TECHNICAL MANUAL

AVIATION UNIT AND AVIATION INTERMEDIATE MAINTENANCE MANUAL

CH-47D HELICOPTER

This copy is a reprint which includes current pages from Changes 1 - 10.

HEADQUARTERS, DEPARTMENT OF THE ARMY

10 MAY 1983

URGENT

TM 55-1520-240-23-10
C23

CHANGE

NO. 23

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CH-47D HELICOPTER

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i and ii	i and ii
E-1 and E-2	E-1 and E-2
E-2.11/(E-2.12 blank)	E-2.11/(E-2.12 blank)
E-33 and E-34	E-33 and E-34
-----	E-35/(E-36 blank)

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16-3 and 16-4	16-3 and 16-4
16-165 and 16-166	16-165 and 16-166
A-3 and A-4	A-3 and A-4
B-15 through B-20	B-15 through B-20
-------	B-20.1/(B-20.2 blank)
8-47 through B-54	B-47 through B-54
B-54.1/(B-54.2 blank)	B-54.1/(B-54.2 blank)
B-82.1/(B-82.2 blank)	B-82.1/(B-82.2 blank)
B-85 through B-87/(B-88 blank)	B-85 through B-87/(B-88 blank)
E-367/(E-368 blank)	E-367 and E-368
-------	E-369/(E-370 blank)
Index-1 and Index-2	Index-1 and Index-2
Index-3 through Index-8	Index-3 through Index-8
Index-13 and Index-14	Index-13 and Index-14
Index-14.1/(Index-14.2 blank)	Index-14.1/(Index-14.2 blank)
Index-15 through Index-18	Index-15 through Index-18
Index-25 through Index-30	Index-25 through Index-30
Index-31 and Index-32	Index-31 and Index-32
Index-35 through Index-38	Index-35 through Index-38
Index-38.1/(Index-38.2 blank)	Index-38.1/(Index-38.2 blank)
Index-39 through Index-44	Index-39 through Index-44
Index-49 and Index-50	Index-49 and Index-50
Index-51 and Index-52	Index-51 and Index-52
Index-52.1/(Index-52.2 blank)	Index-52.1/(Index-52.2 blank)
Index-53 through Index-58	Index-53 through Index-58
Index-58.1/(Index-58.2 blank)	Index-58.1/(Index-58.2 blank)
Index-59 through Index-68	Index-59 through Index-68
-------	Index-68.1/(Index-68.2 blank)
Index-69 and Index-70	Index-69 and Index-70
-------	Index-70.1/(Index-70.2 blank)
Index-73 through Index-82	Index-73 through Index-82
Index-82.1/(Index-82.2 blank)	Index-82.1/(Index-82.2 blank)
Index-83 and Index-84	Index-83 and Index-84
-------	Index-84.1/(Index-84.2 blank)

Remove pages	**Insert pages**
Index-85 and Index-86	Index-85 and Index-86
Index-86.1/Index-86.2 blank)	Index-86.1/(Index-86.2 blank)
Index-87 through Index-104	Index-87 through Index-104
Index-105 through Index-108	Index-105 through Index-108
Index-108.1/(Index-108.2 blank)	Index-108.1/(Index-108.2 blank)
Index-109 and Index-110	Index-109 and Index-110
Index-115 through Index-118	Index-115 through Index-118
Index-121 and Index-122	Index-121 and Index-122
-------	Index-122.1/(Index-122.2 blank)

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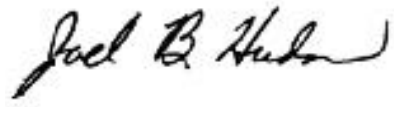

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CH-47D HELICOPTER

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- - -	A through G/(H blank)
v/(vi blank)	v/(vi blank)
- - - -	16-271/(16-272 blank)
- - - - -	16-273(16-274 blank)
- - - - - -	16-275/(16-276 blank)
- - - -	16-277 through 16-280

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i and ii	i and ii
B-43 and B-44	B-43 and B-44
B-79 and B-80	B-79 and B-80
B-80.1/(8-80.2 blank)	---
B-81 and B-82	B-81 and B-82
---	B-82.1/(B-82.2 blank)
---	E-367/(E-368 blank)
Index-1 and Index-2	Index-1 and Index-2

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Remove pages	Insert pages
i and ii	i and ii
E-1 and E-2	E-1 and E-2
E-31/(E-32 blank)	E-31/(E-32 blank)
- - -	E-33 and E-34

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v/(vi blank)	v/(vi blank)
------	16-251 through 16-269/(16-270 blank)
A-1 and A-2	A-1 and A-2
Glossary 1 through Glossary 6	Glossary 1 through Glossary 6
Index-29 and Index-30	Index-29 and Index-30
Index-30.1/(Index-30.2 blank)	------
Index-57 and Index-58	Index-57 and Index-58
Index-107 and Index-108	Index-107 and Index-108
Index-108.1/(Index-108.2 blank)	Index-108.1/(Index-108.2 blank)
Index-109 and Index-110	Index-109 and Index-110

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NO. 16

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AVIATION UNIT AND AVIATION
INTERMEDIATE MAINTENANCE MANUAL

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i and ii	i and ii
12-71 through 12-74	12-71 through 12-74
15-5 and 15-6	15-5 and 15-6
15-21 and 15-22	15-21 and 15-22
B-45 and B-46	B-45 and B-46
B-81 and B-82	B-81 and B-82
E-25/(E-26 blank)	E-25 and E-26
E-183 and E-184	E-183/(E-184 blank)
- - -	E-361 through E-366
G-37 and G-38	G-37 and G-38

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13-2.3 and 13-2.4	13-2.3 and 13-2.4
15-5 and 15-6	15-5 and 15-6
15-21 through 15-24	15-21 through 15-24
16-23 through 16-26	16-23 through 16-26
16-28.3 and 16-28.4	16-28.3 and 16-28.4
16-32.2.1 and 16-32.2.2	16-32.2.1 and 16-32.2.2
16-51 and 16-52	16-51 and 16-52
16-67 and 16-68	16-67 and 16-68
16-247 and 16-248	16-247 and 16-246
B-59 and B-60	B-59 and B-60
E-2.3 through E-2.6	E-2.3 through E-2.6
(blank)/E-38	(blank)/E-38
E-179 and E-180	E-179 and E-180
E-269 and E-270	E-269 and E-270
E-299 and E-300	E-299 and E-306
E-351 and E-352	E-351 and E-352
E-355 and E-356	E-355 and E-356
Index-1 and Index-2	Index-1 and Index-2
Index-2.1/(Index-2.2 blank)	Index-2.1/(Index-2.2 blank)
Index-7 and Index-8	Index-7 and Index-8
Index-61 and Index-62	Index81 and Index-62

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A-1 through A-4	A-1 through A-4
Index-29 and Index-30	Index-29 and Index-30
- - - - -	Index-30.1/(Index-30.2)

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13-11 and 13-12	*13-11 and 13-12*
13-27 and 13-28	*13-27* and 13-28
13-31 and 13-32	13-31 and 13-32
13-35 and 13-36	13-35 and 13-36
13-43 and 13-44	13-43 and 13-44
- - - - -	13-44.1 /(13-44.2 blank)
13-45 and 13-46	13-45 and 13-46
15-5 through 15-10	15-5 through 15-10
15-19 and 15-20	15-19 and 15-20
15-29 and 15-30	15-29 and 15-30
15-31 and 15-32	15-31 and 15-32
15-32.3 through 15-32.6	15-32.3 through 15-32.6
15-33 and 15-34	15-33 and 15-34
16-32.3 through 16-32.6	16-32.3 through 16-32.6
16-35 and 16-36	16-35 and 16-36
16-73 through 16-82	16-73 through 16-82
	16-82.1/(16-82.2 blank)
16-83 through 16-94	16-83 through 16-94
16-147 and 16-148	16-147 and 16-148
B-12.3 and B-12.4	B-12.3 and B-12.4
B-19 and B-20	B-19 and B-20
B-37 and B-38	B-37 and B-38
B-51 and B-52	B-51 and B-52
B-59 and B-60	B-59 and B-60
B-65 and B-66	B-65 and B-66
B-70.1/(B-70.2 blank)	B-70.1/(B-70.2 blank)
B-71 and B-72	B-71 and B-72

Remove pages	Insert pages
E-69 and E-70	E-69 and E-70
E-85 and E-86	E-85 and E-86
E-183 and E-184	E-183 and E-184
E-359 /(E-360 blank)	E-359 /(E-360 blank)
Index-7 and Index-8	Index-7 and Index-8
Index-43 and Index-44	Index-43 and Index-44
Index-53 through Index-56	Index-53 through Index-56
Index-81 and Index-82	Index-81 and Index-82
Index-82.1/(Index-82.2 blank)	Index-82 .1/(Index-82.2 blank)
Index-111 through Index-114	Index-111 through Index-114
Index-121 and Index-122	Index-121 and Index-122

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13-30.1 and 13-30.2	13-30.1/(13-30.2 blank)
----	13-30.2.1 and 13-30.2.2
13-63 through 13-66	13-63 through 13-66
13-105 and 13-106	13-105 and 13-106
13-113 and 13-114	13-113 and 13-114
13-123 and 13-124	13-123 and 13-124
13-129 and 13-130	13-129 and 13-130
14-11 and 14-12	14-11 and 14-12
—-—-	14-12.1 through 14-12.5/ (14-12.6 blank)
16-32.2.1 and 16-32.2.2	16-32.2.1 and 16-32.2.2
--—-	16-164.1 and 16-164.2
B-12.3 and B-12.4	B-12.3 and B-12.4
B-13 and B-14	B-13 and B-14
B–15 and B–16	B-15 and B-16
B-19 through B-22	B-19 through B-22
B-29 and B-30	B–29 and B-30
B-31 and B-32	B-31 and B-32
B-37 through B-42	B-37 through B-42
B–47 and B-48	B-47 and B-48
B-51 and B-52	B-51 and B-52
B-59 and B-60	B-59 and B-60
B-65 and B-66	B-65 and B-66
B-71 and B-72	B-71 and B–72
E-357/(E-358 blank)	E-357 through E-359/ (E-360 blank)
Glossary 1 and Glossary 2	Glossary 1 and Glossary 2
Index-111 and Index-112	Index-111 and Index-112

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e and f	e and f
12-69 and 12-70	12-69 and 12-70
15-19 and 15-20	15-19 and 15-20
----	16-229 through 16-250
E-153 through E-156	E-153 through E-156
Glossary 3 and Glossary 4	Glossary 3 and Glossary 4
Index-99 through Index-102	Index-99 through Index-102
Index-108.1/(Index-108.2 blank)	Index-108.l/(Index-l08.2 blank)

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12-2.1 **and 12-2.2**	**12-2.1 and 12-2.2**
12-25 and 12-26	**12-25 and 12-26**
12-59 through 12-62	**12-59 through 12-62**
12-71 and 12-72	**12-71 and 12-72**
13-31 and 13-32	**13-31 and 13-32**
13-63 through 13-66	**13-63 through 13-66**
14-3 and 14-4	**14-3 and 14-4**
14-35 and 14-36	**14-35 and 14-36**
15-13 and 15-14	**15-13 and 15-14**
15-19 and 15-20	**15-19 and 15-20**
15-33 and 15-34	**15-33 and 15-34**
16-5 through 16-10	**16-5 through 16-10**
16-10.1 through 16-10.4	**16-10.1 through 16-10.4**
16-10.15/16-10.16	**16-10.15/16-10.16**
16-11 and 16-12	**16-11 and 16-12**
16-34.1/16-34.2	**16-34.1/16-34.2**
B-12.7 and B-12.8	**B-12.7 and B-12.8**
B-13 and B-14	**B-13 and B-14**
- - - -	**B-14.1/B-14.2**
B-21 and B-22	**B-21 and B-22**
B-29 and B-30	**B-29 and B-30**
B-43 and B-44	**B-43 and B-44**
B-75 through B-78	**B-75 through B-78**
E-2.3 through E-2.10	**E-2.3 through E-2.11/E-2.12**
E-3 through E-18	**E-3 through E-18**
E-25 through E-37	**E-25 through E-31/E-32**
E-38	**E-38**
E-61 and E-62	**E-61 and E-62**
E-67 and E-68	**E-67 and E-68**
E-72	**E-72**
E-84.1 through E-84.4	**E-84.1 through E-84.4**
E-91 through E-94	**E-91 through E-94**
E-141 and E-142	**E-141 and E-142**
E-143 and E-144	**E-144**
E-153 and E-154	**E-153 and E-154**
E-269 and E-270	**E-269 and E-270**

Remove pages	Insert pages
E-297 and E-298	E-297 and E-298
E-313/E-314	E-313 through E-357/E-358
Index 103 and Index 104	Index 103 and Index 104

2. Retain this sheet in front of manual for reference purposes.

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Official:

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CHANGE NO. 9

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WASHINGTON, D.C., 18 October 1990

Aviation Unit and Aviation Intermediate Maintenance Manual

CH-47D HELICOPTER

TM 55-1520-240-23-10, 10 May 1983, **is changed as follows:**

1. **Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.**

Remove pages	Insert pages
12-53 and 12-54	12-53 and 12-54
12-67 and 12-68	12-67 and 12-68
14-3 and 14-4	14-3 and 14-4
16-3 and 16-4	16-3 and 16-4
16-27 and 16-28	16-27 and 16-28
16-35 and 16-36	16-35 and 16-36
16-49 and 16-50	16-49 and 16-50
16-107 through 16-110	16-107 through 16-110
A-1 and A-2	A-1 and A-2
B-7 through B-12	B-7 through B-12
---	B-12.1 through B-12.8
B-13 and B-14	B-13 and B-14
B-19 and B-20	B-19 and B-20
B-25 and B-26	B-25 and B-26
B-30.1/B-30.2	B-30.l/B-30.2
B-31 and B-32	B-31 and B-32
B-53 and B-54	B-53 and B-54
B-54.1/B-54.2	B-54.l/B-54.2
B-77 through B-80	B-77 through B-80
---	B-80.l/B-80.2
B-81 and B-82	B-81 and B-82
B-85 and B-86	B-85 and B-86
B-87/B-88	B-87/B-88
E-1 and E-2	E-1 and E-2
E-2.1 through E-2.6	E-2.1 through E-2.6
---	E-2.7 through E-2.10
E-23 and E-24	E-23 and E-24
E-31 and E-32	E-31/E-32
E-33 through E-38	E-38
E-43 and E-44	E-43 and E-44
E-59 and E-60	E-59 and E-60
E-71 and E-72	E-72
E-73 through E-84	E-73 through E-84
---	E-84.1 through E-84.6
E-85 and E-86	E-85 and E-86
E-93 through E-96	E-93 through E-96

Remove pages	Insert pages
E-119 and E-120	E-119 and E-120
E-223/E-224	E-223 through E-313/E-314
G-1 and G-2	G-1 and G-2
Index 1 and Index 2	Index 1 and Index 2
Index 3 through Index 6	Index 3 through Index 6
Index 11 through Index 14	Index 11 through Index 14
- - -	Index 14.1/Index 14.2
Index 17 and Index 18	Index 17 and Index 18
Index 21 and Index 22	Index 21 and Index 22
Index 25 and Index 26	Index 25 and Index 26
Index 31 and Index 32	Index 31 and Index 32
Index 37 and Index 38	Index 37 and Index 38
Index 38.1/Index 38.2	Index 38.1/Index 38.2
Index 43 through Index 48	Index 43 through Index 48
Index 51 and Index 52	Index 51 and Index 52
Index 59 through Index 62	Index 59 through Index 62
Index 65 and Index 66	Index 65 and Index 66
Index 73 through Index 76	Index 73 through Index 76
Index 81 and Index 82	Index 81 and Index 82
Index 82.1/Index 82.2	Index 82.1/Index 82.2
Index 85 and Index 86	Index 85 and Index 86
Index 91 through Index 96	Index 91 through Index 96
Index 103 and Index 104	Index 103 and Index 104
Index 107 and Index 108	Index 107 and Index 108
Index 108.1/Index 108.2	Index 108.1/Index 108.2
Index 109 and Index 110	Index 109 and Index 110
Index 113 and Index 114	Index 113 and Index 114
Index 119 through Index 122	Index 119 through Index 122

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CHANGE NO. 8

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WASHINGTON, D.C., 1 November 1989

Aviation Unit and Aviation Intermediate Maintenance Manual

CH-47D HELICOPTER

TM 55-1520-240-23-10, 10 May 1983, is changed as follows:

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Remove pages	Insert pages
12-3 and 12-4	12-3 and 12-4
13-31 through 13-34	13-31 through 13-34
13-105 and 13-106	13-105 and 13-106
---	13-106.1/13-106.2
---	13-110.1/13-110.2
13-111 through 13-114	13-111 through 13-114
15-3 and 15-4	15-3 and 15-4
15-7 and 15-8	15-7 and 15-8
15-21 and 15-22	15-21 and 15-22
16-2.1 through 16-2.6	16-2.1 through 16-2.7/16-2.8
16-3 through 16-10	16-3 through 16-10
16-10.1/16-10.2	16-10.1 through 16-10.15/16-10.16
16-11 and 16-12	16-11 and 16-12
---	16-12.1 and 16-12.2
16-17 and 16-18	16-17 and 16-18
---	16-18.1 through 16-18.6
16-19 and 16-20	16-19 and 16-20
16-21 and 16-22	16-21 and 16-22
16-27 and 16-28	16-27 and 16-28
16-28.1 through 16-28.8	16-28.1 through 16-28.17/16-28.18
16-29 through 16-32	16-29 through 16-32
16-32.1 and 16-32.2	16-32.1 and 16-32.2
---	16-32.2.1 through 16-32.2.5/16-32.2.6
16-32.3 through 16-32.6	16-32.3 through 16-32.6
16-33 and 16-34	16-33 and 16-34
16-37 through 16-40	16-37 through 16-40
16-115 and 16-116	16-115 and 16-116
16-121 through 16-130	16-121 through 16-130
---	16-130.1 through 16-130.4
16-131 through 16-134	16-131 through 16-134
---	16-134.1 and 16-134.2
16-135 through 16-140	16-135 through 16-140
---	16-140.1 and 16-140.2
16-141 and 16-142	16-141 and 16-142
16-197 and 16-198	16-197 and 16-198
16-201 and 16-202	16-201 and 16-202

Remove pages	Insert pages
B-13 and B-14	B-13 and B-14
B-19 through B-26	B-19 through **B-26**
B-29 and B-30	**B-29 and B-30**
B-33 and B-34	**B-33 and B-34**
---	**B-34.l/B-34.2**
B-43 and B-44	**B-43 and B-44**
B-47 through B-SO	**B-47** through **B-50**
B-53 and B-54	**B-53** and B-54
B-59 and B-60	**B-59 and B-60**
B-63 and B-64	**B-63 and B-64**
B-67 though B-70	**B-67** through **B-70**
B-70.1 and B-70.2	**B-70.l/B-70.2**
B-71 and B-72	**B-71 and B-72**
B-85 and B-86	**B-85 and B-86**
B-87/B-88	**B-87/B-88**
E-1 and E-2	**E-1 and E-2**
E-2.l/E-2.2	**E-2.1 through E-2.6**
E-31 through E-36	**E-31 through E-36**
E-49 and E-50	**E-49 and E-50**
E-55 through E-60	**E-55 through** E-60
E-69 and E-70	E-69 and E-70
E-79 and E-80	E-79 and E-80
E-83 and E-84	**E-83 and E-84**
E-91 and E-92	**E-91 and E-92**
E-97 and E-98	**E-97 and E-98**
E-157/E-158	**E-157 through E-223/E-224**
Index-1 and Index-2	**Index-1 and Index-2**
Index-3 and Index-4	**Index-3 and Index-4**
Index-11 and Index-12	**Index-11 and Index-12**
Index-18.1/Index-18.2	**Index 18.1/Index 18.2**
Index-19 through Index-22	**Index-19 through Index-22**
Index-25 through Index-28	**Index-25 through** Index-28
Index-33 and Index-34	Index-33 and Index-34
Index-37 and Index-38	Index-37 and Index-38
---	Index-38.1/Index-38.2
Index-39 and Index-40	Index-39 and Index-40
Index-45 through Index-50	Index-45 through Index-50
---	Index-50.1/Index-50.2
Index-51 through Index-56	Index-51 through Index-56
---	Index-58.1/Index-58.2
Index-59 and Index-60	Index-59 and Index-60
Index-63 through Index-78	Index-63 through Index-78
Index-81 and Index-82	Index-81 and Index-82
Index-83 through Index-86	Index-83 through **Index-86**
Index-87 and Index-88	**Index-87 and Index-88**
Index-95 and Index-96	**Index-95 and Index-96**
Index-103 and Index-104	Index-103 and Index-104
Index-107 and Index-108	Index-107 and Index-108
Index-117 and Index-118	Index-117 and Index-118
Index-121 through Index-124	Index-121 through Index-124

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CHANGE NO. 7

HEADQUARTERS
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WASHINGTON, D.C., 1 May 1988

Aviation Unit and Aviation Intermediate Maintenance Manual

CH-47D HELICOPTER

TM 55-1520-240-23-10, 10 May 1983, is changed as follows:

1. **Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.**

Remove pages	Insert pages
12-1/12-2	**12-1/12-2**
12-2.1 and 12-2.2	**12-2.1 and** 12-2.2
12-2.3/12-2.4	12-2.3 and 12-2.4
12-15 and 12-16	12-15 and 12-16
12-16.1/12-16.2	12-16.1 **and 12-16.2**
---	**12.16.3/12-16.4**
12-17 and 12-18	**12-17 and 12-18**
12-67 and 12-68	**12-67 and 12-68**
13-1/13-2	**13-1/13-2**
13-2.1 and 13-2.2	**13-2.1 and 13-2.2**
---	**13-2.3 and 13-2.4**
13-3 and 13-4	**13-3 and 13-4**
14-1/14-2	**14-1/14-2**
14-2.1 and 14-2.2	**14-2.1 and 14-2.2**
14-2.3/14-2.4	**14-2.3 and 14-2.4**
---	**14-2.5 and 14-2.6**
---	**14-2.7/14-2.8**
14-5 thru 14-12	**14-5 thru 14-12**
15-1/15-2	**15-1/15-2**
15-2.1 and 15-2.2	**15-2.1 and 15-2.2**
16-1/16-2	**16-1/16-2**
16-2.1 and 16-2.2	**16-2.1 and 16-2.2**
16-2.3/16-2.4	**16-2.3 and 16-2.4**
---	**16-2.5 and 16-2.6**
16-28.1 thru 16-28.4	**16-28.1 thru 16-28.4**
16-154.1/16-154.2	**16-154.1/16-154.2**
16-155 and 16-156	**16-155 and 16-156**
16-156.1/16-156.2	**16-156.1/16-156.2**
---	**16-156.3/16-156.4**
A-1 and A-2	**A-1 and A-2**
B-7 thru B-12	**B-7 thru B12**
B-19 thru B-26	**B-19 thru B-26**
B-35 and B-36	**B-35 and B-36**

Remove pages	Insert pages
B-39 and B-40	B-39 and B-40
B-59 and B-60	B-59 and B-60
B-69 thru B-70	B-69 thru B-70
B-83 thru B-86	B-83 thru B-86
E-1 and E-2	E-1 and E-2
---	E-2.1/E-2.2
E-49 and E-50	E-49 and E-50
---	E-50.1/E-50.2
E-53 and E-54	E-53 and E-54
E-59 thru E-62	E-59 thru E-62
E-71 and E-72	E-71 and E-72
E-85 and E-86	E-85 and E-86
---	E-103 thru E-156
---	E-157/E-158
G-1/G-2	G-1 and G-2
---	G-3 thru G-40

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By Order of the **Secretary of** the **Army:**

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General, United States Army
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CH-47D HELICOPTER

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Remove pages	Insert pages
i through iv	i through iv
12-51 through 12-54	12-51 through 12-54
12-55 and 12-56	12-55
12-57 and 12-58	12-58
12-59 through 12-72	12-59 through 12-72
13-61 and 13-62	13-61 and 13-62
13-65 and 13-66	13-65 and 13-66
14-3 through 14-12	14-3 through 14-12
14-39 through 14-44	14-39 through 14-44
15-9 and 15-10	15-9 and 15-10
15-13 through 15-16	15-13 through 15-16
15-19 and 15-20	15-19 and 15-20
16-21 and 16-22	16-21 and 16-22
16-48.1/16-48.2	16-48.1/16-48.2
A-1 through A-4	A-1 through A-4
B-1 through B-4	B-1 through B-4
B-7 and B-8	B-7 and B-8
B-23 through B-28	B-23 through B-28
---	B-30.1/B-30.2
B-31 through B-34	B-31 through B-34
B-36.1/B-36.2	B-36.l/B-36.2
B-41 through B-44	B-41 through B-44
B-49 through B-54	B-49 through B-54
B-57 through B-60	B-57 through B-60
B-73 and B-74	B-73 and B-74
B-85 and B-86	B-85 and B-86
E-1 and E-2	E-1 and E-2
E-7 and E-8	E-7 and E-8
E-99/E-100	E-99 through E-102
Index-1 and Index-2	Index-1 and Index-2
---	Index-2.l/Index-2.2
Index-9 and Index-10	Index-9 and Index-10
---	Index-10.l/Index-10.2
----	Index-18.l/index-18.2
Index-19 and Index-20	Index-19 and Index-20
---	Index-24.1/Index-24.2
Index-25 through Index-28	Index-25 through Index-28
Index-37 and Index-38	Index-37 and Index-38
Index-41 and Index-42	Index-41 and Index-42

Remove pages	Insert pages
Index-45 and Index-46	Index-45 and Index-46
Index-53 and Index-54	Index-53 and Index-54
Index-61 and Index-62	Index-61 and Index-62
Index-77 through Index-82	Index-77 through Index-82
---	Index-82.1/Index-82.2
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---	Index-86.l/Index-86.2
Index-89 and Index-90	Index-89 and Index-90
Index-103 and Index-104	Index-103 and Index-104
---	Index-104.1/Index-104.2
Index-107 and Index-108	Index-107 and Index-108
---	Index-108.1/Index-108.2
Index-109 through Index-112	Index-109 through Index-112
Index-117 through Index-124	Index-117 through Index-124

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TM 55-1520-240-23-10
C 5

CHANGE NO. 5

HEADQUARTERS
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WASHINGTON, D.C., 23 April 1987

Aviation Unit and Aviation Intermediate Maintenance Manual

CH-47D HELICOPTER

TM 55-1520-240-23-10, 10 May 1983, is changed as follows:

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Remove pages	Insert pages
B-71 and B-72	B-71 and B-72
E-1 and E-2	E-1 and E-2
- - -	E-99/(E-l00)

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Aviation Unit and Aviation Intermediate
Maintenance Manual

CH-47D HELICOPTER

TM 55-1520-240-23-10, 10 May 1983, is changed as follows:

1. Remove and insert pages as indicated below. New or changed,text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
g/h	g/h
12-5 and 12-6	12-5 and 12-6
12-37 and 12-38	12-37 and 12-38
---	12-38.1 and 12-38.2
12-65 through 12-68	12-65 through 12-68
13-11 through 13-16	13-11 through 13-16
13-19 through 13-22	13-19 through 13-22
13-29 and 13-30	13-29 and 13-30
---	13-30.1 through 13-30.8
13-41 and 13-42	13-41 and 13-42
13-161 and 13-162	13-161 and 13-162
13-165 and 13-166	13-165 and 13-166
14-25 through 14-34	14-25 through 14-34
15-13 and 15-14	15-13 and 15-14
15-25 and 15-26	15-25 and 15-26
16-5 and 16-6	16-5 and 16-6
16-9 and 16-10	16-9 and 16-10
---	16-10.1/16-10.2
16-27 and 16-28	16-27 and 16-28
16-29 through 16-32	16-29 through 16-32
---	16-32.1 through 16-32.6
---	16-34.1/16-34.2
16-71 and 16.72	16-71 and 16-72
16-85 and 16-86	16-85 and 16-86
16-145 and 16-146	16-145 and 16-146
16-153 and 16-154	16-153 and 16-154
16-157 through 16-160	16-157 through 16-160
16-185/16-186	16-185 and 16-186
---	16-187 through 16-204
---	16-204.1/16-204.2
	16-205 through 16-227/ 16-228
17-17 and 17-18	17-17 and 17-18
A-1 and A-2	A-1 and A-2
B-9 through B-14	B-9 through B-14
B-17 through B-28	B-17 through B-28
---	B-28.l/B-28.2
B-29 through B-36	B-29 through B-36

Remove pages	Insert pages
---	B-36.l/B-36.2
B-45 through B-50	B-45 through B-50
B-53 and B-54	B-53 and B-54
---	B-54.l/B-54.2
B-57 through B-60	B-57 through B-60
B-65 through B-68	B-65 through B-68
-- -	B-70.1 through B-70.4
B-71 through B-85/B-86	B-71 through B-87/B-88
E-1 and E-2	E-1 and E-2
E-23 and E-24	E-23 and E-24
E-49 and E-50	E-49 and E-50
E-55/E-56	E-55 and E-56
---	E-57 through E-98
Index 1 through Index 118	Index 1 through Index 126

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Chief of Staff

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Brigadier General, United States Army
The Adjutant General

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TM 55-1520-240-23-10
C 3

CHANGE

NO. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 28 August 1986

Aviation Unit and Intermediate Maintenance Instructions

CH-47D HELICOPTER

TM 55-1520-240-23-10, 10 May 1983, is changed as follows:

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Remove pages	Insert pages
16-127 and 16-128	16-127 and 16-128

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TM 55-1520-240-23-10
C 2

CHANGE
NO. 2

HEADQUARTERS
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WASHINGTON, D.C., 18 April 1986

Aviation Unit and Intermediate Maintenance Instructions

CH-47D HELICOPTER

TM 55-1520-240-23-10, 10 May 1983, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
16-37 and 16-38	16-37 and 16-38
16-101 and 16-102	16-101 and 16-102
16-104.1/16-104.2	16-104.1/16-104.2

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CHANGE

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WASHINGTON, D. C., 18 April 1985

Aviation Unit and Intermediate Maintenance Instructions

CH-47D HELICOPTER

TM 55-1520-240-23-10, 10 May 1983, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
12.2.3/12.2.4	12.2.3/12.2.4
12-3 through 12-6	12-3 through 12-6
12-9 and 12-10	12-9 and 12-10
12-15 and 12-16	12-15 and 12-16
12-25 and 12-26	12-25 and 12-26
12-29 through 12-32	12-29 through 12-32
12-67 through 12-70	12-67 through 12-70
12-83 and 12-84	12-83 and 12-84
12-87 and 12-88	12-87 and 12-88
12-97 through 12-104	12-97 through 12-104
13-11 and 13-12	13-11 and 13-12
13-43 through 13-46	13-43 through 13-46
13-57 through 13-60	13-57 through 13-60
13-79 and 13-80	13-79 and 13-80
13-105 and 13-106	13-105 and 13-106
14-25 and 14-26	14-25 and 14-26
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2. Retain this sheet in front of manual for reference purposes.

By Order of the Secretary of the Army:

JOHN A. WICKHAM, JR.
General, United States Army
Chief of Staff

Official:

DONALD J. DELANDRO
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-31, Organizational, Direct Support and General Support Maintenance requirements for CH-47D aircraft.

WARNING AND FIRST AID DATA.

For artificial respiration and other first aid data, refer to FM 21-11.

Personnel performing instructions involving operations, procedures, and practices which are included or implied in this technical manual shall observe the following instructions. Disregard of these warnings and precautionary information can cause serious injury, illness, death, or an aborted mission.

WARNING

An operating procedure, practice, etc.. which if not correctly followed, could result in personal injury or loss of life.

CAUTION

An operation procedure, practice, etc., which if not strictly observed, could result in damage to or destruction of equipment.

NOTE

An operating procedure, condition, etc., which is essential to highlight.

WARNING

Cleaning Solvents

- Those areas of skin and clothing that come in contact with cleaning solvents should be thoroughly washed immediately.
- Saturated clothing should be removed immediately.
- Areas in which cleaning solvents are used should be adequately ventilated to keep vapors toa minimum.
- If cleaning solvents contact the eyes, nose, or ears, flush them with generous quantities of water, and then seek medical attention immediately.

WARNING

Electrical and Electronic Equipment Maintenance

- Do not wear rings, watches, or metal jewelry when working around electrical equipment. Serious burns can result.
- Be careful when working on 150- and 300-volt dc circuits and on ac generator 115- and 200-volt ac outputs. Serious burns can result.

WARNING

Dangerous Static Charges

Ground the helicopter during parking, fueling, or defueling. Sparks can cause fuel vapor to ignite.

WARNING

Dangerous Voltages at Antenna Terminals

Be careful when working near antenna or antenna terminals. Radio frequency (rf) voltages exist **at those points** when transmitters are operating. Contact with **radiating** antennas can cause serious rf burns.

WARNING

Poisonous Carbon Monoxide Fumes

Toxic carbon monoxide fumes may be present inside the helicopter whenever engines or apu are operating with cargo ramp open. Ventilate the cockpit.

WARNING

Corrosive Battery Electrolyte
(Potassium Hydroxide)

- The electrolyte used in nickel-cadmium batteries contains potassium hydroxide which is a caustic substance.
- Contact with skin or eyes will cause burns.
- Use rubber gloves, rubber apron. **and protective eye covering or face shield when handling battery.**
- if personal contact with electrolyte occurs, flush immediately with large amounts of only clean water. Get medical attention immediately.

WARNING

Explosive Battery Hazard

- Before removing or installing battery, make sure battery switch is OFF and battery has cooled down if overheated.
- Connecting or disconnecting battery connector while battery is under load may *cause* explosion or electrical arcing resulting in injury to personnel.

WARNING

Electrolyte Contamination

. Separate nickel. cadmium batteries and lead-acid type batteries as far as possible from each other.

- Do not let anything associated with a lead-acid battery, including air, come in contact with a nickel-cadmium battery or its electrolyte. Sulfuric acid fumes from a lead-acid battery could result in damage to a nickel-cadmium battery leading to battery failure and a hazard to personnel.
- Do not use same tools or **protective clothing** for both types of batteries.
- If sulfuric acid has been somehow mixed with electrolyte in the battery, the upper areas of the battery cells will appear green in color indicating battery failure or damage and potential danger to personnel unless replaced.

WARNING

Acids and Alkalines

- Do not add water to acid. A violent action will result. Add acid to water in small quantities.
- Rust stripper is an alkaline solution.
- Avoid skin contact. Wear protective clothing. Wash thoroughly after using.

WARNING

Windshield Rain Repellent

- Do not let windshield rain repellent contact open flame. Deadly hydrogen fluoride gas could be generated.
- Wash hands with **soap** and water after handling repellent,

WARNING

Antiseize Compounds

- Some antiseize compounds are irritants. Avoid inhaling fumes and contact with skin.
- Wear protective clothing. Wash thoroughly after using.

WARNING

Paints, Varniahes, Dopes, Thinners, and Lubricants

- **These** materials are **generally** highly flammable and may be irritants. Work in a well-ventilated area away from open flames.
- Avoid inhaling fumes and prolonged contact with skin. Wash thoroughly after using.

WARNING

Epoxy Resins, Cements, and Adhesives

- These materials may contain toxic or irritating substances. They may also be flammable. Work in a well-ventilated area away from open flames.
- Wear protective clothing. Avoid contact with skin. Wash thoroughly after using.

WARNING

Radiation Hazard

- Some instruments contain radioactive material. Do not try to disassemble these. instruments. They present no radiation hazard unless seal is broken.
- If you think seal is broken, do not remove instrument from helicopter before consulting Base Radioactive Protection Officer (AR 40-15).
- Use a beta-gamma radiac meter AN/PDR-27 or equivalent to determine if instrument contains radioactive material (radium).

WARNING

Fire Extinguishing Agents

- Monobromotrifluoromethane (CF_3Br) is highly volatile but is not easily detected by smell. It is not toxic, but reduces oxygenavailable for proper breathing.
- If liquid CF_3Br contacts skin, it can cause frostbite or low temperature burns.
- If agent touches eyes or skin, immediately flush affected area with running water. Get medical attention.

WARNING

Noise

- Sound pressure levels in **this** helicopter during some operating conditions exceed the Surgeon General's hearing conservation criteria **(TB MED251).**
- **Hearing protection devices, such as** aviator helmet **or ear plugs,** shall be **worn by all personnel in and around the helicopter during operation.**

WARNING

FOD

- **Make sure area is clear of foreign objects before closing access doors, panels, and fairings.**
- If area is not clear, damage to components or systems could result **in personal injury or death.**

WARNING

JP-4/JP-5 Fuel
MIL-T-5624

- **Fuel is flammable. Do not use near welding areas, open flames, or on very hot surfaces.**
- **Use only with adequate ventilation.**
- **Avoid prolonged or repeated contact with skin. Prolonged contact may cause drying and irritation of skin.**
- **Remove saturated clothing immediately.**
- **Do not smoke when handling fuel.**
- **Do not take internally.**
- **Store in approved, metal safety containers.**

WARNING

Lubricating Oils
MIL-L-23699 or MIL-L-7808

- **If oil is decomposed by heat, toxic gases are released.**
- **Prolonged contact with liquid or mist may cause dermatitis and irritation.**
- **If there is prolonged contact with skin, wash affected area with soap and water. If oil contacts eyes, flush with water immediately. Remove saturated clothing.**
- **If swallowed, do not try to vomit. Seek immediate medical attention.**
- **When handling liquid oil, wear rubber gloves. If prolonged contact with mist is likely, wear approved respirator.**

WARNING

Lifting Components With Hoist

- Lifting or hoisting of components shall only be done by designated personnel.
- The load capacity rating shall be clearly marked on hoist. Do not exceed load rating.
- Inspection and testing for cracks or defects in hoist system shall be performed on a regular basis.
- Before lifting, alert personnel in immediate areas.
- Before lifting, balance the load,
- Do not stand under load while it is being moved from one area to another on a hoist.
- Do not stand under load to do maintenance work.
- When positioning or stowing the cargo hook, do not grasp the hook assembly by the synchronizing assembly shaft. Serious injury can result. The strap handle is to be used when positioning or stowing the hook.

WARNING

Hydraulic Pressures

- High pressures used in testing hydraulic components can cause line rupture or component failure.
- Only qualified personnel shall operate, service, and maintain hydraulic test equipment.
- Use heavy plastic shielding at least 1/2-inch thick when applying pressures over 250 psi to prevent injury to personnel.

WARNING

Hydraulic Fluid

- Hydraulic fluid is toxic. It can irritate skin and eyes and cause burns. When fluid is decomposed by heating, it releases toxic gases.
- Avoid inhaling, Use only with adequate ventilation. If prolonged contact with mist is likely, wear an appropriate respirator.
- Avoid contact with skin, eyes, or clothing. Wear rubber gloves if handling liquid.
- In case of contact with the skin, immediately wash skin with soap and water. In case of contact with eyes, flush them immediately with clear water and get medical attention.
- If liquid is swallowed, do not induce vomiting; get immediate medical attention.

WARNING

Compressed Air

- Do not use more than 30 psi compressed air for cleaning purposes. Debris propelled under pressure can cause injury to eyes.
- Use eye protection to prevent injury to personnel.

WARNING

Flare Dispenser

- Flares can accidentally fire, sometimes from stray voltage. Injury or death can result.
- Remove all electrical power from helicopter before installing loaded payload module on dispenser assembly.
- Keep hands and face away from end **of** payload module during installation.

WARNING

Maintenance Platforms/Workstands

- Use only appropriate maintenance platforms/workstands illustrated in TM 55-405-10, or other approved locally procured stands and restraint equipment, when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

WARNING

- Do not wear eyeglasses having light sensitive lenses while performing magnetic particle (black light) or fluorescent penetrant inspections.
- Such lenses have a 16 to 45 percent light transmission loss.

. Wearing them can result in failure to detect flaws and cracks under ultraviolet light.

WARNING

Cadmium-Plated Tools

- Use only chrome-plated or unplated steel tools when working on the helicopter.
- Cadmium or zinc-plated tools are not permitted, since these platings are prone to chipping and flaking. The chips and flakes could cause corrosion or fluid contamination.
- All tools, regardless of plating type, shall be serviceable and free of chipping.

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TECHNICAL MANUAL

NO. 55-1520-240-23

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 10 May 1983

Aviation Unit and Aviation Intermediate Maintenance Manual
CH-47D HELICOPTER

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve these procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, US Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5230. A reply will be furnished directly to you. You may also send your comments electronically to our e-mail address: 2028@redstone.army.mil or by fax (256) 842-6546/DSN 788-6546. Instructions for sending an electronic 2028 may be found at the end of this manual immediately preceding the hard copy 2028.

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CHAPTER 12
UTILITY SYSTEMS

SECTION I
WINDSHIELD AND ANTI-ICING SYSTEM DESCRIPTION AND THEORY OF OPERATION

12-1 WINDSHIELD ANTI-ICING SYSTEM 12-1

DESCRIPTION

The windshield anti-icing system operates independently on the three cockpit windshields. The pilot's and copilot's windshields have anti-icing and anti-fogging systems. The center windshield has an anti-fogging system only.

The total system consists of the three windshields, three switches on the overhead **panel, and three relays and control boxes behind the nose dynamic absorber. Each windshield is made of laminated layers with an imbedded temperature sensor. The inner surface of the outside layer is a transparent heating element. When the switch is operated, current passes through the transparent element, heating the windshield.**

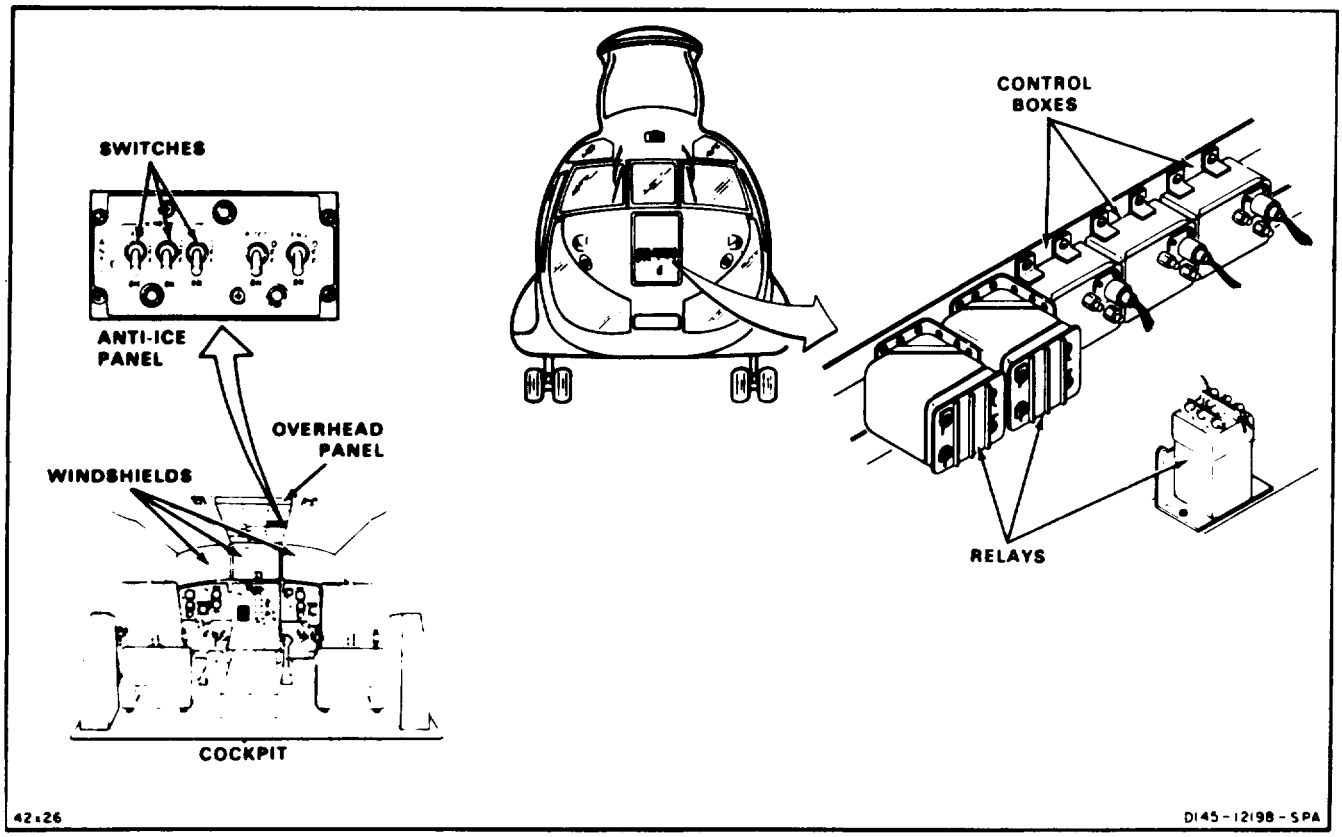
Electrical circuits for the three windshields are identical, except that the cut-in temperature for the center windshield is lower.

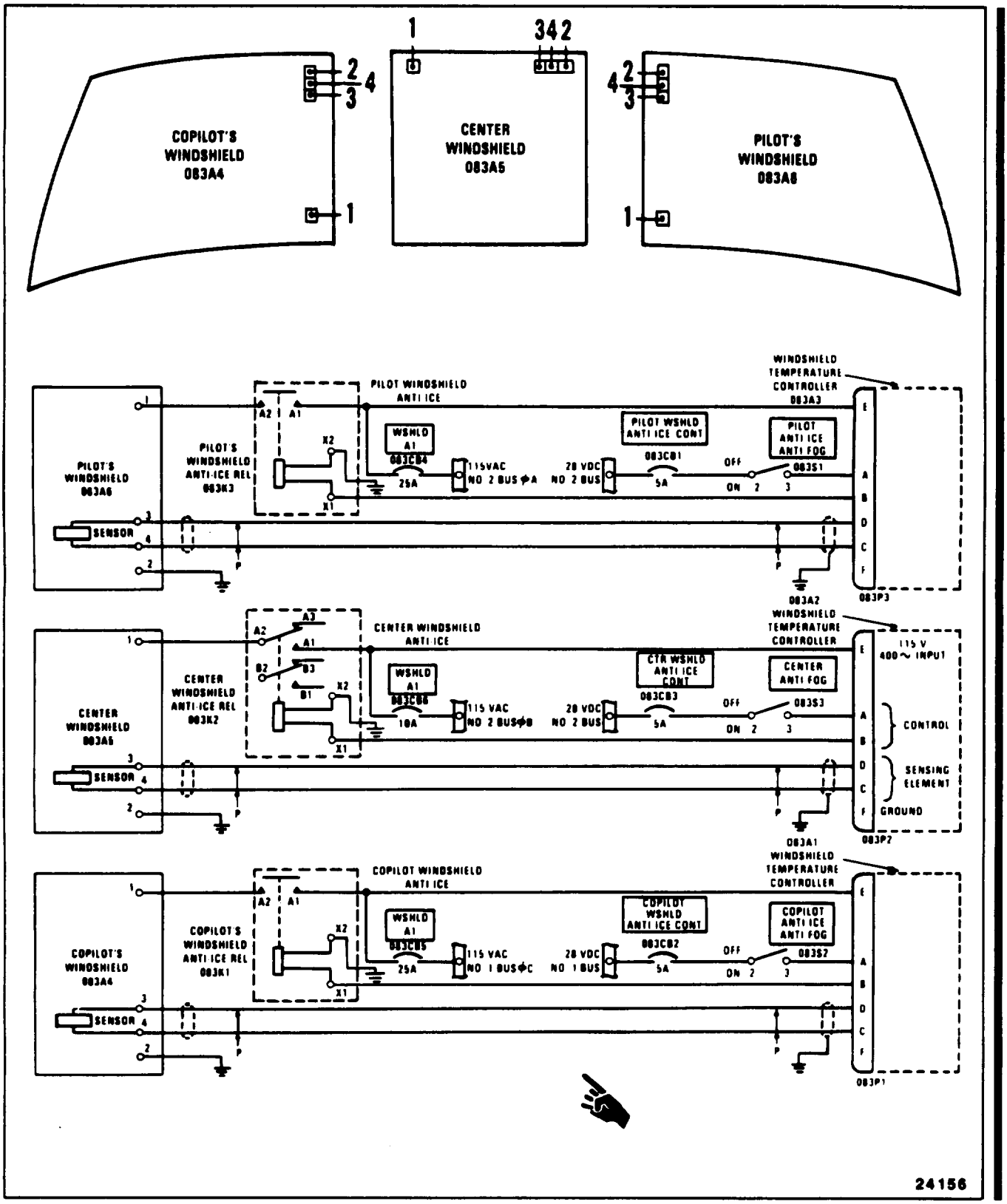
THEORY OF OPERATION

When any of the windshield switches on the ANTI-ICE overhead panel is moved to ON, 28 volts dc **is applied to the** temperature controllor **for the associated windshield. If the temperature of the windshield, as sensed by an** imbedded sensor, is below **90°F (32°C) (pilot's or copilot's windshield) or 80°F {27°C) (center windshield),** relay K1 In the controller **is energized, applying 115 volts ac to the** heating element **in the windshield,**

As windshield temperature increases, resistance within the sensor also increases. When the temperature reaches 110°F (43°C), sensor resistance is high enough to reenergize the anti-ice power relay, **cutting off power to the** heating element. **When the windshield cools, the** sensor **reenergize the** relay **and current flows again to the** heating element.

Power for the pilot's and center windshield comes from the No. 2 ac bus. **Power for the copilot's windshield comes from the No. 1** ac bus. **Temperature control of the pilot's and center windshield is through the No. 2** dc bus. **Control of copilot's windshield temperature is through the No.** 1 dc bus.




COPILOT'S WINDSHIELD 083A4
CENTER WINDSHIELD 083A5
PILOT'S WINDSHIELD 083A6
PILOT WINDSHIELD ANTI ICE
WINDSHIELD TEMPERATURE CONTROLLER 083A3
PILOT'S WINDSHIELD ANTI-ICE REL 083K3
WSHLD A1 083CB4
25A
115VAC NO 2 BUS
28 VDC NO 2 BUS
PILOT WSHLD ANTI ICE CONT 083CB1
5A
PILOT ANTI ICE ANTI FOG
083S1
OFF
ON
SENSOR
083A2
083P3
CENTER WINDSHIELD ANTI ICE
CENTER WINDSHIELD ANTI-ICE REL 083K2
WSHLD A1 083CB6
10A
115 VAC NO 2 BUS
CTR WSHLD ANTI ICE CONT 083CB3
CENTER ANTI FOG
083S3
115 V 400 ~ INPUT
CONTROL
SENSING ELEMENT
GROUND
083A1
083P2
COPILOT WINDSHIELD ANTI ICE
COPILOT'S WINDSHIELD ANTI ICE REL 083K1
WSHLD A1 083CB5
25A
115 VAC NO 1 BUS
28 VDC NO 1 BUS
COPILOT WSHLD ANTI ICE CONT 083CB2
5A
COPILOT ANTI ICE ANTI FOG
083S2
083P1
24156

END OF TASK

SECTION II
WINDSHIELD ANTI-ICING SYSTEM

12-2 TEST CENTER WINDSHIELD ANTI-FOGGING ELEMENT 12-2

INITIAL SETUP

Applicable Configurations:
All

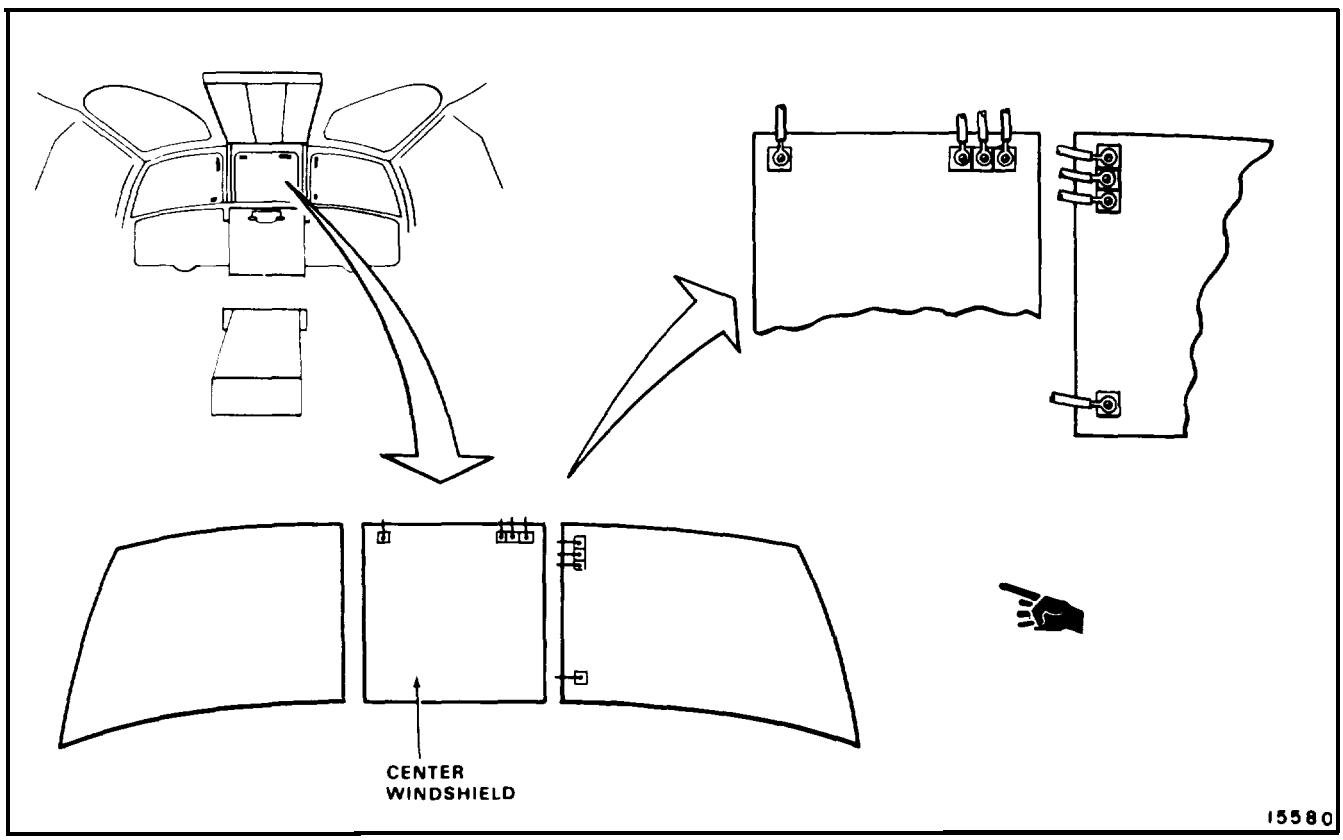
Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



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PILOT'S OR COPILOT'S WINDSHIELD HEATING ELEMENT

NOTE

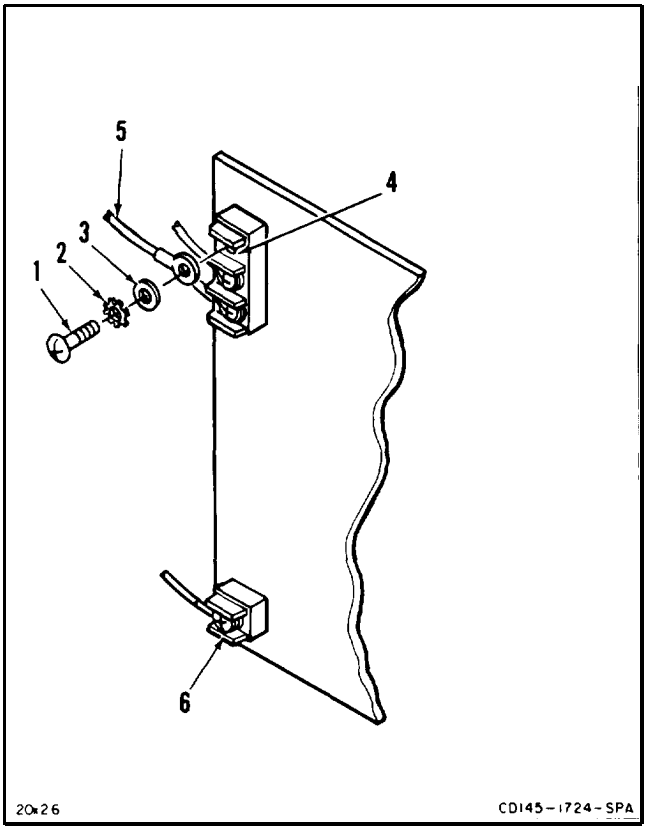
- Heating element cannot be seem It is built into windshield.
- Procedure is same to test pilot's or co-pilot's windshield, Pilot's windshield is shown here.

1. Remove screw (1), lockwasher (2), and flat washer (3) from terminal (4). **Disconnect wire (5).**
2. **Measure resistance between terminals (4 and 6).** Resistance shall be as follows:

Part No.	Vendor	Resistance (Ohms)
114SS601	All	5.6 to 7.6
1 14SS604	PPG	9.5 to 13.5
1 14SS604	Sierracin	6.0 to 9.0

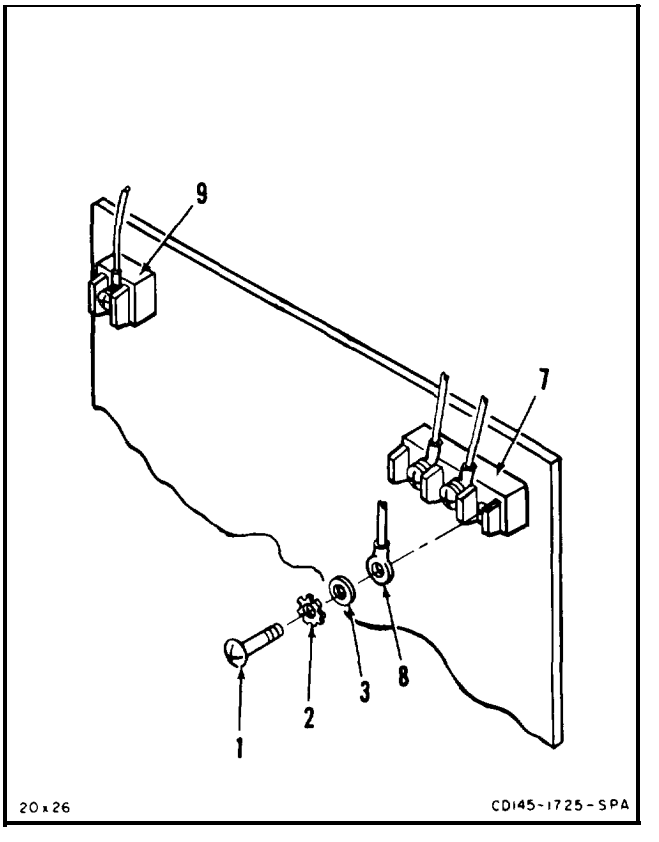
Vendor identification is at upper edge of windshield.

3. **Connect wire (5) to terminal (4).** Install flat washer (3), lockwasher (2), and screw (1).



CENTER WINDSHIELD HEATING ELEMENT

4. Remove screw (1), lockwasher (2), and flat washer (3) from terminal (7). **Disconnect wire (8).**
5. **Measure resistance between terminals (7 and 9).** On windshields 114SS602 or 114SS604 series, resistance shall be 39.8 to 53.8 ohms.
6. **Connect wire (8) to terminal (7).** Install flat washer (3), lockwasher (2), and screw (1).



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12-2 TEST CENTER WINDSHIELD ANTI-FOGGING ELEMENT (Continued) 12-2

PILOT'S OR COPILOT'S WINDSHIELD SENSING ELEMENT

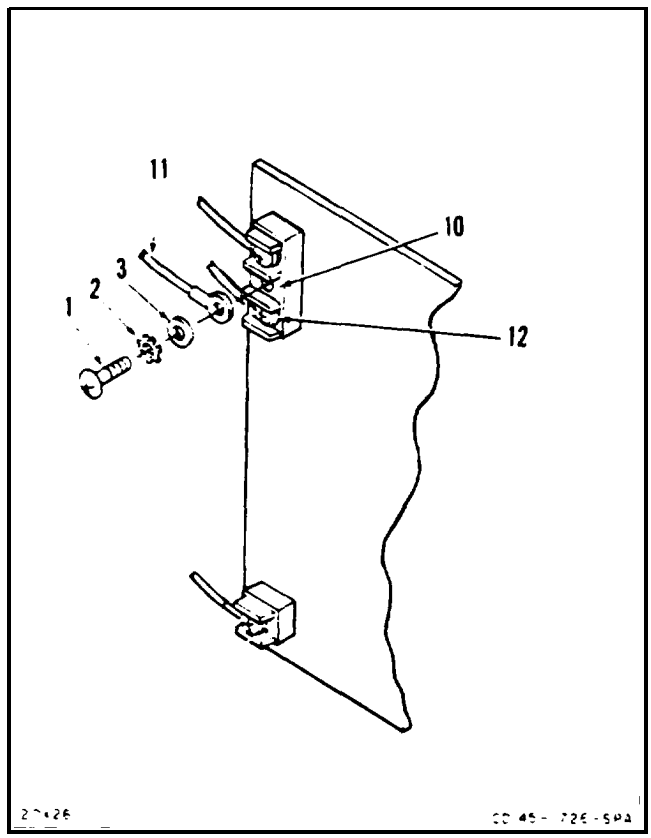
NOTE

- Sensing element is embedded in windshield.
- Windshield must not be in direct sun when reading temperature on FAT thermometer.
- Procedure is same to test pilot's or copilot's windshield. Pilot's windshield is shown here.

7. Remove screw (1), lockwasher (2), and flat washer (3) from terminal (10). **Disconnect wire (11).**
8. **Measure resistance between terminals (10 and 12).** Resistance shall be as below for windshield temperature.

If Temperature Is:	Resistance Shall Be: (Ohms)
31° to 40°C (87° to 104°F)	318—340
21° to 30°C (69° to 86°F)	305 — 330
11° to 20°C (51° to 68°F)	289 — 321
1° to 10°C (33° to 50°F)	275—310
-9° to 0°C (15° to 32°F)	259 — 301
-19° to -10°C (-3° to 14°F)	245 — 290
-29° to -20°C (-21° to -4°F)	228 — 282

9. **Connect wire (11) to terminal (10).** install flat washer (3), lockwasher (2), and screw (1).



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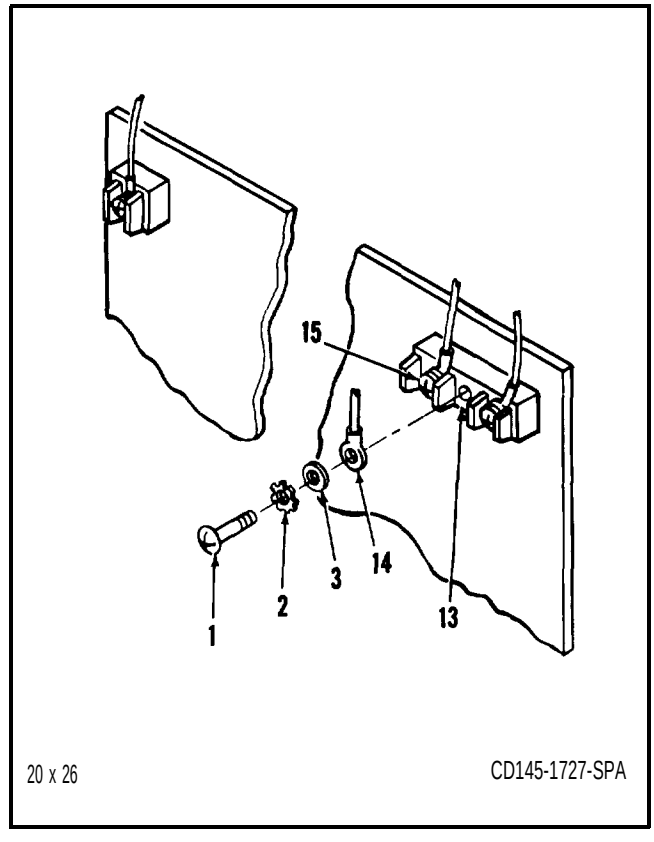
CENTER WINDSHIELD ANTI-FOGGING ELEMENT

NOTE

Windshield must not be in direct sun when reading temperature on FAT thermometer.

10. Remove screw (1), lockwasher (2), and flat washer (3) from terminal (13). **Disconnect wire (14).**
11. **Measure resistance between terminals (13 and 15).** Resistance shall be as listed under step 8 for windshield temperature.
12. **Connect wire (14) to terminal (13).** install flat washer (3), lockwasher (2), and screw (1).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-3 REMOVE WINDSHIELD ANTI-ICING CONTROL BOX

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer"s Tool Kit, NSN 5180-00-323-4915

Materials:

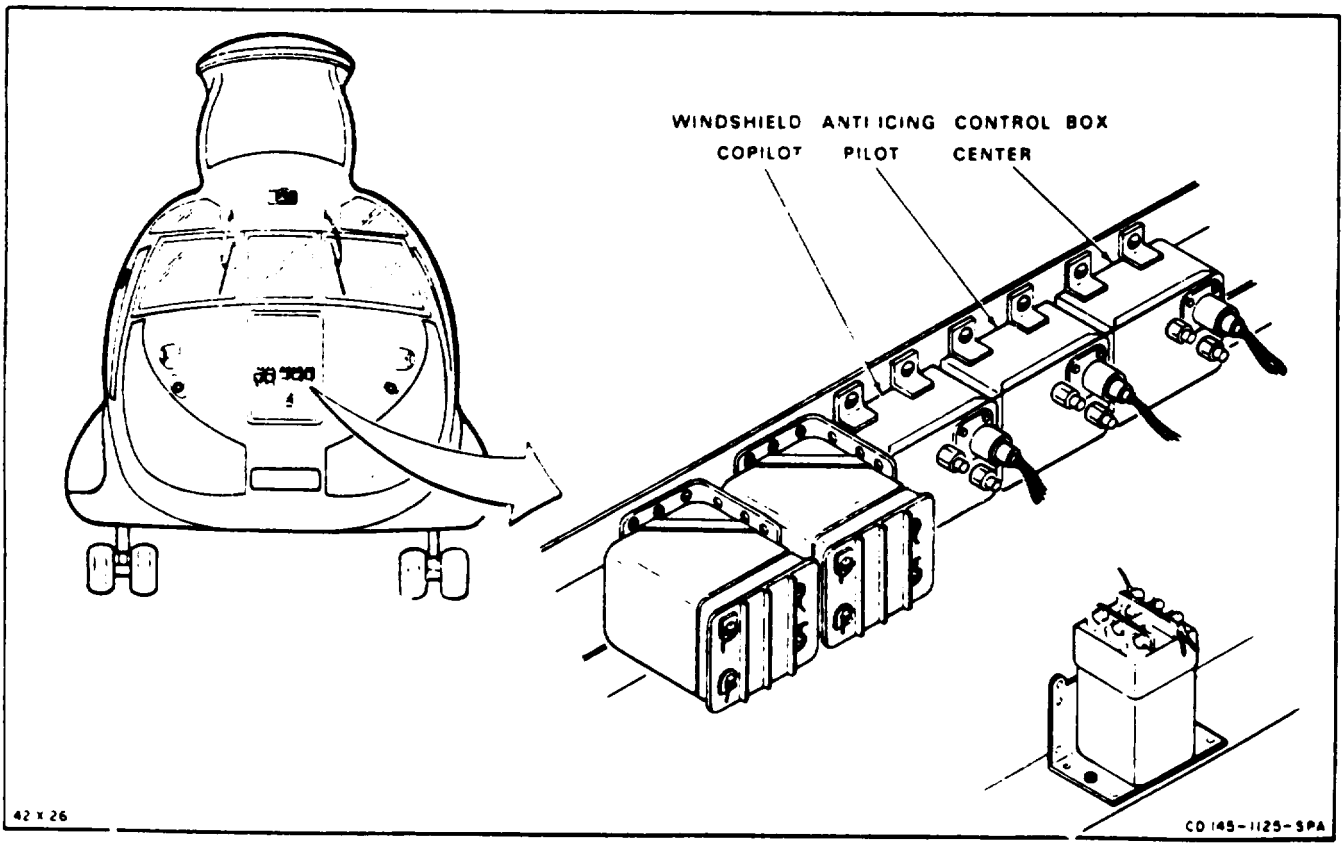
None

Personnel Required:

68F10 Aircraft Electrician

Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Nose Dynamic Absorber Removed (Task 2-139)



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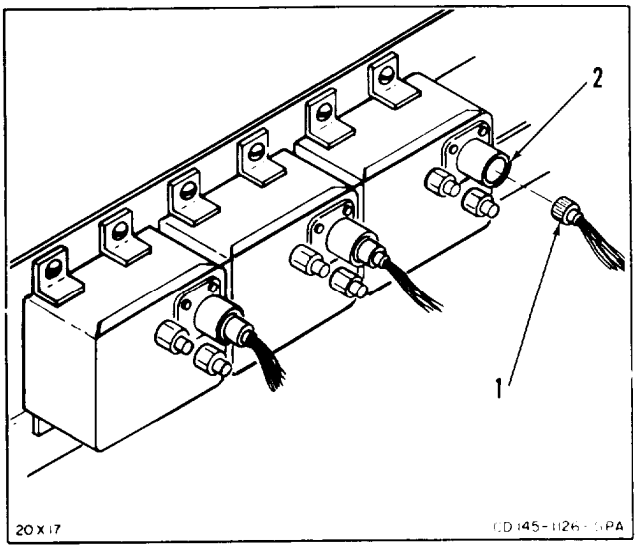
12-3 REMOVE WINDSHIELD ANTI-ICING CONTROL BOX (Continued)

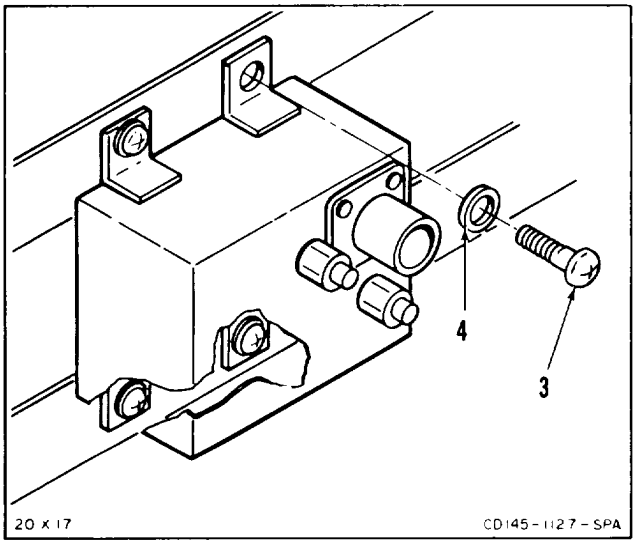
NOTE

Pilot, copilot, and center windshield anti-icing control boxes are in nose enclosure behind dynamic absorber. Removal procedure is same for all three. Center windshield anti-icing control box is shown here.

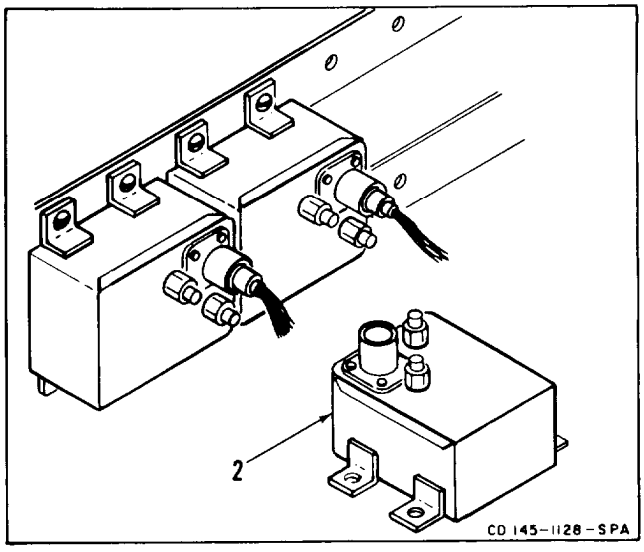
1. **Disconnect electrical plug (1)** from control box (2).



2. Remove four screws (3) and washers (4).



3. **Remove control box (2).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-4 INSTALL WINDSHIELD ANTI-ICING CONTROL BOX 12-4

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:

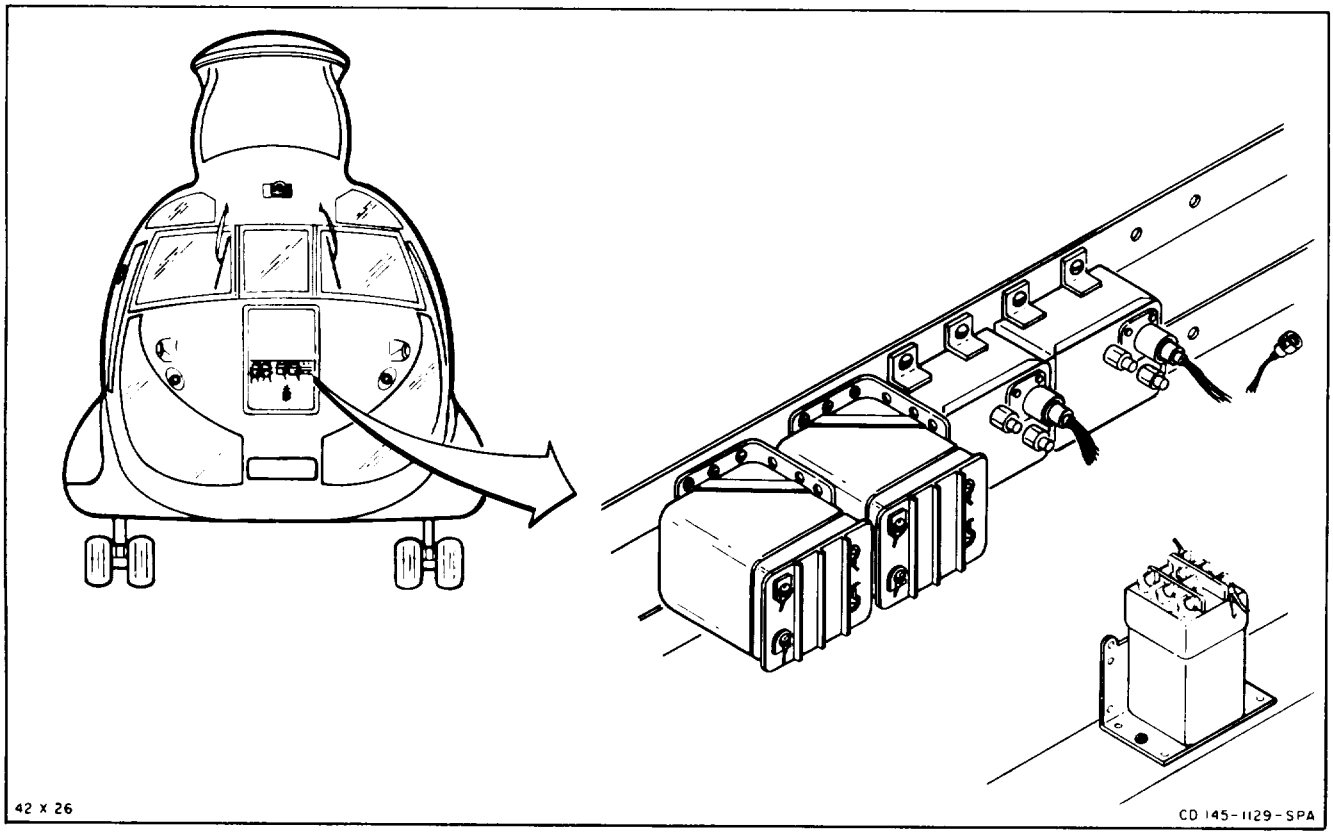
None

Personnel Required:

68F10 Aircraft Electrician
67U30 Inspector

References:

TM 55-1520-240-23P



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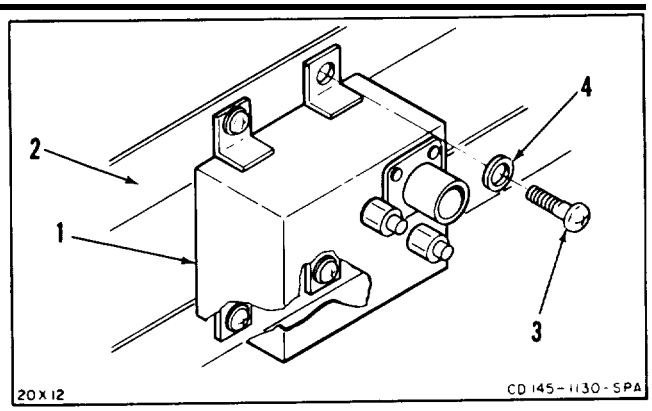
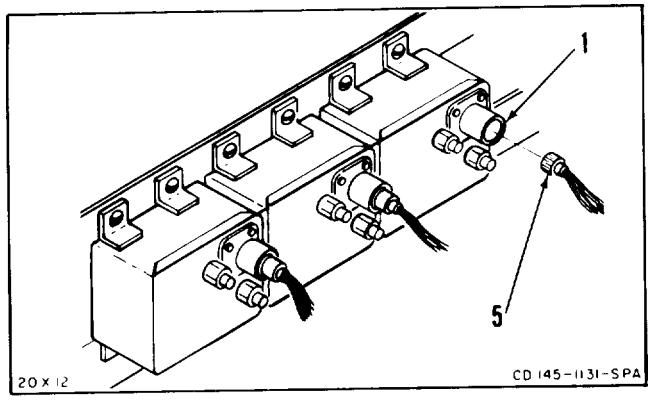
NOTE

Pilot, copilot, and center windshield anti-icing control boxes are in nose enclosure behind dynamic absorber. Installation procedure is same for all three. Center windshield anti-icing control box is shown here.

1. **Position anti-icing control box (1)** on structure (2) inside nose enclosure.
2. **Install four screws (3)** and washers (4).
3. **Connect electrical plug (5)** to control box (1).



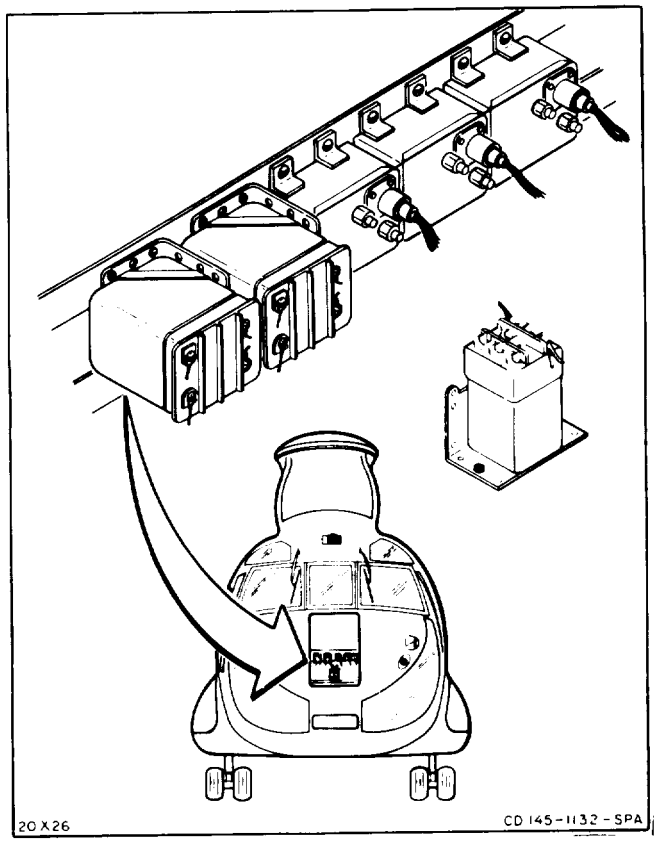


INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Install nose dynamic absorber (Task 2-143).



END OF TASK

12-5 REMOVE WINDSHIELD ANTI-ICING RELAYS 12-5

INITIAL SETUP

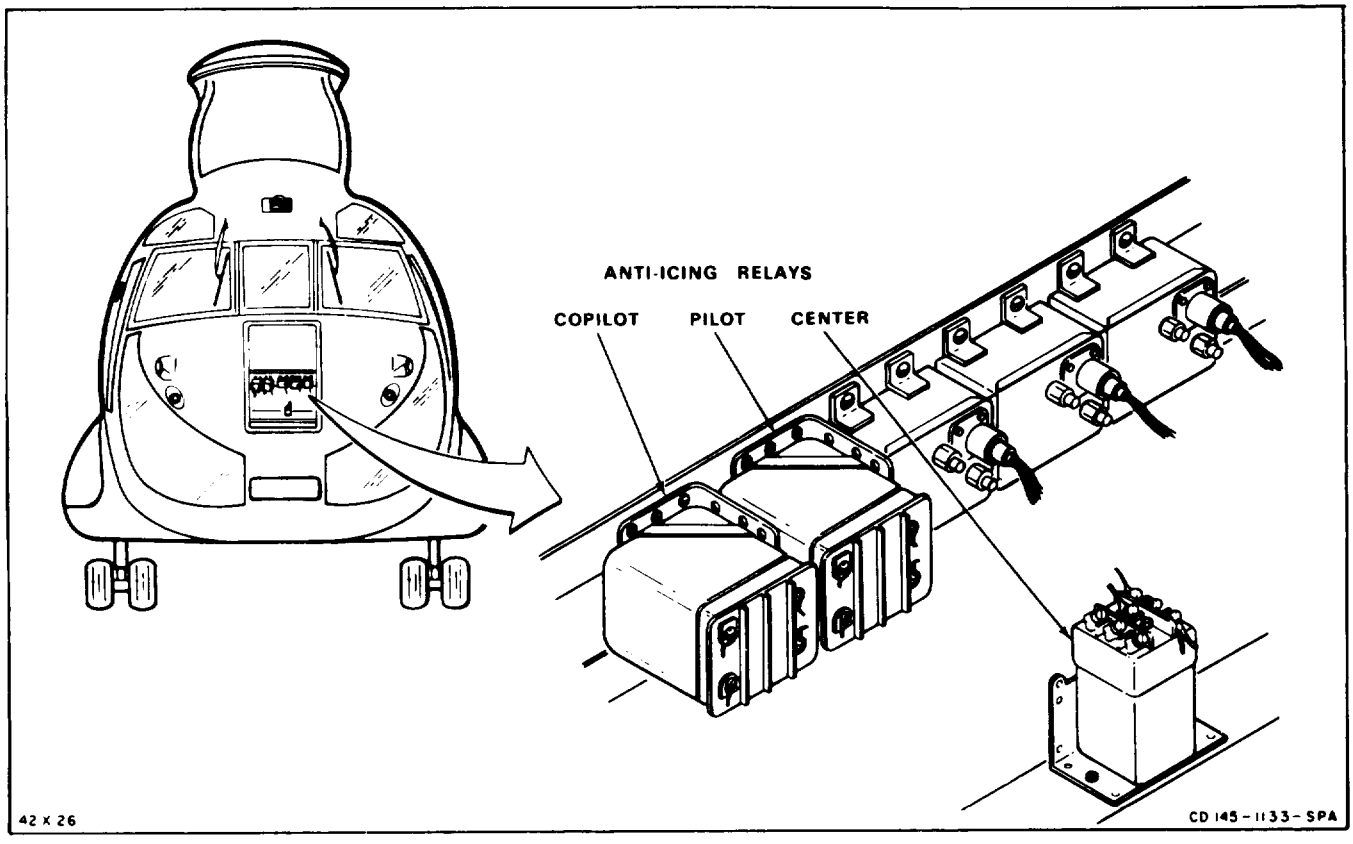
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915

Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Nose Dynamic Absorber Removed (Task 2-139)



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12-5 REMOVE WINDSHIELD ANTI-ICING RELAYS (Continued) 12-5

NOTE

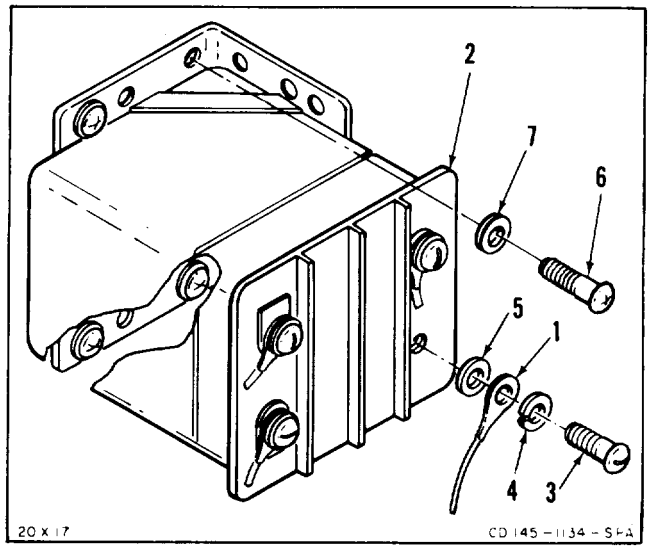
Pilot and copilot anti-icing relays and center windshield anti-icing relay are removed differently. If removing pilot or copilot relay, do steps 1. thru 3. If removing center windshield relay, do steps 4. thru 6.

PILOT AND COPILOT ANTI-ICING RELAYS

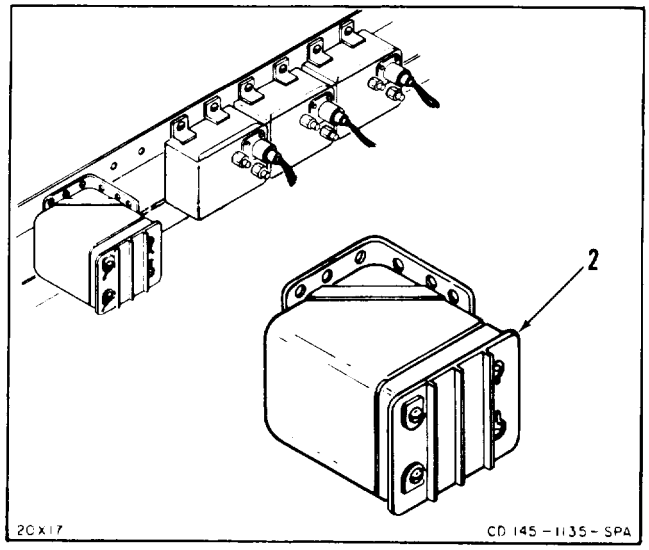
NOTE

Pilot and copilot anti-icing relays are in nose enclosure, behind dynamic absorber. Removal procedure is same for both. Pilot anti-icing relay is shown here.

1. Tag and **disconnect four wires (1)** from relay (2) by removing four screws (3), lockwashers (4), and flat washers (5).
2. Remove four mounting screws (6) and washers (7).



3. **Remove relay (2).**



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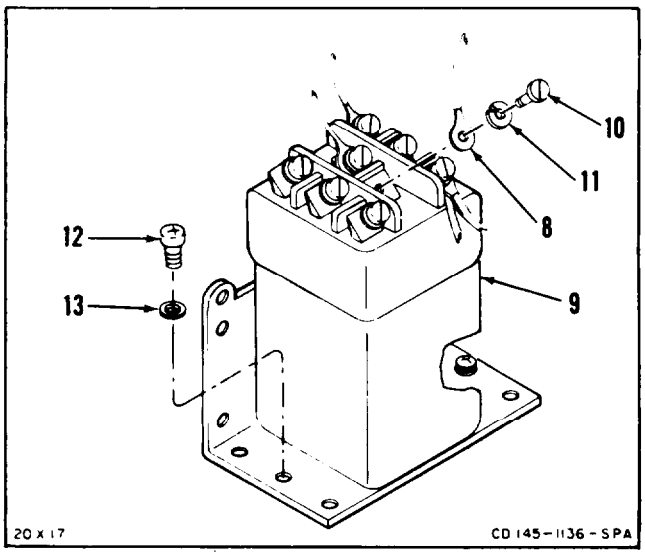
12-5 REMOVE WINDSHIELD ANTI-ICING RELAYS (Continued) 12-5

CENTER WINDSHIELD ANTI-ICING RELAY

NOTE

Center windshield anti-icing relay is in nose enclosure behind dynamic absorber.

4. Tag and **disconnect five wires (8)** from relay (9) by removing four screws (10) and washers (11).
5. Remove two screws (12) and washers (13).
6. **Remove relay (9).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-6 INSTALL WINDSHIELD ANTI-ICING RELAYS 12-6

INITIAL SETUP

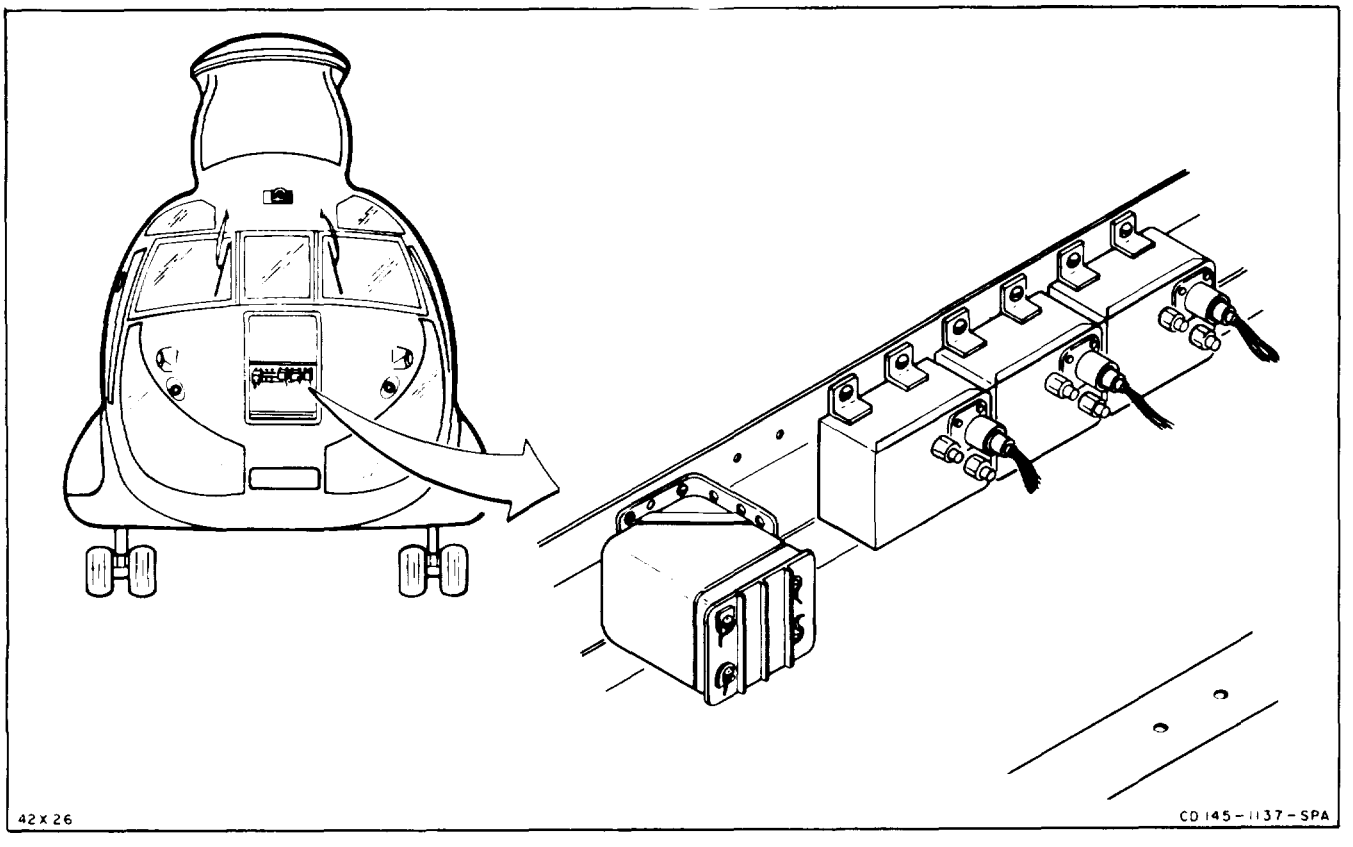
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



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12-6 INSTALL WINDSHIELD ANTI-ICING RELAYS (Continued) 12-6

NOTE

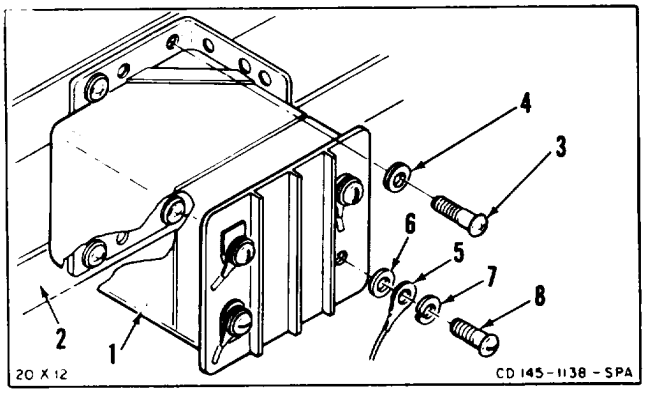
Pilot and copilot anti-icing relays and center windshield anti-icing relay are installed differently. If installing pilot or copilot relay, do steps 1. thru 3. If installing center windshield relay, do steps 4. thru 6.

PILOT AND COPILOT ANTI-ICING RELAYS

NOTE

Pilot and copilot anti-icing relays are in nose enclosure, behind dynamic absorber. Installation procedure is same for both.

1. **Position relay (1)** on mounting structure (2) inside nose enclosure.
2. **Install four screws (3)** and washers (4).
3. **Connect four electric wires (5)** to relay (1) and install four flat washers (6), lockwashers (7), and screws (8). Remove tags from wires.

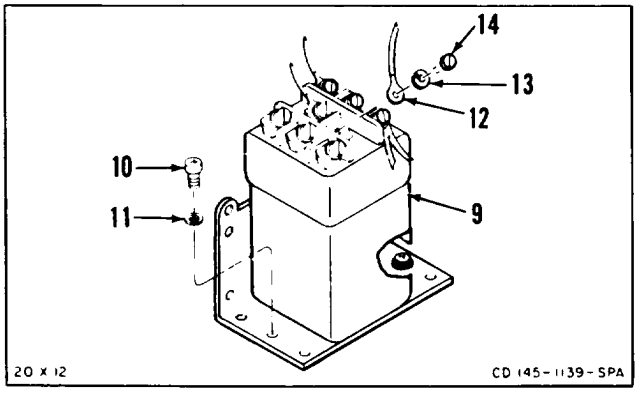


CENTER WINDSHIELD ANTI-ICING RELAY

NOTE

Center windshield anti-icing relay is in nose enclosure behind dynamic absorber.

4. **Position relay (9)** inside nose enclosure.
5. **Install two screws (10)** and washers (11).
6. **Connect five wires (12)** to relay (9) and install four washers (13) and screws (14). Remove tags from wires.



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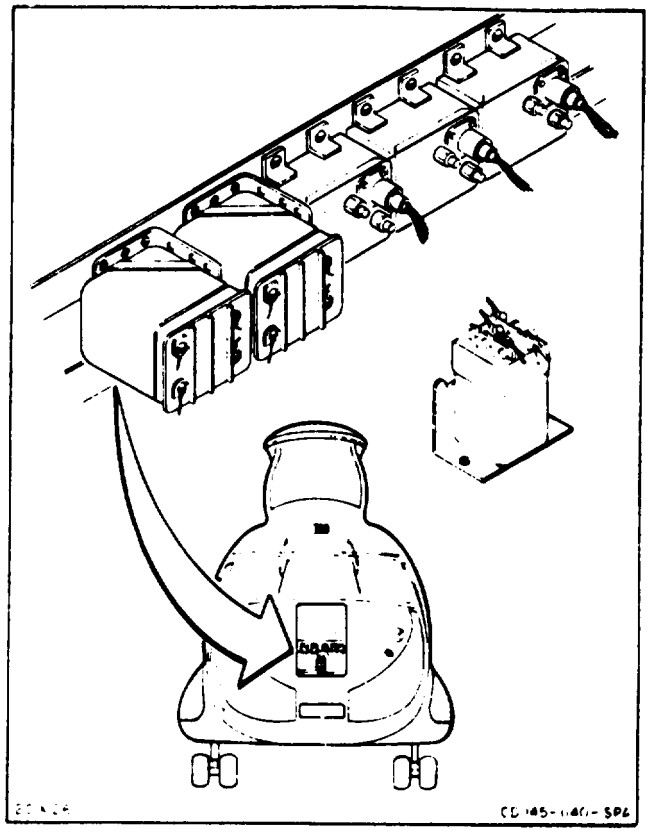
INSPECT

FOLLOW-ON MAINTENANCE

Perform operational check (TM 55-1520-240-T).

Install nose dynamic absorber (Task 2-143).



END OF TASK

SECTION III
FIRE DETECTION AND EXTINGUISHING SYSTEMS DESCRIPTION AND THEORY OF OPERATION

FIRE DETECTION SYSTEM

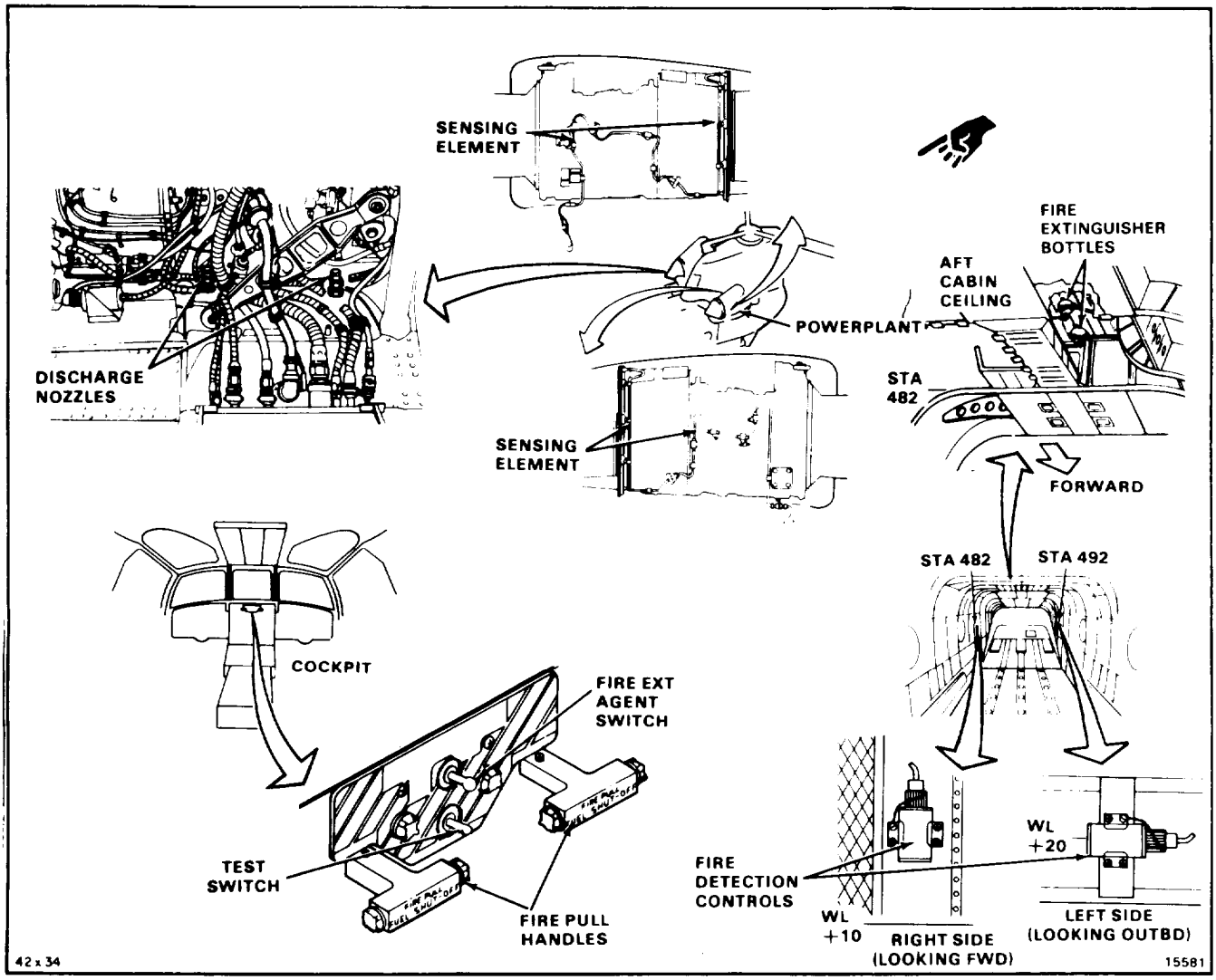
DESCRIPTION

The fire detection system consists of a fire detection loop routed around each engine, a control unit for each of the two loops, and a test switch and indicator lights in the cockpit.

Each fire detection loop consists of three sensing elements joined by connectors. Each element consists of a thin metallic tube with a wire running through the center, insulated from the tubing by a salt imbedded in a ceramic matrix. The resistance of the insulating salt drops and the salt becomes conductive at about 575°F (300°C). The tubing is connected to ground. The central wire is connected to the control unit. The three elements have a combined length of about 19 feet.

The two control units are mounted in the cabin at sta 482 left and right. Each unit contains an ac-powered magnetic amplifier and a dc test circuit. Each unit is connected to its respective fire detection loop. The units are sealed, and maintenance is limited to replacement.

A fire indicating light for each engine is located in the respective fire extinguisher handle on the cockpit center instrument panel. A test switch between the fire pull handles allows the light and electrical circuits to be checked.



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THEORY OF OPERATION

Under normal conditions, the circuit within the magnetic amplifier of a control unit is in balance and no current flows to the warning lights. When the engine compartment temperature around the sensing element reaches about 575°F (300°C), indicating a fire, the insulating material between the sensing element tubing and the internal wire becomes conductive, allowing current to pass through the control unit to the appropriate warning light in the cockpit.

When the test switch on the center instrument panel is operated, 28 volts dc is delivered to the control units. Within each control unit, a relay operates to ground the system, lighting the warning lamps in the fire pull handles.

FIRE EXTINGUISHING SYSTEM DESCRIPTION

Two containers filled with fire extinguishing agent are mounted in the base of the pylon, between the engines. In case of an engine fire, extinguishing agent within the containers can be discharged independently to the affected engine from the cockpit.

The system includes the two fire extinguishing agent containers, four discharge nozzles (one to each engine from each bottle), controls and switches in the cockpit, and associated tubing, wiring, and circuit breakers.

Each container is a metal sphere that holds a three-pound charge of non-toxic extinguishing agent. The agent is pre-charged with nitrogen at 600 psi. monitored by a gage on the bottle. Separate lengths of tubing lead from the bottle to each engine, ending in a pair of discharge nozzles in each engine compartment. The two containers share the nozzles at each engine. The discharge paths are kept separate by a double check valve tee where the tubing from each container joins.

Discharge of extinguishing agent to the engines is controlled by two pull handles, one for each engine, and a toggle switch on the center instrument panel. Pulling a handle shuts off fuel to that engine and arms the circuit to the containers. Selecting one of the containers with the switch discharges extinguishing agent from that container to the affected engine. The remaining container may be discharged into the same or the opposite engine as required.

Electrical power for the system is supplied from the 28 volt dc no. 1 or no. 2 flight essential bus through circuit breakers in the no. 1 and no. 2 power distribution panels.

THEORY OF OPERATION

When the fire detection system lights the warning lamps in either fire pull handle, the extinguishing system for the affected engine can be armed for operation by pulling out the lighted handle. When this is done, the following sequence of events occurs:

a. Current from the 28 volt dc flight essential buses is directed by a switch through the engine fuel shutoff circuit breaker to close the engine fuel valve. This shuts off fuel to the affected engine.

b. At the same time, the selector switch between the fire pull handles is armed. When the switch is operated to select a container, an explosive cartridge at that bottle is fired. This breaks a brittle retaining disc, releasing extinguishing agent from the bottle through the tubing to the two discharge nozzles at the affected engine.

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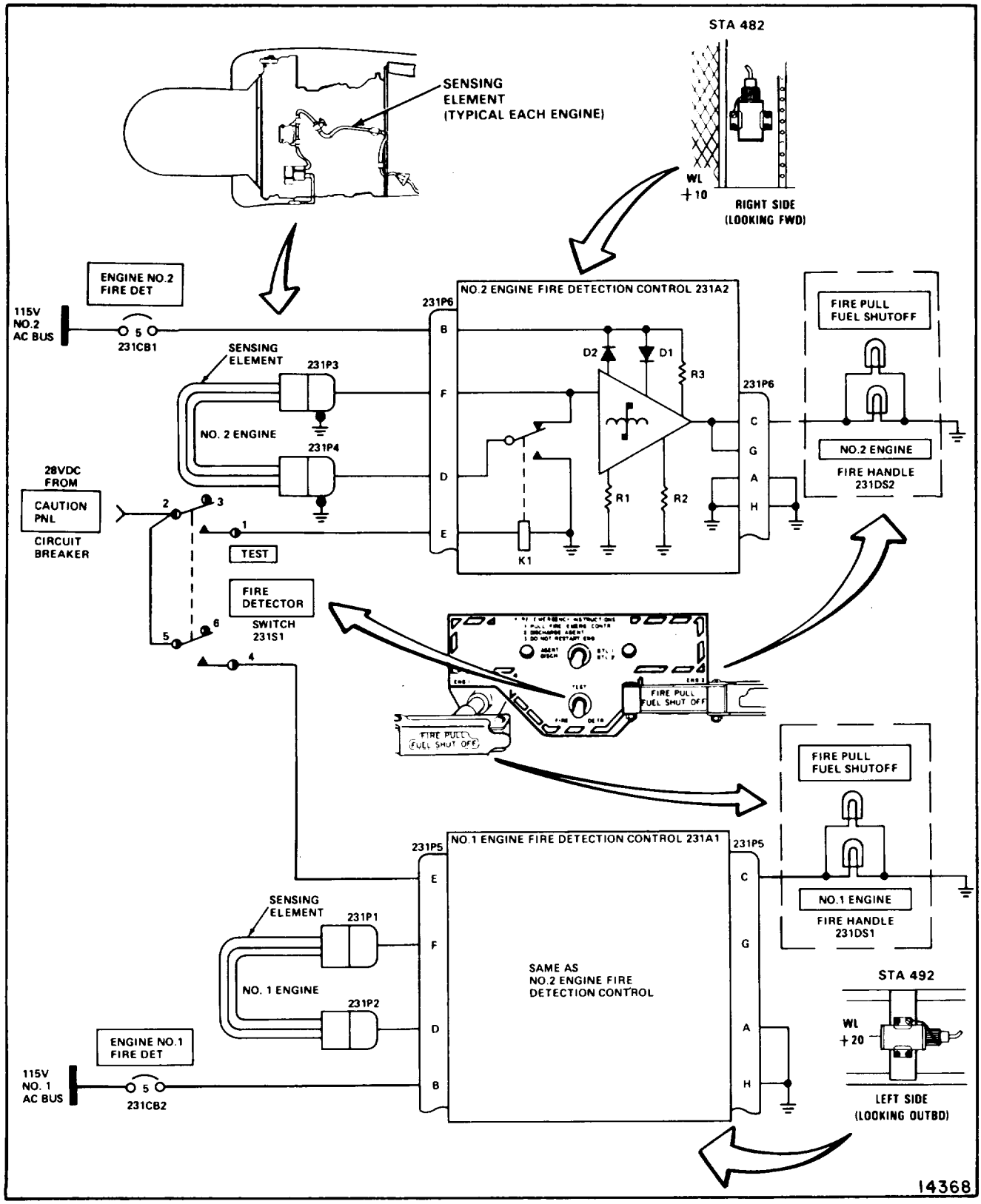

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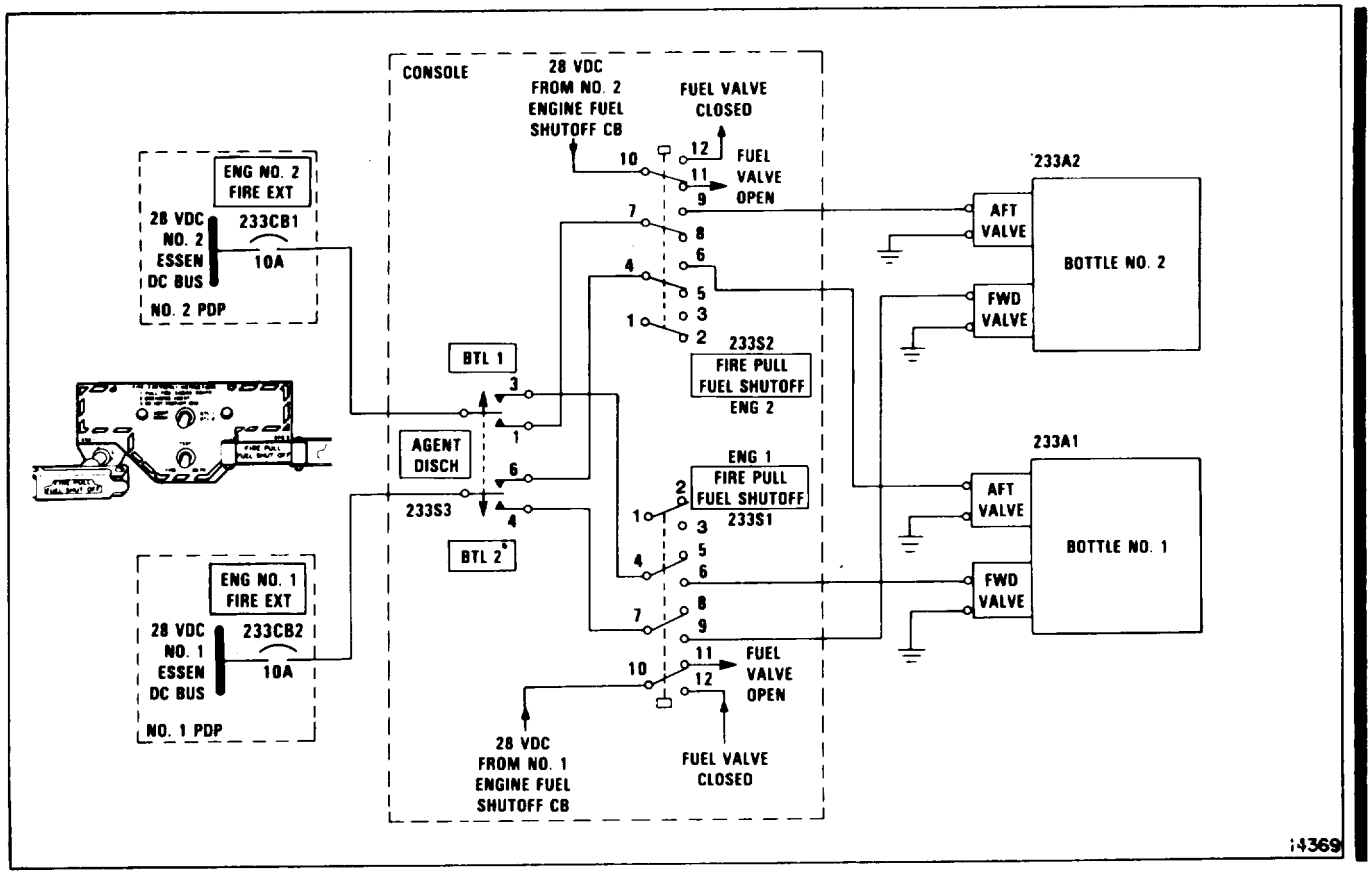

CONSOLE
28 VDC FROM NO. 2 ENGINE FUEL SHUTOFF CB
FUEL VALVE CLOSED
FUEL VALVE OPEN
ENG NO. 2 FIRE EXT
28 VDC NO. 2 ESSEN DC BUS
233CB1
10A
NO. 2 PDP
BTL 1
AGENT DISCH
233S3
BTL 2
233S2
FIRE PULL FUEL SHUTOFF ENG 2
ENG 1 FIRE PULL FUEL SHUTOFF
233S1
ENG NO. 1 FIRE EXT
28 VDC NO. 1 ESSEN DC BUS
233CB2
10A
NO. 1 PDP
28 VDC FROM NO. 1 ENGINE FUEL SHUTOFF CB
FUEL VALVE CLOSED
FUEL VALVE OPEN
233A2
AFT VALVE
FWD VALVE
BOTTLE NO. 2
233A1
AFT VALVE
FWD VALVE
BOTTLE NO. 1
14369

END OF TASK

SECTION IV

FIRE DETECTION AND EXTINGUISHING SYSTEMS

12-8 REMOVE FIRE DETECTION CONTROL

INITIAL SETUP

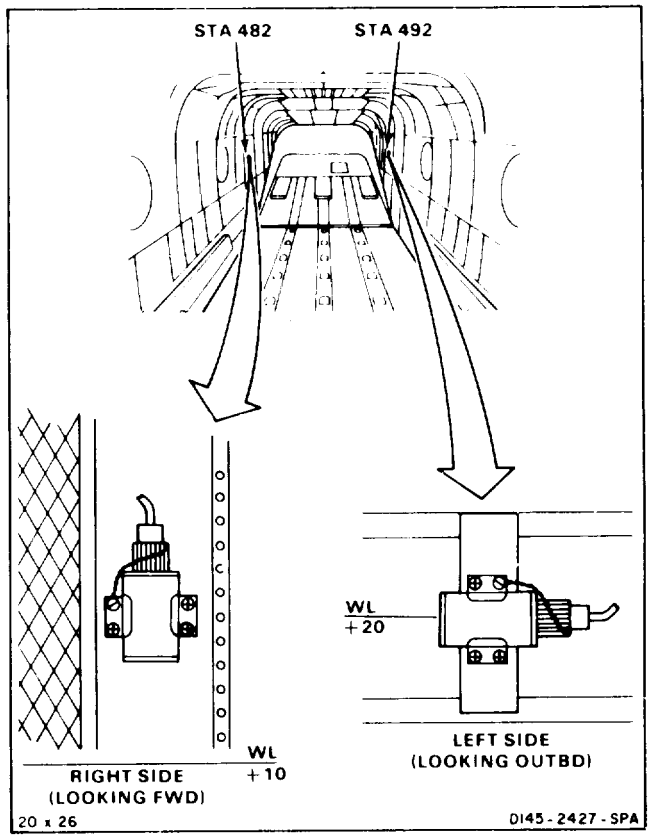
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off

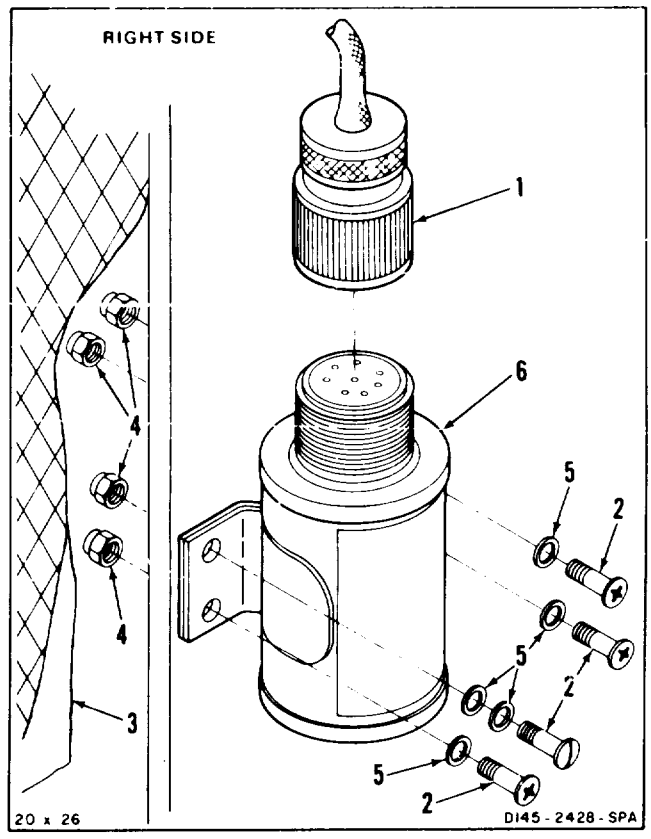


NOTE

If removing right side control, do steps 1 thru 5. If removing left side control, do steps 6 thru 9.

RIGHT SIDE CONTROL

1. Remove lockwire from plug (1) and screw (2).
2. **Disconnect plug (1).**
3. Pull back blanket (3).
4. Remove four nuts (4), screws 2), and five washers (5).
5. **Remove control (6).**



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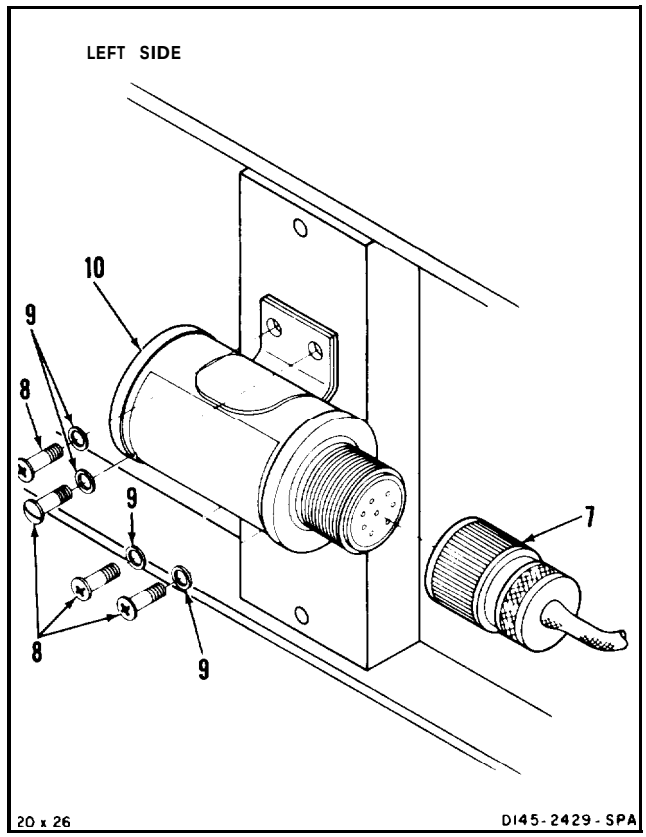
12-8 REMOVE FIRE DETECTION CONTROL (Continued) 12-8

LEFT SIDE CONTROL

6. Remove lockwire from plug (7) and screw (8).
7. **Disconnect plug (7).**
8. Remove four screws (8) and washers (9).
9. **Remove control (10).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-9 INSTALL FIRE DETECTION CONTROL 12-9

INITIAL SETUP

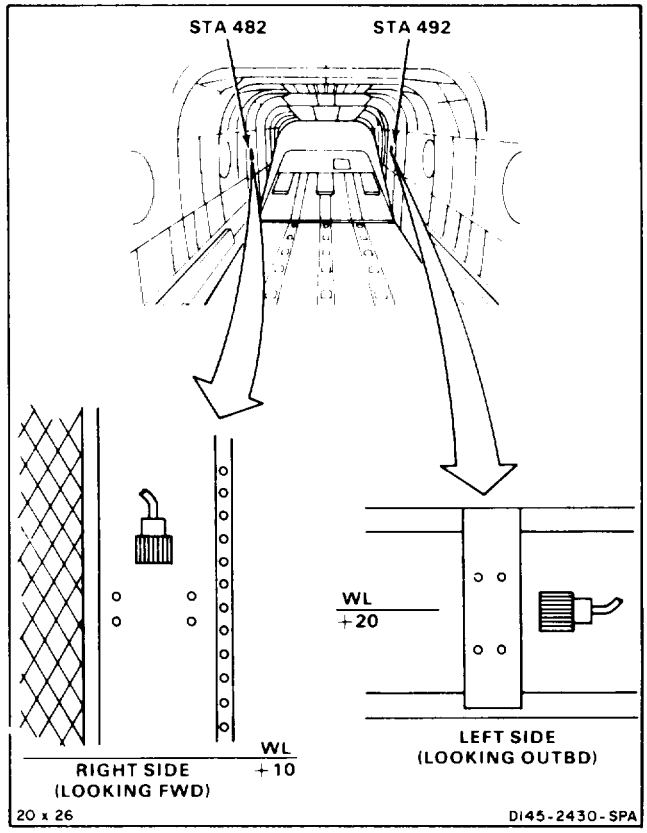
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Lockwire (E231)

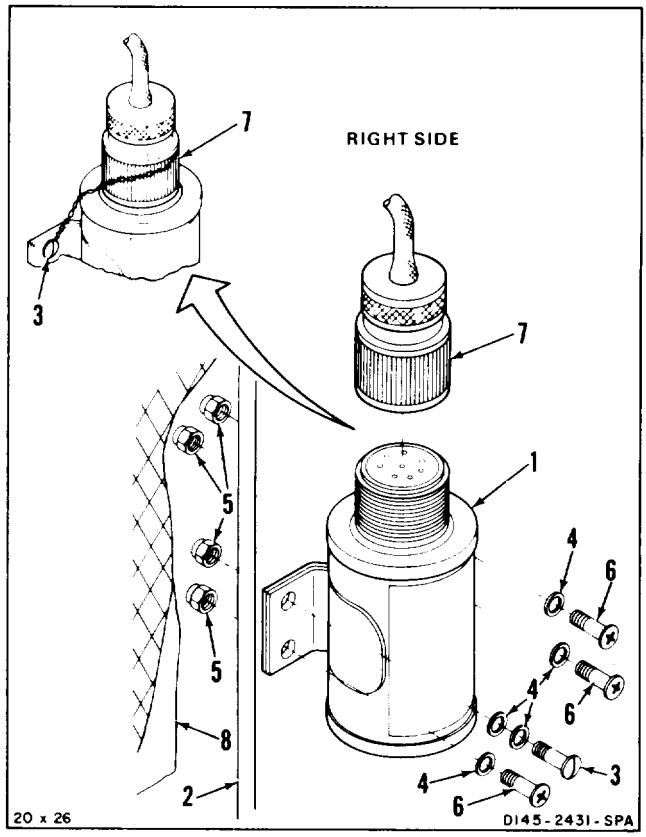
Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



NOTE

If installing right side control, do steps 1 thru 5. If installing left side control, do steps 6 thru 9.



RIGHT SIDE CONTROL

1. **Position control (1)** on structure (2).
2. **Install slotted straw (3),** two washers (4). and nut (5).
3. **Install three cross-slot screws (6),** washers (4), and nuts (5).
4. **Connect plug (7).** Lockwire plug to screw (3). Use Iockwire (E231).

INSPECT

5. Install blanket (8).

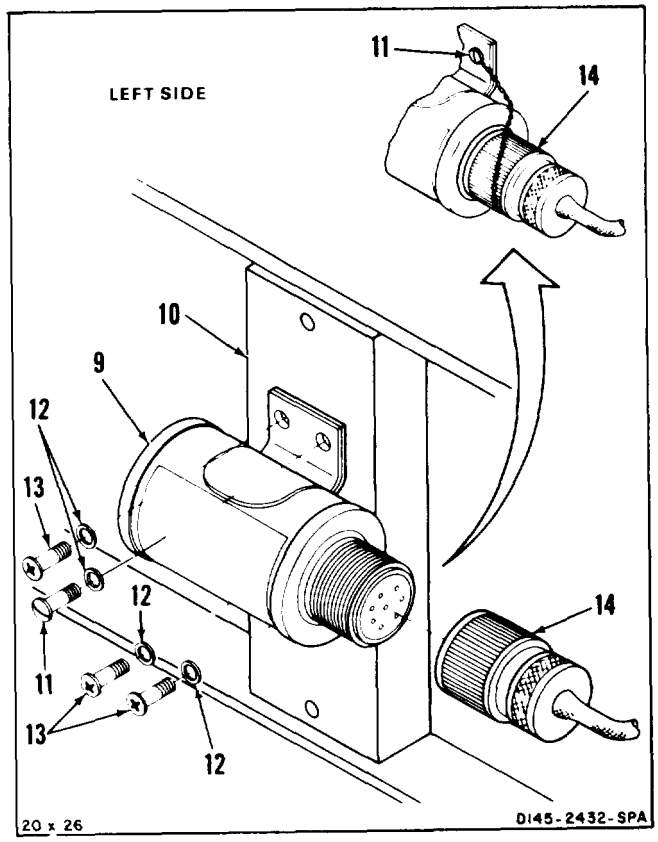
GO TO NEXT PAGE

12-9 INSTALL FIRE DETECTION CONTROL (Continued)

LEFT SIDE CONTROL

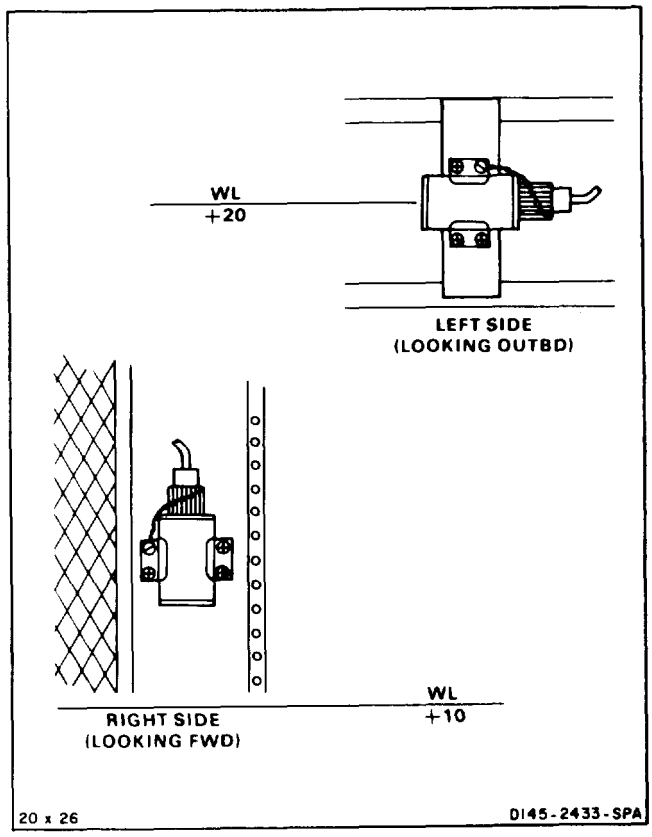
6. **Position control (9)** on structure (10).
7. **Install slotted screw (11)** and washer (12).
8. **Install three cross-slot screws (13)** and washers (12).
9. **Connect plug (14).** Lockwire plug to screw (11). Use lockwire (E231).

INSPECT



FOLLOW-ON MAINTENANCE:

Perform operational check of fire detection system (TM 55-1520-240-T).



END OF TASK

12-10 TEST FIRE DETECTION SENSING ELEMENT 12-10

INITIAL SETUP

Applicable Configurations:
All

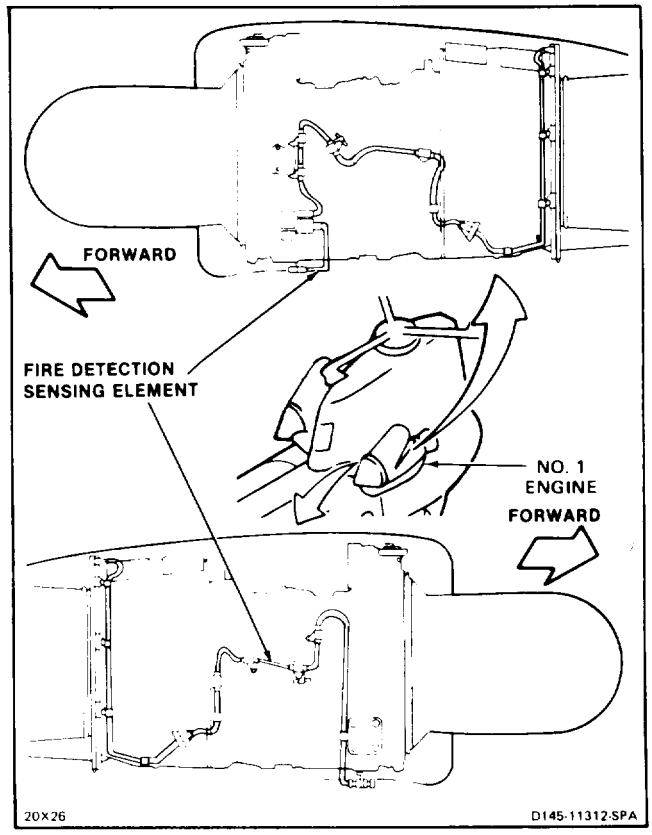
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Exhaust Gas Temperature Tester, (BH 112JB-53)
Multimeter
Stopwatch
Torque Wrench, 30 to 150 Inch-Pounds
Crowfoot Attachment, 3/8-inch

Materials:
None

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-4920-401-13

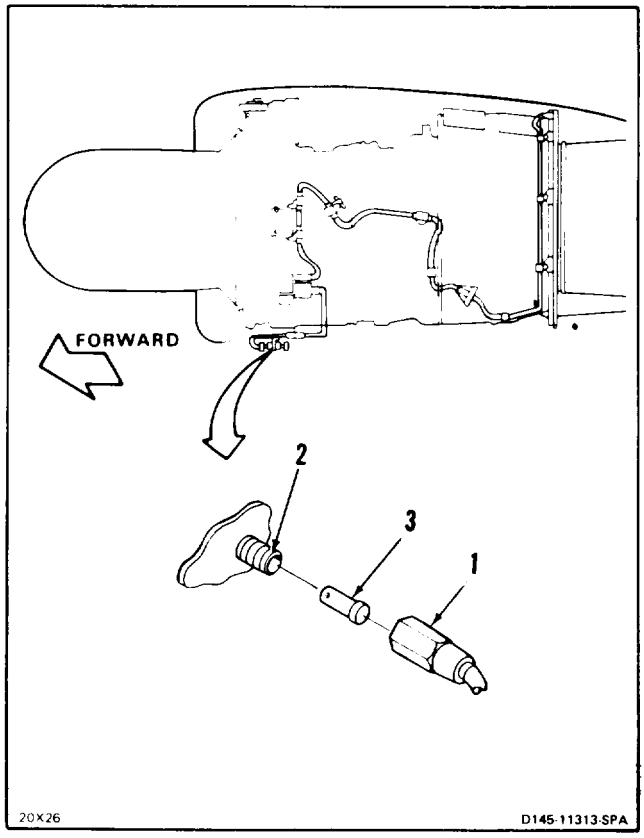
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Engine Work Platform Open (Task 2-2)
Engine Access Cover Open (Task 4-49)



NOTE

Procedure is same to test fire detection sensing element on No. 1 or No. 2 engine. No. 1 engine is shown here.

1. **Disconnect two cables (1)** from two fuselage connectors (2). Make sure inserts (3) stay in connectors.



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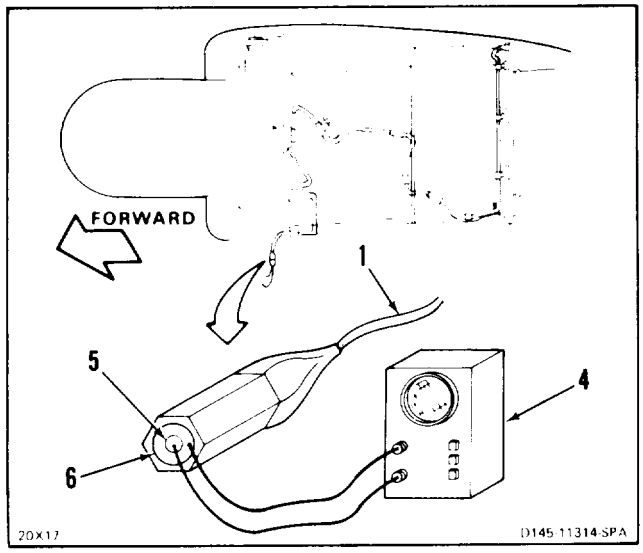
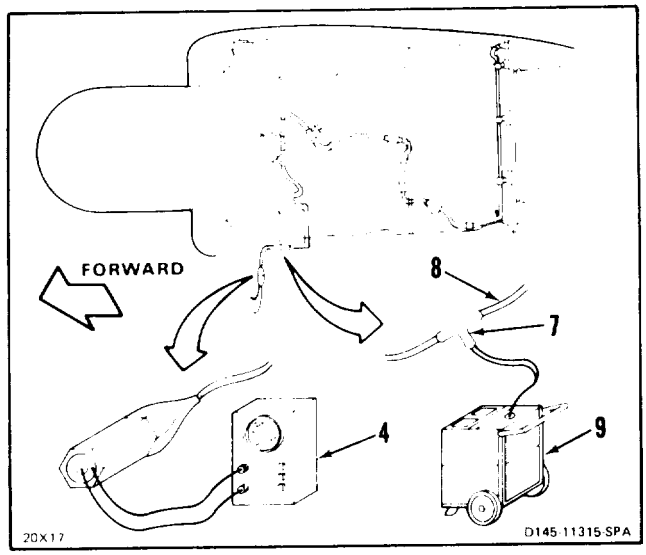
12-10 TEST FIRE DETECTION SENSING ELEMENT (Continued) 12-10

2. Connect multi meter (4), set to RX1, to inner conductor (5) and outer conductor (6) of cable (1). Multimeter shall read infinity.



3. **Connect probe (7)** to element (8). **Set tester (9) to 301°C.**
4. Operate tester (9) (TM 55-4920-401-13).
5. Check multi meter (4). **Multimeter shall read 25 ohms.**
6. **Turn off tester (9).** Remove probe (7).
7. Wait 10 minutes and check multimeter (4). **Multimeter shall read infinity.**
8. **Disconnect multimeter (4).**



9. **Connect two cables (1)** to two fuselage connectors (2). **Torque cables to 65 inch-pounds.**

WARNING

Do not allow element to touch or chafe on engine or engine cover. Element can be damaged by chafing. A damaged element can cause a false fire indication or an inoperative fire detection system resulting in equipment damage and injury to personnel.

10. Check element (8). **Element shall not chafe or touch engine (10) or engine cover (11).**

INSPECT

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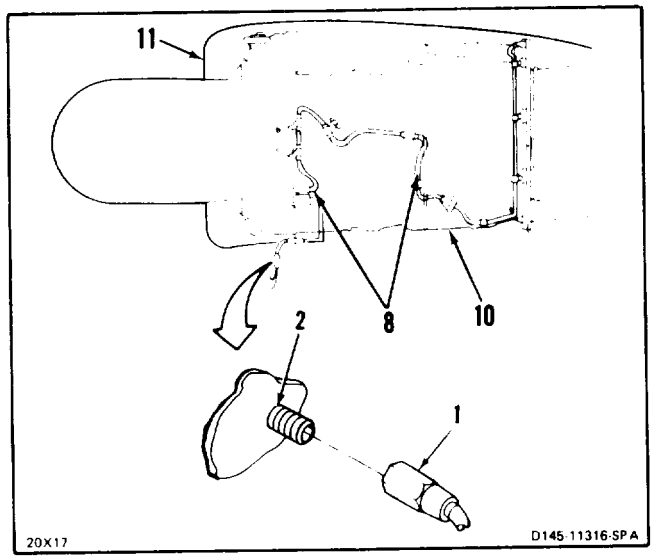


12-10 TEST FIRE DETECTION SENSING ELEMENT (Continued) 12-10

FOLLOW-ON MAINTENANCE:

Perform operational check of fire detection system (TM 55-1520-240-T).

Close engine access cover (Task 4-50).

Close engine work platform (Task 2-2).

END OF TASK

12-11 INSPECT FIRE DETECTION SENSING ELEMENT 12-11

INITIAL SETUP

Applicable Configurations:

All

Tools:

Technical Inspection Tool Kit,
NSN 5180-00-323-5114

Outside Micrometer Caliper, 0 to 1-inch

Materials:

None

Personnel Required:

Inspector

Equipment Condition:

Battery Disconnected (Task 1-39)

Electrical Power Off

Engine Work Platform Open (Task 2-2)

Engine Access Cover Open (Task 4-49)

NOTE

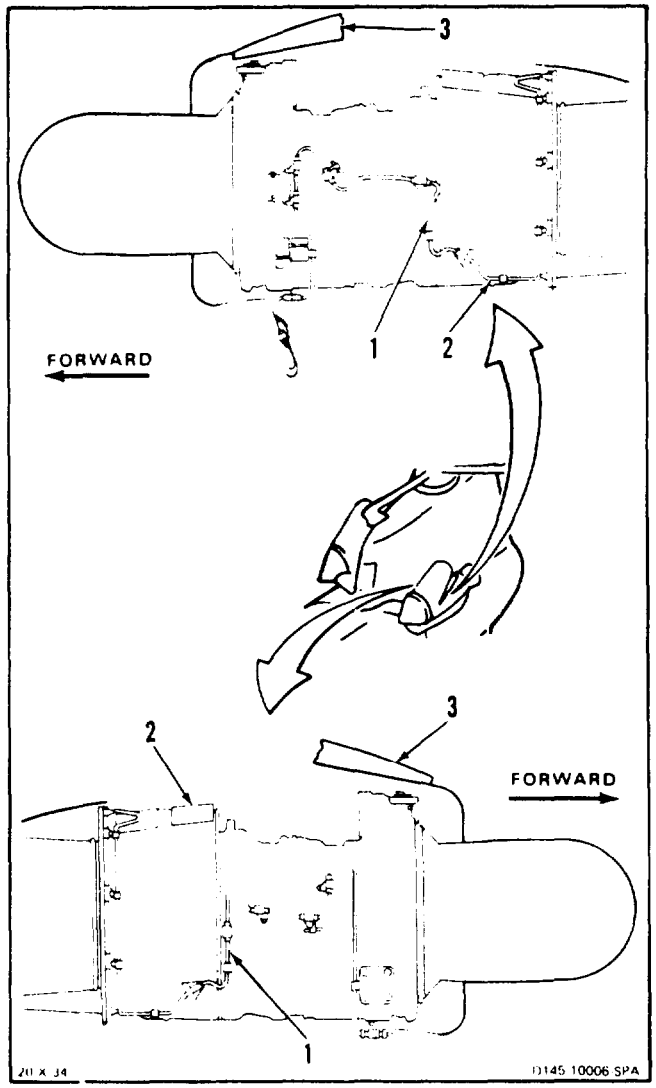
Procedure is same to inspect fire detection sensing element on No. 1 or No. 2 engine. No. 1 engine is shown here.

1. Replace fire detector element only if test or alarm circuit shows malfunction.

WARNING

Do not allow element to touch or chafe on engine or engine cover. Element can be damaged by chafing. A damaged element can cause a false fire indication or an inoperative fire detection system resulting in equipment damage and injury to personnel.

2. **Element (1) shall not touch engine (2) or cover (3).**



FOLLOW-ON MAINTENANCE:

Close engine access cover (Task 4-50).

Close engine work platform (Task 2-2).

END OF TASK

12-12 REMOVE FIRE DETECTION SENSING ELEMENT

INITIAL SETUP

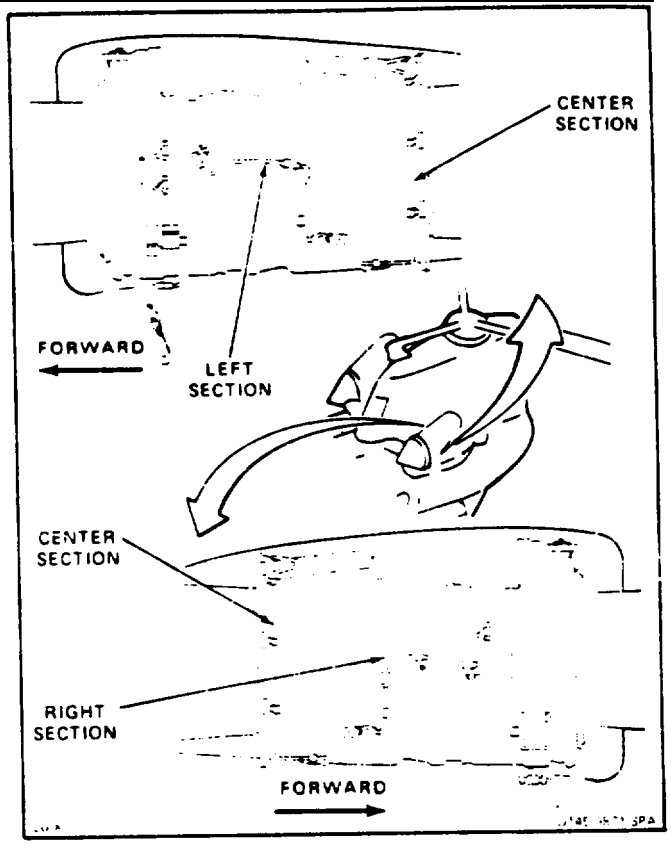
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Engine Work Platform Open (Task 2-2)
Engine Access Cover Open (Task 4-49)



CAUTION

Do not pinch, crush, kink, or make sharp bends in element. Element can be damaged.

NOTE

Procedure is same to remove fire detection sensing element on No. 1 or No. 2 engines. Removal of No. 1 engine element is shown here.

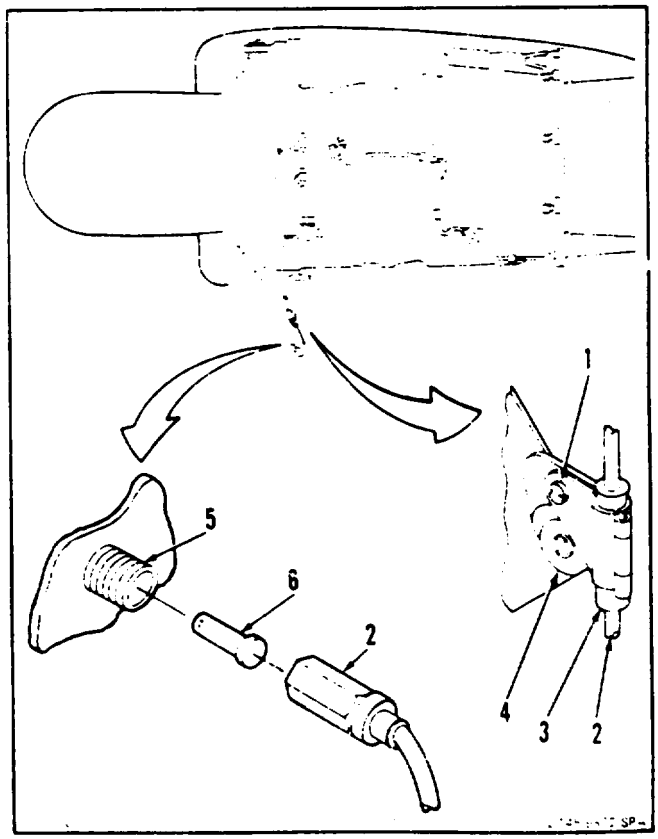
REMOVE LEFT SECTION

NOTE

Left section is outboard on No. 1 engine, inboard on No. 2 engine.

Turn fastener (1) and **release cable (2) and bushing (3)** from clamp (4).

2. **Disconnect cable (2) from connector (5)** on fuselage. Make sure insert (6) stays in connector. Cap connector.



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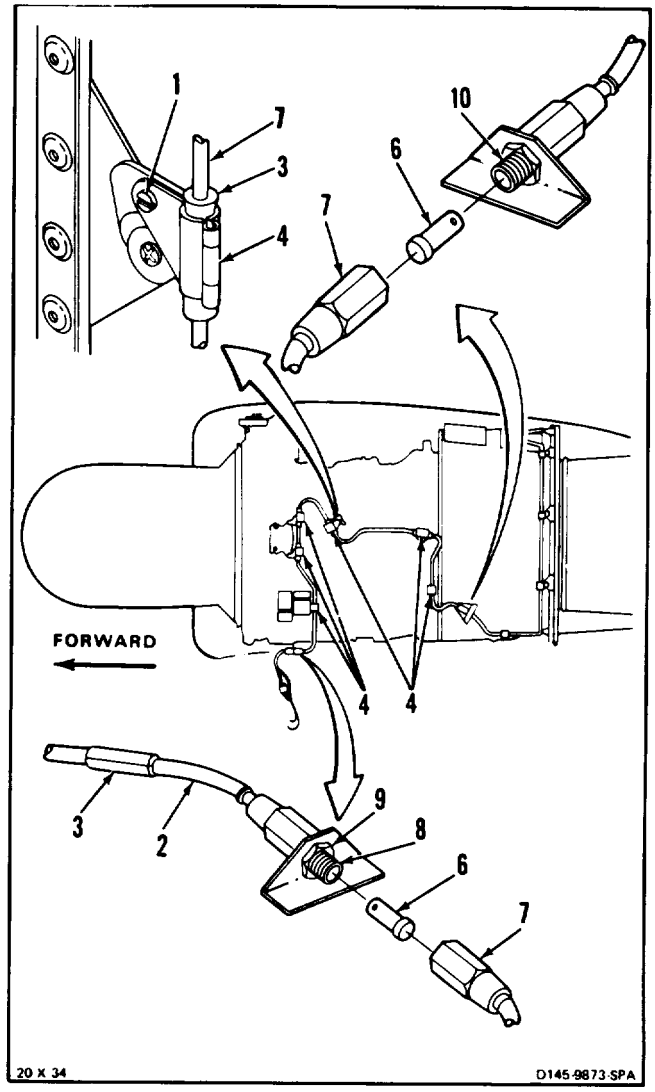
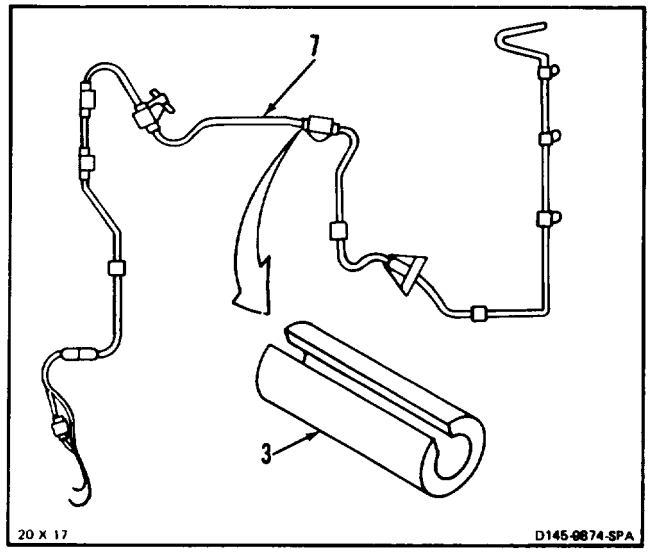
12-12 REMOVE FIRE DETECTION SENSING ELEMENT (Continued) 12-12

3. **Disconnect element (7)** from connector (8). Make sure insert (6) stays in connector.
4. **Remove** lockwire and **nut (9)** from connection (8). Remove cable (2) and bushing (3). Remove bushing from cable. Cap cable ends.
5. **Disconnect element (7)** from connector (10). Make sure insert (6) stays in connector.
6. Turn fastener (1) and release element (7) and bushings (3) from clamp (4) and six locations.
7. **Remove** left section of **element (7).**



8. Cap ends of element (7). **Remove six bushings (3)** from element.



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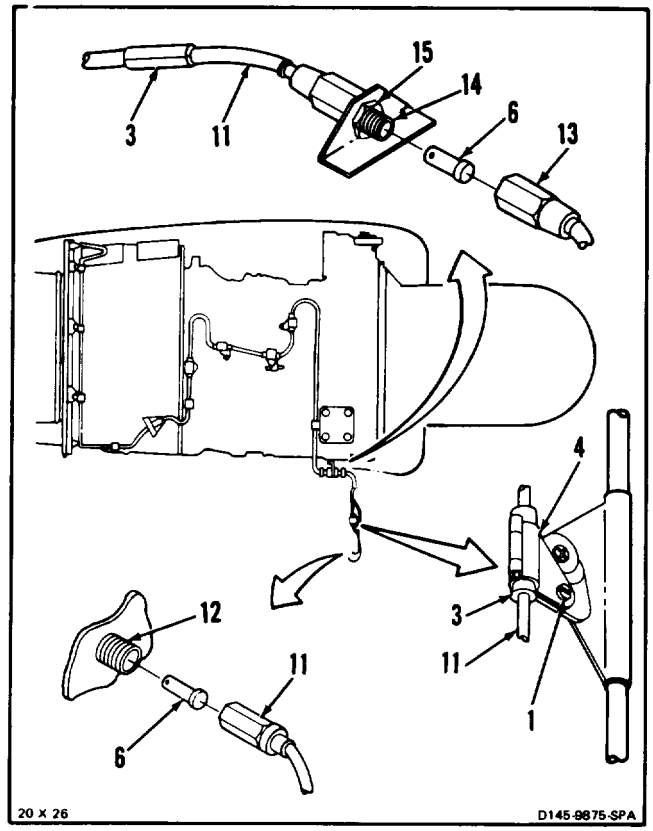
12-12 REMOVE FIRE DETECTION SENSING ELEMENT (Continued) 12-12

REMOVE RIGHT SECTION

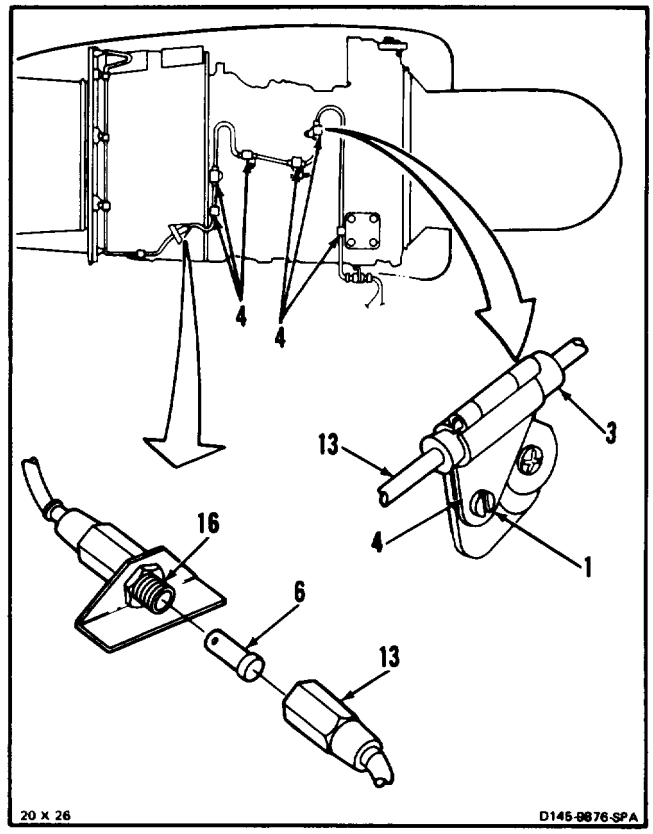
NOTE

Right section is inboard on No. 1 engine, outboard on No. 2 engine.

9. Turn fastener (1) and **release cable (11) and bushing (3) from clamp (4).**
10. **Disconnect cable (11)** from connector (12) on fuselage. Make sure insert (6) stays in connector. Cap connector.
11. **Disconnect element (13)** from connector (14). Make sure insert (6) stays in connector.
12. **Remove** lockwire and **nut (15)** from connector (14). **Remove cable (11)** and bushing (3). Remove bushing from cable. Cap cable ends.



13. **Disconnect element (13)** from connector (16). Make sure insert (6) stays in connector.
14. Turn fastener (1) and release element (13) **and bushing (3)** from clamp (4) at six locations. **Remove** right section of **element (13).**



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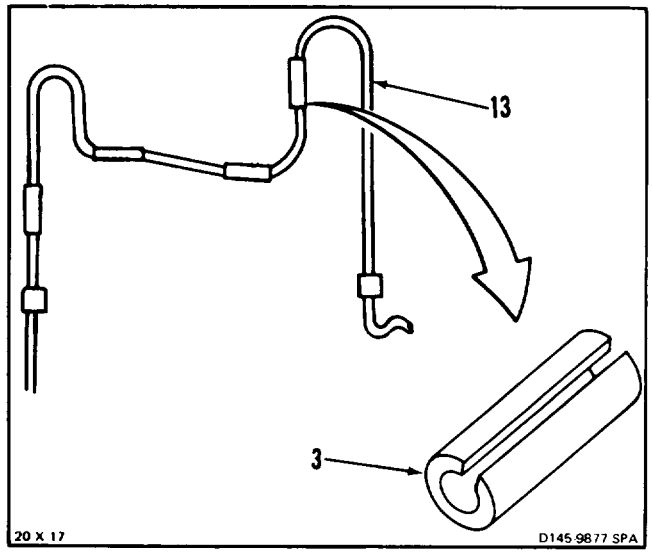
15. Cap ends of element (13). **Remove six bushings (3)** from element.

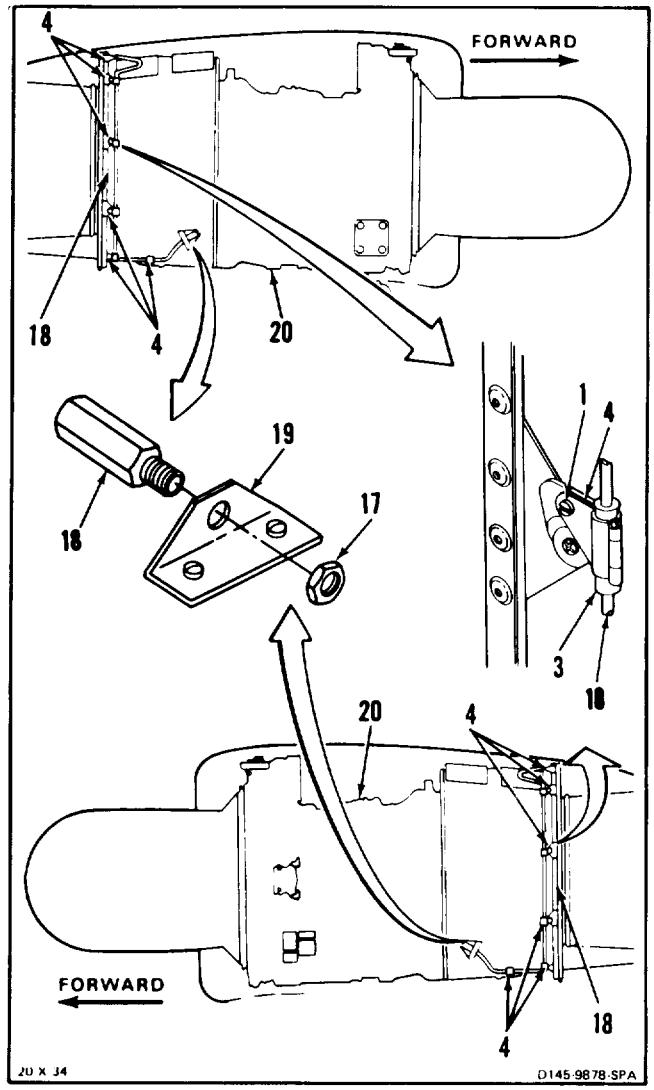


REMOVE CENTER SECTION

NOTE

Center section of element passes over top of engine to connect right and left sections of element.

16. **Remove** lockwire and **nut (17). Remove element (18)** from bracket (19).
17. **Repeat step 16.** to release element (18) **on other side of engine (20).**
18. Turn fastener (1) and release element (18) **and bushing (3)** from clamps (4) at 1210-cations.
19. **Remove** center section of **element (18).**



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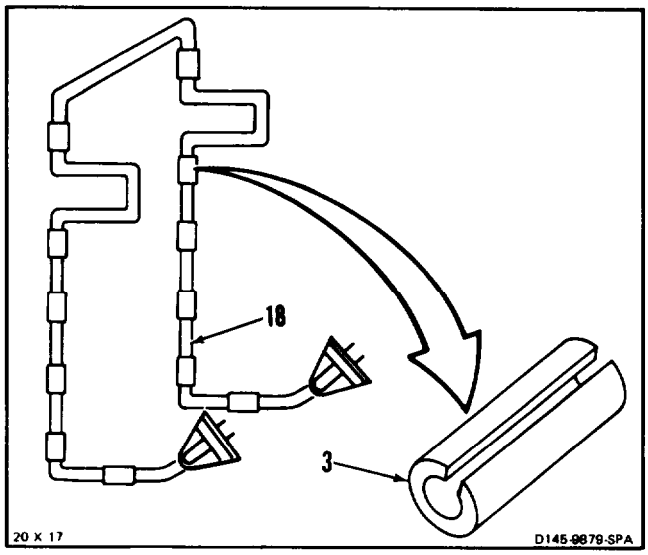
12-12 REMOVE FIRE DETECTION SENSING ELEMENT (Continued)

20. Cap ends of element (18). **Remove 12 bushings (3)** from element.



FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-13 INSTALL FIRE DETECTION SENSING ELEMENT 12-13

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds
Crowsfoot Attachment, 3/8-inch

Materials:

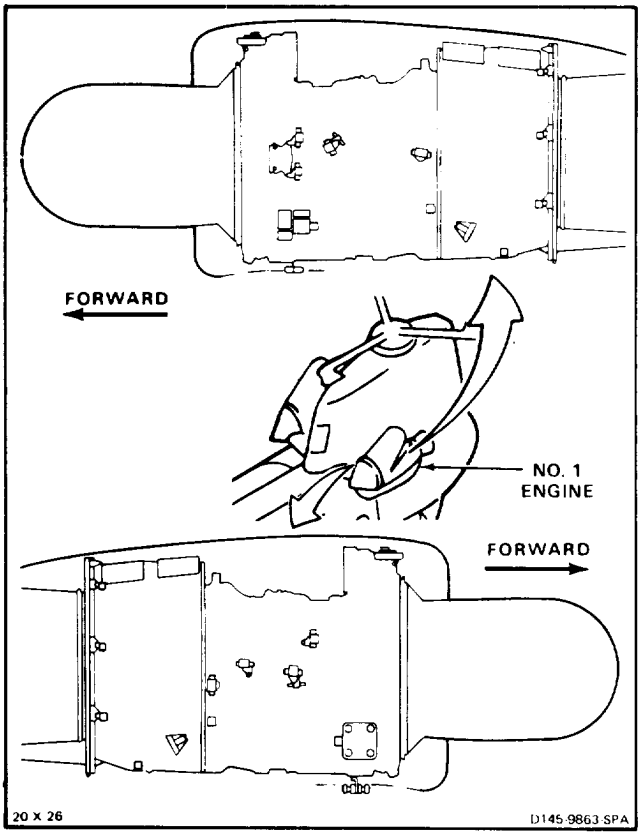
Lockwire (E231)

Personnel Required:

Medium Helicopter Repairer
Inspector

References:

TM 55-1520-240-23P



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CAUTION

Do not pinch, crush, kink, or make sharp bends in element. Element can be damaged.

NOTE

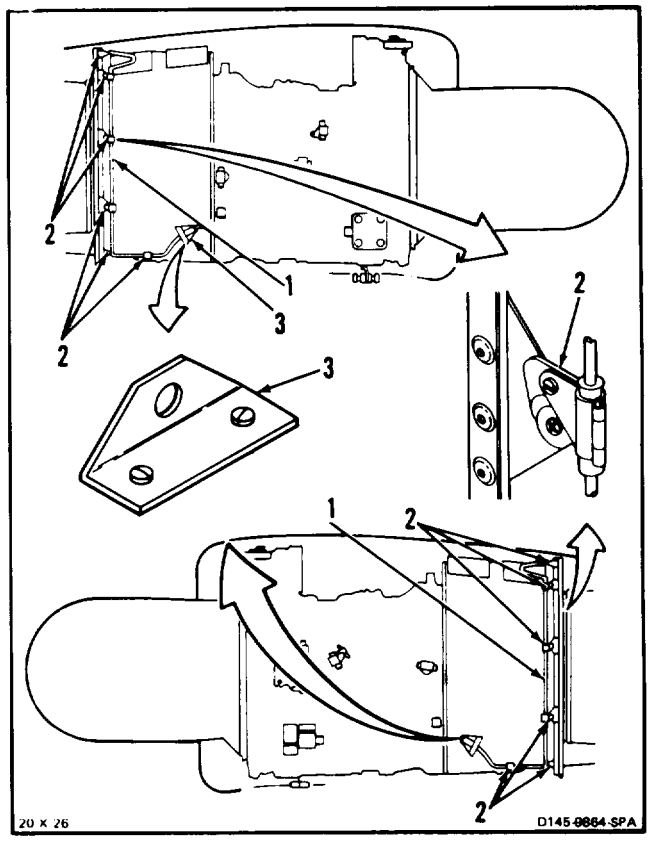
Procedure is same to install fire detection sensing element on No. 1 or No. 2 engine. Installation of No. 1 engine element is shown here.

INSTALL CENTER SECTION

NOTE

Center section of element passes over top of engine to connect right and left sections of element.

1. **Remove caps** from element (1).
2. **Bend element (1)** as shown. Element must follow locations of 12 clamps (2) and two brackets (3).
3. **Follow these guidelines when bending element (1).**
   a. Bend radius shall not be less than 1-inch.
   b. Bends shall be at least 3-inches from brackets (3).
   c. Bends shall be at least 1/2-inch from clamps (2).



