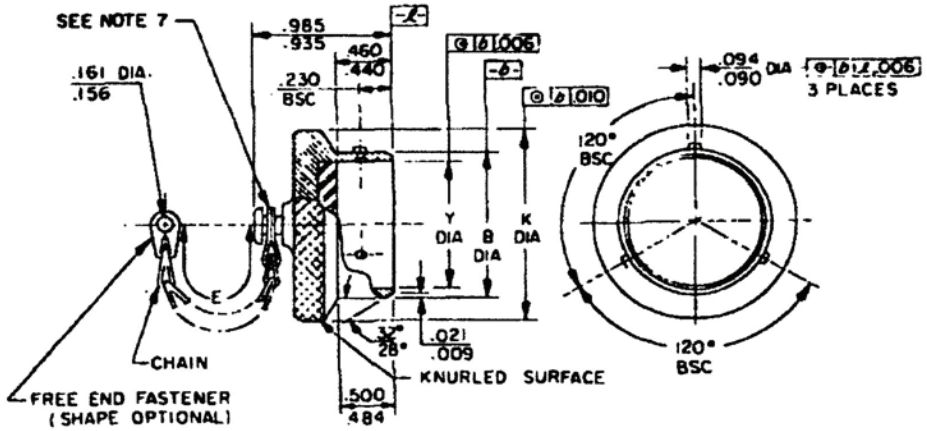
Figure 11. Dummy Receptacle M81511/30

METAL DUST CAP FOR PLUG

Part Number	For Use On		Chain Dimensions		
	MIL-C	Series	Shell Size	Minimum Hole Size	L
M81 511/17-08	81511	2	8	.156	3.0
M81511/17-10	81511	2	10	.156	3.0
M81511/17-14	81511	2	14	.156	3.5
M81511/17-1 6	81511	2	16	.156	3.5
M81511/17-1 8	81511	2	18	.156	3.5

MATERIAL: CAP-ALUMINUM ALLOY
GASKET/DISK-SILICONE RUBBER
CHAIN-STAINLESS STEEL

FINISH: CADMIUM PLATE, OLIVE DRAB
500 HOUR SALT SPRAY



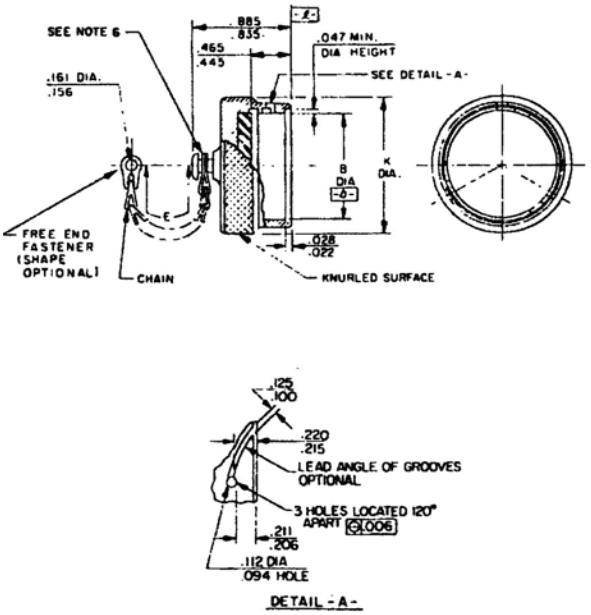
Part number	Shell size	B dia	K dia	Y dia	Approx weight in lbs.	E +/- one link
M8151 1/17-08	8	.553 (14.05) .547 (13.89)	.845 (21.46) .830 (2U08)	.452 (11.48) .444 ill .28)	.018	3.0
M81511/17-10	10	.678 (17.22) .672 (17-07)	.970 (24.64) .955 (24.26)	.577 (14.66) .569 (14.45)	.024	3.0
M81511/17-14	14	.928 (Z3.57) .922 (23.42)	1.220 (30.99) 1205 130.61)	.827 (21.01) .819 (20.80)	.038	3.5
M8J511/17-16	16	1.054 (26.77) 1.048 (26.62)	U45 (34.16) 1.330 (33.78)	.953 (2421) .945 (24.00)	.044	3.5
M81511/17-I8	18	1.178 (29.92) 1.172 (29.77)	1.470 (37.34) 1.455 (36.96)	1.077 (27.36) 1.069 (27.15)	.052	3.5

Figure 12. Dust Cap (Sheet 1 of 2)

METAL DUST CAP FOR PLUG

MATERIAL: CAP-ALUMINUM ALLOY
GASKET/DISK-SILICONE RUBBER
CHAIN-STAINLESS STEEL

FINISH: CADMIUM PLATE, OLIVE DRAB
500 HOUR SALT SPRAY

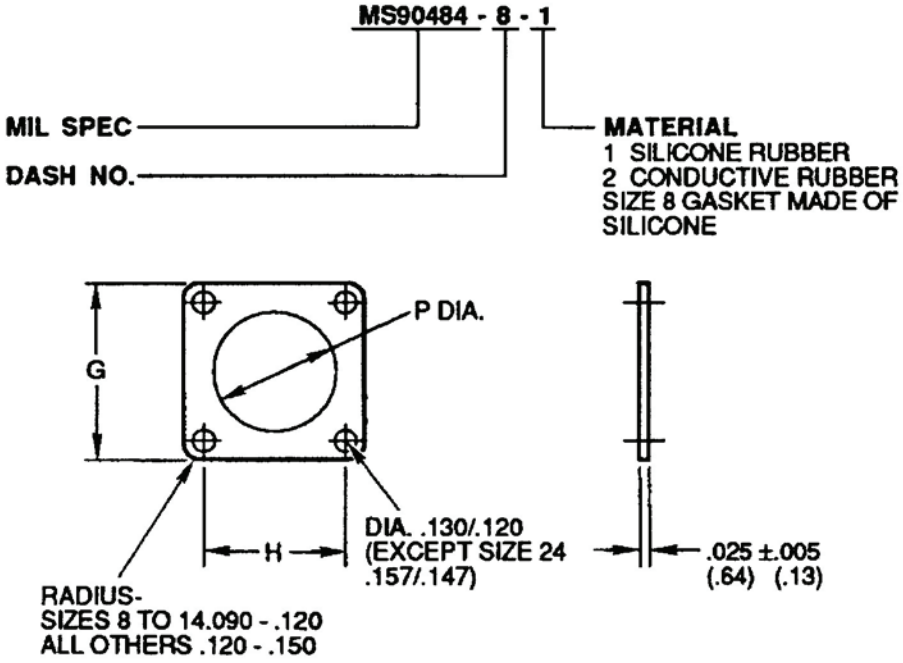


Part number	Shell size	B dia	K dia	Approx. weight in lbs.	E tone link
M8151 1/18-08 (Series 1 or 2)	8	.566 (14J8) 458 (14.17)	.844 (21.44) .830 (21.08)	.023	3.0
M81511/18-10 (Series 1 or 2)	10	.691 (17.55) .683 (17.35)	.969 (24.61) .955 (24.26)	.027	3.0
M8151 1/18-14 (Series 1 or 2)	14	.941 (23.90) .933 (2170)	1.219 (30.96) U05 (30.61)	.038	34
M81511/18-16 (Series 1 or 2)	16	1.068 (27.13) 1.060 (26.92)	U4S (34.16) 1.331 (33.81)	.043	3.5
M81511/I8-18 (Series 1 or 2)	18	1.191 (30.25) 1.183 (30.05)	1.469 (37.31) 1.455 (36.96)	.050	3.5
M81511/18-20 (Series 1)	20	1.316 (33.43) 1.308 (33.22)	1.594 (40.49) 1.580 (40.13)	.057	3.5
M815H/18-22 (Series 1)	22	1.441 (36.60) 1.433 (36.40)	1.719 (43.66) 1.705 (43.31)	.065	3.5
M81511/18-24 (Series 1)	24	1.566 (39.78) 1.558 (39.57)	1.844 (46.84) 1.830 (46.48)	.074	3.5

Figure 12. Dust Cap (Sheet 2 of 2)

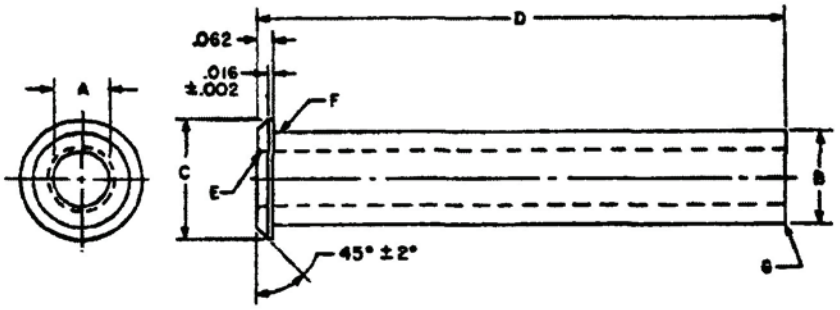
MS90484 GASKET FOR FLANGE MOUNT RECEPTACLE

PART NUMBER DESIGNATION



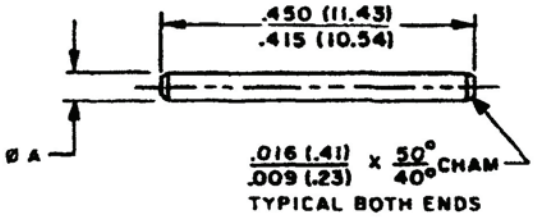
Part Number	Shell Size	G Square	H Square	P Dia.
MS90484-8	8	.804/ .820	.599/ .589	.570/ .555
MS90484-10	10	.945/ .929	.724/ .714	.695/ .680
MS90484-14	14	1.133/1.117	.911/ .901	.945/ .930
MS90484-16	16	1.258/1.242	.974/ .964	1.071/1.056
MS90484-18	18	1.351/1.335	1.067/1.057	1.195/1.180
MS90484-20	20	1.475/1.459	1.161/1.151	1.320/1.305
MS90484-22	22	1.570/1.554	1.255/1.245	1.445/1.430
MS90484-24	24	1.711/1.695	1.380/1.370	1.570/1.555

Figure 13. Gasket for Flange Mount Receptacle



Dash no.	A dia	B dia	C dia	D	E. T. G radius	Supersede (Ref.)	
						AN3420 dash no.	MS39056 dash no.
-3	.130	.210	.379	2.875	.031	-3	-1
-4	.220	.302	.505	2.750	.031	-4	-2
-6	.312	.427	.619	2.625	.031	-6	-3
-8	.437	.552	.744	2.500	.062	-8	-4
-10	.562	.615	.889	2.375	.062	-10	-5
-12	.625	.740	1.084	2.250	.062	-12	-6
-16	.750	.927	1.314	2.125	.062	-16	-7
-20	.937	1.240	1.598	2.000	.062	-20	-8
-24	1.250	1.365	1.847	1.675	.062	-24	-9
-28	1.375	1.614	2.085	1.750	.062	-28	-10
-32	1.624	1.864	2.335	1.625	.062	-32	-11
-40	1.874	2.364	2.835	1.500	.062	•40	-12

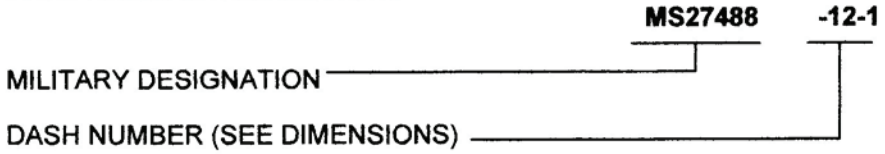
Figure 14. Rubber Bushing

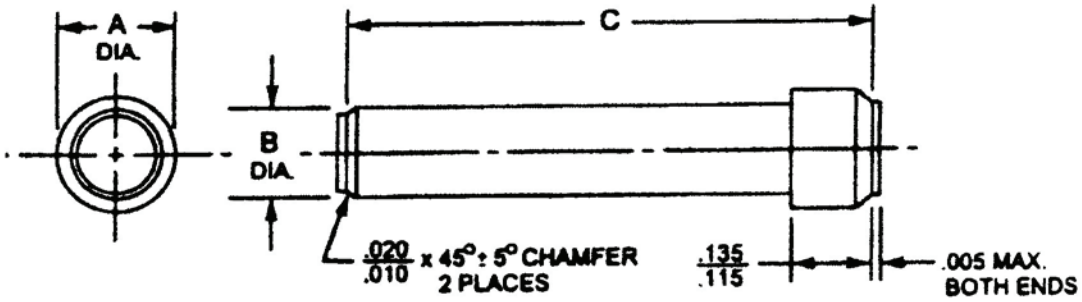


Part Number	Contact size (reference)	A	Color	Approx weight In Lbs
M81511/15-22	23-22	.050(1.27)/.045(1.14)	White	.000046
M81511/15-20	20-20	.070(1.78)/.065(1.65)	Red	.000093
M81511/15-16	16-16	.095(2.41)/.090(2.29)	Blue	.000174
M81511/15-12	12-12	.145(3. 68)/.140(3.56)	Yellow	.000556

Figure 15. Sealing Plugs (Sheet 1 of 2)

PART NUMBER DESIGNATION





DIMENSIONS:

Dash No.	Color Code	A DIA.	B DIA.	C Dim.	Connector Contact Size (grommet cavity size)
-22-1	Black	0.066 0.058	0.045 0.038	0.796 0.746	23-22
-20-1	Red	0.090 0.080	0.058 0.048	0.805 0.755	20
-16-1	Blue	0.130 0.120	0.079 0.069	1.472 1.422	16
-12-1	Yellow	0.170 0.160	0.125 0.115	1.441 1.391	12
-8-1	Red	0.315 0.305	0.175 0.165	1.189 1.139	8
-4-1	Blue	0.414 0.404	0.283 0.273	1.189 1.139	4
-0-1	Yellow	0.606 0.596	0.431 0.416	1.071 1.021	0

NOTES:

1. Dimensions in inches.
2. MS27488 part numbers supersede part numbers from M1L-C-81511/39, MIL-C-83723/28, MS3187, MS25251, MS27186, MS27187, and MS27488, revision L as follows:
   a. MS27488-22-1 supersedes M81511/39-22 and MS27488-22.
   b. MS27488-20-1 supersedes M81511/39-20, M83723/28-20, MS3187-20-2, MS25251-20, MS27186-1, MS27187-3, and MS27488-20.
   c. MS27488-16-1 supersedes M81511/39-16, M83723/28-16, MS3187-16-2, MS25251-16, MS27186-2, MS27187-1, and MS27488-16.
   d. MS27488-12-1 supersedes M81511/39-12, M83723/28-12, MS3187-12-2, MS25251-12, MS27186-3, MS27187-2, and MS27488-12.
   e. MS27488-8-1 supersedes M83723/28-8, MS3187-8-2JVJS25251-8, and MS27488-8.
   f. MS27488-4-1 supersedes M83723/28-4, MS3187-4-2, MS27187-4, and MS27488-4.
   g. MS27488-0-1 supersedes M83723/28-0, MS3187-0-2, and MS27488-0.

Figure 15. Sealing Plugs (Sheet 2 of 2)

ALPHABETICAL INDEX
INSTALLATION PRACTICES
CONNECTORS MIL-DTL-22992 CLASS C, J, R AND L

Title	WP Number
Connector Accessories MIL-DTL-22992 Class C, J, R and L	005 03
Connectors, MIL-DTL-22992 Class C, J, R and L	005 02
Introduction	005 01

INTRODUCTION
INSTALLATION PRACTICES
CONNECTORS MIL-DTL-22992 CLASS C, J, R AND L

1. PURPOSE AND SCOPE.

2. This manual covers connectors manufactured in accordance with MIL-DTL-22992. It includes contact data, tooling, buildup, and connector accessories for MIL-DTL-22992 Class C, J, R and L connectors.

3. SPECIFICATION UPDATES (ASSIST SEARCH).

4. The most up to date government specifications and Qualified Products Lists (QPLs) can be obtained from the Quick Search section of the ASSIST website, the address is http://assist.daps.mil/quicksearch. Non-government standards can be obtained through a license with a document service such as Information Handling Services (IHS) or purchased individually from the Society of Automotive Engineers (SAE).

5. QUALIFIED PRODUCTS LIST (QPL).

6. The Qualified Products List (QPL) is a list of products which have met the qualification requirements stated in the applicable specification. These requirements include appropriate product identification and performance/testing parameters. The list contains the government part number and the manufacturer's part number. The name of the manufacturer, office and manufacturing plant address, CAGE (Commercial and Government Entity) code, assembly plant, or distributor as applicable, is also included in the back of the QPL. The component specification will identify the appropriate quality assurance provisions such as QPL, First Article testing, or user verified test results. NAVAIR Patuxent River (http://www.navair.navy.mil/qpl/) now has an operational website where the latest QPL revision can be accessed, along with all outstanding QPL change letters as they are written. This enables all users to have access to the latest procurement information without relying on the publication of a new QPL revision. When the QPL is revised, all outstanding QPL change letters are incorporated in the latest revision.

CONNECTORS
MIL-DTL-22992 CLASS C, J, R AND L

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Connectors, Electric, Circular, Environment Resistant, Military Specification for MIL-DTL-22992
Connector Accessories, MIL-DTL-22992 Class C, J, R and L 005 03
Contact Bushing, Electric, Wire Barrel SAE-AS33481

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Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
HT-900B	Heat Gun
M22520/23-01	Tool, Crimp, Frame
M22520/23-03	Positioner
M22520/23-04	Positioner
M22520/23-05	Positioner
M22520/23-06	Positioner
M22520/23-07	Positioner
400-B-1	Tool, Crimp, Large Contact (2/0 and 4/0)
M22520/23-10	Locator
M22520/23-12	Locator
M22520/23-14	Locator
M22520/23-16	Locator
M22520/23-15	Locator
M81969/27-06	Tool, Removal
M81969/27-05	Tool, Removal
M81969/27-03	Tool, Removal
M81969/27-02	Tool, Removal
M81969/27-01	Tool, Removal
——	Bottle, Nitrogen
——	Heat Sink
——	Iron, Soldering
——	Pliers, Connector

Materials Required

Specification/ Part No.	Nomenclature
TT-I-735	Alcohol, Isopropyl
H-B-643	Brush, Acid Swabbing
J-STD-004, J-STD-005 and J-STD-006	Flux
MIL-PRF-23827	Lubricant
SAE-AMS-DTL-23053	Sleeving, Insulating, Heat-Shrinkable
Sn60WRMAP3 (or equivalent)	Solder

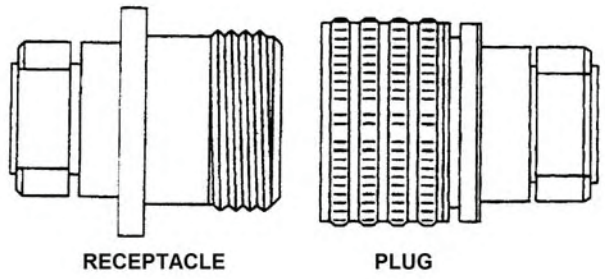


Figure 1. MIL-DTL-22992 Typical Connectors

1. INTRODUCTION.

2. This Work Package (WP) pertains to connectors manufactured in accordance with MIL-DTL-22992.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, (the Society of Automotive Engineers (SAE), will become the preparing activity and the Navy will adopt the documents), the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

3. DESCRIPTION. The MIL-DTL-22992 connector (Figure 1) is an electrical, heavy-duty, threaded, quick disconnect, waterproof connector for electronic and electrical power and control circuits. The connectors have modified Acme threaded couplings. Acme threads are characterized by six large threads per inch. This family consists of the four classes C, J, R, and L.

a. Classes C, J, and R are for heavy-duty, external interconnection. Classes C, J and R connectors are not for prime power distribution. Classes C, J, and R have either non-removable or removable solder contacts.

b. Class L is specifically designed for heavy-duty prime power distribution. Use Class L when waterproof, arc quenching features are needed. Class L has removable, crimp, front-release contacts.

4. WIRE SEALING. Wire sealing is accomplished by the use of a grommet seal which is designed to seal against outside diameter of inserted wire. The outer diameter shall be within applicable size range as specified.

NOTE

Unwired contacts must have sealing plugs installed.

5. INSERTS. The resilient material used for all inserts shall be high grade dielectric having electrical and mechanical characteristics suitable for the purpose intended. The impact strength shall be such that material shall not chip, crack, or break during assembly or normal maintenance.

6. INTERMATEABILITY. All connectors within the same class are completely intermateable.

7. PART NUMBER DEFINITION. Military specifications require the manufacturers to mark the part number on the connector. A part number may consist of the segments shown in Figure 2. The government certification mark "JAN" or "J" must also be included in the part number. For additional information on the various classes, refer to the paragraphs below.

8. DESIGN AND CONSTRUCTION. Connectors and accessories are designed and constructed to withstand normal handling incidental to installation and maintenance.

9. INSERT DESIGN AND CONSTRUCTION. Inserts are positively secured with respect to the shell. The inserts are supplied rotated from the normal position, if specified. The degree and direction of rotation shall be as specified. Inserts are made of void-less construction and are non-removable from their shells.

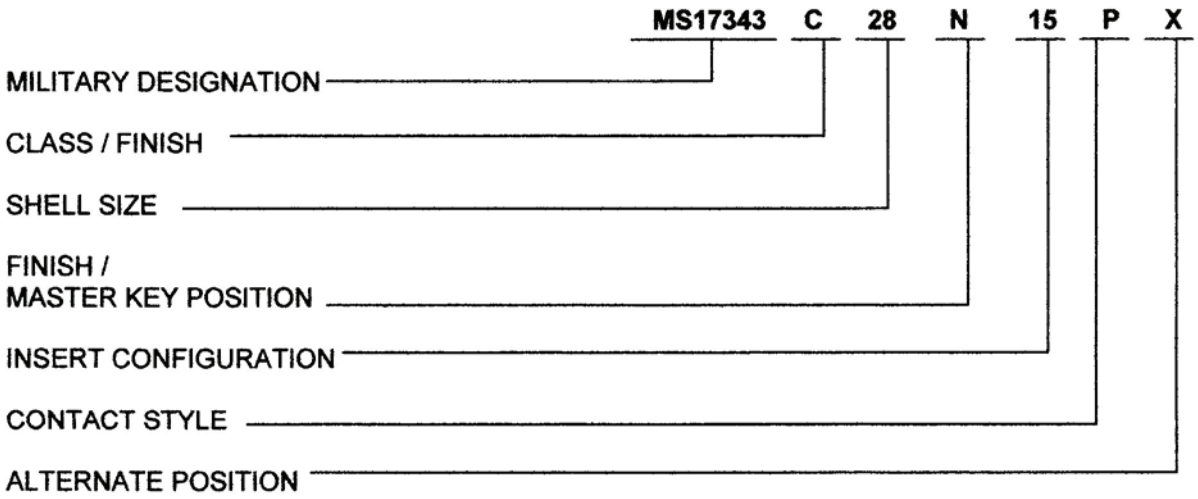


Figure 2. MIL-DTL-22992 Connector Part Number Breakdown

10. CLASS C, J AND R CONNECTORS.

11. DESIGN APPLICATION. Class C, J and R connectors are intended for heavy-duty, external application interconnection. Classes C, J and R connectors are not for prime power distribution. For prime power distribution use Class L connectors where waterproof, arc quenching features are required.

12. PART NUMBER DEFINITION. The following paragraphs contain information necessary for proper selection and procurement of MIL-DTL-22992, Class: C, J and R connectors. The part number breakdown is shown in Figure 3, and described below. The government certification mark "JAN" or "J" must also be included in the part number.

13. MILITARY DESIGNATION/SHELL STYLE. To determine the shell style, see Table 1. Determine the connector type (receptacle or plug), and the connector configuration (wall mount, in-line, etc.). The shell styles, by class, are in the third and fourth columns.

14. CLASS. The second segment of the part number is the class designation for Classes C, J, and R.

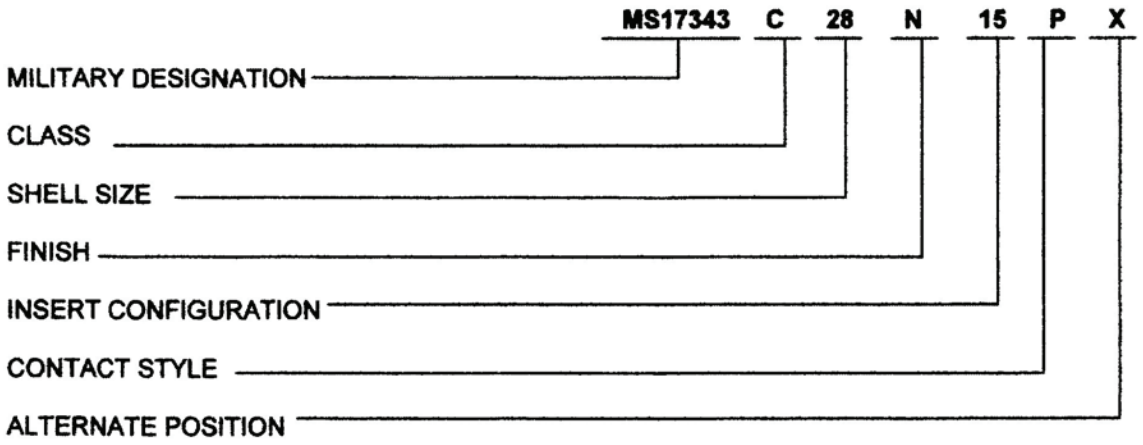
a. Class C. Class C is intended for external interconnection use in heavy-duty (rough service) applications. If this is the intended use for the desired connector, use C for this segment of the part number.

b. Class J. Class J is intended for use only where Class C connectors can be used and a wire support grommet is necessary. If this is the intended use for the desired connector, use J for this segment of the part number.

c. Class R. Class R is intended for general purpose, heavy-duty use where pressurization and arc quenching are not required. The connectors can be made weatherproof when the accessory sealing adapter is attached. If this is the intended use for the desired connector, use R for this segment of the part number.

15. SHELL SIZE. Use Figure 4 thru 11 to find the shell size for Class C, J and R connectors. To identify the shell size, use a dial caliper to measure the mating thread (M Thread) of the desired connector. The measurements for the accessory thread (A Thread); the length of the connector; or the outside diameter (OD) of the connector may be necessary if one measurement does not conclusively identify a shell size. Match the measured dimension(s) to the dimensions in the figure matrix. The shell size is in the left-hand column.

16. FINISH. This segment of the part number identifies the finish for Classes C, J, or R. The conductive (C) finish is cadmium-plate over nickel-plate. The finish is olive drab, light to dark in color. The non-conductive (N) finish is a hard oxide coating. The finish is grey to black in color. Use N or C as applicable for this segment of the part number.



Description

Military Designation / Shell Style (see Table 1)

Class:
C Pressurized
J Pressurized with grommet
R Environmental resistant

Shell Size (See Figure 4, 5, 6, 7, 8, 9, 10, and 11).

Finish:
C Conductive, cadmium plate over nickel. Olive drab color.
N Non-conductive hard oxide. Grey to black color.

Insert Configuration (See Table 2, Figure 12)

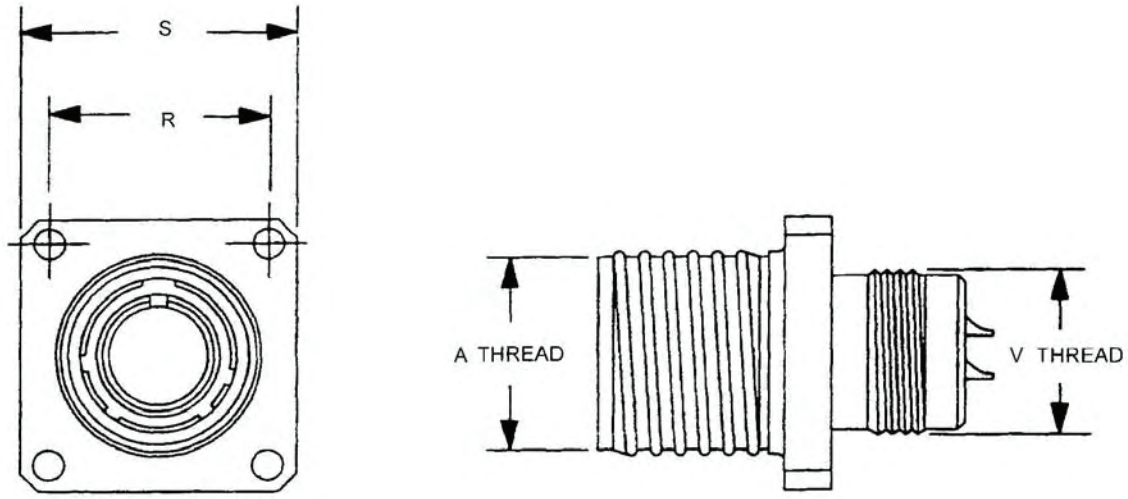
Contact Style:
P Pin contacts
S Socket contacts

Alternate Position (See Figure 13)

Figure 3. MIL-DTL-22992 Connector Class C, J and R Part Number Breakdown

Table 1. MIL-DTL-22992 Military Designation or Shell Style

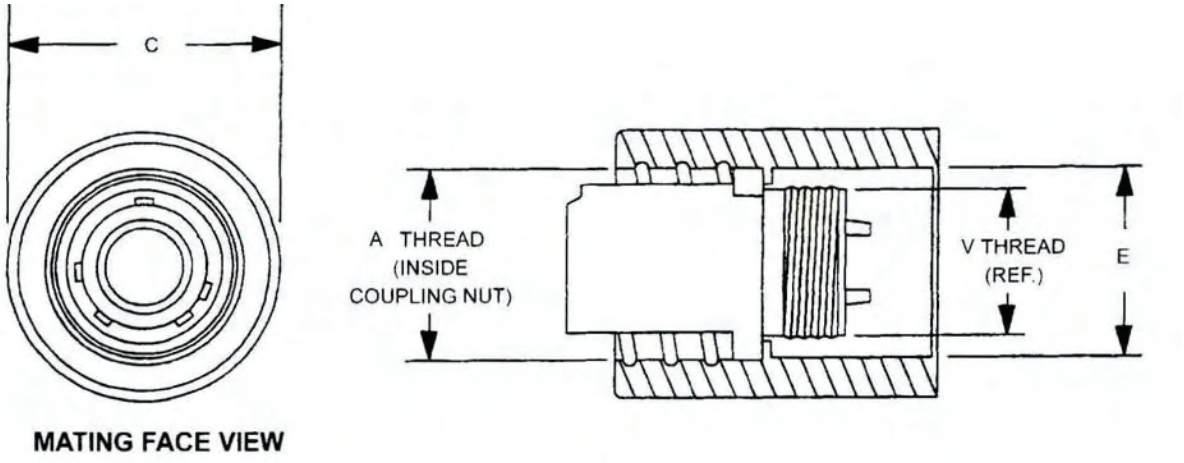
TYPE	CONNECTOR CONFIGURATION	SHELL STYLE FOR CLASSES	
		C. J. R	L
RECEPTACLE	Wall Mount	MS17343	MS90555
	Wall Mount. Jam Nut	MS17347	-
	Box Mount	MS17346	-
	Box Mount. Jam Nut	MS17348	-
	In-line	MS17345	MS90557
PLUG	Straight	MS17344	MS90556
	Wall Mount	-	MS90558



MATING FACE VIEW

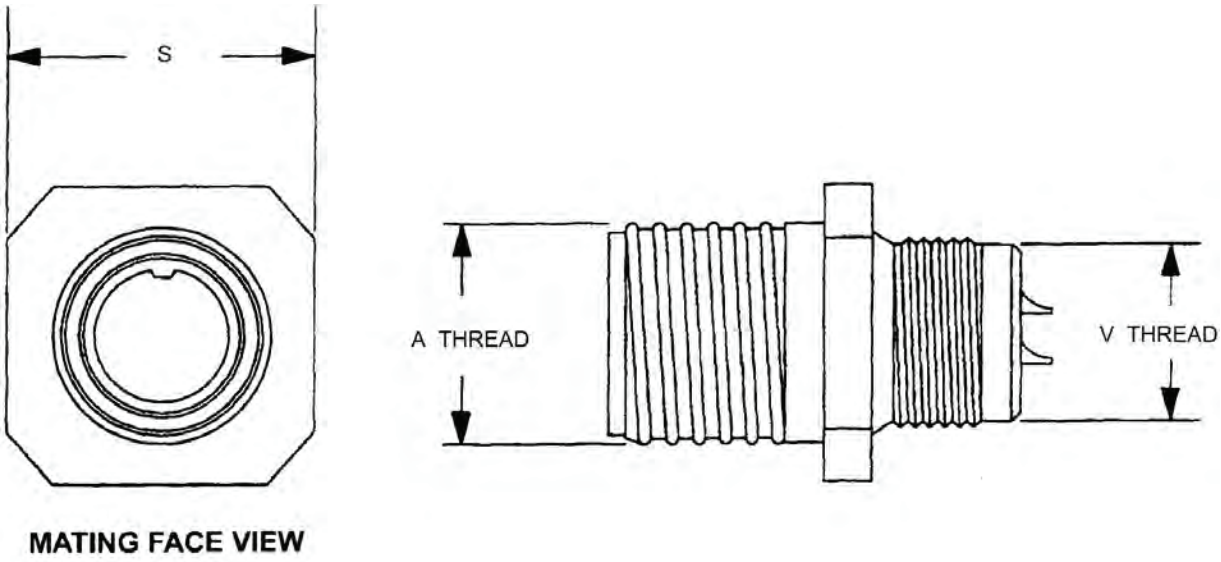
SHELL SIZE	A THREAD (Plated, Class 2)		R	S	V THREAD (Plated, Class 2A, LH)	
	DIA MAX	THREADS PER INCH	NOM	NOM	DIA MAX	THREADS PER INCH
12	0.875 IN	6	0.906 IN	1.188 IN	0.750 IN	20
14	1.000 IN	6	0.969 IN	1.281 IN	0.875 IN	20
16	1.125 IN	6	1.062 IN	1.375 IN	1.000 IN	20
18	1.250 IN	6	1.156 IN	1.500 IN	1.125 IN	18
20	1.375 IN	6	1.250 IN	1.625 IN	1.250 IN	18
22	1.500 IN	6	1.375 IN	1.750 IN	1.375 IN	18
24	1.750 IN	6	1.562 IN	2.000 IN	1.625 IN	18
28	2.000 IN	6	1.750 IN	2.250 IN	1.875 IN	16
32	2.250 IN	6	1.938 IN	2.500 IN	2.062 IN	16
36	2.500 IN	6	2.188 IN	2.750 IN	2.312 IN	16
40	2.750 IN	6	2.375 IN	3.000 IN	2.625 IN	16
44	3.000 IN	6	2.625 IN	3.250 IN	2.875 IN	16

Figure 4. MS17343 Wall Mount Receptacle, Class C, J and R



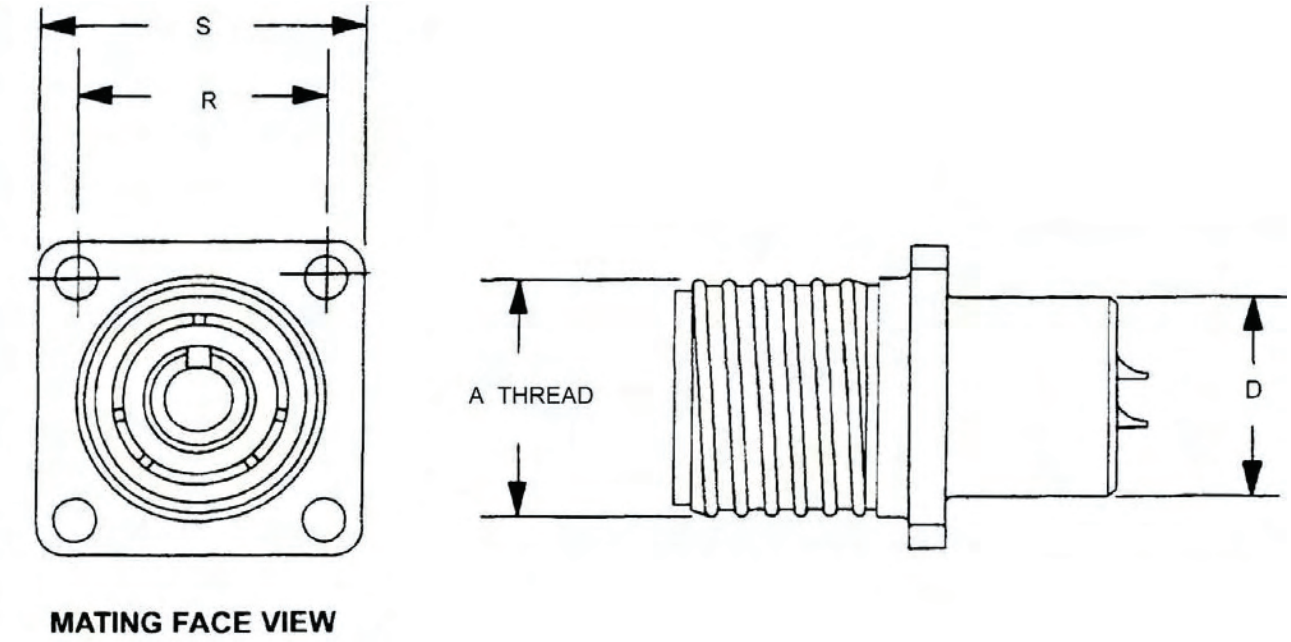
SHELL SIZE	A THREAD (Plated, Class 2B)		E	C	V THREAD (Plated, Class 2A LH)	
	DIA MAX	THREADS PER INCH	DIA	DIA MAX	DIA MAX	THREADS PER INCH
12	0.875 IN	6	0.985 IN	1.156 IN	0.750 IN	20
14	1.000 IN	6	1.109 IN	1.281 IN	0.875 IN	20
16	1.125 IN	6	1.235 IN	1.469 IN	1.000 IN	20
18	1.250 IN	6	1.359 IN	1.563 IN	1.125 IN	18
20	1.375 IN	6	1.485 IN	1.688 IN	1.250 IN	18
22	1.500 IN	6	1.609 IN	1.844 IN	1.375 IN	18
24	1.750 IN	6	1.859 IN	2.094 IN	1.625 IN	18
28	2.000 IN	6	2.109 IN	2.344 IN	1.875 IN	16
32	2.250 IN	6	2.359 IN	2.594 IN	2.062 IN	16
36	2.500 IN	6	2.609 IN	2.844 IN	2.312 IN	16
40	2.750 IN	6	2.922 IN	3.156 IN	2.625 IN	16
44	3.000 IN	6	3.172 IN	3.406 IN	2.875 IN	16

Figure 5. MS17344 Straight Plug Class C, J and R



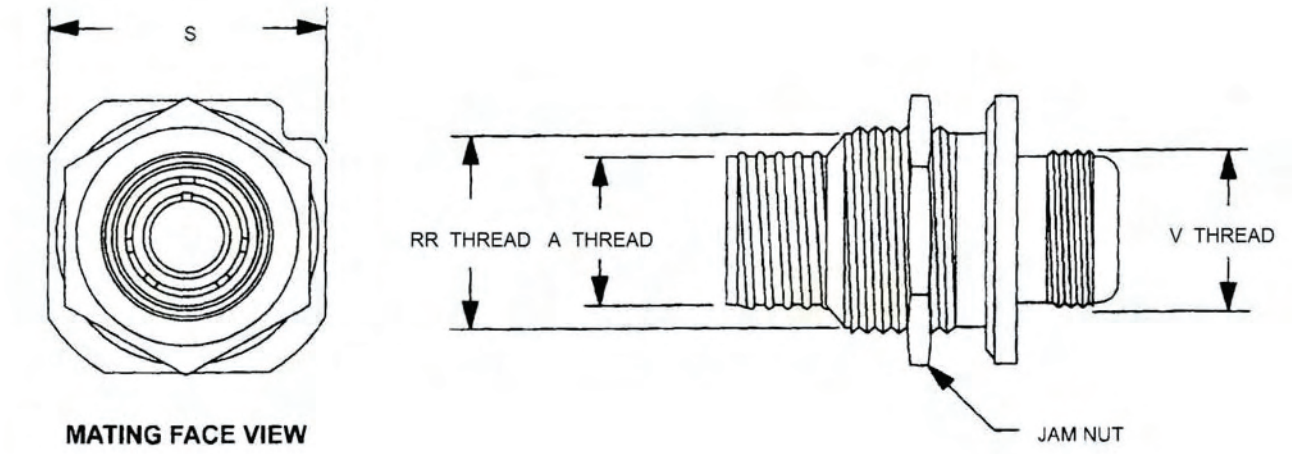
SHELL SIZE	A THREAD (Plated, Class 2A)		S NOM	V THREAD (Plated, Class 2ACH)	
	DIA MAX	THREADS PER INCH		DIA MAX	THREADS PER INCH
12	0.875 IN	6	1.000 IN	0.750 IN	20
14	1.000 IN	6	1.094 IN	0.875 IN	20
16	1.125 IN	6	1.281 IN	1.000 IN	20
18	1.250 IN	6	1.375 IN	1.125 IN	18
20	1.375 IN	6	1.500 IN	1.250 IN	18
22	1.500 IN	6	1.625 IN	1.375 IN	18
24	1.750 IN	6	1.875 IN	1.625 IN	18
28	2.000 IN	6	2.125 IN	1.875 IN	16
32	2.250 IN	6	2.375 IN	2.062 IN	16
36	2.500 IN	6	2.625 IN	2.312 IN	16
40	2.750 IN	6	3.000 IN	2.625 IN	16
44	3.000 IN	6	3.250 IN	2.875 IN	16

Figure 6. MS17345 In-line Plug Class C, J and R



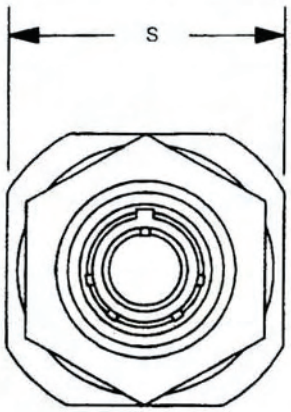
SHELL SIZE	A THREAD (Plated, Class 2A)		R	S	D
	DIA MAX	THREADS PER INCH	NOM	NOM	NOM
12	0.875 IN	6	0.906 IN	1.188 IN	0.640 IN
14	1.000 IN	6	0.969 IN	1.281 IN	0.765 IN
16	1.125 IN	6	1.062 IN	1.375 IN	0.890 IN
18	1.250 IN	6	1.156 IN	1.500 IN	1.015 IN
20	1.375 IN	6	1.250 IN	1.625 IN	1.171 IN
22	1.500 IN	6	1.375 IN	1.750 IN	1.296 IN
24	1.750 IN	6	1.562 IN	2.000 IN	1.421 IN
28	2.000 IN	6	1.750 IN	2.250 IN	1.625 IN
32	2.250 IN	6	1.938 IN	2.500 IN	1.891 IN
36	2.500 IN	6	2.188 IN	2.750 IN	2.078 IN
40	2.750 IN	6	2.375 IN	3.000 IN	2.312 IN
44	3.000 IN	6	2.625 IN	3.250 IN	2.562 IN

Figure 7. MS17346 Box-Mount Receptacle Class C, J and R

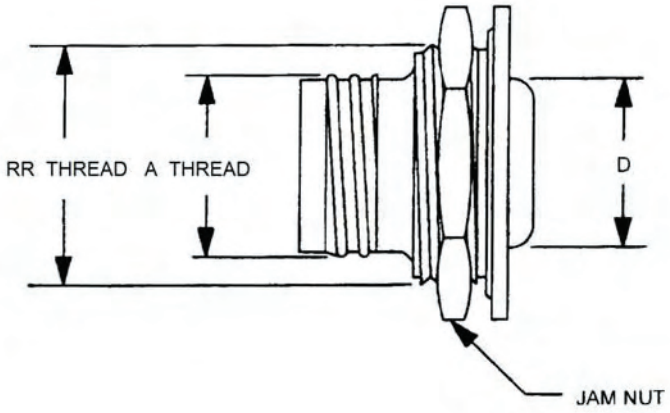


SHELL SIZE	A THREAD (Plated, Class 2A)		S	V THREAD (Plated, Class 2A LH)		RR THREAD (Plated, Class 2A RH)	
	DIA MAX	THREADS PER INCH	NOM	DIA MAX	THREADS PER INCH	DIA MAX	THREADS PER INCH
12	0.875 IN	6	1.375 IN	0.750 IN	20	1.000 IN	20
14	1.000 IN	6	1.500 IN	0.875 IN	20	1.125 IN	18
16	1.125 IN	6	1.750 IN	1.000 IN	20	1.250 IN	18
18	1.250 IN	6	1.875 IN	1.125 IN	18	1.375 IN	18
20	1.375 IN	6	2.000 IN	1.250 IN	18	1.500 IN	18
22	1.500 IN	6	2.125 IN	1.375 IN	18	1.625 IN	18
24	1.750 IN	6	2.375 IN	1.625 IN	18	1.875 IN	16
28	2.000 IN	6	2.625 IN	1.875 IN	16	2.125 IN	16
32	2.250 IN	6	2.875 IN	2.062 IN	16	2.375 IN	16
36	2.500 IN	6	3.125 IN	2.321 IN	16	2.625 IN	16
40	2.750 IN	6	3.406 IN	2.625 IN	16	2.875 IN	16
44	3.000 IN	6	3.656 IN	2.875 IN	16	3.125 IN	16

Figure 8. MS17347 Jam Nut Receptacle, Wall Mount, Class C, J and R

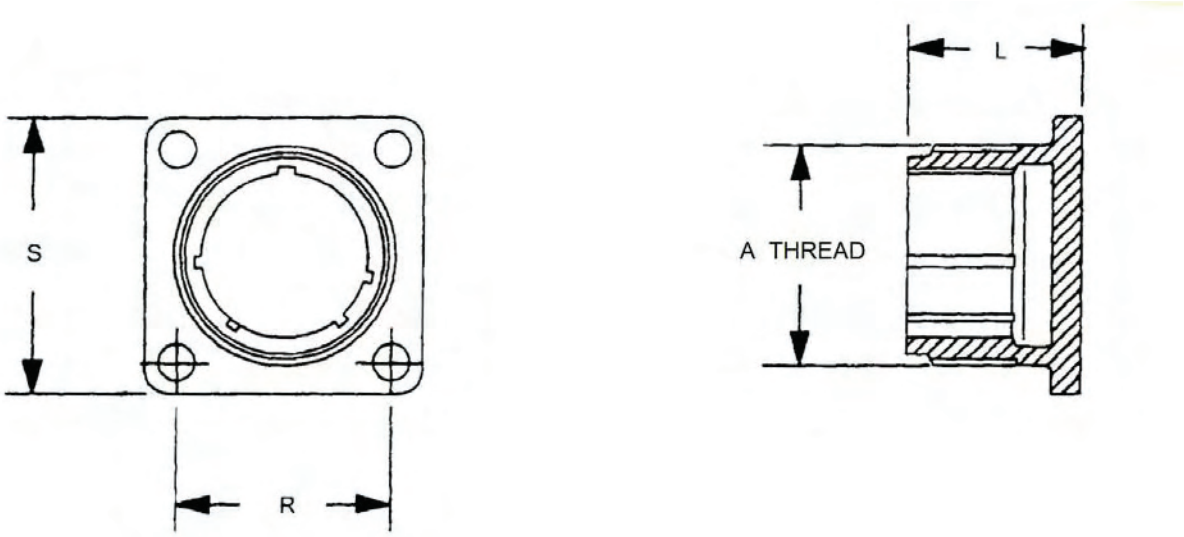


MATING FACE VIEW



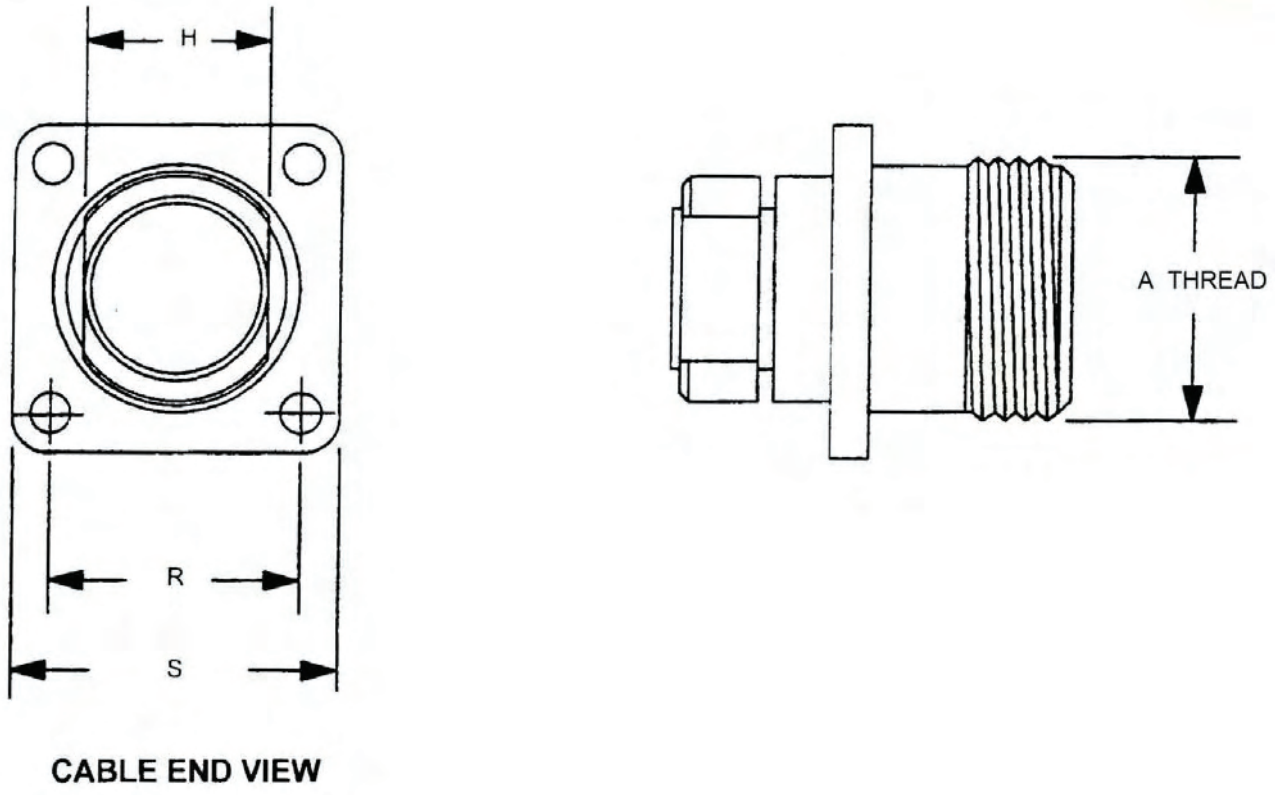
SHELL SIZE	A THREAD (Plated, Class 2A)		S	D	RR THREAD (Plated, Class 2A)	
	DIA MAX	THREADS PER INCH	NOM	NOM	DIA MAX	THREADS PER INCH
12	0.875 IN	6	1.375 IN	0.640 IN	1.000 IN	20
14	1.000 IN	6	1.500 IN	0.765 IN	1.125 IN	18
16	1.125 IN	6	1.750 IN	0.890 IN	1.250 IN	18
18	1.250 IN	6	1.875 IN	1.015 IN	1.375 IN	18
20	1.375 IN	6	2.000 IN	1.171 IN	1.500 IN	18
22	1.500 IN	6	2.125 IN	1.296 IN	1.625 IN	18
24	1.750 IN	6	2.375 IN	1.421 IN	1.875 IN	16
28	2.000 IN	6	2.625 IN	1.625 IN	2.125 IN	16
32	2.250 IN	6	2.875 IN	1.891 IN	2.375 IN	16
36	2.500 IN	6	3.125 IN	2.078 IN	2.625 IN	16
40	2.750 IN	6	3.406 IN	2.312 IN	2.875 IN	16
44	3.000 IN	6	3.656 IN	2.562 IN	3.125 IN	16

Figure 9. MS17348 Jam Nut Receptacle, Box Mount, Class C, J and R



SHELL SIZE	A THREAD (Plated, Class 2A)		L	S	R
	DIA MAX	THREADS PER INCH	NOM	NOM	NOM
12	0.875 IN	6	0.938 IN	1.188 IN	0.906 IN
14	1.000 IN	6	0.938 IN	1.281 IN	0.969 IN
16	1.125 IN	6	0.938 IN	1.375 IN	1.062 IN
18	1.250 IN	6	0.953 IN	1.500 IN	1.156 IN
20	1.375 IN	6	0.953 IN	1.625 IN	1.250 IN
22	1.500 IN	6	0.953 IN	1.750 IN	1.375 IN
24	1.750 IN	6	1.047 IN	2.000 IN	1.562 IN
28	2.000 IN	6	1.047 IN	2.250 IN	1.750 IN
32	2.250 IN	6	1.110 IN	2.500 IN	1.938 IN
36	2.500 IN	6	1.110 IN	2.750 IN	2.188 IN
40	2.750 IN	6	1.110 IN	3.000 IN	2.375 IN

Figure 10. MS18062 Dummy Storage Receptacle, Class C, J and R



SHELL SIZE	A THREAD (Plated, Class 2A)		H	R	S
	DIA MAX	THREADS PER INCH	NOM	NOM	NOM
28	2.000 IN	6	1.812 IN	1.844 IN	2.375 IN
32	2.250 IN	6	2.062 IN	2.062 IN	2.625 IN
44	3.000 IN	6	2.812 IN	2.812 IN	3.375 IN
48	3.250 IN	6	3.062 IN	3.000 IN	3.625 IN
52	3.500 IN	6	3.312 IN	3.156 IN	3.875 IN

Figure 11. MS90555 Wall Mount Receptacle, Class C, J and R

17. INSERT CONFIGURATION. The insert configuration is the manner in which contacts are placed within the insert in a standard configuration. The insert configuration arrangements are for classes C, J, and R are in accordance with MIL-STD-1651 and found by using Table 2. Read down the table to the appropriate shell size. Reading from left to right, find the total number of contacts in the connector and the size of each. Use a caliper to measure the contact size. Match the size in the chart below. Continue reading across the table to find the insert configuration segment. If the total number of contacts within a given shell size is the same and the size of those contacts is the same, an illustration is provided to identify the correct configuration (see Figure 12).

NOTE

The socket inside diameter will be from 0.002 to 0.005 inch larger than the pin outside diameter. The larger the contact, the larger the difference.

18. CONTACT STYLE. Use (P) for pins and (S) for sockets for this segment of the part number.

19. ALTERNATE POSITION. For Class C, J, and R Alternate Positions refer to Figure 13. Use the master key as the zero degree reference point. Using a protractor, measure the number of degrees of insert rotation within the shell. Zero degrees of rotation, or the Normal insert position has the letters on the face of the connector level relative to the master key. This segment is left blank if there is no rotation.

20. CONTACTS. Contact for Class: C, J and R are fixed, removable, non-removable and solder-able. Refer to Table 3 for detailed contact information.

21. Contact Insertion and Removal. Pin and socket contacts, sizes 1/0, 4, and 8 may be designed so that they can be readily removed from their inserts for soldering to their conductors and readily assembled after the soldered connection has been made. Contacts, sizes 12 and 16, are rigidly mounted in their inserts and not removable. Inserts containing non-removable contacts shall not be subject to damage by soldering under an acceptable soldering process.

22. WIRE SIZES TO BE USED WITH CONTACTS. It is intended that the wire attached to each connector contact should be of the AWG size (or smaller diameter), corresponding to the contact size number. For example, it is intended that an AWG size 12 wire be soldered to at least a size 12 contact; and an AWG size 6 wire should be soldered or crimped if applicable to a size 4 or size 6 contact.

23. CONTACT BUSHINGS. When required for insert arrangements (as specified in section 70 of the appendix to MIL-DTL-22992), applicable contact bushings conforming to SAE-AS33481 are supplied with the contacts. Refer to Table 3 for detailed contact bushing information.

24. COUPLING CONNECTION. Plugs are connected or coupled to their mating receptacle by means of coupling rings. The connectors have modified Acme threaded couplings threads, which are characterized by six large threads per inch. Coupling rings are knurled or fluted.

25. COUPLING RINGS. Coupling Rings for Classes C, J and R, are designed so that the pin and socket contacts will fully engage or disengage as the ring is respectively tightened or loosened. The coupling ring shall jack against the adapter during connector un-mating. Coupling shall occur in the following sequence polarization and engagement of shells, engagement of coupling threads, engagement of contacts. The uncoupling sequence is in the reverse order.

26. POLARIZATION. Polarization of the plug with its receptacle is accomplished by five integral keys on the male connector and matching keyways on the female connector and is designed so that it cannot possibly interfere with the functioning of the coupling threads. The integral keys and keyways render the mating of the plug and receptacle in more than one position impossible. The mating keys and keyways are rectangular in cross section.

27. SCREW THREADS. Coupling threads of connectors, stowage receptacles and protective covers are: 1P-2L-DS or 1428P-2857L-DS, Class 2A or 2B of MIL-STD-1373, commonly referred to as Acme type threads.

28. LUBRICATION. All class 2B threads shall be coated with a lubricant conforming to MIL-PRF-23827.

29. CLASS J CONNECTORS. Class J connectors shall be provided with a grommet to support individual conductors and shall be held in position by the appropriate cable sealing adapter.

Table 2. MIL-DTL-22992 Insert Configuration Class C, J and R (Sheet 1 of 3)

Shell Size Insert Arrangement	Service Rating (See Explanation Below)	Contact Size (NOTE)					Number of Contacts
		16	12	8	4	1/0	
12-5	D	-	1	-	-	-	1
14-3	A	-	-	1	-	-	1
16-2	E	-	1	-	-	-	1
16-7	A	2	-	1	-	-	3
16-9	A	2	2	-	-	-	4
16-10	A	-	3	-	-	-	3
16-11	A	-	2	-	-	-	2
16-12	A	-	-	-	1	-	1
16-13	A	-	2	-	-	-	2
18-1	A/INST	10	-	-	-	-	10
18-4	D	4	-	-	-	-	4
18-5	D	1	2	-	-	-	3
18-6	D	-	-	-	1	-	1
18-7	B	-	-	1	-	-	1
18-8	A	7	1	-	-	-	8
18-9	INST	5	2	-	-	-	7
18-11	A	-	5	-	-	-	5
18-13	A	-	3	1	-	-	4
18-14	A	1	-	-	1	-	2
18-15	A	-	4	-	-	-	4
18-16	C	-	1	-	-	-	1
20-2	D	-	-	-	-	1	1
20-4	D	-	4	-	-	-	4
20-7	D/A	4/4	-	-	-	-	8
20-8	INST	4	-	2	-	-	6
20-9	D/A	7	1	-	-	-	8
20-14	A	-	3	2	-	-	5
20-15	A	-	7	-	-	-	7
20-16	A	7	2	-	-	-	9
20-17	A	1	5	-	-	-	6
20-18	A	6	3	-	-	-	9
20-21	A	8	1	-	-	-	9
20-22	A	3	-	3	-	-	6
20-24	A	2	-	2	-	-	4
20-27	A	14	-	-	-	-	14
20-29	A	17	-	-	-	-	17
20-33	A	11	-	-	-	-	11
22-2	D	-	-	3	-	-	3
22-5	D	4	2	-	-	-	6
22-7	E	-	-	-	-	1	1
22-9	E	-	3	-	-	-	3
22-10	E	4	-	-	-		4
22-11	B	2	-	-	-	-	2
22-12	D	3	-	2	-	-	5
22-14	A	19	-	-	-	-	19
22-15	E/A	1	5	-	-	-	6
22-17	D/A	1/7	1	-	-	-	9
22-18	A/D	8	-	-	-	-	8
22-19	A	14	-	-	-	-	14
22-21	A	2	-	-	-	1	3

Table 2. MIL-DTL-22992 Insert Configuration Class C, J and R (Sheet 2 of 3)

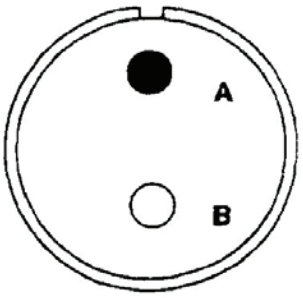
Shell Size Insert Arrangement	Service Rating (See Explanation Below)	Contact Size (NOTE)					Number of Contacts
		16	12	8	4	1/0	
22-22	A	-	-	4	-	-	4
22-23	D/A	-	8	-	-	-	8
22-27	D/A	8	-	1	-	-	9
22-36	D/A	-	1/7 1/	-	-	-	8
24-2	D	-	7	-	-	-	7
24-6	D/A	-	3/5	-	-	-	8
24-7	A	14	2	-	-	-	16
24-10	A	-	-	7	-	-	7
24-11	A	-	6	3	-	-	9
24-12	A	-	3	-	2	-	5
24-16	D/A	3	3	1	-	-	7
24-20	D	9	2	-	-	-	11
24-21	D	9	-	1	-	-	10
24-22	D	-	-	4	-	-	4
24-27	E	7	-	-	-	-	7
24-28	INST	24	-	-	-	-	24
24-80	INST	23	-	-	-	-	23
28-1	D/A – D/A	-	2/4	1/2	-	-	9
28-2	D	12	2	-	-	-	14
28-3	E	-	-	3	-	-	3
28-4	E/D	3/4	2	-	-	-	9
28-5	D	2	1	-	2	-	5
28-8	E/D/A	1/9	2	-	-	-	12
28-9	D	6	6	-	-	-	12
28-10	D/A	-	2/1	2	2	-	7
28-11	A	18	4	-	-	-	22
28-12	A	26	-	-	-	-	26
28-15	A	35	-	-	-	-	35
28-17	B/D/A	1/3/4	-	-	-	-	15
28-18	C/A/INST/D	1/2/4/5	-	-	-		12
28-19	B/D/A	2/2/2	4	-	-	-	10
28-20	A	4	10	-	-	-	14
28-21	A	37	-	-	-	-	37
28-22	D	3	-	-	3	-	6
28-23	INST	21	3 2/	-	-	-	24
28-24	INST	21	3 2/	-	-	-	24
32-1	E/D	-	2/1	-	-	2	5
32-2	E	2	-	-	3	-	5
32-3	D	4	2	-	2	1	9
32-6	A	16	2	3	2	-	23
32-7	INST/A	4/24	7	-	-	-	35
32-9	D	12	-	-	2	-	14
32-13	D	18	5	-	-	-	23
32-15	D	-	6	-	-	2	8
32-17	D	-	-	-	4	-	4
32-73	A	46	-	-	-	-	46

Table 2. MIL-DTL-22992 Insert Configuration Class C, J and R (Sheet 3 of 3)

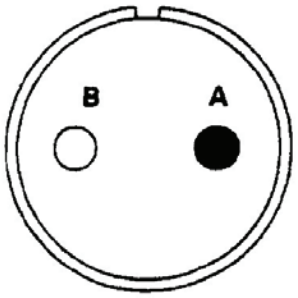
Shell Size Insert Arrangement	Service Rating (See Explanation Below)	Contact Size (NOTE)					Number of Contacts
		16	12	8	4	1/0	
36-3	D	-	3	-	-	3	6
36-5	A	-	-	-	-	4	4
36-6	A	-	-	-	4	2	6
36-7	A	40	7	-	-	-	47
36-8	A	46	1	-	-	-	47
36-9	A	14	14	2	1	-	31
36-10	A	48		-	-	-	48
36-15	D/A	35	-	-	-	-	35
36-52	A	52		-	-	-	52
36-66	A	52	4	-	-	-	56
40-1	D	6		-	-	-	30
40-9	A	22	1	-	-	-	47
40-15	INST	3 2/	-	-	-	-	60
40-56	A	-	-	-	-	-	85

Note:
1/ Thermocouple
2/ Shielded (Coaxial)

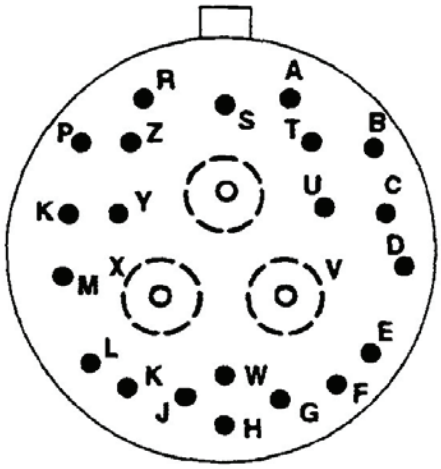
Service rating	Sea level test voltage minimum (vac rms, 60 Hz)
Inst.	1,000
A	2,000
D	2,800
E	3,500
B	4,500
C	7,000



16-11



16-13



28-23 and 28-24

NOTE

1. Insert configuration 16-11 and 16-13 have two size 12 contacts. The contacts locations are different in relationship to the master key.

2. There is no visual difference in contact arrangement between insert configuration 28-23 and insert configuration 28-24. The difference is in the coaxial contacts.

   28-23 accepts a contact to fit M17/29-RG059, M17/30-RG062 and M17/97-RG210.

   28-24 accepts a contact to fit M17/94-RG179.

Figure 12. MIL-DTL-22992 Insert Configurations

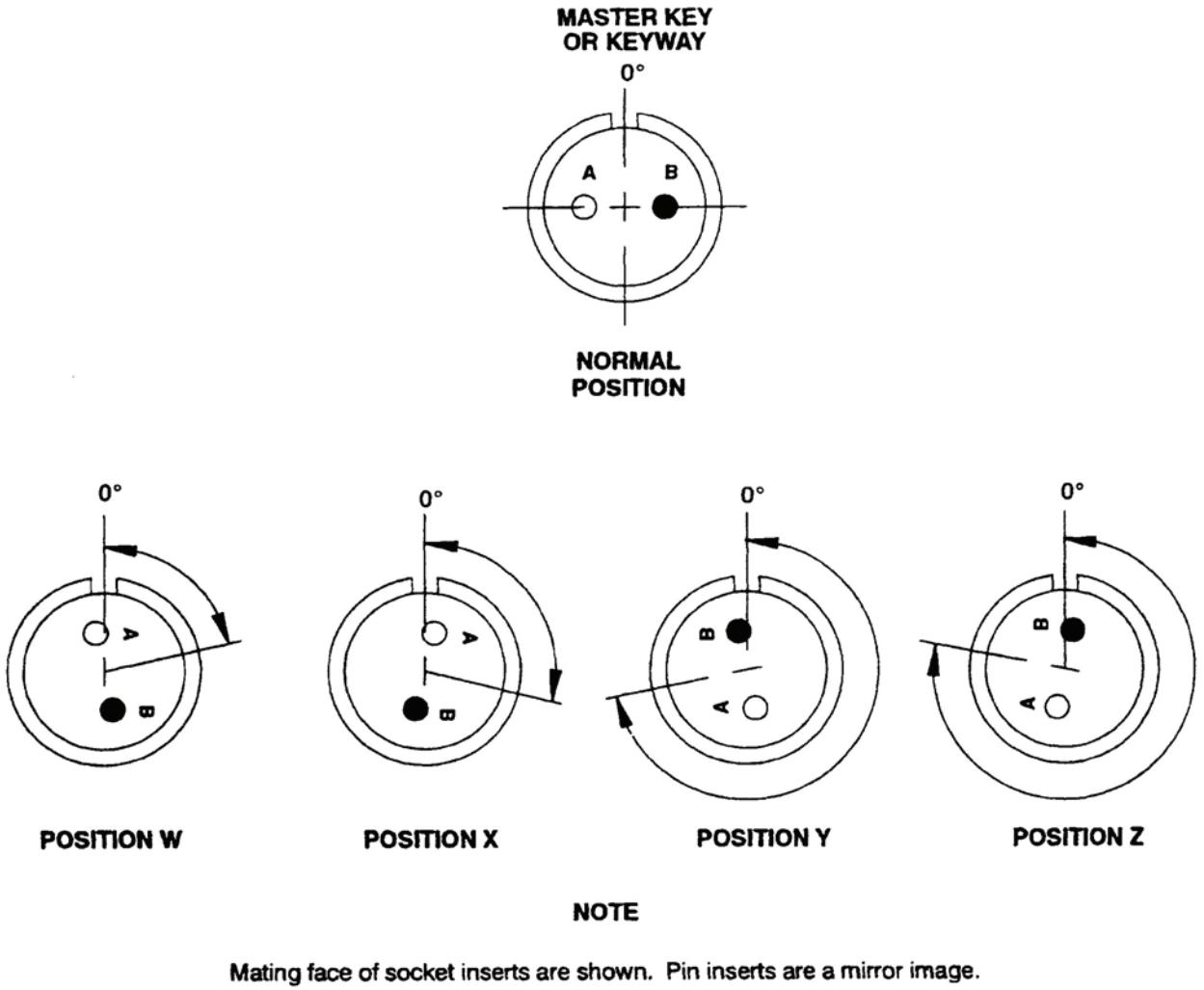


Figure 13. MIL-DTL-22992 Alternate Insert Position Classes C, J, and R

Table 3. MIL-DTL-22992 Contact Information

Contact Size	Wire Barrel Size	Socket Contacts		Pin Contacts		Required Bushing
		M39029/	Color Bands 1st 2nd 3rd	M39029/	Color Bands 6/ 1st 2nd 3rd	(If Not the Same Size, see Notes)
6	6	-	-	48-317	OR BN VI	MS3348-6-8L 2/
6N 1/	6	-	-	48-318	OR BR GY	MS3348-6-9L 2/
6G 1/	6	-	-	48-319	OR BR WH	MS3348-6-10L 2/
4	4	-	-	48-320	OR RD BK	MS3348-4-5L 3/
4N 1/	4	-	-	48-321	OR RD BN	MS3348-4-6L 3/
4G 1/	4	-	-	48-322	OR RD RD	MS3348-4-8L 3/
1/0	1/0	-	-	48-323	OR RD OR	MS3348-1-2L 4/
1/0N 1/	1/0	-	-	48-324	OR RD YE	MS3348-1-6L 4/
2/0	2/0	-	-	48-325	OR RD GN	-
2/0N 1/	2/0	-	-	48-326	OR RD BL	-
4/0	4/0	-	-	48-327	OR RD VI	-
4/0N 1/	4/0	-	-	48-328	OR RD GY	MS3348-4/0-2/0L 5/
6	6	49-329	OR RD WH	-	-	MS3348-6-8L 2/
6G 1/	6	49-330	OR OR BK	-	-	MS3348-6-8L 2/
4	4	49-331	OR OR BN	-	-	MS3348-4-5L 3/
4G 1/	4	49-332	OR OR RD	-	-	MS3348-4-5L 3/
1/0	1	49-333	OR OR OR	-	-	MS3348-1-2L 4/
2/0	2/0	49-334	OR OR YE	-	-	-
4/0	4/0	49-335	OR OR GN	-	-	MS3348-4/0-2/0L 5/

NOTE

1/ "N" Designation indicates a neutral pin
"G" designation indicates a grounding pin

2/ Size 6 doesn't require an insert bushing since it is the same size as the wire. For size 8, 9, and 10, use appropriate size bushing (i.e: For size 8 use MS3348-6-8L, for size 9 use MS3348-6-9L)

3/ Size 4 doesn't require an insert bushing since it is the same size as the wire. For size 5, 6, and 8, use appropriate size bushing (i.e: For size 5 use MS3348-4-5L, for size 6 use MS3348-4-6L)

4/ Size 1/0 doesn't require an insert bushing since it is the same size as the wire. For size 2 and 6, use appropriate size bushing (i.e: For size 2 use MS3348-1-2L, for size 6 use MS3348-1-2L)

5/ Size 4/0 doesn't require an insert bushing since it is the same size as the wire. For size 2, use bushing (MS3348-4/0-2/0L)

6/ Color abbreviations are:

BK - Black	GR - Green
BR - Brown	BL - Blue
RE - Red	GRY - Grey
OR - Orange	WH - White
YE - Yellow	

30. CLASS L CONNECTORS.

31. DESIGN APPLICATION. These connectors are a special design for power distribution. They are designed for use where they will be subjected to severe impacts or to extreme field service use. Class L connectors are intended for power connections in the current range from 40 to 200 amperes; they are required and are to be used only with heavy-duty jacketed cables specified on the applicable insert standard. They are arc quenching, if inadvertently separated under full load. They are waterproof when mated or unmated, capped or uncapped. They are designed to meet all OSHA and National Electric Code requirements for grounding connectors.

32. PART NUMBER DEFINITION. The following paragraphs contain information necessary for proper selection and procurement of MIL-DTL-22992, Class L connectors. The part number breakdown is shown in Figure 14, and described below. The government certification mark "JAN" or "J" must also be included in the part number.

33. MILITARY DESIGNATION/SHELL STYLE. To determine the shell style, see Table 1. Determine the connector type (receptacle or plug), and the connector configuration (wall mount, in-line, etc.). The shell styles, by class, are in the third and fourth columns.

34. FINISH. The second segment of the part number is the finish designation for Classes L type connectors. For Class L, this segment of the part number is the finish. The conductive (C) finish is cadmium-plate over nickel-plate. The finish is olive drab, light to dark in color. The non-conductive (N) finish is a hard oxide coating. The finish is grey to black in color. Use N or C as applicable for this segment of the part number.

35. SHELL SIZE. Use Figures 15, 16 and 17 to find the shell size. To identify the shell size, use a dial caliper to measure the mating thread (M Thread) of the desired connector. The measurements for the accessory thread (A Thread); the length of the connector; or the outside diameter (OD) of the connector may be necessary if one measurement does not conclusively identify a shell size. Match the measured dimension(s) to the dimensions in the figure matrix. The shell size is in the left-hand column.

36. MASTER KEY POSITION. This segment of the part number identifies the position of the master key for Class L type connectors. The master key is the largest key in the connector. The measurement of the position of the master key is relative to the position of the first guide key clockwise for a receptacle, or the first guide key counter-clockwise for a plug. See Figure 18. Locate the zero reference of the desired connector. Measure the position of the master key, in degrees, using a protractor. Measure clockwise for plugs and counter-clockwise for receptacles, use the letter or number identifying the measured degrees for this segment of the part number.

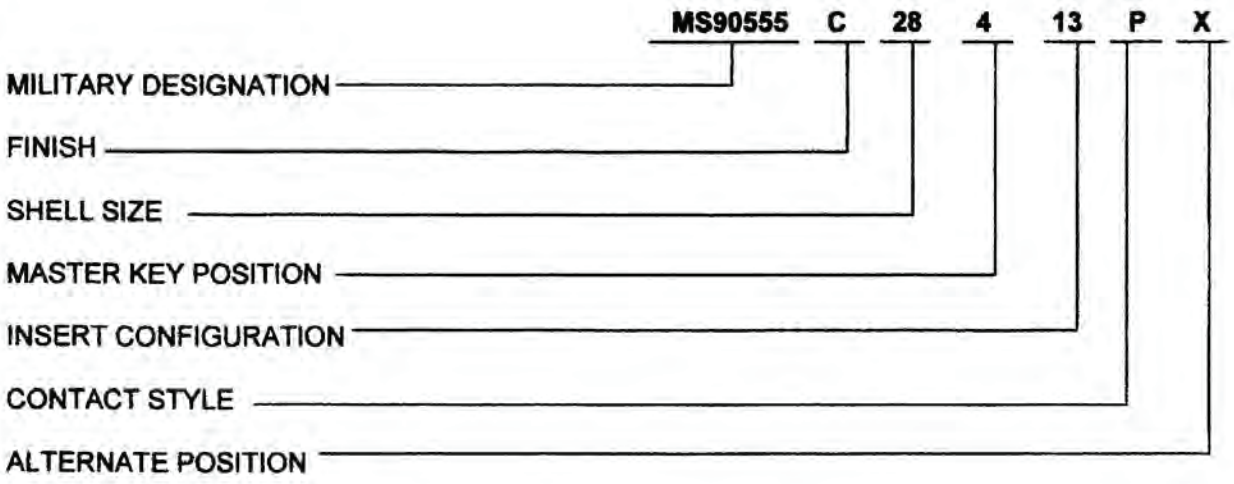
37. INSERT CONFIGURATION. The insert configuration is the manner in which contacts are placed within the insert in a standard configuration. For Class L, use Table 4 to identify the insert configuration arrangements. Read down the table to the appropriate shell size. Reading from left to right, find the total number of contacts in the connector and the size of each. Use a caliper to measure the contact size. Match the size in the chart below. Continue reading across the table to find the insert configuration segment. If the total number of contacts within a given shell size is the same and the size of those contacts is the same, an illustration is provided to identify the correct configuration (see Figure 12).

NOTE

The socket inside diameter will be from 0.002 to 0.005 inch larger than the pin outside diameter. The larger the contact, the larger the difference.

38. CONTACT STYLE. Use (P) for pins and (S) for sockets for this segment of the part number.

39. ALTERNATE POSITION. See Figure 19 for Class L alternate positions. For Class L, the master key position and the degree of insert rotation are independently variable. Use the Normal position of the master key as the zero degree reference. Using a protractor, measure the number of degrees of insert rotation within the shell. Pin inserts rotate counterclockwise and socket inserts rotate clockwise. Zero degrees of rotation, or the Normal insert position has the letters on the face of the connector level relative to the master key normal position. This segment is left blank if there is no rotation.



Description

Military Designation / Shell Style (See Table 1)

MS Number	Class	Description
MS90555	L	Wall Mount Receptacle
MS90556	L	Straight Plug
MS90557	L	In-line Plug
MS90558	L	Wall Mount Plug

Finish:
C Conductive, cadmium plate over nickel. Olive drab color.
N Non-conductive hard oxide. Grey to black color.

Shell Size (See Figures: 15, 16 and 17)

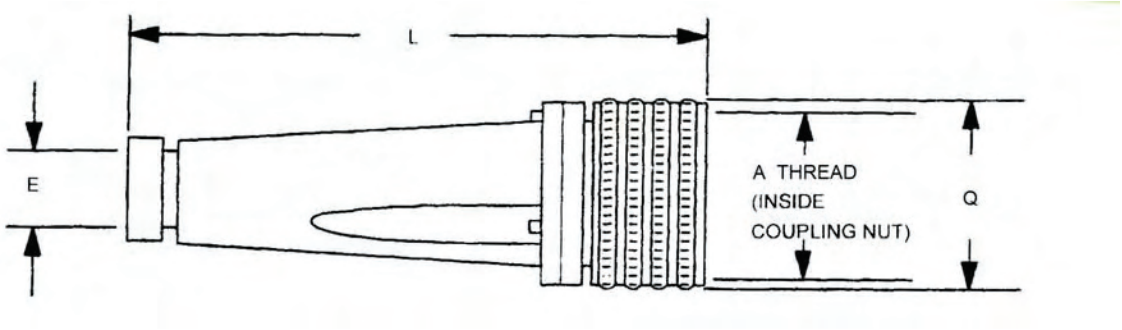
Master Key Position (See Figure 18)

Insert Configuration (See Figure 12 and Table 4)

Contact Style:
P Pin contacts
S Socket contacts

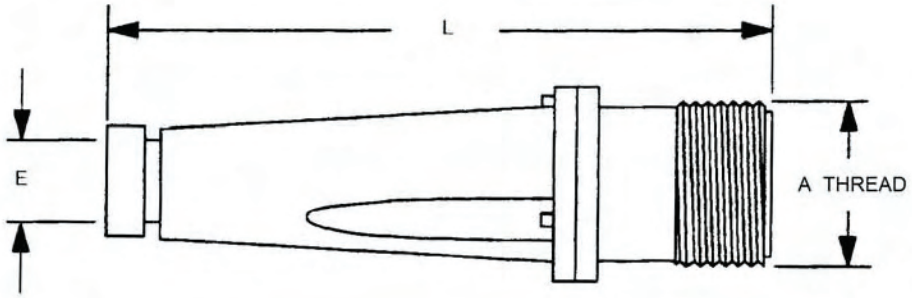
Alternate Position (See Figure 19)

Figure 14. MIL-DTL-22992 Connector Class L Part Number Breakdown



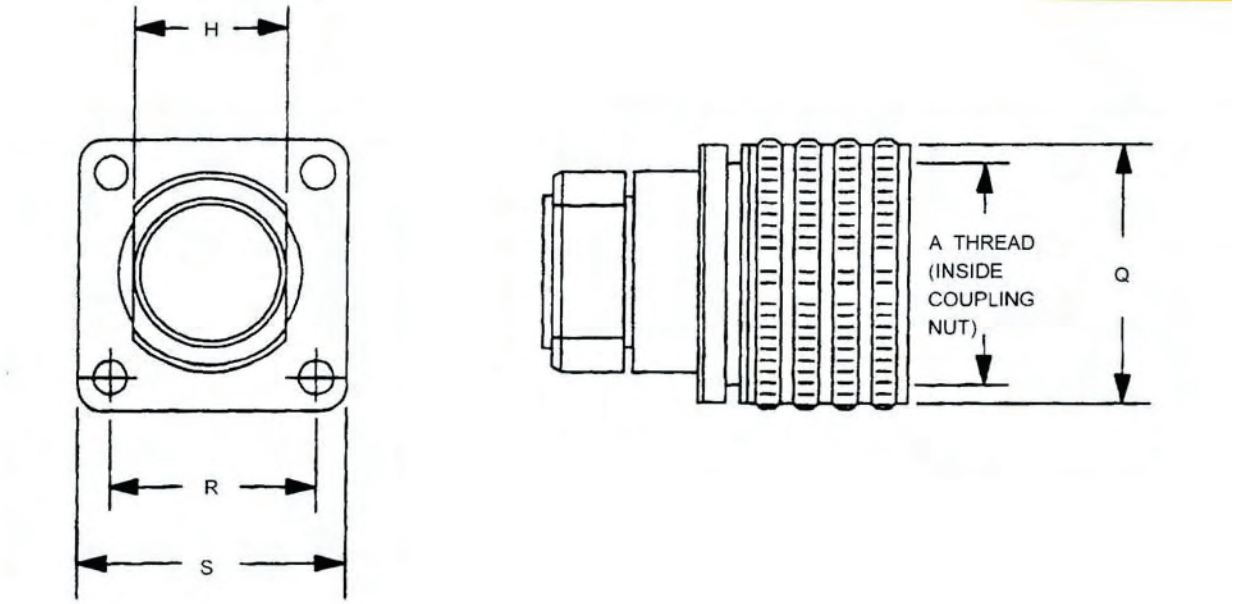
CONNECTOR		A THREAD (Plated, Class 2B)		E	L	Q
SHELL SIZE	INSERT CONFIGURATION	DIA MAX	THREADS PER INCH	CABLE RANGE MAX / MIN	MAX FREE LENGTH	DIA MAX
28	02, 04 03, 05, 06 07, 12 13	2.000 IN	6	0.844/0.719 IN 0.969/0.844 IN 1.047/0.922 IN 1.130/1.005 IN	8.188 IN	2.312 IN
32	02, 04 03, 05, 12 06, 07, 13	2.250 IN	6	0.969/0.844 IN 1.047/0.922 IN 1.130/1.005 IN 1.259/1.135 IN 1.342/1.217 IN	8.188 IN	2.562 IN
44	02, 04 03, 05 06 12 13 51 52 56	3.000 IN	6	1.312/1.187 IN 1.438/1.313 IN 1.375/1.250 IN 1.516/1.391 IN 1.672/1.547 IN 1.734/1.609 IN 1.525/1.435 IN 1.135/1.065 IN	10.172 IN	3.531 IN
48	13	3.250 IN	6	2.000/1.867 IN	10.734 IN	3.781 IN
52	02 12 06 13	3.500 IN	6	1.703/1.558 IN 1.797/1.652 IN 2.328/2.183 IN 2.453/2.308 IN	11.109 IN	4.016 IN

Figure 15. MS90556 Straight Plug, Class L



CONNECTOR		A THREAD (Plated, Class 2A)		E	L
SHELL SIZE	INSERT CONFIGURATION	DIA MAX	THREADS PER INCH	CABLE RANGE MAX / MIN	MAX FREE LENGTH
28	02, 04 03, 05, 06 07, 12 13	2.000 IN	6	0.844/0.719 IN 0.969/0.844 IN 1.047/0.922 IN 1.130/1.005 IN	8.156 IN
32	02, 04 03, 05, 12 06, 07, 13	2.250 IN	6	0.969/0.844 IN 1.047/0.922 IN 1.130/1.005 IN 1.259/1.135 IN 1.342/1.217 IN	8.156 IN
44	02, 04 03, 05 06 12 13 51	3.000 IN	6	1.312/1.187 IN 1.438/1.313 IN 1.375/1.250 IN 1.516/1.391 IN 1.672/1.547 IN 1.734/1.609 IN	10.125 IN
48	13	3.250 IN	6	2.000/1.867 IN	10.688 IN
52	02 12 06 13	3.500 IN	6	1.703/1.558 IN 1.797/1.652 IN 2.328/2.183 IN 2.453/2.308 IN	11.062 IN

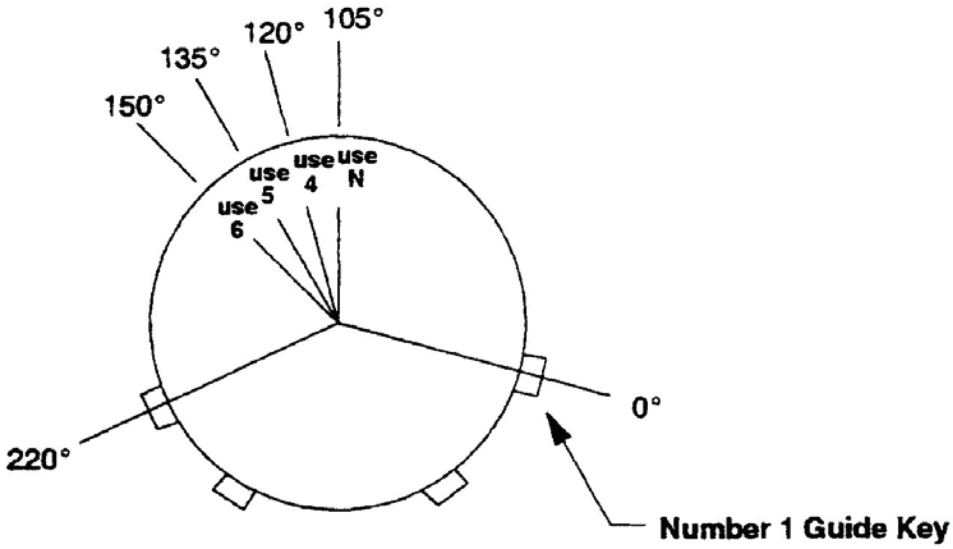
Figure 16. MS90557 In-Line Plug, Class L



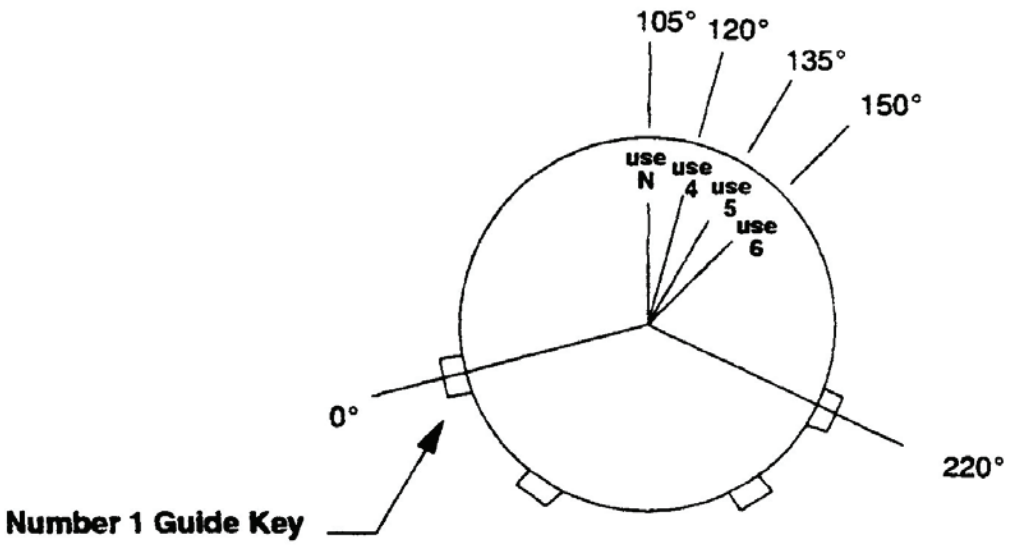
CABLE END VIEW

SHELL SIZE	A THREAD (Plated, Class 2B)		H	Q	R	S
	DIA MAX	THREADS PER INCH	+.001 / -.010	DIA MAX	BSC	+.021 / -.020
28	2.000 IN	6	1.812 IN	2.312 IN	1.844 IN	2.375 IN
32	2.250 IN	6	2.062 IN	2.562 IN	2.062 IN	2.625 IN
44	3.000 IN	6	2.812 IN	3.531 IN	2.812 IN	3.375 IN
48	3.250 IN	6	3.062 IN	3.781 IN	3.000 IN	3.625 IN
52	3.500 IN	6	3.312 IN	4.016 IN	3.156 IN	3.875 IN

Figure 17. MS90558 Wall Mount Plug, Class L



MATING FACE OF JACK

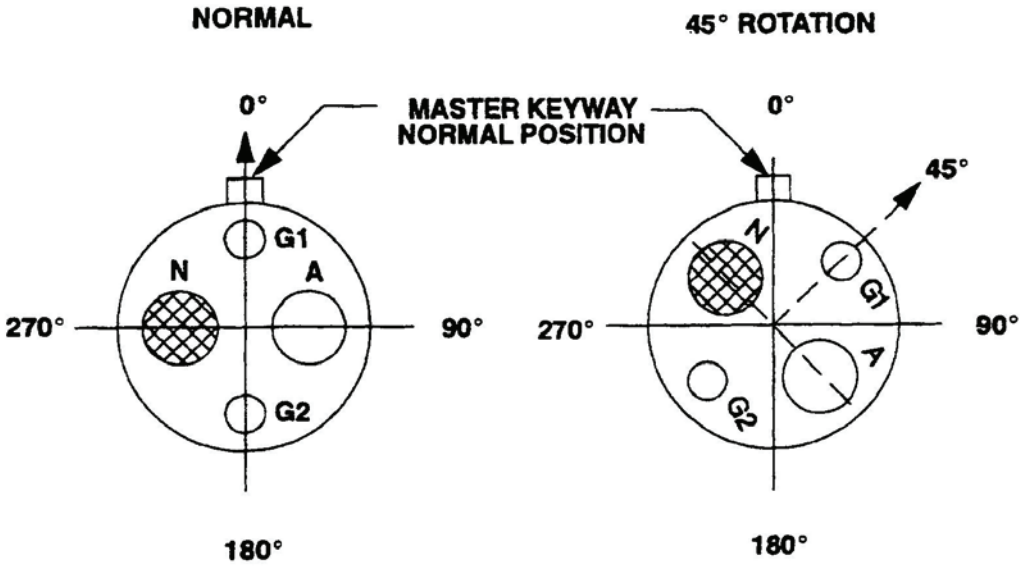


MATING FACE OF PLUG

Figure 18. MIL-DTL-22992 Master Key Position, Class L

EXAMPLE

If the desired connector shell configuration (using socket contacts) is 44N04, with a position of approximately 45°, as measured by a protractor, the alternate position is "Z". Use the "Z" in the part number. If the insert is in the normal position, leave the alternate position segment in the part number blank.



NOTES:

1. Mating face of socket inserts is shown. Pin inserts are a mirror image.
2. The alternate positions only differ in the degree of rotation.

Figure 19. MIL-DTL-22992 Alternate Insert Position Class L

Table 4. MIL-DTL-22992 Insert Configuration Class L

Shell Size Insert Arrangement	Service Rating (NOTE)	Contact Size					Number of Contacts
		4/0	1/0	2	4	6	
28-02 2/	D	-	-	-	-	1+1N	2
28-03	D	-	-	-	-	1+1N	2
28-04 2/	D	-	-	-	-	1+2N	3
28-05	D	-	-	-	-	1+2N	3
28-06 2/	D	-	-	-	1G	2+1N	4
28-07	D	-	-	-	1G	2+1N	4
28-12 2/	D	-	-	-	-	3+2N	5
28-13	D	-	-	-	-	3+2N	5
32-02 2/	D	-	-	-	1+1N	-	2
32-03	D	-	-	-	1+1N	-	2
32-04 2/	D	-	-	-	1+1N	-	4
32-05 2/	D	-	-	-	1+1N	-	4
32-06 2/	D	-	-	-	2+2N	-	4
32-07	D	-	-	-	2+2N	-	4
32-12 2/	D	-	-	-	3+1N	-	5
32-13	D	-	-	-	3+1N	-	5
44-02 2/	D	-	1+1N	-	-	-	2
44-03	D	-	1+1N	-	-	-	2
44-04 2/	D	-	1+1N	-	2G	-	4
44-05	D	-	1+1N	-	2G	-	4
44-06 2/	D	-	2+1N	-	-	3G	6
44-12 2/	D	-	3+1N	-	-	4G	8
44-13 2/	D	-	3+1N	-	-	4G	8
44-50	D	-	3+1N	-	-	-	4
44-51	D	-	3+1N	-	-	-	4
44-52 2/	D	-	3+1N	-	-	-	4
44-56 2/	D	-	3+1N	-	-	-	4
48-13	D	-	-	3+1N	-	4G	8
52-02 2/	-	-	-	-	-	-	-
52-06 2/	-	-	-	-	-	-	-
52-12	-	-	-	-	-	-	-
52-13	-	-	-	-	-	-	-

Note:
1/ N - Pin contact is longer than the standard.
- Socket is standard length
G – Ground Pin is connected to the connector shell.
2/ Supplied with reducing adapter MS3348 for next small AWG wire.

Service rating	Sea level test voltage minimum (vac rms, 60 Hz)
Inst.	1,000
A	2,000
D	2,800
E	3,500
B	4,500
C	7,000

40. CONTACTS. Contact for Class: L are fixed, removable, non-removable and solder-able. Refer to Table 3 for detailed contact information. Class L Pin and Socket Contacts are capable of being readily inserted into the connectors after they have been attached to their respective conductors. Contacts can also be removed from the connectors using removal tools MIL-I-81969/27 (Table 7). The inserts may be removed from their shell to allow the removal of the contacts.

41. CONTACT INSERTION AND REMOVAL. Pin and socket contacts, sizes 1/0, 4, and 8 may be designed so that they can be readily removed from their inserts for soldering to their conductors and readily assembled after the soldered connection has been made. Contacts, sizes 12 and 16, shall be rigidly mounted in their inserts. Inserts containing non-removable contacts shall not be subject to damage by soldering under an acceptable soldering process.

42. CONTACT BUSHINGS. Install contact bushings when required for the particular insert arrangement (as specified in section 70 of the appendix to MIL-DTL-22992). Applicable contact bushings conforming to SAE-AS33481 are supplied with the contacts. Refer to Table 3 for detailed contact bushing information.

43. WIRE SIZES TO BE USED WITH CONTACTS. It is intended that the wire attached to each connector contact should be of the AWG size (or smaller diameter), corresponding to the contact size number. For example, it is intended that an AWG size 12 wire be soldered to at least a size 12 contact; and an AWG size 6 wire should be soldered or crimped if applicable to a size 4 or size 6 contact. SAE-AS33481 contact bushings should be used with class L contacts if the wire AWG is smaller than the wire barrel size. Refer to Table 3 for detailed contact bushing information.

44. COUPLING CONNECTION. Plugs are connected or coupled to their mating receptacle by means of coupling rings. All coupling rings are knurled or fluted.

45. COUPLING RING CONNECTION. The connection is designed so that the pin and socket contacts will fully engage or disengage as the ring is respectively tightened or loosened. The coupling ring shall jack against the adapter during connector un-mating. Coupling shall occur in the following sequence polarization and engagement of shells, engagement of coupling threads, engagement of contacts. The uncoupling sequence is in the reverse order.

46. CONNECTION COUPLING SEQUENCE. Connection occurs in the following sequence: Polarization and engagement of the mating shells; engagement of the grounding and neutral contacts; .019 inch (.483 mm) minimum effective engagement of the phase contacts; and engagement of the coupling threads. The uncoupling sequence is in reverse order.

47. POLARIZATION. Polarization of the plug with its receptacle is accomplished by five integral keys on the male connector and matching keyways on the female connector and is designed so that it cannot possibly interfere with the functioning of the coupling threads. The integral keys and keyways render the mating of the plug and receptacle in more than one position impossible. The mating keys and keyways are rectangular in cross section.

48. SCREW THREADS. Coupling threads of connectors, stowage receptacles and protective covers are: 1P- 2L-DS or 1428P- .2857L-DS, class 2A or 2B of MIL-STD-1373, commonly referred to as Acme type threads.

49. LUBRICATION. All class 2B threads shall be coated with a lubricant conforming to MIL-PRF-23827.

50. CONNECTOR GROUNDING. Class L grounding connectors have all the system grounding contacts electrically connected to their shells without interfering with proper engagement or performance of the connectors. All shells and associated hardware of grounding assemblies shall be of the conductive (C) finish, and only key (or keyway) positions 4, 5, or 6 as applicable, shall be used. All shells and hardware of non-grounding assemblies shall have a nonconductive (N) finish.

51. SAFETY DESIGN. The Class L connectors are designed with mating polarization for specific current rating, voltage, frequency (Hz), phase, and grounding requirements. This prevents mating with a connector of incompatible power characteristics. These connectors are designed in the sizes based on current rating as shown in Table 5. They are also designed for use in the voltage, phase, wire, and frequency combinations as shown in Table 6.

Table 5. MIL-DTL-22992 Class L Connector Current Rating Insert Arrangements

Current rating (amps)	Shell size	Contact size	Insert arrangements available
40	28	#6	MS14054
60	32	#4	MS90565
100	44	#1/0	MS14055
150	48	#2/0	MS90567
200	52	#4/0	MS14057

Table 6. MIL-DTL-22992 Class L Electrical Distribution Application

Voltage	Phase 0	No wire	60 Hz	400 Hz
28 Vdc	-	2	N/A	N/A
120 ac 1/	1	2	X	X
240 ac	1	2	X	X
120/240 ac	1	3	X	N/A
120/208 ac	3	4	X	X
240/416 ac	3	4	X	X
277/480 ac	3	4	X	N/A

1/ All ac connectors have a separate contact (or contacts) for equipment system ground which is (are) electrically connected to the connecter shell.

52. **TOOLS AND MIL-DTL-22992 CONNECTOR MAINTENANCE**.

53. TOOLING. The procedure for attaching contacts to a single conductor wire are the same for all connector classes. Select proper tooling for specific contact part number (Table 7) and refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures.

NOTE

Refer to NAVAIR 01-1A-505-1, WP 011 01, for torque value information on AS85049 connector backshells.

54. BACKSHELL REMOVAL AND INSTALLATION. For backshell removal and installation refer to NAVAIR 01-1A-505-1, WP 024 00.

55. CONNECTOR BUILD-UP.

56. WIRE DIAMETER BUILD-UP. If wire outside diameter is not large enough to fill wire sealing grommet holes, build up wire outside diameter by applying heat-shrinkable insulating sleeving. This must be accomplished prior to contact insertion.

57. WIRE STRIPPING.

a. Cut wire to proper length. Ensure enough wire remains for adequate strain relief without leaving excess slack.

b. Strip insulation from end (NAVAIR 01-1A-505-1, WP 009 00). Select contact (Table 4).

58. CONTACT CRIMPING.

59. Crimp contact in accordance with following procedure. Refer to NAVAIR 01-1A-505-1, WP 013 00 for additional guidance.

a. Select crimp tool frame, positioner, locator and insert bushing from the connector tooling Table 7.

Table 7. MIL-DTL-22992 Connector Tooling

Socket Contact M39029/	Pin Contacts M39029/	Contact Size	Removal Tool M81969/	Crimp Tool M22520/	Locator M22520/	Die Set M22520/
-	48-317	6	27-06	23-01	23-10	23-03
-	48-318	6	27-06	23-01	23-10	23-03
-	48-319	6	27-06	23-01	23-10	23-03
-	48-320	4	27-05	23-01	23-12	23-04
-	48-321	4	27-05	23-01	23-12	23-04
-	48-322	4	27-05	23-01	23-12	23-04
-	48-323	1	27-03	23-01	23-14	23-03
-	48-324	1	27-03	23-01	23-14	23-03
-	48-325	2/0	27-02	23-01	23-15	23-02
-	48-326	2/0	27-02	23-01	23-15	23-02
-	48-327	4/0	27-01	23-01	23-16	23-01
-	48-328	4/0	27-01	23-01	23-16	23-01
49-329	-	6	27-06	23-01	23-10	23-03
49-330	-	6	27-06	23-01	23-10	23-03
49-331	-	4	27-05	23-01	23-12	23-04
49-332	-	4	27-05	23-01	23-12	23-04
49-333	-	1	27-03	23-01	23-14	23-05
49-334	-	2/0	27-02	23-01	23-15	23-06
49-335	-	4/0	27-01	23-01	23-16	23-07

NOTE
Contact insertion tools and unwired contact extraction tools are not needed, or available, for sizes larger than 12.

CAUTION

When removing broken wire contacts ensure wire sealing grommet is not damaged. A new connector must be installed (Paragraph 55) if a broken wire contact cannot be removed.

b. Perform die closure check. Install positioner and set selector knob for gage of wire.

c. Insert stripped wire into contact conductor barrel. Ensure all wire strands are inside contact conductor barrel and visible in contact inspection hole (Figure 20).

d. If insulation gap is too large, trim conductor as required. If insulation gap is too small, trim insulation as required (NAVAIR 01-1A-505-1, WP 009 00).

e. Crimp contact to wire.

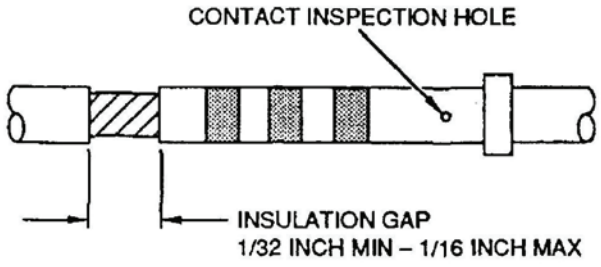


Figure 20. Insulation Gap Inspection

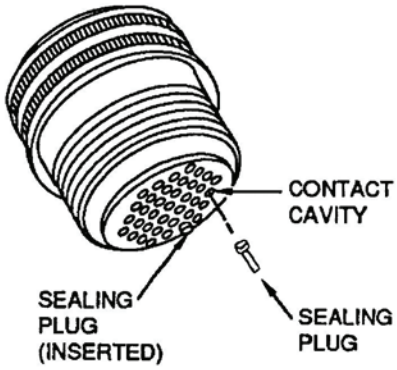


Figure 21. Contact and Sealing Plug Insertion

60. CONTACT INSERTION. Insert wired or unwired contacts in accordance with following procedure:

a. Remove sealing plug and/or contact from contact cavity (Paragraph 64).

b. Ensure wire or cable on contact is routed through backshell.

c. Axially align contact with contact cavity.

d. Start contact insertion near connector center cavities and work outward.

e. Insert wired contact assembly into connector from the rear of connector by hand.

f. With firm even pressure, press wired contact into cavity. A slight click may be heard as retention tines snap into place behind contact shoulder.

g. Pull back lightly on wire to ensure contact is properly seated. Contact should be locked into the connector.

h. Seal connector as required (Paragraph 61) and install backshell.

61. CONNECTOR SEALING.

62. SEALING PLUGS. Seal connector in accordance with following procedure:

a. Fill all unused cavities with uncrimped contacts (Paragraph 60).

b. Insert sealing plug, large diameter first, until bottomed in contact cavity. Fill all cavities that have un-crimped contacts (Figure 21). Preserve connector in accordance with NAVAIR 01-1A-505-1, WP 026 00.

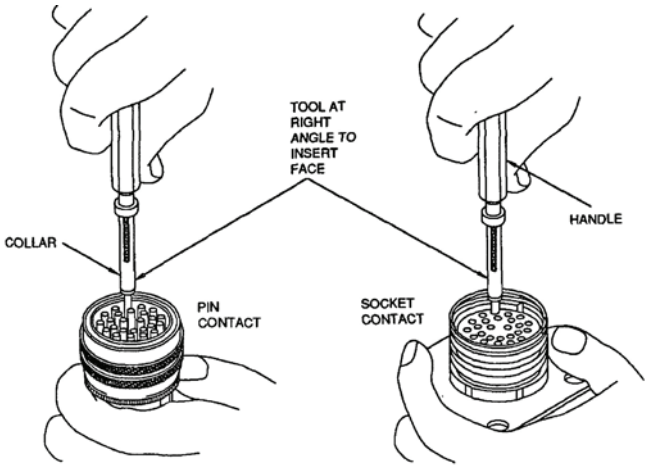


Figure 22. Contact Removal

63. MOISTURE BARRIER. For connector sealing procedures, including application of sealant to grommet refer to NAVAIR 01-1A-505-1, WP 025 00.

NOTE

The following paragraphs give contact removal procedures for front release crimp contacts.

64. WIRED CONTACT REMOVAL.

65. Remove wired, unwired, and broken wire contacts in accordance with following procedure:

a. Select correct removal tool (Table 7).

b. If contact is unwired, remove sealing plug from cavity of contact to be removed.

c. Working from the front (mating end) of connector, slide hollow end of removal tool over contact (Figure 22).

d. Holding removal tool at right angle to front insert face, push tool straight toward rear of connector, firmly pressing tool to positive stop when tool bottoms in insert cavity.

e. Maintain pressure on tool handle and slide collar of tool forward until it stops. Contact will be partially ejected from rear of connector insert.

f. Remove tool by pulling straight back to clear connector insert face. Remove contact out rear of connector by pulling lightly on wire or using a mating contact to push out released contact.

66. UNWIRED CONTACT REMOVAL.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors.

CAUTION

Caution should be exercised in the use of this tooling use as damage to connector can occur if probe is nicked or distorted.

a. Inspect tips of metal and plastic tools for distortion or nicks of probe before use.

NOTE

Unwired contact removal shall be done using the removal tools (Table 7). Specialized unwired contact removal tools and probes are not manufactured for wires larger than 12.

b. Select correct removal tool (Table 7).

c. Working from the front (mating end) of connector, slide hollow end of removal tool over contact (Figure 22).

d. Holding removal tool at right angle to front insert face, push tool straight toward rear of connector, firmly pressing tool to positive stop when tool bottoms in insert cavity.

e. Maintain pressure on tool handle and slide collar of tool forward until it stops. Contact will be partially ejected from rear of connector insert.

f. Remove tool by pulling straight back to clear connector insert face.

g. Remove contact out rear of connector by using a mating contact to push out the released contact.

67. BROKEN WIRE CONTACT REMOVAL.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors.

CAUTION

Caution should be exercised in the use of this tooling use as damage to connector can occur if probe is nicked or distorted.

a. Inspect tips of tools for distortion or nicks of probe before use.

NOTE

Broken wired contact removal shall be done using the removal tools. Specialized unwired contact removal tools and probes are not manufactured for wires with larger diameter than AWG 12.

b. Select correct removal tool (Table 7).

c. Working from the front (mating end) of connector, slide hollow end of removal tool over contact (Figure 22).

d. Holding removal tool at right angle to front insert face, push tool straight toward rear of connector, firmly pressing tool to positive stop when tool bottoms in insert cavity.

e. Maintain pressure on tool handle and slide collar of tool forward until it stops. Broken wire contact will be partially ejected from rear of connector insert.

f. Remove tool by pulling straight back to clear connector insert face.

g. Remove broken wire contact out rear of connector by using a mating contact to push out the released contact.

CAUTION

Failure to remove all broken wire strands will cause connector damage or failure to retain/lock contacts in place, allowing premature release of contacts. If unable to ensure cavity is clear, replace connector with a new one of the same type.

h. Inspect cavity and ensure all wire segments or strands have been removed.

68. CONNECTOR REMOVAL AND INSTALLATION. If the connector is severely damaged and cannot be repaired using the above procedures, proceed as follows:

a. Starting from outside of damaged connector, tag wires and remove all contacts from connector (Paragraph 64). If contact cannot be removed, cut wire as close to connector as possible and attach new contact (Paragraph 58).

b. Starting from center of new connector, maintain a smooth wire dress and insert contact into correct cavity (Paragraph 55). Remove tag from wire. Repeat procedure until all contacts are installed in new connector.

69. CONNECTOR BUILD-UP (SOLDER CONTACTS).

70. For buildup procedures of solder contacts refer to NAVAIR 01-1A-505-1, WP 016 00.

71. CONNECTOR CLEANING AND PRESERVATION.

72. For connector cleaning and corrosion control procedures refer to NAVAIR 01-1A-505-1, WP 026 00.

CONNECTOR ACCESSORIES
MIL-DTL-22992 CLASS C, J, R AND L

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Connectors, Electric, Circular, Environment Resisting, Military Specification for MIL-DTL-22992

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Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
CM229 Series	Tools, Adapter
BT-BS-601	Wrench, Strap
BT-BS-609	Wrench, Strap
BT-BS-611	Wrench, Strap
BT-BS-618	Wrench, Strap
BT-BS-625	Wrench, Strap
BT-BS-630	Wrench, Strap
BT-HT-107	T-handle

Materials Required

Specification/ Part No.	Nomenclature
MIL-PRF-29608	Compound, Cleaning
S1009	Glue, Epoxy
SAE-AMS-DTL-23053/5	Sleeving, Insulating, Heat-Shrinkable
SAE-AMS-DTL-23053/18	Sleeving, Insulating, Heat-Shrinkable
A-A-52080 through A-A-52084, Type II, Finish C, Size 2	Tape, Lacing
P-2740FR	Tape, Silicone Rubber

1. INTRODUCTION.

2. This Work Package (WP) covers connector accessories used with MIL-DTL-22992 Class C, J, R and L connectors, their function, associated tools, assembly, and procurement information. A connector accessory cross-reference table is available (Table 1). This table is a listing of accessories available for MIL-DTL-22992 connectors. A previous number is also provided for old, or obsolete part numbers. The current part number should be ordered when a requirement exists.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, (the Society of Automotive Engineers (SAE), will become the preparing activity and the Navy will adopt the documents), the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

3. CONNECTOR ACCESSORIES. Connector accessories are components added to a connector to help maintain its operational characteristics. These accessories are divided into the following categories:

a. Backshells.

b. Shrink Boots and Adapters.

c. Woven Cable Grip.

d. Conduit Fittings.

e. Dust Caps.

f. Flange Gaskets.

g. Grommet Nuts.

h. Rubber Bushings.

4. MIL-DTL-22992 SERIES C, J, R AND L CONNECTOR ACCESSORIES.

5. SPECIAL TOOLS. Connector backshells come in a wide variety of types depending on application. To install backshells or accessories, adapter tools and a strap wrench are needed. Adapter tools (Figure 1) are used to hold the connector during backshell installation and removal. Special tools are used to prevent damage to connector shells and accessories.

6. ADAPTER TOOL SELECTION. Adapter tools are required for the installation and removal of backshells. For adapter tool selection, the connector shell size and type must be known (Table 2, or 3).

7. ADAPTER TOOL ACCESSORIES. To hold adapter tool and to keep the connector from turning when installing or removing backshells the use of a 1/4 inch drive T-handle is recommended. A strap wrench is used on backshell for installation and removal to apply even pressure without causing damage to accessories (Figure 2).

8. BACKSHELL REMOVAL. Backshells are used to protect shield, and add support to connectors. When modification or repair to the connector is necessary, the backshell must be removed. Proceed using following procedure:

a. Select correct adapter tool (Table 2, or 3) by class, T-handle, and strap wrench (Figure 2).

CAUTION

Ensure white dot on adapter tool aligns with master key of connector. Spinning the tool on the connector will cause damage to tool and/or connector (Figure 3).

b. Mate adapter tool to connector, such that the white dot on the adapter tool aligns with master key of connector. (Figure 3).

c. Install strap wench around part to be removed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 3).

Table 1. MIL-DTL-22992 Connector Accessories References

ACCESSORY DESCRIPTION	SOLDER CLASSES C, J & R	CRIMP CLASS L	PART NO.	
			CURRENT	PREVIOUS
NON-ENVIRONMENTAL EMI/ RFI BACKSHELLS				
Sealing Adapter	X		M85049/3	MS17340
Sealing Adapter, Step-Down	X		M85049/5	MS17341
Sealing Adapter, Step-Up	X		M85049/4	M517342
Woven Cable Grip	X		MS90561	
BOOTS, RINGS AND ADAPTERS				
Shrink Boot Adapter	X		M85049/59	
Straight Shrink Boot	X		MS3109	M85049/68
90° Shrink Boot	X		MS3117	M85049/68
CONDUIT FITTINGS	X	X	AN3050 through AN3054, AN3056 AN3058 through AN3063, AN3066 through AN3068	
CRIMP CONTACTS				
Pin Size 6 - 4/0		X	MS39029/48	MS90559
Socket Size 6 - 4/0		X	MS39029/49	MS90560
CRIMP CONTACT ADAPTER		X	MS3348	
DUST CAPS				
Metal, For Plug	X		MS17350	
Metal, For Plug		X	MS90564	
Metal, For Receptacle	X		MS17349	
Metal, For Receptacle		X	MS90563	
GASKET FOR FLANGE MOUNT RECEPTACLE	X		MS51007	
	X		A-A-52481	
GROMMET NUTS AND RUBBER BUSHINGS				
Cable Sealing Gland		X	MS23747	
CRIMP CONTACT EXTRACTION AND INSERTION TOOL				
Extraction Only		X	M81969/27	MS90562
CRIMP TOOLS				
Size 0-26 Contacts		X	M22520	
Size 4/0-6 Contacts, Hydraulic		X	MS25441	

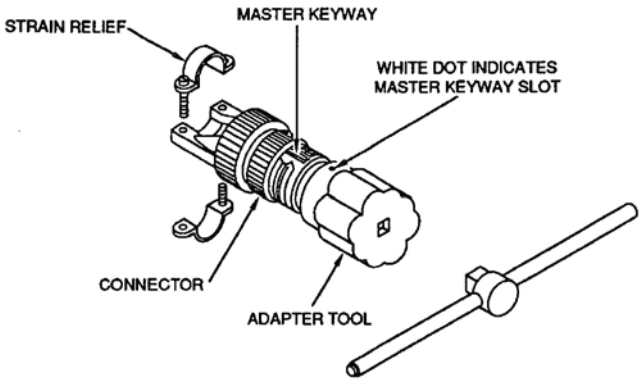


Figure 1. Adapter Tool BT264R

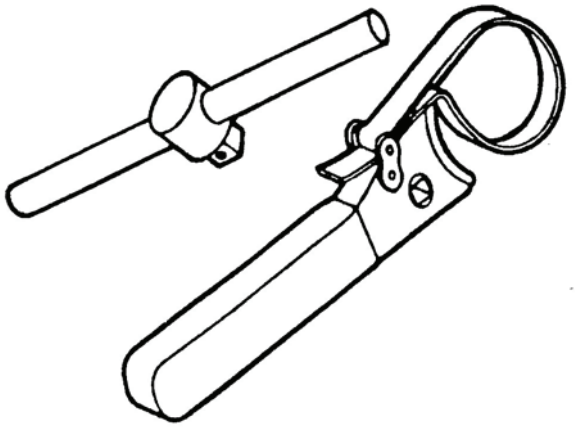


Figure 2. Adapter Tool Accessories

Table 2. MIL-DTL-22992 Connector Class C, J and R Connector Accessory Adapter Tools

Adapts to MIL-DTL-22992 Class C, J & R Plugs	Individual Tool Part Number for Plugs *	Shell Size	Keying	Color Coding
All MS17344 Plugs	CM229-12	12	All	Brown
	CM229-14	14	All	Brown
	CM229-16	16	All	Brown
	CM229-18	18	All	Brown
	CM229-20	20	All	Brown
	CM229-22	22	All	Brown
	CM229-24	24	All	Brown
	CM229-36	36	All	Brown
	CM229-40	40	All	Brown

Note: Adapter Tools for MIL-DTL-22992 are only available for the plugs, none are available for receptacles.

Table 3. MIL-DTL-22992 Connector Class L Connector Accessory Adapter Tools

Adapts to MIL-DTL-22992 Class L Plugs	Individual Tool Part Number for Plugs *	Shell Size	Keying	Color Coding
All MS90556 and MS90558 Plugs	CM229L-28	28	All	Black
	CM229L-32	32	All	Black
	CM229L-44	44	All	Black
	CM229L-48	48	All	Black
	CM229L-52	52	All	Black

Note: Adapter Tools for MIL-DTL-22992 are only available for the plugs, none are available for receptacles

d. Insert T-handle into socket of adapter tool to provide holding (Figure 3).

e. To loosen backshell apply force counterclockwise as viewed from connector rear (Figure 4).

f. Tape/secure backshell to bundle to prevent loss.

9. BACKSHELL INSTALLATION. Upon completion of maintenance or modification, the backshell must be reinstalled. Proceed using following procedure:

a. Un-tape/retrieve stored backshell from bundle. Start backshell on connector by hand, to prevent cross threading.

b. Select correct adapter tool (Table 2, or 3), set up T-handle and strap wrench (Figure 2).

CAUTION

Ensure white dot on adapter tool aligns with master key of connector. Spinning the tool on the connector will cause damage to tool and/or connector (Figure 3).

c. Mate adapter tool to connector, such that the white dot on the adapter tool aligns with master key of connector. (Figure 3).

d. Install strap wrench around part to be installed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 3).

e. Insert T-handle into socket of adapter tool to provide holding (Figure 3).

NOTE

Refer to NAVAIR 01-1A-505-1, WP 011 01, for torque value information on AS85049 connector backshells.

f. To tighten backshell apply force clockwise as viewed from connector rear (Figure 5).

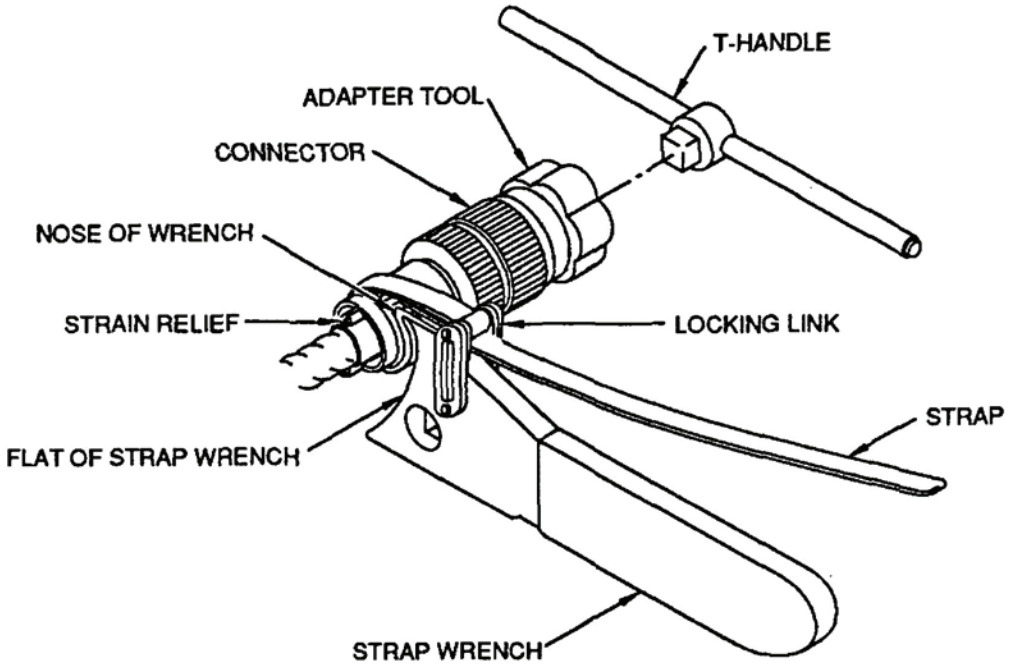


Figure 3. Strap Wrench Setup and Adjustment

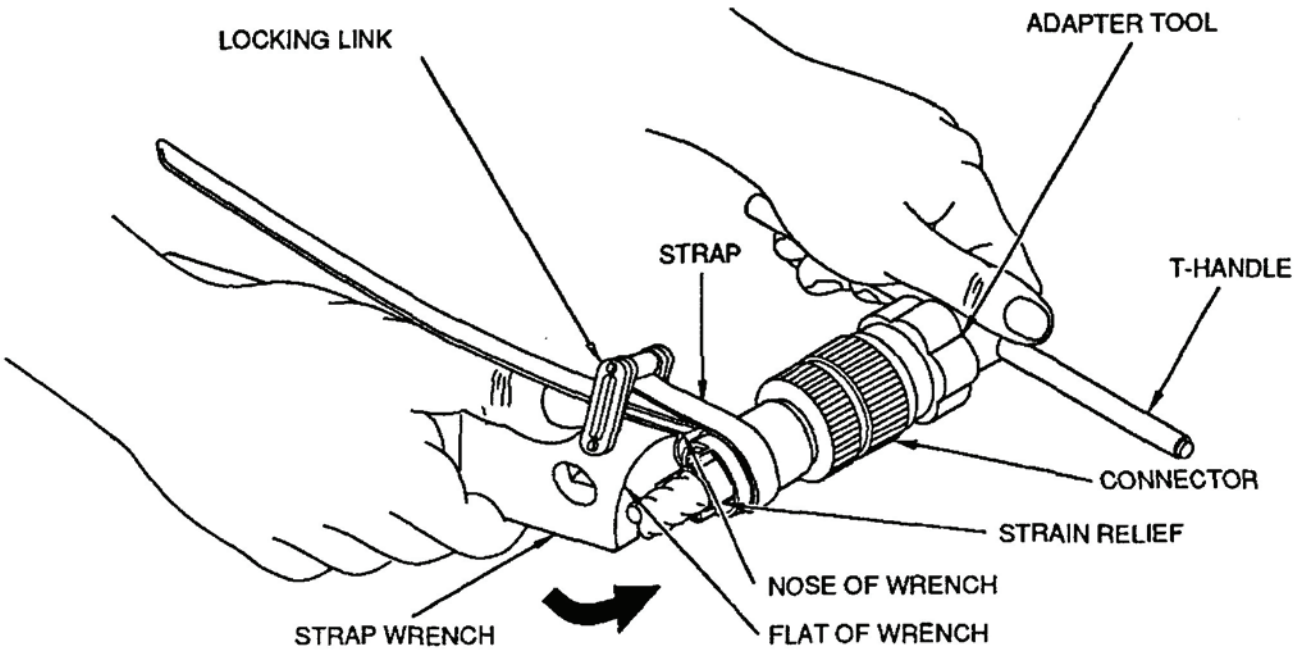


Figure 4. Loosening Position of Wrench

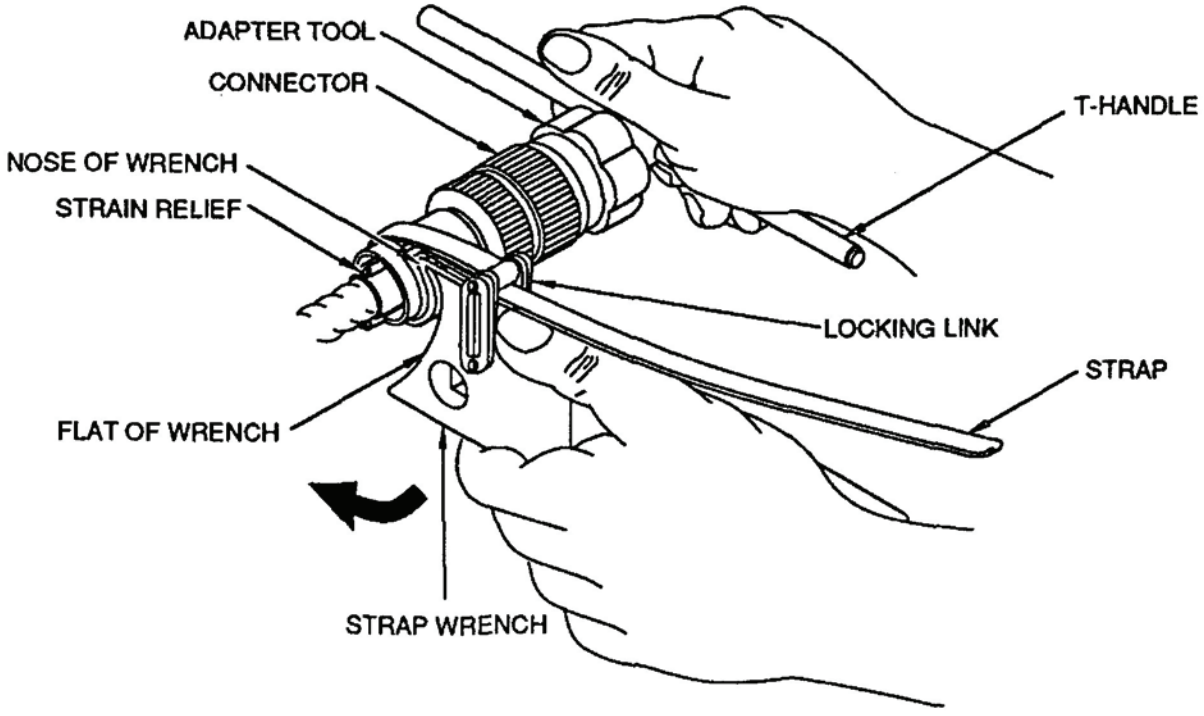


Figure 5. Tightening Position of Wrench

10. CLASS C, J AND R CONNECTOR ACCESSORIES.

11. The following information applies to Class: C, J and R connector accessories.

12. BACKSHELLS. Backshells are the most complex connector accessories and simply stated they are any device added to the rear, or wiring side, of a connector. The MIL-DTL 22992 connectors (class C, J, and R) employ Non-Environmental EMI/RFI type backshells.

13. NON-ENVIRONMENTAL EMI/RFI BACK-SHELLS. A typical non-environmental backshell (Figure 6) is an attachment on the back side of a connector that does not protect against moisture, dust and dirt but does provide EMI/RFI protection. For detailed information on the applicable non-environmental EMI/RFI backshells refer to: M85049/3 (Figure 7), M85049/4 (Figure 8) and M85049/5 (Figure 9).

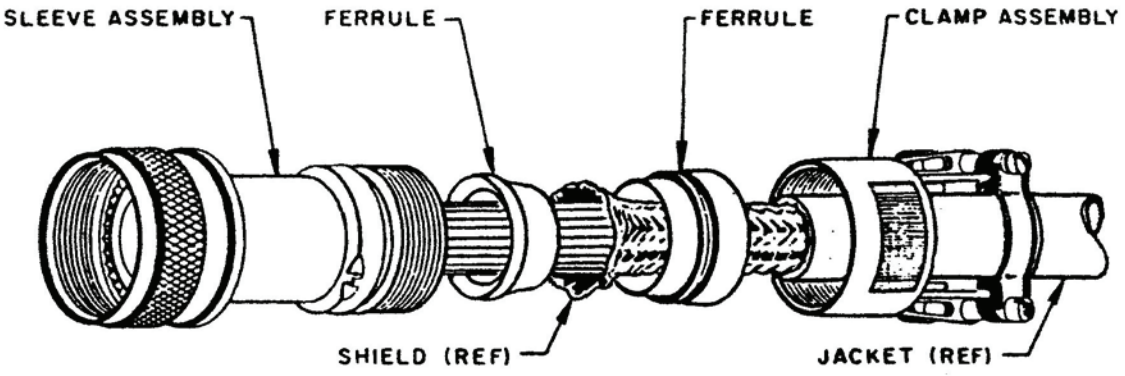
14. CABLE GRIP. A cable grip is a strain relief which provides additional support for larger size cables. For detailed information on the applicable woven cable clamp MS90561 refer to Figure 10.

15. SHRINK BOOTS AND ADAPTERS. Boots and adapters are protective coverings over any portion of a cable, wire, or connector in addition to normal jacketing or insulation. A protective housing usually made from a resilient material to prevent entry of moisture into a connector. For detailed information on applicable adapter refer to M85049/59 (Figure 11). See WP 008 03 (this manual) for information on shrink boots: MS3109 (or AS31091) and MS3117 (or AS31171).

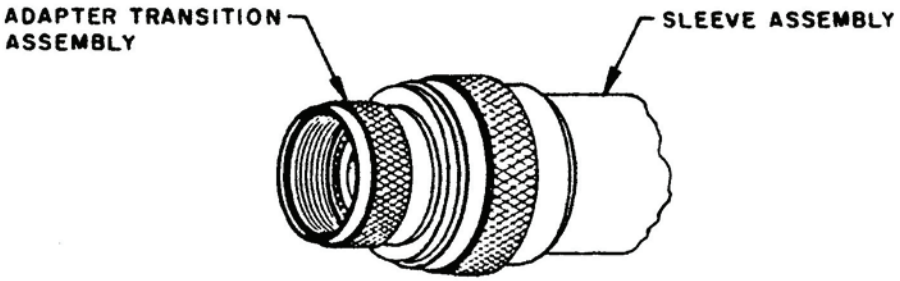
16. CONDUIT FITTINGS. Conduit fittings are used to connect a conduit to a connector and may be either a ferrule, nut, adapter, box fitting, 45° elbow, 90° elbow, hex nut, or seal assembly. See WP 007 03 for detailed information on the conduit fittings apply to class C, J and R: AN3050, AN3051, AN3052, AN3053, AN3054, AN3055, AN3056, AN3058, AN3064, AN3060, AN3061, AN3062, AN3063, AN3067, and AN3068.

17. DUST CAPS. Protective covers are more commonly called dust caps. The purpose of dust caps is to prevent dirt from entering connectors, pins, and sockets and to prevent coupling device from damage. For detailed information on dust caps refer to: MS17350 (Figure 12) and MS17349 (Figure 13).

18. GASKET FOR FLANGE MOUNT RECEPTACLES. Gaskets are used to seal flange mount receptacles to the applicable structure or component. For detailed information refer to gasket A-A-52481, and MS51007 refer to 006 04.



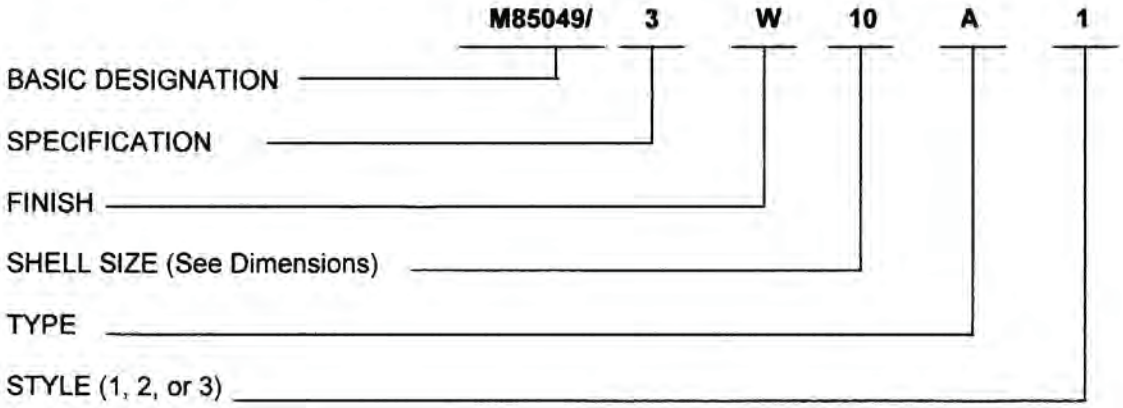
STYLE 1
SHIELD



STYLE 2

Figure 6. Typical Non-Environmental, EMI-RFI Backshell Assembly

PART NUMBER DESIGNATION



FINISH: Connectors and their associated accessories shall be of the same finish.
W, is in accordance with AS85049.
A, is in accordance with MIL-A-8625, type III, I, is hard anodic coating.

APPLICATION: Styles 1 and 3 are for use with classes R and C.
Style 2 for use with classes R, C, and J.

MATERIAL

Component	Material	Finish
Accessory body and cap	High grade aluminum alloy in accordance with AS85049	A, W
Chain	Corrosion resistant steel, type II, class 3, trade number 8 of RR-C-271	Passivated
Gasket and gland	Rubber, in accordance with MIL-R-3065	

NOTE: The backshell, cap and chain are considered the complete accessory.

TYPE: A, B and C offer various configurations
A, is for use with MS17344
B, is for use with MS17343, MS17345, and MS17347.

STYLE: 1 and 2 (Cable Sealing Application)
3 (Cable Sealing and Gripping Application)

Figure 7. MIL-DTL-22992 Connector Backshell M85049/3 (Sheet 1 of 11)

Configuration A, Style 1 (Cable Sealing)

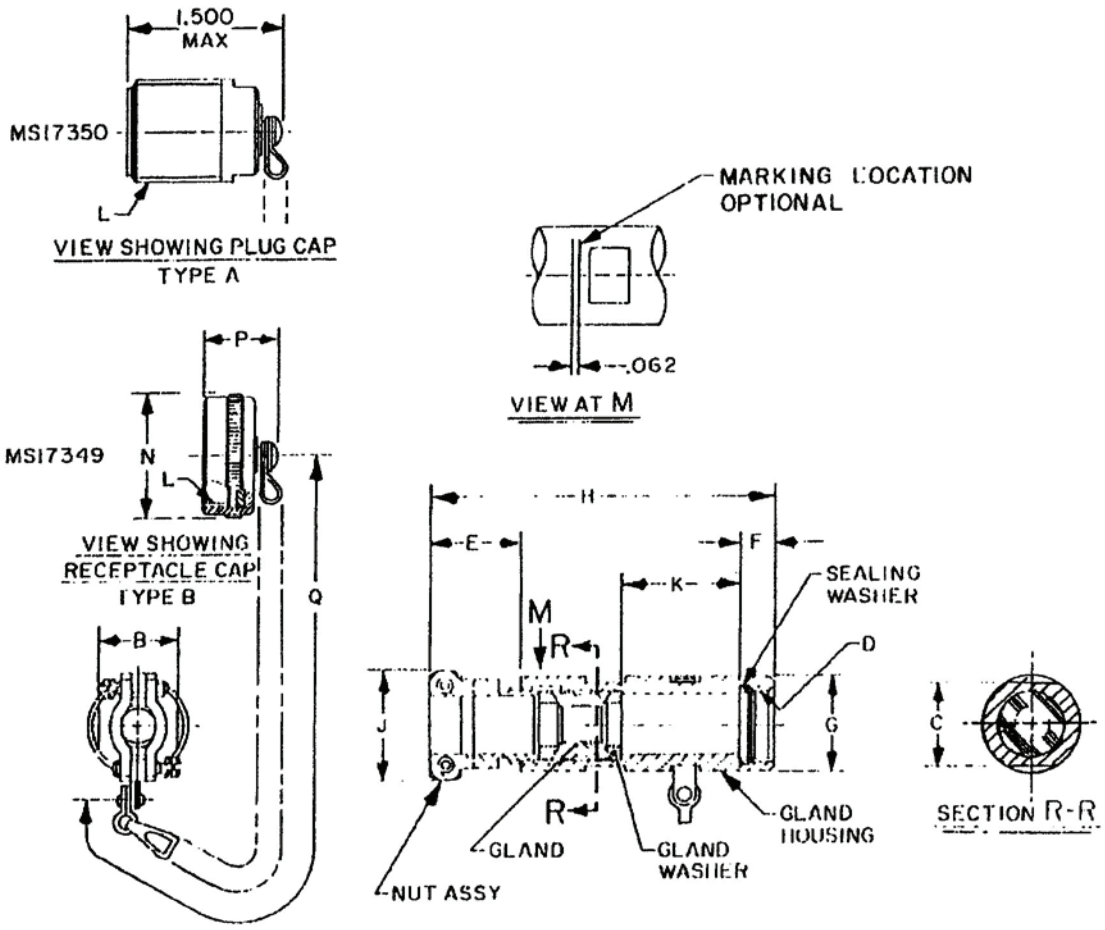


Figure 7. MIL-DTL-22992 Connector Backshell M85049/3 (Sheet 2 of 11)

DIMENSIONS (Configuration A, Style 1 (Cable Sealing)

Size number	Shell size	Cable range		B	C	D	E	F	G	H	J	K	L	N	P	Q
		Max dia	Min dia	+.000 -.010	+.000 -.010	Thread Class 2B-LH	Free length max	+.016	Dia +.010 -.020	Max	±.031	+.015 -.025	Thread (plated) Class 2 (A or B)	Dia max	Max	Within one link
1	12	.375	.281	.750	.812	.7500-20 UNEF	.969	.479	.938	3.365	1.062	.621	.8750-0.1P-0.2L-DS	1.094	.765	5.00
2	12	.281	.188	.750	.812	.7500-20 UNEF	.969	.479	.938	3.365	1.062	.621	.8750-0.1P-0.2L-DS	1.094	.765	5.00
3	14	.438	.344	.875	.938	.8750-20 UNEF	.969	.479	1.062	3.678	1.125	.871	1.0000-0.1P-0.2L-DS	1.219	.765	5.00
4	16	.605	.511	1.000	1.062	1.0000-20 UNEF	1.062	.479	1.188	4.177	1.375	1.121	1.1250-0.1P-0.2L-DS	1.344	.980	5.00
5	16	.530	.436	1.000	1.062	1.0000-20 UNEF	1.062	.479	1.188	4.177	1.375	1.121	1.1250-0.1P-0.2L-DS	1.344	.980	5.00
6	16	.405	.311	1.000	1.062	1.0000-20 UNEF	1.062	.479	1.188	4.177	1.375	1.121	1.1250-0.1P-0.2L-DS	1.344	.980	5.00
7	18	.625	.531	1.062	1.125	1.1250-18 NEF	1.062	.479	1.312	4.489	1.562	1.371	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
8	18	.699	.605	1.062	1.125	1.1250-18 NEF	1.062	.479	1.312	4.489	1.562	1.371	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
9	18	.500	.406	1.062	1.125	1.1250-18 NEF	1.062	.479	1.312	4.489	1.562	1.371	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
10	18	.455	.361	1.062	1.125	1.1250-18 NEF	1.062	.479	1.312	4.489	1.562	1.371	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
11	20	.828	.715	1.188	1.250	1.2500-18 NEF	1.125	.479	1.438	4.615	1.688	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
12	20	.562	.449	1.188	1.250	1.2500-18 NEF	1.125	.479	1.438	4.615	1.688	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
13	22	.750	.637	1.312	1.375	1.3750-18 NEF	1.094	.479	1.562	4.647	1.812	1.371	1.5000-0.1P-0.2L-DS	1.688	.980	6.00
14	22	.900	.787	1.312	1.375	1.3750-18 NEF	1.094	.479	1.562	4.647	1.812	1.371	1.5000-0.1P-0.2L-DS	1.688	.980	6.00

Figure 7. MIL-DTL-22992 Connector Backshell M85049/3 (Sheet 3 of 11)

DIMENSIONS (Configuration A, Style 1 (Cable Sealing Continued)

Size number	Shell size	Cable range		B	C	D	E	F	G	H	J	K	L	N	P	Q
		Max dia	Min dia	+.000 -.010	+.000 -.010	Thread Class 2B-LH	Free length max	+.016	Dia +.010 -.020	Max	±.031	+.015 -.025	Thread (plated) Class 2 (A or B)	Dia max	Max	Within one link
15	22	.805	.692	1.312	1.375	1.3750-18 NEF	1.094	.479	1.562	4.647	1.812	1.371	1.5000-0.1P-0.2L-DS	1.688	.980	6.00
16	24	1.055	.930	1.546	1.625	1.6250-18 NEF	1.281	.479	1.812	4.896	2.125	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
17	24	1.000	.675	1.546	1.625	1.6250-18 NEF	1.281	.479	1.812	4.896	2.125	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
18	24	1.109	.984	1.546	1.625	1.6250-18 NEF	1.281	.479	1.812	4.896	2.125	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
19	24	.880	.755	1.546	1.625	1.6250-18 NEF	1.281	.479	1.812	4.896	2.125	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
20	28	1.180	1.055	1.780	1.875	1.8750-16 UN	1.281	.479	2.062	4.959	2.469	1.372	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
21	28	1.230	1.105	1.780	1.875	1.8750-16 UN	1.281	.479	2.062	4.959	2.469	1.372	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
22	28	1.310	1.185	1.780	1.875	1.8750-16 UN	1.281	.479	2.062	4.959	2.469	1.372	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
23	32	1.455	1.320	2.000	2.062	2.0625-16 UNS	1.281	.479	2.312	5.021	2.625	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
24	32	1.531	1.406	2.000	2.062	2.0625-16 UNS	1.281	.479	2.312	5.021	2.625	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
25	32	1.375	1.250	2.000	2.062	2.0625-16 UNS	1.281	.479	2.312	5.021	2.625	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
26	36	1.656	1.531	2.250	2.312	2.3125-16 UNS	1.281	.479	2.562	5.083	2.953	1.370	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
27	36	1.562	1.437	2.250	2.312	2.3125-16 UNS	1.281	.479	2.562	5.083	2.953	1.370	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
28	44	2.250	2.105	2.875	2.750	2.8750-16 UN	1.382	.667	3.125	6.471	3.500	2.218	3.0000-0.1P-0.2L-DS	3.217	.980	6.00
29	44	2.170	2.025	2.875	2.750	2.8750-16 UN	1.382	.667	3.125	6.471	3.500	2.218	3.0000-0.1P-0.2L-DS	3.217	.980	6.00

Figure 7. MIL-DTL-22992 Connector Backshell M85049/3 (Sheet 4 of 11)

DIMENSIONS (Configuration B, Style 2 (Cable Sealing)

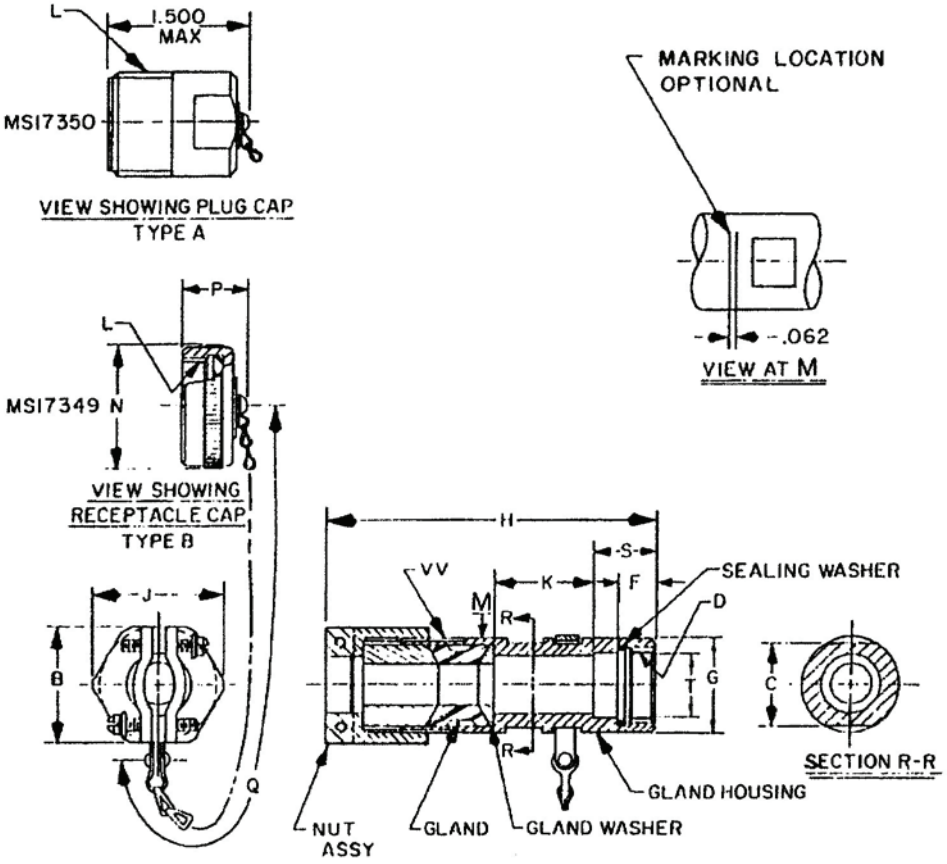


Figure 7. MIL-DTL-22992 Connector Backshell M85049/3 (Sheet 5 of 11)

DIMENSIONS (Configuration B, Style 2 (Cable Sealing)

Size number	Shell size	Cable range		B	C	D	F	G	H	J	K
		Max	Min	+.005	+.000 -.010	Thread Class 2B-LH	+.016	Dia +.010 -.020	Max	Max	±.010
1	12	.396	.246	1.094	.812	.7500-20 UNEF	.479	.938	4.000	1.110	.950
2	14	.521	.321	1.129	.938	.8750-20 UNEF	.479	1.062	4.100	1.320	1.075
3	16	.646	.446	1.344	1.062	1.0000-20 UNEF	.479	1.188	4.400	1.420	1.200
4	18	.765	.565	1.469	1.125	1.1250-18 UNEF	.479	1.312	4.900	1.600	1.325
5	20	.890	.690	1.625	1.250	1.2500-18 UNEF	1.438	1.188	4.900	1.750	1.325
6	22	1.015	.815	1.750	1.375	1.3750-18 UNEF	.479	1.562	4.900	1.900	1.325
7	24	1.180	.980	2.000	1.625	1.6250-18 NEF	.479	1.812	5.000	2.190	1.450
8	28	1.430	1.230	2.250	1.875	1.8750-16 UN	.479	2.062	5.300	2.475	1.700
9	28	1.230	1.030	2.250	1.875	1.8750-16 UN	.479	2.062	5.300	2.475	1.700
10	32	1.670	1.430	2.500	2.062	2.0625-16 N	.479	2.312	5.600	2.715	1.950
11	36	1.860	1.660	2.750	2.312	2.3125-16 N	.479	2.562	5.600	2.900	1.950
12	40	2.110	1.860	3.062	2.562	2.6250-16 UN	.667	2.875	5.725	3.250	1.950

Figure 7. MIL-DTL-22992 Connector Backshell M85049/3 (Sheet 6 of 11)

DIMENSIONS (Configuration B, Style 2 (Cable Sealing Continued)

Size number	Shell size	L Thread (plated) Class 2 (A or B)	N Dia max	P Max	Q Within one link	S ±.010	T Dia ±.005	VV Gland threads class 2-LH
1	12	.8750-0.1P-0.2L-DS	1.094	.765	5.00	1.425	.600	.9375-20 UNEF
2	14	1.0000-0.1P-0.2L-DS	1.219	.765	5.00	1.425	.726	1.0625-18 UNEF
3	16	1.1250-0.1P-0.2L-DS	1.344	.980	5.00	1.605	.845	1.1875-18 NEF
4	18	1.2500-0.1P-0.2L-DS	1.469	.980	5.00	1.605	.970	1.3125-18 NEF
5	20	1.3750-0.1P-0.2L-DS	1.562	.980	5.00	1.605	1.095	1.4375-18 NEF
6	22	1.5000-0.1P-0.2L-DS	1.688	.980	6.00	1.605	1.220	1.5625-18 NEF
7	24	1.7500-0.1P-0.2L-DS	1.938	.980	6.00	1.605	1.470	1.8125-16 N
8	28	2.0000-0.1P-0.2L-DS	2.219	.980	6.00	1.605	1.713	2.0625-16 N
9	28	2.0000-0.1P-0.2L-DS	2.219	.980	6.00	1.605	1.713	2.0625-16 N
10	32	2.2500-0.1P-0.2L-DS	2.469	.980	6.00	1.605	1.900	2.3125-16 N
11	36	2.5000-0.1P-0.2L-DS	2.719	.980	6.00	1.605	2.150	2.5000-16 UN
12	40	2.7500-0.1P-0.2L-DS	2.969	.980	6.00	1.605	2.460	2.8750-16 UN

Figure 7. MIL-DTL-22992 Connector Backshell M85049/3 (Sheet 7 of 11)

DIMENSIONS (Configuration C, Style 3 (Cable Sealing and Gripping)

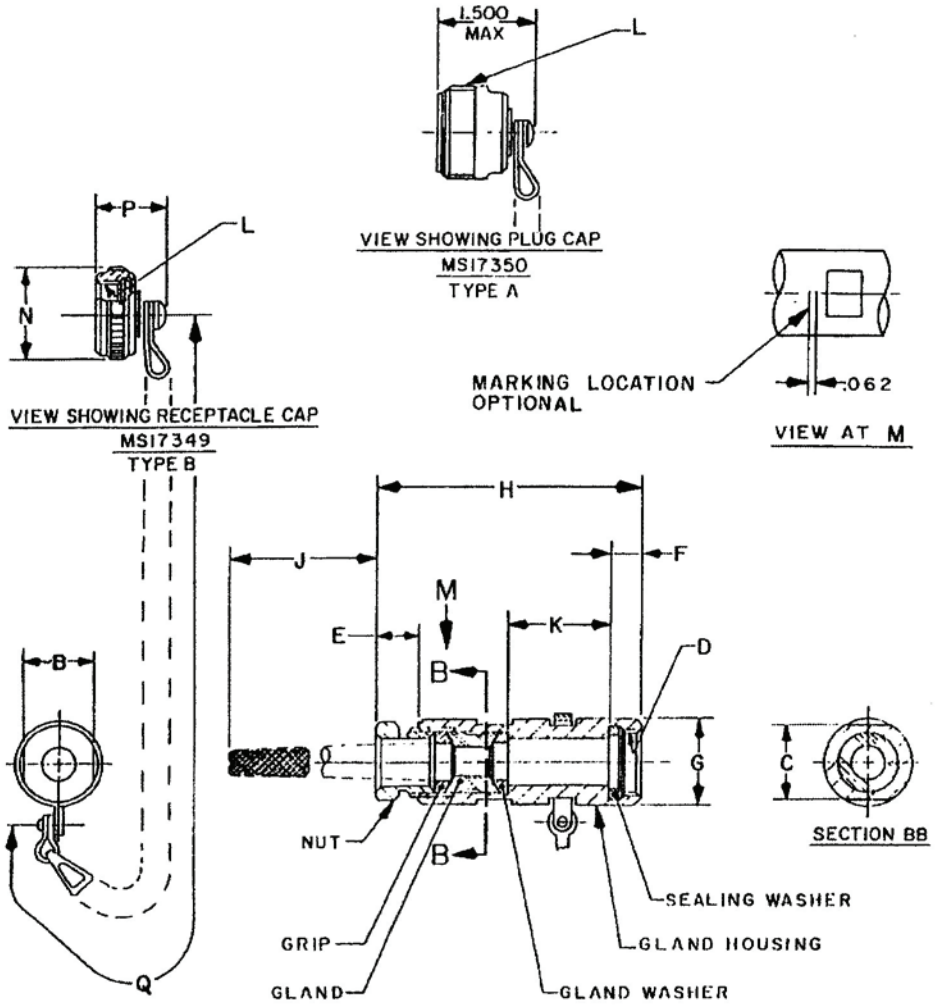


Figure 7. MIL-DTL-22992 Connector Backshell M85049/3 (Sheet 8 of 11)

DIMENSIONS (Configuration C, Style 3 (Cable Sealing and Gripping)

Size number	Shell size	Cable range		B	C	D	E	F	G	H	J	K	L	N	P	Q
		Max dia	Min dia	+.000 -.010	+.000 -.010	Thread Class 2B-LH	Free length max	+.016	Dia +.010 -.020	Max	Approx-free length	+.015 -.025	Thread (plated) Class 2 (A or B)	Dia max	Max	Within one link
1	12	.377	.281	.750	.812	.7500-20 UNEF	.539	.479	.938	2.935	3.344	.621	.8750-0.1P-0.2L-DS	1.094	.765	5.00
2	12	.281	.219	.750	.812	.7500-20 UNEF	.539	.479	.938	2.935	1.062	.621	.8750-0.1P-0.2L-DS	1.094	.765	5.00
3	14	.438	.400	.875	.938	.8750-20 UNEF	.539	.479	1.062	3.248	4.344	.871	1.0000-0.1P-0.2L-DS	1.219	.765	5.00
4	16	.605	.511	1.000	1.062	1.0000-20 UNEF	.597	.479	1.188	3.712	5.188	1.121	1.1250-0.1P-0.2L-DS	1.344	.980	5.00
5	16	.530	.436	1.000	1.062	1.0000-20 UNEF	.597	.479	1.188	3.712	4.688	1.121	1.1250-0.1P-0.2L-DS	1.344	.980	5.00
6	16	.405	.316	1.000	1.062	1.0000-20 UNEF	.597	.479	1.188	3.712	3.688	1.121	1.1250-0.1P-0.2L-DS	1.344	.980	5.00
7	18	.699	.605	1.062	1.125	1.1250-18 UNEF	.597	.479	1.312	4.024	6.188	1.371	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
8	18	.625	.560	1.062	1.125	1.1250-18 UNEF	.597	.479	1.312	4.024	6.188	1.371	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
9	18	.455	.351	1.062	1.125	1.1250-18 UNEF	.597	.479	1.312	4.024	4.188	1.371	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
10	20	.828	.715	1.125	1.250	1.2500-18 UNEF	.625	.479	1.438	4.115	6.688	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
11	20	.562	.449	1.125	1.250	1.2500-18 UNEF	.625	.479	1.438	4.115	5.188	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
12	22	.900	.787	1.250	1.375	1.3750-18 UNEF	.597	.479	1.562	4.150	7.188	1.371	1.5000-0.1P-0.2L-DS	1.688	.980	6.00
13	22	.750	.637	1.250	1.375	1.3750-18 UNEF	.597	.479	1.562	4.150	6.688	1.371	1.5000-0.1P-0.2L-DS	1.938	.980	6.00
14	24	1.109	.984	1.500	1.625	1.6250-18 UNEF	.597	.479	1.812	4.212	7.688	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00

Figure 7. MIL-DTL-22992 Connector Backshell M85049/3 (Sheet 9 of 11)

DIMENSIONS (Configuration C, Style 3 (Cable Sealing and Gripping Continued)

Size number	Shell size	Cable range		B	C	D	E	F	G	H	J	K	L	N	P	Q
		Max dia	Min dia	+.000 -.010	+.000 -.010	Thread Class 2B-LH	Free length max	+.016	Dia +.010 -.020	Max	Approx-free length	+.015 -.025	Thread (plated) Class 2 (A or B)	Dia max	Max	Within one link
15	24	1.000	.875	1.500	1.625	1.6250-18 UNEF	.597	.479	1.812	4.212	7.188	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
16	24	.880	.755	1.500	1.625	1.6250-18 UNEF	.597	.479	1.812	4.212	6.688	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
17	28	1.310	1.185	1.750	1.875	1.8750-16 UN	.597	.479	2.062	4.275	8.688	1.372	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
18	28	1.230	1.105	1.750	1.875	1.8750-16 UN	.597	.479	2.062	4.275	8.188	1.372	2.0000-0.1P-0.2L-DS	1.219	.980	6.00
19	28	1.180	1.055	1.750	1.875	1.8750-16 UNS	.597	.479	2.062	4.275	8.188	1.372	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
20	32	1.531	1.406	2.000	2.062	2.0625-16 UNS	.597	.479	2.312	4.337	10.688	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
21	32	1.455	1.320	2.000	2.062	2.0625-16 UN	.597	.479	2.312	4.337	9.688	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
22	42	1.375	1.250	2.000	2.062	2.0625-16 UN	.597	.479	2.312	4.337	9.688	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
23	36	1.656	1.531	2.250	2.312	2.3125-16 UN	.597	.479	2.562	4.399	12.688	1.370	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
24	36	1.562	1.437	2.250	2.312	2.3125-16 UN	.597	.479	2.562	4.399	11.188	1.370	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
25	44	2.250	2.105	2.750	2.750	2.8750-16 UN	.710	.667	3.125	5.799	17.188	2.218	3.0000-0.1P-0.2L-DS	3.217	.980	6.00
26	44	2.170	2.025	2.750	2.750	2.8750-16 UN	.710	.667	3.125	5.799	17.188	2.218	3.0000-0.1P-0.2L-DS	3.217	.980	6.00

NOTES:
1. Dimensions are in inches, after plating.
2. Tolerances in fractions +/- -016 (0.41mm)

Figure 7. MIL-DTL-22992 Connector Backshell M85049/3 (Sheet 10 of 11)

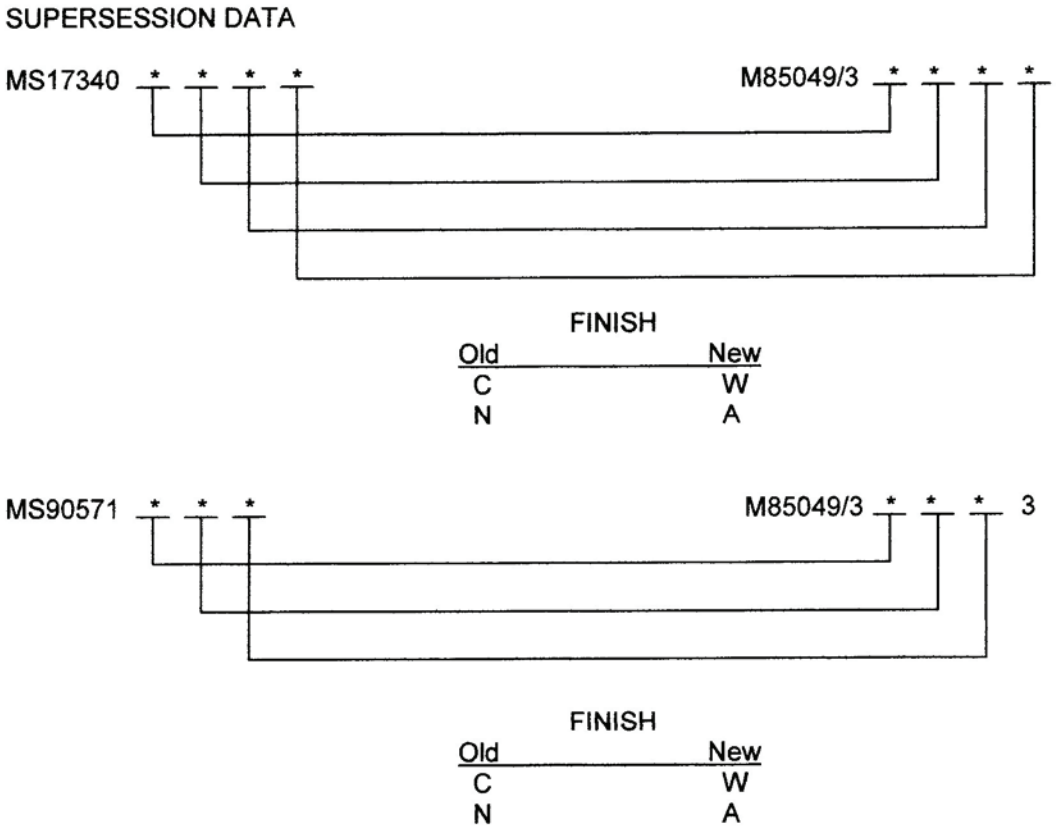
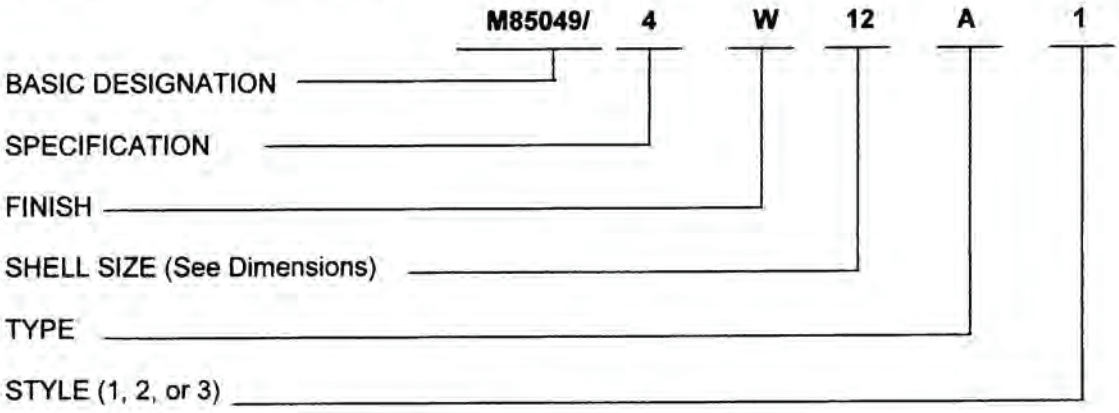


Figure 7. MIL-DTL-22992 Connector Backshell M85049/3 (Sheet 11 of 11)

PART NUMBER DESIGNATION



FINISH: Connectors and their associated accessories shall be of the same finish.
W, is in accordance with AS85049.
A, is in accordance with MIL-A-8625, type III, I, is hard anodic coating.

APPLICATION: Styles 1 and 3 are for use with classes R and C.
Style 2 for use with classes R, C, and J.

MATERIAL

COMPONENT	MATERIAL	FINISH
ACCESSORY BODY AND CAP	HIGH GRADE ALUMINUM ALLOY IN ACCORDANCE WITH AS85049	A, W
CHAIN	CORROSION RESISTANT STEEL, TYPE II, CLASS 3, TRADE NUMBER 8 OF RR-C-271	PASSIVATED
GASKET AND GLAND	RUBBER, IN ACCORDANCE WITH ASTM D 2000	

NOTE: The backshell, cap and chain are considered the complete accessory.

TYPE: A, B and C offer various configurations
A, is for use with MS17344
B, is for use with MS17343, MS17345, and MS17347.

STYLE: 1 and 2 (Cable Sealing Application)
3 (Cable Sealing and Gripping Application)

Figure 8. MIL-DTL-22992 Connector Backshell M85049/4 (Sheet 1 of 13)

Configuration A, Style 1 (Cable Sealing)

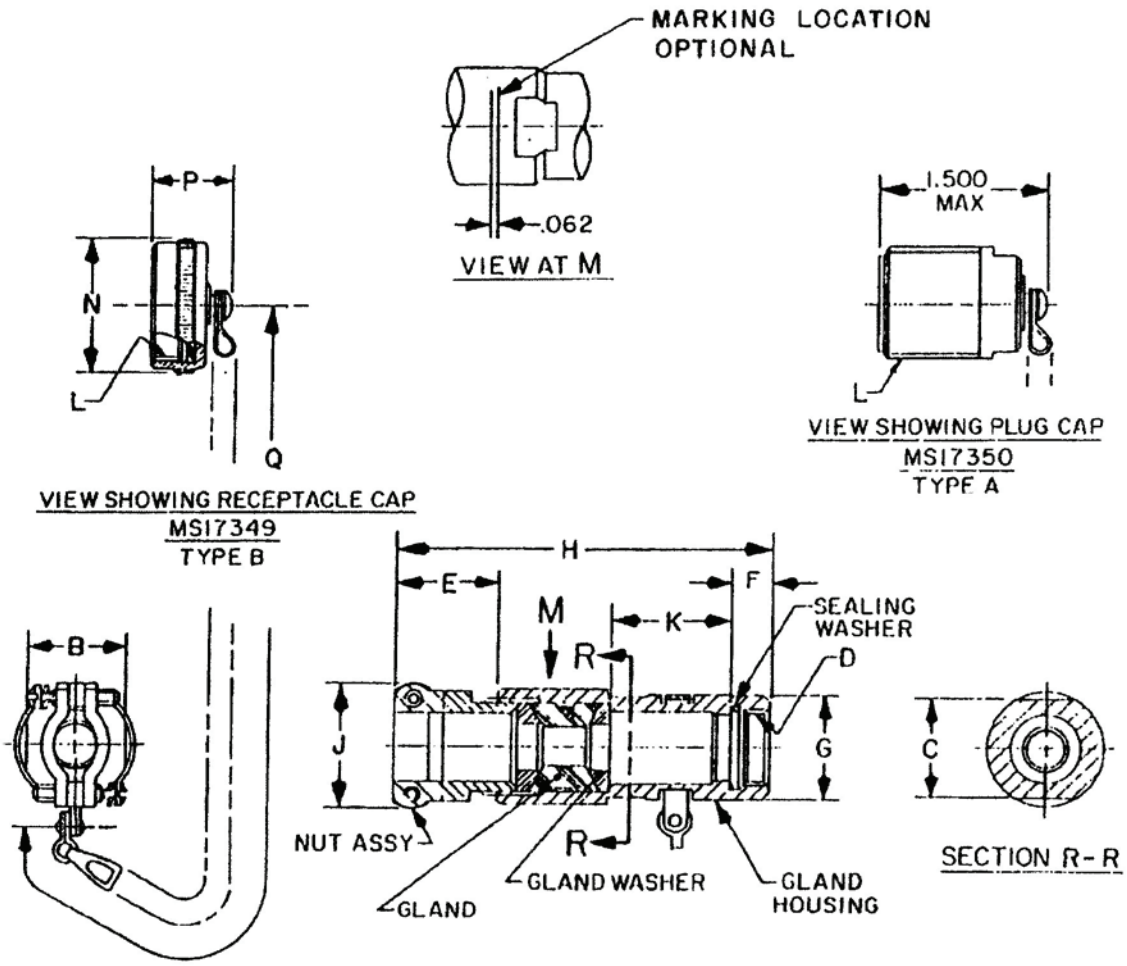


Figure 8. MIL-DTL-22992 Connector Backshell M85049/4 (Sheet 2 of 13)

DIMENSIONS (Configuration A, Style 1 (Cable Sealing)

Size number	Shell size	Cable range		B	C	D	E	F	G	H	J	K	L	M	P	Q
		Max dia	Min dia	+.000 -.010	+.000 -.010	Thread Class 2B-LH	Free length max	+.016	Dia +.010 -.020	Max	+.031	+.015 -.025	Thread (plated) Class 2 (A or B)	Dia max	Max	Within one link
1	12	.530	.436	1.000	.812	.7500-20 UNEF	1.062	.479	.938	4.275	1.375	1.219	.8750-0.1P-0.2L-DS	1.094	.765	5.00
2	12	.500	.406	.875	.938	.7500-20 UNEF	.969	.479	.938	3.678	1.125	.871	.8750-0.1P-0.2L-DS	1.094	.765	5.00
3	12	.405	.311	1.000	.812	.7500-20 UNEF	1.062	.479	.938	4.275	1.375	1.219	.8750-0.1P-0.2L-DS	1.094	.765	5.00
4	14	.605	.511	1.000	1.062	.8750-20 UNEF	1.062	.479	1.062	4.177	1.375	1.121	1.0000-0.1P-0.2L-DS	1.219	.765	5.00
5	14	.625	.531	1.062	1.125	.8750-20 UNEF	1.062	.479	1.062	4.489	1.562	1.371	1.0000-0.1P-0.2L-DS	1.219	.765	5.00
6	14	.530	.436	1.000	1.062	.8750-20 UNEF	1.062	.479	1.062	4.177	1.375	1.121	1.0000-0.1P-0.2L-DS	1.219	.765	5.00
7	14	.405	.311	1.000	1.062	.8750-20 NEF	1.062	.479	1.062	4.177	1.375	1.121	1.0000-0.1P-0.2L-DS	1.219	.765	5.00
8	18	.828	.715	1.188	1.250	1.1250-18 NEF	1.094	.479	1.312	4.584	1.688	1.343	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
9	20	.750	.637	1.312	1.375	1.1250-18 NEF	1.094	.479	1.312	4.647	1.812	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
10	20	1.000	.875	1.546	1.375	1.1250-18 NEF	1.281	.479	1.312	4.896	2.125	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
11	20	.900	.787	1.312	1.375	1.2500-18 NEF	1.094	.479	1.438	4.647	1.812	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
12	20	1.055	.930	1.546	1.375	1.2500-18 NEF	1.281	.479	1.438	4.856	2.125	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
13	22	1.000	.875	1.546	1.625	1.3750-18 NEF	1.281	.479	1.562	4.896	2.125	1.371	1.5000-0.1P-0.2L-DS	1.688	.980	6.00
14	22	1.109	.984	1.546	1.625	1.3750-18 NEF	1.281	.479	1.562	4.896	2.125	1.371	1.5000-0.1P-0.2L-DS	1.688	.980	6.00

Figure 8. MIL-DTL-22992 Connector Backshell M85049/4 (Sheet 3 of 13)

DIMENSIONS (Configuration A, Style 1 (Cable Sealing Continued)

Size number	Shell size	Cable range		B	C	D	E	F	G	H	J	K	L	N	P	Q
		Max dia	Min dia	+.000 -.010	+.000 -.010	Thread Class 2B-LH	Free length max	+.016	Dia +.010 -.020	Max	±.031	+.015 -.025	Thread (plated) Class 2 (A or B)	Dia max	Max	Within one link
15	24	1.180	1.055	1.780	1.875	1.6250-18 UNEF	1.281	.479	1.812	4.959	2.469	1.372	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
16	24	1.310	1.185	1.780	1.875	1.6250-18 UNEF	1.281	.479	1.812	4.959	2.469	1.372	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
17	24	1.230	1.105	1.780	1.875	1.6250-18 UNEF	1.281	.479	1.812	4.959	2.469	1.372	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
18	24	1.375	1.250	2.000	1.875	1.6250-18 UNEF	1.281	.479	1.812	4.959	2.625	1.309	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
19	28	1.445	1.320	2.000	2.062	1.8750-16 UN	1.281	.479	2.062	5.021	2.625	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
20	28	1.531	1.406	2.000	2.062	1.8750-16 UN	1.281	.479	2.062	5.021	2.625	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
21	28	1.375	1.250	2.000	2.062	1.8750-16 UN	1.281	.479	2.062	5.021	2.625	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
22	32	1.656	1.531	2.250	2.312	2.0625-16 UNS	1.281	.479	2.312	5.083	2.953	1.370	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
23	32	1.828	1.700	2.438	2.312	2.0625-16 UNS	1.391	.479	2.312	5.385	3.171	1.375	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
24	32	1.562	1.437	2.250	2.312	2.0625-16 UNS	1.281	.479	2.312	5.083	2.953	1.370	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
25	32	1.730	1.605	2.438	2.312	2.0625-16 UNS	1.391	.479	2.312	5.385	3.171	1.375	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
26	36	1.900	1.775	2.438	2.500	2.3125-16 UNS	1.391	.479	2.562	5.354	3.171	1.344	2.2500-0.1P-0.2L-DS	2.719	.980	6.00
27	36	1.730	1.605	2.438	2.500	2.3125-16 UNS	1.391	.479	2.562	5.354	3.171	1.344	2.2500-0.1P-0.2L-DS	2.719	.980	6.00

Figure 8. MIL-DTL-22992 Connector Backshell M85049/4 (Sheet 4 of 13)

DIMENSIONS (Configuration A, Style 1 (Cable Sealing Continued)

Size no.	Shell size	Cable range		B	C	D	E	F	G	H	J	K	L	N	P	Q
		Max dia	Min dia	+.000 -.010	+.000 -.010	Thread Class 2B-LH	Free length max	+.016	+.010 -.020	Max	±.031	+.015 -.025	Thread (plated) Class 2 (A or B)	Dia max	Max	Within one link
28	36	1.825	1.700	2.438	2.500	2.3125-16 UNS	1.391	.479	2.562	5.354	3.171	1.344	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
29	36	1.984	1.859	2.438	2.500	2.3125-16 UNS	1.391	.479	2.562	5.354	3.171	1.344	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
30	36	2.062	1.917	2.750	2.500	2.3125-16 UNS	1.391	.479	2.562	5.385	3.375	1.375	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
31	40	2.375	2.230	3.000	2.812	2.6250-16 UN	1.391	.667	2.875	5.682	3.625	1.421	2.7500-0.1P-0.2L-DS	2.969	.980	6.00
32	40	2.250	2.105	2.875	2.625	2.6250-16 UN	1.391	.667	2.875	5.682	3.500	1.421	2.7500-0.1P-0.2L-DS	2.969	.980	6.00
33	40	2.145	2.000	2.750	2.625	2.6250-16 UN	1.391	.667	2.875	5.620	3.375	1.422	2.7500-0.1P-0.2L-DS	2.969	.980	6.00
34	40	2.062	1.917	2.750	2.625	2.6250-16 UN	1.391	.667	2.875	5.620	3.375	1.422	2.7500-0.1P-0.2L-DS	2.969	.980	6.00
35	44	2.328	2.183	2.875	2.750	2.8750-16 UN	1.382	.667	3.125	6.471	3.531	2.218	3.0000-0.1P-0.2P-DS	3.217	.980	6.00

Figure 8. MIL-DTL-22992 Connector Backshell M85049/4 (Sheet 5 of 13)

DIMENSIONS (Configuration B, Style 2 (Cable Sealing)

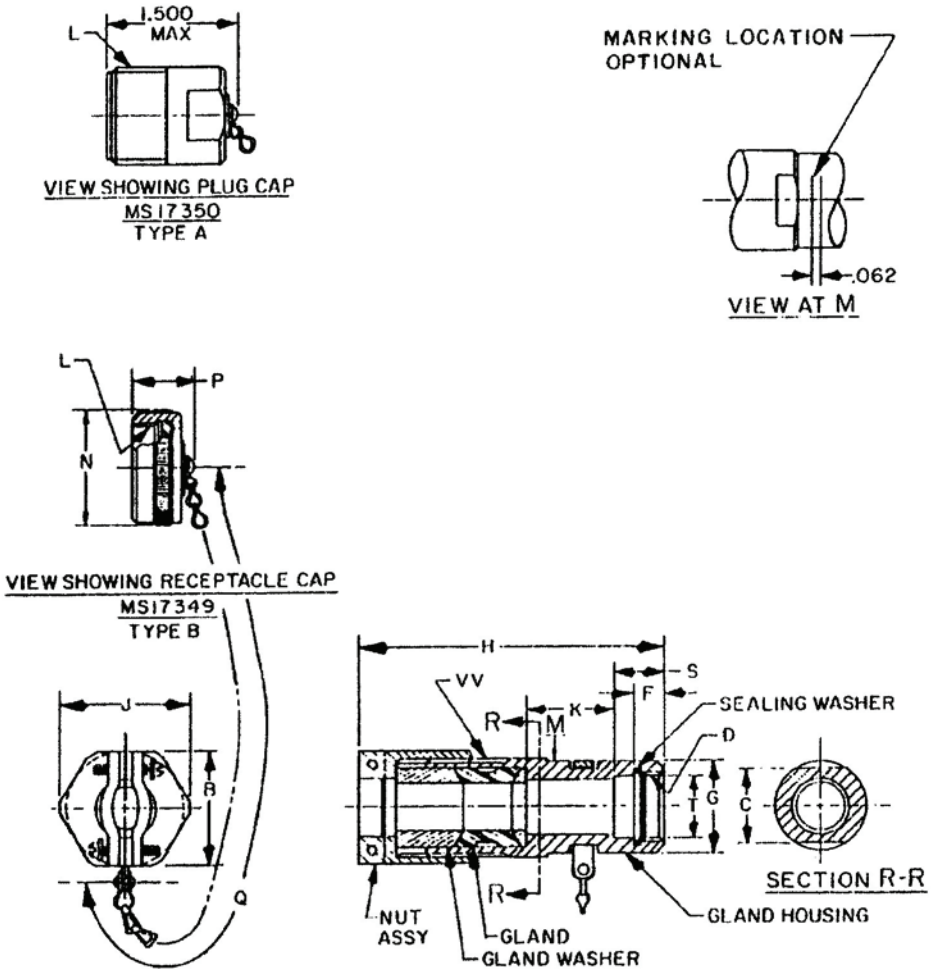


Figure 8. MIL-DTL-22992 Connector Backshell M85049/4 (Sheet 6 of 13)

DIMENSIONS (Configuration B, Style 2 (Cable Sealing)

Size no.	Shell size	Cable range		B ±.005	C ±.000 -.010	D Thread Class 2B - LH	F ±.016	G DLA. ±.010 -.020	H Max.	J Max.	K ±.010
1	12	.521	.321	1.219	.938	0.7500-20 UNEF	.479	.938	4.000	1.320	.950
2	14	.646	.446	1.344	1.062	0.8750-20 UNEF	.479	1.062	4.100	1.420	1.075
3	16	.765	.565	1.469	1.188	1.0000-20 UNEF	.479	1.188	4.800	1.600	1.200
4	18	.890	.690	1.625	1.312	1.1250-18 NEF	.479	1.312	4.900	1.750	1.325
5	20	1.015	.815	1.750	1.438	1.2500-18 NEF	.479	1.438	4.900	1.900	1.325
6	22	1.180	.980	2.000	1.562	1.3750-18 NEF	.479	1.562	4.900	2.190	1.325
7	24	1.430	1.230	2.250	1.812	1.6250-18 NEF	.479	1.812	5.000	2.475	1.450
8	24	1.230	1.030	2.250	1.812	1.6250-18 NEF	.479	1.812	5.000	2.475	1.450
9	28	1.670	1.430	2.500	2.062	1.8750-18 UN	.479	2.062	5.300	2.715	1.700
10	32	1.860	1.660	2.750	2.312	2.0625-16 N	.479	2.312	5.600	2.900	1.950
11	36	2.110	1.860	3.062	2.562	2.3125-16 N	.479	2.562	5.725	3.250	1.950
12	40	2.400	2.200	3.437	2.875	2.6250-16 UN	.667	2.875	5.725	3.625	1.950
13	40	2.200	2.200	3.437	2.875	2.6250-16 UN	.667	2.875	5.725	3.625	1.950

Figure 8. MIL-DTL-22992 Connector Backshell M85049/4 (Sheet 7 of 13)

DIMENSIONS (Configuration B, Style 2 (Cable Sealing Continued)

Size number	Shell size	L Thread (plated) Class 2 (A or B)	N Dia max	P Max	Q Within one link	S ±.010	T Dia ±.005	VV Gland threads class 2-LH
1	12	.8750-0.1P-0.2L-DS	1.094	.765	5.00	1.425	.600	1.0625-18 UNEF
2	14	1.0000-0.1P-0.2L-DS	1.219	.765	5.00	1.425	.726	1.1875-18 NEF
3	16	1.1250-0.1P-0.2L-DS	1.344	.980	5.00	1.605	.845	1.3125-18 NEF
4	18	1.2500-0.1P-0.2L-DS	1.469	.980	5.00	1.605	.970	1.4375-18 NEF
5	20	1.3750-0.1P-0.2L-DS	1.562	.980	5.00	1.605	1.095	1.5625-18 NEF
6	22	1.5000-0.1P-0.2L-DS	1.688	.980	6.00	1.605	1.220	1.8125-16 N
7	24	1.7500-0.1P-0.2L-DS	1.938	.980	6.00	1.605	1.470	2.0625-16 N
8	28	2.0000-0.1P-0.2L-DS	2.219	.980	6.00	1.605	1.713	2.0625-16 N
9	28	2.0000-0.1P-0.2L-DS	2.219	.980	6.00	1.605	1.713	2.3125-16 N
10	32	2.2500-0.1P-0.2L-DS	2.469	.980	6.00	1.605	1.900	2.500-16 UN
11	36	2.5000-0.1P-0.2L-DS	2.719	.980	6.00	1.605	2.150	2.8750-16 UN
12	40	2.7500-0.1P-0.2L-DS	2.969	.980	6.00	1.605	2.460	3.1250-16 UN
13	40	2.7500-0.1P-0.2L-DS	2.969	.980	6.00	1.605	2.460	3.1250-16 UN

Figure 8. MIL-DTL-22992 Connector Backshell M85049/4 (Sheet 8 of 13)

DIMENSIONS (Configuration C, Style 3 (Cable Sealing and Gripping)

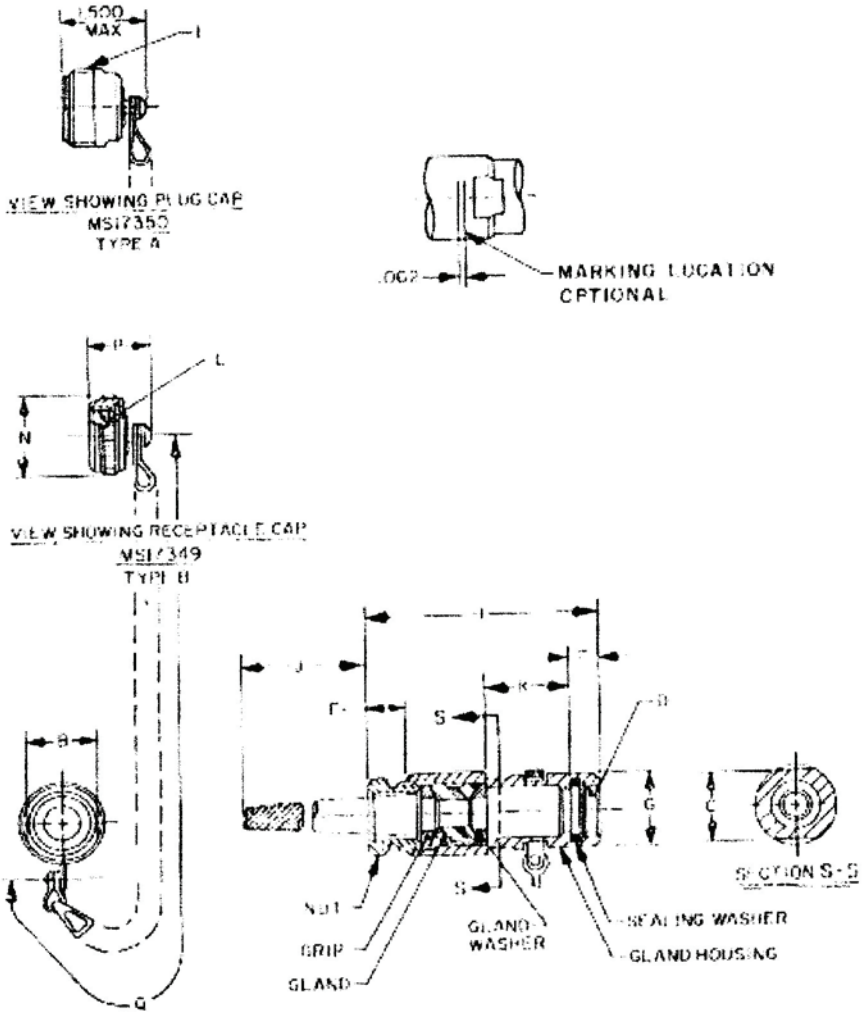


Figure 8. MIL-DTL-22992 Connector Backshell M85049/4 (Sheet 9 of 13)

DIMENSIONS (Configuration C, Style 3 (Cable Sealing and Gripping)

Size number	Shell size	Cable range		B	C	D	E	F	G	H	J	K	L	N	P	Q
		Max dia	Min dia	+.000 -.010	+.000 -.010	Thread Class 2B-LH	Free length max	+.015	Dia +.010 -.020	Max	Approx-free length	+.015 -.025	Thread (plated) Class 2 (A or B)	Dia max	Max	Within one link
1	12	.530	.436	1.000	.812	.7500-20 UNEF	.597	.479	.938	3.810	4.688	1.219	.8750-0.1P-0.2L-DS	1.094	.765	5.00
2	12	.500	.406	.875	.938	.7500-20 UNEF	.539	.479	.938	3.248	4.344	.871	.8750-0.1P-0.2L-DS	1.094	.765	5.00
3	12	.405	.316	1.000	.812	.7500-20 UNEF	.597	.479	.938	3.810	3.688	1.219	.8750-0.1P-0.2L-DS	1.094	.765	5.00
4	14	.625	.560	1.062	1.125	.8750-20 UNEF	.597	.479	1.062	4.024	6.188	1.371	1.0000-0.1P-0.2L-DS	1.219	.765	5.00
5	14	.605	.511	1.000	1.062	.8750-20 UNEF	.597	.479	1.062	3.712	5.188	1.121	1.0000-0.1P-0.2L-DS	1.219	.765	5.00
6	14	.530	.430	1.000	1.062	.8750-20 UNEF	.597	.479	1.062	3.712	4.688	1.121	1.0000-0.1P-0.2L-DS	1.219	.765	5.00
7	14	.405	.316	1.000	1.062	.8750-20 UNEF	.597	.479	1.062	3.712	3.688	1.121	1.0000-0.1P-0.2L-DS	1.219	.765	5.00
8	18	.828	.715	1.125	1.250	1.1250-18 UNEF	.597	.479	1.312	4.087	6.688	1.343	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
9	20	1.055	.930	1.500	1.375	1.2500-18 UNEF	.597	.479	1.438	4.212	7.688	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
10	20	1.000	.875	1.500	1.375	1.2500-18 UNEF	.597	.479	1.438	4.212	7.188	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
11	20	.900	.787	1.250	1.375	1.2500-18 UNEF	.597	.479	1.438	4.150	7.188	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
12	20	.750	.637	1.250	1.375	1.2500-18 UNEF	.597	.479	1.438	4.150	7.188	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00

Figure 8. MIL-DTL-22992 Connector Backshell M85049/4 (Sheet 10 of 13)

DIMENSIONS (Configuration C, Style 3 (Cable Sealing and Gripping Continued)

Size number	Shell size	Cable range		B	C	D	E	F	G	H	J	K	L	N	P	Q
		Max dia	Min dia	+.000 -.010	+.000 -.010	Thread Class 2B-LH	Free length max	+.016	Dia +.010 -.020	Max	Approx- free length	+.015 -.025	Thread (plated) Class 2 (A or B)	Dia max	Max	Within one link
13	22	1.109	.984	1.500	1.625	1.3750-18 UNEF	.597	.479	1.562	4.212	7.688	1.371	1.5000-0.1P-0.2L-DS	1.688	.980	6.00
14	22	1.000	.875	1.500	1.625	1.3750-18 UNEF	.597	.479	1.562	4.212	7.188	1.371	1.5000-0.1P-0.2L-DS	1.688	.980	6.00
15	24	1.375	1.250	2.000	1.875	1.6250-18 UNEF	.597	.479	1.812	4.275	9.688	1.309	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
16	24	1.310	1.185	1.750	1.875	1.6250-18 UNEF	.597	.479	1.812	4.275	8.688	1.372	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
17	24	1.230	1.105	1.750	1.875	1.6250-18 UNEF	.597	.479	1.812	4.275	8.188	1.372	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
18	24	1.180	1.055	1.750	1.875	1.6250-18 UNEF	.597	.479	1.812	4.275	8.188	1.372	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
19	28	1.531	1.406	2.000	2.062	1.8750-16 UN	.597	.479	2.062	4.337	10.688	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
20	28	1.445	1.320	2.000	2.062	1.8750-16 UN	.597	.479	2.062	4.337	9.688	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
21	28	1.375	1.250	2.000	2.062	1.8750-16 UN	.597	.479	2.062	4.337	9.688	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
22	32	1.825	1.700	2.438	2.312	2.0625-16 UNS	.710	.479	2.312	4.704	13.688	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
23	32	1.730	1.605	2.438	2.312	2.0625-16 UNS	.710	.479	2.312	4.704	13.688	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00

Figure 8. MIL-DTL-22992 Connector Backshell M85049/4 (Sheet 11 of 13)

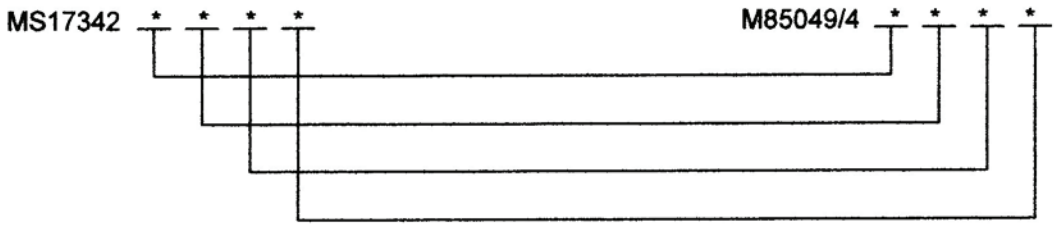
DIMENSIONS (Configuration C, Style 3 (Cable Sealing and Gripping Continued)

Size number	Shell size	Cable range		B	C	D	E	F	G	H	J	K	L	N	P	Q
		Max dia	Min dia	+.000 -.010	+.000 -.010	Thread Class 2B-LH	Free length max	+.016	Dia +.010 -.020	Max	Approx-free length	+.015 -.025	Thread (plated) Class 2 (A or B)	Dia max	Max	Within one link
24	32	1.656	1.531	2.250	2.312	2.0625-16 UNS	.597	.479	2.312	4.399	12.688	1.370	2.2500-0.1P-0.2L-US	2.469	.980	6.00
25	36	2.062	1.917	2.750	2.500	2.3125-16 UNS	.710	.479	2.562	4.704	14.188	1.375	2.5000-0.1P-0.2L-US	2.719	.980	6.00
26	36	1.984	1.859	2.438	2.500	2.3125-16 UNS	.710	.479	2.562	4.673	13.688	1.344	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
27	36	1.900	1.775	2.438	2.500	2.3125-16 UNS	.710	.479	2.562	4.673	13.688	1.344	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
28	36	1.825	1.700	2.438	2.500	2.3125-16 UNS	.710	.479	2.562	4.673	13.688	1.344	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
29	36	1.730	1.605	2.438	2.500	2.3125-16 UNS	.710	.479	2.562	4.673	13.688	1.344	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
30	40	2.375	2.230	2.875	2.812	2.6250-16 UN	.709	.667	2.875	5.000	18.188	1.421	2.7500-0.1P-0.2L-US	2.969	.980	6.00
31	40	2.250	2.105	2.750	2.625	2.6250-16 UN	.709	.667	2.875	5.000	17.188	1.421	2.7500-0.1P-0.2L-DS	2.969	.980	6.00
32	40	2.145	2.000	2.750	2.625	2.6250-16 UN	.710	.667	2.875	4.939	14.188	1.422	2.7500-0.1P-0.2L-DS	2.969	.980	6.00
33	40	2.062	1.917	2.750	2.625	2.6250-16 UN	.710	.667	2.875	4.939	14.188	1.422	2.7500-0.1P-0.2L-DS	2.969	.980	6.00

NOTES:
1. Dimensions are in inches, after plating.
2. Tolerances in fractions +/- .016 (0.41mm)

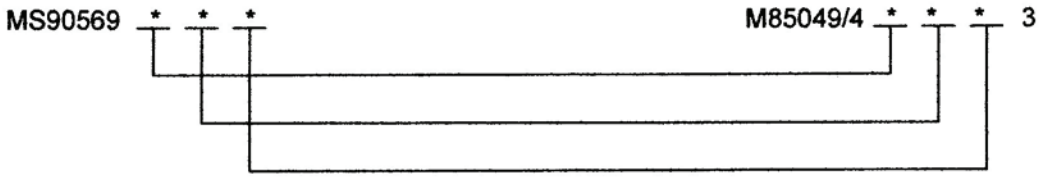
Figure 8. MIL-DTL-22992 Connector Backshell M85049/4 (Sheet 12 of 13)

SUPERSESSION DATA



FINISH

Old	New
C	W
N	A

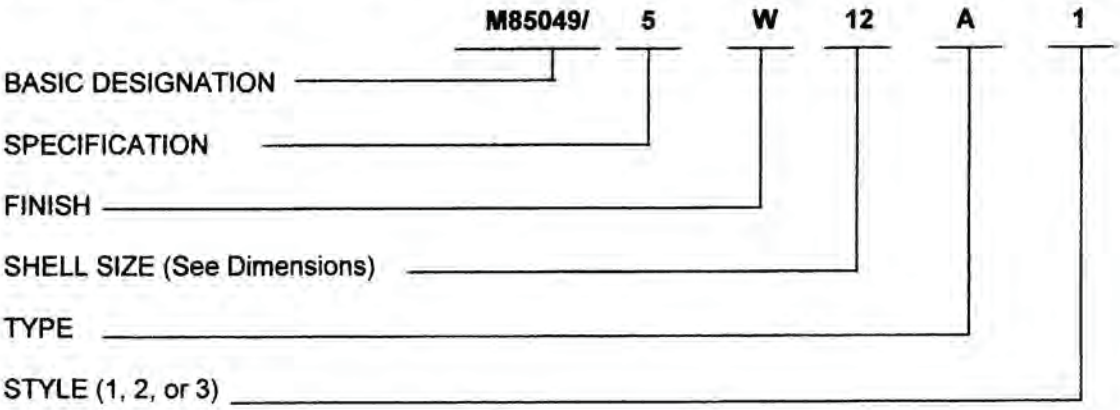


FINISH

Old	New
C	W
N	A

Figure 8. MIL-DTL-22992 Connector Backshell M85049/4 (Sheet 13 of 13)

PART NUMBER DESIGNATION



FINISH: Connectors and their associated accessories shall be of the same finish.
W, is in accordance with AS85049.
A, is in accordance with MIL-A-8625, type III, I, is hard anodic coating.

APPLICATION: Styles 1 and 3 are for use with classes R and C.
Style 2 for use with classes R, C, and J.

MATERIAL

COMPONENT	MATERIAL	FINISH
ACCESSORY BODY AND CAP	HIGH GRADE ALUMINUM ALLOY IN ACCORDANCE WITH AS85049	A, W
CHAIN	CORROSION RESISTANT STEEL, TYPE II, CLASS 3, TRADE NUMBER 8 OF RR-C-271	PASSIVATED
GASKET AND GLAND	RUBBER, IN ACCORDANCE WITH ASTM D 2000	

NOTE: The backshell, cap and chain are considered the complete accessory.

TYPE: A, B and C offer various configurations
A, is for use with MS17344
B, is for use with MS17343, MS17345, and MS17347.

STYLE: 1 and 2 (Cable Sealing Application)
3 (Cable Sealing and Gripping Application)

Figure 9. MIL-DTL-22992 Connector Backshell M85049/5 (Sheet 1 of 13)

Configuration A, Style 1 (Cable Sealing)

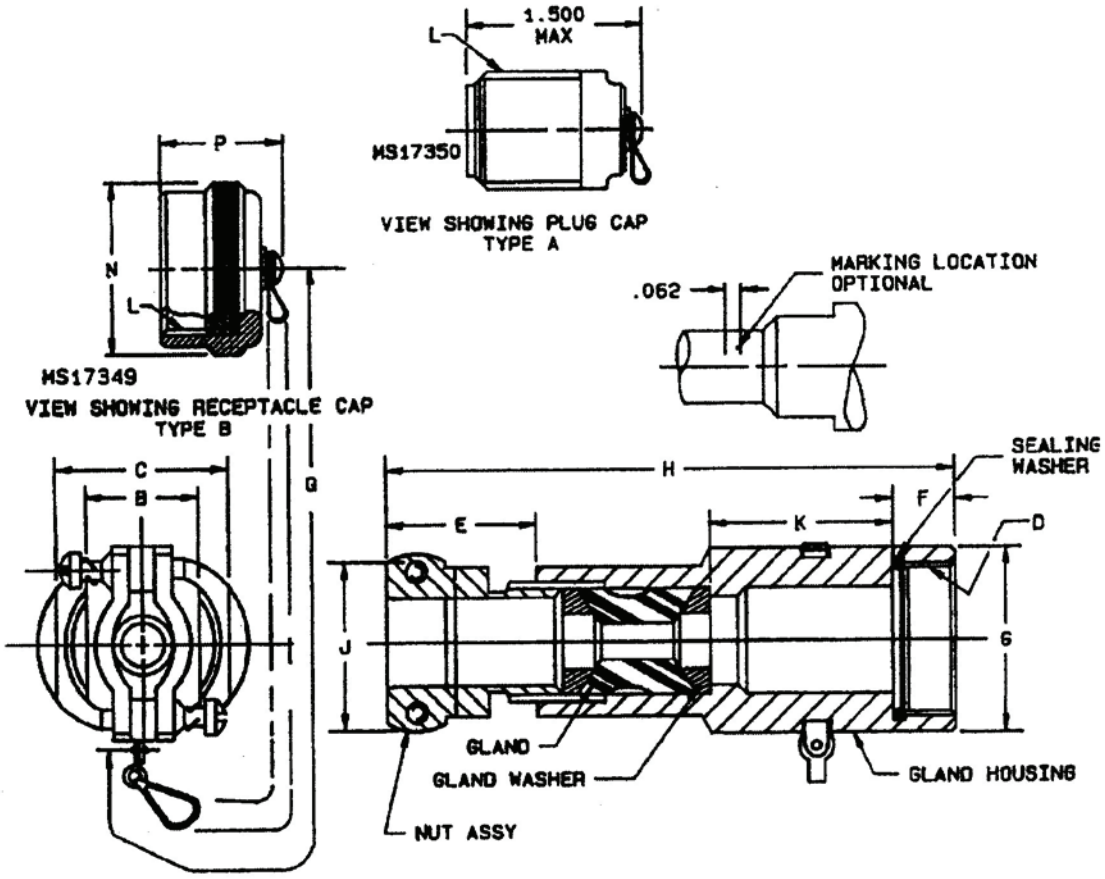


Figure 9. MIL-DTL-22992 Connector Backshell M85049/5 (Sheet 2 of 13)

DIMENSIONS (Configuration 1A, Style 1 Cable Sealing)

Size number	Shell size	Cable range		B	C	D	E	F	G
		Min dia	Max dia	+.000 -.010	+.000 -.010	thread class 2B-LH	free length max	+.016	dia +.010 -.020
1	12	.156	.250	.625	.812	.7500-20 UNEF	.906	.479	.938
2	18	.281	.375	.750	1.125	1.1250-18 NEF	.969	.479	1.312
3	18	.281	.375	.875	1.125	1.1250-18 NEF	.969	.479	1.312
4	18	.188	.281	.750	1.125	1.1250-18 NEF	.969	.479	1.312
5	18	.511	.605	1.000	1.125	1.1250-18 NEF	1.062	.479	1.312
6	18	.436	.530	1.000	1.125	1.1250-18 NEF	1.062	.479	1.312
7	20	.605	.699	1.062	1.250	1.2500-18 NEF	1.062	.479	1.438
8	20	.361	.455	1.062	1.250	1.2500-18 NEF	1.062	.479	1.438
9	20	.511	.605	1.000	1.250	1.2500-18 NEF	1.062	.479	1.438
10	22	.449	.562	1.188	1.406	1.3750-18 NEF	1.094	.479	1.562
11	22	.311	.405	1.000	1.375	1.3750-18 NEF	1.062	.479	1.562
12	22	.715	.828	1.188	1.406	1.3750-18 NEF	1.094	.479	1.562
13	24	.787	.900	1.312	1.625	1.6250-18 NEF	1.094	.479	1.812
14	24	.517	.630	1.312	1.625	1.6250-18 NEF	1.094	.479	1.812
15	24	.637	.750	1.312	1.625	1.6250-18 NEF	1.094	.479	1.812
16	24	.857	.970	1.312	1.625	1.6250-18 NEF	1.094	.479	1.812
17	24	.715	.828	1.188	1.625	1.6250-18 NEF	1.094	.479	1.812
18	24	.692	.805	1.312	1.625	1.6250-18 NEF	1.094	.479	1.812
19	28	.755	.880	1.546	1.875	1.8750-16 UN	1.281	.479	2.062
20	28	.984	1.109	1.546	1.875	1.8750-16 UN	1.281	.479	2.062
21	28	.637	.750	1.312	1.875	1.8750-16 UN	1.094	.479	2.062
22	28	.281	.375	0.875	1.875	1.8750-16 UN	0.969	.479	2.062
23	28	.857	.970	1.312	1.875	1.8750-16 UN	1.094	.479	2.062
24	28	.875	1.000	1.546	1.875	1.8750-16 UN	1.281	.479	2.062
25	28	.436	.530	1.000	1.812	1.8750-16 UN	1.062	.479	2.062
26	28	.567	.680	1.312	1.875	1.8750-16 UN	1.094	.479	2.062
27	32	.930	1.055	1.546	2.062	2.0625-16 N	1.281	.479	2.312
28	32	1.150	1.230	1.780	2.062	2.0625-16 N	1.281	.479	2.312
29	32	.637	.750	1.312	2.062	2.0625-16 N	1.094	.479	2.312
30	32	.755	.880	1.546	2.062	2.0625-16 N	1.281	.479	2.312
31	32	.984	1.109	1.546	2.062	2.0625-16 N	1.281	.479	2.312
32	32	.857	.970	1.312	2.062	2.0625-16 N	1.094	.479	2.312
33	32	.281	.375	.875	2.062	2.0625-16 N	.969	.479	2.312
34	32	.436	.530	1.000	2.000	2.0625-16 N	1.062	.479	2.312
35	32	1.005	1.130	1.780	2.062	2.0625-16 N	1.281	.479	2.312
36	36	1.185	1.310	1.780	2.312	2.3125-16 N	1.281	.479	2.562
37	36	.984	1.109	1.546	2.312	2.3125-16 N	1.281	.479	2.562
38	36	1.250	1.375	2.000	2.312	2.3125-16 N	1.281	.479	2.562
39	36	1.055	1.180	1.780	2.312	2.3125-16 N	1.281	.479	2.562
40	36	1.320	1.445	2.000	2.312	2.3125-16 N	1.281	.479	2.562
41	36	.857	.970	1.312	2.250	2.3125-16 N	1.094	.479	2.562
42	36	1.105	1.230	1.780	2.312	2.3125-16 N	1.281	.479	2.562
43	40	1.815	1.940	2.438	2.750	2.6250-16 UN	1.391	.667	2.875
44	40	1.700	1.825	2.438	2.750	2.6250-16 UN	1.391	.667	2.875
45	40	1.605	1.730	2.438	2.750	2.6250-16 UN	1.391	.667	2.875
46	40	1.531	1.656	2.250	2.750	2.6250-16 UN	1.281	.667	2.875
47	44	1.867	2.000	2.750	2.969	2.8750-16 UN	1.382	.667	3.125
48	44	1.775	1.900	2.438	2.812	2.8750-16 UN	1.382	.667	3.125

Figure 9. MIL-DTL-22992 Connector Backshell M85049/5 (Sheet 3 of 13)

DIMENSIONS (Configuration 1A, Style 1 Cable Sealing Continued)

Size number	Shell size	H max	J +.031	K +.015 -.025	L thread (plated) class 2 (A or B)	N dia max	P max	Q within one link
1	12	3.182	0.938	.563	.8750-0.1P-0.2L-DS	1.094	.765	5.00
2	18	3.901	1.062	1.157	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
3	18	3.932	1.125	1.125	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
4	18	3.901	1.062	1.157	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
5	18	4.177	1.375	1.121	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
6	18	4.177	1.375	1.121	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
7	20	4.489	1.562	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
8	20	4.489	1.562	1.371	1.2500-0.1P-0.2L-DS	1.562	.980	5.00
9	20	4.306	1.375	1.250	1.2500-0.1P-0.2L-DS	1.562	.980	5.00
10	22	4.584	1.688	1.343	1.5000-0.1P-0.2L-DS	1.688	.980	6.00
11	22	4.306	1.375	1.250	1.5000-0.1P-0.2L-DS	1.688	.980	6.00
12	22	4.306	1.375	1.250	1.5000-0.1P-0.2L-DS	1.688	.980	6.00
13	24	4.647	1.812	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
14	24	4.647	1.812	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
15	24	4.647	1.812	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
16	24	4.647	1.812	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
17	24	4.542	1.688	1.301	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
18	24	4.647	1.812	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
19	28	4.896	2.125	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
20	28	4.896	2.125	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
21	28	4.647	1.812	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
22	28	4.229	1.125	1.422	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
23	28	4.647	1.812	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
24	28	4.896	2.125	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
25	28	4.431	1.375	1.375	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
26	28	4.647	1.812	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
27	32	4.896	2.125	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
28	32	4.959	2.469	1.372	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
29	32	4.647	1.812	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
30	32	4.896	2.125	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
31	32	4.896	2.125	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
32	32	4.647	1.812	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
33	32	4.276	1.125	1.469	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
34	32	4.431	1.375	1.375	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
35	32	4.959	2.469	1.372	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
36	36	4.959	2.469	1.372	2.2500-0.1P-0.2L-DS	2.719	.980	6.00
37	36	4.896	2.125	1.371	2.2500-0.1P-0.2L-DS	2.719	.980	6.00
38	36	5.021	2.625	1.371	2.2500-0.1P-0.2L-DS	2.719	.980	6.00
39	36	4.959	2.469	1.372	2.2500-0.1P-0.2L-DS	2.719	.980	6.00
40	36	5.021	2.625	1.371	2.2500-0.1P-0.2L-DS	2.719	.980	6.00
41	36	4.651	1.812	1.375	2.2500-0.1P-0.2L-DS	2.719	.980	6.00
42	36	4.959	2.469	1.372	2.2500-0.1P-0.2L-DS	2.179	.980	6.00
43	40	6.354	3.171	2.156	2.7500-0.1P-0.2L-DS	2.969	.980	6.00
44	40	6.354	3.171	2.156	2.7500-0.1P-0.2L-DS	2.969	.980	6.00
45	40	6.354	3.171	2.156	2.7500-0.1P-0.2L-DS	2.969	.980	6.00
46	40	6.057	2.953	2.156	2.7500-0.1P-0.2L-DS	2.969	.980	6.00
47	44	6.345	3.375	2.156	3.0000-0.1P-0.2L-DS	3.217	.980	6.00
48	44	5.266	3.171	1.078	3.0000-0.1P-0.2L-DS	3.217	.980	6.00

Figure 9. MIL-DTL-22992 Connector Backshell M85049/5 (Sheet 4 of 13)

DIMENSIONS (Configuration 1B, Style 2 Cable Sealing)

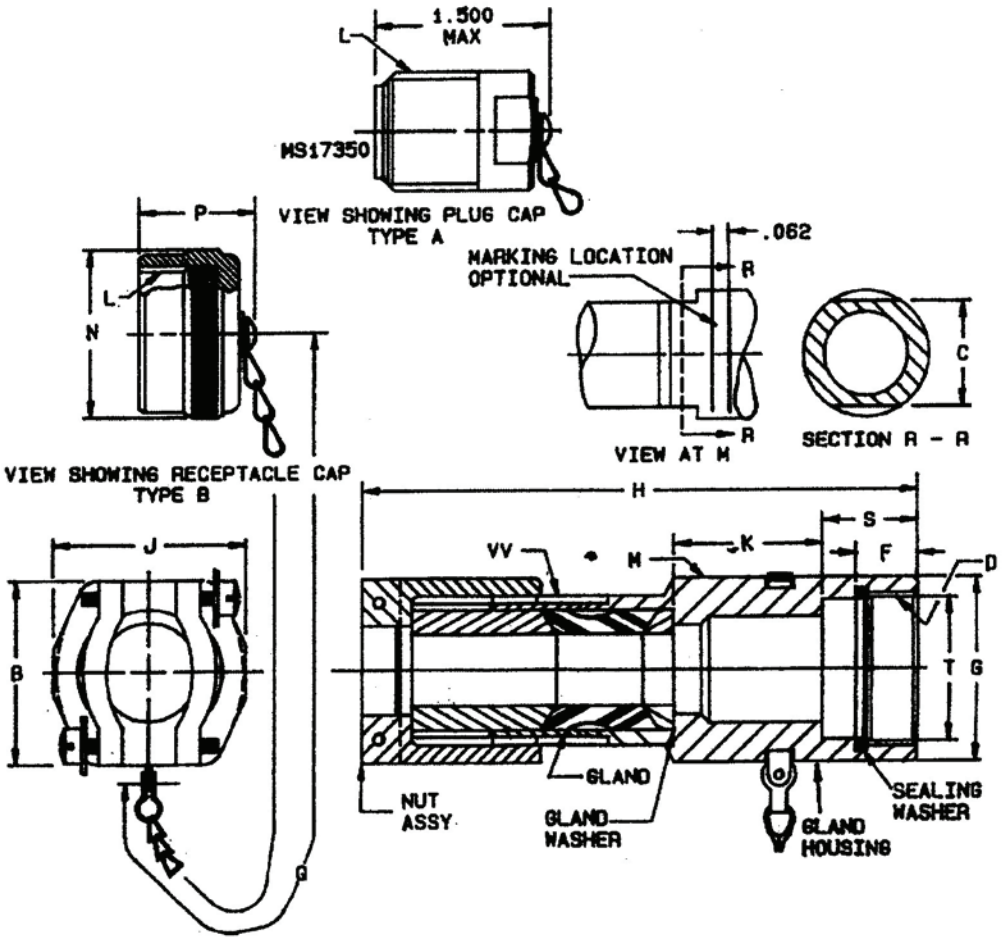


Figure 9. MIL-DTL-22992 Connector Backshell M85049/5 (Sheet 5 of 13)

DIMENSIONS (Configuration B, Style 2 Cable Sealing)

Size number	Shell size	Cable range		B	C	D	F	G	H	J
		Min dia	Max dia	+.005	+.000 -.010	thread class 2B-LH	+.016	dia +.010 -.020	max	max
1	12	.130	.280	.969	.812	.7500-20 UNEF	.479	.938	4.000	1.100
2	14	.246	.396	1.094	.938	.8750-20 UNEF	.479	1.062	4.100	1.110
3	16	.321	.521	1.219	1.062	1.0000-20 UNEF	.479	1.188	4.400	1.320
4	18	.446	.646	1.344	1.125	1.1250-18 UNEF	.479	1.312	4.600	1.420
5	18	.300	.475	1.344	1.125	1.0000-20 UNEF	.479	1.312	4.600	1.420
6	20	.565	.765	1.469	1.250	1.3750-18 UNEF	.479	1.438	4.900	1.600
7	20	.400	.600	1.469	1.250	1.6250-18 NEF	.479	1.438	4.900	1.600
8	22	.690	.890	1.625	1.375	1.6250-18 NEF	.479	1.562	4.900	1.750
9	22	.500	.700	1.625	1.375	1.6250-18 NEF	.479	1.562	4.900	1.750
10	22	.400	.525	1.625	1.375	1.3750-18 NEF	.479	1.562	4.900	1.750
11	24	.815	1.015	1.750	1.625	1.6250-18 NEF	.479	1.812	5.000	1.900
12	24	.595	.815	1.750	1.625	1.6250-18 NEF	.479	1.812	5.000	1.900
13	28	.980	1.180	2.000	1.875	1.6250-18 NEF	.479	2.062	5.300	2.190
14	28	.780	.980	2.000	1.875	1.6250-18 UN	.479	2.062	5.300	2.190
15	32	1.230	1.430	2.250	2.062	2.0625-16 N	.479	2.062	5.600	2.475
16	32	1.030	1.230	2.250	2.062	2.0625-16 N	.479	2.062	5.600	2.475
17	36	1.470	1.670	2.500	2.312	2.3125-16 N	.479	2.562	5.600	2.715
18	36	1.270	1.470	2.500	2.312	2.3125-16 N	.479	2.562	5.600	2.715
19	40	1.660	1.860	2.750	2.562	2.6250-16 UN	.667	2.875	5.725	2.900
20	40	1.400	1.660	2.750	2.562	2.6250-16 UN	.667	2.875	5.725	2.900

Figure 9. MIL-DTL-22992 Connector Backshell M85049/5 (Sheet 6 of 13)

DIMENSIONS (Configuration B, Style 2 Cable Sealing Continued)

Size number	Shell size	K ±.010	L thread class 2A/B	N dia max	P max	Q within one link	S ±.010	T dia ±.055	VV gland threads plated class 2-LH
1	12	.950	.8750-0.1P-0.2L-DS	1.094	.765	5.00	1.425	.600	.8125-20 UNEF
2	14	1.075	1.0000-0.1P-0.2L-DS	1.219	.765	5.00	1.425	.726	.9375-20 UNEF
3	16	1.200	1.1250-0.1P-0.2P-DS	1.344	.980	5.00	1.605	.845	1.0625-18 NEF
4	18	1.325	1.1250-0.1P-0.2L-DS	1.469	.980	5.00	1.605	.970	1.1875-18 NEF
5	18	1.325	1.1250-0.1P-0.2L-DS	1.469	.980	5.00	1.605	.970	1.1875-18 NEF
6	20	1.325	1.3750-0.1P-0.2L-DS	1.562	.980	5.00	1.605	1.095	1.3125-18 NEF
7	20	1.325	1.3750-0.1P-0.2L-DS	1.562	.980	5.00	1.605	1.095	1.3125-18 NEF
8	22	1.325	1.5000-0.1P-0.2L-DS	1.688	.980	6.00	1.605	1.220	1.4375-18 NEF
9	22	1.325	1.5000-0.1P-0.2L-DS	1.688	.980	6.00	1.605	1.220	1.4375-18 NEF
10	22	1.325	1.5000-0.1P-0.2L-DS	1.688	.980	6.00	1.605	1.220	1.4375-18 NEF
11	24	1.450	1.5000-0.1P-0.2L-DS	1.938	.980	6.00	1.605	1.470	1.5625-18 NEF
12	24	1.450	1.5000-0.1P-0.2L-DS	1.938	.980	6.00	1.605	1.470	1.5625-18 NEF
13	28	1.700	2.0000-0.1P-0.2L-DS	2.219	.980	6.00	1.605	1.713	1.8125-16 N
14	28	1.700	2.0000-0.1P-0.2L-DS	2.219	.980	6.00	1.605	1.713	1.8125-16 N
15	32	1.950	2.2500-0.1P-0.2L-DS	2.469	.980	6.00	1.605	1.900	2.0625-16 N
16	32	1.950	2.2500-0.1P-0.2L-DS	2.469	.980	6.00	1.605	1.900	2.0625-16 N
17	36	1.950	2.2500-0.1P-0.2L-DS	2.719	.980	6.00	1.605	2.150	2.3125-16 N
18	36	1.950	2.2500-0.1P-0.2L-DS	2.719	.980	6.00	1.605	2.150	2.3125-16 N
19	40	1.950	2.7500-0.1P-0.2L-DS	2.969	.980	6.00	1.605	2.460	2.5000-16 UN
20	40	1.950	2.7500-0.1P-0.2L-DS	2.969	.980	6.00	1.605	2.460	2.5005-16 UN

Figure 9. MIL-DTL-22992 Connector Backshell M85049/5 (Sheet 7 of 13)

DIMENSIONS (Configuration 1C, Style 3 Cable Sealing and Gripping)

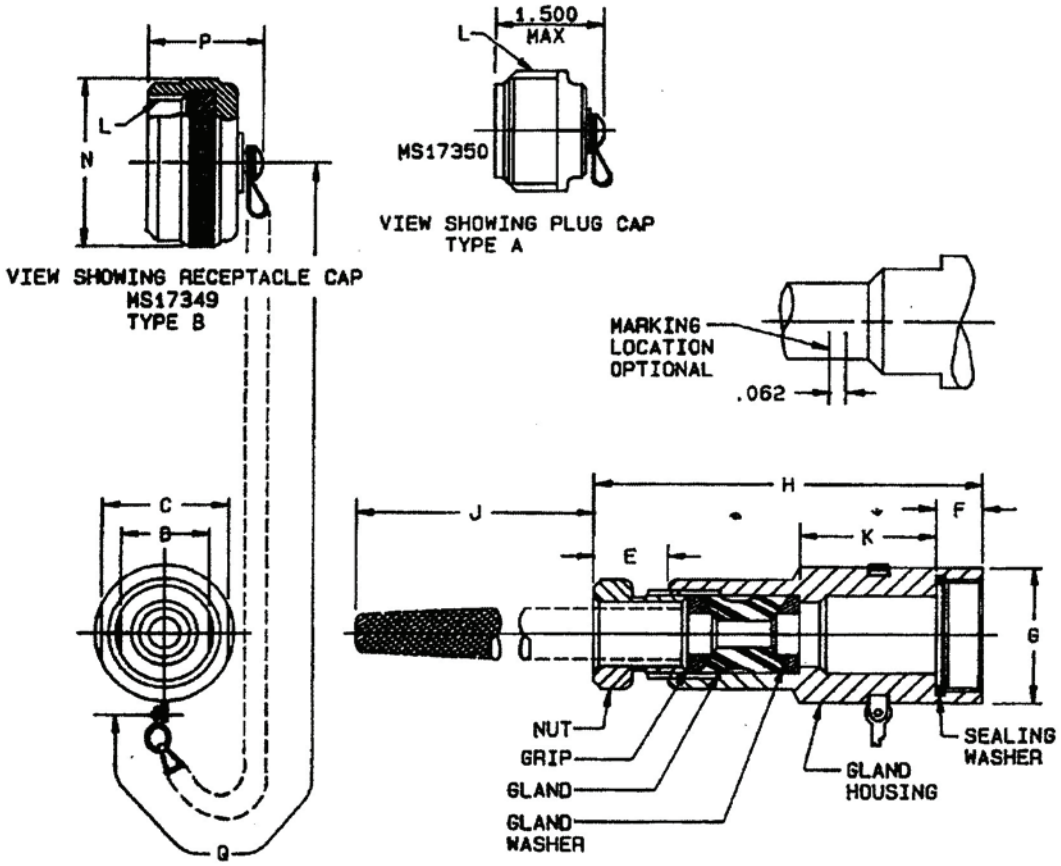


Figure 9. MIL-DTL-22992 Connector Backshell M85049/5 (Sheet 8 of 13)

DIMENSIONS (Configuration 1C, Style 3 Cable Sealing and Gripping)

Size number	Shell size	Cable range		B +.000 -.010	C +.000 -.010	D thread class 2B-LH	E free length max	F +.016	G dia +.010 -.020
		Min dia	Max dia						
1	12	.160	.222	.625	.812	.7500-20 UNEF	.476	.479	.938
2	18	.511	.605	1.000	1.125	1.1250-18 UNEF	.597	.479	1.312
3	18	.436	.530	1.000	1.125	1.1250-18 UNEF	.597	.479	1.312
4	18	.306	.375	.875	1.125	1.1250-18 UNEF	.539	.479	1.312
5	18	.219	.281	.750	1.125	1.1250-18 UNEF	.539	.479	1.312
6	20	.605	.699	1.062	1.250	1.2500-18 UNEF	.597	.479	1.438
7	20	.511	.605	1.000	1.250	1.2500-18 UNEF	.597	.479	1.438
8	20	.361	.455	1.062	1.250	1.2500-18 UNEF	.597	.479	1.438
9	22	.715	.828	1.125	1.460	1.3750-18 UNEF	.597	.479	1.562
10	22	.449	.562	1.125	1.460	1.3750-18 UNEF	.597	.479	1.562
11	22	.316	.405	1.000	1.375	1.3750-18 UNEF	.597	.479	1.562
12	24	.692	.805	1.250	1.625	1.6250-18 UNEF	.597	.479	1.812
13	24	.637	.750	1.250	1.625	1.6250-18 UNEF	.597	.479	1.812
14	24	.517	.630	1.250	1.625	1.6250-18 UNEF	.597	.479	1.812
15	28	.984	1.109	1.500	1.875	1.8750-16 UNEF	.597	.479	2.062
16	28	.875	1.000	1.500	1.875	1.8750-16 UNEF	.597	.479	2.062
17	28	.755	.880	1.500	1.875	1.8750-16 UNEF	.597	.479	2.062
18	28	.637	.750	1.250	1.875	1.8750-16 UNEF	.597	.479	2.062
19	28	.567	.680	1.250	1.875	1.8750-16 UNEF	.597	.479	2.062
20	28	.436	.530	1.000	1.812	1.8750-16 UNEF	.597	.479	2.062
21	28	.306	.375	.875	1.875	1.8750-16 UNEF	.539	.479	2.062

Figure 9. MIL-DTL-22992 Connector Backshell M85049/5 (Sheet 9 of 13)

DIMENSIONS (Configuration 1C, Style 3 Cable Sealing and Gripping Continued)

Size number	Shell size	H max	J ±.031	K +.015 -.025	L thread (plated) class 2 (A or B)	N dia max	P max	Q within one link
1	12	2.752	2.406	.563	.8750-0.1P-0.2L-DS	1.094	.765	5.00
2	18	3.712	5.188	1.121	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
3	18	3.712	4.688	1.121	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
4	18	3.502	3.844	1.125	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
5	18	3.471	2.844	1.157	1.2500-0.1P-0.2L-DS	1.469	.980	5.00
6	20	4.024	6.188	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
7	20	3.841	5.188	1.250	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
8	20	4.024	4.188	1.371	1.3750-0.1P-0.2L-DS	1.562	.980	5.00
9	22	4.087	6.688	1.343	1.5000-0.1P-0.2L-DS	1.688	.980	5.00
10	22	4.087	5.188	1.343	1.5000-0.1P-0.2L-DS	1.688	.980	6.00
11	22	3.841	3.688	1.250	1.5000-0.1P-0.2L-DS	1.688	.980	6.00
12	24	4.150	6.688	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
13	24	4.150	6.688	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
14	24	4.150	5.688	1.371	1.7500-0.1P-0.2L-DS	1.938	.980	6.00
15	28	4.212	7.688	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
16	28	4.212	7.188	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
17	28	4.212	6.688	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
18	28	4.150	6.688	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
19	28	4.150	6.688	1.371	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
20	28	3.966	4.688	1.375	2.0000-0.1P-0.2L-DS	2.219	.980	6.00
21	28	3.799	3.844	1.422	2.0000-0.1P-0.2L-DS	2.219	.980	6.00

Figure 9. MIL-DTL-22992 Connector Backshell M85049/5 (Sheet 10 of 13)

DIMENSIONS (Configuration 1C, Style 3 Cable Sealing and Gripping Continued)

Size number	Shell size	Cable range		B	C	D	E	F	G
		Min dia	Max dia	+.000 -.010	+.000 -.010	thread class 2B-LH	free length max	+.016	dia +.010 -.020
22	32	1.105	1.230	1.750	2.062	2.0625-16 UN	.597	.479	2.312
23	32	1.005	1.130	1.750	2.062	2.0625-16 UN	.597	.479	2.312
24	32	.930	1.055	1.500	2.062	2.0625-16 UN	.597	.479	2.312
25	32	.857	.970	1.250	2.062	2.0625-16 UN	.597	.479	2.312
26	32	.755	.880	1.500	2.062	2.0625-16 UN	.597	.479	2.312
27	32	.637	.750	1.250	2.062	2.0625-16 UN	.597	.479	2.312
28	32	.436	.530	1.000	2.000	2.0625-16 UN	.597	.479	2.312
29	32	.306	.375	.875	2.062	2.0625-16 UN	.597	.479	2.312
30	36	1.320	1.445	2.000	2.312	2.3125-16 UN	.597	.479	2.562
31	36	1.250	1.375	2.000	2.312	2.3125-16 UN	.597	.479	2.562
32	36	1.185	1.310	1.750	2.312	2.3125-16 UN	.597	.479	2.562
33	36	1.105	1.230	1.750	2.312	2.3125-16 UN	.597	.479	2.562
34	36	1.055	1.180	1.750	2.312	2.3125-16 UN	.597	.479	2.562
35	36	.984	1.109	1.500	2.312	2.3125-16 UN	.597	.479	2.562
36	36	.857	.970	1.250	2.250	2.3125-16 UN	.597	.479	2.562
37	40	1.815	1.940	2.438	2.750	2.6250-16 UN	.710	.667	2.875
38	40	1.700	1.825	2.438	2.750	2.6250-16 UN	.710	.667	2.875
39	40	1.605	1.730	2.438	2.750	2.6250-16 UN	.710	.667	2.875
40	40	1.531	1.656	2.250	2.750	2.6250-16 UN	.597	.667	2.875
41	44	1.867	2.000	2.750	2.969	2.8750-16 UN	.710	.667	3.125
42	44	1.775	1.900	2.438	2.812	2.8750-16 UN	.710	.667	3.125

DIMENSIONS (Configuration C, Style 3 (Cable Sealing and Gripping Continued)

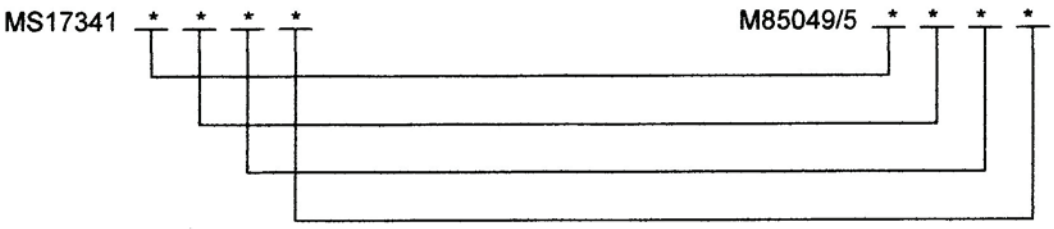
Figure 9. MIL-DTL-22992 Connector Backshell M85049/5 (Sheet 11 of 13)

Size number	Shell size	H max	J ±.031	K +.015 -.025	L thread (plated) class 2 (A or B)	N dia max	P max	Q within one link
22	32	4.275	8.188	1.372	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
23	32	4.275	7.188	1.372	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
24	32	4.212	7.688	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
25	32	4.150	7.188	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
26	32	4.212	6.688	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
27	32	4.150	6.688	1.371	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
28	32	3.966	4.688	1.375	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
29	32	3.846	3.844	1.469	2.2500-0.1P-0.2L-DS	2.469	.980	6.00
30	36	4.337	9.688	1.371	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
31	36	4.337	9.688	1.371	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
32	36	4.275	8.688	1.372	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
33	36	4.275	8.188	1.372	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
34	36	4.275	8.188	1.372	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
35	36	4.212	7.688	1.371	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
36	36	4.154	7.188	1.375	2.5000-0.1P-0.2L-DS	2.719	.980	6.00
37	40	5.673	13.188	2.156	2.7500-0.1P-0.2L-DS	2.969	.980	6.00
38	40	5.673	13.188	2.156	2.7500-0.1P-0.2L-DS	2.969	.980	6.00
39	40	5.673	13.188	2.156	2.7500-0.1P-0.2L-DS	2.969	.980	6.00
40	40	5.373	12.688	2.156	2.7500-0.1P-0.2L-DS	2.969	.980	6.00
41	44	5.673	14.188	2.156	3.0000-0.1P-0.2L-DS	3.217	.980	6.00
42	44	4.594	13.688	1.078	3.0000-0.1P-0.2L-DS	3.217	.980	6.00

NOTES:
1. Dimensions are in inches, after plating.
2. Tolerances in fractions +/- .016 (0.41mm)

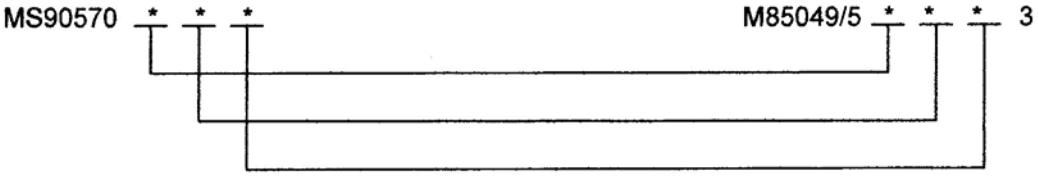
Figure 9. MIL-DTL-22992 Connector Backshell M85049/5 (Sheet 12 of 13)

SUPERSESSION DATA



FINISH

Old	New
C	W
N	A



FINISH

Old	New
C	W
N	A

Figure 9. MIL-DTL-22992 Connector Backshell M85049/5 (Sheet 13 of 13)

PART NUMBER DESIGNATION

MS90561 -1

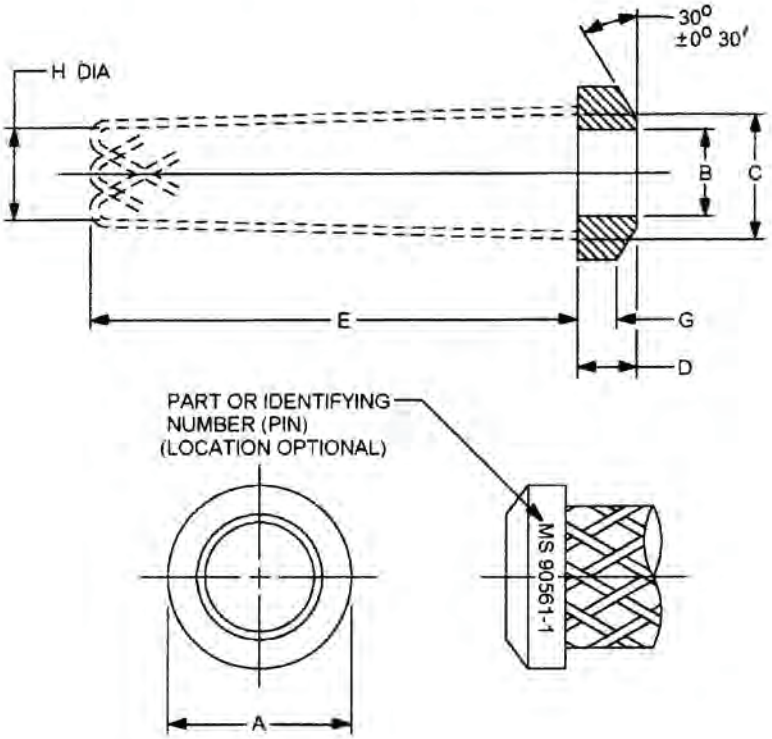
BASIC DESIGNATION

SHELL SIZE (See Dimensions)

FINISH: Connectors and their associated accessories shall be of the same finish.
W, is in accordance with AS85049.
A, is in accordance with MIL-A-8625, type III, I, is hard anodic coating.

APPLICATION: This Woven Cable Grip is for use with MIL-DTL-22992 connector classes: C, J, and R

MATERIAL: Material shall be corrosion resisting steel, type 18-8 or equivalent.



NOTES:
1. Dimensions are in inches, unless otherwise specified, tolerance is ± .010 (.25 mm).
2. Metric equivalents are given for information only.

REQUIREMENTS: P/N example: MS90561-X (See figure above and tables below).
The permeability requirement of MIL-DTL-22992 is not required.

Figure 10. MIL-DTL-22992 Connector Woven Cable Grip MS90561 (Sheet 1 of 3)

DIMENSIONS:

MS PIN	Arrangement Number	A dia + .000 - .010	B dia + .020 - .000	C dia max	D ± .015
90561-1	28-03, -05, -06 32-02, 32-04	1.797	.969	1.506	.450
-2	28-13, 32-03 32-05, 32-12	1.797	1.145	1.506	.413
-3	32-07	1.797	1.260	1.506	.368
-4	28-02, 29-04	1.797	.844	1.506	.485
-5	44-02, 44-04	2.235	1.312	1.944	.477
-6	44-06	2.235	1.375	1.944	.459
-7	48-13	2.672	2.062	2.418	.500
-8	52-02	2.922	1.703	2.672	.680
-9	52-06	2.922	1.797	2.672	.653
-10	Canceled	NO SUPERSEDING DATA			
-11	Canceled	NO SUPERSEDING DATA			
-12	28-07, 28-12 32-06	1.797	1.047	1.506	.428
-13	32-13	1.797	1.342	1.506	.366
-14	44-03, 44-05	2.235	1.438	1.944	.441
-15	44-12	2.235	1.516	1.944	.419
-16	44-13	2.235	1.688	1.944	.375
-17	52-12	2.922	2.328	2.672	.497
-18	52-13	2.922	2.500	2.672	.453
-19	44-51	2.235	1.750	1.955	.325
-20	44-52	2.235	1.579	1.944	.406
-21	44-56	2.235	1.160	1.944	.340

Figure 10. MIL-DTL-22992 Connector Woven Cable Grip MS90561 (Sheet 2 of 3)

DIMENSIONS (Continued)

MS PIN	Arrangement number	E approx.	G ± .005	H Diameter Cable Range	
				Max	Min
90561-1	28-03, -05, -06 32-02, 32-04	8.000	.250	.969	.832
-2	28-13, 32-03 32-05, 32-12	8.000	.250	1.145	1.003
-3	32-07	9.000	.250	1.260	1.055
-4	28-02, 29-04	7.500	.250	.844	.688
-5	44-02, 44-04	11.500	.250	1.312	1.156
-6	44-06	10.500	.250	1.375	1.219
-7	48-13	15.000	.369	2.062	1.867
-8	52-02	14.500	.369	1.703	1.414
-9	52-06	14.500	.369	1.797	1.508
-10	Canceled	NO SUPERSEDING DATA			
-11	Canceled	NO SUPERSEDING DATA			
-12	28-07, 28-12 32-06	8.000	.250	1.047	.891
-13	32-13	9.500	.250	1.342	1.185
-14	44-03, 44-05	10.500	.250	1.438	1.282
-15	44-12	11.500	.250	1.516	1.360
-16	44-13	13.500	.250	1.688	1.531
-17	52-12	18.000	.369	2.328	2.039
-18	52-13	19.000	.369	2.500	2.211
-19	44-51	12.500	.250	1.750	1.550
-20	44-52	12.000	.250	1.160	1.375
-21	44-56	8.000	.250	1.160	1.010

Figure 10. MIL-DTL-22992 Connector Woven Cable Grip MS90561 (Sheet 3 of 3)

PART NUMBER DESIGNATION

M85049/	59	A	12

MILITARY DESIGNATION

DETAIL SHEET

FINISH (A, or W)

SIZE (See Dimensions)

MATERIAL and FINISH: Aluminum alloy in accordance with AS85049.

"A" - Black Anodize
"W" – Cadmium, Olive Drab (1000 hr Salt Spray)

APPLICATION: Used to adapt M85049/68 shrink boots to MIL-DTL-22992 connectors.

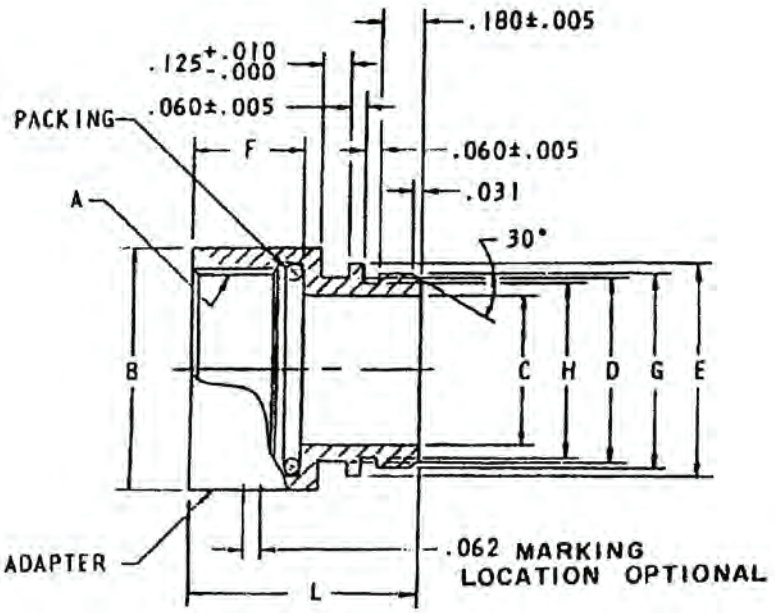


Figure 11. MIL-DTL-22992 Connector Shrink Boot Adapter M85049/59 (Sheet 1 of 2)

DIMENSIONS

Adapter size no.	Packing preformed	A Thread class 2B-LH	B ±.010	C dia ±.005	D dia ±.010	E dia ±.010	F ±.016	G +.010 -.000	H dia ±.005	L ±.031
12	MS9021-017	.7500-20 UNEF	.923	.500	.673	.798	.479	.766	.673	1.175
14	MS9021-019	.8750-20 UNEF	1.047	.656	.797	.922	.479	.844	.797	1.175
16	MS9021-021	1.0000-20 UNEF	1.172	.813	.923	1.048	.479	.969	.923	1.175
18	MS9021-023	1.1250-18 UNEF	1.297	.938	1.047	1.172	.479	1.094	1.047	1.175
20	MS9021-025	1.2500-18 UNEF	1.422	1.063	1.172	1.297	.479	1.219	1.047	1.175
22	MS9021-027	1.3750-18 UNEF	1.547	1.188	1.297	1.423	.479	1.344	1.297	1.175
24	MS9021-030	1.6250-18 UNEF	1.787	1.312	1.537	1.662	.479	1.469	1.422	1.175
28	MS9021-032	1.8750-16 UN	2.047	1.500	1.797	1.922	.479	1.719	1.679	1.175
32	MS9021-033	2.0625-16 UN	2.297	1.800	2.047	2.172	.479	2.000	1.960	1.175
36	MS9021-035	2.3125-16 UN	2.547	2.000	2.297	2.422	.479	2.219	2.179	1.175
40	MS9021-038	2.6250-16 UN	2.859	2.250	2.609	2.734	.667	2.469	2.429	1.375
44	MS9021-040	2.8750-16 UN	3.110	2.459	2.857	2.982	.667	2.782	2.742	1.375

NOTES: Dimensions are in inches, after plating.

SUPERSESSION DATA:

MS90568 * * M85049/59 * *

Finish

Old	New
C	W
N	A

Figure 11. MIL-DTL-22992 Connector Shrink Boot Adapter M85049/59 (Sheet 2 of 2)

PART NUMBER DESIGNATION

MS17350 N 28

MILITARY DESIGNATION

FINISH

SIZE (See Dimensions)

MATERIAL and FINISH:
Cover finish shall be designated by the letter C (conductive) or N (nonconductive).
Chain shall be passivated stainless steel in accordance with type II, class 3, trade number 8 of RR-C-271 and shall be within one link of length specified.
Chain shall move freely on protective cap after assembly.

APPLICATION: Cover is used for MIL-DTL-22992, MS17344.

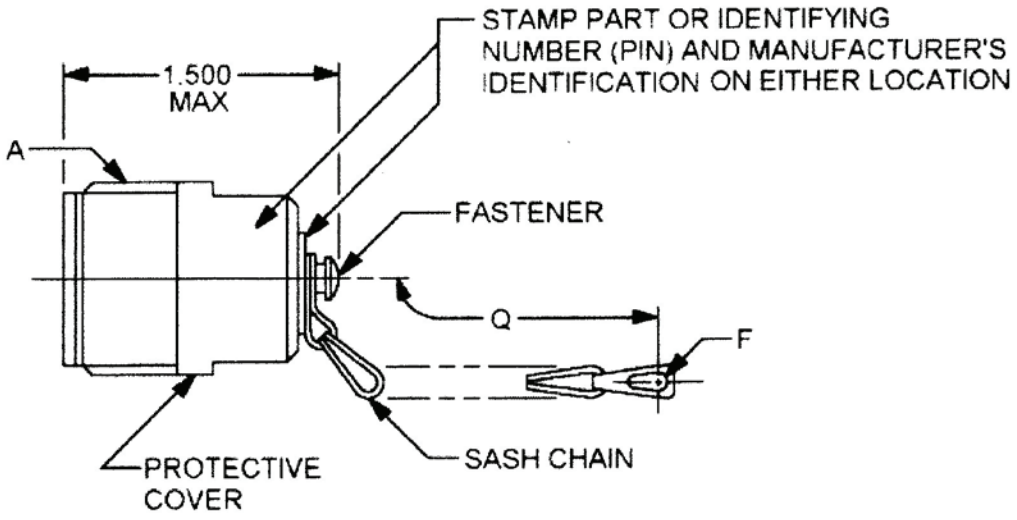


Figure 12. MIL-DTL-22992 Connector Protective Cover MS17350 (Sheet 1 of 2)

DIMENSIONS

Size	A Thread class 2B	Q	F See note 3
12	0.8750-0.1P-0.2L-DS	5.00	6
14	1.0000-0.1P-0.2L-DS		
16	1.1250-0.1P-0.2L-DS		
18	1.2500-0.1P-0.2L-DS		8
20	1.3750-0.1P-0.2L-DS		
22	1.5000-0.1P-0.2L-DS	6.00	
24	1.7500-0.1P-0.2L-DS		
32	2.2500-0.1P-0.2L-DS		10
36	2.5000-0.1P-0.2L-DS		
40	2.7500-0.1P-0.2L-DS		
44	3.0000-0.1P-0.2L-DS		

NOTES:
1. Dimensions are in inches, after plating.
2. Unless otherwise specified, tolerances are + / - .016 inch (0.41 mm).
3. F clearance to accommodate screw size indicated.

Figure 12. MIL-DTL-22992 Connector Protective Cover MS17350 (Sheet 2 of 2)

PART NUMBER DESIGNATION

MS17349	C	28	A
MILITARY DESIGNATION			
	FINISH		
		SIZE (See Dimensions)	
			TYPE (A or B)

MATERIAL and FINISH:
Chain shall be passivated stainless steel in accordance with type II, Class 3, trade number 8 of RR-C-271 and shall be within one link of length specified.
Chain shall move freely on protective cap after assembly.
Cover finish shall be designated by the letter C (conductive) or N (nonconductive).
Cover shall be marked with the part number only when procured as a separate part.

APPLICATION: Cover type shall be designated as A or B.
Type A is used for MS17345, MS17347, and MS17348,
Type B is used for MS17343 and MS17346.

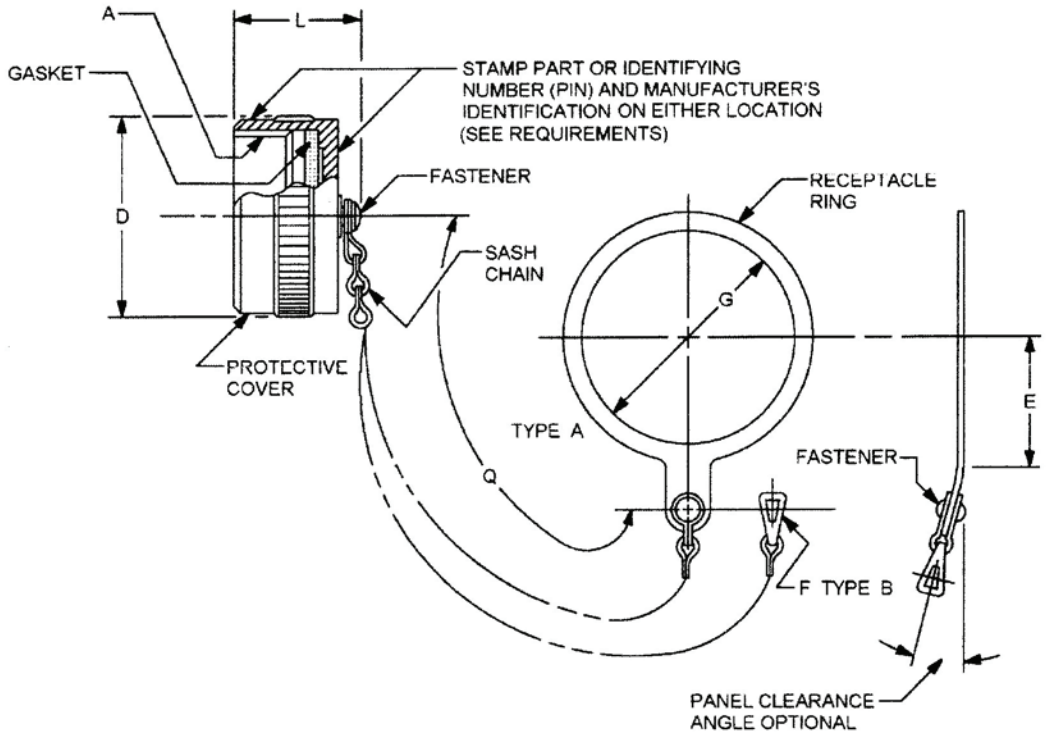


Figure 13. MIL-DTL-22992 Connector Protective Cover MS17349 (Sheet 1 of 2)

DIMENSIONS

Size	Type	A Thread class 2B	L Max.	Q	D Max	E Min	F (See Note 4)	G Min.
12	A	0.8750-0.1P-0.2L-DS	.765	5.00	1.094	.83	6	1.0 16
12	B							
14	A	1.0000-0.1P-0.2L-DS			1.219	.87	6	1.1 41
14	B							
16	A	1.1250-0.1P-0.2L-DS	.980		1.344	.97	6	1.2 66
16	B							
18	A	1.2500-0.1P-0.2L-DS			1.469	1.01	8	1.3 91
18	B							
20	A	1.3750-0.1P-0.2L-DS			1.562	1.12	8	1.5 16
20	B							
22	A	1.5000-0.1P-0.2L-DS		6.00	1.688	1.19	8	1.6 41
22	B							
24	A	1.7500-0.1P-0.2L-DS			1.938	1.33	8	1.8 91
24	B							
28	A	2.0000-0.1P-0.2L-DS			2.219	1.48	8	2.1 41
28	B							
32	A	2.2500-0.1P-0.2L-DS			2.469	1.62	10	2.3 91
32	B							
36	A	2.5000-0.1P-0.2L-DS			2.719	1.77	10	2.6 41
36	B							
40	A	2.7500-0.1P-0.2L-DS			2.969	1.91	10	2.8 91
40	B							
44	A	3.0000-0.1P-0.2L-DS			3.219	2.05	10	3.1 41
44	B							

NOTES:
1. All dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified tolerances are ± .016 (0.41 mm).
4. F clearance to accommodate screw size indicated.

Figure 13. MIL-DTL-22992 Connector Protective Cover MS17349 (Sheet 2 of 2)

19. CLASS L CONNECTOR ACCESSORIES.

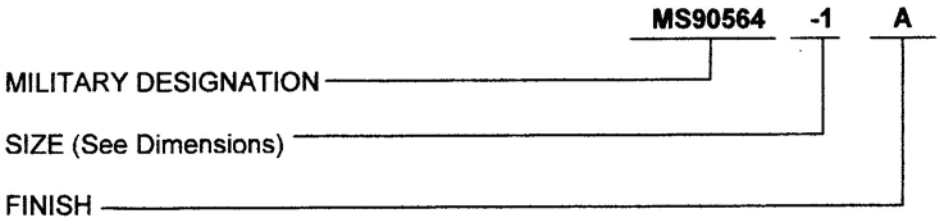
20. The following information applies to Class: L connector accessories.

21. CONDUIT FITTINGS. Conduit fittings are used to connect a conduit to a connector and may be either a ferrule, nut, adapter, box fitting, 45° elbow, 90° elbow, hex nut, or seal assembly. See WP 007 03 for detailed information on the conduit fittings which apply to class L: AN3050, AN3051, AN3052, AN3053, AN3054, AN3055, AN3056, AN3058, AN3064, AN3060, AN3061, AN3062, AN3063, AN3067, and AN3068.

22. DUST CAPS. Protective covers are more commonly called dust caps. The purpose of dust caps is to prevent dirt from entering connectors, pins, and sockets and to prevent coupling device from damage. For detailed information on dust caps refer to: MS90564 (Figure 14) and MS90563 (Figure 15).

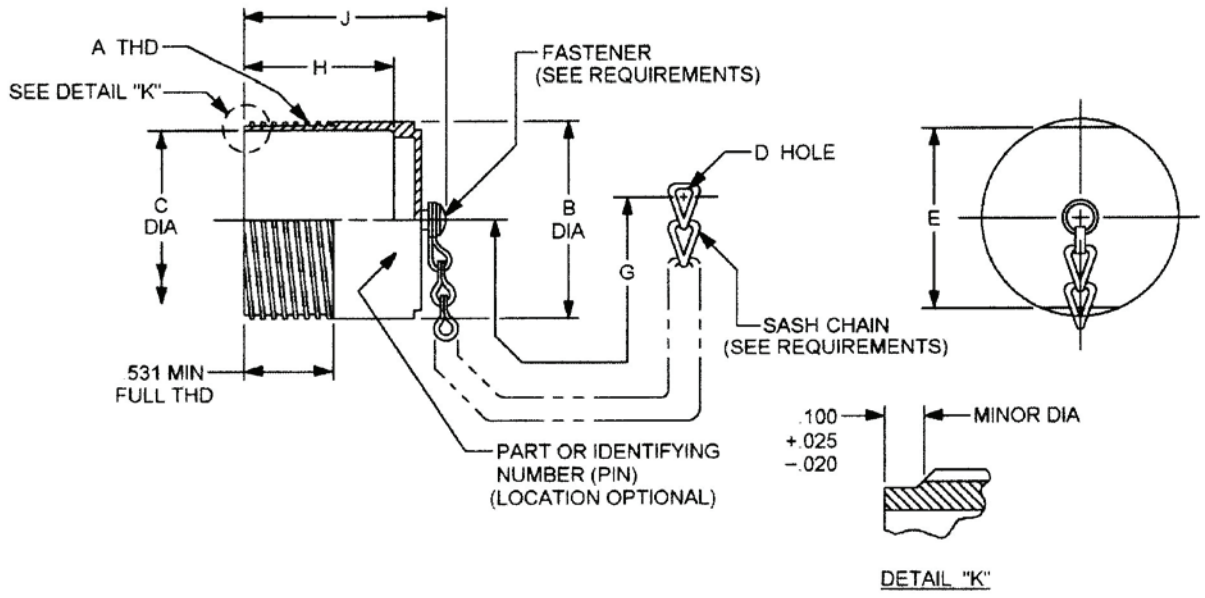
23. RUBBER BUSHINGS. The primary use is to provide a cushion for wires at connector to aid strain relief. Bushing standard material and color is black neoprene rubber. For detailed information on the cable sealing gland (rubber bushing) refer to MS23747 (Figure 16).

PART NUMBER DESIGNATION



MATERIAL and FINISH:
Cover finish shall be designated by the letter C (conductive) or N (nonconductive).
Chain shall be passivated stainless steel in accordance with type II, class 3, trade number 8 of RR-C-271 for -1, -3 and -4, and type II, class 3, trade number 35 of RR-C-271 for -7, -9 and -11.

REQUIREMENTS:
Chain shall move freely on protective cap after assembly.
Chain shall be within one link of length specified.
Optional design chain: Chain may be reversed and a larger link provided as a reverse link to provide the necessary D clearance hole.



SUPERSESSION DATA:
MS PIN MS90564-3 is superseded by MS PIN MS90564-3C.
MS PIN MS90564-4 is superseded by MS PIN MS90564-4C.

Figure 14. MIL-DTL-22992 Connector Protective Cover MS90564 (Sheet 1 of 2)

DIMENSIONS

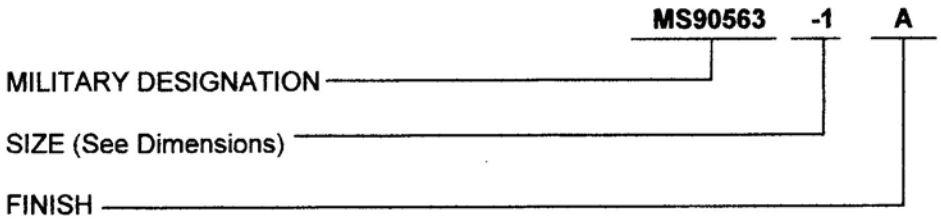
MS Part Number	Shell size	A Thread DS-2A	B dia max	C dia min
MS90564-1 ( )	28	2.000-.1428P-2857L	2.000 (50.80)	1.692 (42.98)
-3 ( )	32	2.250-.1428P-.2857L	2.250 (57.15)	1.942 (49.33)
-7 ( )	44	3.000-.1428P-.2857L	3.000 (76.20)	2.692 (68.38)
-9 ( )	48	3.250-.1428P-.2857L	3.250 (82.55)	29.11 (73.94)
-11 ( )	52	3.500-.1428P-.2857L	3.500 (88.90)	3.161 (80.29)

MS Part Number		D Dia. Hole See note B		E	G	H	J
	Shell Size	For receptacle With coupling ring MS90558	For plug With coupling ring MS90556	Across Flats	See Note 7	Min	Max
MS90564-1 ( )	28	.164 (4.166)	.164 (4.166)	1.750 (44.45)	7.500 (190.50)	1.562 (39.67)	2.266 (57.56)
-3 ( )	32	.190 (4.826)		2.000 (50.80)	6.000 (152.40)	1.562 (39.67)	2.266 (57.56)
-4 ( )			.164 (4.166)		7.500 (1.90.50)		
-7 ( )	44	.250 (6.350)	.250 (6.350)	2.750 (69.85)	8.500 (215.90)	1.781 (45.24)	2.484 (63.09)
-9 ( )	48	.250 (6.350)	.250 (6.350)	3.000 (76.20)	8.500 (215.90)	1.781 (45.24)	2.484 (63.09)
-11 ( )	52	.250 (6.350)	.250 (6.350)	3.250 (83.55)	8.500 (215.90)	1.781 (45.24)	2.484 (63.09)

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Metric equivalents are In parentheses.
4. Unless otherwise specified, tolerances are +.010 (.25 mm) for three place decimals and ±.02 (.51mm) for two place decimals.
5. D clearance to accommodate screw size indicated. Clearance hole may be rounded and enlarged by the use of a drift pin.

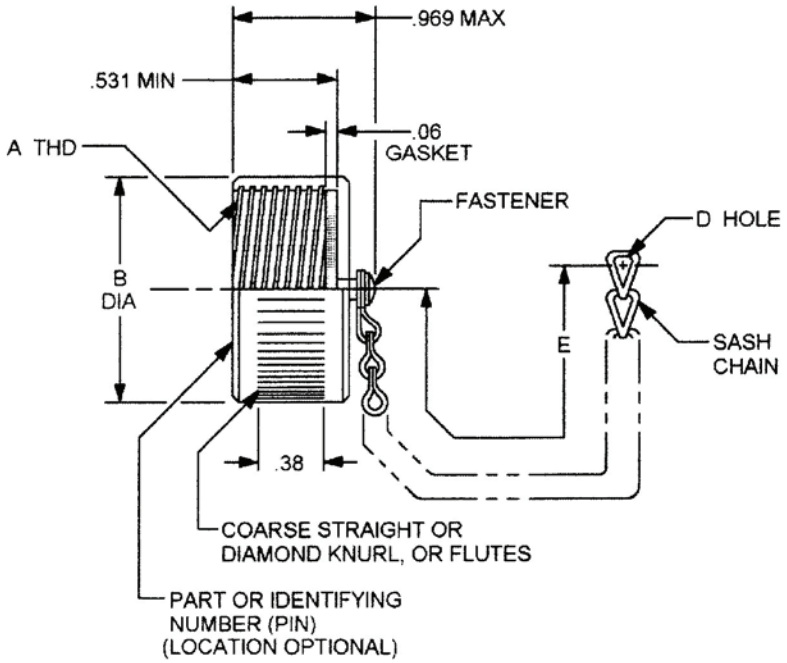
Figure 14. MIL-DTL-22992 Connector Protective Cover MS90564 (Sheet 2 of 2)

PART NUMBER DESIGNATION



MATERIAL and FINISH:
Cover finish shall be designated by the letter C (conductive) or N (nonconductive).
Chain shall be passivated stainless steel in accordance with type II, class 3, trade number 8 of RR-C-271 for -1, -3 and -4, and type II, class 3, trade number 35 of RR-C-271 for -7, -9 and -11.

REQUIREMENTS:
Chain shall move freely on protective cap after assembly.
Chain shall be within one link of length specified.
Optional design chain: Chain may be reversed and a larger link provided as a reverse link to provide the necessary D clearance hole.



SUPERSESSION DATA:
MS PIN MS90563-3 is superseded by MS PIN MS90563-3C.
MS PIN MS90563-4 is superseded by MS PIN MS90563-4C.

Figure 15. MIL-DTL-22992 Connector Protective Cover MS90563 (Sheet 1 of 2)

DIMENSIONS

MS Part Number	Shell size	A thread DS-2B	B dia max	D dia. hole (see note 5)		E
				For receptacle MS90555	For plug without coupling ring MS90557	
MS90563 –1 ( )	28	2.000-.1428P-.2857L	2.219 (56.36)	.190 (4.826)	.190 (4.826)	6.000 (152.40)
- 3 ( )	32	2.250-.1428P-.2857L	2.469 (62.71)			4.500 (114.30)
- 4 ( )						6.000 (152.40)
-7 ( )	44	3.000-.1428P-.2867L	3.219 (81.16)	.265 (6.731)	.265 (6.731)	7.500 (190.50)
-9 ( )	46	3.250-.1420P-.2857L	3.469 (18.11)			7.500 (190.50)
-11 ( )	52	3.500-.1428P-.2857L	3.750 (95.25)			7.500 (190.50)

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Metric equivalents are In parentheses.
4. Unless otherwise specified, tolerances are +.010 (.25 mm) for three place decimals and ±.02 (.51mm) for two place decimals.
5. D clearance to accommodate screw size indicated. Clearance hole may be rounded and enlarged by the use of a drift pin.

Figure 15. MIL-DTL-22992 Connector Protective Cover MS90563 (Sheet 2 of 2)

PART NUMBER DESIGNATION

MS23747 -1

MILITARY DESIGNATION

SIZE (See Dimensions)

MATERIAL: Synthetic rubber in accordance with ASTM D2000.

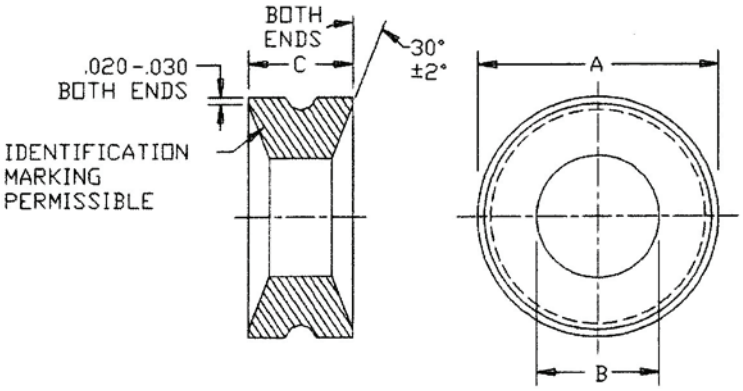


Figure 16. MIL-DTL-22992 Connector Rubber Bushing MS23747 (Sheet 1 of 2)

DIMENSIONS

MS Part Number	Arrangement Number	A dia + .000 - .020	B dia + .020 - .000	C	Minimum Cable Diameter Ref.
MS23747-1	28-03,-05,-06 32-02,-04	1.805	.969	1.034	.844
-2	28-13, 32-03 32-05,32-12	1.805	1.130	1.034	1.005
-3	32-07	1.805	1.260	1.034	1.135
-4	28-02,28-04	1.805	.844	1.034	.719
-5	44-02,44-04	2.242	1.312	1.160	1.187
-6	44-06	2.242	1.375	1.160	1.250
-7	52-02	2.927	1.703	1.284	1.558
-8	52-06	2.927	1.797	1.284	1.652
-9	Cancelled – use MS 23747-18				
-10	Cancelled – no superseding numbers				
-11	Cancelled – no superseding numbers				
-12	28-07, 28-12 32-06	1.805	1.047	1.034	.922
-13	32-13	1.805	1.342	1.034	1.217
-14	44-03, 44-05	2.242	1.438	1.160	1.313
-15	44-12	2.242	1.516	1.160	1.391
-16	44-13	2.242	1.672	1.160	1.547
-17	48-13	2.680	2.000	1.222	1.855
-18	52-12	2.927	2.328	1.284	2.183
-19	52-13	2.927	2.453	1.284	2.308
-20	44-51	2.242	1.734	1.160	1.609
-21	44-52	2.242	1.562	1.160	1.437
-22	44-56	2.242	1.150	1.160	1.025

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
3. Unless otherwise specified, tolerance is ± 010.

Figure 16. MIL-DTL-22992 Connector Rubber Bushing MS23747 (Sheet 2 of 2)

ALPHABETICAL INDEX
INSTALLATION PRACTICES
CONNECTORS MIL-DTL-83723 SERIES II AND III

Title	WP Number
Connector Accessories, MIL-DTL-83723 Series II and III	006 04
Connectors, MIL-DTL-83723 Series II	006 02
Connectors, MIL-DTL-83723 Series III	006 03
Introduction	006 01

INTRODUCTION
INSTALLATION PRACTICES
CONNECTORS MIL-DTL-83723 SERIES II AND III

1. PURPOSE AND SCOPE.

2. This manual covers all connectors manufactured in accordance with MIL-DTL-83723. It includes contact data, tooling, buildup, and connector accessories for MIL-DTL-83723 Series II and III connectors. The Series I connectors have been cancelled.

3. SPECIFICATION UPDATES (ASSIST SEARCH).

4. The most up to date government specifications and Qualified Products Lists (QPLs) can be obtained from the Quick Search section of the ASSIST website, the address is http://assist.daps.mil/quicksearch. Non-government standards can be obtained through a license with a document service such as Information Handling Services (IHS) or purchased individually from the Society of Automotive Engineers (SAE).

5. QUALIFIED PRODUCTS LIST (QPL).

6. The Qualified Products List (QPL) is a list of products which have met the qualification requirements stated in the applicable specification. These requirements include appropriate product identification and performance/testing parameters. The list contains the government part number and the manufacturer's part number. The name of the manufacturer, office and manufacturing plant address, CAGE (Commercial and Government Entity) code, assembly plant, or distributor as applicable, is also included in the back of the QPL. The component specification will identify the appropriate quality assurance provisions such as QPL, First Article testing, or user verified test results. NAVAIR Patuxent River (http://www.navair.navy.mil/qpl/) now has an operational website where the latest QPL revision can be accessed, along with all outstanding QPL change letters as they are written. This enables all users to have access to the latest procurement information without relying on the publication of a new QPL revision. When the QPL is revised, all outstanding QPL change letters are incorporated in the latest revision.

CONNECTORS
MIL-DTL-83723 SERIES II

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Connectors, Electrical, Circular, (Environment Resisting), Receptacles and Plugs,
General Specification for MIL-DTL-83723
Connectors, Electrical, (Circular, Miniature, Quick Disconnect, Environmental Resistant),
Receptacles and Plugs, General Specification for MIL-C-26482
Connector Accessories MIL-DTL-83723 Series II and III 006 04
Contacts, Electrical, Connector, General Specification for AS-39029

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Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
GS590	Die Set
GS710	Die Set
GS840	Die Set
GS1010	Die Set
GS1130	Die Set
GS1250	Die Set
GS1670	Die Set
GS1920	Die Set
GS2170	Die Set
GS2420	Die Set
G82670	Die Set
GS2920	Die Set
GS1440	Die Set
HT-900B	Heat Gun
M22520/1-01	Tool, Crimp, Frame
M22520/1-02	Positioner
M22520-2-01	Tool, Crimp, Frame
AU2520-2-13	Positioner
M22520/3-1	Gage, Inspection
M22520/7-01	Tool, Crimp, Terminal
NU2520/7-03	Positioner
AU2520/23-01	Tool, Crimp
M22520/23-02	Die Set
NU2520/23-04	Die Set
M22520/23-05	Die Set
M22520/23-09	Locator
M22520/23-11	Locator
M22520/23-13	Locator
M81969/8-01	Tool, Insertion
M81969/8-07	Tool, Insertion
M81969/8-09	Tool, Insertion
M81969/14-03	Tool, Insertion/Removal
M81969/14-04	Tool, Insertion/Removal
M81969/29-02	Tool, Removal
M81969/29-03	Tool, Removal
M81969/29-04	Tool, Removal

Materials Required

Specification/ Part No.	Nomenclature
S1009	Glue, Epoxy
SAE-AMS-DTL-23053	Sleeving, Insulating, Heat-Shrinkable
P-2740FR	Tape, Silicone Rubber

1. INTRODUCTION.

2. This Work Package (WP) pertains to connectors manufactured in accordance with MIL-DTL-83723 Series II.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, the Society of Automotive Engineers (SAE) will become the preparing activity and the Navy will adopt the documents, and the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

3. DESCRIPTION. MIL-DTL-83723 connectors utilize crimp type contacts that are inserted, released, and removed from the rear of connector.