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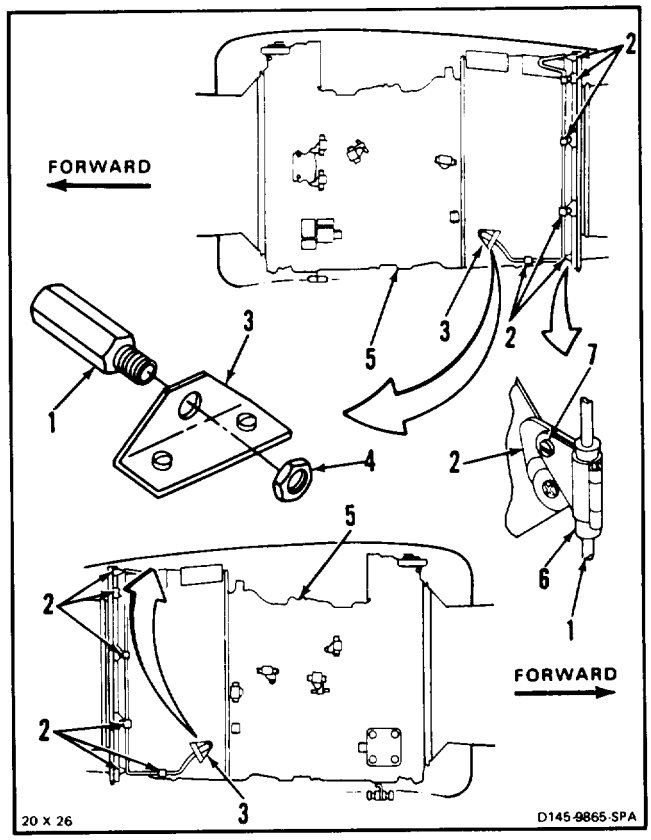
12-13 INSTALL FIRE DETECTION SENSING ELEMENT (Continued)

4. **Insert** end of **element (1) through bracket (3). Install** and lockwire **nut (4).** Use lockwire (E231).
5. **Repeat step 4 for bracket (3) on other side of engine (5).**
6. **Install 12 bushings (6) on element (1),** one at each clamp (2) location. Slits in bushings shall be toward outside of bends in element.
7. **Press element (1)** and bushing (6) **into clamp (2) at 12 locations.** Bushings shall be centered in clamps.
8. **Lock each clamp (2)** with fasteners (7).

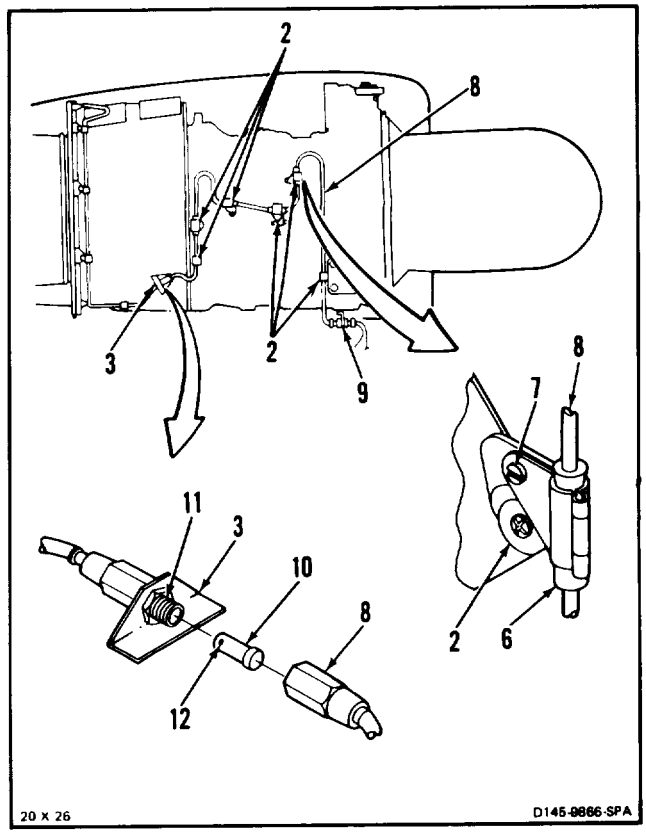


INSTALL RIGHT SECTION

NOTE

Right section of element is inboard on No. 1 engine, outboard on No. 2 engine.

9. **Remove caps** from elements (8).
10. **Bend element (8)** as shown. Element must follow locations of six clamps (2) and two brackets (3 and 9). Follow guidelines in step 3 when bending element.
11. Make sure insert (10) is in connector (11), white dot (12) first.
12. Connect element (8) to connector (11) at bracket (3).
13. **Install six bushings (6)** on element (8), one at each clamp (2) location. Slits in bushings shall be toward outside of bends in element.
14. **Press element (8) and bushing (6) into clamp (2)** at six locations. Bushings shall be centered in clamps.
15. **Lock each clamp (2)** with fastener (7).
16. **Torque** end of **element (8) to 65 inch-pounds.**



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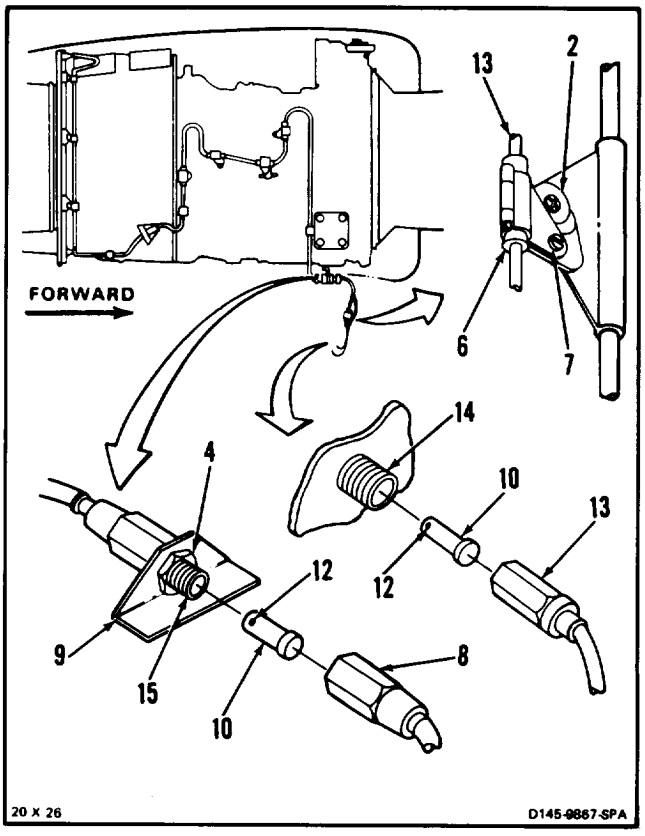
12-13 INSTALL FIRE DETECTION SENSING ELEMENT (Continued) 12-13

17. **Remove caps** from cable (13) and connector (14) on fuselage.
18. **Insert connector (15) through bracket (9).**
19. **Install** and lockwire **nut (4).** Use lockwire (E231).
20. Make sure insert (10) is in two connectors (14 and 15), white dot (12) first.
21. **Connect cable (13)** to connector (14) on fuselage. **Torque cable to 65 inch-pounds.**
22. **Connect element (8)** to connector (15) at bracket (9). **Torque cable to 65 inch-pounds.**
23. **Install bushing (6)** on cable (13) at clamp (2) location.
24. **Press cable (13)** and bushing (6) **into clamp (2).** Bushing shall be centered in clamp.
25. **Lock clamp (2)** with fastener (7).



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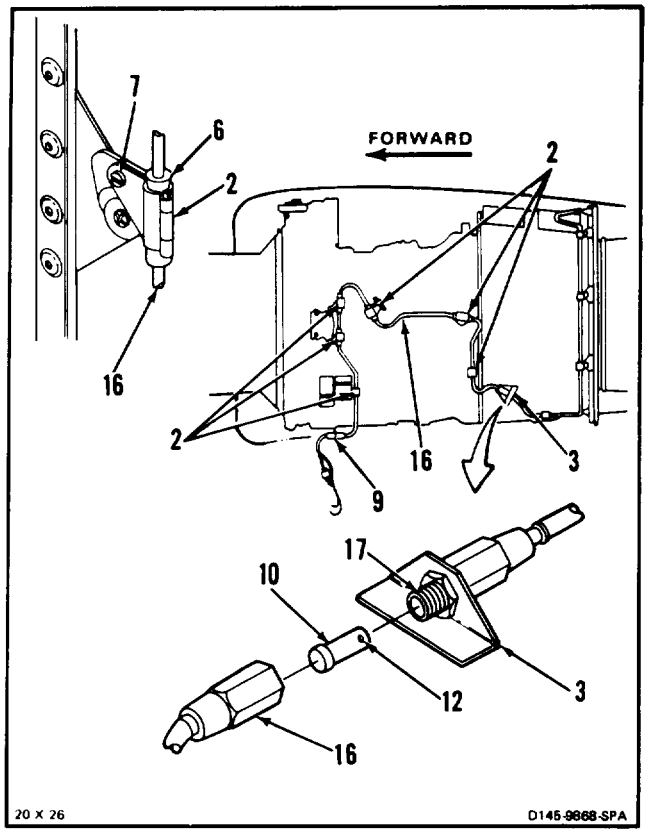
12-13 INSTALL FIRE DETECTION SENSING ELEMENT (Continued) 12-13

INSTALL LEFT SECTION

NOTE

Left section of element is outboard on No. 1 engine, inboard on No. 2 engine.

26. **Remove caps** from element (16).
27. **Bend element (16)** as shown. Element must follow locations of six clamps (2) and two brackets (3 and 9). Follow guidelines in step 3 when bending element.
28. Make sure insert (10) is in connector (17), white dot (12) first.
29. **Connect element (16)** to connector (17) at bracket (3).
30. **Install six bushings (6)** on element (16), one at each clamp (2) location. Slits in bushings shall be toward outside of bends in element.
31. **Press element (16)** and bushing (6) **into clamp (2)** at six locations. Bushings shall be centered in clamps.
32. **Lock each clamp (2)** with fastener (7).
33. **Torque end of element (16) to 65 inch-pounds.**



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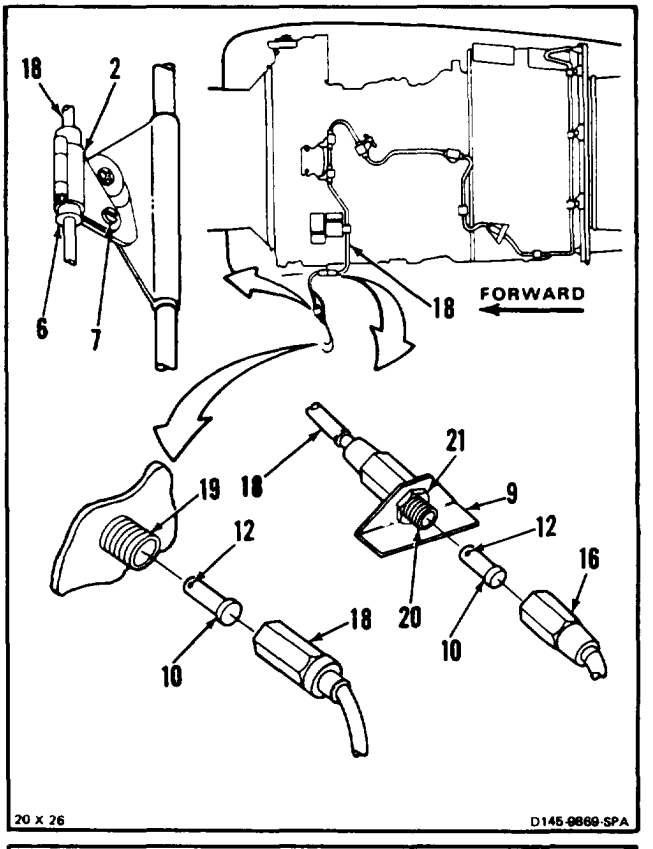
12-13 INSTALL FIRE DETECTION SENSING ELEMENT (Continued) 12-13

34. **Remove caps** from cable (18) and connector (19) on fuselage. Insert connector (20) through bracket (9).
35. Install and lockwire nut (21). Use lockwire (E231).
36. Make sure insert (10) is in connectors (19 and 20), white dot (12) first.
37. **Connect cable (18)** to connector (19) on fuselage. **Torque cable to 65 inch-pounds.**
38. **Connect element (16)** to connector (20) at bracket (9). **Torque element to 65 inch-pounds.**
39. **Install bushing (6)** on cable (18) at clamp (2).
40. **Press cable (18)** and bushing (6) **into clamp (2).** Bushing shall be centered in clamp.
41. **Lock clamp (2)** with fastener (7).

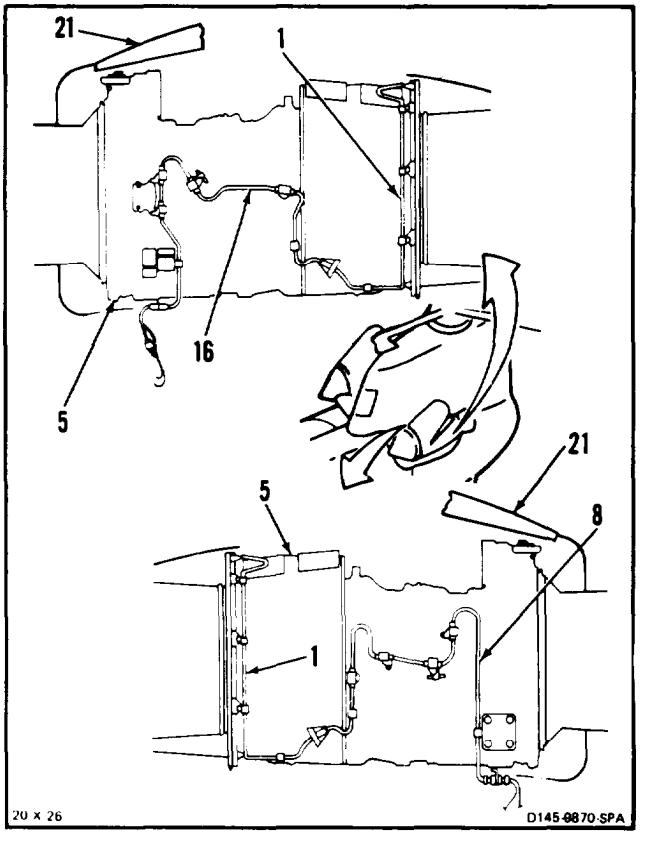
INSPECT



WARNING

Do not allow element to touch or chafe on engine or engine cover. Element can be damaged by chafing. A damaged element can cause a false fire indication or an inoperative fire detection system resulting in equipment damage and injury to personnel.

42. Check elements (1, 8, and 16). **Elements shall not chafe or touch engine (5) or engine cover (21).**



INSPECT

FOLLOW-ON MAINTENANCE:

Close engine access cover (Task 4-50).

Close engine work platform (Task 2-2).

Perform operational check of fire detection system (TM 55-1520-240-T).

END OF TASK

12-14 REPLACE FIRE PULL HANDLE LAMP

INITIAL SETUP

Applicable Configurations:
All

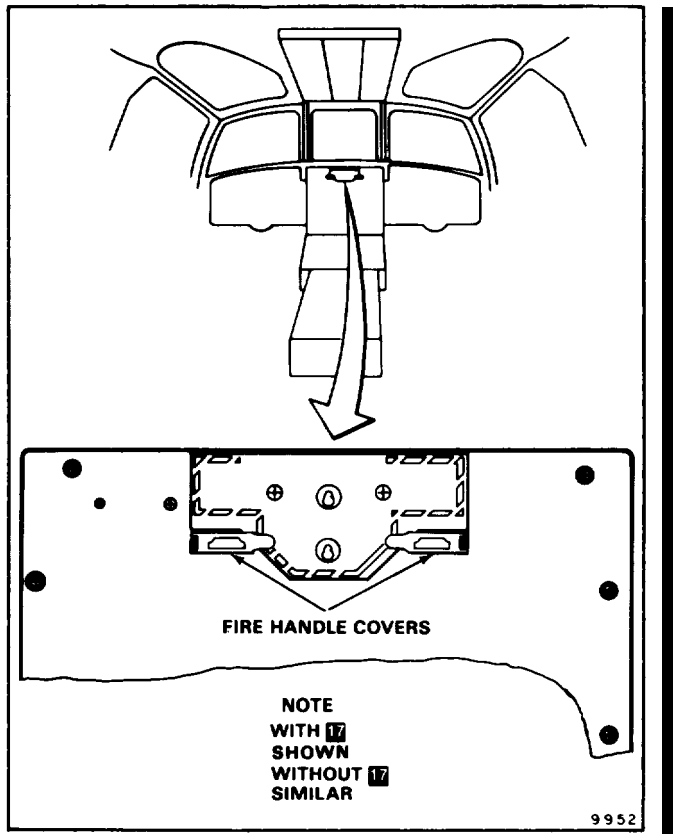
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off

References:
TM 55-1520-240-23P

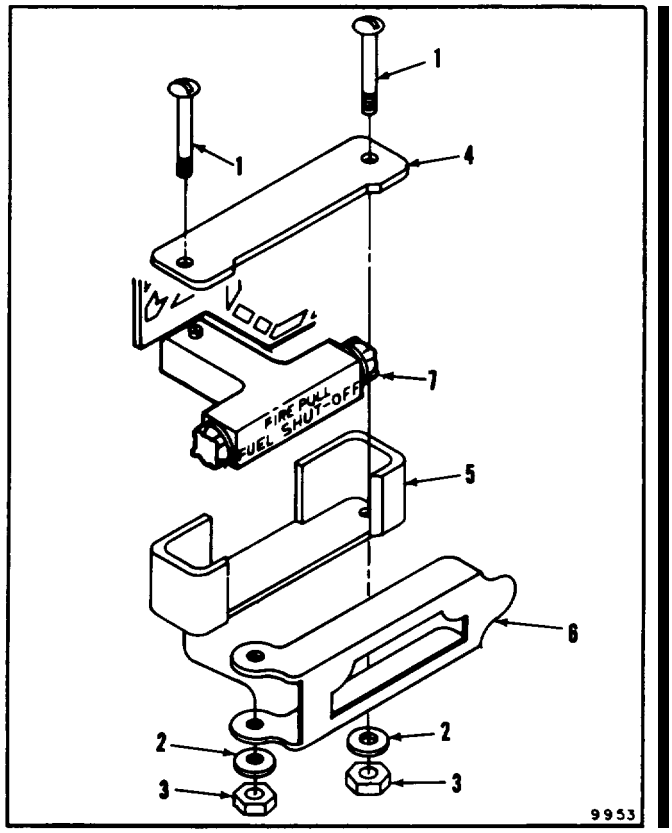


REMOVE COVER ASSEMBLY (With 17)

NOTE

Procedure is similar to replace left or right fire handle cover. Replacement of left cover is shown.

1. **Remove two screws (1), washers (2), and locknuts (3).**
2. **Remove lid (4), bottom cover (5), and filter holder (6)** from fire handle (7).



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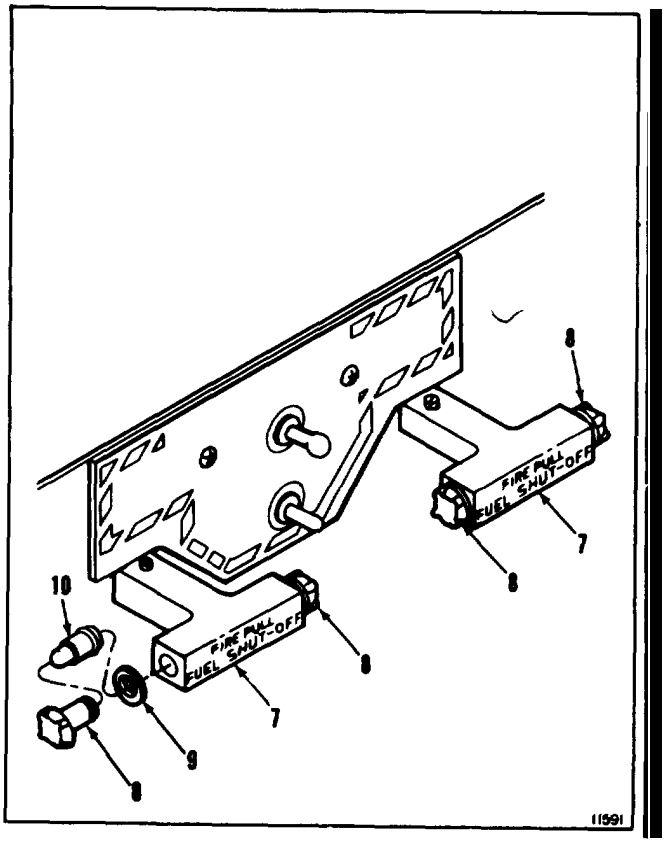
12-14 REPLACE FIRE PULL HANDLE LAMP (Continued) 12-14

REMOVE LAMP

3. **Remove holder lens (8)** and seal or packing (9) from handle (7).
4. **Separate lamp (10) from holder (8).**

INSTALL LAMP

5. Install lamp (10) in holder (8),
6. Install holder (8) and packing (9) in handle (7).



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INSTALL COVER ASSEMBLY (WITH 17)

7. **Position bottom cover (5)** under fire handle (7).
8. **Position lid (4)** on top of fire handle (7).

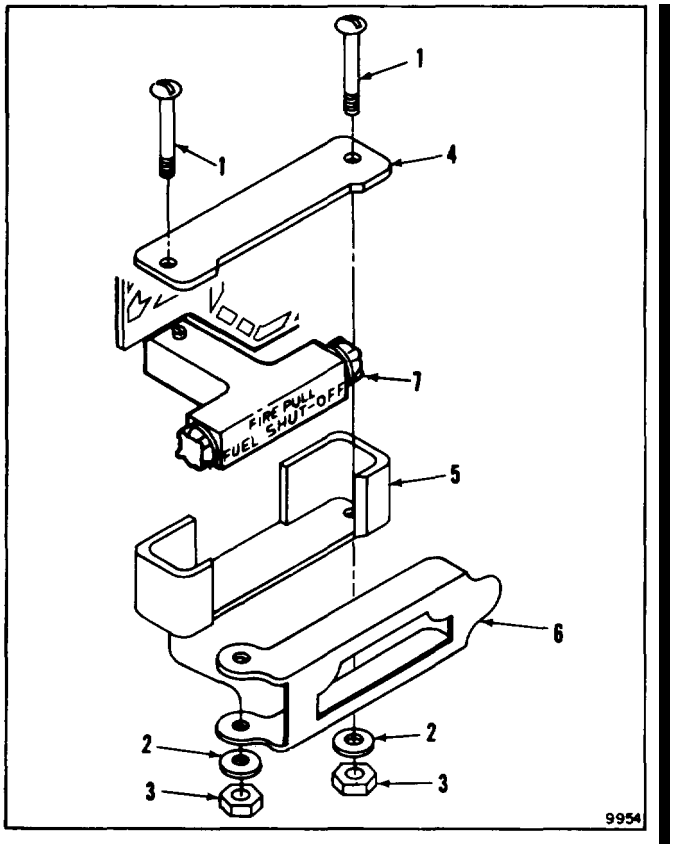
CAUTION

Do not tighten self-locking nut when installing filter holder. Accidental actuation of fire extinguisher may result.

NOTE

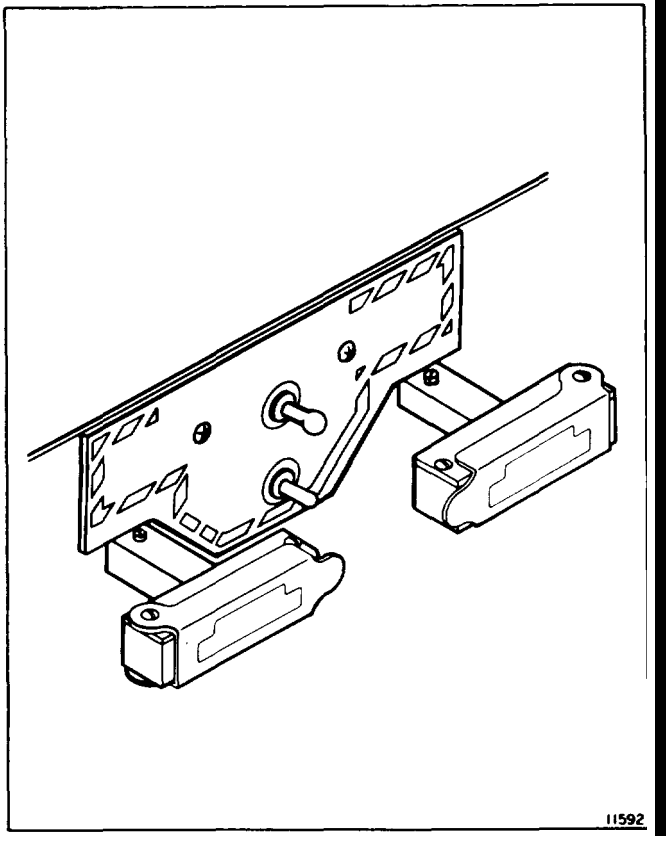
Tab of filter holder on left fire handle is on right edge. Tab of filter holder on right fire handle is on left edge.

9. **Position filter holder (5)** on fire handle (7).
10. Install two screws (1), washers (2), and self-locking nuts (3) in fire handle (7).



FOLLOW-ON MAINTENANCE:

Perform operational check of fire extinguisher system (TM 55-1520-240-T).



END OF TASK

12-15 REMOVE FIRE PULL CONTROL 12-15

INITIAL SETUP

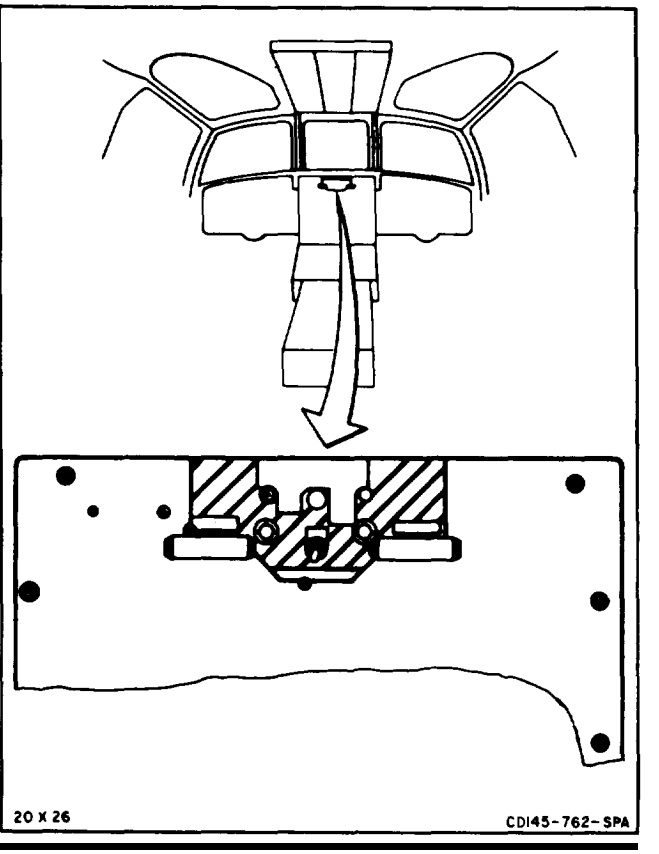
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)

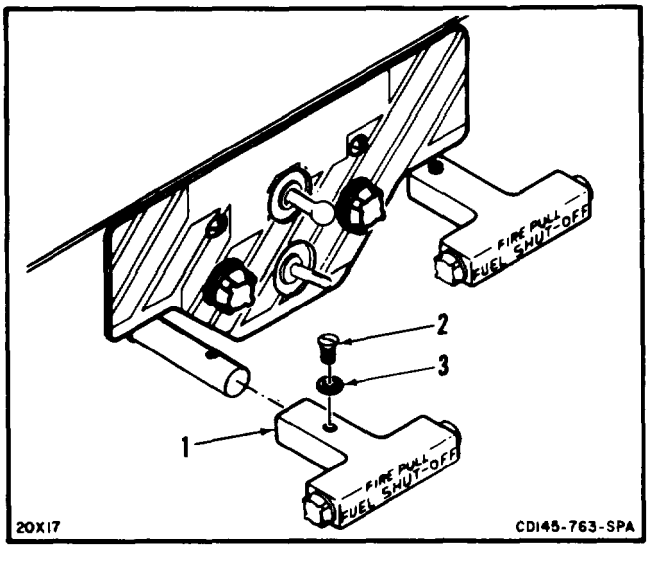
Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

- **There are two fire pull controls, one for each engine. Procedure is same for removing either one. Left side (No. 1 engine) is shown here.**
- **Handle assemblies shown are without 17. Handle assemblies with 17 are similar.**



ACCESS TO FIRE PULL CONTROL

1. Pull handle (1).
2. Remove screw (2) and washer (3) from handle (1).
3. **Remove handle (1).**

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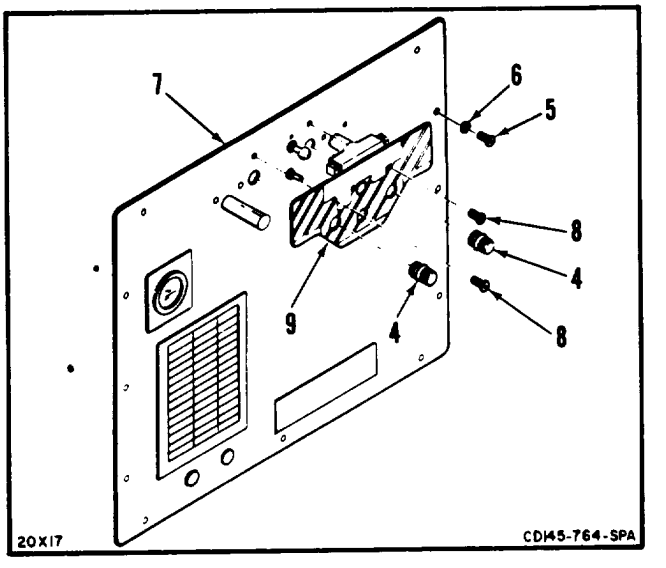
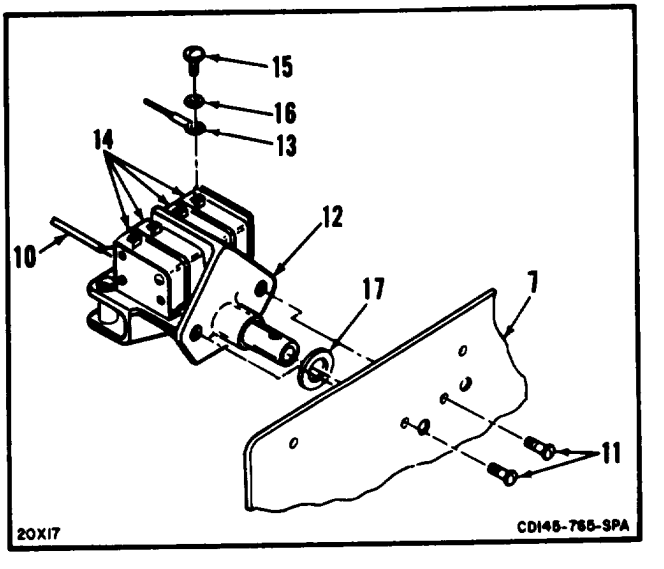
12-15 REMOVE FIRE PULL CONTROL (Continued) 12-15

4. **Remove two panel lights (4).**
5. **Remove 11 screws (5)** and washers (6) from center instrument panel (7).
6. Tilt panel (7) far enough to see and reach behind it.
7. Remove two screws (8) from fire warning panel (9).
8. **Remove panel (9).**



REMOVE CONTROL ASSEMBLY

9. Tag and **disconnect warning light electrical wires (10)** at splice.
10. Remove two screws (11).
11. Separate control (12) from panel (7).
12. Tag eight electrical wires (13) connected to fire extinguisher switches (14). **Disconnect eight wires** by removing screws (15) and washers (16).
13. **Remove control (12)** and packing (17).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-16 REMOVE FIRE EXTINGUISHER SYSTEM SWITCH AND ACTUATOR ADAPTER 12-16

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

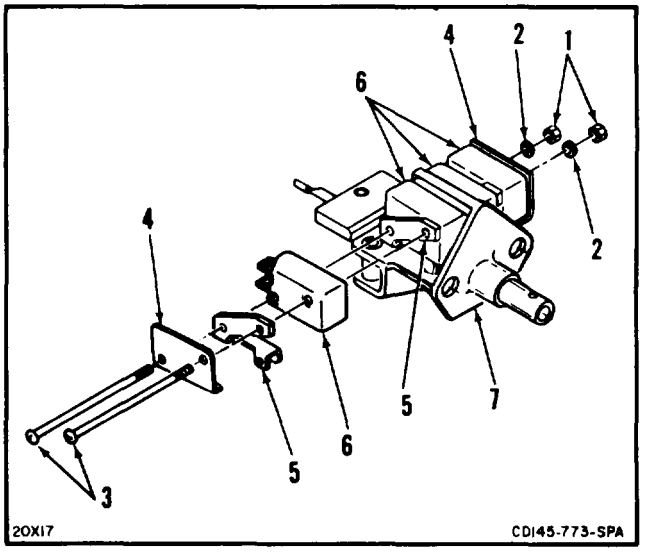
Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Off Helicopter Task
Fire Pull Control Removed (Task 12-15)

1. Remove two nuts (1), washers (2), and screws (3).
2. **Remove** two plates (4), **four adapters (5), and four switches (6)** from control body (7).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

12-17 INSTALL FIRE EXTINGUISHER SYSTEM SWITCH AND ACTUATOR ADAPTER

INITIAL SETUP

Applicable Configurations:
All

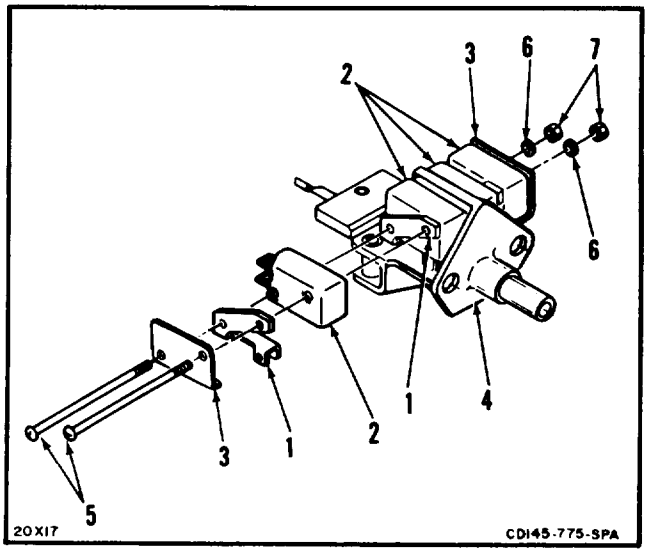
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician

References:
TM 55-1520-240-23P

1. **Position four adapters (1), four switches (2), and two plates (3)** on control body (4) as shown.
2. **Install two screws (5),** washers (6), and nuts (7).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-18 INSTALL FIRE PULL CONTROL

INITIAL SETUP

Applicable Configurations:
All

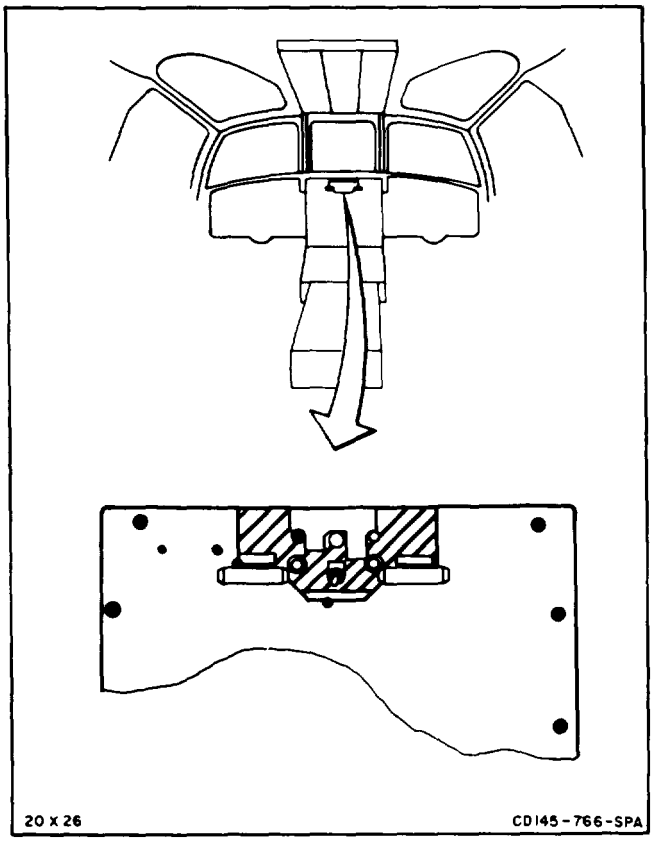
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter

Materials:
Electrical Insulation (E203)

Parts:
Preformed Packing

Personnel Required:
68F10 Aircraft Electrician
67F30 Inspector

References:
TM 55-1520-240-23P

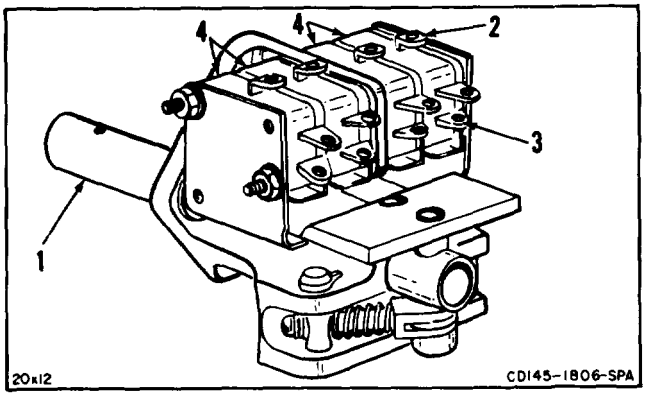


NOTE

There are two fire pull controls, one for each engine. Procedure is same for installing either one. Left side (No. 1 engine) is shown here.

CONTINUITY TESTS

1. Push in shaft (1).
2. **Check for continuity between terminal (2) and terminal (3).**
3. **Repeat step 2 for each switch (4).**



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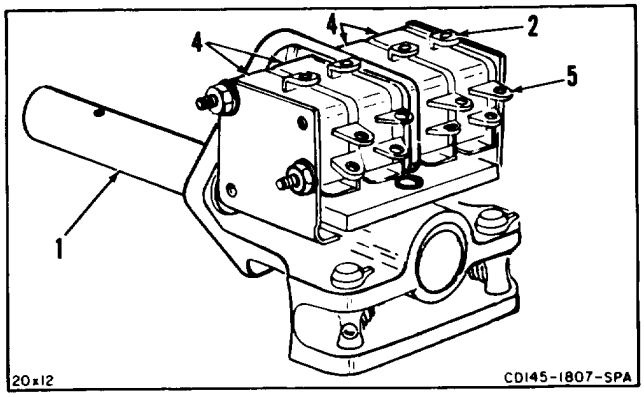
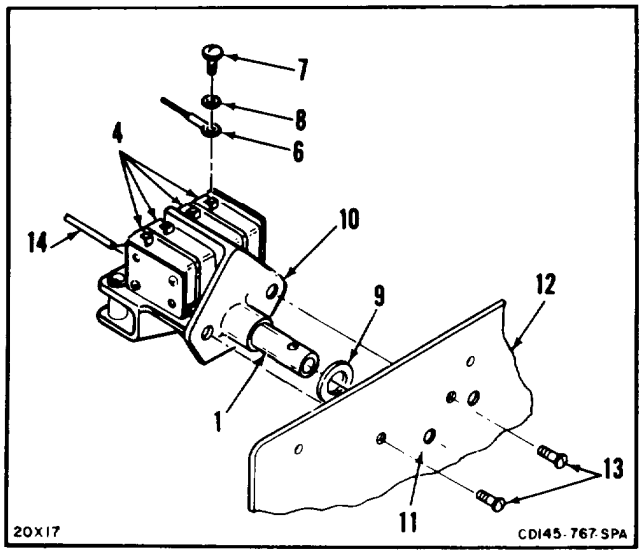
12-18 INSTALL FIRE PULL CONTROL (Continued)

4. Pull out shaft(1).
5. Check continuity between terminal (2) and terminal (5).
6. Repeat step 5. for each switch (4).



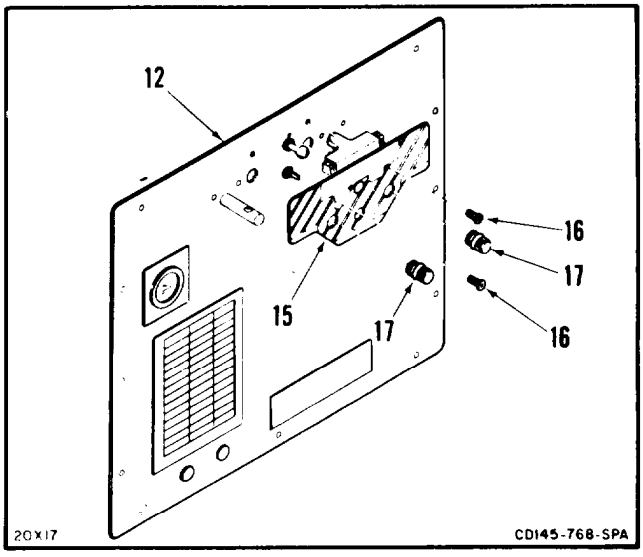
INSTALL CONTROL

7. **Connect eight electrical wires (6)** to switches (4). Install eight screws (7) and washers (8). Remove tags from wires.
8. Install packing (9) on control (10).
9. **Install shaft (1)** through hole (11) in **instrument panel (12).**
10. **Install two screws (13).**
11. **Connect warning light electrical wires (14).** Use splice and insulation (E203) to make connection, Remove tags from wires



INSTALL FIRE WARNING PANEL

12. **Position fire warning panel (15)** on center instrument panel (12).
13. **Install two screws (16).**
14. Install two panel lights (17).



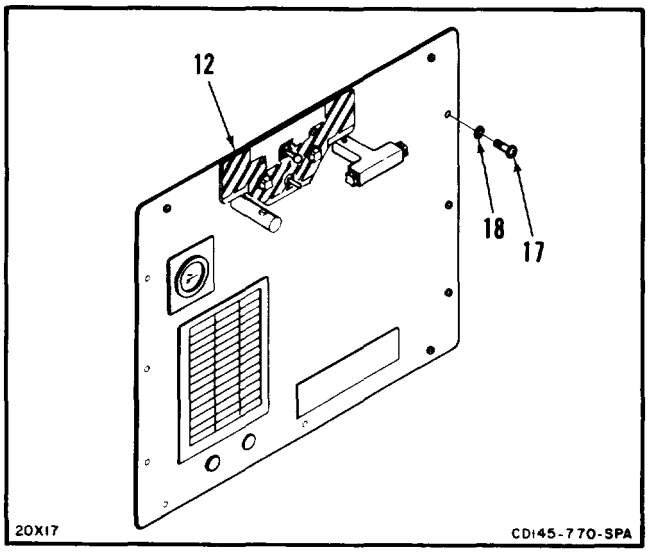
INSPECT

GO TO NEXT PAGE

12-18 INSTALL FIRE PULL CONTROL (Continued) 12-18

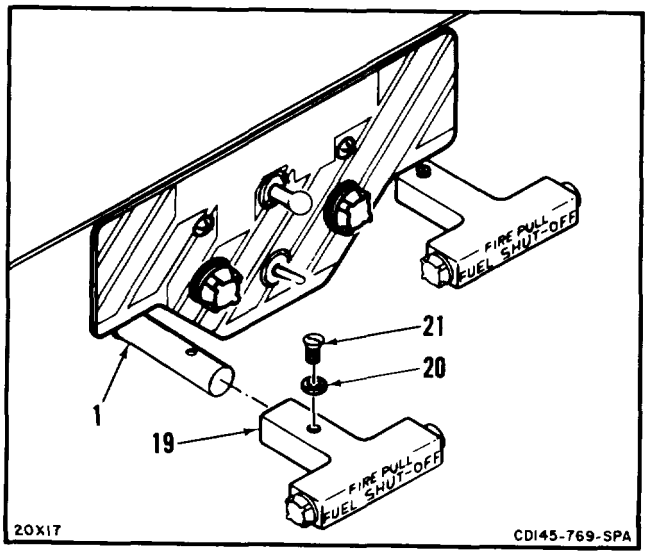
INSTALL CENTER PANEL

15. Position panel (12).
16. **Install 11 screws 17)** and washers (18).



INSTALL HANDLE

17. Position handle (19) on shaft(1).
18. Install washer (20) and screw (21).
19. Push in handle (19).



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

END OF TASK

12-19 REMOVE FIRE EXTINGUISHER AGENT SWITCH 12-19

INITIAL SETUP

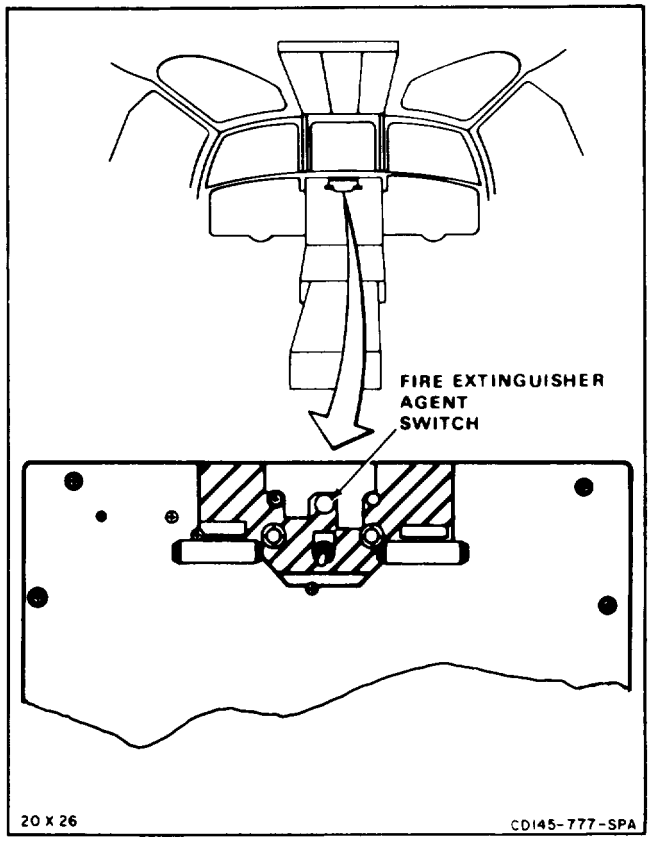
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)

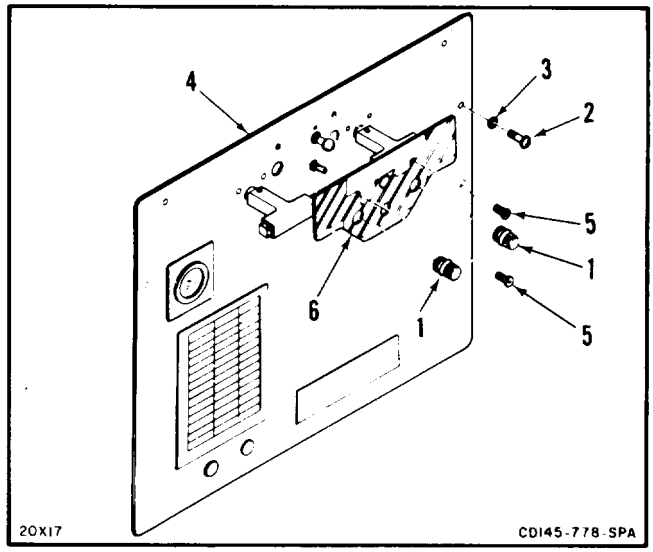
Personnel Required
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



ACCESS TO SWITCH

1. **Remove two panel lights (1).**
2. **Remove 11 screws** (2) and washers (3) from center instrument panel (4).
3. Tilt panel (4) far enough to see and reach behind it.
4. Remove two screws (5) from fire warning panel (6).
5. **Remove panel (6).**

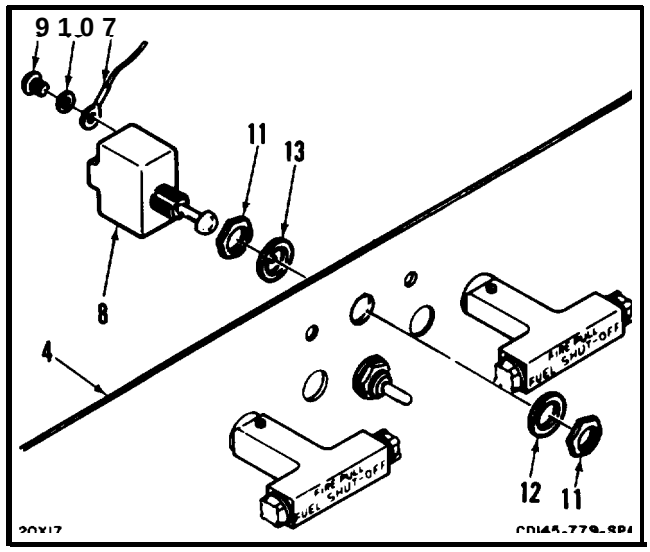


GO TO NEXT PAGE

12-19 REMOVE FIRE EXTINGUISHER AGENT SWITCH (Continued) 12-19

SWITCH REMOVAL

6. Tag six electrical wires (7) connected to FIRE EXT AGENT switch (8).
7. **Disconnect wires (7)** from switch (8) by removing six screws (9) and washers (10). Tag wires.
8. Remove nut (11) and washer (12) from switch (8).
9. **Remove switch (8)** with nut (11) and lockring (13) from behind panel (4).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-20 INSTALL FIRE EXTINGUISHER AGENT SWITCH 12-20

INITIAL SETUP

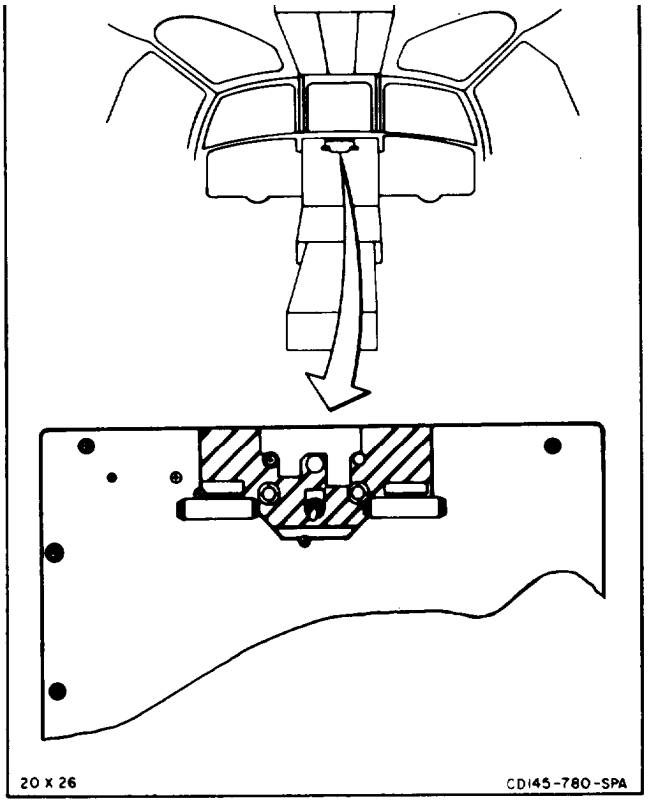
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F30 Inspector

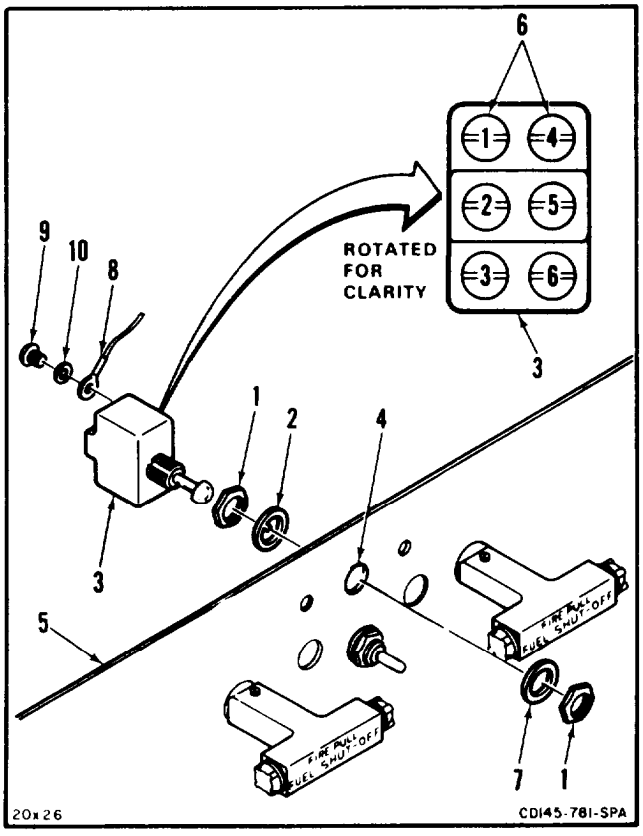
References:
TM 55-1520-240-23P



SWITCH INSTALLATION

1. Check that nut (1) and Iockring (2) are installed on FIRE EXT AGENT switch (3),
2. **Install switch (3)** through hole (4) in center instrument panel (5), Be sure number 1 and 4 switch terminals (6) are at top.
3. Install washer (7) and nut (1) on switch (3).
4. **Connect six electrical wires (8)** to switch (3) with screws (9) and washers (10). Remove tags from wires.

INSPECT

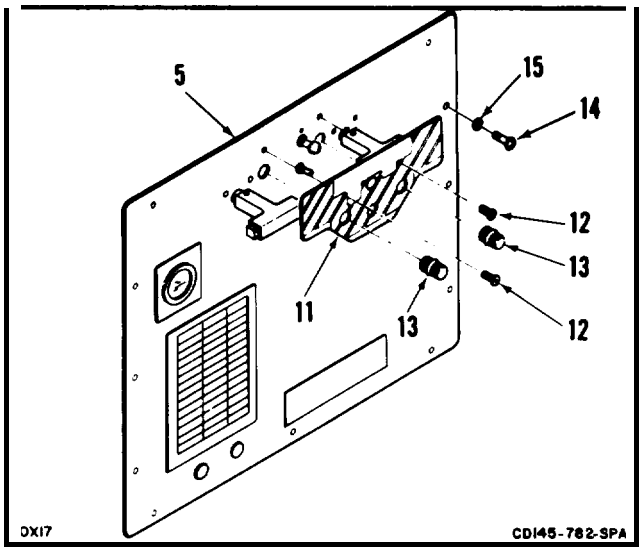


GO TO NEXT PAGE

12-20 INSTALL FIRE EXTINGUISHER AGENT SWITCH (Continued) 12-20

PANEL INSTALLATION

5. **Position firs warning panel (11)** on center instrument panel (5).
6. **Install two straws (12).**
7. **Install two panel lights (13).**
8. **Position panel (5)** as shown.
9. **Install 11 straws (14)** and washers (15).



FOLLOW-ON MAINTENANCE:

Perform operational check of fire extinguisher system (TM 55-1520-240-T).

END OF TASK

12-21 REMOVE FIRE EXTINGUISHER SYSTEM DISCHARGE NOZZLE

INITIAL SETUP

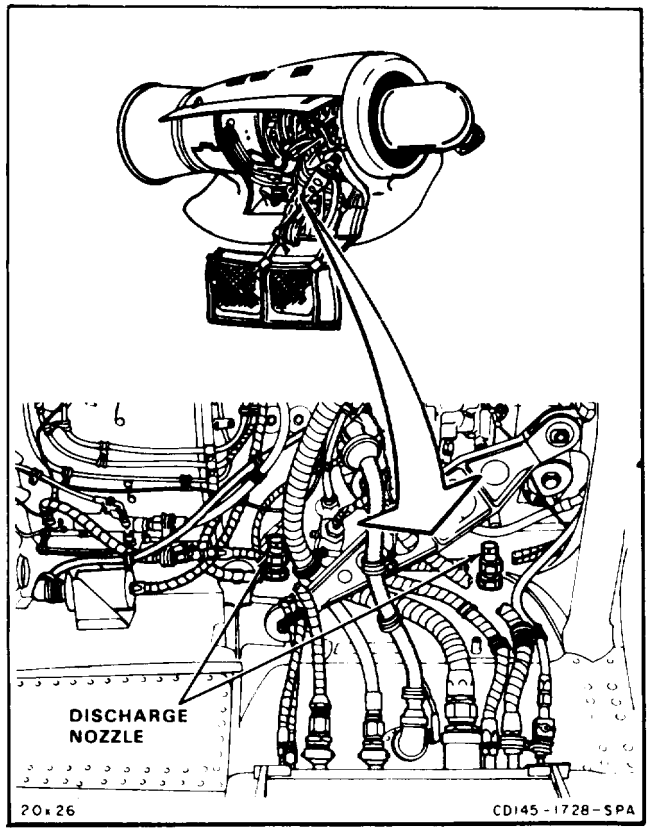
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Engine Work Platform Opened (Task 2-2)
Open Engine Access Cover, (Task 4-49)



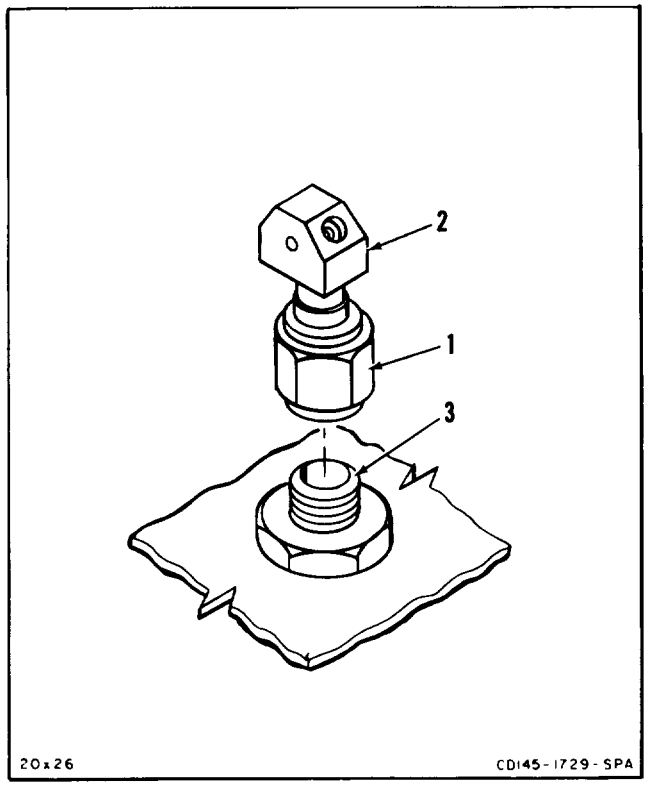
NOTE

There are two discharge nozzles in each engine compartment, one forward and one aft. Removal procedure is same for all nozzles.

1. Loosen nut (1).
2. **Remove nozzle (2).**
3. Cap fitting (3).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

12-22 INSTALL FIRE EXTINGUISHER SYSTEM DISCHARGE NOZZLE 12-22

INITIAL SETUP

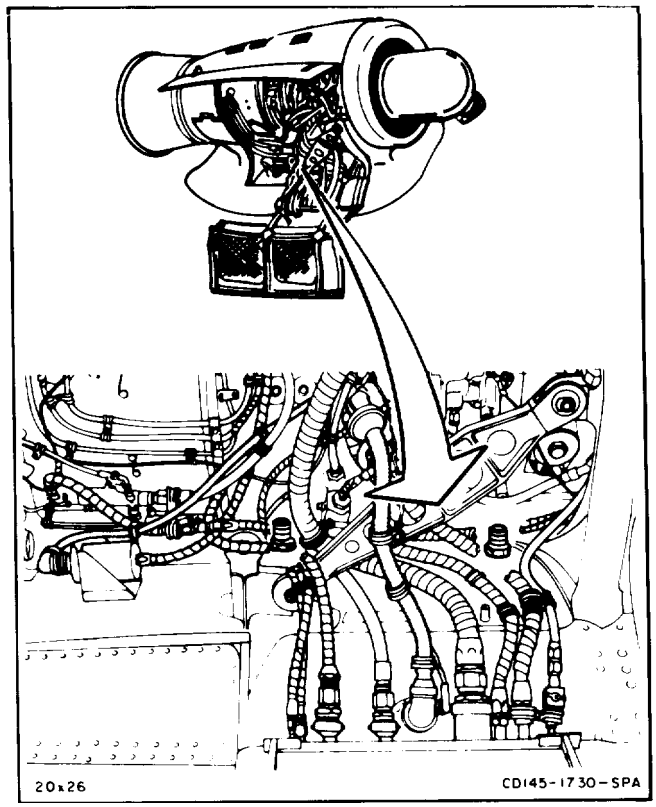
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Sealant (E334)

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

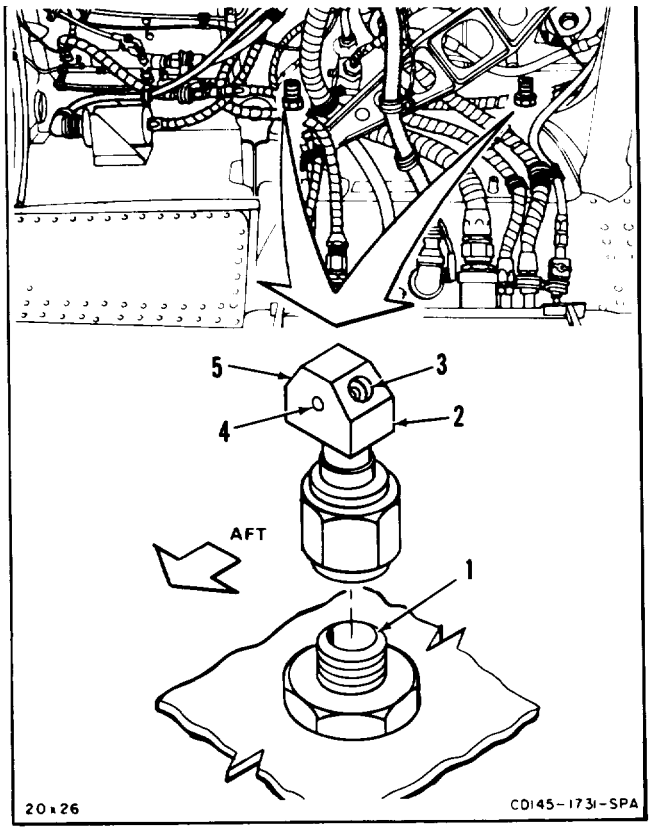
References:
TM 55-1520-240-23P



NOTE

- There are two **discharge nozzles in each engine compartment, one forward and one aft. Installation procedure is same for all nozzles.**
- **Forward and aft nozzles are not same. Left and right aft nozzles are not same.**

1. Remove caps from fitting (1).
2. **Position nozzle** (2) on fitting (1) as shown. For all nozzles, make sure two 1/4-inch holes (3) point outboard and inboard. For aft nozzles, make sure 0.06-inch hole (4) points aft and 30 degree slope (5) is inboard.

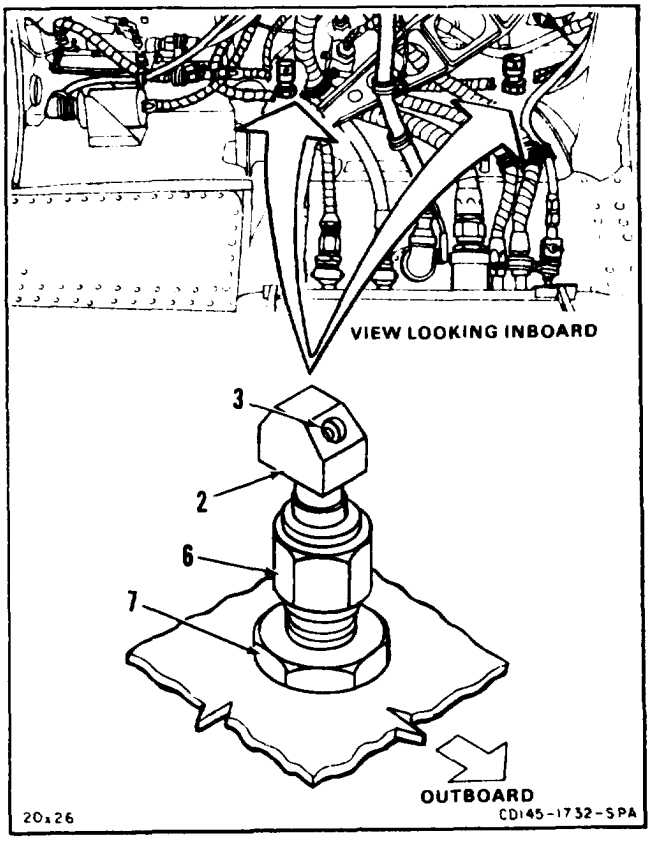


GO TO NEXT PAGE

12-22 INSTALL FIRE EXTINGUISHER SYSTEM DISCHARGE NOZZLE (Continued)

3. Hold nozzle (2) and tighten nut (6).
4. Check that two 1/4-inch holes (3) point outboard and inboard. If nozzle (2) turned, loosen nut (6), align nozzle and tighten nut.
5. Check sealant around lower nut (7). If seal is cracked or damaged, apply sealant (E334) to lower nut.

INSPECT



FOLLOW-ON MAINTENANCE:

Close engine access cover (Task 4-50).

Close engine work platform (Task 2-2).

END OF TASK

12-23 REMOVE FIRE EXTINGUISHER (BOTTLE) (30402103) 12-23

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Open End Wrench, 1-1/2 Inch
Workstand

Materials:
Paper Tags (E264)
Lockwire (E231)

Parts:
Pressure Seal Cap

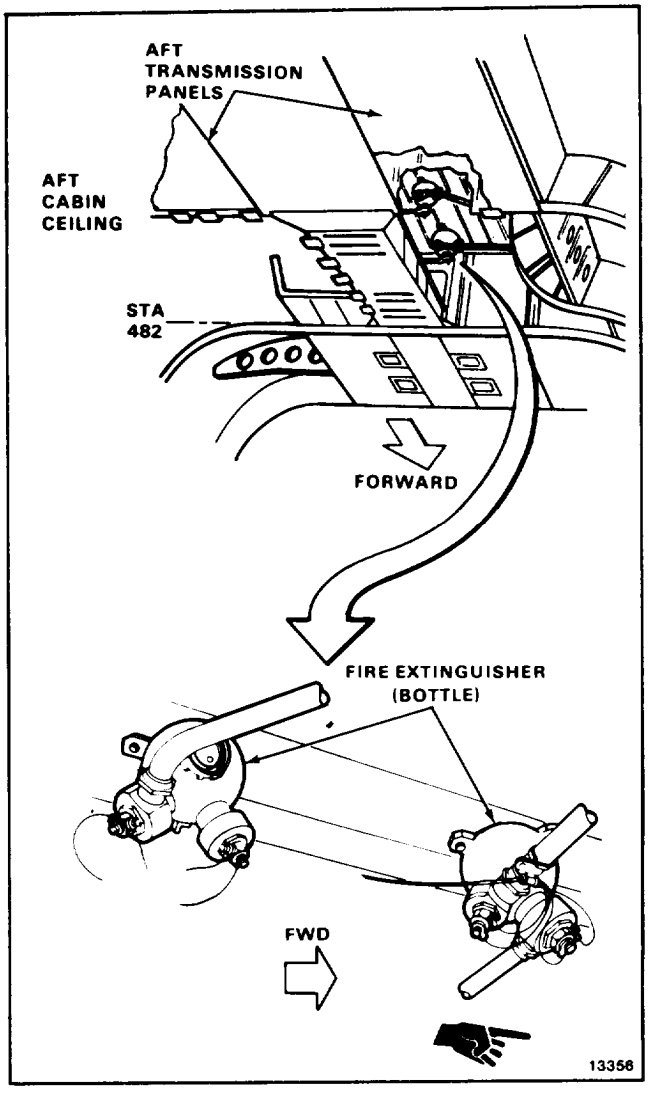
Personnel Required:
Medium Helicopter Repairer (2)

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Helicopter Grounded (Task 1-29)
FIRE EXT AGENT Switch In Center (Off) Position
Both FIRE PULL Handles Pushed In

General Safety Instructions:

WARNING

When not mounted in helicopter, fire extinguishers (bottles) can become dangerous missiles if discharged. Do not detonate, discharge, or abuse fire extinguishers. Injury to personnel can result. Remove cartridges (squibs) when extinguishers are removed for storage.



WARNING

Do not attempt to perform a continuity test on the cartridge. It could fire and discharge the bottle.

WARNING

Shunt the unserviceable live cartridge. Tag the cartridge unserviceable. State the reason for its removal, the date it was installed, and the date it was removed. Place the unserviceable cartridge in container replacement cartridge was packed. Ship cartridge to the Ammunition Supply Activity.

GO TO NEXT PAGE

12-23 REMOVE FIRE EXTINGUISHER (BOTTLE) (304021 03) (Continued) 12-23

NOTE

There are two engine fire extinguishers in aft cabin ceiling. Removal procedure is same for both.

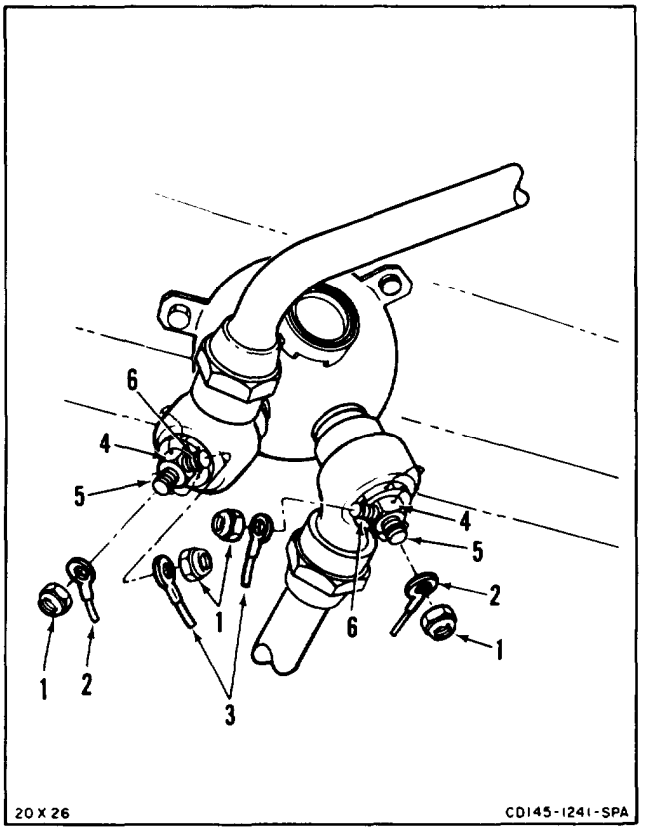
DISCONNECT WIRING

1. Remove four nuts (1). Tag and **disconnect electrical wire (2) and ground wire (3)** from both cartridges (4).

WARNING

Whenever fire extinguisher cartridges are not installed, the positive terminal and the ground terminal must be shorted to prevent firing from stray voltages.

2. Connect wire (E231) between electric terminal (5) and ground terminal (6) on each cartridge (4).

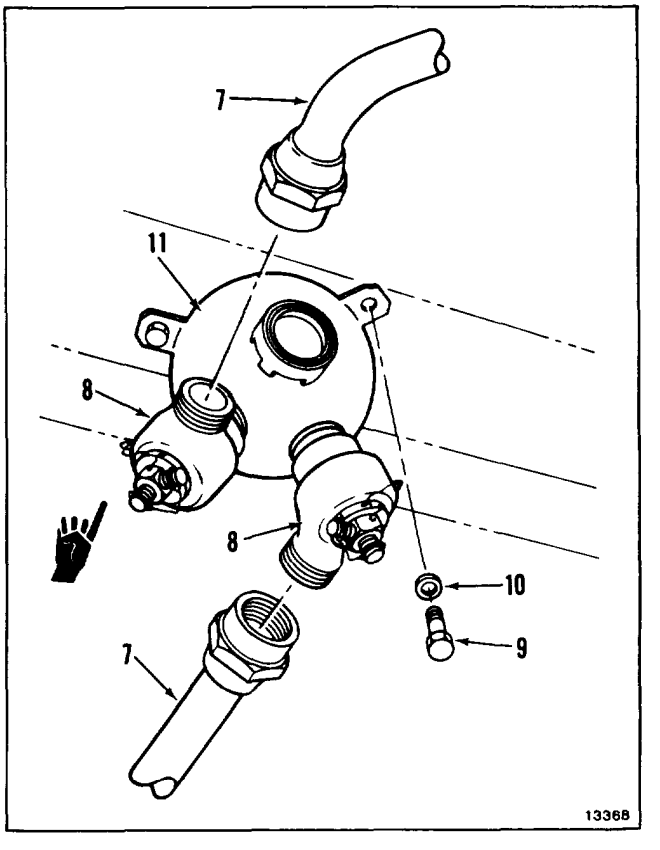


REMOVE EXTINGLUISHER

3. **Disconnect tubes (7)** from both valves (8).
4. Remove three bolts (9) and washers (10).
5. **Remove extinguisher (11).**
6. Install pressure seal cap on both valves (8).
7. **Plug or cap tubes (7).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

12-24 REMOVE FIRE EXTINGUISHER (BOTTLE) (892868-02) 12-24

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Open End Wrench, 1-1/2 Inch
Workstand

Materials:
Lockwire (E231)
Paper Tags (E264)

Parts:
Pressure Seal Cap

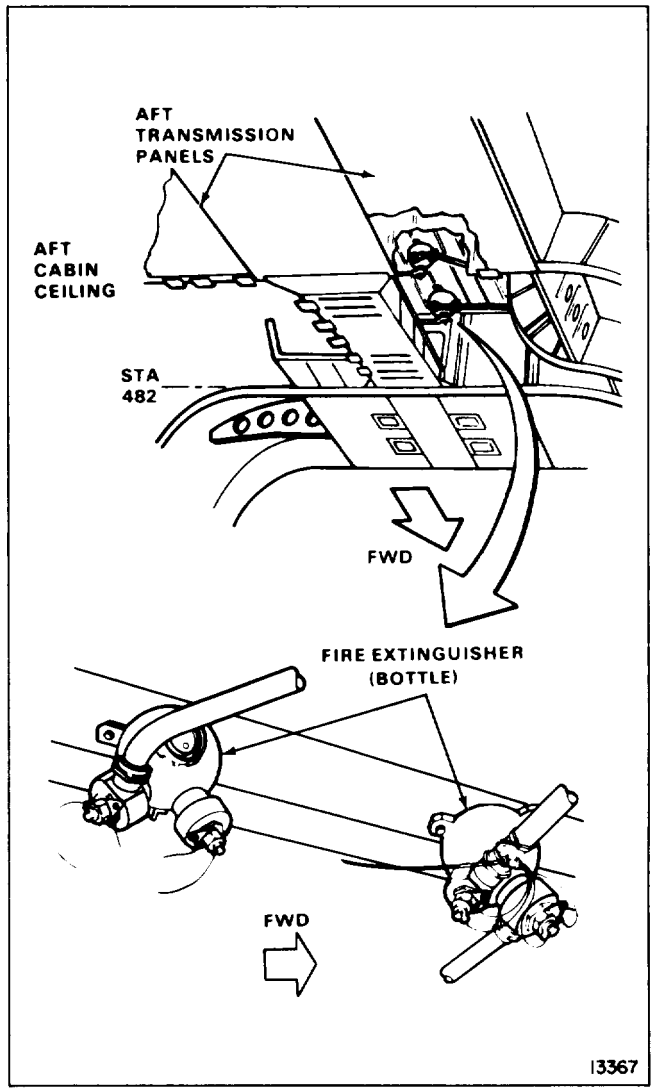
Personnel Required:
Medium Helicopter Repairer (2)

Equipment Condition:
Battery Disconnected (Task 1-39)
Helicopter Grounded (Task 1-29)
Electrical Power Off
FIRE EXT AGENT Switch In Center (OFF) Position
Both FIRE PULL Handles Pushed In

General Safety Instructions:

WARNING

- When not mounted in helicopter, fire extinguishers (bottles) can become dangerous missiles if discharged. Do not detonate, discharge, or abuse fire extinguishers. Injury to personnel can result. Remove cartridges (squibs) when extinguishers are removed for storage.
- Do not attempt to perform a continuity test on the cartridge. It could fire and discharge the bottle.
- Shunt the unserviceable live cartridge. Tag the cartridge unserviceable. State the reason for its removal, the date it was installed, and the date it was removed. Place the unserviceable cartridge in same container that replacement cartridge was packed. Ship cartridge to the Ammunition Supply Activity.



CAUTION

Make sure firing catiridge has been removed before packing bottle for shipment.

GO TO NEXT PAGE

12-24 REMOVE FIRE EXTINGUISHER (BOTTLE) (892868-02) (Continued] 12-24

NOTE

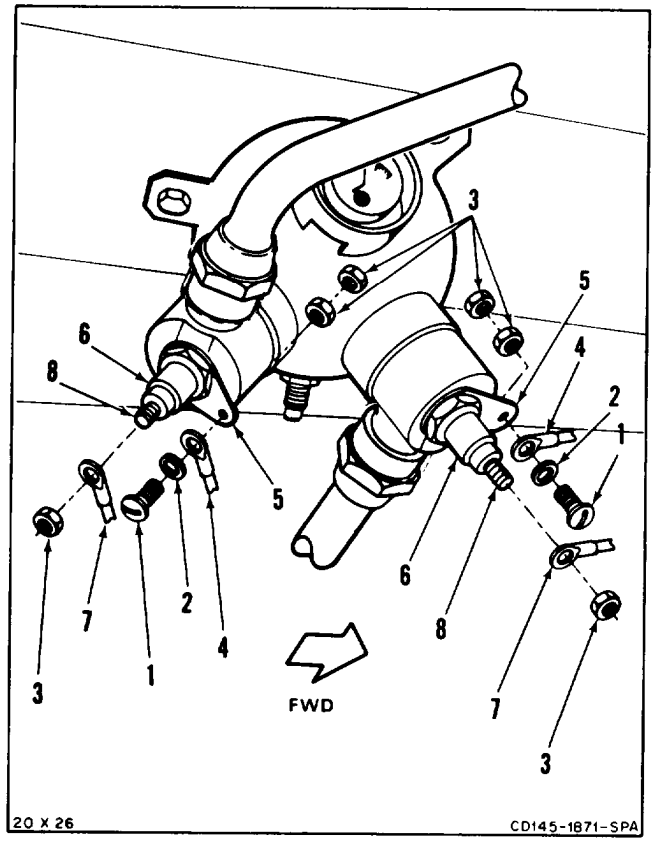
There are two engine fire extinguishers in aft cabin ceiling. Removal procedure is same for both.

DISCONNECT WIRING

1. **Remove** screw (1), washer (2), two nuts (3), and **wire (4)** from ground washer (5) on both cartridges (6). Tag wires.
2. **Remove** nut (3) and **wire (7)** from terminal (8) on both cartridges (6). Tag wires.
3. **Connect a piece of wire (E231) between terminal (8) and ground washer (5) of each cartridge (6).**

WARNING

Whenever fire extinguisher cartridges are not installed, the positive terminal and the ground terminal must be shorted to prevent firing from stray voltages.

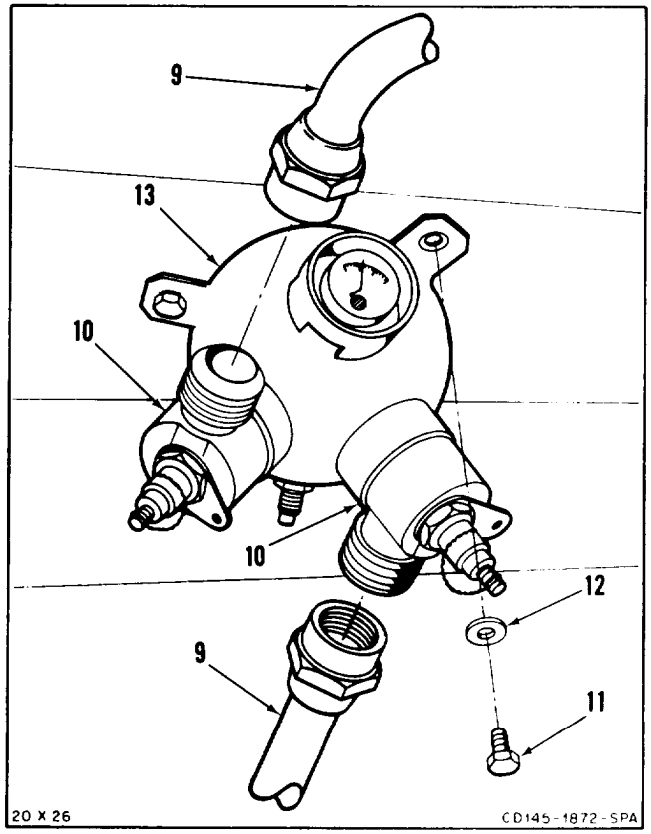


REMOVE EXTINGUISHER

4. **Disconnect tubes (9)** from both valves (10).
5. Remove three bolts (11) and washers (12).
6. **Remove extinguisher (13).**
7. **Install pressure seal caps** on both valves (10).
8. Plug or cap tubes (9).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

12-26 INSPECT FIRE EXTINGUISHER (BOTTLE) (30402103) 12-26

INITIAL SETUP

Applicable Configurations:
All

Tools:
Technical Inspection Tool Kit,
NSN 5180-00-323-5114
Dial Indicating Scale, **0** to 10 Pounds

Materials:
Lockwire (E231)

Personnel Required:
Inspector

References:
TM 55-1520-240-23P

Equipment Condition:
Off Helicopter Task

General Safety Instructions:

WARNING

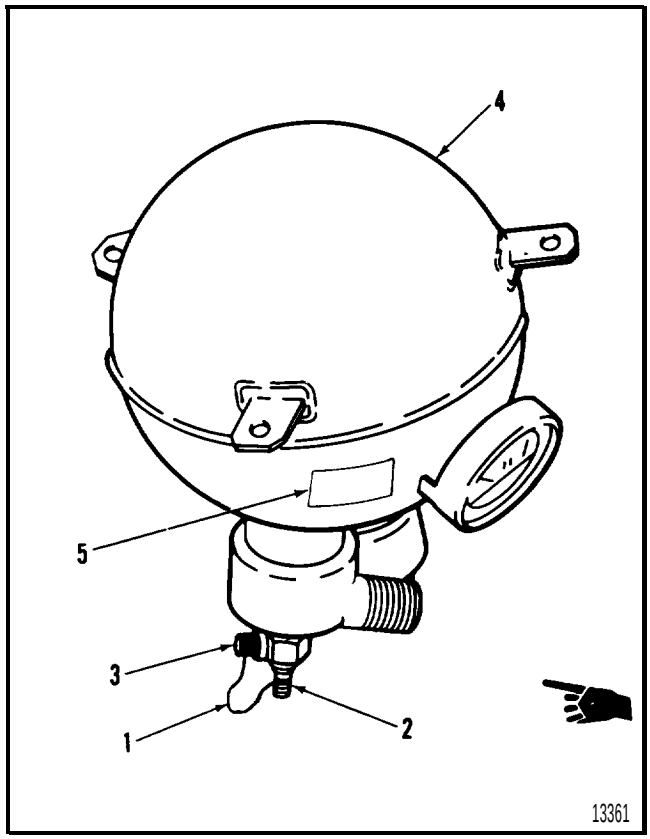
When not mounted in helicopter, fire extinguishers (bottles) can become dangerous missiles if discharged. Do not detonate, discharge, or abuse fire extinguishers. Injury to personnel can result. Remove cartridges (squibs) when extinguishers are removed for storage.

WARNING

Whenever fire extinguisher cartridges are not installed, the positive terminal and ground terminal must be shunted to prevent firing from stray voltage.

INSPECT EXTINGUISHER

1. If not already done, connect shunt wire (1) between positive electrical terminal (2) and ground terminal (3). Use lockwire (E231).
2. **Check extinguisher (4) for damage.** There shall be no nicks, cracks, cuts, corrosion, chafing, or scoring.
3. Inspect extinguisher (4) for scratches. There shall be no scratches deeper than 0.004-inch.
4. Inspect extinguisher (4) for dents. There shall be no dents deeper than 1/16-inch per inch of dent diameter.
5. Check decal (5) and helicopter DA Form 2408-18 for servicing dates of extinguisher (4). If this information is not recorded, weigh extinguisher (4). If extinguisher weighs 6.25 pounds or more, install a new decal. If extinguisher weighs less than 6.25 pounds, return it for servicing. Install a new extinguisher.
6. Weigh extinguisher (4) without caps or protective plugs. Compare weight to weight marked on decal (5). Difference shall be less than 4 ounces.



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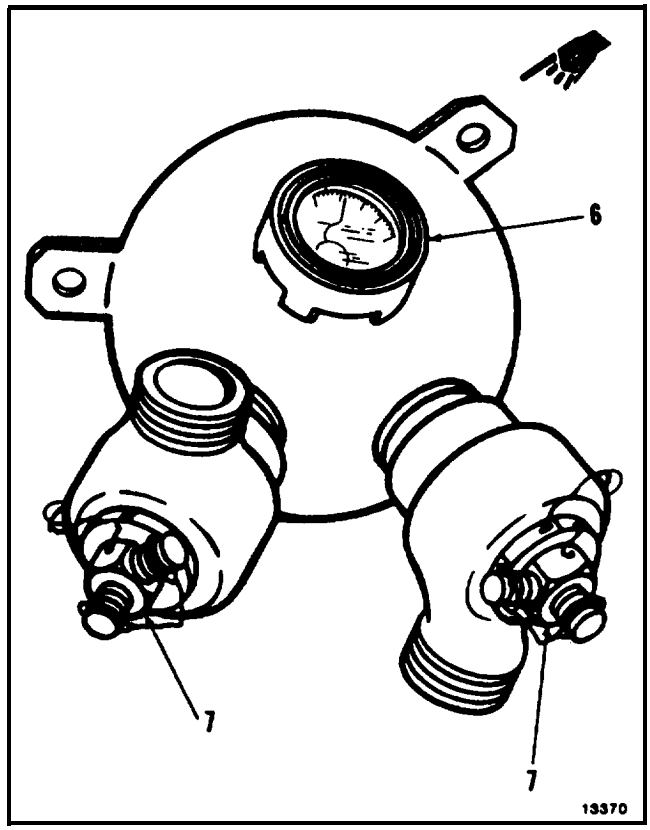
12-26 INSPECT FIRE EXTINGUISHER (BOTTLE) (304021 03) (Continued)



INSPECT GAGE

7. Check gage (6). Gage shall not be broken or damaged.
8. Read gage(6). Pressure reading shall be within limits shown below.

Temperature	*Pressure*
-40°C(40°F)	*292-370 psi*
-29°C(-20°F)	320-400 psi
-18°C(0°F)	355-437 psi
-7°C(19°F)	396-486 psi
4°C(39°F)	449-540 psi
15°C(59°F)	518-618 psi
27°C(81°F)	593-702 psi
38°C(100°F)	691—784 psi
52°C(126°F)	785-902 psi

INSPECT CARTRIDGE

9. Check retirement date of both cartridges (7). Refer to DA Form 2408-18. Cartridges shall not be out of date.

FOLLOW-ON MAINTENANCE:
None

END OF TASK

12-27 INSPECT FIRE EXTINGUISHER (BOTTLE) (892868-02) 12-27

INITIAL SETUP

Applicable Configurations:
All

Tools:
Technical Inspection Tool Kit,
NSN 5180-00-323-5114
Dial Indicating Scale, **0** to 10 Pounds

Materials:
Lockwire(E231)

Personnel Required:
Inspector

References:
TM 55-1520-240-23P

Equipment Condition:
Off Helicopter Task

General Safety Instructions:

WARNING

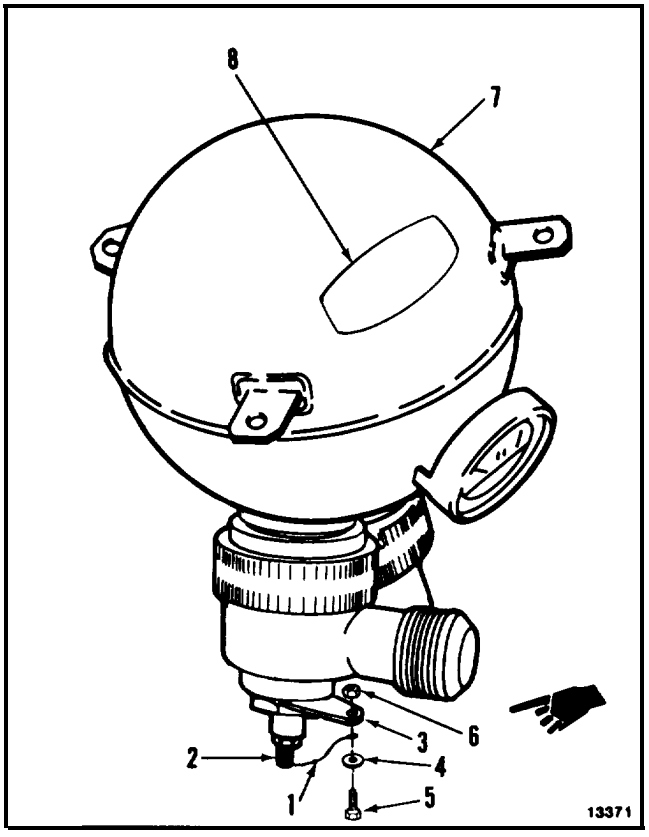
When not mounted in helicopter, firs extinguishers (bottles) can become dangerous missiles if discharged. Do not detonate, discharge, or abuse fire extinguishers. Injury to personnel can result. Remove cartridges (squibs) when extinguishers are removed for storage.

WARNING

Whenever fire extinguisher cartridges are not installed, the positive terminal must be shunted to the cartridge body to prevent accidental firing and discharge from stray voltages.

INSPECT EXTINGUISHER

1. If not already done, connect shunt wire (1) on both cartridges between positive electrical terminal (2) and ground washer (3). Use lockwire (E231).
2. Secure wire (1) with washer (4), screw (5) and nut (6).
3. **Check extinguisher (7) for damage.** There shall be no bulges, dents, cracks, or corrosion.
4. **Inspect extinguisher (7) for pits, cuts, or gouges.** There shall be no damage deeper than 0.005-inch.
5. **Check decal (8) and helicopter DA Form 2408-18 for servicing dates** of extinguisher (7). If this information is not recorded, weigh extinguisher (7). If extinguisher weighs 5.25 pounds or more, install a new decal and record the weight. If it weighs less than 5.25 pounds, return the bottle for servicing. Install a new bottle.
6. **Weigh extinguisher (7)** without caps or protective plugs. **Compare weight to weight marked on decal (8).** Difference shall be less than 4 ounces.



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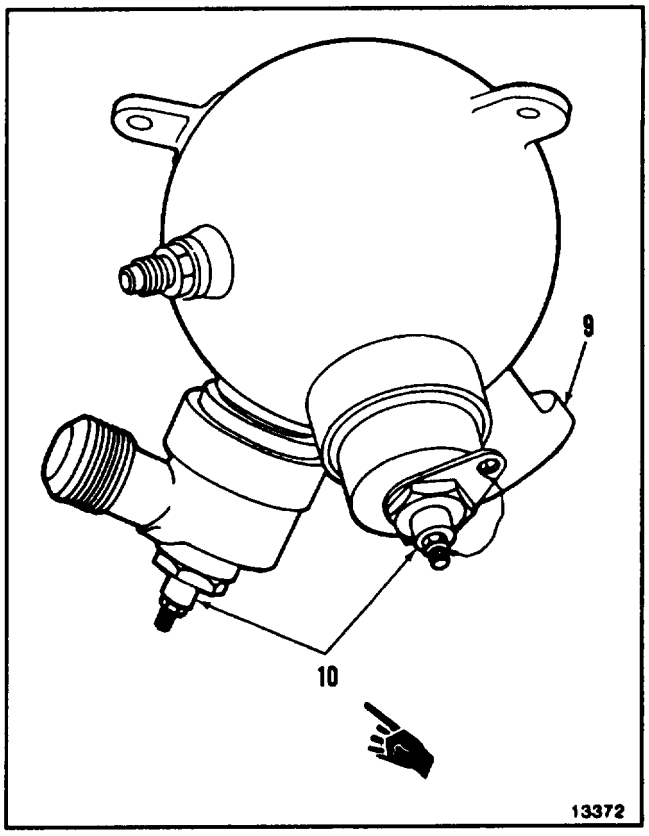
12-27 INSPECT FIRE EXTINGUISHER (BOTTLE) (892868-02) (Continued) 12-27



INSPECT GAGE

7. Check gage (9). Gage shall not be broken or damaged.
8. Read gage (9). Pressure reading shall be within limits shown below.

Temperature	*Pressure*
-40°C(-40°F)	292-370 psi
–29°C(-20°F)	320-400 psi
-18°C(0°F)	355-437 psi
-7°C(19°F)	396-486 psi
4°C(39°F)	449-540 psi
15°C(59°F)	518-618 psi
27°C(81°F)	593-702 psi
38°C(100°F)	691—784 psi
52°C(126°F)	785-902 psi

INSPECT CARTRIDGE

9. Check retirement date of both cartridges (10). Refer to DA Form 2408-18. Cartridges shall not be out of date.

FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-28 REMOVE CARTRIDGE (SQUIB), FIRE EXTINGUISHER (30402103)

INITIAL SETUP

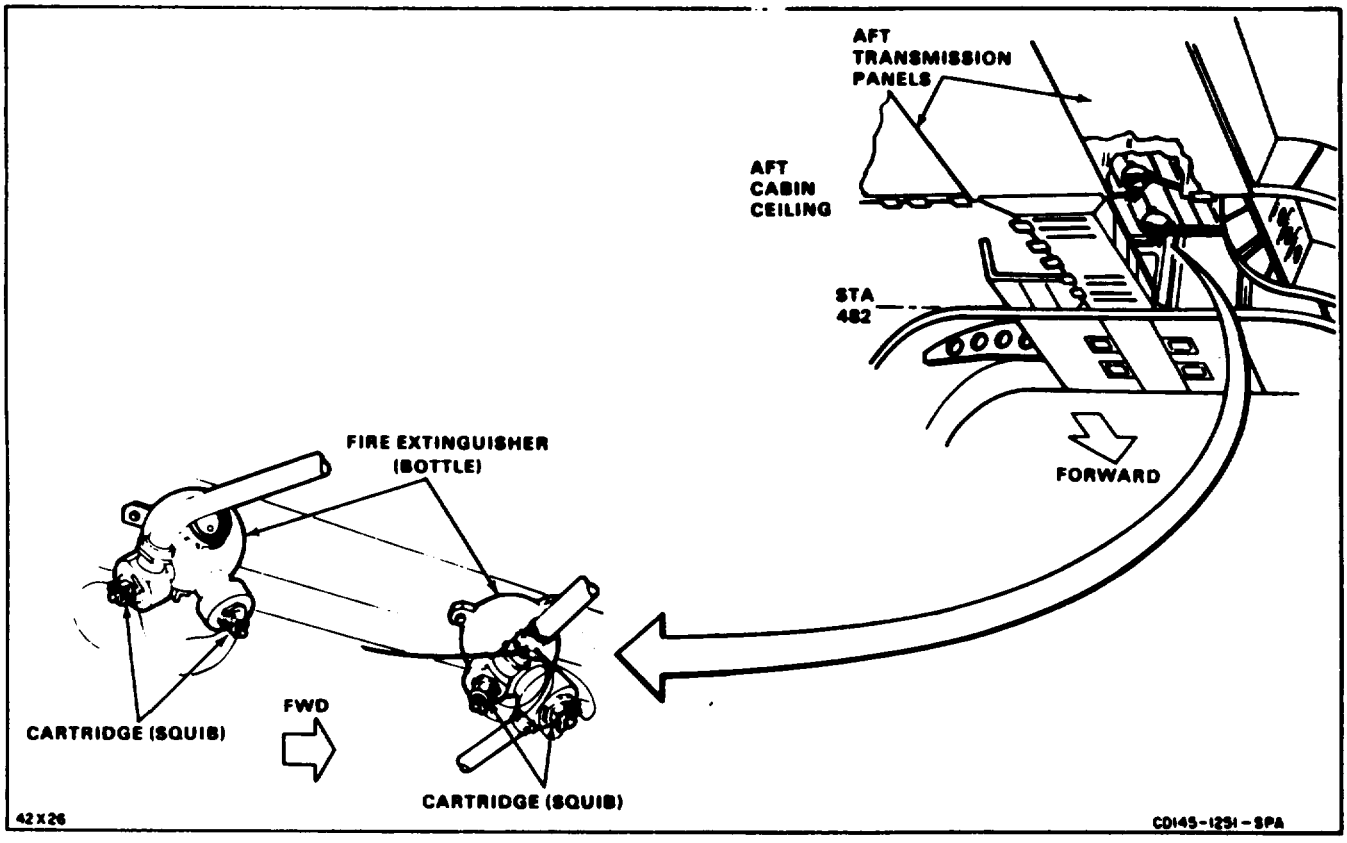
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Open End Wrench, 1 1/4 Inch
Workstand

Materials:
Paper Tags (E264)
Lockwire(E231)

Personnel Required
67U20 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Helicopter Grounded (Task 1-29)
FIRE EXT AGENT Switch In Center (Off) Position
Both Fire Pull Handles Pushed In



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12-28 REMOVE CARTRIDGE (SQUIB), FIRE EXTINGUISHER (304021 03) (Continued)

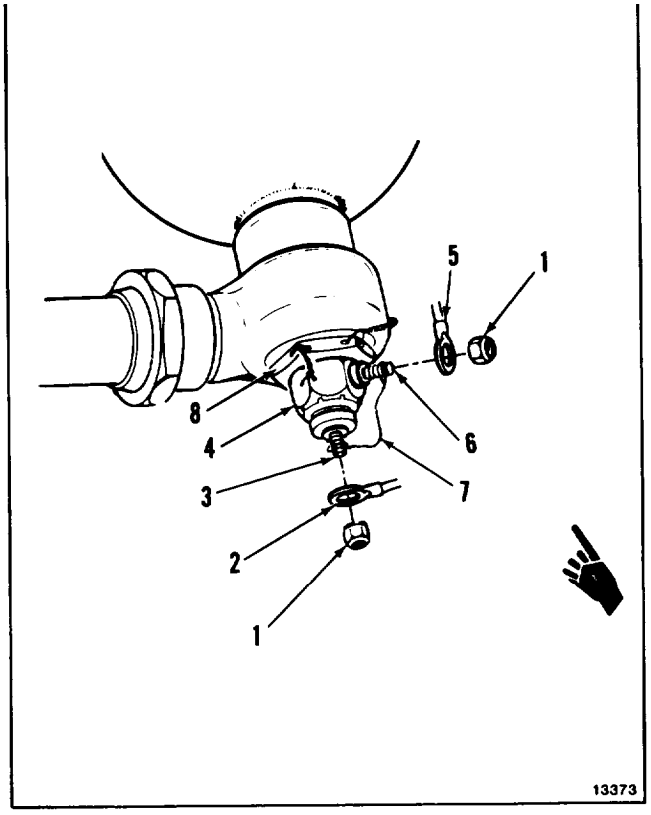
NOTE

There are two cartridges (squibs) on each fire extinguisher (bottle). Both are removed in same way.

1. Remove nut (1) and disconnect wire (2) from electric terminal (3) of cartridge (4). Tag wire.
2. Remove nut (1) and disconnect wire (5) from ground terminal (6) of cartridge (4). Tag wire.
3. Connect shunt wire (7) between electric terminal (3) and ground terminal (6). Use lockwire (E231).
4. Remove lockwire from cartridge (4) and housing (8).

WARNING

Do not allow housing to turn. If housing loosens, fire extinguisher can discharge and can cause personal injury.



5. Use wrench (9) on housing (8) to keep housing from turning.

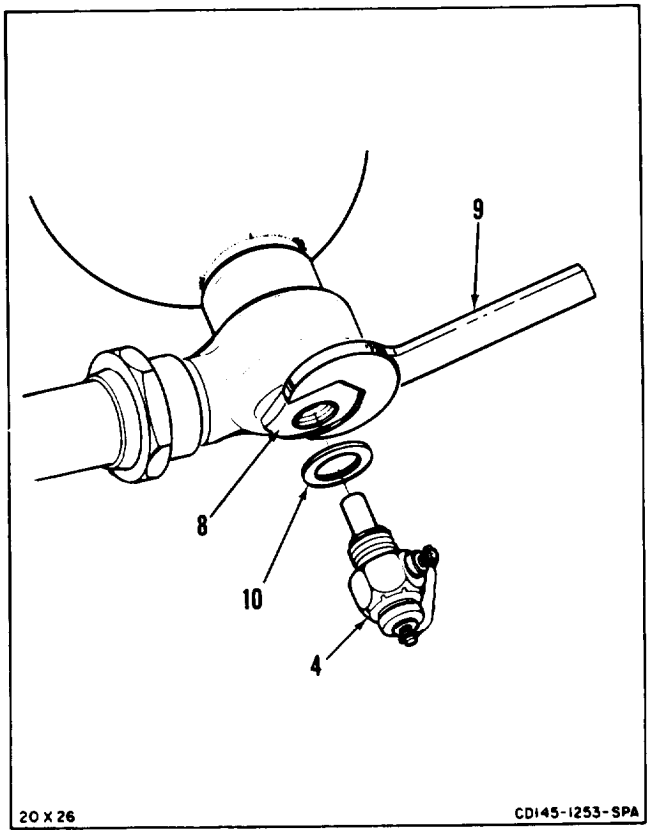
WARNING

Cartridge is an explosive device and is dangerous to personnel. Be sure the electrical terminal is shunted to the ground terminal before the cartridge is removed. Place the cartridge in a protective container.

6. Remove cartridge (4) and packing (10).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

12-29 REMOVE CARTRIDGE (SQUIB), FIRE EXTINGUISHER (892888-02)

INITIAL SETUP

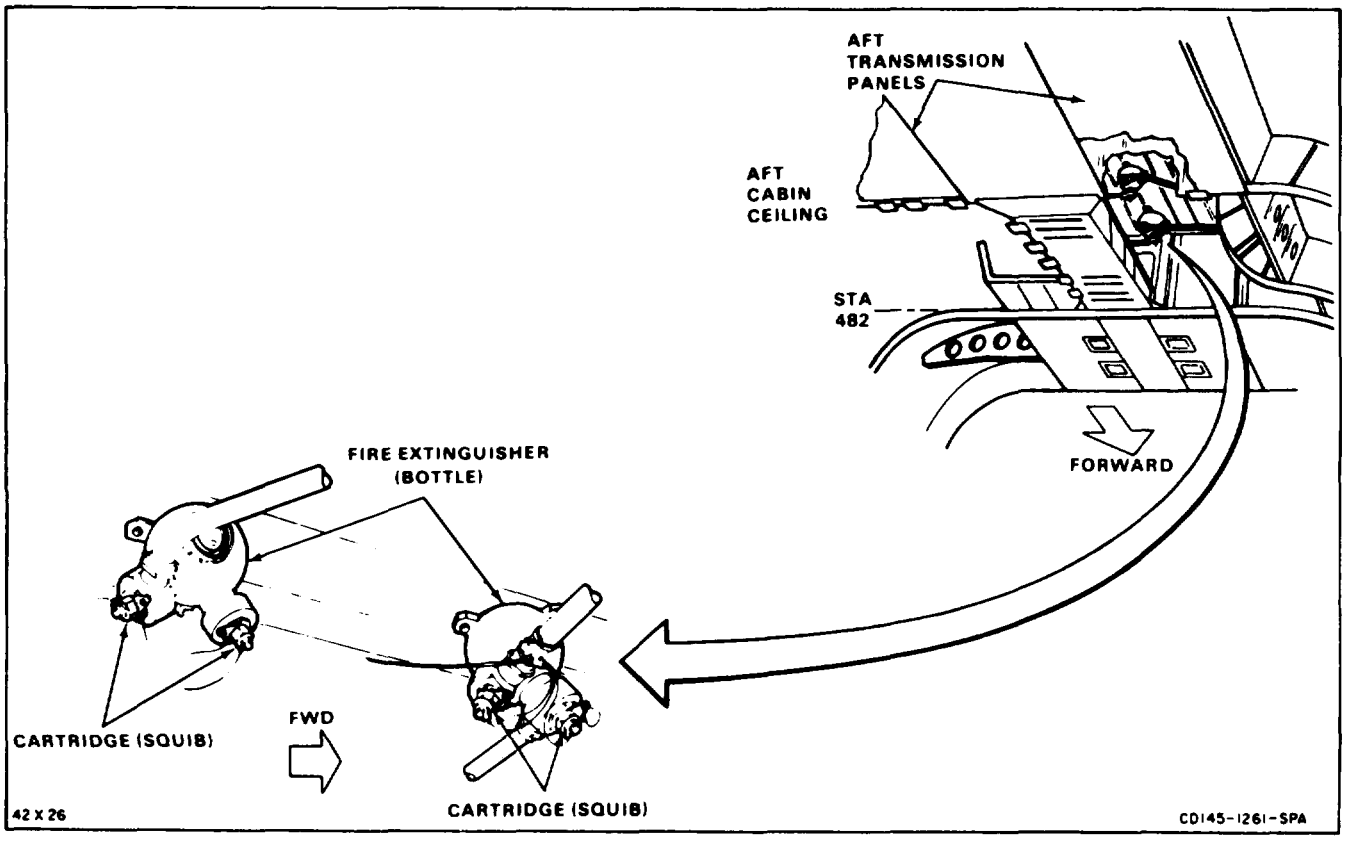
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Open End Wrench, 1 Inch
Workstand

Materials:
Paper Tags (E264)
Lockwire (E231)

Personnel Required:
67U20 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Helicopter Grounded (Task 1-29)
Electrical Power Off
FIRE EXT AGENT Switch In Center (Off) Position
Both Fire Pull Handles pushed in



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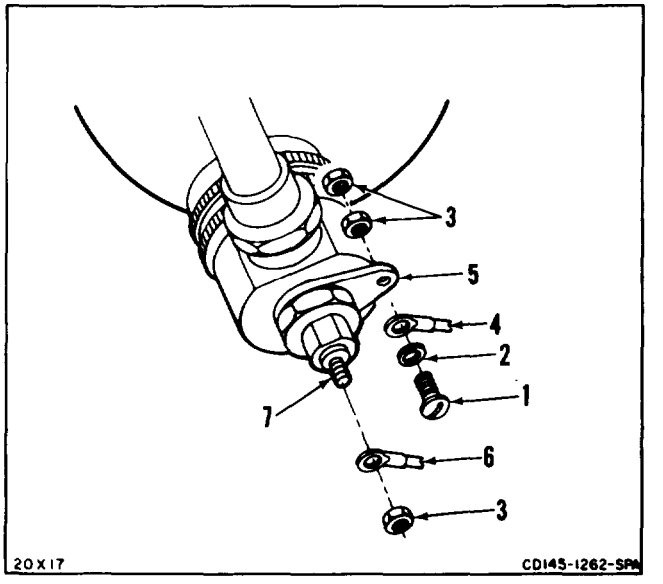
12-29 REMOVE CARTRIDGE (SQUIB), FIRE EXTINGUISHER (892868- 12-29 02) (Continued)

NOTE

There are two cartridges (squibs) on each fire extinguisher (bottle). Both are removed in same way.

1. Remove screw (1), washer (2), two nuts (3), and disconnect wire (4) from ground washer (5). Tag wire.
2. Remove nut (3) and disconnect wire (6) from terminal (7). Tag wire.

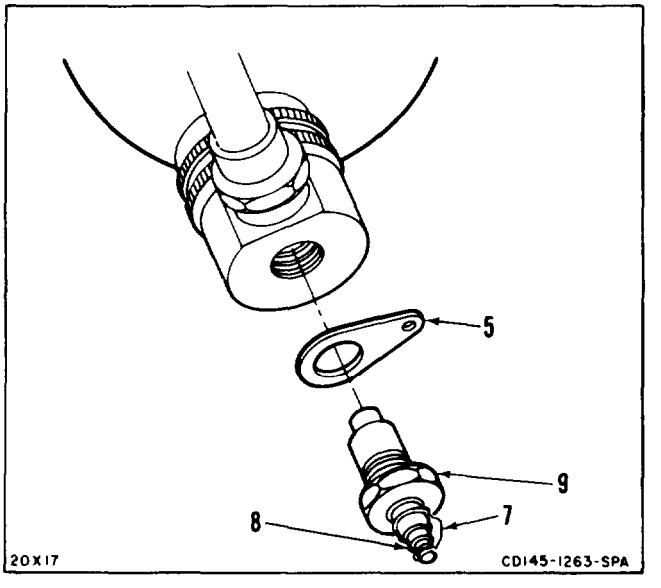


3. **Connect piece of shunt wire (7) between terminal (8) and body of cartridge (9).** Use wire (E231).

WARNING

A cartridge is an explosive device and is dangerous to personnel. Be sure the electrical terminal is shunted to the cartridge case before the cartridge is removed. Place the cartridge in a protective container.

4. **Remove cartridge (9)** and ground washer (5).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-30 INSTALL CARTRIDGE (SQUIB), FIRE EXTINGUISHER (304021031

INITIAL SETUP

Applicable Configurations:
All

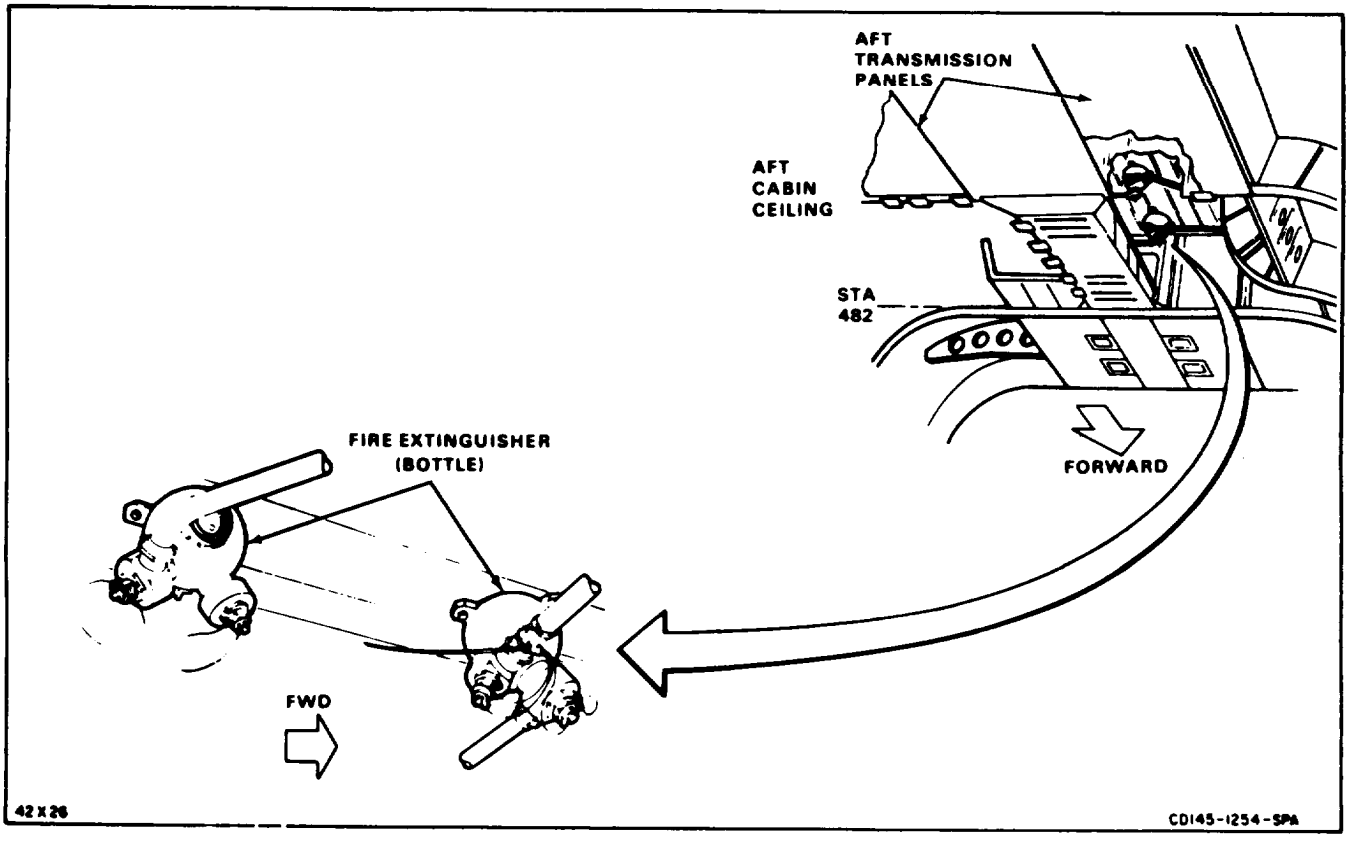
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Open End Wrench, 1 1/4 Inch
Torque Wrench, 100 to 750 Inch-Pounds
Workstand

Materials:
Grease (E190)
Lockwire (E231)

Parts:
Packing

Personnel Raquired:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P



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WARNING

Do not allow housing to turn. If housing loosens, fire extinguisher can discharge and cause personnel injury.

NOTE

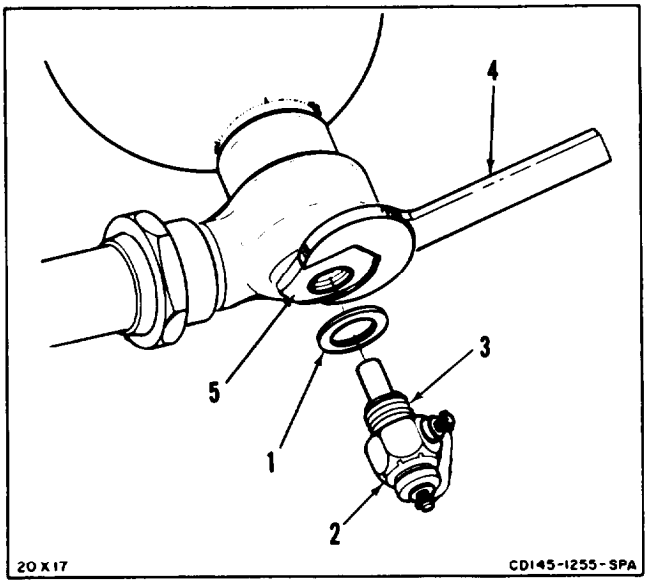
There are two cartridges (squibs) on each fire extinguisher (bottle). Both are installed in same way.

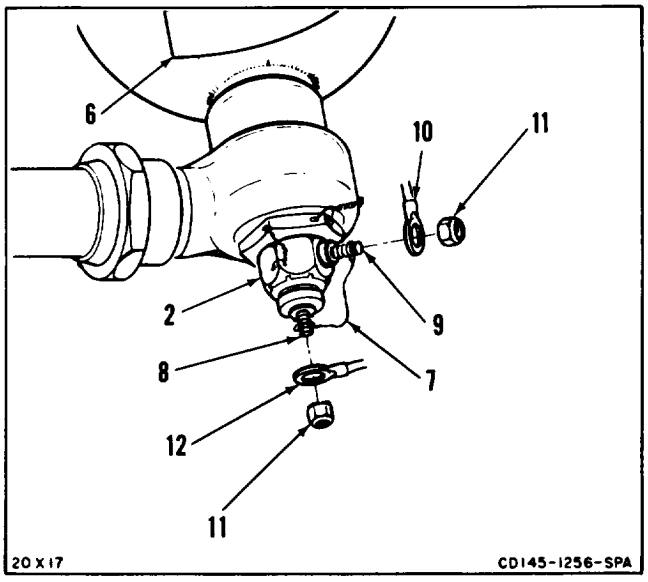
1. Install packing (1) on cartridge (2).
2. Apply grease (E 190) to cartridge thread (3).
3. Use wrench (4) on the flats of housing (5) to keep it from turning.
4. **Install cartridge (2) in housing (5).**
5. **Torque cartridge (2) to 175 inch-pounds.**
6. Lockwire cartridge (2) per directions on decal (6). Use lockwire (E231).

CAUTION

Be sure to remove shunt, otherwise fire bottle won't discharge when it is needed.

7. Remove shunt wire (7) from electric terminal (8) and ground terminal (9).
8. **Connect wire (10)** and install nut (11) on ground terminal (9). Torque nut to 10 inch-pounds. Remove tag from wire.
9. Connect wire (12) and install nut (11) on electric terminal (8). Remove tag from wire.





INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T)

END OF TASK

12-31 INSTALL CARTRIDGE (SQUIB), FIRE EXTINGUISHER (892868-02)

INITIAL SETUP

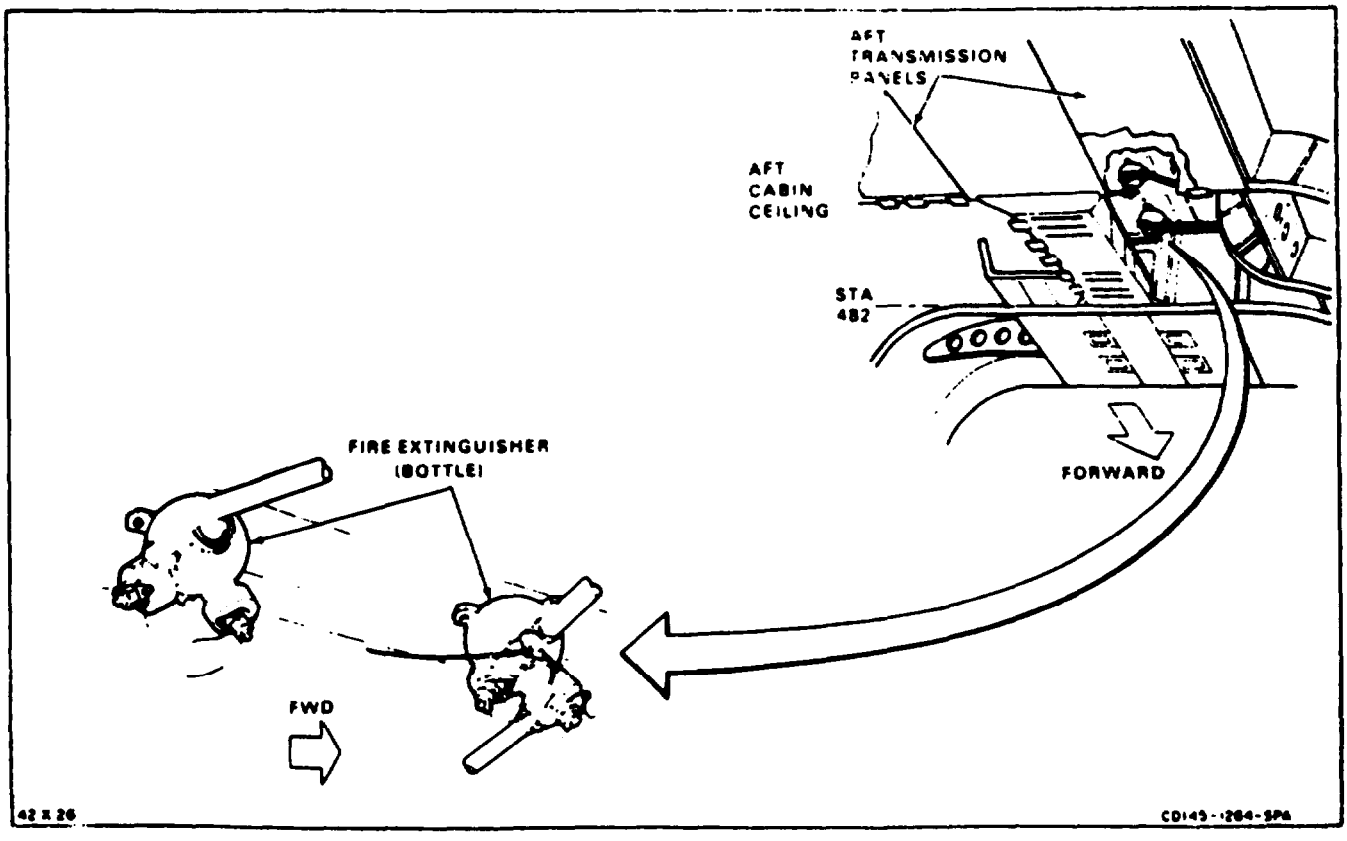
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 100 to 750 Inch-Pounds
Open End Wrench, 1 Inch
Workstand

Materials:
Grease (E190)

Personnel Required:
67U20 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P



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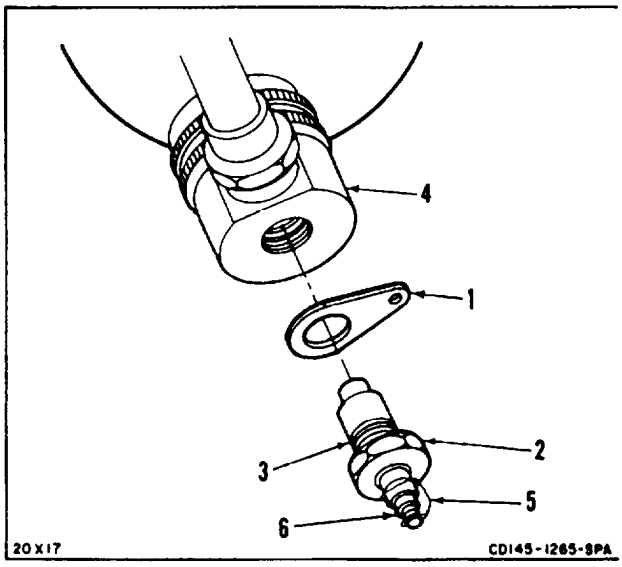
12-31 INSTALL CARTRIDGE (SQUIB) FIRE EXTINGUISHER (892868-02) (Continued) 12-31

NOTE

There are two cartridges (squibs) on each fire extinguisher (bottle). Both are installed in same way.

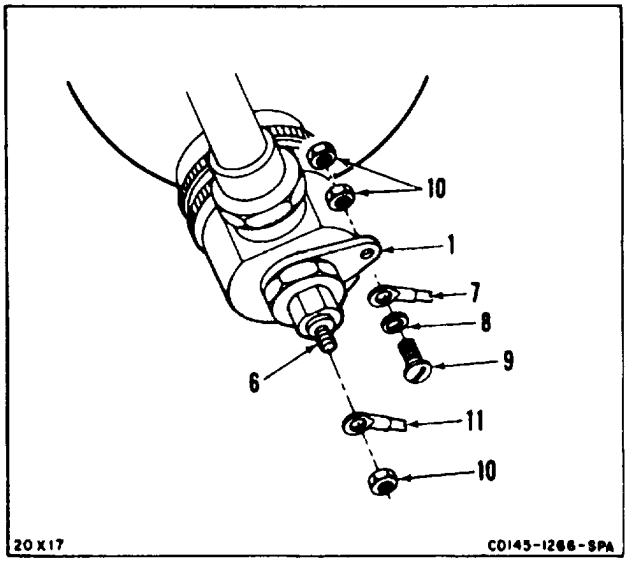
1. Install ground washer (1) on cartridge (2)
2. Apply grease (E190) to cartridge thread (3).
3. Install cartridge (2) in housing (4).
4. Torque cartridge (2) to 175 inch-pounds.



CAUTION

Be sure to remove shunt. Otherwise, fire bottle won't discharge when it is needed.

5. Remove wire shunt (5) from electrical terminal (6) and body of cartridge (2).
6. **Install wire (7),** washer (8), screw (9), and two nuts (10) **on ground washer** (1). Remove tag from wire.
7. **Install wire (11)** and nut (10) **on terminal (6).** Remove tag from wire.



INSPECT

FOLLOW-ON MAINTENANCE:
Perform operational check (TM 55-1520-240-T).

END OF TASK

12-32 INSTALL FIRE EXTINGUISHER (BOTTLE) (30402103) 12-32

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Open End Wrench, 1 1/2 Inches
Workstand

Materials:
None

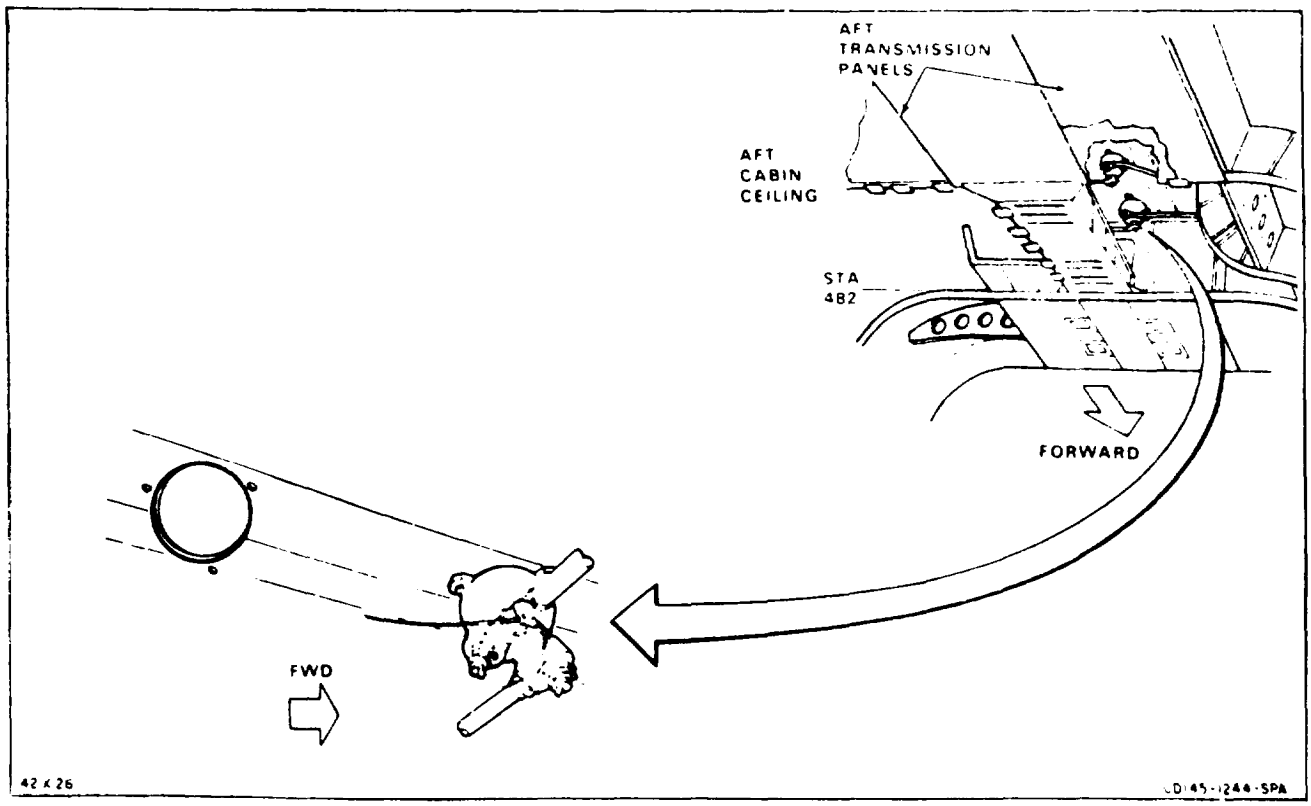
Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P

General Safety Instructions:

WARNING

When not mounted in helicopter, fire extinguishers (bottles) can become dangerous missiles if discharged. Do not detonate, discharge, *or* abuse fire extinguishers. Injury to personnel can result. Remove cartridges (squibs) when extinguishers are removed for storage.



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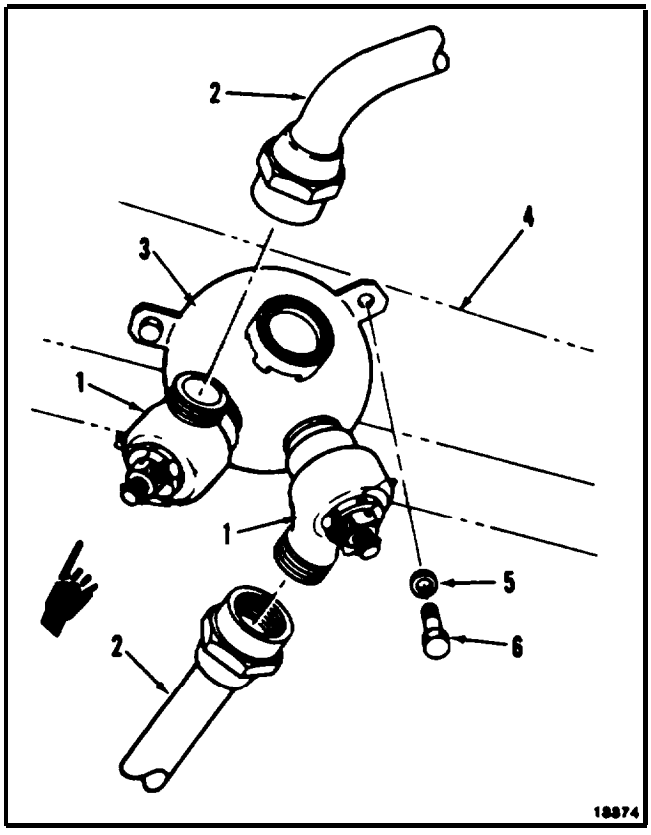
12-32 INSTALL FIRE EXTINGUISHER (BOTTLE) (30402103) (Continued)

NOTE

There are two engine fire extinguishers inside helicopter in aft cabin ceiling. Installation procedure is same for both.

INSTALL EXTINGUISHER

1. Remove protective caps from valves (1).
2. Remove protective plugs or caps from tubes (2).
3. **Position extinguisher (3)** in cabin ceiling (4).
4. **Install three washers** (5) and bolts (6). Do not tighten.
5. **Connect tubes (2)** to both valves (1). Do not tighten.
6. **Tighten three bolts (6).**
7. **Tighten two tubes (2).**



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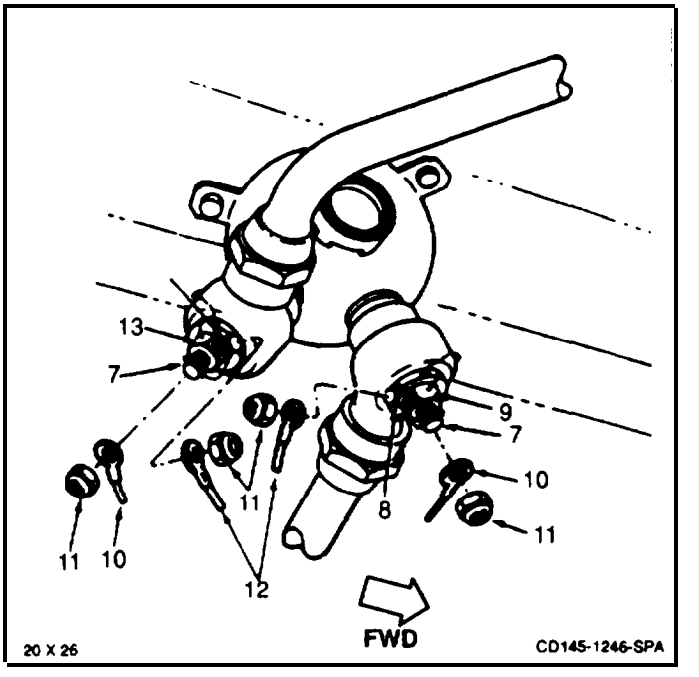
12-32 INSTALL FIRE EXTINGUISHER (BOTTLE) (Continued) 12-32

CONNECT WIRING, FORWARD CARTRIDGE

CAUTION

Be sure to remove shunt. Otherwise, fire bottle won't discharge when it Is needed.

8. Remove wire between electrical terminal (7) and ground terminal (8) of forward cartridge (9) only.
9. Perform Operational Check (TM 55-1520-249-T).
10. Connect electrical wire (10) to terminal (7) and install nut (11). Connect ground wire (12) to terminal (8) and install nut (11) Remove tags from wires.



CONNECT WIRING, AFT CARTRIDGE

CAUTION

Be sure to remove shunt. Otherwise, fire bottle won't discharge when it Is needed.

11. Remove wire between electrical terminal (7) and ground terminal (8) of aft (13).
11.1 Perform Operational Check (TM 55-1520-240-T).
12. Connect electrical wire (10) to terminal (7) and install nut (11). Connect ground wire (12) to terminal (8) and install nut (11). Remove tags.

INSPECT

END OF TASK

12-33 INSTALL FIRE EXTINGUISHER (BOTTLE) (892898-02) 12-33

INITIAL SETUP

Applicable Conifigurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Open End Wrench, 1 1/2 Inches

Materials:
None

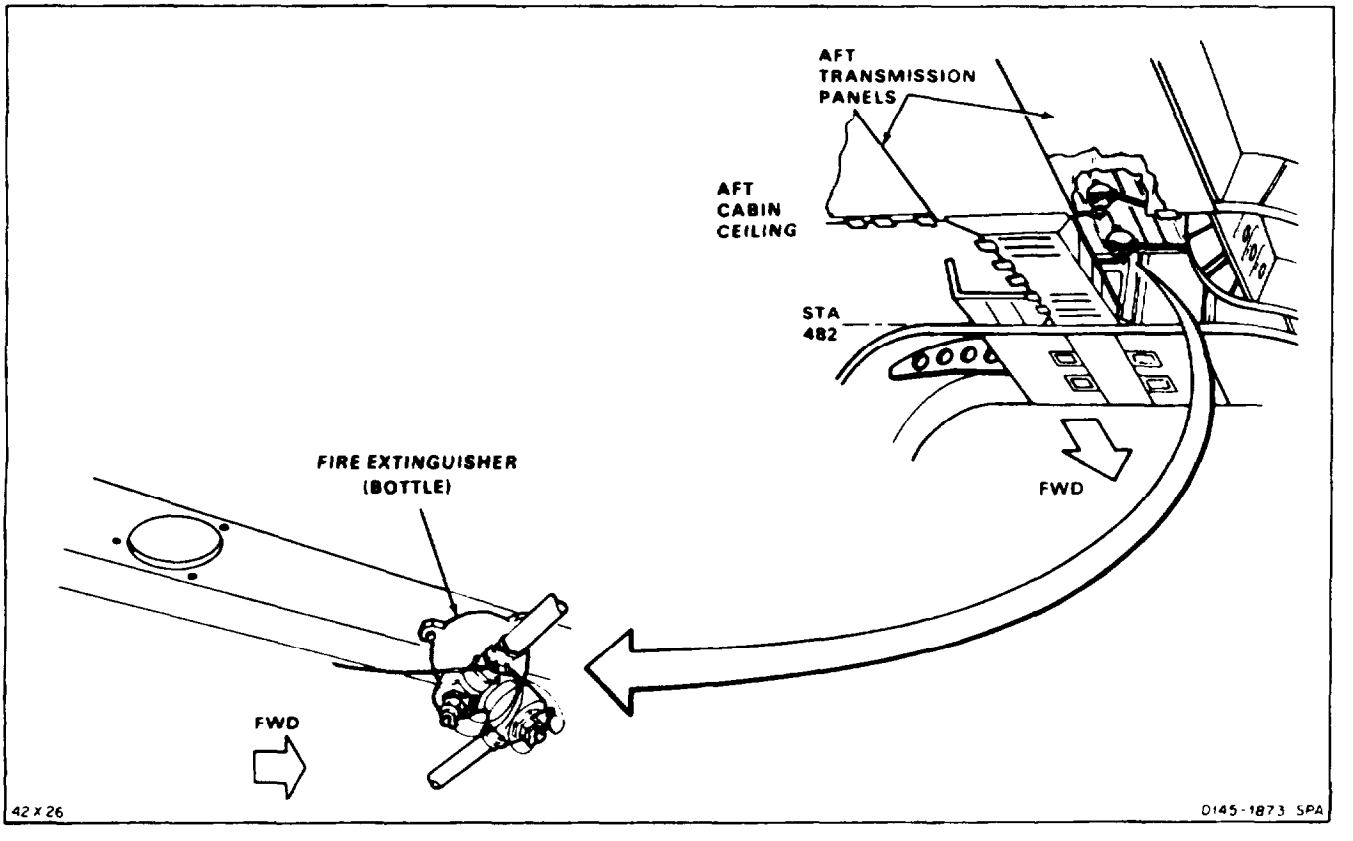
Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P

General Safety Instructions:

WARNING

When not mounted in helicopter, fire extinguisher (bottles) can become dangerous missiles if discharged. Do not detonates, discharge, or abuse firm extinguishers. Injury to personnel can result. Remove cartridges (squibs) when extinguishers are removed for storage.



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12-33 INSTALL FIRE EXTINGUISHER (BOTTLE) (892868-02) (Continued) 12-33

NOTE

There are two engine fire extinguishers In aft cabin ceiling. Installation procedures Is same for both.

INSTALL BOTTLE

1. Remove caps from valves (1).
2. Remove plugs or caps from tubes (2).
3. **Position extinguisher (3)** in cabin ceiling (4).
4. **Install three** washers (5) and **bolts (6).** Do not tighten bolts.
5. **Connect tubes** (2) to both valves (1). No not tighten tubes.
6. **Tighten three bolts (6).**
7. **Tighten two tubes (2).**

CONNECT WIRING, FORWARD CARTRIDGE

a. Remove wire between terminal (7) and body of forward cartridge (8) only.

8.1 Perform Operational Check (TM 55-1520-240-T).

9. **Connect electrical wire (9)** to terminal (7) and install nut (10).
10. **Connect ground wire (11)** to washer (12) and install screw (13), washer (14), and two nuts (10). Remove tags.

CONNECT WIRING, AFT CARTRIDGE

11. Remove wire between terminal (7) and body of aft cartridge (15).

11.1 Perform Operational Check (TM 55-1520-240-T).

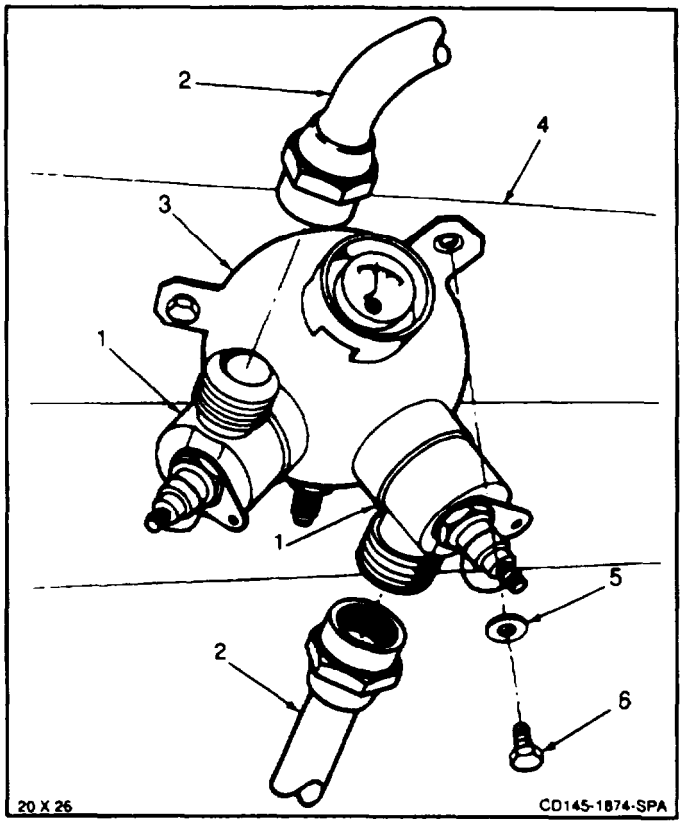
12. Connect electrical wire (9) to terminal (7) and install nut (10).
13. **Connect ground wire** (11) to washer (12) and install screw (13), washer (14), and two nuts (10). Remove tags.

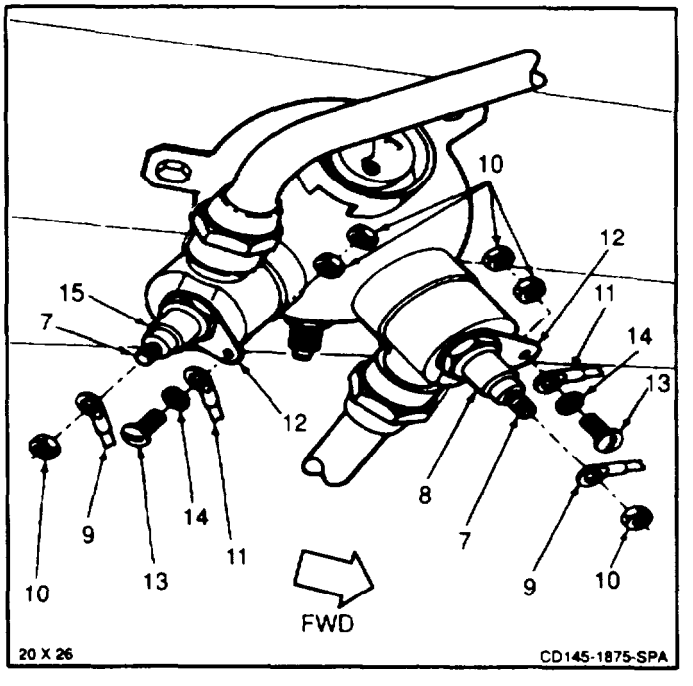
INSPECT

FOLLOW-ON MAINTENANCE

Perform Operational Check (TM 55-1520-240-T).

END OF TASK





SECTION V

WINDSHIELD WIPER SYSTEM

DESCRIPTION AND OPERATION

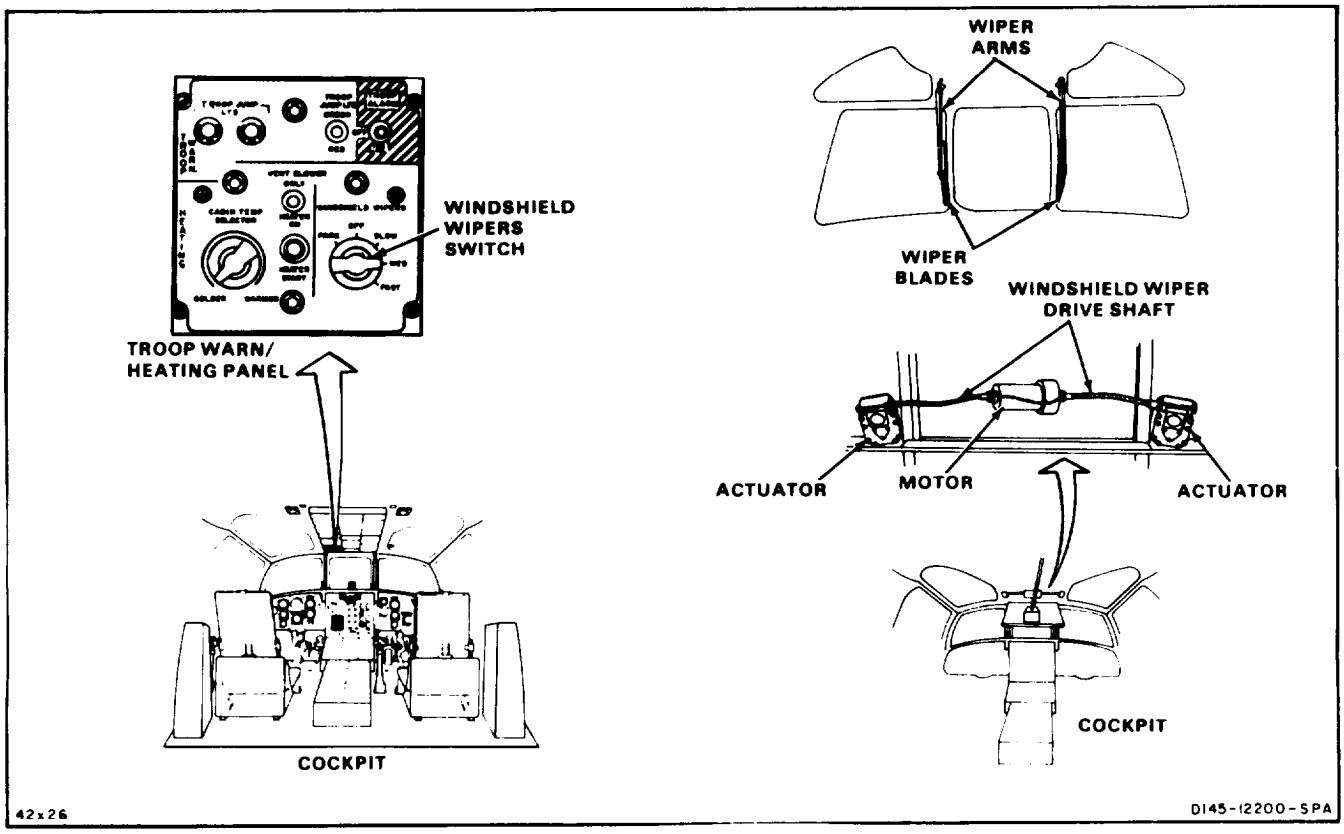
12-34 WINDSHIELD WIPER SYSTEM

The windshield wiper system consists of a motor, a five-position switch, and resistors in the overhead panel, two wiper arms and blades, drive shafts, and actuators.

The 28 vdc electric motor is mounted above the center windshield behind the overhead panel. It provides power to drive the wipers. Flexible drive shafts connect the motor and actuators.

The actuators convert the fast rotary action of the motor to a slow back and forth motion to move the wipers. They are located inside the cockpit above the windshields.

Two wiper arms maintain a constant pressure to hold the blades against the windshields.



END OF TASK

SECTION VI

WINDSHIELD WIPER SYSTEM

12-35 REMOVE WINDSHIELD WIPER BLADE 12-35

INITIAL SETUP

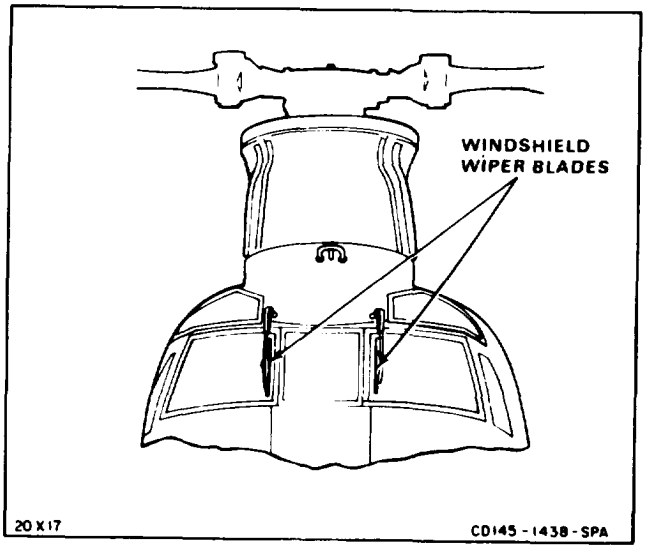
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Workstand
Cotter Pin, 1/8-inch Diameter

Materials:
Masking Tape (E388)
Wrapping Paper (E263)

Personnel Required:
67U10 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



CAUTION

Windshields can be damaged while wipers are being worked on. Failure to protect it can result in damage to windshield.

NOTE

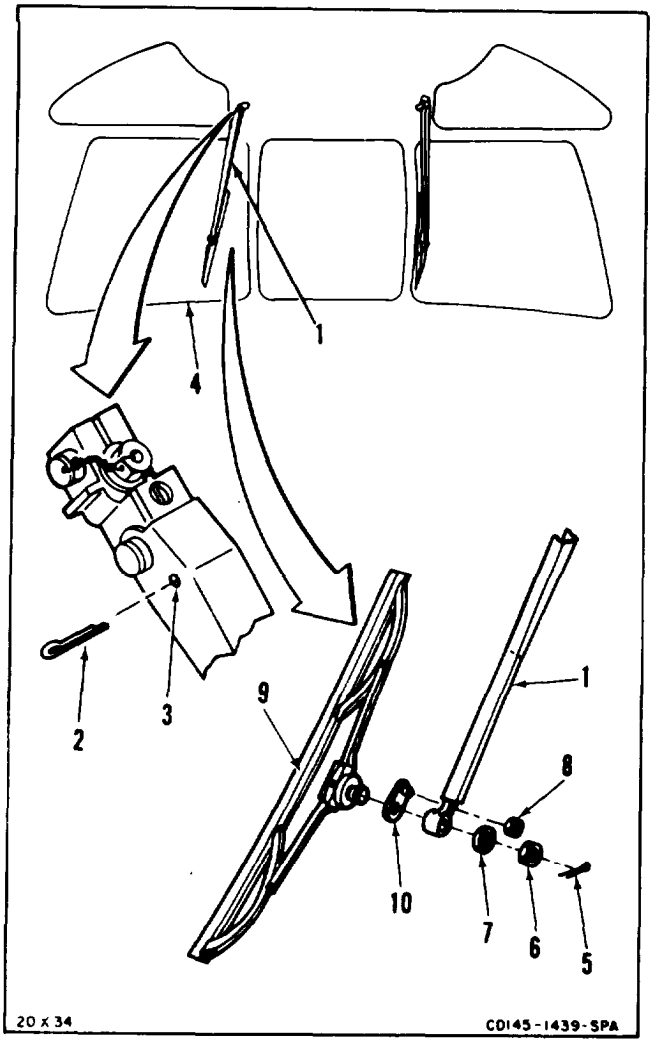
There are two windshield wipers. Removal procedure is same for both. Right wiper is shown here.

1. Lift wiper arm (1) and insert cotter pin (2) in hole (3) in arm.
2. Cover windshield (4) with paper (E263), Use tape (E388) to hold paper on windshield,
3. **Remove** cotter pin (5), **nut (6),** and washer (7).
4. **Remove small nut (8).**
5. **Remove wiper blade (9)** and disk (10) from wiper arm (1).

FOLLOW-ON MAINTENANCE:

None

END OF TASK



12-36 INSTALL WINDSHIELD WIPER BLADE 12-36

INITIAL SETUP

Applicable Configurations:
All

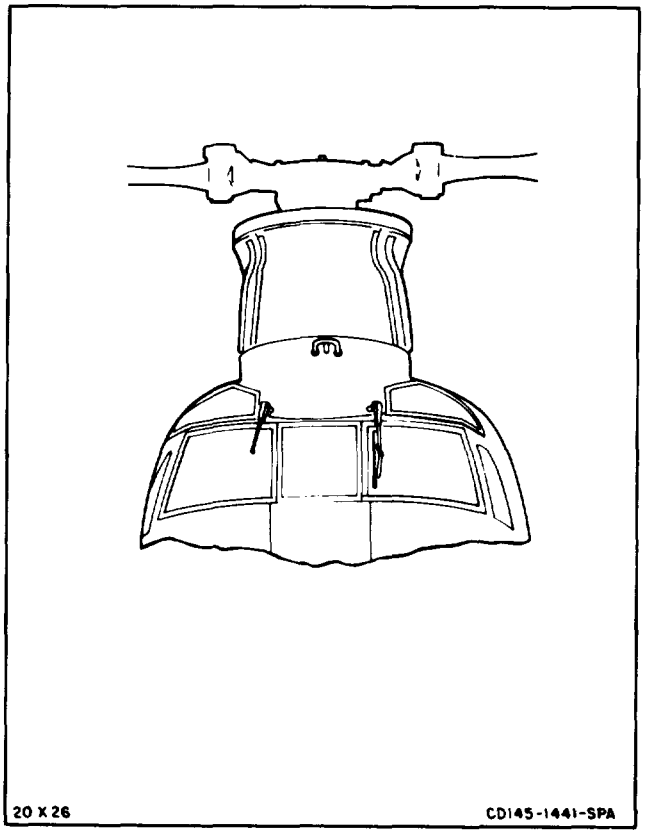
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Workstand

Materials:
None

Parts:
Cotter Pin

Persornnal Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P



CAUTION

Do not use wiper XW21110-H-18 on plastic windshields. Windshield damage will result.

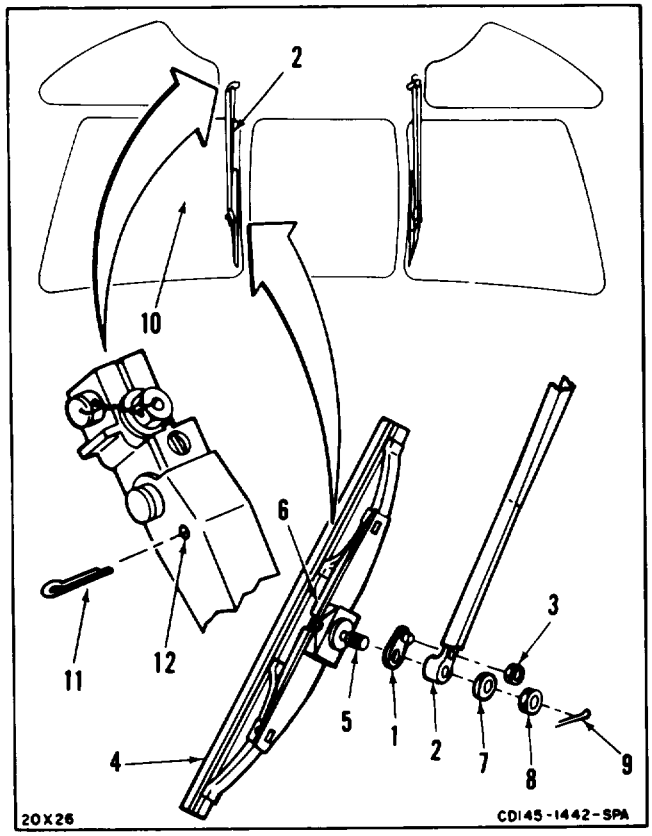
NOTE

- Use wiper XW21110-H-18 or XW21110-S-18 with glass windshields (114SS604 series). Use wiper XW21110-S-18 with plastic windshields (114SS601 series).
- There are two windshield wipers. Installation procedure is same for both. Right wiper is shown here.

GO TO NEXT PAGE

12-36 INSTALL WINDSHIELD WIPER BLADE (Continued) 12-36

1. **Check disk (1),** there shall be no stripped grooves.
2. **Install disk (1)** on end of arm (2).
3. **Install small nut (3).**
4. **Check wiper blade (4).** There shall be no cracked, torn, or loose rubber.
5. Insert stud (5) of wiper blade (4) through disk (1) and arm (2).
6. **Align wiper blade (4) with arm (2).** Be sure air scoop (6) is outboard.
7. **Install** washer (7), **nut (8),** and cotter pin (9).
8. Remove protective paper and tape from windshield (10).
9. Remove cotter pin (11) from hole (12).
10. Lower arm (2) so blade (4) is on windshield (10).



INSPECT

FOLLOW-ON MAINTENANCE:

Adjust wiper arm pressure (Task 12-37 or 12-38).

END OF TASK

12-37 ADJUST WIPER ARM PRESSURE, WINDSHIELD WIPER XW2111O-H-18

INITIAL SETUP

Applicable Configurations:
All

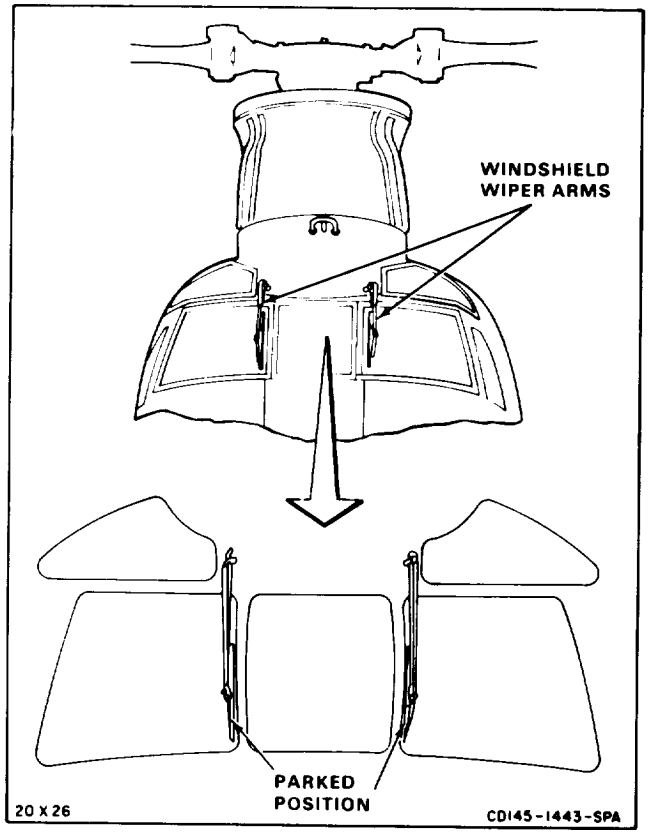
Tools:
Dial Indicating Scale, 0 to 10 Pounds
Wrench, XW20509
Workstand

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

References:
TM 55-1520-240-T

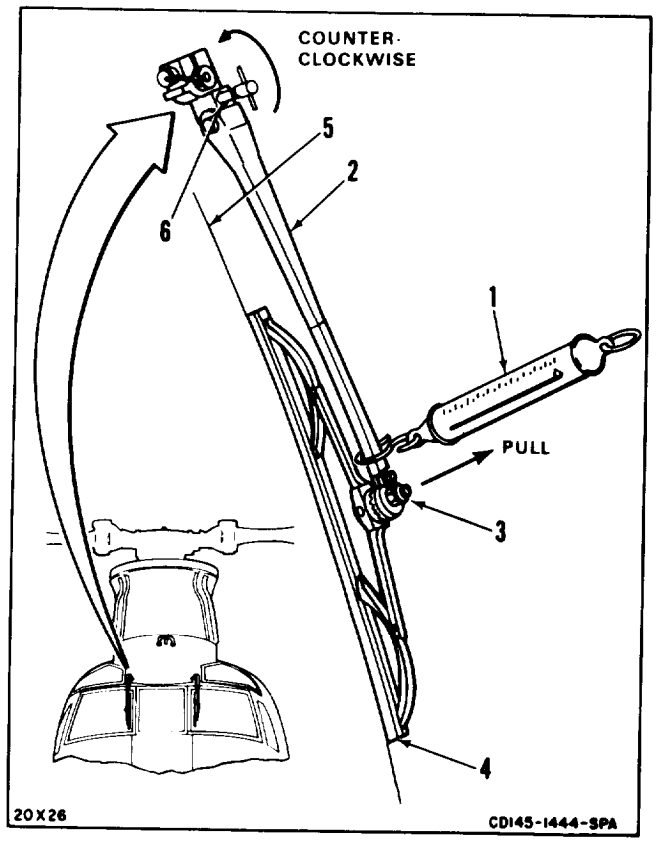
Equipment Condition:
Windshield Wipers in Parked Position (TM 55-1520-240-T)



NOTE

Wiper XW21110-H- 18 is used on glass windshields only.

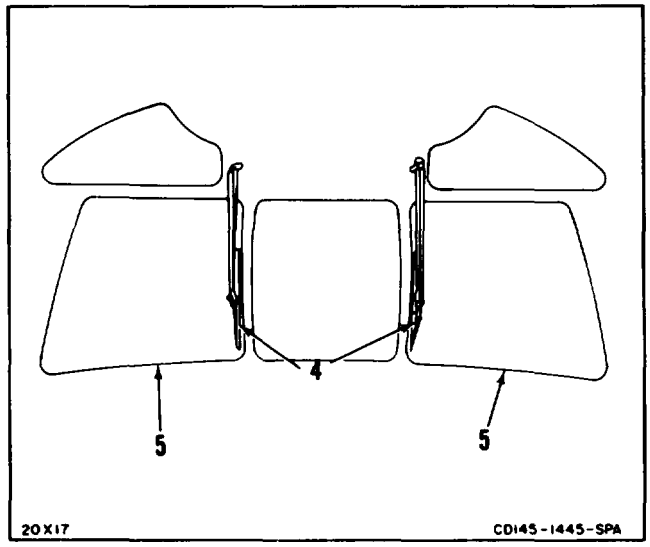
1. Hook dial indicating scale (1) to wiper arm (2) at wiper attach point (3).
2. **Pull scale until wiper blade (4) just lifts from windshield (5).**
3. **Read scale (1).** If scale reads 8 pounds or more, go to step 5. If scale reads less than 8 pounds, go to step 4.
4. **Increase arm pressure by turning key (6) counterclockwise.** Use wrench XW20509. Turn key and pull scale (1) until scale reads more than 8 pounds.
5. Remove scale (1).



GO TO NEXT PA GE

12-37 ADJUST WIPER ARM PRESSURE, WINDSHIELD WIPER XW21110-H-18 (Continued)

6. Operate wipers (4) on wet windshield (5) for 1 minute (TM 55-1520-240-T).
7. Repeat steps 1. thru 6. until scale reads 8 pounds or more twice in a row.



FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-38 ADJUST WIPER ARM PRESSURE, WINDSHIELD WIPER XW21110-S-18

INITIAL SETUP

Applicable Configurations:
All

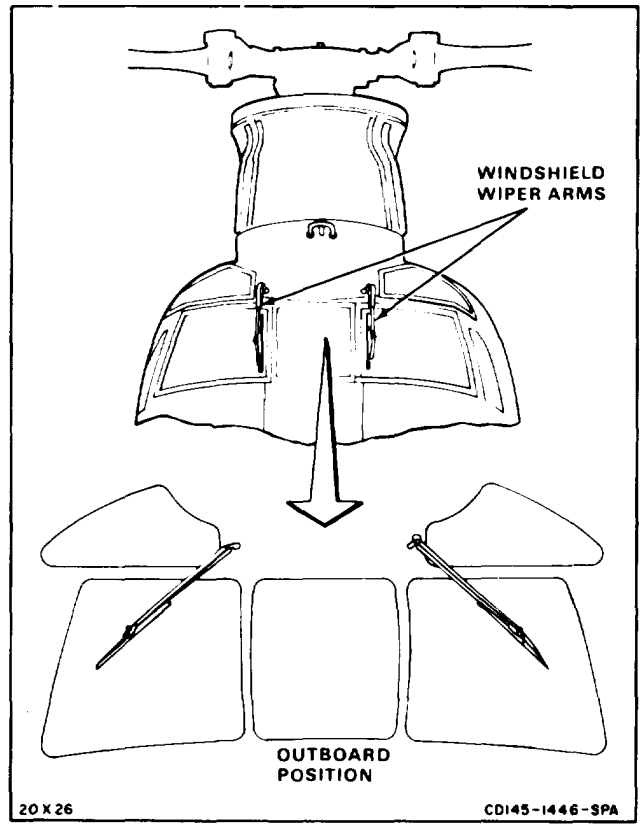
Tools:
Dial Indicating Scale, 0 to 10 Pounds
Wrench, XW20509
Workstand

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

References:
TM 55-1520-240-T

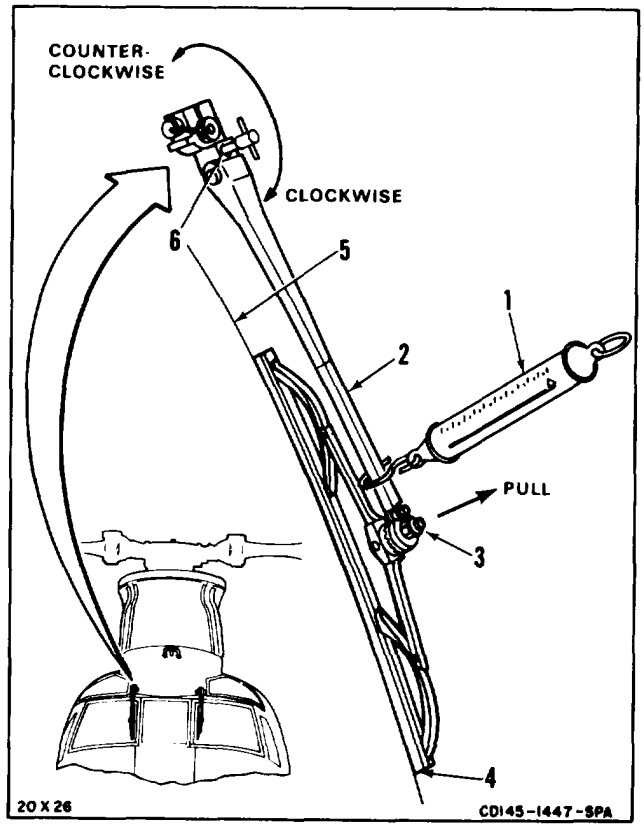
Equipment Condition:
Windshield Wipers in Outboard Position (TM 55-1520-240-T)



NOTE

- Wiper XW21110-S-18 is used on glass or plastic windshields.

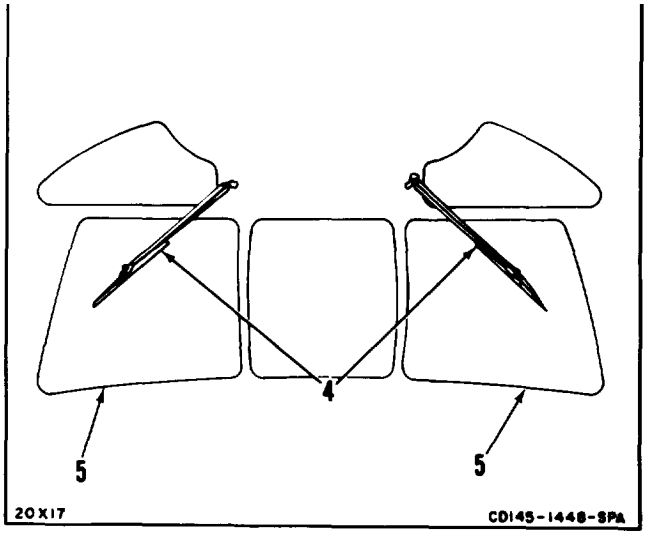
1. Hook dial indicating scale (1) to wiper arm (2) at wiper attach point (3).
2. Pull scale (1) until wiper blade (4) just lifts from windshield (5).
3. Road scale (1). If scale reads 6 to 7 pounds, go to step 5. If scale reads outside this range, go to step 4.
4. Increase arm pressure by turning key (6) counterclockwise. Decrease arm pressure by turning key clockwise. Use wrench XW20509. Turn key and pull scale (1) until scale reads 6 to 7 pounds.
5. Remove scale (1).



GO TO NEXT PA GE

12-38 ADJUST WIPER ARM PRESSURE, WINDSHIELD WIPER XW21110-S-18 (Continued)

6. **Operate wipers (4) on wet windshield (5) for 1 minute** (TM 55-1520-240-T).
7. **Repeat steps 1. thru 6.** until scale reads 6 to 7 pounds twice in a row.



FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-39 REMOVE WINDSHIELD WIPER ARM

INITIAL SETUP

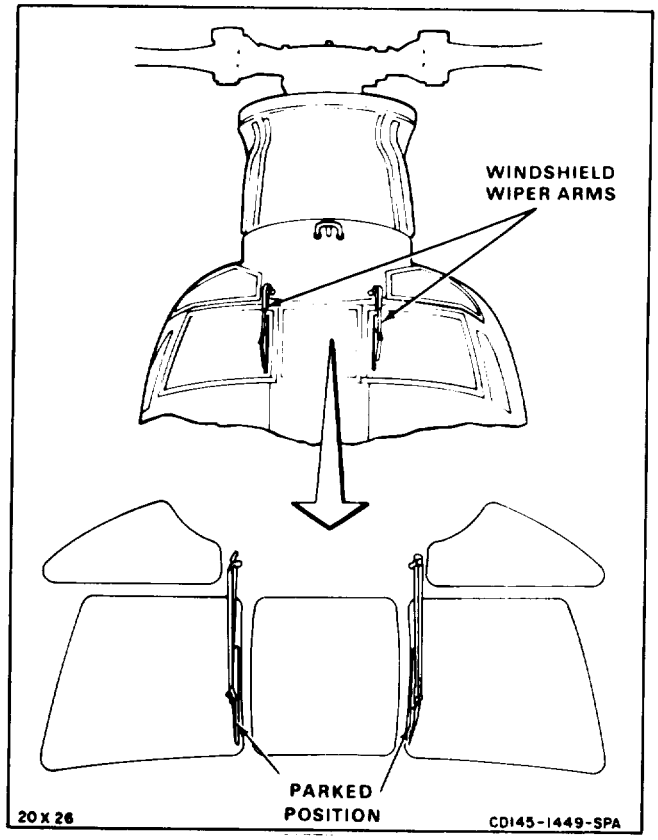
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Workstand
Cotter Pin, 1/8 Inch

Materials:
Masking Tape (E388)
Wrapping Paper (E263)

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Windshield Wipers in Parked Position (TM 55-1520-240T)



CAUTION

Windshields can be damaged while wipers are being worked on. Failure to protect it can result in damage to windshield.

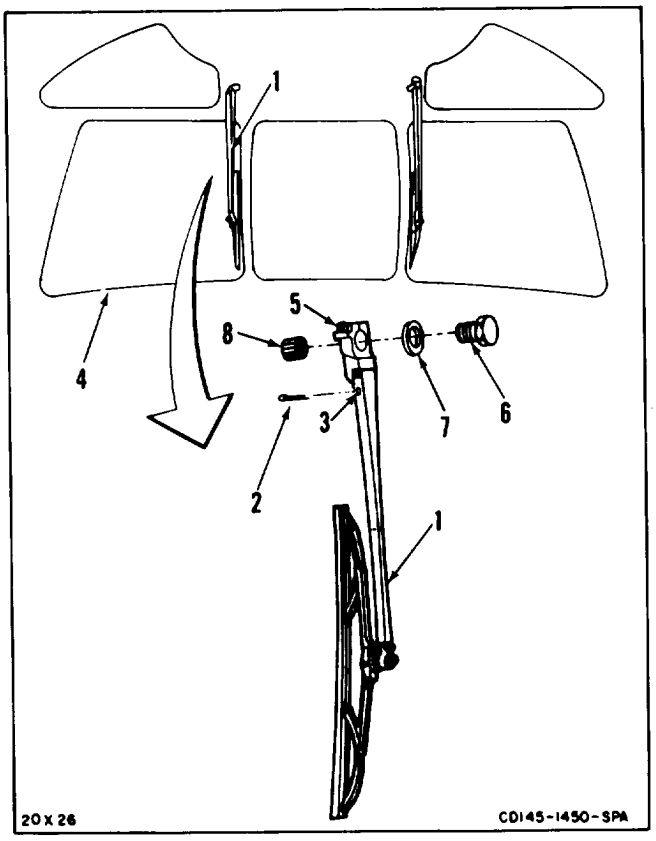
NOTE

- Wipers are at inboard edge of windshield when wiper switch is at PARK.
- There are two windshield wiper arms. Removal procedure is same for both, Right wiper is shown here.

GO TO NEXT PAGE

12-39 REMOVE WINDSHIELD WIPER ARM (Continued) 12-39

1. Lift wiper arm (1) and insert cotter pin {2) in hole (3).
2. Cover windshield (4) with paper (E263). Use tape (E388) to hold paper on windshield.
3. Remove lockwire from screw (5) and bolt (6).
4. Loosen screw (5).
5. **Remove bolt (6)** and washer (7).
6. **Remove wiper arm (1) and sleeve (8).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-40 INSPECT WINDSHIELD WIPER PARTS 12-40

INITIAL SETUP

Applicable Configurations:

All

Tools:

None

Materials:

None

Personnel Required:

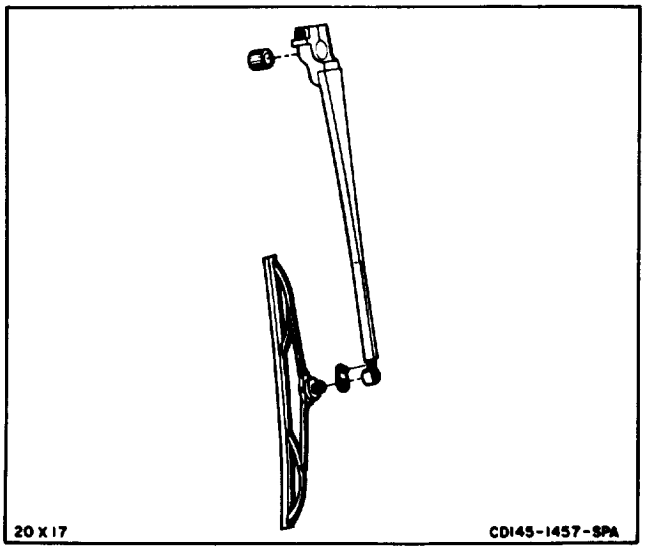
67U10 Medium Helicopter Repairer

References:

TM 55-1520-240-23P

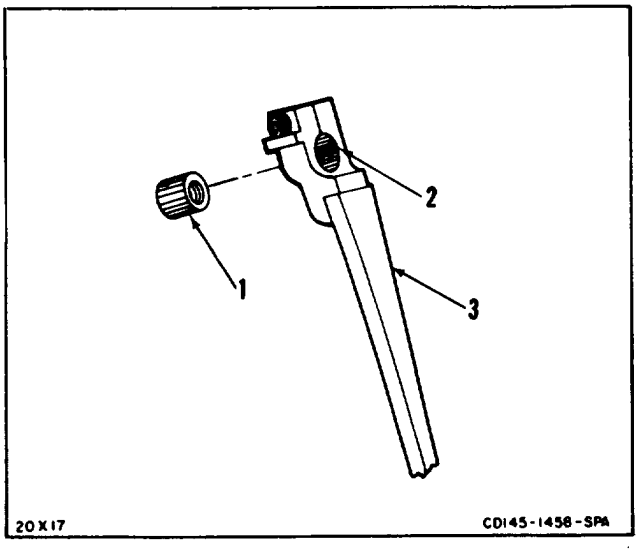
Equipment Condition:

Off Helicopter Task
Wiper Blade Removed (Task 12-35)



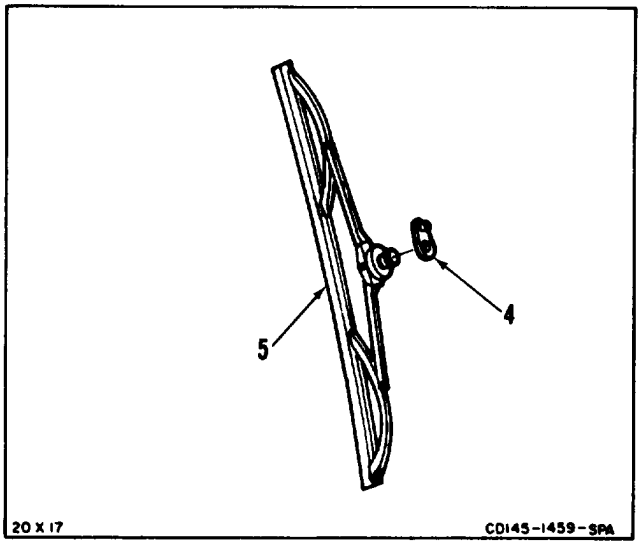
WIPER ARM

1. **Check inside and outside grooves of adjustment sleevs (1).** There shall be no stripped grooves.
2. **Check grooves in hub (2)** at end of wiper arm (3). There shall be no stripped grooves.



WIPER BLADE

3. **Check grooves of disk (4).** There shall be no stripped grooves.
4. **Check rubber of wiper blade (5).** There shall be no cracks, tears or looseness.



FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-41 INSTALL WINDSHIELD WIPER ARM

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Soft Jawed Vise
Workstand
Cotter Pin, 1/8-inch

Materials:

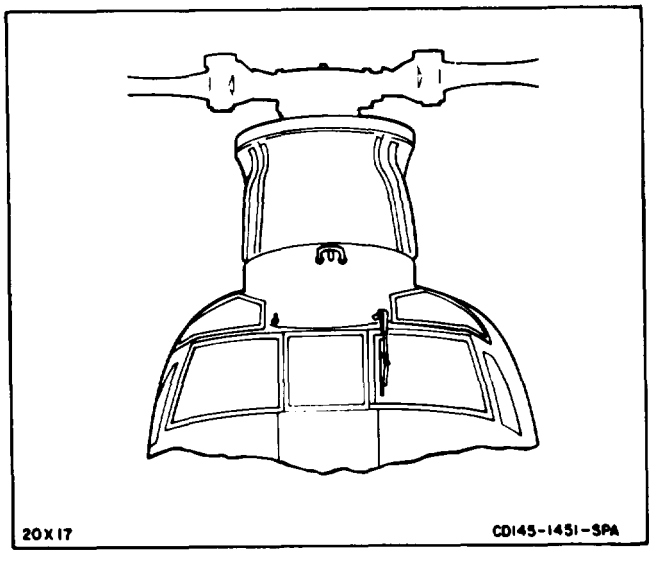
Lockwire (E233)

Personnel Required

67U10 Medium Helicopter Repairer
67U30 Inspector

References:

TM 55-1520-240-23P



NOTE

. There are two windshield wiper arms. Installation procedure is same for both. Right wiper is shown here.

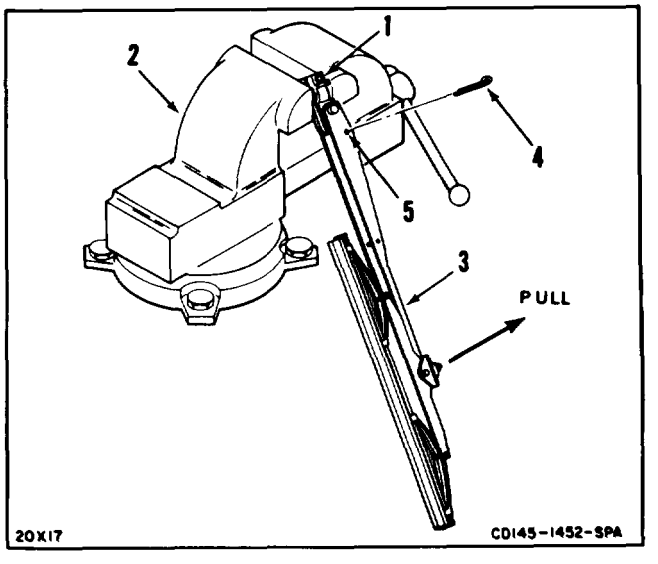
. If installing new wiper arm, begin at step 1. If installing old wiper arm, go to step 5.

1 Put arm hub (1) in vise (2).

2 Pull back on arm (3) against spring tension.

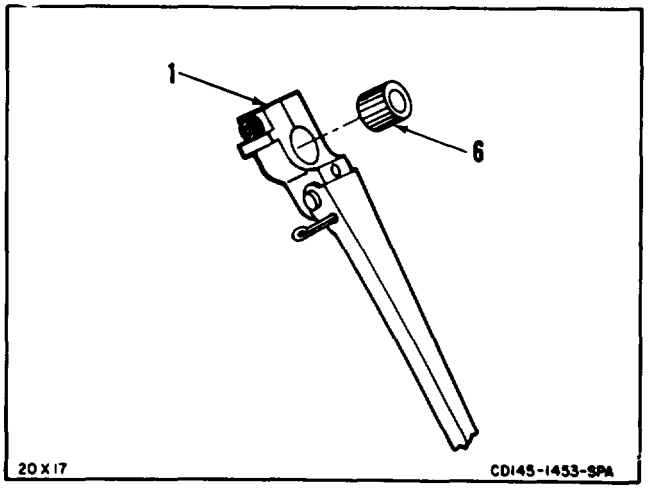
3 Insert cotter pin (4) in hole (5) in arm (3).

4 Remove arm (3) from vise (2).



5. Check sleeve (6) and arm hub (1) for stripped grooves. There shall be no stripped grooves.

6. Install sleeve *(6)* into arm hub(1).



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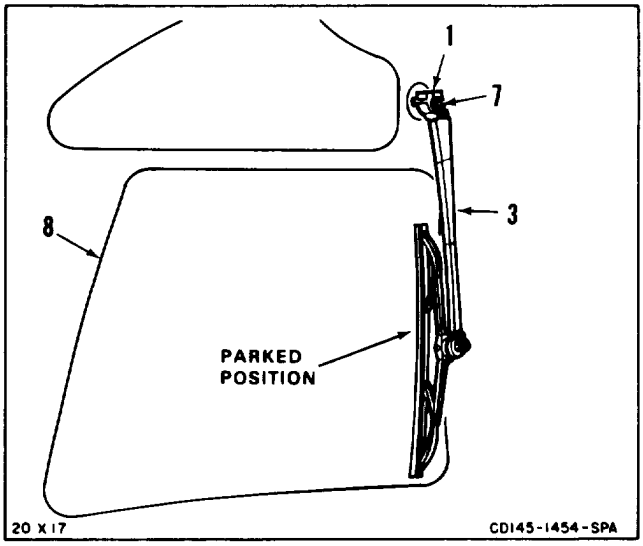
12-41 INSTALL WINDSHIELD WIPER ARM (Continued) 12-41

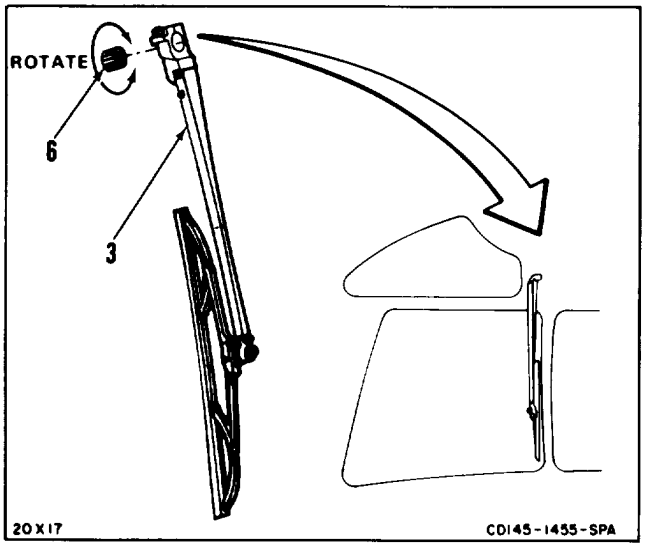
7. Position arm hub (11 on splined shaft (7) above windshield (8). Wiper arm (3) should be as close as possible to parked position. If wiper arm is in parked position, go to step 11. If wiper arm is not in parked position, go to step 8.

NOTE

Parked position is at the inboard edge of the windshield.



8. Remove arm (3) and sleeve (6).
9. Rotate sleeve (6) slightly in direction arm (3) must be moved to get arm into parked position.
10. Repeat steps 7. thru 9. until arm (3) can be installed in parked position.



11. **Tighten screw (9).**
12. **Install** washer (10) and **retaining bolt (11).**
13. Lockwire screw (9) and bolt (11) together. Use lockwire (E233).
14. Remove cotter pin (4) from hole (5).

INSPECT

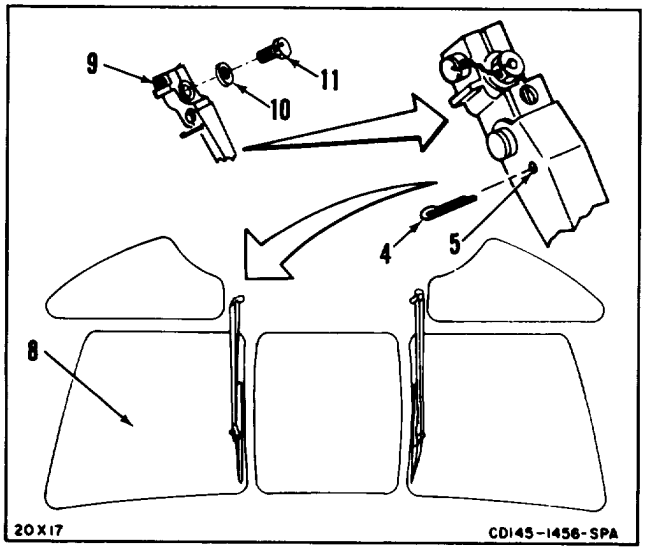
15. Remove protective paper and tape from windshield (8).

FOLLOW-ON MAINTENANCE:

Adjust windshield wiper arm pressure (Task 12-37 or 12-38).

Check windshield wiper system operation (TM 55-1520-240-T).

END OF TASK



12-42 REMOVE WINDSHIELD WIPER MOTOR 12-42

INITIAL SETUP

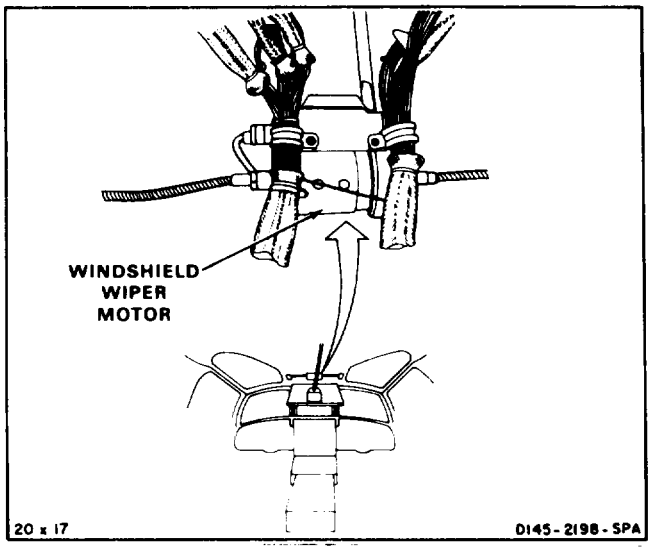
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

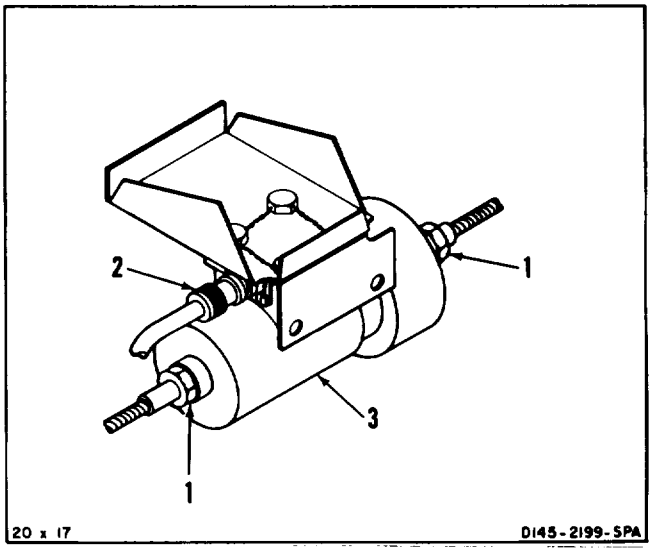
Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Windshield Wiper System in PARK (TM 55-1520-240-T)
Overhead Panel Lowered (Task 9-97)



1. Remove lockwire from both nuts (1) and electrical plug (2).
2. **Back off nuts (1)** from motor (3),
3. **Disconnect plug (2).**



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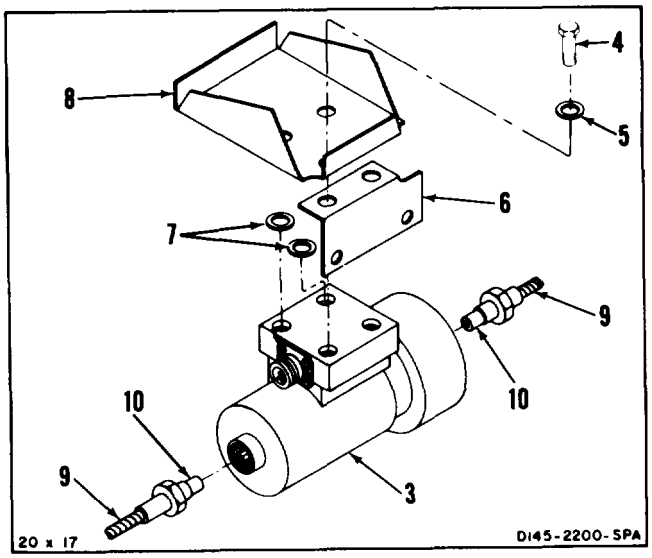
12-42 REMOVE WINDSHIELD WIPER MOTOR (Continued)

4. Remove lockwire from four mounting bolts (4).
5. Support motor (3) and *remove four bolts* **(4)** and washers (5).
6. Separate motor (3) from bracket (6) and **remove two spacers (7)** from between mount (8) and motor.
7. **Disconnect two shafts (9).** Keep couplings (10) in shafts. Cap shafts.
8. **Remove motor (3).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

12-43 REPLACE WINDSHIELD WIPER MOTOR BRUSHES (AVIM)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915

Materials:
Cloths (E120)
Lockwire (E229)
Dry Cleaning Solvent (E162)
Gloves (E186)

Parts:
Brush (2)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P

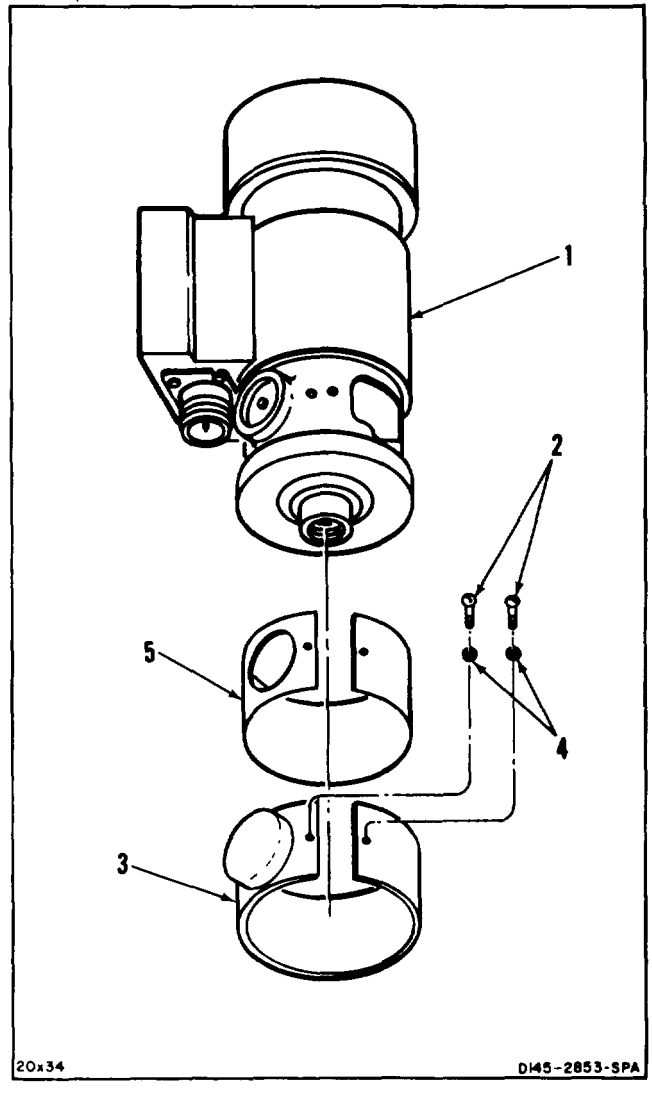
Equipment Condition:
Off Helicopter Task

REMOVE BRUSHES

WARNING

Dry cleaning solvent (E162) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact. immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean surface of motor (1) with solvent (E162) and cloths (E120). Use goggles for eyes. Wear gloves (E186).
2. Remove lockwire from two screws (2) in cover (3).
3. Remove two screws (2) and washers (4). **Remove cover (3).**
4. **Remove gasket (5).**



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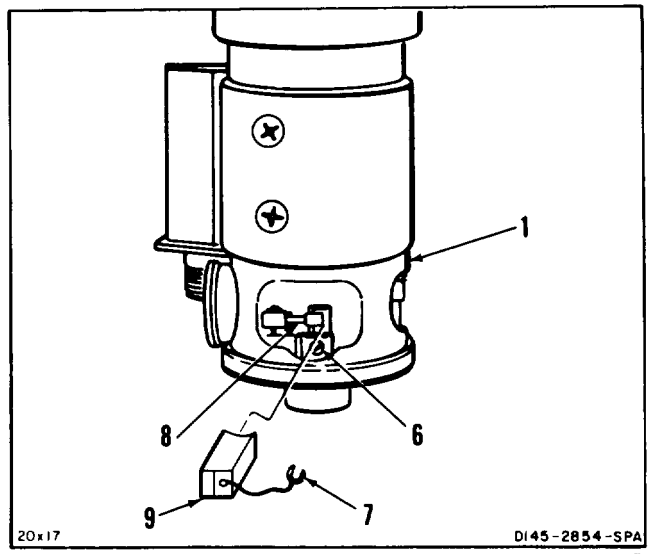
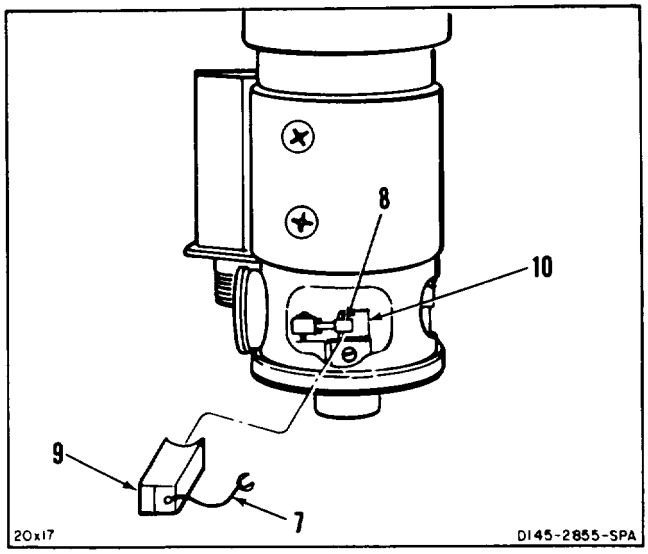
12-43 REPLACE WINDSHIELD WIPER MOTOR BRUSHES (AVIM) (Continued)

5. Loosen screw (6) and **disconnect wire (7).**
6. Lift clip (8) and **remove brush (9).**
7. Repeat steps 5 and 6 to **remove brush (9) from other side of motor (1).**



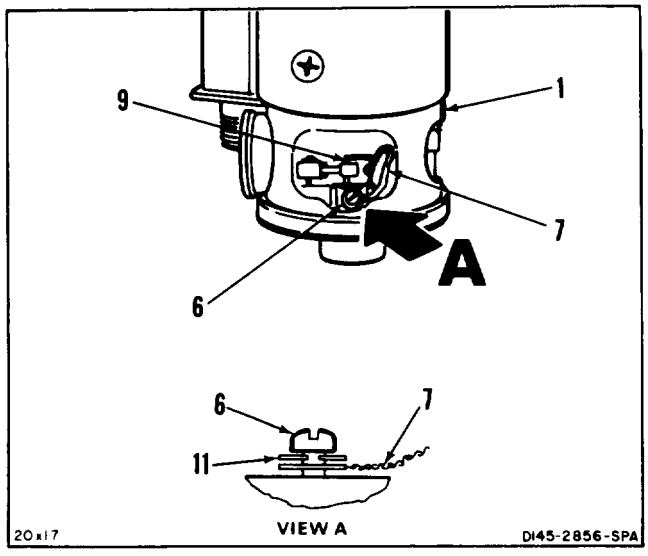
INSTALL BRUSHES

8. Lift clip (8) and **install brush (9)** in holder (10). Make sure wire (7) is away from clip.
9. **Check spring tension of clip (8).** There shall be enough tension in clip for brush (9) to make positive contact.



10. **Connect wire (7)** by Inserting it under screw (6) and washer (11). Tighten screw.
11. Repeat steps 8, 9 and 10 to **install brush (9) on other side of motor (1).**

INSPECT



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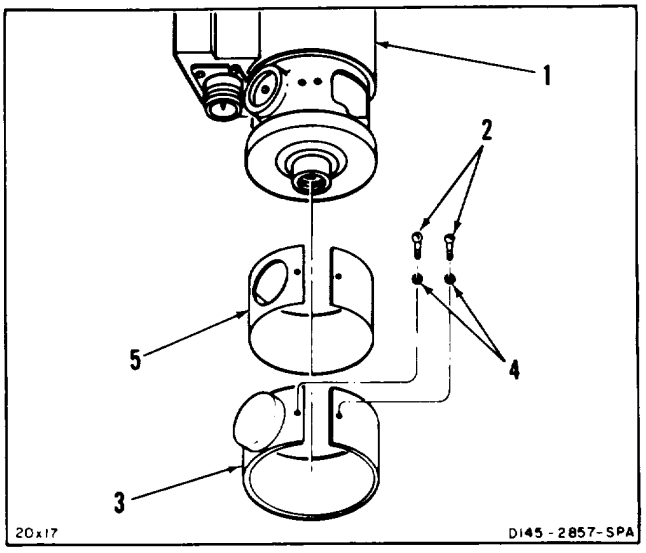
12-43 REPLACE WINDSHIELD WIPER MOTOR BRUSHES (AVIM) (Continued)

12. **Install gasket (5)** around end of motor (1). Align holes in gasket with holes in motor.
13. **Install cover (3).** Align holes in cover with holes in gasket (5) and motor (1).
14. Install two screws (2) and washers (4).

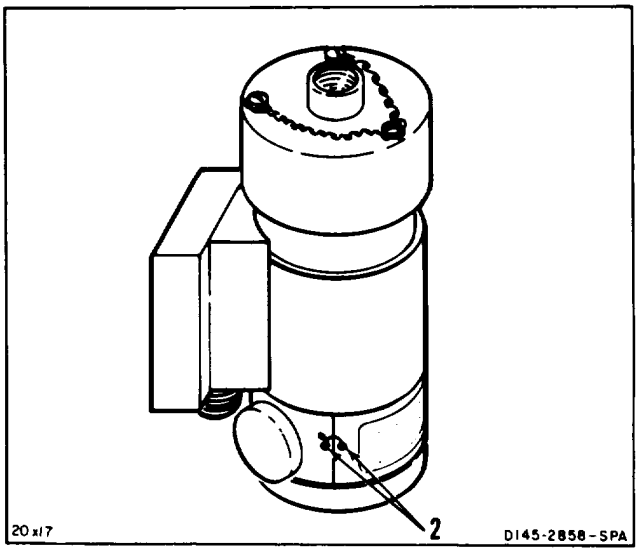


15. Install lockwire on two screws (2). Use lockwire (E229).

INSPECT

FOLLOW-ON MAINTENANCE:

Test windshield wiper motor (Task 12-44).



END OF TASK

12-44 TEST WINDSHIELD WIPER MOTOR (AVIM)

INITIAL SETUP

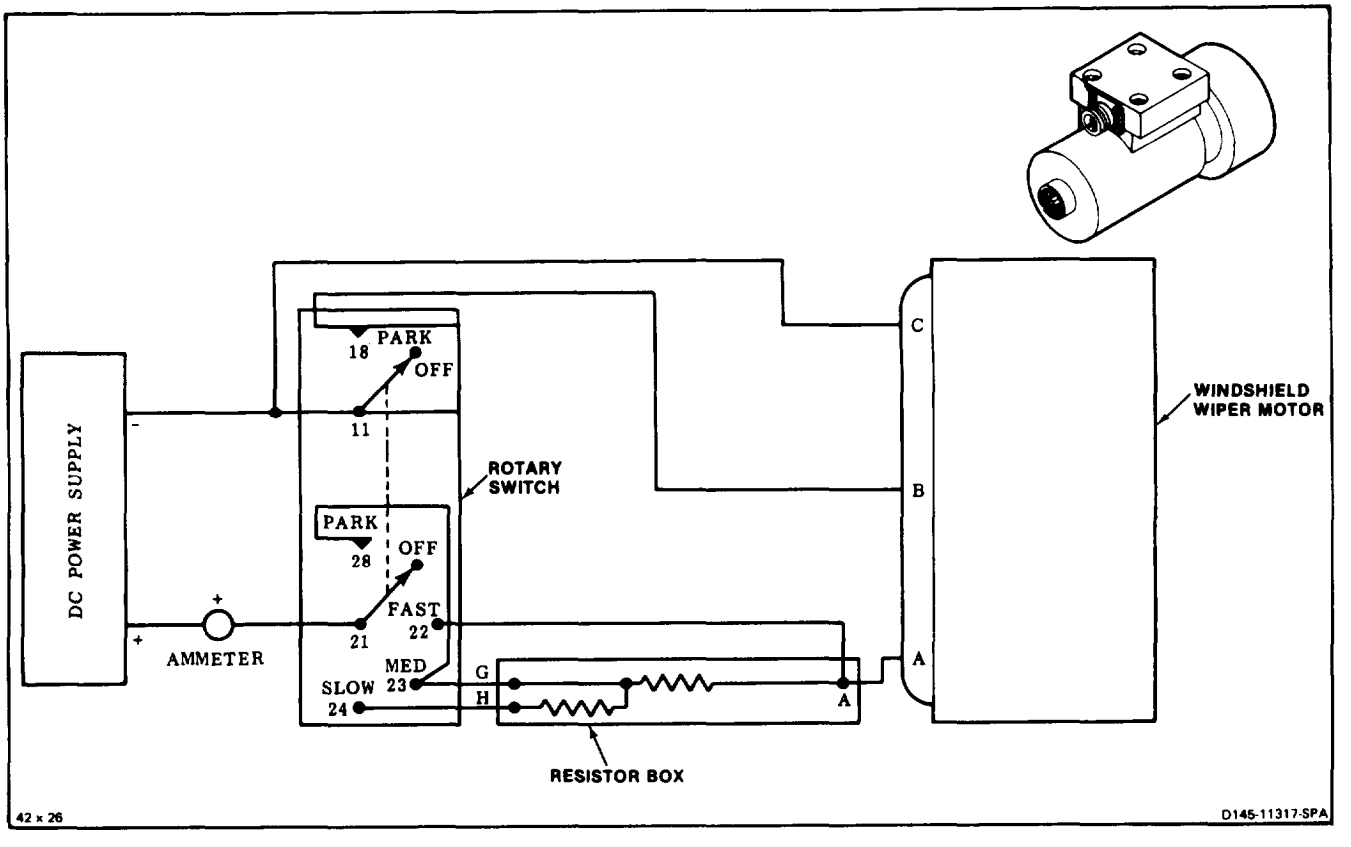
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Ammeter
Fan
Power Supply, 28 Volt DC
Stopwatch
Resistor Box (XW20419-2)
Vise
Adjustable Wrench
Switch, Rotary (XW20336-2)
Coupling (W20075)

Materials:
None

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

Equipment Condition:
Off-Helicopter Task
Test Setup
Wiper Motor Brushes Replace (Task 12-43)



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12-44 TEST WINDSHIELD WIPER MOTOR (AVIM) (Continued) 12-44

1. **Connect motor (1)** to test setup.

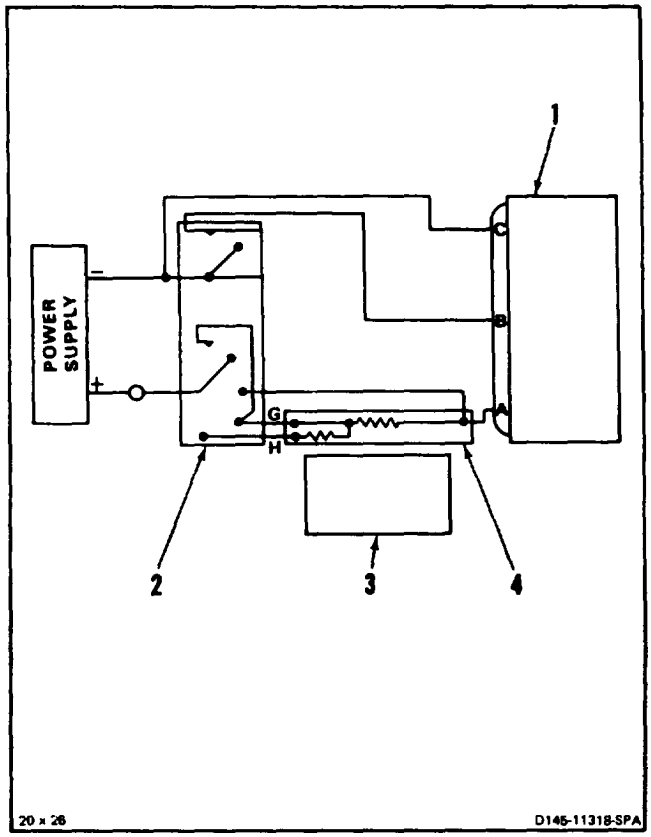
PERFORM RUN IN TEST.

2. **Set switch (2)** to SLOW.

CAUTION

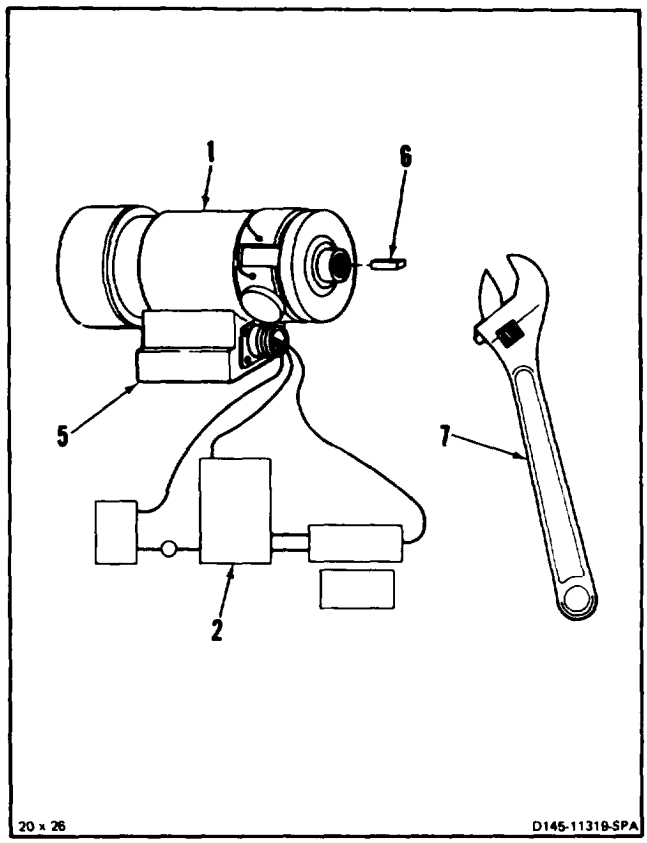
Use fan to cool resistor box during run in test.

3. Apply dc power and run **motor (1) for 1 hour.** Use fan (3) to cool resistor box (4).
4. Check motor (1). **Motor shall not have extreme noise or vibration.**
5. **Set switch (2)** to OFF.



TEST THERMOPROTECTOR

6. **Install motor (1) in vise (5).**
7. **Install coupling (6)** in motor (1). Use wrench (7) to hold coupling.
8. **Turn switch (2) to FAST. Motor (1) shall turn off in less than 30 seconds.**
9. **Remove wrench (7)** and **coupling (6).** Motor (1) shall restart.
10. Set switch (2) to OFF. **Remove motor (1) from vise (5).**



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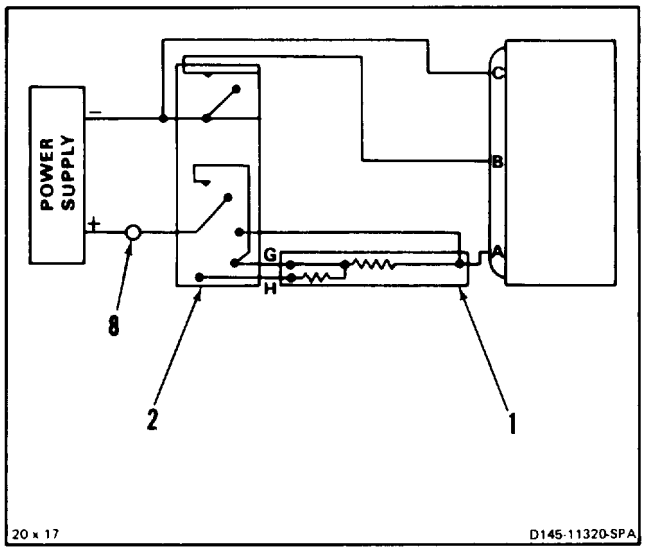
12-44 TEST WINDSHIELD WIPER MOTOR (AVIM) (Continued) 12-44



TEST CURRENT DRAIN

11. **Set switch (2) to FAST.**
12. Check ammeter (8). **Current shall not exceed 5 amperes.**
13. **Remove motor (1)** from test setup.
14. Remove dc power supply.

FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-45 INSTALL WINDSHIELD WIPER MOTOR

INITIAL SETUP

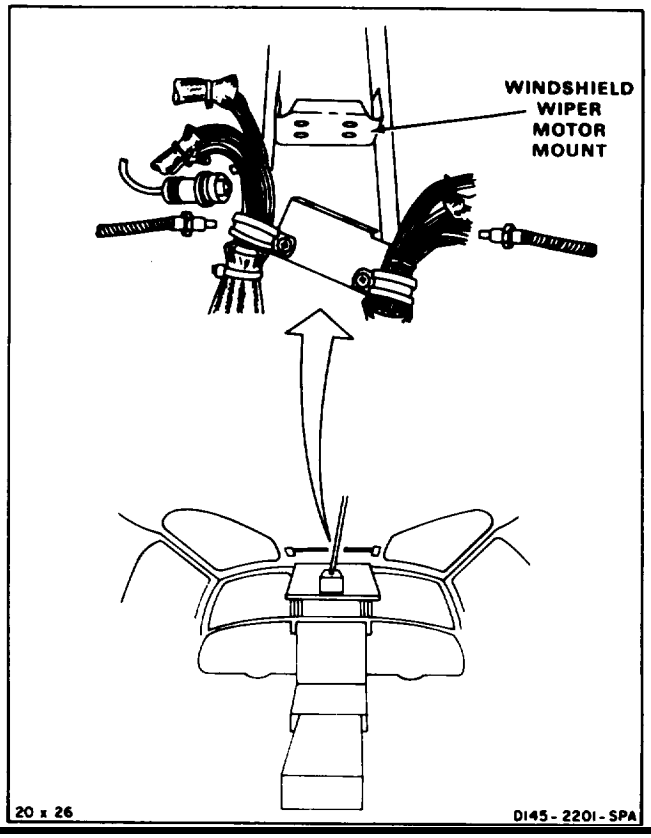
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

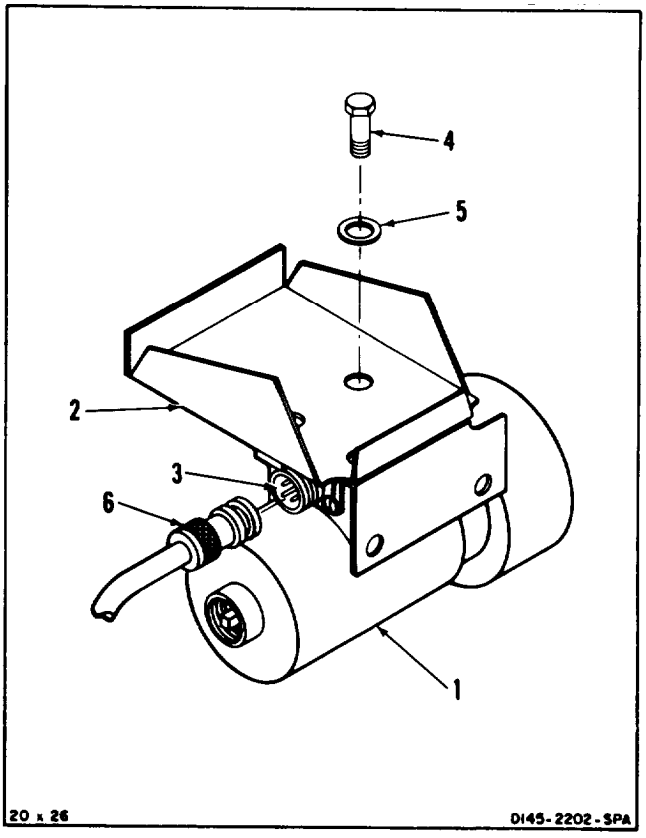
Materials:
Lockwire (E233)
Lockwire (E229)

Personnel Required:
67U20 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P
TM 55-1520-240-T



1. **Position motor (1)** on mount (2) with electrical connector (3) facing left.
2. **Temporarily install four bolts (4)** and washers (5).
3. **Connect electrical plug (6)** to connector (3).
4. Apply electrical power.
5. **Make sure wiper switch is at PARK** (TM 5-1520-240-T).
6. Shut down electrical power.
7. **Remove four bolts (4)** and washers (5).



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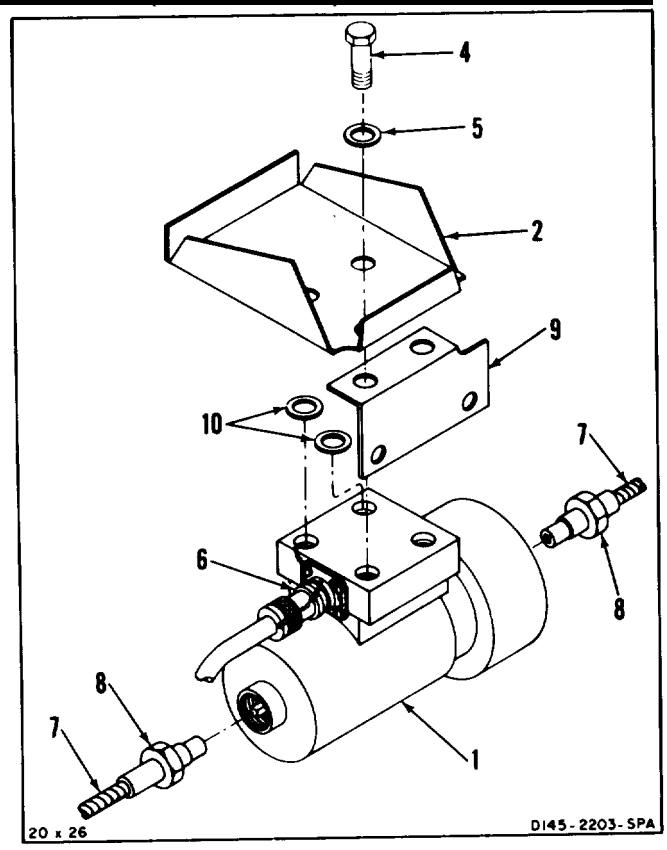
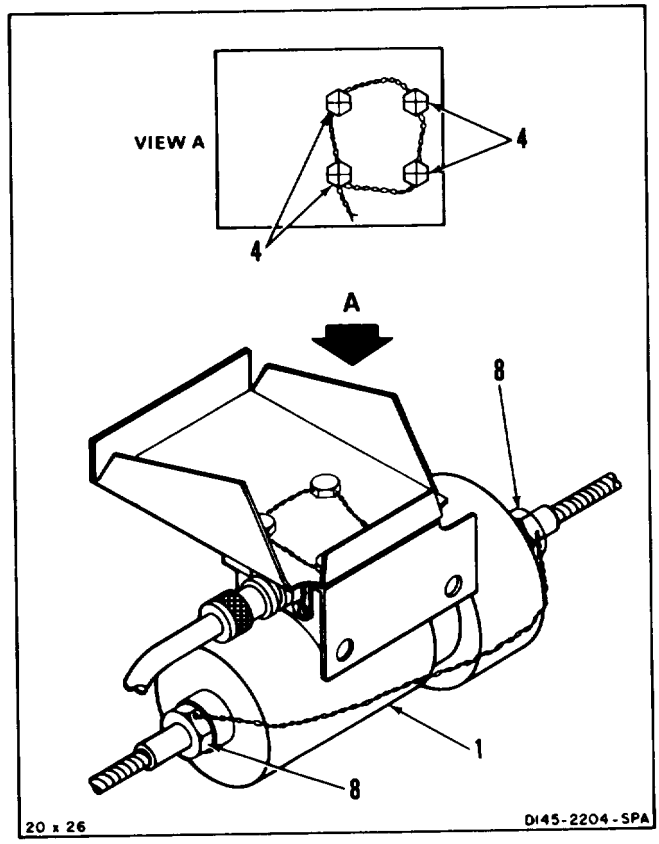
8. Remove caps and **connect two shafts (7) to motor (1).** Do not tighten nuts (8) at this time.
9. **Lockwire plug (6).** Use lockwire (E229).
10. **Position bracket (9) and two spacers (10)** between motor (1) and mount (2).
11. **Install four bolts (4)** and washers (5).



12. **Tighten two nuts (8).**
13. Lockwire nuts (8) to each other across motor (1). Use lockwire (E233).
14. Lockwire four mounting bolts (4) together. Use lockwire (E233).



INSPECT

FOLLOW-ON MAINTENANCE:

Secure overhead panel (Task 9-98).

Check wiper operation (TM 55-1520-240-T).

END OF TASK

12-46 REMOVE WINDSHIELD WIPER DRIVESHAFT 12-46

INITIAL SETUP

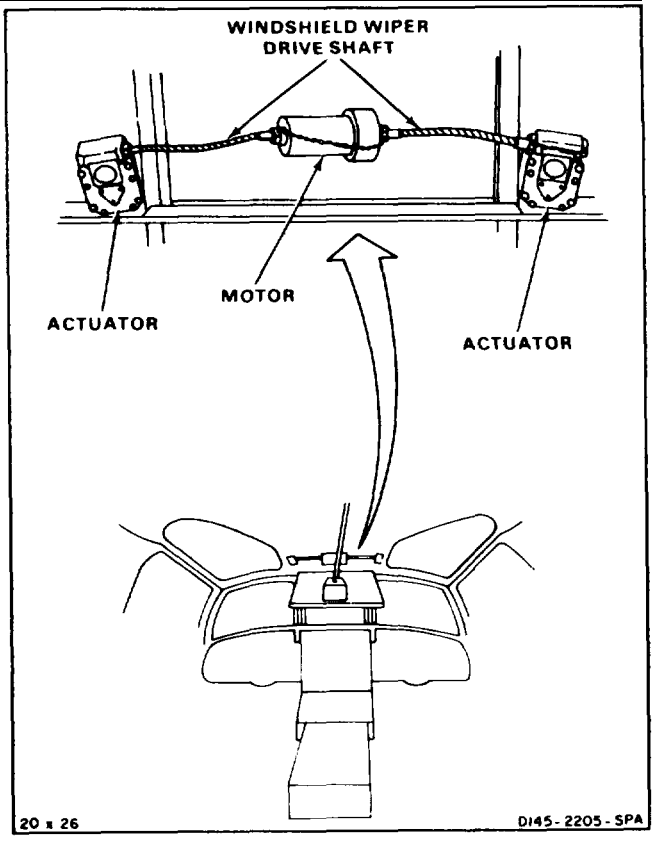
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Overhead Panel Lowered (Task 9-97)
Cockpit Overhead Acoustic Blanket Removed (Task 2-107)



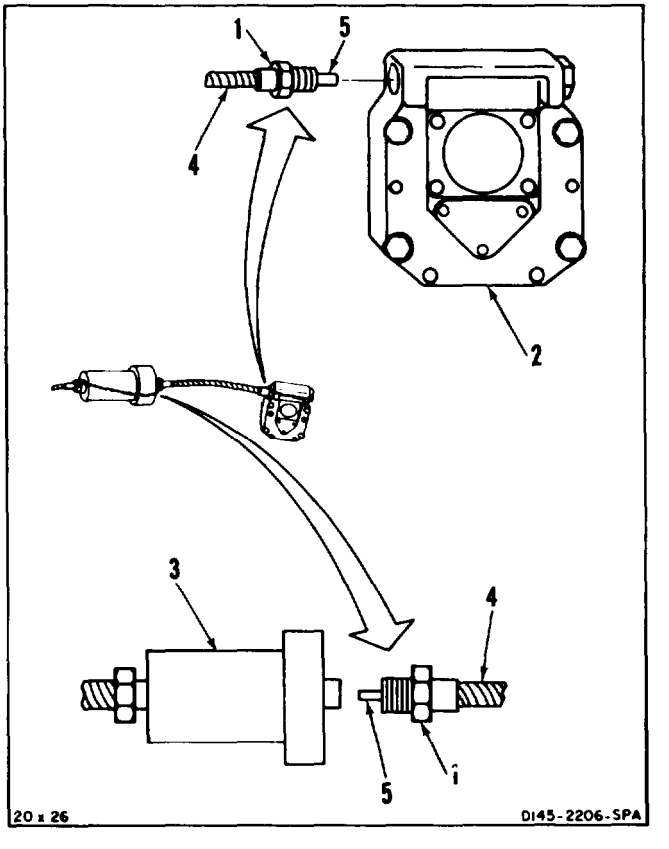
NOTE

There are two windshield wiper drive shafts. Procedure is same for removing right or left shaft. Right shaft is shown here.

1. Remove lockwire from two nuts (1).
2. Back off nut (1) from actuator (2).
3. Back off nut (1) from motor (3).
4. **Disconnect shaft (4)** from motor (3) and actuator (2). **Make sure couplings (5) stay in shaft.**
5. **Remove shaft (4)** and cap ends.

FOLLOW-ON MAINTENANCE:

None



END OF TASK

12-47 INSTALL WINDSHIELD WIPER DRIVE SHAFT 12-47

INITIAL SETUP

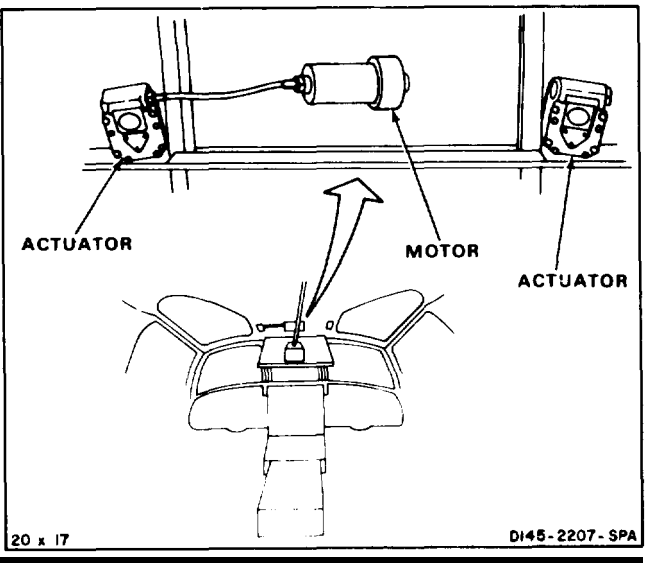
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
Lockwire (E233)

Personnel Required:
Medium Helicopter Repairer
Inspector

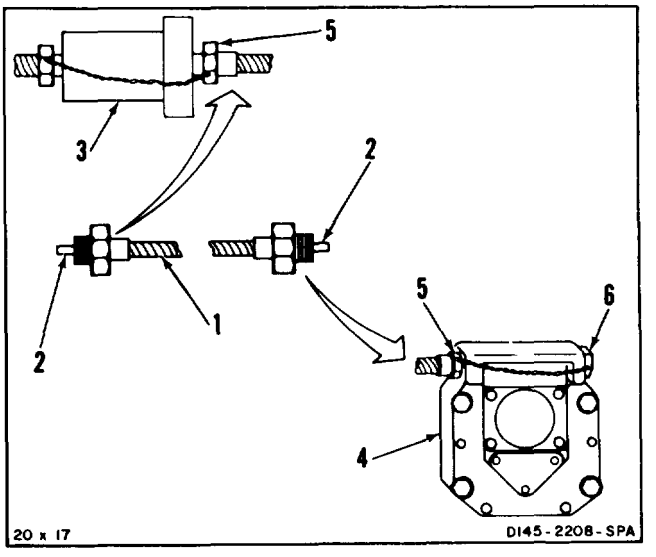
References:
TM 55-1520-240-23P



NOTE

There are two windshield wiper drive shafts. Procedure is same for installing right or left shaft. Right shaft is shown here.

1. Remove caps from shaft (1). **Make sure couplings (2) stay in shaft and shaft turns freely.**
2. **Connect shaft (1)** to motor (3) and actuator (4). **Tighten both nuts (5).**
3. Lockwire nut (5) at motor (3) to nut on other side of motor. Use lockwire (E233).
4. Lockwire nut (5) at actuator (4) to cap nut (6) on other side of actuator. Use lockwire (E233).



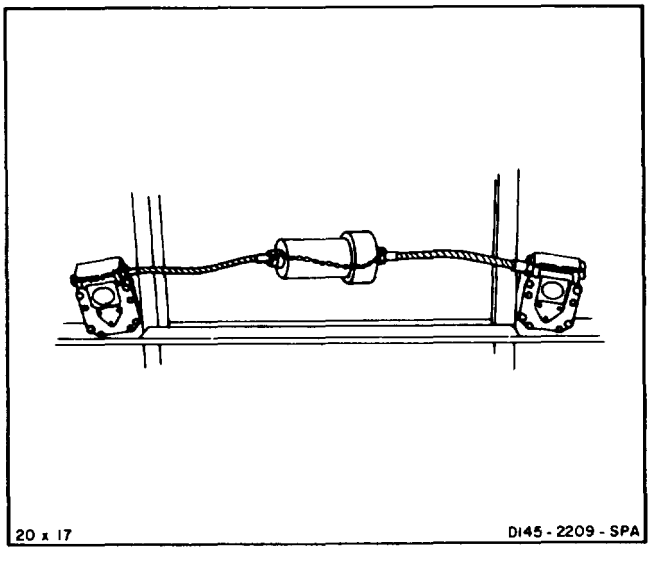
INSPECT

FOLLOW-ON MAINTENANCE:

Secure overhead panel (Task 9-98).

Check wiper operation (TM 55-1520-240-T).

Install acoustic blanket (Task 2-108).



END OF TASK

12-48 REMOVE WINDSHIELD WIPER ACTUATOR (CONVERTER) 12-48

INITIAL SETUP

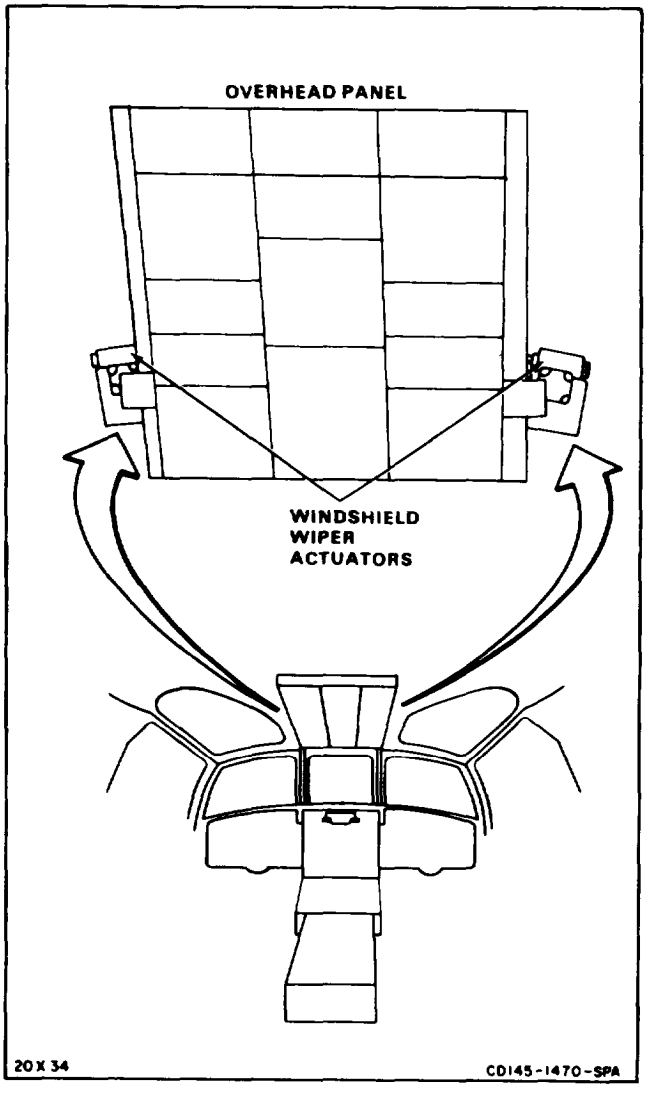
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Workstand

Materials:
None

Personnel Required:
67U20 Medium Helicopter Repairer

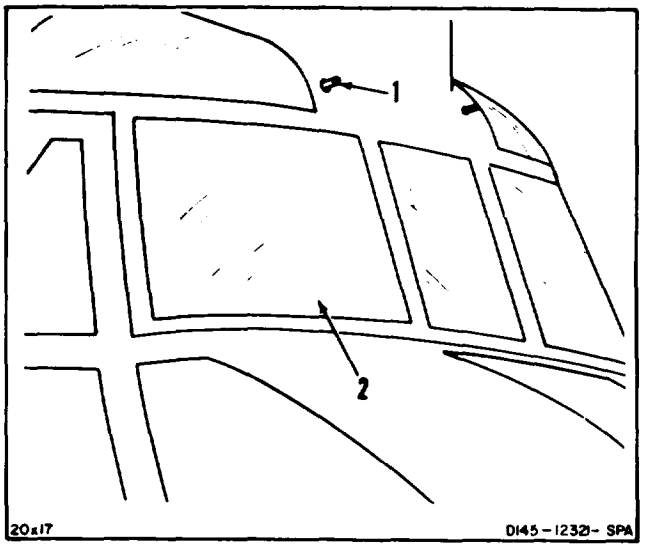
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Windshield Wiper Arm Removed, Right or Left Arm as Required (Task 12-39)
Cockpit Overhead Acoustic Blanket Removed (Task 2-107)



NOTE

There are two windshield wiper actuators (converters), one for each wiper. Removal procedure is same for both. Right side actuator is shown here.

1. Remove sealant where actuator shaft (1) goes through fuselage above windshield (2).



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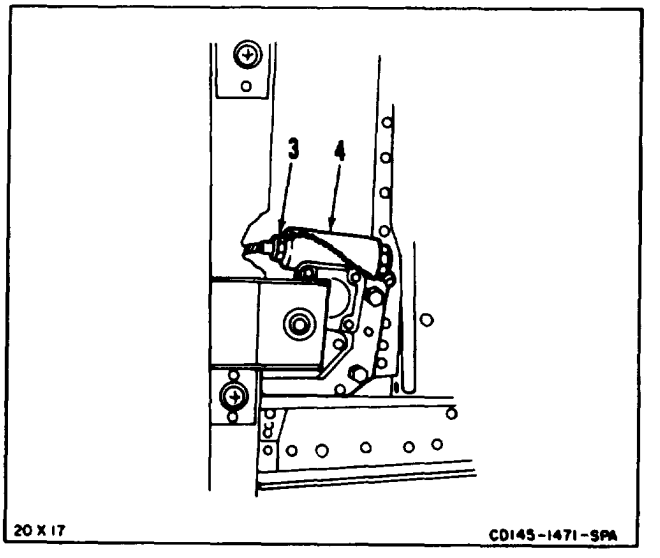
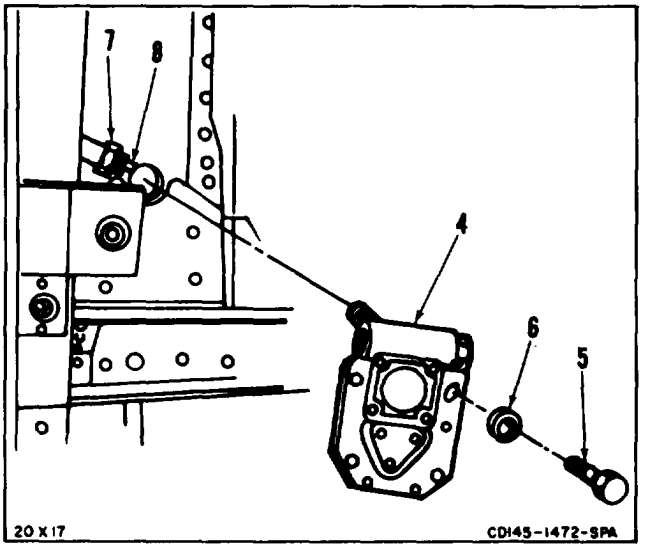
12-48 REMOVE WINDSHIELD WIPER ACTUATOR (CONVERTER) (Continued)

2. Remove lockwire from nut (3).
3. Loosen nut (3) from actuator (4).



4. **Remove four bolts (5)** and washers (6).
5. **Disconnect flexible shaft (7)** from actuator (4). Make sure coupling (8) stays in shaft.
6. **Remove actuator (4).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

12-49 INSTALL WINDSHIELD WIPER ACTUATOR (CONVERTER) 12-49

INITIAL SETUP

Applicable Configurations:
All

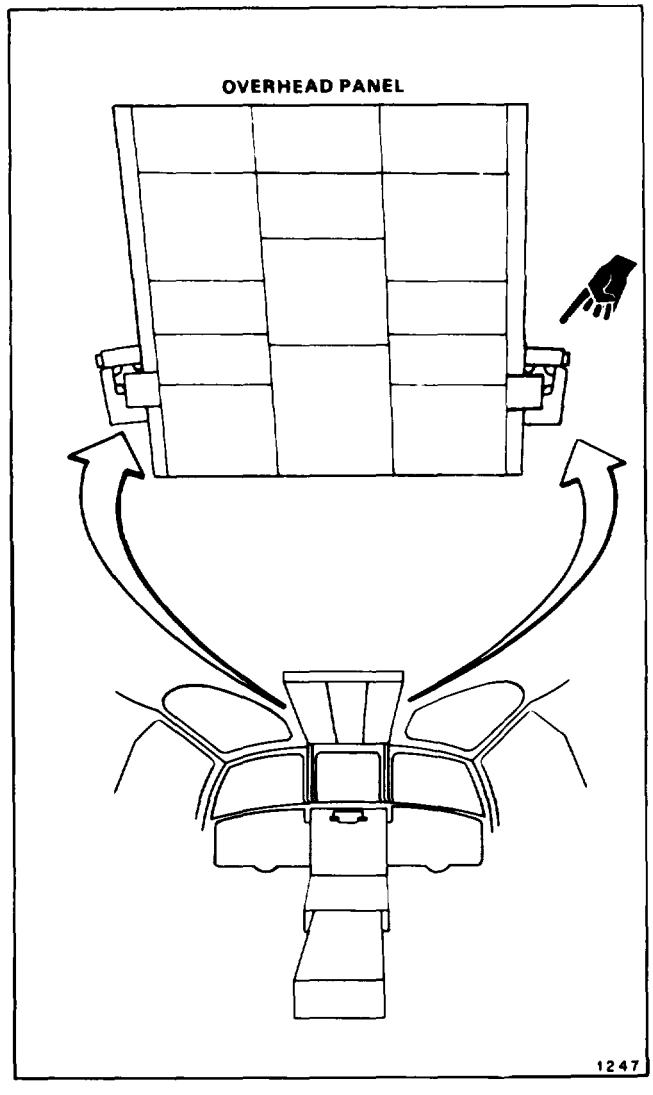
Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Workstand

Materials:
Gloves (E186)
Lockwire (E233)
Sealant (E336)

Parts:
Flexible Shaft

Personnel Required:
Medium Helicopter Repairer
Inspector

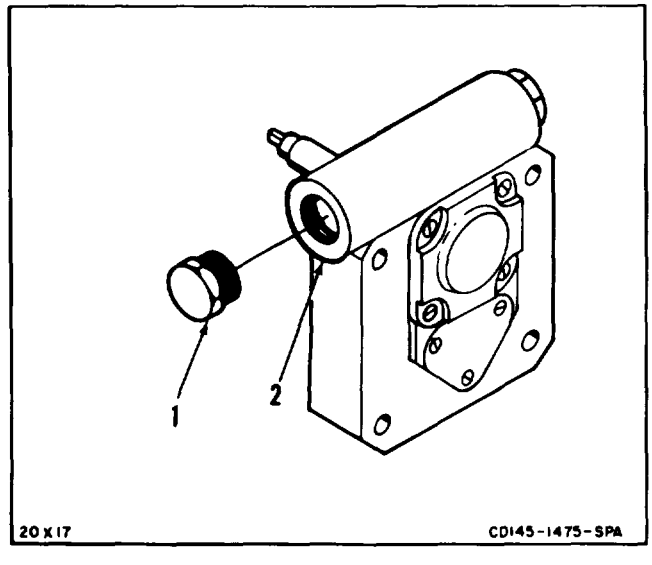
References:
TM 55-1520-240-23P



NOTE

There are two windshield wiper actuators (converters), one for each wiper. Installation procedure is same for both. Right side actuator is shown here.

1. Remove nut (1) from inboard side of actuator (2).



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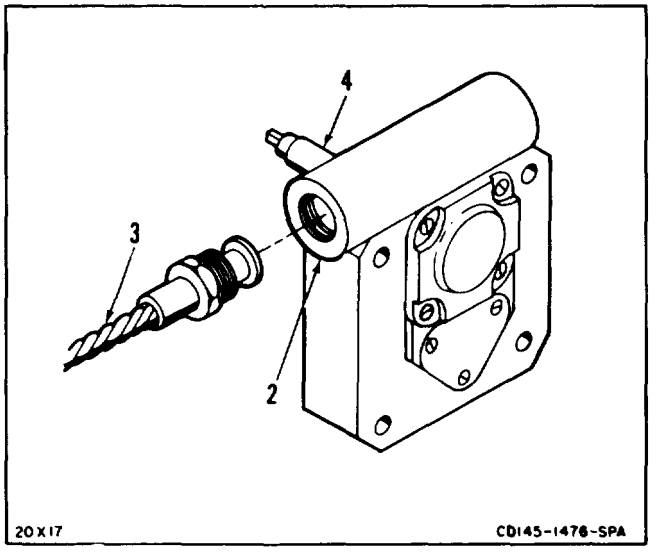
12-49 INSTALL WINDSHIELD WIPER ACTUATOR (CONVERTER) 12-49 (Continued)

2. Insert spare flexible shaft (3) in actuator (2).

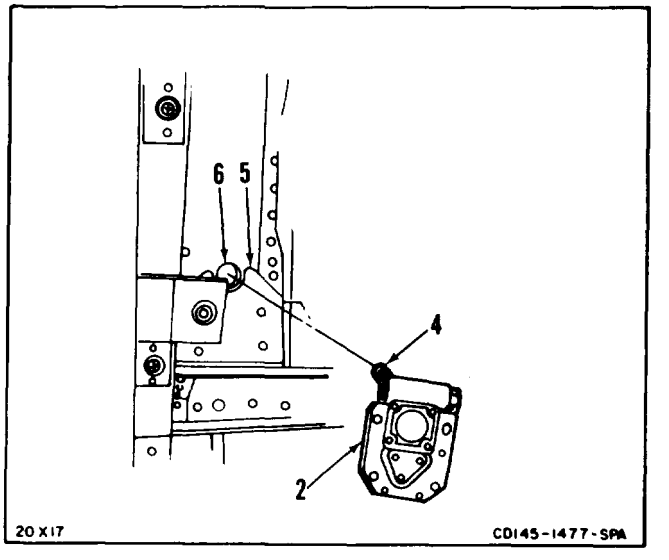
NOTE

Actuator is in parked position when splined shaft stops and an installed wiper would be at inboard edge of windshield. A few more rotations of flexible shaft will move splined shaft in opposite direction.

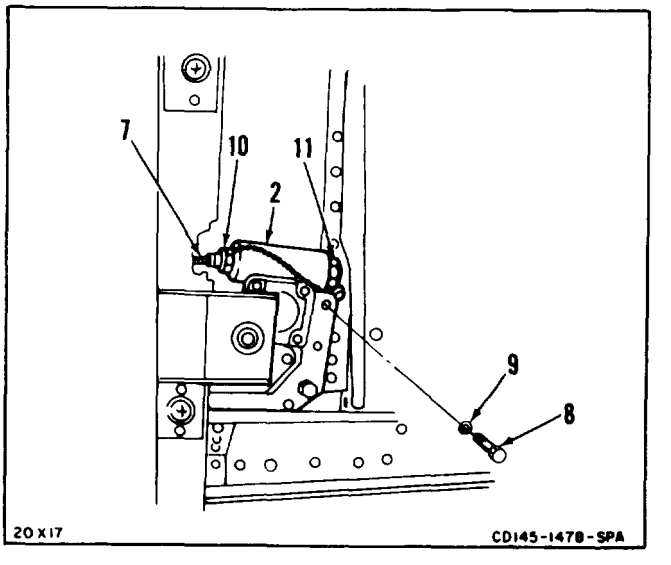


3. **Rotate shaft (3) to move splined shaft (4)** of actuator (2) **to parked position.**
4. Remove shaft (3).

5. **Position actuator (2) on mount (5)** with shaft (4) through hole (6).



6. **Connect flexible shaft (7)** to actuator (2)
7. **Install actuator (2) with four bolts (8), and washers (9).**
8. Tighten nut (10).
9. Lockwire nut (10) to nut (11) on opposite side of actuator (2). Use lockwire (E233).



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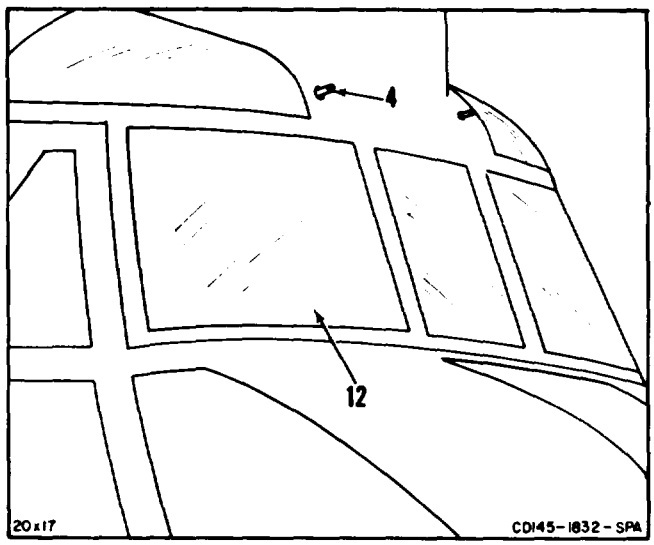
12-49 INSTALL WINDSHIELD WIPER ACTUATOR (CONVERTER) (Continued)

WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, and clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

10. Apply sealant (E336) where shaft (4) comes through helicopter fuselage above windshield (12). Wear gloves (E186).



INSPECT

FOLLOW-ON MAINTENANCE:

Install windshield wiper arm (Task 12-41).

Check windshield wiper system operation (TM 55-1520-240-T).

Install cockpit overhead acoustic blanket (Task 2-108).

END OF TASK

CHAPTER 13
ENVIRONMENTAL CONTROLS

SECTION I
ENVIRONMENTAL SYSTEM DESCRIPTION AND THEORY OF OPERATION

13-1 ENVIRONMENTAL SYSTEM

DESCRIPTION

The environmental system provides heat and ventilation for the helicopter. The system consist of a heater and fan mounted between an air inlet duct and exhaust pipe, an ignition unit, control switches, a temperature controller and thermostat, cockpit and cabin ducting, and fuel delivery components.

The heater is located in a compartment on the right forward end of the cabin, ahead of the cabin door. It is capable of 200,000 btu/hr output.

A fuel control unit draws fuel from the right side fuel system and controls the pressure and flow to the heater combustion chamber.

The fan draws air from outside through the air inlet duct and forces it through the heater. Some air is mixed with fuel and ignited in the heater combustion chamber and other air is heated and sent through the duct network. The fan can also supply fresh air for ventilation. Exhaust gases are sent through the exhaust pipe and discharged outside, above and aft of the air inlet.

The ignition unit supplies a high voltage current that produces a continuous spark in the heater combustion chamber to ignite the fuel and air mixture. Unburned fuel is drained overboard.

The thermostat maintains a steady temperature in the cabin by causing a relay in the temperature controller to open or close as cabin temperature fluctuates. In this way, the controller controls the electrical circuit to the heater fuel system, interrupting or resuming fuel flow, as required.

The heater system is protected from overheating by three thermostatic switches. A differential air pressure switch shuts down the heater when there is not enough air for safe operation.

Switches on the overhead panel control heater operation. A temperature controller adjusts the cabin thermostat setting. Push-pull controls in the cockpit regulate air flow through the ducting.

THEORY OF OPERATION

The heater and fan are both controlled by a control switch and a start button on the cockpit overhead panel. The switch has three positions, labeled OFF, VENT BLOWER ONLY, and HEATER ON. The button is spring-loaded and is labeled HEATER START. When the switch is set to HEATER ON and the button is pressed and released, the system is set in operation as follows:

a. **Relay 082K3** is energized by 28 volts from the No. 2 dc bus through the normally closed (NC) contacts of overheat switch 082A5. This action energizes **relay 082K2** and **fan relay 082K1,** connecting 115 volt 3-phase ac from the No. 2 ac bus to the heater fan.

b. When the fan has been in operation of 10 seconds, **time-delay (TD) relay 082K4** and **air pressure switch 082A4** close. The delay allows time for the fan to purge the heater of combustible vapor and to build up enough air pressure to activate the switch. The closed TD relay and switch allow voltage to close **relay 082K5,** operating **master fuel valve 082L1,** the **fuel pump** (located in **fuel control unit 082A2)** and **ignition unit 082A3.** The closed relay also connects power to the **temperature controller** and **thermostat** (See step e.).

c. The open master fuel valve unit allows fuel to be delivered from the boost pump in the right main tank to the fuel control unit. In the fuel control unit, the fuel passes through a **filter,** a **pressure regulator** and a **pump.** The pump raises fuel pressure to 100 psi, controlled by a **pressure relief valve,** and delivers it through a **solenoid valve** to the heater. The solenoid valve is energized through the temperature controller and thermal cycling switch (See step e.).

d. Fuel enters the heater combustion chamber, where it is atomized by a spray nozzle and mixed with air provided by the fan through the combustion air tube. The mixture is ignited by a spark plug supplied with high tension voltage from the ignition unit. The remainder of the pressurized air flows around the combustion chamber, picking up heat as it does. The heated air is then distributed through ducting to the cockpit and cabin. Air flow direction and volume is controlled by manual operation of valves in the ducting.

e. The temperature of the heated air is controlled by the combined action of **CABIN TEMP SELECTOR switch 082S1, temperature controller 082A1,** and **cabin thermostat 082S4.**

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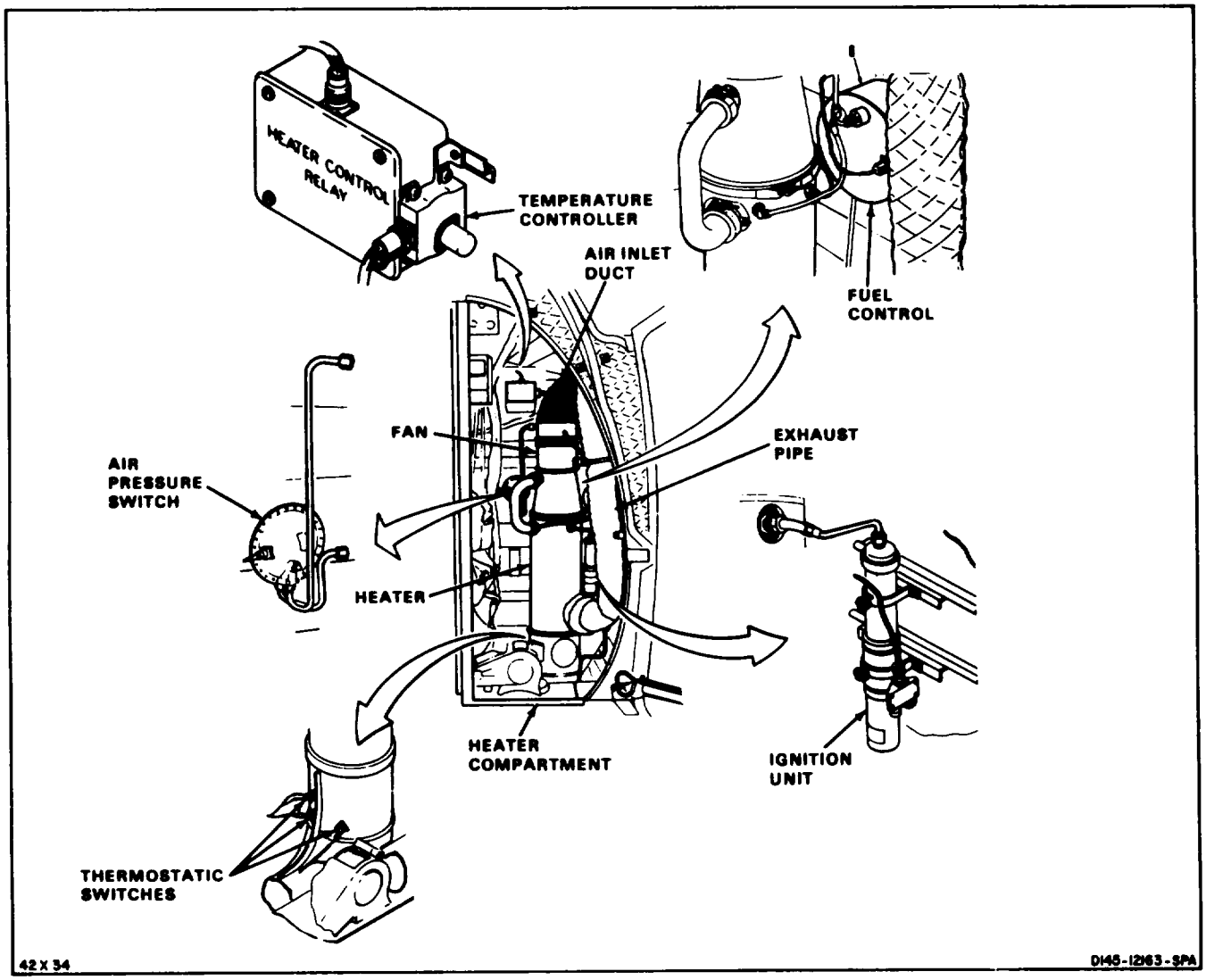
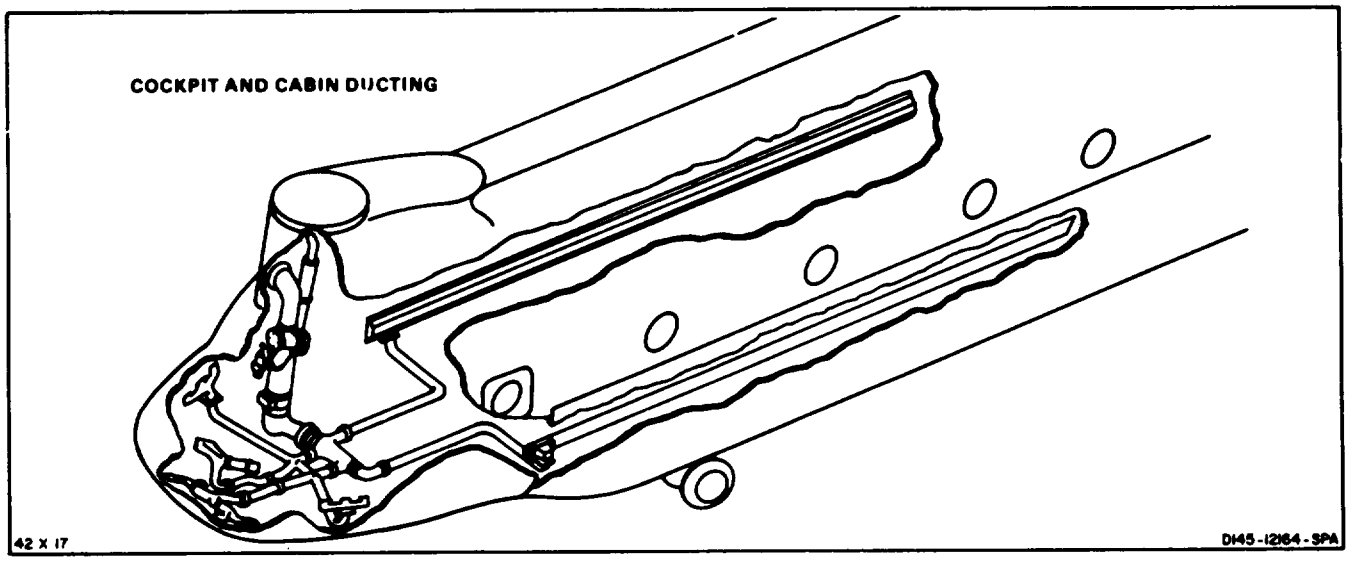
13-1 ENVIRONMENTAL SYSTEM (Continued) 13-1





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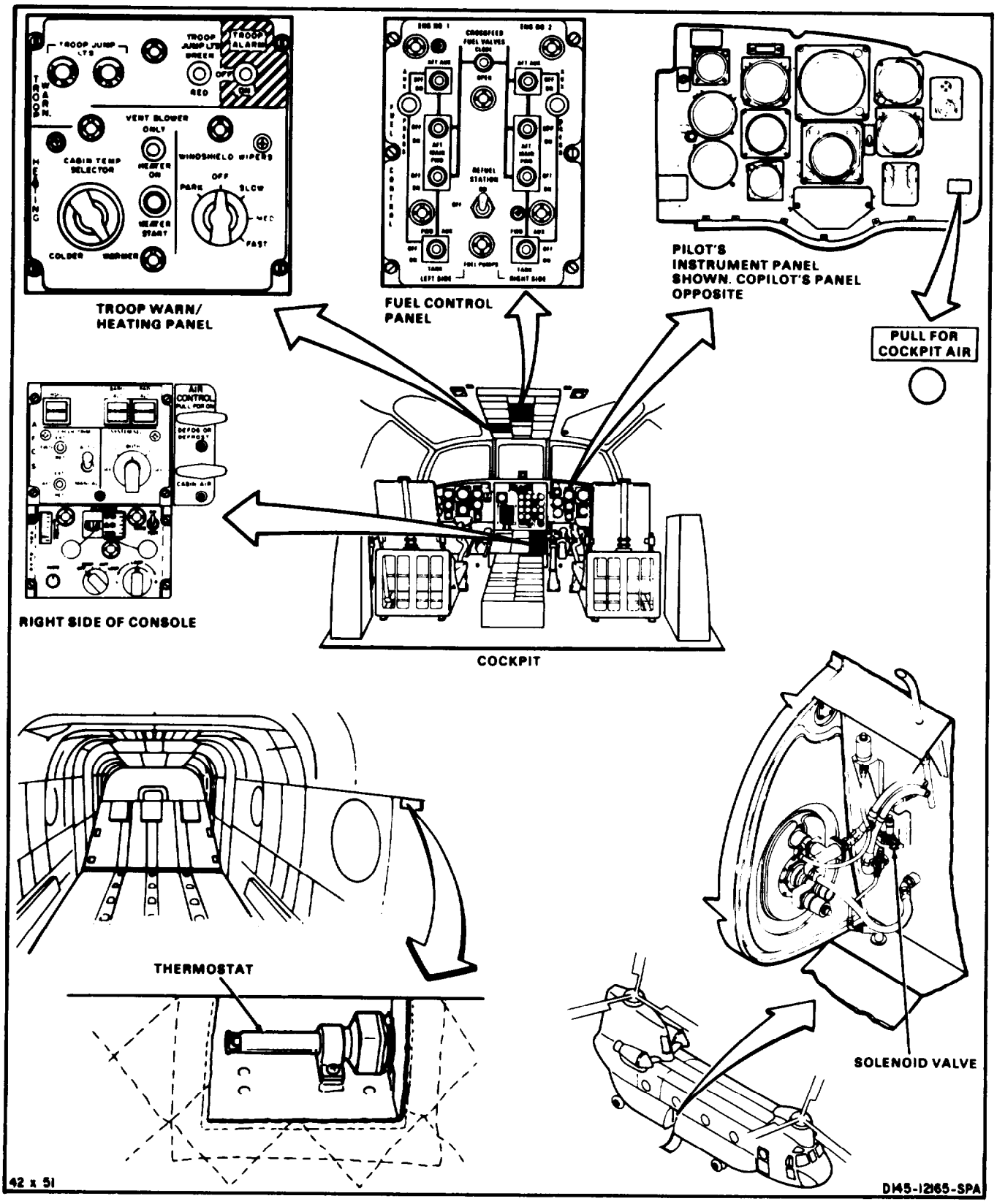

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13-1 ENVIRONMENTAL SYSTEM (Continued) 13-1

The switch is on the cockpit overhead panel. The controller is in the heater compartment on the side of the HEATER CONTROL RELAY box at sta 95. The thermostat is on the left side of the cabin at sta 335.

f. Power is provided through the switch to the controller and thermostat when **relay 082K5** is energized (See step b.). At the same time, power passes through the controller and **thermal cycling switch 082A7** to open the solenoid valve in **fuel control 082A2,** permitting fuel to be delivered to the heater as described in step c.

g. The cabin thermostat consists of a column of mercury surrounded by a heater winding. Current passes through the variable retsistor within the temperature controller to heat the winding. When the winding raises the temperature of the mercury to 93°F (34°C), it opens contacts within the temperature controller relay. This removes power from the solenoid valve within the fuel control, shutting off fuel to the heater. It also removes power from the heater winding, allowing the mercury column to cool and contract. When this happens, the relay contacts open, power is restored to the fuel solenoid valve, and the heater starts.

h. Protection for the heater is provided by three thermal switches at the base of the heater. **Cycling switch 082A7** interrupts the circuit to the fuel control solenoid valve when temperature of the air leaving the heater goes over 250°F (121° C), **Overheat switch 08285** is a backup switch that functions if the cycling switch fails. It opens to deenergize **relay 082K3** whenever air in the transition assembly below the heater exceeds 350°F (177°C). This shuts off the heater, but lets the fan continue to operate. At the same time, the HEATER HOT caution light on the master caution panel comes on. When this happens, the heater cannot be operated again until the transition assembly has cooled below 250°F (121°C. At that time, the heater can be started again by pressing the HEATER START button. **A fan overrun switch 08286** keeps the fan operating after the heater has been shut down until the temperature within the heater drops below 120°F (49°C). If the temperature rises to 120°F (49°C) again, the overrun switch will close and the fan will come on again. This cycling will continue until the temperature stays below 120°F (49°C).

i. Additional heater protection is provided by **diffferential air pressure switch 082A4,** on the sta 95 bulkhead. This switch shuts down the fuel and ignition systems by deenergizing **relay 082K5** if air pressure through the fan drops below 1.25 to 1.75 inches of water

j. When the switch on the cockgit overhead panel is set to VENT FAN ONLY, only those contacts within the switch that energize the heater fan are dosed. The blower then forces unheated ventilating air through the ducting.

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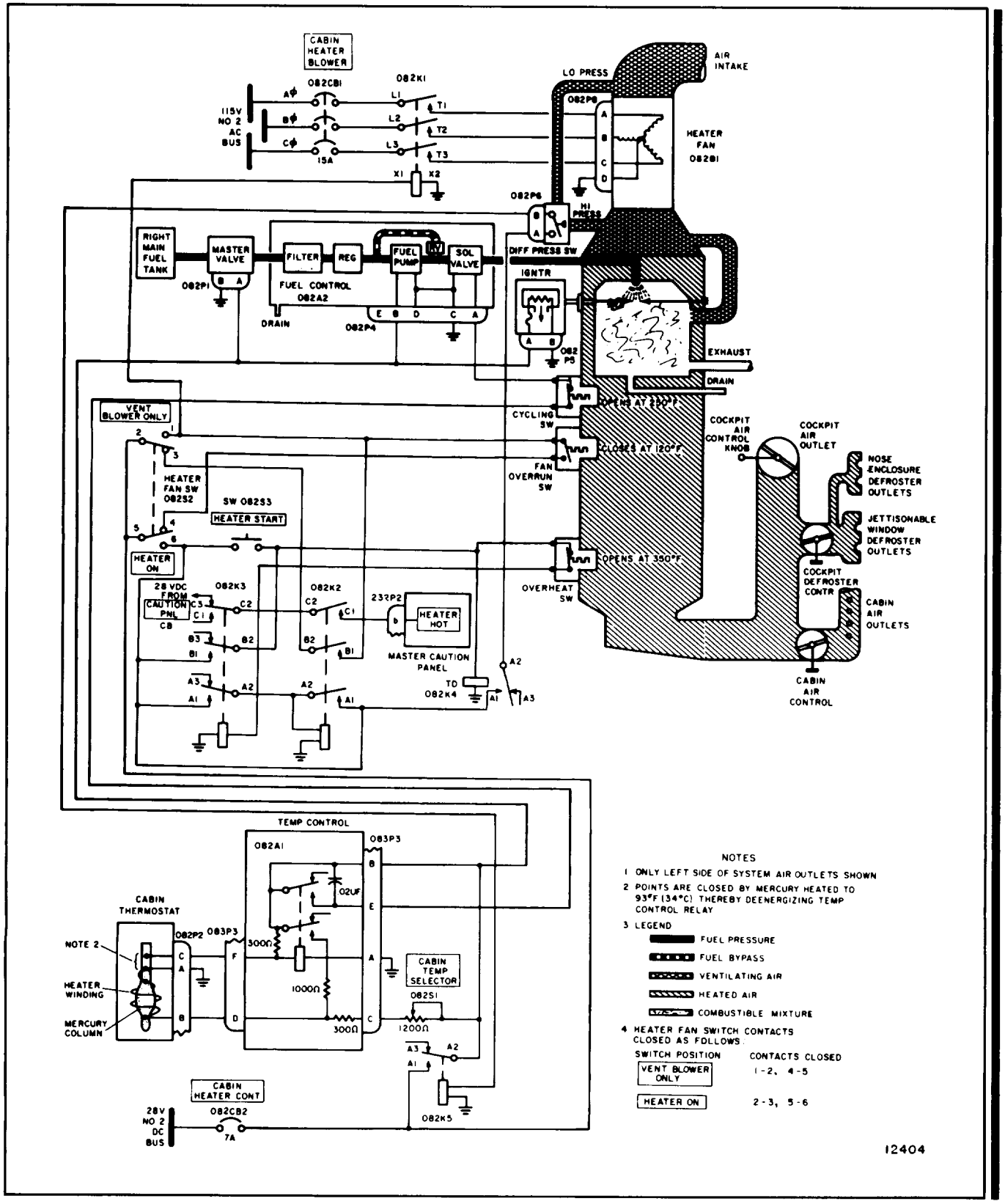

CABIN HEATER BLOWER
082CB1
082K1
115V NO 2 AC BUS
15A
LO PRESS
082P6
AIR INTAKE
HEATER FAN 082B1
082P6
HI PRESS
RIGHT MAIN FUEL TANK
MASTER VALVE
FILTER
REG
FUEL PUMP
SOL VALVE
DIFF PRESS SW
IGNTR
082P1
FUEL CONTROL 082A2
DRAIN
082P4
082 P5
EXHAUST
DRAIN
VENT BLOWER ONLY
CYCLING SW
OPENS AT 330°F
CLOSES AT 120°F
COCKPIT AIR CONTROL KNOB
COCKPIT AIR OUTLET
NOSE ENCLOSURE DEFROSTER OUTLETS
JETTISONABLE WINDOW DEFROSTER OUTLETS
COCKPIT DEFROSTER CONTR
CABIN AIR OUTLETS
CABIN AIR CONTROL
HEATER FAN SW 08252
SW 08253
HEATER START
FAN OVERRUN SW
HEATER ON
28 VDC FROM CAUTION PNL CB
082K3
082K2
233P2
HEATER HOT
MASTER CAUTION PANEL
OVERHEAT SW
OPENS AT 350°F
TO 082K4
TEMP CONTROL
082A1
083P3
02UF
CABIN THERMOSTAT
082P2
NOTE 2
HEATER WINDING
MERCURY COLUMN
300Ω
1000Ω
300Ω
CABIN TEMP SELECTOR
082S1
1200Ω
CABIN HEATER CONT
082CB2
28V NO 2 DC BUS
7A
082K5
NOTES
1 ONLY LEFT SIDE OF SYSTEM AIR OUTLETS SHOWN
2 POINTS ARE CLOSED BY MERCURY HEATED TO 93°F (34°C) THEREBY DEENERGIZING TEMP CONTROL RELAY
3 LEGEND
FUEL PRESSURE
FUEL BYPASS
VENTILATING AIR
HEATED AIR
COMBUSTIBLE MIXTURE
4 HEATER FAN SWITCH CONTACTS CLOSED AS FOLLOWS.
SWITCH POSITION
CONTACTS CLOSED
VENT BLOWER ONLY
1-2, 4-5
HEATER ON
2-3, 5-6
12404

END OF TASK

SECTION II

ENVIRONMENTAL SYSTEM

13-2 REMOVE HEATER

INITIAL SETUP

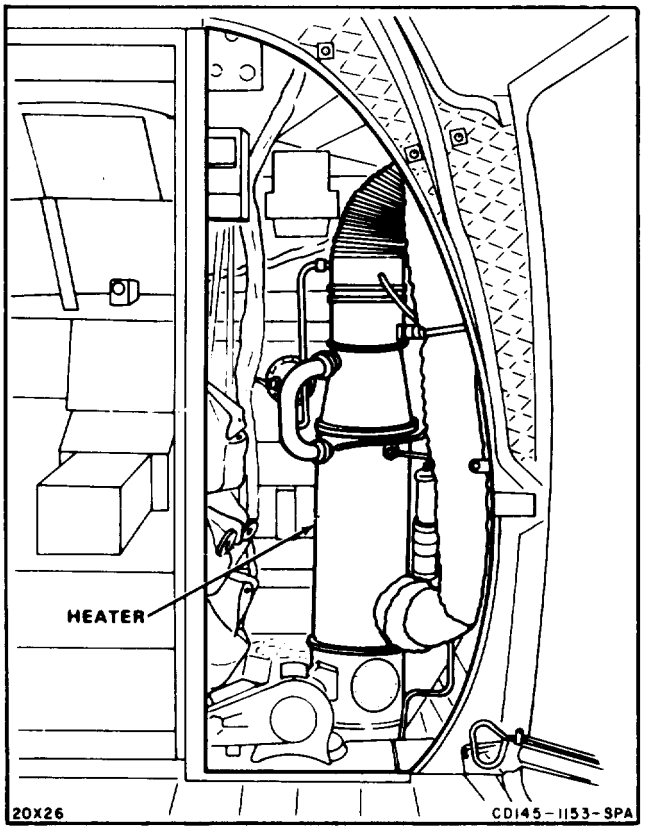
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692

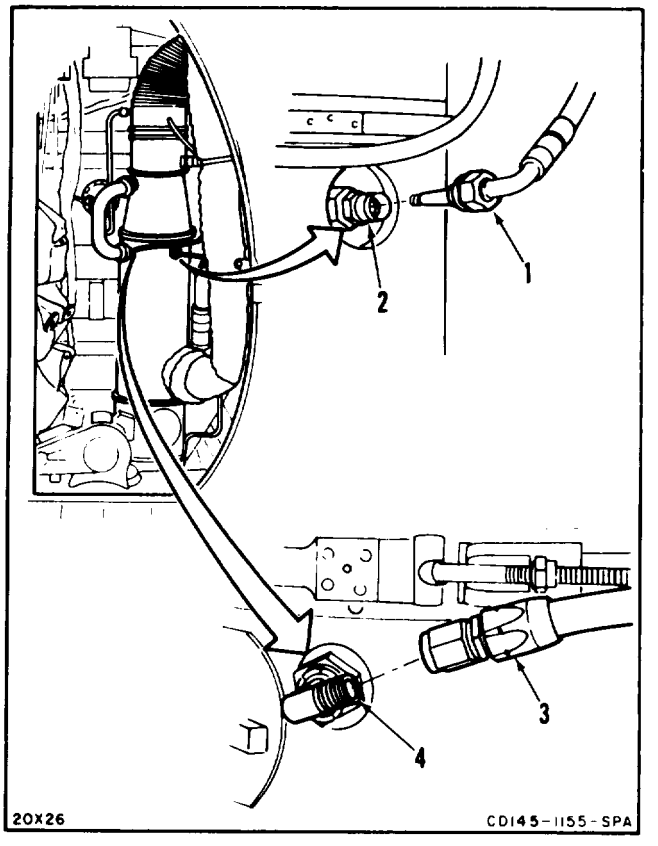
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)



1. **Disconnect shielded lead (1)** from spark Igniter (2).
2. **Disconnect fuel tube (3)** from heater connection (4). Plug tube.



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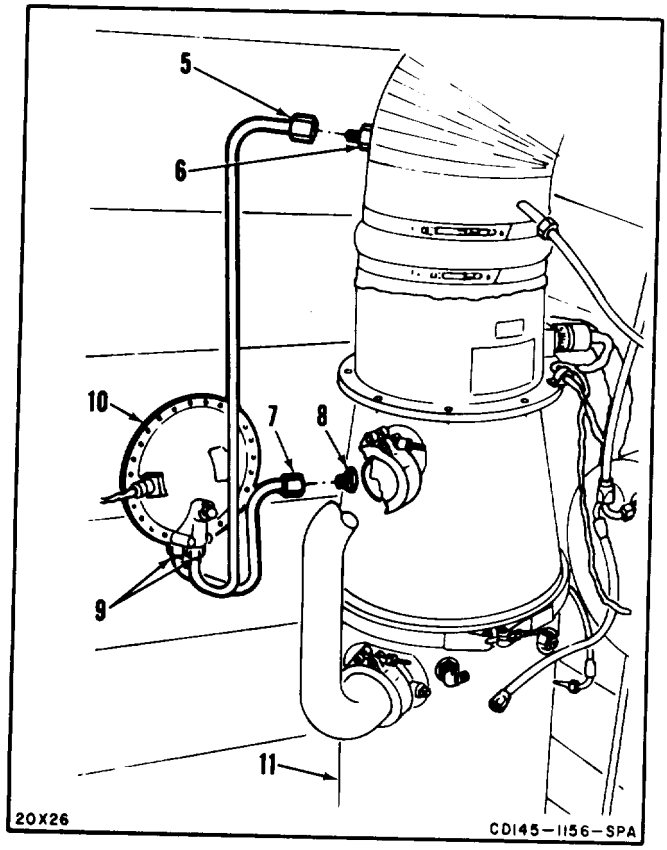
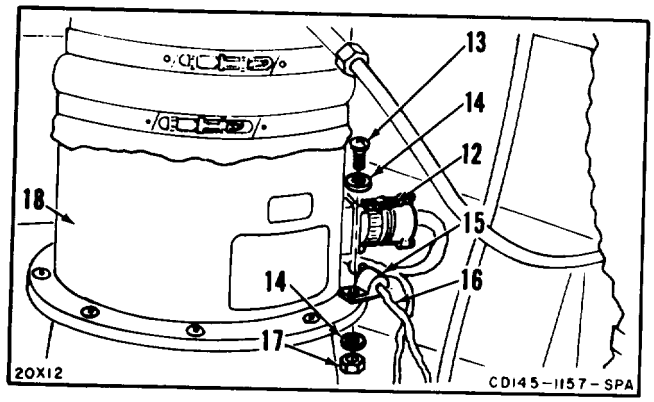
13-2 REMOVE HEATER (Continued)

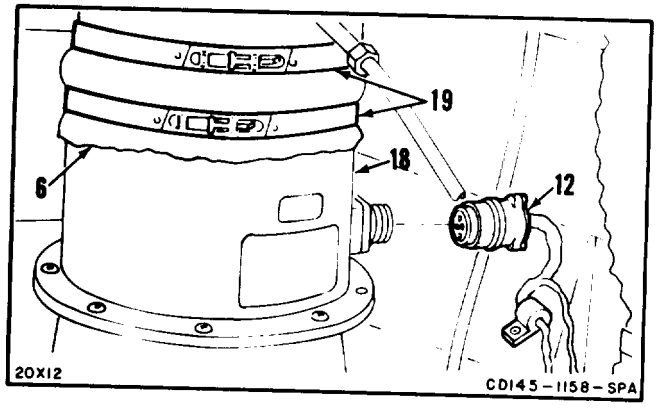
3. **Disconnect low pressure tube (5)** from air inlet duct (6).
4. **Disconnect high pressure tube (7)** from adapter (8).
5. Loosen nuts (9) on low pressure tube (5) and high pressure tube (7) at air pressure switch (10).
6. Turn tubes (5 and 7) away from heater (11).



7. Remove lockwire from electrical connector (12).
8. **Remove** screw (13), two washers (14), **clamp (15),** wires (16), and nut (17) from fan (18).



9. **Disconnect electrical connector (12)** from fan (18).
10. **Remove clamps (19)** from air inlet duct (6).



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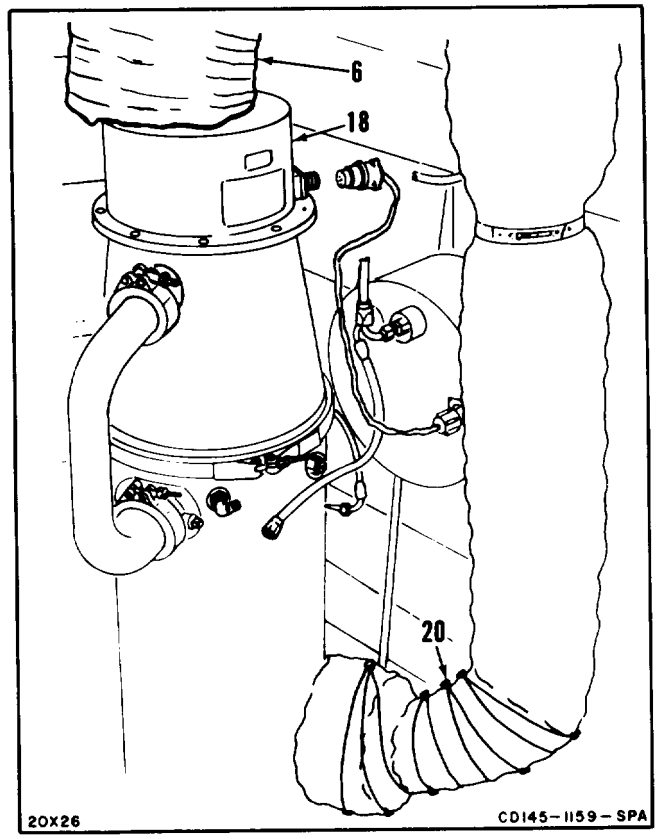
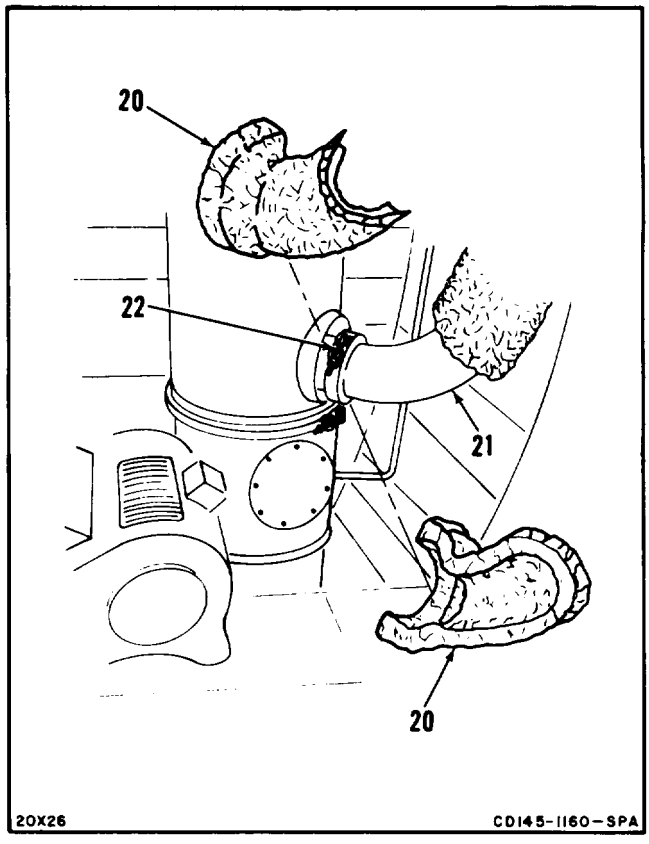
13-2 REMOVE HEATER (Continued)

11. Slide air inlet duct (6) off fan (18) and push duct to side.
12. Remove lacewire from bottom section of exhaust shroud elbow (20).



13. **Remove exhaust shroud elbow (20)** from exhaust pipe (21).
14. Remove lockwire from clamp (22).



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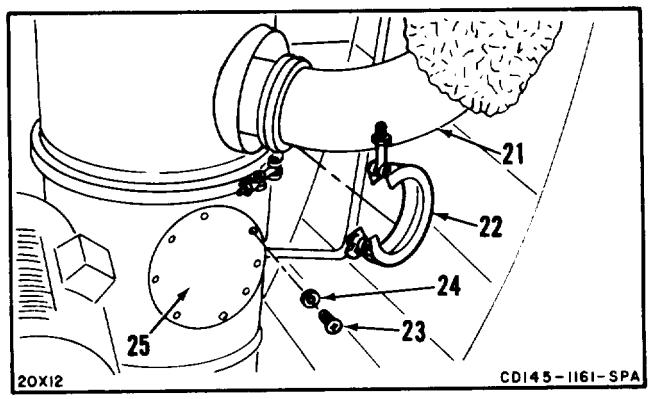
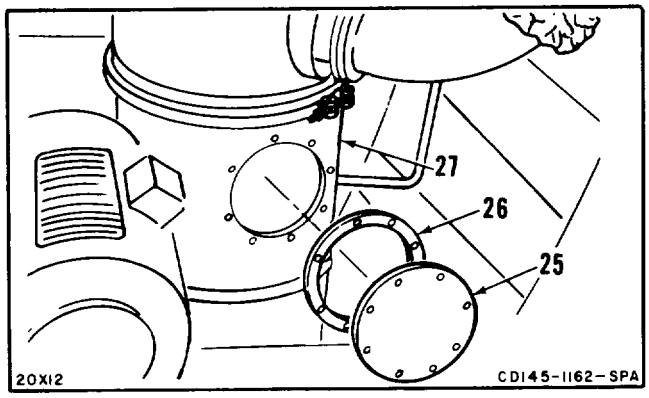
13-2 REMOVE HEATER (Continued)

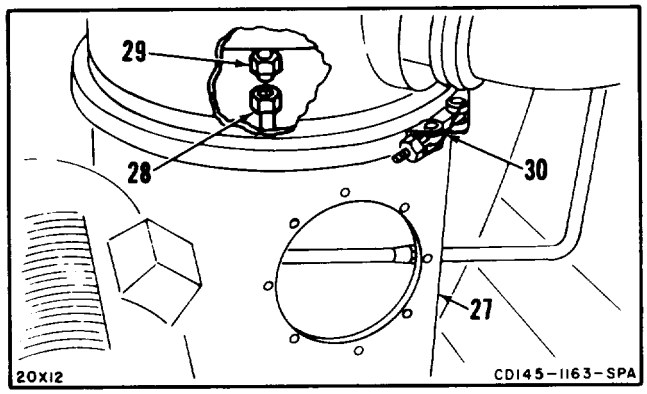
15. **Remove clamp (22)** from pipe (21).
16. Remove eight screws (23) and washers (24) from access cover (25).



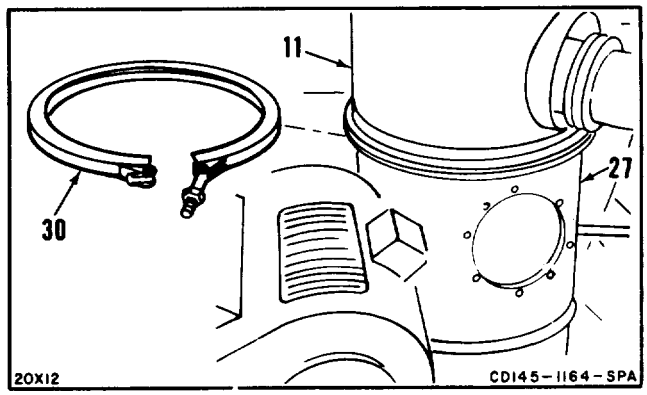
17. **Remove access cover (25) and seal (26)** from transition duct (27).



18. **Disconnect drain tube (28) at heater connection (29)** inside transition duct (27).
19. Remove lockwire from clamp (30).



20. **Remove clamp (30)** from heater (11) and transition duct (27).



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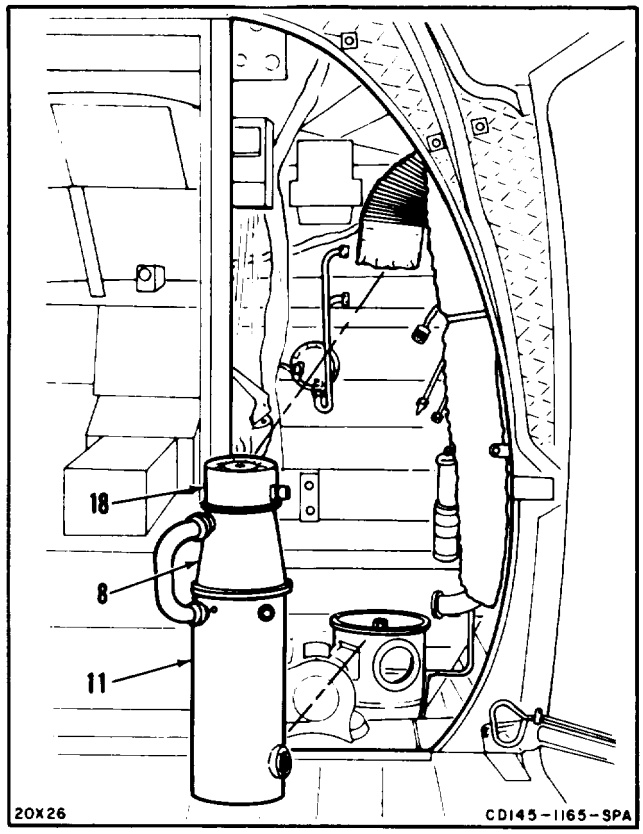
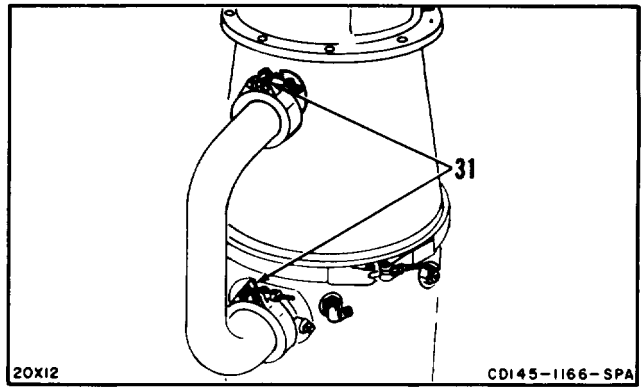
21. **Remove heater (11), adapter (8), and fan (18).**

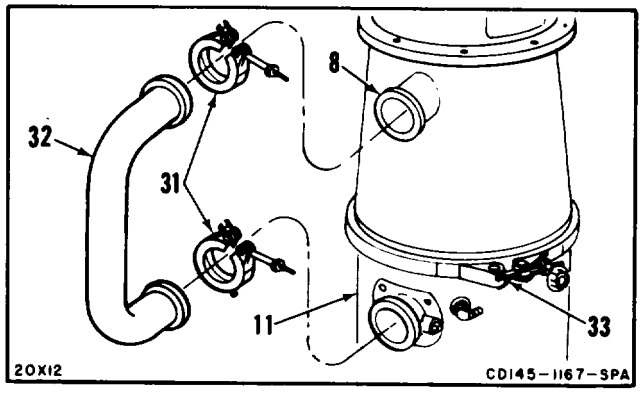


22. Remove lockwire from two clamps (31).



23. **Remove two clamps (31) and combustion tube (32)** from adapter (8) and heater (11).

24. Remove lockwire from clamp (33).



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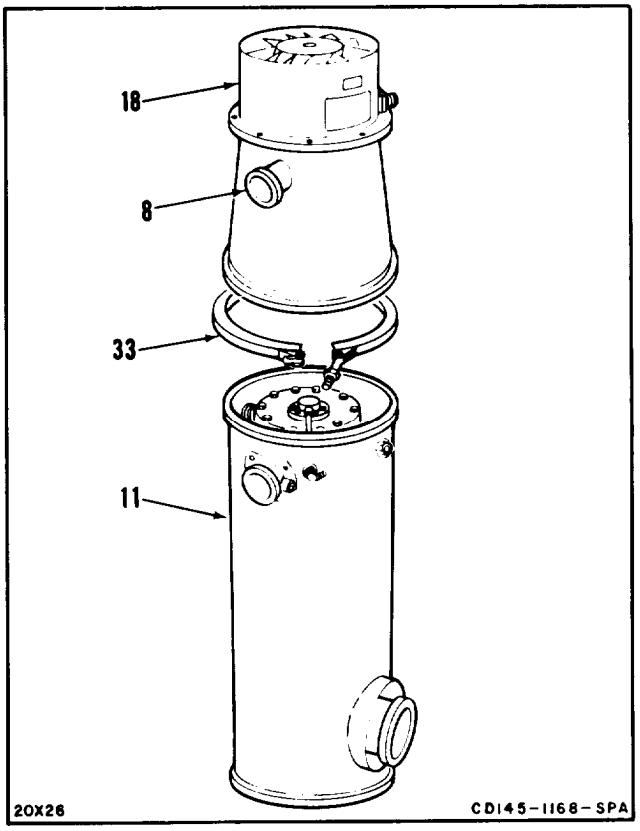
13-2 REMOVE HEATER (Continued)

25. **Remove clamp (33)** from adapter (8) and heater (11).
26. **Lift adapter (8) and fan (18)** from heater (11).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-3 DISASSEMBLE HEATER (AVIM) 13-3

INITIAL SETUP

Applicable Configurations:
All

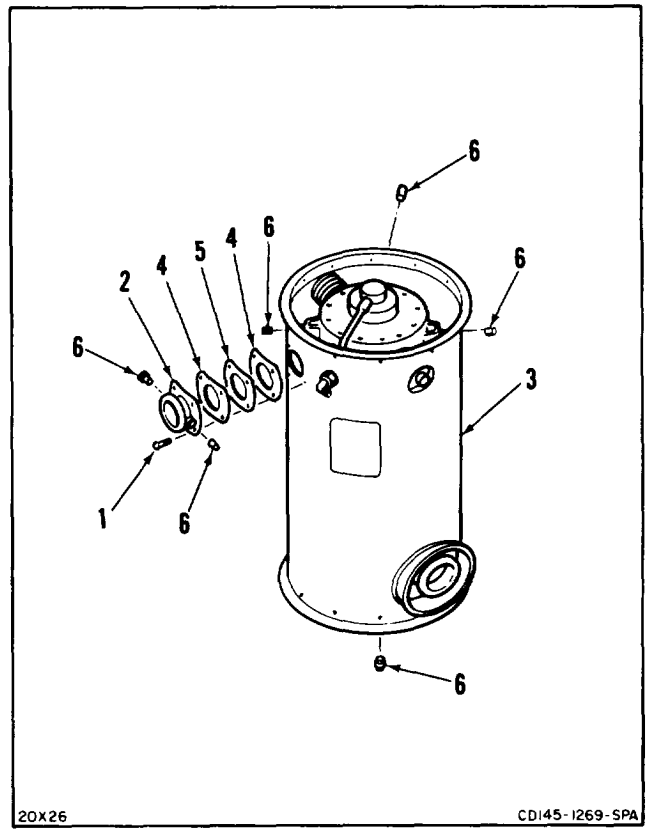
Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Airframe Repairer's Tool Kit, NSN 5180-00-323-4876
Deep Well Socket, 1 Inch
Source of Compressed Air

Materials:
Barrier Material (E81)
Paper Tags (E264)
Masking Tape (E388)

Personnel Required:
68G10 Airframe Repairer
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer

Equipment Condition:
Off Helicopter Task

1. Remove lockwire from four screws (1).
2. Remove four screws (1) holding flange (2) to jacket (3).
3. **Remove flange (2), two gaskets (4), and combustion plate (5).**
4. **Remove lockwire and remove six pipes plugs (6).**



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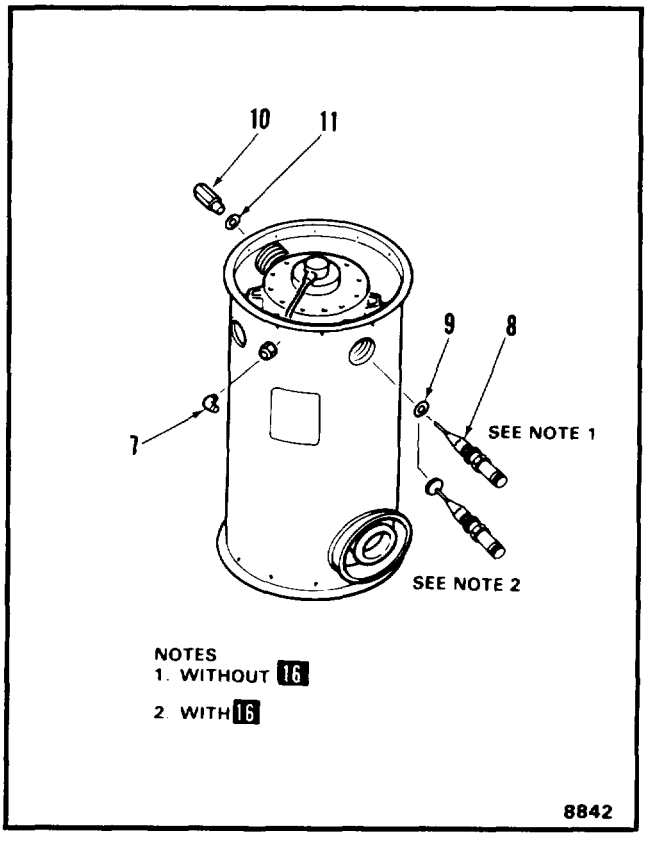
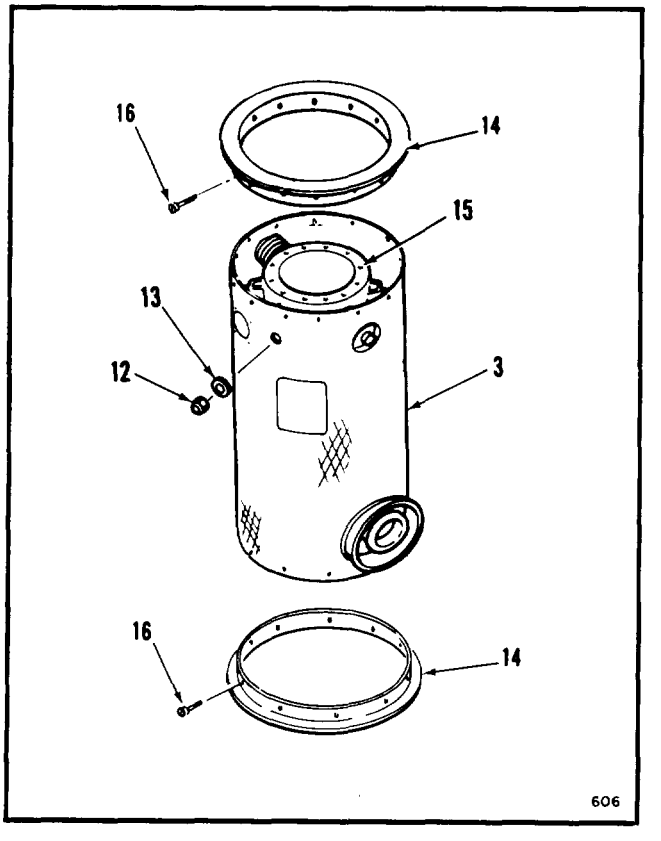
5. **Remove elbow (7).**
6. Remove igniter plug (8) and gasket (9).
7. Remove lockwire from seal plug (10).
8. **Remove seal plug (10)** and gasket (11).



9. **Remove nut (12)** and washer (13) from jacket (3).
10. Scratch index mark on jacket (3) and each flange (14).
11. Cover all openings in combustion chamber (15) and jacket (3) to prevent contamination, Use barrier material (E81) and tape (E388).
12. **Drill out 11 rivets (16)** from each flange (14).
13. **Remove upper and lower flanges (14)** from jacket (3). Tag flanges.



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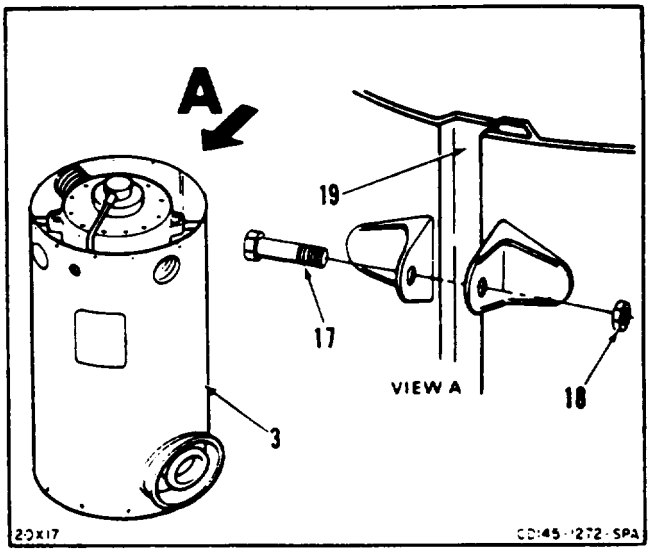
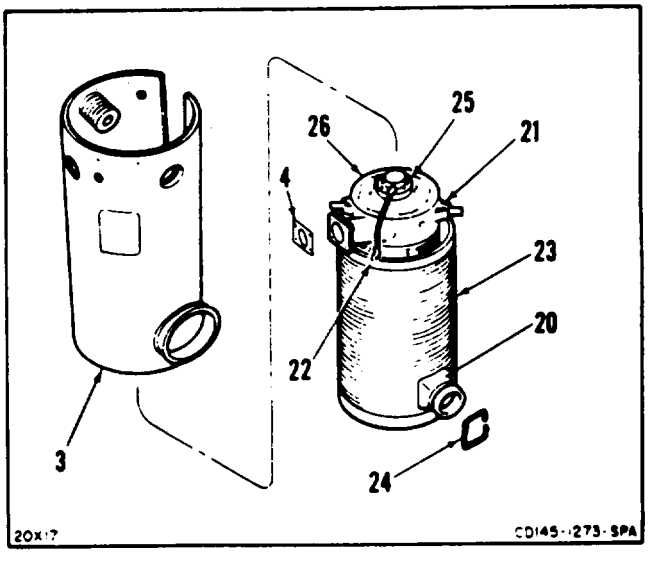
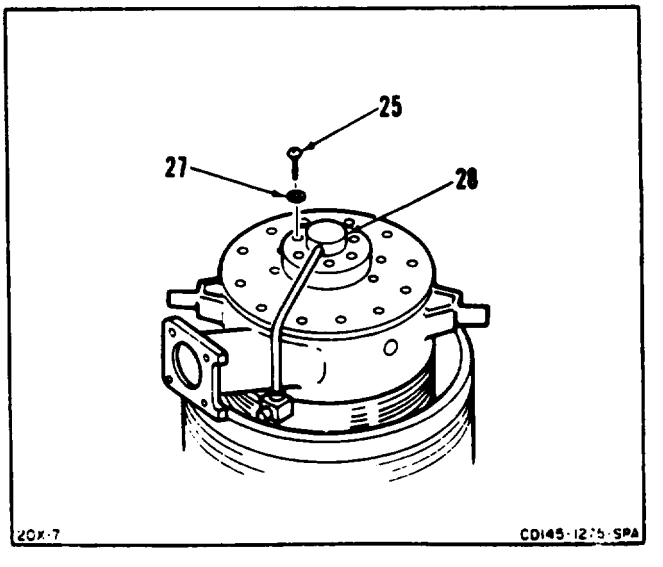
14. **Remove three screws (17)** and nuts (18) from jacket (3) at seam (19).



15. Spread jacket (3) enough to clear flue drain (20), air connections (21), and tube fitting (22).
16. **Slide jacket (3) from combustion chamber (23). Remove gasket (4).**
17. **Remove asbestos rope gasket (24)** from flus drain (20).
18. Remove lockwire from 4 screws (25) and 16 screws (26).



19. Remove four screws (25) and washers (27) from holder and feed assembly (28).



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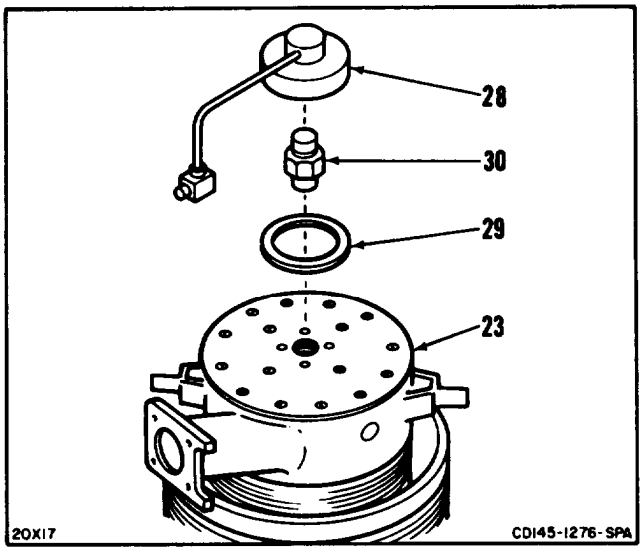
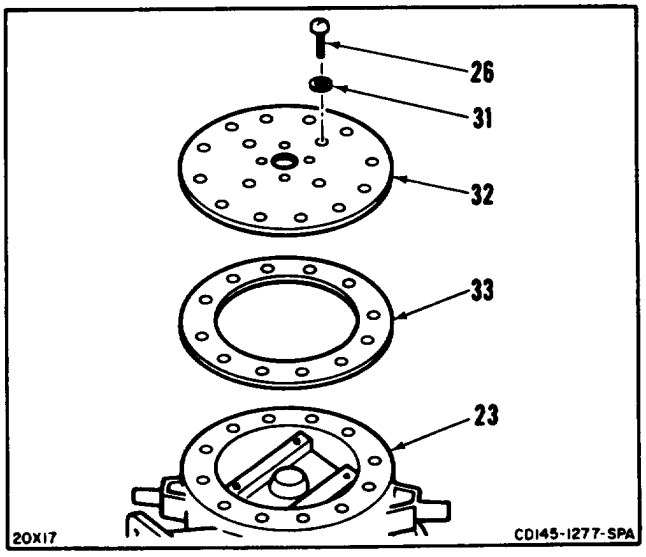
13-3 DISASSEMBLE HEATER (AVIM) (Continued) 13-3

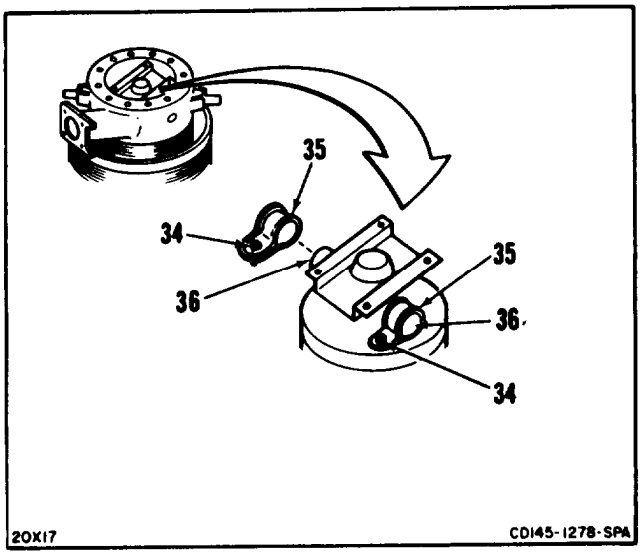
20. **Remove holder and feed assembly (28)** and gasket (29) from combustion chamber (23).
21. **Remove tip and strainer assembly (30)** from holder and feed assembly (28).



22. Remove 16 screws (26) and washers (31) from combustion plate (32).
23. **Remove plate (32)** and gasket (33) from combustion chamber (23).



24. Loosen screws (34) on clamps (35).
25. **Remove clamps (35)** from thimbles (36).



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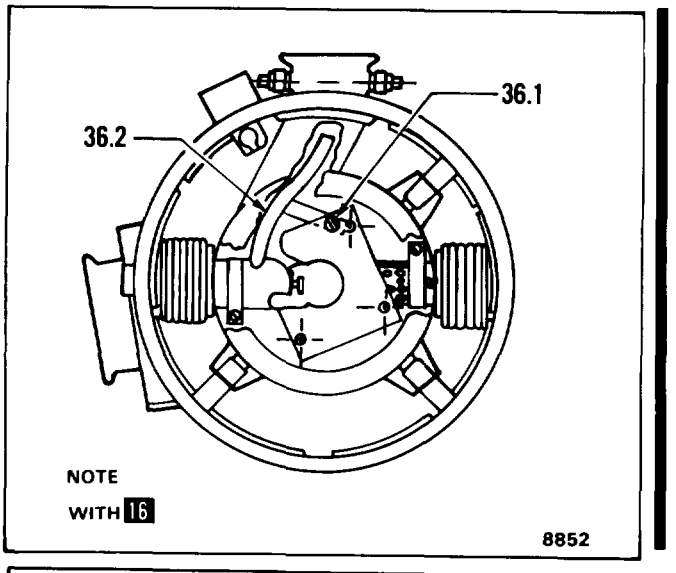
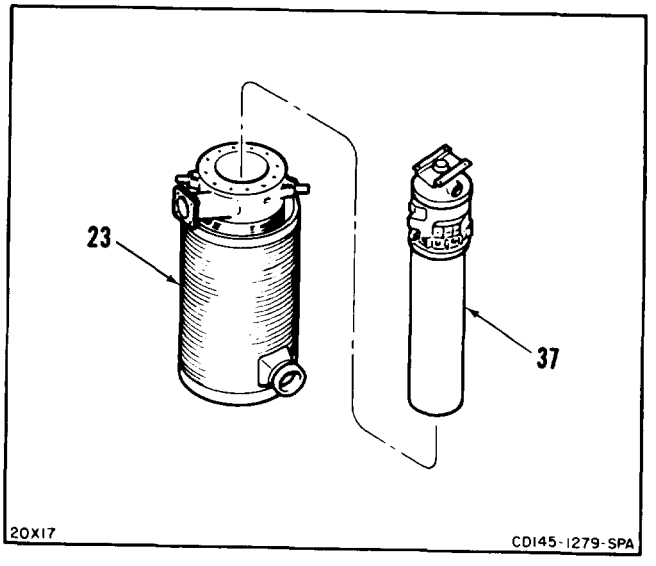
25.1 With 16, **remove screw (36.1)** and **air pick up tube (36.2).**



26. **Slide tube and cone assembly (37) from combustion chamber (23).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-4 CLEAN HEATER PARTS (AVIM) 13-4

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Thermometer
Compressed Air Source
Soak Tank
Brush, Acid Swabbing
Brush, Soft Bristle
Wire Brush, Stainless Steel
Source of Heat

Materials:
Dry Cleaning Solvent (E 162)
Cloths (E135)
Oakite (E249)
Plastic Bag (E78)
Protective Clothing and Gloves
Gloves (E186)
Water

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Off Helicopter Task
Heater Disassembled (Task 13-3)

General Safety Instructions:

WARNING

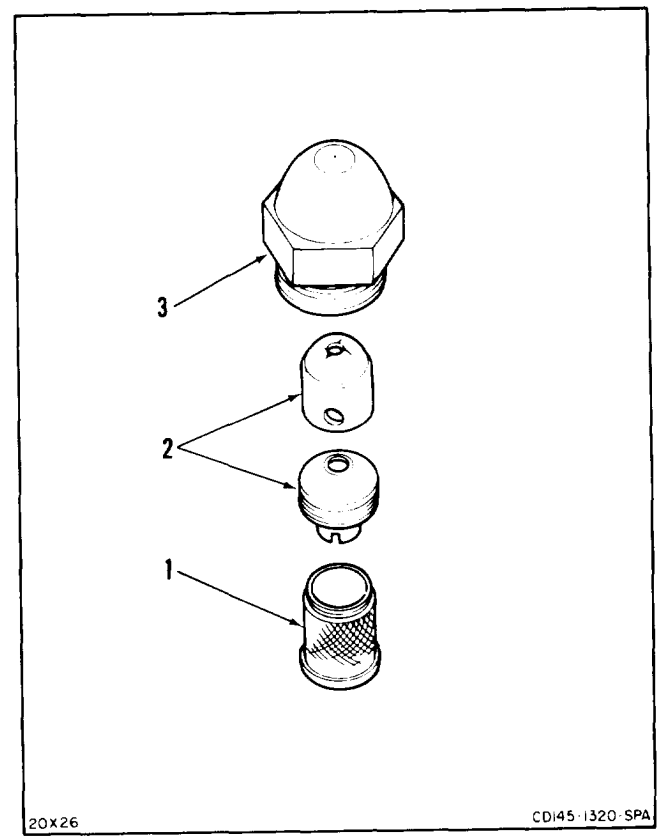
Dry cleaning solvent (E162) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

CLEAN TIP AND STRAINER ASSEMBLY

CAUTION

Tip and strainer assembly parts cannot be swapped with other tip and strainer assembly parts. Keep parts in same place during task.

1. **Remove strainer (1) and two-piece core (2) from body (3).** Separate core (2) from strainer (1).
2. **Dip core (2), fuel strainer (1), and body (3) in dry cleaning solvent (E162). Wear goggles to protect eyes. Wear gloves (E186).**



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CAUTION

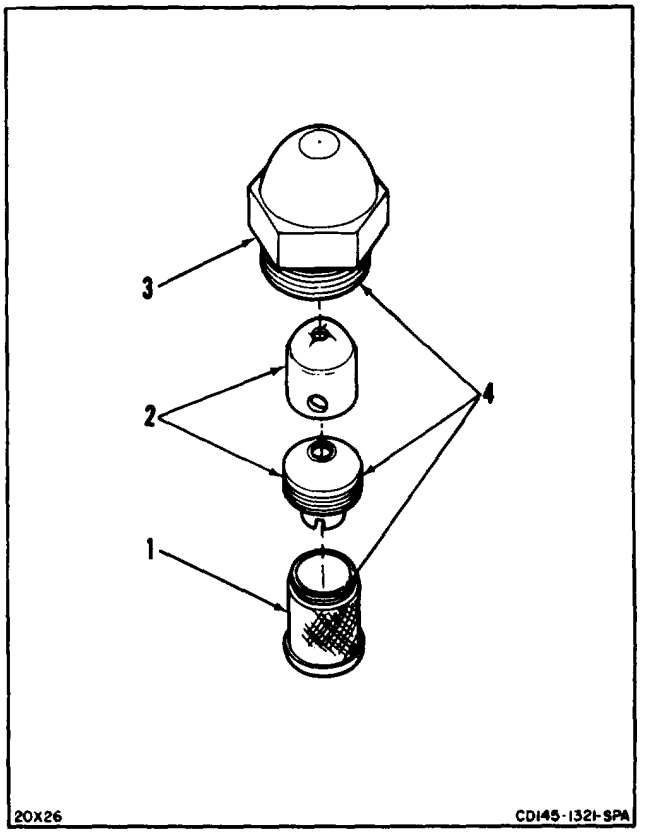
Do not scratch or deform edges of fuel channels in tip and strainer assembly parts. Damage to edges can disturb flow of fuel through parts.

3. **Check body (3), core (2), and fuel strainer (1) for dirt in thread (4).** Use soft bristle brush to clean thread.

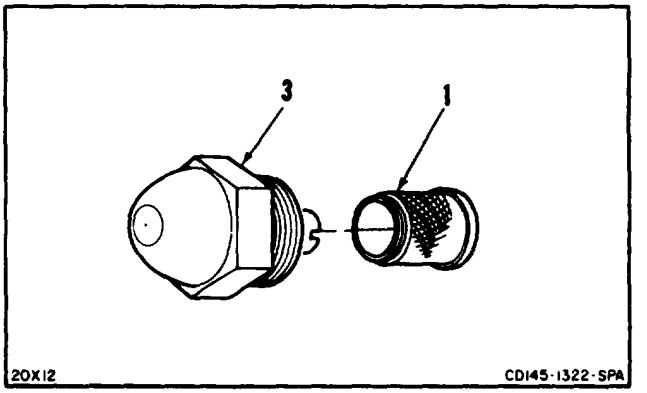
4. **Rinse body (3), core (2), and fuel strainer (1) in clean dry cleaning solvent (E162). Wear goggles to protect eyes. Wear gloves (E186).**

5. **Dry body (3), core (2), and fuel strainer (1)** with low pressure, filtered, compressed air.

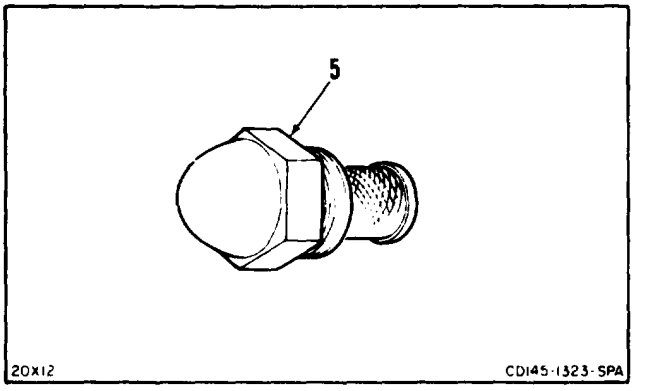
6. **Install two-piece core (2)** in body (3).



7. **Install fuel strainer (1)** in body (3) finger-tight.



8. Place clean tip and strainer assembly (5) in plastic bag (E78) until ready to install in heater.



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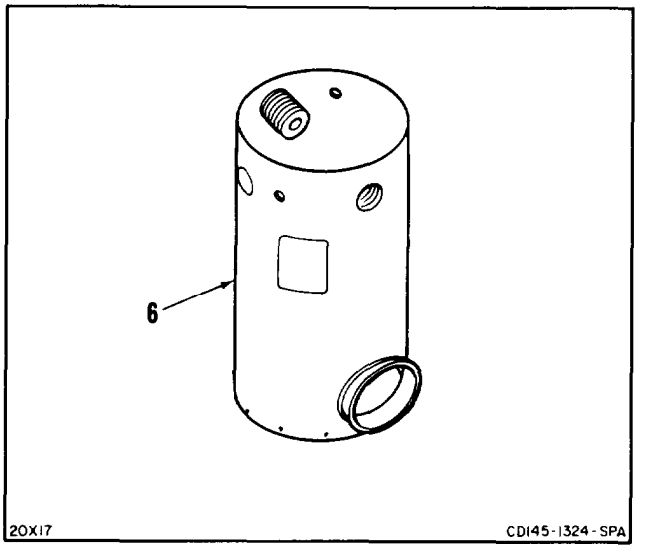
13-4 CLEAN HEATER PARTS (AVIM) (Continued)

CLEAN JACKET

9. **Remove dirt from jacket (6)** with clean cloth (E135) and dry cleaning solvent (E162). Wear goggles to protect eyes. Wear gloves (E186).
10. **Dry jacket (6)** thoroughly with filtered compressed air.



CLEAN COMBUSTION CHAMBER AND TUBE AND CONE ASSEMBLY

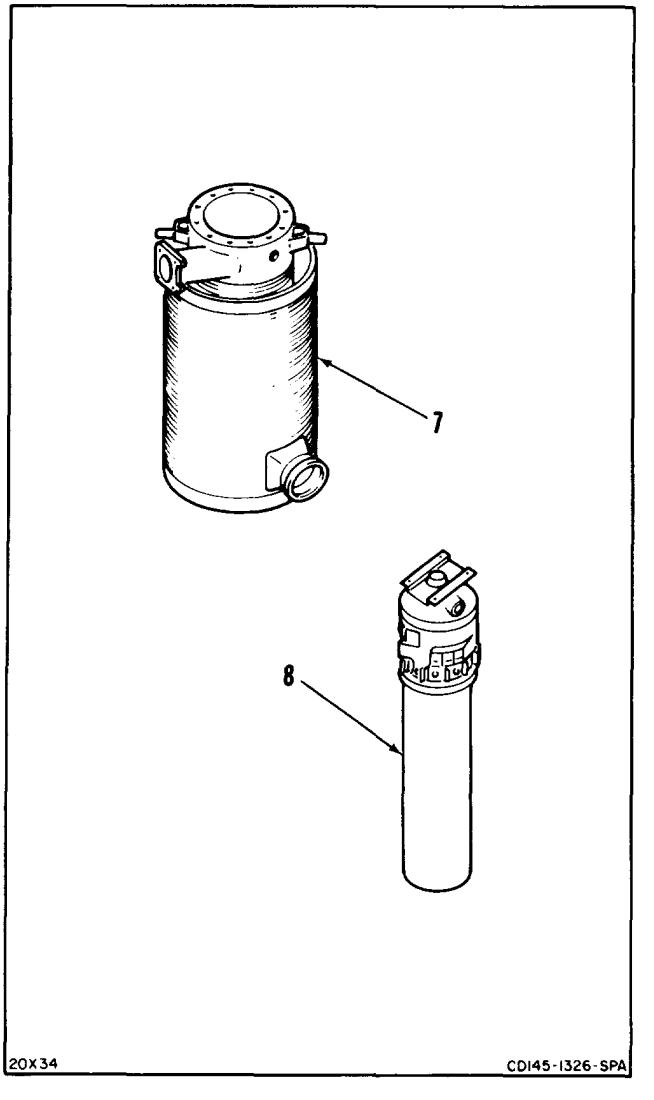
CAUTION

Be sure to use a stainless steel wire brush. Do not use an ordinary wire brush when cleaning parts. An ordinary wire brush can cause rusting.

NOTE

It is better to brush inside of combustion chamber and outside of tube and cone assembly after inspection. Brush marks can make visual inspection for cracks more difficult.

11. **Clean inside and outside of combustion chamber (7) and tube and cone assembly (8)** with stainless steel wire brush. Rinse away dirt with warm water.



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12. **If required, clean combustion chamber (7) and tube and cone assembly (8) in Oakite solution as follows:**

WARNING

Oakite (E249) can irritate skin and cause burns. Avoid contact with skin, eyes, and clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

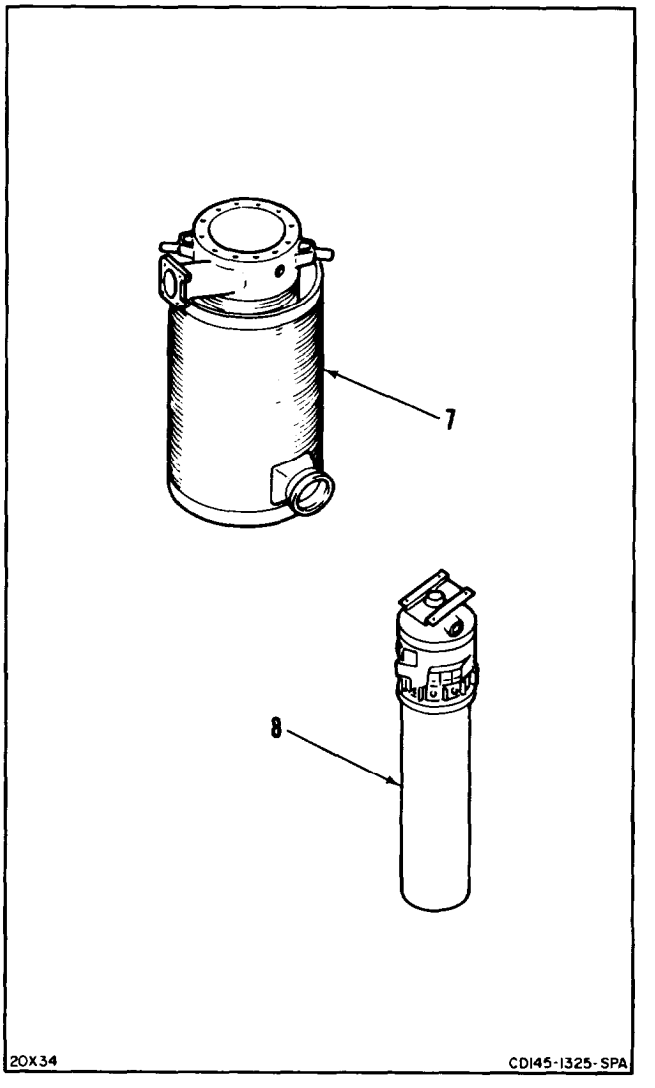
a. Mix 1 pound Oakite (E249) for each gallon water required to fill soak tank, Wear protective clothing and goggles. Wear gloves (E186).

b. Heat Oakite solution to 190°F to 210°F (88°C to 99°C). Maintain temperature.

c. Soak combustion chamber (7) and tube and cone assembly (8) in Oakite solution overnight.

d. Remove combustion chamber (7) and tube and cone assembly (8) from solution. Rinse parts thoroughly in warm water.

e. Dry combustion chamber (7) and tube and cone assembly (8) with filtered compressed air.



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-5 INSPECT HEATER PARTS (AVIM)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Technical Inspection Tool Kit, NSN 5180-00-323-5114
Ballpeen Hammer
Compressed Air Source
Water Tank

Materials:
Acetone (E20)
Methyl-Ethyl-Ketone (E244)
Gloves (E186)

Personnel Required:
Medium Helicopter Repairer
Inspector

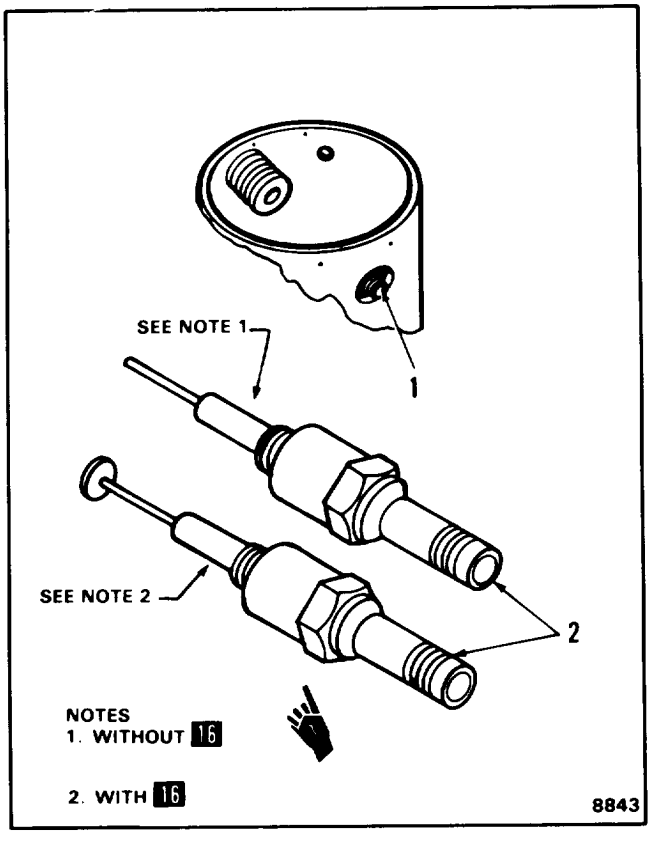
References:
TM 55-1520-240-23P

Equipment Condition:
Off Helicopter Task
Heater Parts Cleaned (Task 13-4)

WARNING

Acetone (E20) can form toxic vapors if exposed to flame. Methyl-ethyl-ketone (E244) is flammable and toxic. It can irritate skin and cause burns. Use methyl-ethyl-ketone and acetone in well-ventilated areas, away from heat and open flames. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. **Check inside of igniter plug well (1) for signs of arcing or carbon tracks.** If arcing or carbon tracks are found, clean igniter plug (2) with acetone (E20) or methyl-ethyl-ketone (E244). Wear gloves (E186).
2. **Check porcelain on igniter plug (2).** There shall be no cracks, breaks, or pitting.



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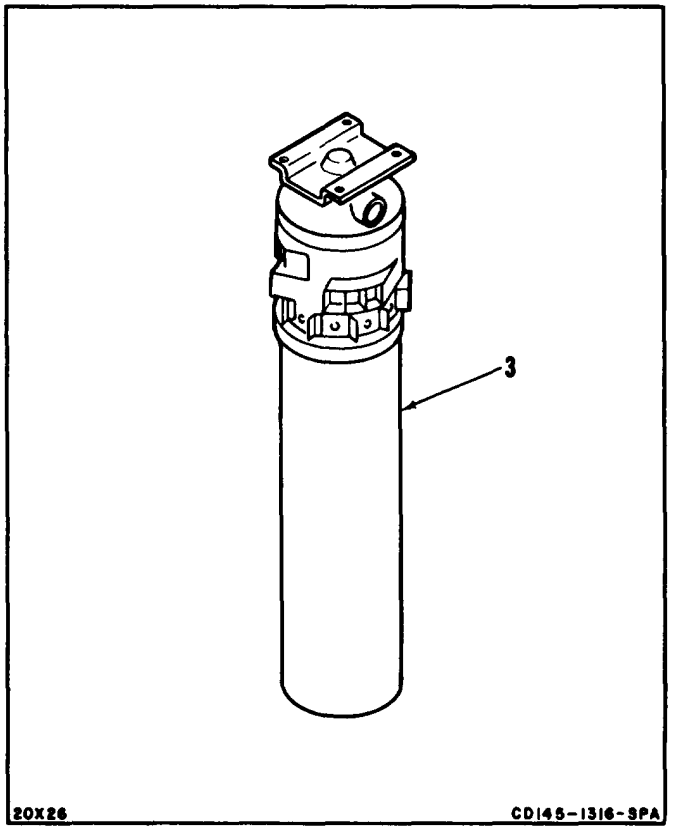
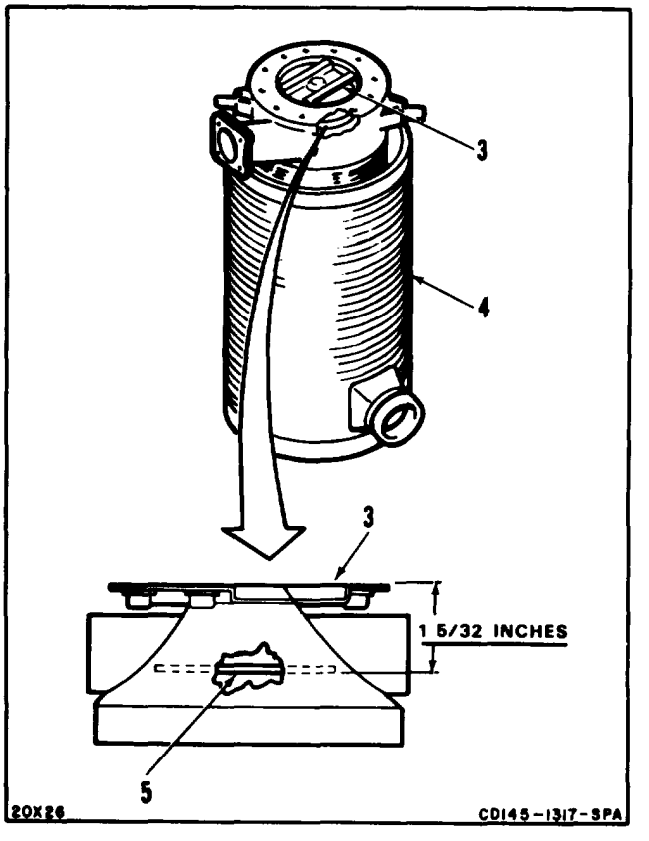
3. Check tube and cone assembly (3) for dull, dark gray areas. If dark area is found, tap area lightly with ballpeen hammer. Area shall not give soft response or dull sound.



4. **Position tube and cone assembly (3) inside combustion chamber (4).**

5. **Measure between ground electrode (5) and top of tube and cone assmbly (3) with 6-inch scale. Distance shall be 1-5/32 -inches.** If not, bend ground electrode for proper distance.



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13-5 INSPECT HEATER PARTS (AVIM) (Continued)

6. Remove tube and cone assembly (3) from combustion chamber (4).

NOTE

Slight scaling and discoloration on combustion chamber are normal. Do not replace combustion chamber unless scaling or discoloration covers large area or causes distortion.

7. **Tap lightly on discolored areas on combustion chamber (4) with ballpeen hammer.** Area shall not give soft response or dull sound.

8. **Check tube and cone assembly (3) for distortion or warping along full length of passage (6).** Diameter shall not be reduced by more than 10 percent.

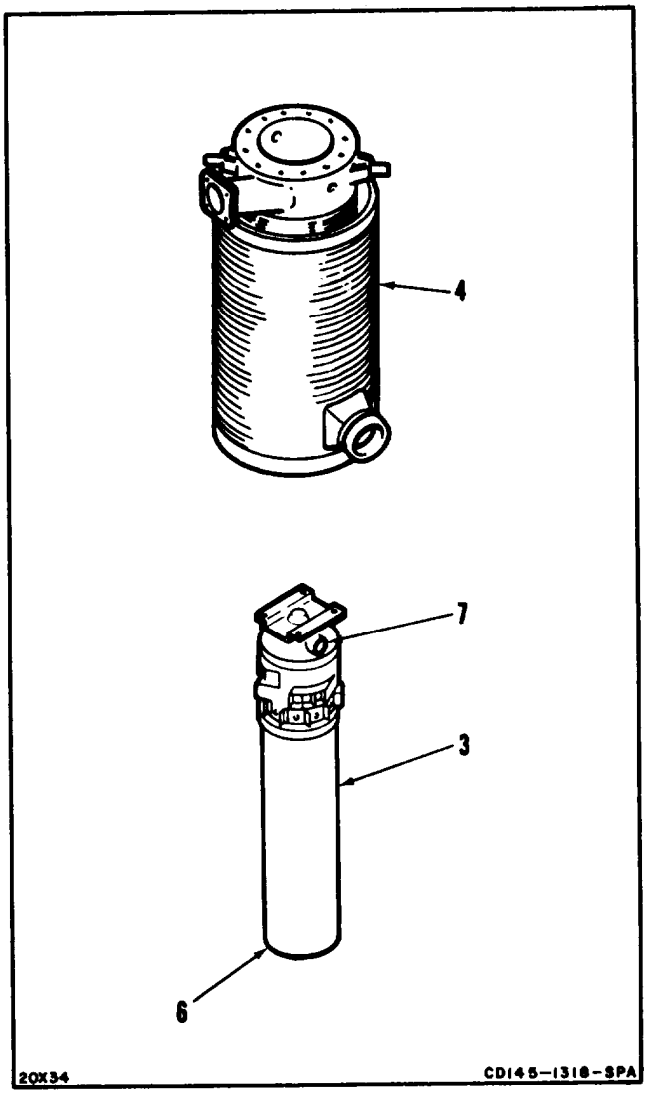
9. **Inspect tube and cone assembly (3) for cracks and pinholes as follows:**

   a. Close all tube and cone assembly openings (7).

   b. Pressurize tube and cone assembly (3) with air up to 6 psi.

   c. Submerge tube and cone assembly (3) in water.

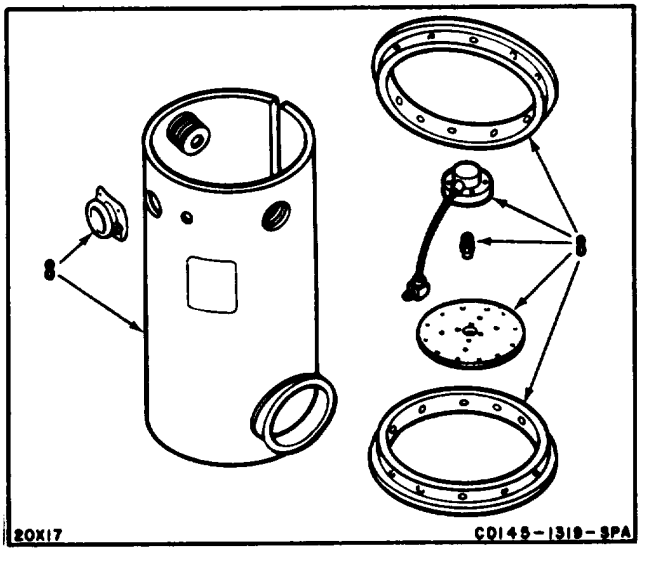
   d. There shall be no air bubbles.



10. **Inspect all other heater parts (8) for nicks, tears, or dents that can cause leaks or affect operation of heater.**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

INITIAL SETUP

Applicable Configurations:

Without 16

Tools:

Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Airframe Repairer's Tool Kit, NSN 5180-00-323-4876
Torque Wrench, 30 to 150 Inch-Pounds
Torque Wrench, 100 to 750 Inch-Pounds
Feeler Gage (T63)
Spark Plug Thimble Gage (T62)
Source of Compressed Air
Deep Well Socket, 1 Inch

Materials:

Lockwire (E227)
Permatex (E273)

Parts:

Gaskets
Rivets

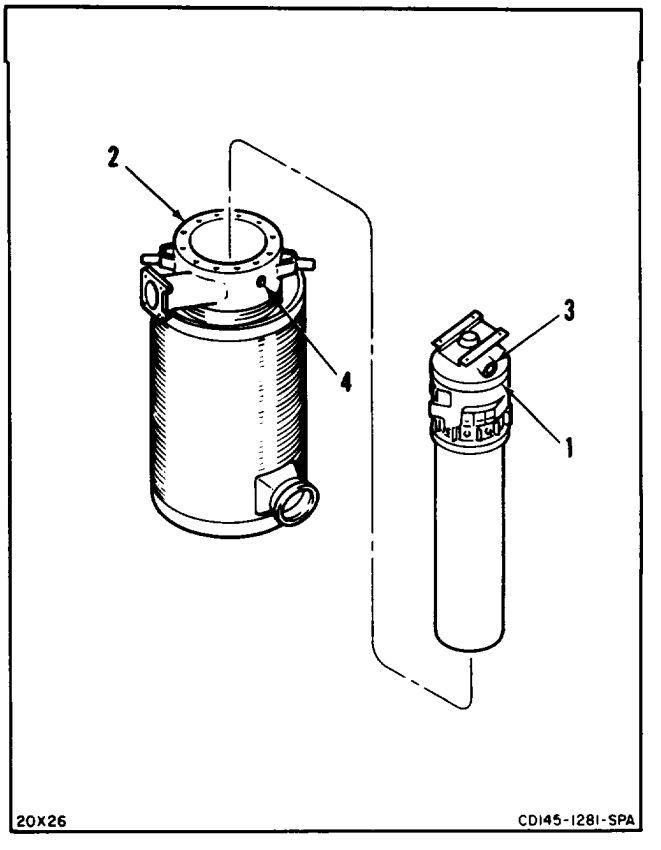
Personnel Required:

Airframe Repairer
Medium Helicopter Repairer (2)
Inspector

References:

TM 55-1520-240-23P

1. **Install tube and cone assembly (1)** into combustion chamber (2). Make sure thimbles (3) align with tubes (4).



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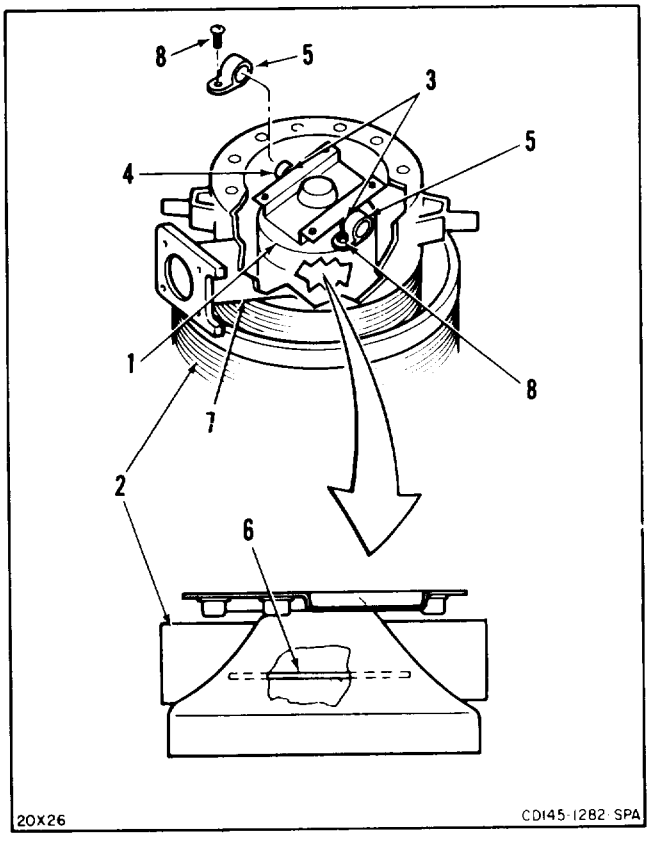
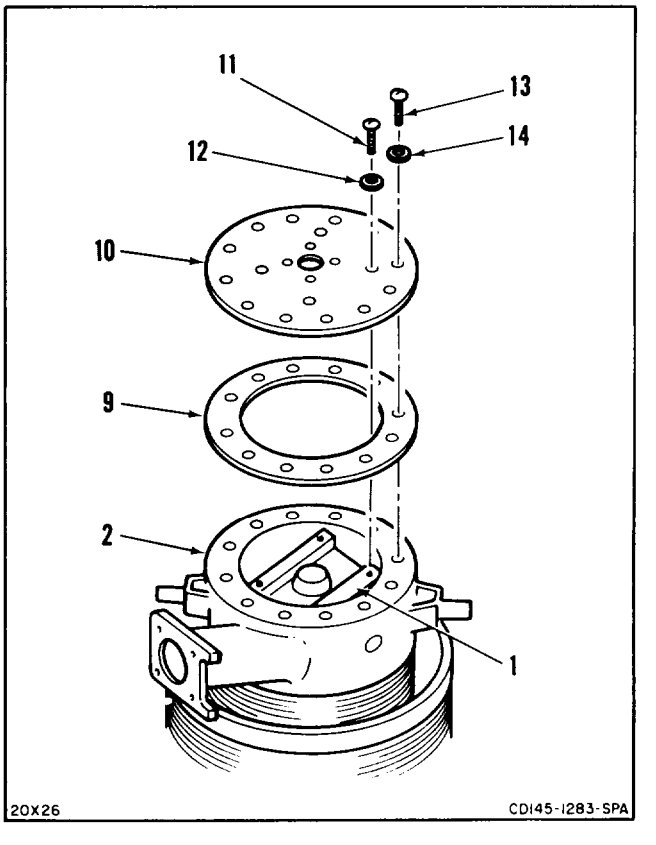
13-6 ASSEMBLE HEATER (AVIM) (Continued)

2. **Install clamps (5)** over thimbles (3) and tubes (4).
3. **Check that ground electrode (6) is on same side of combustion chamber (2) as combustion air inlet connation (7).** If not, turn tube and cone assembly (1) around to adjust.
4. **Install two straws (8)** in clamps (5).



5. **Install** gasket (9) and **combustion plate (10)** on combustion chamber (2).
6. Install four screws (11) and washers (12).
7. Install 12 screws (13) and washers (14).



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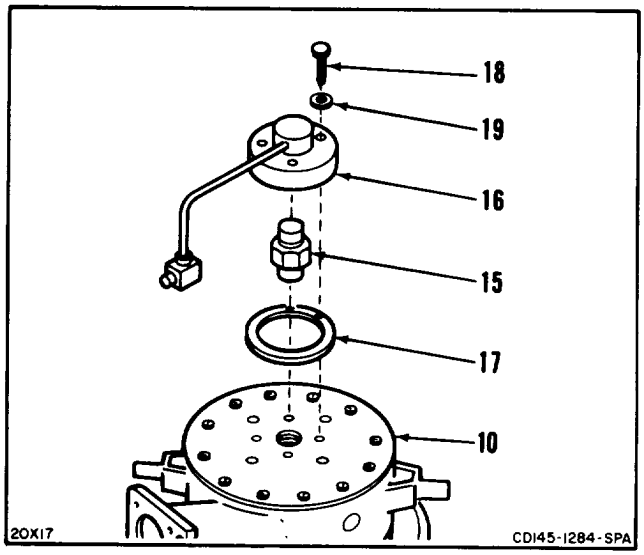
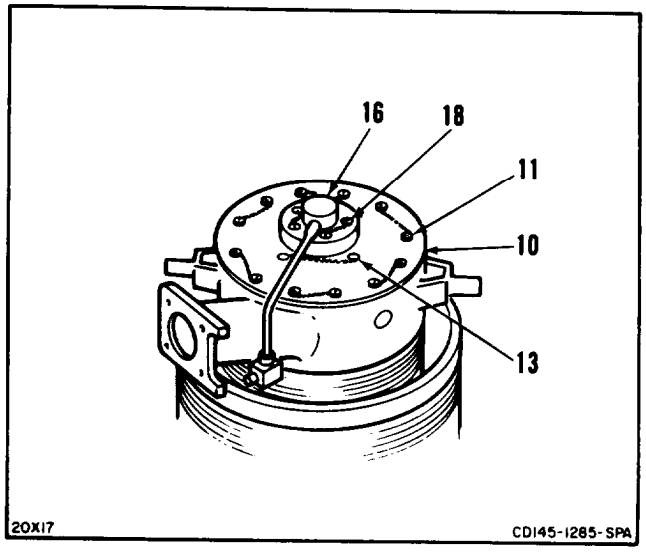
13-6 ASSEMBLE HEATER (AVIM) (Continued) 13-6

8. **Install tip and strainer assembly (15)** in holder and feed assembly (16).
9. **Position holder and feed assembly (16)** and gasket (17) on combustion plate (10). **Install four screws (18)** and washers (19).



10. Lockwire four screws (18) on holder and feed assembly (16). Use lockwire (E227).
11. Lockwire 16 screws (11 and 13) on combustion plate (10). Use lockwire (E227).



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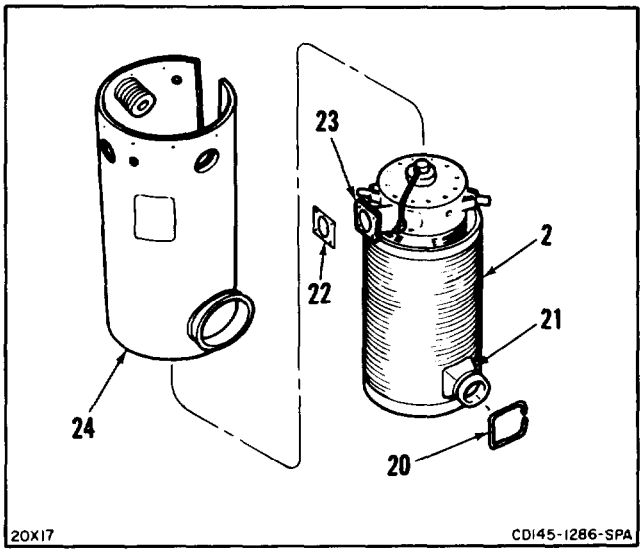
12. **Install rope gasket (20)** on flue drain (21).



WARNING

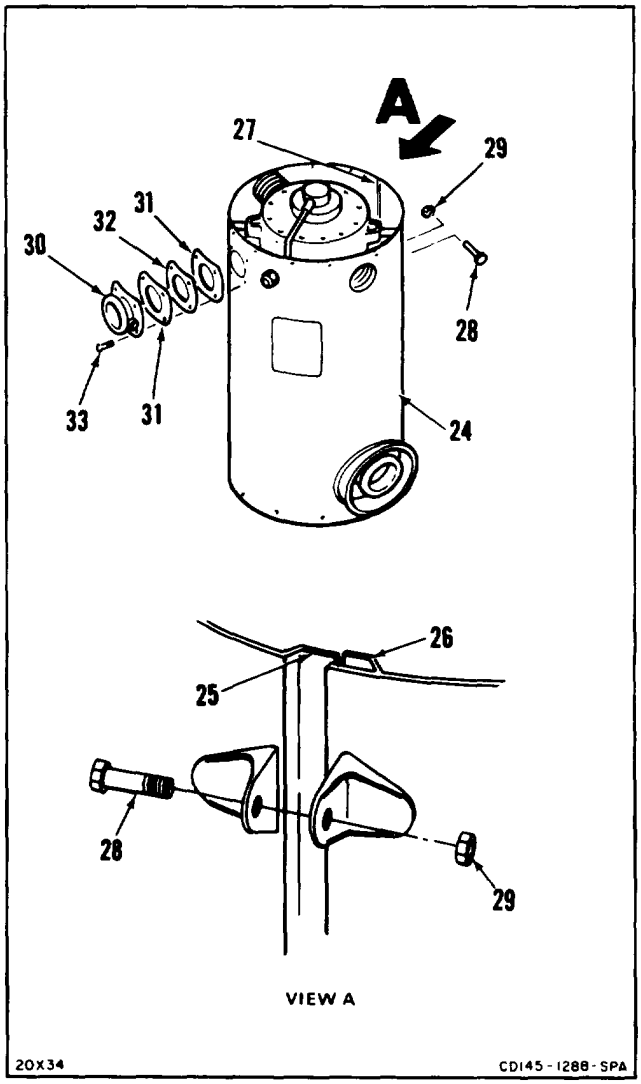
Permatex (E273) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

13. Apply coat of Permatex (E273) to both sides of gasket (22). Wear gloves (E186).
14. **Position gasket (22)** on combustion air connection (23).
15. Spread jacket (24) just enough to slide jacket over flue drain (21) and air connections (23).
16. **Slide jacket (24) over combustion chamber (2).**

GO TO NEXT PAGE

13-6 ASSEMBLE HEATER (AVIM) (Continued)

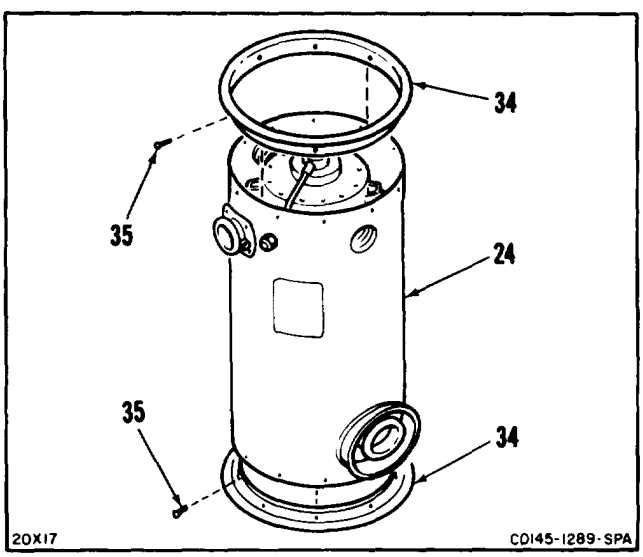
17. **Insert jacket tongue (25)** in self-locking groove (26) of jacket seam (27).
18. **Install three screws (28)** and nuts (29) in jacket seam (27) to secure jacket (24). Do not tighten screws at this time.
19. **Install flange (30), two gaskets (31), and combustion plate (32) on jacket (24).** Install four screws (33). Lockwire screws.
20. **Tighten screws (28)** and nuts (29) in jacket seam (27).



CAUTION

If new flange is to be installed, cover all openings in combustion chamber and jacket before drilling to prevent contamination.

21. Remove tags and **install upper and lower flanges (34)** on jacket (24). If flange is new, make sure face of flange is square with jacket within 0.03-inch. Then drill holes through flange to match holes in jacket.
22. Align index marks on flange (34) with marks on jacket (24).
23. **Install 11 rivets (35)** in each flange (34).



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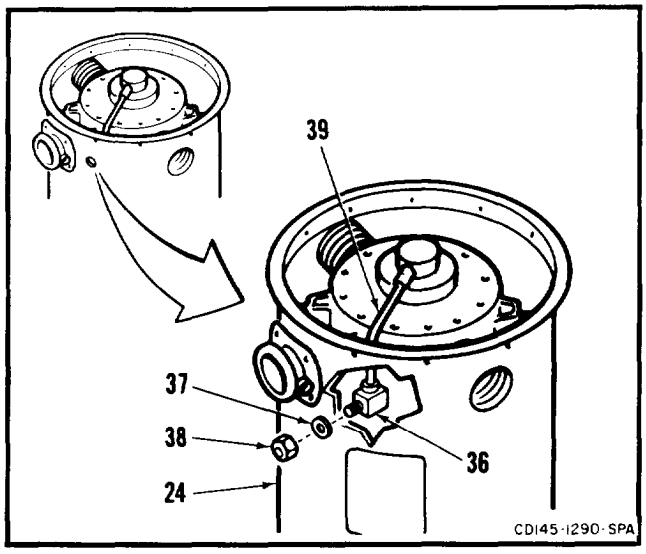
CAUTION

Damage to holder and feed assembly can result if fuel feed tube turns when washer and nut are installed.

24. Hold square fitting (36) under jacket (24) firmly. **Install washer (37)** and nut (38). Do not allow tube (39) to turn.

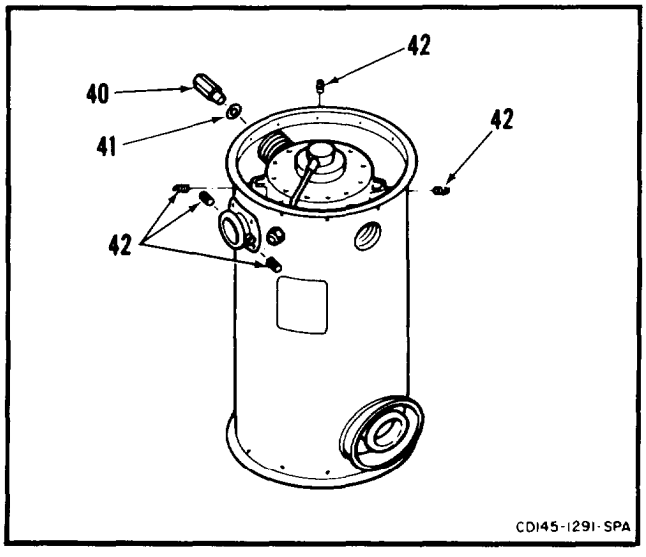


25. **Install seal plug (40)** and gasket (41).

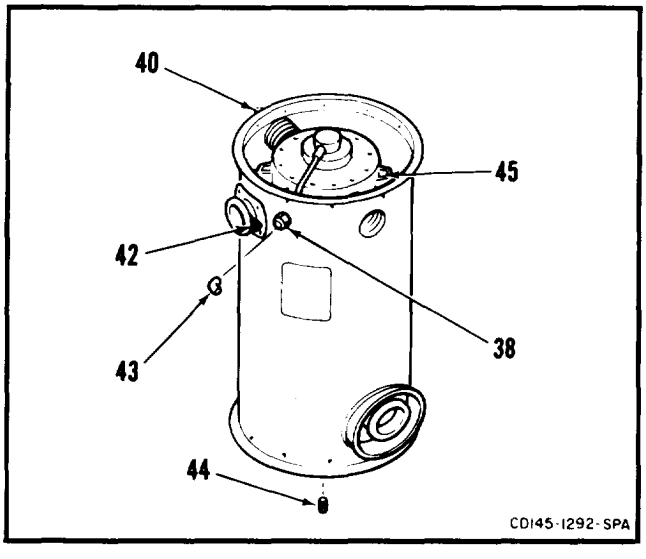
WARNING

Fire can result if plugs are not torqued and lockwired.

26. **Torque seal plug (40) to 335 inch-pounds.**
27. **Install five pipe plugs (42).**
28. **Torque each pipe plug (42) to 150 inch-pounds.**



29. Lockwire five pipe plugs (42) and seal plug (40). Use lockwire (E227).
30. **Install elbow (43)** in nut (38).
31. **Install pipe plug (44)** in bottom of heater (45).



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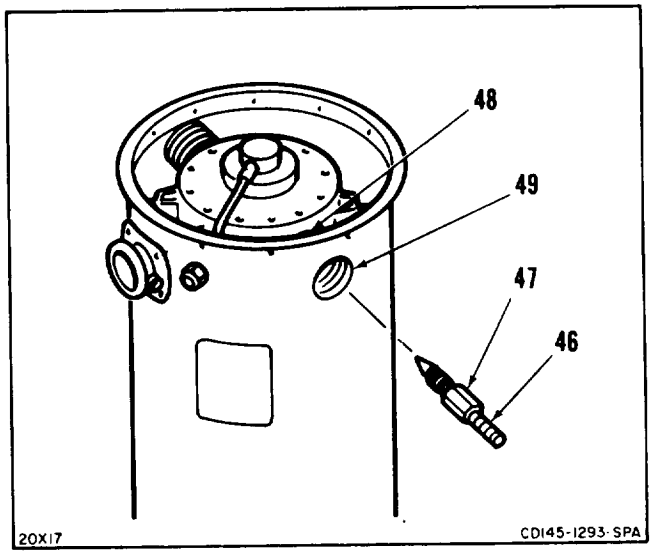
13-6 ASSEMBLE HEATER (AVIM) (Continued)

32. **Install feeler gage (T63) (46) in spark plug thimble gage (T62) (47).**

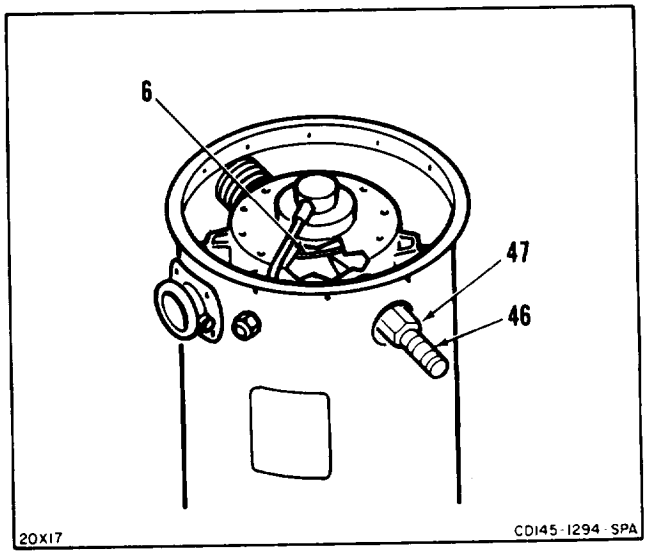
NOTE

Make sure point of feeler gage is inside heater when thimble gage is installed.

33. **Install thimble gage (T62) (47)** in spark plug thimble (48) of spark plug well (49).



34. **Push feeler gage (T63) (46) into thimble gage (T62) (47) until gage contacts ground electrode (6).**



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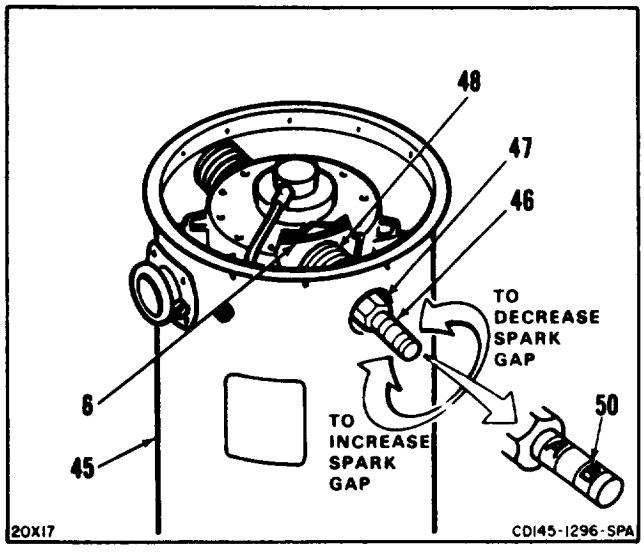
13-6 ASSEMBLE HEATER (AVIM) (Continued) 13-6

35. Check mark on l nd of feeler gage {T63) (46). Gage shall read within limits of l as B (50). If not, reset spark gap as follows:
    a. Pull feeler gage (T63) (46) out until gage is free of ground electrode (6). Make sure tapered end of feeler gage (T63) is bottomed against thimble gage (47).
    b. Pivot feeler gage (T63) (46) and bend spark plug thimble (T62) (47) to obtain proper spark gap. Turn feeler gage (T63) to increase or decrease spark gap.
    c. When proper spark gap is obtained, push feeler gage (T63) (46) into thimble gage (T62) (47) until feeler gage contacts ground electrode (6).



36. Repeat step 35.
37. Romove feeler gage (T63) (46) and thimble gage (T62) (47) from heater (45).

CAUTION

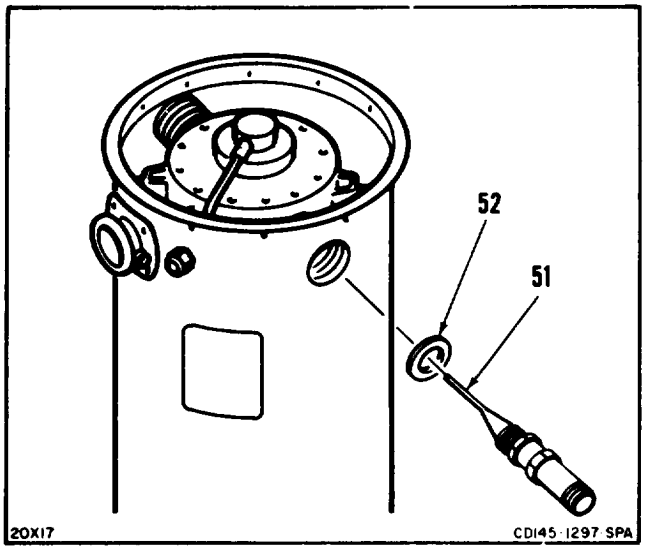
Make sure thimble gage reading is within limits of arae B before installing igniter plug. If gage doss not mad in area B, igniter plug will not be installed in correct position.

38. Install igniter plug (51) and gasket (52).
39. Torque igniter plug (51) to 335 inch-pounds.

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

13-6.1 ASSEMBLE HEATER (AVIM) 13-6.1

INITIAL SETUP

Applicable Configurations:
With ❑

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Airframe Repairer's Tool Kit, NSN 5180-00-323-4876
Torque Wrench, 30 to 150 Inch-Pounds
Torque Wrench, 100 to 750 Inch-Pounds
Source of Compressed Air
Deep Well Socket, 1 Inch
Ignition Assembly 11 C30-1 or -1M
Wire Feeler Gage, 0.015 to 0.018 Inch

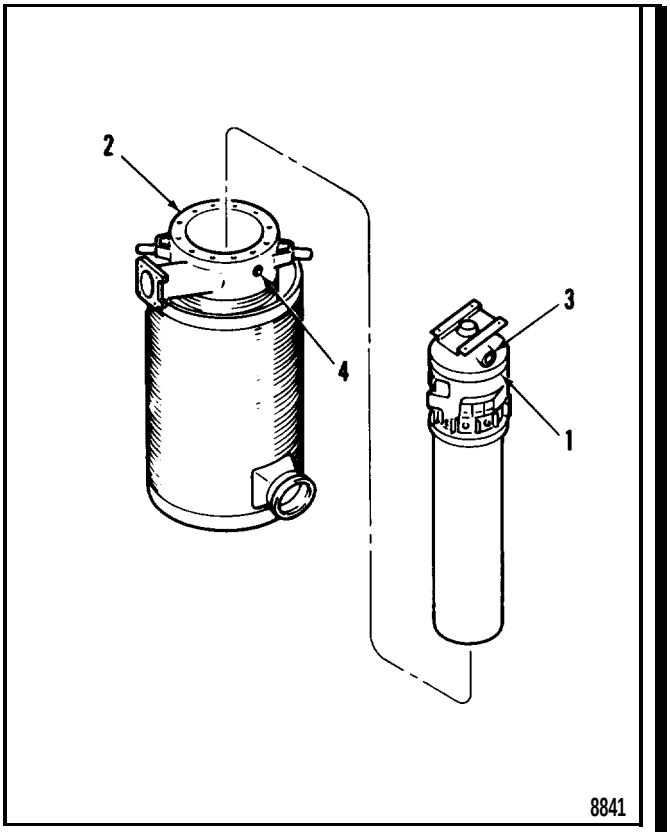
Materials:
Lockwire (E227)
Permatex (E273)

Parts:
Gaskets
Rivets

Personnel Required:
Airframe Repairer
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P

1. **Install tube and cone assembly (1)** into combustion chamber (2). Make sure thimbles (3) align with tubes (4).



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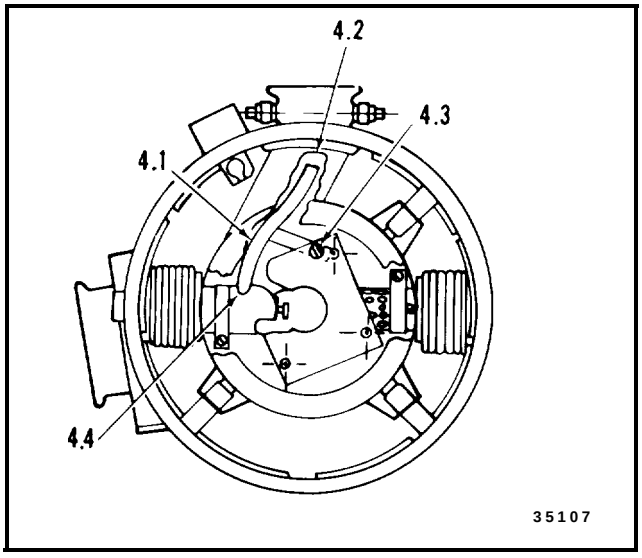
1.1. **Install air pickup tube (4.1)** in combustion air duct (4.2).

1.2. **Tighten screw (4.3). Check that air pickup tube is inserted into spark plug shroud (4.4) at least 0.06 inch.**



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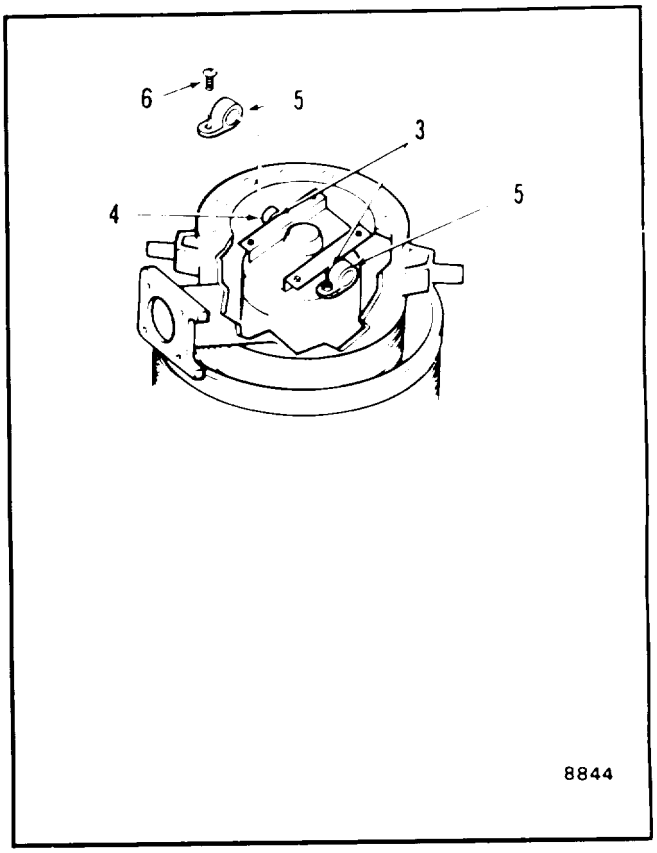
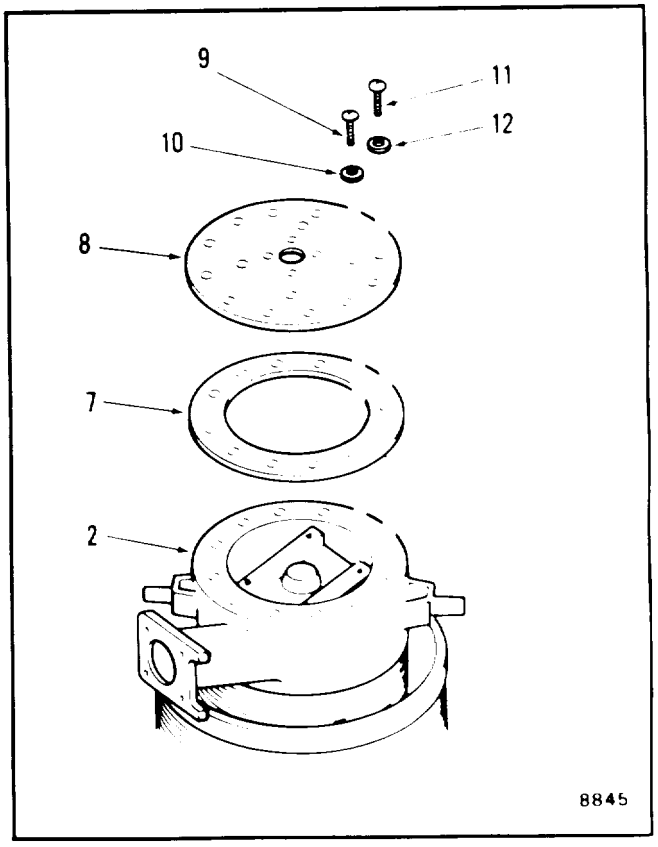
13-6.1 ASSEMBLE HEATER (AVIM) (Continued)

2. Install clamps (5) over thimbles (3) and tubes (4).
3. Install two screws (6) in clamps (5).



4. **Install** gasket (7) and **combustion plate (8)** on combustion chamber (2).
5. Install four screws (9) and washers (10).
6. Install 12 screws (11) and washers (12).



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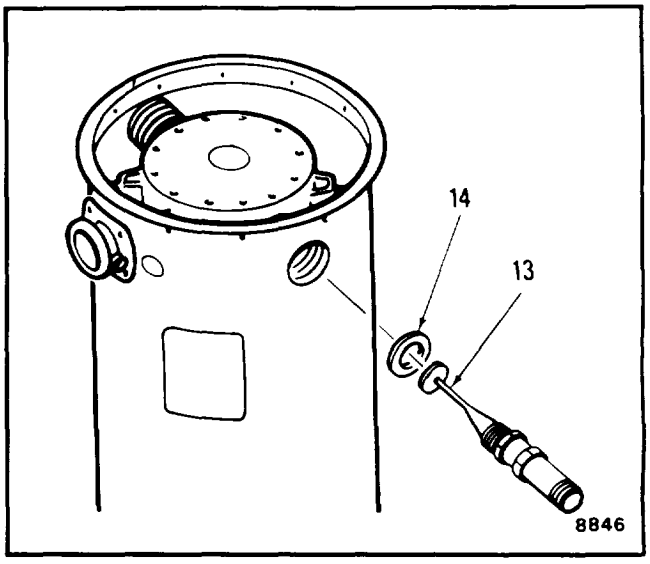
7. **Install igniter plug (13) and washer (14).**
8. **Torque igniter plug (13) to 335 inch-pounds.**

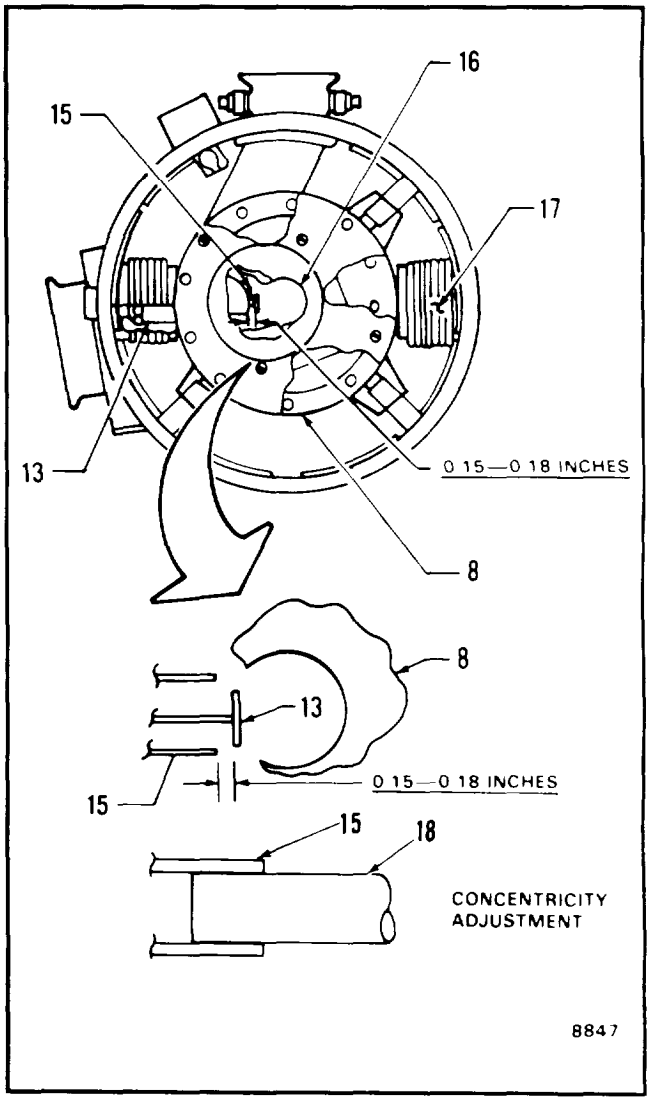


9. Check the spark gap using a wire feeler gage thru the nozzle opening (16) in the combustion plate. The gap is 0.15 to 0.18 inch.

CAUTION

Use care when adjusting concentricity with screwdriver to prevent damage to spark plug ceramic.

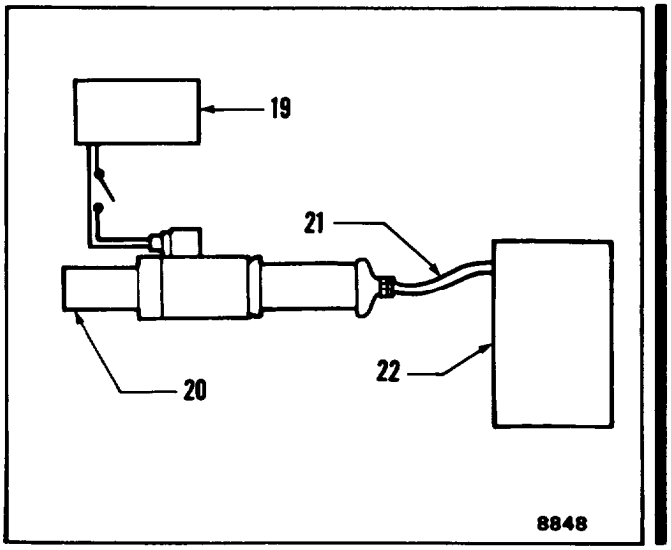
10. **Check the concentricity of the igniter plug (13) and the shroud (15) by viewing the end of the igniter plug thru the opposite igniter plug port (17).** If concentricity is satisfactory, go to step 11. **If adjustment of concentricity is required, remove igniter plug, insert a one-half inch rod (18) through opposite igniter plug port (17) into end of shroud (15) and adjust shroud by bending.**



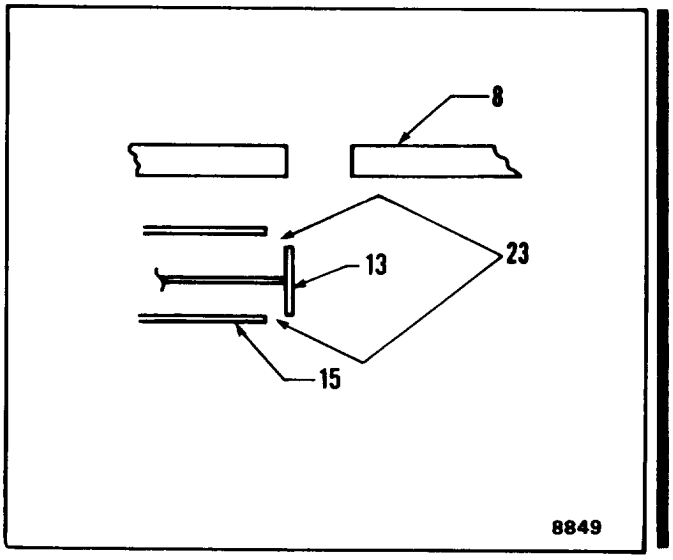
WARNING

Dangerous voltages at igniter plug arcing from the igniter plug to the shroud can cause serious bums.

11. **Connect 28 VDC power supply (19)** to ignition unit (20).
12. **Connect shielded lead (21)** to igniter plug in heater (22).
13. **Energize 28 VDC** power supply.



14. **Observe the igniter plug arcing** thru the fuel opening in the combustion plate (8).
15. **Arcing (23) should be between** the button end of the igniter plug (13) and shroud end (15).
16. **There should be no arcing (23) internally in the shroud (15).**
17. If internal arcing occurs, shut down and return to step 10.
18. Energize the system per step 13. and observe arcing.
19. **Shut down system** and disconnect power source (19).



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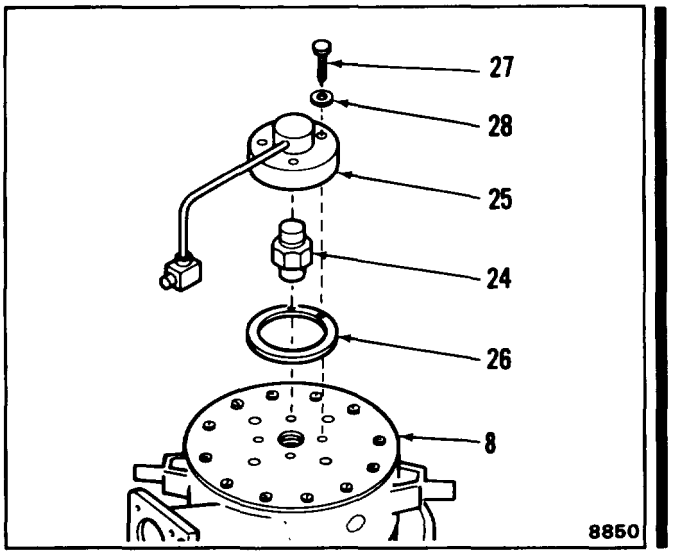
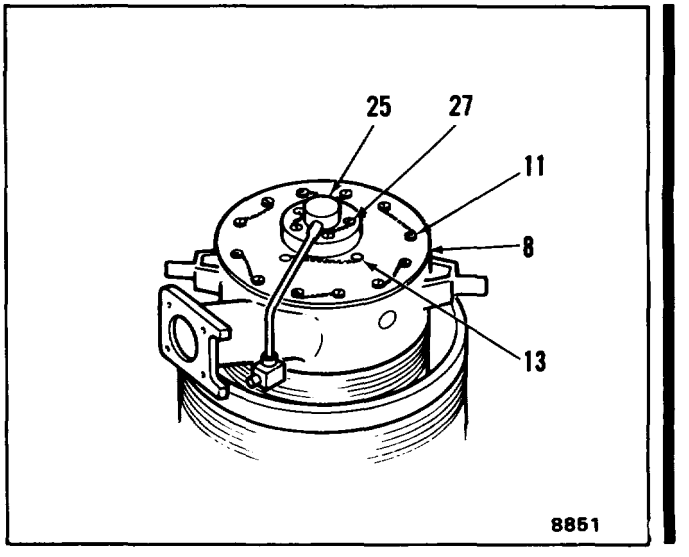
20. **Install tip and strainer assembly (24)** in holder and feed assembly (25).
21. **Position holder and feed assembly (25)** and gasket (26) on combustion plate (8). **Install four screws (27) and washers (28).**



22. Lockwire four screws (27) on holder and feed assembly (25). Use lockwire (E227).
23. Lockwire 16 screws (11 and 13) on combustion plate (8). Use lockwire (E227).



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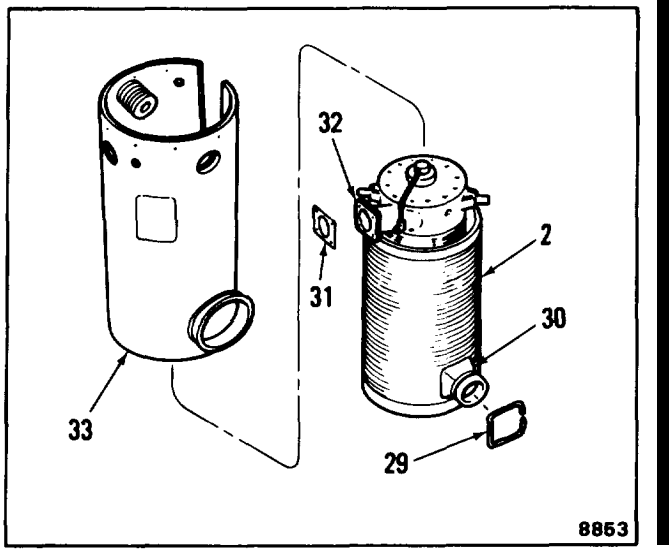
24. **Install rope gasket (29)** on flue drain (30).

WARNING

Permatex (E273) is flammable and toxic. It can irritate skin and cause bums. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

25. Apply coat of Permatex (E273) to both sides of gasket (31). Wear gloves (E186).
26. **Position gasket (31)** on combustion air connection (32).
27. Spread jacket (33) just enough to slide jacket over flue drain (30) and air connections (32).
28. **Slide jacket (33) over combustion chamber (2).**



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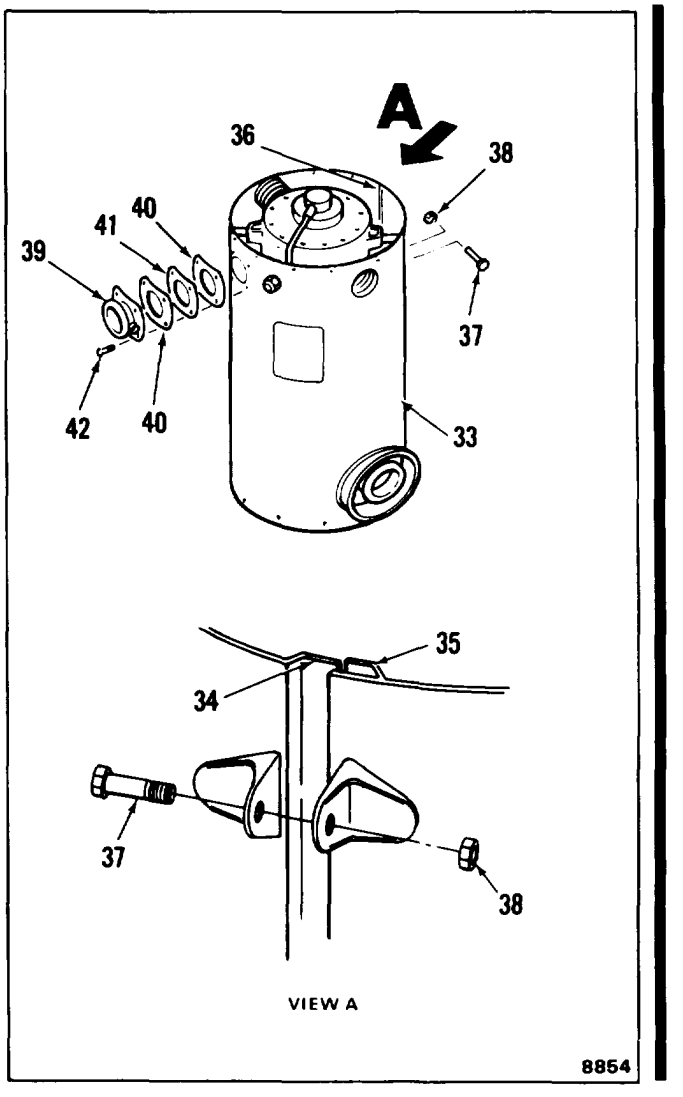
13-6.1 ASSEMBLE HEATER (AVIM) (Continued) 13-6.1

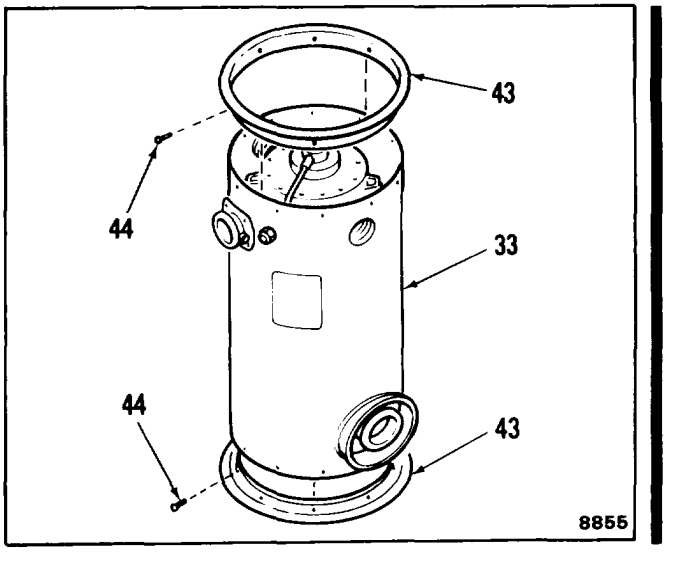
29. **Insert jacket tongue (34)** in self-locking groove (35) of jacket seam (36).
30. **Install three screws (37)** and nuts (38) in jacket seam (36) to secure jacket (33). Do not tighten screws at this time.
31. **Install flange (39), two gaskets (40), and combustion plate (41) on jacket (33).** Install four screws (42). Lockwire screws.
32. **Tighten screws (37)** and nuts (38) in jacket seam (36).



CAUTION

If new flange is to be installed, cover all openings in combustion chamber and jacket before drilling to prevent contamination.

33. Remove tags and **install upper and lower flanges (43)** on jacket (33). If flange is new, make sure face of flange is square with jacket within 0.03-inch. Then drill holes through flange to match holes in jacket.
34. Align index marks on flange (43) with marks on jacket (33).
35. **Install 11 rivets (44)** in each flange (43).



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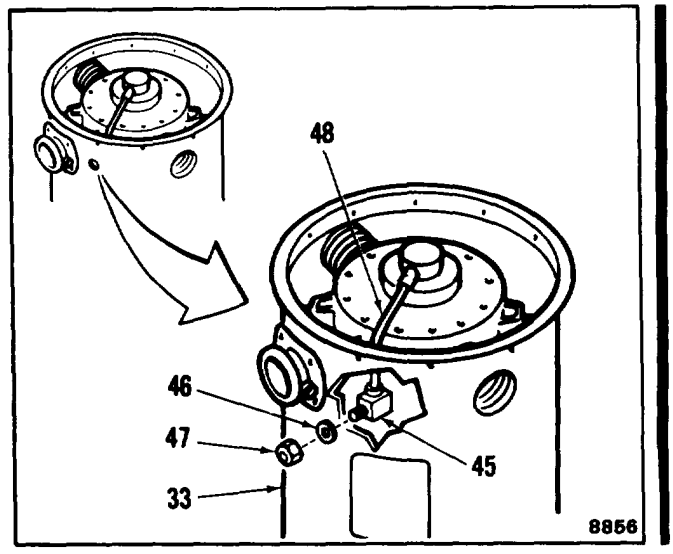
CAUTION

Damage to holder and feed assembly can result if fuel feed tube turns when washer and nut are installed.

36. Hold square fitting (45) under jacket (33) firmly. **Install washer (46)** and nut (47). Do not allow tube (48) to turn.

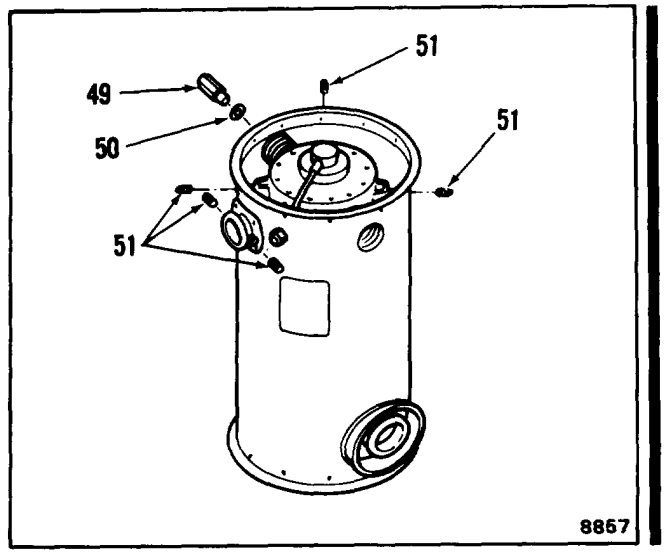


37. **Install seal plug (49)** and gasket (50).

WARNING

Fire can result if plugs are not torqued and lockwired.

38. **Torque seal plug (49) to 335 inch-pounds.**
39. **Install five pipe plugs (51).**
40. **Torque each pipe plug (51) to 150 inch-pounds.**

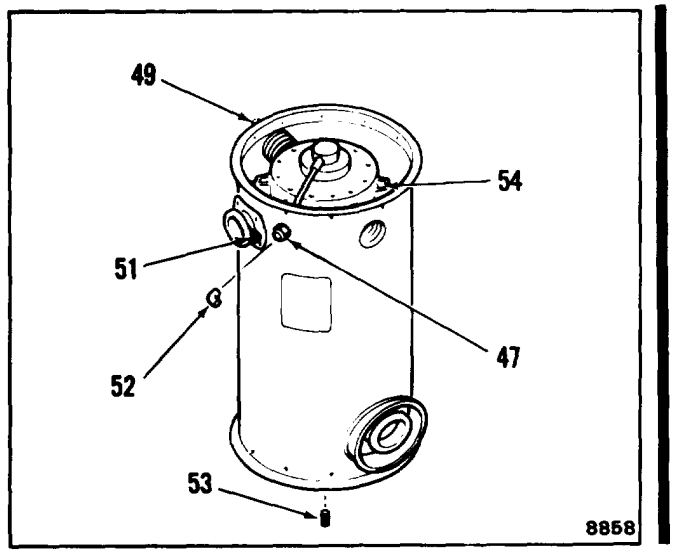


41. Lockwire five pipe plugs (51) and seal plug (49). Use lockwire (E227).
42. **Install protective plug (52)** in nut (47).
43. **Install pipe plug (53)** in bottom of heater (54).

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

13-7 TEST HEATER FOR AIR LEAKS (AVIM)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Mercury Manometer 30PGTM 30-inch
Source of Low Pressure Compressed Air

Materials:
None

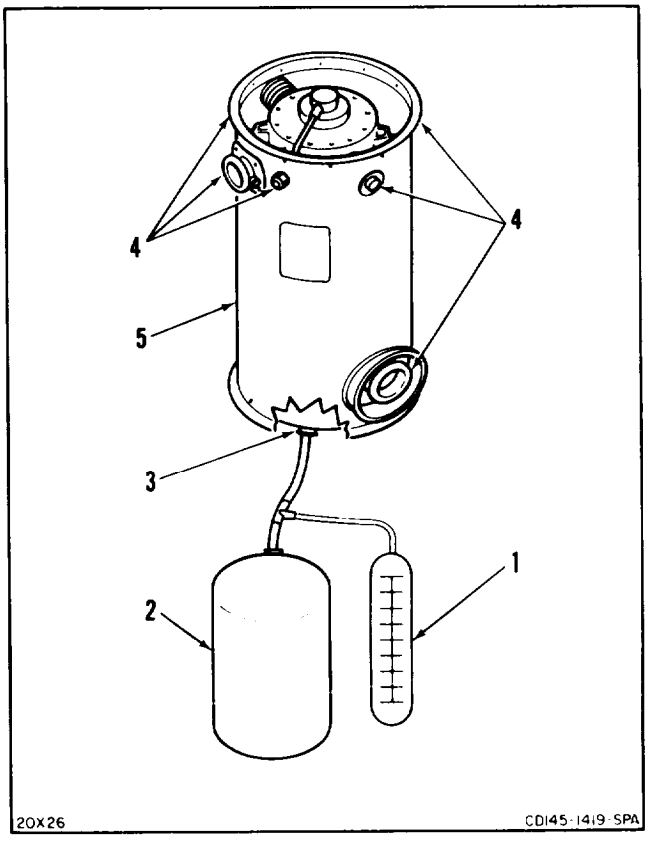
Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Off Helicopter Task

1. **Connect mercury manometer (1)** in parallel to compressed air source (2).
2. **Connect air source (2)** to heater drain fitting (3).
3. Plug all other openings {4) in heater (5).
4. **Adjust air source (2)** to pressure of 12 inches of mercury.
5. **Shut off air source (2).**
6. **Read mercury manometer (1).** Pressure shall not drop 1.0 inch within 90 seconds.
7. Release pressure and disconnect air source (2) from heater drain fitting (3).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

INITIAL SETUP

Applicable Configurations:
All

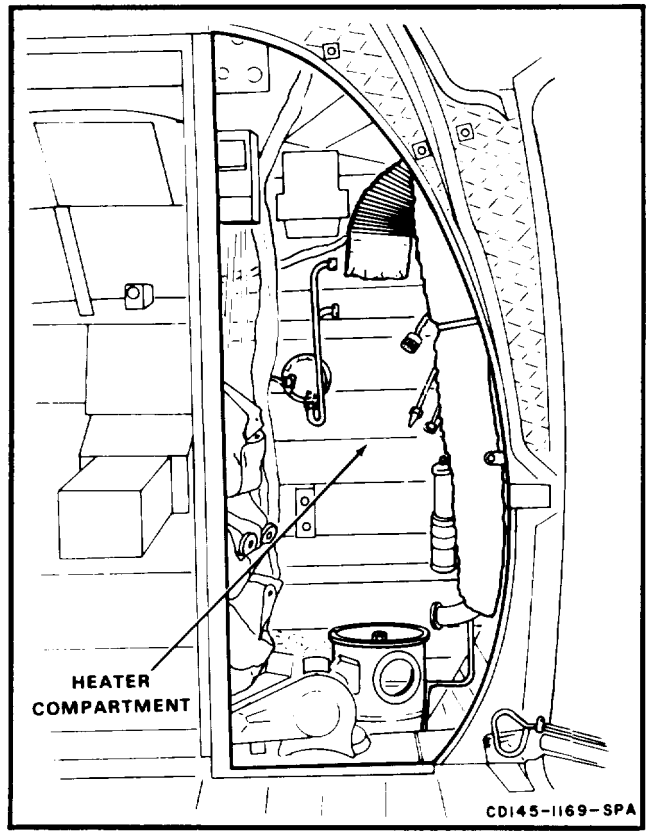
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 0 to 30 Inch-Pounds
Torque Wrench, 30 to 150 Inch-Pounds

Materials:
Acetone (E20)
Lockwire (E231)
Gloves (E184.1)

Parts:
Heater Duct Seal

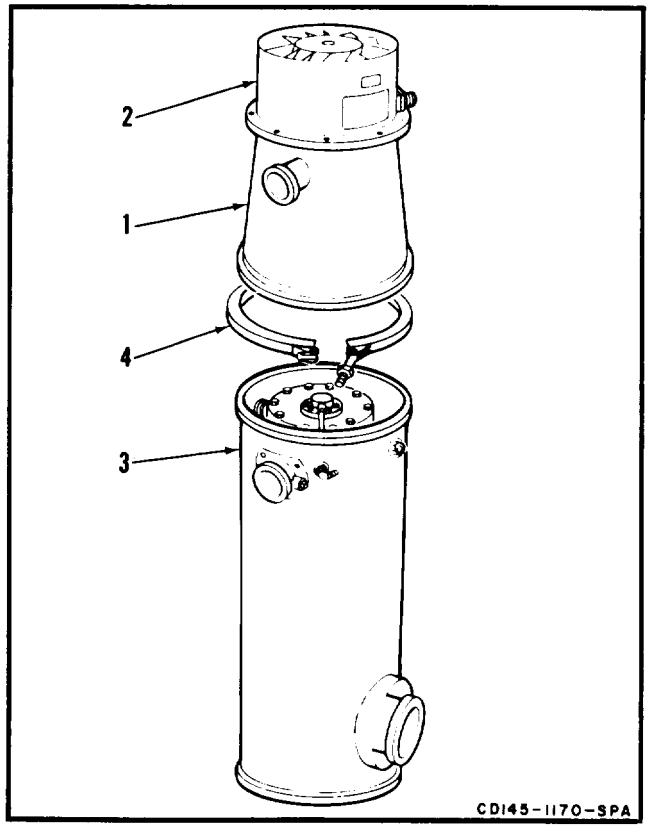
Personnel Required:
Medium Helicopter Repairer (2)
Inspector

References:
TM 55-1520-240-23P



1. **Position adapter (1) and fan (2)** on heater (3).
2. **Install clamp (4)** on adapter (1) and heater (3).

2.1. **Torque clamp (4) to** 60 inch-pounds.



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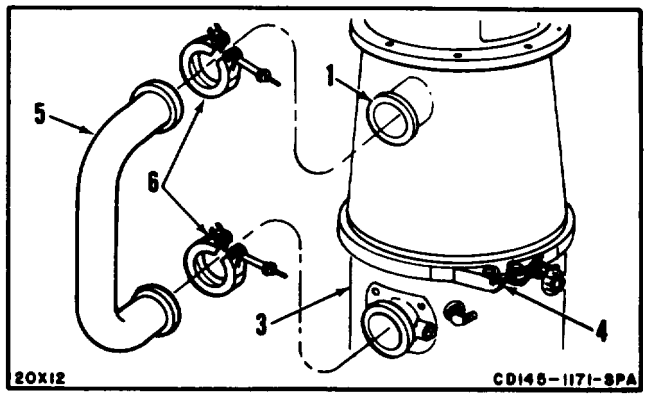
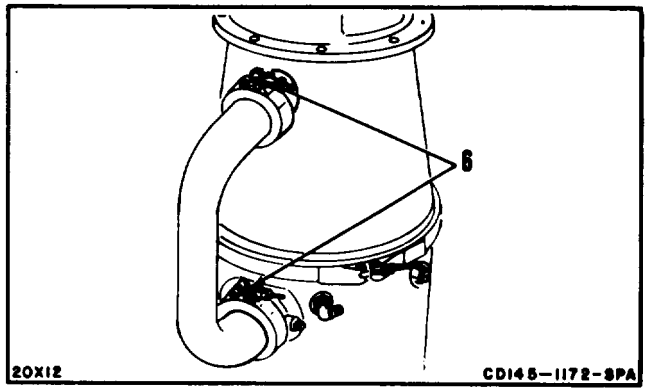
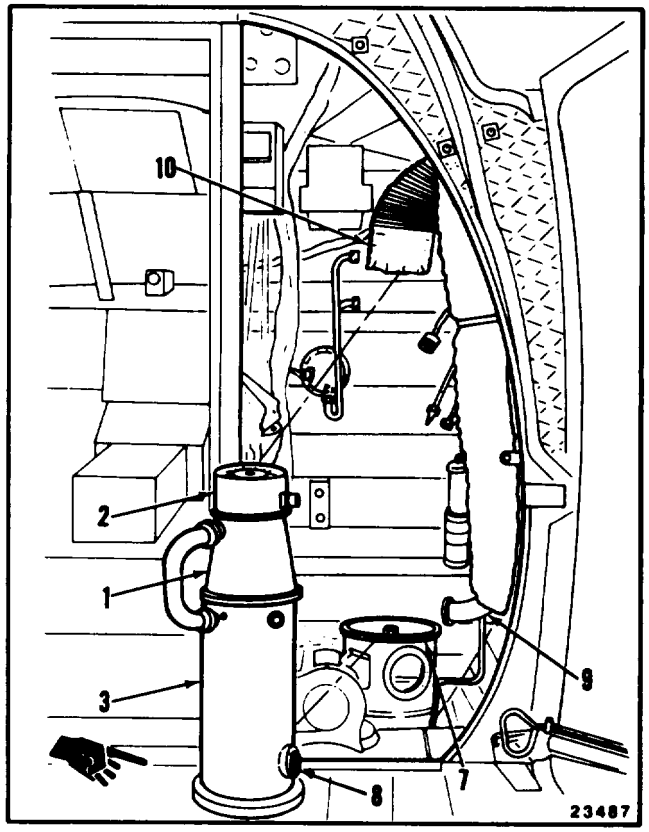
3. Lockwire clamp (4). Use lockwire (E231).
4. **Install combustion tube (5) and two clamps (6)** on adapter (1) and heater (3).



5. **Torque clamps (6) to 40 inch-pounds.**
6. Lockwire clamps (6). Use lockwire (E231).



7. **Position heater (3), adapter (1), and fan (2) on transition duct (7)** so flue drain (8) aligns with exhaust pipe (9).
8. Slide air inlet duct (10) on fan (2).



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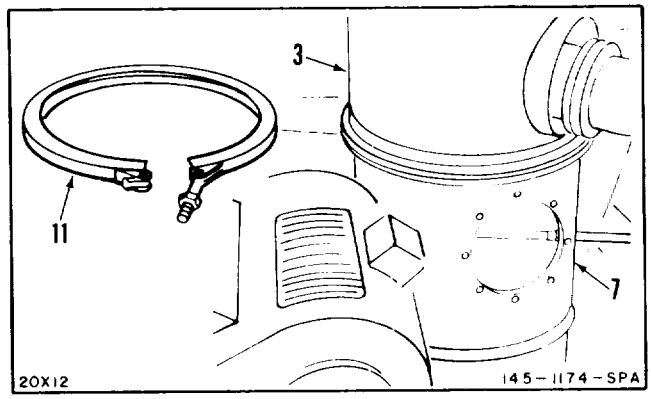
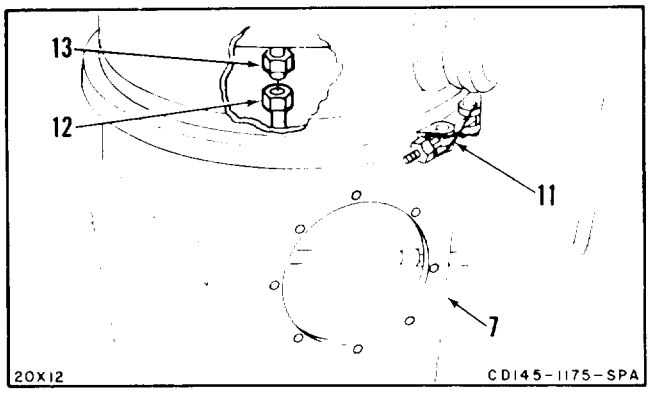
9. **Install clamp (11) on heater (3) and transition duct (7).**

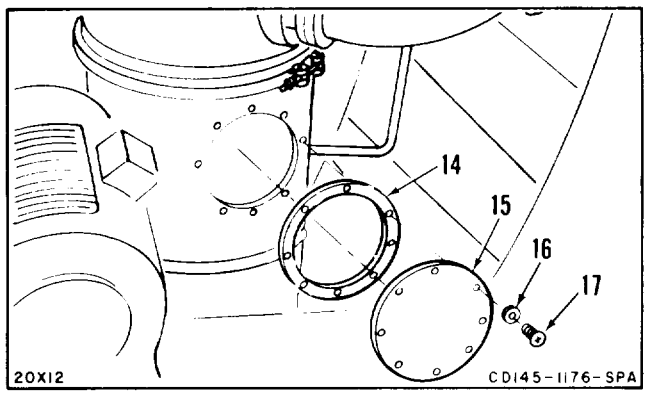
9.1. **Torque clamp (11) to 60 inch-pounds.**



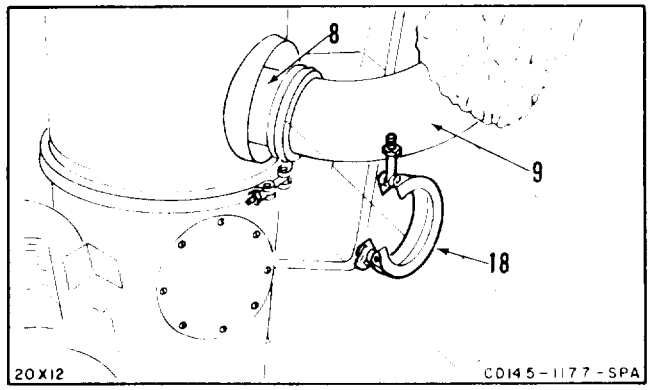
10. Lockwire clamp (11). Use lockwire (E231).
11. **Connect drain tube (12)** at heater connection (13) inside transition duct (7).



12. **Install seal (14), access cover (15), eight washers (16), and eight screws (17).**



13. **Install clamp (18)** on flue drain (8) and exhaust pipe (9).



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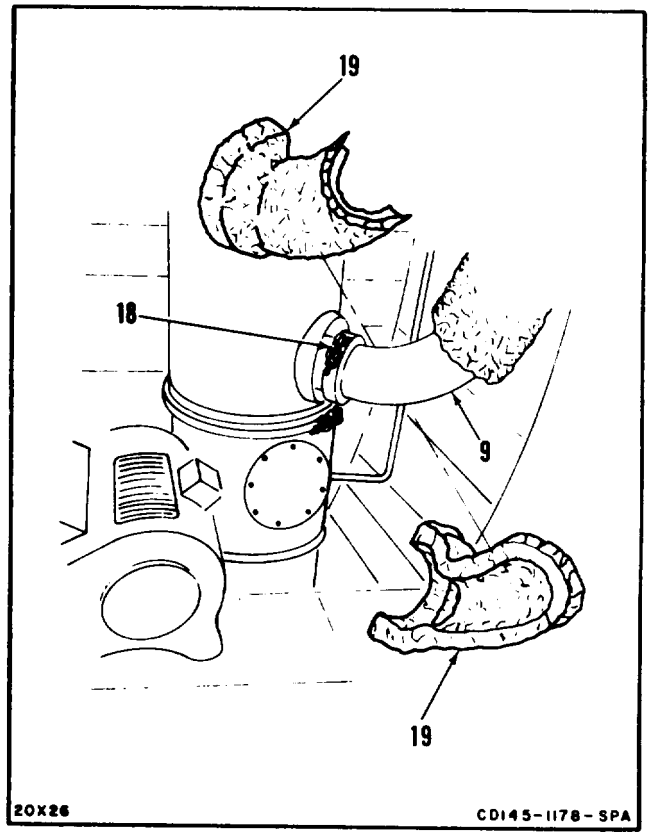
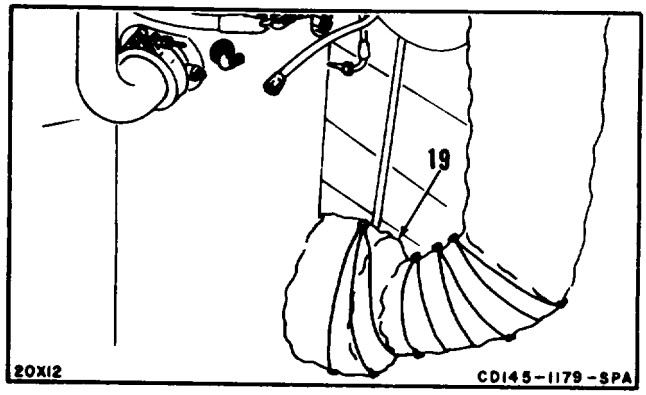
14. Lockwire clamp (18). Use Iockwire (E231).

INSPECT

15. **Install exhaust shroud elbow halves (19)** on pipe. (9).

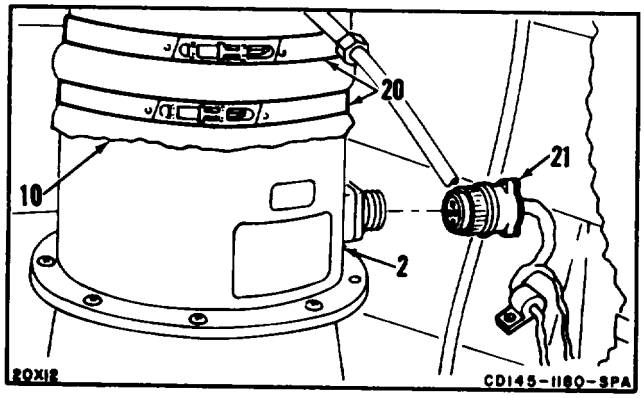


16. Lacewire shroud elbows (19) together. Use Iockwire (E231).



17. **Install clamps (20)** on air inlet duct (10).

18. **Connect electrical connector (21)** to fan (2).



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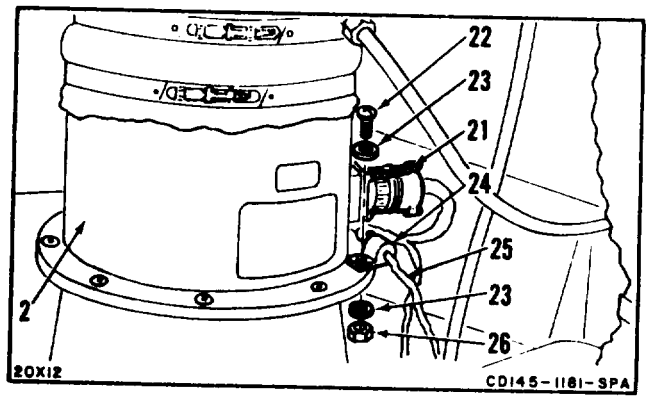
19. Lockwire electrical connector (21). Use lockwire (E231).

20. **Install** screw (22), two washers (23), **clamp (24),** wires (25), and nut (26) through fan (2),

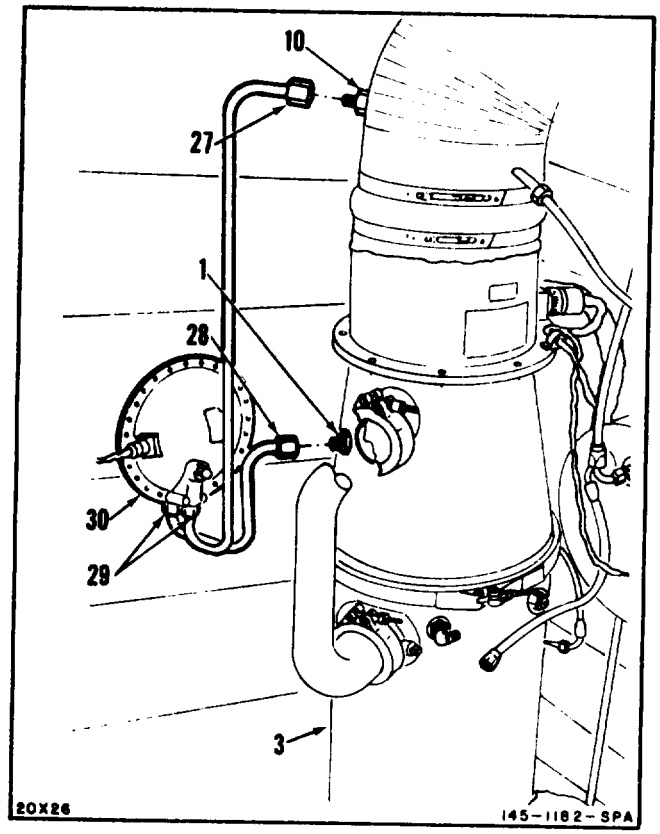


21. Turn low pressure tube (27) and high pressure tube (28) toward heater (3).

22. **Connect low pressure tube (27)** to air inlet duct (10).

23. **Connect high pressure tube (28)** to adapter (1).

24. Tighten nuts (29) on air pressure switch (30).



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25. Remove caps from fuel tube (31) and elbow (32).

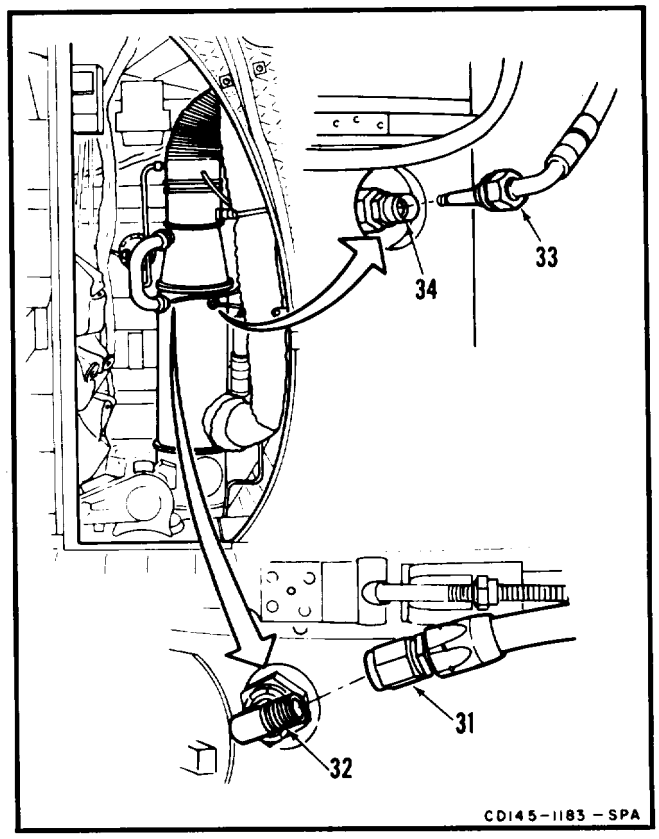
WARNING

Acetone (E20) can form toxic vapors if exposed to flame. Use acetone in well-ventilated areas, away from heat and open flames. in case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

26. Clean shielded lead (33) with acetone (E20). **Connect shielded lead** to spark igniter (34). Wear gloves (E184.1).
27. Remove plug and **connect fuel tube (31)** to elbow (32).

INSPECT

FOLLOW-ON MAINTENANCE:
Check operation of heater (TM 55-1520-240-T).
Install acoustical blanket (Task 2-210).



END OF TASK

13-9 CLEAN HEATER DRAIN ASSEMBLY

INITIAL SETUP

Applicable Configurations:
All

Toots:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Source of Dry Compressed Air

Materials:
Dry Cleaning Solvent (E161)
Gloves (E186)

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Heater Compartment Acoustics Blanket Removed (Task 2-208)

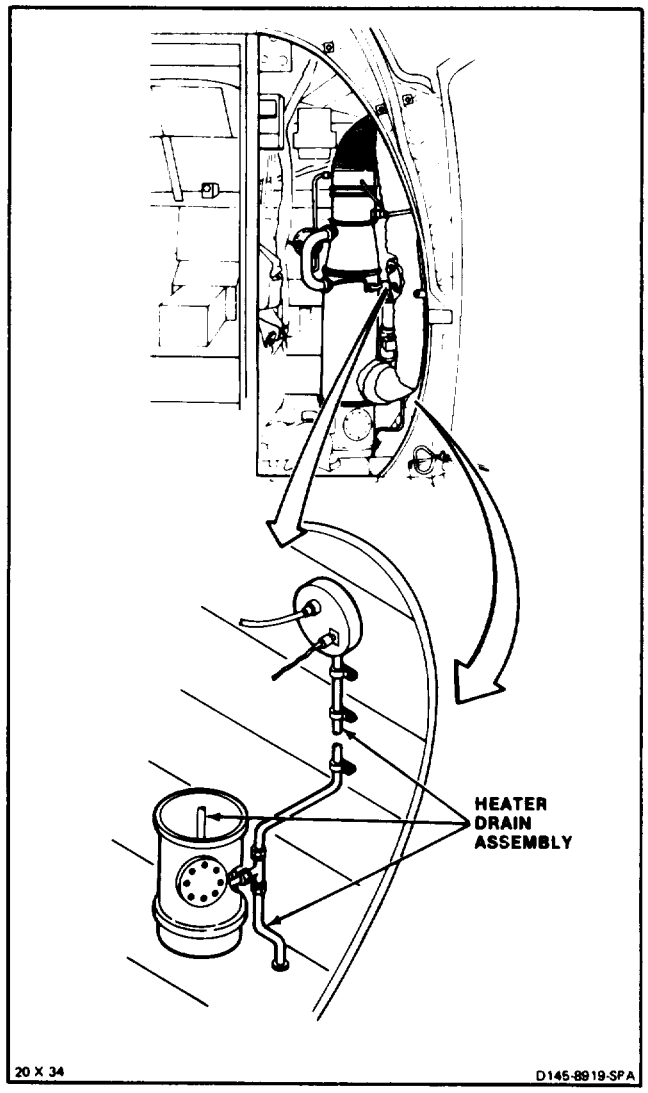
General Safety Instructions:

WARNING

Dry cleaning solvent (E161) is combustible and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

WARNING

Do not use more than 30 psi compressed air for cleaning purposes. Debris trajected under pressure can cause injury to eyes. Use source of compressed air under 30 psi and eye protection to prevent injury to personnel.



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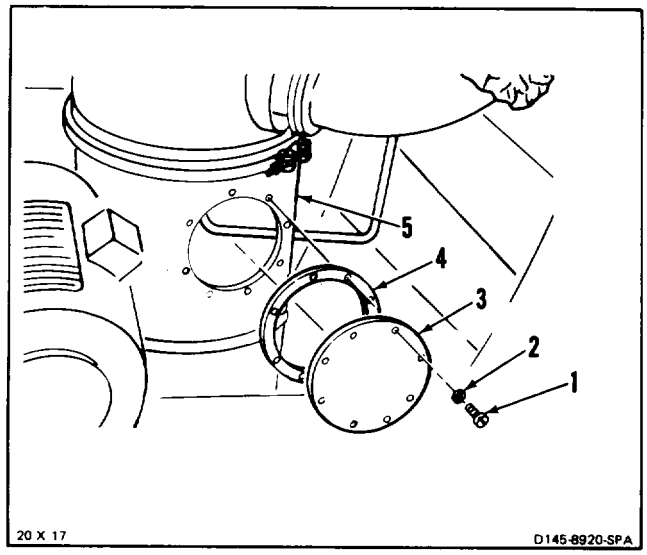
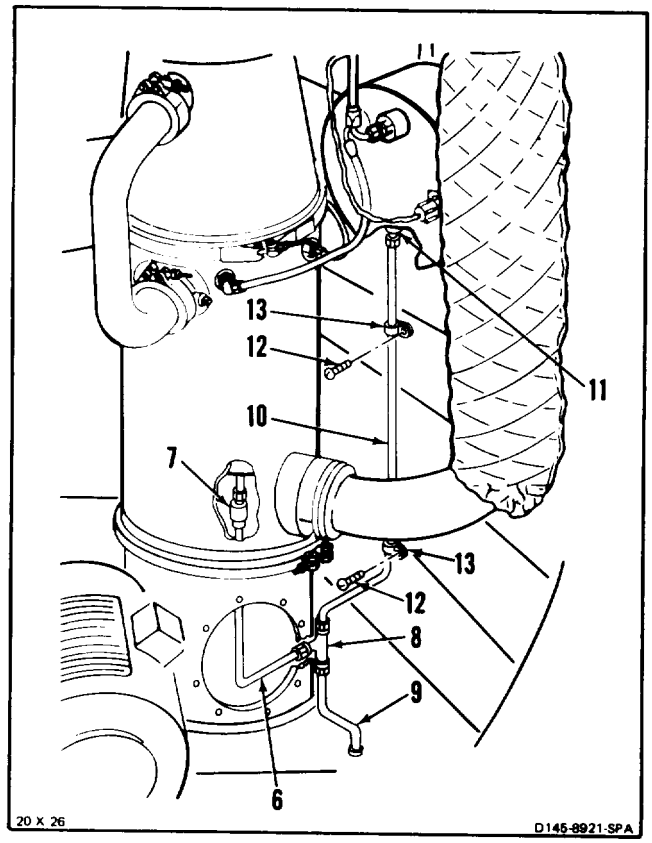
13-9 CLEAN HEATER DRAIN ASSEMBLY (Continued)

1. Remove eight screws (1), washers (2), access cover (3) and gasket (4) from transition duct (5).



2. Disconnect drain tuba (6) from heater connection (7) and tee (8). Remove tuba (6).
3. Disconnect drain tube (9) from tee (8). Remove tube (9).
4. Disconnect drain tuba (10) from tee (8) and heater fuel control (11).
5. Remove two screws (12) and clamps (13) from tube (10). Remove tube.



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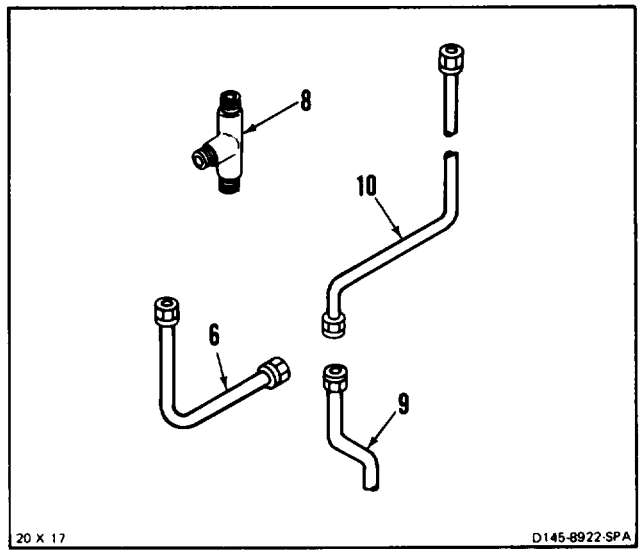
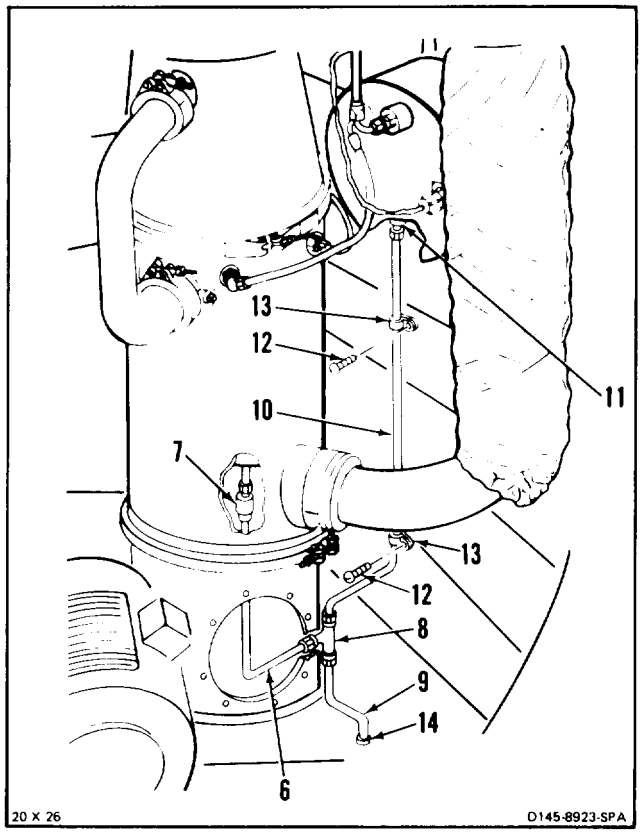
13-9 CLEAN HEATER DRAIN ASSEMBLY (Continued)

6. Wearing gloves (E186), clean outside of tubes (6, 9 and 10). Use dry cleaning solvent (El 61) and brush,
7. Flush inside of tubas (6, 9 and 10). Use dry cleaning solvent (El 61) and compressed air. Wear goggles and gloves (E186).
8. Dry tubas (6, 9 and 10). Use compressed air.



INSPECT

9. Connect drain tube (10) to control (11) and tee (8).
10. Insert tube (9) through grommet (14). Connect tube to tea (8).
11, Connect tube (6) to heater connection (7) and tee (8).
12. Install two clamps (13) and screws (12).



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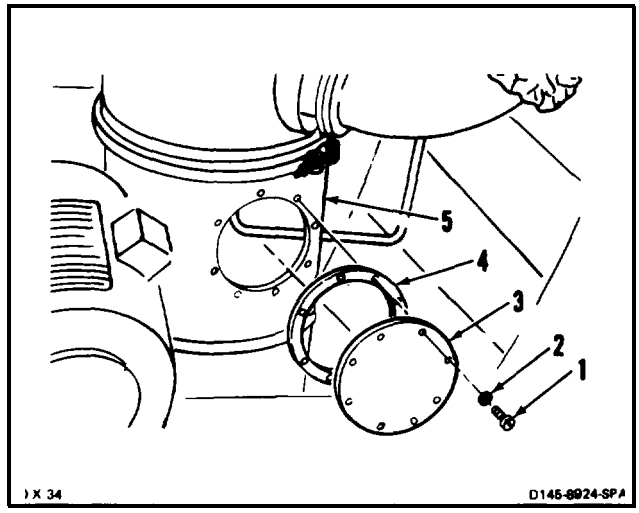
13. **Install access cover (3),** gasket (4), washers (2) **and eight straws (1)** in transition duct (5).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-10 REMOVE HEATER SPARK IGNITER 13-10

INITIAL SETUP

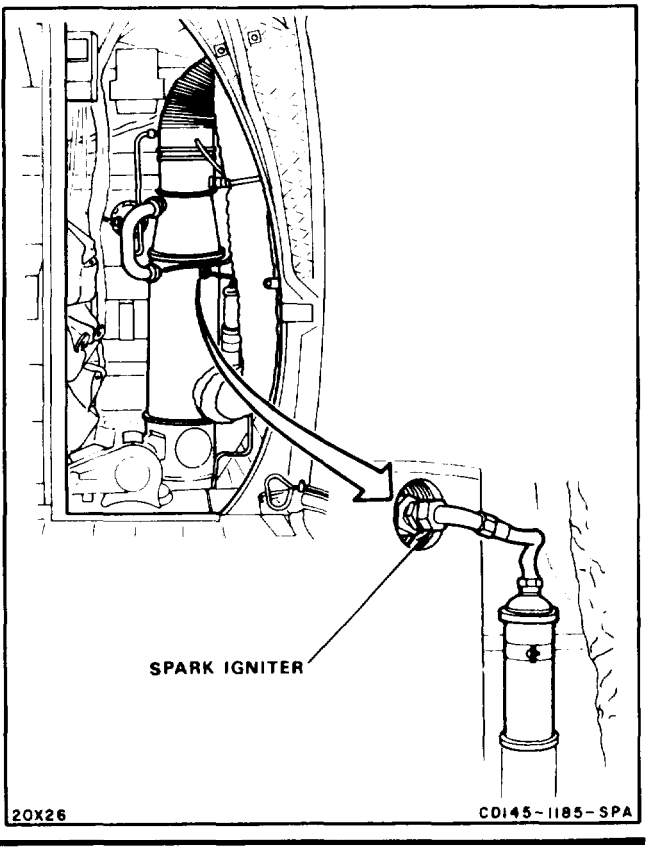
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Deep Well Socket, 1-Inch

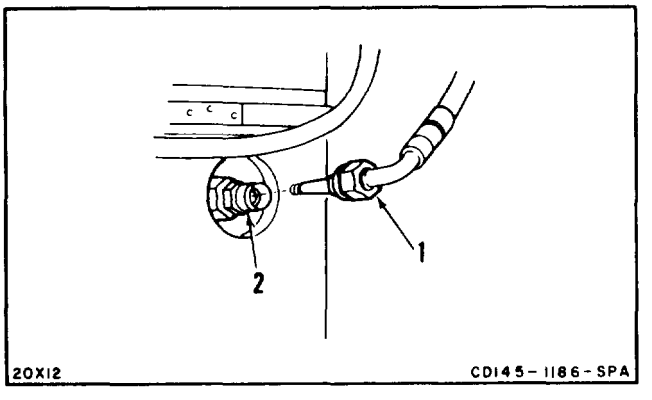
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

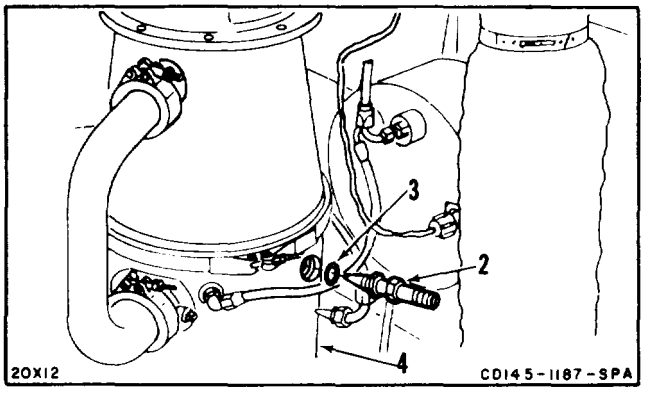
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)



1. **Disconnect shielded lead (1)** from spark igniter (2),



2. **Remove igniter (2) and gasket (3)** from heater (4).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-11 INSTALL HEATER SPARK IGNITER

INITIAL SETUP

Applicable Configurations:
All

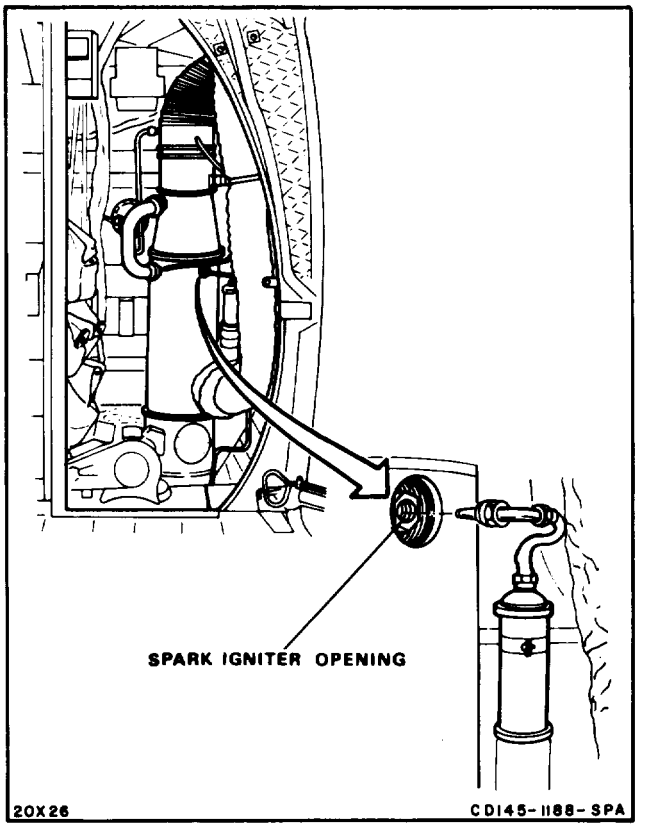
Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Torque Wrench, 100 to 750 Inch-Pounds
Deep Well Socket, 1-Inch

Materials:
None

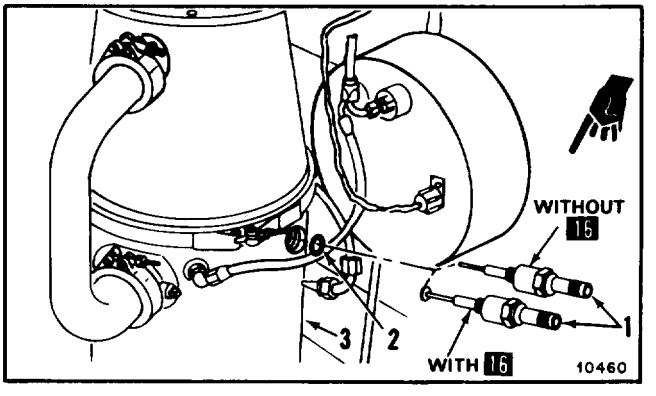
Parts:
Gasket

Personnel Required:
Medium Helicopter Repairer
Inspector

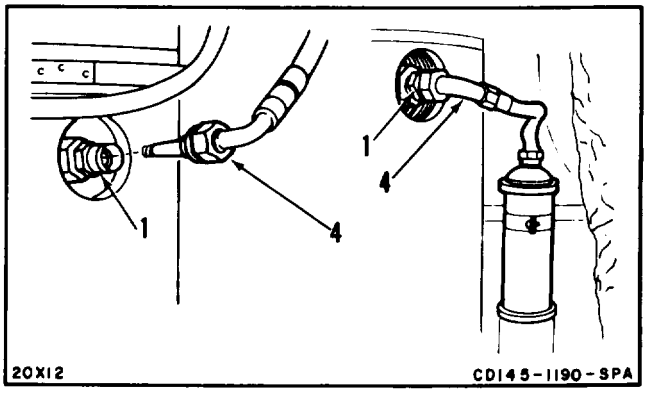
References:
TM 55-1520-240-23P



1. **Install spark igniter (1)** and gasket (2) in heater (3).



2. **Torque igniter (1) to 335 inch-pounds.**
3. **Connect shielded lead (4)** to plug (1).



INSPECT

FOLLOW-ON MAINTENANCE:
None

END OF TASK

13-12 REMOVE HEATER FAN

INITIAL SETUP

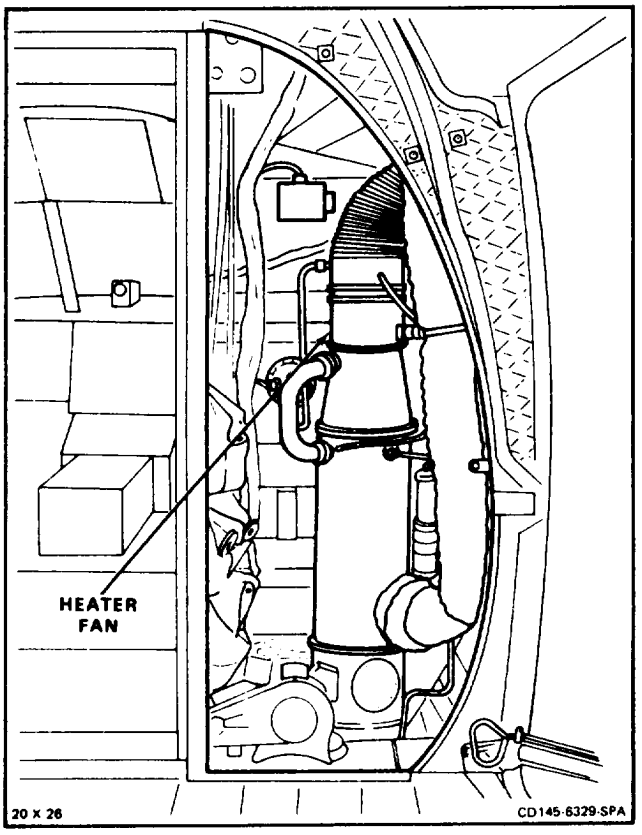
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

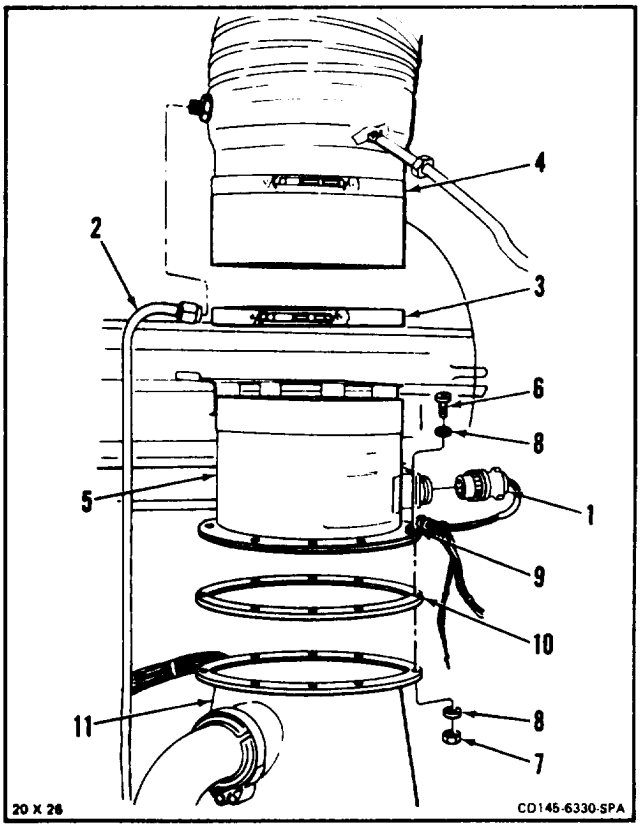
Materials:
Barrier Material (E80)
Tape (E388)

Personnel Required:
67U20 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)



1. Remove lockwire and **disconnect electrical connector (1).**
2. **Disconnect tuba (2).**
3. Loosen lower clamp (3) and **disconnect duct (4)** from fan (5). Remove clamp.
4. **Remove 8 screws (6),** 8 nuts (7), 16 washers (8), and 1 clamp (9).
5. **Remove fan (5)** and gasket (10) from adapter (11).
6. Cover top of adapter (11). Use barrier material (E80) and tape (E388).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Technical Inspection Tool Kit, NSN 5180-00-323-5114
Wood Dowel, 3/8-Inch X 8-Inches
Socket Wrench Handle
Retaining Ring Pliers
Telescoping Gage
Socket, 3/4-Inch
Soldering Iron
Arbor Press
Vise

Materiais:
Gloves (E184.1)
Paper Tags (E264)
Emery Cloth (E123)
Poly Paint (E285.2)
Epoxy primer (E292.1)

Personnel Required:
Aircraft Electrician
Machinist
Inspector

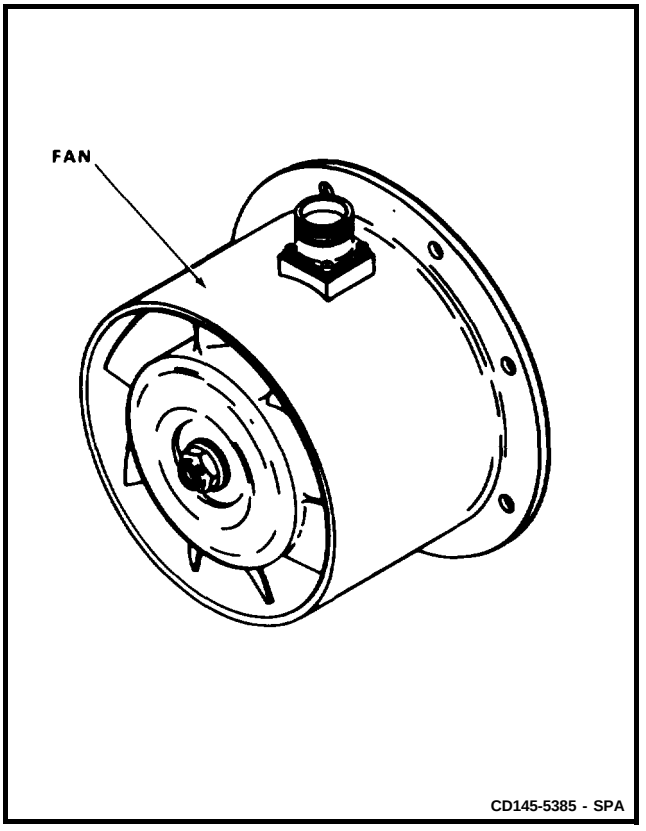
References:
Task 2-350.1
TM 55-1500-322-24

Equipment Condition:
Off Helicopter Task

General Safety Instructions:

WARNING

Epoxy primer (E292.1) and poly paint (E285.2) are flammable and toxic. They can irritate skin and cause burns. Use only with adequate ventilation, away from heat, sparks, and open flame. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



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DISASSEMBLE FAN

1. Clamp fan (1) in vise (2).

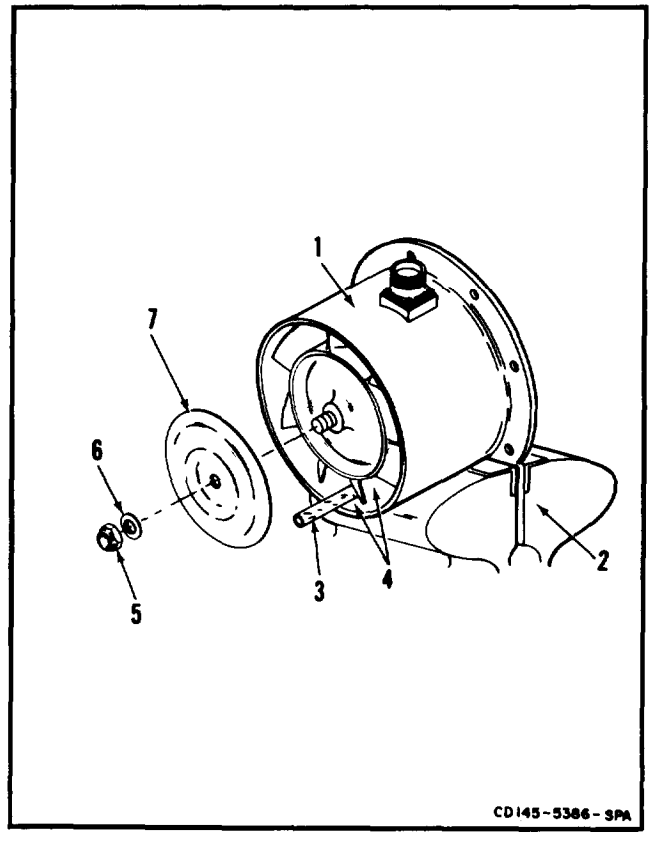
NOTE

Wood dowel prevents rotor from turning when removing nut.

2. Insert wood dowel (3) through vanes (4).
3. **Remove** nut (5), washer (6), and **spun nose (7).**

3.1. **Inspect spun nose (7).** There shall be no dents, cracks, or nicks,

4. **Remove dowel (3).**
5. **Remove fan (1)** from vise.



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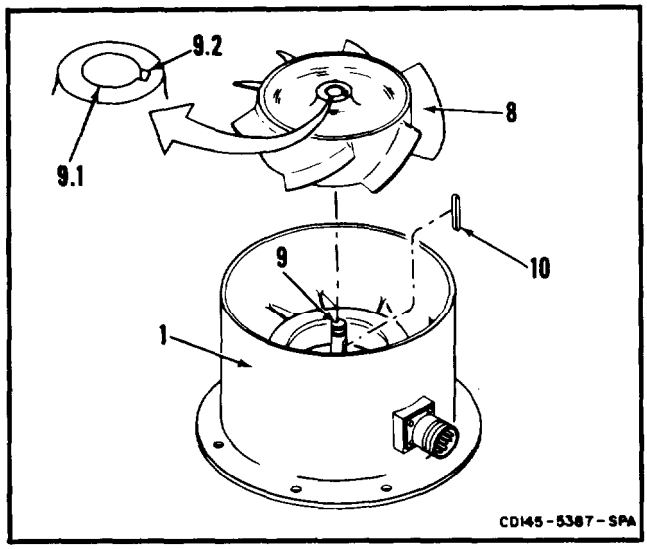
6. **Remove rotor (8).** If rotor is tight, lift fan (1) by rotor and tap shaft (9). Use plastic-face hammer.



NOTE

Spun nose and rotor are a matched set. If one is damaged, both must be replaced.

6.1. **Inspect rotor (8).** There shall be no cracks or nicks.

6.2. **Measure bore (9.1)** in rotor (8). Diameter shall not be more than 0.501 inch.

6.3. **Measure width of keyway (9.2).** Width shall not be more than 0.128 inch.

NOTE

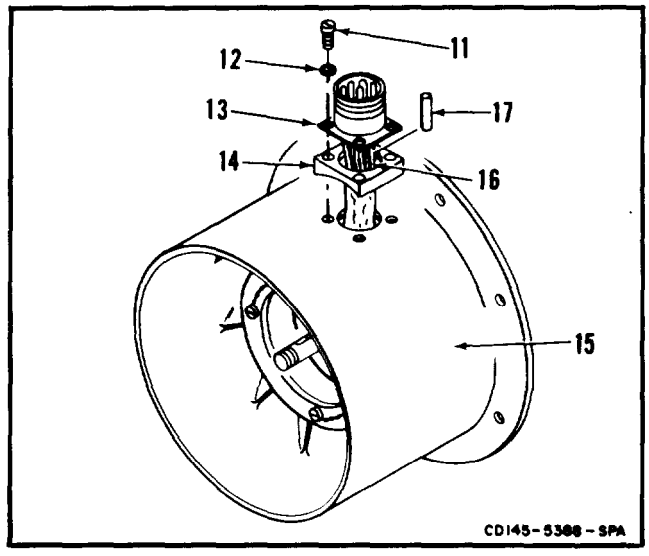
Rotor is magnesium.

6.4. **Inspect rotor (8) for eroded finish.** Touch up as needed. Use epoxy primer (E292.1) and poly paint (E285.2) (Task 2-350.1). Wear gloves (E184.1).

7. **Remove key (10).**

8. **Remove lockwire, four screws (11),** and washer (12). **Pull receptacle (13)** and block (14) **away from housing (15)** far enough to access wires.

9. Remove tubing (17), Tag and **unsolder four wires (16).** Use tags (E264).



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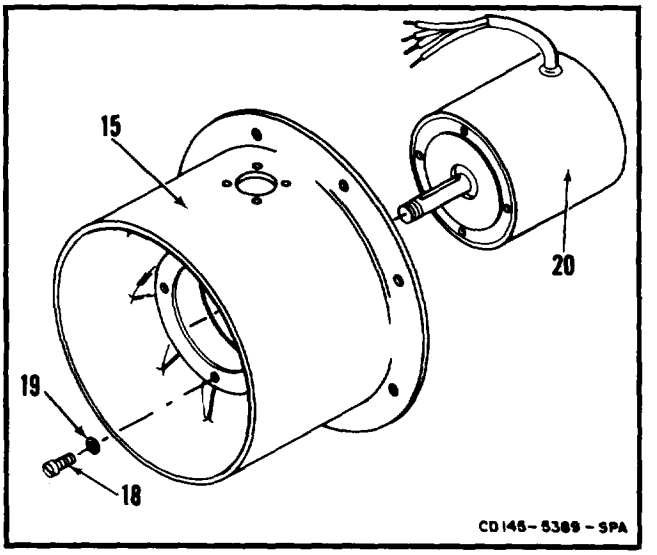
10. **Remove lockwire, four screws** (18), and four washers (19).
11. **Remove motor (20)** from housing (15).
11.1. **Inspect housing (15).** There shall be no cracks. There shall be no nicks or scratches deeper than 0.025 inch,
11.2. Blend out scratches in housing (15) less than 0.025 inch deep. Use emery cloth (E123).

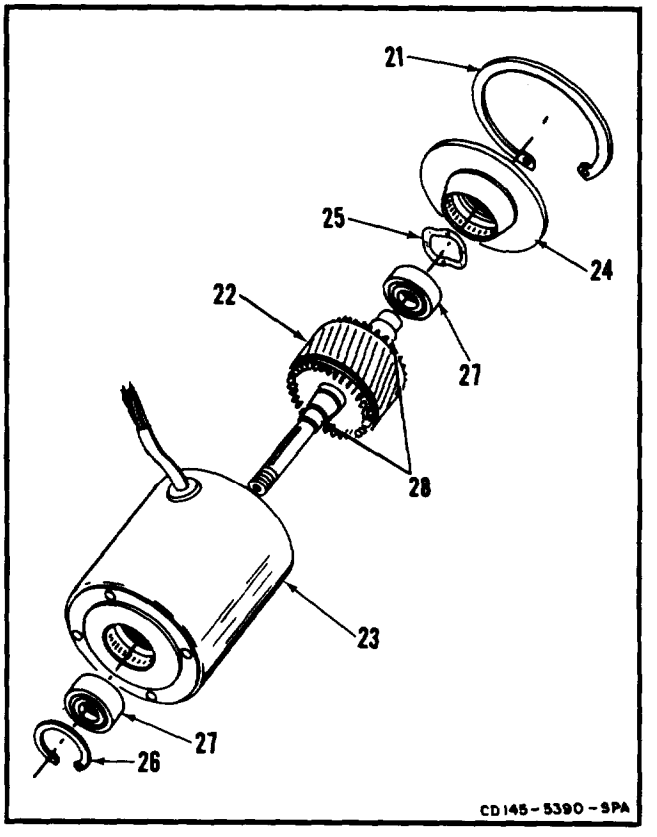
NOTE
Housing is magnesium.

11.3. Touch up housing (15) as needed. Use epoxy primer (E292.1) and poly paint (E285.2) (Task 2-350.1). Wear gloves {E184.1).



DISSASSEMBLE M0TOR

12. Remove retaining ring (21). **Remove rotor (22)** from stator (23).
13. **Remove endbell (24)** and loading washer (25) from rotor (22),
13.1. **Inspect loading washer (25).** Washer shall not be cracked or crushed flat.
14. **Remove retaining ring (26)** from stator (23).
15. **Remove bearing (27)** from rotor (22) and **bearing (27)** from stator (23). Inspect bearings (TM 55-1 500-322-24).
16. **Inspect rotor (22).** There shall be no sign of rubbing against inside of stator (23). There shall be no spalling of bearing surfaces of shaft (28).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

13-14 CLEAN HEATER FAN (500702-5310) PARTS (AVIM)

13-14

INITIAL SETUP

Applicable Configurations:
All

Tools:
Source of Low Pressure Compressed Air
Soft Bristle Brush
Ventilated Oven
Pneumatic Cleaning Gun
Container, Two Quart
Goggles

Materials:
Cloths (E120)
Dry Cleaning Solvent (E161)
Gloves (E186)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Off Helicopter Task
Heater Fan Disassembled (Task 13-13)

1. Remove loose dirt from all parts (1 thru 13)
   Use compressed air and brush

WARNING

Dry cleaning solvent (E161) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

CAUTION

Spray parts; do not soak parts in solvent. Excess solvent will damage plastic, insulation, or rubber.

2 **Spray parts (1, 3 thru 13) with solvent (E161).** Try to keep solvent away from rubber and insulation on wires (2). Wear goggles and gloves (E186).

3. Dry parts (1 thru 13) with compressed air and cloths (E120).

4. **Bake stator (3) and rotor (4) in oven at 275° F (135° C) for 2 hours.** Remove stator. Wear gloves (E186).

FOLLOW-ON MAINTENANCE:
None

END OF TASK

13-15 ASSEMBLE HEATER FAN (5OO7O2-531O) (AVIM) 13-15

INITIAL SETUP

Applicable Configurations:
All

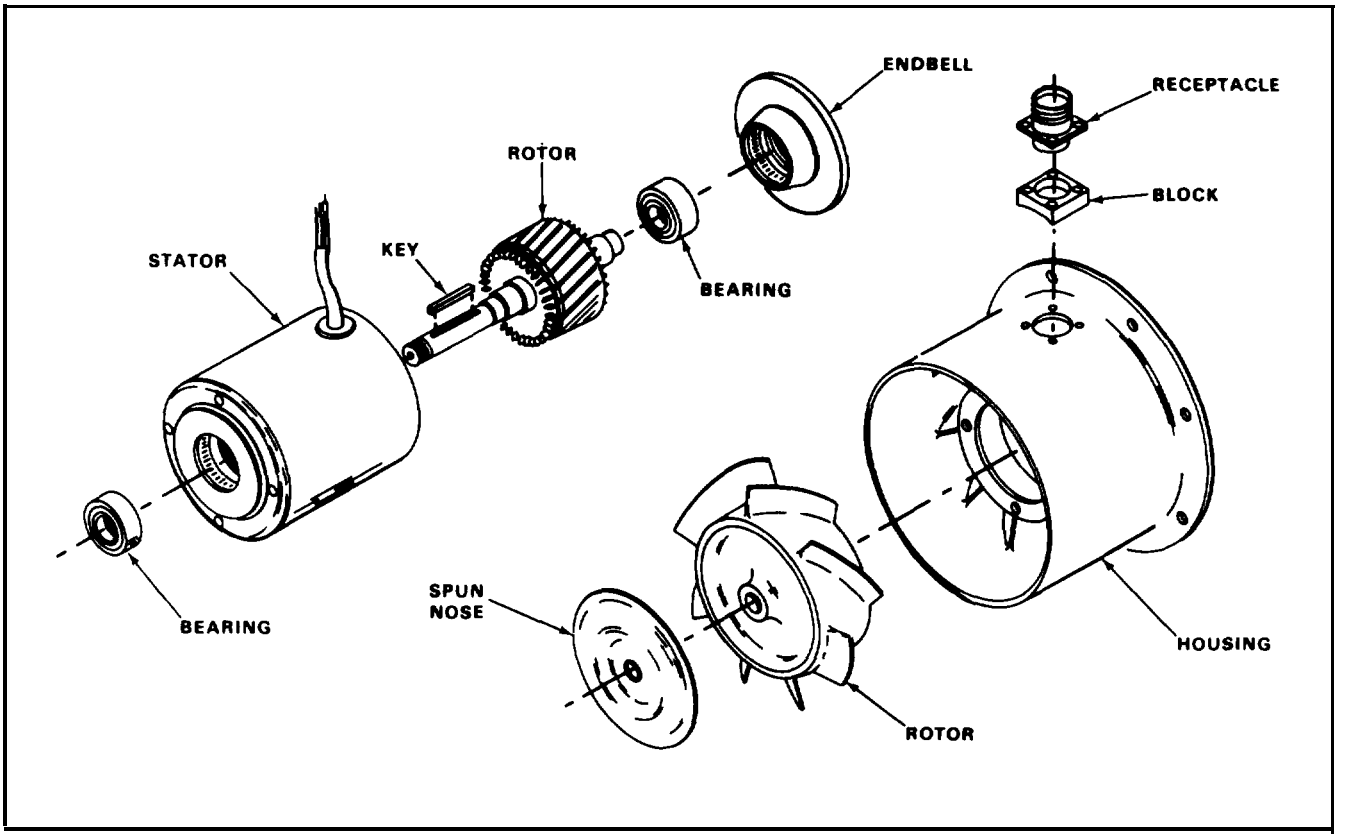
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Arbor Press
Gun Heater
Retaining Ring Pliers
Socket Wrench Handle
Socket, 3/4-Inch
Vise
Soldering Iron
Wood Dowel, 3/8-Inch X 8-Inches

Materials:
Lockwire (E230)
Solder (E360)
Heat Shrinkable Tubing (E431)

Personnel Required:
68F20 Aircraft Electrician
44E20 Machinist
67U30 Inspector

References:
TM 55-1520-240-23P
TM 55-1500-322-24
TM 55-1500-323-25

Equipment Condition:
Heater Fan 500702-5310 Parts Cleaned (Task 13-14)



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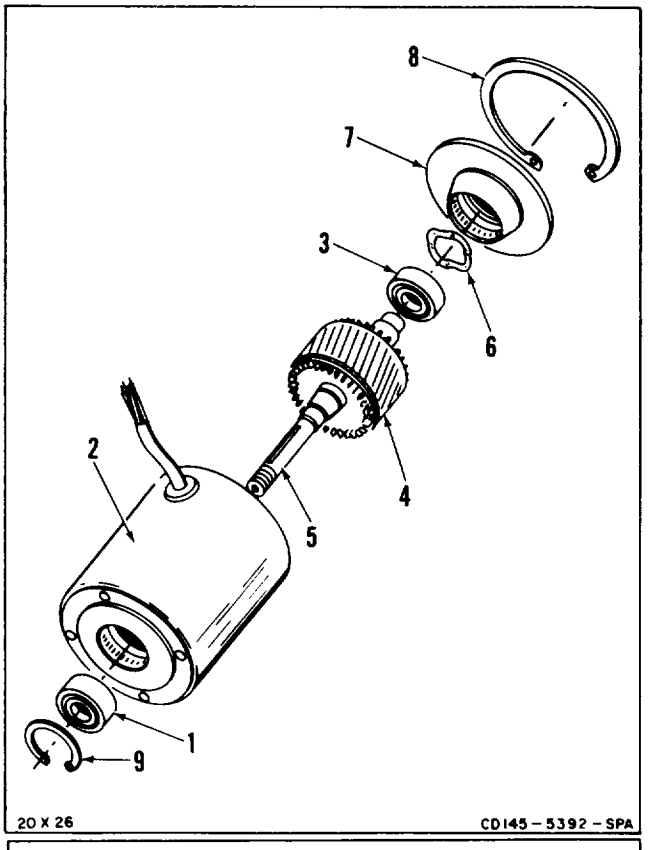
13-15 ASSEMBLE HEATER FAN (500702-5310) (AVIM) (Continued)

ASSEMBLE MOTOR

1. Install bearing (1) in stator (2) and bearing (3) on rotor (4) (TM 55-1500-322-24).
2. Slide rotor (4) into stator (2). Make sure shaft (5) bottoms on bearing (1).
3. Install loading washer (6) and endbell (7) in stator (2). Install retaining ring (8), flat side down.
4. Install retaining ring (9), flat side down

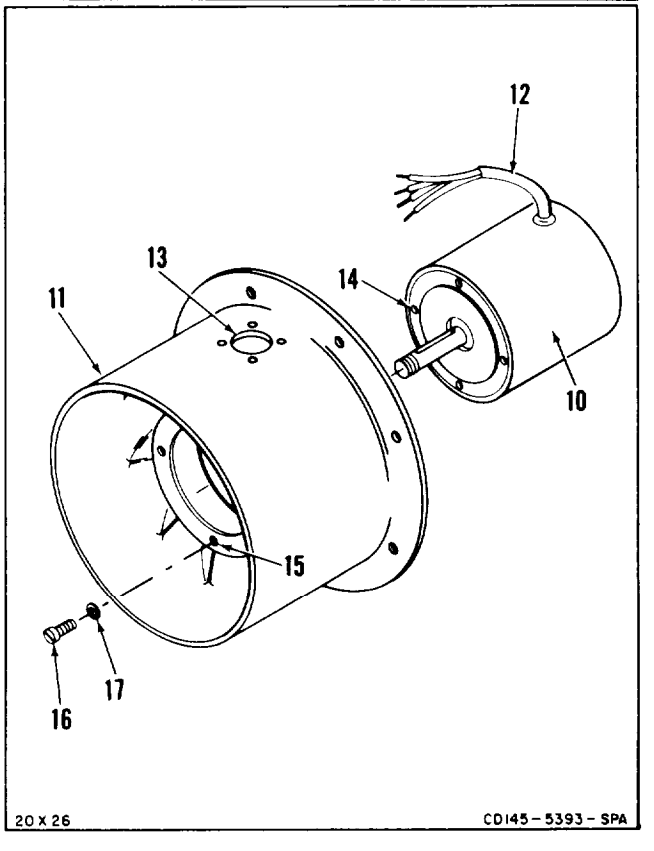
INSPECT



ASSEMBLE FAN

5. Install motor (10) in housing (11). Align wires (12) with hole (13). Align four screw holes (14) with four holes (15) in housing.
6. Install four straws (16) and washers (17).
7. Lockwire screws (16). Use lockwire (E230).

INSPECT



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13-15 ASSEMBLE HEATER FAN (500702-5310) (AVIM) (Continued)

8. Route four wires (12) through hole (13) and block (18).
9. Slide piece of tubing (E431) (191 onto each of four wires (12).
10. Solder four wires (12) to receptacle (20). Use solder (E360). Shrink tubing (19) over solder (TM 55- 1500-323-25). Remove tags.
11. Position block (18) and receptacle (20) on housing (11). Install four screws (21) and washers (22).
12. Lockwire screws (21). Use Iockwire (E230).
13. Install key (23) in shaft (5).
14. Slide rotor (24) onto shaft (5). Make sure groove (25) is up and keyway (26) aligns with key (23).

15, Clamp fan (27) in vise (28)

NOTE

Wood dowel prevents rotor from turning when installing nut,

16. Insert wood dowel (29) through vanes (30).
17, Align match marks on spun nose (31) and rotor (24). Install spun nose, washer (32), and nut (33) on shaft (5).
18. Remove dowel (29)
19. Remove fan (27) from vise (28)

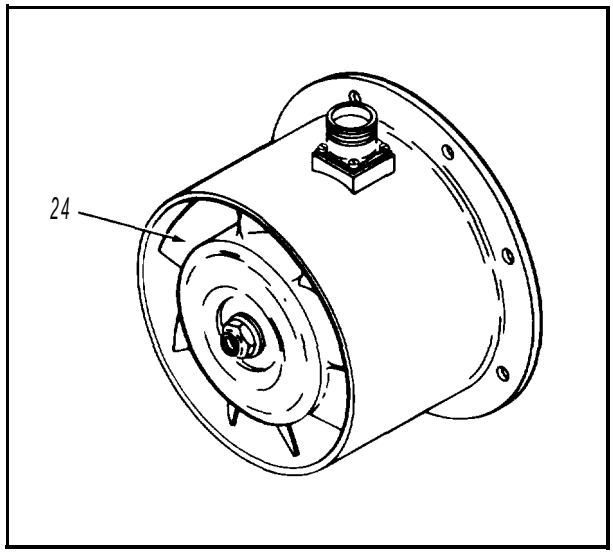
GO TO NEXT PAGE

20. **Spin rotor (24).** Rotor shall spin freely,

INSPECT

FOLLOW-ON MAINTENANCE:

Test heater fan (Task 13-16).



END OF TASK

13-16 TEST HEATER FAN (AVIM)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Ammeters (3), 0 to 20 Amperes
Power Supply, 3-Phase 115/200 Vac
400-Hz, 15 Ampere Capacity
Plug (MS3456W18-11S)
Stroboscope
Support Plate (Appx. E-20)
Vise

Materials:
None

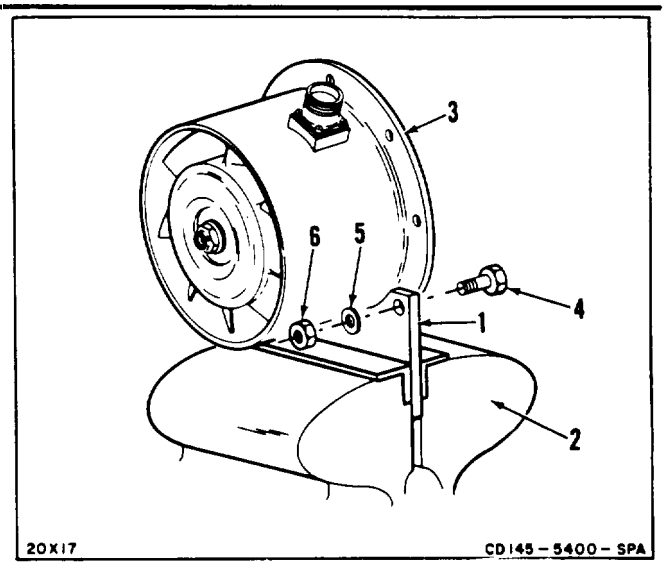
Parts:
Bolts
Nuts
Washers

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

References:
Appendix E

Equipment Condition:
Off Helicopter Task
Test Setup

1. Clamp support plate (1) in vise (2).
2. Position fan (3) on plate (1). Install two bolts (4), washers (5), and nuts (6) in plate and fan.



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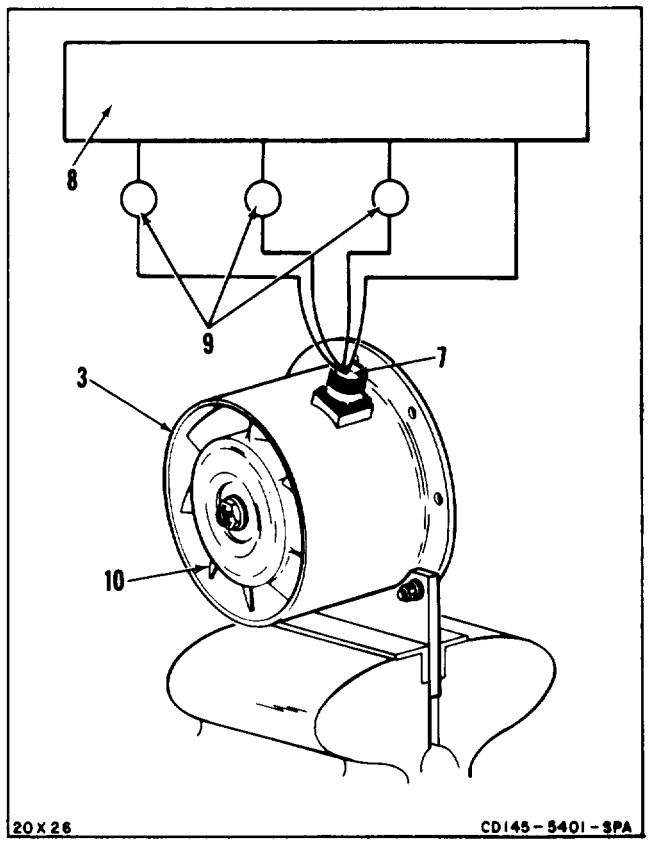
13-16 TEST HEATER FAN (AVIM) (Continued)

3. **Connect test setup** to connector (7) of fan (3).
4. **Turn on power supply (8).** Current shall be 8.1 to 8.9 amperes on each ammeter (9).

NOTE

Rotation direction of rotor is marked on fan housing.

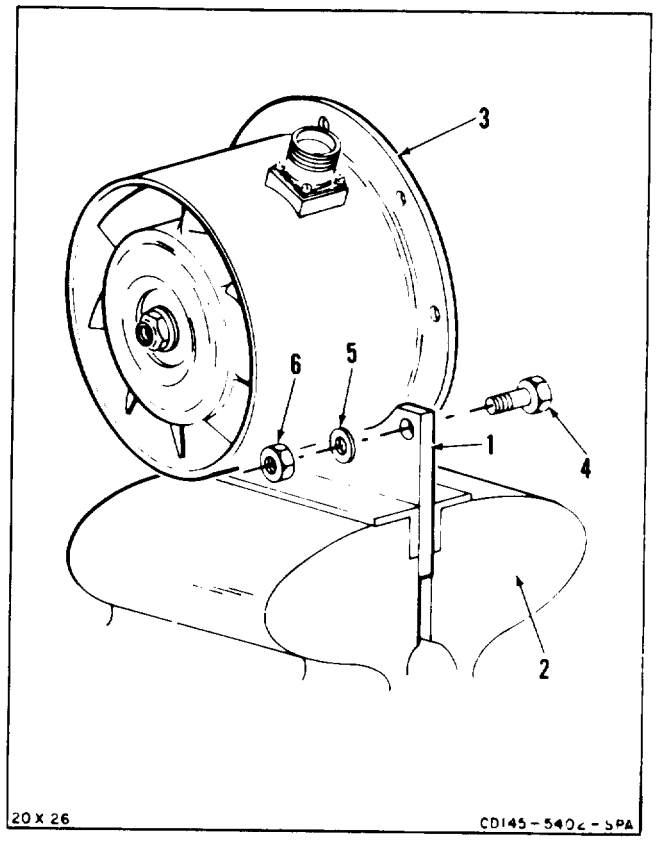
5. Check that rotor (10) is turning in direction marked on housing of fan (3).
6. **Measure rotational velocity of rotor (10).** Velocity shall be 11,400 to 11,800 rpm. Use stroboscope.
7. Shut down power supply (8). Disconnect test setup from connector (7).



8. Remove two nuts (6), washers (5), and bolts (4) from plate (1) and fan (3). Remove fan.
9. Remove plate (1) from vise (2).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

13-17 INSTALL HEATER FAN

INITIAL SETUP

Applicable Configurations:
All

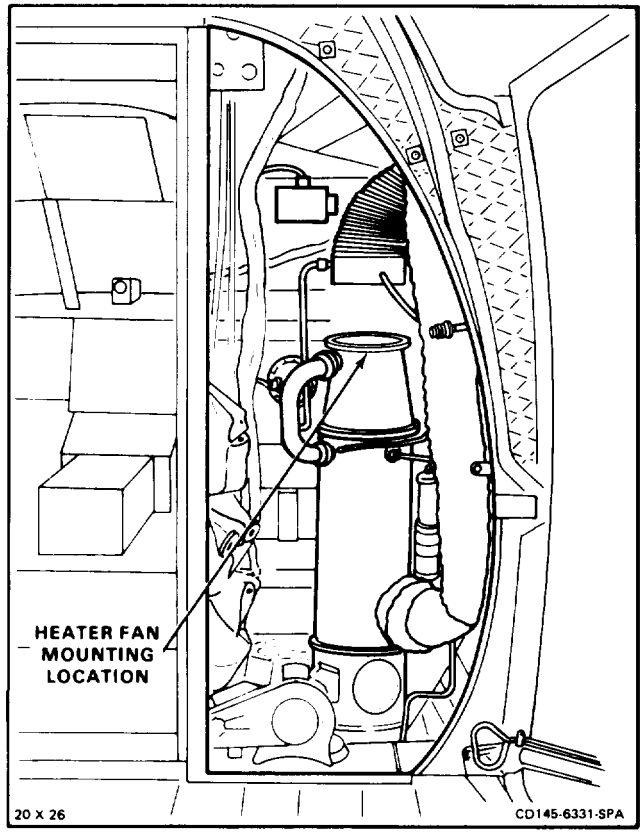
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Lockwire (E231)

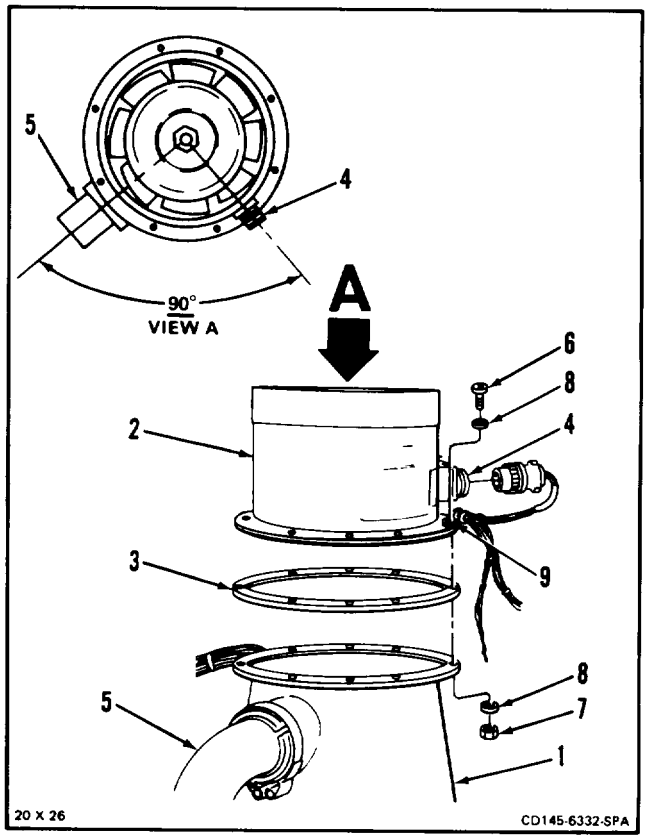
Parts:
Gasket

Personnel Required:
67U20 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P



1. Remove barrier material and tape from adapter (1),
2. **Position fan (2)** and gasket (3) on adapter (1) with receptacle (4) 90 degrees from combustion tube (5).
3. Align holes in fan (2), adapter (1), and gasket (3). **Install 8 screws (6), 8** nuts (7), 16 washers (8), and 1 clamp (9).



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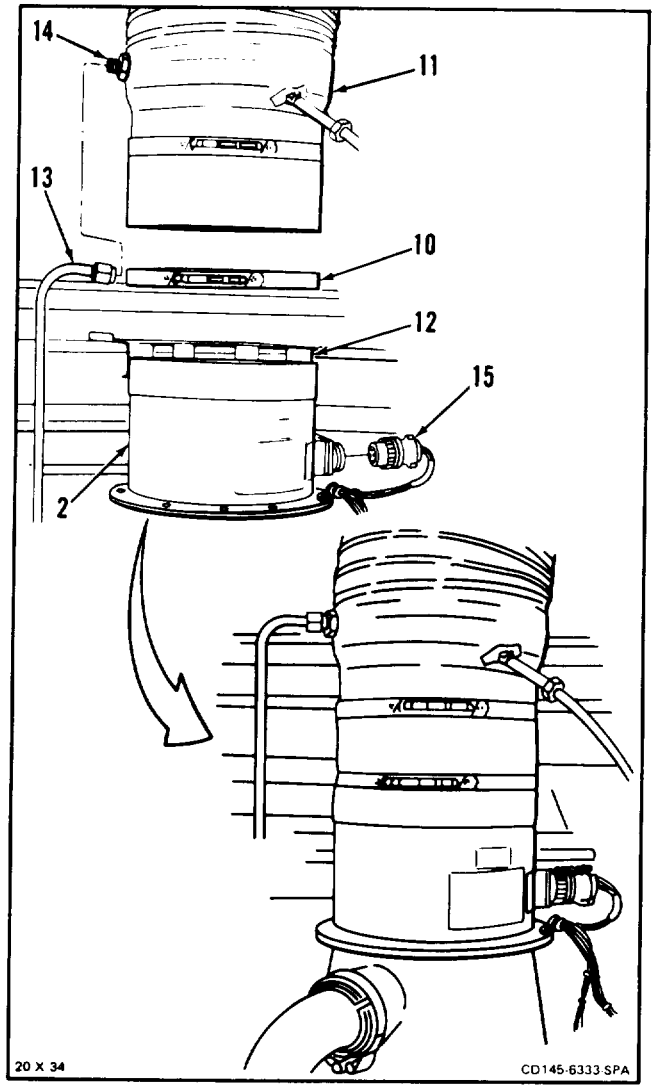
13-17 INSTALL HEATER FAN (Continued) 13-17

4. Slide clamp (10) onto duct (11) and **connect duct to top of fan (2).** Tighten clamp around duct, fan, and bracket (12).
5. **Connect tuba (13)** to nipple (14).
6. **Connect electrical connector (15)** and lockwire it. Use lockwire (E231).



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Install heater compartment acoustic blanket (Task 2-210).

END OF TASK

13-18 REMOVE AIR INLET DUCT

INITIAL SETUP

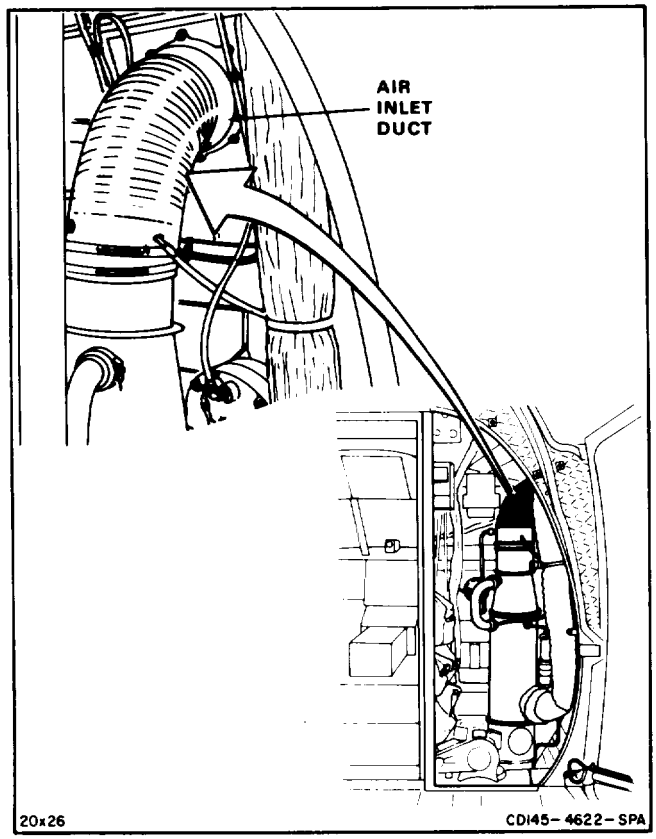
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Workstand

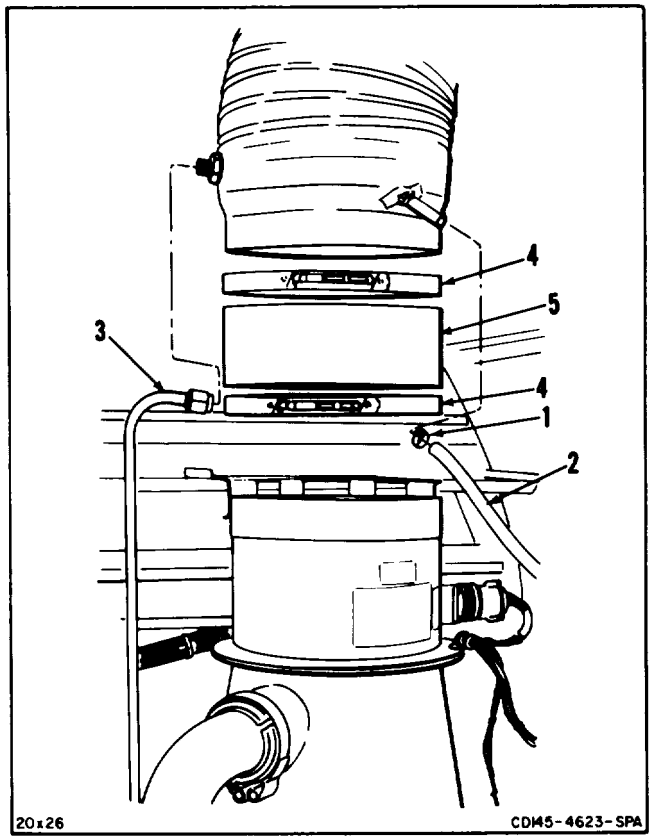
Materials:
Barrier Material (E80)
Tape (E388)

Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)



1. Loosen clamp (1). **Disconnect rubber tube (2)** and remove clamp.
2. **Disconnect metal tube (3).**
3. Loosen two clamps (4). **Remove hose (5)** and two clamps.



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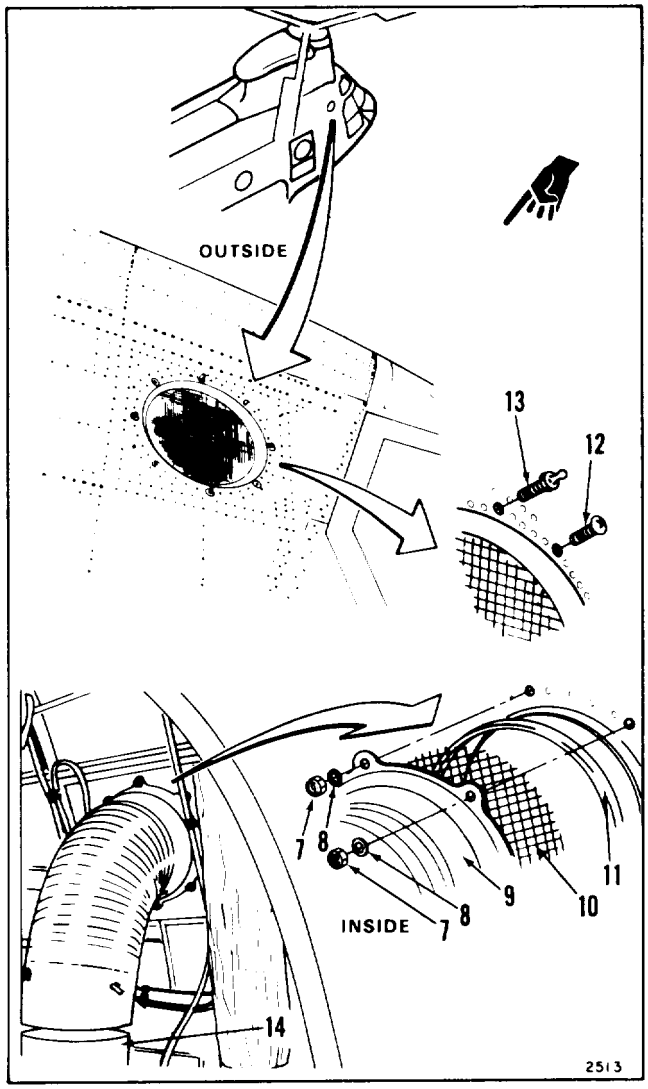
14. Deleted.
5. Remove eight nuts (7) and washers (8).
6. **Remove air inlet duct (9) and wire fabric (10).**
7. Remove seal (11) if worn, deformed, or otherwise damaged.
8. From outside helicopter have helper remove four screws (12) and four snap fasteners (13).
9. Cover opening in top of fan (14). Use barrier material (E80) and tape (E388).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-19 INSTALL AIR INLET DUCT

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Stiff-Bristled Brush
Workstand

Materials:
Cement (E103)
Cloths (E120)
Sealant (E336)
Solvent (E161)
Gloves (E186)

Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P

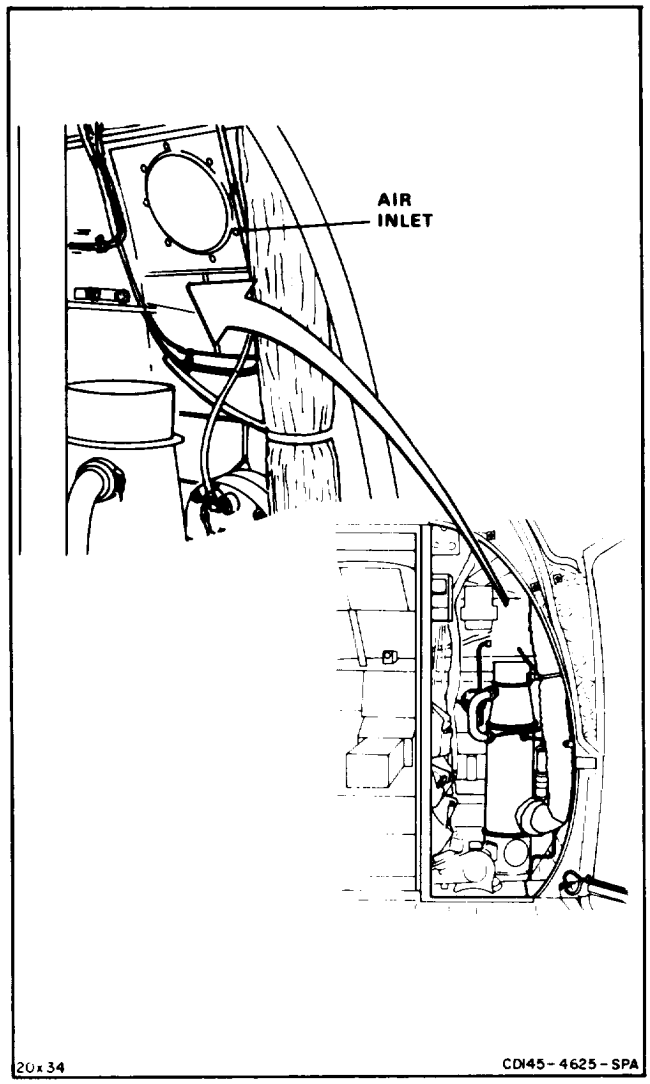
General Safety Instructions:

WARNING

Solvent (E161) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, and clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



WARNING

Cement (E103) is flammable and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from heat or open flame. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

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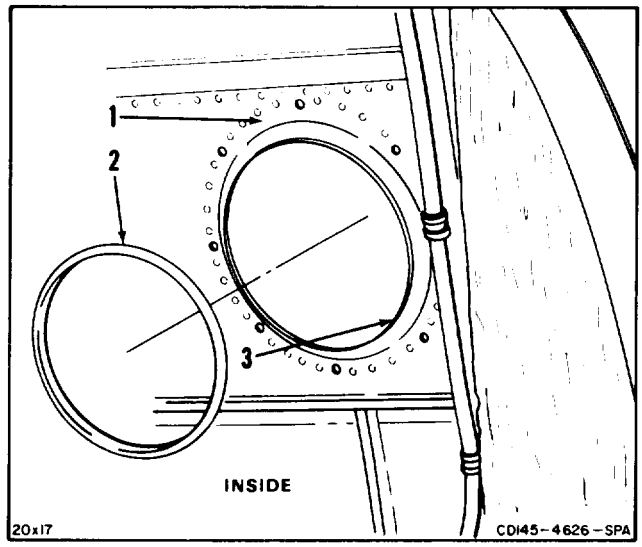
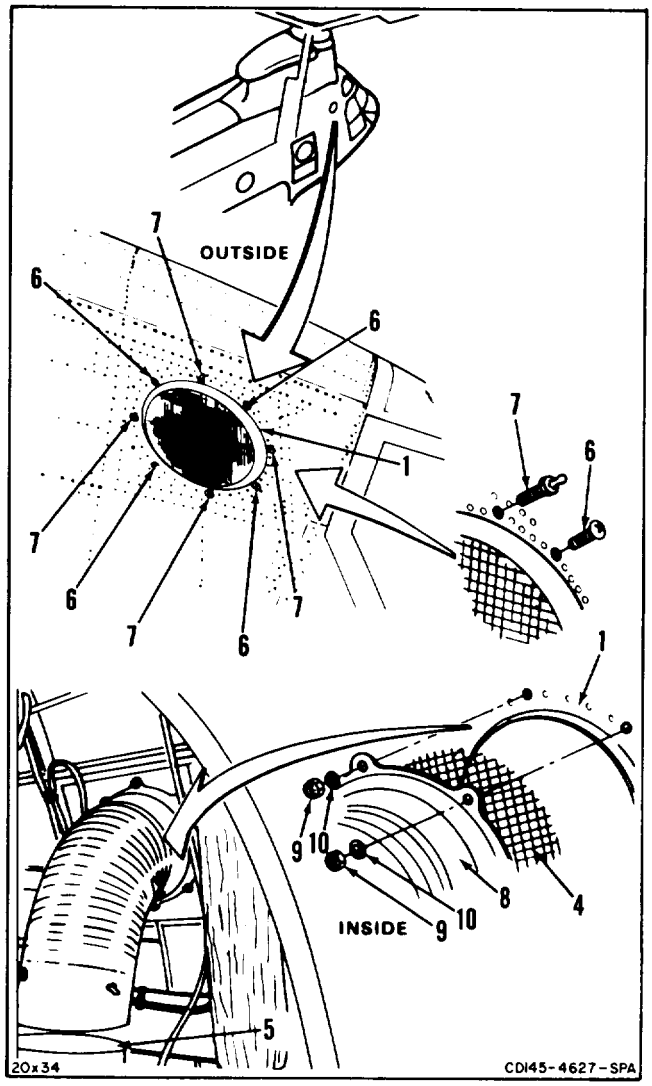
13-19 INSTALL AIR INLET DUCT (Continued) 13-19

1. Remove old sealant from around inlet (1). If seal (2) was removed, remove old adhesive from flange (3). Use solvent (E161) and cloths (E120). Wear gloves (E186).
2. If seal (2) was removed, install new seal on flange (3). Use cement (E103).



3. Have helper remove old sealant from around inlet (1) outside helicopter. Use solvent (E161) and cloths (E120). Wear gloves (E186).
4. Clean wire fabric (4). Use solvent (E161) and stiff-bristled brush. Wear gloves (E186).
5. Remove tape and barrier material from fan (5).
6. From outside helicopter, have helper install four screws (6) and four snap fasteners (7).
7. Position wire fabric (4) and air inlet duct (8) over inlet (1).
8. From inside, install eight nuts (9) and washers (10) while helper holds screws (6) and snap fasteners (7) outside.



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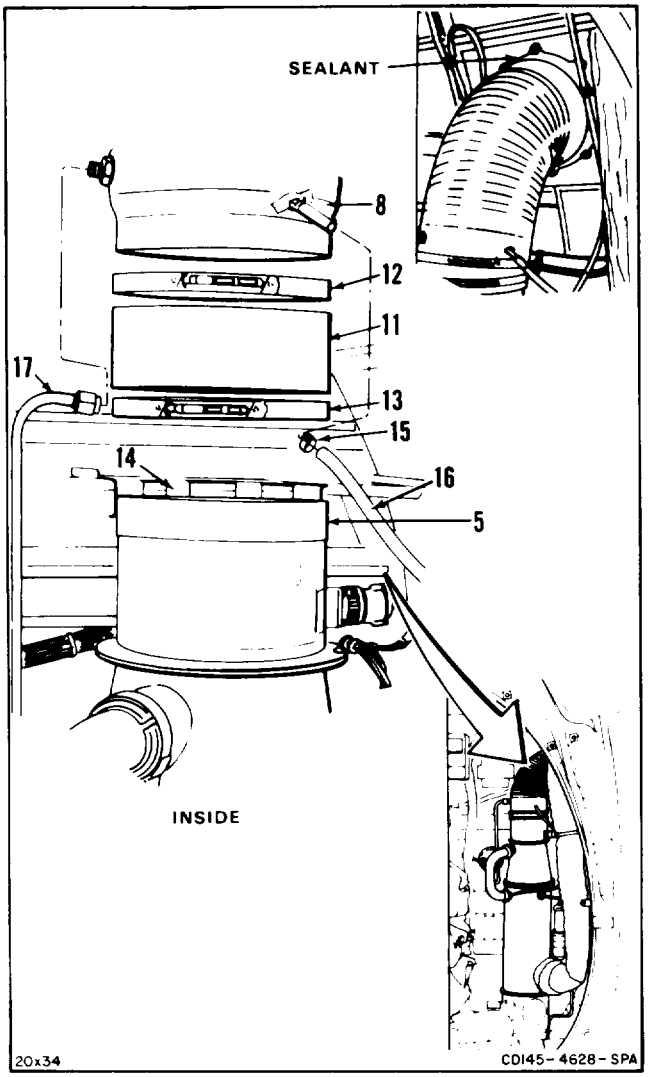
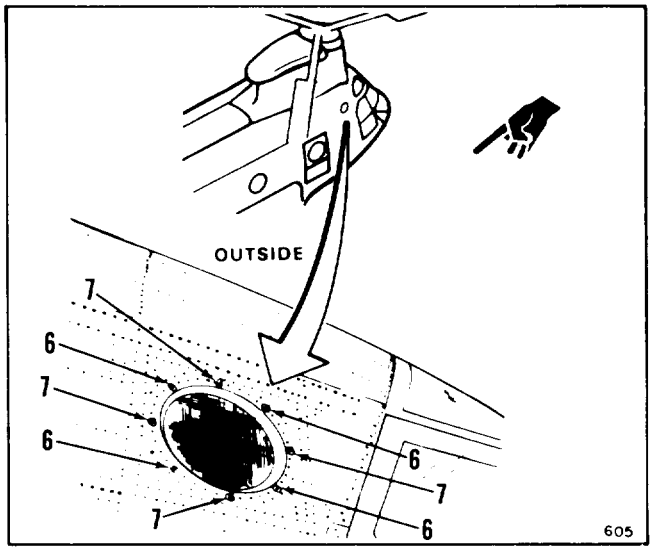
9. **Slide hose (11) up over duct (8)** and slide two clamps (12 and 13) over hose.
10. **Connect hose (11) to fan (5).** Tighten clamp (12) around hose and duct (8). Tighten clamp (13) around hose, fan, and bracket (14).
11. Slide clamp (15), over rubber tube (16), **connect tube to duct (8),** and tighten clamp.
12. **Connect metal tube (17)** to duct (8).
13. Apply bead of sealant (E336) around top of duct (8). Wear gloves (E186).



14. Have helper apply sealant (E336) over screws (6) and around fasteners (7) outside helicopter. Wear gloves (E186).

INSPECT

15. (Deleted)



FOLLOW-ON MAINTENANCE:

Install heater compartment acoustic blanket (Task 2-210).

END OF TASK

13-20 REMOVE HEATER EXHAUST PIPE

INITIAL SETUP

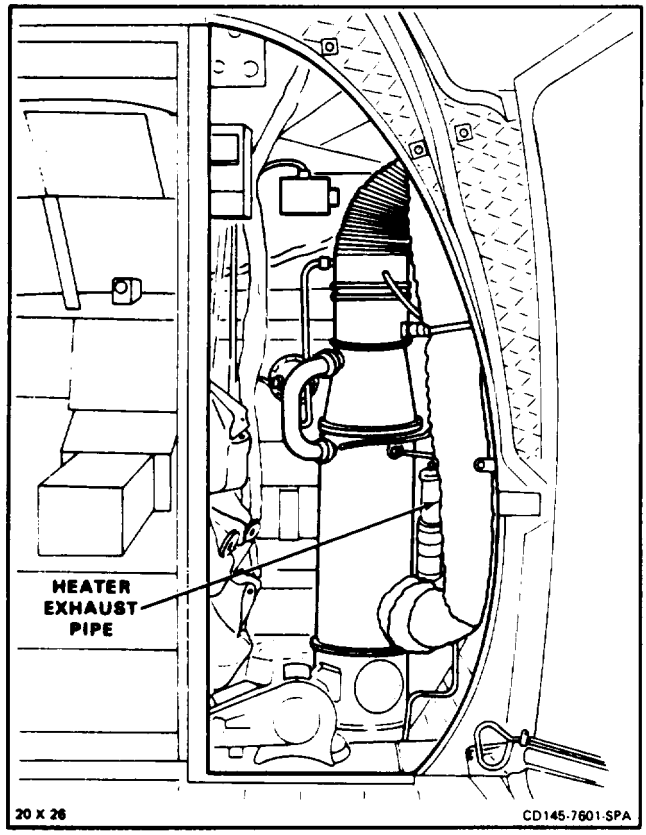
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

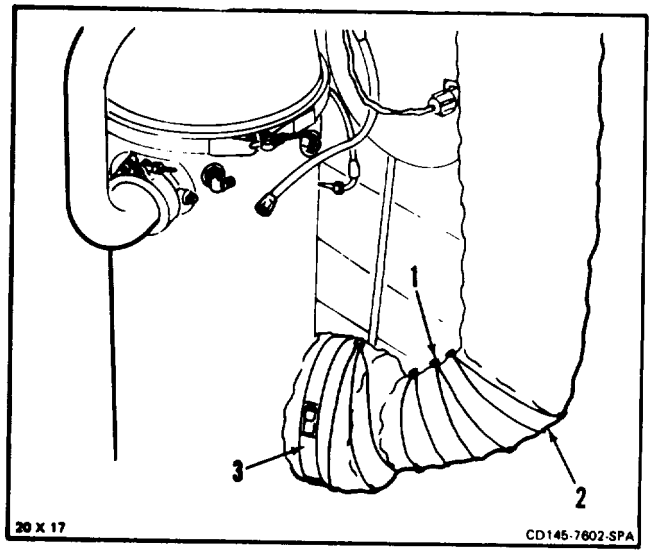
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Heater Compartment Acoustical Blanket Removed (Task 2-208)



1. **Remove lacewire** (1) from exhaust shroud elbow (2).
2. Remove clamp (3).