4. The entire assembly process is performed at rear of connector so that the possibility of damaging critical interface of connector is greatly reduced. This rear release feature also permits the removal and installation of any number of contacts without uncoupling connector.

5. WIRE SEALING. Wire sealing is accomplished by use of a grommet seal designed to seal against outside diameter of inserted wire. The outer diameter shall be within applicable size range as specified (Table 1).

Table 1. Wire Diameters

Contact Size	Minimum OD (inch)	Maximum OD (inch)
20	.040	.083
16	.053*	.103
12	.097	.158
8	.164	.255
4	.288	.370
0	.415	.550

* .068 for series II only.

6. MIL-DTL-83723 SERIES II.

7. MIL-DTL-83723 Series II connectors are thread coupled with rear release, rear removable, crimp contacts. Hermetic connectors are available with non-removable solder type contacts (Figure 1).

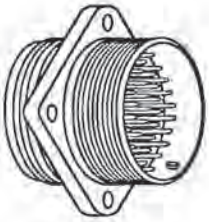
8. GROMMET SEALING PLUGS. The grommets of environment resisting connectors are designed to accept sealing plugs in accordance with MS27488 to be used where unwired contacts are placed. The connector when ordered as a unit will have sealing plugs enclosed to equal 15 percent of the number of contacts but not less than one.

9. MATING SEAL. Plugs and receptacles with pin inserts have a resilient face with individual pin barriers to seal against the hard face socket insert. The resilient interface seal provides individual contact seals in mated condition between each contact and shell.

10. SHELL. Shells including mounting flanges are of one-piece construction and designed to retain their inserts in one position by mechanical means. Each plug and receptacle has at least one blue color band, which indicates rear release retention system, and is located to be readily visible.

11. COUPLING. Connectors shall be capable of being fully coupled and uncoupled without use of tools.

12. POLARIZATION. Connectors are polarized as denoted by their part numbers. This means that the master keyway is rotated to prevent mis-mating of similar connectors in a similar location. A plug with a given polarization letter will mate with a receptacle with same letter. The inserts do not rotate, only the keyway is rotated.



SPECIFICATIONS:

COUPLING METHOD:	THREADED
KEYING POSITIONS:	N (NORMAL), W, X, Y, Z
ALTERNATE KEYING METHOD:	ROTATION OF INSERT-KEYS REMAIN STATIONARY
EMI/RFI GROUNDING:	NO

SHELL MATERIAL & FINISH:

SHELL	FINISH
ALUMINUM	Anodize Nickel
STEEL	Fused Tin
STAINLESS STEEL	Passivated

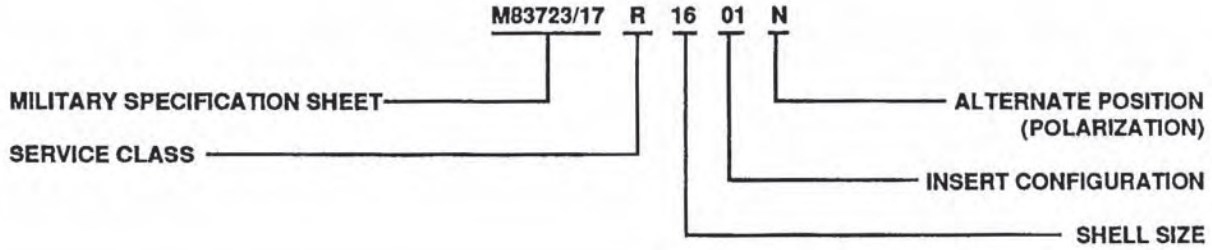
Figure 1. MIL-C-83723 Typical Connector

13. PART NUMBER. The following paragraphs contain information necessary for proper selection and procurement of connector (Figure 2).

14. Military Specification Sheet. The military specification sheet denotes military standard.

15. Service Class. The service class is a letter code denoting environment resisting ability.

16. Shell Size. The shell size is indicated by a progressive numbering system.



MILITARY SPECIFICATION SHEET

M83723/17	IN-LINE RECEPTACLE, SOCKET CONTACTS.
M83723/18	IN-LINE RECEPTACLE, PIN CONTACTS.
M83723/19	WALL MOUNT RECEPTACLE, SOCKET CONTACTS.
M83723/20	WALL MOUNT RECEPTACLE, PIN CONTACTS.
M83723/21	BOX MOUNT RECEPTACLE, SOCKET CONTACTS.
M83723/22	BOX MOUNT RECEPTACLE, PIN CONTACTS.
M83723/23	STRAIGHT PLUG, SOCKET CONTACTS.
M83723/24	STRAIGHT PLUG, PIN CONTACTS.
M83723/25	BOX MOUNT HERMETIC RECEPTACLE, PIN CONTACTS.
M83723/26	SOLDER MOUNT HERMETIC RECEPTACLE, PIN CONTACTS.
M83723/52	STRAIGHT PLUG, SELF-LOCKING COUPLING NUT, PIN CONTACTS.
M83723/53	STRAIGHT PLUG, SELF-LOCKING COUPLING NUT, SOCKET CONTACTS

SERVICE CLASS

A	ALUMINUM, NON-CONDUCTIVE ANODIZE, 392°F (200°C).
F	CANCELLED, SUPERSEDED BY CLASS R.
G	STAINLESS STEEL, PASSIVATED, 392°F (200°C) FLUID RESISTANT.
H	STEEL, FUSED TIN, 302°F (150°C) HERMETIC SEAL.
K	STAINLESS STEEL, PASSIVATED, 392°F (200°C) FLUID RESISTANT FIREWALL.
R	ALUMINUM, ELECTROLESS NICKEL, 392°F (200°C) FLUID RESISTANT.STAINLESS
Y	STEEL, PASSIVATED, 392°F (200°C) HERMETIC SEAL.

SHELL SIZE

M83723 CONNECTOR SERIES SHELL SIZES.

M83723	M83723
08	18
10	20
11	22
12	24
13	28
14	32
15	36
16	40
17	

INSERT ARRANGEMENT

WHEN A SINGLE DIGIT NUMBER IS USED, IT IS PRECEEDED BY THE NUMERAL '0'. EXAMPLE: INSERT NO. 1 WOULD BE WRITTEN AS 01. SEE FIGURE 5 FOR ILLUSTRATIONS AND CODES.

ALTERNATE POSITION (POLARIZATION)
N NORMAL.
W, X, Y & Z INDICATE ROTATION OF INSERT FROM NORMAL POSITION. SEE FIGURE 3.

Figure 2. MIL-C-83723 Series II Part Number Breakdown

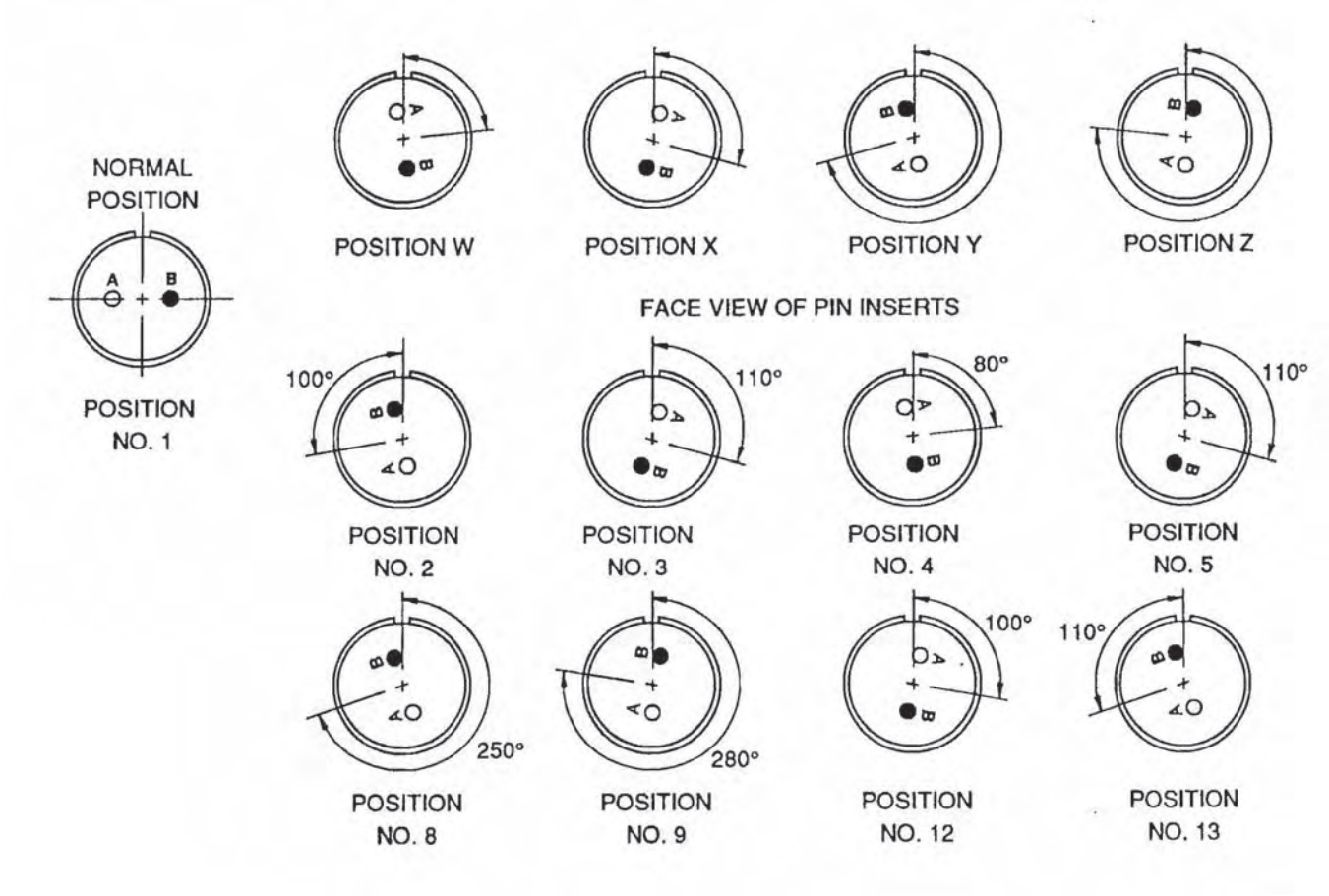


Figure 3. MIL-C-83723 Series II Alternate Positions

17. Insert Configuration. The insert configuration is the insert arrangement by number and size of contacts used.

18. Alternate Position. The alternate keyway position indicates insert polarization (Figure 3).

19. DESIGN AND CONSTRUCTION. Connectors and accessories are designed and constructed to withstand normal handling incidental to installation and maintenance (Figure 4).

20. INSERTS. The nonresilient material used for all inserts shall be a high grade dielectric having electrical and mechanical characteristics suitable for the purpose intended. The impact strength shall be such that material shall not chip, crack, or break during assembly or normal maintenance.

21. Crimp Snap-In Contacts. Snap-in contacts designed to AS39029 can be crimped with standard M22520/1 crimp tool.

22. Closed-Entry Socket Contacts. These contacts eliminate damage from abuse by test probes and help to correct any misaligned pins during engagement.

23. Contact Insertion. Insertion is accomplished from the rear of connector. When the contact is fully inserted, the clip tines snap securely behind the contact shoulders.

24. Contact Extraction. Extraction is accomplished with the use of a removal tool.

25. Contact Retaining Clip. The contact retaining clip is completely encased in a tough plastic wafer to protect clip from damage.

26. Moisture Sealing. Complete sealing is achieved by combining four seals, shell, peripheral, interfacial, and wire seal.

27. Shell Seal. This seal is effected when the plug shell pushes against the sealing ring inside the receptacle when connectors are mated.

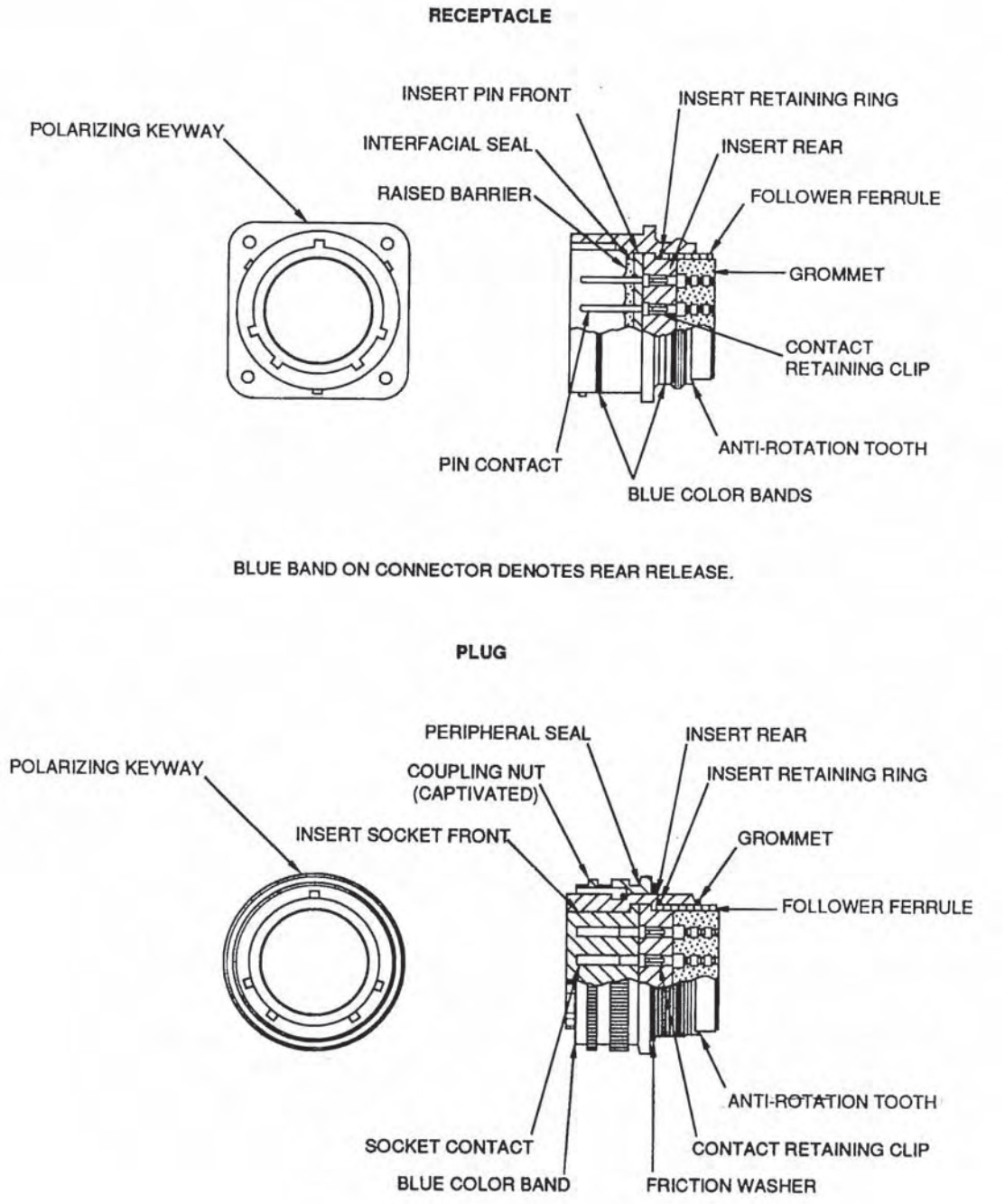


Figure 4. Design Features

28. Peripheral Seal. This seal is around the edge of the pin insulator and designed so that when mating the connector, tension is put on the seal and greatly reduces compression set.

29. Interfacial Seal. This seal is achieved by insulator faces meeting when the plug and receptacle are mated.

30. Wire Seal. This seal is accomplished by a multiple ripple design exceeding wire sealing requirements of MIL-DTL-83723.

31. Insert Retention. Insert retention is accomplished by a hard plastic wafer firmly locked into a groove in the shell and includes a strong adhesive bond between insert and shell.

32. Keying. Keying is used in shell-enclosed connectors to obtain polarization, which assures correct location when mating a connector.

33. INSERT ARRANGEMENT. The insert arrangement is the number and size of contacts available by shell size (Table 2). Series II insert arrangements are specified in MIL-STD-1651.

34. INSERT CONFIGURATION. The insert configuration is the manner in which contacts are placed within an insert in a standard configuration. All arrangements identified in Table 2 are illustrated (Figure 5).

35. CONTACTS. Contacts are designed to prevent damage to the contact retention device or sealing member during insertion or removal of contacts.

36. Fixed Contacts. Contacts in hermetically sealed or thru-bulkhead receptacles are fixed, non-removable, and solder-able, or feed through.

37. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

38. Contact Availability. Crimp contacts are supplied with each connector unit package and consist of a full complement plus one spare per size for connectors of 26 contacts or less. Connectors with more than 26 contacts will have two spares of each size used. Contacts may also be ordered in individual quantities when necessary.

39. Installation and Removal Tools. The proper installation and removal tools must be used to assemble or disassemble connector. The connector when ordered as a unit package will include one MIL-I-81969/14 tool.

40. CONTACT APPLICATION. Contacts used are manufactured in accordance with AS39029, The contact part number breakdown is illustrated (Figure 6). The Basic Identification Number (BIN) or last three digits of the contact part number, matches the standard resistor color code (Figure 7).

41. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts range from size 10 through 22M and are of crimp, rear release design. Contacts are listed by size. Match the required size to connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with corresponding color bands (Table 3).

42. THERMOCOUPLE CONTACTS. Temperature sensing systems utilize two dissimilar metal conductors with matched lengths. When joined at the point temperature will be sensed, a voltage difference develops. This voltage is directly proportional to temperature change. Thermocouple contacts listed (Table 4) are either nickel-aluminum/silicon (formerly alumel), nickel-chromium (formerly chromel), iron, copper, or copper-nickel alloy (formerly constantan). Match the required size to connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with corresponding color bands.

43. TOOLING. The procedure for attaching power and thermocouple contacts to a single conductor wire are the same for this connector series. Select proper tooling for specific contact part number (Table 5) and refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures.

44. BACKSHELL REMOVAL AND INSTALLATION. For backshell removal and installation refer to WP 006 04.

Table 2. MIL-C-83723 Series II Insert Configurations (Sheet 1 of 5)

Shell Size Insert Arrangement Series II	Service Rating (NOTE)	Contact Size							Number of Contacts
		20	18	16	12	8	4	0	
8-1	A	-	-	1	-	-	-	-	1
10-2	A	-	-	1	-	-	-	-	1
11-3	A	-	-	3	-	-	-	-	3
11-4	A	-	-	2	-	-	-	-	2
12-5	D	-	-	-	1	-	-	-	1
13-3	A	-	-	2	-	-	-	-	2
13-4	D	-	-	1	-	-	-	-	1
14-3	A	-	-	-	-	1	-	-	1
15-1	A	-	-	3	-	-	-	-	3
15-2	INST	-	-	4	-	-	-	-	4
15-4	D	-	-	1	-	-	-	-	1
15-5	INST	-	-	5	-	-	-	-	5
15-6	INST	-	-	6	-	-	-	-	6
15-7	A	-	-	3	-	-	-	-	3
15-9	A	-	-	2	-	-	-	-	2
16-2	A	-	-	-	1	-	-	-	1
16-7	A	-	-	2	-	1	-	-	3
16-9	A	-	-	2	2	-	-	-	4
16-10	A	-	-	-	3	-	-	-	3
16-11	A	-	-	-	2	-	-	-	2
16-12	E	-	-	-	-	-	1	-	1
17-1	A	-	-	7	-	-	-	-	7
17-3	E	-	-	1	-	-	-	-	1
17-4	D	-		2	-	-	-	-	2
17-5	A	-	-	2	-	1	-	-	3
17-6	A	-	-	3	-	-	-	-	3
17-8	A	-	-	5	-	-	-	-	5
18-1	A/INST	-	-	10	-	-	-	-	10
18-3	D	-	-	-	2	-	-	-	a
18-4	D	-	-	4	-	-	-	-	4
18-5	D	3	-	1	2	-	-	-	3
18-6	D	-	-	-	-	-	1	-	1
18-7	B	-	-	-	-	1		-	1
18-8	A	-	-	7	1	-	-	-	8
18-9	INST	-	-	5	2	-	-	-	7
18-10	A	-	-	-	4	-	-	-	4
18-11	A	-	-	-	5	-	-	-	5
18-12	A	-	-	6	-	-	-	-	6
18-13	A	-	-	-	3	1	-	-	4
18-14	A	-	-	1	-	-	1	-	2
18-15	A	-	-	-	4	-	-	-	4
18-16	C	-	-	-	1	-	-	-	1
18-20	A	-	-	5	-	-	-	-	5
18-22	D	-	-	3	-	-	-	-	3
18-29	A	-	-	5	-	-	-	-	5
20-2	D	-	-	-	-	-	-	1	1
20-3	D	-	-	-	3	-	-	-	3
20-4	D	-	-	-	4	-	-	-	4
20-5	E	-	-	2	-	-	-	-	2

Table 2. MIL-C-83723 Series II Insert Configurations (Sheet 2 of 5)

Shell Size Insert Arrangement Series II	Service Rating (NOTE)	Contact Size							Number of Contacts
		20	18	16	12	8	4	0	
20-6	D	-	-	3	-	-	-	-	3
20-7	A, D	-	-	8	-	-	-	-	8
20-8	INST	-	-	4	-	2	-	-	6
20-9	A, D	-	-	7	1	-	-	-	8
20-11	INST	-	-	13	-	-	-	-	13
20-12	A	-	-	1	-	-	1	-	2
20-13	A	-	-	4	-	-	-	-	4
20-14	A	-	1	-	3	2	-	-	5
20-15	A	-	-	-	7	-	-	-	7
20-16	A	-	-	7	3	-	-	-	9
20-17	A	-	-	1	5	-	-	-	6
20-18	A	-	-	6	-	-	1	-	9
20-19	A	-	-	-	-	3	-	-	3
20-20	A	-	-	-	3	-	-	-	4
20-21	A	-	-	8	1	-	-	-	9
20-22	A	-	-	3	-	3	-	-	6
20-23	A	-	-	-	-	2	-	-	2
20-24	D	-	-	2	-	2	-	-	4
20-27	A	-	-	14	-	-	-	-	14
20-29	A	-	-	17	-	-	-	-	17
20-31	A	-	-	11	-	-	-	-	11
20-33	A	-	-	11	-	-	-	-	11
22-1	D	-	-	-	-	2	-	-	2
22-2	D	-	-	-	-	3	-	-	3
22-3	D	-	-	1	-	-	1	-	2
22-4	A	-	-	-	2	2	-	-	4
22-5	D	-	-	4	2	-	-	-	6
22-6	D	-	-	1	-	2	-	-	3
22-7	E	-	-	-	-	-	-	1	1
22-8	E	-	-	-	2	-	-	-	2
22-9	E	-	-	-	3	-	-	-	3
22-10	E	-	-	4	-	-	-	-	4
22-11	B	-	-	2	-	-	-	-	2
22-12	D	-	-	3	-	2	-	-	5
22-13	A, D	-	-	1	4	-		-	5
22-14	A	-	-	19	-	-	-	-	19
22-15	A, E	-	-	1	5				6
22-16	A	-	-	6	3	-	-	-	9
22-17	A, D	-	-	8	1		-	-	9
22-18	A, D	-	-	8	-		-	-	8
22-19	A	-	-	14	-	-	-	-	14
22-20	A	-	-	9	-	-	-	-	9
22-21	A	-	-	2	-	-	-	1	3
22-22	A	-	-	-	-	4	-	-	4
22-23	A,D	-	-	-	8	-	-	-	8
52-24	A,D	-	-	4	3.	-	-	-	6
22-25	A	-	-	2	-	-	-	1	3
22-27	A, D	-	-	8	-	1	-	-	9
22-28	A	-	-	-	7	-	-	-	7

Table 2. MIL-C-83723 Series II Insert Configurations (Sheet 3 of 5)

Shell Size Insert Arrangement Series II	Service Rating (NOTE)	Contact Size							Number of Contacts
		20	18	16	12	8	4	0	
22-29	A	-	-	6	-	-	1	-	7
22-33	A.D	-	-	7	-	-	-	-	7
22-34	D	-	-	2	3	-	-	-	5
24-1	D	-	-	1	-	-	-	1	2
24-2	D	-	-	-	7	-	-	-	7
24-3	D	-	-	5	2	-	-	-	7
24-4	A	-	-	3	-	-	-	1	4
24-5	A	-	-	16	-	-	-	-	16
24-6	A.D	-	-	-	8	-	-	-	8
24-7	A	-	-	14	2	-	-	-	16
24-9	A	-	-	-	-	-	2	-	2
24-10	A	-	-	-	-	7	-	-	7
24-11	A	-	-	-	6	3	-	-	9
24-12	A	-	-	-	3	-	2	-	5
24-14	A	-	-	-	2	-	-	1	3
24-16	A,D	-	-	3	3	1	-	-	7
24-17	D	-	-	3	2	-	-	-	5
24-20	D	-	-	9	2	-	-	-	11
24-21	D	-	-	9	-	1	-	-	10
24-22	A	-	-	-	-	3	-	-	4
24-23	D	-	-	1	-	3	-	-	5
24-27	E	-	-	7	-	-	-	-	7
24-28	INST	-	-	24	-	-	-	-	24
24-80	INST	-	-	23	-	-	-	-	23
28-1	A.D	-	-	-	6	3	-	-	9
28-2	D	-	-	12	2	-	-	-	14
28-3	E	-	-	-	-	3	-	-	3
28-4	D,E	-	-	7	2	-	-	-	9
28-5	D	-	-	2	1	-	2	-	5
28-6	D	-	-	-	-	-	3	-	3
28-8	A.D.E	-	-	10	2	-	-	-	12
28-9	D	-	-	6	6	-	-	-	12
28-10	A.D	-	-	-	3	2	2	-	7
28-11	A	-	-	18	4	-	-	-	22
28-12	A	-	-	26	-	-	-	-	26
28-14	D	-	-	11	-	-	-	-	11
28-15	A	-	-	35	-	-	-	-	35
28-16	A	-	-	20	-	-	-	-	20
28-17	A.B.D	-	-	15	-	-	-	-	15
28-18	A,B,D,INST	-	-	12	-	-	-	-	12
28-19	A,B	-	-	6	4	-	-	-	10
28-20	A	-	-	4	10	-	-	-	14
28-21	A	-	-	37	-	-	-	-	37
28-22	D	-	-	3	-	-	3	-	6
28-23	INST	-	-	21	-3(SHIELDED)			-	24
28-24	INST	-	-	21	-S(SHIELDED)			-	24
32-1	D,E	-	-	-	3	-	-	2	5
32-2	E	-	-	2	-	-	3	-	5

Table 2. MIL-C-83723 Series II Insert Configurations (Sheet 4 of 5)

Shell Size Insert Arrangement Series II	Service Rating (NOTE)	Contact Size							Number of Contacts
		20	18	16	12	8	4	0	
32-3	D	-	-	4	2	-	2	1	9
32-4	A.D	-	-	12	2	-	-	-	14
32-5	D	-	-	-	-	-	-	2	2
32-6	A	-	-	16	2	3	2	-	23
32-7	A, INST	-	-	.	28	7	-	-	35
32-8	A	-	-	24	6	-	-	-	30
32-9	D	-	-	12	-	-	2	-	14
32-10	A,B,D,E	-	-	3	-	2	2	-	7
32-12	AD	-	-	10	5	-	-	-	15
32-13	D	-	-	18	5	-	-	-	23
32-14	D	-	-	-	5	-	2	-	7
32-15	D	-	-	-	6	-	-	2	8
32-17	D	-	-	-	-	-	4	-	4
32-22	A	-	-	54	-	-	-	-	54
32-63	-	-	-	-	-	-	5	-	5
32-73	A	-	-	46	-	-	-	-	46
32-101	C,D	-	10+2 COAX			-	-	-	12
32-102	A, C, D	-	13+1 COAX			-	-	-	14
36-1	D	-	-	18	4	-	-	-	22
36-3	A	-	-	-	3	-	-	3	6
36-4	A, D	-	-	-	-	-	-	3	:3
36-5	A	-	-	-	1	-	-	4	4
36-6	A	-	-	-	-	-	4	2	6
36-7	A	-	-	40	7	-	-	-	47
36-8	A	-	-	46	1	-	-	-	47
36-9	A	-	-	14	14	2	1	-	31
36-10	A	-	-	48	-	-	-	-	48
36-13	A, E	-	-	15	2	-	-	-	17
36-14	D	-	-	6	5	5	-	-	16
36-15	A, D	-	-	35	-	-	-	-	35
36-19	D	-	-	10	5	-	1	1	17
36-52	A	-	-	52	-	-	-	-	52
36-66	A	-	-	52	4	-	-	-	56
40-1	D	-	-	24	6	-	-	-	30
40-2	3,D	-	-	.23	-	-	-	-	53
40-3	ID	-	-	18	4	-	1	-	23
40-4	D	-	-	16	2	3	2	1	23
40-5	A	-	-	-	6	4	2	3	15
40-6	D	-	-	24	1	-	-	1	26
40-7	A, D	-	-	18	2	-	-	2	22
40-9	A	-	-	24	22	1	-	-	47
40-10	A	-	-	16	-	9	4	-	29
40-11	D	-	-	18	4	1	1	1	25
40-15	A	-	-	57	-	3	-	-	60
40-56	A	-	-	85	-	-	-	-	85
40-62	A	-	-	60	-	-	-	-	60
44-1	D	-	-	36	6	-	-	-	42
44-2	D	-	-	14	14	2	1	-	31
44-3	D	-	-	24	3	2	2	-	31
44-4	D	-	-	31	8	-	-	-	41
44-52	A	-	-	104	-	-	-	-	104

Table 2. MIL-C-83723 Series II Insert Configurations (Sheet 5 of 5)

Shell Size Insert Arrangement Series II	Service Rating (NOTE)	Contact Size							Number of Contacts
		20	18	16	12	8	4	0	
36-9	A	-	-	14	14	2	1	-	31
36-10	A	-	-	48	-	-	-	-	48
36-13	A, E	-	-	15	2	-	-	-	17
36-14	D	-	-	6	5	5	-	-	16
36-15	A, D	-	-	35	-	-	-	-	35
36-19	D	-	-	10	5	-	1	1	17
36-52	A	-	-	52	-	-	-	-	52
36-66	A	-	-	52	4	-	-	-	56
40-1	D	-	-	24	6	-	-	-	30
40-2	3,D	-	-	.23	-	-	-	-	53
40-3	ID	-	-	18	4	-	1	-	23
40-4	D	-	-	16	2	3	2	1	23
40-5	A	-	-	-	6	4	2	3	15
40-6	D	-	-	24	1	-	-	1	26
40-7	A, D	-	-	18	2	-	-	2	22
40-9	A	-	-	24	22	1	-	-	47
40-10	A	-	-	16	-	9	4	-	29
40-11	D	-	-	18	4	1	1	1	25
40-15	A	-	-	57	-	3	-	-	60
40-56	A	-	-	85	-	-	-	-	85
40-62	A	-	-	60	-	-	-	-	60
44-1	D	-	-	36	6	-	-	-	42
44-2	D	-	-	14	14	2	1	-	31
44-3	D	-	-	24	3	2	2	-	31
44-4	D	-	-	31	8	-	-	-	41
44-52	A	-	-	104	-	-	-	-	104

NOTE:

Service Rating	Operating Voltage	
	DC	AC(RMS)
INST	250	200
A	700	500
D	1250	900
E	1750	1250
B	2450	1750
C	4200	3000

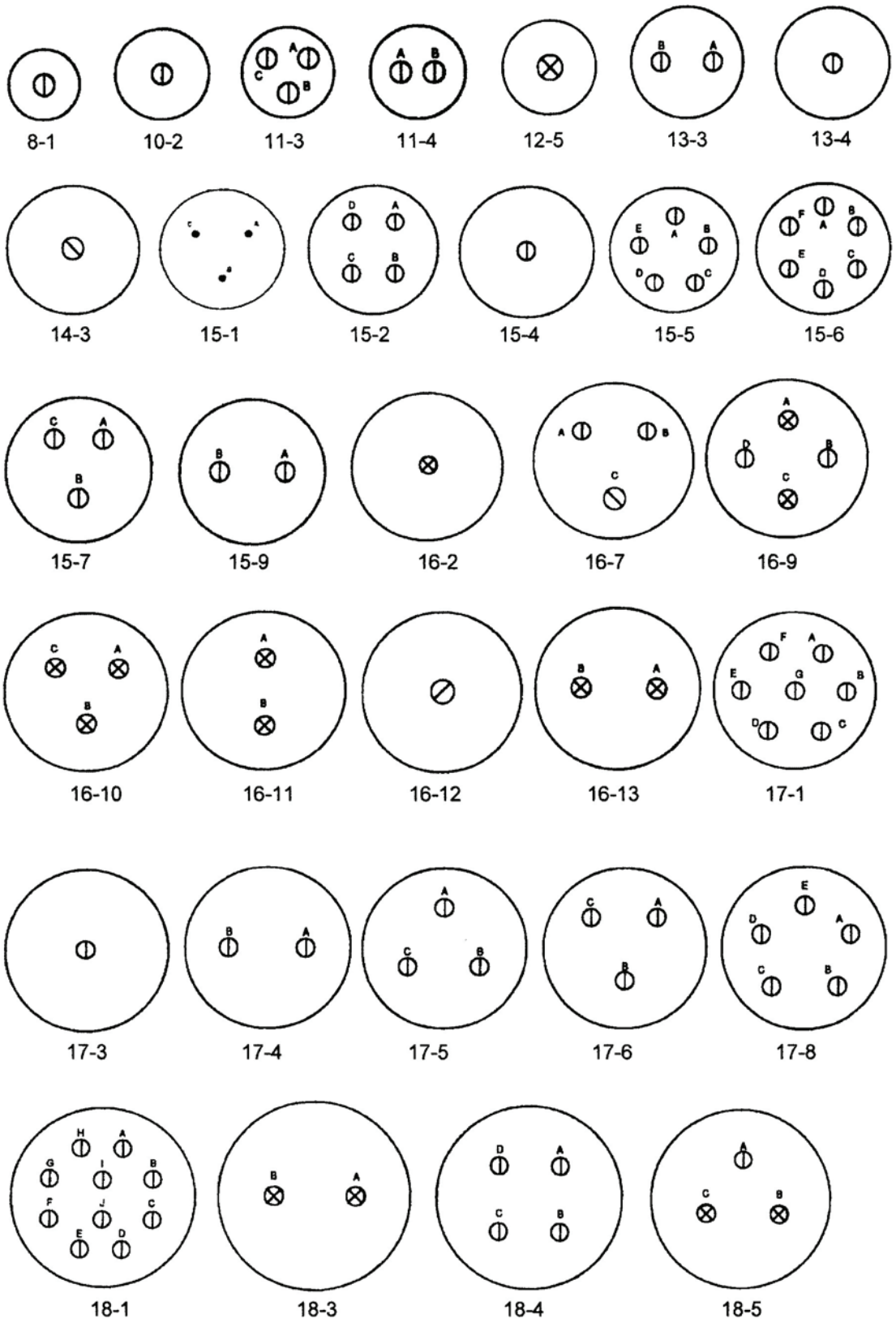


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 1 of 21)

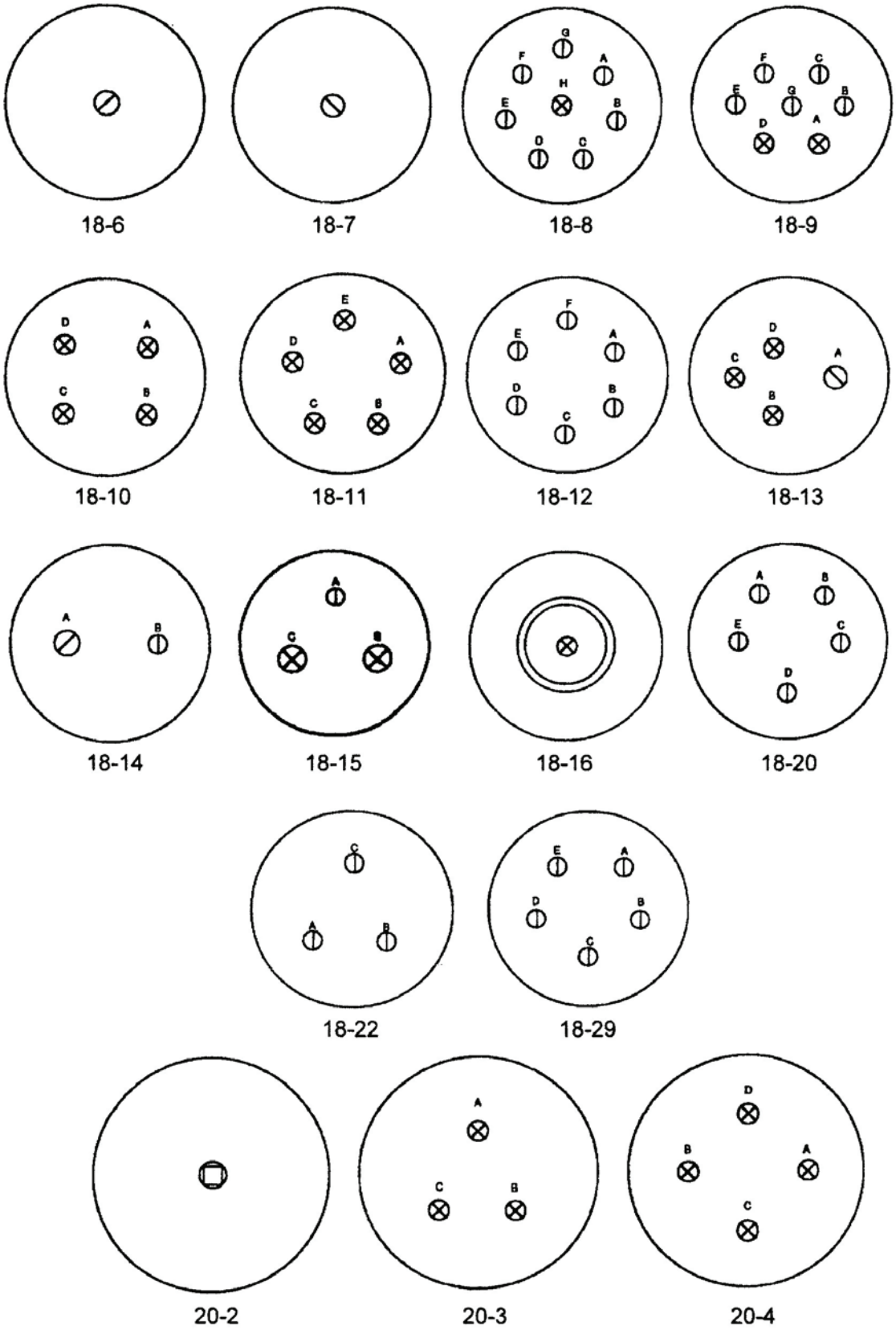


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 2 of 21)

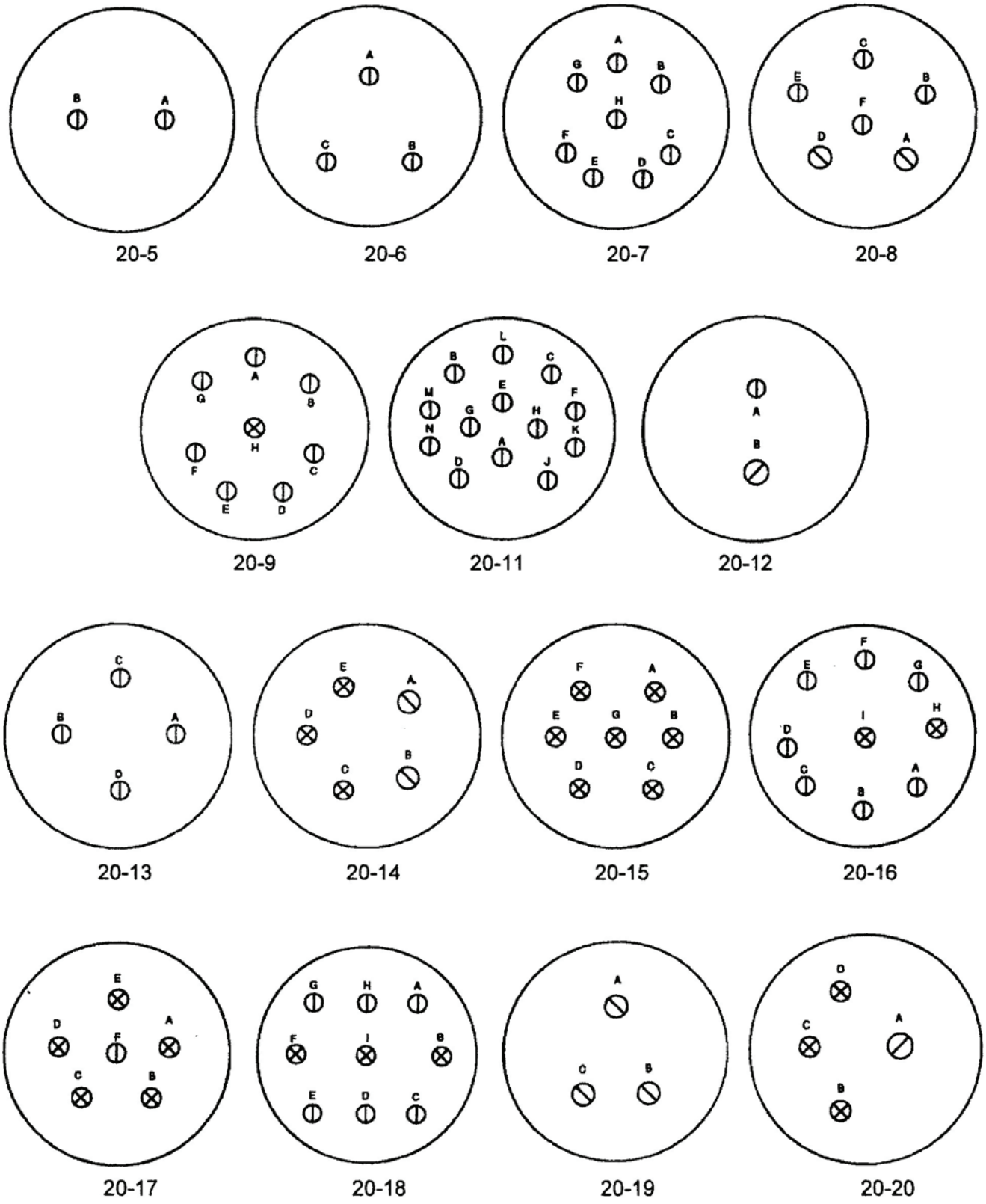
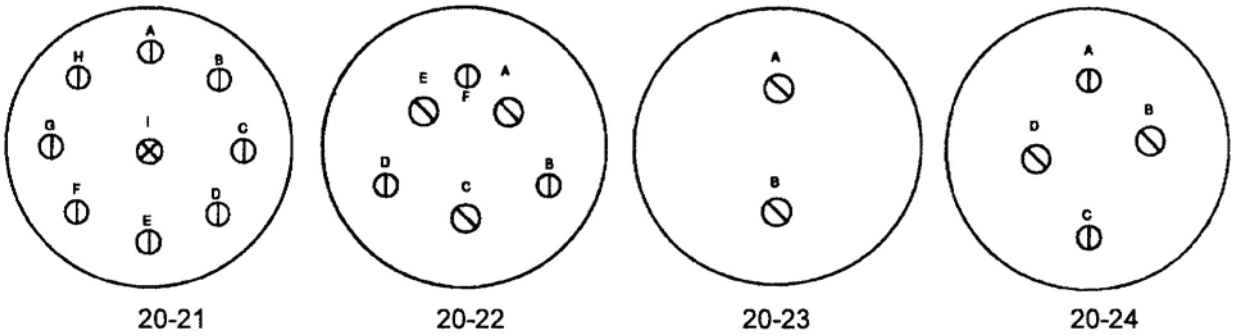
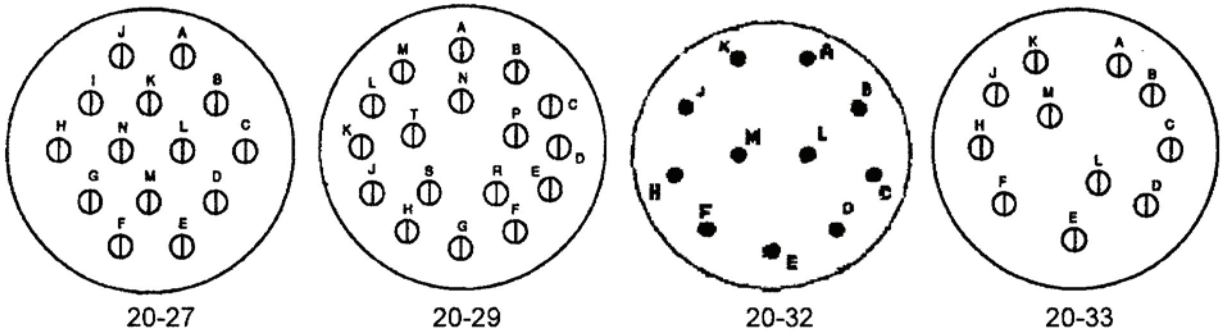
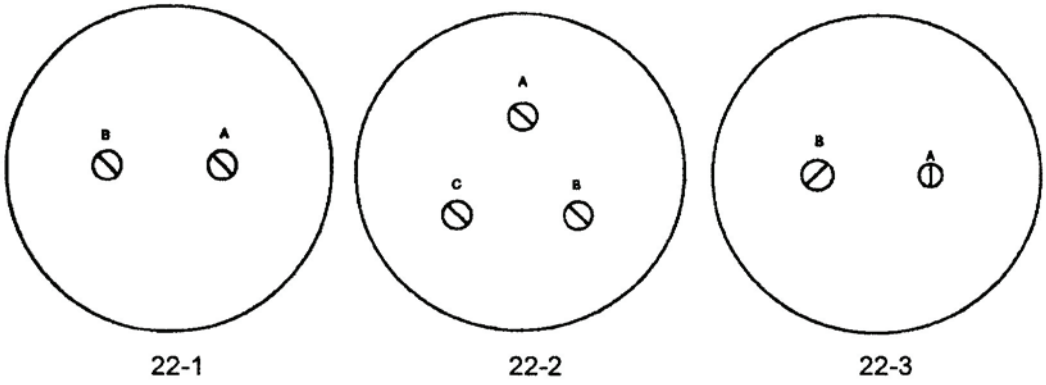


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 3 of 21)







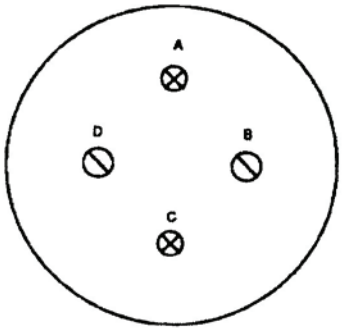


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 4 of 21)

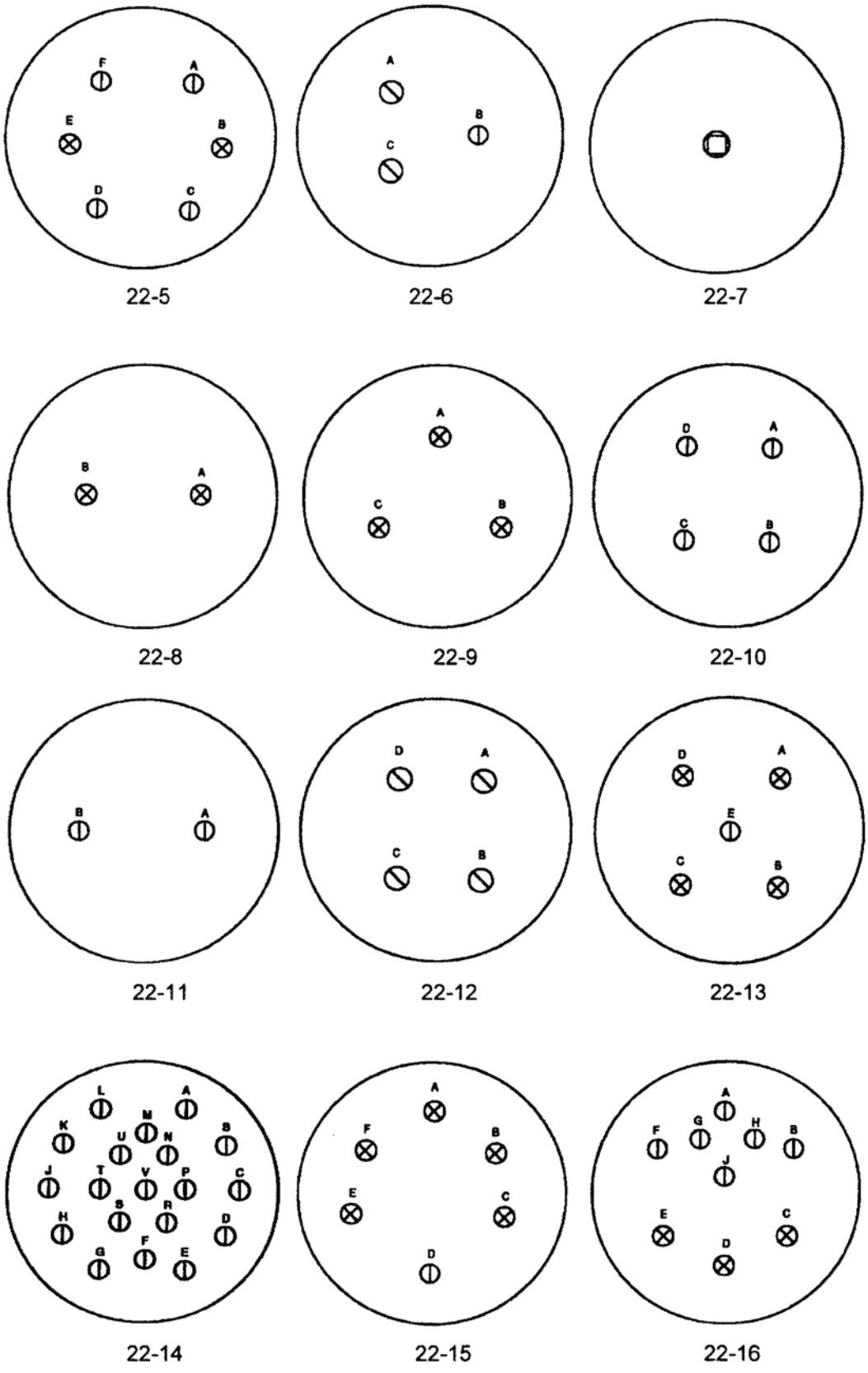


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 5 of 21)

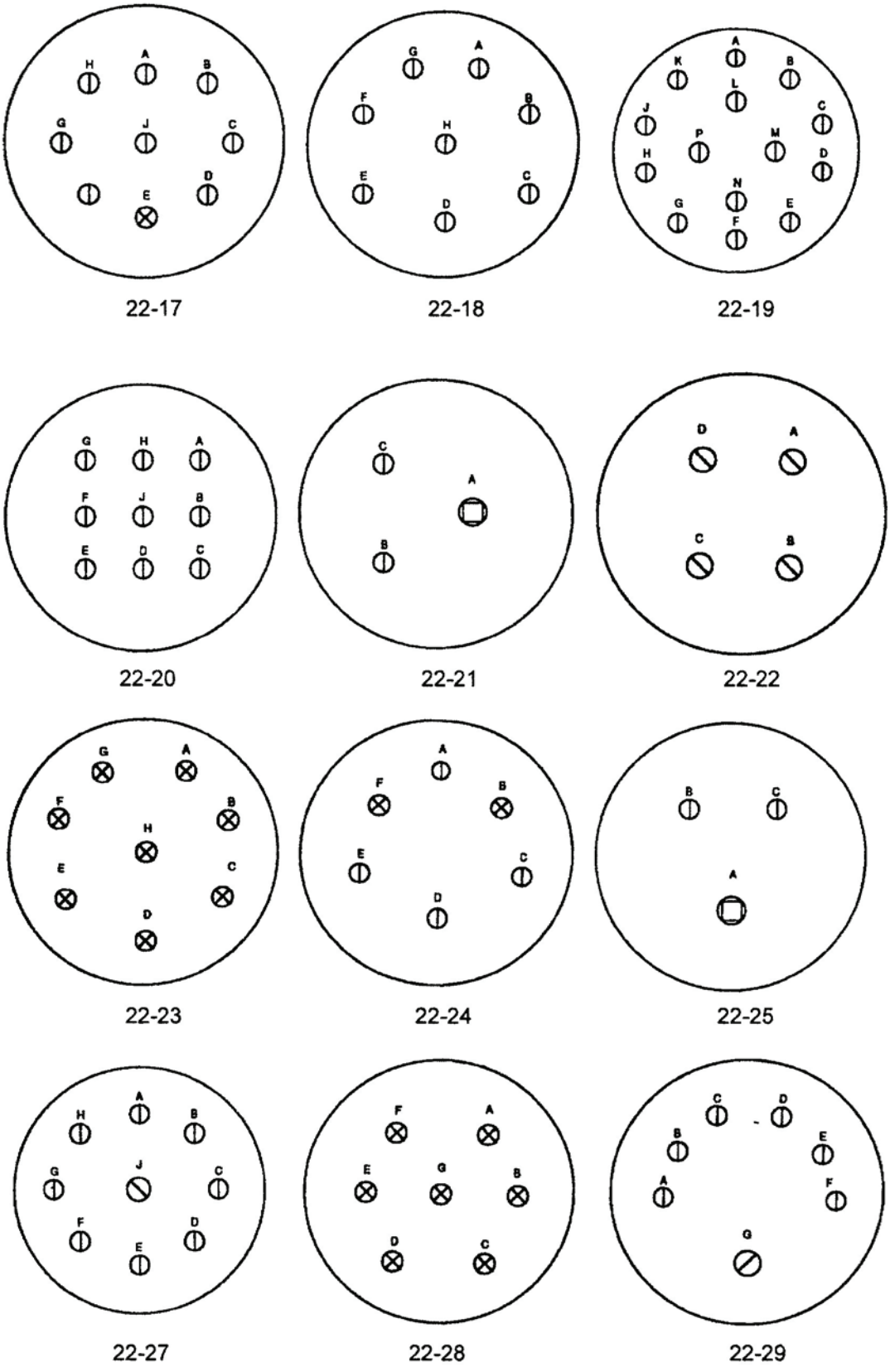


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 6 of 21)

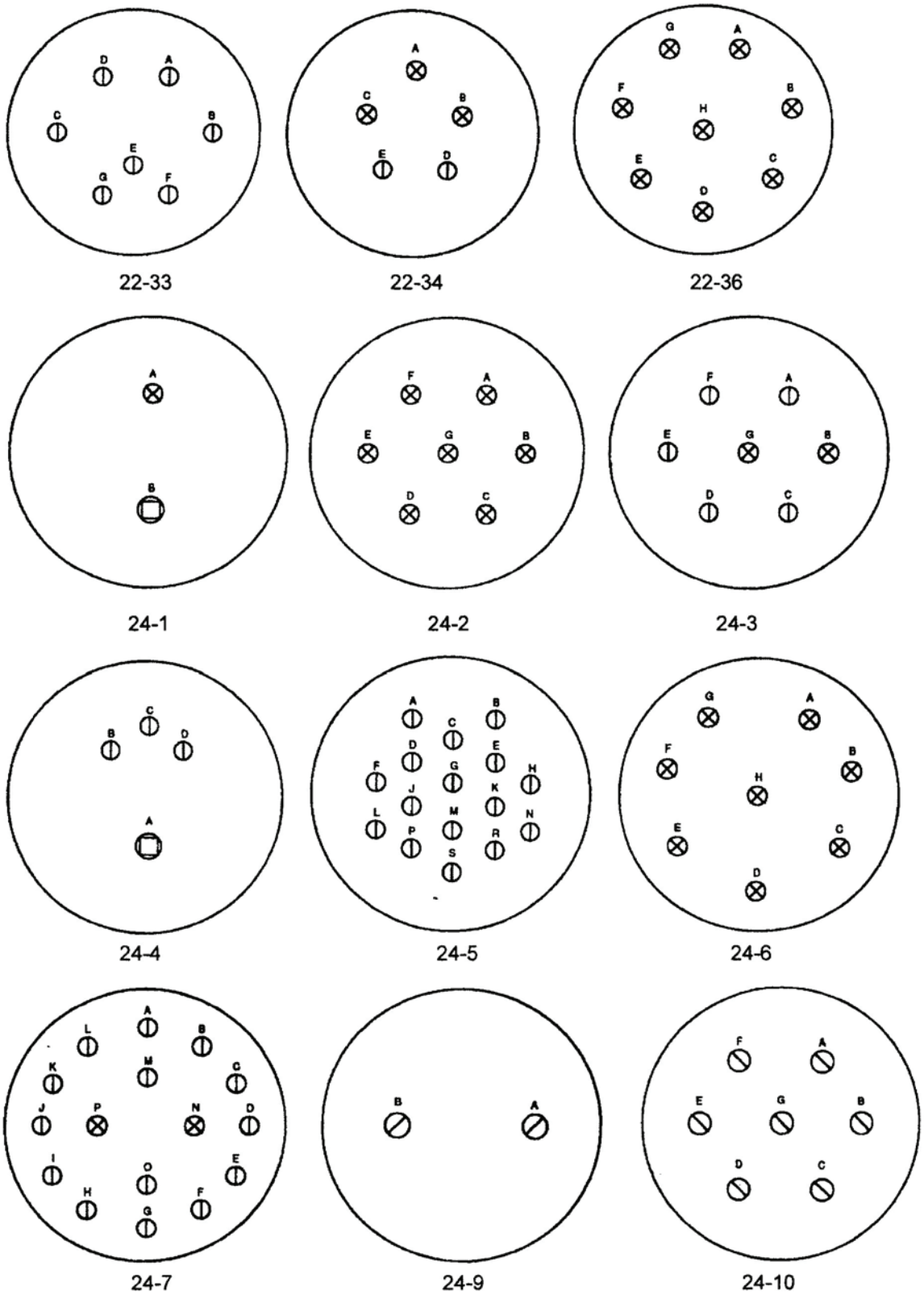


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 7 of 21)

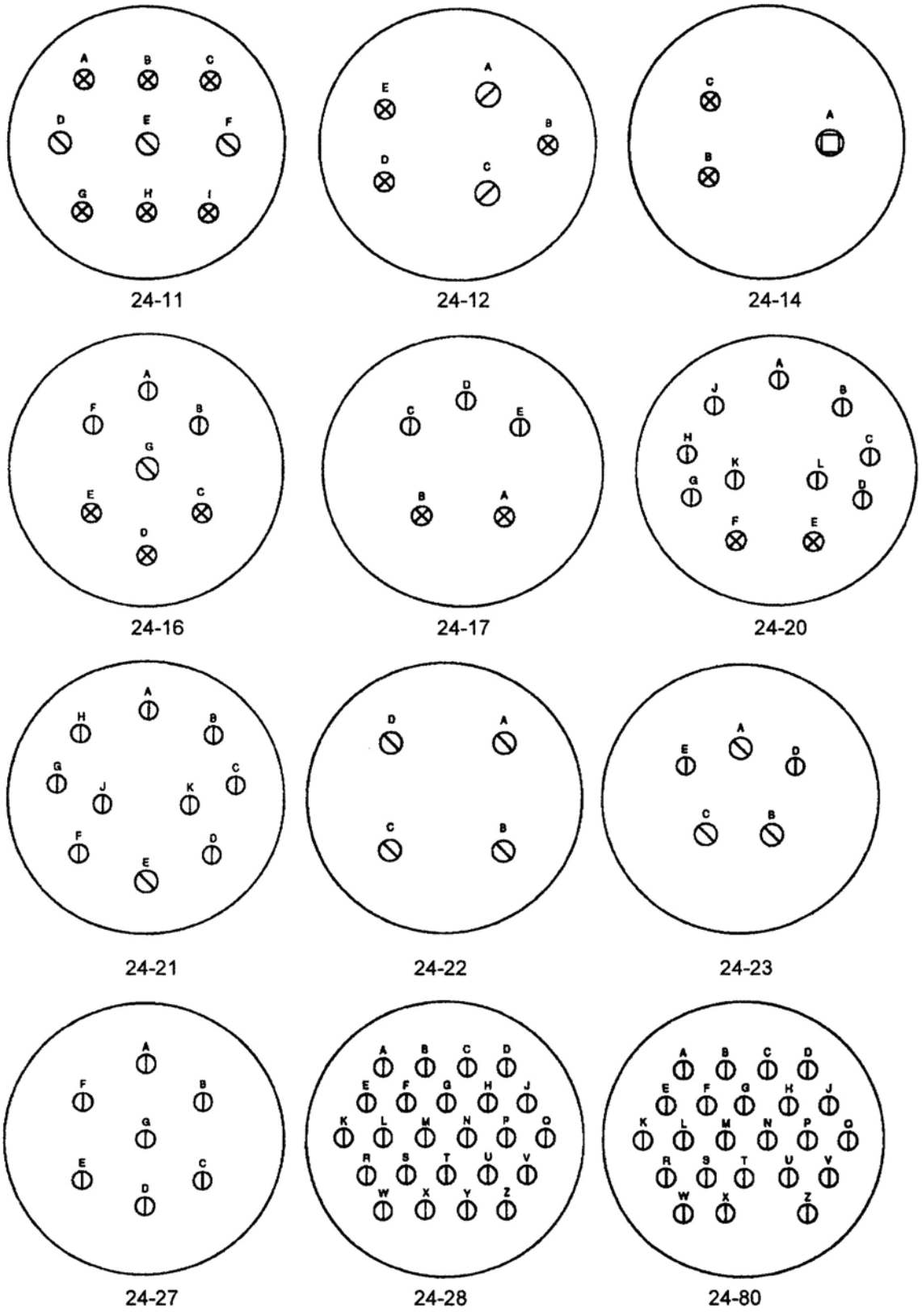


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 8 of 21)

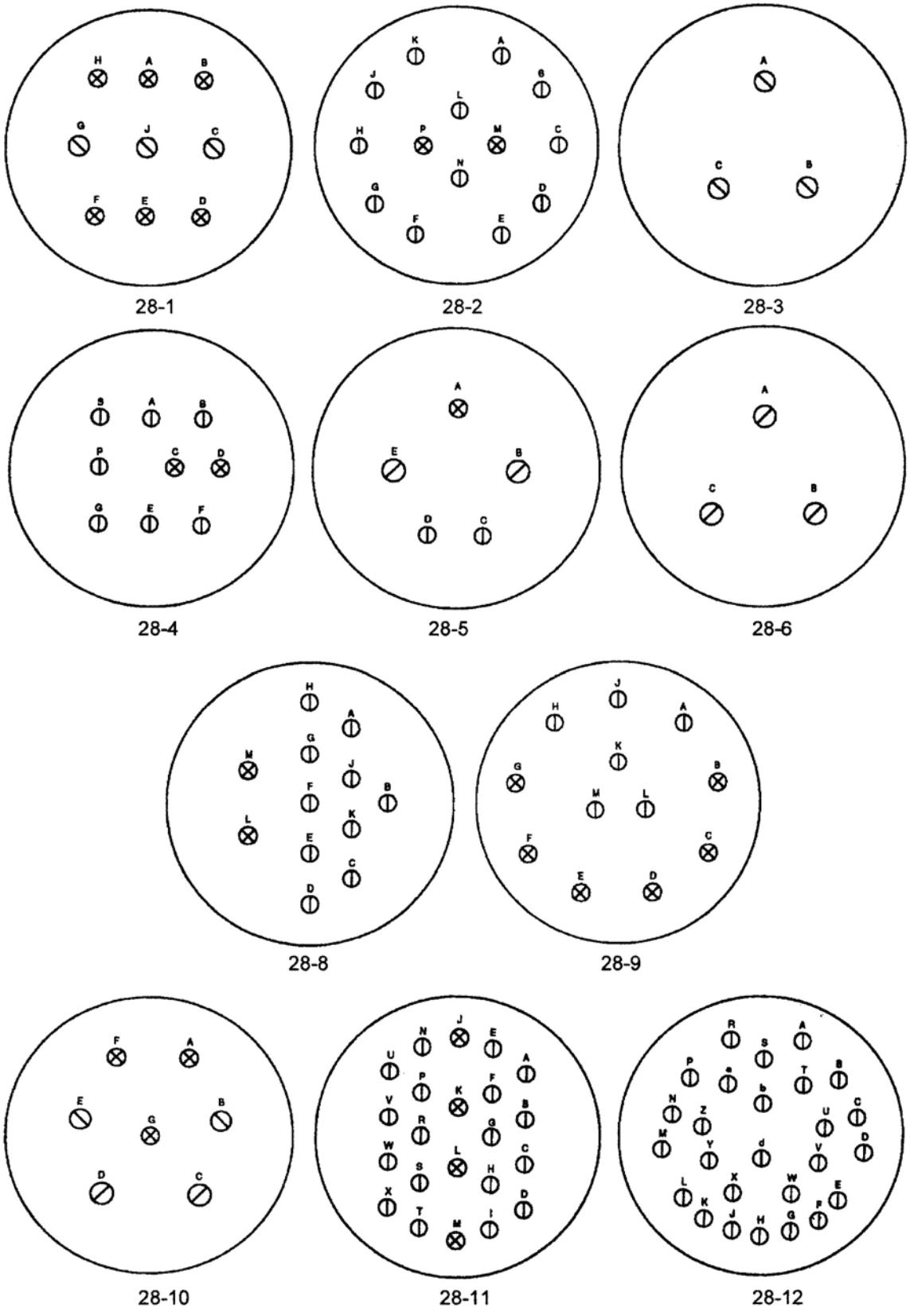


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 9 of 21)

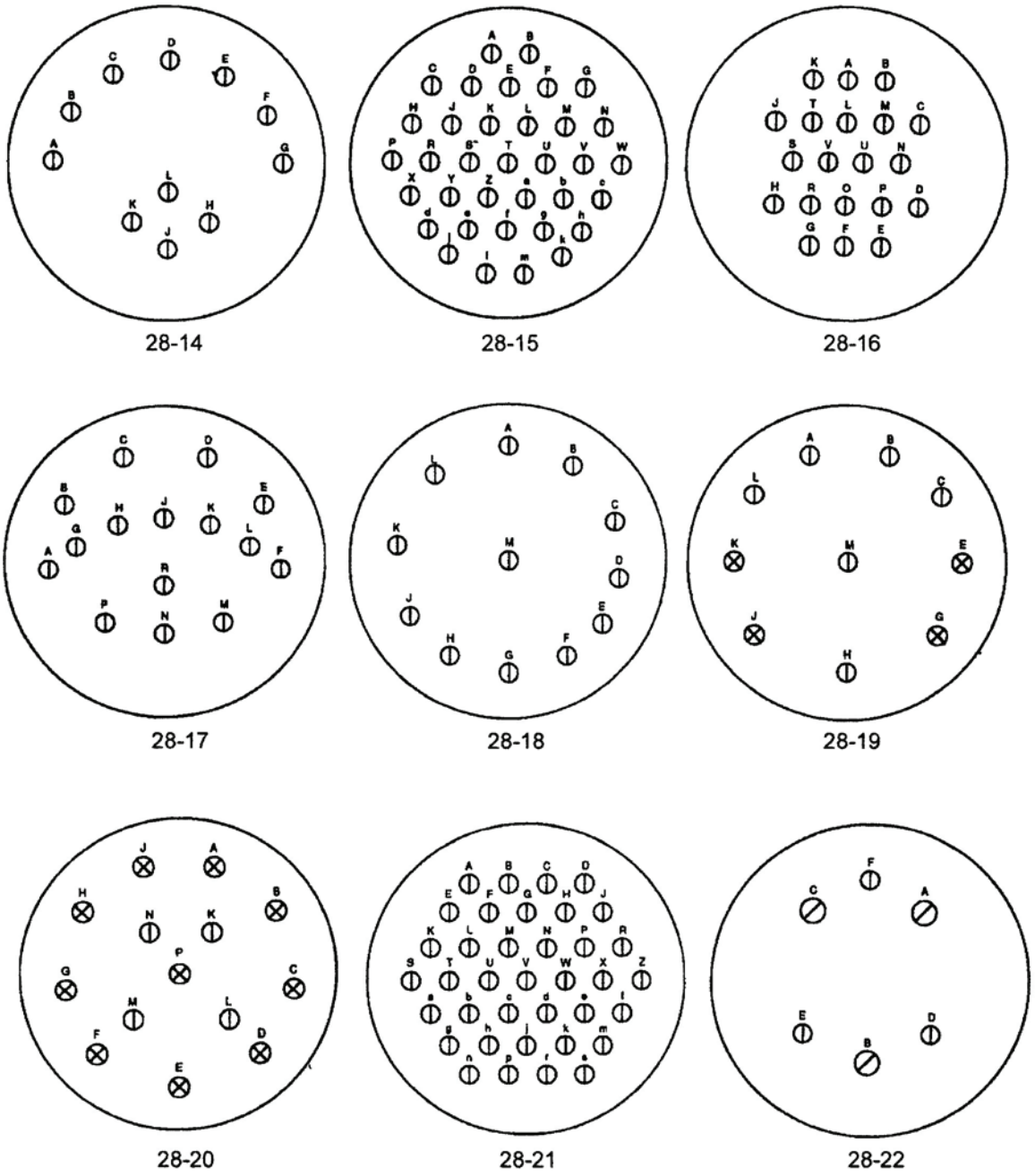


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 10 of 21)

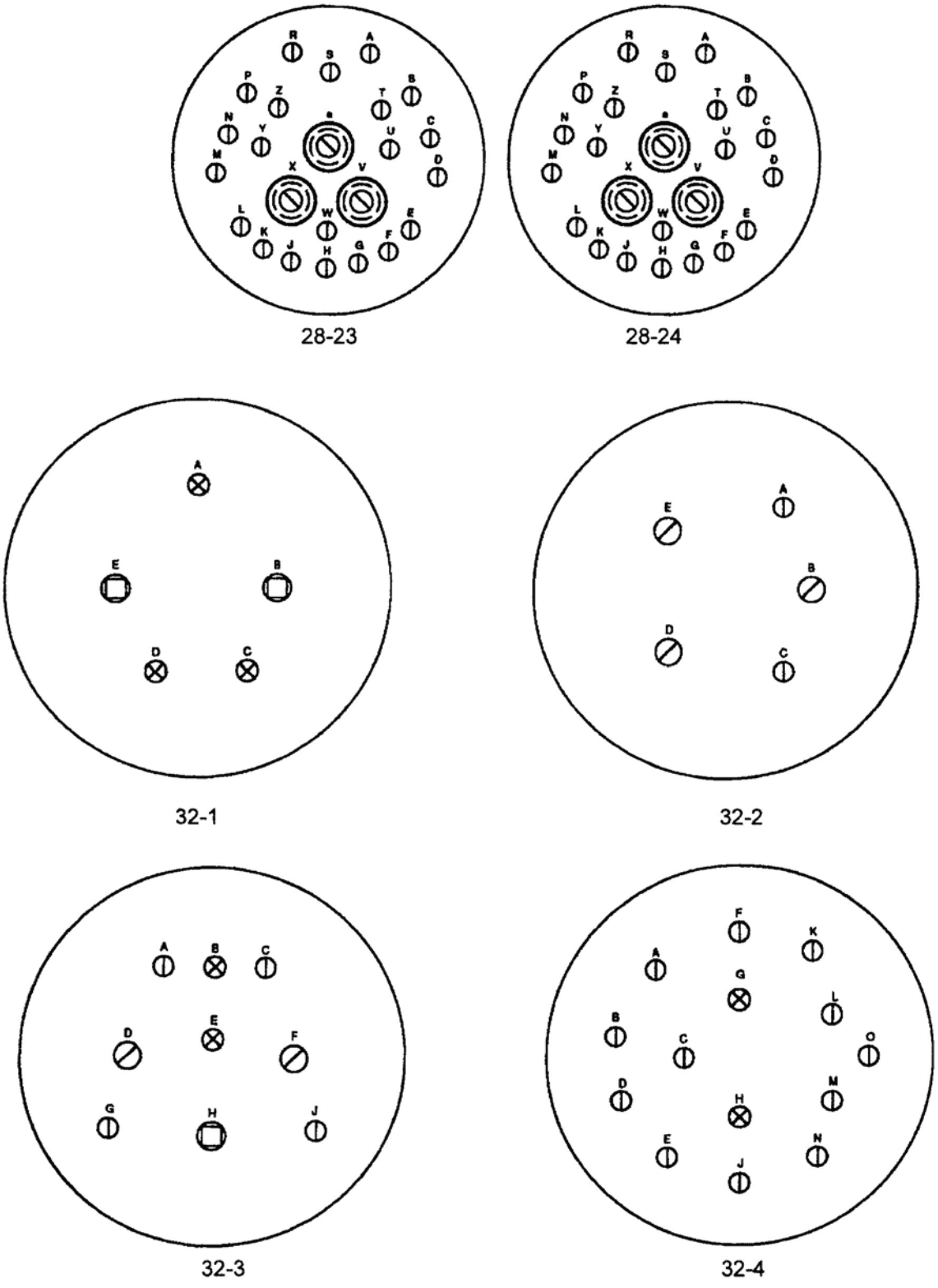


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 11 of 21)

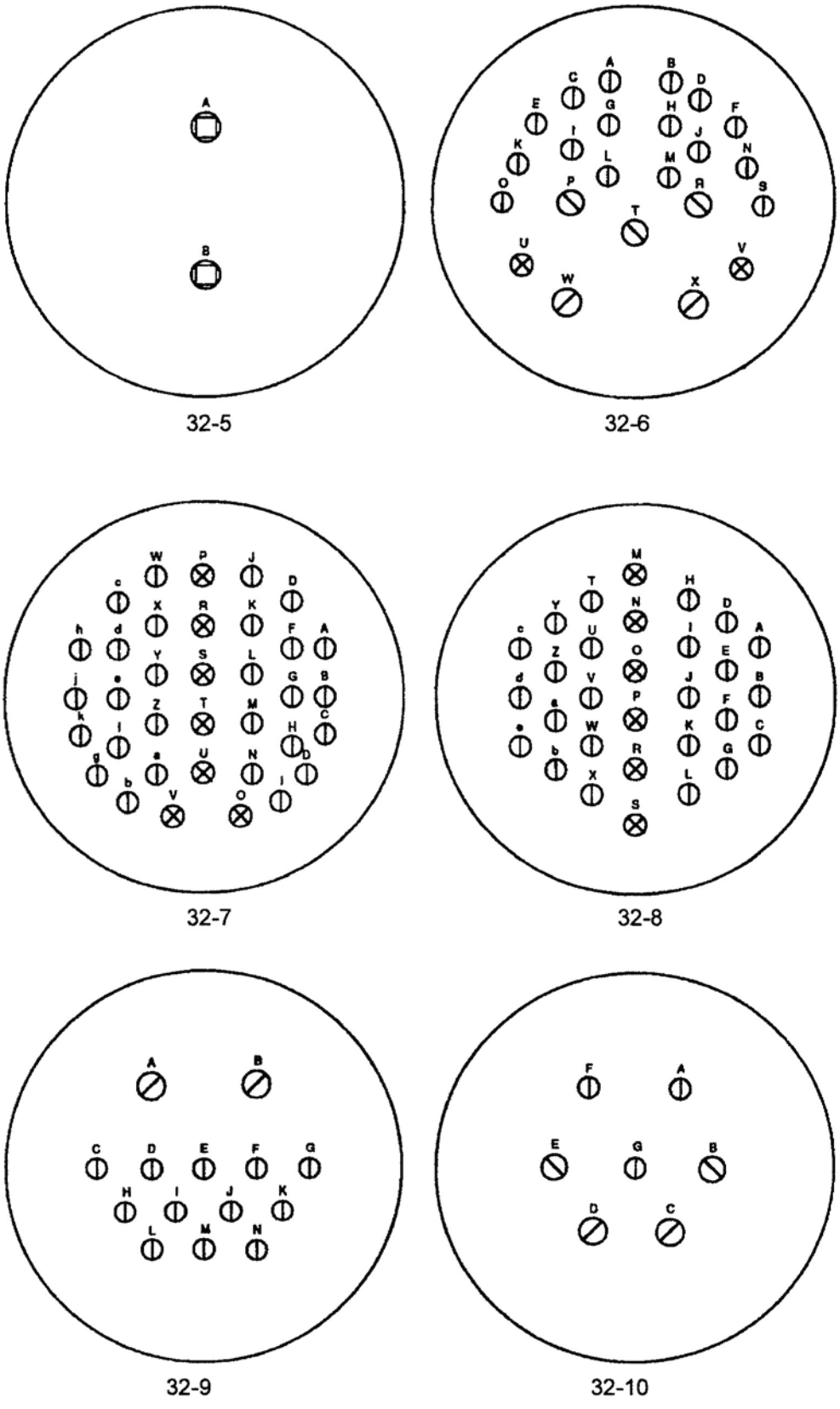


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 12 of 21)

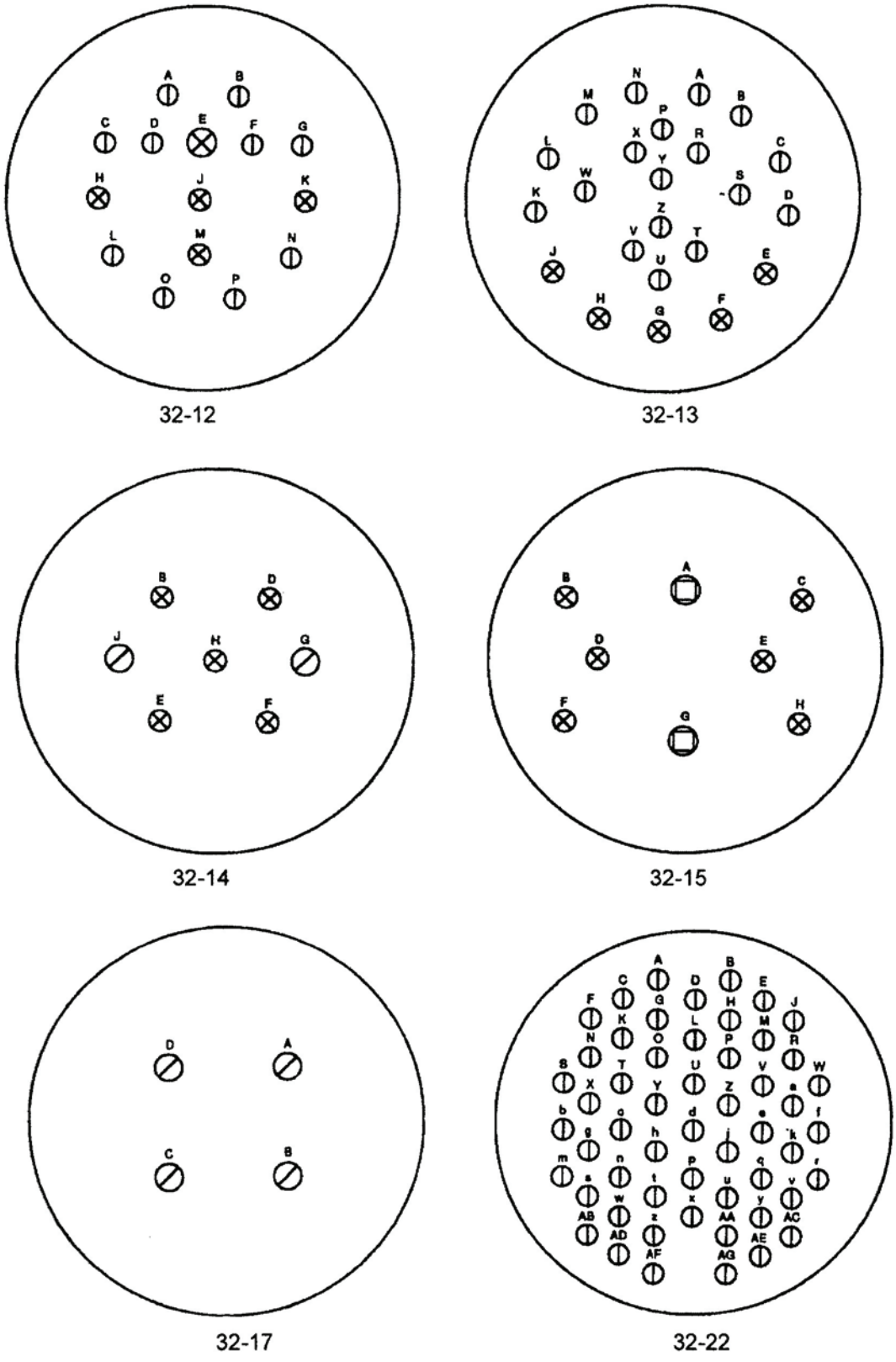


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 13 of 21)

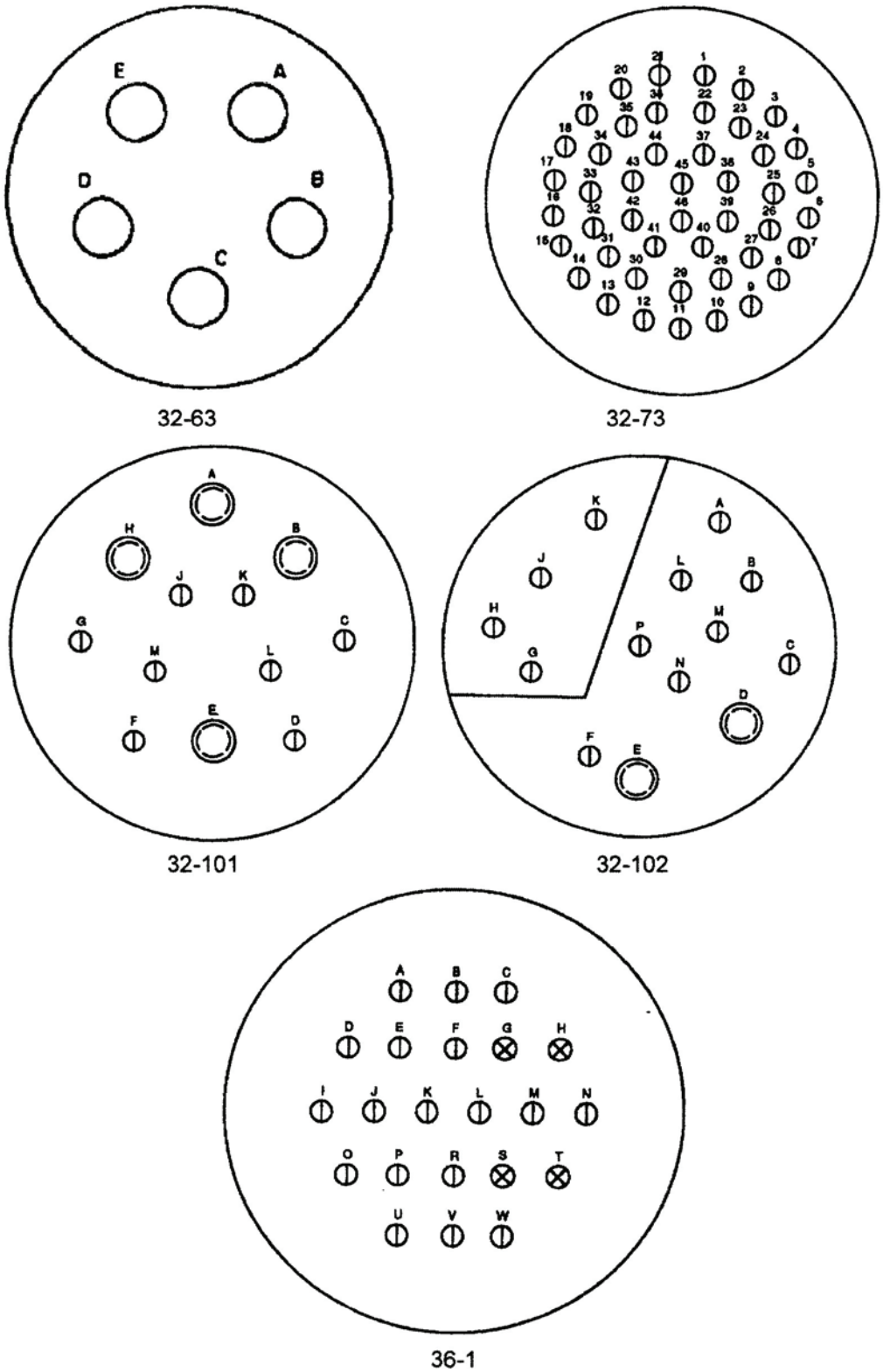


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 14 of 21)

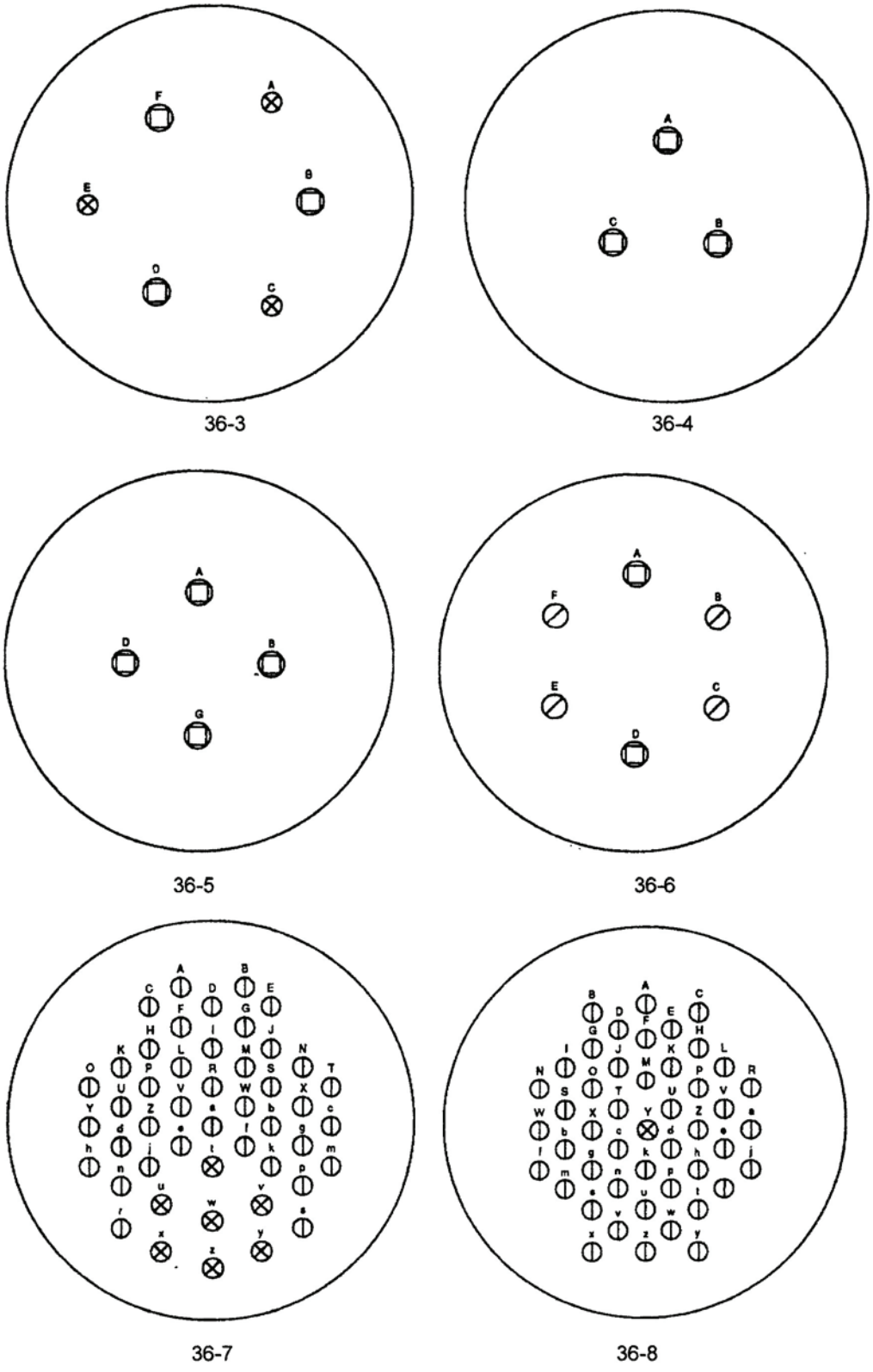


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 15 of 21)

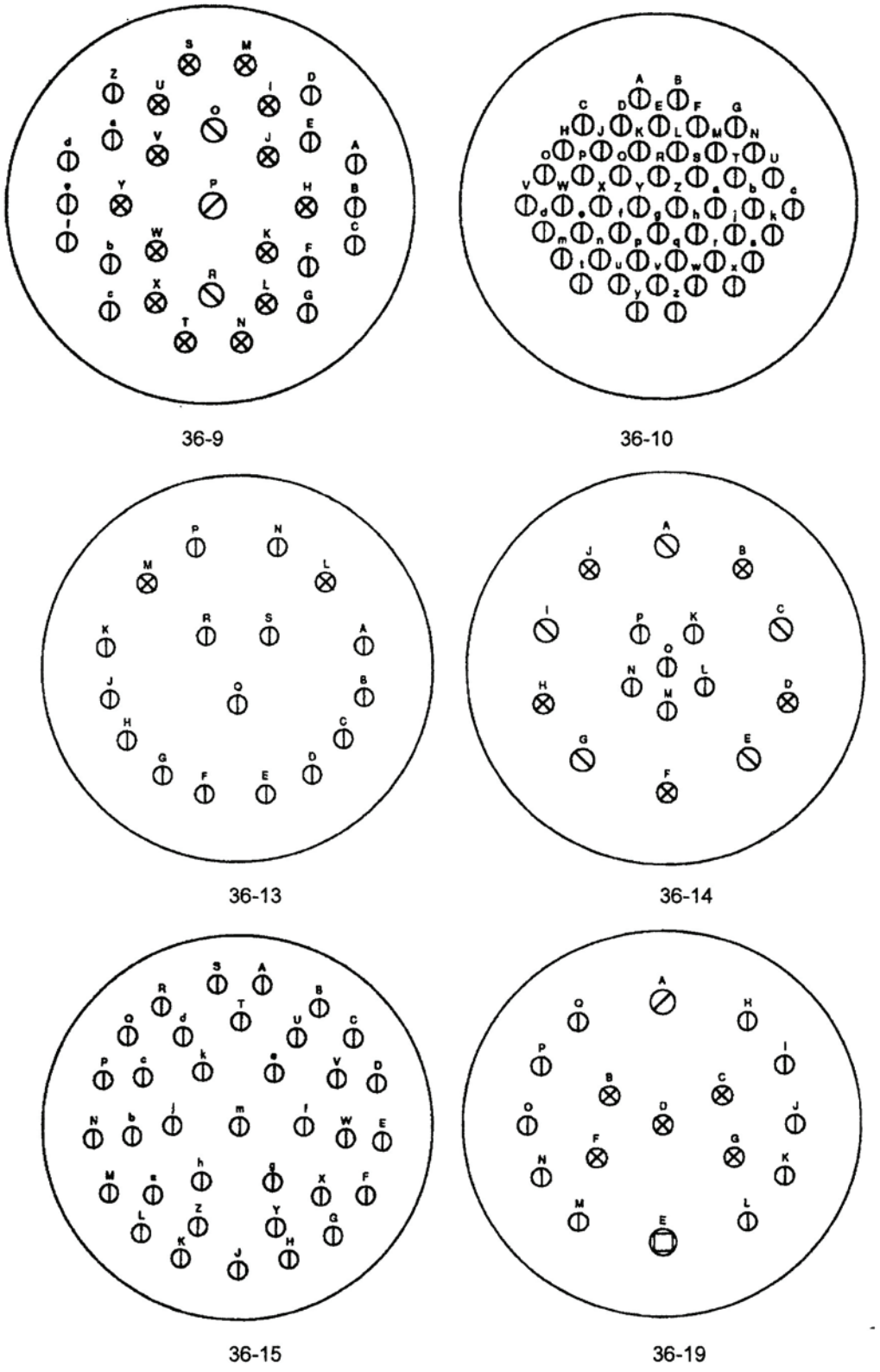


Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 16 of 21)

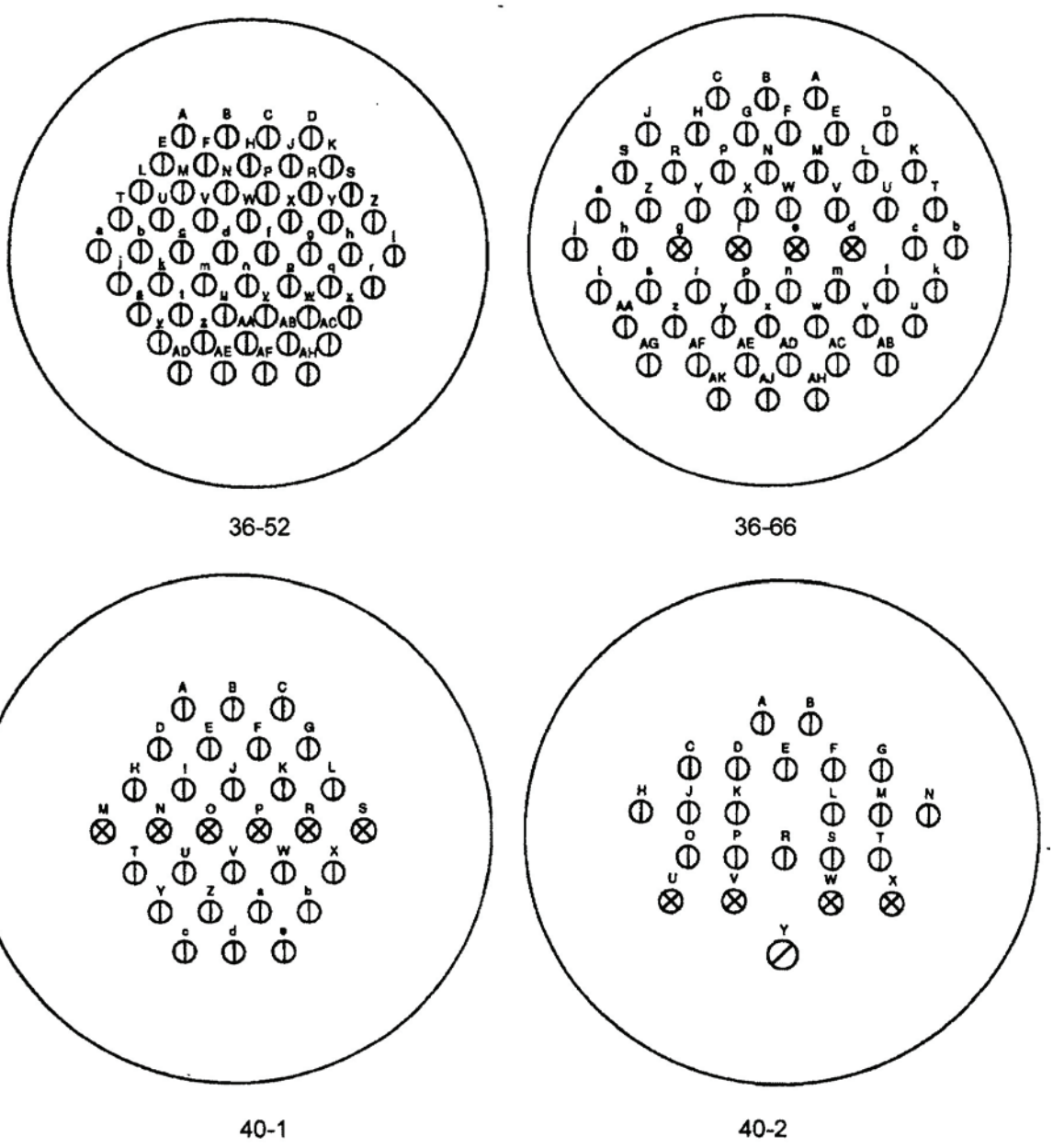
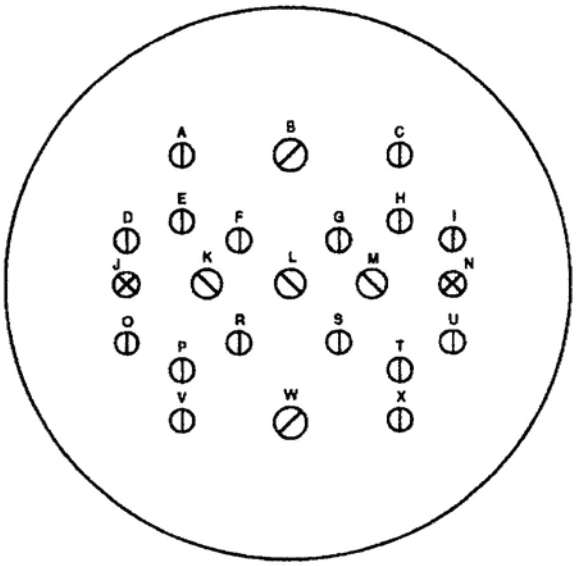
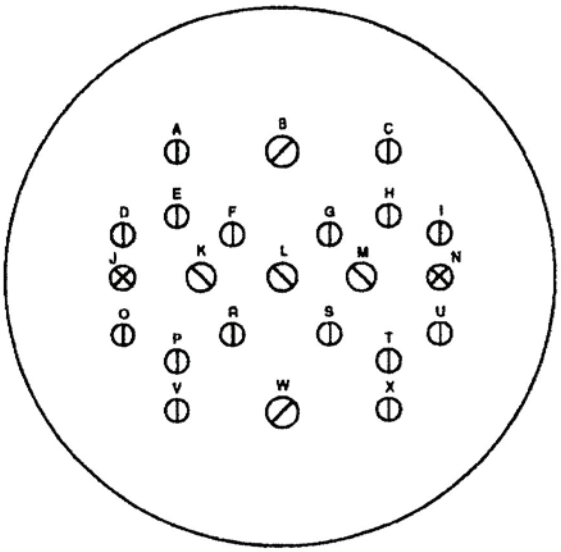


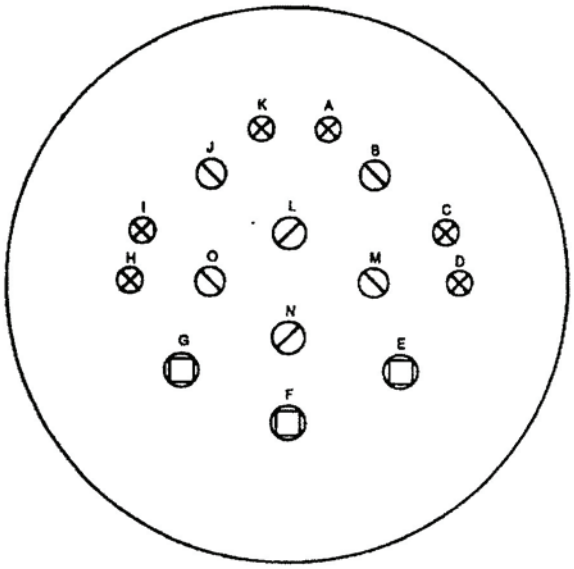
Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 17 of 21)



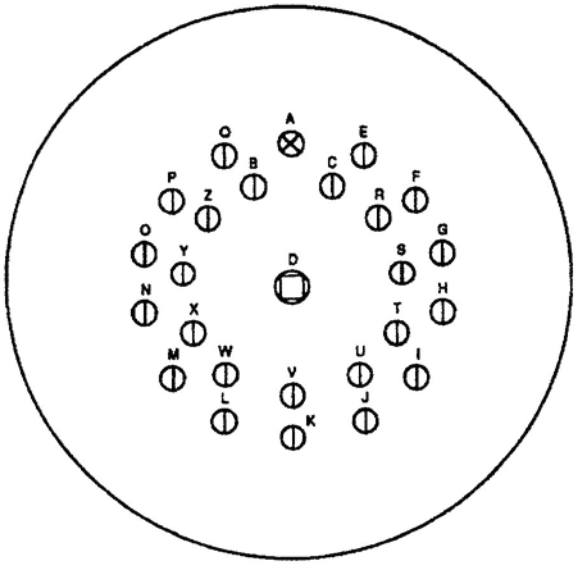
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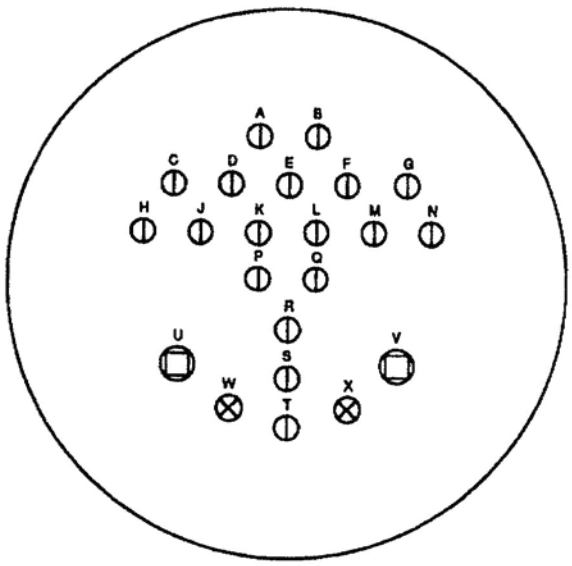


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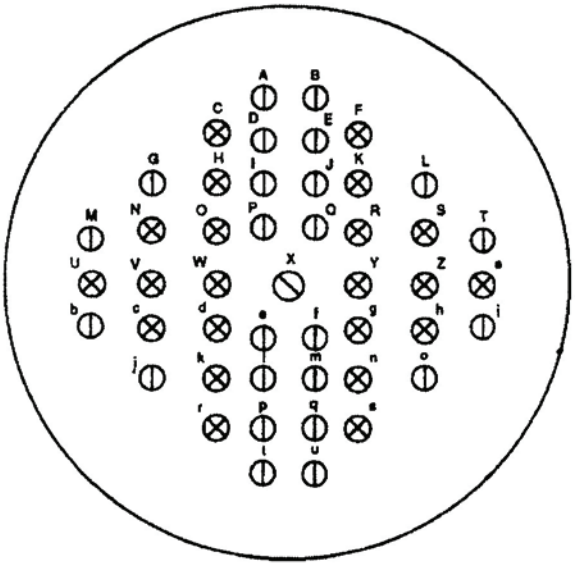


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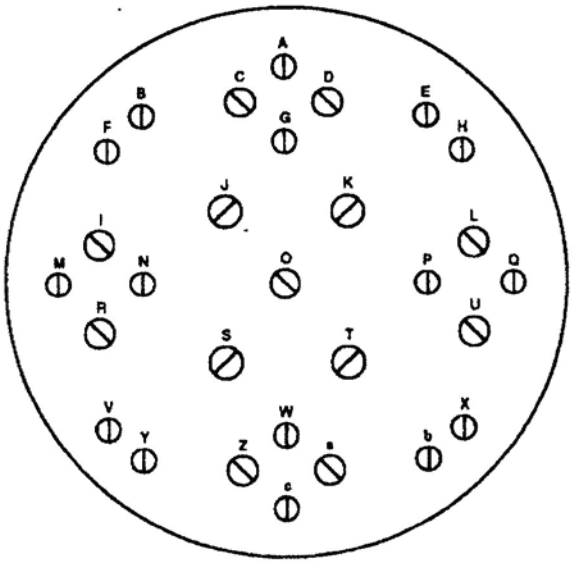
Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 18 of 21)



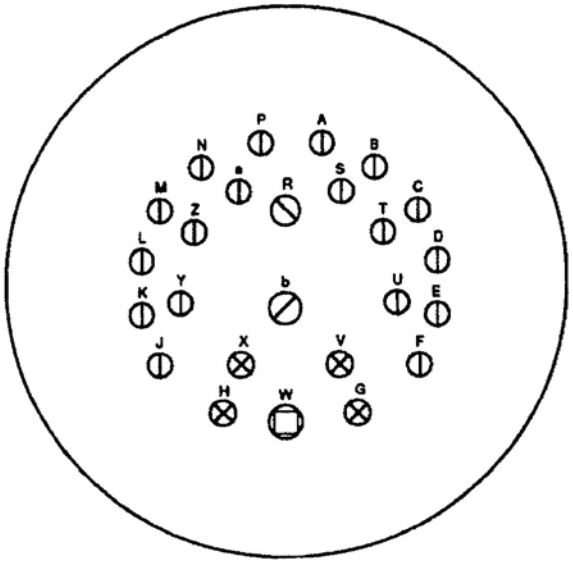
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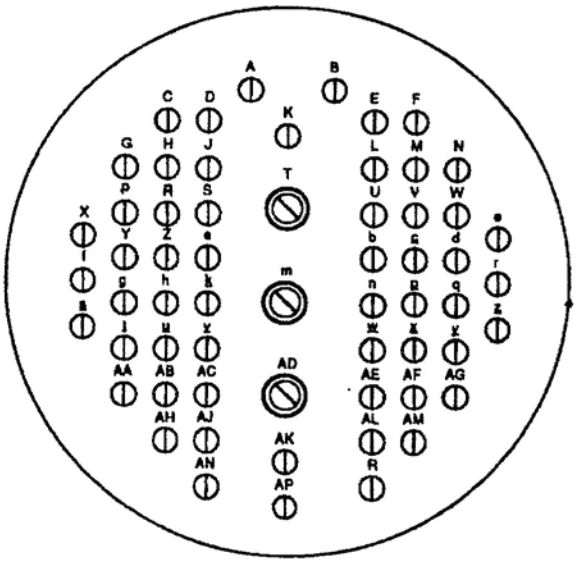


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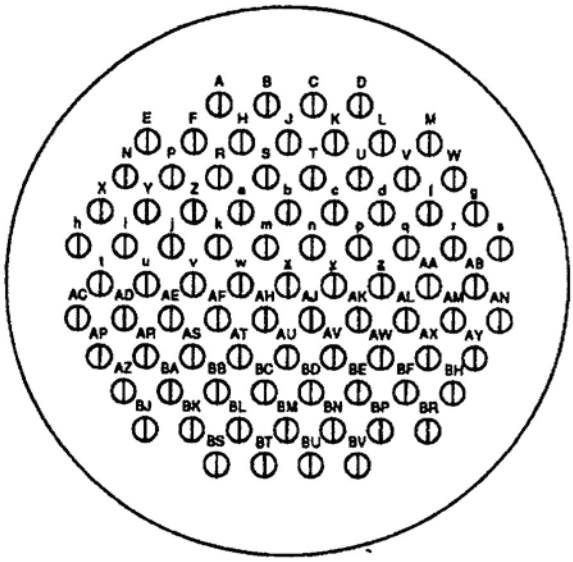


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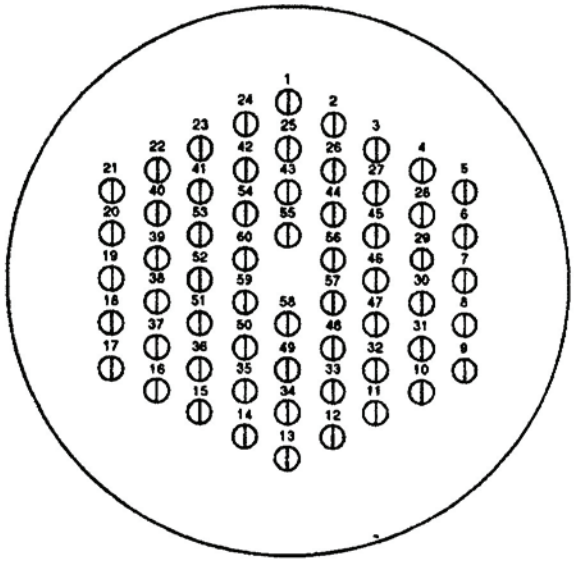
Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 19 of 21)



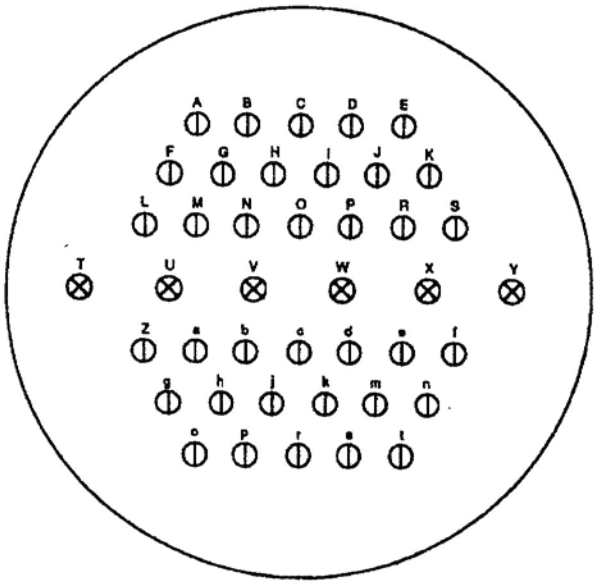
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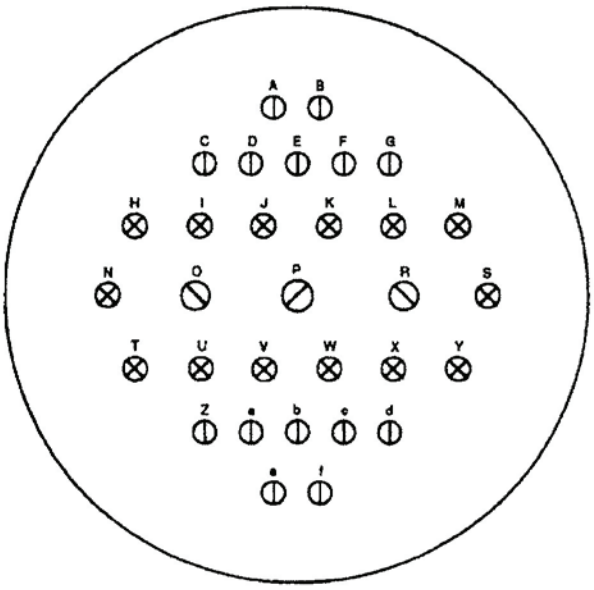


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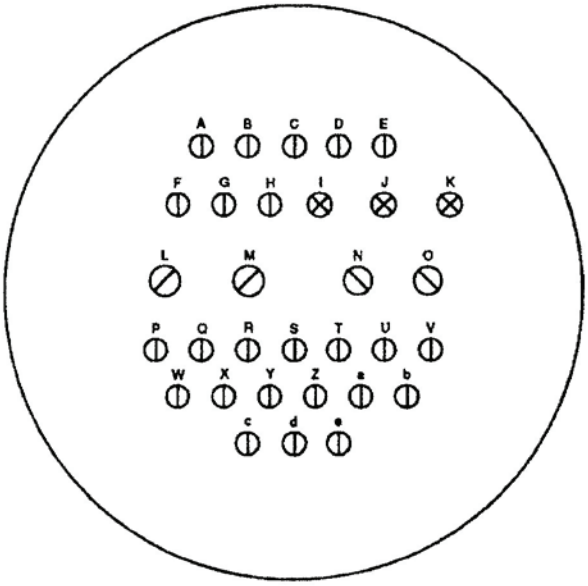


44-1

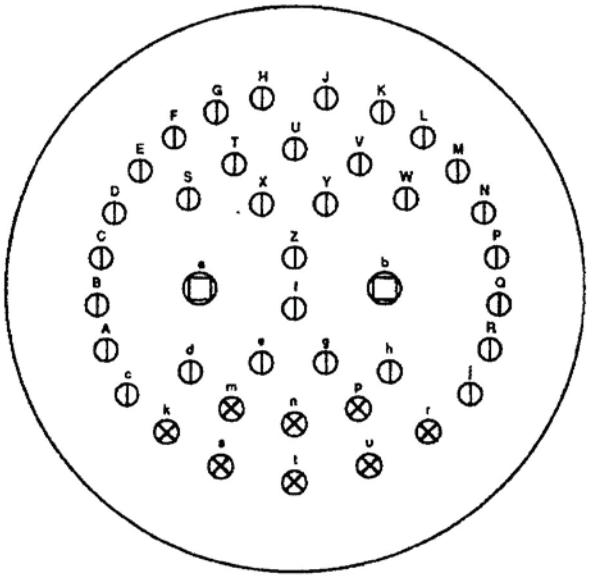
Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 20 of 21)



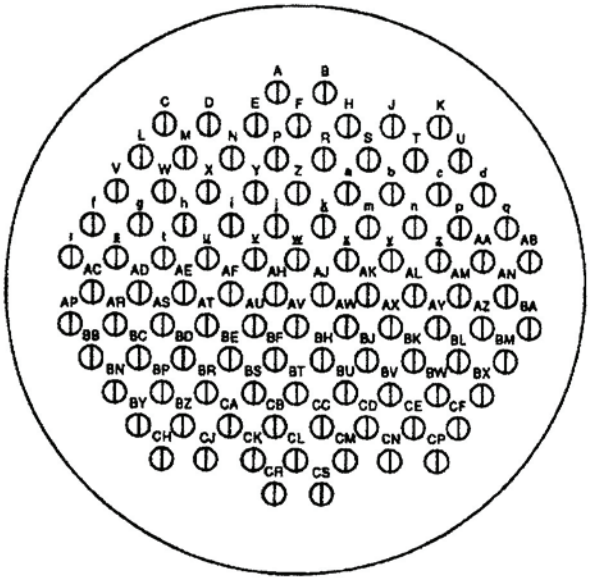
44-2



44-3



44-4



44-52

Figure 5. MIL-C-83723 Series II Insert Configurations (Sheet 21 of 21)

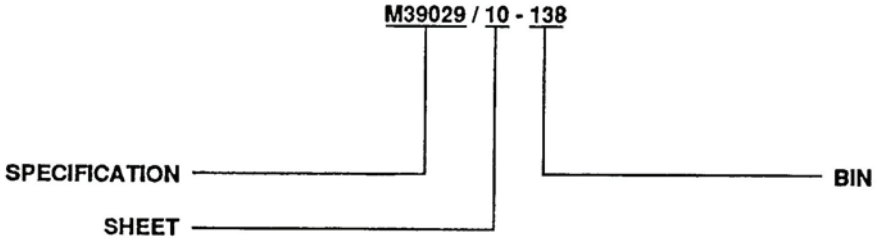


Figure 6. M39029/10-138 Part Number Breakdown

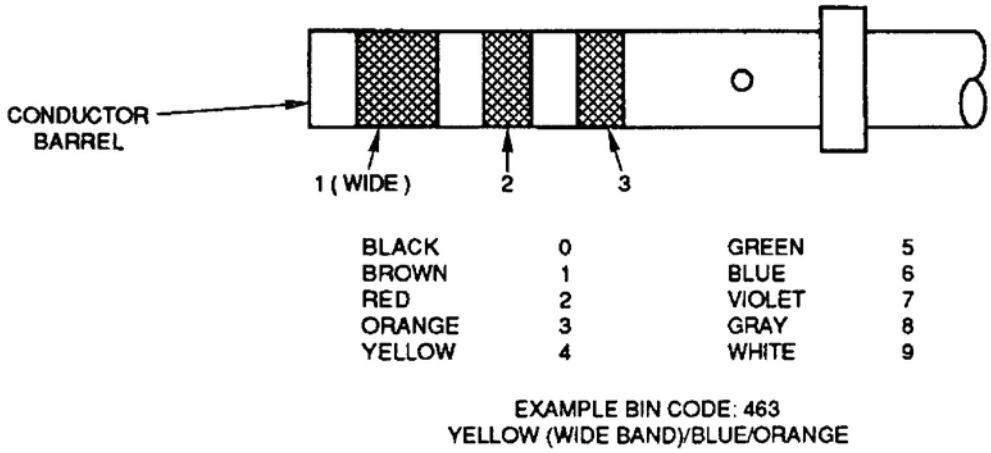


Figure 7. Basic Identification Number and Color Bands

Table 3. MIL-C-83723 Series II Power Contact Application

Contact Size	Wire Gage (AWG)	Socket Contacts				Pin Contacts				Remarks
		M39029/	Color Bands 1st	2nd	3rd	M39029/	Color Bands 1st	2nd	3rd	
8	8	30-220	RD	RD	BK	29-214	RD	BN	YE	—
4	4	30-221	RD	RD	BN	29-215	RD	BN	GN	—
0	0	03-222	RD	RD	RD	29-216	RD	BN	BL	—
12	12-14	30-219	RD	BN	WH	29-213	RD	BN	OR	—
16	16-20	30-218	RD	BN	GY	29-212	RD	BN	RD	—

Table 4. MIL-C-83723 Series II Thermocouple Contact Application

Contact Size	Wire Gage (AWG)	Socket Contacts M39029/	Color Bands 1st	2nd	3rd	Pin Contacts M39029/	Color Bands 1st	2nd	3rd	Remarks
16S	16-20	86-511	GN	BN	BN	8S455	YE	GN	GN	ALUMEL (Nickel - Aluminum Alloy)
16S	16-20	86-512	GN	BN	RD	85-456	YE	GN	BL	CHROMEL (Nickel – Chromium)
16S	16-20	86-513	GN	BN	OR	85-457	YE	GN	VI	IRON
16	16-20	86-462	YE	BL	RD	85-454	YE	GN	YE	CONSTANTAN (Copper - Nickel Alloy)
16	16-20	86-463	YE	BL	OR	85-455	YE	GN	GN	ALUMEL(Nickel - Aluminum Alloy)
16	16-20	86-464	YE	BL	YE	85^56	YE	GN	BL	CHROMEL(Nickel – Chromium)
16	16-20	86-465	YE	BL	GN	85-457	YE	GN	VI	IRON
12	12-14	86-466	YE	BL	BL	85-458	YE	GN	GY	CONSTANTAN(Copper - Nickel Alloy)
12	12-14	86-467	YE	BL	VI	85-459	YE	GN	WH	ALUMEL(Nickel - Aluminum Alloy)
12	12-14	86-46S	YE	BL	GY	85-460	YE	BL	BK	CHROMEL (Nickel – Chromium)
12	12-14	86-69	YE	BL	WH	85-461	YE	BL	BN	IRON

NOTE
New terminology applies to thermocouple conductors as follows:
Constantan: Copper - Nickel Alloy
Alumel: Nickel - Aluminum Alloy
Chromel: Nickel - Chromium

Table 5. MIL-C-83723 Series II Power and Thermocouple Tooling

Socket Contacts M39029/	PIN Contacts M39029/	Insertion Tool M81969/	Removal Tool M81969/	Crimp Tool M22520/	Positioner M22520/	Locator M22520/	Die Set M22520/
86-511	85-455	8-07 or 14-03	8-07 or 14-03	1-01 or 7-01	1-02 BL or 7-03	— —	
86-512	85-456	8-07 or 14-03	8-07 or 14-03	1-01 or 7-01	1-02 BL or 7-03	—	—
86-513	85-457	8-07 or 14-03	8-07 or 14-03	10-01 or 7-01	1-02 BL or 7-03	—	—
30-218	29-212	14-03	14-03	1-01	1-02 BL	—	—
86-462	85-454	8-07 or 14-03	8-07 or 14-03	1-01 or 7-01	1-02 BL or 7-03	—	—
86-463	85-455	8-07 or 14-03	8-07 or 14-03	1-01 or 7-01	1-02 BL or 7-03	—	—
86-464	85-456	8-07 or 14-03	8-07 or 14-03	1-01 or 7-01	1-02 BL or 7-03	—	—
86-465	85-457	8-07 or 14-03	8-07 or 14-03	1-01 or 7-01	1002 BL or 7-03	—	—
30-219	29-213	14-04	14-04	1-01	1-02YE	—	—
86-466	85-458	8-09 of 14-04	8-09 or 14-04	1-01	1-02YE	—	—
86-467	85-459	8-09 or 14-04	8--09 or 14-04	1-01	1-02 YE	—	—
86-468	85-460	8-09 or 14-04	8-09 or 14-04	1-01	1-02YE	—	—
86-469	85-461	8-09 or 14-04	8-09 or 14-04	1-01	1-02YE	—	—
30-220	29-214	—	29-02	23-01	N/A	23-09	23-02
30-221	29-215	—	29-03	23-01	N/A	23-11	23-04
30-222	29-216	—	29-04	23-01	N/A	23-13	23-05

45. CONNECTOR BUILD-UP.

46. WIRE DIAMETER BUILD-UP. If wire outside diameter is not large enough to fill wire sealing grommet holes, build-up wire outside diameter by applying heat-shrinkable insulating sleeving. This must be accomplished prior to contact insertion.

47. WIRE STRIPPING. Strip wire in accordance with following procedure:

a. Cut wire to proper length. Ensure enough wire remains for adequate strain relief without leaving excess slack.

b. Strip insulation from end (NAVAIR 01-1A-505-1, WP 009 00). Select contact (Table 3 or 4).

48. CONTACT CRIMPING. Crimp contact in accordance with following procedure:

a. Select correct crimp tool (Table 5).

b. Perform die closure check, install positioner, and set selector knob for gage of wire.

c. Insert stripped wire into contact conductor barrel. Ensure all wire strands are inside contact conductor barrel and visible in contact inspection hole (Figure 8).

d. If insulation gap is too large, trim conductor as required. If insulation gap is too small, trim insulation as required.

e. Crimp contact to wire.

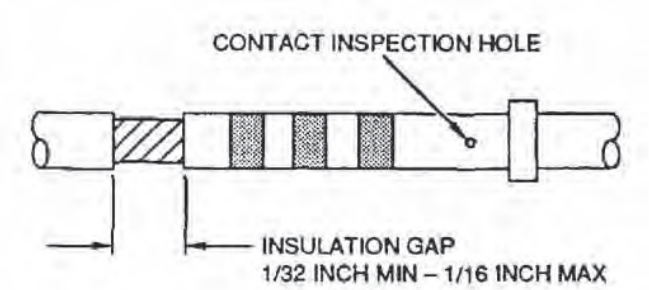
49. CONTACT INSERTION. Insert wired or unwired contacts in accordance with following procedure:

a. Remove sealing plug and/or contact from contact cavity (Paragraph 53.)

b. Ensure wire or cable on contact is routed through connector backshell.

c. Select correct insertion tool (Table 5).

d. Place wire and contact assembly into colored tip of insertion tool (Figure 9). Ensure tool tip is over conductor barrel and butted against contact shoulder.



CONTACT SIZE	WIRE AWG	INSULATION GAP
22D 22M	26	
22	24	1/32 INCH MIN.
	22	1/16 INCH MAX.
20	20	
16	20	
	18	
	16	1/32 INCH MIN.
12	14	5/64 INCH MAX.
	12	
8	10	1/32 INCH MIN.
	8	TWICE DIA. WIRE INSULATION MAX

Figure 8. Insulation Gap

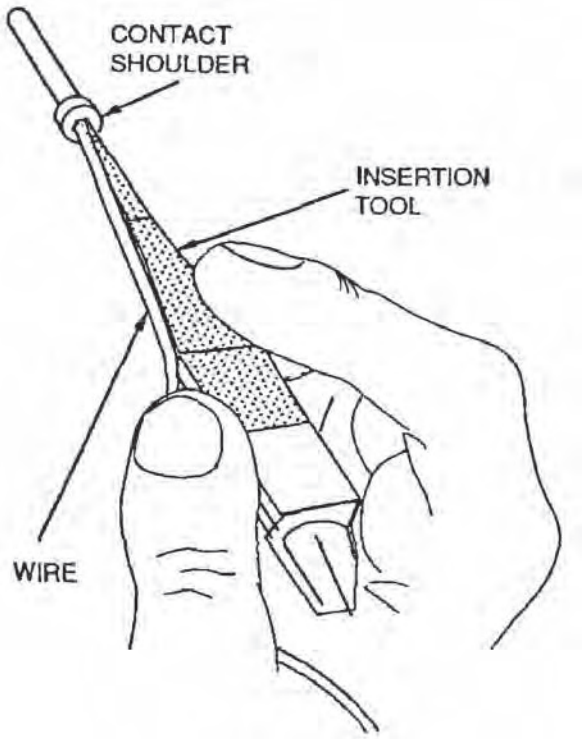


Figure 9. Inserting Contact into Insertion Tool

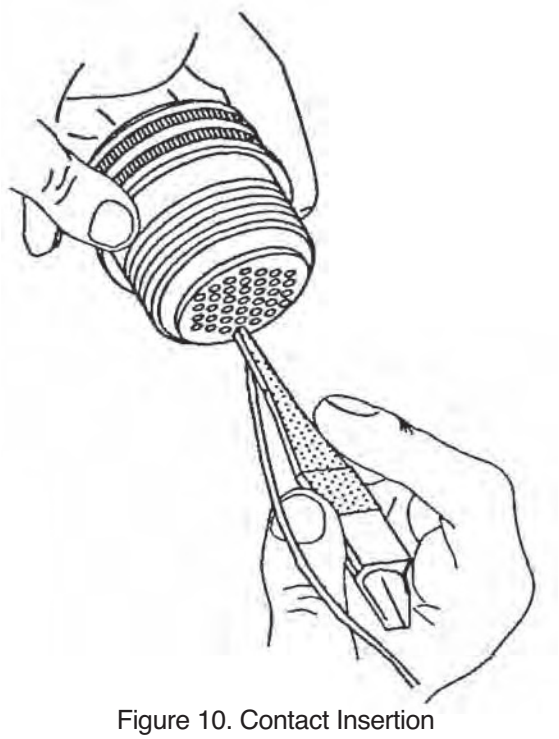


Figure 10. Contact Insertion

e. Insert tip of contact into cavity. Start contact insertion near connector center cavities and work outward.

f. Axially align contact with contact cavity.

g. With firm even pressure, press tool against contact shoulder and seat contact into cavity (Figure 10). A slight click may be heard as retention tines snap into place behind contact shoulder.

h. Pull tool straight out of contact cavity. Remove tool from wire. Pull back lightly on wire to ensure contact is properly seated.

i. Seal connector as required (Paragraph 50) and install backshell.

50. CONNECTOR SEALING.

51. Sealing Plug. Seal connector in accordance with following procedure:

a. Fill all unused cavities with un-crimped contacts (Paragraph 49).

b. Insert sealing plug, large diameter first, until bottomed in contact cavity (Figure 11). Fill all cavities that have un-crimped contacts. Preserve connector in accordance with NAVAIR 01-1A-505-1, WP 026 00.

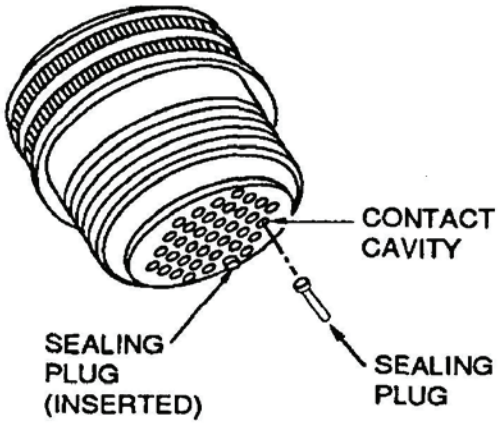


Figure 11. Inserting Sealing Plug into Contact Cavity

52. Moisture Barrier. For connector sealing procedures, including application of sealant to grommet sealed connectors, refer to NAVAIR 01-1A-505-1, WP 025 00.

53. CONTACT REMOVAL. Remove wired, unwired, and broken wire contacts in accordance with following paragraphs.

54. Wired Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors. Exercise caution when using this tooling.

CAUTION

Metal tooling may damage the wire sealing grommet at the end of the connectors. Use of plastic tools is preferred.

a. Select removal tool (Table 5).

b. Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

c. Place wire of contact to be removed into removal tool, with white tip of tool facing connector insert (Figure 12).

d. Slide removal tool along wire at a right angle to connector insert face and align with contact cavity (Figure 13).



Figure 12. Inserting Wire into Removal Tool



Figure 13. Removal Tool on Wire

e. Insert tool into contact cavity until tool tip bottoms against contact shoulder (Figure 14). A slight increase in resistance will be noticed just before the tool tip bottoms. This will spread the retention clip and release its hold on the contact. For smaller diameter wires, be careful the tool does not collapse around the wire when inserted and cause the tool tip to hit the contact crimp barrel instead of sliding over it. A collapsing tool can also damage grommet sealing wafers.

f. Press wire firmly against serrated edge of removal tool and pull wire straight out from contact cavity (Figure 15).

55. Unwired Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors. Exercise caution when using this tooling.

CAUTION

Metal tooling may damage the wire sealing grommet at the end of the connectors. Use of plastic tools is preferred.

Caution should be exercised in the use of tooling.

Inspect tips of metal tools for distortion of probe before use as connector damage can occur.

a. Select removal tool (Table 5, Figure 16).

b. Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

c. With rear of connector exposed, remove sealing plug from insert cavity of contact to be removed.

d. Press and hold tool plunger until tip of tool is aligned with contact to be removed.

e. Axially align removal tool with contact to be removed.

f. Insert removal tool tip into contact cavity to butt contact wire barrel; then slide removal tool sleeve over contact and exert pressure until sleeve bottoms (Figure 17).

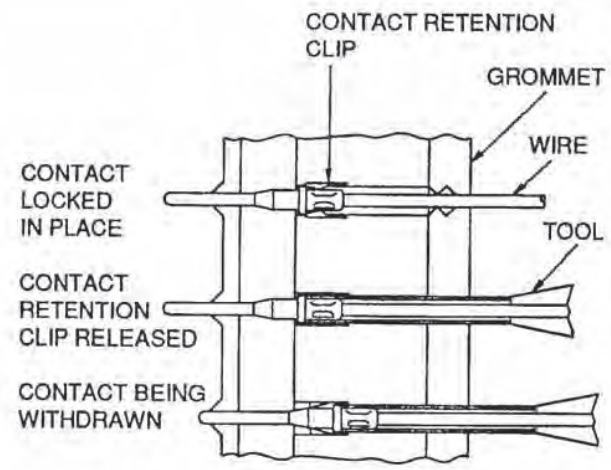


Figure 14. Unlocking Contact Mechanism

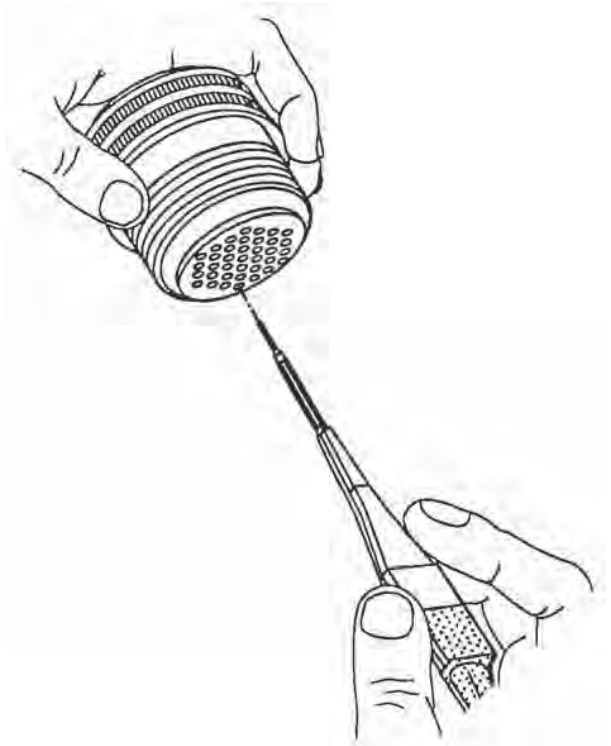


Figure 15. Removing Contact from Connector

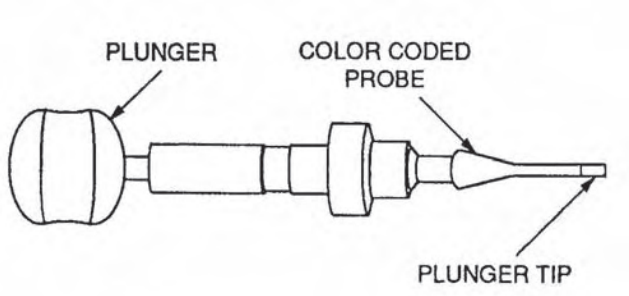


Figure 16. Typical Unwired Contact Removal Tool

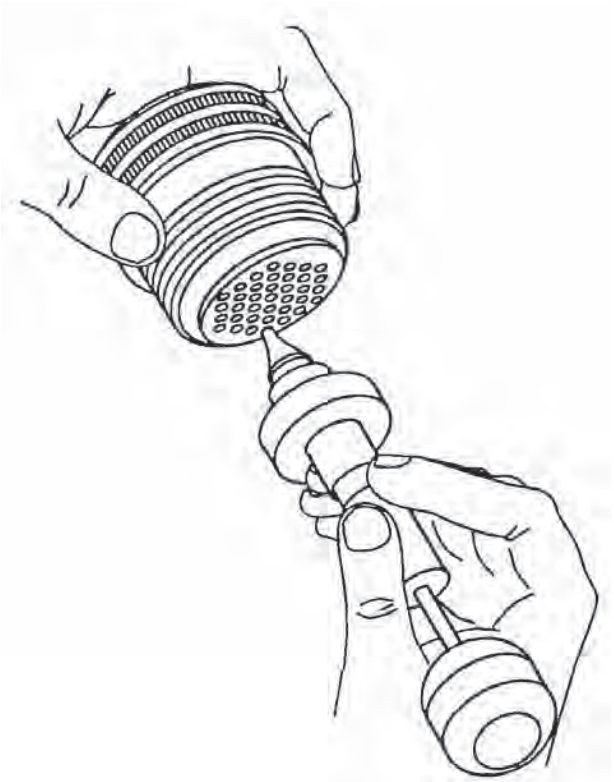


Figure 17. Unlocking Contact Retention Mechanism with Unwired Contact

g. Remove tool and unlocked contact from connector by withdrawing tool from connector (Figure 18).

h. Remove contact from removal tool by pressing plunger.

56. Broken Wire Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors. Exercise caution when using this tooling.

CAUTION

Metal tooling may damage the wire sealing grommet at the end of the connectors. Use of plastic tools is preferred.

a. Select removal tool (Table 5, Figure 16).

b. Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

CAUTION

Removal of a contact with a broken wire shall not be attempted with an unwired removal tool. Use of unwired removal tools require that the tip be jammed onto the contact wire barrel. If wire strands occupy wire barrel, the tool and connector may be damaged.

c. Insert tip of removal tool about 1/8 inch into cavity at rear of connector.

CAUTION

Wire strands may be encountered at any point up to 5/16 inch of tool insertion. It is important not to jam any strands of wire up to this point.

Withdraw removal tool anytime during insertion when it cannot be advanced into connector using these procedures. Inspect tool tip for nicks, cracks, mushrooming, and other damage that will prevent its functioning. Replace removal tool and repeat procedure, if required.

NOTE

Refer to Figure 19 for approximate dimensions of a size 22 contact and cavity. The dimensions in this procedure are based on a size 22 contact.

d. Gently insert removal tool into cavity in about 1/16 inch units, releasing tool after each unit if resistance is felt.

NOTE

Rotating removal tool works splayed wire strands into slot of tool, allowing tool to pass.

Removal tool may be blocked at rear of contact by plastic insert or additional strands of broken wire.

e. If resistance is felt before removal tool reaches back end of contact, withdraw tool slightly, rotate about 1/6 of a turn, and reinsert tool. Repeat rotating and insertion procedure until tool passes with minimum additional force to 5/16 inch depth back end of contact (Figure 20).



Figure 18. Extracting Contact from Connector

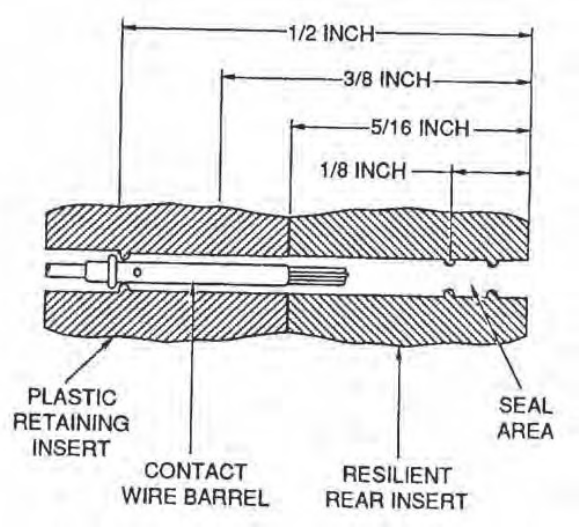


Figure 19. Typical Connector Dimensions

f. Wiggle removal tool gently to help guide into insert bore and over back of contact. Additional rotation may be required if broken strands are encountered.

g. Continue insertion of removal tool until positive stop is felt at about ½ inch depth.

h. Exert axial pressure on engaging end of contact, using appropriate pin or socket as pusher. (If contact does not move, seat removal tool more firmly.)

i. Push contact completely out rear of connector before disengaging removal tool (Figure 21).

57. CONNECTOR REMOVAL AND INSTALLATION. If the connector is severely damaged or cannot be repaired using the above procedures, proceed as follows:

a. Starting from outside of damaged connector, tag wires and remove all contacts from connector (Paragraph 53), If contact cannot be removed, cut wire as close to connector as possible and attach new contact (Paragraphs 47 and 48).

b. Starting from center of new connector, insert contact into correct cavity (Paragraph 49). Remove tag from wire. Repeat procedure until all contacts are installed in new connector.

58. CONNECTOR BUILD-UP SOLDER CONTACTS.

59. For build-up procedures for solder contacts refer to NAVAIR 01-1A-505-1, WP 016 00.

60. CONNECTOR CLEANING AND PRESERVATION.

61. For connector cleaning and corrosion control procedures refer to NAVAIR 01-1A-505-1, WP 026 00.



Figure 20. Unlocking Contact Retention Mechanism of Broken Wire

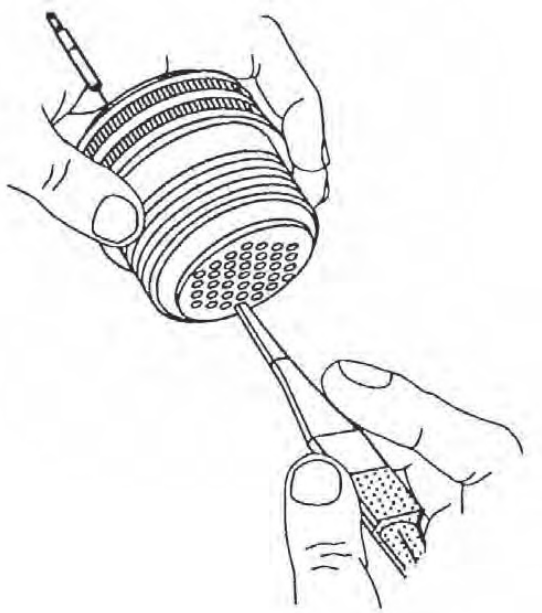


Figure 21. Broken Wire Contact Removal

CONNECTORS
MIL-DTL-83723 SERIES III

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Connectors, Electrical, Circular, (Environment Resisting), Receptacles and Plugs,
General Specification for MIL-DTL-83723
Connector Accessories MIL-DTL-83723 Series II and III 006 04
Contacts, Electrical, Connector, General Specification for AS-39029

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Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
GS590	Die Set
GS710	Die Set
GS940	Die Set
GS1010	Die Set
GS1130	Die Set
GS1250	Die Set
GS1440	Die Set
GS1670	Die Set
GS1920	Die Set
GS2170	Die Set
GS2420	Die Set
GS2670	Die Set
GS2920	Die Set
HT-900B	Heat Gun
M22520/1-01	Tool, Crimp, Frame
M22520/1-02	Positioner
M22520-2-01	Tool, Crimp, Frame
M22520/2-02	Positioner
M22520/7-01	Tool, Crimp, Terminal
M22520/7-03	Positioner
M81969/8-05	Tool, Insertion
M81969/8-06	Tool, Removal
M81969/8-07	Tool, Insertion
M81969/8-08	Tool, Removal
M81969/8-09	Tool, Insertion
M81969/8-10	Tool, Removal
M81969/14-02	Tool, Insertion/Removal
M81969/14-03	Tool, Insertion/Removal
M81969/14-04	Tool, Insertion/Removal
M81969/30-05	Tool, Removal
M81969/30-06	Tool, Removal
M81969/30-07	Tool, Removal
13640	Tool, Crimp

Materials Required

Specification/ Part No.	Nomenclature
S1009	Glue, Epoxy
MIL-I-23053	Sleeving, Insulating, Heat-Shrinkable
MS3118 Series	Shrink Boot
P-2740FR	Tape, Silicone Rubber

1. INTRODUCTION.

2. This Work Package (WP) pertains to connectors manufactured in accordance with MIL-DTL-83723 Series III.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, the Society of Automotive Engineers (SAE) will become the preparing activity and the Navy will adopt the documents, and the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

3. DESCRIPTION. MIL-DTL-83723 connectors utilize crimp type contacts that are inserted, released, and removed from the rear of connector.

4. The entire assembly process is performed at -rear of connector so that the possibility of damaging critical interface of connector is greatly reduced. This rear release feature also permits the removal or installation of any number of contacts without uncoupling connector.

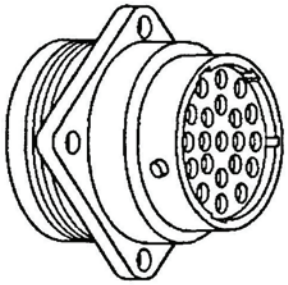
5. WIRE SEALING. Wire sealing is accomplished by use of a grommet seal designed to seal against outside diameter of inserted wire. The outer diameter shall be within applicable size range.

6. MIL-DTL-83723 SERIES III.

7. MIL-DTL-83723 Series III connectors are bayonet or thread coupled with rear release, rear removable, crimp contacts. Hermetic connectors are available with non-removable solder type contacts (Figure 1).

8. GROMMET SEALING PLUGS. The grommets of environment resisting connectors are designed to accept sealing plugs in accordance with MS27488 to be used where unwired contacts are placed. The connector when ordered as a unit will have sealing plugs enclosed to equal 15 percent of the number of contacts but not less than one.

9. MATING SEAL. Plugs and receptacles with pin inserts have a resilient face with individual pin barriers to seal against the hard face socket insert, The resilient interface seal provides individual contact seals in mated condition between each contact and shell.



SPECIFICATIONS:

COUPLING METHOD: BAYONET OR THREADED
KEYING POSITIONS: N(NORMAL),1, 2, 3, 4, 5, 6, 7, 8, 9, 10
ALTERNATE KEYING METHOD: INSERT ROTATION IN POSITIONS 1 THRU 5, MINOR KEY ROTATION IN POSITIONS 6 THRU 10
EMI/RFI GROUNDING: YES (EMI/RFI FINGERS MAY NOT BE AVAILABLE ON ALL MODELS)

SHELL MATERIAL & FINISH:

Shell	Finish
ALUMINUM	BLACK ANODIZE CADMIUM
STAINLESS STEEL	PASSIVATED NICKEL
STEEL	FUSED TIN

Figure 1. MIL-C-83723 Series III Typical Connector

10. SHELL. Shells including mounting flanges are of one-piece construction and designed to retain their inserts in one position by mechanical means. Each plug and receptacle has at least one blue color band, which indicates rear release retention system, and is located to be readily visible.

11. COUPLING. Connectors shall be capable of being fully coupled and uncoupled without use of tools.

12. POLARIZATION. Connectors are polarized as denoted by their part numbers. This means that the master keyway is rotated to prevent mis-mating of similar connectors in a similar location. A plug with a given polarization letter will mate with a receptacle with same letter. The inserts do not rotate, only the keyway is rotated.

13. PART NUMBER. The following paragraphs contain information necessary for proper selection and procurement of connector (Figure 2).

14. Military Prefix. The military prefix denotes military standard.

15. Shell Coupling and Contact Style. The shell, coupling, and contact style denotes type of connector, coupling (bayonet or threaded) and contact style (pin or socket).

16. Class. The class is a letter code denoting environment resisting ability.

17. Shell Size. The shell size is indicated by a progressive numbering system.

18. Insert Configuration. The insert configuration is the insert arrangement by number and size of contacts used.

19. Alternate Keyway Position. The alternate position indicates insert polarization (Figure 3).

20. DESIGN AND CONSTRUCTION. Connectors and accessories are designed and constructed to withstand normal handling incidental to installation and maintenance (Figure 4).

21. INSERTS. The non-resilient material used for all inserts shall be a high grade dielectric having electrical and mechanical characteristics suitable for the purpose intended. The impact strength shall be such that material shall not chip, crack, or break during assembly or normal maintenance.

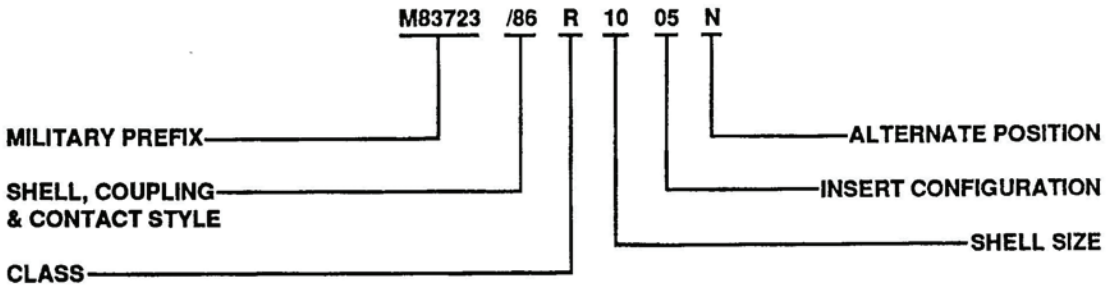
22. Crimp Snap-in Contacts. Snap-in contacts designed to AS39029 can be crimped with standard M22520/1 crimp tool.

23. Closed-Entry Socket Contacts. These contacts eliminate damage from abuse by test probes and help to correct any misaligned pins during engagement.

24. Contact Insertion. Insertion is accomplished from rear of connector. When contact is fully inserted, the clip tines snap securely behind contact shoulders.

25. Contact Extraction. Extraction is accomplished with use of a removal tool.

26. Contact Retaining Clip. The contact retaining clip is completely encased in a tough plastic wafer to protect clip from damage.



SHELL, COUPLING & CONTACT STYLE

Coupling & Contact Style				Shell Style
Bayonet		Threaded		
Socket	Pin	Socket	Pin	
/71	/71	/82	/83	WALL MOUNT RECEPTACLE
—	/79	—	/88	BOX MOUNT RECEPTACLE, HERMETIC SEAL
/73	/74	/84	/85	JAM NUT RECEPTACLE
—	/81	—	/89	JAM NUT RECEPTACLE, HERMETIC SEAL, SOLDER CONTACTS
—	/94	—	—	JAM NUT RECEPTACLE, HERMETIC SEAL, FLEX LEAD CONTACTS
—	/65	—	—	JAM NUT RECEPTACLE, HERMETIC SEAL, CRIMP CONTACTS
—	/80	—	/90	SOLDER MOUNT RECEPTACLE, HERMETIC SEAL
—	/93	—	—	SOLDER MOUNT RECEPTACLE, HERMETIC SEAL, FLEX LEAD CONTACTS
/75	/76	/86	/87	STRAIGHT PLUG
/77	/78	/91	/92	STRAIGHT PLUG, EMI GROUNDING
—	—	/95	/96	STRAIGHT PLUG, SELF-LOCKING COUPLING NUT
—	—	/97	/98	STRAIGHT PLUG, SELF-LOCKING COUPLING NUT, EMI GROUNDING
—	—	/67	/66	STRAIGHT PLUG, PUSH-PULL QUICK DISCONNECT
—	—	/69	/68	STRAIGHT PLUG, PUSH-PULL QUICK DISCONNECT WITH LANYARD

CLASS*

A ALUMINUM, NON-CONDUCTIVE BLACK ANODIZE, FLUID RESISTANT INSERT.
G PASSIVATED STAINLESS STEEL, FLUID RESISTANT INSERT.
H STEEL, HERMETIC SEAL, FLUID RESISTANT INSERT.
K PASSIVATED STAINLESS STEEL, FLUID RESISTANT INSERT, FIREWALL (THREADED ONLY).
N PLUGS SAME AS CLASS S WITH ELECTRODEPOSITED NICKEL FINISH, RECEPTACLES SAME AS CLASS Y OR S WITH ELECTRODEPOSITED NICKEL FINISH (THREADED ONLY).
R ALUMINUM SHELL, CONDUCTIVE FINISH, FLUID RESISTANT INSERT.
S PASSIVATED STAINLESS STEEL, FLUID RESISTANT INSERT, EMI GROUNDING, SELF-LOCKING FIREWALL (THREADED ONLY).
W ALUMINUM, CADMIUM CONDUCTIVE FINISH, 500 HR. SALT SPRAY.
Y STAINLESS STEEL, HERMETIC SEAL.

SHELL SIZE

SEE TABLE 1 FOR APPLICABLE SHELL SIZES.

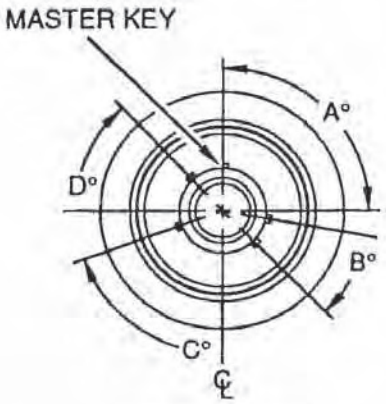
INSERT CONFIGURATION

ILLUSTRATED (FIGURE 6).

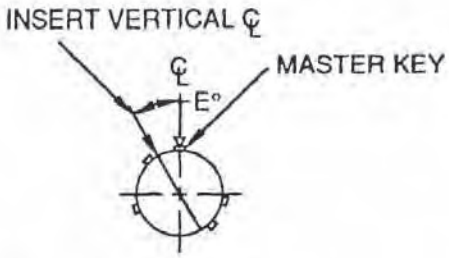
ALTERNATE POSITION

(FIGURE 3)

Figure 2. MIL-C-83723 Series III Part Number Breakdown



KEY POSITIONS
VIEWED FROM
ENGAGING END
OF PLUG



PIN INSERT FACE VIEW
▽ INDICATES ℄ OF SHELL

INSERT POSITIONS
VIEWED FROM
ENGAGING END
OF PLUG

Shell Size	Polarizing Code	Key Positions				Insert Position
		A°	B°	C°	D°	E°
ALL	N	105	140	215	265	0
10, 12, 14, 16, 18, 20, 22, 24 (NOTE 1)	1	105	140	215	265	10
	2	105	140	215	265	20
	3	105	140	215	265	30
	4	105	140	215	265	40
18	5	105	140	215	265	50
8, 10	6	102	132	248	320	0
	7	80	118	230	312	0
	8	35	140	205	275	0
	9	64	155	234	304	0
10	10 (Y)	25	115	220	270	0
12, 14, 16, 18, 20, 22, 24	6	18	149	192	259	0
	7	92	152	222	342	0
	8	84	152	204	334	0
	9	24	135	199	240	0
	10 (Y)	98	152	268	338	0

NOTE 1. ALTERNATE POSITIONS 1 THRU 5 ARE FOR INTERCHANGEABILITY USE ONLY AND ARE NOT RECOMMENDED FOR NEW DESIGN.

Figure 3. MIL-C-83723 Series III Alternate Positions

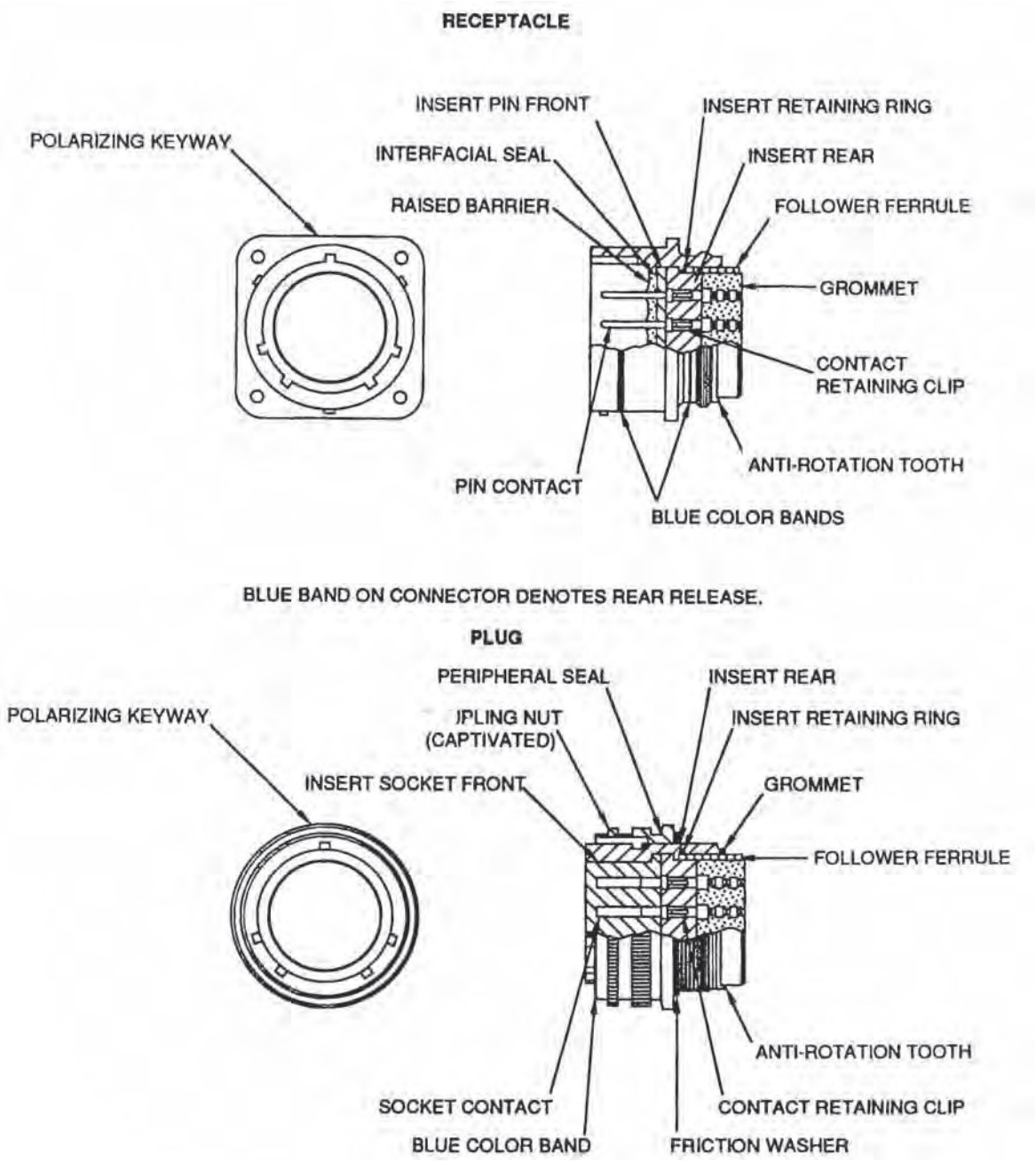


Figure 4. Design Features

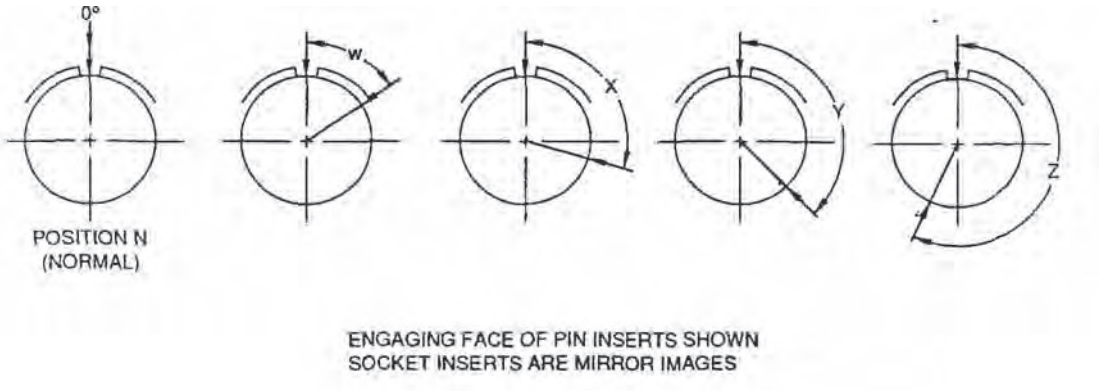


Figure 5. MIL-C-83723 Series III Keying Positions

27. Moisture Sealing. Complete sealing is achieved by combining four seals, shell, peripheral, interfacial, and wire seal.

28. Shell Seal. This seal is effected when plug shell pushes against sealing ring in receptacle when connectors are mated.

29. Peripheral Seal. This seal is around the edge of pin insulator and designed so that when mating the connector, tension is put on seal and greatly reduces compression set.

30. Interfacial Seal. This seal is achieved by insulator faces meeting when plug and receptacle are mated.

31. Wire Seal. This seal is accomplished by a multiple ripple design, exceeding the wire sealing requirement of MIL-C-26482.

32. Insert Retention. Insert retention is accomplished by a hard plastic wafer firmly locked into a groove in shell and a strong adhesive bond between insert and shell.

33. Keying. Keying is used in shell-enclosed connectors to obtain polarization, which assures correct location when mating a connector (Figure 5).

34. INSERT ARRANGEMENT. The insert arrangement is number and size of contacts available by shell size (Table 1). Series III insert arrangements are specified in MIL-STD-1554.

35. INSERT CONFIGURATION. The insert configuration is the manner in which contacts are placed within the insert in a standard configuration. All arrangements identified in Table 1 are illustrated (Figure 6).

36. CONTACTS. Contacts are designed to prevent damage to contact retention device or sealing member during insertion or removal of contacts.

37. Fixed Contacts. Contact in hermetically sealed or thru-bulkhead receptacles are fixed non-removable, and solder-able, or feed through.

38. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

39. Contact Availability. Crimp contacts are supplied with each connector unit package and consist of a full complement plus one spare per size for connectors of 26 contacts or less. Connectors with more than 26 contacts will have two spares of each size used. Contacts may also be ordered in individual quantities when necessary.

40. Installation and Removal Tools. The proper installation and removal tools must be used to assemble or disassemble connector. The connector when ordered as a unit package will include one MIL-I-81969/14 tool.

41. CONTACT APPLICATION. Contacts used in Series III connectors are manufactured in accordance with AS39029. The contact part number breakdown is illustrated (Figure 7). The Basic Identification Number (BIN) or last three digits of contact part number, matches standard resistor color code (Figure 8).

Table 1. MIL-C-83723 Series III Insert Arrangements

Shell Size Insert Arrangement Series III	Service Rating (NOTE)	Contact Size				Number of Contacts
		20	16	12	Shielded	
8-2	I	2	-	-	-	2
8-3	I	3	-	-	-	3
8-98	I	3	-	-	-	3
10-2	I	2	-	-	-	2
10-5	I	5	-	-	-	5
10-6	I	6	-	-	-	6
10-20	I	-	2	-	-	2
12-3	I	-	3	-	-	3
12-1	I	4	-	-	-	4
12-12	I	12	-	-	-	12
14-4	I	-	-	4	-	4
14-7	I	-	7	-	-	7
14-12	I	9	3	-	-	12
14-15	I	15	-	-	-	15
16-10	I	-	10	-	-	10
16-24	I	24	-	-	-	24
18-8	I	-	-	8	-	8
18-14	I	-	14	-	-	14
18-31	I	31	-	-	-	31
20-16	II	-	16	-	-	16
20-25	I	19	-	6	-	25
20-28	I	24	-	4	-	28
20-39	I	37	2	-	-	39
20-41	I	41	-	-	-	41
22-12	I	-	-	12	-	12
22-19	I	-	19	-	-	19
22-32	I	26	-	6	-	32
22-39	I	27	12	-	-	39
22-55	I	55	-	-	-	55
24-19	I	-	-	19		19
24-43	I	23	20	-	-	43
24-57	I	55	-	3	-	57
24-61	I	61	-	-	-	61

NOTE:

Condition	Service Rating
Sea Level	1500
50,000 Feet	500
70,000 Feet	375
110,000 Feet	200

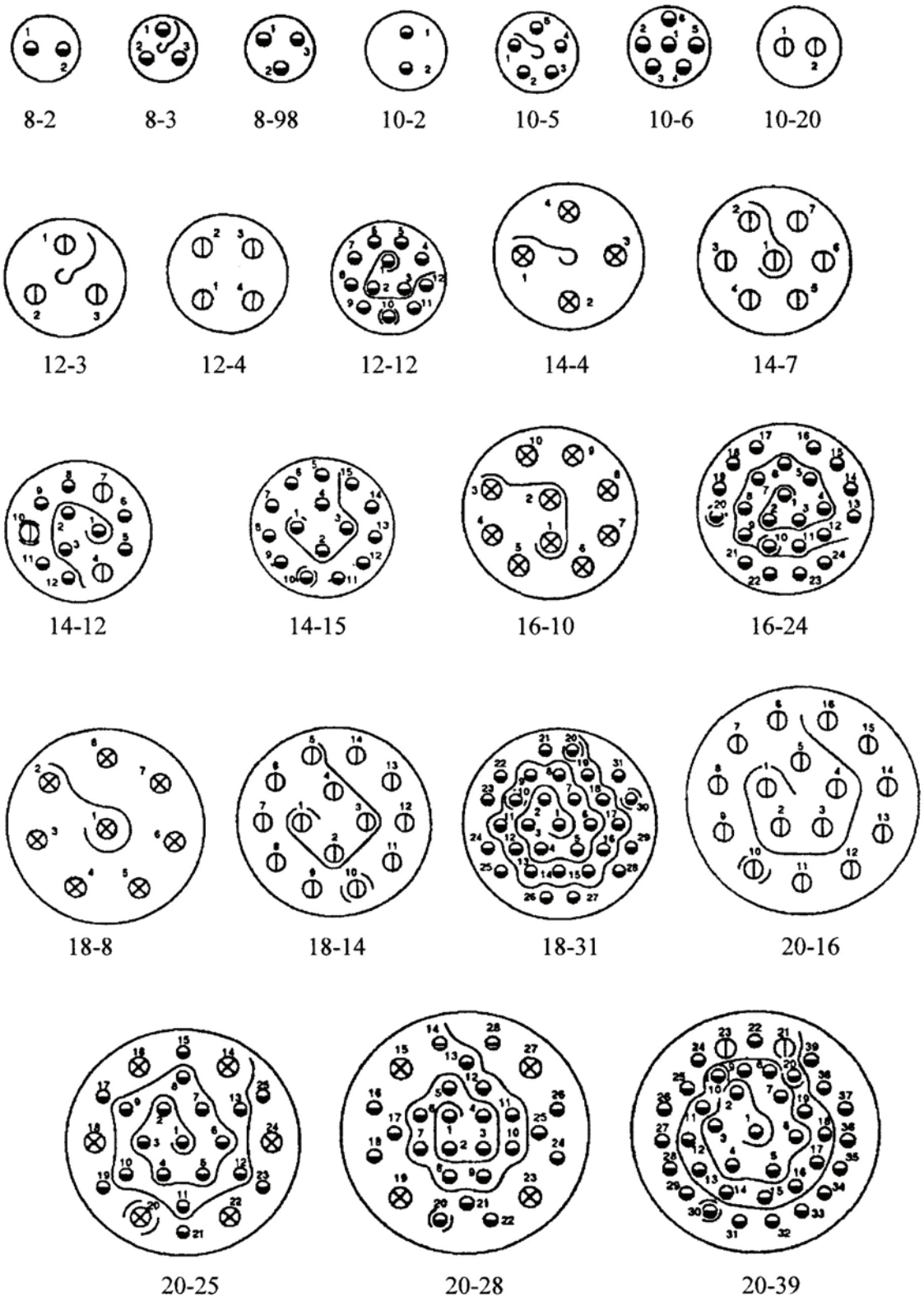


Figure 6. MIL-C-83723 Series III Insert Configuration (Sheet 1 of 2)

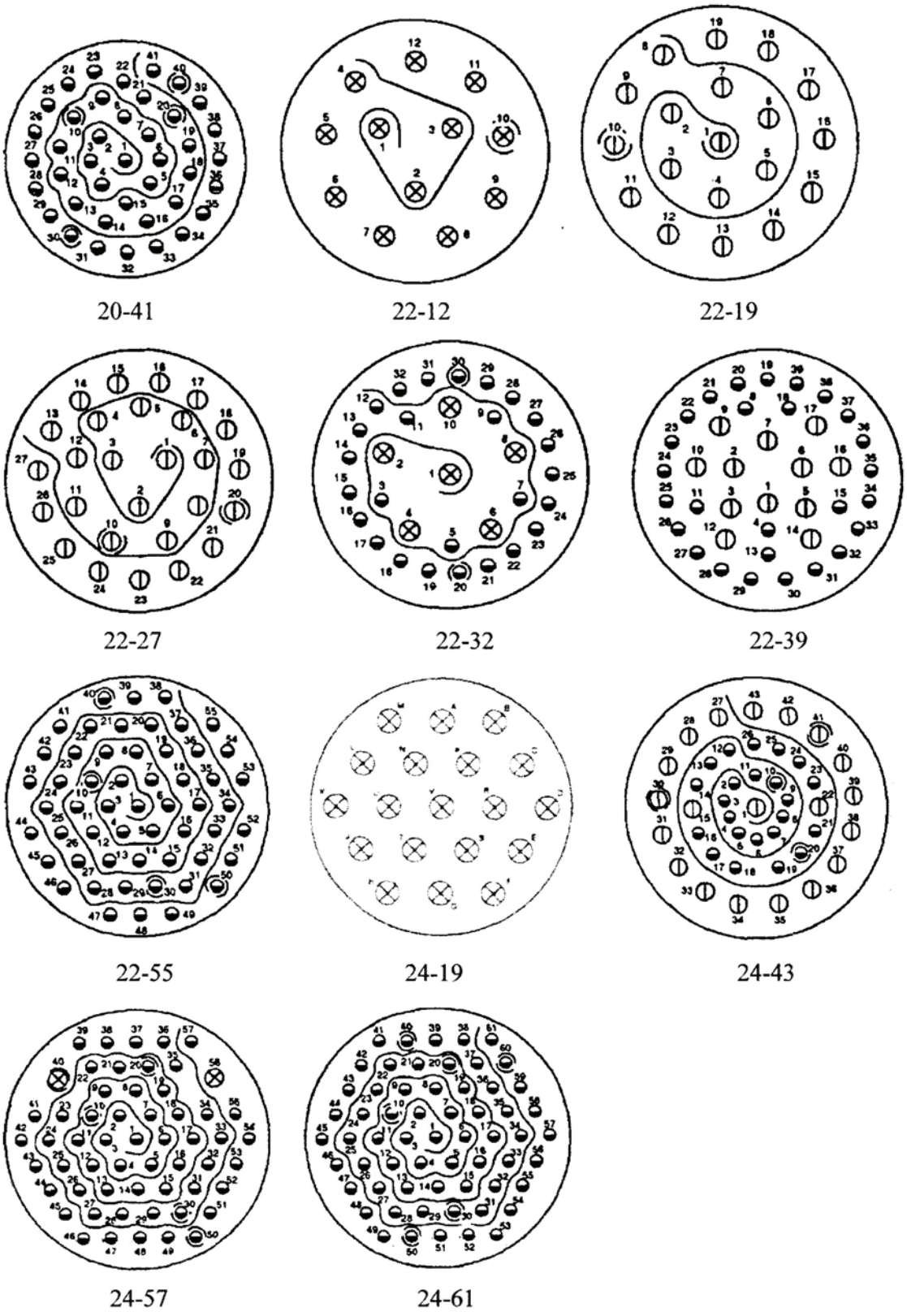


Figure 6. MIL-C-83723 Series III Insert Configuration (Sheet 2 of 2)

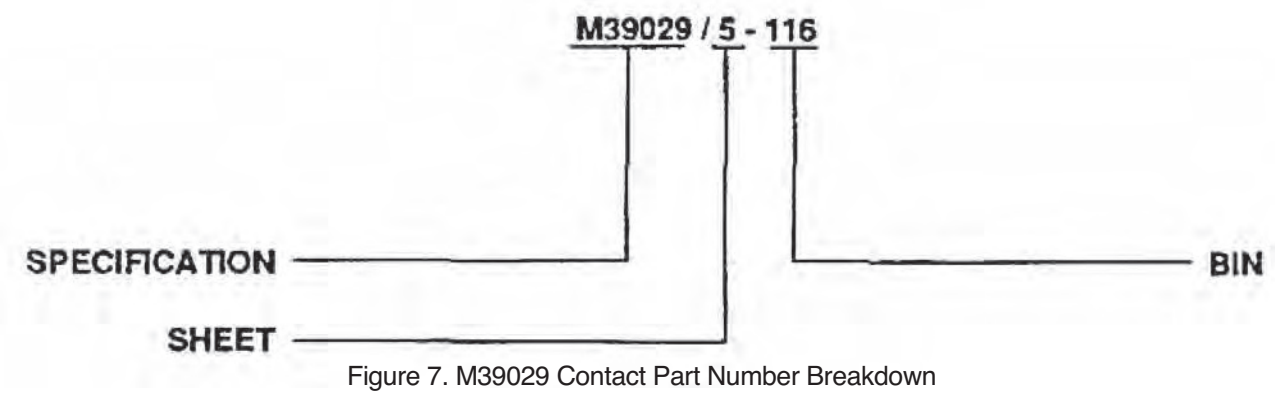


Figure 7. M39029 Contact Part Number Breakdown

42. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts range from size 10 through 22M and are of crimp, rear release design. Contacts are listed by size. Match the required size to connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with corresponding color bands (Table 2).

43. STEP STRIPPING FILTER LINE. Refer to NAVAIR 01-1A-505-1, WP 009 00.

44. THERMOCOUPLE CONTACTS. Temperature sensing systems utilize two dissimilar metal conductors with matched lengths. When joined at the point temperature will be sensed, a voltage difference develops. This voltage is directly proportional to temperature change. Thermocouple contacts listed (Table 3) are either nickel-aluminum / silicon (formerly alumel), nickel-chromium (formerly chromel), iron, or copper-nickel alloy (formerly constantan). Match the required size to connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with corresponding color bands.

45. TOOLING. The procedure for attaching power and thermocouple contacts to a single conductor wire are the same for this connector series. Select proper tooling for specific contact part (Table 4) and refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures.

46. COAXIAL CONTACTS. When routing coaxial cable through connectors, coaxial contacts are superior to other coaxial cable shield termination methods. The shield integrity is maintained across the contact body. The coaxial cable groups listed (Table 5) can be interconnected through MIL-DTL-83723 connector size

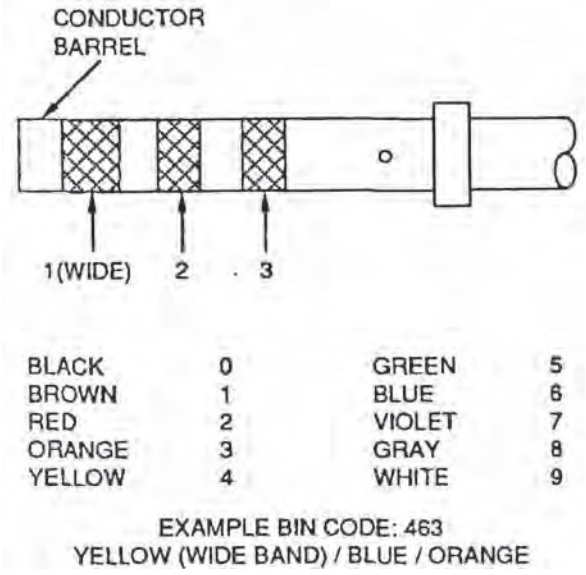


Figure 8. Basic Identification Number and Color Bands

8, 12, and 16 contact cavities. Match the required contact size to connector application and cable group. When crimping the center contact for these cables, use crimp tool selector knob settings specified. Socket and pin contact part numbers are listed along with corresponding color bands. Socket coaxial contacts have a pin center contact. Pin coaxial contacts have a socket center contact (Figure 9).

47. CABLE AND COAXIAL CONTACT ASSEMBLY. To assemble coaxial contacts to applicable cable identify cable by part number. Select proper tooling by contact size (Table 6).

48. BACKSHELL REMOVAL AND INSTALLATION. For backshell removal and installation refer to WP 006 04.

Table 2. MIL-C-83723 Series III Power Contact Application

Contact Size	Wire Range	Socket Contacts M39029/	Socket Contacts Color Bands 1st	2nd	3rd	Pin Contacts M39029/	Pin Contacts Color Bands 1st	2nd	3rd	Remarks
16	16-20	5-116	BN	BN	BL	4-111	BN	BN	BN	—
16	20-24	5-117	BN	BN	VI	4-112	BN	BN	RD	—
12	12-14	5-118	BN	BN	GY	4-113	BN	BN	OR	—
12	16-20	5-119	BN	BN	WH	4-114	BN	BN	YE	—

Table 3. MIL-C-83723 Series III Thermocouple Contact Application

Contact Size	Wire Gage (AWG)	Socket Contacts M39029/	Socket Contacts Color Bands 1st	2nd	3rd	Pin Contacts M39029/	Pin Contacts Color Bands 1st	2nd	3rd	Remarks
20	20-24	10-139	BN	OR	WH	9-133	BN	OR	OR	CONSTANTAN (Copper - Nickel Alloy)
20	20-24	10-140	BN	YE	BK	9-134	BN	OR	YE	ALUMEL (Nickel - Aluminum Alloy)
20	20-24	10-141	BN	YE	BN	9-135	BN	OR	GN	CHROMEL (Nickel – Chromium)
20	20-24	10-142	BN	YE	RD	9-136	BN	OR	BL	IRON
16	16-20	10-519	GN	BN	WH	9-514	GN	BN	YE	COPPER
16	16-20	10-520	GN	RD	BK	9-515	GN	BN	GN	CONSTANTAN(Copper - Nickel Alloy)
16	16-20	10-521	GN	RD	BN	9-516	GN	BN	BL	ALUMEL(Nickel - Aluminum Alloy)
16	12-14	10-522	GN	RD	RD	9-517	GN	BN	VI	CHROMEL(Nickel – Chromium)
16	12-14	10-523	GN	RD	OR	9-518	GN	BN	GY	IRON

NOTE
New terminology applies to thermocouple conductors as follows:
Constantan: Copper - Nickel Alloy
Alumel: Nickel - Aluminum Alloy
Chromel: Nickel - Chromium

Table 4. MIL-C-83723 Series III Power and Thermocouple Tooling

Socket Contacts M39029/	Pin Contacts M39029/	Insertion Tool M81969/	Removal Tool M81969/	Unwired Removal Tool M81969/	Crimp Tool M22520/	Positioner M22520/
10-139	9-133	14-02	14-02	30-05	2-01 or 1-01	2-02 or 1-02 RD
10-140	9-134	14-02	14-02	30-05	2-01 or 1-01	2-02 or 1-02 RD
10-141	9-135	14-02	14-02	30-05	2-01 or 1-01	2-02 or 1-02 RD
10-142	9-136	14-02	14-02		2-01 or 1-01	2-02 or 1-02 RD
5-116	4-111	8-07 OR 14-03	8-08 OR 14-03	30-06	1-01 or 7-01	1-02 BL or 7-03
5-117	4-112	8-05 OR 14-02	8-06 OR 14-02	30-05	1-01 or 7-01	1-02 BL or 7-03
10-519	9-514	14-03	14-03	30-06	1-02 or 7-01	1-02 BL or 7-03
10-520	9-515	14-03	14-03	30-06	1-02 or 7-01	1-02 BL or 7-03
10-521	9-516	14-03	14-03	30-06	1-02 or 7-01	1-02 BL or 7-03
10-522	9-517	14-03	14-03	30-06	1-02 or 7-01	1-02 BL or 7-03
10-523	9-518	14-03	14-03	30-06	1-01 or 7-01	1-02 BL or 7-03
5-118	4-113	8-09 OR 14-04	8-10 OR 14-04	30-07	1-01	1-02 YE
5-119	4-114	8-07 OR 14-03	8-08 OR 14-03	30-06	1-01	1-02 YE

Table 5. MIL-C-83723 Series III Coaxial Contact Application

Contact Size	Wire Range	Socket Contacts				Pin Contacts				Remarks
		M39029/	Color Bands 1st	2nd	3rd	M39029/	Color Bands 1st	2nd	3rd	
12	SHIELDED	8-129	BN	RD	WH	7-126	BN	RD	YL	-
12	SHIELDED	8-130	BN	OR	BN	7-128	BN	RD	GY	-
12	SHIELDED	73-396	OR	WH	BL	74-399	OR	WH	WH	-
12	-	73-397	OR	WH	VI	74-400	YE	BK	BK	-
12	SHIELDED	73-398	OR	WH	GY	74-401	YE	BK	B	-

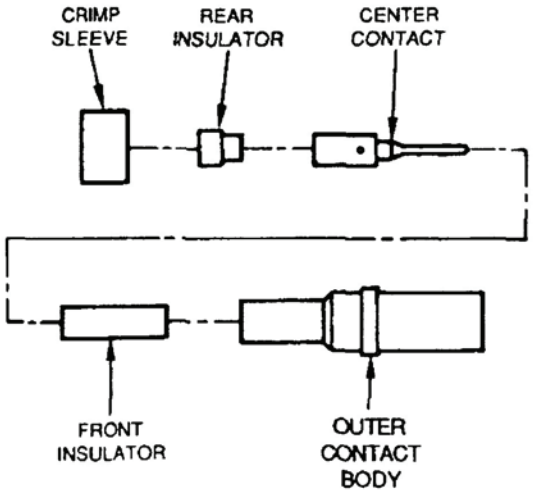


Figure 9. Coaxial Contact Components (Size 12 and 16)

Table 6. MIL-C-83723 Series III Coaxial Contact Tooling

Socket Contacts M39029/	Pin Contacts M39029/	Insertion Tool M81969/	Removal Tool M81969/	Unwired Removal Tool M81969/	Crimp Tool M22520/
8-129	7-126	14-04	14-04	30-07	2-27, 5-06
8-130	7-126	14-04	14-04	30-07	2-27, 5-06
8-131	7-126	14-04	14-04	30-07	2-27, 5-06
73-396	74-399	14-04	14-04	-	M83507/14-02
73-397	74-400	14-04	14-04	-	M83507/14-02
73-398	74-401	14-04	14-04	-	M83507/14-02

49. CONNECTOR BUILD-UP.

50. WIRE DIAMETER BUILD-UP. If wire outside diameter is not large enough to fill wire sealing grommet holes, build-up wire outside diameter by applying heat-shrinkable insulating sleeving. This must be accomplished prior to contact insertion.

51. WIRE STRIPPING. Strip wire in accordance with following procedure:

a. Cut wire to proper length. Ensure enough wire remains for adequate strain relief without leaving excess slack.

b. Strip insulation from end (NAVAIR 01-1A-505-1, WP 009 00). Select contact (Table 2, 3, or 5).

52. CONTACT CRIMPING. Crimp contact in accordance with following procedure:

a. Select correct crimp tool (Table 4 or 6).

b. Perform die closure check, install positioner, and set selector knob for gage of wire.

c. Insert stripped wire into contact conductor barrel. Ensure all wire strands are inside contact conductor barrel and visible in contact inspection hole (Figure 10).

d. If insulation gap is too large, trim conductor as required. If insulation gap is too small, trim insulation as required.

e. Crimp contact to wire.

53. CONTACT INSERTION. Insert wired or unwired contacts in accordance with following procedure:

a. Remove sealing plug and/or contact from contact cavity (Paragraph 57.)

b. Ensure wire or cable on contact is routed through connector backshell.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors. Exercise caution when using this tooling.

CAUTION

Metal tooling may damage the wire sealing grommet at the end of the connectors. Use of plastic tools is preferred.

c. Select removal tool (Table 4 or 6).

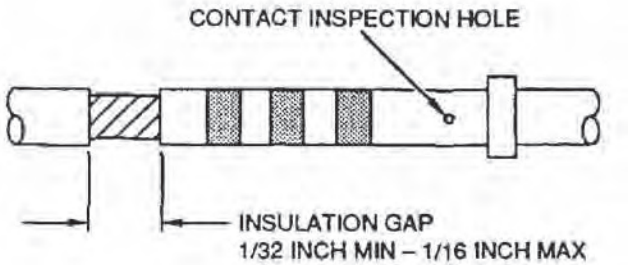
d. Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

e. Place wire and contact assembly into colored tip of insertion tool (Figure 11). Ensure tool tip is over conductor barrel and butted against contact shoulder.

f. Insert tip of contact into cavity. Start contact insertion near connector center cavities and work outward.

g. Axially align contact with contact cavity.

h. With firm even pressure, press tool against contact shoulder and seat contact into cavity (Figure 12). A slight click may be heard as retention tines snap into place behind contact shoulder.



CONTACT SIZE	WIRE AWG	INSULATION GAP
22D	26	
22M		
22	24	1/32 INCH MIN.
	22	1/16 INCH MAX.
20	20	
16	20	
	18	
	16	1/32 INCH MIN.
12	14	5/64 INCH MAX.
	12	
8	10	1/32 INCH MIN.
	8	TWICE DIA. WIRE INSULATION MAX

Figure 10. Insulation Gap

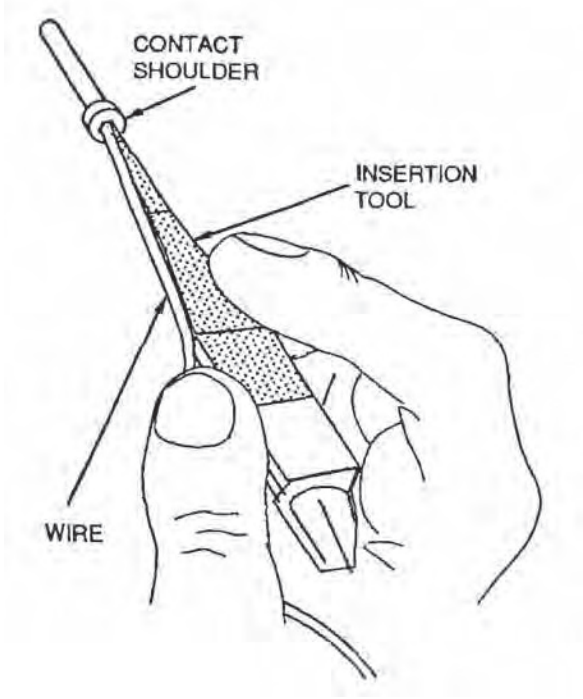


Figure 11. Inserting Contact into Insertion Tool

i. Pull tool straight out of contact cavity. Remove tool from wire. Pull back lightly on wire to ensure contact is properly seated.

j. Seal connector as required (Paragraph 54) and install backshell.

54. CONNECTOR SEALING.

55. Sealing Plugs. Seal connector in accordance with following procedure:

a. Fill all unused cavities with un-crimped contacts (Paragraph 53).

b. Insert sealing plug, large diameter first, until bottomed in contact cavity (Figure 13). Fill all cavities that have un-crimped contacts. Preserve connector in accordance with NAVAIR 01-1A-505-1, WP 026 00.

56. Moisture Barrier. For connector sealing procedures, including application of sealant to grommet sealed connectors, refer to NAVAIR 01-1A-505-1, WP 025 00.

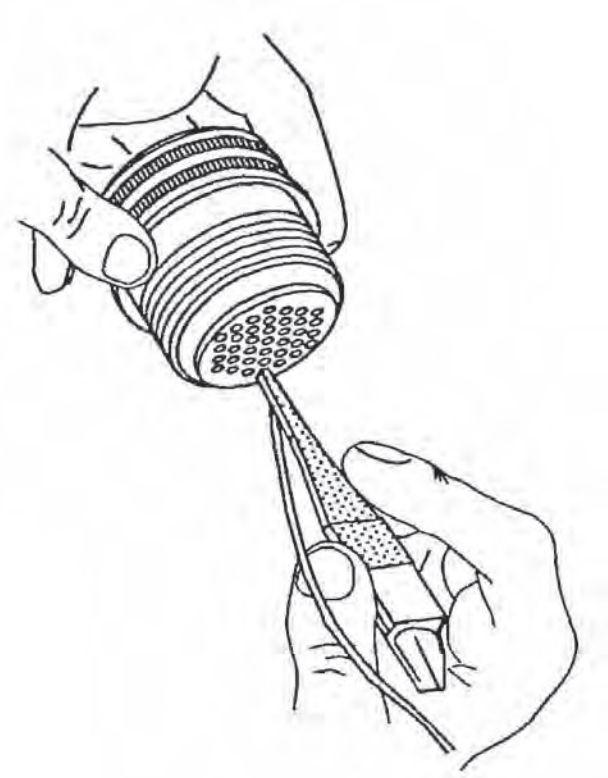


Figure 12. Contact Insertion

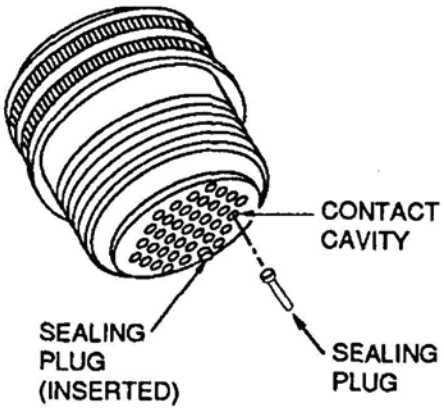


Figure 13. Inserting Sealing Plug into Contact Cavity

57. CONTACT REMOVAL. Remove wired, unwired, and broken wire contacts in accordance with following paragraphs.

58. Wired Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors. Exercise caution when using this tooling.

CAUTION

Metal tooling may damage the wire sealing grommet at the end of the connectors. Use of plastic tools is preferred.

a. Select removal tool (Table 4 or 6).

b. Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

c. Place wire of contact to be removed into removal tool, with white tip of facing connector insert (Figure 14).

d. Slide removal tool along wire at a right angle to connector insert face and line up with contact cavity (Figure 15).



Figure 14. Inserting Wire into Removal Tool



Figure 15. Removal Tool on Wire

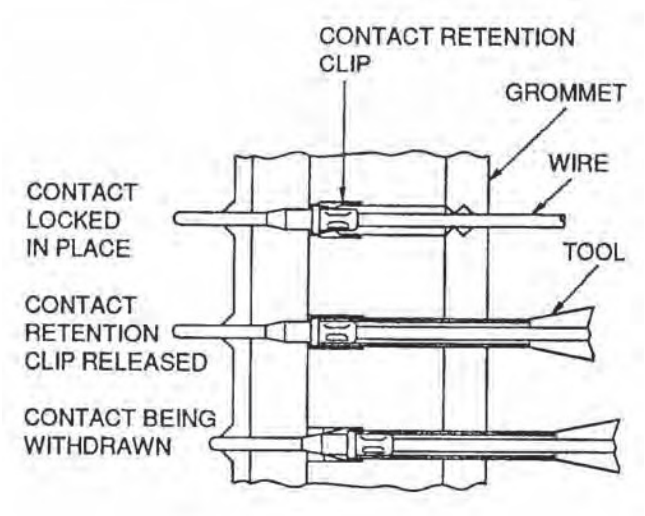


Figure 16. Unlocking Contact Mechanism

e. Insert tool into contact cavity until tool tip bottoms against contact shoulder (Figure 16). A slight increase in resistance will be noticed just before the tool tip bottoms. This will spread the retention clip and release its hold on the contact. For smaller diameter wires, be careful the tool does not collapse around the wire when inserted and cause the tool tip to hit the contact crimp barrel instead of sliding over it. A collapsing tool can also damage grommet sealing wafers.

f. Press wire firmly against serrated edge of removal tool and pull wire straight out from contact cavity (Figure 17).

59. Unwired Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors. Exercise caution when using this tooling.

CAUTION

Metal tooling may damage the wire sealing grommet at the end of the connectors. Use of plastic tools is preferred.

a. Select removal tool (Table 4 or 6).

b. Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

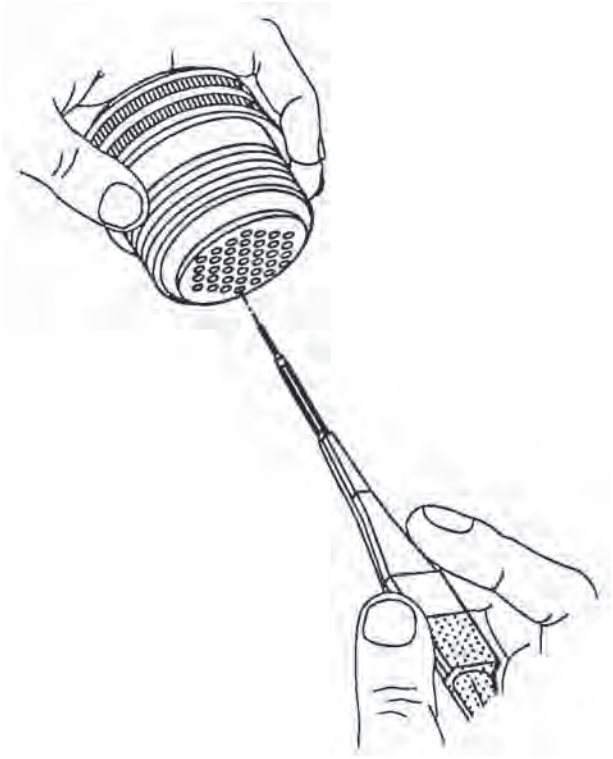


Figure 17. Removing Contact from Connector

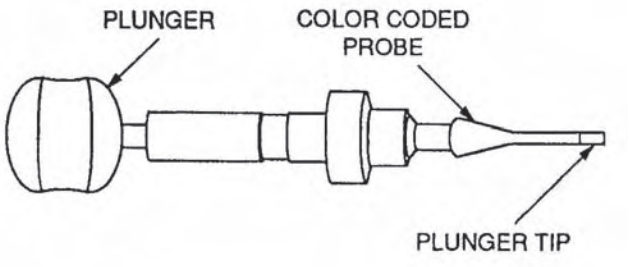


Figure 18. Typical Unwired Contact Removal Tool

c. Select correct unwired removal tool (Table 4 or 6, Figure 18).

d. With rear of connector exposed, remove sealing plug from insert cavity of contact to be removed.

e. Press and hold tool plunger until tip of tool is aligned up with contact to be removed.

f. Axially align removal tool with contact to be removed.

g. Insert removal tool tip into contact cavity to butt contact wire barrel; then slide removal tool sleeve over contact and exert pressure until sleeve bottoms (Figure 19).

h. Remove tool and unlocked contact from connector by withdrawing tool from connector (Figure 20).

i. Remove contact from removal tool by pressing plunger.

60. Broken Wire Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors. Exercise caution when using this tooling.

CAUTION

Metal tooling may damage the wire sealing grommet at the end of the connectors. Use of plastic tools is preferred.

a. Select removal tool (Table 4 or 6).

b. Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

CAUTION

Removal of a contact with a broken wire shall not be attempted with an unwired removal tool. Use of unwired removal tools require that the tip be jammed onto the contact wire barrel. If wire strands occupy wire barrel, the tool and connector may be damaged.

c. Insert tip of removal tool about ⅛ inch into cavity at rear of connector.

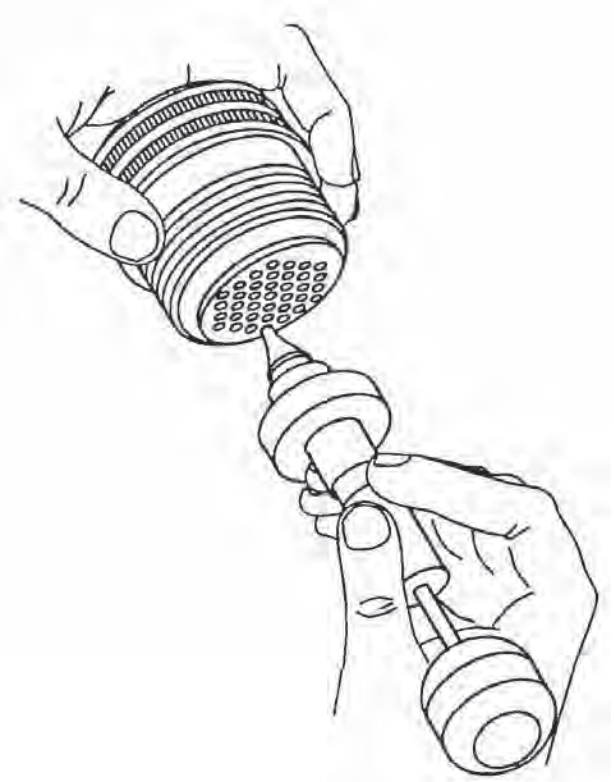


Figure 19. Unlocking Contact Retention Mechanism with Unwired Contact

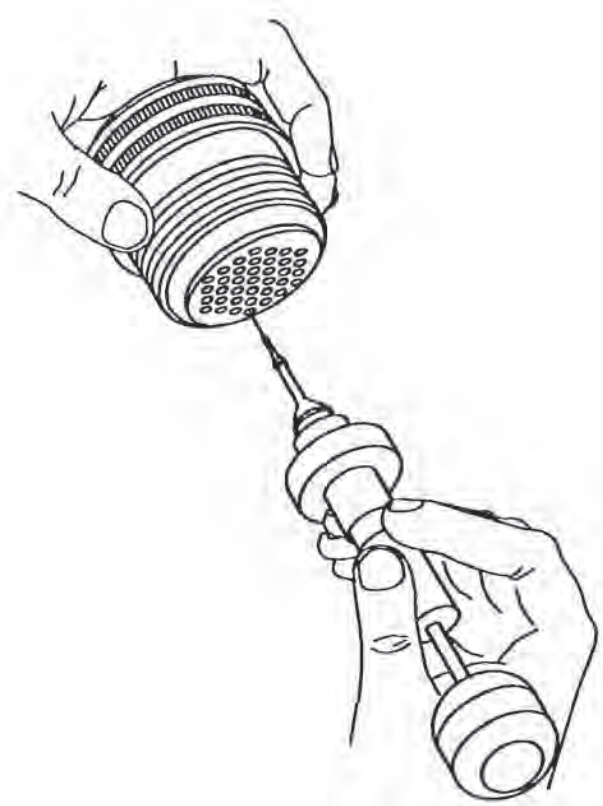


Figure 20. Extracting Contact from Connector

CAUTION

Wire strands may be encountered at any point up to 5/16 inch of tool insertion. It is important not to jam any strands of wire up to this point.

Withdraw removal tool anytime during insertion when it cannot be advanced into connector using these procedures. Inspect tool tip for nicks, cracks, mushrooming, and other damage that will prevent its functioning. Replace removal tool and repeat procedure, if required.

NOTE

Refer to Figure 21 on approximate dimensions of a size 22 contact and cavity. The dimensions in this procedure are based on a size 22 contact.

d. Gently insert removal tool into cavity in about 1/16 inch units, releasing tool after each unit if resistance is felt.

NOTE

Rotating removal tool works splayed wire strands into slot of tool, allowing tool to pass.

Removal tool may be blocked at rear of contact by plastic insert or additional strands of broken wire.

e. If resistance is felt before removal tool reaches back end of contact, withdraw tool slightly, rotate about 1/6 of a turn, and reinsert tool. Repeat rotating and insertion procedure until tool passes with minimum additional force to 5/16 inch-depth back end of contact (Figure 22).

f. Wiggle removal tool gently to help guide into insert bore and over back of contact. Additional rotation may be required if broken strands are encountered.

g. Continue insertion of removal tool until positive stop is felt at about 1/2 inch depth.

h. Exert axial pressure on engaging end of contact, using appropriate pin or socket as pusher. (If contact does not move, seat removal tool more firmly.)

i. Push contact completely out rear of connector before disengaging removal tool (Figure 23).

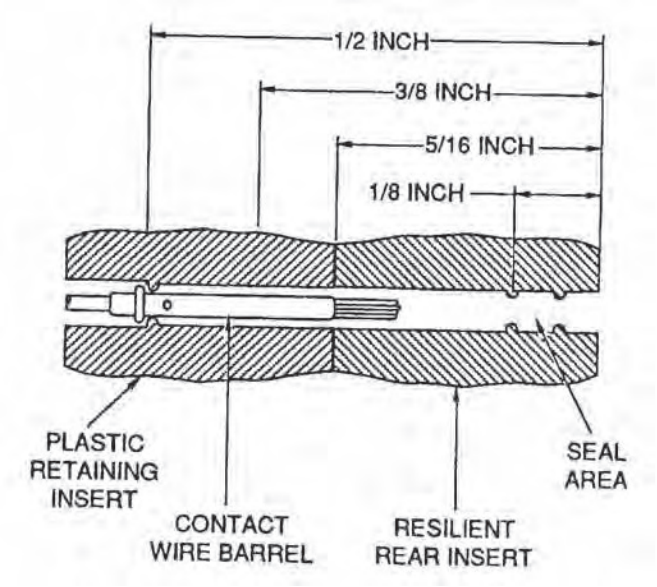


Figure 21. Typical Connector Dimensions



Figure 22. Unlocking Contact Retention Mechanism of Broken Wire

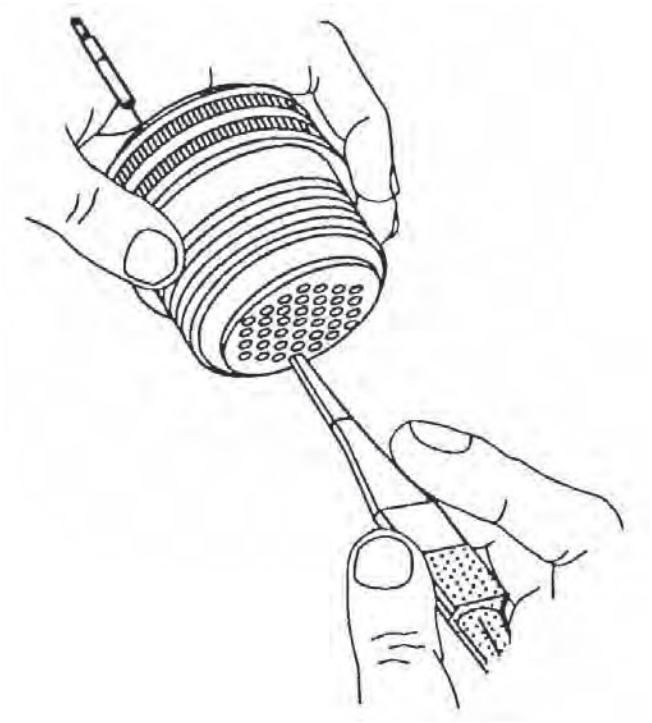


Figure 23. Broken Wire Contact Removal

61. CONNECTOR REMOVAL AND INSTALLATION. If the connector is severely damaged or cannot be repaired using the above procedures, proceed as follows:

a. Starting from outside of damaged connector, tag wires and remove all contacts from connector (Paragraph 57). If contact cannot be removed, cut wire as close to connector as possible and attach new contact (Paragraphs 51 and 52).

b. Starting from center of new connector, insert contact into correct cavity (Paragraph 53). Remove tag from wire, Repeat procedure until all contacts are installed in new connector.

62. CONNECTOR BUILD-UP SOLDER CONTACTS.

63. For build-up procedures for solder contacts refer to NAVAIR 01-1A-505-1, WP 016 00.

64. CONNECTOR CLEANING AND PRESERVATION.

65. For connector cleaning and corrosion control procedures refer to NAVAIR 01-1A-505-1, WP 026 00.

CONNECTOR ACCESSORIES
MIL-DTL-83723 SERIES II AND III

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Connectors, Electrical, Circular, (Environment Resisting), Receptacles and Plugs,
General Specification for MIL-DTL-83723

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Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
BT-BS-601	Wrench, Strap
BT-BS-609	Wrench, Strap
BT-ES-611	Wrench, Strap
BT-BS-618	Wrench, Strap
BT-BS-625	Wrench, Strap
BT-BS-630	Wrench, Strap
BT-HT-107	T-handle
CM-S-264	Set, Adapter
CM-S-264R	Set, Adapter
CM-S-5015	Set, Adapter
CM-8-5015R	Set, Adapter
CM-8-837	Set, Adapter
CM-S-837RB	Set, Adapter

Materials Required

Specification/ Part No.	Nomenclature
A-A-52080 thru A-A-52084	Tape, Lacing
P-2740FR	Tape, Silicone Rubber
4529670544	Tape, Silicone Rubber

1. INTRODUCTION.

2. This Work Package (WP) covers connector accessories used with MIL-DTL-83723 series connectors, their function, associated tools, assembly, and procurement information.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, the Society of Automotive Engineers (SAE) will become the preparing activity and the Navy will adopt the documents, and the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

3. CONNECTOR ACCESSORIES. Connector accessories are components added to a connector to enhance its operational characteristics. These accessories are divided into the following categories:

a. Backshells.

b. Connector Assembly Tools.

c. Dummy Receptacles.

d. Dust Caps.

e. Shrink boots and Adapters.

f. Conduit Fittings.

g. Dummy Receptacles.

h. Dust Caps.

i. Gaskets for Flange Mount Receptacles.

j. Mounting Nut for Jam Nut Receptacles.

k. Rubber Bushings.

l. Sealing Plugs.

4. BACKSHELLS. Backshells are the most complex connector accessories and simply stated they are any device added to rear or wiring side of a connector. Backshells may be divided into the following categories:

a. Grommet Nuts.

b. Cable Clamps and Strain Reliefs.

c . EMI/RFI Grounding Terminators.

d . Non-Environmental Backshells.

e. Environmental Backshells.

f. Non-Environmental EMI/RFI Backshells.

g. Environmental EMI/RFI Backshells.

5. MIL-DTL-83723 SERES II AND III CONNECTOR ACCESSORIES.

6. SPECIAL TOOLS. Connector backshells come in a wide variety of types depending on application. To install backshells or accessories, adapter tools and a strap wrench are needed. Adapter tools (Figure 1) are used to hold connector during backshell installation

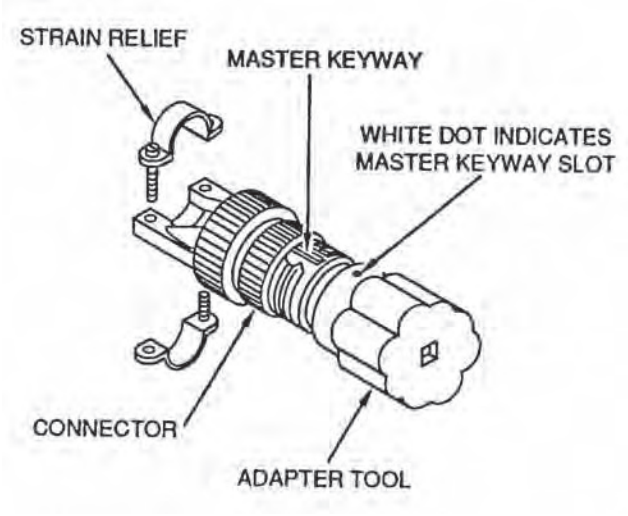


Figure 1. Adapter Tool

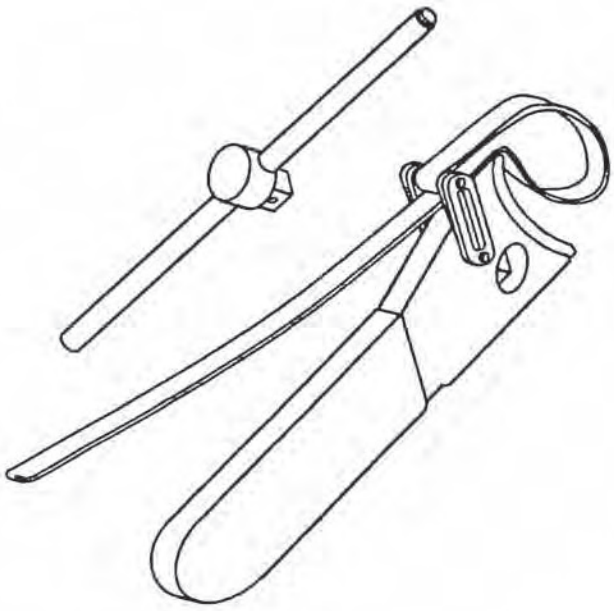


Figure 2. Adaptor Tool Accessories

and removal. Special tools are, used to prevent damage to connector shells and accessories.

7. ADAPTER TOOL SELECTION. To select the proper tool, shell size and type of connector plug or receptacle, must be known. Select proper adapter tool (Table 1).

8. ADAPTER TOOL ACCESSORIES. To hold adapter tool and to keep the connector from turning when installing or removing backshells the use of a ¼ inch drive T-handle is recommended. A strap wrench is used on backshell for installation and removal to apply even pressure without causing damage to accessories (Figure 2).

9. BACKSHELL REMOVAL. Backshells are used to protect, shield, and add strength to connectors. When modification or repair to connector is necessary the backshell must be removed. Proceed using following procedure:

a. Select correct adapter tool (Table 1) by series, T-handle, and strap wrench (Figure 2).

b. Mate adapter tool to connector. Ensure white dot on adapter tool aligns with master key of connector. Spinning tool on connector will cause damage to tool and/or connector (Figure 3).

c. Install strap wrench around part to be removed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 3).

d. Insert T-handle into socket of adapter tool to provide holding (Figure 3).

e. To loosen backshell apply force counterclockwise as viewed from connector rear (Figure 4).

f. Tape backshell to bundle to prevent loss.

Table 1. MIL-C-83723 Adapter Tools

Application		Adapter Set P/N		
Connector Family	Shell Size	Plug	Receptacle	Adapters In Set
MIL-C-83723, Series II	8 thru 48	CM-S-5015	CM-S-5015R	15
MIL-C-83723, Series III	8 thru 24	CM-S-837	CM-S-837RB	20

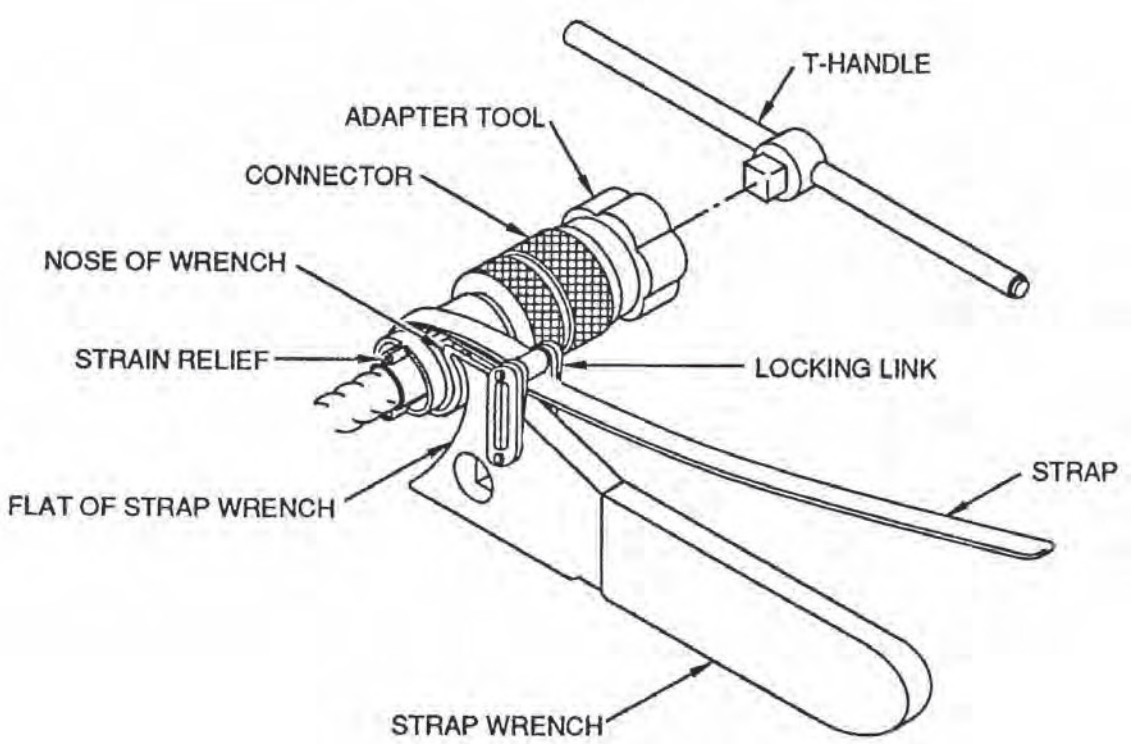


Figure 3. Strap Wrench Setup and Adjustment

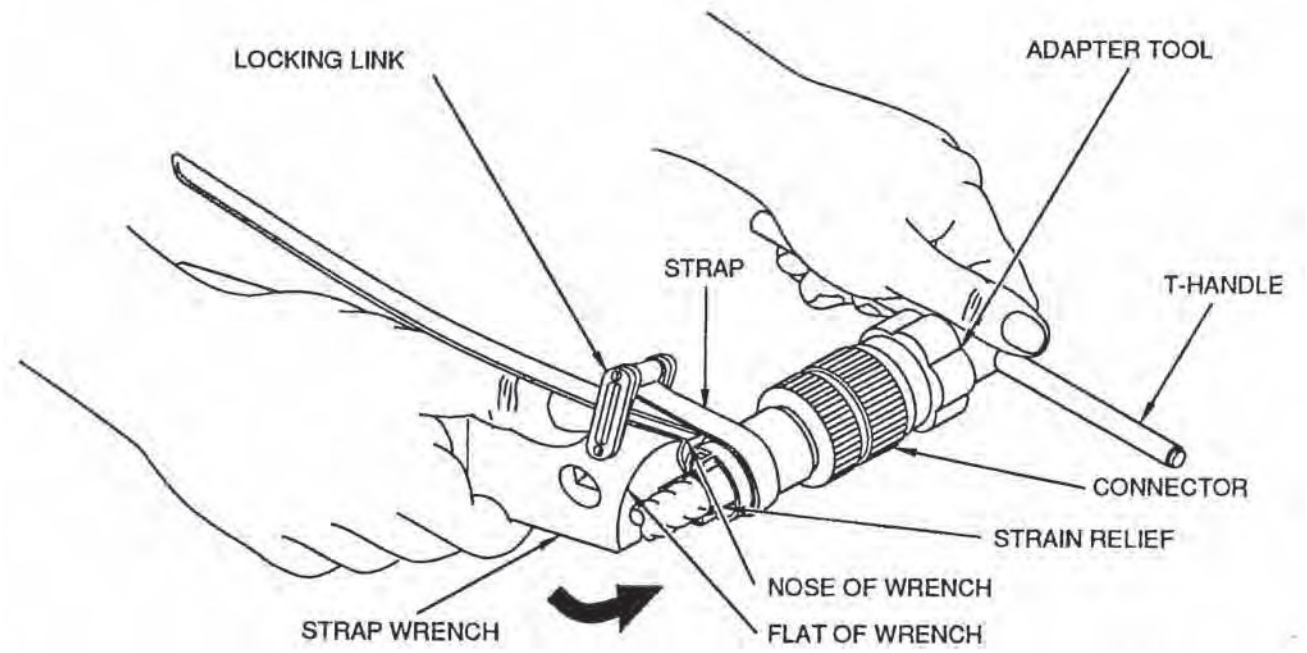


Figure 4. Loosening Position of Wrench

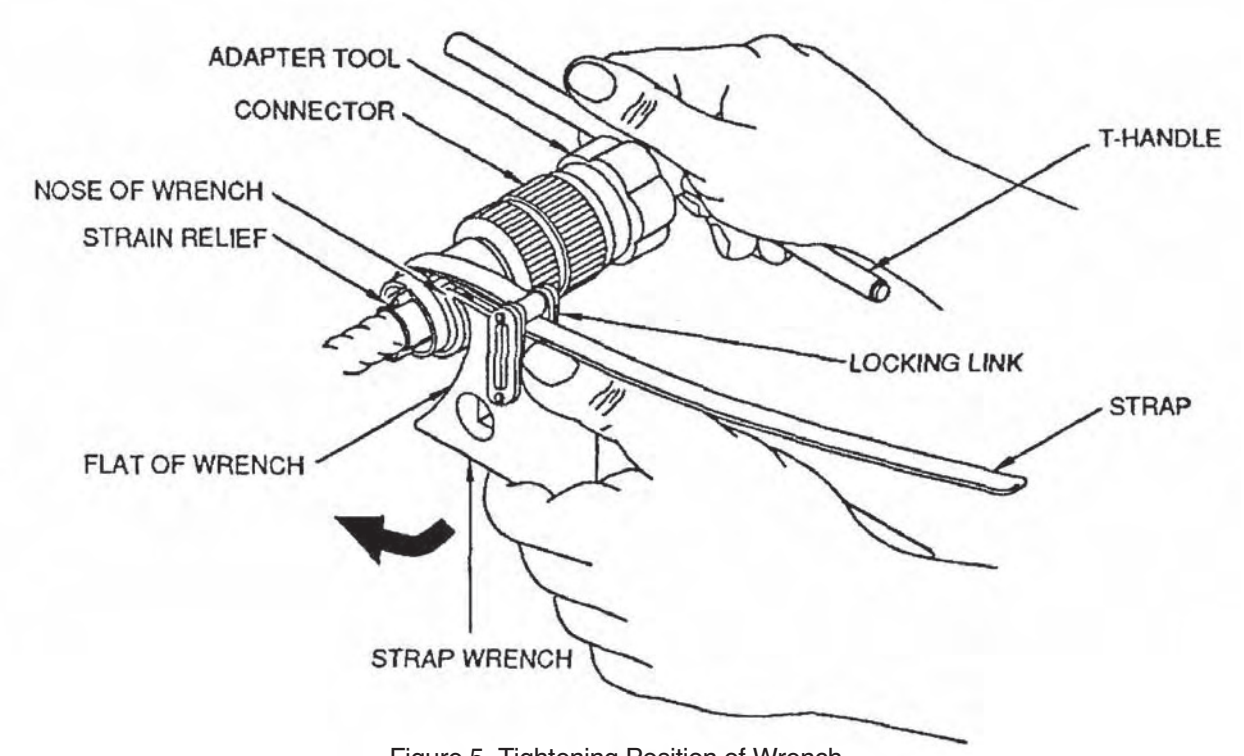


Figure 5. Tightening Position of Wrench

10. BACKSHELL INSTALLATION. Upon completion of maintenance or modification the backshell must be replaced. Proceed using following procedure:

a. Untape backshell from bundle. Start backshell on connector by hand to prevent cross threading. Tighten by hand until the rear connector teeth and the accessory teeth interlock.

b. Select correct adapter tool (Table 1), T-handle, and strap wrench (Figure 2).

CAUTION

Ensure white dot on adapter tool aligns with master key of connector. Spinning tool on connector will cause damage to tool and/or connector (Figure 3).

c. Mate adapter tool to connector. Ensure white dot on adapter tool aligns with master key of connector (Figure 3).

d. Install strap wrench around part to be installed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 3).

e. Insert T-handle into socket of adapter tool to provide holding (Figure 3).

f. To tighten backshell apply force clockwise as viewed from connector rear (Figure 5).

NOTE

Refer to NAVAIR 01-1A-505-1 WP 011 01, for torque value information on MIL-C-85049 connector backshells.

11. GROMMET NUTS. The grommet nut is a threaded ring nut utilized to securely hold the connector grommet in place. M83723/35 is illustrated in Figure 6 and M85049/31 is illustrated in Figure 7. See Note following paragraph 2 this WP on AS, M and MS prefix.

12. CABLE CLAMPS/STRAIN RELIEFS. The following two paragraphs explain the two types of cable support or clamping devices.

13. Cable Clamps. A cable clamp is a support or clamping device which requires use of an intermediate component for attachment to back of connector (Figure 8).

PART NUMBER DESIGNATION

M83723/ 35 A 22 R

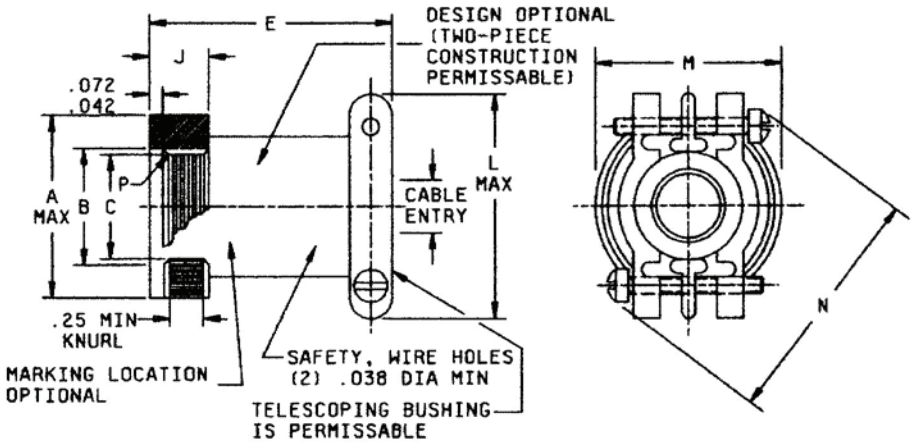
MILITARY DESIGNATION

SPECIFICATION

TYPE
S -- Straight Clamp
A -- 90° Clamp
N – No Clamp

SHELL SIZE

MATERIAL AND FINISH
R – Aluminum, 200°C, conductive finish
G – Stainless Steel, passivated, 200°C
A – Aluminum, black anodize, non-conductive, 200°C



TYPE "S" WITH STRAIGHT CLAMP

Figure 6. Grommet Nut M83723-35 (Sheet 1 of 6)

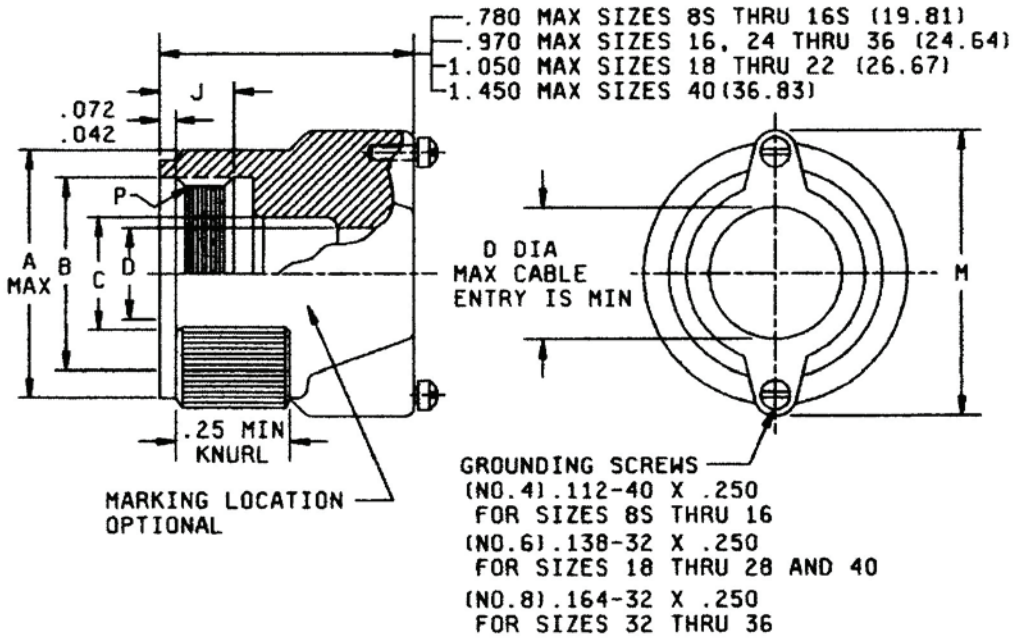
DIMENSIONS (TYPE "A" 90° CLAMP)

Shell size	A Max dia	B dia	C dia	D dia	E max	J min	L max	M max	N max	P thread class 2B	Cable entry 3/	
											Fig. 1 max	Fig. 1 min
8	.585	.450 .440	.291 .281	.257 .245	1.290 (32.77)	.285	.843	.900 (22.86)	1.075	.438-28 UNEF	.235	.125
10	.645	.513 .503	.351 .341	.310 .300	1.290 (32.77)	.285	.843	.900 (22.86)	1.075	.500-28 UNEF	.235	.125
11	.730	.575 .565	.420 .410	.390 .380	1.290 (32.77)	.285	.906	.980 (24.89)	1.140	.562-24 UNEF	.297	.170
13 1/	.770	.640 .628	.471 .461	.415 .403	1.290 (32.77)	.285	1.085	.995 (25.27)	1.140	.625-24 UNEF	.297	.170
15 2/	.910	.765 .753	.575 .564	.497 .485	1.368 (34.75)	.285	1.093	1.160 (29.46)	1.360	.750-20 UNEF	.422	.235
17	1.035	.890 .878	.700 .690	.616 .604	1.430 (36.32)	.285	1.187	1.260 (32.00)	1.520	.875-20 UNEF	.547	.295
16	1.035	.890 .878	.700 .690	.616 .604	1.587 (40.31)	.440	1.275	1.260 (32.00)	1.520	.875-20 UNEF	.547	.295
18	1.170	1.015 1.003	.817 .807	.735 .725	1.695 (43.05)	.440	1.475	1.455 (36.96)	1.600	1.000-20 UNEF	.610	.325
20	1.300	1.140 1.128	.953 .943	.875 .865	1.695 (43.05)	.440	1.500	1.580 (40.13)	1.890	1.125-18 UNEF	.735	.380
22	1.420	1.265 1.255	1.083 1.073	.983 .973	1.695 (43.05)	.440	1.710	1.580 (40.13)	1.890	1.250-18 UNEF	.735	.380
24	1.535	1.390 1.378	1.190 1.180	1.095 1.085	1.931 (49.05)	.440	1.719	1.890 (48.01)	2.145	1.375-18 UNEF	.922	.500
28	1.800	1.640 1.628	1.410 1.400	1.255 1.245	1.931 (49.05)	.440	2.040	1.890 (48.01)	2.145	1.625-18 UNEF	.922	.500
32	2.035	1.890 1.878	1.664 1.654	1.525 1.515	1.869 (47.47)	.440	2.332	2.215 (56.26)	2.550	1.875-16 UN	1.235	.705
36	2.270	2.140 2.128	1.875 1.862	1.760 1.750	1.869 (47.47)	.440	2.312	2.405 (61.09)	2.889	2.125-16 UN	1.360	.725
40	2.780	2.395 2.385	2.208 2.198	2.020 1.865	2.875 (73.03)	.459	2.950	2.781 (70.64)	3.500	2.375-16 UN	1.630	.911

1/ Shell size 13 fits connector sizes 12 and 13.
2/ Shell sizes 14 and 15 fit connector sizes 14 and 16.
3/ "Cable entry" dimension is defined as the envelope area for the wire bundle. This dimension is not intended to define the clamp hardware limits.

NOTE: Dimensions are in inches, after plating

Figure 6. Grommet Nut M83723-35 (Sheet 2 of 6)



TYPE "N" WITH NO CLAMP

Figure 6. Grommet Nut M83723-35 (Sheet 3 of 6)

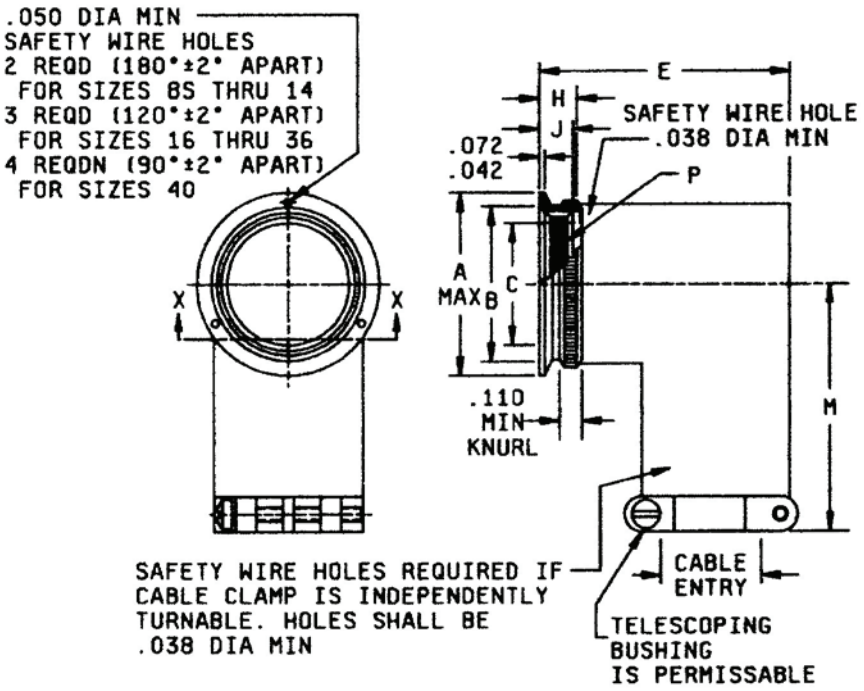
DIMENSIONS (TYPE "A" 90° CLAMP)

Shell size	A max dia	B dia	C dia	E max	H max	J	M max	P thread class 2B	Cable entry 1/	
									Max	Min
8	.805	.455 .440	.300 .279	1.187 (30.15)	.350	.285 .272	1.220	.438-28 UNEF	.235	.102
10	.890	.520 .500	.360 .339	1.187 (30.15)	.350	.285 .272	1.250	.500-28 UNEF	.235	.102
11	.975	.580 .560	.430 .408	1.312 (33.32)	.350	.285 .272	1.280	.562-24 UNEF	.297	.140
13	1.005	.645 .625	.480 .459	1.312 (33.32)	.350	.285 .272	1.280	.625-24 UNEF	.297	.140
12	1.005	.645 .625	.480 .459	1.468 (37.29)	.505	.441 .428	1.280	.625-24 UNEF	.297	.140
15	1.130	.770 .750	.584 .562	1.437 (36.50)	.355	.285 .272	1.405	.750-20 UNEF	.422	.195
14	1.130	.770 .750	.584 .562	1.594 (40.49)	.510	.441 .428	1.405	.750-20 UNEF	.422	.195
17	1.255	.895 .875	.710 .688	1.531 (38.89)	.350	.285 .272	1.529	.875-20 UNEF	.547	.255
16	1.255	.895 .875	.710 .688	1.687 (42.85)	.510	.441 .428	1.529	.875-20 UNEF	.547	.255
18	1.350	1.020 1.000	.827 .805	1.765 (44.83)	.490	.441 .428	1.593	1.000-20 UNEF	.610	.285
20	1.475	1.145 1.125	.962 .942	2.000 (50.80)	.495	.441 .428	1.655	1.125-18 UNEF	.735	.350
22	1.600	1.270 1.250	1.095 1.073	2.000 (50.80)	.495	.441 .428	1.718	1.250-18 UNEF	.735	.350
24	1.725	1.395 1.375	1.202 1.180	2.265 (57.53)	.488	.423 .410	1.894	1.375-18 UNEF	.922	.468
28	1.975	1.645 1.625	1.423 1.401	2.265 (57.53)	.488	.423 .410	1.973	1.625-18 UNEF	.922	.468
32	2.225	1.895 1.875	1.674 1.652	2.578 (65.48)	.488	.423 .410	2.187	1.875-16 UN	1.235	.664
36	2.475	2.145 2.125	1.887 1.865	2.815 (71.50)	.488	.423 .410	2.405	2.125-16 UN	1.360	.694
40	2.750	2.390 2.375	2.125 2.117	5.800 (147.23)	.500	.423 .410	5.100	2.375-16 UN	1.630	.911

1/ "Cable entry" dimension is defined as the envelope area for the wire bundle. This dimension is not intended to define the clamp hardware limits.

NOTE: Dimensions are in inches, after plating

Figure 6. Grommet Nut M83723-35 (Sheet 4 of 6)



TYPE "A" WITH 90° CLAMP

Figure 6. Grommet Nut M83723-35 (Sheet 5 of 6)

DIMENSIONS (TYPE "S" WITH STRAIGHT CLAMP)

Shell size	A Max dia	B dia	C dia	D dia	E max	J min	L max	M max	N max	P thread class 2B	Cable entry 3/	
											Fig. 1 max	Fig. 1 min
8	.585	.450 .440	.291 .281	.257 .245	1.290 (32.77)	.285	.843	.900 (22.86)	1.075	.438-28 UNEF	.235	.125
10	.645	.513 .503	.351 .341	.310 .300	1.290 (32.77)	.285	.843	.900 (22.86)	1.075	.500-28 UNEF	.235	.125
11	.730	.575 .565	.420 .410	.390 .380	1.290 (32.77)	.285	.906	.980 (24.89)	1.140	.562-24 UNEF	.297	.170
13 1/	.770	.640 .628	.471 .461	.415 .403	1.290 (32.77)	.285	1.085	.995 (25.27)	1.140	.625-24 UNEF	.297	.170
15 2/	.910	.765 .753	.575 .564	.497 .485	1.368 (34.75)	.285	1.093	1.160 (29.46)	1.360	.750-20 UNEF	.422	.235
17	1.035	.890 .878	.700 .690	.616 .604	1.430 (36.32)	.285	1.187	1.260 (32.00)	1.520	.875-20 UNEF	.547	.295
16	1.035	.890 .878	.700 .690	.616 .604	1.587 (40.31)	.440	1.275	1.260 (32.00)	1.520	.875-20 UNEF	.547	.295
18	1.170	1.015 1.003	.817 .807	.735 .725	1.695 (43.05)	.440	1.475	1.455 (36.96)	1.600	1.000-20 UNEF	.610	.325
20	1.300	1.140 1.128	.953 .943	.875 .865	1.695 (43.05)	.440	1.500	1.580 (40.13)	1.890	1.125-18 UNEF	.735	.380
22	1.420	1.265 1.255	1.083 1.073	.983 .973	1.695 (43.05)	.440	1.710	1.580 (40.13)	1.890	1.250-18 UNEF	.735	.380
24	1.535	1.390 1.378	1.190 1.180	1.095 1.085	1.931 (49.05)	.440	1.719	1.890 (48.01)	2.145	1.375-18 UNEF	.922	.500
28	1.800	1.640 1.628	1.410 1.400	1.255 1.245	1.931 (49.05)	.440	2.040	1.890 (48.01)	2.145	1.625-18 UNEF	.922	.500
32	2.035	1.890 1.878	1.664 1.654	1.525 1.515	1.869 (47.47)	.440	2.332	2.215 (56.26)	2.550	1.875-16 UN	1.235	.705
36	2.270	2.140 2.128	1.875 1.862	1.760 1.750	1.869 (47.47)	.440	2.312	2.405 (61.09)	2.889	2.125-16 UN	1.360	.725
40	2.780	2.395 2.385	2.208 2.198	2.020 1.865	2.875 (73.03)	.459	2.950	2.781 (70.64)	3.500	2.375-16 UN	1.630	.911

1/ Shell size 13 fits connector sizes 12 and 13.
2/ Shell sizes 14 and 15 fit connector sizes 14 and 16.
3/ "Cable entry" dimension is defined as the envelope area for the wire bundle. This dimension is not intended to define the clamp hardware limits.

NOTE: Dimensions are in inches, after plating

Figure 6. Grommet Nut M83723-35 (Sheet 6 of 6)

PART NUMBER DESIGNATION

M85049/ 31 -S 10 W

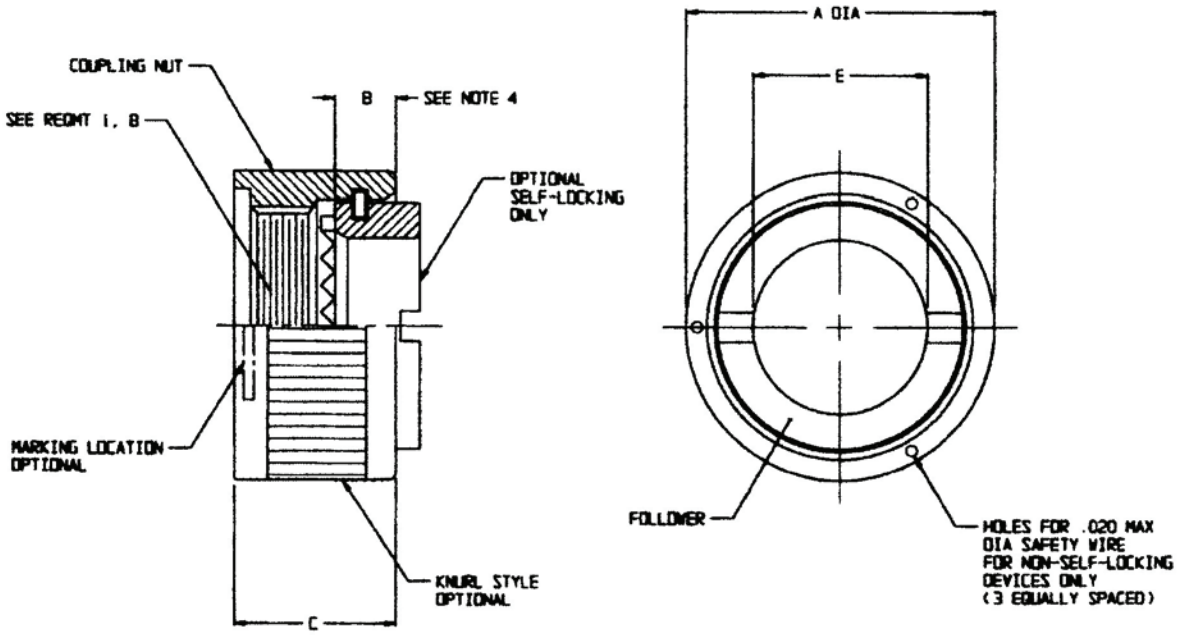
BASIC SPECIFICATION

DETAIL

CONFIGURATION
S – Detented Self-Locking
N – Non-Detented Self-Locking
Blank – For Non-Self Locking

DASH NUMBER (See Dimensions Table)

MATERIAL AND FINISH (See Table)
W – Cadmium, Olive Drab 500 Hr Salt Spray
N – Electroless Nickel
A – Black Anodize



MATERIAL AND FINISH:

Figure	Material	Finish
1	Aluminum alloy in accordance with MIL-C-85049	1/ N, 2/ W A

1/ Not for Navy use. Restricted to Air Force Space applications only.
2/ W finish is not for use in space application.

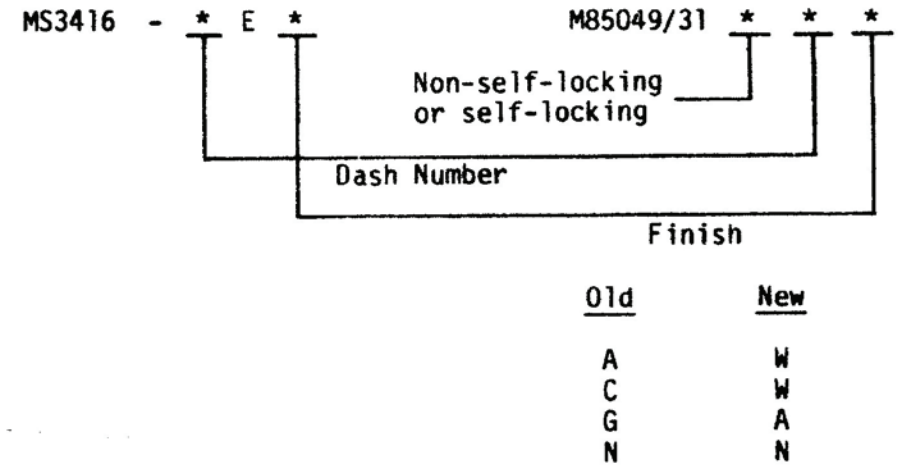
Figure 7. Grommet Nut M83723-31 (Sheet 1 of 2)

DIMENSIONS

Dash Number	For Connection Shell Size (Ref)				Non-Self-Locking				Self-Locking			
	AS81703 Series 3	MIL-C-26482 Series 2	MIL-DTL-5015 Crimp	MIL-DTL-83723 Series III	A Max Dia	B Max	C Max	E Max	A Max Dia	B Max	C Max	E Max
-3	3				.669	.220	.540	.270				
-8		8	8S	8	.617	↓	↓	.270	.885	.39	.710	.270
-10		10	10S,10SL	10	.734			.375	1.010	↓	↓	.375
-12	7	12	12S&12	12	.858			.511	1.135			.511
-14	12	14	14S&14	14	.984			.585	1.260			.585
-16	19	16	16S&16	16	1.112			.710	1.385			.710
-18	27	18	18	18	1.218			.789	1.510			.784
-20	37	20	20	20	1.345			.914	1.635			.914
-22		22	22	22	1.468		↓	1.039	1.760	↓	↓	1.039
-24		24	24	24	1.593		.540	1.154	1.885	.39	.710	1.154
-28			28		1.969		.702	1.389	2.135	.41	.890	1.389
-32			32		2.219		↓	1.635	2.395	↓	↓	1.635
-36			36		2.469			1.850	2.635			1.850
-40			40		2.719			2.065	2.885			2.065
-44			44		2.969		↓	2.320	3.135	↓	↓	2.320
-46			48		3.219	↓	.702	2.570	3.385	.41	.890	2.570
-61	61				1.653	.220	.540	1.194				

NOTE: Dimensions are in inches, after plating

SUPERSESSION DATA:



Old	New
A	W
C	W
G	A
N	N

Figure 7. Grommet Nut M83723-31 (Sheet 2 of 2)

PART NUMBER DESIGNATION

M83723/ 50 R 22 N

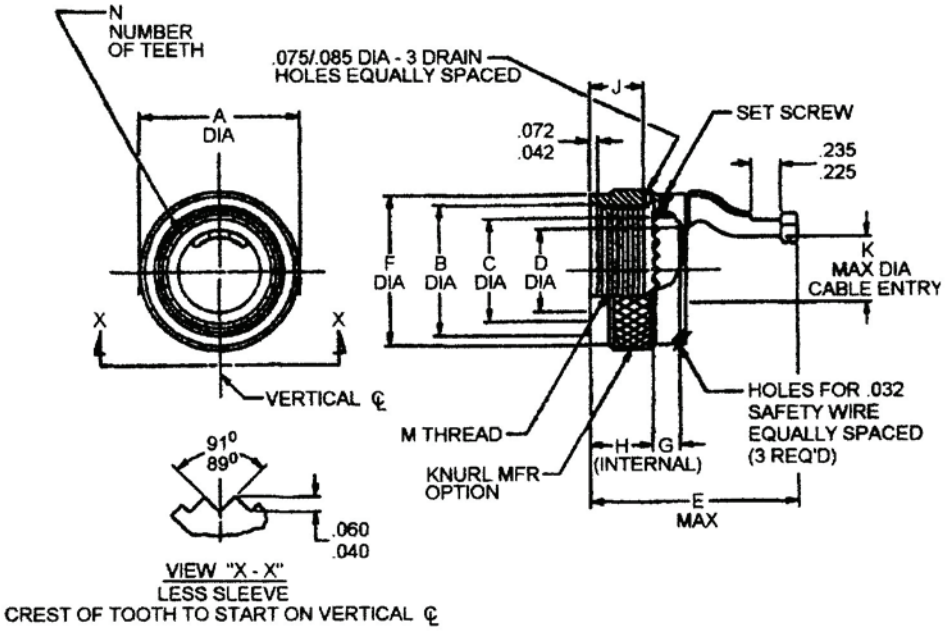
BASIC SPECIFICATION

DETAIL

CONFIGURATION
R – Straight Strain Relief
A – 90° Strain Relief
B – 45° Strain Relief

DASH NUMBER (See Dimensions Table)

MATERIAL AND FINISH
N – Aluminum Alloy, Electroless Nickel (Not for Navy use, AF space application only)
A – Aluminum Alloy, Black Anodize



TYPE "R", STRAIGHT STRAIN RELIEF

NOTE:
- Type, 'R', 'A', & 'B': Complete strain relief consist of an accessory nut and a follower; the accessory nut is captivated to, and free to rotate on, the follower. Strain relief includes one set screw for positive orientation of strain relief to connectors.
- Strain relief unit is to be used with SAE-AS33671 plastic strap, MIL-T-713 lacing twine or A-A-52080 thru A-A-52084 lacing tape.
- M83723/50 strain reliefs are not recommended for use with connectors containing number 8 AWG or larger conductors.
- Dimensions are in inches, after plating.

Figure 8. Strain Relief M83723-50 (Sheet 1 of 9)

DIMENSIONS (Type "R" Straight Strain Relief)

Shell size	MIL-DTL-5015 size shell	A dia max	B dia	C dia	D dia	E max	F dia max
8	8S	.617	.445 .440	.300 .178	.255 .245	1.41	.517
10	10S	.734	.520 .500	.380 .341	.308 .300	1.41	.580
11	10SL	.734	.580 .560	.430 .408	.388 .380	1.41	.642
13	12S	.658	.645 .625	.480 .459	.413 .405	1.47	.705
12	12	.858	.645 .625	.480 .459	.413 .405	1.63	.705
15	14S	.984	.770 .750	.584 .362	.495 .487	1.66	.830
14	14	.984	.770 .750	.584 .582	.495 .487	1.81	.830
17	165	1.112	.895 .875	.710 .588	.614 .608	1.65	.955
16	16	1.112	.895 .875	.710 .688	.614 .608	1.81	.955
18	18	1.218	1.020 1.000	.627 .805	.735 .727	1.85	1.080
20	20	1.345	1.145 1.125	.964 .942	.875 .867	1.99	1.205
22	22	1.468	1.270 1.280	1.095 1.073	.983 .975	2.11	1.330
24	24	1.593	1.395 1.375	1.202 1.180	1.100 1.087	2.17	1.458
28	28	1.969	1.645 1.625	1.423 1.401	1.256 1.246	2.20	1.705

Figure 8. Strain Relief M83723-50 (Sheet 2 of 9)

DIMENSIONS (Type "R" Straight Strain Relief, Continued)

Shell size	MIL-DTL-5015 size shell	G	H	J	K max	M thread class 2B	Number of teeth
8	8S	.365 .335	.350	.285 .272	.240	.4375-28UNEF	8
10	10S	.365 .335	.350	.285 .272	.295	.500-28UNEF	10
11	10SL	.365 .335	.350	.285 .272	.375	.5625-24 UNEF	12
13	12S	.365 .335	.350	.285 .272	.400	.625-24 UNEF	14
12	12	.365 .335	.505	.441 .428	.400	.625-24 UNEF	14
15	14S	.365 .335	.356	.285 .272	.482	.750-20 UNEF	16
14	14	.365 .335	.510	.441 .428	.482	.750-20 UNEF	16
17	165	.365 .335	.350	.285 .272	.601	.675-20 UNEF	20
16	16	.365 .335	.510	.441 .428	.601	.675020 UNEF	20
18	18	.380 .330	.490	.441 .428	.722	1.000-20 UNEF	24
20	20	.370 .340	.495	.044 .428	.862	1.125-18 UNEF	28
22	22	.370 .340	.495	.441 .428	.970	1.250-18 UNEF	32
24	24	.310 .280	.486	.423 .410	1.082	1.375-18 UNEF	32
28	28	.310 .280	.485	.423 .410	1.241	1.625-18 UNEF	36

Figure 8. Strain Relief M83723-50 (Sheet 3 of 9)

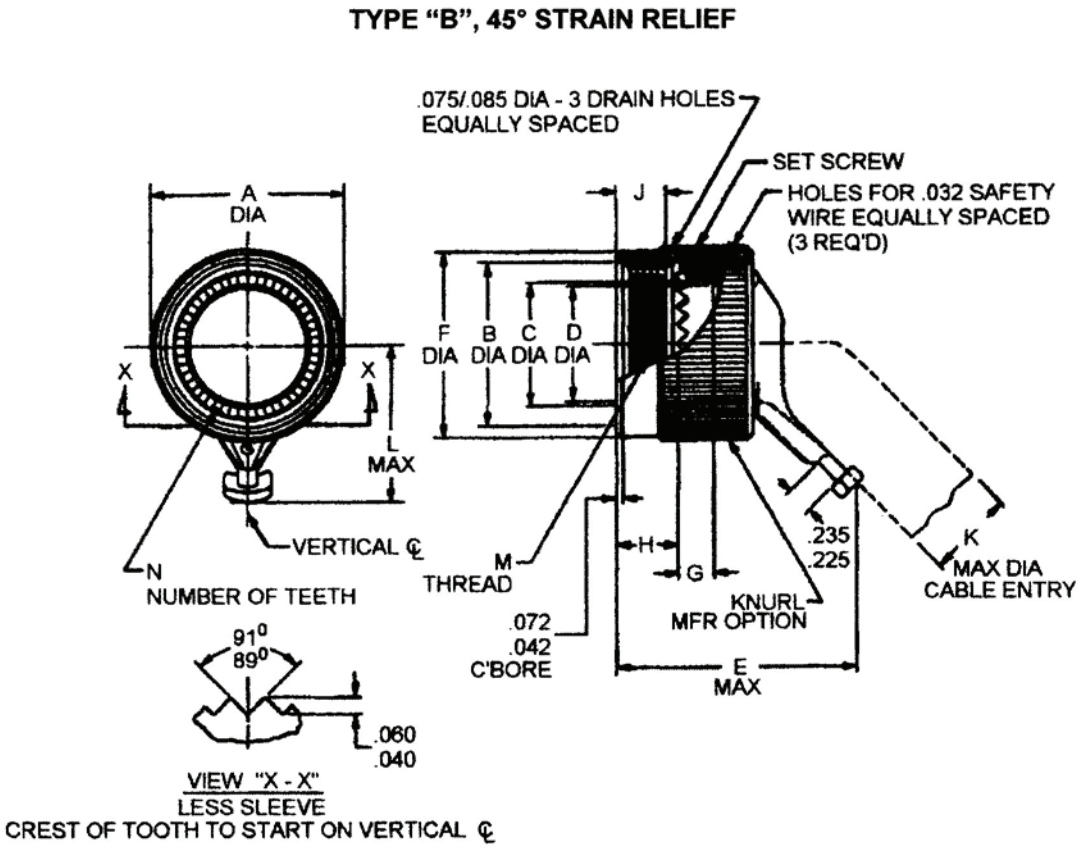


Figure 8. Strain Relief M83723-50 (Sheet 4 of 9)

DIMENSIONS (Type "B" 45° Strain Relief)

Shell size	MIL-DTL-5015 size shell	A dia max	B dia	C dia	D dia	E max	F dia max	G
8	8S	.684	.455 .440	.300 .279	.255 .248	1.085	.551	.365 .335
10	10S	.782	.520 .500	.380 .341	.308 .300	1.085	.676	.365 .335
11	10SL	.782	.580 .560	.430 .408	.388 .380	1.085	.678	.365 .335
13	12S	.937	.645 .625	.480 .459	.413 .405	1.085	.812	.365 .335
12	12	.937	.645 .625	.480 .459	.413 .405	2.01	.812	.365 .335
15	14S	1.050	.770 .750	.584 .582	.495 .487	2.37	.926	.365 .335
14	14	1.050	.770 .750	.584 .582	.495 .487	2.52	.926	.365 .335
17	18S	1.239	.895 .875	.710 .688	.814 .808	2.38	1.052	.365 .335
18	18	1.239	.895 .875	.710 .688	.814 .606	2.52	1.082	.365 .335
18	18	1.378	1.020 1.000	.827 .805	.735 .727	2.66	1.176	.360 .330
20	20	1.500	1.145 1.125	.964 .942	.875 .867	2.74	1.312	.370 .340
22	22	1.831	1.270 1.250	1.095 1.073	.983 .975	2.74	1.437	.370 .340
24	24	1.750	1.395 1.375	1.202 1.180	1.100 1.087	2.82	1.551	.310 .280
28	28	1.921	1.645 1.625	1.423 1.401	1.256 1.246	2.82	1.750	.310 .280

Figure 8. Strain Relief M83723-50 (Sheet 5 of 9)

DIMENSIONS (Type "B" 45° Strain Relief, Continued)

Shell size	MIL-DTL-5015 size shell	H max	J	K max	L max	M thread class 2B	Number of teeth
8	8S	.360	.285 .272	.240	.76	4375-28 UNEF	8
10	10S	.360	.285 .272	.295	.82	.500-28 UNEF	10
11	10SL	.360	.285 .272	.375	.82	.5625-24 UNEF	12
13	12S	.350	.285 .272	.400	.88	.625-24 UNEF	14
12	12	.505	.441 .428	.400	.88	.625-24 UNEF	14
15	14S	.355	.285 .272	.482	1.12	.750-20 UNEF	16
14	14	.510	.441 .428	.482	1.12	.750-20 UNEF	16
17	18S	.350	.285 .272	.601	1.18	.875-20 UNEF	20
18	18	.510	.441 .428	.601	1.18	875-20 UNEF	20
18	18	.480	.441 .428	.722	1.27	1.000-20 UNEF	24
20	20	.495	.441 .428	.662	1.31	1.125-18 UNEF	28
22	22	.495	.441 .428	.970	1.37	1.250-18 UNEF	32
24	24	.488	.423 .410	1.082	1.44	1.375-18 UNEF	32
28	28	.488	.423 .410	1.241	1.57	1.625-18 UNEF	36

Figure 8. Strain Relief M83723-50 (Sheet 6 of 9)

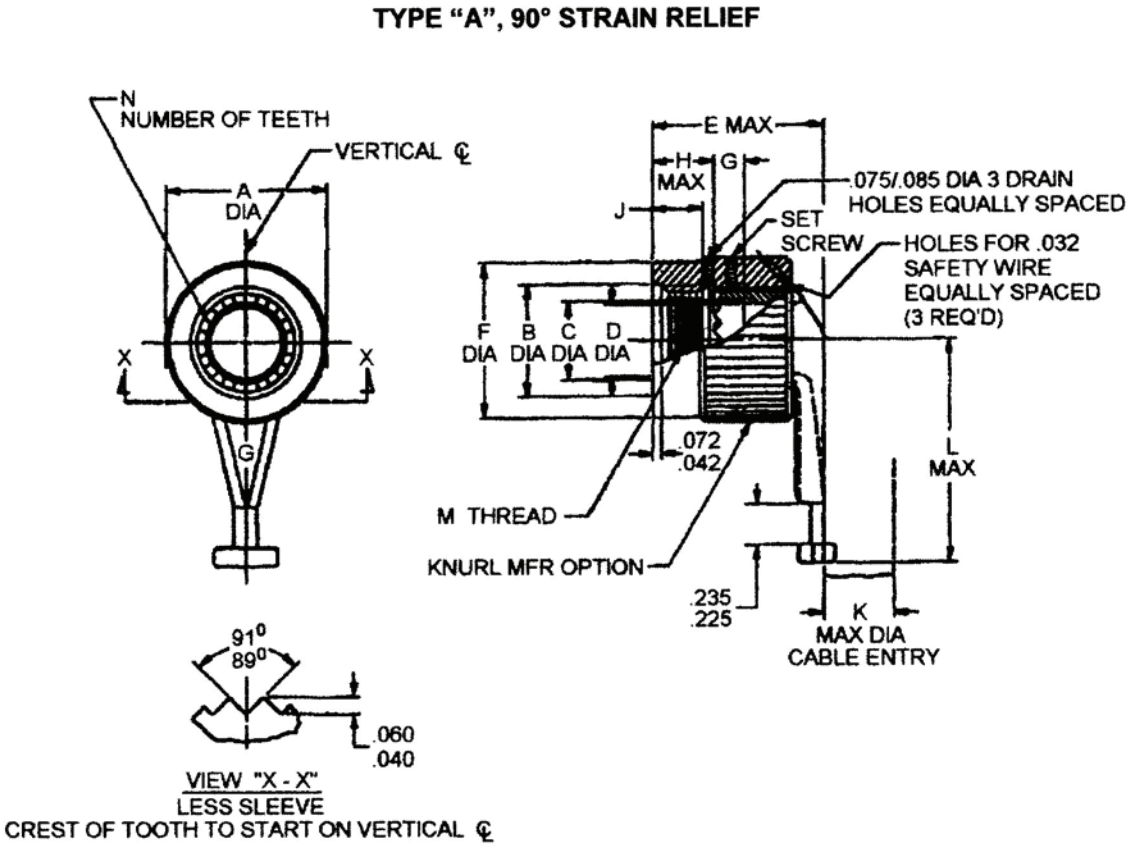


Figure 8. Strain Relief M83723-50 (Sheet 7 of 9)

DIMENSIONS (Type "A" 90° Strain Relief)

Shell size	MIL-DTL-5015 size shell	A dia max	B dia	C dia	D dia	E max	F dia max	G
8	8S	.687	.455 .440	.300 .279	.255 .245	1.060	.551	.365 .335
10	10S	.782	.520 .500	.380 .341	.308 .300	1.060	.576	.365 .335
11	10SL	.782	.580 .560	.430 .408	.388 .390	1.060	.676	.365 .335
13	12S	.937	.645 .625	.480 .459	.413 .405	1.060	.812	.365 .335
12	12	.937	.845 .828	.480 .459	.413 .405	1.215	.812	.365 .335
16	145	1.050	.770 .750	.584 .562	.495 .487	1.065	.926	.365 .335
14	14	1.050	.770 .750	.584 .562	.495 .487	1.220	.926	.365 .335
17	168	1.239	.895 .875	.710 .688	.614 .606	1.060	1.052	.365 .335
16	16	1.239	.895 .875	.710 .688	.614 .606	1.220	1.052	.365 .335
18	18	1.375	1.020 1.000	.827 .805	.735 .727	1.220	1.178	.360 .330
20	20	1.500	1.145 1.128	.964 .942	.875 .887	1.235	1.312	.370 .340
22	22	1.831	1.270 1.250	1.095 1.073	.983 .975	1.188	1.437	.370 .340
24	24	1.750	1.395 1.375	1.202 1.180	1.100 1.087	1.121	1.551	.310 .280
28	28	1.921	1.845 1.625	1.423 1.401	1.256 1.246	1.121	1.780	.310 .280

Figure 8. Strain Relief M83723-50 (Sheet 8 of 9)

DIMENSIONS (Type "A" 90° Strain Relief, Continued)

Shell size	MIL-DTL-5015 size shell	H max	J	K max	L max	M thread class 2B	Number of teeth
8	8S	.350	.285 .272	.240	.88	.4375-28 UNEF	8
10	10S	.350	.285 .272	.295	.94	.500-28 UNEF	10
11	10SL	.350	.285 .272	.375	.94	.5625-24 UNEF	12
13	12S	.350	.285 .272	.400	1.00	.625-24 UNEF	14
12	12	.505	.441 .428	.400	1.00	.625.24 UNEF	14
16	145	.355	.285 .272	.462	1.32	.750-20 UNEF	16
14	14	.510	.441 .428	.482	1.32	.750-20 UNEF	18
17	168	.350	.285 .272	.601	1.37	.875-20 UNEF	20
16	16	.510	.441 .428	.601	1.37	.875-20 UNEF	20
18	18	.490	.441 .428	.722	1.42	1.000-20 UNEF	24
20	20	.495	.441 .428	.862	1.51	1.125-18 UNEF	28
22	22	.495	.441 .428	.970	1.57	1.250-18 UNEF	32
24	24	.488	.423 .410	1.082	1.64	1.375-18 UNEF	32
28	28	.488	.423 .410	1.241	1.71	1.625-18 UNEF	36

Figure 8. Strain Relief M83723-50 (Sheet 9 of 9)

14. Strain Reliefs. A strain relief is a support or clamping device which attaches directly to connector See WP 007 03 for detailed information on M85049/51, M85049/52, M85049/53, M85049/54 and M85049/55. See Note following paragraph 2 this WP on AS, M and MS prefix.

15. SHRINK BOOTS AND ADAPTERS. Boots and adapters are protective coverings over any portion of a cable, wire, or connector in addition to normal jacketing or insulation. A protective housing usually made from a resilient material to prevent entry of moisture into a connector. Adapter and boots M83723/27 are illustrated in Figure 9. See WP 011 03 for detailed information on M83723/16 shrink boots and adapter. See Note following paragraph 2 this WP on AS, M and MS prefix.

16. EMI/RFI GROUNDING TERMINATORS. Ground terminators are used to ground or shield a connector to reduce electromagnetic radiation and radio frequency interference from other equipment. A physical and electrical shield is employed which is terminated at one or both ends to a ground or some other predetermined point with respect to ground. Shields can be applied to individual wires, cables, bundles, or harnesses. See WP 007 03 for detail information on grounding terminator M818121, and ferrules: MS21980, and MS 21981. See Note following paragraph 2 this WP on AS, M and MS prefix.

17. EMI/RFI GROUNDING TERMINATOR INSTALLATION. EMI/RFI grounding terminator installation procedures are contained in Figure 10.

18. NON-ENVIRONMENTAL BACKSHELLS. A non-environmental backshell is an attachment on backside of a connector that does not protect against moisture, dust, and dirt. The M83723/35 backshell is illustrated with various clamp configurations in Figure 11. The M83723/51 backshell has been cancelled without replacement and is provided for reference only (see Figure 12).

19. ENVIRONMENTAL BACKSHELLS. An environmental backshell is a device that provides protection from moisture, dirt, air, or dust which may reduce performance of the connector. They do not provide protection from nonphysical environments such as RIP and radiation .For detailed information on: M85049/9, M85049/7 and M85049/11 backshells, see WP 007 03. See Note following paragraph 2 this WP on AS, M and MS prefix.

20. NON-ENVIRONMENTAL EMI/RFI BACKSHELLS. A non-environmental backshell is an attachment on backside of a connector that does not protect against moisture, dust and dirt but does provide EMI/RFI protection. For detailed information on: M85049/26, M85049/26-1, M85049/26-2, M85049/24, M85049/23 and M85049/25 backshells, see WP 007 03 backshells. See Note following paragraph 2 this WP on AS, M and MS prefix.

21. ENVIRONMENTAL EMI/RFI BACKSHELLS. This type of backshell is used when moisture entry and EMI/RFI protection is needed. Figure 13 illustrates a typical environmental EMI/RFI Backshell assembly. . For detailed information on: M85049/8, M85049/6 and M85049/10 backshells, see WP 007 03. See Note following paragraph 2 this WP on AS, M and MS prefix.

22. CONDUIT FITTINGS. Conduit fittings are used to connect a conduit to a connector, and may be either a ferrule, nut, adapter, box fitting, 45¡ elbow, 90¡ elbow, hex nut, or seal assembly. See WP 007 03 for detail information on conduit fittings: AN3050, AN 3051, AN3052, AN3053, AN3054, AN 3055, AN 3056, AN3060, AN3061, AN3062, AN3063, AN3066, AN3068, and AN3067. See Note following paragraph 2 this WP on AS, M and MS prefix.

23. DUMMY RECEPTACLES. Dummy receptacles are provided and shall be used to stow unmated plugs, caps, or protective covers when related component is not in operational use. The dummy receptacle shall be marked and located to permit easy access. See detailed information on MS3115 in WP 008 03. Figure 14 illustrates the detailed information on dummy receptacle MS3105, and Figure 15 shows details of NAS1196. Figure 16 illustrates the M83723/61-1 and M83723/61-2 is illustrated in Figure 17. See Note following paragraph 2 this WP on AS, M and MS prefix.

24. DUST CAPS. Protective covers are more commonly called dust caps. The purpose of dust caps is to prevent dirt from entering connectors, pins, and sockets and to prevent coupling device from damage. The MS3180 is shown in Figure 18 and MS3181 in Figure 19. See WP 007 03 for detailed information on dust caps: MS25042 and MS25043. See Figure 20 for detailed information on M83723/59-1, Figure 21 for M83723/59-2, Figure 22 for M83723/60-1, Figure 23 for M83723/60-2 and Figure 24 for MS90376. See Note following paragraph 2 this WP on AS, M and MS prefix.