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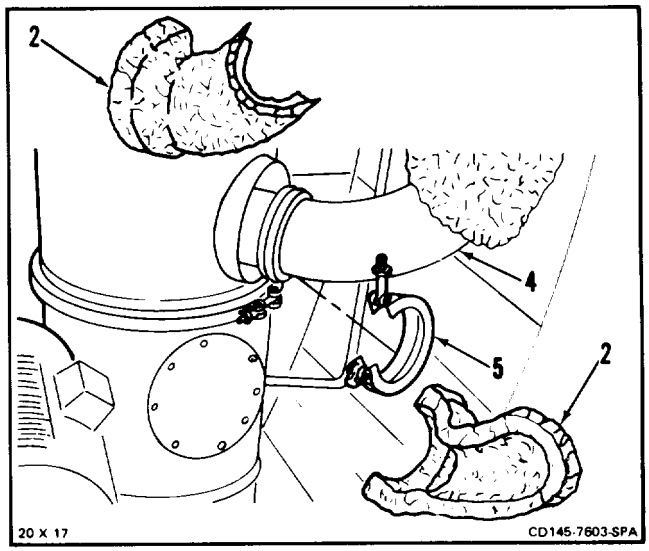
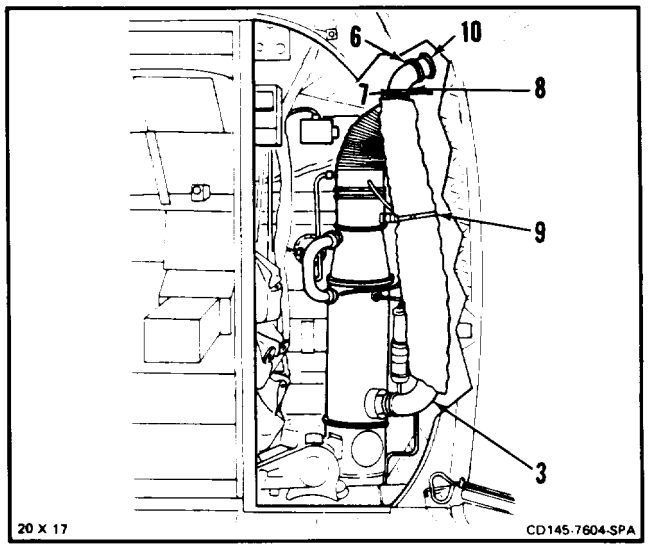
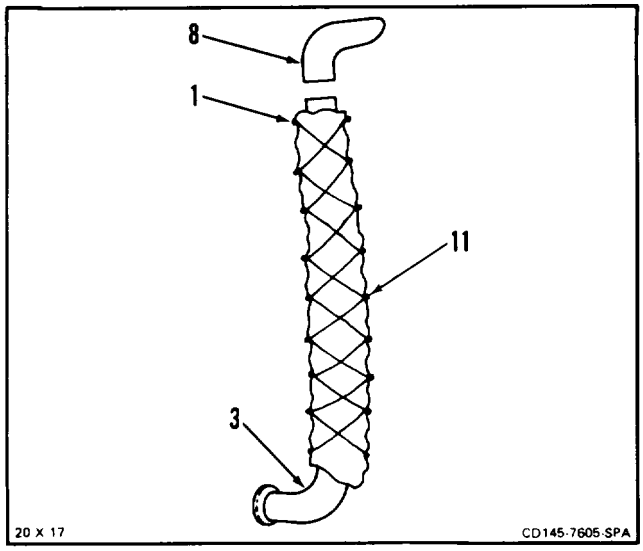
3. **Remove exhaust shroud elbows (2)** from exhaust pipe (4).
4. Remove lockwire and **remove clamp (5)** from pipe (4).



5. **Remove clamps (6 and 7)** from stack (8).
6. **Support pipe (3). Remove clamp (9) and pipe.**
7. Remove gasket (10) if worn or damaged.



8. **Remove stack (8)** from pipe (3.,
9. **Remove lacewire (1)** from exhaust shroud (11). **Remove shroud** from pipe (3).



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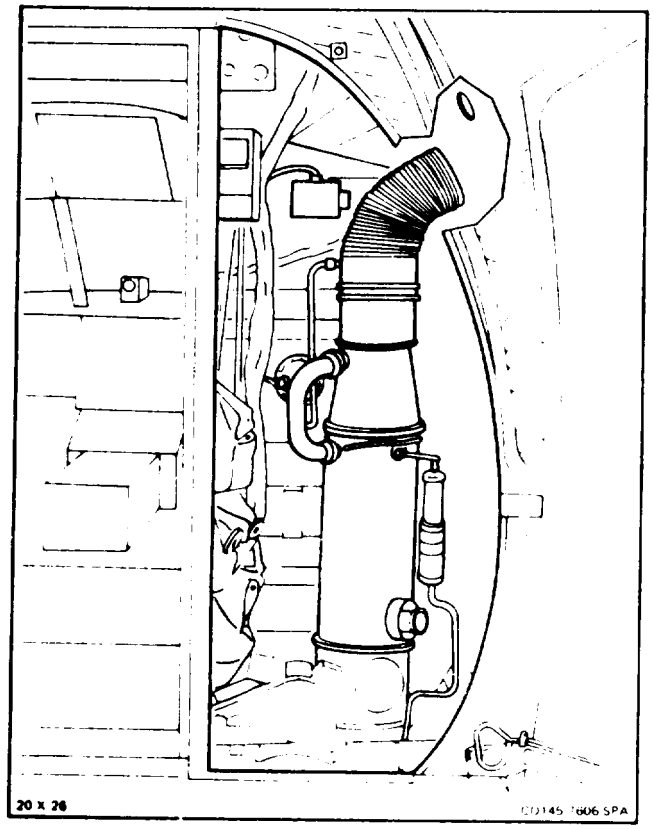
FOLLOW-ON MAINTENANCE:

None



END OF TASK

INITIAL SETUP

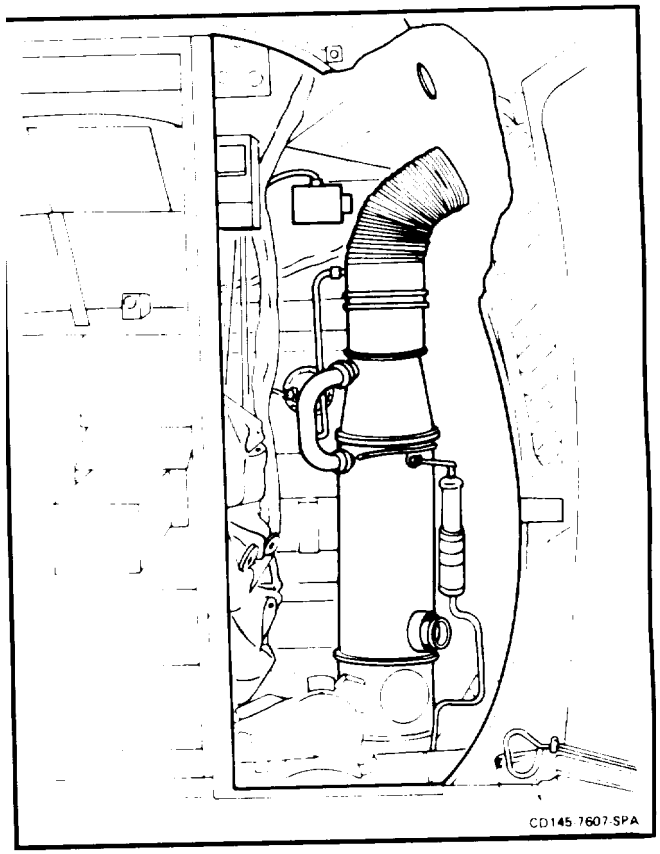
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

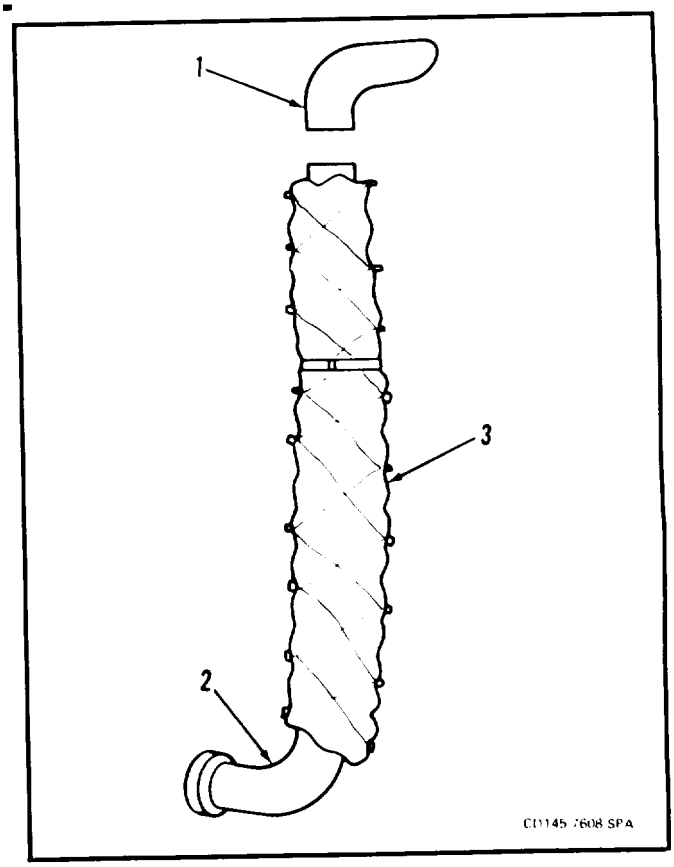
Materials:
Gloves (E186)
Lockwire (E231)
Lockwire (E233)
Sealant (E332.1)
Dry Cleaning Solvent (E162)
Cloth (E120)

Personnel Required:
Medium Helicopter Repairer
Inspector

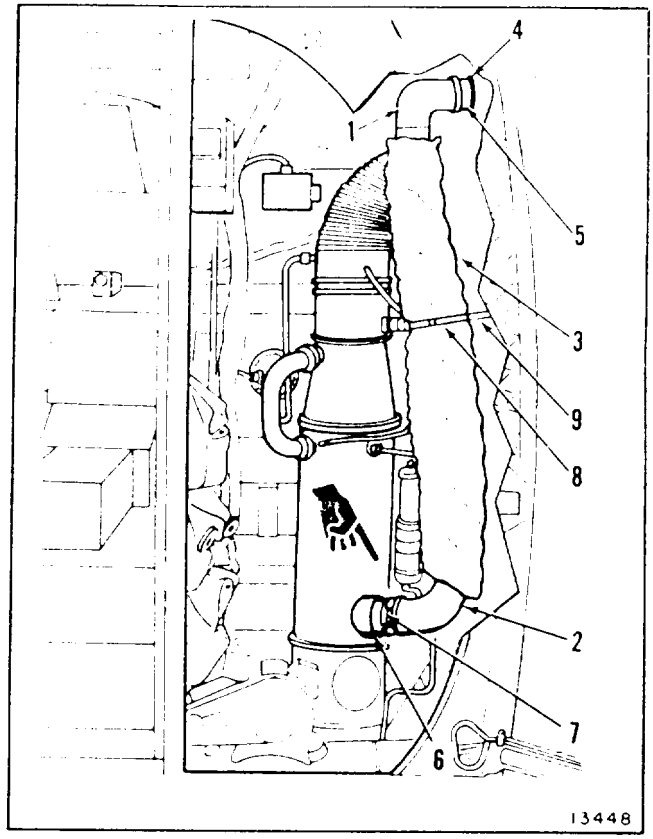
References:
TM 55-1520-240-23P
Task 2-324



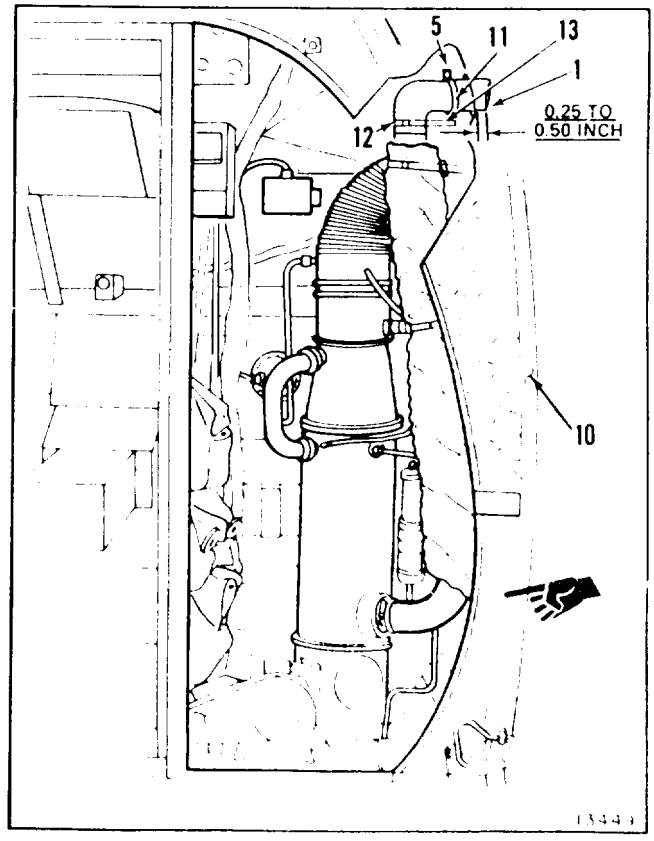
1. Install stack (1) over heater exhaust pipe (2).
2. Position exhaust shroud (3) on pipe (2). Lacewire shroud together. Use Iockwire (E233).



3. If gasket (4) was removed, install new gasket.
4. Insert stack (1) into support (5).
5. **Position lower end of pipe (2) on heater outlet (6). Install clamp (7)** and lockwire (E231).
6. **Install clamp (8) on bracket (9)** and shroud (3).



7. **Slide stack (1) through support (5) until stack protrudes 0.25 to 0.50 inch** from fuselage (10). Install clamp (11) on support and stack.
8. **Install clamp (12)** on bracket (13) and stack (1).



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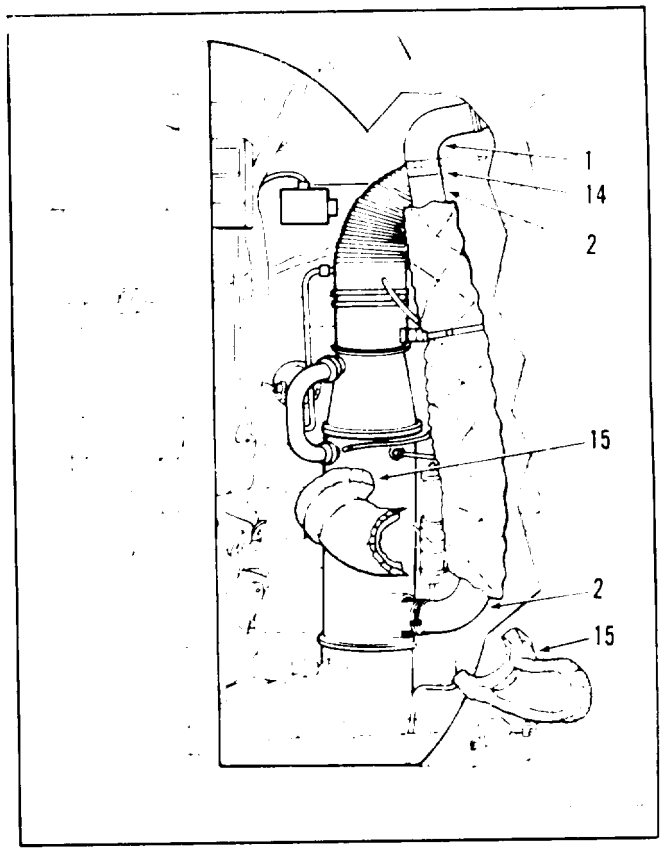
WARNING

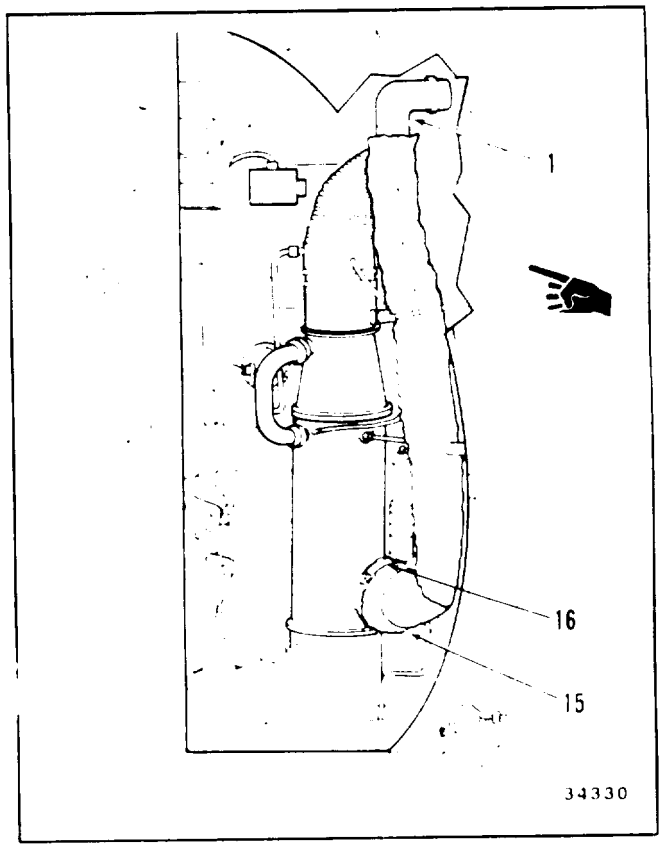
Dry cleaning solvent (E162) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

9. **Clean joint between stack (1) and pipe (2).** Use dry cleaning solvent (E162) and cloths (E120). Wear gloves.
10. **Apply a fillet (14) of sealant (E332.1) to the joint.**
11. **Install exhaust shroud elbows (15)** around pipe (2).



12. **Lacewire shroud elbows (15)** together. Use lockwire (E233).
13. Install clamp (16).
14. Seal stack (1) to edge of skin. (Task 2-324)

INSPECT



FOLLOW-ON MAINTENANCE:
Install heater compartment acoustical blanket (Task 2-210).

END OF TASK

13-22 REMOVE HEATER TRANSITION DUCT

INITIAL SETUP

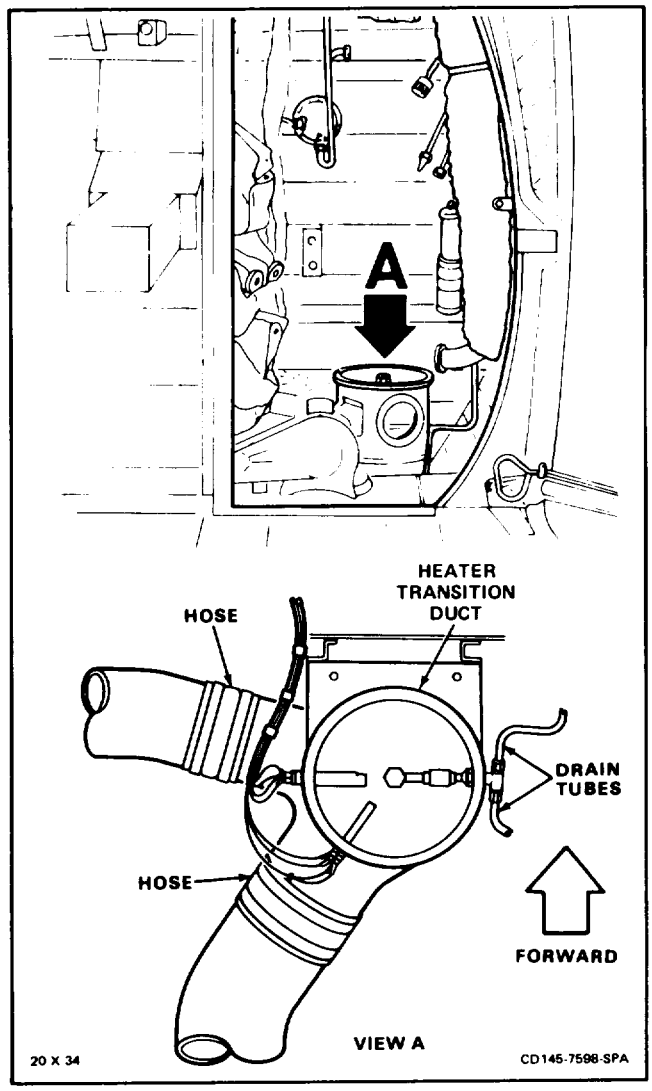
Applicable Configurations:
All

Tools:
Aircraft Mechanics Tool Kit,
NSN 5180-00-323-4692

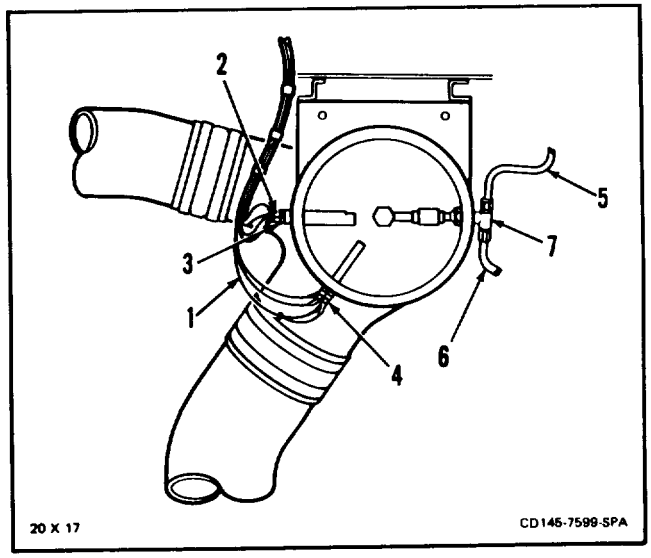
Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
67U10 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Heater Removed (Task 13-2)



1. Tag and disconnect wires (1) from three thermostatic switches (2, 3, and 4). Tape ends of wires. Use tape (E385).
2. Disconnect drain tubes (5 and 6) from tee *(7)*.



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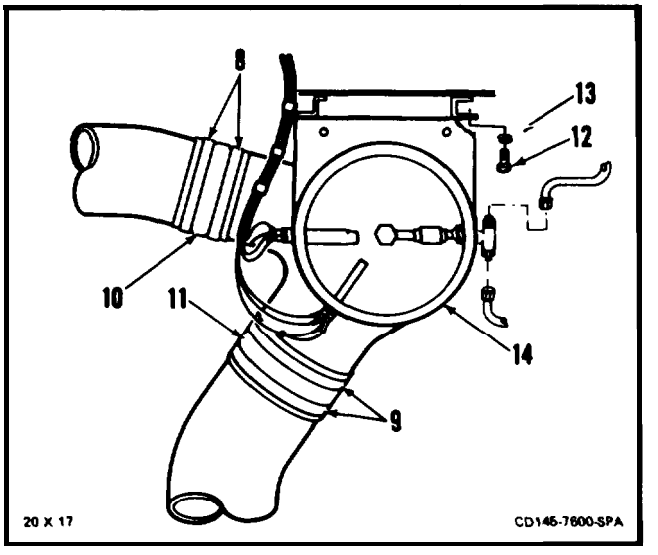
13-22 REMOVE HEATER TRANSITION DUCT (Continued) 13-22

3. Remove clamps (8 and 9) **from hoses** 10 **and 11).**

4. Romove four bolts (12) **and washers (13).** Remove heater transition duct (14).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

13-23 INSTALL HEATER TRANSITION DUCT

INITIAL SETUP

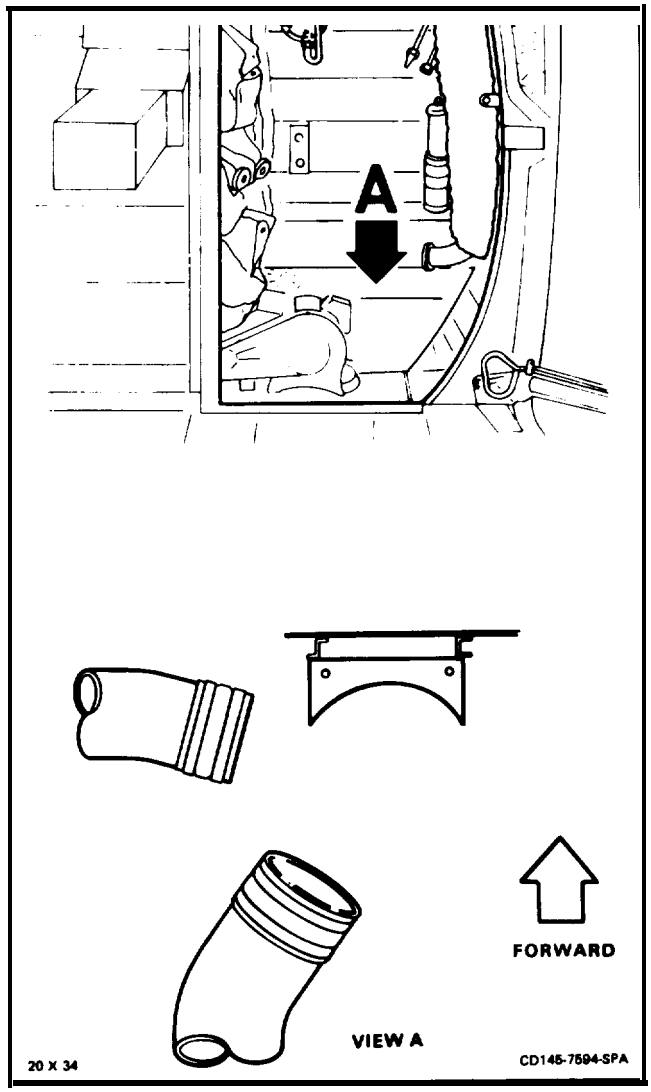
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

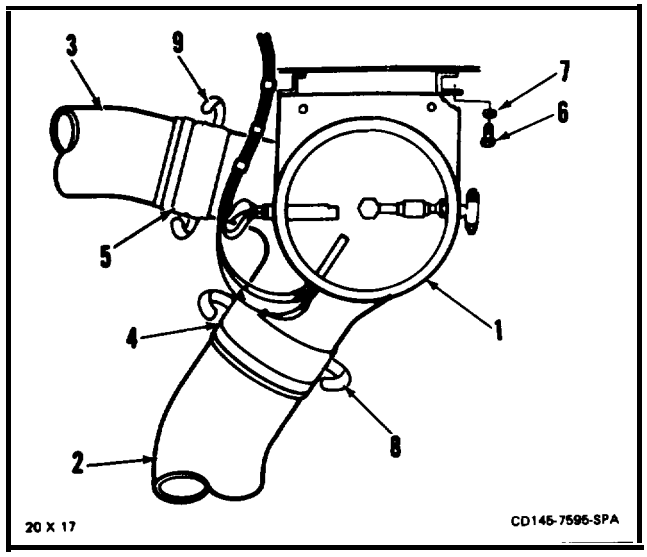
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

References:
TM 55-1520-240-23P



1. **Position heater transition duct (1) with outlets (2 and 3) in hoses (4 and 5). Install four bolts (6)** and washers (7).
2. **Install clamps (8 and 9)** on hoses (4 and 5).



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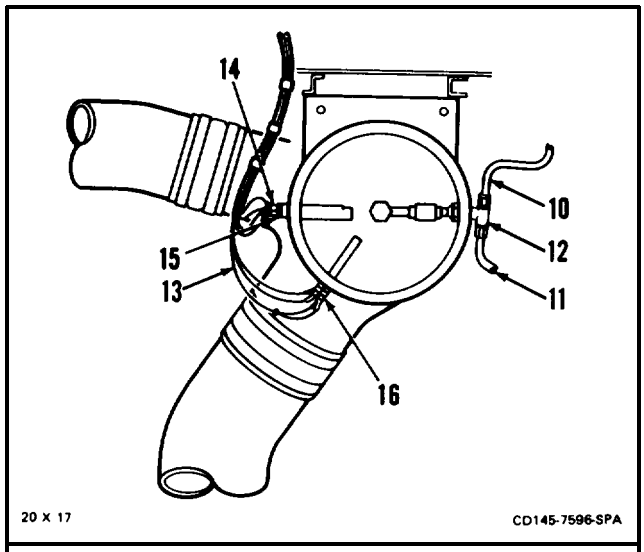
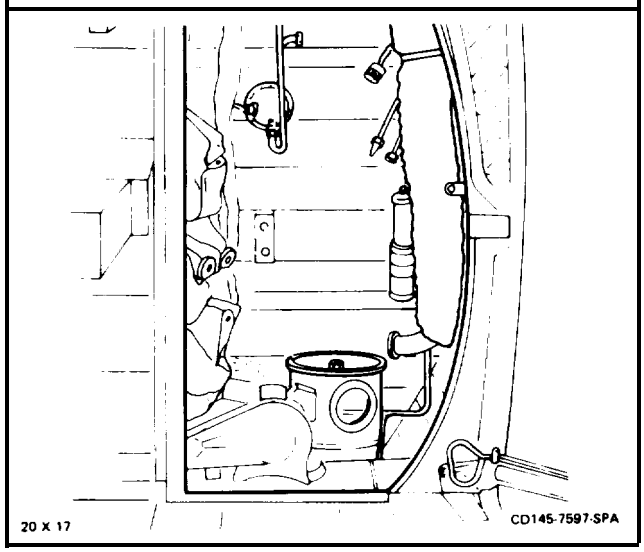
13-23 INSTALL HEATER TRANSITION DUCT (Continued)

3. Connect drain tubas (10 and 11) to tee (12).
4. Remove tape from ends of wires (13).
5. Connect wires (13) to three thermostatic switches (14, 15, and 16). Remove tags.





FOLLOW-ON MAINTENANCE:

Install heater (Task 13-8).

END OF TASK

13-24 REMOVE DISTRIBUTOR AIR DUCT

INITIAL SETUP

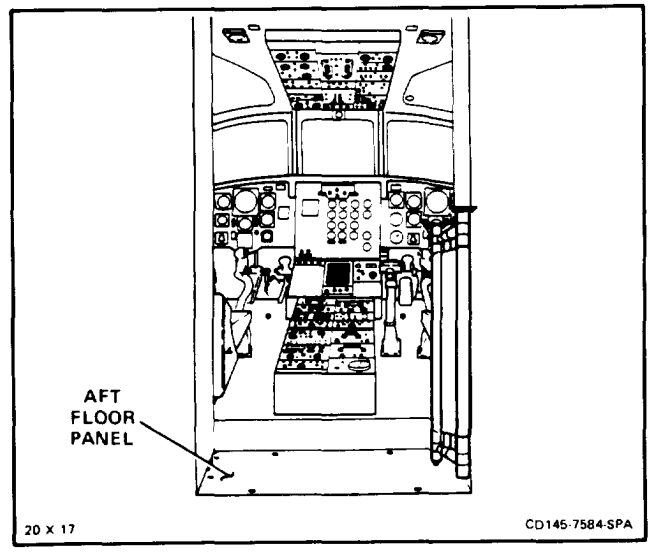
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

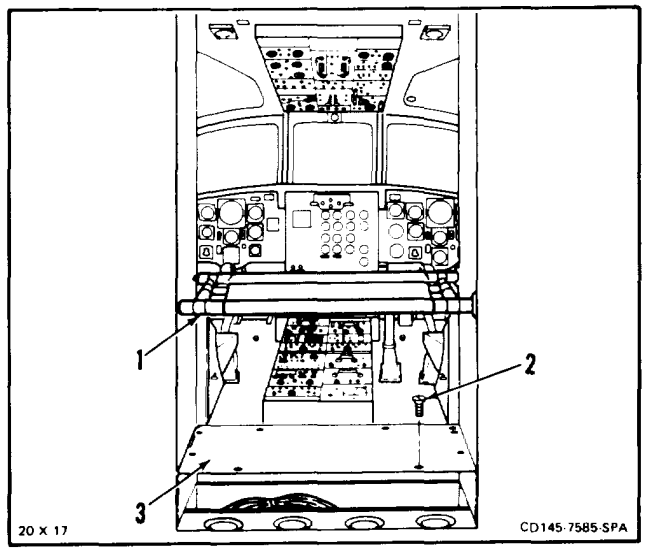
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer (2)

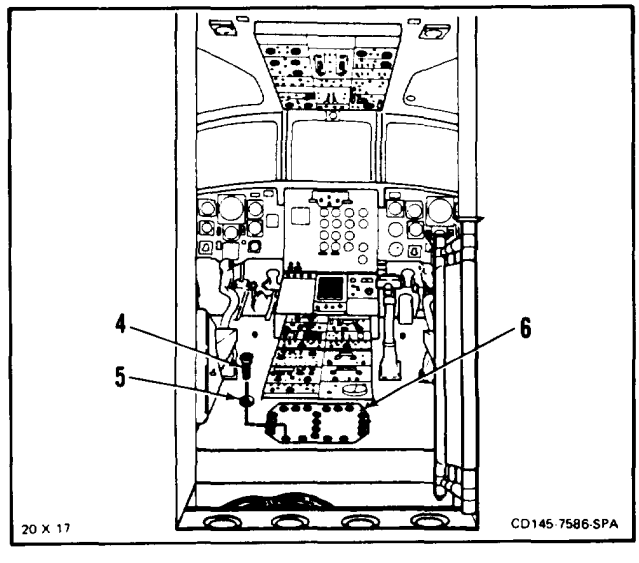
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. Have helper **hold troop commanders seat** (1) in horizontal position.
2. **Remove nine screws (2).**
3. **Tilt floor panel (3)** as needed to clear structure. **Remove panel.**
4. Lower seat (1) to stowed position.



5. Remove 22 screws (4) and washers (5) from access panel (6).
6. **Remove access panel (6).**



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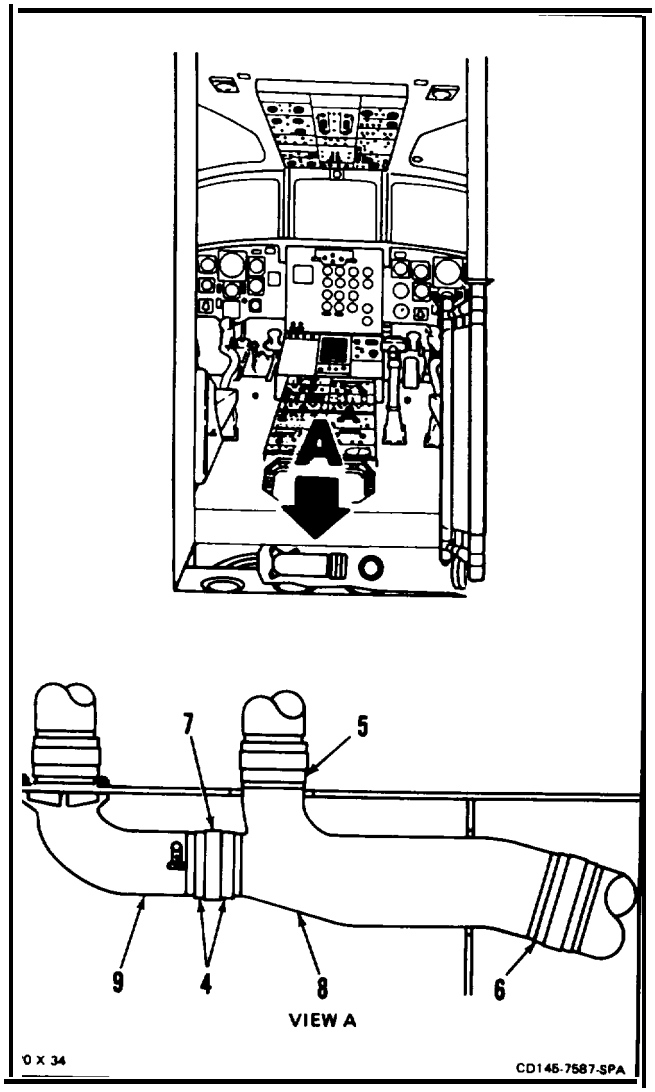
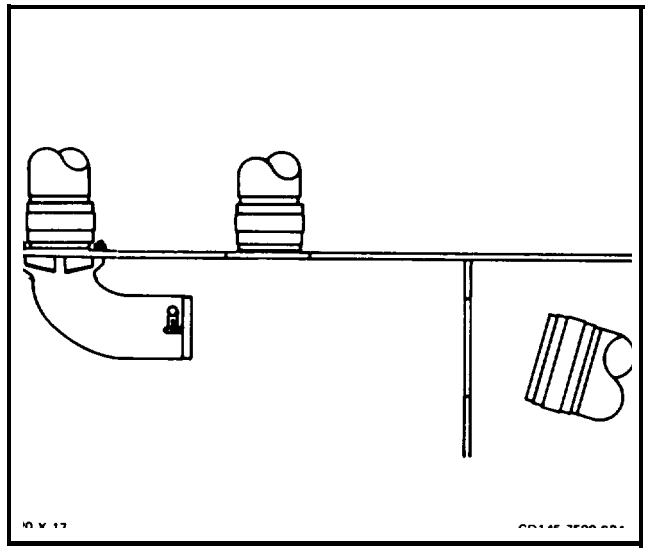
13-24 REMOVE DISTRIBUTOR AIR DUCT (Continued)

7. **Remove four clamps (4, 5, and 6).**
8. **Slide hoses (7)** clear of joint between distributor air duct (8) and valve (9).
9. **Romove distributor air duct (8).**



FOLLOW-ON MAINTENANCE:

None



END OF TASK

13-25 INSTALL DISTRIBUTOR AIR DUCT

INITIAL SETUP

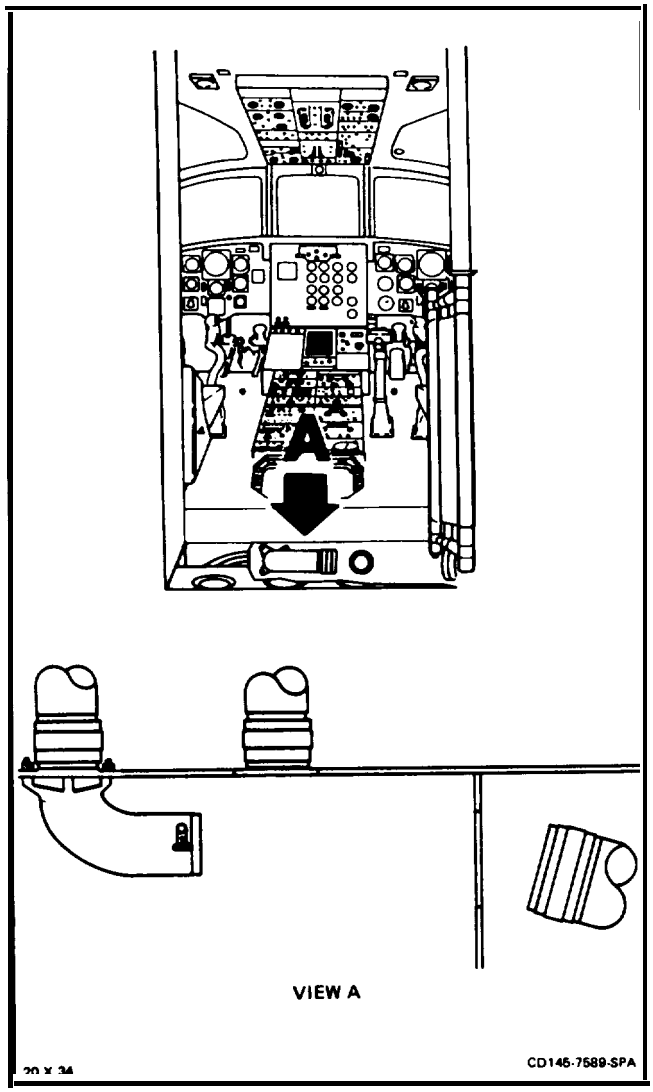
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

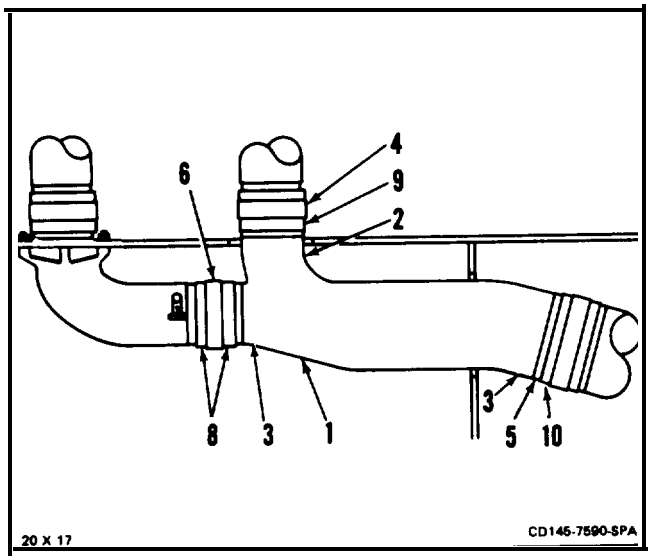
Personnel Required:
67U10 Medium Helicopter Repairer

References:
TM 55-1520-240-23P



1. **Position air duct (1)** with outlets (2 and 3) in hoses (4 and 5).
2. **Slide boses (6) over outlet (3)** of distributor air duct (1).
3. **Install four clamps (8, 9, and 10).**

INSPECT



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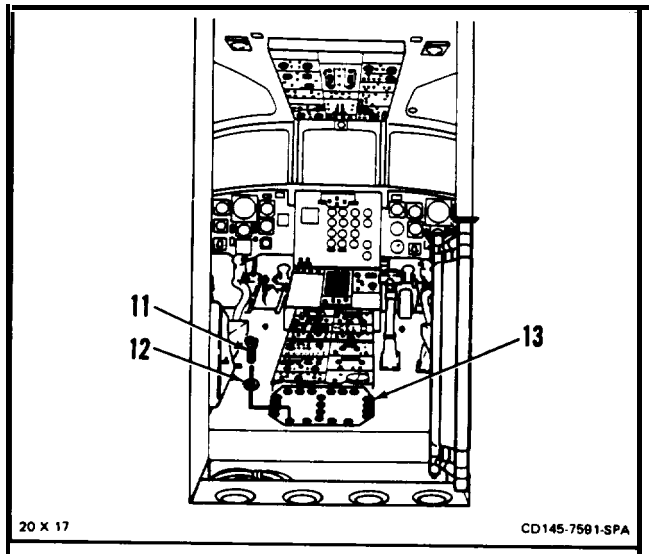
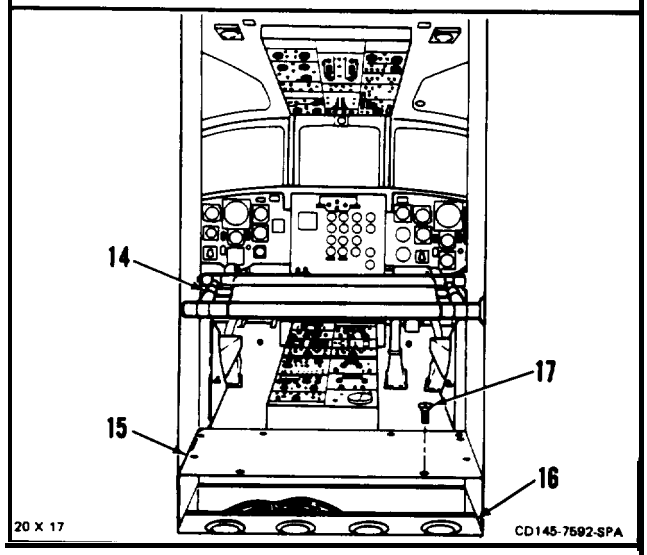
13-25 INSTALL DISTRIBUTOR AIR DUCT (Continued)

4. **Install** 22 screws (11), washers (12), and **access panel (13).**

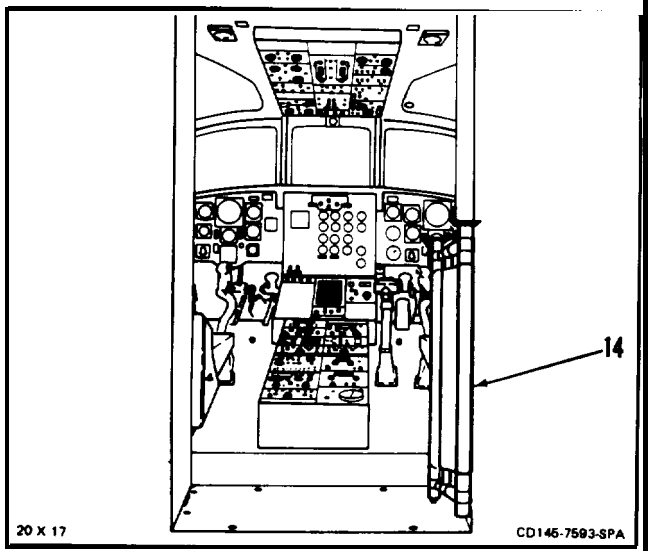


5. **Have helper hold troop commanders seat (14) in horizontal position.**
6. **Position floor panel (15) on structure (16). Install nine straws (17).**
7. **Lower seat (14) to stowed position.**



FOLLOW-ON MAINTENANCE:

None



END OF TASK

13-26 REMOVE DEFROST VALVE

INITIAL SETUP

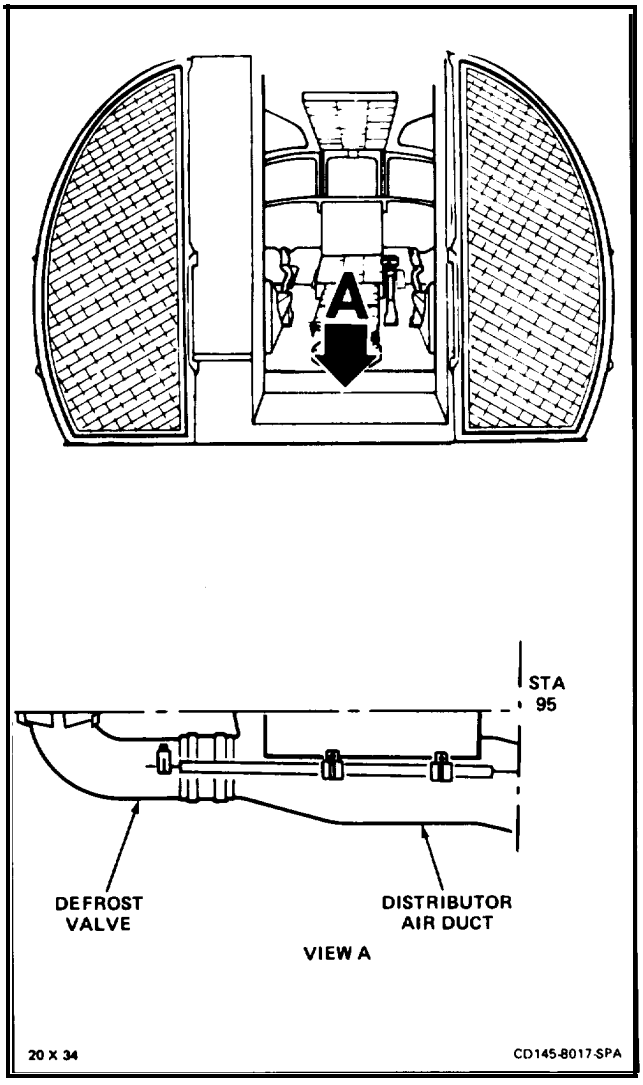
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

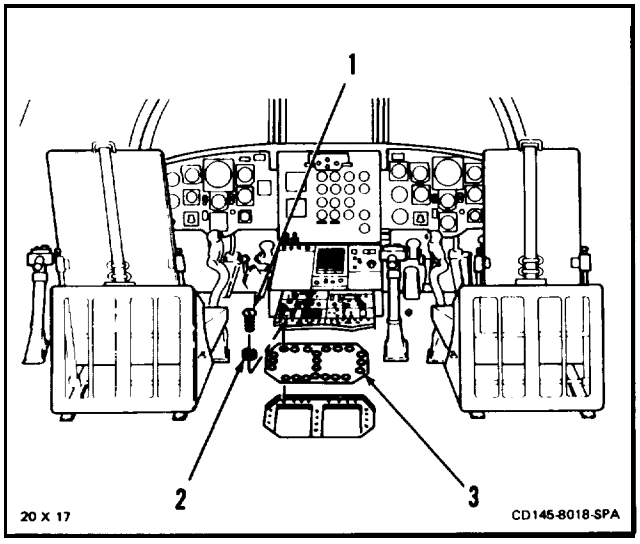
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Cockpit Aft Floor Removed (Task 2-83)



1. Remove 22 screws (1) and washer (2) from cockpit aft floor access panel (3). Remove panel.



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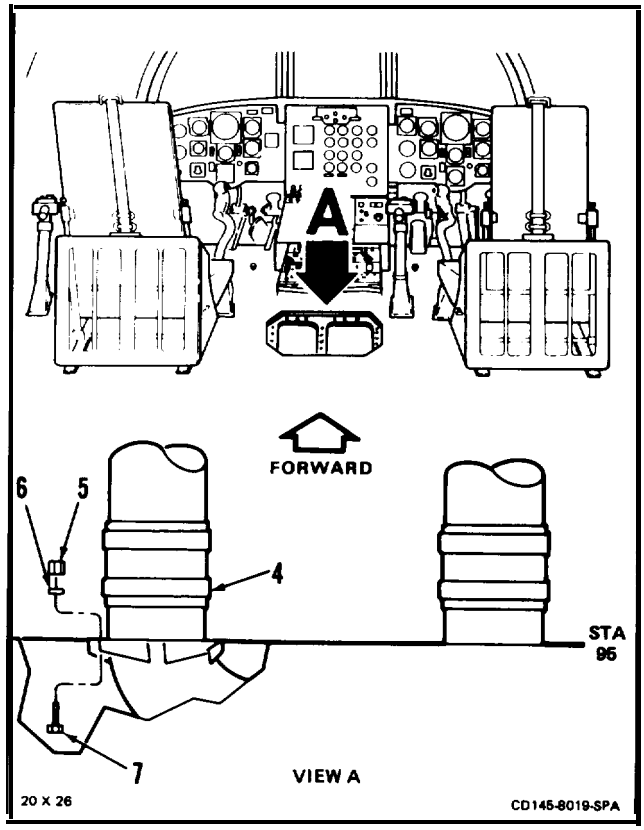
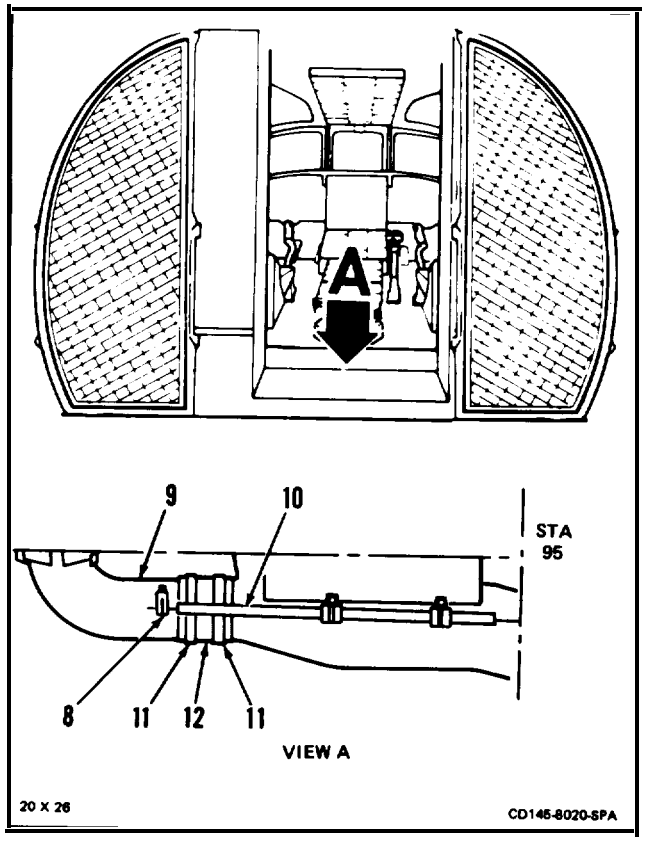
13-26 REMOVE DEFROST VALVE (Continued)

2. Loosen clamp (4).
3 With aid of helper, remove three nuts (5), washers (6), and bolts (7).



4. Loosen cable clamping nut (8) on defrost valve (9). Remove cockpit defrost control cable (10).
5. Loosen two clamps (11). Slide hose (12) to clear joint.
6. Remove valve (9).
7. Remove hose (12).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-27 INSTALL DEFROST VALVE

INITIAL SETUP

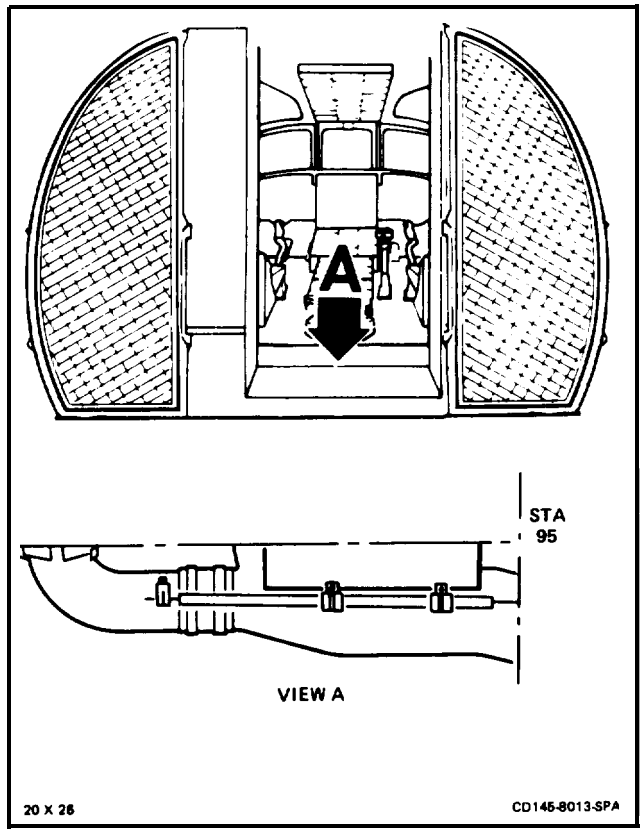
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

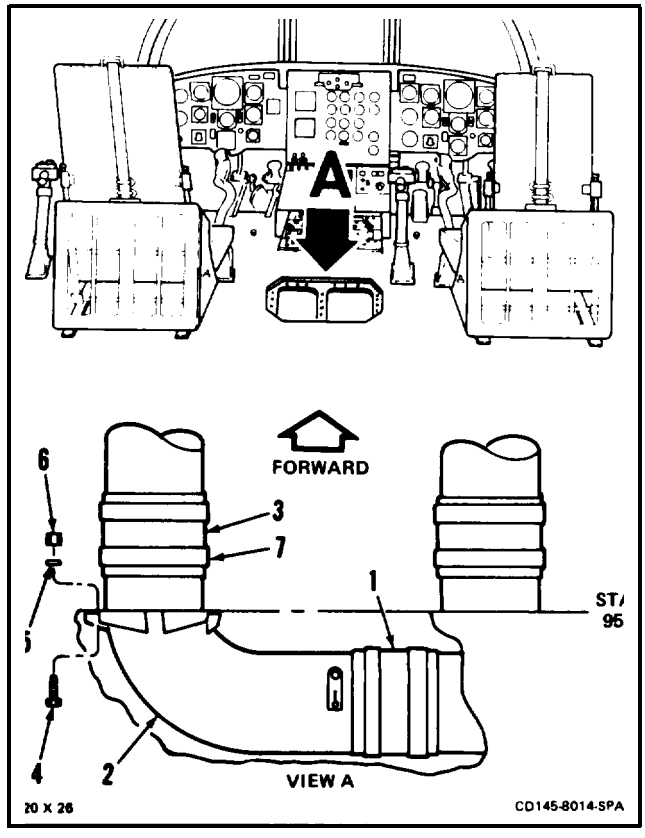
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P



1. **Slide hose (1) on defrost valve (2).**
2. **Insert defrost valve (2) into hose (3).**
3. Align mount holes in valve (2) and sta 95. With aid of helper, **install three bolts (4), washers (5), and nuts (6).**
4. **Tighten clamp (7).**



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13-27 INSTALL DEFROST VALVE (Continued)

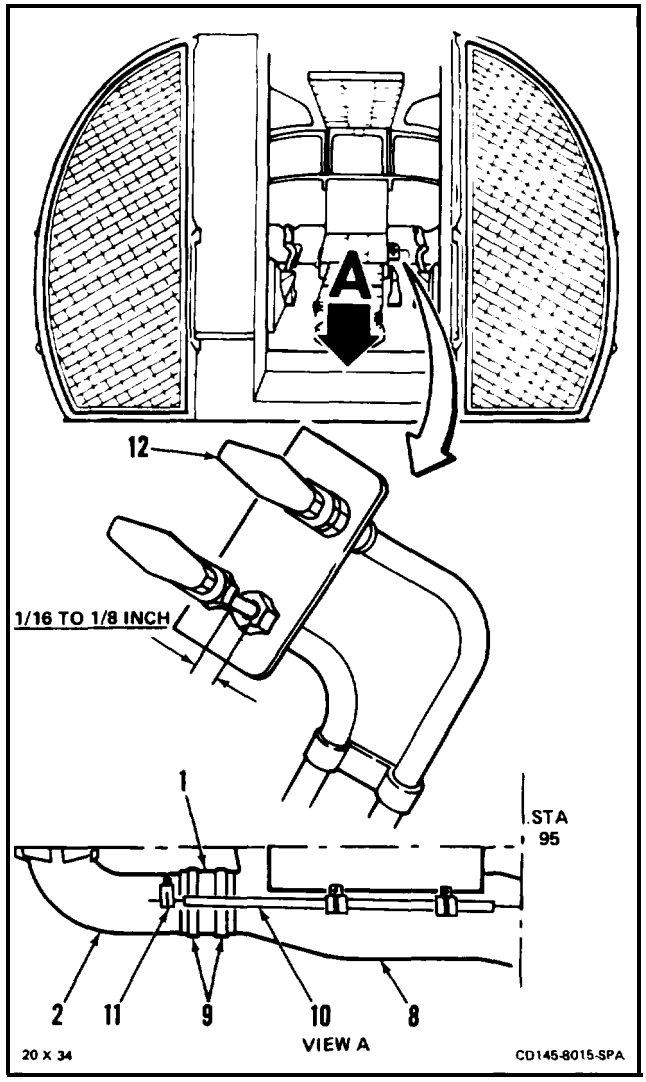
5. **Slide hose (1) over joint** between valve (2) and distributor duct (8). **Install two clamps (9).**

6. **Insert cockpit defrost control cable (10)** in cable clamping nut (11).

7. **Have helper,** in cockpit, **hold** cockpit **defrost control handle (12)** in a position **1/16 to 1/8-inch short of fully closed.**

8. **Hold valve (2) fully closed. Tighten clamping nut (11).**

9. **Have helper operate handle (12). Check that valve (2) opens and closes.**

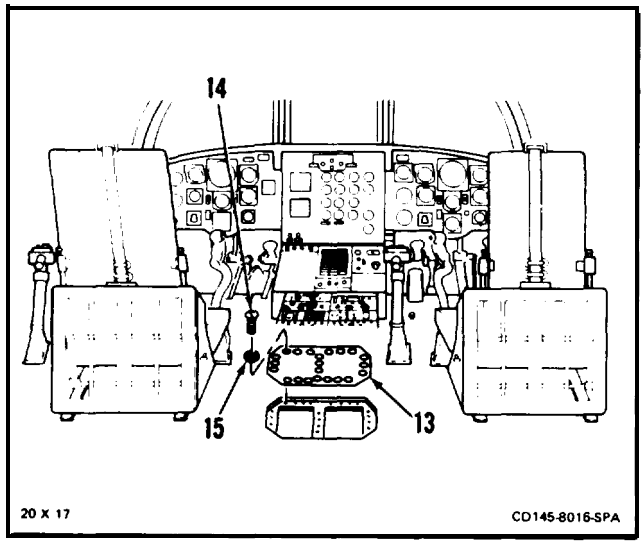


INSPECT

10. Position aft floor access panel (13) in cockpit. Install 22 screws (14) and washers (15).

FOLLOW-ON MAINTENANCE:

Install cockpit aft floor (Task 2-84)



END OF TASK

13-28 REMOVE COCKPIT DUCTING

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:

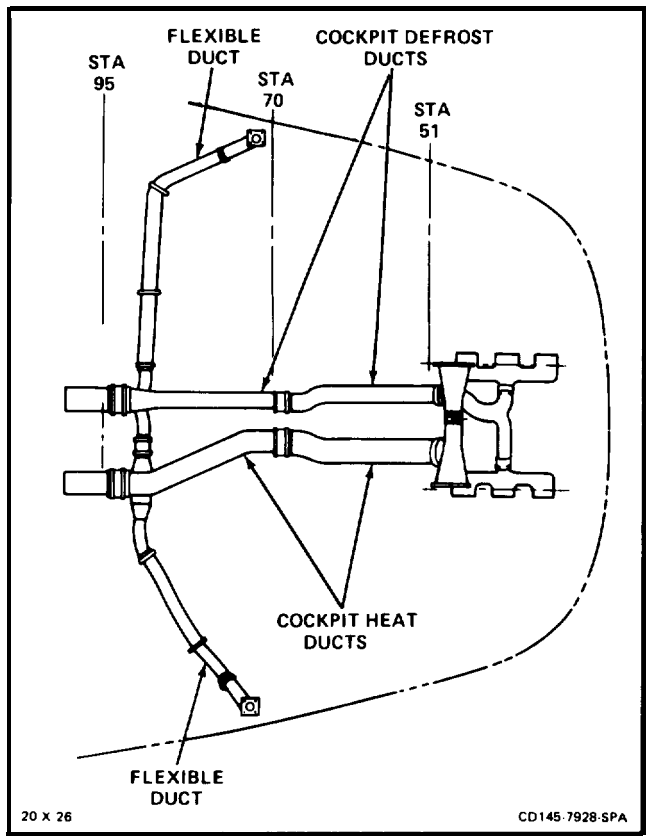
None

Personnel Required:

Medium Helicopter Repairer

Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Cockpit Ducting Access Panel Removed (Task 2-2)
Pilot's and Copilot's Jettisonable Door Removed (Task 2-86)
Pilot's and Copilot's Seat Removed (Task 2-111)
Pilot's and Copilot's Floor Access Panel Removed (Task 2-79)
Cockpit Dynamic Absorber Removed (Task 2-145)
Pilot's and Copilot's Landing Light Removed (Task 9-69)



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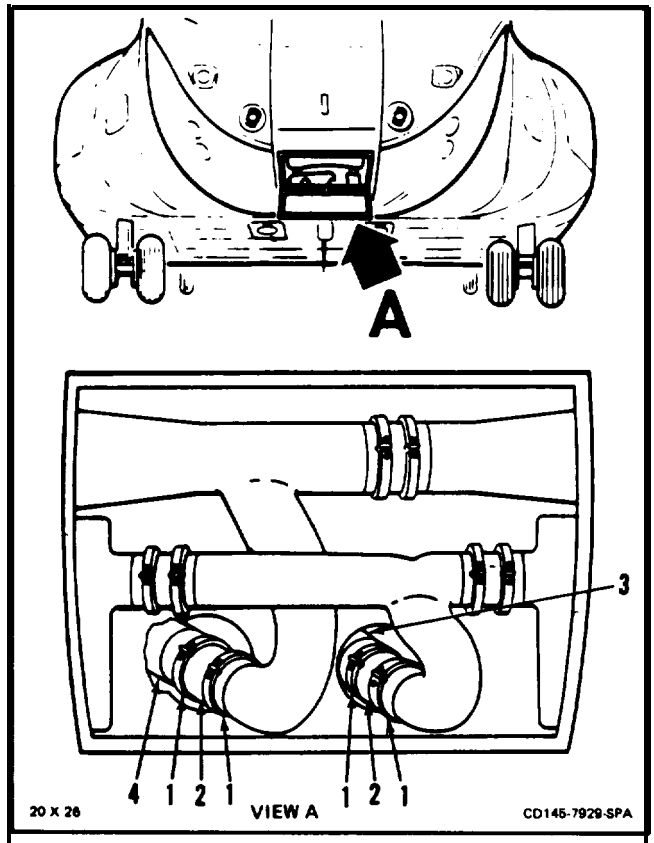
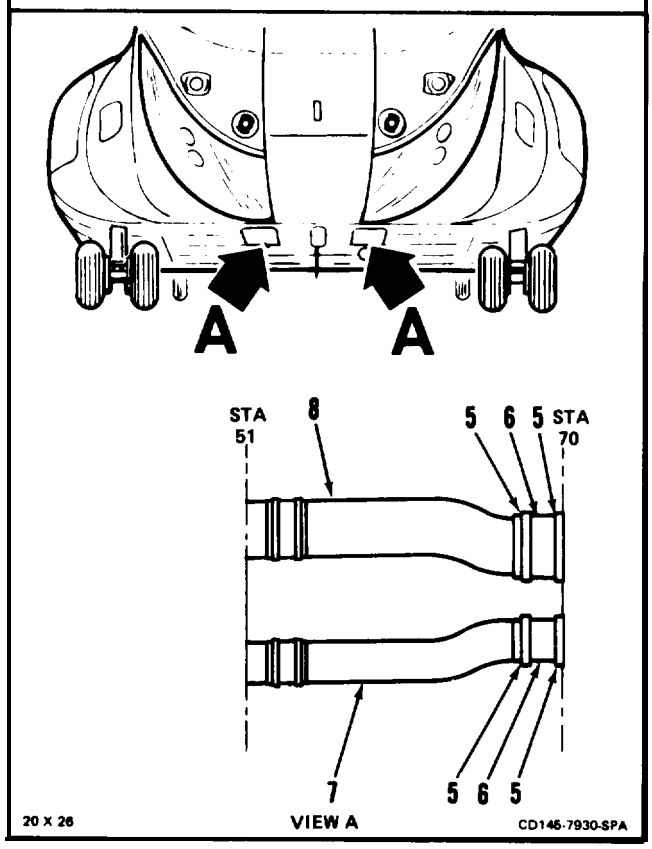
13-28 REMOVE COCKPIT DUCTING (Continued) 13-28

1. **Loosen four clamps (1). Slide two hoses (2) aft onto defrost duct (3) and heat duct (4)** to clear joints between ducts.



2. **Loosen four clamps (5). Slide two hoses (6) forward onto defrost duct (7) and heat duct (8).**
3. **Remove ducts (7 and 8).** Remove four clamps (5) and two hoses (6) from each duct.



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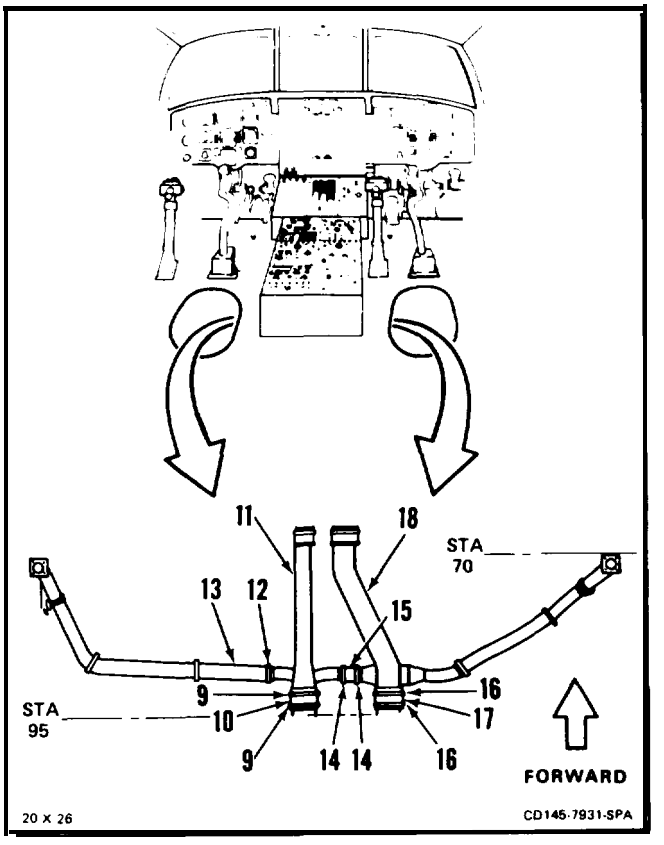
13-28 REMOVE COCKPIT DUCTING (Continued)

4. **Loosen two clamps (9). Slide hose (10) forward onto defrost duct (11).**
5. **Loosen clamp (12). Remove flex duct (13)** from defrost duct (11).
6. **Loosen two clamps (14). Slide hose (15) onto defrost duct (11).**
7. **Remove defrost duct (11).** Remove clamps (9 and 14) and hoses (10 and 15).
8. **Loosen two clamps (16). Slide hose (17) forward onto heat duct (18).**
9. **Romove heat duct (18).** Remove clamps (16) and hose (17).



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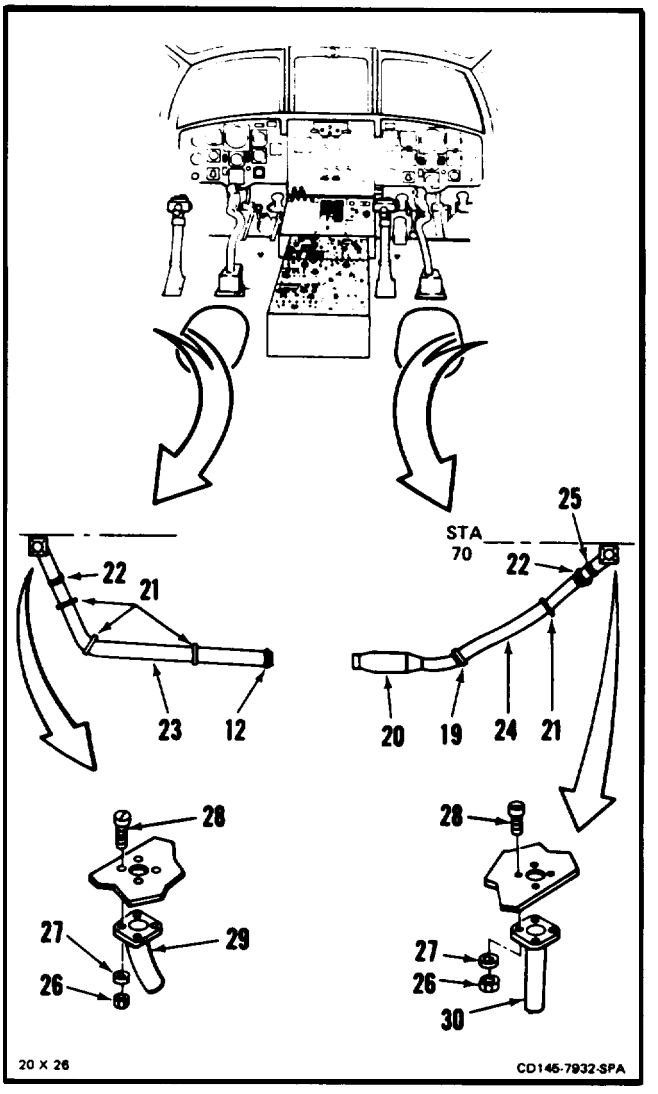
13-28 REMOVE COCKPIT DUCTING (Continued)

10. **Loosen clamp (19). Remove defrost duct (20).**
11. **Remove three support clamps (21).**
12. **Loosen two clamps (22). Remove defrost hoses (23 and 24).** Remove clamp (12, 19, and 22).
13. **Remove support clamp (25).**
14. Remove four nuts (26), washers (27), and screws (28) from each defrost duct (29 and 30), **Remove ducts.**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-29 INSTALL COCKPIT DUCTING 13-29

INITIAL SETUP

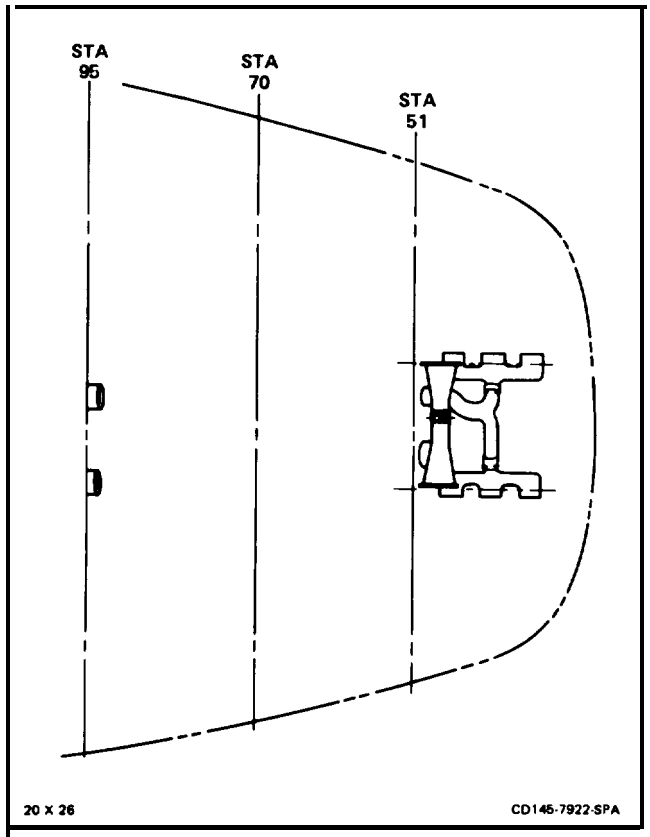
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

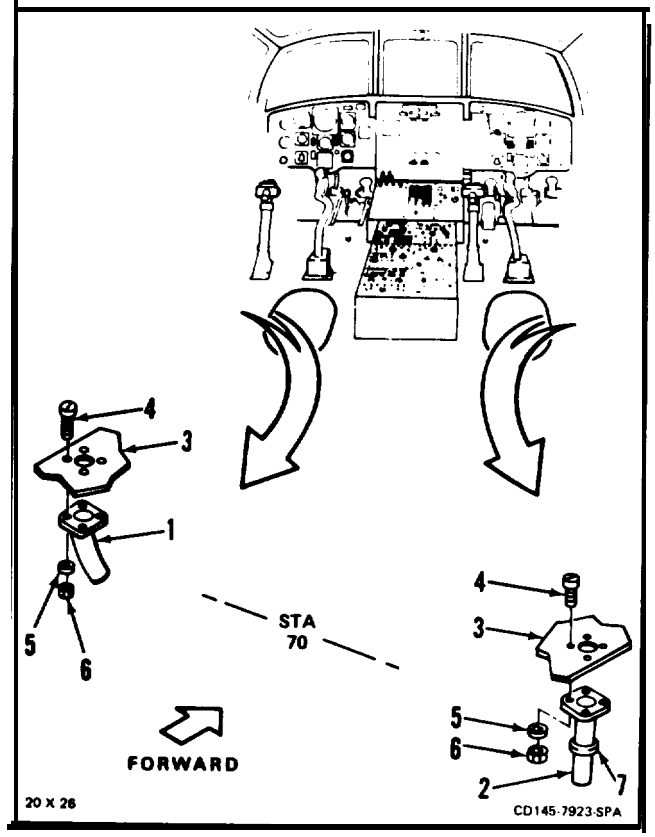
Materials:
None

Personnel Required:
67U20 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P



1. **Align holes in flange of defrost ducts (1 and 2) with holes in cabin floor (3).**
2. **Install four screws (4),** washers (5), and nuts (6) in each duct (1 and 2).
3. **Install support clamp (7).**



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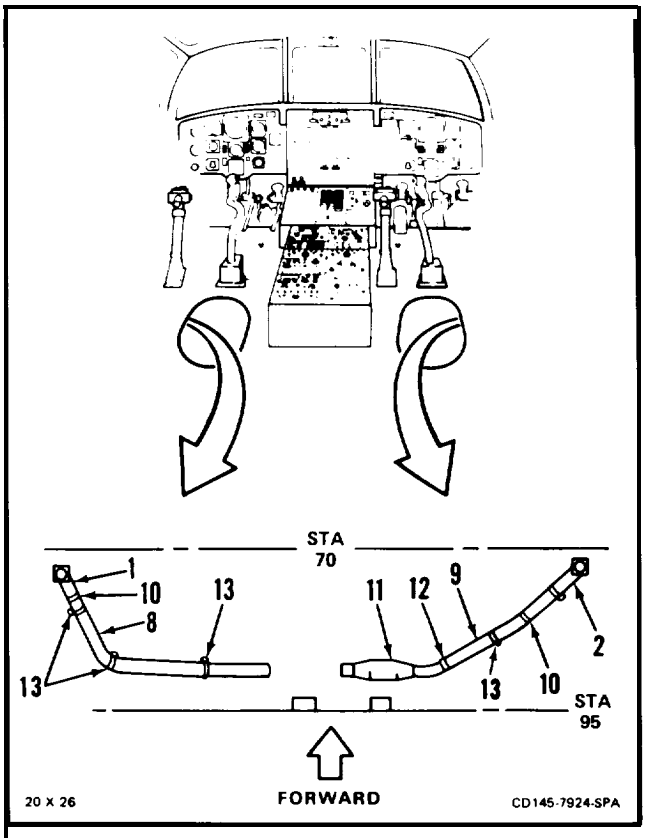
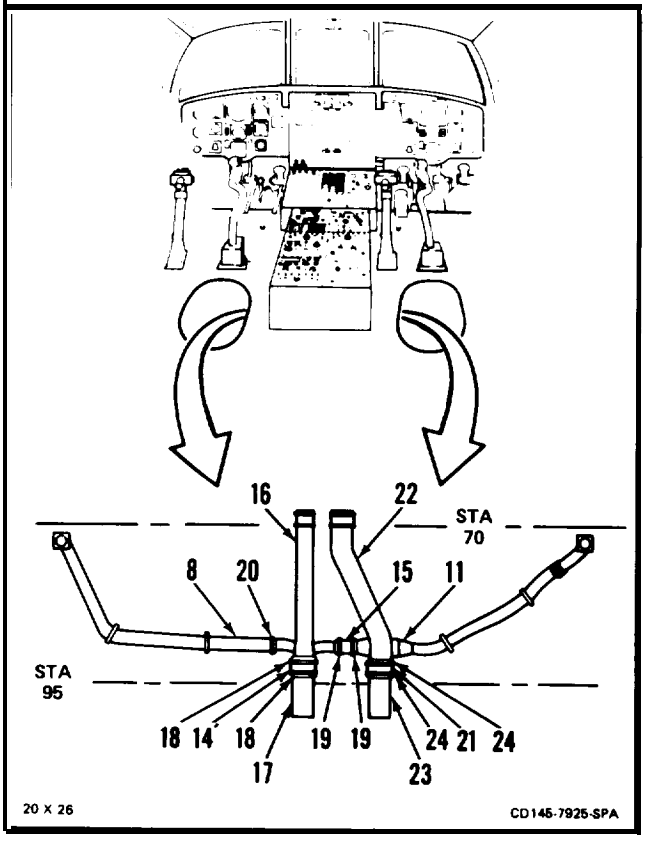
13-29 INSTALL COCKPIT DUCTING (Continued)

4. **Install defrost hoses (8 and 9)** on ducts (1 and 2), Install two clamps (10).
5. **Install defrost duct (11)** in hose (9). **Install clamp (12).**
6. **Install four support clamps (13).**



7. Slide hoses (14 and 15) onto defrost duct (16).
8. **Position duct (16)** between flex hose (8) and defrost duct (11). **Slide hose (14) over joint between ducts (16 and 17). Install two clamps (18).**
9. **Slide hose (15) over joint between ducts (16 and 11). Install two clamps (19).**
10. **Slide flax boss (8) onto duct (16). Install clamp (20).**
11. Slide hose (21) onto heat duct (22).
12. **Position heat duct (22) on distributor duct (23). Slide boss (21) over joint between ducts. Install two clamps (24).**



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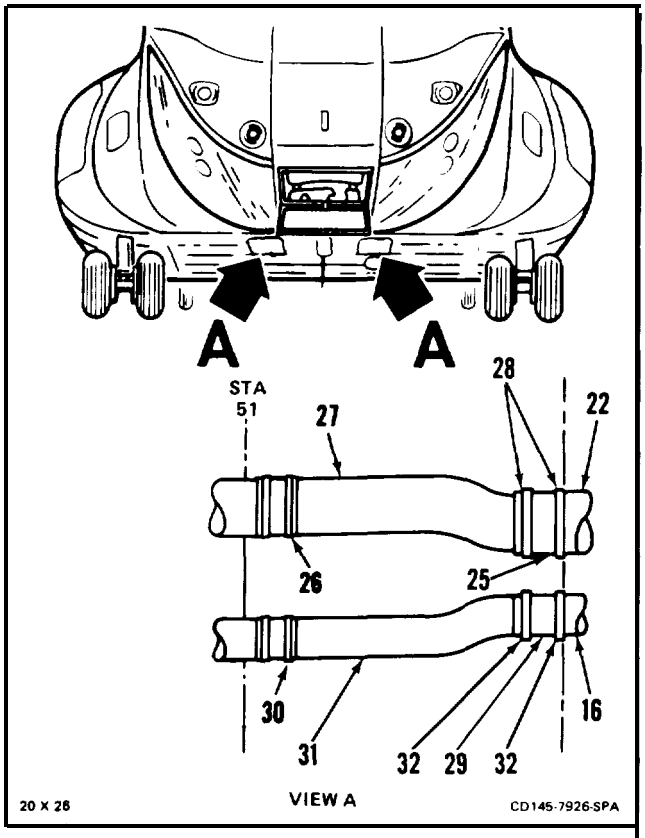
13-29 INSTALL COCKPIT DUCTING (Continued) 13-29

13. Slide hoses (25 and 26) on heat duct (27).
14. **Position heat duct (27) on duct (22). Slide hose (25) over joint between ducts. Install two clamps (28).**
15. Slide hoses (29 and 30) on defrost duct (31).
16. **Position duct (31) on duct (16). Slide hose (29) over joint between ducts. Install two clamps (32).**



17. **Align heat duct (27) and heat outlet duct (33). Slide hose (26) over joint between ducts. Install two clamps (34).**
18. **Align defrost duct (31) with defrost diffuser duct (35). Slide hose (30) over joint between ducts. Install two clamps (36).**

FOLLOW-ON MAINTENANCE:

Install cockpit dynamic absorber (Task 2-146).

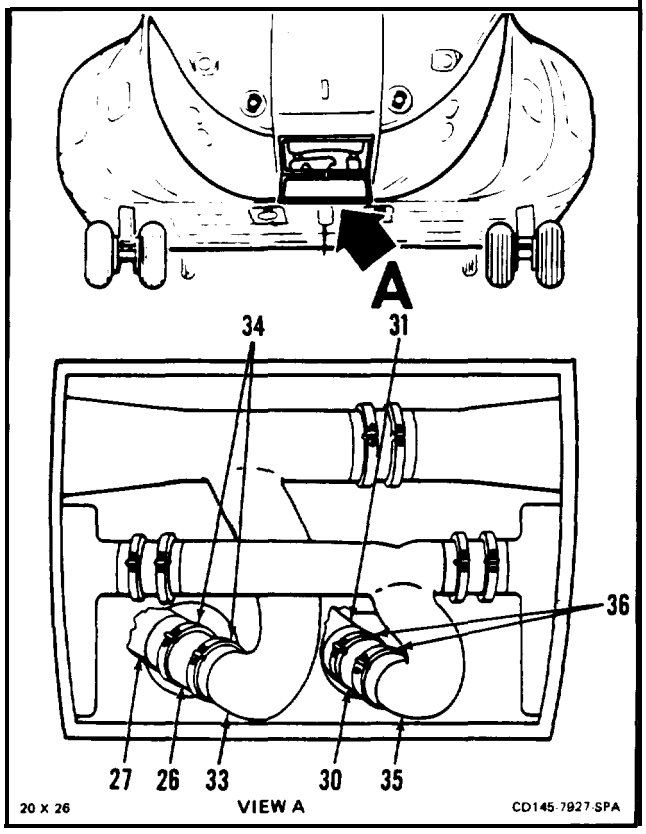
Install pilot's and copilot's floor access panel (Task 2-80).

Install pilot's and copilot's seat (Task 2-114).

Install pilot's and copilot's jettisonable doors (Task 2-89).

Install pilot's and copilot's landing light (Task 9-79).

Install cockpit ducting access panel (Task 2-2).



END OF TASK

13-30 REMOVE COCKPIT AIR OUTLET DUCT

INITIAL SETUP

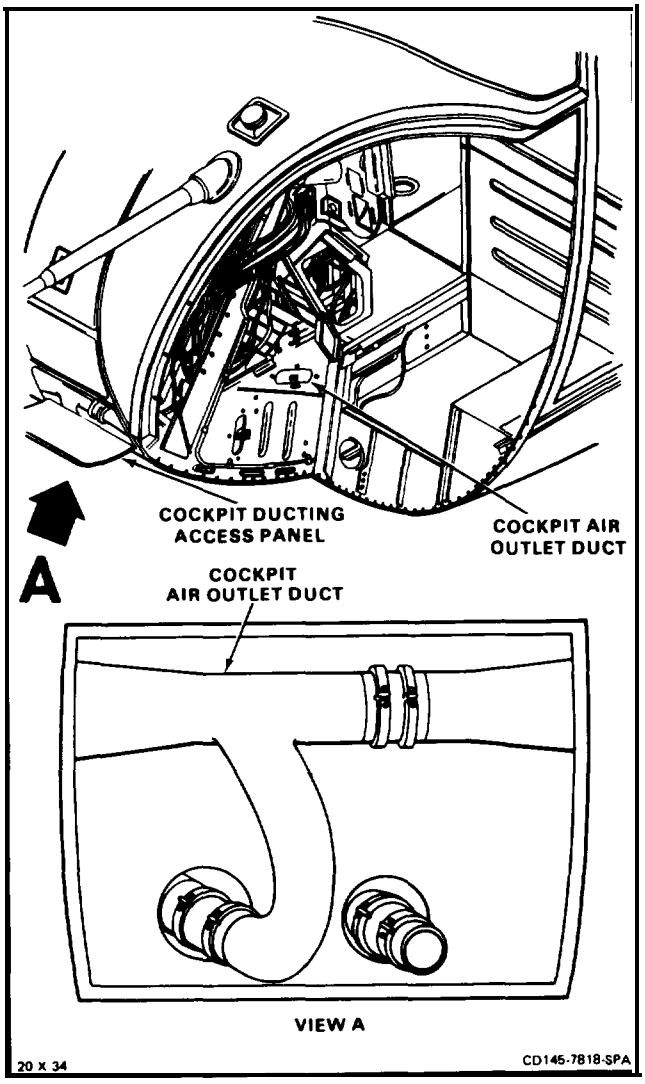
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

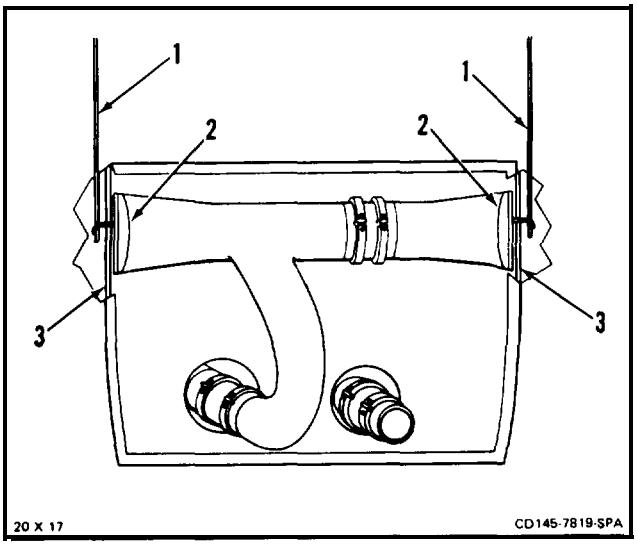
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Cockpit Ducting Access Panel Removed (Task 2-2)
Nose Enclosure Air Diffusers Removed (Task 13-32)



1. Have helper in cockpit disconnect control cable (1) from air outlet duct flap (2) at each side of cockpit beam assembly (3).



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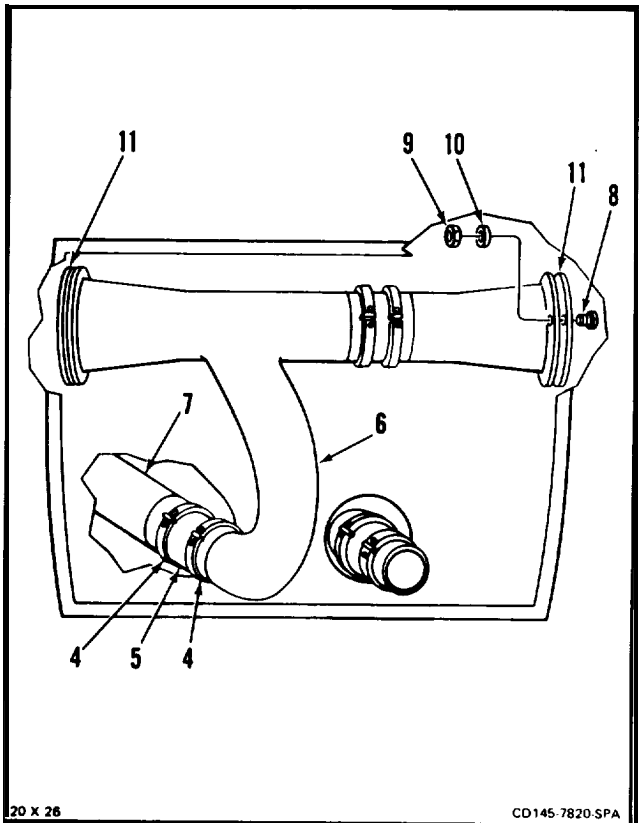
13-30 REMOVE COCKPIT AIR OUTLET DUCT (Continued)

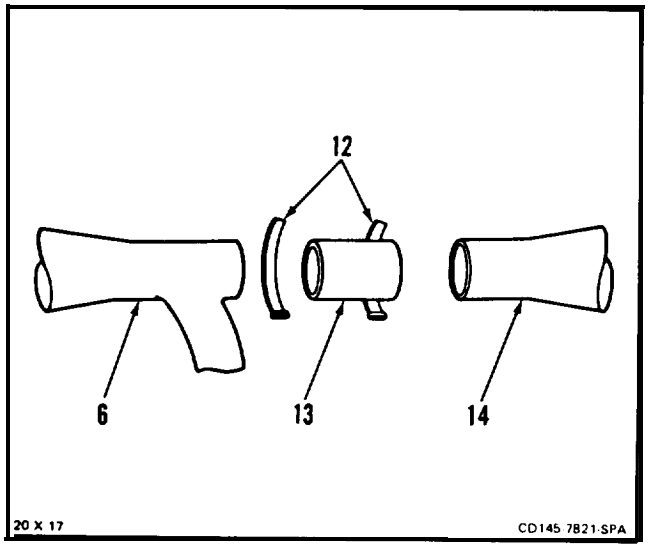
2. **Loosen two clamps (4)** on hose (5).
3. **Slide hose (5)** to clear air outlet duct (6) and air conditioning duct (7).
4. Have helper in cockpit hold screws (8).
5. Remove eight nuts (9) and washers (10).
6. Remove screws (8).
7. **Remove air outlrt duct (6)** and two gaskets (11).



8. **Remove two clamps (12)** from hose (13). **Separate air outlet ducts (6 and 14).**
9. Remove hose (13).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

13-31 INSTALL COCKPIT AIR OUTLET DUCT

INITIAL SETUP

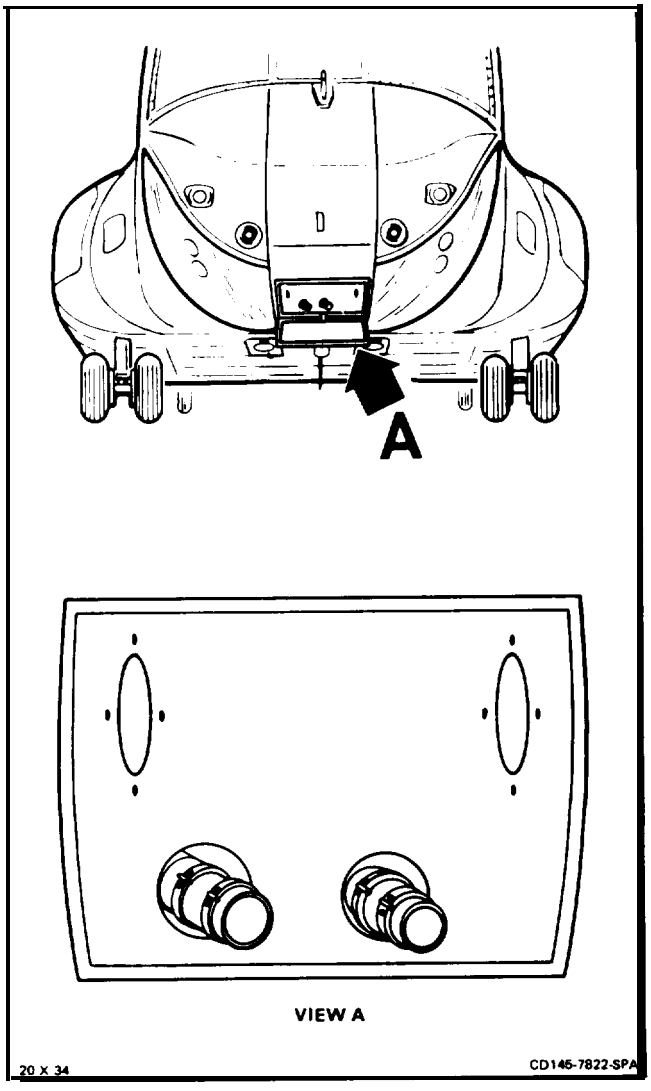
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

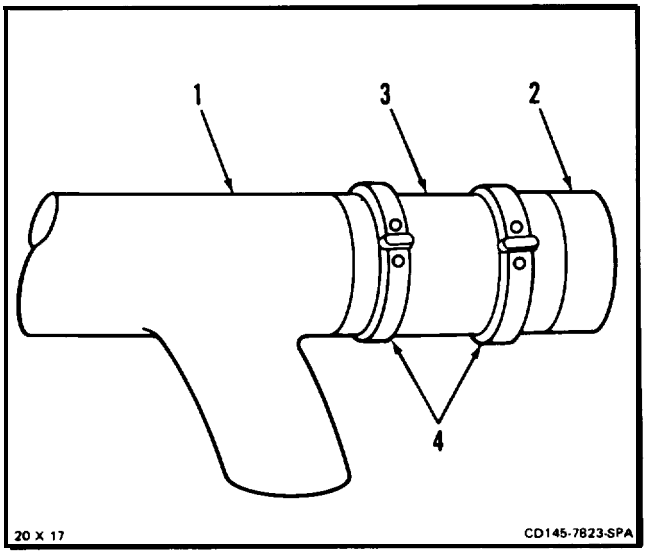
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P



1. Install air outlet ducts (1 and 2) in hose (3). Loosely install two clamps (4) on hose.



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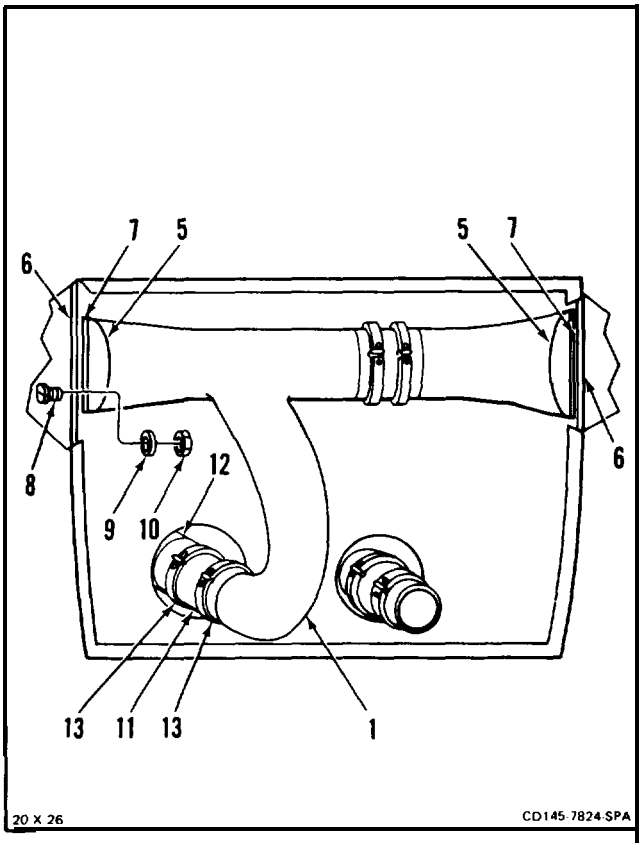
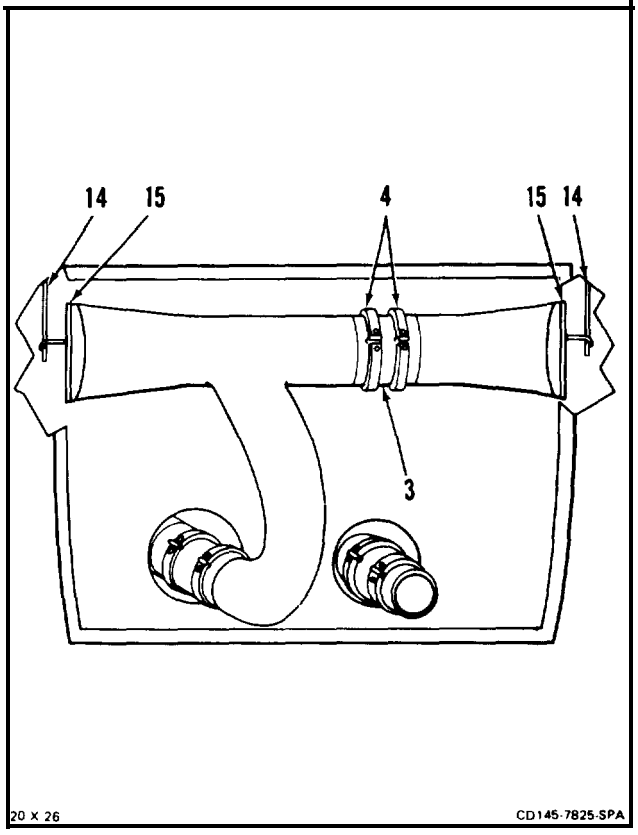
13-31 INSTALL COCKPIT AIR OUTLET DUCT (Continued)

2. Align hose in outlet duct flanges (5) and beams (6).
3. **Insert gaskets (7)** between flanges (5) and beams (6).
4. Have helper, in cockpit, **install eight straws (8).**
5. Install eight washers (9) and nuts (10).
6. **Slide hose (11) over outlet duct (1) and air conditioning duct (12). Tighten clamps (13).**



7. **Tighten clamps (4)** on hose (3).
8. **Connect control cables (14)** on outlet duct flaps (15).

INSPECT



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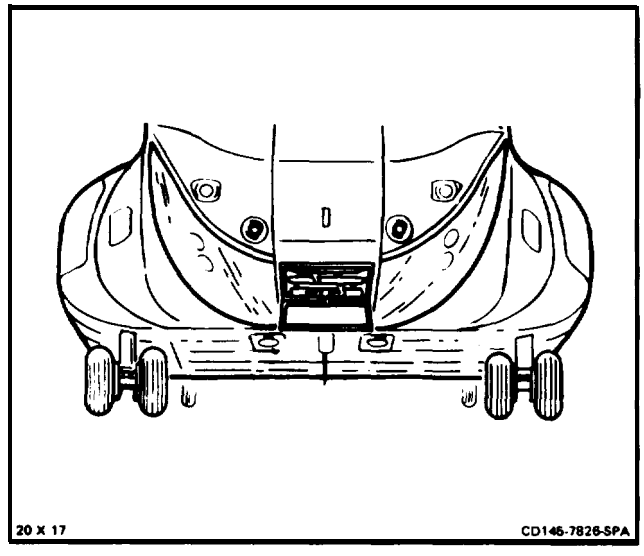
13-31 INSTALL COCKPIT AIR OUTLET DUCT (Continued)

FOLLOW-ON MAINTENANCE:

Install ducting access panel (Task 2-2)

Install nose enclosure air diffuser (Task 13-33).



END OF TASK

13-32 REMOVE NOSE ENCLOSURE AIR DIFFUSERS

INITIAL SETUP

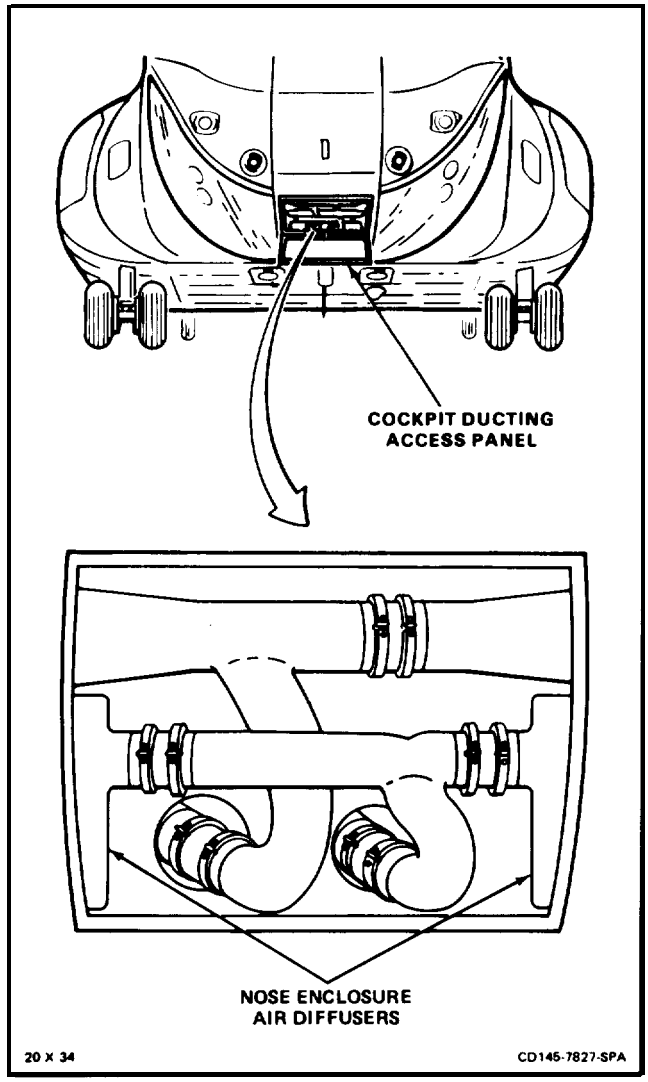
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

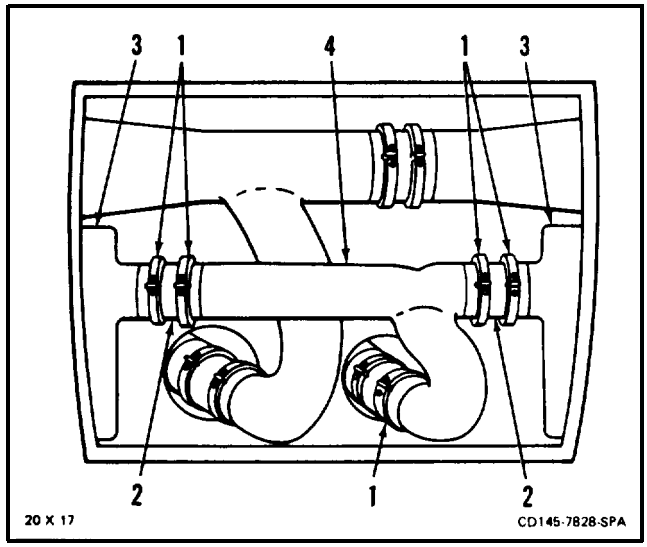
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Nose Compartment Access Door Opened (Task 2-2)
Cockpit Ducting Access Panel Removed (Task 2-2)



1. **Looson five clamps (1).**
2. Slide two hoses (2) to clear joints between air diffusers (3) and defroster duct (4).
3. **Remove defroster duct (4).**



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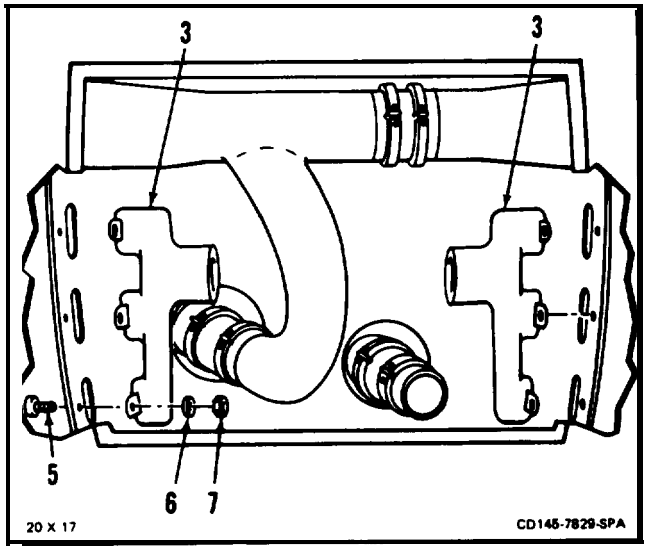
13-32 REMOVE NOSE ENCLOSURE AIR DIFFUSERS (Continued)

4. **Have helper, in cockpit, hold six screws (5).**
5. Remove six washers (6) and nuts (7). Remove screws (5).
6. **Remove two diffusers (3).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

13-33 INSTALL NOSE ENCLOSURE AIR DIFFUSERS

INITIAL SETUP

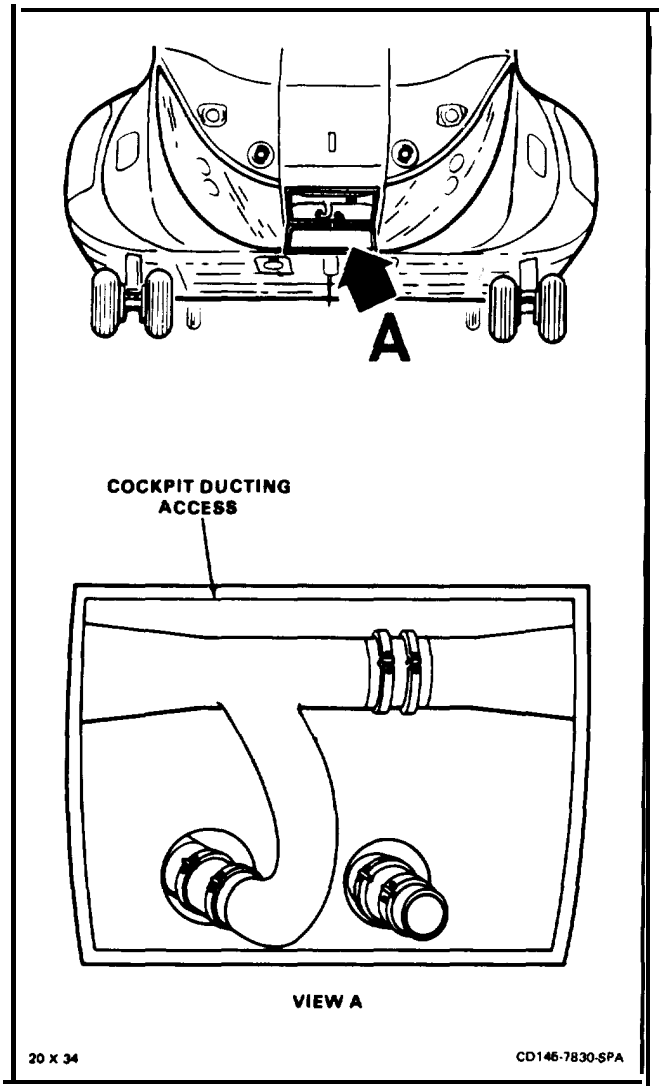
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

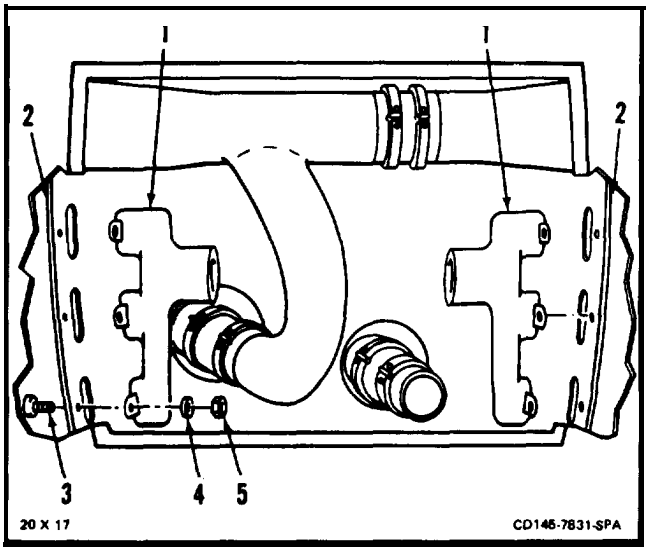
Materiels:
None

Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P



1. Position two diffusers (1) in beams (2).
2. Have helper, in cockpit, **install three screws (3) in each diffuser (1).**
3. Install three washers (4) and nuts (5) in each diffuser (1).



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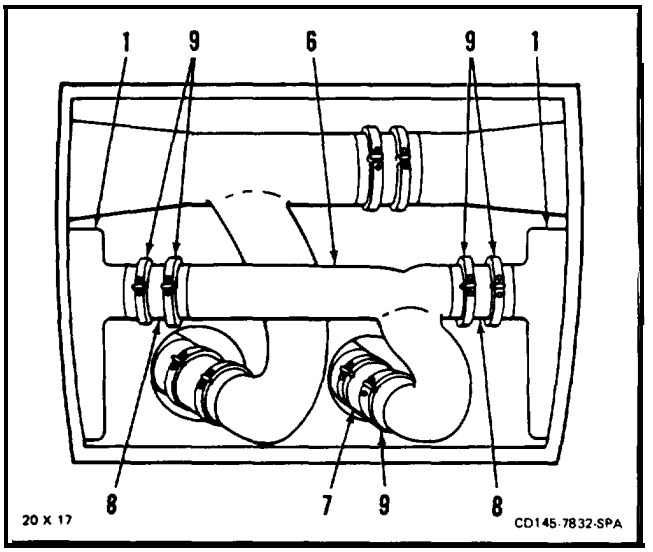
13-33 INSTALL NOSE ENCLOSURE AIR DIFFUSERS (Continued)

4. **Install end of defroster duct (6) in hose (7).**
5. Align remaining outlets of duct (6) with outlets in diffusers (1).
6. **Slide two hoses (8) over joints between diffusers (1) and duct (6).**
7. **Tighten five clamps (9).**

INSPECT



FOLLOW-ON MAINTENANCE:

Install cockpit ducting access panel (Task 2-2).

END OF TASK

INITIAL SETUP

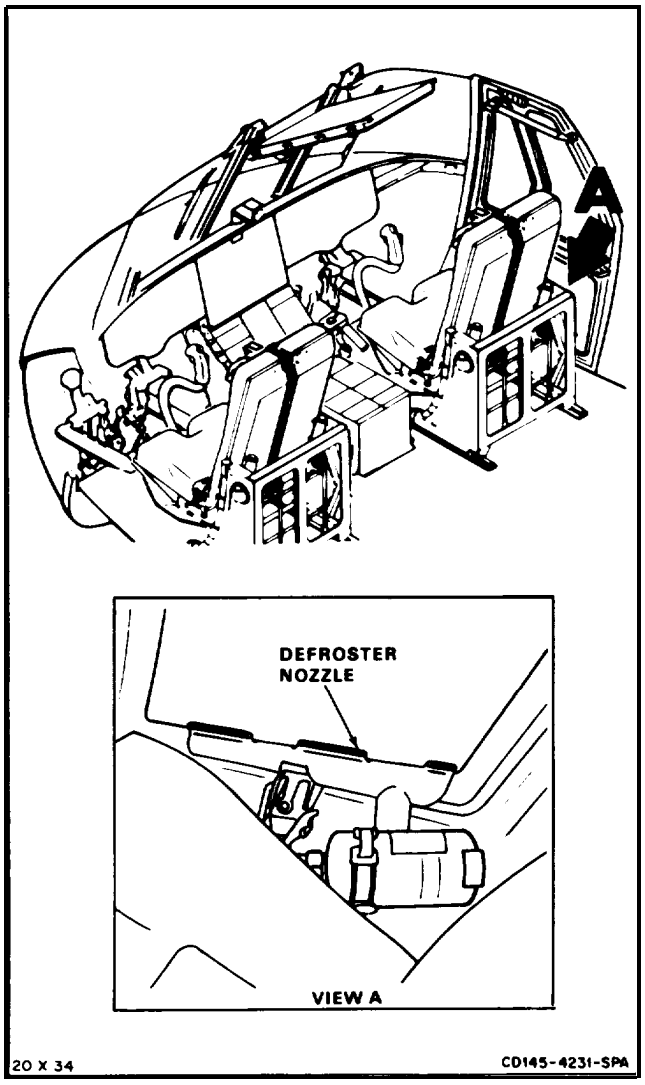
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Tape (E388)

Personnel Required:
67U10 Medium Helicopter Repairer

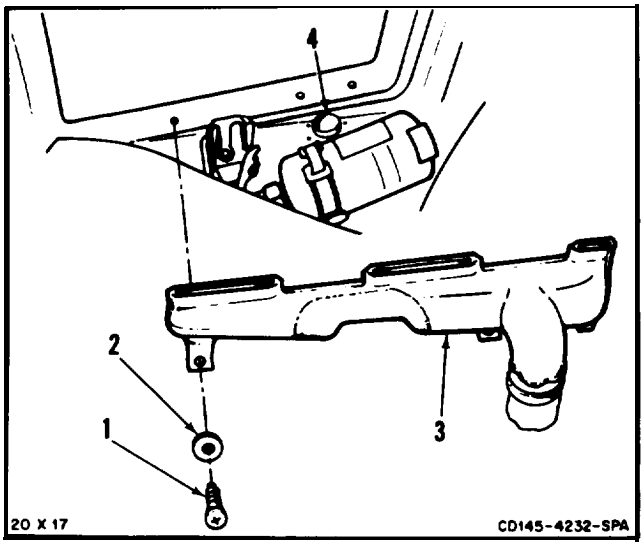
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedure is same to remove right or left side defroster nozzle. Right side (pilot's) nozzle is shown here.

1. Remove three screws (1) and washers (2).
2. **Remove nozzle (3).**
3. Cover duct outlet (4) with tape (E388)



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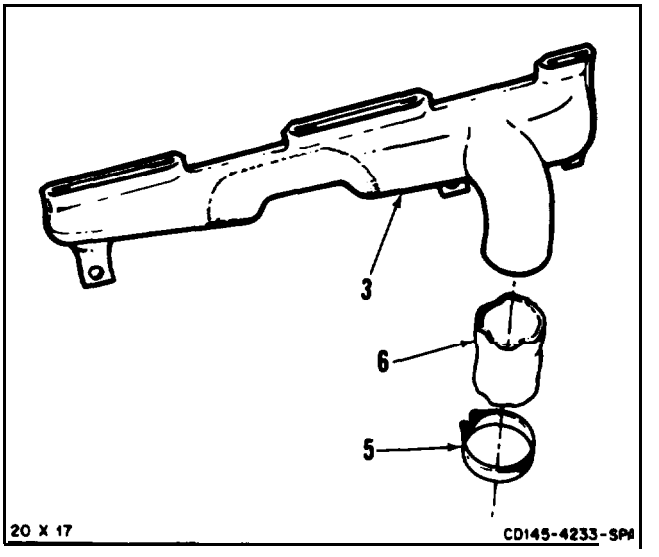
13-34 REMOVE JETTISONABLE DOOR WINDOW DEFROSTER NOZZLE (Continued)

4. **Remove clamp (5)** from hose (6).
5. **Remove hose (6)** from nozzle (3).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-35 INSTALL JETTISONABLE DOOR WINDOW DEFROSTER NOZZLE

INITIAL SETUP

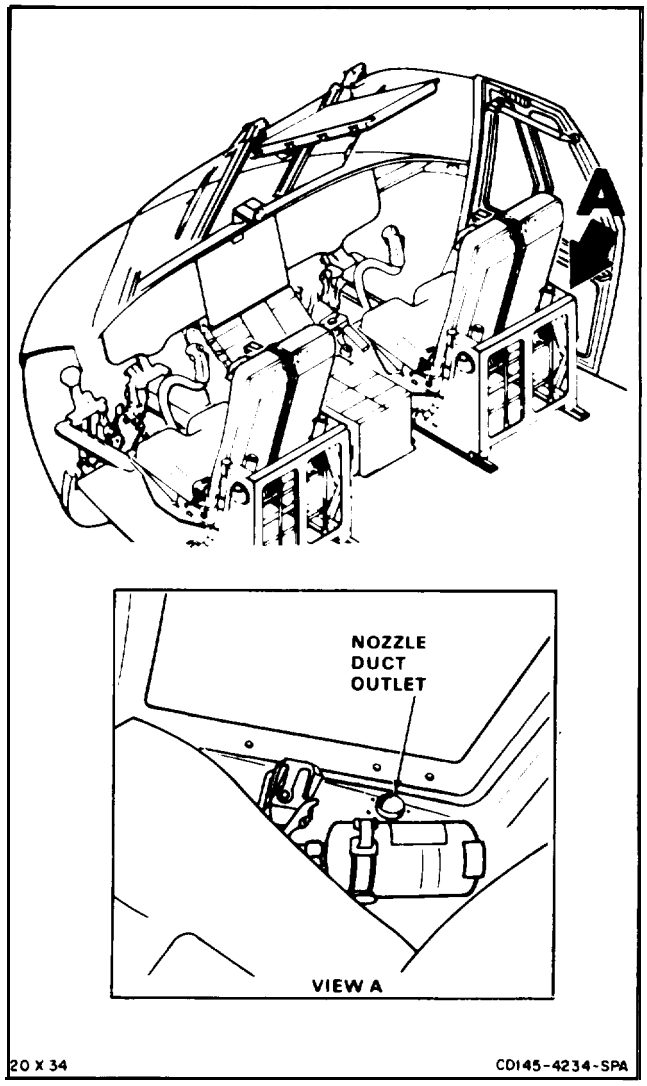
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

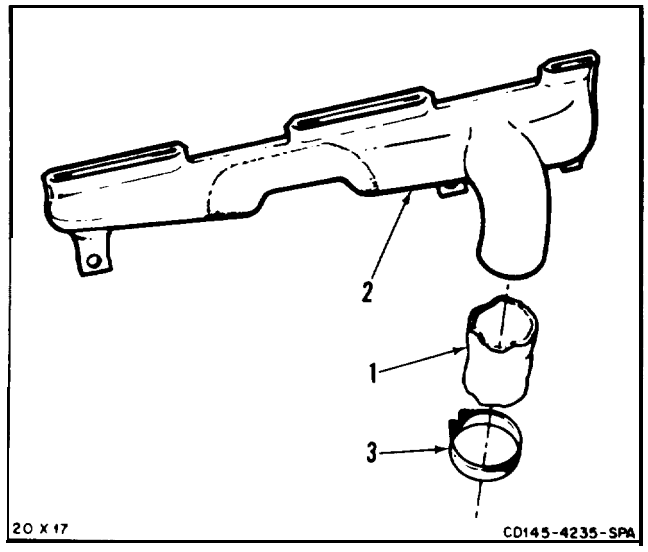
References:
TM 55-1520-240-23P



NOTE

Procedure is same to install right or left side defroster nozzle. Right side (pilot's) nozzle is shown here.

1. **Install hose (1)** on nozzle (2)
2. **Install clamp (3)** over hose (1).



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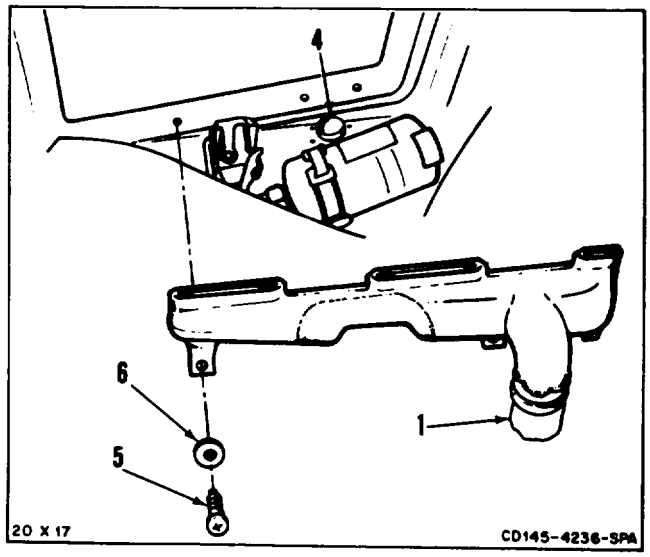
13-35 INSTALL JETTISONABLE DOOR WINDOW DEFROSTER NOZZLE (Continued)

3. Remove tape from duct outlet 4).
4. **Position hose (1)** over duct outlet (4).
5. **Install three screws (5)** and washers (6).



INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-36 REMOVE COCKPIT DEFROST CONTROL

INITIAL SETUP

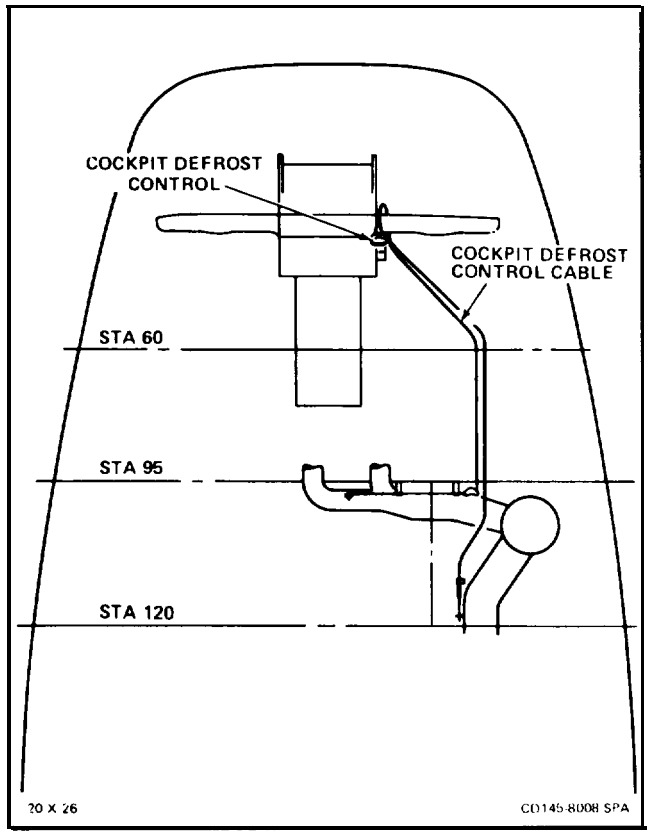
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U20 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Pilot's Seat Removed (Task 2-111)
Pilot's Floor Access Panel Removed (Task 2-79)
Cockpit Aft Floor Panel Removed (Task 2-83)
Heater Compartment Acoustical Blanket Removed (Task 2-208)
Pilot's Landing Light Removed (Task 9-69)

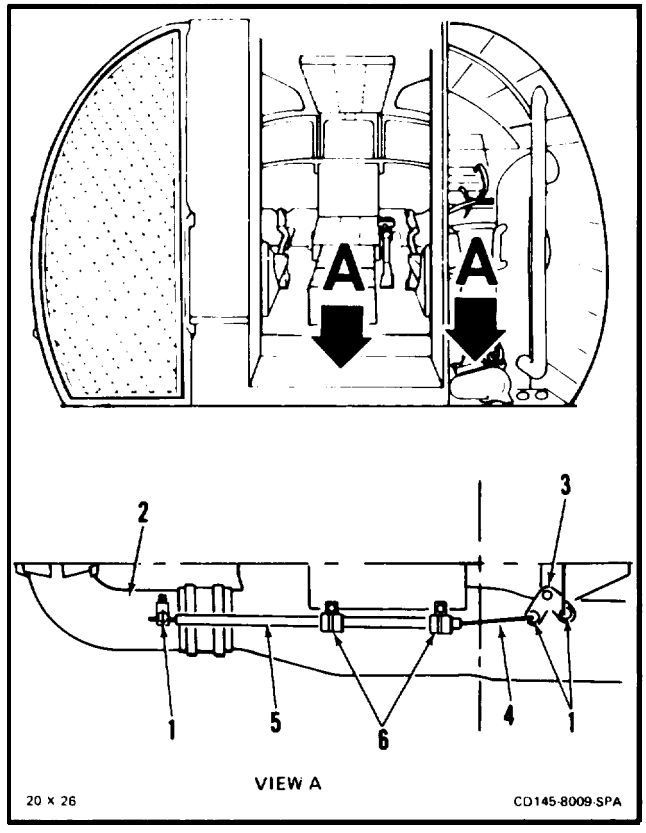


REMOVE COCKPIT TRANSVERSE DEFROST CONTROL CABLE

1. **Loosen cable clamping nuts (1)** on defrost valve (2) and bellcrank (3).
2. **Remove defrost control cable (4)** from transverse defrost control tube (5).

REMOVE COCKPIT TRANSVERSE DEFROST CONTROL TUBE

3. **Loosen two clamps (6).**
4. **Remove tube (5).**



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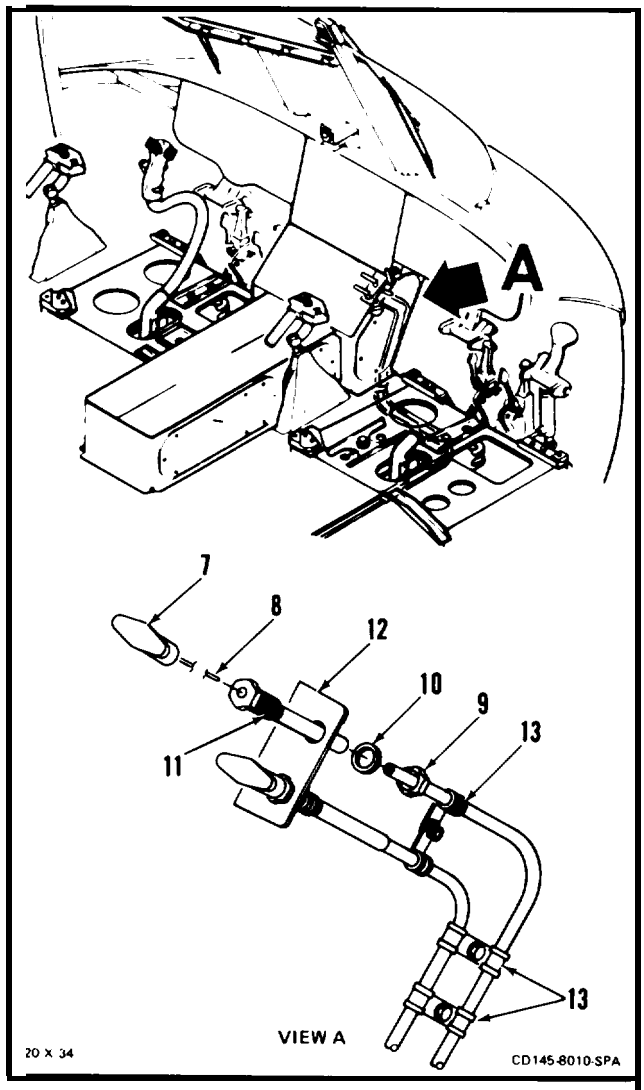
13-36 REMOVE COCKPIT DEFROST CONTROL (Continued)

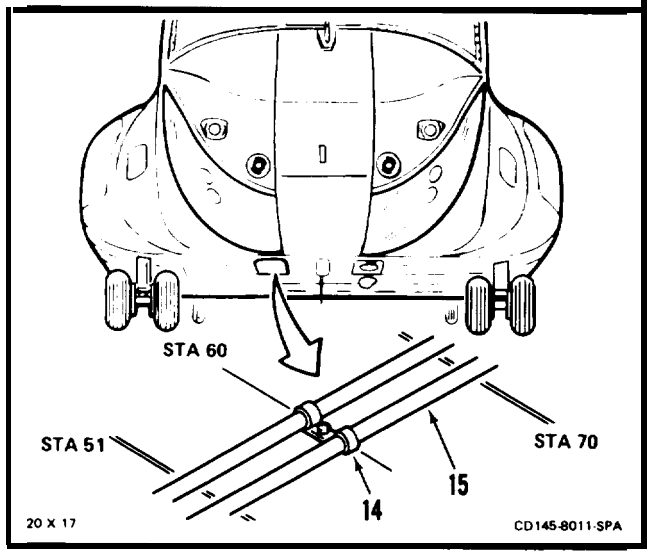
REMOVE COCKPIT DEFROST CONTROL CABLE

5. Pull handle (7) and **remove cable (8).**
6. **Remove nut (9)** and washer (10) from control (11).
7. **Remove control (11) from mounting plate (12).**
8. **Loosen three clamps (13).**



REMOVE COCKPIT DEFROST CONTROL TUBE

9. **Loosen clamp (14)** on defrost control tube (15).



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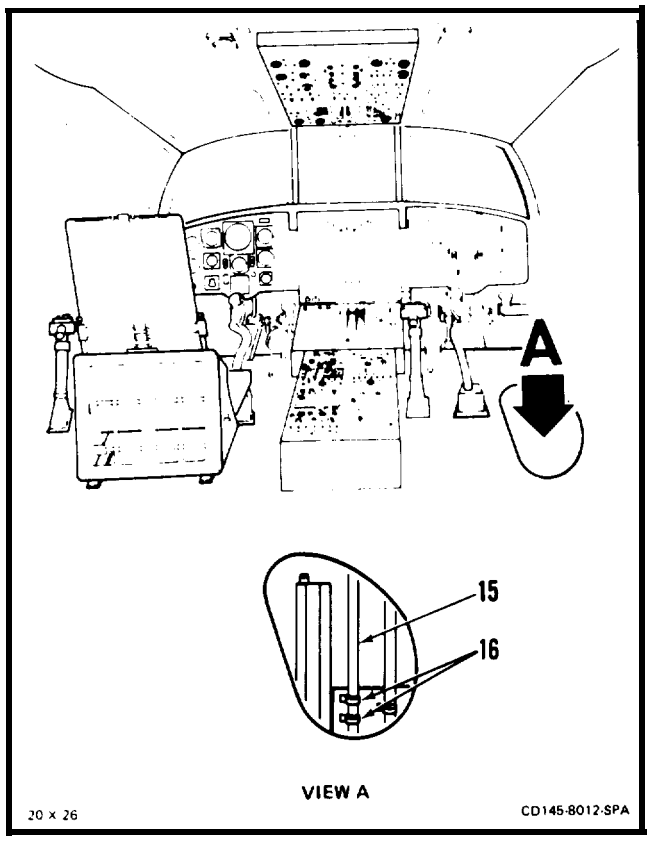
13-36 REMOVE COCKPIT DEFROST CONTROL (Continued)

10. **Loosen two clamps (16).**
11. **Remove tube (15).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

13-37 INSTALL COCKPIT DEFROST CONTROL

INITIAL SETUP

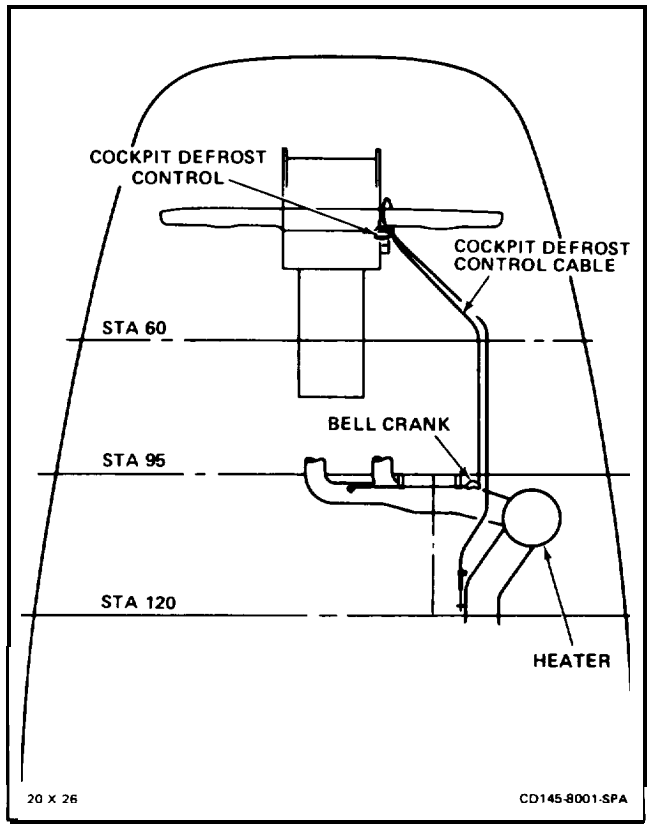
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

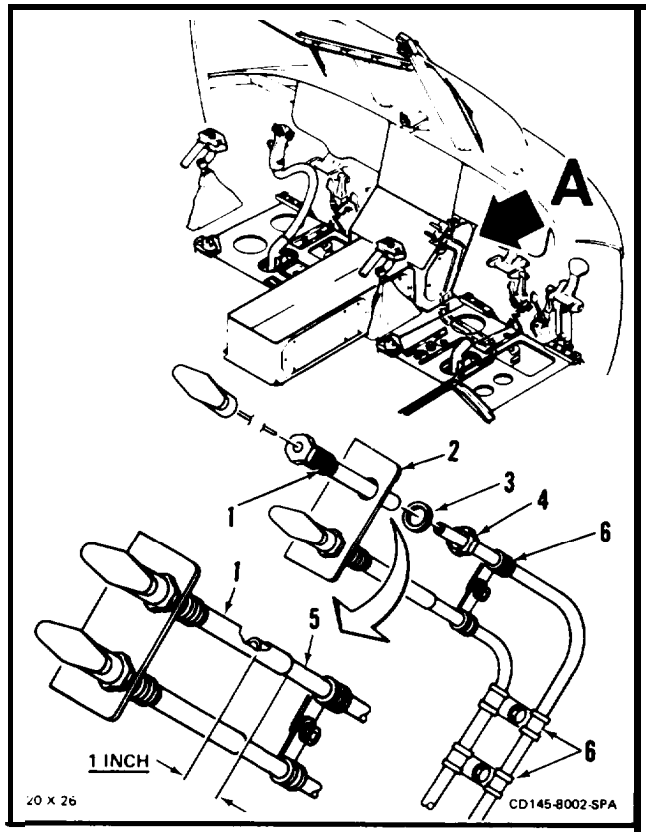
Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer

References:
TM 55-1520-240-23P



INSTALL *COCKPIT DEFROST CONTROL TUBE*

1. **Position control (1) in mounting plate (2). Install washer (3) and nut (4).**
2. **Route control tube (5)** through three clamps (6).
3. **Insert end of tube (5) 1 inch into control (1).**
4. **Tighten three clamps (6).**



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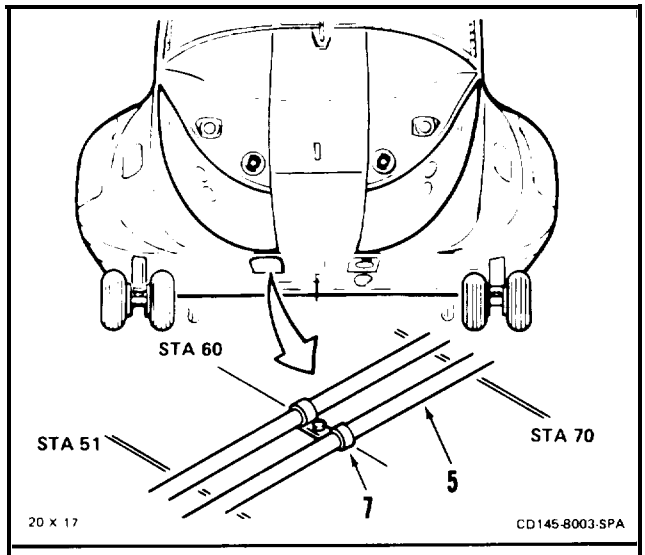
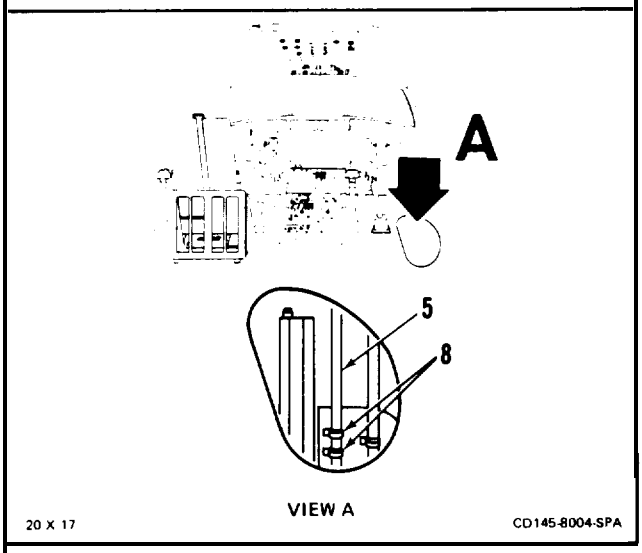
13-37 INSTALL COCKPIT DEFROST CONTROL (Continued)

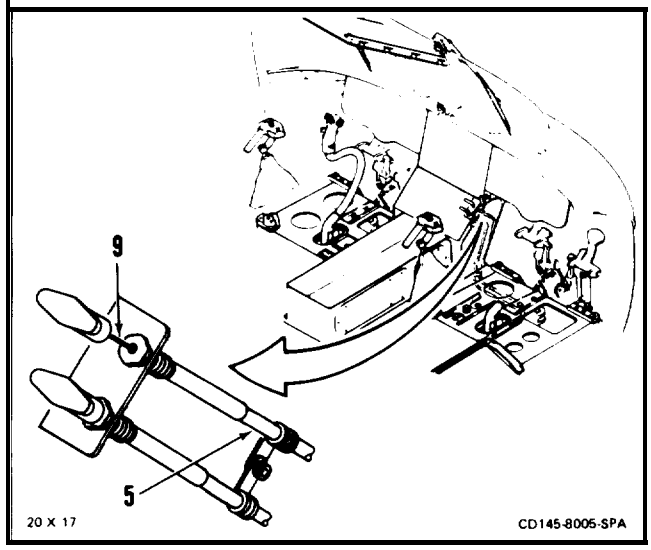
5. **Route tube (5) through clamp (7). Tighten clamp.**



6. **Route tube (5) through two clamps (8). Tighten clamps.**



7. **Thread defrost control cable (9)** in tube (5).



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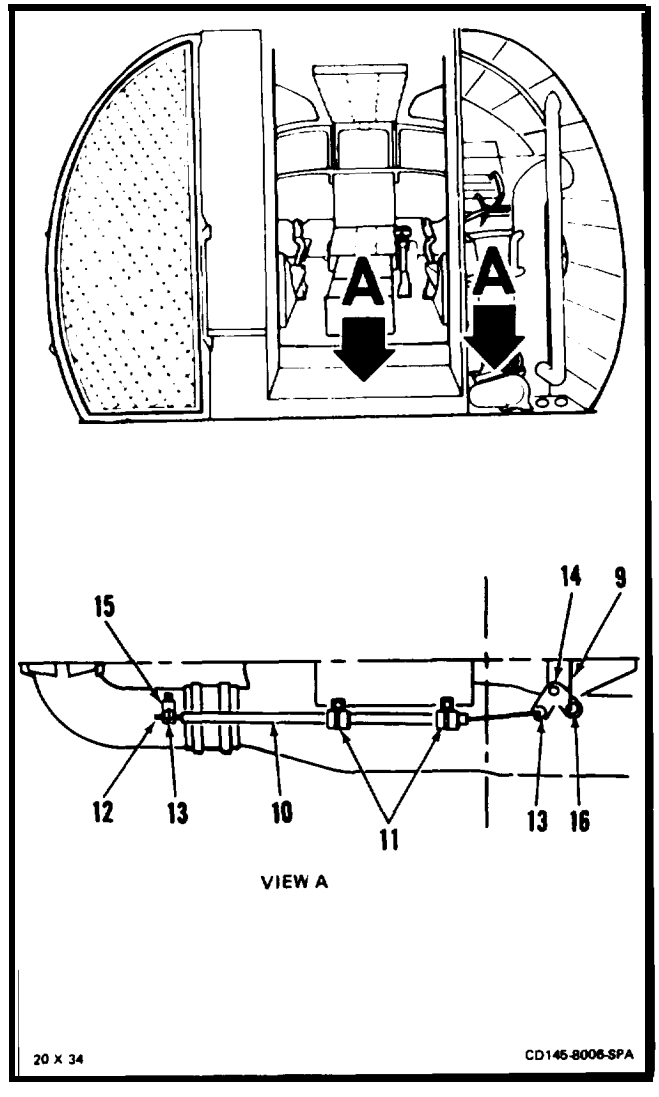
13-37 INSTALL COCKPIT DEFROST CONTROL (Continued)

INSTALL COCKPIT TRANSVERSE CONTROL TUBE

8. Route tube (10) through two clamps (11). Tighten clamps.

INSTALL COCKPIT TRANSVERSE CONTROL CABLE

9. **Thread control cable (12) through tube (10).**
10. **Insert ends of cable (12) in cable clamping nuts (13)** on bellcrank (14) and defrost valve (15).
11. **Insert end of cable (9) in cable clamping nut (16).**
12. **Position bellcrank (14)** with cable clamping nuts (13 and 16) **parallel to sta 95.**
13. **Hold defrost valve (15) fully closed. Tighten two nuts (13).**



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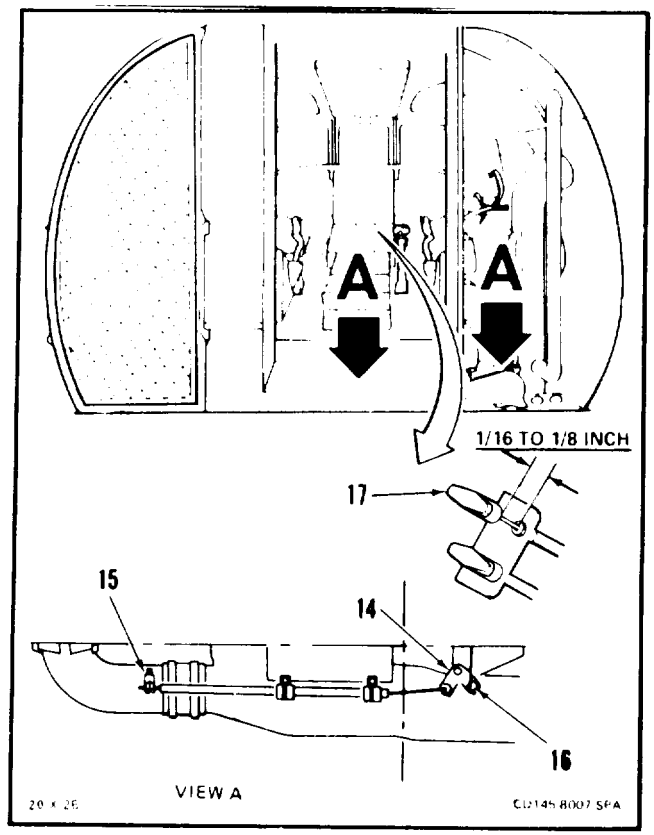
14. Have helper, in cockpit, position defrost control handle (17) 1/8 to 1/16 inch short of fully closed.

15 **Check that bellcrank (14) is parallel** to sta 95. Hold bellcrank and **tighten nut (16).**

16. Have helper operate handle (17) Check that valve (15) opens and closes.



FOLLOW-ON MAINTENANCE

Install pilot's landing light (Task 9-79)

Install floor access panel (Task 2-80)

Install pilot's seat (Task 2-11).

Install cockpit aft floor panel (Task 2-84).

Install heater compartment acoustical blanket (Task 2-210).

END OF TASK

INITIAL SETUP

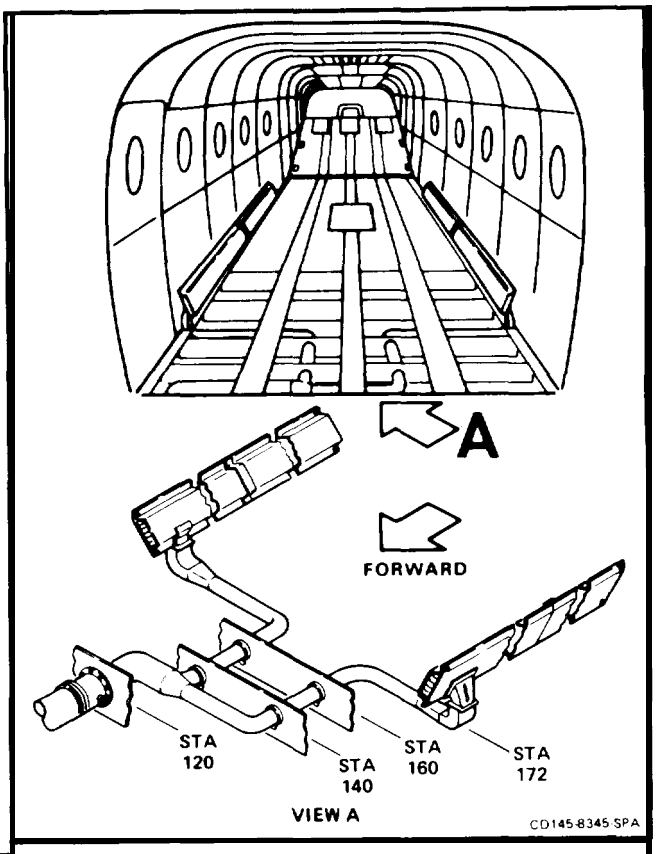
Applicable Configurations:
All

Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

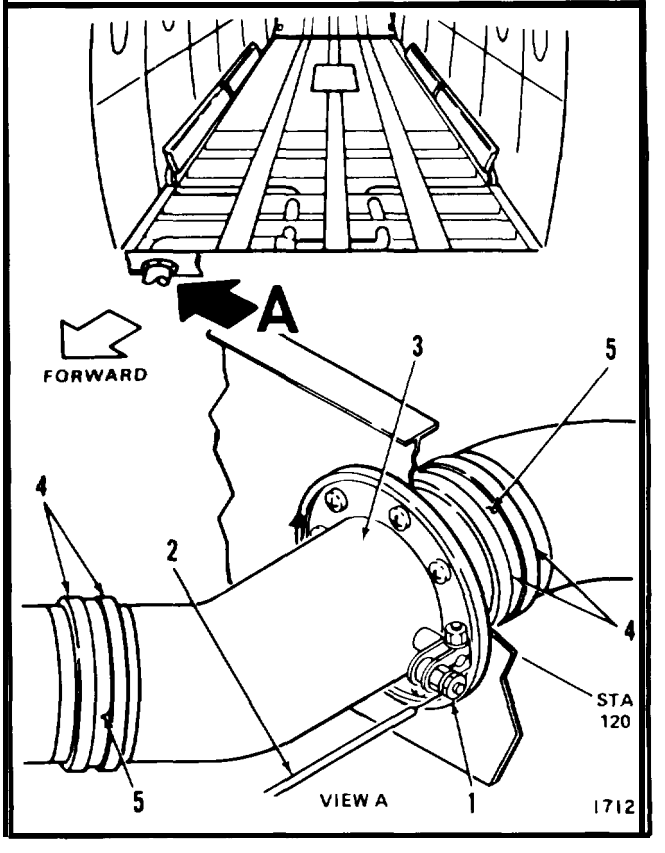
Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Four Floor Panels at Station 120 Removed (Task 2-204) Heater Compartment Acoustical Blanket Removed
(Task 2-208)
Buffer Boards Removed (Task 2-217)
Troop Seats Removed (Task 2-230 and 2-224)
Winch Removed (Task 14-4)



1. Loosen nut (1). **Remove cable (2)** from valve duct (3).
2. **Loosen four clamps (4). Slide two hoses (5) to clear joints between valve duct and adjacent ducts.**



GO TO NEXT PAGE

13-38 REMOVE CABIN DUCTING (Continued)

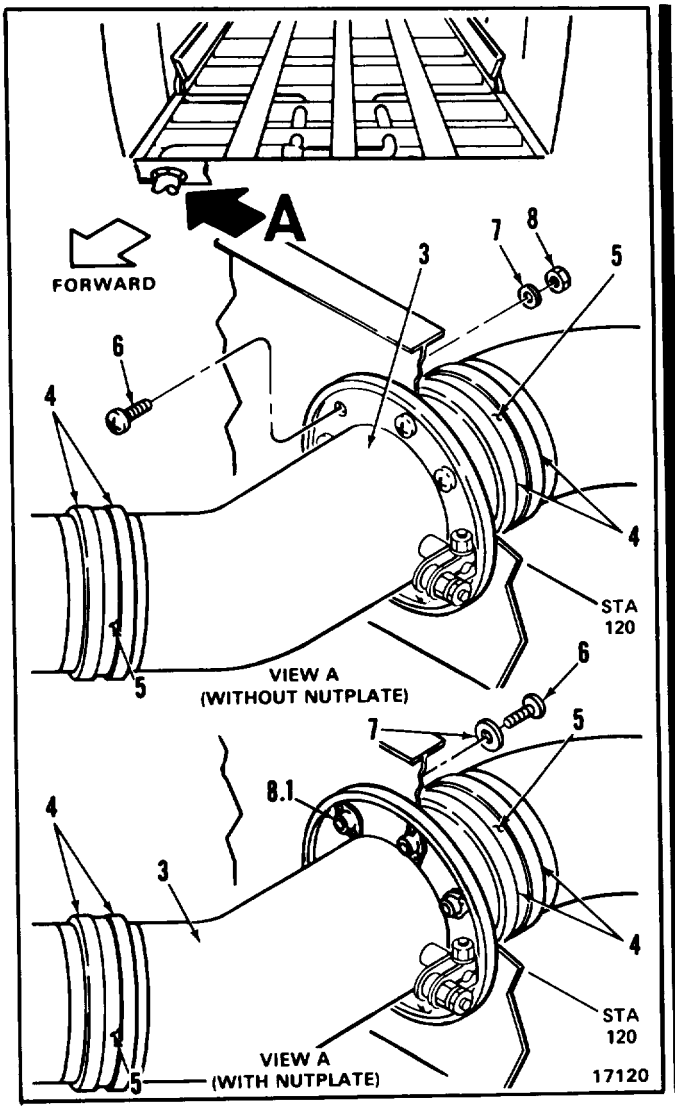
NOTE

Some valve ducts have nutplates and require removal of screws only.

3. **Without nutplates, remove eight screws (6),** washers (7), and nuts (8). **Remove valve duct (3).**

3.1. **With nutplates, remove eight screws (6)** and washers (7) from nutplates (8.1). Remove valve duct (3).

4. Remove two hoses (5) and four clamps (4).



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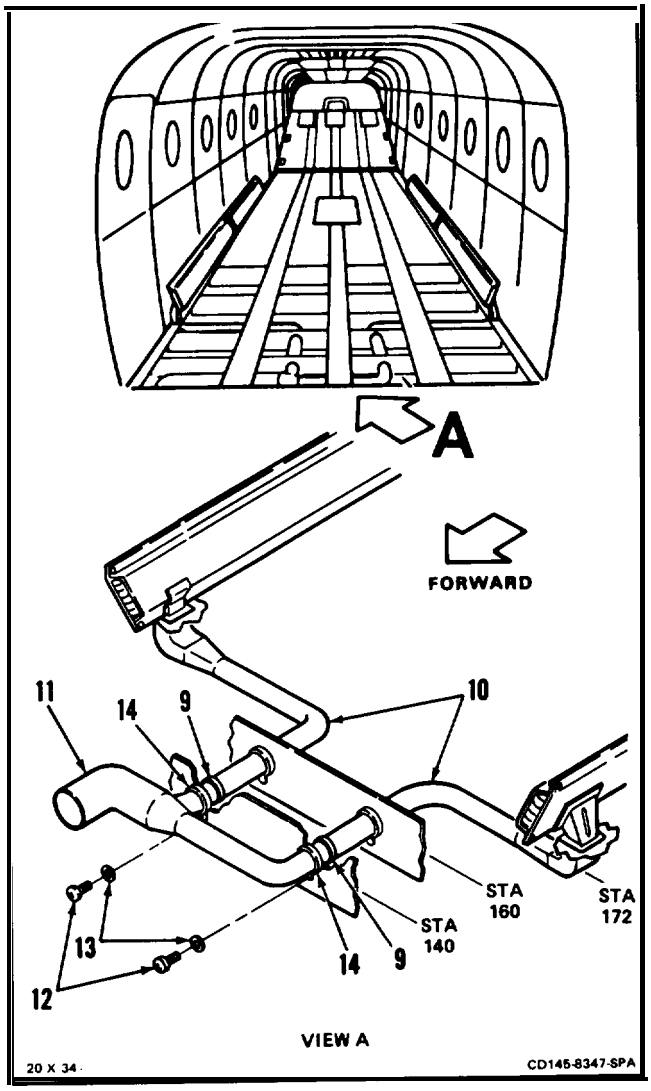
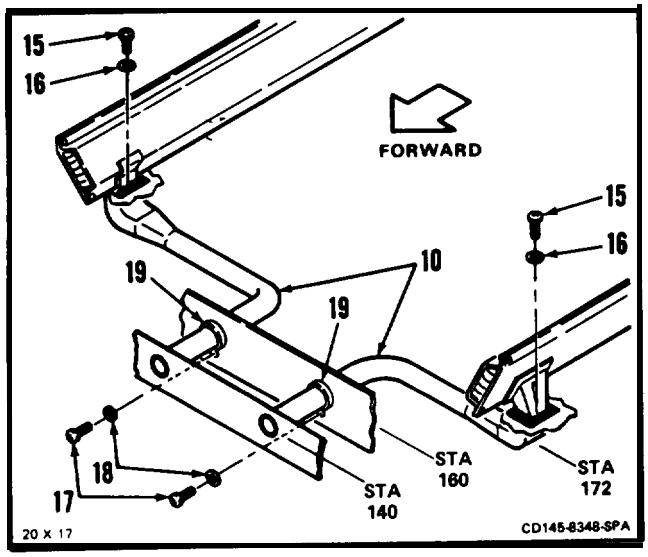
13-38 REMOVE CABIN DUCTING (Continued)

5. Remove two clamps (9). **Disconnect two flex ducts (10)** from manifold (11).
6. **Remove** two screws (12) and washers (13) **from two support clamps (14).**
7. **Remove manifold (11).** Remove two support clamps (14) from manifold.



8. **Remove 14 screws (15)** and washers (16) from each flex duct (10).
9. **Remove** two screws (17) and washers (18) **from two support clamps (19).**
10. **Remove two flex ducts (10).** Remove two support clamps (19) from flex ducts.



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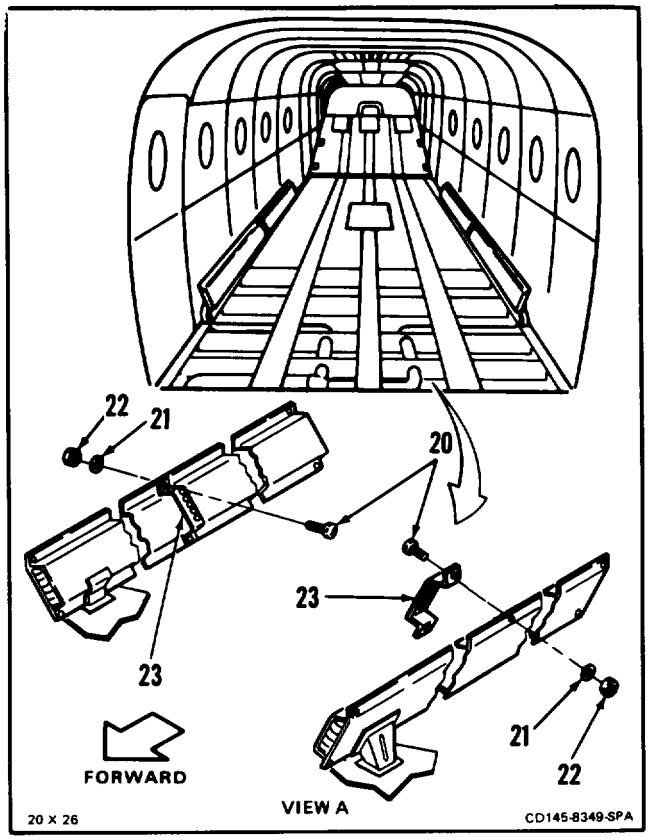
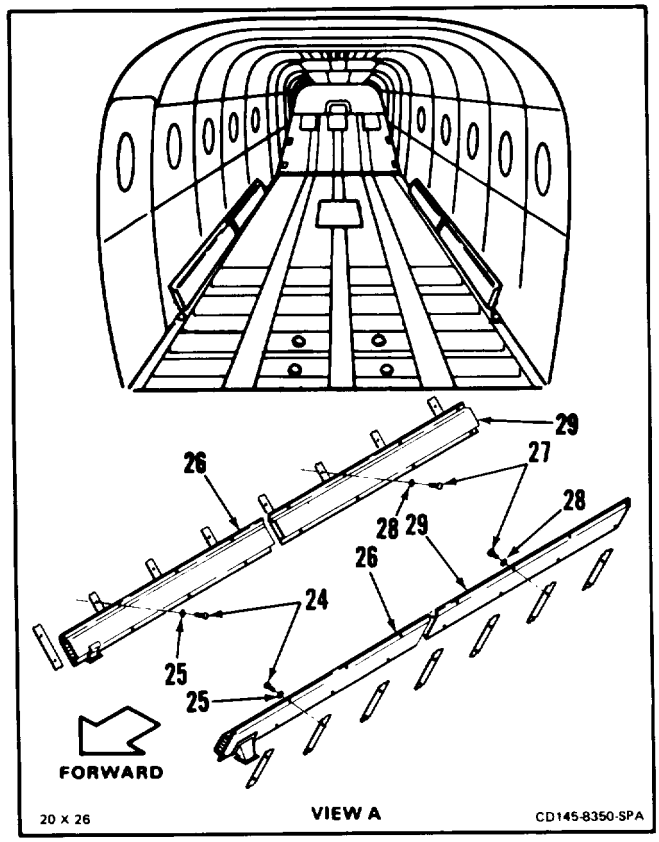
11. **Remove nine screws (20),** two washers (21), and two nuts (22) from each cover plate (23). **Remove two cover plates.**



12. **Remove** eight screws (24), and washers (25), from **each forward diffuser duct (26).** Remove ducts.
13. **Remove** eight screws (27), and washers (28), from **each aft diffuser duct (29).** Remove ducts.



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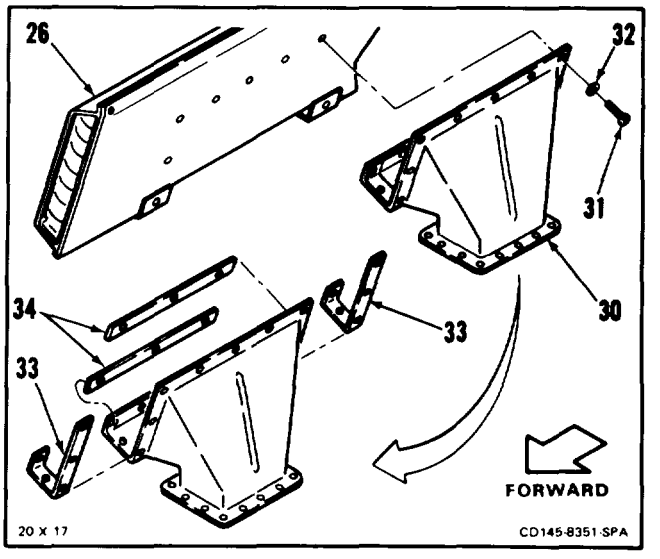
14. **If damaged, remove transition diffuser duct (30)** from each forward diffuser duct (26) as follows:

    a. Remove 16 screws (31 and washers (32).

    b. Remove transition diffuser duct (30).

    c. Remove two seals (33) and two seals (34).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-39 INSTALL CABIN DUCTING

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:

Sealant (E340)

Gloves (E186)

Personnel Required:

67U10 Medium Helicopter Repairer

67U20 Medium Helicopter Repairer

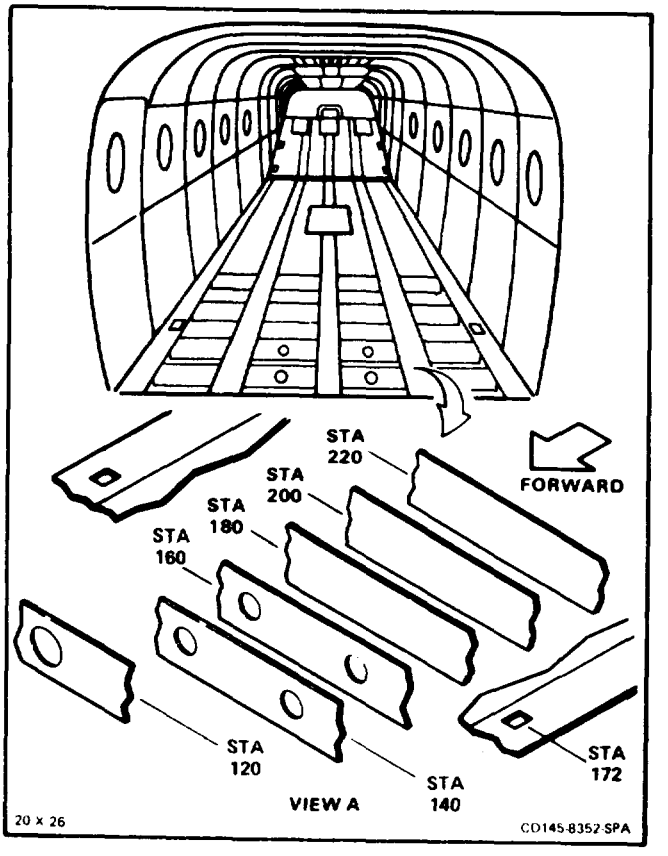
References:

TM 55-1520-240-23P

General Safety Instructions:

WARNING

Sealant (E340) can irritate skin and cause burns. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



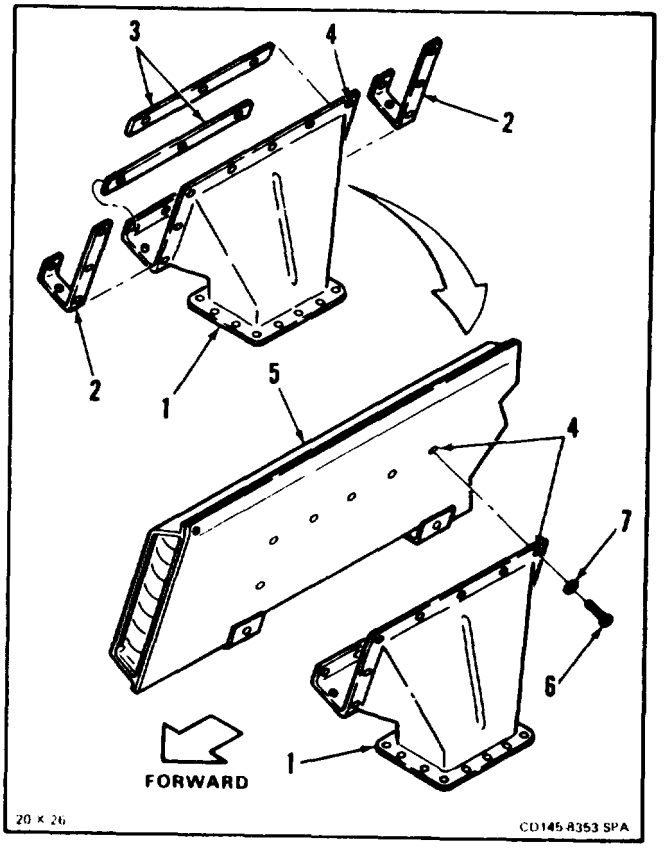
1 **If transition diffuser duct (1) was removed, install it as follows**

a. Apply sealant (E340) to both sides of two seals (2) and two seacs (3). Wear gloves (E186)

b Position seals (2 and 3) on duct (1)

c. Align holes (4) in duct (1) and forward diffuser duct (5).

d. Install 16 screws (6) and washers (7).