PART NUMBER DESIGNATION

M83723/ 27 S 22 A

MILITARY DESIGNATION

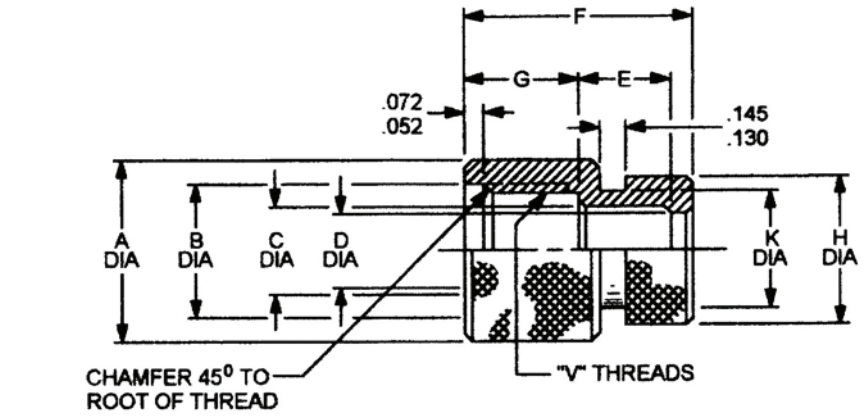
DETAIL

CONFIGURATION
S – Straight
A – 90° Right Angle
M – Backshell Only

SHELL SIZE (See Dimensions Table)

COMPONENT DESIGNATION
A: Polyolefin (150°C) Boot and Backshell
B: Fluoroelastomer (200°C) Boot and Backshell
(M: Backshell only
(A: Polyolefin boot only
(B: Fluoroelastomer boot only

MATERIAL AND FINISH
R – Aluminum Alloy, Electroless Nickel (Not for Navy Use)



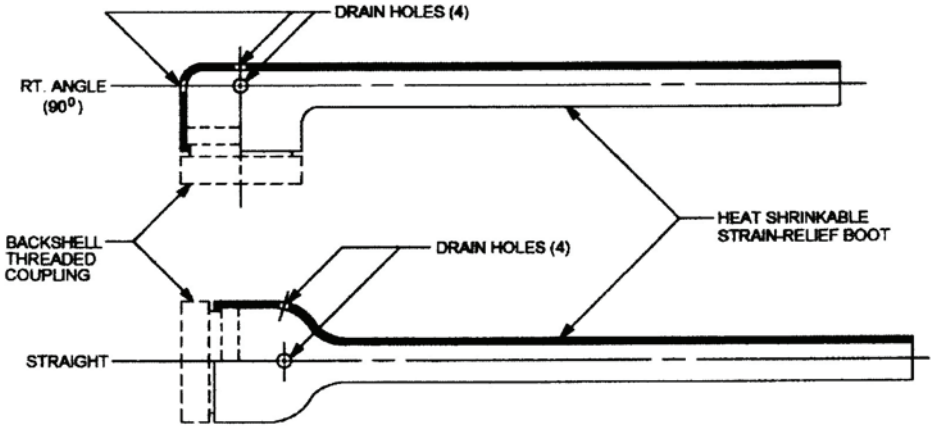


Figure 9. Shrink Boot Adapter M83723-27 (Sheet 1 of 7)

ADAPTER M83723/27

DIMENSIONS

Shell size designator	Shell size	A dia max	B dia	C dia	D dia	E	F max
08	8S	.577	.447	.284	.250	.300	.830
10	10S	.640	.510	.344	.303	.300	.830
11	10SL	.702	.572	.413	.383	.300	.830
13	12S	.765	.635	.464	.408	.300	.830
12	12	.765	.635	.464	.408	.300	.830
16	14S	.890	.760	.567	.490	.300	.830
14	14	.890	.760	.567	.490	.300	.830
17	16S	1.015	.885	.893	.609	.300	.830
16	16	1.015	.885	.693	.609	.300	.996
18	18	1.140	1.010	.810	.730	.300	.996
20	20	1.265	1.135	.947	.870	.309	.996
22	22	1.390	1.260	1.078	.978	.309	.996
24	24	1.515	1.385	1.185	1.090	.246	.996
28	28	1.765	1.635	1.405	1.250	.246	1.076
32	32	2.015	1.885	1.167	1.520	.185	1.076
36	36	2.265	2.135	1.865	1.756	.185	1.076
40	40	2.515	2.392	2.203	1.880	.570	1.222

NOTE: Dimensions are in inches, after plating

Figure 9. Shrink Boot Adapter M83723-27 (Sheet 2 of 7)

ADAPTER M83723/27

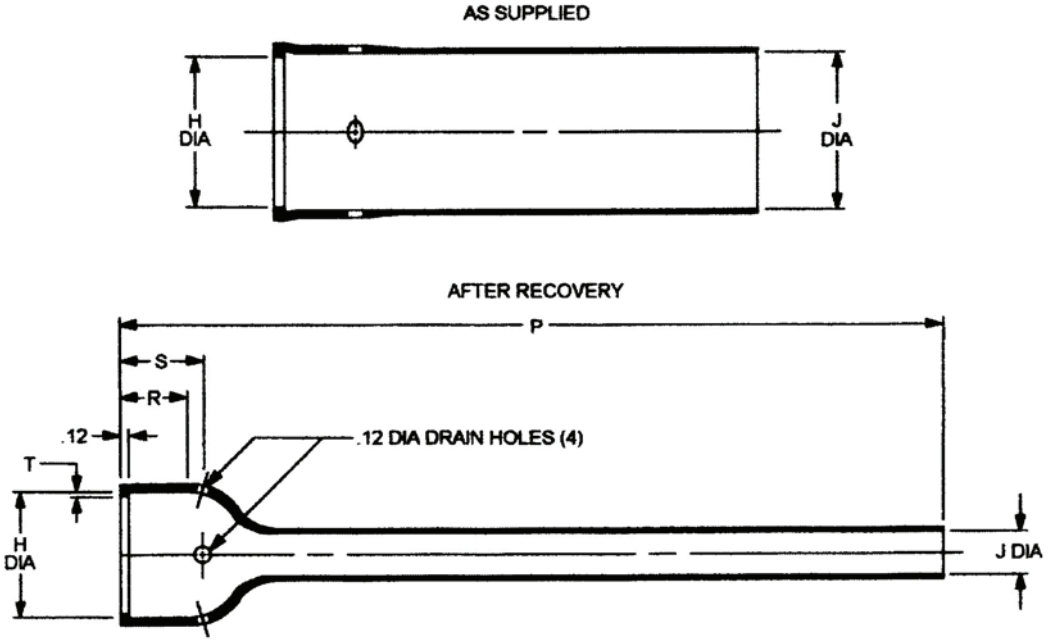
DIMENSIONS (Continued)

Shell size designator	Shell size	P Recovered	R Recovered	S Recovered	T Recovered
08	8S	.25	.46	.55	.040
10	10S	.26	.46	.55	.040
11	10SL	.29	.48	.59	.040
13	12S	.29	.48	.59	.040
12	12	.29	.48	.59	.040
15	14S	.33	.48	.60	.040
14	14	.33	.48	.60	.040
17	16S	.38	.48	.62	.040
16	16	.38	.48	.62	.040
18	18	.38	.48	.62	.040
20	20	.41	.55	.70	.063
22	22	.48	.60	.78	.065
24	24	.48	.60	.78	.065
28	28	.56	.60	.82	.065
32	32	.59	.63	.92	.080
36	36	.69	.63	.92	.080
40	40	.77	.63	.93	.080

NOTE: Dimensions are in inches, after plating

Figure 9. Shrink Boot Adapter M83723-27 (Sheet 3 of 7)

SHRINK BOOT M83723/27S (STRAIGHT)



DIMENSIONS

Shell size designator	Shell size	H Dia		J Dia.	
		As supplied min	Recovered max	As supplied min 1/	Recovered max
				A	B
08	8S	.88	.45	.88	.55
10	10S	.88	.45	.88	.55
11	10SL	1.01	.59	1.01	.63
13	12S	1.01	.59	1.01	.63
12	12	1.01	.59	1.01	.63
15	14S	1.16	.74	1.16	.72
14	14	1.16	.74	1.16	.72
17	16S	1.34	.90	1.34	.84
16	16	1.34	.90	1.34	.84
18	18	1.34	.90	1.34	.84
20	20	1.47	1.16	1.47	.91
22	22	1.72	1.34	1.72	1.07
24	24	1.72	1.34	1.72	1.07
28	28	1.97	1.62	1.97	1.23
32	32	2.47	1.85	2.47	1.54
36	36	2.47	1.85	2.47	1.54
40	40	2.73	2.35	2.73	1.70

Figure 9. Shrink Boot Adapter M83723-27 (Sheet 4 of 7)

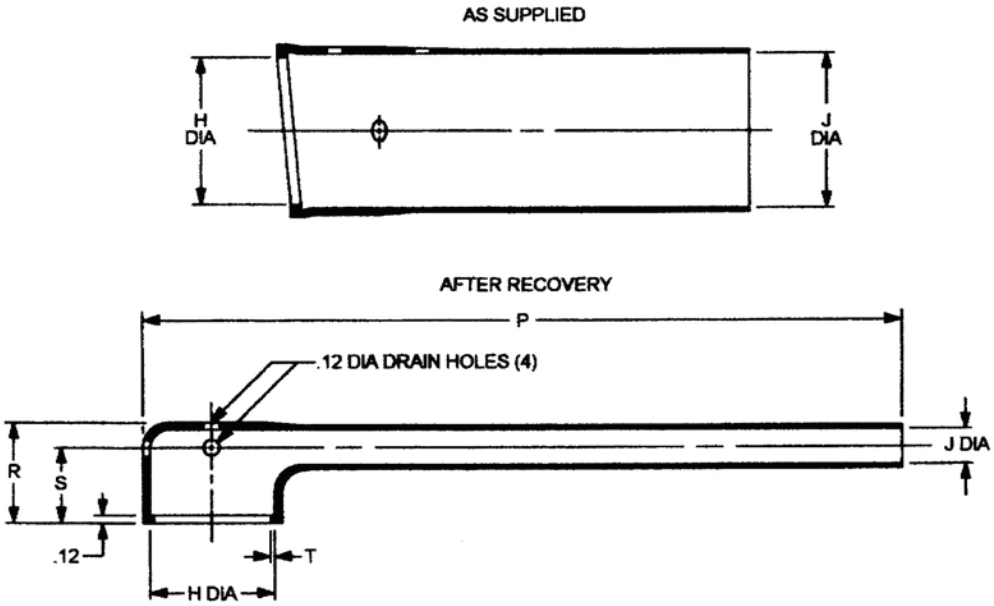
SHRINK BOOT M83723/27S (STRAIGHT)

DIMENSIONS (Continued)

Shell size designator	Shell size	P recovered	R recovered	S recovered	T recovered
08	8S	.25	.46	.55	.040
10	10S	.26	.46	.55	.040
11	10SL	.29	.48	.59	.040
13	12S	.29	.48	.59	.040
12	12	.29	.48	.59	.040
15	14S	.33	.48	.60	.040
14	14	.33	.48	.60	.040
17	16S	.38	.48	.62	.040
16	16	.38	.48	.62	.040
18	18	.38	.48	.62	.040
20	20	.41	.55	.70	.063
22	22	.48	.60	.78	.065
24	24	.48	.60	.78	.065
28	28	.56	.60	.82	.065
32	32	.59	.63	.92	.080
36	36	.69	.63	.92	.080
40	40	.77	.63	.93	.080

Figure 9. Shrink Boot Adapter M83723-27 (Sheet 5 of 7)

SHRINK BOOT M83723/27A (90° RIGHT ANGLE)



DIMENSIONS

Shell size designator	Shell size	H Dia		J Dia.	
		As supplied min	Recovered max	As supplied min 2/	Recovered max
				A	B
08	8S	.88	.45	.88	.55
10	10S	.88	.45	.88	.55
11	10SL	1.01	.59	1.01	.63
13	12S	1.01	.59	1.01	.63
12	12	1.01	.59	1.01	.63
15	14S	1.16	.74	1.16	.72
14	14	1.16	.74	1.16	.72
17	16S	1.34	.90	1.34	.84
16	16	1.34	.90	1.34	.84
18	18	1.34	.90	1.34	.84
20	20	1.47	1.16	1.47	.91
22	22	1.72	1.34	1.72	1.07
24	24	1.72	1.34	1.72	1.07
28	28	1.97	1.62	1.97	1.23
32	32	2.47	1.85	2.47	1.54
36	36	2.47	1.85	2.47	1.54
40	40	2.73	2.35	2.73	1.70

Figure 9. Shrink Boot Adapter M83723-27 (Sheet 6 of 7)

SHRINK BOOT M83723/27A (90° RIGHT ANGLE)

DIMENSIONS (Continued)

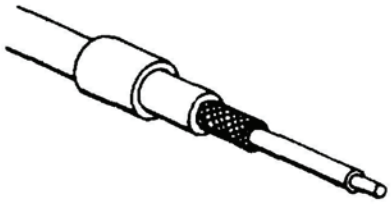
Shell size designator	Shell size	P recovered	R recovered	S recovered	T recovered
08	8S	.25	.46	.55	.040
10	10S	.26	.46	.55	.040
11	10SL	.29	.48	.59	.040
13	12S	.29	.48	.59	.040
12	12	.29	.48	.59	.040
15	14S	.33	.48	.60	.040
14	14	.33	.48	.60	.040
17	16S	.38	.48	.62	.040
16	16	.38	.48	.62	.040
18	18	.38	.48	.62	.040
20	20	.41	.55	.70	.063
22	22	.48	.60	.78	.065
24	24	.48	.60	.78	.065
28	28	.56	.60	.82	.065
32	32	.59	.63	.92	.080
36	36	.69	.63	.92	.080
40	40	.77	.63	.93	.080

Figure 9. Shrink Boot Adapter M83723-27 (Sheet 7 of 7)

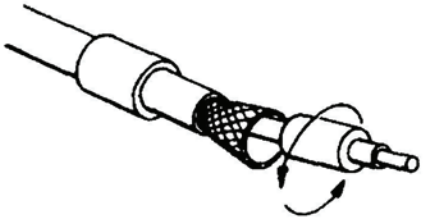
INDIVIDUAL WIRE TERMINATION

MS18121, MS21980, MS21981

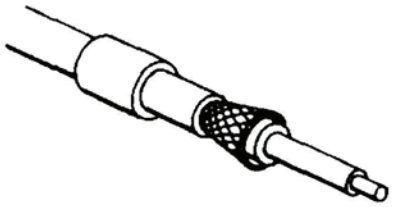
1. SLIP OUTER SLEEVE OVER INSULATION JACKET AFTER STRIPPING. TRIM BRAID TO WITHIN 1/2 INCH OF INSULATION.



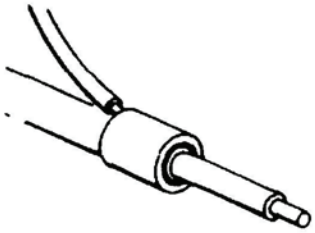
2. FAN BRAID BY ROTATING CENTER CONDUCTOR AND SLIP INNER SLEEVE UNDER BRAID.



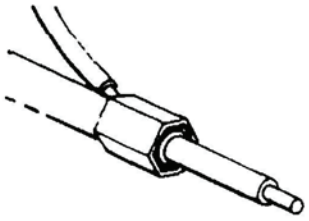
3. POSITION INNER SLEEVE TO EXTEND ABOUT 1/16 INCH BEYOND BRAID.



4. SLIP GROUND LEAD UNDER OUTER SLEEVE (FRONT OR BACK) AND SLIDE OUTER SLEEVE OVER BRAID.



FOR DAISY CHAIN GROUNDING TWO GROUND WIRES CAN BE ACCOMMODATED BY SELECTING THE PROPER SIZE OUTER SLEEVE.



5. OUTER SLEEVE COVERS ALL EXPOSED PARTS.

6. COMPRESS IN SPECIFIED TOOL.

Figure 10. EMI RFI Grounding Ternimator Installation (Sheet 1 of 2)

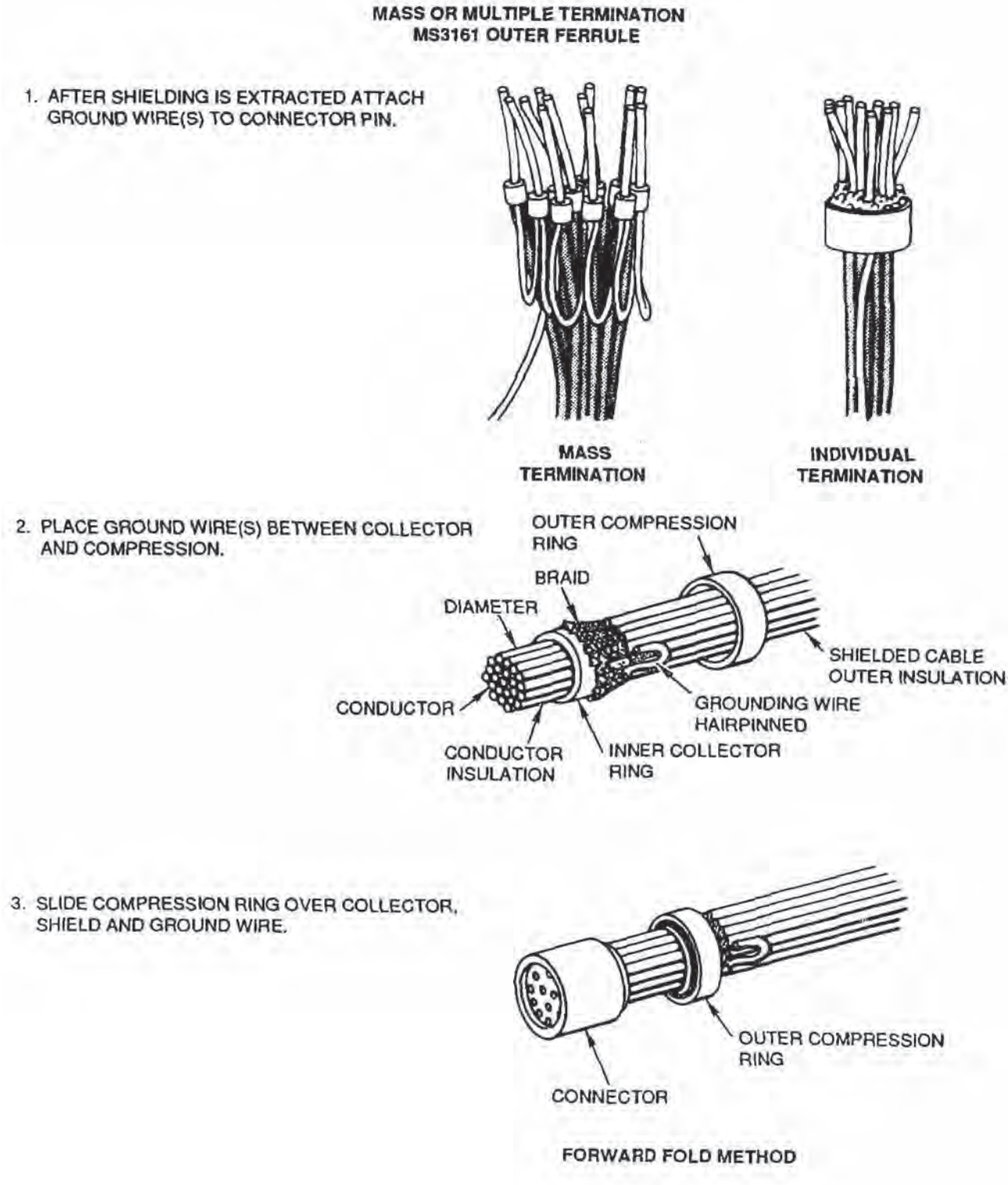


Figure 10. EMI RFI Grounding Ternimator Installation (Sheet 2 of 2)

PART NUMBER DESIGNATION

M83723/ 35 A 22 R

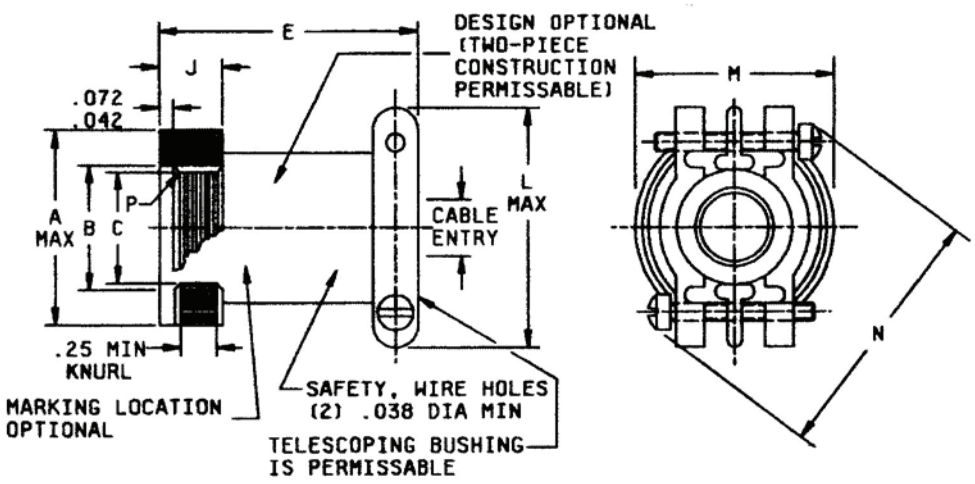
BASIC SPECIFICATION

DETAIL

CONFIGURATION
S – Straight Clamp
A – 90° Clamp
N – No Clamp

DASH NUMBER (See Dimensions Table)

MATERIAL AND FINISH
R – Aluminum Alloy, Electroless Nickel, Conductive Finish, 200° C (Not for Navy Use)
A – Aluminum Alloy, Black Anodize, 200° C
G – Stainless Steel, Passivated, 200° C



TYPE "S", STRAIGHT CLAMP

Figure 11. M83723-35 Non-Environmental Backshell (Sheet 1 of 4)

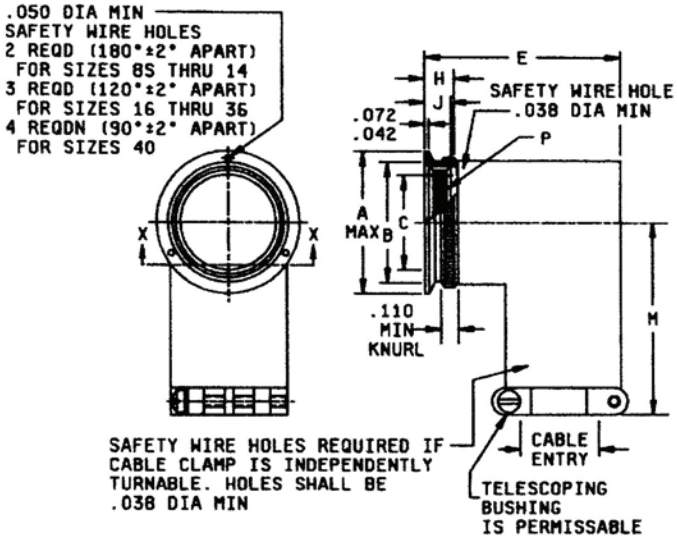
DIMENSIONS (Type "S" Straight Clamp)

Shell size	A Max dia	B dia	C dia	D dia	E max	J min	L max	M max	N max	P thread class 2B	Cable entry 3/	
											Fig. 1 max	Fig. 1 min
8	.585	.450 .440	.291 .281	.257 .245	1.290 (32.77)	.285	.843	.900 (22.86)	1.075	.438-28 UNEF	.235	.125
10	.645	.513 .503	.351 .341	.310 .300	1.290 (32.77)	.285	.843	.900 (22.86)	1.075	.500-28 UNEF	.235	.125
11	.730	.575 .565	.420 .410	.390 .380	1.290 (32.77)	.285	.906	.980 (24.89)	1.140	.562-24 UNEF	.297	.170
13 1/	.770	.640 .628	.471 .461	.415 .403	1.290 (32.77)	.285	1.085	.995 (25.27)	1.140	.625-24 UNEF	.297	.170
15 2/	.910	.765 .753	.575 .564	.497 .485	1.368 (34.75)	.285	1.093	1.160 (29.46)	1.360	.750-20 UNEF	.422	.235
17	1.035	.890 .878	.700 .690	.616 .604	1.430 (36.32)	.285	1.187	1.260 (32.00)	1.520	.875-20 UNEF	.547	.295
16	1.035	.890 .878	.700 .690	.616 .604	1.587 (40.31)	.440	1.275	1.260 (32.00)	1.520	.875-20 UNEF	.547	.295
18	1.170	1.015 1.003	.817 .807	.735 .725	1.695 (43.05)	.440	1.475	1.455 (36.96)	1.600	1.000-20 UNEF	.610	.325
20	1.300	1.140 1.128	.953 .943	.875 .865	1.695 (43.05)	.440	1.500	1.580 (40.13)	1.890	1.125-18 UNEF	.735	.380
22	1.420	1.265 1.255	1.083 1.073	.983 .973	1.695 (43.05)	.440	1.710	1.580 (40.13)	1.890	1.250-18 UNEF	.735	.380
24	1.535	1.390 1.378	1.190 1.180	1.095 1.085	1.931 (49.05)	.440	1.719	1.890 (48.01)	2.145	1.375-18 UNEF	.922	.500
28	1.800	1.640 1.628	1.410 1.400	1.255 1.245	1.931 (49.05)	.440	2.040	1.890 (48.01)	2.145	1.625-18 UNEF	.922	.500
32	2.035	1.890 1.878	1.664 1.654	1.525 1.515	1.869 (47.47)	.440	2.332	2.215 (56.26)	2.550	1.875-16 UN	1.235	.705
36	2.270	2.140 2.128	1.875 1.862	1.760 1.750	1.869 (47.47)	.440	2.312	2.405 (61.09)	2.889	2.125-16 UN	1.360	.725
40	2.780	2.395 2.385	2.208 2.198	2.020 1.865	2.875 (73.03)	.459	2.950	2.781 (70.64)	3.500	2.375-16 UN	1.630	.911

1/ Shell size 13 fits connector sizes 12 and 13.
2/ Shell sizes 14 and 15 fit connector sizes 14 and 16.
3/ "Cable entry" dimension is defined as the envelope area for the wire bundle. This dimension is not intended to define the clamp hardware limits.

Figure 11. M83723-35 Non-Environmental Backshell (Sheet 2 of 4)

TYPE "A", 90° CLAMP

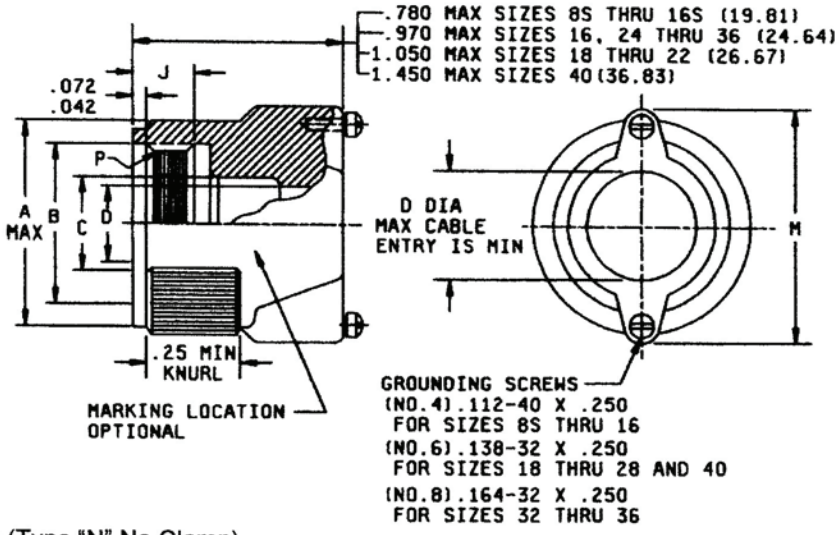


DIMENSIONS (Type "A" 90° Clamp)

Shell size	A max dia	B dia	C dia	E max	H max	J	M max	P thread class 2B	Cable entry 1/	
									Max	Min
8	.805	.455 .440	.300 .279	1.187 (30.15)	.350	.285 .272	1.220	.438-28 UNEF	.235	.102
10	.890	.520 .500	.360 .339	1.187 (30.15)	.350	.285 .272	1.250	.500-28 UNEF	.235	.102
11	.975	.580 .560	.430 .408	1.312 (33.32)	.350	.285 .272	1.280	.562-24 UNEF	.297	.140
13	1.005	.645 .625	.480 .459	1.312 (33.32)	.350	.285 .272	1.280	.625-24 UNEF	.297	.140
12	1.005	.645 .625	.480 .459	1.468 (37.29)	.505	.441 .428	1.280	.625-24 UNEF	.297	.140
15	1.130	.770 .750	.584 .562	1.437 (36.50)	.355	.285 .272	1.405	.750-20 UNEF	.422	.195
14	1.130	.770 .750	.584 .562	1.594 (40.49)	.510	.441 .428	1.405	.750-20 UNEF	.422	.195
17	1.255	.895 .875	.710 .688	1.531 (38.89)	.350	.285 .272	1.529	.875-20 UNEF	.547	.255
16	1.255	.895 .875	.710 .688	1.687 (42.85)	.510	.441 .428	1.529	.875-20 UNEF	.547	.255
18	1.350	1.020 1.000	.827 .805	1.765 (44.83)	.490	.441 .428	1.593	1.000-20 UNEF	.610	.285
20	1.475	1.145 1.125	.962 .942	2.000 (50.80)	.495	.441 .428	1.655	1.125-18 UNEF	.735	.350
22	1.600	1.270 1.250	1.095 1.073	2.000 (50.80)	.495	.441 .428	1.718	1.250-18 UNEF	.735	.350
24	1.725	1.395 1.375	1.202 1.180	2.265 (57.53)	.488	.423 .410	1.894	1.375-18 UNEF	.922	.468
28	1.975	1.645 1.625	1.423 1.401	2.265 (57.53)	.488	.423 .410	1.973	1.625-18 UNEF	.922	.468
32	2.225	1.895 1.875	1.674 1.652	2.578 (65.48)	.488	.423 .410	2.187	1.875-16 UN	1.235	.664
36	2.475	2.145 2.125	1.887 1.865	2.815 (71.50)	.488	.423 .410	2.405	2.125-16 UN	1.360	.694
40	2.750	2.390 2.375	2.125 2.117	5.800 (147.23)	.500	.423 .410	5.100	2.375-16 UN	1.630	.911

Figure 11. M83723-35 Non-Environmental Backshell (Sheet 3 of 4)

TYPE "N", NO CLAMP



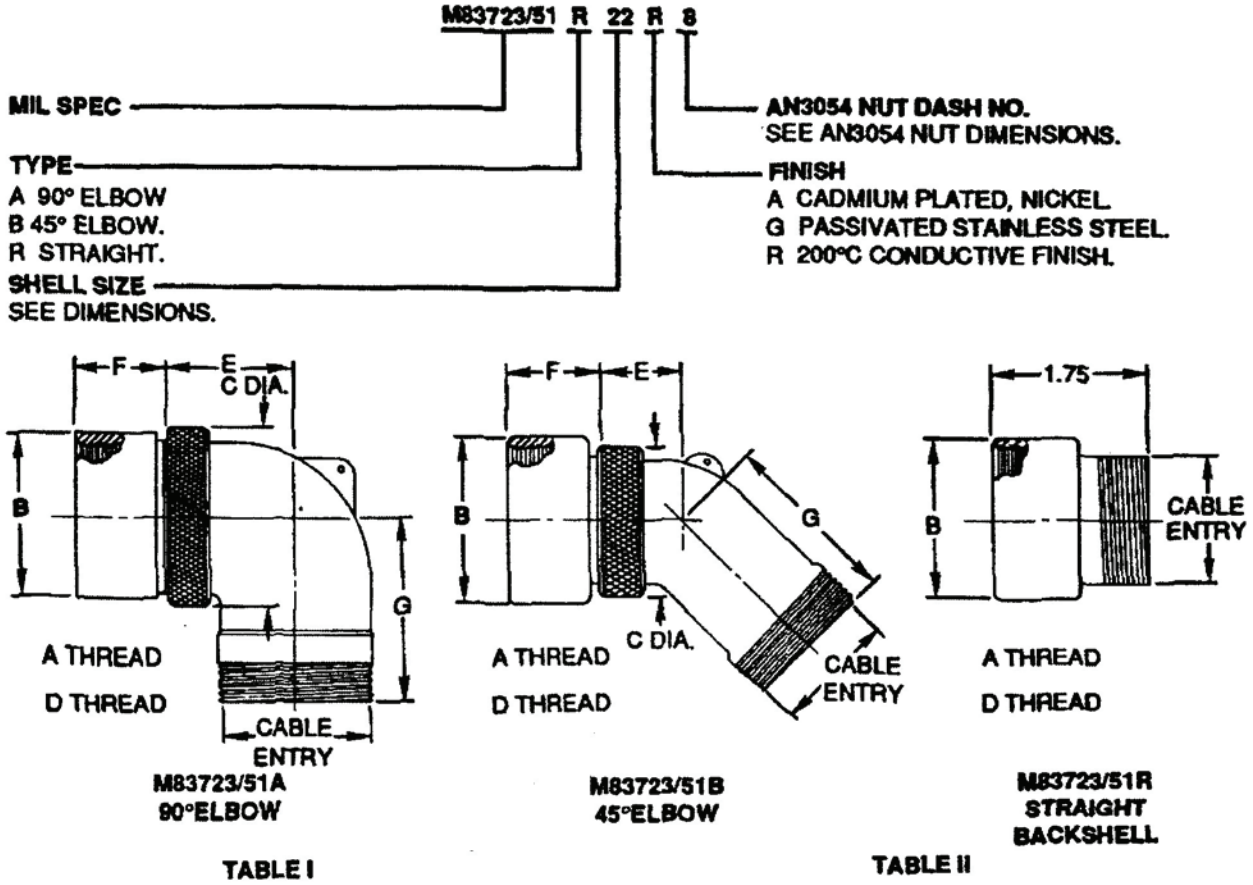
DIMENSIONS (Type "N" No Clamp)

Shell size	A Max dia	B dia	C dia	D dia	E max	J min	L max	M max	N max	P thread class 2B	Cable entry 3/	
											Fig. 1 max	Fig. 1 min
8	.585	.450 .440	.291 .281	.257 .245	1.290 (32.77)	.285	.843	.900 (22.86)	1.075	.438-28 UNEF	.235	.125
10	.645	.513 .503	.351 .341	.310 .300	1.290 (32.77)	.285	.843	.900 (22.86)	1.075	.500-28 UNEF	.235	.125
11	.730	.575 .565	.420 .410	.390 .380	1.290 (32.77)	.285	.906	.980 (24.89)	1.140	.562-24 UNEF	.297	.170
13 1/	.770	.640 .628	.471 .461	.415 .403	1.290 (32.77)	.285	1.085	.995 (25.27)	1.140	.625-24 UNEF	.297	.170
15 2/	.910	.765 .753	.575 .564	.497 .485	1.368 (34.75)	.285	1.093	1.160 (29.46)	1.360	.750-20 UNEF	.422	.235
17	1.035	.890 .878	.700 .690	.616 .604	1.430 (36.32)	.285	1.187	1.260 (32.00)	1.520	.875-20 UNEF	.547	.295
16	1.035	.890 .878	.700 .690	.616 .604	1.587 (40.31)	.440	1.275	1.260 (32.00)	1.520	.875-20 UNEF	.547	.295
18	1.170	1.015 1.003	.817 .807	.735 .725	1.695 (43.05)	.440	1.475	1.455 (36.96)	1.600	1.000-20 UNEF	.610	.325
20	1.300	1.140 1.128	.953 .943	.875 .865	1.695 (43.05)	.440	1.500	1.580 (40.13)	1.890	1.125-18 UNEF	.735	.380
22	1.420	1.265 1.255	1.083 1.073	.983 .973	1.695 (43.05)	.440	1.710	1.580 (40.13)	1.890	1.250-18 UNEF	.735	.380
24	1.535	1.390 1.378	1.190 1.180	1.095 1.085	1.931 (49.05)	.440	1.719	1.890 (48.01)	2.145	1.375-18 UNEF	.922	.500
28	1.800	1.640 1.628	1.410 1.400	1.255 1.245	1.931 (49.05)	.440	2.040	1.890 (48.01)	2.145	1.625-18 UNEF	.922	.500
32	2.035	1.890 1.878	1.664 1.654	1.525 1.515	1.869 (47.47)	.440	2.332	2.215 (56.26)	2.550	1.875-16 UN	1.235	.705
36	2.270	2.140 2.128	1.875 1.862	1.760 1.750	1.869 (47.47)	.440	2.312	2.405 (61.09)	2.889	2.125-16 UN	1.360	.725
40	2.780	2.395 2.385	2.208 2.198	2.020 1.865	2.875 (73.03)	.459	2.950	2.781 (70.64)	3.500	2.375-16 UN	1.630	.911

1/ Shell size 13 fits connector sizes 12 and 13.
2/ Shell sizes 14 and 15 fit connector sizes 14 and 16.
3/ "Cable entry" dimension is defined as the envelope area for the wire bundle. This dimension is not intended to define the clamp hardware limits.

Figure 11. M83723-35 Non-Environmental Backshell (Sheet 4 of 4)

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY



NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

Figure 12. M83723-51 Non-Environmental Backshell (Sheet 1 of 2)

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

DIMENSIONS

MIL-C-83723 Series II Shell Size	A Thread Class 2B	B Max.	C Max.	F Max.
08	7/16-28UNEF	.578 .547	.450 .440	.937
10	1/2-28UNEF	.641 .609	.513 .503	.937
11	9/16-24UNEF	.703 .679	.575 .565	.937
13	5/8-24UNEF	.766 .734	.640 .628	.937
12	5/8-24UNEF	.766 .734	.640 .628	.937
15	3/4-20UNEF	.891 .859	.765 .753	.937
14	3/4-20UNEF	.891 .859	.765 .753	.937
17	7/8-20UNEF	1.016 .984	.890 .878	1.093
16	7/8-20UNEF	1.016 .984	.890 .878	1.093
18	1-20UNEF	1.141 1.109	1.015 1.003	1.093
20	1 1/8-18UNEF	1.265 1.234	1.140 1.128	1.093
22	1 1/4-18UNEF	1.391 1.359	1.265 1.255	1.093
24	1 3/8-18UNEF	1.516 1.484	1.390 1.378	1.093
28	1 5/8-18UNEF	1.828 1.797	1.640 1.628	1.093
32	1 7/8-16UN	2.078 2.047	1.890 1.878	1.000
36	2 1/8-16UN	2.328 2.297	2.140 2.128	1.000
40	2 3/8-16UN	2.578 2.547	2.395 2.385	1.437

AN3054 NUT DIMENSIONS

(1) Dash No.	Cable Size	C Max.	D Thread Class 2A	E Max. 90°	E Max. 45°	G Max. 90°	G Max. 45°
-4	.312	.880	5/8-24UNEF	.7	.6	1.23 1.17	1.21 1.15
-6	.438	1.078	3/4-20UNEF	.8	.7	1.35 1.29	1.28 1.22
-8	.562	1.125	7/8-20UNEF	.8	.7	1.37 1.31	1.34 1.28
-10	.625	1.250	1-20UNEF	.9	.8	1.69 1.63	1.68 1.62
-12	.750	1.437	1 3/16-18UNEF	1.1	.9	1.78 1.72	1.79 1.73
-16	.938	1.687	1 7/16-18UNEF	1.2	1.1	1.96 1.90	1.98 1.92
-20	1.250	2.000	1 3/4-18UNS	1.4	1.2	2.06 2.00	2.12 2.06
-24	1.375	2.250	2-18UNS	1.5	1.3	2.23 2.17	2.18 2.12
-28	1.625	2.500	2 1/4-16UNS	1.9	1.4	2.48 2.42	2.28 2.22
-32	1.825	2.750	2 1/2-16UN	2.1	1.4	2.45 2.39	2.37 2.31

(1) TO MATE WITH CORRESPONDING DASH NO.S OF AN3054 NUT

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

Figure 12. M83723-51 Non-Environmental Backshell (Sheet 2 of 2)

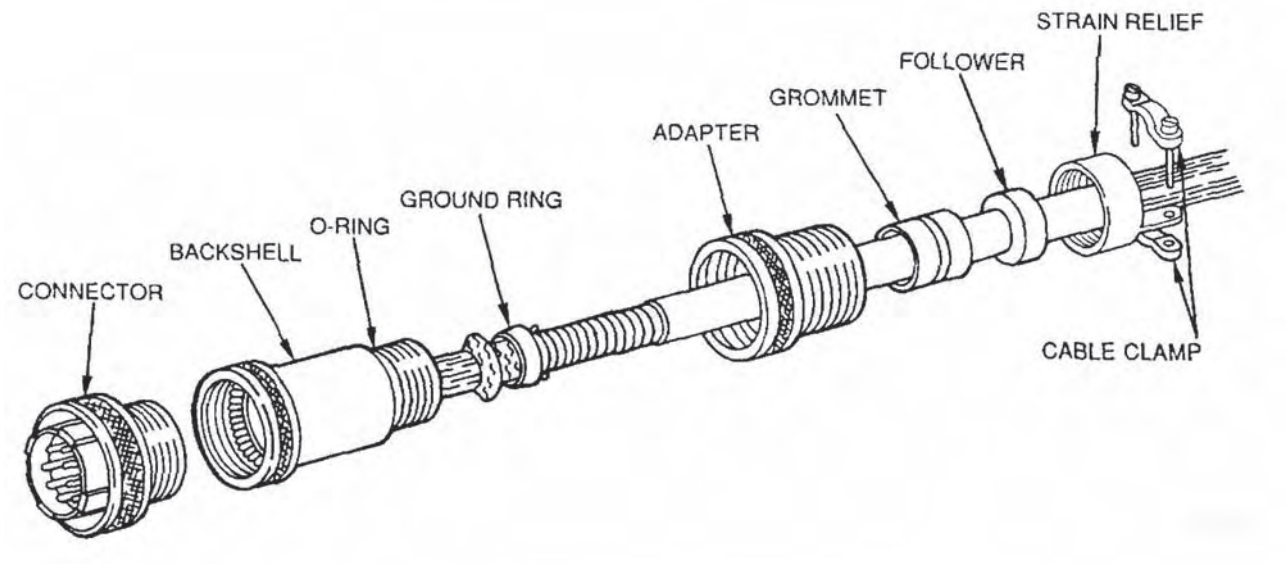
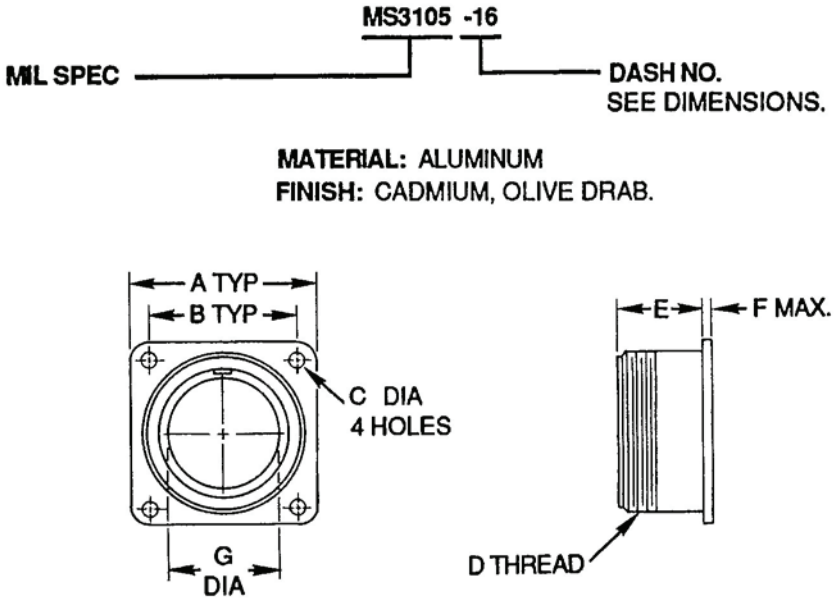


Figure 13. Typical Environmental EMI-RFI Backshells



DIMENSIONS

MS3105 Dash No. (Note 1)	A ±.031	B ±.005	C +.010 -.005	D	E +.031 -.000	F	G ±.031	Supersedes NAS1196 (Note 2)
-8S	.875	.594	.120	1/2-28	.562	.156	.252	-1X
-10S	1.000	.719	.120	5/8-24	.562	.156	.323	-2X
-12S	1.094	.812	.120	3/4-20	.562	.156	.450	-3X
-12	1.094	.812	.120	3/4-20	.750	.156	.450	-6X
-14S	1.188	.906	.120	7/8-20	.562	.156	.526	-4X
-14	1.188	.906	.120	7/8-20	.750	.156	.526	-7X
-16	1.281	.969	.120	1-20	.562	.156	.646	-5X
-16	1.281	.969	.120	1-20	.750	.156	.646	-8X
-18	1.375	1.062	.120	1 1/8-18	.750	.203	.771	-9X
-20	1.500	1.156	.120	1 1/4-18	.750	.203	.927	-10X
-22	1.625	1.250	.120	1 3/8-18	.750	.203	1.021	-11X
-24	1.750	1.375	.147	1 1/2-18	.812	.203	1.150	-12X
-28	2.000	1.562	.147	1 3/4-18	.812	.203	1.365	-13X
-32	2.250	1.750	.173	2-18	.875	.359	1.620	-14X
-36	2.500	1.938	.173	2 1/4-16	.875	.359	1.833	-15X
-40	2.750	2.188	.173	2 1/2-16	.875	.359	2.052	-16X
-44	3.000	2.375	.173	2 3/4-16	.875	.359	2.302	-17X
-48	3.250	2.625	.173	3-16	.875	.359	2.552	-18X

NOTES:
1. THE DASH NUMBER ALSO INDICATES SHELL SIZE.
2. NAS1196 IS INACTIVE FOR NEW DESIGN, USE MS3105 PART NUMBERS.

Figure 14. MS3105 Dummy Receptacle

PART NUMBER DESIGNATION

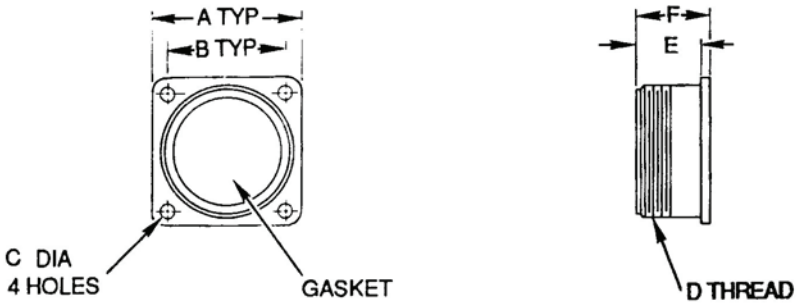
NAS1196 -12 X

MIL SPEC

DASH NO.
SEE DIMENSIONS.

GASKET
BLANK WITH GASKET.
X NO GASKET.

MATERIAL RECEPTACLE-ALUMINUM
GASKET-SILICONE



DIMENSIONS

NAS1196 Dash No.	Shell Size	A ±.031	B ±.005	C ±.005	D Thread	E Max.	F Max.
-1	8S	.875	.594	.120	1/2-28	.156	.749
-2	10SL	1.000	.719	.120	5/8-24	.156	.749
-3	12S	1.094	.812	.120	3/4-20	.156	.749
-4	14S	1.188	.906	.120	7/8-20	.156	.749
-5	16S	1.281	.969	.120	1-20	.156	.749
-6	12	1.094	.812	.120	3/4-20	.156	.937
-7	14	1.188	.906	.120	7/8-20	.156	.937
-8	16	1.281	.969	.120	1-20	.156	.937
-9	18	1.375	1.062	.120	1 1/8-18	.203	.984
-10	20	1.500	1.156	.120	1 1/4-18	.203	.984
-11	22	1.625	1.250	.120	1 3/8-18	.203	.984
-12	24	1.750	1.375	.147	1 1/2-18	.203	1.046
-13	28	2.000	1.562	.147	1 3/4-18	.203	1.046
-14	32	2.250	1.750	.173	2-18	.359	1.265
-15	36	2.500	1.938	.173	2 1/4-16	.359	1.265
-16	40	2.750	2.188	.173	2 1/2-16	.359	1.265
-17	44	3.000	2.375	.173	2 3/4-16	.359	1.265
-18	48	3.250	2.625	.173	3-16	.359	1.265

Figure 15. NAS1196 Dummy Receptacle

PART NUMBER DESIGNATION

M83723/ 61 -1 10 A

BASIC SPECIFICATION

DETAIL

DASH NUMBER

SHELL SIZE (See Dimensions Table)

MATERIAL AND FINISH

Dummy Connector:

R – Aluminum Alloy, Electroless Nickel, Conductive Finish, 200° C (Not for Navy Use)

A – Aluminum Alloy, Black Anodize, 200° C

Gasket:

Fluorosilicone, bonded or mechanically retained in the receptacle

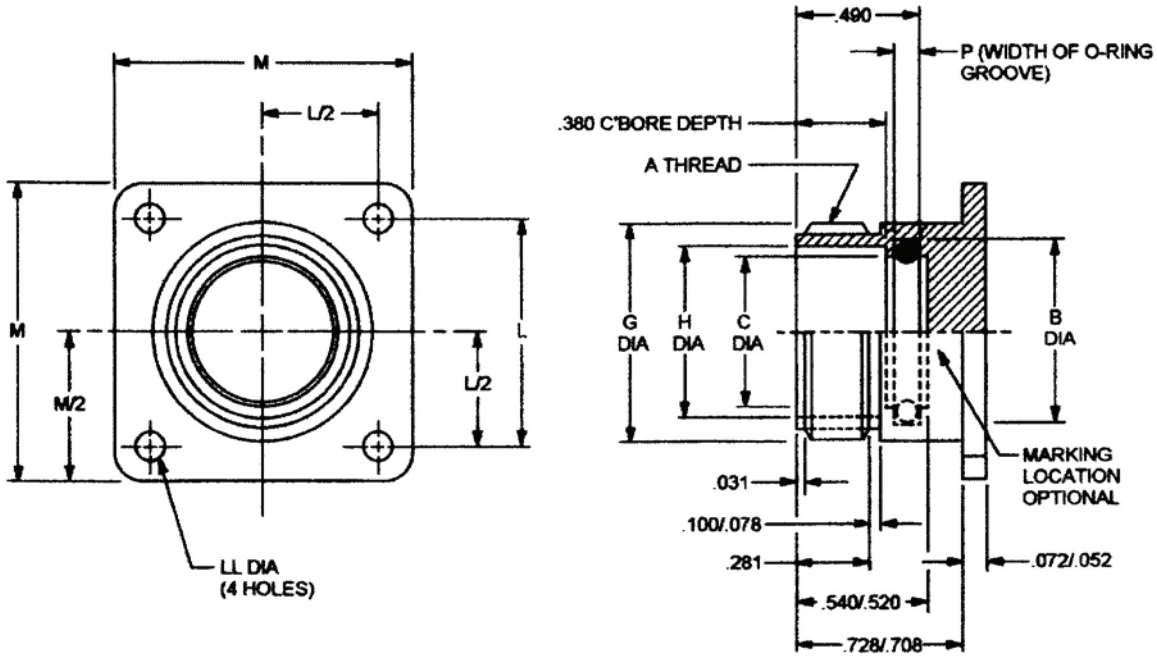


Figure 16. M83723-61-1 Dummy Receptacle (Sheet 1 of 2)

DIMENSIONS

Shell size	A UNEF-2A coupling thread	B dia ± .005	C dia + .005 - .000	G dia (max.)	H dia +.005 -.000	L ℄ - ℄ mtg. hole	LL dia mtg. hole +.000 -.009	M Length side	P + .000 - .005
8	.5625-24 (14.29)	.505 (12.83)	.428 (10.87)	.561 (14.25)	.475 (12.07)	.594 (15.09)	.125 (3.18)	.812 (20.62)	.076 (1.93)
10	.6875-24 (17.46)	.636 (16.15)	.530 (13.46)	.696 (17.68)	.576 (14.63)	.719 (18.26)	.125 (3.18)	.937 (23.80)	.089 (2.26)
12	.875-20 (22.23)	.806 (20.47)	.700 (17.78)	.875 (22.23)	.746 (18.95)	.812 (20.62)	.125 (3.18)	1.031 (26.19)	.089 (2.26)
14	.9375-20 (23.81)	.875 (22.23)	.769 (20.22)	.935 (23.75)	.815 (20.70)	.906 (23.01)	.125 (3.18)	1.125 (28.58)	.089 (2.26)
16	1.0625-18 (26.99)	1.002 (25.45)	.896 (22.76)	1.062 (26.97)	.942 (23.93)	.969 (24.61)	.125 (3.18)	1.250 (31.75)	.089 (2.26)
18	1.1875-18 (30.16)	1.108 (28.14)	1.002 (25.45)	1.187 (30.15)	1.048 (26.62)	1.062 (26.97)	.125 (3.18)	1.343 (34.11)	.089 (2.26)
20	1.3125-18 (33.34)	1.233 (31.32)	1.127 (28.63)	1.312 (33.32)	1.171 (29.74)	1.156 (29.36)	.125 (3.18)	1.437 (36.50	.089 (2.26)
22	1.4375-18 (36.51)	1.358 (34.49)	1.252 (31.80)	1.437 (36.50)	1.297 (32.94)	1.250 (31.75)	.125 (3.18)	1.562 (39.67)	.089 (2.26)
24	1.5625-18 (39.67)	1.483 (37.67)	1.377 (34.98)	1.562 (39.67)	1.420 (36.07)	1.375 (34.93)	.154 (3.91)	1.703 (43.26)	.089 (2.26)

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Metric equivalents are in parentheses.

SUPERSESSION DATA

Superseding PIN M83723/61-2	Superseded PIN MS27297
8AR	7
10AR	1
12AR	2
14AR	3
16AR	4
18AR	5
20AR	8
22AR	6
24AR	9

Figure 16. M83723-61-1 Dummy Receptacle (Sheet 1 of 2)

PART NUMBER DESIGNATION

M83723/ 61 -2 14 R

BASIC SPECIFICATION

DETAIL

DASH NUMBER

SHELL SIZE (See Dimensions Table)

MATERIAL AND FINISH

Dummy Connector:

R – Aluminum Alloy, Electroless Nickel, Conductive Finish, 200° C (Not for Navy Use)

A – Aluminum Alloy, Black Anodize, 200° C

Gasket:

Fluorosilicone, bonded or mechanically retained in the receptacle

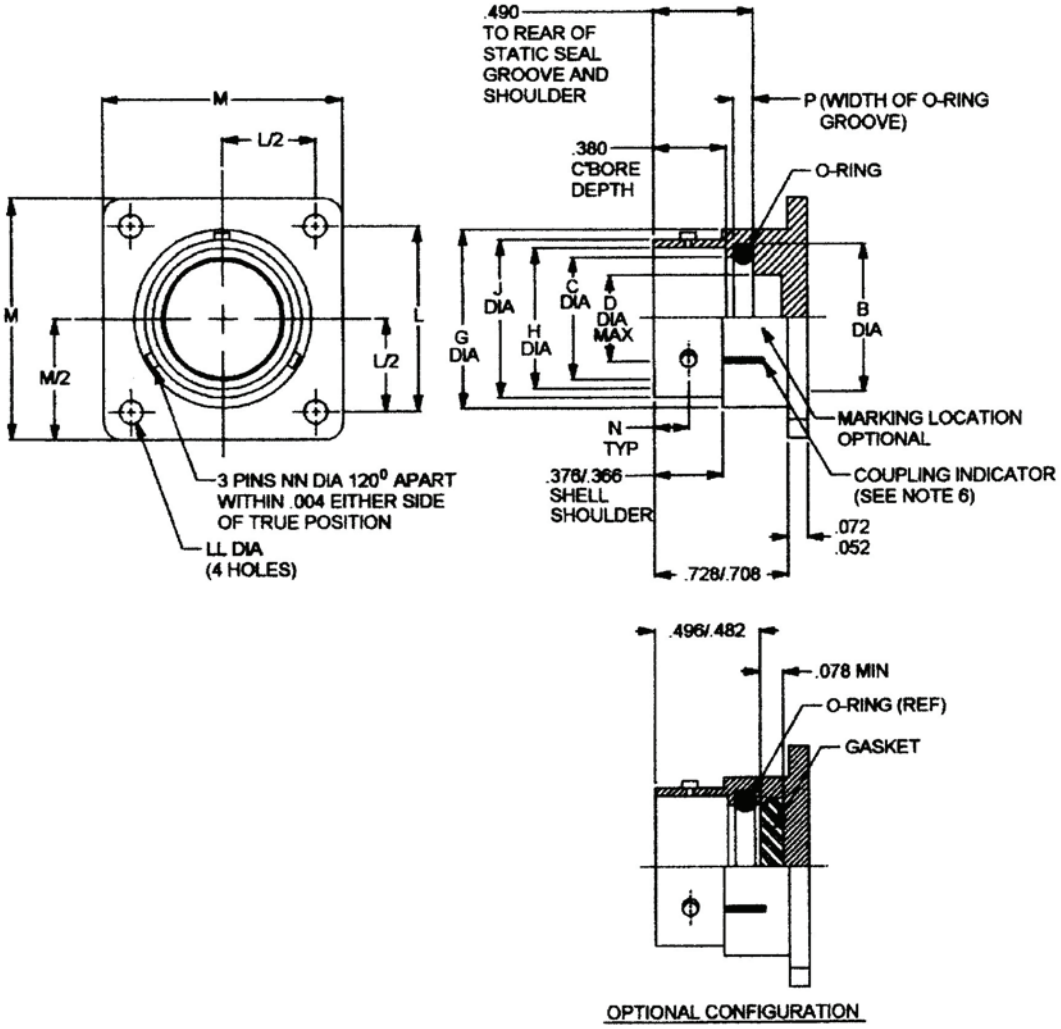


Figure 17. M83723-61-2 Dummy Receptacle (Sheet1 of 3)

DIMENSIONS

Shell size	B dia ± .005	C dia +.005 -.000	D dia (max)	G dia (max)	H dia +.005 -.000	J dia +.000 -.005	L ℄ - ℄ mounting hole
8	.508 (12.83)	.428 (10.87)	.352 (8.94)	.561 (14.25)	.475 (12.07)	.536 (13.61)	.594 (15.09)
10	.636 (16.15)	.530 (13.46)	.428 (10.87)	.696 (17.68)	.576 (14.63)	.659 (16.74)	.719 (18.26)
12	.806 (20.47)	.700 (17.78)	.598 (15.19)	.875 (22.23)	.746 (18.95)	.829 (21.06)	.812 (20.62)
14	.875 (22.23)	.769 (20.22)	.667 (16.94)	.935 (23.75)	.815 (20.70)	.898 (22.81)	.906 (23.01)
16	1.002 (25.45)	.869 (22.76)	.794 (20.17)	1.062 (26.97)	.942 (23.93)	1.025 (26.04)	.969 (24.61)
18	1.108 (28.14)	1.002 (25.45)	.900 (22.86)	1.187 (30.15)	1.048 (26.62)	1.131 (28.73)	1.062 (26.97)
20	1.233 (31.32)	1.127 (28.63)	1.025 (26.03)	1.312 (33.32)	1.171 (29.74)	1.256 (31.90)	1.156 (29.36)
22	1.358 (34.49)	1.252 (31.80)	1.150 (29.21)	1.437 (36.50)	1.297 (32.94)	1.381 (35.08)	1.250 (31.75)
24	1.483 (37.67)	1.377 (34.98)	1.275 (32.38)	1.562 (39.67)	1.420 (36.07)	1.506 (38.25)	1.375 (34.93)

Shell size	LL dia. Mounting hole +.000 / -.009	M length side	N +.000 -.004	NN dia +.000 -.003	P +.000 -.005
8	.125 (3.18)	.812 (20.62)	.101 (2.57)	.078 (1.98)	.076 (1.93)
10	.125 (3.18)	.937 (23.80)	.094 (2.39)	.093 (2.36)	.089 (2.26)
12	.125 (3.18)	1.031 (26.19)	.094 (2.39)	.093 (2.36)	.089 (2.26)
14	.125 (3.18)	1.125 (28.58)	.094 (2.39)	.093 (2.36)	.089 (2.26)
16	.125 (3.18)	1.250 (31.75)	.094 (2.39)	.093 (2.36)	.089 (2.26)
18	.125 (3.18)	1.343 (34.11)	.094 (2.39)	.093 (2.36)	.089 (2.26)
20	.125 (3.18)	1.437 (36.50)	.094 (2.39)	.093 (2.36)	.089 (2.26)
22	.125 (3.18)	1.562 (39.67)	.094 (2.39)	.093 (2.36)	.089 (2.26)
24	.154 (3.91)	1.703 (43.26)	.094 (2.39)	.093 (2.36)	.089 (2.26)

Figure 17. M83723-61-2 Dummy Receptacle (Sheet12 of 3)

SUPERSESSION DATA

Superseding PIN M83723/61-2	Superseded PIN MS27297
8AR	7
10AR	1
12AR	2
14AR	3
16AR	4
18AR	5
20AR	8
22AR	6
24AR	9

Figure 17. M83723-61-2 Dummy Receptacle (Sheet3 of 3)

PART NUMBER DESIGNATION

MS3180 -12 C A L

MILITARY DESIGNATION

DETAIL SHEET
(See Dimension Table)

TERMINATION TYPE
C – SASH CHAIN
R – WIRE ROPE

FINISH
A – Anodic, Hard, Non-Conductive

LENGTH
L - 5 inches
BLANK – For Standard Lengths (See Column "H" in Dimension Table)

MATERIAL:
Dummy Receptacle - Aluminum alloy.
Gasket – Synthetic Rubber (Meets MIL-STD-417), or Silicone Elastomer.
Chain – Stainless Steel, passivate as per RR-C-271, Type II, class 3, .030 maximum thickness.
Fasteners – Stainless Steel, passivate

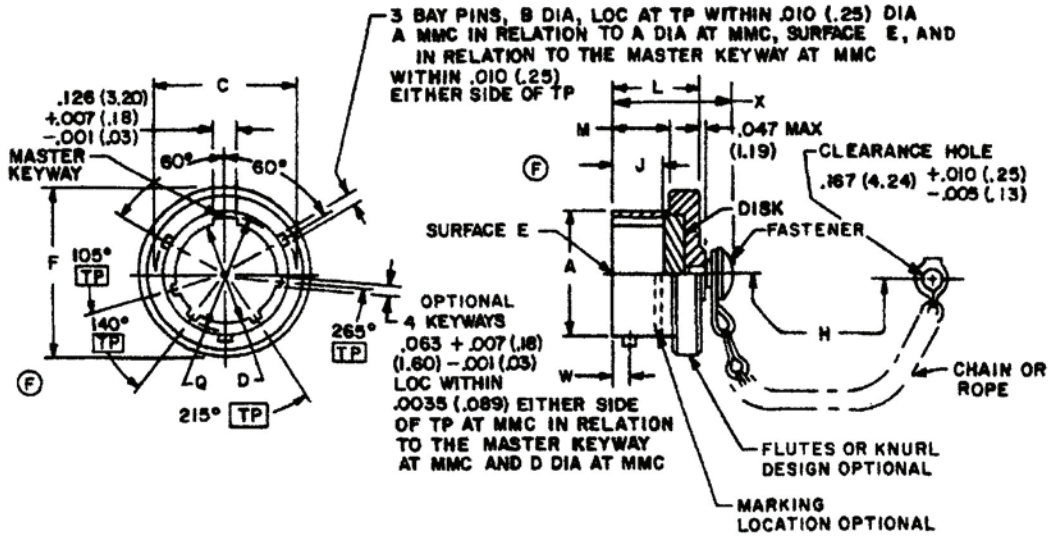


Figure 18. Dust Cap MS3180 (Sheet 1 of 2)

DIMENSIONS

DASH NO. (WITH CHAIN)	DASH NO. (WITH ROPE)	A +.001 (.03) -.005 (.13) DIA	B +.006 (.15) -.002 (.05) DIA BAY PIN	C +.000 (.00) -.016 (.41) DIA OVER BAY PINS	D +.005 (.13) -.001 (.03) DIA	F MAX DIA OVERALL	H +.500 (12.70) -.250 (6.35) STD. CHAIN/ ROPE LENGTH	J +.010 (.25) -.020 (.51) DISK LOC.	L MAX LENGTH	M +.031 (.25) -.000 (.00) SHLDR LOC.	Q +.005 (.13) -.006 (.15) DIA OVER KWYS	W BAY PIN LOC.	X MAX LENGTH OVERALL
-8C	-8R	.473 (12.01)		.563 (14.30)	.362 (9.19)	.719 (18.26)	3.000 (76.20)				.412 (10.46)		
-10C	-10R	.590 (14.99)		.680 (17.27)	.490 (12.45)	.844 (21.44)					.540 (13.72)		
-12C	-12R	.750 (19.05)		.859 (21.82)	.607 (15.42)	1.000 (25.40)		.328 (8.33)	.562 (14.27)	.368 (9.35)	.689 (17.50)		
-14C	-14R	.875 (22.22)		.984 (24.99)	.732 (18.59)	1.125 (28.58)					.814 (20.68)		
-16C	-16R	1.000 (25.40)	.078 (1.98)	1.108 (28.14)	.857 (21.77)	1.250 (31.75)	3.500 (88.90)				.939 (23.85)	.100 (2.54)	
-18C	-18R	1.125 (28.58)		1.233 (31.32)	.962 (24.43)	1.375 (34.92)					1.039 (26.39)		.781 (19.84)
-20C	-20R	1.250 (31.75)		1.358 (34.49)	1.087 (27.61)	1.500 (38.10)					1.164 (29.57)		
-22C	-22R	1.375 (34.92)		1.483 (37.67)	1.212 (30.78)	1.625 (41.28)	4.000 (101.60)	.390 (9.91)	.625 (15.88)	.430 (10.92)	1.289 (32.74)		.844 (21.44)
-24C	-24R	1.500 (38.10)	.125 (3.18)	1.610 (40.89)	1.337 (33.96)	1.750 (44.45)			.658 (16.71)	.463 (11.76)	1.414 (35.92)	.109 (2.77)	.875 (22.22)

NOTES:

1. Dimensions are in inches (Metric equivalents are in parenthesis).
2. Dimensions are after plating.
3 Meets fluid resistance as per MIL-C-26482.
4. Intermateability dimensions per MIL-C-26482.

Figure 18. Dust Cap MS3180 (Sheet 2 of 2)

PART NUMBER DESIGNATION

MS3181 -12 C A L

MILITARY DESIGNATION

DETAIL SHEET
(See Dimension Table)

TERMINATION TYPE
C – SASH CHAIN
N – SASH CHAIN WITH RING
R – WIRE ROPE

FINISH
A – Anodic, Hard, Non-Conductive

LENGTH
L - 5 inches
BLANK – For Standard Lengths (See Column "H" in Dimension Table)

MATERIAL:
Dummy Receptacle - Aluminum alloy.
Gasket – Synthetic Rubber (Meets MIL-STD-417), or Silicone Elastomer.
Chain – Stainless Steel, passivate as per RR-C-271, Type II, class 3, .030 maximum thickness.
Fasteners – Stainless Steel, passivate

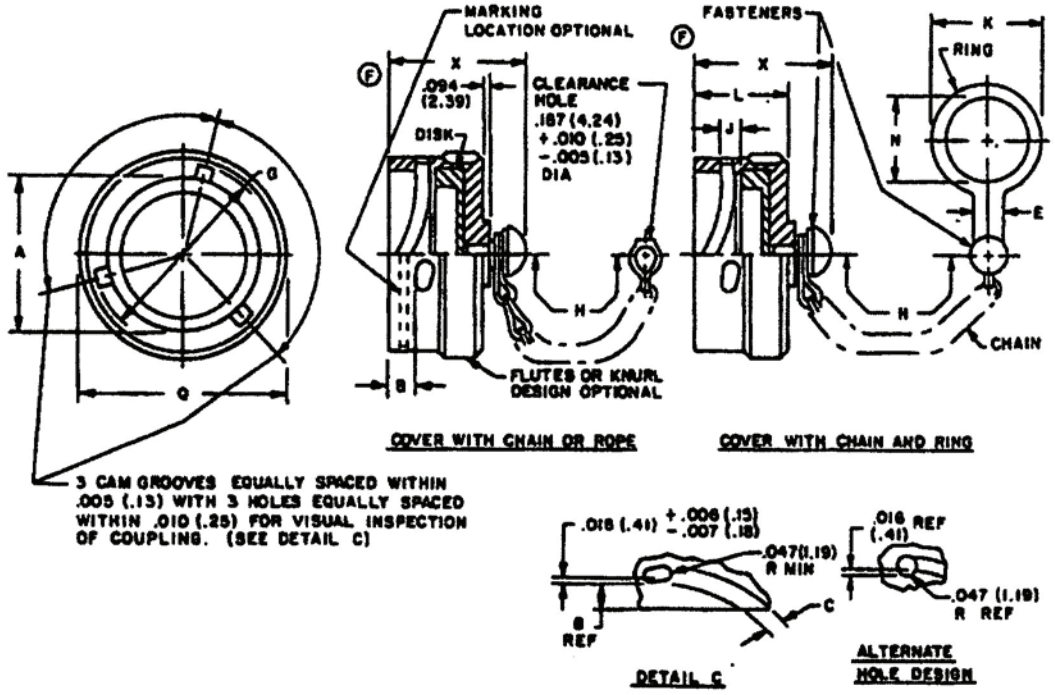


Figure 19. Dust Cap MS3181 (Sheet 1 of 3)

DIMENSIONS

DASH NO. (WITH CHAIN)	DASH NO. (WITH CHAIN AND RING)	DASH NO. (WITH ROPE)	A +.005 (.13) -.001 (.03) ID	B MAX BAY LOCK LOC.	C +.016 (.41) -.001 (.03) BAY GROOVE WIDTH	G +.005 (.13) -.006 (.15) ID SLOTS	H +.500 (12.70) -.250 (6.35) STD. CHAIN/ ROPE LENGTH	J +.010 (.25) -.015 (.38) DISK LOC.	L MAX LENGTH	N MIN ID RING	Q MAX DIA OVERALL	K RING O.D. MAX	E RING THROAT MIN	I MAX LENGTH OVERALL
-2C	-2CN	-2CR	.481 (12.221) .502 (12.75)	.087 (2.21) .149 (3.78)	.117 (3.48) .060 (2.29) .089/.153 (2.26)/(3.89)	.576 (14.63) .697 (17.70) .871 (22.12)	1.000 (76.00)	.187 (3.73) .115 (2.92)	.802 (15.29) .562 (14.27)	.578 (14.68) .700 (17.78) .871 (22.12)	.734 (18.64) .859 (21.82) 1.000 (25.40)	.812 (20.62) 1.000 (25.40) 1.188 (30.18)	.234 (5.94)	.875 (22.22) .875 (22.22)
-3C	-3CN	-3CR	.606 (15.39) .731 (18.57) .856 (21.74)				2.500 (63.50)							
-4C	-4CN	-4CR	.731 (18.57) .856 (21.74) 1.000 (25.40)				3.000 (76.20)							
-5C	-5CN	-5CR	.856 (21.74) 1.000 (25.40) 1.125 (28.58)				4.000 (101.60)							
-6C	-6CN	-6CR	1.000 (25.40) 1.125 (28.58) 1.250 (31.75)											
-7C	-7CN	-7CR	1.125 (28.58) 1.250 (31.75) 1.375 (34.93)											
-8C	-8CN	-8CR	1.250 (31.75) 1.375 (34.93) 1.500 (38.10)											
-10C	-10CN	-10CR	1.500 (38.10) 1.625 (41.28) 1.750 (44.45)											
-12C	-12CN	-12CR	1.750 (44.45) 1.875 (47.63) 2.000 (50.80)											
-14C	-14CN	-14CR	2.000 (50.80) 2.125 (53.98) 2.250 (57.15)											
-16C	-16CN	-16CR	2.250 (57.15) 2.375 (60.33) 2.500 (63.50)											
-20C	-20CN	-20CR	2.500 (63.50) 2.625 (66.68) 2.750 (69.85)											
-24C	-24CN	-24CR	2.750 (69.85) 2.875 (73.03) 3.000 (76.20)											

Figure 19. Dust Cap MS3181 (Sheet 2 of 3)

NOTES:

1. Dimensions are in inches (Metric equivalents are in parenthesis).
2. Dimensions are after plating.
3 Meets fluid resistance as per MIL-C-26482.

Figure 19. Dust Cap MS3181 (Sheet 3 of 3)

PART NUMBER DESIGNATION

M83723/ 59 -1 10 A C

BASIC SPECIFICATION

DETAIL

DASH NUMBER

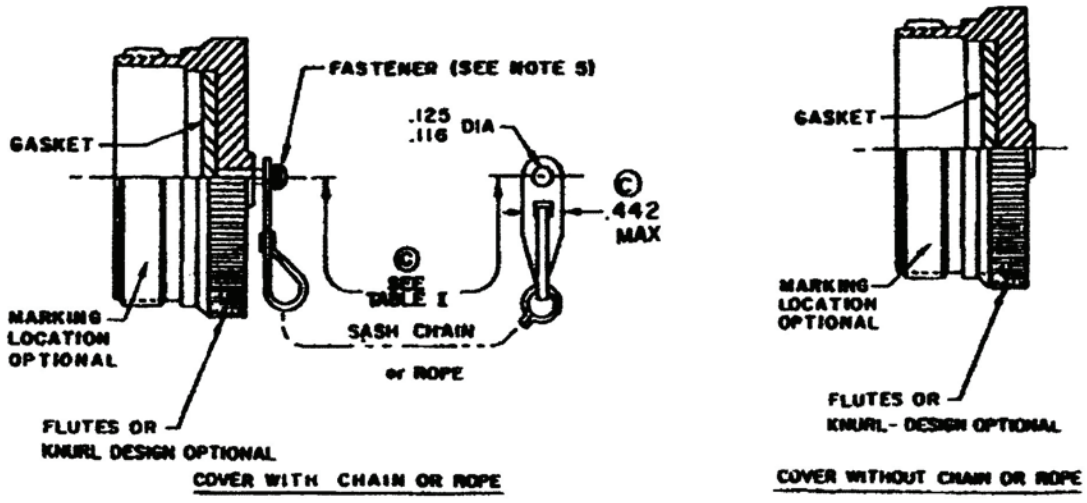
SHELL SIZE
(See Shell Size Table)

FINISH AND MATERIAL
(See Finish Code and Material)

TERMINATION STYLE
C – Chain, with chain length of 5.0" + .25"
N – With Chain
R – Rope, with rope length of 5.0" + .25"
P – Chain, with chain length of 8.0" + .25"
T – Rope, with rope length of 8.0" + .25"

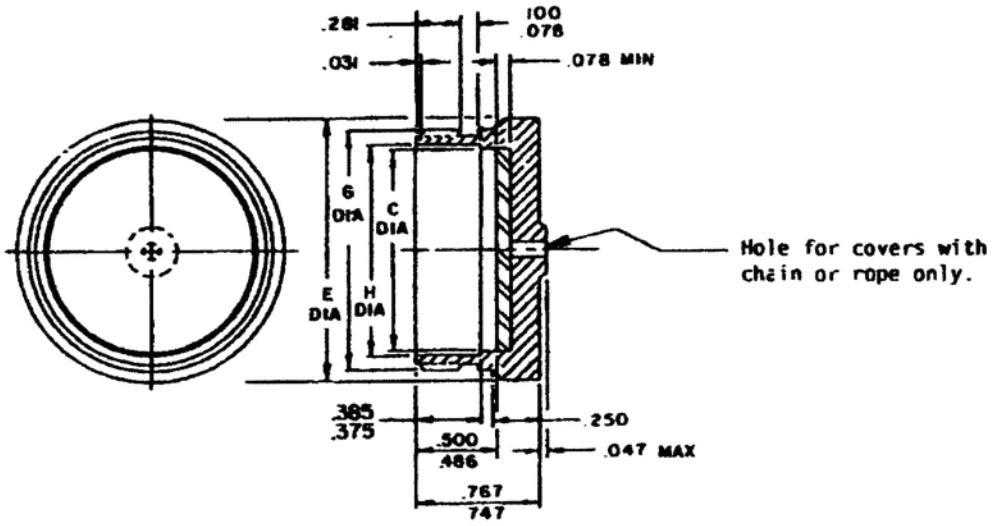
FINISH CODES:
Blank – Hard Anodize
A – Non-Conductive Anodize
R – Conductive Electroless Nickel (Not for Navy Use)

MATERIAL:
COVER: ALUMINUM ALLOY
DISK: NON-CORROSIVE SILICONE, OR FLUOROSILICONE ELASTOMETER.
SASH CHAIN: STAINLESS STEEL, PASSIVATED (AS PER RR-C-271)
FASTENER: STAINLESS STEEL, PASSIVATED.
ROPE: INSULATED, BRAIDED OR STRANDED STEEL WIRE
RING: STAINLESS STEEL, PASSIVATED
GASKET: FLUOROSILICONE



NOTE: INACTIVE FOR NEW DESIGN

Figure 20. M83723-59-1 Dust Cap (Sheet 1 of 3)



NOTE: INACTIVE FOR NEW DESIGN

SHELL SIZE

Shell size	A UNEF-2A coupling thread	C Dia. +.005 -.000	E Dia. max.	G Dia. max.	H Dia. max.
8	.5625-24 (14.29)	.428 (10.87)	.766 (19.46)	.561 (14.25)	.475 (12.07)
10	.6875-24 (17.46)	.530 (13.46)	.906 (23.01)	.696 (17.68)	.576 (14.63)
12	.875-20 (22.23)	.700 (17.78)	1.078 (27.38)	.875 (22.23)	.746 (18.95)
14	.9375-20 (23.81)	.769 (20.22)	1.141 (28.98)	.935 (23.75)	.815 (20.70)
16	1.0626-18 (26.99)	.869 (22.76)	1.266 (32.16)	1.062 (26.97)	.942 (23.93)
18	1.1875-18 (30.16)	1.002 (25.45)	1.375 (34.93)	1.187 (30.15)	1.048 (26.62)
20	1.3125-18 (33.34)	1.127 (28.63)	1.510 (38.35)	1.312 (33.32)	1.171 (29.74)
22	1.4375-18 (36.51)	1.252 (31.80)	1.625 (41.28)	1.437 (36.50)	1.297 (32.94)
24	1.5625-18 (39.67)	1.377 (34.98)	1.760 (44.70)	1.562 (39.67)	1.420 (36.07)

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only (in parenthesis).
3. Unless otherwise specified, tolerances shall be +.005".

Figure 20. M83723-59-1 Dust Cap (Sheet 2 of 3)

SUPERSESSION DATA

Superseding part number M83723/59-1	Superseded part number MS27292-
8AR	7
10AR	1
12AR	2
14AR	3
16AR	4
18AR	5
20AR	8
22AR	6
24AR	9

Figure 20. M83723-59-1 Dust Cap (Sheet 3 of 3)

PART NUMBER DESIGNATION

M83723/ 59 -2 10 A C

BASIC SPECIFICATION

DETAIL

DASH NUMBER

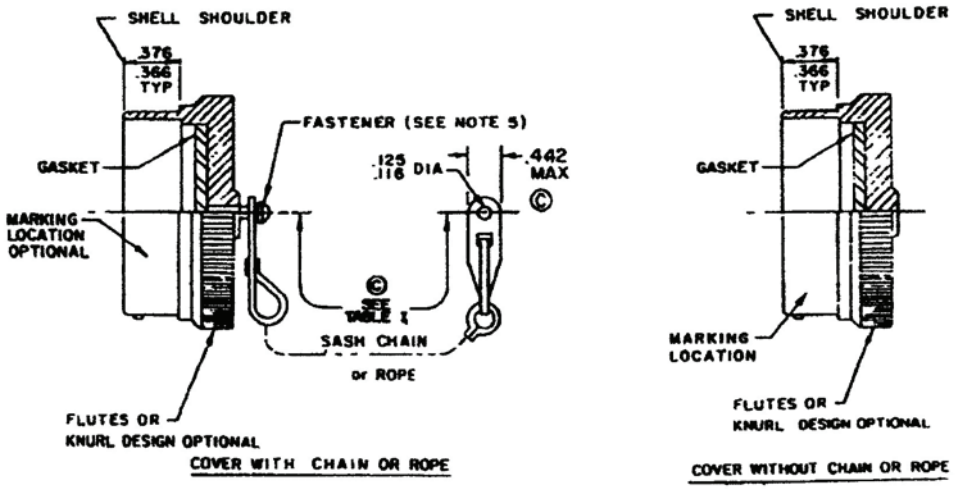
SHELL SIZE
(See Shell Size Table)

FINISH AND MATERIAL
(See Finish Code and Material)

TERMINATION STYLE
C – Chain, with chain length of 5.0" + .25"
N – With Chain
R – Rope, with rope length of 5.0" + .25"
P – Chain, with chain length of 8.0" + .25"
T – Rope, with rope length of 8.0" + .25"

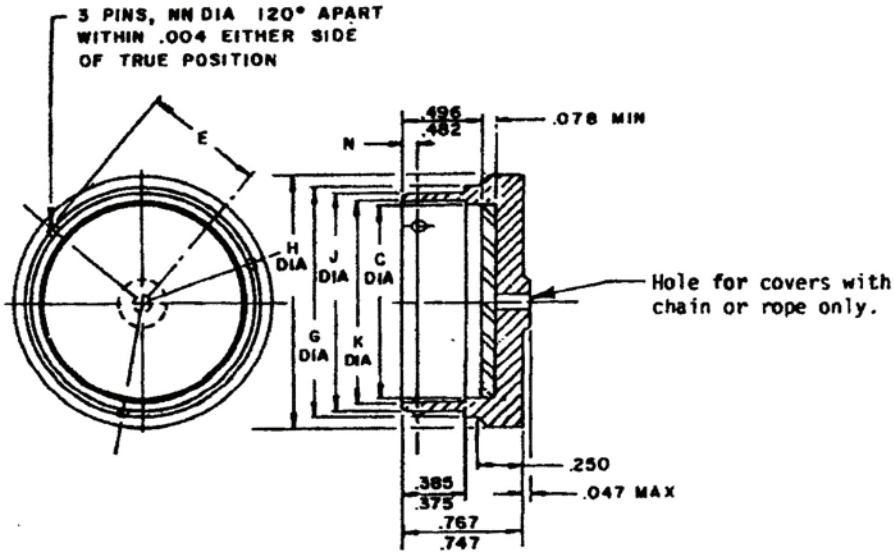
FINISH CODES:
Blank – Hard Anodize
A – Non-Conductive Anodize
R – Conductive Electroless Nickel (Not for Navy Use)

MATERIAL:
COVER: ALUMINUM ALLOY
DISK: NON-CORROSIVE SILICONE, OR FLUOROSILICONE ELASTOMETER.
SASH CHAIN: STAINLESS STEEL, PASSIVATED (AS PER RR-C-271)
FASTENER: STAINLESS STEEL, PASSIVATED.
ROPE: INSULATED, BRAIDED OR STRANDED STEEL WIRE
RING: STAINLESS STEEL, PASSIVATED
GASKET: FLUOROSILICONE



NOTE: INACTIVE FOR NEW DESIGN

Figure 21. M83723-59-2 Dust Cap (Sheet 1 of 3)



NOTE: INACTIVE FOR NEW DESIGN

SHELL SIZE

Shell size	C Dia. +.005 -.000	E +.000 -.009	G Dia. Max.	H Dia Max	J Dia +.000 -.005	K Dia +.005 -.000	N +.000 -.004	NN Dia +.000 -.003
8	.428 (10.87)	.310 (7.87)	.561 (14.25)	.766 (19.46)	.536 (13.61)	.475 (12.07)	.101 (2.57)	.078 (1.98)
10	.530 (13.46)	.374 (9.50)	.696 (17.68)	.906 (23.01)	.659 (16.74)	.576 (14.63)	.094 (2.39)	.093 (2.36)
12	.700 (17.78)	.459 (11.66)	.875 (22.23)	1.078 (27.38)	.829 (21.06)	.746 (18.95)	.094 (2.39)	.093 (2.36)
14	.769 (20.22)	.494 (12.55)	.935 (23.75)	1.141 (28.98)	.898 (22.81)	.815 (20.70)	.094 (2.39)	.093 (2.36)
16	.869 (22.76)	.557 (14.15)	1.062 (26.97)	1.266 (32.16)	1.025 (26.04)	.942 (23.93	.094 (2.39)	.093 (2.36)
18	1.002 (25.45)	.610 (15.49)	1.187 (30.15)	1.375 (34.93)	1.131 (28.73)	1.048 (26.62)	.094 (2.39)	.093 (2.36)
20	1.127 (28.63)	.673 (17.09)	1.312 (33.32)	1.510 (38.35)	1.256 (31.90)	1.171 (29.74)	.094 (2.39)	.093 (2.36)
22	1.252 (31.80)	.735 (18.67)	1.437 (36.50)	1.625 (41.28)	1.381 (35.08)	1.297 (32.94)	.094 (2.39)	.093 (2.36)
24	1.377 (34.98)	.798 (20.27)	1.562 (39.67)	1.760 (44.07)	1.506 (38.25)	1.420 (36.07)	.094 (2.39)	.093 (2.36)

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only (in parenthesis).
3. Unless otherwise specified, tolerances shall be +.005".

Figure 21. M83723-59-2 Dust Cap (Sheet 2 of 3)

SUPERSESSION DATA

Superseding part number M83723/59-2	Superseded part number MS27293-
8AR	7
10AR	1
12AR	2
14AR	3
16AR	4
18AR	5
20AR	8
22AR	6
24AR	9

Figure 21. M83723-59-2 Dust Cap (Sheet 3 of 3)

PART NUMBER DESIGNATION

M83723/ 60 -1 10 A C

BASIC SPECIFICATION

DETAIL

DASH NUMBER

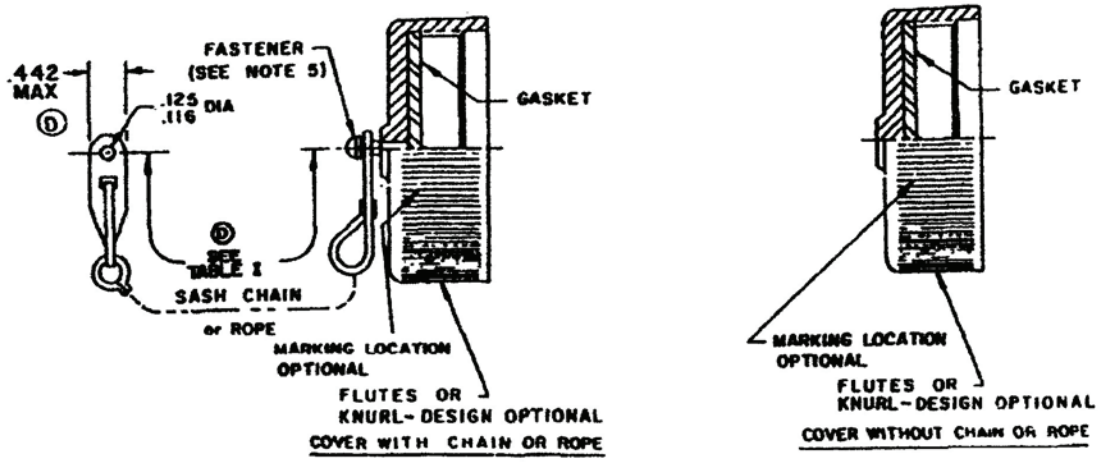
SHELL SIZE
(See Shell Size Table)

FINISH AND MATERIAL
(See Finish Code and Material)

TERMINATION STYLE
B – Chain, with chain length of 5.0" + .25"
N – With Chain
R – Rope, with rope length of 5.0" + .25"
P – Chain, with chain length of 8.0" + .25"
T – Rope, with rope length of 8.0" + .25"

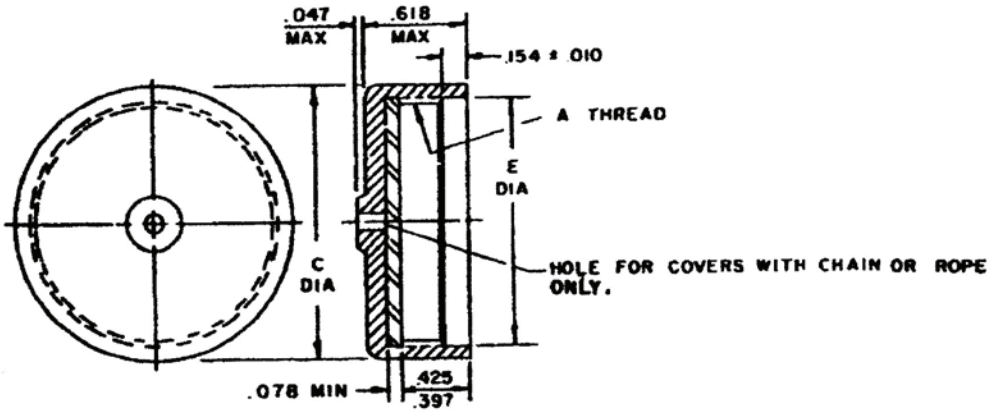
FINISH CODES:
Blank – Hard Anodize
A – Non-Conductive Anodize
R – Conductive Electroless Nickel (Not for Navy Use)

MATERIAL:
COVER: ALUMINUM ALLOY
DISK: NON-CORROSIVE SILICONE, OR FLUOROSILICONE ELASTOMETER.
SASH CHAIN: STAINLESS STEEL, PASSIVATED (AS PER RR-C-271)
FASTENER: STAINLESS STEEL, PASSIVATED.
ROPE: INSULATED, BRAIDED OR STRANDED STEEL WIRE
RING: STAINLESS STEEL, PASSIVATED
GASKET: FLUOROSILICONE



NOTE: INACTIVE FOR NEW DESIGN

Figure 22. M83723-60-1 Dust Cap (Sheet 1 of 3)



NOTE: INACTIVE FOR NEW DESIGN

SHELL SIZE

Shell size	A UNEF-2A coupling thread	C dia. max.	E dia. C' bore min
8	.5625-24 (14.29)	.776 (19.71)	.583 (14.81)
10	.6875-24 (17.46)	.906 (23.01)	.707 (17.96)
12	.875-20 (22.23)	1.078 (27.38)	.895 (22.73)
14	.9375-20 (23.81)	1.141 (28.98)	.957 (34.31)
16	1.0625-18 (26.99)	1.266 (32.16)	1.084 (27.53)
18	1.1875-18 (30.16)	1.375 (34.93)	1.209 (30.17)
20	1.3125-18 (33.34)	1.510 (38.35)	1.334 (33.88)
22	1.4375-18 (36.51)	1.625 (41.28)	1.459 (37.06)
24	1.5625-18 (39.67)	1.760 (44.70)	1.584 (40.23)

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only (in parenthesis).
3. Unless otherwise specified, tolerances shall be +.005".

Figure 22. M83723-60-1 Dust Cap (Sheet 2 of 3)

SUPERSESSION DATA

Superseding PIN M83723/60-1	Superseding PIN MS27294-
8AR	7
10AR	1
12AR	2
14AR	3
16AR	4
18AR	5
20AR	8
22AR	6
24AR	9

Figure 22. M83723-60-1 Dust Cap (Sheet 3 of 3)

PART NUMBER DESIGNATION

M83723/ 60 -2 10 A C

BASIC SPECIFICATION

DETAIL

DASH NUMBER

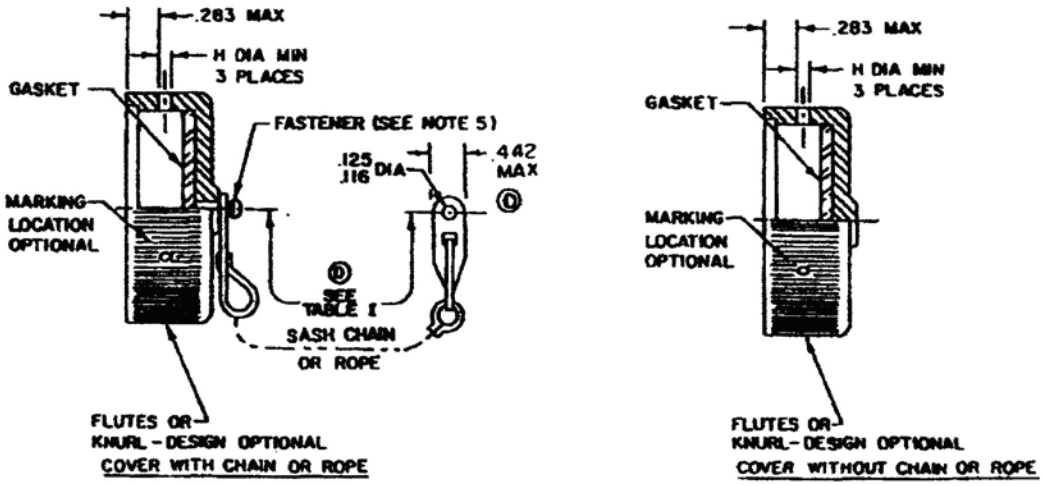
SHELL SIZE
(See Shell Size Table)

FINISH AND MATERIAL
(See Finish Code and Material)

TERMINATION STYLE
B – Chain, with chain length of 5.0" + .25"
N – With Chain
R – Rope, with rope length of 5.0" + .25"
P – Chain, with chain length of 8.0" + .25"
T – Rope, with rope length of 8.0" + .25"

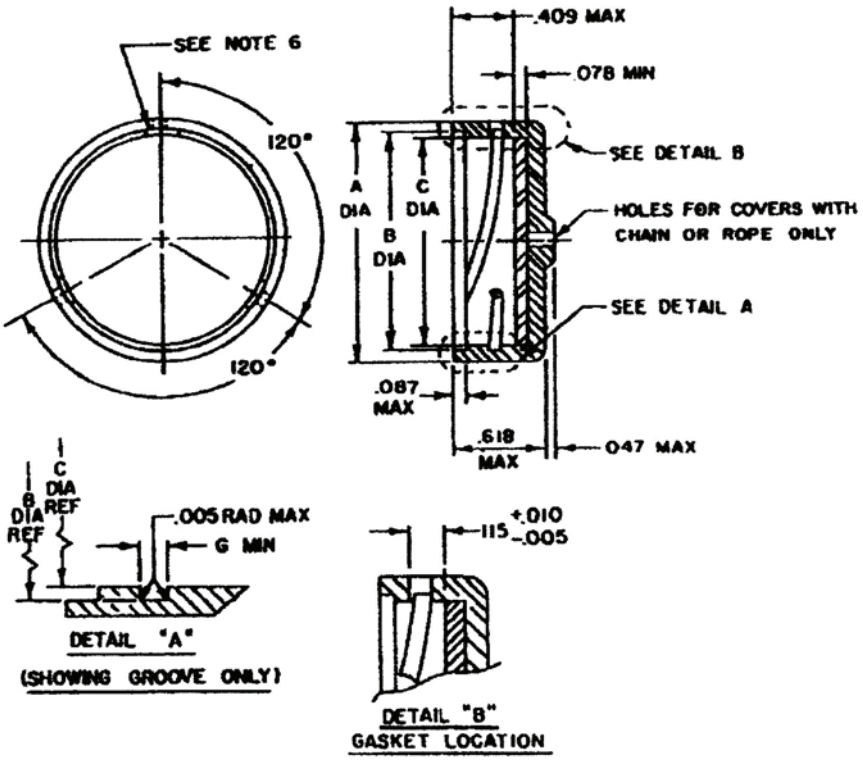
FINISH CODES:
Blank – Hard Anodize
A – Non-Conductive Anodize
R – Conductive Electroless Nickel (Not for Navy Use)

MATERIAL:
COVER: ALUMINUM ALLOY
DISK: NON-CORROSIVE SILICONE, OR FLUOROSILICONE ELASTOMETER.
SASH CHAIN: STAINLESS STEEL, PASSIVATED (AS PER RR-C-271)
FASTENER: STAINLESS STEEL, PASSIVATED.
ROPE: INSULATED, BRAIDED OR STRANDED STEEL WIRE
RING: STAINLESS STEEL, PASSIVATED
GASKET: FLUOROSILICONE



NOTE: INACTIVE FOR NEW DESIGN

Figure 23. M83723-60-2 Dust Cap (Sheet 1 of 3)



NOTE: INACTIVE FOR NEW DESIGN

SHELL SIZE

Shell size	A UNEF-2A coupling thread	C dia. max.	E dia. C' bore min
8	.5625-24 (14.29)	.776 (19.71)	.583 (14.81)
10	.6875-24 (17.46)	.906 (23.01)	.707 (17.96)
12	.875-20 (22.23)	1.078 (27.38)	.895 (22.73)
14	.9375-20 (23.81)	1.141 (28.98)	.957 (34.31)
16	1.0625-18 (26.99)	1.266 (32.16)	1.084 (27.53)
18	1.1875-18 (30.16)	1.375 (34.93)	1.209 (30.17)
20	1.3125-18 (33.34)	1.510 (38.35)	1.334 (33.88)
22	1.4375-18 (36.51)	1.625 (41.28)	1.459 (37.06)
24	1.5625-18 (39.67)	1.760 (44.70)	1.584 (40.23)

Figure 23. M83723-60-2 Dust Cap (Sheet 2 of 3)

SHELL SIZE (Continued)

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only (in parenthesis).
3. Unless otherwise specified, tolerances shall be +.005".

SUPERSESSION DATA

Superseding PIN M83723/60-2	Superseding PIN MS27295-
8AR	7
10AR	1
12AR	2
14AR	3
16AR	4
18AR	5
20AR	8
22AR	6
24AR	9

Figure 23. M83723-60-2 Dust Cap (Sheet 3 of 3)

PART NUMBER DESIGNATION

AS90376 -18 Y F

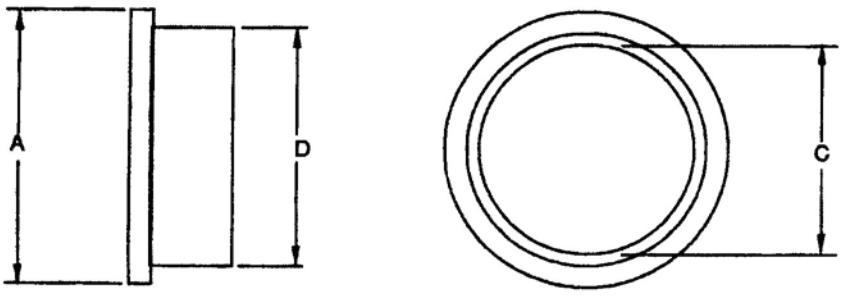
MILITARY DESIGNATION

DETAIL SHEET
(See Dimension Table)

COLOR
R – RED
Y – YELLOW

MODIFICATION
BLANK – Type a Material
F – Type b Electrostatic-Free Material

MATERIAL
a Polyethylene, L-P-390, Type I, Class L
b Electrostatic-Free Material Conforming with MIL-B-81705 Type II



SHELL SIZES

Shell Size	MS90376 MIL-C-26482	
	Rept	Plug
8	-8R	-8Y
9		
10	-10R	-8R
11		
12	-14Y	-12Y
13		
14	-16Y	-12R
15		
16	-18Y	-16Y
17		
18	-20Y	-16R
19		
20	-22Y	-18R
21		
22	-24Y	-20R
23		
24	-24R	-22R

Figure 24. Dust Caps AS90376 (Sheet 1 of 2)

DIMENSIONS

Part Number	A ±.031	C ±.010	D ±.010	Supersedes	Part Number	A ±.031	C ±.010	D ±.010	Supersedes
MS90376-8Y	.670	.413	.483	MS25177-8	MS90376-24Y	1.640	1.390	1.460	MS25177-24
MS90376-8R	.740	.480	.540	MS25178-8	MS90376-24R	1.700	1.463	1.533	MS25178-24
MS90376-10Y	.750	.530	.595	MS25177-10	MS90376-25Y	1.580	1.540	1.610	—
MS90376-10R	.840	.605	.665	MS25178-10	MS90376-28Y	1.875	1.648	1.718	MS25177-28
MS90376-12Y	.860	.655	.715	MS25177-12	MS90376-28R	1.950	1.715	1.790	MS25178-28
MS90376-12R	.970	.720	.775	MS25178-12	MS90376-32Y	2.125	1.890	1.970	MS25177-32
MS90376-14Y	1.031	.785	.845	MS25177-14	MS90376-32R	2.220	1.965	2.040	MS25178-32
MS90376-14R	1.125	.850	.905	MS25178-14	MS90376-36Y	2.340	2.140	2.210	MS25177-36
MS90376-16Y	1.125	.893	.963	MS25177-16	MS90376-36R	2.435	2.215	2.290	MS25178-36
MS90376-16R	1.220	.973	1.035	MS25178-16	MS90376-40Y	2.600	2.380	2.450	MS25177-40
MS90376-18Y	1.250	1.028	1.088	MS25177-18	MS90376-40R	2.660	2.440	2.530	MS25178-40
MS90376-18R	1.330	1.093	1.155	MS25178-18	MS90376-44Y	2.875	2.630	2.700	MS25177-44
MS90376-20Y	1.406	1.150	1.215	MS25177-20	MS90376-44R	2.960	2.720	2.812	MS25178-44
MS90376-20R	1.465	1.231	1.301	MS25178-20	MS90376-48Y	3.125	2.880	2.950	MS25177-48
MS90376-22Y	1.500	1.270	1.340	MS25177-22	MS90376-48R	3.225	2.960	3.050	MS25178-48
MS90376-22R	1.590	1.340	1.410	MS25178-22					

Figure 24. Dust Caps AS90376 (Sheet 2 of 2)

25. GASKETS FOR FLANGE MOUNT RECEPTACLES. Gaskets for flange mount receptacles are made from neoprene or silicone and are used to seal receptacle flange to mounting structure. See WP 009 03 for detailed information on gasket 229401. Information on gasket MS51007 is in Figure 25 and Figure 26 for gasket A-A-52481. See Note following paragraph 2 this WP on AS, M and MS prefix.

26. MOUNTING NUT FOR JAM NUT RECEPTACLES. Part number MS3186 mounting nut is used to mechanically mount a receptacle to a structure (Figure 27).

27. RUBBER BUSHINGS. Part number MS3420 bushings standard material and color is black neoprene. The primary use is to provide a cushion for wires at connector to aid strain relief. See WP 007 03 for detailed information. See Note following paragraph 2 this WP on AS, M and MS prefix.

28. SEALING PLUGS. See WP 008 03 for detailed information on part number M83723/28. See WP 007 03 for detailed information on part number MS27488 sealing plug. Plugs are inserted, large end first, to fill a cavity in a connector insert. Its function is to seal all unoccupied openings in insert, especially in environmental connectors. See Note following paragraph 2 this WP on AS, M and MS prefix.

29. MOUNTING PLATES FOR FLANGE MOUNT RECEPTACLES. See Note following paragraph 2 this WP on AS, M and MS prefix. Mounting plates are available in three types: heavy, medium and light duty. The M85528/1 , M85528/2 and M85528/3 have been superseded by the M85049 Mounting Plates. See WP 007 03 for detailed information on the following:

a. Heavy Duty Mounting Plate M85049/94.

b. Medium Duty Mounting Plate M85049/95.

c. Light Duty Mounting Plate M85049/96.

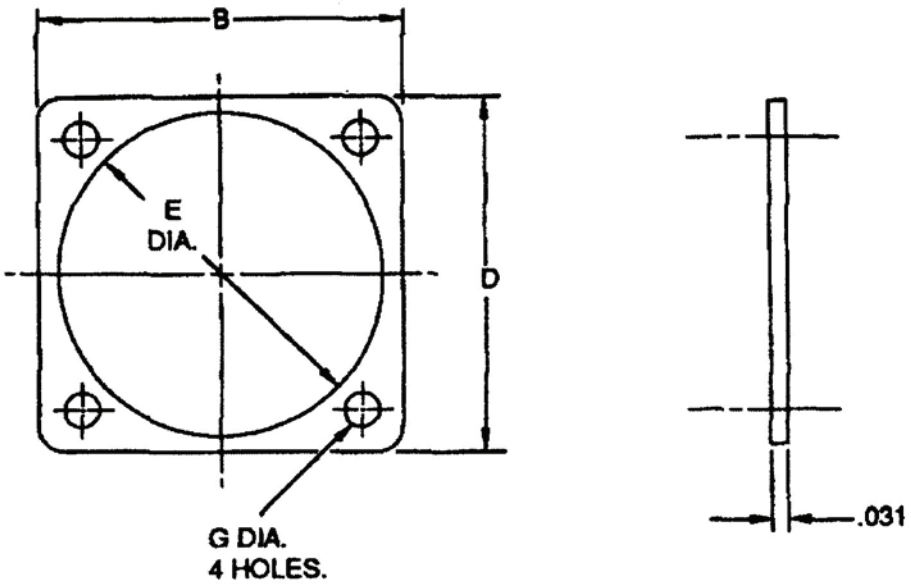
PART NUMBER DESIGNATION

AS51007 -10

MILITARY DESIGNATION

DASH NR., SHELL SIZE (SEE DIMENSIONS)

MATERIAL TYPE: MS51007 – NEOPRENE PER MIL-STD-417



DIMENSIONS

Dash No.	Shell Size MIL-C-5015	B +.016 -.000	D	E Dia +.016 -.000	G Dia
-1	8S	.594	.875	.500	.172
-2	10S & 10 SL	.719	1.000	.625	.172
-3	12 & 12S	.813	1.094	.750	.172
-4	14 & 14S	.906	1.188	.875	.172
-5	16 & 16S	.969	1.281	1.000	.172
-6	18	1.063	1.375	1.125	.203
-7	20	1.156	1.500	1.250	.203
-8	22	1.250	1.625	1.375	.203
-9	24	1.375	1.750	1.500	.203
-10	28	1.563	2.000	1.750	.203
-11	28	2.188	2.688	1.750	.203
-12	32	1.750	2.250	2.000	.219
-13	36	1.938	2.500	2.188	.219
-14	40	2.188	2.750	2.437	.219

Figure 25. AS51007 Gasket for Mount Receptacles

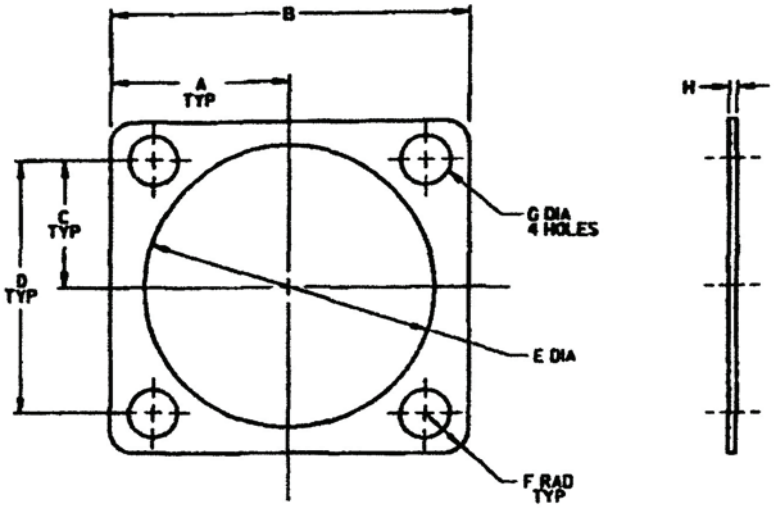
PART NUMBER DESIGNATION

A-A-52481 -10

BASIC SPECIFICATION

DASH NR., SHELL SIZE (SEE DIMENSIONS)

MATERIAL TYPE: NEOPRENE PER MIL-STD-417



PIN Dash No. A52481	DIM A	DIM B +.016 -.000	DIM C	DIM D	DIA E +.016 -.000	RAD F	DIA G	DIM H +.010
-1	.437	.875	.297	.594	.500	.141	.172	.031
-2	.500	1.000	.359	.719	.625	.141	.172	.031
-3	.547	1.094	.406	.813	.750	.141	.172	.031
-4	.594	1.188	.453	.906	.875	.141	.172	.031
-5	.641	1.281	.484	.969	1.000	.156	.172	.031
-6	.688	1.375	.531	1.063	1.125	.156	.203	.031
-7	.750	1.500	.578	1.156	1.250	.172	.203	.031
-8	.813	1.625	.625	1.250	1.375	.188	.203	.031
-9	.875	1.750	.687	1.375	1.500	.188	.203	.031
-10	1.000	2.000	.781	1.563	1.750	.219	.203	.031
-11	1.344	2.688	1.094	2.188	1.750	.250	.203	.031
-12	1.125	2.250	.875	1.750	2.000	.250	.219	.031
-13	1.250	2.500	.969	1.938	2.188	.281	.219	.031
-14	1.375	2.750	1.094	2.188	2.437	.281	.219	.031

NOTE: Dimensions are in inches. Unless otherwise specified, tolerances are ± .010 on decimals.

Figure 26. A-A-52481 Gasket for Mount Receptacles

PART NUMBER DESIGNATION

MS3186 A -113 B

MILITARY DESIGNATION

MATERIAL
A – ALUMINUM
C – CRES.
S – STEEL, BRIGHT CADMIUM PLATED

DASH NUMBER (SEE DIMENSIONS AND USAGE TABLES)

FINISH (REVISION H ONLY)
A – BLACK ANODYZE
B – BLACK CADMIUM OVER CRES.
N – ELECTROLESS NICKEL (Not for Navy Use)
P – PASSIVATE
W – OLIVE DRAB CADMIUM OVER NICKEL (Not for Navy Use)

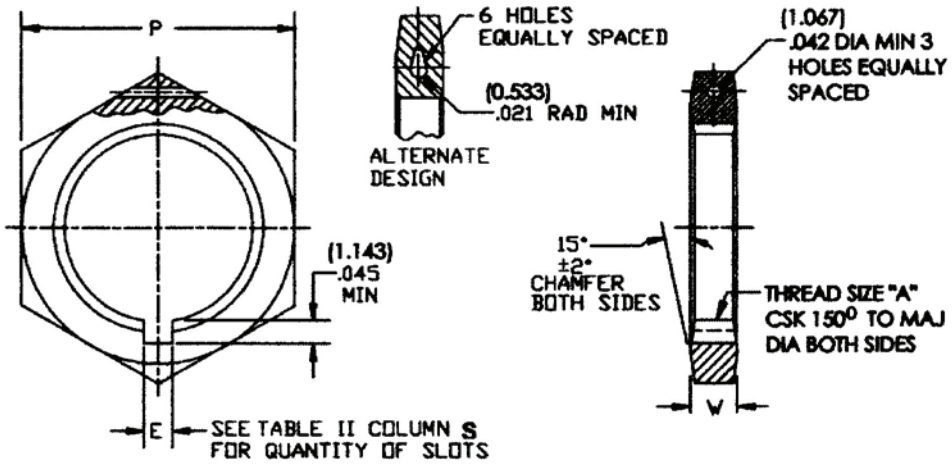


Figure 27. Mounting Nut MS3186 (Sheet 1 of 7)

DIMENSIONS

Dash number	Material	A Thread size	E max	P ± .017	S minimum number of slots	W ± .017	Supersedes dash number
101	ASC	.500-28UNEF-28	None	.687	None	.125	-25 -26 -27
102	ASC	.5625-24UNEF-28	.135	.750	2	.125	-28 -29 -30
103	ASC	.625-24UNEF-28	None	.812	None	.125	-31 -32 -33
104	ASC	.625-2OUN-28	None	.812	None	.125	— — —
105	ASC	.625-2OUN-28	None	.812	None	.125	— — —
106	ASC	.6875-24UNEF-28	.135	.875	1	.125	-34 -35 -36
107	ASC	.750-2OUNEF-28	None	.937	None	.125	-37 -38 -39
108	ASC	.8125-2OUNEF-28	.135	1.000	1	.125	— — —
109	ASC	.875-2OUNEF-28	.135	1.062	1	.125	-40 -41 -42
110	ASC	.9375-2OUNEF-28	None	1.123	None	.125	— — —
111	ASC	1.000-2OUNEF-28	.135	1.188	1	.125	-43 -44 -45
112	ASC	1.125-1OUN-28	None	1.312	None	.125	— — —
113	ASC	1.125-18UNEF-28	.135	1.312	1	.125	-46 -47 -48
114	ASC	1.1075-18UNEF-28	None	1.375	None	.125	— — —
115	ASC	1.250-20OUN-28	None	1.438	None	.125	— — —

Figure 27. Mounting Nut MS3186 (Sheet 2 of 7)

DIMENSIONS (Continued)

Dash No.	Material	A Thread size	E Max	P ± .017	S Minimum number of slots	W ± .017	Supersedes dash number
116	A S C	1.250-18UNEF-28	.135	1.438	1	.125	-49 -50 -51
117	A S C	1.375-18UNEF-28	.192	1.562	1	.125	-52 -53 -54
118	A S C	1.4375-18UNEF-28	None	1.625	None	.125	— — —
119	A S C	1.500-2OUN-28	None	1.688	None	.125	— — —
120	A S C	1.500-2OUNEF-28	None	1.608	1	.125	-55 -56 -57
121	A S C	1.625-18UNEF-28	.192	1.812	1	.125	-58 -59 -60
122	A S C	1.750-18UNS-28	None	2.000	None	.125	-61 -62 -63
123	A S C	1.875-16UN-28	None	2.125	None	.125	— — —
124	A S C	1.9375-16UN-28	None	2.187	None	.159	— — —
125	A S C	2.000-18UNS-28	None	2.250	None	.189	-64 -65 -66
126	A S C	2.125-16UN-28	None	2.375	None	.189	— — —
127	A S C	2.250-16UN-28	None	2.500	None	.189	-67 -68 -69
128	A S C	2.500-16UN-28	None	2.750	None	.189	-70 -71 -72
129	A S C	2.750-16UN-28	None	3.000	None	.189	-73 -74 -75
130	A S C	3.000-18UN	None	3.250	None	.189	-76 -77 -78

Figure 27. Mounting Nut MS3186 (Sheet 3 of 7)

CONNECTOR INTERMATEABILITY (SHEET 1 of 4)

Dash number	Material	For connector shell size (reference)			
		MIL-DTL-5015	MIL-C-26482	MIL-DTL-26500	MIL-DTL-83723 Series I
101	A	85	—	—	—
	S	35	—	—	—
	C	85	—	—	—
102	A	—	8	—	8
	S	—	8	—	8
	C	—	8	—	8
103	A	10S-10SL	—	—	—
	S	10S-10SL	—	—	—
	C	10S-10SL	—	—	—
104	A	—	—	8	—
	S	—	—	8	—
	C	—	—	8	—
105	A	—	—	—	—
	S	—	—	—	—
	C	—	—	—	—
106	A	—	10	—	10
	S	—	10	—	10
	C	—	10	—	10
107	A	12S-12	—	10	—
	S	12S-12	—	10	—
	C	12S-12	—	10	—
108	A	—	—	—	—
	S	—	—	—	—
	C	—	—	—	—
109	A	14S-14	12	—	12
	S	14S-14	12	—	12
	C	14S-14	12	—	12
110	A	—	—	12	—
	S	—	—	12	—
	C	—	—	12	—
111	A	16S-16	14	14	14
	S	16S-16	14	14	14
	C	16S-16	14	14	14
112	A	—	—	16	—
	S	—	—	16	—
	C	—	—	16	—
113	A	18	16	—	16
	S	18	16	—	16
	C	18	16	—	16
114	A	—	—	—	—
	S	—	—	—	—
	C	—	—	—	—
115	A	—	—	18	—
	S	—	—	18	—
	C	—	—	18	—

Figure 27. Mounting Nut MS3186 (Sheet 4 of 7)

CONNECTOR INTERMATEABILITY (SHEET 2 of 4)

Dash number	Material	For connector shell size (reference)				
		MIL-DTL-83723 Series III	MIL-DTL-38999 Series I	MIL-DTL-38999 Series II	MIL-C-28840	MIL-C-27599
101	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
102	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
103	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
104	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
105	A	8	—	—	—	—
	S	8	—	—	—	—
	C	8	—	—	—	—
106	A	—	9	—	—	9
	S	—	9	—	—	9
	C	—	9	—	—	9
107	A	10	—	—	—	—
	S	10	—	—	—	—
	C	10	—	—	—	—
108	A	—	11	—	—	11
	S	—	11	—	—	11
	C	—	11	—	—	11
109	A	—	—	8	11	8
	S	—	—	8	11	8
	C	—	—	8	11	8
110	A	12	—	—	—	—
	S	12	—	—	—	—
	C	12	—	—	—	—
111	A	14	13	10	13	10 -13
	S	14	13	10	13	10 -13
	C	14	13	10	13	10 -13
112	A	16 1/	—	—	—	—
	S	16 1/	—	—	—	—
	C	16 1/	—	—	—	—
113	A	16 2/	—	—	—	—
	S	16 2/	—	—	—	—
	C	16 2/	—	—	—	—
114	A	—	—	—	15	—
	S	—	—	—	15	—
	C	—	—	—	15	—
115	A	—	—	—	—	14 - 17
	S	—	—	—	—	14 - 17
	C	—	—	—	—	14 - 17

See footnotes at end of table.

Figure 27. Mounting Nut MS3186 (Sheet 5 of 7)

CONNECTOR INTERMATEABILITY (SHEET 3 of 4)

Dash number	Material	For connector shell size (reference)			
		MIL-DTL-5015	MIL-C-26482	MIL-DTL-26500	MIL-DTL-83723 Series I
116	A	20	18	—	18
	S	20	18	—	18
	C	20	18	—	18
117	A	22	20	20	20
	S	22	20	20	20
	C	22	20	20	20
118	A	—	—	—	—
	S	—	—	—	—
	C	—	—	—	—
119	A	—	—	22	—
	S	—	—	22	—
	C	—	—	22	—
120	A	24	22	—	22
	S	24	22	—	22
	C	24	22	—	22
121	A	—	24	24	24
	S	—	24	24	24
	C	—	24	24	24
122	A	28	—	—	—
	S	28	—	—	—
	C	28	—	—	—
123	A	—	—	—	—
	S	—	—	—	—
	C	—	—	—	—
124	A	—	—	—	—
	S	—	—	—	—
	C	—	—	—	—
125	A	32	—	—	—
	S	32	—	—	—
	C	32	—	—	—
126	A	—	—	—	—
	S	—	—	—	—
	C	—	—	—	—
127	A	36	—	—	—
	S	36	—	—	—
	C	36	—	—	—
128	A	40	—	—	—
	S	40	—	—	—
	C	40	—	—	—
129	A	44	—	—	—
	S	44	—	—	—
	C	44	—	—	—
130	A	48	—	—	—
	S	48	—	—	—
	C	48	—	—	—

See footnotes at end of table.

Figure 27. Mounting Nut MS3186 (Sheet 6 of 7)

CONNECTOR INTERMATEABILITY (SHEET 4 of 4)

Dash number	Material	For connector shell size (reference)				
		MIL-DTL-83723 Series III	MIL-DTL-38999 Series I	MIL-DTL-38999 Series II	MIL-C-28840	MIL-C-27599
116	A	18	17	14	17	—
	S	18	17	14	17	—
	C	18	17	14	17	—
117	A	20	19	16	—	16 19
	S	20	19	16	—	16 19
	C	20	19	16	—	16 19
118	A	—	—	—	19	—
	S	—	—	—	19	—
	C	—	—	—	19	—
119	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
120	A	22	21	18	—	18 21
	S	22	21	18	—	18 21
	C	22	21	18	—	18 21
121	A	24	23	20	23	20 23
	S	24	23	20	23	20 23
	C	24	23	20	23	20 23
122	A	—	25	22	25	22 25
	S	—	25	22	25	22 25
	C	—	25	22	25	22 25
123	A	—	—	24	—	24
	S	—	—	24	—	24
	C	—	—	24	—	24
124	A	—	—	—	29	—
	S	—	—	—	29	—
	C	—	—	—	29	—
125	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
126	A	—	—	—	33	—
	S	—	—	—	33	—
	C	—	—	—	33	—
127	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
128	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
129	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
130	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—

1/ For bayonet coupling only.
2/ For threaded coupling only.

Figure 27. Mounting Nut MS3186 (Sheet 7 of 7)

ALPHABETICAL INDEX
INSTALLATION PRACTICES
CONNECTORS MIL-DTL-5015 SERIES

Title	WP Number
Connector Accessories, MIL-DTL-5015 Series	007 03
Connectors, MIL-DTL-5015 Series	007 02
Introduction	007 01

INTRODUCTION
INSTALLATION PRACTICES
CONNECTORS MIL-DTL-5015 SERIES

1. PURPOSE AND SCOPE.

2. This manual covers all connectors manufactured in accordance with MIL-DTL-5015. It includes data, tooling, buildup, and connector accessories for MIL-DTL-5015 series connectors.

3. SPECIFICATION UPDATES (ASSIST SEARCH).

4. The most up to date government specifications and Qualified Products Lists (QPLs) can be obtained from the Quick Search section of the ASSIST website, the address is http://assist.daps.mil/quicksearch. Non-government standards can be obtained through a license with a document service such as Information Handling Services (IHS) or purchased individually from the Society of Automotive Engineers (SAE).

5. QUALIFIED PRODUCTS LIST (QPL).

6. The Qualified Products List (QPL) is a list of products which have met the qualification requirements stated in the applicable specification. These requirements include appropriate product identification and performance/testing parameters. The list contains the government part number and the manufacturer's part number. The name of the manufacturer, office and manufacturing plant address, CAGE (Commercial and Government Entity) code, assembly plant, or distributor as applicable, is also included in the back of the QPL. The component specification will identify the appropriate quality assurance provisions such as QPL, First Article testing, or user verified test results. NAVAIR Patuxent River (http://www.navair.navy.mil/qpl/) now has an operational website where the latest QPL revision can be accessed, along with all outstanding QPL change letters as they are written. This enables all users to have access to the latest procurement information without relying on the publication of a new QPL revision. When the QPL is revised, all outstanding QPL change letters are incorporated in the latest revision.

CONNECTORS
MIL-C-5015 SERIES

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Connectors, Electrical, Circular Threaded, AN Type, General Specification for MIL-DTL-5015
Connector Accessories MIL-DTL-5015 Connectors 007 03
Contacts, Electrical, Connector, General Specification for AS-39029

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Record of Applicable Technical Directives

None

Support Equipment Required

Part No. / Type Designation	Nomenclature
HT-900B (or equivalent)	Heat Gun
M22520/1-01	Tool, Crimp, Frame
M22520/1-02	Positioner
M22520/23-01	Tool, Crimp
M22520/23-02	Die Set
M22520/23-04	Die Set
M22520/23-05	Die Set
M2520/23-09	Locator
M22520/23-11	Locator
M22520/23-13	Locator
M22520/3-1	Gage, Inspection
M22520/7-01	Tool, Crimp, Frame
M22520/7-03	Positioner
M81969/14-03	Tool, Insertion/Removal
M81969/14-04	Tool, Insertion/Removal
M81969/17-01	Tool, Insertion
M81969/17-02	Tool$ Insertion
M81969/17-06	Tool, Insertion
M81969/17-07	Tool, Insertion
M81969/17-08	Tool, Insertion
M81969/19-01	Tool, Removal
M81969/19-02	Tool, Removal
M81969/19-03	Tool, Removal
M81969/19-04	Tool, Removal
M81969/19-05	Tool, Removal
M81969/29-02	Tool, Insertion/Removal
M81969/29-03	Tool, Removal
M81969/29-04	Tool, Removal
M81969/29-07	Tool, Insertion/Removal
M81969/8-09	Tool, Insertion, Metal
M81969/8-10	Tool, Removal
-----	Bottle, Nitrogen
-----	Heat Sink
-----	Iron, Soldering
-----	Pliers, Connector

Materials Required

Specification / Part No.	Nomenclature
TT-I-735	Alcohol, Isopropyl
H-B-643 (or equivalent)	Brush, Acid Swabbing
MIL-F-14256	Liquid Flux
SAE-AMS-DTL-23053	Sleeving, Insulating, Heat Shrinkable
Sn60WRMAP3 (or equivalent)	Solder

1. INTRODUCTION.

2. This Work Package (WP) contains information for connectors manufactured in accordance with MIL-DTL-5015.

3. DESCRIPTION. These connectors are circular threaded and of the AN Type. The connectors are rated for specified operation with a temperature range of -67°F (-55°C) to +392°F (+200°C) depending upon the class. The upper temperature is the maximum internal hotspot temperature resulting from any combination of electrical load and ambient condition.

4. WIRE SEALING. Wire sealing is accomplished by the use of a grommet seal which is designed to seal against outside diameter of inserted wire. The outer diameter shall be within applicable size range. See NAVAIR 01-1A-505-1 (WP 025 00).

5. MIL-DTL-5015 SERIES.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, (the Society of Automotive Engineers (SAE), will become the preparing activity and the Navy will adopt the documents), the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

6. MIL-DTL-5015 Series connectors are environment resistant and come in three varied contact features. The basic design feature (Figure 1) is typical for all MIL-DTL-5015 connectors. However, the contacts are either non-removable soldered (except contacts in sizes 0, 4, and 8), removable crimp front release, or removable crimp rear release.

7. GROMMET SEALING PLUGS. The grommets of environment resisting connectors are designed to accept sealing plugs in accordance with MIL-DTL-5015 to be used where unwired contacts are placed. The connector, when ordered as a unit, will have sealing plugs enclosed to equal 15 percent of the number of contacts but not less than one.

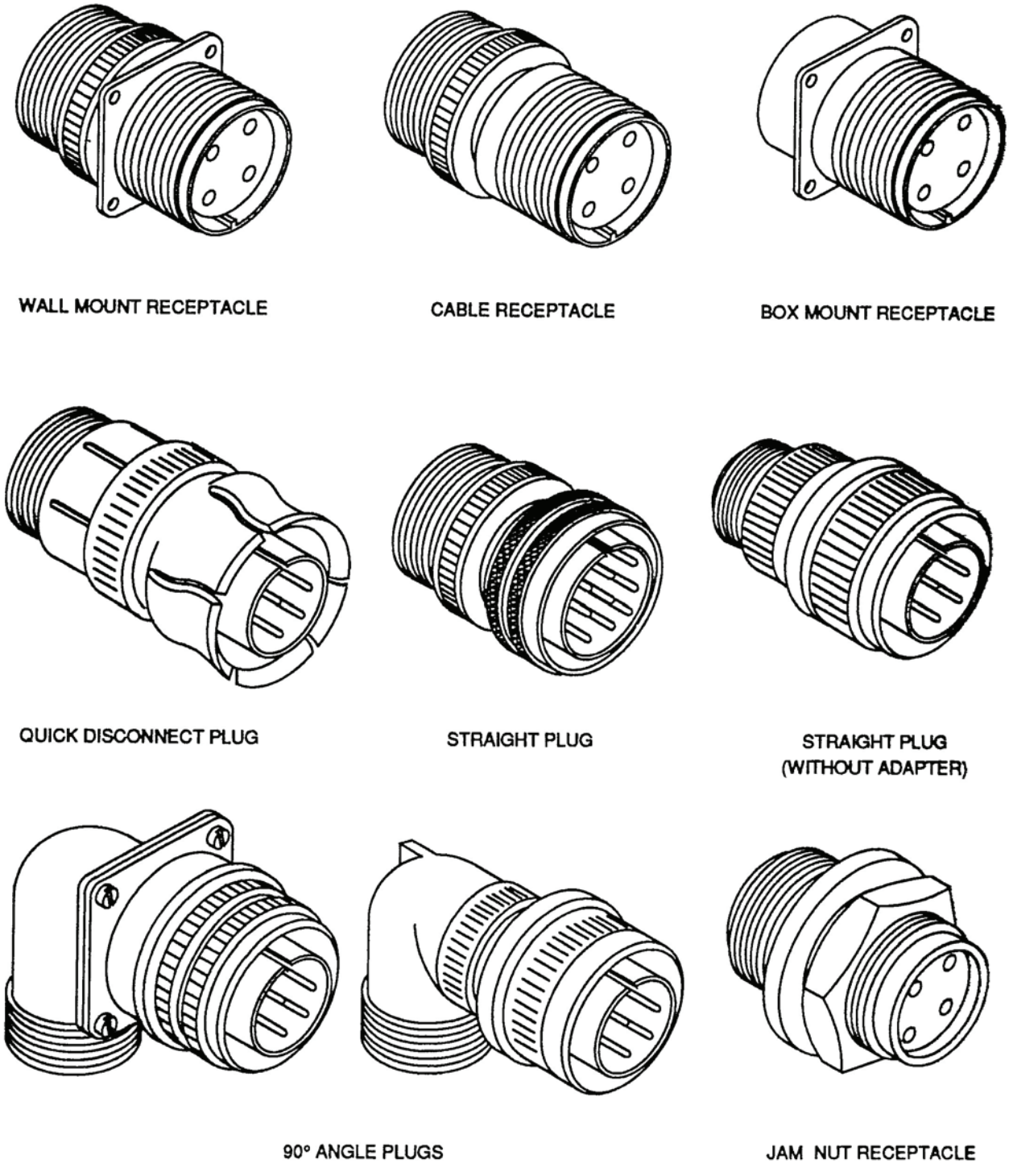


Figure 1. MIL-DTL-5015 Typical Connectors

8. MATING SEAL. Plugs and receptacles with pin inserts have a resilient face with individual pin barriers to seal against the hard face socket insert. The resilient interface seal provides individual contact seals in mated condition between each contact and shell.

9. SHELL. Shells including mounting flanges are of one-piece construction and designed to retain their inserts in one position by mechanical means. Each plug and receptacle has at least one blue color band, which indicates rear release retention system, and is located to be readily visible.

10. COUPLING. Connectors shall be capable of being fully coupled and uncoupled without use of tools.

11. POLARIZATION. Connectors are polarized as denoted by their part numbers. This means that the master keyway is rotated to prevent mis-mating of similar connectors in a close proximity location. A plug with a given polarization letter will mate with a receptacle with same letter. The inserts do not rotate, only the keyway is rotated.

12. PART NUMBER. The following paragraphs contain information necessary for proper selection and procurement of connector (Figure 2).

13. MILITARY PREFIX. The military prefix denotes military standard.

14. SHELL STYLE. The shell style denotes type of connector and mounting to structure.

15. CLASS. The class is a letter code denoting environment resisting ability.

16. SHELL MATERIAL. The shell material is a letter code denoting the material of the shell (where applicable).

17. Shell Size. The shell size is indicated by a progressive numbering system.

18. Backshell Sealing Range. This portion of the part number pertains to Class DJ only (where applicable).

19. Insert Configuration. The insert configuration is the insert arrangement by number and size of contacts.

20. Contact Style. The contact style denotes the type of contact (pin or socket).

21. Alternate Position. The alternate position indicates insert polarization (Figure 3).

22. DESIGN AND CONSTRUCTION. Connectors and accessories are designed and constructed to withstand normal handling incidental to installation and maintenance for crimp front and rear release contacts (Figures 4 and 5).

23. INSERTS. All resilient inserts shall be non-removable from the shell. Hard material inserts for connectors having more than one alternate position shall be removable from the shell. However, these inserts shall be retained within the shell when the conduit nut or adapter is removed. All inserts are of a voidless construction and are secured to prevent rotation within shell.

24. Crimp Snap-In Contacts. Snap-in contacts designed to AS39029 can be crimped with standard M22520/1 crimp tool.

25. Closed-Entry Socket Contacts. These contacts eliminate damage from abuse by test probes and help to correct any misaligned pins during engagement.

26. Contact Insertion. Insertion is accomplished from rear of connector. When contact is fully inserted, the clip tines snap securely behind contact shoulders.

27. Contact Extraction. Extraction is accomplished with use of a removal tool.

28. Contact Retaining Clip. The contact retaining clip is completely encased in a tough plastic wafer to protect clip from damage.

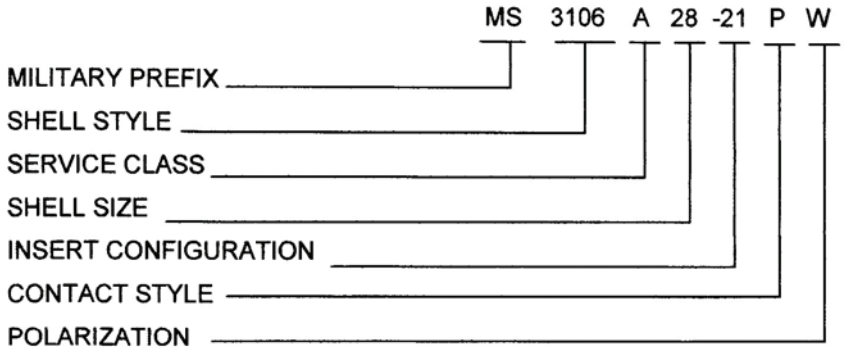
29. Moisture Sealing. Complete sealing is achieved by combining four seals, shell, peripheral, interfacial, and wire seal.

30. Shell Seal. This seal is effected when plug shell pushes against sealing ring in receptacle when connectors are mated.

31. Peripheral Seal. This seal is around the edge of pin insulator and designed so that when mating the connector, tension is put on seal and greatly reduces compression set.

32. Interfacial Seal. This seal is achieved by insulator faces meeting when plug and receptacle are mated.

SOLDER CONTACTS



MILITARY PREFIX

AN	OBSOLETE FOR CURRENT USE.
MS	MILITARY STANDARD.

SHELL STYLE

3100	WALL MOUNT RECEPTACLE.
3101	IN-LINE RECEPTACLE.
3102	BOX MOUNT RECEPTACLE.
3103	WALL MOUNT RECEPTACLE, POTTING SEAL
3106	STRAIGHT PLUG.
3107	QUICK DISCONNECT PLUG.
3108	90° ANGLE PLUG.
3142	BOX MOUNT RECEPTACLE, HERMETIC SEAL
3143	SOLDER MOUNT RECEPTACLE, HERMETIC SEAL
3436	STRAIGHT PLUG
3507	QUICK DISCONNECT PLUG.
25183	STRAIGHT PLUG, POTTING SEAL.
25183A	STRAIGHT PLUG, POTTING SEAL; WITH GROUND LUG.

SERVICE CLASS

A	SOLIDSHELL, NON-ENVIRONMENTAL
B	SPLIT SHELL, NON-ENVIRONMENTAL
C	PRESSURIZED.
E	ENVIRONMENTAL SUPERSEDED BY F.
F	R TYPE WITH STRAIN RELIEF.
H	HERMETIC.
K	FIRE WALL.
M	REPLACED BY E.
PR	REPLACED BY C.
R	ENVIRONMENTAL WITH O-RING UNDER COUPLING NUT.

SHELL SIZE
(TABLE 1)

INSERT CONFIGURATION
(FIGURE 7)

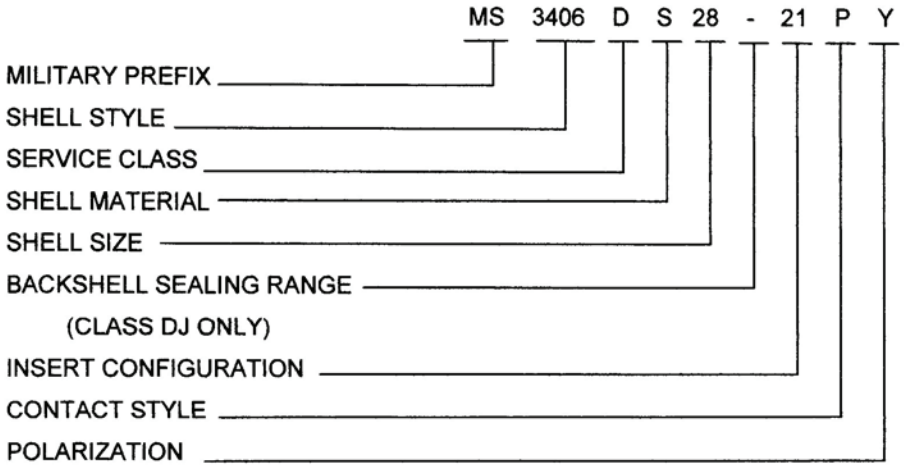
CONTACT STYLE

P	PIN CONTACTS.
S	SOCKET CONTACTS.

ALTERNATE POSITION (POLARIZATION)
BLANK (NORMAL) W, X, Y OR Z (FIGURE 3)

Figure 2. MIL-DTL-5015 Series Part Number Breakdown (Sheet 1 of 3)

CRIMP FRONT RELEASE CONTACTS



SHELL STYLE

3400	WALL MOUNT RECEPTACLE.
3401	IN-LINE RECEPTACLE.
3402	BOX MOUNT RECEPTACLE.
3403	WALL MOUNT RECEPTACLE, POTTING SEAL
3406	STRAIGHT PLUG.
3407	QUICK DISCONNECT PLUG.
3408	90° ANGLE PLUG. 45° ANGLE PLUG
3409	45° ANGLE PLUG.
3412	BOX MOUNT RECEPTACLE, WITH THREADED REAR SKIRT

SERVICE CLASS

D	HIGH IMPACT SHOCK, 345°F (175°C)
DJ	HIGH IMPACT SHOCK, CABLE SEALING GLAND 345°F (175°C)
K	FIREWALL SEAL, 345°F (175°C)
L	FLUID RESISTANT, 392°F (200°C)

SHELL MATERIAL

BLANK	ALUMINUM
S	STAINLESS STEEL
T	FERROUS ALLOY, CLASS K ONLY.

BACKSHELL SEALING RANGE
(CLASS DJ ONLY)
A, B, D, E, F, G OR H. (WP 055 00)

SHELL SIZE (TABLE 1)

INSERT CONFIGURATION
(FIGURE 7)

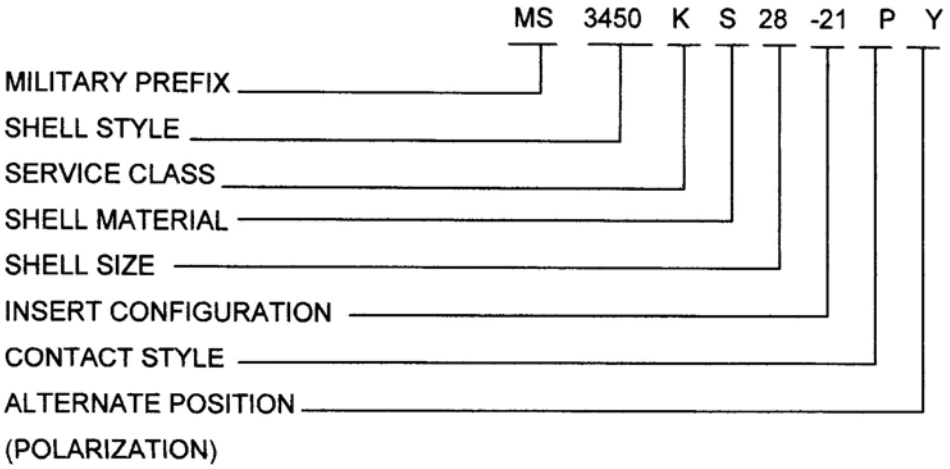
CONTACT STYLE

D	16-22 PIN CONTACTS IN LIEU OF 16-16 OR 12-16 PIN CONTACTS IN LIEU OF 12-12.
E	16-22 PIN CONTACTS IN LIEU OF 16-16 OR 12-16 PIN CONTACTS IN LIEU OF 12-12, CLASS D CONNECTORS ONLY.
P	PIN CONTACTS.
S	SOCKET CONTACTS.

ALTERNATE POSITION (POLARIZATION)
BLANK (NORMAL) W, X, Y OR Z (FIGURE 3)

Figure 2. MIL-DTL-5015 Series Part Number Breakdown (Sheet 2 of 3)

CRIMP REAR RELEASE CONTACTS



SHELL STYLE

MS3450	WALL MOUNT RECEPTACLE.
MS3451	IN-LINE RECEPTACLE.
MS3452	BOX MOUNT RECEPTACLE.
MS3454	JAM NUT RECEPTACLE
MS3456	STRAIGHT PLUG.
MS3459	STRAIGHT PLUG, SELF LOCKING COUPLING NUT

SERVICE CLASS

K	FIREWALL SEAL, 345°F (175°C)
L	FLUID RESISTANT, 392°F (200°C)
U	HIGH TEMPERATURE, 392°F (200°C)
W	GENERAL PURPOSE, 345°F (175°C)

SHELL MATERIAL

BLANK	ALUMINUM
S	STAINLESS STEEL
T	FERROUS ALLOY, CLASS K ONLY.

SHELL SIZE (TABLE 1)

INSERT CONFIGURATION
(FIGURE 7)

CONTACT STYLE

P	PIN CONTACTS.
S	SOCKET CONTACTS.

ALTERNATE POSITION (POLARIZATION)
BLANK (NORMAL) W, X, Y OR Z (FIGURE 3)

Figure 2. MIL-DTL-5015 Series Part Number Breakdown (Sheet 3 of 3)

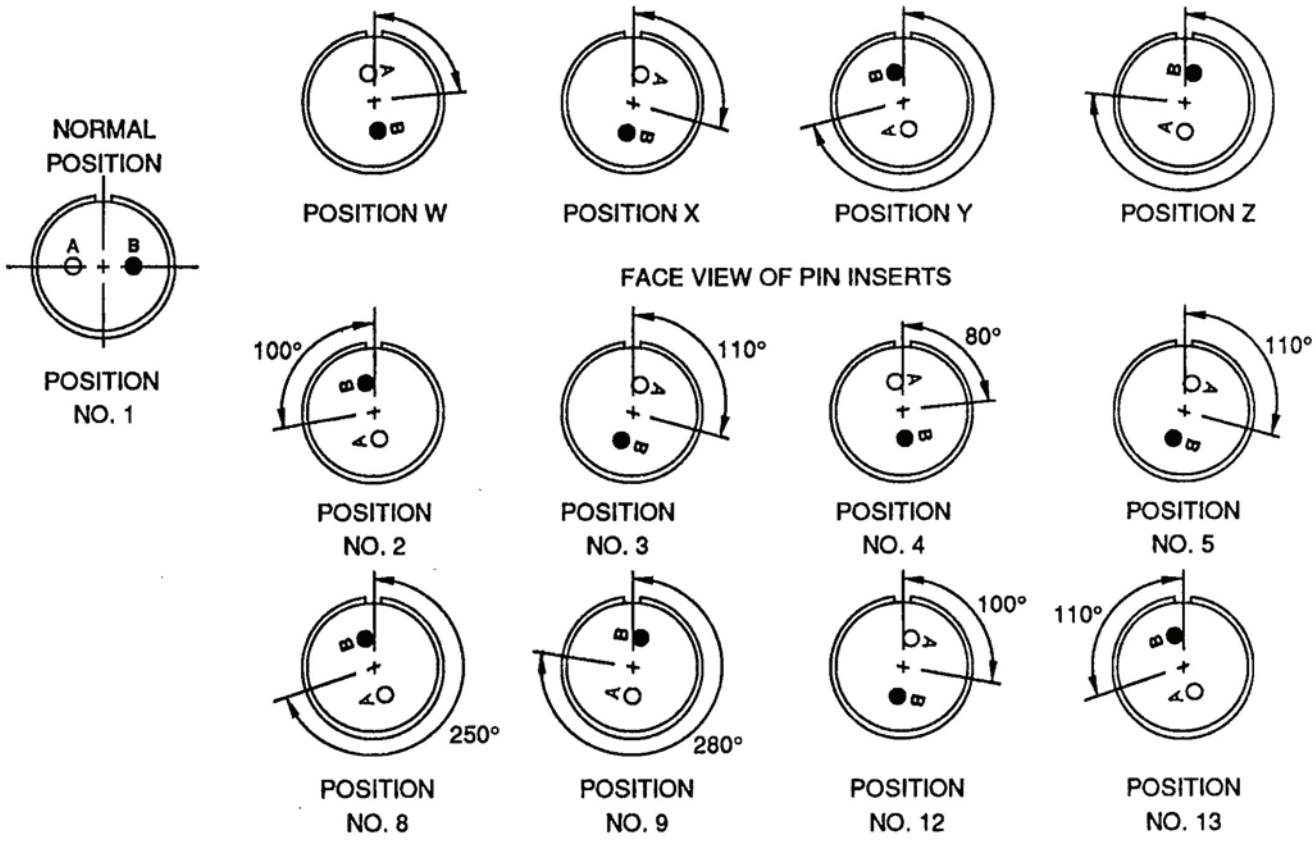


Figure 3. MIL-DTL-5015 Alternate Positions

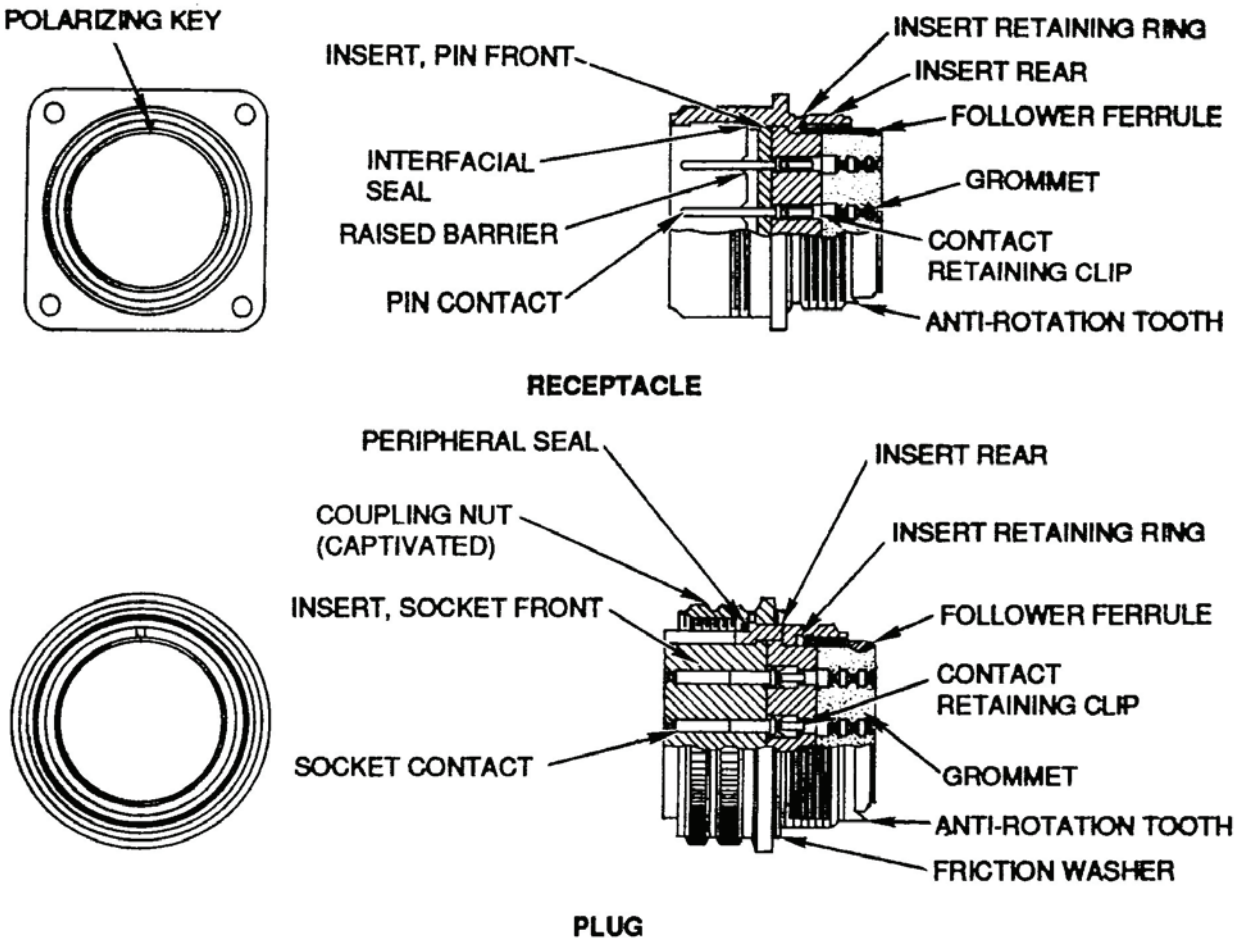


Figure 4. Design Features Front Release Contacts

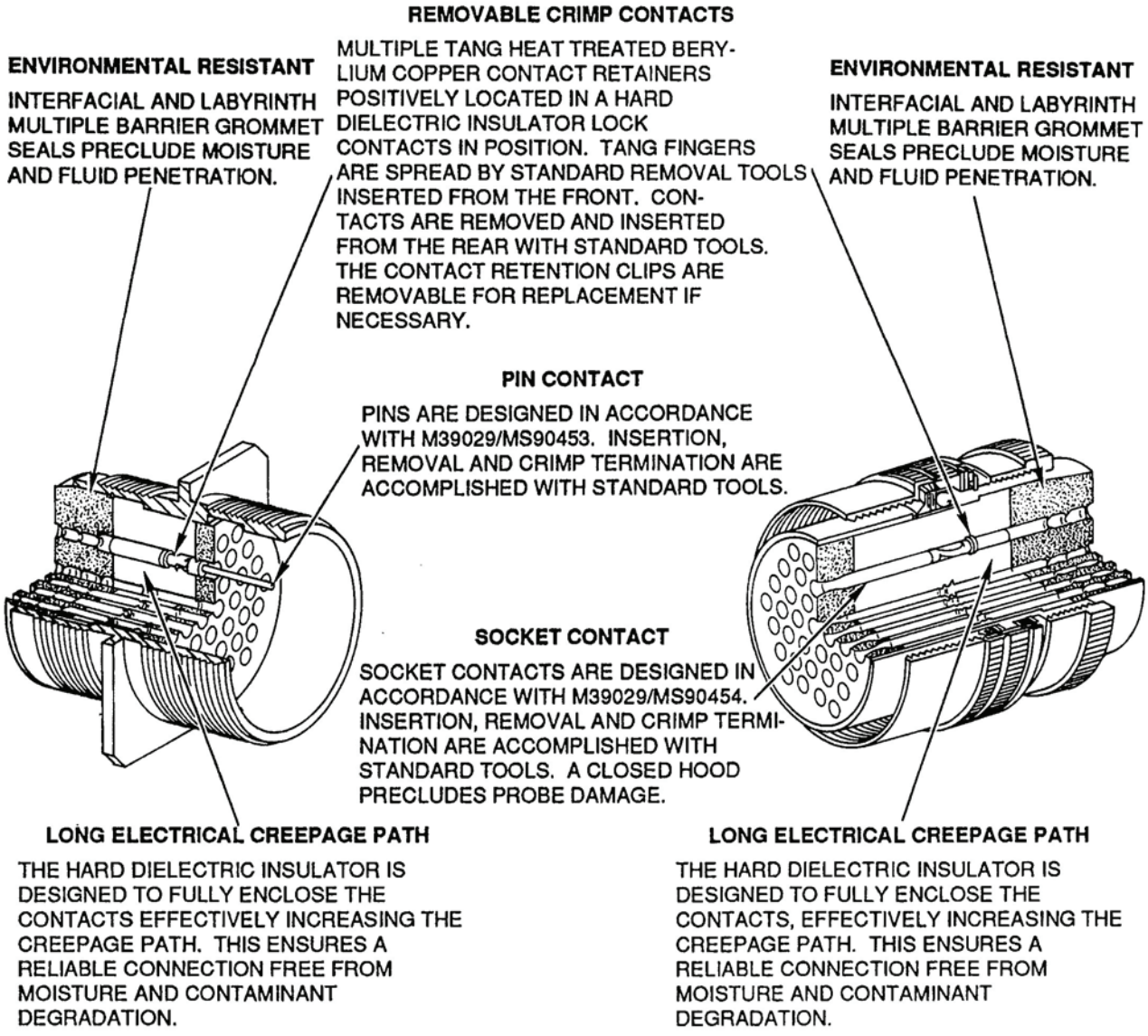


Figure 5. Design Features Crimp Rear Release Contacts

33. Wire Seal. This seal is accomplished by a multiple ripple design, exceeding wire sealing requirements of MIL-DTL-5015.

34. Insert Retention. Insert retention is accomplished by a hard plastic wafer firmly locked into a groove in shell and a strong adhesive bond between insert and shell.

35. Keying. Removable inserts are keyed to prevent rotation within the shell. The positioning is indicated by the part number of the connection.

36. INSERT ARRANGEMENT. The insert arrangement is number and size of contacts available by shell size (Table 1).

37. INSERT CONFIGURATION. The insert configuration is the manner in which contacts are placed within insert in a standard configuration. All arrangements identified in Table 1 are illustrated (Figure 6).

38. CONTACTS. Contacts are designed to prevent damage to contact retention device or sealing member during insertion or removal of contacts.

39. Fixed Contacts. Contacts in hermetically sealed or thru-bulkhead receptacles are fixed non-removable, solder-able, or feed through.

40. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

41. Contact Availability. Crimp contacts are supplied with each connector unit package and consist of a full complement plus one spare per size for connectors of 26 contacts or less. Connectors with more than 26 contacts will have two spares of each size used. Contacts may also be ordered in individual quantities when necessary.

42. CONTACT APPLICATION. Contacts used are manufactured in accordance with AS-39029. The contact part number breakdown is illustrated (Figure 7). The Basic Identification Number (BIN) or last three digits of contact part number, matches the standard resistor color code (Figure 8). Pin contacts are interchangeable between all series.

43. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts range from size 12 through 23-22 and are of rear insertion, front release design. Contacts are listed by size. Match the required size to connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with corresponding color bands (Table 2 or 3).

44. THERMOCOUPLE CONTACTS. Temperature sensing systems utilize two dissimilar metal conductors with matched lengths. When joined at the point temperature will be sensed, a voltage difference develops. This voltage is directly proportional to temperature change. Thermocouple contacts listed (Table 4) are either leaded copper, nickel-aluminum/silicon (formerly alumel), nickel-chromium (formerly chromel), iron, or copper-nickel alloy (formerly constantan). Match the required size to connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with the corresponding color bands.

45. TOOLING. The procedure for attaching power and thermocouple contacts to a single conductor wire are the same for this connector series. Select proper tooling for specific contact part number (Table 5 or 6) and refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures.

46. BACKSHELL REMOVAL AND INSTALLATION. For backshell removal and installation refer to WP 007 03.

Table 1. MIL-DTL-5015 Insert Arrangement (Sheet 1 of 5)

INSERT ARRANGEMENT SHELL SIZE	SERVICE RATING (See Note)	CONTACT SIZE							NUMBER OF CONTACTS
		20	18	16	12	8	4	0	
8S-1	A			1					1
10S-2	A			1					1
10SL-3	A			3					3
10SL-4	A			2					2
12S-3	A			2					2
12S-4	D				1				1
12-5	D			1					1
14S-1	A			3					3
14S-2	INST			4					4
14-3	A					1			1
14S-4	D			1					1
14S-5	INST			5					5
14S-6	INST			6					6
14S-7	A			3					3
14-9	A			2					2
16S-1	A			7					7
16-2	E				1				1
16S-3	B			1					1
16S-4	D			2					2
16S-5	A			3					3
16S-6	A			3					3
16-7	A			2		1			3
16S-8	A			5					5
16-9	A			2	2				4
16-10	A				3				3
16-11	A				2				2
16-12	A						1		1
16-13	A				2				2
16S-14	A			3					3
18-1	A/INST			4/6					10
18-3	D				2				2
18-4	D			4					4
18-5	D			1	2				3
18-6	D						1		1
18-7	B					1			1
18-8	A			7	1				8
18-9	INST			5	2				7
18-10	A				4				4
18-11	A				5				4
18-12	A			6					6
18-13	A				3	1			4
18-14	A			1			1		2

Table 1. MIL-DTL-5015 Insert Arrangement (Sheet 2 of 5)

INSERT ARRANGEMENT SHELL SIZE	SERVICE RATING (See Note)	CONTACT SIZE							NUMBER OF CONTACTS
		20	18	16	12	8	4	0	
18-15	A				4				4
18-16	C				1				1
18-20	A			5					5
18-22	D			3					3
20-2	D							1	1
20-3	D			3					3
20-4	D				4				4
20-5	E			2					2
20-6	D			3					3
20-7	A, D			4/4					8
20-8	INST			4		2			6
20-9	D			7	1				8
20-11	INST			13					13
20-12	A			1			1		2
20-13	A			4					4
20-14	A				3	2			5
20-15	A				7				7
20-16	A			7	2				0
20-17	A			1	5				6
20-18	A			6	3				9
20-19	A					3			3
20-20	A				3		1		4
20-21	A			8	1				9
20-22	A			3		3			6
20-23	A					2			2
20-24	A			2		2			4
20-27	A			14					14
20-29	A			17					17
20-31	A			11					11
20-33	A			11					11
22-1	D					2			2
22-2	D					3			3
22-3	D			1			1		2
22-4	D				2	2			4
22-5	D			4	2				6
22-6	D			1		2			3
22-7	E							1	1
22-8	E				2				2
22-9	E				3				3
22-10	E			4					4
22-11	B			2					2
22-12	D			3		2			5
22-13	A/D			1	4				5

Table 1. MIL-DTL-5015 Insert Arrangement (Sheet 3 of 5)

SHELL SIZE INSERT ARRANGEMENT	SERVICE RATING (See Note)	CONTACT SIZE							NUMBER OF CONTACTS
		20	18	16	12	8	4	0	
22-14	A			19					19
22-15	A/E			1	5				6
22-16	A			6	3				9
22-17	A/D			8	1				9
22-18	A/D			3/5					8
22-19	A			14					14
22-20	A			9					9
22-21	A			2				1	3
22-22	A					4			4
22-23	A/D				7/1				8
22-24	A/D			3/1	2				6
22-25	A			2				1	3
22-27	A/D			8		1			9
22-28	A				7				7
22-29	A			6			1		7
22-33	A/D			3/4					7
22-34	D			2	3				5
22-36	A/D				1/7				8
24-1	D			1				1	2
24-2	D				7				7
24-3	D			5	2				7
24-4	D			3				1	4
24-5	A			16					16
24-6	A/D				5/3				8
24-7	A			14	2				16
24-9	A						2		2
24-10	A					7			7
24-11	A				6	3			9
24-12	A				3		2		5
24-14	A				2			1	3
24-16	A/D			3	3	1			7
24-17	D			3	2				5
24-20	D			9	2				11
24-21	D			9		1			10
24-22	D					4			4
24-23	D			2		3			5
24-27	E			7					7
24-28	INST			24					24
24-80	INST			23					23
28-1	A/D				6	3			9
28-2	D			12	2				14
28-3	E					3			3

Table 1. MIL-DTL-5015 Insert Arrangement (Sheet 4 of 5)

SHELL SIZE / INSERT ARRANGEMENT	SERVICE RATING (See Note)	CONTACT SIZE							NUMBER OF CONTACTS
		20	18	16	12	8	4	0	
28-4	D/E			7	2				9
28-5	D			2	1		2		5
28-6	D						3		3
28-8	A/D/E			10	2				12
28-9	D			6	6				12
28-10	A/D				1/2	2	2		7
28-11	A			18	4				22
28-12	A			26					26
28-14	D			11					11
28-15	A			35					35
28-16	A			20					20
28-17	A/B/D			15					15
28-18	A/C/D/INT			12					12
28-19	A/B/D			6	4				10
28-20	A			4	10				14
28-21	A			37					37
28-22	D			3			3		6
28-23	INST			21		3 SHIELDED			24
28-24	INST			21		3 SHIELDED			24
32-1	D/E				3			2	5
32-2	E			2			3		5
32-3	D			4	2		2	1	9
32-4	A/D			12	2				14
32-5	D							2	2
32-6	A			16	2	3	2		23
32-7	A INST				28	7			35
32-8	A			24	6				30
32-9	D			12			2		14
32-10	A/B/D/E			3		2	2		7
32-12	A/D			10	5				15
32-13	D			18	5				23
32-14	D				5		2		7
32-15	D			6				2	8
32-17	D						4		4
32-22	A			54					54
32-63	D						5		5
32-73	A			46					46
32-101	C/D			10+2 COAX					12
32-102	A/B/D			13+1 COAX					14
36-1	D			18	4				22
36-3	D				3			3	6

Table 1. MIL-DTL-5015 Insert Arrangement (Sheet 5 of 5)

SHELL SIZE INSERT ARRANGEMENT	SERVICE RATING (See Note)	CONTACT SIZE							NUMBER OF CONTACTS
		20	18	16	12	8	4	0	
36-4	A/D							2/1	3
36-5	A							4	4
36-6	A						4	2	6
36-7	A			40	7				47
36-8	A			46	1				47
36-9	A			14	14	2	1		31
36-10	A			48					48
36-13	A/E			15	2				17
36-14	D			6	5	5			16
36-15	A/D			35					35
36-19	D			10	5		1	1	17
36-52	A			52					52
36-66	A			52	4				56
40-1	D			24	6				30
40-2	B/D			5/18					23
40-3	D			18	4		1		23
40-4	D			16	2	3	2		23
40-5	A				6	4	2	3	15
40-6	D			24	1			1	26
40-7	A/D			18	2			2	22
40-9	A			24	22	1			47
40-10	A			16		9	4		29
40-11	D			18	4	1	1	1	25
40-15	INST			57		3			60
40-56	A			85					85
40-62	A			61					61
44-1	D			36	6				42
44-2	D			14	14	2	1		31
44-3	D			24	3	2	2		31
44-4	D			31	8			2	41
44-52	A			104					104
48-1	D/E				6	4	2	3	15
48-2	D/E			46	1				47
48-3	D			18	1	3		3	25
48-4	A/D			47	16			2	65
48-62	D			85					85

NOTES:

DC Operating Voltage	AC (RMS)
250	200
700	500
1250	900
1750	1250
2450	1750
4200	3000

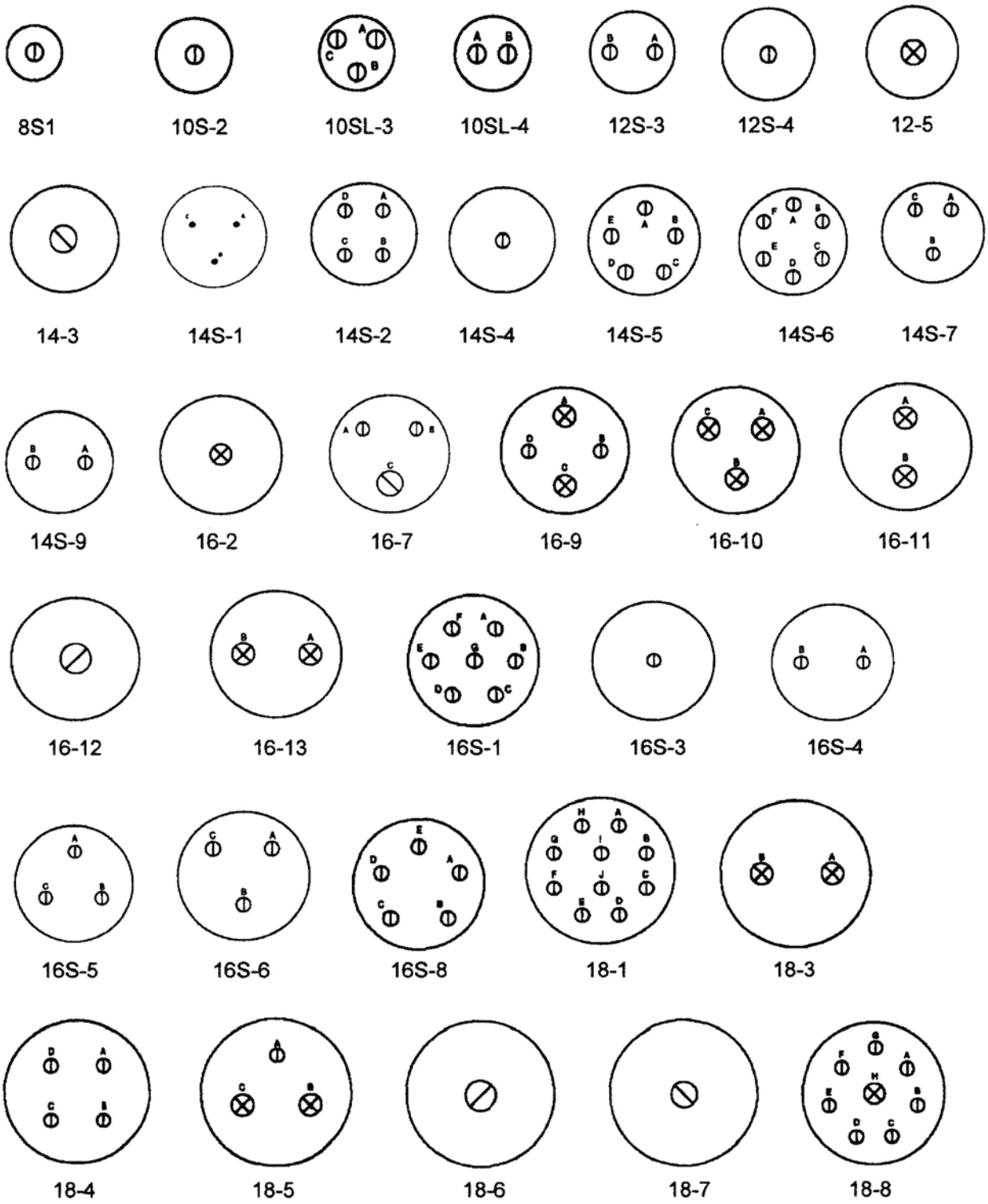


Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 1 of 15)

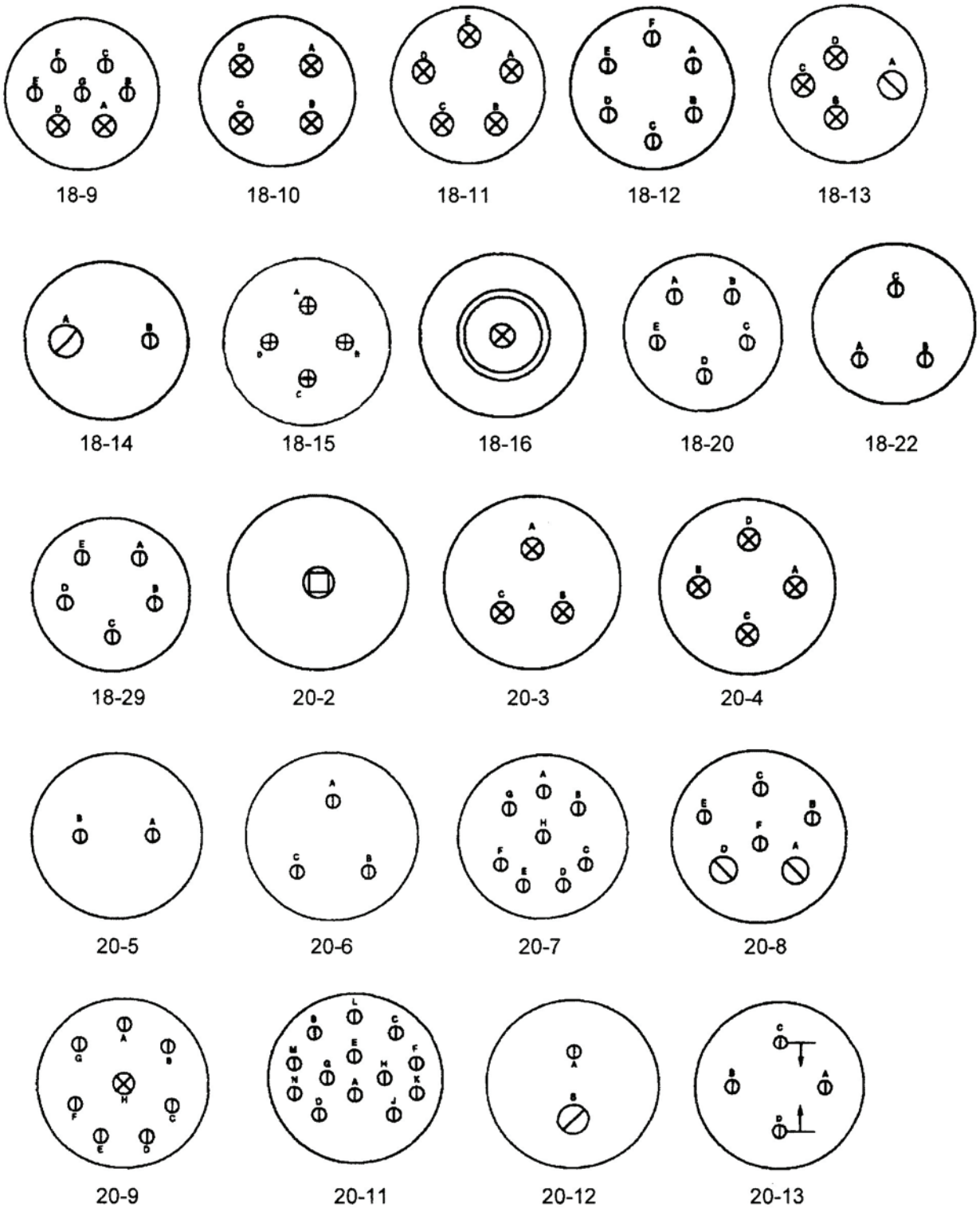


Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 2 of 15)

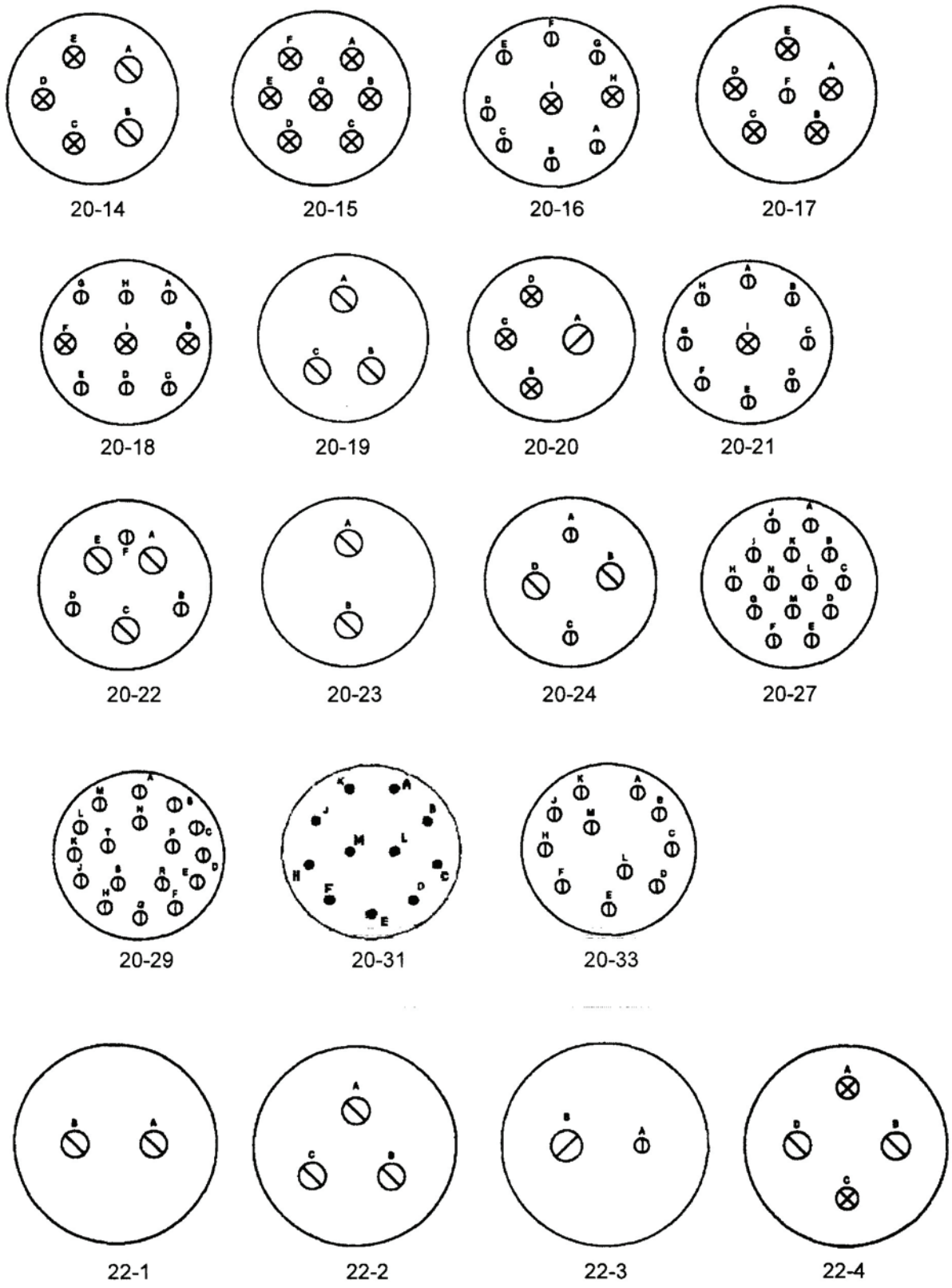


Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 3 of 15)

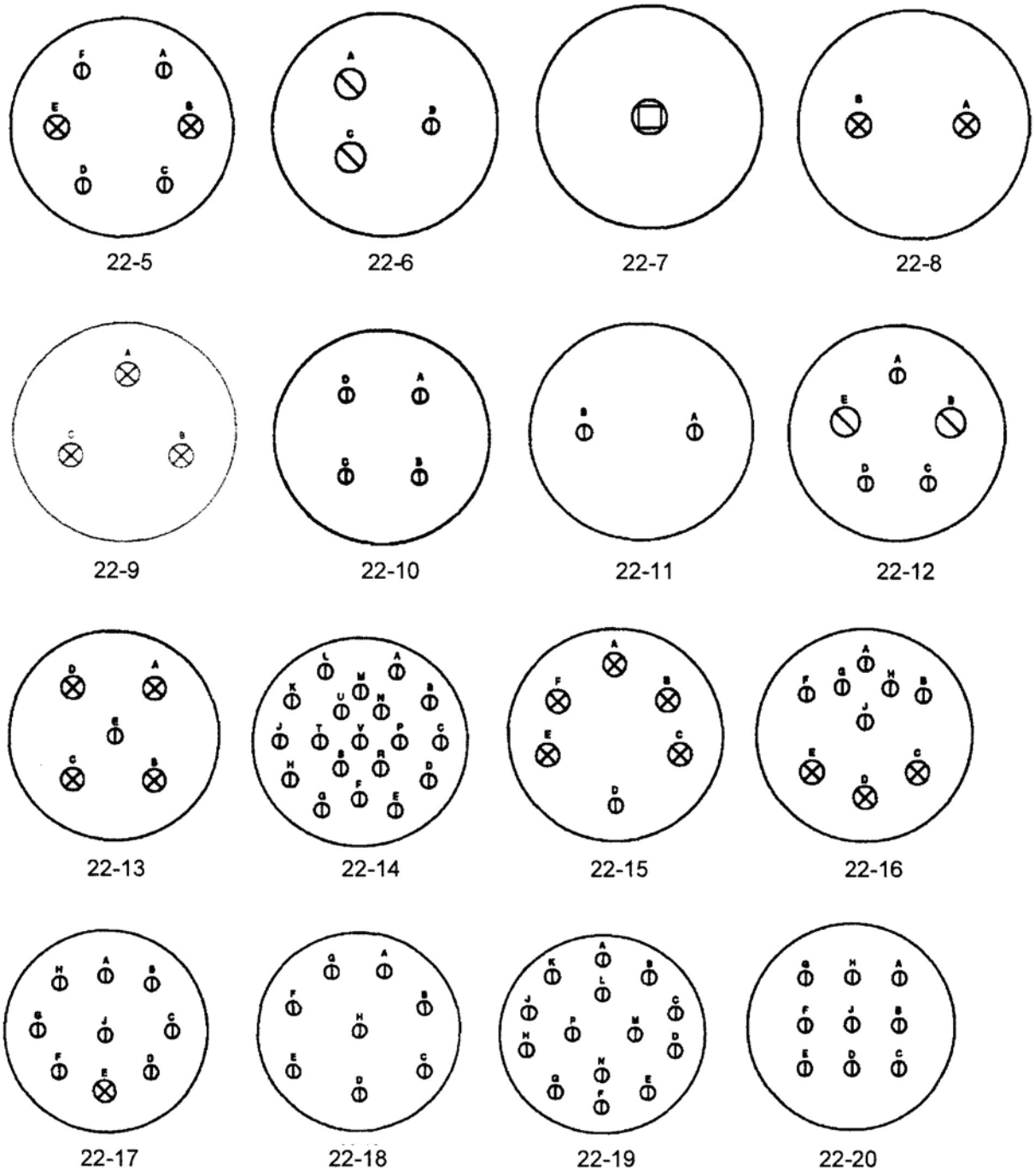


Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 4 of 15)

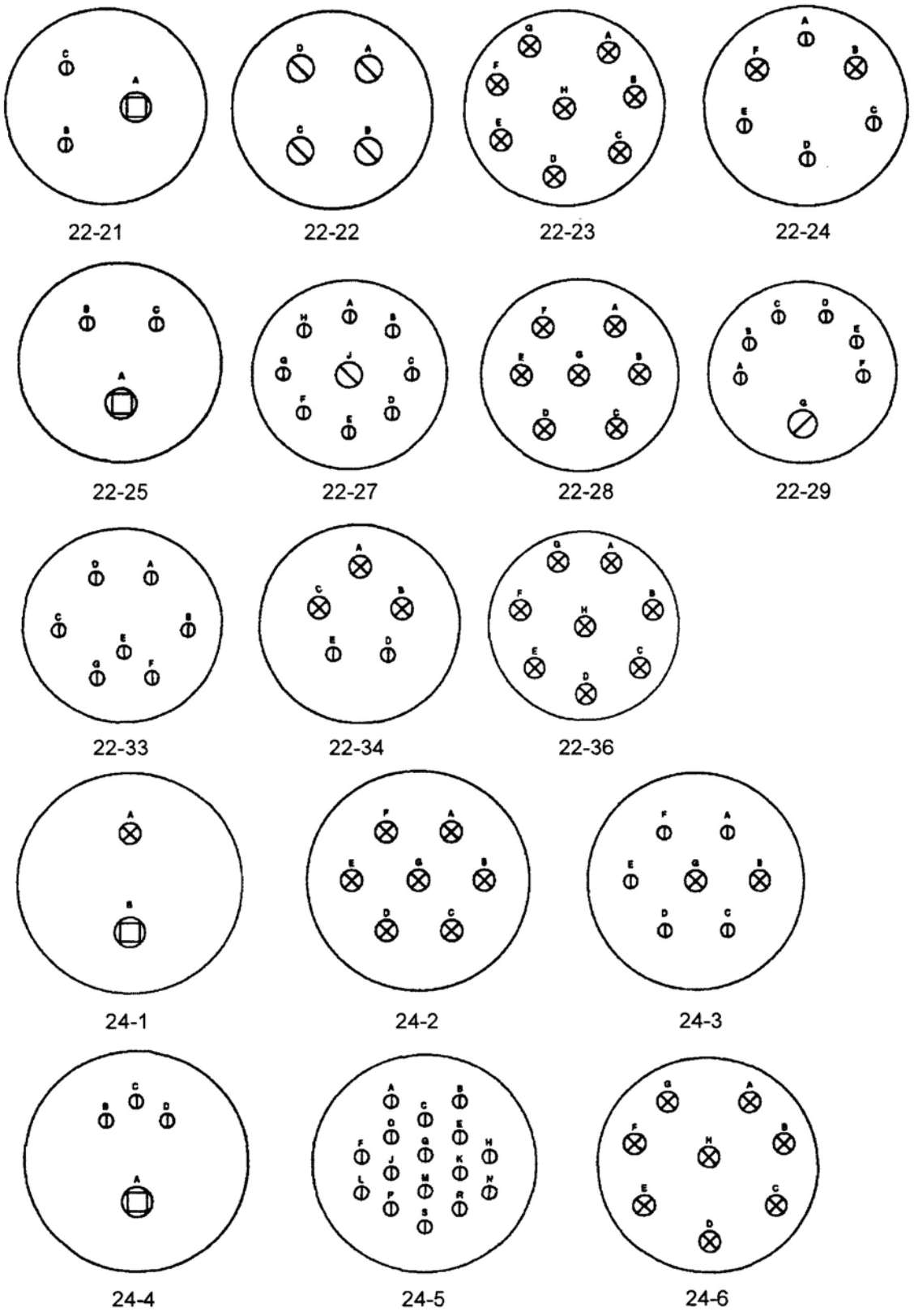


Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 5 of 15)

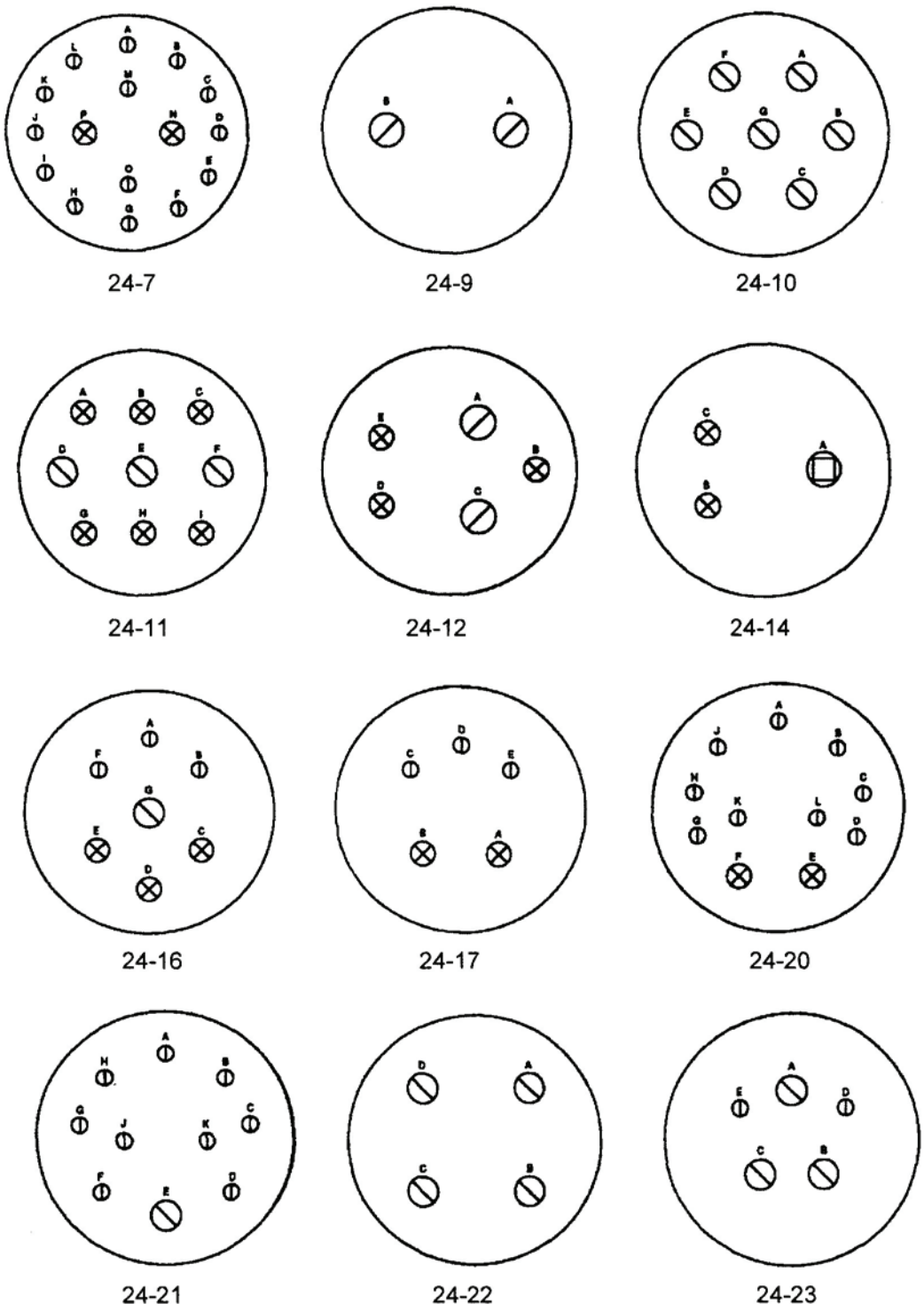


Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 6 of 15)

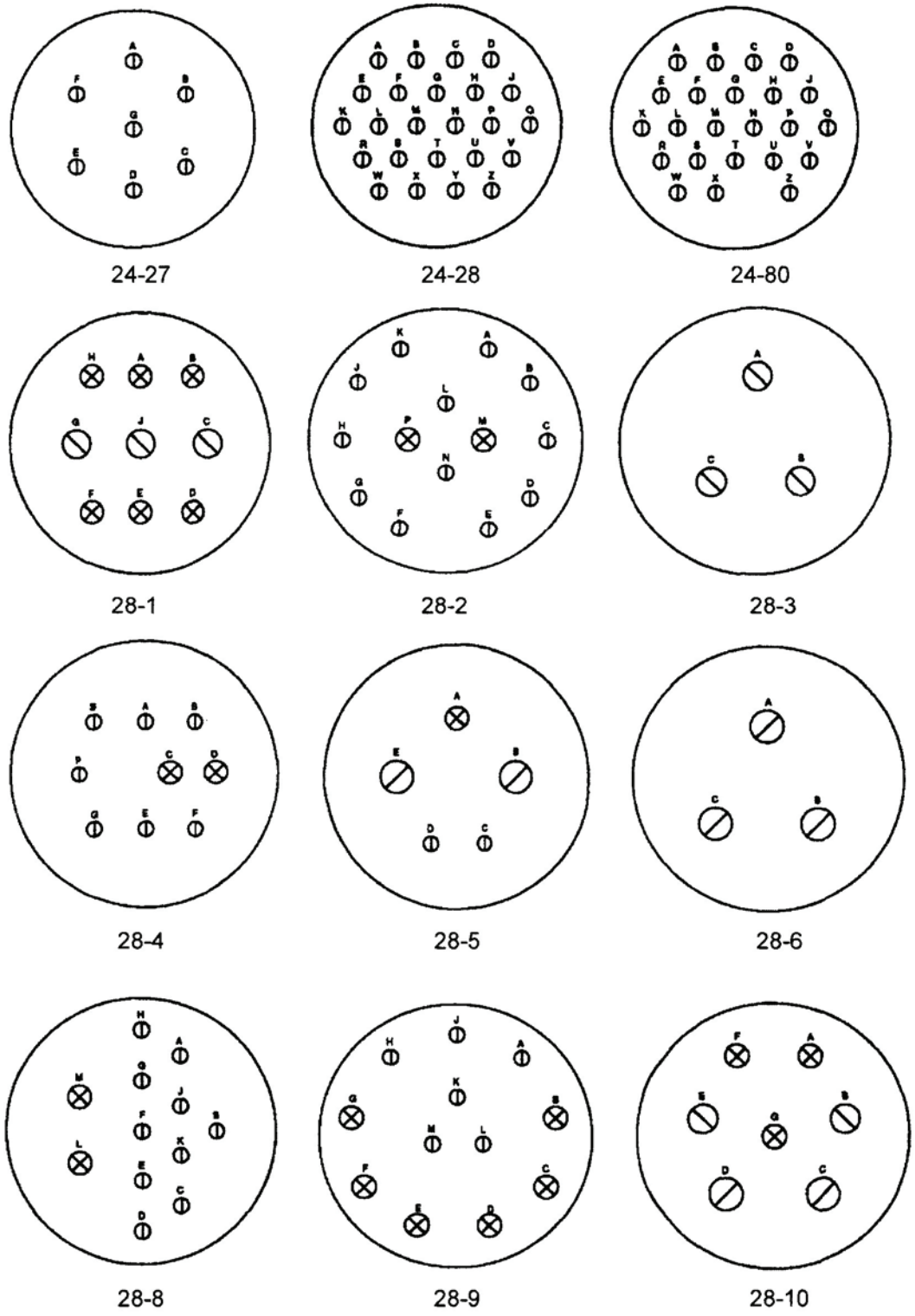


Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 7 of 15)

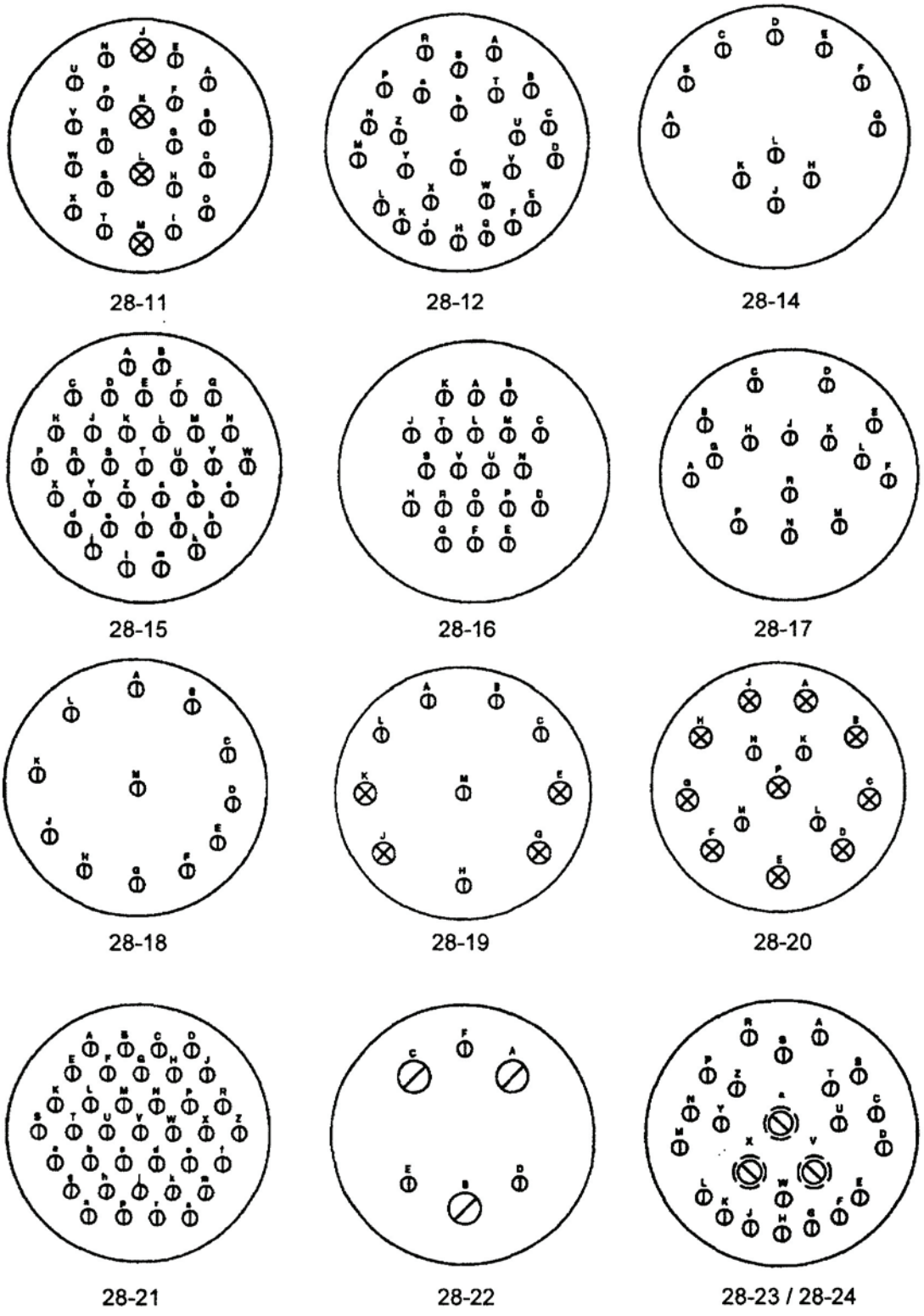


Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 8 of 15)

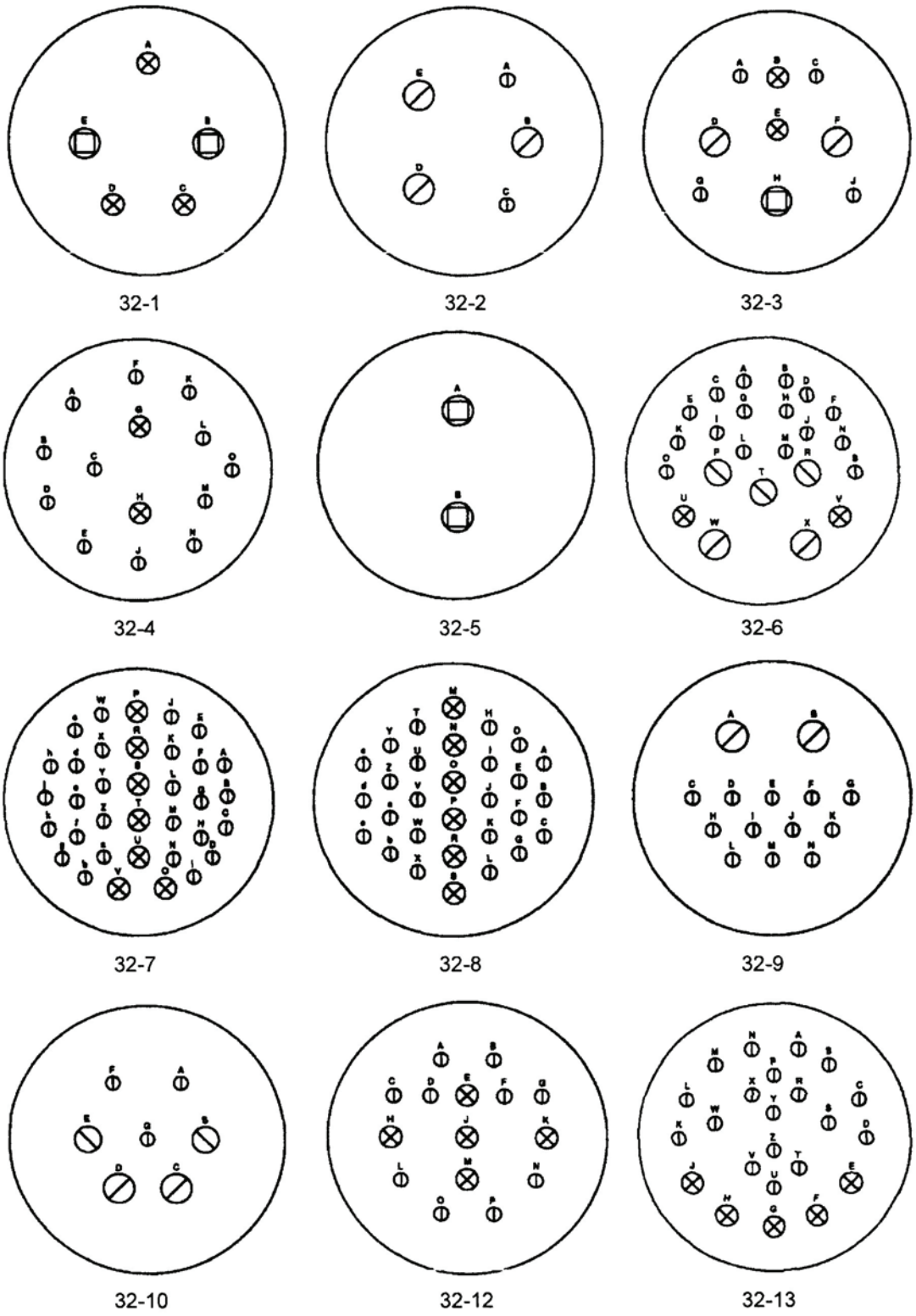


Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 9 of 15)

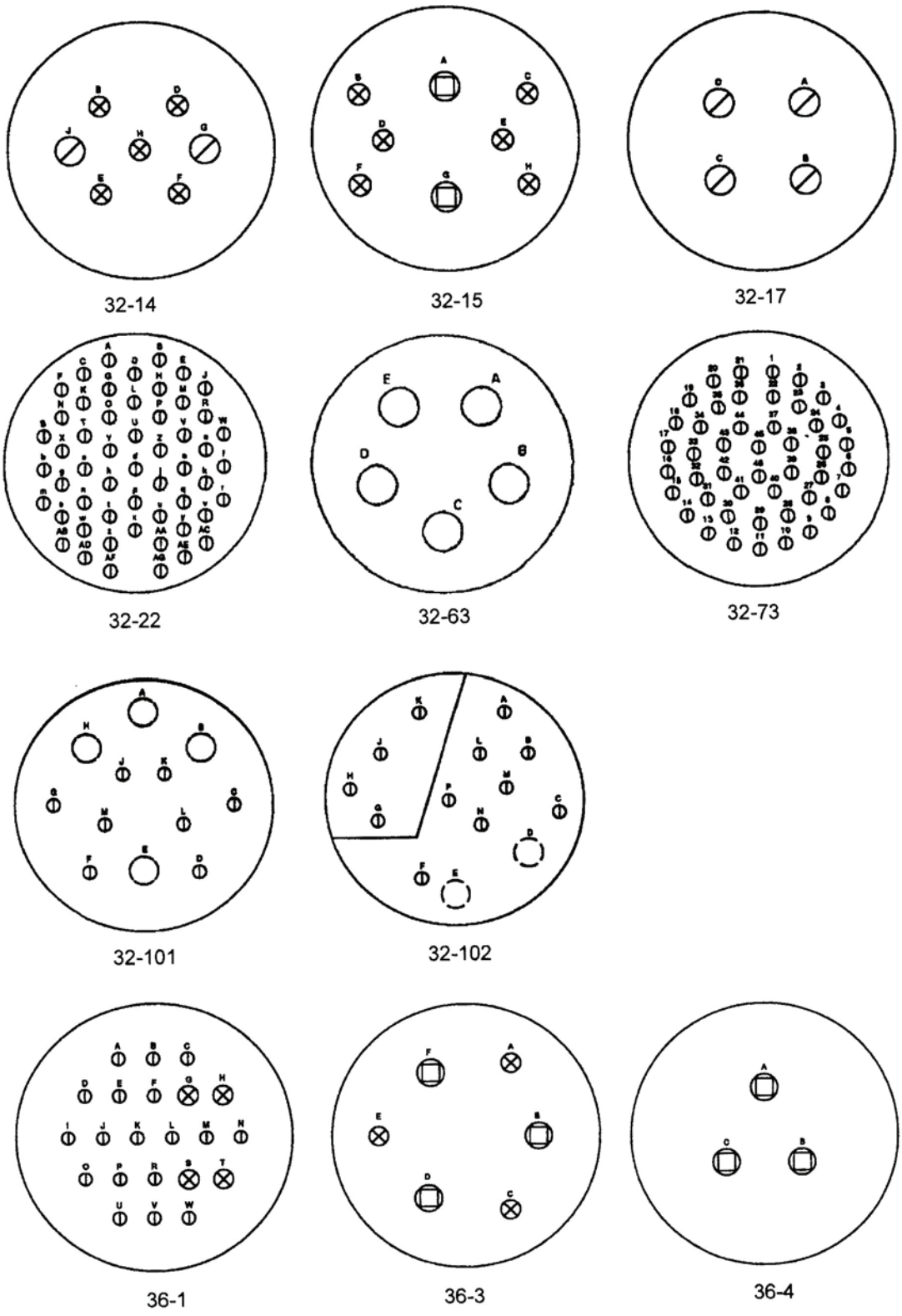


Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 10 of 15)

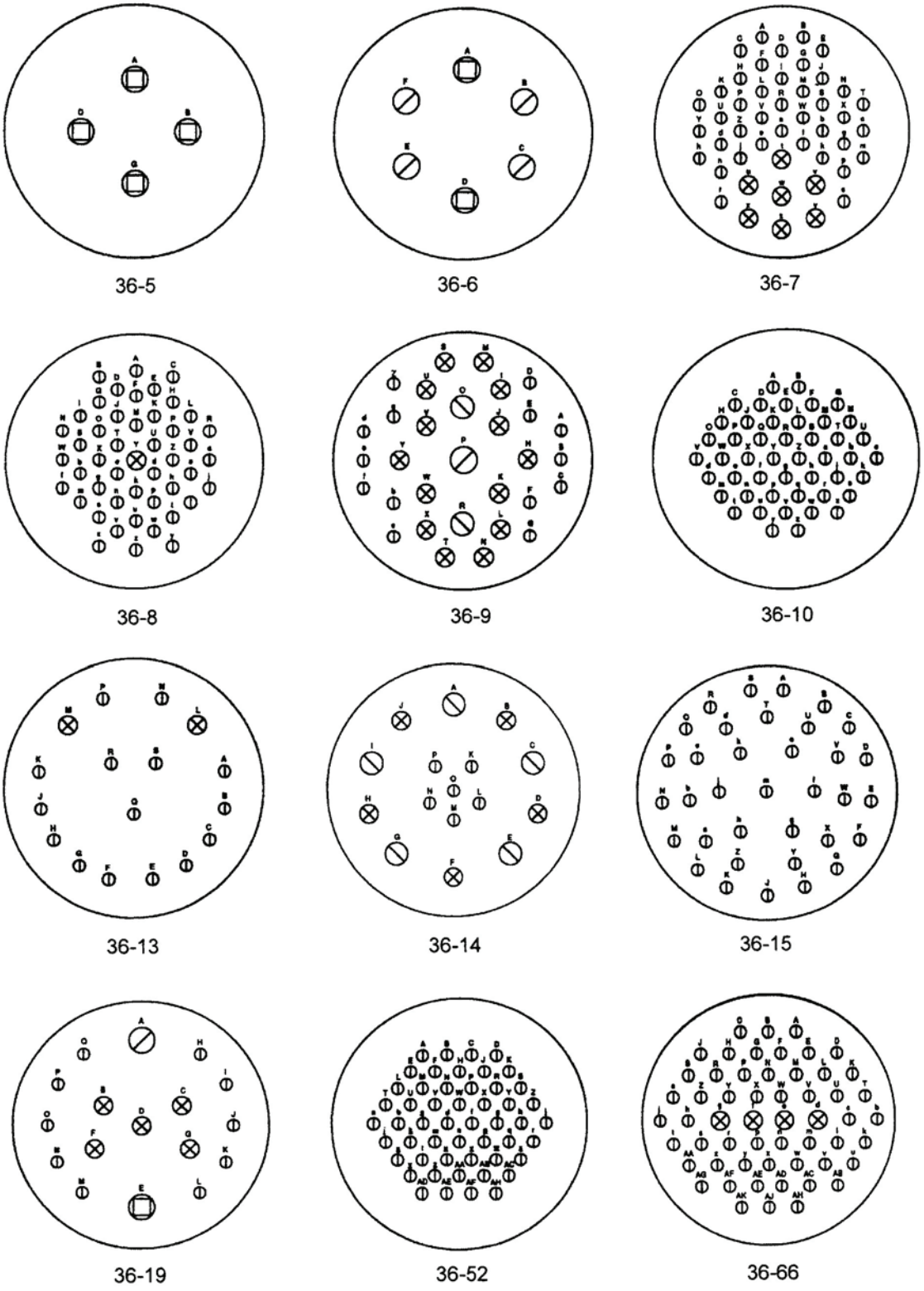


Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 11 of 15)

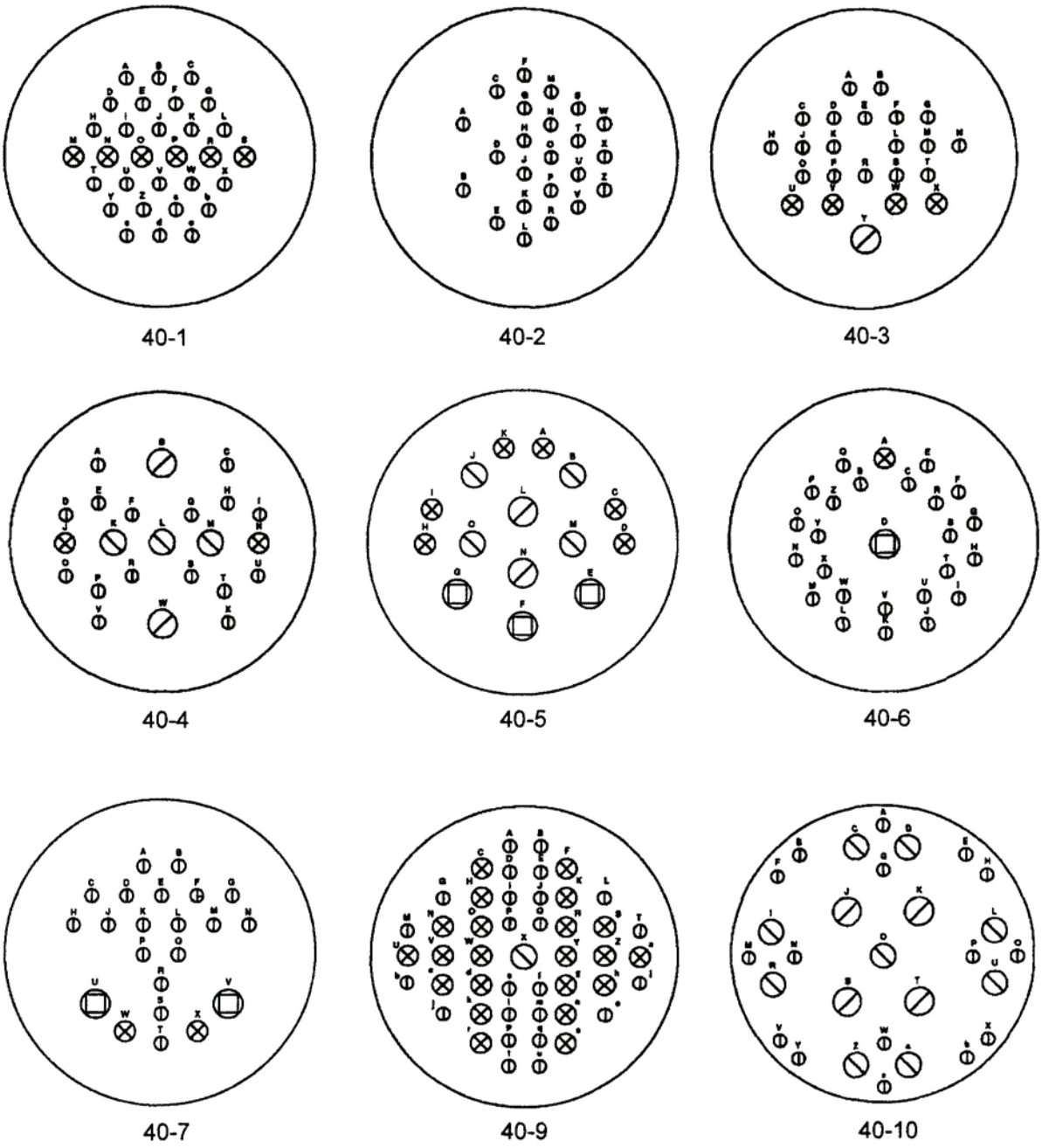


Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 12 of 15)

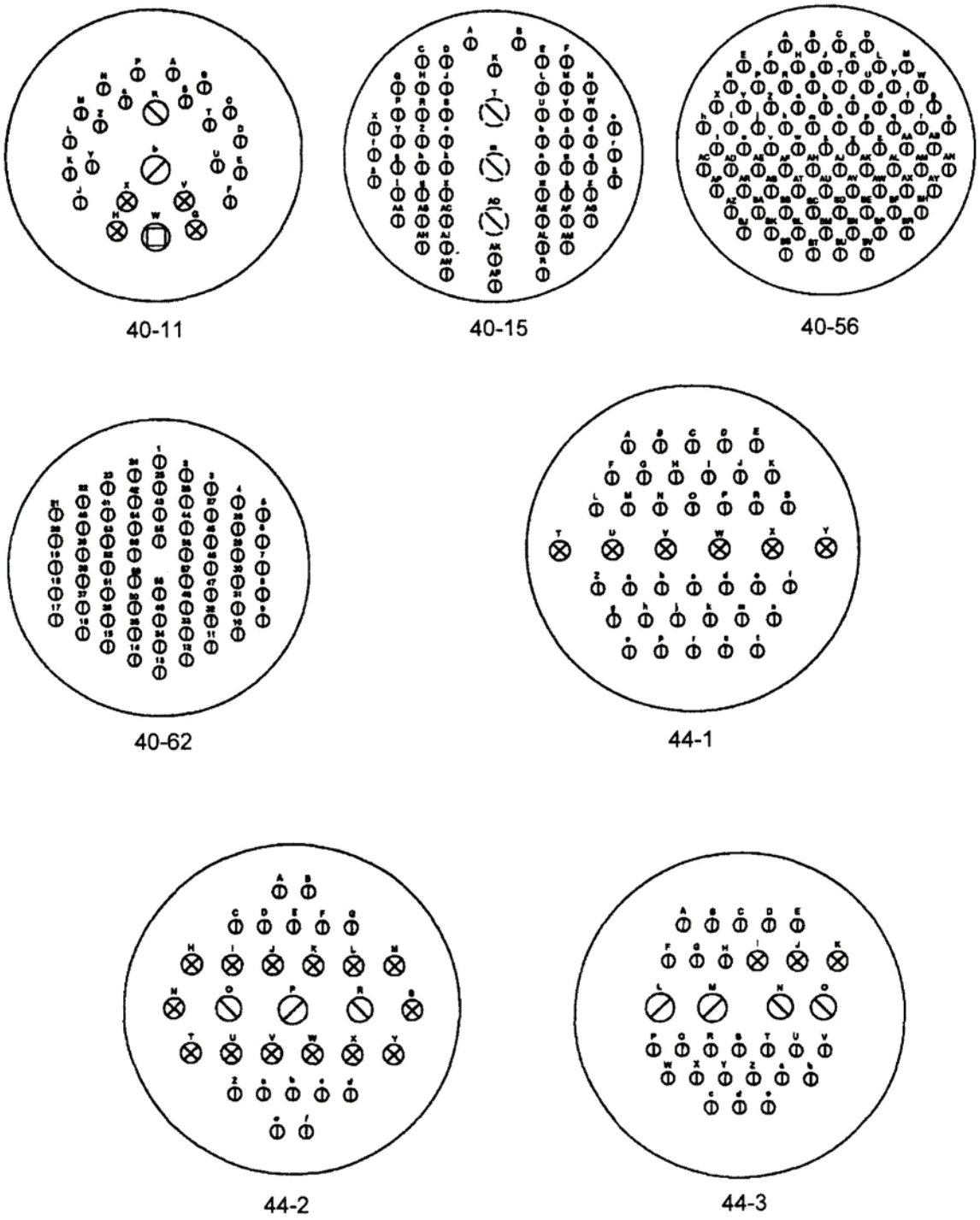


Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 13 of 15)

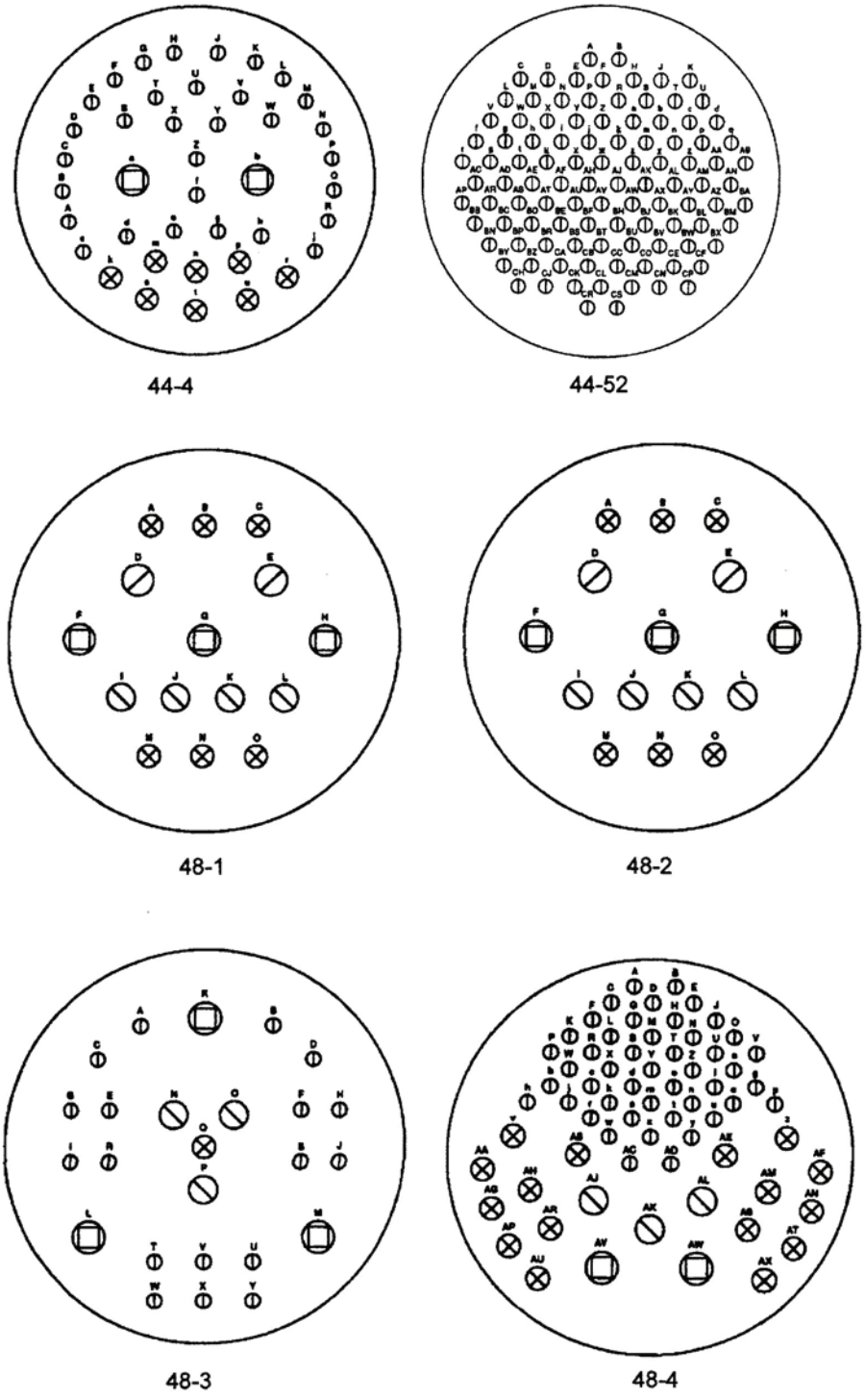
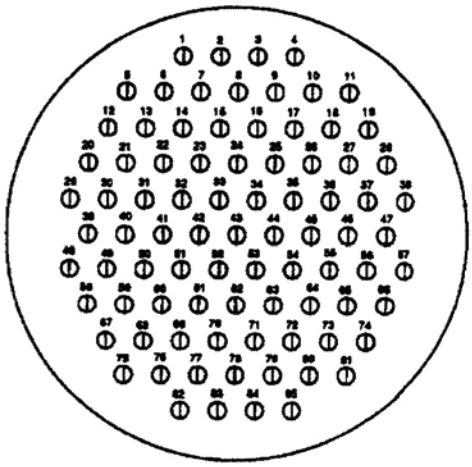


Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 14 of 15)



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Figure 6. MIL-DTL-5015 Insert Configuration (Sheet 15 of 15)

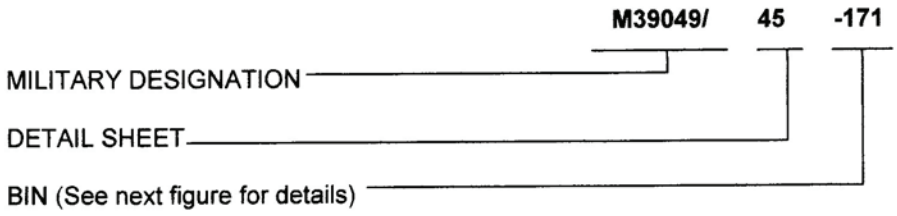


Figure 7. M39029/45-171 Part Number Breakdown

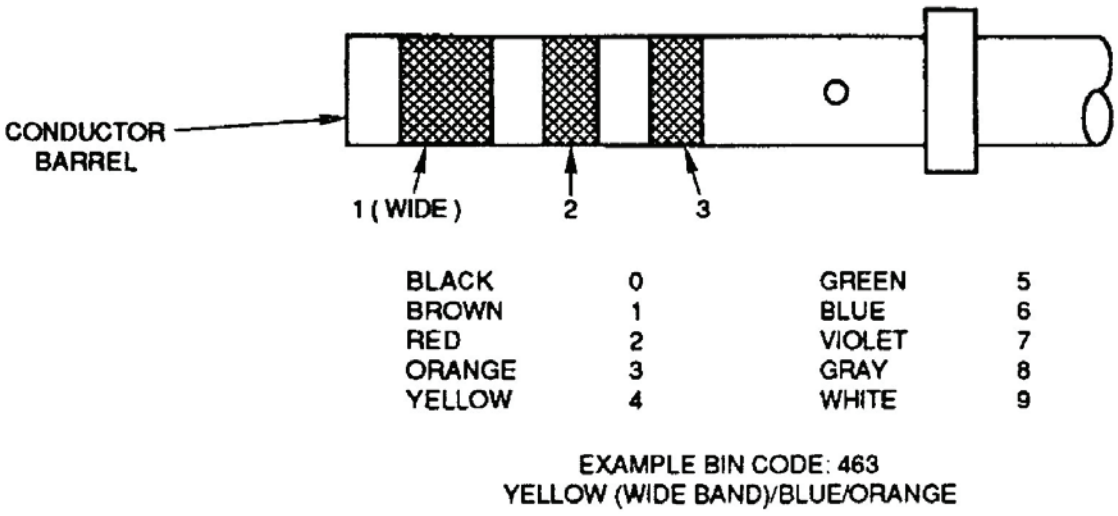


Figure 8. Basic Identification Number and Color Bands

Table 2. MIL-DTL-5015 Crimp Front Release Power Contact Application

Contact Size	Wire Range	Socket Contacts		Pin Contacts		Remarks
		M39029/	Color Bands 1st 2nd 3rd	M39029/	Color Bands 1st 2nd 3rd	
16	22-26	45-294	RD WH YE	44-287	RD GY VI	—
16	16-20	45-295	RD WH GN	44-288	RD GY GY	—
12	16-20	45-296	RD WH BL	44-289	RD GY WH	—
12	12-14	45-297	RD WH VI	44-290	RD WH BK	—
8	8	45-298	RD WH HY	44-291	RD WH BN	—
4	4	45-299	RD WH HY	44-292	RD WH BN	—
0	0	45-300	OR BK BK	44-293	RD WH OR	—

Table 3. MIL-DTL-5015 Crimp Rear Release Power Contact Application

Contact Size	Wire Range	Socket Contacts		Pin Contacts		Remarks
		M39029/	Color Bands 1st 2nd 3rd	M39029/	Color Bands 1st 2nd 3rd	
16S	16-20	30-217	RD BN VI	29-212	RD BN RD	—
16S	16-20	86-510	GN BN BK	85-454	YE GN YE	Copper-Nickel
16S	16-20	86-511	GN BN BN	85-455	YE GN GN	Nickel-Aluminum
16S	16-20	86-512	GN BN RD	85-456	YE GN BL	Nickel-Chromium
16S	16-20	86-513	GN BN OR	85-457	YE GN VI	Iron
16	16-20	30-218	RD BN GY	29-212	RD BN RD	—
16	16-20	86-462	YE BL RD	85-454:	YE GN YE	Copper-Nickel
16	16-20	86-463	YE BL OR	85-455	YE GN GN	Nickel-Aluminum
16	16-20	86-464	YE BL YE	85-456	YE GN BL	Nickel-Chromium
16	16-20	86-465	YE BL GN	85-457	YE GN VI	Iron
12	12-14	30-219	RD BN WH	29-213	RD BN OR	—
12	12-14	86-466	YE BL BL	85-458	YE GN GY	Copper-Nickel
12	12-14	86-467	YE BL VI	85-459	YE GN WH	Nickel-Aluminum
12	12-14	86-468	YE BL GY	85-460	YE BL BK	Nickel-Chromium
12	12-14	86-469	YE BL WH	85-461	YE BL BN	Iron
8	8	30-220	RD RD BK	29-214	RD BN YE	—
4	4	30-221	RD RD BN	29-215	RD BN GN	—
0	0	30-222	RD RD RD	29-216	RD BN BL	—

NOTE
New terminology applies to thermocouple conductors as follows:
Constantan: Copper - Nickel Alloy
Alumel: Nickel - Aluminum Alloy
Chromel: Nickel - Chromium

Table 4. MIL-DTL-5015 Thermocouple Contact Application (Sheet 1 of 9)

Thermo-Couple Insert	Total Con-tacts	Con-tact Size		Basic Insert	Contact Material
		#16	#12		
10SL-51	2	2		10SL-4	A = Ir.; B = Con.
10SL-52	2	2		10SL-4	A = Cu.; B = Con.
10SL-53	2	2		10SL-4	A = Al.; B = Ch.
10SL-54	3	3		10SL-3	A = Ir.; B = Con.; C = Cu.
10SL-55	3	3		10SL-3	A = Al.; B = Ch.; C = Cu.
10SL-56	2	2		10SL-4	A = Al.; B = Ch.
10SL-57	2	2		10SL-4	A = Ch.; B = Con.
10SL-58	3	3		10SL-3	A = Ch.; B = Al.; C = Cu.
10SL-59	2	2		10SL-4	A = Ch.; B = Al.
10SL-60	2	2		10SL-4	A = Ir.; B = Con.
10SL-61	2	2		10SL-4	A = Cu.; B = Con.
10SL-62	3	3		10SL-3	A = Cu.; B = Al.; C = Ir.
10SL-63	3	3		10SL-3	A, C = Con.; B = Ch.
10SL-64	3	3		10SL-3	A, C= Ch.; B = Al.
97-10SL-401	2	2		10SL-4	A = Al.; B = Ch.
12S-51	2	2		12S-3	A = Ch.; B = Al.
12S-54	2	2		12S-3	A = Ir.; B = Con.
12S-55	2	2		12S-3	A = Cu.; B = Con.
12S-56	2	2		12S-3	A = Al.; B = Ch.
12S-57	2	2		12S-3	A = Ch.; B = Al.
12S-58	2	2		12S-3	A = Ir.; B = Con.
12S-59	2	2		12S-3	A = Ir.; B = Con.
12S-60	2	2		12S-3	A - Cu.; B = Con.
12S-61	2	2		12S-3	A = Ch.; B = Con.
12S-62	2	2		12S-3	A = Ch.; B = Al.
12S-64	2	2		12S-3	A = Cu.; B = Con.
12S-65	2	2		12S-3	A = Con.; B = Ir.
97-12S-6	2	2		12S-6	A = Con.; B = Ir.
97-12S-407	2	2		12S-6	A = Al.; B = Ch.
97-12S-409	2	2		12S-6	A = Cu.; B = Con.
14S-51	2	2		14S-9	A = Al.; B = Ch.
14S-52	4	4		14S-2	A, B = Cu.; C = Al.; D = Ch.
14S-53	2	2		14S-9	A = Ir.; B = Con.
14S-54	6	6		14S-6	A, C, E = Ir.; B, D, F = Con.
14S-55	4	4		14S-2	A, C = Ir.; B, D = Con.
14S-56	4	4		14S-2	A = Ir.; B = Con.; C, D = Cu.
14S-57	4	4		14S-2	A, C = Al.; B, D = Ch.
14S-58	3	3		14S-7	A = Al.; B = Ch.; C = Cu.
14-59	6	6		14-53	A = Al.; B = Ch.; C = Ir.; D = Con.; E, F = Cu.
14S-59	2	2		14S-9	A = Cu.; B = Con.
14S-60	2	2		14S-9	A = Al.; B = Ch.
14S-61	6	6		14S-6	A = Al.; B = Ch.; C = Ir.; D = Con.; E, F = Cu.
14S-63	6	6		14S-6	A, C = Al.; B, D = Ch.; E = Ir.; F = Con.
14S-64	4	4		14S-2	A, C = Con.; B, D = Cu.
14S-65	6	6		14S-6	A, C, E = Cu.; B, D, F = Con.
14S-67	6	6		14S-6	A = Al.; B = Ch.; Bal = Cu.
14S-68	4	4		14S-2	A - Ch.; B = Con.; C, D = Cu.
14S-69	3	3		14S-7	A = Con.; B = Ch.; C = Cu.
14S-70	4	4		14S-2	A, D = Ch.; B, C = Al.
14S-70	4	4		14S-2	D = Al.; A = Ch.; Bal = Std.
14S-71	4	4		14S-2	A, B, D = Cu.; C = Con.
14S-72	2	2		14S-9	A = Con.; B = Cu.
14S-73	4	4		14S-2	A, B = Cu.; C = Al.; D = Ch.
14S-74	4	4		14S-2	A, B = Ch.; C, D = Al.
14S-75	4	4		14S-2	A, B = Cu.; C, D = Con.
14S-76	4	4		14S-2	A, C = Al.; B, D = Ch.
14S-77	4	4		14S-2	A, D = Al.; B, C = Ch.
14S-77	6	6		14S-6	A, B, C = Al.; D, E, F = Ch.
14S-78	2	2		14S-9	A = Ch.; B = Al.
14S-78	4	4		14S-2	A, B = Al.; C, D = Ch.
14S-79	5	5		14S-5	A, B, E = Cu.; C = Al.; D = Ch.

Table 4. MIL-DTL-5015 Thermocouple Contact Application (Sheet 2 of 9)

Thermo-Couple Insert	Total Con-tacts	Con-tact Size		Basic Insert	Contact Material
		#16	#12		
14S-79	5	5		14S-5	1 = Al.; 1 = Ch.; Bal = Std.
14S-80	2	2		14S-9	A = Cu.; B = Con.
14S-80	3	3		14S-7	2 = Ir.; 1 = Con.
14S-81	2	2		14S-9	A = Al.; B = Cu.
14S-82	4	4		14S-2	A = Ir.; B = Con.; C = Ch.; D = Al.
14S-83	6	6		14S-6	A, C = Ir.; B, D = Con.; E, F = Cu.
14S-84	6	6		14S-6	A, B = Al.; Bal = Cu.
14S-85	3	3		14S-7	A = Ch.; B = Al.; C = Cu.
14S-86	6	6		14S-6	A, F = Ir.; B, E = Con.; C, D = Cu.
14S-87	6	6		14S-6	A, B, C, D = Ir.; E, F = Con.
14S-88	2	2		14S-9	A = Ch.; B = Con.
14S-89	3	3		14S-7	A = Ir.; B = Cu.; C = Con.
14S-90	6	6		14S-6	A = Al.; C = Ch.; Bal = Cu.
14S-91	4	4		14S-2	A = Al.; B = Ch.; Bal = Cu.
14S-93	6	6		14S-6	A, B, F = Al.; C, D, E = Ch.
97-14S-414	2	2		14S-9	A = Al.; B = Ch.
97-14S-415	6	6		14S-6	A, C, E = Cu.; B, D, F = Con.
97-14S-419	4	4		14S-2	A, B = Al.; C, D = Ch.
97-14S-421	6	6		14S-6	A, B, C = Ir.; D, E, F = Con.
97-14S-422	6	6		14S-6	A, B, C = Al.; D, E, F = Ch.
97-14S-423	6	6		14S-6	A = Ir.; B, C = Al.; D = Con.; E, F = Ch.
97-14S-424	6	6		14S-6	A = Ch.; B, C = Ir.; D = Al.; E, F = Con.
97-14S-433	4	4		14S-2	A, B = Std.; C = Al.; D = Ch.
97-14S-446	4	4		14S-2	A, C = Ir.; B, D = Con.

Thermo-Couple Insert	Total Con-tacts	Con-tact Size		Basic Insert	Contact Material
		#16	#12		
16-13	2	2		16-13	A = Ir.; B = Con.
16S-50	5	5		16S-8	1 = Con.; 1 = Ir.; 3 = Cu.
16S-51	7	7		16S-1	A, F = Al.; B = Ch.; Bal = Std.
16-52	2	2		16-11	A = Al.; B = Ch.
16S-52	2	2		16S-4	A = Ch.; B = Al.
16-53	4	2	2	16-9	A = Al.; C = Ch.; B, D = Cu.
16S-54	7	7		16S-1	A = Al.; B = Ch.; Bal = Cu.
16-55	3		3	16-10	A = Al.; B = Ch.; C = Cu.
16S-55	7	7		16S-1	A = Con.; Bal = Cu.
16S-55	2	2		16S-4	B = Con.
16-56	2		2	16-13	A= Con.; B = Cu.
16S-56	7	7		16S-1	A = Al.; D = Ch.; Bal = Cu.
16-57	3		3	16-10	A= Al.; B = Cu.; C = Ch.
16S-57	7	7		16S-1	A, B = Al.; C, D = Ch.; Bal = Cu.
16-58	3		3	16-10	A = Con.; B, C = Cu.
16S-58	7	7		16S-1	A, G = Al.; Bal - Ch.
16S-59	7	7		16S-1	A, C = Ir.; B, D = Con.; Bal = Cu.
16-60	2		2	16-13	A = Al.; B = Ch.
16S-60	7	7		16S-1	A = Ir.; B = Con. Bal = Cu.
16S-61	7	7		16S-1	G = Al.; Bal = Ch.
16-62	2		2	16-11	A = Con.; B = Cu.
16-67	2		2	16-11	A = Al.; B = Ch.
16-68	4	2	2	16-9	A, B, C = Ch.; D = Al.
97-16-412	2		2	16-13	A = Al.; B = Ch.; Al coded green; Ch coded white
97-16-414	2		2	16-13	A = Cu.; B = Con.
97-16S-417	2	2		16S-4	A = Al.; B= Ch.
97-16S-418	2	2		16S-4	A = Ir.; B = Con.
97-16S-419	2	2		16S-4	A = Cu.; B = Con.

Table 4. MIL-DTL-5015 Thermocouple Contact Application (Sheet 3 of 9)

Thermo-Couple Insert	Total Con-tacts	Con-tact Size		Basic Insert	Contact Material
		#16	#12		
97-16-848	2		2	16-13	A = Al.; B = Ch.
18-15	4		4	18-15	A, C = Ir.; B, D = Con.
18-41	4	4		18-4	A, C = Ir.; B, D = Con.
18-42	4	4		18-4	A, C = Al.; B, D = Ch.
18-43	4	4		18-4	A, C = Ch.; B, D = Con.
18-44	3	3		18-22	1 = Al.; 1 = Ch.; 1 = Std.
18-45	5	5		18-20	A = Ir.; B = Con.; Bal = Std.
18-46	4	4		18-4	1 = Ch.; 1 = Al.; 2 = Std.
18-51	6	6		18-12	A = Ir.; B, E = Con.; D = Cu.; C, F = Dummy
18-51	6	6		18-12	A = Ir.; B, E = Con.; D = Cu.; C, F = Bal. Std.
18-52	5		5	18-11	A = Ir.; B = Con.; C = Ch.; D - Al.; E = Dummy
18-52	5		5	18-11	A = Ir.; B = Con.; D = Al.; E = Bal. Std.
18-53	6	6		18-12	A, D = Ir.; B, E = Con.; C, F = Dummy
18-53	6	6		18-12	A, D = Ir.; E = Con.; C, F = Bal Std.
18-54	4		4	18-15	A, C = Al.; B, D = Ch.
18-56	10	10		18-1	A, C, E, G, I = Ir.; B, D, F, H, J = Con.
18-57	6	6		18-12	A, C, E = Al.; B, D, F = Ch.
18-59	6	6		18-12	A, C = Ir.; B, E, F = Con.; D = Cu.
18-60	5		5	18-11	A, D = Al.; B, C = Ch.; E = Cu.
18-61	6	6		18-12	A, C = Ir.; B, D = Con.; E = Ch.; F = Al.
18-62	6	6		18-12	A, B, C = Ir.; D, E, F = Con.
18-63	4		4	18-15	A, C = Con.; B, D = Cu.
18-65	6	6		18-12	A = Ir.; B = Con.; Bal = Cu.
18-66	10	10		18-1	A, C, E, G, I = Cu.; B, D, F, H, J = Con.
18-67	6	6		18-12	A, C, E = Cu.; B, D, F = Con.
18-68	5		5	18-11	A, D = Al.; B, C = Ch.; E = Cu.
18-69	10	10		18-1	A = Al.; B = Ch.; Bal = Cu.
18-70	5		5	18-11	A = Ir.; B = Con.; C = Ch.; D = Al.; E = Cu.
18-71	4		4	18-15	A = Con.; Bal = Cu.
18-71	6	6		18-12	2 = Al.; 2 = Ch.; 2 = Std.
18-72	4		4	18-15	D = Con.; Bal = Cu.
18-73	7	5	2	18-9	A = Al.; D = Ch.; Bal = Cu.
18-74	6	6		18-12	A = Ch.; B = Al.; D = Ir.; E = Cu.; C, F = Con.
18-75	10	10		18-1	2 = Al.; 2 = Ch.; Bal = Std.
18-76	10	10		18-1	A, C, E, G, I = Al.; B, D, F, H, J = Ch.
18-77	10	10		18-1	A, C, E, G = Al.; B, D, F, H = Ch.; Bal = Cu.
18-78	10	10		18-1	A = Al.; B = Ch.; D, F, H, J = Con. Bal = Cu.
18-79	6	6		18-12	A, F = Ir.; B, E = Con.; C, D = Cu.
18-80	4		4	18-15	A, C = Cu.; B, D = Con.
18-81	10	10		18-1	E, G = Con.; Bal = Cu.
18-82	10	10		18-1	E, G = Con.; F, H = Ir.; Bal = Cu.
97-18-401	4		4	18-10	A, B = Al.; C, D = Ch.

Table 4. MIL-DTL-5015 Thermocouple Contact Application (Sheet 4 of 9)

Thermo-Couple Insert	Total Con-tacts	Con-tact Size		Basic Insert	Contact Material
		#16	#12		
87-18-402	4		4	18-10	A, B = Ir.; C, D = Con.
87-18-403	4		4	18-15	A, C = Al.; B, D = Ch.
97-18-404	2		2	18-3	A = Con.; B = Ir.
97-18-405	2		2	18-3	A = Al.; B = Ch.
97-18-411	4		4	18-10	A = Con.; B, C, D - Cu.
97-18-422	2		2	18-3	A = Cu.; B = Con.
97-18-423	8	7	1	18-8	A, B, C, H = Ch.; D, E, F, G = Al.
97-18-426	10	10		18-1	A, B, C, D, J = Ir.; E, F, G, H, 1 = Con.
97-18-434	10	10		18-1	All Alumel
97-18-435	10	10		18-1	All Chromel
97-18-439	10	10		18-1	A, B, G, H, I = Al.; C, D, E, F, J = Ch.
97-18-443	6	6		18-12	A, C, E = Ir.; B, D, F = Con.
97-18-451	6	6		18-12	A, C, E = Cu.; B, D, F = Con.
97-18-452	4		4	18-15	A = Con.; B = Cu.; C, D = Std.
20-50	17	17		20-29	7 = Al.; 7 = Ch.; 3 = Std.
20-52	4		4	20-4	A = Ir.; B = Con.; C = Ch.; D = Ai.
20-56	8	8		20-7	A, B, G, H = Ir.; C, D, E, F = Con.
20-60	8	8		20-7	D = Ch.; E = Al.; Bal = Cu.
20-61	17	17		20-29	A, B, M = Cu.; Bal = Con.
20-62	7		7	20-15	A, C, E = Al.; B, D, F = Ch.; G = Cu.
20-64	14	14		20-27	A = Al.; C = Ch.; Bal = Cu.
20-65	14	14		20-27	A, B, C, D, E, F, G = Ir.; H, I, J, K, L, M, N = Con.
20-67	9	7	2	20-16	H = Al.; I = Ch.; Bal = Cu.
20-68	8	8		20-7	A, B, G, H = Con.; C, D, E, F = Cu.
20-69	14	14		20-27	A, B, C, D, E, F, G = Cu.; H, I, J, K, L, M, N = Con.
20-70	17	17		20-29	A, C, E, G, J, L, N, R, T = Ir.; B, D, F, H, K, M, P, S = Con.
20-71	17	17		20-29	S = Al.; R = Ch.; Bal = Cu.
20-74	17	17		20-29	A, C, E, G, J, L, N, R = Ir.; B, D, F, H, K, M, P, S = Con.; T = Cu.
20-75	7		7	20-15	G = Al.; Bal = Ch.
20-75	14	14		20-27	A, L, E = Al.; B, F, M = Ch.; Bal = Std.
20-76	17	17		20-29	8 = Ch.; 8 = Al.; 1 = Cu.
20-77	9	7	2	20-16	A = Con.; Bal = Std.
20-77	9	9		20A-9	3 = Al.; 3 = Ch.; 3 = Ph. Bz.
20-80	14	14		20-27	A, C, E, G, I, K, M = Cu.; B, D, F, H, J, L, N = Con.
20-81	14	14		20-27	A, C, E, G, I, K, M = Ch.; B, D, F, H, J, L, N = Al.
20-82	17	17		20-29	A, C, E, G, J, L, N, R = Al.; B, D, F, H, K, M, P, S = Ch.; T = Cu.
20-83	14	14		20-27	A, B = Ch.; C, D = Al.; Bal = Std.
20-85	11	11		20-33	A, L = Al.; Bal = Ch.
20-87	17	17		20-29	A, C, E, G, J, L, N, R = Con.; Bal = Cu.
20-88	14	14		20-27	A, C, E = Al.; B, D, F = Ch.; G, H, K, N = Con.; Bal = Cu.
20-89	14	14		20-27	B, D, F, H, J, L = Al.; A, C, E, G, I, K = Ch.; M, N = Cu.
20-90	14	14		20-27	C, G, I = Ch,; K, L, M = Al.; Bal = Cu.
20-91	14	14		20-27	I = Ch.; K = Al.; Bal = Cu.

Table 4. MIL-DTL-5015 Thermocouple Contact Application (Sheet 5 of 9)

Thermo-Couple Insert	Total Con-tacts	Con-tact Size		Basic Insert	Contact Material
		#16	#12		
20-92	8	8		20-7	A = Al.; H = Cu.; Bal = Ch.
20-93	14	14		20-27	A = Ch.; B = Al.; Bal = Cu.
20-94	7		7	20-15	A, C, E = Al.; B, D, F = Ch.; G = Cu.
20-99	11	11		20-33	A = Al.; Bal = Ch.
20-641	14	14		20-27	A, B, C, D, E, F, G = Al.; H, I, J, K, L, M, N = Ch.; 7 = Al.; 7 = Ch.
97-20-408	8	8		20-7	A, C, E, G = Ch,; B, D, F, H = Al.
97-20-409	8	8		20-7	A, C, E, G = Cu.; B, D, F, H = Con.
97-20-410	4		4	20-4	A, C = Cu.; B, D = Con.
97-20-412	14	14		20-27	A, B, C, D, E, F, G = Al.; H, I, J, K, L, M, N = Ch.
97-20-413	14	14		20-27	A, B, C, D, E, F, G = Ir.; H, I, J, K, L, M, N = Con.
22-36	8		8	22-36	B, D, F, H = Con.; A, C, E, G = Ir.
22-57	19	19		22-14	A, C, E, F, J, L, N, R = Ir.; B, D, F, H, M, S, P = Con.; T, U, V = Cu.
22-60	19	19		22-14	U = Al.; N = Ch.; Bal = Cu.
22-62	8		8	22-23	A, B, F, G = Al.; C, D, E, H = Ch.
22-68	14	14		22-19	A, C, E, G, J, L, M = Ir.; B, D, F, H, K, P, N = Con.
22-69	14	14		22-19	A, C, E, G, J, L, M = Cu.; B, D, F, H, K, P, N = Con.
22-71	19	19		22-14	V = Al.; U = Ch.; Bal = Cu.
22-72	6	4	2	22-5	B = Al.; E = Ch.; Bal = Cu.
22-73	6	4	2	22-5	E = Al.; B = Ch.; Bal = Cu.
22-74	8		8	22-23	A, C, E, G = Ir.; B, D, F, H = Con.
22-75	8		8	22-23	A = Al.; B, D, G, H = Cu.; C = Ch.; E = Ir.; F = Con.
22-76	21		21		W = Con.; Bal = Cu.
22-77	14	14		22-19	B, D, F, H, J, K, M, P = Cu.; A, E, L = Ir.; C, G, N = Con.
22-78	19	19		22-14	A, C, E, G, H, K, M, P, R, T = Con.; Bal = Cu.
22-79	4	4		22-10	A, C = Con.; B, D = Cu.
22-81	5	2	3	22-34	E = Ir.; D = Con.; Bal = Std.
22-82	19	19		22-14	A, C, E, G, J, L, N, R, T = Ir.; B, D, F, H, K, M, P, S, U = Con.; V = Cu.
22-83	8	8		22-18	A, C, E, G = Al.; B, D, F, H = Ch.
22-84	19	19		22-14	A, C, S = Ch.; B, D, T = Al.; Bal - Cu.
22-85	14	14		22-19	A, C, E, G, J, L, N = Al.; B, D, F, H, K, M, P = Ch.
22-85	6	4	2	22-5	2 = Al.; 2 = Ch.; Bal = Std.
22-89	7		7	22-28	A, C, E = Ir.; B, D, F = Con.; G = Cu.
97-22-404	8		8	22-23	A, B, F, G = Ir.; C, D, E, H = Con.
97-22-405	8		8	22-23	A, B, F, G = Cu.; C, D, E, H = Con.
97-22-406	8		8	22-23	A, B, F, G = Al.; C, D, E, H = Ch.
97-22-407	8		8	22-23	A, B, C = Ir.; D, E, F = Con.; G = Ch.; H = Al.
97-22-412	8		8	22-36	A, C, E, G = Al.; B, D, F, H = Ch.
97-22-414	8		8	22-23	All Alumel
97-22-415	8		8	22-23	All Chromel
97-22-416	8		8	22-36	A, C, E, G = Cu.; B, D, F, H = Con.
97-22-422	8	8		22-18	A, B, C, D = Al.; E, F, G, H = Ch.

Table 4. MIL-DTL-5015 Thermocouple Contact Application (Sheet 6 of 9)

Thermo-Couple Insert	Total Con-tacts	Con-tact Size		Basic Insert	Contact Material
		#16	#12		
97-22-431	14	14		22-19	A, C, E, J, P, M = Ch.; B, D, F, H, L, N = Al.
24-56	11	9	2	24-20	E = Al.; F = Ch.; Bal = Cu.
24-57	24	24		24-28	A, C, J, V, Y, W, K, E, H, U, S, M = Ch.; Bal = Al.
24-62	24	24		24-28	A, C, E, G = Ir.; B, D, F, H = Con.; R, T = Ch.; S, U = Al.; Bal = Cu.
24-63	24	24		24-28	A, C, E, G, J, L, K, N, S, U, W, Y = Cu.; B, D, F, H, Q, R, M, P, T, V, X, Z = Con.
24-64	16	16		24-5	A, B, C, D, E, F, G, H = Ir.; J, K, L, M, N, P, R, S = Con.
24-68	24	24		24-28	D = Con.; Bal = Cu.
24-69	12	12		24-19	5 = Con.; 7 = Std.
24-70	24	24		24-28	8 = Ch.; 8 = Al.; 8 = Ph. Bz.
24-81	16	14	2	24-7	A, C, E, G, I, K, M, N, P = Cu.; B, D, F, H, J, L, O = Con.
24-88	24	24		24-28	A, B, C, D, E, F, G, H, J, K, L, M = Con.; Bal = Ir.
24-91	16	16		24-5	A, B, C, D, E, F, G, H = Al.; J, K, L, M, N, P, R, S = Ch.
24-621	24	24		24-28	A, C, E, G, J, L, K, N, S, U, W, Y = Ir.; B, D, F, H, Q, R, M, P, T, V, X, Z = Con.
24-622	24	24		24-28	A, C, E, G, J, L, K, N, S, U, W, Y = Ch.; B, D, F, H, Q, R, M, P, T, V, X, Z = Al.
97-24-401	8		8	24-6	A, B, F, G = Ir.; C, D, E, H = Con.
97-24-402	8		8	24-6	A, B, F, G = Al.; C, D, E, H = Ch.
97-24-406	8		8	24-6	A, B, F, G = Cu.; C, D, E, H = Con.
97-24-409	12	12		24-19	A, B, C, D, E, F = Ir.; H, J, K, L, M, N = Con.
97-24-412	12	12		24-19	A, B, C, D, E, F = Cu.; H, J, K, L, M, N = Con.
97-24-414	24	24		24-28	A, B, C, D, E, F, G, H, J, K, L, M = Al.; N, P, Q, R, S, T, U, V, W, X, Y, Z = Ch.
97-24-415	24	24		24-28	A, B, C, D, E, F, G, H, J, K, L, M = Con.; N , P, Q, R, S, T, U, V, W, X, Y, Z = Ir.
97-24-417	16	16		24-5	A, B, C, D, E, F, G, H = Al.; J, K, L, M, N, P, R, S = Ch.
97-24-418	12	12		24-19	A, B, C, D, E, F = Al.; H, J, K, L, M, N = Ch.
97-24-422	24	24		24-28	A, C, E, G, J, L, N, Q, S, V, W, Y = Cu.; B, D, F, H, K, M, R, T, U, X, Z = Con.
97-24-423	16	16		24-5	A, B, C, D, E, F, G, H = Ir.; J, K, L, M, N, P, R, S = Con.
97-24-430	24	24		24-28	All Chromel
97-24-431	24	24		24-28	All Alumel
28-53	22	18	4	28-11	J, L = Al.; K, M = Ch.
28-58	14	4	10	28-20	A, C, E, G, K, M = Al.; B, D, F, H, L, N = Ch.; J, P = Cu.

Table 4. MIL-DTL-5015 Thermocouple Contact Application (Sheet 7 of 9)

Thermo-Couple Insert	Total Con-tacts	Con-tact Size		Basic Insert	Contact Material
		#16	#12		
28-61	37	37		28-21	A, C, J, Z, m, r, n, a, K, F, H, X, k, h, T, M, N, d = Ir.; Bal = Con.
28-63	14	4	10	28-20	A, C, E, G, J = Al.; B, D, F, H, P = Ch.; Bal = Cu.
28-64	35	35		28-15	A, d = Al.; B, j = Ch.; C, D, E, F, G, N, P, R, S, H, J, K, L, N, W, X, Y, Z = Con.; Bal = Cu.
28-65	26	26		28-12	A, C, E, G, J, L, N, R, T, V = Ir.; X, Z = Al.; B, D, F, H, K, M, P, S, U, W = Con.; Y, a = Ch.; b, d = Cu.
28-67	20	20		28-16	U = Con.; Bal = Cu.
28-68	35	35		28-15	T = Al.; U = Ch.; Bal = Cu.
28-69	22	18	4	28-11	G = Al.; R = Ch.; Bal = Cu.
28-70	22	18	4	28-11	A = Al.; B = Ch.; Bal = Cu.
28-77	22	18	4	28-11	J = Con.; Bal = Cu.
28-77	20	20		28-16	6 = Ir.; 6 = Con.; Bal = Std.
28-78	35	35		28-15	A, B = Ch.; C, D = Al.; Bal = Std.
28-81	37	37		28-21	A, D, S, Z, n, s = Ir.; B, J, K, f, g, r = Con.; G, L, P, b, e, j = Al.; F, H, T, X, h, k = Ch.; Bal = Cu.
28-82	35	35		28-15	12 = Ir.; 12 = Con.; Bal = Std.
28-85	22	18	4	28-11	K, M = Al.; J, L = Ch.; Bal = Cu.
28-91	12	6	6	28-9	M = Ir.; L = Con.; Bal = Cu.
28-94	26	26		28-12	B, D, F, H, K, M, P, S, U, W, Y, a, d = Al.; Bal = Ch.
28-98	37	37		28-21	M = Al.; F = Ch.; Bal = Cu.
28-99	26	26		28-12	B, D, F, H, K, M, P, S, U, W, Y, a = Con.; Bal = Cu.
28-201	14	4	10	28-20	A, C, E, G, J, P = Con.; Bal = Std.
28-AC	20	20		28-16	A, C, E, G, J, L = Ir.; B, D, F, N, K, M = Con.; Bal = Cu.
28-AD	37	37		28-21	A, C, F, H, J, K, M, N, T, X, Y, Z, a, d, h, k, m, n, r = Cu.; Bal = Con.
28-AE	37	37		28-21	A, C, E, G, J, L, N, R, T, V, X, a, c, e, g, j, m, p, s = Cu.; Bal - Con.
28-AF	12	12		28-18	A, C, E, G, J, L = Ch.; Bal = Al.
28-AG	26	26		28-12	A, C, E, G, J, L, N, R = Al.; B, D, F, H, K, M, P, S = Ch.; Bal = Cu.
28-AK	37	37		28-21	A, B, C, D, J, K, L, M, N, P, X, a, b, c, d, e, m, p - Ch.; n = Cu.; Bal = Al.
97-28-413	26	26		28-12	A, B, C, D, M, N, P, R, S, T, U, Z, a = Ir.; E, F, G, H, J, K, L, V, W, X, Y, b, d = Con.
97-28-414	26	26		28-12	A, B, C, D, M, N, P, R, S, T, U, Z, A = Cu.; E, F, G, H, J, K, L, V, W, X, Y, b, d = Con.
97-28-420	20	20		28-16	A, B, C, J, K, L, M, S, T, V = Con.; D, E, F, G, H, N, P, Q, R, U = Ir.
32-50	30	24	6	32-8	M = Ch.; N = Al.; Bal = Cu.

Table 4. MIL-DTL-5015 Thermocouple Contact Application (Sheet 8 of 9)

Thermo-Couple Insert	Total Con-tacts	Con-tact Size		Basic Insert	Contact Material
		#16	#12		
32-51	30	24	6	32-8	M = Ch.; N = Al.; Bal = Cu.
32-55	30	24	6	32-8	M, N = Ch.; O, P = Al.; Bal = Cu.
32-91	54	54		32-64	A, C, E, G, J, L, N, P, S, U, W, Y, a, c, e, g, j, m = Ir.; B, D, F, H, K, M, O, R, T, V, X, Z, b, d, f, h, k, n = Con.; Bal = Cu.
32A401	40	40		32A-40	13 = Al.; 13 = Ch.; 14 = Std.
97-32-408	30	24	6	32-8	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O = Ir.; P, R, S, T, U, V, W, X, Y, Z, a, b, c, d, e = Con.
36-53	47	40	7	36-7	U, V, W = Al.; X, Y, Z = Ch.; Bal = Cu.
36-56	48	48		36-10	A, C, E, G, L, J, H, P, R, T, V, X, Z, b, d, f, h, k, q, n, m, u, w, y = Con.; Bal = Cu.
36-57	47	46	1	36-8	W = Al.; f = Ch.; Bal - Cu.
36-57	47	46	1	36-8	W = Al.; F = Ch.; Bal = Cu.
36-58	35	35		36-15	H = Al.; G = Ch.; Bal = Cu.
36-61	35	35		36-15	A, C, E, J, K, L, M N, P, R, T, V, f, X, Y, h, j, c = Con.; Bal = Cu.
36-62	48	48		36-10	A, C, E = Al.; B, D, F = Ch.; Bal = Cu.
36-82	52	52		36-52	v, g = Ir.; p, y, c= Con.; x = Ch.; Bal = Cu.
36-86	48	48		36-10	A, C, E, G, J, L, N, P, R, T, V, X = Al.; B, D, F, H, K, M, O, Q, S, U, W, Y = Ch.; z, b, d, f, h, k, n, q, s, u, w, y = Con.; a, c, e, g, j, m, p, r, t, v, x, z = Cu.
36-88	52	52		88-52	A, C, E, H, K, M, P, S, U, W, Y, a, c, f, h, j, m, p, r, t, v, x, z, AB, AD, AF = Cu.; Bal = Con.
36-101	48	48		36-10	24 = Al.; 24 = Ch.
36-102	48	48		36-10	24 = Ch.; 24 = Con.
97-36-411	22	18	4	36-1	A, B, E, G, I, K, M, O, R, S, U = Ir.; C, D, F, H, J, L, N, P, T, V, W = Con.
97-36-412	22	18	4	36-1	A, B, E, G, I, K, M, O, R, S, U = Ch.; C, D, F, H, J, L, N, P, T, V, W = Al.
97-36-414	48	48		36-10	A, B, C, D, E, F, G, H, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y = Ir.; Z, a, b, c, d, e, f, g, h, j, k, m, n, p, q, r, s, t, u, v, w, x, y, z = Con.
97-36-416	48	48		36-10	A, B, C, D, E, F, G, H, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y = Cu.; Z, a, b, c, d, e, f, g, h, j, k, m, n, p, q, r, s, t, u, v, w, x, y, z = Con.
97-36-417	48	48		36-10	A, B, C, D, E, F, G, H, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y = Ch.; Z, a, b, c, d, e, f, g, h, j, k, m, n, p, q, r, s, t, u, v, w, x, y, z = Con.

Table 4. MIL-DTL-5015 Thermocouple Contact Application (Sheet 9 of 9)

Thermo-Couple Insert	Total Contacts	Contact Size		Basic Insert	Contact Material
		#16	#12		
40-58	85	85		40-56	A, C, E, H, K, M, P, S, U, W, Y, a, c, f, h, j, m, p, r, t, v, x, z, AB, AD, AF, AJ, AL, AN, AP, AS, AU, AW, AY, BA, BC, BE, BH, BK, BM, BP, BS, BU = Ir.; Bal = Con.
40-58	31		31	40A-31	15 = Al.; 16 = Ch.
40-59	85	85		40-56	B = Ch.; C = Con.; Bal = Cu.
40-77	60	60		40-53	55, 60 = Ir.; 57, 58, 59 = Con.; 56 = Ch.; Bal = Cu.
40-78	60	60		40-53	50, 51 = Ir.; 27, 28, 29, 31, 32, 34, 36, 37 = Con.; 25, 39, 40, 41 = Al.; 43, 44, 45, 46, 47, 48, 49, 52, 53, 54 = Ch.; Bal = Cu.
40-88	60	60		40-53	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59 = Con.; Bal = Cu.
40-AA	85	85		40-56	A, C, E, H, K, M, P, S, U, W, Y, a, c, f, h, j, m, p, r, t, v, x, z, AB, AD, AF, AJ, AL, AN, AR, AT = Cu.; B, D, F, J, L, N, R, T, V, X, Z, b, d, g, i, k, n, q, s, u, w, y, AA, AC, AE, AH, AK, AM, AP, AS = Con.; AU, AW, AY, BA, BC, BE, BH, BK, BM, BP, BS, BU = Ch.; AV, AX, AZ, BB, BD, BF, BJ, BL, BN, BR, BT, BV = Al.
44-57	104	104		44-52	A, C, E, G, J, L, etc. = Cu.; B, D, F, H, K, M, etc. = Con.
44-59	104	104		44-52	34 = Con.; 70 = Cu.
44-60	104	104		44-52	A, C, E, etc. = Ch. (52); B, D, F, etc. = Con. (52)
44-62	104	104		44-52	BY, BZ, CA, CB, CC, CD, CE, CR = Al.; CH, CJ, CK, CL, CM, CN, CP, CS = Ch.; Bal = Cu.

Table 5. MIL-DTL-5015 Crimp Front Release Power Contact Tooling

Socket Contacts M39029/	Pin Contacts M39029/	Insertion Tool M81969/	Removal Tool M81969/	Crimp Tool	Positioner	Locator	Die Set
45-294	44-287	17-01	19-01	M22520/1-01	M22520/01-02-BL	—	
45-295	44-288	17-01	19-01	M22520/1-01	M22520/01-02-BL	—	—
45-296	44-289	17-01	19-01	M22520/1-01	M22520/01-02-YE	—	—
45-297	44-290	17-02	19-02	M22520/1-01	M22520/01-02-YE	—	—
45-298	44-291	17-06	19-03	M22520/23-01	—	M22520/23-09	M22520/23-02
45-299	44-292	17-07	19-04	M22520/23-01	—	M22520/23-11	M22520/23-04
45-300	44-293	17-08	19-05	M22520/23-01	—	M22520/23-13	M22520/23-05

Table 6. MIL-DTL-5015 Crimp Rear Release Power and Thermocouple Contact Tooling

Socket Contacts M39029/	PIN Contacts M39029/	Insertion Tool M81969/	Removal Tool M81969/	Unwired Removal Tool M81969/	Crimp Tool M22520/	Positioner M22520/	Locator M22520/	Die Set M22520/
30-217	29-212	14-03	14-03	—	1-01 or 7-01	1-02 BL or 7-03	—	—
86-510	85-454	8-07 or 14-03	8-03 or 14-03	—	1-01 or 7-01	1-02 BL or 7-03	—	—
86-511	85-455	8-07 or 14-03	8-07 or 14-03	—	1-01 or 7-01	1-02 BL or 7-03	—	—
86-512	85-456	8-07 or 14-03	8-07 or 14-03	—	1-01 or 7-01	1-02 BL or 7-03	—	—
86-513	85-457	8-07 or 14-03	8-07 or 14-03	—	1-01 or 7-01	1-02 BL or 7-03	—	—
30-218	29-212	14-03	14-03	—	1-01	1-02 BL	—	—
86-462	85-454	8-07 or 14-03	8-07 or 1-403	—	1-01 or 7-01	1-02 BL or 7-03	—	—
86-463	85-455	8-07 or 14-03	8-07 or 1-403	—	1-01 or 7-01	1-02 BL or 7-03	—	—
86-464	85-456	8-07 or 14-03	8-07 or 1-403	—	1-01 or 7-01	1-02 BL or 7-03	—	—
86-465	85-457	8-07 or 14-03	8-07 or 1-403	—	1-01 or 7-01	1-02 BL or 7-03	—	—
30-219	29-213	14-04	14-04	—	1-01	1-02 YE	—	—
86-466	85-458	8-09 or 14-04	8-09 or 14-04	—	1-01	1-02 YE	—	—
86-467	85-459	8-09 or 14-04	8-09 or 14-04	—	1-01	1-02 YE	—	—
86-468	85-460	8-09 or 14-04	8-09 or 14-04	—	1-01	1-02 YE	—	—
86-469	85-461	8-09 or 14-04	8-09 or 14-04	—	1-01	1-02 YE	—	—
30-220	29-214	—	29-02	—	23-01	N/A	23-09	23-02
30-221	29-215	—	29-03	—	23-01	N/A	23-11	23-04
30-222	29-216	—	29-04	—	23-01	N/A	23-13	23-05

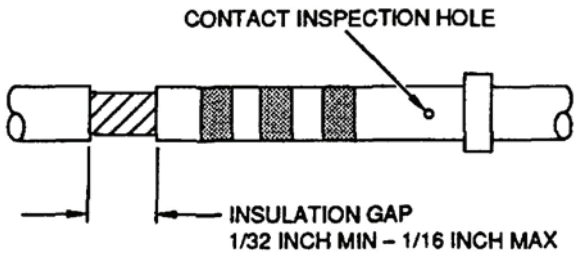


Figure 9. Insulation Gap

47. CONNECTOR BUILD-UP.

48. WIRE DIAMETER BUILD-UP. If wire outside diameter is not large enough to fill wire sealing grommet holes, build up wire outside diameter by applying heat-shrinkable insulating sleeving. This must be accomplished prior to contact insertion.

49. WIRE STRIPPING.

a. Cut wire to proper length. Ensure enough wire remains for adequate strain relief without leaving excess slack.

b. Strip insulation from end (NAVAIR 01-1A-505-1, WP 009 00). Select contact (Table 2, 3, or 4).

50. CONTACT CRIMPING. Crimp contact in accordance with following procedure:

a. Select crimp tool frame, positioner, and inspection gage (Table 5 or 6).

CAUTION

When removing broken wire contacts ensure wire sealing grommet is not damaged. A new connector must be installed (Paragraph 61) if a broken wire contact cannot be removed.

b. Perform die closure check. Install positioner and set selector knob for gage of wire.

c. Insert stripped wire into contact conductor barrel. Ensure all wire strands are inside contact conductor barrel and visible in contact inspection hole (Figure 9).

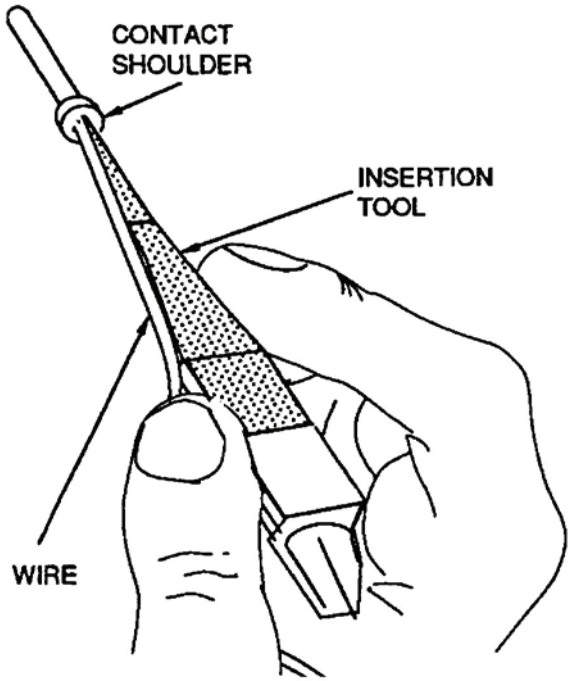


Figure 10. Inserting Contact into Insertion Tool

d. If insulation gap is too large, trim conductor as required. If insulation gap is too small, trim insulation as required (NAVAIR 01-1A-505-1, WP 009 00).

e. Crimp contact to wire.

51. CONTACT INSERTION. Insert wired or unwired contacts in accordance with following procedure:

a. Remove sealing plug and/or contact from contact cavity (Paragraph 55).

b. Ensure wire or cable on contact is routed through backshell.

c. Place wire and contact assembly into tip of insertion tool. Ensure tool tip is over contact conductor barrel and butted against contact shoulder (Figure 10).

d. Insert tip of contact into cavity. Start contact insertion near connector center cavities and work outward.

e. Axially align contact with contact cavity.

f. With firm even pressure, press tool against contact shoulder and seat contact into cavity (Figure 11). A slight click may be heard as retention tines snap into place behind contact shoulder.

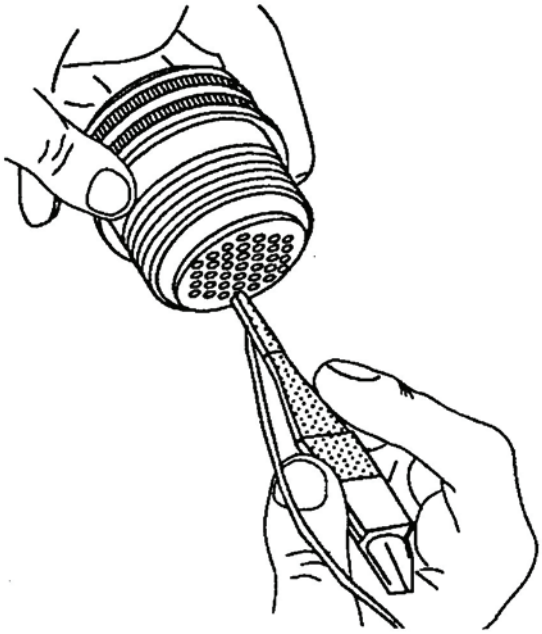


Figure 11. Contact Insertion

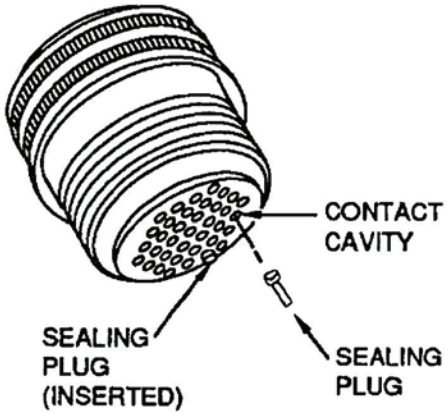


Figure 12. Contact and Sealing Plug Insertion

g. Pull tool straight out of contact cavity. Remove tool from wire. Pull back lightly on wire to ensure contact is properly seated.

h. Seal connector as required (Paragraph 52) and install backshell.

52. CONNECTOR SEALING.

53. Sealing Plugs. Seal connector in accordance with following procedure:

a. Fill all unused cavities with un-crimped contacts (Paragraph 51).

b. Insert sealing plug, large diameter first, until bottomed in contact cavity. Do not insert further than knob. Fill all cavities that have un-crimped contacts (Figure 12). Preserve connector in accordance with NAVAIR 01-1A-505-1, WP 026 00.

54. Moisture Barrier. For connector sealing procedures, including application of sealant to grommet sealed connectors, refer to NAVAIR 01-1A-505-1, WP 025 00.

55. CONTACT REMOVAL. The following paragraphs give contact removal procedures for front release and rear release crimp contacts.

56. Crimp Front Release Contacts. Remove wired, unwired, and broken wire contacts in accordance with following procedure:

a. Select correct removal tool (Table 5).

b. If contact is unwired, remove sealing plug from cavity of contact to be removed.

c. Working from the front (mating end) of connector, slide hollow end of removal tool over contact (Figure 13).

d. Holding removal tool at right angle to front insert face, push tool straight toward rear of connector, firmly pressing tool to positive stop when tool bottoms in insert cavity.

e. Maintain pressure on tool handle and slide collar of tool forward until it stops. Contact will be partially ejected from rear of connector insert.

f. Remove tool by pulling straight back to clear connector insert face. Remove contact out rear of connector by pulling lightly on wire or using a mating contact to push out released contact.

57. Crimp Rear Release Contacts. Remove wired, unwired, and broken wire contacts in accordance with following paragraphs.

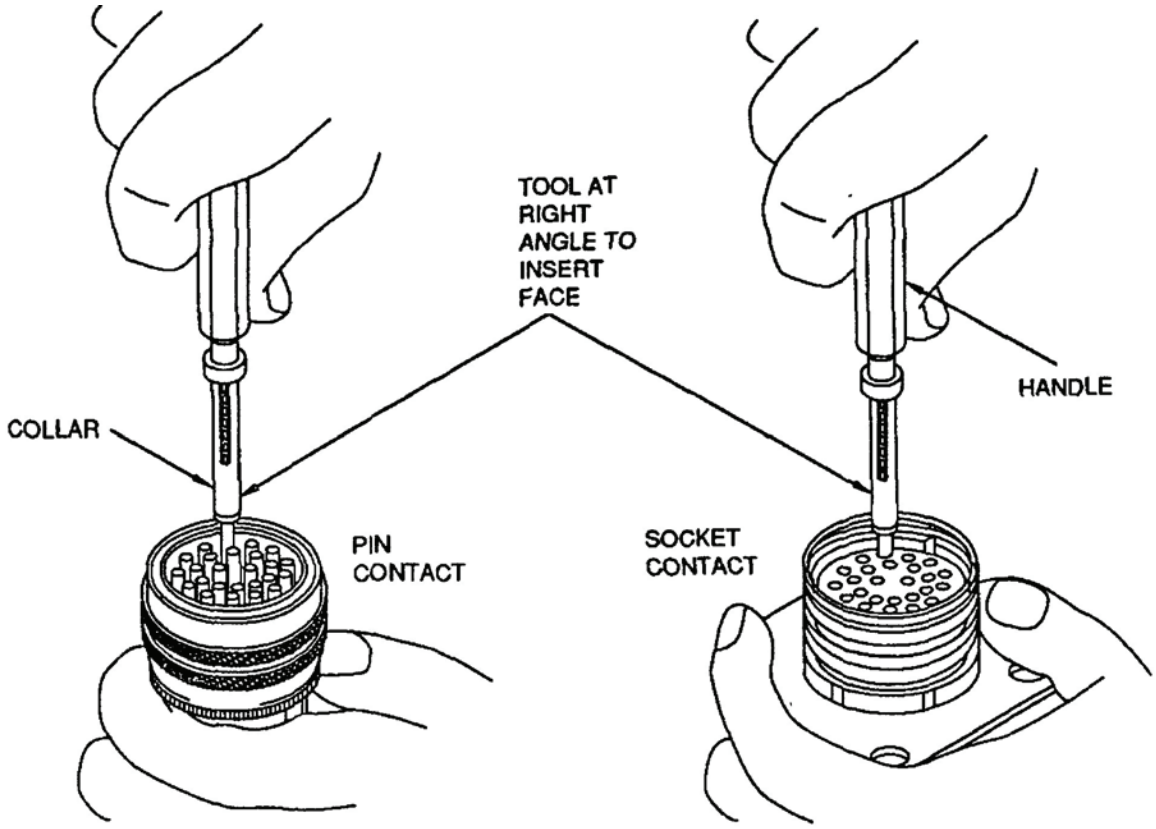


Figure 13. Contact Removal

58. Wire Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors.

CAUTION

Present metal tooling in some instances has damaged the wire sealing grommet at the end of the connectors. Plastic tools are preferred.

Caution should be exercised in the use of tooling.

Inspect tips of metal tools for distortion or nicks of probe before use, as connector damage can occur.

a. Select correct removal tool (Table 6).

b. Place wire of contact to be removed into removal tool, with white tip facing connector insert (Figure 14).



Figure 14. Inserting Wire into Removal Tool

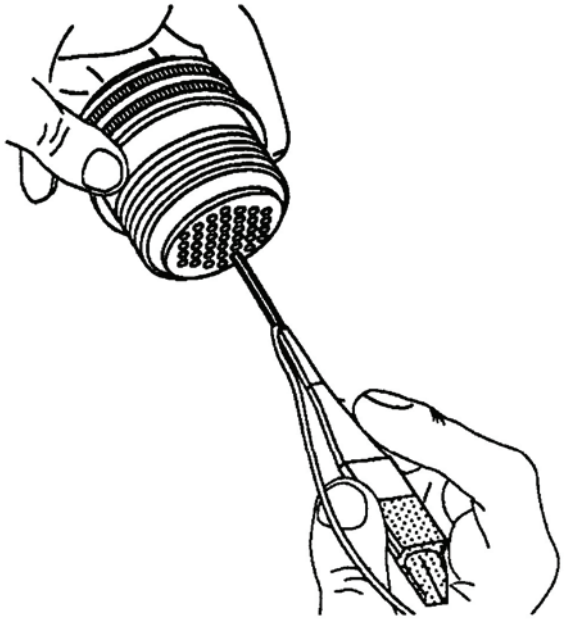


Figure 15. Removal Tool on Wire



Figure 17. Removing Contact from Connector

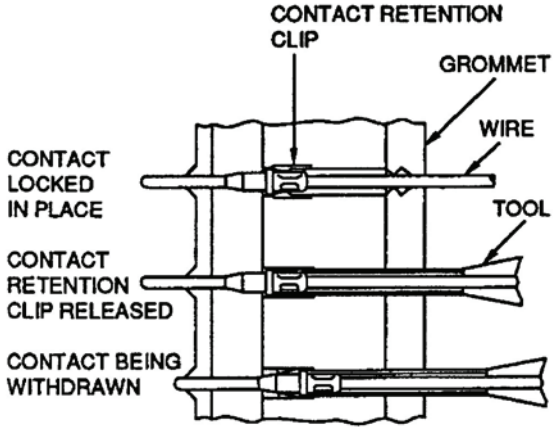


Figure 16. Unlocking Contact Mechanism

c. Slide removal tool along wire at a right angle to connector insert face and align with contact cavity (Figure 15).

d. Insert tool into contact cavity until tool tip bottoms against contact shoulder (Figure 16). A slight increase in resistance will be noticed just before the tool tip bottoms. This will spread the retention clip and release its hold on the contact.

f. Press wire firmly against serrated edge of removal tool and pull wire straight out from contact cavity (Figure 17).

59. Unwired Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors.

CAUTION

Present metal tooling in some instances has damaged the wire sealing grommet at the end of the connectors. Plastic tools are preferred.

Caution should be exercised in the use of tooling.

Inspect tips of metal tools for distortion or nicks of probe before use as connector damage can occur.

a. Select correct unwired removal tool (Table 6).

b. With rear of connector exposed, remove sealing plug from insert cavity of contact to be removed.

c. Press and hold tool plunger until tip of tool is aligned with contact to be removed.

d. Axially align removal tool with contact to be removed.

e. Insert removal tool tip into contact cavity to butt contact wire barrel; then slide removal tool sleeve over contact and exert pressure until sleeve bottoms (Figure 18).

f. Remove tool and unlocked contact from connector by withdrawing tool from connector (Figure 19).

g. Remove contact from removal tool by pressing plunger.



Figure 18. Unlocking Contact Retention Mechanism With Unwired Contact Removal Tool

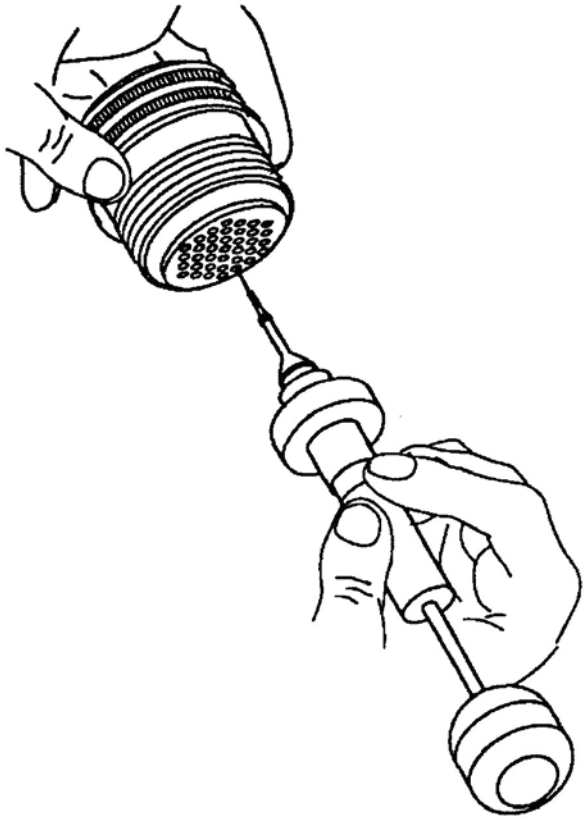


Figure 19. Extracting Contact from Connector

60. Broken Wire Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors.

CAUTION

Present metal tooling in some instances has damaged the wire sealing grommet at the end of the connectors. Plastic tools are preferred.

Caution should be exercised in the use of tooling.

Inspect tips of metal tools for distortion or nicks of probe before use as connector damage can occur.

a. Select correct removal tool (Table 6).

CAUTION

Removal of a contact with a broken wire shall not be attempted with an unwired removal tool. Use of unwired removal tools requires that the tip be jammed onto the contact wire barrel. If wire strands occupy wire barrel, the tool and connector may be damaged.

b. Insert tip of removal tool about 1/8 inch into cavity at rear of connector.

CAUTION

Wire strands may be encountered at any point up to 5/16 inch of tool insertion. It is important not to jam any strands of wire up to this point.

Withdraw removal tool anytime during insertion when it cannot be advanced into connector using these procedures. Inspect tool tip for nicks, cracks, mushrooming, and other damage that will prevent its functioning. Replace removal tool and repeat procedure, if required.

NOTE

Refer to Figure 20 for approximate dimensions of a size 22 contact and cavity. The dimensions in this procedure are based on a size 22 contact.

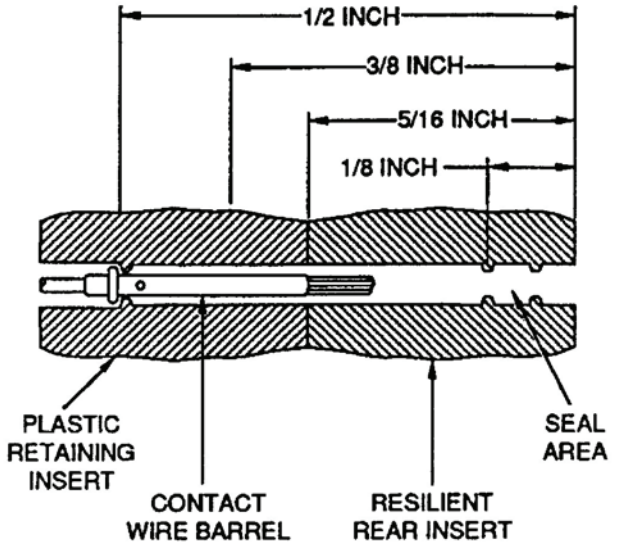


Figure 20. Typical Connector Dimensions

c. Gently insert removal tool into cavity in about 1/16 inch units, releasing tool after each unit if resistance is felt.

NOTE

Rotating removal tool works splayed wire strands into slot of tool, allowing tool to pass.

Removal tool may be blocked at rear of contact by plastic insert or additional strands of broken wire.

d. If resistance is felt before removal tool reaches back end of contact, withdraw tool slightly, rotate about 1/6 of a turn, and reinsert tool. Repeat rotating and insertion procedure until tool passes with minimum additional force to 5/16 inch depth back end of contact (Figure 21).

e. Wiggle removal tool gently to help it into insert bore and over back of contact. Additional rotation may be required if broken strands are encountered.

f. Continue insertion of removal tool until positive stop is felt at about 1/2 inch depth.

g. Exert axial pressure on engaging end of contact, using appropriate pin or socket as pusher. (If contact does not move, seat removal tool more firmly).

h. Push contact completely out rear of connector before disengaging removal tool (Figure 22).

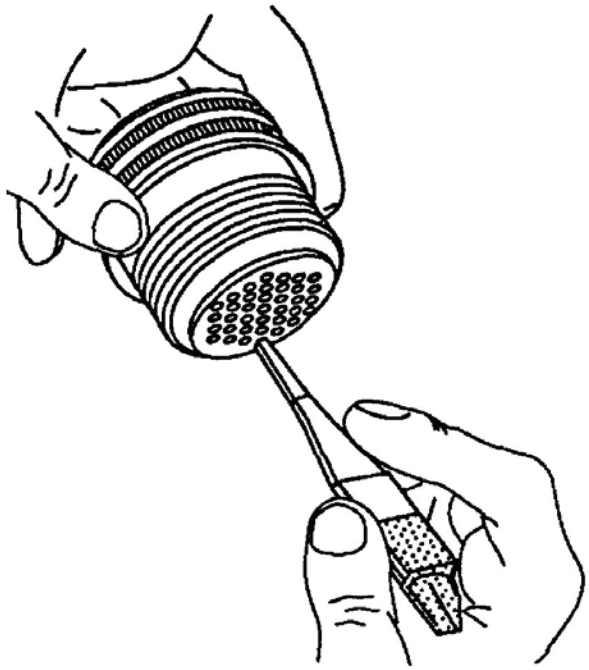


Figure 21. Unlocking Contact Retention Mechanism of Broken Wire Contact

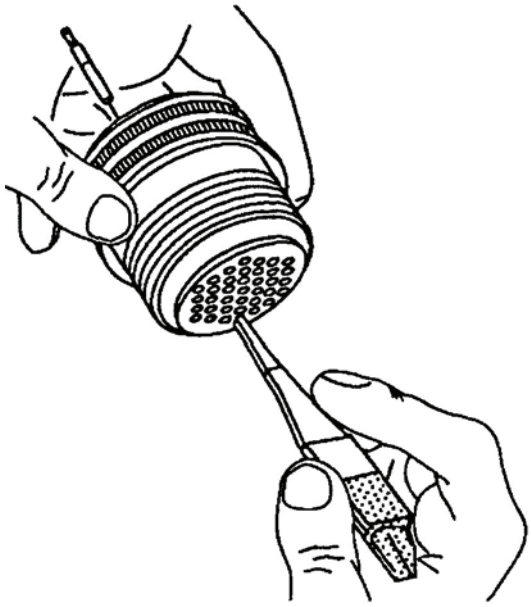


Figure 22. Broken Wire Contact Removal

61. CONNECTOR REMOVAL AND INSTALLATION. If the connector is severely damaged and cannot be repaired using the above procedures, proceed as follows:

a. Starting from outside of damaged connector, tag wires and remove all contacts from connector (Paragraph 55). If contact cannot be removed, cut wire as close to connector as possible and attach new contact (Paragraphs 49 and 50).

b. Starting from center of new connector, maintain a smooth wire dress and insert contact into correct cavity (paragraph 51). Remove tag from wire. Repeat procedure until all contacts are installed in new connector.

62. CONNECTOR BUILD-UP SOLDER CONTACTS.

63. For build-up procedures for solder contacts refer to NAVAIR 01-1A-505-1, WP 016 00.

64. CONNECTOR CLEANING AND PRESERVATION.

65. For connector cleaning and corrosion control procedures refer to NAVAIR 01-1A-505-1, WP 026 00.

CONNECTOR ACCESSORIES
MIL-DTL-5015 SERIES

Reference Material

Connectors, Electrical, Circular Threaded, AN Type, General Specification MIL-DTL-5015

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Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
BT-BS-601	Wrench, Strap
BT-BS-609	Wrench, Strap
BT-BS-611	Wrench, Strap
BT-BS-618	Wrench, Strap
BT-BS-625	Wrench, Strap
BT-BS-630	Wrench, Strap
BT-HT-107	T-Handle
CM 5015 Series	Tools, Adapter
CM 5015R Series	Tools, Adapter
	Iron, Soldering

Materials Required

Specification/ Part No.	Nomenclature
TT-I-735	Alcohol, Isopropyl
H-B-643 (or equivalent)	Brush, Acid Swabbing
MIL-F-14256	Liquid Flux
Sn60WRMAP3 (or equivalent)	Solder

1. INTRODUCTION.

2. This Work Package (WP) covers connector accessories common to crimp contacts and solder contacts of MIL-DTL-5015 connectors. It includes their function, associated tools, assembly, and procurement information.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, (the Society of Automotive Engineers (SAE), will become the preparing activity and the Navy will adopt the documents), the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

3. CONNECTOR ACCESSORIES. Connector accessories and backshells are components added to a connector to maintain its operational characteristics. A cross-reference of MIL-DTL-5015 connector accessories is provided in Table 1. These accessories are divided into the following categories:

a. Backshells.

b. Connector Assembly Tools.

c. Dummy Receptacles.

d. Dust Caps.

e. Shrink Boots and Adapters.

f. Conduit Fittings.

g. Gaskets for Flange Mount Receptacles.

h. Mounting Nut for Jam Nut Receptacles.

i. Rubber Bushings.

j. Sealing Plugs.

k. Mounting Plates for Flange Mount Receptacles.

4. BACKSHELLS. Backshells are the most complex connector accessories and simply stated they are any device added to the rear or wiring side of a connector. Backshells may be divided into the following categories:

a. Grommet Nuts.

b. Cable Clamps and Strain Reliefs.

c. EMI/RFI Grounding Terminators.

d. Non-Environmental Backshells.

e. Environmental Backshells.

f. Non-Environmental EMI/RFI Backshells.

g. Environmental EMI/RFI Backshells.

h. Bonding Rings.

Table 1. MIL-DTL-5015 Accessory Cross-Reference (Sheet 1of 2)

Accessory Cross-Reference MIL-DTL-5015

ACCESSORY DESCRIPTION 1/	SHELL STYLE			PART NO.	
	SOLDER	CRIMP			
	3100	3400	3450	CURRENT 4/	PREVIOUS 2/
CABLE CLAMP STRAIN/RELIEFS					
Straight Cable Clamp	X			M85049/1, /2, /41, /42	MS3057
Grommet Nut		X	X	M85049/31	MS3416
Straight Quick Tie		X	X	M85049/53	MS3152
Straight Strain Relief		X	X	M85049/52	MS3417
Straight Strain Relief (2 piece)		X	X	M85049/66	
45° Quick Tie		X	X	M85049/54	MS3153
45° Strain Relief		X	X	M85049/43	MS3415
90° Quick Tie		X	X	M85049/55	MS3154
90° Strain Relief		X	X	M85049/51	MS3418
90° Straight Relief 2 piece)		X	X	M85049/67	
SHRINK BOOTS AND ADAPTERS					
Boot Adapter		X	X	M85049/60	MS3158 or MS3416
Straight Boot		X	X	MS3109	M85049/68
90° Boot		X	X	MS3117	M85049/68
Shrink Sleeve		X	X	MS3118	
ENVIRONMENTAL BACKSHELLS					
Straight		X	X	M85049/11	MS3437
45°		X	X	M85049/7	MS3189
90°		X	X	M85049/9	MS3188
EMI/RFI & GROUNDING TERMINALS					
Bonding Ring	X			AN3111	
Insulated Outer Ferrule	X	X	X	MS18121	
Outer Ferrule	X	X	X	MS21980	
Inner Ferrule	X	X	X	MS21981	
NON-ENVIROMENTAL EMI/RFI BACK-SHELLS					
Straight		X	X	M85049/25, /26	MS3437, MS3419 & MS3161
45°		X	X	M85049/23	MS3189
90°		X	X	M85049/24	MS3188
ENVIRONMENTAL EMI/RFI BACKSHELLS					
Straight		X	X	M85049/10	MS3437
45°		X	X	M85049/6	MS3189
90°		X	X	M85049/8	MS3188
DUST CAPS					
Metal, For Plug	X	X	X	MS25042	
Metal, For Jack	X	X	X	MS25043	
Plastic, ESD for Plug or Jack	X	X	X	MS90376	

Table 1. MIL-DTL-5015 Accessory Cross-Reference (Sheet 2 of 2)

ACCESSORY DESCRIPTION 1/	SHELL STYLE			PART NO.	
	SOLDER	CRIMP			
	3100	3400	3450	CURRENT 4/	PREVIOUS 2/
CONDUIT FITTINGS	X	X	X	AN3050 through AN3054, AN3056 MS3057 AN3058 through AN3063 AN3066 through AN3068	AN3057
MISCELLANEOUS					
Rubber Bushings	X	X	X	MS3420	MS39056 & MS39057
Nut for Jam Nut Jack		X	X	MS3186	
Connector Assembly Wrench	X	X	X	MS3480	
Crimp Contact Adapter, Size 0-8		X	X	MS3348	
Sealing Plugs	X	X	X	MS27488	MS25251
CRIMP CONTACTS 3/					
PIN, Size 0-16			X	M39029/29	MS3162
PIN, Size 0-16		X		M39029/44	MS90453
Socket, Size 0-16			X	M39029/30	MS3163
Socket, Size 0-16		X		M39029/45	MS90454
CRIMP CONTACT EXTRACTION AND INSERTION TOOL 3/					
Extraction Only			X	M81969/29	MS3165
Extraction Only		X		M81969/19	MS90456
Extraction or Insertion		X	X	M81969/14	MS3447 & MS27534
Insertion Only		X		M81969/17	MS90455
CRIMP TOOLS 3/					
Size 0-20 Contacts		X	X	M22520	
Size 8-4/0 Contacts, Hydraulic		X	X	MS25441	

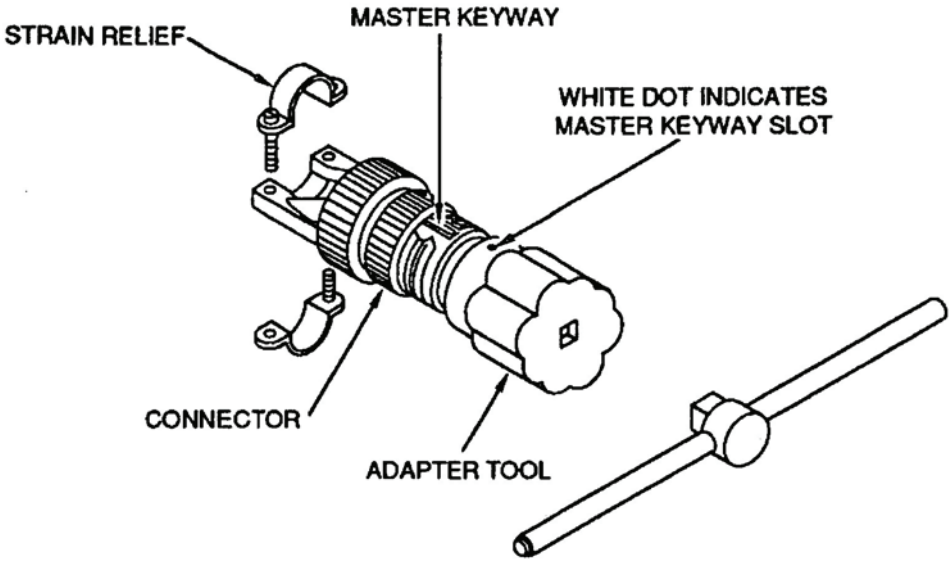


Figure 1. Adapter Tool

5. MIL-DTL-5015 SERIES CONNECTOR ACCESSORIES.

6. SPECIAL TOOLS. Connector backshells come in a wide variety of types depending on application. To install backshells or accessories, adapter tools and a strap wrench are needed. Adapter tools (Figure 1) are used to hold the connector during backshell installation and removal. Special tools are used to prevent damage to connector shells and accessories.

7. ADAPTER TOOL SELECTION. To select proper too], shell size, and type of connector plug or receptacle must be known. Select proper adapter tool from Table 2.

8. ADAPTER TOOL ACCESSORIES. To hold adapter tool and to keep connector from turning when installing or removing backshells the use of a T-handle is recommended. A strap wrench is used on backshell for installation and removal to apply even pressure without causing damage to accessories (Figure 2).

9. BACKSHELL REMOVAL. Backshells are used to protect, shield, and add support to the rear of the connectors. When modification or repair to connector is necessary, the backshell must be removed. Proceed using the following procedure:

a. Select correct adapter tool (Table 2).

b. Mate adapter tool to connector. Ensure white dot on adapter tool aligns with master keyway of connector. Spinning tool on connector will cause damage to tool and/or connector Figure 3).

c. Install strap wrench around backshell to be removed. Draw strap tightly through locking link. Backshell will rest on nose of wrench.

d. Insert T-handle into socket of adapter tool to provide holding.

e. To loosen backshell, apply force counterclockwise from rear of connector (Figure 4).

f. Tape backshell to bundle to prevent loss.

10. BACKSHELL INSTALLATION. Upon completion of modification or maintenance the backshell must be replaced. Proceed using the following procedure:

a. Untape backshell from bundle. Start backshell on connector by hand to prevent cross threading. Tighten by hand until the rear connector teeth and the accessory teeth interlock.

Table 2. MIL-DTL-5015 Adapter Tools

Shell Size	Polarization	Plug	Adapter Tool Part Number		
			Color Code	Receptacle	Color Code
8	ALL	CM5015-8	Chrome	CM5015R-8	Chrome
10	ALL	CM5015-10	Chrome	CM5015R-10	Chrome
12	ALL	CM5015-12	Chrome	CM5015R-12	Chrome
14	ALL	CM5015-14	Chrome	CM5015R-14	Chrome
16	ALL	CM5015-16	Chrome	CM5015R-16	Chrome
18	ALL	CM5015-18	Chrome	CM5015R-18	Chrome
20	ALL	CM5015-20	Chrome	CM5015R-20	Chrome
22	ALL	CM5015-22	Chrome	CM5015R-22	Chrome
24	ALL	CM5015-24	Chrome	CM5015R-24	Chrome
26	ALL	CM5015-26	Chrome	CM5015R-26	Chrome
28	ALL	CM5015-28	Chrome	CM5015R-28	Chrome
32	ALL	CM5015-32	Chrome	CM5015R-32	Chrome
36	ALL	CM5015-36	Chrome	CM5015R-36	Chrome
40	ALL	CM5015-40	Chrome	CM5015R-40	Chrome
44	ALL	CM5015-44	Chrome	CM5015R-44	Chrome
48	ALL	CM5015-48	Chrome	CM5015R-48	Chrome

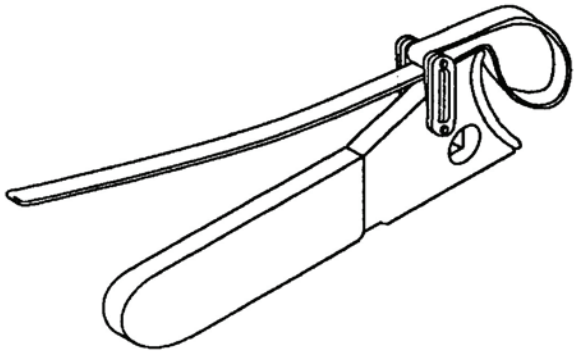


Figure 2. Strap Wrench

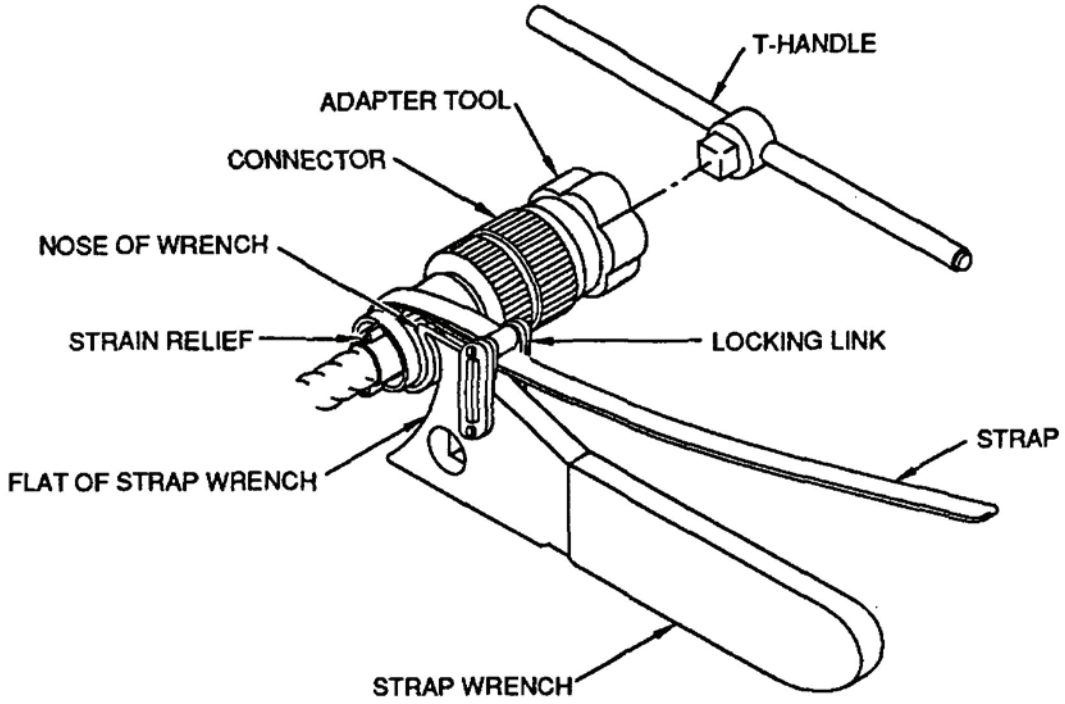


Figure 3. Strap Wrench Setup and Adjustment

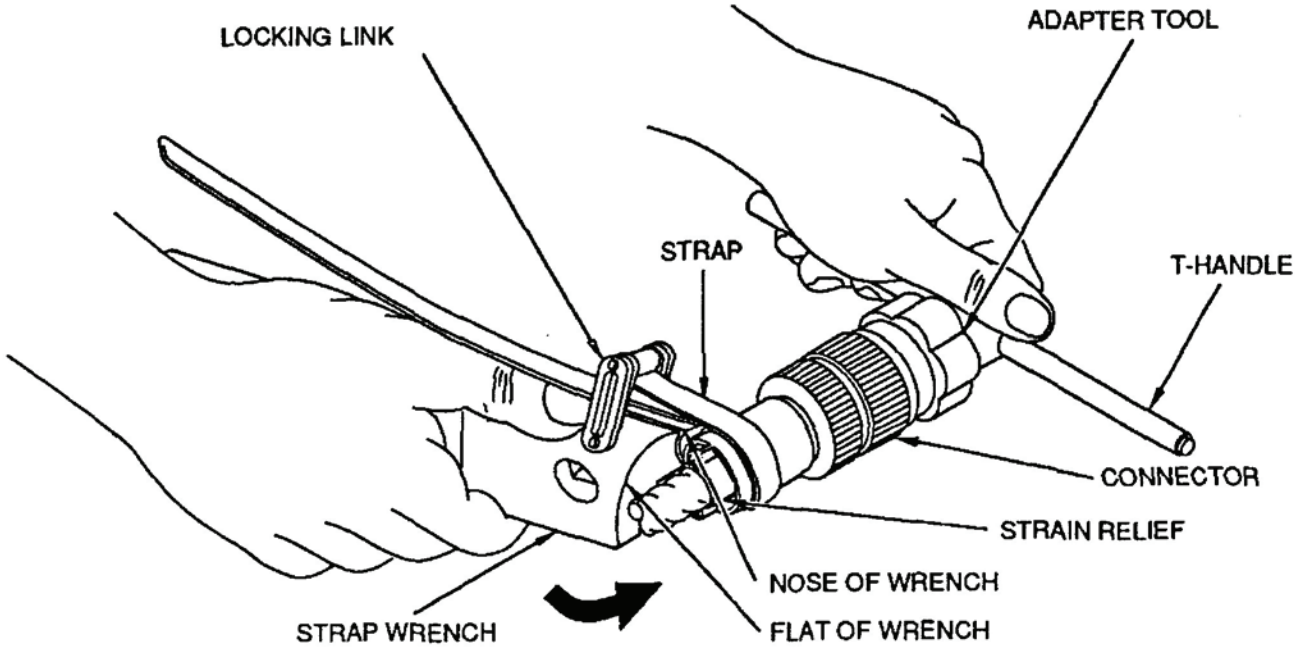


Figure 4. Loosening Position of Wrench

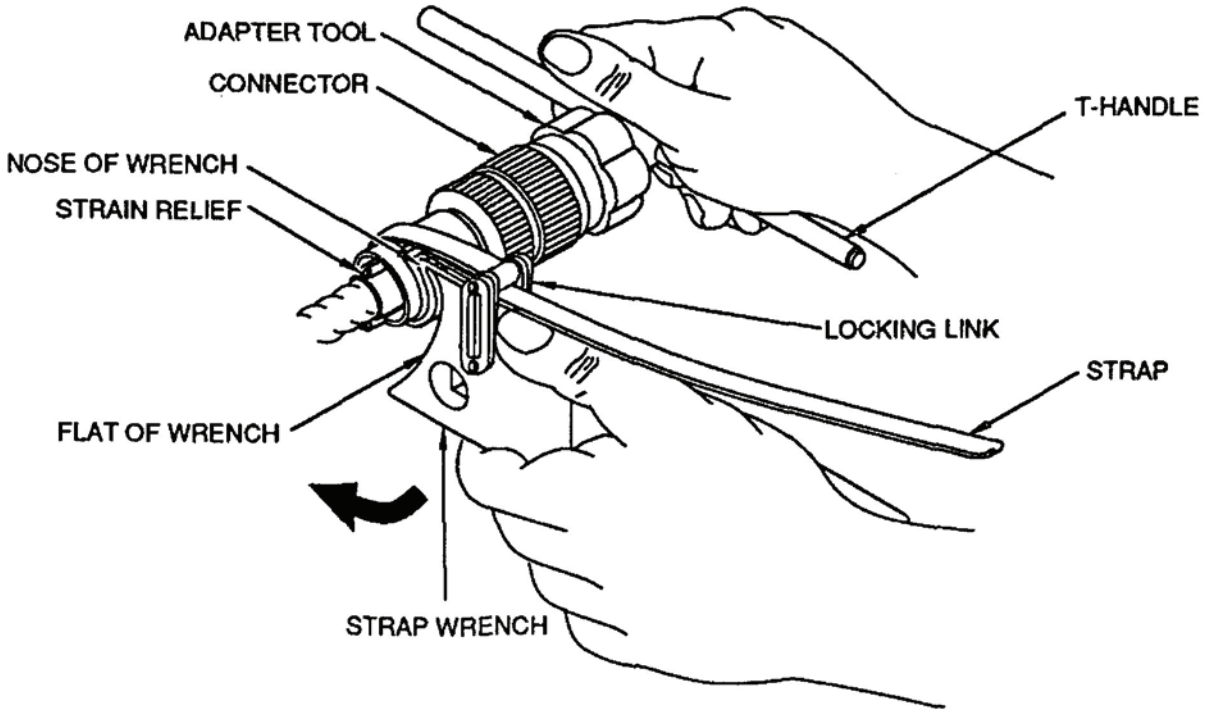


Figure 5. Tightening Position of Wrench

b. Select correct adapter tool (Table 2).

c. Mate adapter tool to connector. Ensure white dot on adapter tool aligns with master keyway of connector. Spinning tool on connector will cause damage to tool and/or connector (Figure 3).

d. Install strap wrench around backshell to be installed. Draw strap tightly through locking link. Backshell will rest on nose of wrench.

e. Insert T-handle into socket of adapter tool to provide holding.

NOTE

Refer to NAVAIR 01-1A-505-1, WP 011 01, for torque value information on AS85049 connector backshells.

f. To tighten backshell, apply force clockwise from rear of connector (Figure 5).

11. CONNECTOR ACCESSORIES, SOLDER CONTACT TYPE.

12. Connector accessories to enhance solder type contact connectors are as follows:

a. Cable Clamps/Strain Reliefs.

b. EMI-RFI and Grounding Terminators.

c. Bonding Rings.

d. Mounting Plates for Flange Mount Receptacles.

13. CABLE CLAMPS/STRAIN RELIEFS. The following two paragraphs explain the two types of cable support or clamping devices.

14. Cable CIamps. A cable clamp is a support or clamping device which requires use of an intermediate component for attachment to back of connector (Figures 6, 7, 8 and 9).

15. Strain Reliefs. A strain relief is a support or clamping device which attaches directly to connector (Figures 6, 7, 8 and 9).

16. EMI/RFI GROUNDING TERMINATORS. EMI/RFI grounding terminators are used to ground or shield a connector to reduce electromagnetic radiation and radio frequency interference from other equipment. A physical and electrical shield is employed which is terminated at one or both ends to a ground or some other predetermined point with respect to ground. Shields can be applied to individual wires, cables, bundles, and harness.

17. BONDING RINGS. Bonding rings are used with cable clamps or flexible conduit coupling nuts to ground wire shielding (Figure 10).

18. Bonding Ring Installation. Bonding rings are installed using the following procedure:

a. Separate shield from each wire at end of cable by pulling wire through a hole pierced in the shield.

b. Gather individual wire shield together.

c. Crimp shields in bonding ring tongue and solder.

d. Tighten cable clamp or coupling nut to end of bell of connector.

19. MOUNTING PLATES FOR FLANGE MOUNT RECEPTACLES. Mounting plates are used to secure a flange mount receptacle to mounting structure. Mounting plates are available in heavy, medium, and light duty type (Figures 11, 12 and 13).

PART NUMBER DESIGNATION

M85049/ 1 -20B

MILITARY DESIGNATION

DETAIL SHEET

DASH NUMBER (See Dimensions)

FINISH
M85049: OLIVE DRAB CADMIUM, 1000 Hr SALT SPRAY

SCREW MATERIAL
M85049/1: STAINLESS STEEL

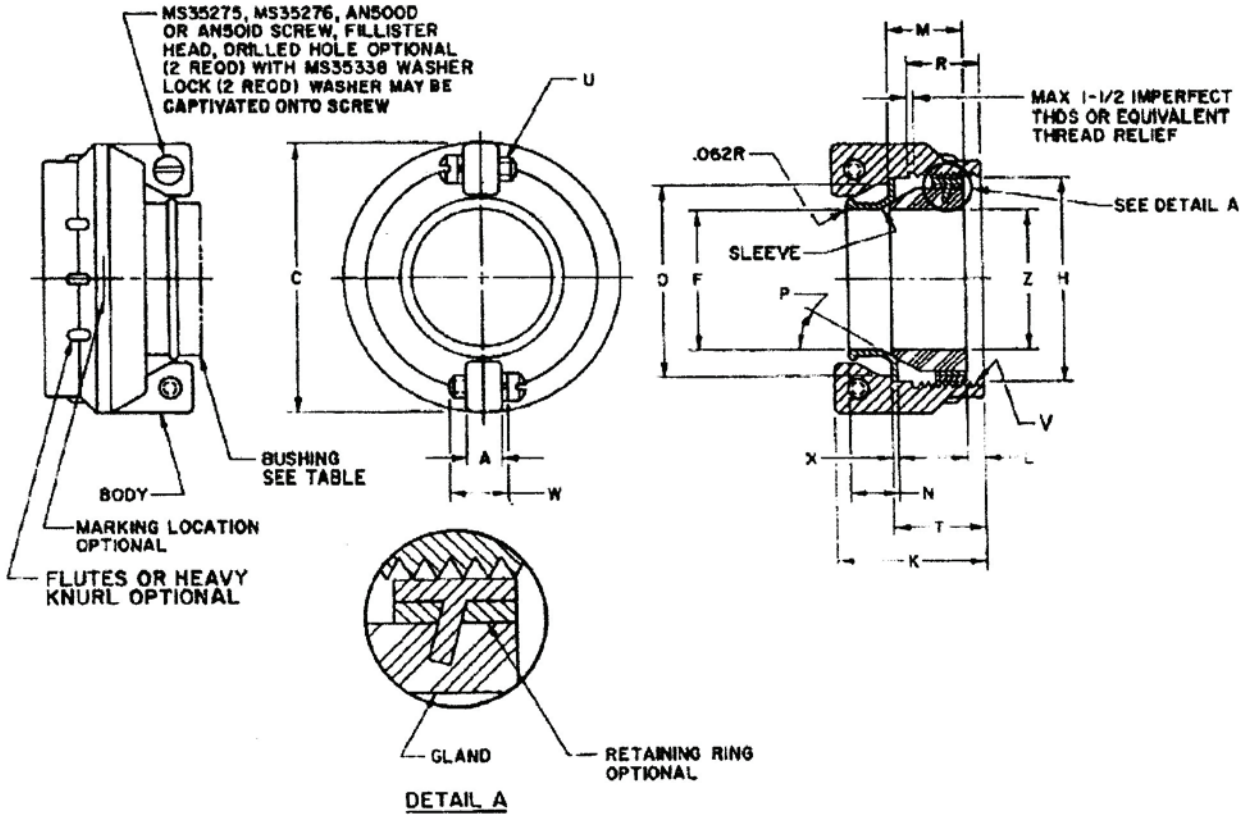


Figure 6. Cable Clamps - Strain Reliefs M85049/1-20B (Sheet 1 of 2)

DIMENSIONS

Dash No.	Connector Shell Size (Ref) 1/	A +.031 -.016	C Max	D +.000 -.020 Dia Gland	F +.020 -.000 Dia	H +.000 -.020 Dia 2/	K Max	L Min	M ±.031	N	P ±2°	R Min	T	U Thread	MS35338 Washer, Lock Dash Number
-3B	8S and 10S	.188	.812	.389	.231	.441	1.031	.156	.473	.254	20°	.531	.641	6-32UNC-2A	136
-4B	10SL, 12S and 12		.937	.510	.315	.560									136
-6B	14S and 14		1.062	.627	.440	.676					30°				136
-8B	16S and 16		1.188	.744	.515	.800									136
-10B	18		1.312	.870	.614	.926	1.094		.537	.281			.672		136
-12B	20 and 22	.250	1.562	1.037	.738	1.107	1.219		.625	.320			.719	8-32UNC-2A	137
-16B	24 and 28		1.750	1.286	.926	1.357			.662	.344					137
-20B	32	.312	2.250	1.590	1.200	1.670	1.344			.406	35°	.562	.797	10-32UNF-2A	138
-24B	36		2.375	1.844	1.363	1.920	1.547		.940			.781	1.016		138
-28B	40		2.625	2.083	1.611	2.162									138
-32B	44	.375	2.812	2.332	1.865	2.412	1.734	.188	1.047	.500			1.172		138
-40B	48		3.312	2.832	2.365	2.912	1.781						1.234		138

Dash No.	Fillister Head Screw				V Thread	W Min	X	Z Dia Approx (Gland)		Bushing (Ref)	Max Cable Dia
	AN500D Dash Number	MS35275 Dash Number	AN501D Dash Number	MS35276 Dash Number				Free	Closed		
-3B	6-5	227			.500-28 UNEF-2B	.281	.025 +.010 -.003	.219	.027	MS3420-3A	.209
-4B	6-5	227			.625-24 UNEF-2B			.312	.094	MS3420-4A	.302
-6B	6-5	227			.750-20 UNEF-2B			.438	.230	MS3420-6A	.428
-8B	6-5	227			.875-20 UNEF-2B			.531	.312	MS3420-8A	.515
-10B	6-5	227			1.000-20 UNEF-2B		.032 +.012 -.003	.625	.375	MS3420-10A	.614
-12B	8-6	243			1.188-18 UNEF-2B	.344		.750	.445	MS3420-12A	.738
-16B	8-6	243			1.438-18 UNEF-2B			.938	.594	MS3420-16A	.926
-20B			10-7	262	1.750-18 UNS-2B	.406		1.250	.922	MS3420-20A	1.200
-24B			10-7	262	2.000-18 UNS-2B		.051 ±.006	1.375	.922	MS3420-24A	1.363
-28B			10-7	262	2.250-16 UN-2B			1.625	1.180	MS3420-28A	1.611
-32B			10-7	262	2.500-16 UN-2B		.064 ±.006	1.875	1.376	MS3420-32A	1.865
-40B			10-7	262	3.000-16 UN-2B			2.375	1.875	MS3420-40A	2.365

NOTES:

1/ Clamp mates with connector shell size listed in the column.
2/ When the retaining ring is not used, the dimensions listed in column H shall be the minimum outer diameter of the gland for the associated dash number.

- Bushings are not supplied with clamps

Figure 6. Cable Clamps - Strain Reliefs M85049/1-20B (Sheet 2 of 2)

PART NUMBER DESIGNATION

M85049/ 2 -20C

MILITARY DESIGNATION

DETAIL SHEET

DASH NUMBER (See Dimensions)

FINISH
M85049: OLIVE DRAB CADMIUM, 1000 Hr SALT SPRAY

SCREW MATERIAL
M85049/1: STAINLESS STEEL

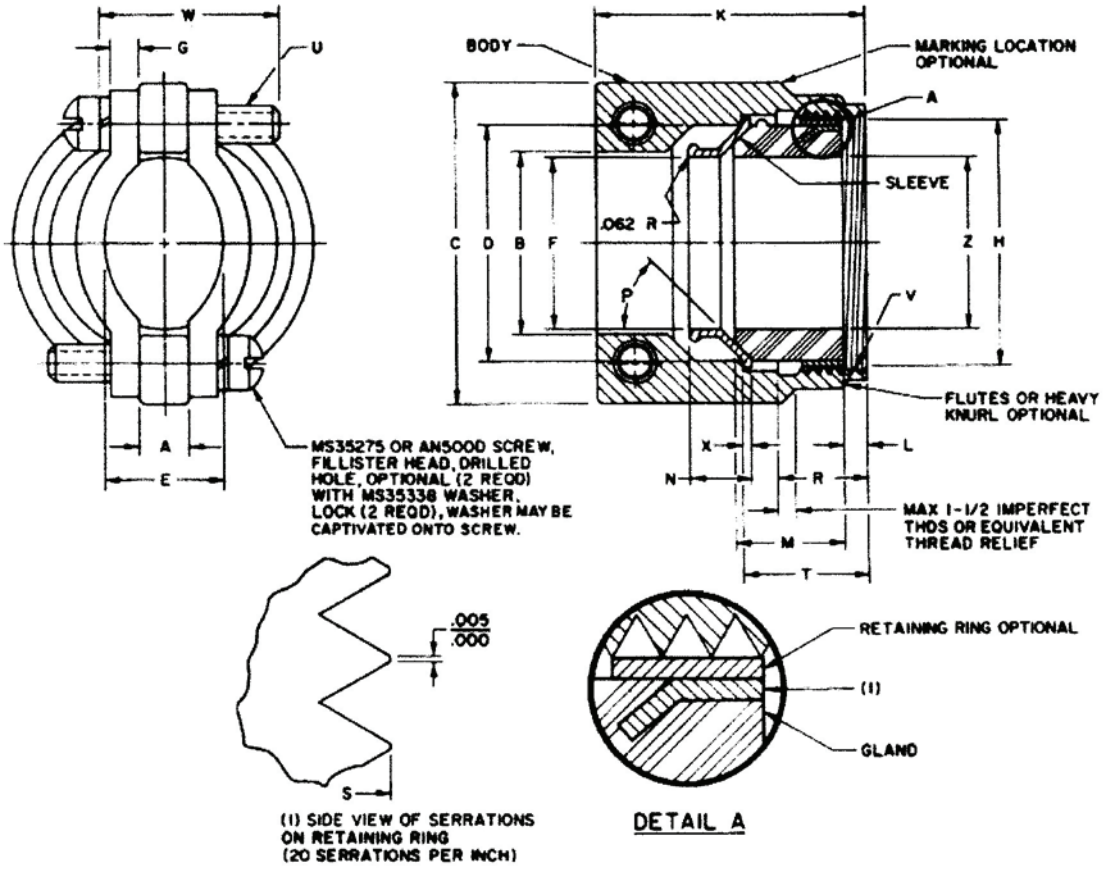


Figure 7. Cable Clamps - Strain Reliefs M85049/1-20C (Sheet 1 of 2)

DIMENSIONS

Dash No.	Connector Shell Size (Ref) 1/	A +.031 -.016	B Min Cable Clearance	C Max	D +.000 -.020 Dia Gland	E Max Closed	F +.020 -.000 Dia	G ±.016	H +.000 -.020 Dia 2/	K Max	L Min	M ±.031	N	P Min	R Min
-3C	8S and 10S	.188	.239	.812	.389	.217	.231	.125	.441	1.375	.156	.473	.254	20°	.531
-4C	10SL, 12S and 12		.317	.937	.510	.296	.315		.560					30°	
-6C	14S and 14		.443	1.062	.627	.390	.440		.676						
-8C	16S and 16		.551	1.188	.744	.434	.515		.800						
-10C	18		.630	1.312	.870		.614		.926	1.437		.537	.281	30°	
-12C	20 and 22	.250	.771	1.562	1.037	.596	.738	.156	1.107			.625	.320		
-16C	24 and 28		.959	1.750	1.286		.926		1.357	1.562		.662	.344		
-20C	32	.312	1.271	2.250	1.590	.858	1.200		1.670	1.812			.406	35°	.562
-24C	36		1.396	2.375	1.644		1.363	.188	1.920	2.062		.940			.781
-28C	40		1.646	2.625	2.083	1.107	1.611		2.162						
-32C	44	.375	1.896	2.812	2.332	1.421	1.865		2.412	2.188	.188	1.047	.500		

Dash No.	T	U Thread	Fillister Head Screw AN500D Dash No.	Fillister Head Screw MS35275 Dash No.	Screw Size	V Thread	W Min	X	Z Dia Approx (Gland) Free	Z Dia Approx (Gland) Closed	Bushing (Ref)	Max Cable Entry	MS35338 Washer, Lock Dash Number
-3C	.641	.138-32UNC-2A	6-8	230	(6-32)	.500-28 UNEF-2B	.469	.025 +.010 -.003	.219	.031	MS3420-3A	.219	136
-4C			6-10	231		.625-24 UNEF-2B	.594		.312	.094	MS3420-4A	.312	136
-6C			6-10	231		.750-20 UNEF-2B			.438	.250	MS3420-6A	.438	136
-8C			6-12	232		.875-20 UNEF-2B	.719		.531	.312	MS3420-8A	.515	136
-10C	.672		6-12	232		1.000-20 UNEF-2B			.625	.375	MS3420-10A	.614	136
-12C	.719	.164-32UNC-2A	8-14	248	(8-32)	1.188-18 UNEF-2B	.844	.032 +.012 -.003	.750	.500	MS3420-12A	.738	137
-16C			8-18	NA		1.438-18 UNEF-2B	1.062		.938	.594	MS3420-16A	.926	137
-20C	.797	.250-20UNC-2A	416-20	284	(1/4-20)	1.750-18 UNS-2B	1.187	.051±.005	1.250	.938	MS3420-20A	1.200	139
-24C	1.016		416-22	NA		2.000-18 UNS-2B	1.312		1.375	.969	MS3420-24A	1.363	139
-28C			416-22	NA		2.250-16 UN-2B			1.625	1.138	MS3420-28A	1.611	139
-32C	1.172		416-22	NA		2.500-16 UN-2B		.064±.005	1.875	1.375	MS3420-32A	1.865	139

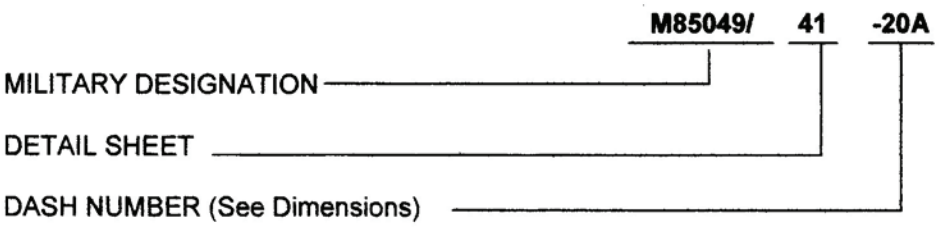
NOTES:

1/ Clamp mates with connector shell size listed in the column.
2/ When the retaining ring is not used, the dimensions listed in column H shall be the minimum outer diameter of the gland for the associated dash number.

- Bushings are not supplied with clamps

Figure 7. Cable Clamps - Strain Reliefs M85049/1-20C (Sheet 2 of 2)

PART NUMBER DESIGNATION



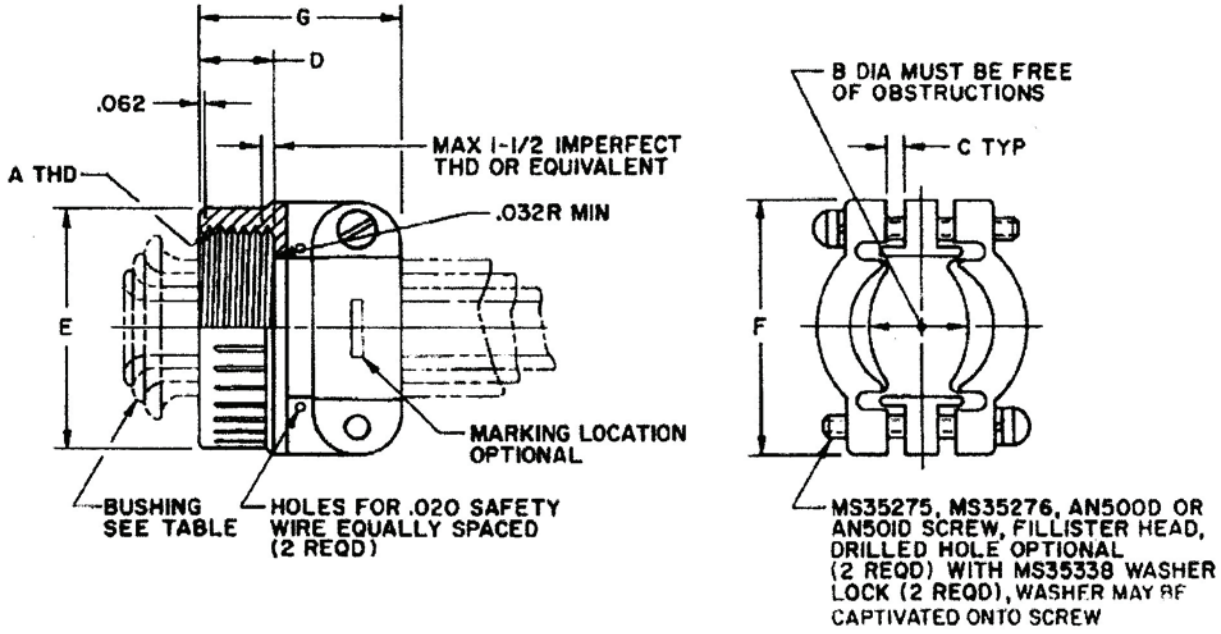
FINISH
M85049: OLIVE DRAB CADMIUM, 1000 Hr SALT SPRAY

MATERIAL

Material	Finish
Aluminum alloy in accordance with MIL-C-85049	1/ W

1/ W finish is not for use in space application.

SCREW MATERIAL
M85049/1: STAINLESS STEEL



NOTE:
INACTIVE FOR NEW DESIGN EQUIPMENT OR MODIFICATION OF EXISTING EQUIPMENT, USE MIL-C-85049/42.

Figure 8. Cable Clamps - Strain Reliefs M85049/41 (Sheet 1 of 3)

DIMENSIONS

Dash No.	Connector Shell Size (Ref) See Note 7	A Thread	B Wire Bundle Accommodation Max	C	D	E ±.031 Dia	F ±.031	G ±.031	Bushing (Ref) See Note 8
-3A	8S & 10S	.500-28 UNEF-2B	.250	.047	.406	.688	.812	.812	MS3420-3
-4A	10SL, 12S & 12	.625-24 UNEF-2B	.312	.062		.812	.875		MS3420-4
-6A	14S & 14	.750-20 UNEF-2B	.438	.078		.969	1.062	.875	MS3420-6
-8A	16S & 16	.875-20 UNEF-2B	.562	.109		1.094	1.156	.938	MS3420-8
-10A	18	1.000-20 UNEF-2B	.625	.125		1.188	1.250		MS3420-10
-12A	20 & 22	1.188-18 UNEF-2B	.750	.156		1.375	1.469		MS3420-12
-16A	24 & 28	1.438-18 UNEF-2B	.938	.188		1.656	1.688	1.031	MS3420-16
-20A	32	1.750-18 UNS-2B	1.250	.250	.469	2.031	2.031	1.094	MS3420-20
-24A	36	2.000-18 UNS-2B	1.375	.297	.531	2.219	2.281	1.156	MS3420-24
-28A	40	2.250-16 UN-2B	1.625	.328		2.500	2.688	1.688	MS3420-28
-32A	44	2.500-16 UN-2B	1.875	.375	.594	2.781	2.938	1.750	MS3420-32
-40A	48	3.000-16 UN-2B	2.375	.453	.656	3.281	3.500		MS3420-40

Dash No.	Fillister Head Screw				Screw Size	MS35338 Washer, Lock Dash Number
	AN500D Dash Number	MS35275 Dash Number	AN501D Dash Number	MS25276 Dash Number		
-3A	4-7	216			4-40	135
-4A	4-10	218			4-40	135
-6A	6-12	232			6-32	136
-8A	6-12	232			6-32	136
-10A	6-14	248			6-32	136
-12A	8-16	249			8-32	137
-16A	8-18	N/A			8-32	137
-20A	8-24	251			8-32	137
-24A			10-24	269	10-32	138
-28A	416-28	286			1/4-20	139
-32A	416-32	287			1/4-20	139
-40A	416-48	291			1/4-20	139

NOTES:
1. Dimensions are in inches.
2. Unless otherwise specified, tolerances shall be as follows: Decimals ±.016, angles ±2".
3. Dimensions apply after plating.
4. Dimensions and tolerancing in accordance with ANSI Y14.5.
5. Remove all burrs and sharp edges.
6. Clamp mates with MIL-DTL-5015 Solder Type, MS310X MS "V" thread class A, B, C and K connectors.

Figure 8. Cable Clamps - Strain Reliefs M85049/41 (Sheet 2 of 3)

7. Bushings for reference only and not supplied as part of clarnp. For additional closedown of the B dimension, bushing MS3420-3 through MS3420-4C may be used One bushing as required for M65049/41-3 through M85049/41-12, corresponding to MS3420-3 through MS342C-12. Two bushings as required for f/85049/4 i-!6 through M35049/41-24 one each corresponding to MS3420-16 through MS342C-24. and MS342Q-12 through MS342D-20. (Examples: M85049M1-16 requires one VS3420-15 and one MS342C-i2.) Three bushings as required for M85049/4l-28 through f/85049/41-40 one each corresponding to MS3420-28 through MS3420-40. ^53420-24 through MS342C-32 and MS3420-20 through MS3423-28, (Examples: M85049/41-40 requires one MS3420-4C, one MS3420-32, and one MS3420-28.)
8. The 3 dia dimension is meant to define the maximum wire bundle outside diameter which can be accommodated by the clamp. This dimension is not meant to define the clamp hardware dimensions.

SUPERSESSION DATA

MS3057 - * * M85049/41 - *

Dash Number

Finish

Old	New
A	W
C	W
N	W

Figure 8. Cable Clamps - Strain Reliefs M85049/41 (Sheet 3 of 3)

PART NUMBER DESIGNATION

M85049/ 42 -20D N

MILITARY DESIGNATION

DETAIL SHEET

DASH NUMBER (See Dimensions)

FINISH (See Codes)

MATERIAL and FINISH

Component	Material	Finish
Body	Aluminum alloy in accordance with MIL-C-85049	1/ N, 2/ W
Body	Corrosion resistant steel in accordance with MIL-C-85049	B, S

1/ Not for Navy use. Restricted to Air Force Space applications only.
2/ W finish is not for use in space application.

SCREW MATERIAL: M85049/1: STAINLESS STEEL

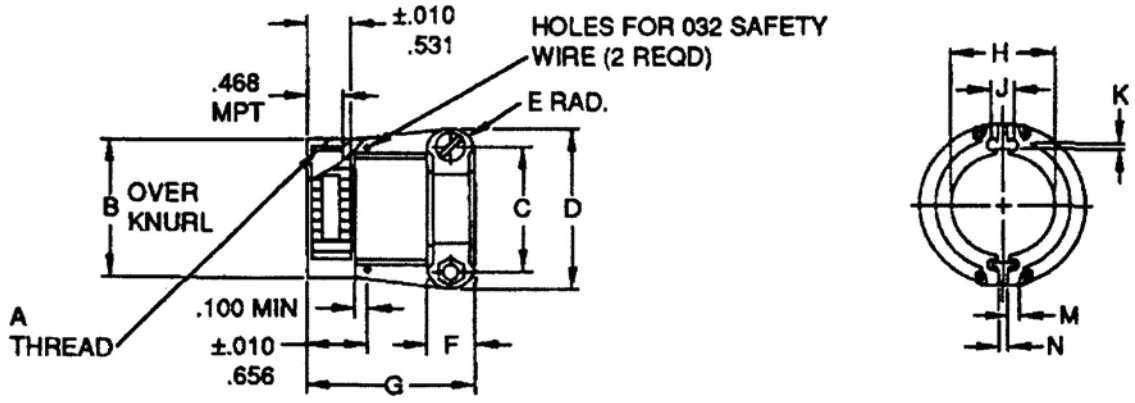


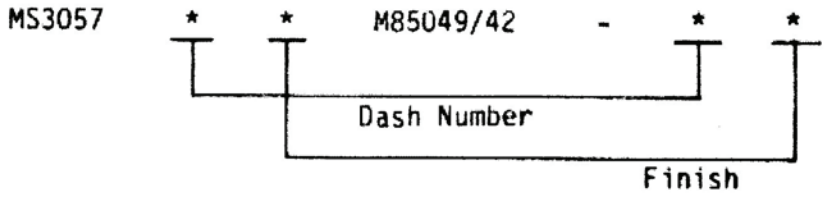
Figure 9. Cable Clamps - Strain Reliefs M85049/42 (Sheet 1 of 2)

DIMENSIONS

Dash No.	A Thread Class 2A	B Dia Max.	C ±.010	D ±.020	E +.000 -.007	F ±.010	G ±.020	H Clamp Range Min.	H Clamp Range Max.	J Dia ±.010	K ±.010	M ±.010	N ±.010	P ±.005
-4D	.625-24UNEF	.937	.637	.937	.250	.312	1.281	.125	.312	.218	.062	.156	.109	.166
-6D	.750-20UNEF	1.031	.763	1.125	.250	.375	1.281	.250	.437	.281	.062	.175	.125	.166
-8D	.875-20UNEF	1.250	.942 ± .032	1.312	.250	.422 ± .026	1.281	.312	.562	.312	.062	.211 ± .018	.125	.166
-10D	1.000-20UNEF	1.250	.964	1.312	.250	.437	1.281	.350	.625	.312	.062	.218	.125	.166
-12D	1.188-18UNEF	1.437	1.130	1.631	.250	.437	1.312	.500	.750	.375	.062	.250	.156	.192
-16D	1.438-18UNEF	1.688	1.375	1.750	.250	.531	1.406	.625	.937	.375	.062	.250	.188	.192
-20D	1.750-18UNS	2.000	1.703	2.093	.312	.531	1.593	.875	1.250	.475	.078	.312	.188	.217
-24D	2.000-18UNS	2.250	1.906	2.343	.312	.531	1.625	1.000	1.375	.500	.093	.312	.250	.217
-28D	2.250-16UN	2.500	2.218	2.750	.312	.812	1.900	1.250	1.625	.625	.093	.312	.375	.217
-32D	2.50016UN	2.750	2.500	3.000	.312	.812	1.900	1.437	1.875	.675	.125	.312	.375	.217

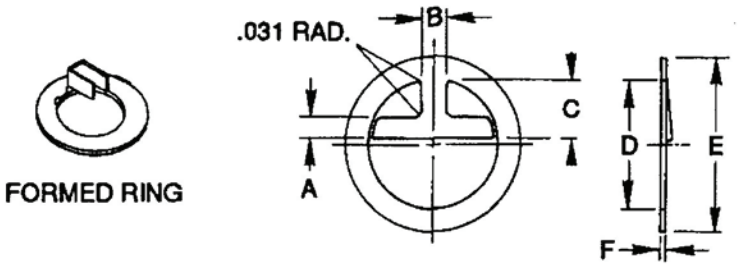
NOTES:
1. Dimensions are in inches.
2. Unless otherwise specified, tolerances shall be as follows: decimals ±.01, angles ±.005.
3. When clamp is fully closed position the telescoping screw and nut shall not be fully mated.
4. The MIL-DTL-85049/42 clamp is used to provide strain relief for the connector accessories MIL-DTL-85049/6, /7, /8, /9, /10, /11, /23, /24, and /25.

SUPERSESSION DATA



Old	New
DA	W
DC	W
DD	B
DN	N
DS	S

Figure 9. Cable Clamps - Strain Reliefs M85049/42 (Sheet 2 of 2)



AN Part No.	Use With MIL-C-5015 Solder Shell Size	A	B	C	D ± .005 Dia	E ± .005 Dia	F + .005 - .002
AN3111-1	8S ± 10S	.062	.062	.156	.323	.448	
AN3111-2	10SL,12 ± 12S	.062	.062	.188	.441	.566	
AN3111-3	14 ± 14S	.062	.062	.188	.557	.682	
AN3111-4	16 ± 16S	.094	.094	.406	.620	.807	.020
AN3111-5	18	.125	.125	.312	.682	.932	
AN3111-6	20 ± 22	.125	.125	.500	.914	1.105	
AN3111-7	24 ± 28	.125	.125	.438	1.105	1.355	
AN3111-8	32	.125	.125	.562	1.418	1.668	
AN3111-9	36	.125	.125	.562	1.668	1.918	
AN3111-10	40	.125	.125	.562	1.910	2.160	.032
AN3111-11	44	.125	.125	.688	2.160	2.410	
AN3111-12	48	.125	.125	.688	2.660	2.910	

MATERIAL:

SOFT COPPER, SPEC QQ-C-501a-3
FINISH — TIN PLATED

Figure 10. Bonding Rings

PART NUMBER DESIGNATION

AS85049/	94	-14	A

BASIC DESIGNATION

DETAIL SHEET

DASH NUMBER (See Dimensions)

MATERIAL and FINISH (See Codes)

MATERIAL and FINISH:

- FLANGE, ALUMINUM ALLOY IAW SAE AS85049, CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1 A.
- 'A' DESIGNATOR, 2 COATS OF EPOXY POLYAMIDE PRIMER PER MIL-PRF-23377, TYPE I, SHALL BE APPLIED EITHER BEFORE OR AFTER NUT INSTALLATION AND OVERSPRAY IS ALLOWED PROVIDED THE PERFORMANCE CHARACTERISTICS OF THE NUT ARE NOT DEGRADED AND ALL OTHER REQUIREMENTS ARE MET.
- NUT, STAINLESS STEEL.

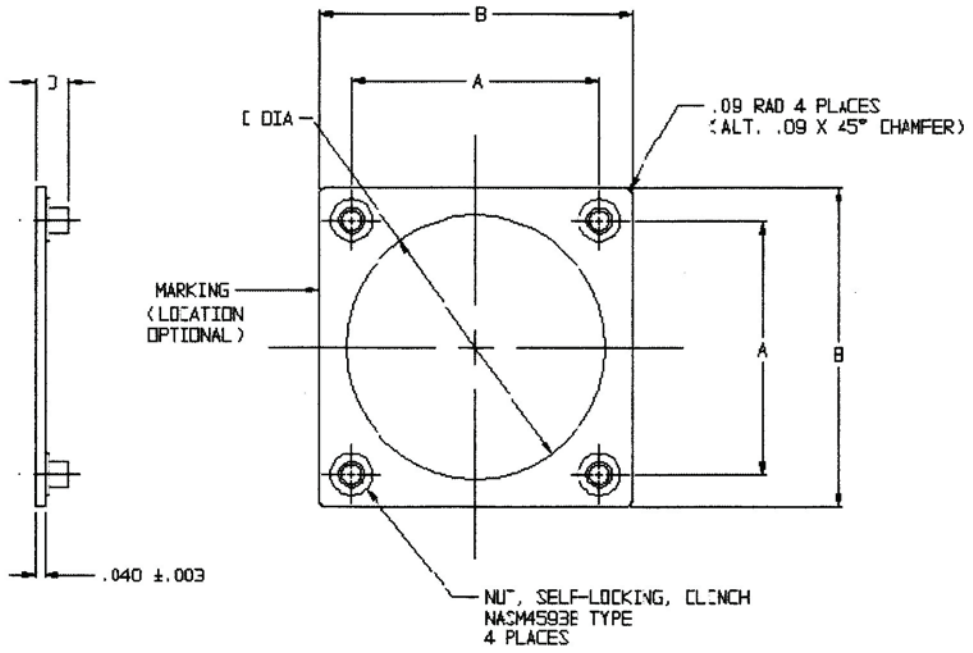


Figure 11. Mounting Plate, Heavy Duty (Sheet 1 of 4)

DIMENSIONS

DASH NUMBER	THRD UNJC-3B	A ± .015	B MAX	C ± .015	D
8	4-40	.594	.900	.570	.106/.166
10	4-40	.719	1.034	.720	.106/.166
12	4-40	.812	1.119	.855	.106/.166
14	4-40	.906	1.213	.984	.106/.166
16	4-40	.969	1.295	1.094	.106/.166
18	4-40	1.062	1.421	1.220	.106/.166
20	4-40	1.156	1.550	1.345	.106/.166
22	4-40	1.250	1.680	1.478	.106/.166
24	6-32	1.375	1.800	1.595	.123/.183
25	6-32	1.500	1.910	1.658	.123/.183

NOTES:

1. SEE FIGURE, MOUNTING FLANGES SHALL BE OF A CONSTRUCTION WITH PREDRILLED OR PUNCHED HOLES IN ALUMINUM ALLOY INCORPORATING SELF LOCKING NUTS, CLINCH TYPE.
2. CLINCH NUTS: IN ACCORDANCE WITH NASM45938, CLEAN AND DE-SCALE IN ACCORDANCE WITH ASTM A 380 AND PASSIVATED IN ACCORDANCE AMS-QQ-P-35, FOLLOWED BY A SOLID FILM LUBRICANT COATING PER MIL-PRF-46010
3. MARKING: IN ACCORDANCE WITH MIL-STD-1285
4. DIMENSIONS ARE IN INCHES
5. UNLESS OTHERWISE SPECIFIED, DIMENSIONS IS +/- .010.
6. FOR MOUNTING FLANGE CROSS REFERENCE, SEE NEXT TABLE

Figure 11. Mounting Plate, Heavy Duty (Sheet 2 of 4)

MOUNTING FLANGE CROSS REFERENCE (CONTINUED ON NEXT PAGE)

PROCUREMENT SPECIFICATION	MS SHEET	SHELL SIZES	PART NUMBER	ASSOCIATED DRAWING
MIL-DTL-5015	3100	8S 10 10SL 12S 12 14S 14 16S 16 18 20 22 24 28 32 36	M85049/ 94-X-A	8 10 -- 12 12 14 14 16 16 18 20 22 24
" "	3102	8S 10S 10SL 12S 12 14S 14 16S 16 18 20 22 24 28 32 36	"	8 10 -- 12 12 14 14 16 16 18 20 22 24
" "	3400	8S 10 10SL 12S 12 14S 14 16S 16 18 20 22 24 28 32 36	"	8 10 -- 12 12 14 14 16 16 18 20 22 24
" "	3402	8S 10 10SL 12S 12 14S 14 16S 16 18 20 22 24 28 32 36	"	8 10 -- 12 12 14 14 16 16 18 20 22 24
" "	3450	8S 10 10SL 12S 12 14S 14 16S 16 18 20 22 24 28 32 36	"	8 10 -- 12 12 14 14 16 16 18 20 22 24
" "	3452	8S 10 10SL 12S 12 14S 14 16S 16 18 20 22 24 28 32 36	"	8 10 -- 12 12 14 14 16 16 18 20 22 24
MIL-C-22992	17343	12 14 16 18 20 22	"	14 16 18 20 22 24
MIL-DTL-26482	3110	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	3112	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	3120	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	3122	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	3470	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	3472	8 10 12 14 16 18 20 22 24	"	-- 12 -- -- 22 -- 24 25
MIL-C-27599	20026	9 11 13 15 17 19 21 23 25	"	10 12 14 16 18 20 22 24 25
" "	27334	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27335	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
MIL-DTL-38999	27466	9 11 13 15 17 19 21 23 25	"	10 12 14 16 18 20 22 24 25
" "	27469	9 11 13 15 17 19 21 23 25	"	10 12 14 16 18 20 22 24 --
" "	27472	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27475	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27476	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27496	9 11 13 15 17 19 21 23 25	"	10 12 14 16 18 20 22 24 25
" "	27497	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27499	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27505	9 11 13 15 17 19 21 23 25	"	10 12 14 16 18 20 22 24 25
" "	27508	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27513	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27515	9 11 13 15 17 19 21 23 25	"	10 12 14 16 18 20 22 23 25

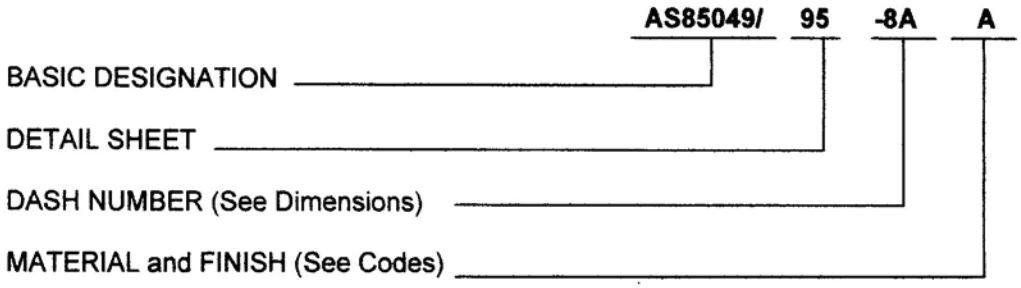
Figure 11. Mounting Plate, Heavy Duty (Sheet 3 of 4)

MOUNTING FLANGE CROSS REFERENCE (CONTINUED FROM PREVIOUS PAGE)

PROCUREMENT SPECIFICATION	MS SHEET	SHELL SIZES	PART NUMBER	ASSOCIATED DRAWING
MIL-DTL-38999	/20	9 11 13 15 17 19 21 23 25	M85049/ 94-X-A	10 12 14 16 18 20 22 24 25
" "	/40	11 13 15 17 19 21 23 25	"	12 14 16 18 20 24 25
" "	/42	11 13 15 17 19 21 23 25	"	12 14 16 18 20 22 24 25
AS81703	3130	3 7 12 19 27 37	"	-- 10 -- -- -- --

Figure 11. Mounting Plate, Heavy Duty (Sheet 4 of 4)

PART NUMBER DESIGNATION



MATERIAL and FINISH:

- FLANGE, ALUMINUM ALLOY IAW SAE AS85049, CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1 A. 'A' DESIGNATOR, 2 COATS OF EPOXY POLYAMIDE PRIMER PER MIL-PRF-23377, TYPE I, SHALL BE APPLIED EITHER BEFORE OR AFTER NUT INSTALLATION AND OVERSPRAY IS ALLOWED PROVIDED THE PERFORMANCE CHARACTERISTICS OF THE NUT ARE NOT DEGRADED AND ALL OTHER REQUIREMENTS ARE MET.
- CLINCH NUTS, NASM45938, PASSIVATED, CORROSION RESISTANT STEEL (AMS-QQ-P-35).

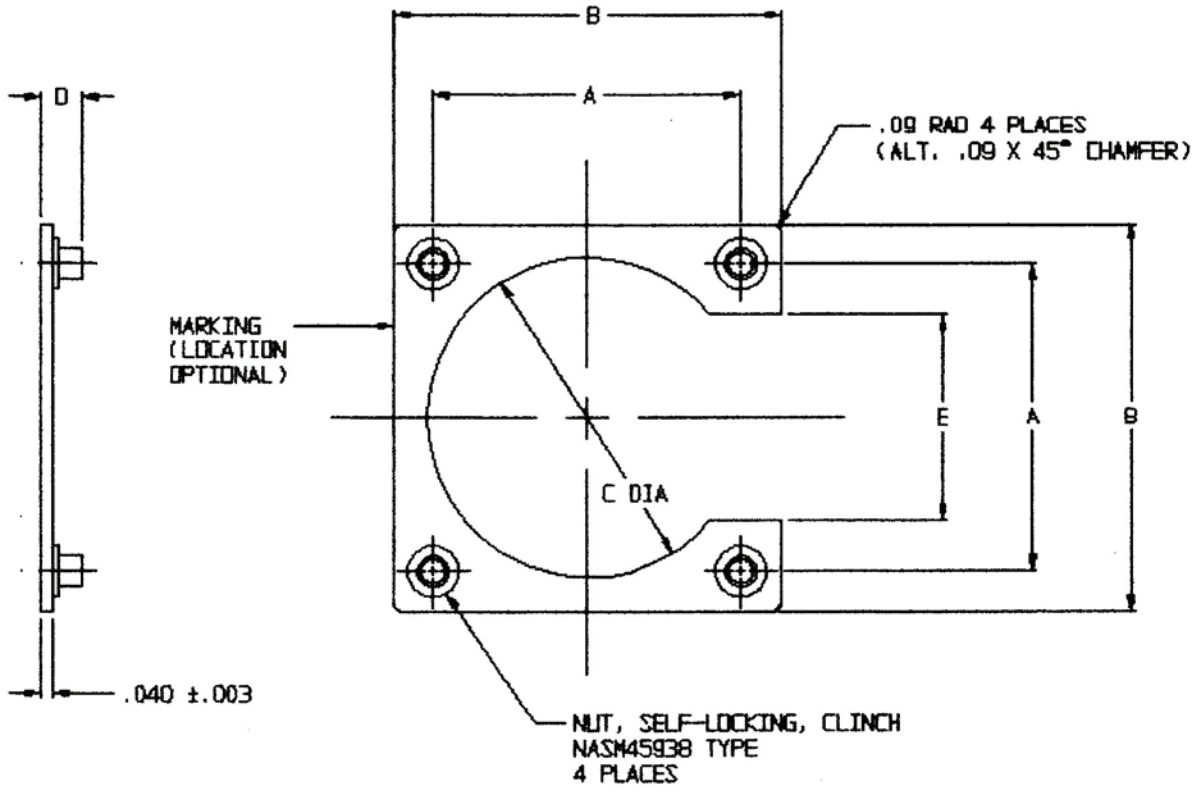


Figure 12. Mounting Plate, Medium Duty (Sheet 1 of 4)

DIMENSIONS

DASH NUMBER	CLASS	THRD UNJC -3B	A ± .005 1/	B MAX 1/	C ± .015	D	E ± .030 1/
3	A	4-40	.625	.940	.641	.106/.166	.325
7	A	4-40	.719	1.034	.688	.106/.166	.433
8	A	4-40	.594	.900	.570	.106/.166	.308
10	A	4-40	.719	1.034	.720	.106/.166	.433
	B	6-32	.812	1.202	.749	.123/.183	
12	A	4-40	.812	1.119	.855	.106/.166	.530
	B	6-32	.938	1.327	.938	.123/.183	
14	A	4-40	.906	1.213	.984	.106/.166	.624
	B	6-32	1.031	1.421	1.031	.123/.183	
16	A	4-40	.969	1.295	1.094	.106/.166	.687
	B	6-32	1.125	1.515	1.125	.123/.183	
18	A	4-40	1.062	1.421	1.220	.106/.166	.780
	B	6-32	1.203	1.593	1.234	.123/.183	
19	A	4-40	.906	1.207	.953	.106/.166	.620
20	A	4-40	1.156	1.550	1.345	.106/.166	.874
	B	6-32	1.297	1.703	1.359	.123/.183	.865
22	A	4-40	1.250	1.680	1.478	.106/.166	.968
	B	6-32	1.375	1.753	1.483	.123/.183	.907
24	A	6-32	1.500	1.906	1.560	.106/.166	1.000
	B	6-32	1.375	1.800	1.595	.123/.183	1.031
25	A	6-32	1.500	1.906	1.658	.123/.183	1.125
27	A	4-40	.969	1.270	1.094	.106/.166	.683
28	A	6-32	1.562	2.015	1.820	.123/.183	1.125
32	A	6-32	1.750	2.327	2.062	.123/.183	1.188
36	A	6-32	1.938	2.515	2.312	.123/.183	1.375
37	A	4-40	1.187	1.515	1.281	.106/.166	.874
61	A	4-40	1.437	1.827	1.594	.106/.166	1.602

1/ DIMENSIONS A, B AND E SHALL BE MEASURED WITH THE MOUNTING FLANGE IN THE RESTRAINED STATE

NOTES:

1. SEE FIGURE, MOUNTING FLANGE CONSTRUCTION WITH PREDRILLED OR PUNCHED HOLES IN ALUMINUM ALLOY INCORPORATING SELF LOCKING NUTS, CLINCH TYPE.
2. MARKING: IN ACCORDANCE WITH MIL-STD-1285
3. DIMENSIONS ARE IN INCHES
4. UNLESS OTHERWISE SPECIFIED, DIMENSIONS IS +/- .010.
5. FOR MOUNTING FLANGE CROSS REFERENCE, SEE NEXT TABLE

Figure 12. Mounting Plate, Medium Duty (Sheet 2 of 4)

MOUNTING FLANGE CROSS REFERENCE (CONTINUED ON NEXT PAGE)

PROCUREMENT SPECIFICATION	MS SHEET	SHELL SIZES	PART NUMBER	ASSOCIATED DRAWING
MIL-DTL-5015	3100	8S 10 10SL 12S 12 14S 14 16S 16 18 20 22 24 28 32 36	M85049/ 94-X-A	8 10 -- 12 12 14 14 16 16 18 20 22 24
" "	3102	8S 10S 10SL 12S 12 14S 14 16S 16 18 20 22 24 28 32 36	"	8 10 -- 12 12 14 14 16 16 18 20 22 24
" "	3400	8S 10 10SL 12S 12 14S 14 16S 16 18 20 22 24 28 32 36	"	8 10 -- 12 12 14 14 16 16 18 20 22 24
" "	3402	8S 10 10SL 12S 12 14S 14 16S 16 18 20 22 24 28 32 36	"	8 10 -- 12 12 14 14 16 16 18 20 22 24
" "	3450	8S 10 10SL 12S 12 14S 14 16S 16 18 20 22 24 28 32 36	"	8 10 -- 12 12 14 14 16 16 18 20 22 24
" "	3452	8S 10 10SL 12S 12 14S 14 16S 16 18 20 22 24 28 32 36	"	8 10 -- 12 12 14 14 16 16 18 20 22 24
MIL-C-22992	17343	12 14 16 18 20 22	"	14 16 18 20 22 24
MIL-DTL-26482	3110	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	3112	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	3120	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	3122	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	3470	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	3472	8 10 12 14 16 18 20 22 24	"	-- 12 -- -- 22 24 25
MIL-C-27599	20026	9 11 13 15 17 19 21 23 --	"	10 12 14 16 18 20 22 24 25
" "	27334	9 11 13 15 17 19 21 23 25	"	10 12 14 16 18 20 22 24 25
" "	27335	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
MIL-DTL-38999	27466	9 11 13 15 17 19 21 23 25	"	10 12 14 16 18 20 22 24 25
" "	27469	9 11 13 15 17 19 21 23 25	"	10 12 14 16 18 20 22 24 --
" "	27472	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27475	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27476	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27496	9 11 13 15 17 19 21 23 25	"	10 12 14 16 18 20 22 24 25
" "	27497	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27499	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27505	9 11 13 15 17 19 21 23 25	"	10 12 14 16 18 20 22 24 25
" "	27508	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27513	8 10 12 14 16 18 20 22 24	"	8 10 12 14 16 18 20 22 24
" "	27515	9 11 13 15 17 19 21 23 25	"	10 12 14 16 18 20 22 23 25

Figure 12. Mounting Plate, Medium Duty (Sheet 3 of 4)

MOUNTING FLANGE CROSS REFERENCE (CONTINUED FROM PREVIOUS PAGE)

PROCUREMENT SPECIFICATION	MS SHEET	SHELL SIZES	PART NUMBER	ASSOCIATED DRAWING
MIL-DTL-38999	/20	9 11 13 15 17 19 21 23 25	M85049/ 94-X-A	10 12 14 16 18 20 22 24 25
" "	/40	11 13 15 17 19 21 23 25	"	12 14 16 18 20 24 25
" "	/42	11 13 15 17 19 21 23 25	"	12 14 16 18 20 22 24 25
AS81703	3130	3 7 12 19 27 37	"	-- 10 12 14 16 --

Figure 12. Mounting Plate, Medium Duty (Sheet 4 of 4)

PART NUMBER DESIGNATION

AS85049/	96	-3	A

BASIC DESIGNATION

DETAIL SHEET

DASH NUMBER (See Dimensions)

MATERIAL and FINISH (See Codes)

MATERIAL and FINISH:

- FLANGE, ALUMINUM ALLOY IAW SAE AS85049, CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1 A. 'A' DESIGNATOR, 2 COATS OF EPOXY POLYAMIDE PRIMER PER MIL-PRF-23377, TYPE I, SHALL BE APPLIED EITHER BEFORE OR AFTER NUT INSTALLATION AND OVERSPRAY IS ALLOWED PROVIDED THE PERFORMANCE CHARACTERISTICS OF THE NUT ARE NOT DEGRADED AND ALL OTHER REQUIREMENTS ARE MET.
- CLINCH NUTS, NASM45938, PASSIVATED, CORROSION RESISTANT STEEL (AMS-QQ-P-35).

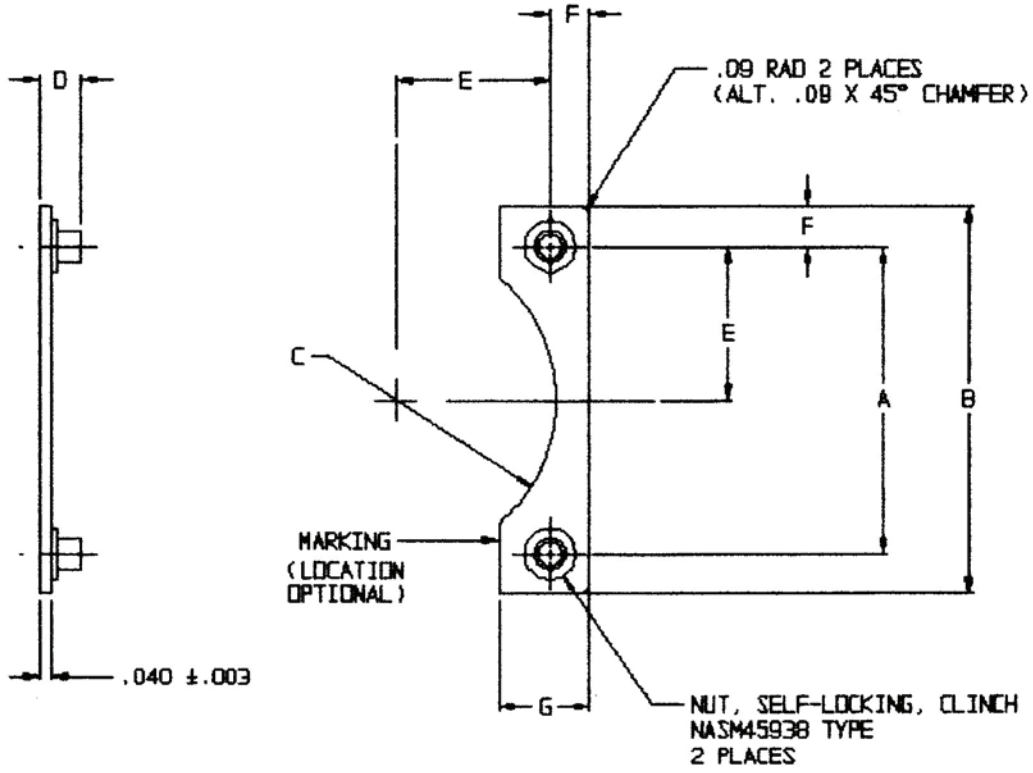


Figure 13. Mounting Plate, Light Duty (Sheet 1 of 3)

DIMENSIONS

DASH NUMBER	THRD UNJC -3B	A ± .005	B MAX	C ± .015	D	E ± .005	F ± .010	G MAX
3	4-40	.625	.940	.320	.106/.166	.312	.150	.310
7	4-40	.719	1.031	.359	.106/.166	.359	.149	.308
8	4-40	.594	.906	.277	.106/.166	.297	.148	.306
10	4-40	.719	1.031	.359	.106/.166	.359	.149	.308
12	4-40	.812	1.124	.425	.106/.166	.406	.148	.306
14	4-40	.906	1.218	.492	.106/.166	.453	.148	.306
16	4-40	.969	1.281	.547	.106/.166	.484	.149	.308
18	4-40	1.062	1.405	.610	.106/.166	.531	.164	.338
19	4-40	.906	1.218	.492	.106/.166	.453	.148	.306
20	4-40	1.156	1.525	.672	.106/.166	.578	.177	.364
22	4-40	1.250	1.655	.739	.106/.166	.625	.195	.400
24	6-32	1.375	1.790	.797	.123/.183	.687	.193	.396
25	6-32	1.500	1.874	.845	.123/.183	.750	.179	.368
27	4-40	.969	1.281	.547	.106/.166	.484	.149	.308
28	6-32	1.562	2.015	.920	.123/.183	.781	.219	.448
32	6-32	1.750	2.327	1.058	.123/.183	.875	.281	.572
36	6-32	1.938	2.515	1.170	.123/.183	.969	.281	.572
37	4-40	1.187	1.515	.670	.106/.166	.593	.157	.324
61	4-40	1.437	1.827	.812	.106/.166	.718	.188	.386

NOTES:
SEE FIGURE, MOUNTING FLANGE CONSTRUCTION WITH PREDRILLED OR PUNCHED HOLES IN ALUMINUM ALLOY INCORPORATING SELF LOCKING NUTS, CLINCH TYPE.
MARKING: IN ACCORDANCE WITH MIL-STD-1285
DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE SPECIFIED, DIMENSIONS IS +/- .010.
FOR MOUNTING FLANGE CROSS REFERENCE, SEE NEXT TABLE

Figure 13. Mounting Plate, Light Duty (Sheet 2 of 3)

MOUNTING FLANGE CROSS REFERENCE

CONNECTOR	SHELL SIZES	
	M85049/96	8 10 12 14 16 18 20 22 24 25
MIL-DTL-5015	MS3100	8S 10 12S 14S 16S 18 20 22 24 00 -- -- 12 14 16
" "	MS3102	8S 10 12S 14S 16S 18 20 22 24 -- -- -- 12 14 16
" "	MS3400	8S 10 12S 14S 16S 18 20 22 24 -- -- -- 12 14 16
" "	MS3402	8S 10 12S 14S 16S 18 20 22 24 -- -- -- 12 14 16
" "	MS3450	8S 10 12S 14S 16S 18 20 22 24 -- -- -- 12 14 16
" "	MS3452	8S 10 12S 14S 16S 18 20 22 24 -- -- -- 12 14 16
MIL-C-22992	MS17343	-- -- 12 14 16 18 20 22 -- --
MIL-DTL-26482	MS3110	8 10 12 14 16 18 20 22 24 --
" "	MS3112	8 10 12 14 16 18 20 22 24 --
" "	MS3120	8 10 12 14 16 18 20 22 24 --
" "	MS3122	8 10 12 14 16 18 20 22 24 --
" "	MS3470	8 10 12 14 16 18 20 22 24 --
" "	MS3472	8 10 12 14 16 18 20 22 24 --
MIL-C-27599	MS20026	9 11 13 15 17 19 21 23 25 --
" "	MS27334	8 10 12 14 16 18 20 22 24 --
" "	MS27335	8 10 12 14 16 18 20 22 24 --
MIL-DTL-38999	MS27466	-- 9 11 13 15 17 19 21 23 25
" "	MS27469	-- 9 11 13 15 17 19 21 23 25
" "	MS27472	8 10 12 14 16 18 20 22 24 --
" "	MS27475	8 10 12 14 16 18 20 22 24 --
" "	MS85049/96	8 10 12 14 16 18 20 22 24 25
" "	MS27476	8 10 12 14 16 18 20 22 24 --
" "	MS27496	-- 9 11 13 15 17 19 21 23 25
" "	MS27497	8 10 12 14 16 18 20 22 24 --
" "	MS27499	8 10 12 14 16 18 20 22 24 --
" "	MS27505	-- 9 11 13 15 17 19 21 23 25
" "	MS27508	8 10 12 14 16 18 20 22 24 --
" "	MS27513	8 10 12 14 16 18 20 22 24 --
" "	MS27515	-- 9 11 13 15 17 19 21 23 25
" "	MIL-C-38999/20	-- 9 11 13 15 17 19 21 23 25
" "	MIL-C-38999/40	-- -- 11 13 15 17 19 21 23 25
" "	MIL-C-38999/42	-- -- 11 13 15 17 19 21 23 25
MIL-C-81511	------	8 10 -- 14 16 18 -- -- -- --
AS81703	MS3130	3 7 12 19 27 37 -- -- -- --

Figure 13. Mounting Plate, Light Duty (Sheet 3 of 3)

20. CONNECTOR ACCESSORIES CRIMP RELEASE CONTACTS.

21. Connector accessories to maintain operational characteristics for crimp release (front and rear) contacts are divided into the following categories:

a. Grommet Nuts.

b. Cable Clamps/Strain Reliefs.

c. Shrink Boots and Adapters.

d. Environmental Backshells.

e. EMI/RFI Grounding Terminators.

f. Non-Environmental EMI/RFI Backshells.

g. Environmental EMI/RFI Backshells.

h. Conduit Fittings.

i. Dummy Receptacles.

j. Dust Caps.

k. Gasket for Flange Mount Receptacles.

l. Mounting Nuts for Jam Nut Receptacles.

m. Rubber Bushings.

n. Sealing Plugs.

22. GROMMET NUTS. The grommet nut is a threaded ring nut utilized to securely hold connector grommet in place (Figure 14).

23. CABLE CLAMPS/STRAIN RELIEFS. The following two paragraphs explain the two types of cable support or clamping devices.

24. Cable Clamps. A cable clamp is a support or clamping device which requires use of an intermediate component for attachment to back of connector.

25. Strain Reliefs. A strain relief is a support or clamping device which attaches directly to connector (Figures 15, 16, 17, 18, 19 and 20).

26. SHRINK BOOTS AND ADAPTERS. Shrink boots are protective coverings over wire or connector in addition to the normal jacket or insulation. The shrink boot adapter is used to secure shrink boot to connector and prevent entry of moisture into connector (Figure 21).

27. ENVIRONMENTAL BACKSHELL. An environmental backshell is a device that provides protection from moisture, dirt, air, or dust which may reduce performance of unit. Environmental backshells do not provide protection from non-physical environments such as RF and Radiation (Figures 22, 23, 24 and 25).

28. EMI/RFI GROUNDING TERMINATORS. EMI/RFI grounding terminators are used to ground or shield a connector to reduce the electromagnetic radiation and radio frequency interference from other equipment. A physical and electrical shield is employed to terminate a cable assembly to a ground or some other predetermined point with respect to ground. Shields can be applied to individual wires, cables, bundles or harnesses (**Figure**s 26 and 27).

29. NON-ENVIRONMENTAL EMI/RFI BACKSHELL. A non-environmental EMI/RFI backshell is an attachment on the rear of a connector that does not protect against moisture, dust, and dirt but does provide EMI/RFI protection (Figures 28, 29, 30, 31, 32 and 33).

30. ENVIRONMENTAL EMI/RFI BACKSHELL. Environmental EMI/RFI backshells are used when moisture entry and EMI/RFI protection is needed (Figures 34, 35, 36 and 37).

31. CONDUIT FITTINGS. Conduit fittings are used to connect a conduit to a connector and may be either a ferrule, nut, adapter, box fitting, 45° elbow, 90° elbow, hex nut, seal assemblies, or Y fittings (Figure 38).

32. DUMMY RECEPTACLES. Dummy receptacles are provided and used to stow unmated plugs, caps, or protective covers when related component is not in operational use. The dummy receptacles shall be marked and located to permit easy access (Figure 39).

33. DUST CAPS. Protective covers are more commonly called dust caps. The purpose of dust caps is to prevent dirt from entering connectors, pins, and sockets and to prevent coupling device from damage (Figure 40).

34. GASKET FOR FLANGE MOUNT RECEPTACLES. Gaskets for flange mount receptacles are used to seal between the receptacle flange and mounting structure (Figure 41).

35. MOUNTING NUTS FOR JAM NUT RECEPTACLES. Part number AS3186 mounting nuts are used to mechanically mount receptacles (Figure 42).

36. RUBBER BUSHINGS. The rubber bushings primary use is to act as a cushion for wires at connector exit and to aid as a strain relief (Figure 43).

37. SEALING PLUGS. Sealing plugs are used to fill a grommet cavity in a connector insert. Its function is to seal all unoccupied apertures in insert, for environmental connectors (Figure 44).

PART NUMBER DESIGNATION

M85049/ 31 S 10 W

MILITARY DESIGNATION

DETAIL SHEET

CONFIGURATION
"S" – For detented, self-locking
"N" – For Non-detented self-locking
"-" - For Non-self-locking

DASH NUMBER (See Dimensions)

FINISH (See Codes)

MATERIAL and FINISH

Figure	Material	Finish
1	Aluminum alloy in accordance with MIL-C-85049	1/ N, 2/ W A

1/ Not for Navy use. Restricted to Air Force Space applications only.
2/ W finish is not for use in space application.

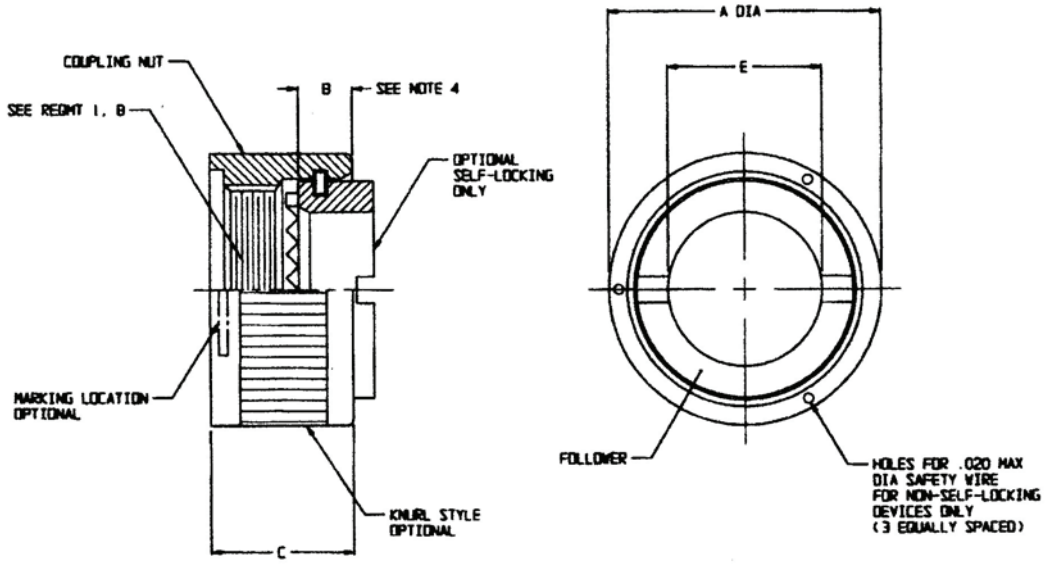


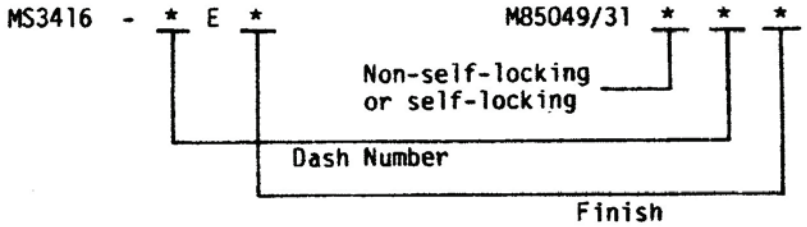
Figure 14. Grommet Nut (Sheet 1 of 2)

DIMENSIONS

Dash Number	For Connection Shell Size (Ref)				Non-Self-Locking				Self-Locking			
	AS81703 Series 3	MIL-C-26482 Series 2	MIL-DTL-5015 Crimp	MIL-DTL-83723 Series III	A Max Dia	B Max	C Max	E Max	A Max Dia	B Max	C Max	E Max
-3	3				.669	.220	.540	.270				
-8		8	8S	8	.617	↓	↓	.270	.885	.39	.710	.270
-10		10	10S,10SL	10	.734			.375	1.010	↓	↓	.375
-12	7	12	12S&12	12	.858			.511	1.135			.511
-14	12	14	14S&14	14	.984			.585	1.260			.585
-16	19	16	16S&16	16	1.112			.710	1.385			.710
-18	27	18	18	18	1.218			.789	1.510			.784
-20	37	20	20	20	1.345			.914	1.635			.914
-22		22	22	22	1.468		↓	1.039	1.760	↓	↓	1.039
-24		24	24	24	1.593		.540	1.154	1.885	.39	.710	1.154
-28			28		1.969		.702	1.389	2.135	.41	.890	1.389
-32			32		2.219		↓	1.635	2.395	↓	↓	1.635
-36			36		2.469			1.850	2.635			1.850
-40			40		2.719			2.065	2.885			2.065
-44			44		2.969		↓	2.320	3.135	↓	↓	2.320
-48			48		3.219	↓	.702	2.570	3.385	.41	.890	2.570
-61	61				1.653	.220	.540	1.194				

NOTES:
1. Dimensions are in inches, after plating.
2. Dimensions are after plating.
3. Measured from the root of the tooth to the back of the coupling nut.
4. Interface dimensions as per SAE85049
5. Accessory consists of a coupling nut and a follower. Coupling nut is captivated to the follower and rotatable.

SUPERSESSION DATA



Old	New
A	W
C	W
G	A
N	N

Figure 14. Grommet Nut (Sheet 2 of 2)

PART NUMBER DESIGNATION

M85049/ 43 S 10 W

MILITARY DESIGNATION

DETAIL SHEET

CONFIGURATION
"S" For detented, self-locking
"N" For Non-detented self-locking
"-" For Non-self-locking

DASH NUMBER (See Dimensions)

FINISH (See Codes)

MATERIAL and FINISH

FIGURE	MATERIAL	FINISH
1	ALUMINUM ALLOY IN ACCORDANCE WITH SAE-AS85049	A N 1/ W 2/

1/ NOT FOR NAVY USE. AIR FORCE USE IS FOR SPACE APPLICATIONS ONLY. W IS THE PREFERRED FINISH.

2/ W IS NOT FOR USE IN SPACE APPLICATION.

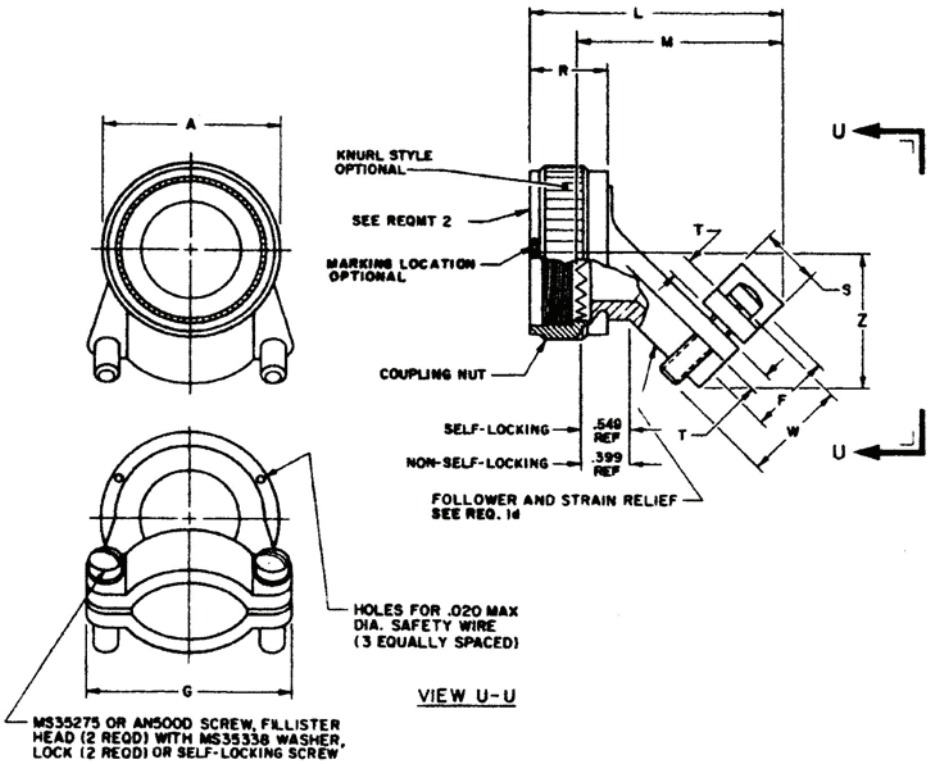


Figure 15. Strain Relief 45 Degree M85049/43 (Sheet 1 of 4)

DIMENSIONS

Dash No.	For Connector Shell, Size (Ref)				Non-Self-Locking				Self-Locking			
	AS81703 Series 3	MIL-C-26482 Series 2	MIL-DTL-5015 Crimp	MIL-DTL-83723 Series III	A Max Dia	L Max Closed	M Max	R Max	A Max Dia	L Max Closed	M Max	R Max
-3	3				.669	1.490	1.160	.540				
-8		8	8S	8	.617	1.490	1.160		.885	1.650	1.320	.710
-10		10	10S&10SL	10	.734	1.534	1.204		1.010	1.694	1.364	.710
-12	7	12	12S&12	12	.858	1.608	1.278		1.135	1.768	1.438	.710
-14	12	14	14S&14	14	.984	1.650	1.320		1.260	1.810	1.480	.710
-16	19	16	16S&16	16	1.112	1.756	1.426		1.385	1.916	1.586	.710
-18	27	18	18	18	1.218	1.874	1.544		1.510	2.034	1.704	.710
-20	37	20	20	20	1.345	1.918	1.588		1.635	2.078	1.748	.710
-22		22	22	22	1.468	1.962	1.632		1.760	2.122	1.792	.710
-24		24	24	24	1.593	2.006	1.676	.540	1.885	2.166	1.836	.710
-28			28		1.969	2.301	1.801	.702	2.135	2.461	1.961	.890
-32			32		2.219	2.389	1.889		2.395	2.549	2.049	.890
-36			36		2.469	2.433	1.933		2.635	2.593	2.093	.890
-40			40		2.719	2.434	1.934		2.885	2.599	2.094	.890
-44			44		2.969	2.700	2.200		3.135	2.860	2.360	.890
-48			48		3.219	2.788	2.288	.702	3.385	2.948	2.448	.890
-61	61				1.653	2.006	1.676	.540				

N/A = Not Available

Figure 15. Strain Relief 45 Degree M85049/43 (Sheet 2 of 4)

DIMENSIONS (Continued)

Dash Number	F (see note 4) Wire Bundle Accommodation Range Max	Min	S ±.020	T ±.015	Fillister Head Screw AN500D Dash Number	MS35275 Dash Number	Screw Size	Z Max	MS35338 Washer, Lock Dash Number	G Max
-3	.204	.125	.250	.125	6-8	230	6-32	.772	136	.782
-8	.204	.125	↕	↕	6-8	230	↕	.772	↕	.782
-10	.286	.187			6-8	230		.803		.862
-12	.416	.291			6-10	231		.866		1.018
-14	.476	.351			6-10	231		.928		1.076
-16	.625	.501	.250	.125	6-10	231	6-32	.991	136	1.349
-18	.706	.518	.375	.156	8-12	247	8-32	1.110	137	1.481
-20	.831	.581	↕	↕	8-14	248	↕	1.172	↕	1.587
-22	.956	.644			8-16	249		1.235		1.688
-24	1.081	.706	.375	.156	8-18	N/A		1.297		1.805
-28	1.187	.750	.500	.188	8-20	250	8-32	1.543	137	2.050
-32	1.250	.875	↕	↕	416-20	284	1/4-20	1.668	139	2.416
-36	1.375	.938			416-24	285	↕	1.793	↕	2.526
-40	1.500	.938	.500		416-24	285		1.918		2.596
-44	1.750	1.188	.625		416-28	286		2.132		2.890
-48	1.875	1.312	.625	.188	416-32	287	1/4-20	2.257	139	3.374
-61	1.081	.706	.375	.156	8-18	N/A	8-32	1.204	137	1.805

N/A = Not Available

NOTES:
1. Dimensions are in inches, after plating.
2. Dimensions are after plating.
3. Measured from the root of the tooth to the back of the coupling nut.
4. Interface dimensions as per SAE85049
5. Accessory consists of a coupling nut and strain relief. Coupling nut is captivated to the strain relief and rotatable.
6. Detented self-locking provides a positive, audible, detented coupling.
7. The strain relief accommodate SAE AS85049/127 bushing strip.
8. Clamps, screws and lock washers: 300 Series Corrosion-resistant steel, passivate.
9. Self-locking device: corrosion resistant material.

Figure 15. Strain Relief 45 Degree M85049/43 (Sheet 3 of 4)

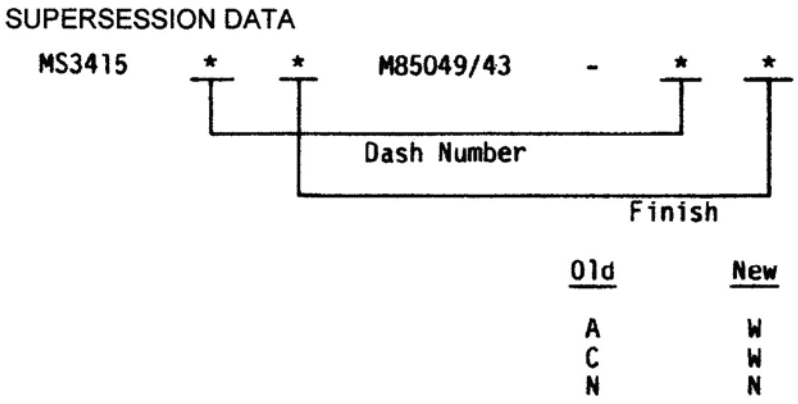


Figure 15. Strain Relief 45 Degree M85049/43 (Sheet 4 of 4)

PART NUMBER DESIGNATION

M85049/ 51 S 10 W

MILITARY DESIGNATION

DETAIL SHEET

CONFIGURATION
"S" For detented, self-locking
"N" For Non-detented, self-locking
"1" For Non-self-locking

DASH NUMBER (See Dimensions)

FINISH (See Codes)

MATERIAL and FINISH

Figure	Material	Finish
1	Aluminum alloy in accordance with SAE AS85049	A N 1/ W 2/
1	Corrosion resistant steel in accordance with SAE AS85049	S

1/ Not for Navy use. Air Force use is for space applications only. W is the preferred finish.
2/ W is not for use in space application.

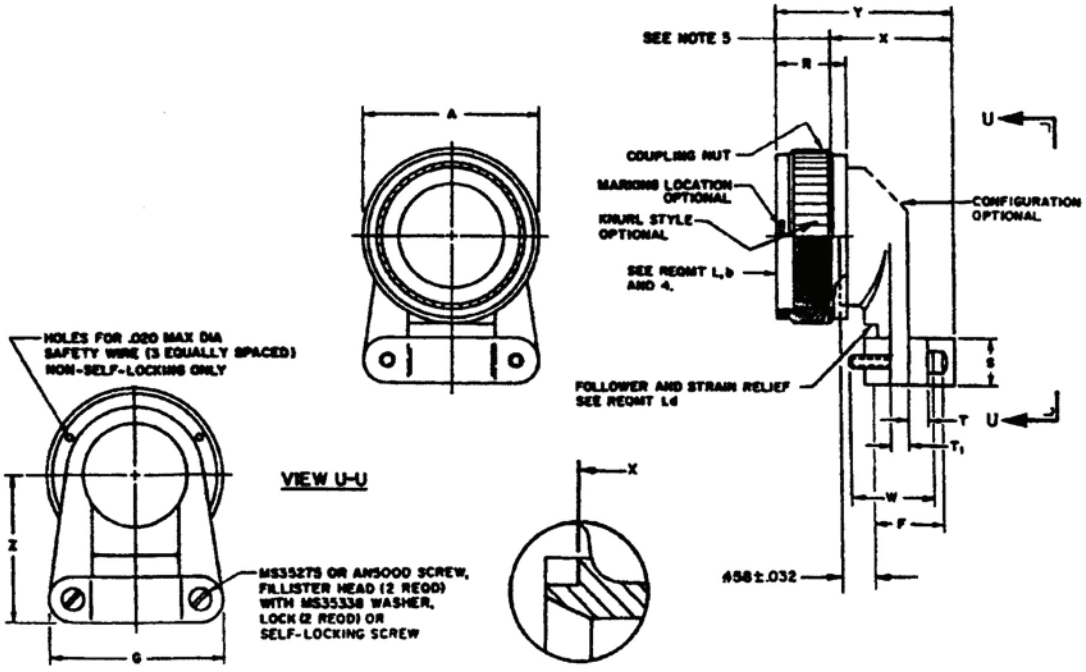


Figure 16. Strain Relief 90 Degree M85049/51 (Sheet 1 of 4)

DIMENSIONS

Dash No.	For Connector Shell, Size (Ref)				Non-Self-Locking						Self-Locking			
	MIL-C-81703 Series 3	MIL-C-26482 Series 2	MIL-C-5015 Crimp	MIL-C-83723 Series III	A Max Dia	R Max	Fillister Head Screw		X Max	Y Max	A Max Dia	R Max	X Max	Y Max
							AN500D Dash No.	MS35275 Dash No.						
-3	3				.669	.540	6-8	230	.78	1.101				
-8		8	8S	8	.617		6-8	230	.78	1.101	.885	.710	.93	1.257
-10		10	10S&10SL	10	.734		6-8	230	.86	1.183	1.010		1.02	1.339
-12	7	12	12S&12	12	.858		6-10	231	1.05	1.376	1.135		1.21	1.532
-14	12	14	14S&14	14	.984		6-10	231	1.11	1.436	1.260		1.27	1.592
-16	19	16	16S&16	16	1.112		6-10	231	1.26	1.585	1.385		1.42	1.741
-18	27	18	18	18	1.218		8-12	247	1.37	1.697	1.510		1.53	1.853
-20	37	20	20	20	1.345		8-14	248	1.50	1.822	1.635		1.65	1.978
-22		22	22	22	1.468		8-16	249	1.62	1.947	1.760		1.78	2.108
-24		24	24	24	1.593	.540	8-18	N/A	1.75	2.072	1.885	.710	1.90	2.228
-28			28		1.969	.702	8-20	250	1.89	2.372	2.135	.890	2.20	2.528
-32			32		2.219		416-20	284	1.95	2.435	2.395		2.27	2.591
-36			36		2.469		416-24	285	2.07	2.560	2.635		2.39	2.716
-40			40		2.719		416-24	285	2.20	2.685	2.885		2.52	2.841
-44			44		2.969		416-28	286	2.45	2.935	3.135		2.77	3.091
-48			48		3.219	.702	416-32	297	2.57	3.060	3.385	.890	2.89	3.216
-61	61				1.653	.540	8-18	N/A	1.75	2.072				

Figure 16. Strain Relief 90 Degree M85049/51 (Sheet 2 of 4)

DIMENSIONS (Continued)

Non-Self-Locking and Self-Locking									
Dash No.	F (see Note 5) Wire Bundle Accommodation Range Max	F (see Note 5) Wire Bundle Accommodation Range Min	G Max	S ±.020	T T1 ±.015	Z ±.062	MS35338 Washer, Lock Dash Number	W +.032 Screw Length	Screw Size
-3 1/	.204	.125	.782	.250	.125	.777	136	.500	6-32
-8	.204	.125	.782	↑	↑	.746	↑	.500	↑
-10	.286	.187	.862	↓	↓	.805	↓	.500	↓
-12	.416	.291	1.003	↓	↓	.867	↓	.625	↓
-14	.476	.351	1.061	↓	↓	.930	↓	.625	↓
-16	.626	.501	1.334	.250	.125	.994	136	.625	6-32
-18	.706	.518	1.466	.375	.156	1.171	137	.750	8-32
-20	.831	.581	1.572	↑	↑	1.234	↑	.875	↑
-22	.956	.644	1.688	↓	↓	1.296	↓	1.000	↓
-24	1.081	.706	1.790	.375	.156	1.358	↓	1.125	↓
-28	1.187	.750	2.035	.500	.188	1.572	137	1.250	8-32
-32	1.250	.875	2.386	↑	↑	1.797	139	1.250	1/4-20
-36	1.375	.938	2.496	↓	↓	1.922	↑	1.500	↑
-40	1.500	.938	2.566	.500	↓	2.047	↓	1.500	↓
-44	1.750	1.188	2.860	.625	↓	2.296	↓	1.750	↓
-48	1.875	1.312	3.344	.625	.188	2.421	139	2.000	1/4-20
-61 1/	1.081	.706	1.775	.375	.156	1.388	137	1.125	8-32

1/ Not available on self-locking configuration.

NOTES:
1. Dimensions are in inches, after plating.
2. Dimensions are after plating.
3. Measured from the root of the tooth to the back of the coupling nut.
4. Interface dimensions as per SAE85049
5. Accessory consists of a coupling nut and a follower. Coupling nut is captivated to the follower and rotatable.

Figure 16. Strain Relief 90 Degree M85049/51 (Sheet 3 of 4)

SUPERSESSION DATA

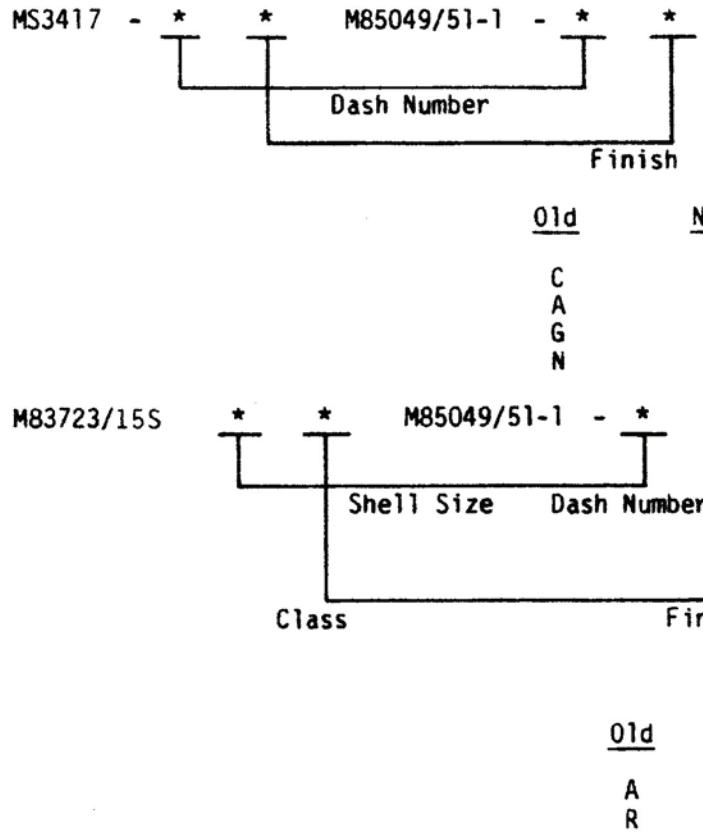


Figure 16. Strain Relief 90 Degree M85049/51 (Sheet 4 of 4)

PART NUMBER DESIGNATION

M85049/ 52 S 10 W

MILITARY DESIGNATION

DETAIL SHEET

CONFIGURATION
"S" For detented, self-locking
"N" For Non-detented, self-locking
"1" For Non-self-locking

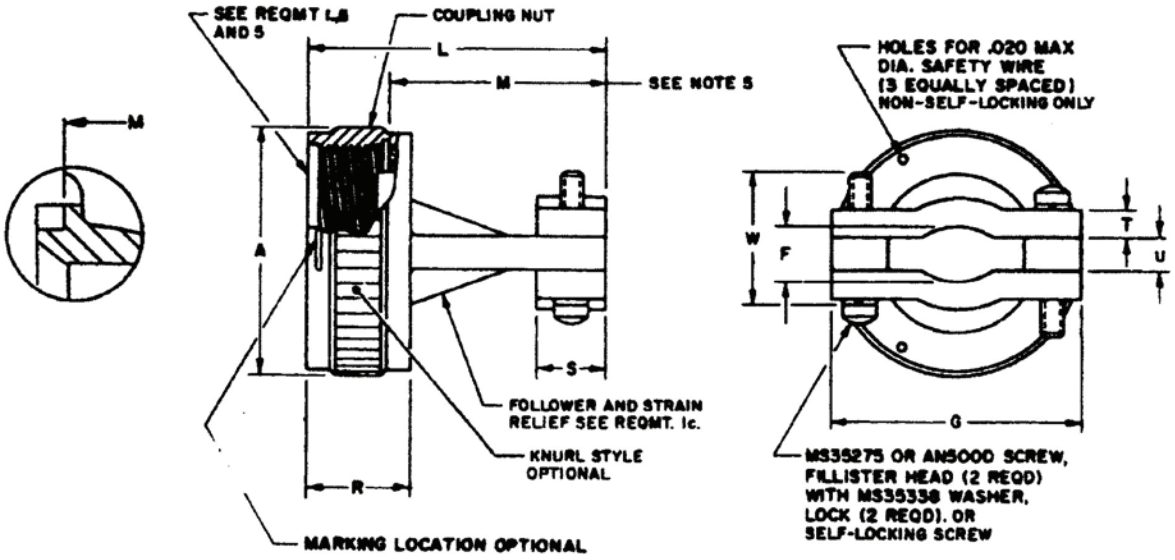
DASH NUMBER (See Dimensions)

FINISH (See Codes)

MATERIAL and FINISH
"A" - Black Anodize
"W" – Cadmium, Olive Drab 1000 hr Salt Spray
"N" – Electroless Nickel (not for Navy use)

Figure	Material	Finish
1	Aluminum alloy in accordance with SAE AS85049	A N 1/ W 2/
1	Corrosion resistant steel in accordance with SAE AS85049	S

1/ Not for Navy use. Air Force use is for space applications only. W is the preferred finish.
2/ W is not for use in space application.



NON-SELF-LOCKING OR SELF-LOCKING COUPLING

Figure 17. Strain Relief Straight M85049/52 (Sheet 1 of 4)

DIMENSIONS

Dash No.	For Connector Shell, Size (Ref)				Non-Self-Locking						Self-Locking			
	MIL-C-81703 Series 3	MIL-C-26482 Series 2	MIL-C-5015 Crimp	MIL-C-83723 Series III	A Max Dia	L ±.062	M Max	R Max	Fillister Head Screw AN5000 Dash Number	Fillister Head Screw MS35275 Dash Number	A Max Dia	L Max	M Max	R Max
-3	3				.669	.890	.63	.540	6-8	230				
-8		8	8S	8	.617	.890	.63		6-8	230	.885	1.04	.73	.710
-10		10	10S&10SL	10	.734	1.000	.74		6-8	230	1.010	1.16	.85	.710
-12	7	12	12S&12	12	.858	1.125	.86		6-10	231	1.135	1.29	.98	.710
-14	12	14	14S&14	14	.984	1.125	.86		6-10	231	1.260	1.29	.98	.710
-16	19	16	16S&16	16	1.112	1.250	.99		6-10	231	1.385	1.41	1.10	.710
-18	27	18	18	18	1.218	1.500	1.24		8-12	247	1.510	1.66	1.35	.710
-20	37	20	20	20	1.345	1.625	1.36		8-14	248	1.635	1.79	1.48	.710
-22		22	22	22	1.468	1.750	1.49		8-16	249	1.760	1.91	1.60	.710
-24		24	24	24	1.593	1.875	1.61	.540	8-18	N/A	1.885	2.04	1.73	.710
-28			28		1.969	2.187	1.76	.702	8-20	250	2.135	2.35	1.88	.890
-32			32		2.219	2.375	1.95		416-20	284	2.395	2.60	2.13	.890
-36			36		2.469	2.750	2.33		416-24	285	2.635	2.91	2.44	.890
-40			40		2.719	2.938	2.51		416-24	285	2.885	3.10	2.63	.890
-44			44		2.969	3.312	2.89		416-28	286	3.135	3.47	3.00	.890
-48			48		3.219	3.687	3.26	.702	416-32	287	3.385	3.87	3.40	.890
-61	61				1.653	1.875	1.61	.640	8-18	N/A				

N/A = Not Available

Figure 17. Strain Relief Straight M85049/52 (Sheet 2 of 4)

DIMENSIONS (Continued)

Non-Self-Locking and Self-Locking									
Dash Number	F (see Note 4) Wire Bundle Accommodation Range		G Max	S ±.020	T ±.015	U ±.020	W +.032 Screw Length	Screw Size	MS35338 Washer Lock Dash Number
	Max	Min							
-3 1/	.204	.125	.782	.250	.125	.125	.500	6-32	136
-8	.204	.125	.782	↑	↑	↑	.500	6-32	↑
-10	.286	.187	.862	↓	↓	↓	.500	6-32	↓
-12	.416	.291	1.003	↑	↑	↑	.625	6-32	↑
-14	.476	.351	1.061	↓	↓	↓	.625	6-32	↓
-16	.625	.501	1.334	.250	.125	.125	.625	6-32	136
-18	.706	.518	1.466	.375	.156	.156	.750	8-32	137
-20	.831	.581	1.572	↑	↑	.156	.875	8-32	↑
-22	.956	.644	1.688	↓	↓	.156	1.000	8-32	↓
-24	1.081	.706	1.790	.375	.156	.188	1.125	8-32	↓
-28	1.187	.750	2.035	.500	.188	.250	1.250	8-32	137
-32	1.250	.875	2.386	↑	↑	.250	1.250	1/4-20	139
-36	1.375	.938	2.476	↓	↓	.375	1.500	1/4-20	↑
-40	1.500	.938	2.566	.500	↓	↑	1.500	1/4-20	↓
-44	1.750	1.188	2.860	.625	↓	↓	1.750	1/4-20	↓
-48	1.875	1.312	3.344	.625	.188	.375	2.000	1/4-20	139
-61 1/	1.081	.706	1.775	.375	.156	.188	1.125	8-32	137

1/ Not available on self-locking configuration.

NOTES:
1. Dimensions are in inches, after plating.
2. Dimensions are after plating.
3. Measured from the root of the tooth to the back of the coupling nut.
4. Interface dimensions as per SAE85049
5. Accessory consists of a coupling nut and a strain relief. Coupling nut is captivated to the strain relief and rotatable.

Figure 17. Strain Relief Straight M85049/52 (Sheet 3 of 4)

SUPERSESSION DATA

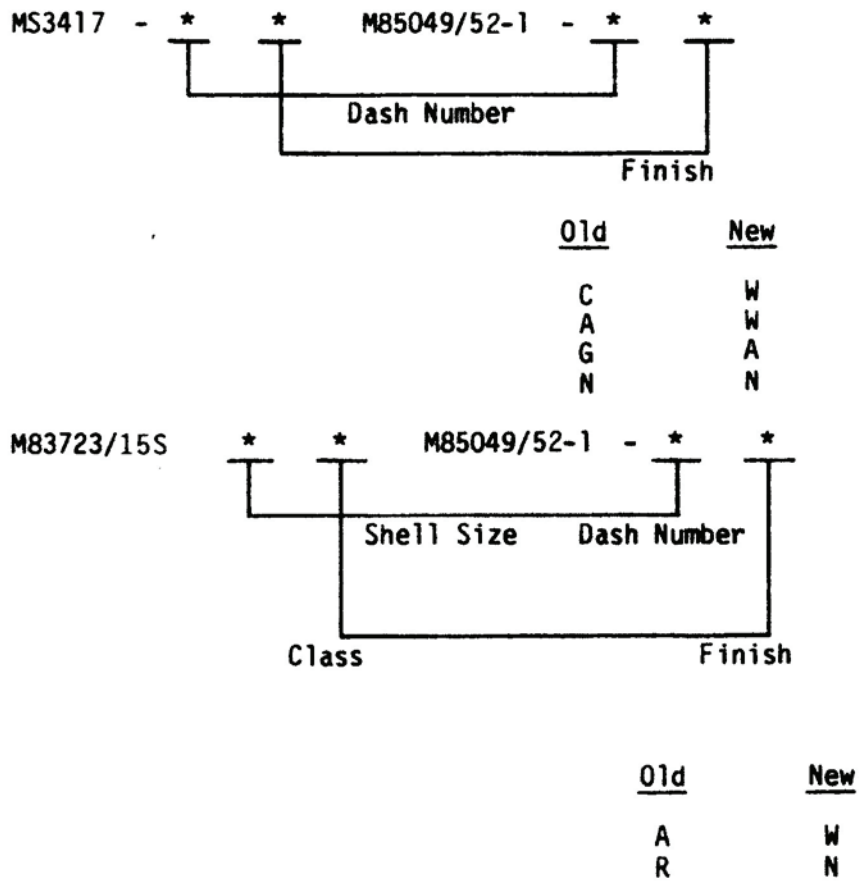


Figure 17. Strain Relief Straight M85049/52 (Sheet 4 of 4)

PART NUMBER DESIGNATION

M85049/ 53 10 W

MILITARY DESIGNATION

DETAIL SHEET

DASH NUMBER (See Dimensions)

FINISH (See Codes)

MATERIAL and FINISH

Figure	Material	Finish
Coupling nut and follower	Aluminum alloy in accordance with MIL-C-85049	A, 1/ W
Tie mount	Polyamid (optional)	None
Fastener	Stainless steel (optional)	None

1/ W finish is not for use in space application.

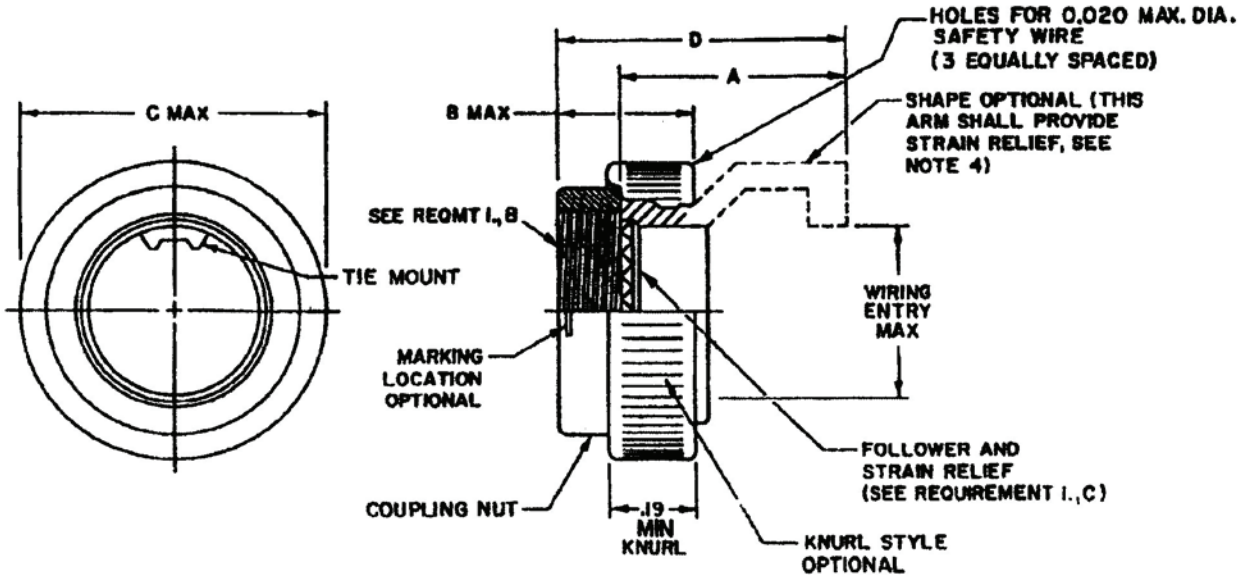


Figure 18. Strain Relief Straight Arm M85049/53 (Sheet 1 of 2)

DIMENSIONS

Dash No.	For Connector Shell, Size (Ref)				A Max	B Max	C Dia Max	D Max	Wiring Entry Max
	MIL-C-81703 Series 3	MIL-C-26482 Series 2	MIL-C-5015 Crimp	MIL-C-83723 Series III					
03	3				.954	.540	.669	1.310	.260
08		8	8S	8	.954	.540	.617	1.310	.260
10		10	10,10SL	10	.954	.540	.734	1.310	.365
12	7	12	12,12S	12	.954	.540	.858	1.560	.501
14	12	14	14,14S	14	1.204	.540	.984	1.560	.575
16	19	16	16,16S	16	1.204	.540	1.112	1.560	.700
18	27	18	18	18	1.204	.540	1.218	1.560	.779
20	37	20	20	20	1.310	.540	1.345	1.666	.904
22		22	22	22	1.430	.540	1.468	1.786	1.029
24		24	24	24	1.560	.540	1.593	1.916	1.144
28			28		1.560	.702	1.969	2.098	1.379

NOTES:
1. Inactive for new design. For new design use: MIL-C-85049/52
2. Dimensions are in inches.
3. Dimensions are after plating.
4. This clamp will accommodate connectors using size 8, 4, and 0 contacts.
5. Strain relief unit is used with MS3367-1-X plastic strap qualified as per MIL-S-23190, MIL-T-713 lacing twine, or MIL-T-43435 lacing tape, or equivalent, not supplied with the connector accessory.

SUPERSESSION DATA:

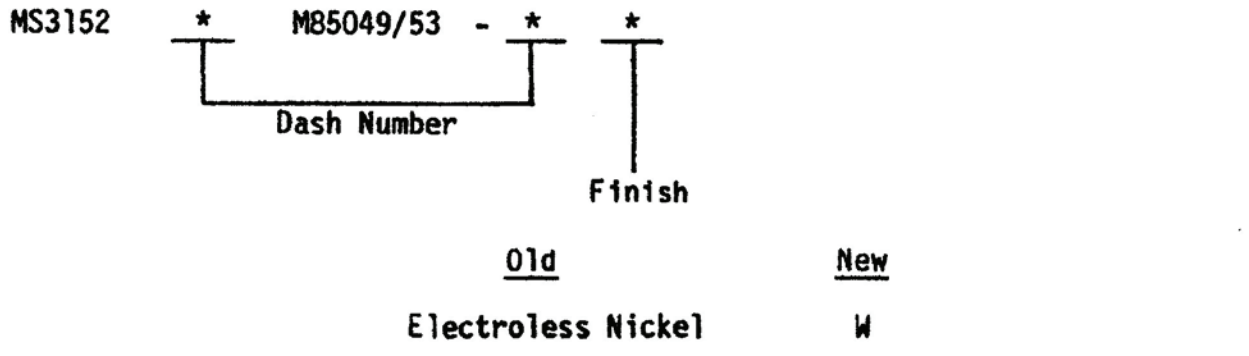


Figure 18. Strain Relief Straight Arm M85049/53 (Sheet 2 of 2)

PART NUMBER DESIGNATION

M85049/ 54 10 W

MILITARY DESIGNATION

DETAIL SHEET

DASH NUMBER (See Dimensions)

FINISH (See Codes)

MATERIAL and FINISH
"A" - Black Anodize
"W" – Cadmium, Olive Drab 1000 hr Salt Spray

Figure	Material	Finish
Coupling nut and follower	Aluminum alloy in accordance with MIL-C-85049	A, 1/ W
Tie mount	Polyamid (optional)	None
Fastener	Stainless steel (optional)	None

1/ W finish is not for use in space application.

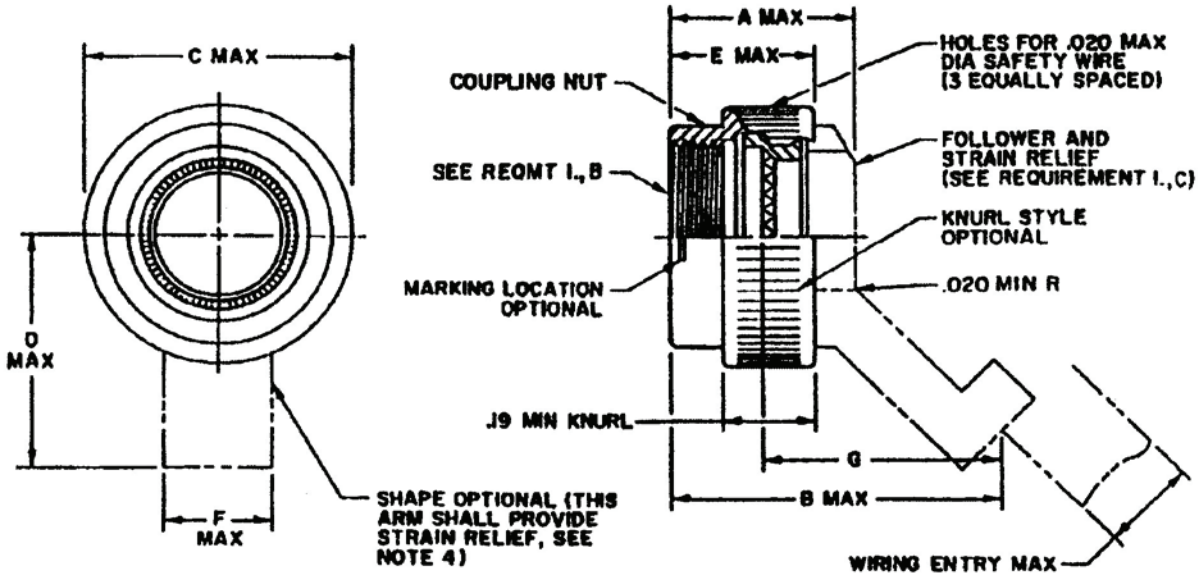


Figure 19. Strain Relief Straight with 45 Degree Arm M85049/54 (Sheet 1 of 2)

DIMENSIONS

Dash Number	For Connector Shell Size (Ref) MIL-C-81703 Series 3	MIL-C-26482 Series 2	MIL-C-5015 Crimp	MIL-C-83723 Series III	A Max	B Max	C Dia Max	D Max	E Max	F Max	G Max	Wiring Entry Max
03	3				.790	1.562	.782	1.110	.540	.600	1.232	.260
08		8	8S	8	.790	1.562	.657	1.110	.540	.463	1.232	.260
10		10	10S,10SL	10	.790	1.562	.782	1.110	.540	.561	1.232	.365
12	7	12	12,12S	12	.790	1.562	.937	1.110	.540	.644	1.232	.501
14	12	14	14,14S	14	.790	1.562	1.050	1.200	.540	.738	1.232	.575
16	19	16	16,16S	16	.790	1.562	1.239	1.200	.540	.834	1.232	.700
18	27	18	18	18	.790	1.562	1.378	1.300	.540	.914	1.232	.779
20	37	20	20	20	.790	1.812	1.500	1.300	.540	1.00	1.482	.904
22		22	22	22	.790	1.812	1.631	1.400	.540	1.10	1.482	1.029
24		24	24	24	.790	1.812	1.750	1.400	.540	1.20	1.482	1.144
28			28		.952	1.969	1.970	1.600	.702	1.48	1.469	1.379

NOTES:
1. Inactive for new design. For new design use: MIL-C-85049/43.
2. Dimensions are in inches.
3. Dimensions are after plating.
4. This clamp will accommodate connectors using size 8, 4, and 0 contacts.
5. Strain relief unit is used with MS3367-1-X plastic strap qualified as per MIL-S-23190, MIL-T-713 lacing twine, or MIL-T-43435 lacing tape, or equivalent, not supplied with the connector accessory.
6. Complete strain relief consists of coupling nut and a follower with a strain relief arm. The coupling is captive and the follower arm is rotateable.

SUPERSESSION DATA:

MS3153 * M85049/54 - * *

Dash Number

Finish

Old	New
Electroless Nickel	W

Figure 19. Strain Relief Straight with 45 Degree Arm M85049/54 (Sheet 2 of 2)

PART NUMBER DESIGNATION

M85049/ 55 S 10 W

MILITARY DESIGNATION

DETAIL SHEET

CONFIGURATION
"S" Detented, self-locking
"N" Non-detented, self-locking
"-" Non-self-locking
"G" Non-self locking with ground lug
"H" Non-detented, self locking with ground lug
"T" Detented, self locking with ground lug

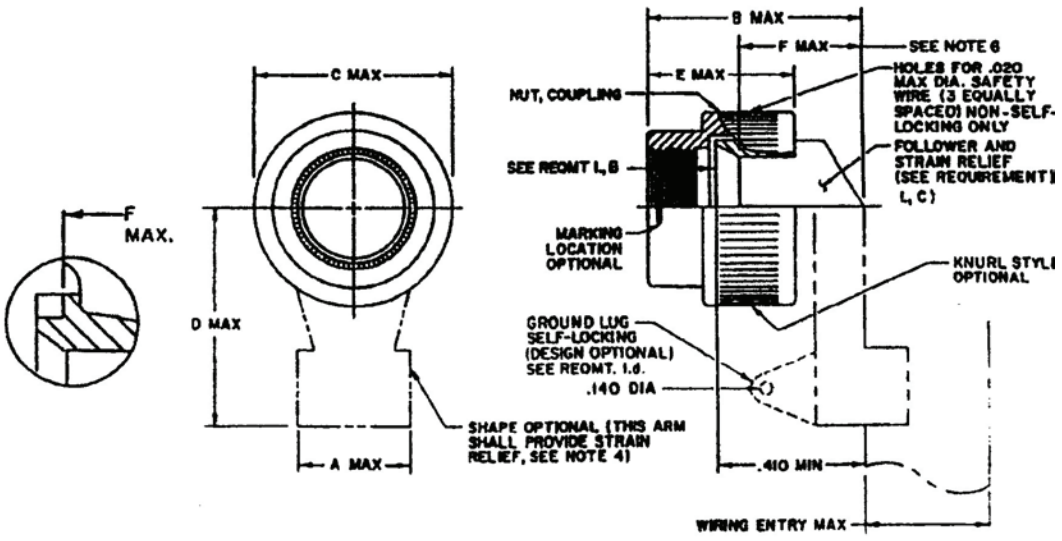
DASH NUMBER (See Dimensions)

FINISH (See Codes)

MATERIAL and FINISH
"A" - Black Anodize
"W" – Cadmium, Olive Drab 1000 hr Salt Spray

	Material	Finish
Coupling nut and follower	Aluminum alloy in accordance with MIL-C-85049	1/ W A
Tie mount	Polyamid (optional)	None
Fastener	Stainless steel (optional)	None
Self-Locking Device	Corrosion resistant material	None

1/ W finish is not for use in space application.



NON-SELF-LOCKING OR SELF-LOCKING

Figure 20. Strain Relief Straight with 90 Degree Arm M85049/55 (Sheet 1 of 3)

DIMENSIONS

Dash No.	For Connector Shell, Size (Ref)				Non-Self-Locking				Self-Locking			
	AS81703 Series 3	MIL-C-26482 Series 2	MIL-DTL-5015 Crimp	MIL-DTL-83723 Series III	B Max	C Max Dia	E Max	F Max	B Max	C Max Dia	E Max	F Max
03	3				.751	.782	.540	.431	1.05	1.010	.710	.73
08		8	8S	8	.751	.657	.540	.431	1.05	.885	.710	.73
10		10	10S,10SL	10	.751	.782	.540	.431	1.05	1.010	.710	.73
12	7	12	12,12S	12	.751	.937	.540	.431	1.05	1.135	.710	.73
14	12	14	14,14S	14	.751	1.050	.540	.431	1.05	1.260	.710	.73
16	19	16	16,16S	16	.751	1.239	.540	.431	1.05	1.385	.710	.73
18	27	18	18	18	.776	1.378	.540	.456	1.05	1.510	.710	.73
20	37	20	20	20	.776	1.500	.540	.456	1.07	1.635	.710	.75
22		22	22	22	.776	1.631	.540	.456	1.07	1.760	.710	.75
24		24	24	24	.776	1.750	.540	.456	1.07	1.885	.710	.75
28			28		.938	1.970	.702	.448	1.24	2.135	.890	.75

DIMENSIONS (Continued)

Non-Self-Locking and Self-Locking			
Dash No.	A Max	D Max	Wiring Entry Max
03	.500	1.29	.260
08	.463	1.22	.260
10	.551	1.29	.365
12	.644	1.62	.501
14	.738	1.66	.575
16	.834	1.72	.700
18	.914	1.72	.779
20	1.00	1.79	.904
22	1.10	1.85	1.029
24	1.20	1.91	1.144
28	1.48	2.06	1.379

Figure 20. Strain Relief Straight with 90 Degree Arm M85049/55 (Sheet 2 of 3)

NOTES:
1. Inactive for new design. For new design use: MIL-C-85049/51.
2. Dimensions are in inches.
3. Dimensions are after plating.
4. This clamp will accommodate connectors using size 8, 4, and 0 contacts.
5. Strain relief unit is used with MS3367-1-X plastic strap qualified as per MIL-S-23190, MIL-T-713 lacing twine, or MIL-T-43435 lacing tape, or equivalent, not supplied with the connector accessory.
6. Complete strain relief consists of coupling nut and a follower with a strain relief arm. The coupling is captive and the follower arm is rotatable.
7. Grounding lug is not fro Navy use, and not for new design for Air Force.
8. Detented self-locking provides a positive, audible detented coupling.
9. Measured from the root of the tooth to the back of the coupling nut.

SUPERSESSION DATA:

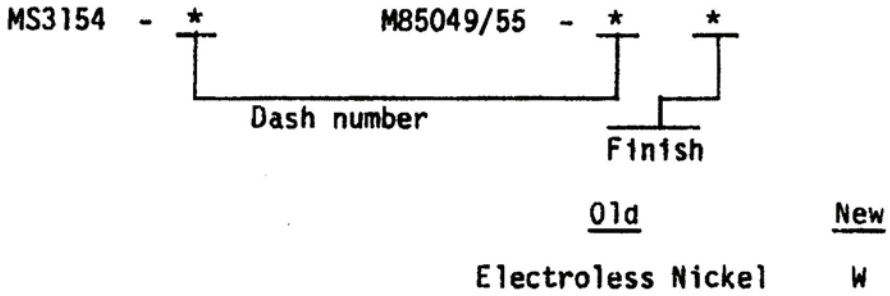


Figure 20. Strain Relief Straight with 90 Degree Arm M85049/55 (Sheet 3 of 3)

PART NUMBER DESIGNATION

AS85049/	60	-2	W	10

MILITARY DESIGNATION

DETAIL SHEET

FIGURE

FINISH (See Codes)

DASH NUMBER (See Dimensions)

MATERIAL and FINISH

"A" - Black Anodize
"W" – Cadmium, Olive Drab 1000 hr Salt Spray
"N" – Electroless Nickel (not for Navy use)

Figure	Material	Finish
1 & 2	Aluminum alloy in accordance with MIL-C-85049	1/ N, A, 2/ W

1/ Not for Navy use. Restricted to Air Force space application only.
2/ W finish is not for use in space application.

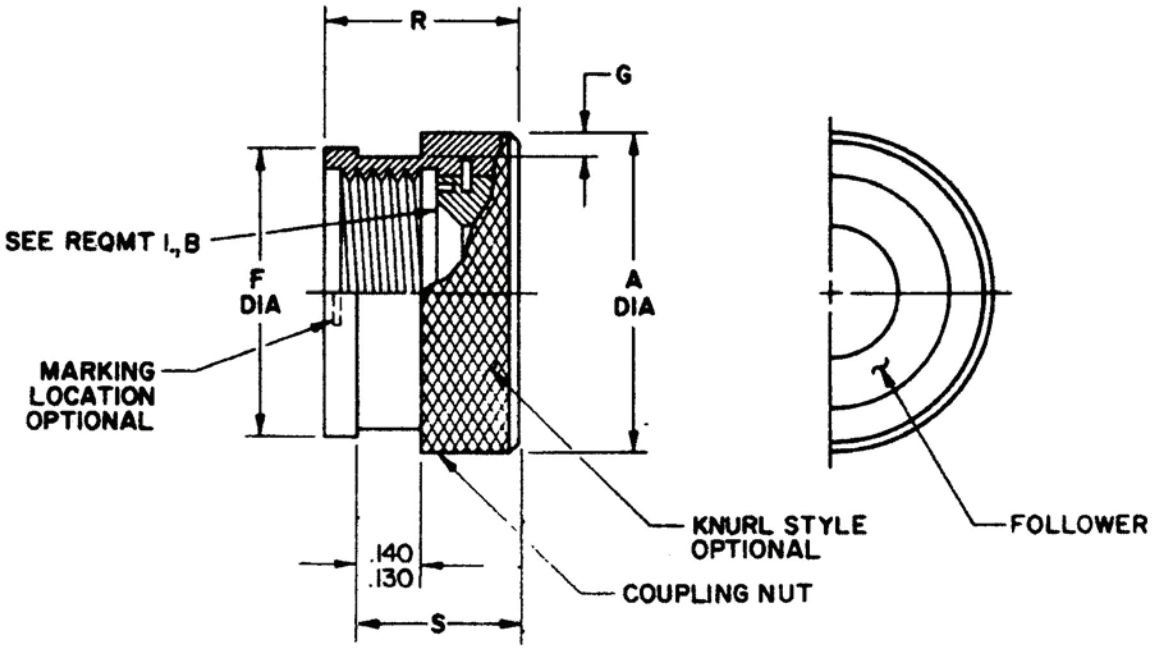


FIGURE 2 - CONFIGURATION AND DIMENSIONS

Figure 21. Shrink Boots and Adapters (Sheet 1 of 4)

DIMENSIONS

Dash No.	For Connector Shell Size (Ref)			A +.000 -.045 Dia	F +.000 -.020 Dia	G +.008 -.000	R Max	S ±.031
	MIL-C-81703 Series 3	MIL-C-26482 Series 2 & MIL-C-83723 Series III	MIL-C-5015 Crimp					
-3	3			.750	.709	.044	.540	.406
-8		8	8S	.688	.657			
-10		10	10S,10SL	.803	.774			
-12	7	12	12S,12	.938	.898			
-14	12	14	14S,14	1.063	1.024	.044		
-16	19	16	16S,16	1.238	1.152	.069		
-18	27	18	18	1.310	1.243			
-20	37	20	20	1.436	1.370			
-22		22	22	1.560	1.443			
-24		24	24	1.686	1.618	.069	.540	.406
-28			28	2.062	1.969	.086	.702	.563
-32			32	2.312	2.219			
-36			36	2.562	2.469			
-40			40	2.812	2.719			
-44			44	3.062	2.969			
-48			48	3.312	3.219	.086	.702	.563
-61	61			1.748	1.653	.069	.540	.406

NOTES:
1. For use with M85049/68-2 or MS3117 Shrink Boots
2. Dimensions are in inches.
3. Dimensions are after plating.
4. Complete strain relief consists of coupling nut and a follower. The coupling is captive and the follower arm is rotatable.

SUPERSESSION DATA:

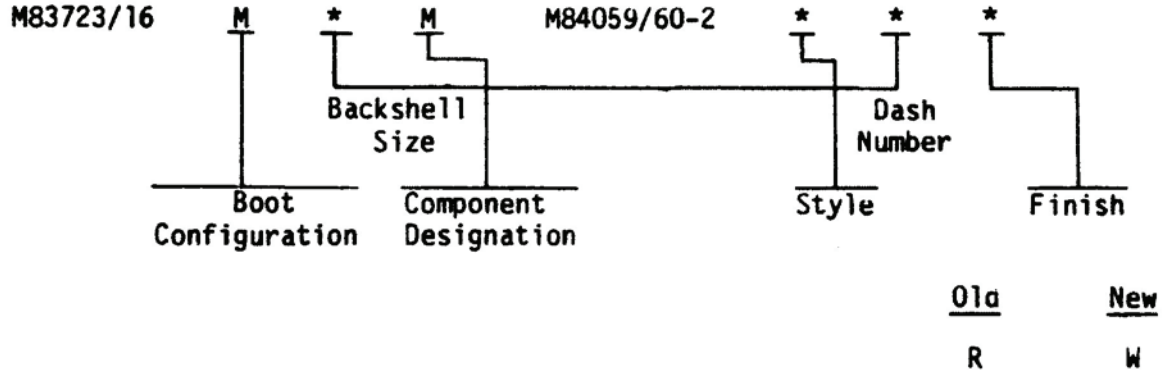


Figure 21. Shrink Boots and Adapters (Sheet 2 of 4)

PART NUMBER DESIGNATION

AS85049/	60	-1	W	10

MILITARY DESIGNATION

DETAIL SHEET

FIGURE

FINISH (See Codes)

DASH NUMBER (See Dimensions)

MATERIAL and FINISH

"A" - Black Anodize
"W" – Cadmium, Olive Drab 1000 hr Salt Spray
"N" – Electroless Nickel (not for Navy use)

Figure	Material	Finish
1 & 2	Aluminum alloy in accordance with MIL-C-85049	1/ N, A, 2/ W

1/ Not for Navy use. Restricted to Air Force space application only.
2/ W finish is not for use in space application.

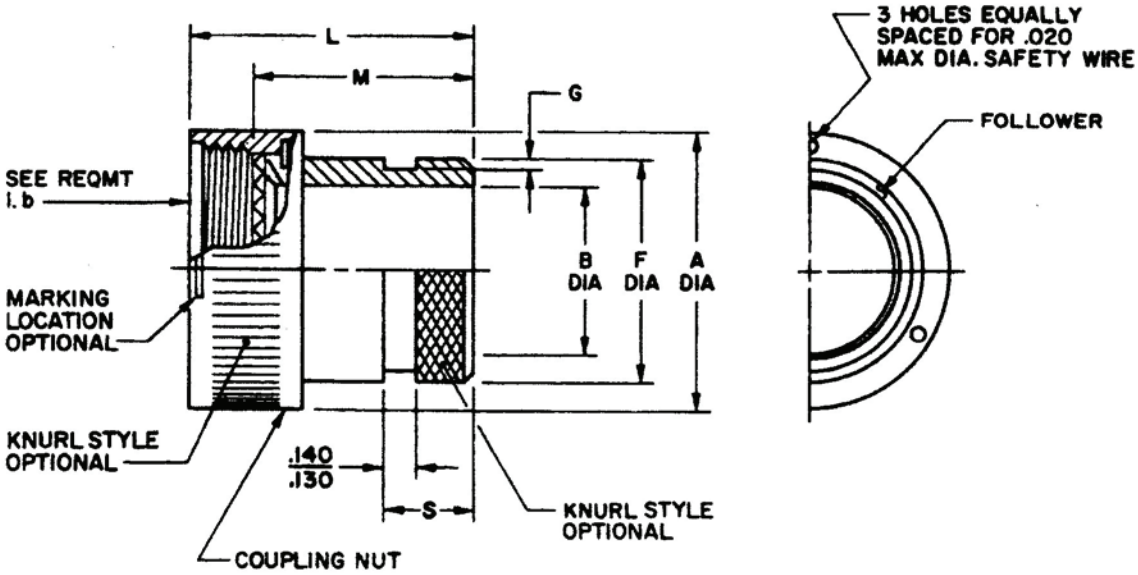


Figure 21. Shrink Boots and Adapters (Sheet 3 of 4)

DIMENSIONS

Dash No.	For Connector Shell Size (Ref) MIL-C-26482			A +.000 -.045 Dia	F +.000 -.020 Dia	G +.008 -.000	E Max	H Max	S ±.031	B Min Dia
	MIL-C-81703 Series 3	Series 2 & MIL-C-83723 Series III	MIL-C-5015 Crimp							
-3	3			.669	.533	.044	1.187	.832	.406	.250
-8		8	8S	.617	.533	↑	↑	↑	↑	.250
-10		10	10S, 10SL	.734	.605					.355
-12	7	12	12S, 12	.858	.774					.491
-14	12	14	14S, 14	.984	.838					.565
-16	19	16	16S, 16	1.112	.963	↓				.690
-18	27	18	18	1.218	1.042	.044				.769
-20	37	20	20	1.345	1.217	.069				.894
-22		22	22	1.468	1.355	↑	↓	↓		1.019
-24		24	24	1.593	1.443	↓	1.187	.832	↓	1.134
-28			28	1.969	1.709	.069	1.511	.994	.406	1.369
-32			32	2.219	1.919	.086	↑	↑	.563	1.615
-36			36	2.469	2.169	↑			↑	1.830
-40			40	2.719	2.402					2.045
-44			44	2.969	2.657	↓	↓	↓	↓	2.300
-48			48	3.219	2.907	.086	1.511	.994	.563	2.550
-61	61			1.653	1.529	.069	1.187	.832	.406	1.174

NOTES:
1. For use with M85049/68-1 or MS3109 Shrink Boots
2. Dimensions are in inches.
3. Dimensions are after plating.
4. Complete strain relief consists of coupling nut and a follower. The coupling is captive and the follower arm is rotatable.

SUPERSESSION DATA:

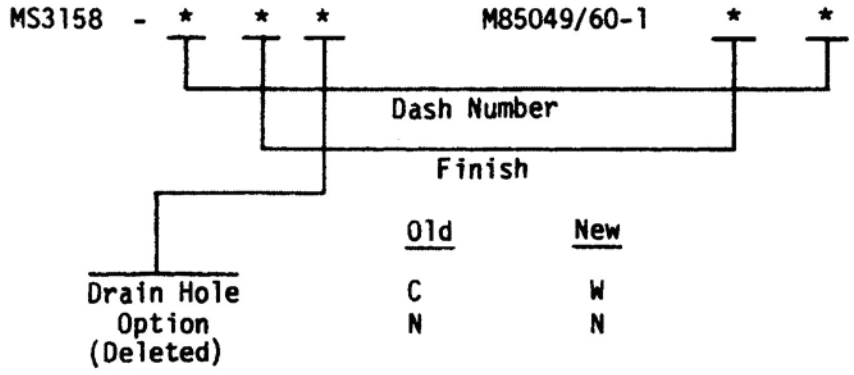


Figure 21. Shrink Boots and Adapters (Sheet 4 of 4)

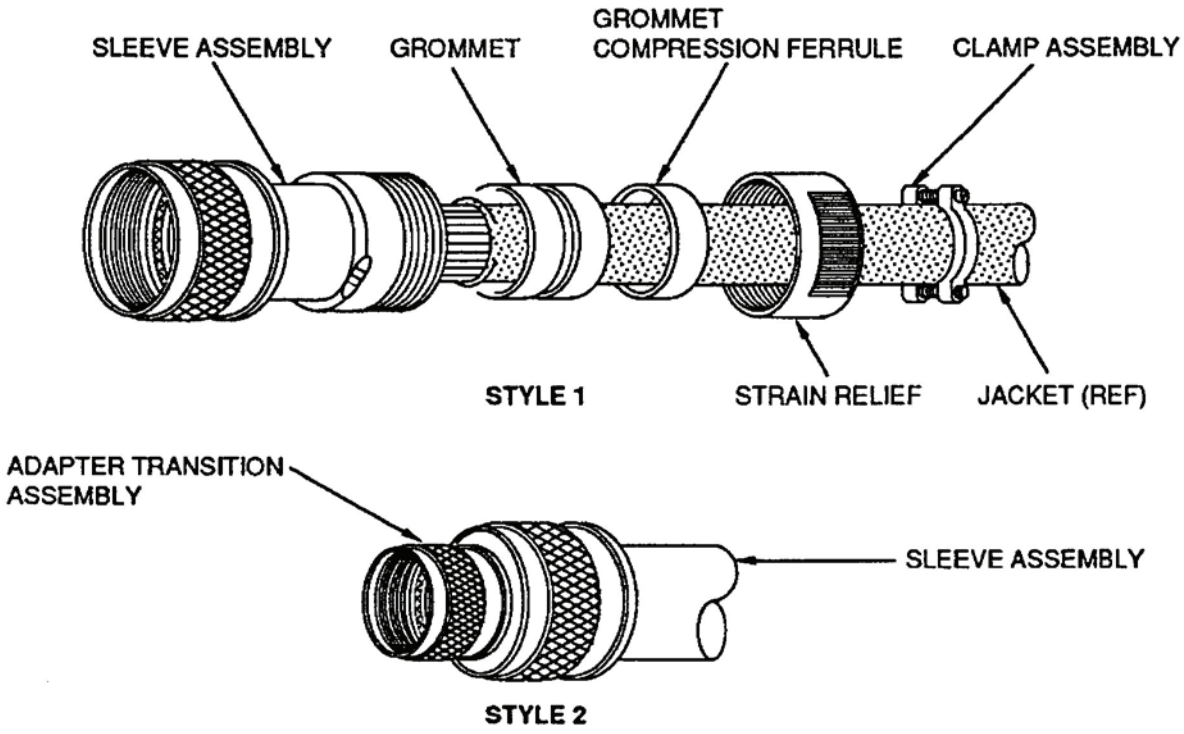


Figure 22. Typical Environmental Backshells

PART NUMBER DESIGNATION

AS85049/ 7 -10 W

MILITARY DESIGNATION

DETAIL SHEET

DASH NUMBER (See Dimensions)

FINISH (See Codes)

MATERIAL and FINISH

"A" - Black Anodize
"W" – Cadmium, Olive Drab 1000 hr Salt Spray
"N" – Electroless Nickel (not for Navy use)
"B" – Black Cadmium
"S" - Passivate

Component	Material	Finish
Body	Aluminum alloy in accordance with MIL-C-85049	1/ N, 2/ W
Body	Corrosion resistant steel in accordance with MIL-C-85049	B, S

1/ Not for Navy use. Restricted to Air Force Space applications only.
2/ W finish is not for use in space application.

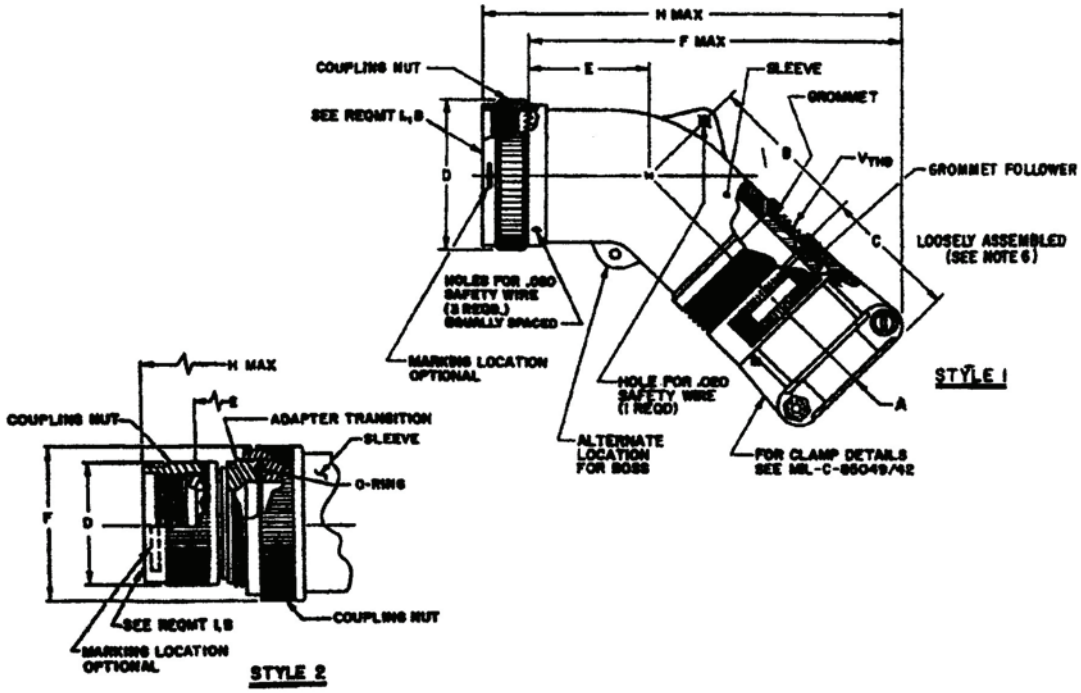


Figure 23. Environmental Backshells M85049/7 (1 of 9)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
21			28		16	.625	.937	1	2.500	1.156	1.969
22					24	1.000	1.375	1	2.156	1.500	1.969
23			32		16	.625	.937	1	2.600	1.156	2.219
24					20	.875	1.250	1	2.600	1.375	2.219
25					28	1.250	1.625	1	2.250	1.781	2.219
26			36		16	.625	.937	1	2.690	1.156	2.469
27					24	1.000	1.375	1	2.690	1.500	2.469
28					32	1.437	1.840	1	2.344	1.830	2.469
29			40		16	.625	.937	1	2.690	1.156	2.719
30					24	1.000	1.375	1	2.690	1.500	2.719

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
21	1.188	1.4375-18 UNEF	5.11	-	5.64
22	1.188	2.000-18 UNS	5.09	-	5.62
23	1.250	1.4375-18 UNEF	5.24	-	5.77
24	1.250	1.750-18 UNS	5.52	-	6.05
25	1.250	2.250-16 UN	5.73	-	6.26
26	1.281	1.4375-18 UNEF	5.33	-	5.86
27	1.281	2.000-18 UNS	5.56	-	6.09
28	1.281	2.500-16 UN	5.95	-	6.48
29	2.031	1.4375-18 UNEF	6.08	-	6.61
30	2.031	2.000-18 UNS	6.31	-	6.84

Figure 23. Environmental Backshells M85049/7 (2 of 9)

DIMENSIONS

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
1	3	X	X	X	4	.125	.250	1	1.790	1.027	.669
2					6	.250	.437	2	1.910	1.027	.669
3	X	8	8S	8	4	.125	.250	1	1.182	1.027	.617
4	X	10	10S, 10SL	10	4	.125	.312	1	1.850	1.027	.734
5	X				6	.250	.375	1	1.245	1.027	.734
6	7	12	12,12S	12	4	.125	.312	1	1.910	1.027	.858
7					6	.250	.437	1	1.910	1.027	.858
8					10	.350	.500	1	1.910	1.027	.858
9	12	14	14,14S	14	6	.250	.437	1	2.000	1.027	.984
10					10	.350	.575	1	1.655	1.027	.984

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
1	.561	.625-24 UNEF	3.37	-	3.74
2	1.375	.750-20 UNEF	4.33	.858	4.70
3	.500	.625-24 UNEF	2.88	-	3.25
4	.561	.625-24 UNEF	3.41	-	3.78
5	.561	.750-20 UNEF	3.05	-	3.42
6	.625	.625-24 UNEF	3.52	-	3.89
7	.625	.750-20 UNEF	3.58	-	3.95
8	.625	1.000-20 UNEF	3.86	-	4.23
9	.688	.750-20 UNEF	3.71	-	4.08
10	.688	1.000-20 UNEF	3.74	-	4.11

Figure 23. Environmental Backshells M85049/7 (3 of 9)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
11	19	16	16,16S	16	6	.250	.437	1	2.110	1.027	1.112
12					12	.500	.700	1	1.750	1.059	1.112
13	27	18	18	18	10	.350	.625	1	2.300	1.027	1.218
14					16	.625	.779	1	1.938	1.156	1.218
15	37	20	20	20	10	.350	.625	1	2.300	1.027	1.345
16					16	.625	.904	1	1.938	1.156	1.345
17		22	22	22	12	.500	.750	1	2.450	1.059	1.468
18					20	.875	1.029	1	2.093	1.375	1.468
19		24	24	24	12	.500	.750	1	2.450	1.059	1.593
20					20	.875	1.144	1	2.093	1.375	1.593

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
11	.781	.750-20 UNEF	3.88	-	4.25
12	.781	1.1875-18 UNEF	4.03	-	4.40
13	.968	1.000-20 UNEF	4.48	-	4.85
14	.968	1.4375-18 UNEF	4.49	-	4.86
15	.968	1.000-20 UNEF	4.48	-	4.85
16	.968	1.4375-18 UNEF	4.49	-	4.86
17	1.063	1.1875-18 UNEF	4.81	-	5.18
18	1.063	1.750-18 UNS	4.98	-	5.35
19	1.063	1.1875-18 UNEF	4.81	-	5.18
20	1.063	1.750-18 UNS	4.98	-	5.35

Figure 23. Environmental Backshells M85049/7 (4 of 9)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
31			40		32	1.437	1.875	1	2.344	1.830	2.719
32					16	.625	.937	1	2.690	1.156	2.969
33			44		24	1.000	1.375	1	2.690	1.500	2.969
34					32	1.437	1.875	1	2.344	1.830	2.969
35					16	.625	.937	1	2.690	1.156	3.219
36			48		24	1.000	1.375	1	2.690	1.500	3.219
37					32	1.437	1.875	1	2.344	1.830	3.219
38	61				12	.500	.750	1	2.450	1.059	1.653
39					20	.875	1.184	1	2.093	1.375	1.653
40	19	16	16,16S	16	10	.350	.625	1	2.110	1.027	1.112

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
31	2.031	2.500-16 UN	6.70	-	7.23
32	2.031	1.437-18 UNEF	6.08	-	6.61
33	2.031	2.000-18 UNS	6.31	-	6.84
34	2.031	2.500-16 UN	6.70	-	7.23
35	2.031	1.4375-18 UNEF	6.08	-	6.61
36	2.031	2.000-18 UNS	6.31	-	6.84
37	2.031	2.500-16 UN	6.70	-	7.23
38	1.063	1.1875-18 UNEF	4.81	-	5.18
39	1.063	1.750-18 UNS	4.98	-	5.35
40	.781	1.000-20 UNEF	4.16	-	4.53

Figure 23. Environmental Backshells M85049/7 (5 of 9)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
41	27	18	18	18	4	.125	.312	1	2.300	1.027	1.218
42					6	.250	.437	1	2.300	1.027	1.218
43	37	20	20	20	6	.250	.437	1	2.300	1.027	1.345
44		22	22	22	4	.125	.312	1	2.450	1.027	1.468
45					6	.250	.437	1	2.450	1.027	1.468
46		24	24	24	10	.350	.625	1	2.450	1.027	1.593
47			36		12	.500	.750	1	2.690	1.059	2.469
48			40		12	.500	.750	1	2.690	1.059	2.719
49		10	10S, 10SL	10	6	.250	.437	2	1.910	1.027	.734
50	12	14	14,14S	14	12	.500	.750	2	2.300	1.059	.984

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
41	.968	.625-24 UNEF	4.13	-	4.50
42	.968	.750-20 UNEF	4.20	-	4.57
43	.968	.750-20 UNEF	4.20	-	4.57
44	1.063	.625-24 UNEF	4.34	-	4.71
45	1.063	.750-20 UNEF	4.40	-	4.77
46	1.063	1.000-20 UNEF	4.68	-	5.05
47	1.281	1.1875-18 UNEF	5.20	-	5.73
48	2.031	1.1875-18 UNEF	5.95	-	6.48
49	1.375	.750-20 UNEF	4.33	.858	4.70
50	1.717	1.1875-18 UNEF	5.36	1.218	5.73

Figure 23. Environmental Backshells M85049/7 (6 of 9)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
51	19	16	16,16S	16	16	.625	.937	2	2.450	1.156	1.112
52	27	18	18	18	12	.500	.750	1	2.300	1.059	1.218
53	61				16	.625	.937	1	2.450	1.156	1.653
54	37	20	20	20	12	.500	.750	1	2.300	1.059	1.345
55					20	.875	1.250	2	2.500	1.375	1.345
56		22	22	22	10	.350	.625	1	2.450	1.027	1.468
57					16	.625	.937	1	2.450	1.156	1.468
58					20	.875	1.250	2	2.500	1.375	1.468
59		24	24	24	16	.625	.937	1	2.450	1.156	1.593
60			28		12	.500	.750	1	2.500	1.059	1.969

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
51	1.812	1.4375-18 UNEF	5.70	1.468	6.07
52	.968	1.1875-18 UNEF	4.61	-	4.98
53	1.063	1.4375-18 UNEF	4.95	-	5.32
54	.968	1.1875-18 UNEF	4.61	-	4.98
55	1.936	1.750-18 UNS	6.14	1.969	6.51
56	1.063	1.000-20 UNEF	4.68	-	5.05
57	1.063	1.4375-18 UNEF	4.95	-	5.32
58	1.936	1.750-18 UNS	6.14	1.969	6.51
59	1.063	1.4375-18 UNEF	4.95	--	5.32
60	1.188	1.1875-18 UNEF	4.97	--	5.50

Figure 23. Environmental Backshells M85049/7 (7 of 9)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
61			28		20	.875	1.250	1	2.500	1.375	1.969
62			32		24	1.000	1.375	1	2.600	1.500	2.219
63			36		20	.875	1.250	1	2.690	1.375	2.469
64					28	1.250	1.625	1	2.690	1.781	2.469
65			40		20	.875	1.250	1	2.690	1.375	2.719
66					28	1.250	1.625	1	2.690	1.781	2.719
67			44		20	.875	1.250	1	2.690	1.375	2.969
68					28	1.250	1.625	1	2.690	1.781	2.969
69			48		20	.875	1.250	1	2.690	1.375	3.219
70					28	1.250	1.625	1	2.690	1.781	3.219

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
61	1.188	1.750-18 UNS	5.39	-	5.92
62	1.250	2.000-18 UNS	5.47	-	6.00
63	1.281	1.750-18 UNS	5.62	-	6.15
64	1.281	2.250-16 UN	6.08	-	6.61
65	2.031	1.750-18 UNS	6.37	-	6.90
66	2.031	2.250-16 UN	6.83	-	7.36
67	2.031	1.750-18 UNS	6.37	-	6.90
68	2.031	2.250-16 UN	6.83	-	7.36
69	2.031	1.750-18 UNS	6.37	-	6.90
70	2.031	2.250-16 UN	6.83	-	7.36

Figure 23. Environmental Backshells M85049/7 (8 of 9)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
71	7	12	12,12S	12	10	.350	.625	2	2.110	1.027	.858
72	27	18	18	18	16	.625	.937	2	2.450	1.156	1.218
73	X	24	24	24	20	.875	1.250	2	2.500	1.375	1.593
74	12	14	14,14S	14	4	.125	.312	1	2.000	1.027	.984
75	19	16	16,16S	16	4	.125	.312	1	2.110	1.027	1.112

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
71	1.529	1.000-20 UNEF	4.90	1.112	5.27
72	1.812	1.4375-18 UNEF	5.69	1.468	6.06
73	1.936	1.750-18 UNS	6.13	1.969	6.50
74	.688	.625-24 UNEF	3.64	-	4.01
75	.781	.625-24 UNEF	3.81	-	4.18

NOTES:
1. Dimensions are in inches
2. Dimensions are after plating.
3. Grommet and O-Ring - Grommet and O-ring elastomer material shall be in accordance with MIL-C-85049.
4. Clamp assembly screws - Corrosion resistant steel in accordance with MIL-C-85049 passivated per QQ-P-35.
5. These accessories are for environmental applications.
6. Style 2 applies when the cable diameter exceeds the "E" diameter of the interface dimensions defined in MIL-C-85049

SUPERSESSION DATA:

MS31898 * * M85049/7 - * *

Dash Number

Finish

Old	New
A	W
C	W

Figure 23. Environmental Backshells M85049/7 (9 of 9)

PART NUMBER DESIGNATION

AS85049/ 9 -10 W

MILITARY DESIGNATION

DETAIL SHEET
(See Application Data)

DASH NUMBER (See Dimensions)

FINISH (See Codes)

MATERIAL and FINISH

"A" - Black Anodize
"W" – Cadmium, Olive Drab 1000 hr Salt Spray
"N" – Electroless Nickel (not for Navy use)
"B" – Black Cadmium
"S" - Passivate

Component	Material	Finish
Body	Aluminum alloy in accordance with MIL-C-85049	1/ N, 2/ W
Body	Corrosion resistant steel in accordance with MIL-C-85049	B, S

1/ Not for Navy use. Restricted to Air Force Space applications only.
2/ W finish is not for use in space application.

APPLICATION DATA

M85049	Application
/8	FOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS. ARMOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS MAY BE ACHIEVED BY REVERSING THE FERRULES AND GROMMETS.
/9	FOR ENVIRONMENTAL APPLICATIONS ONLY AND IS TYPE A (/8) LESS THE REAR ADAPTER AND FERRULES AND WITH THE GROMMET REPLACING THE FERRULES.
/24	FOR SHIELD TERMINATION APPLICATIONS ONLY AND IS TYPE A (/8) LESS THE REAR ADAPTER AND GROMMET. (NON-ENVIRONMENTAL)

Figure 24. Environmental Backshells M85049/9 (1 of 10)

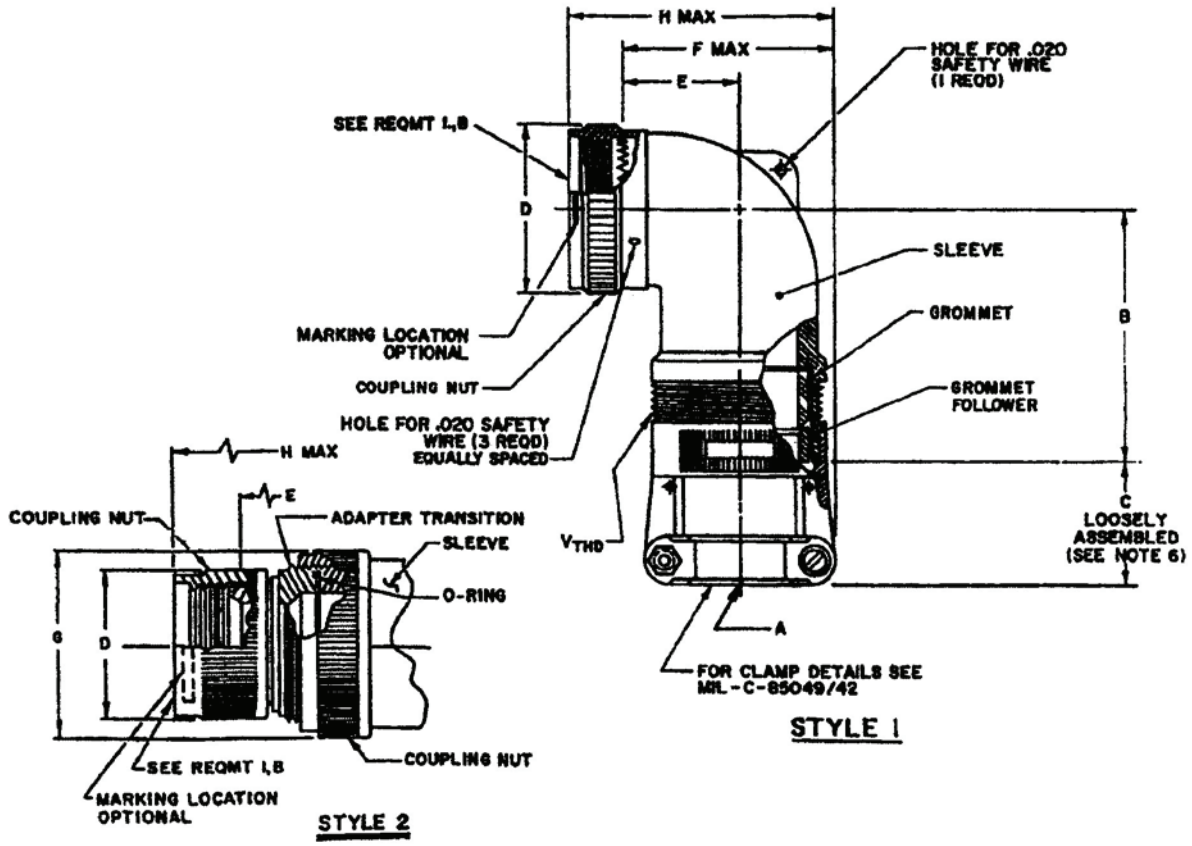


Figure 24. Environmental Backshells M85049/9 (2 of 10)

DIMENSIONS

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
1	3	X	X	X	4	.125	.250	1	1.800	1.027	.669
2					6	.250	.437	2	1.320	1.027	.669
3	X	8	8S	8	4	.125	.250	1	1.200	1.027	.617
4	X	10	10S, 10SL	10	4	.125	.312	1	1.920	1.027	.734
5	X				6	.250	.375	1	1.320	1.027	.734
6	7	12	12,12S	12	4	.125	.312	1	1.940	1.027	.858
7					6	.250	.437	1	1.940	1.027	.858
8					10	.350	.500	1	1.335	1.027	.858
9	12	14	14,14S	14	6	.250	.437	1	2.010	1.027	.984
10					10	.350	.575	1	1.655	1.027	.984

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
1	.636	.625-24 UNEF	1.18	-	1.57
2	1.386	.750-20 UNEF	2.02	.858	2.41
3	.541	.625-24 UNEF	1.09	-	1.48
4	.636	.625-24 UNEF	1.18	-	1.57
5	.636	.750-20 UNEF	1.27	-	1.66
6	.641	.625-24 UNEF	1.18	-	1.57
7	.641	.750-20 UNEF	1.28	-	1.67
8	.641	1.000-20 UNEF	1.37	-	1.76
9	.741	.750-20 UNEF	1.38	-	1.77
10	.741	1.000-20 UNEF	1.47	-	1.86

Figure 24. Environmental Backshells M85049/9 (3 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
11	19	16	16,16S	16	6	.250	.437	1	2.100	1.027	1.112
12					12	.500	.700	1	1.745	1.059	1.112
13	27	18	18	18	10	.350	.625	1	2.270	1.027	1.218
14					16	.625	.779	1	1.920	1.156	1.218
15	37	20	20	20	10	.350	.625	1	2.270	1.027	1.345
16					16	.625	.904	1	1.920	1.156	1.345
17		22	22	22	12	.500	.750	1	2.380	1.059	1.468
18					20	.875	1.029	1	2.025	1.375	1.468
19		24	24	24	12	.500	.750	1	2.380	1.059	1.593
20					20	.875	1.144	1	2.025	1.375	1.593

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
11	.926	.750-20 UNEF	1.59	-	1.98
12	.926	1.1875-18 UNEF	1.77	-	2.16
13	1.016	1.000-20 UNEF	1.80	-	2.19
14	1.016	1.4375-18 UNEF	1.97	-	2.36
15	1.016	1.000-20 UNEF	1.80	-	2.19
16	1.016	1.4375-18 UNEF	1.97	-	2.36
17	1.166	1.1875-18 UNEF	2.11	-	2.50
18	1.166	1.750-18 UNS	2.29	-	2.68
19	1.166	1.1875-18 UNEF	2.11	-	2.50
20	1.166	1.750-18 UNS	2.29	-	2.68

Figure 24. Environmental Backshells M85049/9 (4 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
21			28		16	.625	.937	1	2.550	1.156	1.969
22					24	1.000	1.375	1	2.195	1.500	1.969
23			32		16	.625	.937	1	2.800	1.156	2.219
24					20	.875	1.250	1	2.800	1.375	2.219
25					28	1.250	1.625	1	2.445	1.781	2.219
26			36		16	.625	.937	1	2.770	1.156	2.469
27					24	1.000	1.375	1	2.770	1.500	2.469
28					32	1.437	1.840	1	2.415	1.830	2.469
29			40		16	.625	.937	1	2.770	1.156	2.719
30					24	1.000	1.375	1	2.770	1.500	2.719

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
21	1.266	1.4375-18 UNEF	2.33	-	2.88
22	1.266	2.000-18 UNS	2.51	-	3.06
23	1.616	1.4375-18 UNEF	2.81	-	3.36
24	1.616	1.750-18 UNS	2.81	-	3.36
25	1.616	2.250-16 UN	3.07	-	3.62
26	1.816	1.4375-18 UNEF	3.13	-	3.68
27	1.816	2.000-18 UNS	3.13	-	3.68
28	1.816	2.500-16 UN	3.39	-	3.94
29	2.566	1.4375-18 UNEF	3.88	-	4.43
30	2.566	2.000-18 UNS	3.88	-	4.43

Figure 24. Environmental Backshells M85049/9 (5 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
31			40		32	1.437	1.875	1	2.415	1.830	2.719
32			44		16	.625	.937	1	2.770	1.156	2.969
33					24	1.000	1.375	1	2.770	1.500	2.969
34					32	1.437	1.875	1	2.415	1.830	2.969
35			48		16	.625	.937	1	2.770	1.156	3.219
36					24	1.000	1.375	1	2.770	1.500	3.219
37					32	1.437	1.875	1	2.415	1.830	3.219
38	61				12	.500	.750	1	2.380	1.059	1.653
39					20	.875	1.184	1	2.025	1.375	1.653
40	19	16	16,16S	16	10	.350	.625	1	2.100	1.027	1.112

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
31	2.566	2.500-16 UN	4.14	-	4.69
32	2.566	1.4375-18 UNEF	3.88	-	4.43
33	2.566	2.000-18 UNS	3.88	-	4.43
34	2.566	2.500-16 UN	4.14	-	4.69
35	2.566	1.4375-18 UNEF	3.88	-	4.43
36	2.566	2.000-18 UNS	3.88	-	4.43
37	2.566	2.500-16 UN	4.14	-	4.69
38	1.166	1.1875-18 UNEF	2.11	-	2.50
39	1.166	1.750-18 UNS	2.29	-	2.68
40	.926	1.000-20 UNEF	1.66	-	2.05

Figure 24. Environmental Backshells M85049/9 (6 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
41	27	18	18	18	4	.125	.312	1	2.270	1.027	1.218
42					6	.250	.437	1	2.270	1.027	1.218
43	37	20	20	20	6	.250	.437	1	2.270	1.027	1.345
44		22	22	22	4	.125	.312	1	2.380	1.027	1.468
45					6	.250	.437	1	2.380	1.027	1.468
46		24	24	24	10	.350	.625	1	2.380	1.027	1.593
47			36		12	.500	.750	1	2.770	1.059	2.469
48			40		12	.500	.750	1	2.770	1.059	2.719
49		10	10S, 10SL	10	6	.250	.437	2	1.940	1.027	.734
50	12	14	14,14S	14	12	.500	.750	2	2.270	1.059	.984

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
41	1.016	.625-24 UNEF	1.80	-	2.19
42	1.016	.750-20 UNEF	1.80	-	2.19
43	1.016	.750-20 UNEF	1.80	-	2.19
44	1.166	.625-24 UNEF	2.11	-	2.50
45	1.166	.750-20 UNEF	2.11	-	2.50
46	1.166	1.000-20 UNEF	2.11	-	2.50
47	1.816	1.1875-18 UNEF	3.13	-	3.68
48	1.816	1.1875-18 UNEF	3.88	-	4.43
49	1.391	.750-20 UNEF	2.03	.858	2.42
50	1.766	1.1875-18 UNEF	2.61	1.218	3.00

Figure 24. Environmental Backshells M85049/9 (7 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
51	19	16	16,16S	16	16	.625	.937	2	2.380	1.156	1.112
52	27	18	18	18	12	.500	.750	1	2.270	1.059	1.218
53	61				16	.625	.937	1	2.025	1.156	1.653
54	37	20	20	20	12	.500	.750	1	2.270	1.059	1.345
55					20	.875	1.250	2	2.550	1.375	1.345
56		22	22	22	10	.350	.625	1	2.380	1.027	1.468
57					16	.625	.937	1	2.380	1.156	1.468
58					20	.875	1.250	2	2.550	1.375	1.468
59		24	24	24	16	.625	.937	1	2.380	1.156	1.593
60			28		12	.500	.750	1	2.550	1.059	1.969

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
51	1.916	1.4375-18 UNEF	2.87	1.468	3.26
52	1.016	1.1875-18 UNEF	1.86	-	2.25
53	1.166	1.4375-18 UNEF	2.14	-	2.53
54	1.016	1.1875-18 UNEF	1.86	-	2.25
55	2.016	1.750-18 UNS	3.14	1.969	3.53
56	1.166	1.000-20 UNEF	2.11	-	2.50
57	1.166	1.4375-18 UNEF	2.12	-	2.51
58	2.016	1.750-18 UNS	3.14	1.969	3.53
59	1.166	1.4375-18 UNEF	2.14	-	2.53
60	1.266	1.1875-18 UNEF	2.33	-	2.88

Figure 24. Environmental Backshells M85049/9 (8 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
61			28		20	.875	1.250	1	2.550	1.375	1.969
62			32		24	1.000	1.375	1	2.800	1.500	2.219
63			36		20	.875	1.250	1	2.770	1.375	2.469
64					28	1.250	1.625	1	2.770	1.781	2.469
65			40		20	.875	1.250	1	2.770	1.375	2.719
66					28	1.250	1.625	1	2.770	1.781	2.719
67			44		20	.875	1.250	1	2.770	1.375	2.969
68					28	1.250	1.625	1	2.770	1.781	2.969
69			48		20	.875	1.250	1	2.770	1.375	3.219
70					28	1.250	1.625	1	2.770	1.781	3.219

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
61	1.266	1.750-18 UNS	2.39	-	2.94
62	1.616	2.000-18 UNS	2.86	-	3.41
63	1.816	1.750-18 UNS	3.13	-	3.68
64	1.816	2.250-16 UN	3.27	-	3.82
65	2.566	1.750-18 UNS	3.88	-	4.43
66	2.566	2.250-16 UN	4.02	-	4.57
67	2.566	1.750-18 UNS	3.88	-	4.43
68	2.566	2.250-16 UN	4.02	-	4.57
69	2.566	1.750-18 UNS	3.88	-	4.43
70	2.566	2.250-16 UN	4.02	-	4.57

Figure 24. Environmental Backshells M85049/9 (9 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
71	7	12	12,12S	12	10	.350	.625	2	2.100	1.027	.858
72	27	18	18	18	16	.625	.937	2	2.380	1.156	1.218
73	X	24	24	24	20	.875	1.250	2	2.550	1.375	1.593
74	12	14	14,14S	14	4	.125	.312	1	2.010	1.027	.984
75	19	16	16,16S	16	4	.125	.312	1	2.100	1.027	1.112

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
71	1.686	1.000-20 UNEF	2.42	1.112	2.81
72	1.926	1.4375-18 UNEF	2.88	1.468	3.27
73	2.026	1.750-18 UNS	3.15	1.969	3.54
74	.741	.625-24 UNEF	1.31	-	1.70
75	.926	.625-24 UNEF	1.59	-	1.98

NOTES:
1. Dimensions are in inches
2. Dimensions are after plating.
3. Grommet and O-Ring - Grommet and O-ring elastomer material shall be in accordance with MIL-C-85049.
4. Clamp assembly screws - Corrosion resistant steel in accordance with MIL-C-85049 passivated per QQ-P-35.
5. These accessories are for environmental applications.
6. Style 2 applies when the cable diameter exceeds the "E" diameter of the interface dimensions defined in MIL-C-85049

SUPERSESSION DATA:

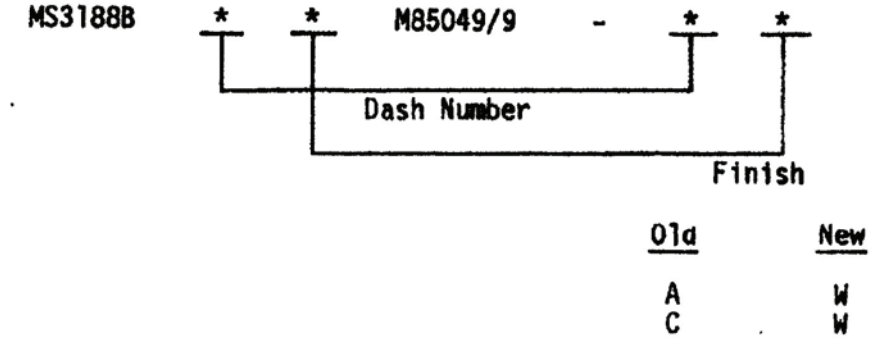


Figure 24. Environmental Backshells M85049/9 (10 of 10)

PART NUMBER DESIGNATION

AS85049/ 11 -10 W

MILITARY DESIGNATION

DETAIL SHEET
(See Application Data)

DASH NUMBER (See Dimensions)

FINISH (See Codes)

MATERIAL and FINISH

M85049	FINISH	MATERIAL
W	CADMIUM, OLIVE DRAB 500 HR. SALT SPRAY	ALUMINUM
-	CADMIUM, OLIVE DRAB	ALUMINUM
N	ELECTROLESS NICKEL	ALUMINUM
B	BLACK CADMIUM	STAINLESS STEEL
S	PASSIVATE	STAINLESS STEEL

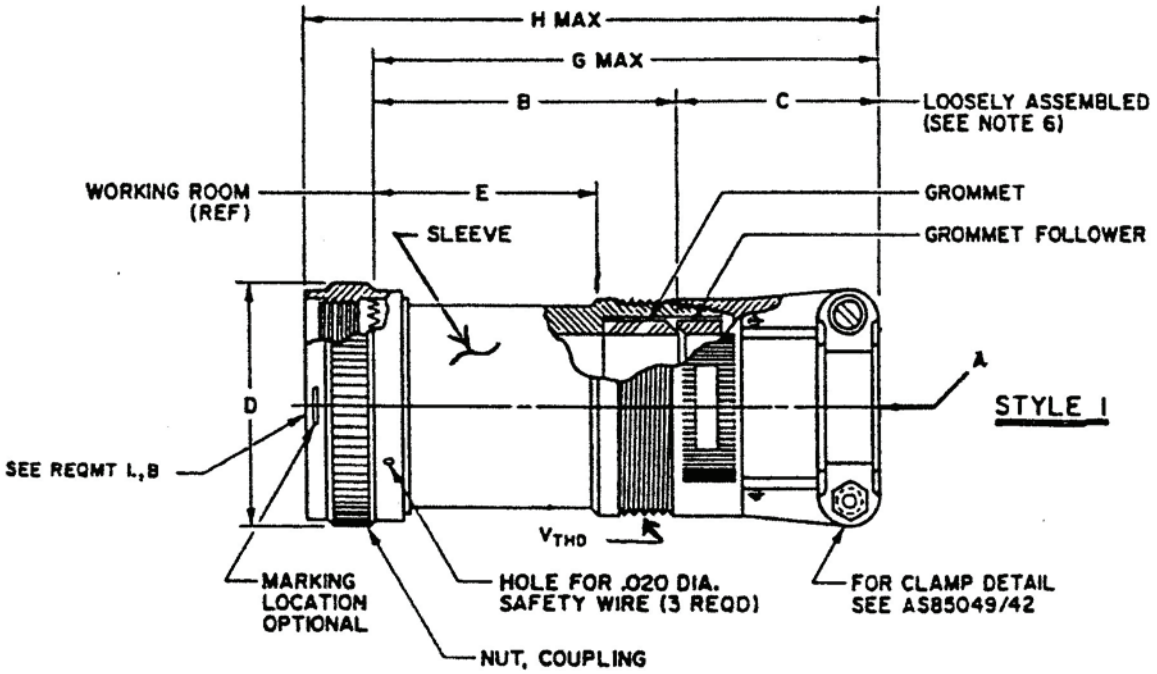
Component	Material	Finish
Body	Aluminum alloy in accordance with MIL-C-85049	1/ N, 2/ W
Body	Corrosion resistant steel in accordance with MIL-C-85049	B, S

1/ Not for Navy use. Restricted to Air Force Space applications only.
2/ W finish is not for use in space application.

APPLICATION DATA

M85049	APPLICATION
/10	FOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS. ARMOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS MAY BE ACHIEVED BY REVERSING THE FERRULES AND GROMMETS.
/11	FOR ENVIRONMENTAL APPLICATIONS ONLY AND ARE TYPE A (/10) LESS THE REAR ADAPTER AND FERRULES AND WITH THE GROMMET REPLACING THE FERRULES.
/25	FOR SHIELD TERMINATION APPLICATIONS ONLY AND ARE TYPE A (/10) LESS THE REAR ADAPTER AND GROMMET. (NON-ENVIRONMENTAL)

Figure 25. Environmental Backshells M85049/11 (1 of 10)



DIMENSIONS

DASH NO.	FITS SHELL OF CONNECTOR				CLAMP SIZE	A (SEE NOTE 6) WIRE BUNDLE ACCOMMODATION RANGE		STYLE	B ±.125	C REF	D DIA MAX
	AS81703 SER 3	MIL-DTL-26482 SER 2	MIL-DTL-5015 CRIMP	MIL-DTL-83723 SER III		MIN	MAX				
01	3	--	--	--	4	.125	.250	1	2.00	1.027	.669
02	3	--	--	--	4	.125	.250	1	3.00	1.027	.669
03	3	--	--	--	6	.250	.437	2	2.75	1.027	.669
04	3	--	--	--	6	.250	.437	2	3.75	1.027	.669
05	--	8	8S	8	4	.125	.250	1	2.00	1.027	.617
06	--	8	8S	8	4	.125	.250	1	3.00	1.027	.617
07	--	8	8S	8	6	.250	.437	2	2.75	1.027	.617
08	--	8	8S	8	6	.250	.437	2	3.75	1.027	.617
09	--	10	10S,10SL	10	4	.125	.312	1	2.00	1.027	.734
10	--	10	10S,10SL	10	4	.125	.312	1	3.00	1.027	.734
11	--	10	10S,10SL	10	6	.250	.437	2	2.75	1.027	.734
12	--	10	10S,10SL	10	6	.250	.437	2	3.75	1.027	.734
13	7	12	12,12S	12	6	.250	.437	1	2.00	1.027	.858
14	7	12	12,12S	12	6	.250	.437	1	3.00	1.027	.858
15	7	12	12,12S	12	10	.350	.625	2	2.75	1.027	.858
16	7	12	12,12S	12	10	.350	.625	2	3.75	1.027	.858
17	12	14	14,14S	14	10	.350	.575	1	2.00	1.027	.984
18	12	14	14,14S	14	10	.350	.575	1	3.00	1.027	.984
19	12	14	14,14S	14	12	.500	.750	2	2.75	1.059	.984
20	12	14	14,14S	14	12	.500	.750	2	3.75	1.059	.984

Figure 25. Environmental Backshells M85049/11 (2 of 10)

DIMENSIONS (Continued)

DASH NO.	E REF	V THREAD CLASS 2A	F DIA MAX	G MAX	H MAX
01	1.06	.625-24 UNEF	--	3.15	3.51
02	2.06	.625-24 UNEF	--	4.15	4.51
03	1.81	.750-20 UNEF	.858	3.90	4.26
04	2.81	.750-20 UNEF	.858	4.90	5.26
05	1.06	.625-24 UNEF	--	3.15	3.51
06	2.06	.625-24 UNEF	--	4.15	4.51
07	1.81	.750-20 UNEF	.858	3.90	4.26
08	2.81	.750-20 UNEF	.858	4.90	5.26
09	1.06	.625-24 UNEF	--	3.15	3.51
10	2.06	.625-24 UNEF	--	4.15	4.51
11	1.81	.750-20 UNEF	.858	3.90	4.26
12	2.81	.750-20 UNEF	.858	4.90	5.26
13	1.06	.750-20 UNEF	--	3.15	3.51
14	2.06	.750-20 UNEF	--	4.15	4.51
15	1.67	1.000-20 UNEF	1.112	3.90	4.26
16	2.67	1.000-20 UNEF	1.112	4.90	5.26
17	0.92	1.000-20 UNEF	--	3.15	3.51
18	1.92	1.000-20 UNEF	--	4.15	4.51
19	1.67	1.1875-18 UNEF	1.218	3.93	4.29
20	2.67	1.1875-18 UNEF	1.218	4.93	5.29

DIMENSIONS (Continued)

DASH NO.	FITS SHELL OF CONNECTOR				CLAMP SIZE	A (SEE NOTE 6) WIRE BUNDLE ACCOMMODATION RANGE		STYLE	B ±.125	C REF	D DIA MAX
	AS81703 SER 3	MIL-DTL-26482 SER 2	MIL-DTL-5015 CRIMP	MIL-DTL-83723 SER III		MIN	MAX				
21	19	16	16,16S	16	12	.500	.700	1	2.00	1.059	1.112
22	19	16	16,16S	16	12	.500	.700	1	3.00	1.059	1.112
23	19	16	16,16S	16	16	.625	.937	2	2.75	1.156	1.112
24	19	16	16,16S	16	16	.625	.937	2	3.75	1.156	1.112
25	27	18	18	18	10	.350	.625	1	2.00	1.027	1.218
26	27	18	18	18	10	.350	.625	1	3.00	1.027	1.218
27	27	18	18	18	12	.500	.750	1	2.00	1.059	1.218
28	27	18	18	18	12	.500	.750	1	3.00	1.059	1.218
29	27	18	18	18	16	.625	.937	2	2.75	1.156	1.218
30	27	18	18	18	16	.625	.937	2	3.75	1.156	1.218
31	37	20	20	20	10	.350	.625	1	3.00	1.027	1.345
32	37	20	20	20	10	.350	.625	1	4.00	1.027	1.345
33	37	20	20	20	12	.500	.750	1	3.00	1.059	1.345
34	37	20	20	20	12	.500	.750	1	4.00	1.059	1.345
35	37	20	20	20	16	.625	.937	2	3.75	1.156	1.345
36	37	20	20	20	16	.625	.937	2	4.75	1.156	1.345
37	37	20	20	20	20	.875	1.250	2	3.75	1.375	1.345
38	37	20	20	20	20	.875	1.250	2	4.75	1.375	1.345
39	--	22	22	22	10	.350	.625	1	3.00	1.027	1.468
40	--	22	22	22	10	.350	.625	1	4.00	1.027	1.468

Figure 25. Environmental Backshells M85049/11 (3 of 10)

DIMENSIONS (Continued)

DASH NO.	E REF	V THREAD CLASS 2A	F DIA MAX	G MAX	H MAX
21	0.92	1.1875-18 UNEF	--	3.18	3.54
22	1.92	1.1875-18 UNEF	--	4.18	4.54
23	1.67	1.4375-18 UNEF	1.468	4.02	4.38
24	2.67	1.4375-18 UNEF	1.468	5.02	5.38
25	0.92	1.000-20 UNEF	--	3.15	3.51
26	1.92	1.000-20 UNEF	--	4.15	4.51
27	0.92	1.1875-18 UNEF	--	3.18	3.54
28	1.92	1.1875-18 UNEF	--	4.18	4.54
29	1.67	1.4375-18 UNEF	1.468	4.02	4.38
30	2.67	1.4375-18 UNEF	1.468	5.02	5.38
31	1.92	1.000-20 UNEF	--	4.15	4.51
32	2.92	1.000-20 UNEF	--	5.15	5.51
33	1.92	1.1875-18 UNEF	--	4.18	4.54
34	2.92	1.1875-18 UNEF	--	5.18	5.54
35	2.67	1.4375-18 UNEF	1.468	5.02	5.38
36	3.67	1.4375-18 UNEF	1.468	6.02	6.38
37	2.67	1.750-18 UNS	1.969	5.24	5.60
38	3.67	1.750-18 UNS	1.969	6.24	6.60
39	1.92	1.000-20 UNEF	--	4.15	4.51
40	2.92	1.000-20 UNEF	--	5.15	5.51

DIMENSIONS (Continued)

DASH NO.	FITS SHELL OF CONNECTOR				CLAMP SIZE	A (SEE NOTE 6) WIRE BUNDLE ACCOMMODATION RANGE		STYLE	B ±.125	C REF	D DIA MAX
	AS81703 SER 3	MIL-DTL-26482 SER 2	MIL-DTL-5015 CRIMP	MIL-DTL-83723 SER III		MIN	MAX				
41	--	22	22	22	12	.500	.750	1	3.00	1.059	1.468
42	--	22	22	22	12	.500	.750	1	4.00	1.059	1.468
43	--	22	22	22	16	.625	.937	1	3.00	1.156	1.468
44	--	22	22	22	16	.625	.937	1	4.00	1.156	1.468
45	--	22	22	22	20	.875	1.250	2	3.75	1.375	1.468
46	--	22	22	22	20	.875	1.250	2	4.75	1.375	1.468
47	--	24	24	24	12	.500	.750	1	3.00	1.059	1.593
48	--	24	24	24	12	.500	.750	1	4.00	1.059	1.593
49	--	24	24	24	16	.625	.812	1	3.00	1.156	1.593
50	--	24	24	24	16	.625	.812	1	4.00	1.156	1.593
51	--	24	24	24	16	.625	.937	1	3.00	1.156	1.593
52	--	24	24	24	16	.625	.937	1	4.00	1.156	1.593
53	--	24	24	24	20	.875	1.250	2	3.75	1.375	1.593
54	--	24	24	24	20	.875	1.250	2	4.75	1.375	1.593
55	--	--	28	--	12	.500	.750	1	3.00	1.059	1.969
56	--	--	28	--	12	.500	.750	1	4.00	1.059	1.969
57	--	--	28	--	16	.625	.937	1	3.00	1.156	1.969
58	--	--	28	--	16	.625	.937	1	4.00	1.156	1.969
59	--	--	28	--	20	.875	1.250	1	3.00	1.375	1.969
60	--	--	28	--	20	.875	1.250	1	4.00	1.375	1.969

Figure 25. Environmental Backshells M85049/11 (4 of 10)

DIMENSIONS (Continued)

DASH NO.	E REF	V THREAD CLASS 2A	F DIA MAX	G MAX	H MAX
41	1.92	1.1875-18 UNEF	--	4.18	4.54
42	2.92	1.1875-18 UNEF	--	5.18	5.54
43	1.92	1.4375-18 UNEF	--	4.27	4.63
44	2.92	1.4375-18 UNEF	--	5.27	5.63
45	2.67	1.750-18 UNS	1.969	5.24	5.60
46	3.67	1.750-18 UNS	1.969	6.24	6.60
47	1.92	1.1875-18 UNEF	--	4.18	4.54
48	2.92	1.1875-18 UNEF	--	5.18	5.54
49	1.92	1.4375-18 UNEF	--	4.27	4.63
50	2.92	1.4375-18 UNEF	--	5.27	5.63
51	1.92	1.4375-18 UNEF	--	4.27	4.63
52	2.92	1.4375-18 UNEF	--	5.27	5.63
53	2.67	1.750-18 UNS	1.969	5.24	5.60
54	3.67	1.750-18 UNS	1.969	6.24	6.60
55	1.92	1.1875-18 UNEF	--	4.16	4.68
56	2.92	1.1875-18 UNEF	--	5.16	5.68
57	1.92	1.4375-18 UNEF	--	4.26	4.78
58	2.92	1.4375-18 UNEF	--	5.26	5.78
59	1.92	1.750-18 UNS	--	4.48	5.00
60	2.92	1.750-18 UNS	--	5.48	6.00

DIMENSIONS (Continued)

DASH NO.	FITS SHELL OF CONNECTOR				CLAMP SIZE	A (SEE NOTE 6) WIRE BUNDLE ACCOMMODATION RANGE		STYLE	B ±.125	C REF	D DIA MAX
	AS81703 SER 3	MIL-DTL-26482 SER 2	MIL-DTL-5015 CRIMP	MIL-DTL-83723 SER III		MIN	MAX				
61	--	--	28	--	24	1.000	1.375	1	3.00	1.500	1.969
62	--	--	28	--	24	1.000	1.375	1	4.00	1.500	1.969
63	--	--	32	--	16	.625	.937	1	3.00	1.156	2.219
64	--	--	32	--	16	.625	.937	1	4.00	1.156	2.219
65	--	--	32	--	20	.875	1.250	1	3.00	1.375	2.219
66	--	--	32	--	20	.875	1.250	1	4.00	1.375	2.219
67	--	--	32	--	24	1.000	1.375	1	3.00	1.500	2.219
68	--	--	32	--	24	1.000	1.375	1	4.00	1.500	2.219
69	--	--	32	--	28	1.250	1.625	1	3.00	1.781	2.219
70	--	--	32	--	28	1.250	1.625	1	4.00	1.781	2.219
71	--	--	36	--	20	.875	1.250	1	4.00	1.375	2.469
72	--	--	36	--	20	.875	1.250	1	5.00	1.375	2.469
73	--	--	36	--	24	1.000	1.375	1	4.00	1.500	2.469
74	--	--	36	--	24	1.000	1.375	1	5.00	1.500	2.469
75	--	--	36	--	28	1.250	1.625	1	4.00	1.781	2.469
76	--	--	36	--	28	1.250	1.625	1	5.00	1.781	2.469
77	--	--	36	--	32	1.437	1.875	2	4.88	1.830	2.469
78	--	--	36	--	32	1.437	1.875	2	5.88	1.830	2.469
79	--	--	40	--	20	.875	1.250	1	4.00	1.375	2.719
80	--	--	40	--	20	.875	1.250	1	5.00	1.375	2.719

Figure 25. Environmental Backshells M85049/11 (5 of 10)

DIMENSIONS (Continued)

DASH NO.	E REF	V THREAD CLASS 2A	F DIA MAX	G MAX	H MAX
61	1.92	2.000-18 UNS	--	4.60	5.12
62	2.92	2.000-18 UNS	--	5.60	6.12
63	1.92	1.4375-18 UNEF	--	4.26	4.78
64	2.92	1.4375-18 UNEF	--	5.26	5.78
65	1.92	1.750-18 UNS	--	4.48	5.00
66	2.92	1.750-18 UNS	--	5.48	6.00
67	1.92	2.000-18 UNS	--	4.60	5.12
68	2.92	2.000-18 UNS	--	5.60	6.12
69	1.92	2.250-16 UN	--	4.89	5.41
70	2.92	2.250-16 UN	--	5.89	6.41
71	2.92	1.750-18 UNS	--	5.49	6.01
72	3.92	1.750-18 UNS	--	6.49	7.01
73	2.92	2.000-18 UNS	--	5.60	6.12
74	3.92	2.000-18 UNS	--	6.60	7.12
75	2.92	2.250-16 UN	--	5.89	6.41
76	3.92	2.250-16 UN	--	6.89	7.41
77	3.80	2.500-16 UN	2.719	6.81	7.33
78	4.80	2.500-16 UN	2.719	7.81	8.33
79	2.92	1.750-18 UNS	--	5.48	6.00
80	3.92	1.750-18 UNS	--	6.48	7.00

DIMENSIONS (Continued)

DASH NO.	FITS SHELL OF CONNECTOR				CLAMP SIZE	A (SEE NOTE 6) WIRE BUNDLE ACCOMMODATION RANGE		STYLE	B ±.125	C REF	D DIA MAX
	AS81703 SER 3	MIL-DTL-26482 SER 2	MIL-DTL-5015 CRIMP	MIL-DTL-83723 SER III		MIN	MAX				
81	--	--	40	--	24	1.000	1.375	1	4.00	1.500	2.719
82	--	--	40	--	24	1.000	1.375	1	5.00	1.500	2.719
83	--	--	40	--	28	1.250	1.625	1	4.00	1.781	2.719
84	--	--	40	--	28	1.250	1.625	1	5.00	1.781	2.719
85	--	--	40	--	32	1.437	1.875	1	4.00	1.830	2.719
86	--	--	40	--	32	1.437	1.875	1	5.00	1.830	2.719
87	--	--	44	--	20	.875	1.250	1	4.00	1.375	2.969
88	--	--	44	--	20	.875	1.250	1	5.00	1.375	2.969
89	--	--	44	--	24	1.000	1.375	1	4.00	1.500	2.969
90	--	--	44	--	24	1.000	1.375	1	5.00	1.500	2.969
91	--	--	44	--	28	1.250	1.625	1	4.00	1.781	2.969
92	--	--	44	--	28	1.250	1.625	1	5.00	1.781	2.969
93	--	--	44	--	32	1.437	1.875	1	4.00	1.830	2.969
94	--	--	44	--	32	1.437	1.875	1	5.00	1.830	2.969
95	--	--	48	--	20	.875	1.250	1	4.00	1.375	3.219
96	--	--	48	--	20	.875	1.250	1	5.00	1.375	3.219
97	--	--	48	--	24	1.000	1.375	1	4.00	1.500	3.219
98	--	--	48	--	24	1.000	1.375	1	5.00	1.500	3.219
99	--	--	48	--	28	1.250	1.625	1	4.00	1.781	3.219
100	--	--	48	--	28	1.250	1.625	1	5.00	1.781	3.219

Figure 25. Environmental Backshells M85049/11 (6 of 10)

DIMENSIONS (Continued)

DASH NO.	E REF	V THREAD CLASS 2A	F DIA MAX	G MAX	H MAX
81	2.92	2.000-18 UNS	--	5.60	6.12
82	3.92	2.000-18 UNS	--	6.60	7.12
83	2.92	2.250-16 UN	--	5.89	6.41
84	3.92	2.250-16 UN	--	6.89	7.41
85	2.92	2.500-16 UN	--	5.93	6.45
86	3.92	2.500-16 UN	--	6.93	7.45
87	2.92	1.750-18 UNS	--	5.48	6.00
88	3.92	1.750-18 UNS	--	6.48	7.00
89	2.92	2.000-18 UNS	--	5.60	6.12
90	3.92	2.000-18 UNS	--	6.60	7.12
91	2.92	2.250-16 UN	--	5.89	6.41
92	3.92	2.250-16 UN	--	6.89	7.41
93	2.92	2.500-16 UN	--	5.93	6.45
94	3.92	2.500-16 UN	--	6.93	7.45
95	2.92	1.750-18 UNS	--	5.48	6.00
96	3.92	1.750-18 UNS	--	6.48	7.00
97	2.92	2.000-18 UNS	--	5.60	6.12
98	3.92	2.000-18 UNS	--	6.60	7.12
99	2.92	2.250-16 UN	--	5.89	6.41
100	3.92	2.250-16 UN	--	6.89	7.41

DIMENSIONS (Continued)

DASH NO.	FITS SHELL OF CONNECTOR				CLAMP SIZE	A (SEE NOTE 6) WIRE BUNDLE ACCOMMODATION RANGE		STYLE	B ±.125	C REF	D DIA MAX
	AS81703 SER 3	MIL-DTL-26482 SER 2	MIL-DTL-5015 CRIMP	MIL-DTL-83723 SER III		MIN	MAX				
101	--	--	48	--	32	1.437	1.875	1	4.00	1.830	3.219
102	--	--	48	--	32	1.437	1.875	1	5.00	1.830	3.219
103	61	--	--	--	12	.500	.750	1	3.00	1.059	1.653
104	61	--	--	--	12	.500	.750	1	4.00	1.059	1.653
105	61	--	--	--	16	.625	.937	1	3.00	1.156	1.653
106	61	--	--	--	16	.625	.937	1	4.00	1.156	1.653
107	61	--	--	--	20	.875	1.250	2	3.75	1.375	1.653
108	61	--	--	--	20	.875	1.250	2	4.75	1.375	1.653
109	61	--	--	--	24	1.000	1.375	2	3.75	1.500	1.653
110	61	--	--	--	24	1.000	1.375	2	4.75	1.500	1.653
111	7	12	12,12S	12	10	.350	.500	1	2.00	1.027	.858
112	19	16	16,16S	16	6	.250	.437	1	2.00	1.027	1.112
113	19	16	16,16S	16	6	.250	.437	1	3.00	1.027	1.112
114	7	12	12,12S	12	4	.125	.312	1	2.00	1.027	.858
115	7	12	12,12S	12	4	.125	.312	1	3.00	1.027	.858
116	12	14	14,14S	14	6	.250	.437	1	2.00	1.027	.984
117	12	14	14,14S	14	6	.250	.437	1	3.00	1.027	.984
118	19	16	16,16S	16	10	.350	.625	1	2.00	1.027	1.112
119	19	16	16,16S	16	10	.350	.625	1	3.00	1.027	1.112

Figure 25. Environmental Backshells M85049/11 (7 of 10)

DIMENSIONS (Continued)

DASH NO.	E REF	V THREAD CLASS 2A	F DIA MAX	G MAX	H MAX
101	2.92	2.500-16 UN	--	5.93	6.45
102	3.92	2.500-16 UN	--	6.93	7.45
103	1.92	1.1875-18 UNEF	--	4.18	4.54
104	2.92	1.1875-18 UNEF	--	5.18	5.54
105	1.92	1.4375-18 UNEF	--	4.27	4.63
106	2.92	1.4375-18 UNEF	--	5.27	5.63
107	2.67	1.750-18 UNS	1.969	5.24	5.60
108	3.67	1.750-18 UNS	1.969	6.24	6.60
109	2.67	2.000-18 UNS	1.969	5.37	5.73
110	3.67	2.000-18 UNS	1.969	6.37	6.73
111	1.00	1.000-20 UNEF	--	3.15	3.51
112	1.00	1.000-20 UNEF	--	3.15	3.51
113	2.00	.750-20 UNEF	--	4.15	4.51
114	1.00	.750-20 UNEF	--	3.15	3.51
115	2.00	.625-24 UNEF	--	4.15	4.51
116	1.00	.625-24 UNEF	--	3.15	3.51
117	2.00	.750-20 UNEF	--	4.15	4.51
118	0.92	.750-20 UNEF	--	3.15	3.51
119	1.92	1.000-20 UNEF	--	4.15	4.51

DIMENSIONS (Continued)

DASH NO.	FITS SHELL OF CONNECTOR				CLAMP SIZE	A (SEE NOTE 6) WIRE BUNDLE ACCOMMODATION RANGE		STYLE	B ±.125	C REF	D DIA MAX
	AS81703 SER 3	MIL-DTL-26482 SER 2	MIL-DTL-5015 CRIMP	MIL-DTL-83723 SER III		MIN	MAX				
120	27	18	18	18	4	.125	.312	1	2.00	1.027	1.218
121	27	18	18	18	4	.125	.312	1	3.00	1.027	1.218
122	27	18	18	18	6	.250	.437	1	2.00	1.027	1.218
123	27	18	18	18	6	.250	.437	1	3.00	1.027	1.218
124	37	20	20	20	6	.250	.437	1	3.00	1.027	1.345
125	37	20	20	20	6	.250	.437	1	4.00	1.027	1.345
126	--	22	22	22	4	.125	.312	1	3.00	1.027	1.468
127	--	22	22	22	4	.125	.312	1	4.00	1.027	1.468
128	--	22	22	22	6	.250	.437	1	3.00	1.027	1.468
129	--	22	22	22	6	.250	.437	1	4.00	1.027	1.468
130	--	24	24	24	10	.350	.625	1	3.00	1.027	1.593
131	--	24	24	24	10	.350	.625	1	4.00	1.027	1.593
132	--	--	36	--	12	.500	.750	1	4.00	1.059	2.469
133	--	--	36	--	12	.500	.750	1	5.00	1.059	2.469
134	--	--	40	--	12	.500	.750	1	4.00	1.059	2.719
135	--	--	40	--	12	.500	.750	1	5.00	1.059	2.719
136	--	10	10S,10SL	10	6	.250	.375	1	2.00	1.027	.734
137	--	10	10S,10SL	10	6	.250	.375	1	3.00	1.027	.734
138	7	12	12,12S	12	10	.350	.500	1	2.00	1.027	.858
139	7	12	12,12S	12	10	.350	.500	1	3.00	1.027	.858

Figure 25. Environmental Backshells M85049/11 (8 of 10)

DIMENSIONS (Continued)

DASH NO.	E REF	V THREAD CLASS 2A	F DIA MAX	G MAX	H MAX
120	0.92	.625-24 UNEF	--	3.15	3.51
121	1.92	.625-24 UNEF	--	4.15	4.51
122	0.92	.750-20 UNEF	--	3.15	3.51
123	1.92	.750-20 UNEF	--	4.15	4.51
124	1.92	.750-20 UNEF	--	4.15	4.51
125	2.92	.750-20 UNEF	--	5.15	5.51
126	1.92	.625-24 UNEF	--	4.15	4.51
127	2.92	.625-24 UNEF	--	5.15	5.51
128	1.92	.750-20 UNEF	--	4.15	4.51
129	2.92	.750-20 UNEF	--	5.15	5.51
130	1.92	1.000-20 UNEF	--	4.15	4.51
131	2.92	1.000-20 UNEF	--	5.15	5.51
132	2.92	1.1875-18 UNEF	--	5.32	5.68
133	3.92	1.1875-18 UNEF	--	6.32	6.68
134	2.92	1.1875-18 UNEF	--	5.16	5.68
135	3.92	1.1875-18 UNEF	--	6.16	6.68
136	1.06	.750-20 UNEF	--	3.15	3.51
137	2.06	.750-20 UNEF	--	4.15	4.51
138	1.06	1.000-20 UNEF	--	3.15	3.51
139	2.06	1.000-20 UNEF	--	4.15	4.51

DIMENSIONS (Continued)

DASH NO.	FITS SHELL OF CONNECTOR				CLAMP SIZE	A (SEE NOTE 6) WIRE BUNDLE ACCOMMODATION RANGE		STYLE	B ±.125	C REF	D DIA MAX
	AS81703 SER 3	MIL-DTL-26482 SER 2	MIL-DTL-5015 CRIMP	MIL-DTL-83723 SER III		MIN	MAX				
140	37	20	20	20	18	.625	.904	1	3.00	1.156	1.345
141	37	20	20	20	18	.625	.904	1	4.00	1.156	1.345
142	--	22	22	22	20	.875	1.029	1	3.00	1.375	1.468
143	--	22	22	22	20	.875	1.029	1	4.00	1.375	1.468
144	--	24	24	24	20	.875	1.144	1	3.00	1.375	1.593
145	--	24	24	24	20	.875	1.144	1	4.00	1.375	1.593
146	--	--	36	--	32	1.437	1.840	1	4.00	1.830	2.469
147	--	--	36	--	32	1.437	1.840	1	5.00	1.830	2.469
148	--	--	36	--	18	.625	.937	1	4.00	1.156	2.469
149	--	--	36	--	18	.625	.937	1	5.00	1.156	2.469
150	12	14	14,14S	14	4	.125	.312	1	2.00	1.027	.984
151	12	14	14,14S	14	4	.125	.312	1	3.00	1.027	.984
152	19	16	16,16S	16	4	.125	.312	1	2.00	1.027	1.112
153	19	16	16,16S	16	4	.125	.312	1	3.00	1.027	1.112
154	--	--	44	--	16	.625	.937	1	4.00	1.156	2.969
155	--	--	44	--	16	.625	.937	1	5.00	1.156	2.969
156	--	--	40	--	16	.625	.937	1	4.00	1.156	2.719
157	--	--	40	--	16	.625	.937	1	5.00	1.156	2.719

Figure 25. Environmental Backshells M85049/11 (9 of 10)

DIMENSIONS (Continued)

DASH NO.	E REF	V THREAD CLASS 2A	F DIA MAX	G MAX	H MAX
140	1.92	1.4375-18 UNEF	--	4.27	4.63
141	2.92	1.4375-18 UNEF	--	5.27	5.63
142	1.92	1.750-18 UNS	--	4.49	4.85
143	2.92	1.750-18 UNS	--	5.49	5.85
144	1.92	1.750-18 UNS	--	4.49	4.85
145	2.92	1.750-18 UNS	--	5.49	5.85
146	2.92	2.500-16 UN	--	5.93	6.45
147	3.92	2.500-16 UN	--	6.93	7.45
148	2.92	1.4375-18 UNEF	--	5.26	5.78
149	3.92	1.4375-18 UNEF	--	6.26	6.78
150	0.92	.625-24 UNEF	--	3.15	3.51
151	1.92	.625-24 UNEF	--	4.15	4.51
152	0.92	.625-24 UNEF	--	3.15	3.51
153	1.92	.625-24 UNEF	--	4.15	4.51
154	2.92	1.4375-18 UNEF	--	5.26	5.78
155	3.92	1.4375-18 UNEF	--	6.26	6.78
156	2.92	1.4375-18 UNEF	--	5.26	5.78
157	3.92	1.4375-18 UNEF	--	6.26	6.78

NOTES:
1. Dimensions are in inches
2. Dimensions are after plating.
3. Grommet and O-Ring - Grommet and O-ring elastomer material shall be in accordance with AS85049.
4. Clamp assembly screws - Corrosion resistant steel in accordance with MIL-C-85049 passivated per QQ-P-35.
5. These accessories are for environmental applications.
6. Style 2 applies when the cable diameter exceeds the "E" diameter of the interface dimensions defined in MIL-C-85049

SUPERSESSION DATA:

MS3437B * * M85049/11 - * *

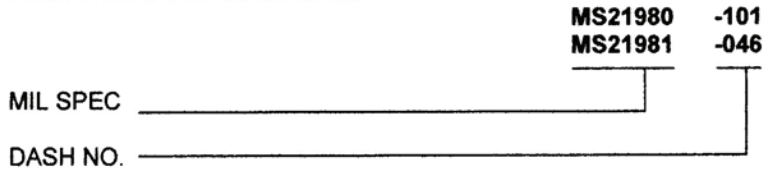
Dash Number

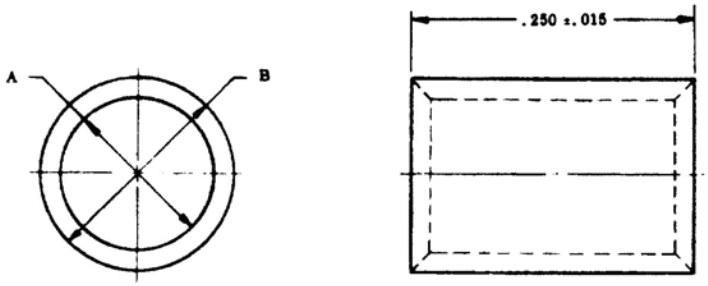
Finish

Old	New
A	W
C	W
N	N
D	B
S	S

Figure 25. Environmental Backshells M85049/11 (10 of 10)

PART NUMBER DESIGNATION





MS21980 OUTER FERRULE DIMENSIONS (SEE MS21981 FOR INNER FERRULE)

DASH NO,	COLOR CODE	A DIA		B DIA		MIL-C-22520/5 CRIMPING DIE DASH NO. (REF)	DIE CLOSURE
		MIN	MAX	MIN	MAX		
-101	NO COLOR	.098	.104	. 121	. 127	-33	B
-128	BLUE	.125	.131	.147	. 155	-35	B
-149	PURPLE	. 146	.152	.176	.182	-37	B
-156	YELLOW	. 153	. 159	.190	.196	-39	B
-175	BLUE	. 172	.178	.212	.218	-41	B
-167	ORANGE	.184	.190	.224	.230	-43	B
-194	RED	.191	, r&?	.223	.229	-43	B
-199	NO COLOR	.196	.202	.232	.238	-43	B
-205	YELLOW	.202	.208	.242	.248	-19	B
-219	GREEN	.216	.222	.247	.253	-19	B
-225	PURPLE	.221	.228	.253	.259	-45	B
-232	ORANGE	.229	.235	.260	.266	-45	B
-261	YELLOW	.258	.264	.294	.300	-19	A
-275	NO COLOR	.272	. 276	.303	.309	-43	A
-281	PURPLE	.278	.284	.328	.334	-41	A
-287	BLUE	.284	. 290	. 324	.330	-41	A
-297	GREEN	.294	,300	.332	.338	-41	A
-312	YELLOW	.309	.315	.359	.365	-39	A
-327	NO COLOR	.324	.330	.369	.375	-37	A
-348	ORANGE	.345	.351	.391	.397	-35	A
-359	PURPLE	.356	.362	.396	.402	-33	A
-375	YELLOW	.372	.376	.403	.409	-47	
-405	RED	.402	.408	.450	.456	-23	
-419	BLUE	.412	. 418	.400	.466	-23	
-460	NO COLOR	.457	.463	.507	.513	-53	
-500	GREEN	.497	.503	.547	.553	-21	A

Figure 26. EMI-RFI Grounding Terminators MS21981 and MS21980 (Sheet 1 of 4)

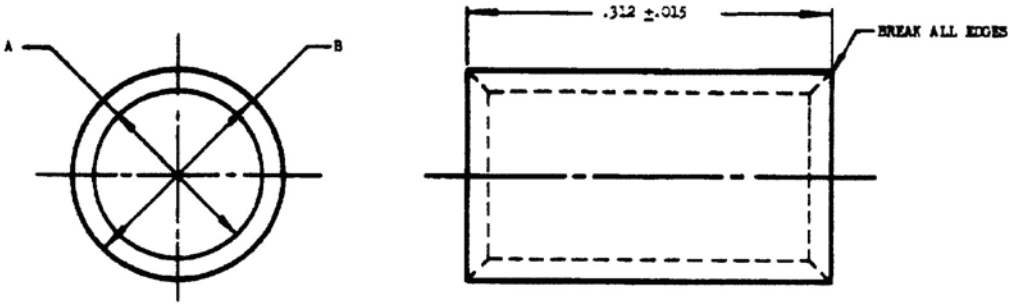
NOTE:

1. FOR USE WITH MS21981 INNER FERRULE.
2. USE CRIMP TOOL THOMAS & BETTS, INSTALLING HEAD CAT. NO. 13640, OR EQUIVALENT
3. USE INSTALLING DIES THOMAS & BETTS CAT.NO.13640, OR EQUIVALENT

FINISH: TIN PLATE; IN ACCORDANCE WITH MIL-T-10727, TYPE 1, COLOR CODE PER TABLE.

MATERIAL: COPPER; ASTM B75, TYPE DLP-WW-T-799 ROCKWELL F-50 MAX, OR OFHC COPPER, CDA 102 OR APPROVED EQUIVALENT

PART NUMBER DESIGNATION MS21981



MS21981 INNER FERRULE DIMENSIONS (SEE MS21980 FOR OUTER FERRULE)

DASH NO.	COLOR CODE	A DIA		B DIA	
		MIN	MAX	MIN	MAX
-046	NO COLOR	.043	.049	.067	.073
-058	YELLOW	055	.061	.080	.086
-063	RED	.060	.066	.085	.091
-071	GREEN	.068	.074	.093	.099
-080	BUT	.077	.083	.101	.107
-090	ORANGE	.087	.093	.111	.117
-096	PURPLE	.093	.099	.116	.122
-101	YELLOW	.098	.104	.121	.127
-109	RED	.106	.112	.128	.134
-115	NO COLOR	.112	.118	.143	.149
-124	GREEK	.121	.127	.142	.us
-128	NO COLOR	.125	.131	.149	.155
-134	ORANGE	.131	.137	.153	.159
-149	BLUE	.146	.152	.176	.182
-156	RED	.153	.159	.139	.195
-165	NO COLOR	.162	.168	.191	.197
-175	GREEU	.172	.178	.212	.218
-187	YELLOW	.184	.190	.224	.230
-194	BLUE	.191	.197	.222	.229
-205	ORANGE	.202	.208	.242	.248
-219	NO COLOR	.216	.222	.240	.253
-225	YELLOW	.222	.228	.253	.259

Figure 26. EMI-RFI Grounding Terminators MS21981 and MS21980 (Sheet 2 of 4)

MS21981 INNER FERRULE DIMENSIONS, CONTINUED (SEE MS21980 FOR OUTER FERRULE)

DASH NO.	COLOR CODE	A DIA		B DIA	
		MIN	MAX	MIN	MAX
-232	REC	.229	.235	,260	.266
-250	GREEN	.247	.253	.278	.284
-261	BLUE	.258	.264	.294	.300
-266	NO COLOR	.263	.269	.294	.300
-275	ORANGE	.272	.278	.303	.309
-281	YELLOW	.278	.284	.328	.334
-287	NO COLOR	.284	.290	.324	.330
-297	RED	.294	.300	.332	.338
-312	PURPLE	.309	.315	.359	.365
-348	ORANGE	.345	.351	.397	.403
-375	BLUE	.372	.378	.403	.409

NOTE:

1. MS21980 OUTER FERRULE ARE USED WITH 21981 INNER FERRULE AS AN UN-INSULATED REPLACEMENT.
2. MS18121 OUTER FERRULES ARE USED WITH MS21981 INNER FERRULES AS AN INSULATED REPLACEMENT.
3. REMOVE ALL BURRS AND SHARP EDGES. CHAMFER OR ROUNDED EDGES ACCEPTED.
4. DIMENSIONS IN INCHES.

SUPERSESSION DATA:

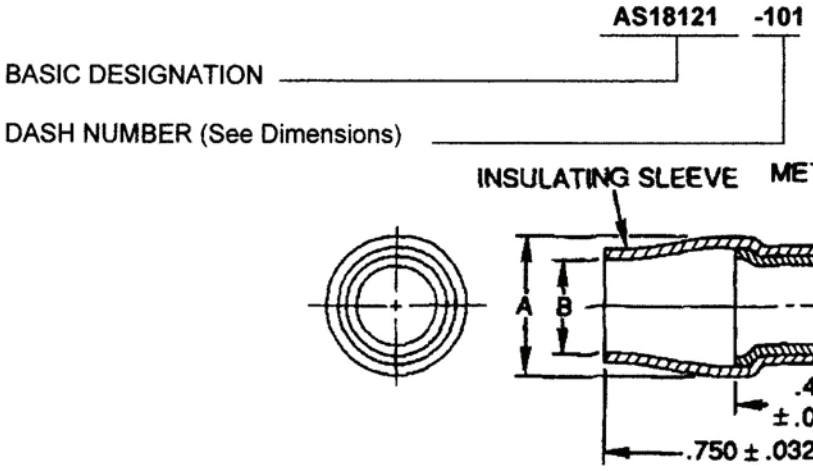
Figure 26. EMI-RFI Grounding Terminators MS21981 and MS21980 (Sheet 3 of 4)

SUPERSEDED MS25311 ONE-PIECE FERRULE DASH NO.	REPLACED BY TWO-PIECE COMBINATION (REF)	
	MS21981 INNER FERRULE DASH NO.	MS21980 OUTER FERRULE DASH NO.
-90	-058	-128, -149, -156
-100	-063	-156, -175
-110	-080	-156, -175, -187
-120	-101	-187, -194, -199
-130	-115	-199, -205, -219
-150	-134	-225, -232, -261
-160	-156	-232, -261, -275
-180	-175, -187	-287, -297
-200	-205, -219	-312, -327, -348

UNINSULATED TWO-PIECE COMBINATION (REF)	
MS21981 INNER FERRULE DASH NO.	MS21980 OUTER FERRULE DASH NO.
-058	-128, -149, -156
-063	-156, -175
-080	-156, -175, -187
-101	-187, -194, -199
-115	-199, -205, -219
-134	-225, -232, -261
-156	-232, -261, -275
-175, -187	-287, -297
-205, -219	-312, -327, -348

Figure 26. EMI-RFI Grounding Terminators MS21981 and MS21980 (Sheet 4 of 4)

PART NUMBER DESIGNATION



INSULATED OUTER FERRULE DIMENSIONS

Part Number	Color Code	A ±.025	B ±.015	C ±.005	D ±.025	MIL-C-22520/5 Crimping Die Dash No. (REF)	Die Closure
AS18121-101	NO COLOR	.177	.128	.101	.152	-35	B
AS18121-128	BLUE	.205	.149	.128	.182	-37	B
AS18121-149	PURPLE	.244	.175	.149	.219	-41	B
AS18121-156	YELLOW	.260	.184	.156	.233	-43	B
AS18121-175	BLUE	.283	.206	.175	.255	-19	B
AS18121-187	ORANGE	.299	.218	.187	.270	-45	A
AS18121-194	RED	.298	.223	.194	.270	-45	A
AS18121-199	NO COLOR	.305	.229	.199	.275	-45	A
AS1 8121 -205	YELLOW	.315	.236	.205	.285	-19	A
AS18121-219	GREEN	.320	.247	.219	.293	-19	A
AS18121-225	PURPLE	.336	.253	.225	.302	-19	A
AS18121-232	ORANGE	.343	.260	.232	.314	-43	A
AS18121-261	YELLOW	.377	.292	.261	.347	-41	A
AS18121-275	NO COLOR	.396	.316	.275	.356	-39	A
AS18121-281	PURPLE	.414	.322	.281	.374	-35	A
AS18121-287	BLUE	.410	.325	.287	.372	-35	A
AS18121-297	GREEN	.418	,340	.297	.376	•35	A
AS18121-312	YELLOW	.454	.353	.312	,409	•47	
AS18121-327	NO COLOR	.478	.368	.327	.436	•23	
AS1 81 21-348	ORANGE	.493	.389	.348	.453	•23	
AS18121-359	PURPLE	.492	.397	.359	.454	-23	
AS18121-375	YELLOW	.499	.416	.375	.459	-49	
AS18121-405	RED	.553	.446	.405	.513	•51	
AS18121-415	BLUE	.558	.456	.415	.518	-51	
ASI 81 21 -460	NO COLOR	.608	.501	.460	.568	-31	
AS18121-500	GREEN	.660	.541	.500	.620	-27	

Figure 27. EMI-RFI Grounding Termination AS18121 (Sheet 1 of 2)

MATERIAL
METAL BARREL: - COPPER OR BRASS ALLOY, ROCKWELL F65 MAXIMUM.
- MIL-C-22520/5 CRIMPING DIES SHALL BE USED WITH M22520/5-01 BASIC CRIMPING TOOL (MIL-C-22520/5).
INSULATING SLEEVE: - NYLON AS PER MIL-M-20693, COMPOSITION A, TYPE I.

FINISH: - TIN PLATED (METAL BARREL), AS PER MIL-T-10727, TYPE I. REMOVE ALL BURRS AND SHARP EDGES; CHAMFERED OR ROUNDED EDGES ARE ACCEPTABLE.
COLOR CODE: - INSULATING SLEEVE IN ACCORDANCE WITH TABLE.

SUPERSESSION:

SUPERSEDED MS25911 ONE-PIECE FERRULE DASH NO.	REPLACED BY TWO-PIECE COMBINATIONS (REF.)	
	MS21981 INNER FERRULE DASH NO.	MS18121 OUTER FERRULE DASH NO.
-90	-058	-128, -149, -156
-100	-063	-156, -175
-110	-080	-156, -175, -187
-120	-101	-187, -194, -199
-130	-115	-199, -205, -219
-150	-134	-225, -232, -261
-160	-156	-232, -261, -275
-180	-175, -167	-287, -297
-200	-205, -219	-312, -327, -348

Figure 27. EMI-RFI Grounding Termination AS18121 (Sheet 2 of 2)

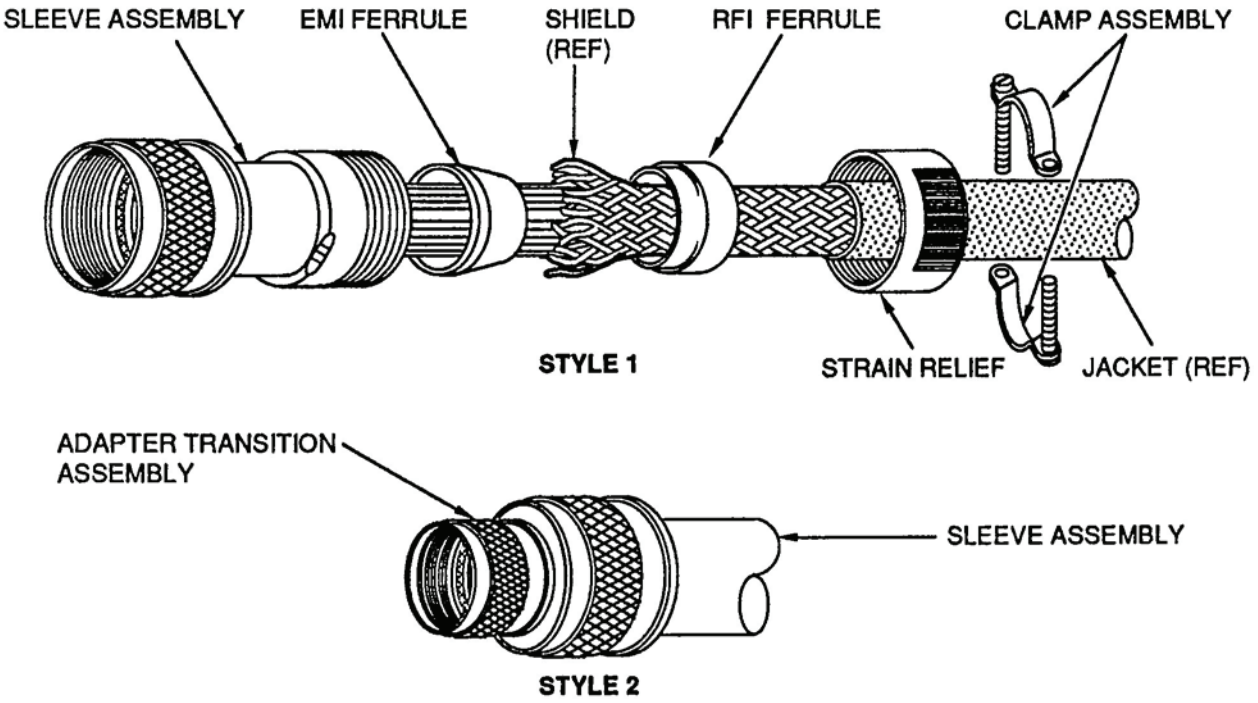


Figure 28. Typical Non-Environmental EMI-RFI Backshell

PART NUMBER DESIGNATION

AS85049/ 23 -10 W

MILITARY DESIGNATION

DETAIL SHEET
(See Application Table)

DASH NUMBER (See Dimensions)

FINISH (See Codes)

MATERIAL and FINISH

"W" – Cadmium, Olive Drab 1000 hr Salt Spray
"N" – Electroless Nickel (not for Navy use)
"B" – Black Cadmium
"S" - Passivate

COMPONENT	MATERIAL	FINISH
BODY	ALUMINUM ALLOY IN ACCORDANCE WITH AS85049	1/ N, 2/ W
BODY	CORROSION RESISTANT STEEL IN ACCORDANCE WITH AS85049	B, S

1/ NOT FOR NAVY USE. RESTRICTED TO AIR FORCE SPACE APPLICATIONS ONLY.
2/ W FINISH IS NOT FOR USE IN SPACE APPLICATION.

APPLICATION DATA

AS85049	APPLICATION
/6	FOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS. ARMOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS MAY BE ACHIEVED BY REVERSING THE FERRULES AND GROMMETS.
/7	FOR ENVIRONMENTAL APPLICATIONS ONLY AND IS TYPE A (/6) LESS THE REAR ADAPTER AND FERRULES AND WITH THE GROMMET REPLACING THE FERRULES.
/23	FOR SHIELD TERMINATION APPLICATIONS ONLY AND IS TYPE A (/6) LESS THE REAR ADAPTER AND GROMMET. (NON-ENVIRONMENTAL)

Figure 29. Non-Environmental EMI-RFI Backshell AS85049/23 (Sheet 1 of 10)

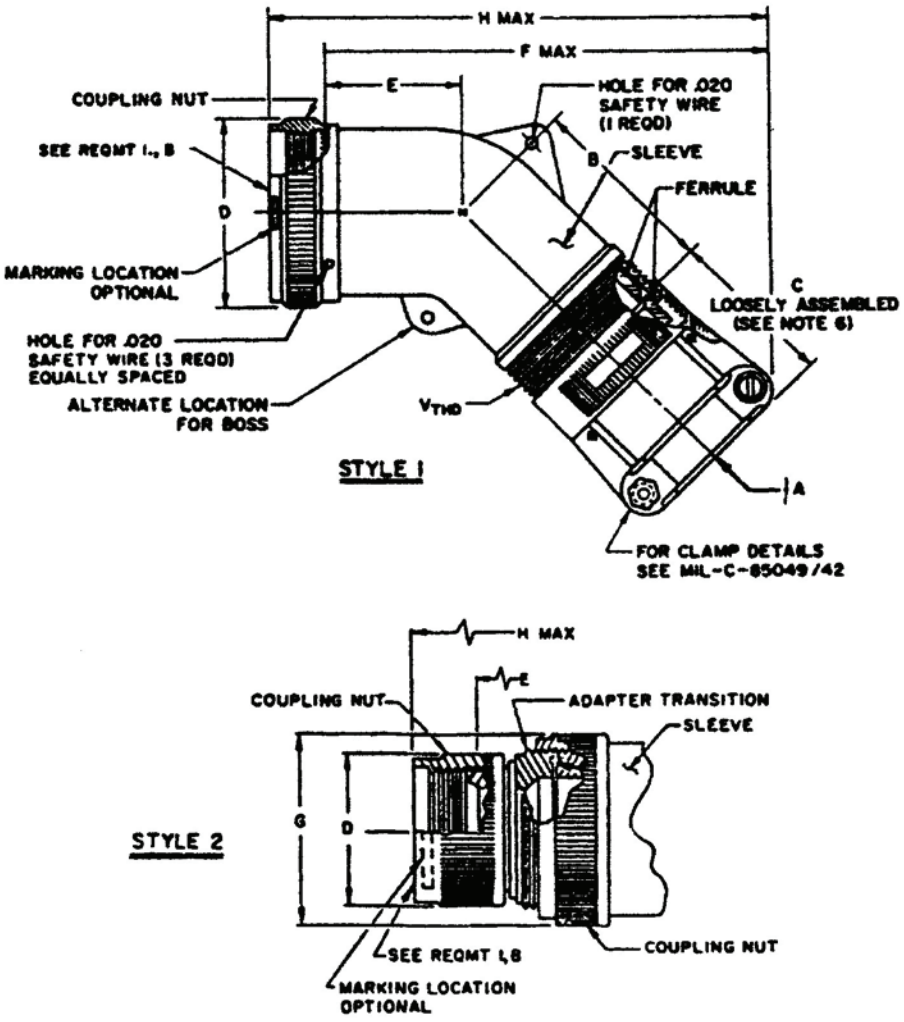


Figure 29. Non-Environmental EMI-RFI Backshell AS85049/23 (Sheet 2 of 10)

DIMENSIONS

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
1	3	X	X	X	4	.125	.250	1	1.790	1.027	.669
2					6	.250	.437	2	1.910	1.027	.669
3	X	8	8S	8	4	.125	.250	1	1.182	1.027	.617
4		10	10S, 10SL	10	4	.125	.312	1	1.850	1.027	.734
5					6	.250	.375	1	1.245	1.027	.734
6	7	12	12,12S	12	4	.125	.312	1	1.910	1.027	.858
7					6	.250	.437	1	1.910	1.027	.858
8					10	.350	.500	1	1.910	1.027	.858
9	12	14	14,14S	14	6	.250	.437	1	2.000	1.027	.984
10					10	.350	.575	1	1.655	1.027	.984

Dash No.	E ±.125	W Thread Class 2A	F Max	G Dia Max	H Max
1	.561	.625-24 UNEF	3.00	-	3.39
2	1.375	.750-20 UNEF	3.97	.858	4.36
3	.500	.625-24 UNEF	2.52	-	2.91
4	.561	.625-24 UNEF	3.05	-	3.44
5	.561	.750-20 UNEF	2.69	-	3.08
6	.625	.625-24 UNEF	3.16	-	3.55
7	.625	.750-20 UNEF	3.22	-	3.61
8	.625	1.000-20 UNEF	3.29	-	3.68
9	.688	.750-20 UNEF	3.35	-	3.74
10	.688	1.000-20 UNEF	3.17	-	3.56

Figure 29. Non-Environmental EMI-RFI Backshell AS85049/23 (Sheet 3 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector: MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III	Clamp Size	A (see note 6) Wire Bundle Accommodation Range: Min	Max	Style	B ±.125	C Ref	D Dia Max
11	19	16	16,16S	16	6	.250	.437	1	2.110	1.027	1.112
12					12	.500	.700	1	1.750	1.059	1.112
13	27	18	18	18	10	.350	.625	1	2.300	1.027	1.218
14					16	.625	.779	1	1.938	1.156	1.218
15	37	20	20	20	10	.350	.625	1	2.300	1.027	1.345
16					16	.625	.904	1	1.938	1.156	1.345
17	X	22	22	22	12	.500	.750	1	2.450	1.059	1.468
18					20	.875	1.029	1	2.093	1.375	1.468
19		24	24	24	12	.500	.750	1	2.450	1.069	1.593
20					20	.875	1.144	1	2.093	1.375	1.593

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
11	.781	.750-20 UNEF	3.52	-	3.91
12	.781	1.1875-18 UNEF	3.43	-	3.82
13	.968	1.000-20 UNEF	3.91	-	4.30
14	.968	1.4375-18 UNEF	3.90	-	4.29
15	.968	1.000-20 UNEF	3.91	-	4.30
16	.968	1.4375-18 UNEF	3.90	-	4.29
17	1.063	1.1875-18 UNEF	4.21	-	4.60
18	1.063	1.750-10 UNS	4.38	-	4.77
19	1.063	1.1875-18 UNEF	4.21	-	4.60
20	1.063	1.750-18 UNS	4.38	-	4.77

Figure 29. Non-Environmental EMI-RFI Backshell AS85049/23 (Sheet 4 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
21			28		16	.625	.937	1	2.500	1.156	1.969
22					24	1.000	1.375	1	2.156	1.500	1.969
23			32		16	.625	.937	1	2.600	1.156	2.219
24					20	.875	1.250	1	2.600	1.375	2.219
25					28	1.250	1.625	1	2.250	1.781	2.219
26			36		16	.625	.937	1	2.690	1.156	2.469
27					24	1.000	1.375	1	2.690	1.500	2.469
28					32	1.437	1.840	1	2.344	1.830	2.489
29			40		16	.625	.937	1	2.690	1.156	2.719
30					24	1.000	1.375	1	2.690	1.500	2.719

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
21	1.188	1.4375-18 UNEF	4.52	-	5.05
22	1.188	2.000-18 UNS	4.72	-	5.23
23	1.250	1.4375-18 UNEF	4.65	-	5.18
24	1.250	1.750-18 UNS	4.92	-	5.45
25	1.250	2.250-16 UN	5.19	-	5.72
26	1.281	1.4375-18 UNEF	4.74	-	5.27
27	1.281	2.000-18 UNS	5.19	-	5.72
28	1.281	2.500-18 UN	5.41	-	5.94
29	2.031	1.4375-18 UNEF	5.49	-	6.02
30	2.031	2.000-18 UNS	5.94	-	6.47

Figure 29. Non-Environmental EMI-RFI Backshell AS85049/23 (Sheet 5 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
31			40		32	1.437	1.875	1	2.344	1.830	2.719
32					16	.625	.937	1	2.690	1.156	2.969
33			44		24	1.000	1.375	1	2.690	1.500	2.969
34					32	1.437	1.875	1	2.344	1.830	2.969
35					16	.625	.937	1	2.690	1.156	3.219
36			48		24	1.000	1.375	1	2.690	1.500	3.219
37					32	1.437	1.875	1	2.344	1.830	3.219
38	61				12	.500	.750	1	2.450	1.059	1.653
39					20	.875	1.184	1	2.093	1.375	1.653
40	19	16	16,16S	16	10	.350	.625	1	2.110	1.027	1.112

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
31	2.031	2.500-16 UN	6.16	-	6.69
32	2.031	1.437-18 UNEF	5.49	-	6.02
33	2.031	2.000-18 UNS	5.94	-	6.47
34	2.031	2.500-16 UN	6.16	-	6.69
35	2.031	1.4375-18 UNEF	5.49	-	6.02
36	2.031	2.000-18 UNS	5.94	-	6.47
37	2.031	2.500-16 UN	6.16	-	6.69
38	1.063	1.1875-18 UNEF	4.21	-	4.60
39	1.063	1.750-18 UNS	4.38	-	4.77
40	.781	1.000-20 UNEF	3.59	-	3.98

Figure 29. Non-Environmental EMI-RFI Backshell AS85049/23 (Sheet 6 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
41	27	18	18	18	4	.125	.312	1	2.300	1.027	1.218
42					6	.250	.437	1	2.300	1.027	1.218
43	37	20	20	20	6	.250	.437	1	2.300	1.027	1.345
44		22	22	22	4	.125	.312	1	2.450	1.027	1.488
45					6	.250	.437	1	2.450	1.027	1.468
46		24	24	24	10	.350	.625	1	2.450	1.027	1.593
47			36		12	.500	.750	1	2.690	1.059	2.469
48			40		12	.500	.750	1	2.690	1.059	2.719
49		10	10S, 10SL	10	6	.250	.437	2	1.910	1.027	.734
50	12	14	14,14S	14	12	.500	.750	2	2.300	1.059	.984

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
41	.968	.625-24 UNEF	3.80	-	4.19
42	.968	.750-20 UNEF	3.84	-	4.23
43	.968	.750-20 UNEF	3.84	-	4.23
44	1.063	.625-24 UNEF	3.98	-	4.37
45	1.063	.750-20 UNEF	4.04	-	4.43
46	1.063	1.000-20 UNEF	4.11	-	4.50
47	1.281	1.1875-18 UNEF	4.60	-	5.13
48	2.031	1.1875-18 UNEF	5.35	-	5.88
49	1.375	.750-20 UNEF	3.97	.858	4.36
50	1.717	1.1875-18 UNEF	4.76	1.218	5.15

Figure 29. Non-Environmental EMI-RFI Backshell AS85049/23 (Sheet 7 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
51	19	16	16,16S	16	16	.625	.937	2	2.450	1.156	1.112
52	27	18	18	18	12	.500	.750	1	2.300	1.059	1.218
53	61				16	.625	.937	1	2.450	1.156	1.653
54	37	20	20	20	12	.500	.750	1	2.300	1.059	1.345
55					20	.875	1.250	2	2.500	1.375	1.345
56		22	22	22	10	.350	.625	1	2.450	1.027	1.468
57					16	.625	.937	1	2.450	1.156	1.468
58					20	.875	1.250	2	2.500	1.375	1.468
59		24	24	24	16	.625	.937	1	2.450	1.156	1.593
60			28		12	.500	.750	1	2.500	1.059	1.969

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
51	1.812	1.4375-18 UNEF	5.11	1.468	5.50
52	.968	1.1875-18 UNEF	4.01	-	4.40
53	1.063	1.4375-18 UNEF	4.36	-	4.75
54	.968	1.1875-18 UNEF	4.01	-	4.40
55	1.936	1.750-18 UNS	5.54	1.969	5.93
56	1.063	1.000-20 UNEF	4.11	-	4.50
57	1.063	1.4375-18 UNEF	4.36	-	4.75
58	1.936	1.750-18 UNS	5.54	1.969	5.93
59	1.063	1.4375-18 UNEF	4.36	--	4.75
60	1.188	1.1875-18 UNEF	4.37	--	4.90

Figure 29. Non-Environmental EMI-RFI Backshell AS85049/23 (Sheet 8 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
61			28		20	.875	1.250	1	2.500	1.375	1.969
62			32		24	1.000	1.375	1	2.600	1.500	2.219
63			36		20	.875	1.250	1	2.690	1.375	2.469
64					28	1.250	1.625	1	2.690	1.781	2.469
65			40		20	.875	1.250	1	2.690	1.375	2.719
66					28	1.250	1.625	1	2.690	1.781	2.719
67			44		20	.875	1.250	1	2.690	1.375	2.969
68					28	1.250	1.625	1	2.690	1.781	2.969
69			48		20	.875	1.250	1	2.690	1.375	3.219
70					28	1.250	1.625	1	2.690	1.781	3.219

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
61	1.188	1.750-18 UNS	4.79	-	5.32
62	1.250	2.000-18 UNS	5.10	-	5.63
63	1.281	1.750-18 UNS	5.02	-	5.55
64	1.281	2.250-16 UN	5.54	-	6.07
65	2.031	1.750-18 UNS	5.77	-	6.30
66	2.031	2.250-16 UN	6.29	-	6.82
67	2.031	1.750-18 UNS	5.77	-	6.30
68	2.031	2.250-16 UN	6.29	-	6.82
69	2.031	1.750-18 UNS	5.77	-	6.30
70	2.031	2.250-16 UN	6.29	-	6.82

Figure 29. Non-Environmental EMI-RFI Backshell AS85049/23 (Sheet 9 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
71	7	12	12,12S	12	10	.350	.625	2	2.110	1.027	.858
72	27	18	18	18	16	.625	.937	2	2.450	1.156	1.218
73	X	24	24	24	20	.875	1.250	2	2.500	1.375	1.593
74	12	14	14,14S	14	4	.125	.312	1	2.000	1.027	.984
75	19	16	16,16S	16	4	.125	.312	1	2.110	1.027	1.112

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
71	1.529	1.000-20 UNEF	4.33	1.112	4.72
72	1.812	1.4375-18 UNEF	5.10	1.468	5.49
73	1.936	1.750-18 UNS	5.53	1.969	5.92
74	.688	.625-24 UNEF	3.28	-	3.67
75	.781	.625-24 UNEF	3.45	-	3.84

NOTES:

1. Dimensions are in inches
2. Dimensions are after plating.
3. Clamp assembly screws - Corrosion resistant steel in accordance with MIL-C-85049 passivated per QQ-P-35.
4. These accessories are for shield termination.
5. Style 2 is not supplied with O-ring

SUPERSESSION DATA:

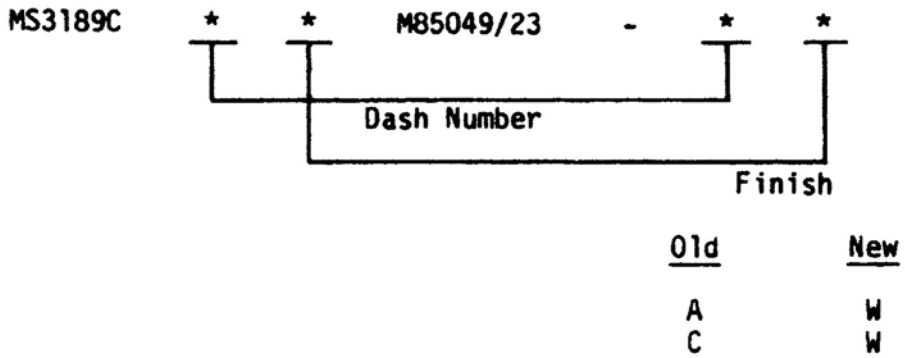
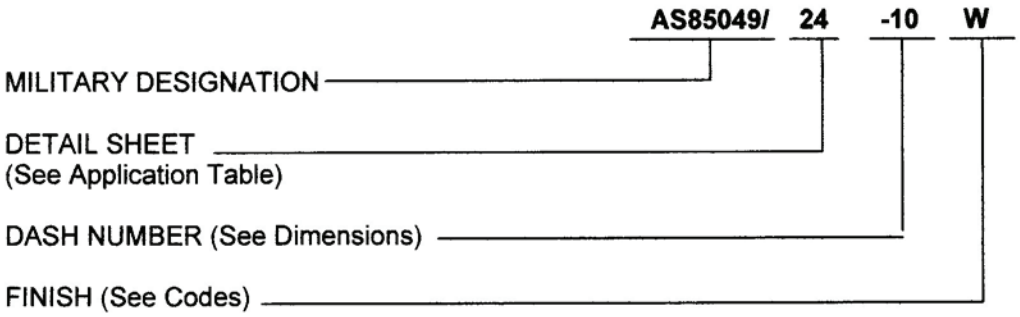


Figure 29. Non-Environmental EMI-RFI Backshell AS85049/23 (Sheet 10 of 10)

PART NUMBER DESIGNATION



MATERIAL and FINISH

"W" – Cadmium, Olive Drab 1000 hr Salt Spray
"N" – Electroless Nickel (not for Navy use)
"B" – Black Cadmium
"S" - Passivate

Component	Material	Finish
Body	Aluminum alloy in accordance with MIL-C-85049	1/ N, 2/ W
Body	Corrosion resistant steel in accordance with MIL-C-85049	B, S

1/ Not for Navy use. Restricted to Air Force Space applications only.
2/ W finish is not for use in space application.