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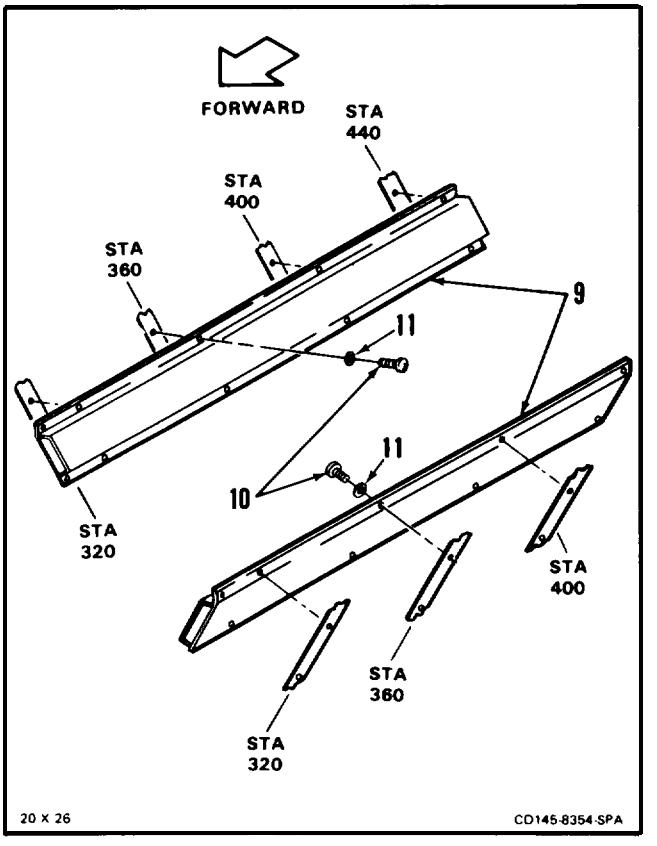
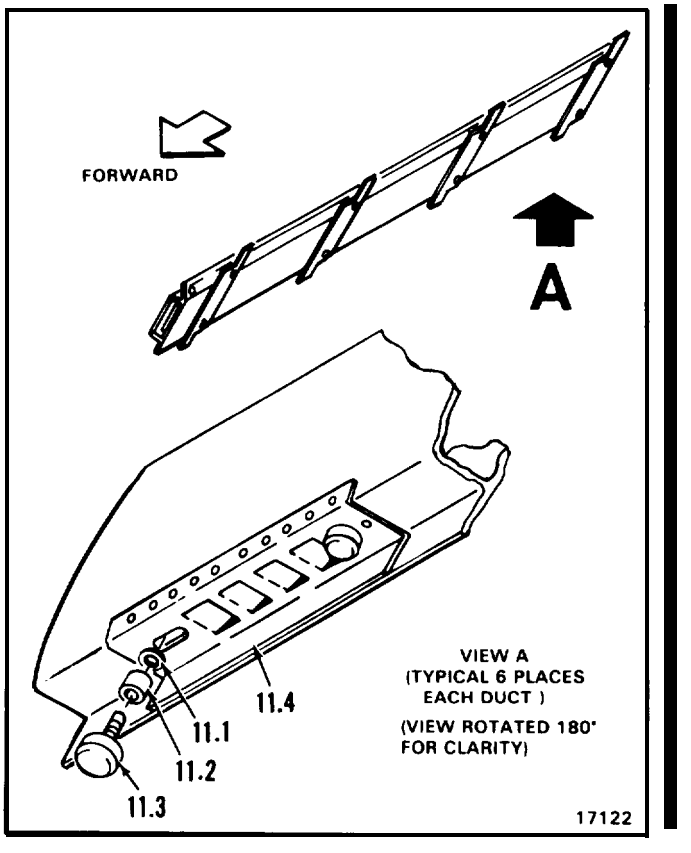
2. **Position both aft diffuser ducts (9) on structure. Install eight screws (10),** and washers (11), in each duct.



2.1. Install washer (11.1), spacer (11.2), and thumb screw (11.3) in duct assembly (11.4).



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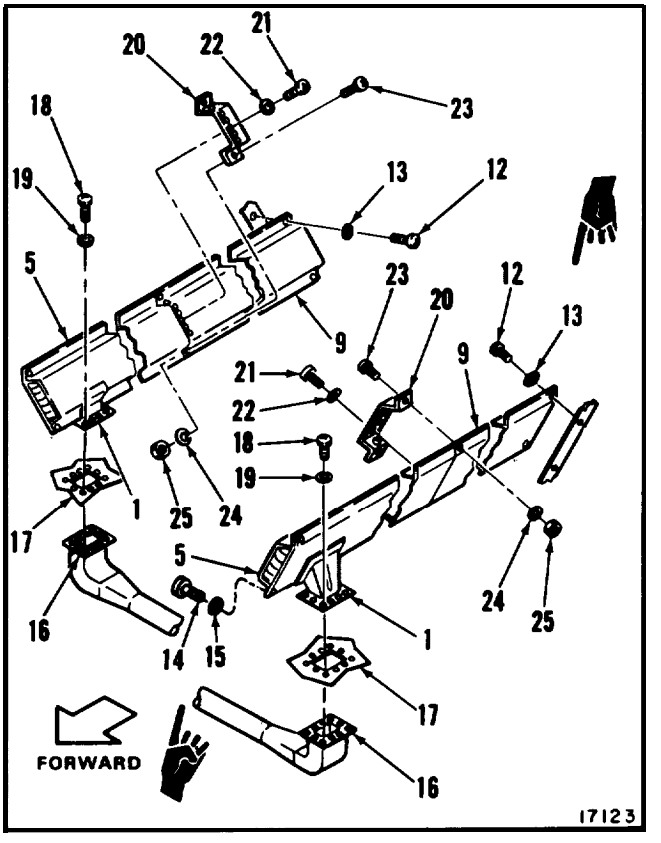
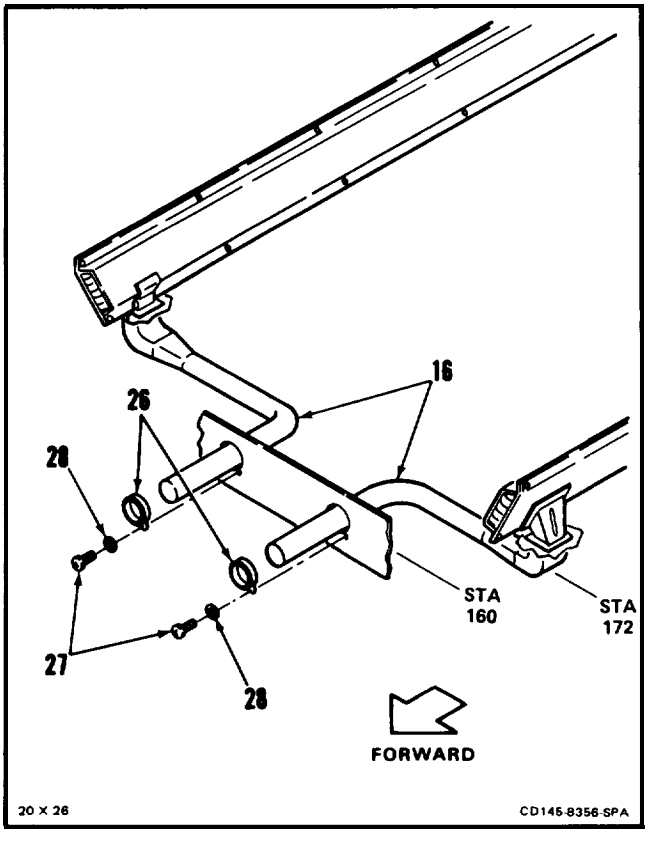
3. Apply sealant (E340) to flange of each transition diffuser duct (1). Wear gloves (E186).
4. **Position both transition diffuser ducts (1) on structure. Install seven screws (12)** and washers (13) in each duct. Install screw (14) and washers (15) in each duct.
5. Apply sealant (E340) to flange of each flexible duct (16). Wear gloves (E186).
6. **Position flexible ducts (16)** under cabin floor (17) and transition diffuser duct (1). **Install 14 screws (18)** and washers (19) in each duct (1).
7. **Position two cover plates (20)** over joints between forward and aft diffuser ducts (5 and 9). **Install seven screws (21)** and washers (22) in each plate. **Install two screws (23),** washers (24), and nuts (25) in each plate.



8. Route ducts (16) through holes in bulkhead at station 160.
9. **Position support clamps** (26) on flexible ducts (16). **Install screw (27)** and washer (28) in each clamp (26).



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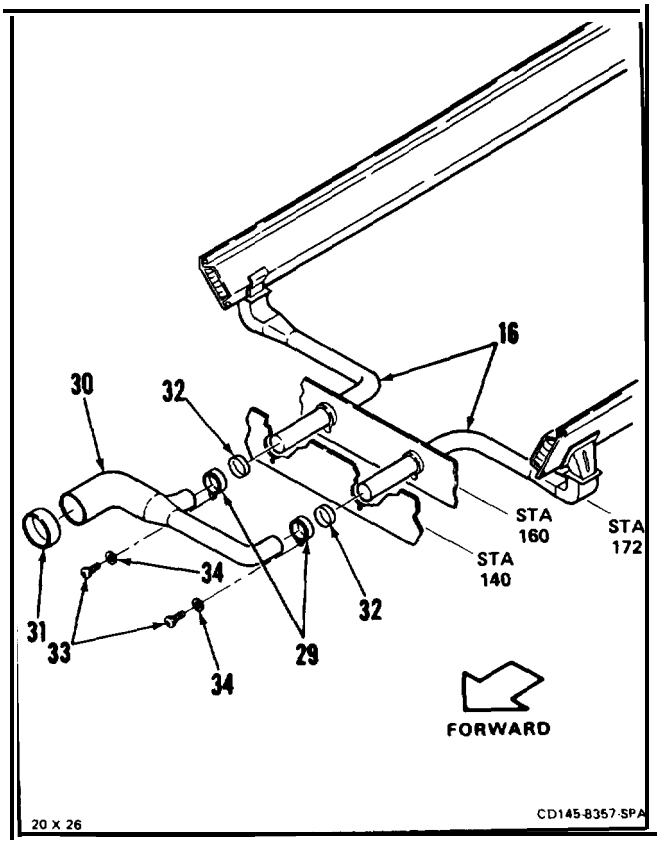
10. **Position two support clamps (29)** on manifold duct (30).
11. Slide hose (31) onto manifold duct (30).
12. **Position manifold duct (30).** Slide ends of flex ducts (16) on manifold duct (30). **Install two clamps (32).**
13. **Install screw (33)** and washer (34) **in each support clamp (29).**

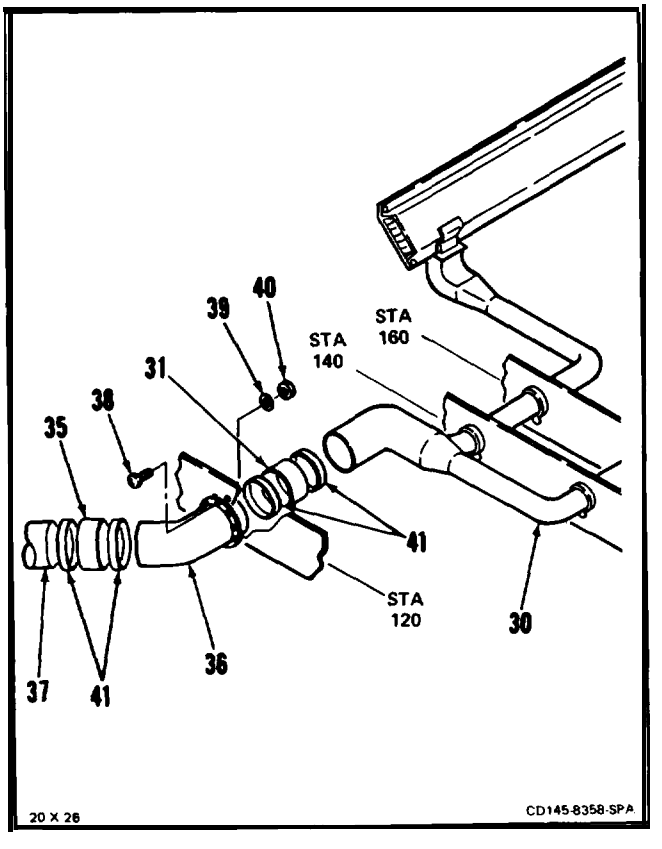


14. Slide hose (35) or valve duct (36).

NOTE

Some valve ducts have nutplates and require installation of screws only.

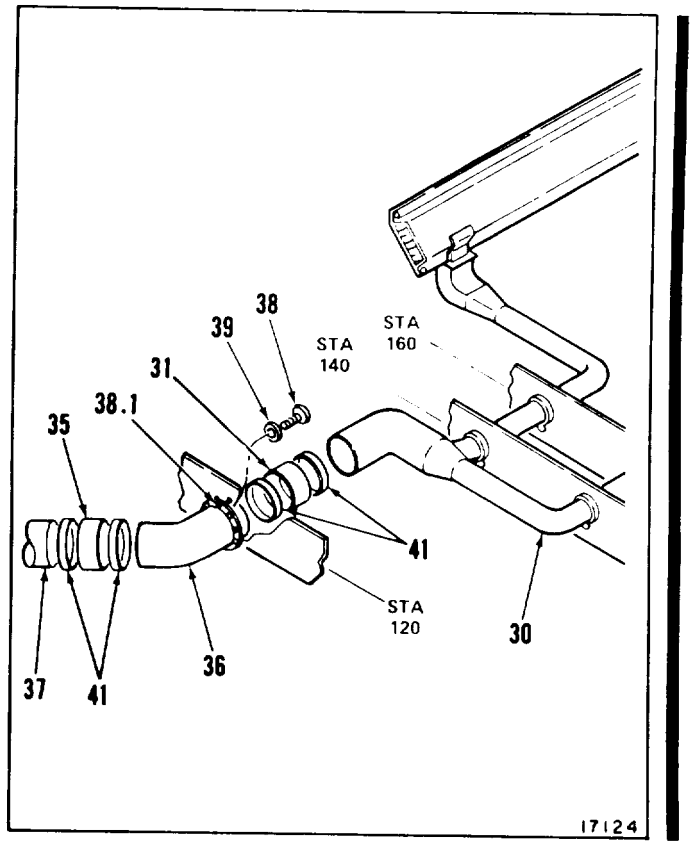
15. **Without nutplates, position valve duct (36)** between manifold duct (30) and transition duct (37). **Install eight screws (38),** washers (39), and nuts (40).



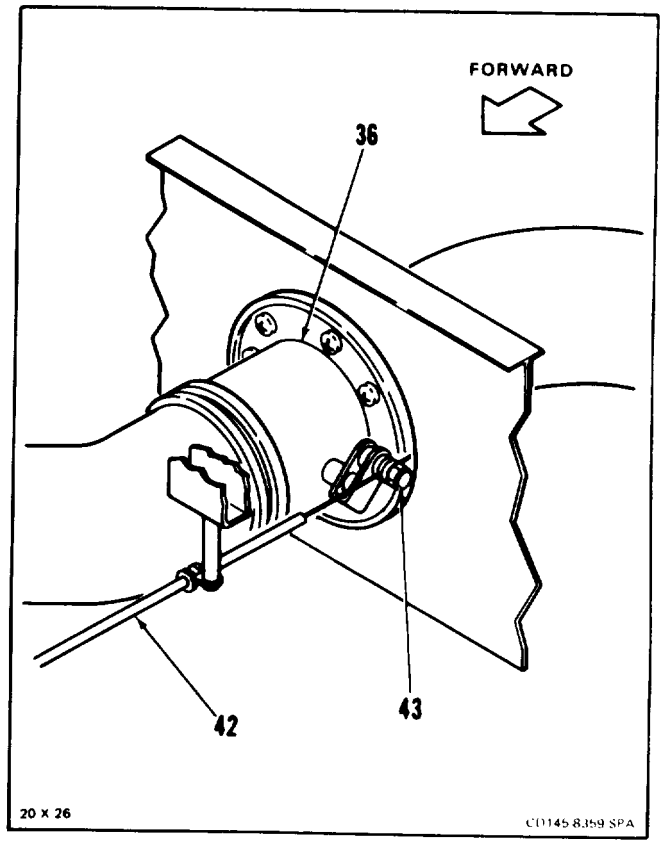
15 1 **With nutplates, position valve duct (36)** between manifold duct (30) and transition duct (37) Install eight screws (38) and washers (39) in nutplates (38.1).

16 **Slide hoses (31 and 35) over joints** between valve duct (36) and adjacent ducts (30 and 37)

17 **Install four clamps (41).**



18. **Install cabin heat control cable (42)** into cable clamping nut (43) on valve duct (36).



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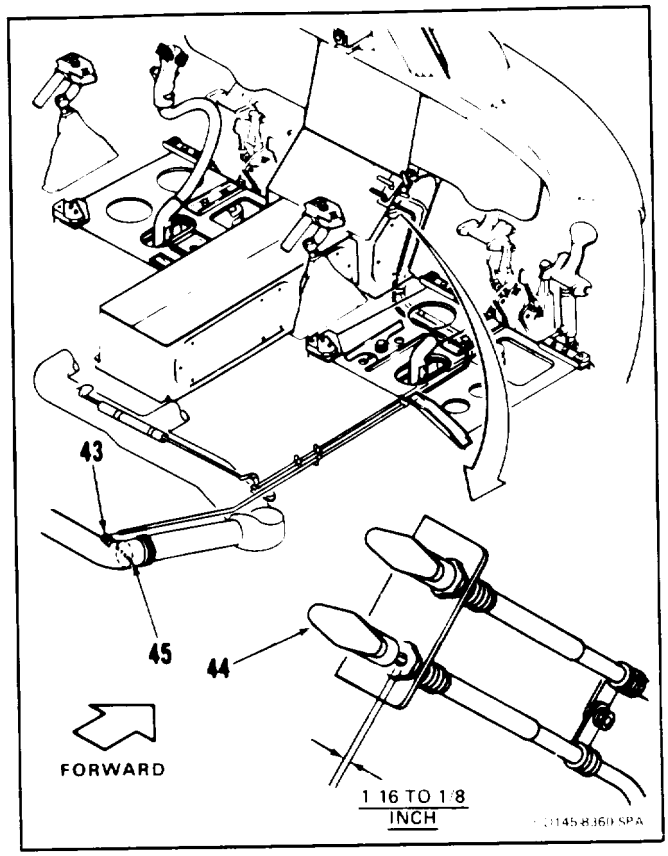
19. **Have helper in cockpit hold cabin heat control handle (44) in a position 1/16 to 1/8 inch short of fully closed.**
20. **Hold heat valve (45) fully closed and tighten clamping nut (43).**

INSPECT

21. Operate cabin heat control cable. Check for freedom of movement and full travel.



FOLLOW-ON MAINTENANCE:

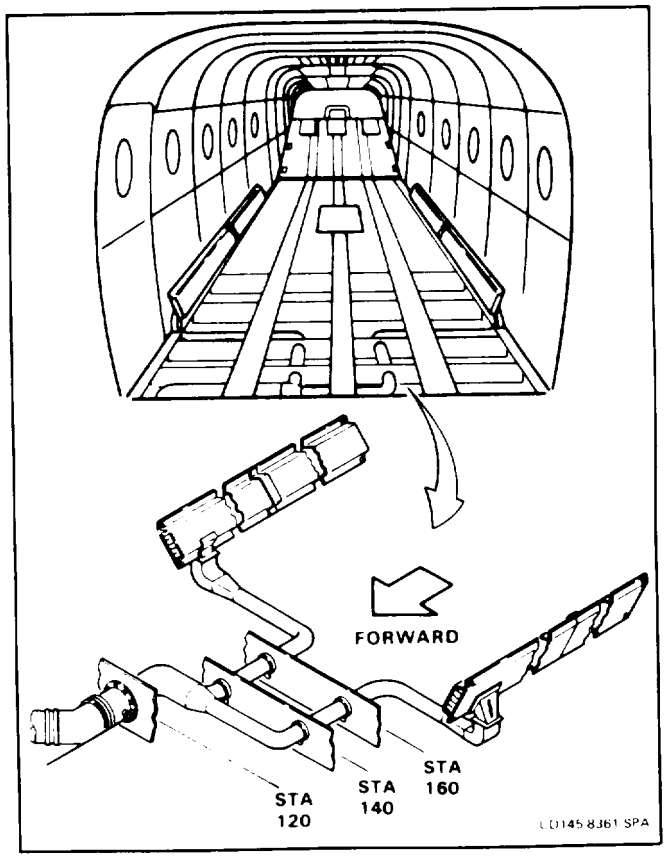
Install four floor panels at station 120 (Task 2-207).

Install winch (Task 14-9)

Install heater compartment acoustical blanket (Task 2-210).

Install buffer boards (Task 2-218).

Install troop seats (Task 2-223 and 2-229).



END OF TASK

13-40 REMOVE BUTTERFLY VALVE OR AIR OUTLET FLAP 13-40

INITIAL SETUP

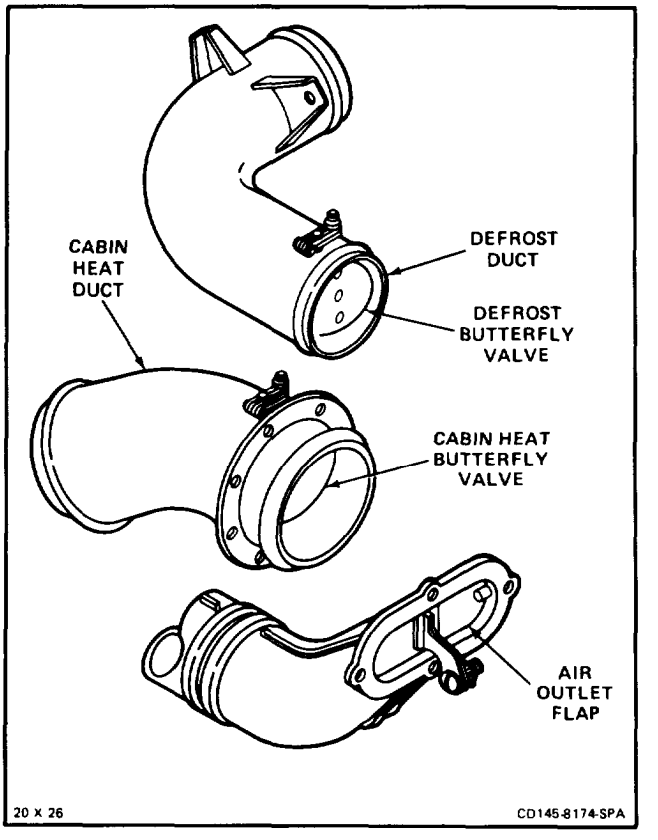
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Airframe Repairer's Tool Kit,
NSN 5180-00-323-4876

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
68G10 Aircraft Structural Repairer

Equipment Conditions:
Off Helicopter Task

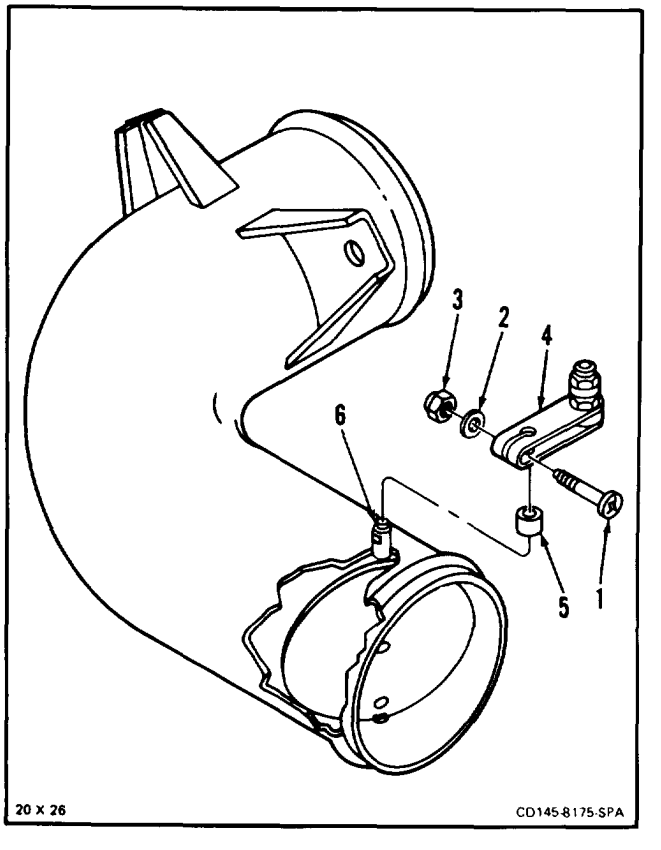


REMOVE COCKPIT DEFROST OR CABIN HEAT BUTTERFLY VALVE

NOTE

Procedure is same to remove cockpit defrost or cabin heat butterfly valve. Cockpit defrost valve is shown here.

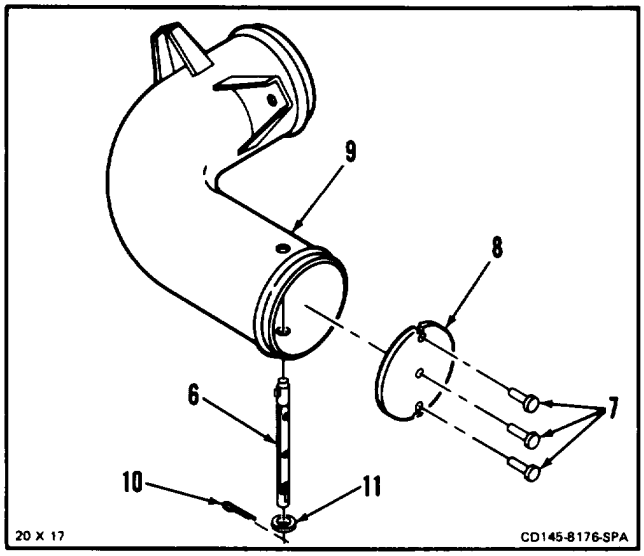
1. **Remove screw (1),** washer (2) and nut 3) from lever (4).
2. **Remove lever (4) and spacer (5)** from shaft (6).



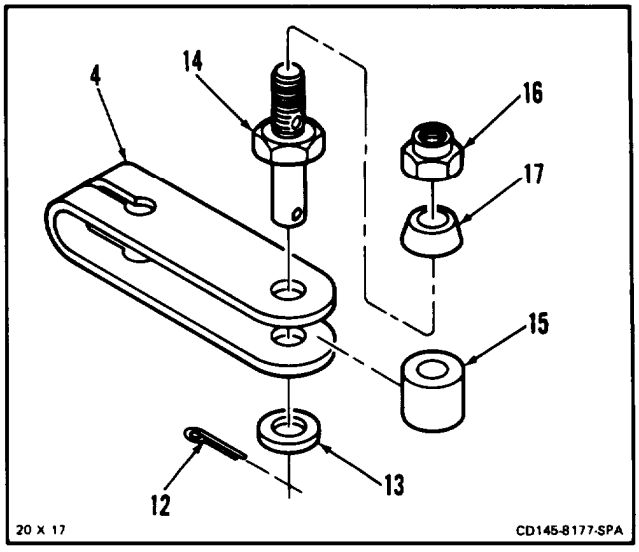
GO TO NEXT PAGE

13-40 REMOVE BUTTERFLY VALVE OR AIR OUTLET FLAP (Continued)

3. **Remove three rivets (7)** from butterfly valve (8) and shaft (6).
4. **Remove butterfly valve (8),** and shaft (6) from duc t (9). **Remove cotter pin (10)** and washer 11) from shaft (6).



5. **Remove cotter pin (12),** washer (13), **stud (14) and spacer (15)** from lever (4).
6. **Remove nut (16) and washer (17)** from stud (14).

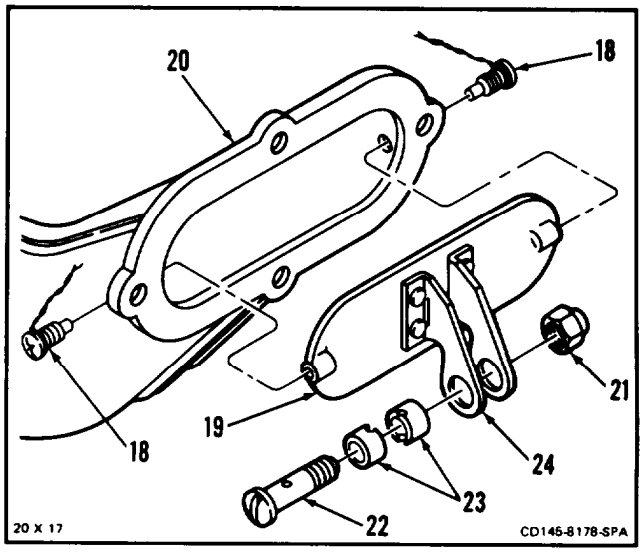


REMOVE AIR OUTLET FLAP

7. **Remove** lockwire and **two screws (18).**
8. **Remove air outlet flap (19]** from duct (20).
9. **Remove nut (21), screw (22), and two collars (23)** from arm (24).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

13-41 INSTALL BUTTERFLY VALVE OR AIR OUTLET FLAP

INITIAL SETUP

Applicable Configurations:
All

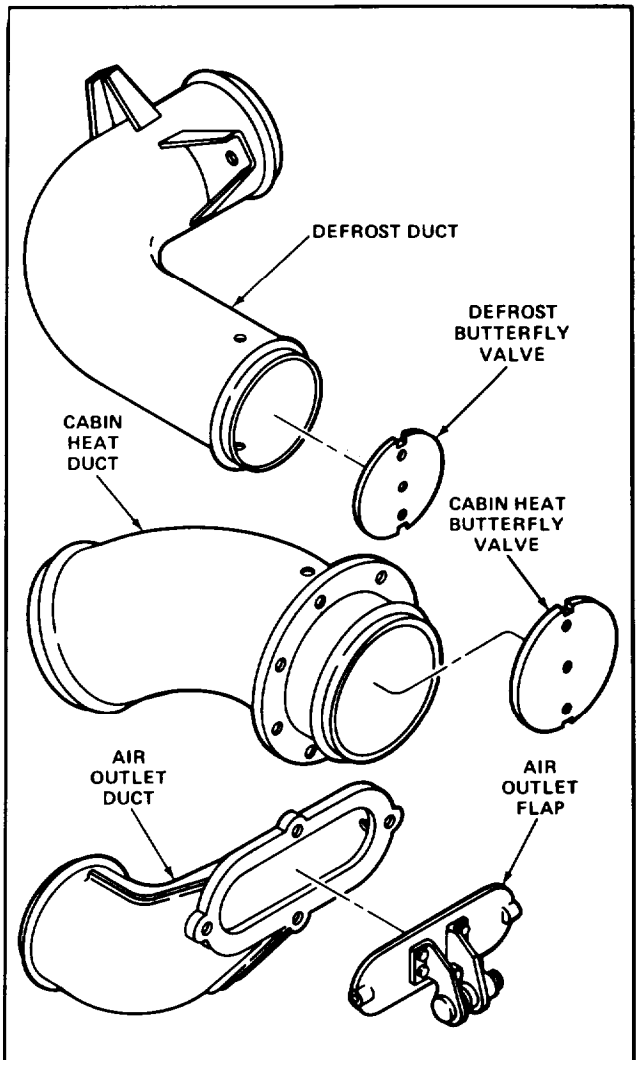
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Airframe Repairer's Tool Kit,
NSN 5180-00-323-4876

Materials:
Lockwire (E231)

Parts:
Rivets
Cotter Pins

Personnel Required:
67U10 Medium Helicopter Repairer
68G10 Aircraft Structural Repairer

References:
TM 55-1520-240-23P

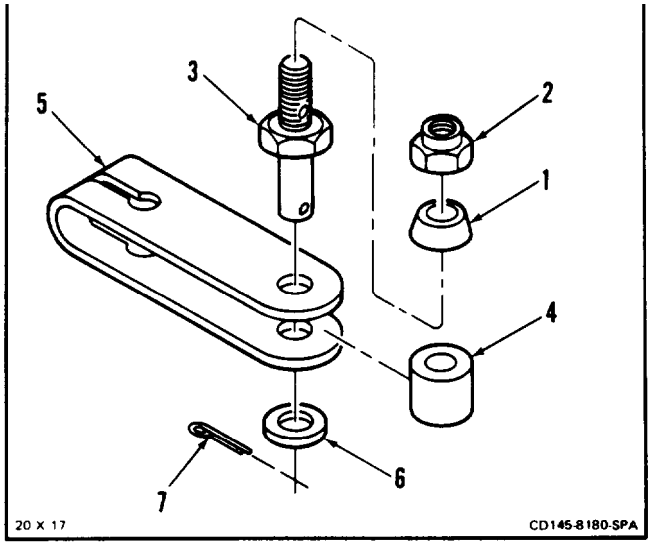


INSTALL COCKPIT DEFROST OR CABIN HEAT BUTTERFLY VALVE

NOTE

Procedures to install cockpit defrost or cabin heat butterfly valve is same. Cockpit defrost valve shown here.

1. **Install washer (1) and nut (2)** on stud (3).
2. Position spacer (4) in lever (5). **Install stud (3).**
3. **Install washer (6) and cotter pin (7).**



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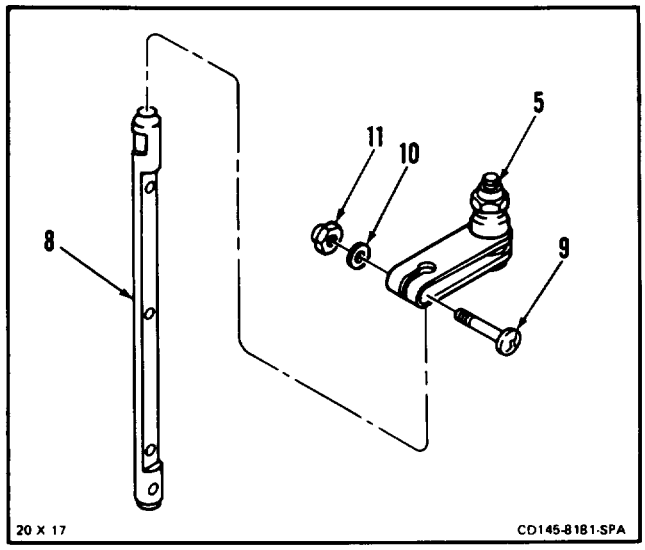
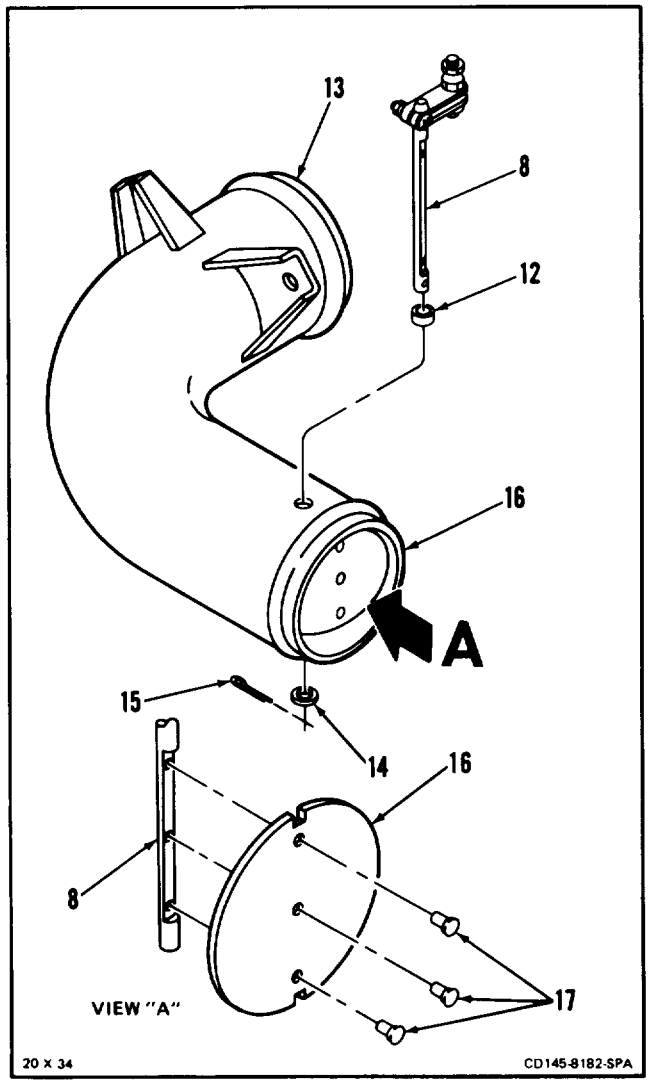
13-41 INSTALL BUTTERFLY VALVE OR AIR OUTLET FLAP (Continued)

4. **Position lever (5) on notched end of shaft (8). Install screw (9), washer (10), and nut (11).**



5. **Slide shaft (8) through spacer (12)** and defrost duct (13).
6. **Install washer (14) and cotter pin (15).**
7. **Position butterfly valve (16) on shaft (8) so that notches in valve fit into shaft. Install three rivets (17).**



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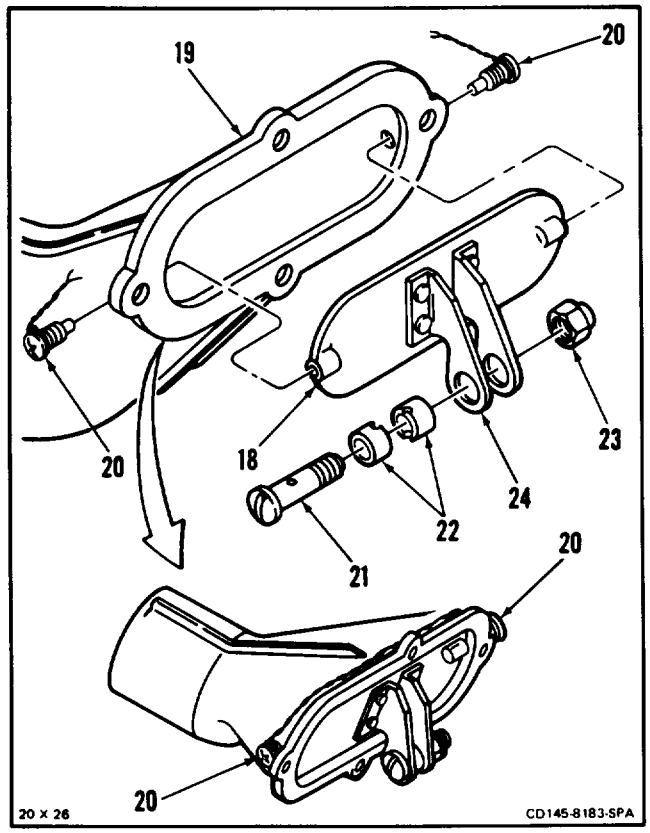
1341 INSTALL BUTTERFLY VALVE OR AIR OUTLET FLAP (Continued)

INSTALL AIR OUTLET FLAP

8. **Position air outlet flap (18)** in air outlet duct (19). **Install two screws (20).**
9. Lockwire screws (20). Use lockwire (E231).
10. **Install screw (21), two collars (22),** and nut (23) in arm (24).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-42 REMOVE COCKPIT AIR CONTROLS

INITIAL SETUP

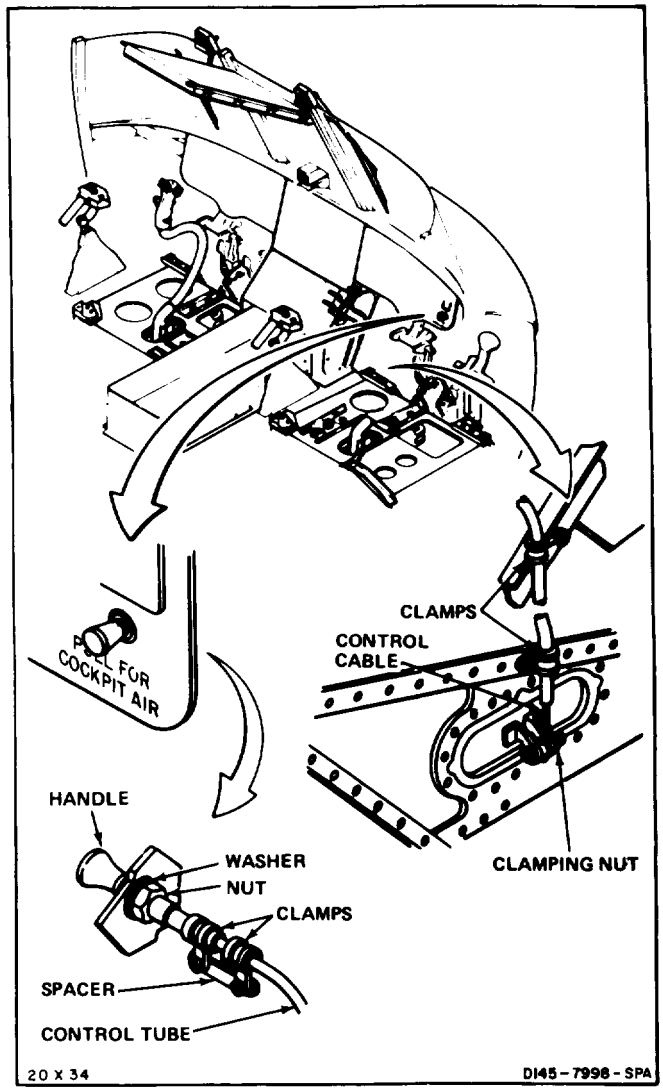
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U20 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off

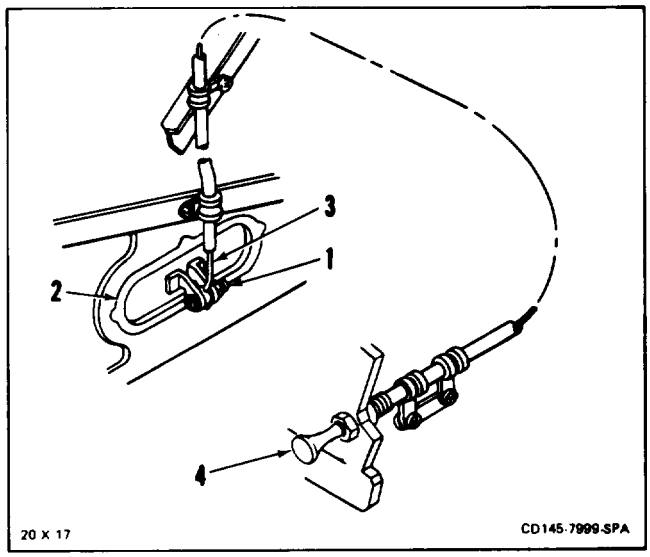


NOTE

Procedure is same to remove pilot's or copilot's cockpit air control. Pilot's air control shown here.

REMOVE COCKPIT AIR CONTROL CABLE

1. **Loosen cable clamping nut (1)** on cockpit air outlet flap (2). **Disconnect control cable (3).**
2. **Pull handle (4) to remove control cable (3).**



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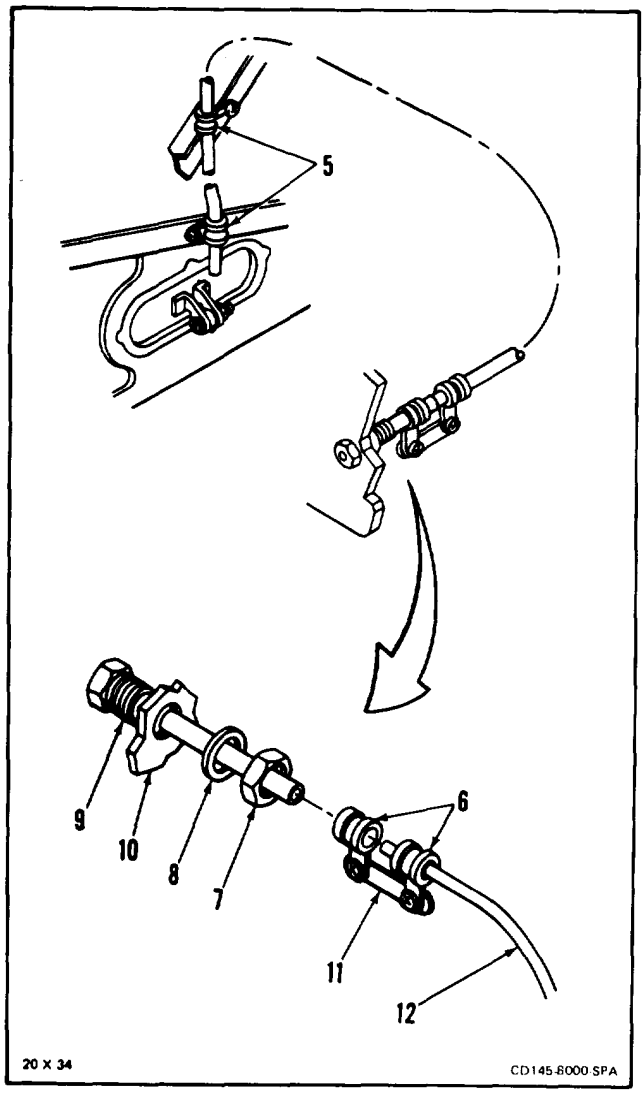
REMOVE COCKPIT AIR CONTROL TUBE

3. **Loosen two clamps (5).**
4. **Loosen two clamps (6).**
5. **Remove nut (7)** and washer (8) from control (9). **Remove control** from instrument panel (10).
6. **Remove two clamps (6) with spacer (11).**
7. **Remove tube (12).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-43 INSTALL COCKPIT AIR CONTROL

INITIAL SETUP

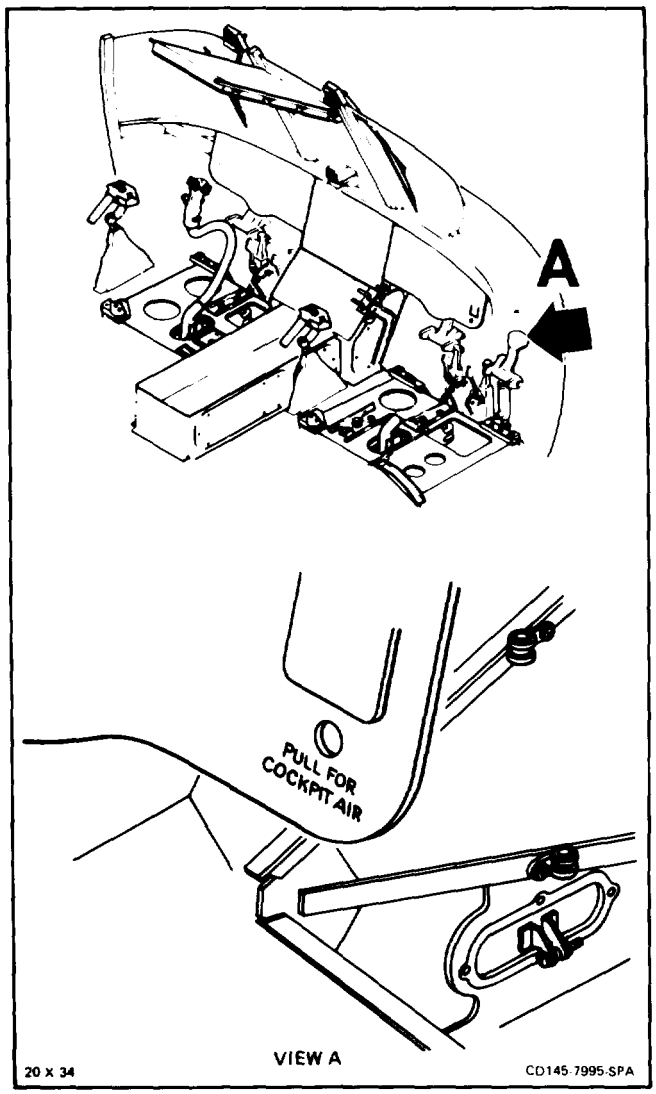
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U10 Medium Helicopter Mechanic
67U20 Medium Helicopter Mechanic
67U30 Inspector

References:
TM 55-1520-240-23P

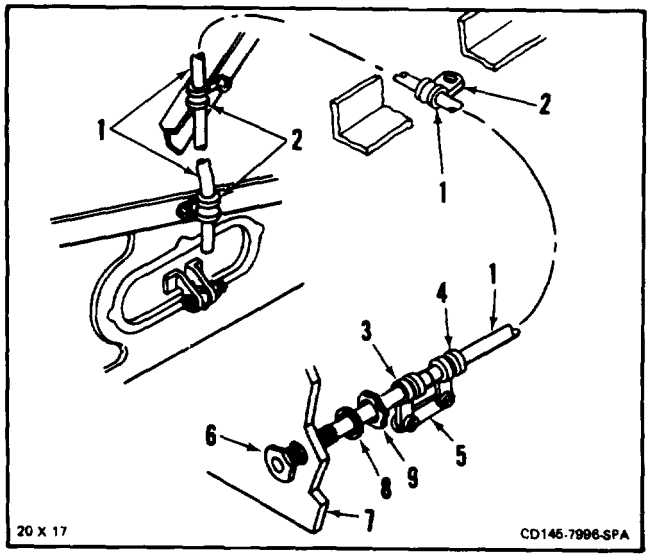


NOTE

Procedure to install pilot's or copilot's cockpit air control is same. Pilot's air control shown here.

INSTALL COCKPIT AIR CONTROL TUBE

1. **Route control tube (1)** through three clamps (2).
2. **Position clamps (3 and 4)** with spacer (5) **on control tube (1).**
3. **Position control (6) in instrument panel (7). Install washer (8) and nut (9).**



GO TO NEXT PAGE

4 **Insert tube (1) 1 inch into control (6).**

5. Position clamps (3 and 4) with spacer (5) on tube (1) and control (6). **Tighten clamps.**

6. **Tighten three clamps (2).**

INSTALL COCKPIT AIR CONTROL CABLE

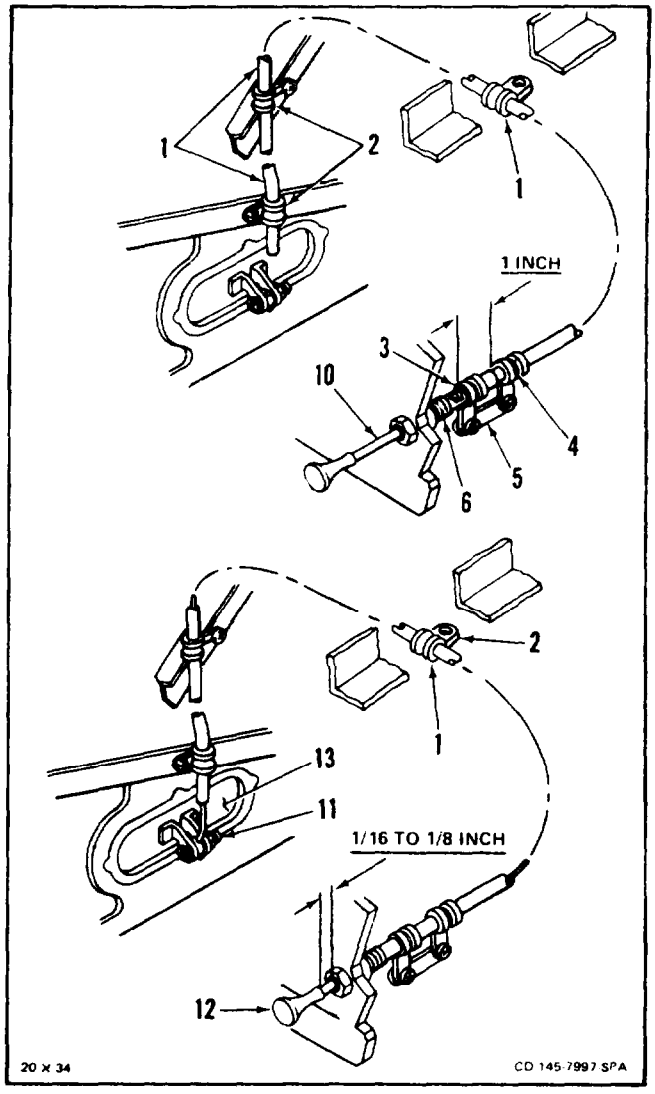
7. **Thread control cable (10) through tube (1) into cable clamping nut (11).**

8. **Have helper hold control handle (12) in a position 1/16 to 1/8 inch short of fully closed.**

9. **Hold air outlet flap (13) fully closed. Tighten cable clamping nut (1).**

10. Have helper operate handle (12). Check that flap (13) opens and closes.

INSPECT



FOLLOW-ON MAINTENANCE:

None

END OF TASK

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:

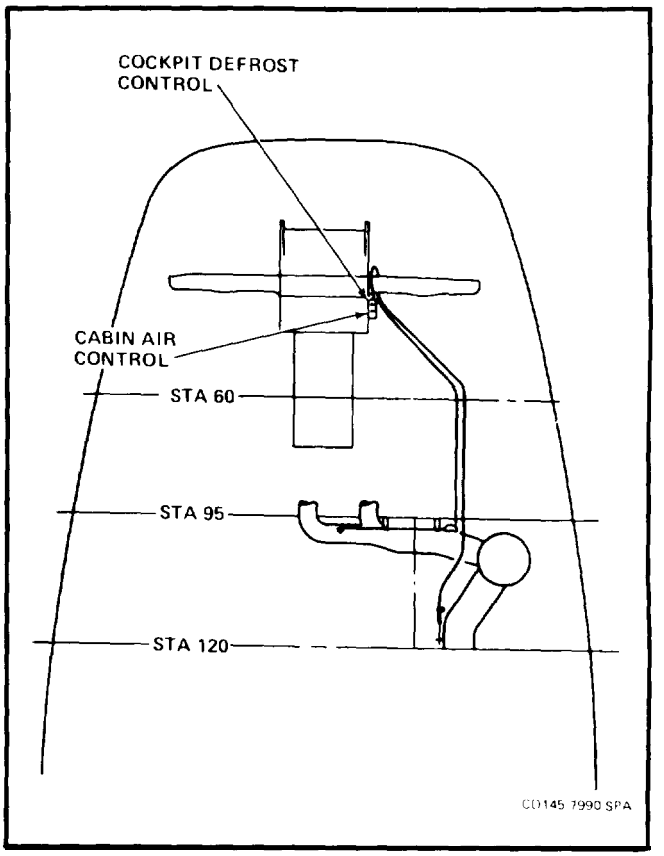
None

Personnel Required:

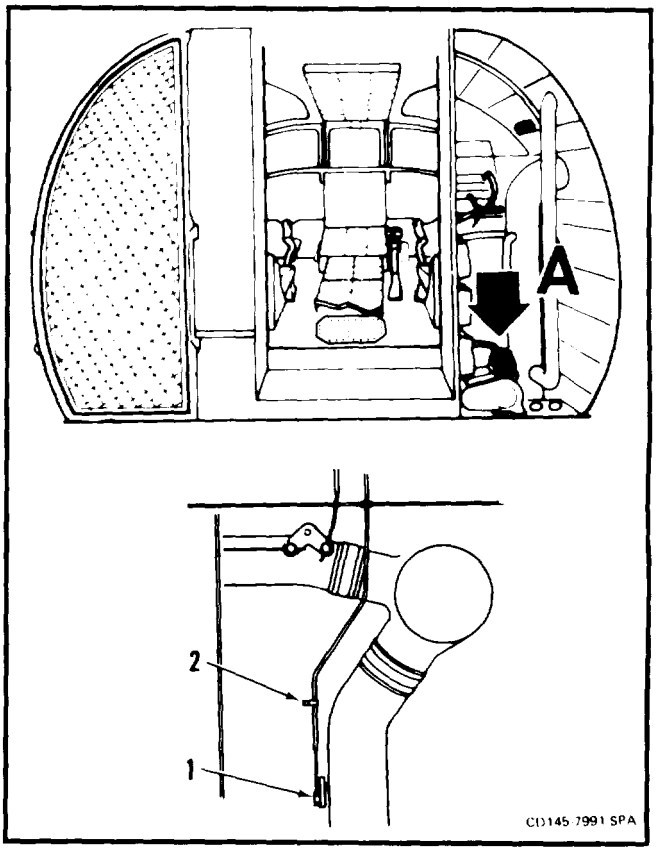
Medium Helicopter Repairer

Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Pilot's Seat Removed (Task 2-111)
Pilot's Floor Access Panel Removed (Task 2-79)
Heater Compartment Acoustical Blanket Removed (Task 2-208)
Pilot's Landing Light Removed (Task 9-69)
Winch Removed (Task 14-4)



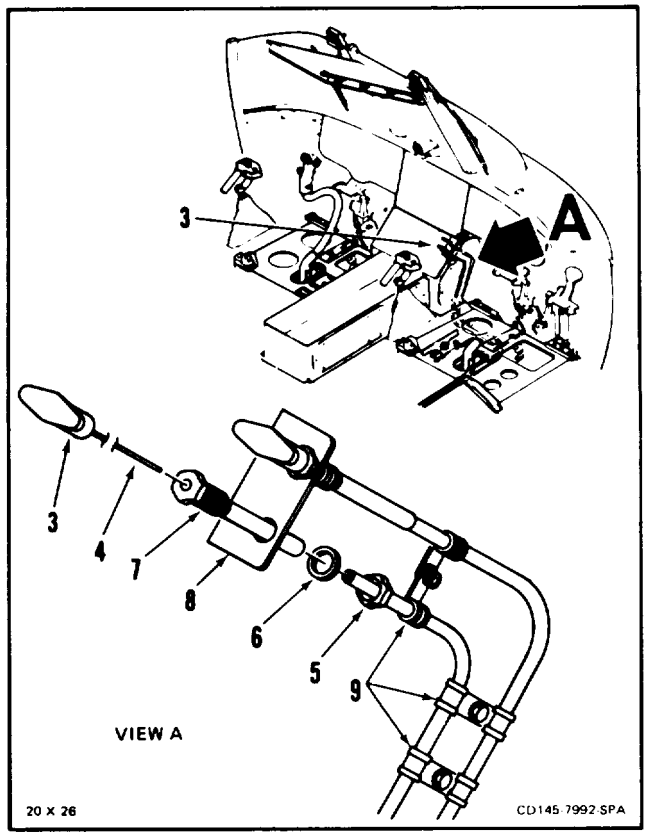
1. **Loosen cable clamping nut (1).**
2. Loosen clamp (2).



13-44 REMOVE CABIN AIR CONTROL (Continued)

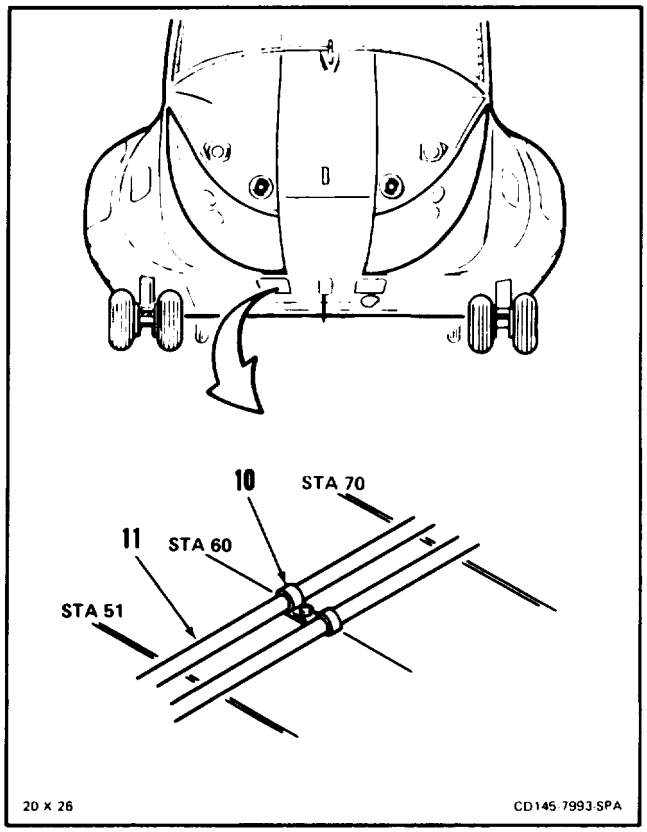
REMOVE CA BIN AIR CONTROL CABLE

3. **Pull cabin air control handle (3) and remove cable (4).**
4. **Remove nut (5)** and washer (6) from *control* (7).
5. **Remove control (7)** from mounting plate (8).
6. **Loosen three clamps (9).**



REMOVE AIR CONTROL TUBE

7. **Loosen clamp (10)** on air control tube (11).



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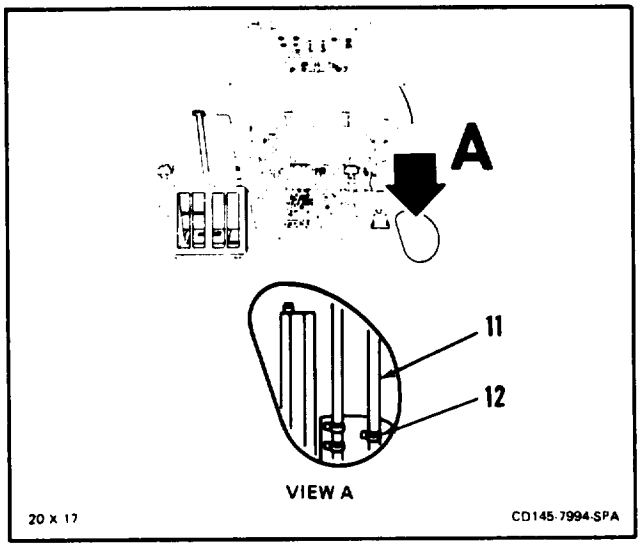
8. **Loosen clamp (12).**
9. **Remove tube (11).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-45 INSTALL CABIN AIR CONTROL

INITIAL SETUP

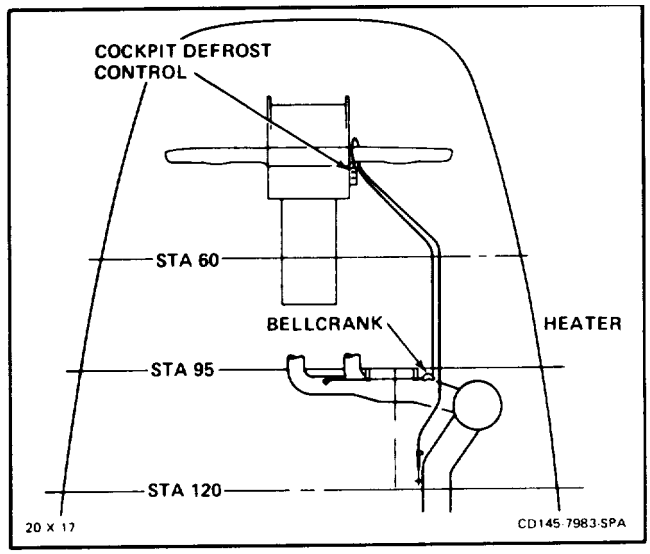
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

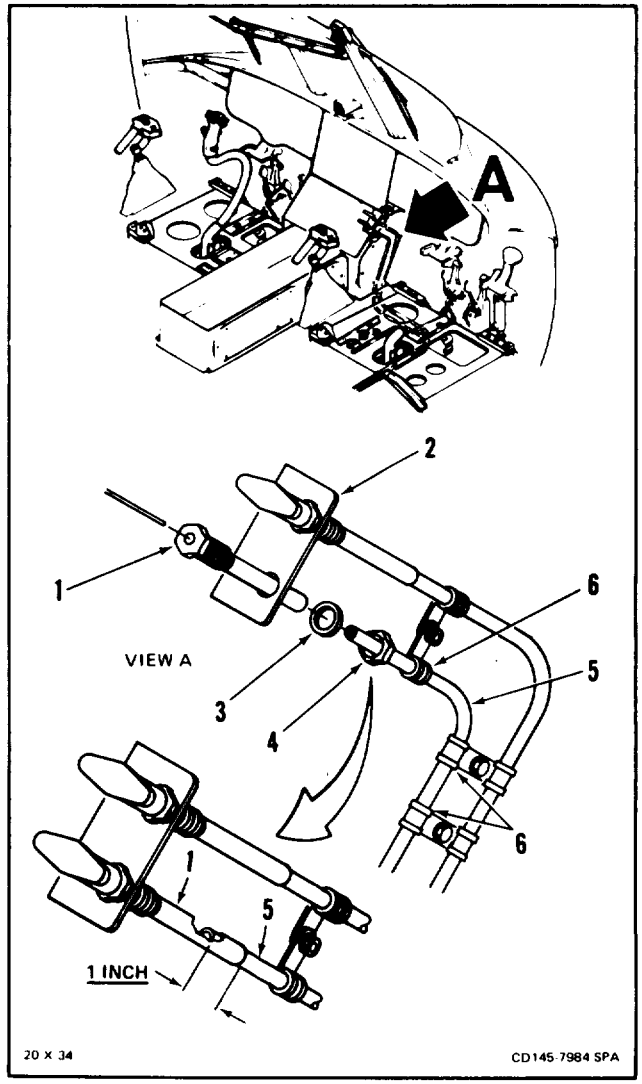
Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer

References:
TM 55-1520-240-23P



INSTALL CABIN AIR CONTROL TUBE

1. **Position control (1) in mounting plate (2). Install washer (3) and nut (4).**
2. **Route control tube (5)** through three clamps (6).
3. **Insert end of tube (5) 1 inch into control (1).**
4. Tighten three clamps (6).



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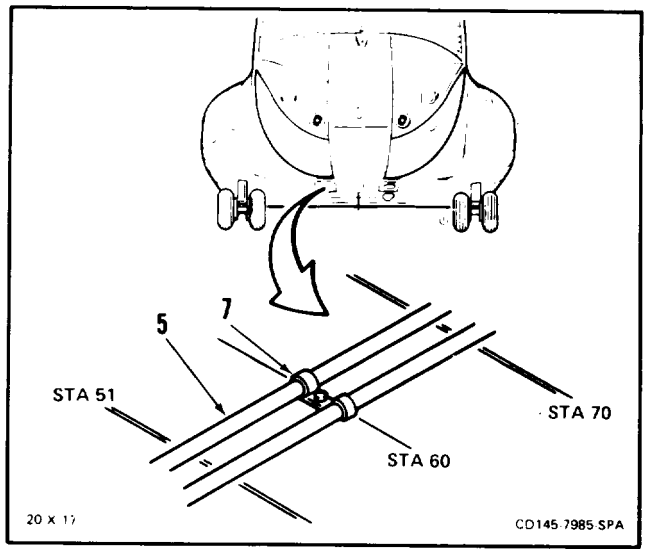
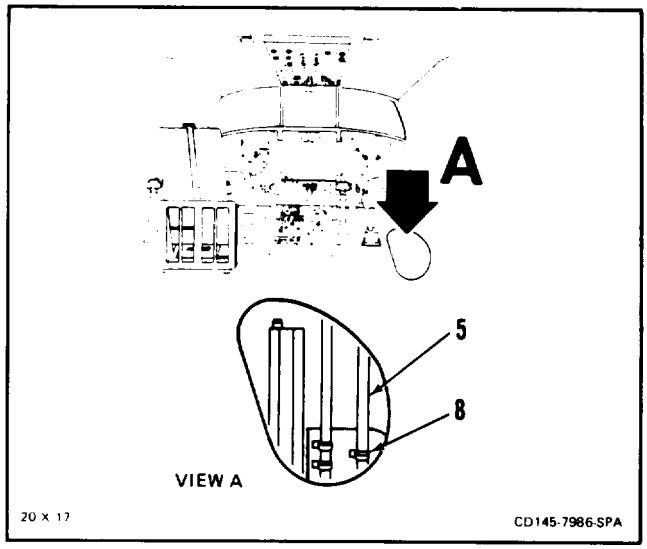
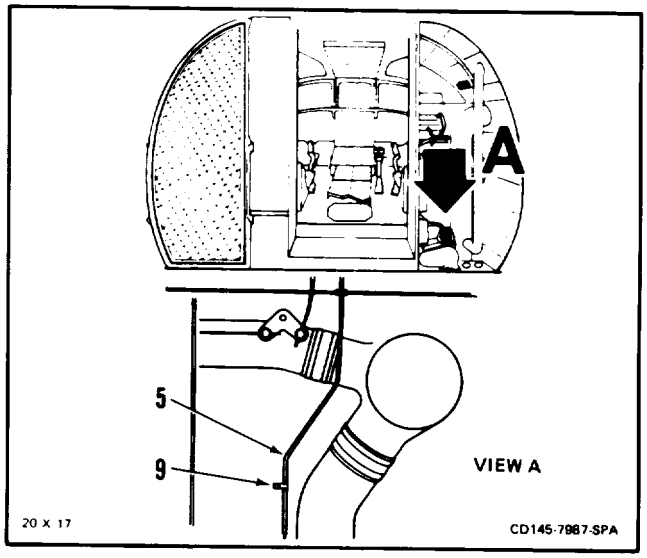
5. **Route tube (5) through clamp (7). Tighten clamp.**



6. **Route tube (5) through clamp (8). Tighten clamp.**



7. **Route tube (5) through clamp (9). Tighten clamp.**



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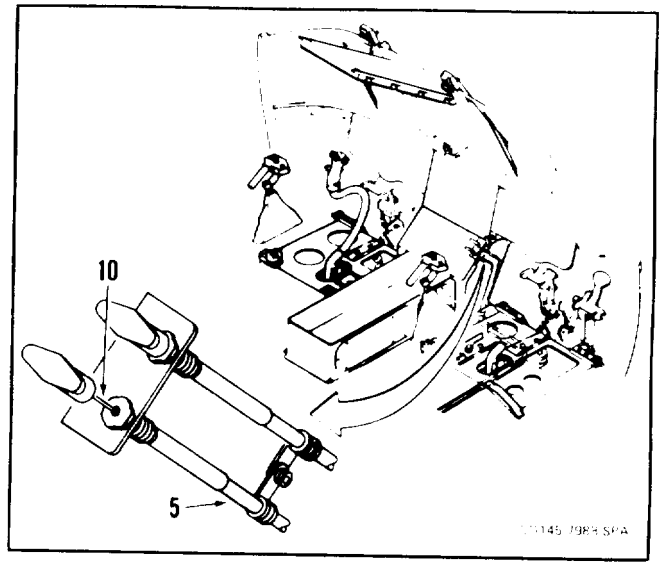
INSTALL CABIN AIR CONTROL CABLE

8. **Thread cable (10) through tube (5).**

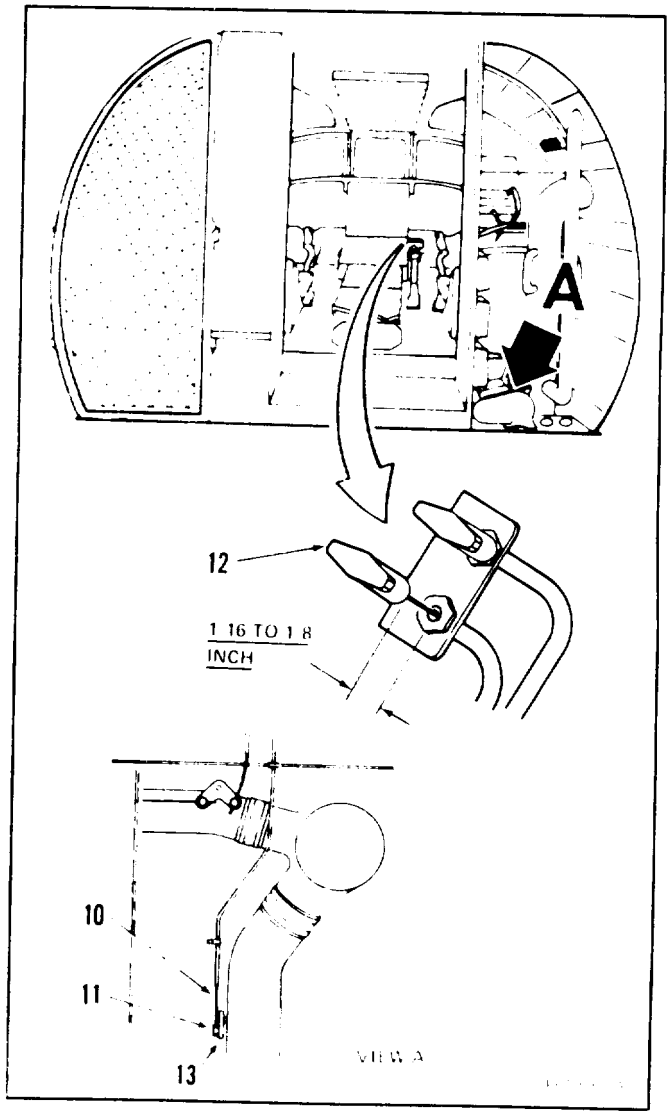


9. **Insert cable (10) into cable clamping nut (11).**

10. **Have helper, in cockpit, position cabin air control handle (12) 1/16 to 1/8 inch short Of fully closed.**

11. **Hold air valve (13) fully closed. Tighten nut (11).**

12. Have helper operate handle (12). Check that valve (13) opens and closes,



FOLLOW-ON MAINTENANCE:
Install pilot's landing light (Task 9-79),
Install pilot's floor access panel (Task 2-80),
Install pilot's seat (Task 2-114).
Install winch (Task 14-9).
Install heater compartment acoustical blanket (Task 2-210).

END OF TASK

13-46 REMOVE CABIN TEMPERATURE SELECTOR

INITIAL SETUP

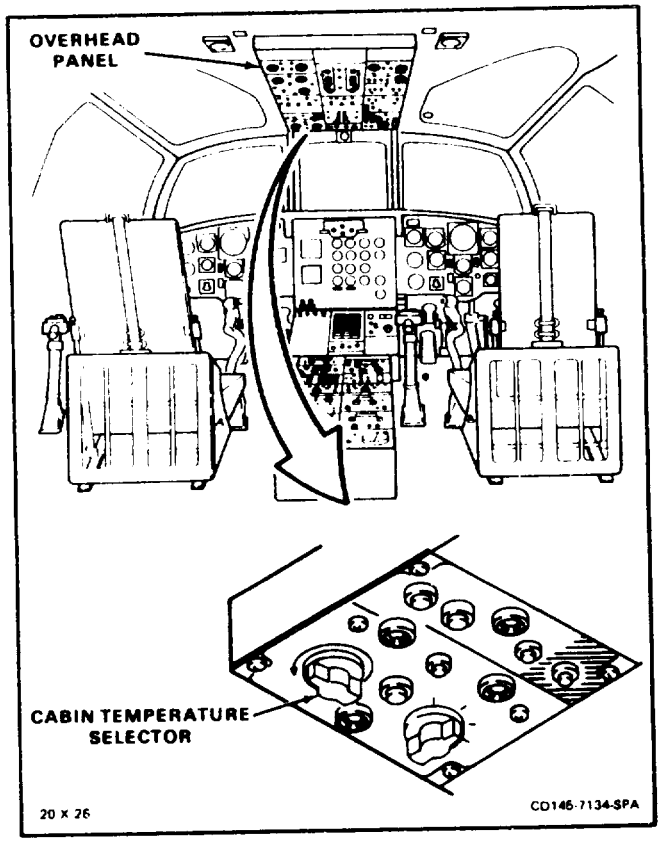
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

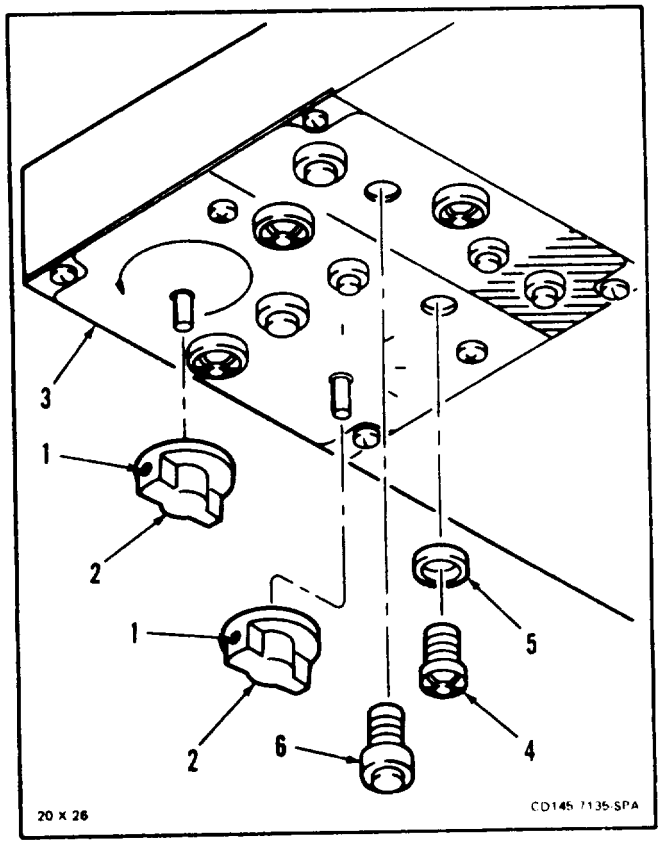
Materials:
Paper Tags (E264)
Tape (E395)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)



1. Loosen two setscrews (1) **Remove two knobs (2)** from plastlc panel (3)
2. Turn four panel lights (4) counter-clockwlse **Remove lights** and seals (5) from plasticc panel (3)
3. Turn two press-to-test light (6) counter-clockwise **Remove press-to-test lights** from plastic panel (3). Tag lights.



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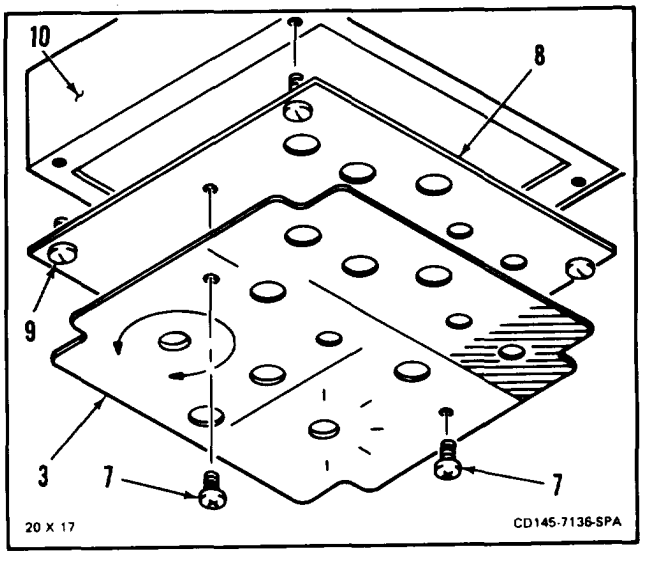
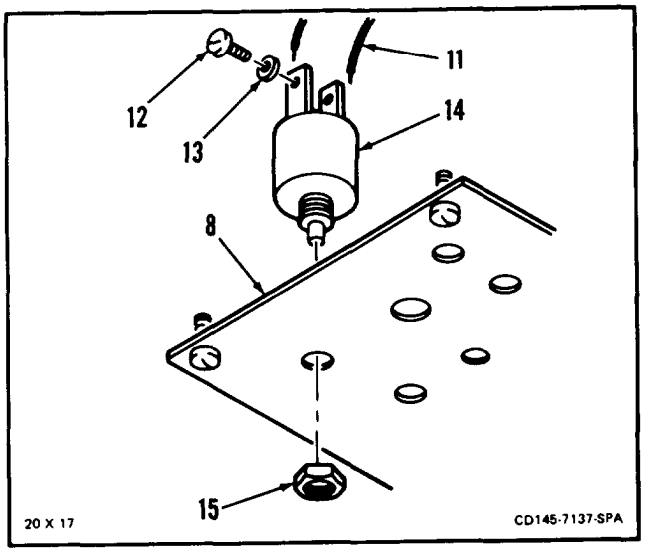
13-46 REMOVE CABIN TEMPERATURE SELECTOR (Continued)

4. **Remove** two screws (7) and **plastic panel (3)** from metal panel (8).
5. Release four screws (9). **Remove metal panel (8)** from cockpit overhead panel (10)



6. Tag two wires (11). **Remove** two screws (12), washers (13) and **wires (11)** from cabin temperature selector (14).
7. **Remove** locknut (15) and **selector (14)** from metal panel (8).
8. Tape exposed ends of wires (11). Use tape (E395).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-47 INSTALL CABIN TEMPERATURE SELECTOR

INITIAL SETUP

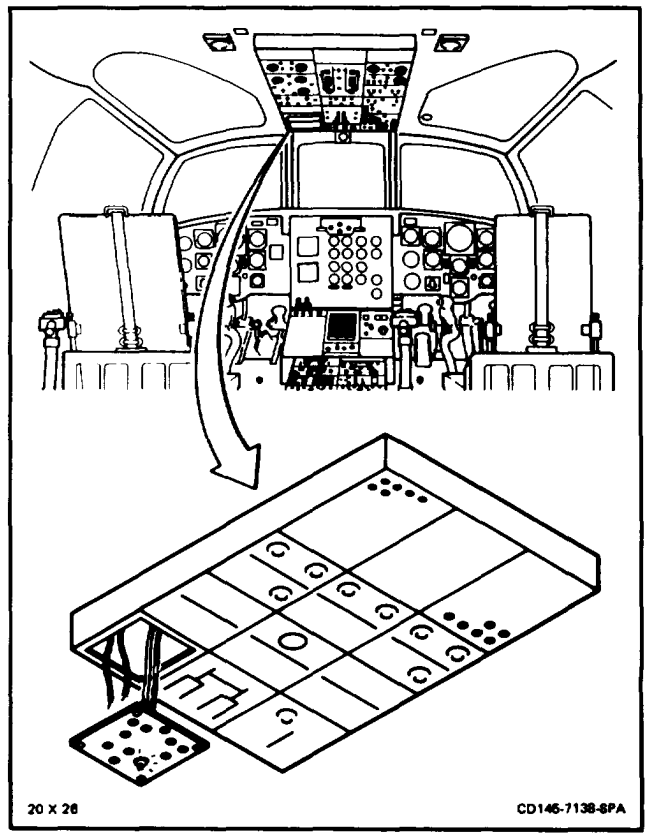
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

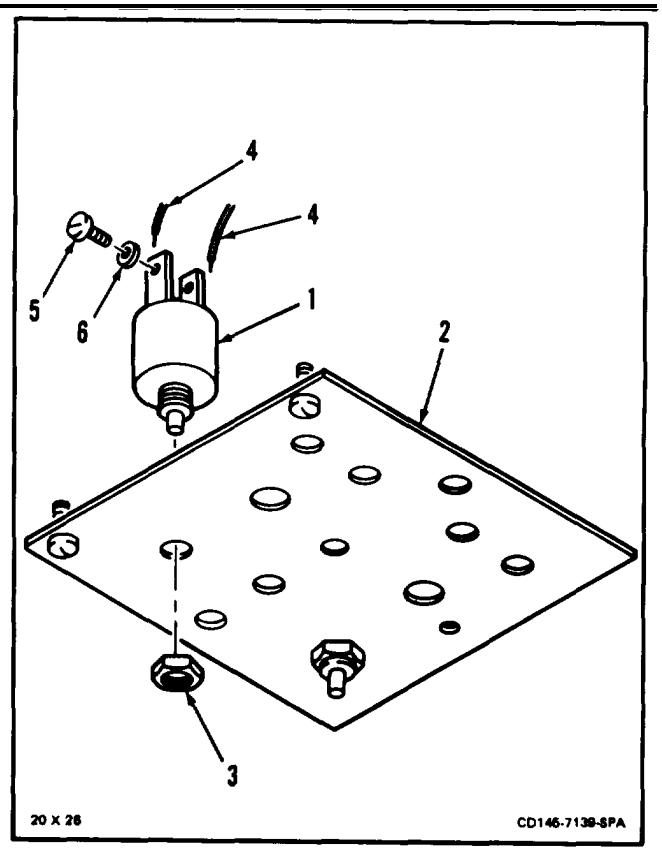
Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



1. **Position cabin temperature selector (1)** in metal panel (2). **Install locknut (3)** on selector.
2. Remove tape from two electrical wires (4).
3. **Connect two wires (4)** to selector (1). Install two screws (5) and washers (6). Remove tags.



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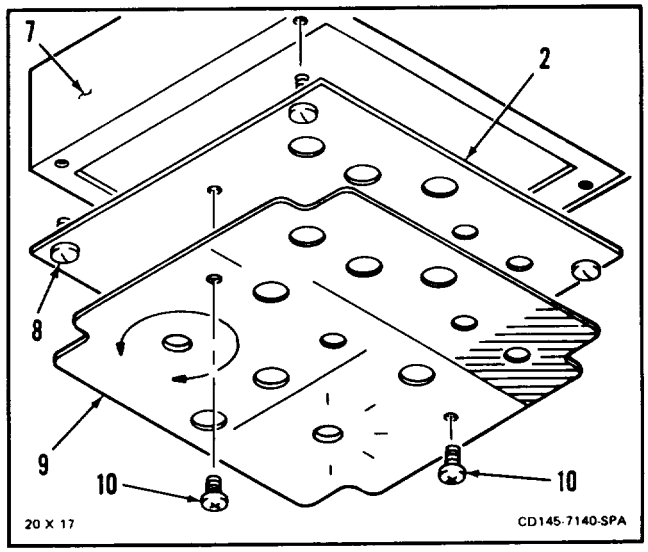
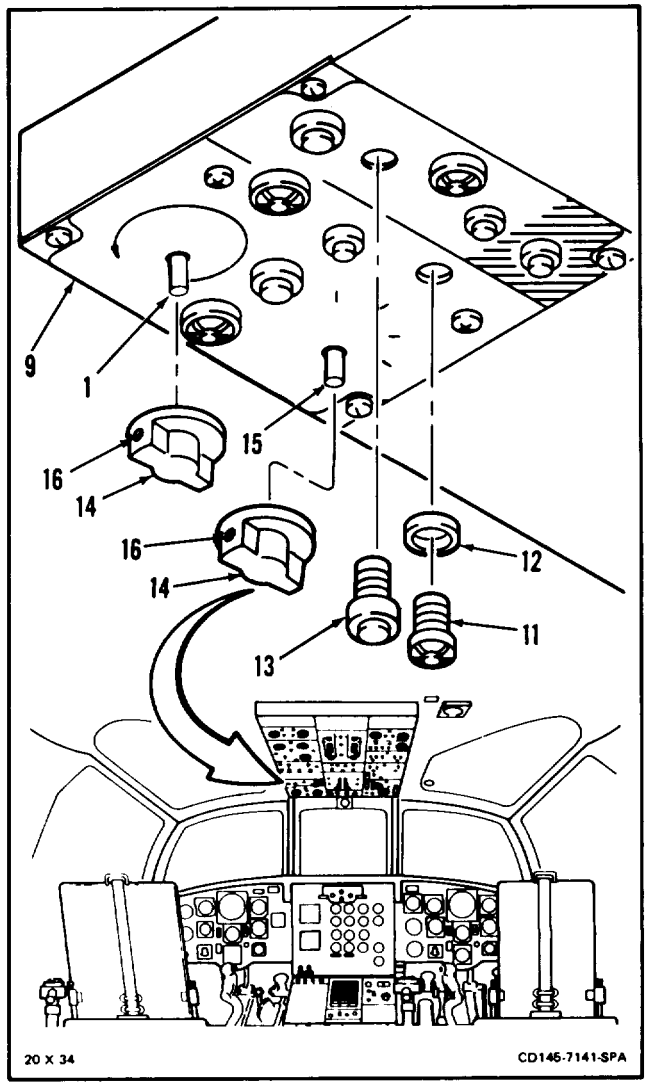
4. **Position metal panel (2)** in cockpit overhead panel (7). **Tighten four fasteners (8).**
5. **Align holes in plastic panel (9) and metal panel (2). Install two screws (10).**



6. **Install four panel lights (11)** and seals (12) in plastic panel (9).
7. **Remove tags and install two press-to-test lights (13)** in plastic panel (9).
8. **Install two knobs (14)** on selectors (1and 15).
9. **Tighten setscrews(16).**

FOLLOW-ON MAINTENANCE:

Perform operational check of heating system. (TM 55-1520-240-T).



END OF TASK

13-48 REMOVE HEATER FUEL SOLENOID VALVE 13-48

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Grounded Container, Two Quart

Materials:
Cloths (E 135)

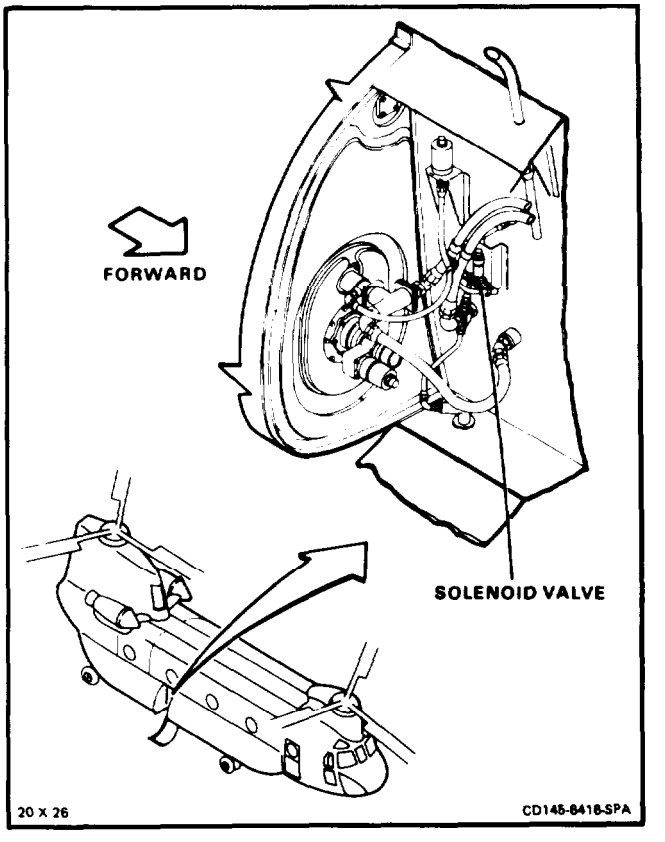
Personnel Required:
67U1O Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Helicopter Grounded (Task 1-29)
Right Aft Intertank Access Door Opened (Task 2-2)

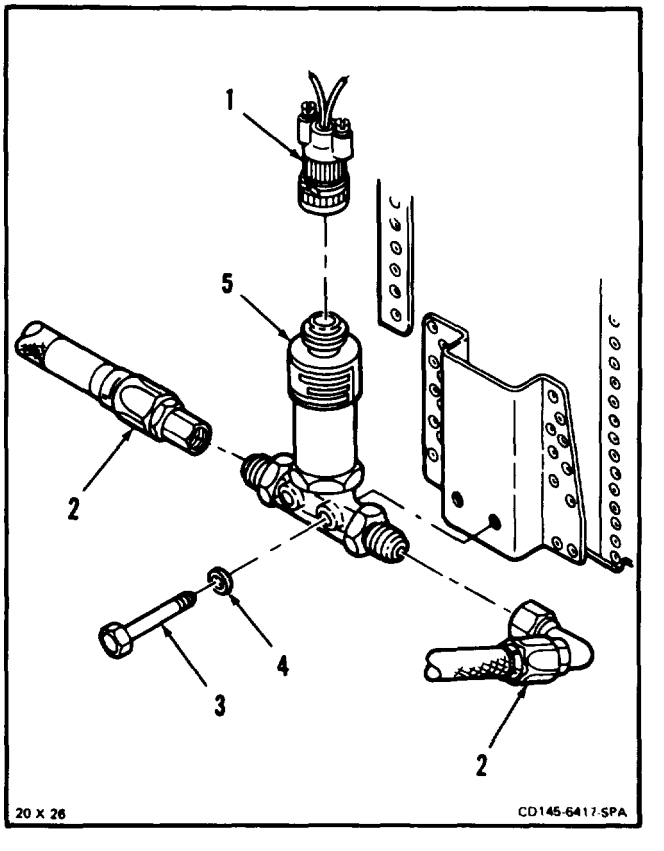
General Safety Instructions:

WARNING

All regulations and instructions for handling fuels shall be strictly observed.



1. Remove lockwire and **disconnect electrical connector (1).**
2. **Disconnect two fuel hoses (2).** Use container and cloths (E135) for spilled fuel. Plug hoses.
3. Remove two bolts (3) and washers (4). **Remove valve (5).**



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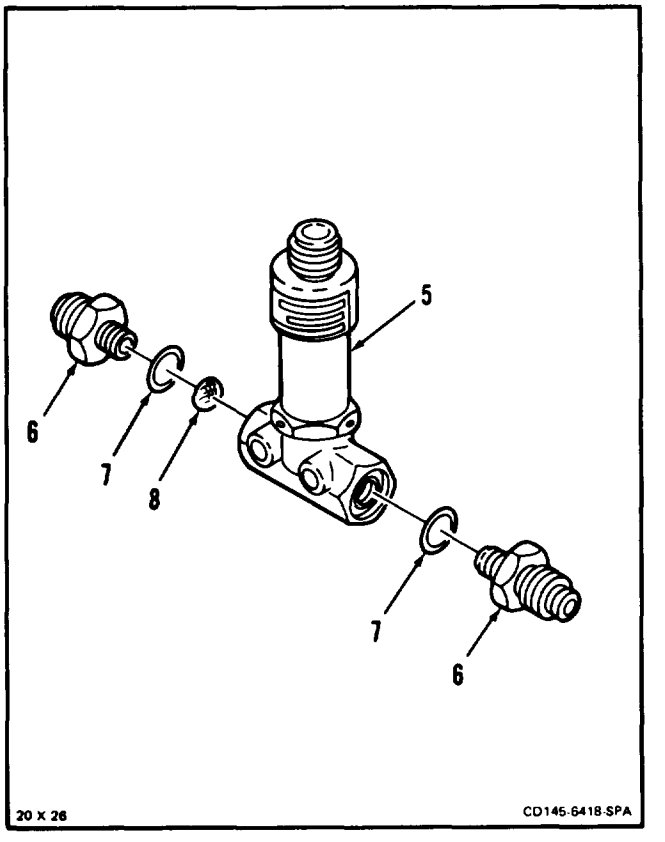
13-48 REMOVE HEATER FUEL SOLENOID VALVE (Continued)

4. **Remove. two reducers (6)** and packings (7) from valve (5).
5. Remove strainer (8).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-49 INSTALL HEATER FUEL SOLENOID VALVE

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Lockwire (E231)

Parts:
Packing

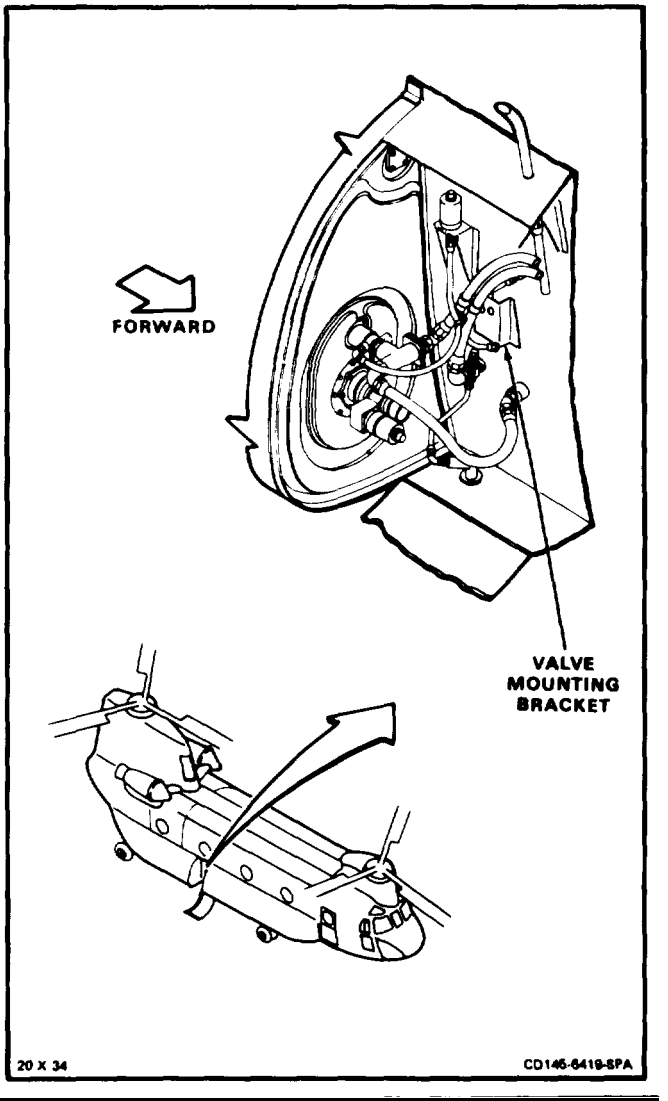
Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P

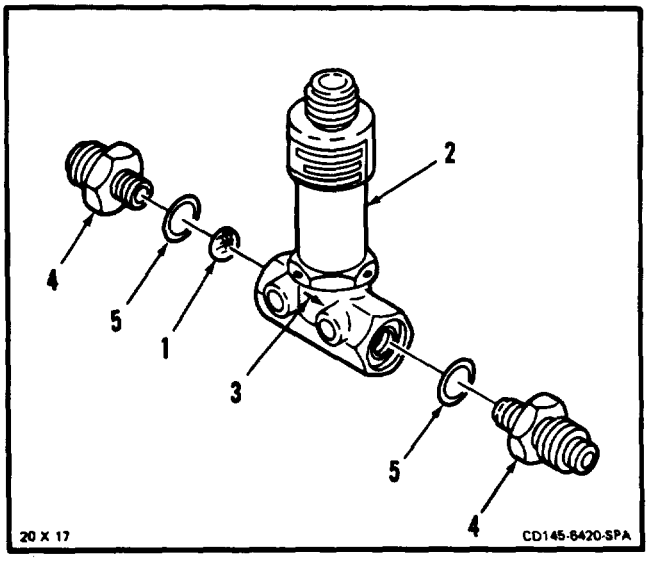
General Safety Instructions:

WARNING

All regulations and instructions for handling fuels shall be strictly observed.



1. **Install strainer (1)** in end of valve (2) opposite arrow (3).
2. ***Install two reducers*** **(4)** and packings (5).



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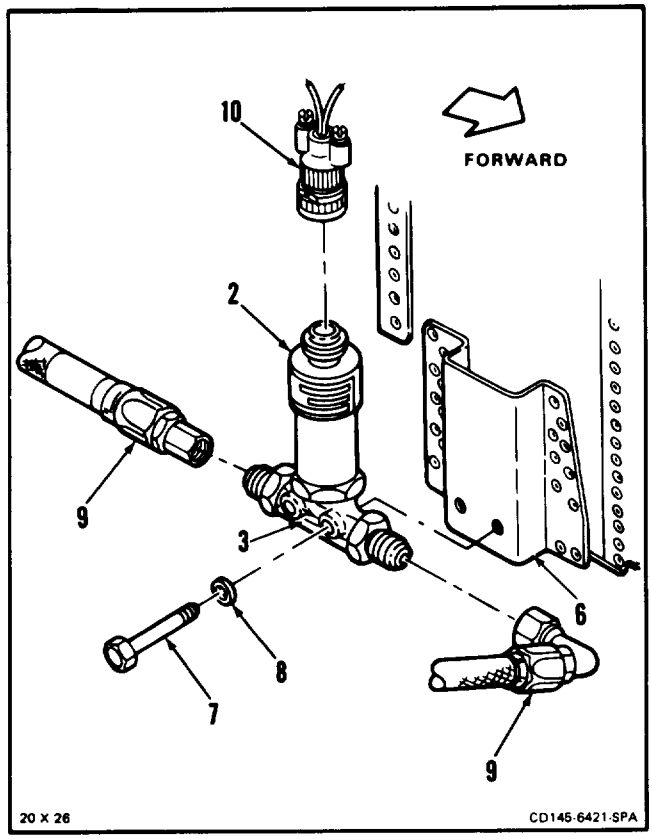
13-49 INSTALL HEATER FUEL SOLENOID VALVE (Continued)

3. **Position valve (2)** on bracket (6), arrow (3) forward.
4. **Install two bolts (7)** and washers (8).
5. Remove plugs and **connect two fuel hoses (9).**
6. **Connect electrical connector (10)** to valve (2).



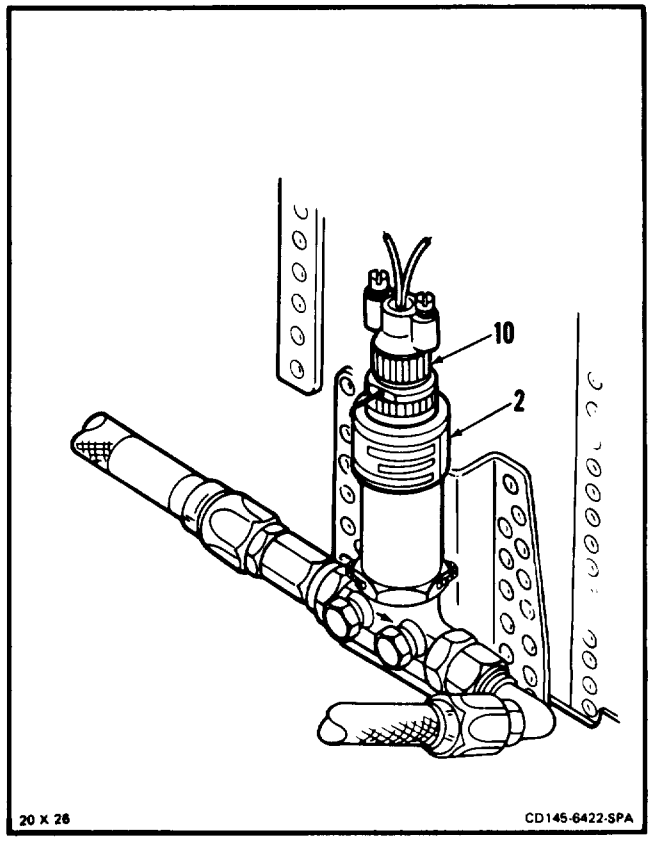
7 **Lockwire (E231) connector (10)** to valve (2).

INSPECT

FOLLOW-ON MAINTENANCE:

Close right aft intertank access door (Task 2-2).

Perform operational check (TM 55-1520-240-T).



END OF TASK

13-50 REMOVE HEATER THERMOSTATIC SWITCHES 13-50

INITIAL SETUP

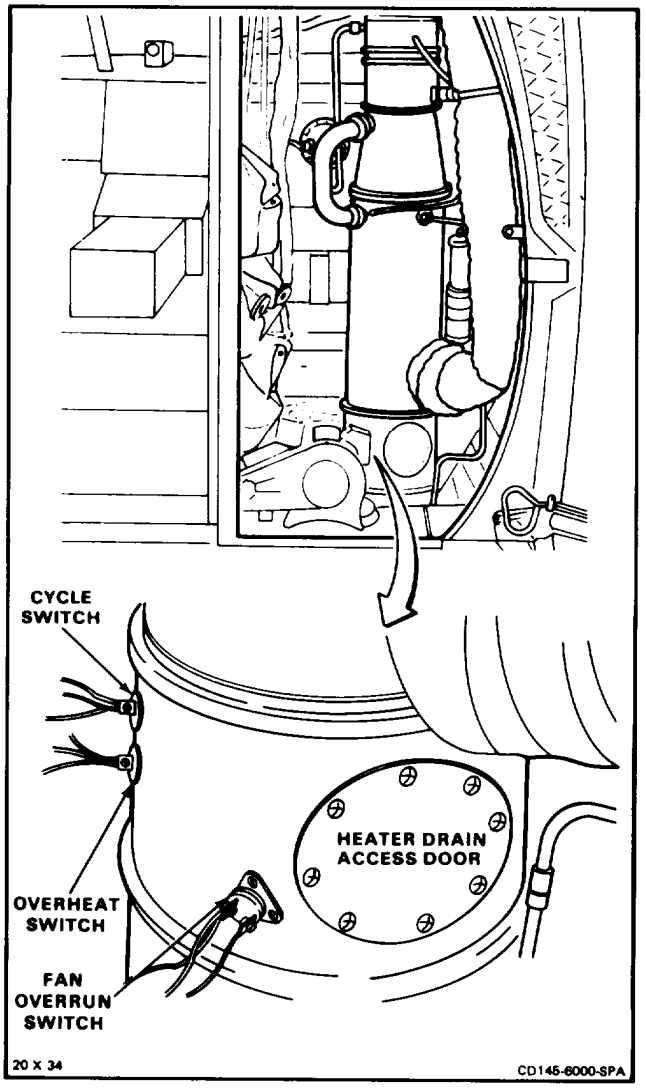
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Paper Tags (E264)
Electrical Tape (E385)

Personnel Required:
67U10 Medium Helicopter Repairer

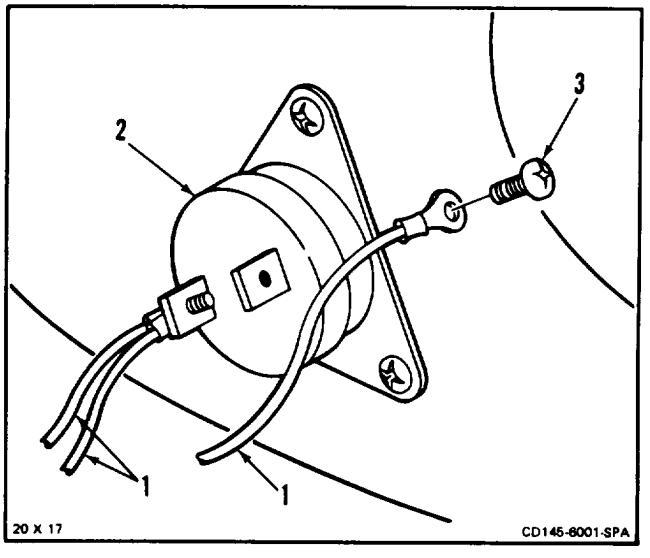
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)



NOTE

Removal procedure is same for all three heater thermostatic switches except for wire connections. Overrun and overheat switches have three wires; cycle switch has two, Removal of fan overrun switch is shown here.

1. Tag and **disconnect three wires (1)** from switch (2) by removing two screws (3). Tape wire ends.



GO 70 *NEXT PAGE*

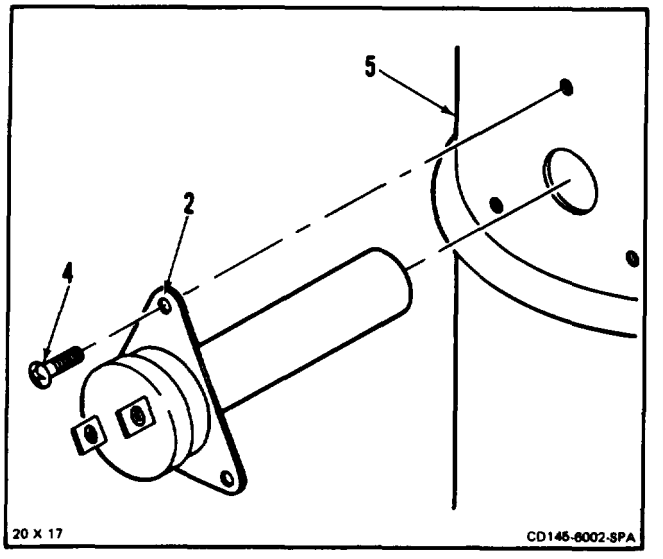
13-50 REMOVE HEATER THERMOSTATIC SWITCHES (Continued) 13-50

2. **Remove three screws (4).**

3. **Remove switch (2)** from transition duct (5).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

13-51 INSTALL HEATER THERMOSTATIC SWITCHES

INITIAL SETUP

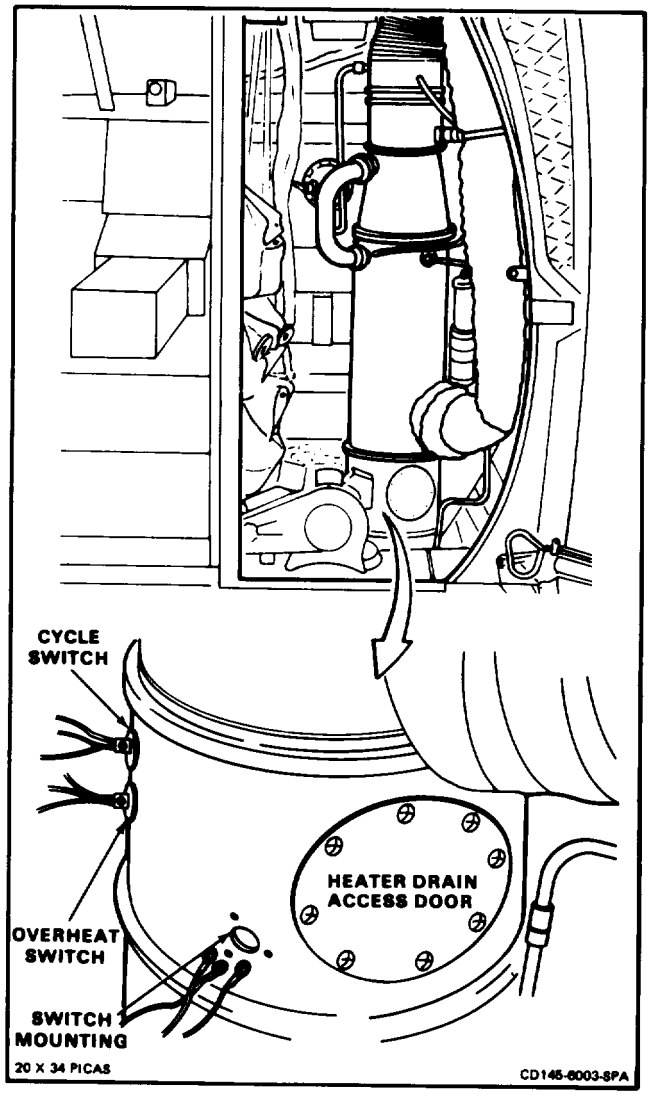
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

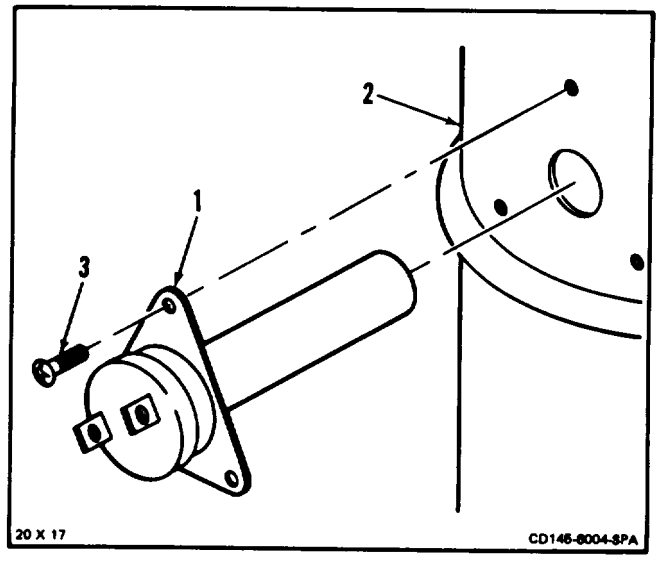
References:
TM 55-1520-240-23P



NOTE

Installation procedure is same for all three heater thermostatic switches except for wire connections. Overrun and overheat switches have three wires; cycle switch has two. installation of fan overrun switch is shown here.

1. **Slide switch (1) into transition duct (2).**
2. **Install three screws (3).**



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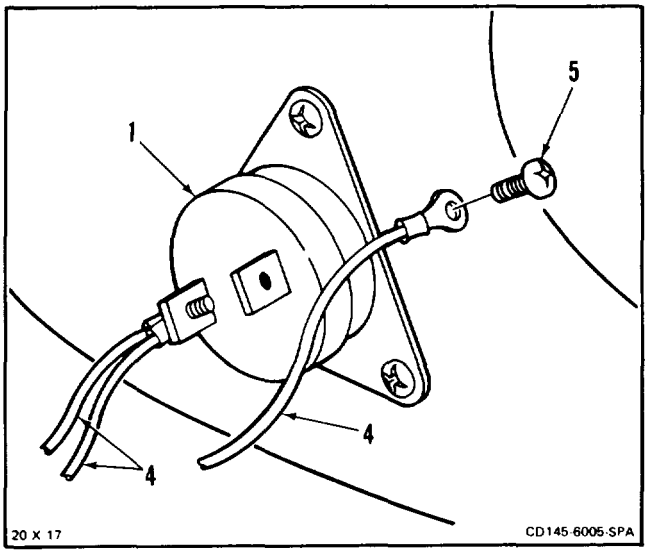
13-51 INSTALL HEATER THERMOSTATIC SWITCHES (Continued)

3. Remove tape. **Connect three wires (4)** to switch (1) by installing two screws (5). Remove tags.



FOLLOW-ON MAINTENANCE:

Perform operational check TM 55-1520-240-T).

Install heater compartment acoustic blanket (Task 2-210).

END OF TASK

13-52 REMOVE HEATER AIR PRESSURE SWITCH

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:

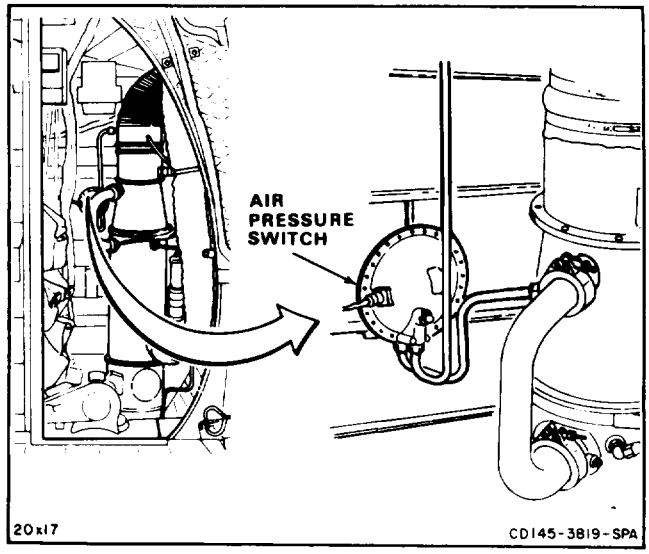
None

Personnel Required:

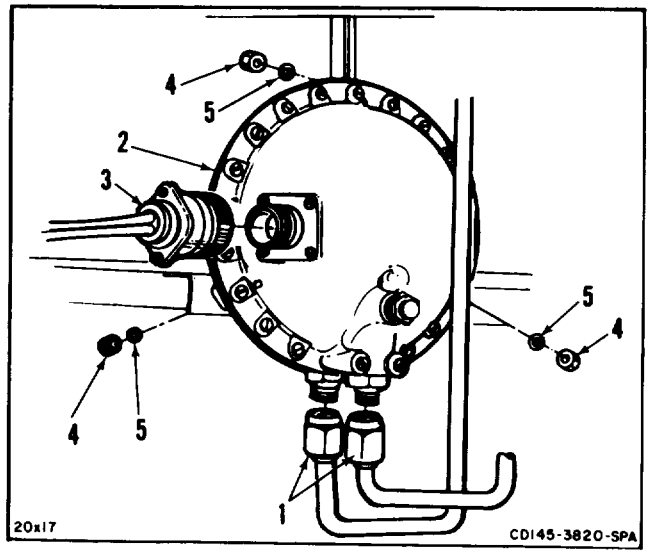
67U1O Medium Helicopter Repairer

Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)

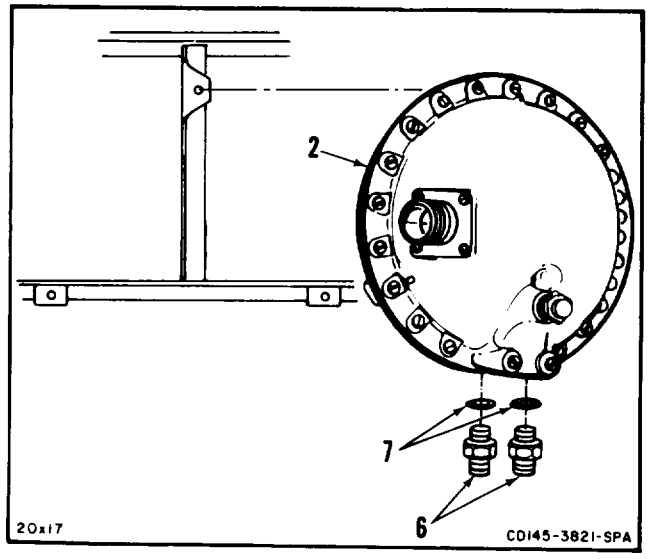


1. **Disconnect two tubes (1)** from switch (2).
2. **Remove lockwire and disconnect electrical connector (3).**
3. Remove three nuts (4) and washers (5) from back of switch (2).



4, **Remove switch (2).**

5. **Remove two nipples (6).** Remove packings (7) from nipples.



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-53 INSTALL HEATER AIR PRESSURE SWITCH

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:

Lockwire (E231)

Parts:

Packings

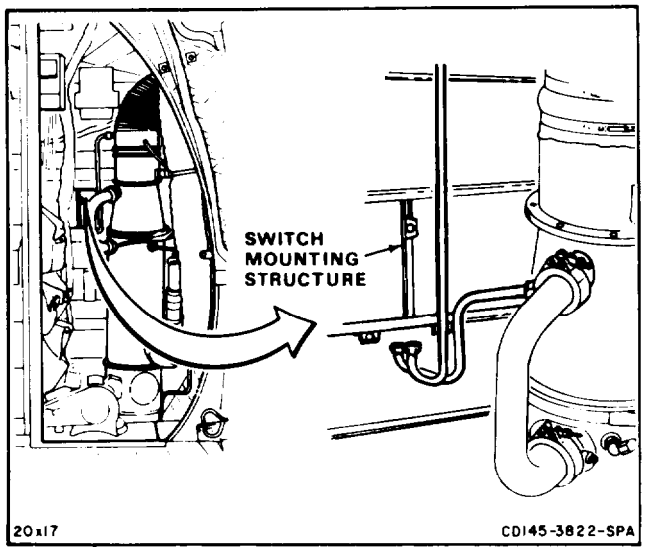
Personnel Required:

67U1O Medium Helicopter Repairer

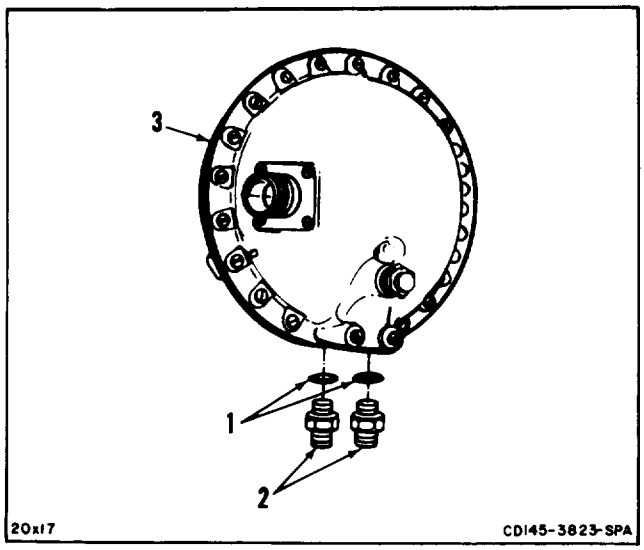
67U30 Inspector

References:

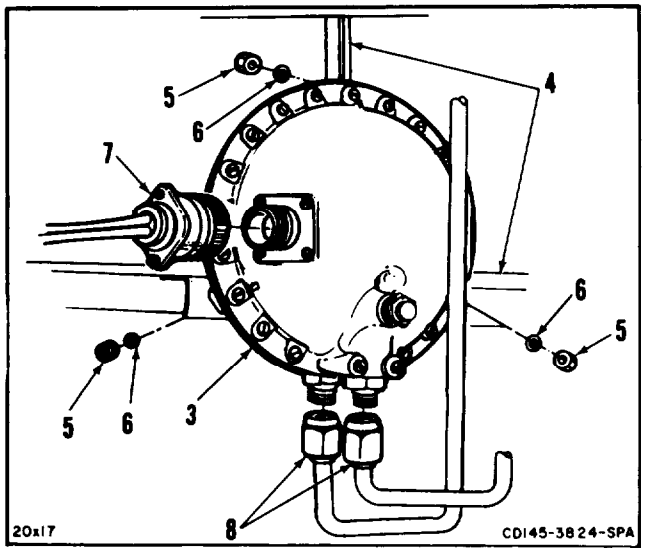
TM 55-1520-240-23P



1. Install two packings (1) on nipples (2). **Install nipples** in switch (3).



2. **Position switch (3)** on structure (4).
3. **Install three nuts (5)** and washers (6) on back of switch (3).
4. **Connect electrical connector (7). Lockwire connector. Use lockwire (E231).**
5. **Connect two tubes (8).**



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Install heater compartment acoustic blanket (Task 2-210).

END OF TASK

13-54 REMOVE HEATER CONTROL RELAY BOX 13-54

INITIAL SETUP

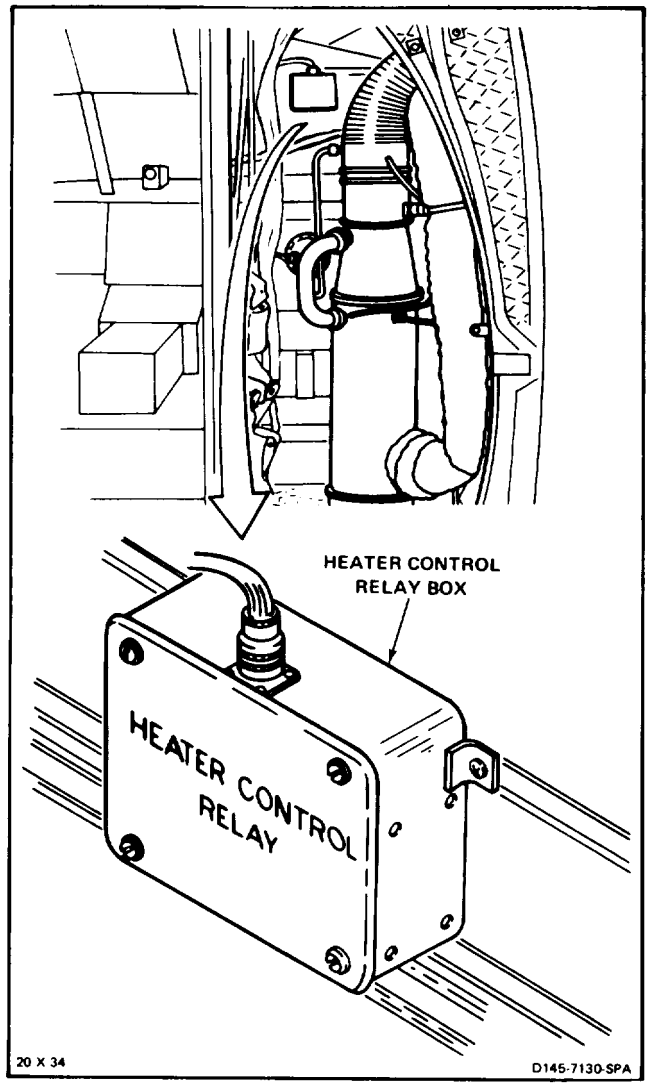
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U1O Medium Helicopter Repairer

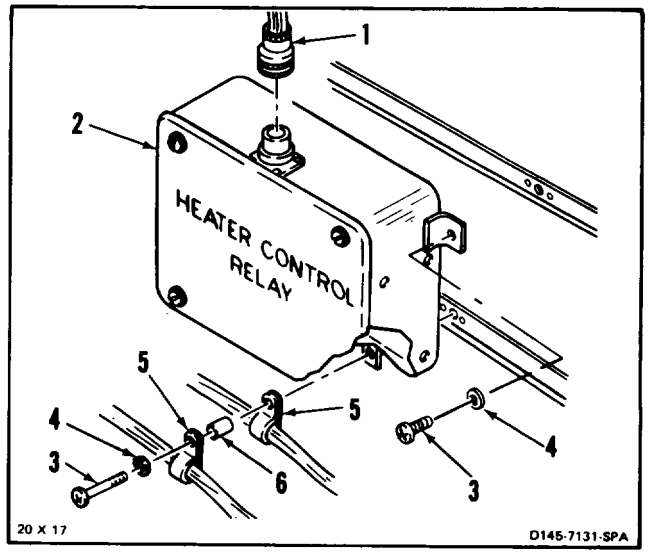
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)
Temperature Controller Removed (Task 13-58)



1. **Disconnect electrical connector (1)** from heater control relay box (2).
2. Remove four screws (3), washers (4), four clamps (5), and two spacers (6) from relay box (2), Remove relay box.

FOLLOW-ON MAINTENANCE:

None



END OF TASK

13-55 REMOVE HEATER CONTROL BOX RELAYS

INITIAL SETUP

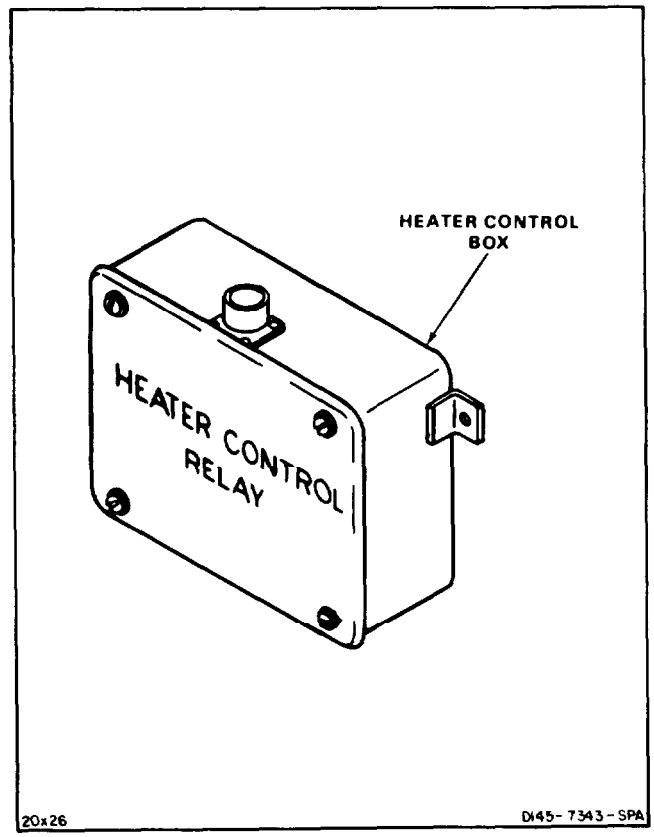
Application Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Iron

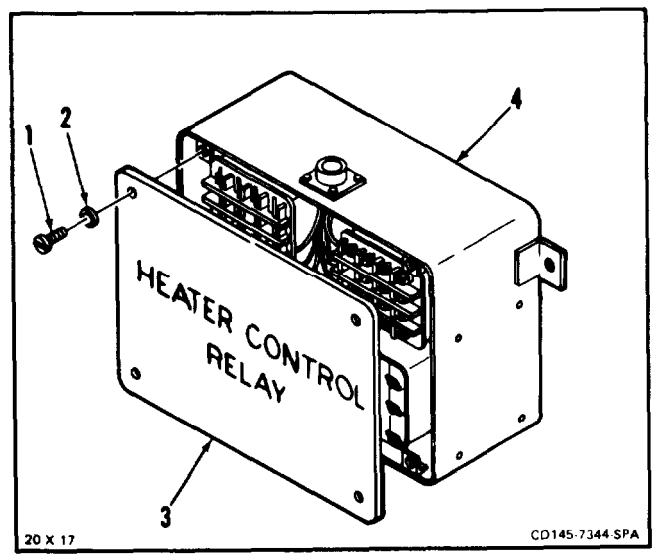
Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F1O Aircraft Electrician

Equipment Condition:
Off Helicopter Task



1. **Remove** four screws (1), washers (2), and **cover (3)** from heater control box (4).



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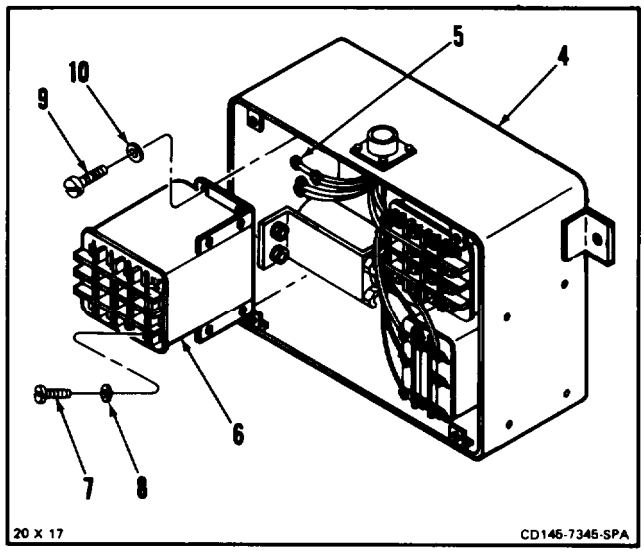
REMOVE HEATER CONTROL RELAY

2. Tag 10 wires *(5)* on heater control relay (6), **Remove 8 screws (7), washers (8), and wires.** Tape exposed ends of wires. Use tape (E385).

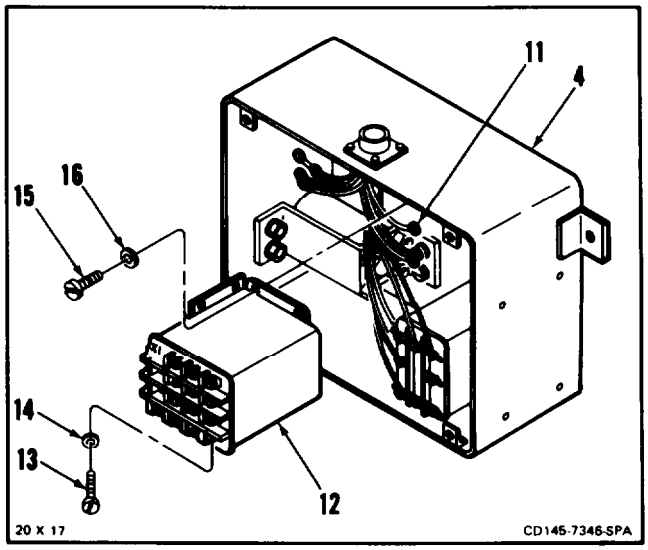
3. **Remove** four screws (9), washers (10), and **relay (6)** from box (4),



REMOVE OVERHEAT RELAY

4. Tag 11 wires (11) on overheat relay (12), **Remove** 8 screws (13), *8* washers (14), and **11 wires.** Tape exposed ends of wires. Use tape (E385).

5. **Remove** four screws (15), washers (16), and **relay (12)** from box (4).



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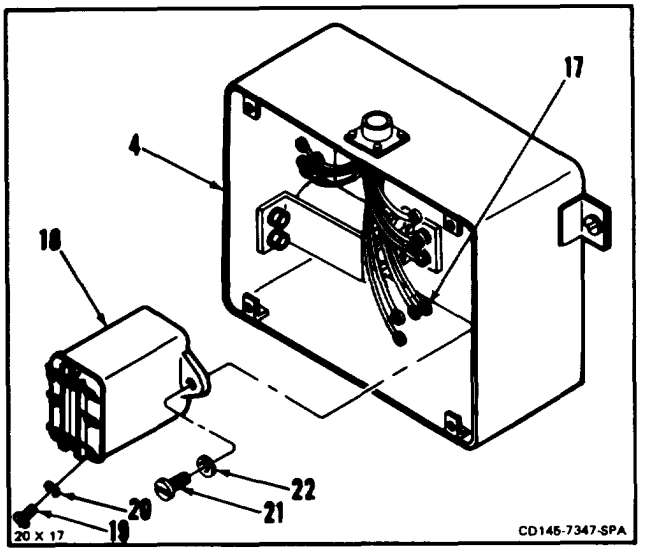
13-55 REMOVE HEATER CONTROL BOX RELAYS (Continued) 13-55

REMOVE AIR PRESSURE RELAY

6. Tag four wires (17) on air pressure relay (18). **Remove** four screws (19), washer (20), and **wires.** Tape exposed ends of wires. Use tape (E385).

7. **Remove** two screws (21), washers (22 and **relay (18)** from box (4).



REMOVE TIME DELAY RELAY

8. **Remove** four screws (23), washers (24), two nuts (25), and **support (26)** from box.

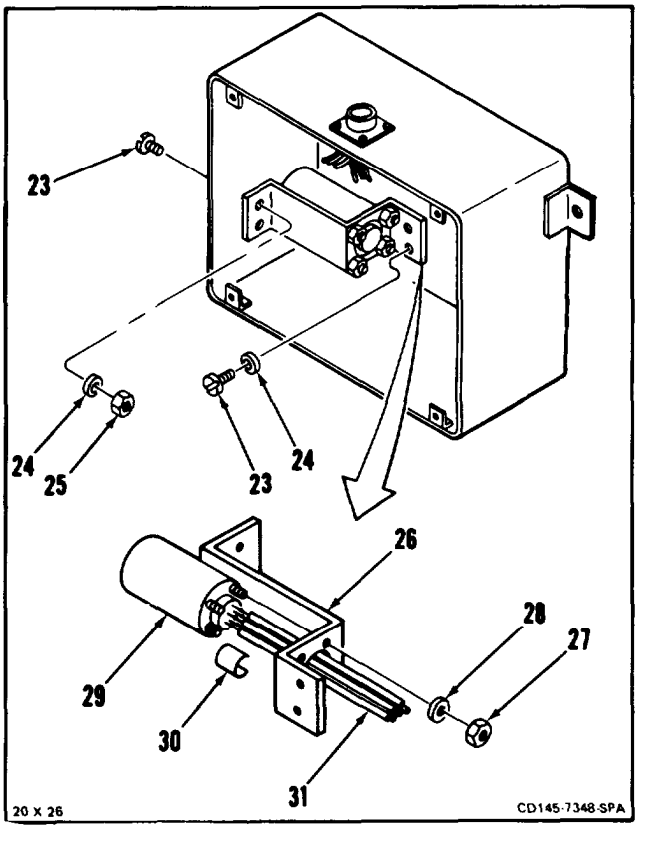
9. **Remove** four nuts (27), washers (28), and **time delay relay *(29)*** from support (26).

10. Cut insulation tubing (30) from six. wires (31).

11. Tag six wires (31). **Unsolder six wires from** time delay relay (29). Tape exposed ends of wires. Use tape (E385).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

13-56 INSTALL HEATER CONTROL BOX RELAYS

INITIAL SETUP

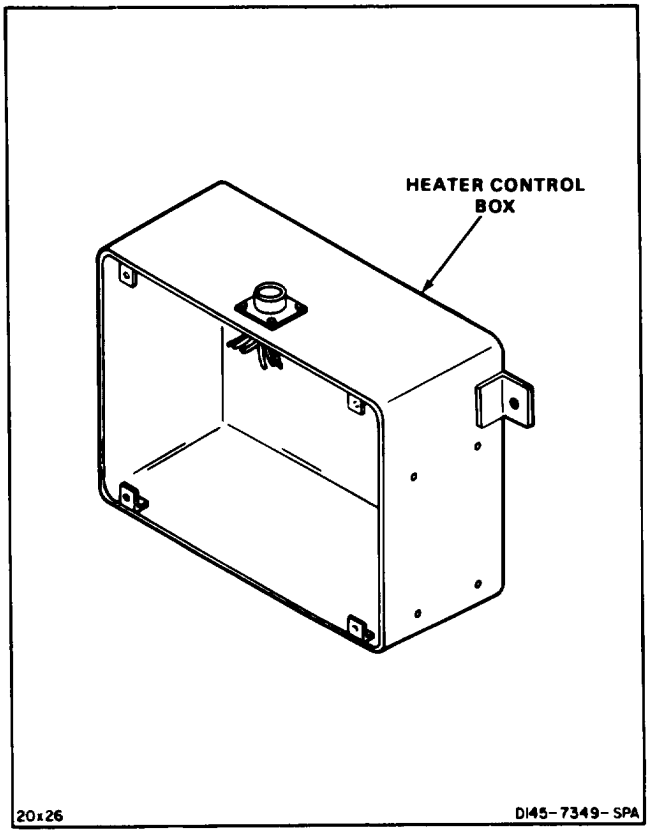
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun
Heat Gun

Materials:
Solder (E360)
Insulation Tubing (E431)

Personnel Required:
68F1O Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



INSTALL TIME DELAY RELAY

1. **Insert six wires (1)** through support (2). Remove tape from wires.

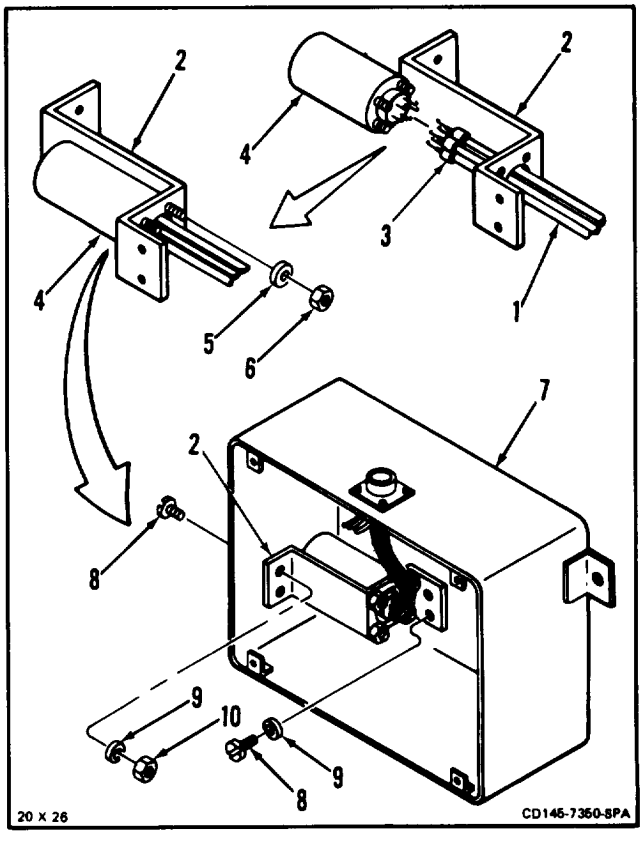
2. Slide insulation tubing (3) on wires (1). Use tubing (E431).

3. **Connect six wires (1)** to time delay relay (4). Use solder (E360). Remove tags.

4. Slide tubing (3) over terminals of relay (4). Shrink tubing with heat gun.

5. **Position relay (4) in support (2). Install** four washers (5) and **nuts (6).**

6. **Position support (2)** in heater control box (7). **Install four straws (8),** washers (9) and two nuts (10)



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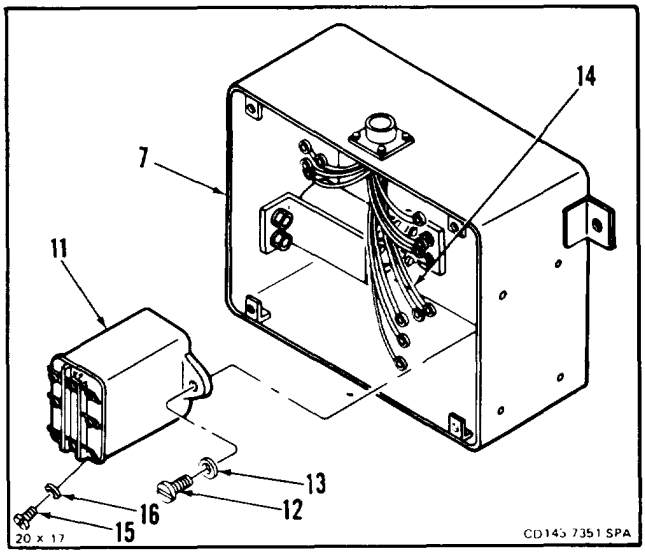
13-56 INSTALL HEATER CONTROL BOX RELAYS (Continued) 13-56

INSTALL AIR PRESSURE RELAY

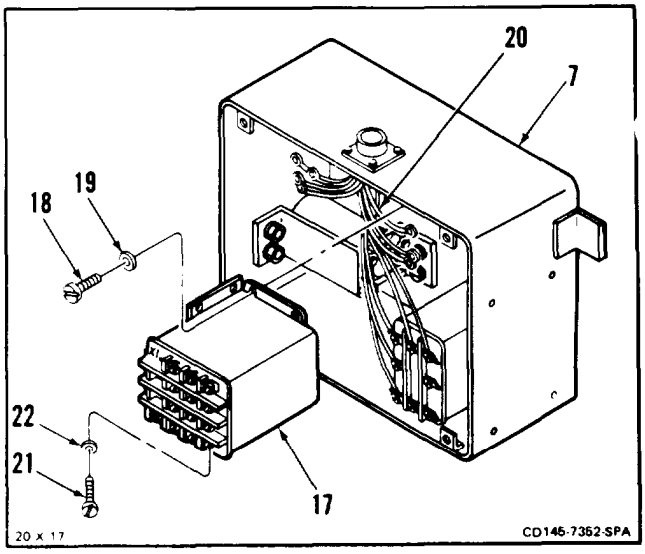
7. **Position air pressure relay (11) with X2 terminal up, in box (7). Install two screws (12)** and washers (13).
8. Remove tape from four wires (14).
9. **Connect four wires (14)** to relay (11). Install four screws (15) and washers (16). Remove tags,



INSTALL OVERHEAT RELAY

10 **Position overheat relay (17) with X1 terminal up,** in box (7). **Install four screws (18)** and washers (19).

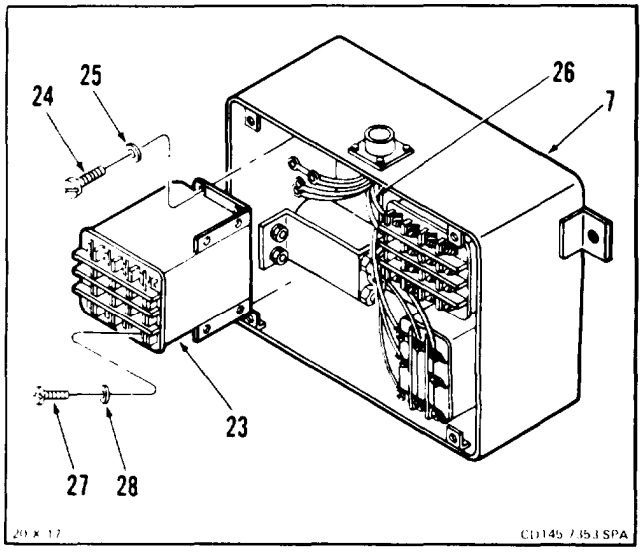
11. Remove tape from 11 wires (20).
12. **Connect 11 wires (20)** to relay (17). Install 8 screws (21) and washers (22), Remove tags,



INSTALL HEATER CONTROL RELAY

13. **Position heater control relay (23) with X2 terminal up,** in box (7). **Install four screws (24),** and washers (25).
14. Remove tape from 10 wires (26).
15, **Connect 10 wires (26)** to relay (23). Install 8 screws (27) and washers (28). Remove tags,

INSPECT



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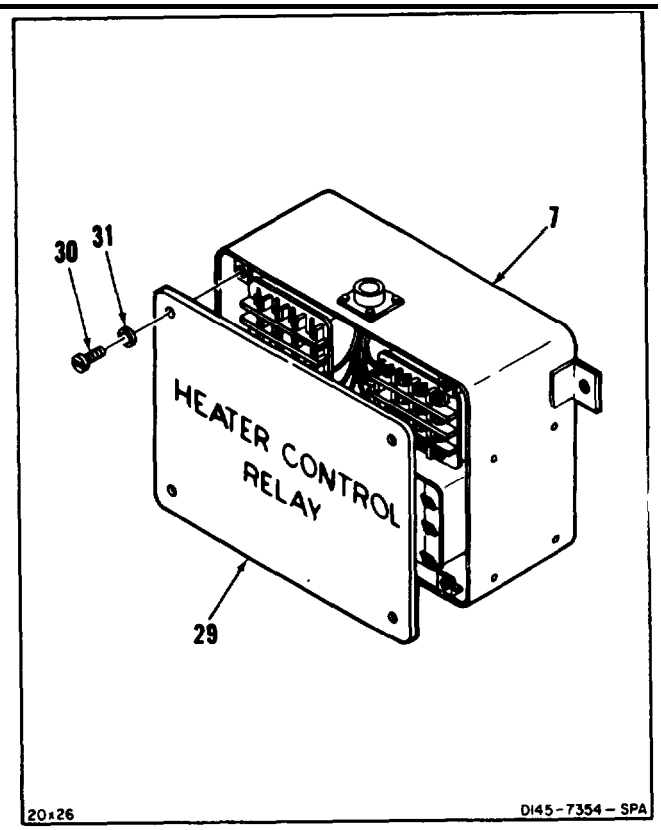
13-56 INSTALL HEATER CONTROL BOX RELAYS (Continued)

16. **Position cover (29)** on box (7) **Install four screws (30)** and washers (31)



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-57 INSTALL HEATER CONTROL RELAY BOX

INITIAL SETUP

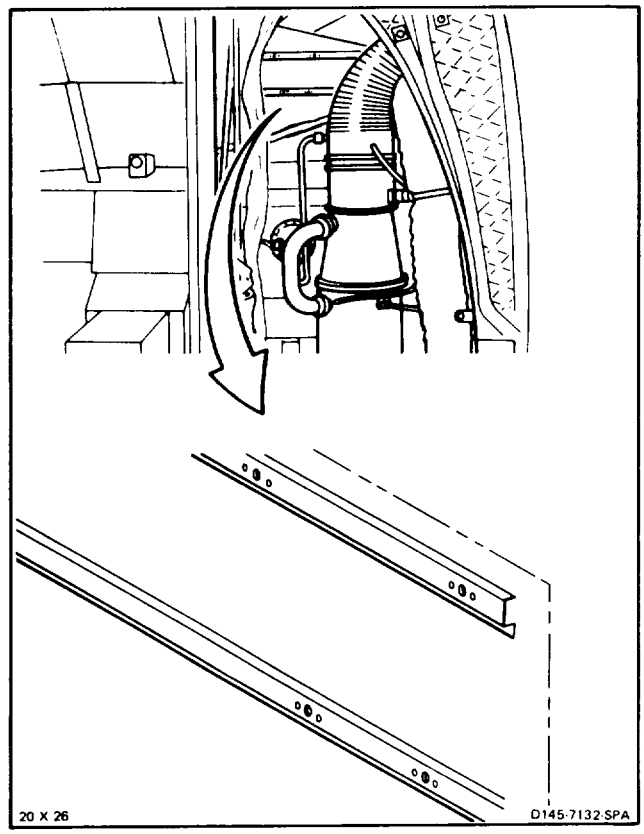
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Cloths (E120)
Gloves (E186)
Methyl-Ethyl-Ketone (E244)

Personnel Required:
67U10 Medium Helicopter Repairer
67U10 Inspector

References:
TM 55-1520-240-23P



WARNING

Methyl-ethyl-ketone (E244) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean bonding points on heater control relay box (1) and structure (2). Use methyl-ethyl-ketone (E244) and cloths (E120). Wear gloves (E186).
2. **Align holes in heater control relay box (1)** and structure (2). **Install four screws (3),** washers (4), four clamps (5) and two spacers (6).
3. **Connect electrical connector (7)** to heater control relay box (1).

INSPECT

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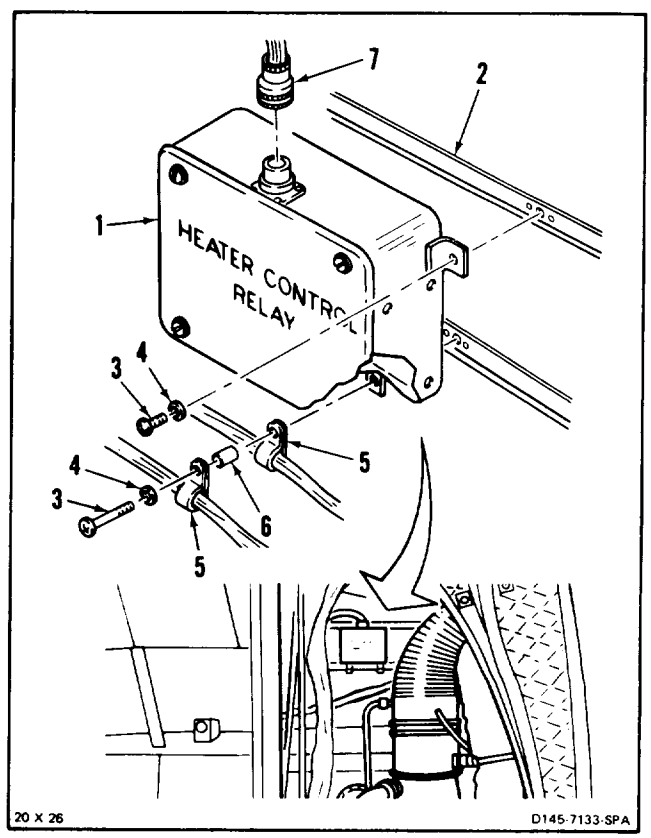


13-57 INSTALL HEATER CONTROL RELAY BOX (Continued)

FOLLOW-ON MAINTENANCE:

Install temperature controller (Task 13-59).

Perform operational check of heating system (TM 55-1520-240-T).

Install heater compartment acoustic blanket (Task 2-210).

END OF TASK

13-58 REMOVE TEMPERATURE CONTROLLER

INITIAL SETUP

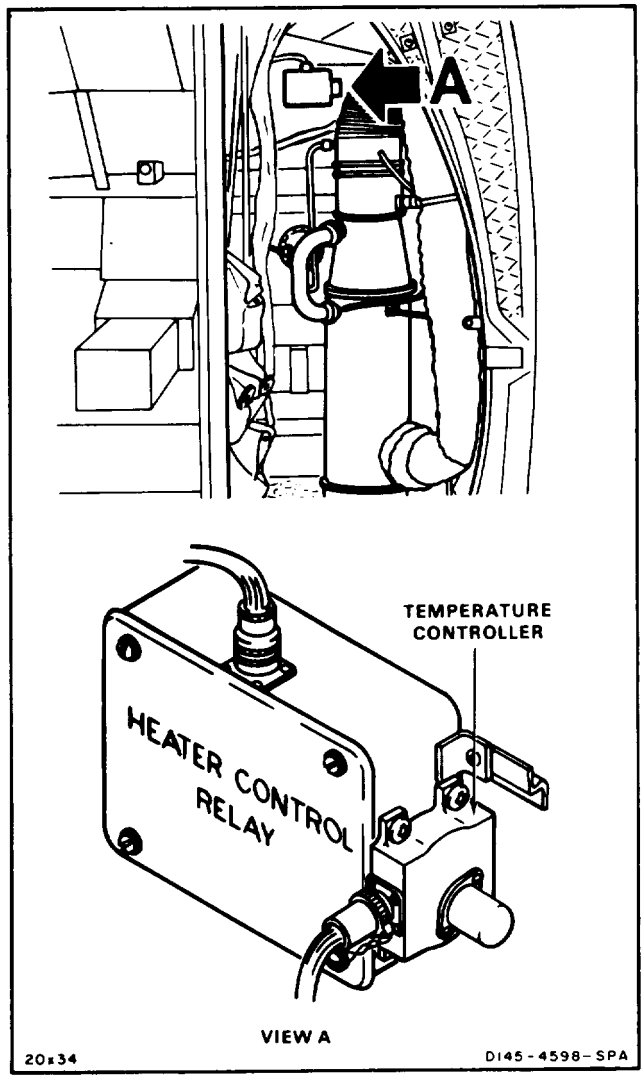
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

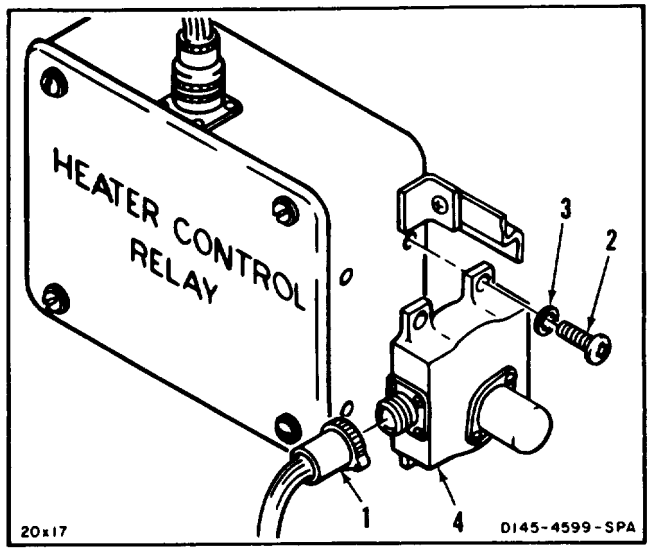
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Heater Compartment Acoustic
Blanket Removed (Task 2-208)



1. Remove lockwire and disconnect electrical **connector (1).**
2. **Remove four screws (2)** and washers (3). **Remove temperature controller (4).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

13-59 INSTALL TEMPERATURE CONTROLLER

INITIAL SETUP

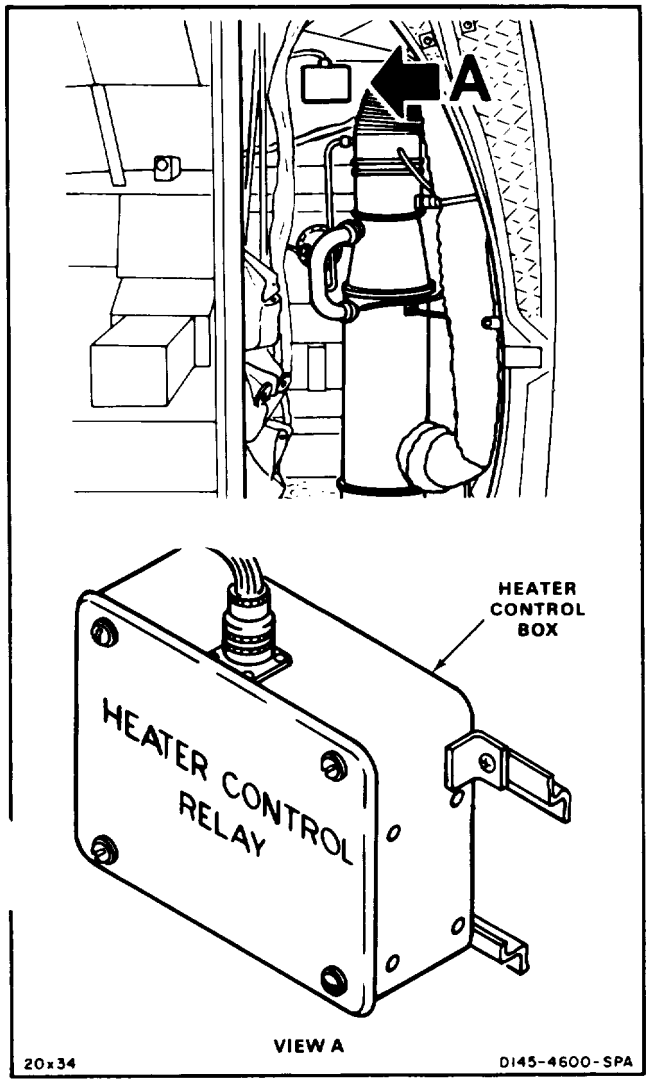
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

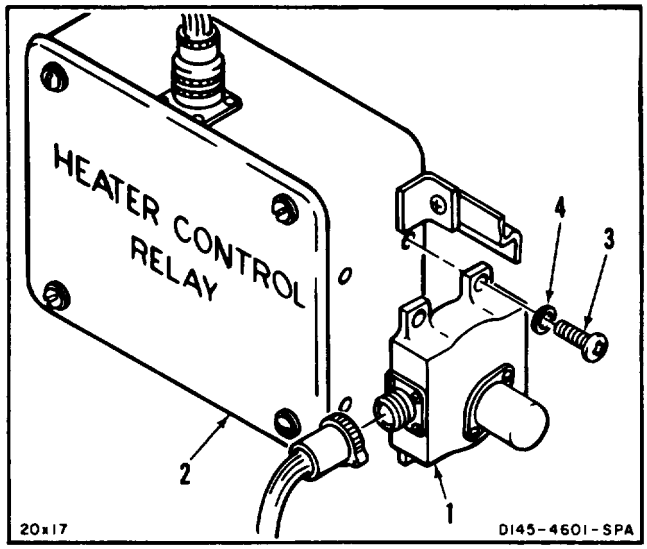
Materials:
Lockwire (E231)

Personnel Required:
67U1O Medium Helicopter Repairer
67U30 inspector

References:
TM 55-1520-240-23P



1. **Position temperature controller (1)** on heater control box (2).
2. **Install four screws (3)** and washers (4).



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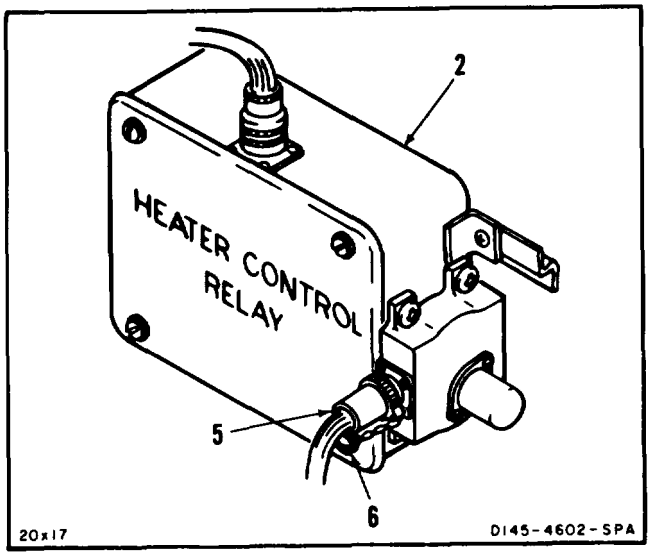
3. **Connect electrical connector (5).**
4. Lockwire connector (5) to screw (6) in heater control box (2). Use lockwire (E231).

INSPECT



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Install heater compartment acoustic blanket (Task 2-210).