APPLICATION DATA

M85049	Application
/8	FOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS. ARMOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS MAY BE ACHIEVED BY REVERSING THE FERRULES AND GROMMETS.
/9	FOR ENVIRONMENTAL APPLICATIONS ONLY AND IS TYPE A (/8) LESS THE REAR ADAPTER AND FERRULES AND WITH THE GROMMET REPLACING THE FERRULES.
/24	FOR SHIELD TERMINATION APPLICATIONS ONLY AND IS TYPE A (/8) LESS THE REAR ADAPTER AND GROMMET. (NON-ENVIRONMENTAL)

Figure 30. Non-Environmental EMI-RFI Backshell AS85049/24 (Sheet 1 of 10)

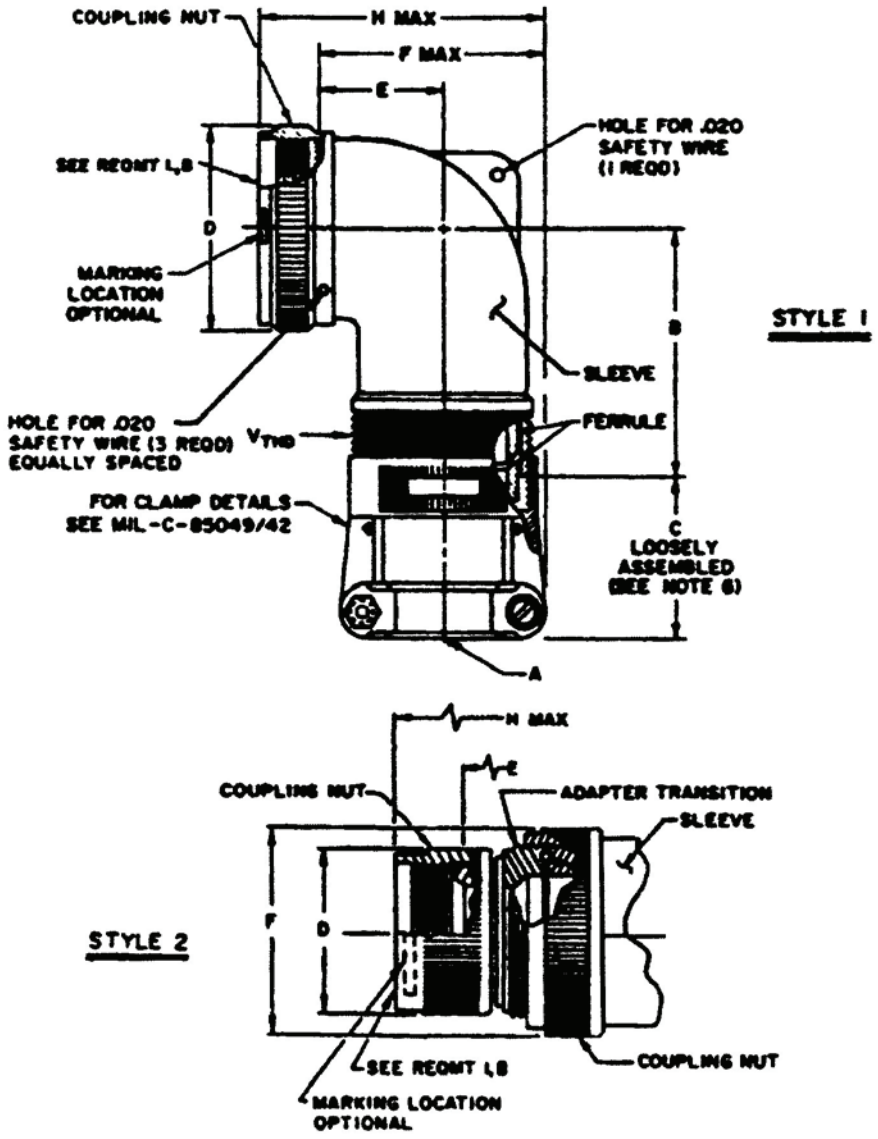


Figure 30. Non-Environmental EMI-RFI Backshell AS85049/24 (Sheet 2 of 10)

DIMENSIONS

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
1	3	X	X	X	4	.125	.250	1	1.800	1.027	.669
2					6	.250	.437	2	1.320	1.027	.669
3	X	8	8S	8	4	.125	.250	1	1.200	1.027	.617
4		10	10S, 10SL	10	4	.125	.312	1	1.920	1.027	.734
5					6	.250	.375	1	1.320	1.027	.734
6	7	12	12,12S	12	4	.125	.312	1	1.940	1.027	.858
7					6	.250	.437	1	1.940	1.027	.858
8					10	.350	.500	1	1.335	1.027	.858
9	12	14	14,14S	14	6	.250	.437	1	2.010	1.027	.984
10					10	.350	.575	1	1.655	1.027	.984

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
1	.636	.625-24 UNEF	1.18	-	1.57
2	1.386	.750-20 UNEF	2.02	.858	2.41
3	.541	.625-24 UNEF	1.09	-	1.48
4	.636	.625-24 UNEF	1.18	-	1.57
5	.636	.750-20 UNEF	1.27	-	1.66
6	.641	.625-24 UNEF	1.18	-	1.57
7	.641	.750-20 UNEF	1.28	-	1.67
8	.641	1.000-20 UNEF	1.37	-	1.76
9	.741	.750-20 UNEF	1.38	-	1.77
10	.741	1.000-20 UNEF	1.47	-	1.86

Figure 30. Non-Environmental EMI-RFI Backshell AS85049/24 (Sheet 3 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
11	19	16	16,16S	16	6	.250	.437	1	2.100	1.027	1.112
12					12	.500	.700	1	1.745	1.059	1.112
13	27	18	18	18	10	.350	.625	1	2.270	1.027	1.218
14					16	.625	.779	1	1.920	1.156	1.218
15	37	20	20	20	10	.350	.625	1	2.270	1.027	1.345
16					16	.625	.904	1	1.920	1.156	1.345
17		22	22	22	12	.500	.750	1	2.380	1.059	1.468
18					20	.875	1.029	1	2.025	1.375	1.468
19		24	24	24	12	.500	.750	1	2.380	1.059	1.593
20					20	.875	1.144	1	2.025	1.375	1.593

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
11	.926	.750-20 UNEF	1.59	-	1.98
12	.926	1.1875-18 UNEF	1.77	-	2.15
13	1.016	1.000-20 UNEF	1.80	-	2.19
14	1.016	1.4375-18 UNEF	1.97	-	2.36
15	1.016	1.000-20 UNEF	1.80	-	2.19
16	1.016	1.4375-18 UNEF	1.97	-	2.36
17	1.166	1.1875-18 UNEF	2.11	-	2.50
18	1.166	1.750-10 UNS	2.29	-	2.68
19	1.166	1.1875-18 UNEF	2.11	-	2.50
20	1.166	1.750-18 UNS	2.29	-	2.68

Figure 30. Non-Environmental EMI-RFI Backshell AS85049/24 (Sheet 4 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
21			28		16	.625	.937	1	2.550	1.156	1.969
22					24	1.000	1.375	1	2.195	1.500	1.969
23			32		16	.625	.937	1	2.800	1.156	2.219
24					20	.875	1.250	1	2.800	1.375	2.219
25					28	1.250	1.625	1	2.445	1.781	2.219
26			36		16	.625	.937	1	2.770	1.156	2.469
27					24	1.000	1.375	1	2.770	1.500	2.469
28					32	1.437	1.840	1	2.415	1.830	2.469
29			40		16	.625	.937	1	2.770	1.156	2.719
30					24	1.000	1.375	1	2.770	1.500	2.719

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
21	1.266	1.4375-18 UNEF	2.33	-	2.88
22	1.266	2.000-18 UNS	2.51	-	3.06
23	1.616	1.4375-18 UNEF	2.81	-	3.36
24	1.616	1.750-18 UNS	2.81	-	3.36
25	1.616	2.250-16 UN	3.07	-	3.62
26	1.816	1.4375-18 UNEF	3.13	-	3.68
27	1.816	2.000-18 UNS	3.13	-	3.68
28	1.816	2.500-18 UN	3.39	-	3.94
29	2.566	1.4375-18 UNEF	3.88	-	4.43
30	2.566	2.000-18 UNS	3.88	-	4.43

Figure 30. Non-Environmental EMI-RFI Backshell AS85049/24 (Sheet 5 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
31			40		32	1.437	1.875	1	2.415	1.830	2.719
32					16	.625	.937	1	2.770	1.156	2.969
33			44		24	1.000	1.375	1	2.770	1.500	2.969
34					32	1.437	1.875	1	2.415	1.830	2.969
35					16	.625	.937	1	2.770	1.156	3.219
36			48		24	1.000	1.375	1	2.770	1.500	3.219
37					32	1.437	1.875	1	2.415	1.830	3.219
38	61				12	.500	.750	1	2.380	1.059	1.653
39					20	.875	1.184	1	2.025	1.375	1.653
40	19	16	16,16S	16	10	.350	.625	1	2.100	1.027	1.112

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
31	2.566	2.500-16 UN	4.14	-	4.69
32	2.566	1.437-18 UNEF	3.88	-	4.43
33	2.566	2.000-18 UNS	3.88	-	4.43
34	2.566	2.500-16 UN	4.14	-	4.69
35	2.566	1.4375-18 UNEF	3.88	-	4.43
36	2.566	2.000-18 UNS	3.88	-	4.43
37	2.566	2.500-16 UN	4.14	-	4.69
38	1.166	1.1875-18 UNEF	2.11	-	2.50
39	1.166	1.750-18 UNS	2.29	-	2.68
40	.926	1.000-20 UNEF	1.66	-	2.05

Figure 30. Non-Environmental EMI-RFI Backshell AS85049/24 (Sheet 6 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
41	27	18	18	18	4	.125	.312	1	2.270	1.027	1.218
42					6	.250	.437	1	2.270	1.027	1.218
43	37	20	20	20	6	.250	.437	1	2.270	1.027	1.345
44		22	22	22	4	.125	.312	1	2.380	1.027	1.468
45					6	.250	.437	1	2.380	1.027	1.468
46		24	24	24	10	.350	.625	1	2.380	1.027	1.593
47			36		12	.500	.750	1	2.770	1.059	2.469
48			40		12	.500	.750	1	2.770	1.059	2.719
49		10	10S, 10SL	10	6	.250	.437	2	1.940	1.027	.734
50	12	14	14,14S	14	12	.500	.750	2	2.270	1.059	.984

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
41	1.016	.625-24 UNEF	1.80	-	2.19
42	1.016	.750-20 UNEF	1.80	-	2.19
43	1.016	.750-20 UNEF	1.80	-	2.19
44	1.166	.625-24 UNEF	2.11	-	2.50
45	1.166	.750-20 UNEF	2.11	-	2.50
46	1.166	1.000-20 UNEF	2.11	-	2.50
47	1.816	1.1875-18 UNEF	3.13	-	3.68
48	1.816	1.1875-18 UNEF	3.88	-	4.43
49	1.381	.750-20 UNEF	2.03	.858	2.42
50	1.766	1.1875-18 UNEF	2.61	1.218	3.00

Figure 30. Non-Environmental EMI-RFI Backshell AS85049/24 (Sheet 7 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
51	19	16	16,16S	16	16	.625	.937	2	2.380	1.156	1.112
52	27	18	18	18	12	.500	.750	1	2.270	1.059	1.218
53	61				16	.625	.937	1	2.025	1.156	1.863
54	37	20	20	20	12	.500	.750	1	2.270	1.059	1.345
55					20	.875	1.250	2	2.550	1.375	1.345
56		22	22	22	10	.350	.625	1	2.380	1.027	1.468
57					16	.625	.937	1	2.380	1.156	1.468
58					20	.875	1.250	2	2.550	1.375	1.468
59		24	24	24	16	.625	.937	1	2.380	1.156	1.593
60			28		12	.500	.750	1	2.550	1.059	1.969

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
51	1.916	1.4375-18 UNEF	2.87	1.468	3.26
52	1.016	1.1875-18 UNEF	1.86	-	2.25
53	1.166	1.4375-18 UNEF	2.14	-	2.53
54	1.016	1.1875-18 UNEF	1.86	-	2.25
55	2.016	1.750-18 UNS	3.14	1.969	3.53
56	1.166	1.000-20 UNEF	2.11	-	2.50
57	1.166	1.4375-18 UNEF	2.12	-	2.51
58	2.016	1.750-18 UNS	3.14	1.969	3.53
59	1.166	1.4375-18 UNEF	2.14	--	2.53
60	1.266	1.1875-18 UNEF	2.33	--	2.88

Figure 30. Non-Environmental EMI-RFI Backshell AS85049/24 (Sheet 8 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector: MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III	Clamp Size	A (see note 6) Wire Bundle Accommodation Range: Min	Max	Style	B ±.125	C Ref	D Dia Max
61			28		20	.875	1.250	1	2.550	1.375	1.969
62			32		24	1.000	1.375	1	2.800	1.500	2.219
63			36		20	.875	1.250	1	2.770	1.375	2.469
64					28	1.250	1.625	1	2.770	1.781	2.469
65			40		20	.875	1.250	1	2.770	1.375	2.719
66					28	1.250	1.625	1	2.770	1.781	2.719
67			44		20	.875	1.250	1	2.770	1.375	2.969
68					28	1.250	1.625	1	2.770	1.781	2.969
69			48		20	.875	1.250	1	2.770	1.375	3.219
70					28	1.250	1.625	1	2.770	1.781	3.219

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
61	1.266	1.750-18 UNS	2.39	-	2.94
62	1.616	2.000-18 UNS	2.86	-	3.41
63	1.816	1.750-18 UNS	3.13	-	3.68
64	1.816	2.250-16 UN	3.27	-	3.82
65	2.566	1.750-18 UNS	3.88	-	4.43
66	2.566	2.250-16 UN	4.02	-	4.57
67	2.566	1.750-18 UNS	3.88	-	4.43
68	2.566	2.250-16 UN	4.02	-	4.57
69	2.566	1.750-18 UNS	3.88	-	4.43
70	2.566	2.250-16 UN	4.02	-	4.57

Figure 30. Non-Environmental EMI-RFI Backshell AS85049/24 (Sheet 9 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
71	7	12	12,12S	12	10	.350	.625	2	2.100	1.027	.858
72	27	18	18	18	16	.625	.937	2	2.380	1.156	1.218
73	X	24	24	24	20	.875	1.250	2	2.550	1.375	1.593
74	12	14	14,14S	14	4	.125	.312	1	2.010	1.027	.984
75	19	16	16,16S	16	4	.125	.312	1	2.100	1.027	1.112

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
71	1.686	1.000-20 UNEF	2.42	1.112	2.81
72	1.925	1.4375-18 UNEF	2.88	1.468	3.27
73	2.026	1.750-18 UNS	3.15	1.969	3.54
74	.741	.625-24 UNEF	1.31	-	1.70
75	.926	.625-24 UNEF	1.59	-	1.98

NOTES:

1. Dimensions are in inches
2. Dimensions are after plating.
3. Clamp assembly screws - Corrosion resistant steel in accordance with MIL-C-85049 passivated per QQ-P-35.
4. These accessories are for shield termination.
5. Style 2 is not supplied with O-ring

SUPERSESSION DATA:

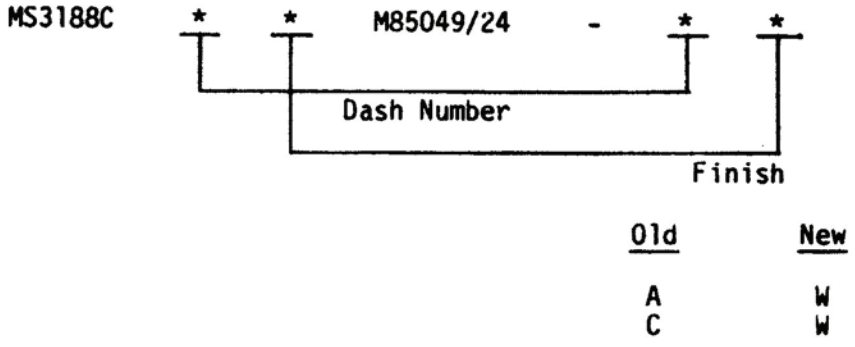
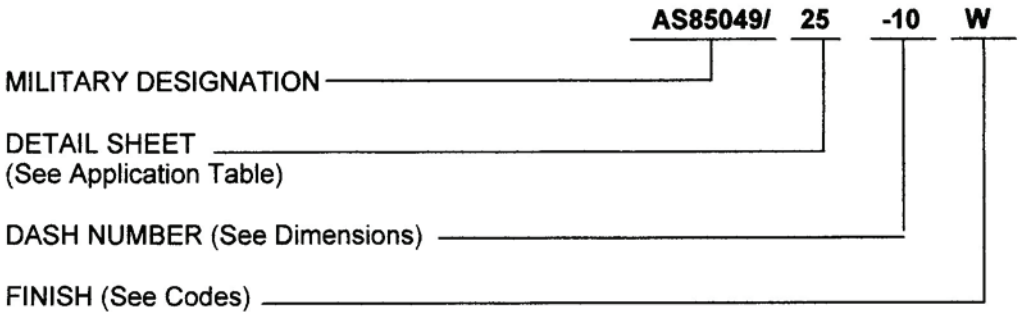


Figure 30. Non-Environmental EMI-RFI Backshell AS85049/24 (Sheet 10 of 10)

PART NUMBER DESIGNATION



MATERIAL and FINISH

"W" – Cadmium, Olive Drab 1000 hr Salt Spray
"N" – Electroless Nickel (not for Navy use)
"B" – Black Cadmium
"S" - Passivate

Component	Material	Finish
Body	Aluminum alloy in accordance with MIL-C-85049	1/ N, 2/ W
Body	Corrosion resistant steel in accordance with MIL-C-85049	B, S

1/ Not for Navy use. Restricted to Air Force Space applications only.
2/ W finish is not for use in space application.

APPLICATION DATA

M85049	Application
/10	FOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS. ARMOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS MAY BE ACHIEVED BY REVERSING THE FERRULES AND GROMMETS.
/11	FOR ENVIRONMENTAL APPLICATIONS ONLY AND ARE TYPE A (/10) LESS THE REAR ADAPTER AND FERRULES AND WITH THE GROMMET REPLACING THE FERRULES.
/25	FOR SHIELD TERMINATION APPLICATIONS ONLY AND ARE TYPE A (/10) LESS THE REAR ADAPTER AND GROMMET. (NON-ENVIRONMENTAL)

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 1 of 20)

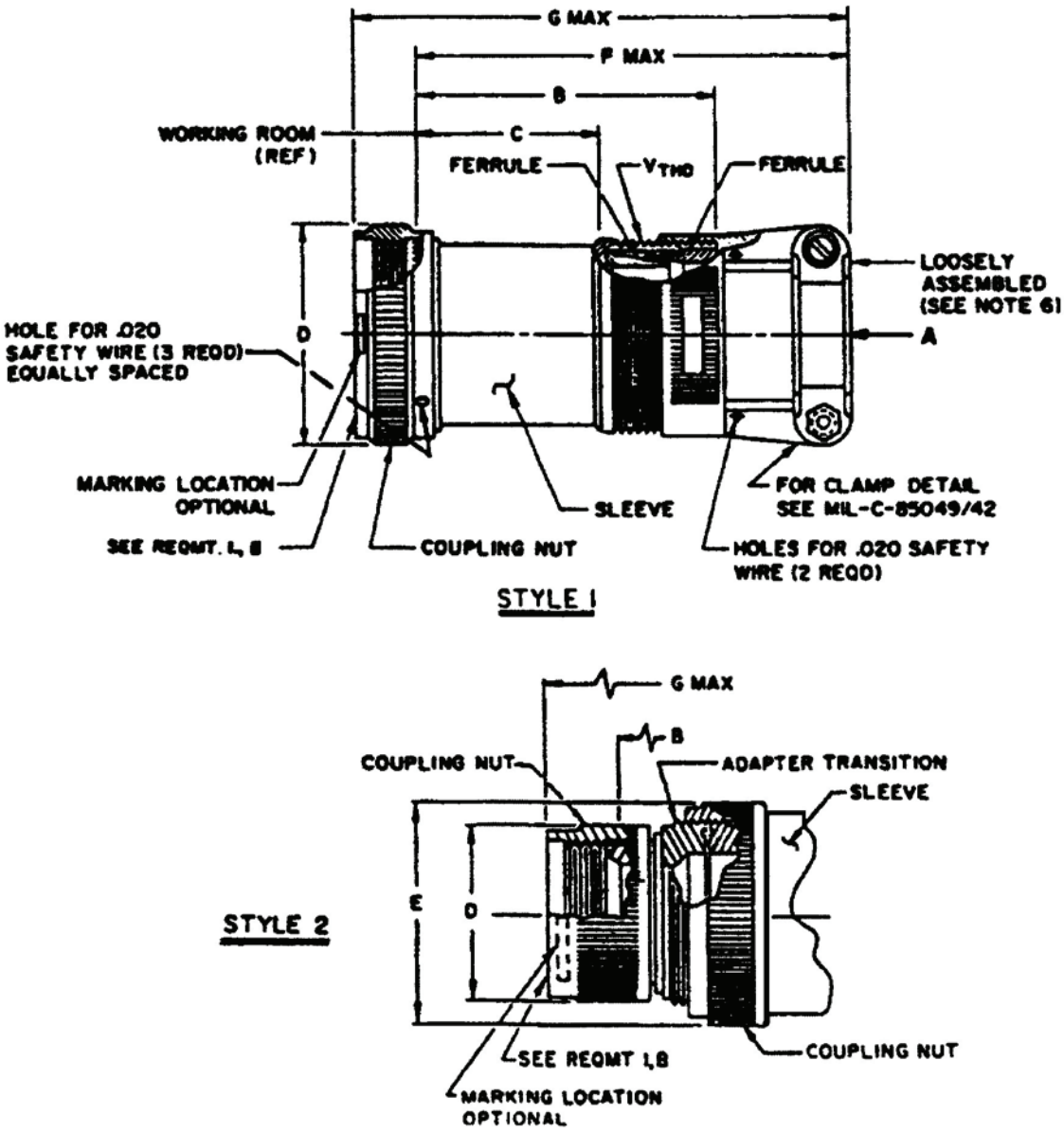
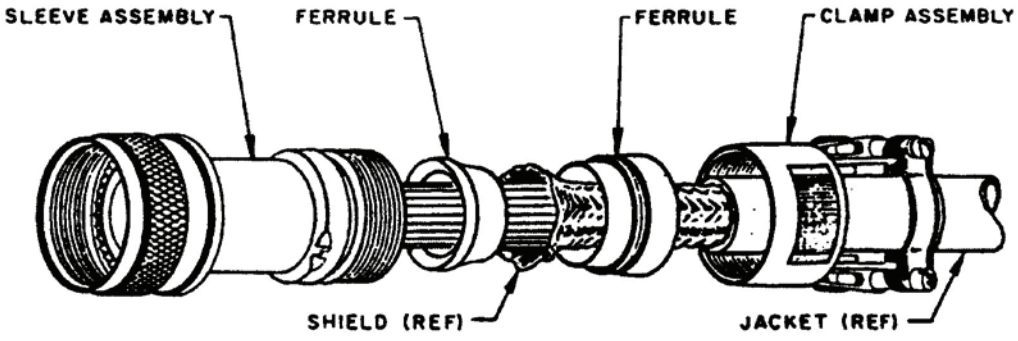
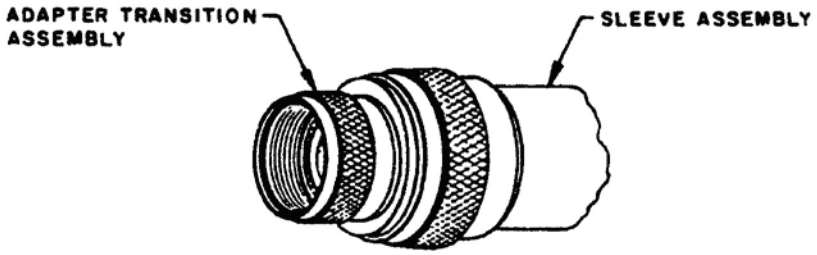


Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 2 of 20)



STYLE 1
SHIELD



STYLE 2

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 3 of 20)

DIMENSIONS

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max			
01	3				4	.125	.250	1	2.00	.669
02									3.00	
03					6	.250	.437	2	2.75	.669
04									3.75	
05		8	8S	8	4	.125	.250	1	2.00	.617
06									3.00	
07					6	.250	.437	2	2.75	.617
08									3.75	
09		10	10S, 10SL	10	4	.125	.312	1	2.00	.734
10									3.00	
11					6	.250	.437	2	2.75	.734
12									3.75	
13	7	12	12, 12S	12	6	.250	.437	1	2.00	.858
14									3.00	
15					10	.350	.625	2	2.75	.858
16									3.75	
17	12	14	14, 14S	14	10	.350	.575	1	2.00	.984
18									3.00	
19					12	.500	.750	2	2.75	.984
20									3.75	

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 4 of 20)

DIMENSIONS (Continued)

Dash No.	C Ref	V Thread Class 2A	E Dia Max	F Max	G Max
01	1.06	.625-24 UNEF	-	3.15	3.51
02	2.06			4.15	4.51
03	1.81	.750-20 UNEF	.858	3.90	4.26
04	2.81			4.90	5.26
05	1.06	.625-24 UNEF	-	3.15	3.51
06	2.06			4.15	4.51
07	1.81	.750-20 UNEF	.858	3.90	4.26
08	2.81			4.90	5.26
09	1.06	.625-24 UNEF	-	3.15	3.51
10	2.06			4.15	4.51
11	1.81	.750-20 UNEF	.858	3.90	4.26
12	2.81			4.90	5.26
13	1.06	.750-20 UNEF	-	3.15	3.51
14	2.06			4.15	4.51
15	1.67	1.000-20 UNEF	1.112	3.90	4.26
16	2.67			4.90	5.26
17	0.92	1.000-20 UNEF	-	3.15	3.51
18	1.92			4.15	4.51
19	1.67	1.1875-18 UNEF	1.218	3.93	4.29
20	2.67			5.04	5.29

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 5 of 20)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max			
21	19	16	16,16S	16	12	.500	.700	1	2.00	1.112
22									3.00	
23					16	.625	.937	2	2.75	1.112
24									3.75	
25	27	18	18	18	10	.350	.625	1	2.00	1.218
26									3.00	
27					12	.500	.750	1	2.00	1.218
28									3.00	
29					16	.625	.937	2	2.75	1.218
30									3.70	
31	37	20	20	20	10	.350	.625	1	3.00	1.345
32									4.00	
33					12	.500	.750	1	3.00	1.345
34									4.00	
35					16	.625	.937	2	3.75	1.345
36									4.75	
37					20	.875	1.250	2	3.75	1.345
38									4.75	
39		22	22	22	10	.350	.625	1	3.00	1.468
40									4.00	

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 6 of 20)

DIMENSIONS (Continued)

Dash No.	C Ref	V Thread Class 2A	E Dia Max	F Max	G Max
21	0.92	1.1875-18 UNEF	-	3.18	3.54
22	1.92			4.18	4.54
23	1.67	1.4375-18 UNEF	1.468	4.02	4.38
24	2.67			5.02	5.38
25	0.92	1.000-20 UNEF	-	3.15	3.51
26	1.92			4.15	4.51
27	0.92	1.1875-18 UNEF	-	3.18	3.54
28	1.92			4.18	4.54
29	1.67	1.4375-18 UNEF	1.468	4.02	4.38
30	2.67			5.02	5.38
31	1.92	1.000-20 UNEF	-	4.15	4.51
32	2.92			5.15	5.51
33	1.92	1.1875-18 UNEF	-	4.18	4.54
34	2.92			5.18	5.54
35	2.67	1.4375-18 UNEF	1.468	5.02	5.38
36	3.67			6.02	6.38
37	2.67	1.750-18 UNS	1.969	5.24	5.60
38	3.67			6.24	6.60
39	1.92	1.000-20 UNEF	-	4.15	4.51
40	2.92			5.15	5.51

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 7 of 20)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max			
41		22	22	22	12	.500	.750	1	3.00	1.468
42									4.00	
43					16	.625	.937	1	3.00	1.468
44									4.00	
45					20	.875	1.250	2	3.75	1.468
46									4.75	
47		24	24	24	12	.500	.750	1	3.00	1.593
48									4.00	
49					16	.625	.812	1	3.00	1.593
50									4.00	
51					16	.625	.937	1	3.00	1.593
52									4.00	
53					20	.875	1.250	2	3.75	1.593
54									4.75	
55			28		12	.500	.750	1	3.00	1.969
56									4.00	
57					16	.625	.937	1	3.00	1.969
58									4.00	
59					20	.875	1.250	1	3.00	1.969
60									4.00	

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 8 of 20)

DIMENSIONS (Continued)

Dash No.	C Ref	V Thread Class 2A	E Dia Max	F Max	G Max
41	1.92	1.1875-18 UNEF	-	4.18	4.54
42	2.92			5.18	5.54
43	1.92	1.4375-18 UNEF	-	4.27	4.63
44	2.92			5.27	5.63
45	2.67	1.750-18 UNS	1.969	5.24	5.60
46	3.67			6.24	6.60
47	1.92	1.1875-18 UNEF	-	4.18	4.54
48	2.92			5.18	5.54
49	1.92	1.4375-18 UNEF	-	4.27	4.63
50	2.92			5.27	5.63
51	1.92	1.4375-18 UNEF	-	4.27	4.63
52	2.92			5.27	5.63
53	2.67	1.750-18 UNS	1.969	5.24	5.60
54	3.67			6.24	6.60
55	1.92	1.1875-18 UNEF	-	4.16	4.68
56	2.92			5.16	5.68
57	1.92	1.4375-18 UNEF	-	4.26	4.78
58	2.92			5.26	5.78
59	1.92	1.750-18 UNS	-	4.48	5.00
60	2.92			5.48	6.00

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 9 of 20)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max			
61			28		24	1.000	1.375	1	3.00	1.969
62									4.00	
63			32		16	.625	.937	1	3.00	2.219
64									4.00	
65					20	.875	1.250	1	3.00	2.219
66									4.00	
67					24	1.000	1.375	1	3.00	2.219
68									4.00	
69					28	1.250	1.625	1	3.00	2.219
70									4.00	
71			36		20	.875	1.250	1	4.00	2.469
72									5.00	
73					24	1.000	1.375	1	4.00	2.469
74									5.00	
75					28	1.250	1.625	1	4.00	2.469
76									5.00	
77					32	1.437	1.875	2	4.88	2.469
78									5.88	
79			40		20	.875	1.250	1	4.00	2.719
80									5.00	

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 10 of 20)

DIMENSIONS (Continued)

Dash No.	C Ref	V Thread Class 2A	E Dia Max	F Max	G Max
61	1.92	2.000-18 UNS	-	4.60	5.12
62	2.92			5.60	6.12
63	1.92	1.4375-18 UNEF	-	4.26	4.78
64	2.92			5.26	5.78
65	1.92	1.750-18 UNS	-	4.48	5.00
66	2.92			5.48	6.00
67	1.92	2.000-18 UNS	-	4.60	5.12
68	2.92			5.60	6.12
69	1.92	2.250-16 UN	-	4.89	5.41
70	2.92			5.89	6.41
71	2.92	1.750-18 UNS	-	5.49	6.01
72	3.92			6.49	7.01
73	2.92	2.000-18 UNS	-	5.60	6.12
74	3.92			6.60	7.12
75	2.92	2.250-16 UN	-	5.89	6.41
76	3.92			6.89	7.41
77	3.80	2.500-16 UN	2.719	6.81	7.33
78	4.80			7.81	8.33
79	2.92	1.750-18 UNS	-	5.48	6.00
80	3.92			6.48	7.00

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 11 of 20)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max			
81			40		24	1.000	1.375	1	4.00	2.719
82									5.00	
83					28	1.250	1.625	1	4.00	2.719
84									5.00	
85					32	1.437	1.875	1	4.00	2.719
86									5.00	
87			44		20	.875	1.250	1	4.00	2.969
88									5.00	
89					24	1.000	1.375	1	4.00	2.969
90									5.00	
91					28	1.250	1.625	1	4.00	2.969
92									5.00	
93					32	1.437	1.875	1	4.00	2.969
94									5.00	
95			48		20	.875	1.250	1	4.00	3.219
96									5.00	
97					24	1.000	1.375	1	4.00	3.219
98									5.00	
99					28	1.250	1.625	1	4.00	3.219
100									5.00	

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 12 of 20)

DIMENSIONS (Continued)

Dash No.	C Ref	V Thread Class 2A	E Dia Max	F Max	G Max
81	2.92	2.000-18 UNS	-	5.60	6.12
82	3.92			6.60	7.12
83	2.92	2.250-16 UN	-	5.89	6.41
84	3.92			6.89	7.41
85	2.92	2.500-16 UN	-	5.93	6.45
86	3.92			6.93	7.45
87	2.92	1.750-18 UNS	-	5.48	6.00
88	3.92			6.48	7.00
89	2.92	2.000-18 UNS	-	5.60	6.12
90	3.92			6.60	7.12
91	2.92	2.250-16 UN	-	5.89	6.41
92	3.92			6.89	7.41
93	2.92	2.500-16 UN	-	5.93	6.45
94	3.92			6.93	7.45
95	2.92	1.750-18 UNS	-	5.48	6.00
96	3.92			6.48	7.00
97	2.92	2.000-18 UNS	-	5.60	6.12
98	3.92			6.60	7.12
99	2.92	2.250-16 UN	-	5.89	6.41
100	3.92			6.89	7.41

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 13 of 20)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max			
101			48		32	1.437	1.875	1	4.00	3.219
102									5.00	
103	61				12	.500	.750	1	3.00	1.653
104									4.00	
105					16	.625	.937	1	3.00	1.653
106									4.00	
107					20	.875	1.250	2	3.75	1.653
108									4.75	
109					24	1.000	1.375	2	3.75	1.653
110									4.75	
111	7	12	12,12S	12	10	.350	.500	1	2.00	.858
112	19	16	16,16S	16	6	.250	.437	1	2.00	1.112
113									3.00	
114	7	12	12,12S	12	4	.125	.312	1	2.00	.858
115									3.00	
116	12	14	14,14S	14	6	.250	.437	1	2.00	.984
117									3.00	
118	19	16	16,16S	16	10	.350	.625	1	2.00	1.112
119									3.00	

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 14 of 20)

DIMENSIONS (Continued)

Dash No.	C Ref	V Thread Class 2A	E Dia Max	F Max	G Max
101	2.92	2.500-16 UN	-	5.93	6.45
102	3.92			6.93	7.45
103	1.92	1.1875-18 UNEF	-	4.18	4.54
104	2.92			5.18	5.54
105	1.92	1.4375-18 UNEF	-	4.27	4.63
106	2.92			5.27	5.63
107	2.67	1.750-18 UNS	1.969	5.24	5.60
108	3.67			6.24	6.60
109	2.67	2.000-18 UNS	1.969	5.37	5.73
110	3.67			6.37	6.73
111	1.00	1.000-20 UNEF	-	3.15	3.51
112	1.00	.750-20 UNEF	-	3.15	3.51
113	2.00			4.15	4.51
114	1.00	.625-24 UNEF	-	3.15	3.51
115	2.00			4.15	4.51
116	1.00	.750-20 UNEF	-	3.15	3.51
117	2.00			4.15	4.51
118	0.92	1.000-20 UNEF	-	3.15	3.51
119	1.92			4.15	4.51

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 15 of 20)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max			
120	27	18	18	18	4	.125	.312	1	2.00	1.218
121									3.00	
122					6	.250	.437	1	2.00	1.218
123									3.00	
124	37	20	20	20	6	.250	.437	1	3.00	1.345
125									4.00	
126		22	22	22	4	.125	.312	1	3.00	1.468
127									4.00	
128					6	.250	.437	1	3.00	1.468
129									4.00	
130		24	24	24	10	.350	.625	1	3.00	1.593
131									4.00	
132			36		12	.500	.750	1	4.00	2.469
133									5.00	
134			40		12	.500	.750	1	4.00	2.719
135									5.00	
136		10	10S, 10SL	10	6	.250	.375	1	2.00	.734
137									3.00	
138	7	12	12,12S	12	10	.350	.500	1	2.00	.858
139									3.00	

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 16 of 20)

DIMENSIONS (Continued)

Dash No.	C Ref	V Thread Class 2A	E Dia Max	F Max	G Max
120	0.92	.625-24 UNEF	-	3.15	3.51
121	1.92			4.15	4.51
122	0.92	.750-20 UNEF	-	3.15	3.51
123	1.92			4.15	4.51
124	1.92	.750-20 UNEF	-	4.15	4.51
125	2.92			5.15	5.51
126	1.92	.625-24 UNEF	-	4.15	4.51
127	2.97			5.15	5.51
128	1.92	.750-20 UNEF	-	4.15	4.51
129	2.92			5.15	5.51
130	1.92	1.000-20 UNEF	-	4.15	4.51
131	2.92			5.15	5.51
132	2.92	1.1875-18 UNEF	-	5.32	5.68
133	3.92			6.32	6.68
134	2.92	1.1875-18 UNEF	-	5.16	5.68
135	3.92			6.16	6.68
136	1.06	.750-20 UNEF	-	3.15	3.51
137	2.06			4.15	4.51
138	1.06	1.000-20 UNEF	-	3.15	3.51
139	2.06			4.15	4.51

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 17 of 20)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max			
140	37	20	20	20	16	.625	.904	1	3.00	1.345
141									4.00	
142		22	22	22	20	.875	1.029	1	3.00	1.468
143									4.00	
144		24	24	24	20	.875	1.144	1	3.00	1.593
145									4.00	
146			36		32	1.437	1.840	1	4.00	2.469
147									5.00	
148					16	.625	.937	1	4.00	2.469
149									5.00	
150	12	14	14,14S	14	4	.125	.312	1	2.00	.984
151									3.00	
152	19	16	16,16S	16	4	.125	.312	1	2.00	1.112
153									3.00	
154			44		16	.625	.937	1	4.00	2.969
155									5.00	
156			40		16	.625	.937	1	4.00	2.719
157									5.00	

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 18 of 20)

DIMENSIONS (Continued)

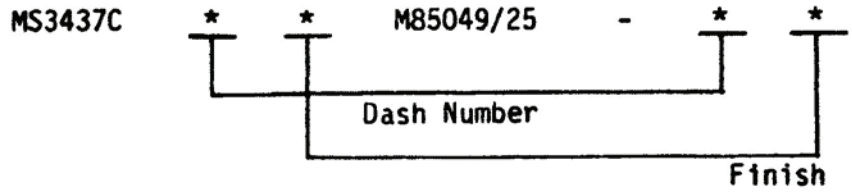
Dash No.	C Ref	V Thread Class 2A	E Dia Max	F Max	G Max
140	1.92	1.4375-18 UNEF	-	4.27	4.63
141	2.92			5.27	5.63
142	1.92	1.750-18 UNS	-	4.49	4.85
143	2.92			5.49	5.85
144	1.92	1.750-18 UNS	-	4.49	4.85
145	2.92			5.49	5.85
146	2.92	2.500-16 UN	-	5.93	6.45
147	3.92			6.93	7.45
148	2.92	1.4375-18 UNEF	-	5.26	5.78
149	3.92			6.26	6.78
150	0.92	.625-24 UNEF	-	3.15	3.51
151	1.92			4.15	4.51
152	0.92	.625-24 UNEF	-	3.15	3.51
153	1.92			4.15	4.51
154	2.92	1.4375-18 UNEF	-	5.26	5.78
155	3.92			6.26	6.78
156	2.92	1.4375-18 UNEF	-	5.26	5.78
157	3.92			6.26	6.78

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 19 of 20)

NOTES:

1. Dimensions are in inches
2. Dimensions are after plating.
3. Clamp assembly screws - Corrosion resistant steel in accordance with MIL-C-85049 passivated p QQ-P-35.
4. These accessories are for shield termination.
5. Style 2 is not supplied with O-ring

SUPERSESSION DATA:



Old	New
A	W
C	W
N	N
D	B
S	S

Figure 31. Non-Environmental EMI-RFI Backshell AS85049/25 (Sheet 20 of 20)

PART NUMBER DESIGNATION

M85049/26-1 MS3419	12 -12	N N

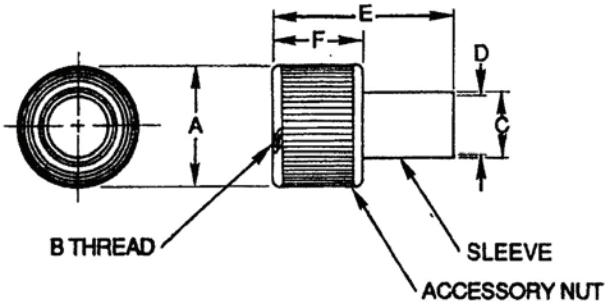
MILITARY DESIGNATION

DASH NUMBER (See Dimensions)

FINISH (See Finish Codes)

FINISH

MS3419	M85049	FINISH
C	-	CADMIUM, OLIVE DRAB
N	N	ELECTROLESS NICKEL
-	W	CADMIUM, OLIVE DRAB, 1000 HOUR SALT SPRAY



DIMENSIONS

Dash No.	For Connector Shell Size MIL-C-5015 Crimp	A +.000 -.045 Dia.	B Thread Class	C ±.010 Dia.	D ±.015 Dia.	E +.000 -.062	F +.000 -.062	M85049/ 26-2 RING, SHIELD CRIMP
-8	8S	.617	.500-20UNF	.337	.250	1.277	.540	-8
-10	10S,10SL	.734	.625-20UNEF	.488	.325	1.277	.540	-10
-12	12, 12S	.858	.750-20UNEF	.500	.420	1.277	.540	-12
-14	14, 14S	.984	.875-20UNEF	.620	.540	1.277	.540	-14
-16	16, 16S	1.112	1.000-20UNEF	.750	.670	1.277	.540	-16
-18	18	1.218	1.062-18UNEF	.880	.789	1.277	.540	-18
-20	20	1.345	1.188-18UNEF	1.000	.914	1.277	.540	-20
-22	22	1.468	1.312-18UNEF	1.120	1.039	1.277	.540	-22
-24	24	1.593	1.438-18UNEF	1.192	1.112	1.277	.540	-24
-28	28	1.969	1.750-18UNS	1.545	1.389	1.439	.702	-28
-32	32	2.219	2.000-18UNS	1.795	1.635	1.439	.702	-32
-36	36	2.469	2.250-16UN	2.045	1.850	1.439	.702	-36
-40	40	2.719	2.500-16UN	2.295	2.065	1.439	.702	-40
-44	44	2.969	2.750-16UN	2.545	2.320	1.439	.702	-44
-48	48	3.219	3.000-16UN	2.795	2.570	1.439	.702	-48

Figure 32. Non-Environmental EMI-RFI Backshell AS85049/26-1

PART NUMBER DESIGNATION

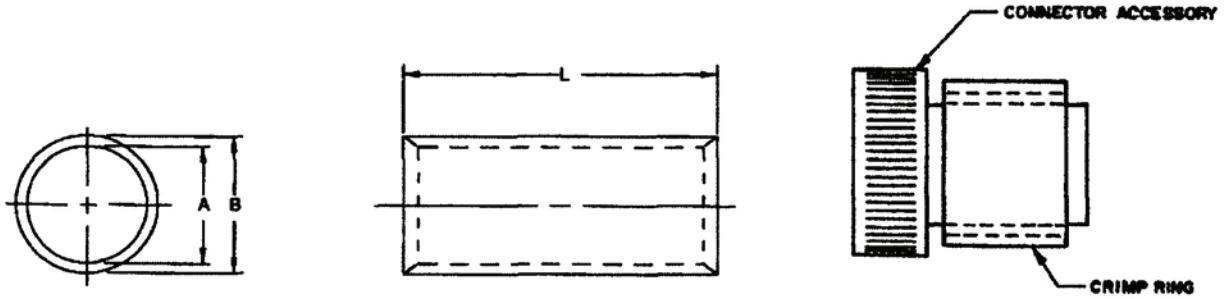
M85049/ 26-2 -12

MILITARY DESIGNATION

DETAIL SHEET

DASH NUMBER (See Dimensions)

FINISH – Tin Plate
MATERIAL - Copper



DIMENSIONS

Dash No.	Color Code	A Dia		B Dia		L
		Min.	Max.	Min.	Max.	±.015
-8	GREEN	.400	.410	.488	.458	.250
-10 -12	RED	.585	.595	.660	.680	
-14	BLUE	.705	.715	.780	.800	
-16	GRAY	.835	.845	.910	.930	
-18	BROWN	1.005	1.015	1.080	1.100	
-20	GREEN	1.125	1.135	1.200	1.220	
-22 -24	PINK	1.245	1.255	1.320	1.340	.440
-28	RED	1.665	1.675	1.740	1.760	
-32	GRAY	1.915	1.925	1.990	2.010	
-36	GREEN	2.165	2.175	2.240	2.260	
-40	ORANGE	2.415	2.425	2.490	2.510	
-44	YELLOW	2.665	2.675	2.740	2.760	
-48	BLUE	2.915	2.925	2.990	3.010	
-61	PURPLE	1.435	1.445	1.510	1.530	

Figure 33. Non-Environmental EMI-RFI Backshell AS85049/26-2 (Sheet 1 of 2)

CRIMP TOOLS

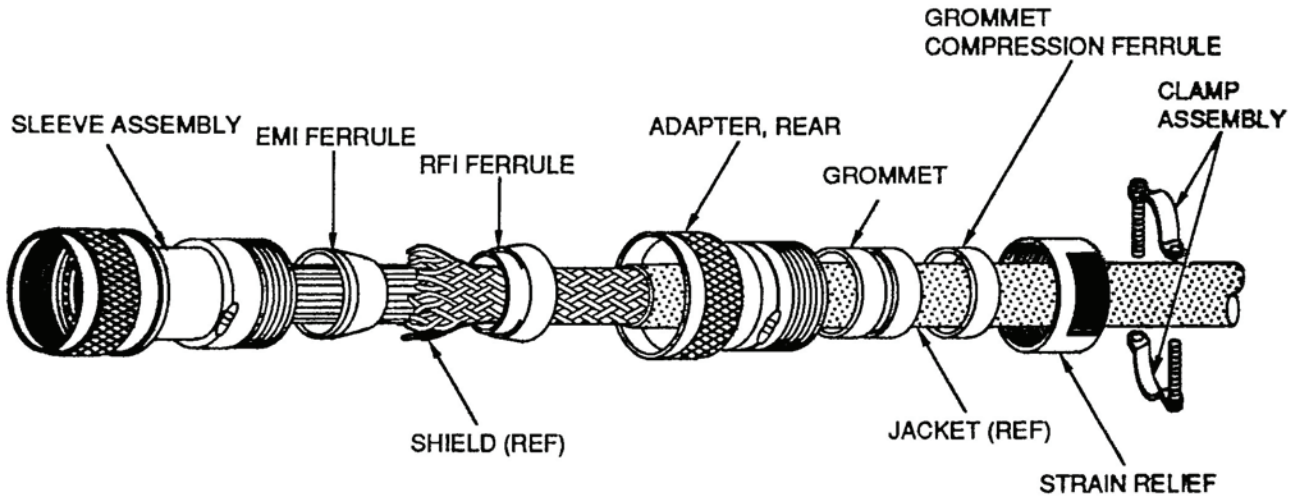
Mil Spec	T & B		Burndy	
	Tool No.	Die Set	Tool No.	Die Set
MS3161-8	13640	-	HYPRESS Y40LH	-
MS3161-10 or -12	13640	GS590	HYPRESS Y40LH	YK590
MS3161-14	13640	GS710	HYPRESS Y40LH	YK710
MS3161-16	13640	GS840	HYPRESS Y40LH	YK840
MS3161-18	13640	GS1010	HYPRESS Y40LH	YK1010
MS3161-20	13640	GS1130	HYPRESS Y40LH	YK1130
MS3161-22 or -24	13640	GS1250	HYPRESS Y40LH	YK1250
MS3161-28	13640	GS1670	HYPRESS Y40LH	YK1670
MS3161-32	13640	GS1920	HYPRESS Y40LH	YK1920
MS3161-36	13640	GS2170	HYPRESS Y40LH	YK2170
MS3161-40	13640	GS2420	HYPRESS Y40LH	YK2420
MS3161-44	13640	GS2670	HYPRESS Y40LH	YK2670
MS3161-48	13640	GS2920	HYPRESS Y40LH	YK2920
MS3161-61	13640	GS1440	HYPRESS Y40LH	YK1440

SUPERSESSION

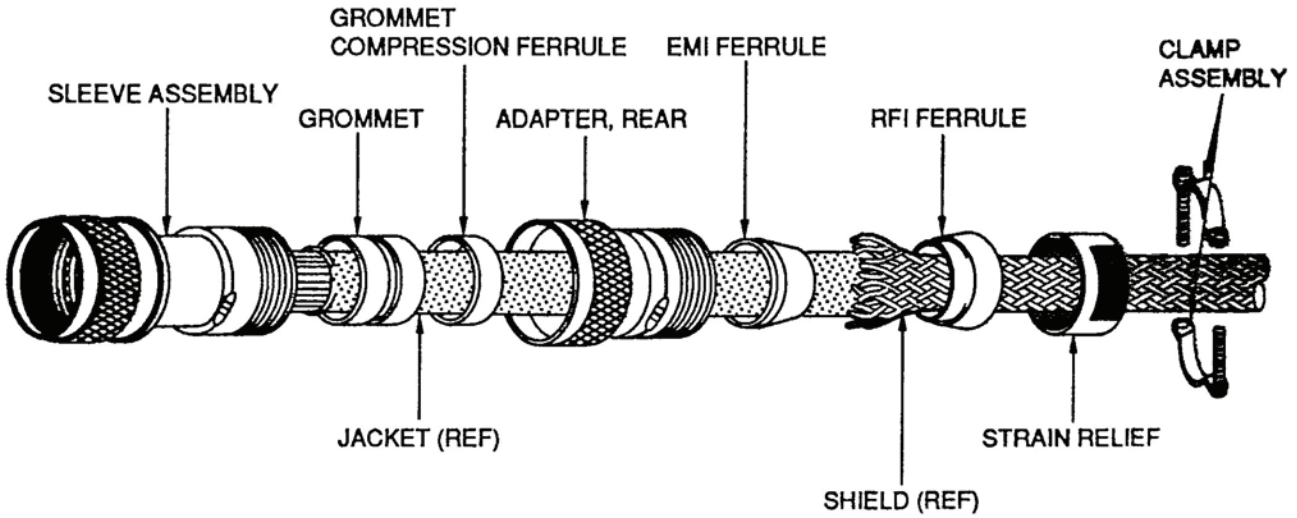
MS3161- * M85049/26-2- *

Dash Number

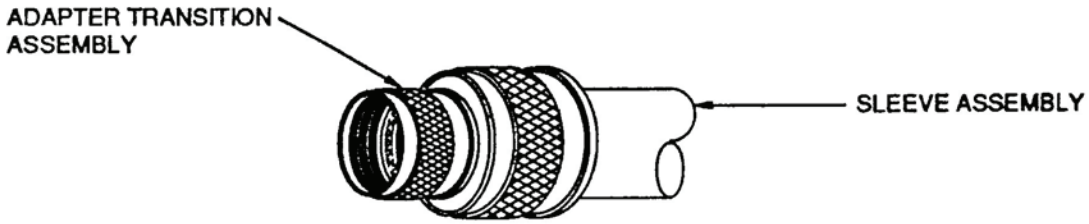
Figure 33. Non-Environmental EMI-RFI Backshell AS85049/26-2 (Sheet 2 of 2)



STYLE 1
SHIELD, ENVIRONMENTAL



STYLE 1
ARMOR, ENVIRONMENTAL



STYLE 2

Figure 34. Typical Environmental EMI-RFI Backshell

PART NUMBER DESIGNATION

AS85049/ 6 -10 W

MILITARY DESIGNATION

DETAIL SHEET
(See Application Table)

DASH NUMBER (See Dimensions)

FINISH (See Codes)

MATERIAL and FINISH

"W" – Cadmium, Olive Drab 1000 hr Salt Spray
"N" – Electroless Nickel (not for Navy use)
"B" – Black Cadmium
"S" - Passivate

Component	Material	Finish
Body	Aluminum alloy in accordance with MIL-C-85049	1/ N, 2/ W
Body	Corrosion resistant steel in accordance with MIL-C-85049	B, S

1/ Not for Navy use. Restricted to Air Force Space applications only.
2/ W finish is not for use in space application.

APPLICATION DATA

M85049	Application
/6	FOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS. ARMOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS MAY BE ACHIEVED BY REVERSING THE FERRULES AND GROMMETS.
/7	FOR ENVIRONMENTAL APPLICATIONS ONLY AND IS TYPE A (/6) LESS THE REAR ADAPTER AND FERRULES AND WITH THE GROMMET REPLACING THE FERRULES.
/23	FOR SHIELD TERMINATION APPLICATIONS ONLY AND IS TYPE A (/6) LESS THE REAR ADAPTER AND GROMMET. (NON-ENVIRONMENTAL)

Figure 35. Environmental EMI-RFI Backshell AS85049/6 (Sheet 1 of 10)

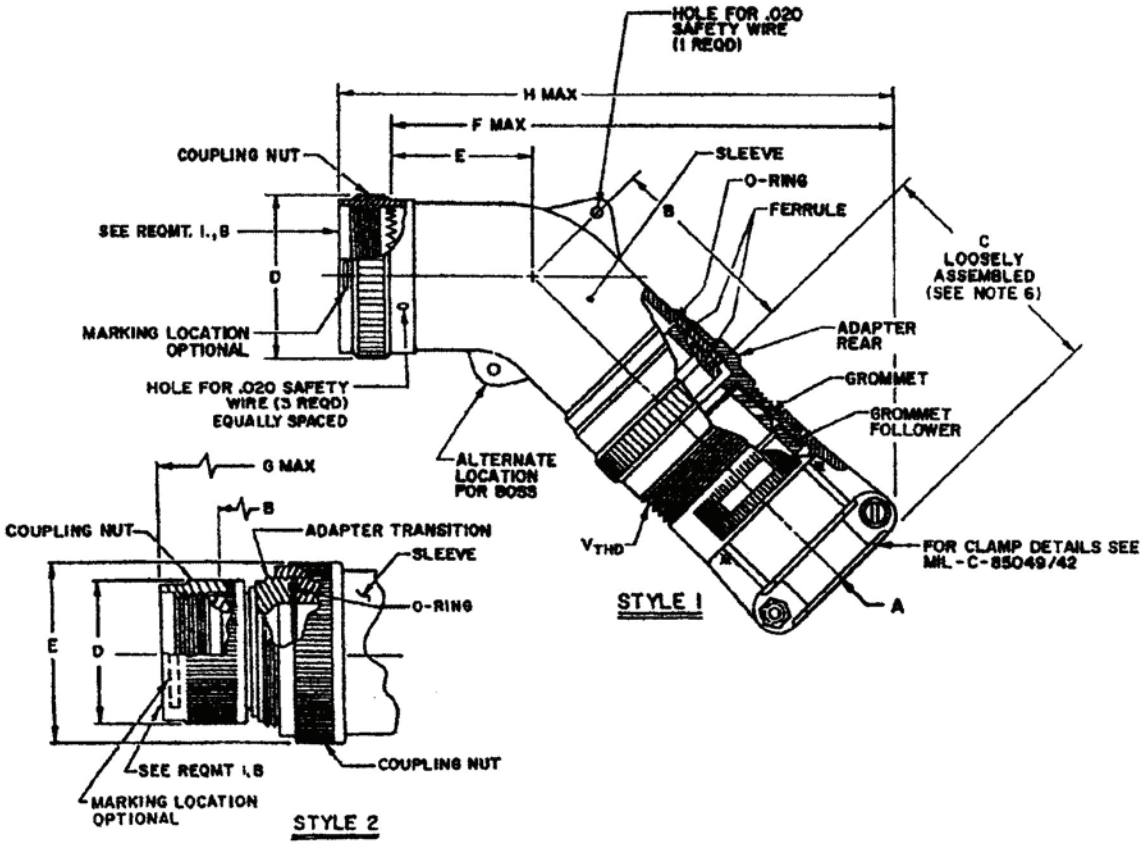


Figure 35. Environmental EMI-RFI Backshell AS85049/6 (Sheet 2 of 10)

DIMENSIONS

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
1	3	X	X	X	4	.125	.250	1	1.790	1.544	.669
2					6	.250	.437	2	1.910	1.544	.669
3	X	8	8S	8	4	.125	.250	1	1.182	1.544	.617
4		10	10S, 10SL	10	4	.125	.312	1	1.850	1.544	.734
5					6	.250	.375	1	1.245	1.544	.734
6	7	12	12,12S	12	4	.125	.312	1	1.910	1.544	.858
7					6	.250	.437	1	1.910	1.544	.858
8					10	.350	.500	1	1.910	1.844	.858
9	12	14	14,14S	14	6	.250	.437	1	2.000	1.544	.984
10					10	.350	.575	1	1.655	1.844	.984

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
1	.561	.625-24 UNEF	3.37	-	3.74
2	1.375	.750-20 UNEF	4.33	.858	4.70
3	.500	.625-24 UNEF	2.88	-	3.25
4	.561	.625-24 UNEF	3.41	-	3.78
5	.561	.750-20 UNEF	3.05	-	3.42
6	.625	.625-24 UNEF	3.52	-	3.89
7	.625	.750-20 UNEF	3.58	-	3.95
8	.625	1.000-20 UNEF	3.86	-	4.23
9	.688	.750-20 UNEF	3.71	-	4.08
10	.688	1.000-20 UNEF	3.74	-	4.11

Figure 35. Environmental EMI-RFI Backshell AS85049/6 (Sheet 3 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
11	19	16	16,16S	16	6	.250	.437	1	2.110	1.544	1.112
12					12	.500	.700	1	1.750	1.916	1.112
13	27	18	18	18	10	.350	.625	1	2.300	1.844	1.218
14					16	.625	.779	1	1.938	2.000	1.218
15	37	20	20	20	10	.350	.625	1	2.300	1.844	1.345
16					16	.625	.904	1	1.938	2.000	1.345
17		22	22	22	12	.500	.750	1	2.450	1.916	1.468
18					20	.875	1.029	1	2.093	2.230	1.468
19		24	24	24	12	.500	.750	1	2.450	1.916	1.593
20					20	.875	1.144	1	2.093	2.230	1.593

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
11	.781	.750-20 UNEF	3.88	-	4.25
12	.781	1.1875-18 UNEF	4.03	-	4.40
13	.968	1.000-20 UNEF	4.48	-	4.85
14	.968	1.4375-18 UNEF	4.49	-	4.86
15	.968	1.000-20 UNEF	4.48	-	4.85
16	.968	1.4375-18 UNEF	4.49	-	4.86
17	1.063	1.1875-18 UNEF	4.81	-	5.18
18	1.063	1.750-10 UNS	4.98	-	5.35
19	1.063	1.1875-18 UNEF	4.81	-	5.18
20	1.063	1.750-18 UNS	4.98	-	5.35

Figure 35. Environmental EMI-RFI Backshell AS85049/6 (Sheet 4 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
21			28		16	.625	.937	1	2.500	2.000	1.969
22					24	1.000	1.375	1	2.156	2.024	1.969
23			32		16	.625	.937	1	2.600	2.000	2.219
24					20	.875	1.250	1	2.600	2.230	2.219
25					28	1.250	1.625	1	2.250	2.550	2.219
26			36		16	.625	.937	1	2.690	2.000	2.469
27					24	1.000	1.375	1	2.690	2.024	2.469
28					32	1.437	1.840	1	2.344	2.600	2.469
29			40		16	.625	.937	1	2.690	2.000	2.719
30					24	1.000	1.375	1	2.690	2.024	2.719

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
21	1.188	1.4375-18 UNEF	5.11	-	5.64
22	1.188	2.000-18 UNS	5.09	-	5.62
23	1.250	1.4375-18 UNEF	5.24	-	5.77
24	1.250	1.750-18 UNS	5.52	-	6.05
25	1.250	2.250-16 UN	5.73	-	6.26
26	1.281	1.4375-18 UNEF	5.33	-	5.86
27	1.281	2.000-18 UNS	5.56	-	6.09
28	1.281	2.500-18 UN	5.95	-	6.48
29	2.031	1.4375-18 UNEF	6.08	-	6.61
30	2.031	2.000-18 UNS	6.31	-	6.84

Figure 35. Environmental EMI-RFI Backshell AS85049/6 (Sheet 5 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
31			40		32	1.437	1.875	1	2.344	2.600	2.719
32					16	.625	.937	1	2.690	2.000	2.969
33			44		24	1.000	1.375	1	2.690	2.024	2.969
34					32	1.437	1.875	1	2.344	2.600	2.969
35					16	.625	.937	1	2.690	2.000	3.219
36			48		24	1.000	1.375	1	2.690	2.024	3.219
37					32	1.437	1.875	1	2.344	2.600	3.219
38	61				12	.500	.750	1	2.450	1.916	1.653
39					20	.875	1.184	1	2.093	2.230	1.653
40	19	16	16,16S	16	10	.350	.625	1	2.110	1.844	1.112

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
31	2.031	2.500-16 UN	6.70	-	7.23
32	2.031	1.437-18 UNEF	6.08	-	6.61
33	2.031	2.000-18 UNS	6.31	-	6.84
34	2.031	2.500-16 UN	6.70	-	7.23
35	2.031	1.4375-18 UNEF	6.08	-	6.61
36	2.031	2.000-18 UNS	6.31	-	6.84
37	2.031	2.500-16 UN	6.70	-	7.23
38	1.063	1.1875-18 UNEF	4.81	-	5.18
39	1.063	1.750-18 UNS	4.98	-	5.35
40	.781	1.000-20 UNEF	4.16	-	4.53

Figure 35. Environmental EMI-RFI Backshell AS85049/6 (Sheet 6 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
41	27	18	18	18	4	.125	.312	1	2.300	1.544	1.218
42					6	.250	.437	1	2.300	1.544	1.218
43	37	20	20	20	6	.250	.437	1	2.300	1.544	1.345
44		22	22	22	4	.125	.312	1	2.450	1.544	1.468
45					6	.250	.437	1	2.450	1.544	1.468
46		24	24	24	10	.350	.625	1	2.450	1.844	1.593
47			36		12	.500	.750	1	2.690	1.916	2.469
48			40		12	.500	.750	1	2.690	1.916	2.719
49		10	10S, 10SL	10	6	.250	.437	2	1.910	1.544	.734
50	12	14	14,14S	14	12	.500	.750	2	2.300	1.916	.984

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
41	.968	.625-24 UNEF	4.13	-	4.50
42	.968	.750-20 UNEF	4.20	-	4.57
43	.968	.750-20 UNEF	4.20	-	4.57
44	1.063	.625-24 UNEF	4.34	-	4.71
45	1.063	.750-20 UNEF	4.40	-	4.77
46	1.063	1.000-20 UNEF	4.68	-	5.05
47	1.281	1.1875-18 UNEF	5.20	-	5.73
48	2.031	1.1875-18 UNEF	5.95	-	6.48
49	1.375	.750-20 UNEF	4.33	.858	4.70
50	1.717	1.1875-18 UNEF	5.36	1.218	5.73

Figure 35. Environmental EMI-RFI Backshell AS85049/6 (Sheet 7 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
51	18	16	16,16S	16	16	.625	.937	2	2.450	2.000	1.112
52	27	18	18	18	12	.500	.750	1	2.300	1.916	1.218
53	61				16	.625	.937	1	2.450	2.000	1.653
54	37	20	20	20	12	.500	.750	1	2.300	1.916	1.345
55					20	.875	1.250	2	2.500	2.230	1.345
56		22	22	22	10	.350	.625	1	2.450	1.844	1.468
57					16	.625	.937	1	2.450	2.000	1.468
58					20	.875	1.250	2	2.500	2.230	1.468
59		24	24	24	16	.625	.937	1	2.450	2.000	1.593
60			28		12	.500	.750	1	2.500	1.916	1.969

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
51	1.812	1.4375-18 UNEF	5.70	1.468	6.07
52	.968	1.1875-18 UNEF	4.61	-	4.98
53	1.063	1.4375-18 UNEF	4.95	-	5.32
54	.968	1.1875-18 UNEF	4.61	-	4.98
55	1.936	1.750-18 UNS	6.14	1.969	6.48
56	1.063	1.000-20 UNEF	4.68	-	5.05
57	1.063	1.4375-18 UNEF	4.95	-	5.32
58	1.936	1.750-18 UNS	6.14	1.969	6.51
59	1.063	1.4375-18 UNEF	4.95	--	5.32
60	1.188	1.1875-18 UNEF	4.97	--	5.50

Figure 35. Environmental EMI-RFI Backshell AS85049/6 (Sheet 8 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
61			28		20	.875	1.250	1	2.500	2.230	1.969
62			32		24	1.000	1.375	1	2.600	2.024	2.219
63			36		20	.875	1.250	1	2.690	2.230	2.469
64					28	1.250	1.625	1	2.690	2.550	2.469
65			40		20	.875	1.250	1	2.690	2.230	2.719
66					28	1.250	1.625	1	2.690	2.550	2.719
67			44		20	.875	1.250	1	2.690	2.230	2.969
68					28	1.250	1.625	1	2.690	2.550	2.969
69			48		20	.875	1.250	1	2.690	2.230	3.219
70					28	1.250	1.625	1	2.690	2.550	3.219

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
61	1.188	1.750-18 UNS	5.39	-	5.92
62	1.250	2.000-18 UNS	5.47	-	6.00
63	1.281	1.750-18 UNS	5.62	-	6.15
64	1.281	2.250-16 UN	6.08	-	6.61
65	2.031	1.750-18 UNS	6.37	-	6.90
66	2.031	2.250-16 UN	6.83	-	7.36
67	2.031	1.750-18 UNS	6.37	-	6.90
68	2.031	2.250-16 UN	6.83	-	7.36
69	2.031	1.750-18 UNS	6.37	-	6.90
70	2.031	2.250-16 UN	6.83	-	7.36

Figure 35. Environmental EMI-RFI Backshell AS85049/6 (Sheet 9 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
71	7	12	12,12S	12	10	.350	.625	2	2.110	1.844	.858
72	27	18	18	18	16	.625	.937	2	2.450	2.000	1.218
73	X	24	24	24	20	.875	1.250	2	2.500	2.230	1.593
74	12	14	14,14S	14	4	.125	.312	1	2.000	1.544	.984
75	19	16	16,16S	16	4	.125	.312	1	2.110	1.544	1.112

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
71	1.529	1.000-20 UNEF	4.90	1.112	5.27
72	1.812	1.4375-18 UNEF	5.69	1.468	6.06
73	1.936	1.750-18 UNS	6.13	1.969	6.50
74	.688	.625-24 UNEF	3.64	-	4.01
75	.781	.625-24 UNEF	3.81	-	4.18

NOTES:

1. Dimensions are in inches
2. Dimensions are after plating.
3. Clamp assembly screws - Corrosion resistant steel in accordance with MIL-C-85049 passivated per QQ-P-35.
4. These accessories are for shield termination and environmental applications. Armor shield termination and environmental applications may be achieved by reversing the ferrules and grommets.
5. Grommet and O-Ring - Grommet and o-ring elastomer material shall be in accordance with MIL-C-85049.

SUPERSESSION DATA:

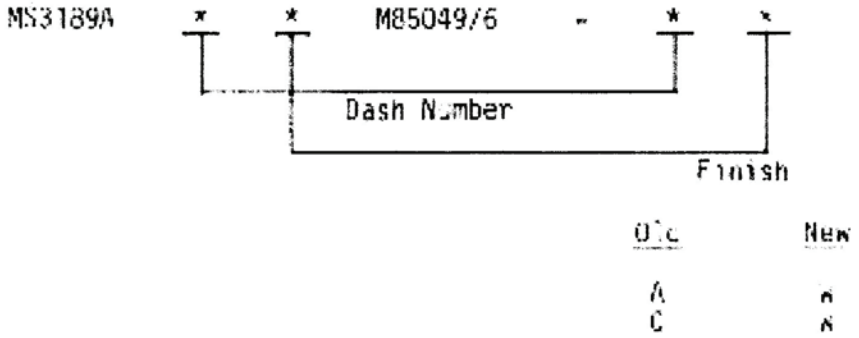


Figure 35. Environmental EMI-RFI Backshell AS85049/6 (Sheet 10 of 10)

PART NUMBER DESIGNATION

AS85049/ 8 -10 N

MILITARY DESIGNATION

DETAIL SHEET
(See Application Table)

DASH NUMBER (See Dimensions)

FINISH (See Codes)

MATERIAL and FINISH

"W" – Cadmium, Olive Drab 1000 hr Salt Spray
"N" – Electroless Nickel (not for Navy use)
"B" – Black Cadmium
"S" - Passivate

Component	Material	Finish
Body	Aluminum alloy in accordance with MIL-C-85049	1/ N, 2/ W
Body	Corrosion resistant steel in accordance with MIL-C-85049	B, S

1/ Not for Navy use. Restricted to Air Force Space applications only.
2/ W finish is not for use in space application.

APPLICATION DATA

M85049	Application
/8	FOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS. ARMOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS MAY BE ACHIEVED BY REVERSING THE FERRULES AND GROMMETS.
/9	FOR ENVIRONMENTAL APPLICATIONS ONLY AND IS TYPE A (/8) LESS THE REAR ADAPTER AND FERRULES AND WITH THE GROMMET REPLACING THE FERRULES.
/24	FOR SHIELD TERMINATION APPLICATIONS ONLY AND IS TYPE A (/8) LESS THE REAR ADAPTER AND GROMMET. (NON-ENVIRONMENTAL)

Figure 36. Environmental EMI-RFI Backshell AS85049/8 (Sheet 1 of 10)

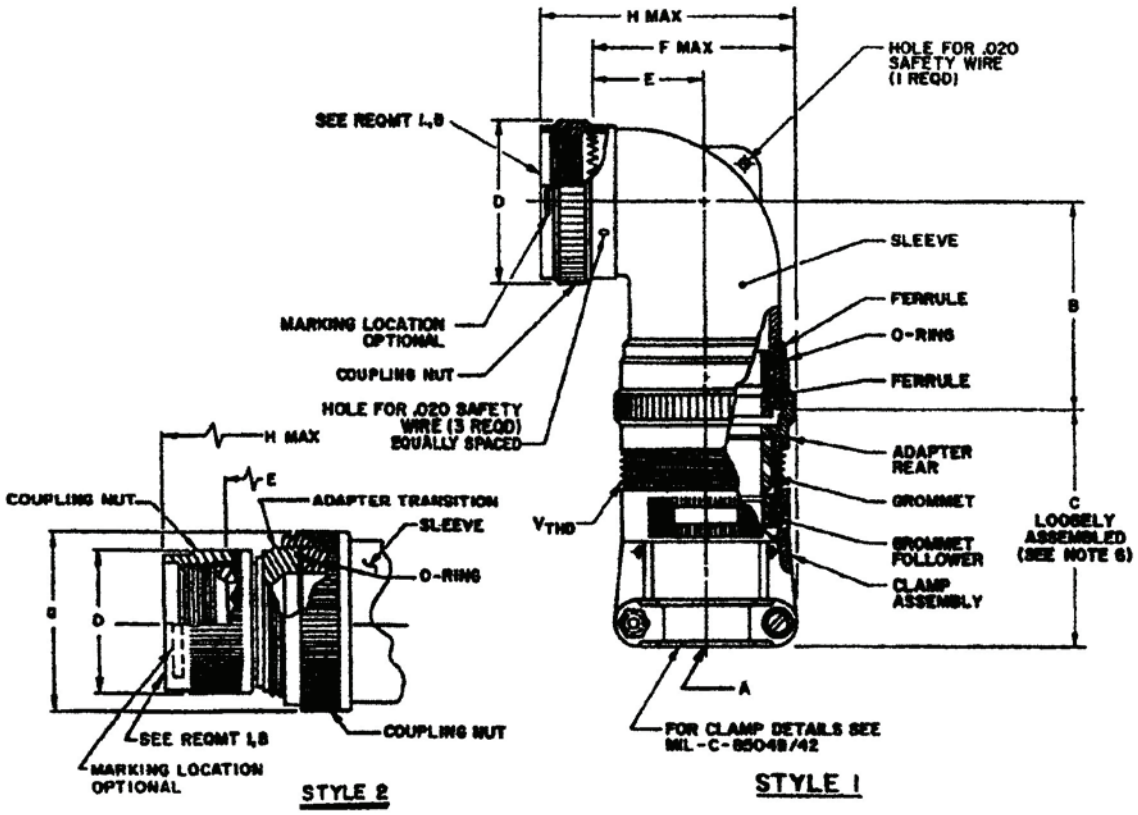


Figure 36. Environmental EMI-RFI Backshell AS85049/8 (Sheet 2 of 10)

DIMENSIONS

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
1	3	X	X	X	4	.125	.250	1	1.800	1.544	.669
2					6	.250	.437	2	1.320	1.544	.669
3	X	8	8S	8	4	.125	.250	1	1.200	1.544	.617
4	X	10	10S, 10SL	10	4	.125	.312	1	1.920	1.544	.734
5	X				6	.250	.375	1	1.320	1.544	.734
6	7	12	12,12S	12	4	.125	.312	1	1.940	1.544	.858
7					6	.250	.437	1	1.940	1.544	.858
8					10	.350	.500	1	1.335	1.844	.858
9	12	14	14,14S	14	6	.250	.437	1	2.010	1.544	.984
10					10	.350	.575	1	1.655	1.844	.984

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
1	.636	.625-24 UNEF	1.18	-	1.57
2	1.386	.750-20 UNEF	2.02	.858	2.41
3	.541	.625-24 UNEF	1.09	-	1.48
4	.636	.625-24 UNEF	1.18	-	1.57
5	.636	.750-20 UNEF	1.27	-	1.66
6	.641	.625-24 UNEF	1.18	-	1.57
7	.641	.750-20 UNEF	1.28	-	1.67
8	.641	1.000-20 UNEF	1.37	-	1.76
9	.741	.750-20 UNEF	1.38	-	1.77
10	.741	1.000-20 UNEF	1.47	-	1.86

Figure 36. Environmental EMI-RFI Backshell AS85049/8 (Sheet 3 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
11	19	16	16,16S	16	6	.250	.437	1	2.100	1.544	1.112
12					12	.500	.700	1	1.745	1.916	1.112
13	27	18	18	18	10	.350	.625	1	2.270	1.844	1.218
14					16	.625	.779	1	1.920	2.000	1.218
15	37	20	20	20	10	.350	.625	1	2.270	1.844	1.345
16					16	.625	.904	1	1.920	2.000	1.345
17		22	22	22	12	.500	.750	1	2.380	1.918	1.468
18					20	.875	1.029	1	2.025	2.230	1.468
19		24	24	24	12	.500	.750	1	2.380	1.916	1.593
20					20	.875	1.144	1	2.025	2.230	1.593

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
11	.926	.750-20 UNEF	1.59	-	1.98
12	.926	1.1875-18 UNEF	1.77	-	2.16
13	1.016	1.000-20 UNEF	1.80	-	2.19
14	1.016	1.4375-18 UNEF	1.97	-	2.36
15	1.016	1.000-20 UNEF	1.80	-	2.19
16	1.016	1.4375-18 UNEF	1.97	-	2.36
17	1.166	1.1875-18 UNEF	2.11	-	2.50
18	1.166	1.750-18 UNS	2.29	-	2.68
19	1.166	1.1875-18 UNEF	2.11	-	2.50
20	1.166	1.750-18 UNS	2.29	-	2.68

Figure 36. Environmental EMI-RFI Backshell AS85049/8 (Sheet 4 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
21			28		16	.625	.937	1	2.550	2.000	1.969
22					24	1.000	1.375	1	2.195	2.024	1.969
23			32		16	.625	.937	1	2.800	2.000	2.219
24					20	.875	1.250	1	2.800	2.230	2.219
25					28	1.250	1.625	1	2.445	2.550	2.219
26			36		16	.625	.937	1	2.770	2.000	2.469
27					24	1.000	1.375	1	2.770	2.024	2.469
28					32	1.437	1.840	1	2.415	2.600	2.469
29			40		16	.625	.937	1	2.770	2.000	2.719
30					24	1.000	1.375	1	2.770	2.024	2.719

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
21	1.266	1.4375-18 UNEF	2.33	-	2.88
22	1.266	2.000-18 UNS	2.51	-	3.06
23	1.616	1.4375-18 UNEF	2.81	-	3.36
24	1.616	1.750-18 UNS	2.81	-	3.36
25	1.616	2.250-16 UN	3.07	-	3.62
26	1.816	1.4375-18 UNEF	3.13	-	3.68
27	1.816	2.000-18 UNS	3.13	-	3.68
28	1.816	2.500-16 UN	3.39	-	3.94
29	2.566	1.4375-18 UNEF	3.88	-	4.43
30	2.566	2.000-18 UNS	3.88	-	4.43

Figure 36. Environmental EMI-RFI Backshell AS85049/8 (Sheet 5 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
31			40		32	1.437	1.875	1	2.415	2.600	2.719
32					16	.625	.937	1	2.770	2.000	2.969
33			44		24	1.000	1.375	1	2.770	2.024	2.969
34					32	1.437	1.875	1	2.415	2.600	2.969
35					16	.625	.937	1	2.770	2.000	3.219
36			48		24	1.000	1.375	1	2.770	2.024	3.219
37					32	1.437	1.875	1	2.415	2.600	3.219
38	61				12	.500	.750	1	2.380	1.916	1.653
39					20	.875	1.184	1	2.025	2.230	1.653
40	19	16	16,16S	16	10	.350	.625	1	2.100	1.844	1.112

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
31	2.566	2.500-16 UN	4.14	-	4.69
32	2.566	1.4375-18 UNEF	3.88	-	4.43
33	2.566	2.000-18 UNS	3.88	-	4.43
34	2.566	2.500-16 UN	4.14	-	4.69
35	2.566	1.4375-18 UNEF	3.88	-	4.43
36	2.566	2.000-18 UNS	3.88	-	4.43
37	2.566	2.500-16 UN	4.14	-	4.69
38	1.166	1.1875-18 UNEF	2.11	-	2.50
39	1.166	1.750-18 UNS	2.29	-	2.68
40	.926	1.000-20 UNEF	1.66	-	2.05

Figure 36. Environmental EMI-RFI Backshell AS85049/8 (Sheet 6 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
41	27	18	18	18	4	.125	.312	1	2.270	1.544	1.218
42					6	.250	.437	1	2.270	1.544	1.218
43	37	20	20	20	6	.250	.437	1	2.270	1.544	1.345
44		22	22	22	4	.125	.312	1	2.380	1.544	1.468
45					6	.250	.437	1	2.380	1.544	1.468
46		24	24	24	10	.350	.625	1	2.380	1.844	1.593
47			36		12	.500	.750	1	2.770	1.916	2.469
48			40		12	.500	.750	1	2.770	1.916	2.719
49		10	10S, 10SL	10	6	.250	.437	2	1.940	1.544	.734
50	12	14	14,14S	14	12	.500	.750	2	2.270	1.916	.984

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
41	1.016	.625-24 UNEF	1.80	-	2.19
42	1.016	.750-20 UNEF	1.80	-	2.19
43	1.016	.750-20 UNEF	1.80	-	2.19
44	1.166	.625-24 UNEF	2.11	-	2.50
45	1.166	.750-20 UNEF	2.11	-	2.50
46	1.166	1.000-20 UNEF	2.11	-	2.50
47	1.816	1.1875-18 UNEF	3.13	-	3.68
48	1.816	1.1875-18 UNEF	3.88	-	4.43
49	1.391	.750-20 UNEF	2.03	.858	2.42
50	1.766	1.1875-18 UNEF	2.61	1.218	3.00

Figure 36. Environmental EMI-RFI Backshell AS85049/8 (Sheet 7 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.062	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
51	19	16	16,16S	16	16	.625	.937	2	2.380	2.000	1.112
52	27	18	18	18	12	.500	.750	1	2.270	1.916	1.218
53	61				16	.625	.937	1	2.025	2.000	1.653
54	37	20	20	20	12	.500	.750	1	2.270	1.916	1.345
55					20	.875	1.250	2	2.550	2.230	1.345
56		22	22	22	10	.350	.625	1	2.380	1.844	1.468
57					16	.625	.937	1	2.380	2.000	1.468
58					20	.875	1.250	2	2.550	2.230	1.468
59		24	24	24	16	.625	.937	1	2.380	2.000	1.593
60			28		12	.500	.750	1	2.550	1.916	1.969

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
51	1.916	1.4375-18 UNEF	2.87	1.468	3.26
52	1.016	1.1875-18 UNEF	1.86	-	2.25
53	1.166	1.4375-18 UNEF	2.14	-	2.53
54	1.016	1.1875-18 UNEF	1.86	-	2.25
55	2.016	1.750-18 UNS	3.14	1.969	3.53
56	1.166	1.000-20 UNEF	2.11	-	2.50
57	1.166	1.4375-18 UNEF	2.12	-	2.51
58	2.016	1.750-18 UNS	3.14	1.969	3.53
59	1.166	1.4375-18 UNEF	2.14	-	2.53
60	1.266	1.1875-18 UNEF	2.33	-	2.88

Figure 36. Environmental EMI-RFI Backshell AS85049/8 (Sheet 8 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector: MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III	Clamp Size	A (see note 6) Wire Bundle Accommodation Range: Min	Max	Style	B ±.062	C Ref	D Dia Max
61			28		20	.875	1.250	1	2.550	2.230	1.969
62			32		24	1.000	1.375	1	2.800	2.024	2.219
63			36		20	.875	1.250	1	2.770	2.230	2.469
64					28	1.250	1.625	1	2.770	2.550	2.469
65			40		20	.875	1.250	1	2.770	2.230	2.719
66					28	1.250	1.625	1	2.770	2.550	2.719
67			44		20	.875	1.250	1	2.770	2.230	2.969
68					28	1.250	1.625	1	2.770	2.550	2.969
69			48		20	.875	1.250	1	2.770	2.230	3.219
70					28	1.250	1.625	1	2.770	2.550	3.219

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
61	1.266	1.750-18 UNS	2.39	-	2.94
62	1.616	2.000-18 UNS	2.86	-	3.41
63	1.816	1.750-18 UNS	3.13	-	3.68
64	1.816	2.250-16 UN	3.27	-	3.82
65	2.566	1.750-18 UNS	3.88	-	4.43
66	2.566	2.250-16 UN	4.02	-	4.57
67	2.566	1.750-18 UNS	3.88	-	4.43
68	2.566	2.250-16 UN	4.02	-	4.57
69	2.566	1.750-18 UNS	3.88	-	4.43
70	2.566	2.250-16 UN	4.02	-	4.57

Figure 36. Environmental EMI-RFI Backshell AS85049/8 (Sheet 9 of 10)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector: MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III	Clamp Size	A (see note 6) Wire Bundle Accommodation Range: Min	Max	Style	B ±.062	C Ref	D Dia Max
71	7	12	12,12S	12	10	.350	.625	2	2.100	1.844	.858
72	27	18	18	18	16	.625	.937	2	2.380	2.000	1.218
73	X	24	24	24	20	.875	1.250	2	2.550	2.230	1.593
74	12	14	14,14S	14	4	.125	.312	1	2.010	1.544	.984
75	19	16	16,16S	16	4	.125	.312	1	2.100	1.544	1.112

Dash No.	E ±.125	V Thread Class 2A	F Max	G Dia Max	H Max
71	1.686	1.000-20 UNEF	2.42	1.112	2.81
72	1.926	1.4375-18 UNEF	2.88	1.468	3.27
73	2.026	1.750-18 UNS	3.15	1.969	3.54
74	.741	.625-24 UNEF	1.31	-	1.70
75	.926	.625-24 UNEF	1.59	-	1.98

NOTES:

1. Dimensions are in inches
2. Dimensions are after plating.
3. Clamp assembly screws - Corrosion resistant steel in accordance with MIL-C-85049 passivated per QQ-P-35.
4. These accessories are for shield termination and environmental applications. Armor shield termination and environmental applications may be achieved by reversing the ferrules and grommets.
5. Grommet and O-Ring - Grommet and o-ring elastomer material shall be in accordance with MIL-C-85049.

SUPERSESSION DATA:

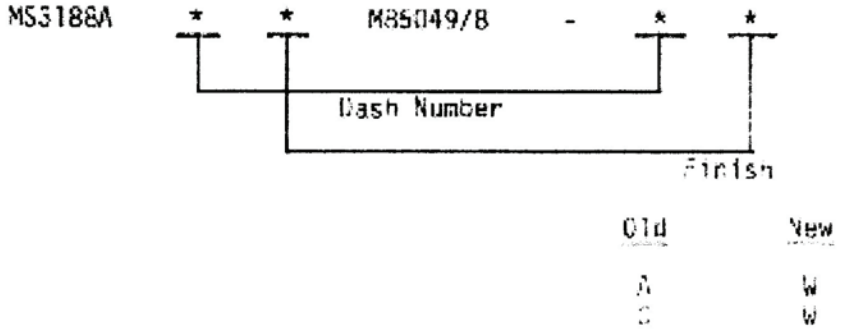
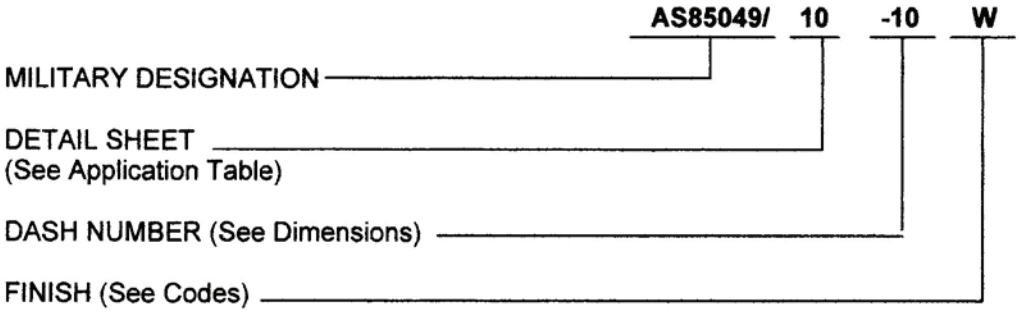


Figure 36. Environmental EMI-RFI Backshell AS85049/8 (Sheet 10 of 10)

PART NUMBER DESIGNATION



MATERIAL and FINISH

"W" – Cadmium, Olive Drab 1000 hr Salt Spray
"N" – Electroless Nickel (not for Navy use)
"B" – Black Cadmium
"S" - Passivate

Component	Material	Finish
Body	Aluminum alloy in accordance with MIL-C-85049	1/ N, 2/ W
Body	Corrosion resistant steel in accordance with MIL-C-85049	B, S

1/ Not for Navy use. Restricted to Air Force Space applications only.
2/ W finish is not for use in space application.

APPLICATION DATA

M85049	Application
/10	FOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS. ARMOR SHIELD TERMINATION AND ENVIRONMENTAL APPLICATIONS MAY BE ACHIEVED BY REVERSING THE FERRULES AND GROMMETS.
/11	FOR ENVIRONMENTAL APPLICATIONS ONLY AND IS TYPE A (/10) LESS THE REAR ADAPTER AND FERRULES AND WITH THE GROMMET REPLACING THE FERRULES.
/25	FOR SHIELD TERMINATION APPLICATIONS ONLY AND IS TYPE A (/10) LESS THE REAR ADAPTER AND GROMMET. (NON-ENVIRONMENTAL)

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 1 of 18)

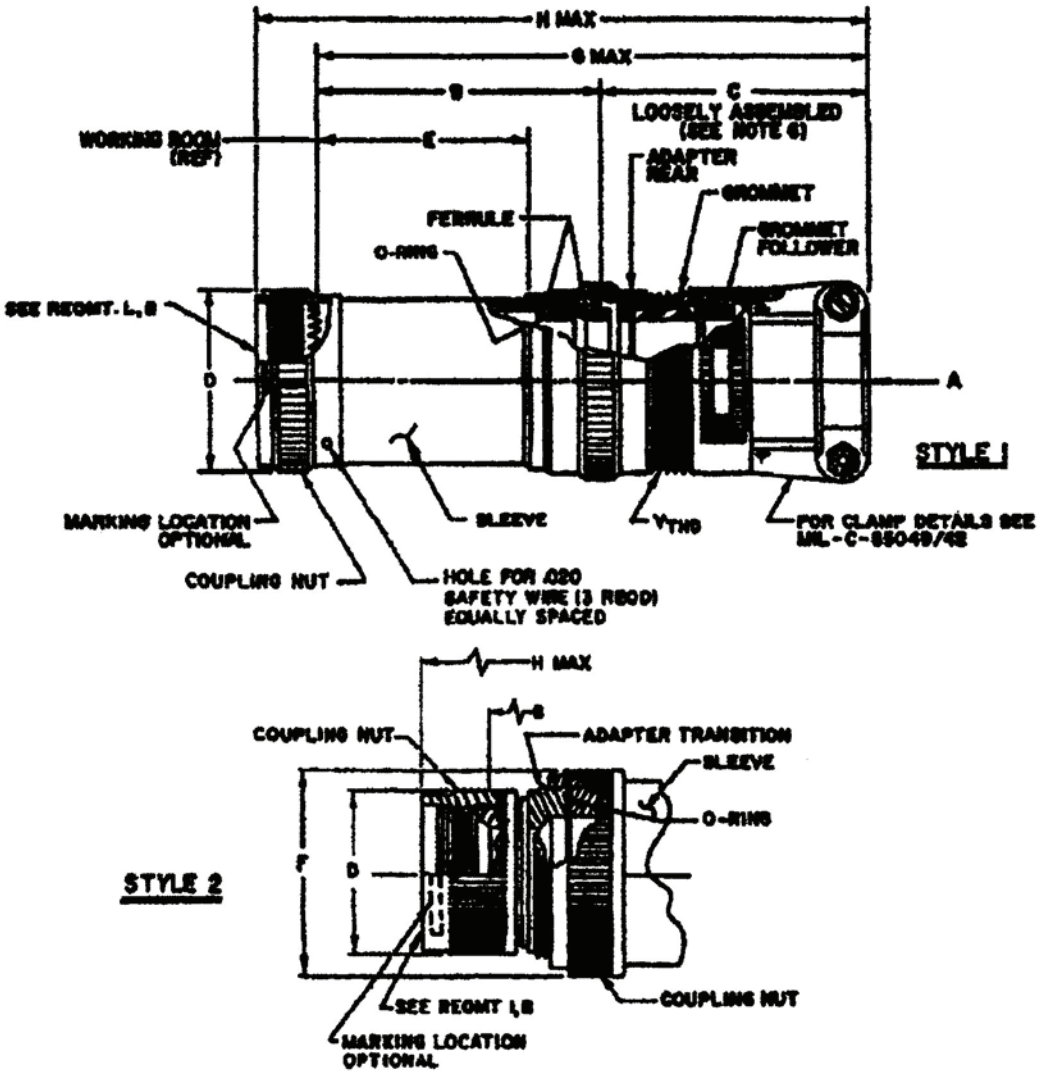


Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 2 of 18)

DIMENSIONS

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
01	3				4	.125	.250	1	2.00	1.544	.669
02									3.00		
03					6	.250	.437	2	2.75	1.544	.669
04									3.75		
05		8	8S	8	4	.125	.250	1	2.00	1.544	.617
06									3.00		
07					6	.250	.437	2	2.75	1.544	.617
08									3.75		
09		10	10S, 10SL	10	4	.125	.312	1	2.00	1.544	.734
10									3.00		
11					6	.250	.437	2	2.75	1.544	.734
12									3.75		
13	7	12	12,12S	12	6	.250	.437	1	2.00	1.544	.858
14									3.00		
15					10	.350	.625	2	2.75	1.844	.858
16									3.75		
17	12	14	14,14S	14	10	.350	.575	1	2.00	1.844	.984
18									3.00		
19					12	.500	.750	2	2.75	1.916	.984
20									3.75		

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 3 of 18)

DIMENSIONS (Continued)

Dash No.	E Ref	V Thread Class 2A	F Dia Max	G Max	H Max
01	1.06	.625-24 UNEF	-	3.66	4.02
02	2.06			4.66	5.02
03	1.81	.750-20 UNEF	.858	4.41	4.77
04	2.81			5.41	5.77
05	1.06	.625-24 UNEF	-	3.66	4.02
06	2.06			4.66	5.02
07	1.81	.750-20 UNEF	.858	4.41	4.77
08	2.81			5.41	5.77
09	1.06	.625-24 UNEF	-	3.66	4.02
10	2.06			4.66	5.02
11	1.81	.750-20 UNEF	.858	4.41	4.77
12	2.81			5.41	5.77
13	1.06	.750-20 UNEF	-	3.66	4.02
14	2.06			4.66	5.02
15	1.67	1.000-20 UNEF	1.112	4.71	5.07
16	2.67			5.71	6.07
17	0.92	1.000-20 UNEF	-	3.96	4.32
18	1.92			4.96	5.32
19	1.67	1.1875-18 UNEF	1.218	4.78	5.14
20	2.87			5.78	6.14

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 4 of 18)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
21	19	16	16,16S	16	12	.500	.700	1	2.00	1.916	1.112
22									3.00		
23					16	.625	.937	2	2.75	2.000	1.112
24									3.75		
25	27	18	18	18	10	.350	.625	1	2.00	1.844	1.218
26									3.00		
27					12	.500	.750	1	2.00	1.916	1.218
28									3.00		
29					16	.625	.937	2	2.75	2.000	1.218
30									3.75		
31	37	20	20	20	10	.350	.625	1	3.00	1.844	1.345
32									4.00		
33					12	.500	.750	1	3.00	1.916	1.345
34									4.00		
35					16	.625	.937	2	3.75	2.000	1.345
36									4.75		
37					20	.875	1.250	2	3.75	2.230	1.345
38									4.75		
39		22	22	22	10	.350	.625	1	3.00	1.844	1.468
40									4.00		

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 5 of 18)

DIMENSIONS (Continued)

Dash No.	E Ref	V Thread Class 2A	F Dia Max	G Max	H Max
21	0.92	1.1875-18 UNEF	-	4.03	4.39
22	1.92			5.03	5.39
23	1.67	1.4375-18 UNEF	1.468	4.87	5.23
24	2.67			5.87	6.23
25	0.92	1.000-20 UNEF	-	3.96	4.32
26	1.92			4.96	5.32
27	0.92	1.1875-18 UNEF	-	4.03	4.39
28	1.92			5.03	5.39
29	1.67	1.4375-18 UNEF	1.468	4.87	5.23
30	2.67			5.87	6.23
31	1.92	1.000-20 UNEF	-	4.96	5.32
32	2.92			5.96	6.32
33	1.92	1.1875-18 UNEF	-	5.03	5.39
34	2.92			6.03	6.39
35	2.67	1.4375-18 UNEF	1.468	5.87	6.23
36	3.67			6.87	7.23
37	2.67	1.750-18 UNS	1.969	6.10	6.46
38	3.67			7.10	7.46
39	1.92	1.000-20 UNEF	-	4.96	5.32
40	2.92			5.96	6.32

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 6 of 18)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
41					12	.500	.750	1	3.00	1.916	1.468
42									4.00		
43		22	22	22	16	.625	.937	1	3.00	2.000	1.468
44									4.00		
45					20	.875	1.250	2	3.75	2.230	1.468
46									4.75		
47					12	.500	.750	1	3.00	1.916	1.593
48									4.00		
49					16	.625	.812	1	3.00	2.000	1.593
50		24	24	24					4.00		
51					16	.625	.937	1	3.00	2.000	1.593
52									4.00		
53					20	.875	1.250	2	3.75	2.230	1.593
54									4.75		
55					12	.500	.750	1	3.00	1.916	1.969
56									4.00		
57			28		16	.625	.937	1	3.00	2.000	1.969
58									4.00		
59					20	.875	1.250	1	3.00	2.230	1.969
60									4.00		

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 7 of 18)

DIMENSIONS (Continued)

Dash No.	E Ref	V Thread Class 2A	F Dia Max	G Max	H Max
41	1.92	1.1875-18 UNEF	-	5.03	5.39
42	2.92			6.03	6.39
43	1.92	1.4375-18 UNEF	-	5.12	5.48
44	2.92			6.12	6.48
45	2.67	1.750-18 UNS	1.969	6.10	6.46
46	3.67			7.10	7.46
47	1.92	1.1875-18 UNEF	-	5.03	5.39
48	2.92			6.03	6.39
49	1.92	1.4375-18 UNEF	-	5.12	5.48
50	2.92			6.12	6.48
51	1.92	1.4375-18 UNEF	-	5.12	5.48
52	2.92			6.12	6.48
53	2.67	1.750-18 UNS	1.969	6.10	6.46
54	3.67			7.10	7.46
55	1.92	1.1875-18 UNEF	-	5.04	5.56
56	2.92			6.04	6.56
57	1.92	1.4375-18 UNEF	-	5.12	5.64
58	2.92			6.12	6.64
59	1.92	1.750-18 UNS	-	5.35	5.87
60	2.92			6.35	6.87

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 8 of 18)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector: MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III	Clamp Size	A (see note 6) Wire Bundle Accommodation Range: Min	Max	Style	B ±.125	C Ref	D Dia Max
61			28		24	1.000	1.375	1	3.00	2.024	1.969
62									4.00		
63			32		16	.625	.937	1	3.00	2.000	2.219
64									4.00		
65					20	.875	1.250	1	3.00	2.230	2.219
66									4.00		
67					24	1.000	1.375	1	3.00	2.024	2.219
68									4.00		
69					28	1.250	1.625	1	3.00	2.550	2.219
70									4.00		
71			36		20	.875	1.250	1	4.00	2.230	2.469
72									5.00		
73					24	1.000	1.375	1	4.00	2.024	2.469
74									5.00		
75					28	1.250	1.625	1	4.00	2.550	2.469
76									5.00		
77					32	1.437	1.875	2	4.88	2.600	2.469
78									5.88		
79			40		20	.875	1.250	1	4.00	2.230	2.719
80									5.00		

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 9 of 18)

DIMENSIONS (Continued)

Dash No.	E Ref	V Thread Class 2A	F Dia Max	G Max	H Max
61	1.92	2.000-18 UNS	-	4.62	5.14
62	2.92			5.62	6.14
63	1.92	1.4375-18 UNEF	-	5.12	5.64
64	2.92			6.12	6.64
65	1.92	1.750-18 UNS	-	4.50	5.02
66	2.92			5.50	6.02
67	1.92	2.000-18 UNS	-	4.62	5.14
68	2.92			5.62	6.14
69	1.92	2.250-16 UN	-	4.90	5.42
70	2.92			5.90	6.42
71	2.92	1.750-18 UNS	-	5.50	6.02
72	3.92			6.50	7.02
73	2.92	2.000-18 UNS	-	5.62	6.14
74	3.92			6.62	7.14
75	2.92	2.250-16 UN	-	5.90	6.42
76	3.92			6.90	7.42
77	3.80	2.500-16 UN	2.719	6.83	7.35
78	4.80			7.83	8.35
79	2.92	1.750-18 UNS	-	5.50	6.02
80	3.92			6.50	7.02

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 10 of 18)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
81			40		24	1.000	1.375	1	4.00	2.024	2.719
82									5.00		
83					28	1.250	1.625	1	4.00	2.550	2.719
84									5.00		
85					32	1.437	1.875	1	4.00	2.600	2.719
86									5.00		
87			44		20	.875	1.250	1	4.00	2.230	2.969
88									5.00		
89					24	1.000	1.375	1	4.00	2.024	2.969
90									5.00		
91					28	1.250	1.625	1	4.00	2.550	2.969
92									5.00		
93					32	1.437	1.875	1	4.00	2.600	2.969
94									5.00		
95			48		20	.875	1.250	1	4.00	2.230	3.219
96									5.00		
97					24	1.000	1.375	1	4.00	2.024	3.219
98									5.00		
99					28	1.250	1.625	1	4.00	2.550	3.219
100									5.00		

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 11 of 18)

DIMENSIONS (Continued)

Dash No.	E Ref	V Thread Class 2A	F Dia Max	G Max	H Max
81	2.92	2.000-18 UNS	-	6.14	6.66
82	3.92			7.14	7.66
83	2.92	2.250-16 UN	-	6.67	7.19
84	3.92			7.67	8.19
85	2.92	2.500-16 UN	-	6.72	7.24
86	3.92			7.72	8.24
87	2.92	1.750-18 UNS	-	6.35	6.87
88	3.92			7.35	7.87
89	2.92	2.000-18 UNS	-	6.14	6.66
90	3.92			7.14	7.66
91	2.92	2.250-16 UN	-	6.67	7.19
92	3.92			7.67	8.19
93	2.92	2.500-16 UN	-	6.72	7.24
94	3.92			7.72	8.24
95	2.92	1.750-18 UNS	-	6.35	6.87
96	3.92			7.35	7.87
97	2.92	2.000-18 UNS	-	6.14	6.66
98	3.92			7.14	7.66
99	2.92	2.250-16 UN	-	6.67	7.19
100	3.92			7.67	8.19

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 12 of 18)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
101	X		48		32	1.437	1.875	1	4.00	2.600	3.219
102									5.00		
103	61				12	.500	.750	1	3.00	1.916	1.653
104									4.00		
105					16	.625	.937	1	3.00	2.000	1.653
106									4.00		
107					20	.875	1.250	2	3.75	2.230	1.653
108									4.75		
109					24	1.000	1.375	2	3.75	2.024	1.653
110									4.75		
111	7	12	12,12S	12	10	.350	.500	1	2.00	1.844	.858
112	19	16	16,16S	16	6	.250	.437	1	2.00	1.544	1.112
113									3.00		
114	7	12	12,12S	12	4	.125	.312	1	2.00	1.544	.858
115									3.00		
116	12	14	14,14S	14	6	.250	.437	1	2.00	1.544	.984
117									3.00		
118	19	16	16,16S	16	16	.350	.625	1	2.00	1.844	1.112
119									3.00		

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 13 of 18)

DIMENSIONS (Continued)

Dash No.	E Ref	V Thread Class 2A	F Dia Max	G Max	H Max
101	2.92	2.500-16 UN	-	6.72	7.24
102	3.92			7.72	8.24
103	1.92	1.1875-18 UNEF	-	5.03	5.39
104	2.92			6.03	6.39
105	1.92	1.4375-18 UNEF	-	5.12	5.48
106	2.92			6.12	6.48
107	2.67	1.750-18 UNS	1.969	6.10	6.46
108	3.67			7.10	7.46
109	2.67	2.000-18 UNS	1.969	5.89	6.25
110	3.67			6.89	7.25
111	1.00	1.000-20 UNEF	-	3.96	4.32
112	1.00	.750-20 UNEF	-	3.66	4.02
113	2.00			4.66	5.02
114	1.00	.625-24 UNEF	-	3.66	4.02
115	2.00			4.66	5.02
116	1.00	.750-20 UNEF	-	3.66	4.02
117	2.00			4.66	5.02
118	0.92	1.000-20 UNEF	-	3.96	4.32
119	1.92			4.96	5.32

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 14 of 18)

DIMENSIONS (Continued)

Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
120	27	18	18	18	4	.125	.312	1	2.00	1.544	1.218
121									3.00		
122					6	.250	.437	1	2.00	1.544	1.218
123									3.00		
124	37	20	20	20	6	.250	.437	1	3.00	1.544	1.345
125									4.00		
126		22	22	22	4	.125	.312	1	3.00	1.544	1.468
127									4.00		
128					6	.250	.437	1	3.00	1.544	1.468
129									4.00		
130		24	24	24	10	.350	.625	1	3.00	1.844	1.593
131									4.00		
132			36		12	.500	.750	1	4.00	1.916	2.469
133									5.00		
134			40		12	.500	.750	1	4.00	1.916	2.719
135									5.00		
136		10	10S, 10SL	10	6	.250	.375	1	2.00	1.544	.734
137									3.00		
138	7	12	12,12S	12	10	.350	.500	1	2.00	1.844	.858
139									3.00		

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 15 of 18)

DIMENSIONS (Continued)

Dash No.	E Ref	V Thread Class 2A	F Dia Max	G Max	H Max
120	0.92	.625-24 UNEF	-	3.66	4.02
121	1.92			4.66	5.02
122	0.92	.750-20 UNEF	-	3.66	4.02
123	1.92			4.66	5.02
124	1.92	.750-20 UNEF	-	4.66	5.02
125	2.92			5.66	6.02
126	1.92	.625-24 UNEF	-	4.66	5.02
127	2.97			5.66	6.02
128	1.92	.750-20 UNEF	-	4.66	5.02
129	2.92			5.66	6.02
130	1.92	1.000-20 UNEF	-	4.96	5.32
131	2.92			5.96	6.32
132	2.92	1.1875-18 UNEF	-	6.04	6.56
133	3.92			7.04	7.56
134	2.92	1.1875-18 UNEF	-	6.04	6.56
135	3.92			7.04	7.56
136	1.06	.750-20 UNEF	-	3.66	4.02
137	2.06			4.66	5.02
138	1.06	1.000-20 UNEF	-	3.96	4.32
139	2.06			4.96	5.32

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 16 of 18)

DIMENSIONS (Continued)

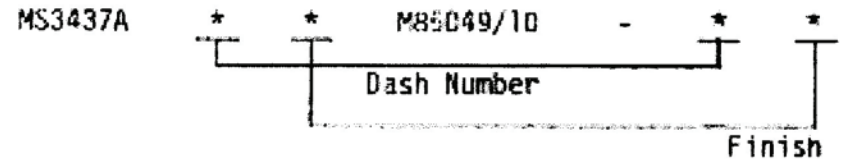
Dash No.	Fits Shell of Connector				Clamp Size	A (see note 6) Wire Bundle Accommodation Range		Style	B ±.125	C Ref	D Dia Max
	MIL-C-81703 Ser 3	MIL-C-26482 Ser 2	MIL-C-5015 Crimp	MIL-C-83723 Ser III		Min	Max				
140	37	20	20	20	16	.625	.904	1	3.00	2.000	1.345
141									4.00		
142		22	22	22	20	.875	1.029	1	3.00	2.230	1.468
143									4.00		
144		24	24	24	20	.875	1.144	1	3.00	2.230	1.593
145									4.00		
146			36		32	1.437	1.840	1	4.00	2.600	2.469
147									5.00		
148					16	.625	.937	1	4.00	2.000	2.469
149									5.00		
150	12	14	14,14S	14	4	.125	.312	1	2.00	1.544	.984
151									3.00		
152	19	16	16,16S	16	4	.125	.312	1	2.00	1.544	1.112
153									3.00		
154			44		16	.625	.937	1	4.00	2.000	2.969
155									5.00		
156			40		16	.625	.937	1	4.00	2.000	2.719
157									5.00		

NOTES:

1. Dimensions are in inches
2. Dimensions are after plating.
3. Clamp assembly screws - Corrosion resistant steel in accordance with MIL-C-85049 passivated per QQ-P-35.
4. These accessories are for shield termination and environmental applications. Armor shield termination and environmental applications may be achieved by reversing the ferrules and grommets.
5. Grommet and O-Ring - Grommet and o-ring elastomer material shall be in accordance with MIL-C-85049.

Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 17 of 18)

SUPERSESSION DATA:



Old	New
A	W
C	W
N	N
D	H
S	S

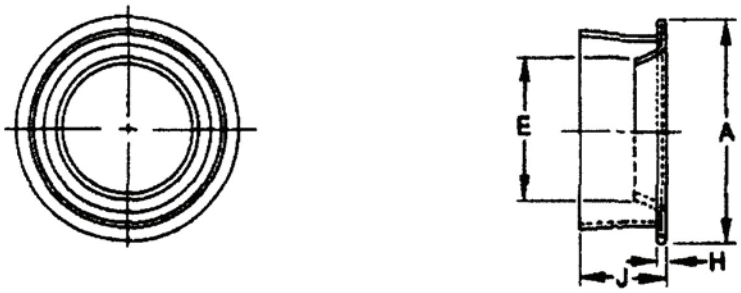
Figure 37. Environmental EMI-RFI Backshell AS85049/10 (Sheet 18 of 18)

PART NUMBER DESIGNATION

AN3050 -3
AN3051 -3
AN3050 -4

MILITARY DESIGNATION

DASH NUMBER (See Dimensions)



MATERIAL: ALUMINUM ALLOY
FINISH: NONE

DIMENSIONS

Conduit Size	E Dia.	J	AN3050	A Dia.	H	AN3051	A Dia.	H	AN3052	A Dia.	H
3/16	1/8	7/16	-3	.448	.040	-3	.566	.040	-4	.807	.040
1/4	3/16	7/16	-4	.566	.040	-4	.682	.040	-6	.932	.040
3/8	5/16	7/16	-6	.682	.040	-6	.807	.040	-8	1.105	.040
1/2	7/16	7/16	-8	.807	.040	-8	.932	.040	-10	1.355	.040
5/8	9/16	7/16	-10	.932	.040	-10	1.105	.040	-12	1.668	.040
3/4	11/16	1/2	-12	1.105	.040	-12	1.355	.040	-16	1.918	.060
1	15/16	5/8	-16	1.355	.040	-16	1.668	.060	-20	2.160	.060
1-1/4	1-3/16	5/8	-20	1.668	.040	-20	1.918	.060	-24	2.410	.060
1-1/2	1-7/16	3/4	-24	1.918	.040	-24	2.160	.060	-28	2.910	.060
1-3/4	1-11/16	7/8	-28	2.160	.040	-28	2.410	.060			
2	1-15/16	1	-32	2.410	.040	-32	2.910	.060			
2-1/2	2-7/16	1	-40	2.910	.040						

Figure 38. Conduit Fittings (Sheet 1 of 10)

PART NUMBER DESIGNATION

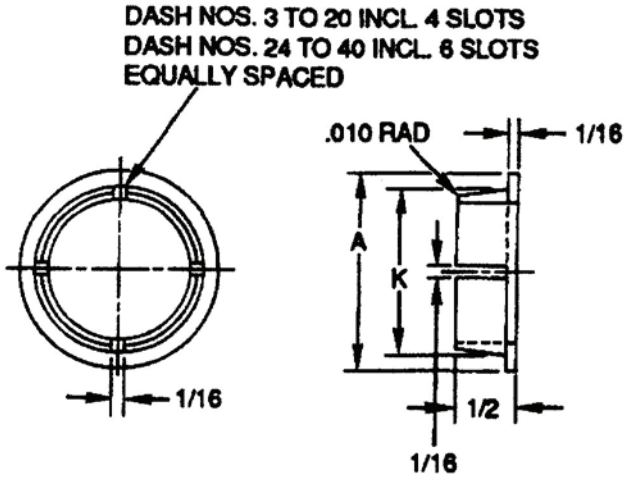
AN3053 -12

MILITARY DESIGNATION

DASH NUMBER

MATERIAL: ALUMINUM

FINISH: CADMIUM, OLIVE DRAB



DIMENSIONS

Dash No.	Conduit Size	A Dia.	K Dia.
-3	3/16	.448	.332
-4	1/4	.566	.394
-6	3/8	.682	.519
-8	1/2	.807	.669
-10	5/8	.932	.794
-12	3/4	1.105	.929
-16	1	1.355	1.214
-20	1-1/4	1.668	1.469
-24	1-1/2	1.918	1.724
-28	1-3/4	2.160	1.976
-32	2	2.410	2.229
-40	2-1/2	2.910	2.744

Figure 38. Conduit Fittings (Sheet 2 of 10)

PART NUMBER DESIGNATION

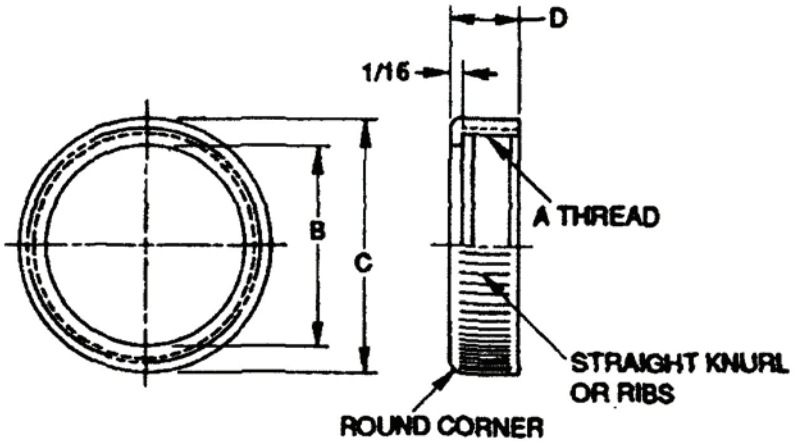
AN3054 -12

MILITARY DESIGNATION

DASH NUMBER (See DIMENSIONS)

MATERIAL: ALUMINUM

FINISH: CADMIUM, OLIVE BRAD



DIMENSIONS

Dash No.	Conduit Size	A Thread	B	C ±3/64	D
-3	3/16	1/2-28UNEF-2B	.396	5/8	7/16
-4	1/4	5/8-24NEF-2B	.458	3/4	7/16
-5	5/16	11/16-24NS-2B	.458	25/32	7/16
-6	3/8	3/4-20UNEF-2B	.583	7/8	7/16
-8	1/2	7/8-20UNEF-2B	.708	1-1/32	7/16
-10	5/8	1-20UNEF-2B	.833	1-5/32	7/16
-12	3/4	1-3/16-18NEF-2B	.993	1-11/32	7/16
-16	1	1-7/16-18NEF-2B	1.278	1-19/32	7/16
-20	1-1/4	1-3/4-18NS-2B	1.533	1-29/32	1/2
-24	1-1/2	2-18NS-2B	1.788	2-5/32	9/16
-28	1-3/4	2-1/4-16UN-2B	2.040	2-13/32	9/16
-32	2	2-1/2-16UN-2B	2.293	2-21/32	5/8
-40	2-1/2	3-16UN-2B	2.808	3-5/32	11/16

Figure 38. Conduit Fittings (Sheet 3 of 10)

PART NUMBER DESIGNATION

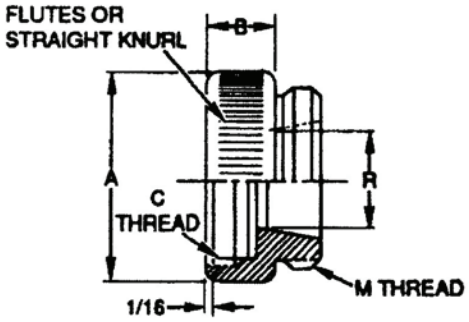
AN3055 -12-3

MILITARY DESIGNATION

DASH NUMBER (See DIMENSIONS)

MATERIAL: ALUMINUM

FINISH: CADMIUM, OLIVE DRAB



DIMENSIONS

Dash No.	A +3/32 -1/32 Dia.	B ±1/32	C Thread	M Thread	R ±.005 Dia.
-10-3	19/32	7/8	1/2-28UNEF-2B	1/2-28UNEF-2A	.178
-10-4	5/8	7/8	1/2-28UNEF-2B	5/8-24NEF-2A	.240
-12-3	23/32	7/8	5/8-24NEF-2B	1/2-28UNEF-2A	.178
-12-4	23/32	7/8	5/8-24NEF-2B	5/8-24NEF-2A	.240
-14-4	27/32	7/8	3/4-20UNEF-2B	5/8-24NEF-2A	.240
-14-6	27/32	7/8	3/4-20UNEF-2B	3/4-20UNEF-2A	.365
-16-4	1	7/8	7/8-20UNEF-2B	5/8-24NEF-2A	.240
-16-6	1	7/8	7/8-20UNEF-2B	3/4-20UNEF-2A	.365
-16-8	1	7/8	7/8-20UNEF-2B	7/8-20UNEF-2A	.515
-18-6	1-1/8	7/8	1-20UNEF-2B	3/4-20UNEF-2A	.365
-18-8	1-1/8	7/8	1-20UNEF-2B	7/8-20UNEF-2A	.515
-18-10	1-1/8	7/8	1-20UNEF-2B	1-20UNEF-2A	.640
-22-8	1-5/16	7/8	1-3/16-18NEF-2B	7/8-20UNEF-2A	.515
-22-10	1-5/16	7/8	1-3/16-18NEF-2B	1-20UNEF-2A	.640
-22-12	1-5/16	7/8	1-3/16-18NEF-2B	1-3/16-18NEF-2A	.775
-28-10	1-9/16	7/8	1-7/16-18NEF-2B	1-20UNEF-2A	.640
-28-12	1-9/16	7/8	1-7/16-18NEF-2B	1-3/16-18NEF-2A	.775
-28-16	1-9/16	7/8	1-7/16-18NEF-2B	1-7/16-18NEF-2A	1.060
-32-12	1-7/8	15/16	1-3/4-18NS-2B	1-3/16-18NEF-2A	.775
-32-16	1-7/8	15/16	1-3/4-18NS-2B	1-7/16-18NEF-2A	1.060
-32-20	1-7/8	15/16	1-3/4-18NS-2B	1-3/4-18NS-2	1.315
-36-16	2-1/8	1-1/16	2-18NS-2B	1-7/16-18NEF-2A	1.060
-36-20	2-1/8	1-1/16	2-18NS-2B	1-3/4-18NS-2	1.315
-36-24	2-1/8	1-1/16	2-18NS-2B	2-18NS-2	1.570
-40-20	2-3/8	1-1/16	2-1/4-16UN-2B	1-3/4-18NS-2	1.315
-40-24	2-3/8	1-1/16	2-1/4-16UN-2B	2-18NS-2	1.570
-40-28	2-3/8	1-1/16	2-1/4-16UN-2B	2-1/4-16UN-2A	1.822
-44-24	2-5/8	1-3/16	2-1/2-16UN-2B	2-18NS-2	1.570
-44-28	2-5/8	1-3/16	2-1/2-16UN-2B	2-1/4-16UN-2A	1.822
-44-32	2-5/8	1-3/16	2-1/2-16UN-2B	2-1/2-16UN-2A	2.075
-48-28	3-1/8	1-5/16	3-16UN-2B	2-1/4-16UN-2A	1.822
-48-32	3-1/8	1-5/16	3-16UN-2B	2-1/2-16UN-2A	2.075
-48-40	3-1/8	1-5/16	3-16UN-2B	3-16UN-2A	2.590

Figure 38. Conduit Fittings (Sheet 4 of 10)

PART NUMBER DESIGNATION

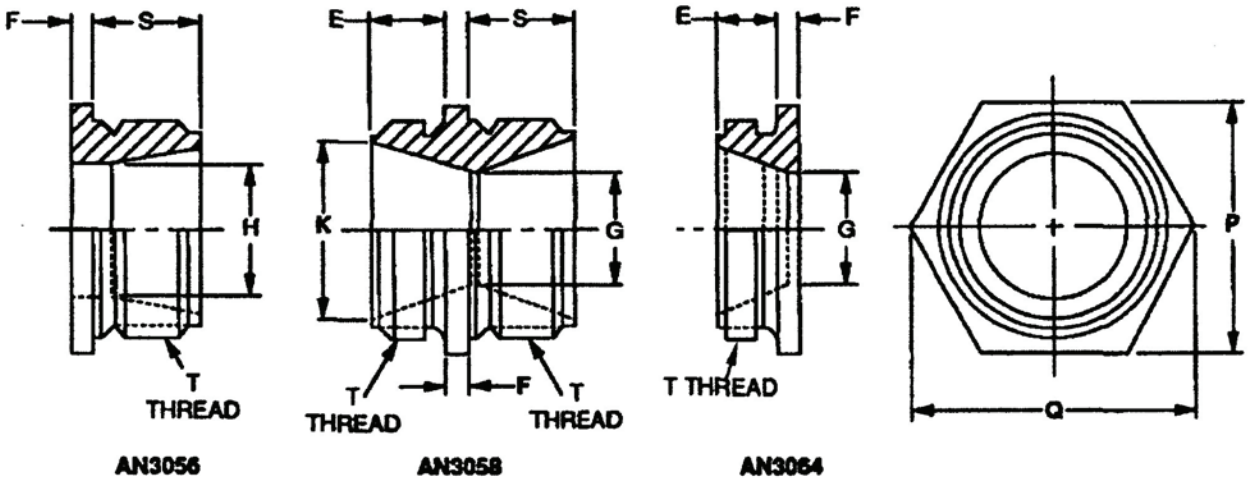
AN3056 -12
AN3058 -12
AN3064 -12

MILITARY DESIGNATION

DASH NUMBER (See DIMENSIONS)

MATERIAL: ALUMINUM

FINISH: CADMIUM



DIMENSIONS

Dash No.	AN3056, AN3058, AN3064					AN3058, AN3064		AN3056 AN3058	AN3056
	Conduit Size	T Thread	F	P	Q Approx	E	G	S	H
-3	3/16	1/2-28UNEF-2A	1/8	11/16	51/64	3/8	.198	5/8	.167
-4	1/4	5/8-24UNEF-2A	1/8	13/16	15/16	3/8	.260	5/8	.229
-6	3/8	3/4-20UNEF-2A	1/8	15/16	1-3/32	3/8	.385	5/8	.354
-8	1/2	7/8-20UNEF-2A	3/16	1-1/16	1-15/64	3/8	.510	11/16	.479
-10	5/8	1-20UNEF-2A	3/16	1-1/4	1-7/16	3/8	.635	11/16	.604
-12	3/4	1-3/16-18NEF-2A	3/16	1-3/8	1-19/32	3/8	.760	11/16	.729
-16	1	1-7/16-18NEF-2A	3/16	1-5/8	1-7/8	1/2	1.010	11/16	.979
-20	1-1/4	1-3/4-18NS-2A	3/16	2	2-5/16	1/2	1.261	3/4	1.229
-24	1-1/2	2-18NS-2A	3/16	2-3/16	2-17/32	1/2	1.511	13/16	1.479
-28	1-3/4	2-1/4-16UN-2A	1/4	2-7/16	2-13/16	1/2	1.761	7/8	1.729
-32	2	2-1/2-16UN-2A	1/4	2-13/16	3-1/4	9/16	2.011	15/16	1.979
-40	2-1/2	3-16UN-2A	1/4	3-3/8	3-57/64	5/8	2.512	1	2.479

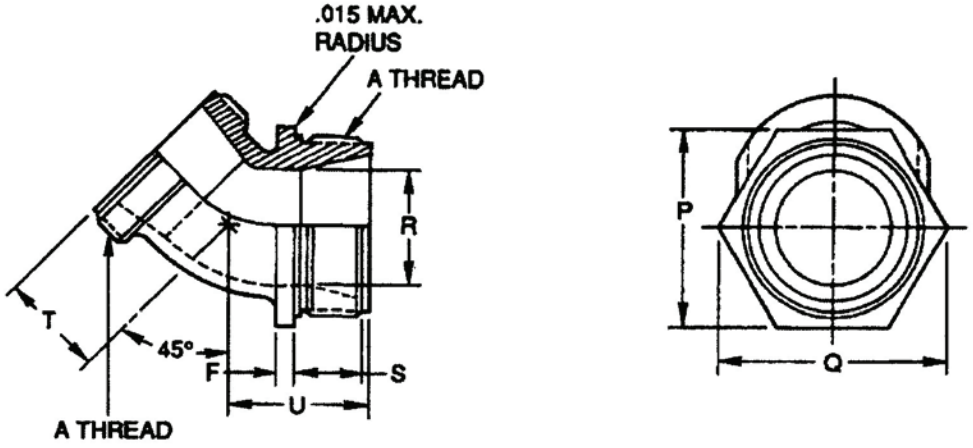
Figure 38. Conduit Fittings (Sheet 5 of 10)

PART NUMBER DESIGNATION

	AN3060 AN3061	-12 -12
MILITARY DESIGNATION		
DASH NUMBER (See DIMENSIONS)		

MATERIAL: ALUMINUM

FINISH: CADMIUM, OLIVE DRAB



DIMENSIONS

Dash No.	AN3060, AN3061							AN3060		AN3061	
	Conduit Size	A Thread	F	P	Q Approx	R ±.010 Dia	T	S	U	S	U
-3	3/16	1/2-28UNEF-2A	1/8	11/16	51/64	.167	5/8	5/8	29/32	9/32	9/16
-4	1/4	5/8-24NEF-2A	1/8	13/16	15/16	.229	21/32	5/8	15/16	9/32	19/32
-6	3/8	3/4-20UNEF-2A	1/8	15/16	1-3/32	.354	11/16	5/8	31/32	9/32	5/8
-8	1/2	7/8-20UNEF-2A	3/16	1-1/16	1-15/64	.479	3/4	11/16	1-1/8	11/32	25/32
-10	5/8	1-20UNEF-2A	3/16	1-1/4	1-7/16	.604	3/4	11/16	1-5/32	11/32	13/16
-12	3/4	1-3/16-18NEF-2A	3/16	1-3/8	1-19/32	.729	25/32	11/16	1-3/16	11/32	27/32
-16	1	1-7/16-18NEF-2A	3/16	1-5/8	1-7/8	.979	31/32	11/16	1-1/4	11/32	29/32
-20	1-1/4	1-3/4-18NS-2A	3/16	2	2-5/16	1.229	1-1/16	3/4	1-13/32	3/8	1-1/32
-24	1-1/2	2-18NS-2A	3/16	2-3/16	2-17/32	1.479	1-5/32	13/16	1-9/16	13/32	1-5/32
-28	1-3/4	2-1/4-16UN-2A	1/4	2-7/16	2-13/16	1.729	1-7/32	7/8	1-11/16	7/16	1-1/4
-32	2	2-1/2-16UN-2A	1/4	2-13/16	3-1/4	1.979	1-1/4	15/16	1-27/32	15/32	1-3/8
-40	2-1/2	3-16UN-2A	1/4	3-3/8	3-57/64	2.479	1-3/8	1	2	1/2	1-1/2

Figure 38. Conduit Fittings (Sheet 6 of 10)

PART NUMBER DESIGNATION

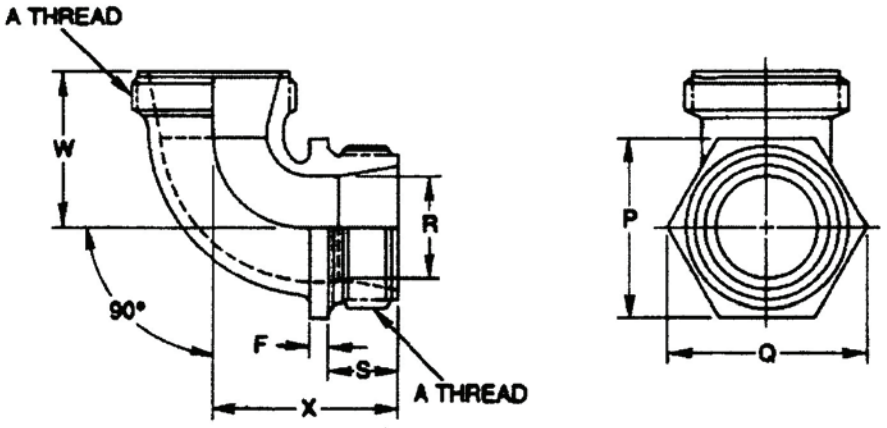
AN3062 -12
AN3063 -12

MILITARY DESIGNATION

DASH NUMBER (See DIMENSIONS)

MATERIAL: ALUMINUM

FINISH: CADMIUM, OLIVE DRAB



DIMENSIONS

Dash No.	AN3062, AN3063							AN3062		AN3063	
	Conduit Size	A Thread	F	P	Q Approx	R ±.010 Dia	W	S	X	S	X
-3	3/16	1/2-28UNEF-2A	1/8	11/16	51/64	.167	13/16	5/8	1-1/8	9/32	25/32
-4	1/4	5/8-24NEF-2A	1/8	13/16	15/16	.229	29/32	5/8	1-3/16	9/32	27/32
-6	3/8	3/4-20UNEF-2A	1/8	15/16	1-3/32	.354	31/32	5/8	1-1/4	9/32	29/32
-8	1/2	7/8-20UNEF-2A	3/16	1-1/16	1-15/64	.479	1-3/32	11/16	1-1/2	11/32	1-5/32
-10	5/8	1-20UNEF-2A	3/16	1-1/4	1-7/16	.604	1-5/32	11/16	1-9/16	11/32	1-7/32
-12	3/4	1-3/16-18NEF-2A	3/16	1-3/8	1-19/32	.729	1-7/32	11/16	1-5/8	11/32	1-9/32
-16	1	1-7/16-18NEF-2A	3/16	1-5/8	1-7/8	.979	1-1/2	11/16	1-13/16	11/32	1-15/32
-20	1-1/4	1-3/4-18NS-2A	3/16	2	2-5/16	1.229	1-23/32	3/4	2-1/16	3/8	1-11/16
-24	1-1/2	2-18NS-2A	3/16	2-3/16	2-17/32	1.479	1-29/32	13/16	2-5/16	13/32	1-29/32
-28	1-3/4	2-1/4-16UN-2A	1/4	2-7/16	2-13/16	1.729	2-1/32	7/8	2-9/16	7/16	2-1/8
-32	2	2-1/2-16UN-2A	1/4	2-13/16	3-1/4	1.979	2-5/32	15/16	2-3/4	15/32	2-9/32
-40	2-1/2	3-16UN-2A	1/4	3-3/8	3-57/64	2.479	2-7/16	1	3-1/16	1/2	2-9/16

Figure 38. Conduit Fittings (Sheet 7 of 10)

PART NUMBER DESIGNATION

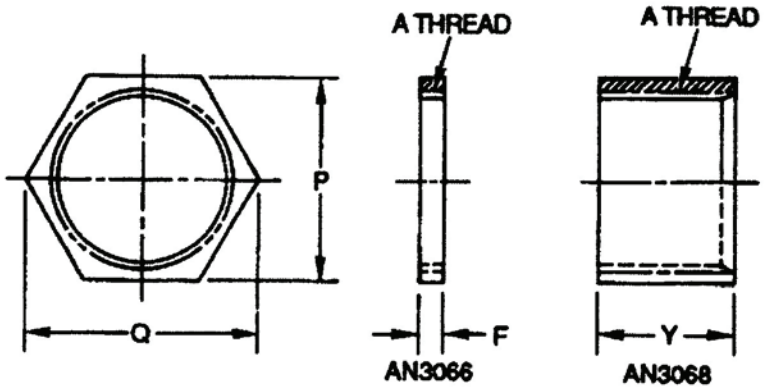
AN3068 -12

MILITARY DESIGNATION

DASH NUMBER (See DIMENSIONS)

MATERIAL: ALUMINUM

FINISH: CADMIUM, OLIVE DRAB



DIMENSIONS

Dash No.	Conduit Size	A Thread	P	Q Approx	F	Y
-3	3/16	1/2-28UNEF-2B	11/16	51/64	1/8	1-1/16
-4	1/4	5/8-24NEF-2B	13/16	15/16	1/8	1-1/16
-6	3/8	3/4-20UNEF-2B	15/16	1-3/32	1/8	1-1/8
-8	1/2	7/8-20UNEF-2B	1-1/16	1-15/64	3/16	1-1/8
-10	5/8	1-20UNEF-2B	1-1/4	1-7/16	3/16	1-1/8
-12	3/4	1-3/16-18NEF-2B	1-3/8	1-19/32	3/16	1-1/8
-16	1	1-7/16-18NEF-2B	1-5/8	1-7/8	3/16	1-1/8
-20	1-1/4	1-3/4-18NS-2B	2	2-5/16	3/16	1-1/4
-24	1-1/2	2-18NS-2B	2-3/16	2-17/32	3/16	1-3/8
-28	1-3/4	2-1/4-16UN-2B	2-7/16	2-7/8	1/4	1-7/16
-32	2	2-1/2-16UN-2B	2-13/16	3-1/4	1/4	1-9/16
-40	2-1/2	3-16UN-2B	3-3/8	3-57/64	1/4	1-11/16

Figure 38. Conduit Fittings (Sheet 8 of 10)

PART NUMBER DESIGNATION

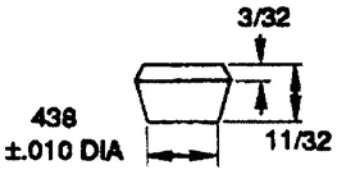
AN3067 -5

MILITARY DESIGNATION

DASH NUMBER (See TABLE)

MATERIAL: SEAL-SYNTHETIC RUBBER
WASHER-PHENOLIC, FABRIC BASED

AN Assy Part No.	Seals		Washer
	Part No.	Holes	
AN3067-2	AN3067S2	2	AN3067W3
AN3067-3	AN3067S3	3	
AN3067-4	AN3067S4	4	
AN3067-5	AN3067S5	5	
AN3067-6	AN3067S6	6	





AN3067S2



AN3067S3



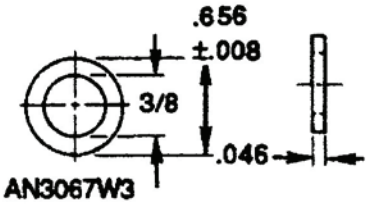
AN3067S4



AN3067S5



AN3067S6



AN3067W3

Figure 38. Conduit Fittings (Sheet 9 of 10)

PART NUMBER DESIGNATION

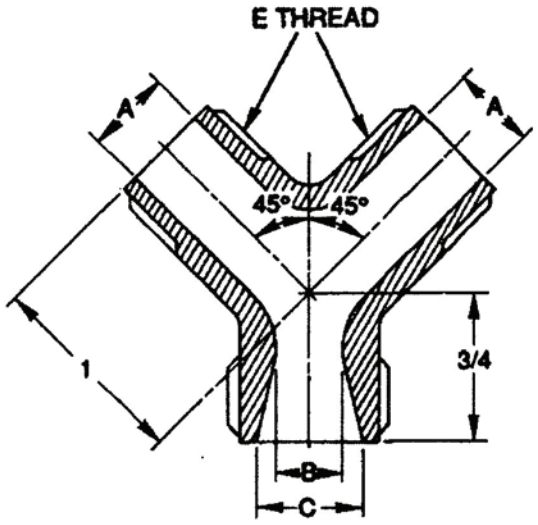
AN3250 DD 1
AN3250 B 1

MILITARY DESIGNATION

MATERIAL

DETAIL (See TABLE)

MATERIAL: DD – ALUMINUM ALLOY
B - BRASS



AN Part No.		A	B	C	D	E
Alum. Alloy	Brass	Dia	Dia	Dia	Thread	Thread
AN3250DD1	AN3250B1	.395	.354	.519	3/4-20 NEF-2	5/8-24 NEF-2
AN3250DD2	AN3250B2	.557	.510	.669	7/8-20 NEF-2	3/4-20 NEF-2

Figure 38. Conduit Fittings (Sheet 10 of 10)

PART NUMBER DESIGNATION

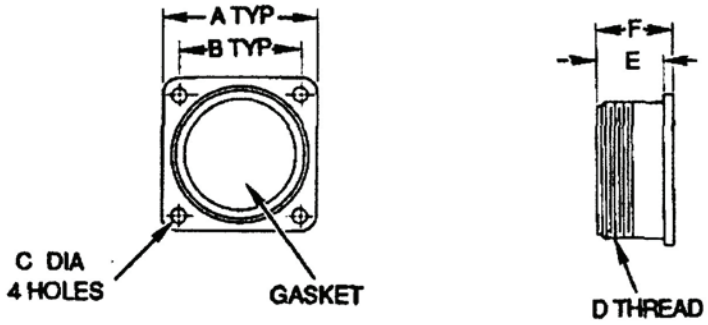
NAS1196 -12 X

MILITARY DESIGNATION

DASH NO. (See Dimensions)

GASKET
BLANK – WITH GASKET
X – NO GASKET

MATERIAL:
RECEPTACLE – ALUMINUM ALLOY
GASKET - SILICONE



DIMENSIONS

Dash Number	Shell Size	A ±.031	B ±.005	C ±.005	D Thread	E Max.	F Max.
-1	8S	.875	.594	.120	1/2-28	.156	.749
-2	10SL	1.000	.719	.120	5/8-24	.156	.749
-3	12S	1.094	.812	.120	3/4-20	.156	.749
-4	14S	1.188	.906	.120	7/8-20	.156	.749
-5	16S	1.281	.969	.120	1-20	.156	.749
-6	12	1.094	.812	.120	3/4-20	.156	.937
-7	14	1.188	.936	.120	7/8-20	.156	.937
-8	16	1.281	.969	.120	1-20	.156	.937
-9	18	1.375	1.062	.120	1-1/8-18	.203	.984
10	20	1.500	1.156	.120	1-1/4-18	.203	.984
-11	22	1.625	1.250	.120	1-3/8-18	.203	.984
-12	24	1.750	1.375	.147	1-1/2-1B	.203	1.046
-13	28	2.000	1.562	.147	1-3/4-18	.203	1.046
-14	32	2.250	1.750	.173	2-18	.359	1.265
-15	36	2.500	1.938	.173	2-1/4-16	.359	1.265
-16	40	2.750	2.188	.173	2-1/2-16	.359	1.265
-17	44	3.000	2.375	.173	2-3/4-16	.359	1.265
-18	48	3.250	2.625	.173	3-16	.359	1.265

NOTES:
1. DASH NUMBER INDICATES SHELL SIZE
2. NAS1196 IS INACTIVE FOR NEW DESIGN, USE MS3105.

Figure 39. Dummy Receptacles (Sheet 1 of 2)

PART NUMBER DESIGNATION

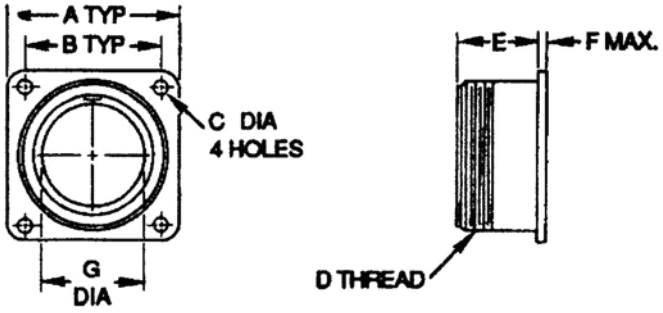
MS3105 -16

MILITARY DESIGNATION

DASH NO. (See Dimensions)

MATERIAL: ALUMINUM ALLOY

FINISH: CADMIUM, OLIVE DRAB



Dash Number (NOTE 1)	A ±.031	B ±.005	C +.010 -.005	D	E +.031 -.000	F	G ±.031	Supersedes NAS1196 (NOTE2)
-8S	.875	.594	.120	1/2-28	.562	.156	.252	-1X
-10S	1.000	.719	.120	5/8-24	.562	.156	.323	-2X
-12S	1.094	.812	.120	3/4-20	.562	.156	.450	-3X
-12	1.188	.906	.120	7/8-20	.750	.156	.450	-6X
-14S	1.281	.969	.120	1-20	.562	.156	.526	-4X
-14	1.094	.812	.120	3/4-20	.750	.156	.526	-7X
-16S	1.188	.936	.120	7/8-20	.662	.156	.646	-5X
-16	1.281	.969	.120	1-20	.750	.156	.646	-8X
-18	1.375	1.062	.120	1-1/8-18	.750	.203	.771	-9X
-20	1.500	1.156	.120	1-1/4-18	.750	.203	.927	-10X
-22	1.625	1.250	.120	1-3/8-18	.750	.203	1.021	-11X
-24	1.750	1.375	.147	1-1/2-1B	.182	.203	1.150	-12X
-28	2.000	1.562	.147	1-3/4-18	.812	.203	1.365	-13X
-32	2.250	1.750	.173	2-18	.875	.359	1.620	-14X
-36	2.500	1.938	.173	2-1/4-16	.875	.359	1.833	-15X
-40	2.750	2.188	.173	2-1/2-16	.875	.359	2.052	-16X
-44	3.000	2.375	.173	2-3/4-16	.875	.359	2.302	-17X
-48	3.250	2.625	.173	3-16	.875	.359	2.552	-18X

NOTES:
1. DASH NUMBER INDICATES SHELL SIZE
2. NAS1196 IS INACTIVE FOR NEW DESIGN, USE MS3105.

Figure 39. Dummy Receptacles (Sheet 2 of 2)

PART NUMBER DESIGNATION

MS25042	-18	D	A	(REVISION J)
MS25042	-18	D		(REVISION G)

MILITARY DESIGNATION

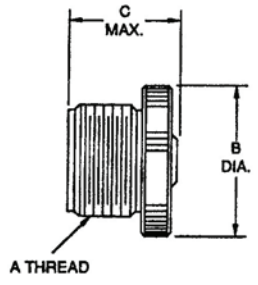
DASH NUMBER (SEE DIMENSIONS)

TERMINATION TYPE
BLANK – NO TERMINATION (INACTIVE FOR NEW DESIGN)
C – SASH CHAIN (INACTIVE FOR NEW DESIGN)
D – SASH CHAIN

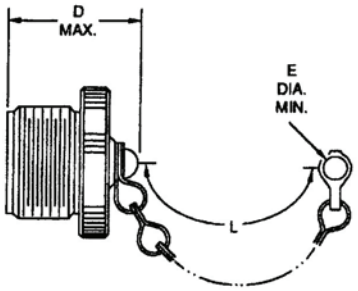
FINISH (REVISION H ONLY)
A – BLACK ANODYZE

PART NUMBER	GASKET	FINISH
MS25042-D (REVISION G)	NONE	CADMIUM, OLIVE DRAB
MS25042-DA (REVISION H)	NEOPRENE	BLACK ANODIZE
MS25042-D (REVISION J)	NONE	BLACK ANODIZE .0006 MIN

MATERIAL: CAP - ALUMINUM ALLOY
WIRE ROPE/CHAIN – STAINLESS STEEL



MS25042*



MS25042*
TYPE C, D OR DA

Shell Size	A Thread Class 2A	B Max.	C Max.	D Max.	E Min.	L Nominal	
						MS25042C	MS25042D OR DA
08	.500-28UNEF	.562	.803	.969	.151	3.00	4.00
10	.625-24 UNEF	.687	.803	.969	.151	3.00	4.00
12	.750-A20 UNEF	.812	.891	1.156	.151	3.50	4.50
14	.875-20 UNEF	.937	.891	1.156	.151	3.50	4.50
16	1.000-20 UNEF	1.062	.891	1.156	.151	3.50	4.50
18	1.125-18 UNEF	1.187	.891	1.156	.151	3.50	4.50
20	1.250-18 UNEF	1.312	.891	1.156	.182	4.00	5.00
22	1.375-18 UNEF	1.437	.891	1.156	.182	4.00	5.00
24	1.500-18 UNEF	1.562	.891	1.156	.182	4.00	5.50
28	1.750-18 UNS	1.812	.891	1.156	.182	7.50	7.75
32	2.000-18 UNS	2.062	.891	1.156	.213	7.50	7.75
36	2.250-16 UN	2.312	.891	1.156	.213	7.50	7.75
40	2.500-16 UN	2.562	.891	1.156	.213	7.50	7.75
44	2.750-16 UN	2.812	.891	1.156	.213	7.50	7.75
48	3.000-16 UN	3.062	.891	1.156	.213	7.50	7.75

Figure 40. Dust Caps (Sheet 1 of 3)

PART NUMBER DESIGNATION

MS25043	-28	D	A	(REVISION J)
MS25043	-28	D		(REVISION G)

MILITARY DESIGNATION

DASH NR., SHELL SIZE (SEE DIMENSIONS)

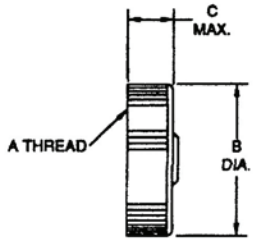
TERMINATION TYPE
BLANK – NO TERMINATION (INACTIVE FOR NEW DESIGN)
C – SASH CHAIN (INACTIVE FOR NEW DESIGN)
D – SASH CHAIN

FINISH (REVISION H ONLY)
A – BLACK ANODYZE

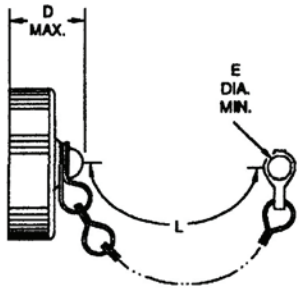
PART NUMBER	GASKET	FINISH
MS25043-D (REVISION G)	NEOPRENE	CADMIUM, OLIVE DRAB
MS25043-DA (REVISION H)	NEOPRENE	BLACK ANODIZE
MS25043-D (REVISION J)	NEOPRENE	BLACK ANODIZE .0006 MIN

GASKET THICKNESS IS .57/.63

MATERIAL: CAP - ALUMINUM ALLOY; WIRE ROPE/CHAIN – STAINLESS STEEL



MS25043*



MS25043*
TYPE C, D OR DA

Shell Size	A Thread Class 2B	B Max.	C Max.	D Max.	E Min.	L Nominal	
						MS25043*C	MS25043*D OR DA
08	.500-28UNEF	.688	.516	.750	.135	3.00	4.00
10	.625-24 UNEF	.815	.516	.750	.135	3.00	4.00
12	.750-20 UNEF	1.000	.516	.750	.135	3.50	4.50
14	.875-20 UNEF	1.125	.516	.750	.135	3.50	4.50
16	1.000-20 UNEF	1.188	.516	.750	.135	3.50	4.50
18	1.125-18 UNEF	1.344	.516	.750	.135	3.50	4.50
20	1.250-18 UNEF	1.469	.516	.750	.135	4.00	5.00
22	1.375-18 UNEF	1.594	.516	.750	.135	4.00	5.00
24	1.500-18 UNEF	1.719	.516	.750	.166	4.00	5.50
28	1.750-18 UNS	1.969	.578	.812	.166	7.50	7.75
32	2.000-18 UNS	2.219	.578	.812	.182	7.50	7.75
36	2.250-16 UN	2.469	.578	.812	.182	7.50	7.75
40	2.500-16 UN	2.719	.578	.812	.182	7.50	7.75
44	2.750-16 UN	2.969	.578	.812	.182	7.50	7.75
48	3.000-16 UN	3.188	.578	.812	.182	7.50	7.75

Figure 40. Dust Caps (Sheet 2 of 3)

PART NUMBER DESIGNATION

MS90376 -18 Y F

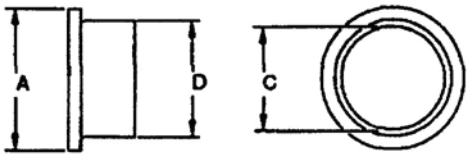
MILITARY DESIGNATION

DASH NR., SHELL SIZE (SEE DIMENSIONS)

COLOR
R - RED
Y - YELLOW

MODIFICATION
BLANK – TYPE A MATERIAL
F – TYPE B ELECTROSTATIC-FREE MATERIAL

MATERIAL TYPE: A – POLYETHYLENE, L-P-390, TYPEI, CLASS L
B – ELECTROSTATIC-FREE MATERIAL CONFORMING TO MIL-B-81705, TYPEII.



DIMENSIONS

Part Number	A ±.031	C ±.010	D ±.010	Supersedes	Part Number	A ±.031	C ±.010	D ±.010	Supersedes
MS90376-8Y	.670	.413	.483	MS25177-8	MS90376-24Y	1.640	1.390	1.460	MS25177-24
MS90376-8R	.740	.480	.540	MS25178-8	MS90376-24R	1.700	1.463	1.533	MS25178-24
MS90376-10Y	.750	.530	.595	MS25177-10	MS90376-25Y	1.580	1.540	1.610	—
MS90376-10R	.840	.605	.665	MS25178-10	MS90376-28Y	1.875	1.648	1.718	MS25177-28
MS90376-12Y	.860	.655	.715	MS25177-12	MS90376-28R	1.95	1.715	1.790	MS25178-28
MS90376-12R	.970	.720	.775	MS25178-12	MS90376-32Y	2.125	1.890	1.970	MS25177-32
MS90376-14Y	1.031	.785	.845	MS25177-14	MS90376-32R	2.220	1.965	2.040	MS25178-32
MS90376-14R	1.125	.850	.905	MS25178-14	MS90376-36Y	2.340	2.140	2.210	MS25177-36
MS90376-16Y	1.125	.893	.963	MS25177-16	MS90376-36R	2.435	2.215	2.290	MS25178-36
MS90376-16R	1.220	.973	1.035	MS25178-16	MS90376-40Y	2.600	2.380	2.450	MS25177-40
MS90376-18Y	1.250	1.028	1.088	MS25177-18	MS90376-40R	2.660	2.440	2.530	MS25178-40
MS90376-18R	1.330	1.093	1.155	MS25178-18	MS90376-44Y	2.875	2.630	2.700	MS25177-44
MS90376-20Y	1.406	1.150	1.215	MS25177-20	MS90376-44R	2.960	2.720	2.812	MS25178-44
MS90376-20R	1.465	1.231	1.301	MS25178-20	MS90376-48Y	3.125	2.880	2.950	MS25177-48
MS90376-22Y	1.500	1.270	1.340	MS25177-22	MS90376-48R	3.225	2.960	3.050	MS25178-48
MS90376-22R	1.590	1.340	1.410	MS25178-22					

SHELL SIZE

Shell Size	MS90376 Dash Number		Shell Size	MS90376 Dash Number		Shell Size	MS90376 Dash Number	
	MIL-C-5015			MIL-C-5015			MIL-C-5015	
	Rept	Plug		Rept	Plug		Rept	Plug
8	-8R	-8Y	16	-16R	-16Y	24	-24R	-24Y
9			17			25		
10	-10R	-10Y	18	-18R	-18Y	28	-28R	-28Y
11			19			32	-32R	-32Y
12	-12R	-12Y	20	-20R	-20Y	36	-36R	-36Y
13			21			40	-40R	-40Y
14	-14R	-14Y	22	-22R	-22Y	44	-44R	-44Y
15			23			48	-48R	-48Y

Figure 40. Dust Caps (Sheet 3 of 3)

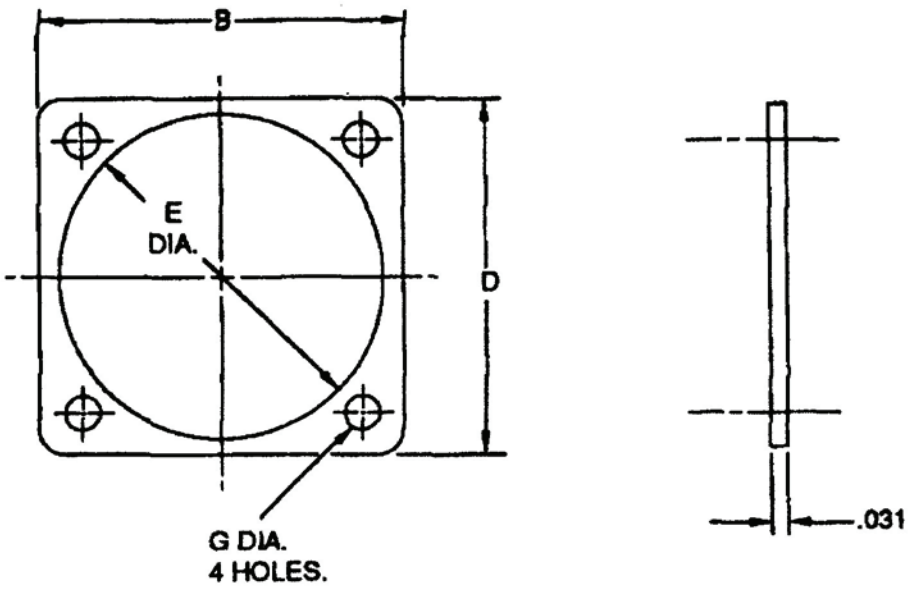
PART NUMBER DESIGNATION

AS51007 -10

MILITARY DESIGNATION

DASH NR., SHELL SIZE (SEE DIMENSIONS)

MATERIAL TYPE: MS51007 – NEOPRENE PER MIL-STD-417
MS52000 – NEOPRENE PER MIL-R-3065



DIMENSIONS

Dash No.	Shell Size MIL-C-5015	B +.016 -.000	D	E Dia +.016 -.000	G Dia
-1	8S	.594	.875	.500	.172
-2	10S & 10 SL	.719	1.000	.625	.172
-3	12 & 12S	.813	1.094	.750	.172
-4	14 & 14S	.906	1.188	.875	.172
-5	16 & 16S	.969	1.281	1.000	.172
-6	18	1.063	1.375	1.125	.203
-7	20	1.156	1.500	1.250	.203
-8	22	1.250	1.625	1.375	.203
-9	24	1.375	1.750	1.500	.203
-10	28	1.563	2.000	1.750	.203
-11	28	2.188	2.688	1.750	.203
-12	32	1.750	2.250	2.000	.219
-13	36	1.938	2.500	2.188	.219
-14	40	2.188	2.750	2.437	.219

Figure 41. Gaskets for Mount Receptacles

PART NUMBER DESIGNATION

MS3186 A -113 B

MILITARY DESIGNATION

MATERIAL
A – ALUMINUM
C – CRES.
S – STEEL, BRIGHT CADMIUM PLATED

DASH NUMBER (SEE DIMENSIONS AND USAGE TABLES)

FINISH (REVISION H ONLY)
A – BLACK ANODYZE
B – BLACK CADMIUM OVER CRES.
N – ELECTROLESS NICKEL (Not for Navy Use)
P – PASSIVATE
W – OLIVE DRAB CADMIUM OVER NICKEL (Not for Navy Use)

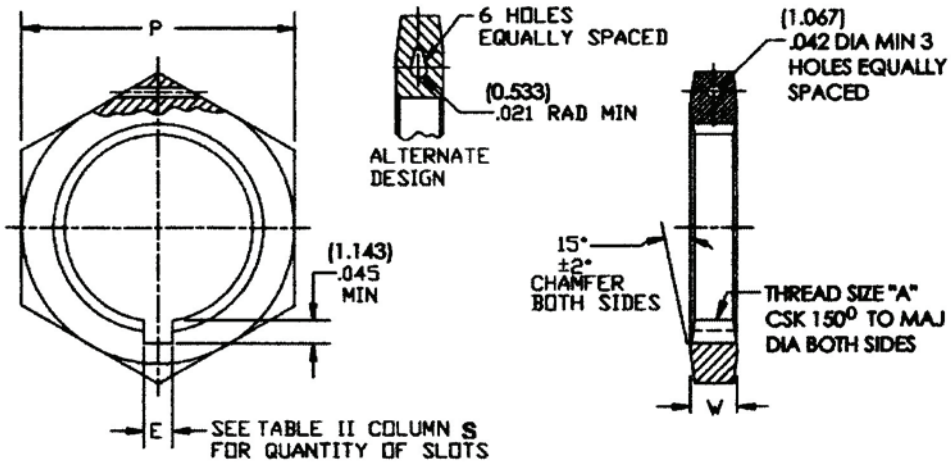


Figure 42. Mounting Nut for Jam Nut Receptacles MS3186 (Sheet 1 of 7)

DIMENSIONS

Dash number	Material	A Thread size	E max	P ± .017	S minimum number of slots	W ± .017	Supersedes dash number
101	ASC	.500-28UNEF-28	None	.687	None	.125	-25 -26 -27
102	ASC	.5625-24UNEF-28	.135	.750	2	.125	-28 -29 -30
103	ASC	.625-24UNEF-28	None	.812	None	.125	-31 -32 -33
104	ASC	.625-2OUN-28	None	.812	None	.125	— — —
105	ASC	.625-2OUN-28	None	.812	None	.125	— — —
106	ASC	.6875-24UNEF-28	.135	.875	1	.125	-34 -35 -36
107	ASC	.750-2OUNEF-28	None	.937	None	.125	-37 -38 -39
108	ASC	.8125-2OUNEF-28	.135	1.000	1	.125	— — —
109	ASC	.875-2OUNEF-28	.135	1.062	1	.125	-40 -41 -42
110	ASC	.9375-2OUNEF-28	None	1.123	None	.125	— — —
111	ASC	1.000-2OUNEF-28	.135	1.188	1	.125	-43 -44 -45
112	ASC	1.125-1OUN-28	None	1.312	None	.125	— — —
113	ASC	1.125-18UNEF-28	.135	1.312	1	.125	-46 -47 -48
114	ASC	1.1075-18UNEF-28	None	1.375	None	.125	— — —
115	ASC	1.250-20OUN-28	None	1.438	None	.125	— — —

Figure 42. Mounting Nut for Jam Nut Receptacles MS3186 (Sheet 2 of 7)

DIMENSIONS (Continued)

Dash No.	Material	A Thread size	E Max	P ± .017	S Minimum number of slots	W ± .017	Supersedes dash number
116	A S C	1.250-18UNEF-28	.135	1.438	1	.125	-49 -50 -51
117	A S C	1.375-18UNEF-28	.192	1.562	1	.125	-52 -53 -54
118	A S C	1.4375-18UNEF-28	None	1.625	None	.125	— — —
119	A S C	1.500-2OUN-28	None	1.688	None	.125	— — —
120	A S C	1.500-2OUNEF-28	None	1.608	1	.125	-55 -56 -57
121	A S C	1.625-18UNEF-28	.192	1.812	1	.125	-58 -59 -60
122	A S C	1.750-18UNS-28	None	2.000	None	.125	-61 -62 -63
123	A S C	1.875-16UN-28	None	2.125	None	.125	— — —
124	A S C	1.9375-16UN-28	None	2.187	None	.159	— — —
125	A S C	2.000-18UNS-28	None	2.250	None	.189	-64 -65 -66
126	A S C	2.125-16UN-28	None	2.375	None	.189	— — —
127	A S C	2.250-16UN-28	None	2.500	None	.189	-67 -68 -69
128	A S C	2.500-16UN-28	None	2.750	None	.189	-70 -71 -72
129	A S C	2.750-16UN-28	None	3.000	None	.189	-73 -74 -75
130	A S C	3.000-18UN	None	3.250	None	.189	-76 -77 -78

Figure 42. Mounting Nut for Jam Nut Receptacles MS3186 (Sheet 3 of 7)

CONNECTOR INTERMATEABILITY (SHEET 1 of 4)

Dash number	Material	For connector shell size (reference)			
		MIL-DTL-5015	MIL-C-26482	MIL-DTL-26500	MIL-DTL-83723 Series I
101	A	85	—	—	—
	S	35	—	—	—
	C	85	—	—	—
102	A	—	8	—	8
	S	—	8	—	8
	C	—	8	—	8
103	A	10S-10SL	—	—	—
	S	10S-10SL	—	—	—
	C	10S-10SL	—	—	—
104	A	—	—	8	—
	S	—	—	8	—
	C	—	—	8	—
105	A	—	—	—	—
	S	—	—	—	—
	C	—	—	—	—
106	A	—	10	—	10
	S	—	10	—	10
	C	—	10	—	10
107	A	12S-12	—	10	—
	S	12S-12	—	10	—
	C	12S-12	—	10	—
108	A	—	—	—	—
	S	—	—	—	—
	C	—	—	—	—
109	A	14S-14	12	—	12
	S	14S-14	12	—	12
	C	14S-14	12	—	12
110	A	—	—	12	—
	S	—	—	12	—
	C	—	—	12	—
111	A	16S-16	14	14	14
	S	16S-16	14	14	14
	C	16S-16	14	14	14
112	A	—	—	16	—
	S	—	—	16	—
	C	—	—	16	—
113	A	18	16	—	16
	S	18	16	—	16
	C	18	16	—	16
114	A	—	—	—	—
	S	—	—	—	—
	C	—	—	—	—
115	A	—	—	18	—
	S	—	—	18	—
	C	—	—	18	—

Figure 42. Mounting Nut for Jam Nut Receptacles MS3186 (Sheet 4 of 7)

CONNECTOR INTERMATEABILITY (SHEET 2 of 4)

Dash number	Material	For connector shell size (reference)				
		MIL-DTL-83723 Series III	MIL-DTL-38999 Series I	MIL-DTL-38999 Series II	MIL-C-28840	MIL-C-27599
101	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
102	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
103	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
104	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
105	A	8	—	—	—	—
	S	8	—	—	—	—
	C	8	—	—	—	—
106	A	—	9	—	—	9
	S	—	9	—	—	9
	C	—	9	—	—	9
107	A	10	—	—	—	—
	S	10	—	—	—	—
	C	10	—	—	—	—
108	A	—	11	—	—	11
	S	—	11	—	—	11
	C	—	11	—	—	11
109	A	—	—	8	11	8
	S	—	—	8	11	8
	C	—	—	8	11	8
110	A	12	—	—	—	—
	S	12	—	—	—	—
	C	12	—	—	—	—
111	A	14	13	10	13	10 -13
	S	14	13	10	13	10 -13
	C	14	13	10	13	10 -13
112	A	16 1/	—	—	—	—
	S	16 1/	—	—	—	—
	C	16 1/	—	—	—	—
113	A	16 2/	—	—	—	—
	S	16 2/	—	—	—	—
	C	16 2/	—	—	—	—
114	A	—	—	—	15	—
	S	—	—	—	15	—
	C	—	—	—	15	—
115	A	—	—	—	—	14 - 17
	S	—	—	—	—	14 - 17
	C	—	—	—	—	14 - 17

See footnotes at end of table.

Figure 42. Mounting Nut for Jam Nut Receptacles MS3186 (Sheet 5 of 7)

CONNECTOR INTERMATEABILITY (SHEET 3 of 4)

Dash number	Material	For connector shell size (reference)			
		MIL-DTL-5015	MIL-C-26482	MIL-DTL-26500	MIL-DTL-83723 Series I
116	A	20	18	—	18
	S	20	18	—	18
	C	20	18	—	18
117	A	22	20	20	20
	S	22	20	20	20
	C	22	20	20	20
118	A	—	—	—	—
	S	—	—	—	—
	C	—	—	—	—
119	A	—	—	22	—
	S	—	—	22	—
	C	—	—	22	—
120	A	24	22	—	22
	S	24	22	—	22
	C	24	22	—	22
121	A	—	24	24	24
	S	—	24	24	24
	C	—	24	24	24
122	A	28	—	—	—
	S	28	—	—	—
	C	28	—	—	—
123	A	—	—	—	—
	S	—	—	—	—
	C	—	—	—	—
124	A	—	—	—	—
	S	—	—	—	—
	C	—	—	—	—
125	A	32	—	—	—
	S	32	—	—	—
	C	32	—	—	—
126	A	—	—	—	—
	S	—	—	—	—
	C	—	—	—	—
127	A	36	—	—	—
	S	36	—	—	—
	C	36	—	—	—
128	A	40	—	—	—
	S	40	—	—	—
	C	40	—	—	—
129	A	44	—	—	—
	S	44	—	—	—
	C	44	—	—	—
130	A	48	—	—	—
	S	48	—	—	—
	C	48	—	—	—

See footnotes at end of table.

Figure 42. Mounting Nut for Jam Nut Receptacles MS3186 (Sheet 6 of 7)

CONNECTOR INTERMATEABILITY (SHEET 4 of 4)

Dash number	Material	For connector shell size (reference)				
		MIL-DTL-83723 Series III	MIL-DTL-38999 Series I	MIL-DTL-38999 Series II	MIL-C-28840	MIL-C-27599
116	A	18	17	14	17	—
	S	18	17	14	17	—
	C	18	17	14	17	—
117	A	20	19	16	—	16 19
	S	20	19	16	—	16 19
	C	20	19	16	—	16 19
118	A	—	—	—	19	—
	S	—	—	—	19	—
	C	—	—	—	19	—
119	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
120	A	22	21	18	—	18 21
	S	22	21	18	—	18 21
	C	22	21	18	—	18 21
121	A	24	23	20	23	20 23
	S	24	23	20	23	20 23
	C	24	23	20	23	20 23
122	A	—	25	22	25	22 25
	S	—	25	22	25	22 25
	C	—	25	22	25	22 25
123	A	—	—	24	—	24
	S	—	—	24	—	24
	C	—	—	24	—	24
124	A	—	—	—	29	—
	S	—	—	—	29	—
	C	—	—	—	29	—
125	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
126	A	—	—	—	33	—
	S	—	—	—	33	—
	C	—	—	—	33	—
127	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
128	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
129	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—
130	A	—	—	—	—	—
	S	—	—	—	—	—
	C	—	—	—	—	—

1/ For bayonet coupling only.
2/ For threaded coupling only.

Figure 42. Mounting Nut for Jam Nut Receptacles MS3186 (Sheet 7 of 7)

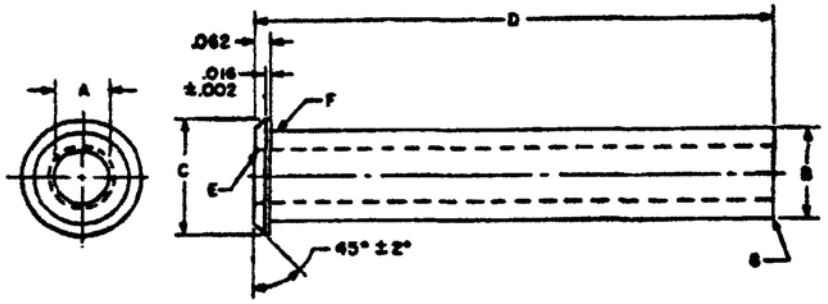
PART NUMBER DESIGNATION

MS3420 -16

MILITARY DESIGNATION

DASH NUMBER (SEE DIMENSIONS)

MATERIAL TYPE: RUBBER PER MIL-STD-417



Dash no.	A dia	B dia	C dia	D	E, F, G radius	Supersede (Ref.)	
						AN3420 dash no.	MS39056 dash no.
-3	.130	.210	.379	2.875	.031	-3	-1
-4	.220	.302	.505	2.750	.031	-4	-2
-6	.312	.427	.619	2.625	.031	-6	-3
-8	.437	.552	.744	2.500	.062	-8	-4
-10	.562	.615	.889	2.375	.062	-10	-5
-12	.625	.740	1.084	2.250	.062	-12	-6
-16	.750	.927	1.314	2.125	.062	-16	-7
-20	.937	1.240	1.598	2.000	.062	-20	-8
-24	1.250	1.365	1.847	1.675	.062	-24	-9
-28	1.375	1.614	2.085	1.750	.062	-28	-10
-32	1.624	1.864	2.335	1.625	.062	-32	-11
-40	1.874	2.364	2.835	1.500	.062	-40	-12

NOTES:

1. Dimensions in inches.
2. For use with electrical cable clamp for connector MS3057-3A thru MS3057-40A and MS3057-3C thru -40C.

Figure 43. Rubber Bushings (Sheet 1 of 3)

PART NUMBER DESIGNATION

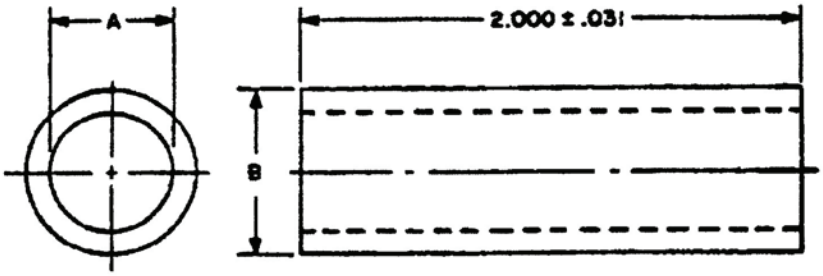
MS3420 -6 A

MILITARY DESIGNATION

DASH NUMBER (SEE DIMENSIONS)

MATERIAL
A – NEOPRENE, BLACK
D – SILICONE, RED
L – FLUOROSILICONE, BLUE

MATERIAL TYPE: RUBBER PER MIL-STD-417

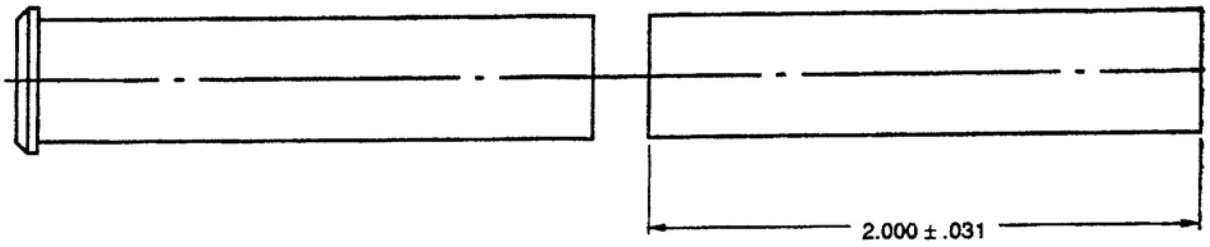


DIMENSIONS:

Dash no.	A dia	B dia	Supersede (Ref.)	
			AN3420 dash no.	MS39057 dash no.
-3	.125	.210	-3A	-1
-4	.219	.302	-4A	-2
-6	.312	.427	-6A	-3
-8	.438	.531	-8A	-4
-10	.438	.615	-10A	-5
-12	.541	.740	-12A	-6
-16	.750	.927	-16A	-7
-18	.938	1.115	-18A	-8
-20	.938	1.240	-20A	-9
-24	1.125	1.365	-24A	-10
-28	1.250	1.614	-28A	-11
-32	1.625	1.865	-32A	-12
-40	1.875	2.365	-40A	-13

NOTES:
1. Dimensions in inches.
2. For use with electrical cable clamp for connector MS3057-3B thru MS3057-40B and MS3057-3C thru -40C, MS3415, MS3417 and MS3418.

Figure 43. Rubber Bushings (Sheet 2 of 3)



MS39056
SUPERSEDED BY MS3420

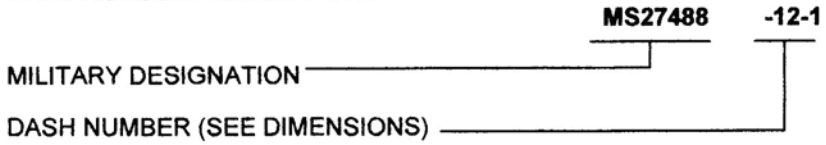
Supersedes	
AN3420	MS39056
-3	-1
-4	-2
-6	-3
-8	-4
-10	-5
-12	-6
-16	-7
-20	-8
-24	-9
-28	-10
-32	-11
-40	-12

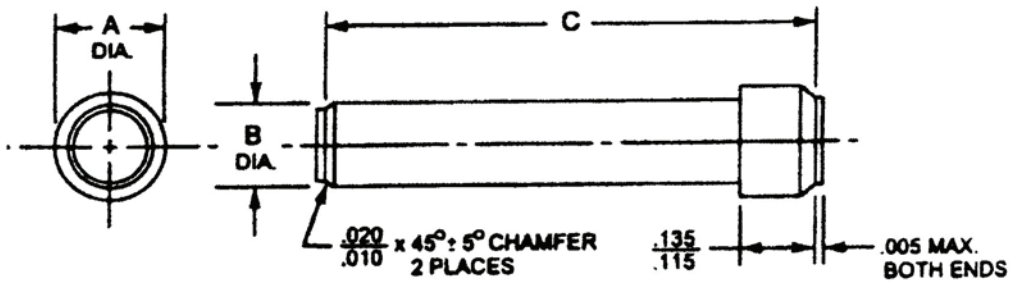
MS39057
SUPERSEDED BY MS3420*A

Supersedes	
AN3420	MS39057
-3A	-1
-4A	-2
-6A	-3
-8A	-4
-10A	-5
-12A	-6
-16A	-7
-18A	-8
-20A	-9
-24A	-10
-28A	-11
-32A	-12
-40A	-13

Figure 43. Rubber Bushings (Sheet 3 of 3)

PART NUMBER DESIGNATION





DIMENSIONS:

Dash No.	Color Code	A DIA.	B DIA.	C Dim.	Connector Contact Size (grommet cavity size)
-22-1	Black	0.066 0.058	0.045 0.038	0.796 0.746	23-22
-20-1	Red	0.090 0.080	0.058 0.048	0.805 0.755	20
-16-1	Blue	0.130 0.120	0.079 0.069	1.472 1.422	16
-12-1	Yellow	0.170 0.160	0.125 0.115	1.441 1.391	12
-8-1	Red	0.315 0.305	0.175 0.165	1.189 1.139	8
-4-1	Blue	0.414 0.404	0.283 0.273	1.189 1.139	4
-0-1	Yellow	0.606 0.596	0.431 0.416	1.071 1.021	0

NOTES:

1. Dimensions in inches.
2. MS27488 part numbers supersede part numbers from M1L-C-81511/39, MIL-C-83723/28, MS3187, MS25251, MS27186, MS27187, and MS27488, revision L as follows:
   a. MS27488-22-1 supersedes M81511/39-22 and MS27488-22.
   b. MS27488-20-1 supersedes M81511/39-20, M83723/28-20, MS3187-20-2, MS25251-20, MS27186-1, MS27187-3, and MS27488-20.
   c. MS27488-16-1 supersedes M81511/39-16, M83723/28-16, MS3187-16-2, MS25251-16, MS27186-2, MS27187-1, and MS27488-16.
   d. MS27488-12-1 supersedes M81511/39-12, M83723/28-12, MS3187-12-2, MS25251-12, MS27186-3, MS27187-2, and MS27488-12.
   e. MS27488-8-1 supersedes M83723/28-8, MS3187-8-2JVJS25251-8, and MS27488-8.
   f. MS27488-4-1 supersedes M83723/28-4, MS3187-4-2, MS27187-4, and MS27488-4.
   g. MS27488-0-1 supersedes M83723/28-0, MS3187-0-2, and MS27488-0.

Figure 44. Sealing Plugs

38. CONNECTOR ACCESSORIES. DJ CLASS CONNECTORS.

39. Accessories for DJ class connectors are to provide protection from high impact shock as well as cable sealing. The four specific adapters for DJ class connectors are as follows:

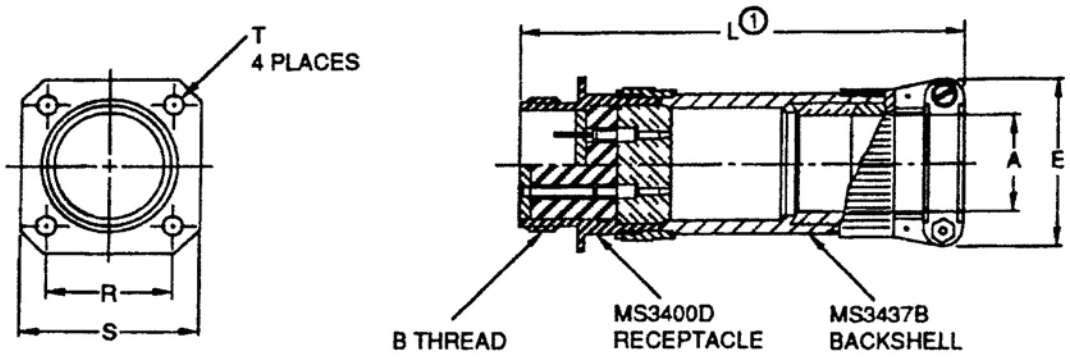
a. Receptacle - Straight Adapter (Figures 45 and 46).

b. Plug - Straight Adapter (Figure 47).

c. Plug - 90° Adapter (Figure 48).

d. Plug - 45° Adapter (Figure 49).

40. DJ Class connector accessories maintenance procedures are preformed using the same tools as for 5051 series accessories covered in this work package. Refer to paragraphs 5 through 10 for removal and installation.



DIMENSIONS

Assembly No.	Connector Receptacle No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	E Max.	L ① Max.	R ±.005	S ±.031	T Dia. Max.
			Max.	Min.						
MS3400DJ 10AXX	MS3400D-10S-XX	MS3437B-9A	.312	.125	.625-24UNEF	.957	4.938	.719	1.000	.120
MS3400DJ 10BXX	MS3400D-10S-XX	MS3437B-11A	.437	.250	.625-24UNEF	1.145	5.688	.719	1.000	.120
MS3400DJ 10DXX	MS3400D-10S-XX	MS3437B-136A	.375	.250	.625-24UNEF	1.145	4.938	.719	1.000	.120
MS3400DJ 11AXX	MS3400D-10SL-XX	MS3437B-9A	.312	.125	.625-24UNEF	.957	4.938	.719	1.000	.120
MS3400DJ 11BXX	MS3400D-10SL-XX	MS3437B-11A	.437	.250	.625-24UNEF	1.145	5.688	.719	1.000	.120
MS3400DJ 11DXX	MS3400D-10SL-XX	MS3437B-136A	.375	.250	.625-24UNEF	1.145	4.938	.719	1.000	.120
MS3400DJ 12AXX	MS3400D-12-XX	MS3437B-114A	.312	.125	.750-20UNEF	.957	4.938	.812	1.094	.120
MS3400DJ 12BXX	MS3400D-12-XX	MS3437B-15A	.625	.350	.750-20UNEF	1.332	5.688	.812	1.094	.120
MS3400DJ 12DXX	MS3400D-12-XX	MS3437B-138A	.500	.350	.750-20UNEF	1.332	4.938	.812	1.094	.120
MS3400DJ 12EXX	MS3400D-12-XX	MS3437B-13A	.437	.250	.750-20UNEF	1.145	4.938	.812	1.094	.120
MS3400DJ 13AXX	MS3400D-12S-XX	MS3437B-114A	.312	.125	.750-20UNEF	.957	4.938	.812	1.094	.120
MS3400DJ 13BXX	MS3400D-12S-XX	MS3437B-15A	.625	.350	.750-20UNEF	1.332	5.688	.812	1.094	.120
MS3400DJ 13DXX	MS3400D-12S-XX	MS3437B-138A	.500	.350	.750-20UNEF	1.332	4.938	.812	1.094	.120
MS3400DJ 13EXX	MS3400D-12S-XX	MS3437B-13A	.437	.250	.750-20UNEF	1.145	4.938	.812	1.094	.120
MS3400DJ 14AXX	MS3400D-14-XX	MS3437B-116A	.437	.250	.875-20UNEF	1.145	4.938	.906	1.188	.120
MS3400DJ 14BXX	MS3400D-14-XX	MS3437B-19A	.750	.500	.875-20UNEF	1.551	5.750	.906	1.188	.120
MS3400DJ 14DXX	MS3400D-14-XX	MS3437B-17A	.575	.350	.875-20UNEF	1.332	4.938	.906	1.188	.120
MS3400DJ 14EXX	MS3400D-14-XX	MS3437B-150A	.312	.125	.875-20UNEF	.957	4.938	.906	1.188	.120
MS3400DJ 15AXX	MS3400D-14S-XX	MS3437B-116A	.437	.250	.875-20UNEF	1.145	4.938	.906	1.188	.120
MS3400DJ 15BXX	MS3400D-14S-XX	MS3437B-19A	.750	.500	.875-20UNEF	1.551	5.750	.906	1.188	.120
MS3400DJ 15DXX	MS3400D-14S-XX	MS3437B-17A	.575	.350	.875-20UNEF	1.332	4.938	.906	1.188	.120
MS3400DJ 15EXX	MS3400D-14S-XX	MS3437B-150A	.312	.125	.875-20UNEF	.957	4.938	.906	1.188	.120
MS3400DJ 16AXX	MS3400D-16-XX	MS3437B-21A	.700	.500	1.000-20UNEF	1.551	5.000	.969	1.284	.120
MS3400DJ 16BXX	MS3400D-16-XX	MS3437B-23A	.937	.625	1.000-20UNEF	1.770	5.812	.969	1.284	.120
MS3400DJ 16DXX	MS3400D-16-XX	MS3437B-112A	.437	.250	1.000-20UNEF	1.145	4.938	.969	1.284	.120
MS3400DJ 16EXX	MS3400D-16-XX	MS3437B-118A	.625	.350	1.000-20UNEF	1.332	4.938	.969	1.284	.120

) ADD .445 WHEN CONTACT ARRANGEMENT INCLUDES SIZE 0 CONTACTS.

Figure 45. Receptacle - Straight Adapter Assembly MS3400DJ (Sheet 1 of 3)

DIMENSIONS

Assembly No.	Connector Receptacle No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	E Max.	L ① Max.	R ±.005	S ±.031	T Dia. Max.
			Max.	Min.						
MS3400DJ 17AXX	MS3400D-16S-XX	MS3437B-21A	.700	.500	1.000-20UNEF	1.551	5.000	.969	1.284	.120
MS3400DJ 17BXX	MS3400D-16S-XX	MS3437B-23A	.937	.625	1.000-20UNEF	1.770	5.812	.969	1.284	.120
MS3400DJ 17DXX	MS3400D-16S-XX	MS3437B-112A	.437	.250	1.000-20UNEF	1.145	4.938	.969	1.284	.120
MS3400DJ 17EXX	MS3400D-16S-XX	MS3437B-118A	.625	.350	1.000-20UNEF	1.332	4.938	.969	1.284	.120
MS3400DJ 18AXX	MS3400D-18-XX	MS3437B-25A	.625	.350	1.125-18UNEF	1.332	4.938	1.062	1.375	.120
MS3400DJ 18BXX	MS3400D-18-XX	MS3437B-27A	.750	.500	1.125-18UNEF	1.551	5.000	1.062	1.375	.120
MS3400DJ 18EXX	MS3400D-18-XX	MS3437B-120A	.312	.125	1.125-18UNEF	.957	4.938	1.062	1.375	.120
MS3400DJ 18FXX	MS3400D-18-XX	MS3437B-122A	.437	.250	1.125-18UNEF	1.145	4.938	1.062	1.375	.120
MS3400DJ 20AXX	MS3400D-20-XX	MS3437B-31A	.625	.350	1.250-18UNEF	1.332	5.938	1.156	1.500	.120
MS3400DJ 20BXX	MS3400D-20-XX	MS3437B-33A	.750	.500	1.250-18UNEF	1.551	6.000	1.156	1.500	.120
MS3400DJ 20EXX	MS3400D-20-XX	MS3437B-37A	1.250	.875	1.250-18UNEF	2.113	7.062	1.156	1.500	.120
MS3400DJ 20FXX	MS3400D-20-XX	MS3437B-124A	.437	.250	1.250-18UNEF	1.145	5.938	1.156	1.500	.120
MS3400DJ 20GXX	MS3400D-20-XX	MS3437B-140A	.904	.625	1.250-18UNEF	1.770	6.062	1.156	1.500	.120
MS3400DJ 22AXX	MS3400D-22-XX	MS3437B-39A	.625	.350	1.375-18UNEF	1.332	5.938	1.250	1.625	.120
MS3400DJ 22BXX	MS3400D-22-XX	MS3437B-41A	.750	.500	1.375-18UNEF	1.551	6.000	1.250	1.625	.120
MS3400DJ 22DXX	MS3400D-22-XX	MS3437B-43A	.937	.625	1.375-18UNEF	1.770	6.062	1.250	1.625	.120
MS3400DJ 22EXX	MS3400D-22-XX	MS3437B-45A	1.250	.875	1.375-18UNEF	2.113	7.062	1.250	1.625	.120
MS3400DJ 22FXX	MS3400D-22-XX	MS3437B-126A	.312	.125	1.375-18UNEF	.957	5.938	1.250	1.625	.120
MS3400DJ 22GXX	MS3400D-22-XX	MS3437B-128A	.437	.250	1.375-18UNEF	1.145	5.938	1.250	1.625	.120
MS3400DJ 22HXX	MS3400D-22-XX	MS3437B-142A	1.029	.875	1.375-18UNEF	2.113	6.312	1.250	1.625	.120
MS3400DJ 24AXX	MS3400D-24-XX	MS3437B-47A	.750	.500	1.500-18UNEF	1.551	6.000	1.375	1.750	.147
MS3400DJ 24BXX	MS3400D-24-XX	MS3437B-49A	.812	.625	1.500-18UNEF	1.770	6.062	1.375	1.750	.147
MS3400DJ 24DXX	MS3400D-24-XX	MS3437B-51A	.937	.625	1.500-18UNEF	1.770	6.062	1.375	1.750	.147
MS3400DJ 24EXX	MS3400D-24-XX	MS3437B-53A	1.250	.875	1.500-18UNEF	2.113	7.062	1.375	1.750	.147
MS3400DJ 24FXX	MS3400D-24-XX	MS3437B-130A	.625	.350	1.500-18UNEF	1.332	5.938	1.375	1.750	.147
MS3400DJ 24GXX	MS3400D-24-XX	MS3437B-144A	1.144	.875	1.500-18UNEF	2.113	6.312	1.375	1.750	.147
MS3400DJ 28AXX	MS3400D-28-XX	MS3437B-55A	.750	.500	1.750-18UNS	1.551	6.000	1.562	2.000	.147
MS3400DJ 28BXX	MS3400D-28-XX	MS3437B-57A	.937	.625	1.750-18UNS	1.770	6.062	1.562	2.000	.147
MS3400DJ 28DXX	MS3400D-28-XX	MS3437B-59A	1.250	.875	1.750-18UNS	2.113	6.312	1.562	2.000	.147
MS3400DJ 28EXX	MS3400D-28-XX	MS3437B-61A	1.375	1.000	1.750-18UNS	2.363	6.438	1.562	2.000	.147
MS3400DJ 32AXX	MS3400D-32-XX	MS3437B-63A	.937	.625	2.000-18UNS	1.770	6.062	1.750	2.250	.173
MS3400DJ 32BXX	MS3400D-32-XX	MS3437B-65A	1.250	.875	2.000-18UNS	2.113	6.312	1.750	2.250	.173
MS3400DJ 32DXX	MS3400D-32-XX	MS3437B-67A	1.375	1.000	2.000-18UNS	2.363	6.438	1.750	2.250	.173
MS3400DJ 32EXX	MS3400D-32-XX	MS3437B-69A	1.625	1.250	2.000-18UNS	2.770	6.750	1.750	2.250	.173
MS3400DJ 36AXX	MS3400D-36-XX	MS3437B-71A	1.250	.875	2.250-16UN	2.113	7.312	1.938	2.500	.173
MS3400DJ 36BXX	MS3400D-36-XX	MS3437B-73A	1.375	1.000	2.250-16UN	2.363	7.438	1.938	2.500	.173
MS3400DJ 36DXX	MS3400D-36-XX	MS3437B-75A	1.625	1.250	2.250-16UN	2.770	7.688	1.938	2.500	.173
MS3400DJ 36EXX	MS3400D-36-XX	MS3437B-146A	1.840	1.437	2.250-16UN	3.020	7.750	1.938	2.500	.173
MS3400DJ 36FXX	MS3400D-36-XX	MS3437B-132A	.750	.500	2.250-16UN	1.551	7.000	1.938	2.500	.173
MS3400DJ 36GXX	MS3400D-36-XX	MS3437B-148A	.937	.625	2.250-16UN	1.770	7.062	1.938	2.500	.173

① ADD .445 WHEN CONTACT ARRANGEMENT INCLUDES SIZE 0 CONTACTS.

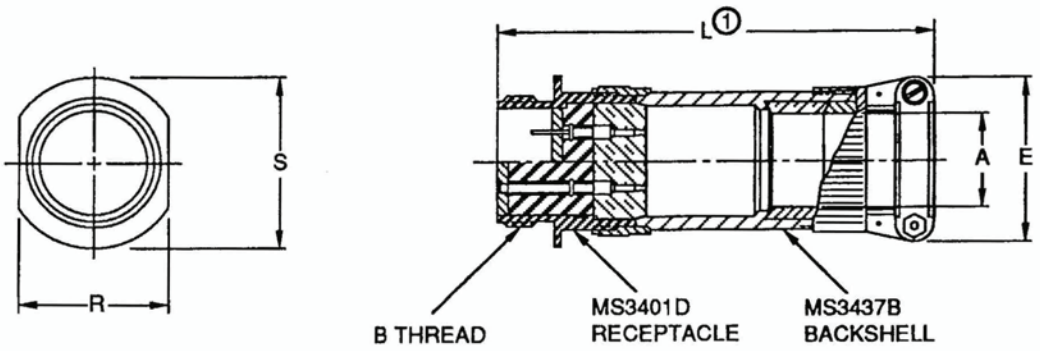
Figure 45. Receptacle - Straight Adapter Assembly MS3400DJ (Sheet 2 of 3)

DIMENSIONS

Assembly No.	Connector Receptacle No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	E Max.	L ① Max.	R ±.005	S ±.031	T Dia. Max.
			Max.	Min.						
MS3400DJ 40AXX	MS3400D-40-XX	MS3437B-79A	1.250	.875	2.500-16UN	2.113	7.312	2.188	2.750	.173
MS3400DJ 40BXX	MS3400D-40-XX	MS3437B-81A	1.375	1.000	2.500-16UN	2.363	7.438	2.188	2.750	.173
MS3400DJ 40DXX	MS3400D-40-XX	MS3437B-83A	1.625	1.250	2.500-16UN	2.770	7.688	2.188	2.750	.173
MS3400DJ 40EXX	MS3400D-40-XX	MS3437B-85A	1.840	1.437	2.500-16UN	3.020	7.750	2.188	2.750	.173
MS3400DJ 40FXX	MS3400D-40-XX	MS3437B-134A	.750	.500	2.500-16UN	1.551	7.000	2.188	2.750	.173
MS3400DJ 44AXX	MS3400D-44-XX	MS3437B-87A	1.250	.875	2.750-16UN	2.113	7.312	2.375	3.000	.173
MS3400DJ 44BXX	MS3400D-44-XX	MS3437B-89A	1.375	1.000	2.750-16UN	2.363	7.438	2.375	3.000	.173
MS3400DJ 44DXX	MS3400D-44-XX	MS3437B-91A	1.625	1.250	2.750-16UN	2.770	7.688	2.375	3.000	.173
MS3400DJ 44EXX	MS3400D-44-XX	MS3437B-93A	1.840	1.437	2.750-16UN	3.020	7.750	2.375	3.000	.173
MS3400DJ 44FXX	MS3400D-44-XX	MS3437B-154A	.937	.625	2.750-16UN	1.551	7.062	2.375	3.000	.173

① ADD .445 WHEN CONTACT ARRANGEMENT INCLUDES SIZE 0 CONTACTS.

Figure 45. Receptacle - Straight Adapter Assembly MS3400DJ (Sheet 3 of 3)



DIMENSIONS

Assembly No.	Connector Receptacle No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	E Max.	L① Max.	R ±.004	S ±.015
			Max.	Min.					
MS3401DJ 10AXX	MS3401D-10S-XX	MS3437B-9A	.312	.125	.625-24UNEF	.957	4.938	.625	.854
MS3401DJ 10BXX	MS3401D-10S-XX	MS3437B-11A	.437	.250	.625-24UNEF	1.145	5.688	.625	.854
MS3401DJ 10DXX	MS3401D-10S-XX	MS3437B-136A	.375	.250	.625-24UNEF	1.145	4.938	.625	.854
MS3401DJ 11AXX	MS3401D-10SL-XX	MS3437B-9A	.312	.125	.625-24UNEF	.957	4.938	.625	.854
MS3401DJ 11BXX	MS3401D-10SL-XX	MS3437B-11A	.437	.250	.625-24UNEF	1.145	5.688	.625	.854
MS3401DJ 11DXX	MS3401D-10SL-XX	MS3437B-136A	.375	.250	.625-24UNEF	1.145	4.938	.625	.854
MS3401DJ 12AXX	MS3401D-12-XX	MS3437B-114A	.312	.125	.750-20UNEF	.957	4.938	.750	.974
MS3401DJ 12BXX	MS3401D-12-XX	MS3437B-15A	.625	.350	.750-20UNEF	1.332	5.688	.750	.974
MS3401DJ 12DXX	MS3401D-12-XX	MS3437B-138A	.500	.350	.750-20UNEF	1.332	4.938	.750	.974
MS3401DJ 12EXX	MS3401D-12-XX	MS3437B-13A	.437	.250	.750-20UNEF	1.145	4.938	.750	.974
MS3401DJ 13AXX	MS3401D-12S-XX	MS3437B-114A	.312	.125	.750-20UNEF	.957	4.938	.750	.974
MS3401DJ 13BXX	MS3401D-12S-XX	MS3437B-15A	.625	.350	.750-20UNEF	1.332	5.688	.750	.974
MS3401DJ 13DXX	MS3401D-12S-XX	MS3437B-138A	.500	.350	.750-20UNEF	1.332	4.938	.750	.974
MS3401DJ 13EXX	MS3401D-12S-XX	MS3437B-13A	.437	.250	.750-20UNEF	1.145	4.938	.750	.974
MS3401DJ 14AXX	MS3401D-14-XX	MS3437B-116A	.437	.250	.875-20UNEF	1.145	4.938	.875	1.099
MS3401DJ 14BXX	MS3401D-14-XX	MS3437B-19A	.750	.500	.875-20UNEF	1.551	5.688	.875	1.099
MS3401DJ 14DXX	MS3401D-14-XX	MS3437B-17A	.575	.350	.875-20UNEF	1.332	4.938	.875	1.099
MS3401DJ 14EXX	MS3401D-14-XX	MS3437B-150A	.312	.125	.875-20UNEF	.957	4.938	.875	1.099
MS3401DJ 15AXX	MS3401D-14S-XX	MS3437B-116A	.437	.250	.875-20UNEF	1.145	4.938	.875	1.099
MS3401DJ 15BXX	MS3401D-14S-XX	MS3437B-19A	.750	.500	.875-20UNEF	1.551	5.750	.875	1.099
MS3401DJ 15DXX	MS3401D-14S-XX	MS3437B-17A	.575	.350	.875-20UNEF	1.332	4.938	.875	1.099
MS3401DJ 15EXX	MS3401D-14S-XX	MS3437B-150A	.312	.125	.875-20UNEF	.957	4.938	.875	1.099
MS3401DJ 16AXX	MS3401D-16-XX	MS3437B-21A	.700	.500	1.000-20UNEF	1.551	5.000	1.000	1.224
MS3401DJ 16BXX	MS3401D-16-XX	MS3437B-23A	.937	.625	1.000-20UNEF	1.770	5.812	1.000	1.224
MS3401DJ 16DXX	MS3401D-16-XX	MS3437B-112A	.437	.250	1.000-20UNEF	1.145	4.938	1.000	1.224
MS3401DJ 16EXX	MS3401D-16-XX	MS3437B-118A	.625	.350	1.000-20UNEF	1.332	4.938	1.000	1.224

① ADD .445 WHEN CONTACT ARRANGEMENT INCLUDES SIZE 0 CONTACTS.

Figure 46. Receptacle - Straight Adapter Assembly MS3401DJ (Sheet 1 of 3)

DIMENSIONS

Assembly No.	Connector Receptacle No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	E Max.	L ① Max.	R ±.004	S ±.015
			Max.	Min.					
MS3401DJ 17AXX	MS3401D-16S-XX	MS3437B-21A	.700	.500	1.000-20UNEF	1.551	5.000	1.000	1.224
MS3401DJ 17BXX	MS3401D-16S-XX	MS3437B-23A	.937	.625	1.000-20UNEF	1.770	5.812	1.000	1.224
MS3401DJ 17DXX	MS3401D-16S-XX	MS3437B-112A	.437	.250	1.000-20UNEF	1.145	4.938	1.000	1.224
MS3401DJ 17EXX	MS3401D-16S-XX	MS3437B-118A	.625	.350	1.000-20UNEF	1.332	4.938	1.000	1.224
MS3401DJ 18AXX	MS3401D-18-XX	MS3437B-25A	.625	.350	1.125-18UNEF	1.332	4.938	1.125	1.349
MS3401DJ 18BXX	MS3401D-18-XX	MS3437B-27A	.750	.500	1.125-18UNEF	1.551	5.000	1.125	1.349
MS3401DJ 18EXX	MS3401D-18-XX	MS3437B-120A	.312	.125	1.125-18UNEF	.957	4.938	1.125	1.349
MS3401DJ 18FXX	MS3401D-18-XX	MS3437B-122A	.437	.250	1.125-18UNEF	1.145	4.938	1.125	1.349
MS3401DJ 20AXX	MS3401D-20-XX	MS3437B-31A	.625	.350	1.250-18UNEF	1.332	5.938	1.250	1.474
MS3401DJ 20BXX	MS3401D-20-XX	MS3437B-33A	.750	.500	1.250-18UNEF	1.551	6.000	1.250	1.474
MS3401DJ 20EXX	MS3401D-20-XX	MS3437B-37A	1.250	.875	1.250-18UNEF	2.113	7.062	1.250	1.474
MS3401DJ 20FXX	MS3401D-20-XX	MS3437B-124A	.437	.250	1.250-18UNEF	1.145	5.938	1.250	1.474
MS3401DJ 20GXX	MS3401D-20-XX	MS3437B-140A	.904	.625	1.250-18UNEF	1.770	6.062	1.250	1.474
MS3401DJ 22AXX	MS3401D-22-XX	MS3437B-39A	.625	.350	1.375-18UNEF	1.332	5.938	1.375	1.599
MS3401DJ 22BXX	MS3401D-22-XX	MS3437B-41A	.750	.500	1.375-18UNEF	1.551	6.000	1.375	1.599
MS3401DJ 22DXX	MS3401D-22-XX	MS3437B-43A	.937	.625	1.375-18UNEF	1.770	6.062	1.375	1.599
MS3401DJ 22EXX	MS3401D-22-XX	MS3437B-45A	1.250	.875	1.375-18UNEF	2.113	7.062	1.375	1.599
MS3401DJ 22FXX	MS3401D-22-XX	MS3437B-126A	.312	.125	1.375-18UNEF	.957	5.938	1.375	1.599
MS3401DJ 22GXX	MS3401D-22-XX	MS3437B-128A	.437	.250	1.375-18UNEF	1.145	5.938	1.375	1.599
MS3401DJ 22HXX	MS3401D-22-XX	MS3437B-142A	1.029	.875	1.375-18UNEF	2.113	6.312	1.375	1.599
MS3401DJ 24AXX	MS3401D-24-XX	MS3437B-47A	.750	.500	1.500-18UNEF	1.551	6.000	1.500	1.715
MS3401DJ 24BXX	MS3401D-24-XX	MS3437B-49A	.812	.625	1.500-18UNEF	1.770	6.062	1.500	1.715
MS3401DJ 24DXX	MS3401D-24-XX	MS3437B-51A	.937	.625	1.500-18UNEF	1.770	6.062	1.500	1.715
MS3401DJ 24EXX	MS3401D-24-XX	MS3437B-53A	1.250	.875	1.500-18UNEF	2.113	7.062	1.500	1.715
MS3401DJ 24FXX	MS3401D-24-XX	MS3437B-130A	.625	.350	1.500-18UNEF	1.332	5.938	1.500	1.715
MS3401DJ 24GXX	MS3401D-24-XX	MS3437B-144A	1.144	.875	1.500-18UNEF	2.113	6.312	1.500	1.715
MS3401DJ 28AXX	MS3401D-28-XX	MS3437B-55A	.750	.500	1.750-18UNS	1.551	6.000	1.750	1.974
MS3401DJ 28BXX	MS3401D-28-XX	MS3437B-57A	.937	.625	1.750-18UNS	1.770	6.062	1.750	1.974
MS3401DJ 28DXX	MS3401D-28-XX	MS3437B-59A	1.250	.875	1.750-18UNS	2.113	6.312	1.750	1.974
MS3401DJ 28EXX	MS3401D-28-XX	MS3437B-61A	1.375	1.000	1.750-18UNS	2.363	6.438	1.750	1.974
MS3401DJ 32AXX	MS3401D-32-XX	MS3437B-63A	.937	.625	2.000-18UNS	1.770	6.062	2.000	2.224
MS3401DJ 32BXX	MS3401D-32-XX	MS3437B-65A	1.250	.875	2.000-18UNS	2.113	6.312	2.000	2.224
MS3401DJ 32DXX	MS3401D-32-XX	MS3437B-67A	1.375	1.000	2.000-18UNS	2.363	6.438	2.000	2.224
MS3401DJ 32EXX	MS3401D-32-XX	MS3437B-69A	1.625	1.250	2.000-18UNS	2.770	6.750	2.000	2.224
MS3401DJ 36AXX	MS3401D-36-XX	MS3437B-71A	1.250	.875	2.250-16UN	2.113	7.312	2.250	2.474
MS3401DJ 36BXX	MS3401D-36-XX	MS3437B-73A	1.375	1.000	2.250-16UN	2.363	7.438	2.250	2.474
MS3401DJ 36DXX	MS3401D-36-XX	MS3437B-75A	1.625	1.250	2.250-16UN	2.770	7.688	2.250	2.474
MS3401DJ 36EXX	MS3401D-36-XX	MS3437B-146A	1.840	1.437	2.250-16UN	3.020	7.750	2.250	2.474
MS3401DJ 36FXX	MS3401D-36-XX	MS3437B-132A	.750	.500	2.250-16UN	1.551	7.000	2.250	2.474
MS3401DJ 36GXX	MS3401D-36-XX	MS3437B-148A	.937	.625	2.250-16UN	1.770	7.062	2.250	2.474

① ADD .445 WHEN CONTACT ARRANGEMENT INCLUDES SIZE 0 CONTACTS.

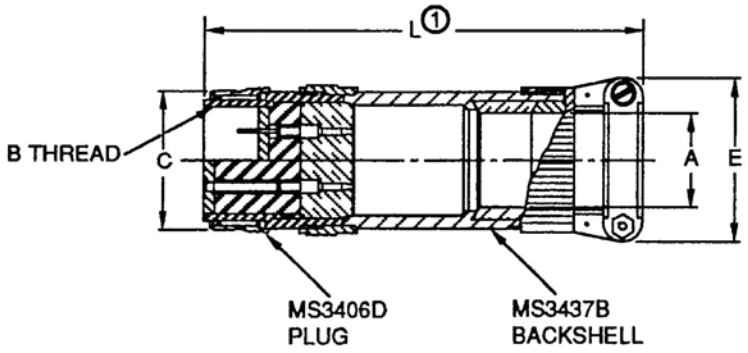
Figure 46. Receptacle - Straight Adapter Assembly MS3401DJ (Sheet 2 of 3)

DIMENSIONS

Assembly No.	Connector Receptacle No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	E Max.	L ① Max.	R ±.004	S ±.015
			Max.	Min.					
MS3401DJ 40AXX	MS3401D-40-XX	MS3437B-79A	1.250	.875	2.500-16UN	2.113	7.312	2.505	2.724
MS3401DJ 40BXX	MS3401D-40-XX	MS3437B-81A	1.375	1.000	2.500-16UN	2.363	7.438	2.505	2.724
MS3401DJ 40DXX	MS3401D-40-XX	MS3437B-83A	1.625	1.250	2.500-16UN	2.770	7.688	2.505	2.724
MS3401DJ 40EXX	MS3401D-40-XX	MS3437B-85A	1.840	1.437	2.500-16UN	3.020	7.750	2.505	2.724
MS3401DJ 40FXX	MS3401D-40-XX	MS3437B-134A	.750	.500	2.500-16UN	1.551	7.000	2.505	2.724
MS3401DJ 44AXX	MS3401D-44-XX	MS3437B-87A	1.250	.875	2.750-16UN	2.113	7.312	2.755	2.974
MS3401DJ 44BXX	MS3401D-44-XX	MS3437B-89A	1.375	1.000	2.750-16UN	2.363	7.438	2.755	2.974
MS3401DJ 44DXX	MS3401D-44-XX	MS3437B-91A	1.625	1.250	2.750-16UN	2.770	7.688	2.755	2.974
MS3401DJ 44EXX	MS3401D-44-XX	MS3437B-93A	1.840	1.437	2.750-16UN	3.020	7.750	2.755	2.974
MS3401DJ 44FXX	MS3401D-44-XX	MS3437B-154A	.937	.625	2.750-16UN	1.551	7.062	2.755	2.974

① ADD .445 WHEN CONTACT ARRANGEMENT INCLUDES SIZE 0 CONTACTS.

Figure 46. Receptacle - Straight Adapter Assembly MS3401DJ (Sheet 3 of 3)



DIMENSIONS

Assembly No.	Connector Receptacle No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	C Dia. Max.	E Max.	L ① Max.
			Max.	Min.				
MS3406DJ 10AXX	MS3406D-10S-XX	MS3437B-9A	.312	.125	.625-24UNEF	.969	.957	4.938
MS3406DJ 10BXX	MS3406D-10S-XX	MS3437B-11A	.437	.250	.625-24UNEF	.969	1.145	5.688
MS3406DJ 10DXX	MS3406D-10S-XX	MS3437B-136A	.375	.250	.625-24UNEF	.969	1.145	4.938
MS3406DJ 11AXX	MS3406D-10SL-XX	MS3437B-9A	.312	.125	.625-24UNEF	.969	.957	4.938
MS3406DJ 11BXX	MS3406D-10SL-XX	MS3437B-11A	.437	.250	.625-24UNEF	.969	1.145	5.688
MS3406DJ 11DXX	MS3406D-10SL-XX	MS3437B-136A	.375	.250	.625-24UNEF	.969	1.145	4.938
MS3406DJ 12AXX	MS3406D-12-XX	MS3437B-114A	.312	.125	.750-20UNEF	1.062	.957	4.938
MS3406DJ 12BXX	MS3406D-12-XX	MS3437B-15A	.625	.350	.750-20UNEF	1.062	1.332	5.688
MS3406DJ 12DXX	MS3406D-12-XX	MS3437B-138A	.500	.350	.750-20UNEF	1.062	1.332	4.938
MS3406DJ 12EXX	MS3406D-12-XX	MS3437B-13A	.437	.250	.750-20UNEF	1.062	1.145	4.938
MS3406DJ 13AXX	MS3406D-12S-XX	MS3437B-114A	.312	.125	.750-20UNEF	1.062	.957	4.938
MS3406DJ 13BXX	MS3406D-12S-XX	MS3437B-15A	.625	.350	.750-20UNEF	1.062	1.332	5.688
MS3406DJ 13DXX	MS3406D-12S-XX	MS3437B-138A	.500	.350	.750-20UNEF	1.062	1.332	4.938
MS3406DJ 13EXX	MS3406D-12S-XX	MS3437B-13A	.437	.250	.750-20UNEF	1.062	1.145	4.938
MS3406DJ 14AXX	MS3406D-14-XX	MS3437B-116A	.437	.250	.875-20UNEF	1.156	1.145	4.938
MS3406DJ 14BXX	MS3406D-14-XX	MS3437B-19A	.750	.500	.875-20UNEF	1.156	1.551	5.750
MS3406DJ 14DXX	MS3406D-14-XX	MS3437B-17A	.575	.350	.875-20UNEF	1.156	1.332	4.938
MS3406DJ 14EXX	MS3406D-14-XX	MS3437B-150A	.312	.125	.875-20UNEF	1.156	.957	4.938
MS3406DJ 15AXX	MS3406D-14S-XX	MS3437B-116A	.437	.250	.875-20UNEF	1.156	1.145	4.938
MS3406DJ 15BXX	MS3406D-14S-XX	MS3437B-19A	.750	.500	.875-20UNEF	1.156	1.551	5.750
MS3406DJ 15DXX	MS3406D-14S-XX	MS3437B-17A	.575	.350	.875-20UNEF	1.156	1.332	4.938
MS3406DJ 15EXX	MS3406D-14S-XX	MS3437B-150A	.312	.125	.875-20UNEF	1.156	.957	4.938
MS3406DJ 16AXX	MS3406D-16-XX	MS3437B-21A	.700	.500	1.000-20UNEF	1.250	1.551	5.000
MS3406DJ 16BXX	MS3406D-16-XX	MS3437B-23A	.937	.625	1.000-20UNEF	1.250	1.770	5.812
MS3406DJ 16DXX	MS3406D-16-XX	MS3437B-112A	.437	.250	1.000-20UNEF	1.250	1.145	4.938
MS3406DJ 16EXX	MS3406D-16-XX	MS3437B-118A	.625	.350	1.000-20UNEF	1.250	1.332	4.938

① ADD .445 WHEN CONTACT ARRANGEMENT INCLUDES SIZE 0 CONTACTS.

Figure 47. Plug - Straight Adapter Assembly MS3406DJ (Sheet 1 of 3)

DIMENSIONS

Assembly No.	Connector Receptacle No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	C Dia. Max.	E Max.	L ① Max.
			Max.	Min.				
MS3406DJ 17AXX	MS3406D-16S-XX	MS3437B-21A	.700	.500	1.000-20UNEF	1.250	1.551	5.000
MS3406DJ 17BXX	MS3406D-16S-XX	MS3437B-23A	.937	.625	1.000-20UNEF	1.250	1.770	5.812
MS3406DJ 17DXX	MS3406D-16S-XX	MS3437B-112A	.437	.250	1.000-20UNEF	1.250	1.145	4.938
MS3406DJ 17EXX	MS3406D-16S-XX	MS3437B-118A	.625	.350	1.000-20UNEF	1.250	1.332	4.938
MS3406DJ 18AXX	MS3406D-18-XX	MS3437B-25A	.625	.350	1.125-18UNEF	1.344	1.332	4.938
MS3406DJ 18BXX	MS3406D-18-XX	MS3437B-27A	.750	.500	1.125-18UNEF	1.344	1.551	5.000
MS3406DJ 18EXX	MS3406D-18-XX	MS3437B-120A	.312	.125	1.125-18UNEF	1.344	.957	4.938
MS3406DJ 18FXX	MS3406D-18-XX	MS3437B-122A	.437	.250	1.125-18UNEF	1.344	1.145	4.938
MS3406DJ 20AXX	MS3406D-20-XX	MS3437B-31A	.625	.350	1.250-18UNEF	1.469	1.332	5.938
MS3406DJ 20BXX	MS3406D-20-XX	MS3437B-33A	.750	.500	1.250-18UNEF	1.469	1.551	6.000
MS3406DJ 20EXX	MS3406D-20-XX	MS3437B-37A	1.250	.875	1.250-18UNEF	1.469	2.113	7.062
MS3406DJ 20FXX	MS3406D-20-XX	MS3437B-124A	.437	.250	1.250-18UNEF	1.469	1.145	5.938
MS3406DJ 20GXX	MS3406D-20-XX	MS3437B-140A	.904	.625	1.250-18UNEF	1.469	1.770	6.062
MS3406DJ 22AXX	MS3406D-22-XX	MS3437B-39A	.625	.350	1.375-18UNEF	1.594	1.332	5.938
MS3406DJ 22BXX	MS3406D-22-XX	MS3437B-41A	.750	.500	1.375-18UNEF	1.594	1.551	6.000
MS3406DJ 22DXX	MS3406D-22-XX	MS3437B-43A	.937	.625	1.375-18UNEF	1.594	1.770	6.062
MS3406DJ 22EXX	MS3406D-22-XX	MS3437B-45A	1.250	.875	1.375-18UNEF	1.594	2.113	7.062
MS3406DJ 22FXX	MS3406D-22-XX	MS3437B-126A	.312	.125	1.375-18UNEF	1.594	.957	5.938
MS3406DJ 22GXX	MS3406D-22-XX	MS3437B-128A	.437	.250	1.375-18UNEF	1.594	1.145	5.938
MS3406DJ 22HXX	MS3406D-22-XX	MS3437B-142A	1.029	.875	1.375-18UNEF	1.594	2.113	6.312
MS3406DJ 24AXX	MS3406D-24-XX	MS3437B-47A	.750	.500	1.500-18UNEF	1.719	1.551	6.000
MS3406DJ 24BXX	MS3406D-24-XX	MS3437B-49A	.812	.625	1.500-18UNEF	1.719	1.770	6.062
MS3406DJ 24DXX	MS3406D-24-XX	MS3437B-51A	.937	.625	1.500-18UNEF	1.719	1.770	6.062
MS3406DJ 24EXX	MS3406D-24-XX	MS3437B-53A	1.250	.875	1.500-18UNEF	1.719	2.113	7.062
MS3406DJ 24FXX	MS3406D-24-XX	MS3437B-130A	.625	.350	1.500-18UNEF	1.719	1.332	5.938
MS3406DJ 24GXX	MS3406D-24-XX	MS3437B-144A	1.144	.875	1.500-18UNEF	1.719	2.113	6.312
MS3406DJ 28AXX	MS3406D-28-XX	MS3437B-55A	.750	.500	1.750-18UNS	1.969	1.551	6.000
MS3406DJ 28BXX	MS3406D-28-XX	MS3437B-57A	.937	.625	1.750-18UNS	1.969	1.770	6.062
MS3406DJ 28DXX	MS3406D-28-XX	MS3437B-59A	1.250	.875	1.750-18UNS	1.969	2.113	6.312
MS3406DJ 28EXX	MS3406D-28-XX	MS3437B-61A	1.375	1.000	1.750-18UNS	1.969	2.363	6.438
MS3406DJ 32AXX	MS3406D-32-XX	MS3437B-63A	.937	.625	2.000-18UNS	2.219	1.770	6.062
MS3406DJ 32BXX	MS3406D-32-XX	MS3437B-65A	1.250	.875	2.000-18UNS	2.219	2.113	6.312
MS3406DJ 32DXX	MS3406D-32-XX	MS3437B-67A	1.375	1.000	2.000-18UNS	2.219	2.363	6.438
MS3406DJ 32EXX	MS3406D-32-XX	MS3437B-69A	1.625	1.250	2.000-18UNS	2.219	2.770	6.750
MS3406DJ 36AXX	MS3406D-36-XX	MS3437B-71A	1.250	.875	2.250-16UN	2.469	2.113	7.312
MS3406DJ 36BXX	MS3406D-36-XX	MS3437B-73A	1.375	1.000	2.250-16UN	2.469	2.363	7.438
MS3406DJ 36DXX	MS3406D-36-XX	MS3437B-75A	1.625	1.250	2.250-16UN	2.469	2.770	7.688
MS3406DJ 36EXX	MS3406D-36-XX	MS3437B-146A	1.840	1.437	2.250-16UN	2.469	3.020	7.750
MS3406DJ 36FXX	MS3406D-36-XX	MS3437B-132A	.750	.500	2.250-16UN	2.469	1.551	7.000
MS3406DJ 36GXX	MS3406D-36-XX	MS3437B-148A	.937	.625	2.250-16UN	2.469	1.770	7.062

① ADD .445 WHEN CONTACT ARRANGEMENT INCLUDES SIZE 0 CONTACTS.

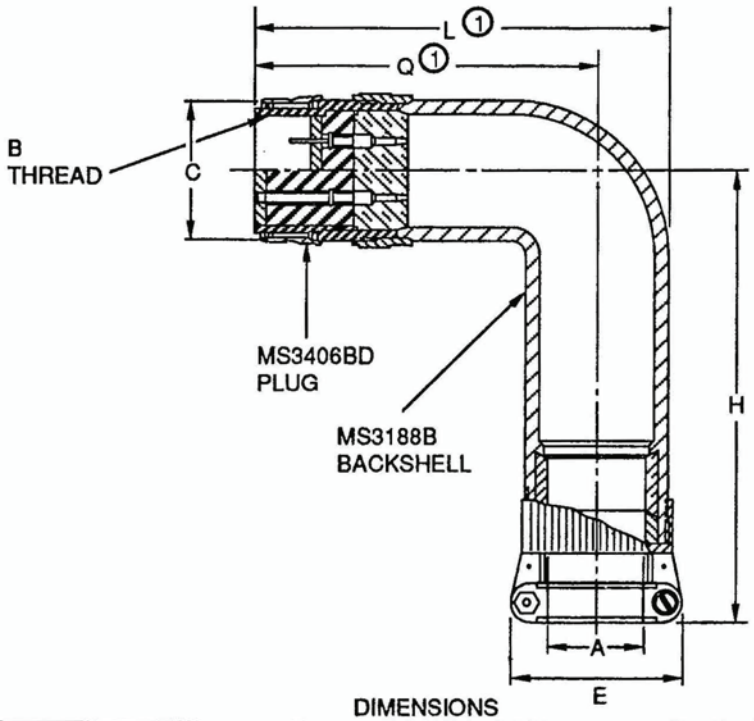
Figure 47. Plug - Straight Adapter Assembly MS3406DJ (Sheet 2 of 3)

DIMENSIONS

Assembly No.	Connector Receptacle No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	C Dia. Max.	E Max.	L ① Max.
			Max.	Min.				
MS3406DJ 40AXX	MS3406D-40-XX	MS3437B-79A	1.250	.875	2.500-16UN	2.719	2.113	7.312
MS3406DJ 40BXX	MS3406D-40-XX	MS3437B-81A	1.375	1.000	2.500-16UN	2.719	2.363	7.438
MS3406DJ 40DXX	MS3406D-40-XX	MS3437B-83A	1.625	1.250	2.500-16UN	2.719	2.770	7.688
MS3406DJ 40EXX	MS3406D-40-XX	MS3437B-85A	1.840	1.437	2.500-16UN	2.719	3.020	7.750
MS3406DJ 40FXX	MS3406D-40-XX	MS3437B-134A	.937	.625	2.500-16UN	2.719	1.551	7.000
MS3406DJ 44AXX	MS3406D-44-XX	MS3437B-87A	1.250	.875	2.750-16UN	2.969	2.113	7.312
MS3406DJ 44BXX	MS3406D-44-XX	MS3437B-89A	1.375	1.000	2.750-16UN	2.969	2.363	7.438
MS3406DJ 44DXX	MS3406D-44-XX	MS3437B-91A	1.625	1.250	2.750-16UN	2.969	2.770	7.688
MS3406DJ 44EXX	MS3406D-44-XX	MS3437B-93A	1.840	1.437	2.750-16UN	2.969	3.020	7.750
MS3406DJ 44FXX	MS3406D-44-XX	MS3437B-154A	.937	.625	2.750-16UN	2.969	1.770	7.062

① ADD .445 WHEN CONTACT ARRANGEMENT INCLUDES SIZE 0 CONTACTS.

Figure 47. Plug - Straight Adapter Assembly MS3406DJ (Sheet 3 of 3)



DIMENSIONS

Assembly No.	Connector Plug No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	C Dia Max.	E Max.	H Max.	L ① Max.	Q ① Max.
			Max.	Min.						
MS3408DJ 10AXX	MS3406D-10S-XX	MS3188B-04A	.312	.125	.625-24UNEF	.969	.957	3.125	3.000	2.500
MS3408DJ 10BXX	MS3406D-10S-XX	MS3188B-49A	.437	.250	.625-24UNEF	.969	1.145	3.125	3.812	3.250
MS3408 DJ 10DXX	MS3406D-10S-XX	MS3188B-05A	.375	.250	.625-24UNEF	.969	1.145	2.500	3.062	2.500
MS3408DJ 11AXX	MS3406D-10SL-XX	MS3188B-04A	.312	.125	.625-24UNEF	.969	.957	3.125	3.000	2.500
MS3408DJ 11BXX	MS3406D-10SL-XX	MS3188B-49A	.437	.250	.625-24UNEF	.969	1.145	3.125	3.812	3.250
MS3408DJ 11DXX	MS3406D-10SL-XX	MS3188B-05A	.375	.250	.625-24UNEF	.969	1.145	2.500	3.062	2.500
MS3408DJ 12AXX	MS3406D-12-XX	MS3188B-06A	.312	.125	.750-20UNEF	1.062	.957	3.125	3.000	2.500
MS3408DJ 12BXX	MS3406D-12-XX	MS3188B-71A	.625	.350	.750-20UNEF	1.062	1.332	3.312	4.188	3.562
MS3408DJ 12DXX	MS3406D-12-XX	MS3188B-08A	.500	.350	.750-20UNEF	1.062	1.332	2.500	3.188	2.500
MS3408DJ 12EXX	MS3406D-12-XX	MS3188B-07A	.437	.250	.750-20UNEF	1.062	1.145	3.125	3.062	2.500
MS3408DJ 13AXX	MS3406D-12S-XX	MS3188B-06A	.312	.125	.750-20UNEF	1.062	.957	3.125	3.000	2.500
MS3408DJ 13BXX	MS3406D-12S-XX	MS3188B-71A	.625	.350	.750-20UNEF	1.062	1.332	3.312	4.188	3.562
MS3408DJ 13DXX	MS3406D-12S-XX	MS3188B-08A	.500	.350	.750-20UNEF	1.062	1.332	2.500	3.188	2.500
MS3408DJ 13EXX	MS3406D-12S-XX	MS3188B-07A	.437	.250	.750-20UNEF	1.062	1.145	3.125	3.062	2.500
MS3408DJ 14AXX	MS3406D-14-XX	MS3188B-09A	.437	.250	.875-20UNEF	1.156	1.145	3.188	3.188	2.688
MS3408DJ 14BXX	MS3406D-14-XX	MS3188B-50A	.750	.500	.875-20UNEF	1.156	1.551	3.500	4.375	3.625
MS3408DJ 14DXX	MS3406D-14-XX	MS3188B-10A	.575	.350	.875-20UNEF	1.156	1.332	2.812	3.250	2.688
MS3408DJ 14EXX	MS3406D-14-XX	MS3188B-74A	.312	.125	.875-20UNEF	1.156	.957	3.188	3.125	2.625

① ADD .445 WHEN CONTACT ARRANGEMENT INCLUDES SIZE 0 CONTACTS.

Figure 48. Plug - 90 Degrees Adapter Assembly MS3408DJ (Sheet 1 of 3)

DIMENSIONS

Assembly No.	Connector Plug No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	C Dia Max.	E Max.	H Max.	L ① Max.	Q ① Max.
			Max.	Min.						
MS3408DJ 15AXX	MS3406D-14S-XX	MS3188B-09A	.437	.250	.875-20UNEF	1.156	1.145	3.188	3.188	2.688
MS3408DJ 15BXX	MS3406D-14S-XX	MS3188B-50A	.750	.500	.875-20UNEF	1.156	1.551	3.500	4.375	3.625
MS3408DJ 15DXX	MS3406D-14S-XX	MS3188B-10A	.575	.350	.875-20UNEF	1.156	1.332	2.812	3.250	2.688
MS3408DJ 15EXX	MS3406D-14S-XX	MS3188B-74A	.312	.125	.875-20UNEF	1.156	.957	3.188	3.125	2.562
MS3408DJ 16AXX	MS3406D-16-XX	MS3188B-12A	.700	.500	1.000-20UNEF	1.250	1.551	2.938	3.562	2.812
MS3408DJ 16BXX	MS3406D-16-XX	MS3188B-51A	.937	.625	1.000-20UNEF	1.250	1.770	3.688	4.688	3.750
MS3408DJ 16DXX	MS3406D-16-XX	MS3188B-11A	.437	.250	1.000-20UNEF	1.250	1.145	3.312	3.375	2.812
MS3408DJ 16EXX	MS3406D-16-XX	MS3188B-40A	.625	.350	1.000-20UNEF	1.250	1.332	3.312	3.438	2.812
MS3408DJ 17AXX	MS3406D-16S-XX	MS3188B-12A	.700	.500	1.000-20UNEF	1.250	1.551	2.938	3.562	2.812
MS3408DJ 17BXX	MS3406D-16S-XX	MS3188B-51A	.937	.625	1.000-20UNEF	1.250	1.770	3.688	4.688	3.750
MS3408DJ 17DXX	MS3406D-16S-XX	MS3188B-11A	.437	.250	1.000-20UNEF	1.250	1.145	3.312	3.375	2.812
MS3408DJ 17EXX	MS3406D-16S-XX	MS3188B-40A	.625	.350	1.000-20UNEF	1.250	1.332	3.312	3.438	2.812
MS3408DJ 18AXX	MS3406D-18-XX	MS3188B-13A	.625	.350	1.125-18UNEF	1.344	1.332	3.438	3.625	2.875
MS3408DJ 18BXX	MS3406D-18-XX	MS3188B-52A	.750	.500	1.125-18UNEF	1.344	1.551	3.500	3.625	2.875
MS3408DJ 18DXX	MS3406D-18-XX	MS3188B-41A	.312	.125	1.125-18UNEF	1.344	.957	3.438	3.625	2.875
MS3408DJ 18EXX	MS3406D-18-XX	MS3188B-42A	.437	.250	1.125-18UNEF	1.344	1.145	3.438	3.625	2.875
MS3408DJ 20AXX	MS3406D-20-XX	MS3188B-15A	.625	.350	1.250-18UNEF	1.469	1.332	3.438	3.625	2.875
MS3408DJ 20BXX	MS3406D-20-XX	MS3188B-54A	.750	.500	1.250-18UNEF	1.469	1.551	3.500	3.625	2.875
MS3408DJ 20EXX	MS3406D-20-XX	MS3188B-55A	1.250	.875	1.250-18UNEF	1.469	2.113	4.062	4.938	3.875
MS3408DJ 20FXX	MS3406D-20-XX	MS3188B-43A	.437	.250	1.250-18UNEF	1.469	1.145	3.438	3.625	2.875
MS3408DJ 20GXX	MS3406D-20-XX	MS3188B-16A	.904	.625	1.250-18UNEF	1.469	1.770	3.250	3.750	2.875
MS3408DJ 22AXX	MS3406D-22-XX	MS3188B-56A	.625	.350	1.375-18UNEF	1.594	1.332	3.562	3.875	3.000
MS3408DJ 22BXX	MS3406D-22-XX	MS3188B-17A	.750	.500	1.375-18UNEF	1.594	1.551	3.625	3.875	3.000
MS3408DJ 22DXX	MS3406D-22-XX	MS3188B-57A	.937	.625	1.375-18UNEF	1.594	1.770	3.688	3.938	3.000
MS3408DJ 22EXX	MS3406D-22-XX	MS3188B-58A	1.250	.875	1.375-18UNEF	1.594	2.113	4.062	4.938	3.875
MS3408DJ 22FXX	MS3406D-22-XX	MS3188B-44A	.312	.125	1.375-18UNEF	1.594	.957	3.562	3.875	3.000
MS3408DJ 22GXX	MS3406D-22-XX	MS3188B-45A	.437	.250	1.375-18UNEF	1.594	1.145	3.562	3.875	3.000
MS3408DJ 22HXX	MS3406D-22-XX	MS3188B-18A	1.029	.875	1.375-18UNEF	1.594	2.113	3.562	4.062	3.000
MS3408DJ 24AXX	MS3406D-24-XX	MS3188B-19A	.750	.500	1.500-18UNEF	1.719	1.551	3.625	3.875	3.000
MS3408DJ 24DXX	MS3406D-24-XX	MS3188B-59A	.937	.625	1.500-18UNEF	1.719	1.770	3.688	3.938	3.000
MS3408DJ 24EXX	MS3406D-24-XX	MS3188B-73A	1.250	.875	1.500-18UNEF	1.719	2.113	4.062	4.938	3.875
MS3408DJ 24FXX	MS3406D-24-XX	MS3188B-46A	.625	.350	1.500-18UNEF	1.719	1.332	3.562	3.875	3.000
MS3408DJ 24GXX	MS3406D-24-XX	MS3188B-20A	1.144	.875	1.500-18UNEF	1.719	2.113	3.562	4.062	3.000
MS3408DJ 28AXX	MS3406D-28-XX	MS3188B-60A	.750	.500	1.750-18UNS	1.969	1.551	3.750	4.125	3.125
MS3408DJ 28BXX	MS3406D-28-XX	MS3188B-21A	.937	.625	1.750-18UNS	1.969	1.770	3.875	4.125	3.125
MS3408DJ 28DXX	MS3406D-28-XX	MS3188B-61A	1.250	.875	1.750-18UNS	1.969	2.113	4.062	4.188	3.125
MS3408DJ 28EXX	MS3406D-28-XX	MS3188B-22A	1.375	1.000	1.750-18UNS	1.969	2.363	3.875	4.312	3.125
MS3408DJ 32AXX	MS3406D-32-XX	MS3188B-23A	.937	.625	2.000-18UNS	2.219	1.770	4.125	4.625	3.500
MS3408DJ 32BXX	MS3406D-32-XX	MS3188B-24A	1.250	.875	2.000-18UNS	2.219	2.113	4.312	4.625	3.500

① ADD .445 WHEN CONTACT ARRANGEMENT INCLUDES SIZE 0 CONTACTS.

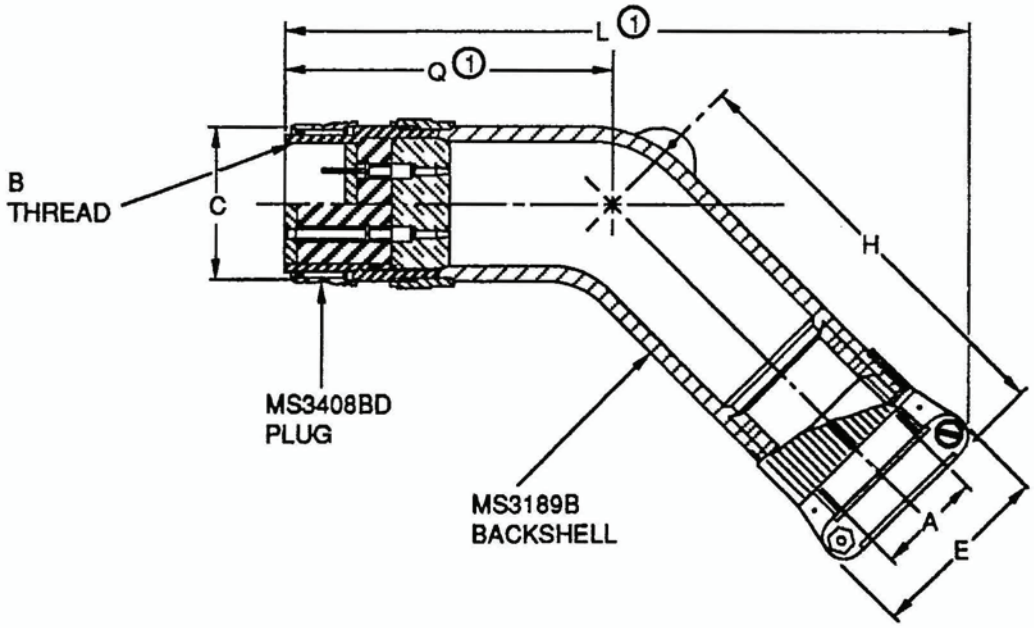
Figure 48. Plug - 90 Degrees Adapter Assembly MS3408DJ (Sheet 2 of 3)

DIMENSIONS

Assembly No.	Connector Plug No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	C Dia Max.	E Max.	H Max.	L ① Max.	Q ① Max.
			Max.	Min.						
MS3408DJ 32DXX	MS3406D-32-XX	MS3188B-62A	1.375	1.000	2.000-18UNS	2.219	2.363	4.438	4.625	3.500
MS3408DJ 32EXX	MS3406D-32-XX	MS3188B-25A	1.625	1.250	2.000-18UNS	2.219	2.770	4.375	4.875	3.500
MS3408DJ 36AXX	MS3406D-36-XX	MS3188B-63A	1.250	.875	2.250-16UN	2.469	2.113	4.312	4.938	3.688
MS3408DJ 36BXX	MS3406D-36-XX	MS3188B-27A	1.375	1.000	2.250-16UN	2.469	2.363	4.438	4.938	3.688
MS3408DJ 36DXX	MS3406D-36-XX	MS3188B-64A	1.625	1.250	2.250-16UN	2.469	2.770	4.688	5.072	3.688
MS3408DJ 36EXX	MS3406D-36-XX	MS3188B-28A	1.840	1.437	2.250-16UN	2.469	3.020	4.375	5.188	3.688
MS3408DJ 36FXX	MS3406D-36-XX	MS3188B-47A	.750	.500	2.250-16UN	2.469	1.551	4.000	4.938	3.688
MS3408DJ 36GXX	MS3406D-36-XX	MS3188B-26A	.937	.625	2.250-16UN	2.469	1.770	4.062	4.938	3.688
MS3408DJ 40AXX	MS3406D-40-XX	MS3188B-65A	1.250	.875	2.500-16UN	2.719	2.113	4.312	5.688	4.438
MS3408DJ 40BXX	MS3406D-40-XX	MS3188B-30A	1.375	1.000	2.500-16UN	2.719	2.363	4.438	5.688	4.438
MS3408DJ 40DXX	MS3406D-40-XX	MS3188B-66A	1.625	1.250	2.500-16UN	2.719	2.770	4.688	5.812	4.438
MS3408DJ 40EXX	MS3406D-40-XX	MS3188B-31A	1.840	1.437	2.500-16UN	2.719	3.020	4.375	5.938	4.438
MS3408DJ 40FXX	MS3406D-40-XX	MS3188B-48A	.750	.500	2.500-16UN	2.719	1.551	4.000	5.688	3.688
MS3408DJ 44AXX	MS3406D-44-XX	MS3188B-67A	1.250	.875	2.750-16UN	2.969	2.113	4.312	5.688	4.438
MS3408DJ 44BXX	MS3406D-44-XX	MS3188B-33A	1.375	1.000	2.750-16UN	2.969	2.363	4.438	5.688	4.438
MS3408DJ 44DXX	MS3406D-44-XX	MS3188B-68A	1.625	1.250	2.750-16UN	2.969	2.770	4.688	5.812	4.438
MS3408DJ 44EXX	MS3406D-44-XX	MS3188B-34A	1.840	1.437	2.750-16UN	2.969	3.020	4.375	5.938	4.438
MS3408DJ 44FXX	MS3406D-44-XX	MS3188B-32A	.937	.625	2.750-16UN	2.969	1.770	4.062	5.688	4.438

① ADD .445 WHEN CONTACT ARRANGEMENT INCLUDES SIZE 0 CONTACTS.

Figure 48. Plug - 90 Degrees Adapter Assembly MS3408DJ (Sheet 3 of 3)



DIMENSIONS

Assembly No.	Connector Plug No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	C Dia Max.	E Max.	H Max.	L ① Max.	Q ① Max.
			Max.	Min.						
MS3409DJ 10AXX	MS3406D-10S-XX	MS3189B-04A	.312	.125	.625-24UNEF	.969	.957	3.062	4.875	2.438
MS3409DJ 10BXX	MS3406D-10S-XX	MS3189B-49A	.437	.250	.625-24UNEF	.969	1.145	3.062	5.812	3.250
MS3409DJ 10DXX	MS3406D-10S-XX	MS3189B-05A	.375	.250	.625-24UNEF	.969	1.145	2.438	4.562	2.438
MS3409DJ 11AXX	MS3406D-10SL-XX	MS3189B-04A	.312	.125	.625-24UNEF	.969	.957	3.062	4.875	2.438
MS3409DJ 11BXX	MS3406D-10SL-XX	MS3189B-49A	.437	.250	.625-24UNEF	.969	1.145	3.062	5.812	3.250
MS3409DJ 11DXX	MS3406D-10SL-XX	MS3189B-05A	.375	.250	.625-24UNEF	.969	1.145	2.438	4.562	2.438
MS3409DJ 12AXX	MS3406D-12-XX	MS3189B-06A	.312	.125	.750-20UNEF	1.062	.957	3.062	5.000	2.500
MS3409DJ 12BXX	MS3406D-12-XX	MS3189B-71A	.625	.350	.750-20UNEF	1.062	1.332	2.938	6.188	3.375
MS3409DJ 12DXX	MS3406D-12-XX	MS3189B-08A	.500	.350	.750-20UNEF	1.062	1.332	3.062	5.125	2.500
MS3409DJ 12EXX	MS3406D-12-XX	MS3189B-07A	.437	.250	.750-20UNEF	1.062	1.145	3.062	5.062	2.500
MS3409DJ 13AXX	MS3406D-12S-XX	MS3189B-06A	.312	.125	.750-20UNEF	1.062	.957	3.062	5.000	2.500
MS3409DJ 13BXX	MS3406D-12S-XX	MS3189B-71A	.625	.350	.750-20UNEF	1.062	1.332	3.312	6.188	3.375
MS3409DJ 13DXX	MS3406D-12S-XX	MS3189B-08A	.500	.350	.750-20UNEF	1.062	1.332	3.062	5.125	2.500
MS3409DJ 13EXX	MS3406D-12S-XX	MS3189B-07A	.437	.250	.750-20UNEF	1.062	1.145	3.062	5.062	2.500
MS3409DJ 14AXX	MS3406D-14-XX	MS3189B-09A	.437	.250	.875-20UNEF	1.156	1.145	3.188	5.188	2.582
MS3409DJ 14BXX	MS3406D-14-XX	MS3189B-50A	.750	.500	.875-20UNEF	1.156	1.551	3.500	6.625	3.625
MS3409DJ 14DXX	MS3406D-14-XX	MS3189B-10A	.575	.350	.875-20UNEF	1.156	1.332	2.812	5.000	2.582
MS3409DJ 14EXX	MS3406D-14-XX	MS3189B-74A	.312	.125	.875-20UNEF	1.156	.957	3.188	5.125	2.582

① ADD .445 WHEN CONTACT ARRANGEMENT INCLUDES SIZE 0 CONTACTS.

Figure 49. Plug - 45 Degrees Adapter Assembly MS3409DJ (Sheet 1 of 3)

DIMENSIONS

Assembly No.	Connector Plug No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	C Dia Max.	E Max.	H Max.	L ① Max.	Q ① Max.
			Max.	Min.						
MS3409DJ 15AXX	MS3406D-14S-XX	MS3189B-09A	.437	.250	.875-20UNEF	1.156	1.145	3.188	5.188	2.562
MS3409DJ 15BXX	MS3406D-14S-XX	MS3189B-50A	.750	.500	.875-20UNEF	1.156	1.551	3.500	6.625	3.625
MS3409DJ 15DXX	MS3406D-14S-XX	MS3189B-10A	.575	.350	.875-20UNEF	1.156	1.332	2.812	5.000	2.562
MS3409DJ 15EXX	MS3406D-14S-XX	MS3189B-74A	.312	.125	.875-20UNEF	1.156	.957	3.188	5.125	2.562
MS3409DJ 16AXX	MS3406D-16-XX	MS3189B-12A	.700	.500	1.000-20UNEF	1.250	1.551	2.938	5.312	2.625
MS3409DJ 16BXX	MS3406D-16-XX	MS3189B-51A	.937	.625	1.000-20UNEF	1.250	1.770	3.750	6.938	3.688
MS3409DJ 16DXX	MS3406D-16-XX	MS3189B-11A	.437	.250	1.000-20UNEF	1.250	1.145	3.312	5.375	2.625
MS3409DJ 16EXX	MS3406D-16-XX	MS3189B-40A	.625	.350	1.000-20UNEF	1.250	1.332	3.312	5.438	2.625
MS3409DJ 17AXX	MS3406D-16S-XX	MS3189B-12A	.700	.500	1.000-20UNEF	1.250	1.551	2.938	5.312	2.625
MS3409DJ 17BXX	MS3406D-16S-XX	MS3189B-51A	.937	.625	1.000-20UNEF	1.250	1.770	3.750	6.938	3.688
MS3409DJ 17DXX	MS3406D-16S-XX	MS3189B-11A	.437	.250	1.000-20UNEF	1.250	1.145	3.312	5.375	2.625
MS3409DJ 17EXX	MS3406D-16S-XX	MS3189B-40A	.625	.350	1.000-20UNEF	1.250	1.332	3.312	5.438	2.625
MS3409DJ 18AXX	MS3406D-18-XX	MS3189B-13A	.625	.350	1.125-18UNEF	1.344	1.332	3.500	5.750	2.812
MS3409DJ 18BXX	MS3406D-18-XX	MS3189B-52A	.750	.500	1.125-18UNEF	1.344	1.551	3.500	5.875	2.812
MS3409DJ 18EXX	MS3406D-18-XX	MS3189B-41A	.312	.125	1.125-18UNEF	1.344	.957	3.500	5.625	2.812
MS3409DJ 18FXX	MS3406D-18-XX	MS3189B-42A	.437	.250	1.125-18UNEF	1.344	1.145	3.500	5.688	2.812
MS3409DJ 20AXX	MS3406D-20-XX	MS3189B-15A	.625	.350	1.250-18UNEF	1.469	1.332	3.500	5.750	2.812
MS3409DJ 20BXX	MS3406D-20-XX	MS3189B-54A	.750	.500	1.250-18UNEF	1.469	1.551	3.500	5.875	2.812
MS3409DJ 20EXX	MS3406D-20-XX	MS3189B-55A	1.250	.875	1.250-18UNEF	1.469	2.113	4.000	7.375	3.812
MS3409DJ 20FXX	MS3406D-20-XX	MS3189B-43A	.437	.250	1.250-18UNEF	1.469	1.145	3.500	5.688	2.812
MS3409DJ 20GXX	MS3406D-20-XX	MS3189B-16A	.904	.625	1.250-18UNEF	1.469	1.770	3.250	5.750	2.812
MS3409DJ 22AXX	MS3406D-22-XX	MS3189B-56A	.625	.350	1.375-18UNEF	1.594	1.332	3.625	5.938	2.938
MS3409DJ 22BXX	MS3406D-22-XX	MS3189B-17A	.750	.500	1.375-18UNEF	1.594	1.551	3.688	6.062	2.938
MS3409DJ 22DXX	MS3406D-22-XX	MS3189B-57A	.937	.625	1.375-18UNEF	1.594	1.770	3.750	6.188	2.938
MS3409DJ 22EXX	MS3406D-22-XX	MS3189B-58A	1.250	.875	1.375-18UNEF	1.594	2.113	4.000	7.375	3.812
MS3409DJ 22FXX	MS3406D-22-XX	MS3189B-44A	.312	.125	1.375-18UNEF	1.594	.957	3.625	5.812	2.938
MS3409DJ 22GXX	MS3406D-22-XX	MS3189B-45A	.437	.250	1.375-18UNEF	1.594	1.145	3.625	5.875	2.938
MS3409DJ 22HXX	MS3406D-22-XX	MS3189B-18A	1.029	.875	1.375-18UNEF	1.594	2.113	3.625	6.250	2.938
MS3409DJ 24AXX	MS3406D-24-XX	MS3189B-19A	.750	.500	1.500-18UNEF	1.719	1.551	3.688	6.062	2.938
MS3409DJ 24DXX	MS3406D-24-XX	MS3189B-59A	.937	.625	1.500-18UNEF	1.719	1.770	3.750	6.188	2.938
MS3409DJ 24EXX	MS3406D-24-XX	MS3189B-73A	1.250	.875	1.500-18UNEF	1.719	2.113	4.000	7.375	3.812
MS3409DJ 24FXX	MS3406D-24-XX	MS3189B-46A	.625	.350	1.500-18UNEF	1.719	1.332	3.625	5.938	2.938
MS3409DJ 24GXX	MS3406D-24-XX	MS3189B-20A	1.144	.875	1.500-18UNEF	1.719	2.113	3.625	6.250	2.938
MS3409DJ 28AXX	MS3406D-28-XX	MS3189B-60A	.750	.500	1.750-18UNS	1.969	1.551	3.688	6.250	3.062
MS3409DJ 28BXX	MS3406D-28-XX	MS3189B-21A	.937	.625	1.750-18UNS	1.969	1.770	3.812	6.375	3.062
MS3409DJ 28DXX	MS3406D-28-XX	MS3189B-61A	1.250	.875	1.750-18UNS	1.969	2.113	4.000	6.625	3.062
MS3409DJ 28EXX	MS3406D-28-XX	MS3189B-22A	1.375	1.000	1.750-18UNS	1.969	2.363	3.812	6.562	3.062
MS3409DJ 32AXX	MS3406D-32-XX	MS3189B-23A	.937	.625	2.000-18UNS	2.219	1.770	3.938	6.500	3.125
MS3409DJ 32BXX	MS3406D-32-XX	MS3189B-24A	1.250	.875	2.000-18UNS	2.219	2.113	4.125	6.750	3.125
MS3409DJ 32DXX	MS3406D-32-XX	MS3189B-62A	1.375	1.000	2.000-18UNS	2.219	2.363	4.250	6.938	3.125
MS3409DJ 32EXX	MS3406D-32-XX	MS3189B-25A	1.625	1.250	2.000-18UNS	2.219	2.770	4.188	7.062	3.125

Figure 49. Plug - 45 Degrees Adapter Assembly MS3409DJ (Sheet 2 of 3)

Assembly No.	Connector Plug No.	Backshell Assembly No.	A Cable Entry		B Thread Class 2	C Dia Max.	E Max.	H Max.	L ① Max.	Q ① Max.
			Max.	Min.						
MS3409DJ 32DXX	MS3406D-32-XX	MS3189B-62A	1.375	1.000	2.000-18UNS	2.219	2.363	4.250	6.938	3.125
MS3409DJ 32EXX	MS3406D-32-XX	MS3189B-25A	1.625	1.250	2.000-18UNS	2.219	2.770	4.188	7.062	3.125
MS3409DJ 36AXX	MS3406D-36-XX	MS3189B-63A	1.250	.875	2.250-16UN	2.469	2.113	4.250	6.875	3.125
MS3409DJ 36BXX	MS3406D-36-XX	MS3189B-27A	1.375	1.000	2.250-16UN	2.469	2.363	4.375	7.062	3.125
MS3409DJ 36DXX	MS3406D-36-XX	MS3189B-64A	1.625	1.250	2.250-16UN	2.469	2.770	4.625	7.375	3.125
MS3409DJ 36EXX	MS3406D-36-XX	MS3189B-28A	1.840	1.437	2.250-16UN	2.469	3.020	4.312	7.250	3.125
MS3409DJ 36FXX	MS3406D-36-XX	MS3189B-47A	.750	.500	2.250-16UN	2.469	1.551	3.875	6.438	3.125
MS3409DJ 36GXX	MS3406D-36-XX	MS3189B-26A	.937	.625	2.250-16UN	2.469	1.770	4.000	6.625	3.125
MS3409DJ 40AXX	MS3406D-40-XX	MS3189B-65A	1.250	.875	2.500-16UN	2.719	2.113	4.250	7.625	3.875
MS3409DJ 40BXX	MS3406D-40-XX	MS3189B-30A	1.375	1.000	2.500-16UN	2.719	2.363	4.375	7.812	3.875
MS3409DJ 40DXX	MS3406D-40-XX	MS3189B-66A	1.625	1.250	2.500-16UN	2.719	2.770	4.625	8.125	3.875
MS3409DJ 40EXX	MS3406D-40-XX	MS3189B-31A	1.840	1.437	2.500-16UN	2.719	3.020	4.312	8.000	3.875
MS3409DJ 40FXX	MS3406D-40-XX	MS3189B-48A	.750	.500	2.500-16UN	2.719	1.551	3.875	7.188	3.125
MS3409DJ 44AXX	MS3406D-44-XX	MS3189B-67A	1.250	.875	2.750-16UN	2.969	2.113	4.250	7.625	3.875
MS3409DJ 44BXX	MS3406D-44-XX	MS3189B-33A	1.375	1.000	2.750-16UN	2.969	2.363	4.375	7.812	3.875
MS3409DJ 44DXX	MS3406D-44-XX	MS3189B-68A	1.625	1.250	2.750-16UN	2.969	2.770	4.625	8.125	3.875
MS3409DJ 44EXX	MS3406D-44-XX	MS3189B-34A	1.840	1.437	2.750-16UN	2.969	3.020	4.312	8.000	3.875
MS3409DJ 44FXX	MS3406D-44-XX	MS3189B-32A	.937	.625	2.750-16UN	2.969	1.770	4.000	7.375	3.875

① ADD .445 WHEN CONTACT ARRANGEMENT INCLUDES SIZE 0 CONTACTS.

Figure 49. Plug - 45 Degrees Adapter Assembly MS3409DJ (Sheet 3 of 3)

ALPHABETICAL INDEX
INSTALLATION PRACTICES
CONNECTORS MIL-C-26482 SERIES 1 AND 2

Title	WP Number
Connector Accessories, MIL-C-26482 Series 1 and 2	008 03
Connectors, MIL-C-26482 Series 1 and 2	008 02
Introduction	008 01

INTRODUCTION
CONNECTORS MIL-C-26482 SERIES 1 AND 2

1. PURPOSE AND SCOPE.

2. This manual covers all connectors manufactured in accordance with MIL-C-26482. It includes contact data, tooling, buildup, and connector accessories for MIL-C-26482 Series 1 and 2 connectors.

3. SPECIFICATION UPDATES (ASSIST SEARCH).

4. The most up to date government specifications and Qualified Products Lists (QPLs) can be obtained from the Quick Search section of the ASSIST website, the address is http://assist.daps.mil/quicksearch. Non-government standards can be obtained through a license with a document service such as Information Handling Services (IHS) or purchased individually from the Society of Automotive Engineers (SAE).

5. QUALIFIED PRODUCTS LIST (QPL).

6. The Qualified Products List (QPL) is a list of products which have met the qualification requirements stated in the applicable specification. These requirements include appropriate product identification and performance/testing parameters. The list contains the government part number and the manufacturer's part number. The name of the manufacturer, office and manufacturing plant address, CAGE (Commercial and Government Entity) code, assembly plant, or distributor as applicable, is also included in the back of the QPL. The component specification will identify the appropriate quality assurance provisions such as QPL, First Article testing, or user verified test results. NAVAIR Patuxent River (http://www.navair.navy.mil/qpl/) now has an operational website where the latest QPL revision can be accessed, along with all outstanding QPL change letters as they are written. This enables all users to have access to the latest procurement information without relying on the publication of a new QPL revision. When the QPL is revised, all outstanding QPL change letters are incorporated in the latest revision.

CONNECTORS
MIL-C-26482 SERIES 1 AND 2

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Connectors, Electrical, (Circular, Miniature, Quick Disconnect, Environmental Resisting),
Receptacles and Plugs, General Specification for MIL-C-26482
Connector Accessories MIL-C-26482 Series 1 and 2 ..... 008 03

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Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
HT-900B (or equivalent)	Heat Gun
M22520/1-01	Tool, Crimp Frame
M22520/1-02	Positioner
M22520/3-1	Gage, Inspection
M81969/14-02	Tool, Insertion and Removal
M81969/14-03	Tool, Insertion and Removal, Plastic
M81969/14-04	Tool, Insertion and Removal, Plastic
M81969/17-03	Tool, Insertion
M81969/17-04	Tool, Insertion
M81969/19-67	Tool, Removal
M81969/19-08	Tool, Removal
M81969/30	Tool, Removal, Unwired Contact

Materials Required

Specification/ Part No.	Nomenclature
H-B-643 (or equivalent)	Brush, Acid Swabbing
MIL-F-14256	Flux, Liquid
SAE-AMS-DTL-23053	Sleeving, Insulating, Heat-Shrinkable
Sn60WRMAP3 (or equivalent)	Solder

1. INTRODUCTION.

2. This Work Package (WP) pertains to connectors manufactured in accordance with MIL-C-26482 Series 1 and 2.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, (the Society of Automotive Engineers (SAE), will become the preparing activity and the Navy will adopt the documents), the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

3. DESCRIPTION. MIL-C-26482 connectors utilize crimp type contacts or non-removable solder contacts. Crimp type contacts are front release or rear release but both are inserted and removed from rear of connector.

4. All MIL-C-26482 connectors are environment resisting, quick disconnect, miniature, circular electrical connectors. Series 1 and 2 connectors are intermateable when using power contacts, and are not intermateable when using shielded contacts.

5. WIRE SEALING. Wire sealing is accomplished by the use of a grommet seal which is designed to seal against outside diameter of inserted wire.

6. **MIL-C-26482 SERIES 1**.

7. The MIL-C-26482 Series 1 connectors are bayonet coupled with solder or front release crimp removable contacts. Hermetic receptacles have solder contacts (Figure 1).

8. GROMMET SEALING PLUGS. The grommets of environment resisting connectors are designed to accept sealing plugs in accordance with MIL-C-26482 to be used where unwired contacts are placed. The connector, when ordered as a unit, will have sealing plugs enclosed to equal 15 percent of the number of contacts but not less than one.

9. MATING SEAL. Plugs and receptacles with pin inserts have a resilient face with individual pin barriers to seal against the hard face socket insert. The resilient interface seal provides individual contact seals in mated condition between each contact and shell.

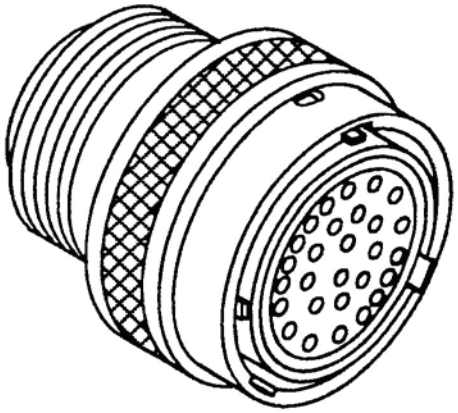


Figure 1. MIL-C-26482 Series 1 Typical Connector

10. SHELL. Shells including mounting flanges are of one-piece construction and designed to retain their inserts in one position by mechanical means.

11. COUPLING. Connectors shall be capable of being fully coupled and uncoupled without use of tools.

12. POLARIZATION. Connectors are polarized as denoted by their part numbers. This means that the master keyway is rotated to prevent mis-mating of similar connectors in close proximity to each other, or in a similar location. A plug with a given polarization letter will mate with a receptacle with same letter, The inserts do not rotate, only the keyway is rotated.

13. PART NUMBER. The following paragraphs contain information necessary for proper selection and procurement of connector (Figures 2 and 3).

14. Shell Style. The shell style denotes the type and mounting of connector.

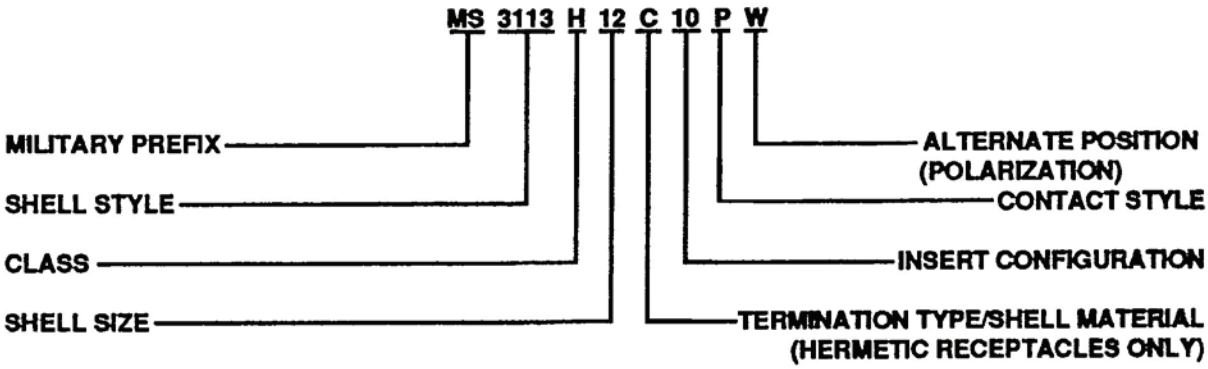
15. Military Prefix. The military prefix denotes military standard.

16. Class. The class is a letter code denoting environment resisting ability.

17. Shell Size. The shell size is indicated by a progressive numbering system.

18. Insert Configuration. The insert configuration is the insert arrangement by number and size of contacts used.

19. Contact Style. The contact style denotes type of contact used.



SHELL STYLE

MS3110	WALL MOUNT RECEPTACLE.
MS3111	IN-LINE RECEPTACLE.
MS3112	BOX MOUNT RECEPTACLE.
MS3113	HERMETIC SEAL SOLDER MOUNT RECEPTACLE.
MS3114	JAM NUT RECEPTACLE.
MS3116	STRAIGHT PLUG.
MS3119	THRU-BULKHEAD RECEPTACLE.

CLASS

A*	GENERAL DUTY, THREADED BACKSHELL.
B*	GENERAL DUTY WITH STRAIN RELIEF CLAMP.
E	GROMMET SEAL.
F	GROMMET SEAL WITH STRAIN RELIEF.
H	HERMETIC SEAL.
J	CABLE SEAL WITH CLAMP.
P	POTTING SEAL.

* OBSOLETE. NOT FOR NEW DESIGN.

SHELL SIZE

SEE TABLE 1 FOR AVAILABLE SHELL SIZES.

TERMINATION TYPE/SHELL MATERIAL

(HERMETIC RECEPTACLES ONLY)

INSERT CONFIGURATION

SEE FIGURE 7 FOR ILLUSTRATIONS AND CODES.

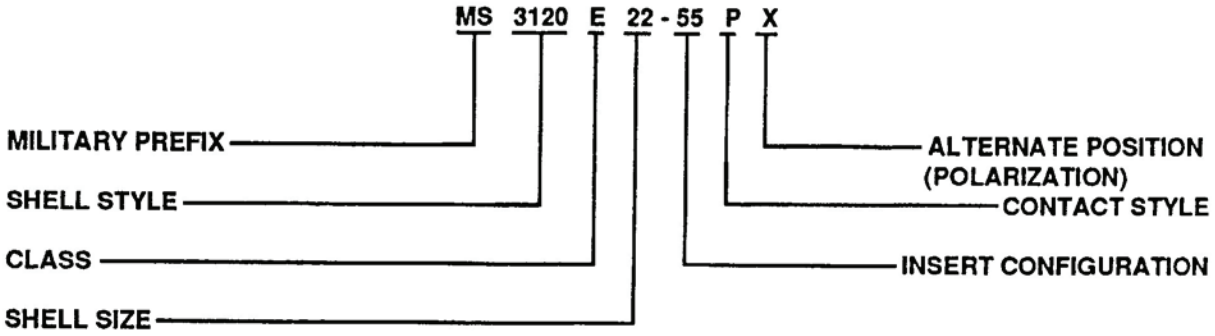
CONTACT STYLE

C	FEEDTHRU CONTACTS (MS3119)
P	PIN CONTACTS.
S	SOCKET CONTACTS.

ALTERNATE POSITION (POLARIZATION)

W, X, Y,Z OR BLANK (NORMAL)

Figure 2. MIL-C-26482 Series 1 Part Number Breakdown (Solder Type)



SHELL STYLE

MS3120	WALL MOUNT RECEPTACLE.
MS3121	IN-LINE RECEPTACLE.
MS3122	BOX MOUNT RECEPTACLE.
MS3124	JAM NUT RECEPTACLE.
MS3126	STRAIGHT PLUG.
MS3127	LARGE FLANGE BOX MOUNT RECEPTACLE.
MS3128	LARGE FLANGE WALL MOUNT RECEPTACLE.

CLASS

E	GROMMET SEAL.
F	GROMMET SEAL WITH STRAIN RELIEF.
P	POTTING SEAL.

SHELL SIZE

SEE TABLE 1 FOR AVAILABLE SHELL SIZES.

INSERT CONFIGURATION

SEE FIGURE 7 FOR ILLUSTRATIONS AND CODES.

CONTACT STYLE

A	LESS PIN CONTACTS.
B	LESS SOCKET CONTACTS.
P	PIN CONTACTS.
S	SOCKET CONTACTS.

ALTERNATE POSITION (POLARIZATION)

W, X, Y,Z OR BLANK (NORMAL).

Figure 3. MIL-C-26482 Series 1 Part Number Breakdown (Crimp Type)

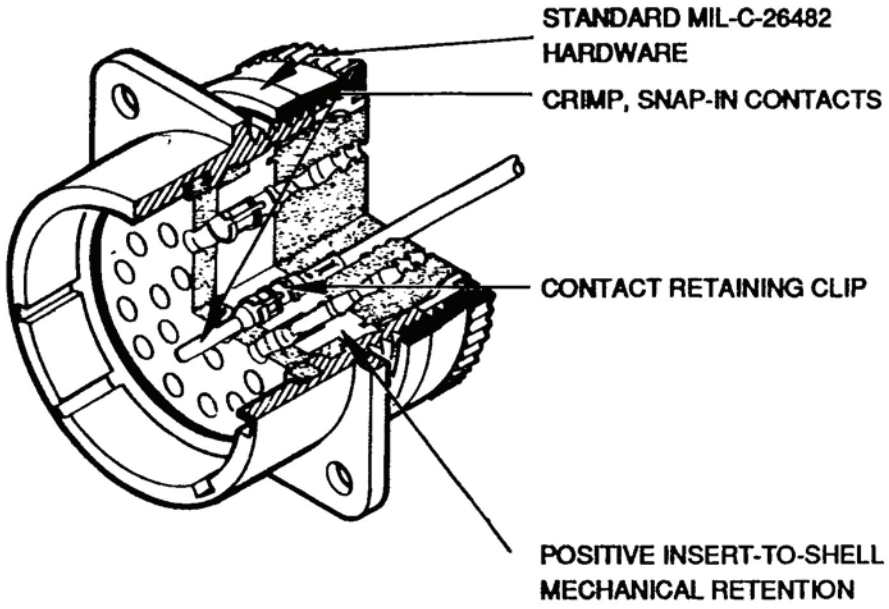


Figure 4. MIL-C-26482 Series 1 Design Features

20. Polarization. The polarization letter shows that the plugs and receptacles with the same letter can be mated.

21. DESIGN AND CONSTRUCTION. Connectors and accessories are designed and constructed to withstand normal handling incidental to installation and maintenance (Figure 4).

22. INSERTS. The non-resilient material used for all inserts shall be a high grade dielectric having electrical and mechanical characteristics suitable for the purpose intended. The impact strength shall be such that material shall not chip, crack, or break during assembly or normal maintenance.

23. Crimp Snap-In Contacts. Contacts designed to AS39029 can be crimped with standard M22520/1 crimp tool.

24. Closed-Entry Socket Contacts. These contacts eliminate damage from abuse by test probes and help to correct any misaligned pins during engagement.

25. Contact Insertion. Insertion is accomplished from rear of connector. When contact is fully inserted, the clip tines snap securely behind contact shoulders.

26. Contact Extraction. Extraction is accomplished with a front-inserted extraction tool. Pressing the tool plunger pushes contact out through rear of connector.

27. Contact Retaining Clip. The retaining clip is completely encased in a tough plastic wafer to protect clip from damage.

28. Moisture Sealing. Complete sealing is achieved by combining four seals, shell, peripheral, interfacial, and wire seal.

29. Shell Seal. This seal is effected when plug shell pushes against sealing ring in receptacle when connectors are mated.

30. Peripheral Seal. This seal is around the edge of the insulator and designed so that when mating the connector, tension is put on seal and greatly reduces compression set.

31. Interfacial Seal. This seal is achieved by insulator faces meeting when plug and receptacle are mated.

32. Wire Seal. This seal is accomplished by a multiple ripple design, exceeding wire sealing requirements of MIL-C-26482.

33. Insert Retention. Insert retention is accomplished by a hard plastic wafer firmly locked into a groove in shell and a strong adhesive bond between insert and shell.

34. Keying. Keying is used in shell-enclosed connectors to obtain polarization, which assures the correct location when mating a connector (Figure 5).

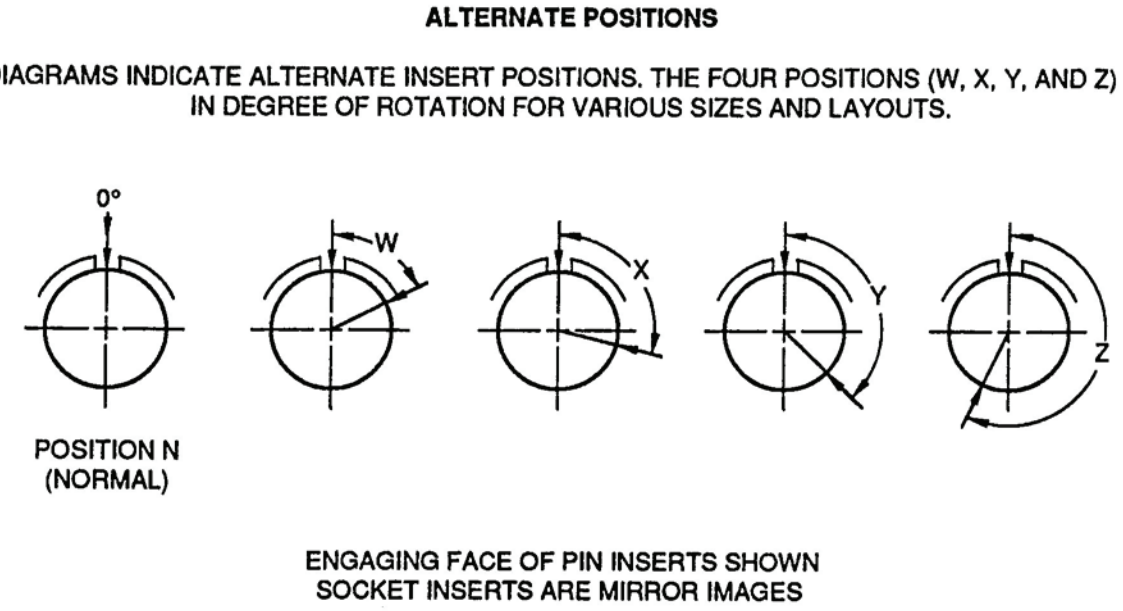


Figure 5. MIL-C-26482 Series 1 and 2 Alternate Key Positions

35. INSERT ARRANGEMENT. The insert arrangement is the number and size of contacts available by shell size (Table 1). Insert arrangements are specified in MIL-STD-1669.

36. INSERT CONFIGURATION. The insert configuration is the manner in which contacts are placed within the insert in a standard configuration. All arrangements identified in Table 1 are illustrated (Figure 6).

37. CONTACTS. Contacts are designed to prevent damage to contact retention device or sealing member during insertion or removal of contacts.

38. Fixed Contacts. Contacts in hermetically sealed or thru-bulkhead receptacles are fixed non-removable, and solderable, or feed through type.

39. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

40. Contact Availability. Crimp contacts are supplied with each connector unit package and consist of a full complement plus one spare per size for connectors of 26 contacts or less. Connectors with more than 26 contacts will have two spares of each size used. Contacts may also be ordered in individual quantities when necessary.

41. Installation and Removal Tools. The proper installation and removal tools must be used to assemble or disassemble connectors. The connector, when ordered as a unit package, will include one MIL-I-81969/17 tool.

42. CONTACT APPLICATION. Contacts used are manufactured in accordance with AS39029. The contact part number breakdown is illustrated (Figure 7). The Basic Identification Number (BIN) or last three digits of contact part number, matches the standard resistor color code (Figure 8).

43. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts range from size 8 through 20 and are of crimp, front release design. Contacts are listed by size. Match the required size to connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with corresponding color bands (Table 2).

44. TOOLING. The procedure for attaching power contacts to a single conductor wire are the same for this connector series. Select the proper tooling for the specific contact part number (Table 3) and refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures.

Table 1. MIL-C-26482 Insert Arrangement (Sheet 1 of 5)

INSERT ARRANGEMENT SHELL SIZE	SERVICE RATING (See Note: 1)	CONTACT SIZE (See Note: 2)				NUMBER OF CONTACTS
		20	16	12	8	
8-2	I	2				2
8-3	I	3				3
8-4	I	4				4
8-33	I	3				3
8-60 (8-3)	I	*a				3
8-61 (8-4)	I	*b				4
8-62 (8-2)	I	*c				2
8-63 (8-4)	I	*d				4
8-80 (8-4)	I	*e				4
8-82 (8-2)	I	*f				2
8-83 (8-3)	I	*g				3
8-84 (8-4)	I	*h				4
8-86 (8-4)	I	*i				4
8-87 (8-3)	I	1				3
8-88 (8-4)	I	*k				4
8-89 (8-3)	I	*l				3
8-98	I	3				3
10-6	I	6				6
10-80(10-6)	I	*m				6
10-81 (10-6)	I	*n				6
10-92 (10-6)	I	*o				6
10-83(10-6)	I	*p				6
10-85(10-6)	I	*q				6
10-98	I	6				6
12-3	II		3			3
12-8	I	8				8
12-10	I	10				10
12-80(12-10)	I	*r				10
12-81(12-10)	I	*s				10
12-85(12-10)	I	*t				10
12-87(12-8)	I	*u				8
12-88(12-10)	I	*v				10
12-89(12-10)	I	*w				10
14-4	I			4		4
14-5	II		5			5
14-9	I	5		4		9
14-12	I	8	4			12
14-15	I	14	1			15
14-18	I	18				18

Table 1. MIL-C-26482 Insert Arrangement (Sheet 2 of 5)

INSERT ARRANGEMENT SHELL SIZE	SERVICE RATING (See Note: 1)	CONTACT SIZE (See Note: 2)				NUMBER OF CONTACTS
		20	16	12	8	
14-19	I	19				19
14-22	I	1		4		5
14-80 (14-19)	I	*x				19
14-81 (14-18)	I	*y				18
14-84 (14-18)	I	*z				18
14-85 (14-19)	I	*aa				19
14-87 (14-19)	I	*ab				19
16-5	I	*ac 5				5
16-8	II		8			8
16-14	I					14
16-23	I	22	1			23
16-26	I	26				26
16-80 (16-26)	I	*ad				26
16-83 (16-26)	I	*ae				26
16-84 (16-26)	I	*af				26
16-88 (16-26)	I	*ag				26
16-89 (16-26)	I	*ah				26
16-95	I	6			2	8
16-99	I	21	2			23
18-8	I			8		8
18-11	II		11			11
18-30	I	29	1			30
18-32	I	32				32
18-71	Coaxial		*aj 9			9
18-72	Coaxial	*ak 14				14
18-75	Coaxial	*al 4				4
18-76	Coaxial	*am 4				4
18-80	II	*an 8				8
18-85	I	5		8		13
18-88	I	4			4	8
20-16	II		16			16
20-24	I	24				24
20-27	I	27				27
20-39	I	37	2			39
20-41	I	41				41
20-70	Coaxial	*ao				14
20-71	Coaxial	*ap				10
20-73	Coaxial	*aq				10
20-84 (20-41)	I	*ar				41

Table 1. MIL-C-26482 Insert Arrangement (Sheet 3 of 5)

INSERT ARRANGEMENT SHELL SIZE	SERVICE RATING (See Note: 1)	CONTACT SIZE (See Note: 2)				NUMBER OF CONTACTS
		20	16	12	8	
20-85 (20-41)	I	*as				41
20-90	I	3		12		15
22-12	I			12		12
22-19	I			19		19
22-21	II		21			21
22-32	I	32				32
22-34	I	34				34
22-41	I	27	14			41
22-55	I	55				55
22-70	Coaxial	*at				19
22-71	Coaxial	*au				9
22-72	Coaxial		*av			19
22-75	Coaxial	*aw				7
22-77	Coaxial	*ax				7
22-78	Coaxial	*ay				7
22-79	Coaxial	*az				7
22-84 (22-55)	I	*ba				55
22-85 (22-55)	I	*bb				55
22-86 (22-55)	I	*bc				55
22-95	I	26		6		32
22-96	I				7	7
24-A2	Coaxial	1 + 7 Coaxial				
24A4	Coaxial	1 + 7 Coaxial				7
24A8	Coaxial	1 + 7 Coaxial				7
24A9	Coaxial	1 + 7 Coaxial				7
24-19	II			19		19
24-27	I	11	16			27
24-31	I	31				31
24-61	I	61				61
24-71	I	45				49
24-79	Coaxial	*be				6
24-80 (24-61)	I	*bf				61
24-82 (24-61)	I	*bg				61
24-83 (24-61)	I	*bh				61

Table 1. MIL-C-26482 Insert Arrangement (Sheet 4 of 5)

NOTES: See figure 6 for insert configuration graphic
1.

Condition	Service Rating I	Service Rating II
Sea Level	600	1000
70,000Feet	300	450

2. All Thermocouple contacts are size 20 contacts
   a. Thermocouple 1-IR, 1-CON, 1-CU
   b. Thermocouple 1-IR, 1-CON, 2-CU
   c. Thermocouple 1-CH, 1-CON
   d. Thermocouple 1-CH, 1-AL, 1-CU
   e. Thermocouple 2-AL, 1-CH
   f. Thermocouple 1-AL, 1-CH
   g. Thermocouple 1-AL, 1-CH, +1 No. 20
   h. Thermocouple 2-IR, 2-CON
   i. Thermocouple 2-CON, 1-CH
   j. Thermocouple 1-CON, + 2 No. 20
   k. Thermocouple 2-CON, + 2 No. 20
   l. Thermocouple 1-CON, 1-CH, +1 No. 20
   m. Thermocouple 1-AL, 1-CH, +4 No. 20
   n. Thermocouple 3-CH, 3 AL
   o. Thermocouple 1-AL, 1-IR, 1-CON, 1-CH, +2 No. 20
   p. Thermocouple 1-AL, 1-CH, +4 No. 20
   q. Thermocouple 2-AL, 2-CH, +2 No. 20
   r. Thermocouple 5-CH, 5 AL
   s. Thermocouple 5-CH, 5 AL
   t. Thermocouple 5-IR, 5-CON
   u. Thermocouple 1-AL, 1-CH, +6 No. 20
   v. Thermocouple 1-AL, 1-CH, +8 No. 20
   w. Thermocouple 2-CON, + 8 No. 20
   x. Thermocouple 10-CH, 9 AL
   y. Thermocouple 5-AL, 5-CH, +8 No. 20
   z. Thermocouple 9-CH, 9 AL
   aa. Thermocouple 1-AL, 1-CH, +17 No. 20
   ab. Thermocouple 5-AL, 5-CH, +9 No. 20
   ac. 5 (Omit all holes except: S, T, Z, W, J)
   ad. Thermocouple 13-IR, 13-CON
   ae. Thermocouple 12-CON, 12-CH, +2 No. 20
   af. Thermocouple 13-IR, 13-CH
   ag. Thermocouple 1-AL, 1-CH, +24 No. 20
   ah. Thermocouple 13-CON, + 13 No. 20
   aj. 8+1 No. 8 Coaxial
   ak. 10+4 No. 12 Coaxial
   al. 4 No. 8 Coaxial
   am. 3 No. 12 and 1 No. 8 Coaxial
   an. 6 + 2 No. 8 Coaxial
   ao. 10 + 4 No. 8 Coaxial
   ap. 2 + 8 No. 12 Coaxial
   aq. 8+2 No. 8 Coaxial
   ar. Thermocouple 3-AL, 3-CH, +35 No. 20
   as. Thermocouple 1-AL, 1-CH, +39 No. 20
   at. 13+ 6 No. 8 Coaxial
   au. 2 + 7 No. 8 Coaxial
   av. 4 + 3 No. 8 Coaxial
   aw. ALL No.8 Coaxial
   ax. ALL No.8 Coaxial

Table 1. MIL-C-26482 Insert Arrangement (Sheet 5 of 5)

ay. ALL No.8 Coaxial
az. ALL No.12 Coaxial
ba. Thermocouple 27-AL, 27-CH, +1 No. 20
bb. Thermocouple 8-AL, 8-CH, +39 No. 20
bc. Thermocouple 12-AL, 12-CH, +31 No. 20
bd. 2 + 2 No. 8 Coaxial
be. 1 + 5 No. 8 Coaxial
bf. Thermocouple 31-CON, + 3 No. 20
bg. Thermocouple 9-AL, 9-CH, +43 No. 20
bh. Thermocouple 26-AL, 26-CH, +9 No. 20

New terminology applies to thermocouple conductors as follows:
Constantan: Copper - Nickel Alloy
Alumel: Nickel - Aluminum Alloy
Chromel: Nickel – Chromium
Iron: Iron (Remains unchanged)

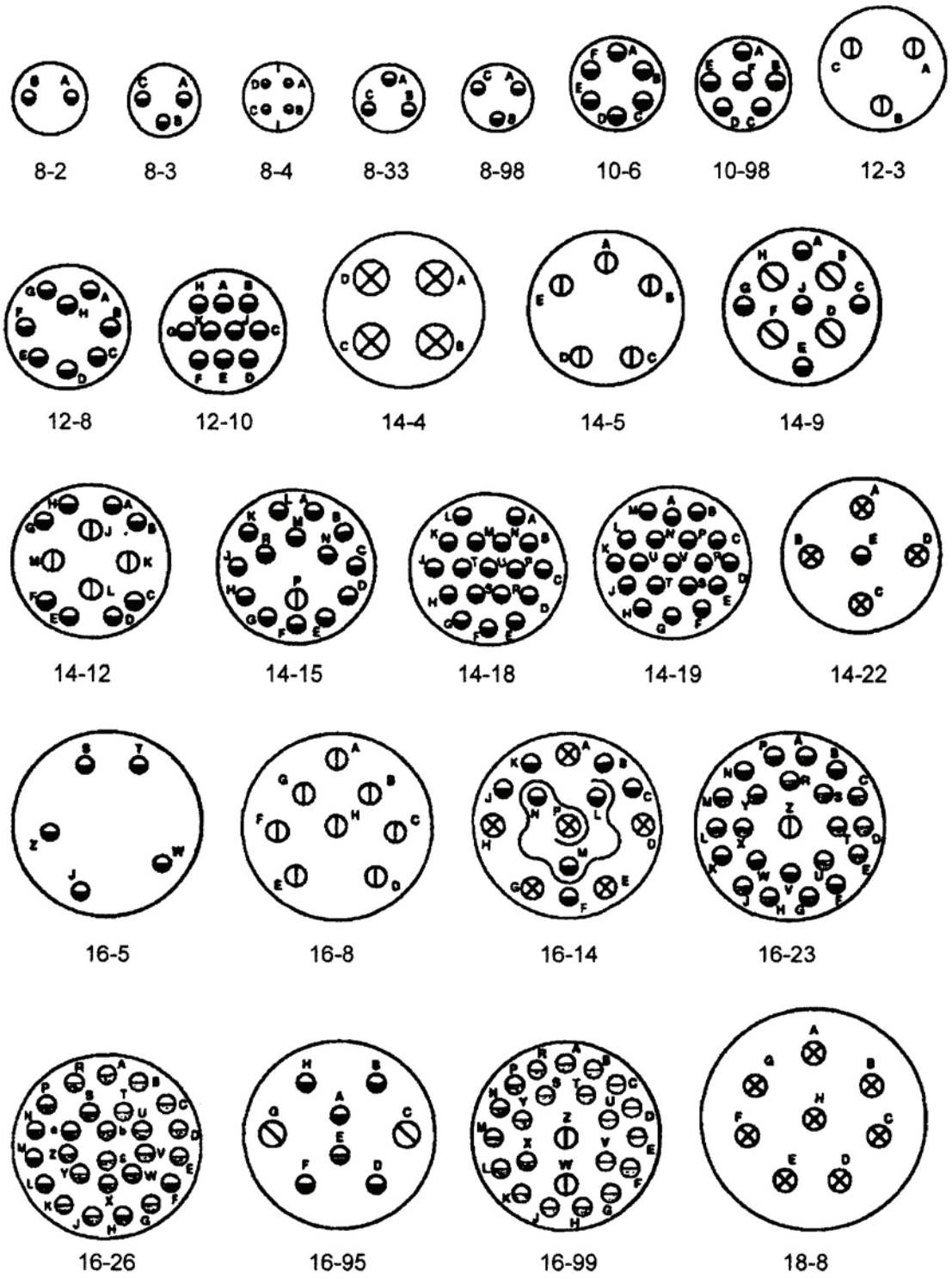


Figure 6. MIL-C-26482 Series 1 an 2 Insert Configuration (Sheet 1 of 5)

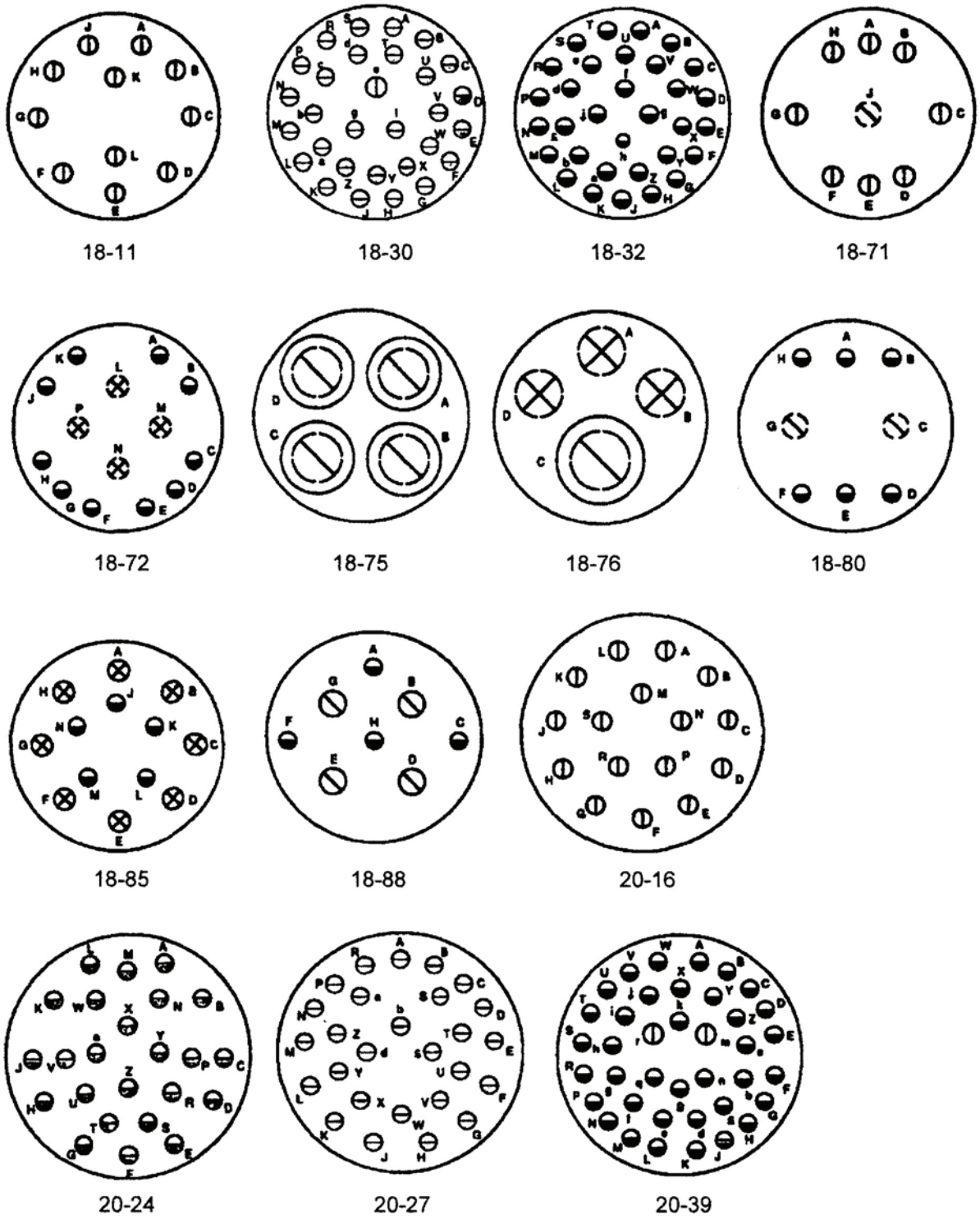


Figure 6. MIL-C-26482 Series 1 an 2 Insert Configuration (Sheet 2 of 5)

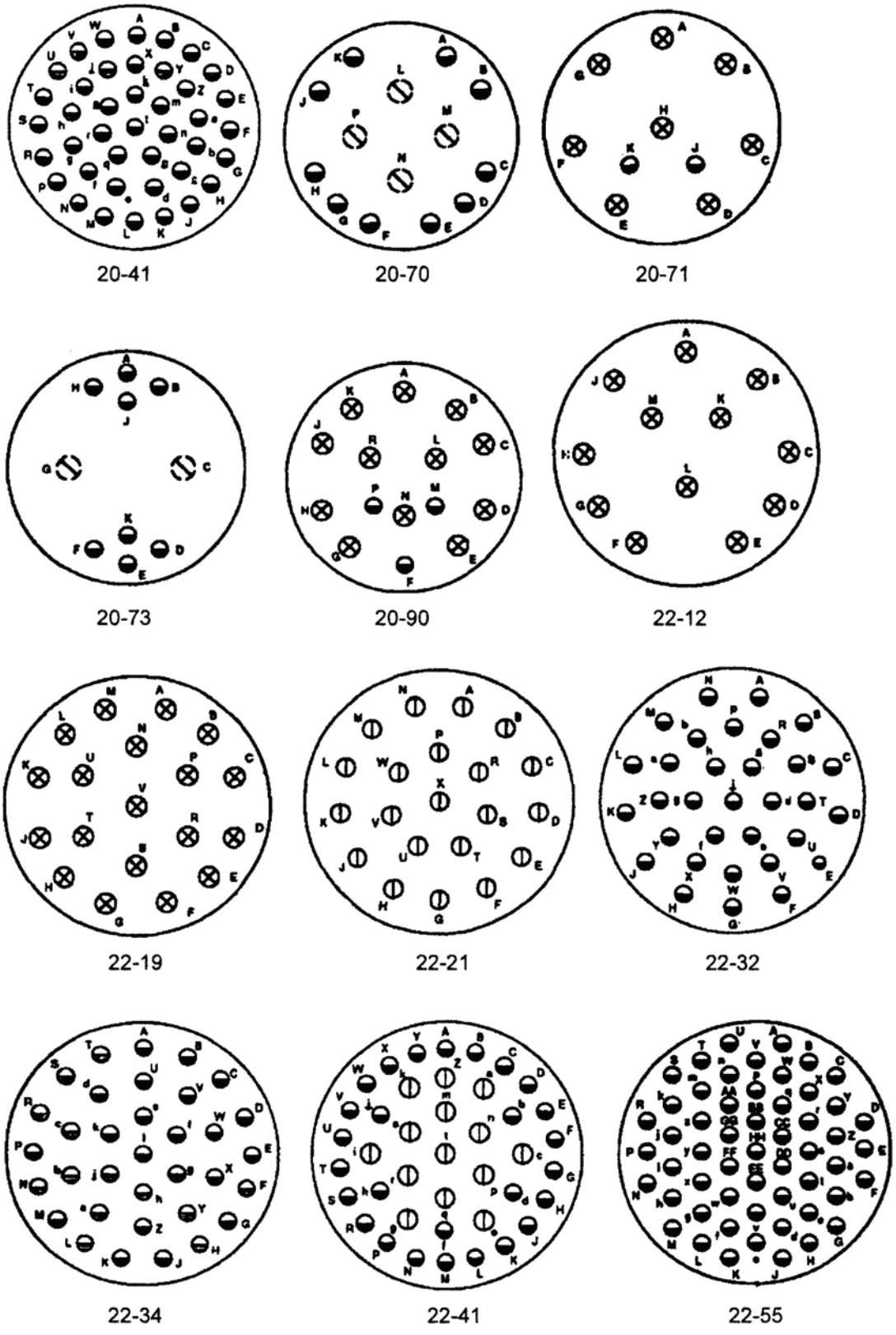


Figure 6. MIL-C-26482 Series 1 an 2 Insert Configuration (Sheet 3 of 5)

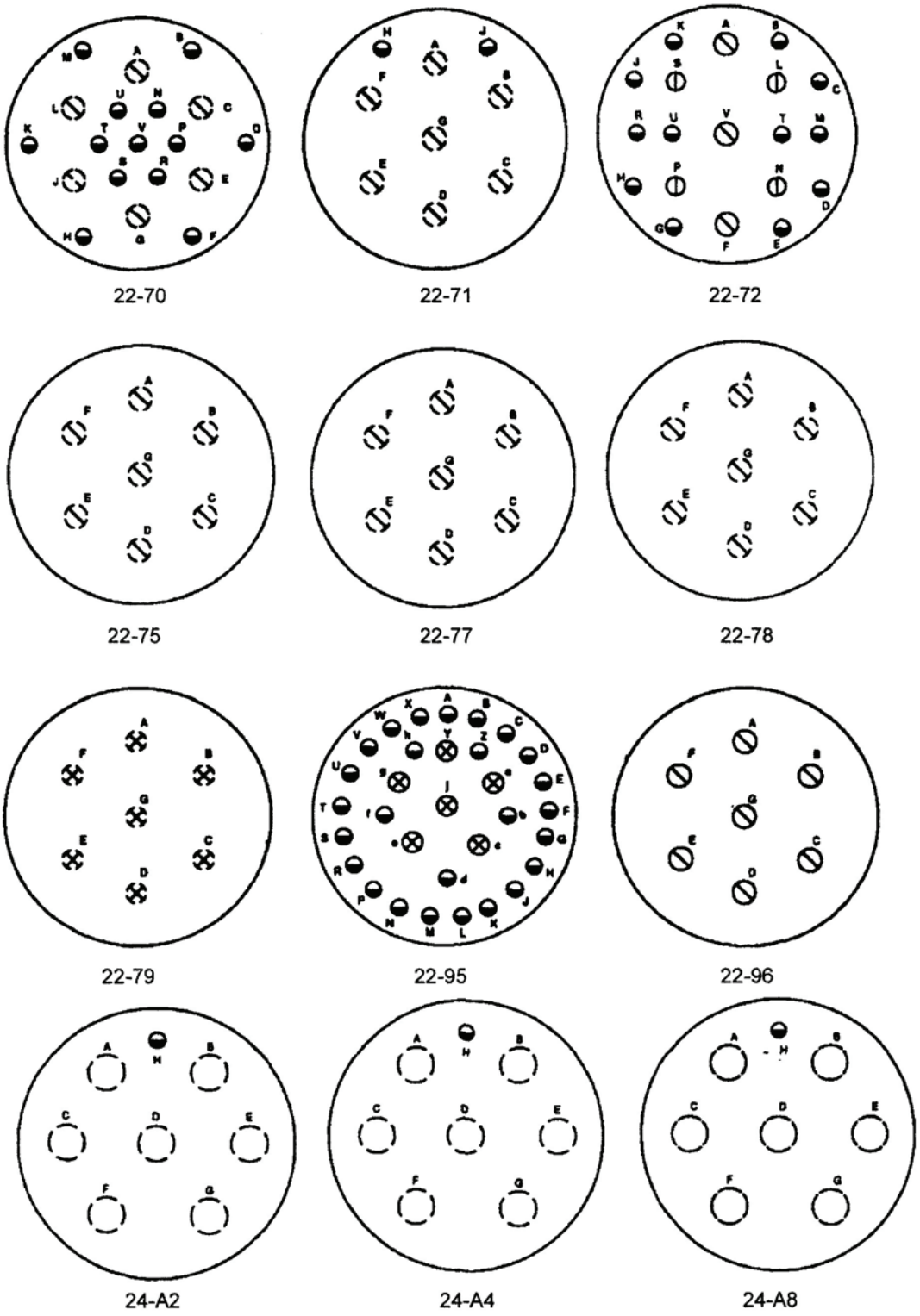


Figure 6. MIL-C-26482 Series 1 an 2 Insert Configuration (Sheet 4 of 5)

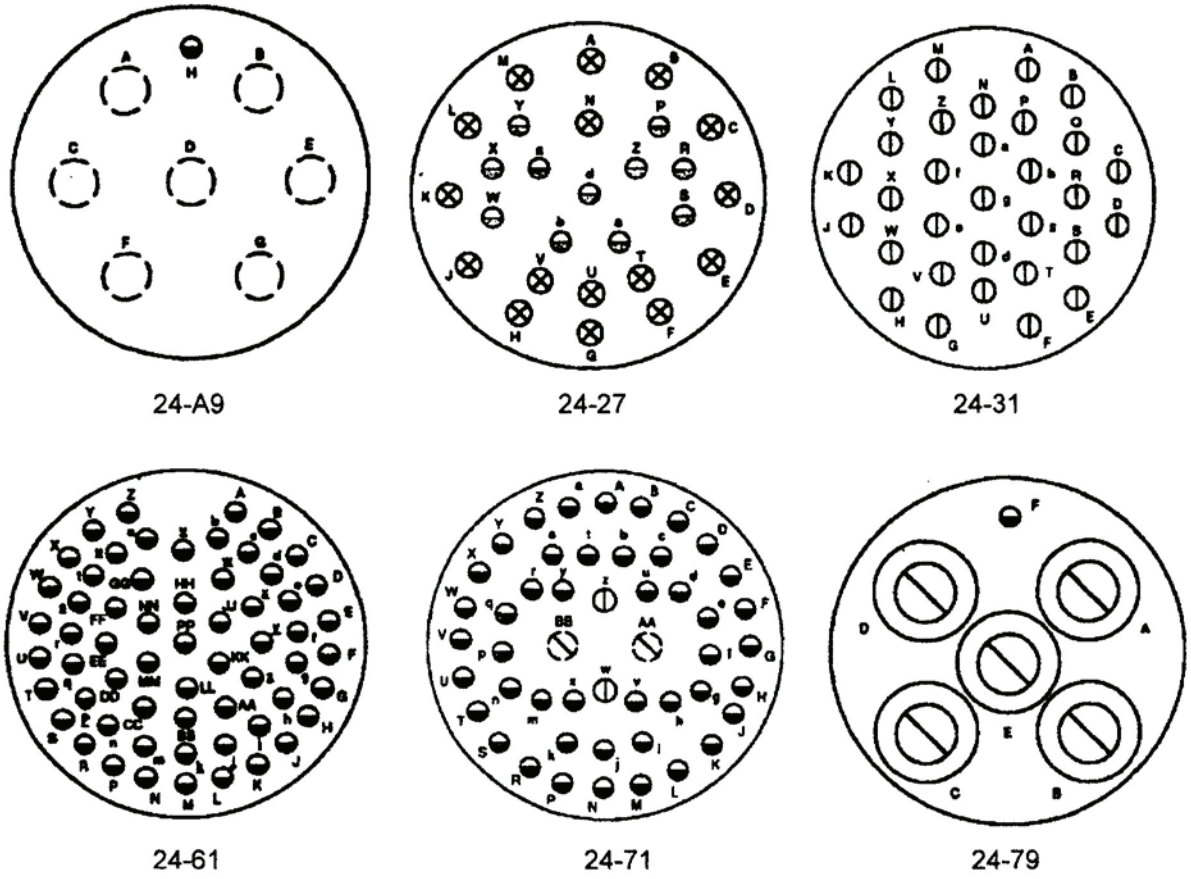


Figure 6. MIL-C-26482 Series 1 an 2 Insert Configuration (Sheet 5 of 5)

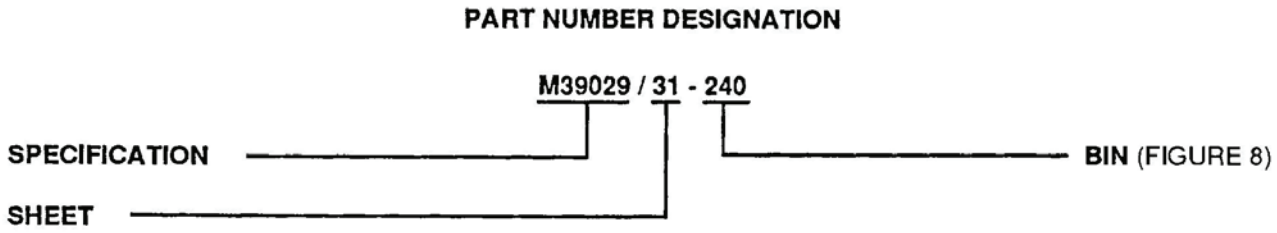


Figure 7. M39029-31 Part Number Breakdown

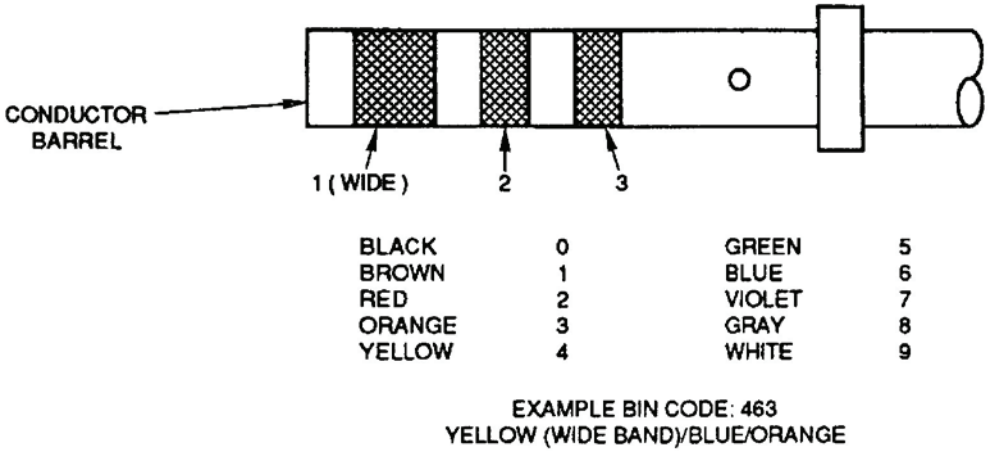


Figure 8. Basic Identification Number and Color Bands

Table 2. MIL-C-26482 Series 1 Power, Thermocouple and Shielded Contact Application

Contact Size	Wire Range	Socket Contact		Pin Contacts		Remarks (See Notes)
		M39029/	Color Bands 1st 2nd 3rd	M39029/	Color Bands 1st 2nd 3rd	
20	20-24	32-259	RD GN WH	31-240	RD YE BK	-
20	20-24	32-242	RD YE RD	31-223	RD RD OR	-
20	20-24	32-449	YE YE WH	31-448	YE YE GY	-
20	20-24	32-243	RD YE OR	31-224	RD RD YE	4/
20	20-24	32-244	RD YE YE	31-225	RD RD GN	3/
20	20-24	32-245	RD YE GN	31-226	RD RD BL	2/
20	20-24	32-246	RD YE BL	31-227	RD RD VI	1/
16	16-20	32-247	RD YE VI	31-228	RD RD GY	-
16	16-20	32-249	RD YE W H	31-230	RD OR BK	4/
16	16-20	32-250	RD GN BK	31-231	RD OR BN	3/
16	16-20	32-252	RD GN BN	31-232	RD OR RD	2/
16	16-20	32-252	RD GN RD	31-233	RD OR OR	1/
12	12-24	32-253	RD GN OR	31-234	RD OR YE	-
12	12-14	32-255	RD GN GN	31-236	RD OR BL	4/
12	12-14	32-256	RD GN BL	31-237	RD OR VI	3/
12	12-14	32-257	RD GN VI	31-238	RD OR GY	2/
12	12-14	32-258	RD GN GY	31-239	RD OR WH	1/
12	SHIELDED	26-207	RD BK VI	25-204	RD BK YE	-
12	SHIELDED	26-208	RD BK GY	25-205	RD BK GN	-
12	SHIELDED	26-209	RD BK W H	25-206	RD BK BL	-
8	SHIELDED	24-199	BN WH WH	23-194	BN WH YE	-
8	SHIELDED	24-200	RD BK BK	23-195	BN WH GN	-
8	SHIELDED	24-201	RD BK BN	23-196	BN WH BL	-
8	SHIELDED	24-202	RD BK RD	23-197	BN WH VI	-
8	SHIELDED	24-203	RD BK OR	23-198	BN WH GY	-

NOTE
New terminology applies to thermocouple conductors as follows:
1/ Constantan: Copper - Nickel Alloy
2/ Alumel: Nickel - Aluminum Alloy
3/ Chromel: Nickel - Chromium
4/ Iron: Iron

RD – Red
YE – Yellow
BK – Black
OR – Orange
VI – Violet
WH – White
BN – Brown
GY – Grey

Table 3. MIL-C-26482 Series 1 Power and Shielded Contact Tooling

Socket Contact M39029/	Pin Contacts M39029/	Insertion Tool M81969/	Removal Tool M81969/	Crimp Tool M22520/	Positioner M22520/	Locator M22520/	Die Set M22520/
32-259	31-240	17-09	19-07	1-01 or 2-01	1-02 RD or 2-02	—	—
32-242	31-223	17-03	19-07	7-01	7-01	—	—
32-449	31-448	17-09	19-07	1-01 or 2-01	1-02 RD or 2-02	—	—
32-243	31-224	17-03	19-07	7-01	7-02	—	—
32-244	31-225	17-03	19-07	7-01	7-02	—	—
32-245	31-226	17-03	19-07	1-01	1-02 RD	—	—
32-246	31-227	17-03	19-07	1-01	1-02 RD	—	—
32-247	31-228	17-04	19-08	1-01	1-02 BL	—	—
32-249	31-230	17-04	19-08	1-01	1-02 BL	—	—
32-250	31-231	17-04	19-08	7-01	7-03	—	—
32-251	31-232	17-04	19-08	7-01	7-03	—	—
32-252	31-233	17-04	19-08	7-01	7-03	—	—
32-253	31-234	17-05	19-09	1-01	1-02 YE	—	—
32-255	31-236	17-05	19-09	1-01	1-02 YE	—	—
32-256	31-237	17-05	19-09	1-01	1-02 YE	—	—
32-257	31-238	17-05	19-09	1-01	1-02 YE	—	—
32-258	31-239	17-05	19-09	1-01	1-02 YE	—	—
26-207	25-204	17-05	19-09	—	—	—	—
26-208	25-205	17-05	19-09	—	—	—	—
26-209	25-206	17-05	19-09	—	—	—	—
24-199	23-194	—	—	—	—	—	—
24-200	23-195	—	—	—	—	—	—
24-201	23-196	—	—	—	—	—	—
24-202	23-197	—	—	—	—	—	—
24-203	23-198	—	—	—	—	—	—

45. COAXIAL CONTACTS. When routing coaxial cable through connectors, coaxial contacts are superior to other coaxial cable shield termination methods. The shield integrity is maintained across the contact body. The coaxial cable groups listed (Table 2) can be interconnected through MIL-DTL-83723 connector size 8 and 12 contact cavities. Match the required contact size to connector application and cable group. When crimping center contact for these cables, use crimp tool selector knob settings specified. Socket and pin contact part numbers are listed along with corresponding color bands. Socket coaxial contacts have a pin center contact. Pin coaxial contacts have a socket center contact.

46. CABLE AND COAXIAL CONTACT ASSEMBLY. To assemble coaxial contacts to applicable cable identify cable by part number. Select proper tooling by contact size (Table 3).

47. BACKSHELL REMOVAL AND INSTALLATION. For backshell removal and installation refer to WP 008 03.

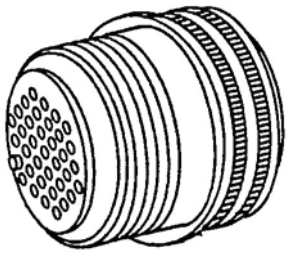


Figure 9. MIL-C-26482 Series 2 Typical Connector

48. **MIL-C-26482 SERIES 2**.

49. MIL-C-26482 Series 2 connectors are bayonet coupled with rear release crimp removable contacts. Hermetic connectors are available with non-removable solder type contact or crimp removable terminations (Figure 9).

50. GROMMET SEALING PLUGS. The grommets of environment resisting connectors are designed to accept sealing plugs in accordance with MIL-C-26482 to be used where unwired contacts are placed. The connector when ordered as a unit will have sealing plugs enclosed to equal 15 percent of the number of contacts but not less than one.

51. MATING SEAL Plugs and receptacles with pin inserts have a resilient face with individual pin barriers to seal against the hard face socket insert. The resilient interface seal provides individual contact seals in mated condition between each contact and shell.

52. SHELL. Shells including mounting flanges are of one-piece construction and designed to retain their inserts in one position by mechanical means.

53. COUPLING. Connectors shall be capable of being fully coupled and uncoupled without use of tools.

54. POLARIZATION. Connectors are polarized as denoted by their part numbers. This means that the master keyway is rotated to prevent mis-mating of similar connectors in close proximity to each other, or in a similar location. A plug with a given polarization letter will mate with a receptacle with same letter. The inserts do not rotate, only the keyway is rotated.

55. PART NUMBER. The following paragraphs contain information necessary for proper selection and procurement of connector (Figure 10).

56. Shell Style. The shell style denotes the type and mounting of the connector.

57. Military Prefix. The military prefix denotes military standard.

58. Class. The class is a letter code denoting environment resisting ability.

59. Shell Size. The shell size is indicated by a progressive numbering system.

60. Termination Type/Shell Material. This is applicable to hermetic type connectors only.

61. Insert Configuration. The insert configuration is the insert arrangement by number and size of contacts used.

62. Contact Style. The style denotes type of contact used.

63. Alternate Position. The alternate position denotes connector polarization.

64. DESIGN AND CONSTRUCTION. Connectors and accessories are designed and constructed to withstand normal handling incidental to installation and maintenance (Figure 11).

65. INSERTS. The non-resilient material used for all inserts shall be a high grade dielectric having electrical and mechanical characteristics suitable for the purpose intended. The impact strength shall be such that material shall not chip, crack, or break during assembly or normal maintenance.

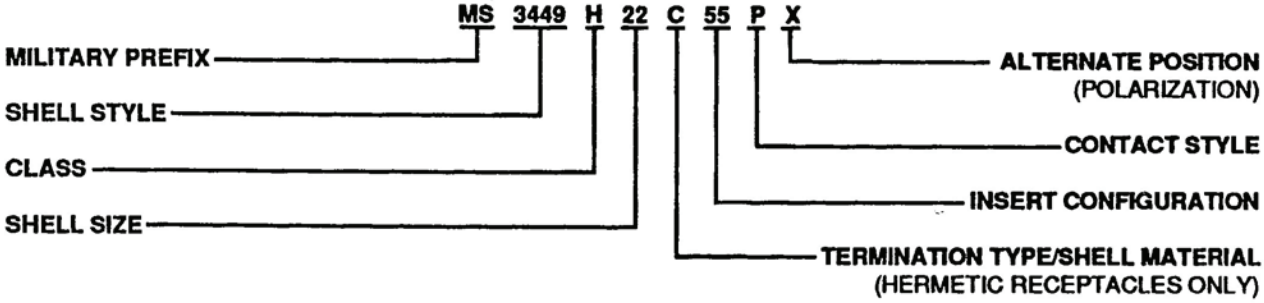
66. Crimp Snap-In Contacts. Snap-in contacts designed to AS39029 can be crimped with standard M22520/1 crimp tool.

67. Closed-Entry Socket Contacts. These contacts eliminate damage from abuse by test probes and help to correct any misaligned pins during engagement.

68. Contact Insertion. Insertion is accomplished from rear of connector. When contact is fully inserted, the clip tines snap securely behind contact shoulders.

69. Contact Extraction. Extraction is accomplished with a rear inserted extraction tool which expands the tines beyond the contact shoulder, releasing the contact.

PARTS NUMBER DESIGNATION



SHELL SIZE

MS No.	Class*	Description
MS3440	H	HERMETIC SEAL BOX MOUNT RECEPTACLE
MS3442	H	WIDE FLANGE HERMETIC SEAL BOX MOUNT RECEPTACLE
MS3443	H	HERMETIC SEAL SOLDER MOUNT RECEPTACLE
MS3449	H	HERMETIC SEAL JAM NUT RECEPTACLE
MS3470	A, L, S, W	WALL MOUNT RECEPTACLE
MS3471	A, L, S, W	IN-LINE RECEPTACLE
MS3472	A, L, S, W	WIDE FLANGE WALL MOUNT RECEPTACLE
MS3473	N	HERMETIC SEAL SOLDER MOUNT RECEPTACLE
MS3474	A, L, S, W	JAM NUT RECEPTACLE
MS3475	L, S, W	STRAIGHT PLUG (RFI GROUNDING)
MS3476	A, L, S, W	STRAIGHT PLUG
MS3477	N	HERMETIC SEAL BOX MOUNT RECEPTACLE
MS3479	N	HERMETIC SEAL JAM NUT RECEPTACLE

* SEE BELOW FOR CLASS DESCRIPTIONS.

CLASS

A GROMMET SEAL, NONCONDUCTIVE FINISH, 392°F(200°C).
E GROMMET SEAL, CONDUCTIVE FINISH. INACTIVE FOR NEW DESIGN. USE CLASS L.
H HERMETIC SEAL, CONDUCTIVE FINISH, 347°F (175°C).
L FLUID RESISTANT GROMMET SEAL, CONDUCTIVE FINISH, 392°F(200°C).
N HERMETIC SEAL, CRIMP TERMINATION, CONDUCTIVE FINISH, 347°F (175°C).
S GROMMET SEAL, STAINLESS STEEL CONDUCTIVE FINISH, 392°F(200°C).
W GROMMET SEAL, 500 HR. SALT SPRAY CONDUCTIVE FINISH, 347°F (175°C).

SHELL SIZE

SEE TABLE 1 FOR AVAILABLE SHELL SIZES.

TERMINATION TYPE/SHELL MATERIAL

(HERMETIC ONLY)
A SOLDER POT, STAINLESS STEEL SHELL.
B EYELET, STAINLESS STEEL SHELL.
C SOLDER POT, FERROUS ALLOY SHELL.
Y EYELET, FERROUS ALLOY SHELL.

INSERT CONFIGURATION

SEE FIGURE 7 FOR ILLUSTRATIONS AND CODES.

CONTACT STYLE

A LESS PIN CONTACTS.
B LESS SOCKET CONTACTS.
P PIN CONTACTS.
S SOCKET CONTACTS.

ALTERNATE POSITION

(POLARIZATION)
W, X, Y, Z OR BLANK (NORMAL). SEE FIGURE 5.

Figure 10. MIL-C-26482 Series 2 Part Number Breakdown

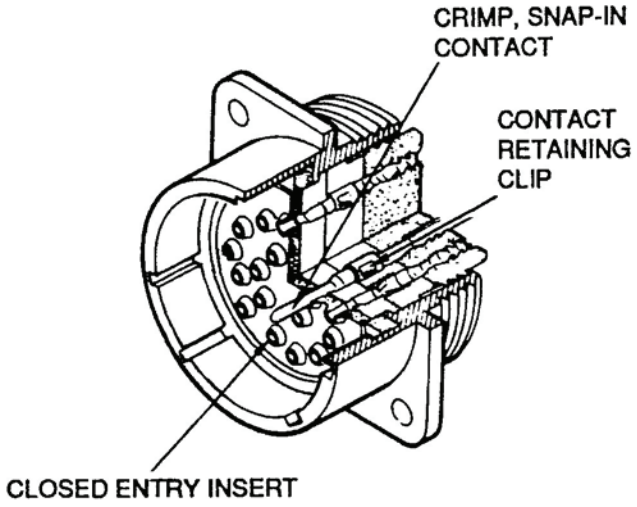


Figure 11. MIL-C-26482 Series 2 Design Features

70. Contact Retaining Clip. The retaining clip is completely encased in a tough plastic wafer to protect clip from damage.

71. Moisture Sealing. Complete sealing is achieved by combining four seals, shell, peripheral, interfacial, and wire seal.

72. Shell Seal. This is effected when the plug shell pushes against the sealing ring in the receptacle when the connectors are mated.

73. Peripheral Seal. This seal is around the edge of the pin insulator and designed so that when mating the connector, tension is put on the seal and greatly reduces compression set.

74. Interfacial Seal. This seal is achieved by the insulator faces meeting when the plug and receptacle are mated.

75. Wire Seal. This seal is accomplished by a multiple ripple design, exceeding the wire sealing requirements of MIL-C-26482.

76. Insert Retention. Insert retention is accomplished by a bard plastic wafer firmly locked into a groove in shell and a strong adhesive bond between insert and shell.

77. Keying. Keying is used in shell-enclosed connectors to obtain polarization, which assures correct location when mating a connector (Figure 5).

78. INSERT ARRANGEMENT. The insert arrangement is number and size of contacts available by shell size (Table 1). Insert arrangements are specified in MIL-STD-1669.

79. INSERT CONFIGURATION. The insert configuration is the manner in which contacts are placed within insert in a standard configuration. All arrangements identified in Table 1 are illustrated (Figure 6).

80. CONTACTS. Contacts are designed to prevent damage to contact retention device or sealing member during insertion or removal of contacts.

81. Fixed Contacts. Contacts in hermetically sealed or thru-bulkhead receptacles are fixed non-removable, and solderable, or feed through.

82. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

83. Contact Availability. Crimp contacts are supplied with each connector unit package and consist of a full complement plus one spare per size for connectors of 26 contacts or less. Connectors with more than 26 contacts will have two spares of each size used. Contacts may also be ordered in individual quantities when necessary.

84. Installation and Removal Tools. The proper installation and removal tools must be used to assemble or disassemble connector. The connector when ordered as a unit package will include one MIL-I-81969/17 tool.

85. CONTACT APPLICATION. Contacts used are manufactured in accordance with AS39029. The contact part number breakdown is illustrated (Figure 12). The Basic Identification Number (BIN) or last three digits of contact part number, matches the standard resistor color code (Figure 13).

86. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts range from size 12 through 20 and are of crimp, rear release design. Contacts are listed by size. Match the required size to connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with corresponding color bands (Table 4).

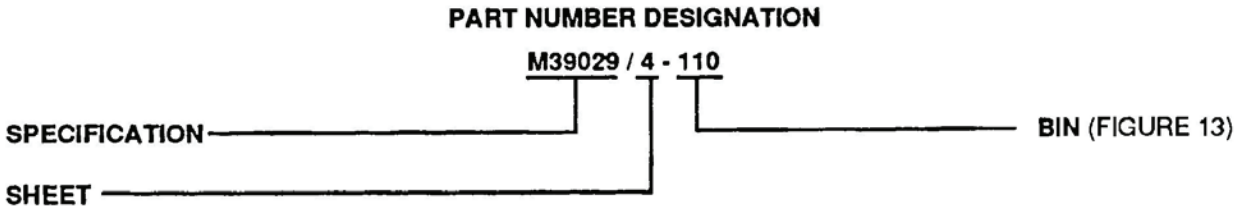


Figure 12. M39029/4 Part Number Breakdown

87. THERMOCOUPLE CONTACTS. Temperature sensing systems utilize two dissimilar metal conductors with matched lengths. When joined at the point temperature will be sensed, a voltage difference develops. This voltage is directly proportional to temperature change. Thermocouple contacts listed (Table 4) are either nickel-aluminum / silicon (formerly alumel), nickel-chromium (formerly chromel), iron, copper, or copper-nickel alloy (formerly constantan). Match the required size to connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with the corresponding color bands.

88. TOOLING. The procedure for attaching power contacts to a single conductor wire are the same for this connector series. Select the proper tooling for the specific contact part number (Table 5) and refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures.

89. COAXIAL CONTACTS. When routing coaxial cable through connectors, coaxial contacts are superior to other coaxial cable shield termination methods. The shield integrity is maintained across the contact body. The coaxial cable groups listed (Table 4) can be interconnected through MIL-C-26482 connector size 8 and 12 contact cavities. Match the required contact size to connector application and cable group. When crimping center contact for these cables, use crimp tool selector knob settings specified. Socket and pin contact part numbers are listed along with corresponding color bands. Socket coaxial contacts have a pin center contact. Pin coaxial contacts have a socket center contact.

90. CABLE AND COAXIAL CONTACT ASSEMBLY. To assemble coaxial contacts to applicable cable identify cable by part number. Select proper tooling by contact size (Table 5).

91. BACKSHELL REMOVAL AND INSTALLATION. For backshell removal and installation refer to WP 008 03.

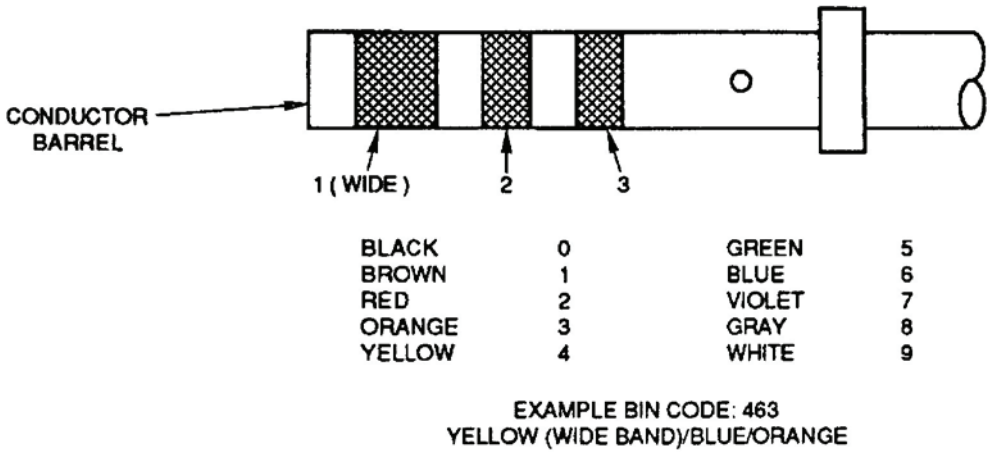


Figure 13. Basic Identification Number and Color Bands

Table 4. MIL-C-26482 Series 2 Power, Thermocouple and Shielded Contact Application

Contact Size	Wire Range	Socket Contacts		Pin Contacts		Remarks (See Notes)
		M39029/	Color Bands 1st 2nd 3rd	M39029/	Color Bands 1st 2nd 3rd	
20	20-24	5-115	BN BN GN	4-110	BN BN BK	
20	20-24	10-139	BN OR WH	9-133	BN OR OR	1/
20	20-24	10-140	BN YE BK	9-134	BN OR YE	2/
20	20-24	10-141	BN YE BN	9-135	BN OR GN	3/
20	20-24	10-142	BN YE RD	9-136	BN OR BL	4/
16	16-20	5-116	BN BN BL	4-111	BN BN BN	-
16	16-20	5-116	BN BN VI	4-112	BN BN RD	-
16	16-20	10-519	ON BN WH	9-514	GN BN YE	5/
16	16-20	10-520	GN RD BK	9-515	GN BN GN	1/
16	16-20	10-521	GN RD BN	9-516	GN BN BL	2/
16	16-20	10-522	GN RD RD	9-517	GN BN VI	3/
16	16-20	10-523	GN RD OR	9-518	GN BN GY	4/
12	12-14	5-118	BN BN GY	4-113	BN BN OR	-
12	16-20	5-119	BN BN WH	4-114	BN BN YE	-
12	SHIELDED	8-129	BN RD WH	7-126	BN RD BK	-
12	SHIELDED	8-130	BN OR BK	7-127	BN RD VI	-
12	SHIELDED	8-131	BN OR BN	7-128	BN RD GY	-
12	SHIELDED	73-396	OR WH BL	74-399	OR WH WH	-
12	-	73-397	OR WH VI	74-400	YE BK BK	-
12	SHIELDED	73-398	OR WH GY	74-401	YE BK BN	-

NOTE
New terminology applies to thermocouple conductors as follows:
1/ Constantan: Copper - Nickel Alloy
2/ Alumel: Nickel - Aluminum Alloy
3/ Chromel: Nickel - Chromium
4/ Iron: Iron
5/ Copper: Copper

RD – Red
YE – Yellow
BK – Black
OR – Orange
VI – Violet
WH – White
BN – Brown
GY – Grey

Table 5. MIL-C-26482 Series 2 Power, Thermocouple and Shielded Contact Tooling

Socket Contact M39029/	Pin Contacts M39029/	Insertion Tool M81969/	Removal Tool M81969/	Un wired Removal Tool M81969/	Crimp Tool M22520/	Positioner M22520/	Locator M22520/	Die Set M22520/
5-115	4-110	14-02	14-02	30-06	2-01, 1-01, 7-01	2-02, 1-02 RD, 7-02	-	-
10-139	9-133	14-02	14-02	30-06	2-01 or 1-01	2-02 or 1-02 RD	-	-
10-140	9-134	14-02	14-02	30-06	3-01 or 1-01	2-02 or 1-02 RD	-	-
10-141	9-136	14-02	14-02	30-06	2-01 or 1-01	2-02 or 1-02 RD	-	-
10-142	9-136	14-02	14-02	--	2-01 or 1-01	2-02 or 1-02 RD	-	-
5-116	4-111	14-03	14-03	30-06	1-01 or 7-01	1-02 BL or 7-03	-	-
5-117	4-112	14-02	14-02	30-06	1-01 or 7-01	1-02 BL or 7-03	-	-
10-519	9-614	14-03	14-03	30-06	1-01 or 7-01	1-02 BL or 7-03	-	-
10-520	9-615	14-03	14-03	30-06	1-01 or 7-01	1-02 BL or 7-03	-	-
10-521	9-616	14-03	14-03	30-08	1-01 or 7-01	1-02 BL or 7-03	-	-
10-522	9-617	14-03	14-03	30-06	1-01 or 7-01	1-02 BL or 7-03	-	-
10-523	9-518	14-03	14-03	30-06	1-01 or 7-01	1-02 BL or 7-03	-	-
5-118	4-113	14-04	14-04	30-07	1-01	1-02 YE	-	-
5-119	4-114	14-03	14-03	30-06	1-01	1-02 YE	-	-
8-129	7-126	14-04	14-04	30-06	-	-	-	-
8-130	7-127	14-04	14-04	MS3448-12	-	-	-	-
8-131	7-128	14-04	14-04	MS3448-12	-	-	-	-
73-396	74-399	14-04	14-04	-	M83507/14-02	-	-	-
73-397	74-400	14-04	14-04	-	M83507/14-02	-	-	-
73-398	74-401	14-04	14-04	-	M83507/14-02	-	-	-

NOTE

RD – Red
BL – Blue
YE – Yellow

92. **CONNECTOR BUILD-UP**.

93. WIRE DIAMETER BUILD-UP. If wire outside diameter is not large enough to fill wire sealing grommet holes, build up wire outside diameter by applying heat shrinkable insulating sleeving. This must be accomplished prior to contact insertion.

94. WIRE STRIPPING. Strip wire in accordance with following procedure.

a. Cut wire to proper length. Ensure enough wire remains for adequate strain relief without leaving excess slack.

b. Strip insulation from end (NAVAIR 01-1A-505-1, WP 009 00). Select contact (Table 2 or 4).

95. CONTACT CRIMPING.

a. Select crimp tool frame and positioner (Table 3 or 5).

b. Perform die closure check, install positioner, and set selector knob for gage of wire.

c. Insert stripped wire into contact conductor barrel. Ensure all wire strands are inside contact conductor barrel and visible in contact inspection hole (Figure 14).

d. If insulation gap is too large, trim conductor as required. If insulation gap is too small, trim insulation as required (NAVAIR 01-1A-505-1, WP 009 00).

e. Crimp contact to wire.

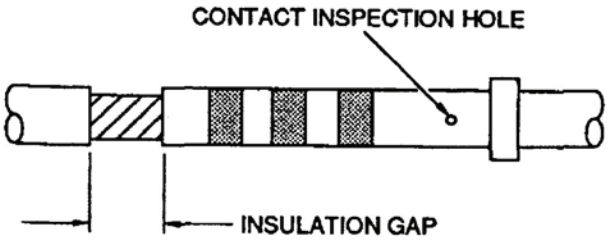
96. CONTACT INSERTION. Insert wired or unwired contacts in accordance with following procedure:

a. Remove sealing plug and/or contact from contact cavity (Paragraph 100).

b. Ensure wire or cable on contact is routed through connector backshell.

c. Select correct insertion tool (Table 3 or 5).

d. Place wire and contact assembly into colored tip of insertion tool (Figure 15). Ensure tool tip is over conductor barrel and butted against contact shoulder.



CONTACT SIZE	WIRE AWG	INSULATION GAP
22D 22M 22 20	26 24 22 20	1/32" MIN 1/16" MAX
16 12	20 18 16 14 12	1/32" MIN 5/64" MAX
8	10 8	1/32" MIN TWICE DIA WIRE INSULATION MAX

Figure 14. Insulation Gap

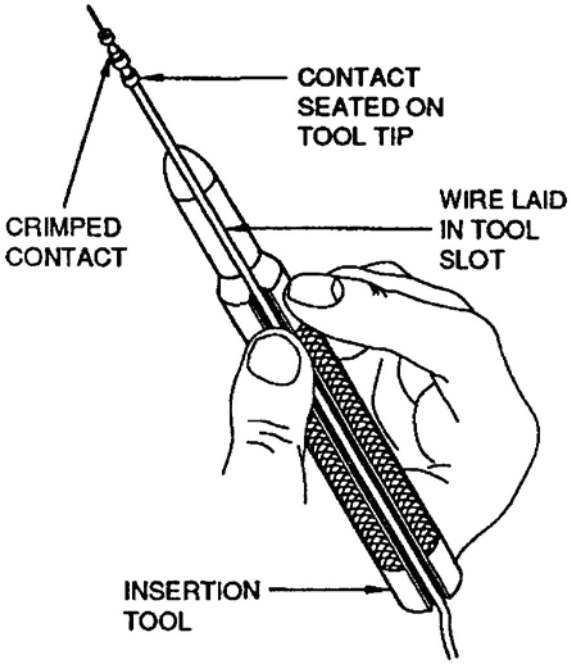


Figure 15. Inserting Contact into Insertion Tool

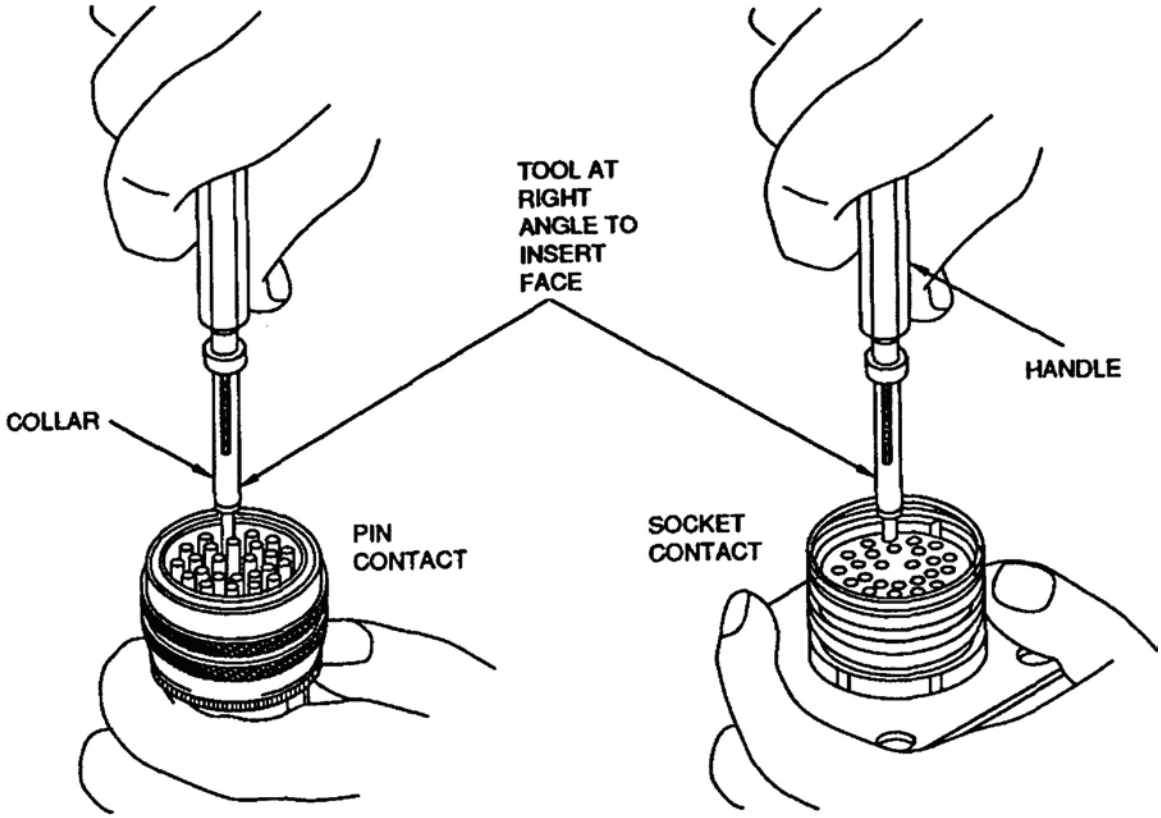


Figure 16. Removing Contact from Connector

e. Insert tip of contact into cavity. Start contact insertion near connector center cavities and work outward.

f. Axially align contact with contact cavity.

g. With firm even pressure, press tool against contact shoulder and seat contact into cavity (Figure 16). A slight click may be heard as retention tines snap into place behind contact shoulder.

h. Pull tool straight out of contact cavity. Remove tool from wire. Pull back lightly on wire to ensure contact is properly seated.

i. Seal connector as required (Paragraph 97), and install backshell (WP 008 03).

97. CONNECTOR SEALING.

98. Sealing Plugs. Seal connector in accordance with following procedure:

a. Fill all unused cavities with un-crimped contacts (Paragraph 96).

b. Insert sealing plug, large diameter first, until bottomed in contact cavity (Figure 17). Fill all cavities that have un-crimped contacts. Preserve connector in accordance with NAVAIR 01-1A-505-1, WP 026 00.

99. Moisture Barrier. For connector sealing procedures, including application of sealant to grommet sealed connectors, refer to NAVAIR 01-1A-505-1, WP 025 00.

100. CONTACT REMOVAL. The following paragraphs give contact removal for front release and rear release crimp contacts.

101. Crimp Front Release Contacts. Remove wired, unwired, and broken wire contacts in accordance with following procedure:

a. Select correct removal tool (Table 5).

b. If contact is unwired, remove sealing plug from contact cavity of contact to be removed.

c. Working from front (mating end) of connector, slide hollow end of removal tool over contact (Figure 18).

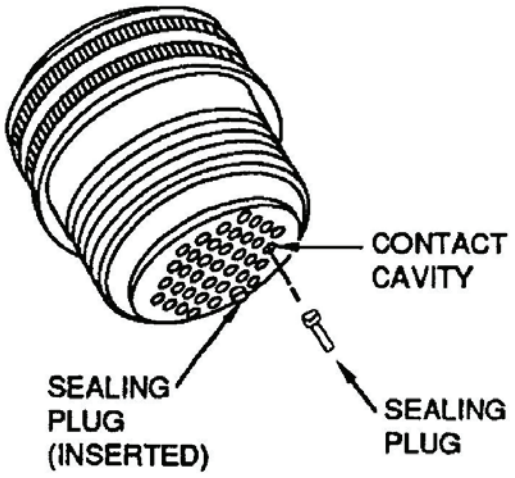


Figure 17. Contact and Sealing Plug Insertion

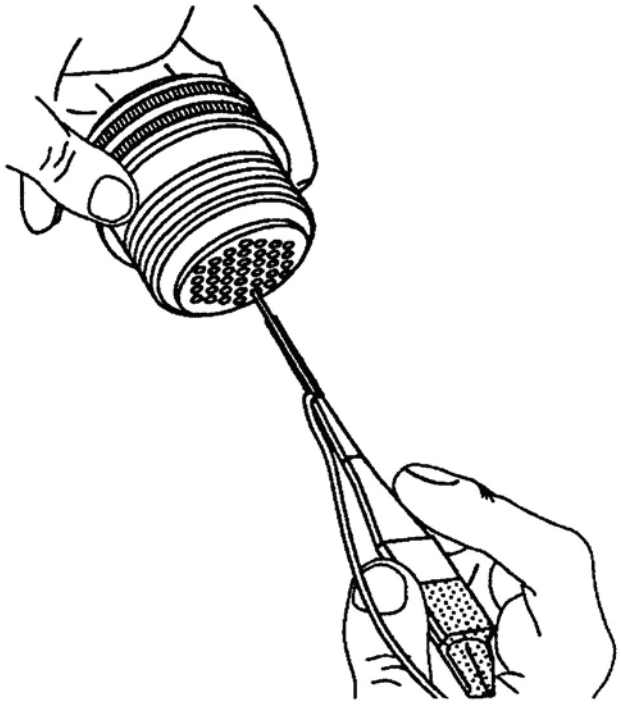


Figure 18. Inserting Wire into Removal Tool

d. Holding, removal tool at right angle to front insert face, push tool straight toward rear of connector, firmly pressing tool to positive stop when tool bottoms in insert cavity.

CAUTION

For smaller diameter wires, ensure the tool does not collapse around the wire when inserted and cause the tool tip to hit the contact crimp barrel instead of sliding over it. A collapsing tool can damage grommet sealing wafers, resulting in connector damage requiring connector replacement.

e. Maintain pressure on tool handle and slide collar of tool forward until it stops. Contact will be partially ejected from rear of connector insert.

f. Remove tool by pulling straight back to clear connector insert face. Remove contact out rear of connector by pulling lightly on wire or using a mating contact to push out released contact.

102. Crimp Rear Release Contacts. Remove wired, unwired, and broken wire contacts in accordance with following paragraphs.

103. Wired Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors.

CAUTION

Present metal tooling in some instances has damaged the wire sealing grommet at the end of the connectors. Plastic tools are preferred.

Caution should be exercised in the use of tooling.

Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

a. Select correct removal tool (Table 5).

b. Place wire of contact to be removed into removal tool, with white tip facing connector insert (Figure 18).

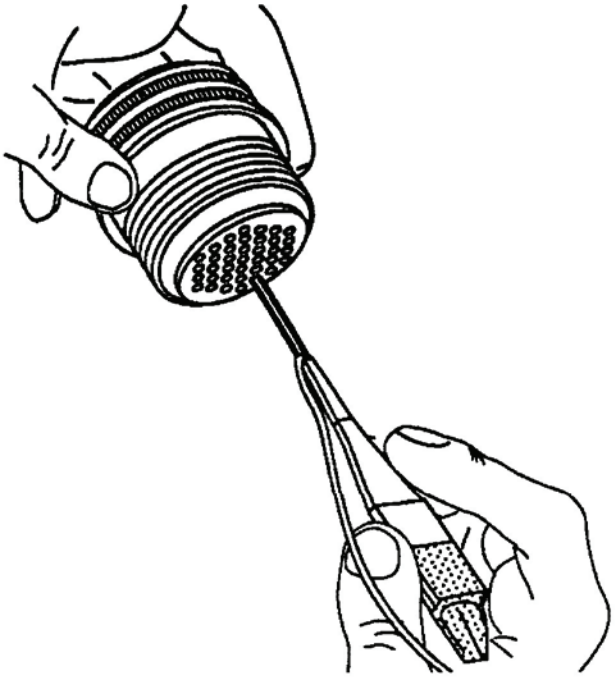


Figure 19. Removal Tool on Wire

c. Slide removal tool along wire at a right angle to connector insert face and align with contact cavity (Figure 19).

d. Insert tool into contact cavity until tool tip bottoms against contact shoulder (Figure 20). A slight increase in resistance will be noticed just before the tool tip bottoms. This will spread the retention clip and release its hold on the contact.

CAUTION

For smaller diameter wires, ensure the tool does not collapse around the wire when inserted and cause the tool tip to hit the contact crimp barrel instead of sliding over it. A collapsing tool can damage grommet sealing wafers, resulting in connector damage requiring connector replacement.

e. Press wire firmly against serrated edge of removal tool and pull wire straight out from contact cavity (Figure 21).

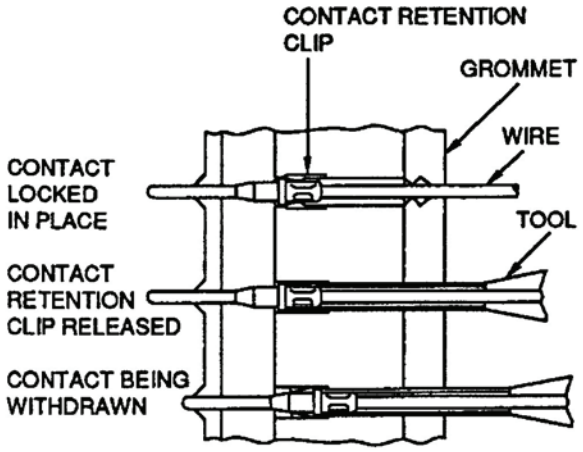


Figure 20. Unlocking Contact Mechanism



Figure 21. Removing Contact from Connector

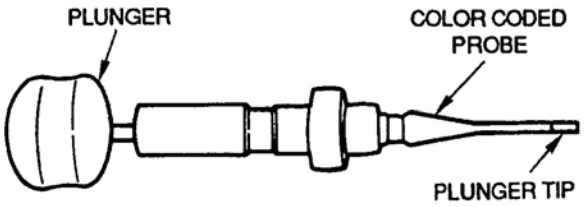


Figure 22. Unwired Contact Removal Tool

104. Unwired Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors.

CAUTION

Present metal tooling in some instances has damaged the wire sealing grommet at the end of the connectors. Plastic tools are preferred.

Caution should be exercised in the use of tooling.

Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

a. Select correct unwired removal tool (Table 5) tool data, in figure illustrating connector to be repaired (Figure 22).

b. With rear of connector exposed, remove sealing plug from insert cavity of contact to be removed.

c. Press and hold tool plunger until tip of tool is aligned with contact to be removed.

d. Axially align removal tool with contact to be removed.

e. Insert removal tool tip into contact cavity to butt contact wire barrel; then slide removal tool sleeve over contact and exert pressure until sleeve bottoms (Figure 23).

f. Remove tool and unlocked contact from connector by withdrawing tool from connector (Figure 24).

g. Remove contact from removal tool by pressing plunger.



Figure 23. Unlocking Contact Retention Mechanism With Unwired Contact Removal Tool

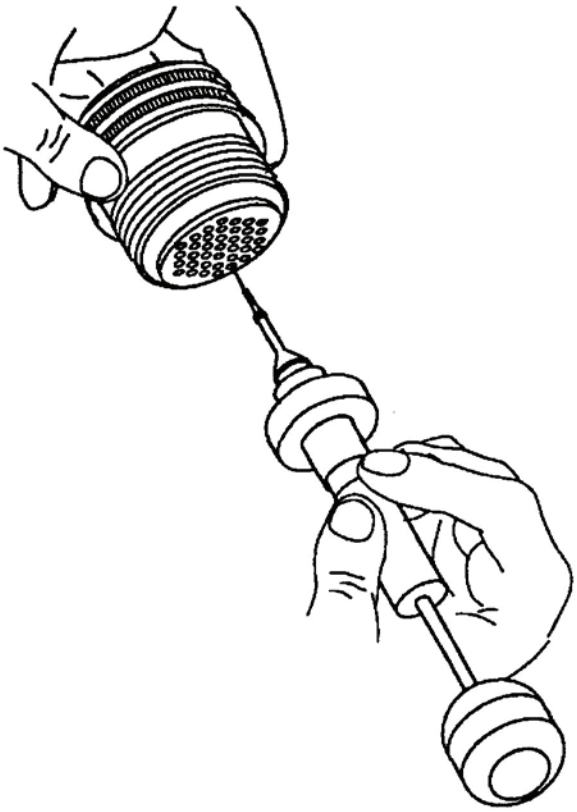


Figure 24. Extracting Contact from Connector

105. Broken Wire Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors.

CAUTION

Present metal tooling in some instances has damaged the wire sealing grommet at the end of the connectors. Plastic tools are preferred.

Caution should be exercised in the use of tooling.

Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

a. Select correct removal tool (Table 5).

CAUTION

Removal of a contact with a broken wire shall not be attempted with an unwired removal tool. Use of unwired removal tools require that the tip be jammed onto the contact wire barrel. If wire strands occupy wire barrel, the tool and connector may be damaged.

b. Insert tip of removal tool about 1/8 inch into cavity at rear of connector.

CAUTION

Wire strands may be encountered at any point up to 5/16 inch of tool insertion. It is important not to jam any strands of wire up to this point.

Withdraw removal tool anytime during insertion when it cannot be advanced into connector using these procedures. Inspect tool tip for nicks, cracks, mushrooming, and other damage that will prevent its functioning. Replace removal tool and repeat procedure, if required.

NOTE

Refer to Figure 25 for approximate dimensions of a size 22 contact and cavity. The dimensions in this procedure are based on a size 22 contact.

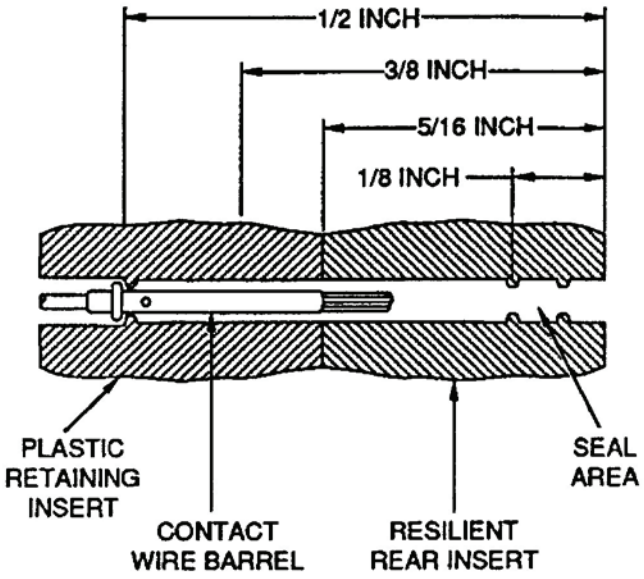


Figure 25. Typical Connector Dimensions

c. Gently insert removal tool into cavity in about 1/16 inch units, releasing tool after each unit if resistance is felt.

NOTE

Rotating removal tool works splayed wire strands into slot of tool, allowing tool to pass.

Removal tool may be blocked at rear of contact by plastic insert or additional strands of broken wire.

d. If resistance is felt before removal tool reaches back end of contact, withdraw tool slightly, rotate about 1/6 of a turn, and reinsert tool. Repeat rotating and insertion procedure until tool passes with minimum additional force to 5/16 inch depth back end of contact (Figure 26).

e. Wiggle removal tool gently to help it into insert bore and over back of contact. Additional rotation may be required if broken strands are encountered.

f. Continue insertion of removal tool until positive stop is felt at about 1/2 inch depth.

g. Exert axial pressure on engaging end of contact, using appropriate pin or socket as pushed. (If contact does not move, seat removal tool more firmly).

h. Push contact completely out rear of connector before disengaging removal tool (Figure 27).

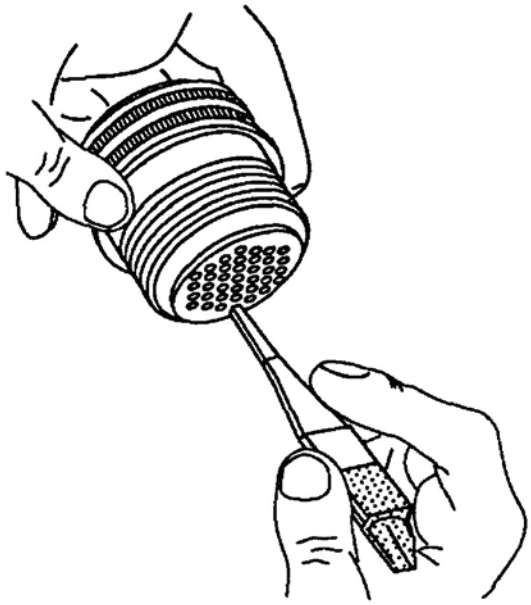


Figure 26. Unlocking Contact Retention Mechanism of Broken Wire Contact

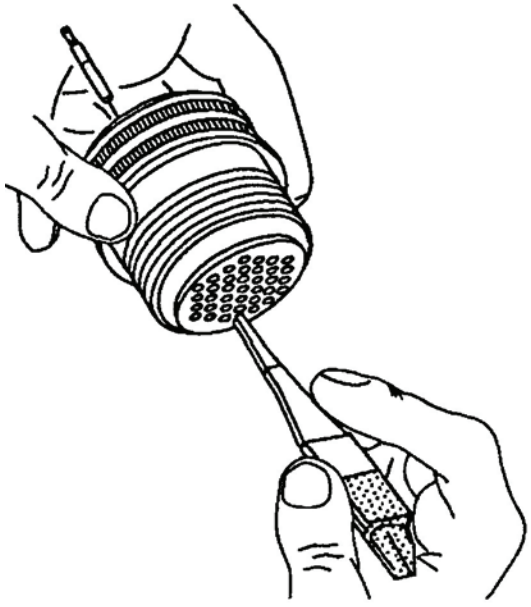


Figure 27. Broken Wire Contact Removal

106. CONNECTOR REMOVAL AND INSTALLATION. If the connector is severely damaged or cannot be repaired using the above procedures, proceed as follows:

a. Starting from outside of damaged connector, tag wires and remove all contacts from connector (Paragraph 100). If contact cannot be removed, cut wire as close to connector as possible and attach new contact (Paragraphs 94 and 95).

b. Starting from center of new connector, insert contact into correct cavity (Paragraph 96). Remove tag from wire. Repeat procedure until all contacts are installed in new connector.

107. **CONNECTOR BUILD-UP, SOLDER CONTACTS**.

108. For build up procedures for solder contacts refer to NAVAIR 01-1A-505-1, WP 016 00.

109. **CONNECTOR CLEANING AND PRESERVATION**.

110. For connector cleaning and corrosion control procedures refer to NAVAIR 01-1A-505-1, WP 026 00.

CONNECTOR ACCESSORIES
MIL-C-26482 SERIES 1 AND 2

Reference Material

Connectors, General Purpose, Electrical, Miniature Circular, Environmental Resisting NAS1599

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- Non-Environmental Backshells 15
- Non -Environmental EMI/RFI Backshells 15
- Potting Boots 15
- Rubber Bushings 15
- Sealing Plugs 15
- Shrink Boots and Adapters 4
- Special Tools 2

Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
BT Series	Adapter Tools
BT-BS-601	Wrench, Strap
BT-BS-609	Wrench, Strap
BT-BS-611	Wrench, Strap
BT-BS-618	Wrench, Strap
BT-BS-625	Wrench, Strap
BT-BS-630	Wrench, Strap
BT-HT-107	T-Handle

Materials Required

Specification/ Part No.	Nomenclature
A-A-52080 thru A-A-52084	Tape, Lacing
P-2740FR	Tape, Silicone Rubber
4529670544	Tape, Silicone Rubber

1. INTRODUCTION.

2. This Work Package (WP) covers connector accessories used with MIL-C-26482 Series 1 and 2 connectors, their function, associated tools, assembly, and procurement information.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, the Society of Automotive Engineers (SAE), will become the preparing activity and the Navy will adopt the documents, the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

3. CONNECTOR ACCESSORIES. Connector accessories are components added to a connector to enhance its operational characteristics. These accessories are divided into the following categories:

a. Backshells.

b. Connector Assembly Tools.

c. Dummy Receptacles.

d. Dust Caps.

e. Shrink Boots and Adapters.

f. Conduit Fittings.

g. Gaskets for Flange Mount Receptacles.

h. Mounting Nut for Jam Nut Receptacles.

i. Rubber Bushings.

j. Sealing Plugs.

k. Potting Boots and Rings.

4. BACKSHELLS. Backshells are the most complex connector accessories and simply stated they are any device added to rear or wiring side of a connector. Backshells may be divided into the following categories:

a. Grommet Nuts.

b. Cable Clamps and Strain Reliefs.

c. EMI/RFI Grounding Terminators.

d. Non-Environmental Backshells.

e. Environmental Backshells.

f. Non-Environmental EMI/RFI Backshells.

g. Environmental EMI/RFI Backshells.

5. MIL-C-26482 SERIES 1 AND 2 CONNECTOR ACCESSORIES.

6. SPECIAL TOOLS. Connector backshells come in a wide variety of types depending on application. To install backshells or accessories, adapter tools and a strap wrench are needed. Adapter tools (Figure 1) are used to bold connector during backshell installation and removal. Special tools are used to prevent damage to connector shells and accessories.

7. ADAPTER TOOL SELECTION. To select proper tool, shell size, and type of connector plug or receptacle, must be known. Select proper adapter tool (Table 1).

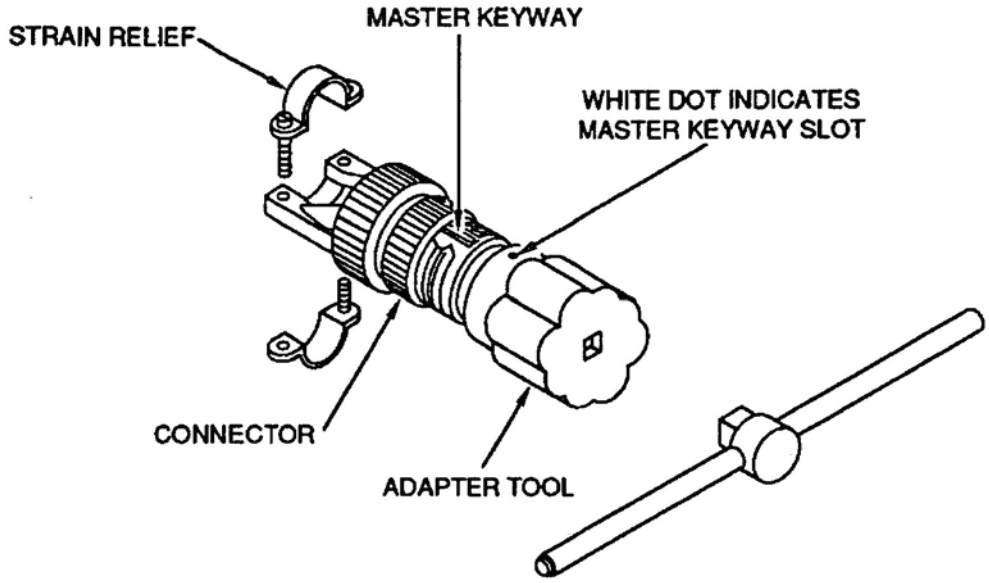


Figure 1. Adapter Tool (BT264R)

Table 1. MIL-C-26482 Series 1 and 2 Adapter Tools

			Part Number			
Connector Family	Shell Size	Polarization	Plug	Color Code	Receptacle	Color Code
MIL-C-26482, Series I & II	8	All	BT264-8	Orange	BT264R-8	Orange
MIL-C-26482, Series I & II	10	All	BT264-10	Orange	BT264R-10	Orange
MIL-C-26482, Series I & II	12	All	BT264-12	Orange	BT264R-12	Orange
MIL-C-26482, Series I & II	14	All	BT264-14	Orange	BT264R-14	Orange
MIL-C-26482, Series I & II	16	All	BT264-16	Orange	BT264R-16	Orange
MIL-C-26482, Series I & II	18	All	BT264-18	Orange	BT264R-18	Orange
MIL-C-26482, Series I & II	20	All	BT264-20	Orange	BT264R-20	Orange
MIL-C-26482, Series I & II	22	All	BT264-22	Orange	BT264R-22	Orange
MIL-C-26482, Series I & II	24	All	BT264-24	Orange	BT264R-24	Orange

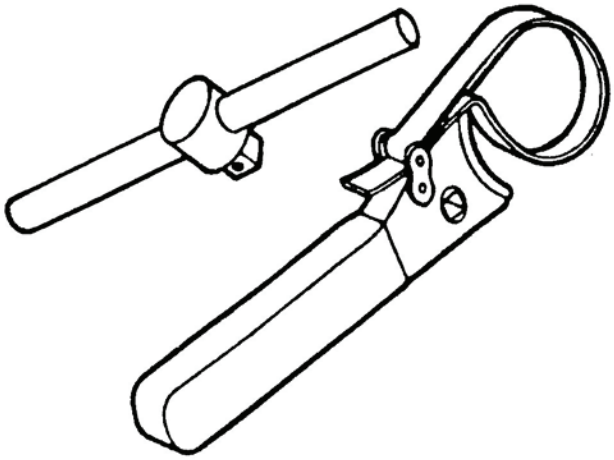


Figure 2. Adapter Tool Accessories

8. ADAPTER TOOL ACCESSORIES. To hold adapter tool and to keep the connector from turning when installing or removing backshells the use of a ¼ inch drive T-handle is recommended. A strap wrench is used on the backshell for installation and removal to apply even pressure without causing damage to accessories (Figure 2).

9. BACKSHELL REMOVAL. Backshells are used to protect, shield, and add support to connectors. When modification or repair to the connector is necessary, the backshell must be removed. Proceed using following procedure:

a. Select correct adapter tool (Table 1) by series, T-handle, and strap wrench (Figure 2).

b. Mate adapter tool to connector. Ensure white dot on adapter tool aligns with master key of connector. Spinning tool on connector will cause damage to tool and/or connector (Figure 3).

c. Install strap wrench around part to be removed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 3).

d. Insert T-handle into socket of adapter tool to provide holding (Figure 3).

e. To loosen backshell apply force counterclockwise as viewed from connector rear (Figure 4).

f. Tape backshell to bundle to prevent loss.

10. BACKSHELL INSTALLATION. Upon completion of maintenance or modification the backshell must be replaced. Proceed using following procedure:

a. Untape backshell from bundle. Start backshell on connector by hand to prevent cross threading,

b. Select correct adapter tool (Table 1), T-handle, and strap wrench (Figure 2).

c. Mate adapter tool to connector. Ensure white dot on adapter tool aligns with master keyway of connector. Spinning tool on connector will cause damage to tool and/or connector (Figure 3).

d. Install strap wrench around part to be installed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 3).

e. Insert T-handle into socket of adapter tool to provide holding (Figure 3).

f. To tighten backshell apply force clockwise as viewed from connector rear (Figure 5).

NOTE

Refer to NAVAIR 01-1A-505-1 WP 011 01, Table 1, for torque value information on AS85049 connector backshells.

11. GROMMET NUTS, The grommet nut is a threaded ring nut utilized to securely hold connector grommet in place. See M85049/31 (WP 007 03).

12. CABLE CLAMPS/STRAIN RELIEFS. The following two paragraphs explain the two types of cable support or clamping devices.

13. Cable, Clamps. A cable clamp is a support or clamping device which requires use of an intermediate component for attachment to back of connector. See: M85049/1, M85049/2, M85049/41 and M85049/42 (WP 007 03).

14. Strain Reliefs. A strain relief is a support or clamping device which attaches directly to connector. See: M85049/52, M85049/51, M85049/53, M85049/54, M85049/55, M85049/43 (WP 007 03).

15. SHRINK BOOTS AND ADAPTERS. Boots and adapters are protective coverings over any portion of a cable, wire, or connector in addition to the normal jacketing or insulation. A protective housing is usually made from a resilient material to prevent entry of moisture into a connector. See shrink boots: AS3109 and AS3117 and adapters: M85049/60-1 and M85049/60-2 (Figures 6, 7, and 8, this WP).

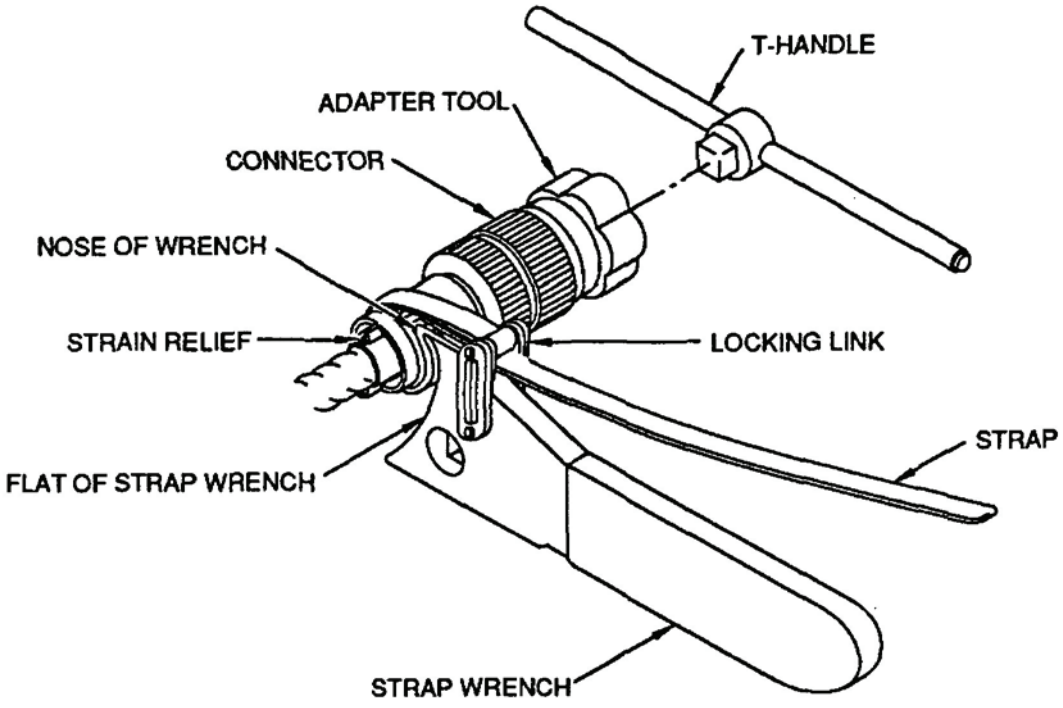


Figure 3. Strap Wrench Setup and Adjustment

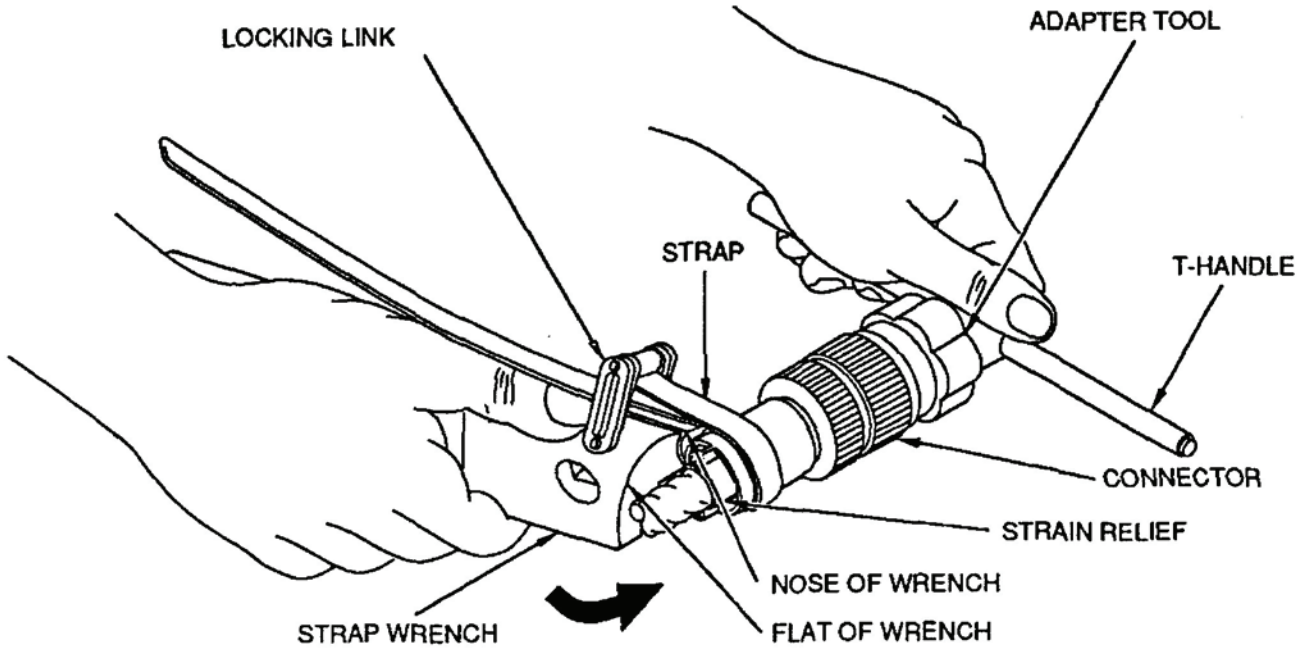


Figure 4. Loosening Position of Wrench

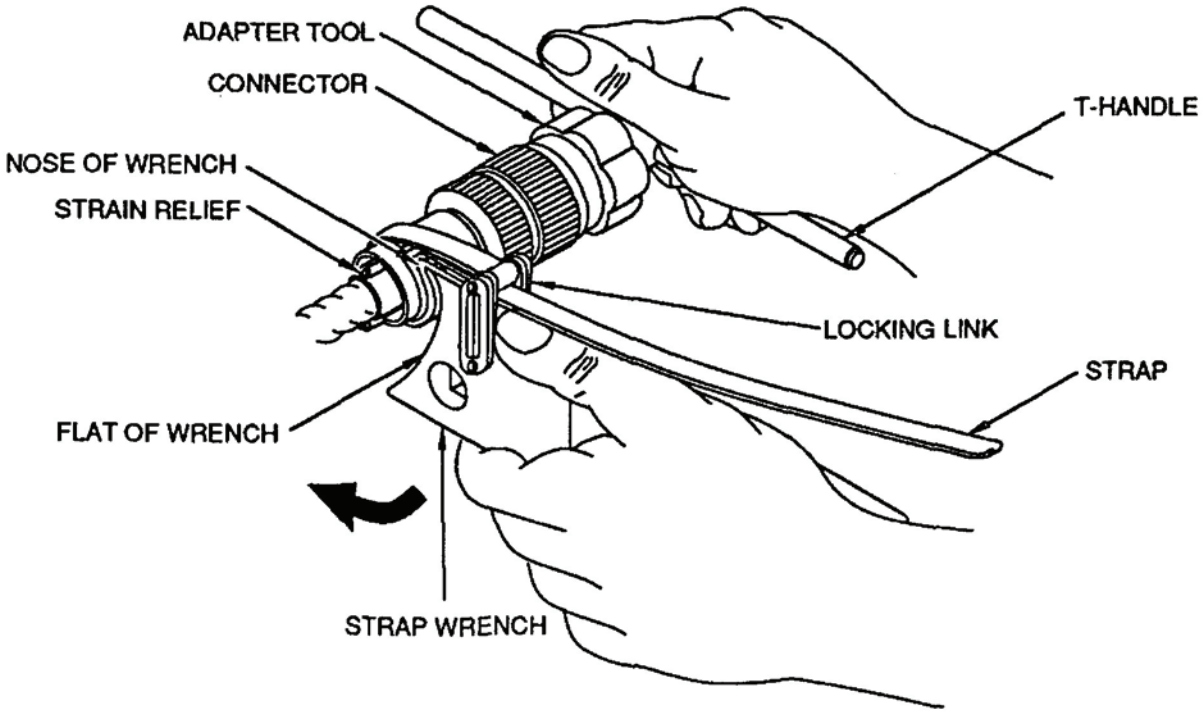
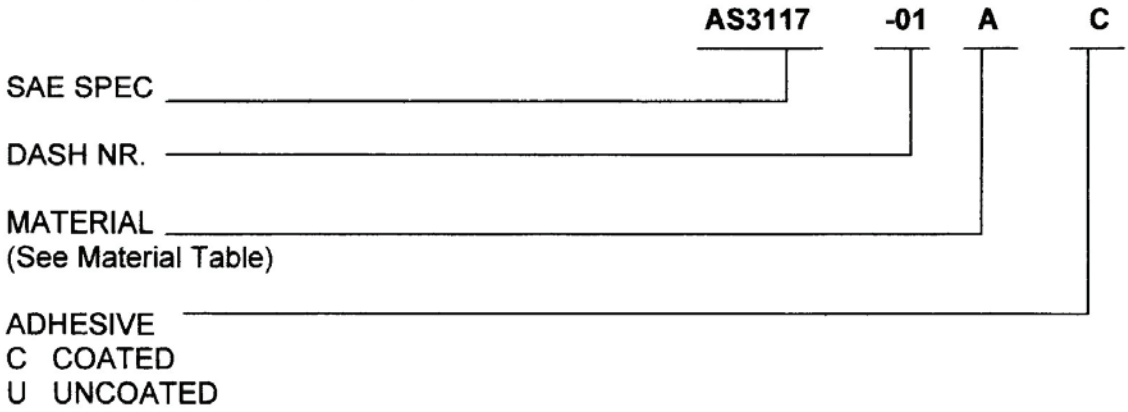


Figure 5. Tightening Position of Wrench

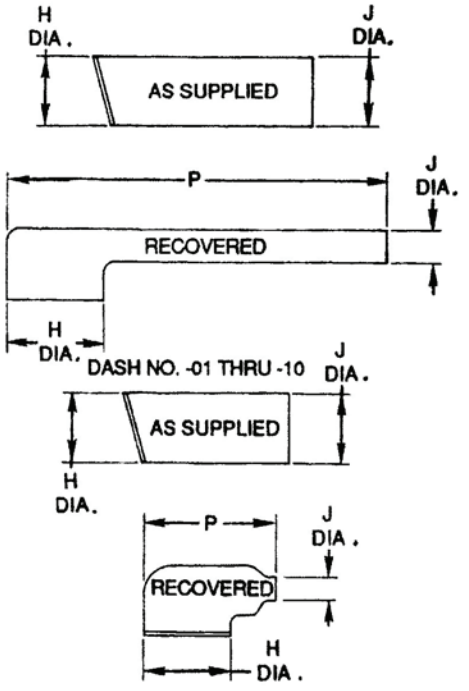
PART NUMBER DESIGNATION



MATERIAL CODES

Material Designation	Material Type	Color Stripe	Continuous Operating Temp. Range	Flexibility
A	MIL-C-81 765/1 TYPE II	RED	-55°C to+135°C	FLEXIBLE
B	MIL-1-81765/1 TYPEI	WHITE	-55°C to +135°C	SEMI-RIGID
C	MIL-1-81765/4	YELLOW	-55°C to +200°C	FLEXIBLE

Figure 6. Shrink Boots and Adapters - 90 Degree AS3117 (Sheet 1 of 2)



DASH NO. -11 THRU -18

Dash No.	H Dia. As Supplied Min.	H Dia. Recovered Max.	J Dia. As Supplied Min. A & B *	J Dia. As Supplied Min. C*	J Dia. Recovered Max.	P
-01	.88	.45	.88	.55	.25	4.14
-02	1.01	.59	1.01	.63	.29	4.88
-03	1.16	.74	1.16	.72	.33	5.76
-04	1.34	.90	1.34	.84	.38	6.78
-05	1.47	1.16	1.47	.91	.41	7.29
-06	1.72	1.34	1.72	1.07	.48	8.41
-07	1.97	1.62	1.97	1.24	.56	8.84
-08	2.47	1.85	2.47	1.54	.69	8.95
-09	2.73	2.35	2.73	1.70	.77	9.19
-10	3.22	2.64	3.22	2.01	.90	9.33
-11	.92	.41	.92	.47	.22	1.08
-12	1.12	.56	1.12	.58	.26	1.65
-13	1.22	.70	1.22	.63	.28	1.84
-14	1.42	.88	1.42	.73	.33	2.20
-15	1.68	1.11	1.68	.87	.39	2.71
-16	2.04	1.38	2.04	1.39	.62	3.84
-17	2.60	1.75	2.60	1.80	.80	4.81
-18	3.22	2.38	3.22	2.25	1.00	5.90

* MATERIAL TYPE

Figure 6. Shrink Boots and Adapters - 90 Degree AS3117 (Sheet 2 of 2)

PART NUMBER DESIGNATION

AS85049/	60	-1	W	10

MILITARY DESIGNATION

DETAIL SHEET

FIGURE

FINISH (See Codes)

DASH NUMBER (See Dimensions)

MATERIAL and FINISH

"A" - Black Anodize
"W" – Cadmium, Olive Drab 1000 hr Salt Spray
"N" – Electroless Nickel (not for Navy use)

Figure	Material	Finish
1 & 2	Aluminum alloy in accordance with AS85049	1/ N, A, 2/ W

1/ Not for Navy use. Restricted to Air Force space application only.
2/ W finish is not for use in space application.

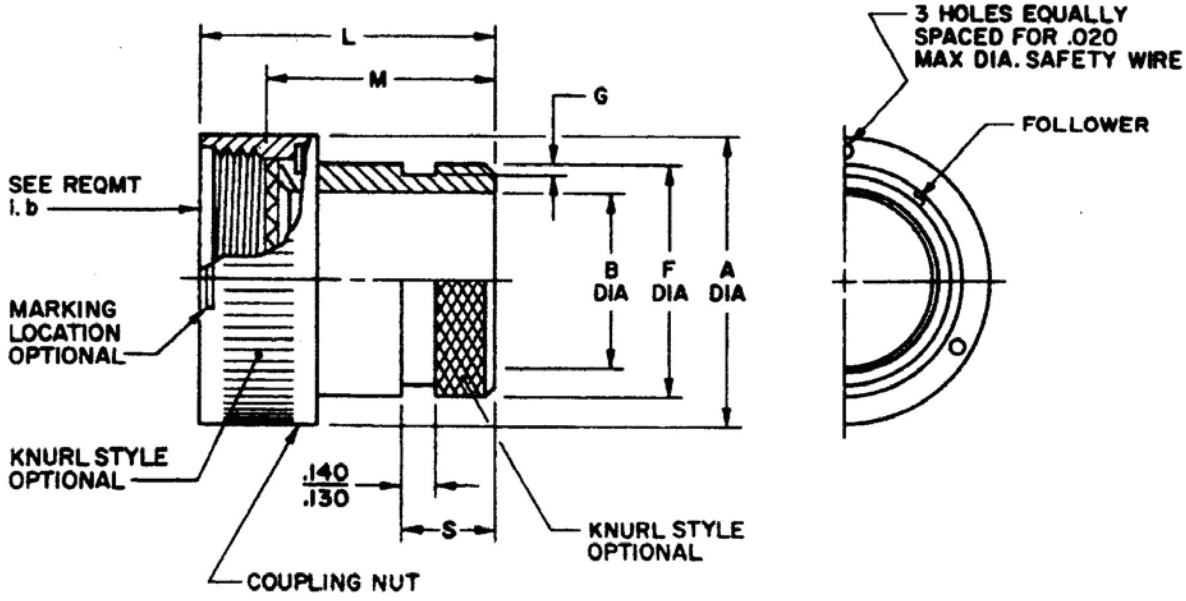


Figure 7. Shrink Boot Adapter M85049/60 (Sheet 1 of 4)

DIMENSIONS

Dash No.	For Connector Shell Size (Ref) MIL-C-26482			A +.000 -.045 Dia	F +.000 -.020 Dia	G +.008 -.000	L Max	M Max	S ±.031	B Min Dia
	MIL-C-81703 Series 3	Series 2 & MIL-C-83723 Series III	MIL-C-5015 Crimp							
-3	3			.669	.533	.044	1.187	.832	.406	.250
-8		8	8S	.617	.533	↑	↑	↑	↑	.250
-10		10	10S, 10SL	.734	.605					.355
-12	7	12	12S, 12	.858	.774					.491
-14	12	14	14S, 14	.984	.838					.565
-16	19	16	16S, 16	1.112	.963	↓				.690
-18	27	18	18	1.218	1.042	.044				.769
-20	37	20	20	1.345	1.217	.069				.894
-22		22	22	1.468	1.355	↑	↑	↑		1.019
-24		24	24	1.593	1.443	↓	1.187	.832	↓	1.134
-28			28	1.969	1.709	.069	1.511	.994	.406	1.369
-32			32	2.219	1.919	.086	↑	↑	.563	1.615
-36			36	2.469	2.169	↑			↑	1.830
-40			40	2.719	2.402					2.045
-44			44	2.969	2.657	↓	↓	↓	↓	2.300
-48			48	3.219	2.907	.086	1.511	.994	.563	2.550
-61	61			1.653	1.529	.069	1.187	.832	.406	1.174

NOTES:
1. For use with M85049/68-1 or MS3109 Shrink Boots
2. Dimensions are in inches.
3. Dimensions are after plating.
4. Complete strain relief consists of coupling nut and a follower. The coupling is captive and the follower arm is rotatable.

SUPERSESSION DATA:

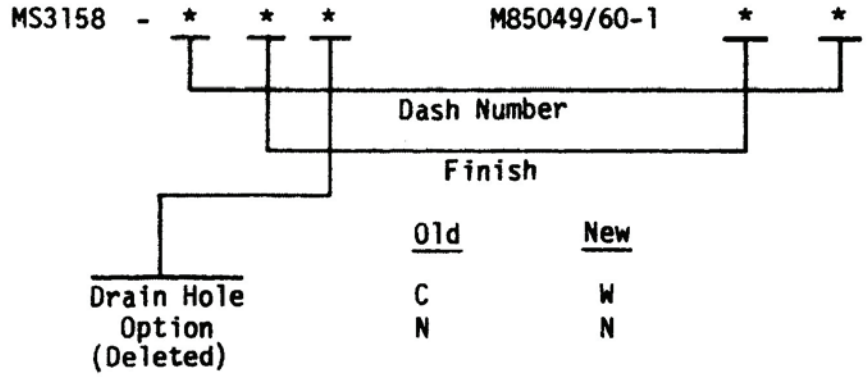


Figure 7. Shrink Boot Adapter M85049/60 (Sheet 2 of 4)

PART NUMBER DESIGNATION

AS85049/ 60 -2 W 10

MILITARY DESIGNATION

DETAIL SHEET

FIGURE

FINISH (See Codes)

DASH NUMBER (See Dimensions)

MATERIAL and FINISH

"A" - Black Anodize
"W" – Cadmium, Olive Drab 1000 hr Salt Spray
"N" – Electroless Nickel (not for Navy use)

Figure	Material	Finish
1 & 2	Aluminum alloy in accordance with AS85049	1/ N, A, 2/ W

1/ Not for Navy use. Restricted to Air Force space application only.
2/ W finish is not for use in space application.

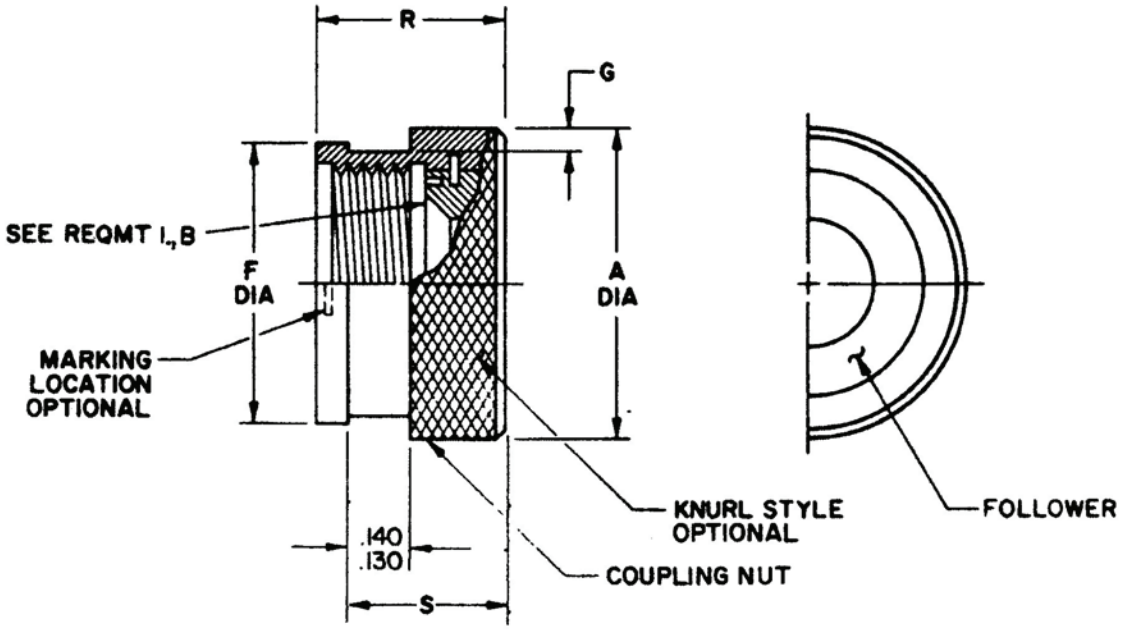


FIGURE 2 - CONFIGURATION AND DIMENSIONS

Figure 7. Shrink Boot Adapter M85049/60 (Sheet 3 of 4)

DIMENSIONS

Dash No.	For Connector Shell Size (Ref)			A +.000 -.045 Dia	F +.000 -.020 Dia	G +.008 -.000	R Max	S ±.031
	MIL-C-81703 Series 3	MIL-C-26482 Series 2 & MIL-C-83723 Series III	MIL-C-5015 Crimp					
-3	3			.750	.709	.044	.540	.406
-8		8	8S	.688	.657			
-10		10	10S,10SL	.803	.774			
-12	7	12	12S,12	.938	.898			
-14	12	14	14S,14	1.063	1.024	.044		
-16	19	16	16S,16	1.238	1.152	.069		
-18	27	18	18	1.310	1.243			
-20	37	20	20	1.436	1.370			
-22		22	22	1.560	1.443			
-24		24	24	1.686	1.618	.069	.540	.406
-28			28	2.062	1.969	.086	.702	.563
-32			32	2.312	2.219			
-36			36	2.562	2.469			
-40			40	2.812	2.719			
-44			44	3.062	2.969			
-48			48	3.312	3.219	.086	.702	.563
-61	61			1.748	1.653	.069	.540	.406

NOTES:
1. For use with M85049/68-2 or MS3117 Shrink Boots
2. Dimensions are in inches.
3. Dimensions are after plating.
4. Complete strain relief consists of coupling nut and a follower. The coupling is captive and the follower arm is rotatable.

SUPERSESSION DATA:

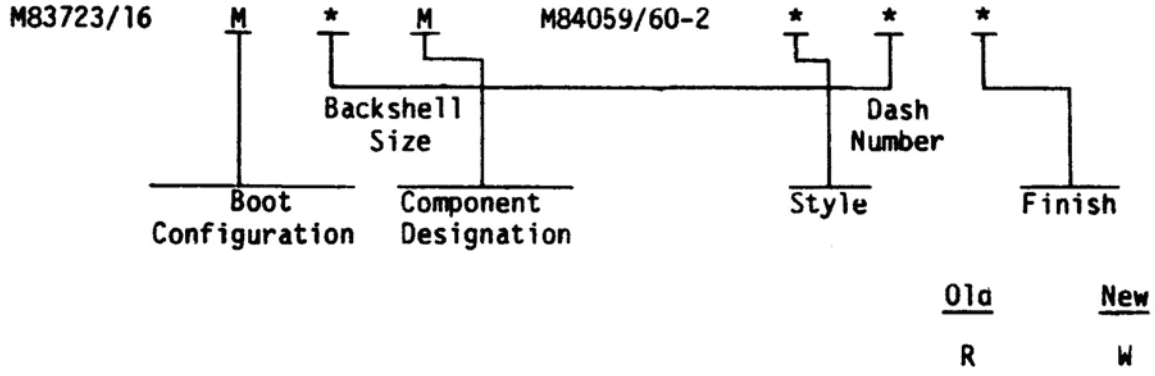


Figure 7. Shrink Boot Adapter M85049/60 (Sheet 4 of 4)

PART NUMBER DESIGNATION

AS3109 -01 A C

SAE SPEC

DASH NR.

MATERIAL
(See Material Table)

ADHESIVE
C COATED
U UNCOATED

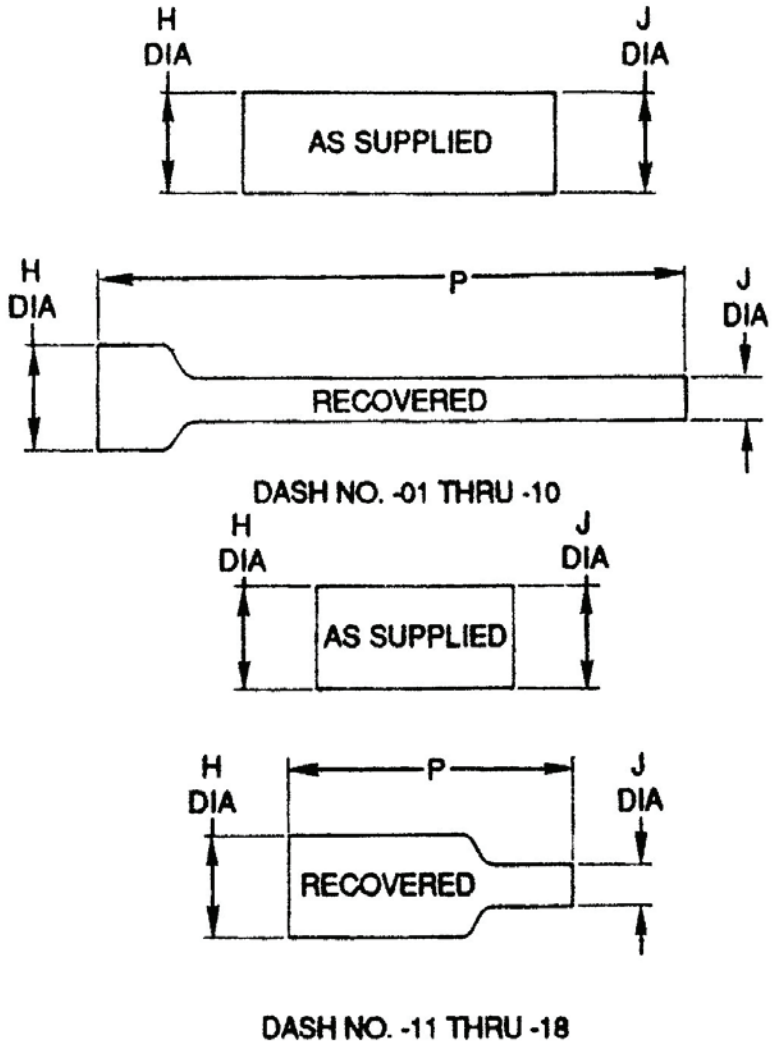


Figure 8. Shrink Boots and Adapters Straight AS3109 (Sheet 1 of 2)

MATERIAL CODES

Material Designation	Material Type	Color Stripe	Continuous Operating Temp. Range	Flexibility
A	MIL-C-81 765/1 TYPE II	RED	-55°C to+135°C	FLEXIBLE
B	MIL-1-81765/1 TYPEI	WHITE	-55°C to +135°C	SEMI-RIGID
C	MIL-1-81765/4	YELLOW	-55°C to +200°C	FLEXIBLE

Dash No.	H Dia.		J Dia.			P
	As Supplied Min.	Recovered Max.	As Supplied Min. A & B *	As Supplied Min. C*	Recovered Max.	
-01	.88	.45	.88	.55	.25	4.17
-02	1.01	.59	1.01	.63	.29	4.77
-03	1.16	.74	1.16	.72	.33	5.46
-04	1.34	.90	1.34	.84	.38	6.28
-05	1.47	1.16	1.47	.91	.41	7.00
-06	1.72	1.34	1.72	1.07	.48	8.00
-07	1.97	1.62	1.97	1.24	.56	8.00
-08	2.47	1.85	2.47	1.54	.69	8.00
-09	2.73	2.35	2.73	1.70	.77	8.00
-10	3.22	2.64	3.22	2.01	.90	8.00
-11	.92	.41	.92	.47	.22	1.50
-12	1.12	.56	1.12	.58	.26	2.16
-13	1.22	.70	1.22	.63	.28	2.63
-14	1.42	.88	1.42	.73	.33	3.15
-15	1.68	1.11	1.68	.87	.39	4.08
-16	2.04	1.38	2.04	1.39	.62	5.13
-17	2.60	1.75	2.60	1.80	.80	6.50
-18	3.22	2.38	3.22	2.25	1.00	7.00

* MATERIAL TYPE

Figure 8. Shrink Boots and Adapters Straight AS3109 (Sheet 2 of 2)

16. EMI/RFI GROUNDING TERMINATORS. Ground terminators are used to ground or shield a connector to reduce the electromagnetic radiation and radio frequency interference from other equipment. A physical and electrical shield is employed which is terminated at one or both ends to a ground or some other predetermined point with respect to ground. Shields can be applied to individual wires, cables, bundles, or harnesses. See: MS18121, MS21980, and MS21981 (WP 007 03).

17. EMI/RFI GROUNDING TERMINATOR INSTALLATION. EMI/RFI grounding terminator installation procedures are contained in Figure 9, this WP.

18. NON-ENVIRONMENTAL BACKSHELLS. A non-environmental backshell is an attachment on backside of connector that does not provide protection to unit from moisture, dirt, air or dust. See backshells: M85049/34, Figure 10, this WP.

19. ENVIRONMENTAL BACKSHELLS. An environmental backshell is a device that provides protection from moisture, dirt, air and dust which may reduce performance of unit. They do not provide protection from nonphysical environments such as RF and radiation. See: M85049/9, M85049/7, M85049/11 (WP 007 03).

20. NON-ENVIRONMENTAL EMI/RFI BACKSHELLS, A non-environmental EMI/RFI backshell is an attachment on the back side of a connector that does not protect against moisture, dust, and dirt but does provide EMI/RFI protection. See: M85049/25, M85049/24, M85049/23, M85049/26-1 and M85049/26-2 (WP 007 03).

21. ENVIRONMENTAL EMI/RFI BACKSHELLS. This type of backshell is used when moisture entry and EMI/RFI protection is needed; Figure 11 shows a typical example. See: M85049/6, M85049/8 and M85049/10 (WP 007 03).

22. CONDUIT FITTINGS. Conduit fittings are used to connect a conduit to a connector, and may be either a ferrule, nut, adapter, box fitting, 45° elbow, 90° elbow, hex nut, or seal assembly. See AN3050, AN3051, AN3052, AN3053, AN3054, AN3055, AN3056, AN3058, AN3064, AN3060, AN3061, AN3062, AN3063, AN3068, and AN3067, (WP 007 03).

23. DUMMY RECEPTACLES. Dummy receptacles are provided, and shall be used to stow unmated plugs, caps or protective covers when the related component is not in operational use. The dummy receptacle shall be marked and located to permit easy location and access. See MS3115 (Figure 12, this WP).

24. Protective covers for plugs and receptacles MS3180 and MS3181 are shown in Figures 13 and 14. Dust cap AS90376 is shown in Figure 15.

25. GASKET FOR FLANGE MOUNT RECEPTACLE. Part Number 229401 gaskets are made from conductive rubber, fluorosilicone, neoprene, or silicone and are used to seal receptacle flange to mounting structure (Figure 16, this WP).

26. MOUNTING NUT FOR JAM NUT RECEPTACLES. Part number MS3186 mounting nut is used to mechanically mount a receptacle to a structure. See MS3186, (WP 007 03).

27. MOUNTING PLATES FOR FLANGE MOUNT RECEPTACLES. Part number M85528 mounting plates for both series 1 and 2 receptacles are available in three types: heavy duty, medium duty, and light duty. See M85049/94, M85049/95, M85049/96 (WP 007 03).

28. RUBBER BUSHINGS. Part number MS3420 bushing standard material and color is black neoprene. Primary use is to provide a cushion for wires at connector exit to aid strain relief. See MS3420-6 and MS3420-16 (WP 007 03).

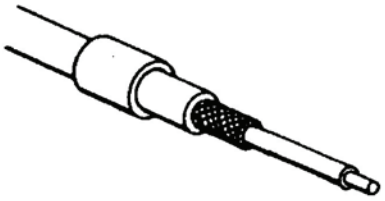
29. SEALING PLUGS. Part number MS27488 plugs are inserted to fill a cavity in a connector insert. These plugs are inserted large end first. Its function is to seal all unoccupied apertures in insert, especially in environmental connectors. See MS27488 (WP 007 03) and Figure 17, this WP).

30. POTTING BOOTS. Potting is used to improve and protect the electrical functions of the unit. Potting acts as a dielectric and provides strain relief and protection to unit from the environment. See MS3185 in Figure 18, this WP.

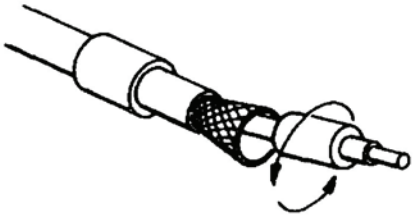
INDIVIDUAL WIRE TERMINATION

MS18121, MS21980, MS21981

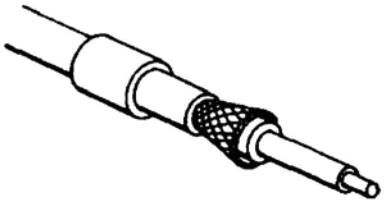
1. SLIP OUTER SLEEVE OVER INSULATION JACKET AFTER STRIPPING. TRIM BRAID TO WITHIN 1/2 INCH OF INSULATION.



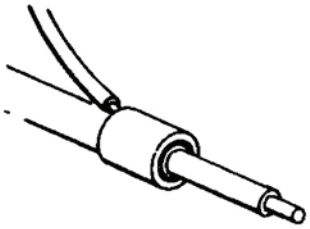
2. FAN BRAID BY ROTATING CENTER CONDUCTOR AND SLIP INNER SLEEVE UNDER BRAID.



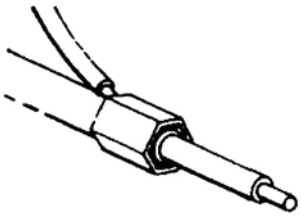
3. POSITION INNER SLEEVE TO EXTEND ABOUT 1/16 INCH BEYOND BRAID.



4. SLIP GROUND LEAD UNDER OUTER SLEEVE (FRONT OR BACK) AND SLIDE OUTER SLEEVE OVER BRAID.



FOR DAISY CHAIN GROUNDING TWO GROUND WIRES CAN BE ACCOMMODATED BY SELECTING THE PROPER SIZE OUTER SLEEVE.



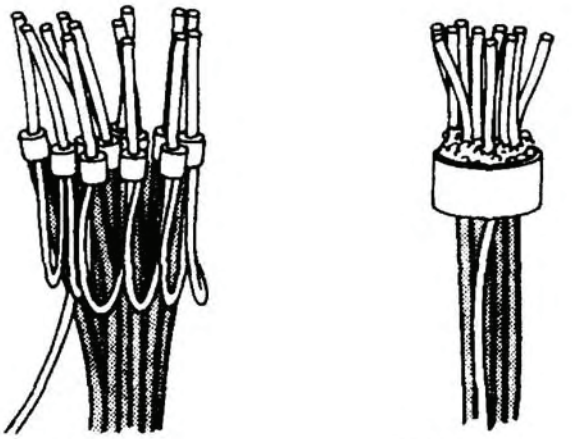
5. OUTER SLEEVE COVERS ALL EXPOSED PARTS.

6. COMPRESS IN SPECIFIED TOOL.

Figure 9. EMI-RFI Grounding Terminator Installation (Sheet 1 of 2)

MASS OR MULTIPLE TERMINATION
AS85049/26 **OUTER FERRULE**

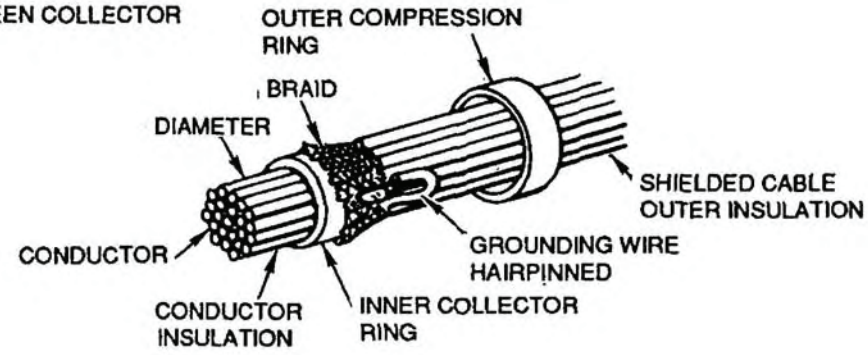
1. AFTER SHIELDING IS EXTRACTED ATTACH GROUND WIRE(S) TO CONNECTOR PIN.



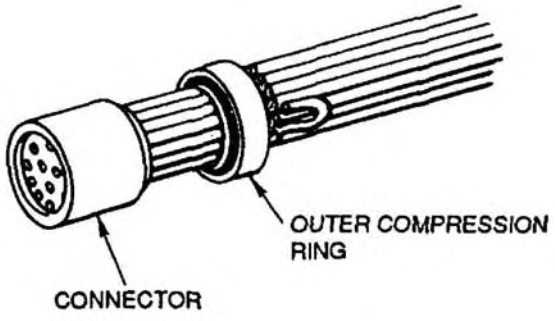
MASS TERMINATION

INDIVIDUAL TERMINATION

2. PLACE GROUND WIRE(S) BETWEEN COLLECTOR AND COMPRESSION.



3. SLIDE COMPRESSION RING OVER COLLECTOR, SHIELD AND GROUND WIRE.



FORWARD FOLD METHOD

Figure 9. EMI-RFI Grounding Terminator Installation (Sheet 2 of 2)

PART NUMBER DESIGNATION

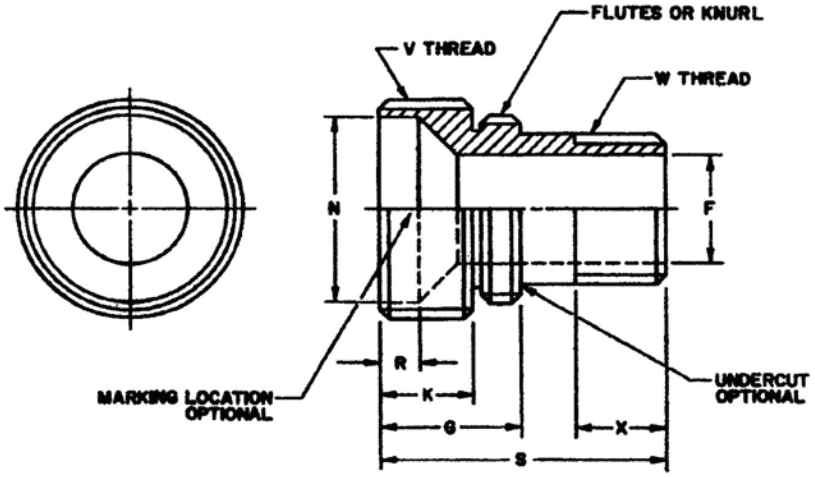
M85049/ 34 -10 W

MILITARY DESIGNATION

SPECIFICATION SHEET
34 – CADMIUM, OLIVE DRAB
NONE – CADMIUM, OLIVE DRAB (1000 Hr SALT SPRAY)

DASH NUMBER (See Dimensions)

FINISH (See Table)



DIMENSIONS

Shell Size	F +.005 -.001 Dia	G +.001 -.016	K +.017 -.000	N +.010 -.011 Dia	R ±.016	S Max	V Thread UNEF Class 2A	W Thread UNEF Class 2A	X Min Full Thread
8	.322	.391	.256	.500	.094	.812	.625-24	.4375-28	.250
10	.439			.609			.750-20	.5625-24	
12	.564			.734			.875-20	.6875-24	
14	.668			.859			1.000-20	.8125-20	
16	.793			.969			1.125-18	.9375-20	
18	.910			1.109			1.250-18	1.0625-18	
20	1.025	.422	.302	1.219	.125	.906	1.375-18	1.1875-18	.312
22	1.150			1.344			1.500-18	1.3125-18	
24	1.275			1.469		.937	1.625-18	1.4375-18	

NOTES:
FOR USE WITH MS3114 AND MS3124 CONNECTORS

Figure 10. Non-Environmental Backshell M85049/34 (Sheet 1 of 2)

FINISH

Figure	Material	Finish
1	Aluminum alloy in accordance with AS85049	1/ W

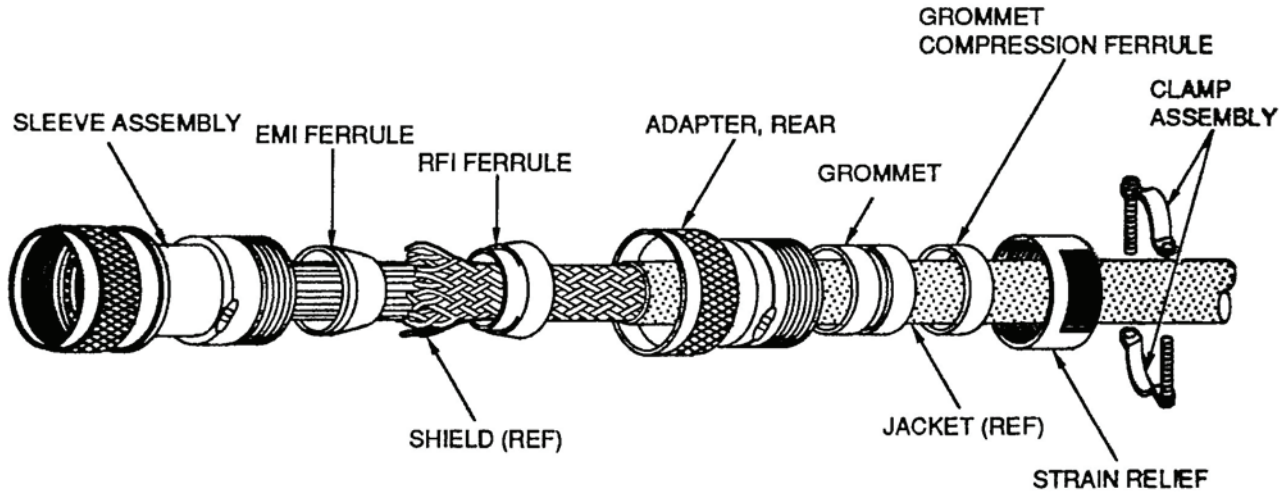
1/ W finish is not for use in space application.

SUPERSESSION:

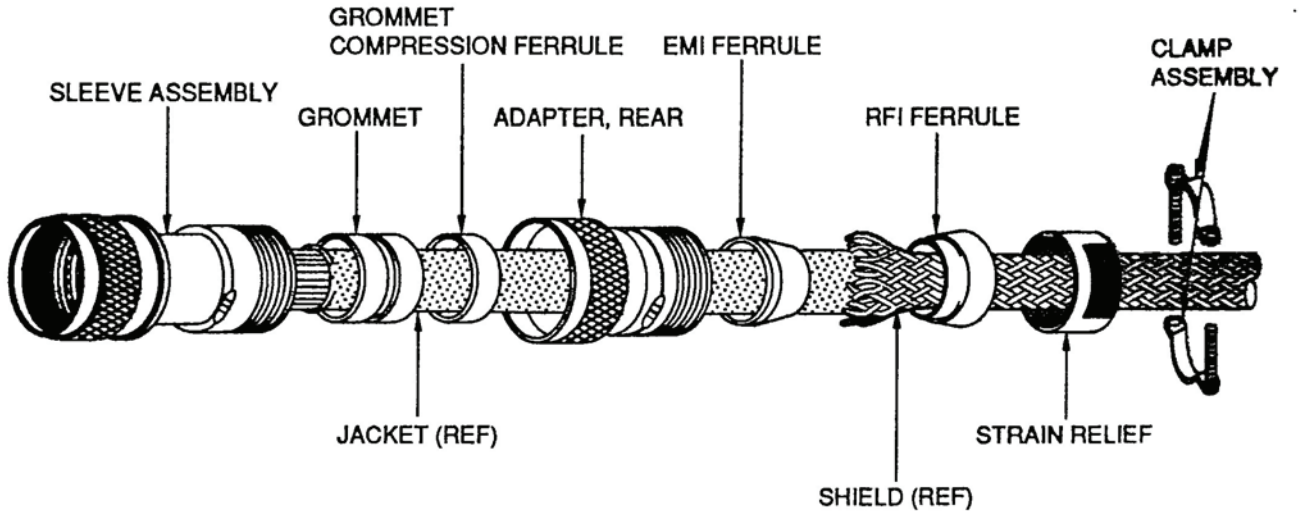
MS3184 * M85049/34 - * *

Shell Size Finish

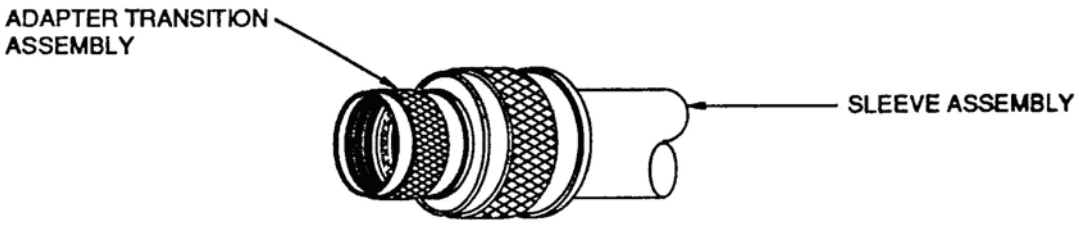
Figure 10. Non-Environmental Backshell M85049/34 (Sheet 2 of 2)



STYLE 1
SHIELD, ENVIRONMENTAL



STYLE 1
ARMOR, ENVIRONMENTAL



STYLE 2

Figure 11. Typical Environmental EMI-RFI Backshell

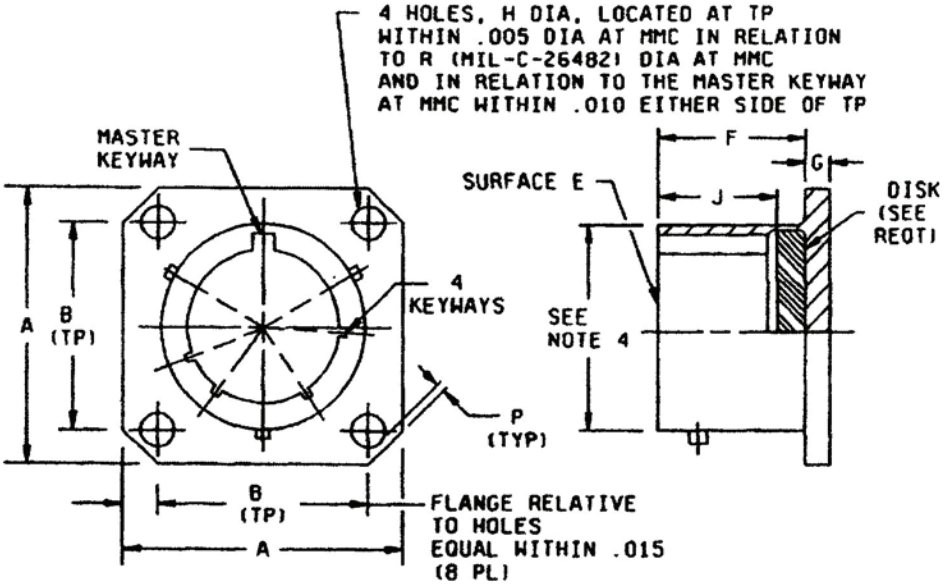
PART NUMBER DESIGNATION

MS3115 -18 N

MILITARY DESIGNATION

DETAIL SHEET
(See Dimension Table)

SHELL STYLE
A – REGULAR FLANGE
B – LARGE FLANGE



MATERIAL:
Dummy Receptacle - Aluminum Alloy
Gasket – Synthetic Rubber (Meets MIL-STD-417), or Silicone Elastomer.

FINISH:
"W" – Cadmium, Olive Drab 1000 hr Salt Spray
"N" – Electroless Nickel (not for Navy use)

Figure 12. Dummy Receptacle MS3115 (Sheet 1 of 2)

DIMENSIONS

Shell size	A max length side	B (TP) ℄-℄ mtg holes	F +.031 -.000 mtg flange location	G ±.016 Thk mtg flange	H Dia ±.005 mtg holes	J +.010 -.020 disk location	P Min edge dist
8	.828	.594	.462	.062	.120	.328	.035
10	.954	.719					
12	1.047	.812					
14	1.141	.906					
16	1.234	.969					
18	1.328	1.062					
20	1.453	1.156	.556				
22	1.578	1.250					
24	1.703	1.375	.589	.094	.147	.390	.050

NOTES:

1. Dimensions are in inches
2. Dimensions are after plating.
3 Dummy stowage meets fluid resistance as per MIL-C-26482.
4. Intermateability dimensions per MIL-C-26482

SUPERSESSION DATA:

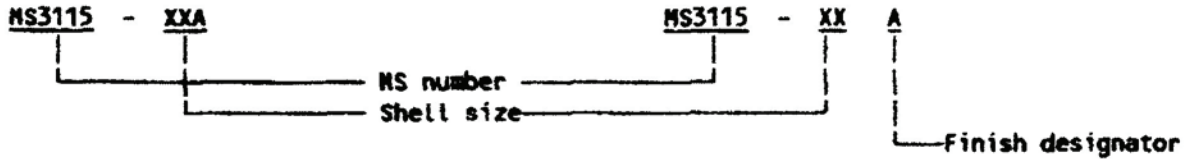


Figure 12. Dummy Receptacle MS3115 (Sheet 2 of 2)

PART NUMBER DESIGNATION

MS3180 -12 C A L

MILITARY DESIGNATION

DETAIL SHEET
(See Dimension Table)

TERMINATION TYPE
C – SASH CHAIN
R – WIRE ROPE

FINISH
A – Anodic, Hard, Non-Conductive

LENGTH
L - 5 inches
BLANK – For Standard Lengths (See Column "H" in Dimension Table)

MATERIAL:

Dummy Receptacle - Aluminum alloy.
Gasket – Synthetic Rubber (Meets MIL-STD-417), or Silicone Elastomer.
Chain – Stainless Steel, passivate as per RR-C-271, Type II, class 3, .030 maximum thickness.
Fasteners – Stainless Steel, passivate

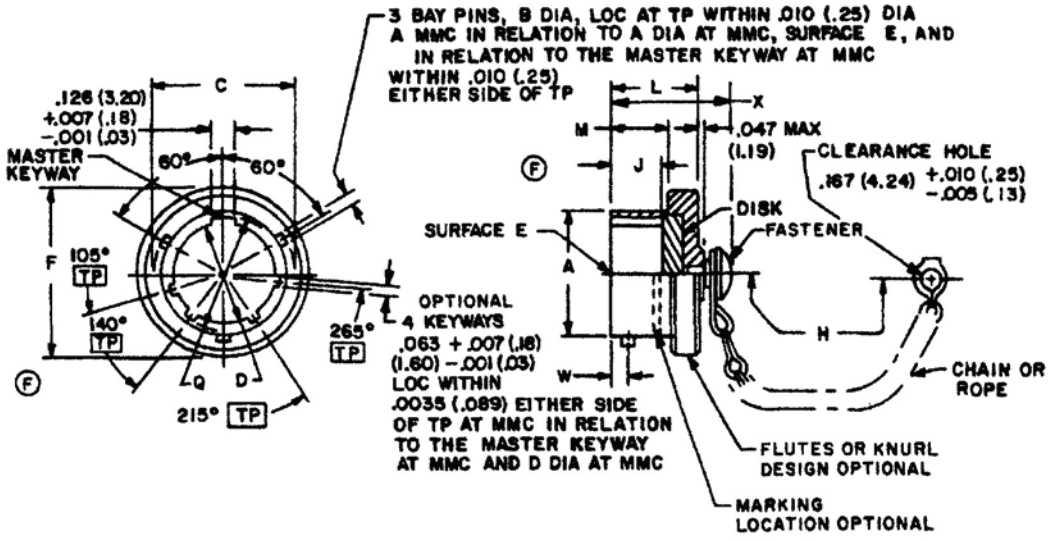


Figure 13. Protective Cap MS3180 (Sheet 1 of 2)

DIMENSIONS

DASH NO. (WITH CHAIN)	DASH NO. (WITH ROPE)	A +.001 (.03) -.005 (.13) DIA	B +.006 (.15) -.002 (.05) DIA BAY PIN	C +.000 (.00) -.016 (.41) DIA OVER BAY PINS	D +.005 (.13) -.001 (.03) DIA	F MAX DIA OVERALL	H +.500 (12.70) -.250 (6.35) STD. CHAIN/ ROPE LENGTH	J +.010 (.25) -.020 (.51) DISK LOC.	L MAX LENGTH	M +.031 (.25) -.000 (.00) SHLDR LOC.	Q +.005 (.13) -.006 (.15) DIA OVER KWYS	W BAY PIN LOC.	X MAX LENGTH OVERALL
-8C	-8R	.473 (12.01)		.563 (14.30)	.362 (9.19)	.719 (18.26)	3.000 (76.20)				.412 (10.46)		
-10C	-10R	.590 (14.99)		.680 (17.27)	.490 (12.45)	.844 (21.44)					.540 (13.72)		
-12C	-12R	.750 (19.05)		.859 (21.82)	.607 (15.42)	1.000 (25.40)		.328 (8.33)	.562 (14.27)	.368 (9.35)	.689 (17.50)		
-14C	-14R	.875 (22.22)		.984 (24.99)	.732 (18.59)	1.125 (28.58)					.814 (20.68)		
-16C	-16R	1.000 (25.40)	.078 (1.98)	1.108 (28.14)	.857 (21.77)	1.250 (31.75)	3.500 (88.90)				.939 (23.85)	.100 (2.54)	
-18C	-18R	1.125 (28.58)		1.233 (31.32)	.962 (24.43)	1.375 (34.92)					1.039 (26.39)		.781 (19.84)
-20C	-20R	1.250 (31.75)		1.358 (34.49)	1.087 (27.61)	1.500 (38.10)			.625 (15.88)	.430 (10.92)	1.164 (29.57)		.844 (21.44)
-22C	-22R	1.375 (34.92)		1.483 (37.67)	1.212 (30.78)	1.625 (41.28)	4.000 (101.60)	.390 (9.91)			1.289 (32.74)		
-24C	-24R	1.500 (38.10)	.125 (3.18)	1.610 (40.89)	1.337 (33.96)	1.750 (44.45)			.658 (16.71)	.463 (11.76)	1.414 (35.92)	.109 (2.77)	.875 (22.22)

NOTES:

1. Dimensions are in inches (Metric equivalents are in parenthesis).
2. Dimensions are after plating.
3 Meets fluid resistance as per MIL-C-26482.
4. Intermateability dimensions per MIL-C-26482.

Figure 13. Protective Cap MS3180 (Sheet 2 of 2)

PART NUMBER DESIGNATION

MS3181 -12 C A L

MILITARY DESIGNATION

DETAIL SHEET
(See Dimension Table)

TERMINATION TYPE
C – SASH CHAIN
N – SASH CHAIN WITH RING
R – WIRE ROPE

FINISH
A – Anodic, Hard, Non-Conductive

LENGTH
L - 5 inches
BLANK – For Standard Lengths (See Column "H" in Dimension Table)

MATERIAL:
Dummy Receptacle - Aluminum alloy.
Gasket – Synthetic Rubber (Meets MIL-STD-417), or Silicone Elastomer.
Chain – Stainless Steel, passivate as per RR-C-271, Type II, class 3, .030 maximum thickness.
Fasteners – Stainless Steel, passivate

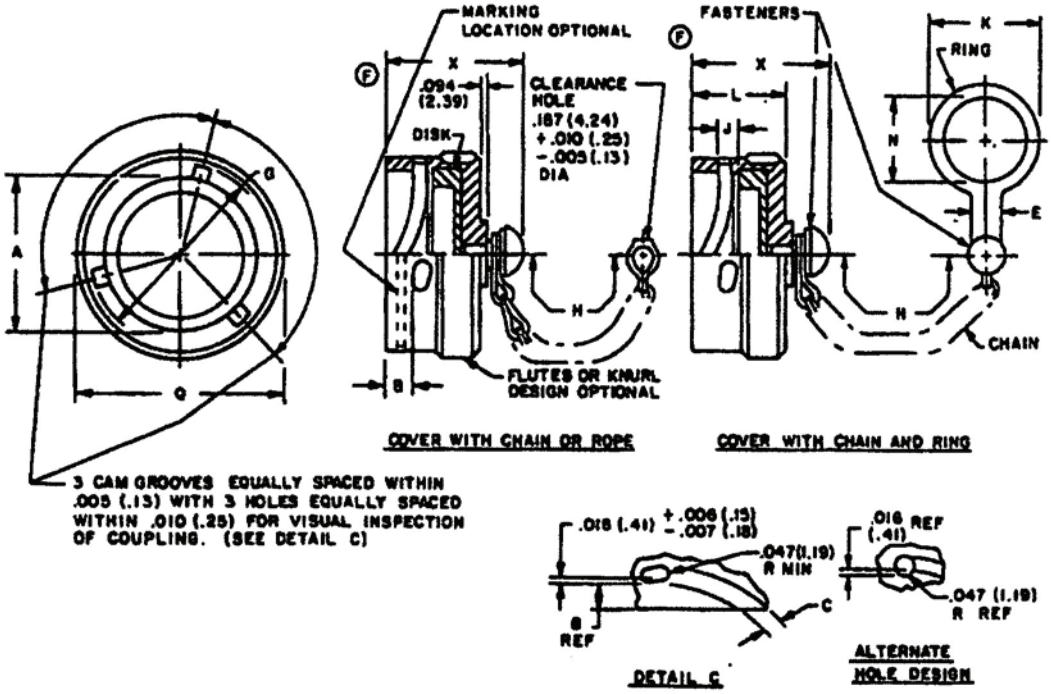


Figure 14. Protective Cap MS3181 (Sheet 1 of 3)

DIMENSIONS

DASH NO. (WITH CHAIN)	DASH NO. (WITH CHAIN AND RING)	DASH NO. (WITH ROPE)	A .005 (.13) -.001 (.03) ID	B MAX BAY LOCK LOC.	C .016 (.41) -.001 (.03) BAY GROOVE WIDTH	G .005 (.13) -.006 (.15) ID SLOTS	H .500 (12.70) -.250 (6.35) SID. CHAIN/ ROPE LENGTH	J .010 (.25) -.015 (.38) DISK LOC.	L MAX LENGTH	N MIN ID RING	Q MAX DIA OVERALL	K RING O.D. MAX	E RING THROAT MIN	F MAX LENGTH OVERALL
-8C	-8N	-8R	.481 (12.221)	.087 (2.21)	.090 (2.29)	.576 (14.63)	1.000 (76.20)	.147 (3.73)	.602 (15.29)	.578 (14.68)	.734 (18.64)	.812 (20.62)	.233 (5.92)	.875 (22.22)
-10C	-10N	-10R	.602 (15.29)			.697 (17.70)				.707 (17.96)	.859 (21.82)	1.000 (25.40)		
-12C	-12N	-12R	.761 (19.33)			.871 (22.12)				.869 (22.63)	1.000 (25.40)	1.188 (30.18)		
-14C	-14N	-14R	.885 (22.48)	.149 (3.78)	.089/.153 (2.26)(3.89)	.985 (25.27)	3.500 (88.90)	.115 (2.92)	.562 (14.27)	1.018 (25.81)	1.125 (28.58)	1.338 (35.53)		
-16C	-16N	-16R	1.010 (25.65)			1.120 (28.45)				1.141 (28.98)	1.250 (31.75)	1.552 (39.67)		
-18C	-18N	-18R	1.135 (28.83)			1.245 (31.62)				1.266 (32.16)	1.375 (34.92)	1.658 (42.08)		
-20C	-20N	-20R	1.260 (32.00)			1.370 (34.80)				1.391 (35.33)	1.500 (38.10)	1.812 (46.02)		
-22C	-22N	-22R	1.385 (35.18)			1.495 (37.97)	4.000 (101.60)			1.516 (38.51)	1.625 (41.28)	1.938 (49.23)		
-24C	-24N	-24R	1.510 (38.35)	.137 (3.48)		1.624 (41.25)		.147 (3.73)	.602 (15.29)	1.641 (41.68)	1.750 (44.45)	2.062 (52.37)	.233 (5.92)	.875 (22.22)

Figure 14. Protective Cap MS3181 (Sheet 2 of 3)

NOTES:

1. Dimensions are in inches (Metric equivalents are in parenthesis).
2. Dimensions are after plating.
3 Meets fluid resistance as per MIL-C-26482.

Figure 14. Protective Cap MS3181 (Sheet 3 of 3)

PART NUMBER DESIGNATION

AS90376 -18 Y F

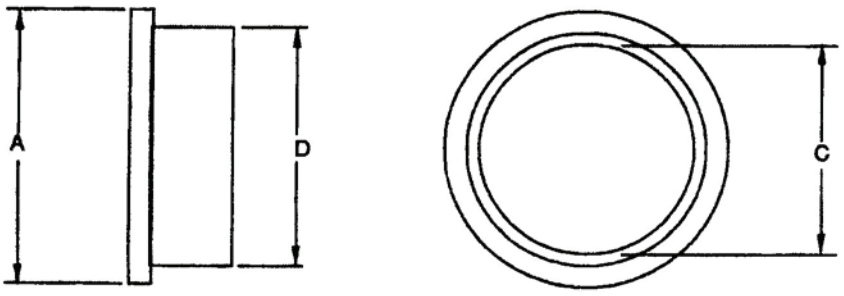
MILITARY DESIGNATION

DETAIL SHEET
(See Dimension Table)

COLOR
R – RED
Y – YELLOW

MODIFICATION
BLANK – Type a Material
F – Type b Electrostatic-Free Material

MATERIAL
a Polyethylene, L-P-390, Type I, Class L
b Electrostatic-Free Material Conforming with MIL-B-81705 Type II



SHELL SIZES

Shell Size	MS90376 MIL-C-26482	
	Rept	Plug
8	-8R	-8Y
9		
10	-10R	-8R
11		
12	-14Y	-12Y
13		
14	-16Y	-12R
15		
16	-18Y	-16Y
17		
18	-20Y	-16R
19		
20	-22Y	-18R
21		
22	-24Y	-20R
23		
24	-24R	-22R

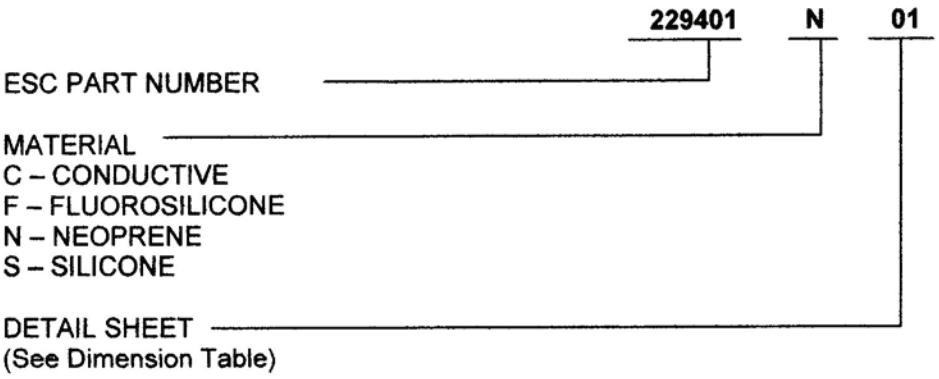
Figure 15. Dust Caps AS90376 (Sheet 1 of 2)

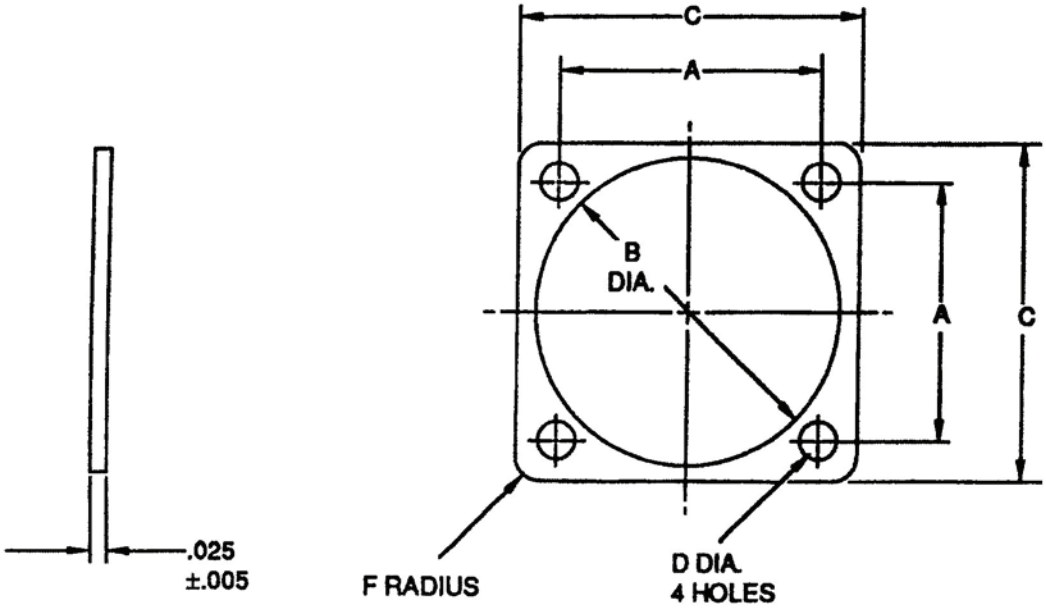
DIMENSIONS

Part Number	A ±.031	C ±.010	D ±.010	Supersedes	Part Number	A ±.031	C ±.010	D ±.010	Supersedes
MS90376-8Y	.670	.413	.483	MS25177-8	MS90376-24Y	1.640	1.390	1.460	MS25177-24
MS90376-8R	.740	.480	.540	MS25178-8	MS90376-24R	1.700	1.463	1.533	MS25178-24
MS90376-10Y	.750	.530	.595	MS25177-10	MS90376-25Y	1.580	1.540	1.610	—
MS90376-10R	.840	.605	.665	MS25178-10	MS90376-28Y	1.875	1.648	1.718	MS25177-28
MS90376-12Y	.860	.655	.715	MS25177-12	MS90376-28R	1.950	1.715	1.790	MS25178-28
MS90376-12R	.970	.720	.775	MS25178-12	MS90376-32Y	2.125	1.890	1.970	MS25177-32
MS90376-14Y	1.031	.785	.845	MS25177-14	MS90376-32R	2.220	1.965	2.040	MS25178-32
MS90376-14R	1.125	.850	.905	MS25178-14	MS90376-36Y	2.340	2.140	2.210	MS25177-36
MS90376-16Y	1.125	.893	.963	MS25177-16	MS90376-36R	2.435	2.215	2.290	MS25178-36
MS90376-16R	1.220	.973	1.035	MS25178-16	MS90376-40Y	2.600	2.380	2.450	MS25177-40
MS90376-18Y	1.250	1.028	1.088	MS25177-18	MS90376-40R	2.660	2.440	2.530	MS25178-40
MS90376-18R	1.330	1.093	1.155	MS25178-18	MS90376-44Y	2.875	2.630	2.700	MS25177-44
MS90376-20Y	1.406	1.150	1.215	MS25177-20	MS90376-44R	2.960	2.720	2.812	MS25178-44
MS90376-20R	1.465	1.231	1.301	MS25178-20	MS90376-48Y	3.125	2.880	2.950	MS25177-48
MS90376-22Y	1.500	1.270	1.340	MS25177-22	MS90376-48R	3.225	2.960	3.050	MS25178-48
MS90376-22R	1.590	1.340	1.410	MS25178-22					

Figure 15. Dust Caps AS90376 (Sheet 2 of 2)

PART NUMBER DESIGNATION

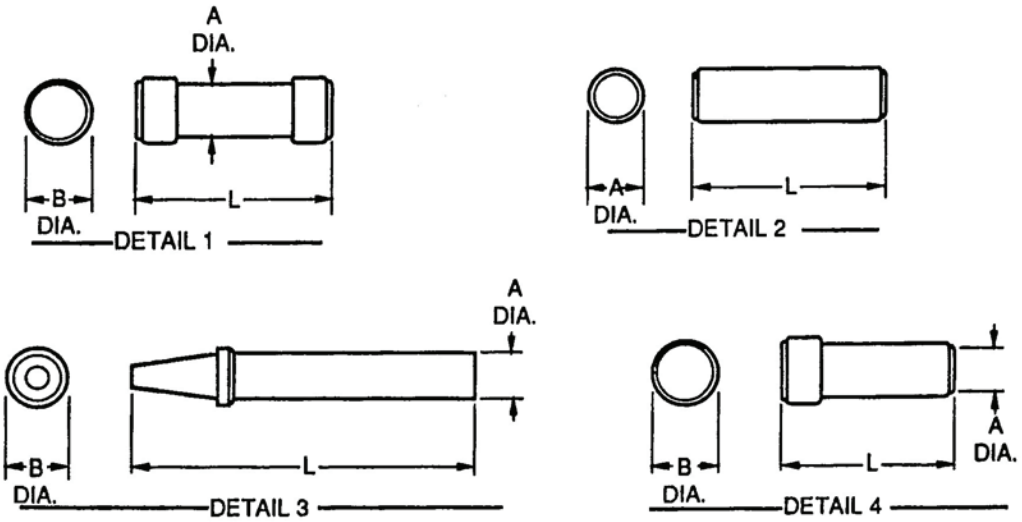




DIMENSIONS

Dash No.	For Use With Connectors: MIL-C-26482 Series 1 & 2	A ±.005	B ±.007	C ±.008	D ±.005	F ±.015
-1	8	.594	.562	.812	.125	.105
-3	10	.719	.687	.937	.125	.105
-4	12	.812	.772	1.031	.125	.105
-6	14	.906	.937	1.125	.125	.105
-7	16	.969	1.063	1.250	.125	.135
-8	18	1.062	1.187	1.343	.125	.135
-10	20	1.156	1.312	1.467	.125	.135
-11	22	1.250	1.437	1.562	.125	.135
-12	24	1.375	1.562	1.703	.152	.135

Figure 16. Gasket for Flange Mount Receptacle 229401



	MIL SPEC	Detail	Material	Wire Size	Color	A Dia Max.	B Dia Max.	L Max.	Superseded
	MS3187-A20	3	NYLON	20	RED	.069	.106	.610	
	MS3187-20-2	4	TEFLON	20	RED	.065	.100	.584	MS27488-20
	MS3187-16	3	NYLON	16	BLUE	.091	.105	.630	
	MS3187-16-2	4	TEFLON	16	BLUE	.093	.138	.584	MS27488-16
	MS3187-12	3	NYLON	12	YELLOW	.123	.153	.630	
	MS3187-12-2	4	TEFLON	12	YELLOW	.131	.176	.584	MS27488-12
	MS3187-8-2	4	TEFLON	8	RED	.195	.320	.480	MS27488-8
	MS3187-4-2	4	TEFLON	4	BLUE	.320	.420	.480	MS27488-4
	MS3187-0-2	4	TEFLON	0	YELLOW	.450	.610	1.010	MS27488-0
	MS25251-8	1	NYLON	8	WHITE	.200	.235	.479	MS27488-8
	MS25251-12	1	NYLON	12	YELLOW	.150	.187	.479	MS27488-12
	MS25251-16	1	NYLON	16	BLUE	.115	.152	.479	MS27488-16
	MS25251-20	1	NYLON	20	RED	.095	.122	.385	MS27488-20
REV E	MS27488A0	2	TEFLON	0	YELLOW	.398	N/A	1.415	
	MS27488A4	2	TEFLON	4	BLUE	.364	N/A	1.415	
	MS27488A8	2	TEFLON	8	RED	.232	N/A	1.415	
	MS27488A12	2	TEFLON	12	YELLOW	.133	N/A	1.290	
	MS27488A16	2	TEFLON	16	BLUE	.094	N/A	1.290	
	MS27488A20	2	TEFLON	20	RED	.070	N/A	1.165	
	MS27488A22	2	TEFLON	22	GREEN	.046	N/A	1.165	
REV F, G & H	MS27488-0	2	TEFLON	0	YELLOW	.440	N/A	1.415	
	MS27488-4	2	TEFLON	4	BLUE	.315	N/A	1.415	
	MS27488-8	2	TEFLON	8	RED	.190	N/A	1.415	
	MS27488-12	2	TEFLON	12	YELLOW	.128	N/A	1.290	
	MS27488-16	2	TEFLON	16	BLUE	.088	N/A	1.290	
	MS27488-20	2	TEFLON	20	RED	.065	N/A	1.165	
	MS27488-22	2	TEFLON	22	BLACK	.038	N/A	1.165	
REV J, K & L	MS27488-0	4	TEFLON	0	YELLOW	.450	.610	1.010	
	MS27488-4	4	TEFLON	4	BLUE	.320	.420	.480	
	MS27488-8	4	TEFLON	8	RED	.195	.320	.480	
	MS27488-12	4	TEFLON	12	YELLOW	.131	.176	.584	
	MS27488-16	4	TEFLON	16	BLUE	.093	.138	.584	
	MS27488-20	4	TEFLON	20	RED	.065	.100	.584	
	MS27488-22	4	TEFLON	22	BLACK	.045	.068	.500	

Figure 17. Sealing Plugs

PART NUMBER DESIGNATION

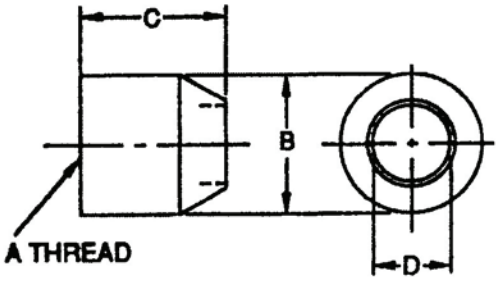
MS3185 -10 1

MILITARY DESIGNATION

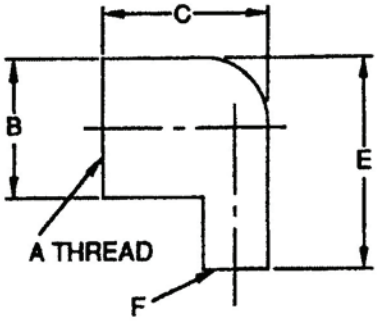
DASH NUMBER (SEE DIMENSIONS)

BOOT GEOMETRY
1 – STRAIGHT
2 – 75° to 90° ELBOW

NOTE: POTTING BOOT RING NOT REQUIRED



STRAIGHT BOOT MS3185-1



75°-90° BOOT MS3185-2

DIMENSIONS:

Dash Number	Size	A Thread Class 2B	B Max. Dia.	C Max.		D Min. Dia. ID.	E Max.	F Min. Cross-Sec. Area In.
				-1	-2			
-8	8	7/16-28	.608	.825	1.125	.317	1.030	.078
-10	10	9/16-24	.734	.825	1.250	.433	1.125	.147
-12	12	11/16-24	.858	.825	1.344	.543	1.250	.190
-14	14	13/16-20	.984	.825	1.453	.673	1.297	.226
-16	16	15/16-20	1.110	.825	1.516	.798	1.375	.304
-18	18	1-1/16-18	1.234	.825	1.594	.899	1.469	.532
-20	20	1-3/16-18	1.360	.915	1.750	1.024	1.700	.619
-22	22	1-5/16-18	1.484	.915	1.828	1.149	1.703	.690
-24	24	1-7/16-18	1.610	.915	2.125	1.274	2.100	.806

Figure 18. Potting Boot MS3185

ALPHABETICAL INDEX
INSTALLATION PRACTICES
CONNECTORS MIL-DTL-26500

Title	WP Number
Connector Accessories, MIL-DTL-26500	009 03
Connectors, MIL-DTL-26500	009 02
Introduction	009 01

INTRODUCTION
INSTALLATION PRACTICES
CONNECTORS MIL-DTL-26500

1. PURPOSE AND SCOPE.

2. This manual covers all connectors manufactured in accordance with MIL-DTL-26500. It includes contact data, tooling, buildup and connector accessories for MIL-DTL-26500 connectors.

3. SPECIFICATION UPDATES (ASSIST SEARCH).

4. The most up to date government specifications and Qualified Products Lists (QPLs) can be obtained from the Quick Search section of the ASSIST website, the address is http://assist.daps.mil/quicksearch. Non-government standards can be obtained through a license with a document service such as Information Handling Services (IHS) or purchased individually from the Society of Automotive Engineers (SAE).

5. QUALIFIED PRODUCTS LIST (QPL).

6. The Qualified Products List (QPL) is a list of products which have met the qualification requirements stated in the applicable specification. These requirements include appropriate product identification and performance/testing parameters. The list contains the government part number and the manufacturer's part number. The name of the manufacturer, office and manufacturing plant address, CAGE (Commercial and Government Entity) code, assembly plant, or distributor as applicable, is also included in the back of the QPL. The component specification will identify the appropriate quality assurance provisions such as QPL, First Article testing, or user verified test results. NAVAIR Patuxent River (http://www.navair.navy.mil/qpl/) now has an operational website where the latest QPL revision can be accessed, along with all outstanding QPL change letters as they are written. This enables all users to have access to the latest procurement information without relying on the publication of a new QPL revision. When the QPL is revised, all outstanding QPL change letters are incorporated in the latest revision.

CONNECTORS
MIL-DTL-26500

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Connectors, General Purpose, Electrical, Miniature, Circular, Environment Resisting,
General Specification for MIL-DTL-26500
Connector Accessories MIL-DTL-26500 ..... 009 03

Alphabetical Index

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Insert Configuration 5
Inserts 3
Mating Seal 3
Part Number 3
Polarization 3
Power Contacts 5
Shell 3
Tooling 5

Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
M2520/1-01	Tool, Crimp, Frame
AU2520/1-02	Positioner
M2520/2-01	Tool, Crimp, Frame
M22520/2-24	Positioner
M22520/2-33	Positioner
M22520/3-1	Gage, Inspection
M81969/14-02	Tool, Insertion
M81969/14-03	Tool, Insertion
M81969/14-04	Tool, Insertion
M81969/17-03	Tool, Insertion
M81969/17-04	Tool, Insertion
M81969/17-05	Tool, Insertion
M81969/17-06	Tool, Insertion
M81969/19-03	Tool, Removal
M81969/19-07	Tool, Removal
M81969/19-08	Tool, Removal
M81969/19-09	Tool, Removal

Materials Required

Specification/ Part No.	Nomenclature
None	

1. **INTRODUCTION**.

2. This Work Package (WP) pertains to connectors manufactured in accordance with MIL-DTL-26500. They are capable of withstanding operating temperatures to 392°F (200°C). The connectors prevent pin or socket damage during normal mating of counterpart connectors. Integral keys and keyways in shell of connector prevents engagement of contacts until they are properly aligned.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, the Society of Automotive Engineers (SAE), will become the preparing activity and the Navy will adopt the documents, the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

3. DESCRIPTION. The coupling ring of these threaded and bayonet type connectors is mounted on the plug shell and assists in mating and unmating contacts as the coupling ring is tightened or loosened. Complete mating of threaded types occurs when the plug shell bottoms against the receptacle shell. The connector inserts are designed to positively lock the contacts in place. Insert arrangements for individual connectors are shown for each connector part number. The contacts are rear inserted and front release, rear removable. Disengagement of the connector is necessary only when removing contacts from connector.

4. MIL-DTL-26500.

5. MIL-DTL-26500 connectors are miniature, circular, environment resistant, with front-release, rear removable crimp contacts (Figure 1). Hermetic receptacles have solder contacts.

6. GROMMET SEALING PLUGS. The grommets of environment resisting connectors are designed to accept sealing plugs in accordance with MS27488 to be used where unwired contacts are placed. The connector when ordered as a unit will have sealing plugs enclosed to equal 15 percent of the number of contacts but not less than three.

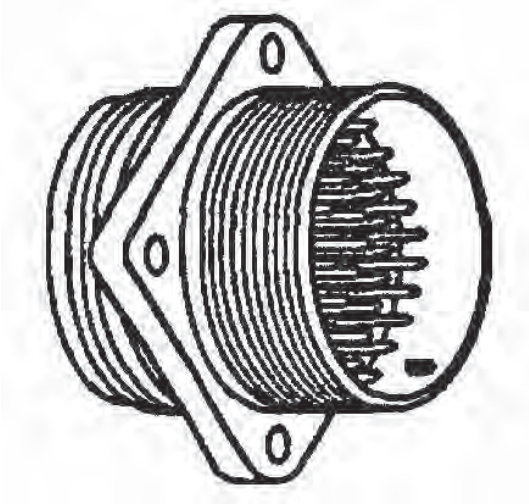


Figure 1. MIL-DTL-26500 Typical Connector

7. MATING SEAL. Plugs and receptacles with pin inserts have a resilient face with individual pin barriers to seal against the hard face socket insert. The resilient interface seal provides individual contact seal in mated condition between each contact and shell.

8. SHELL. Shells including mounting flanges are of one-piece construction and designed to retain their inserts in one position by mechanical means.

9. COUPLING. Connectors shall be capable of being fully coupled and uncoupled without use of tools.

10. POLARIZATION. Connectors are polarized as denoted by their part numbers. This means that the master keyway is rotated to prevent mis-mating of similar connectors in a similar location. A plug with a given polarization letter will mate with a receptacle with same letter. The inserts do not rotate, only the keyway is rotated.

11. PART NUMBER. The following paragraphs contain information necessary for proper selection and procurement of connector (Figure 2).

12. Military Prefix. The prefix denotes military standard.

13. Shell Style. The shell style denotes type and mounting of the connector.

14. Class. The class indicates the environment resisting abilities.

15. Shell Size. The shell size is indicated by a progressive numbering system.

16. Coupling Type. The coupling type denotes bayonet or threaded coupling.

17. Insert Configuration. The insert configuration is the insert arrangement by number and size of contacts used.

18. Contact Style. The contact style is a letter denoting type of contact.

19. Alternate Polarizing Position. The alternate positions indicate insert polarization other than the normal position.

20. DESIGN AND CONSTRUCTION. Connectors and accessories are designed and constructed to withstand normal handling incidental to maintenance and installation (Figure 3).

21. INSERTS. The entire insert of the connector assembly is essentially one integral part designed to provide suitable support and sealing around contacts.

22. Crimp Snap-In Contacts. Snap-in contacts designed to AS39029 can be crimped with standard M22520/1 crimp tool.

23. Closed-Entry Socket Contacts. These contacts eliminate damage from abuse by test probes and help to correct any misaligned pins during engagement.

24. Contact Insertion. Insertion is accomplished from rear of connector. When contact is fully inserted, the clip tines snap securely behind contact shoulder.

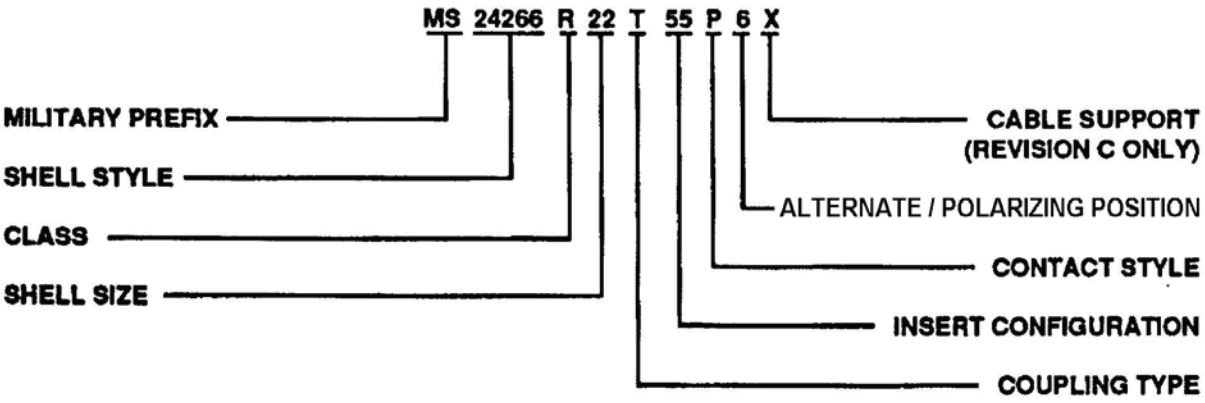
25. Contact Extraction. Extraction is accomplished with a front-inserted extraction tool.

26. Contact Retaining Clip. The retaining clip is completely encased in a tough plastic wafer to protect clip from damage.

27. Moisture Sealing. A complete seal is achieved by combining four seals; shell, peripheral, interfacial, and wire seals.

28. Shell Seal. Shell seal is effected when plug shell pushes against sealing ring in receptacle when connectors are mated.

29. Peripheral Seal. A peripheral seal is around the edge of pin insulator and designed so that when mating the connector, tension is put on seal and greatly reduces compression set.



SHELL STYLE

MS24264	WALL MOUNT RECEPTACLE.
MS24265	JAM NUT RECEPTACLE.
MS24266	STRAIGHT PLUG.
MS27034	HERMETIC SOLDER MOUNT RECEPTACLE.

CLASS

REVISION		DESCRIPTION
C	D OR E	
—	E	PASSIVATED STAINLESS STEEL, ENVIRONMENTAL SEAL
—	F	ALUMINUM, BLACK OR GRAY ANODIZE, ENVIRONMENTAL SEAL, FLUID RESISTANT
G	G	ALUMINUM, CONDUCTIVE FINISH, ENVIRONMENTAL SEAL
H*	H*	STEEL, TIN OR CADMIUM PLATE, HERMETIC SEAL
R	R	ALUMINUM, BLACK OR GRAY ANODIZE, ENVIRONMENTAL SEAL

* USED ONLY ON MS27034.

SHELL SIZE
8, 10, 12, 14, 16, 18, 20, 22 OR 24.

COUPLING TYPE

B	BAYONET.
T	THREADED.

INSERT CONFIGURATION
SEE FIGURE 6.

CONTACT STYLE

C	PIN SOLDER CUP CONTACTS (CLASS H ONLY).
E	PIN EYELET CONTACTS (CLASS H ONLY).
P	PIN CONTACTS.
S	SOCKET CONTACTS.

ALTERNATE / POLARIZING POSITION
SEE FIGURE 4.

CABLE SUPPORT (REVISION C ONLY)

BLANK	WITH CABLE SUPPORT.
X	NO CABLE SUPPORT.

Figure 2. MIL-DTL-26500 Part Number Breakdown

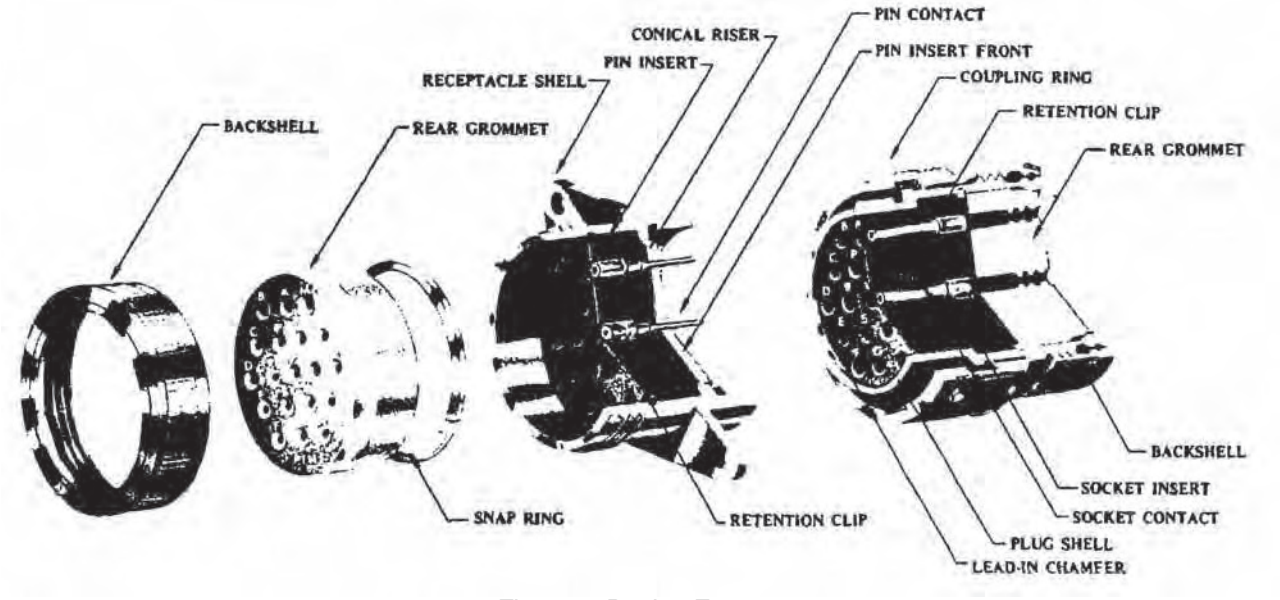


Figure 3. Design Features

30. Interfacial Seal. This seal is achieved by insulator faces meeting when the plug and receptacle are mated.

31. Wire Seal. The wire seal is accomplished by a multiple ripple design.

32. Insert Retention. Insert retention is accomplished by a hard plastic wafer firmly locked into a groove in shell, in addition a strong adhesive bond is used between insert and shell.

33. Keying. Keying is used in shell-enclosed connectors to obtain polarization, which assures correct location when mating a connector (Figure 4).

34. INSERT ARRANGEMENTS. The insert arrangement is the number and size of contacts available by shell size (Table 1). Insert arrangements are specified in MIL-STD-1554.

35. INSERT CONFIGURATION. The insert configuration is the manner in which the contacts are placed within the insert in a standard configuration. All arrangements identified in Table 1 are illustrated (Figure 5).

36. CONTACTS. Contacts are designed to prevent damage to contact retention device or sealing member during insertion or removal of contacts.

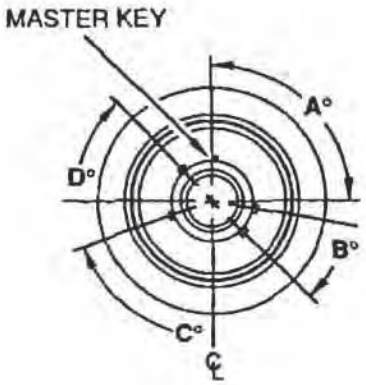
37. Fixed Contacts. Contacts in hermetically sealed receptacles are fixed non-removable, and solder-able, or feed through.

38. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

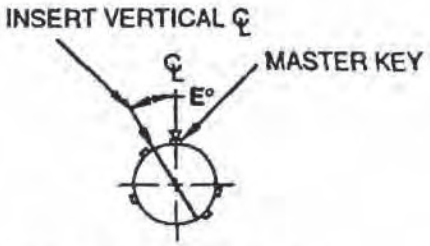
39. CONTACT APPLICATION. Contacts used are manufactured in accordance with AS39029. The contact part number breakdown is illustrated (Figure 6). The Basic Identification Number (BIN) or last three digits of contact part number, matches standard resistor color code (Figure 7).

40. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts range from size 12 through 20 and are of rear insertion, front release design. Contacts are listed by size. Match the required size to connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with Corresponding color bands (Table 2).

41. TOOLING. The procedures for attaching power contacts to a single conductor wire are the same for this connector series. Select proper tooling for specific contact part number (Table 3) and refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures.



KEY POSITIONS
VIEWED FROM
ENGAGING END
OF PLUG



PIN INSERT FACE VIEW
▽ INDICATES ℄ OF SHELL

INSERT POSITIONS
VIEWED FROM
ENGAGING END
OF PLUG

Shell Size	Polarizing Code	Key Positions				Insert Position
		A°	B°	C°	D°	E°
ALL	N	105	140	215	265	0
10, 12, 14, 16, 18, 20, 22, 24 (NOTE 1)	1	105	140	215	265	10
	2	105	140	215	265	20
	3	105	140	215	265	30
	4	105	140	215	265	40
18	5	105	140	215	265	50
8, 10	6	102	132	248	320	0
	7	80	118	230	312	0
	8	35	140	205	275	0
	9	64	155	234	304	0
10	10 (Y)	25	115	220	270	0
12, 14, 16, 18, 20, 22, 24	6	18	149	192	259	0
	7	92	152	222	342	0
	8	84	152	204	334	0
	9	24	135	199	240	0
	10 (Y)	98	152	268	338	0

NOTE 1. ALTERNATE POSITIONS 1 THRU 5 ARE FOR INTERCHANGEABILITY USE ONLY AND ARE NOT RECOMMENDED FOR NEW DESIGN.

Figure 4. MIL-DTL-26500 Keying Positions

Table 1. MIL-DTL-26500 Insert Arrangements

Shell Size Insert Arrangement	Service Rating (NOTE)	Contact Size				Number of Contacts
		20	16	12	Shielded	
8-2	I	2	-	-	-	2
8-3	I	3	-	-	-	3
8-98	I	3	-	-	-	3
10-2	I	2	-	-	-	2
10-5	I	5	-	-	-	5
10-20	I	-	2	-	-	2
12-3	I	-	3	-	-	3
12-12	I	12	-	-	-	12
14-3	I	-	2	-	1	3
14-4	I	-	-	4	-	4
14-5	I	-	-	-	4	4
14-7	I	-	7	-	-	7
14-12	I	9	3	-	-	12
14-15	I	15	-	-	-	15
16-10	I	-	10	-	-	10
16-24	I	24	-	-	-	24
18-8	I	-	-	8	-	8
18-9	I	-	-	2	6	8
18-11	I	-	10	-	1	11
18-14	I	-	14	-	-	14
18-31	I	31	-	-	-	31
20-16	I	-	16	-	-	16
20-25	I	19	-	6	-	25
20-28	I	24	-	4	-	28
20-39	I	37	2	-	-	39
20-41	I	41	-	-	-	41
22-12	I	.	-	12	-	12
22-13	I	-	-	1	11	12
22-14	I	-	-	3	9	12
22-19	I	-	19	-	-	29
22-32	I	26	-	6	-	32
22-55	I	55	-	-	-	55
24-19	I	-	-	19	-	19
24-43	I	23	20	-	-	43
24-57	I	55	-	2	-	57
24-61	I	61	-	-	-	61

NOTE:

Condition	Service Rating 1 AC RMS
Sea Level	1500
50,000 Feet	500
70,000 Feet	375
110,000 Feet	200

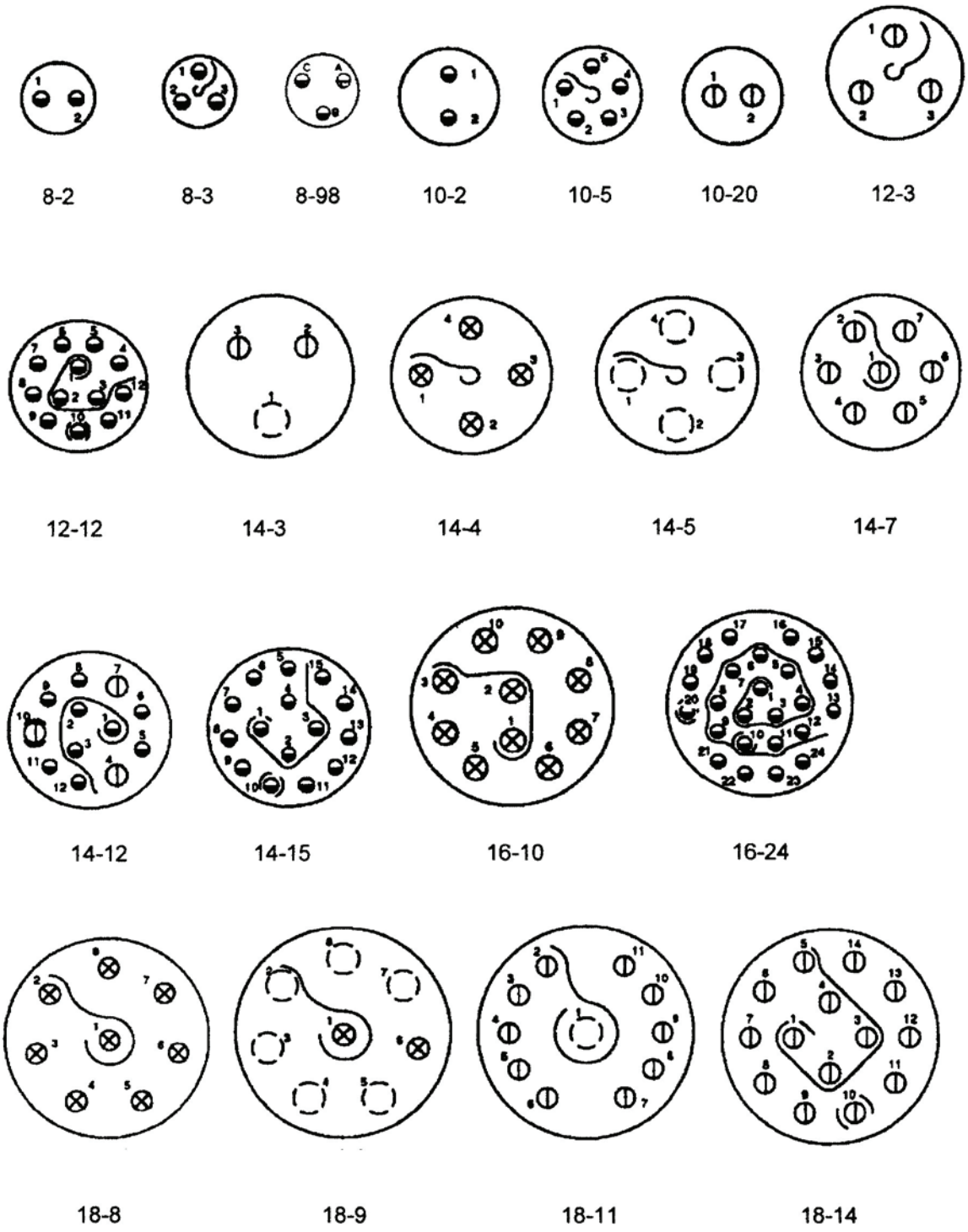
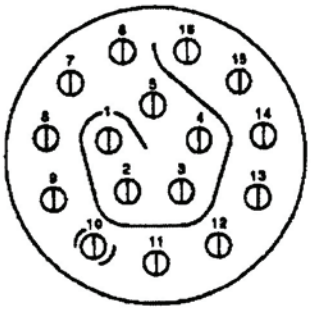


Figure 5. MIL-DTL-26500 Insert Configuration (Sheet 1 of 3)



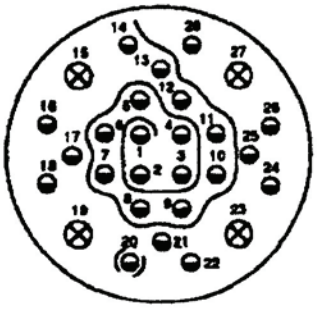
18-31



20-16



20-25



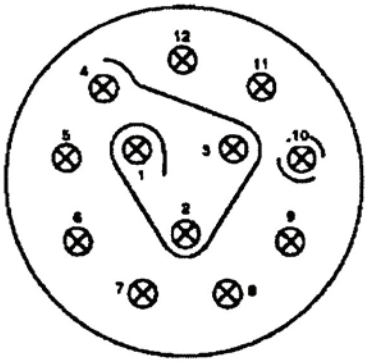
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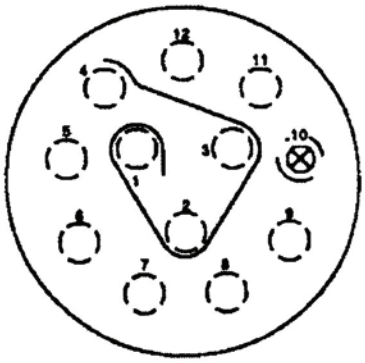
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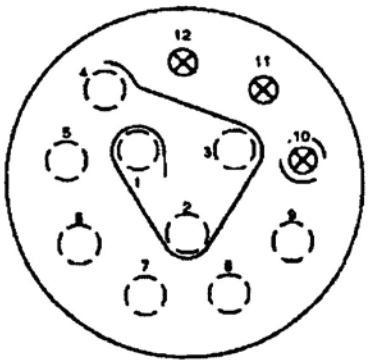
20-41



22-12

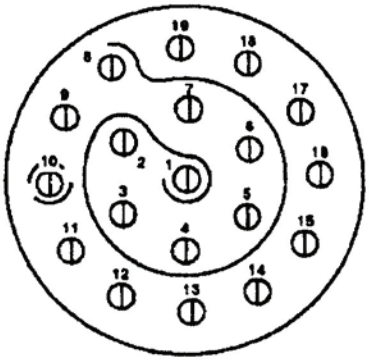


22-13



22-14

Figure 5. MIL-DTL-26500 Insert Configuration (Sheet 2 of 3)



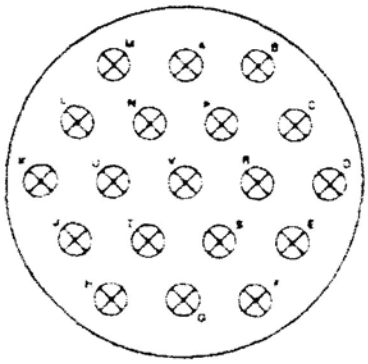
22-19



22-32



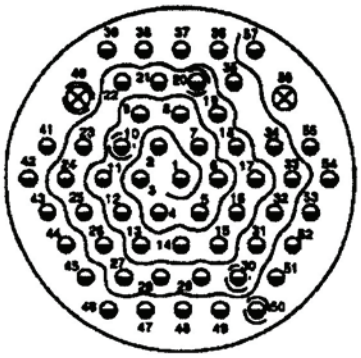
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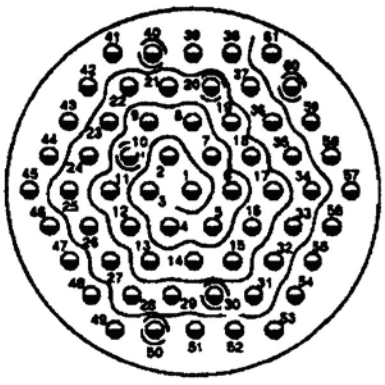
24-19



24-43



24-57



24-61

Figure 5. MIL-DTL-26500 Insert Configuration (Sheet 3 of 3)

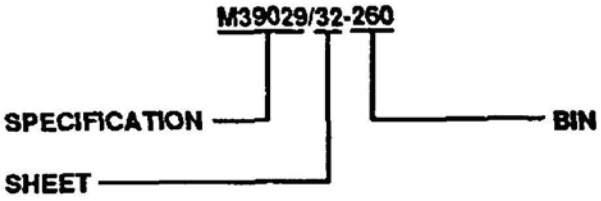


Figure 6. M39029/32-260 Part Number Breakdown

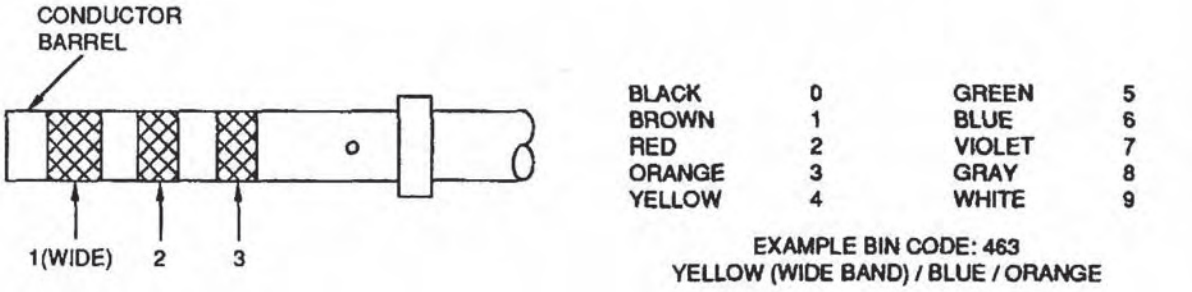


Figure 7. Basic Identification Number and Color Bands

Table 2. MIL-DTL-26500 Power and Shielded Contact Application

Contact Size	Wire Range	Socket Contacts				Pin Contacts				Remarks
		M39029/	Color Bands 1st	2nd	3rd	M39029/	Color Bands 1st	2nd	3rd	
20	20-24	32-260	RD	BL	BK	31-241	RD	YE	BN	
16	16-20	32-248	RD	YE	GY	31-229	RD	RD	WH	
12	12-14	32-254	RD	GN	YE	31-235	RD	OR	GN	
12	SHIELDED	55-344	OR	YE	YE	54-342	OR	YE	RD	
8	SHIELDED	55-345	OR	YE	GN	54-343	OR	YE	OR	

Table 3. MIL-DTL-26500 Power and Shielded Tooling

Socket Contact M39029/	Pin Contacts M39029/	Insertion Tool M81969/	Removal Tool M81969/	Crimp Tool M22520/	Positioner M22520/
32-260	31-241	17-09	19-07	1-01 or 2-01	1-02 RD or 2-02
32-248	31-229	17-04	19-08	1-01	1-02 BL
32-254	31-235	14-05	19-09	1-01	1-02 YE
55-344	54-342	17-05	19-09	5-01	2-33 AND 5-08
55-345	55-343	17-06	—	5-01	2-24 AND 5-10

42. COAXIAL CONTACTS. When routing coaxial cable through connectors, coaxial contacts are superior to other coaxial cable shield termination methods. The shield integrity is maintained across the contact body. The coaxial cable groups listed (Table 2) can be interconnected through MIL-DTL-26500 connector size 8 and 12 contact cavities. Match the required contact size to connector application and cable group. When crimping center contact for these cables, use crimp tool selector knob settings specified. Socket and pin contact part numbers are listed along with corresponding color bands. Socket coaxial contacts have a pin center contact. Pin coaxial contacts have a socket center contact.

43. CABLE AND COAXIAL CONTACT ASSEMBLY. To assemble coaxial contacts to applicable cable identify cable by part number. Select proper tooling by contact size (Table 3).

44. CABLE CLAMP/STRAIN RELIEF REMOVAL AND INSTALLATION. For cable clamp/strain relief removal and installation refer to WP 009 03.

45. CONNECTOR BUILD-UP.

46. WIRE DIAMETER BUILD-UP. If wire outside diameter is not large enough to fill wire sealing grommet holes, build-up wire outside diameter by applying heat-shrinkable insulating sleeving. This must be accomplished prior to contact insertion.

47. WIRE STRIPPING. Strip wire in accordance with the following procedure:

a. Cut wire to proper length. Ensure enough wire remains for adequate strain relief without leaving excess slack.

b. Strip insulation from end (NAVAIR 01-1A-505-1, WP 009 00). Select contact (Table 2).

48. CONTACT CRIMPING. Crimp contact in accordance with following procedure:

a. Select crimp tool frame and positioner (Table 3).

b. Perform die closure check. Install positioner and set selector knob for gage of wire.

c. Insert stripped wire into contact conductor barrel. Ensure all wire strands are inside contact conductor barrel and visible in contact inspection hole (Figure 8).

d. If insulation gap is too large, trim conductor as required. If insulation gap is too small, trim insulation as required.

e. Crimp contact to wire.

49. CONTACT INSERTION. Insert wired or unwired contacts in accordance with following procedure:

a. Remove sealing plug and/or contact from contact cavity (Paragraph 53).

b. Ensure wire or cable on contact is routed through backshell.

c. Select correct insertion tool (Table 3).

d. Place wire and contact assembly into colored end tip of insertion tool (Figure 9). Ensure tool tip is over contact conductor barrel and butted against contact shoulder.

e. Insert tip of contact into cavity. Start contact insertion near connector center cavities and work outward.

f. Axially align contact with contact cavity.

g. With firm even pressure, press tool against contact shoulder and seat contact into cavity (Figure 10). A slight click may be heard as retention tines snap into place behind contact shoulder.

h. Pull tool straight out of contact cavity. Remove tool from wire. Pull back lightly on wire to ensure contact is properly seated.

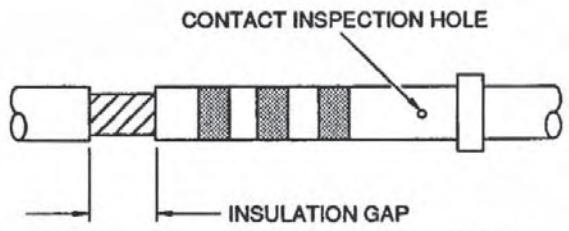
i. Seal connector as required (Paragraph 50) and install backshell.

50. CONNECTOR SEALING.

51. Sealing Plugs. Seal connector in accordance with following procedure:

a. Fill all unused cavities with un-crimped contacts (Paragraph 49).

b. Insert sealing plug, large diameter first, until bottomed in contact cavity (Figure 11). Fill all cavities that have un-crimped contacts. Preserve connector in accordance with NAVAIR 01-1A-505-1, WP 026 00.



CONTACT SIZE	WIRE AWG	INSULATION GAP
22D 22M 22 20	26 24 22 20	1/32" MIN 1/16" MAX
16 12	20 18 16 14 12	1/32" MIN 5/64" MAX
8	10 8	1/32" MIN TWICE DIA WIRE INSULATION MAX

Figure 8. Insulation Gap

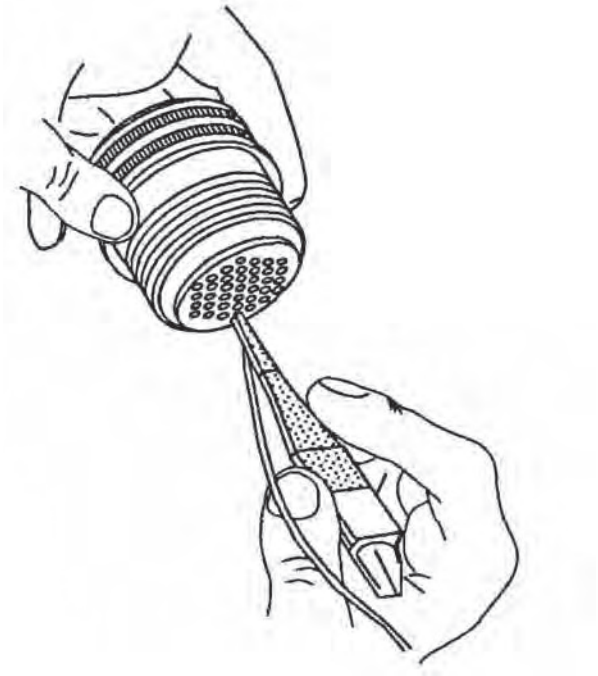


Figure 10. Contact Insertion

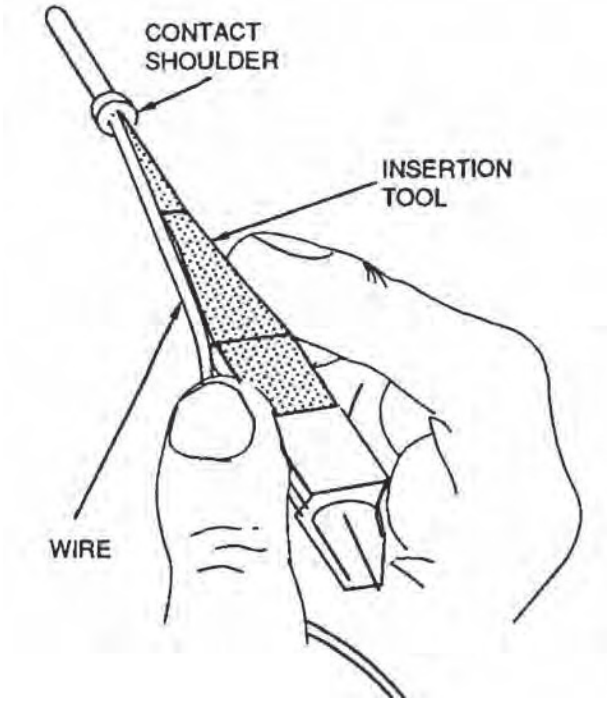


Figure 9. Inserting Contact into Insertion Tool

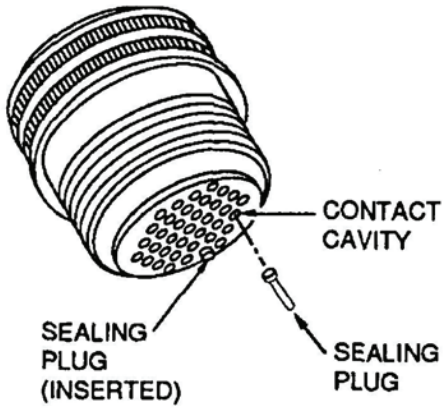


Figure 11. Inserting Sealing Plug into Contact Cavity

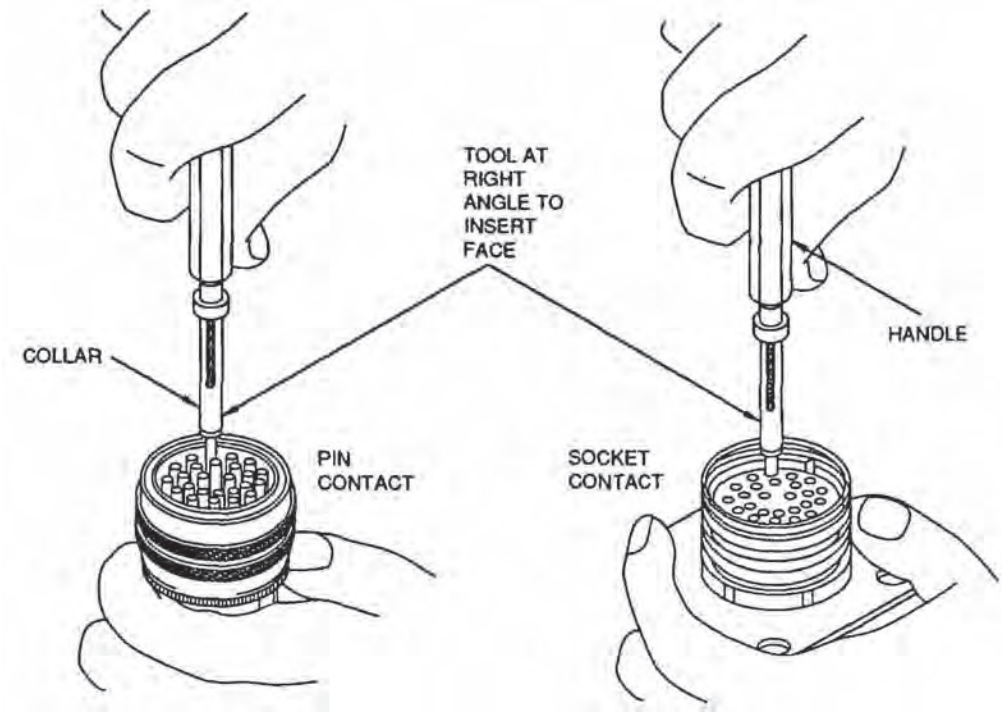


Figure 12. Removing Contact from Connector

52. Moisture Barrier. For connector sealing procedures, including application of sealant to grommet sealed connectors, refer to NAVAIR 01-1A-505-1, WP 025 00.

53. CONTACT REMOVAL. Remove wired, unwired, and broken wire contacts in accordance with following procedure:

a. Select correct removal tool (Table 3).

b. If contact is unwired, remove sealing plug from contact cavity of contact to be removed.

c. Working from front (mating end) of connector, slide hollow end of removal tool over contact (Figure 12).

d. Holding removal tool at right angle to front insert face, push tool straight toward rear of connector, firmly pressing tool to positive stop when tool bottoms in insert cavity.

e. Maintain pressure on tool handle and slide collar of tool forward until it stops. Contact will be partially ejected from rear of connector insert.

f. Remove tool by pulling straight back to clear connector insert face. Remove contact out rear of connector by pulling lightly on wire or using a mating contact to push out released contact.

54. CONNECTOR REMOVAL AND INSTALLATION. If the connector is severely damaged or cannot be repaired using the above procedures, proceed as follows:

a. Starting from outside of damaged connector, tag wires and remove all contacts from connector (Paragraph 53). If contact cannot be removed, cut wire as close to connector as possible and attach new contact (Paragraphs 47 and 48).

b. Starting from center of new connector, insert contact into correct cavity (Paragraph 50). Remove tag from wire. Repeat procedure until all contacts are installed in new connector.

55. CONNECTOR BUILD-UP, SOLDER CONTACTS.

56. For build-up procedures for solder contacts refer to NAVAIR 01-1A-505-1, WP 016 00.

57. CONNECTOR CLEANING AND PRESERVATION.

58. For connector cleaning and corrosion control procedures refer to NAVAIR 01-1A-505-1, WP 026 00.

CONNECTOR ACCESSORIES
MIL-DTL-26500

Reference Material

Connectors, General Purpose, Electrical, Miniature, Circular, Environment Resisting,
General Specification for MIL-DTL-26500

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Special Tools 2

Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
BT Series	Adapter Tools
BT-BS-601	Wrench, Strap
BT-BS-609	Wrench, Strap
BT-BS-611	Wrench, Strap
BT-BS-618	Wrench, Strap
BT-BS-625	Wrench, Strap
BT-BS-630	Wrench, Strap
BT-HT-107	T-handle

Materials Required

Specification/ Part No.	Nomenclature
A-A-52080 thru A-A-52084	Tape, Lacing
P-2740FR	Tape, Silicone Rubber
4529670544	Tape, Silicone Rubber

1. INTRODUCTION.

2. This Work Package (WP) covers connector accessories used with MIL-DTL-26500 series connectors, their function, associated tools, assembly, and procurement information.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, the Society of Automotive Engineers (SAE), will become the preparing activity and the Navy will adopt the documents, the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

3. CONNECTOR ACCESSORIES. Connector accessories are components added to a connector to help maintain its operational characteristics. These accessories are divided into the following categories:

a. Backshells.

b. Connector Assembly Tools.

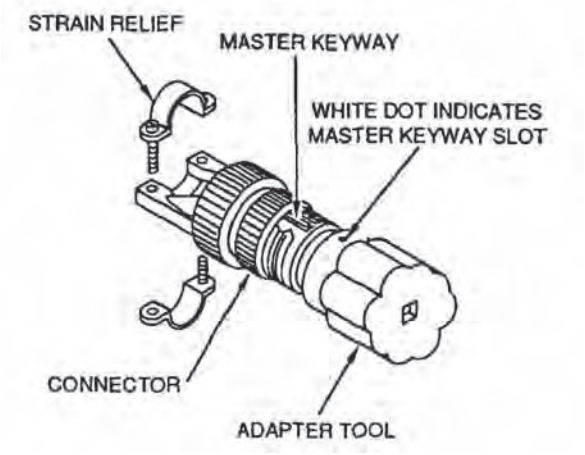


Figure 1. Adaptor Tool

c. Dummy Receptacles.

d. Dust Caps.

e . Shrink Boots and Adapters.

f. Conduit Fittings.

g. Gaskets for Flange Mount Receptacles.

h. Mounting Nut for Jam Nut Receptacles.

i. Rubber Bushings.

j. Sealing Plugs.

4. BACKSHELLS. Backshells are the most complex connector accessories and simply stated they are any device added to rear or wiring side of a connector. Backshells may be divided into the following categories:

a. Cable Clamps and Strain Reliefs.

b. EMI/RFI Grounding Terminators.

5. MIL-DTL-26500 CONNECTOR ACCESSORIES.

6. SPECIAL TOOLS. Connector backshells come in a wide variety of types depending on the application. To install backshells or accessories, adapter tools and a strap wrench are needed. Adapter tools (Figure 1) are used to hold the connector during backshell installation and removal, Special tools are used to prevent damage to connector shells and accessories.

7. ADAPTER TOOL SELECTION. To select proper tool, shell size and type of connector plug or receptacle, must be known. Select proper adapter tool from Table 1.

Table 1. MIL-C-26500 Adaptor Tools

		Part Number			
Shell Size	Polarization	Plug	Color Code	Receptacle	Color Code
8	All	BT264-8	Orange	BT264R-8	Orange
10	All	BT264-10	Orange	BT264R-10	Orange
12	All	BT264-12	Orange	BT264R-12	Orange
14	All	BT264-14	Orange	BT264R-14	Orange
16	All	BT264-16	Orange	BT264R-16	Orange
18	All	BT264-18	Orange	BT264R-18	Orange
20	All	BT264-20	Orange	BT264R-20	Orange
22	All	BT264-22	Orange	BT264R-22	Orange
24	All	BT264-24	Orange	BT264R-24	Orange

8. ADAPTER TOOL ACCESSORIES. To hold adapter tool and to keep the connector from turning when installing or removing backshells or accessories the use of a ¼ inch drive T-handle is recommended. A strap wrench is used on backshell for installation and removal to apply even pressure without causing damage to accessories (Figure 2).

9. CABLE CLAMPS/STRAIN RELIEFS. The following two paragraphs explain the two types of cable support or clamping devices.

10. Cable Clamps. A cable clamp is a support or clamping device which requires use of an intermediate component for attachment to back of connector. Illustrated are the following cable clamps and strain reliefs: MS27291 (Figure 3), MS27558 (Figure 4), MS27559 (Figure 5), and MS27657 (Figure 6). The MS27658 (Figure 7) and MS27659 (Figure 8) are provided for reference only, as they have been cancelled without replacement.

11. Strain Reliefs. A Strain relief is a support or clamping device which attaches directly to connector (Figures 3 through 8).

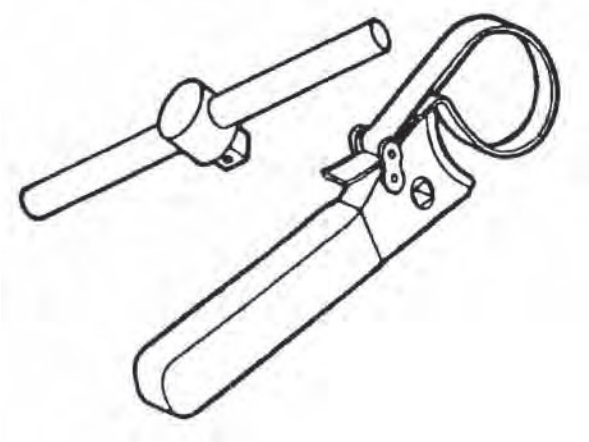
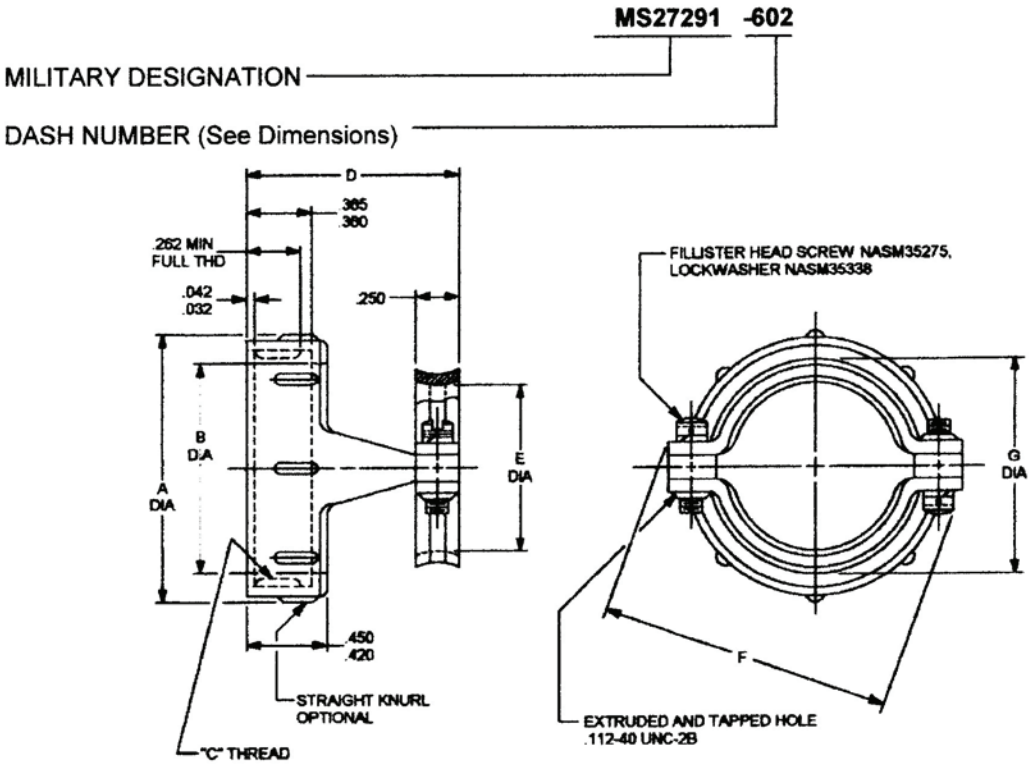


Figure 2. Adaptor Tool Accesories

PART NUMBER DESIGNATION



DIMENSIONS

MS PIN	For use with connector class	Shell size	A max dia	B dia ± .005
MS27291-1	R, F	10	.731	.459
MS27291-101	G	10	.731	.459
MS27291-2	R, F	12	.919	.636
MS27291-201	G	12	.919	.636
MS27291-3	R, F	14	.981	.698
MS27291-301	G	14	.981	.698
MS27291-4	R, F	16	1.106	.823
MS27291-401	G	16	1.106	.823
MS27291-5	R, F	18	1.231	.941
MS27291-501	G	18	1.231	.941
MS27291-6	R, F	22	1.481	1.191
MS27291-601	G	22	1.481	1.191
MS27291-13	R, F	8	.606	.334
MS27291-701	G	8	.606	.334
MS27291-14	R, F	20	1.356	1.066
MS27291-801	G	20	1.356	1.066
MS27291-15	R, F	24	1.606	1.316
MS27291-901	G	24	1.606	1.316

Figure 3. Cable Clamp-Strain Relief MS27291 (Sheet 1 of 3)

DIMENSIONS (Continued)

MS PIN	For use with connector class	Shell size	"C" Nom UNEF-2B thread	D ± .015	E dia ± .015	F max	G dia max.
MS27291-1	R, F	10	.5625-24	.935	.270	.914	.435
MS27291-101	G	10	.5625-24	.935	.270	.914	.435
MS27291-2	R, F	12	.750	.935	.400	1.026	.565
MS27291-201	G	12	.750	.935	.400	1.026	.565
MS27291-3	R, F	14	.8125	1.170	.460	1.090	.625
MS27291-301	G	14	.8125	1.170	.460	1.090	.625
MS27291-4	R, F	16	.9375	1.170	.610	1.250	.775
MS27291-401	G	16	.9375	1.170	.610	1.250	.775
MS27291-5	R, F	18	1.0625	1.170	.690	1.358	.855
MS27291-501	G	18	1.0625	1.170	.690	1.358	.855
MS27291-6	R, F	22	1.3125	1.170	.940	1.604	1.105
MS27291-601	G	22	1.3125	1.170	.940	1.604	1.105
MS27291-13	R, F	8	.4375	.935	.186	.789	.351
MS27291-701	G	8	.4375	.935	.186	.789	.351
MS27291-14	R, F	20	1.1875	1.170	.816	1.481	.981
MS27291-801	G	20	1.1875	1.170	.816	1.481	.981
MS27291-15	R, F	24	1.4375	1.170	1.066	1.729	1.231
MS27291-901	G	24	1.4375	1.170	1.066	1.729	1.231

Figure 3. Cable Clamp-Strain Relief MS27291 (Sheet 2 of 3)

DIMENSIONS (Continued)

MS PIN	For use with connector class	Shell size	A max dia.	B dia ± .005	"C" -36NS2A thread
MS27291-702	E	08	.606	.334	.4340
MS27291-102	E	10	.731	.459	.5634
MS27291-202	E	12	.919	.631	.7334
MS27291-302	E	14	.981	.698	.8032
MS27291-402	E	16	1.106	.823	.9302
MS27291-502	E	18	1.231	.941	1.0362
MS27291-802	E	20	1.356	1.066	1.1611
MS27291-602	E	22	1.481	1.191	1.2862
MS27292-902	E	24	1.606	1.316	1.1111

MS PIN	For use with class connector	Shell size	D ± .015	E dia. ± .015	F max	G dia max
MS27291-702	E	08	.935	.186	.769	.351
MS27291-102	E	10	.935	.270	.914	.435
MS27291-202	E	12	.935	.400	1.026	.565
MS27291-302	E	14	1.170	.460	1.090	.625
MS27291-402	E	16	1.170	.610	1.250	.775
MS27291-502	E	18	1.170	.690	1.358	.855
MS27291-802	E	20	1.170	.816	1.481	.981
MS27291-602	E	22	1.170	.940	1.604	1.105
MS27292-902	E	24	1.170	1.066	1.729	1.231

NOTES:
1. Inactive for new design. For new design use: MIL-DTL-83723, Series III
2. Dimensions are in inches, after plating
3. Cable strap; aluminum alloy in accordance with SAE-AMS-QQ-A-367 or ASTM-B209 or stainless steel type, 300 or 216 series. Cable strap for use with class R and F connectors. For aluminum alloy, anodize in accordance with MIL-A-8625 or suitable hard anodizing process to meet the performance requirements of MIL-DTL-26500 and MIL-DTL-83723. For stainless steel the finish shall be black oxide or equivalent.
4. Cable strap for use with class G connectors; for stainless steel, chromium plating in accordance with SAE-AMS-QQ-C-320, class 2a, type II, .0002 minimum thickness.
5. Cable support; aluminum alloy in accordance with ASTM-B85 composition 13, A13, A380, or 380. Cable support use with class R and F connectors; for aluminum alloy, in accordance with MIL-A-8625 or suitable hard anodizing process to meet the performance requirements of MIL-DTL-26500 and MIL-DTL-83723.
6. Cable support for use with class G connectors; for aluminum alloy, chromium plating in accordance with SAE-AMS-QQ-C-320, class 2a, type II, .0002 minimum thickness.
7. All threads are as per FED-STD-H28.

Figure 3. Cable Clamp-Strain Relief MS27291 (Sheet 3 of 3)

PART NUMBER DESIGNATION

MS27558 -4

MILITARY DESIGNATION

DASH NUMBER (See Dimensions)

MATERIAL: ALUMINUM ALLOY
FINISH: ANODIZE PER MIL-A-8625

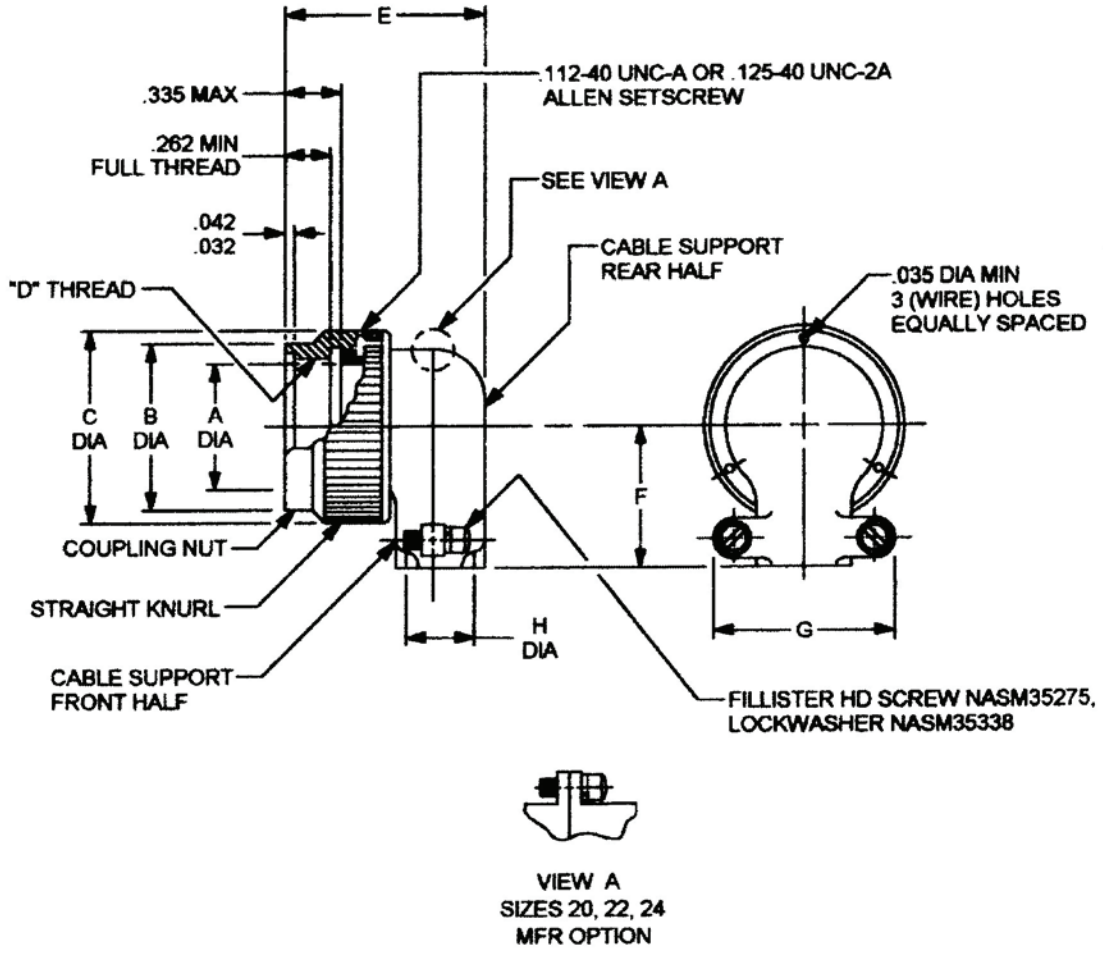


Figure 4. Cable Clamp-Strain Relief MS27558 (Sheet 1 of 2)

DIMENSIONS

MS Part or Identifying Number (PIN)	Size	A dia	B dia max	C dia max
MS27558-1	8	.348	.532	.672
MS27558-2	10	.440	.657	.797
MS27558-3	12	.600	.845	1.016
MS27558-4	14	.684	.907	1.110
MS27558-5	16	.789	1.032	1.234
MS27558-6	18	.922	1.157	1.360
MS27558-7	20	1.053	1.282	1.485
MS27558-8	22	1.172	1.407	1.610
MS27558-9	24	1.302	1.532	1.735

MS PIN	D Thread UNEF-28	E max	F max	G max	H dia
MS27558-1	.4375-28	1.200	.602	.892	.240
MS27558-2	.5625-24	1.320	.650	1.072	.365
MS27558-3	.750-20	1.320	.740	1.072	.365
MS27558-4	.8125-20	1.487	.775	1.108	.515
MS27558-5	.9375-20	1.470	.830	1.108	.515
MS27558-6	1.0625-18	1.588	.897	1.233	.640
MS27558-7	1.1875-18	1.759	.955	1.477	.775
MS27558-8	1.3125-18	1.759	1.015	1.477	.775
MS27558-9	1.4375-18	2.027	1.077	1.727	1.060

NOTES:
1. Dimensions are in inches, after plating
2. All threads are as per MIL-S-7742
3. Coupling nut securely captivated to cable support and has provisions for locking in an indexed position.
4. Aluminum components anodize in accordance with MIL-A-8625 or suitable hard anodizing process to meet the performance requirements of MIL-DTL-26500.
5. Cable support; Aluminum alloy in accordance with ASTM B26 composition 13, A13, A380, or 380.
6. Coupling; Aluminum alloy in accordance with ASTM B211 or SAE-AMS-QQ-A-367. ..
7. Part or Identifying Number (P/N): MS27558- (see tables for dash numbers)

Figure 4. Cable Clamp-Strain Relief MS27558 (Sheet 2 of 2)

PART NUMBER DESIGNATION

MS27559 -9

MILITARY DESIGNATION

DASH NUMBER (See Dimensions)

MATERIAL: ALUMINUM ALLOY
FINISH: ANODIZE PER MIL-A-8625

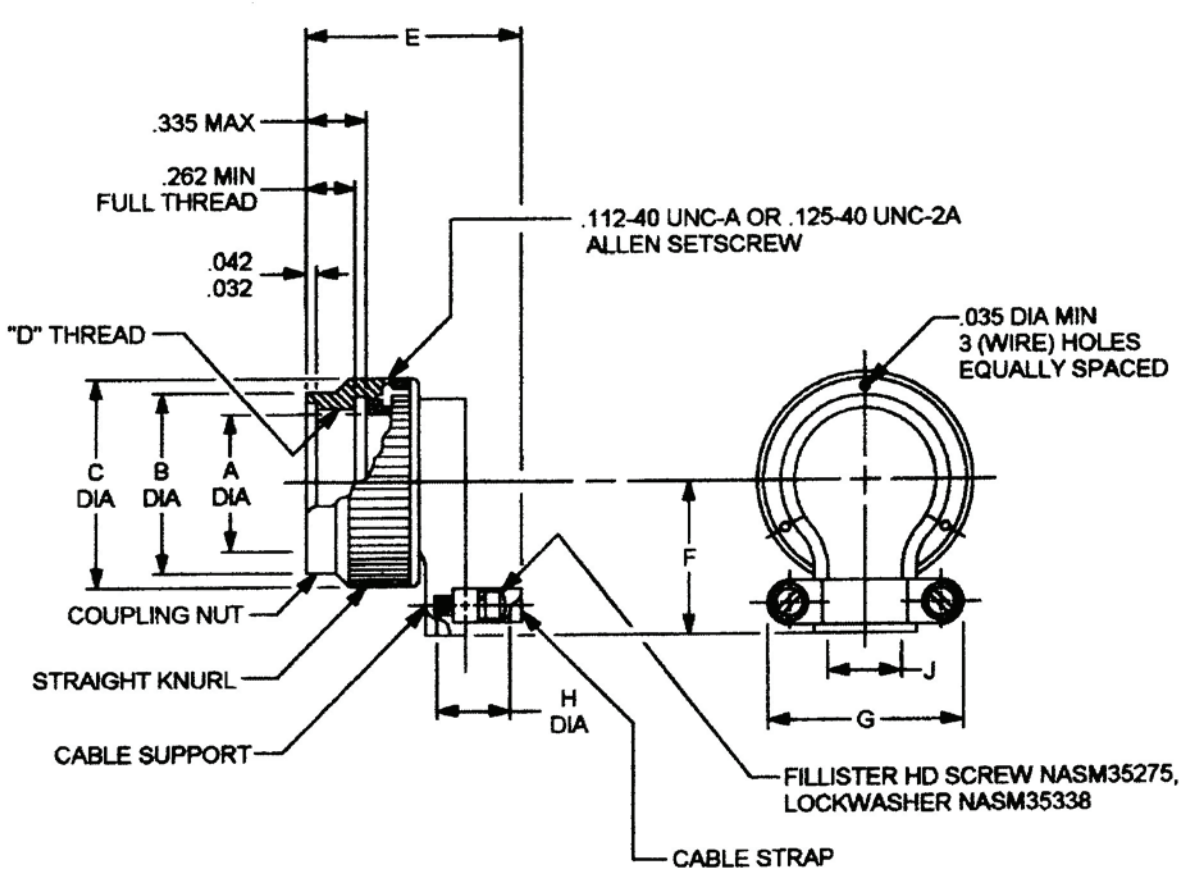


Figure 5. Cable Clamp-Strain Relief MS27559 (Sheet 1 of 2)

DIMENSIONS

MS Part or Identifying Number (PIN)	Size	A dia	B dia max	C dia max	D thread UNEF-28
MS27559-1	8	.348	.532	.672	.4375-28
MS27559-2	10	.440	.657	.797	.5625-24
MS27559-3	12	.600	.845	1.016	.750-20
MS27559-4	14	.684	.907	1.110	.8125.20
MS27559-5	16	.789	1.032	1.234	.9375-20
MS27559-6	18	.922	1.157	1.360	1.0625-18
MS27559-7	20	1.053	1.282	1.485	1.1875-18
MS27559-8	22	1.172	1.407	1.610	1.3125-18
MS27559-9	24	1.302	1.532	1.735	1.4375-18

MS PIN	E max	F max	G max	H max	J dia max
MS27559-1	1.200	.602	.892	.201	.245
MS27559-2	1.320	.650	1.072	.328	.370
MS27559-3	1.320	.740	1.072	.388	.370
MS27559-4	1.487	.775	1.108	.452	.520
MS27559-5	1.470	.830	1.108	.508	.520
MS27559-6	1.588	.897	1.233	.571	.645
MS27559-7	1.759	.955	1.477	.748	.780
MS27559-8	1.759	1.015	1.477	.748	.780
MS27559-9	2.027	1.077	1.727	.996	1.065

NOTES:
1. Dimensions are in inches, after plating
2. All threads are as per MIL-S-7742
3. Coupling nut securely captivated to cable support and has provisions for locking in an indexed position.
4. Aluminum components anodize in accordance with MIL-A-8625 or suitable hard anodizing process to meet the performance requirements of MIL-DTL-26500.
5. Cable support; Aluminum alloy in accordance with ASTM B26 composition 13, A13, A380, or 380.
6. Coupling; Aluminum alloy in accordance with ASTM B211 or SAE-AMS-QQ-A-367. ..
7. Part or Identifying Number (P/N): MS27559- (see tables for dash numbers)
8. Inactive for Air Force new design.

Figure 5. Cable Clamp-Strain Relief MS27559 (Sheet 2 of 2)

PART NUMBER DESIGNATION

MS27657 -16

MILITARY DESIGNATION

DASH NUMBER (See Dimensions)

MATERIAL:
CABLE CLAMP: Stainless Steel, Passivate
CLAMP SECTOR: Passivated 300 OR 216 Series Steel
SCREW: Number 4-40, Round, Machine Head, Stainless Steel

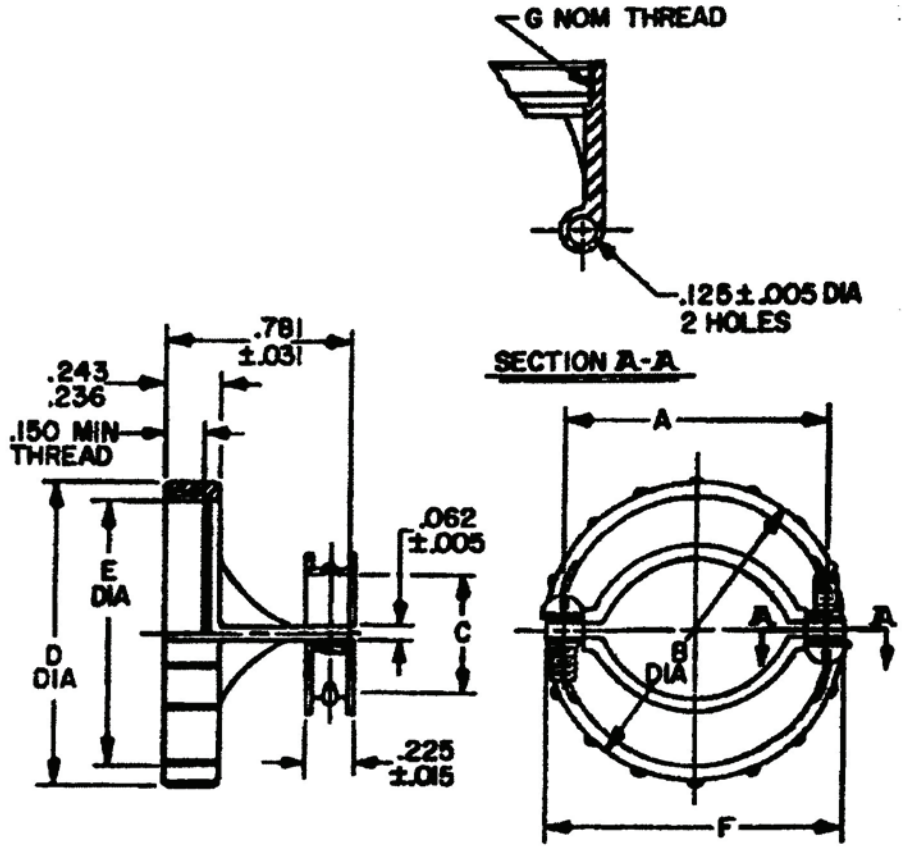


Figure 6. Cable Clamp-Strain Relief MS27657 (Sheet 1 of 2)

DIMENSIONS

MS Part or Identifying Number (PIN)	A dia ± .005	B dia ± .015	C ± .015	D ± .015	E ± .005	F ± .015	G Nom -36NS-2B	Weights (lbs) ± 5 %
MS27657-1	.679	.842	.382	.862	.717	.867	.8032	.012
MS27657-2	.806	.969	.462	.989	.844	.994	.9302	.014
MS27657-3	.912	1.075	.556	1.095	.950	1.100	1.0362	.015
MS27657-4	1.162	1.325	.608	1.345	1.200	1.350	1.2862	.018

MS (PIN)	A dia ± .005	B dia ± .015	C ± .015	D ± .015	E ± .005	F ± .015	G Nom -36NS-2B	Weights (lbs) ± 5 %
MS27657-14	.679	.842	.230	.862	.717	.867	.8032	.012
MS27657-16	.806	.969	.292	.989	.844	.994	.9302	.014
MS27657-18	.912	1.075	.392	1.095	.950	1.100	1.0362	.015
MS27657-22	1.162	1.325	.516	1.345	1.200	1.350	1.2862	.018

NOTES:
1. Dimensions are in inches, after plating
2. Unless otherwise specified, tolerances are + / - .010
3. Inactive for Air Force new design; use MIL-DTL-83723

Figure 6. Cable Clamp-Strain Relief MS27657 (Sheet 2 of 2)

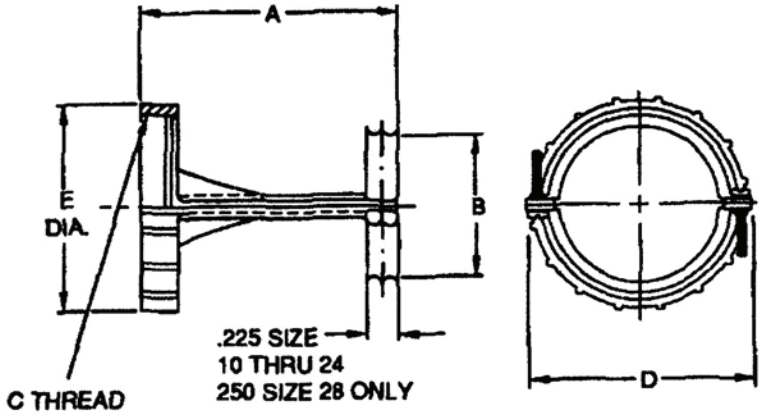
NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

PART NUMBER DESIGNATION

MS27658 - 18

MIL SPEC — DASH NO. SEE DIMENSIONS.

MATERIAL: STAINLESS STEEL.
FINISH: PASSIVATE.



DIMENSIONS

Dash No.	MIL-C-26500 Class E, K Connector Size	A ±.015	B Dia. Max.	C Thread -36NS-2B	D ±.015	E ±.010
-12	12	1.070	.435	.7334	.863	.788
-14	14	1.170	.504	.8032	.934	.862
-16	16	1.270	.686	.9302	1.109	.989
-18	18	1.370	.794	1.0362	1.225	1.095
-22	22	1.570	1.038	1.2862	1.484	1.345
-24	24	1.670	1.162	1.4111	1.613	1.595
-28	28	1.870	1.412	1.6611	1.844	1.845

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

Figure 7. Cable Clamp-Strain Relief MS27658

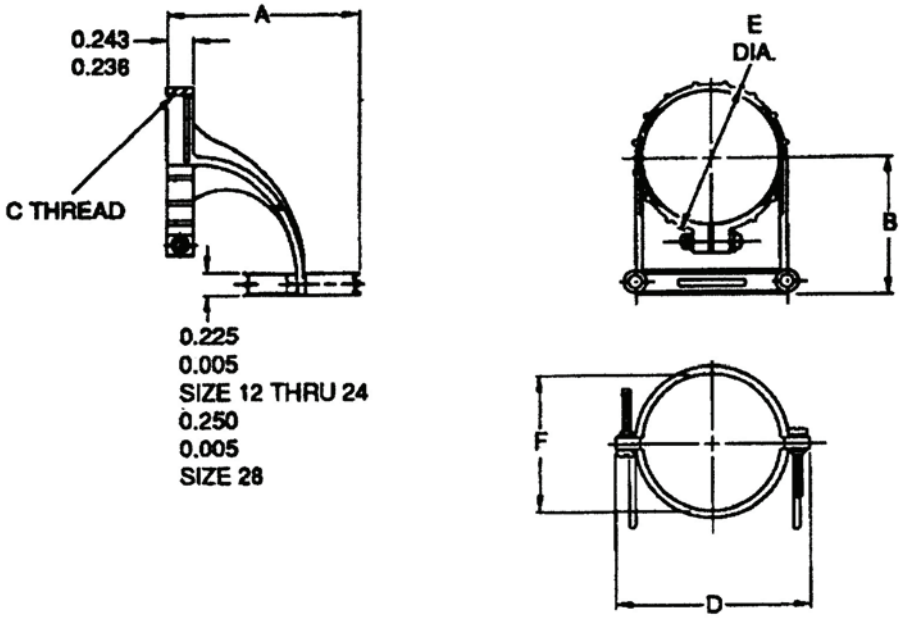
NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

PART NUMBER DESIGNATION

MS27659 - 24

MIL SPEC — DASH NO. SEE DIMENSIONS.

MATERIAL: STAINLESS STEEL.
FINISH: PASSIVATE.



DIMENSIONS

Dash No.	MIL-C-26500 Class E, K Connector Size	A Max.	B Max.	C Thread -36NS-2B	D ±.015	E ±.010	F ±.015
-12	12	1.298	.950	7334	.863	.788	.435
-14	14	1.388	1.010	.8032	.934	.862	.504
-16	16	1.523	1.070	.9302	1.109	.989	.686
-18	18	1.622	1.130	1.0362	1.225	1.095	.749
-22	22	1.878	1.260	1.2862	1.484	1.345	1.038
-24	24	2.000	1.320	1.4111	1.613	1.595	1.162
-28	28	2.250	1.440	1.6611	1.844	1.845	1.412

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

Figure 8. Cable Clamp-Strain Relief MS27659

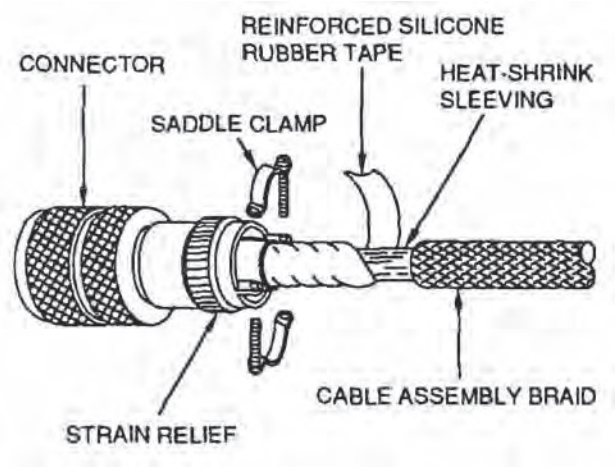


Figure 9. Saddle Clamp Removal and Instalation

12. CABLE CLAMP-TYPE STRAIN RELIEF REMOVAL.

a. Loosen saddle clamp screws (Figure 9).

b. Unwrap any reinforcing silicone tape.

CAUTION

Ensure white dot on adapter tool aligns with master key of connector. Spinning tool on connector will cause damage to tool and/or connector (Figure 1).

c. Mate adapter tool to connector. Ensure white dot on adapter tool aligns with master key of connector (Figure 1).

d. Install strap wrench around part to be removed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 10).

e. Insert T-handle into socket of adapter tool to provide holding (Figure 10).

f. To loosen strain relief apply force counterclockwise as viewed from connector rear (Figure 11).

g. Secure strain relief parts/accessories to bundle to prevent loss.

13. CABLE CLAMP-TYPE STRAIN RELIEF INSTALLATION. Upon the completion of connector repair (NAVAIR 01-1A-505-1) install the strain relief using the following procedure:

a. Wrap cable with reinforcing silicone tape to build cable diameter where necessary (Figure 9).

b. Un-tape, or detach the strain relief which was temporarily secured from the bundle. Start strain relief on to connector by hand to prevent cross-threading.

c. Select the correct adapter tool (Table 1), T-handle, and strap wrench (Figure 2).

CAUTION

Ensure white dot on adapter tool aligns with master keyway of connector (Figure 1). Spinning tool on connector will cause damage to tool and/or connector.

d. Mate adapter tool to connector. Align white dot on adapter tool with master keyway of connector (Figure 1).

e. Install strap wrench around part to be installed. Draw strap tightly through locking link. Strain relief will rest on nose of wrench (Figure 10).

f. Insert T-handle into socket of adapter tool to provide holding (Figure 10).

NOTE

Refer to NAVAIR 01-1A-505-1 WP 011 01, Table 1, for torque value information on AS85049 connector backshells.

g. To tighten strain relief apply force clockwise as viewed from connector rear (Figure 12).

h. Restore proper dress of wire at connector. Wire should not elongate grommet holes, pull tightly, or be kinked.

i. Tighten screws in saddle clamp to provide firm gripping action preventing wire movement (Figure 9).

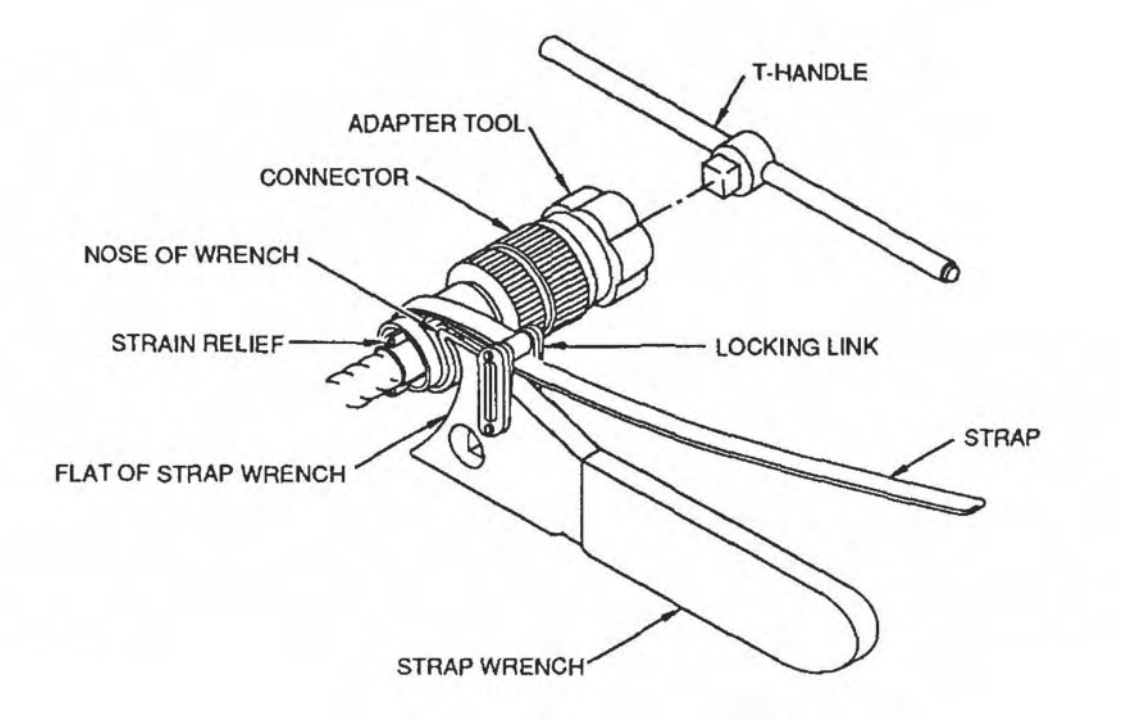


Figure 10. Strap Wrench Setup and Adjustment

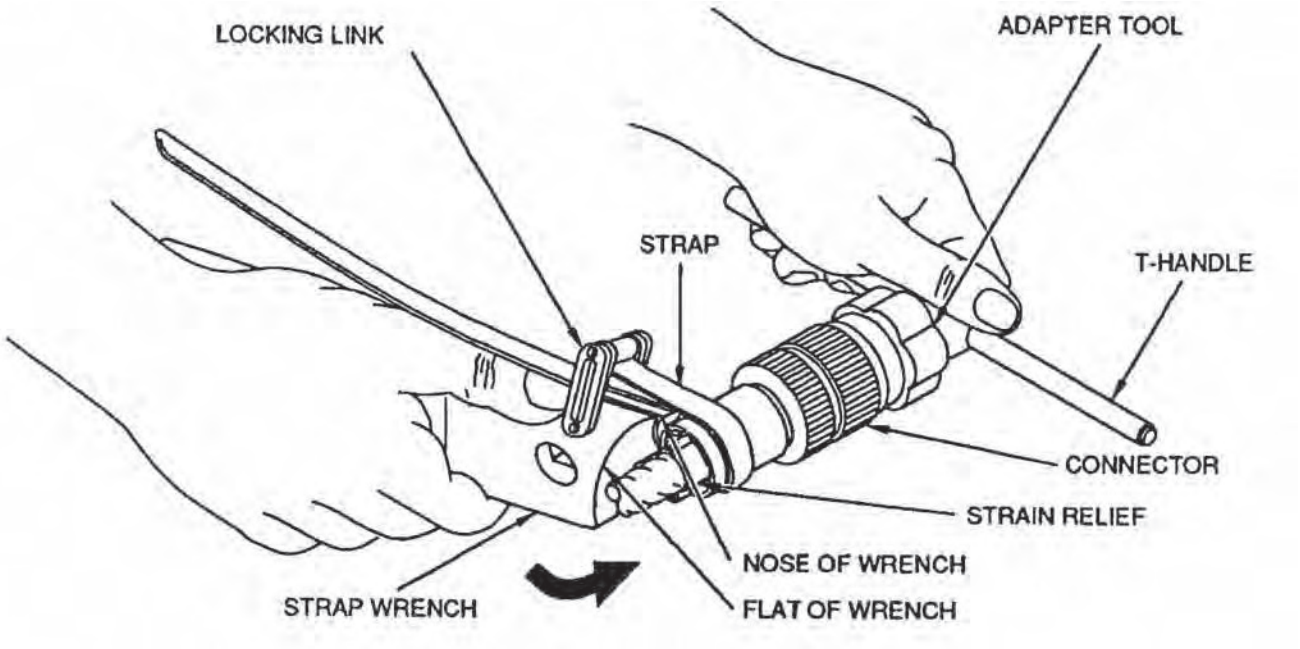


Figure 11. Loosening Position of Wrench

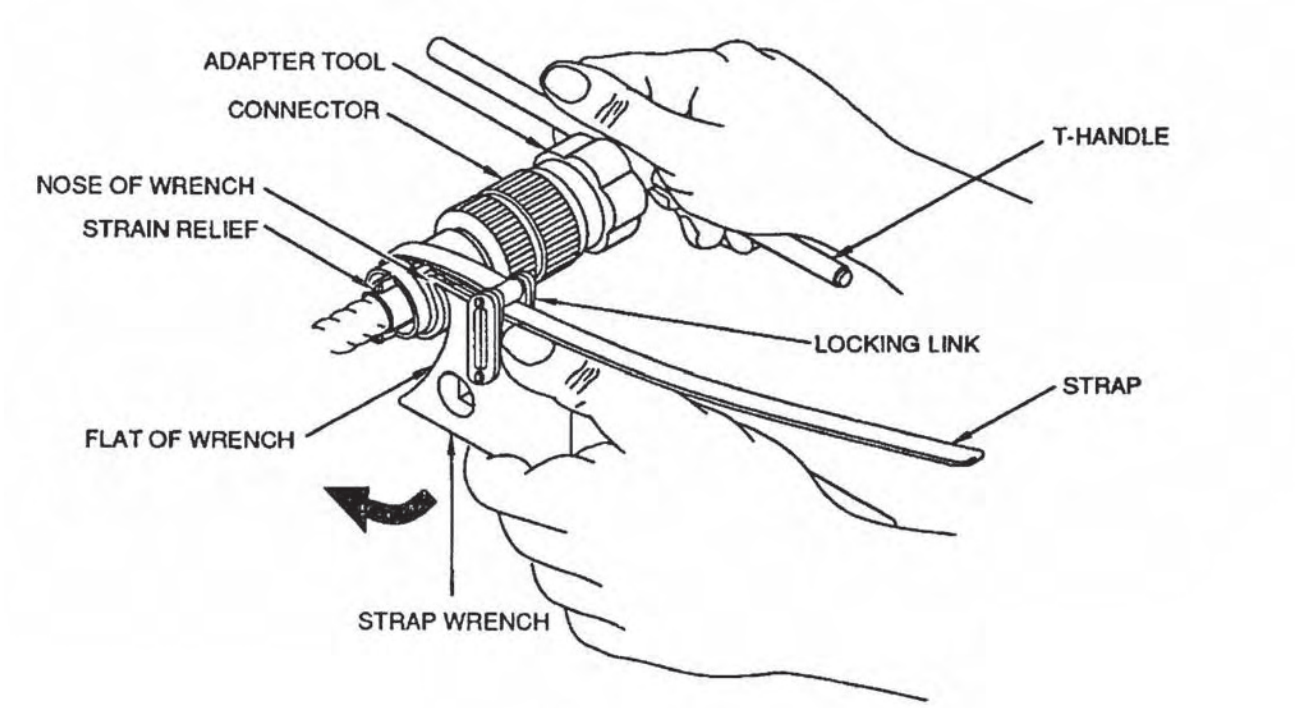


Figure 12. Tightening Position of Wrench

14. SHRINK BOOTS AND ADAPTERS. Boots and adapters are protective coverings over any portion of a cable, wire or connector in addition to normal jacketing or insulation. A protective housing usually made from a resilient material to prevent entry of moisture into a connector. See WP 008 03 for detail information on adapters: M85049/60-1, M85049/60-2G, MS3158 and shrink boots: AS3109, AS3117. The listed adapters are intended to be used with these shrink boots. See Note following paragraph 2 this WP on AS, M and MS prefix.

15. EMI/RFI GROUNDING TERMINATORS. EMI/RFI grounding terminations are used to ground or shield a connector to reduce the electromagnetic radiation and radio frequency interference from other equipment. A physical and electrical shield is employed which is terminated at one or both ends to a ground or some other predetermined point with respect to ground. Shields can be applied to individual wires, cables, bundles, or harnesses. See WP 007 03 for detail information on grounding terminator M818121, and ferrules: MS21980, and MS 21981. See Note following paragraph 2 this WP on AS, M and MS prefix.

16. EMI/RFI GROUNDING TERMINATOR INSTALLATION. EMI/RFI grounding terminator installation procedures are contained in Figure 13.

17. CONDUIT FITTINGS. Conduit fittings are used to connect a conduit to a connector, and may be either a ferrule, nut, adapter, box fitting, 45° elbow, 90° elbow, hex nut, or seal assembly. See WP 007 03 for detail information on conduit fittings: AN3050, AN 3051, AN3052, AN3053, AN3054, AN 3055, AN 3056, AN3060, AN3061, AN3062, AN3063, AN3066, AN3068, and AN3067. See Note following paragraph 2 this WP on AS, M and MS prefix.

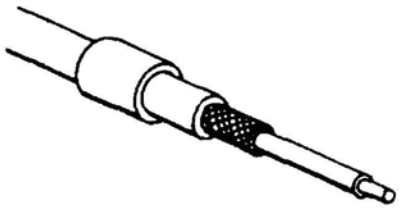
18. DUMMY RECEPTACLES. Dummy receptacles are provided and shall be used to stow unmated plugs, caps or protective covers when the related component is not in operational use. The dummy receptacle shall be marked and located to permit easy location and access. See WP 006 04 for detail information on dummy receptacles: M83723/61-1 and M83723/61-2. See Note following paragraph 2 this WP on AS, M and MS prefix.

19. DUST CAPS. Protective covers are more commonly called dust caps. The purpose of dust caps is to prevent dirt from entering connectors, pins, and sockets and to prevent coupling device from damage. See WP 006 04 for detail information on dust caps: M83723/59-1, M83723/59-2, M83723/60-1, M83723/60-2, and MS90376-18. See Note following paragraph 2 this WP on AS, M and MS prefix.

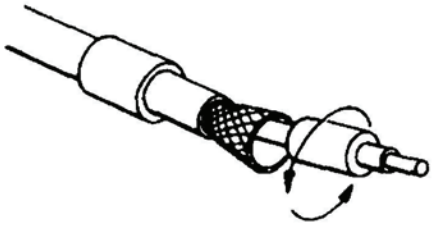
INDIVIDUAL WIRE TERMINATION

MS18121, MS21980, MS21981

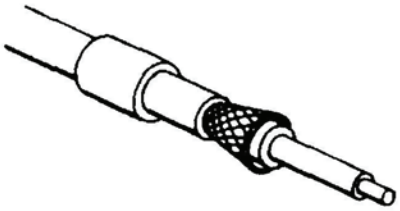
1. SLIP OUTER SLEEVE OVER INSULATION JACKET AFTER STRIPPING. TRIM BRAID TO WITHIN 1/2 INCH OF INSULATION.



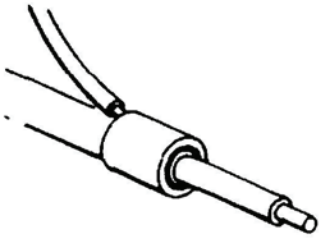
2. FAN BRAID BY ROTATING CENTER CONDUCTOR AND SLIP INNER SLEEVE UNDER BRAID.



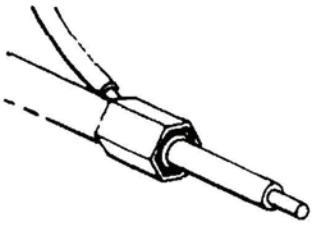
3. POSITION INNER SLEEVE TO EXTEND ABOUT 1/16 INCH BEYOND BRAID.



4. SLIP GROUND LEAD UNDER OUTER SLEEVE (FRONT OR BACK) AND SLIDE OUTER SLEEVE OVER BRAID.



FOR DAISY CHAIN GROUNDING TWO GROUND WIRES CAN BE ACCOMMODATED BY SELECTING THE PROPER SIZE OUTER SLEEVE.



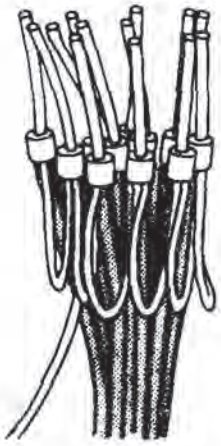
5. OUTER SLEEVE COVERS ALL EXPOSED PARTS.

6. COMPRESS IN SPECIFIED TOOL.

Figure 13. EMI RFI Grounding Ternimator Installation (Sheet 1 of 2)

MASS OR MULTIPLE TERMINATION
MS3161 OUTER FERRULE

1. AFTER SHIELDING IS EXTRACTED ATTACH GROUND WIRE(S) TO CONNECTOR PIN.

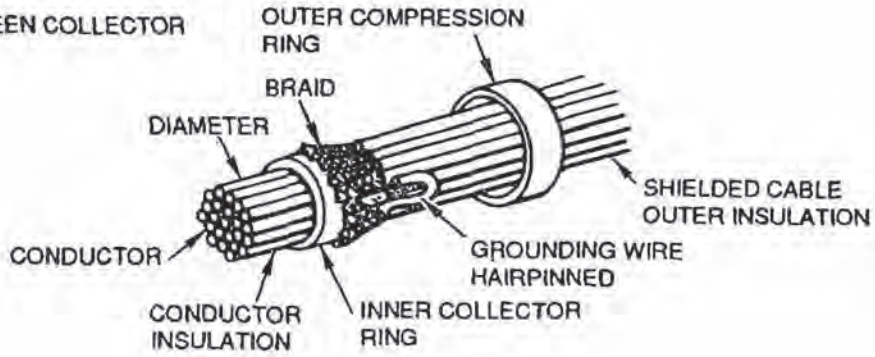


MASS TERMINATION

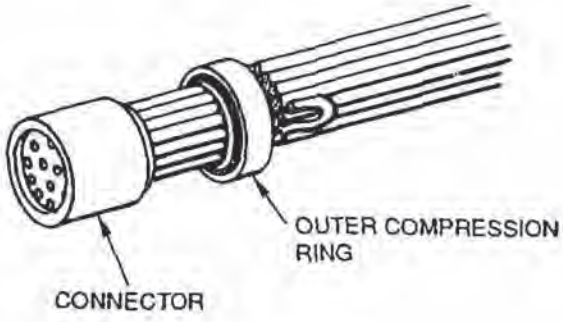


INDIVIDUAL TERMINATION

2. PLACE GROUND WIRE(S) BETWEEN COLLECTOR AND COMPRESSION.



3. SLIDE COMPRESSION RING OVER COLLECTOR, SHIELD AND GROUND WIRE.



FORWARD FOLD METHOD

Figure 13. EMI RFI Grounding Ternimator Installation (Sheet 2 of 2)

20. GASKETS FOR FLANGE MOUNT RECEPTACLES. Gaskets for flange mount receptacles are made from neoprene or silicone and are used to seal the receptacle flange to the mounting structure. The 229401 gasket is provided for reference only, as it has been cancelled without replacement. (Figure 14).

21. MOUNTING NUT FOR JAM NUT RECEPTACLES. Part number MS3186 mounting nut is used to mechanically mount the receptacle to a structure. See WP 006 04 for detail information on the MS3186 mounting nut for jam nut receptacles. See Note following paragraph 2 this WP on AS, M and MS prefix.

22. RUBBER BUSHINGS. See WP 008 03 for detail information on rubber bushing MS3420. The primary use is to provide a cushion for wires at connector and to aid strain relief. Bushing standard material and color is black neoprene. The 27290-1 bushing is provided for reference only, as it has been cancelled without replacement. (Figure 15). See Note following paragraph 2 this WP on AS, M and MS prefix.

23. SEALING PLUGS. See WP 008 03 for detail information on the MS27488 plugs. The sealing plugs are inserted to fill a cavity in a connector insert. The plugs are inserted large end first. Its function is to seal all unoccupied openings in the insert, especially in environmental connectors. See Note following paragraph 2 this WP on AS, M and MS prefix.

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

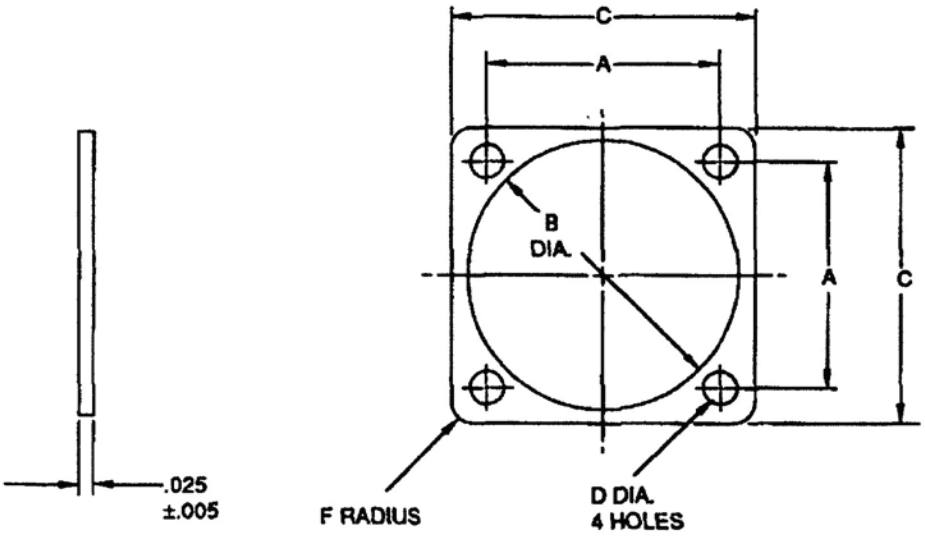
PART NUMBER DESIGNATION

229401 N 01

ESC PART NO.

MATERIAL
C CONDUCTIVE.
F FLUOROSILICONE.
N NEOPRENE.
S SILICONE.

DASH NO.
SEE DIMENSIONS.



DIMENSIONS

Dash No.	For Use With Connectors: MIL-C-26500	A ±.005	B ±.007	C ±.008	D ±.005	F ±.015
-1	8	.594	.562	.812	.125	.105
-3	10	.719	.687	.937	.125	.105
-4	12	.812	.772	1.031	.125	.105
-6	14	.906	.937	1.125	.125	.105
-7	16	.969	1.063	1.250	.125	.135
-8	18	1.062	1.187	1.343	.125	.135
-10	20	1.156	1.312	1.467	.125	.135
-11	22	1.250	1.437	1.562	.125	.135
-12	24	1.375	1.562	1.703	.152	.135

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

Figure 14. Gasket for Flange Mount Receptacle

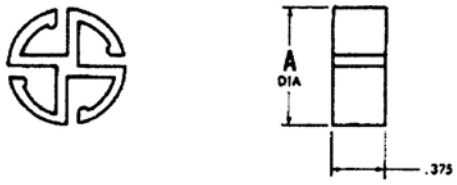
NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

PART NUMBER DESIGNATION

MS27290 - 1

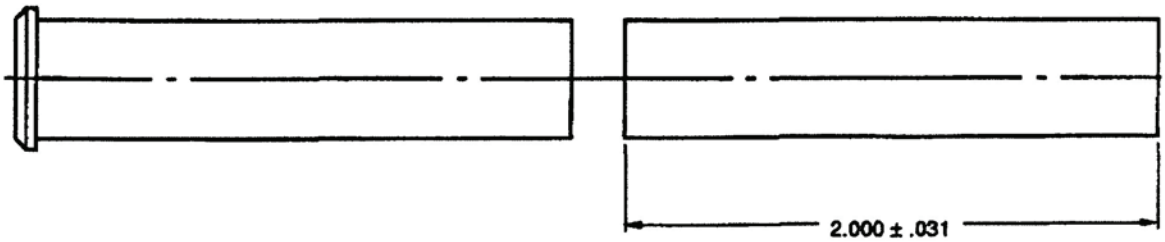
MIL SPEC
MATERIAL
SILICONE.