END OF TASK

13-60 REMOVE CABIN THERMOSTAT 13-60

INITIAL SETUP

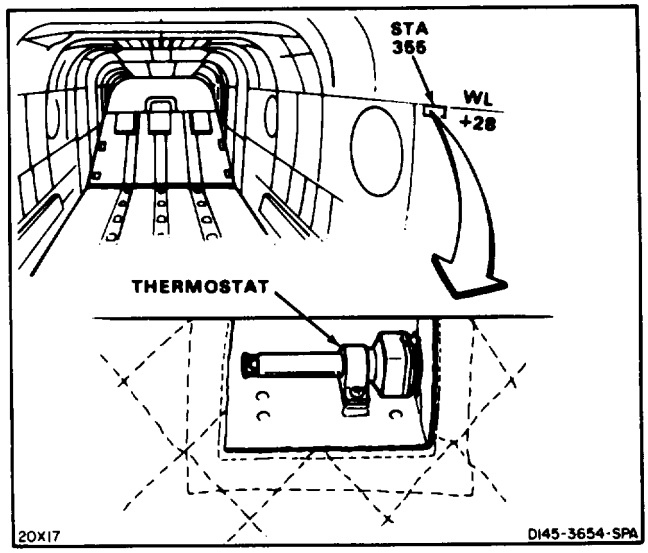
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

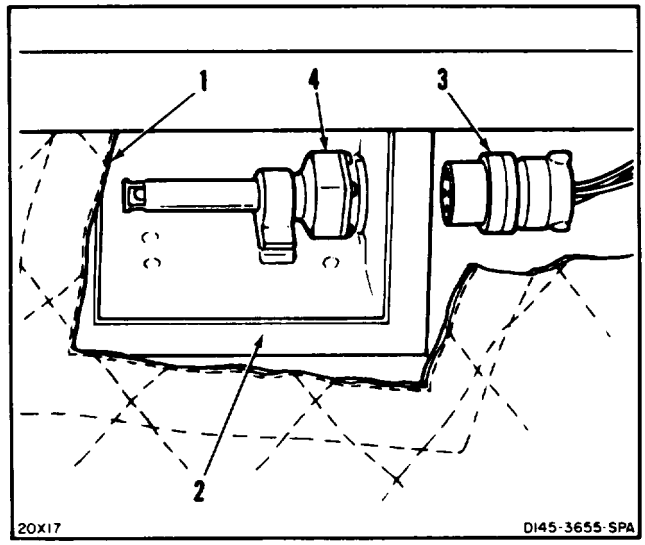
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

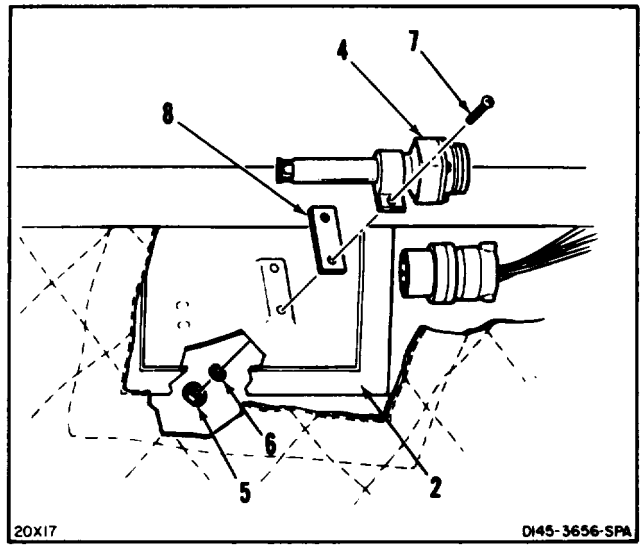
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



1. Pull blanket (1) away from box (2).
2. **Disconnect connector (3)** from thermostat (4).



3. **Remove two nuts (5)** and washers (6) from back of box (2).
4. Remove two screws (7), thermostat (4), and rubber pad (8).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-61 INSTALL CABIN THERMOSTAT

INITIAL SETUP

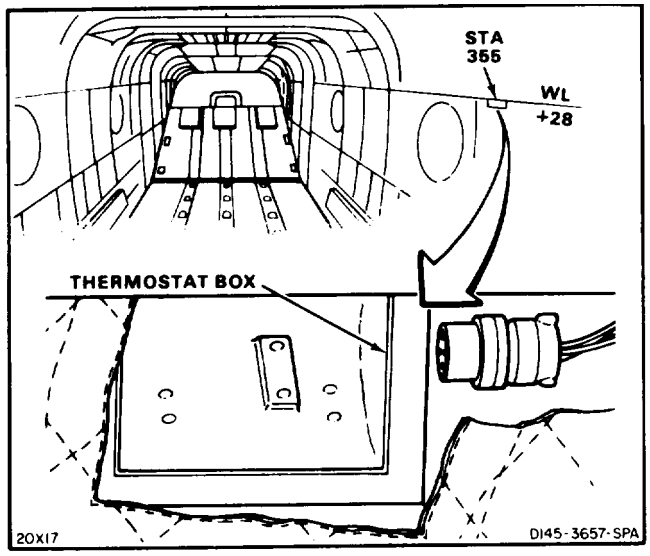
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

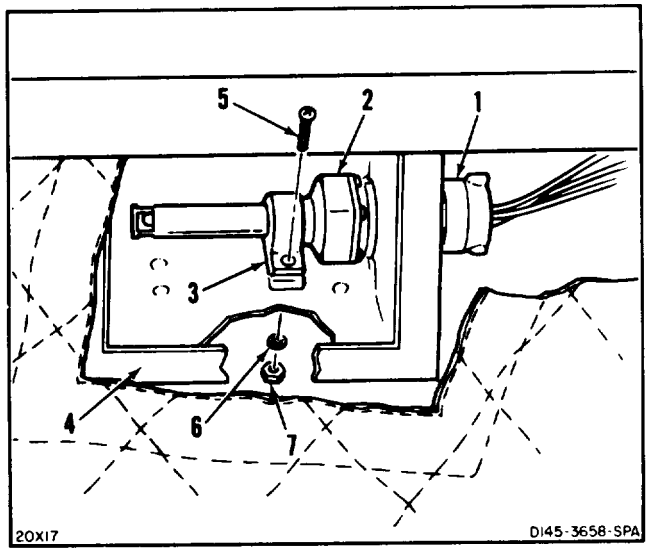
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

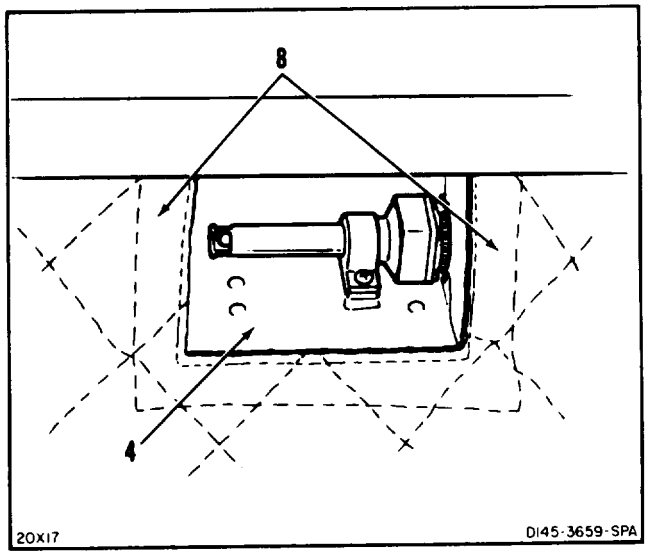
References:
TM 55-1520-240-23P



1. **Connect connector (1)** to thermostat (2).
2. **Position thermostat (2)** and rubber pad (3) on box *(4). **Install*** **two screws (5),** washers (6), and nuts (7).



3. Install blanket (8) around box (4).



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

END OF TASK

13-62 REMOVE HEATER FUEL CONTROL

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Cloths (E135)
Paper Tags (E264)

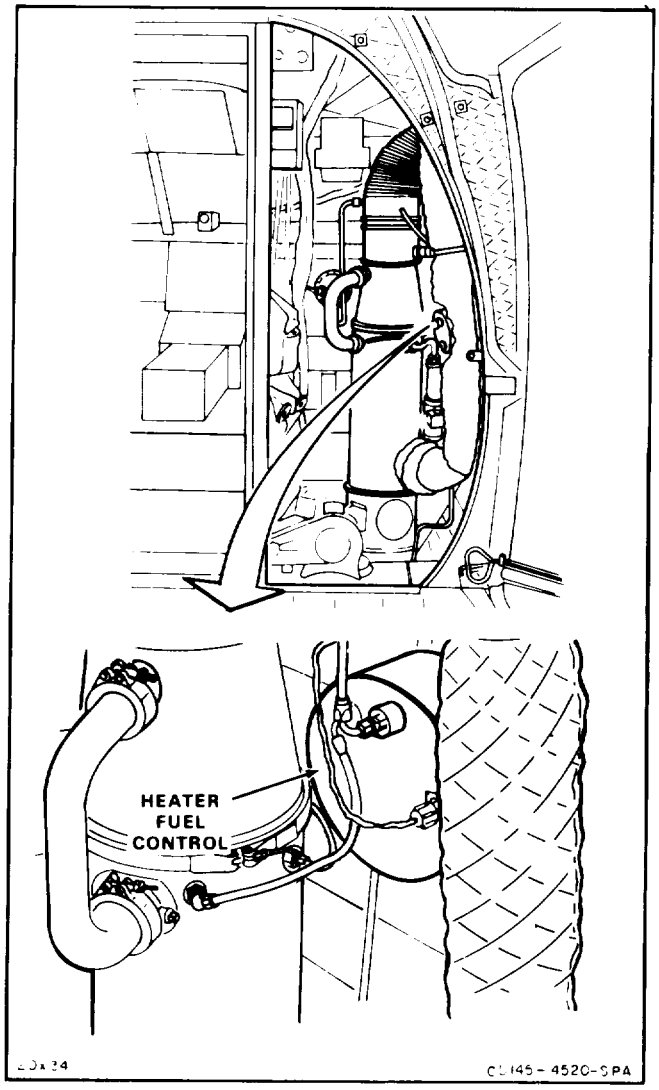
Personnel Required:
67U20 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)
Grounded Container, Two Quart

General Safety Instructions:

WARNING

***All* regulations and instructions for handling fuels shall be strictly observed.**

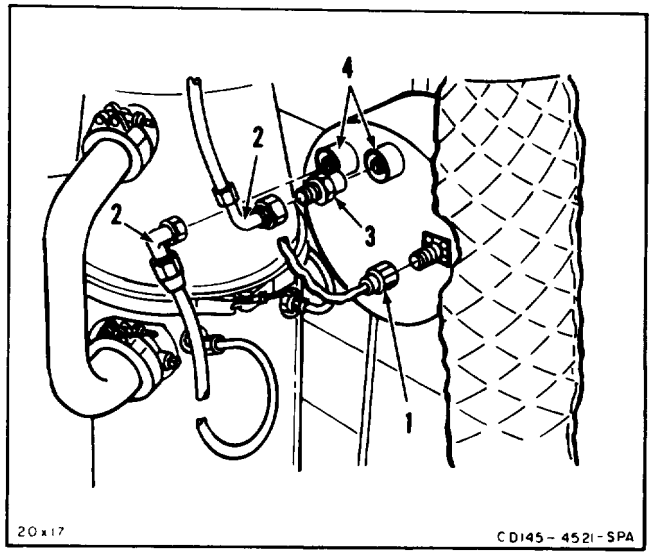


1 Remove lockwire and **disconnect electrical connector (1).**

2 Tag and **disconnect two fuel hoses (2).** Use container and cloths (E135) for spilled fuel, Plug hoses.

3. **Remove reducer (3).**

4. Cap ports (4),



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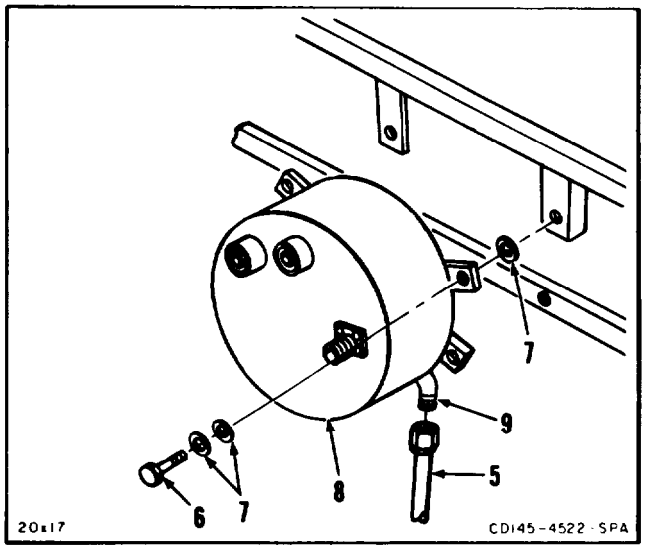
13-62 REMOVE HEATER FUEL CONTROL (Continued) 13-62

5. **Disconnect drain tube (5).**
6. Remove 4 bolts (6) and 12 washers (7). **Remove control *(8).***
7. Plug drain tube (5) and cap port (9).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

13-63 INSTALL HEATER FUEL CONTROL

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Lockwire (E229)

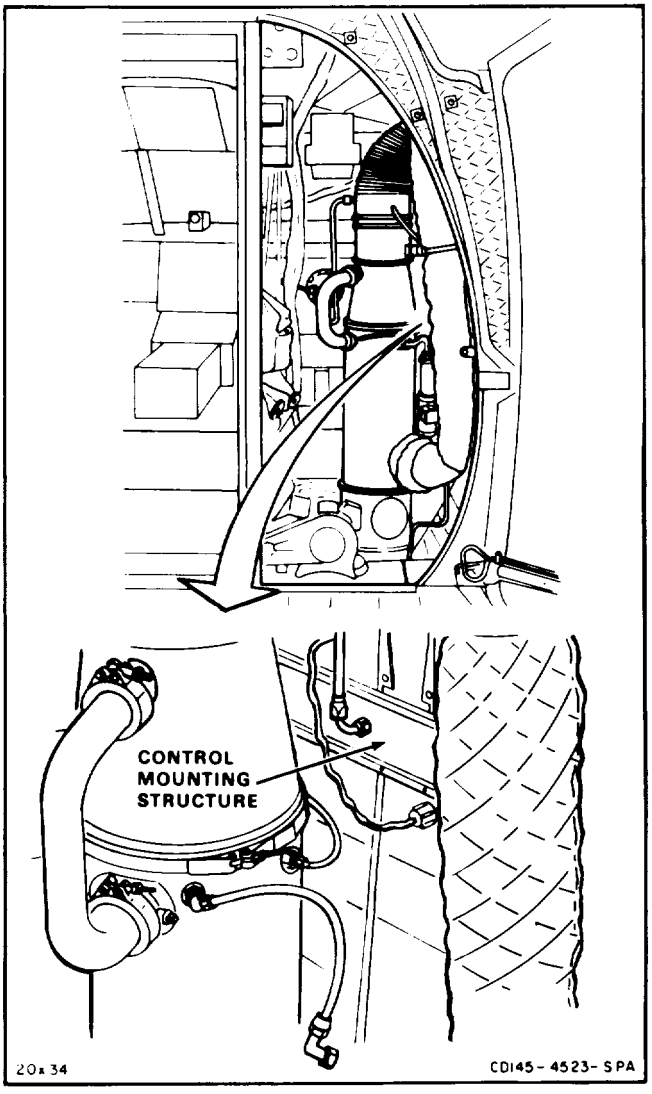
Personnel Required:
67U20 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P

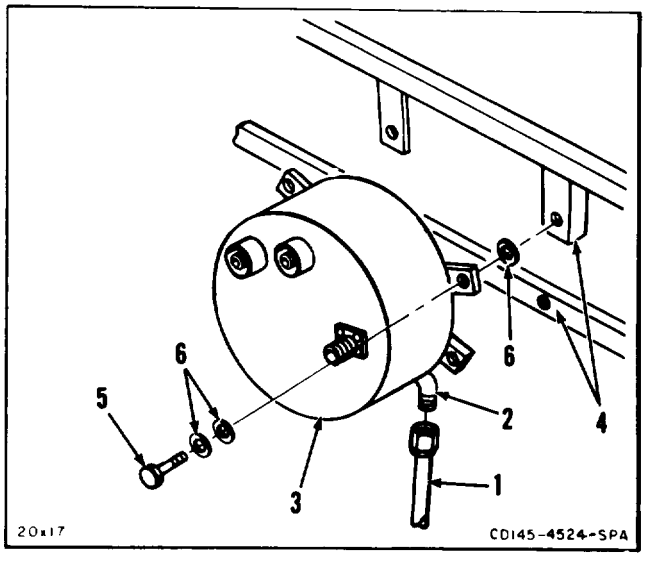
General Safety Instructions:

WARNING

***All* regulations and instructions for handling fuels shall be strictly observed.**



1. Remove plug from drain tube (1) and cap from DRAIN port (2).
2. **Position control (3)** on mounting structure (4),
3. **Install 4 bolts (5)** and 12 washers (6).
4. **Connect drain tube (1)** to DRAIN Port (2).



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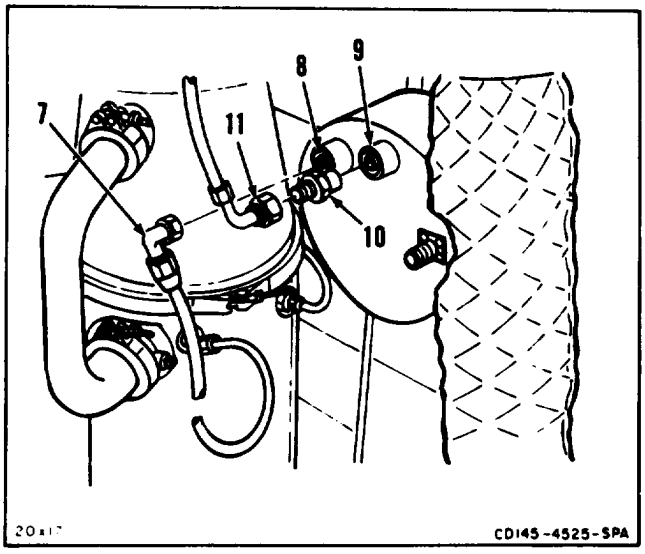
13-63 INSTALL HEATER FUEL CONTROL (Continued)

5. Remove plug from hose (7) and cap from FUEL OUTLET port {8). **Connect hose** to port. Remove tag from hose.
6. Remove cap from FUEL INLET port (9). In**stall reducer (10)** in port.
7. Remove plug from hose (11). **Connect hose** to reducer (10). Remove tag from hose.



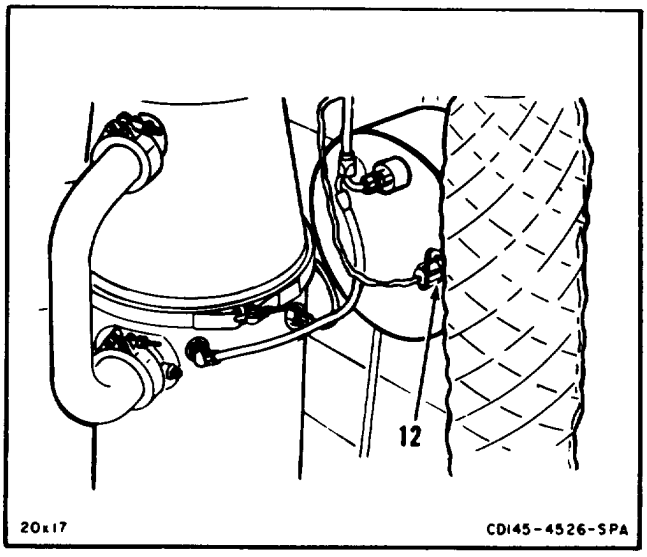
8. **Connect electrical connector (12).**
9. Install lockwire (E229) on connector (12).

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Install heater compartment acoustic blanket (Task 2-210).



END OF TASK

13-64 REPLACE HEATER IGNITION UNIT FUSE

INITIAL SETUP

Applicable Configurations:
All

Tools:
None

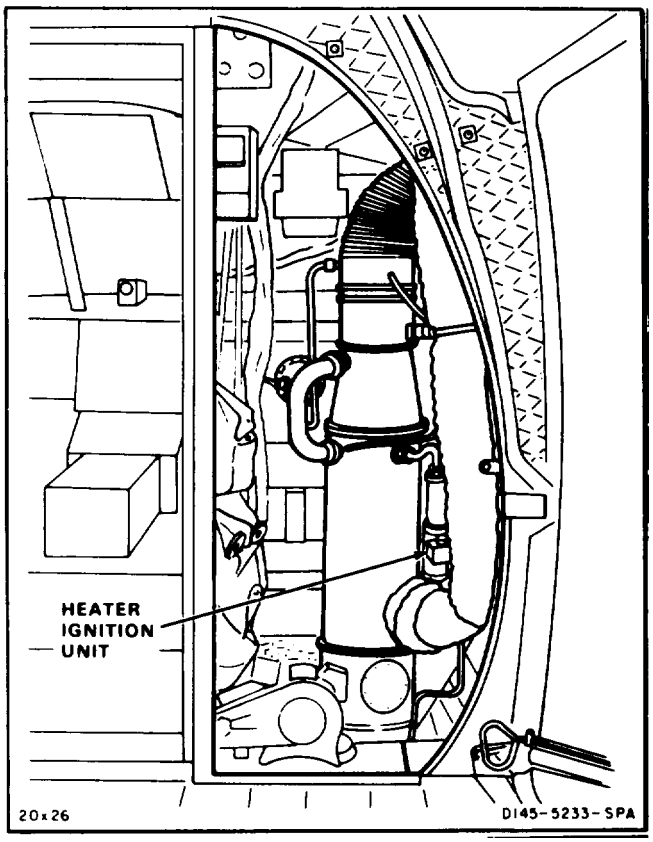
Materials:
None

Parts:
Fuse

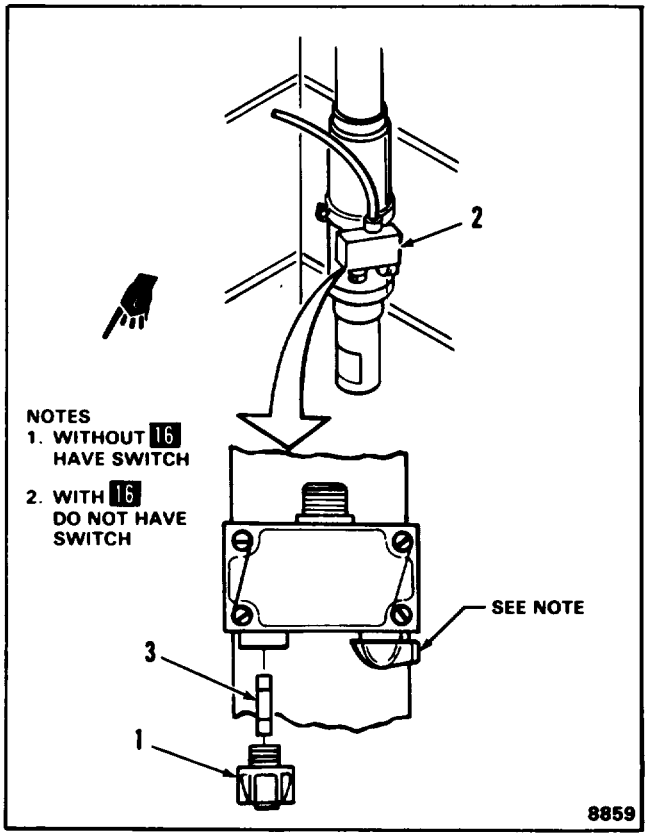
Personnel Required:
Medium Helicopter Repairer

References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)



1. Remove extractor (1) from ignition unit (2).
2. **Remove fuse (3)** from extractor (1). **Install serviceable fuse.**
3. Install extractor (1).



FOLLOW-ON MAINTENANCE:

Install heater compartment acoustic blanket (Task 2-210).

END OF TASK

13-65 REMOVE HEATER IGNITION UNIT

INITIAL SETUP

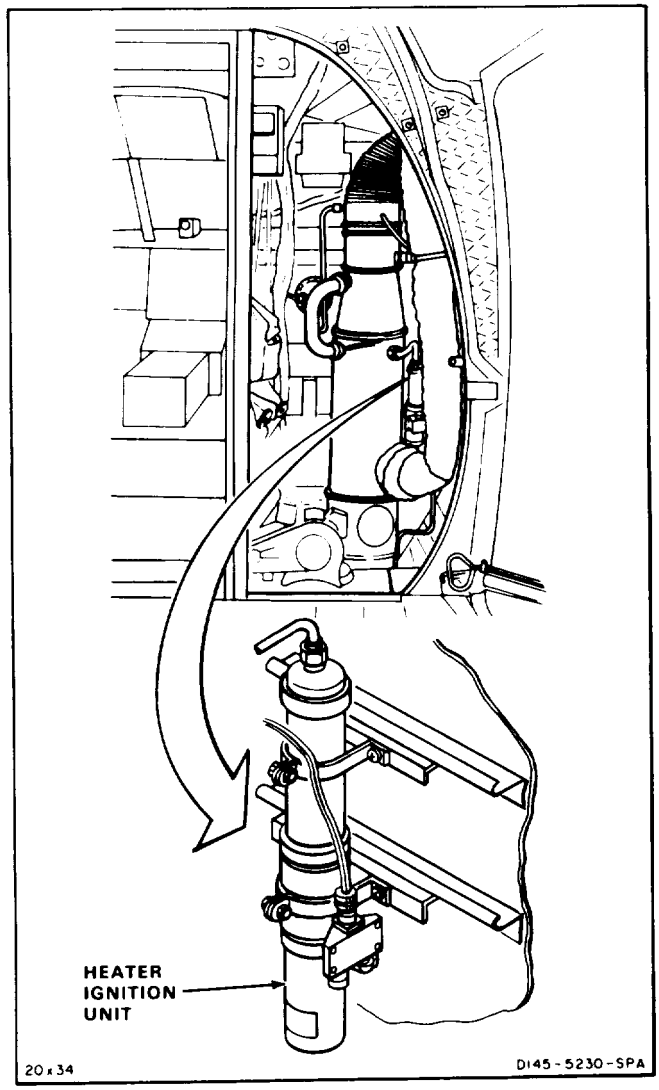
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

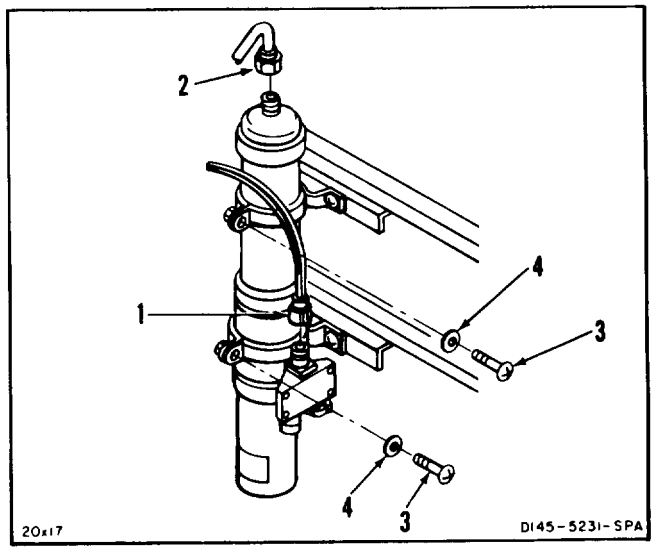
Materials:
None

Personnel Required:
67U1O Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)



1. **Remove lockwire and** disconnect electrical connector (1).
2. Disconnect shielded lead ***(2).***
3. **Remove two screws (3) and washers (4).**



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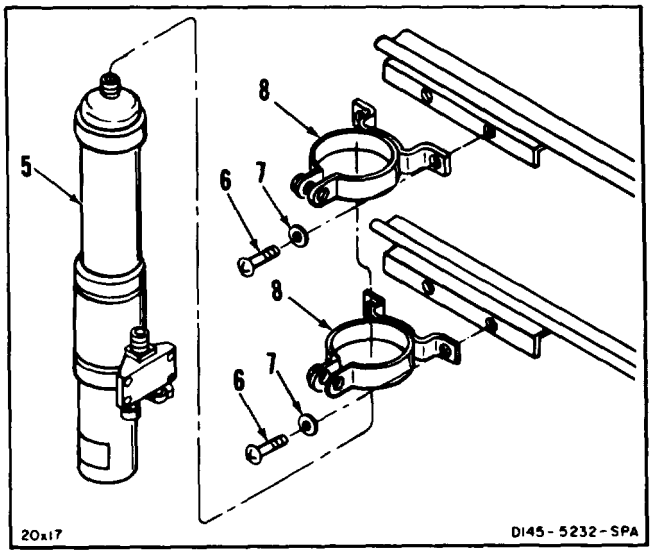
13-65 REMOVE HEATER IGNITION UNIT (Continued)

4. Removal ignition unit (5).
5. Remove four screws (6), washers(7) and two brackets from structure (8).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-66 INSTALL HEATER IGNITION UNIT

INITIAL SETUP

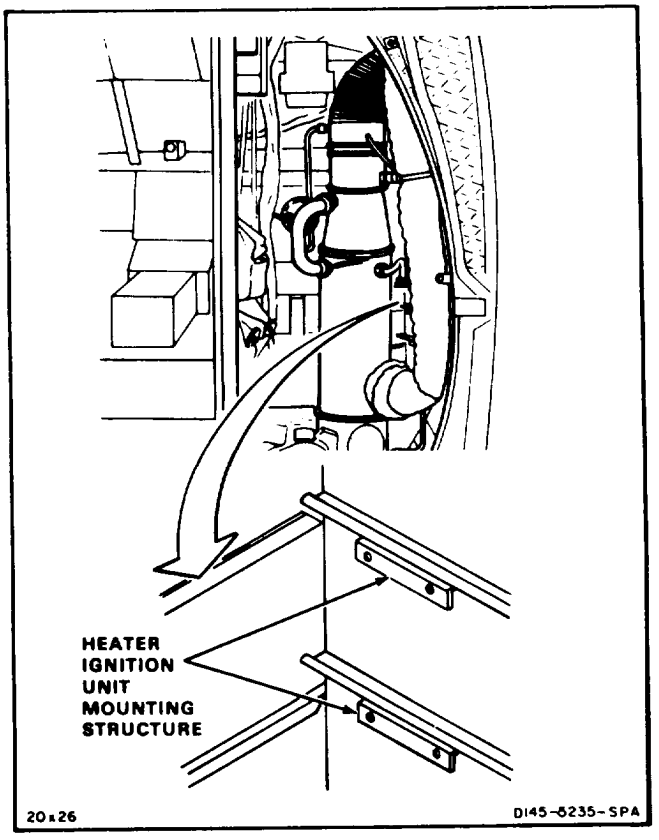
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

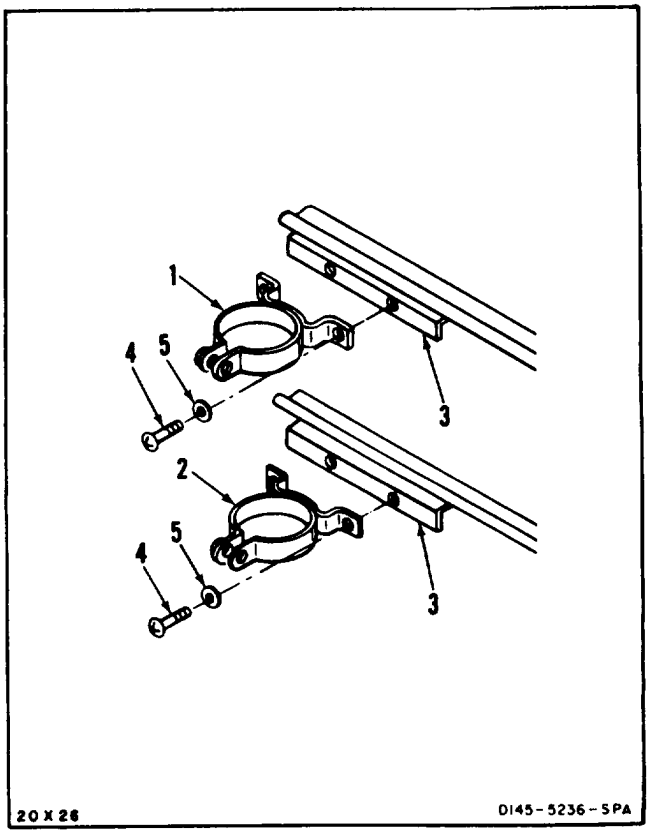
Materials:
Lockwire (E231)

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P



1. Align holes in small diameter bracket(1), large diameter bracket (2) and structure (3).
2. Install four screws (4) and washers (5).



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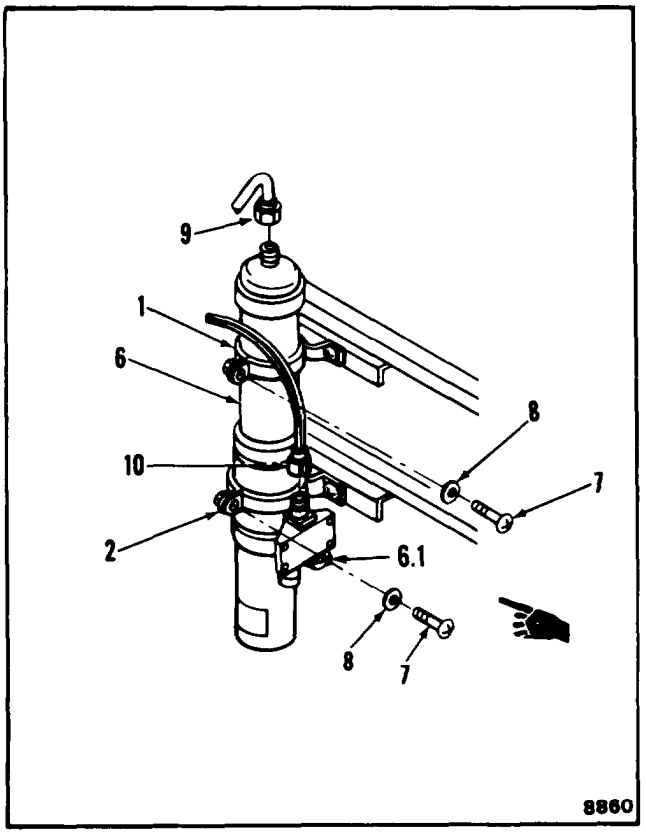
3. **Position ignition unit** (6) in brackets (1 and 2) as shown.

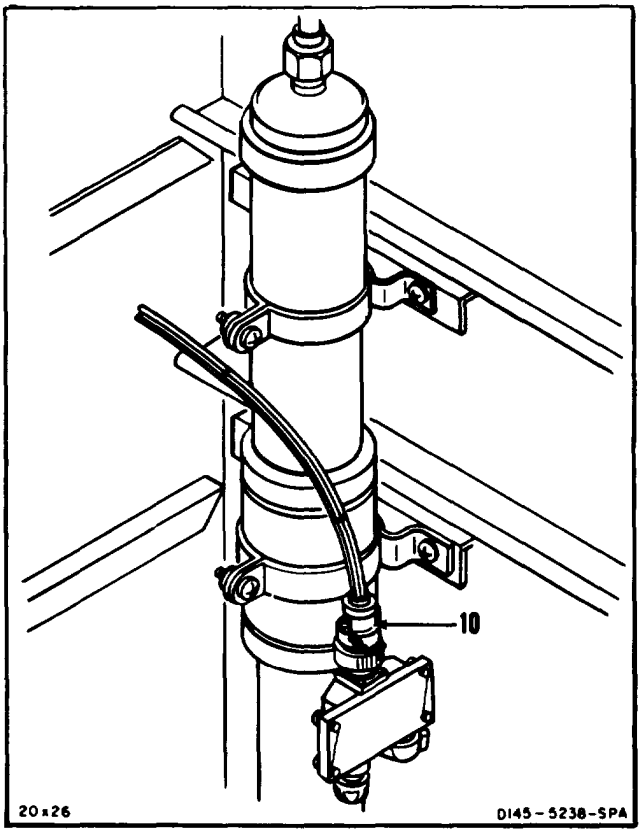
NOTE

Without 16 have switch (6.1). With 16 do not have switch (6.1).

4. Install two screws (7) and washers (8).
5. **Connect shielded lead (9).**
6. **Connect electrical connector (10).**



7. **Lockwire connector (10). Use lockwire (E231).**



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Install heater compartment acoustic blanket (Task 2-210).

END OF TASK

13-67 REMOVE SHIELDED LEAD

INITIAL SETUP

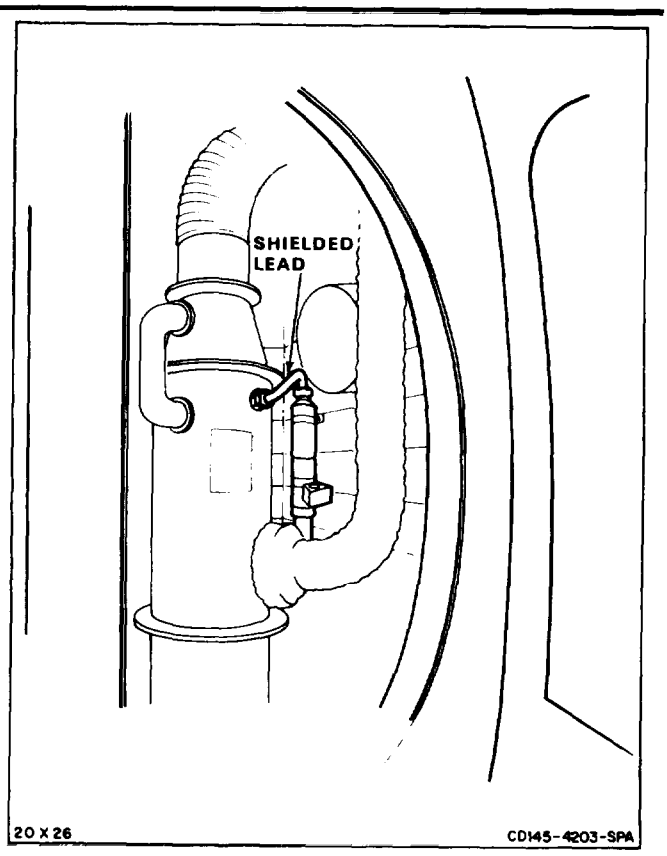
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN *5180-00-323-4692*

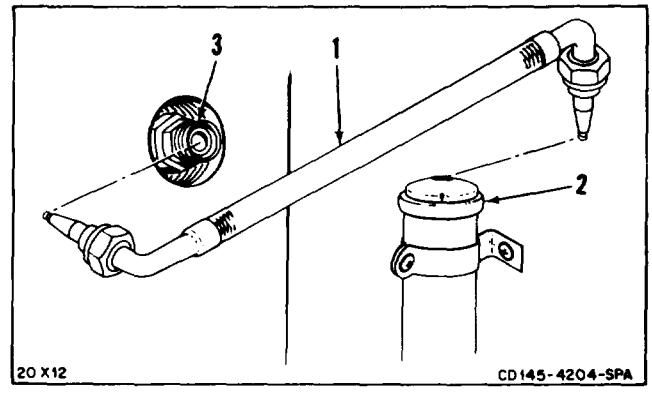
Materials:
None

Personnel Required:
67U1O Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)



1. Disconnect shielded lead (1) from ignition unit (2).
2. Disconnect lead (1) from spark igniter (3).
3. **Remove lead (1).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

13-68 INSTALL SHIELDED LEAD 1358

INITIAL SETUP

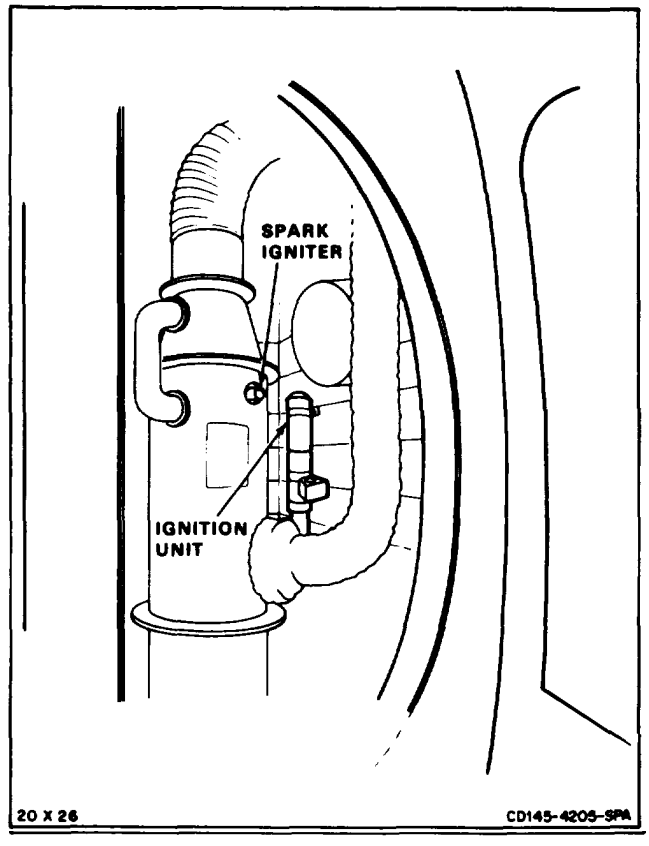
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

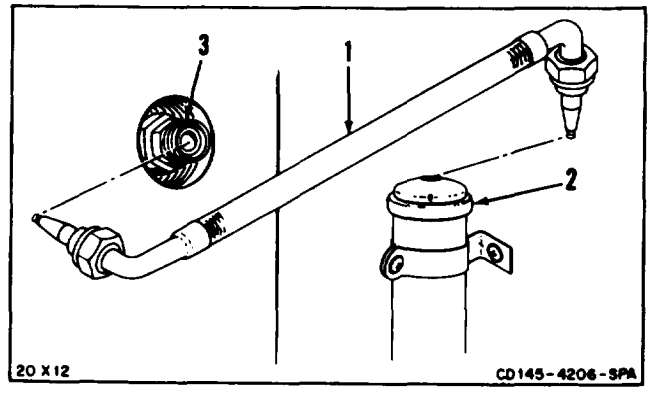
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P



1. Connect shielded lead (1) to ignition unit (2).
2. Connect other end of lead (1) to spark igniter (3).



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Install heater compartment acoustic blanket (Task 2-210).

END OF TASK

CHAPTER 14
HOISTS AND WINCHES

SECTION I
CARGO HANDLING SYSTEM DESCRIPTION AND THEORY OF OPERATION

DESCRIPTION

The cargo handling system consists of a hydraulically-operated winch and cable, a cable cutter, tackle blocks, and a remote-control grip and safety harness. Stowage bags in the heater compartment are provided for the cable cutter and tackle blocks when not in use. System power and control is provided through various hydraulic valves and electrical switches and receptacles.

The heart of the cargo handling system is the winch, mounted to the floor of the heater compartment at the right forward corner of the cabin. It is powered by hydraulic pressure from the utility hydraulic system. By changing cable routing, the winch can be used to perform several different functions:

- Loading cargo into the cabin through the open cargo door
- Carrying or bringing on board cargo through the open rescue hatch while in the air
- Personnel rescue operations
- Parachute static line retrieval

Refer to TM 55-1520-240-10 for information on setting up the system to perform these functions.

The winch has 150 feet of 1/4 inch steel cable. It has a 3,000 pound load capacity at a reel-in speed of 20 feet per minute for cargo loading through the cargo door. For hoisting operations through the rescue hatch, it can lift 600 pounds at a reel-in speed of 100 feet per minute. For cargo loading, the effective winch capacity can be increased by reeving the cable through the cable blocks as described in TM 55-1520-240-10.

The winch system can be operated from either the cockpit or the cabin. Cockpit operation is by the HOIST panel on the overhead console. Cabin operation is by a control grip that can be plugged into an operator's panel at sta 320 or receptacles at sta 95 or 502. If power is lost during operation, a winch-mounted brake will automatically lock the cable. During rescue operations, the cable is reeved through a cable cutter that is plugged into a receptacle above the rescue hatch. During cargo operation, the cable cutter is stowed in the stowage container and connected to a stowage receptacle in the heater compartment at sta 95.

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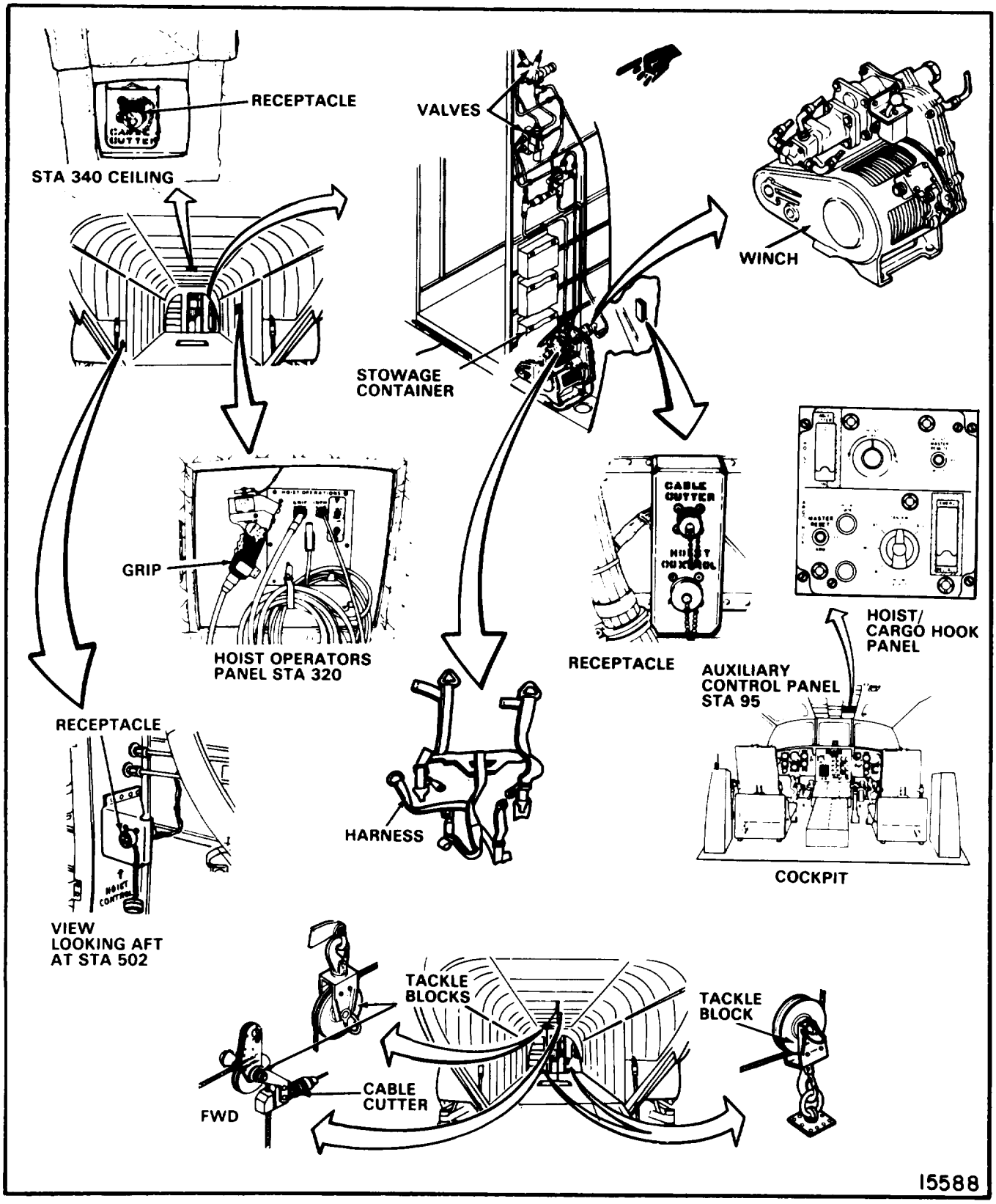
14-1 CARGO HANDLING SYSTEM (Continued) 14-1



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THEORY OF OPERATION

The hoist system can be operated from the cockpit or from any of three locations in the cabin. System operation is identical regardless of which location is used. Operation described here is from the cockpit overhead panel, with the winch shifting lever at RESCUE. The control locations in the cabin can be used when the HOIST MASTER switch on the cockpit overhead panel is at REMOTE.

1. **Placing the HOIST MASTER** switch **to PILOT connects 28-volt dc from the bus to the spring-loaded center-off HOIST** rotary switch. **The rotary switch has a set of contacts that close whenever the switch is off center. When off center, these contacts energize the** winch brake control valve solenoid. **When energized, this solenoid directs pressurized hydraulic fluid to release the** winch brake **and to the P (pressure) port of the** winch control valve.
2. **Rotating the HOIST switch to OUT energizes the winch control shutoff valve solenoid. At the same time, current flows from the rotary switch to energize the winch control valve OUT solenoid thru the out-limit switch on the winch. Hydraulic fluid from the C 1 port of the winch control valve flows thru the pressure reducing valve. This reduces the pressure to 750 psi before it reaches the OUT port of the winch motor. This pressurized fluid operates the hydraulic motor to reel out the cable. The fluid returns to the system through the IN port of the winch motor to the winch control valve. A relief valve between the hoist in line and system return protects the winch motor case shaft seal from high pressure.**
3. **When the HOIST switch is released to OFF, the winch control shutoff valve and the winch control valve circuits open. The winch control valve and shutoff valve return to the deenergized position. This stops fluid flow to the winch motor, to the brake release line, and the winch control valve. The winch control shutoff valve then directs fluid from the brake release line to the utility hydraulic system return line and the spring-loaded brake is applied automatically.**
4. **Rotating the HOIST switch to IN closes the contacts that complete the winch control shutoff valve solenoid circuit. It also moves the wiper of the rotary switch into contact with the IN portion of the switch. Current flows through the wiper arm to the IN solenoid of the winch control valve, through the overload limit and in-limit switches on the winch, and the cable cutter plug. The IN solenoid positions the winch control valve to direct fluid through the C2 port of the valve, to the IN port of the winch motor. The pressurized fluid operates the hydraulic motor to reel in the cable. The fluid returns to the system through the OUT port of the winch motor, the pressure reducer, and the return port of the winch control valve.**
5. **When the CABLE CUTTER switch on either the hoist control panel or the operator's grip is ON, power from the 28-volt dc bus is connected to the cable cutter cartridge. In this condition, operation of the cable cutter from either the cockpit or cabin is independent of the HOIST MASTER switch.**
6. **Limit switches prevent winch overloading, stop winch OUT operation when the cable is extended 150 feet, and stop winch IN operation when the cable is extended 28-1/2 feet in the rescue mode or extended 3 feet in the cargo mode. An** overload limit switch **opens the circuit when the load on the cable exceeds 3,100 to 3,200 pounds when the winch is operated in the reel-in direction.**

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7. A shifting lever **on the winch controls a two-speed gear train, labeled RESCUE (fast) and CARGO (slow). With the lever at RESCUE, the cable cutter must be plugged into the overhead CABLE CUTTER connector to complete the winch circuit. With the lever at CARGO, the cable cutter must be plugged into the stowage receptacle at sta 95 to complete the circuit. The shifting lever is mechanically linked to** three transfer switches. **These switches connect voltage to either the rescue or cargo in-limit switch. When the lever is at RESCUE, the rescue (fast) in-limit switch is connected in series with switch 1. With the lever at CARGO, the cargo (slow) in-limit switch is connected in series with switch 2. Switch 3 is a safety device which interrupts the hoist-out circuit when switches 1 and 2 are open. This arrangement prevents the winch from operating in either direction when the gears are not engaged.**

8. **In case of electrical failure, emergency hydraulic operation of the winch is possible by operating** manual override knobs **on the** winch control shutoff valve **and the** winch control valve. **The knob on the shutoff valve is an on-off valve that allows fluid to flow through the system when it is pushed in. It can be locked in by rotating it. Winch reeling direction (cable in or out) is controlled by rotating the knob on the control valve cw or** ccw**, When the manual override knobs are used, the cable limit switches are disabled, As a result, care is necessary to prevent reeling the cable too far in or out.**

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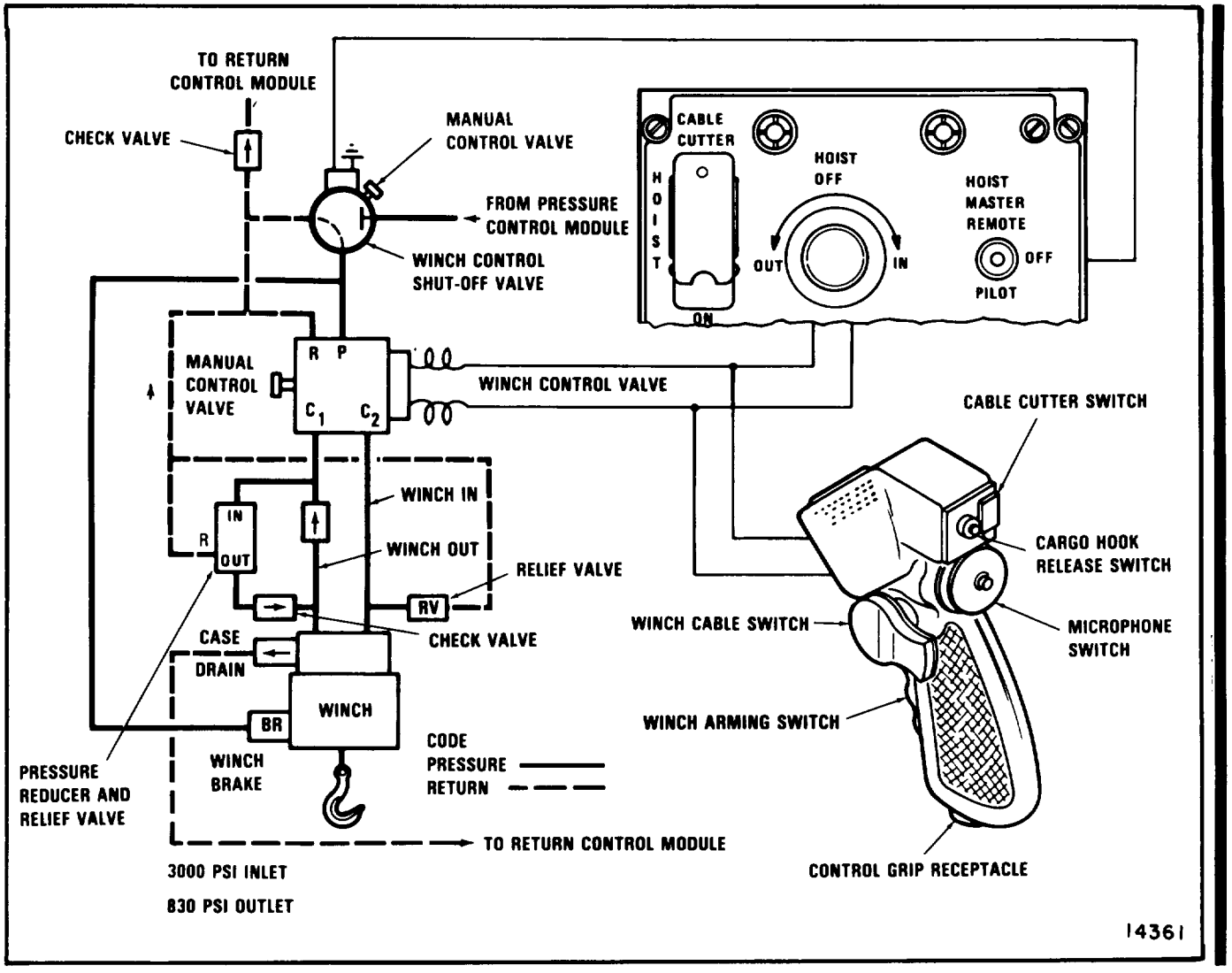

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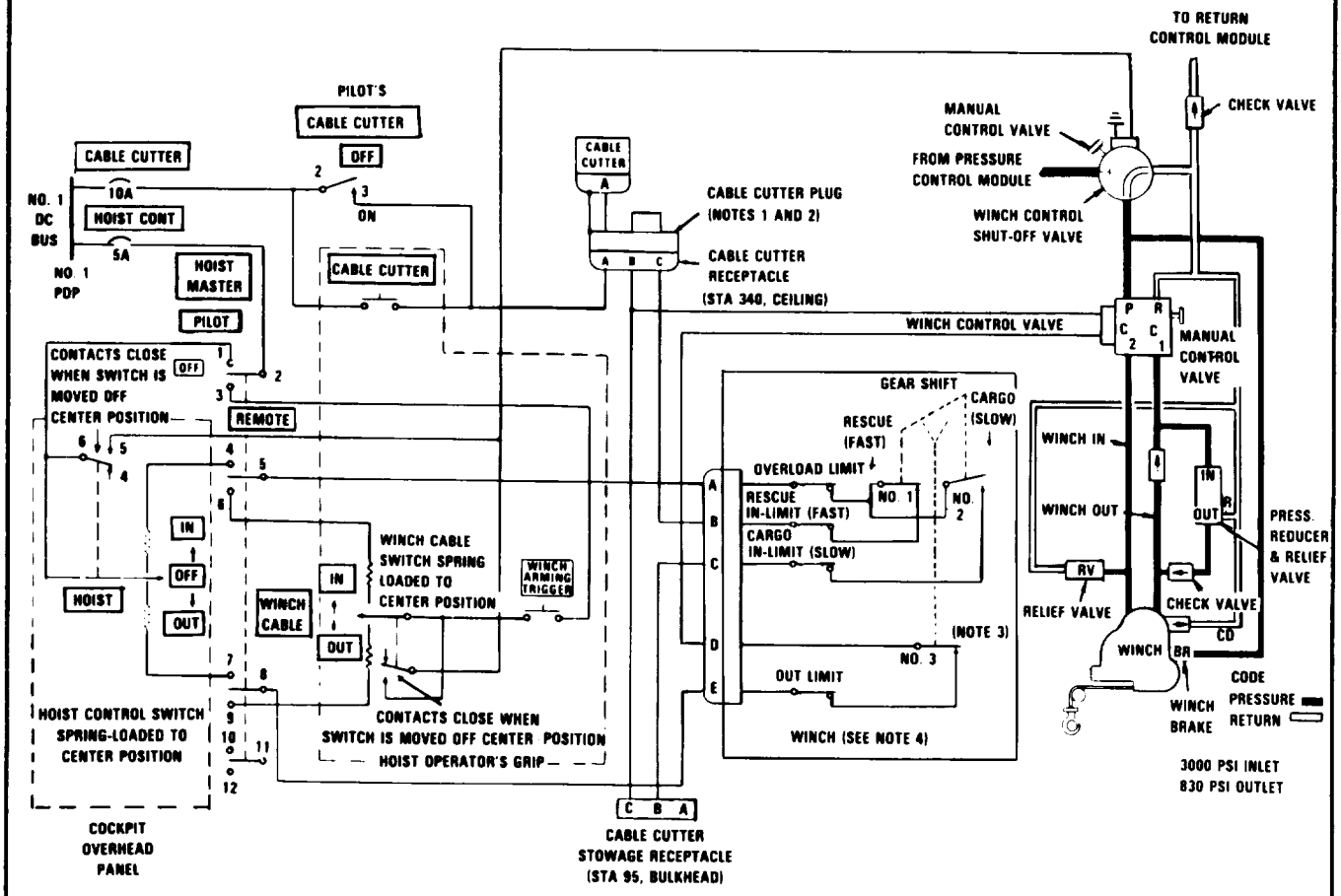


NOTES

1 FOR RESCUE (FAST) OPERATION, CABLE CUTTER PLUG MUST BE PLUGGED INTO CABLE CUTTER RECEPTACLE AND GEAR SHIFT MUST BE IN RESCUE POSITION TO COMPLETE HOIST "IN" CONTROL CIRCUIT.

2 FOR CARGO (SLOW) OPERATION, CABLE CUTTER PLUG MUST BE PLUGGED INTO STOWAGE RECEPTACLE AND GEAR SHIFT MUST BE IN CARGO POSITION TO COMPLETE WINCH "IN" CONTROL CIRCUIT.

3 SWITCH NO. 3 IS OPEN WHEN SWITCH NO. 1 AND SWITCH NO. 2 ARE OPEN SWITCH NO. 3 IS CLOSED WHEN SWITCH NO. 1 OR SWITCH NO. 2 IS CLOSED. THIS ARRANGEMENT PREVENTS WINCH OPERATION WHEN THE GEARS ARE NOT ENGAGED.

4 THESE SWITCHES ARE LOCATED ON THE WINCH.

14362

END OF TASK

SECTION II
CARGO HANDLING SYSTEM

14-2 CLEAN AND INSPECT WINCH CABLE

INITIAL SETUP

Applicable *Configuration*

All

Tools

Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials

Cloths (E 135)
Dry Cleaning Solvent (E162)
Gloves (E 186)
Gloves, Wire Handling (E185)

Personal Required:

Medium Helicopter Repairer (2)

References:

TM 55-1500-204-25/1
TM 55-1520-240-T
Task 14-10
I Task 14-11

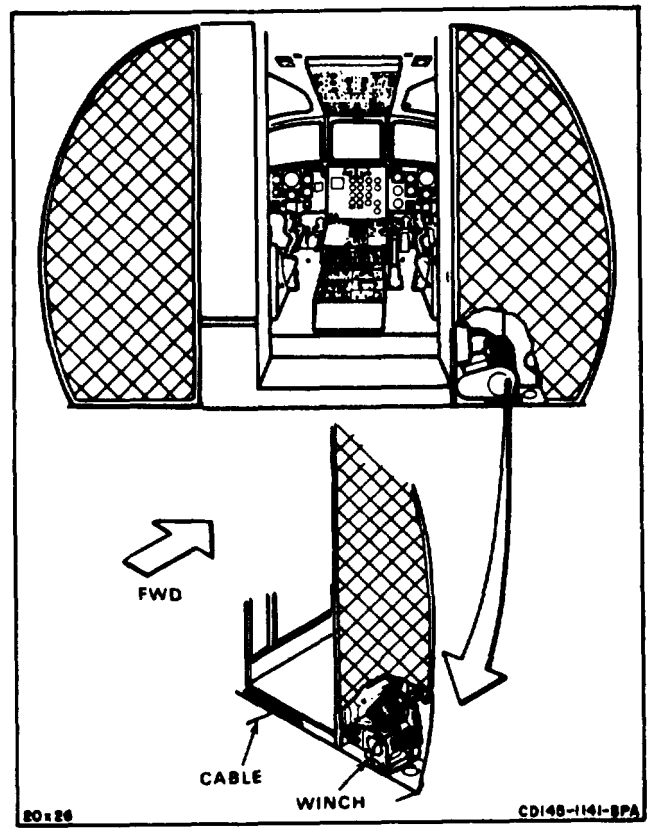
Equipment Condition:

Battery Connected (Task 1-39)
Electrical Power On
Hydraulic Power On

General Safety *Instructions:*

WARNING

Wear wire handling gloves while handling cable. Broken wires. can injure hands.



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14-2 CLEAN AND INSPECT WINCH CABLE (Continued) 14-2

1. Reel out cable (1) **(TM 55-1520-240-T). Have helper keep slight pull on cable as cable reels out.**
2. Shut down electrical and hydraulic power.

WARNING

Dry cleaning solvent (E162) is flammable and toxic. It can Irritate skin and cause bum.. Use only in well-ventilated area away from heat and open flame. In case of contact, Immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

3. **Wet cloth (E 135) with solvent (E 162) and wipe cable (1) clean. Wear gloves (E186).**
4. **If any of the following conditions are found, have the cable replaced (Task 14-10 and 14-11),**

NOTE

A **strand is seven wires twisted together. A cable has 19 strands.**

a. **Check cable (1) for broken strands by passing clean dry cloth (E135) along cable. (Refer to** TM 55-1500-204-25-1).

b. Check cable (l). **There shall be no bends, kinks, corrosion, or crushed wires. Inspect for 20 feet of red paint on both ends of cable.**

c. **Check outer wires for wear. If wear on outer wires is 40 to 50 percent, replace cable (TM 55-1500-204-25/1).**

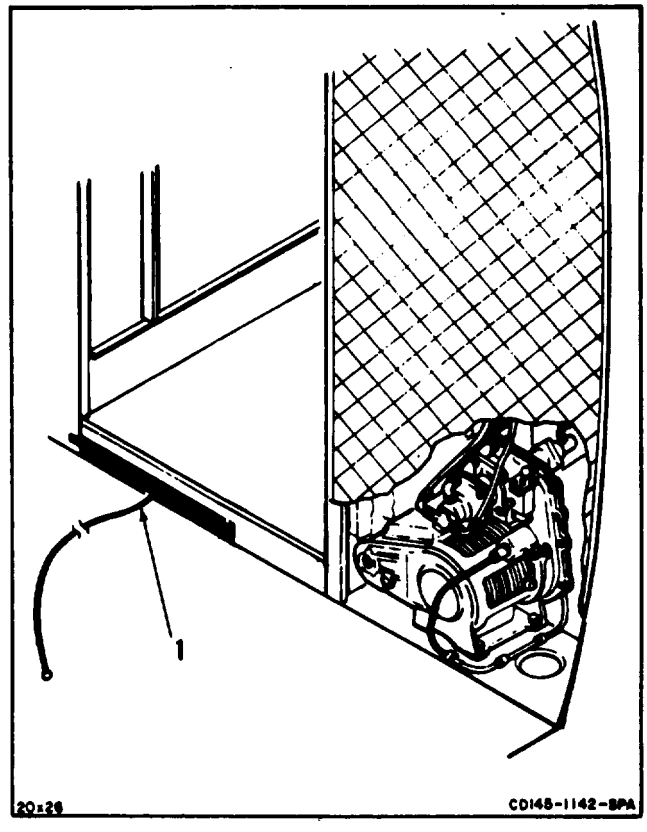
d. Check cable ball and (2). **Ball end shall not be loose.**

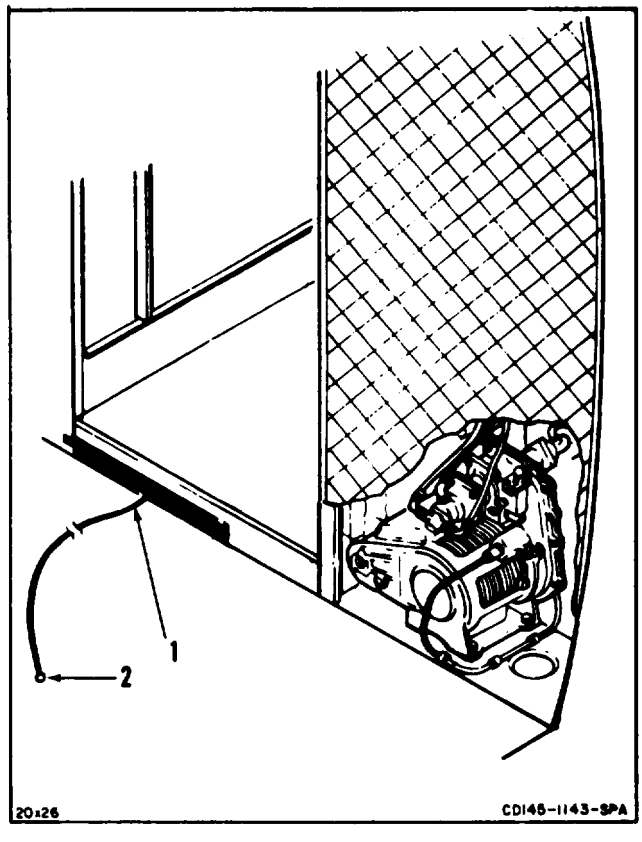
5. Apply electrical and hydraulic power.
6. Reel in cable (1) **(TM 55-1520-240-T). Have helper keep slight drag on cable as cable is reeled in.**
7. Shut down electrical and hydraulic power.

FOLLOW-ON MAINTENANCE:

None

END OF TASK





INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

Materials:
Lockwire (E231)
Marking Pencil (E271)
Sealant (E330)
Strap (E374)
Gloves, Wire Handling (E 185)

Personnel Required:
Medium Helicopter Repairer (2)
Inspector

References:
TM 55-1520-240-T

Equipment Condition:
Battery Connected (Task 1-39)
Heater Compartment Acoustic Blanket Removed (Task 2-208)
Stowage Container Removed (Task 14- 19)
Electrical Power On
Hydraulic Power **On**

General Safety Instructions:

WARNING

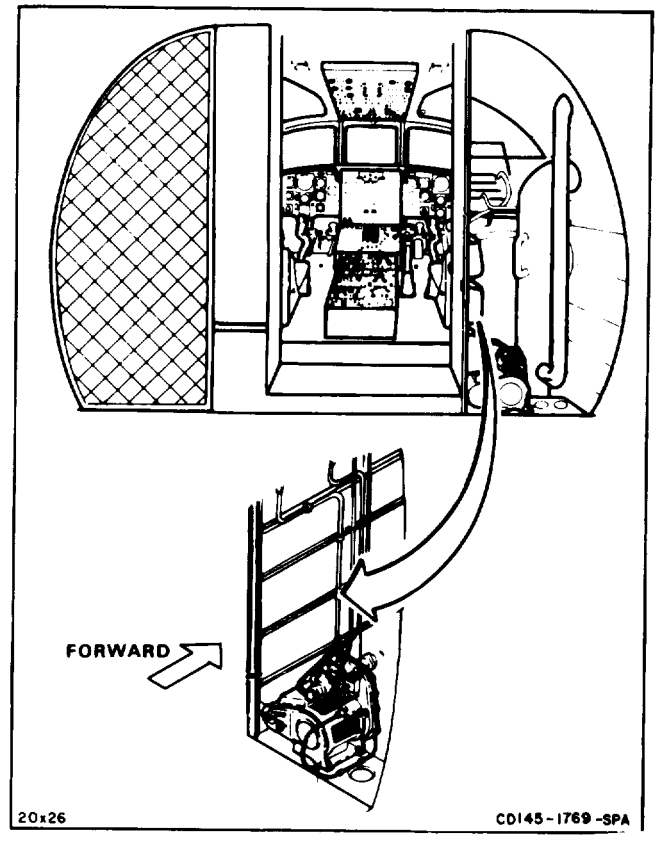
Proper adjustment of three limit switches is needed for safe operation of winch. Adjust switches very carefully.

WARNING

Wear wire handling gloves while handling cable. Broken wires can injure hands.

WARNING

Sealant (E330) may irritate skin and cause burns. Avoid contact with skin, eyes and clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



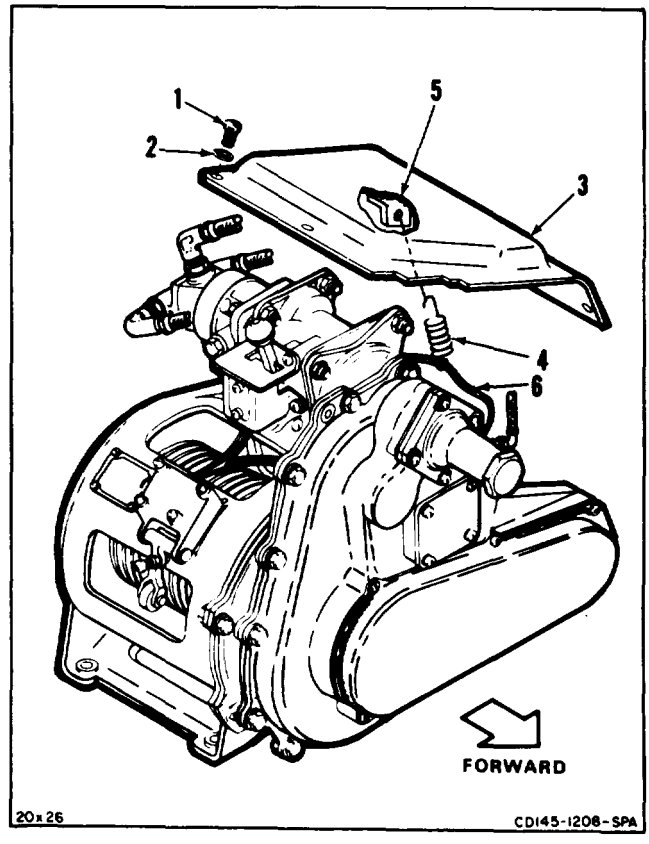
GO TO NEXT PAGE

REMOVE WINCH HOUSING COVER

NOTE

It is not necessary to remove cover to adjust out-limit switch.

1. **Remove lockwire.** Remove six screws (1) and washers (2).
2. **Lift cover (3) just enough to reach spring (4).** Detach spring from underside of cover at bracket (5).
3. Remove cover (3).
4. Cut tie wrap and remove spring (4) from **wire bundle (6).**

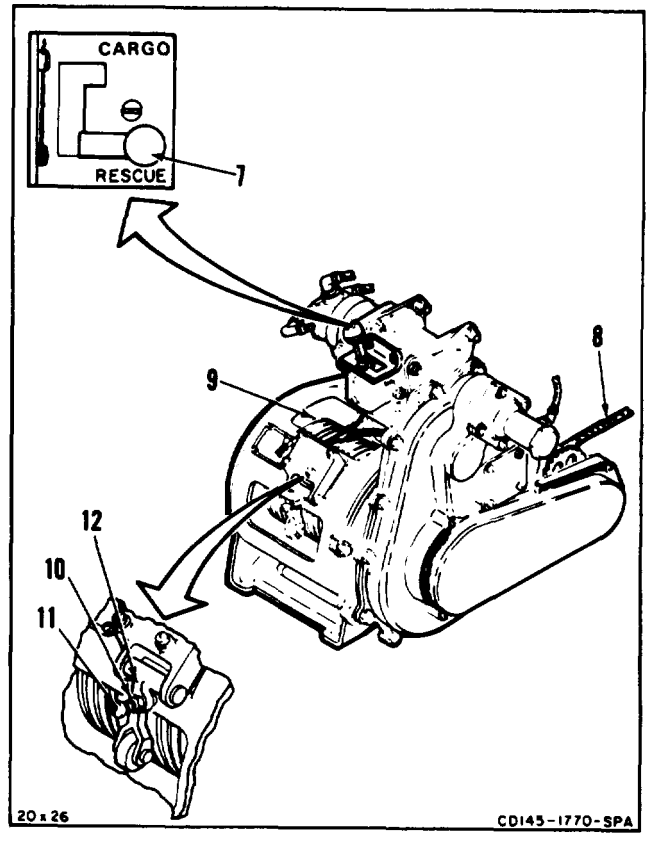


ADJUST OUT-LIMIT SWITCH

5. Set shift lever (7) to RESCUE.
6. Have helper keep slight pull on cable (8) as cable reels out. Helper must wear gloves (E185).
7. Reel out cable (8) until only 2-1/2 wraps are left on drum (9) **(TM 55-1520-240-T).**
8. Loosen nut (1O). Turn screw (11) in or out of lever (12) until it clicks.
9. Apply light coat of sealant (E330) to thread **of screw (11).** Tighten nut (10) to lock **screw in place.**

INSPECT

10. **If no other switches need to be adjusted, go to step 42.**



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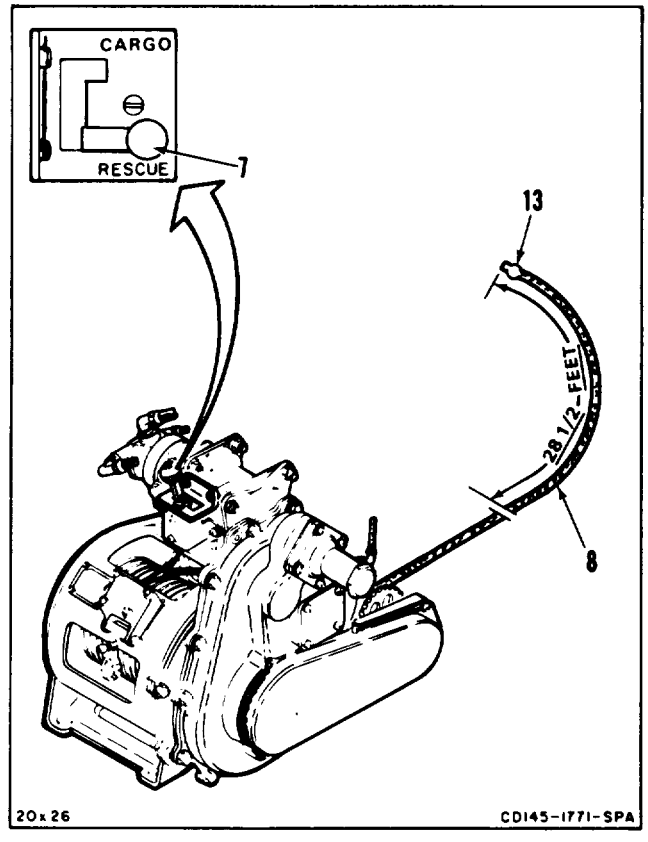
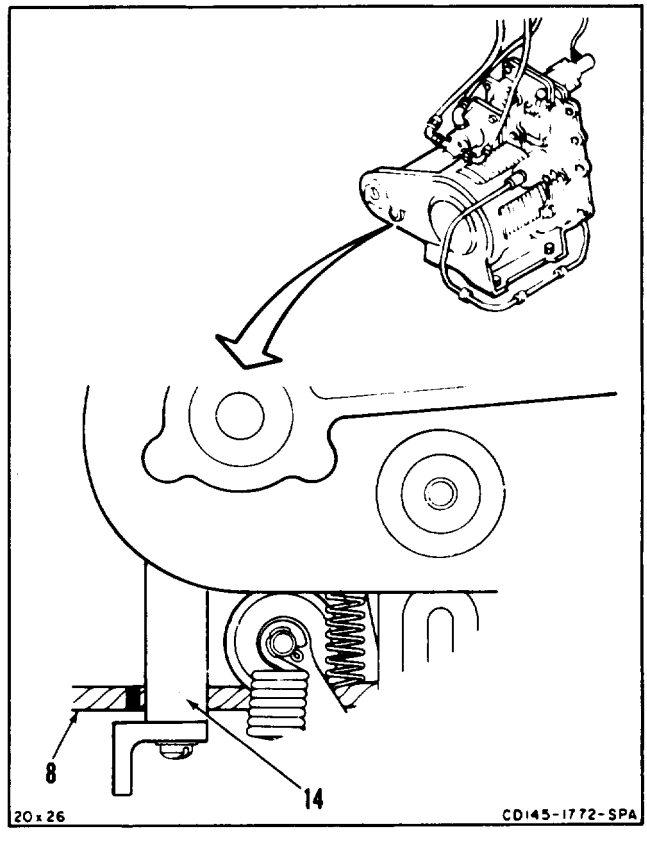
ADJUST RESCUE MODE IN-LIMIT SWITCH

11. **Set** shift lever **(7)** to RESCUE.
12. **Have** helper keep slight pull on cable (8) as cable reels out. Helper must wear gloves (E185).
13. Reel out 30 feet of cable (8) **(TM 55-1520-240-T).**
14. Mark cable (8) 28- 1/2 feet from ball end (13). Use marking pencil (E271).



15. Have helper **keep slight pull on cable (8) as cable reels in.** Helper must wear gloves (E185).
16. Reel in cable (8) until mark just enters levelwind rollers (14).



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17. Remove four bolts (15) **and washers (16). Move** winch (17) enough to gain access to switch (18).

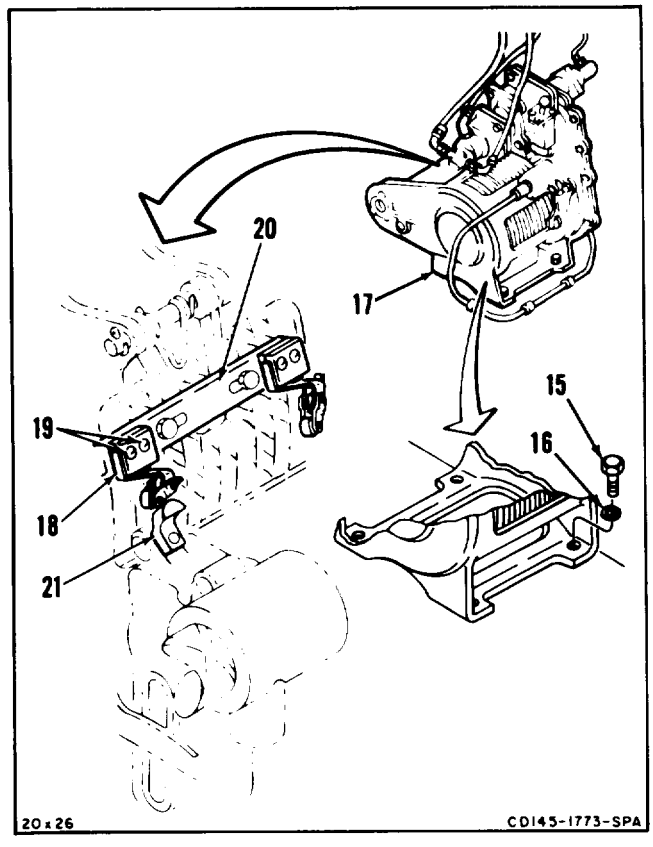
18. **Loosen two screws (19).** Position switch (18) in slots of switch bracket (20) so that it is actuated by striker bracket (21).

19. Apply light coat of sealant (E330) to thread of screws (19). Tighten screws.

20. **Text** Deleted.

INSPECT

21. If no other switches need adjusting, position winch (17) and install four bolts (15) **and washers (16). Go to step 31.**



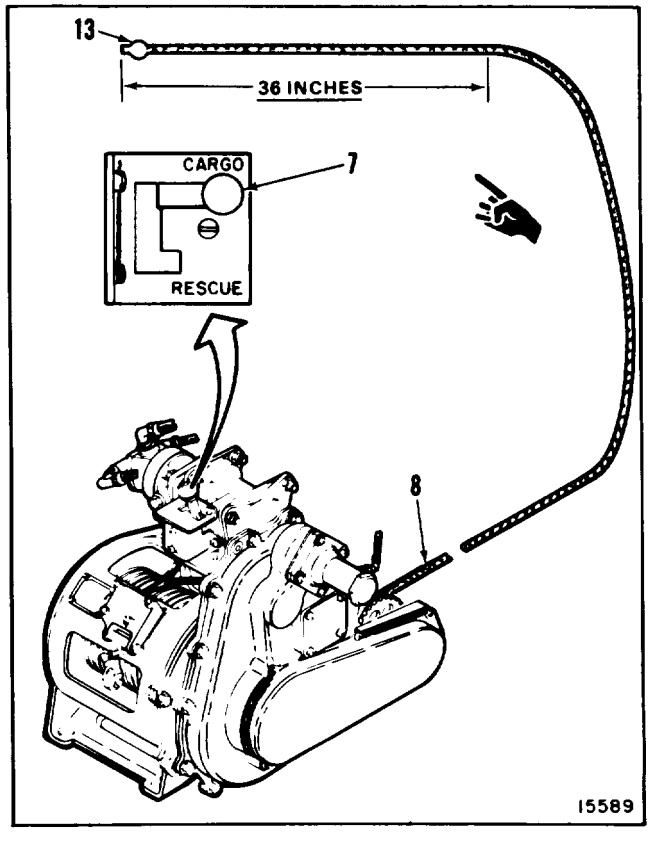
ADJUST CARGO MODE IN-LIMITS WITCH

22. Set shift lever (7) to CARGO.

23. **Have helper keep slight pull on cable (8) as it reels out.** Helper must wear gloves (E185).

24. Reel out 5 feet of cable (8) **(TM 55-1520-240-T).**

25. Mark cable (8) 36 inches from ball end (13). **Use marking pencil (E271).**



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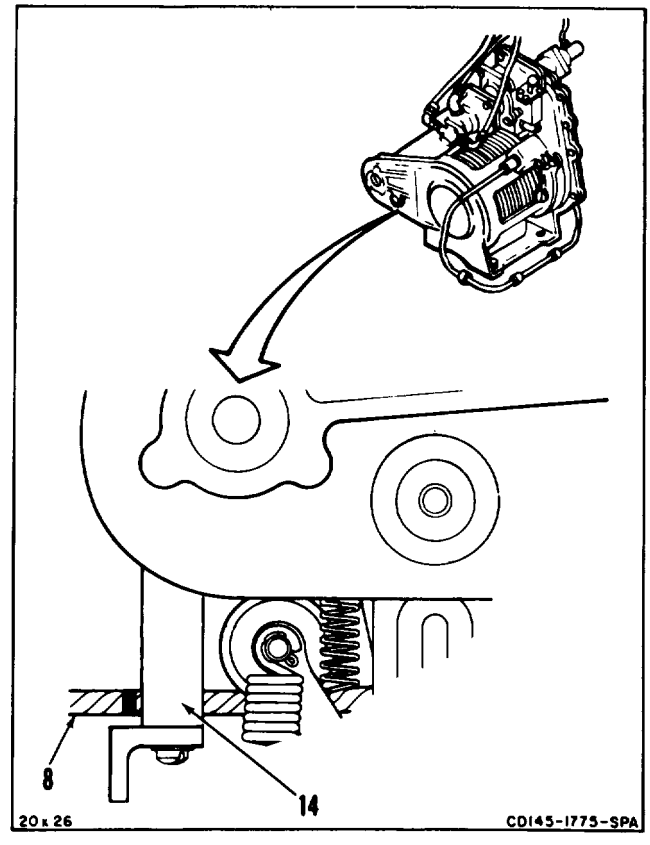
26. Have helper keep slight pull on cable (8) as cable **reels in.** Helper must wear gloves (E185).
27. Reel in cable (8) until mark just enters levelwind rollers (14).



28. Text Deleted.

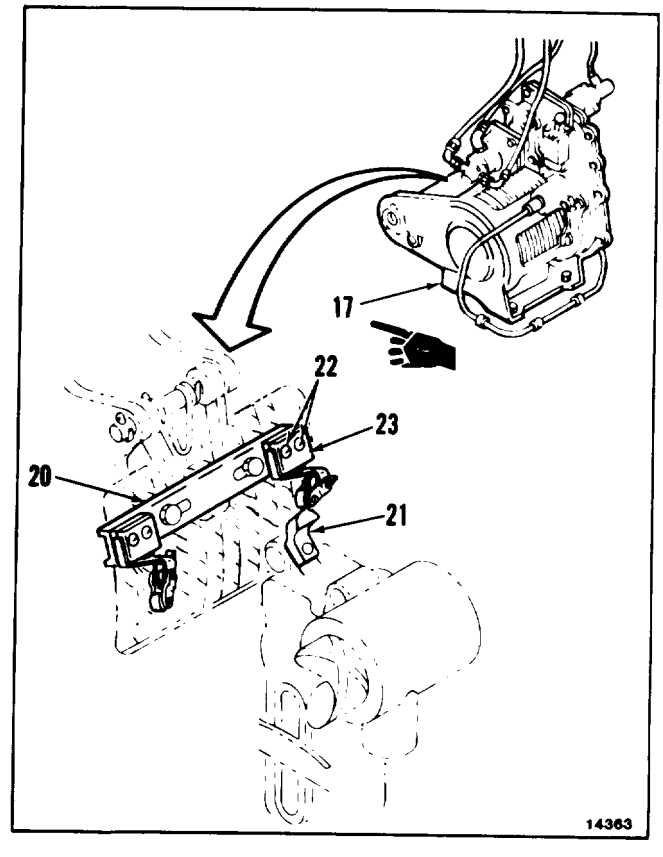
29. Loosen two screws (22). Position switch (23) **in slots of switch bracket (20) so** that it is actuated by striker bracket (21).

30. Apply light coat of sealant (E330) to thread of screws (22). Tighten screws.

INSPECT

31. **Test winch (17) (TM 55-1520-240-T).**

32. Turn off electrical and hydraulic power.



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All Data on Page 14-10, Including Steps 33 through 43 Deleted.

ARJUST OVERLOAD LIMIT SWITCH

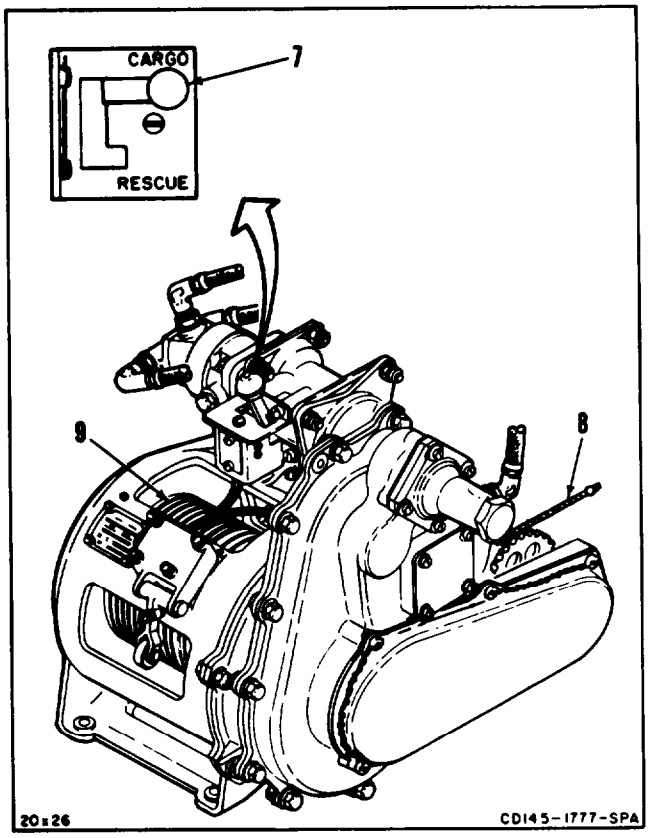
33. Sot shift lever (7) to CARGO.

34. Have helper keep slight pull on cable (8) es cable reels out. Helper must wear gloves (E185).

35. Reel out cable (8) until It is fully extended (TM 55-1520-240-T).

36. Attach 3100 to 3300 pound drag load to cable (8).

37. With load attached, reelin cable **(8) until two layers of cable are wrapped on drum (9).**



38. Repeat step 17.

39. Loosen two nuts (24). Position switch (25) in slots of cable tension bracket (26) so that it is actuated by load on second layer of cable (8).

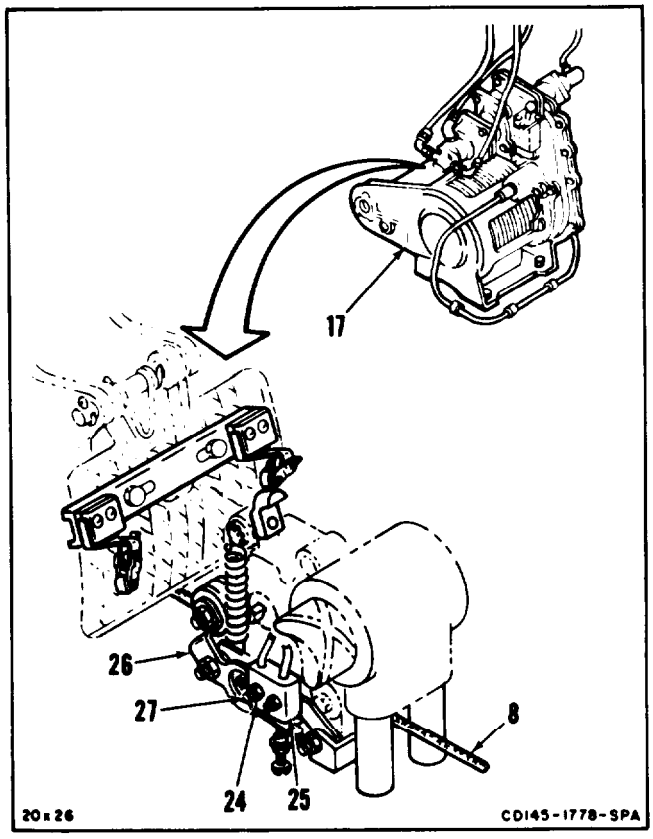
40. Apply light coat of sealant (E330) to thread **of screws** (27). Tighten nuts (24).

INSPECT

41. Repeat step 20.

42. Test winch (17) (TM 55-1520-240-T).

43. Turn off electrical and hydraulic power.



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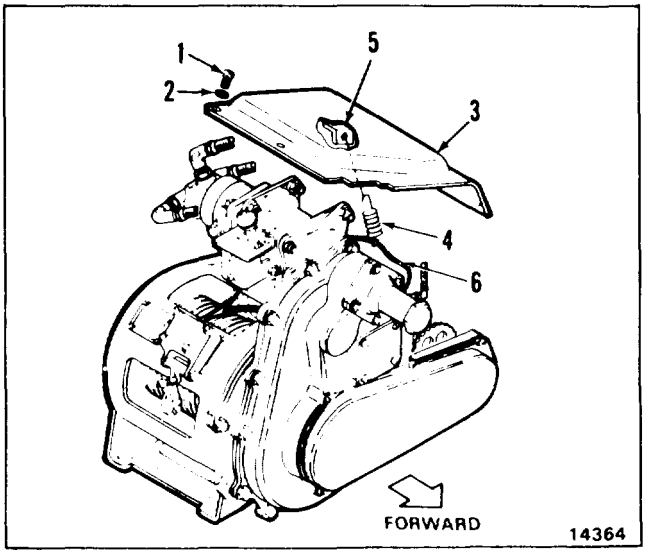
INSTALL WINCH HOUSING COVER

44. **Deleted.**

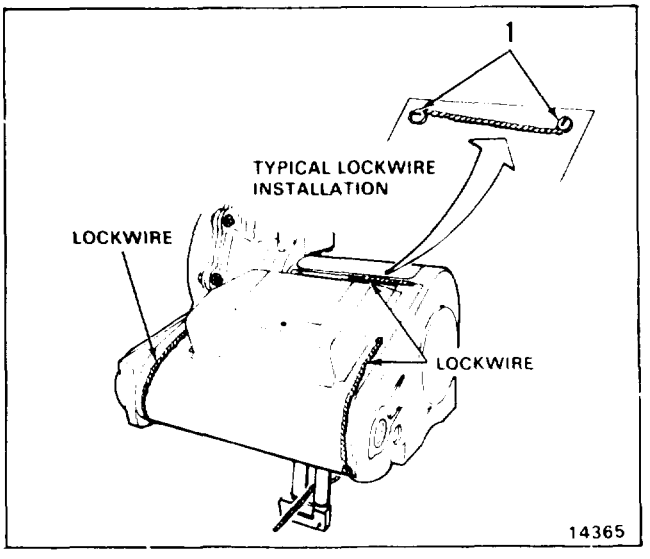
45. **Connect lower end of spring (4) to wire bundle (6). Use strap (E374).**

46. **Position cover (3).** Lift cover enough to attach spring (4) to underside of cover at bracket (5). Lower cover.

47. Secure cover (3) to housing with six screws (1) and washers (2).



48. **Lockwire screws (1) together in pairs. Use lockwire (E231),**

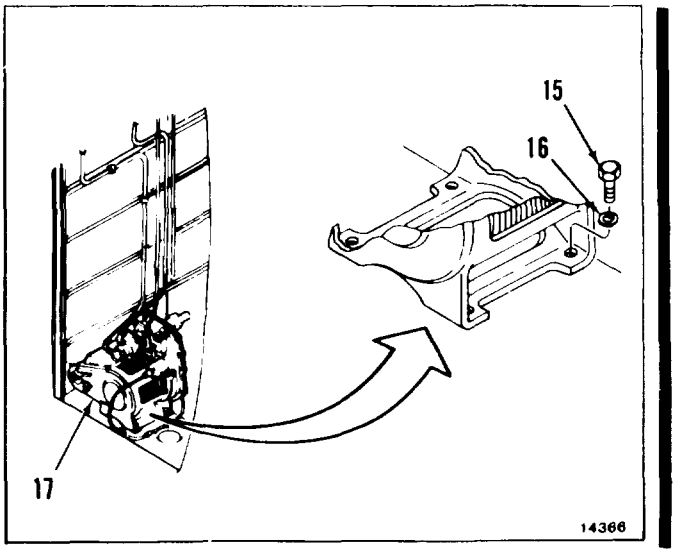


49. Position winch (17). Install four bolts (15) and washers (16).

INSPECT

FOLLOW-ON MAINTENANCE:

Install stowage container (Task 14-20)



END OF TASK

14-3.1 REPLACE WINCH LIMIT SWITCHES

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:

Lockwire (E231)
Sealant (E330)
Strap (E374)
Gloves (E186)

Personnel Required:

Medium Helicopter Repairer (2)
Inspector

References:

None

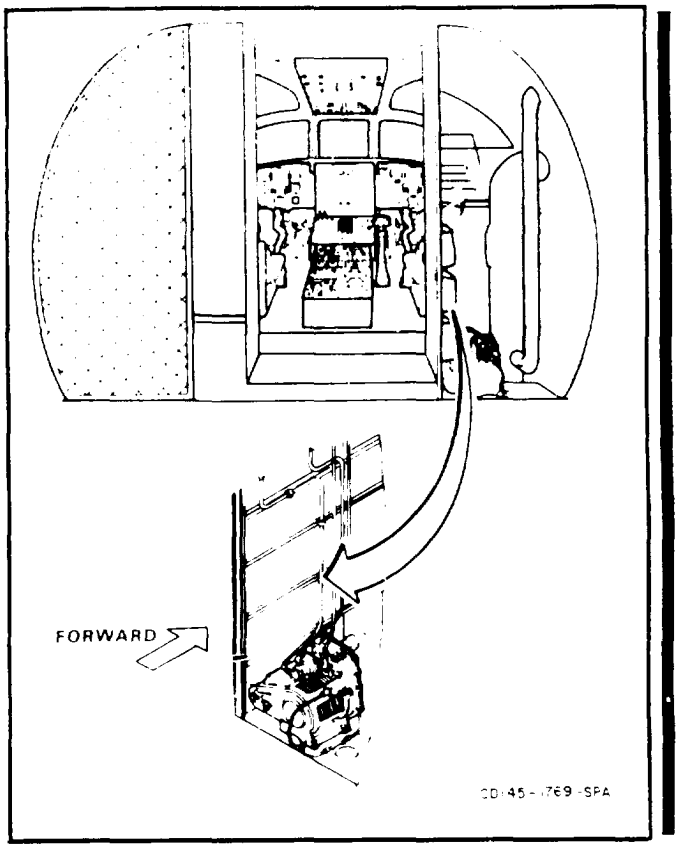
Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)
Stowage Container Removed (Task 14-19)

General Safety Instructions:

WARNING

Sealant (E330] may irritate skin and cause burns. Avoid contact with skin, eyes and clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



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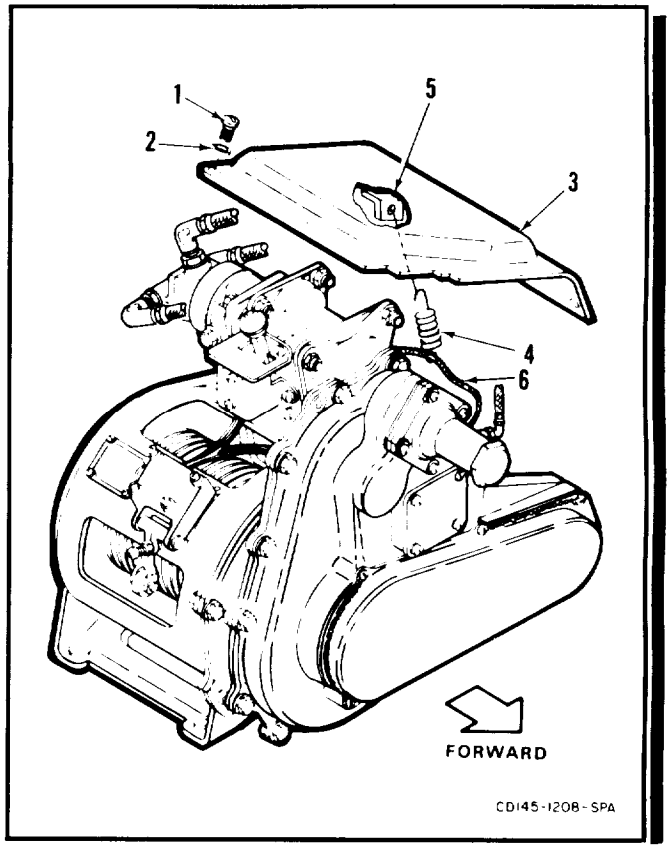
REMOVE WINCH HOUSING COVER

NOTE

Procedure is the same to replace out-limit switch and in-limit switch. Out-limit switch is shown here.

1. **Remove lockwire.** Remove six screws (1) and washers (2).
2. **Lift cover (3) just enough to reach spring** *(4),* Detach spring from underside of cover at bracket (5).
3. Remove cover (3).
4. Cut tie wrap and remove spring (4) from wire bundle (6).



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REMOVE OUT/IN LIMIT SWITCH

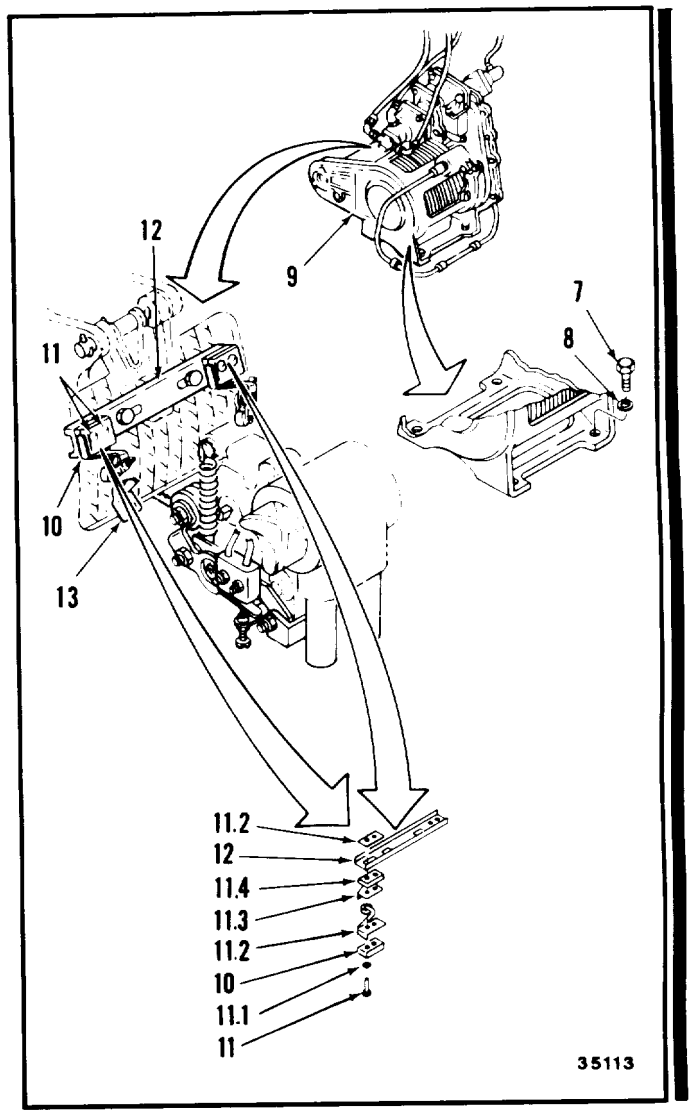
5. Remove four bolts (7) and washers (8). Move winch (9) enough to gain access to switch (10).
6. Remove two screws (11), **washers (11.1), switch (10), two adapters (11.2), bracket (11.3), and spacer (11.4) from switch holder (12).**

INSTALL 0UT/IN LIMIT SWITCH

7. Install spacer (11.4), **bracket (11.3), two adapters (11.2) and switch (10) in switch holder (12).**
8. Position switch (10) **in slots of switch holder (12) so that it is** actuated by striker bracket (13).
9. Apply light coat of sealant (E330) to thread of screws (11). Wear gloves (E186).
10. Install washers (11.1) and screws (11). Tighten two screws (11).

INSPECT

11. **If no other switches need replacing, position winch (9).** Install four bolts (7) and washers (8). Go to step 19.



REMOVE OVERLOADLIM!T SWITCH

12. Repeat steps 1 thru 5.

13, Remove two nuts (14).

14. Remove switch (15) from cable tension bracket (16).

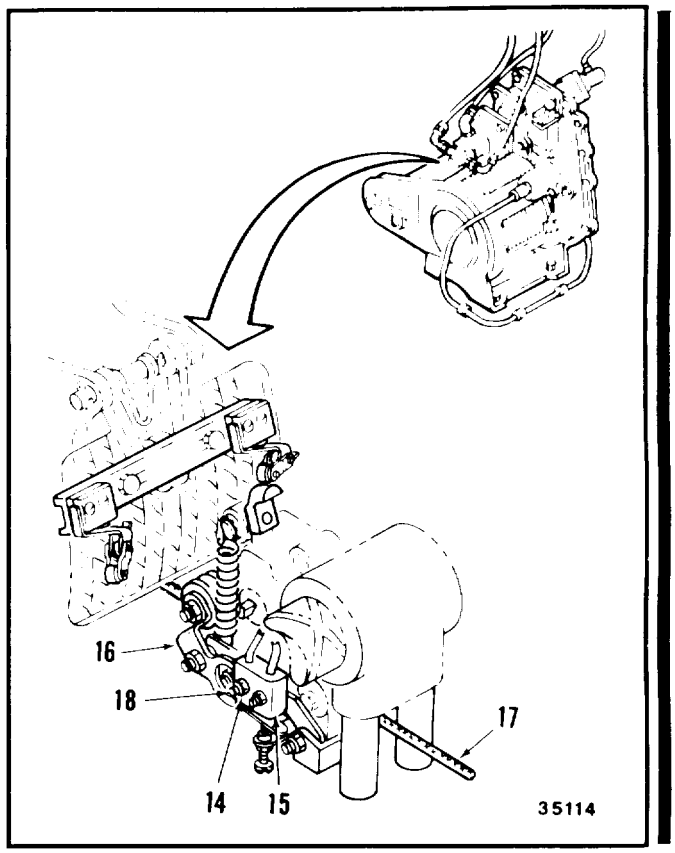
INSTALL OVERLOAD LIMIT SWITCH

15. Position switch (15) **in slots of cable tension bracket (16) so** that it is actuated by load on second layer of cable (17).

16. Apply light **coat of sealant (E330) to thread of screws (18). Wear gloves (E186).**

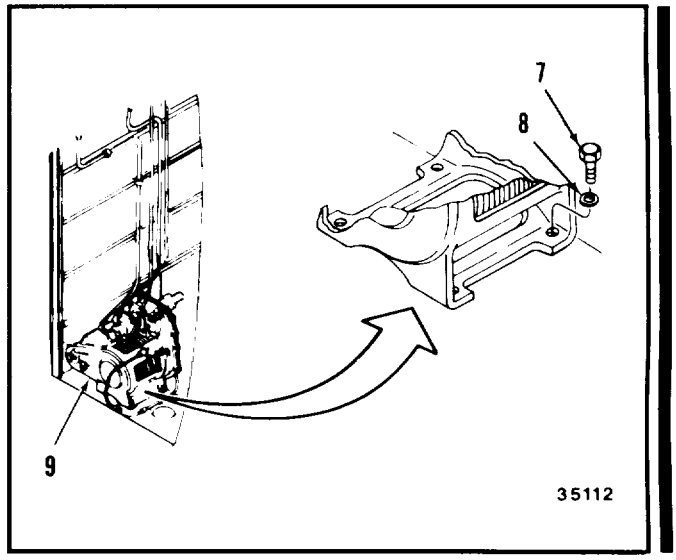
17. Tighten two nuts (14).

INSPECT



18. Position winch (9). Install four bolts (7) and washers (8).

INSPECT



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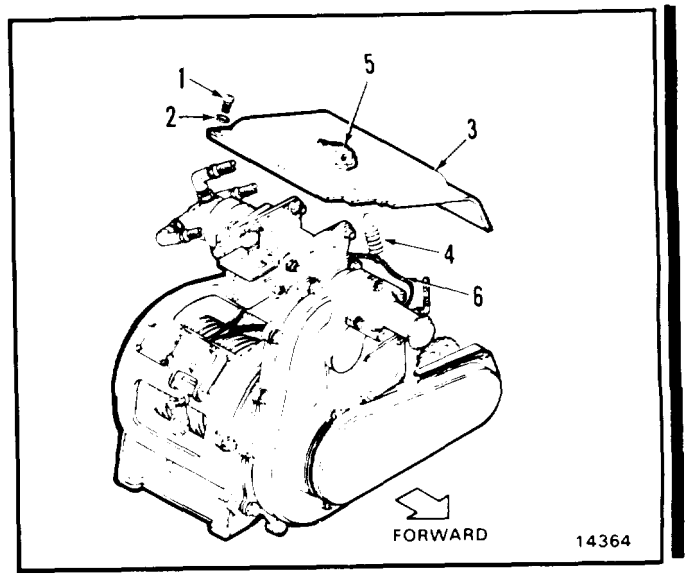
INSTALL WINCH HOUSING COVER

19. Connect lower end of spring (4) to wire bundle (6). Use tie wrap (E374).

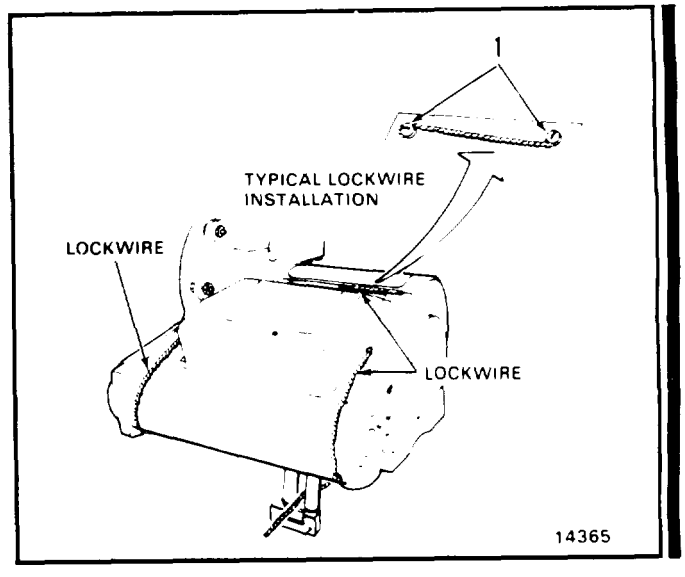
20. Position cover (3). Lift cover enough to attach spring (4) to underside of cover at bracket (5). Lower cover.

21. Secure cover (3) **to housing with six screws (1) and washers (2).**



22. Lockwire screws (1) together in pairs, Use lockwire (E231).

INSPECT



FOLLOW-ON MAINTENANCE:
Perform operational check (TM 55-1520-240-T).
Install stowage container (Task 14-20).
Install heater compartment acoustic blanket (Task 2-210)

END OF TASK

INITIAL SETUP

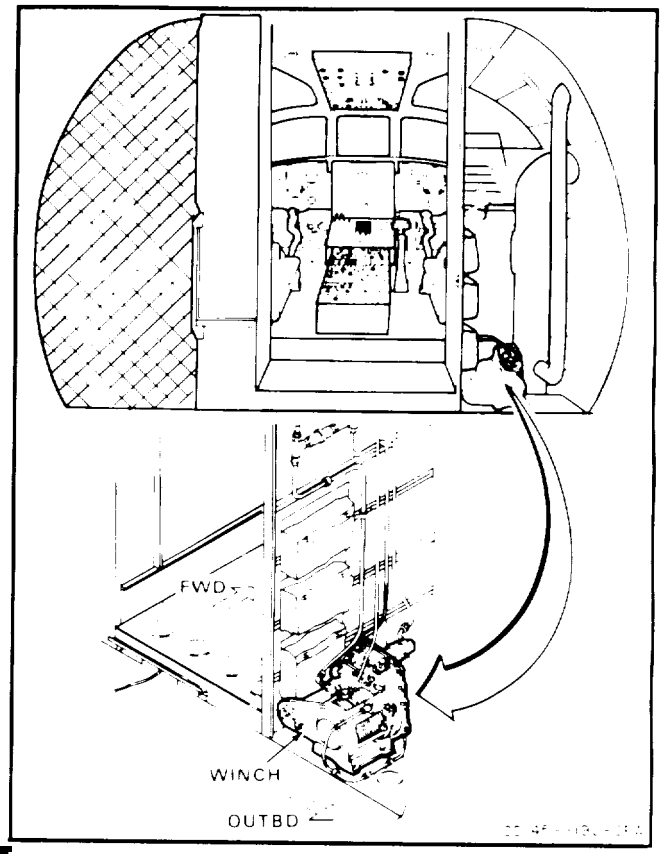
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Container, Two Quart

Materials:
Paper Tags (E264)
Cloths (E135)

Personnel Required:
Medium Helicopter Repairer
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Utility Hydraulic System Depressurized (TM 55-1520-240-T)
Heater Compartment Acoustic Blanket Removed (Task 2-208)
Cockpit Aft Floor Panel Removed (Task 2-83)

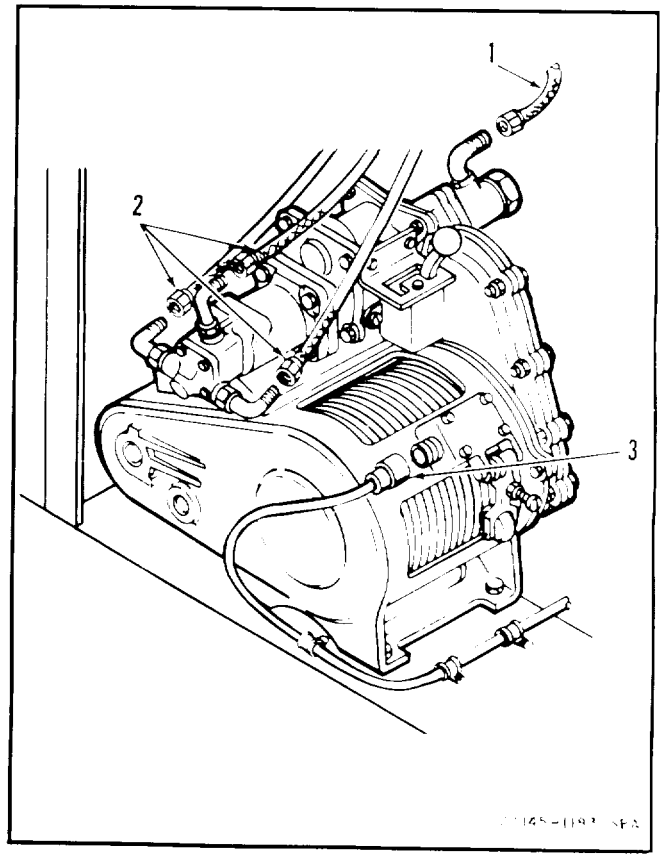


DISCONNECT HOSES AND ELECTRICAL CONNECTOR

WARNING

Use container to catch fluid as each hose is disconnected. Spilled fluid is a hazard.

1. **Tag and** disconnect hose (1).
2. Tag and disconnect three hoses (2).**Wipe up spilled fluid with cloths (E135).**
3. Disconnect electrical connector (3).



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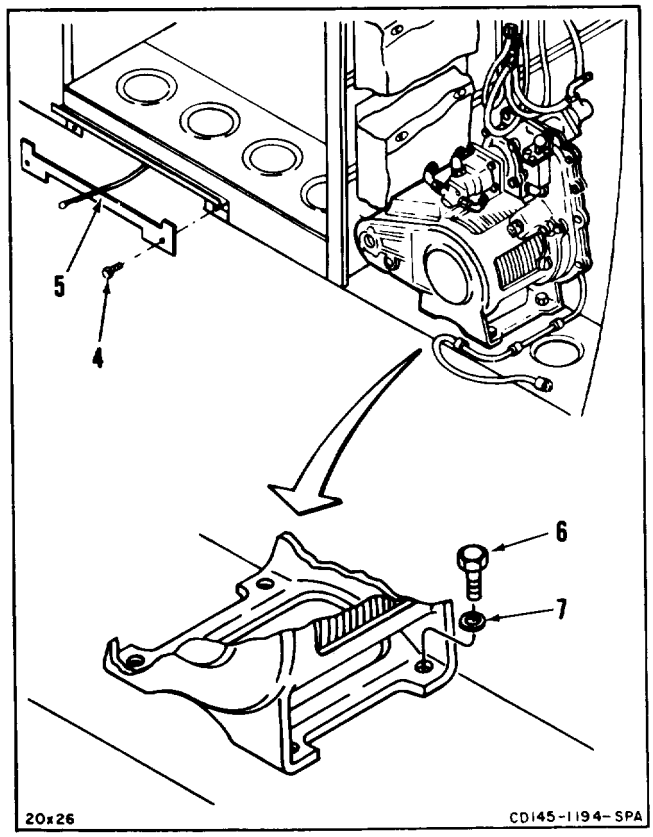
14-4 REMOVE WINCH (Continued)

REMOVE WINCH

4. **Remove three screws (4).** Remove cable panel (5).

5. Remove four bolts (6) and washers (7).



6. **Reach under structure (8) and remove nut (9) and washer (10). Remove bolt (11) and washer (1 2).**

7. Move pulley (13) outboard along bracket (14).

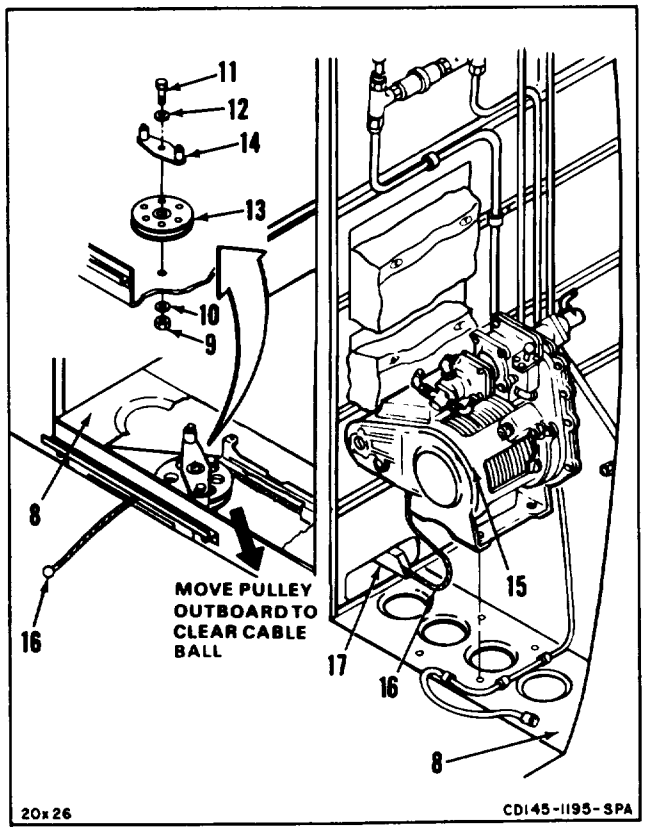
8. **Slide winch (15) away from structure (8). At same time, have helper pull cable (16) through cable guard (17).** Pull cable (16) out from between pulley (13) and bracket (14).

Winch weighs 56 pounds. Do not lift winch without help. Personal injury can result.

CAUTION

Take care not to damage electrical connector or wiring when removing winch.

9. Secure cable (16) to winch (15). Remove winch from compartment.



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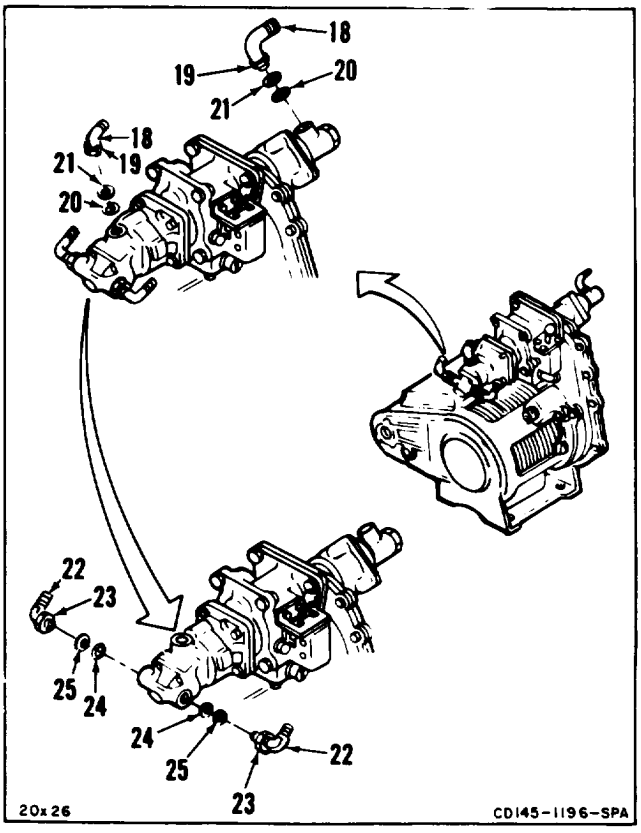
PARTS REMOVAL

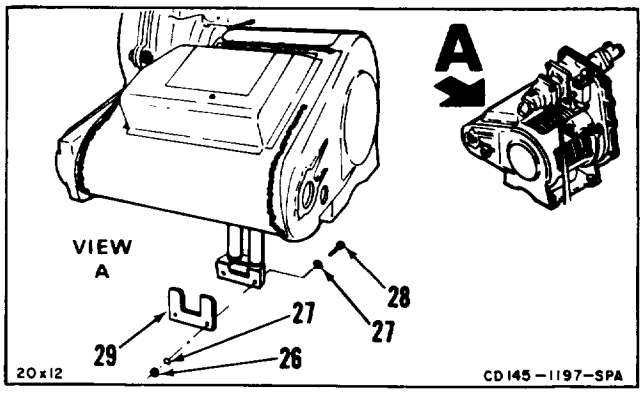
NOTE

Remove parts only if replacement winch will be installed. Note position of elbows for reinstallation.



10. Remove two elbows (18) **by loosening attaching nuts (19). Remove two packings (20) and washers (21).**

11. Remove two elbows (22) by loosening attaching nuts (23), **Remove two packings (24 and washers (25).**



12. Remove two nuts (26), four washers (27), and two screws (28). Remove cable guard guide (29).

FOLLOW-ON MAINTENANCE:

None

END OF TASK

14-5 REMOVE CLUTCH CHAIN AND ROLLER CHAINS (AVIM)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:

None

Personnel Required:

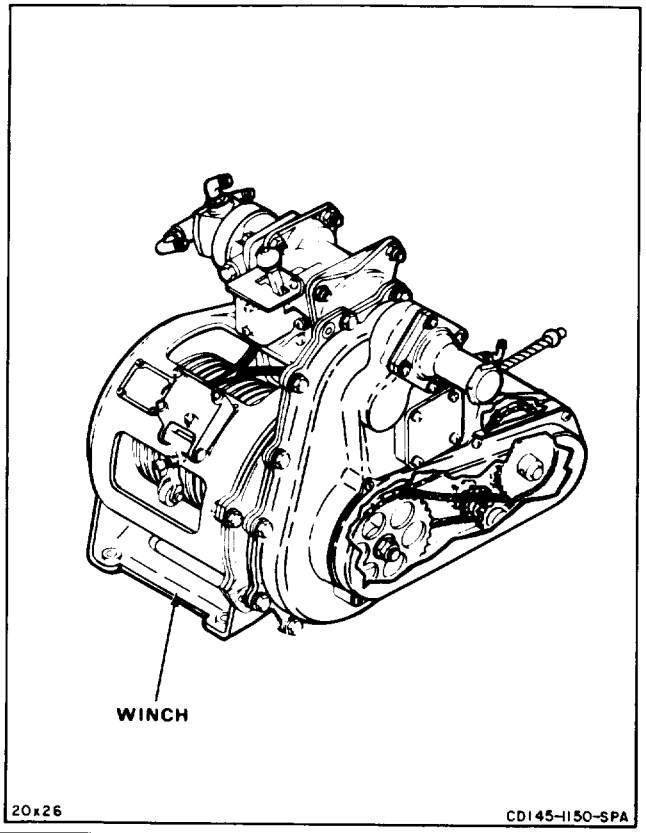
67U20 **Medium Helicopter Repairer**

References:

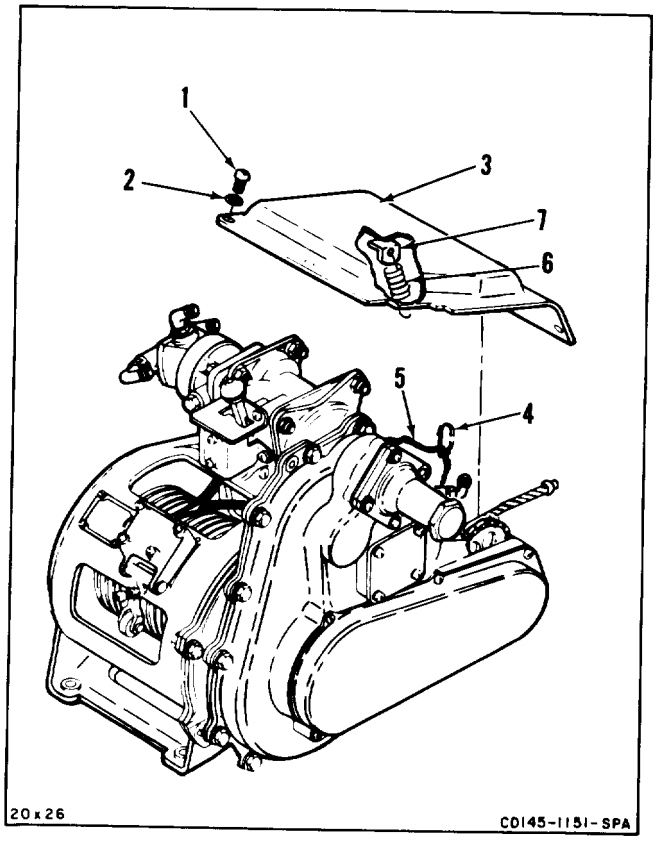
Task 14-10

Equipment Condition:

Off **Helicopter Task**



1. **Remove lockwire.** Remove six screws(1) and washers (2).
2. Lift cover (3). Cut strap (4) from wire bundle (5).
3. Remove cover (3).
4. Disconnect spring (6) from bracket (7).



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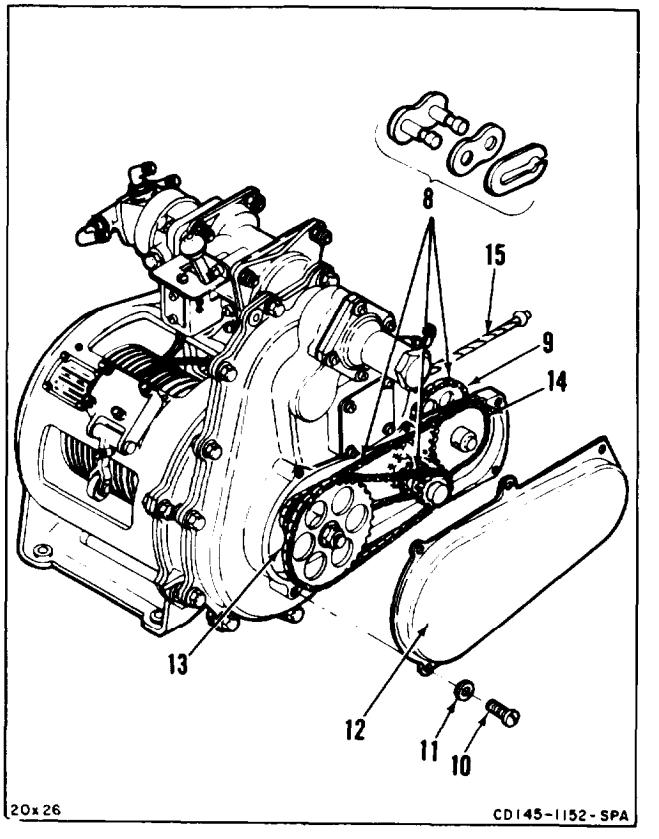
14-5 REMOVE CLUTCH CHAIN AND ROLLER CHAINS (AVIM) (Continued)

5. **Remove spring lock (8) from clutch chain (9),** Remove chain.
6. **Remove lockwire,** Remove six screws (10) and washers (11), Remove cover (12).
7. Remove spring lock (8) from roller chain (13). Remove chain.
8. Remove spring lock (8) from roller chain (14). Remove chain.
9. Remove cable **15) (Task 14-10)**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

14-6 CLEAN AND INSPECT SPROCKETS, CLUTCH CHAIN AND ROLLER CHAINS (AVIM)

INITIAL SETUP

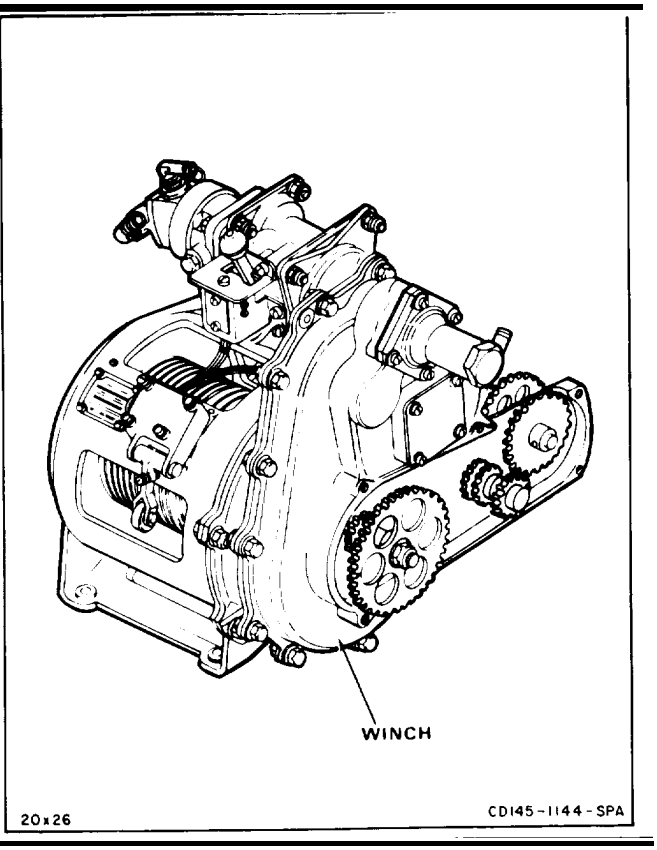
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Source of Compressed Air

Materials:
Brush (E85)
Dry Cleaning Solvent (E162)
Gloves (E186)

Personnel Required:
67U10 **Medium Helicopter Repairer**
67U30 Inspector

Equipment Condition:
Off Helicopter Task
Clutch Chain and Roller Chains Removed (Task 14-5)



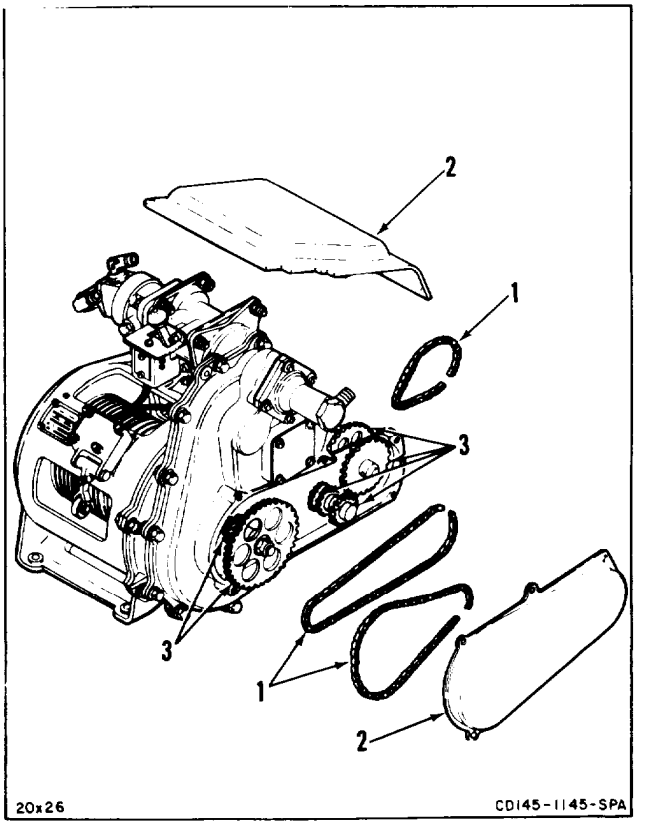
WARNING

Dry cleaning solvent (E162) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

WARNING

Do not use more than 30 psi compressed air for cleaning purposes. Debris propelled under pressure can cause injury to eyes. Use source of compressed air under 30 psi and eye protection to prevent injury to personnel.

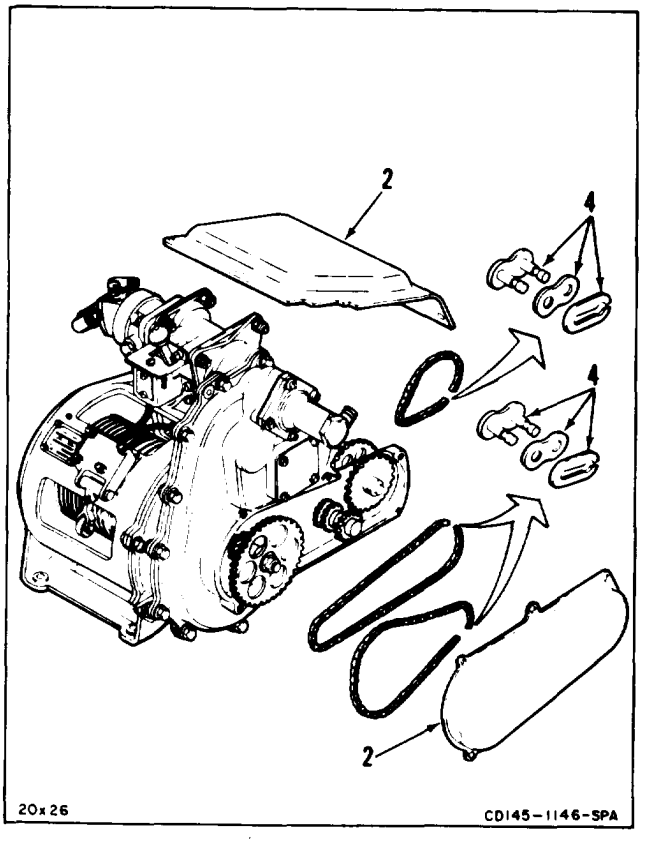
1. **Dip brush (E85) in solvent (E162). Clean chains (1), covers (2), and sprockets (3). Dry parts with low pressure dry air. Use goggles for eyes and wear gloves (E186).**
2. Check sprockets (3). There shall be no **burrs, nicks, or broken teeth.**
3. Check chains (1). **There shall be no broken or worn links or rollers.**



*GO **TO** NEXT PAGE*

14-6 CLEAN AND INSPECT SPROCKETS, CLUTCH CHAIN AND ROLLER CHAINS (AVIM) (Continued)

4. Check spring locks (4). **There shall be no cracks, bends, or poor locklng action,**
5. **Check covers (2). There shall be no cracks, dents, or out-of-round holes.**



FOLLOW-ON MAINTENANCE:

Install clutch chain and roller chains (Task 14-8).

END OF TASK

14-7 TIME WINCH CABLE DRUM AND LEVELWIND MECHANISM (AVIM)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:

None

Personnel Required:

67U20 **Medium Helicopter Repairer**

Equipment Condition:

Off Helicopter Task

Winch Wire Rope (Cable) Removed (Task 14-10)

Clutch Chain and Roller Chains Removed (Task 14-5)

NOTE

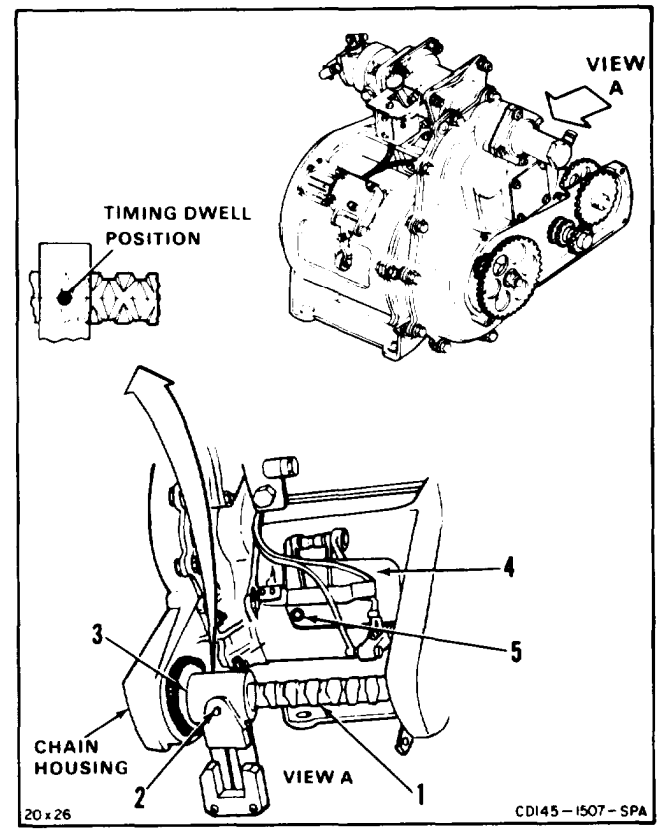
Dwell position is at far end of levelwind screw, next to chain housing.

1. Turn levelwind screw (1) until pin (2) in levelwind housing (3) lines up in dwell position.

CAUTION

Do not turn drum or levelwind screw after timing is complete. Cable snarl could result.

2. Turn drum (4) until cable socket (5) in drum is straight down. **Drum is now timed to levelwind screw (1). Do not move drum or screw until chains are installed.**



FOLLOW-ON MAINTENANCE:

Install clutch chains and roller chains (Task 14-8).

END OF TASK

14-8 INSTALL CLUTCH CHAIN AND ROLLER CHAINS (AVIM)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:

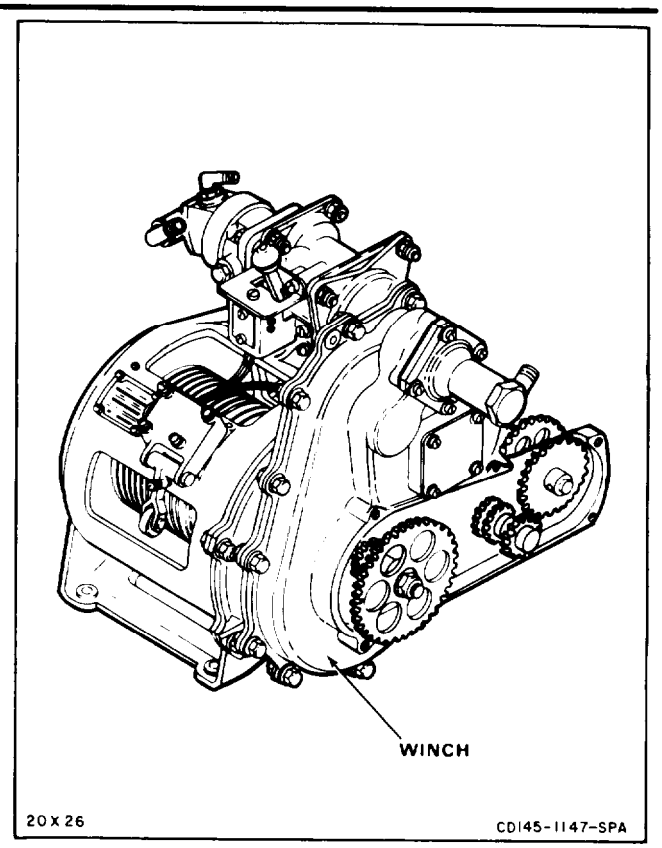
Grease (E190)
Lockwire (E231)
Tie-Wrap (E374)

Personnel Required:

67U20 **Medium Helicopter Repairer**
67U30 Inspector

References:

TM 55-1520-240-23P
Task 14-7
Task 14-11

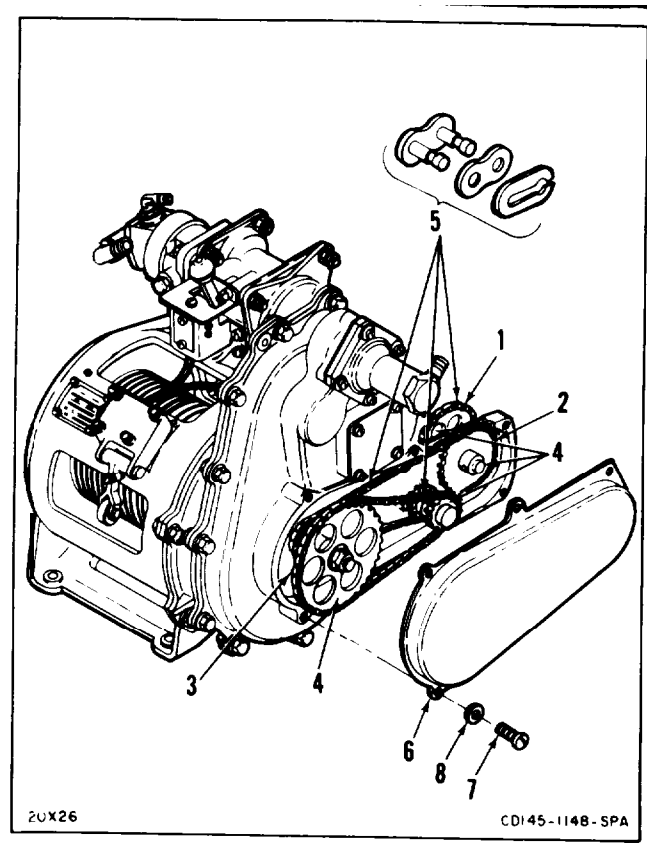


1. **Apply light coat of grease (E190) on clutch chain (1), roller chain (2), and roller chain (3), Put light coat of grease (E190) on sprockets (4).**
2. Time winch cable drum and levelwind mechanism **(Task 14-7).**

CAUTION

Do not move cable drum or levelwind screw when installing chains. Levelwind timing could change, which could snarl the cable.

3. Install roller chain (2). **Install spring lock (5).**
4. Install roller chain (3). Install spring lock (5).
5. Install clutch chain (1). Install spring lock (5).
6. Position cover (6). Install six screws (7) and washers (8). Lockwire screws with lockwire (E231).



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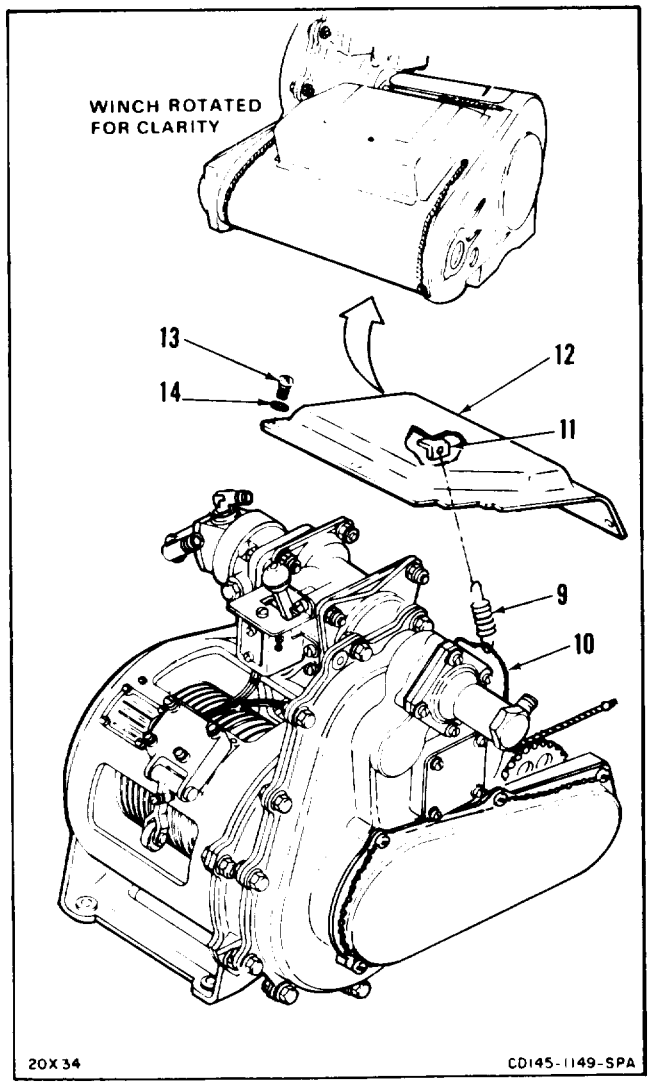
14-8 INSTALL CLUTCH CHAIN AND ROLLER CHAINS (AVIM) (Continued)

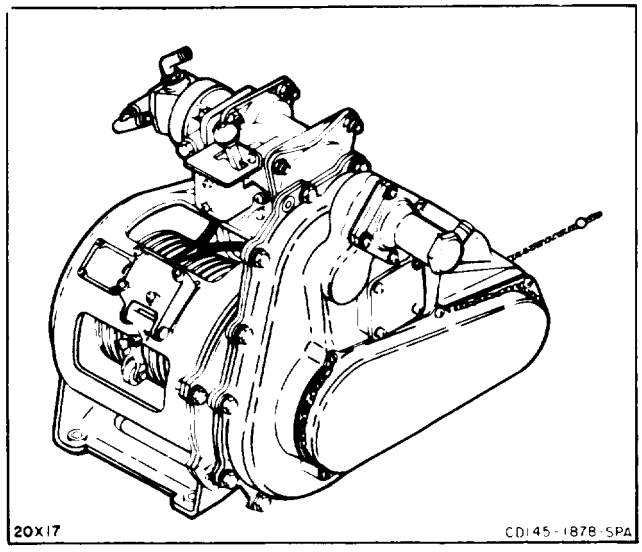
7. Install winch cable **(Task 14-11).**
8. Connect one end of spring (9) to Wire **bundle (10). Use tie-wrap (E374).**
9. Attach other end of spring (9) to bracket (11).
10. Position cover (12). Install six screws (13) **and washers (14). Lockwire screws using lockwire E231)**



INSPECT

FOLLOW-ON MAINTENANCE:

None



END OF TASK

14-9 INSTALL WINCH

INITIAL SETUP

Applicable Configurations:

All

Took:

Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:

Cloths (El 35)
Hydraulic Fluid (E197)

Parts:

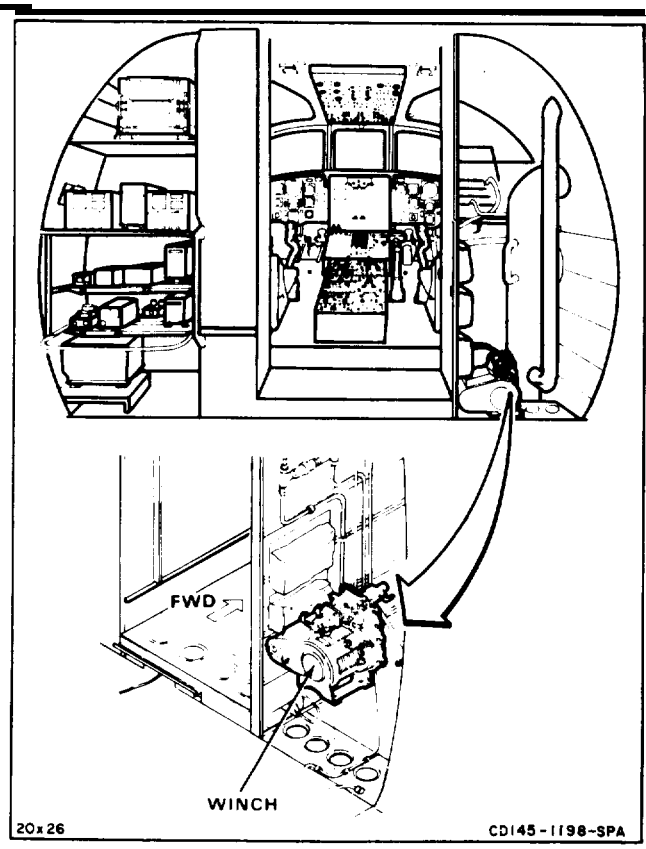
Preformed Packings
Nonmetallic Washers

Personnel Required:

67U10 **Medium Helicopter Repairer**
67U20 Medium Helicopter Repairer
67U30 Inspector

References:

TM 55-1520-240-23P

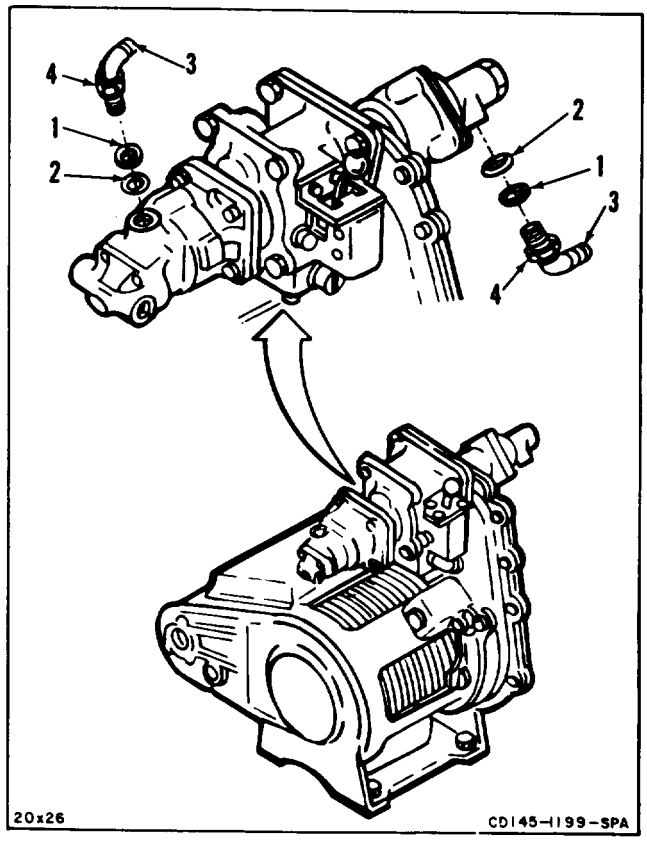


PARTS INSTALLATION

NOTE

Install parts on a replacement winch only as required.

1. Apply light coat of hydraulic fluid (El 97) to two new washers(1) and packings (2). Coat thread **of two elbows (3).**
2. **Install one washer (1) and packing (2) on each elbow (3).**
3. Install elbows **(3) with nuts (4) attached. Point elbows straight back, as shown, and tighten nuts.**



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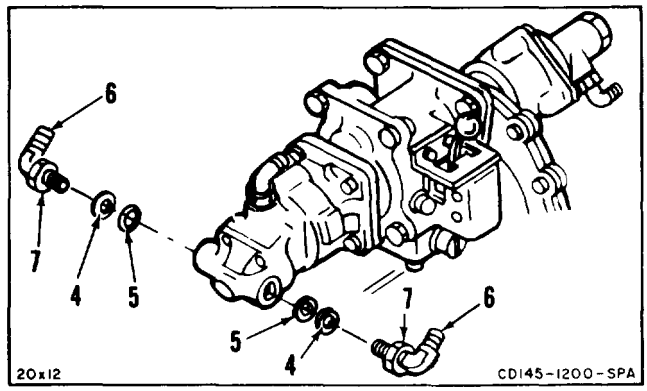
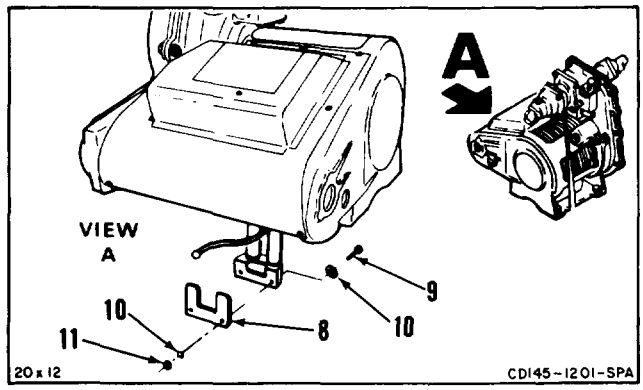
14-9 INSTALL WINCH (Continued)

4. Apply light coat of hydraulic fluid (E197) to two new washers (4) and packings (5), Coat thread of two elbows (6).
5. Install one washer (4) and packing (5) on each elbow (6).
6. Install elbows (6), with nuts (7) attached. Point elbows as shown and tighten nuts.

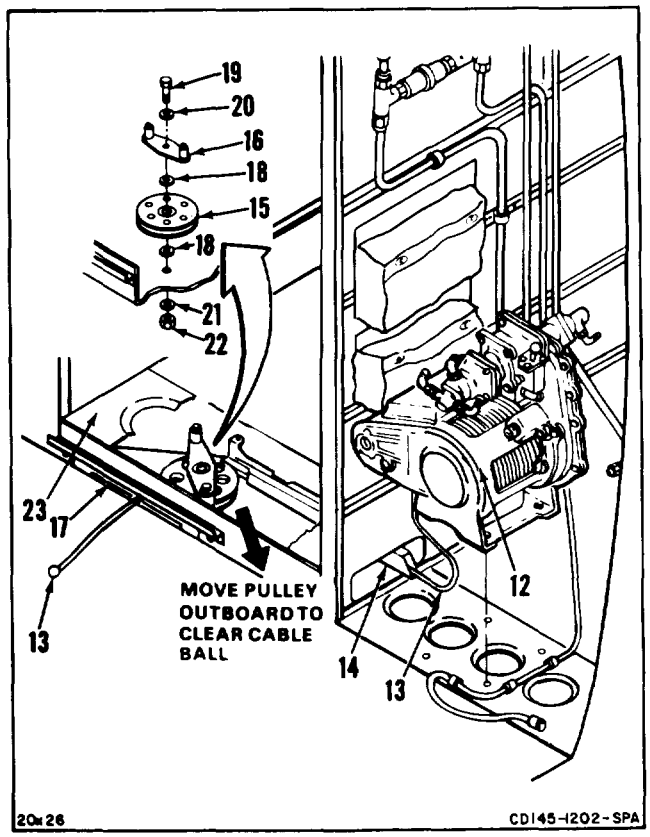


7. Install cable guard guide (8). Secure with two screws (9), four washers (10), and two nuts (11).



INSTALL WINCH

8. Set winch (12) on heater compartment floor. Route cable (13) through cable guard (14).
9. Route cable (13) around pulley (15} and bracket (16). Move pulley outboard along bracket as needed for clearance. Pass cable through slot in bulkhead (17).
10. Align two washers (18) with holes in pulley (15) and bracket (16). Install bolt (19) and washer (20). Install washer (21) and nut (22) by reaching under structure (23).
11. Position winch (12) to fit cable (13) into cable guard (14). Align mounting holes in winch and floor.



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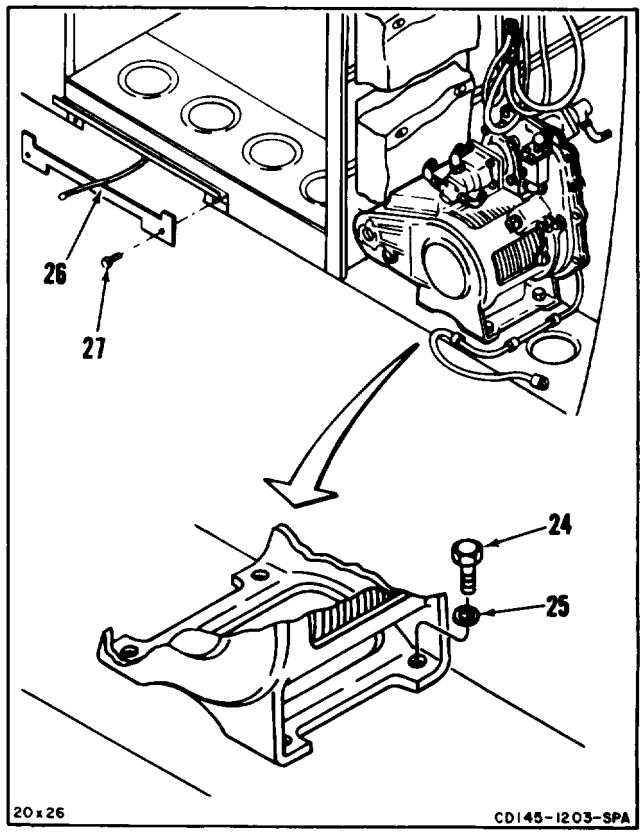
14-9 INSTALL WINCH (Continued)

12. Install four bolts (24) and washers (25)

13. Secure panel (26) to bulkhead with two screws (27).



CONNECT HOSES AND ELECTRICAL CONNECTOR

14. Connect three hoses *(28)* **as follows:**

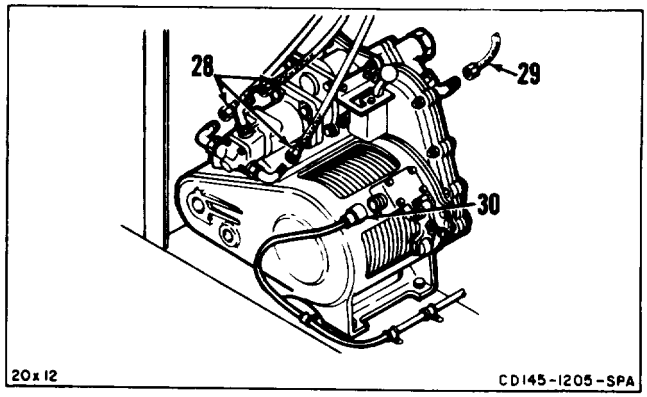
a. HOIST UP to IN port.

b. HOIST DOWN to OUT port.

c. **RETURN to CABLE port.**

15. Connect hose ***(29).***

16. Connect electrical connector (30).



INSPECT

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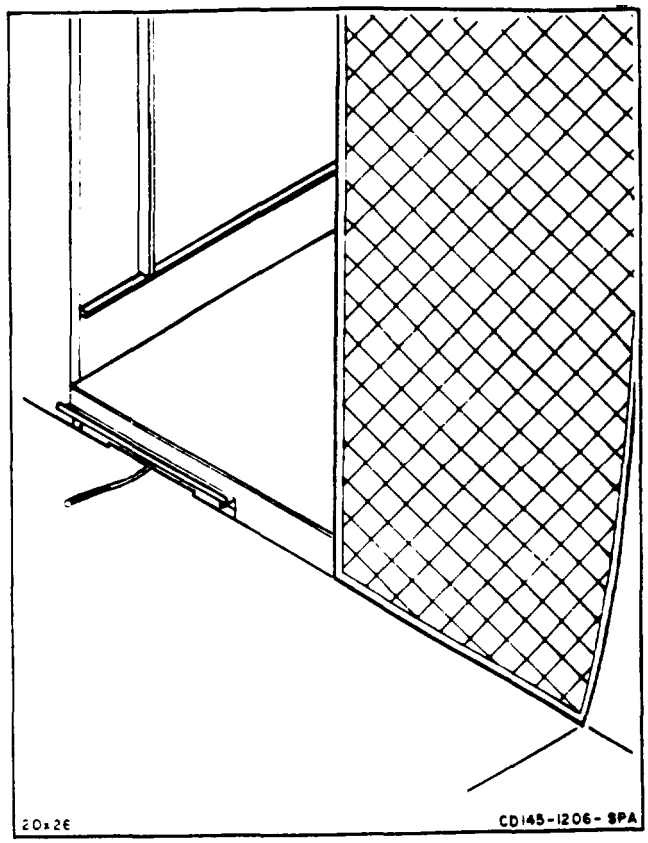
FOLLOW-ON MAINTENANCE

Install cockpit aft floor panel (Task 2-84).

Bleed winch hydraullc system (Task 7-333)

Install heater compartment blanket (Task 2-210)

Perform operational check (TM 55-1520-240-T)



END OF TASK

14-10 REMOVE WINCH WIRE ROPE (CABLE) 14-10

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Container, Two Quart
Wooden Block, 2 Inches X 4 Inches X 12 Inches

Mathematics:
Cloths (E 120)
Gloves, Wire Handling (E 185)

Personnel Required:
Medium Helicopter Repairer (2)

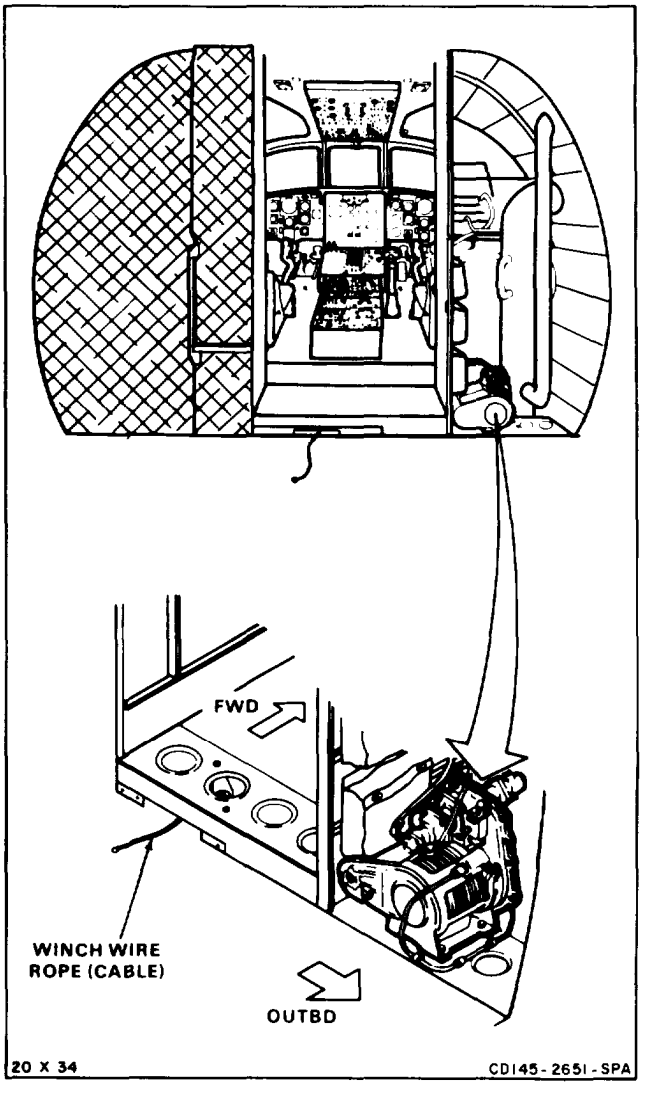
References:
TM 55-1520-240-T

Equipment Condition:
Battery Connected (Task 1-39)
Electrical Power On
Hydraulic Power On
Acoustic Blanket Removed from Heater Compartment (Task 2-208)
Cockpit Aft Floor Panel Removed (Task 2-83)

General Safety Instructions:

WARNING

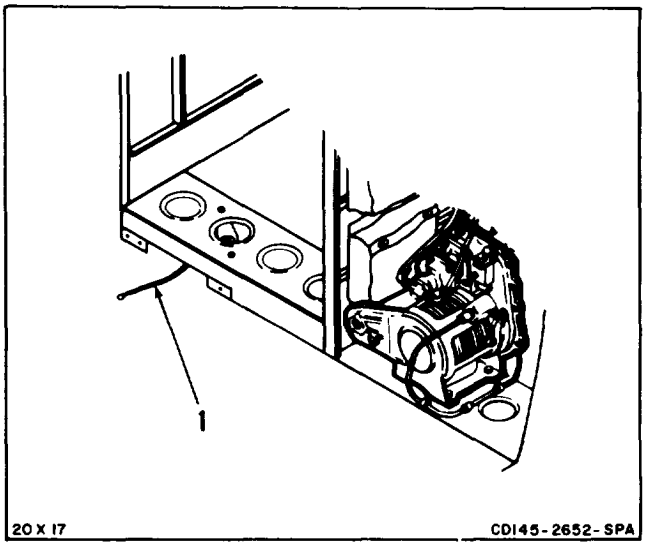
Wear wire handling gloves when removing wire rope (cable). Otherwise, injury to hands can result.