DASH NO.
SEE DIMENSIONS.



DIMENSIONS

PART NUMBER	A DIA	TO BE USED WITH
MS27290-1	.553	MS27291-3
MS27290-2	.703	MS27291-4
MS27290-3	.783	MS27291-5
MS27290-4	1.033	MS27291-6



MS39056
SUPERSEDED BY MS3420

Supersedes	
AN3420	MS39056
-3	-1
-4	-2
-6	-3
-8	-4
-10	-5
-12	-6
-16	-7
-20	-8
-24	-9
-28	-10
-32	-11
-40	-12

MS39057
SUPERSEDED BY MS3420*A

Supersedes	
AN3420	MS39057
-3A	-1
-4A	-2
-6A	-3
-8A	-4
-10A	-5
-12A	-6
-16A	-7
-18A	-8
-20A	-9
-24A	-10
-28A	-11
-32A	-12
-40A	-13

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

Figure 15. Rubber Bushing MS27290

ALPHABETICAL INDEX
INSTALLATION PRACTICES
CONNECTORS MIL-C-81703 SERIES 1, 2 AND 3

Title	WP Number
Connectors Accessories, MIL-C-81703 Series 1, 2, and 3	010 03
Connectors, MIL-C-81703 Series 1, 2, and 3	010 02
Introduction	010 01

INTRODUCTION
INSTALLATION PRACTICES
CONNECTORS MIL-C-81703 SERIES 1, 2, AND 3

1. PURPOSE AND SCOPE.

2. This manual covers all connectors manufactured in accordance with MIL-C-81703. It includes contact data, tooling, buildup, and connector accessories for MIL-C-81703 Series 1, 2, and 3 connectors.

3. SPECIFICATION UPDATES (ASSIST SEARCH).

4. The most up to date government specifications and Qualified Products Lists (QPLs) can be obtained from the Quick Search section of the ASSIST website, the address is http://assist.daps.mil/quicksearch. Non-government standards can be obtained through a license with a document service such as Information Handling Services (IHS) or purchased individually from the Society of Automotive Engineers (SAE).

5. QUALIFIED PRODUCTS LIST (QPL).

6. The Qualified Products List (QPL) is a list of products which have met the qualification requirements stated in the applicable specification. These requirements include appropriate product identification and performance/testing parameters. The list contains the government part number and the manufacturer's part number. The name of the manufacturer, office and manufacturing plant address, CAGE (Commercial and Government Entity) code, assembly plant, or distributor as applicable, is also included in the back of the QPL. The component specification will identify the appropriate quality assurance provisions such as QPL, First Article testing, or user verified test results. NAVAIR Patuxent River (http://www.navair.navy.mil/qpl/) now has an operational website where the latest QPL revision can be accessed, along with all outstanding QPL change letters as they are written. This enables all users to have access to the latest procurement information without relying on the publication of a new QPL revision. When the QPL is revised, all outstanding QPL change letters are incorporated in the latest revision.

CONNECTORS
MIL-C-81703 SERIES 1, 2, AND 3

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Connectors, Electric, Circular, Miniature, Rack and Panel or Push-pull Coupling, Environment Resisting,
Military Specification for MIL-C-81703
Connector Accessories MIL-C-81703 Series 1, 2, and 3 ..... 010 03

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Tooling 18

Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
HT-900B	Heat Gun
M22520/1-01	Tool, Crimp, Frame
M22520/1-02	Positioner
M22520/1-02 BL	Positioner
M22520/1-02 RD	Positioner
M22520/1-02 YE	Positioner
M22520/2-01	Tool, Crimp, Frame
M22520/2-02	Positioner
M22520/7-01	Tool, Crimp, Terminal
M22520/7-02	Positioner
M22520/7-03	Positioner
M81969/8-05	Tool, Insertion
M81969/8-06	Tool, Removal
M81969/8-07	Tool, Insertion
M81969/8-08	Tool, Removal
M81969/8-09	Tool, Insertion
M81969/8-10	Tool, Removal
M81969/14-02	Tool, Insertion/Removal
M81969/14-03	Tool, Insertion/Removal
M81969/14-04	Tool, Insertion/Removal
M81969/17-03	Tool, Insertion
M81969/17-04	Tool, Insertion
M81969/17-05	Tool, Insertion
M81969/19-07	Tool, Removal
M81969/19-08	Tool, Removal
M81969/19-09	Tool, Removal
M81969/30	Handle, Removal, Unwired Contact
M81969/30-05	Tool, Unwired Contact Removal
M81969/30-06	Tool, Unwired Contact Removal
M81969/30-07	Tool, Unwired Contact Removal
-----	Bottle, Nitrogen
-----	Heat Sink
-----	Iron, Soldering
-----	Pliers, Connector

Materials Required

Specification / Part No.	Nomenclature
H-B-643	Brush, Acid Swabbing
MIL-F-14256	Flux, Liquid
SAE-AMS-DTL-23053	Sleeving, Insulating, Heat-Shrinkable
Sn60WRMAP3 (or equivalent)	Solder

1. INTRODUCTION.

2. This Work Package (WP) pertains to connectors manufactured in accordance with MIL-C-81703. There are three series of environment resistant, circular, miniature, rack and panel, or push-pull coupling connectors, and accessories. Each series contains hermetic receptacles.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, (the Society of Automotive Engineers (SAE), will become the preparing activity and the Navy will adopt the documents), the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511 / 17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

3. DESCRIPTION. The connectors are identified as Series 1, 2, or 3 and feature solder contacts, front, or rear release crimp contacts. The connectors are designed to withstand overall temperatures from -67°F (-55°C) to +392°F (+200°C). The actual temperature range varies for each series connectors.

4. Electrical, mechanical, and environmental features of these connectors include:

a. Environment resisting at sea level and high altitude.

b. Rack and Panel or push-pull coupling.

c. High density insert arrangements.

d. Low level circuit capacities.

e. Fluid resistant classes.

5. WIRE SEALING. Wire sealing is accomplished by the use of a grommet seal which is designed to seal against outside diameter of inserted wire. The outer diameter shall be within applicable size range as specified.

6. INSERTS. The resilient material used for all inserts shall be high grade dielectric having electrical and mechanical characteristics suitable for the purpose intended. The impact strength shall be such that material shall not chip, crack, or break during assembly or normal maintenance.

7. INSERT ARRANGEMENT. The insert arrangement is number and size of contacts available by shell size (Table 1). The insert arrangements are specified in MS33698, MS33699, MS33700, MS33701, MS33702, MS33703, and MS33704.

8. INSERT CONFIGURATION. The insert configuration is the manner in which contacts are placed within the insert in a standard configuration. All arrangements identified in Table 1 are illustrated (Figure 1).

9. INTERMATEABILITY. All connectors within the same series are completely intermateable.

a. Series 1 push-pull plugs will intermate with all series 1, 2, and 3 receptacles.

b. Series 3 push-pull plugs will not intermate with series 1 and 2 receptacles or MS3182 protective covers (due to five key provision).

c. Rack and panel plugs will mate with square flange receptacles or solder mount receptacles and the series 3 single hole mount receptacles. Rack and panel plugs do not mate with the series 1 and 2 single hole mount receptacles.

Table 1. MIL-C-81703 Insert Arrangements

Shell Size Insert Arrangement	Contact Size			Number of Contacts
	20	16	12	
3-50	3	-	-	3
7-50	7	-	-	7
12-6	6	-	-	6
12-50	12	-	-	12
19-4	-	-	4	4
19-7	-	-	7	7
19-12	-	12	-	12
19-50	19	-	-	19
27-2	27	-	-	14
27-3	14	2	-	16
27-4	10	-	-	10
27-5	-	19	-	19
27-8	-	6	4	10
27-11	12	-	-	12
27-22	22	-	-	22
27-24	24	-	-	24
27-50	27	-	-	27
37-2	-	24	-	24
37-3	-	-	12	12
37-50	37	-	-	37

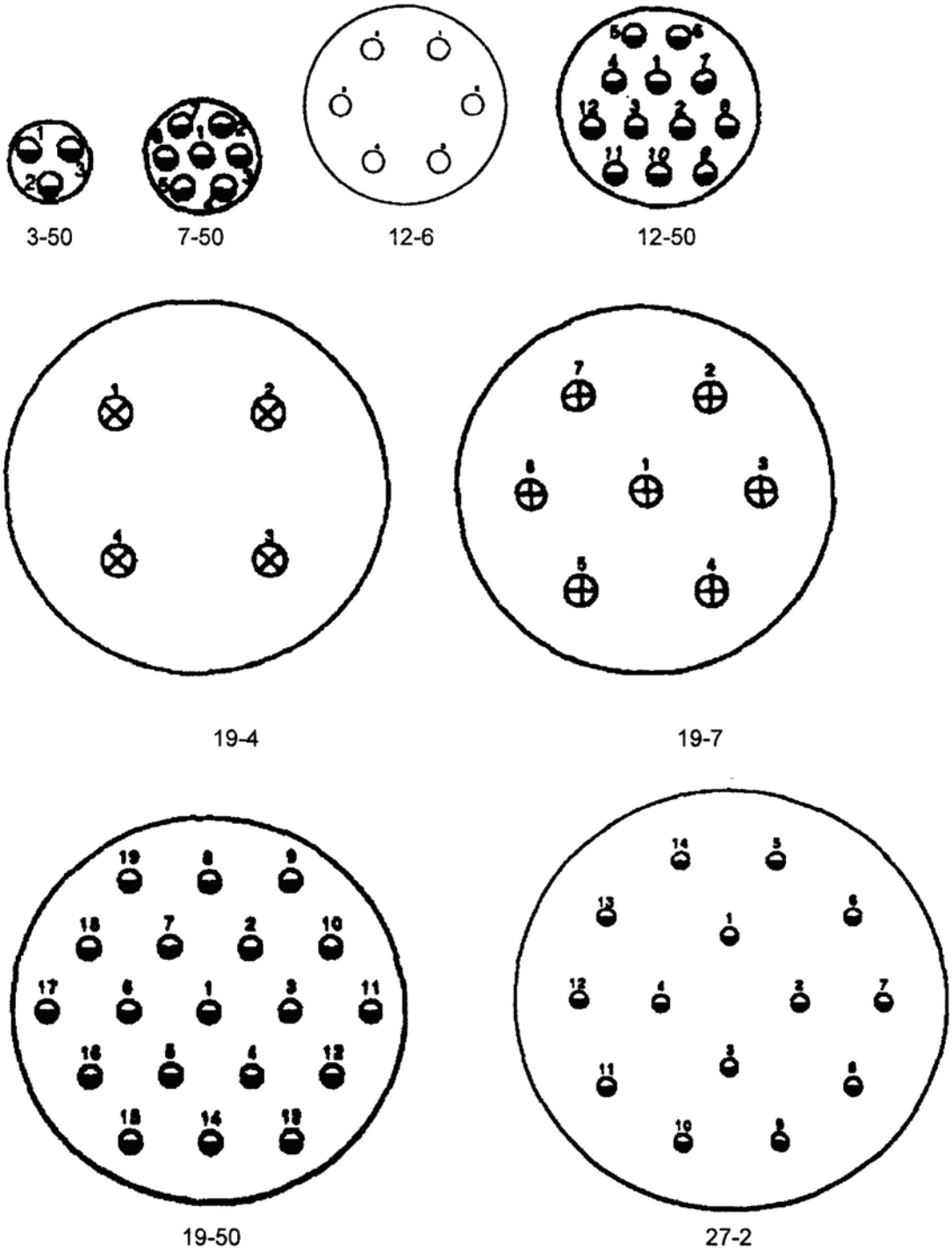
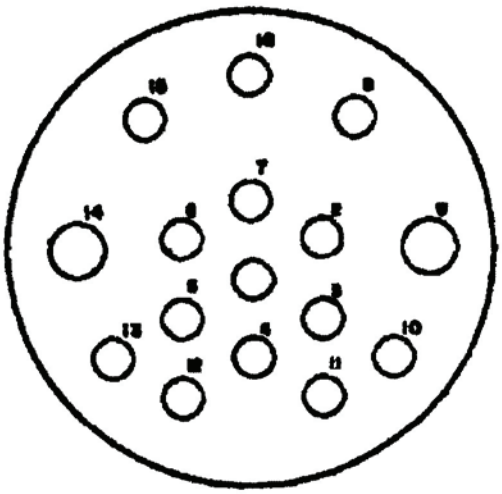
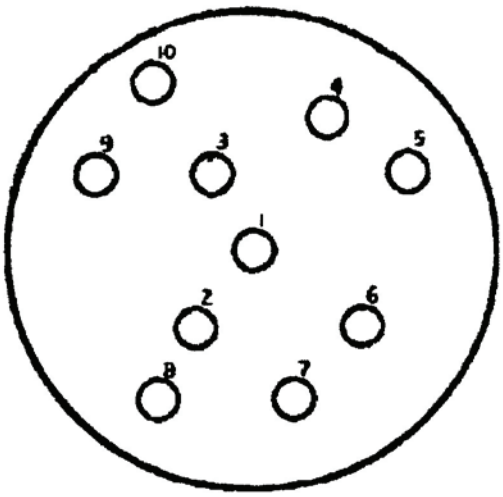


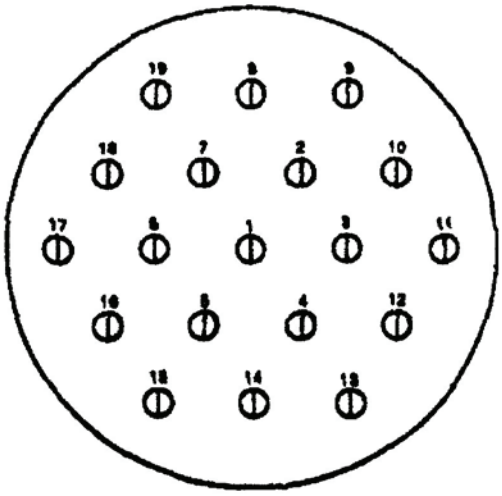
Figure 1. MIL-C-81703 Insert Configurations (Sheet 1 of 4)



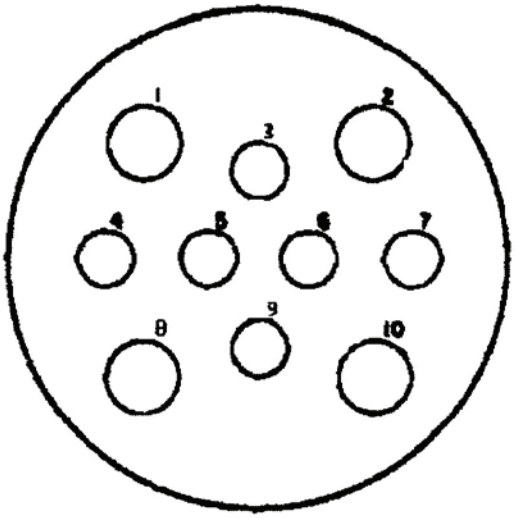
27-3



27-4

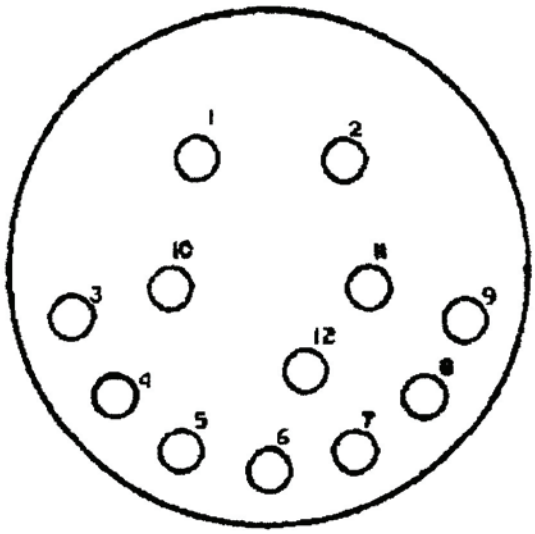


27-5

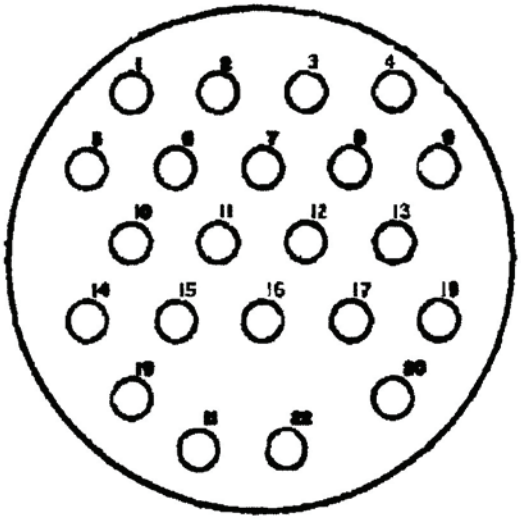


27-8

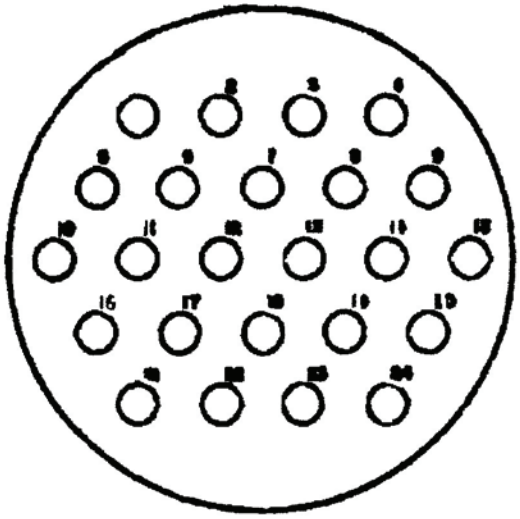
Figure 1. MIL-C-81703 Insert Configurations (Sheet 2 of 4)



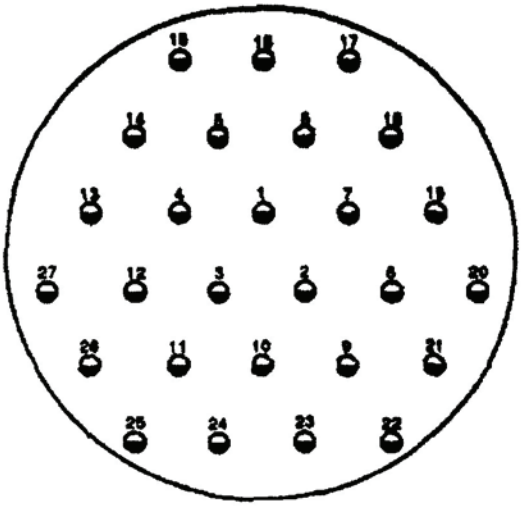
27-11



27-22

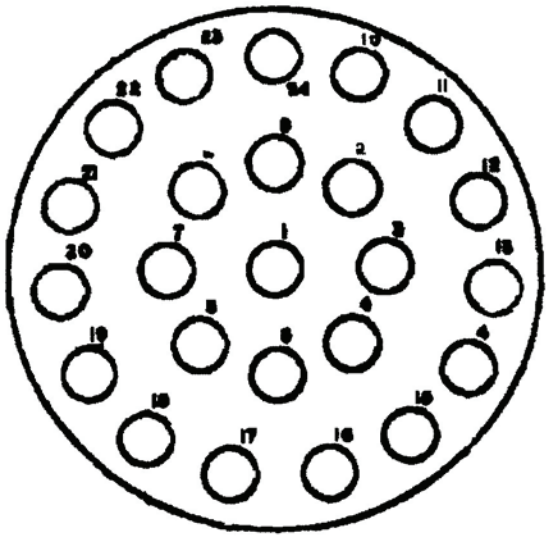


27-24

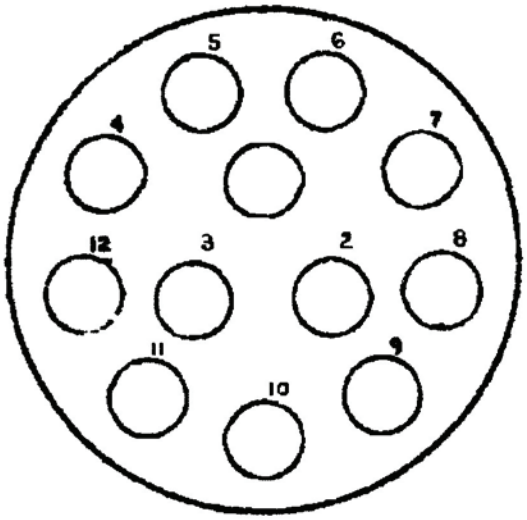


27-50

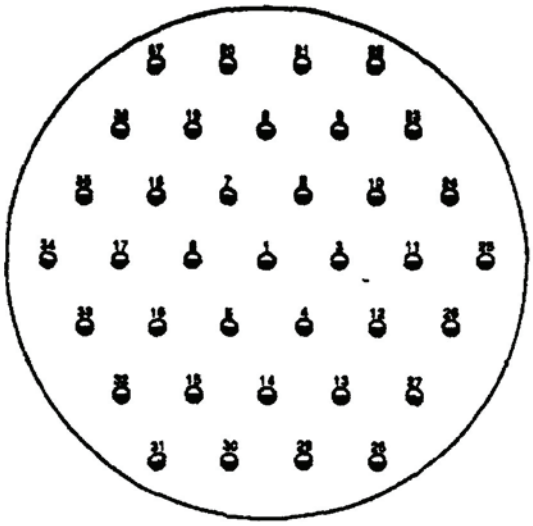
Figure 1. MIL-C-81703 Insert Configurations (Sheet 3 of 4)



37-2



37-3



37-50

Figure 1. MIL-C-81703 Insert Configurations (Sheet 4 of 4)

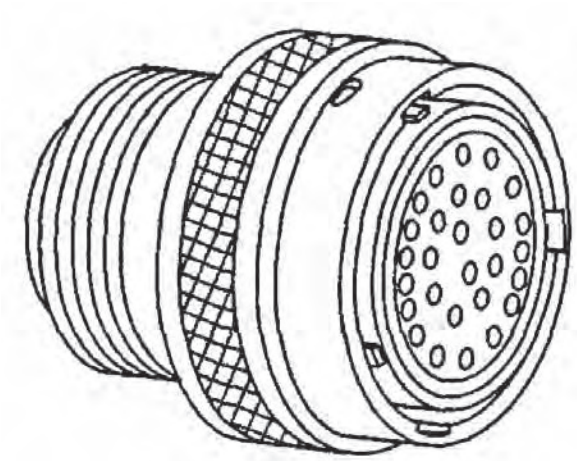


Figure 2. MIL-C-81703 Series I Typical Connector

10. MIL-C-81703 SERIES 1.

11. MIL-C-81703 Series 1 connectors are push-pull coupled with solder contacts. Series I hermetic box and solder mount receptacles are also available. The Series I connector has a temperature range of -67°F (-55°C) to +257°F (+125°C) (Figure 2).

12. GROMMET SEALING PLUGS. The grommets of environment resisting connectors are designed to accept sealing plugs in accordance with MIL-C-81703 to be used where unwired contacts are placed. The connector when ordered as a unit will have sealing plugs enclosed to equal 15 percent of the number of contacts but not less than one.

13. MATING SEAL. Plugs and receptacles with pin inserts have a resilient face with individual pin barriers to seal against the bard face socket insert. The resilient interface seal provides individual contact seals in mated condition between each contact and shell.

14. SHELL. Shells including mounting flanges are of one-piece construction and designed to retain their inserts in one position by mechanical means. The shell is designed to accept and retain a cable adapter or other accessory.

15. COUPLING. The two methods of coupling are push-pull and rack and panel coupling.

16. POLARIZATION. Connectors are polarized as denoted by their part numbers. This means that the master keyway is rotated to prevent mis-mating of similar connectors in a similar location. A plug with a given polarization letter will mate with a receptacle with same letter. The inserts do not rotate, only the keyway is rotated.

17. PART NUMBER. The following paragraphs contain information necessary for proper selection and procurement of connector (Figure 3).

18. Basic Part Number. The prefix denotes the basic specification.

19. Shell Style. The shell style denotes type and mounting of connector.

20. Service Class. The service class is a letter code denoting environment resistant ability.

21. Shell Size. Shell size is indicated by a progressive numbering system.

22. Contact Termination (Hermetics only). The contact indicates type of solder termination.

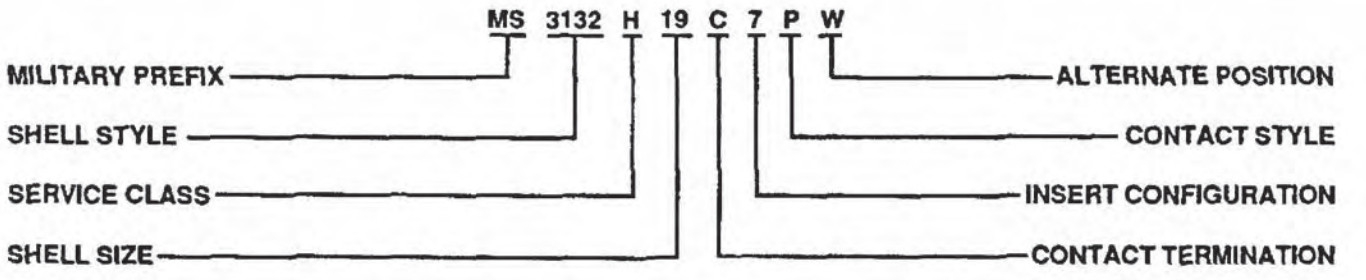
23. Insert Configuration. The insert configuration is the insert arrangement by number and size of contacts used.

24. Contact Style. The contact style denotes pin or socket contacts and whether or not the connector is supplied with contacts.

25. Alternate Keyway Position. The alternate position indicates insert polarization (Figure 4).

26. DESIGN AND CONSTRUCTION. Connectors and accessories are designed and constructed to withstand normal handling incidental to installation and maintenance.

27. CONTACTS. Contact are fixed, non-removable, and solderable.



SHELL STYLE
3130 WALL MOUNT RECEPTACLE.
3132 BOX MOUNT RECEPTACLE.
3132H HERMETIC BOX MOUNT RECEPTACLE.
3134 JAM NUT RECEPTACLE.
3134H HERMETIC SOLDER MOUNT RECEPTACLE.
3137 STRAIGHT PLUG.
3138 STRAIGHT PLUG, LANYARD RELEASE.
3139 THRU BULKHEAD.

SERVICE CLASS
E FLUID RESISTANT, 392°F (200°C) OPERATING TEMPERATURE.
H HERMETIC (3132, 3134 ONLY).
J WATERTIGHT JACKETED CABLE SEAL.
P POTTING SEAL (3130, 3134, 3137, 3138 ONLY)

SHELL SIZE
3, 7, 12, 19, 27, 37, OR 61.

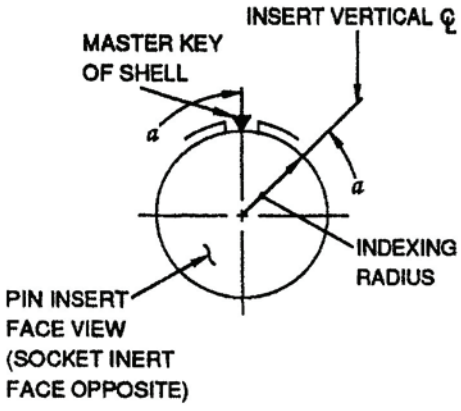
CONTACT TERMINATION (HERMETICS ONLY)
C SOLDER CUP.
Y EYELET.

INSERT CONFIGURATION
SEE FIGURE 5.

CONTACT STYLE
P PIN.
S SOCKET.

ALTERNATE POSITION
BLANK (NORMAL) W, X, Y, B OR C.

Figure 3. MIL-C-81703 Series 1 Part Number Breakdown



▼ INDICATES ℄ OF SHELL

THE SYMBOL *a* INDICATES INSERT ROTATION IN DEGREES.

Size and Configuration MIL	Alternate Positions (Degrees)						
	N	W	X	Y	Z	B	C
	0	-	-	75	-	-	-
7-50	0	-	-	-	-	150	-
12-6	0	25	45	60	-	150	220
12-50	0	15	50	75	-	150	220
19-4	0	-	-	22-1/2	-	135	247-1/2
19-7	0	-	-	75	-	150	225
19-50	0	-	-	75	-	150	225
27-2	0	25	60	75	-	150	225
27-3	0	25	50	75	-	150	225
27-4	0	25	50	75	-	150	225
27-5	0	-	-	75	-	150	225
27-8	0	25	50	75	-	150	225
27-11	0	25	60	75	-	150	225
27-22	0	25	50	75	-	150	225
27-24	0	25	50	75	-	150	225
27-50	0	25	50	75	-	150	225
37-2	0	25	50	75	-	150	225
37-3	0	20	70	-	-	-	-
37-50	0	25	50	75	-	150	225

NOTES:

1. FOR ALTERNATE POLARIZING POSITIONS, THE CONNECTOR INSERT IS ROTATED IN RESPECT TO THE SHELL.
2. IN NORMAL POSITIONS (POSITION N) THE INSERT VERTICAL CENTERLINE COINCIDES WITH THE MASTER KEY OF THE SHELL.
3. IN ALTERNATE POSITIONS (POSITIONS W, X, Y, AND Z) THE PIN INSERT IS ROTATED *a* DEGREES CLOCKWISE RELATIVE TO ℄ OF THE MASTER KEY OF SHELL.
4. IN ALTERNATE POSITIONS (POSITIONS W, X, Y, AND Z) THE SOCKET INSERT IS ROTATED *a* DEGREES COUNTERCLOCKWISE RELATIVE TO THE ℄ OF THE MASTER KEY OF SHELL.

Figure 4. MIL-C-81703 Alternate Positions

28. MIL-C-81703 SERIES 2.

29. MIL-C-81703 Series 2 connectors are rack and panel or push-pull coupled, single key removable crimp front release contacts. The Series 2 connector has a temperature operating range of -67°F (-55°C) to +347°F (+175°C) (Figure 5).

30. GROMMET SEALING PLUGS. The grommets of environment resisting connector are designed to accept sealing plugs in accordance with MIL-C-81703 to be used where unwired contacts are placed. The connector when ordered as a unit will have sealing plugs enclosed to equal 15 percent of the number of contacts but not less than one.

31. MATING SEAL. Plugs and receptacles with pin inserts have a resilient face with individual pin barriers to seal against the hard face socket insert. The resilient interface seal provides individual contact seals in mated condition between each contact and shell.

32. SHELL. Shells including mounting flanges are of one-piece construction and designed to retain their inserts in one position by mechanical means.

33. COUPLING. Connectors shall be capable of being fully coupled and uncoupled without use of tools.

34. POLARIZATION. Connectors are polarized as denoted by their part numbers, This means that the master keyway is rotated to prevent mis-mating of similar connectors in a proximate location. A plug with a given polarization letter will mate with a receptacle with the same letter. The inserts do not rotate, only the keyway is rotated.

35. PART NUMBER. The following paragraphs contain information necessary for proper selection and procurement of connector (Figure 6).

36. Basic Part Number. The prefix denotes the basic specification.

37. Shell Style. The shell style denotes type and mounting of connector.

38. Service Class. The service class is a letter code denoting environment resistant ability.

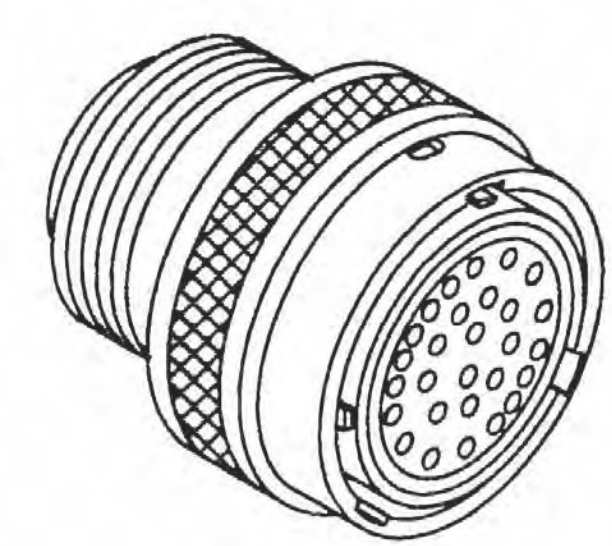


Figure 5. MIL-C-81703 Series 2 Typical Connector

39. Shell Size. Shell size is indicated by a progressive numbering system.

40. Insert Configuration. The insert configuration is the insert arrangement by number and size of contacts used.

41. Contact Style. The contact style denotes type of contact used.

42. Alternate Position. The alternate position indicates insert polarization (Figure 4).

43. DESIGN AND CONSTRUCTION. Connectors and accessories are designed and constructed to withstand normal handling incidental to installation and maintenance.

44. Crimp Snap-in Contacts. Snap-in contacts designed to AS39029 can be crimped with standard M22520/1 crimp tool.

45. Closed-Entry-Socket Contacts. These contacts eliminate damage from abuse by test probes and help to correct any misaligned pins during engagement.

46. Contact Insertion. Front release contacts feature a stamped metal retaining clip captivated by molded-in shoulders of each contact cavity in the insulator.

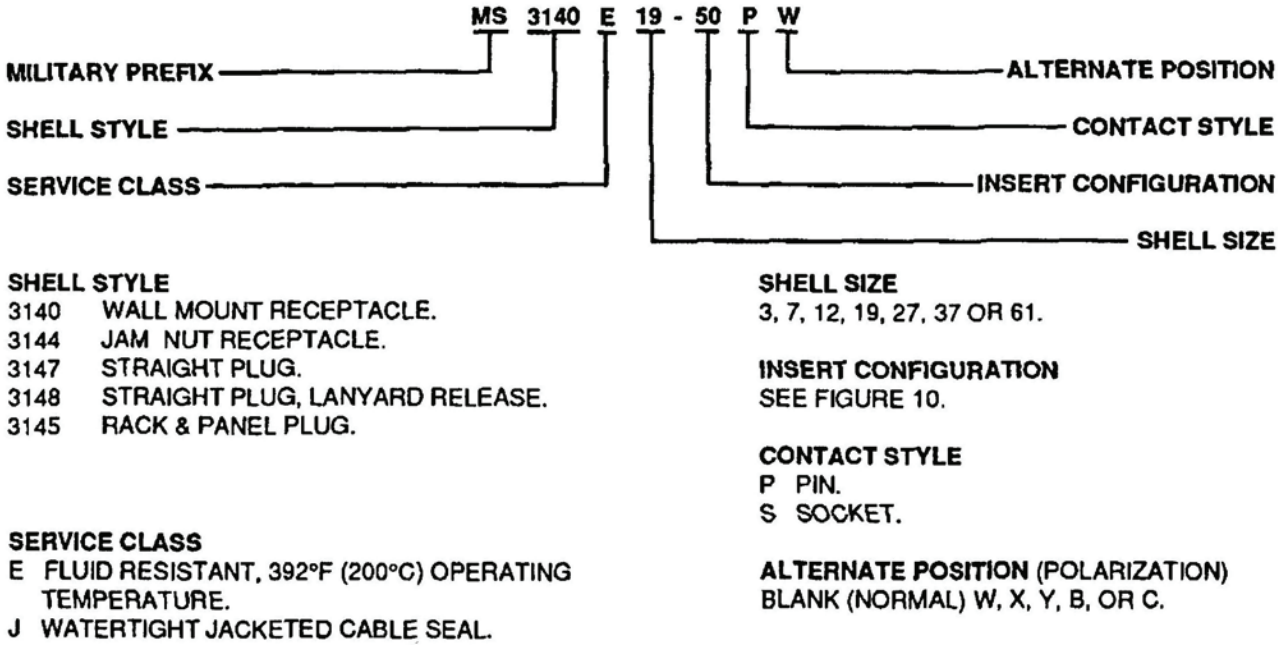


Figure 6. MIL-C-81703 Series 2 Part Number Breakdown

47. Contact Extraction. Extraction is accomplished with a front release removal tool which expands the tines beyond the contact shoulder, releasing the contact.

48. Contact Retaining Clip. The contact retaining clip is completely encased in a tough plastic wafer to protect clip from damage.

49. Moisture Sealing. A silicone interfacial seal wafer is featured on the mating face of pin inserts. This ensures complete electrical isolation of the pins when connector halves are mated. In addition, a silicone main joint gasket is installed in the receptacles for moisture sealing between connector halves. A silicone grommet provides moisture sealing of wires at the rear of the connector. Complete sealing is achieved by combining four seals, shell, peripheral, interfacial, and wire seals.

50. Shell Seal. This seal is effected when plug shell pushes against sealing ring in receptacle when connectors are mated.

51. Peripheral Seal. This seal is around the edge of pin insulator and is designed so that when mating connector, tension is put on seal and greatly reduces compression set.

52. Interfacial Seal. This seal is achieved by the insulator faces meeting when plug and receptacle are mated.

53. Wire Seal. This seal is accomplished by a multiple ripple design, exceeding wire sealing requirements of MIL-C-81703.

54. Insert Retention. Insert retention is accomplished by a hard plastic wafer firmly locked into a groove in the shell and a strong adhesive bond between the insert and shell.

55. Keying. Keying is used in shell-enclosed connectors to obtain polarization, which assures correct location when mating a connector (Figure 4).

56. CONTACTS. Contacts are designed to prevent damage to contact retention device or sealing member during insertion or removal of contacts.

57. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

58. Contact Availability. Crimp contacts are supplied with each connector unit package and consist of a full complement plus one spare per size for connectors of 26 contacts or less. Connectors with more than 26 contacts will have spares of each size used. Contacts may also be ordered in individual quantities when necessary.

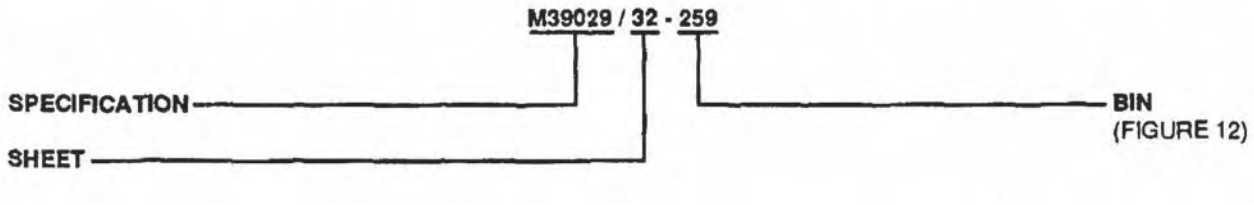


Figure 7. M39029 Part Number Breakdown

59. CONTACT APPLICATION. Contacts used for Series 2 connectors are manufactured in accordance with AS39029. The contact part number breakdown is illustrated (Figure 7). The Basic Identification Number (BIN) or last three digits of contact part number, matches standard resistor color code (Figure 8).

60. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts range from size 12 through 20 and are of crimp, front release design. Contacts are listed by size. Match the required size to connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with corresponding color bands (Table 2).

61. TOOLING. This procedure is for attaching power contacts to a single conductor wire. Select proper tooling for the specific contact put number (Table 3) and refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures.

62. MIL-C-81703 SERIES 3.

63. MIL-C-81073 Series 3 connectors are rack and panel or push-pull coupled, five keys removable crimp rear release contacts. Some hermetic receptacles have solder contacts. The Series 3 connector has a temperature range of -67°F (-55°C) to +392°F (+200°C) (Figure 9).

64. GROMMET SEALING PLUGS. The grommets of environment resisting connectors are designed to accept sealing plugs in accordance with MIL-C-81703 to be used where unwired contacts are placed. The connector, when ordered as a unit, will have sealing plugs enclosed to equal 15 percent of the number of contacts but not less than one.

65. MATING SEAL. Plugs and receptacles with pin inserts have a resilient face with individual pin barriers to seal against the hard face socket insert. The resilient interface seal provides individual contact seals in mated condition between each contact and shell.

66. SHELL. Shells including mounting flanges are of one-piece construction and designed to retain their inserts in one position by mechanical means. Each plug and receptacle has at least one blue color band, which indicates rear release retention system, and is located to be readily visible.

67. COUPLING. Connectors shall be capable of being fully coupled and uncoupled without use of tools.

68. POLARIZATION. Connectors are polarized as denoted by their part numbers. This means that the master keyway is rotated to prevent mis-mating of similar connectors in a proximate location. A plug with a given polarization letter will mate with a receptacle with same letter. The inserts do not rotate, only the keyway is rotated.

69. PART NUMBER. The following Paragraphs contain information necessary for proper selection and procurement of connector (Figure 10).

70. Basic Part Number. The prefix denotes the basic specification.

71. Shell Style. The shell style denotes type and mounting of connector.

72. Service Class. The service class is a letter code denoting environment resistant ability.

73. Shell Size. Shell size is indicated by a progressive numbering system.

74. Insert Configuration. The insert configuration is the insert arrangement by number and size of contacts used.

75. Contact Style. The contact style denotes pin or socket contacts and whether or not the connector is supplied with contacts.

76. Alternate Position. The alternate position indicates insert polarization (Figure 4).

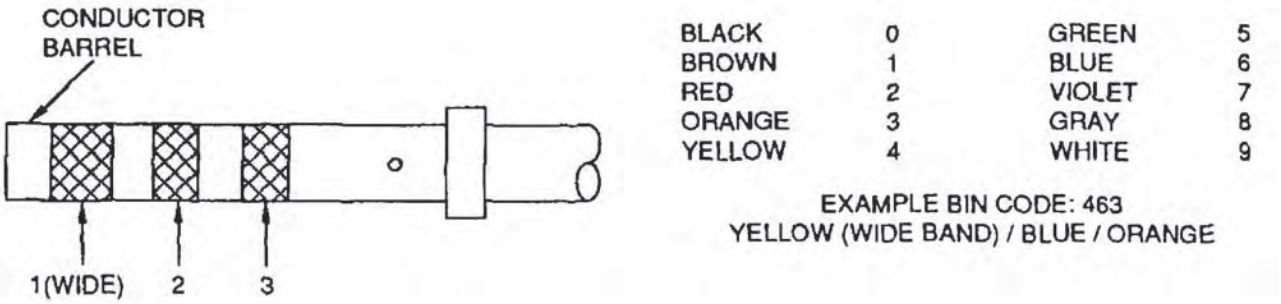


Figure 8. Basic Identification Number and Color Bands

Table 2. MIL-C-81703 Series 2 Power Contact Application

Contact Size	Wire Range	Socket Contacts				Pin Contacts			
		M39029/	Color Bands 1st	2nd	3rd	M39029/	Color Bands 1st	2nd	3rd
20	20-24	32-259	RD	GN	W H	31-240	RD	YE	BK
20	20-24	32-449	YE	YE	W H	31-448	YE	YE	GY
20	20-24	32-245	RD	YE	GN	31-226	RD	RD	BL
20	20-24	32-246	RD	YE	BL	31-227	RD	RD	VI
16	16-20	32-247	RD	YE	VI	31-228	RD	RD	GY
16	16-20	32-249	RD	YE	W H	31-230	RD	OR	BK
16	16-20	32-250	RD	GN	BK	31-231	RD	OR	BN
16	16-20	32-251	RD	GN	BN	31-232	RD	OR	RD
16	16-20	32-252	RD	GN	RD	31-233	RD	OR	OR
12	12-14	32-256	RD	GN	BL	31-237	RD	OR	VI
12	12-14	32-257	RD	GN	VI	31-238	RD	OR	GY
12	12-14	32-258	RD	GN	GY	31-239	RD	OR	W H

Table 3. MIL-C-81703 Series 2 Power Contact Tooling

Socket Contacts M39029/	Pin Contacts M39029/	Insertion Tool M81969/	Removal Tool M81969/	Crimp Tool M22520/	Positioner M22520/
32-259	31-240	17-09	19-07	1-01 or 2-01	1-02 RD or 2-02
32-449	31-448	17-04	19-07	1-01 or 2-01	1-02 RD or 2-02
32-245	31-226	17-03	19-07	1-01	1-02 RD
32-246	31-227	17-03	19-07	1-01	1-02 RD
32-247	31-228	17-04	19-08	1-01	1-02 BL
32-249	31-230	17-04	19-08	1-01	1-02 BL
32-250	31-231	17-04	19-08	7-01	7-03
32-251	31-232	17-04	19-08	7-01	7-03
32-252	31-233	17-04	19-08	7-01	7-03
32-256	31-237	17-05	19-09	1-01	1-02 YE
32-257	31-238	17-05	19-09	1-01	1-02 YE
32-258	31-239	17-05	19-09	1-01	1-02 YE

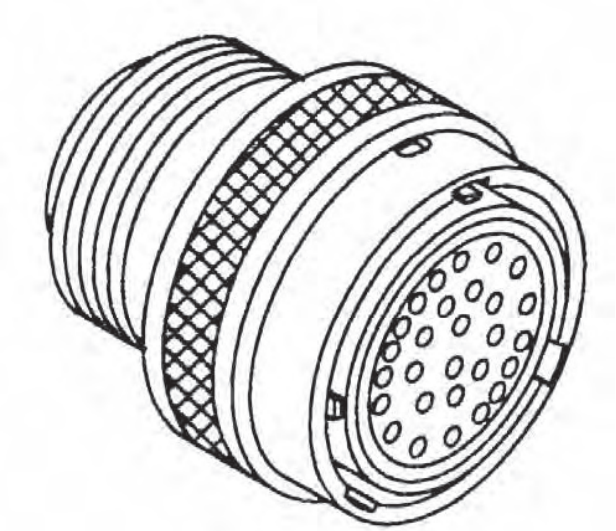


Figure 9. MIL-C-81703 Series 3 Typical Connector

77. DESIGN AND CONSTRUCTION. Connectors and accessories are designed and constructed to withstand normal handling incidental to installation and maintenance.

78. Crimp Snap-in Contacts. Snap-in contacts designed to AS39029 can be crimped with a standard M22520/1 crimp tool.

79. Closed-Entry Socket Contacts. These contacts eliminate damage from abuse by test probes and help to correct any misaligned pins during engagement.

80. Contact Insertion. Insertion is accomplished from rear of connector. When contact is fully inserted, the clip tines snap securely behind contact shoulders.

81. Contact Extraction. Extraction is accomplished with the use of a removal tool.

82. Contact Retaining Clip. The contact retaining clip is completely encased in a tough plastic wafer to protect clip from damage.

83. Moisture Sealing. Complete sealing is achieved by combining four seals; shell, peripheral, interfacial, and wire seal.

84. Shell Seal. This seal is effected when plug shell pushes against sealing ring in receptacle when connectors are mated.

85. Peripheral Seal. This seal is around the edge of pin insulator and designed so that when mating connector, tension is put on seal and greatly reduces compression set.

86. Interfacial Seal. This seal is achieved by insulator faces meeting when the plug and receptacle are mated.

87. Wire Seal. This seal is accomplished by a multiple ripple design, exceeding wire sealing requirements of MIL-C-81703.

88. Insert Retention. Insert retention is accomplished by a hard plastic wafer firmly locked into a groove in the shell and a strong adhesive bond between the insert and shell.

89. Keying. Keying is used in shell-enclosed connectors to obtain polarization, which ensures correct location when mating a connector (Figure 11).

90. CONTACTS. Contacts are designed to prevent damage to contact retention device or sealing member during insertion or removal of contacts.

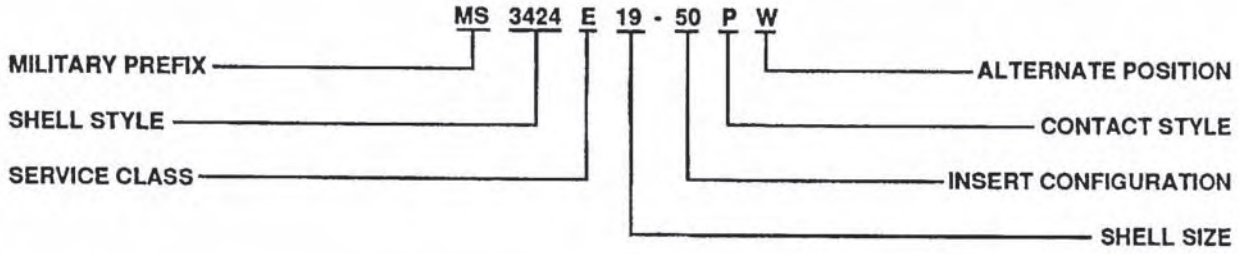
91. Fixed Contacts. Contacts in some hermetically sealed receptacles are fixed non-removable, and solderable, or feed through.

92. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

93. Contact Availability. Crimp contacts are supplied with each connector unit package and consist of a full complement plus one spare per size for connectors of 26 contacts or less. Connectors with more than 26 contacts will have two spares of each size used. Contacts may also be ordered in individual quantities when necessary.

94. CONTACT APPLICATION. Contacts used for Series 3 connectors are manufactured in accordance with AS39029. The contact part number breakdown is illustrated (Figure 12). The Basic Identification Number (BIN) or last three digits of contact part number, matches standard resistor color code (Figure 13).

95. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts range from size 12 through 20 and are of crimp, rear release design. Contacts are listed by size. Match the required size to connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with corresponding color bands (Table 4).



SHELL STYLE

3145 HERMETIC SEAL BOX MOUNT RECEPTACLE, CRIMP CONTACTS.
3146 HERMETIC SOLDER BOX MOUNT RECEPTACLE, CRIMP CONTACTS.
3149 HERMETIC SEAL JAM NUT RECEPTACLE, CRIMP CONTACTS.
3424 WALL MOUNT RECEPTACLE.
2446 RACK & PANEL PLUG.
3463 HERMETIC SOLDER BOX MOUNT RECEPTACLE, SOLDER CONTACTS.
3464 JAM NUT RECEPTACLE.
3466 HERMETIC SOLDER BOX MOUNT RECEPTACLE, SOLDER CONTACTS.
3467 STRAIGHT PLUG.
3468 STRAIGHT PLUG, LANYARD RELEASE.
3469 HERMETIC SEAL JAM NUT RECEPTACLE, CRIMP CONTACTS.

SHELL SIZE

3, 7, 12, 19, 27, 37, OR 61.

INSERT CONFIGURATION

SEE FIGURE 18.

CONTACT STYLE

P PIN.
S SOCKET.

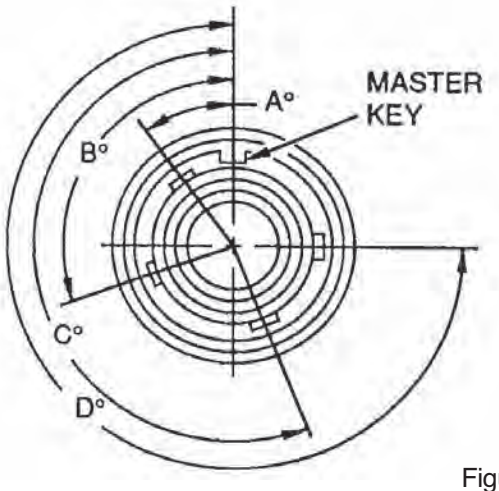
SERVICE CLASS

E FLUID RESISTANT, 392°F(200°C) OPERATING TEMPERATURE. (3424, 3446, 3464, 3467, 3468 ONLY).
H HERMETIC SEAL, SOLDER CONTACTS (3463, 3466, 3469 ONLY).
L FLUID RESISTANT EXTENDED 347°F(175°C) OPERATING TEMPERATURE.
N HERMETIC SEAL, CRIMP CONTACTS (3145, 3146, 3149 ONLY)

ALTERNATE POSITION

BLANK (NORMAL) W, X, Y, B OR C.

Figure 10. MIL-C-81703 Series 3 Connector Part Number Breakdown



Size	A°.	B°	C°	D°
3	23°	97°	187°	—
7	23°	97°	187°	277°
12	30°	105°	195°	270°
19	30°	105°	195°	270°
27	30°	105°	195°	270°
37	30°	105°	195°	270°
61	30°	105°	195°	270°

Figure 11. Connector Keying

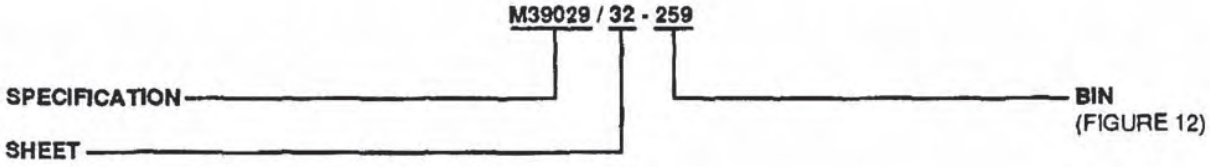


Figure 12. M39029 Part Number Breakdown

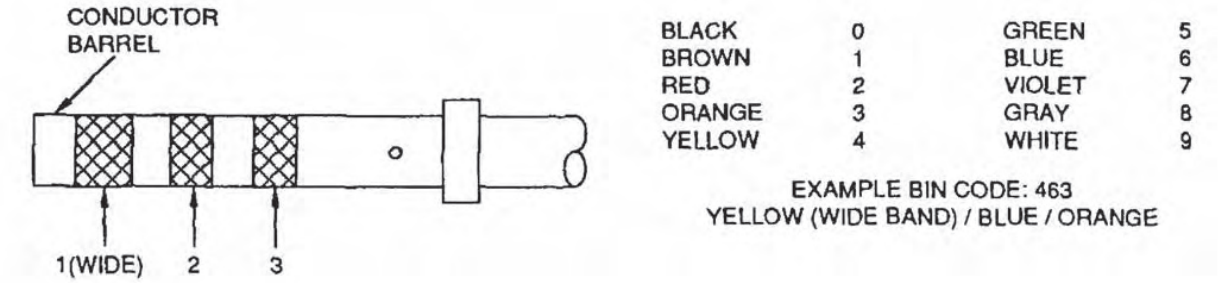


Figure 13. Basic Identification Number and Color Bands

Table 4. MIL-C-81703 Series 3 Power Contact Application

Contact Size	Wire Range	Socket Contacts				Pin Contacts			
		M39029/	Color Bands 1st	2nd	3rd	M39029/	Color Bands 1st	2nd	3rd
20	20-24	5-115	BN	BN	GN	4-110	BN	BN	BK
16	16-20	5-116	BN	BN	BL	4-111	BN	BN	BN
16	20-24	5-117	BN	BN	VI	4-112	BN	BN	RD
12	12-14	5-118	BN	BN	GY	4-113	BN	BN	OR
12	16-20	5-119	BN	BN	W H	4-114	BN	BN	YE

96. THERMOCOUPLE CONTACTS. Temperature sensing systems utilize two dissimilar metal conductors with matched lengths. When joined at the point temperature will be sensed, a voltage difference develops. This voltage is directly proportional to temperature change. Thermocouple contacts listed (Table 5) are either nickel-aluminum / silicon (formerly alumel), nickel-chromium (formerly chromel), iron, or copper-nickel alloy (formerly constantan). Match the required size to connector application, wire gage, and composition. Socket and pin contact part numbers are listed along with the corresponding color bands.

97. TOOLING. This procedure is for attaching power and thermocouple contacts to a single conductor wire. Select proper tooling for the specific contact part number (Table 6) and refer to NAVAIR 01-1A-505-1, WP 013 00 for correct assembly and crimp procedures.

98. BACKSHELL REMOVAL AND INSTALLATION. For backshell removal and installation refer to WP 010 03.

Table 5. MIL-C-81703 Series 3 Thermocouple Contact Application

Contact Size	Wire Range	Socket Contacts		Pin Contacts		Remarks (See Notes)
		M39029/	Color Bands 1st 2nd 3rd	M39029/	Color Bands 1st 2nd 3rd	
20	20-24	10-138	BN OR GY	9-132	BN OR RD	5/
20	20-24	10-139	BN OR WH	9-133	BN OR OR	1/
20	20-24	10-140	BN YE BK	9-134	BN OR YE	2/
20	20-24	10-141	BN YE BN	9-135	BN OR GN	3/
20	20-24	10-142	BN YE RD	9-136	BN OR BL	4/
16	16-20	10-519	GN BN WH	9-514	GN BN YE	5/
16	16-20	10-520	GN RD BK	9-515	GN BN GN	1/
16	16-20	10-521	GN RD BN	9-516	GN BN BL	2/
16	16-20	10-522	GN RD RD	9-517	GN BN VI	3/
16	16-20	10-523	GN RD OR	9-518	GN BN GY	4/

NOTE
New terminology applies to thermocouple conductors as follows:
1/ Constantan: Copper - Nickel Alloy
2/ Alumel: Nickel - Aluminum Alloy
3/ Chromel: Nickel - Chromium
4/ Iron: Iron
5/ Copper: Copper

RD – Red
YE – Yellow
BK – Black
OR – Orange
VI – Violet
WH – White
BN – Brown
GY – Grey

Table 6. MIL-C-81703 Series 3 Power and Thermocouple Tooling

Socket Contacts M39029/	Pin Contacts M39029/	Insertion Tool M81969/	Removal Tool M81969/	Unwired Removal Tool M81969/	Crimp Tool M22520/	Positioner M22520/
5-115	4-110	14-02	14-02	30-05	2-01, 1-01, 7-01	2-01, 1-02 RD, 7-02
10-138	9-132	14-02	14-02	30-05	2-01 or 1-01	2-02 or 1-02 RD
10-139	9-133	14-02	14-02	30-05	2-01 or 1-01	2-02 or 1-02 RD
10-140	9-134	14-02	14-02	30-05	2-01 or 1-01	2-02 or 1-02 RD
10-141	9-135	14-02	14-02	30-05	2-01 or 1-01	2-02 or 1-02 RD
10-142	9-136	14-02	14-02	–	2-01 or 1-01	2-02 or 1-02 RD
5-116	4-111	14-03	14-03	30-06	1-01 or 7-01	1-02 BL or 7-03
5-117	4-112	14-02	14-03	30-05	1-01 or 7-01	1-02 BL or 7-03
10-519	9-514	14-03	14-03	30-06	1-02 or 7-01	1-02 BL or 7-03
10-520	9-515	14-03	14-03	30-06	1-02 or 7-01	1-02 BL or 7-03
10-521	9-516	14-03	14-03	30-06	1-02 or 7-01	1-02 BL or 7-03
10-522	9-517	14-03	14-03	30-06	1-02 or 7-01	1-02 BL or 7-03
10-523	9-518	14-03	14-03	30-06	1-01 or 7-01	1-02 BL or 7-03
5-118	4-113	14-04	14-04	30-07	1-01	1-02 YE
5-119	4-114	14-03	14-04	30-06	1-01	1-02 YE

99. CONNECTOR BUILD-UP SERIES 2 AND 3.

100. WIRE DIAMETER BUILD-UP. If wire outside diameter is not large enough to fill wire sealing grommet holes, build up wire outside diameter by applying heat-shrinkable insulating sleeving. This must be accomplished prior to contact insertion.

101. WIRE STRIPPING. Strip wire in accordance with following procedure:

a. Cut wire to proper length. Ensure enough wire remains for adequate strain relief without leaving excess slack.

b. Strip insulation from end (NAVAIR 01-1A-505-1, WP 009 00). Select contact (Table 2, 4, or 5).

102. CONTACT CRIMPING. Crimp contact in accordance with following procedure:

a. Select correct crimp tool and positioner (Table 3 or 6).

b. Perform die closure check (NAVAIR 01-1A-505-1, WP 013 00). Install positioner and set selector knob for gage of wire.

c. Insert stripped wire into contact conductor barrel. Ensure all wire strands are inside contact conductor barrel and visible in contact inspection hole (Figure 14).

d. If insulation gap is to large, trim conductor as required. If insulation gap is too small, trim insulation as required (NAVAIR 01-1A-505-1, WP 009 00).

e. Crimp contact to wire.

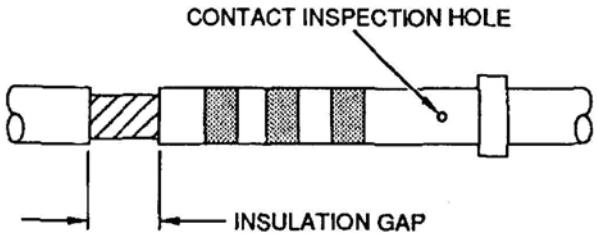
103. CONTACT INSERTION. Insert wired or unwired contacts in accordance with following procedure:

a. Remove sealing plug and/or contact from contact cavity (Paragraph 107).

b. Ensure wire or cable on contact is routed through connector backshell.

c. Select correct insertion tool (Table 3 or 6).

d. Place wire and contact assembly into colored tip of insertion tool (Figure 15). Ensure tool tip is over conductor barrel and butted against contact shoulder.



CONTACT SIZE	WIRE AWG	INSULATION GAP
20	20	1/32 INCH MIN. 1/16 INCH MAX.
16 12	20 18 16 14 12	 1/32 INCH MIN. 5/64 INCH MAX.

Figure 14. Insulation Gap

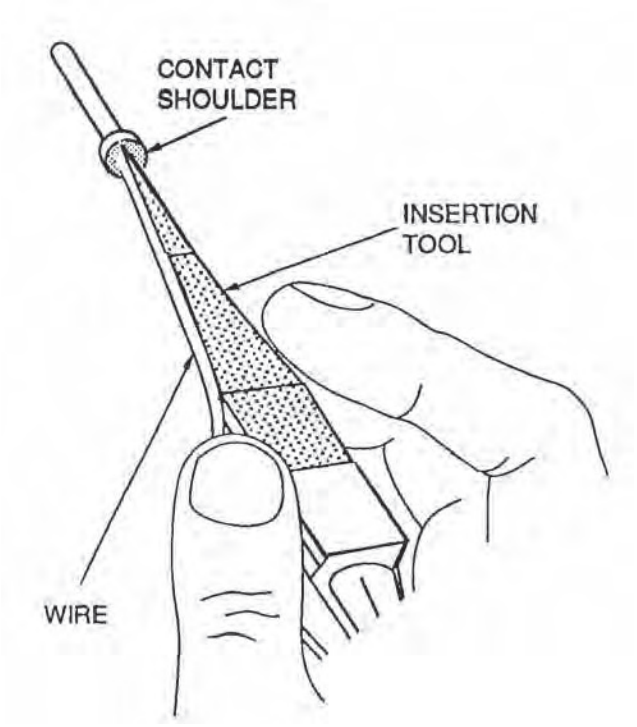


Figure 15. Inserting Contact Into Insertion Tool

e. Insert tip of contact into cavity. Start contact insertion near connector center cavities and work outward.

f. Axially align contact with contact cavity.

g. With firm even pressure, press tool against contact shoulder and seat contact into cavity. A slight click may be heard as retention tines snap into place behind contact shoulder (Figure 16).

h. Pull tool straight out of contact cavity. Remove tool from wire. Pull back lightly on wire to ensure contact is properly seated.

i. Seal connector as required (Paragraph 104) and install backshell.

104. CONNECTOR SEALING.

105. Sealing Plugs. Seal connector in accordance with following procedure:

a. Fill all unused cavities with un-crimped contacts (Paragraph 103).

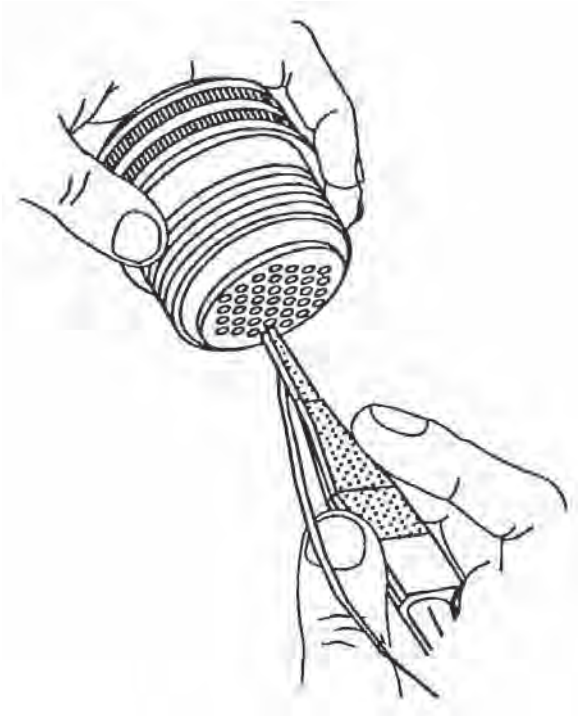


Figure 16. Contact Insertion

Table 7. Sealing Plug Selection

Contact	Sealing Plug Selection Part Number	Color
8	MS27488-8	Red
12	MS37488-12	Yellow
20	MS27488-20	Red

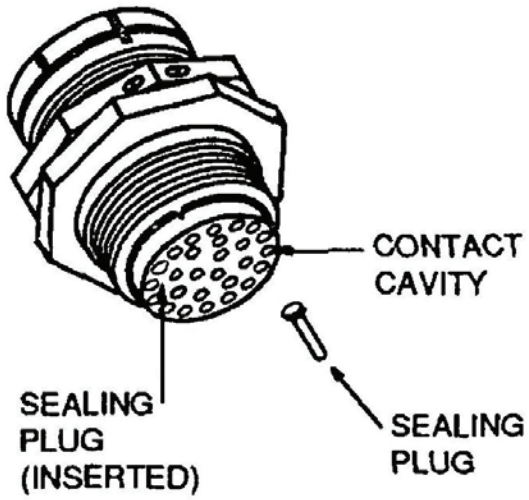


Figure 17. Inserting Sealing Plug Into Contact Cavity

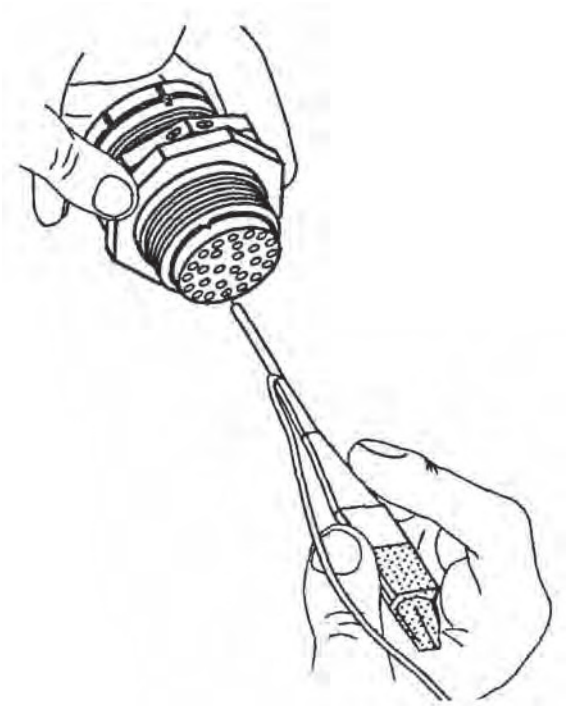


Figure 18. Removing Contact from Connector

b. Select sealing plug (Table 7). Insert sealing plug, large diameter first, until bottomed in contact cavity (Figure 17). Fill all cavities that have un-crimped contacts. Preserve connector in accordance with NAVAIR 01-1A-505-1, WP 026 00.

106. Moisture Barrier. For connector sealing procedures, including application of sealant to grommet sealed connectors, refer to NAVAIR 01- 1A-505-1, WP 025 00.

107. CONTACT REMOVAL. The following paragraphs give contact removal for front release and rear release crimp contacts.

108. Crimp Front Release Contacts. Remove wired, unwired, and broken wire contacts in accordance with following procedure:

a. Select removal tool (Table 3).

b. If contact is unwired, remove sealing plug from cavity of contact to be removed.

c. Working from front (mating end) of connector, slide hollow end of removal tool over contact (Figure 18).

d. Holding removal tool at right angle to front insert face, push tool straight toward rear of connector, firmly pressing tool to positive stop when tool bottoms in insert cavity.

e. Maintain pressure on tool handle and slide collar of tool forward until it stops. Contact will be partially ejected from rear of connector insert.

f. Remove tool by pulling straight back to clear connector insert face. Remove contact out rear of connector by pulling lightly on wire or using a mating contact to push out released contact.

109. Crimp Rear Release Contacts. Remove wired, unwired, and broken wire contacts in accordance with following paragraphs.

110. Wired Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors.

CAUTION

Present metal tooling in some instances has damaged the wire sealing grommet at the end of the connectors. Plastic tools are preferred.

Caution should be exercised in the use of tooling, as connector damage can occur.

a. Select correct removal tool (Table 6).

b. Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

c. Place wire of contact to be removed into removal tool, with white tip facing connector insert (Figure 19).

d. Slide removal tool along wire at a right angle to connector insert face and align with contact cavity (Figure 20).

e. Insert tool into contact cavity until tool tip bottoms against contact shoulder (Figure 21). A slight increase in resistance will be noticed just before the tool tip bottoms. This will spread the retention clip and release its hold on the contact.

f. Press wire firmly against serrated edge of removal tool and pull wire straight out from contact cavity (Figure 22).



Figure 19. Inserting Wire into Removal Tool

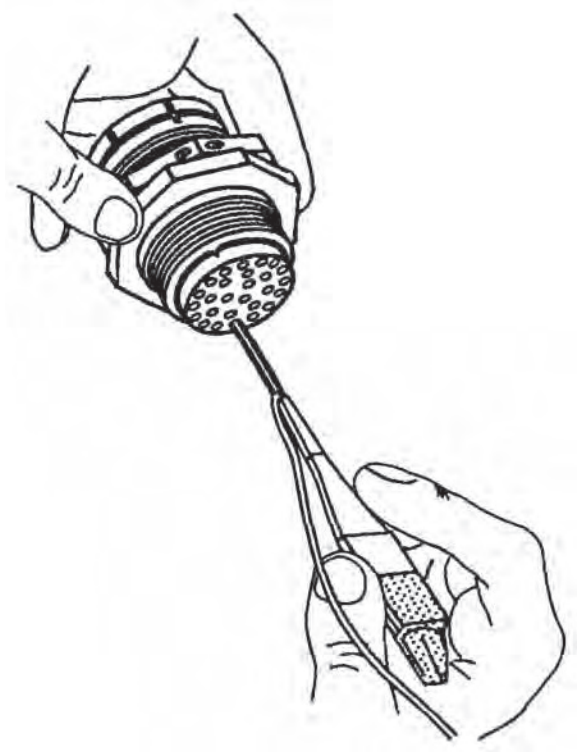


Figure 20. Removal Tool on Wire

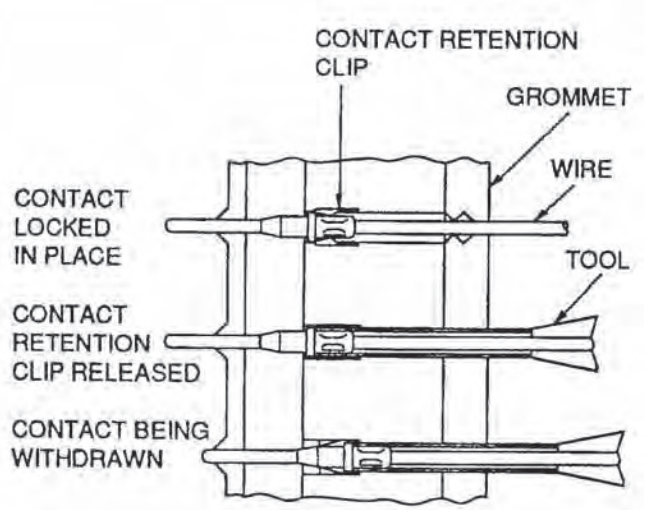


Figure 21. Unlocking Contact Mechanism

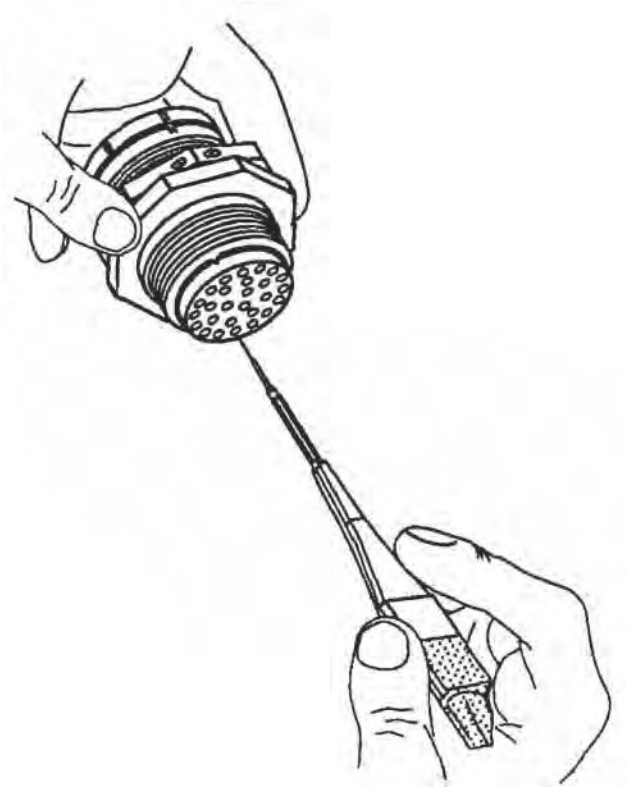


Figure 22. Removing Contact from Connector

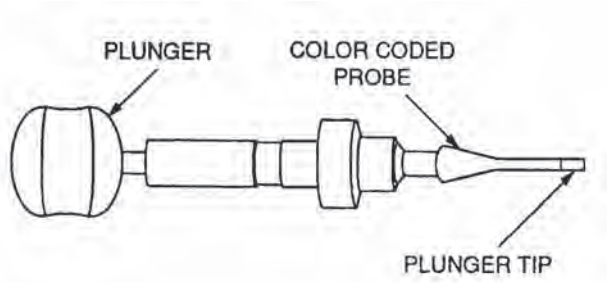


Figure 23. Typical Unwired Contact Removal Tool

111. Unwired Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors.

CAUTION

Present metal tooling in some instances has damaged the wire sealing grommet at the end of the connectors. Plastic tools are preferred.

Caution should be exercised in the use of tooling, as connector damage can occur.

a. Select correct unwired removal tool (Table 6, Figure 23).

b. Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

c. With rear of connector exposed, remove sealing plug from insert cavity of contact to be removed.

d. Press and hold tool plunger until tip of tool is aligned with contact to be removed.

e. Axially align removal tool with contact to be removed.

f. Insert removal tool tip into contact cavity to butt contact wire barrel; then slide removal tool sleeve over contact and exert pressure until sleeve bottoms (Figure 24).

g. Remove tool and unlocked contact from connector by withdrawing tool from connector (Figure 25).

h. Remove contact from removal tool by pressing plunger.

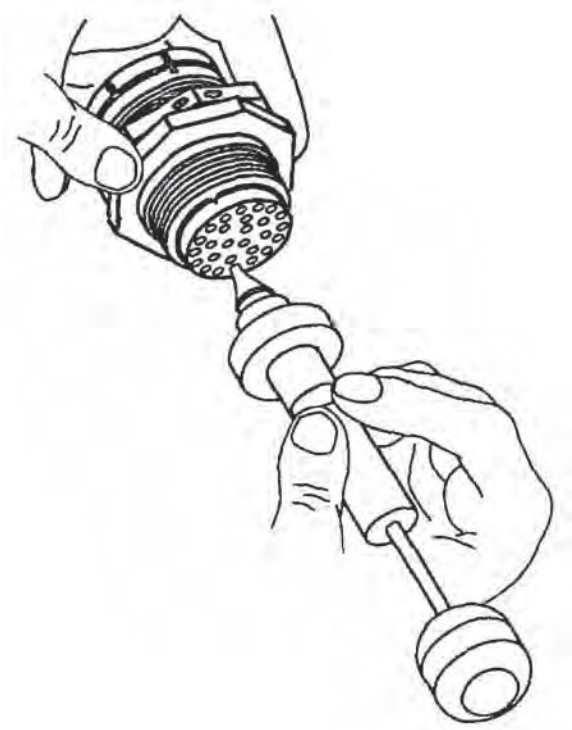


Figure 24. Unlocking Contact Retention Mechanism With Unwired Removal Tool

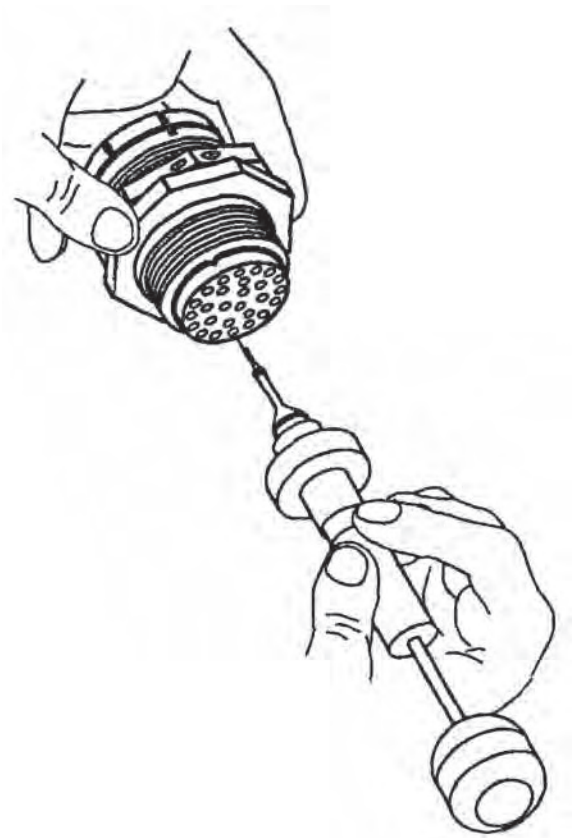


Figure 25. Extracting Contact from Connector

112. Broken Wire Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors.

CAUTION

Present metal tooling in some instances has damaged the wire sealing grommet at the end of the connectors. Plastic tools are preferred.

Caution should be exercised in the use of tooling, as connector damage can occur.

a. Select correct removal tool (Table 6).

b. Inspect tips of metal tools for nicks, burrs, and distortion of probe before use.

CAUTION

Removal of a contact with a broken Wire shall not be attempted with an unwired removal tool. Use of unwired removal tools require that the tip be jammed onto the contact wire barrel. If wire strands occupy wire barrel, the tool and connector may be damaged.

c. Insert tip of removal tool about $\frac{1}{8}$ inch into cavity at rear of connector.

CAUTION

Wire strands may be encountered at any point up to $\frac{5}{16}$ inch of tool insertion. It is important not to jam any strands of wire up to this point.

Withdraw removal tool anytime during insertion when it cannot be advanced into connector using these procedures. Inspect tool tip for nicks, cracks, mushrooming, and other damage that will prevent its functioning. Replace removal tool and repeat procedure, if required.

NOTE

Refer to Figure 26 for approximate dimensions of a size 22 contact and cavity. The dimensions in this procedure are based on a size 22 contact.

d. Gently insert removal tool into cavity in about $\frac{1}{16}$ inch units, releasing tool after each unit if resistance is felt.

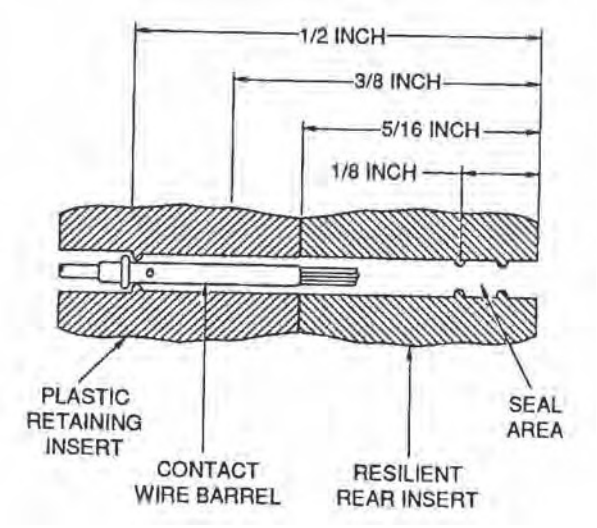


Figure 26. Typical Connector Dimensions

NOTE

Rotating removal tool works splayed wire strands into slot of tool, allowing tool to pass.

Removal tool may be blocked at rear of contact by plastic insert or additional strands of broken wire.

e. If resistance is felt before removal too] reaches back end of contact, withdraw too] slightly, rotate about $\frac{1}{6}$ of a turn, and reinsert tool. Repeat rotating and insertion procedure until tool passes with minimum additional force to $\frac{5}{16}$ inch depth back end of contact (Figure 27).

f. Wiggle removal tool gently to help it into insert bore and over back of contact. Additional rotation may be required if broken strands are encountered.

g. Continue insertion of removal tool until positive stop is felt at about $\frac{1}{2}$ inch depth.

h. Exert axial pressure on engaging end of contact, using appropriate pin or socket as pusher. If contact does not move, seat removal tool more firmly.

i. Push contact completely out rear of connector before disengaging removal tool (Figure 28).



Figure 27. Unlocking Contact Retention Mechanism of Broken Wire



Figure 28. Broken Wire Contact Removal

113. CONNECTOR REMOVAL AND INSTALLATION. If the connector is severely damaged or cannot be repaired using the above procedures, proceed as follows:

a. Starting from outside of damaged connector, tag wires and remove all contacts from connector (Paragraph 107). If contact cannot be removed, cut wire as close to connector as possible and attach new contact (Paragraphs 101 and 102).

b. Starting from center of new connector, maintain a smooth wire dress and insert contact into correct cavity (Paragraph 103). Remove tag from wire. Repeat procedure until all contacts are installed in new connector.

114. CONNECTOR BUILD-UP, SOLDER CONTACTS.

115. For buildup procedures for solder contacts refer to NAVAIR 01-1A-505-1, WP 016 00.

116. CONNECTOR CLEANING AND PRESERVATION.

117. For connector cleaning and corrosion control procedures refer to NAVAIR 01-1A-505-1, WP 026 00.

CONNECTOR ACCESSORIES
MIL-C-81703 SERIES 1, 2, AND 3

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Connectors, Electric, Circular, Miniature, Rack and Panel or Push-Pull Coupling, Environment Resisting MIL-C-81703

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Sealing Plugs 13
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Special Tools 2

Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
BT Series	Tools, Adapter
BT-BS-601	Wrench, Strap
BT-BS-609	Wrench, Strap
BT-BS-611	Wrench, Strap
BT-BS-618	Wrench, Strap
BT-BS-625	Wrench, Strap
BT-BS-630	Wrench, Strap
BT-HT-107	T-handle

Materials Required

Specification/ Part No.	Nomenclature
MIL-PRF-29608	Compound, Cleaning
S1009	Glue, Epoxy
M23053/5	Sleeving, Insulating, Heat-Shrinkable
M23053/8	Sleeving, Insulating, Heat-Shrinkable
MIL-T-43435, Type II, Finish C, Size 2	Tape, Lacing
P-2740FR	Tape, Silicone Rubber
4529670544	Tape, Silicone Rubber

1. INTRODUCTION.

2. This Work Package (WP) covers connector accessories used with MIL-C-81703 Series 1, 2, and 3 connectors, their function, associated tools, assembly, and procurement information.

3. CONNECTOR ACCESSORIES. Connector accessories are components added to a connector to help maintain its operational characteristics. These accessories are divided into the following categories:

a. Backshells.

b. Connector Assembly Tools.

c. Dummy Receptacles.

d. Dust Caps.

e. Shrink Boots and Adapters.

f. Conduit Fittings.

g. Mounting Plates for Flange Mount Receptacles.

h. Rubber Bushings.

i. Sealing Plugs.

4. BACKSHELLS. Backshells are the most complex connector accessories and simply stated they are any device added to the rear or wiring side of a connector. Backshells may be divided into the following categories:

a. Grommet Nuts.

b. Cable Clamps/Strain Reliefs.

c. EMI/RFI Grounding Terminators.

d. Non- Environmental Backshells.

e. Environmental Backshells.

f. Non-Environmental EMI/RFI Backshells.

g. Environmental EMI/RFI Backshells.

5. MIL-C-81703 SERIES 1, 2, and 3 CONNECTOR ACCESSORIES.

6. SPECIAL TOOLS. Connector backshells come in a wide variety of types depending on application. To install backshells or accessories, adapter tools and a strap wrench are needed. Adapter tools (Figure 1) are used to hold the connector during backshell installation and removal. Special tools are used to prevent damage to connector shells and accessories.

7. ADAPTER TOOL SELECTION. Adapter tools are required for the installation and removal of backshells. For adapter tool selection, the connector shell size and type must be known (Table 1).

8. ADAPTER TOOL ACCESSORIES. To hold adapter tool and to keep the connector from turning when installing or removing backshells the use of a ¼ inch drive T-handle is recommended. A strap wrench is used on backshell for installation and removal to apply even pressure without causing damage to accessories (Figure 2).

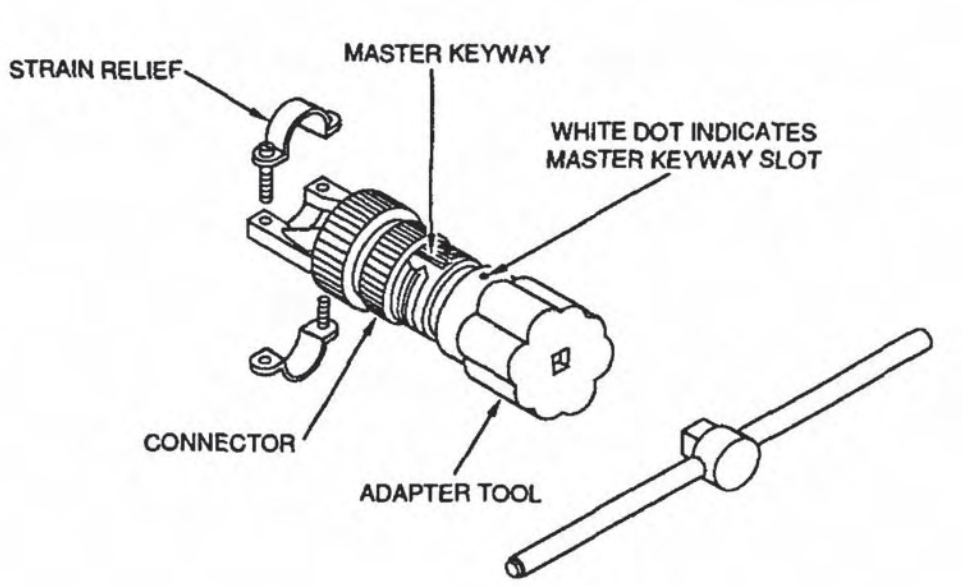


Figure 1. Adaptor Tool

Table 1. MIL-C-81703 Adaptor Tools

		Part Number			
Shell Size	Polarization	Plug	Color Code	Receptacle	Color Code
8	All	BT264-8	Orange	BT264R-8	Orange
10	All	BT264-10	Orange	BT264R-10	Orange
12	All	BT264-12	Orange	BT264R-12	Orange
14	All	BT264-14	Orange	BT264R-14	Orange
16	All	BT264-16	Orange	BT264R-16	Orange
18	All	BT264-18	Orange	BT264R-18	Orange
20	All	BT264-20	Orange	BT264R-20	Orange
22	All	BT264-22	Orange	BT264R-22	Orange
24	All	BT264-24	Orange	BT264R-24	Orange

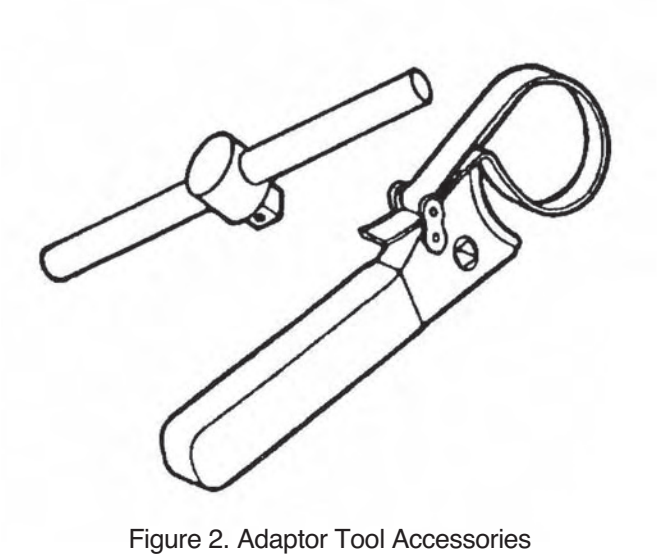


Figure 2. Adaptor Tool Accessories

9. BACKSHELL REMOVAL. Backshells are used to protect, shield, and add support to connectors. When modification or repair to the connector is necessary the backshell must be removed. Proceed using following procedure:

a. Select correct adapter tool (Table 1) by series, T-handle, and strap wrench (Figure 2).

CAUTION

Ensure white dot on adapter tool aligns with master key of connector. Spinning the tool on the connector will cause damage to tool and/or connector (Figure 3).

b. Mate adapter tool to connector, such that the white dot on the adapter tool aligns with master key of connector (Figure 3).

c. Install strap wench around part to be removed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 3).

d. Insert T-handle into socket of adapter tool to provide holding (Figure 3).

e. To loosen backshell apply force counterclockwise as viewed from connector rear (Figure 4).

f. Tape/secure backshell to bundle to prevent loss.

10. BACKSHELL INSTALLATION. Upon completion of maintenance or modification the backshell must be reinstalled. Proceed using following procedure:

a. Untape/retrieve stored backshell from bundle. Start backshell on connector by hand to prevent cross threading.

b. Select correct adapter tool (Table 1), set up T-handle and strap wrench (Figure 2).

CAUTION

Ensure white dot on adapter tool aligns with master key of connector. Spinning the tool on the connector will cause damage to tool and/or connector (Figure 3).

c. Mate adapter tool to connector, such that the white dot on the adapter tool aligns with master key of connector (Figure 3).

d. Install strap wrench around part to be installed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 3).

e. Insert T-handle into socket of adapter tool to provide holding (Figure 3).

NOTE

Refer to NAVAIR 01-1A-505-1, WP 011 01, for torque value information on AS85049 connector backshells.

f. To tighten backshell apply force clockwise as viewed from connector rear (Figure 5).

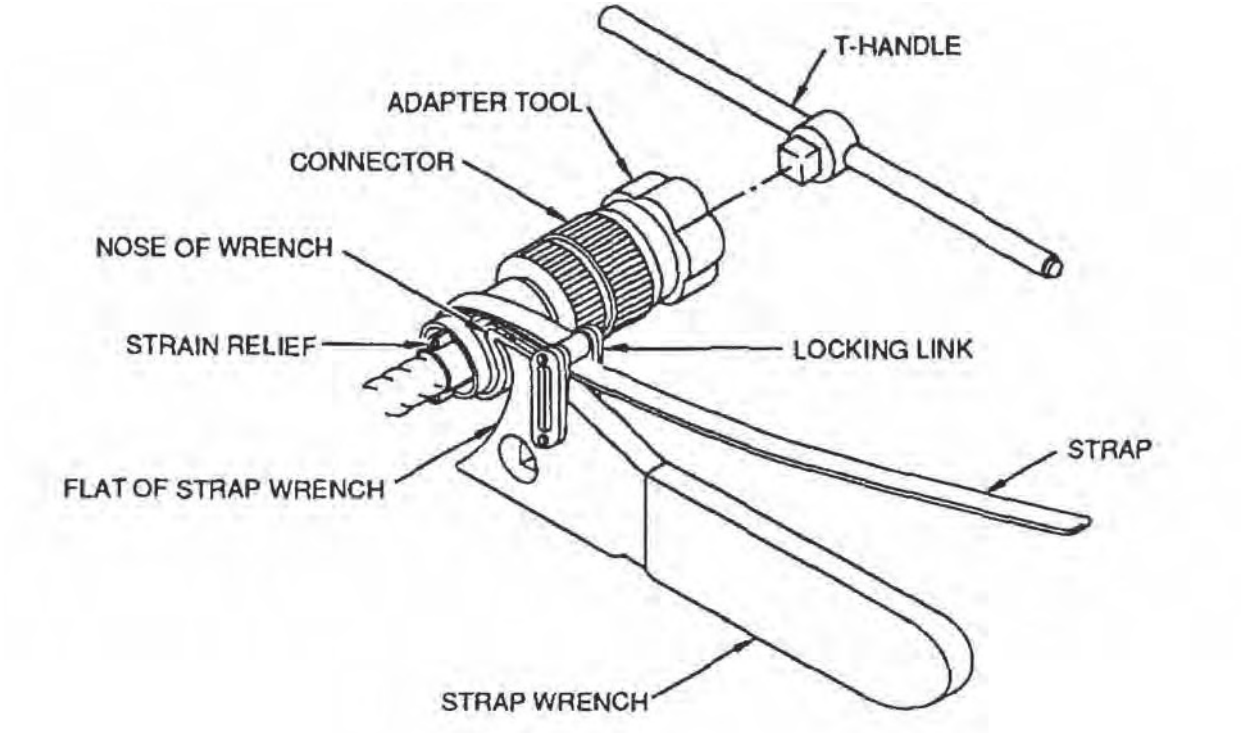


Figure 3. Strap Wrench setup and Adjustment

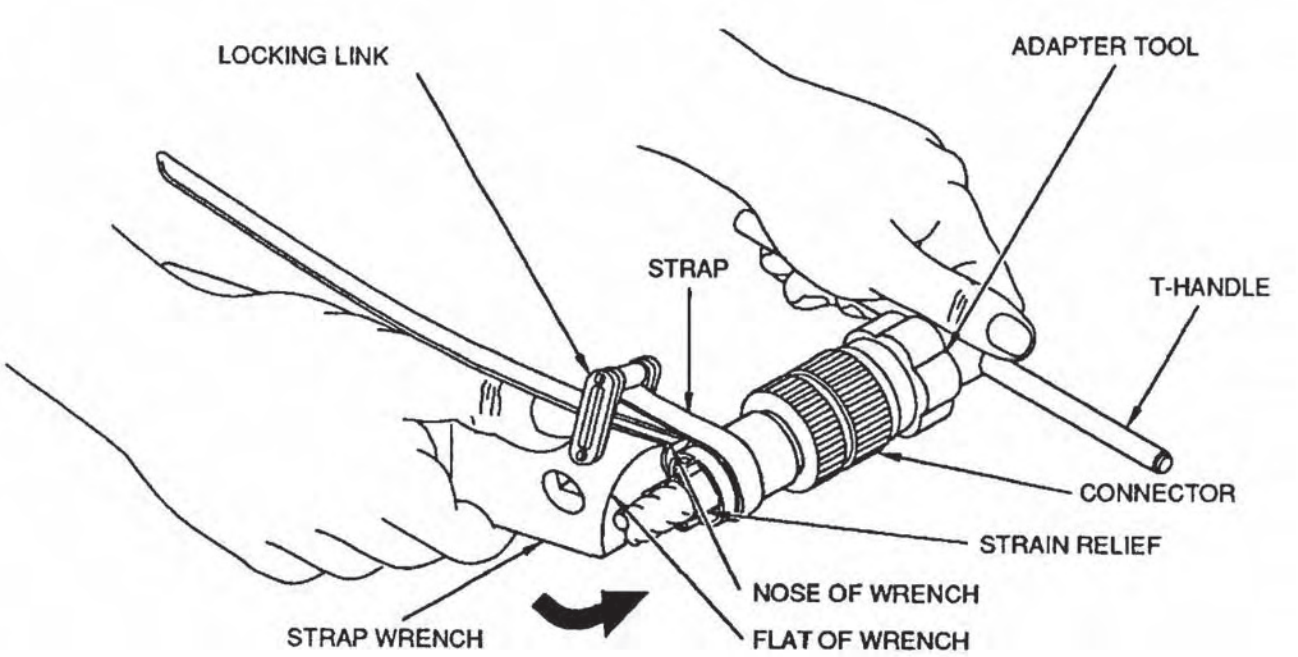


Figure 4. Loosening Position of Wrench

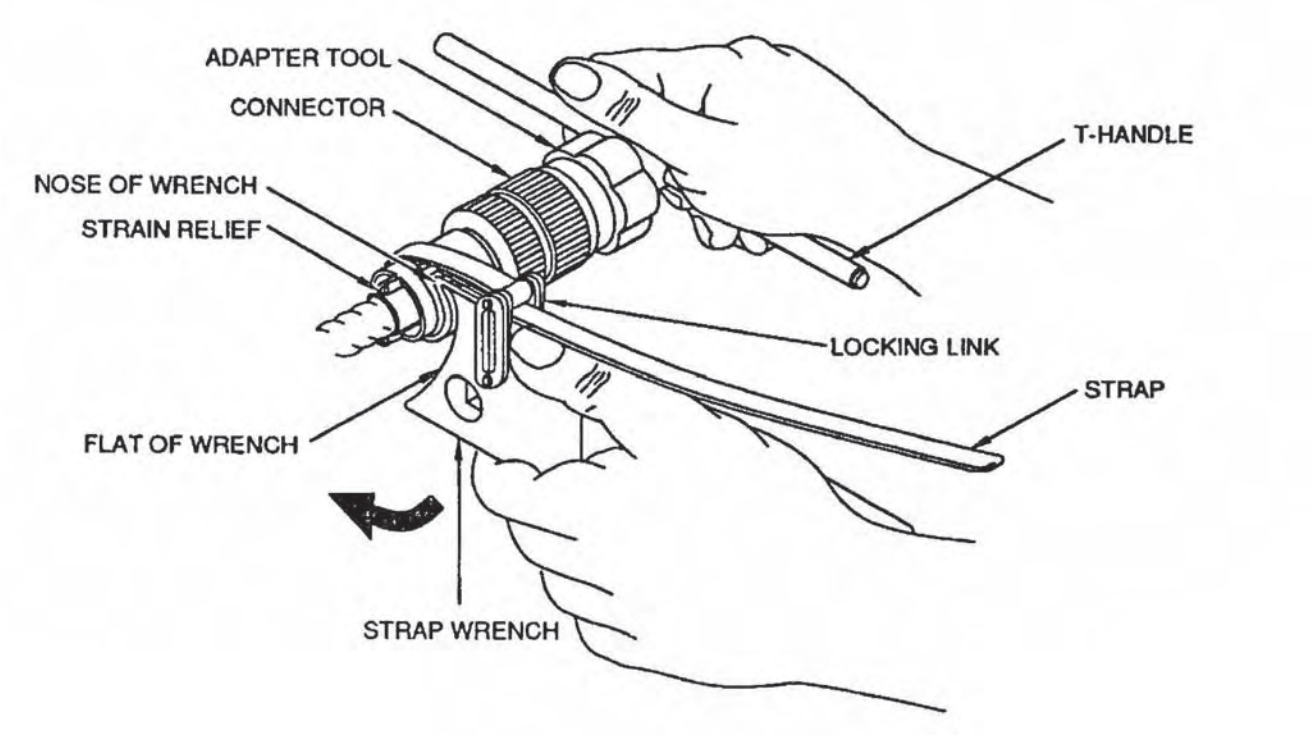


Figure 5. Tightening Position of Wrench

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, (the Society of Automotive Engineers (SAE), will become the preparing activity and the Navy will adopt the documents), the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

11. GROMMET NUTS. The grommet nut is a threaded ring nut utilized to securely bold connector grommet in place. See WP 007 03, this manual for detailed information on the M85049/31 grommet nut.

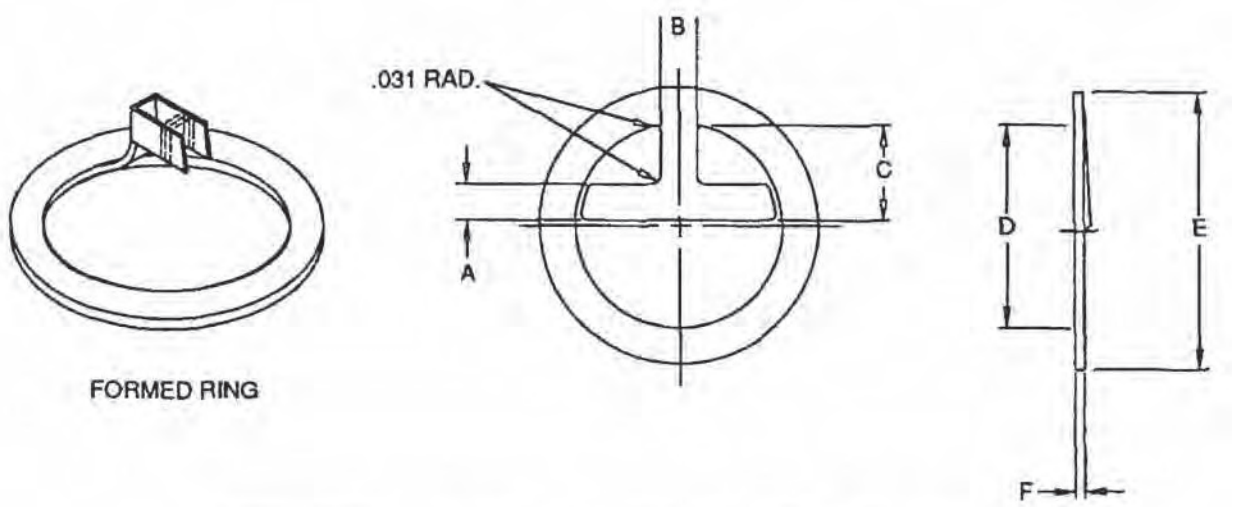
12. CABLE CLAMPS/STRAIN RELIEFS. The following two paragraphs explain the two types of cable support or clamping devices.

13. Cable Clamps. A cable clamp is a support or clamping device which requires use of an intermediate component for attachment to back of connector. See (WP 007 03, this manual) for detailed information on the following cable clamps: M85049/1, M85049/2, M85049/41 and M85049/42.

14. Strain Reliefs. A strain relief is a support or clamping device which attaches directly to connector. See (WP 007 03, this manual) for detailed information on the following strain reliefs: M85049/43, M85049/51, M85049/52, M85049/53, M85049/54, and M85049/55.

15. SHRINK BOOTS AND ADAPTERS. Boots and adapters are protective coverings over any portion of a cable, wire, or connector in addition to normal jacketing or insulation. A protective housing usually made from a resilient material to prevent entry of moisture into a connector. See WP 008 03 for information on shrink boots: MS3109 (or AS31091) and MS3117 (or AS31171) and adapters: M85049/60-1 and M85049/60-2.

16. EMI/RFI GROUNDING TERMINATORS. Ground terminators are used to ground or shield a connector to reduce electromagnetic radiation and radio frequency interference from other equipment. A physical and electrical shield is employed which is terminated at one or both ends to a ground or some other predetermined point with respect to ground. Shields can be applied to individual wires, cables, bundles, or harnesses. See WP 007 03 for information on grounding terminators: MS18121, MS21980, and MS21981. Refer



AN Part No.	Use With MIL-C-81703 Series 1 Shell Size	A	B	C	D ±.005 Dia.	E ±.005 Dia.	F +.005 -.002
AN3111-1	8S, 10S	.062	.062	.156	.323	.448	
AN3111-2	10SL, 12, 12S	.062	.062	.188	.441	.566	
AN3111-3	14, 14S	.062	.062	.188	.557	.682	
AN3111-4	16, 16S	.094	.094	.406	.620	.807	.020
AN3111-5	18	.125	.125	.312	.682	.932	
AN3111-6	20, 22	.125	.125	.500	.914	1.105	
AN3111-7	24, 28	.125	.125	.438	1.105	1.355	
AN3111-8	32	.125	.125	.562	1.418	1.668	
AN3111-9	36	.125	.125	.562	1.668	1.918	
AN3111-10	40	.125	.125	.562	1.910	2.160	.032
AN3111-11	44	.125	.125	.688	2.160	2.410	
AN3111-12	48	.125	.125	.688	2.660	2.910	

Figure 6. Grounding Terminator

to Figure 6 for information on the AN 3111 grounding termination ring.

17. EMI/RFI GROUNDING TERMINATOR INSTALLATION. EMI/RFI grounding terminator installation procedures are contained in Figure 7.

18. NON-ENVIRONMENTAL BACKSHELLS. Use EMI/RFI non-environmental backshells and discard ring.

19. ENVIRONMENTAL BACKSHELLS. A typical environmental backshell (Figure 8) is a device that provides protection from moisture, dirt, air, or dust which may reduce performance of unit. They do not provide protection from nonphysical environments such as RF and radiation. See WP 007 03 for information on environmental backshells: M85049/9, M85049/7, M85049/11.

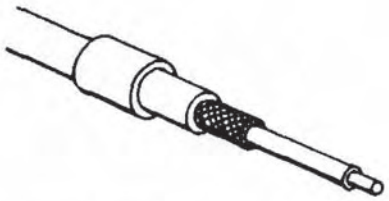
20. NON-ENVIRONMENTAL EMI/RFI BACKSHELLS. A typical non-environmental backshell (Figure 9) is an attachment on the back side of a connector that does not protect against moisture, dust and dirt but does provide EMI/RFI protection. See WP 007 03 for detailed information on non-environmental EMI/RFI backshells:, M85049/23, M85049/24, M85049/25, M85049/26-1 and M85049/26-2.

21. ENVIRONMENTAL EMI/RFI BACKSHELLS. A typical environmental EMI/RFI backshell (Figure 10) is used when moisture entry and EMI/RFI protection is needed. See WP 007 03 for information on environmental EMI/RFI backshells: M85049/6, M85049/8 and M85049/10.

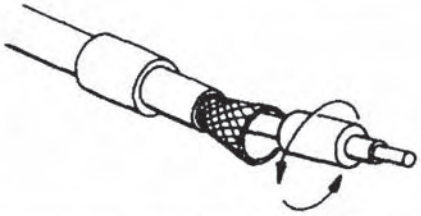
INDIVIDUAL WIRE TERMINATION

MS18121, MS21980, MS21981

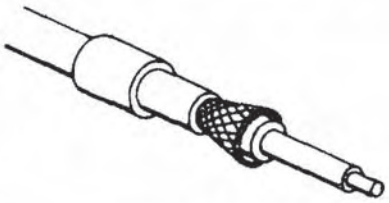
1. SLIP OUTER SLEEVE OVER INSULATION JACKET AFTER STRIPPING. TRIM BRAID TO WITHIN 1/2 INCH OF INSULATION.



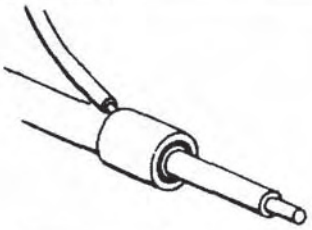
2. FAN BRAID BY ROTATING CENTER CONDUCTOR AND SLIP INNER SLEEVE UNDER BRAID.



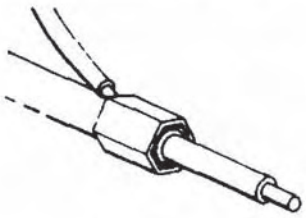
3. POSITION INNER SLEEVE TO EXTEND ABOUT 1/16 INCH BEYOND BRAID.



4. SLIP GROUND LEAD UNDER OUTER SLEEVE (FRONT OR BACK) AND SLIDE OUTER SLEEVE OVER BRAID.



FOR DAISY CHAIN GROUNDiNG TWO GROUND WIRES CAN BE ACCOMMODATED BY SELECTING THE PROPER SIZE OUTER SLEEVE.



5. OUTER SLEEVE COVERS ALL EXPOSED PARTS.

6. COMPRESS IN SPECIFIED TOOL.

Figure 7. EMI-RFI Grounding Terminator Installation (Sheet 1 of 2)

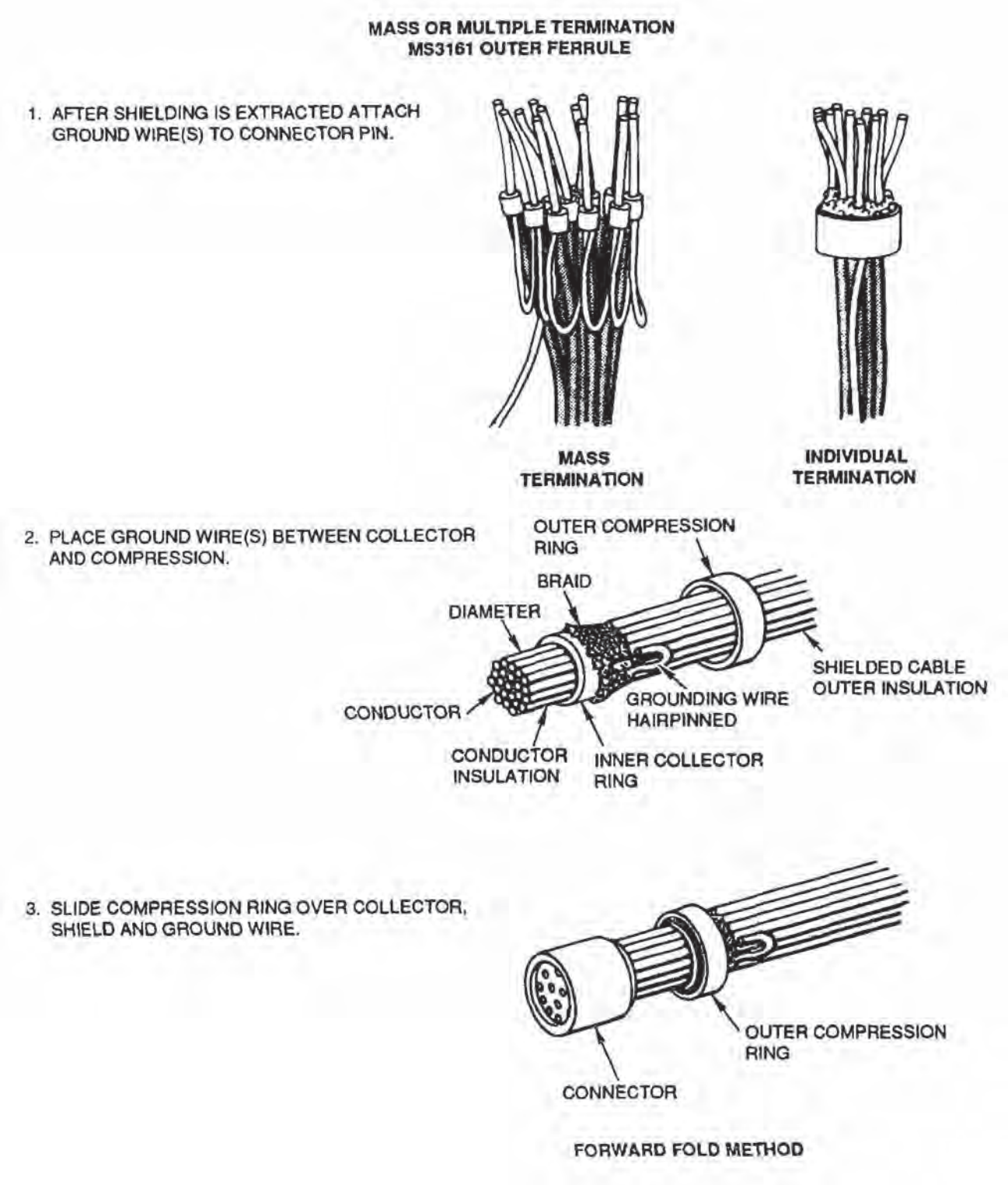


Figure 7. EMI-RFI Grounding Terminator Installation (Sheet 2 of 2)

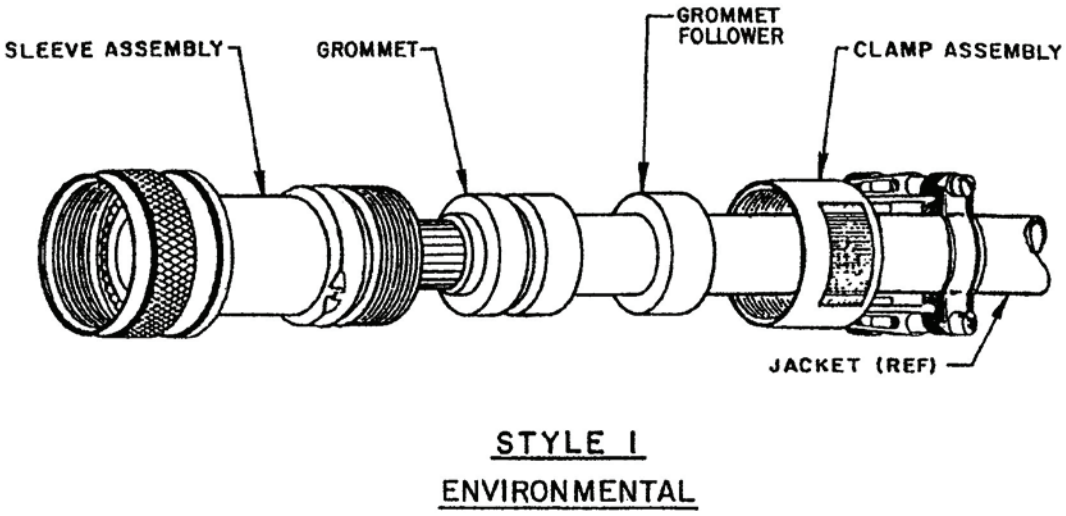
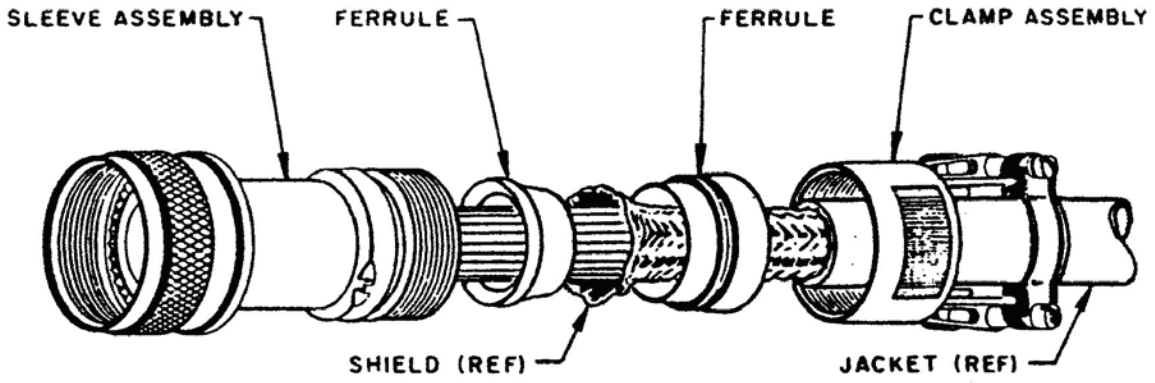
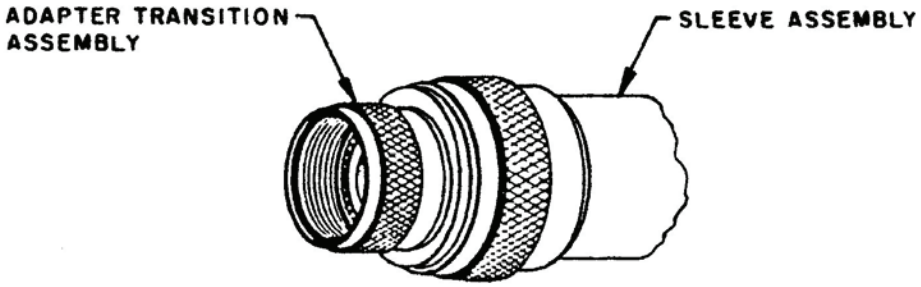


Figure 8. Typical Environmental Backshell Assembly



STYLE 1
SHIELD



STYLE 2
(SEE APLICATION REQUIREMENT 4., B)

Figure 9. Typical Non-Environmental, EMI-RFI Backshell Assembly

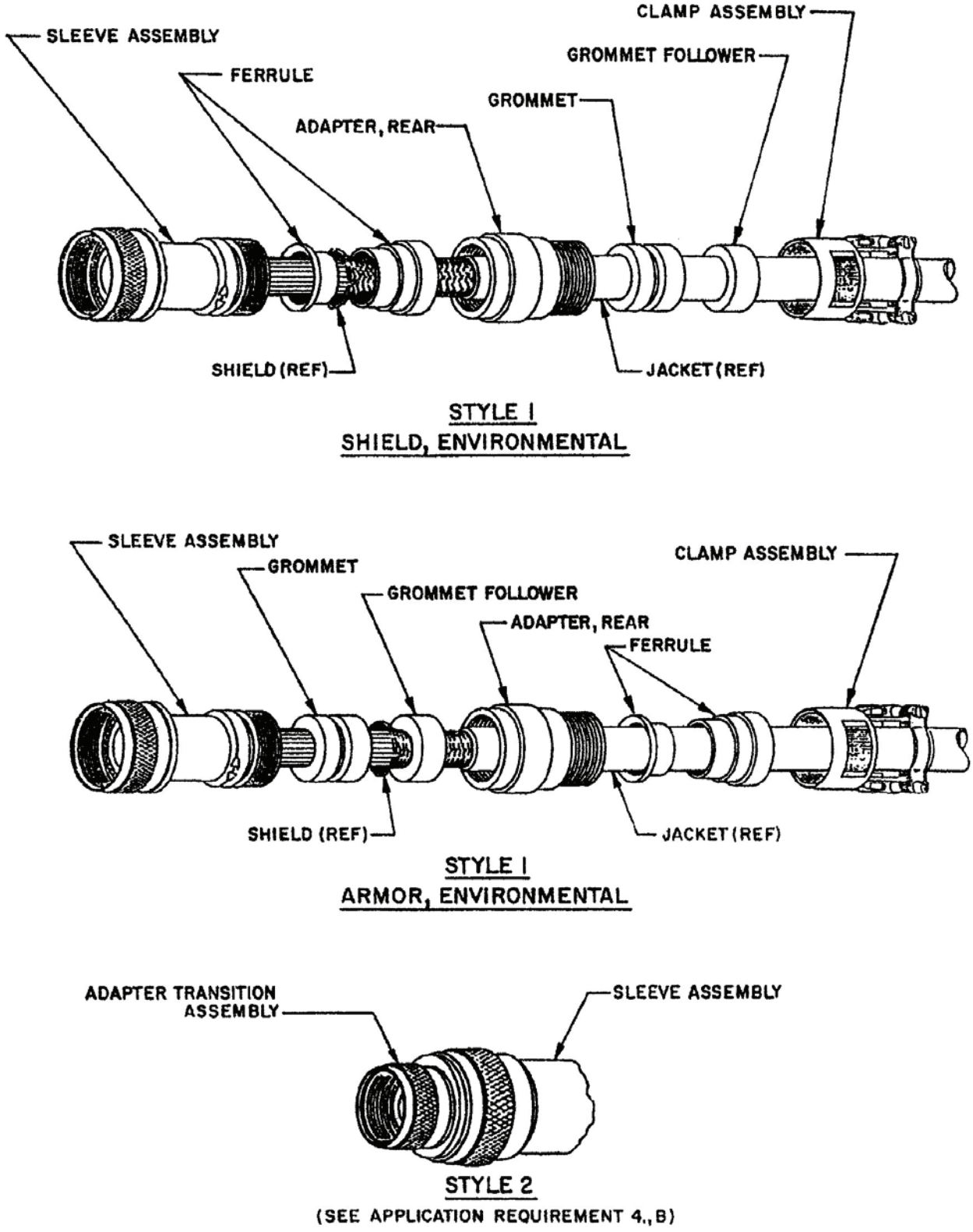


Figure 10. Typical Environmental, EMI-RFI Backshell Assembly

22. CONDUIT FITTINGS. Conduit fittings are used to connect a conduit to a connector and may be either a ferrule, nut, adapter, box fitting, 45° elbow, 90° elbow, hex nut, or seal assembly .See WP 007 03 for detailed information on the conduit fittings: AN3050, AN3051, AN3052, AN3053, AN3054, AN3055, AN3056, AN3058, AN3064, AN3060, AN3061, AN3062, AN3063, AN3068, and AN3067.

23. MOUNTING NUT FOR JAM NUT RECEPTACLES. Part number MS3186 mounting nut is used to mechanically mount a receptacle to a structure. See Figure 11 for information on mount nut AN3066.

24. DUMMY RECEPTACLES. Dummy receptacles are provided and shall be used to stow unmated plugs, caps, or protective covers when related component is not in operational use. The dummy receptacle shall be marked and located to permit easy access. See Figure 12, this WP, for detailed information on dummy receptacle MS3135.

25. DUST CAPS. Protective covers are more commonly called dust caps. The purpose of dust caps is to prevent dirt from entering connectors, pins, and sockets and to prevent coupling device from damage. See WP 006 04 for detailed information on dust cap M90376. For information on dust caps: MS3182, see Figure 13 and for MS3183, see Figure 14, this WP.

26. MOUNTING PLATES FOR FLANGE MOUNT RECEPTACLES. Mounting plates are used to secure flange mount receptacle to mounting structure. See WP 008 03 for detailed information on mounting plates: M85049/95 and M85049/96.

27. RUBBER BUSHINGS. Part number MS3420 bushings standard material and color is black neoprene. The primary use is to provide a cushion for wires at connector to aid strain relief. See WP 008 03 for detailed information on rubber bushing: MS3420-6 and MS3420-16.

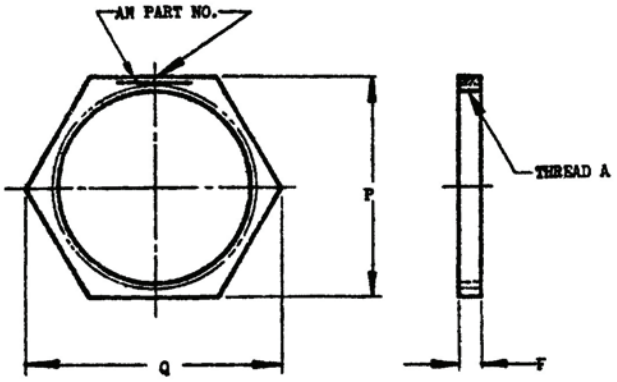
28. SEALING PLUGS. Part number M83723/28 and part number MS27488 plugs are inserted, large end first, to fill a cavity in a connector insert. Its function is to seal all unoccupied apertures in the insert, especially in environmental connectors. See detailed information in WP 008 03 on sealing plug MS27488.

PART NUMBER DESIGNATION

AN3066 -6

BASIC DESIGNATION

DASH NUMBER (See Dimensions)



DIMENSIONS

AN PART NO.	CONDUIT SIZE	THREAD A	F	P	Q APPROX
AN3066-3	3/16	1/2 -28 UNEF-2B	1/8	11/16	51/64
AN3066-4	1/4	5/8--24 NEF-2B	1/8	13/16	15/16
AN3066-6	3/8	3/4 -20 UNEF-2B	1/8	15/16	1- 3/32
AN3066-8	1/2	7/8 -20 UNEF-2B	3/16	1- 1/16	1-15/64
AN3066-10	5/8	1 -20 UNEF-2B	3/16	1- 1/4	1- 7/16
AN3066-12	3/4	1-3/16-18 NEF-2B	3/16	1- 3/8	1-19/32
AN3066-16	1	1-7/16-18 NEF-2B	3/16	1- 5/8	1- 7/8
AN3066-20	1-1/4	1-3/4 -18 NS -2B	3/16	2	2-5/16
AN3066-24	1-1/2	2 -18 NS -2B	3/16	2-3/16	2-17/32
AN3066-28	1-3/4	2-1/4 -16 UN -2B	1/4	2-7/16	2- 7/8
AN3066-32	2	2-1/2 -16 UN -2B	1/4	2-13/16	3- 1/4
AN3066-40	2-1/2	3 -16 UN -2B	1/4	3- 3/8	3-57/64

NOTES:
1. Inactive for new design.
2. Dimensions are in inches, after plating. Tolerances in fractions +/- 1/64", Decimals +/- .005.
3. Threads as per: MIL-S-7742, except 1 ¾-18NS-2B and 2-18 NS-2B threads shall be as per ASA B-1.
4. Marking of part number in center of Hex flat.

MATERIAL: Aluminum Alloy, Specification: QQ-A-351, Condition: T, Specification: QQ-A-355, Specification: QQ-A-591, or Commercial Grade: Suitable for Procuring Activity.

FINISH: Cadmium Plate, Specification: QQ-P-416, Type: II, Class: C.

Figure 11. Mount Nut AN3066

PART NUMBER DESIGNATION

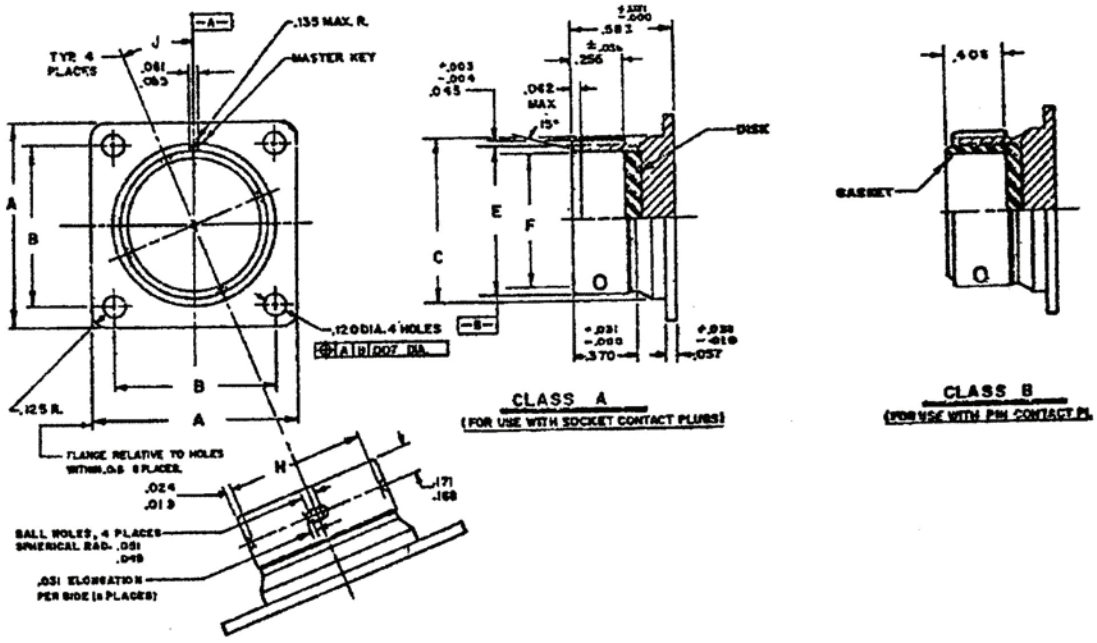
MS3135 -19 A

BASIC DESIGNATION

DASH NUMBER (See Dimensions)

CLASS

A – For use with Socket Contact Plugs
B – For use with Pin Contact Plugs



DIMENSIONS

SHELL SIZE DASH NO.	A (MAX) LENGTH SIDE	B MOUNT HOLE CENTER	C (MAX) DIM. FRONT	E +.000 -.004 SHELL OD	F +.003 -.007 SHELL ID	H +.002 -.007 BALL HOLE SPACING	J +.002 -.007 BALL HOLE LOCATION
-3	.096	.625	.578	.435	.304	.396	30
-7	1.021	.719	.671	.570	.450	.531	22.5
-12	1.114	.812	.825	.704	.621	.660	22.5
-19	1.206	.905	.953	.843	.760	.804	22.5
-27	1.302	.965	1.136	.992	.915	.858	22.5
-37	1.458	1.157	1.266	1.120	1.037	1.021	22.5

NOTES:
1. Dimensions are in inches, after plating.
2. Tolerances in fractions +/- ½° (for column J only).

MATERIAL:
COVER: Aluminum Alloy, Specification: QQ-A-351 (MIL-C-26482)
DISK: Closed Cell Neoprene Sponge (MIL-C-3133, Class SB, or SC)
GASKET: Synthetic Rubber, MIL-Std-417, 55 +/- 10 Durometer

Figure 12. Dummy Receptacle MS3135

PART NUMBER DESIGNATION

MS3182 E -19 A

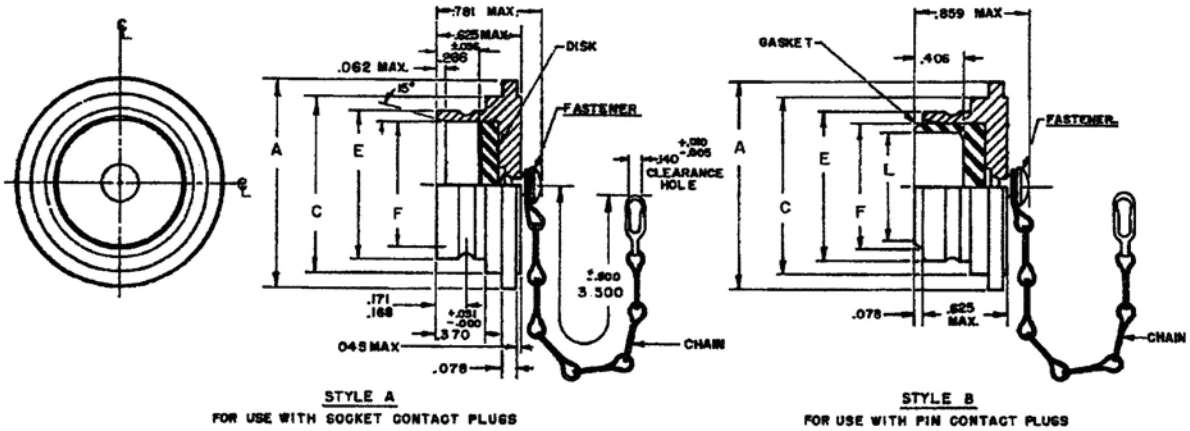
BASIC DESIGNATION

CLASS

DASH NUMBER (See Dimensions)

STYLE

A – For use with Socket Contact Plugs
B – For use with Pin Contact Plugs



DIMENSIONS

SHELL SIZE	A MAX. DIA. FLANGE	C MAX. DIA. FRONT	E +.006 −.004 SHELL O.D.	F +.003 −.007 SHELL I.D.	L INSERT I.D.
− 3	.750	.578	.435	.364	.262
− 7	.906	.703	.570	.480	.354
−12	1.093	.828	.704	.621	.490
−19	1.219	1.016	.843	.760	.625
−27	1.374	1.172	.998	.918	.781
−37	1.531	1.266	1.120	1.037	.900

NOTES:
1. Dimensions are in inches, after plating.
2. Tolerances in decimals +/- .016, angles +/- ½°

MATERIAL:
COVER: Aluminum Alloy, Specification: QQ-A-351 (MIL-C-26482)
DISK: Closed Cell Neoprene Sponge (MIL-C-3133, Class SB, or SC)
GASKET: Synthetic Rubber, MIL-Std-417, 55 +/- 10 Durometer
CHAIN: Stainless Steel Passivated, as per NAS145-00

Figure 13. Dust Cap MS3182

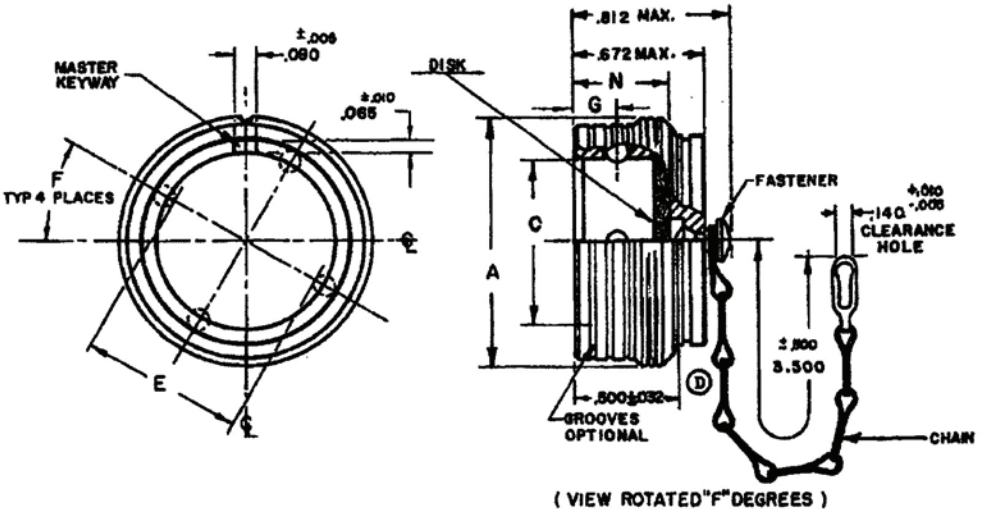
PART NUMBER DESIGNATION

MS3183 E -19

BASIC DESIGNATION

CLASS

DASH NUMBER (See Dimensions)



COVER WITH CHAIN
FOR USE WITH PIN OR SOCKET CONTACT RECEPTACLES

DIMENSIONS

SHELL SIZE	A MAX. DIA. COUPLING RING	C MIN I.D. SHELL	E MIN. DIA. BALL SPACING	F BALL LOCATION (ANGULAR)	G ±.002 -.005 BALL LOCATION DEPTH	N ±.010 DEPTH OF VOID
-3	.796	.438	.391	30°	.202	.500
-7	.933	.577	.526	22½°	.124	.422
-12	1.140	.713	.661		.202	.500
-19	1.228	.852	.799		.124	.422
-27	1.383	1.007	.954		.202	.500
-37	1.513	1.127	1.076		.124	.422

NOTES:
1. Dimensions are in inches, after plating.
2. Tolerances in decimals +/- .016, unless otherwise specified; angles +/- ½°.

MATERIAL:
COVER: Aluminum Alloy, Specification: QQ-A-351 (MIL-C-26482)
DISK: Closed Cell Neoprene Sponge (MIL-C-3133, Class SB, or SC)
CHAIN: Stainless Steel Sash, Passivated, as per RR-C-271, Type II, Class 3, Grade 8

Figure 14. Dust Cap MS3183

ALPHABETICAL INDEX
INSTALLATION PRACTICES
CONNECTORS NAS1599

Title	WP Number
Connector Accessories, NAS 1599	011 03
Connectors, NAS 1599	011 02
Introduction	011 01

INTRODUCTION
INSTALLATION PRACTICES
CONNECTORS NAS1599

1. PURPOSE AND SCOPE.

2. This manual covers all connectors manufactured in accordance with NAS 1599. It includes contact data, tooling, buildup, and connector accessories for NAS 1599 Series connectors.

3. SPECIFICATION UPDATES (ASSIST SEARCH).

4. The most up to date government specifications and Qualified Products Lists (QPLs) can be obtained from the Quick Search section of the ASSIST website, the address is http://assist.daps.mil/quicksearch. Non-government standards can be obtained through a license with a document service such as Information Handling Services (IHS) or purchased individually from the Society of Automotive Engineers (SAE).

5. QUALIFIED PRODUCTS LIST (QPL).

6. The Qualified Products List (QPL) is a list of products which have met the qualification requirements stated in the applicable specification. These requirements include appropriate product identification and performance/testing parameters. The list contains the government part number and the manufacturer's part number. The name of the manufacturer, office and manufacturing plant address, CAGE (Commercial and Government Entity) code, assembly plant, or distributor as applicable, is also included in the back of the QPL. The component specification will identify the appropriate quality assurance provisions such as QPL, First Article testing, or user verified test results. NAVAIR Patuxent River (http://www.navair.navy.mil/qpl/) now has an operational website where the latest QPL revision can be accessed, along with all outstanding QPL change letters as they are written. This enables all users to have access to the latest procurement information without relying on the publication of a new QPL revision. When the QPL is revised, all outstanding QPL change letters are incorporated in the latest revision.

CONNECTORS
NAS1599

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Connectors, General Purpose, Electrical, Miniature, Circular, Environment Resisting,
General Specification for MIL-DTL-26500
Connectors, General Purpose, (Circular, Miniature, Quick Disconnect, Environment Resisting),
Receptacles and Plugs MIL-C-26482
Connectors, Electrical Circular, (Environment Resisting), Receptacles and Plugs, General Specification for MIL-DTL-83723
Connectors, General Purpose, Electrical, Miniature Circular, Environment Resisting NAS1599
Contacts, Electrical Connector, Pin, Crimp Removable NAS1662
Contacts, Electrical Connector, Socket, Crimp Removable NAS1663
Connector Accessories NAS1599 ..... 011 03

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Inserts	6
Mating Seal	3
Part Number	4
Polarization	4
Power Contacts	8
Shell	3
Tooling	8

Record of Applicable Technical DIrectives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
M22520/1-01	Tool, Crimp, Frame
M22520/1-02	Positioner
M22520/7-12	Positioner
NAS1664-12	Tool, Insertion and Removal
NAS1664-16	Tool, Insertion and Removal
NAS1664-20	Tool, Insertion and Removal

Materials Required

Specification/ Part No.	Nomenclature

None

1. **INTRODUCTION**.

2. This Work Package (WP) pertains to connectors manufactured in accordance with NAS1599.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, the Society of Automotive Engineers (SAE), will become the preparing activity and the Navy will adopt the documents, the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

3. DESCRIPTION. NAS1599 connectors utilize crimp type contacts that are inserted, released and removed from rear of connector. The two methods of coupling utilized for NAS connectors are threaded, conforming to MIL-DTL-26500 insert configurations, and bayonet, conforming to MIL-C-26482 insert configurations.

4. Bayonet coupled type connectors covered by NAS1599 are intermateable with all MIL-C-26482

Table 1. Threaded Coupled Connector Intermatabilty Cross-Reference

Specification Number NAS1599	Specification Number MIL-C-26500	Specification Number MIL-C-83723 Series III	
		Socket Contact	Pin Contact
NAS1692G	MS24264G	M83723/82R	M83723/83R
NAS1641R	MS24264R	M83723/82A	M83723/83A
NAS1693G	MS24265G	M83723/84R	M83723/85R
NAS1642R	MS24265R	M83723/84A	M83723/85A
NAS1681H	MS27034H	–	M83723/90
NAS1683H	–	–	M83723/88
NAS1682H	MS24265H	–	M83723/89
NAS1694G	MS24266G	M83723/86R	M83723/87R
NAS1643R	MS24266R	M83723/86A	M83723/87A

connectors, provided the insert configurations are the same. Table 1 provides an intermateability cross-reference from threaded type connectors covered by NAS1599 to MIL-DTL-26500 and MIL-C-83723 Series III connectors.

5. The entire assembly process is performed at rear of connector so that the possibility of damaging critical interface of connector is greatly reduced. This rear release feature also permits the removal or installation of any number of contacts without uncoupling connector.

6. WIRE SEALING. Wire sealing is accomplished by use of a grommet seal designed to seal against outside diameter of inserted wire. The outer diameter shall be within applicable size range.

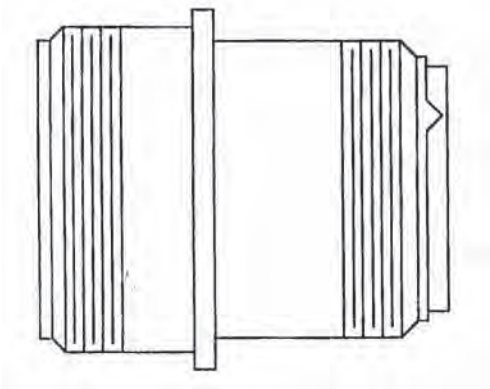


Figure 1. NAS1599 Threaded Coupled Typical Connector

NOTE

Unwired contacts must have sealing plugs installed.

7. NAS1599 THREADED COUPLED CONNECTOR.

8. Threaded coupled type connectors, NAS1599, conform to MIL-DTL-26500 insert configuration, but utilize crimp rear release contacts and hermetic non-removable solder contacts (Figure 1).

9. GROMMET SEALING PLUGS. The grommets of environment resisting connectors are designed to accept sealing plugs in accordance with NAS1599 to be used where unwired contacts are placed. The connector when ordered as a unit will have sealing plugs enclosed to equal 15 percent of the number of contacts but not less than one.

10. MATING SEAL Plugs and receptacles with pin inserts have a resilient face with individual pin barriers to seal against the bard face socket insert. The resilient interface seal provides individual contact seals in mated condition between each contact and shell.

11. SHELL. Shells including mounting flanges are of one-piece construction and designed to retain their inserts in one position by mechanical means. Each plug and receptacle has at least one blue color band, which indicates rear release retention system, and is located to be readily visible.

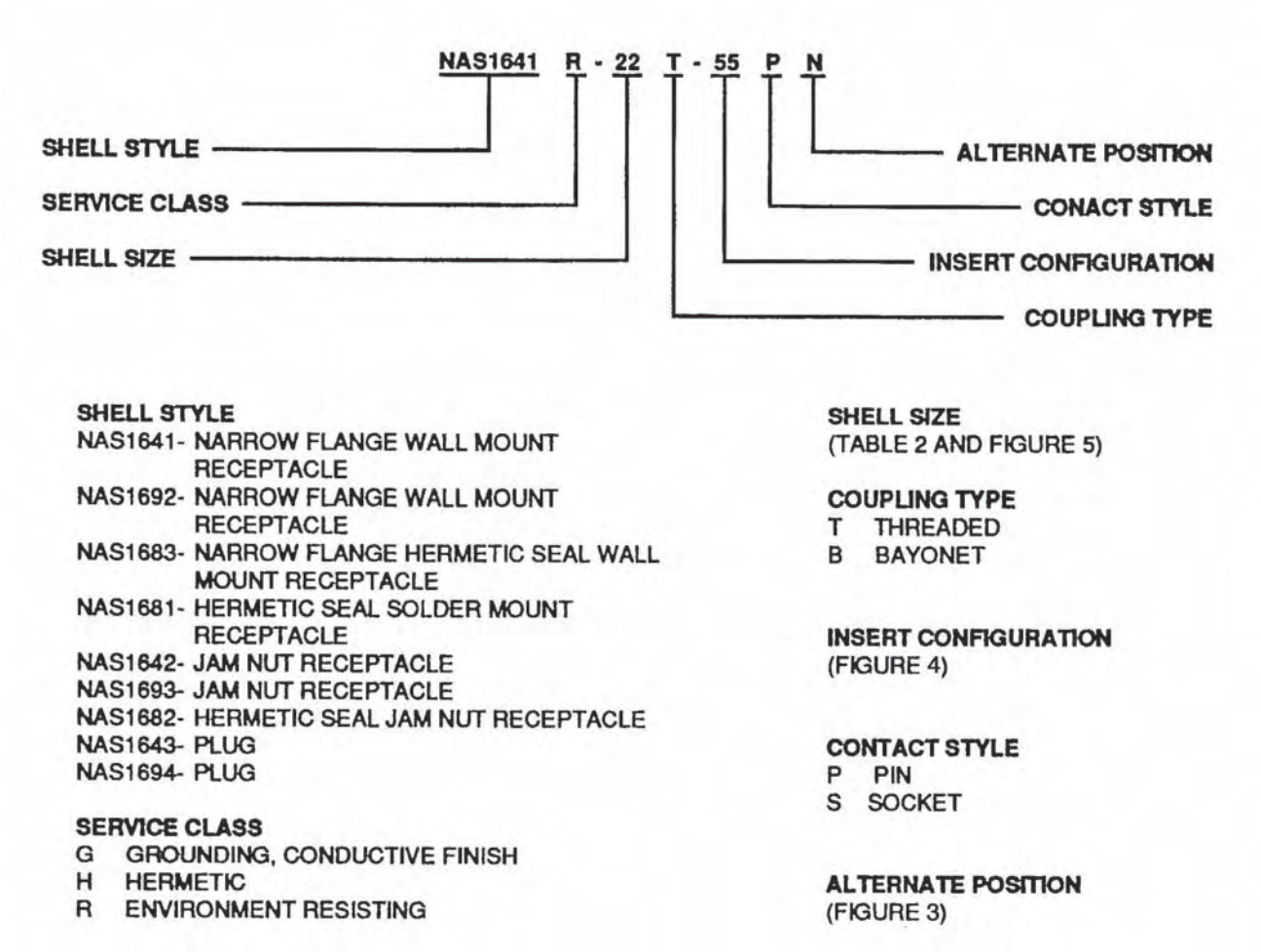


Figure 2. NAS1599 Threaded Coupled Part Number Breakdown

12. COUPLING. Connectors shall be capable of being fully coupled and uncoupled without use of tools.

13. POLARIZATION. Connectors are polarized as denoted by their part numbers. This means that the master keyway is rotated to prevent mis-mating of similar connectors in a similar location. A plug with a given polarization letter will mate with a receptacle with same letter. The inserts do not rotate, only the keyway is rotated.

14. PART NUMBER. The following paragraphs contain the information necessary for proper selection and procurement of connector (Figure 2).

15. Shell Style. The shell style is denoted by the NAS number and style of connector.

16. Service Class. The service class is a letter code denoting environment resisting ability.

17. Shell Size. Shell size is indicated by a progressive numbering system.

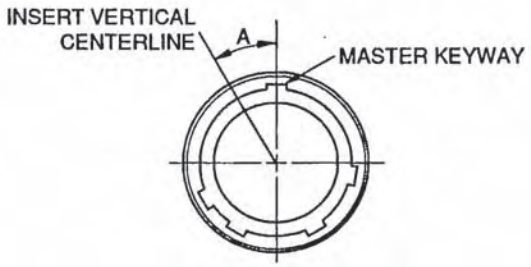
18. Coupling Type. The coupling type is a letter code, denoting either threaded or bayonet.

19. Insert Configuration. The insert configuration is the insert arrangement by number and size of contacts used.

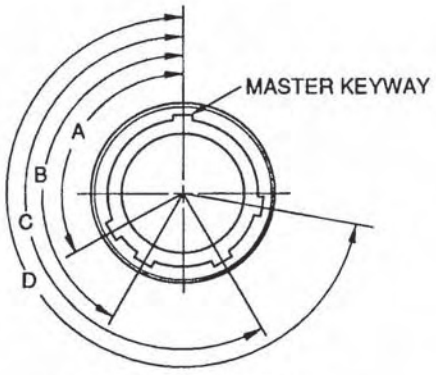
20. Contact Style. The contact style denotes the type of contact.

21. Alternate Keyway Position. The alternate position indicates insert polarization other than the normal position (see Figure 3).

22. DESIGN AND CONSTRUCTION. Connectors and accessories are designed and constructed to withstand normal handling incidental to installation and maintenance.



PIN INSERT
(AS VIEWED FROM ENGAGING END)



SHELL KEYWAY POSITIONS
(AS VIEWED FROM ENGAGING END)

PIN INSERTS ARE ROTATED COUNTERCLOCKWISE AND SOCKET INSERTS ARE ROTATED CLOCKWISE RELATIVE TO THE MASTER KEYWAY

Shell Size	Polarizing Position	Keyway Positions (Degrees)				Insert Position E
		A	B	C	D	
ALL	N	105	140	215	265	0
10, 12, 14, 16, 18, 22	1	105	140	215	265	10
	2	105	140	215	265	20
	3	105	140	215	265	30
	4	105	140	215	265	40
18	5	105	140	215	265	50
10	6	102	132	248	320	0
	7	80	118	230	312	0
	8	35	140	205	275	0
	9	64	155	234	304	0
	10	25	115	220	270	0
12, 14, 16, 18, 22	6	18	149	192	259	0
	7	92	152	222	342	0
	8	84	152	204	334	0
	9	24	135	240	240	0
	10	98	152	338	338	0

IN THE ALTERNATE INSERT POSITION (POSITIONS 1, 2, 3, 4, & 5) THE PIN INSERT IS ROTATED COUNTERCLOCKWISE RELATIVE TO THE CENTERLINE OF THE SHELL MASTER KEYWAY.

IN THE ALTERNATE KEYING POSITION (POSITIONS 6, 7, 8, 9 & 10) THE KEYWAYS ARE POSITIONED AS INDICATED IN THE ABOVE CHART WITH REFERENCE TO THE SHELL MASTER KEYWAY.

Figure 3. NAS1599 Threaded Coupled Alternate Positions

Table 2. Threaded Coupled Insert Arrangements

Shell Size Insert Arrangement	Contact Size			Number of Contacts
	20	16	12	
12-3	-	3	-	3
12-12	12	-	-	12
14-4	-	-	4	4
14-7	-	7	-	7
14-15	15	-	-	15
16-24	24	-	-	24
18-14	-	14	-	14
18-31	31	-	-	31
22-12	-	-	12	12
22-19	-	19	-	19
22-55	55	-	-	55

23. INSERTS. The non-resilient material used for all inserts shall be a high grade dielectric having electrical and mechanical characteristics suitable for the purpose intended. The impact strength shall be such that material shall not chip, crack, or break during assembly or normal maintenance.

24. Crimp Snap-In Contacts. Snap-in contacts designed for NAS1662 or NAS1663 can be crimped with standard M22520/1 crimp tool.

25. Closed-Entry Socket Contacts. These contacts eliminate damage from abuse by test probes and help to correct any misaligned pins during engagement.

26. Contact Insertion. Insertion is accomplished from rear of connector. When contact is fully inserted, the clip tines snap securely behind contact shoulders.

27. Contact Extraction. Extraction is accomplished with use of a removal tool.

28. Contact Retaining Clip. The contact retaining clip is completely encased in a tough plastic wafer to protect clip from damage.

29. Moisture Sealing. Complete sealing is achieved by combining four seals, shell, peripheral, interfacial, and wire seal.

30. Shell Seal. This seal is effected when plug shell pushes against sealing ring in receptacle when connectors are mated.

31. Peripheral. Seal. This seal is around the edge of pin insulator and designed so that when mating the connector, tension is put on seal and greatly reduces compression set.

32. Interfacial Seal. This seal is achieved by insulator faces meeting when plug and receptacle are mated.

33. Wire Seal. This seal is accomplished by a multiple ripple design exceeding wire sealing requirement of NAS1599.

34. Insert Retention. Insert retention is accomplished by a hard plastic wafer firmly locked into a groove in shell and a strong adhesive bond between insert and shell.

35. Keying. Keying is used in shell-enclosed connectors to obtain polarization, which assures correct location when mating a connector.

36. INSERT ARRANGEMENT. The insert arrangement is number and size of contacts available by shell size (Table 2).

37. INSERT CONFIGURATION. The insert configuration is the manner in which contacts are placed within insert in a standard configuration. All arrangements identified in Table 2 are illustrated (Figure 4).

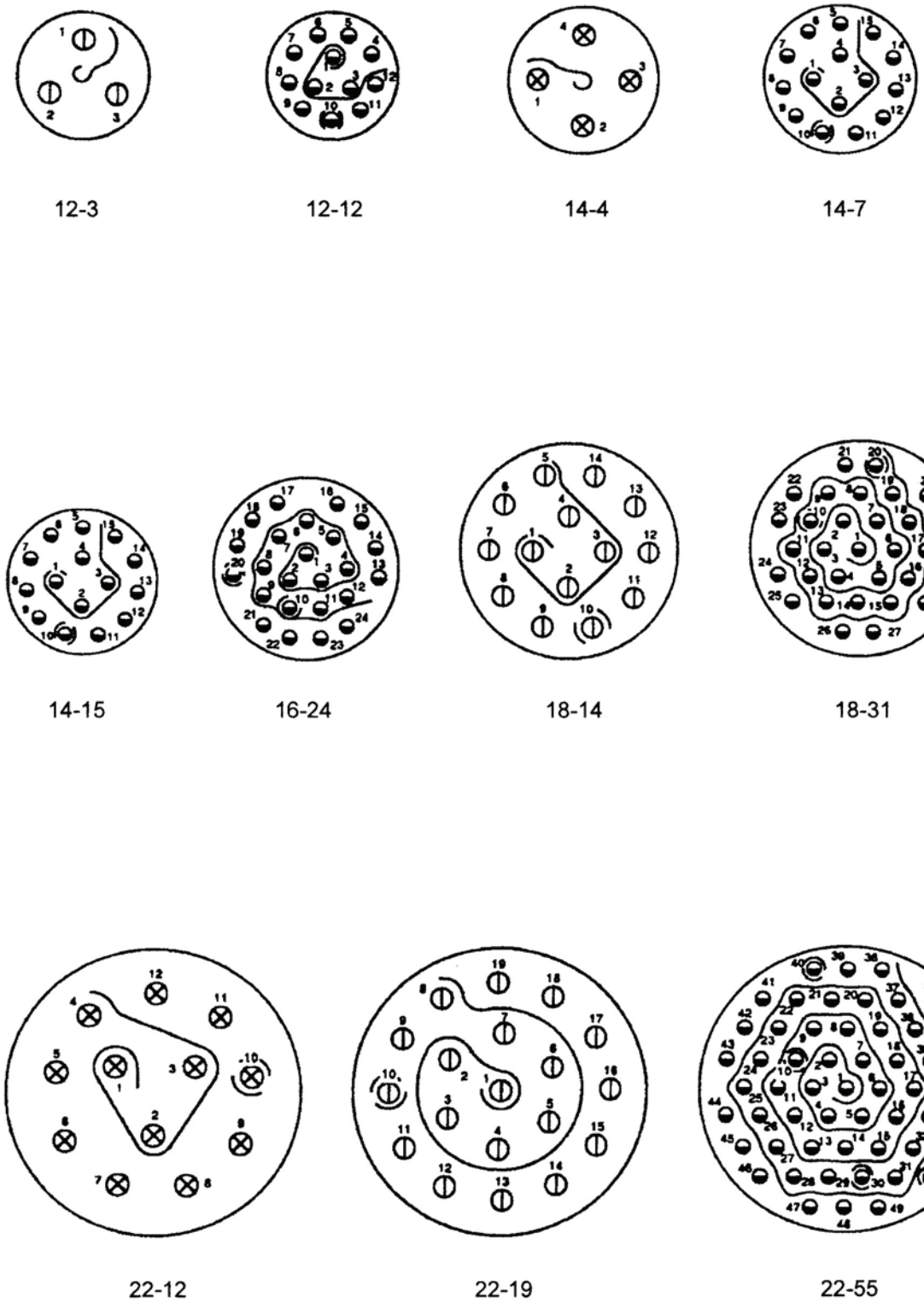


Figure 4. NAS1599 Threaded Coupled Insert Configuration

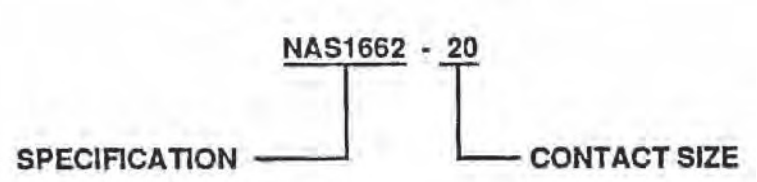


Figure 5. NAS1662 and NAS1663 Part Number Breakdown

38. CONTACTS. Contacts are designed to prevent damage to contact retention device or sealing member during insertion or removal of contacts.

39. Fixed Contacts. Contacts in hermetically sealed or thru-bulkhead receptacles are fixed, non-removable, and solderable, or feed through.

40. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

41. Contact Availability. Crimp contacts are supplied with each connector unit package and consist of a full complement plus one spare per size for connectors of 26 contacts or less. Connectors with more than 26 contacts will have two spares of each size used. Contacts may also be ordered in individual quantities when necessary.

42. CONTACT APPLICATION. Contacts used in NAS1599 connectors are manufactured in accordance with NAS1662 for pin contacts and NAS1663 for socket contacts. The part number breakdown is illustrated (Figure 5).

43. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts range from size 12 to 20 for these connectors. Socket and pin contact part numbers are listed along with color bands (Table 3).

44. TOOLING. Select the proper tooling for the specific contact part number (Table 4) and refer to NAVAIR 01-1A-505-1, WP 013 00 for the proper assembly procedures.

45. BACKSHELL REMOVAL AND INSTALLATION. For backshell removal and installation refer to WP 011 03.

NOTE

Refer to NAVAIR 01-1A-505-1 WP 011 01, for torque value information on AS85049 connector backshells.

Table 3. Threaded Coupled or Bayonet Power Contact Application

Contact Size	Wire Range	Socket Contacts			Pin Contacts			Remarks
		NAS1663	Color Bands 1st	2nd	NAS1662	Color Bands 1st	2nd	
20	20-24	-20	RD	RD	-20	RD	RD	–
16	16-20	-16	BL	BL	-16	BL	BL	–
12	12-14	-12	YE	YE	-12	YE	YE	

Table 4. Threaded Coupled or Bayonet Power Contact Tooling

Contact Part Number	Crimp Tool Frame M22520/	Turret Head or Positioner M22520/	Insertion Tool	Removal Tool
NAS1663-20	1-01	1-02	NAS1664-20	NAS1664-20
NAS1663-16	1-01	1-02	NAS1664-16	NAS1664-16
NAS1663-12	1-01	7-12	NAS1664-12	NAS1664-12
NAS1662-20	1-01	1-02	NAS1664-20	NAS1664-20
NAS1662-16	1-01	1-02	NAS1664-16	NAS1664-16
NAS1662-12	1-01	7-12	NAS1664-12	NAS1664-12

46. NAS1599 BAYONET COUPLED CONNECTORS.

47. Bayonet coupled type connectors NAS1599 conform to MIL-C-26482 insert configurations with crimp rear release contacts (Figure 6).

48. GROMMET SEALING PLUGS. The grommets of environment resisting connectors are designed to accept sealing plugs in accordance with NAS1599 to be used where unwired contacts are placed. The connector when ordered as a unit will have sealing plugs enclosed to equal 15 percent of the number of contacts but not less than one.

49. MATING SEAL. Plugs and receptacles with pin inserts have a resilient face with individual pin barriers to seal against the hard face socket insert. The resilient interface seal provides individual contact seals in mated condition between each contact and shell.

50. SHELL. Shells including mounting flanges are of one-piece construction and designed to retain their inserts in one position by mechanical means. Each plug and receptacle has at least one blue color band, which indicates rear release retention system, and is located to be readily visible.

51. COUPLING. Connectors shall be capable of being fully coupled and uncoupled without use of tools.

52. POLARIZATION. Connectors are polarized as denoted by their part numbers. This means that the master keyway is rotated to prevent mis-mating of similar connectors in a similar location. A plug with a given polarization letter will mate with a receptacle with same letter. The inserts do not rotate, only the keyway is rotated.

53. PART NUMBER. The following paragraphs contain information necessary for proper selection and procurement of connector (Figure 7).

54. Shell Style. The shell style is denoted by the NAS number and style of connector.

55. Service Class. The service class is a letter code denoting environment resisting ability.

56. Shell Size. Shell size is indicated by a progressive numbering system.

57. Coupling Type. The coupling type is a letter code denoting either threaded or bayonet.

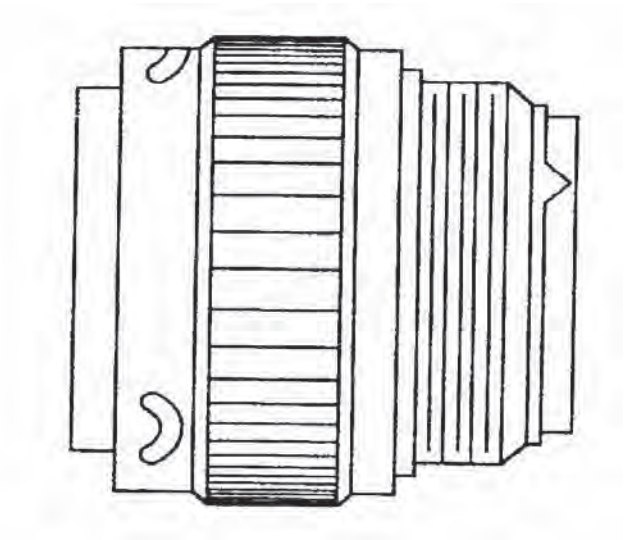


Figure 6. NAS1599 Bayonet Coupled Typical Connector

58. Insert Configuration. The insert configuration is the insert arrangement by number and size of contacts used.

59. Alternate Keyway Position. The alternate position indicates insert polarization other than the normal position (Figure 8).

60. DESIGN AND CONSTRUCTION. Connectors and accessories are designed and constructed to withstand normal handling incidental to installation and maintenance.

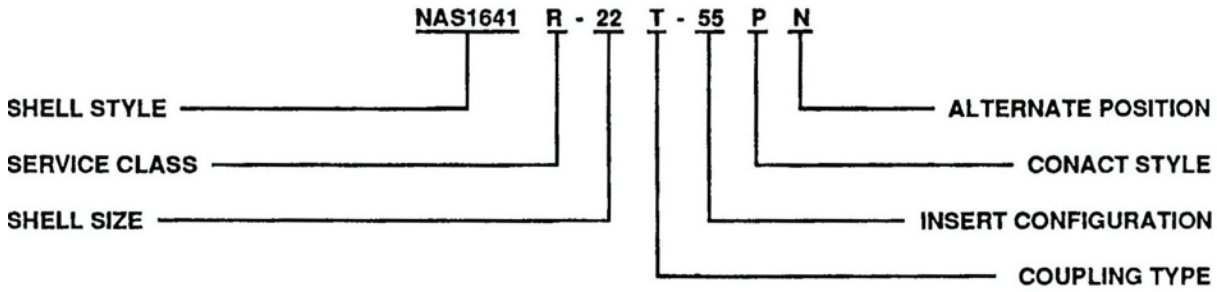
61. INSERTS. The non-resilient material used for all inserts shall be a high grade dielectric having electrical and mechanical characteristics suitable for the purpose intended. The impact strength shall be such that material shall not chip, crack, or break during assembly or normal maintenance.

62. Crimp Snap-In Contacts. Snap-in contacts designed to NAS1662 or NAS1663 can be crimped with standard M22520/1 crimp tool.

63. Closed-Entry Socket Contacts. These contacts eliminate damage from abuse by test probes and help to correct any misaligned pins during engagement.

64. Contact Insertion. Insertion is accomplished from rear of connector. When contact is fully inserted, the clip tines snap securely behind contact shoulders.

65. Contact Extraction. Extraction is accomplished with use of a removal tool.



SHELL STYLE
NAS1650- NARROW FLANGE WALL MOUNT RECEPTACLE
NAS1699- NARROW FLANGE WALL MOUNT RECEPTACLE
NAS1680- NARROW FLANGE HERMETIC SEAL WALL MOUNT RECEPTACLE
NAS1678- HERMETIC SEAL SOLDER MOUNT RECEPTACLE
NAS1651- WALL MOUNT RECEPTACLE
NAS1700- WALL MOUNT RECEPTACLE
NAS1652- JAM NUT RECEPTACLE
NAS1701- JAM NUT RECEPTACLE
NAS1679- HERMETIC SEAL JAM NUT RECEPTACLE
NAS1653- PLUG
NAS1702- PLUG

SERVICE CLASS
G GROUNDING, CONDUCTIVE FINISH
H HERMETIC
R ENVIRONMENT RESISTING

SHELL SIZE
(TABLE 5 AND FIGURE 5)

COUPLING TYPE
T THREADED
B BAYONET

INSERT CONFIGURATION
(FIGURE 9)

CONTACT STYLE
P PIN
S SOCKET

ALTERNATE POSITION
(FIGURE 8)

Figure 7. NAS1599 Bayonet Coupled Part Number Breakdown

PIN INSERTS ARE ROTATED CLOCKWISE AND SOCKET INSERTS ARE ROTATED COUNTERCLOCKWISE RELATIVE TO THE CENTERLINE OF THE MASTER KEYWAY

Shell Size	Insert Arrangement	Keyway Positions (Degrees)				
		N	W	X	Y	Z
8	-33	0	—	—	—	—
	-98	0	—	—	—	—
10	-6	0	90	—	—	—
12	-10	0	60	155	270	295
14	-12	0	43	90	—	—
	-15	0	17	110	155	234
	-19	0	30	165	315	—
16	-8	0	54	152	180	331
	-26	0	60	—	275	338
18	-32	0	85	138	222	265
20	-39	0	63	144	252	333
	-41	0	45	126	225	—
22	-21	0	16	135	175	349
	-41	0	39	—	—	—
	-55	0	30	142	226	314
24	-61	0	90	180	270	324

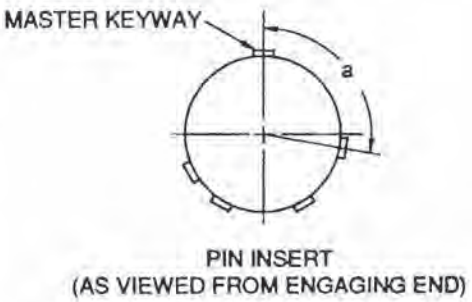


Figure 8. NAS1599 Bayonet Coupled Alternate Positions

Table 5. Bayonet Coupled Insert Arrangements

Shell Size Insert Arrangement	Contact Size			Number of Contacts
	20	16	12	
8-33	3	-	-	3
8-98	3	-	-	3
10-6	6	-	-	6
16-8	-	8	-	8
12-10	10	-	-	10
14-12	8	4	-	12
14-15	14	1	-	15
14-19	19	-	-	19
22-21	-	21	-	21
16-26	26	-	-	26
18-32	32	-	-	32
20-39	37	2	-	39
20-41	41	-	-	41
22-41	27	14	-	41
22-55	55	-	-	55
24-61	61	-	-	61

66. Contact Retaining Clip. The contact retaining clip is completely encased in a tough plastic wafer to protect clip from damage.

67. Moisture Sealing. Complete sealing is achieved by combining four seals, shell, peripheral, interfacial, and wire seal.

68. Shell Seal. This seal is effected when plug shell pushes against sealing ring in receptacle when connectors are mated.

69. Peripheral Seal. This seal is around the edge of pin insulator and designed so that when mating the connector, tension is put on seal and greatly reduces compression set.

70. Interfacial Seal. This seal is achieved by insulator faces meeting when plug and receptacle are mated.

71. Wire Seal. This seal is accomplished by a multiple ripple design, exceeding the wire sealing requirement of NAS1599.

72. Insert Retention. Insert retention is accomplished by a hard plastic wafer firmly locked into a groove in shell and a strong adhesive band between insert and shell.

73. Keying. Keying is used in shell-enclosed connectors to obtain polarization, which assures correct location when mating a connector.

74. INSERT ARRANGEMENT. The insert arrangement is number and size of contacts available by shell size (Table 5).

75. INSERT CONFIGURATION. The insert configuration is the manner in which contacts are placed within insert in a standard configuration. All arrangements identified in Table 5 are illustrated (Figure 9).

76. CONTACTS. Contacts are designed to prevent damage to contact retention device or sealing member during insertion or removal of contacts.

77. Fixed Contacts. Contacts in hermetically sealed or thru-bulkhead receptacles are fixed, non-removable, and solderable, or feed through.

78. Crimp Removable Contacts. Crimp removable contacts may be used with all environment resisting classes of connectors.

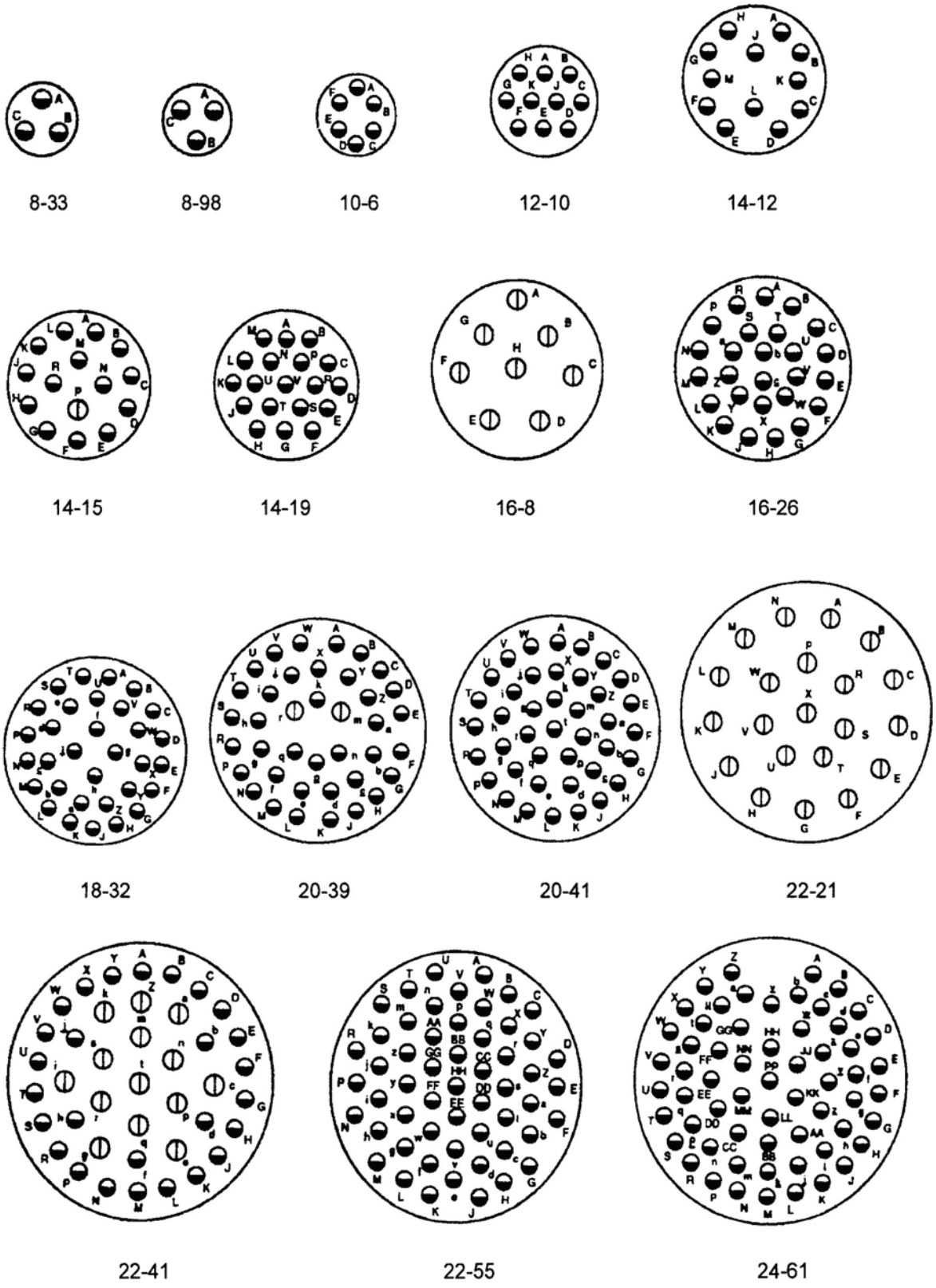


Figure 9. Bayonet Coupled Insert Configuration

79. Contact Availability. Crimp contacts are supplied with each connector unit package and consist of a full complement plus one spare per size for connectors of 26 contacts or less. Connectors with more than 26 contacts will have two spares of each size used. Contacts may also be ordered in individual quantities when necessary.

80. CONTACT APPLICATION. Contacts used in NAS1599 connectors are manufactured in accordance with NAS1662 for pin contacts and NAS1663 for socket contacts. The part number breakdown is illustrated (Figure 5).

81. POWER CONTACTS. Power contacts are used to connect single conductor wire through connectors. The power contacts range from size 16 through 20 for these connectors. Socket and pin contact part numbers are listed along with colorbands (Table 3).

82. TOOLING. Select the proper tooling for the specific contact part number (Table 4) and refer to NAVAIR 01-1A-505-1, WP 013 00 for the proper assembly procedures.

83. BACKSHELL REMOVAL AND INSTALLATION. For backshell removal and installation refer to WP 011 03.

84. CONNECTOR BUILD-UP.

85. The build-up procedures for both threaded coupled and bayonet coupled NAS1599 connectors are the same, however the connector contact cavities for threaded coupled connectors are identified by numbers while bayonet coupled connectors have contact cavities identified by letters.

86. WIRE DIAMETER BUILD-UP. If wire outside diameter is not large enough to fill wire sealing grommet holes, build up wire outside diameter by applying heat-shrinkable insulating sleeving. This must be accomplished prior to contact insertion.

87. WIRE STRIPPING. Strip wire in accordance with following procedure:

a. Cut wire to proper length. Ensure enough wire remains for adequate strain relief without leaving excess slack.

b. Strip insulation to the proper dimensions (Table 6), using proper stripping procedures (NAVAIR 01-1A-505-1, WP 009 00). Select contact (Table 3).

Table 6. Strip Dimensions

Contact Size	Wire Size	Strip Dimension
20	20-24	5/36 to 3/16
16	16-20	1/4 to 9/32
12	12-14	1/4 to 9/32

88. CONTACT CRIMPING. See NAVAIR 01-1A-505-1, WP 013 00. Crimp contact in accordance with following procedure:

a. Select correct crimp tool (Table 4).

b. Perform die closure check, install positioner, and set selector knob for gage of wire.

c. Insert stripped wire into contact conductor barrel. Ensure all wire strands are inside contact conductor barrel and visible in contact inspection hole.

d. If insulation gap is too large, trim conductor as required. If insulation gap is too small, trim insulation as required,

e. Crimp contact to wire.

89. CONTACT INSERTION. Insert wired or unwired contacts in accordance with following procedure:

a. Remove sealing plug and/or contact from contact cavity (Paragraph 93).

b. Ensure wire or cable on contact is routed through connector backshell.

c. Select correct insertion tool (Table 4).

d. Place wire and contact assembly into colored tip of insertion tool (Figure 10). Ensure tool tip is over conductor barrel and butted against contact shoulder.

e. Insert tip of contact into cavity. Start contact insertion near connector center cavities and work outward.

f. Axially align contact with contact cavity.

g. With firm and even pressure, press tool against contact shoulder and seat contact into cavity (Figure 11). A slight click may be heard as retention tines snap into place behind contact shoulder.

h. Pull tool straight out of contact cavity. Remove tool from wire. Pull back lightly on wire to ensure contact is property seated.

i. Seal connector as required (Paragraph 90) and install backshell.

90. CONNECTOR SEALING.

91. Sealing Plugs. Seal connector in accordance with following procedure:

a. Fill all unused cavities with un-crimped contacts (Paragraph 89).

b. Insert sealing plug, large diameter first, until bottomed in contact cavity (Figure 12). Fill all cavities that have un-crimped contacts. Preserve connector in accordance with NAVAIR 01-1A-505-1, WP 026 00.

92. Moisture Barrier. For connector sealing procedures, including application of sealant to grommet sealed connectors, refer to NAVAIR 01-1A-505-1, WP 025 00.

93. CONTACT REMOVAL. Remove wired, unwired, and broken wire contacts in accordance with following paragraphs.

94. Wired Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors. Exercise caution when using this tooling.

CAUTION

Metal tooling may damage the wire sealing grommet at the end of the connectors. Use of plastic tools is preferred.

a. Select removal tool (Table 4).

b. Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

c. Place wire of contact to be removed into removal tool, with white tip facing connector insert (Figure 13).

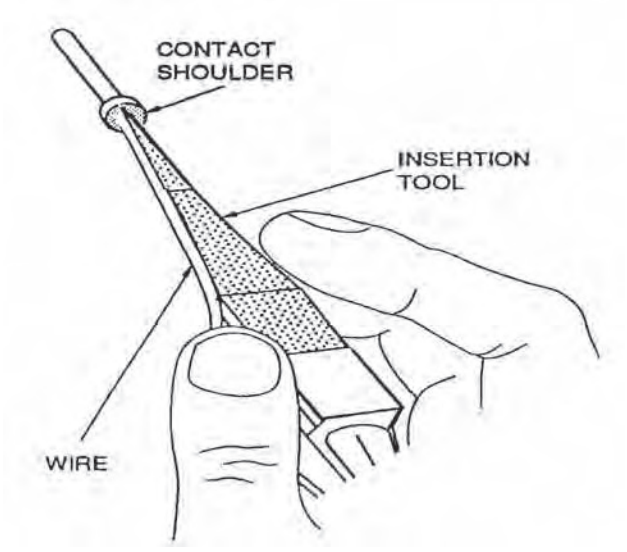


Figure 10. Inserting Contact Into Insertion Tool


Figure 11. Contact Insertion

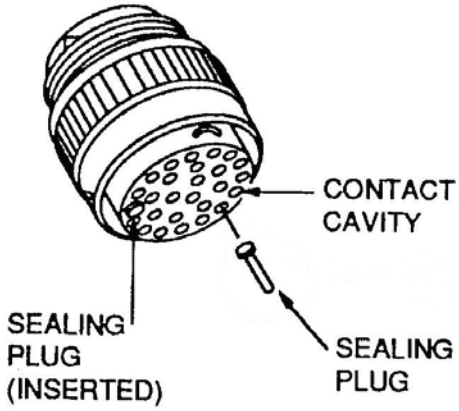


Figure 12. Inserting Sealing Plug into Contact Cavity

d. Slide removal tool along wire at a right angle to connector insert face and align with contact cavity (Figure 13).

e. Insert tool into contact cavity until tool tip bottoms against contact shoulder. A slight increase in resistance will be noticed just before tool tip bottoms. This will spread the retention clip and release its hold on the contact (Figure 14).

f. Press wire firmly against serrated edge of removal tool and pull wire straight out from contact cavity (Figure 13).

95. Unwired Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors. Exercise caution when using this tooling.

CAUTION

Metal tooling may damage the wire sealing grommet at the end of the connectors. Use of plastic tools is preferred.

a. Select correct unwired removal tool (Table 4, Figure 15).

b. Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

c. With rear of connector exposed, remove sealing plug from insert cavity of contact to be removed.

d. Press and hold tool plunger until tip of tool is aligned with contact to be removed.

e. Axially align removal tool with contact to be removed.

f. Insert removal tool tip into contact cavity to butt contact wire barrel, then slide removal tool sleeve over contact and exert pressure until sleeve bottoms (Figure 16).

g. Remove tool and unlocked contact from connector by withdrawing tool from connector (Figure 17).

h. Remove contact from removal tool by pressing plunger.



Figure 13. Removing Contact from Connector

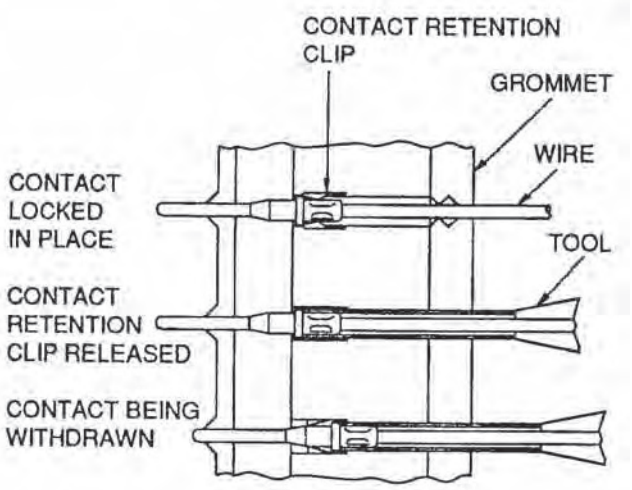


Figure 14. Unlocking Contact Mechanism

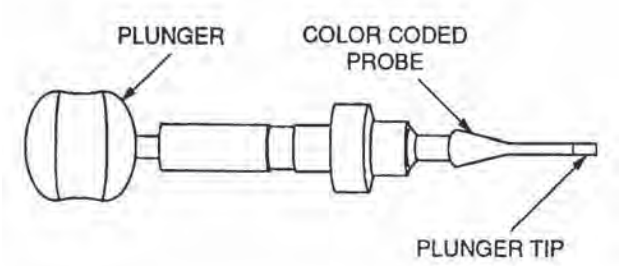


Figure 15. Typical Unwired Contact Removal Tool

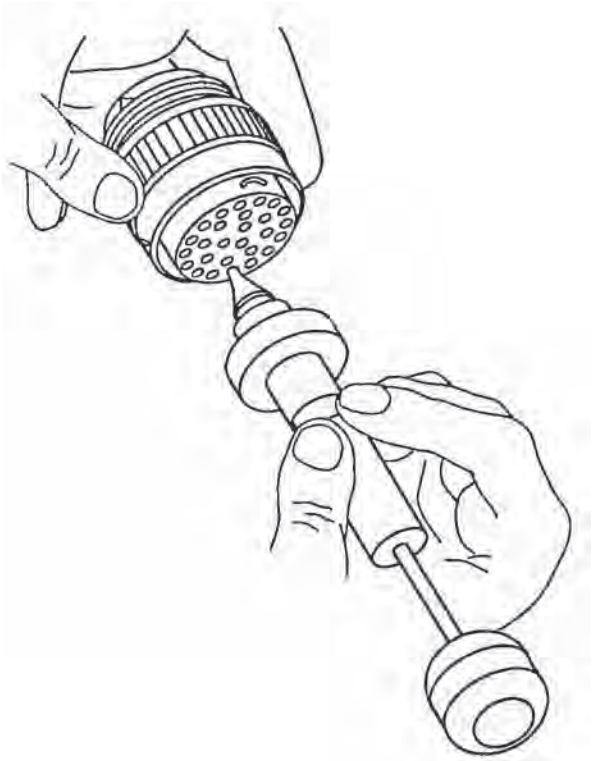


Figure 16. Unlocking Contact With Unwired Contact Removal Tool



Figure 17. Extracting Contact from Connector

96. Broken Wire Contact Removal.

WARNING

Metal tool tips are sharp and can cause injury to personnel and/or damage to connectors. Exercise caution when using this tooling.

CAUTION

Metal tooling may damage the wire sealing grommet at the end of the connectors. Use of plastic tools is preferred.

a. Select correct removal tool (Table 4).

b. Inspect tips of metal tools for nicks, burrs, and distortion of probe before use as connector damage can occur.

CAUTION

Removal of a contact with a broken wire shall not be attempted with an unwired removal tool. Use of unwired removal tools require that the tip be jammed onto the contact wire barrel. If wire strands occupy wire barrel, the tool and connector may be damaged.

c. Insert tip of removal tool about $\frac{1}{8}$ inch into cavity at rear of connector.

CAUTION

Wire strands may be encountered at any point up to $\frac{5}{16}$ inch of tool insertion. It is important not to jam any strands of wire up to this point.

Withdraw removal tool anytime during insertion when it cannot be advanced into connector using these procedures. Inspect tool tip for nicks, cracks, mushrooming, and other damage that will prevent its functioning. Replace removal tool and repeat procedure, if required.

NOTE

Refer to Figure 18 for approximate dimensions of a size 22 contact and cavity. The dimensions in this procedure are based on a size 22 contact.

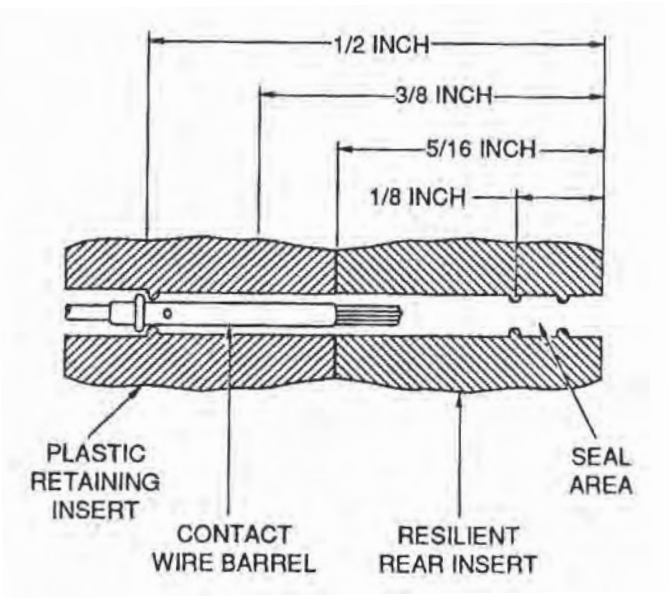


Figure 18. Typical Connector Dimensions



Figure 19. Unlocking Contact Retention Mechanism With Broken Wire

d. Gently insert removal tool into cavity in about 1/16 inch units, releasing tool after each unit if resistance is felt.

NOTE

Rotating removal tool works splayed wire strands into slot of tool, allowing tool to pass.

Removal tool may be blocked at rear of contact by plastic insert or additional strands of broken wire.

e. If resistance is felt before removal tool reaches back end of contact, withdraw tool slightly, rotate 1/6 of a turn, and reinsert tool. Repeat rotating and insertion Procedure until tool passes with minimum additional force to 5/16 inch depth back end of contact (Figure 19).

f. Wiggle removal tool gently to help guide into insert bore and over back of contact. Additional rotation may be required if broken strands are encountered.

g. Continue insertion of removal tool until positive stop is felt at about 1/2 inch depth.

h. Exert axial pressure on engaging end of contact, using appropriate pin or socket as pusher. (If contact does not move, seat removal tool more firmly.)

i. Push contact completely out rear of connector before disengaging removal tool (Figure 20).

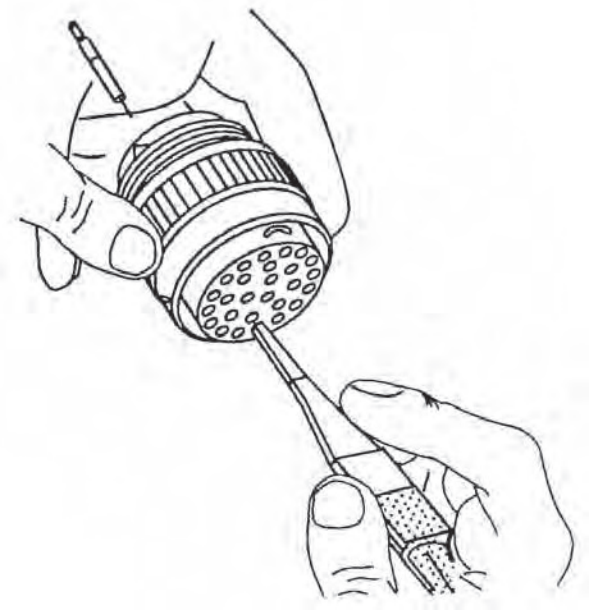


Figure 20. Broken Wire Contact Removal

97. CONNECTOR REMOVAL AND INSTALLATION. If the connector is severely damaged or cannot be repaired using the above procedures, proceed as follows:

a. Starting from outside of damaged connector, tag wires and remove all contacts from connector (Paragraph 93). If contact cannot be removed, cut wire as close to connector as possible and attach new contact (Paragraphs 87 and 88).

b. Starting from center of new connector, insert contact into correct cavity (Paragraph 89). Remove tag from wire. Repeat procedure until all contacts are installed in new connector.

98. CONNECTOR BUILD-UP, SOLDER CONTACTS.

99. For build-up procedures for solder contacts refer to NAVAIR 01-1A-505-1, WP 016 00.

100. CONNECTOR CLEANING AND PRESERVATION.

101. For connector cleaning and corrosion control procedures refer to NAVAIR 01-1A-505-1, WP 026 00.

CONNECTOR ACCESSORIES
NAS1599

Reference Material

Connectors, General Purpose, Electrical, Miniature Circular, Environment Resisting NAS1599

Alphabetical Index

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NAS1599 Connector Accessories 2
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Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
BT-BS-601	Wrench, Strap
BT-HT-100	T-Handle
CM264	Adapter, Tool Set
CM264R	Adapter, Tool Set

Materials Required

None

1. INTRODUCTION.

2. This Work Package (WP) covers connector accessories used with NAS1599 connectors, their function, associated tools, assembly, and procurement information.

NOTE

As all NAVAIR connector and accessory documents are transitioned to non-government standards, the Society of Automotive Engineers (SAE), will become the preparing activity and the Navy will adopt the documents, the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

3. CONNECTOR ACCESSORIES. Connector accessories are components added to a connector to help maintain its operational characteristics. These accessories are divided into the following categories:

a. Backshells.

b. Connector Assembly Tools.

c. Dummy Receptacles.

d. Dust Caps.

e. Shrink Boots and Adapters.

f. Conduit Fittings.

g. Rubber Bushings.

h. Sealing Plugs.

4. BACKSHELLS. Backshells are the most complex connector accessories and simply stated, they are any device added to the rear or wiring side of a connector. Backshells may be divided into the following categories:

a. Grommet Nuts.

b. Cable Clamps/Strain Reliefs.

c. EMI/RFI Grounding Terminators.

d. Environmental Backshells.

e. Non-Environmental EMI/RFI Backshells.

f. Environmental EMI/RFI Backshells.

5. NAS1592 CONNECTOR ACCESSORIES.

6. SPECIAL TOOLS. Connector backshells come in a wide variety of types depending on application. To install backshells or accessories, adapter tools and a strap wrench are needed. Adapter tools (Figure 1) are used to hold connector during backshell installation and removal. Special tools are used to prevent damage to connector shells and accessories.

7. ADAPTER TOOL SELECTION. To select proper adapter tool, shell size, and type of connector plug or receptacle, must be known. Select proper adapter tool (Table 1).

8. ADAPTER TOOL ACCESSORIES. To hold the adapter too] and to keep the connector from turning when installing or removing backshells the use of a ¼ inch drive T-handle is recommended. A strap wrench is used on the backshell for installation and removal to apply even pressure without causing damage to accessories (Figure 2).

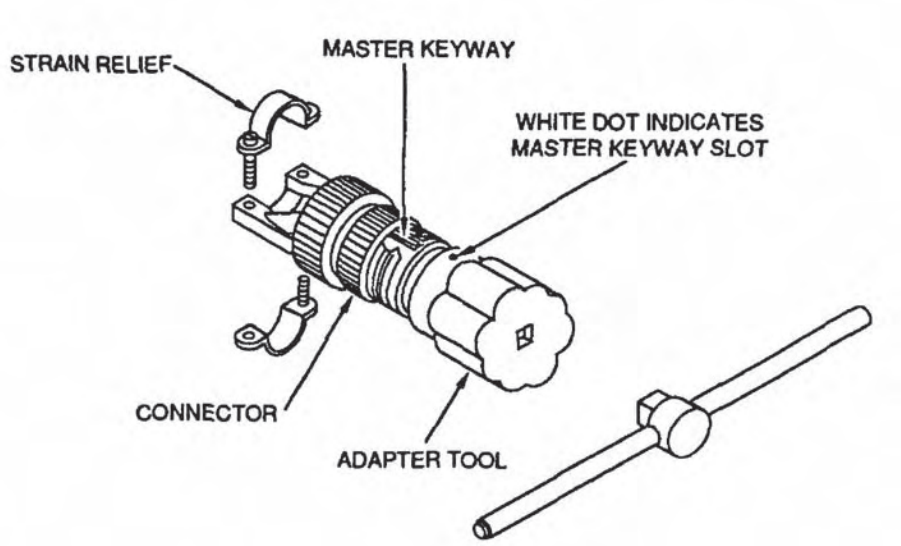


Figure 1. Adaptor Tool

Table 1. NAS1599 Adaptor Tools

		Adapter Tool P/N			
Shell Size	Polarization	Plug	Color Code	Receptacle	Color Code
8	All	CM264-8	Orange	CM264R-8	Orange
10	All	CM264-10	Orange	CM264R-10	Orange
12	All	CM264-12	Orange	CM264R-12	Orange
14	All	CM264-14	Orange	CM264R-14	Orange
16	All	CM264-16	Orange	CM264R-16	Orange
18	All	CM264-18	Orange	CM264R-18	Orange
20	All	CM264-20	Orange	CM264R-20	Orange
22	All	CM264-22	Orange	CM264R-22	Orange
24	All	CM264-24	Orange	CM264R-24	Orange

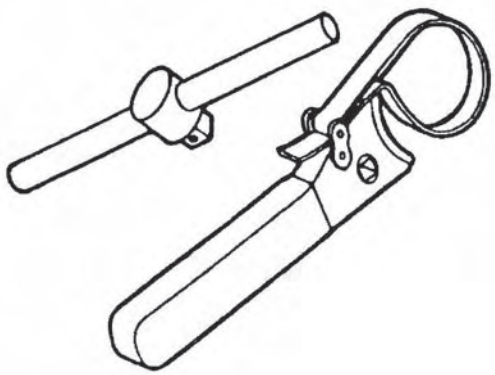


Figure 2. Adaptor Tool Accesories

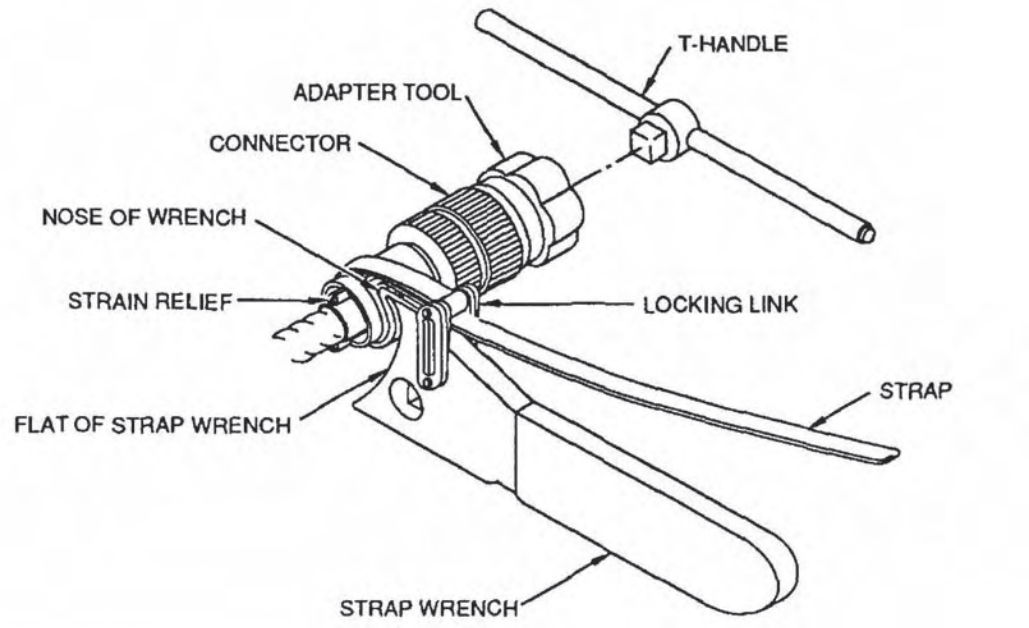


Figure 3. Starp Wrench setup and Adjustment

9. BACKSHELL REMOVAL. Backshells are used to protect, shield, and add strength to connectors. When modification or repair to the connector is necessary the backshell must be removed. Proceed using following procedure:

a. Select the correct adapter tool (Table 1) by shell size, T-handle, and strap wrench (Figure 2).

CAUTION

Ensure white dot on adapter tool aligns with master key of connector. Spinning tool on connector will cause damage to tool and/or connector (Figure 3).

b. Mate adapter tool to connector. Ensure white dot on adapter tool aligns with master key of connector (Figure 3).

c. Install strap wrench around part to be removed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 3).

d. Insert T-handle into socket of adapter tool (Figure 3).

e. To loosen backshell apply force counterclockwise as viewed from connector rear (Figure 4).

f. Secure/tape backshell to bundle to prevent loss.

10. BACKSHELL INSTALLATION. Upon completion of maintenance or modification (NAVAIR 01-1A-505-1), the backshell must be replaced. Proceed using following procedure:

a. Un-tape/acquire backshell from the bundle to which it was secured temporarily. Start backshell on to connector by hand to prevent cross-threading.

b. Select the correct adapter tool (Table 1), T-handle, and strap wrench (Figure 2).

CAUTION

Ensure white dot on adapter tool aligns with master key of connector. Spinning tool on connector will cause damage to tool and/or connector (Figure 3).

c. Mate adapter tool to connector. Ensure white dot on adapter tool aligns with master key of connector (Figure 3).

d. Install strap wrench around part to be installed. Draw strap tightly through locking link. Backshell will rest on nose of wrench (Figure 3).

e. Insert T-handle into socket of adapter tool to provide holding (Figure 3).

f. To tighten backshell apply force clockwise as viewed from connector rear (Figure 5).

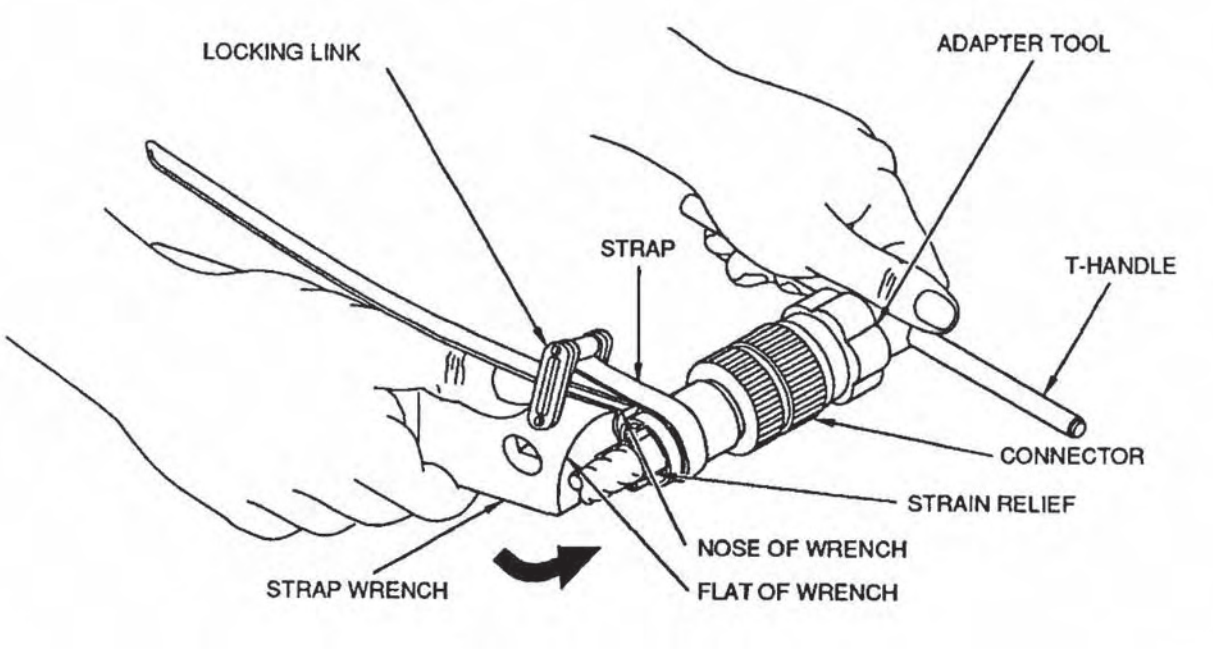


Figure 4. Loosening Position of Wrench

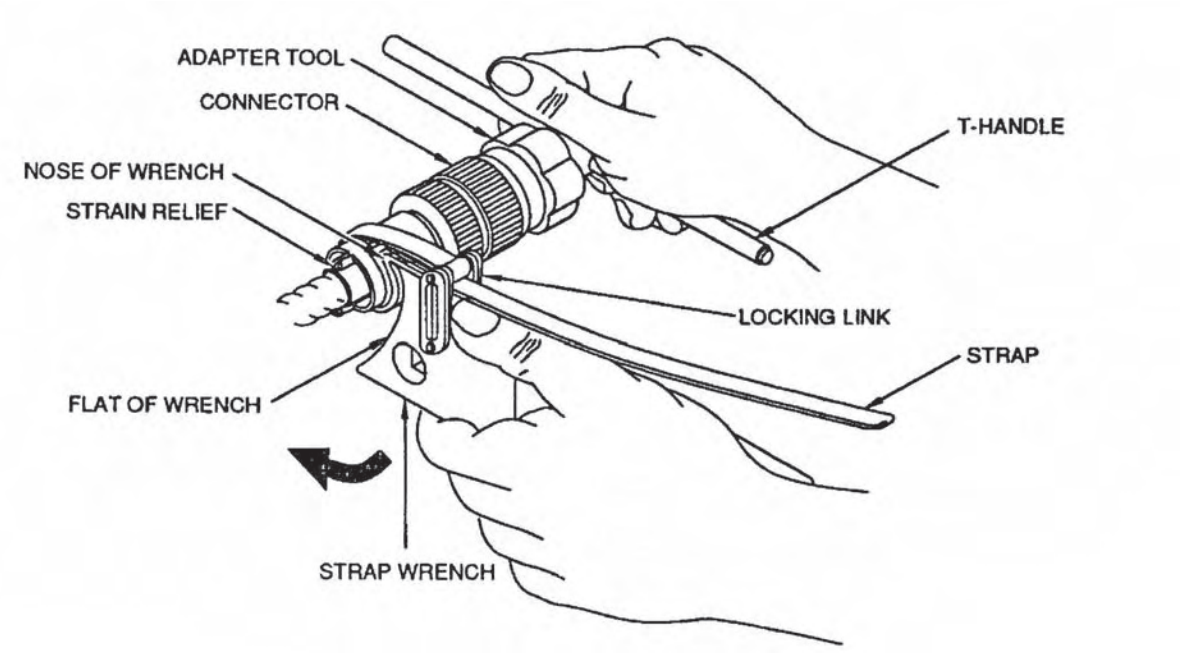


Figure 5. Tightening Position of Wrench

NOTE

Refer to NAVAIR 01-1A-505-1 WP 011 01, for torque value information on AS85049 connector backshells.

11. GROMMET NUTS. The grommet nut is a threaded ring nut utilized to securely hold the connector grommet in place (Figures 6 and 7). The M83723/15AN-08 thru -24 grommet nut is provided for reference only, as it has been cancelled without replacement (see Figure 6). See WP 010 03 for detail information grommet nut M85049/31. The NAS1665 and NAS1695 grommet nut is illustrated in Figure 7. See Note following paragraph 2 this WP on AS, M and MS prefix.

12. CABLE CLAMPS/STRAIN RELIEFS. The following two paragraphs explain the two types of cable support or clamping devices.

13. Cable Clamps. A cable clamp is a support or clamping device which requires use of an intermediate component for attachment to back of connector.

14. Strain Reliefs. A strain relief is a support or clamping device which attaches directly to connector (Figures 8 and 9). The M83723/15A-08 thru -24 strain relief is provided for reference only, as it has been cancelled without replacement (see Figure 8). See Figure 9 for the NAS1666 and NAS1696 straight strain relief part number breakdown. See Note following paragraph 2 this WP on AS, M and MS prefix. See WP 007 03 for detail information on the following:

a. 45° strain reliefs: M85049/43 or MS34515.

b. 90° strain reliefs: M85049/51-1 or MS3418.

c. Straight strain reliefs: M85049/52-1 or MS3417.

d. Straight strain reliefs with quick tie arm: M85049/53 or MS3152.

e. 45° strain reliefs with quick tie arm: M85049/54 or MS3153.

15. SHRINK BOOTS AND ADAPTERS. Boots and adapters are protective coverings over any portion of a cable, wire, or connector in addition to normal jacketing or insulation. A protective housing usually made from a resilient material to prevent entry of moisture into a connector. The M83723/16 adapter and shrink boots are illustrated (Figure 10). See WP 008 03 for detail information on the following adapters: M85049/60/-1 and M85049/60-2. See WP 008 03 for detail information on the following shrink boots: MS3109 and AS31171. Shrink boot M85049/68 has been cancelled without replacement. See Note following paragraph 2 this WP on AS, M and MS prefix.

16. ENVIRONMENTAL BACKSHELLS. An environmental backshell is a device that provides protection from moisture, dirt, air or dust which may reduce performance of unit. They do not provide protection from non-physical environments such as RF and radiation. See Note following paragraph 2 this WP on AS, M and MS prefix. Refer to WP 008 03 for detail information on the following:

a. 45° Environmental Backshell M85049/7.

b. 90° Environmental Backshell M85049/9.

c. Straight Environmental Backshell M85049/11.

17. EMI/RFI GROUNDING TERMINATORS. The EMI/RFI grounding terminators are two piece units used to ground shielded cable or shield terminations to a common point using a ground lead. Details on the following are located in WP 008 03. The insulated outer ferrule AS18121, the un-insulated inner (MS21980) and outer (MS21981) ferrules.

18. NON-ENVIRONMENTAL EMI/RFI BACKSHELLS. This type of backshell is used when moisture entry protection is not required but the need for EMI/RFI protection is required (Figure 11). See details on NAS16981 Straight Shield Termination for Non-Environmental Backshell (Figure 12). See Note following paragraph 2 this WP on AS, M and MS prefix. Refer to WP 008 03 for detail information on the following:

a. 45° Non-Environmental Backshell M85049/23.

b. 90° Non-Environmental Backshell M85049/24.

c. Straight Non-Environmental Backshell M85049/25.

d. Straight Shield Termination for Non-Environmental Backshell M85049/26-1.

e. Shielding Ring termination for Non-Environmental Backshell M85049/26-2, or MS3161.

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

PART NUMBER DESIGNATION

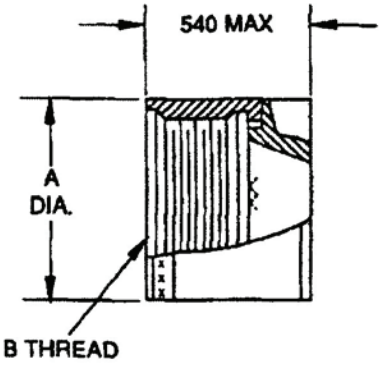
M83723/15 A N - 22

MIL SPEC DESIGNATION

CLASS
A NON-CONDUCTIVE.
N CONDUCTIVE.

DASH NO.
SEE DIMENSIONS.

TYPE
A 90° CLAMP.
N NO CLAMP.
S STRAIGHT CLAMP.



INTERCHANGEABLE WITH
M85049/31 AND MS3416#E

DIMENSIONS

Dash Number	Shell Size	A Max.	B Thread Class 2B
-08	8	.617	1/2-20UNF
-10	10	.734	5/8-24UNEF
-12	12	.858	3/4-20UNEF
-14	14	.984	7/8-20UNEF
-16	16	1.112	1-20UNEF
-18	18	1.218	1 1/16-18UNEF
-20	20	1.345	1 3/16-18UNEF
-22	22	1.468	1 5/16-18UNEF
-24	24	1.593	1 7/16-18UNEF

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

Figure 6. M83723/15 Grommet Nut Part Number Breakdown

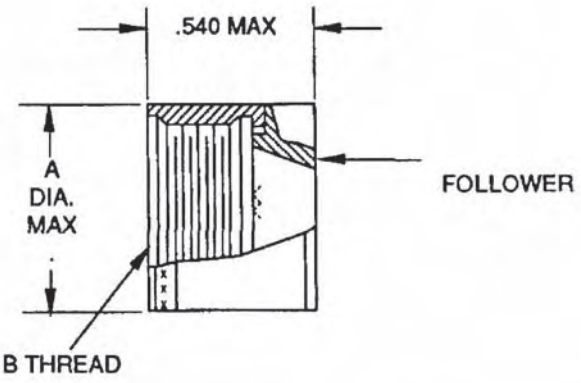
PART NUMBER DESIGNATION

NAS1665 - 14
NAS1695 - 14

MIL SPEC

SHELL SIZE
SEE DIMENSIONS.

FINISH:
NAS1665 ANODIC COATING, NON-CONDUCTIVE
NAS1695 CHROMIUM PLATING, CONDUCTIVE

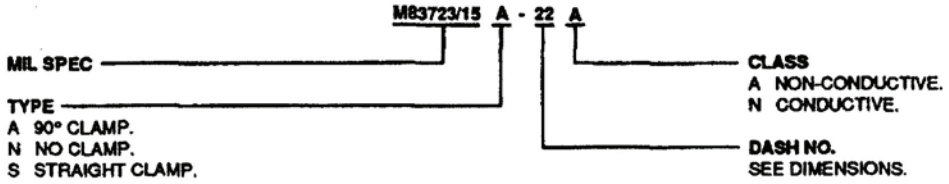


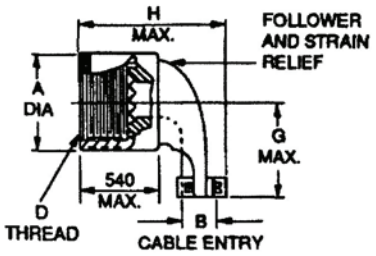
DIMENSIONS

Part Number		Shell Size	A Dia.	B Thread
NAS1665-8	NAS1695-8	8	.617	1/2-20UNEF-2B
NAS1665-10	NAS1695-10	10	.734	5/8-24UNEF-2B
NAS1665-12A	NAS1695-12A	12	.858	3/4-20UNEF-2B
NAS1665-14	NAS1695-14	14	.984	7/8-20UNEF-2B
NAS1665-16	NAS1695-16	16	1.112	1-20UNEF-2B
NAS1665-18	NAS1695-18	18	1.218	1 1/16-18UNEF-2B
NAS1665-20	NAS1695-20	20	1.345	1 3/16-18UNEF-2B
NAS1665-22	NAS1695-22	22	1.468	1 5/16-18UNEF-2B
NAS1665-24	NAS1695-24	24	1.593	1 7/16-18UNEF-2B

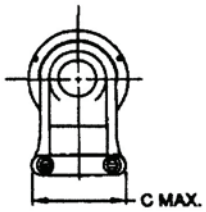
Figure 7. NAS1665 and NAS1695 Grommet Nut Part Number Breakdown

NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

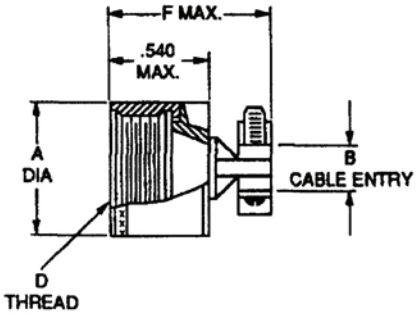




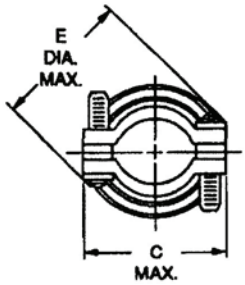
M83723/15A
90° CLAMP



INTERCHANGEABLE
WITH MS3418 OR
M85049/51



M83723/15S
STRAIGHT CLAMP



INTERCHANGEABLE
WITH MS3417 OR
M85049/52

DIMENSIONS

Dash No.	Shell Size NAS1599	A Max.	B Cable Entry Max.	B Cable Entry Min.	C Max.	D Thread Class 2B	E Max.	F Max.	G Max.	H Max.
-08	8	.617	.204	.172	.700	1/2-20UNF	.863	.890	.830	1.069
-10	10	.734	.286	.254	.809	5/8-24UNEF	.914	.890	.880	1.163
-12	12	.858	.416	.384	.937	3/4-20UNEF	1.026	.890	.950	1.298
-14	14	.984	.476	.444	1.008	7/8-20UNEF	1.090	1.125	1.010	1.388
-16	16	1.112	.626	.594	1.183	1-20UNEF	1.250	1.125	1.070	1.523
-18	18	1.218	.706	.674	1.299	1 1/16-18UNEF	1.358	1.125	1.130	1.622
-20	20	1.345	.831	.799	1.431	1 3/16-18UNEF	1.480	1.125	1.190	1.755
-22	22	1.468	.956	.924	1.558	1 5/16-18UNEF	1.604	1.125	1.260	1.878
-24	24	1.593	1.081	1.049	1.700	1 7/16-18UNEF	1.740	1.125	1.320	2.000

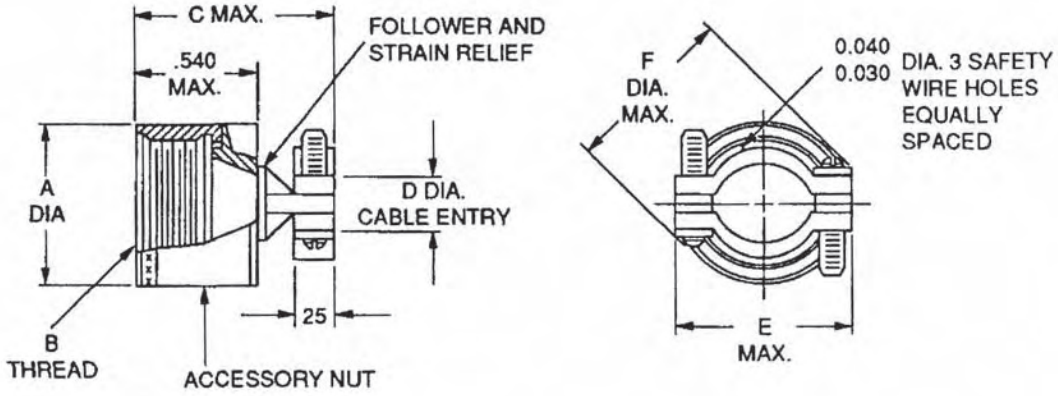
NOTE: THIS PART NUMBER WAS CANCELLED WITHOUT REPLACEMENT. INFORMATION PROVIDED FOR REFERENCE USE ONLY

Figure 8. M83723/15A Strain Relief Part Number Breakdown

PART NUMBER DESIGNATION

NAS1666 - 8
NAS1696 - 8

MIL SPEC — SHELL SIZE SEE DIMENSIONS.



DIMENSIONS

Part Number		Shell Size	A Dia.	B Thread	C Max.	D Dia.	E Max.	F Dia. Max.
NAS1666-8	NAS1696-8	8	.617	1/2-20UNF-2B	.890 .828	.204 .172	.700	.863
NAS1666-10	NAS1696-10	10	.734	5/8-24UNEF-2B	.890 .828	.286 .254	.809	.914
NAS1666-12A	NAS1696-12A	12	.858	3/4-20UNEF-2B	.890 .828	.416 .384	.937	1.026
NAS1666-14	NAS1696-14	14	.984	7/8-20UNEF-2B	1.125 1.062	.476 .444	1.008	1.090
NAS1666-16	NAS1696-16	16	1.112	1-20UNEF-2B	1.125 1.062	.626 .594	1.183	1.250
NAS1666-18	NAS1696-18	18	1.218	1 1/16-18UNEF-2B	1.125 1.062	.706 .674	1.299	1.358
NAS1666-20	NAS1696-20	20	1.345	1 3/16-18UNEF-2B	1.125 1.062	.831 .799	1.431	1.480
NAS1666-22	NAS1696-22	22	1.468	1 5/16-18UNEF-2B	1.125 1.062	.956 .924	1.558	1.604
NAS1666-24	NAS1696-24	24	1.593	1 7/16-18UNEF-2B	1.125 1.062	1.081 1.049	1.700	1.740

FINISH: NAS1666 ANODIC COATING, NON-CONDUCTIVE
NAS1696 CHROMIUM PLATING, CONDUCTIVE

Figure 9. NAS1666 and NAS1696 Straight Strain Relief Part Number Breakdown

PART NUMBER DESIGNATION

M83723/ 16 M 22 M

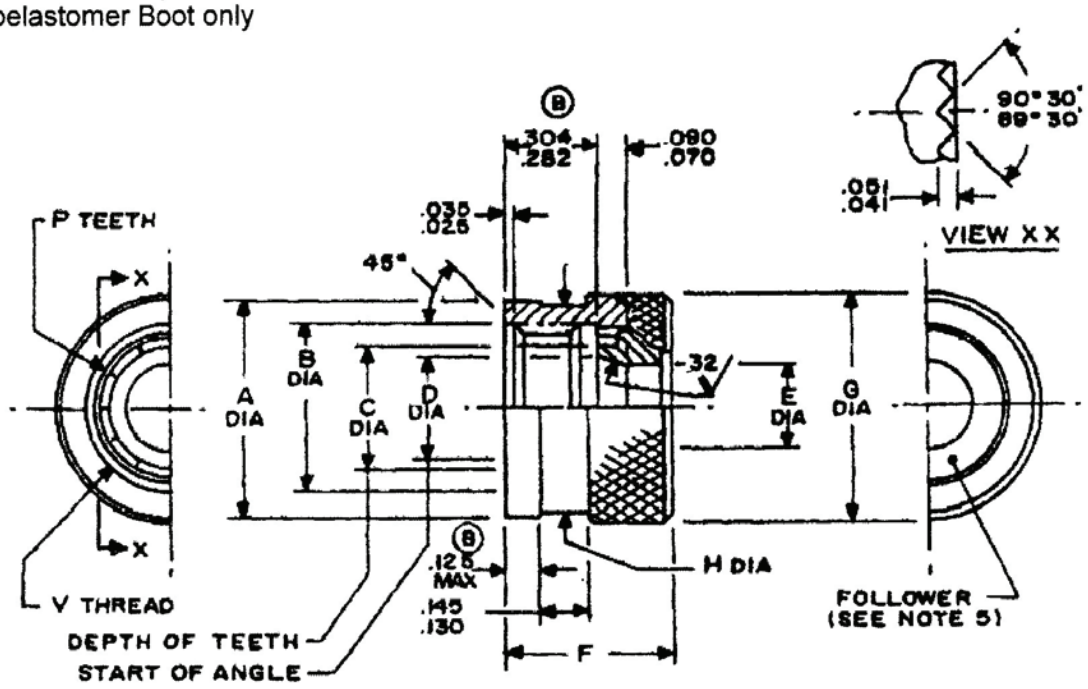
MIL SPEC

SPECIFICATION SHEET

CONFIGURATION
S Straight Shrink Boot
A Right Angle Shrink Boot
M Backshell Adapter

SHELL SIZE (See Table)

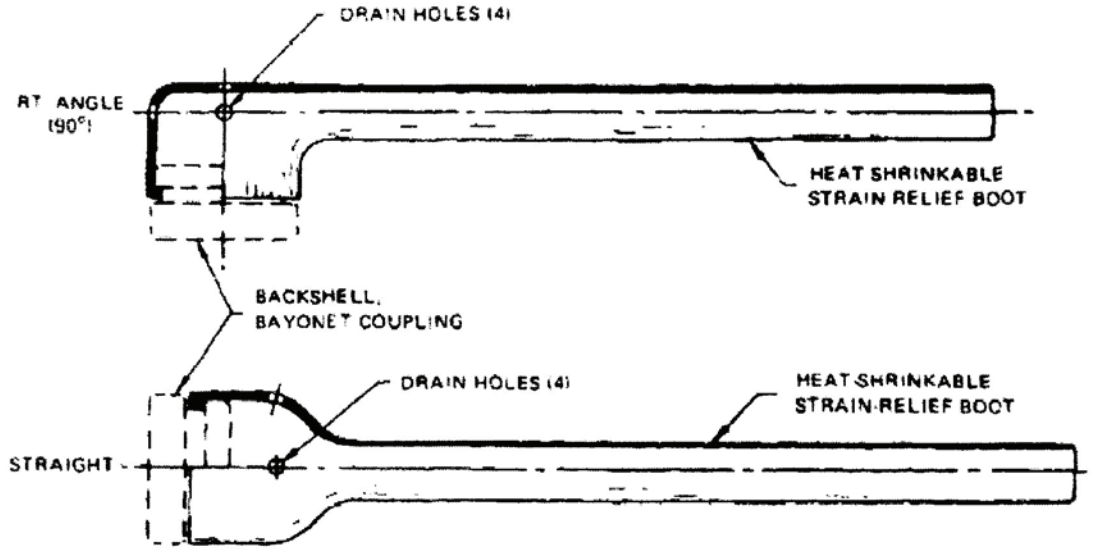
BOOT MATERIAL
A Polyolefin, 302 °F (150° C) Boot and Backshell
B Fluoroelastomer, 392°F (200° C) Boot and Backshell
(M Backshell only
(A Polyolefin Boot only
(B Fluoroelastomer Boot only



MATERIAL:
Coupling nut and follower; Aluminum alloy in accordance with AS85049.

Figure 10 .M83723/16 Shrink Boot Adapter Part Number Breakdown (Sheet 1 of 4)

COMPLETE ASSEMBLY, ADAPTER AND SHRINK BOOT



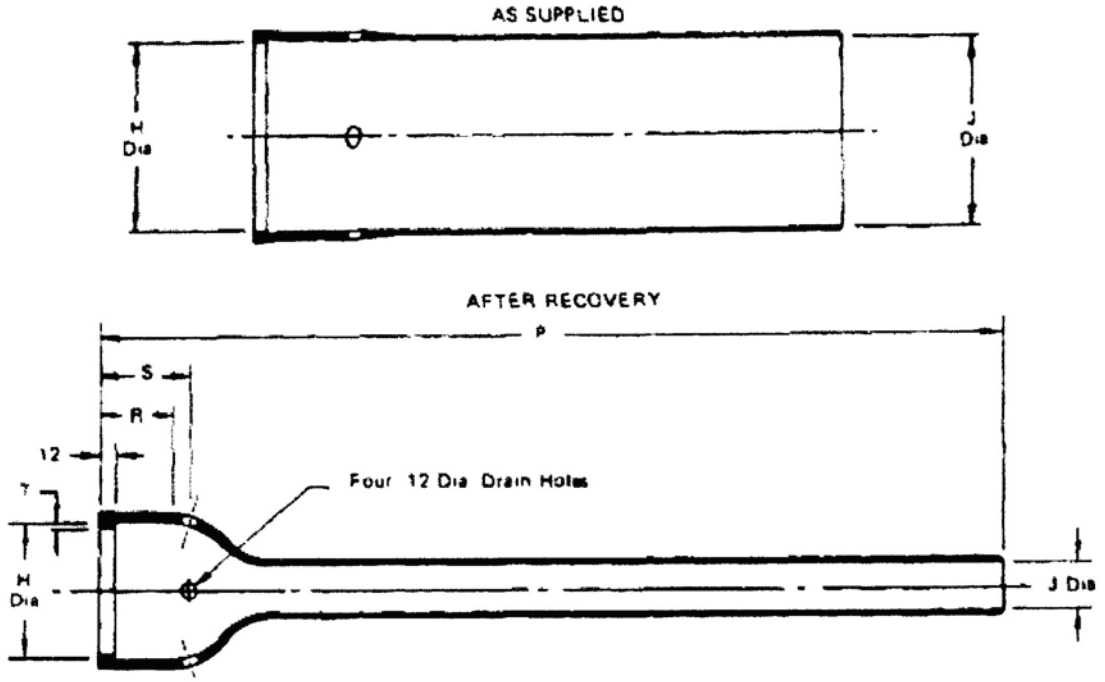
DIMENSIONS

Shell Size	Dimensions in Inches									P
	(B) A Dia (Max)	B Dia (Min)	C Dia (Max)	D Dia (Min)	E Dia (Min)	(B) F (Max)	(B) G Dia (Min)	(B) H Dia (Max)	V Threads	No. of Teeth
8	.657	.500	.360	.299	.250	.540	.668	.600	.500-20UNF-2B	12
10	.774	.625	.494	.433	.295	.540	.783	.715	625-24UNEF-2B	15
12	.898	.750	.610	.549	.491	.540	.918	.850	.750-20UNEF-2B	21
14	1.024	.875	735	.674	.555	.540	1.043	.975	.875-20UNEF-2B	24
16	1 152	1.000	.860	.799	.680	.540	1.218	1.100	1.000-20UNEF-2B	30
18	1.243	1.062	.916	.869	.759	.540	1.290	1.172	1.0625-18UNEF-2B	33
20	1.370	1.188	1.041	.994	.884	.540	1.416	1.298	1.1875-18UNEF-2B	36
22	1 443	1.312	1.166	1.119	1.009	.540	1.540	1.422	1.3125-18UNEF-2B	39
24	1.618	1.438	1.291	1.244	1.134	.540	1.666	1.548	1.4375-18UNEF-2B	42or45

NOTES:
1. Dimensions are in inches, after plating.
2. Complete backshell consists of accessory nut and a follower.
3. Accessory nut is captivated to, and free to rotate to follower.

Figure 10 .M83723/16 Shrink Boot Adapter Part Number Breakdown (Sheet 2 of 4)

SHRINK BOOT, STRAIGHT



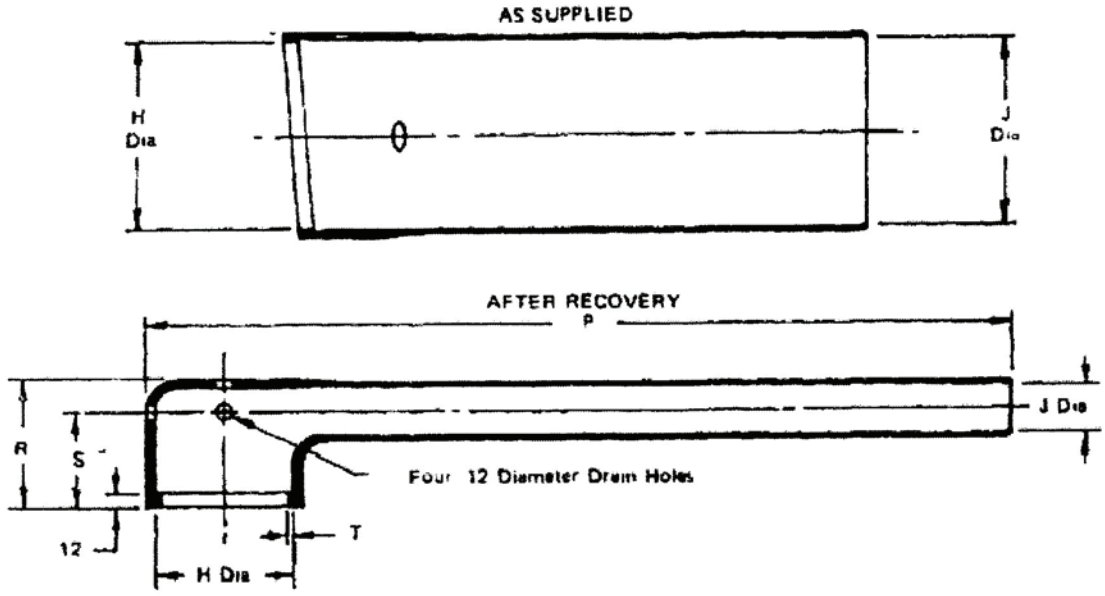
DIMENSIONS, STRAIGHT SHRINK BOOT

Shell Size	Dimensions Inch								
	H Dia		J Dia			P	R	S	T
	As Supplied (Min.)	Recovered (Max.)	As Supplied (Min.) (Note 2)		Recovered (Max.)	Recovered	Recovered	Recovered	Recovered
			A	B					
8	1.01	.59	1.01	.63	.29	4.77	.48	.59	.040
10	1.16	.74	1.16	.72	.33	5.46	.48	.60	.040
12	1.34	.90	1.34	.84	.38	6.28	.48	.62	.040
14	1.34	.90	1.34	.84	.38	6.28	.48	.62	.040
16	1.47	1.16	1.47	.91	.41	7.00	.55	.70	.065
18	1.47	1.16	1.47	.91	.41	7.00	.55	.70	.065
20	1.72	1.34	1.72	1.07	.48	8.00	.60	.78	.065
22	1.72	1.34	1.72	1.07	.48	8.00	.60	.78	.065
24	1.97	1.62	1.97	1.23	.56	8.00	.60	.82	.065

NOTE:
Boots will shrink to recovered dimensions upon application of heat in excess of 175°C.

Figure 10 .M83723/16 Shrink Boot Adapter Part Number Breakdown (Sheet 3 of 4)

SHRINK BOOT, RIGHT ANGLE (90°)



DIMENSIONS, RIGHT ANGLE (90°) SHRINK BOOT

Shell Size	Dimensions, Inch								
	H Dia		J Dia			P	R	S	T
	As Supplied (Min.)	Recovered (Max.)	As Supplied (Min.) (Note 2)		Recovered (Max.)	Recovered	Recovered	Recovered	Recovered
			A	B					
8	1.01	.59	1.01	.63	.29	4.88	.78	.59	.040
10	1.16	.74	1.16	.72	.33	5.76	.82	.60	.040
12	1.34	.90	1.34	.84	.38	6.78	.86	.62	.040
14	1.34	.90	1.34	.84	.38	6.78	.86	.62	.040
16	1.47	1.16	1.47	.91	.41	7.29	.96	.70	.065
18	1.47	1.16	1.47	.91	.41	7.29	.96	.70	.065
20	1.72	1.34	1.72	1.07	.48	8.41	1.08	.78	.065
22	1.72	1.34	1.72	1.07	.48	8.41	1.08	.78	.065
24	1.97	1.62	1.97	1.23	.56	8.84	1.16	.82	.065

NOTE:
Boots will shrink to recovered dimensions upon application of heat in excess of 175°C

Figure 10 .M83723/16 Shrink Boot Adapter Part Number Breakdown (Sheet 4 of 4)

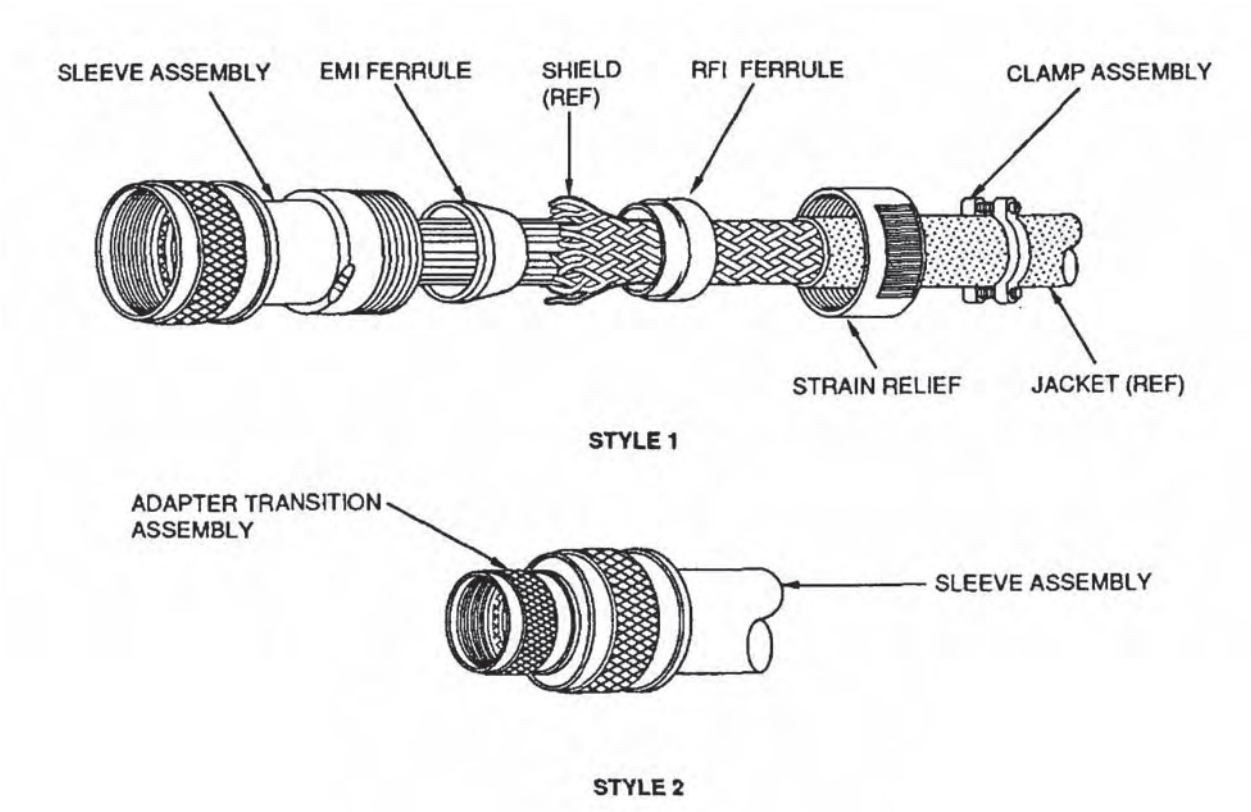


Figure 11. Non-Enviromental EMI-RFI Typical Backshell

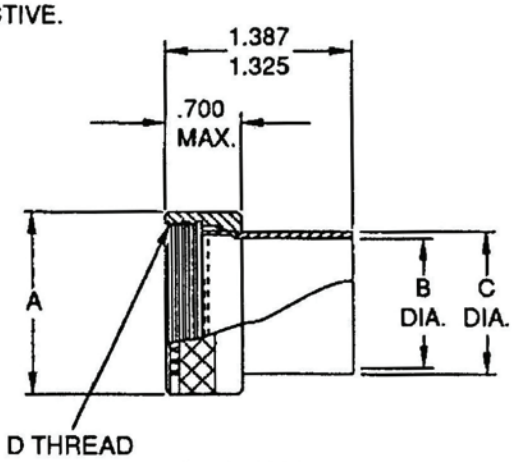
PART NUMBER DESIGNATION

NAS 1698 - 10-1

MIL SPEC — **DASH NO.** SEE DIMENSIONS.

FINISH:

CHROMIUM PLATING, CONDUCTIVE.



DIMENSIONS

Part Number	Shell Size	A Dia.	B Dia.	C Dia.	D Thread	Use M85049/26-2
NAS1698-8-1	8	.617	.231 .201	.311 .301	1/2-20UNF-2B	—
NAS1698-10-1	10	.734	.325 .295	.411 .401	5/8-24UNEF-2B	—
NAS1698-12-1	12	.858	.435 .405	.505 .495	3/4-20UNEF-2B	-12
NAS1698-14-1	14	.984	.545 .515	.625 .615	7/8-20UNEF-2B	-14
NAS1698-16-1	16	1.112	.670 .640	.755 .745	1-20UNEF-2B	-16
NAS1698-18-1	18	1.218	.789 .759	.885 .875	1-1/16-18UNEF-2B	-18
NAS1698-20-1	20	1.345	.914 .884	1.005 .995	1-3/16-18UNEF-2B	-20
NAS1698-22-1	22	1.468	1.039 1.009	1.125 1.115	1-5/16-18UNEF-2B	-22

Figure 12. NAS1698 Straight Shield Termination Non-Enviroment

19. ENVIRONMENTAL EMI/RFI BACKSHELLS. This type of backshell is used where moisture and EMI/RFI protection is required. Moisture protection is accomplished by the use of 0-rings, grommets, and other sealing devices. See Note following paragraph 2 this WP on AS, M and MS prefix. Refer to WP 008 03 for detail information on the following:

a. 45° Environmental EMI/RFI Backshell M85049/6.

b. 90° Environmental EMI/RFI Backshell M85049/8.

c. Straight Environmental EMI/RFI Backshell M85049/10.

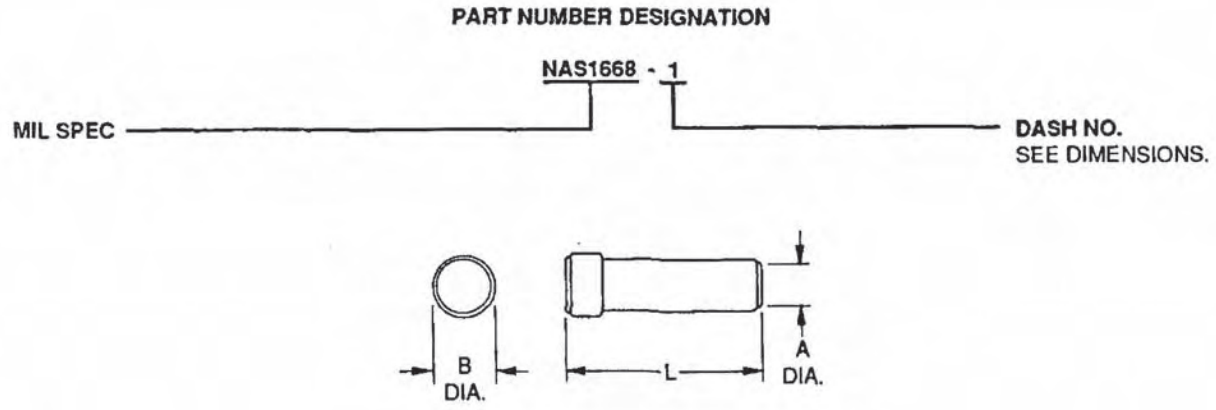
20. CONDUIT FITTINGS. Conduit fittings are used to connect a conduit to a connector and may be either a ferrule, nut, adapter, box fitting, 45° elbow, 90° elbow, hex nut, seal assembly, or Y fitting. See WP 007 03 for detail information on conduit fittings: AN3050, AN 3051, AN3052, AN3053, AN3054, AN3055, AN3056, AN3058, AN3060, AN3061, AN3062, AN3063, AN3064, AN3066, AN3068 and AN3067. See WP 007 03 for detailed information on the Y fitting, AN3250. See Note following paragraph 2 this WP on AS, M and MS prefix.

21. DUMMY RECEPTACLES. Dummy receptacles are provided and shall be used to stow unmated plugs, caps, or protective covers when the related component is not in operational use. The dummy receptacle shall be marked and located to permit easy access. See WP 006 04 for detail information on dummy receptacle M83723/61-1. See WP 008 03 for detailed information on dummy receptacle MS3115. See Note following paragraph 2 this WP on AS, M and MS prefix.

22. DUST CAPS. Protective covers are more commonly called dust caps. The purpose of dust caps is to prevent dirt, or contaminants from entering connectors, pins, and sockets and to prevent coupling device from damage. See WP 006 04 for detail information on dust caps: MS3180, MS3181, M83723/59, M83723/60-1, M83723/60-2 and MS90376. See Note following paragraph 2 this WP on AS, M and MS prefix.

23. RUBBER BUSHINGS. The primary use is to provide a cushion for wires at connector and to aid with strain relief. Bushing standard material and color is black neoprene. See WP 008 03 for detail information on rubber bushing MS3420. See Note following paragraph 2 this WP on AS, M and MS prefix.

24. SEALING PLUGS. Sealing plugs are inserted to fill a cavity in a connector insert. The purpose is to seal all unoccupied apertures in the insert, especially in environmental connectors. The plugs are inserted large end first. See Figure 13 for detail information on the NAS1668 sealing plug.



DIMENSIONS

MIL SPEC	Material	Wire Size	Color	A Dia. Max.	B Dia. Max.	L Max.	Superseded By Rev. H
NAS1668-1	TEFLON	20	RED	.065	.584	.100	
NAS1668-2	TEFLON	16	BLUE	.093	.584	.138	
NAS1668-3	TEFLON	12	YELLOW	.131	.584	.176	

Figure 13. NAS1668 Sealing Plug Part Number Breakdown

ALPHABETICAL INDEX
INSTALLATION PRACTICES
RF CONNECTORS MIL-PRF-39012

Title	WP Number
Introduction	012 01
RF Connectors, MIL-PRF-39012	012 02

INTRODUCTION
INSTALLATION PRACTICES
RF CONNECTORS MIL-PRF-39012

1. PURPOSE AND SCOPE.

2. This manual covers all connectors manufactured in accordance with MIL-PRF-39012. It includes coaxial contacts and all associated tooling.

3. SPECIFICATION UPDATES (ASSIST SEARCH).

4. The most up to date government specifications and Qualified Products Lists (QPLs) can be obtained from the Quick Search section of the ASSIST website, the address is http://assist.daps.mil/quicksearch. Non-government standards can be obtained through a license with a document service such as Information Handling Services (IHS) or purchased individually from the Society of Automotive Engineers (SAE).

5. QUALIFIED PRODUCTS LIST (QPL).

6. The Qualified Products List (QPL) is a list of products which have met the qualification requirements stated in the applicable specification. These requirements include appropriate product identification and performance/testing parameters. The list contains the government part number and the manufacturer's part number. The name of the manufacturer, office and manufacturing plant address, CAGE (Commercial and Government Entity) code, assembly plant, or distributor as applicable, is also included in the back of the QPL. The component specification will identify the appropriate quality assurance provisions such as QPL, First Article testing, or user verified test results. NAVAIR Patuxent River (http://www.navair.navy.mil/qpl/) now has an operational website where the latest QPL revision can be accessed, along with all outstanding QPL change letters as they are written. This enables all users to have access to the latest procurement information without relying on the publication of a new QPL revision. When the QPL is revised, all outstanding QPL change letters are incorporated in the latest revision.

RF CONNECTORS
MIL-PRF-39012

Reference Material

Installation Practices, Aircraft Electric and Electronic Wiring ..... NAVAIR 01-1A-505-1
Connectors, Coaxial, Radio Frequency, General Specification for MIL-PRF-39012

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Connector Sealing 64
Moisture Proofing 64
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Series SMA Connector Build-Up 64
Series SMB Connector Build-Up 64
Series SMC Connector Build-Up 64
Series TNC Connector Build-Up 64
Soldering 64

Record of Applicable Technical Directives

None

Support Equipment Required

Part No./ Type Designation	Nomenclature
M22520/1-01	Crimp Tool Frame
M22520/1-12	Turret
M22520/1-13	Turret
M22520/1-14	Turret
N22520/1-15	Positioner
M22520/36-01	Crimp Tool Frame
M22520/36-02	Positioner
M22520/36-03	Positioner
M22520/36-04	Locator
M22520/36-05	Locator
M22520/36-06	Locator
M22520/36-15	Positioner
M22520/36-16	Positioner
M22520/36-17	Locator
M22520/36-18	Locator
M22520/5-01	Crimp Tool Frame
M22520/5-03	Die
M22520/5-05	Die
M22520/5-07	Die
M22520/5-09	Die
M22520/5-11	Die
M22520/5-13	Die
M22520/5-19	Die
M22520/5-25	Die
M22520/5-33	Die
M22520/5-35	Die
M22520/5-41	Die
M22520/5-55	Die
M22520/5-57	Die
M22520/5-59	Die
M22520/5-61	Die
OMNI SPECTRA T-200	Crimping Tool
901-2500	Crimping Tool
-----	Torque Wrench, 0-100 in/lbs

Materials Required

Specification/ Part No.	Nomenclature
SAE-AMS-DTL-23053	Sleeving, Heat-Shrink
Sn60WRMAP3 (or equivalent)	Solder
A-A-23594	Tape, Insulating

1. **INTRODUCTION.**

2. This Work Package (WP) provides pertinent data necessary for the use and maintenance of radio frequency (RF) connectors manufactured in accordance with MIL-PRF-39012.

NOTE

As all connectors and accessory documents are transitioned to non-government standards, (the Society of Automotive Engineers (SAE), will become the preparing activity and the Navy will adopt the documents), the drawing number prefix will change from MS to AS. The main part number designation remains the same, with the "M" prefix, such as M81511/17-08. At times the entire item may be superseded by another. There are many cases where documents have been cancelled without replacements, each case was reviewed and some information has been retained in this volume "for reference use only".

3. GENERAL. RF connectors are frequently called coaxial connectors because the majority of them are used with coaxial cables. These connectors are primarily used in circuits carrying RF current, however they may be used to serve a shielding function in low-level signal circuits or audio circuits over shielded single conductor wire or coaxial cable.

4. CLASSIFICATION. RF connectors are divided into two classes, Class 1 and Class 2.

5. Class 1. A class 1 connector is a connector which is intended to provide superior RF performance at specified frequencies, and for which all RF characteristics are completely defined.

6. Class 2. A class 2 connector is a connector which is intended to provide mechanical connection within an RF circuit providing specified RF performance.

7. CATEGORIES. The categories of RF connectors are designated by an A (field serviceable), B (non-field replaceable), C (field replaceable solder center contact), D (field replaceable crimp center contact), E (field replaceable, solder), and F (field replaceable, solderless).

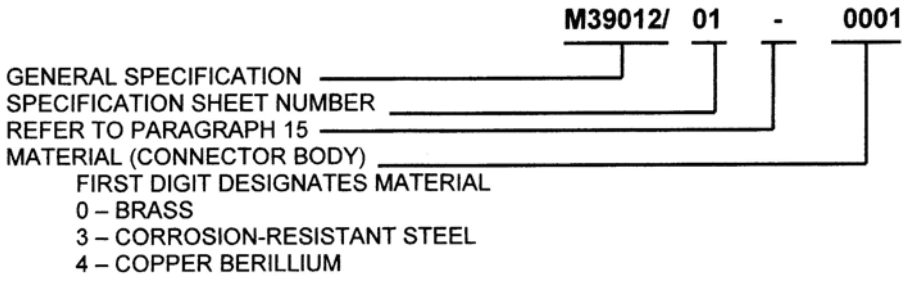


Figure 1. MIL-PRF-39012 RF Connector Part Number Breakdown

8. Category A. Category A connectors are connectors which do not require special tools for assembly.

9. Category B. Category B connectors are connectors which require special tools. These connectors may be used for original installations and are not intended for field replacement. Field replacement is intended to be made by using category A, C, D, E, or F connectors. Also refer to paragraph 15 and Figure 1 for additional information.

10. Category C. Category C connectors are connectors which require only standard military crimping tools and standard cable stripping dimensions for assembly. The tooling for these connectors is identified later in this WP, as it applies to each series.

11. Category D. Category D connectors are connectors which require only standard military crimping tools for the center contact and outer ferrule, and standard stripping dimensions for assembly.

12. Category E. Category E connectors are connectors which are used for semi-rigid cables with standard stripping dimension and standard military tools. The method of assembly of a connector to a cable outer conductor is soldering.

13. Category F. Category F connectors are connectors which are used for semi-rigid cables with standard stripping dimensions and standard military tools. The method of assembly of a connector to a cable outer conductor is solderless.

14. MIL-PRF-39012 RF CONNECTORS.

15. PART NUMBER BREAKDOWN. The part number consists of the letter M followed by the basic specification sheet number, and a four digit dash number. The dash (-) in the part number indicates a standard military part. When the letter B appears in the dash (-) position, the connector is not procurable by the military (Figure 1). Refer to Figures 2, 3 and 4 for typical RF connectors.

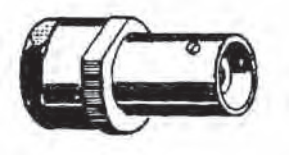


Figure 2. Typical Jam Nut Mount and Flange Mount Receptacle

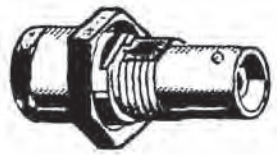


Figure 3. Typical Jam Nut Mount and Flange Mount Receptacle

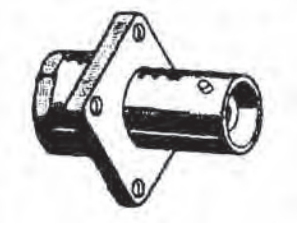


Figure 4. Typical Jam Nut Mount and Flange Mount Receptacle

16. SUPERSEDED PART NUMBER CROSS-REFERENCE. Table 1 provides a listing of superseded M39012 and UG part numbered connectors and cross-references them to the superseding M39012 part number. Table 2 provides a cross-reference from invalid M39012 connector part numbers, to valid ones. Some of them are "B" category numbers, which require the use of information in Table 3 to cross-reference to procurable part numbers.

17. CONNECTOR/CABLE REFERENCE. Table 4 identifies each connector type along with the respective MIL-C-17 cable to which it can be connected.

18. CONNECTOR FIGURES. Table 5 identifies the various connector types by slash number order. The following paragraphs (19 through 29) describe the various types of RF connectors by type. Refer to Figure 5 for the applicable graphic and dimensions.

19. SERIES BNC CONNECTORS. The Series BNC connectors are small, lightweight, weatherproof connectors having a bayonet-type coupling, metal-to-metal clamp, and polytetraflourethylene dielectric. These connectors have a nominal impedance of 50 ohms, maximum peak voltage rating of 500 volts, practical frequency limit of 10 gigahertz, and are designed for use with small-size cables.

20. SERIES C CONNECTORS. The Series C connectors are medium-size, weatherproof connectors having bayonet-type coupling, metal-to-metal cable clamp, and polytetrafluoroethylene dielectric. These connectors have a nominal impedance of 50 ohms, maximum peak voltage rating of 1,500 volts, and practical frequency limit of 10 gigahertz, -and are designed for use with medium size cables.

21. SERIES N CONNECTORS. The Series N connectors are medium-size, weatherproof connectors having screw-type coupling, metal-to-metal cable clamp, and polytetraflouroethylene dielectric. These connectors have nominal impedance characteristics of 50 and 70 ohms. The 50 ohm connectors will not properly mate with 70 ohm connectors, but they may be used with 70 ohm cable where impedance matching is not required. These connectors are designed for use with medium size cables.

22. SERIES QL CONNECTORS. The Series QL connectors are high voltage, high power, and low VSWR connectors used with large size cables.

23. SERIES QM CONNECTORS. The Series QM connectors are high voltage, high power, and low VSWR connectors used with large size cables.

24. SERIES QNC CONNECTORS. The Series QNC connectors are used with medium size cables. These connectors have a nominal impedance of 50 ohms and a frequency limit of 11 gigahertz.

25. SERIES QSC CONNECTORS. The Series QSC connectors are used with medium size cables. These connectors have a nominal impedance of 50 ohms and a frequency limit of 11 gigahertz.

26. SERIES SC CONNECTORS. The Series SC connectors are used for large size cables. These connectors have a nominal impedance of 50 ohms and frequency limit of 11 gigahertz.

27. SERIES SHV CONNECTORS. The Series SHV connectors are used for coaxial cabled high voltage applications. These connectors have a voltage rating of 3,500 Vrms and 5,000 VDC at sea level and 350 Vrms at 70,000 feet.

28. SERIES SM CONNECTORS. The Series SM connectors are not weatherproof and have been developed for use with coaxial cables of 1/4 inch diameter or smaller. These connectors may be used where electrical matching is not required.

29. SERIES TNC CONNECTORS. The Series TNC connectors provide low noise levels and optimum stability, and can withstand shock and vibrations often present in hostile environments. These connectors have threaded couplings and provide excellent performance at frequencies up to 7 gigahertz.

Table 1. Superseded Part Number Cross-Reference (Sheet 1 of 3)

Superseded Part M39012/	Superseding Part M39012/	Superseded Part M39012/	Superseding Part M39012/
01-0001	01-0101	28-0004	28-0104
01-0002	01-0005	28-0017	28-0117
01-0003	01-0015	29-0001	29-0101
01-0004	01-0104	29-0002	29-0102
01-0025	01-0125	29-0003	29-0103
02-0001	02-0101	29-0004	29-0104
02-0002	02-0003	29-0017	29-0117
02-0004	02-0104	30-0001	30-0101
02-0005	02-0006	30-0002	30-0102
02-0031	02-0131	30-0003	30-0103
02-0032	02-0132	30-0004	30-0104
03-0001	03-0101	30-0017	30-0117
03-0002	03-0012	30-0018	30-0118
05-0001	05-0101	35-0001	35-0016
16-0001	16-0101	35-0002	35-0017
16-0002	16-0102	35-0003	35-0018
16-0003	16-0103	35-0004	35-0019
16-0011	16-0111	35-0005	35-0020
16-0018	16-0118	35-0015	35-0021
17-0001	17-0101	36-0001	36-0015
17-0002	17-0102	36-0002	36-0016
17-0003	17-0103	36-0012	36-0018
17-0011	17-0111	36-0013	36-0019
17-0018	17-0118	36-0014	36-0020
18-0001	18-0101	36-0011	36-0017
18-0002	18-0102	38-0001	38-0010
18-0003	18-0103	38-0002	38-0011
18-0011	18-0111	38-0009	38-0012
18-0018	18-0118	39-0001	39-0101
19-0001	19-0101	39-0006	39-0106
19-0002	19-0102	39-0007	39-0107
19-0010	19-0110	40-0001	40-0023
19-0011	19-0001	40-0002	40-0024
19-0018	19-0118	40-0003	40-0025
20-0001	20-0101	40-0004	40-0026
20-0008	20-0108	40-0005	40-0027
26-0001	26-0101	55-3001	55-3006
26-0002	26-0102	55-4001	44-4006
26-0003	26-0103	55-3002	55-3007
26-0004	26-0104	55-4002	55-4007
26-0017	26-0117	55-3003	55-3008
27-0001	27-0101	55-4003	55-4008
27-0003	27-0103	55-3004	55-3009
27-0004	27-0104	55-4004	55-4009
27-0017	27-0117	55-3005	55-3010
28-0001	28-0101	55-4005	55-4010
28-0002	28-0102	56-3001	56-3006
28-0003	28-0103	56-4001	56-4006

Table 1. Superseded Part Number Cross-Reference (Sheet 2 of 3)

Superseded Part M39012/	Superseding Part M39012/
56-3002	56-3007
56-4002	56-4007
56-3003	56-3008
56-4003	56-4008
56-3004	56-3009
56-4004	56-4009
56-3005	56-3010
56-4005	56-4010
57-3001	57-3006
57-4001	57-4006
57-3002	57-3007
57-4002	57-4007
57-3003	57-3008
57-4003	57-4008
57-3004	57-3009
57-4004	57-4009
57-3005	57-3010
57-4005	57-4010
57-3001	57-3006
58-4001	58-4006
58-3002	58-3007
58-4002	58-4007
58-3003	58-3008
58-4003	58-4008
58-3004	58-3009
58-4004	58-4009
58-3005	58-3010
58-4005	58-4010
59-3001	59-3006
59-4001	59-4006
59-3002	59-3007
59-4002	59-4007
59-3003	59-3008
59-4003	59-4008
59-3004	59-3009
59-4004	59-4009
59-3005	59-3010
59-4005	59-4010
UG-18E/U	01-0101
UG-19E/U	02-0104
UG-20E/U	02-0101
UG-21G/U	01-0005
UG-22F/U	02-0006
UG-23F/U	02-0003
UG-58/U	04-0002
UG-88/U	16-0101
UG-89/U	17-0101
UG-159D/U	03-0101
UG-160E/U	03-0012
UG-167F/U	01-0104
UG-204D/U	01-0015
UG-260/U	16-0102
UG-261/U	17-0102
UG-262/U	18-0101
UG-290/U	22-0001
UG-291/U	18-0102
UG-568/U	12-0001
UG-569/U	14-0001
UG-570/U	11-0002
UG-571/U	08-0001
UG-572/U	07-0001
UG-573C/U	06-0002
UG-594C/U	05-0101
UG-625/U	12-0001
UG-626C/U	06-0001
UG-627/U	15-0001
UG-629/U	08-0002
UG-630/U	11-0001
UG-631/U	09-0001
UG-633/U	07-0002
UG-680A/U	04-0001
UG-704/U	09-0002
UG-705/U	14-0002
UG-706/U	13-0001
UG-707C/U	06-0003
UG-708C/U	06-0005
UG-709/U	15-0002
UG-710/U	10-0001
UG-711C/U	06-0004
UG-909/U	19-0101
UG-910/U	19-0102
UG-911/U	24-0001
UG-912/U	24-0002
UG-913/U	20-0101
UG-935D/U	02-0032
UG-940C/U	02-0031
UG-941C/U	01-0125
UG-1033/U	16-0103
UG-1055/U	18-0103
UG-1056/U	17-0103
UG-1094/U	21-0002
UG-1098/U	23-0001
UG-1174/U	23-0002
UG-1185A/U	01-0005
UG-1186A/U	02-0003
UG-1187A/U	02-0006

Table 1. Superseded Part Number Cross-Reference (Sheet 3 of 3)

Superseded Part M39012/	Superseding Part M39012/	Superseded Part M39012/	Superseding Part M39012/
UG-1392/U	44-2001	UG-1768/U	09-0004
UG-1393/U	44-2002	UG-1769/U	10-0002
UG-1394/U	48-2001	UG-1770/U	10-0003
UG-1395/U	46-2001	UG-1771/U	10-0004
UG-1396/U	46-2002	UG-1773/U	11-0004
UG-1397/U	45-2001	UG-1774/U	11-0005
UG-1398/U	45-2002	UG-1775/U	11-0006
UG-1399/U	49-2001	UG-1776/U	11-0007
UG-1460/U	73-0001	UG-1777/U	11-0008
UG-1461/U	75-0001	UG-1779/U	15-0003
UG-1462/U	74-0001	UG-1780/U	15-0004
UG-1463/U	76-0001	UG-1785/U	16-0004
UG-1464/U	77-0002	UG-1786/U	16-0005
UG-1465/U	73-0002	UG-1787/U	16-0006
UG-1466/U	75-0002	UG-1788/U	16-0007
UG-1467/U	74-0002	UG-1789/U	16-0008
UG-1468/U	76-0002	UG-1790/U	16-0010
UG-1487/U	01-0015	UG-1791/U	16-0009
UG-1533/U	47-2001	UG-1792/U	18-0010
UG-1537A/U	03-0012	UG-1793/U	18-0009
UG-1619/U	77-0001	UG-1794/U	17-0004
UG-1696/U	02-0015	UG-1795/U	17-0005
UG-1697/U	02-0016	UG-1796/U	17-0006
UG-1698/U	02-0017	UG-1797/U	17-0007
UG-1700/U	03-0004	UG-1798/U	17-0008
UG-1707/U	05-0002	UG-1799/U	17-0010
UG-1708/U	05-0003	UG-1800/U	17-0009
UG/1746/U	06-0006	UG-1801/U	18-0008
UG-1748/U	06-0007	UG-1802/U	18-0004
UG-1749/U	06-0008	UG-1803/U	18-0005
UG-1750/U	06-0009	UG-1804/U	19-0003
UG-1751/U	06-0010	UG-1805/U	19-0004
UG-1752/U	06-0011	UG-1806/U	19-0005
UG-1753/U	06-0012	UG-1807/U	19-0006
UG-1754/U	07-0003	UG-1808/U	19-0007
UG-1755/U	07-0004	UG-1809/U	19-0009
UG-1756/U	07-0005	UG-1810/U	19-0008
UG-1758/U	07-0007	UG-1811/U	18-0007
UG-1759/U	07-0008	UG-1812/U	20-0002
UG-1761/U	08-0003	UG-1813/U	20-0003
UG-1762/U	08-0004	UG-1814/U	18-0006
UG-1763/U	08-0005	UG-1817/U	10-0014
UG-1765/U	08-0007	UG-1819/U	03-0011
UG-1767/U	09-0003		

Table 2. Invalid to Valid M39012 Cross Reference (Sheet 1 of 8)

NOTE

This table is the cross reference from invalid M39012 part numbers to valid M39012 part numbers. Some of the valid M39012 part numbers may be Category B (not procurable). If a Category B connector is found using this table, a second cross reference using Table : 6 will have to be completed.

INVALID	VALID
01-0001	01-0101
01-0002	01-0005
01-0003	01-0015
01-0004	01-0104
01-0006	01B0006
01-0007	01B0007
01-0008	01B0008
01-0011	01B0011
01-0012	01B0012
01-0013	01B0013
01-0014	01B0014
01-0020	01-0016
01-0025	01-0125
01-0026	01B0026
02-0001	02-0101
02-0002	02-0003
02-0004	02-0104
02-0005	02-0006
02-0007	02B0007
02-0008	02B0008
02-0009	02B0009
02-0011	02B0007
02-0012	02B0012
02-0013	02B0013
02-0014	02B0014
02-0015	02B0015
02-0016	02B0016
02-0017	02B0017
02-0018	02B0018
02-0023	02-0019
02-0031	02-0131
02-0032	02-0132
02-0033	02-0511
02-0033	02-0034
02-0033	02-0006
02-0035	02B0035
02-0036	02B0036
02-0037	02B0037
02-0038	02B0038
02-0044	02B0044
03-0001	03-0101
03-0002	03-0012
03-0003	03B0003
03-0004	03B0004
03-0005	03B0005
03-0006	03B0006
03-0007	03B0003
03-0008	03B0008
03-0009	03B0009
03-0010	03B0010
03-0011	03B0011
03-0017	03-0013
03-0022	03B0022
05-0001	05-0101
05-0002	05B0002
05-0003	05B0003
05-0007	05B0007
05-0008	05B0008
05-0009	05B0009
05-0010	05B0010
05-0011	05B0011
05-0012	05B0012
06-0001	06-0014
06-0002	06-0015
06-0003	06-0016
06-0004	06-0017
06-0005	06-0018
06-0007	06B0021
06-0008	06B0022
06-0009	06B0023
06-0010	06B0024
06-0011	06B0025
06-0013	06-0019
06-0021	06B0021
06-0022	06B0022
06-0023	06B0023
06-0024	06B0024
06-0025	06B0025
06-0026	06B0026
07-0001	07-0017
07-0002	07-0018
07-0003	07B0021
07-0004	07B0022
07-0005	07B0023
07-0007	07B0024
07-0008	07B0025
07-0010	07-0019
07-0021	07B0021
07-0022	07B0022
07-0023	07B0023
07-0024	07B0024
07-0025	07B0025
07-0026	07B0026
08-0001	08-0015
08-0002	08-0016
08-0003	08B0019
08-0004	08B0020
08-0005	08B0021
08-0007	08B0022
08-0009	08-0017
08-0019	08B0019
08-0020	08B0020
08-0021	08B0021
08-0022	08B0022
08B0003	08B0019

Table 2. Invalid to Valid M39012 Cross Reference (Sheet 2 of 8)

INVALID	VALID
08B0004	08B0020
08B0005	08B0021
08B0007	08B0022
09-0003	09-0002
09-0004	09-0002
10-0002	10-0006
10-0003	10-0007
10-0004	10-0008
10-0010	10-0011
11-0001	11-0018
11-0002	11-0019
11-0004	11-0018
11-0005	11-0019
11-0006	11-0019
11-0007	11-0019
11-0008	11-0015
11-0010	11-0020
11-0022	11B0022
11-0023	11B0023
11-0024	11B0024
11-0025	11B0025
11-0026	11B0026
11-0027	11B0027
15-0003	15-0002
15-0004	15-0002
16-0001	16-0101
16-0002	16-0102
16-0003	16-0103
16-0004	16B0004
16-0005	16B0005
16-0006	16B0006
16-0007	16B0007
16-0008	16B0008
16-0009	16B0009
16-0011	16-0111
16-0012	16B0012
16-0018	16-0118
16-0019	16B0019
17-0001	17-0101
17-0002	17-0102
17-0003	17-0103
17-0004	17B0004
17-0005	17B0005
17-0006	17B0006
17-0007	17B0007
17-0008	17B0008
17-0009	17B0009
17-0011	17-0111
17-0012	17B0012
17-0018	17-0118
17-0019	17B0019
17-0221	17B0221
18-0001	18-0101
18-0002	18-0102
18-0003	18-0103
18-0004	18B0004
18-0005	18B0005
18-0006	18B0006
18-0007	18B0007
18-0008	18B0008
18-0009	18B0009
18-0011	18-0111
18-0012	18B0012
18-0018	18-0118
18-0019	18B0019
19-0001	19-0101
19-0002	19-0102
19-0003	19B0003
19-0004	19B0004
19-0005	19B0005
19-0006	19B0006
19-0007	19B0007
19-0008	19B0008
19-0010	19-0110
19-0011	19-0111
19-0012	19B0012
19-0018	19-0118
19-0019	19B0019
20-0001	20-0101
20-0002	20B0002
20-0003	20B0003
20-0004	20-0006
20-0005	20-0503
20-0008	20-0108
20-0009	20-0010
26-0001	26-0101
26-0002	26-0102
26-0003	26-0103
26-0004	26-0104
26-0005	26B0005
26-0006	26B0006
26-0007	26B0007
26-0008	26B0008
26-0009	26B0009
26-0015	26B0015
26-0016	26B0016
26-0017	26-0117
26-0019	26B0019
26-0020	26B0020
27-0001	27-0101
27-0003	27-0103
27-0004	27-0104
27-0005	27B0005
27-0006	27B0006
27-0007	27B0007
27-0008	27B0008
27-0009	27B0009
27-0015	27B0015
27-0016	27B0016
27-0017	27-0117
27-0019	27B0019
27-0020	27B0020
28-0001	28-0101
28-0002	28-0102
28-0003	28-0103
28-0004	28-0104
28-0005	28B0005

Table 2. Invalid to Valid M39012 Cross Reference (Sheet 3 of 8)

INVALID	VALID
28-0006	28B0006
28-0007	28B0007
28-0008	28B0008
28-0009	28B0009
28-0015	28B0015
28-0016	28B0016
28-0017	28-0117
28-0019	28B0019
28-0020	28B0020
29-0001	29-0101
29-0002	29-0102
29-0003	29-0103
29-0004	29-0104
29-0017	29-0117
30-0001	30-0101
30-0002	30-0102
30-0003	30-0103
30-0004	30-0104
30-0005	30B0005
30-0006	30B0006
30-0007	30B0007
30-0008	30B0008
30-0009	30B0009
30-0015	30B0015
30-0016	30B0016
30-0017	30-0117
30-0018	30-0118
30-0019	30B0019
30-0020	30B0020
35-0001	35-0016
35-0002	35-0017
35-0003	35-0018
35-0004	35-0019
35-0005	35-0020
35-0006	35B0023
35-0007	35B0024
35-0008	35B0025
35-0009	35B0026
35-0015	35-0021
35-0023	35B0023
35-0024	35B0024
35-0025	35B0025
35-0026	35B0026
35-0027	35B0027
36-0001	36-0015
36-0002	36-0016
36-0003	36B0022
36-0004	36B0023
36-0005	36B0024
36-0006	36B0025
36-0011	36-0017
35-0012	36-0018
36-0013	36-0019
36-0014	36-0020
38-0001	38-0010
38-0002	38-0011
38-0009	38-0012
38-0015	38B0015
38-0016	38B0016
38-0017	38B0017
39-0001	39-0101
39-0002	39B0002
39-0003	39B0003
39-0006	39-0106
39-0007	39-0107
39-0008	39B0008
40-0001	40-0023
40-0002	40-0024
40-0003	40-0025
40-0004	40-0026
40-0005	40-0027
40-0006	40B0029
40-0007	40B0030
40-0008	40B0031
40-0009	40B0032
40-0012	40B0033
40-0013	40B0034
40-0029	40B0029
40-0030	40B0030
40-0031	40B0031
40-0032	40B0032
40-0033	40B0033
40-0034	40B0034
40-0035	40B0035
40B0006	40B0029
40B0007	40B0030
40B0008	40B0031
40B0009	40B0032
40B0012	40B0033
40B0013	40B0034
55-3001	55-3006
55-3002	55-3007
55-3003	55-3008
55-3004	55-3009
55-3005	55-3010
55-3011	55B3011
55-3012	55B3012
55-3013	55B3013
55-3014	55B3014
55-3015	55B3015
55-3016	55B3016
55-3017	55B3017
55-3018	55B3018
55-3019	55B3019
55-3020	55B3020
55-3021	55B3021
55-3022	55B3022
55-3023	55B3023
55-3024	55B3024
55-3111	55B3111
55-3112	55B3112
55-3113	55B3113
55-3114	55B3114
55-3115	55B3115
55-3116	55B3116
55-3117	55B3117
55-3118	55B3118

Table 2. Invalid to Valid M39012 Cross Reference (Sheet 4 of 8)

INVALID	VALID
55-3119	55B3119
55-3120	55B3120
55-3121	55B3121
55-3122	55B3122
55-3123	55B3123
55-3124	55B3124
55-4001	55-4006
55-4002	55-4007
55-4003	55-4008
55-4004	55-4009
55-4005	55-4010
55-4011	55B4011
55-4012	55B4012
55-4013	55B4013
55-4014	55B4014
55-4015	55B4015
55-4016	55B4016
55-4017	55B4017
55-4018	55B4018
55-4019	55B4019
55-4020	55B4020
55-4021	55B4021
55-4022	55B4022
55-4023	55B4023
55-4024	55B4024
55-4111	55B4111
55-4112	55B4112
55-4113	55B4113
55-4114	55B4114
55-4115	55B4115
55-4116	55B4116
55-4117	55B4117
55-4118	55B4118
55-4119	55B4119
55-4120	55B4120
55-4121	55B4121
55-4122	55B4122
55-4123	55B4123
55-4124	55B4124

INVALID	VALID
56-3001	56-3006
56-3002	56-3007
56-3003	56-3008
56-3004	56-3009
56-3005	56-3010
56-3011	56B3011
56-3012	56B3012
56-3013	56B3013
56-3014	56B3014
56-3015	56B3015
56-3016	56B3016
56-3017	56B3017
56-3018	56B3018
56-3019	56B3019
56-3020	56B3020
56-3021	56B3021
56-3022	56B3022
56-3023	56B3023
56-3024	56B3024
56-3111	56B3111
56-3112	56B3112
56-3113	56B3113
56-3114	56B3114
56-3115	56B3115
56-3116	56B3116
56-3117	56B3117
56-3118	56B3118
56-3119	56B3119
56-3120	56B3120
56-3121	56B3121
56-3122	56B3122
56-3123	56B3123
56-4001	56-4006
56-4002	56-4007
56-4003	56-4008
56-4004	56-4009
56-4005	56-4010
56-4011	56B4011
56-4012	56B4012

INVALID	VALID
56-4013	56B4013
56-4014	56B4014
56-4015	56B4015
56-4016	56B4016
56-4017	56B4017
56-4018	56B4018
56-4019	56B4019
56-4020	56B4020
56-4021	56B4021
56-4022	56B4022
56-4023	56B4023
56-4024	56B4024
56-4111	56B4111
56-4112	56B4112
56-4113	56B4113
56-4114	56B4114
56-4115	56B4115
56-4116	56B4116
56-4117	56B4117
56-4118	56B4118
56-4119	56B4119
56-4120	56B4120
56-4121	56B4121
56-4122	56B4122
56-4123	56B4123
57-3001	57-3006
57-3001	57-3006
57-3002	57-3007
57-3003	57-3008
57-3004	57-3009
57-3005	57-3010
57-3011	57B3011
57-3012	57B3012
57-3013	57B3013
57-3014	57B3014
57-3015	57B3015
57-3016	57B3016
57-3017	57B3017
57-3018	57B3018

Table 2. Invalid to Valid M39012 Cross Reference (Sheet 5 of 8)

INVALID	VALID
57-3019	57B3019
57-3020	57B3020
57-3021	57B3021
57-3022	57B3022
57-3023	57B3023
57-3024	57B3024
57-4001	57-4006
57-4002	57-4007
57-4003	57-4008
57-4004	57-4009
57-4005	57-4010
57-4011	57B4011
57-4012	57B4012
57-4013	57B4013
57-4014	57B4014
57-4015	57B4015
57-4016	57B4016
57-4017	57B4017
57-4018	57B4018
57-4019	57B4019
57-4020	57B4020
57-4021	57B4021
57-4022	57B4022
57-4023	57B4023
57-4024	57B4024
58-3002	58-3007
58-3003	58-3008
58-3004	58-3009
58-3005	58-3010
58-3011	58B3011
58-3012	58B3012
58-3013	58B3013
58-3014	58B3014
58-3015	58B3015
58-3016	58B3016
58-3017	58B3017
58-3018	58B3018
58-3019	58B3019
58-3020	58B3020

INVALID	VALID
58-3021	58B3021
58-3022	58B3022
58-3023	58B3023
58-3024	58B3024
58-4001	58-4006
58-4002	58-4007
58-4003	58-4008
58-4004	58-4009
58-4005	58-4010
58-4011	58B4011
58-4012	58B4012
58-4013	58B4013
58-4014	58B4014
58-4015	58B4015
58-4016	58B4016
58-4017	58B4017
58-4018	58B4018
58-4019	58B4019
58-4020	58B4020
58-4021	58B4021
58-4022	58B4022
58-4023	58B4023
58-4024	58B4024
59-3001	59-3006
59-3002	59-3007
59-3003	59-3008
59-3004	59-3009
59-3005	59-3010
59-3011	59B3011
59-3012	59B3012
59-3013	59B3013
59-3014	59B3014
59-3015	59B3015
59-3016	59B3016
59-3017	59B3017
59-3018	59B3018
59-3019	59B3019
59-3020	59B3020
59-3021	59B3021

INVALID	VALID
59-3022	59B3022
59-3023	59B3023
59-3024	59B3024
59-4001	59-4006
59-4002	59-4007
59-4003	59-4008
59-4004	59-4009
59-4005	59-4010
59-4011	59B4011
59-4012	59B4012
59-4013	59B4013
59-4014	59B4014
59-4015	59B4015
59-4016	59B4016
59-4017	59B4017
59-4018	59B4018
59-4019	59B4019
59-4020	59B4020
59-4021	59B4021
59-4022	59B4022
59-4023	59B4023
59-4024	59B4024
63-0006	63B0006
63-0007	63B0007
63-0008	63B0008
63-0009	63B0009
63-0010	63B0010
63-0011	63B0011
63-0012	63B0012
64-0003	64B0003
64-0004	64B0004
64-0005	64B0005
64-0006	64B0006
64-0007	64B0007
64-0008	64B0008
64-0009	64B0009
65-0005	65B0005
65-0006	65B0006
65-0007	65B0007

Table 2. Invalid to Valid M39012 Cross Reference (Sheet 6 of 8)

INVALID	VALID
65-0008	65B0008
65-0009	65B0009
65-0015	65B0015
65-0016	65B0016
66-0005	66B0005
66-0006	66B0006
66-0007	66B0007
66-0008	66B0008
66-0009	66B0009
66-0015	66B0015
66-0016	66B0016
67-0001	67-0003
67-0002	67-0004
67-0005	67B0008
67-0006	67B0009
67-0007	67B0010
67-0008	67B0008
67-0009	67B0009
67-0010	67B0010
68-0001	68-0003
68-0002	68-0004
68-0005	68B0008
68-0006	68B0009
68-0007	68B0010
68-0008	68B0008
68-0009	68B0009
68-0010	68B0010
69-0001	69-0003
69-0002	69-0004
69-0005	69B0008
69-0006	69B0009
69-0007	69B0010
69-0008	69B0008
69-0009	69B0009
69-0010	69B0010
70-0001	70-0003
70-0002	70-0004
70-0005	70B0008
70-0006	70B0009
70-0007	70B0010
70-0008	70B0008
70-0009	70B0009
70-0010	70B0010
73-0001	73-0003
73-0002	73-0004
73-0005	73B0008
73-0006	73B0009
73-0007	73B0010
73-0008	73B0008
73-0009	73B0009
73-0010	73B0010
74-0001	74-0003
74-0002	74-0004
74-0005	74B0008
74-0006	74B0009
74-0007	74B0010
74-0008	74B0008
74-0009	74B0009
74-0010	74B0010
75-0001	75-0003
75-0002	75-0004
75-0005	75B0008
75-0006	75B0009
75-0007	75B0010
75-0008	75B0008
75-0009	75B0009
75-0010	75B0010
76-0001	76-0003
76-0002	76-0004
76-0005	76B0008
76-0006	76B0009
76-0007	76B0010
76-0008	76B0008
76-0009	76B0009
76-0010	76B0010
79-3001	79B3001
79-3002	79B3002
79-3003	79B3003
79-3004	79B3004
79-3005	79-3007
79-3006	79-3008
79-3101	79B3101
79-3102	79B3102
79-3103	79B3103
79-3104	79B3104
79-3105	79-3107
79-3106	79-3108
79-3801	79B3003
79-3802	79B3004
79-3803	79B3003
79-3804	79B3004
79-3807	79-3007
79-3808	79-3008
79-4001	79B4003
79-4002	79B4004
79-4003	79B4003
79-4004	79B4004
79-4005	79-4007
79-4006	79-4008
79-4101	79B4103
79-4102	79B4104
79-4103	79B4103
79-4104	79B4104
79-4105	79-4107
79-4106	79-4108
79-4801	79B4003
79-4802	79B4004
79-4803	79B4003
79-4804	79B4004
79-4807	79-4007
79-4808	79-4008
80-3001	80B3001
80-3002	80B3002
80-3101	80B3101
80-3102	80B3102
80-3801	80B3003
80-3802	80B3004

Table 2. Invalid to Valid M39012 Cross Reference (Sheet 7 of 8)

INVALID	VALID
80-3803	80B3003
80-3804	80B3004
80-3805	80-3007
80-3806	80-3008
80-3807	80-3007
80-3808	80-3008
80-4101	80B4103
80-4102	80B4104
80-4103	80B4103
80-4104	80B4104
80-4801	80B4003
80-4802	80B4004
80-4803	80B4003
80-4804	80B4004
80-4805	80-4007
80-4806	80-4008
80-4807	80-4007
80-4808	80-4008
81-3001	81B3001
81-3002	81B3002
81-3003	81B3003
81-3004	81B3004
81-3801	81B3003
81-3802	81B3004
81-3803	81B3003
81-3804	81B3004
81-3805	81-3007
81-3806	81-3008
81-3807	81-3007
81-3808	81-3008
81-4001	81B4003
81-4002	81B4004
81-4003	81B4003
81-4004	81B4004
81-4801	81B4003
81-4802	81B4004
81-4803	81B4003
81-4804	81B4004
81-4805	81-4007
81-4806	81-4008
81-4807	81-4007
81-4808	81-4008
82-3001	82B3001
82-3002	82B3002
82-3003	82B3003
82-3004	82B3004
82-3801	82B3003
82-3802	82B3004
82-3803	82B3003
82-3804	82B3004
82-3805	82-3007
82-3806	82-3008
82-3807	82-3007
82-3808	82-3008
82-4001	82B4003
82-4002	82B4004
82-4003	82B4003
82-4004	82B4004
82-4801	82B4003
82-4802	82B4004
82-4803	82B4003
82-4804	82B4004
82-4805	82-4007
82-4806	82-4008
82-4807	82-4007
82-4808	82-4008
83-3001	83B3001
83-3002	83B3002
83-3003	83B3003
83-3004	83B3004
83-3801	83B3003
83-3802	83B3004
83-3803	83B3003
83-0804	83B3004
83-3805	83-3007
83-3806	83-3008
83-3807	83-3007
83-3808	83-0008
83-4001	83B4003
83-4002	83B4004
83-4003	83B4003
83-4004	83B4004
83-4005	83-4007
83-4006	83-4008
83-4310	83-4210
83-4801	83B4003
83-4802	83B4004
83-4803	83B4003
83-4804	83B4004
83-4805	83-4007
83-4806	83-4008
83-4807	83-4007
83-4808	83-4008
84-0006	84B0006
84-0007	84B0007
84-0008	84B0008
84-0009	84B0009
84-0010	84B0010
84-0011	84B0011
84-0012	84B0012
85-0006	85B0006
85-0007	85B0007
85-0008	8580008
85-0009	85B0009
85-0010	85B0010
85-0011	85B0011
85-0012	85B0012
86-0006	86B0006
86-0007	86B0007
86-0008	86B0008
86-0009	86B0009
86-0010	8680010
86-0011	86B0011
86-0012	86B0012
88-0005	88B0005
88-0006	88B0006
88-0007	88B0007

Table 2. Invalid to Valid M39012 Cross Reference (Sheet 8 of 8)

INVALID	VALID
88-0008	88B0008
88-0009	88B0009
88-0015	88B0015
88-0016	88B0016
89-0005	89B0005
89-0006	89B0006
89-0007	89B0007
89-0008	89B0008
89-0009	89B0009
89-0015	89B0015
89-0016	89B0016
101-0101	101-0001
112-0003	112B0005
112-0004	112B0006
112-0005	112B0005
112-0006	112B0006
113-0003	113B0005
113-0004	113B0006
113-0005	113B0005
113-0006	113B0006
114-0003	114B0005
114-0004	114B0006
114-0005	114B0005
114-0006	114B0006
115-0003	115B0005
115-0004	115B0006
115-0005	115B0005
115-0006	115B0006
116-0003	116B0005
116-0004	116B0006
116-0005	116B0005
116-0006	116B0006

Table 3. M39012 Category B (Not Procurable) to M39012 (Procurable) Cross Reference (Sheet 1 of 9)

NOTE

This table is a cross reference between the MIL-PRF-39012 category B (not procurable) connectors and the MIL-PRF-39012 categories of connectors which are procurable.

CATEGORY B	REPLACEMENT
01B0006	01-0016 01-0101
01B0007	01-0502 01-0017 01-0005
01B0008	01-0501 01-0018 01-0005
01B0011	01-0021 01-0005
01B0012	01-0501 01-0022 01-0005
01B0013	01-0023 01-0005
01B0014	01-0024 01-0005
01B0026	01-0027 01-0101
02B0007	02-0019 02-0101
02B0008	02-0502 02-0020 02-0003
02B0009	02-0501 02-0021 02-0003
02B0012	02-0024 02-0003
02B0013	02-0501 02-0025 02-0003
02B0014	02-0026 02-0003
02B0015	02-0027 02-0104
02B0016	02-0512 02-0028 02-0006
02B0017	02-0511 02-0029
02B0017 - Cont	02-0006
02B0018	02-0039 02-0003
02B0035	02-0041 02-0006
02B0036	02-0042 02-0006
02B0037	02-0030 02-0006
02B0038	02-0043 02-0104
02B0044	02-0040 02-0101
03B0003	03-0013 03-0101
03B0004	03-0502 03-0014 03-0012
03B0005	03-0501 03-0015 03-0012
03B0006	03-0102
03B0008	03-0018 03-0012
03B0009	03-0501 03-0019
03B0010	03-0020 03-0012
03B0011	03-0021 03-0012
03B0022	03-0023 03-0101
05B0002	05-0502 05-0004 05-0101
05B0003	05-0501 05-0005 05-0101
05B0007	05-0013 05-0006
05B0008	05-0014 05-0101
05B0009	05-0015 05-0101
05B0010	05-0016 05-0006
05B0011	05-0017 05-0101
05B0012	05-0501 05-0018 05-0101
06B0021	06-0027 06-0001 06-0014
06B0022	06-0028 06-0002 06-0015
060023	06-0029 06-0002 06-0015
06B0024	06-0030 06-0002 06-0015
06B0025	06-0031
06B0026	06-0032 06-0020
07B0021	07-0011 07-0017
07B0022	07-0012 07-0017
07B0023	07-0013 07-0017
07B0024	07-0014 07-0018
07B0025	07-0015
07B0026	07-0016 07-0020
08B0019	08-0010 08-0001
08B0020	08-0011 08-0001
08B0021	08-0012 08-0001
08B0022	08-0013 08-0002
08B0023	08-0014 08-0018
11B0022	11-0012 11-0001 11-0018
11B0023	11-0013 11-0002 11-0019
11B0024	11-0014 11-0002 11-0019

Table 3. M39012 Category B (Not Procurable) to M39012 (Procurable) Cross Reference (Sheet 2 of 9)

CATEGORY B	REPLACEMENT
11B0025	11-0015 11-0002 11-0019
11B0026	11-0016
11B0027	11-0017 11-0021
16B0004	16-0504 16-0013 16-0101
16B0005	16-0014 16-0101
16B0006	16-0013 16-0111
16B0007	16-0503 16-0014 16-0101
16B0008	16-0015 16-0102
16B0009	16-0501 16-0016
16B0012	16-0017
16B0019	16-0020
17B0004	17-0504 17-0013 17-0101
17B0005	17-0014 17-0101
17B0006	17-0013 17-0111
17B0007	17-0503 17-0014 17-0101
17B0008	17-0015 17-0102
17B0009	17-0501 17-0016 17-0103
17B0012	17-0017 17-0102
17B0019	17-0020 17-0118
17B0221	17-0222 17-0220
18B0004	18-0504 18-0013 18-0102
18B0005	18-0014 18-0111
18B0006	18-0013 18-0102
18B0007	18-0503 18-0014 18-0102
18B0008	18-0015 18-0101
18B0009	18-0501 18-0016 18-0103
18B0012	18-0017 18-0101
18B0019	18-0020 18-0118
19B0003	19-0504 19-0013 19-0101
19B0004	19-0014 19-0101
19B0005	19-0013 19-0111
19B0006	19-0503 19-0014 19-0101
19B0007	19-0015 19-0102
19B0008	19-0501 19-0016 19-0110
19B0012	19-0017 19-0102
19B0019	19-0020 19-0118
20B0002	20-0504 20-0006 20-0101
20B0003	20-0007 20-0101
26B0005	26-0504 26-0010 26-0101
26B0006	26-0503 26-0011 26-0101
26B0007	26-0012 26-0102
26B0008	26-0501 26-0013
26B0008 - Cont	26-0103
26B0009	26-0014 26-0102
26B0015	26-0010 26-0104
26B0016	26-0011 26-0101
26B0019	26-0021 26-0117
26B0020	26-0022 26-0018
27B0005	27-0504 27-0010 27-0101
27B0006	27-0503 27-0011 27-0101
27B0007	27-0012 27-0002
27B0008	27-0501 27-0013 27-0103
27B0009	27-0014 27-0002
27B0015	27-0010 27-0104
27B0016	27-0011 27-0101
27B0019	27-0021 27-0117
27B0020	27-0022 27-0018
28B0005	28-0504 28-0010 28-0101
28B0006	28-0503 28-0011 28-0101
28B0007	28-0012 28-0102
28B0008	28-0501 28-0013 28-0103
28B0009	28-0014 28-0102
28B0015	28-0010 28-0104
28B0016	28-0011

Table 3. M39012 Category B (Not Procurable) to M39012 (Procurable) Cross Reference (Sheet 3 of 9)

CATEGORY B	REPLACEMENT
28B0016 - Cont	28-0101
28B0019	28-0021
	28-0117
28B0020	28-0022
	28-0018
29B0005	29-0504
	29-0010
	29-0101
29B0006	29-0503
	29-0011
	29-0101
29B0007	29-0012
	29-0102
29B0008	29-0501
	29-0013
	29-0103
29B0009	29-0014
	29-0102
29B0015	29-0010
	29-0104
29B0016	29-0011
	29-0101
29B0019	29-0021
	29-0117
29B0020	29-0022
	29-0018
30B0005	30-0504
	30-0010
	30-0101
30B0006	30-0503
	30-0011
	30-0101
30B0007	30-0012
	30-0102
30B0008	30-0501
	30-0013
	30-0103
30B0009	30-0014
	30-0102
30B0015	30-0010
	30-0104
30B0016	30-0011
	30-0101
30B0019	30-0021
	30-0117
30B0020	30-0022
	30-0118
35B0023	35-0010

CATEGORY B	REPLACEMENT
35B0023 - Cont	35-0016
35B0024	35-0502
	35-0011
	35-0017
35B0025	35-0501
	35-0012
	35-0017
35B0026	35-0013
35B0027	35-0014
	35-0022
36B0022	36-0502
	36-0007
	36-0015
36B0023	36-0501
	36-0008
	36-0015
36B0024	36-0009
	36-0016
36B0025	36-0010
36B0026	36-0027
	36-0021
38B0015	38-0501
	38-0007
	38-0010
38B0016	38-0008
	38-0011
38B0017	38-0018
	38-0013
39B0002	39-0502
	39-0004
	39-0101
39B0003	39-0501
	39-0005
	39-0101
39B0008	39-0009
	39-0107
40B0029	40-0014
	40-0023
40B0030	40-0502
	40-0015
	40-0024
40B0031	40-0501
	40-0016
	40-0024
40B0032	40-0018
	40-0026
40B0033	40-0021
40B0034	40-0017

CATEGORY B	REPLACEMENT
40B0035	40-0022
	40-0028
55B3011	55-3025
	55-3006
55B3012	55-3026
	55-3007
55B3013	55-3027
	55-3008
55B3014	55-3029
	55-3009
55B3015	55-3502
	55-3028
	55-3009
55B3016	55-3028
	55-3009
55B3017	55-3029
	55-3010
55B3018	55-3025
	55-3006
55B3019	55-3026
	55-3007
55B3020	55-3027
	55-3008
55B3021	55-3029
	55-3009
55B3022	55-3502
	55-3028
	55-3009
55B3023	55-3028
	55-3009
55B3024	55-3029
	55-0010
55B3111	55-3125
	55-3106
55B3112	55-3126
	55-3107
55B3113	55-3127
	55-3108
55B3114	55-3129
	55-3109
55B3115	55-3602
	55-3128
	55-3109
55B3116	55-3128
	55-3109
55B3117	55-3129
	55-3110
55B3118	55-3125

Table 3. M39012 Category B (Not Procurable) to M39012 (Procurable) Cross Reference (Sheet 4 of 9)

CATEGORY B	REPLACEMENT
55B3118 - Cont	55-3106
55B3119	55-3126
	55-3107
55B3120	55-3127
	55-3108
55B3121	55-3129
	55-3109
55B3122	55-3602
	55-3128
	55-3109
55B3123	55-3128
	55-3109
55B3124	55-3129
	55-3110
55B4011	55-4025
	55-4006
55B4012	55-4026
	55-4007
55B4013	55-4027
	55-4008
55B4014	55-4029
	55-4009
55B4015	55-4502
	55-4028
	55-4009
55B4016	55-4028
	55-4009
55B4017	55-4029
	55-4010
55B4018	55-4025
	55-4006
55B4019	55-4026
	55-4007
55B4020	55-4027
	55-4008
55B4021	55-4029
	55-4009
55B4022	55-4502
	55-4028
	55-4009
55B4023	55-4028
	55-4009
55B4024	55-4029
	55-4010
55B4111	55-4125
	55-4106
55B4112	55-4126
	55-4107
55B4113	55-4127
	55-4108
55B4114	55-4129
	55-4109
55B4115	55-4602
	55-4128
	55-4109
55B4116	55-4128
	55-4109
55B4117	55-4129
	55-4110
55B4118	55-4125
	55-4106
55B4119	55-4126
	55-4107
55B4120	55-4127
	55-4108
55B4121	55-4129
	55-4109
55B4122	55-4602
	55-4128
	55-4109
55B4123	55-4128
	55-4109
55B4124	55-4129
	55-4110
56B3011	56-3025
	56-3006
56B3012	56-3026
	56-3007
56B3013	56-3027
	56-3008
56B3014	56-3029
	56-3009
5653015	56-3502
	56-3028
	56-3009
56B3016	56-3028
	56-3009
56B3017	56-3029
	56-3010
56B3018	56-3025
	56-3006
56B3019	56-3026
	56-3007
56B3020	56-3027
	56-3008
56B3021	56-3029
56B3021 - Cont	56-3009
56B3022	56-3502
	56-3028
	56-3009
56B3023	56-3028
	56-3009
56B3024	56-3029
	56-3010
56B3111	56-3125
	56-3106
56B3112	56-3126
	56-3107
56B3113	56-3127
	56-3108
56B3114	56-3129
	56-3109
56B3115	56-3602
	56-3128
	56-3109
56B3116	56-3128
	56-3109
56B3117	56-3129
	56-3110
56B3118	56-3125
	56-3106
56B3119	56-3126
	56-3107
56B3120	56-3127
	56-3108
56B3121	56-3129
	56-3109
56B3122	56-3602
	56-3128
	56-3109
56B3123	56-3128
	56-3109
56B3124	56-3129
	56-3110
56B4011	56-4025
	56-4006
56B4012	56-4026
	56-4007
56B4013	56-4027
	56-4008
56B4014	56-4029
	56-4009
56B4015	56-4502
	56-4028

Table 3. M39012 Category B (Not Procurable) to M39012 (Procurable) Cross Reference (Sheet 5 of 9)

CATEGORY B	REPLACEMENT
56B4015 - Cont	56-4009
56B4016	56-4028
	56-4009
56B4017	56-4029
	56-4010
56B4018	56-4025
	56-4006
56B4019	56-4026
	56-4007
56B4020	56-4027
	56-4008
56B4021	56-4029
	56-4009
56B4022	56-4502
	56-4028
	56-4009
56B4023	56-4028
	56-4009
56B4024	56-4029
	56-4010
56B4111	56-4125
	56-4106
56B4112	56-4126
	56-4107
56B4113	56-4127
	56-4108
56B4114	56-4129
	56-4109
56B4115	56-4602
	56-4128
	56-4109
56B4116	56-4128
	56-4109
56B4117	56-4129
	56-4110
56B4118	56-4125
	56-4106
56B4119	56-4126
	56-4107
56B4120	56-4127
	56-4108
56B4121	56-4129
	56-4109
56B4122	56-4602
	56-4128
	56-4109
56B4123	56-4128
	56-4109
56B4124	56-4129
	56-4110
57B3011	57-3025
	57-3006
57B3012	57-3026
	56-3007
57B3013	57-3027
	57-3008
57B3014	57-3029
	57-3009
57B3015	57-3502
	57-3028
	57-3009
57B3016	57-3028
	57-3009
57B3017	57-3029
	57-3010
57B3018	57-3025
	57-3006
57B3019	57-3026
	57-3007
57B3020	57-3027
	57-3008
57B3021	57-3029
	57-3009
57B3022	57-3502
	57-3028
	57-3009
57B3023	57-3028
	57-3009
57B3024	57-3029
	57-3010
57B4011	57-4025
	57-4006
57B4012	57-4026
	57-4007
57B4013	57-4027
	57-4008
57B4014	57-4029
	57-4009
57B4015	57-4502
	57-4028
	57-4009
57B4016	57-4028
	57-4009
57B4017	57-4029
	57-4010
57B4018	57-4025
57B4018 - Cont	57-4006
57B4019	57-4026
	57-4007
57B4020	57-4027
	57-4008
57B4021	57-4029
	57-4009
57B4022	57-4502
	57-4028
	57-4009
57B4023	57-4028
	57-4009
57B4024	57-4029
	57-4010
58B3011	58-3025
	58-3006
58B3012	58-3026
	58-3007
58B3013	58-3027
	58-3008
58B3014	58-3029
	58-3009
58B3015	58-3502
	58-3028
	58-3009
58B3016	58-3028
	58-3009
58B3017	58-3029
	58-3010
58B3018	58-3025
	58-3006
58B3019	58-3026
	58-3007
58B3020	58-3027
	58-3008
58B3021	58-3029
	58-3009
58B3022	58-3502
	58-3028
	58-3009
58B3023	58-3028
	58-3009
58B3024	58-3029
	58-3010
58B4011	58-4025
	58-4006
58B4012	58-4026
	58-4007

Table 3. M39012 Category B (Not Procurable) to M39012 (Procurable) Cross Reference (Sheet 6 of 9)

CATEGORY B	REPLACEMENT
58B4013	58-4027
	58-4008
58B4014	58-4029
	58-4009
58B4015	58-4502
	58-4028
	58-4009
58B4016	58-4028
	58-4009
58B4017	58-4029
	58-4010
58B4018	58-4025
	58-4006
58B4019	58-4026
	58-4007
58B4020	58-4027
	58-4008
58B4021	58-4029
	58-4009
58B4022	58-4502
	58-4028
	58-4009
58B4023	58-4028
	58-4009
58B4024	58-4029
	58-4010
59B3011	59-3025
	59-3006
59B3012	59-3026
	59-3007
59B3013	59-3027
	59-3008
59B3014	59-3029
	59-3009
59B3015	59-3502
	59-3028
	59-3009
59B3016	59-3028
	59-3009
59B3017	59-3029
	59-3010
59B3018	59-3025
	59-3006
59B3019	59-3026
	59-3007
59B3020	59-3027
	59-3008
59B3021	59-3029

CATEGORY B	REPLACEMENT
59B3021 - Cont	59-3009
59B3022	59-3502
	59-3028
	59-3009
59B3023	59-3028
	59-3009
59B3024	59-3029
	59-3010
59B4011	59-4025
	59-4006
59B4012	59-4026
	59-4007
59B4013	59-4027
	59-4008
59B4014	59-4029
	59-4009
59B4015	59-4502
	59-4028
	59-4009
59B4016	59-4028
	59-4009
59B4017	59-4029
	59-4010
59B4018	59-4025
	59-4006
59B4019	59-4026
	59-4007
59B4020	59-4027
	59-4008
59B4021	59-4029
	59-4009
59B4022	59-4502
	59-4028
	59-4009
59B4023	59-4028
	59-4009
59B4024	59-4029
	59-4010
63B0006	63-0013
	63-0001
63B0007	63-0014
	63-0001
63B0008	63-0015
	63-0002
63B0009	63-0016
	63-0002
63B0010	63-0017
	63-0002

CATEGORY B	REPLACEMENT
63B0011	63-0018
63B0012	63-0019
64B0003	64-0010
	64-0002
64B0004	64-0011
	64-0002
64B0005	64-0012
	64-0002
64B0006	64-0013
	64-0001
64B0007	64-0014
	64-0001
64B0008	64-0015
64B0009	64-0016
65B0005	65-0010
	65-0001
65B0006	65-0011
	65-0001
65B0007	65-0012
	65-0002
65B0008	65-0013
	65-0003
65B0009	65-0014
	65-0002
65B0015	65-0010
	65-0004
65B0016	65-0011
	65-0001
66B0005	66-0010
	66-0001
66B0006	66-0011
	66-0001
66B0007	66-0012
	66-0002
66B0008	66-0013
	66-0003
66B0009	66-0014
	66-0002
66B0015	66-0010
	66-0004
66B0016	66-0011
	66-0001
67B0008	67-0011
	67-0003
67B0009	67-0012
	67-0004
67B0010	67-0012
	67-0004

Table 3. M39012 Category B (Not Procurable) to M39012 (Procurable) Cross Reference (Sheet 7 of 9)

CATEGORY B	REPLACEMENT
67B0013	67-0016
	67-0103
67B0014	67-0017
	67-0104
67B0015	67-0017
	67-0104
68B0008	68-0011
	68-0003
68B0009	68-0012
	68-0004
68B0010	68-0012
	68-0004
68B0013	68-0016
	68-0103
68B0014	68-0017
	68-0104
68B0015	68-0017
	68-0104
69B0008	69-0011
	69-0003
69B0009	69-0012
	69-0004
69B0010	69-0012
	69-0004
69B0013	69-0016
	69-0103
69B0014	69-0017
	69-0104
69B0015	69-0017
	69-0104
70B0008	70-0011
	70-0003
70B0009	70-0012
	70-0004
70B0010	70-0012
	70-0004
70B0013	70-0016
	70-0103
70B0014	70-0017
	70-0104
70B0015	70-0017
	70-0104
73B0008	73-0011
	73-0003
73B0009	73-0012
	73-0004
73B0010	73-0012
	73-0004

CATEGORY B	REPLACEMENT
73B0013	73-0016
	73-0103
73B0014	73-0017
	73-0104
73B0015	73-0017
	73-0104
74B0008	74-0011
	74-0003
74B0009	74-0012
	74-0004
74B0010	74-0012
	74-0004
74B0014	74-0017
	74-0103
74B0015	74-0018
	74-0104
74B0016	74-0018
	74-0104
75B0008	75-0011
	75-0003
75B0009	75-0012
	75-0004
75B0010	75-0012
	75-0004
75B0014	75-0017
	75-0103
75B0015	75-0018
	75-0104
75B0016	75-0018
	75-0104
76B0008	76-0011
	76-0003
76B0009	76-0012
	76-0004
76B0010	76-0012
	76-0004
76B0014	76-0017
	76-0103
76B0015	76-0018
	76-0104
76B0016	76-0018
	76-0104
79B3001	79-3207
	79-3007
	79-3009
79B3002	79-3208
	79-3210
	79-3008

CATEGORY B	REPLACEMENT
79B3002	79-3010
79B3003	79-3207
	79-3007
	79-3009
79B3004	79-3208
	79-3210
	79-3008
	79-3010
79B3101	79-3307
	79-3107
	79-3109
79B3102	79-3308
	79-3310
	79-3108
	79-3110
79B3103	79-3307
	79-3107
	79-3109
79B3104	79-3308
	79-3310
	79-3108
	79-3110
79B4003	79-4207
	79-4007
	79-4009
79B4004	79-4208
	79-4210
	79-4008
	79-4010
79B4103	79-4307
	79-4107
	79-4109
79B4104	79-4308
	79-4310
	79-4108
	79-4110
80B3001	80-3207
	80-3007
	80-3009
80B3002	80-3208
	80-3210
	80-3008
	80-3010
80B3003	80-3207
	80-3007
	80-3009
80B3004	80-3208
	80-3210

Table 3. M39012 Category B (Not Procurable) to M39012 (Procurable) Cross Reference (Sheet 8 of 9)

CATEGORY B	REPLACEMENT
80B3004 - Cont	80-3008
	80-3010
80B3101	80-3307
	80-3107
	80-3109
80B3102	80-3308
	80-3310
	80-3108
	80-3110
80B3103	80-3307
	80-3107
	80-3109
80B3104	80-3308
	80-3310
	80-3108
	80-3110
80B4003	80-4207
	80-4007
	80-4009
80B4004	80-4208
	80-4210
	80-4008
	80-4010
80B4103	80-4307
	80-4107
	80-4109
80B4104	80-4308
	80-4310
	80-4108
	80-4110
81B3001	81-3207
	81-3007
	81-3009
81B3002	81-3208
	81-3210
	81-3008
	81-3010
81B3003	81-3207
	81-3007
	81-3009
81B3004	81-3208
	81-3210
	81-3008
	81-3010
81B4003	81-4207
	81-4007
	81-4009
81B4004	81-4208

CATEGORY B	REPLACEMENT
81B4004 - Cont	81-4210
	81-4008
	81-4010
82B3001	82-3207
	82-3007
	82-3009
82B3002	82-3208
	82-3210
	82-3008
	82-3010
82B3003	82-3207
	82-3007
	82-3009
82B3004	82-3208
	82-3210
	82-3008
	82-3010
82B4003	82-4207
	82-4007
	82-4009
82B4004	82-4208
	82-4210
	82-4008
	82-4010
83B3001	83-3207
	83-3007
	83-3009
83B3002	83-3208
	83-3210
	83-3008
	83-3010
83B3003	83-3207
	83-3007
	83-3009
83B3004	83-3208
	83-3210
	83-3008
	83-3010
83B4003	83-4207
	83-4007
	83-4009
83B4004	83-4208
	83-4210
	83-4008
	83-4010
84B0006	84-0013
	84-0001
84B0007	84-0014

CATEGORY B	REPLACEMENT
84B0007 - Cont	84-0001
84B0008	84-0015
	84-0002
84B0009	84-0016
	84-0002
84B0010	84-0017
	84-0002
84B0011	84-0018
84B0012	84-0019
85B0006	85-0013
	85-0001
85B0007	85-0014
	85-0001
85B0008	85-0015
	85-0002
85B0009	85-0016
	85-0002
85B0010	85-0017
	85-0002
85B0011	85-0018
85B0012	85-0019
86B0006	86-0013
	86-0001
86B0007	86-0014
	86-0001
86B0008	86-0015
	86-0002
86B0009	86-0016
	86-0002
86B0010	86-0017
	86-0002
86B0011	86-0018
86B0012	86-0019
88B0005	88-0010
	88-0001
88B0006	88-0011
	88-0001
88B0007	88-0012
	88-0002
88B0008	88-0013
	88-0003
88B0009	88-0014
	88-0002
88B0015	88-0010
	88-0004
88B0016	88-0011
	88-0001
89B0005	89-0010

Table 3. M39012 Category B (Not Procurable) to M39012 (Procurable) Cross Reference (Sheet 9 of 9)

CATEGORY B	REPLACEMENT
89B0005 - Cont	89-0001
89B0006	89-0011 89-0001
89B0007	89-0012 89-0002
89B0008	89-0013 89-0003
89B0009	89-0014 89-0002
89B0015	89-0010 89-0004
89B0016	89-0011 89-0001
92B3001	92-3201 92-3202 92-3003 92-3002
92B3101	92-3301 92-3302 92-3103 92-3102
92B4001	92-4201 92-4202 92-4003 92-4002
92B4101	92-4301 92-4302 92-4103 92-4102
112B0005	112-0001
112B0006	112-0002
113B0005	113-0001
113B0006	113-0002
114B0005	114-0001
114B0006	114-0002
115B0005	115-0001
115B0006	115-0002
116B0005	116-0001
116B0006	116-0002

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 1 of 25)

Note: This table lists the MIL-PRF-39012 connectors and the MIL-C-17 cables for each of the connectors.

CONNECTOR M39012/	CABLE M17
01-0005	/6-RG011 /62-RG144 /65-RG165 /74-RG213 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001 /164-00001 /174-00001 /181-00001 /189-00001 /190-00001 /191-00001
01-0015	/78-RG217
01-0016	/73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
01-0017	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
01-0018	/75-RG214 /86-00001 /127-RG393 /164-00001 /190-00001
01-0023	/6-RG011 /62-RG144 /181-00001
01-0024	/77-RG216 /191-00001
01-0101	/2-RG006 /73-RG212 /112-RG304 /162-00001 /171-00001

CONNECTOR M39012/	CABLE M17
01-0101	/180-00001 /188-00001 /199-00001
01-0104	/79-RG218 /166-00001 /193-00001
01-0125	/74-RG215 /189-00002
01-0501	/75-RG214 /190-00001 /127-RG393 /174-00001 /86-00001 /164-00001
01-0502	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
01-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
01-0504	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
02-0003	/6-RG011 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001

CONNECTOR M39012/	CABLE M17
02-0003	/164-00001 /174-00001 /189-00001 /181-00001 /190-00001 /191-00001
02-0006	/6-RG011 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001 /164-00001 /174-00001 /181-00001 /189-00001 /190-00001 /191-00001
02-0019	/2-RG006 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
02-0020	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
02-0021	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001 /190-00001

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 2 of 25)

CONNECTOR M39012/	CABLE M17
02-0026	/6-RG011 /62-RG144 /181-00001
02-0027	/2-RG606 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
02-0028	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
02-0029	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001 /190-00001
02-0030	/77-RG216 /191-00001
02-0034	/86-00001
02-0039	/77-RG216 /191-00001
02-0040	/2-RG006 /180-00001
02-0041	/65-RG165 /159-00001
02-0042	/6-RG011 /62-RG144 /181-00001
02-0043	/2-RG006 /180-00001
02-0101	/2-RG006 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
02-0104	/2-RG006 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
02-0131	/74-RG215 /189-00002
02-0132	/74-RG215 /189-00002
02-0133	/78-RG217 /165-00001
02-0134	/78-RG217
02-0501	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001 /190-00001
02-0502	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
02-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
02-0504	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
02-0511	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001
02-0511	/190-00001
02-0512	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
02-0513	060-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
02-0514	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
03-0012	/6-RG011 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001 /164-00001 /174-00001 /181-00001 /189-00001 /190-00001 /191-00001
03-0013	/2-RG006 /73-RG212 /112-RG303 /162-00001 /171-00001 /188-00001 /199-00001

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 3 of 25)

CONNECTOR M39012/	CABLE M17
03-0014	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
03-0015	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001 /190-00001
03-0020	/6-RG011 /62-RG144 /181-00001
03-0021	/77-RG216 /191-00001
03-0101	/2-RG006 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
03-0102	/78-RG217
03-0104	/79-RG218 /166-00001 /193-00001
03-0125	/74-RG215 /189-00002
03-0501	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001 /190-00001
03-0502	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
03-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001

CONNECTOR M39012/	CABLE M17
03-0503	/167-00001 /175-00001 /194-00001 /200-00001
03-0504	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
05-0004	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
05-0005	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001 /190-00001
05-0006	/2-RG006 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
05-0013	/2-RG006 /180-00001
05-0014	/6-RG011 /62-RG144 /181-00001
05-0015	/78-RG217
05-0016	/2-RG006 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
05-0017	/77-RG216 /191-00001

CONNECTOR M39012/	CABLE M17
05-0018	/86-00001
05-0101	/6-RG011 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001 /164-00001 /174-00001 /181-00001 /189-00001 /190-00001 /191-00001
05-0125	/74-RG215 /189-00002
05-0501	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001 /190-00001
05-0502	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
05-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
05-0504	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 4 of 25)

CONNECTOR M39012/	CABLE M17
06-0001	/73-RG212 /112-RG304
06-0002	/65-RG165 /74-RG213 /75-RG214 /86-00001
06-0003	/78-RG217
06-0004	/72-RG211
06-0005	/79-RG218
06-0013	/74-RG215
06-0014	/73-RG212 /112-RG304
06-0015	/65-RG165 /74-RG213 /75-RG214 /86-00001
06-0016	/78-RG217
06-0017	/72-RG211
06-0018	/79-RG218
06-0019	/74-RG215
06-0020	/92-RG115
06-0027	/73-RG212 /112-RG304
06-0028	/65-RG165 /74-RG213
06-0029	/75-RG214
06-0030	/86-00001
06-0031	/6-RG011
06-0032	/92-RG115
07-0011	/65-RG165 /74-RG213
07-0012	/75-RG214
07-0013	RG-225/U
07-0014	/73-RG212 /112-RG304
07-0015	/6-RG011
07-0016	/92-RG115
07-0017	/65-RG165 /74-RG213 /75-RG214 RG-225/U
07-0018	/73-RG212 /112-RG304
07-0019	/74-RG215
07-0020	/92-RG115
08-0001	/65-RG165 /74-RG213 /75-RG214 RG-225/U
08-0002	/73-RG212 /112-RG304
08-0010	/65-RG165 /74-RG213
08-0011	/75-RG214
08-0012	RG-225/U
08-0013	/73-RG212 /112-RG304
08-0014	/92-RG115
08-0015	/65-RG165 /74-RG213 /75-RG214 RG-225/U
08-0016	/73-RG212 /112-RG304
08-0017	/74-RG215
08-0018	/92-RG115
08-0024	/6-RG011
09-0001	/29-RG059 /30-RG062 /90-RG071
09-0002	/28-RG058 /84-RG223
10-0001	/65-RG165 /74-RG213 /75-RG214 RG-225/U
10-0005	/74-RG215
10-0006	/65-RG165 /74-RG213
10-0007	/75-RG214
10-0008	RG-225/U
10-0009	/92-RG115
10-0011	/92-RG115
11-0001	/73-RG212 /112-RG304
11-0002	/65-RG165 /74-RG213
11-0002	/75-RG214 /86-00001
11-0012	/73-RG212 /112-RG304
11-0013	/65-RG165 /74-RG213
11-0014	/75-RG214
11-0015	/86-00001
11-0016	/6-RG011
11-0017	/92-RG115
11-0018	/73-RG212 /112-RG304
11-0019	/65-RG165 /74-RG213 /75-RG214 /86-00001
11-0020	/74-RG215
11-0021	/92-RG115
15-0001	/29-RG059 /30-RG062 /90-RG071
15-0002	/28-RG058 /84-RG223
16-0013	/28-RG058 /111-RG303 /155-00001 /183-00001 /197-00001 /170-00001
16-0014	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
16-0015	/29-RG059 /30-RG062 /97-RG210 /184-00001 /185-00001

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 5 of 25)

CONNECTOR M39012/	CABLE M17
16-0016	/54-RG122 /157-00001 /187-00001 /198-00001
16-0017	/90-RG071 /195-00001
16-0020	/110-RG302
16-0101	/28-RG058 /60-RG142 /84-RG223 /111-RG303 /128-RG400 /155-00001 /158-00001 /167-00001 /170-00001 /175-00001 /183-00001 /194-00001 /197-00001 /200-00001
16-0102	/29-RG059 /30-RG062 /90-RG071 /97-RG210 /110-RG302 /184-00001 /185-00001 /195-00001
16-0103	/54-RG122 /157-00001 /187-00001 /198-00001
16-0220	/94-RG179 /113-RG316 /119-RG174 /172-00001
16-0220	/173-00001 /196-00001
16-0222	/113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001

CONNECTOR M39012/	CABLE M17
16-0225	/6-RG11 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001 /164-00001 /174-00001 /181-00001 /189-00001 /190-00001 /191-00001
16-0501	/54-RG122 /157-00001 /187-00001 /198-00001
16-0502	/95-RG180
16-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
16-0504	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
17-0013	/28-RG058 /111-RG303 /155-00001 /183-00001 /197-00001 /170-00001
17-0014	/60-RG142 /84-RG223 /128-RG400

CONNECTOR M39012/	CABLE M17
17-0014	/158-00001 /167-00001 /175-00001 /194-00001 /200-00001
17-0015	/29-RG059 /30-RG062 /97-RG210 /110-RG302 /184-00001 /185-00001
17-0016	/54-RG122 /157-00001 /187-00001 /198-00001
17-0017	/90-RG071 /195-00001
17-0020	/110-RG302
17-0101	/28-RG058 /60-RG142 /84-RG223 /111-RG303 /128-RG400 /155-00001 /158-00001 /167-00001 /170-00001 /175-00001 /183-00001 /194-00001 /197-00001 /200-00001
17-0102	/29-RG059 /30-RG062 /90-RG071 /97-RG210 /110-RG302 /184-00001 /185-00001 /195-00001
17-0103	/54-RG122 /157-00001 /187-00001 /198-00001

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 6 of 25)

CONNECTOR M39012/	CABLE M17
17-0220	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
17-0222	/113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
17-0225	/6-RG11 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001 /164-00001 /174-00001 /181-00001 /189-00001 /190-00001 /191-00001
17-0501	/54-RG122 /157-00001 /187-00001 /198-00001
17-0502	/95-RG180
17-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
17-0504	/28-RG058 /111-RG303 /155-00001 /170-00001

CONNECTOR M39012/	CABLE M17
17-0504	/183-00001 /197-00001
18-0013	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
18-0014	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
18-0015	/29-RG059 /30-RG062 /97-RG210 /110-RG302 /184-00001 /185-00001
18-0016	/54-RG122 /157-00001 /187-00001 /198-00001
18-0017	/90-RG071 /195-00001
18-0020	/110-RG302
18-0101	/29-RG059 /30-RG062 /90-RG071 /97-RG210 /110-RG302 /184-00001 /185-00001 /195-00001
18-0102	/28-RG058 /60-RG142 /84-RG223 /111-RG303 /128-RG400 /155-00001 /158-00001

CONNECTOR M39012/	CABLE M17
18-0102	/167-00001 /170-00001 /175-00001 /183-00001 /194-00001 /197-00001 /200-00001
18-0103	/54-RG122 /157-00001 /187-00001 /198-00001
18-0220	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
18-0221	/113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
18-0225	/6-RG11 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001 /164-00001 /174-00001 /181-00001 /189-00001 /190-00001 /191-00001
18-0501	/54-RG122 /157-00001 /187-00001 /198-00001

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 7 of 25)

CONNECTOR M39012/	CABLE M17
18-0502	/95-RG180
18-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
18-0504	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
19-0013	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
19-0014	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
19-0015	/29-RG059 /30-RG062 /97-RG210 /110-RG302 /184-00001 /185-00001
19-0016	/54-RG122 /157-00001 /187-00001 /198-00001
19-0017	/90-RG071 /195-00001
19-0101	/28-RG058 /60-RG142 /84-RG223

CONNECTOR M39012/	CABLE M17
19-0101	/111-RG303 /128-RG400 /155-00001 /158-00001 /167-00001 /170-00001 /175-00001 /183-00001 /194-00001 /197-00001 /200-00001
19-0102	/29-RG059 /30-RG062 /90-RG071 /97-RG210 /110-RG302 /184-00001 /185-00001 /195-00001
19-0110	/54-RG122 /157-00001 /187-00001 /198-00001
19-0220	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
19-0221	/113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
19-0225	/74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001 /164-00001 /174-00001

CONNECTOR M39012/	CABLE M17
19-0225	/181-00001 /189-00001 /190-00001 /191-00001
19-0501	/54-RG122 /157-00001 /187-00001 /198-00001
19-0502	/95-RG180
19-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
19-0504	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
20-0006	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
20-0007	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
20-0011	/29-RG059 /30-RG062 /97-RG210 /110-RG302 /184-00001 /185-00001

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 8 of 25)

CONNECTOR M39012/	CABLE M17
20-0016	/54-RG122 /157-00001 /187-00001 /198-00001
20-0017	/90-RG071 /195-00001
20-0101	/28-RG058 /60-RG142 /84-RG223 /111-RG303 /128-RG400 /155-00001 /158-00001 /167-00001 /170-00001 /175-00001 /183-00001 /194-00001 /197-00001 /200-00001
20-0102	/29-RG059 /30-RG062 /90-RG071 /97-RG210 /110-RG302 /184-00001 /185-00001 /195-00001
20-0103	/54-RG122 /157-00001 /167-00001 /198-00001
20-0220	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
20-0222	/113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
20-0225	/6-RG11 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001 /164-00001 /174-00001 /181-00001 /189-00001 /190-00001 /191-00001
20-0501	/54-RG122 /157-00001 /187-00001 /198-00001
20-0502	/95-RG180
20-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
20-0504	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
26-0010	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
26-0011	/60-RG142 /84-RG223 /128-RG400
26-0011	/158-00001 /167-00001 /175-00001 /194-00001 /200-00001
26-0012	/29-RG059 /30-RG062 /97-RG210 /110-RG302 /184-00001 /185-00001
26-0013	/54-RG122 /157-00001 /187-00001 /198-00001
26-0014	/90-RG071 /195-00001
26-0018	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
26-0021	/110-RG302
26-0022	/113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
26-0023	/95-RG180
26-0030	/220-00001
26-0031	/221-00001
26-0032	/222-00001
26-0033	/223-00001
26-0034	/224-00001
26-0035	/225-00001
26-0101	/28-RG058 /60-RG142 /84-RG223 /111-RG303 /128-RG400 /155-00001 /158-00001 /167-00001

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 9 of 25)

CONNECTOR M39012/	CABLE M17
26-0101	/170-00001 /175-00001 /183-00001 /194-00001 /197-00001 /200-00001
26-0102	/29-RG059 /30-RG062 /90-RG071 /97-RG210 /110-RG303 /184-00001 /185-00001 /195-00001
26-0103	/54-RG122 /157-00001 /187-00001 /198-00001
26-0104	/111-RG303 /170-00001
26-0117	/110-RG302
26-0130	/220-00002
26-0131	/221-00002
26-0132	/222-00002
26-0133	/223-00002
26-0134	/224-00002
26-0135	/225-00002
26-0501	/54-RG122 /157-00001 /187-00001 /198-00001
26-0502	/95-RG180
26-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
26-0504	/28-RG058 /111-RG303 /155-00001 /170-00001

CONNECTOR M39012/	CABLE M17
26-0504	/183-00001 /197-00001
26-0225	/6-RG11 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001 /164-00001 /174-00001 /181-00001 /189-00001 /190-00001 /191-00001
27-0002	/29-RG059 /30-RG062 /90-RG071 /97-RG210 /184-00001 /185-00001 /195-00001
27-0010	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
27-0011	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
27-0012	/29-RG059 /30-RG062 /97-RG210 /110-RG302 /184-00001 /185-00001

CONNECTOR M39012/	CABLE M17
27-0013	/54-RG122 /157-00001 /187-00001 /198-00001
27-0014	/90-RG071 /195-00001
27-0018	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
27-0022	/113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
27-0023	/95-RG180
27-0101	/28-RG058 /60-RG142 /84-RG223 /111-RG303 /128-RG400 /155-00001 /158-00001 /167-00001 /170-00001 /175-00001 /183-00001 /194-00001 /197-00001 /200-00001
27-0102	/29-RG059 /30-RG062 /90-RG071 /97-RG210 /110-RG302 /184-00001 /185-00001 /195-00001
27-0103	/54-RG122 /157-00001 /187-00001 /198-00001

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 10 of 25)

CONNECTOR M39012/	CABLE M17
27-0225	/6-RG11
	/62-RG144
	/65-RG165
	/74-RG213
	/75-RG214
	/77-RG216
	/86-00001
	/127-RG393
	/159-00001
	/163-00001
	/164-00001
	/174-00001
	/181-00001
	/189-00001
	/190-00001
	/191-00001
27-0501	/54-RG122
	/157-00001
	/187-00001
	/198-00001
27-0502	/95-RG180
27-0503	/60-RG142
	/84-RG223
	/128-RG400
	/158-00001
	/167-00001
	/175-00001
	/194-00001
	/200-00001
27-0504	/28-RG058
	/111-RG303
	/155-00001
	/170-00001
	/183-00001
	/197-00001
28-0010	/28-RG058
	/111-RG303
	/155-00001
	/170-00001
	/183-00001
	/197-00001
28-0011	/60-RG142
	/84-RG223

CONNECTOR M39012/	CABLE M17
28-0011	/128-RG400
	/158-00001
	/167-00001
	/175-00001
	/194-00001
	/200-00001
28-0012	/29-RG059
	/30-RG062
	/97-RG210
	/184-00001
	/185-00001
28-0013	/54-RG122
	/157-00001
	/187-00001
	/198-00001
28-0014	/90-RG071
	/195-00001
28-0018	/113-RG316
	/119-RG174
	/172-00001
	/173-00001
	/196-00001
28-0021	/110-RG302
28-0022	/113-RG316
	/119-RG174
	/172-00001
	/173-00001
	/196-00001
28-0023	/95-RG180
28-0101	/28-RG058
	/60-RG142
	/84-RG223
	/128-RG400
	/155-00001
	/158-00001
	/167-00001
	/175-00001
	/183-00001
	/194-00001
	/197-00001
	/200-00001
28-0102	/29-RG059
	/30-RG062

CONNECTOR M39012/	CABLE M17
28-0102	/90-RG071
	/97-RG210
	/184-00001
	/185-00001
	/195-00001
28-0103	/54-RG122
	/157-00001
	/187-00001
	/198-00001
28-0104	/111-RG303
	/170-00001
28-0117	/110-RG302
28-0501	/54-RG122
	/157-00001
	/187-00001
	/198-00001
28-0502	/95-RG180
28-0503	/60-RG142
	/128-RG400
	/158-00001
	/175-00001
28-0504	/28-RG058
	/155-00001
	/183-00001
	/197-00001
29-0010	/28-RG058
	/111-RG303
	/155-00001
	/170-00001
	/183-00001
	/197-00001
29-0011	/60-RG142
	/84-RG223
	/128-RG400
	/158-00001
	/167-00001
	/175-00001
	/194-00001
	/200-00001
29-0012	/29-RG059
	/30-RG062
	/97-RG210
	/110-RG302
	/184-00001

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 11 of 25)

CONNECTOR M39012/	CABLE M17
29-0012	/185-00001
29-0013	/54-RG122 /157-00001 /187-00001 /198-00001
29-0014	/90-RG071 /195-00001
29-0018	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
29-0022	/113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
29-0023	/95-RG180
29-0030	/220-00001
29-0031	/221-00001
29-0032	/222-00001
29-0033	/223-00001
29-0034	/224-00001
29-0035	/225-00001
29-0101	/28-RG058 /60-RG142 /84-RG223 /111-RG303 /128-RG400 /155-00001 /158-00001 /167-00001 /170-00001 /175-00001 /183-00001 /194-00001 /197-00001 /200-00001
29-0102	/29-RG059 /30-RG062 /90-RG071 /97-RG210 /110-RG302

CONNECTOR M39012/	CABLE M17
29-0102	/184-00001 /185-00001 /195-00001
29-0103	/54-RG122 /157-00001 /187-00001 /198-00001
29-0130	/220-00002
29-0131	/221-00002
29-0132	/222-00002
29-0133	/223-00002
29-0134	/224-00002
29-0135	/225-00002
29-0225	/6-RG11 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001 /164-00001 /174-00001 /181-00001 /189-00001 /190-00001 /191-00001
29-0501	/54-RG122 /157-00001 /187-00001 /198-00001
29-0502	/95-RG180
29-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
29-0504	/28-RG058 /111-RG303

CONNECTOR M39012/	CABLE M17
29-0504	/155-00001 /170-00001 /183-00001 /197-00001
30-0010	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
30-0011	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
30-0012	/29-RG059 /30-RG062 /97-RG210 /110-RG302 /184-00001 /185-00001
30-0013	/54-RG122 /157-00001 /187-00001 /198-00001
30-0014	/90-RG071 /195-00001
30-0021	/110-RG302
30-0022	/113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
30-0023	/95-RG180
30-0030	/220-00001
30-0031	/221-00001
30-0032	/222-00001
30-0033	/223-00001
30-0034	/224-00001
30-0035	/225-00001
30-0101	/28-RG058 /60-RG142

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 12 of 25)

CONNECTOR M39012/	CABLE M17
30-0101	/84-RG223 /111-RG303 /128-RG400 /155-00001 /158-00001 /167-00001 /170-00001 /175-00001 /183-00001 /194-00001 /197-00001 /200-00001
30-0102	/29-RG059 /30-RG062 /90-RG071 /97-RG210 /110-RG302 /184-00001 /185-00001 /195-00001
30-0103	/54-RG122 /157-00001 /187-00001 /198-00001
30-0118	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001 /196-00001
30-0130	/220-00002
30-0131	/221-00002
30-0132	/222-00002
30-0133	/223-00002
30-0134	/224-00002
30-0135	/225-00002
30-0225	/6-RG11 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001

CONNECTOR M39012/	CABLE M17
30-0225	/164-00001 /174-00001 /181-00001 /189-00001 /190-00001 /191-00001
30-0501	/54-RG122 /157-00001 /187-00001 /198-00001
30-0502	/95-RG180
30-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
30-0504	/28-RG058 /111-RG303 /155-00001 /170-00001 /183-00001 /197-00001
35-0010	/2-RG006 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
35-0011	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
35-0012	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001 /190-00001
35-0013	/6-RG011

CONNECTOR M39012/	CABLE M17
35-0013	/62-RG144 /181-00001
35-0014	/92-RG115 /168-00001
35-0016	/2-RG006 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
35-0017	/6-RG11 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001 /164-00001 /174-00001 /181-00001 /189-00001 /190-00001 /191-00001
35-0018	/78-RG217 /165-00001 /188-00001
35-0019	/72-RG211 /161-00001
35-0020	/79-RG218 /166-00001 /193-00001
35-0021	/74-RG215 /189-00002
35-0022	/92-RG115 /168-00001
35-0501	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 13 of 25)

CONNECTOR M39012/	CABLE M17
35-0501	/190-00001
35-0502	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
35-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
38-0006	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
38-0007	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001 /190-00001
38-0008	/2-RG006 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
38-0010	/6-RG11 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001 /164-00001 /174-00001
38-0010	/181-00001 /189-00001 /190-00001 /191-00001
38-0011	/2-RG006 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
38-0012	/74-RG215 /189-00002
38-0013	/6-RG11 /62-RG144 /181-00001 /92RG115 /168-00001
38-0019	/72-RG211 /161-00001
38-0020	/79-RG218 /166-00001 /193-00001
38-0501	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001 /190-00001
38-0502	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
38-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
39-0004	/65-RG165 /74-RG213
39-0004	/159-00001 /163-00001 /189-00001
39-0005	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001 /190-00001
39-0009	/92-RG115 /168-00001
39-0010	/2-RG006 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
39-0016	/2-RG006 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
39-0018	/78-RG217 /165-00001 /188-00001
39-0019	/72-RG211 /161-00001
39-0020	/79-RG218 /166-00001 /193-00001
39-0101	/6-RG11 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 14 of 25)

CONNECTOR M39012/	CABLE M17
39-0101	/164-00001 /174-00001 /181-00001 /189-00001 /190-00001 /191-00001
39-0106	/74-RG215 /189-00002
39-0107	/92-RG115 /168-00001
39-0501	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001 /190-00001
39-0502	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
39-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
40-0014	/2-RG6 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
40-0015	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
40-0016	/75-RG214 /86-00001
40-0016	/127-RG393 /164-00001 /174-00001 /190-00001
40-0017	/77-RG216 /191-00001
40-0018	/78-RG217
40-0019	/72-RG211 /161-00001
40-0021	/6-RG011 /62-RG144 /181-00001
40-0022	/92-RG115 /168-00001
40-0023	/2-RG006 /73-RG212 /112-RG304 /162-00001 /171-00001 /180-00001 /188-00001 /199-00001
40-0024	/6-RG11 /62-RG144 /65-RG165 /74-RG213 /75-RG214 /77-RG216 /86-00001 /127-RG393 /159-00001 /163-00001 /164-00001 /174-00001 /181-00001 /189-00001 /190-00001 /191-00001
40-0025	/74-RG215 /189-00002
40-0026	/78-RG217 /165-00001 /188-00001
40-0027	/79-RG218
40-0027	/166-00001 /193-00001
40-0028	/92-RG115 /168-00001
40-0501	/75-RG214 /86-00001 /127-RG393 /164-00001 /174-00001 /190-00001
40-0502	/65-RG165 /74-RG213 /159-00001 /163-00001 /189-00001
40-0503	/60-RG142 /84-RG223 /128-RG400 /158-00001 /167-00001 /175-00001 /194-00001 /200-00001
55-3006	/93-RG178
55-3007	/113-RG316
55-3008	/54-RG122
55-3009	/60-RG142 /84-RG223 /128-RG400
55-3010	/111-RG303
55-3025	/93-RG178 /169-00001
55-3026	/113-RG316
55-3027	/54-RG122
55-3028	/60-RG142 /84-RG223 /128-RG400
55-3029	/28-RG058 /111-RG303
55-3030	/152-00001
55-3106	/93-RG178
55-3107	/113-RG316
55-3108	/54-RG122

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 15 of 25)

CONNECTOR M39012/	CABLE M17
55-3109	/60-RG142 /84-RG223 /128-RG400
55-3110	/111-RG303
55-3125	/93-RG178 /169-00001
55-3126	/113-RG316
55-3127	/54-RG122
55-3128	/60-RG142 /84-RG223 /128-RG400
55-3129	/28-RG058 /111-RG303
55-3130	/152-00001
55-3502	/60-RG142 /128-RG400
55-3602	/60-RG142 /128-RG400
55-4006	/93-RG178
55-4007	/113-RG316
55-4008	/54-RG122
55-4009	/60-RG142 /84-RG223 /128-RG400
55-4010	/111-RG303
55-4025	/93-RG178
55-4026	/113-RG316
55-4027	/54-RG122
55-4028	/60-RG142 /84-RG223 /128-RG400
55-4029	/28-RG058 /111-RG303
55-4030	/152-00001
55-4106	/93-RG178
55-4107	/113-RG316
55-4108	/54-RG122
55-4109	/28-RG058 /84-RG223 /128-RG400
55-4110	/111-RG303
55-4125	/93-RG178
55-4126	/113-RG316
55-4127	/54-RG122

CONNECTOR M39012/	CABLE M17
55-4128	/60-RG142 /84-RG223 /128-RG400
55-4129	/28-RG058 /111-RG303
55-4130	/152-00001
55-4502	/60-RG142 /128-RG400
55-4602	/60-RG142 /128-RG400
56-3006	/93-RG178
56-3007	/113-RG316
56-3008	/54-RG122
56-3009	/60-RG142 /84-RG223 /128-RG400
56-3010	/111-RG303
56-3025	/93-RG178
56-3026	/113-RG316
56-3027	/54-RG122
56-3028	/60-RG142 /84-RG223 /128-RG400
56-3029	/28-RG058 /111-RG303
56-3030	/152-00001
56-3106	/93-RG178
56-3107	/113-RG316
56-3108	/54-RG122
56-3109	/60-RG142 /84-RG223 /128-RG400
56-3110	/111-RG303
56-3125	/93-RG178
56-3126	/113-RG316
56-3127	/54-RG122
56-3128	/60-RG142 /84-RG223 /128-RG400
56-3129	/28-RG058 /111-RG303
56-3130	/152-00001
56-3502	/60-RG142

CONNECTOR M39012/	CABLE M17
56-3502	/128-RG400 /56-3602
56-4006	/93-RG178
56-4007	/113-RG316
56-4008	/54-RG122
56-4009	/60-RG142 /84-RG223 /128-RG400
56-4010	/111-RG303
56-4025	/93-RG178
56-4026	/113-RG316
56-4027	/54-RG122
56-4028	/60-RG142 /84-RG223 /128-RG400
56-4029	/28-RG058 /111-RG303
56-4030	/152-00001
56-4106	/93-RG178
56-4107	/113-RG316
56-4108	/54-RG122
56-4109	/60-RG142 /84-RG223 /128-RG400
56-4110	/111-RG303
56-4125	/93-RG178
56-4126	/113-RG316
56-4127	/54-RG122
56-4128	/60-RG142
56-4128	/84-RG223 /128-RG400
56-4129	/28-RG058 /111-RG303
56-4130	/152-00001
56-4502	/60-RG142 /128-RG400
56-4602	/60-RG142 /128-RG400
57-3006	/93-RG178
57-3007	/113-RG316
57-3008	/54-RG122
57-3009	/60-RG142 /84-RG223 /128-RG400

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 16 of 25)

CONNECTOR M39012/	CABLE M17
57-3010	/111-RG303
57-3025	/93-RG178
57-3026	/113-RG316
57-3027	/54-RG122
57-3028	/60-RG142 /84-RG223 /128-RG400
57-3029	/28-RG058 /111-RG303
57-3030	/152-00001
57-3502	/60-RG142 /128-RG400
57-4006	/93-RG178
57-4007	/113-RG316
57-4008	/54-RG122
57-4009	/60-RG142 /84-RG223
57-4010	/111-RG303
57-4025	/93-RG178
57-4026	/113-RG316
57-4027	/54-RG122
57-4028	/60-RG142 /84-RG223 /128-RG400
57-4029	/28-RG058 /111-RG303
57-4030	/152-00001
57-4502	/60-RG142 /128-RG400
58-3006	/93-RG178
58-3007	/113-RG316
58-3008	/54-RG122
58-3009	/60-RG142 /84-RG223 /128-RG400
58-3010	/111-RG303
58-3025	/93-RG178
58-3026	/113-RG316
58-3027	/54-RG122
58-3028	/60-RG142 /84-RG223 /128-RG400
58-3029	/28-RG058 /111-RG303

CONNECTOR M39012/	CABLE M17
58-3030	/152-00001
58-3502	/60-RG142 /128-RG400
58-4006	/93-RG178
58-4007	/113-RG316
58-4008	/54-RG122
58-4009	/60-RG142 /84-RG223 /128-RG400
58-4010	/111-RG303
58-4025	/93-RG178
58-4026	/113-RG316
58-4027	/54-RG122
58-4028	/60-RG142 /84-RG223 /128-RG400
58-4029	/28-RG058 /111-RG303
58-4030	/152-00001
58-4502	/60-RG142 /128-RG400
59-3006	/93-RG178
59-3007	/113-RG316
59-3008	/54-RG122
59-3009	/60-RG142 /84-RG223 /128-RG400
59-3010	/111-RG303
59-3025	/93-RG178
59-3026	/113-RG316
59-3027	/54-RG122
59-3028	/60-RG142 /84-RG223 /128-RG400
59-3029	/28-RG058 /111-RG303
59-3030	/152-00001
59-3502	/60-RG142 /128-RG400
59-4006	/93-RG178
59-4007	/113-RG316
59-4008	/54-RG122
59-4009	/60-RG142

CONNECTOR M39012/	CABLE M17
59-4009	/84-RG223 /128-RG400
59-4010	/111-RG303
59-4025	/93-RG178
59-4026	/113-RG316
59-4027	/54-RG122
59-4028	/60-RG142 /84-RG223 /128-RG400
59-4029	/28-RG058 /111-RG303
59-4030	/152-00001
59-4502	/60-RG142 /128-RG400
67-0003	/93-RG178 /169-00001
67-0004	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
67-0011	/93-RG178 /169-00001
67-0012	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
67-0016	/93-RG178 /169-00001
67-0017	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
67-0103	/93-RG178 /169-00001
67-0104	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
67-4001	/93-RG178

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 17 of 25)

CONNECTOR M39012/	CABLE M17
67-4001	/169-00001
67-4002	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
67-4101	/93-RG178 /169-00001
67-4102	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
68-0003	/93-RG178 /169-00001
68-0004	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
68-0011	/93-RG178 /169-00001
68-0012	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
68-0016	/93-RG178 /169-00001
68-0017	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
68-0103	/93-RG178 /169-00001
68-0104	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
68-4001	/93-RG178 /169-00001
68-4002	/94-RG179

CONNECTOR M39012/	CABLE M17
68-4002	/113-RG316 /119-RG174 /172-00001 /173-00001
68-4101	/93-RG178 /169-00001
68-4102	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
69-0003	/93-RG178 /169-00001
69-0004	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
69-0011	/93-RG178 /169-00001
69-0012	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
69-0016	/93-RG178 /169-00001
69-0017	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
69-0103	/93-RG178 /169-00001
69-0104	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
69-4001	/93-RG178 /169-00001
69-4002	/94-RG179 /113-RG316

CONNECTOR M39012/	CABLE M17
69-4002	/119-RG174 /172-00001 /173-00001
69-4101	/93-RG178 /169-00001
69-4102	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
70-0003	/93-RG178 /169-00001
70-0004	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
70-0011	/93-RG178 /169-00001
70-0012	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
70-0016	/93-RG178 /169-00001
70-0017	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
70-0103	/93-RG178 /169-00001
70-0104	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
70-4001	/93-RG178 /169-00001
70-4002	/94-RG179 /113-RG316 /119-RG174

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 18 of 25)

CONNECTOR M39012/	CABLE M17
70-4002	/172-00001 /173-00001
70-4101	/93-RG178 /169-00001
70-4102	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
73-0003	/93-RG178 /169-00001
73-0004	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
73-0011	/93-RG178 /169-00001
73-0012	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
73-0016	/93-RG178 /169-00001
73-0017	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
73-0103	/93-RG178 /169-00001
73-0104	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
73-4001	/93-RG178 /169-00001
73-4002	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
73-4101	/93-RG178 /169-00001
73-4102	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
74-0003	/93-RG178 /169-00001
74-0004	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
74-0011	/93-RG178 /169-00001
74-0012	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
74-0013	/95-RG180
74-0017	/93-RG178 /169-00001
74-0018	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
74-0103	/93-RG178 /169-00001
74-0104	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
74-0105	/95-RG180
74-4001	/93-RG178 /169-00001
74-4002	/94-RG179 /113-RG316 /119-RG174
74-4002	/172-00001 /173-00001
74-4101	/93-RG178 /169-00001
74-4102	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
75-0003	/93-RG178 /169-00001
75-0004	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
75-0011	/93-RG178 /169-00001
75-0012	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
75-0013	/95-RG180
75-0017	/93-RG178 /169-00001
75-0018	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
75-0103	/93-RG178 /169-00001
75-0104	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
75-0105	/95-RG180
75-4001	/93-RG178 /169-00001
75-4002	/94-RG179 /113-RG316

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 19 of 25)

CONNECTOR M39012/	CABLE M17
75-4002	/119-RG174 /172-00001 /173-00001
75-4101	/93-RG178 /169-00001
75-4102	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
76-0003	/93-RG178 /169-00001
76-0004	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
76-0011	/93-RG178 /169-00001
76-0012	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
76-0013	/95-RG180
76-0017	/93-RG178 /169-00001
76-0018	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
76-0103	/93-RG178 /169-00001
76-0104	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
76-0105	/95-RG180
76-4001	/93-RG178 /169-00001
76-4002	/94-RG179 /113-RG316 /119-RG174

CONNECTOR M39012/	CABLE M17
76-4002	/172-00001 /173-00001
76-4101	/93-RG178 /169-00001
76-4102	/94-RG179 /113-RG316 /119-RG174 /172-00001 /173-00001
79-3007	/133-RG405 /133-00001 Thru /133-00011
79-3008	/130-RG402 /130-00001 Thru /130-00007
79-3009	/133-RG405 /133-00001 Thru /133-00011
79-3010	/130-RG402 /130-00001 Thru /130-00007
79-3011	/133-RG405 /130-00001 Thru /130-00011
79-3012	/130-RG402 /130-00001 Thru /130-00007
79-3107	/133-RG405 /133-00001 Thru /133-00011
79-3108	/130-RG402 /130-00001 Thru /130-00007

CONNECTOR M39012/	CABLE M17
79-3109	/133-RG405 /133-00001 Thru /133-00011
79-3110	/130-RG402 /130-00001 Thru /130-00007
79-3111	/133-RG405 /133-00001 Thru /133-00011
79-3112	/130-RG402 /130-00001 Thru /130-00007
79-3207	/133-RG405 /133-00001 Thru /133-00011
79-3208	/130-RG402 /130-00001 Thru /130-00007
79-3210	/130-RG402 /130-00001 Thru /130-00007
79-3211	/133-RG405 /133-00001 Thru /133-00011
79-3212	/130-RG402 /130-00001 Thru /130-00007
79-3213	/133-RG405 /133-00001 Thru /133-00011
79-3307	/133-RG405 /133-00001 Thru /133-00011

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 20 of 25)

CONNECTOR M39012/	CABLE M17
79-3308	/130-RG402 /130-00001 Thru /130-00007
79-3310	/130-RG402 /130-00001 Thru /130-00007
79-3311	/133-RG405 /133-00001 Thru /133-00011
79-3312	/130-RG402 /130-00001 Thru /130-00007
79-3313	/133-RG405 /133-00001 Thru /133-00011
79-4007	/133-RG405 /133-00001 Thru /133-00011
79-4008	/130-RG402 /130-00001 Thru /130-00007
79-4009	/133-RG405 /133-00001 Thru /133-00011
79-4010	/130-RG402 /130-00001 Thru /130-00007
79-4011	/133-RG405 /133-00001 Thru /133-00011
79-4012	/130-RG402 /130-00001 Thru /130-00007

CONNECTOR M39012/	CABLE M17
79-4107	/133-RG405 /133-00001 Thru /133-00011
79-4108	/130-RG402 /130-00001 Thru /130-00007
79-4109	/133-RG405 /133-00001 Thru /133-00011
79-4110	/130-RG402 /130-00001 Thru /130-00007
79-4111	/133-RG405 /133-00001 Thru /133-00011
79-4112	/130-RG402 /130-00001 Thru /130-00007
79-4207	/133-RG405 /133-00001 Thru /133-00011
79-4208	/130-RG402 /130-00001 Thru /130-00007
79-4210	/130-RG402 /130-00001 Thru /130-00007
79-4211	/133-RG405 /133-00001 Thru /133-00011
79-4212	/130-RG402 /130-00001 Thru /130-00007

CONNECTOR M39012/	CABLE M17
79-4213	/133-RG405 /133-00001 Thru /133-00011
79-4307	/133-RG405 /133-00001 Thru /133-00011
79-4308	/130-RG402 /130-00001 Thru /130-00007
79-4310	/130-RG402 /130-00001 Thru /130-00007
79-4211	/133-RG405 /133-00001 Thru /133-00011
79-4212	/130-RG402 /130-00001 Thru /130-00007
79-4213	/133-RG405 /133-00001 Thru /133-00011
80-3005	/133-RG405 /133-00001 Thru /133-00011
80-3006	/130-RG402 /130-00001 Thru /130-00007
80-3007	/133-RG405 /133-00001 Thru /133-00011
80-3008	/130-RG402 /130-00001 Thru /130-00007

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 21 of 25)

CONNECTOR M39012/	CABLE M17
80-3009	/133-RG405 /133-00001 Thru /133-00011
80-3010	/130-RG402 /130-00001 Thru /130-00007
80-3011	/133-RG405 /133-00001 Thru /133-00011
80-3012	/130-RG402 /130-00001 Thru /130-00007
80-3105	/133-RG405 /133-00001 Thru /133-00011
80-3106	/130-RG402 /130-00001 Thru /130-00007
80-3107	/133-RG405 /133-00001 Thru /133-00011
80-3108	/130-RG402 /130-00001 Thru /130-00007
80-3109	/133-RG405 /133-00001 Thru /133-00011
80-3110	/130-RG402 /130-00001 Thru /130-00007
80-3111	/133-RG405 /133-00001 Thru /133-00011

CONNECTOR M39012/	CABLE M17
80-3112	/130-RG402 /130-00001 Thru /130-00007
80-3207	/133-RG405 /133-00001 Thru /133-00011
80-3208	/130-RG402 /130-00001 Thru /130-00007
80-3210	/130-RG402 /130-00001 Thru /130-00007
80-3211	/133-RG405 /133-00001 Thru /133-00011
80-3212	/130-RG402 /130-00001 Thru /130-00007
80-3213	/133-RG405 /133-00001 Thru /133-00011
80-3307	/133-RG405 /133-00001 Thru /133-00011
80-3308	/130-RG402 /130-00001 Thru /130-00007
80-3310	/130-RG402 /130-00001 Thru /130-00007
80-3311	/133-RG405 /133-00001 Thru /133-00011

CONNECTOR M39012/	CABLE M17
80-3312	/130-RG402 /130-00001 Thru /130-00007
80-3313	/133-RG405 /133-00001 Thru /133-00011
80-4007	/133-RG405 /133-00001 Thru /133-00011
80-4008	/130-RG402 /130-00001 Thru /130-00007
80-4009	/133-RG405 /133-00001 Thru /133-00011
80-4010	/130-RG402 /130-00001 Thru /130-00007
80-4011	/133-RG405 /133-00001 Thru /133-00011
80-4012	/130-RG402 /130-00001 Thru /130-00007
80-4107	/133-RG405 /133-00001 Thru /133-00011
80-4108	/130-RG402 /130-00001 Thru /130-00007
80-4109	/133-RG405 /133-00001 Thru /133-00011

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 22 of 25)

CONNECTOR M39012/	CABLE M17
80-4110	/130-RG402 /130-00001 Thru /130-00007
80-4111	/133-RG405 /133-00001 Thru /133-00011
80-4112	/130-RG402 /130-00001 Thru /130-00007
80-4207	/133-RG405 /133-00001 Thru /133-00011
80-4208	/130-RG402 /130-00001 Thru /130-00007
80-4210	/130-RG402 /130-00001 Thru /130-00007
80-4211	/133-RG405 /133-00001 Thru /133-00011
80-4212	/130-RG402 /130-00001 Thru /130-00007
80-4213	/133-RG405 /133-00001 Thru /133-00011
80-4307	/133-RG405 /133-00001 Thru /133-00011
80-4308	/130-RG402 /130-00001 Thru /130-00007

CONNECTOR M39012/	CABLE M17
80-4310	/130-RG402 /130-00001 Thru /130-00007
80-4311	/133-RG405 /133-00001 Thru /133-00011
80-4312	/130-RG402 /130-00001 Thru /130-00007
80-4313	/133-RG405 /133-00001 Thru /133-00011
81-3005	/133-RG405 /133-00001 Thru /133-00011
81-3006	/130-RG402 /130-00001 Thru /130-00007
81-3007	/133-RG405 /133-00001 Thru /133-00011
81-3008	/130-RG402 /130-00001 Thru /130-00007
81-3009	/133-RG405 /133-00001 Thru /133-00011
81-3010	/130-RG402 /130-00001 Thru /130-00007
81-3011	/133-RG405 /133-00001 Thru /133-00011

CONNECTOR M39012/	CABLE M17
81-3012	/130-RG402 /130-00001 Thru /130-00007
81-3207	/133-RG405 /133-00001 Thru /133-00011
81-3208	/130-RG402 /130-00001 Thru /130-00007
81-3210	/130-RG402 /130-00001 Thru /130-00007
81-3211	/133-RG405 /133-00001 Thru /133-00011
81-3212	/130-RG402 /130-00001 Thru /130-00007
81-3213	/133-RG405 /133-00001 Thru /133-00011
81-4007	/133-RG405 /133-00001 Thru /133-00011
81-4008	/130-RG402 /130-00001 Thru /130-00007
81-4009	/133-RG405 /133-00001 Thru /133-00011
81-4010	/130-RG402 /130-00001 Thru /130-00007

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 23 of 25)

CONNECTOR M39012/	CABLE M17
80-3107	/133-00011
80-3108	/130-RG402
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80-3109	/133-RG405
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	/133-00009
	/133-00010
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80-3207	/133-RG405
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CONNECTOR M39012/	CABLE M17
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	/133-00011
80-3208	/130-RG402
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	/130-00007
80-3210	/130-RG402
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	/130-00004
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	/133-00006
	/133-00007
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	/133-00009
	/133-00010
	/133-00011
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CONNECTOR M39012/	CABLE M17
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80-3310	/130-RG402
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	/130-00006
	/130-00007
80-3313	/133-RG405
	/133-00001

Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 24 of 25)

CONNECTOR M39012/	CABLE M17
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	/133-00009
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80-4007	/133-RG405
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	/133-00009
	/133-00010
	/133-00011
80-4008	/130-RG402
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	/130-00004
	/130-00005
	/130-00006
	/130-00007
80-4009	/133-RG405
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	/133-00007
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	/133-00009
	/133-00010
	/133-00011
80-4010	/130-RG402
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	/130-00007
80-4011	/133-RG405
	/133-00001
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	/133-00003
	/133-00004
	/133-00005
	/133-00006

CONNECTOR M39012/	CABLE M17
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	/133-00011
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	/133-00003

CONNECTOR M39012/	CABLE M17
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80-4207	/133-RG405
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80-4210	/130-RG402
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	/133-00007
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Table 4. MIL-PRF-39012 Connector to MIL-C-17 Cable Cross Reference (Sheet 25 of 25)

CONNECTOR M39012/	CABLE M17
80-4211	/133-00009
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	/133-00009
	/133-00010
	/133-00011
80-4307	/133-RG405
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	/133-00009
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	/133-00011
80-4308	/130-RG402
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80-4310	/130-RG402
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	/130-00004
	/130-00005
	/130-00006
	/130-00007
80-4311	/133-RG405
	/133-00001

CONNECTOR M39012/	CABLE M17
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	/133-00006
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81-3005	/133-RG405
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81-3006	/130-RG402
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	/130-00007
81-3007	/133-RG405

CONNECTOR M39012/	CABLE M17
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81-3008	/130-RG402
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81-3009	/133-RG405
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	/133-00011
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	/133-00011
81-3012	/130-RG402
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	/130-00003
	/130-00004
	/130-00005

Table 5. MIL-PRF-39012 Connector Cross Reference (Sheet 1 of 2)

SERIES	SLASH	MATING	CONTACT	FORM	COUPLING	SIZE	MOUNT
N	01	Plug	Pin	Straight	THD	5/8-24	
N	02	Flange Mount Jack	Socket	Straight	THD	5/8-24	R
N	02	Jack	Socket	Straight	THD	5/8-24	
N	03	Jam Nut Mount Jack	Socket	Straight	THD	5/8-24	R
N	05	Plug	Pin	Right Angle	THD	5/8-24	
C	06	Plug	Pin	Straight	BAY		
C	07	Jack	Socket	Straight	BAY		
C	08	Flange Mount Jack	Socket	Straight	BAY		R
C	09	Jam Nut Mount Jack	Socket	Straight	BAY		FR
C	10	Plug	Pin	Right Angle	BAY		
C	11	Jam Nut Mount Jack	Socket	Straight	BAY		R
C	15	Plug	Pin	Straight	BAY		
BNC	16	Plug	Pin	Straight	BAY		
BNC	17	Jack	Socket	Straight	BAY		
BNC	18	Flange Mount Jack	Socket	Straight	BAY		R
BNC	19	Jam Nut Mount Jack	Socket	Straight	BAY		R
BNC	20	Plug	Pin	Right Angle	BAY		
TNC	26	Plug	Pin	Straight	THD	7/16-28	
TNC	27	Jack	Socket	Straight	THD	7/16-28	
TNC	28	Jam Nut Mount Jack	Socket	Straight	THD	7/16-28	R
TNC	29	Flange Mount Jack	Socket	Straight	THD	7/16-28	R
TNC	30	Plug	Pin	Right Angle	THD	7/16-28	
SC	35	Plug	Pin	Straight	BAY		
SC	36	Jack	Socket	Straight	BAY		
SC	38	Flange Mount Jack	Socket	Straight	BAY		R
SC	39	Plug	Pin	Right Angle	BAY		
SC	40	Jam Nut Mount Jack	Socket	Straight	BAY		R
SMA	55	Plug	Pin	Straight	THD	1/4-32	
SMA	56	Plug	Pin	Right Angle	THD	1/4-32	
SMA	57	Jack	Socket	Straight	THD	1/4-32	
SMA	58	Flange Mount Jack	Socket	Straight	THD	1/4-32	R
SMA	59	Jam Nut Mount Jack	Socket	Straight	THD	1/4-32	R
QSC	63	Plug	Pin	Straight	PP		
QSC	64	Jack	Socket	Straight	PP		
QNC	65	Plug	Pin	Straight	PP		
QNC	66	Jack	Socket	Straight	PP		
SMB	67	Plug	Socket	Straight	PP		

Table 5. MIL-PRF-39012 Connector Cross Reference (Sheet 2 of 2)

SERIES	SLASH	MATING	CONTACT	FORM	COUPLING	SIZE	MOUNT
SMB	68	Jack	Pin	Straight	PP		
SMB	69	Plug	Socket	Right Angle	PP		
SMB	70	Jam Nut Mount Jack	Pin	Straight	PP		R
SMC	73	Plug	Socket	Straight	THD	10-32	
SMC	74	Jack	Pin	Straight	THD	10-32	
SMC	75	Plug	Socket	Right Angle	THD	10-32	
SMC	76	Jam Nut Mount Jack	Pin	Straight	THD	10-32	R
SMA	79	Plug	Pin	Straight	THD	1/4-32	
SMA	80	Plug	Pin	Right Angle	THD	1/4-32	
SMA	81	Jack	Socket	Straight	THD	1/4-32	
SMA	82	Flange Mount Jack	Socket	Straight	THD	1/4-32	R
SMA	83	Jack	Socket	Straight	THD	1/4-32	R
QSC	84	Plug	Pin	Right Angle	PP		
QSC	85	Jam Nut Mount Jack	Socket	Straight	PP		
QSC	86	Jam Nut Mount Jack	Socket	Straight	PP		
QSC	87	Jam Nut Mount Receptacle	Socket	Straight	PP		
QNC	88	Plug	Pin	Right Angle	PP		
QNC	89	Jam Nut Mount Jack	Socket	Straight	PP		R
SMA	92	Plug	None	Straight	THD	1/4-32	
MHV	100	Plug	Pin	Straight	BAY		
MHV	101	Jack	Socket	Straight	BAY		
MHV	102	Flange Mount Jack	Socket	Straight	BAY		R
SHV	105	Plug	Socket	Straight	BAY		
SHV	106	Plug	Socket	Right Angle	BAY		
SHV	107	Jack	Pin	Straight	BAY		R
SHV	108	Flange Mount Jack	Pin	Straight	BAY		R
SHV	111	Jam Nut Mount Jack	Pin	Straight	BAY		R
TNC	112	Plug	Pin	Straight	THD	7/16-28	
TNC	113	Jack	Socket	Straight	THD	7/16-28	
TNC	114	Plug	Pin	Right Angle	THD	7/16-28	
TNC	115	Jam Nut Mount Jack	Socket	Straight	THD	7/16-28	R
TNC	116	Flange Mount Jack	Socket	Straight	THD	7/16-28	R
N	129	Plug	Pin	Straight	THD	5/8-24	
N	130	Plug	Pin	Right Angle	THD	5/8-24	
N	131	Jack	Socket	Straight	THD	5/8-24	
N	132	Jack	Socket	Straight	THD	5/8-24	R

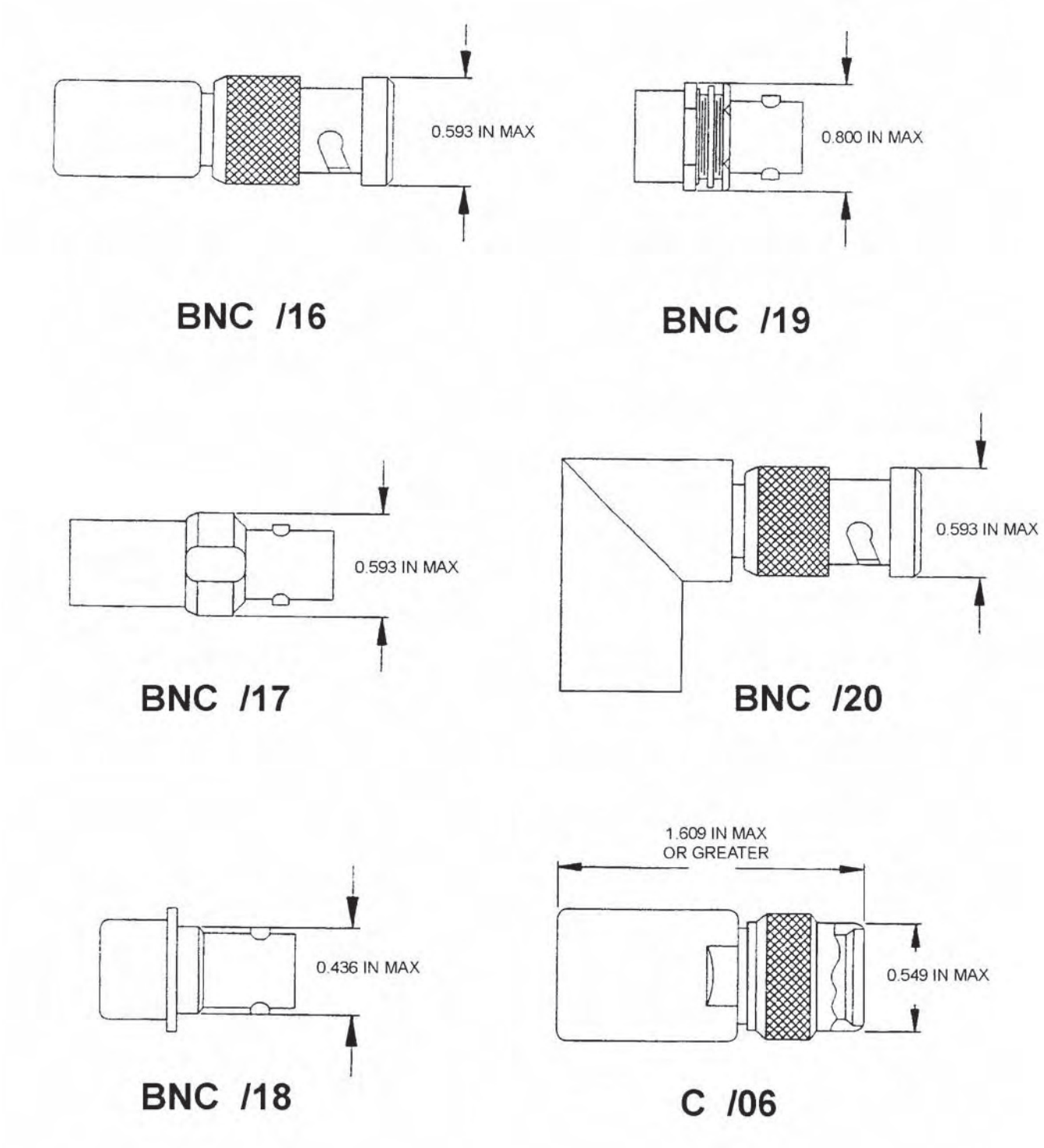


Figure 5. MIL-PRF-39012 Coaxial Connector Series (Sheet 1 of 12)

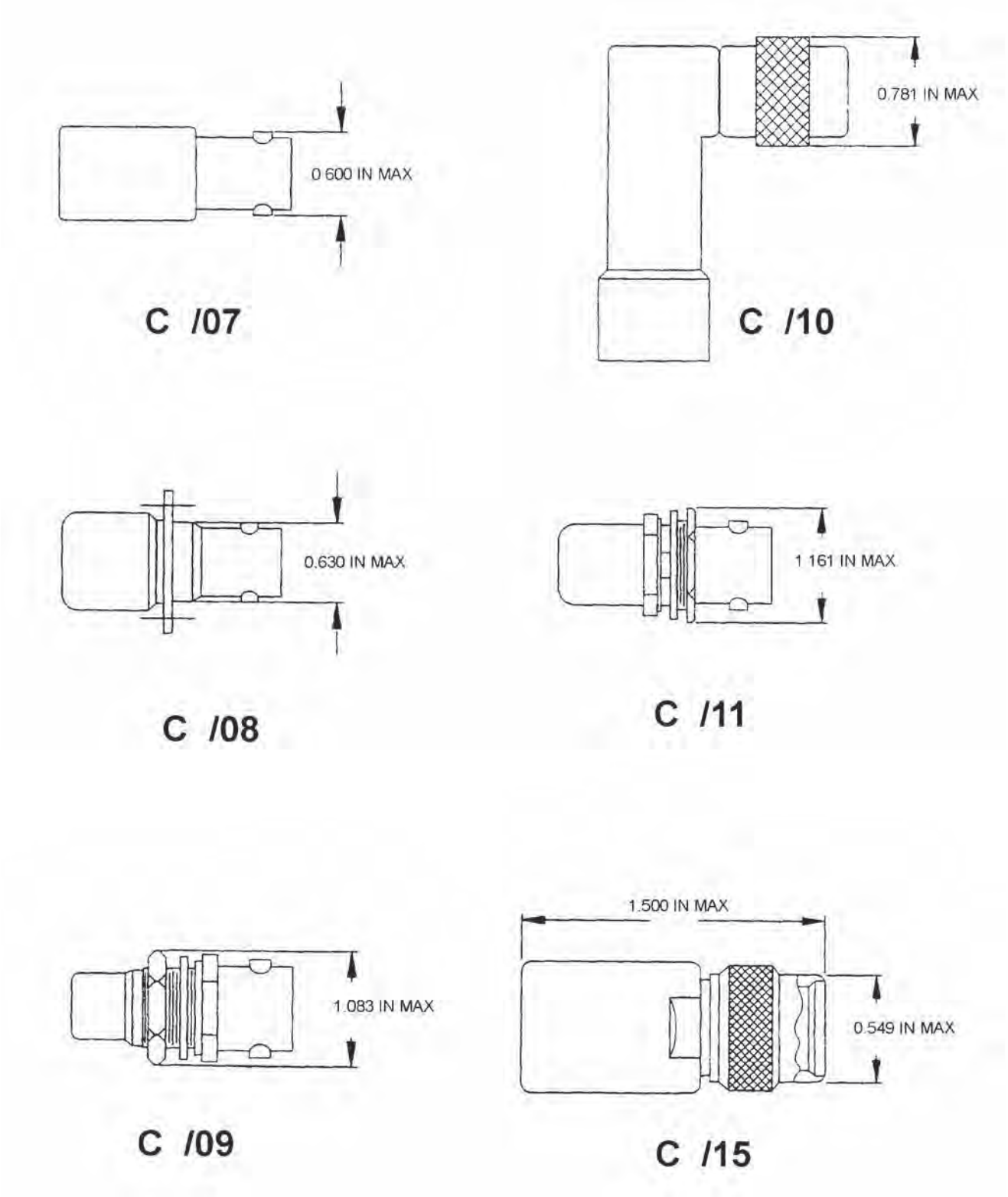


Figure 5. MIL-PRF-39012 Coaxial Connector Series (Sheet 2 of 12)

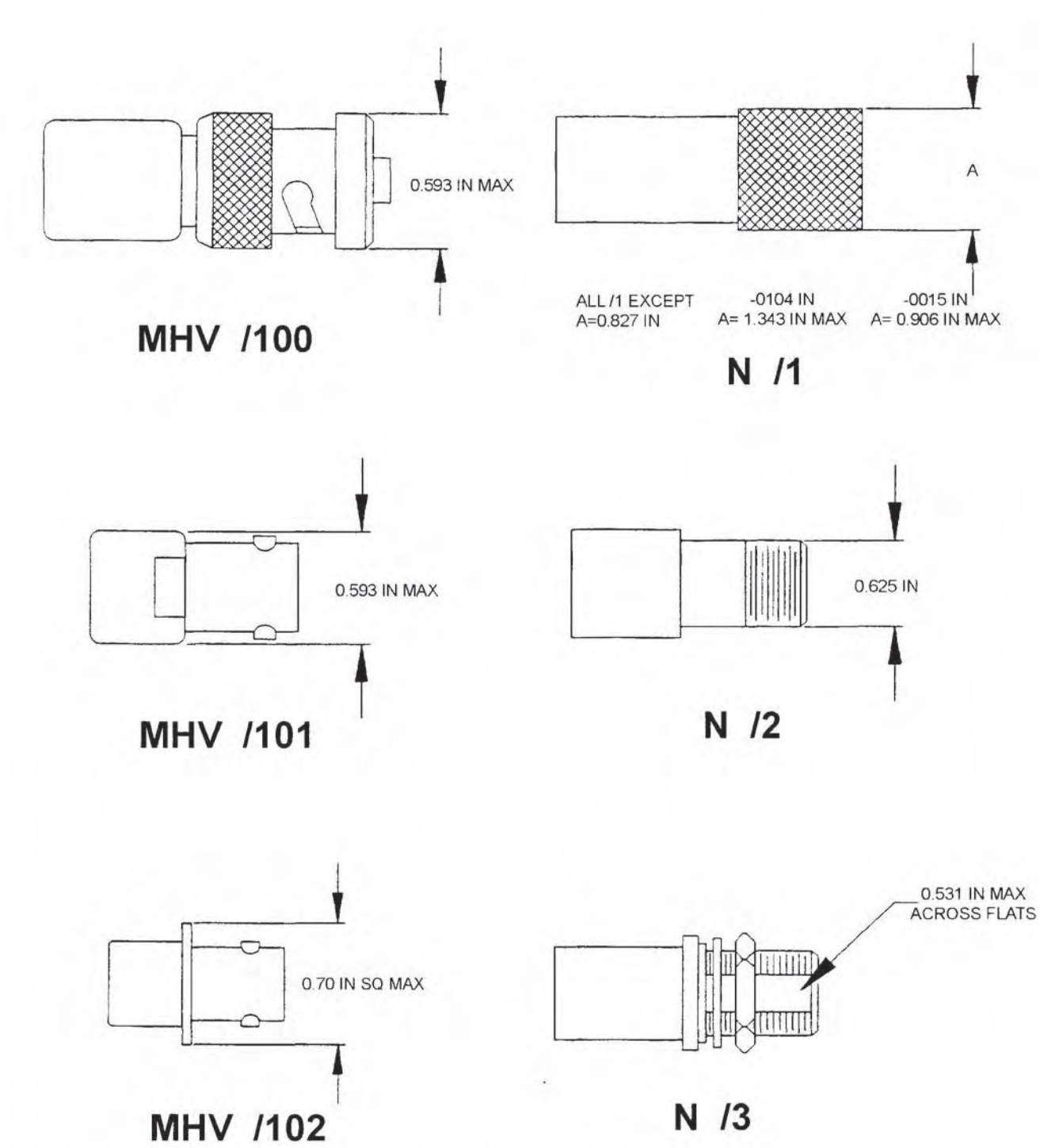


Figure 5. MIL-PRF-39012 Coaxial Connector Series (Sheet 3 of 12)

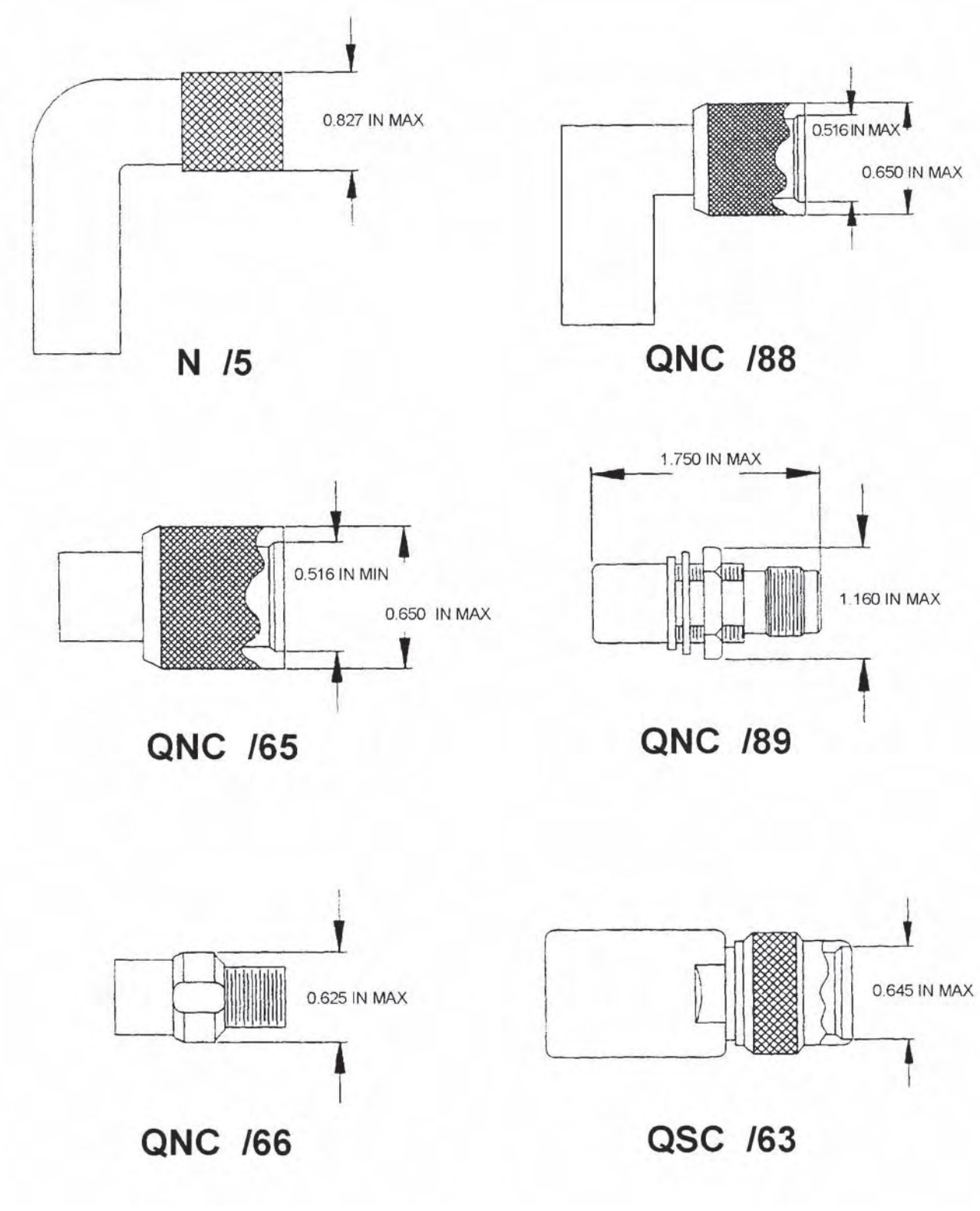


Figure 5. MIL-PRF-39012 Coaxial Connector Series (Sheet 4 of 12)

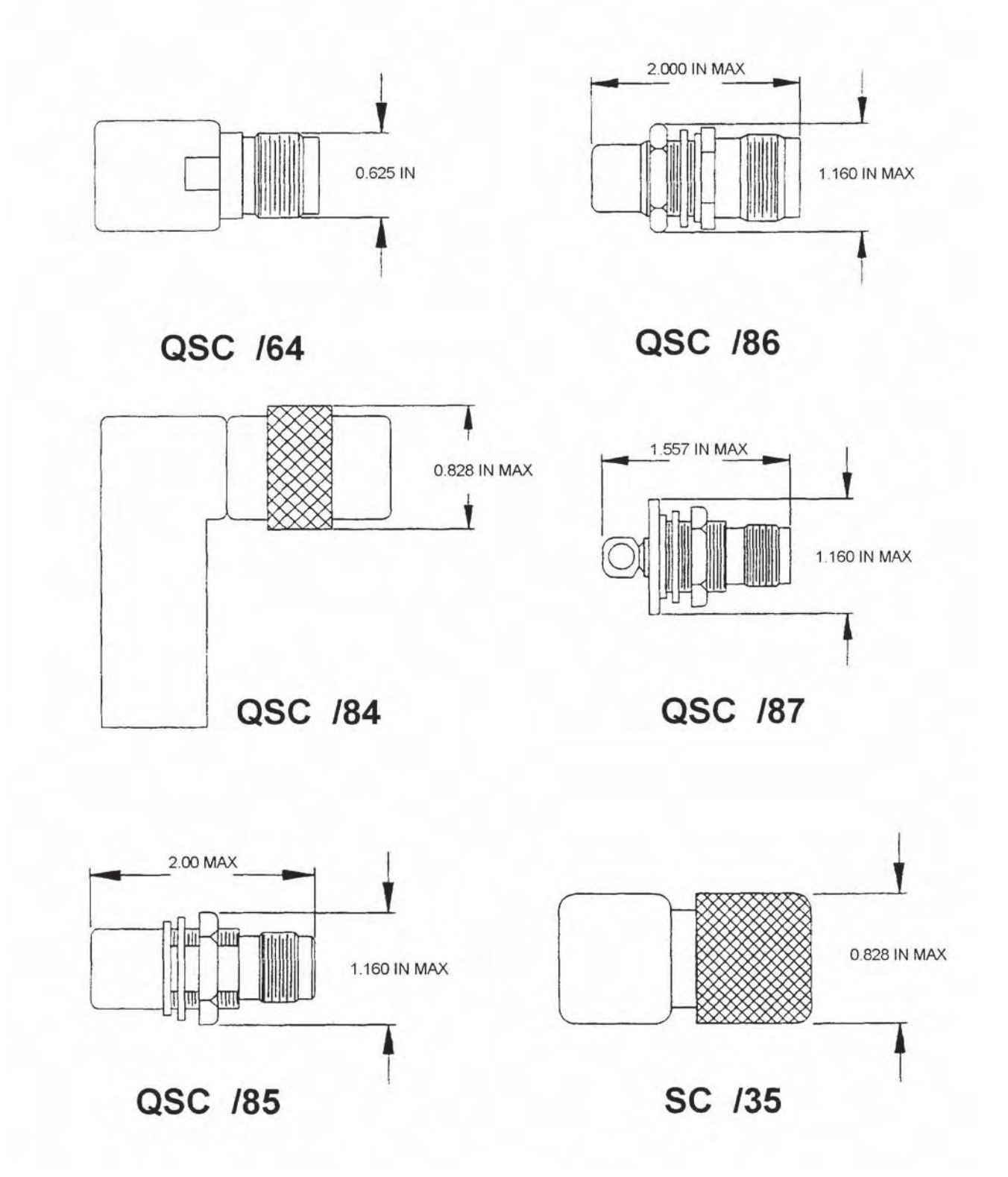


Figure 5. MIL-PRF-39012 Coaxial Connector Series (Sheet 5 of 12)

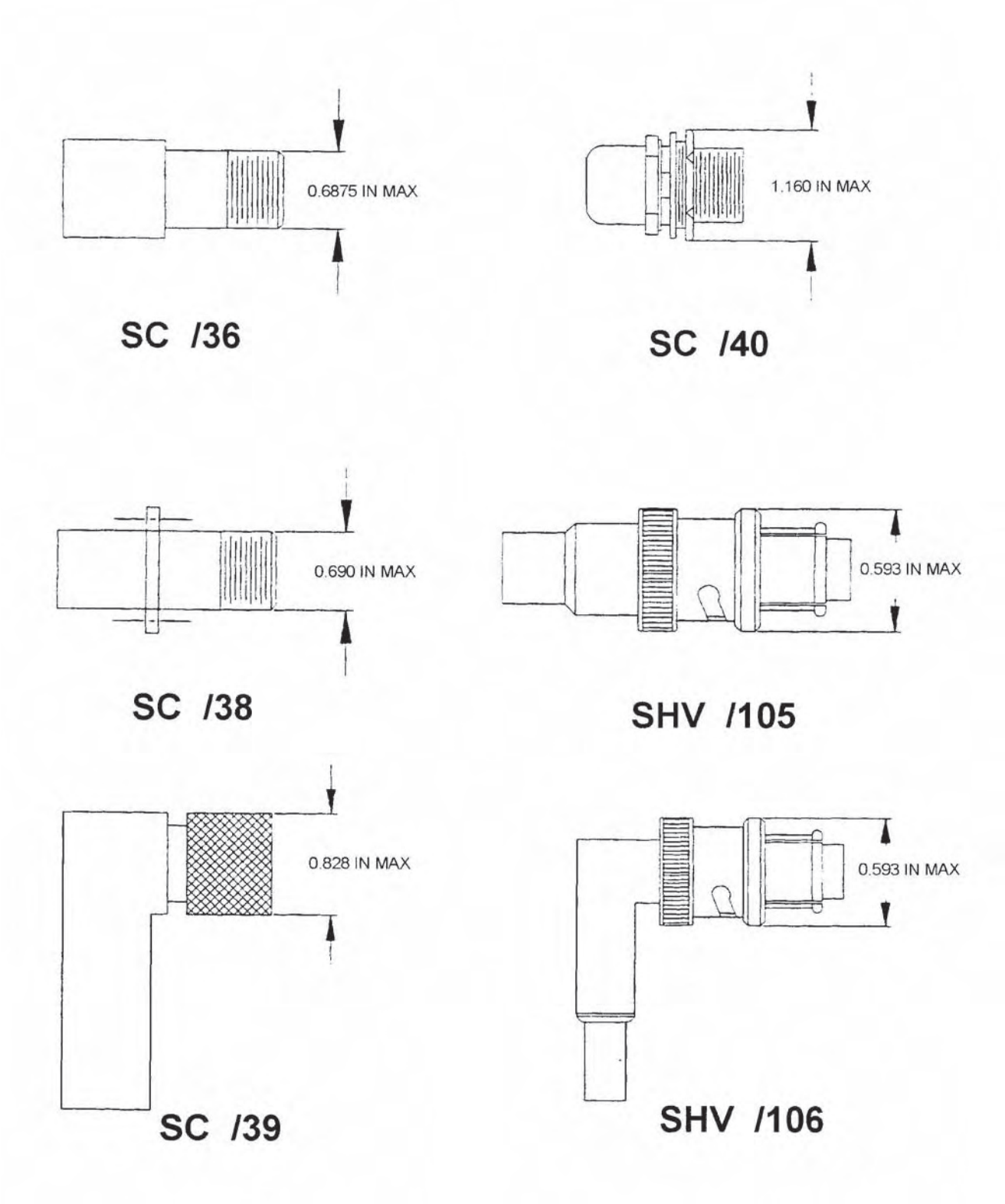


Figure 5. MIL-PRF-39012 Coaxial Connector Series (Sheet 6 of 12)

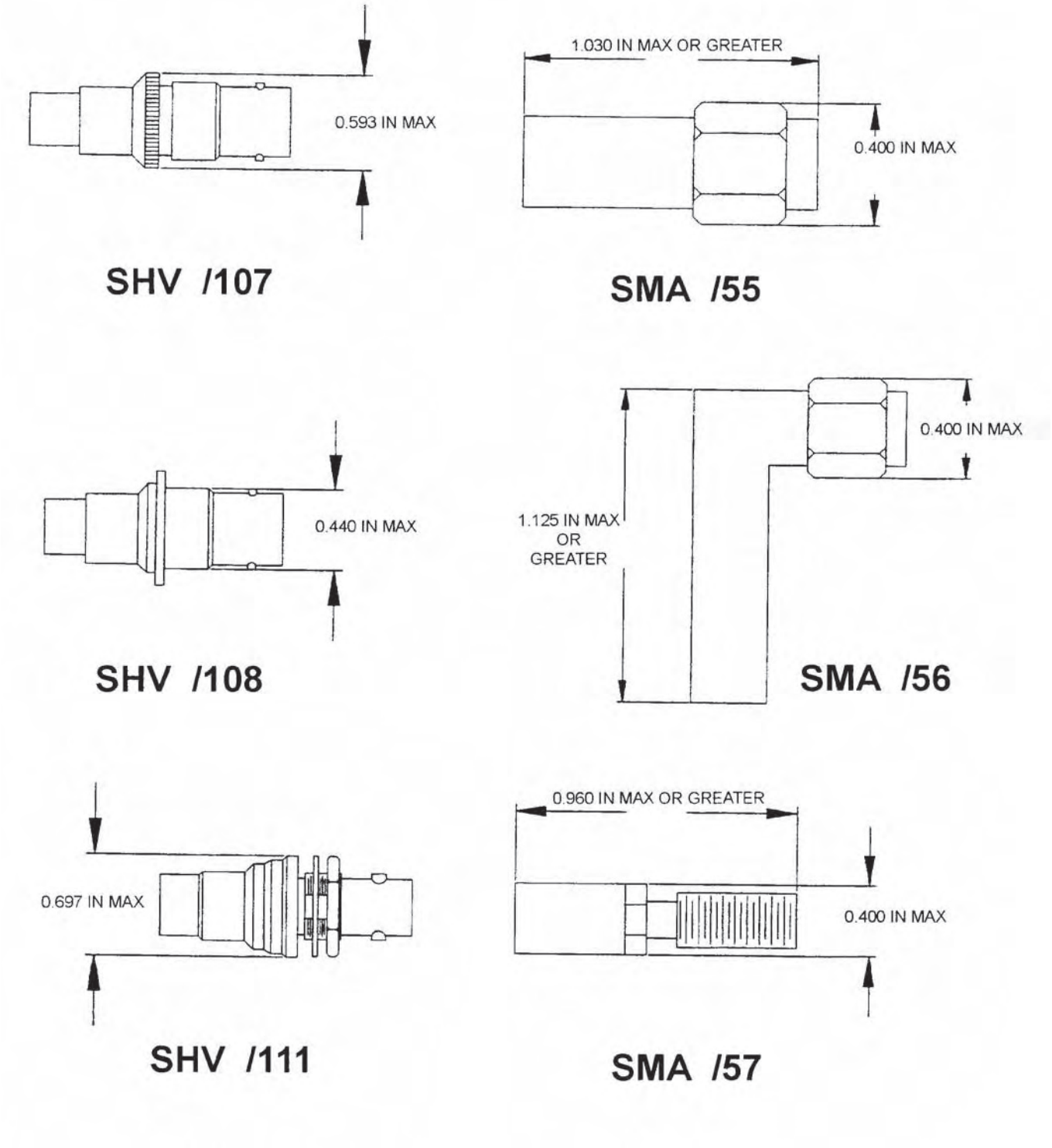


Figure 5. MIL-PRF-39012 Coaxial Connector Series (Sheet 7 of 12)

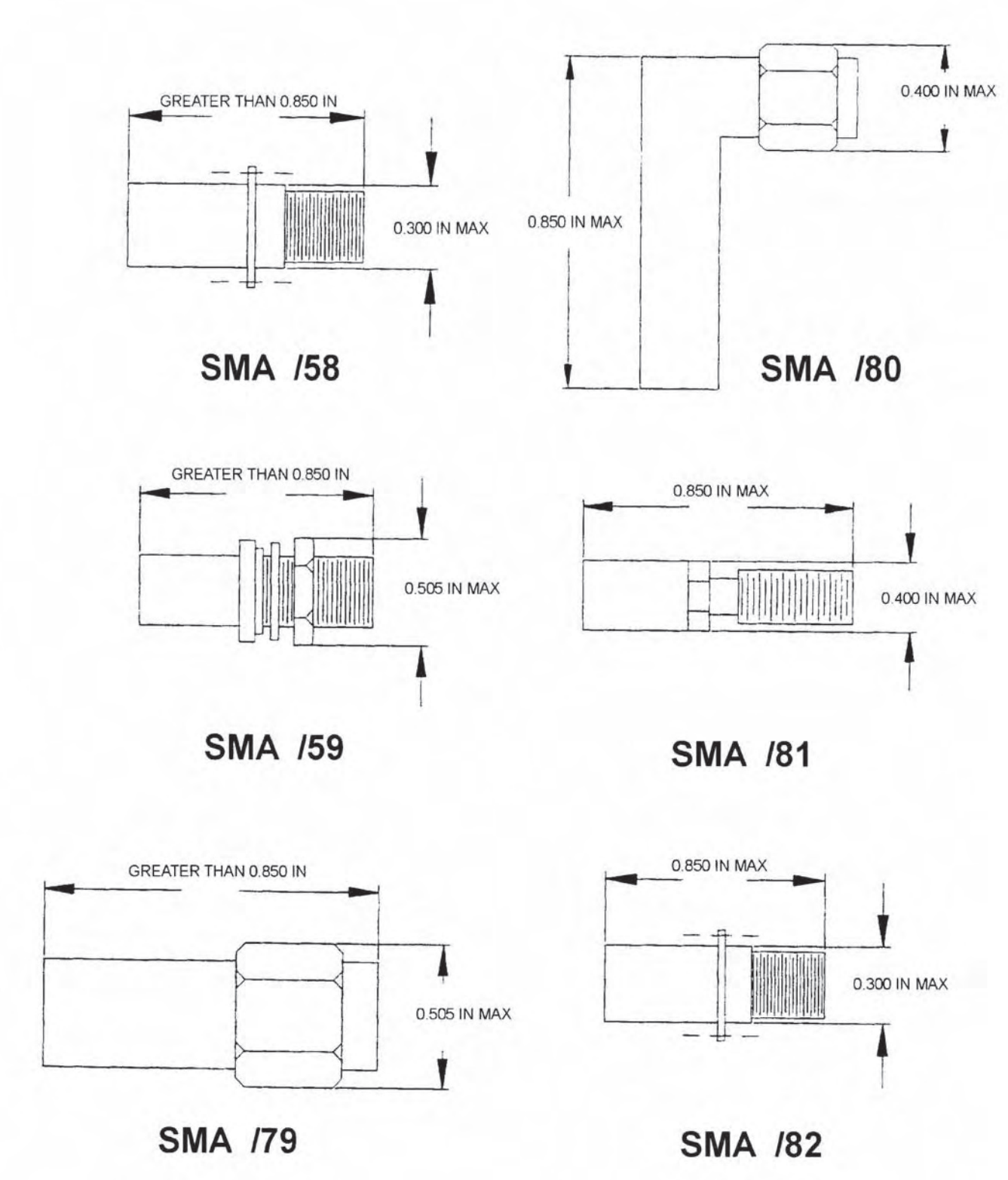


Figure 5. MIL-PRF-39012 Coaxial Connector Series (Sheet 8 of 12)

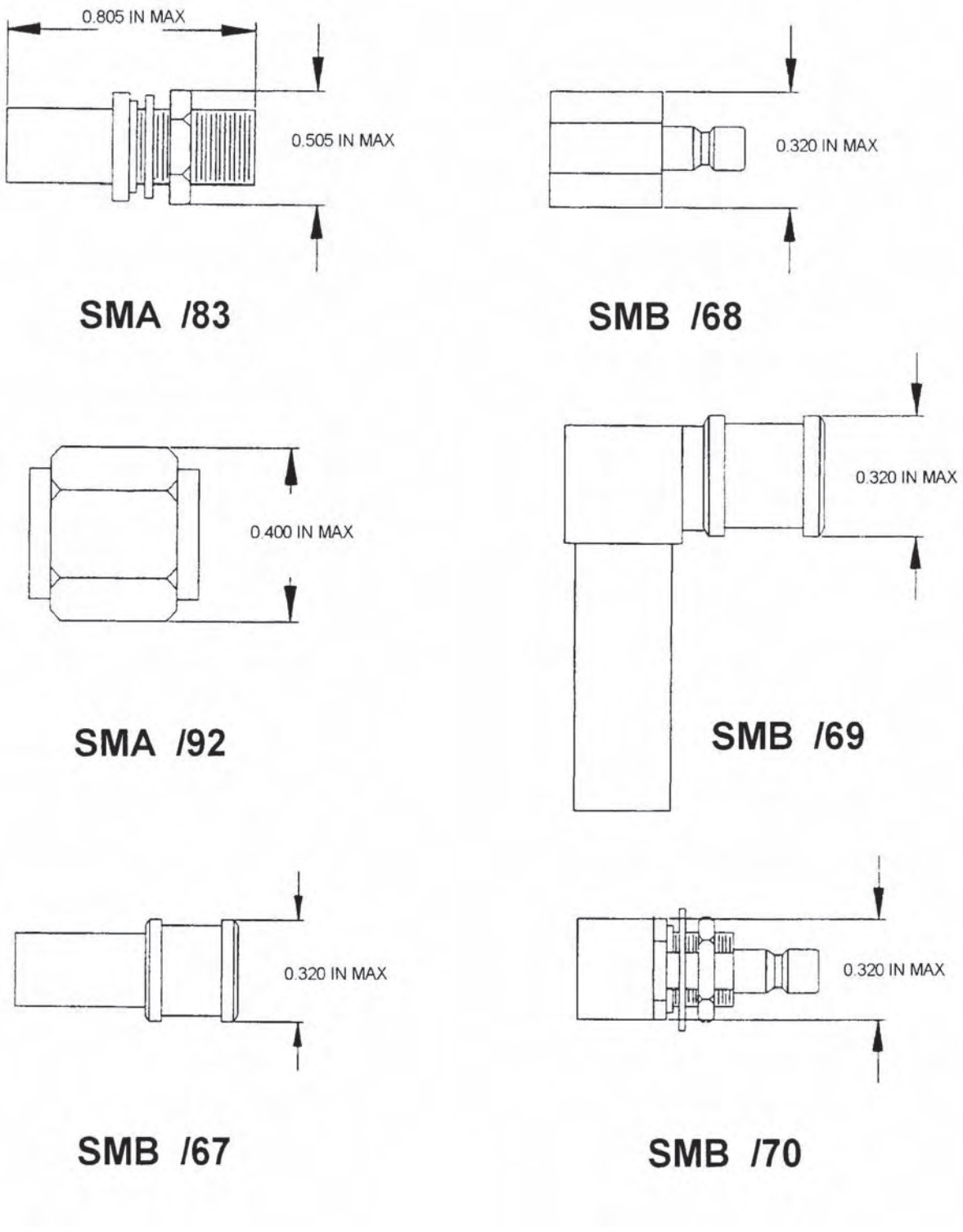


Figure 5. MIL-PRF-39012 Coaxial Connector Series (Sheet 9 of 12)

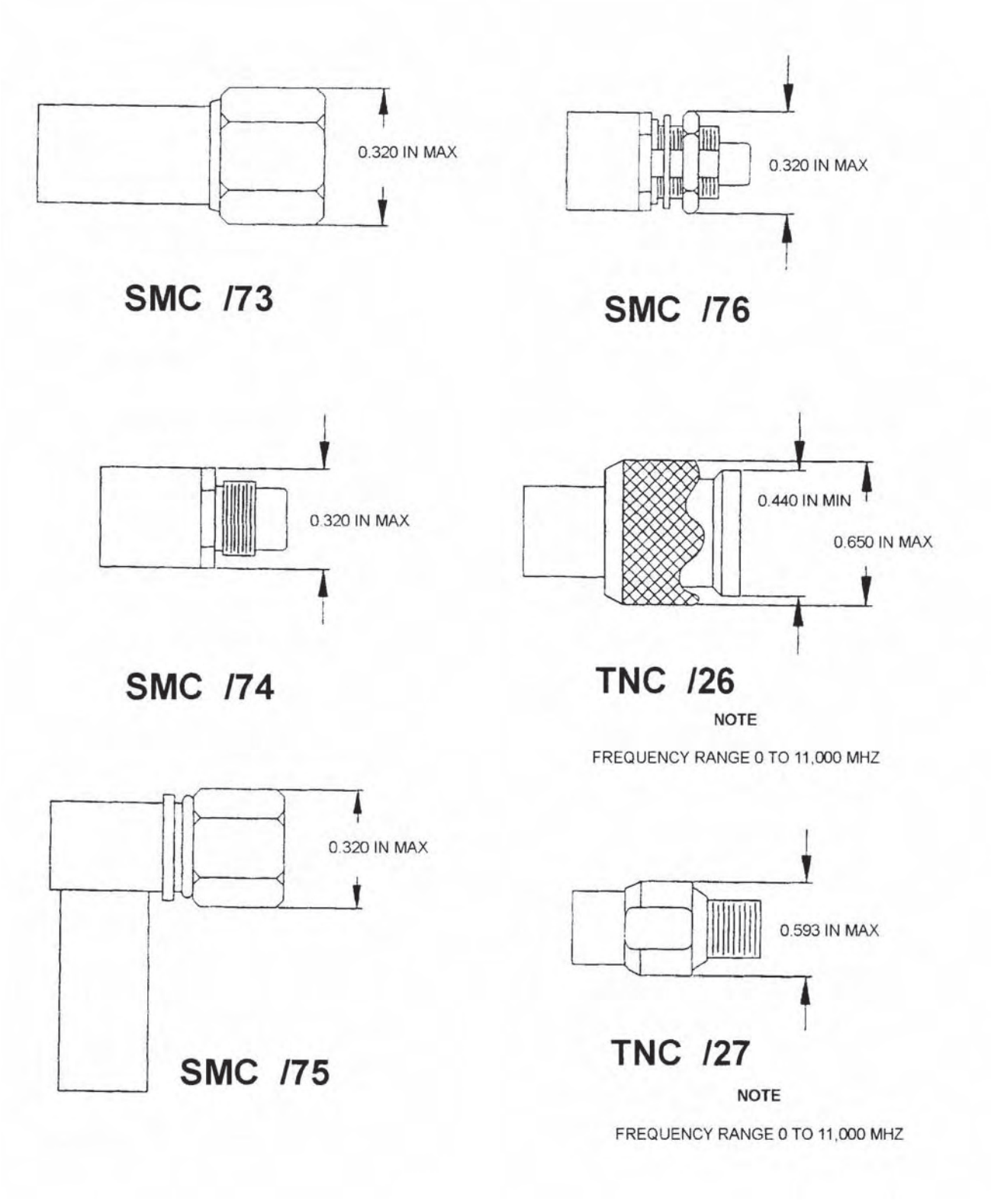


Figure 5. MIL-PRF-39012 Coaxial Connector Series (Sheet 10 of 12)

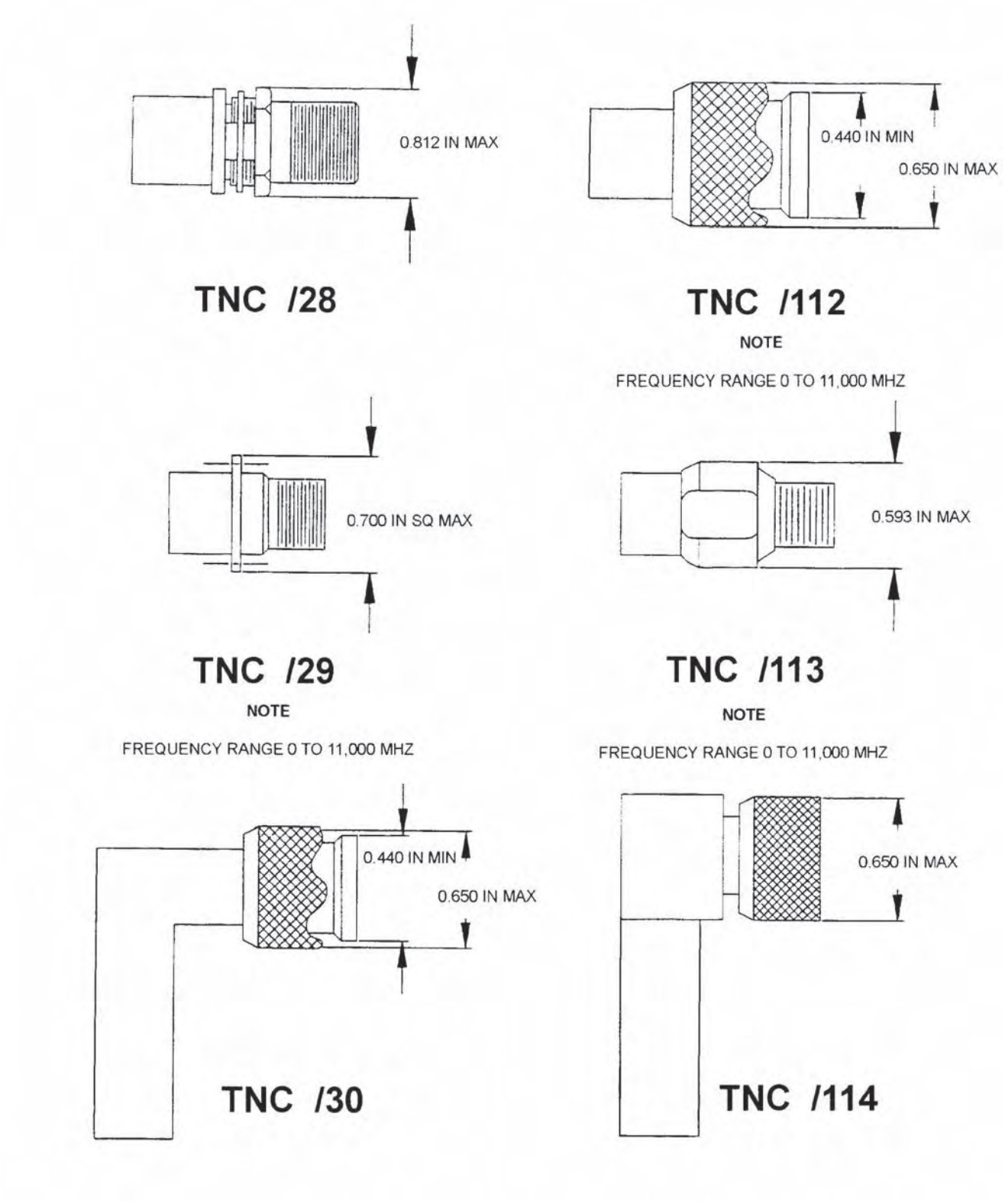


Figure 5. MIL-PRF-39012 Coaxial Connector Series (Sheet 11 of 12)

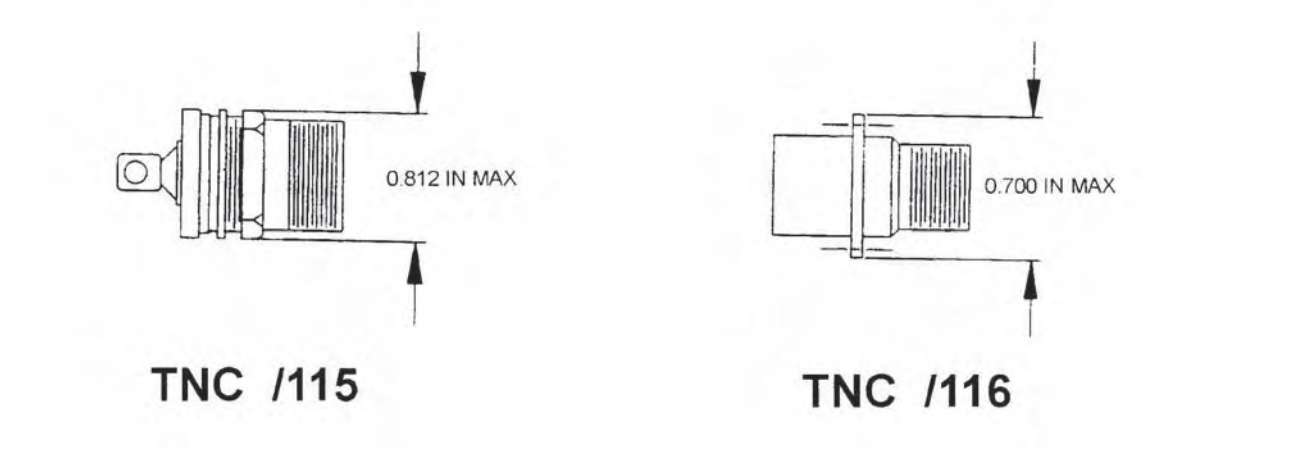


Figure 5. MIL-PRF-39012 Coaxial Connector Series (Sheet 12 of 12)

30. RF CONNECTOR BUILD-UP.

31. GENERAL PROCEDURES. Cables with woven or braided outer jackets shall have two wraps of insulating tape placed around the jacket behind the point of stripping.

32. SOLDERING. Soldering procedures shall be accomplished in accordance with NAVAIR 01-1A-505-1, WP 016 00.

33. CRIMPING. Using the tools identified in Table 6 for the type connector being assembled, perform crimping procedures in accordance with NAVAIR 01-1A-505-1, WP 013 00.

34. CABLE STRIPPING. Cable stripping procedures shall be performed in accordance with the tooling and procedural information contained in NAVAIR 01-1A-505-1, WP 009 00. For specific cable stripping dimensions, refer to the vendor provided dimensions and tolerances that are included with every connector (as required by MIL-PRF-39012E, paragraph 3.28, titled "Assembly Instructions").

35. SERIES BNC CONNECTOR BUILD-UP. To assemble Series BNC connectors perform procedures (Figure 6).

36. SERIES C CONNECTOR BUILD-UP. To assemble Series, C connectors, perform procedures (Figure 7).

37. SERIES N CONNECTOR BUILD-UP. To assemble Series N connectors, perform procedures (Figure 8).

38. SERIES QL AND QM CONNECTOR BUILD-UP. To assemble Series QL and QM connectors, perform procedures (Figure 9).

39. SERIES SC CONNECTOR BUILD-UP. To assemble Series SC connectors, perform procedures (Figure 10).

40. SERIES SMA CONNECTOR BUILD-UP. To assemble Series SMA connectors, perform procedures (Figure 11).

41. SERIES SMB CONNECTOR BUILD-UP. To assemble Series SMB connectors, perform procedures (Figure 12).

42. SERIES SMC CONNECTOR BUILD-UP. To assemble Series SMC connectors, perform procedures (Figure 13).

43. SERIES TNC CONNECTOR BUILD-UP. To assemble Series TNC connectors, perform procedures (Figure 14).

44. CONNECTOR SEALING.

45. MOISTURE PROOFING. The preferred method of moisture proofing coaxial connectors is the use of the threaded coupled connectors, The second method is use of the insulating tape. Perform procedures (Figure 15).

46. CLEANING AND PRESERVATION.

47. For connector cleaning and preservation procedures refer to NAVAIR 01-1A-505-1, WP 026 00.

Table 6. M39012 Connector Crimping Information (Sheet 1 of 17)

NOTE

This table is a cross reference from M39012 connector part number to contact and ferrule part number. Also listed are any necessary tools, dies, or positioners. These cross references are provided in case the contacts or ferrules are the only parts needing replacement.

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
01-0016					/5-01	/5-35A or -55A	
01-0017					/5-01	/5-61	
01-0018					/5-01	/5-61	
01-0021					/5-01	/5-61	
01-0022					/5-01	/5-61	
01-0023					/5-01	/5-61	
01-0024					/5-01	/5-61	
01-0027					/5-01	/5-35A or -55A	
01-0501	/1-10	/1-01	/1-13	/1-50	/5-01	/5-61 or -25A	
01-0502	/1-10	/1-01	/1-13	/1-51	/5-01	/5-61 or -25A	
01-0503	/1-11	/1-01	/1-13	/1-52	/5-01	/5-19B or -05A, -11A, -57A	
01-0504	/1-11	/1-01	/1-13	/1-53	/5-01	/5-19B or -05A, 11A, -57A	
02-0019					/5-01	/5-35A or -55A	
02-0020					/5-01	/5-61	
02-0021					/5-01	/5-61	
02-0024					/5-01	/5-61	
02-0025					/5-01	/5-61	
02-0026					/5-01	/5-61	
02-0027					/5-01	/5-35A or -55A	
02-0028					/5-01	/5-61	
02-0029					/5-01	/5-61	
02-0030					/5-01	/5-61	
02-0034					/5-01	/5-61	
02-0039					/5-01	/5-61	
02-0040					/5-01	/5-35A or -55A	
02-0041					/5-01	/5-61	
02-0042					/5-01	/5-61	
02-0043					/5-01	/5-35A or -55A	
02-0501	/2-10	/1-01	/1-13	/2-50	/5-01	/5-61 or -25A	
02-0502	/2-10	/1-01	/1-13	/2-51	/5-01	/5-61 or -25A	

Table 6. M39012 Connector Crimping Information (Sheet 2 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
02-0503	/2-11	/1-01	/1-13	/2-52	/5-01	/5-19B or -05A, -11A, -57A	
02-0504	/2-11	/1-01	/1-13	/2-53	/5-01	/5-19B or -05A, -11A, -57A	
02-0511	/2-10	/1-01	/1-13	/2-50	/5-01	/5-61 or -25A	
02-0512	/2-10	/1-01	/1-13	/2-51	/5-01	/5-61 or -25A	
02-0513	/2-11	/1-01	/1-13	/2-52	/5-01	/5-19B or -05A, -11A, -57A	
02-0514	/2-11	/1-01	/1-13	/2-53	/5-01	/5-19B or -05A, -11A, -57A	
03-0013					/5-01	/5-35A or -55A	
03-0014					/5-01	/5-61	
03-0015					/5-01	/5-61	
03-0018					/5-01	/5-61	
03-0019					/5-01	/5-61	
03-0020					/5-01	/5-61	
03-0021					/5-01	/5-61	
03-0023					/5-01	/5-35A or -55A	
03-0501	/3-10	/1-01	/1-14	/3-50	/5-01	/5-61 or -25A	
03-0502	/3-10	/1-01	/1-14	/3-51	/5-01	/5-61 or -25A	
03-0503	/3-11	/1-01	/1-14	/3-52	/5-01	/5-19B or -05A, -11A, -57A	
03-0504	/3-11	/1-01	/1-14	/3-53	/5-01	/5-19B or -05A, -11A, -57A	
05-0004					/5-01	/5-61	
05-0005					/5-01	/5-61	
05-0013					/5-01	/5-35A or -55A	
05-0014					/5-01	/5-61	
05-0015					/5-01	/5-61	
05-0016					/5-01	/5-35A or -55A	
05-0017					/5-01	/5-61	
05-0018					/5-01	/5-61	
05-0501	/5-10	/1-01	/1-13	/5-50	/5-01	/5-61 or -25A	
05-0502	/5-10	/1-01	/1-13	/5-51	/5-01	/5-61 or -25A	
05-0503	/5-11	/1-01	/1-13	/5-52	/5-01	/5-19B or -05A, -11A, -57A	
05-0504	/5-11	/1-01	/1-13	/5-53	/5-01	/5-19B or -05A, -11A, -57A	

Table 6. M39012 Connector Crimping Information (Sheet 3 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
06-0027					/5-01	/5-35A or -55A	
06-0028					/5-01	/5-61	
06-0029					/5-01	/5-61	
06-0030					/5-01	/5-61	
06-0031					/5-01	/5-61	
06-0032					/5-01	/5-61	
07-0011					/5-01	/5-61	
07-0012					/5-01	/5-61	
07-0013					/5-01	/5-61	
07-0014					/5-01	/5-35A or -55A	
07-0015					/5-01	/5-61	
07-0016					/5-01	/5-61	
08-0010					/5-01	/5-61	
08-0011					/5-01	/5-61	
08-0012					/5-01	/5-61	
08-0013					/5-01	/5-35A or -55A	
08-0014					/5-01	/5-61	
08-0024					/5-01	/5-61	
10-0006					/5-01	/5-61	
10-0007					/5-01	/5-61	
10-0008					/5-01	/5-61	
10-0011					/5-01	/5-61	
11-0012					/5-01	/5-05A or -55A	
11-0013					/5-01	/5-61	
11-0014					/5-01	/5-61	
11-0015					/5-01	/5-61	
11-0016					/5-01	/5-61	
11-0017					/5-01	/5-61	
16-0013					/5-01	/5-19B or -05A -11A, -57A	
16-0014				-	/5-01	/5-19B or -05A, -11A, -57A	
16-0015					/5-01	/5-19A or -07A, -13A, -59A	
16-0016					/5-01	/5-41B or -05B, -09A	

Table 6. M39012 Connector Crimping Information (Sheet 4 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
16-0017					/5-01	/5-19A or -07A, -13A, -59A	
16-0020					/5-01	/5-19A or -07A, -13A, -59A	
16-0222					/5-01	/5-35B or -03A	
16-0501	/16-12	/1-01	/1-12	/16-50	/5-01	15-41B or -05B, -09A	
16-0502	/16-11	/1-01	/1-12	/16-50	/5-01	/5-41B or -05B, -09A	
16-0503	/16-10	/1-01	/1-12	/16-51	/5-01	/5-19B or -05A, -11A -57A	
16-0504	/16-10	/1-01	/1-12	/16-52	/5-01	/5-19B or -05A, -11A, -57A	
17-0013					/5-01	/5-19B or -05A, -11A, -57A	
17-0014					/5-01	/5-19B or -05A, -11A, -57A	
17-0015					/5-01	/5-19A or -07A, -13A, -59A	
17-0016					/5-01	/5-41B or -05B, -09A	
17-0017					/5-01	/5-19A or -07A, -13A, -59A	
17-0020					/5-01	/5-19A or -07A, -13A, -59A	
17-0222					/5-01	/5-35B or -03A	
17-0501	/17-12	/1-01	/1-12	/17-50	/5-01	/5-41B or -05B, -09A	
17-0502	/17-11	/1-01	/1-12	/17-50	/5-01	/5-41B or -05B, -09A	
17-0503	/17-10	/1-01	/1-12	/17-51	/5-01	/5-19B or -05A, -11A, -57A	
17-0504	/17-10	/1-01	/1-12	/17-52	/5-01	/5-19B or -05A, -11A, -57A	
18-0013					/5-01	/5-19B or -05A, -11A, -57A	
18-0014					/5-01	/5-19B or -05A, -11A, -57A	
18-0015					/5-01	/5-19A or -07A, -13A, -59A	

Table 6. M39012 Connector Crimping Information (Sheet 5 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
18-0016					/5-01	/5-41 B or -05B, -09A	
18-0017					/5-01	/5-19A or -07A, -13A, -59A	
18-0020					/5-01	/5-19A or -07A, -13A, -59A	
18-0221					/5-01	/5-35B or -03A	
18-0501	/18-12	/1-01	/1-12	/18-50	/5-01	/5-41B or -05B, -09A	
18-0502	/18-11	/1-01	/1-12	/18-50	/5-01	/5-41B or -05B, -09A	
18-0503	/18-10	/1-01	/1-12	/18-51	/5-01	/5-19B or -05A, -11A, -57A	
18-0504	/18-10	/1-01	/1-12	/18-52	/5-01	/5-19B or -05A, -11A, -57A	
19-0013					/5-01	/5-19B or -05A, -11A, -57A	
19-0014					/5-01	/5-19B or -05A, -11A, -57A	
19-0015					/5-01	/5-19A or -07A, -13A, -59A	
19-0016					/5-01	/5-41 B or -05A, -09A	
19-0017					/5-01	/5-19A or -07A, -13A, -59A	
19-0020					/5-01	/5-19A or -07A, -13A, -59A	
19-0221					/5-01	/5-35B or -03A	
19-0501	/19-12	/1-01	/1-12	/19-50	/5-01	/5-41B or -05B, -09A	
19-0502	/19-11	/1-01	/1-12	/19-50	/5-01	/5-41B or -05B, -09A	
19-0503	/19-10	/1-01	/1-12	/19-51	/5-01	/5-19B or -05A, -11A, -57	
19-0504	/19-10	/1-01	/1-12	/19-52	/5-01	/5-19B or -05A, -11A, -57A	
20-0006					/5-01	/5-19B or -05A, -11A, -57	
20-0007					/5-01	/5-19B or -05A, -11A, -57A	

Table 6. M39012 Connector Crimping Information (Sheet 6 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
20-0010					/5-01	/5-19A or -07A, -13A, -59A	
20-0011					/5-01	/5-19A or -07A, -13A, -59A	
20-0501	/20-12	/1-01	/1-12	/20-50	/5-01	/5-41B or -05B, -09A	
20-0502	/20-11	/1-01	/1-12	/20-50	/5-01	/5-41B or -05B, -09A	
20-0503	/20-10	/1-01	/1-12	/20-51	/5-01	/5-19B or -05A, -11A, -57A	
20-0504	/20-10	/1-01	/1-12	/20-52	/5-01	/5-19B or -05A, -11A, -57A	
26-0010					/5-01	/5-19B or -05A, -11A, -57A	
26-0011					/5-01	/5-19B or -05A, -11A, -57A	
26-0012					/5-01	/5-19A or -07A, -13A, -59A	
26-0013					/5-01	/5-41B or -05B, -09A	
26-0014					/5-01	/5-19A or -07A, -13A, -59A	
26-0021					/5-01	/5-19A or -07A, -13A, -59A	
26-0022					/5-01	/5-35B or -03A	
26-0023					/5-01	/5-41B or -05B, -09A	
26-0501	/26-12	/1-01	/1-12	/26-50	/5-01	/5-41B or -05B, -09A	
26-0502	/26-11	/1-01	/1-12	/26-50	/5-01	/5-41B or -05B, -09A	
26-0503	/26-10	/1-01	/1-12	/26-51	/5-01	/5-19B or -05A, -11A, -57	
26-0504	/26-10	/1-01	/1-12	/26-52	/5-01	/5-19B or -05A, 11A, -57	
27-0010					/5-01	/5-19B or -05A, -11A, -57A	
27-0011					/5-01	/5-19B or -05A, -11A, -57	
27-0012					/5-01	/5-19A or -07A, -13A, -59A	

Table 6. M39012 Connector Crimping Information (Sheet 7 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
27-0013					/5-01	/5-41B or -05B, -09A	
27-0014					/5-01	/5-19A or -07A, -13A, -59A	
27-0021					/5-01	/5-19A or -07A, -13A, -59A	
27-0022					/5-01	/5-05B or -03A	
27-0023					/5-01	/5-41B or -05B, -09A	
27-0501	/27-12	/1-01	/1-12	/27-50	/5-01	/5-41B or -05B, -09A	
27-0502	/27-11	/1-01	/1-12	/27-50	/5-01	/5-41B or -05B, -09A	
27-0503	/27-10	/1-01	/1-12	/27-51	/5-01	/5-19B or -05A, -11A, -57A	
27-0504	/27-10	/1-01	/1-12	/27-52	/5-01	/5-19B or -05A, -11A, -57A	
28-0010					/5-01	/5-19B or -05A, -11A, -57A	
28-0011					/5-01	/5-19B or -05A, -11A, -57A	
28-0012					/5-01	/5-19A or -07A, -13A, -59A	
28-0013					/5-01	/5-41B or -05B, -09A	
28-0014					/5-01	/5-19A or -07A, -13A, -59A	
28-0021					/5-01	/5-19A or -07A, -13A, -59A	
28-0022					/5-01	/5-35B or -03A	
28-0023					/5-01	/5-41 B or -05B, -09A	
28-0501	/28-12	/1-01	/1-12	/28-50	/5-01	/5-41B or -05B, -09A	
28-0502	/28-11	/1-01	/1-12	/28-50	/5-01	/5-41B or -05B, -09A	
28-0503	/28-10	/1-01	/1-12	/28-51	/5-01	/5-19B or -05A, -11A, -57A	
28-0504	/28-10	/1-01	/1-12	/28-52	/5-01	/5-19B or -05A, -11A, -57A	

Table 6. M39012 Connector Crimping Information (Sheet 8 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
29-0010					/5-01	/5-19B or -05A, -11A, -57A	
29-0011					/5-01	/5-19B or -05A, -11A, -57A	
29-0012					/5-01	/5-19A or -07A, -13A, -59A	
29-0013					/5-01	/5-41B or -05B, -09A	
29-0014					/5-01	/5-19A or -07A, -13A, -59A	
29-0021					/5-01	/5-19A or -07A, -13A, -59A	
29-0022					/5-01	/5-35B or -03A	
29-0501	/29-12	/1-01	/1-12	/29-50	/5-01	/5-41B or -05B, -09A	
29-0502	/29-11	/1-01	/1-12	/29-50	/5-01	/5-41B or -05B, -09A	
29-0503	/29-10	/1-01	/1-12	/29-51	/5-01	/5-19B or -05A, -11A, -57A	
29-0504	/29-10	/1-01	/1-12	/29-52	/5-01	/5-19B or -05A, -11A, -57A	
30-0010					/5-01	/5-19B or -05A, -11A, -57A	
30-0011					/5-01	/5-19B or -05A, -11A, -57A	
30-0012					/5-01	/5-19A or -07A, -13A, -59A	
30-0013					/5-01	/5-41B or -05B, -09A	
30-0014					/5-01	/5-19A or -07A, -13A, -59A	
30-0021					/5-01	/5-19A or -07A, -13A, -59A	
30-0022					/5-01	/5-35B or -03A	
30-0501	/30-12	/1-01	/1-12	/30-50	/5-01	/5-41B or -05B, -09A	
30-0502	/30-11	/1-01	/1-12	/30-50	/5-01	/5-41B or -05B, -09A	
30-0503	/30-10	/1-01	/1-12	/30-51	/5-01	/5-19B or -05A, -11A, -57A	

Table 6. M39012 Connector Crimping Information (Sheet 9 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
30-0504	/30-10	/1-01	/1-12	/30-52	/5-01	/5-19B or -05A, -11A, -57A	
35-0010					/5-01	/5-35A or -55A	
35-0011					/5-01	/5-61	
35-0012					/5-01	/5-61	
35-0013					/5-01	/5-61	
35-0014					/5-01	/5-61	
35-0501	/35-10	/1-01	/1-14	/35-50	/5-01	/5-61 or -25A	
35-0502	/35-10	/1-01	/1-14	/35-51	/5-01	/5-61 or -25A	
35-0503	/35-11	/1-01	/1-14	/35-52	/5-01	/5-19B or -05A, -11A, -57A	
36-0007					/5-01	/5-61	
36-0008					/5-01	/5-61	
36-0009					/5-01	/5-35A or -55A	
36-0010					/5-01	/5-61	
36-0027					/5-01	/5-61	
36-0501	/36-10	/1-01	/1-14	/36-50	/5-01	/5-61 or -25A	
36-0502	/36-10	/1-01	/1-14	/36-51	/5-01	/5-61 or -25A	
36-0503	/36-11	/1-01	/1-14	/36-52	/5-01	/5-19B or -05A, -11A, -57A	
38-0006					/5-01	/5-61	
38-0007					/5-01	/5-61	
38-0008					/5-01	/5-35A or -55A	
38-0018					/5-01	/5-61	
38-0501	/38-10	/1-01	/1-14	/38-50	/5-01	/5-61 or -25A	
38-0502	/38-10	/1-01	/1-14	/38-51	/5-01	/5-81 or -25A	
38-0503	/38-10	/1-01	/1-14	/38-52	/5-01	/5-19B or -05A, -11A, -57A	
39-0004					/5-01	/5-61	
39-0005					/5-01	/5-61	
39-0009					/5-01	/5-61	
39-0501	/39-10	/1-01	/1-13	/39-50	/5-01	/5-61 or -25A	
39-0502	/39-10	/1-01	/1-13	/39-51	/5-01	/5-61 or -25A	
39-0503	/39-11	/1-01	/1-13	/39-52	/5-01	/5-19B or -05A, -11A, -57A	
40-0014					/5-01	/5-35A or -55A	
40-0015					/5-01	/5-61	

Table 6. M39012 Connector Crimping Information (Sheet 10 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
40-0016					/5-01	/5-61	
40-0017					/5-01	/5-61	
40-0018					/5-01	/5-61	
40-0021					/5-01	/5-61	
40-0022					/5-01	/5-61	
40-0501	/40-10	/1-01	/1-14	/40-50	/5-01	/5-61 or -25A	
40-0502	/40-10	/1-01	/1-14	/40-51	/5-01	/5-61 or -25A	
40-0503	/40-11	/1-01	/1-14	/40-52	/5-01	/5-19B or -05A, -11A, -57A	
55-3025					/5-01	/5-33B or -03B	
55-3026					/5-01	/5-35B or -03A	
55-3027					/5-01	/5-41B or -05B, -09A	
55-0028					/5-01	/5-19B or -05A, -11A, -57A	
55-3029					/5-01	/5-19B or -05A, -11A, -57A	
55-0125					/5-01	/5-33B or -03B	
55-3126					/5-01	/5-35B or -03A	
55-0127					/5-01	/5-41B or -05B, -09A	
55-0128					/5-01	/5-19B or -05A, -11A, -57A	
55-3129					/5-01	/5-19B or -05A, -11A, -57A	
55-3502	/55-10	/1-01	/1-15	/55-50	/5-01	/5-19B or -05A, -11A, -57A	
55-3602	/55-10	/1-01	/1-15	/55-50	/5-01	/5-19B or -05A, -11A, -57A	
55-4025					/5-01	/5-33B or -03B	
55-4026					/5-01	/5-35B or -03A	
55-4027					/5-01	/5-41B or -05B, -09A	
55-4028					/5-01	/5-19B or -05A, -11A, -57A	
55-4029					/5-01	/5-19B or -05A, -11A, -57A	
55-4125					/5-01	/5-33B or -03B	
55-4126					/5-01	/5-35B or -03A	

Table 6. M39012 Connector Crimping Information (Sheet 11 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
55-4127					/5-01	/5-41B or -05B, -09A	
55-4128					/5-01	/5-19B or -05A, -11A, -57A	
55-4129					/5-01	/5-19B or -05A, -11A, -57A	
55-4502	/55-10	/1-01	/1-15	/55-50	/5-01	/5-19B or -05A, -11A, -57A	
55-4602	/55-10	/1-01	/1-15	/55-50	/5-01	/5-19B or -05A, -11A, -57A	
56-3025					/5-01	/5-33B or -03B	
56-3026					/5-01	/5-35B or -03A	
56-3027					/5-01	/5-41B or -05B, -09A	
56-3028					/5-01	/5-19B or -05A, -11A, -57A	
56-3029					/5-01	/5-19B or -05A, -11A, -57A	
56-3125					/5-01	/5-33B or -03B	
56-3126					/5-01	/5-35B or -03A	
56-3127					/5-01	/5-41B or -05B, -09A	
56-3128					/5-01	/5-19B or -05A, -11A, -57A	
56-3129					/5-01	/5-19B or -05A, -11A, -57A	
56-3502	/56-10	/1-01	/1-15	/56-50	/5-01	/5-19B or -05A, -11A, -57A	
56-3602	/56-10	/1-01	/1-15	/56-50	/5-01	/5-19B or -05A, -11A, -57A	
56-4025					/5-01	/5-33B or -03B	
56-4026					/5-01	/5-05B or -03A	
56-4027					/5-01	/5-41B or -05B, -09A	
56-4028					/5-01	/5-19B or -05A, -11A, -57A	
56-4029					/5-01	/5-19B or -05A, -11A, -57A	
56-4125					/5-01	/5-33B or -03B	
56-4126					/5-01	/5-35B or -03A	

Table 6. M39012 Connector Crimping Information (Sheet 12 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
56-4127					/5-01	/5-41B or -05B, -09A	
56-4128					/5-01	/5-19B or -05A, -11A, -57A	
56-4129					/5-01	/5-19B or -05A, -11A, -57A	
56-4502	/56-10	/1-01	/1-15	/56-50	/5-01	/5-19B or -05A -11A, -57A	
56-4602	/56-10	/1-01	/1-15	/56-50	/5-01	/5-19B or -05A, -11A, -57A	
57-3025					/5-01	/5-33B or -03B	
57-3026					/5-01	/5-35B or -03A	
57-3027					/5-01	/5-41B or -05B, -09A	
57-3028					/5-01	/5-19B or -05A, -11A, -57A	
57-3029					/5-01	/5-19B or -05A, -11A, -57A	
57-3502	/57-10	/1-01	/1-15	/57-50	/5-01	/5-19B or -05A, -11A, -57A	
57-4025					/5-01	/5-33B or -03B	
57-4026					/5-01	/5-35B or -03A	
57-4027					/5-01	/5-41 B or -05B, -09A	
57-4028					/5-01	/5-19B or -05A, -11A, -57A	
57-4029					/5-01	/5-19B or -05A, -11A, -57A	
57-4502	/57-10	/1-01	/1-15	/57-30	/5-01	/5-19B or -05A, -11A, -57A	
58-3025					/5-01	/5-33B or -03B	
58-3026					/5-01	/5-35B or -03A	
58-3027					/5-01	/5-41B or -05B, -09A	
58-3028					/5-01	/5-19B or -05A, -11A, -57A	
58-3029					/5-01	/5-19B or -05A, -11A, -57A	
58-3502	/59-10	/1-01	/1-15	/59-50	/5-01	/5-19B or -05A, -11A, -57A	

Table 6. M39012 Connector Crimping Information (Sheet 13 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
58-4025					/5-01	/5-33B, or -03B	
58-4026					/5-01	/5-35B, or -03A	
58-4027					/5-01	/5-41B, or -05B, -09A	
58-4028					/5-01	/5-19B, or-05A, -11A, -57A	
58-4029					/5-01	/5-19B, or -05A, -11A, -57A	
58-4502	759-10	71-01	71-15	759-50	/5-01	/5-19B, or -05A, -11A, -57A	
59-3025					/5-01	/5-33B, or -03B	
59-3026					/5-01	/5-3 5B, or -03 A	
59-3027					/5-01	/5-41 B, or -05B, -09A	
59-3028					/5-01	/5-19B, or-05A, -11 A, -57A	
59-3029					/5-01	/5-19B or -05A. -11A, -57A	
59-3502	/59-10	71-01	71-15	759-50	/5-01	/5-19B, or -05A, -11A, -57A	
59-4025					/5-01	/5-33B, or -03B	
59-4026					/5-01	/5-35B, or -03A	
59-4027					/5-01	/5-41B, or -05B, -09A	
59-4028					/5-01	/5-19B, or -05A -11A,-57A	
59-4029					/5-01	/5-19B, or -05A, -11A, -57A	
59-4502	759-10	71-01	71-15	759-50	/5-01	/5-19B, or -05A, -11A, -57A	
67-0011					/5-01	/5-33B or -03B	
67-0012					/5-01	/5-35B or -03A	
67-0016					/5-01	/5-33B or -03B	
67-0017					/5-01	/5-35B or -03A	
68-0011					/5-01	/5-33B or -03B	
68-0012					/5-01	/5-35B or -03A	
68-0016					/5-01	/5-33B or -03B	
68-0017					/5-01	/5-3 5B or -03A	
69-0011					/5-01	/5-33B or -03B	
69-0012					/5-01	/5-35B or-03A	
69-0016					/5-01	/5-33B or -03B	
69-0017					/5-01	/5-35B or -03A	
70-0011					/5-01	/5-33Bor-03B	
70-0012					/5-01	/5-35B or -03A	

Table 6. M39012 Connector Crimping Information (Sheet 14 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
70-0016					/5-01	/5-33B or -03B	
70-0017					/5-01	/5-35B or -03A	
73-0011					/5-01	/5-33B or -03B	
73-0012					/5-01	/5-35B or -03A	
73-0016					/5-01	/5-33B or -03B	
73-0017					/5-01	/5-35B or -03A	
74-0011					/5-01	/5-33B or -03B	
74-0012					/5-01	/5-35B or -03A	
74-0013					/5-01	/5-41B or -05B, -09A	
74-0017					/5-01	/5-33B or -03B	
74-0018					/5-01	/5-35B or -03A	
75-0011					/5-01	/5-33B or -03B	
75-0012					/5-01	/5-35B or -03A	
75-0013					/5-01	/5-41B or -05B, -09A	
75-0017					/5-01	/5-33B or -03B	
75-0018					/5-01	/5-35B or -03A	
76-0011					/5-01	/5-33B or -03B	
76-0012					/5-01	/5-35B or -03A	
76-0013					/5-01	/5-41B or -05B, -09A	
76-0017					/5-01	/5-33B or -03B	
76-0018					/5-01	/5-35B or -03A	
79-3007	1/						
79-3008	1/						
79-3107	1/						
79-3108	1/						
79-3207					/36-01	/36-02	/36-04 or -18
79-3208					/36-01	/36-03	/36-04 or -18
79-3210					/5-01	/5-05B or -41B	
79-3307					/36-01	/36-02	/36-04 or -18
79-3308					/36-01	/36-03	/36-04 or -18
79-3310					/5-01	/5-05B or -41B	
79-4007	1/						
79-4008	1/						
79-4107	1/						

Table 6. M39012 Connector Crimping Information (Sheet 15 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
79-4108	1/						
79-4207					/36-01	/36-02	/36-04 or -18
79-4208					/36-01	/36-03	/36-04 or -18
79-4210					/5-01	/5-05B or -41B	
79-4307					/36-01	/36-02	/36-04 or -18
79-4308					/36-01	/36-03	/36-04 or -18
79-4310					/5-01	/5-05B or -41B	
80-3005	1/						
80-3006	1/						
80-3007	1/						
80-3008	1/						
80-0105	1/						
80-3106	1/						
80-3107	1/						
80-3108	1/						
80-3207					/36-01	/36-15	/36-15
80-3208					/36-01	/36-15	/36-15
80-3210					/5-01	/5-05B or -41B	
80-3307					/36-01	/36-15	/36-15
80-3308					/36-01	/36-15	/36-15
80-3310					/5-01	/5-05B or -41B	
80-4007	1/						
80-4008	1/						
80-4107	1/						
80-4108	1/						
80-4207					/36-01	/36-15	/36-15
80-4208					/36-01	/36-15	/36-15
80-4210					/5-01	/5-05B or -41B	
80-4307					/36-01	/36-15	/36-15
80-4308					/36-01	/36-15	/36-15
80-4310					/5-01	/5-05B or -41B	
81-3005	1/						
81-3006	1/						
81-3007	1/						
81-3008	1/						
81-3207					/36-01	/36-02	/36-05 or -17

Table 6. M39012 Connector Crimping Information (Sheet 16 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
81-3208					/36-01	/36-03	/36-05 or -17
81-3210					/5-01	/5-05B or -41B	
81-4007	1/						
81-4008	1/						
81-4207					/36-01	/36-02	/36-05 or -17
81-4208					/36-01	/36-03	/36-05 or -17
81-4210					/5-01	/5-05B or -41B	
82-3005	1/						
82-3006	1/						
82-3007	1/						
82-3008	1/						
82-3207					/36-01	/36-02	/36-05 or -17
82-3208					/36-01	/36-03	/36-05 or -17
82-3210					/5-01	/5-05B or -41B	
82-4005	1/						
82-4006	1/						
82-4007	1/						
82-4008	1/						
82-4207					/36-01	/36-02	/36-05 or -17
82-4208					/36-01	/36-03	/36-05 or -17
82-4210					/5-01	/5-05B or -41B	
83-3005	1/						
83-3006	1/						
83-3007	1/						
83-3008	1/						
83-3207					/36-01	/36-02	/36-05 or -17
83-3208					/36-01	/36-03	/36-05 or -17
83-3210					/5-01	/5-05B or -41B	
83-4007	1/						
83-4008	1/						
83-4207					/36-01	/36-02	/36-05 or -17
83-4208					/36-01	/36-03	/36-05 or -17
83-4210					/5-01	/5-05B or -41B	

Table 6. M39012 Connector Crimping Information (Sheet 17 of 17)

M39012/ CONNECTOR PART NO.	M39012 CONTACT PART NO.	M22520 CONTACT CRIMP TOOL	M22520 CONTACT CRIMP DIE	M39012 FERRULE PART NO.	M22520 FERRULE CRIMP TOOL	M22520 FERRULE DIE NO.	M22520 LOCATOR PIN OR POSITIONER
92-3103	/1						
92-3201					/36-01	/36-03	/36-06 or -16
92-3202					/5-01	/5-05B or -41B	
92-3301					/36-01	/36-03	/36-06 or -16
92-3302					/5-01	75-05B or -41B	
92-4003	1/						
92-4103	1/						
92-4201					/36-01	/36-03	/36-06 or -16
92-4202					/5-01	/5-05B or -41B	
92-4301					/36-01	/36-03	/36-06 or -16
92-4302					/5-01	/5-05B or -41B	
132-3203					/5-01	/5-XX 3/	
132-3204					/5-01	/5-XX 3/	

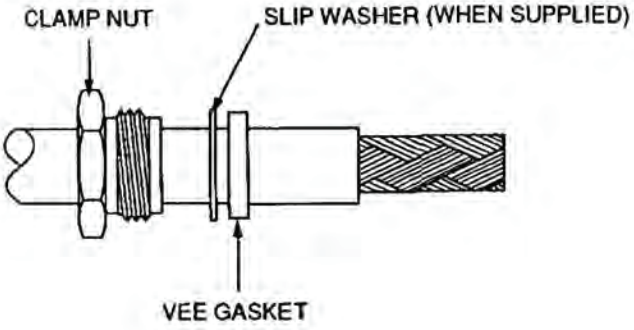
1/ Amphenol (74868) #227-901-2500 or Omni Spectra (26805) #2098-5066-54 (Series SMA Tool Kits).
2/ Omni Spectra (26805) #2098-5273-54 (Series N Tool Kit).
3/ Verification of most current tooling specification necessary to determine proper tool use.

A. STRAIGHT CLAMP CONNECTORS, CATEGORY A.

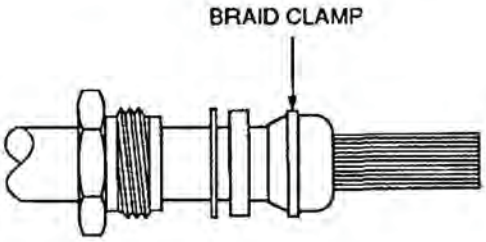
WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

1. CUT CABLE END SQUARE, IF REQUIRED, PLACE INSULATING TAPE ON CABLE. SLIDE CLAMP NUT, SLIP WASHER, AND GASKET OVER CABLE. STRIP CABLE JACKET TO DIMENSION

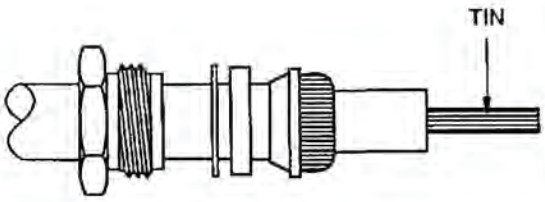


2. COMB OUT BRAID AND TAPER FORWARD. PLACE BRAID CLAMP OVER BRAID AND BUTT AGAINST JACKET.



3. UNIFORMLY FOLD BRAID BACK OVER BRAID CLAMP AND TRIM FLUSH WITH CLAMP SHOULDER. STRIP CENTER CONDUCTOR TO DIMENSION

4. TIN CENTER CONDUCTOR.



5. INSERT TINNED CONDUCTOR INTO CONTACT UNTIL IT BUTTS AGAINST DIELECTRIC. CONDUCTOR MUST BE VISIBLE THROUGH INSPECTION HOLE.

CAUTION

EXCESSIVE HEAT COULD DAMAGE DIELECTRIC.

6. SOLDER CONTACT TO CENTER CONDUCTOR.

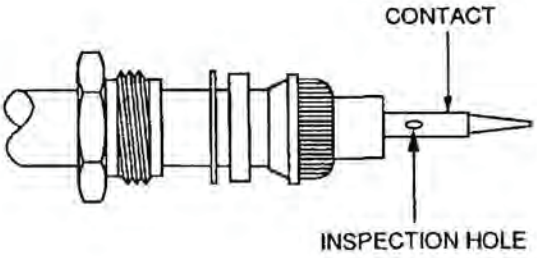


Figure 6. Series BNC Connector Build-Up (Sheet 1 of 5)

7. INSTALL CONNECTOR ON CABLE UNTIL IT BOTTOMS. ENSURE GASKET IS PROPERLY SEATED ON BRAID CLAMP.

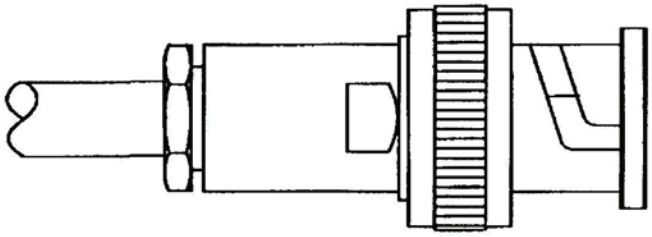
NOTE

HOLD CONNECTOR BODY STATIONARY WHILE TIGHTENING NUT.

8. IF APPLICABLE, REMOVE INSULATING TAPE. TIGHTEN NUT AND TORQUE TO VALVE FOR PROPER CABLE GROUP.

CABLE GROUP (RG/U)	TORQUE IN (IN/LBS)
55, 58, 59, 62, 71, 140, 141, 142, 210	10-15
161, 178	
8, 9, 115, 213, 214, 225	35-45

9. COMPLETED ASSEMBLY.



B. RIGHT ANGLE CLAMP CONNECTOR, CATEGORY A.

WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

1. CUT CABLE END SQUARE, IF REQUIRED, PLACE INSULATING TAPE ON CABLE. SLIDE CLAMP NUT, SLIP WASHER, AND GASKET OVER CABLE. STRIP CABLE JACKET TO DIMENSION

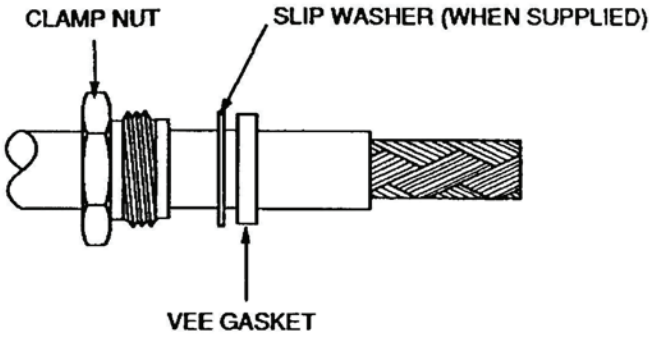
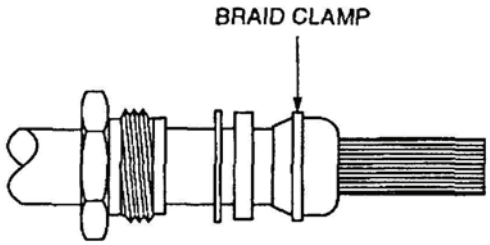


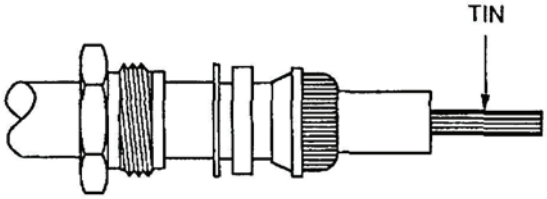
Figure 6. Series BNC Connector Build-Up (Sheet 2 of 5)

2. COMB OUT BRAID AND TAPER FORWARD. PLACE BRAID CLAMP OVER BRAID AND BUTT AGAINST JACKET.



3. UNIFORMLY FOLD BRAID BACK OVER BRAID CLAMP AND TRIM FLUSH WITH CLAMP SHOULDER. STRIP CENTER CONDUCTOR TO DIMENSION

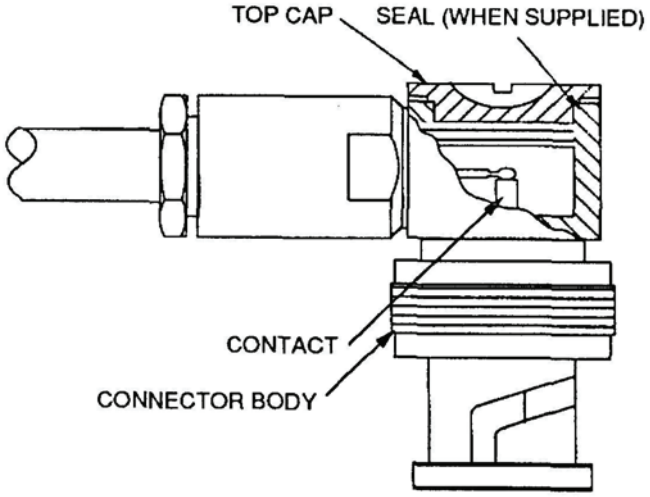
4. TIN CENTER CONDUCTOR.



5. INSTALL CONNECTOR ON CABLE UNTIL IT BOTTOMS. ENSURE GASKET IS PROPERLY SEATED ON BRAID CLAMP.

6. HAND TIGHTEN CLAMP NUT.

7. REMOVE TOP CAP. SOLDER CENTER CONDUCTOR TO CONTACT.



NOTE

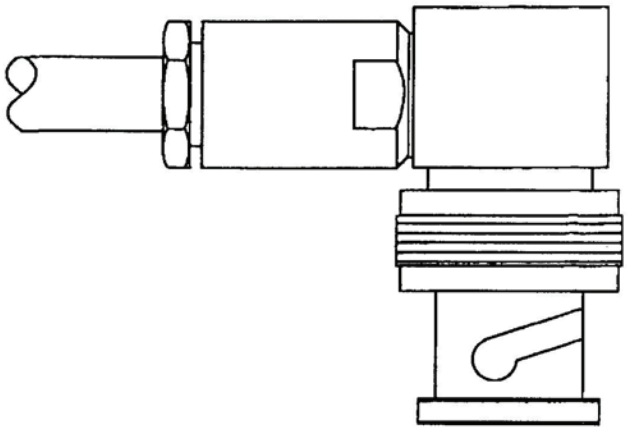
HOLD CONNECTOR STATIONARY WHILE TIGHTENING NUT.

8. TIGHTEN NUT AND TORQUE TO VALVE FOR PROPER CABLE GROUP.

CABLE GROUP (RG/U)	TORQUE IN (IN/LBS)
161, 178	15-25

Figure 6. Series BNC Connector Build-Up (Sheet 3 of 5)

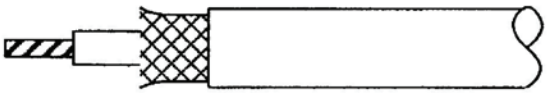
9. INSPECT SOLDER JOINT AND INSTALL TOP CAP.



C. CRIMP FERRULE CONNECTOR, CATEGORY C AND D.

WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.



1. SLIDE FERRULE ONTO CABLE.
2. STRIP CABLE TO DIMENSIONS FOR APPROPRIATE CONNECTOR AND FLARE BRAID.

3. CRIMP CONTACT AND INSERT CONTACT INTO CONNECTOR WITH BRAID OVER SUPPORT SLEEVE.

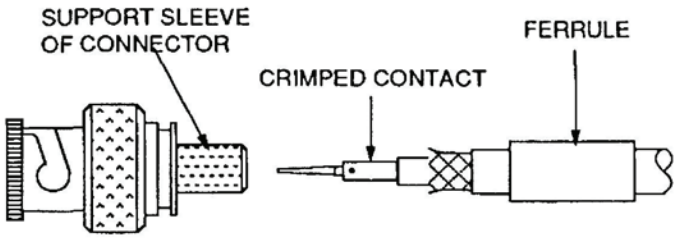
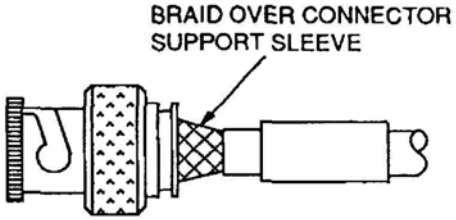


Figure 6. Series BNC Connector Build-Up (Sheet 4 of 5)

4. ENSURE BRAID IS OVER SUPPORT SLEEVE.



5. SLIDE FERRULE OVER BRAID AND SUPPORT SLEEVE.

6. USING CRIMPING TOOL FOR APPROPRIATE CONNECTOR CRIMP FERRULE.

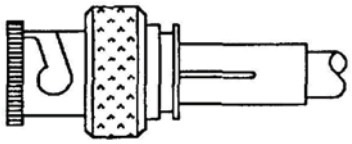


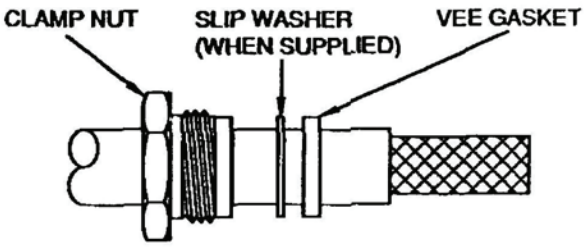
Figure 6. Series BNC Connector Build-Up (Sheet 5 of 5)

A. STRAIGHT CONNECTOR, CATEGORY A.

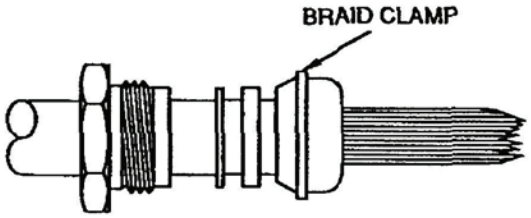
WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

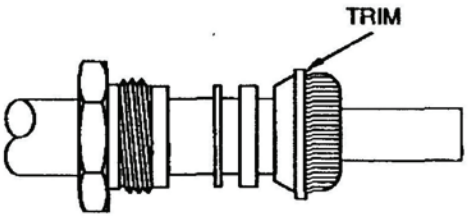
1. TRIM CABLE END SQUARE, PLACE CLAMP NUT, WASHER, AND GASKET WITH GROOVE FACING CONNECTOR OVER OUTER CABLE JACKET.
2. STRIP OUTER CABLE JACKET TO DIMENSION



3. COMB OUT BRAID AND TAPER FORWARD. PLACE BRAID CLAMP OVER BRAID AND AGAINST JACKET SHOULDER.



4. FOLD COMBED OUT BRAID OVER BRAID CLAMP AND TRIM.



5. STRIP DIELECTRIC AND CENTER CONDUCTOR TO DIMENSIONS

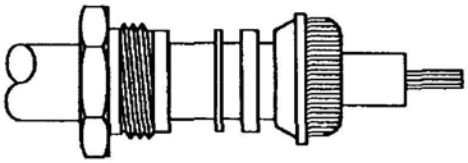
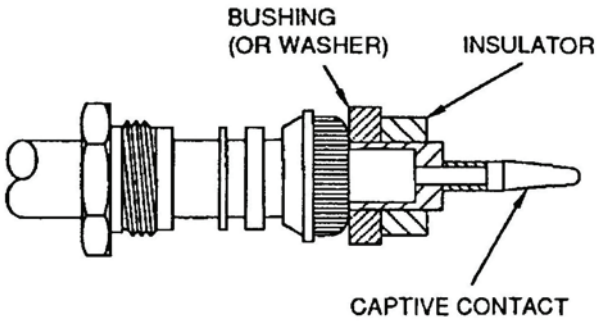


Figure 7. Series C Connector Build-Up (Sheet 1 of 2)

6. PLACE BUSHING OR WASHER AND REAR INSULATOR OR DIELECTRIC BUSHING OVER CABLE DIELECTRIC.

7. TIN CENTER CONDUCTOR.

8. PLACE CONTACT ON CENTER CONDUCTOR SO IT BUTTS AGAINST DIELECTRIC SHOULDER OR BUSHING. CENTER CONDUCTOR SHALL BE VISIBLE THROUGH INSPECTION HOLE. SOLDER CONTACT TO CONDUCTOR.



NOTE

HOLD CONNECTOR BODY STATIONARY WHILE TIGHTENING NUT.

9. INSERT CABLE INTO CONNECTOR BODY UNTIL IT BOTTOMS. SLIDE GASKET, WASHER, AND CLAMP NUT FORWARD. HAND TIGHTEN, THEN TORQUE TO 55 ± 5 IN/LBS.

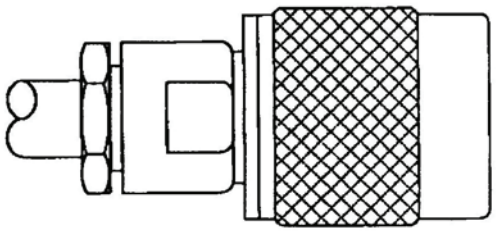


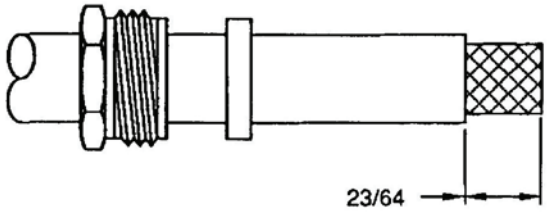
Figure 7. Series C Connector Build-Up (Sheet 2 of 2)

A. STRAIGHT CONNECTOR, CATEGORY A.

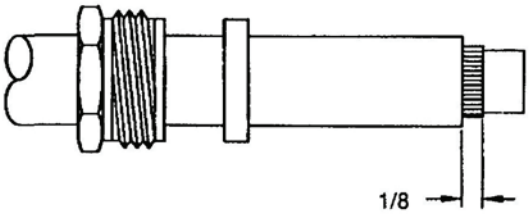
WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

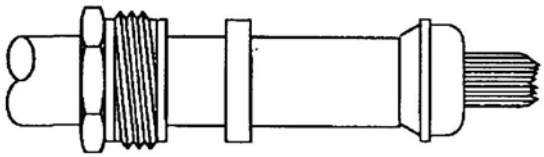
1. CUT END OF CABLE SQUARE. PLACE NUT AND GASKET, WITH V-GROOVE TOWARD CLAMP OVER CABLE.
2. STRIP CABLE TO DIMENSIONS JACKET 23/64 INCH FROM END.



3. COMB OUT BRAID. STRIP CABLE DIELECTRIC 1/8 INCH FROM END OF JACKET.



4. PULL BRAID FORWARD AND TAPER TOWARD CENTER CONDUCTOR. PLACE CLAMP OVER BRAID AND BUTT AGAINST JACKET.



5. FOLD BRAID OVER CLAMP AND TRIM. TIN CENTER CONDUCTOR. PLACE WASHER, INSULATOR, AND CONTACT ON CABLE. SOLDER CONTACT TO CENTER CONDUCTOR.

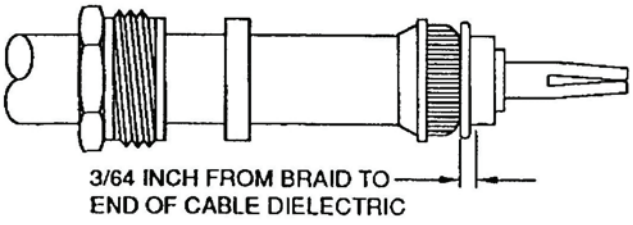
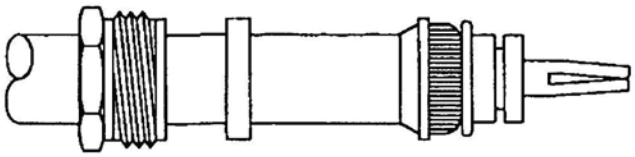


Figure 8. Series N Connector Build-Up (Sheet 1 of 3)

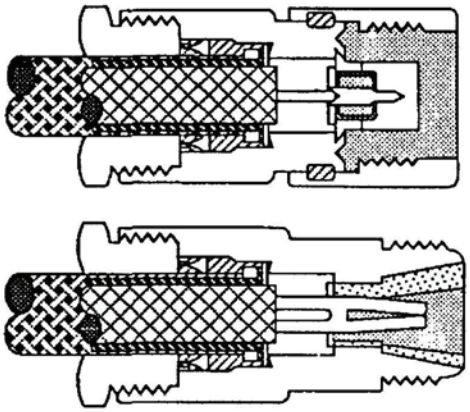
6. PLACE FRONT INSULATOR OVER CONTACT. ENSURE COUNTER BORE END OF INSULATOR IS TOWARD MATING END OF CONTACT.



NOTE

HOLD CONNECTOR BODY STATIONARY WHILE TIGHTENING NUT.

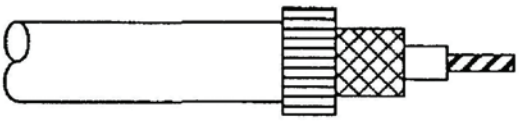
7. INSERT CABLE TERMINATION INTO CONNECTOR BODY. ENSURE SHARP EDGE OF CLAMP SEATS PROPERLY IN GASKET. TIGHTEN NUT.



B. STRAIGHT CONNECTOR, CATEGORY D.

WARNING

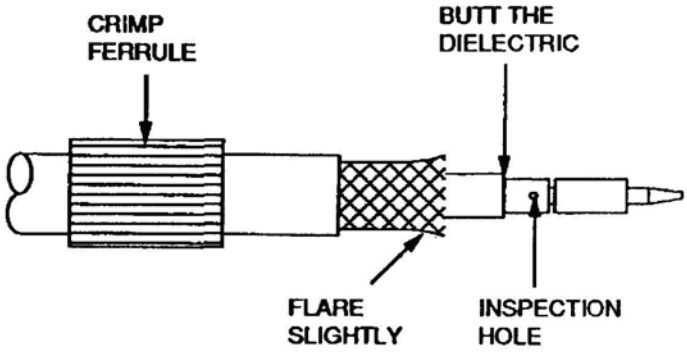
EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.



1. CUT CABLE END SQUARE AND SLIDE CRIMP FERRULE OVER CABLE.
2. STRIP CABLE TO DIMENSIONS

Figure 8. Series N Connector Build-Up (Sheet 2 of 3)

3. USING APPROPRIATE TOOLS CRIMP CONTACT TO CENTER CONDUCTOR. CENTER CONDUCTOR SHALL BE VISIBLE THROUGH INSPECTION HOLE. FLARE BRAID.



4. INSERT CONTACT AND CABLE INTO CONNECTOR BODY. ENSURE SUPPORT SLEEVE IS UNDER OUTER BRAID.

5. SLIDE FERRULE OVER BRAID UNTIL IT BUTTS AGAINST CONNECTOR BODY. CRIMP OUTER FERRULE WITH APPLICABLE TOOL

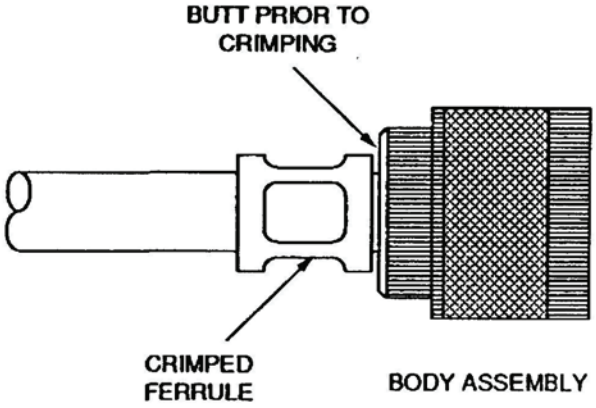


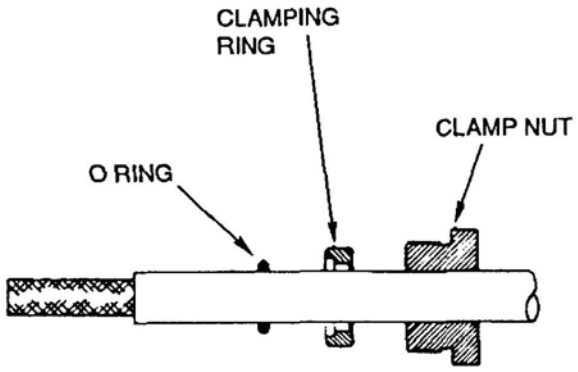
Figure 8. Series N Connector Build-Up (Sheet 3 of 3)

A. SERIES QL AND QM WITH RG-217/U, RG-218/U, AND RG-220/U CABLES.

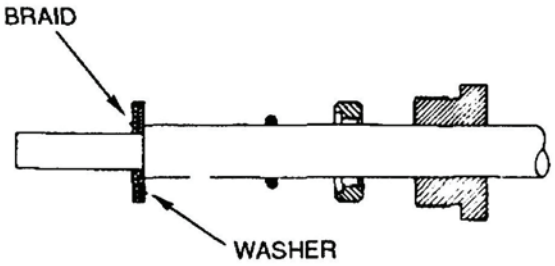
WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

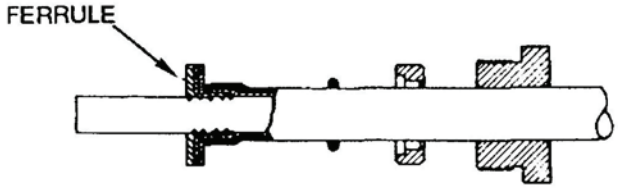
1. CUT CABLE END SQUARE. PLACE CLAMP NUT, CLAMPING RING, AND CABLE SEALING O-RING ON CABLE. STRIP CABLE JACKET SQUARE TO DIMENSION



2. PLACE CLAMPING WASHER OVER BRAID UNTIL IT BUTTS AGAINST CABLE JACKET. FOLD BRAID AGAINST WASHER AND TRIM SO THAT NO BRAID EXTENDS BEYOND OUTER DIAMETER OF WASHER.



3. INSTALL FERRULE OVER CABLE CORE UNTIL BRAID IS CONTAINED BETWEEN WASHER AND FERRULE FLANGE.



4. STRIP CABLE CORE FLUSH WITH FLANGE OF FERRULE. THREAD FERRULE ONTO CABLE UNTIL CORE EXTENDS BEYOND FERRULE FLANGE 1/64 IN. IF NECESSARY, CUT CENTER CONDUCTOR TO PROPER DIMENSION

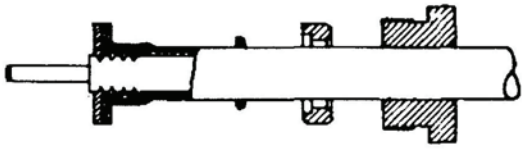
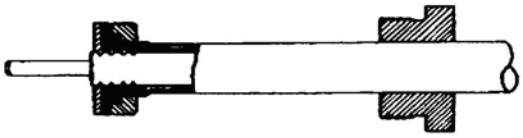
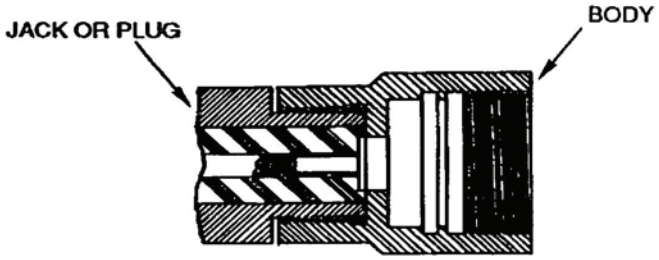


Figure 9. Series QL and QM Connector Build-Up (Sheet 1 of 6)

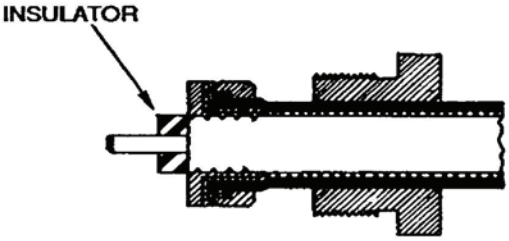
5. INSERT CABLE SEALING O-RING IN CLAMPING GROOVE. APPLY O-RING LUBRICANT ON JACKET AND FORCE CLAMPING RING AGAINST CLAMPING WASHER.



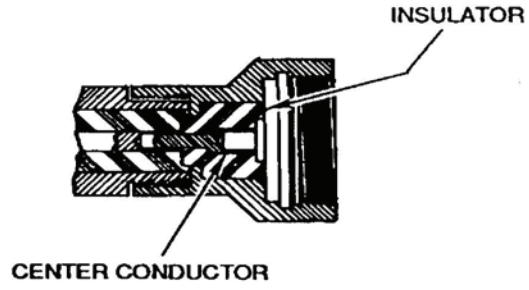
6. ASSEMBLE ACCESSORY BODY TO JACK OR PLUG AND TIGHTEN.



7. FOR RG-217/U AND RG-218/U CABLES, INSTALL SMALL TEFLON INSULATOR ON CENTER CONDUCTOR AND PUSH IT AGAINST CABLE CORE.



8. FOR RG-220/U CABLES, INSTALL LARGE DIAMETER INSULATOR AND CENTER CONDUCTOR IN ACCESSORY BODY.



9. FOR RG-220/U CABLES, PLACE RUBBER INSERT ON CENTER CONDUCTOR OF CABLE AND PUSH AGAINST CABLE CORE.

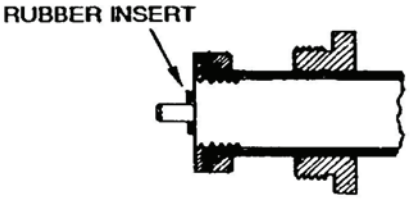
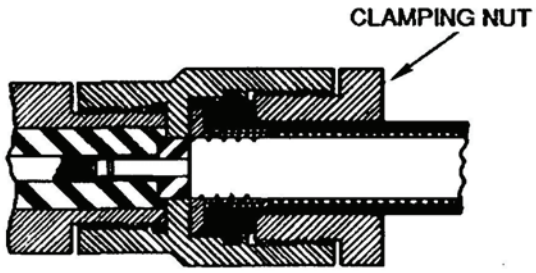
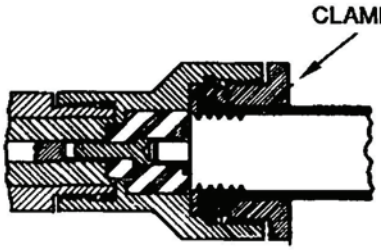


Figure 9. Series QL and QM Connector Build-Up (Sheet 2 of 6)

10. INSERT PREPARED CABLE INTO CONNECTOR AND TIGHTEN CLAMPING NUT.



COMPLETED ASSEMBLY FOR RG-217/U AND RG-218/U



COMPLETED ASSEMBLY FOR RG-220/U

B. SERIES QL AND QM WITH ARMORED CABLE.

WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

1. STRIP ARMOR BRAID FROM CABLE TO DIMENSIONS SPECIFIED FOR APPLICABLE CABLE.

2. PLACE ARMOR CLAMP NUT AND ARMOR CLAMPING RING ON CABLE OVER ARMOR BRAID. PLACE CLAMP NUT, CLAMPING RING, AND SEALING O-RING OVER CABLE VINYL COVERING.

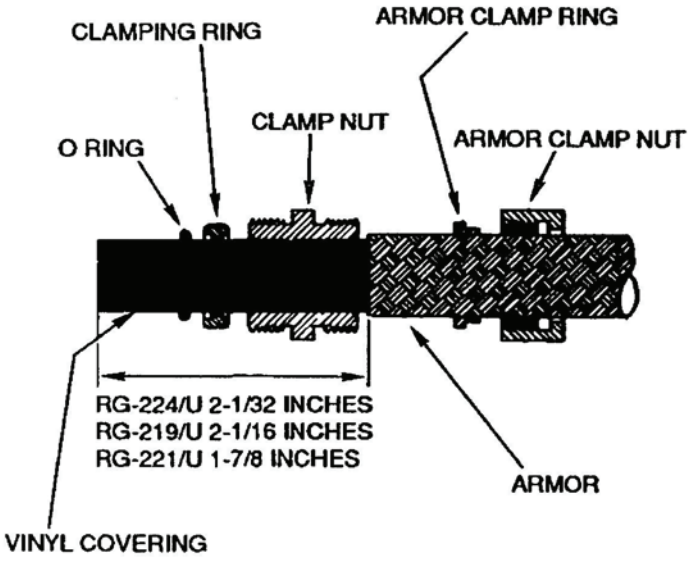
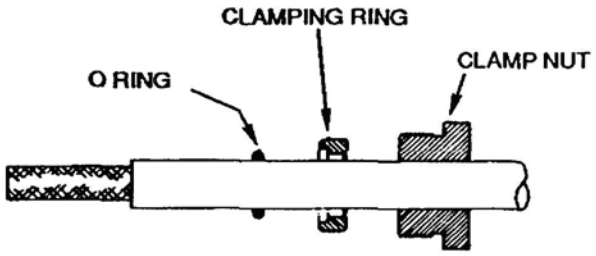
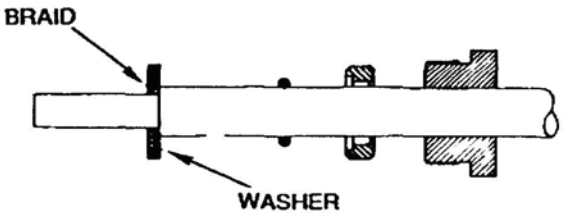


Figure 9. Series QL and QM Connector Build-Up (Sheet 3 of 6)

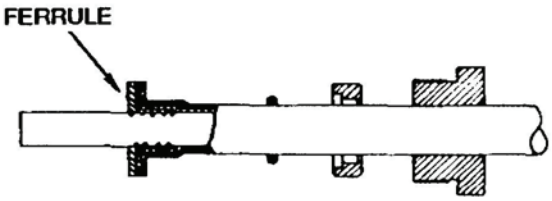
3. CUT CABLE END SQUARE. PLACE CLAMP NUT, CLAMPING RING, AND CABLE SEALING O-RING ON CABLE. STRIP CABLE JACKET SQUARE TO DIMENSION



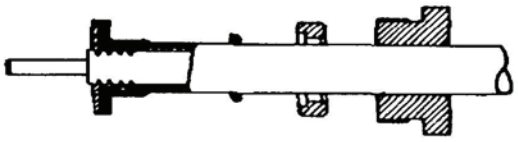
4. PLACE CLAMPING WASHER OVER BRAID UNTIL IT BUTTS AGAINST CABLE JACKET. FOLD BRAID AGAINST WASHER AND TRIM SO THAT NO BRAID EXTENDS BEYOND OUTER DIAMETER OF WASHER.



5. INSTALL FERRULE OVER CABLE CORE UNTIL BRAID IS CONTAINED BETWEEN WASHER AND FERRULE FLANGE.



6. STRIP CABLE CORE FLUSH WITH FLANGE OF FERRULE. THREAD FERRULE ONTO CABLE UNTIL CORE EXTENDS BEYOND FERRULE FLANGE 1/64 IN. IF NECESSARY, CUT CENTER CONDUCTOR TO PROPER DIMENSION

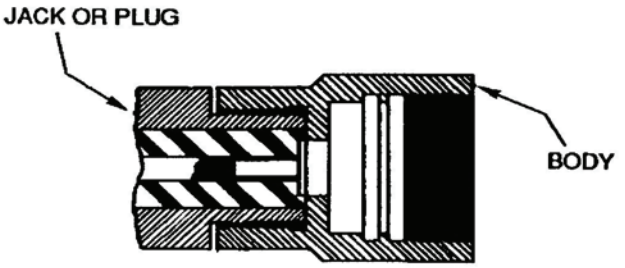


7. INSERT CABLE SEALING O-RING IN CLAMPING GROOVE. APPLY O-RING LUBRICANT ON JACKET AND FORCE CLAMPING RING AGAINST CLAMPING WASHER.

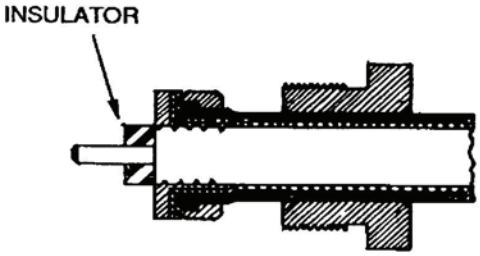


Figure 9. Series QL and QM Connector Build-Up (Sheet 4 of 6)

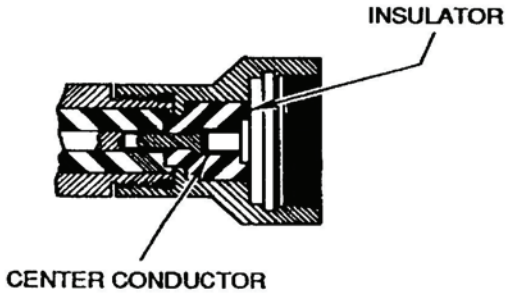
8. ASSEMBLE ACCESSORY BODY TO JACK OR PLUG AND TIGHTEN.



9. FOR RG-219/U AND RG-224/U CABLES. INSTALL SMALL TEFLON INSULATOR ON CENTER CONDUCTOR AND PUSH IT AGAINST CABLE CORE.



10. FOR RG-221/U CABLES, INSTALL LARGE DIAMETER INSULATOR AND CENTER CONDUCTOR IN ACCESSORY BODY.



11. FOR RG -221/U CABLES, PLACE RUBBER INSERT ON CENTER CONDUCTOR OF CABLE AND PUSH AGAINST CABLE CORE.

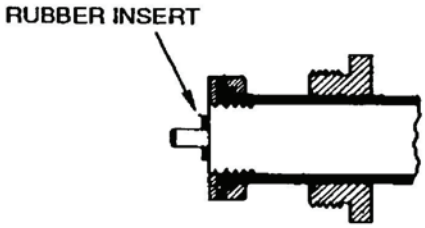
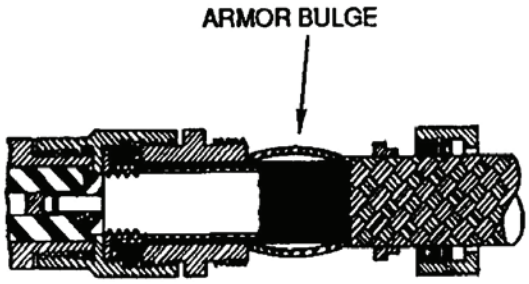
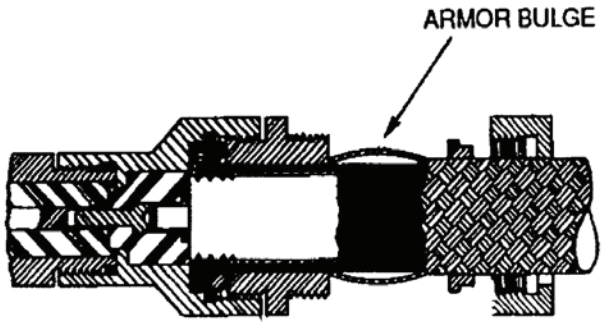


Figure 9. Series QL and QM Connector Build-Up (Sheet 5 of 6)

12. FORM BULGE IN ARMOR TO MANIPULATE ACCESSORIES INTO PLACE.



FOR RG-219/U AND RG-224/U



FOR RG-221/U

13. FOLD ARMOR BRAID AGAINST BACK EDGE OF CLAMP NUT AND TRIM EVEN WITH CLAMP NUT THREADS. SLIDE ARMOR CLAMPING RING AGAINST CLAMP NUT HOLDING ARMOR BRAID SECURELY. TIGHTEN ARMOR CLAMP NUT.

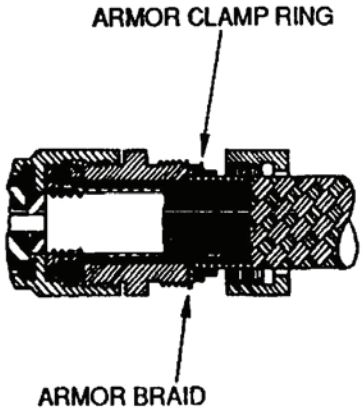


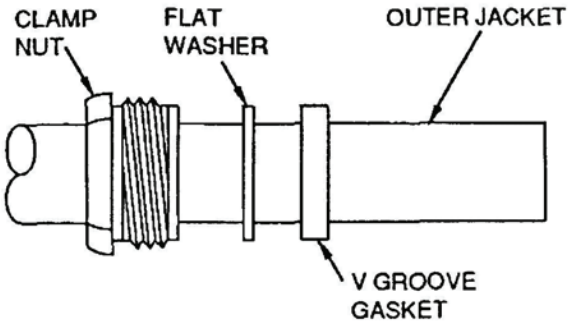
Figure 9. Series QL and QM Connector Build-Up (Sheet 6 of 6)

A. STRAIGHT CONNECTOR, CATEGORY A

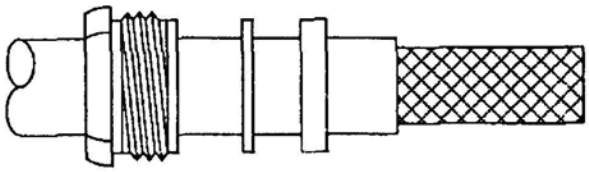
WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

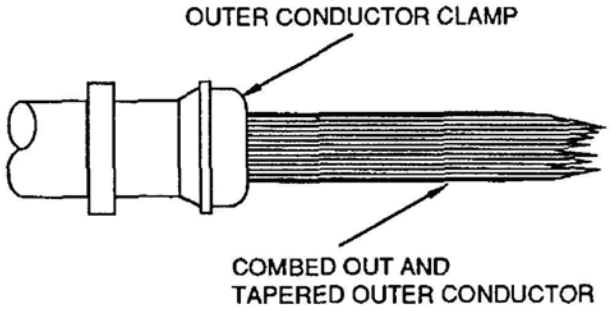
1. PLACE CLAMP NUT, WASHER, AND V-GROOVE GASKET, FLAT SIDE FIRST ON CABLE.



2. STRIP OUTER JACKET TO DIMENSIONS



3. COMB OUTER CONDUCTOR AND TAPER OVER END OF DIELECTRIC. SLIDE OUTER CONDUCTOR CLAMP, BEVELED END FIRST, OVER COMBED CONDUCTOR UNTIL IT BOTTOMS ON OUTER JACKET.



4. FOLD COMBED OUTER CONDUCTOR OVER OUTER CONDUCTOR CLAMP SHOULDER. TRIM OUTER CONDUCTOR FLUSH WITH OUTER CONDUCTOR CLAMP SHOULDER.

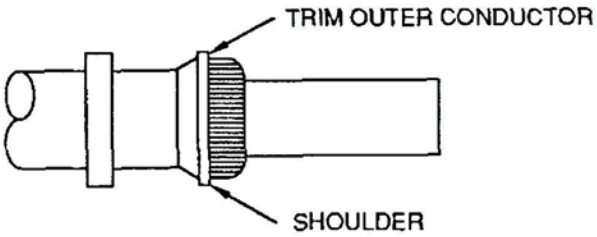
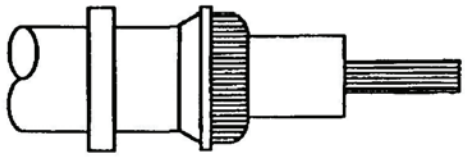
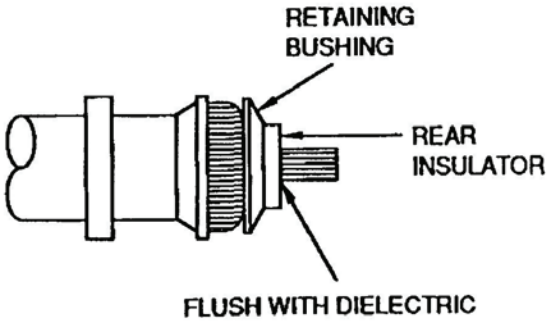


Figure 10. Series SC Connector Build-Up (Sheet 1 of 7)

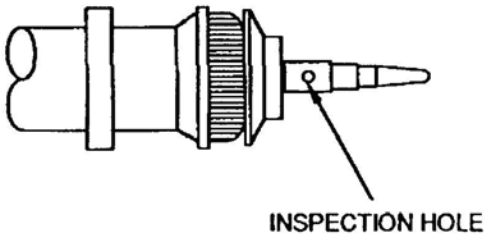
5. STRIP DIELECTRIC TO DIMENSIONS



6. SLIDE RETAINING BUSHING, FLAT SIDE FIRST, ONTO DIELECTRIC UNTIL IT BUTTS AGAINST OUTER CONDUCTOR. SLIDE REAR INSULATOR ONTO DIELECTRIC UNTIL IT BUTTS AGAINST RETAINING BUSHING. OPPOSITE END SHALL BE FLUSH WITH END OF DIELECTRIC.



7. INSERT TINNED CONDUCTOR INTO CONTACT UNTIL CABLE BUTTS AGAINST CONTACT. CENTER CONDUCTOR SHALL BE VISIBLE THROUGH INSPECTION HOLE. SOLDER CONTACT TO CONDUCTOR.



8. SLIDE FRONT INSULATOR ONTO CONTACT UNTIL IT BUTTS AGAINST FRONT SHOULDER.

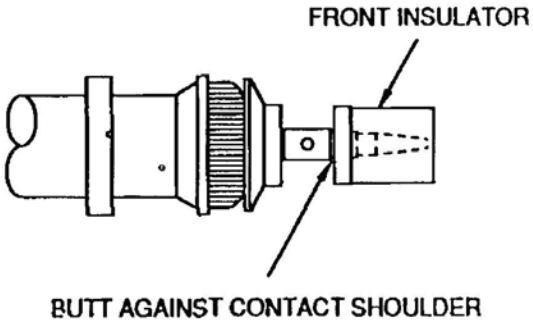
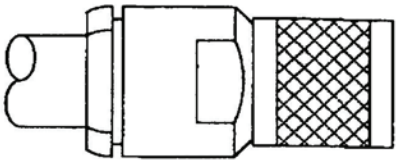


Figure 10. Series SC Connector Build-Up (Sheet 2 of 7)

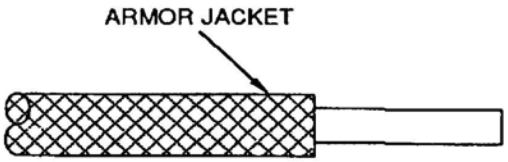
9. INSERT CABLE ASSEMBLY INTO CONNECTOR BODY UNTIL IT BOTTOMS. ENSURE GROOVE GASKET IS SEATED PROPERLY ON OUTER CONDUCTOR. THREAD CLAMP NUT INTO CONNECTOR AND TIGHTEN.



B. STRAIGHT CONNECTOR WITH ARMOR JACKET, CATEGORY A.

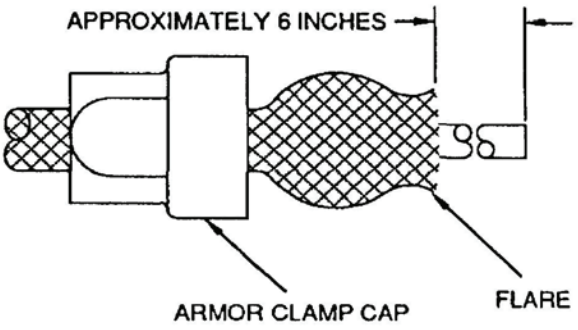
WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.



1. PLACE ARMOR CLAMP CAP, HEX END FIRST, ONTO CABLE. STRIP ARMOR JACKET TO DIMENSIONS

2. BIRD CAGE AND FLARE ARMOR JACKET.



3. PLACE ARMOR CLAMP NUT, BEVELED END FIRST, ON CABLE UNTIL IT BUTTS AGAINST FLARED ARMOR JACKET. PLACE WASHER AND GROOVE GASKET, FLAT SIDE FIRST, ON CABLE.

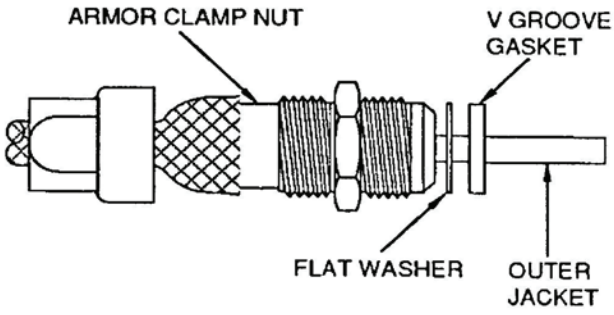
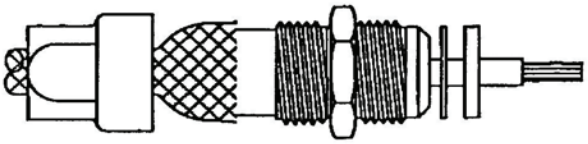
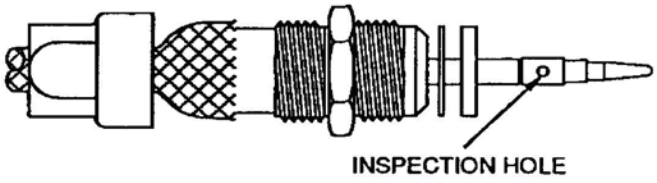


Figure 10. Series SC Connector Build-Up (Sheet 3 of 7)

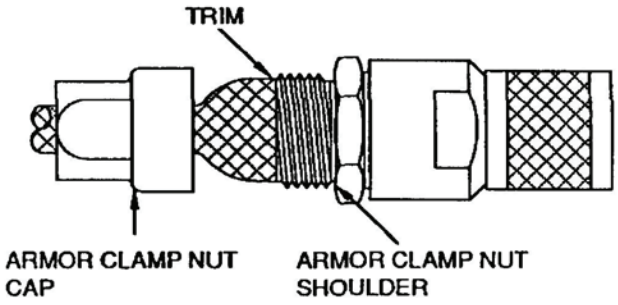
4. STRIP DIELECTRIC TO DIMENSIONS TIN CENTER CONDUCTOR.



5. SOLDER CONTACT TO CENTER CONDUCTOR. CENTER CONDUCTOR SHALL BE VISIBLE THROUGH INSPECTION HOLE.



6. ALIGN CONTACT WITH CONNECTOR BODY AND INSERT CABLE INTO CONNECTOR BODY AND TIGHTEN. PUSH FLARED END OF ARMOR JACKET OVER CLAMP NUT SHOULDER. THREAD CLAMP NUT CAP ONTO CLAMP NUT AND TIGHTEN.

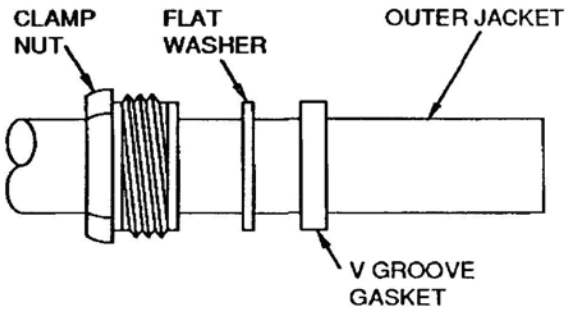


C. RIGHT ANGLE CONNECTOR.

WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

1. PLACE CLAMP NUT, WASHER, AND V-GROOVE GASKET, FLAT SIDE FIRST, ON CABLE.



2. STRIP OUTER JACKET TO DIMENSIONS

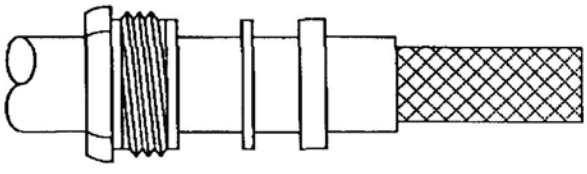
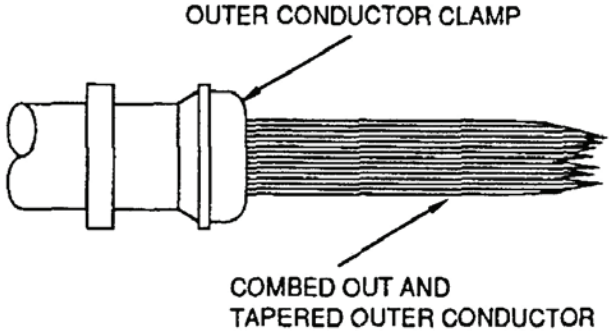
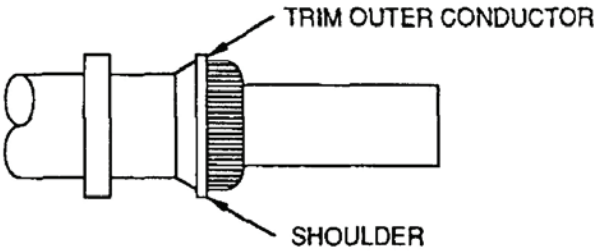


Figure 10. Series SC Connector Build-Up (Sheet 4 of 7)

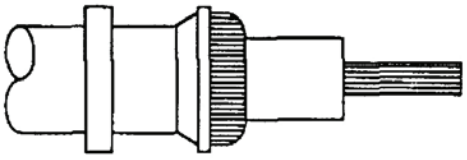
3. COMB OUTER CONDUCTOR AND TAPER OVER END OF DIELECTRIC, SLIDE OUTER CONDUCTOR CLAMP, BEVELED END FIRST, OVER COMBED CONDUCTOR UNTIL IT BOTTOMS ON OUTER JACKET.



4. FOLD COMBED OUTER CONDUCTOR OVER OUTER CONDUCTOR CLAMP SHOULDER. TRIM OUTER CONDUCTOR FLUSH WITH OUTER CONDUCTOR CLAMP SHOULDER.



5. STRIP DIELECTRIC TO DIMENSIONS



6. SLIDE RETAINING BUSHING, FLAT SIDE FIRST, ONTO DIELECTRIC UNTIL IT BUTTS AGAINST OUTER CONDUCTOR. SLIDE REAR INSULATOR ONTO DIELECTRIC UNTIL IT BUTTS AGAINST RETAINING BUSHING. OPPOSITE END SHALL BE FLUSH WITH END OF DIELECTRIC.

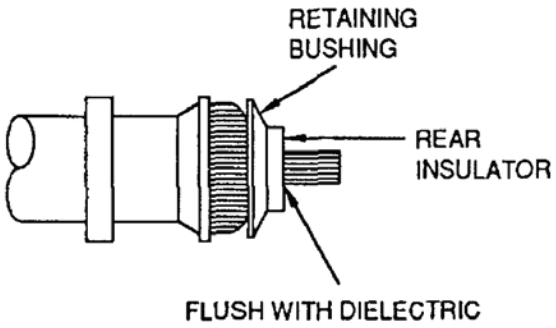
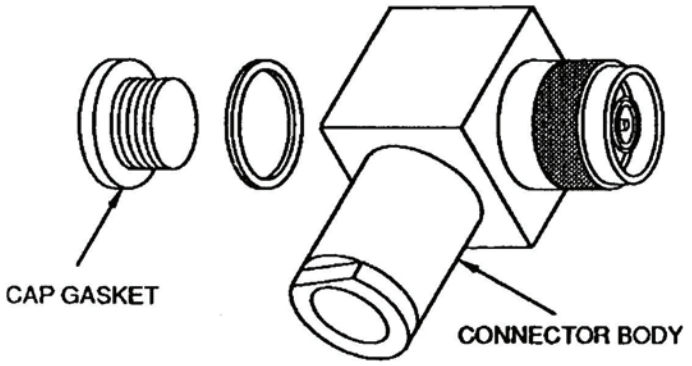


Figure 10. Series SC Connector Build-Up (Sheet 5 of 7)

7. REMOVE SOLDER CAP AND GASKET FROM SOLDER PORT. INSERT CABLE INTO CONNECTOR BODY AND SOLDER CENTER CONDUCTOR TO CONTACT.

8. INSTALL GASKET AND SOLDER CAP IN SOLDER PORT.

9. THREAD CLAMP NUT TO CONNECTOR BODY AND TIGHTEN.

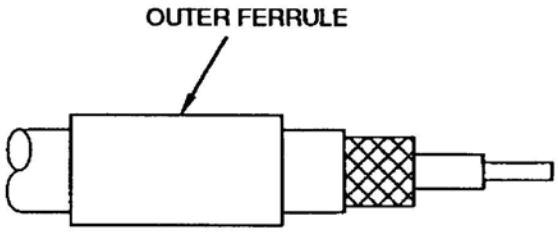


D. STRAIGHT CONNECTOR, CATEGORY D.

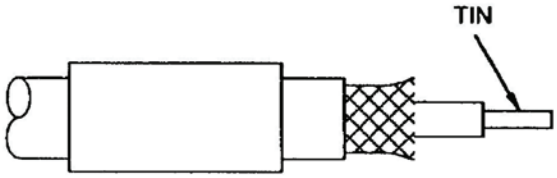
WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

1. CUT CABLE END SQUARE. SLIDE OUTER FERRULE ONTO CABLE. STRIP CABLE TO DIMENSIONS



2. SLIGHTLY FLARE OUTER CONDUCTOR. DO NOT COMB OUT BRAID. TIN CENTER CONDUCTOR.



3. PLACE CONTACT ON CENTER CONDUCTOR SO IT BUTTS AGAINST DIELECTRIC. SOLDER CONTACT.

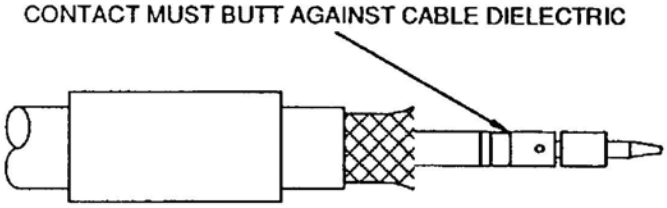


Figure 10. Series SC Connector Build-Up (Sheet 6 of 7)

4. INSERT CABLE INTO CONNECTOR BODY WITH FERRULE UNDER FLARED BRAID. PUSH INTO CONTACT SNAPS INTO INSULATOR. SLIDE OUTER FERRULE OVER BRAID AND CRIMP, USING TOOLS

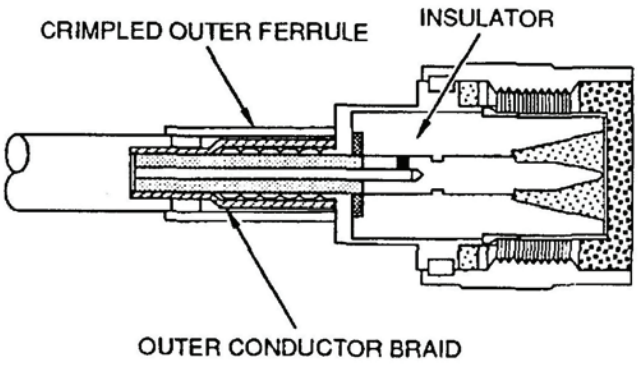
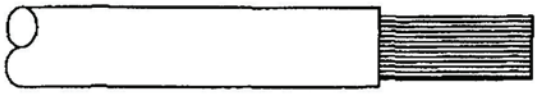


Figure 10. Series SC Connector Build-Up (Sheet 7 of 7)

A. STRAIGHT CONNECTOR, CLAMP TYPE

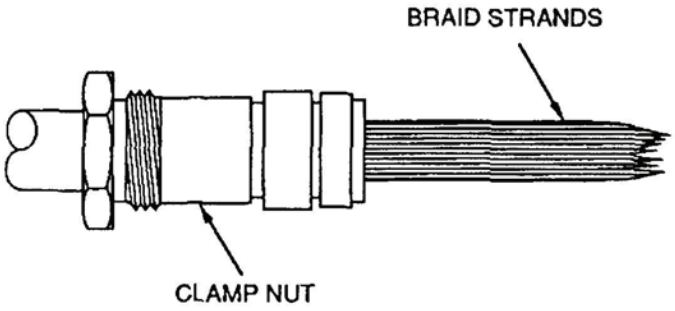
WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

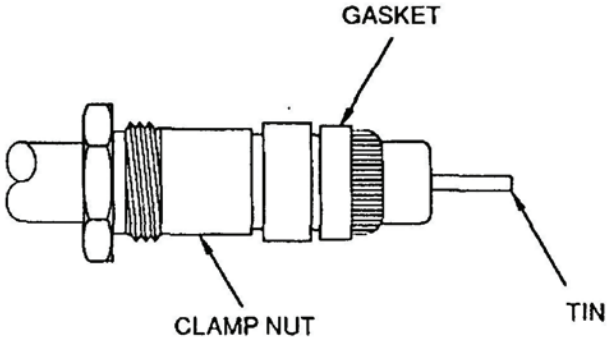


1. CUT CABLE SQUARE AND STRIP TO DIMENSION

2. COMB OUT BRAID AND TAPER OVER DIELECTRIC. SLIDE CLAMP NUT ON CABLE TOWARD BRAID AND AGAINST JACKET CUT.



3. UNIFORMLY FOLD BRAID OVER CLAMP NUT AND TRIM SO NO STRANDS TOUCH GASKET, STRIP DIELECTRIC TO DIMENSIONS.
TIN CENTER CONDUCTOR.



4. INSERT CENTER CONTACT INTO BUSHING CONTACT ASSEMBLY SO DIELECTRIC SEATS SQUARELY AGAINST BUSHING. CENTER CONDUCTOR SHALL BE VISIBLE THROUGH INSPECTION HOLE. SOLDER CONTACT.

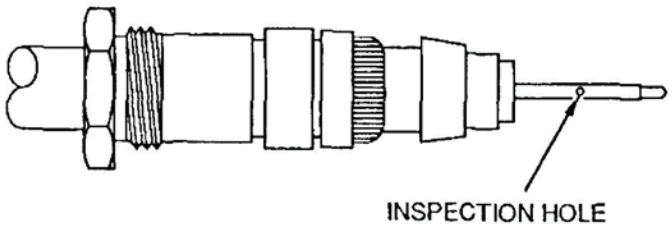


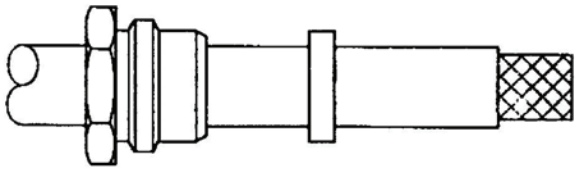
Figure 11. Series SMA Connector Build-Up (Sheet 1 of 4)

5. INSERT PREPARED CABLE INTO CONNECTOR BODY UNTIL IT BOTTOMS. THREAD CLAMP NUT INTO CONNECTOR BODY AND TORQUE TO 20-25 IN/LBS.

B. RIGHT ANGLE, CLAMP TYPE.

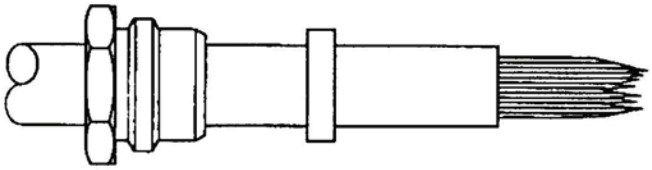
WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

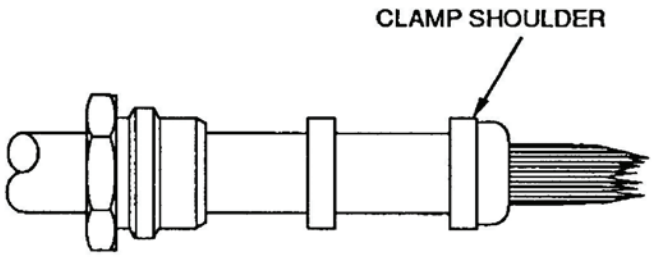


1. CUT CABLE END SQUARE. SLIDE CLAMP NUT AND GASKET OVER CABLE. STRIP OUTER JACKET TO DIMENSIONS.

2. COMB OUT OUTER BRAID.



3. INSTALL BRAID CLAMP OVER BRAID STRANDS UNTIL IT BUTTS AGAINST OUTER JACKET. FOLD BRAID BACK AND TRIM AT CLAMP SHOULDER.



4. STRIP DIELECTRIC TO DIMENSIONS TIN CONDUCTOR.

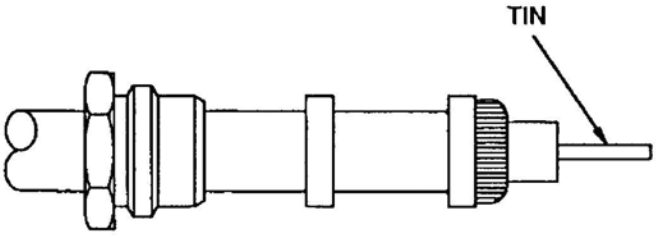
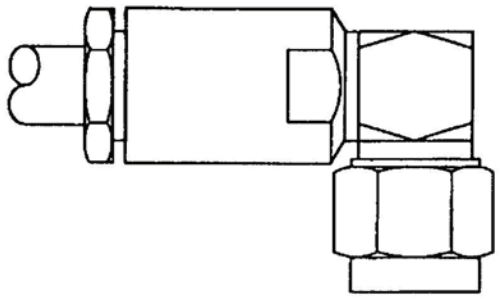


Figure 11. Series SMA Connector Build-Up (Sheet 2 of 4)

5. INSERT PREPARED CABLE INTO CONNECTOR BODY. THREAD CLAMP NUT INTO CONNECTOR AND TORQUE TO 15-18 IN/LBS.

6. REMOVE SOLDER PORT CAP. SOLDER CENTER CONDUCTOR TO CENTER CONTACT.

7. INSTALL SOLDER PORT CAP.



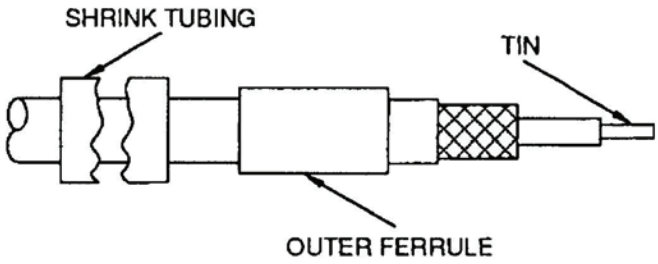
COMPLETED ASSEMBLY

C. STRAIGHT CONNECTOR, CRIMP TYPE.

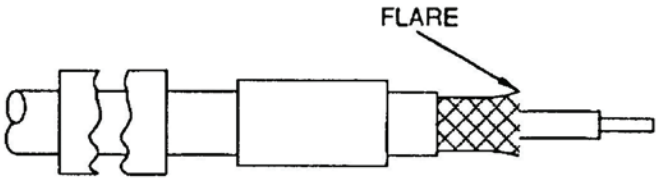
WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

1. SLIDE HEAT SHRINK TUBING AND OUTER FERRULE OVER OUTER CABLE JACKET. STRIP CABLE TO DIMENSIONS.



2. SLIGHTLY FLARE END OF BRAID. DO NOT COMB OUT.



3. INSTALL FERRULE/CONTACT ASSEMBLY ONTO CABLE. SOLDER CONTACT TO CENTER CONDUCTOR.

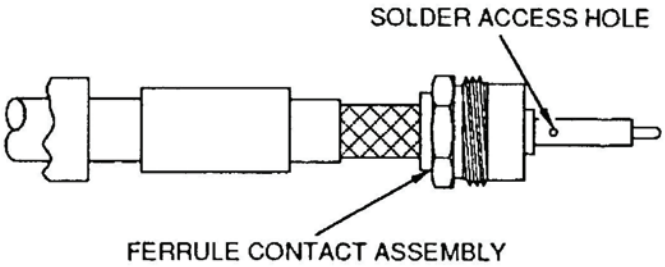
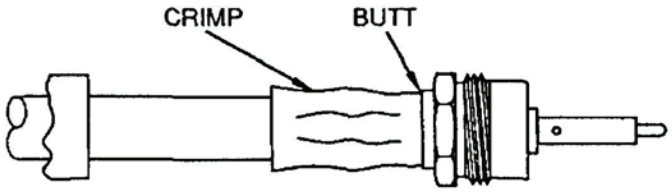


Figure 11. Series SMA Connector Build-Up (Sheet 3 of 4)

4. SLIDE OUTER FERRULE OVER BRAID. USING CRIMP TOOLS , CRIMP FERRULE.



5. THREAD FERRULE/CONTACT ASSEMBLY INTO CONNECTOR BODY AND TORQUE TO 20-25 IN/LBS. SLIDE HEAT SHRINK TUBING OVER FERRULE UNTIL IT BUTTS AGAINST CLAMP NUT AND SHRINK.

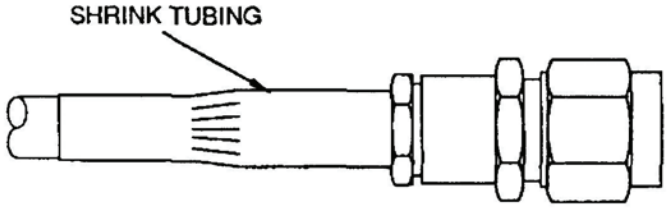
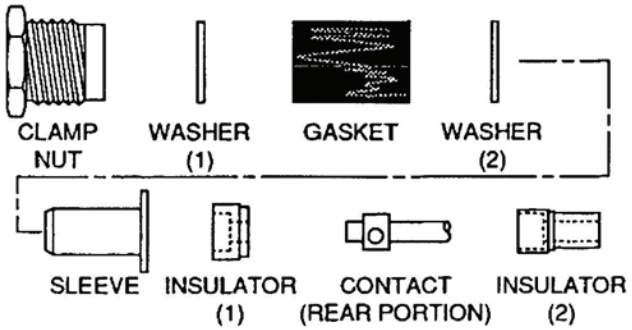


Figure 11. Series SMA Connector Build-Up (Sheet 4 of 4)

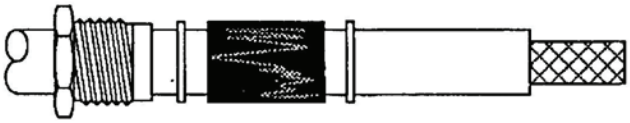
A. STRAIGHT CONNECTOR, CLAMP TYPE, FOR FLEXIBLE CABLE.



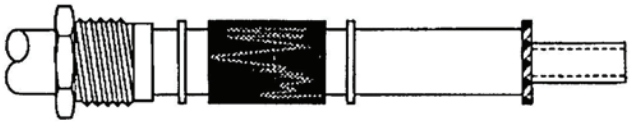
WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

1. SLIDE CLAMP NUT, WASHERS (1 AND 2), AND GASKET OVER CABLE. STRIP CABLE TO DIMENSIONS.



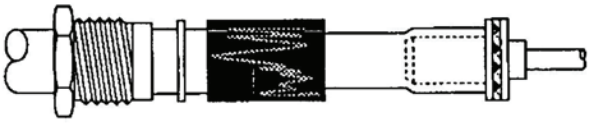
2. SPREAD BRAID. SLIGHTLY CHAMFER CABLE CORE TO ASSIST SLEEVE INSTALLATION.



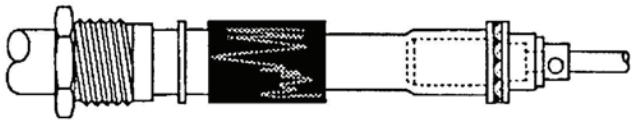
3. SLIDE WASHER (2) CLOSE TO BRAID. INSERT SLEEVE BETWEEN BRAID AND CORE, TRIM BRAID TO DIAMETER SMALLER THAN SLEEVE FLANGE.



4. SLIDE SLEEVE IN UNTIL FLANGE BUTTS AGAINST BRAID. STRIP CABLE CORE TO DIMENSIONS. TIN CENTER CONDUCTOR.



5. SLIDE INSULATOR (1) OVER DIELECTRIC UNTIL IT BUTTS AGAINST SLEEVE FLANGE. SLIDE CONTACT OVER CENTER CONDUCTOR UNTIL FLUSH WITH INSULATOR (1) AND SOLDER.



6. SLIDE INSULATOR (2) OVER CONTACT AND SLIDE GASKET, WASHER (1), AND CLAMP NUT AGAINST WASHER (2). INSERT INTO CONNECTOR BODY AND TORQUE CLAMP NUT TO 5-7 IN/LBS.

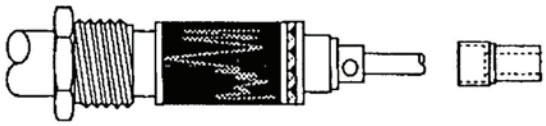


Figure 12. Series SMB Connector Build-Up (Sheet 1 of 3)

B. STRAIGHT CONNECTOR, CLAMP TYPE, FOR SEMI-RIGID CABLE.

WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

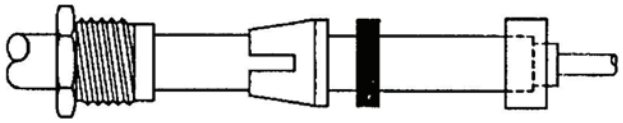


CAUTION

CARE MUST BE TAKEN NOT TO FRACTURE CENTER CONDUCTOR.

1. CUT CABLE END SQUARE. STRIP CABLE TO DIMENSIONS. TIN CENTER CONDUCTOR. SLIDE CLAMP NUT, COLLAR, AND GASKET OVER CABLE.

2. SLIDE BUSHING ON CABLE UNTIL COUNTER BORE RESTS AGAINST JACKET.



3. SLIDE REAR INSULATOR OVER CABLE CORE UNTIL FLUSH AGAINST BUSHING. SLIDE CONTACT ONTO CENTER CONDUCTOR UNTIL CONTACT SHOULDER IS FLUSH AGAINST INSULATOR. SOLDER CONTACT.



4. SLIDE FRONT INSULATOR OVER CONTACT. SLIDE GASKET, COLLAR, AND CLAMP NUT TO BUSHING AND INSERT INTO BACK OF BODY, TIGHTEN NUT AND TORQUE TO 4-6 IN/LBS.

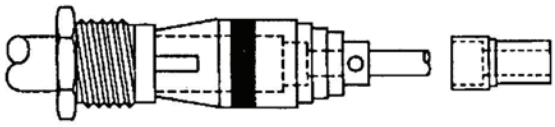
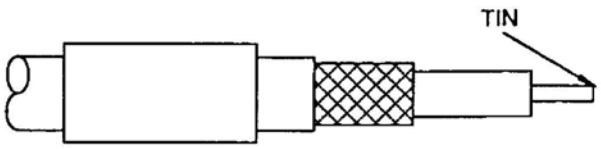


Figure 12. Series SMB Connector Build-Up (Sheet 2 of 3)

C. STRAIGHT CONNECTOR, CRIMP TYPE, FOR FLEXIBLE CABLE.

WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

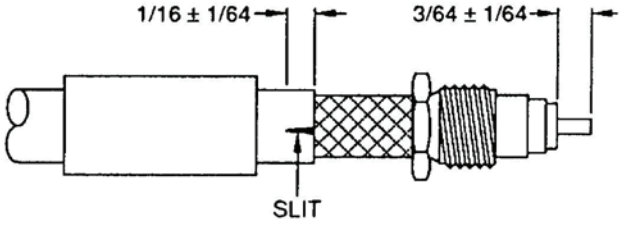


1. CUT CABLE END SQUARE. STRIP CABLE TO DIMENSIONS. TIN CENTER CONDUCTOR. SLIDE FERRULE OVER CABLE.

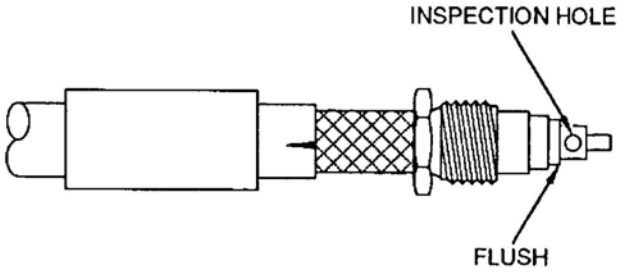
NOTE

ON SMALL DIAMETER CABLES TWO SLITS IN JACKET (180° APART LONGITUDINALLY) MAY BE MADE TO EASE ASSEMBLY.

2. INSERT TRIMMED CABLE INTO BACK OF REAR BODY ASSEMBLY. TUBULAR BODY EXTENSION WILL SLIDE UNDER BRAID AND JACKET. TINNED CENTER CONDUCTOR SHOULD PROJECT 3/64 IN. BEYOND FACE OF INSULATOR.



3. INSTALL CONTACT ON CENTER CONDUCTOR WITH CONTACT SHOULDER FLUSH WITH INSULATOR. SOLDER CONTACT.



4. SLIDE FERRULE UNTIL IT BUTTS AGAINST HEX FACE OF REAR BODY. USING CRIMP TOOLS, CRIMP FERRULE.

5. INSERT CONTACT INTO FRONT INSULATOR AND THREAD FRONT BODY ONTO REAR BODY. TORQUE TO 6-8 IN/LBS.

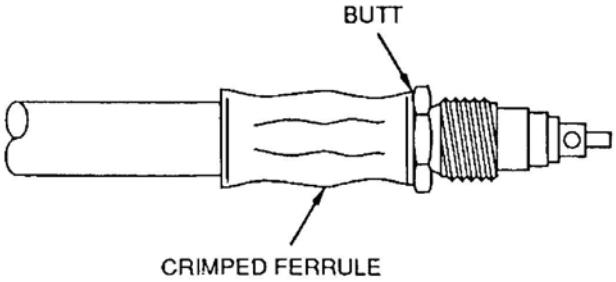


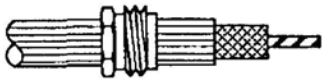
Figure 12. Series SMB Connector Build-Up (Sheet 3 of 3)

A. STRAIGHT CONNECTOR.

WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

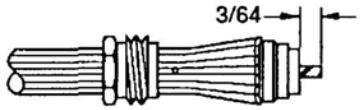
1. CUT CABLE END SQUARE. STRIP TO DIMENSIONS. TIN CENTER CONDUCTOR AND SLIDE CLAMP NUT OVER CABLE.



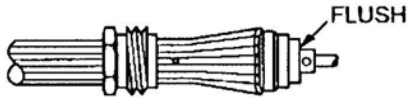
NOTE

TWO SLITS IN CABLE JACKET (180° APART LONGITUDINALLY, 1/8 IN. LONG), MAY BE CUT TO EASE ASSEMBLY.

2. SPREAD BRAID, INSERT SLEEVE ASSEMBLY BETWEEN BRAID AND DIELECTRIC. TRIM BRAID TO DIAMETER OF SLEEVE FLANGE. TINNED CONDUCTOR SHOULD PROJECT 3/64 IN. BEYOND INSULATOR FACE.



3. INSERT CENTER CONDUCTOR INTO CONTACT UNTIL CONTACT SHOULDER IS FLUSH AGAINST INSULATOR. SOLDER CONTACT.



4. INSTALL FRONT INSULATOR OVER CONTACT AND SLIDE CLAMP NUT FORWARD UNTIL IT BUTTS AGAINST SLEEVE. INSERT INTO BACK OF CONNECTOR BODY, TIGHTEN CLAMP NUT AND TORQUE TO 6-8 IN/LBS.

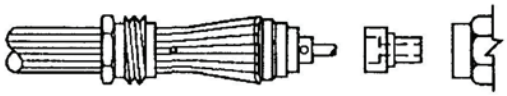
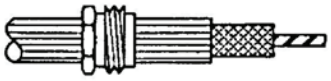


Figure 13. Series SMC Connector Build-Up (Sheet 1 of 2)

B. RIGHT ANGLE CONNECTORS.

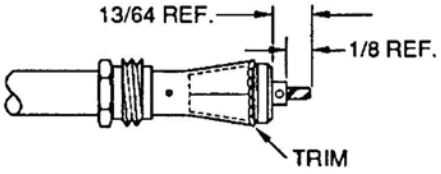
WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

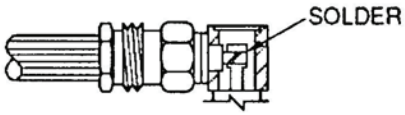


1. CUT CABLE END SQUARE. STRIP CABLE TO DIMENSIONS. TIN CENTER CONDUCTOR. SLIDE CLAMP NUT OVER CABLE.

2. SPREAD BRAID AND INSERT SLEEVE ASSEMBLY BETWEEN BRAID AND DIELECTRIC. TRIM BRAID TO DIAMETER OF SLEEVE FLANGE.



3. REMOVE CAP FROM SOLDER PORT. PUSH CABLE INTO CONNECTOR BODY. SOLDER CENTER CONDUCTOR TO CENTER CONTACT.



4. SLIDE CLAMP NUT FORWARD AND THREAD INTO CONNECTOR BODY. TORQUE TO 6-8 IN/LBS. SNAP CAP INTO SOLDER PORT AND SOLDER.

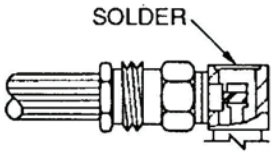


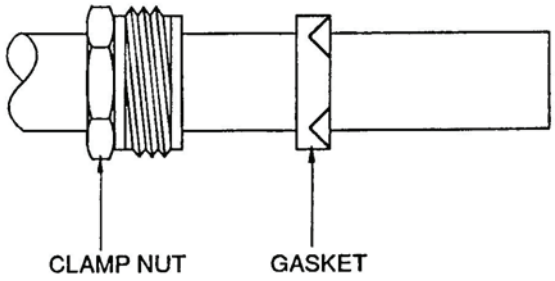
Figure 13. Series SMC Connector Build-Up (Sheet 2 of 2)

A. STRAIGHT CONNECTOR.

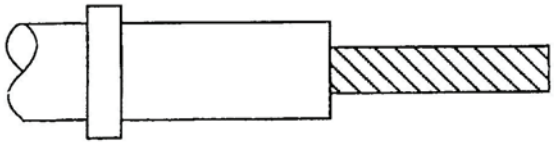
WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

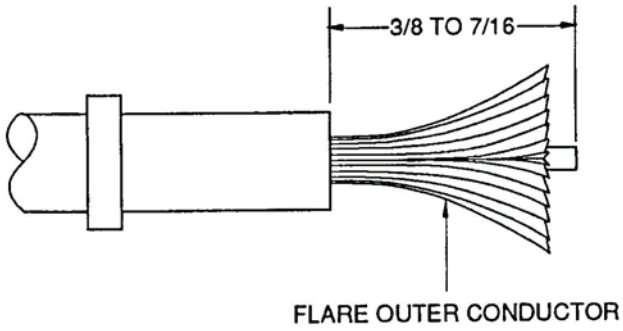
1. CUT CABLE END SQUARE. SLIDE CLAMP NUT AND GASKET (FLAT SIDE FIRST) ON CABLE.



2. STRIP CABLE TO DIMENSIONS



3. COMB OUT AND FLARE OUTER CONDUCTOR



4. TAPER OUTER CONDUCTOR OVER DIELECTRIC. SLIDE CLAMP (BEVELED END FIRST) OVER OUTER CONDUCTOR UNTIL IT BUTTS AGAINST OUTER JACKET.

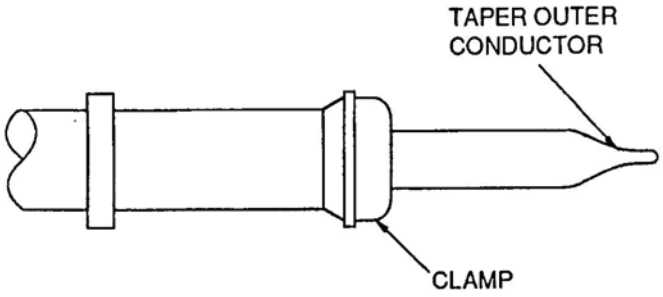
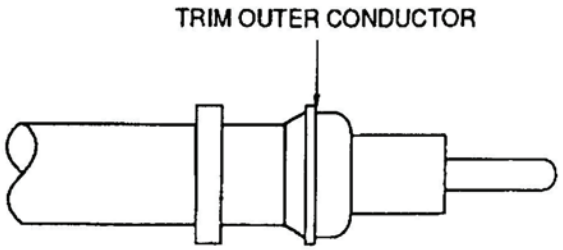
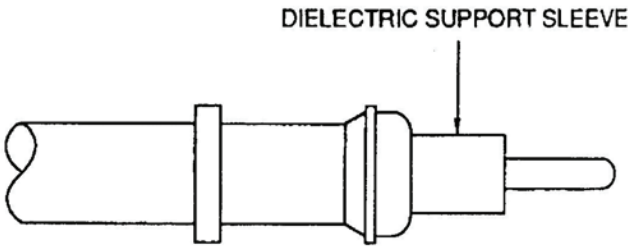


Figure 14. Series TNC Connector Build-Up (Sheet 1 of 4)

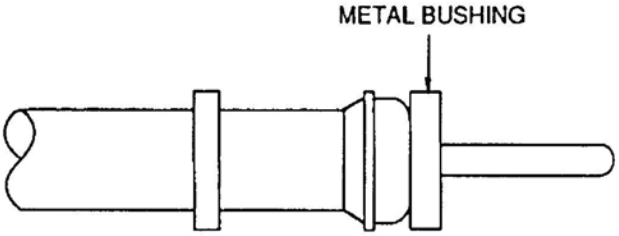
5. FOLD OUTER CONDUCTOR BACK OVER CLAMP AND TRIM. STRIP DIELECTRIC TO DIMENSIONS.



6. SLIDE DIELECTRIC SUPPORT SLEEVE ONTO CABLE DIELECTRIC UNTIL IT BUTTS AGAINST OUTER CONDUCTOR.



7. SLIDE METAL BUSHING (FLAT SIDE FIRST) ONTO DIELECTRIC SUPPORT SLEEVE UNTIL IT BUTTS AGAINST OUTER CONDUCTOR.



8. INSTALL STEPPED DOWN END OF INSULATOR INTO METAL BUSHING AND OVER DIELECTRIC SUPPORT SLEEVE UNTIL SHOULDER OF INSULATOR BUTTS AGAINST METAL BUSHING.

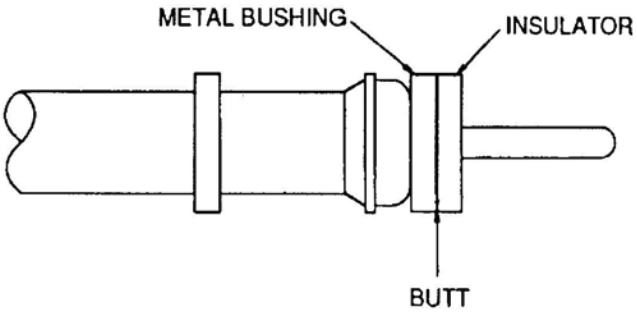
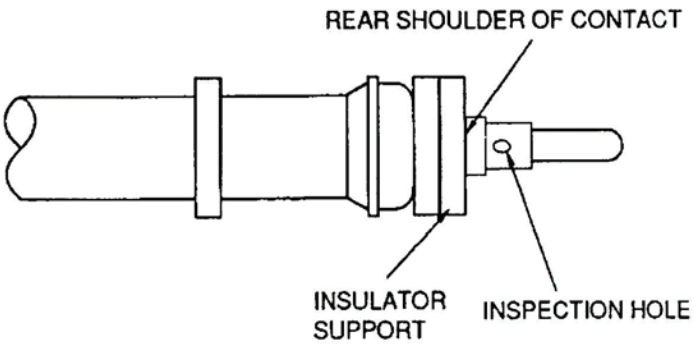
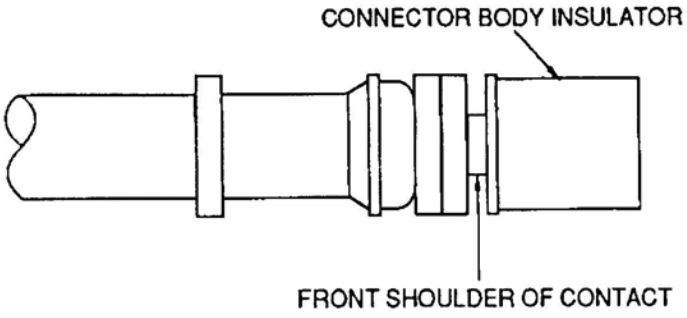


Figure 14. Series TNC Connector Build-Up (Sheet 2 of 4)

9. INSERT TINNED CONDUCTOR INTO CONTACT UNTIL SHOULDER BUTTS AGAINST INSULATOR. SOLDER CONTACT.



10. SLIDE CONNECTOR BODY INSULATOR ONTO CONTACT UNTIL IT BUTTS AGAINST FRONT SHOULDER OF CONTACT.



B. STRAIGHT CONNECTOR FOR SUB-MINIATURE CABLES.

WARNING

EYE PROTECTION SHALL BE WORN DURING ALL SOLDERING, CUTTING, AND STRIPPING PROCEDURES.

1. CUT CABLE END SQUARE. SLIDE CLAMP NUT AND SLOTTED CLAMP OVER CABLE END. STRIP CABLE TO DIMENSIONS SHOWN.

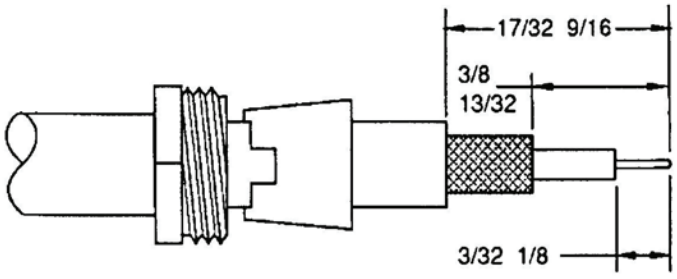
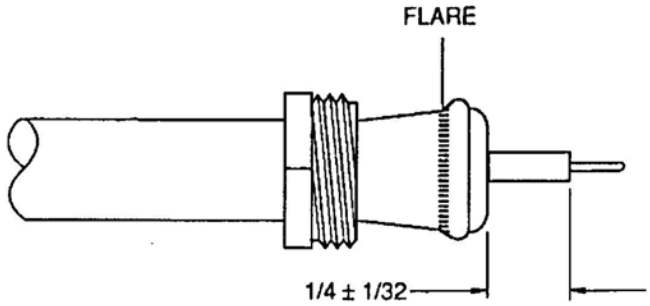


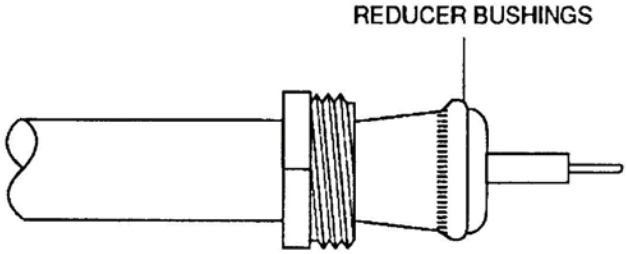
Figure 14. Series TNC Connector Build-Up (Sheet 3 of 4)

2. FLARE OUTER CONDUCTOR, DO NOT COMB OUT. INSERT WEDGE BETWEEN FLARED OUTER CONDUCTOR AND DIELECTRIC TO A POINT WHERE DIELECTRIC EXTENDS TO DIMENSION SHOWN.



3. PUSH SLOTTED CLAMP OVER WEDGE. TIN CENTER CONDUCTOR.

4. WHEN REQUIRED, SLIDE REDUCER BUSHINGS OVER DIELECTRIC AND CENTER CONDUCTOR.



5. SLIDE ADAPTER AND RETAINER BUSHING OVER REDUCER BUSHING ON DIELECTRIC.

6. THREAD CLAMP NUT INTO ADAPTER. HAND TIGHTEN. SLIDE REAR INSULATOR INTO AND AGAINST RETAINER BUSHING.

7. INSTALL CONTACT ON TINNED CENTER CONDUCTOR UNTIL IT BUTTS AGAINST REDUCER BUSHING OR DIELECTRIC. SOLDER CONTACT.

8. INSERT CABLE ASSEMBLY INTO CONNECTOR BODY AND TIGHTEN ADAPTER.

9. ROTATE CABLE SLIGHTLY TO ENSURE SLOTTED CLAMP IS PROPERLY SEATED.

10. TIGHTEN CLAMP NUT AND TORQUE TO 15-20 IN/LBS.

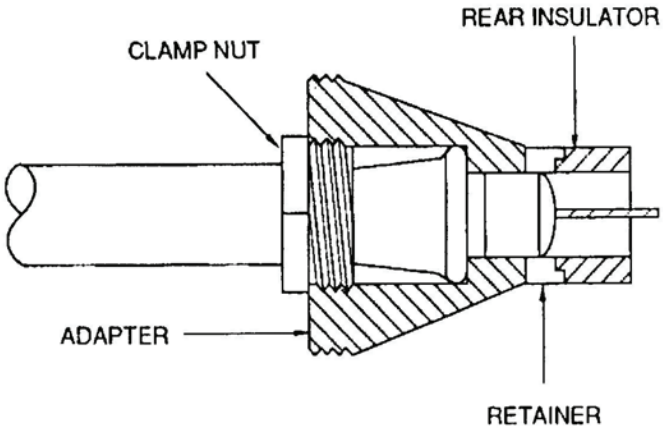


Figure 14. Series TNC Connector Build-Up (Sheet 4 of 4)

1. ENSURE CONNECTOR IS CORRECTLY ASSEMBLED AND INSTALLED.
2. TIGHTLY WRAP TAPE IMMEDIATELY BEHIND CONNECTOR TO PROVIDE SMOOTH CONTOUR BETWEEN CABLE AND CONNECTOR.



3. TIGHTLY WRAP SEVERAL LAYERS OF TAPE WITH 50 PERCENT OVERLAP OVER BUILT-UP JUNCTION. LAYERS SHOULD BE APPLIED IN REVERSE DIRECTIONS WITH A MINIMUM OF FOUR LAYERS.
4. COMPLETED TAPED COVERING SHOULD EXTEND BEYOND EACH CONNECTOR FOR A DISTANCE EQUAL TO 8-12 TIMES THE DIAMETER OF CABLE AND HAVE A SMOOTH SYMMETRICAL CONTOUR.

Figure 15. Moisture Proofing

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0804301

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These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: “Whomever” whomever@wherever.army.mil
To: 2028@redstone.army.mil

Subject: DA Form 2028

1 ***From: Joe Smith***
2 *Unit: home*
3 ***Address: 4300 Park***
4 ***City***: Hometown
5 ***St: MO***
6 ***Zip: 77777***
7 ***Date Sent***: 19--OCT--93
8 ***Pub no***: 55--2840--229--23
9 ***Pub Title: TM***
10 ***Publication Date***: 04--JUL--85
11 *Change Number*: 7
12 *Submitter Rank*: MSG
13 ***Submitter FName***: Joe
14 *Submitter MName*: T
15 ***Submitter LName***: Smith
16 ***Submitter Phone***: 123--123--1234
17 ***Problem: 1***
18 *Page: 2*
19 *Paragraph: 3*
20 *Line: 4*
21 *NSN: 5*
22 *Reference: 6*
23 *Figure: 7*
24 *Table: 8*
25 *Item: 9*
26 *Total: 123*

27 ***Text***:
This is the text for the problem below line 27.

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25--30; the proponent agency is ODISC4.	Use Part II (*reverse*) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/ Supply Manuals (SC/SM)	DATE 8/30/02
TO: (*Forward to proponent of publication or form)(Include ZIP Code*) Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM--MMC--MA--NP Redstone Arsenal, AL 35898	FROM: (*Activity and location)(Include ZIP Code*) MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565	

PART 1 - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-1005-433-24	16 Sep 2002	Organizational, Direct Support, And General Support Maintenance Manual for Machine Gun, .50 Caliber M3P and M3P Machine Gun Electrical Test Set Used On Avenger Air Defense Weapon System

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON
1	WP0005 PG 3		2			Test or Corrective Action column should identify a different WP number.

EXAMPLE

* *Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/ AUTOVON, PLUS EXTENSION	SIGNATURE
MSG, Jane Q. Doe, SFC	788-1234	

TO: (Forward direct to addressee listed in publication)	FROM: (Activity and location) (Include ZIP Code)	DATE
Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898	MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565	8/30/02

PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III - REMARKS (*Any general remarks or recommendations or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.*)

EXAMPLE

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
MSG, Jane Q. Doe, SFC	788-1234	

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS **For use of this form, see AR 25--30; the proponent agency is ODISC4.**	Use PartII(*reverse*) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/ Supply Manuals (SC/SM)	DATE
TO*: (Forward to proponent of publication or form)(Include ZIP Code)* Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898	FROM*: (Activity and location)(Include ZIP Code)*	

PART 1 --ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON

* *Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/ AUTOVON, PLUS EXTENSION	SIGNATURE

T**O:** *(Forward direct to addressee listed in publication)* Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898	**FROM:** *(Activity and location) (Include ZIP Code)*	**DATE**

PART II --REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART II --REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. Ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 decagram = 10 grams = .35 ounce
1 hectogram = 10 decagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. Inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. Inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN: 084660-000