NOTE

Keep tension on wire rope when reeling wire rope out. Wire rope will reel out evenly and will not snarl.

1. Have helper keep slight pull on wire rope (1).
Helper must wear gloves (E185).



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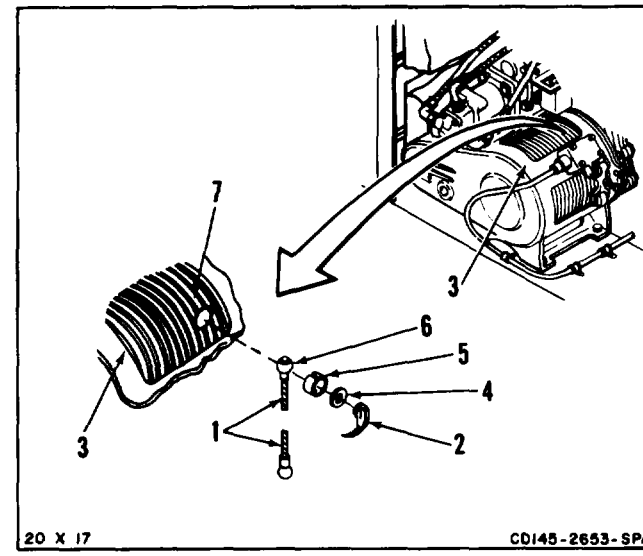
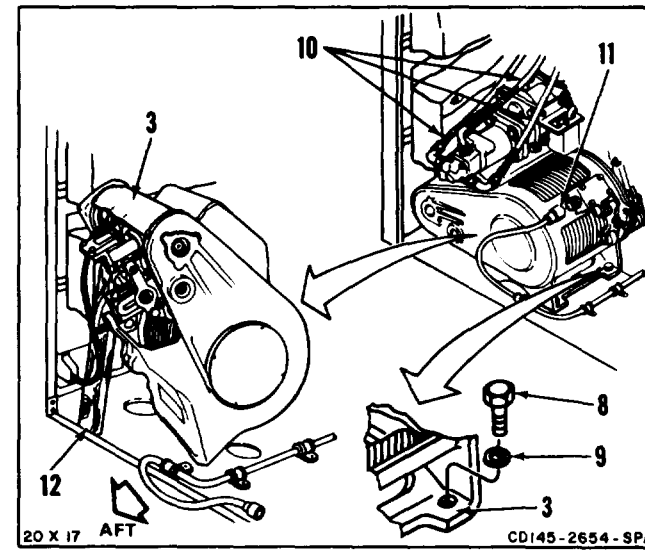
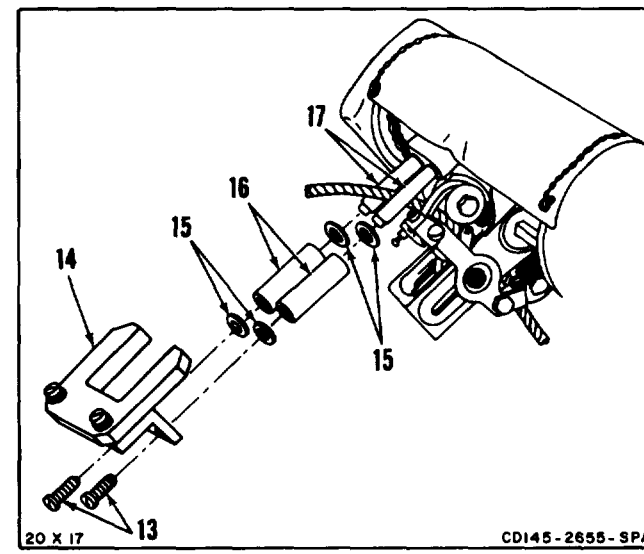
2. Reel out ail wire rope (1) (TM 55-1520-240-T). End cover (2) shall be visible through opening in winch (3).
3. Shut down electric and hydraulic power.
4. Remove end cover (2), retaining ring (4), and locking sleeve (5).
5. Remove ball end (6) from drum (7).



6. Remove four bolts (8), and washers (9}, from winch (3).
7. Disconnect four hydraulic lines (10). Use container and cloths (E120) for spilled fluid. Cap lines.
8. Disconnect electrical plug (11).
9. Reposition winch (3) so back of winch faces aft. Position wooden block (12) under winch.



10. Cut lockwire and remove two screws (13).
11. Remove bracket (14), four washers (15), and two rollers (16) from posts (17).



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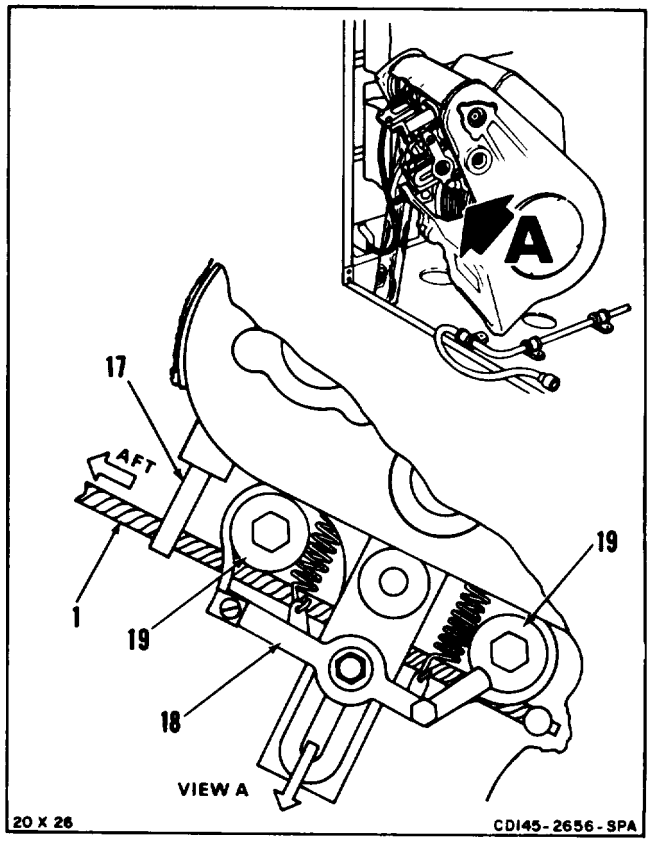
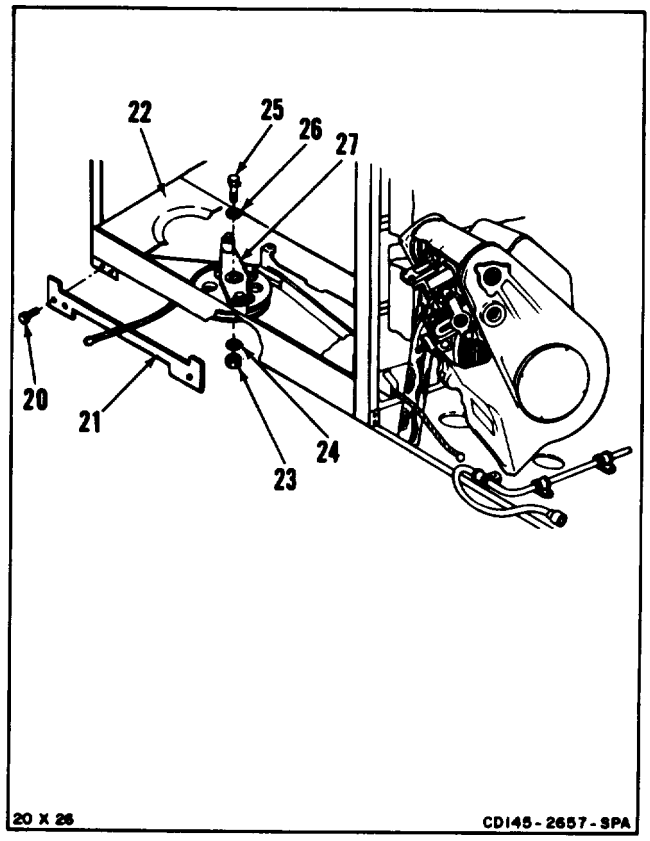
12. **With aid of helper, pull bracket (18) down.**
13. Pull aft and remove wire rope (1) **from pulleys (19) and posts (17).**
14. **Release bracket (18).**



15. Remove three screws (20) **from panel (21). Remove panel.**
16. **Reach under structure (22) and remove nut (23) and washer (24),**
17. Remove bolt (25) **and washer (26) from top of bracket (27).**



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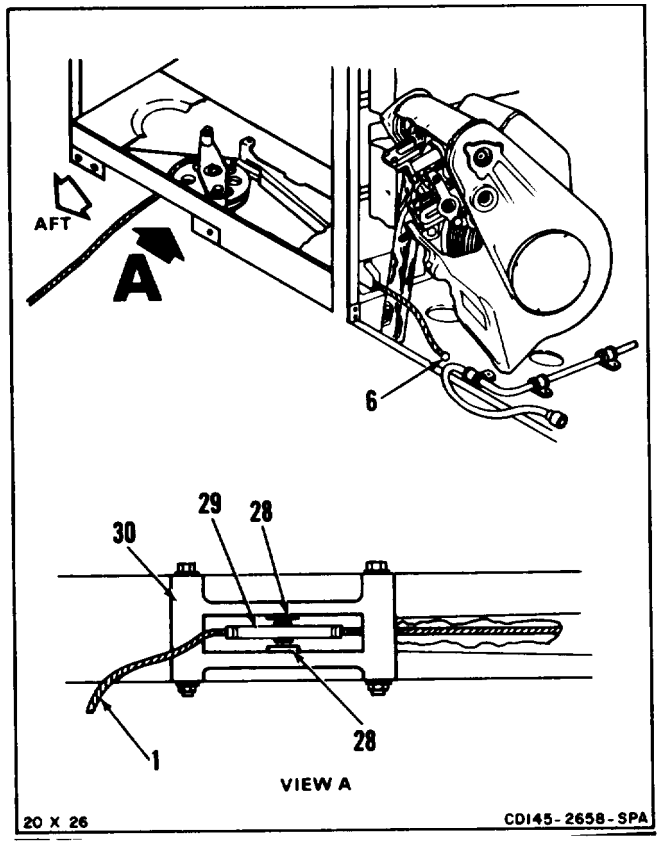
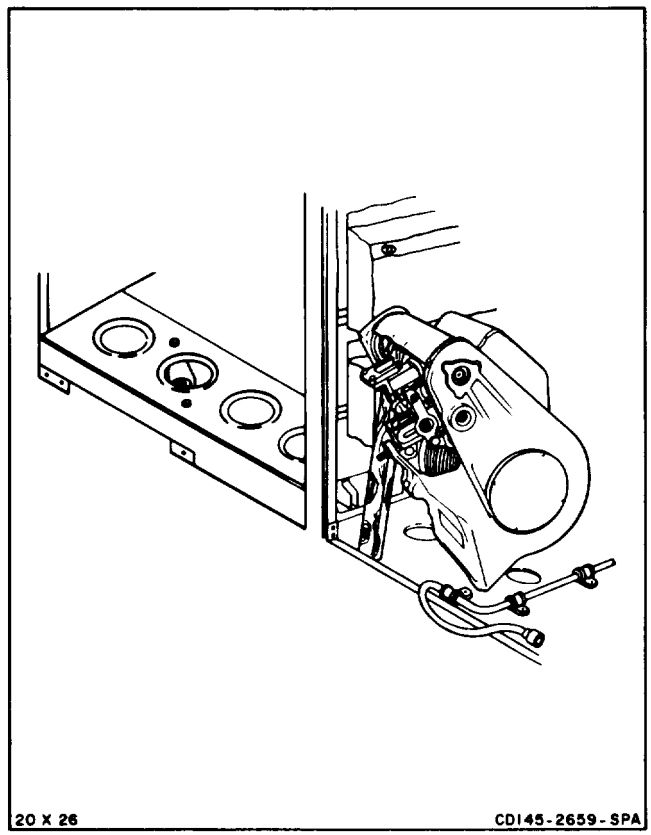
18. **Make sure washers (28) stay in place on top and bottom of pulley (29).**
19. Move pulley (29) aft **just enough to clear ball end (6).**
20. **Guide wire rope (1) out from between pulley (29) and bracket (30).**
21. **Remove wire rope (1).**



FOLLOW-ON MAINTENANCE:

None



END OF TASK

14-11 INSTALL WINCH WIRE ROPE (CABLE)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Container, Two-Quart

Materials:
Cloths (E120)
Lockwire (E229)
Gloves, Wire Handling (E185)

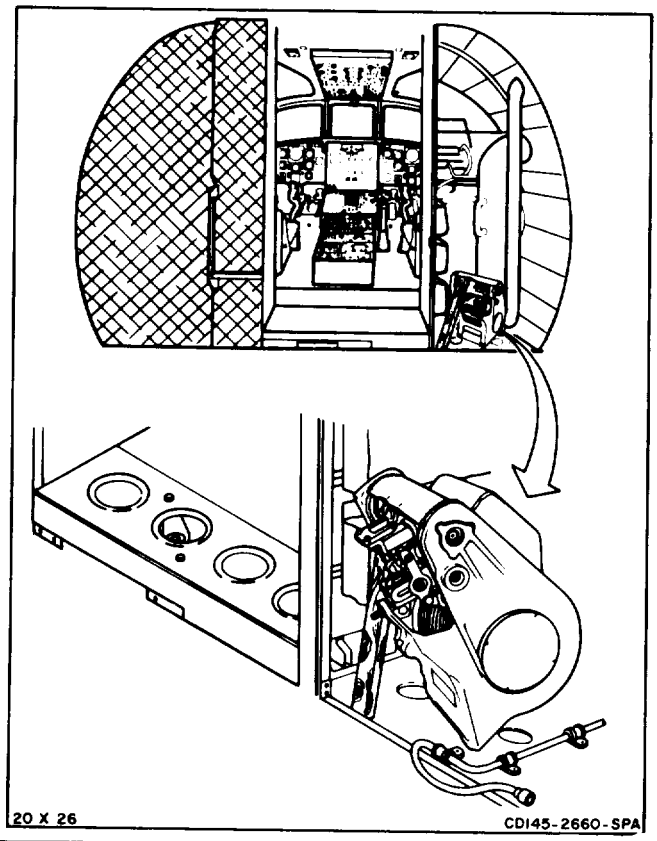
Personnel Required:
Medium Helicopter Repairer (2).
Inspector

References:
TM 55-1520-240-23P
TM 55-1520-240-T

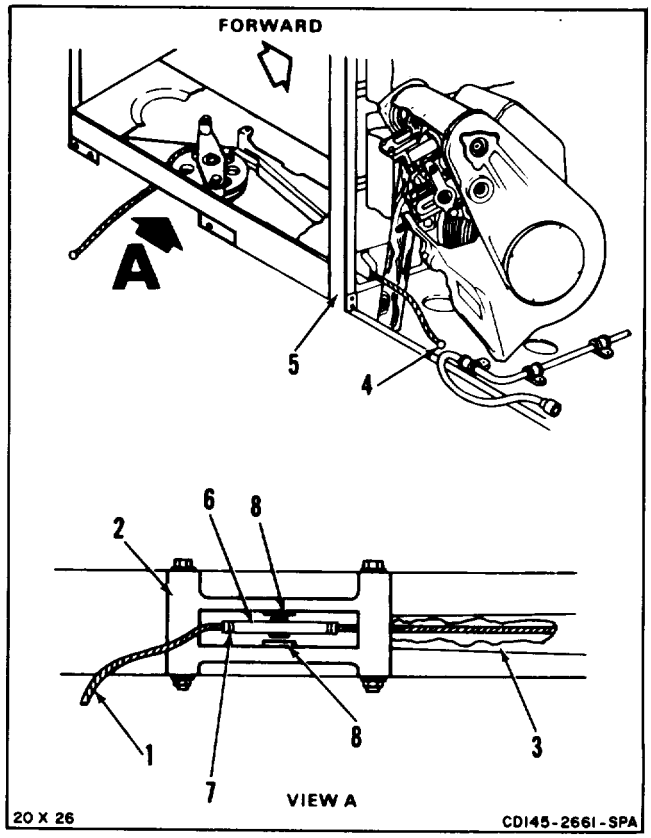
General Safety Instructions:

WARNING

Wear wire handling gloves when installing wire rope (cable). Otherwise, injury to hands can result.



1. Guide wire rope (1) through bracket (2) and guard (3) until cable ball end (4) extends past bulkhead (5).
2. Position pulley (6) forward in bracket (2). Wire rope (1) shall be forward in groove (7) of pulley.
3. Make sure two washers (8) are in place on top and bottom of pulley (6).



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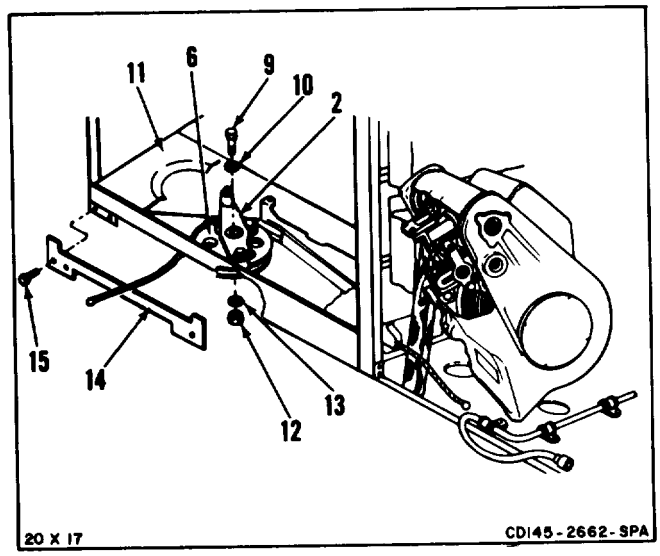
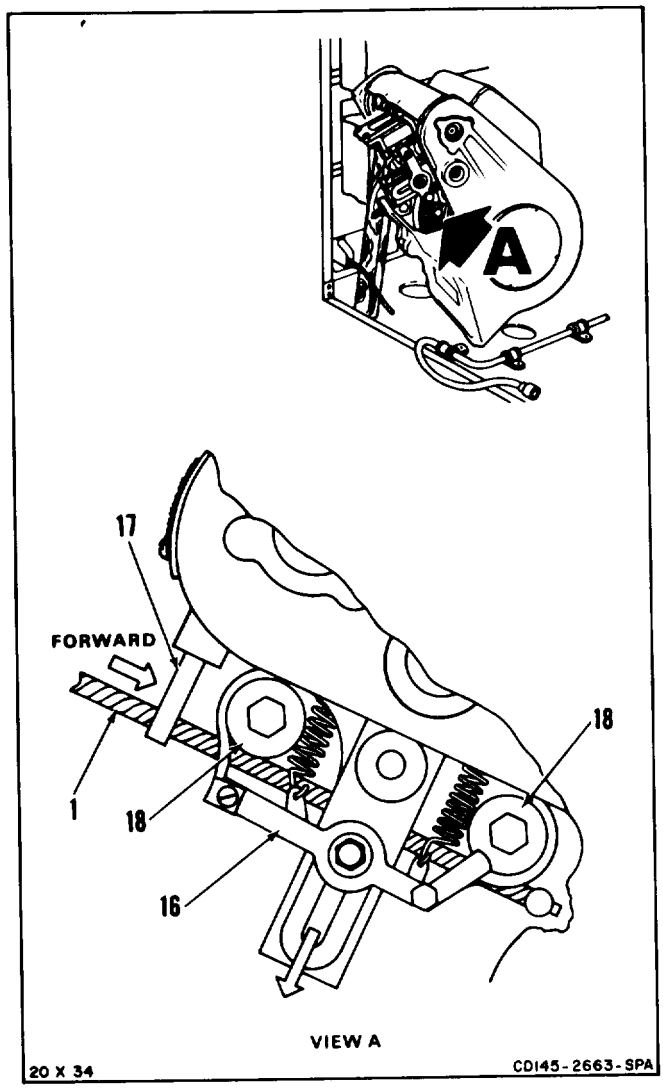
14-11 INSTALL WINCH WIRE ROPE (CABLE) (Continued)

4. **Install bolt (9),** and washer (10) through bracket (2) and pulley (6).
5. Reach under structure (11) and install nut (12) and washer (13) on bolt (9).
6. **Position panel (14) and install three screws (15).**



7. With aid of helper pull bracket (16) down.
8. **Install wire rope (1) forward through posts (17) and pulleys (18).**
9. Release bracket (16).



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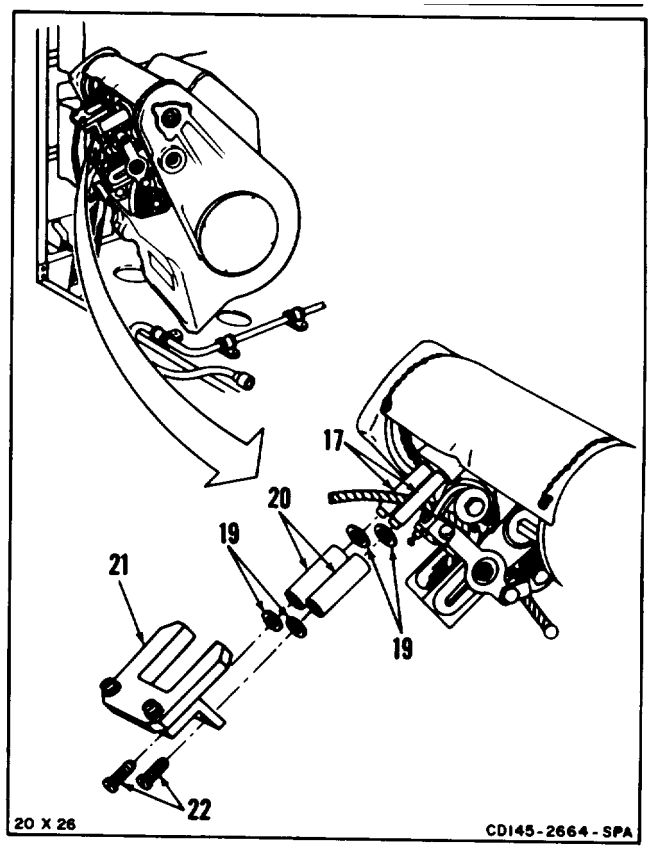
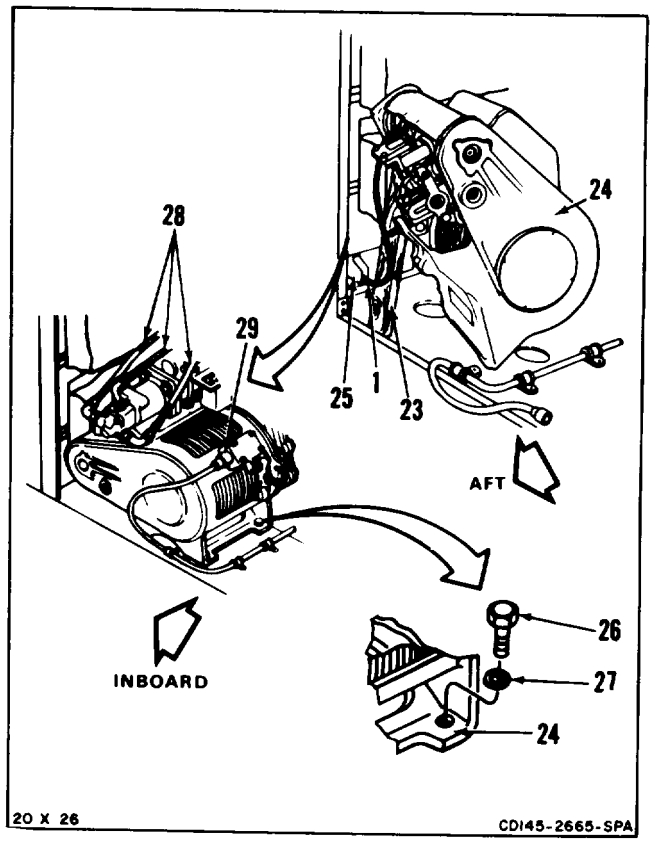
10. **Position** four washers (19), two rollers (20) and **bracket (21)** on posts (17).
11. **Install two screws (22)** in bottom of posts (17). Lockwire screws with lockwire (E229).

INSPECT



12. Remove wooden block (23).
13. **Position winch (24)** so back of winch faces inboard. **Make sure guard (25) is aligned with wire rope (1)** in back of winch.
14. **Install four bolts (26)** and washers (27) on winch (24).
15. Remove caps and **connect four hydraulic lines (28).** Use container and cloths (E120) for spilled fluid.
16. **Connect electrical plug (29).**



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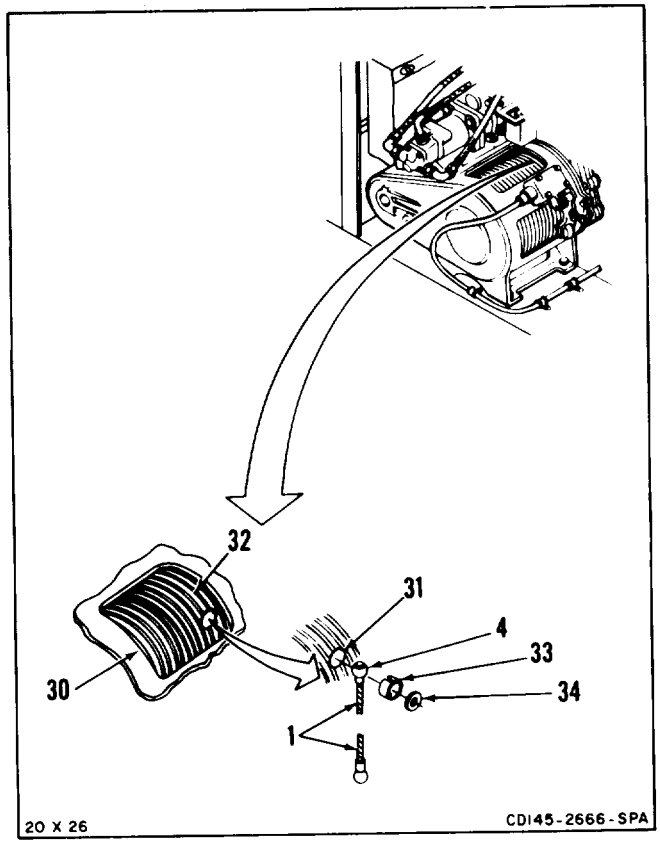
17. **Pull ball end (4) up** through winch housing (30).
18. **Position ball end (4)** in socket (31) on drum (32).
19. **Install locking sleeve (33)** and retaining ring (34).
20. **Apply electric and hydraulic power.**
21. **Bleed utility hydraulic system.**

NOTE

Keep tension on wire rope when reeling in wire rope. Wire rope will reel in evenly and will not snarl.

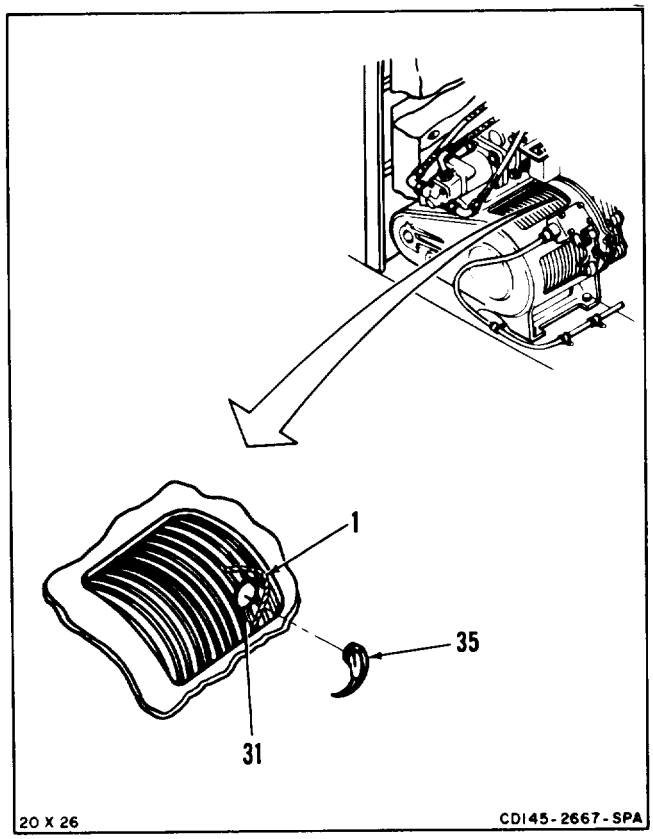
22. Have helper keep slight drag on wire rope (1). **Helper must wear gloves (E185).**
23. **Reel in one wrap of wire rope (1)** (TM 55-1520-240-T).



24. **Raise wrap of wire rope (1) and install end cover (35) in socket (31).**
25. **Make sure wire rope (1) is pulled tight** and holds end cover (35) in place.

INSPECT

26. Reel in all wire rope (1) (TM 55-1520-240-T).
27. Shut down electric and hydraulic power.



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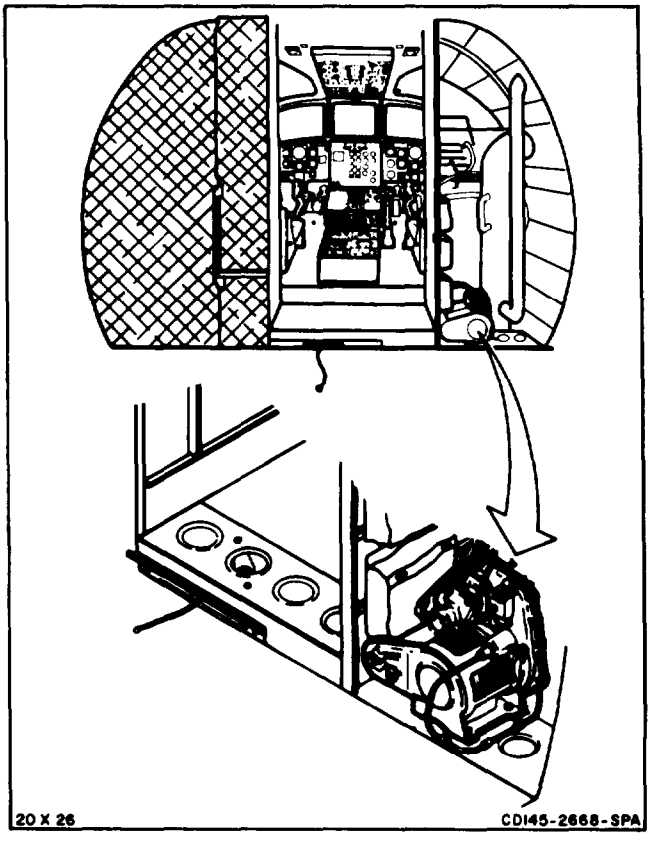
14-11 INSTALL WINCH WIRE ROPE (CABLE) (Continued) 14-11

FOLLOW-ON MAINTENANCE:

Operate winch (TM 55-1520-240-T).

Install cockpit aft floor panel (Task 2-84).

Install heater compartment acoustic blanket (Task 2-2 10).



END OF TASK

14-12 INSPECT HOOK AND CABLE ASSEMBLY

INITIAL SETUP

Applicable Configurations:
All

Tools:
Technical Inspection Tool Kit,
NSN 5180-00-323-5114

Materials:
Cloths (E135)
Lubricant (E235)
Gloves, Wire Handling (El 85)

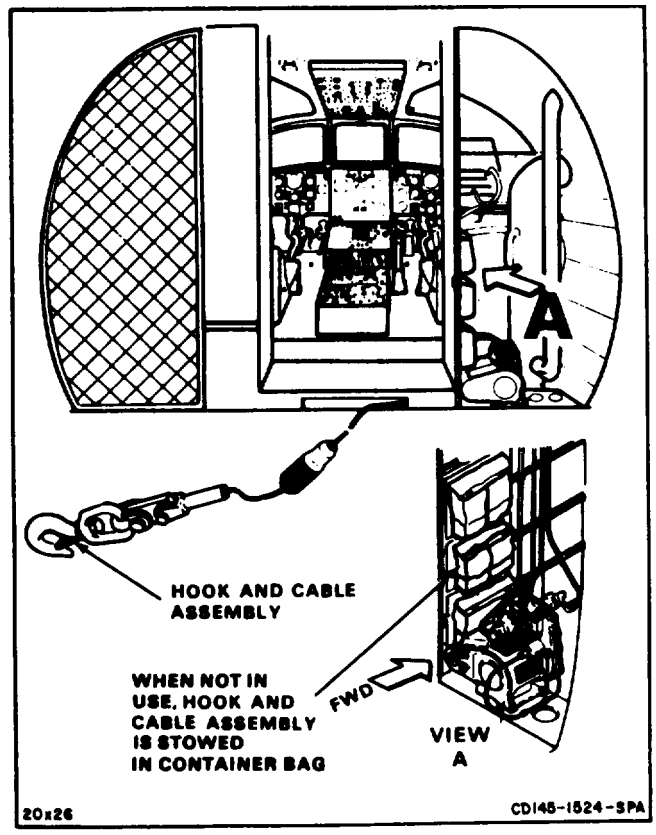
Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)

General Safety Instructions:

WARNING

Wear wire handling gloves while handling cable. Broken wires can injure hands.



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1. Disconnect upper half of quick disconnect cable guard (1) from lower half of cable guard (2).
2. **Check hook (3) and cable (4) for corrosion.**
3. **Check that hook (3) turns freely.** If it does not, apply light coat of dry lubricant (E235) to pivot (5).
4. **Check safety latch (6)** for cracks. nicks, and proper spring action.
5. **Check cable (4)** for broken strands or fraying. (Refer to TM 55-1 500-204-25-1). Trim wire ends flush with cable. Use cloth (El 35).
6. **Check upper half of guard (1)** and lower half of cable guard (2). There shall be no cracks or stripped thread.
7. **Check quick-disconnect coupling (7).** There shall be no broken spring (8). cracks, or corrosion.
8. Remove and stow hook and cable assembly (9) in pocket (10) of stowage container (11) (if required) (Task 14-13).

FOLLOW-ON MAINTENANCE:

Install heater compartment acoustic blanket (Task 2-21 O)

END OF TASK

14-13 REMOVE HOOK AND CABLE ASSEMBLY

INITIAL SETUP

Applicable Configurations:
All

Tools:
None

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

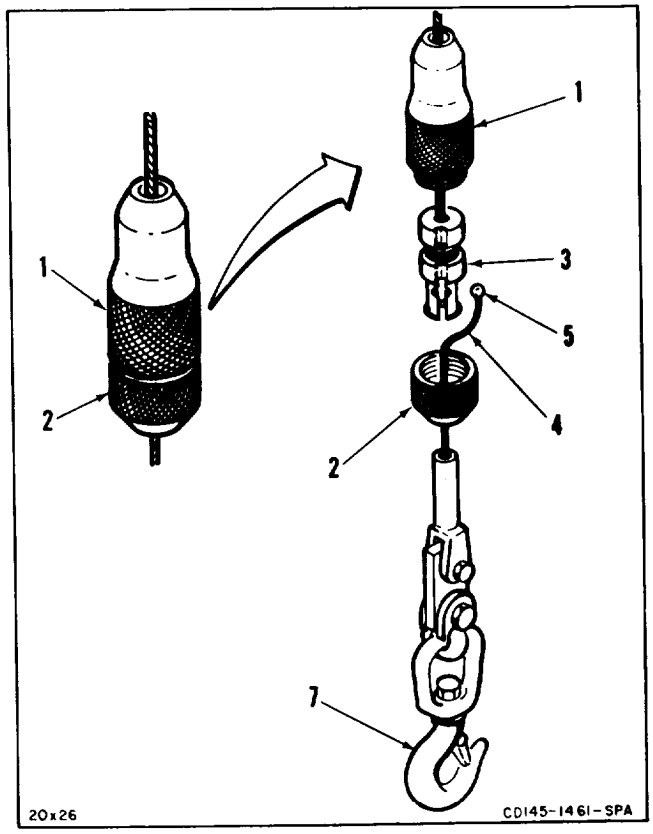
Equipment Condition:
Battery Disconnected Task 1-39)
Electrical Power Off
Hydraulic Power Off

1. **Disconnect quick-disconnect cable guard (1)** from lower half of cable guard (2)
2. Push up and hold lower end of spring-loaded coupling (3).
3. **Remove cable (4) and ball end (5)** from coupling (3).
4. Release coupling (3).
5. **Remove lower half of cable guard (2)** from cable (4). **Remove hook and cable assembly (7).**
6. Connect guard (2) to upper half of cable guard (1).

FOLLOW-ON MAINTENANCE:

None

END OF TASK



14-14 INSTALL HOOK AND CABLE ASSEMBLY 14-14

INITIAL SETUP

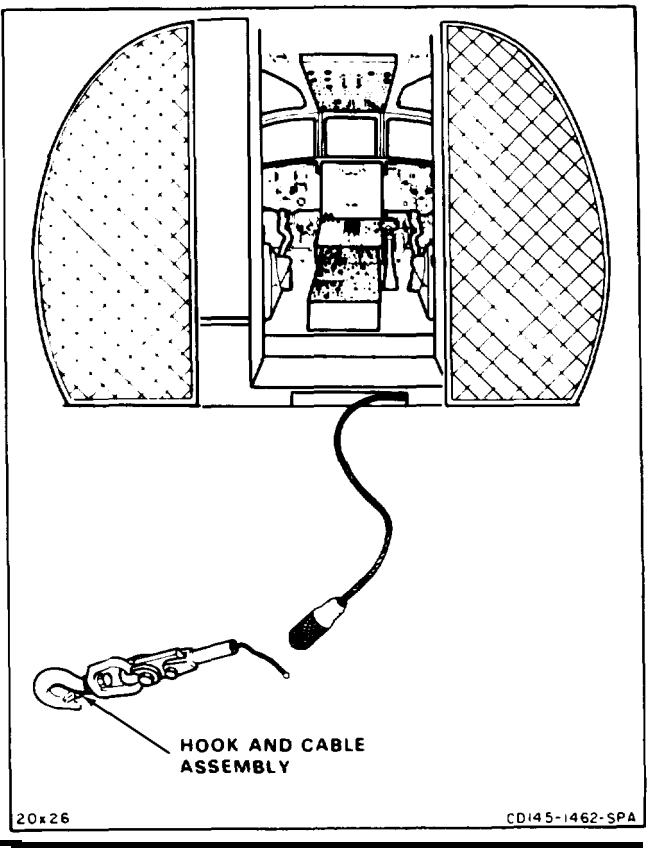
Applicable Configurations:
All

Tools:
None

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

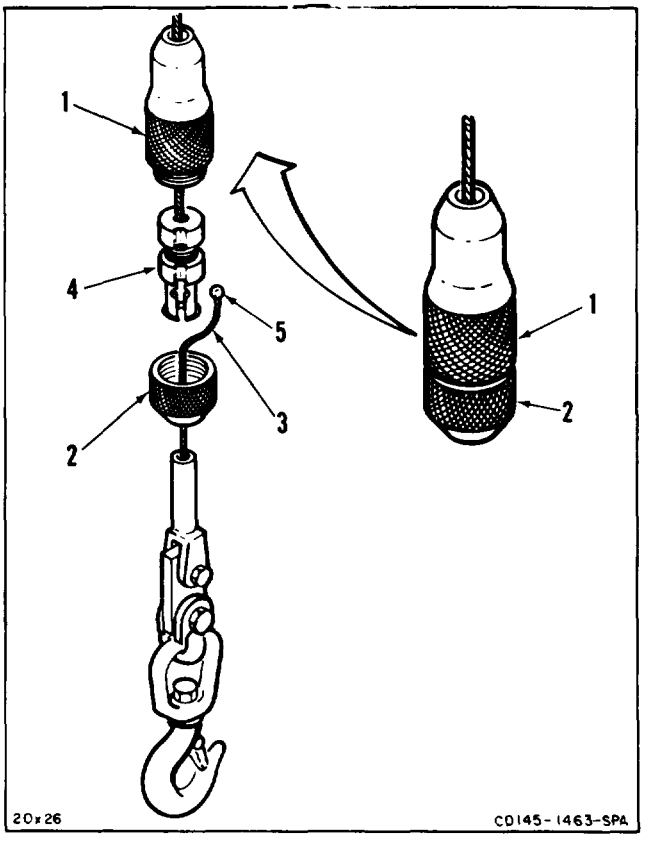
References:
TM 55-1520-240-23P



WARNING

Quick-disconnect cable guard must be installed during all rescue and cargo operations. Otherwise hook assembly can be accidently disconnected from coupling. This can result in death or serious injury to personnel

1. **Remove upper half of quick-disconnect cable guard (1)** from lower half of cable guard (2).
2. **Install cable (3), through lower half of cable guard (2).**
3. Push up and hold lower end of spring-loaded coupling (4).
4. **Install ball end (5)** of cable (3) into coupling (4).
5. Release lower end of coupling (4).
6. **Connect guard (2)** to upper half of cable guard (1).



INSPECT

FOLLOW-ON MAINTENANCE:
None

END OF TASK

14-15 REMOVE CABLE CUTTER

INITIAL SETUP

Applicable Configurations:
All

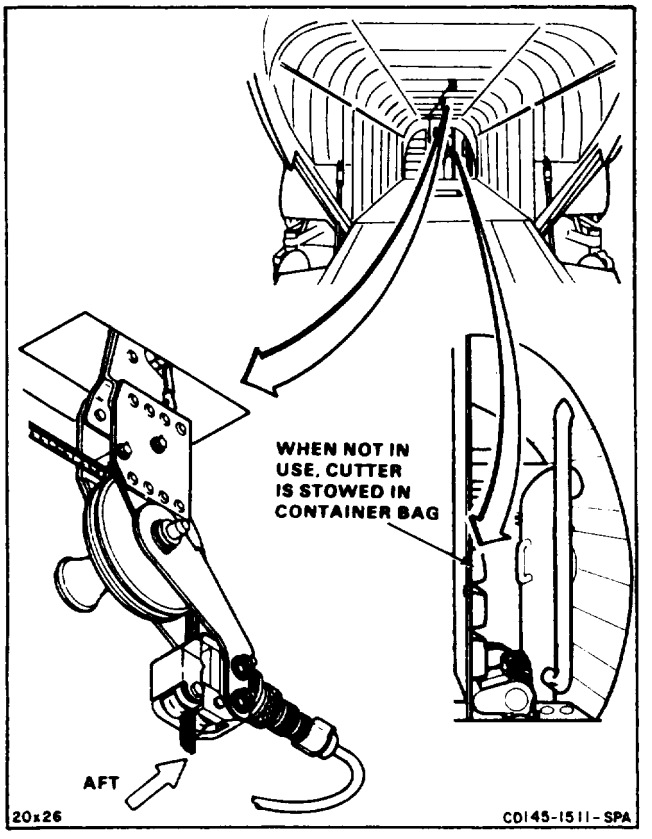
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Cloths (E135)
Lubricating Oil (E250)

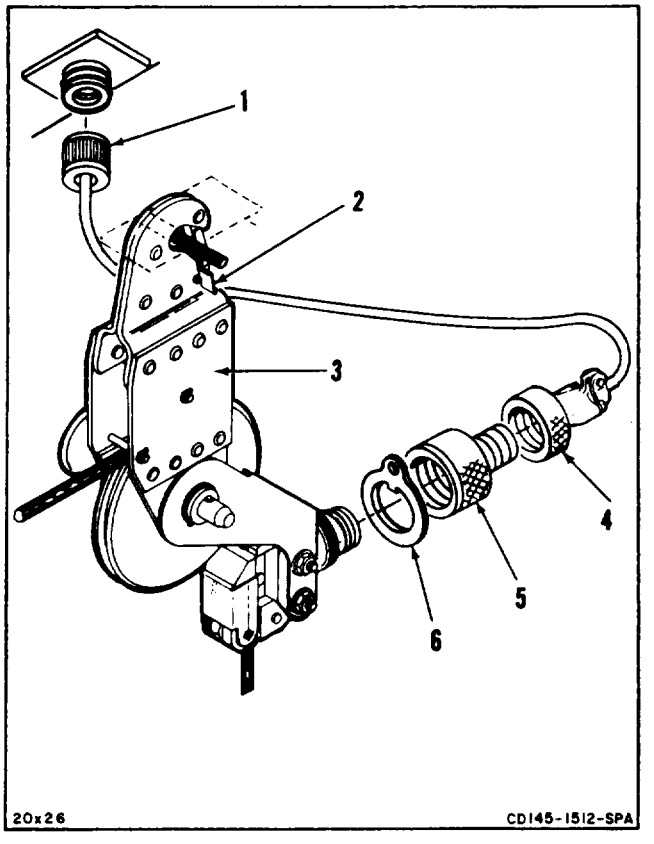
Personnel Required:
67U20 Medium Helicopter Repairer

References:
Task 1-75
Task 14-16

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. If cartridge was fired without cable in place, inspect cable cutter (Task 14- 16).
2. If cartridge was fired with cable in place, service cable cutter (Task 1 -75).
3. **Disconnect connector (1).**
4. Push in keeper (2) and **remove cable block (3).**
5. Remove lockwire. **Disconnect connector (4).**
6. **Remove adapter (5) and key washar (6).**



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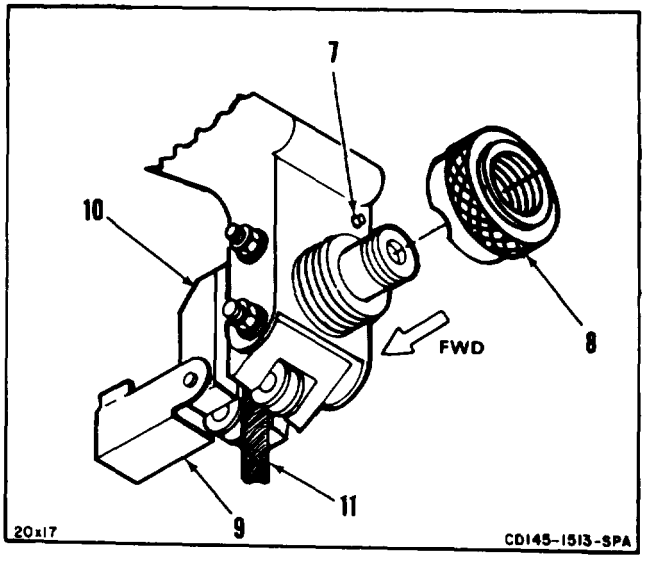
7 **If cable is installed in cutter,** push in lockpin (7) and **remove locknut (8).** Pull down guard (9) and push cable cutter (10) forward. **Remove cable (11).**



WARNING

Use care when handling cartridges. Injury to personnel could result if cartridge fires.

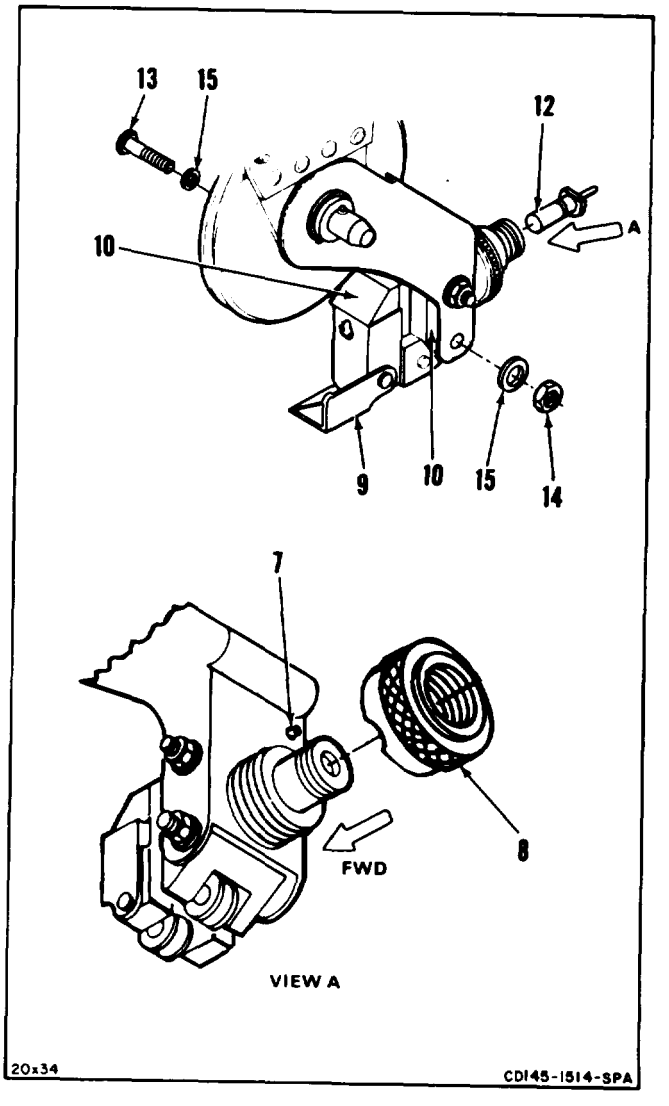
8. **If cable cutter will be stowed,** pull down guard (9). **Remove cartridge (12).**

8.1. Place serviceable cartridge in a protective container. Tag container with helicopter serial number and cartridge installation date for quick reference.

9. Push in lockpin (7) and **remove locknut (8).**

10. Remove two screws (13), nuts (14), and four washers (15). **Remove cable cutter (10).**

11. Lightly coat cable cutter (10) with lubricating oil (E250) using cloths (E135).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

INITIAL SETUP

Applicable Configurations:
All

Tools:
None

Materials:
Cleaning Brush (E84)
Cloths (E135)
Dry Cleaning Solvent (E 162)
Lubricating Oil (E250)
Powder Solvent (E464)
Gloves (E186)

Personnel Required:
Medium Helicopter Repairer
Inspector

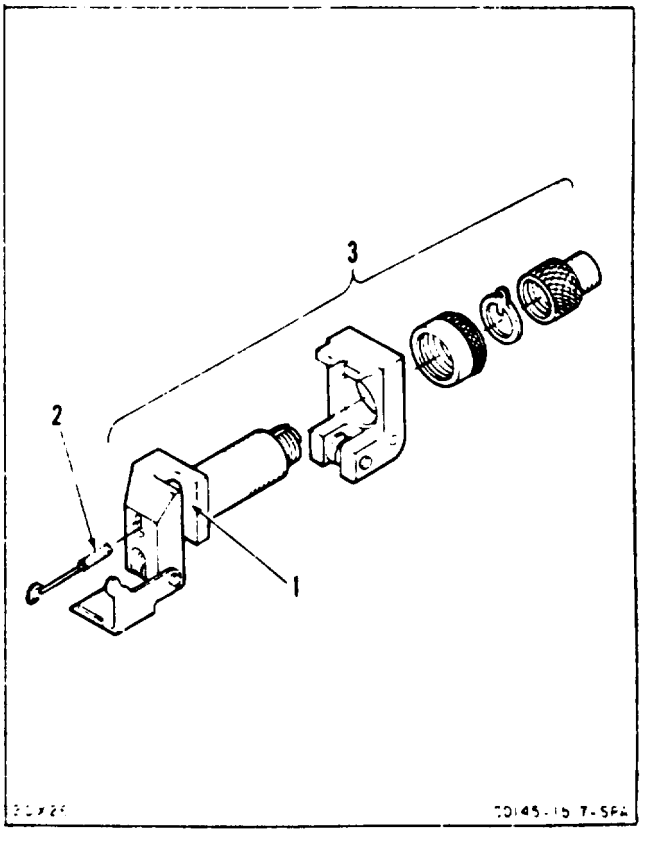
Equipment Condition:
Off Helicopter Task

1 Clean cartridge chamber (1). Use powder solvent (E464) and cleaning brush (2) (E84)

WARNING

Dry cleaning solvent (E162) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

2 **Clean cable cutter (3) except chamber (1).** Use clean cloth (E135) wet with solvent (E162) **Let parts air dry.** Wear gloves (E186)



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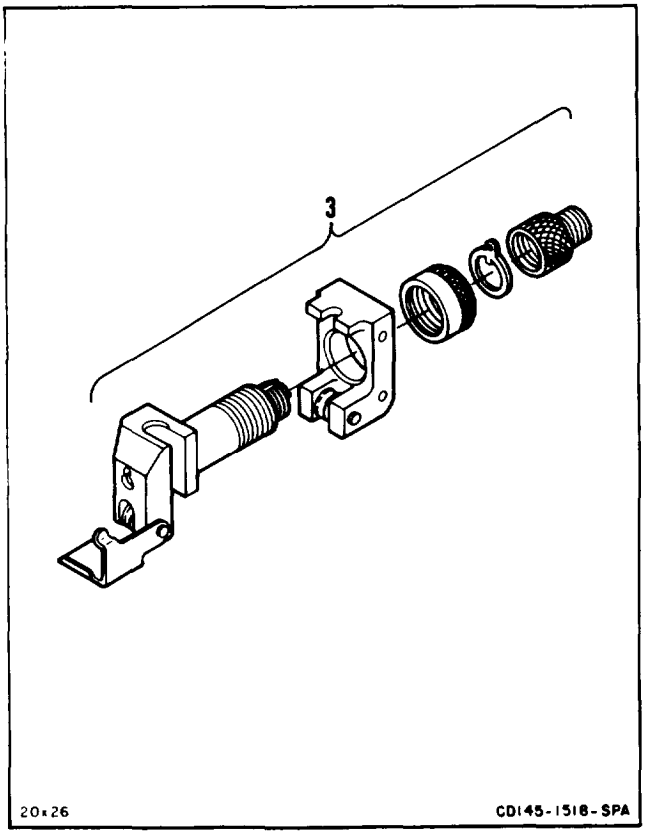
3. If cable cutter (3) has been fired without cable in place, log report of firing. Fill out inspection record and record serial number of cable cutter.
4. **Check cable cutter (3) for corrosion, cracks or nicks.**
5. **Coat all parts lightly with oil (E250) using cloths (E135).**

WARNING

Use care when handling cartridges. Injury to personnel could result if cartridge fires.

6. Dispose of unserviceable live cartridges. Place them in empty can that contained replacement cartridge. Tag can unserviceable. On the tag write the reason for cartridge removal, date of removal and date of installation. Return the cartridge to the Ammunition Supply Activity.



INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK

14-17 INSTALL CABLE CUTTER

INITIAL SETUP

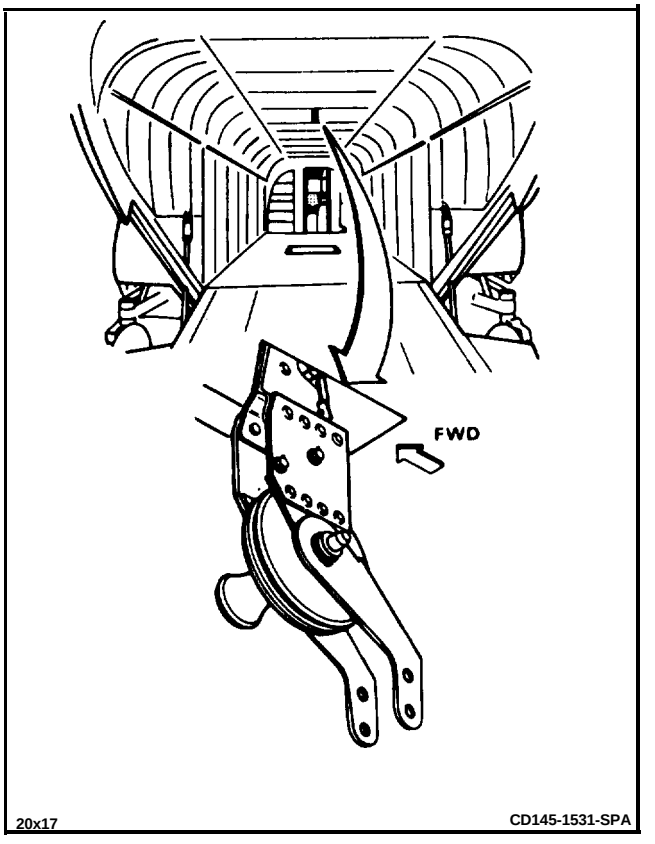
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692

Materials:
Lockwire {E231)

Personnel Required:
67U20 Medium Helicopter Repairer
67U30 Inspector

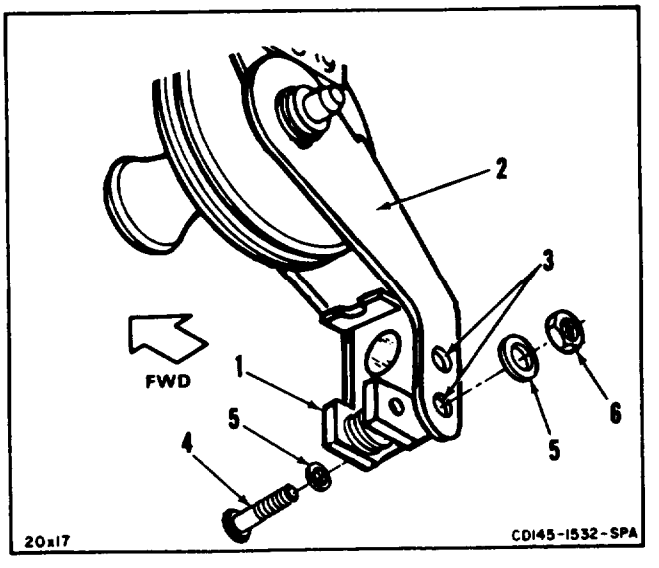
References:
TM 55-1520-240-23P
Task 1-75



NOTE

Make sure roller faces forward.

1. **Position rear half of cable cutter (1) in bracket (2).**
2. Align two holes in cutter (1) with holes (3). Install two screws (4), four washers (5), and two nuts (6).



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NOTE

If cable block will be used, do steps 3 through 7. If cable block will not be used, go to step 8.

3. **Install cable block (7)** on overhead hook (8).
4. **Remove quick-disconnect pin (9)** and remove pulley (10).
5. **Place cable (11) between pulley (10) and cable block (7).**
6. **Place pulley (10} in cable block (7).** Install pin (9).
7. Retain cable (11) between rollers (12) by **installing forward half of cable cutter (1).**
8. Push in lockpin (13). **Install locknut (14).**

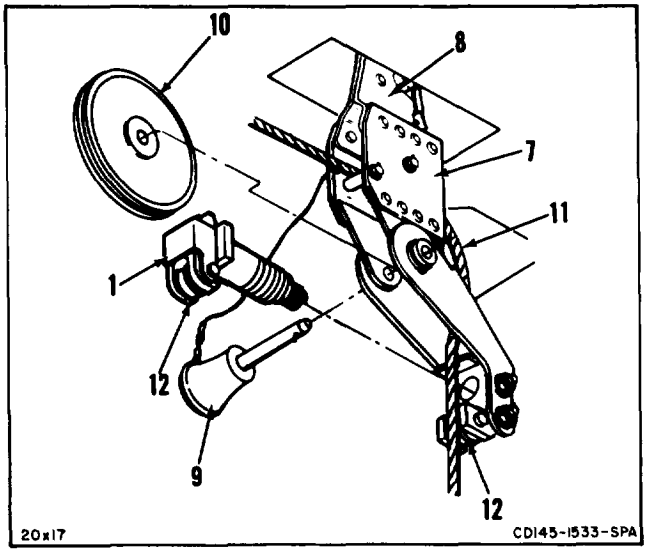
WARNING

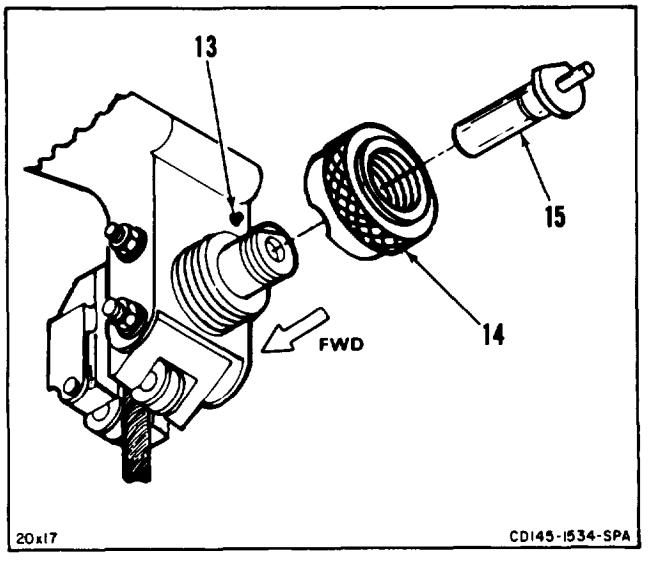
A loaded cutter is a hazard. Insert cartridge only if cutter is to be used. Do not install if cutter will be stowed.

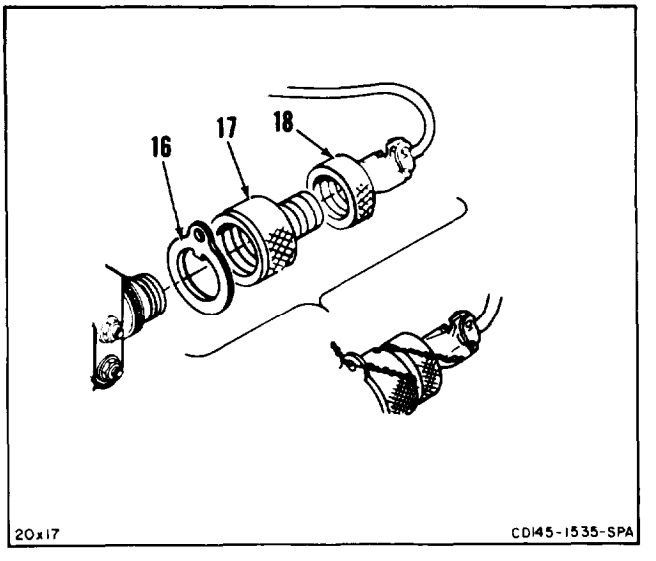
9. If cutter is to be used, insert cartridge (15) (Task 1-75).

9.1. Write cartridge lot number, date cartridge was installed, and date cartridge was removed on DA Form 2408-16.

10. If cartridge is not inserted, **install key washer (16) and lock adapter (17).** Lockwire adapter to key washer using lockwire (E231).
11. **Install electrical connector (18).** Secure it to adapter (17) with lockwire (E231).







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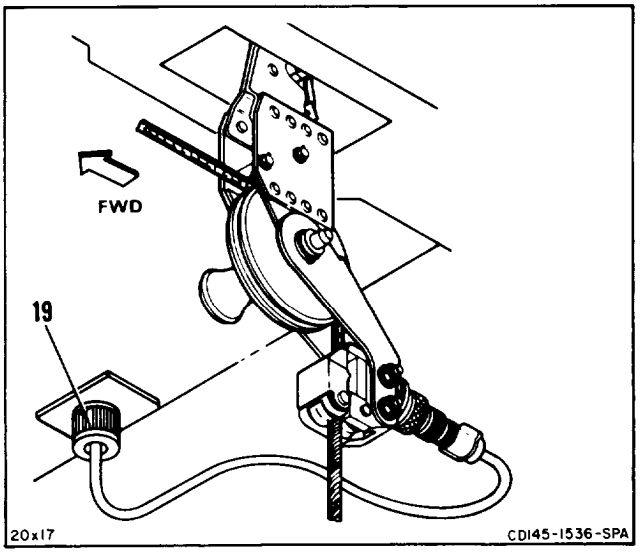
NOTE

Connect connector only if cutter is to be used. Stow cable block and cutter in container if it will not be used.

12. If cutter is to be used, connect connector (19).



INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK

14-18 INSPECT HOIST OPERATOR'S HARNESS 14-18

INITIAL SETUP

Applicable Configurations:

All

Tools:

None

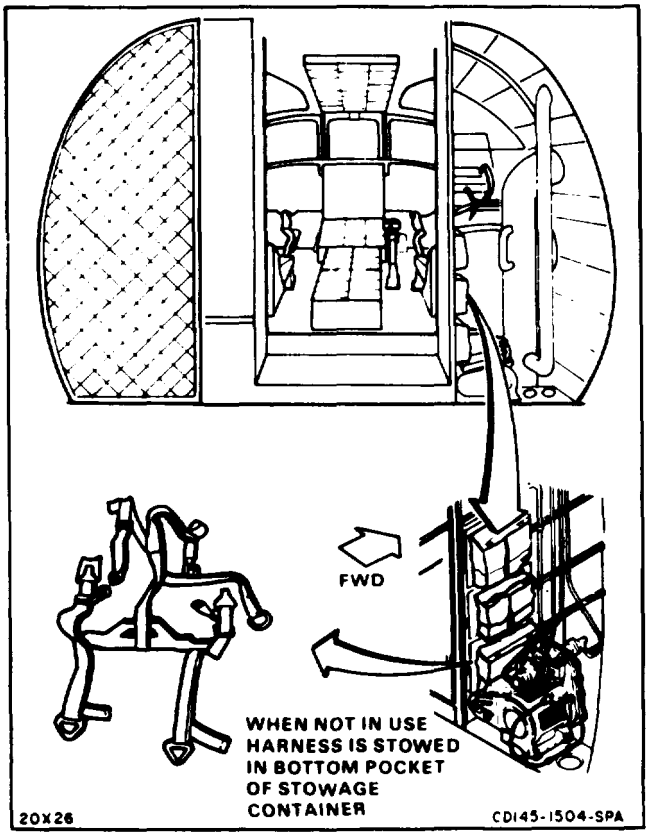
Materia/s:

None

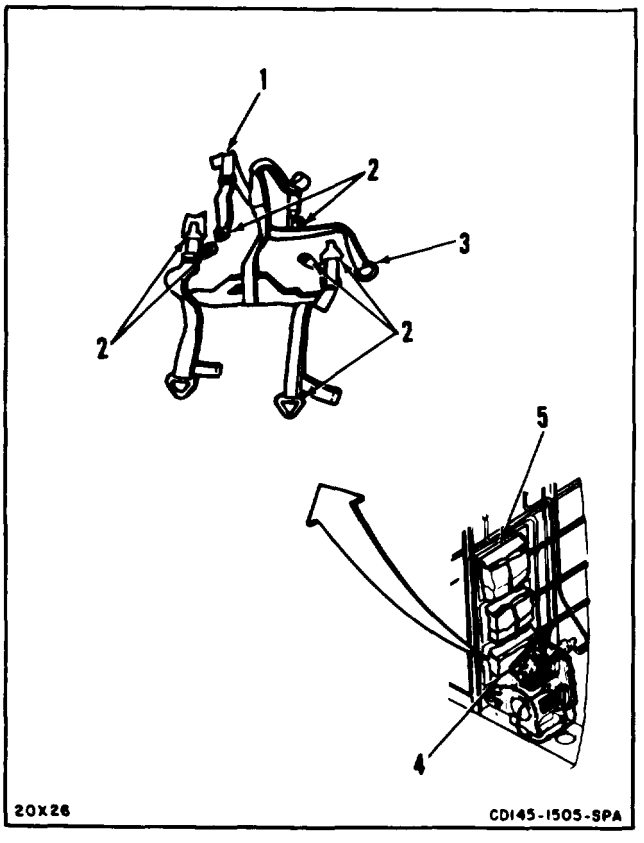
Personnel Required:
67U30 Inspector

References:
TM 55-1500-204-25/1

Equipment Condition:
Battery Disconnected (Task 1 -39)
Electrical Power Off
Hydraulic Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)



1. **Check harness (1) for cuts or fraying** (TM 55-1 500-204-25/1).
2. **Check fittings (2) for corrosion and proper operation** (TM 55-1500-204-25/1).
3. **Check lockring (3) for corrosion** (TM 55-1500-204-25/1).
4. Check webbing for deterioration (TM 55-1500-204-25/1).
5. **Stow operator's harness (1) in bottom pocket (4)** of stowage container (5).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

14-19 REMOVE STOWAGE CONTAINER

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692

Materials:

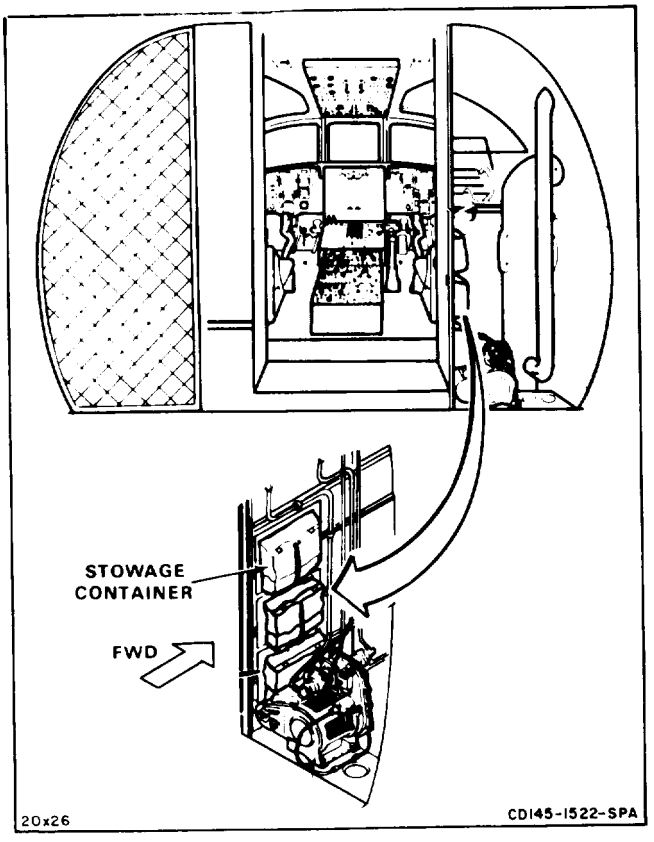
None

Personnel Required:

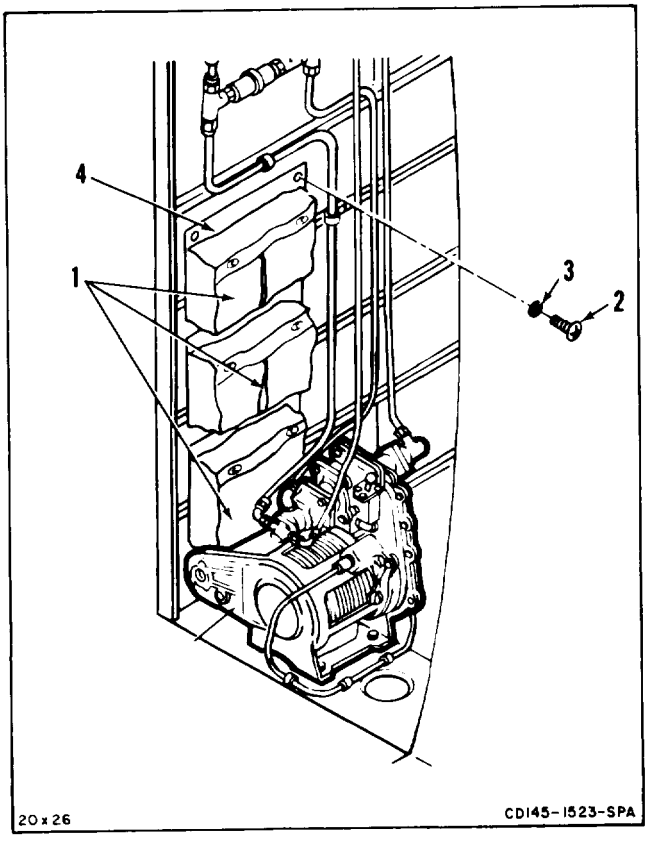
67U10 Medium Helicopter Repairer

Equipment Condition:

Battery Disconnected (ask 1 -39)
Electrical Power Off
Hydraulic Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)



1. Remove parts from pockets (1).
2. **Remove five straws (2)** and washers (3).
3. **Remove stowage container (4).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

14-20 INSTALL STOWAGE CONTAINER

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:

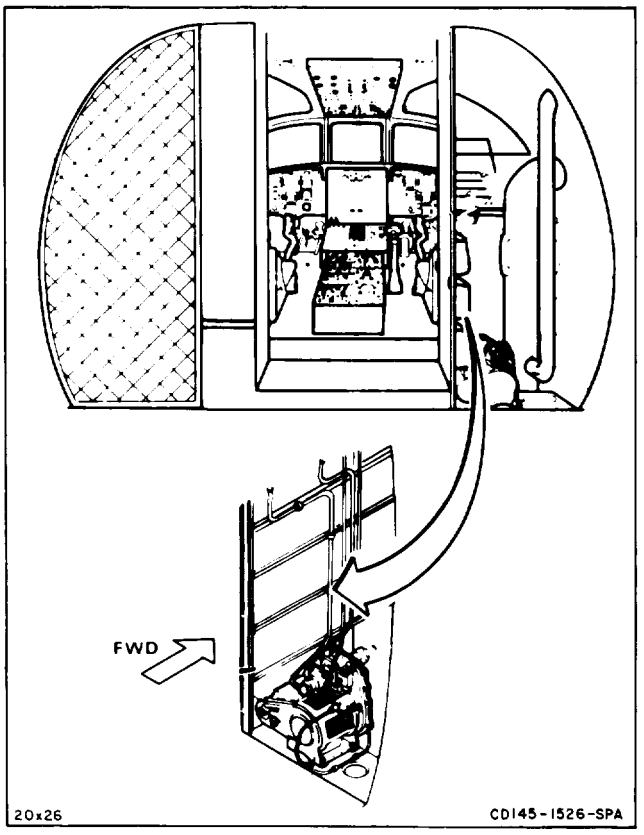
None

Personnel Required:

67U10 Medium Helicopter Repairer

References:

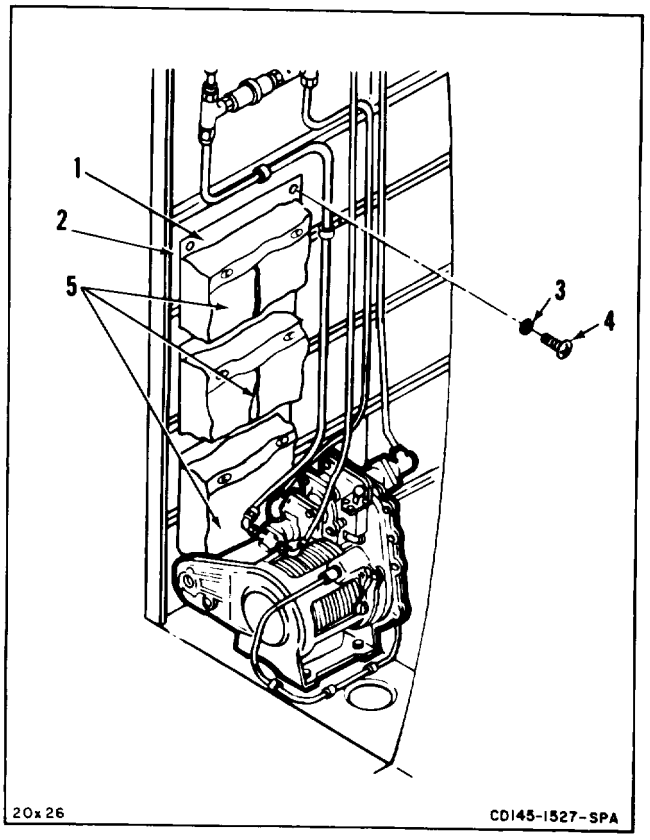
TM 55-1520-240-23P



1. **Position stowage container (1)** on bulkhead (2).
2. **Install five** washers (3) and **screws (4).**
3. Stow parts in pockets (5).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

14-21 REMOVE TACKLE BLOCKS/CABLE BLOCKS (RESCUE MODE)

INITIAL SETUP

Applicable Configurations:
All

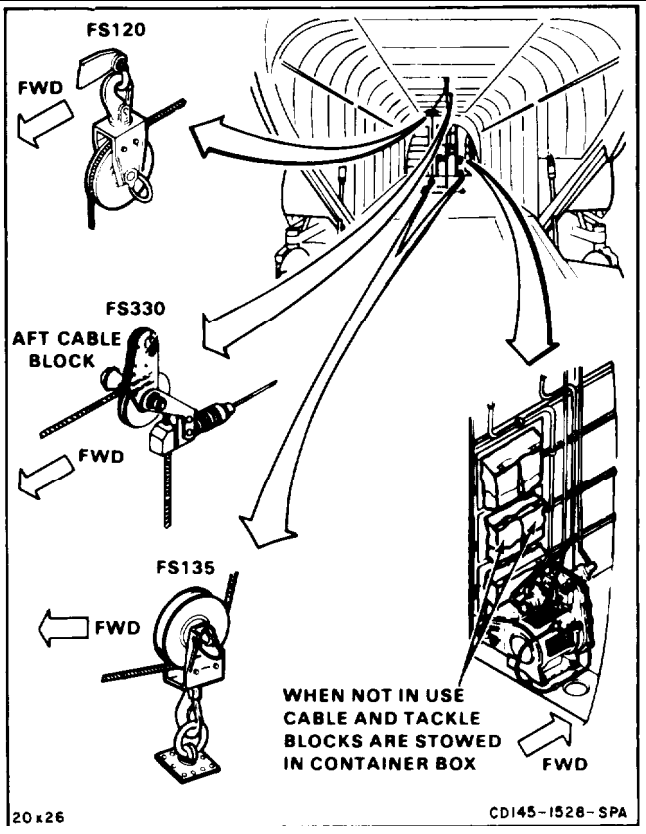
Tools:
None

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

References:
Task 14-15

Equipment Condition:
Battery Disconnected (Task 1 -39)
Electrical Power Off
Hydraulic Power Off



WARNING

Make sure there is no load on cable. Serious injury to personnel or damage to equipment can occur.

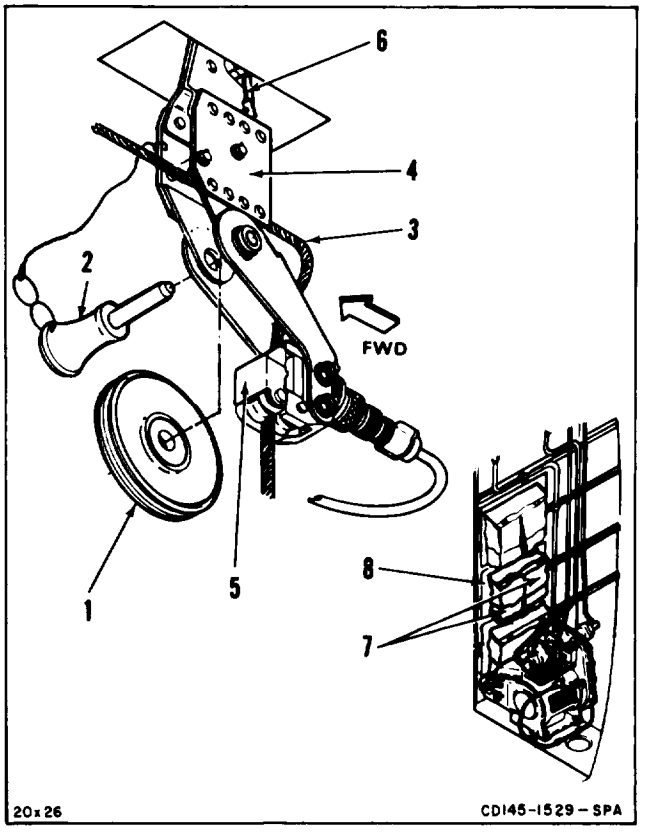
NOTE

Procedure is same for all tackle blocks except aft cable block. Aft cable block may have cable cutter installed.

1. Hold pulley (1) and remove quick disconnect pin (2). **Remove pulley (1).**
2. **Remove cable (3)** from cable block (4).
3. Position pulley (1) in cable block (4). Install pin (2).
4. For an aft cable block, remove cable cutter (5), if installed (Task 14-15).
5. Push in keeper (6) and **remove cable block (4).**
6. Stow cable or tackle blocks in pockets (7) of stowage container (8).

FOLLOW-ON MAINTENANCE:
None

END OF TASK



14-22 INSTALL TACKLE BLOCKS/CABLE BLOCKS (RESCUE MODE)

INITIAL SETUP

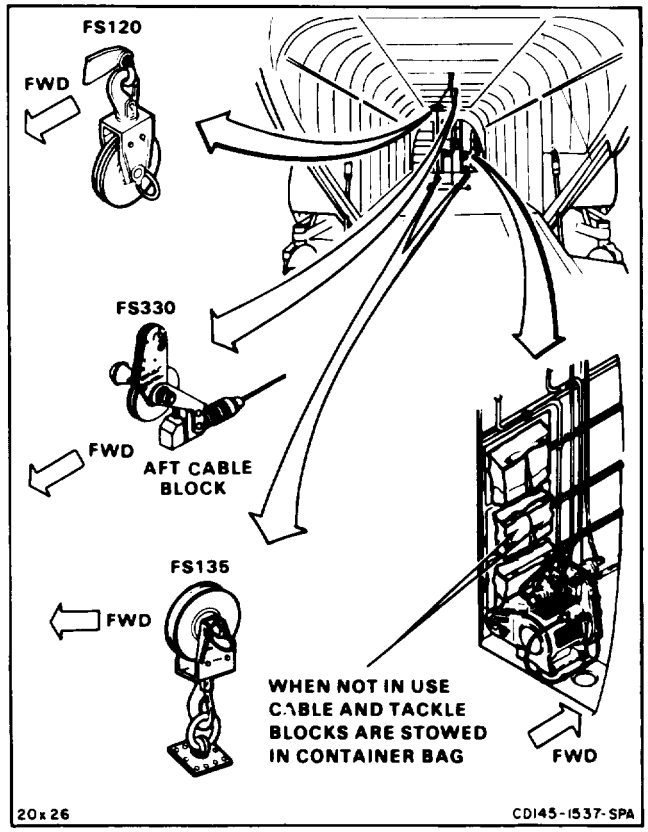
Applicable Configurations:
All

Tools:
None

Materials:
None

Personnel Required
67U10 Medium Helicopter Repairer

References:
TM 55-1520-240-23P
Task 14-17



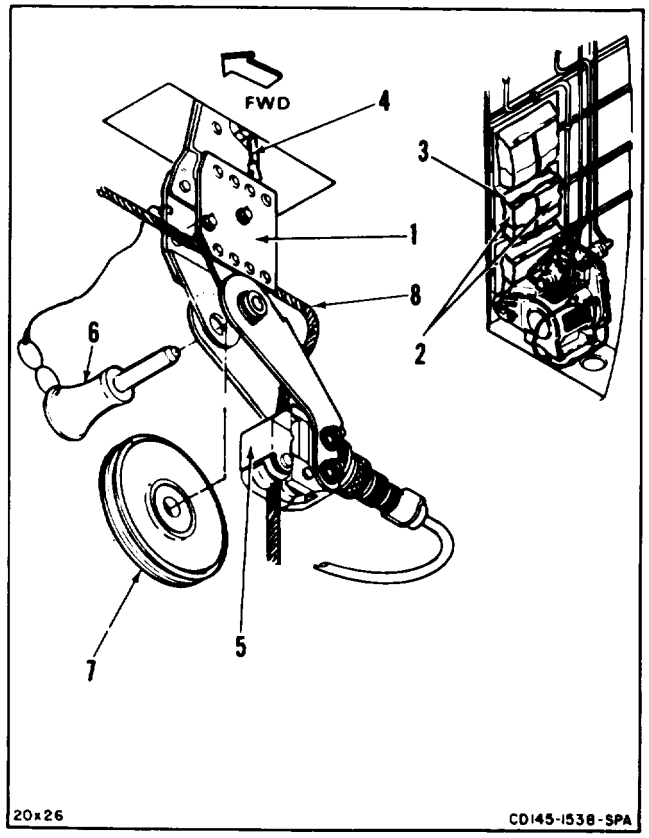
WARNING

Aft cable block may have cable cutter installed. Make sure there is no load on cable. Serious injury to personnel or damage to equipment can occur.

NOTE

Procedure is same for all tackle blocks except aft cable block.

1. Remove cable block (1) from pocket (2) of stowage container (3).
2. Position cable block (1), push in keeper (4), and **install cable block (1).**
3. For an aft cable block, install cable cutter (5), if required (Task 14-1 7).
4. Remove quick-disconnect pin (6) and **remove pulley (7).**
5. **Position cable (8)** between pulley (7) and cable block (1).
6. **Position pulley (7)** in cable block (1) **and install pin (6).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

CHAPTER 15
AUXILIARY POWER UNIT

SECTION I
AUXILIARY POWER UNIT DESCRIPTION AND SEQUENCE OF OPERATION

DESCRIPTION

The auxiliary power unit (apu) is a gas turbine engine that provides hydraulic and electrical power for engine starting and ground maintenance. The complete apu system includes the apu, an electronic sequence unit (esu), a switch, relays, a start module, and a start accumulator. Fuel supply components include a fuel valve, boost pump, and manual shutoff valve.

A hydraulic motor-pump is mounted on the front of the apu. To start the apu, the motor-pump is riven by pressurized hydraulic fluid from the utility hydraulic system, supplied by the start accumulator. When the apu is operating, the motor-pump operates as a pump to pressurize the flight control and utility hydraulic systems. An ac generator is riven by the apu to supply power to the electrical system during ground operation. Refer to TM 55-835-205-23 for more detailed information on the apu.

The esu is a microprocessor with built-in test equipment {bite) facilities. The esu automatically sequences the start procedure and continuously monitors apu operation. If the operating sequence is not normal or the operation is not within normal limits, the esu stops the apu and shows fault dis-Iays that give the reason for shutdown. information to decode the fault display is on a placard on the esu.

SEQUENCE OF OPERATION

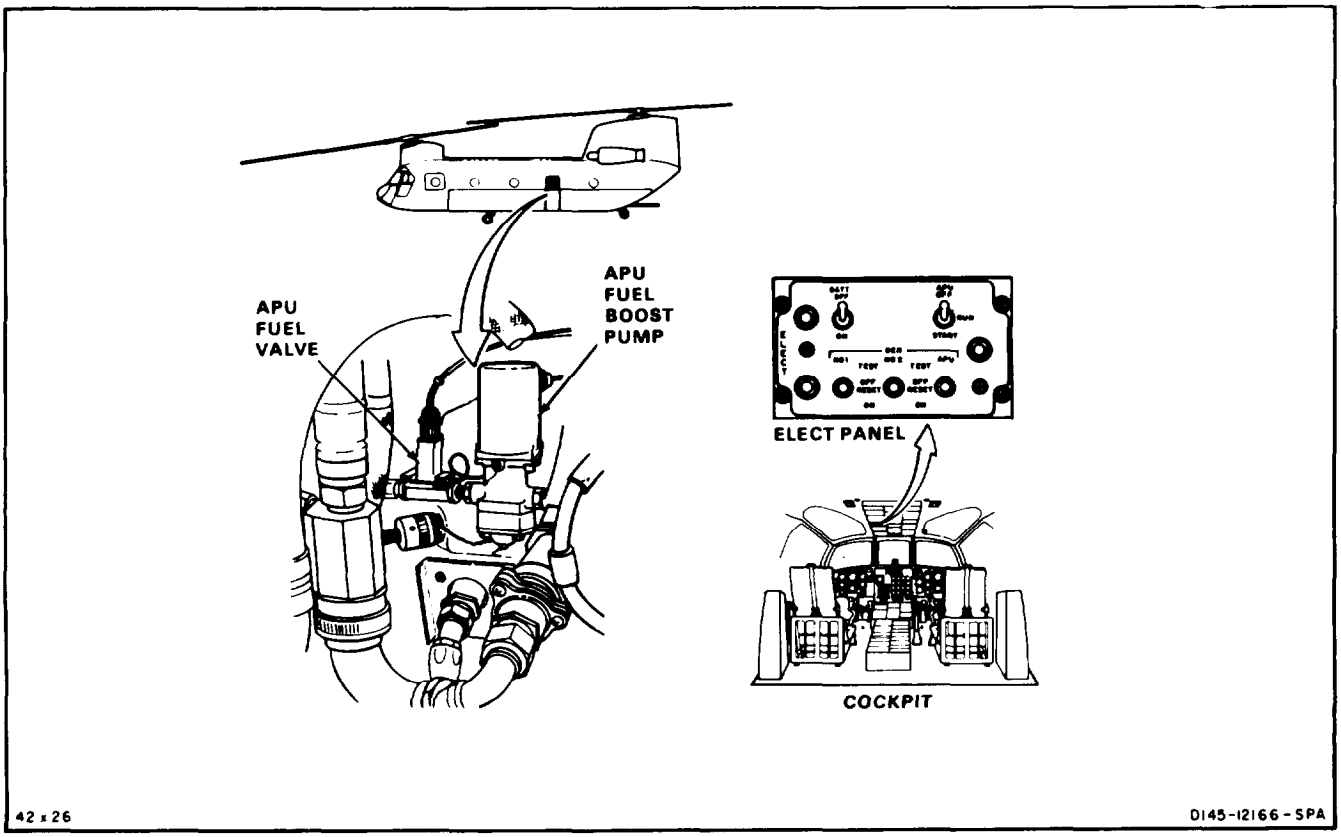
The apu is started and stopped through a three-position switch on the overhead ELECT panel. During normal starts, operating power is obtained from the 28 volt dc essential bus. Emergency start power is obtained from the battery bus.

Placing the **APU switch** to RUN provides power to operate the fuel pump and open the **fuel solenoid valve.** It also applies power to the **electronic sequencing unit** (esu) and resets the built-in test equipment (bite) indicators. Moving the switch to START energizes the solenoid valve on the **apu start module.** The valve opens to allow pressurized fluid to flow from the **start accumulator** to operate the **motor-pump** on the front of the apu.

As the motor-pump increases apu rpm, a **magnetic pickup** on the apu generates a signal proportional to apu speed.

NOTE

The starting sequence can be interrupted at any point and the apu shut down by closing the manual shutoff fuel valve.



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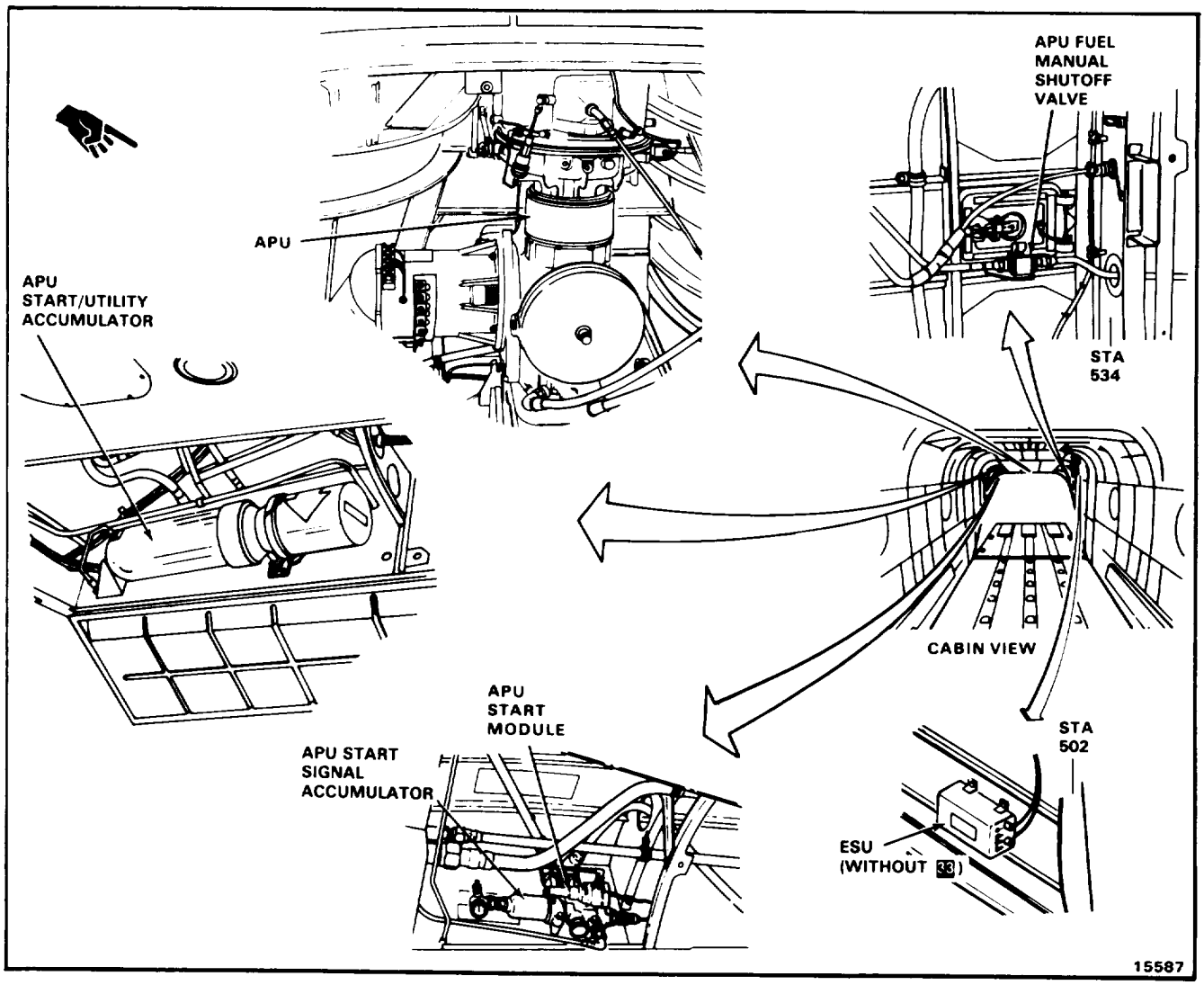
- At about 5 percent of rated speed, the esu applies power to the **ignition exciter** and opens the **start fuel valve.** It also activates a 40-second timer. Fuel flows through the start fuel valve and a start fuel nozzle into the combustor, where it is vaporized and ignited by the exciter-energized igniter plug. The burning fuel mixture increases apu speed.
- At about 14 percent of rated speed, the esu opens the **main fuel valve,** allowing fuel to flow through the six **main vaporizer tubes** into six **fuel injectors.** The injectors direct fuel into the combustor, increasing apu speed.
- At about 20 percent, the charge in the start accumulator is depleted and the motor-pump no longer drives the apu.
- At about 70 percent, combustion is self-sustaining. Power is removed from the ignition exciter and start fuel solenoid.
- At about 90 percent, the motor-pump becomes a pump and is driven by the apu to recharge the accumulator. After 1.5 seconds, the APU ON light on the master caution panel comes on. If 90 percent rpm is not attained within 40 seconds of when start power was applied to the esu (five percent rpm), a **fault relay** cuts off fuel to the apu.

If the temperature or speed of an operating apu becomes abnormal, the esu will automatically shut it down, Overtemperature during the start sequence is anything over a sustained 1,250°F (677°C). During operation, it is anything over 1,150°F (621°C). Overspeed is anything more than about 110 percent of rated speed. The apu will also shut down if speed drops below 90 percent 1.5 seconds after attaining that speed,



END OF TASK

SECTION II

AUXILIARY POWER UNIT

INITIAL SETUP

Applicable Configurations:
All

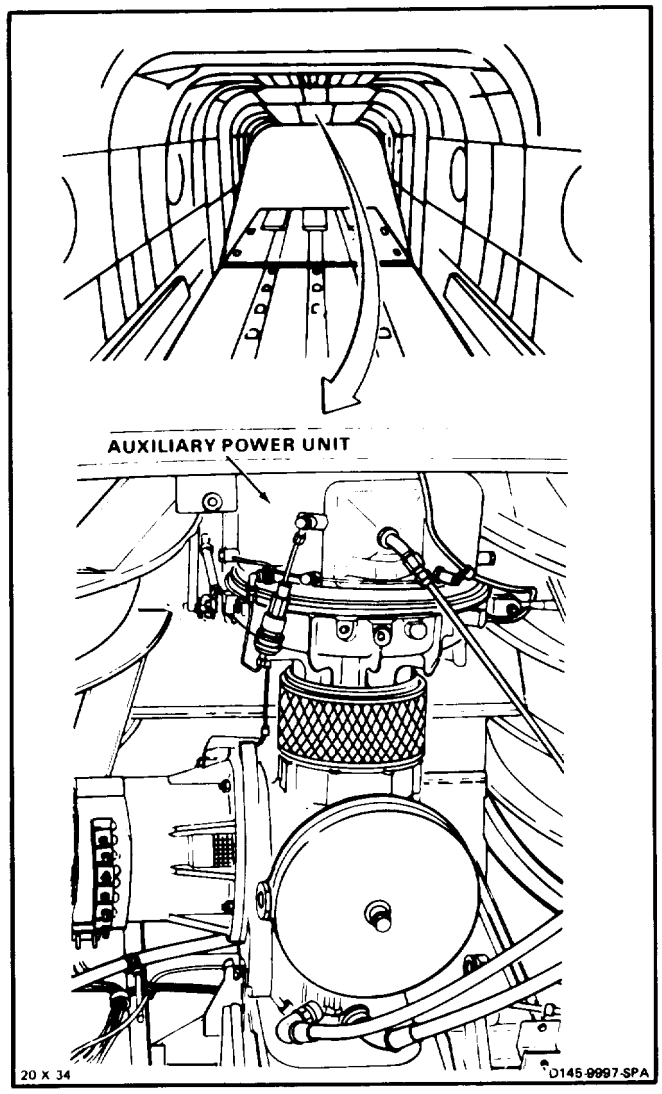
Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692
Workstand

Materials:
None

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
Task 7-143
Task 9-33
Task 1-103
TM 55-2835-205-23

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



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1. **Preserve installed apu (Task 1-103).**
2. **Preserve uninstalled apu** as follows:
   a. **Remove hydraulic motor pump (1)** if installed (Task 7-1 43).
   b. **Remove generator (2) (Task 9-33).**
   c. Cover air inlet (3), exhaust openings (4) and reduction drive housing output pads (5).
   d. **Preserve apu (TM 55-2835-205-23).**

INSPECT

3. **Preserve inoperative apu (TM 55-2835-205-23).**

INSPECT

FOLLOW-ON MAINTENANCE:
None

END OF TASK

15-3 REMOVE AUXILIARY POWER UNIT (APU) 15-3

INITIAL SETUP

Applicable Configuration;
All

Tools;
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
bomb Hoist, Aero 14C (T166)
Grounded Container, 2 Quart
Padded Support
Tackle Block (T165)
Trailer 1000334
Wood Planks, 1 Inch x 8 Inches x 5 1/2-Feet (10)
Workstand

Materials:
Cloths
Paper Tags (E264)
Tape (E385)
Twine (E433)

Parts:
Bolt
Nut

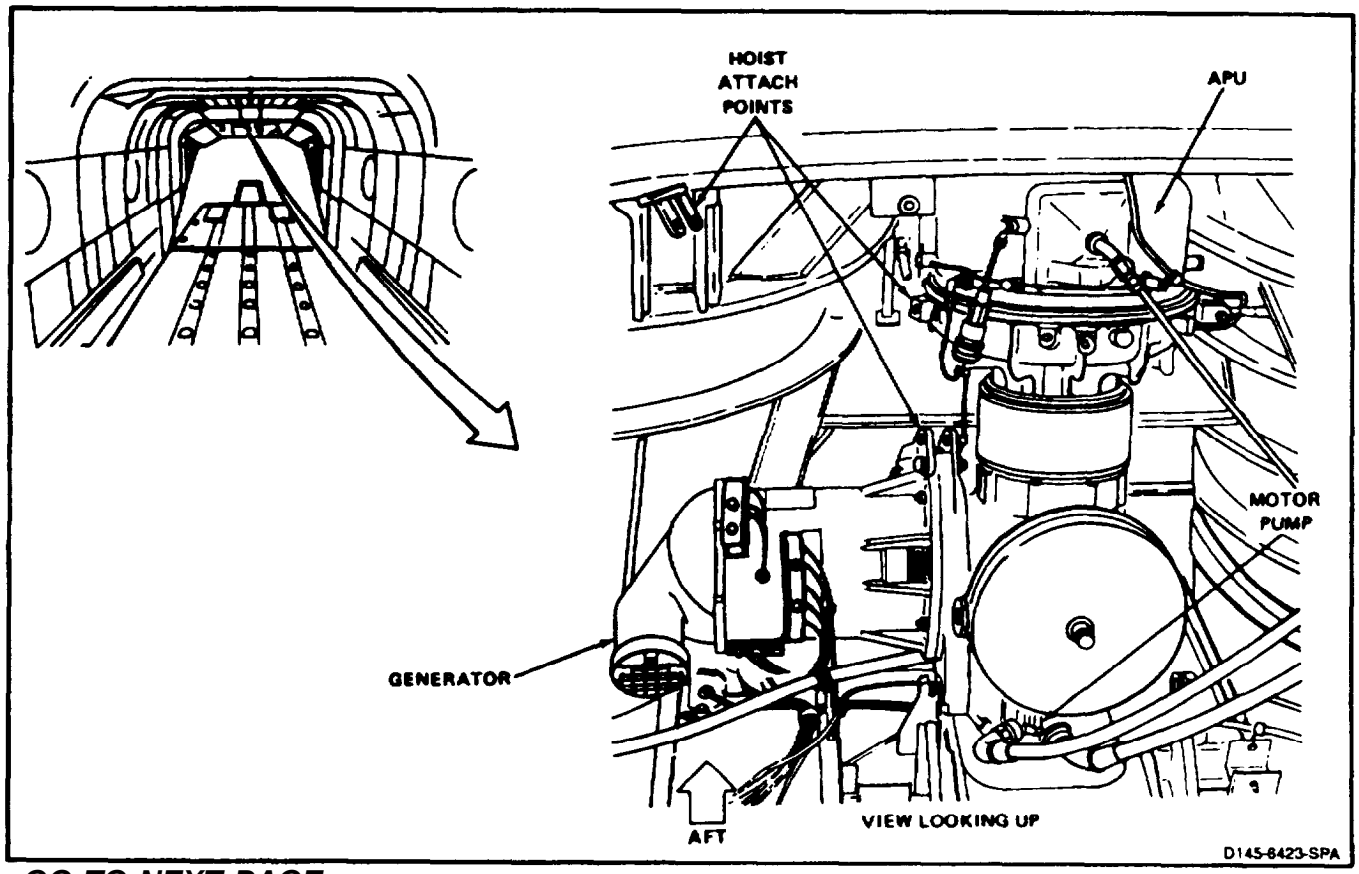
Personnel Required:
Medium Helicopter Repairer (3)

Equipment Condition:
Battery Disconnected (Task 1-39)
Hydraulic Power Off
Cargo Ramp Open and Level (TM 55-1520-240-T)
Ramp work Platform open (Task 2-238)
Apu Drip Pan Remove (Task 2-3)
Aft Transmission Access Panels Open (Task 2-2)
Aft Transmission Drip Pan Removed (Task 2-3)
Remove Apu Motor Pump (Task 7-143)

General SafteyInstruction:

WARNING

All regulation and Instructions for handling fuels shall be strickly observed.



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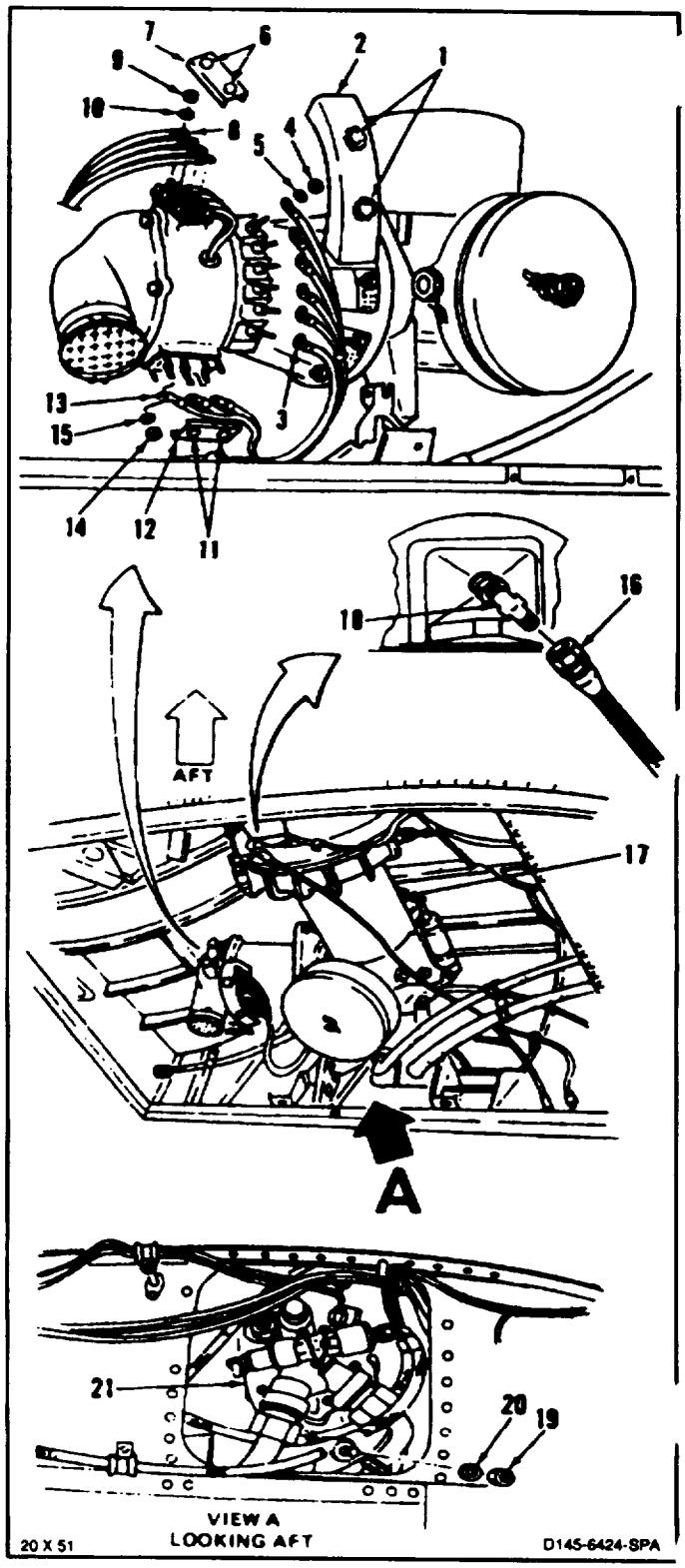
15-3 REMOVE AUXILIARY POWER UNIT (APU) (Continued) 15-3

NOTE

Ensure APU generator wires are properly tagged as the APU generator manufactures (Lucas and Leland) have different wire terminal attachment points

1. Loosen two fasteners (1) and remove terminal cover (2). **Tag and disconnect six wires (3)** by removing six nuts (4) and washers (5). Tape wire ends. Use tape (E365).
2. Loosen two fasteners (6) and remove terminal cover (7). **Tag and disconnect four wires (8)** by removing four nuts (9) and washers (10). Tape wire ends. Use tape (E385).
3. Loosen two fasteners (11) and remove terminal cover (12). **Tag and disconnect three wlres** (13) by removing three nuts (14) and washers (15). Tape wire ends. Use tape (E385).
4. Tag and **disconnected drain hose (16)** at auxiliary power unit (apu) (17). Use container and cloths for spilled fuel. Plug hose and cap fitting (18).
5. Deleted.
6. Tie motor-pump (21) out of way. Use twine (E433).



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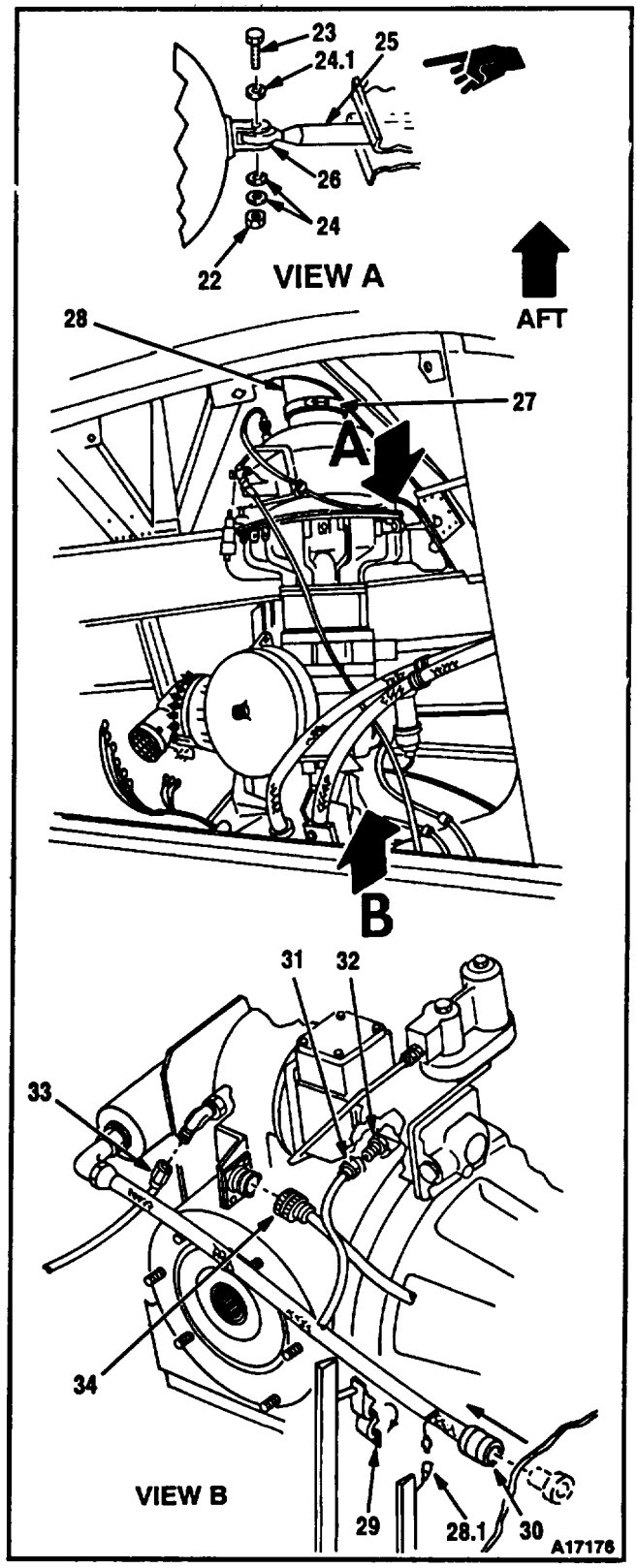
7. **Remove nut (22),** bolt (23), two washers (24), and washer (24.1). **Remove link (25) from clevis (26).**
8. Loosen clamp (27). **Slide exhaust duct (28) aft.**

8.1. **Disconnect** bonding jumper assembly (28,1).

9. **Open** quick-release clamp (29). **Disconnect** fuel hose at quick-disconnect **fitting (30)** on airframe bulkhead.
10. Tag and **disconnect drain hose (31).** Use tags (E264). Use container and cloths (E135) for spilled fuel. Plug hose and cap fitting (32).
11. Tag and **disconnect vent hose (33).** Use tags (E264).
12. **Disconnect plug (34).**



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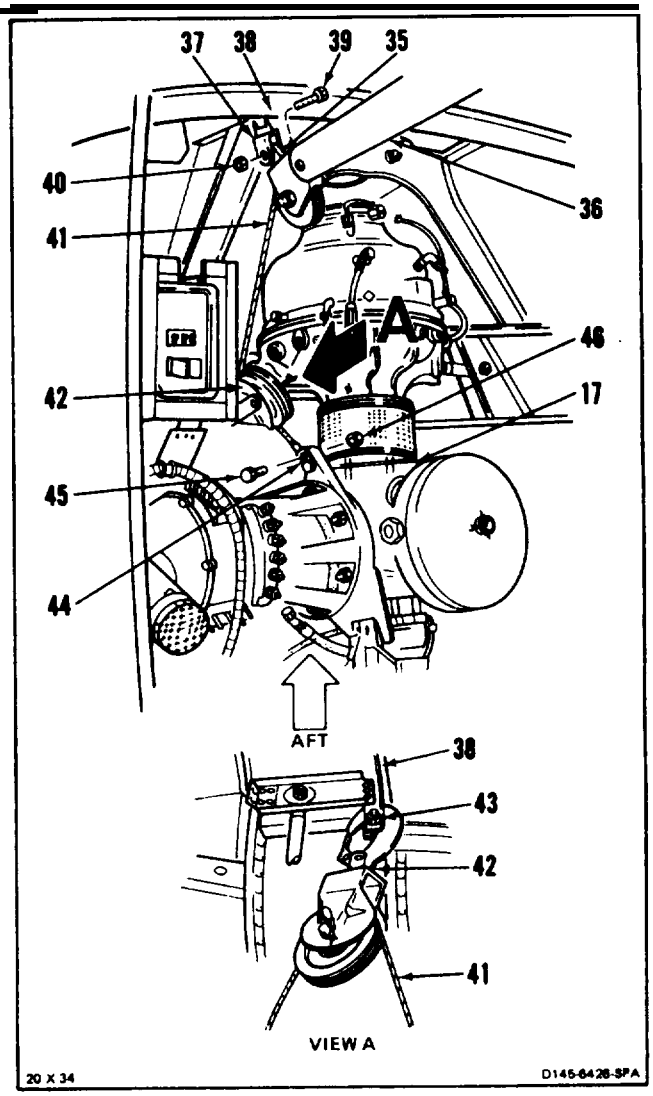
NOTE

Hoist operating instructions are marked on hoist.

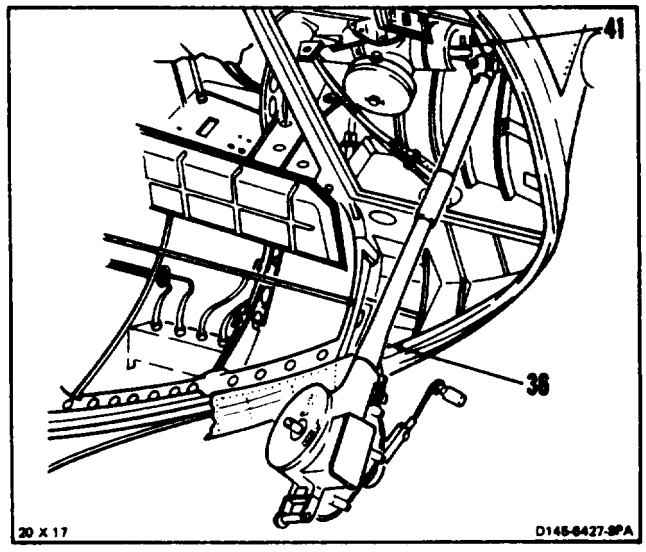
13. **Position lug (35) of hoist (36) in clevis (37)** on structure (38). **Install bolt (39)** and nut (40).
14. Route cable (41) through tackle block (42). **Hook tackle block to fitting (43)** on structure (38).
15. **Attach cable (41) to links (44)** on apu (17) with bolt (45) and nut (46).



WARNING

Make sure slack is removed from hoist cable. Otherwise, apu could drop when it is disconnected causing injury to personnel.

16. Operate hoist (36) to **remove slack from cable (41).**



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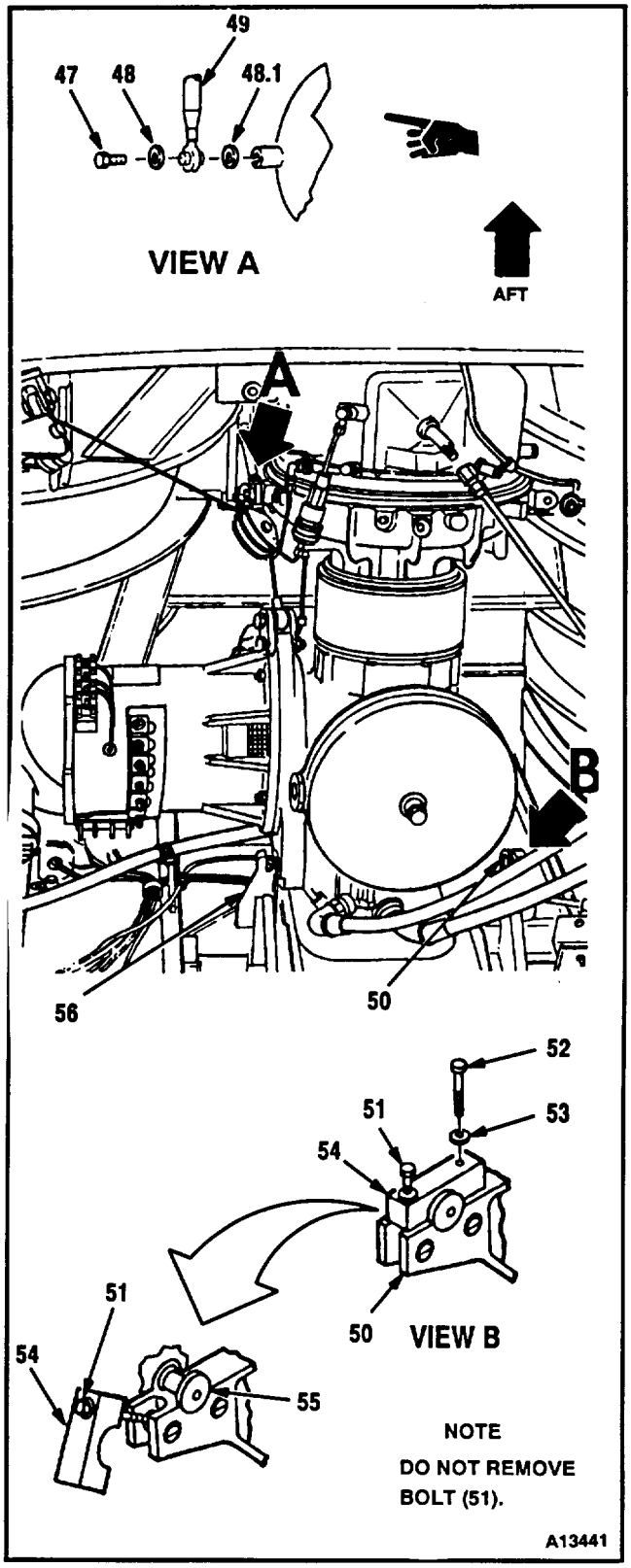
17. Remove lockwire and **remove bolt (47),** washer (48) and washer (48.1) from link (49).

NOTE

Do not remove bolt (51).

18. On right forward support (50), loosen aft bolt (51) and remove forward bolt (52) and washer (53). **Rotate clip (54) away from adapter (55).**
19. **Repeat step 18 at left forward support (50).**



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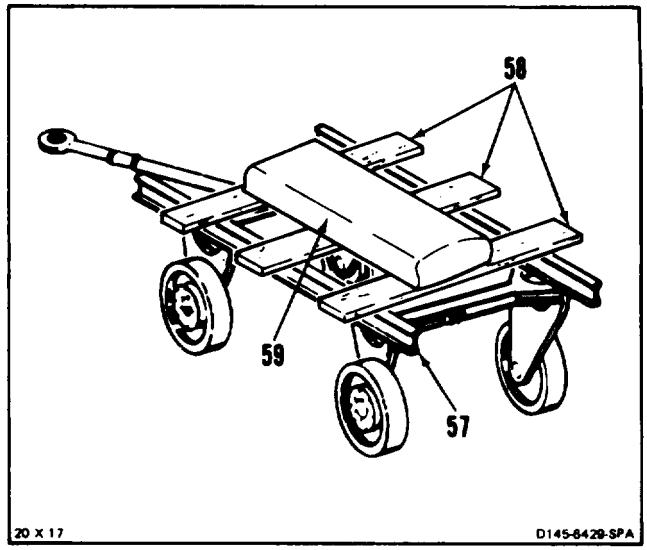
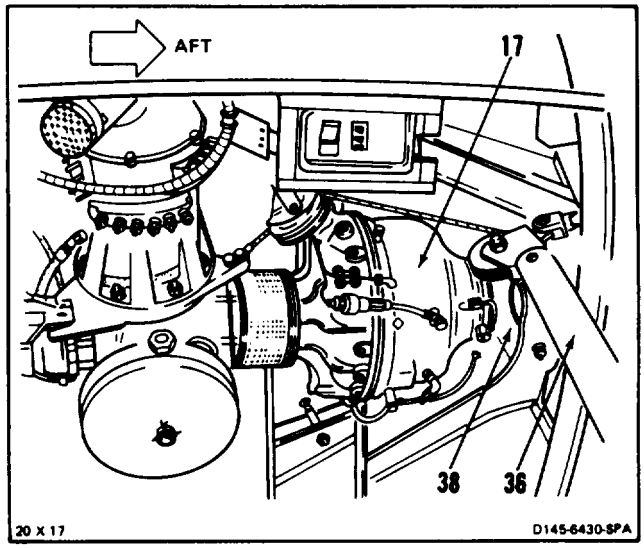
20. Position trailer (57) near helicopter. Lay wood planks (58) across trailer. Position padded support (59) on planks,



21. Operate hoist (36) to **lower aft and of apu (17)** below edge of structure (38). Make sure all lines, wires, and hoses are disconnected and out of way.



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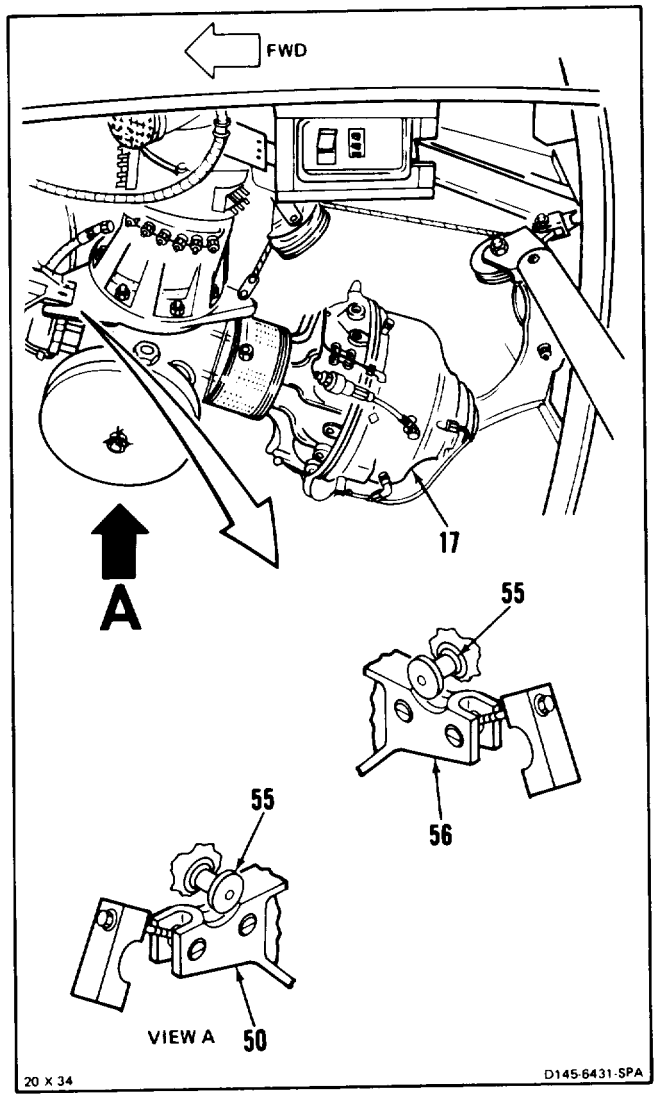
15-3 REMOVE AUXILIARY POWER UNIT (APU) (Continued)

WARNING

When adapters are removed from supports, weight of apu will be supported by hoist only. Apu is heavy and can injure personnel if it drops. Apu must be supported by hoist and moved carefully to prevent injury to personnel.

22. Have helpers lift forward end of apu (17) to **remove adapters (55) from left support (56) and right support (50).** Have helpers keep apu steady.



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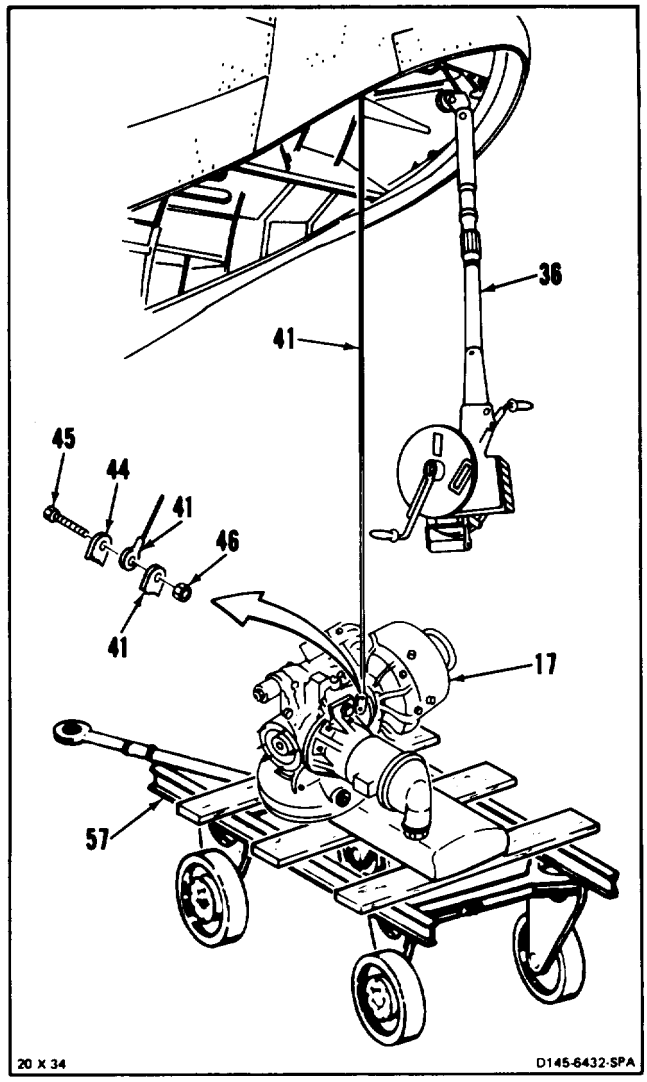
CAUTION

Do not let weight of l pu crush its fittings, lines, or accessories.

23. With aid of helpers, operate hoist (36) and **lower apu (17) onto traitor (57).** Make sure Apu does not crush its fittings, lines, or accessories.
24. Operate hoist (36) to **remove tension from cable (41).**
25. Remove bolt (45) and nut (46) to **disconnect cable (41) from links (44)** on apu (17).



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26. If apu (17) being replaced, do the following:

a. Remove elbow (60) and pecking (61). Remove nut (62) from elbow.

b. Remove lockwire and remove four bolts (63), washers (64), and two adapters (56).

c. Loosen clamp (65) and remove clamp and screen (66) from generator (67).

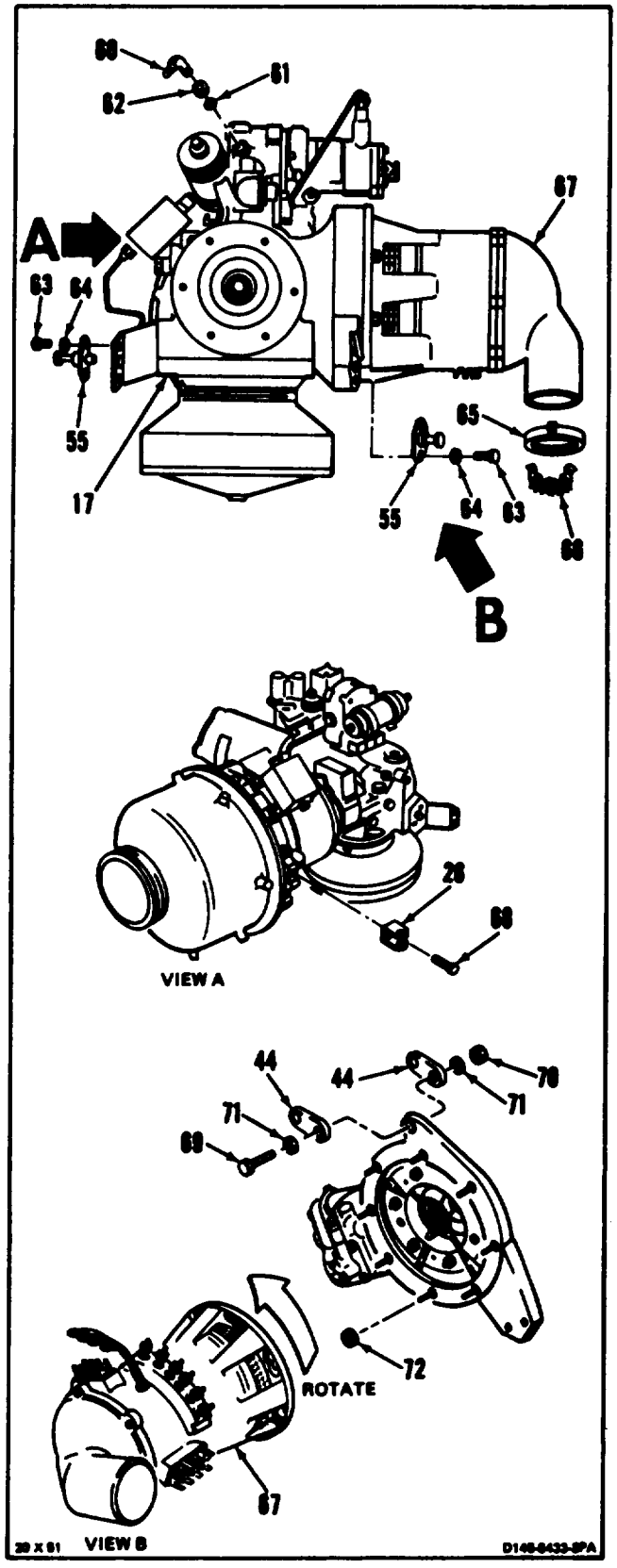
d. Remove lockwire and remove bolt (68) and clevis (26).

e. Remove bolt (69). nut (70), two washers (71), and links (44).

f. Loosen eight nuts (72). Rotate generator (67) counterclockwise and remove it. Remove eight nuts.

FOLLOW-ON MAINTENANCE:

None



END OF TASK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692 .
Torque Wrench, 30 to 150 Inch-Pounds.
Torque Wrench, 100 to 750 Inch-Pounds
Workstand
Bomb Hoist, T166

Materials:
Grease (E190)
Lockwire (E231)

Parts:
Bolt
Nut
Packing

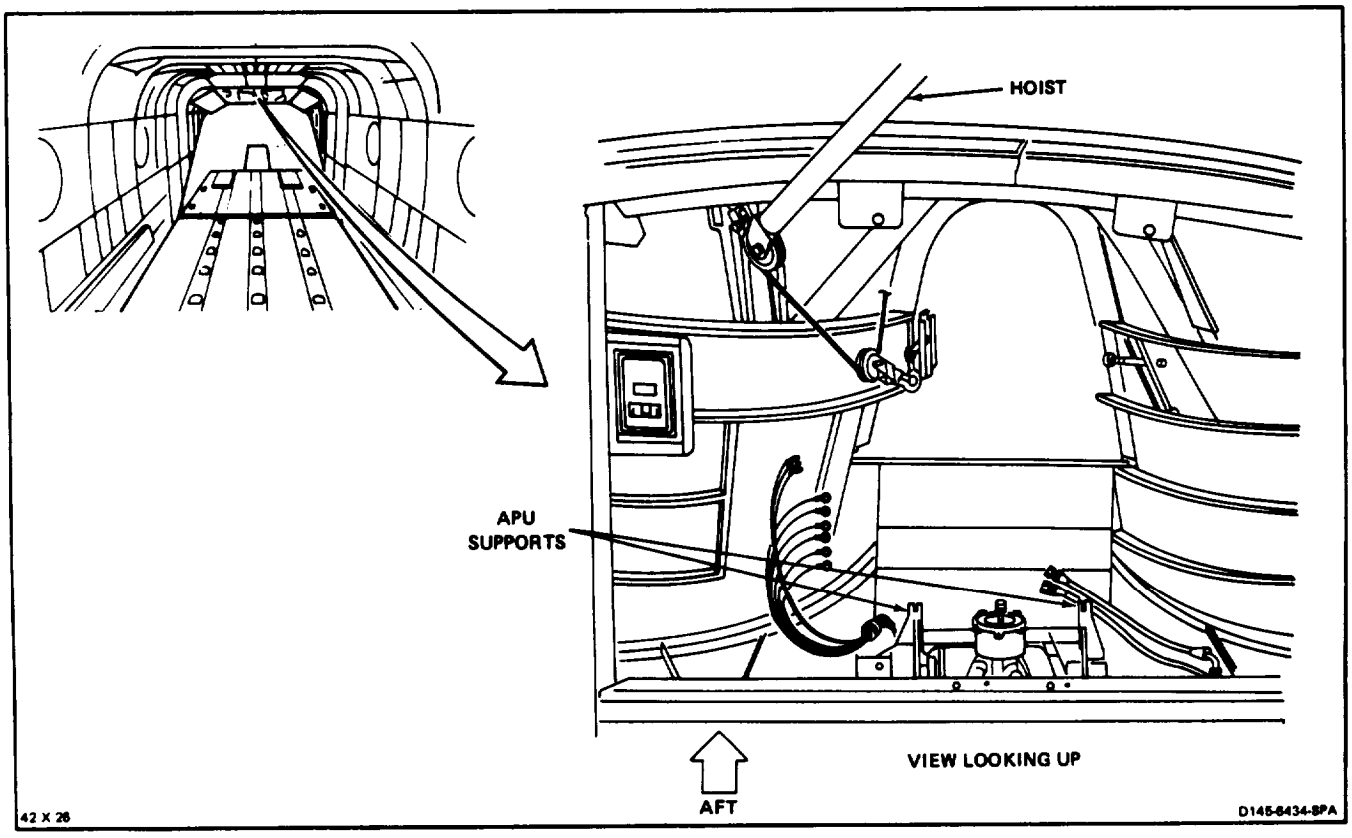
Personnel Required:
Medium Helicopter Repairer (3)
Inspector

References:
TM 55-1520-240-23P

General Safety Instructions:

WARNING

All regulations and instructions for handling fuels shall be strictly observed.

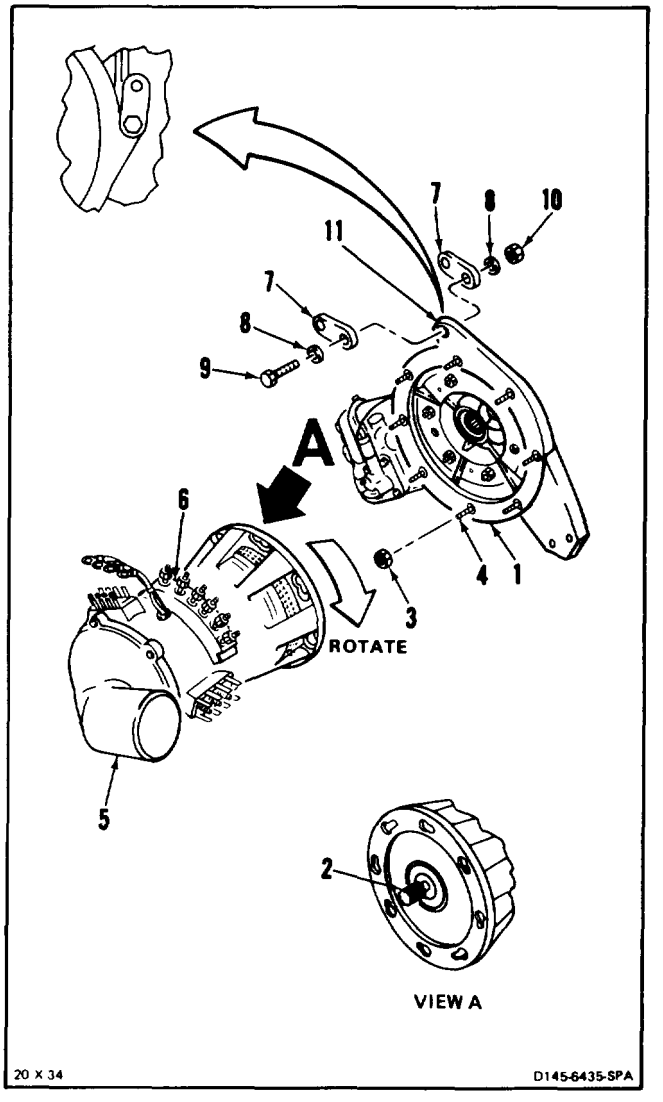


1. **If auxiliary power unit (apu) (1) is not a replacement, go to step 2. If apu (1) is a replacement, do the following:**

   a. Apply grease (E 190) to generator shaft (2).

   b. Install eight nuts (3) loosely on studs (4). Install generator (5) over studs, large terminal board (6) down. Rotate generator clockwise. Tighten nuts.

   c. Install two links (7), washers (8), bolt (9), and nut (10) on lug (11). **Torque nut to 175 inch-pounds.**



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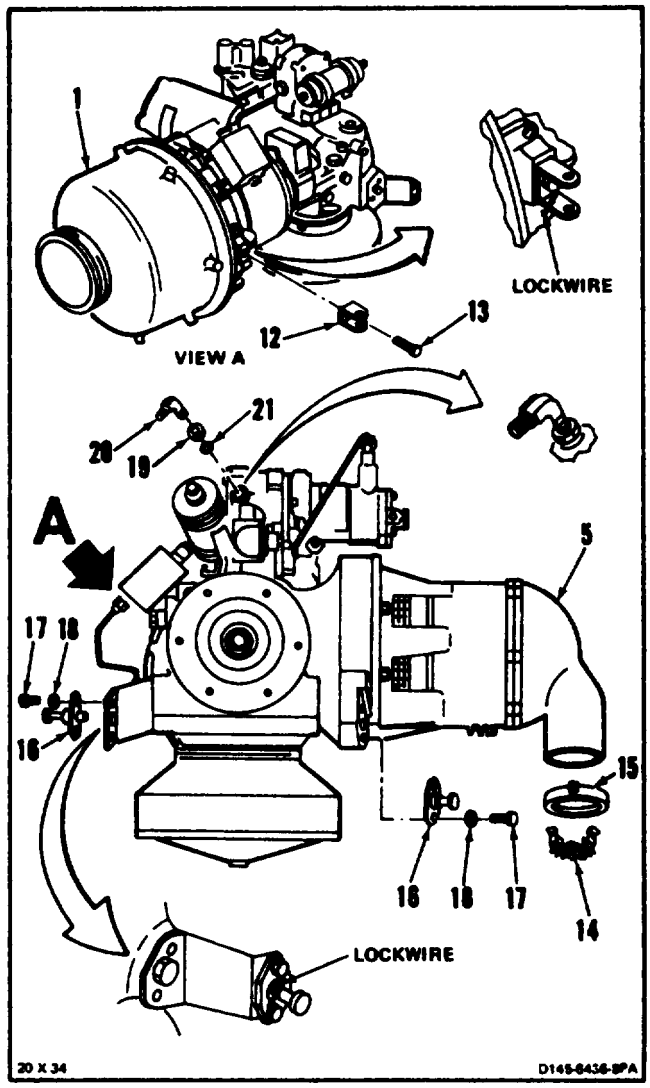
d. Install clevis (12) and bolt (13) on side of apu (1). Lockwire bolt to clevis. Use lockwire (E231).



e. Install screen (14) on generator (5). Tighten clamp (15) over screen.

f. Install two adapters (16), four bolts (17), and washers (18). Install lockwire (E231) on bolts.

g. install nut (19) on elbow (20). Install packing (21) and elbow.

INSPECT

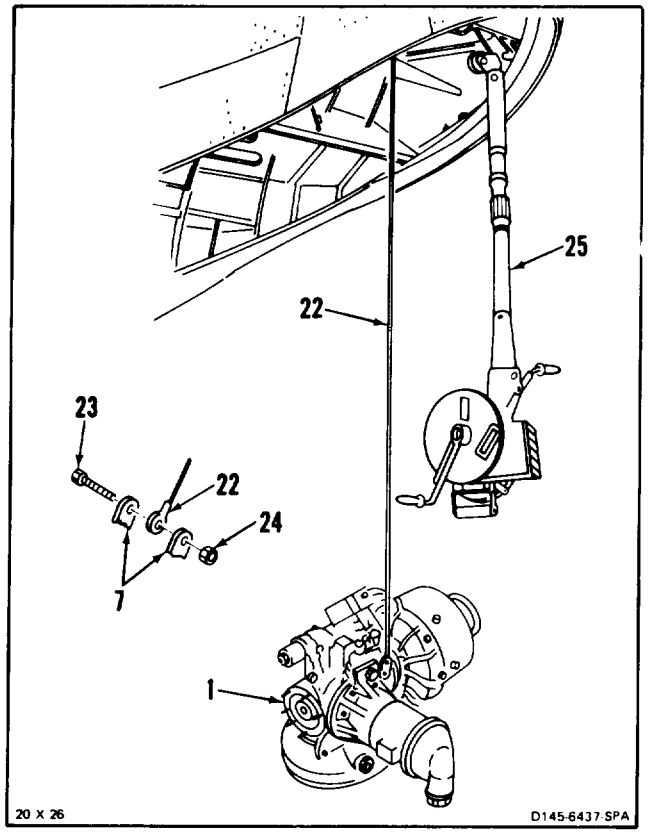
GO TO NEXT PAGE

2. Attach cable (22) to links (7) on apu (1) with bolt (23) and nut (24).

NOTE

Hoist operating instructions are marked on hoist,

3. Operate hoist (25) to remove slack from cable (22).

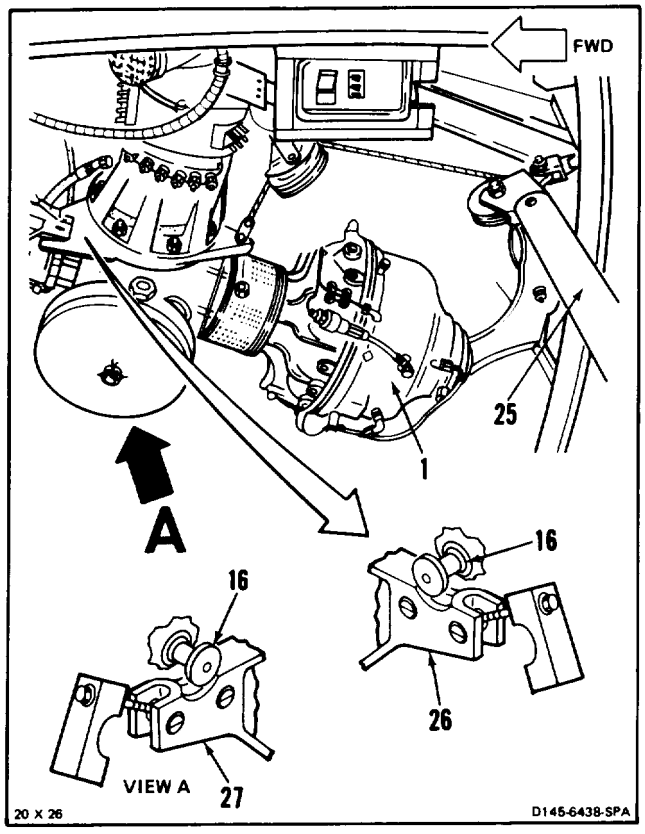


WARNING

Apu is heavy and can injure personnel if it drops. Apu must be supported by hoist and moved carefully to prevent injury to personnel.

4. Operate hoist (25) to **raise apu (1) to supports (26 and 27).** Make sure all lines, wires, and hoses are out of way, Have helpers keep apu steady.

5. Have helpers lift forward end of apu (1) **to position adapters (16) in left support (26) and right support (27).**



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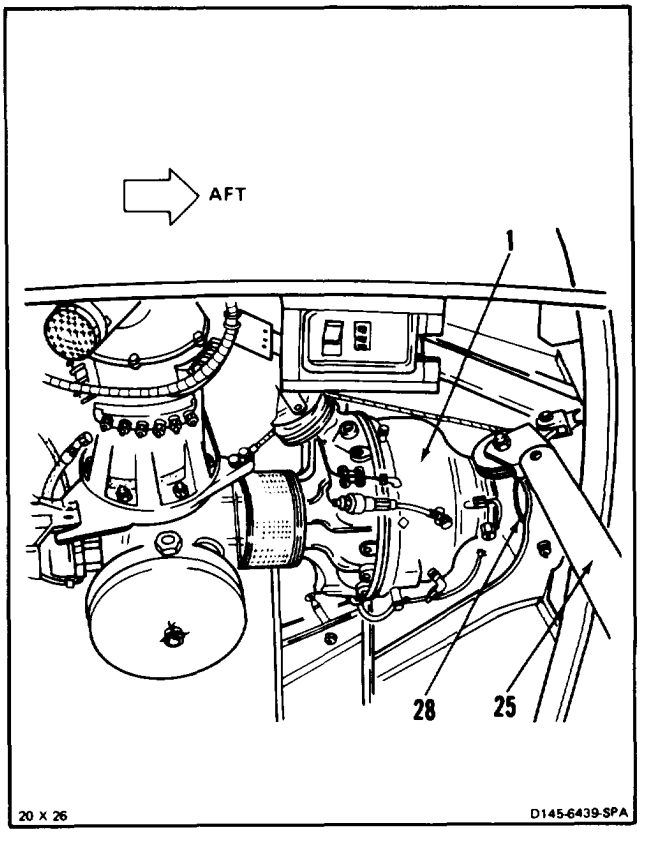
6. Operate hoist (25) to **raise aft end of apu** (1) above edge of structure (28).



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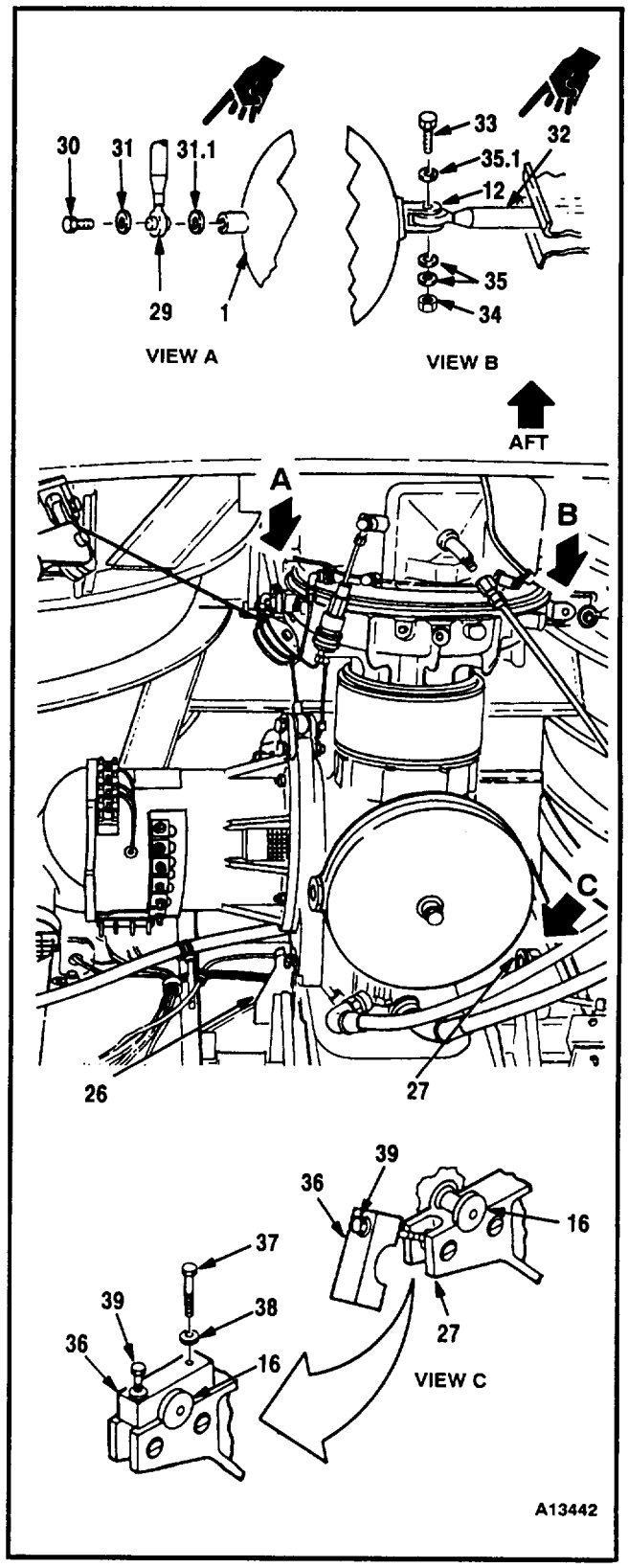
7. Align left link (29) with apu (1) and install **bolt (30),** washer (31), and washer (31,1). **Torque bolt (30) to 75 to 85 inch-pounds.**
8. **Position link (32) in clevis (12) and install bolt (33),** two washers (35), washer (35,1), and nut (34). **Torque bolt (33) to 75 to 85 inch-pounds.**
9. On right forward support (27), **position clip (36) over adapter (16). Install bolt (37)** and washer (38). **Torque bolts (37 and 39) to 75 to 85 inch-pounds.**
10. **Repeat step 9 for left forward support (26).**



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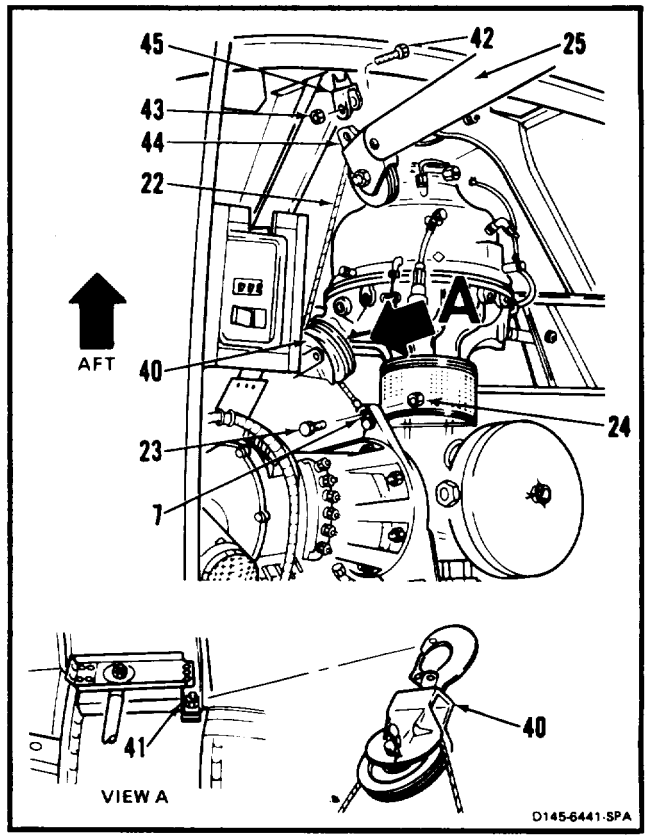
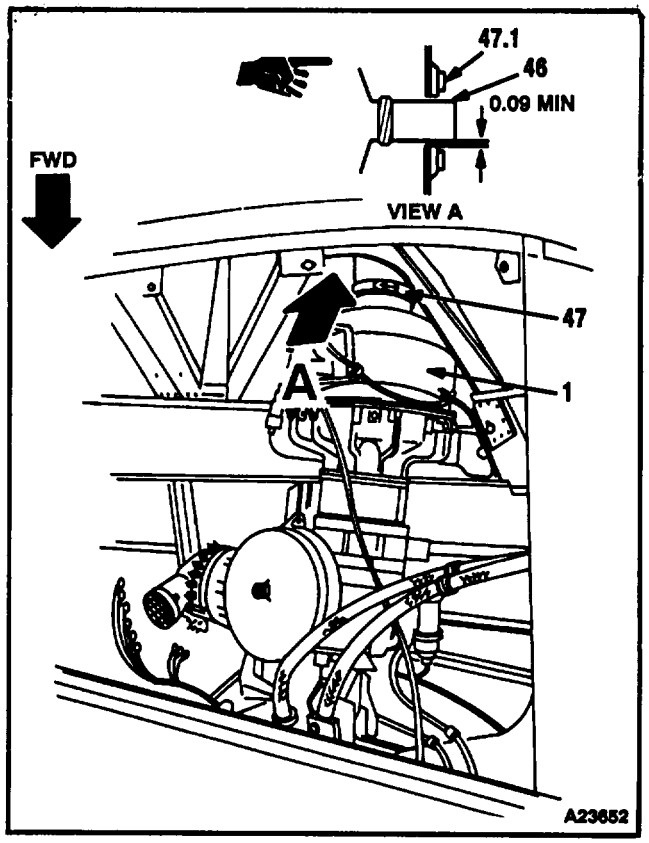
11. Operate hoist (25) to remove tension from cable (22).
12. Remove bolt (23) and nut (24) to disconnect cable (22) from links (7).
13. Unhook tackle block (40) from fitting (41).
14. Remove bolt (42) and nut (43) to remove lug (44) from clevis (45). Remove hoist (25).



15. **Slide exhaust duct (46) forward** over apu (1). **Check for <u>0.09 inch minimum</u>** gap between duct (46) and tailcone closure (47.1) before tighting clamp (47). **Tighten clamp (47).**



15-4 INSTALL AUXILIARY POWER UNIT (APU) (Continued)

16. **Connect plug (48).**
17. **Connect vent hose (49).** Remove tag.Tighten nut (19).
18. Remove plug from drain hose (5O) and cap from fitting (51). **Connect hose** to fitting. Remove tag
19. **Connect** fuel hose at quick-disconnect **fitting (52)** on airframe bulkhead.

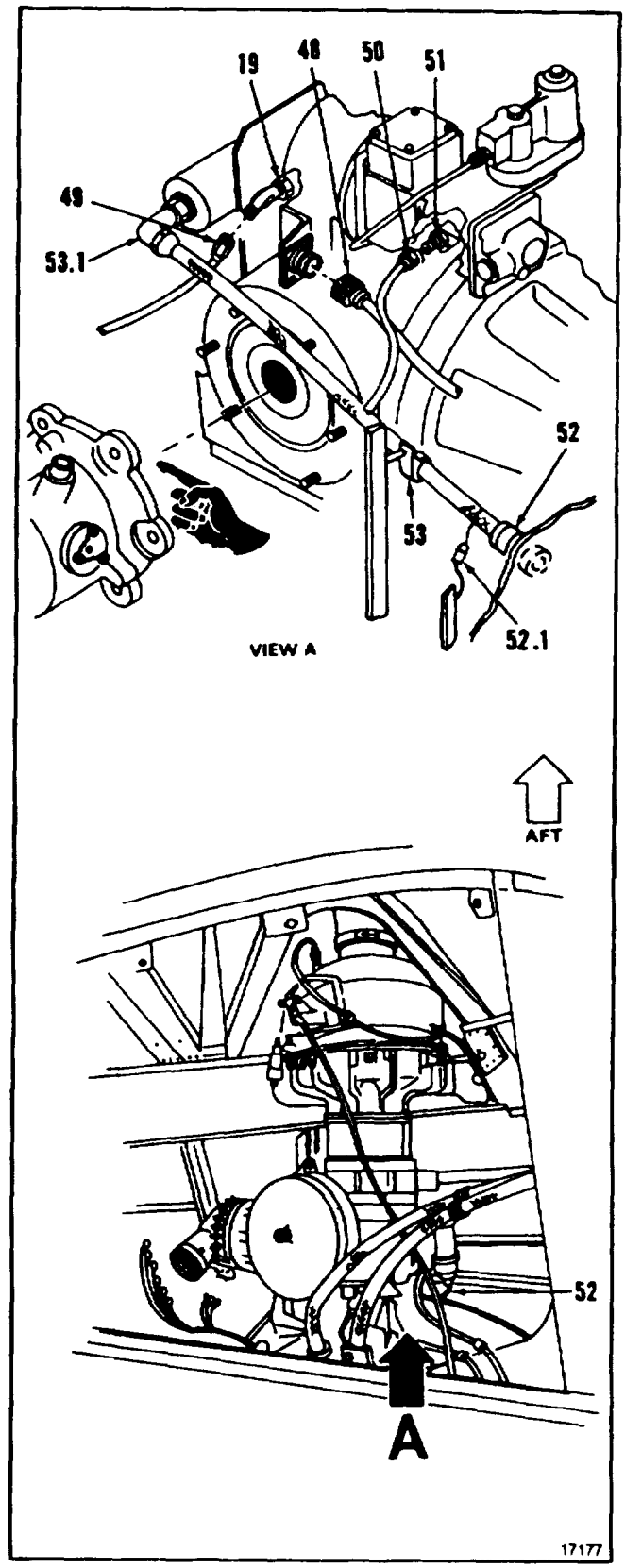
19.1. connect bonding jumper assembly (52.1).

19.2. **Install quick-release clamp (53)** on hose. Close damp and lock

19.3.Loosen hose at APU and rotate ftting (53.1) counterclockwise toward the 12 o'clock position to remove any slack in hose.

19.4. Tighten fitting (53.1). Use cloths (E135) for spilled fuel.

20. Deleted.



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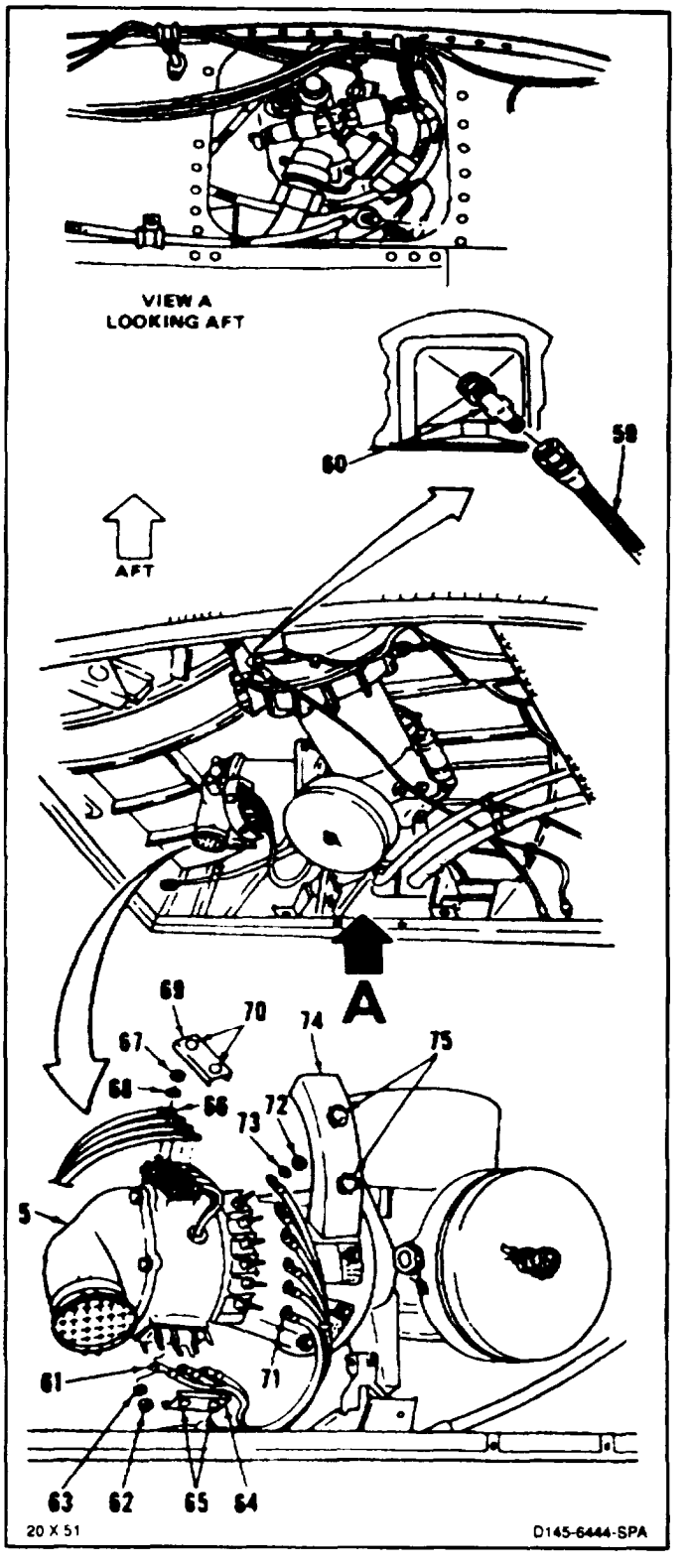
21. Deleted.



22. Remove plug from drain hose (59) and cap from fitting (60. **Connect hose** to fitting. Remove tag.

23. Remove tape and **connect three wires (61)** to generator (5) by installing three nuts (62) and washers (63). Remove tags. **Install terminal cover (64)** and tighten two fasteners (65).

24. Remove tape and **connect four wires (66)** to generator (5) by installing four nuts (67) and washers (68). Remove tags. **Install terminal cover (69)** and tighten two fasteners (70).

NOTE

- Ensure APU generator wires are properly tagged as the APU generator manufactures (Lucas and Leland) have different wire terminal attachment points
- If Leland APU generator is installed, Lucas generator terminal board will not fit. Use rubber nipple (P/N MS25171-4S- NSN 5975-00-553-7077 or equivalent.

25. **Remove tape and connect six wires (71)** to generator (5) by installing six nuts (72) and washers (73). Remove tags. **Install terminal cover (74)** and tighten two fasteners (75).

INSPECT

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15-4 INSTALL AUXILIARY POWER UNIT (APU) (Continued)

FOLLOW-ON MAINTENANCE:

Install apu motor pump (Task 7-147).

Service auxiliary power unit (Task 1-53).

Perform operational check of apu (TM 55-1520-240-T).

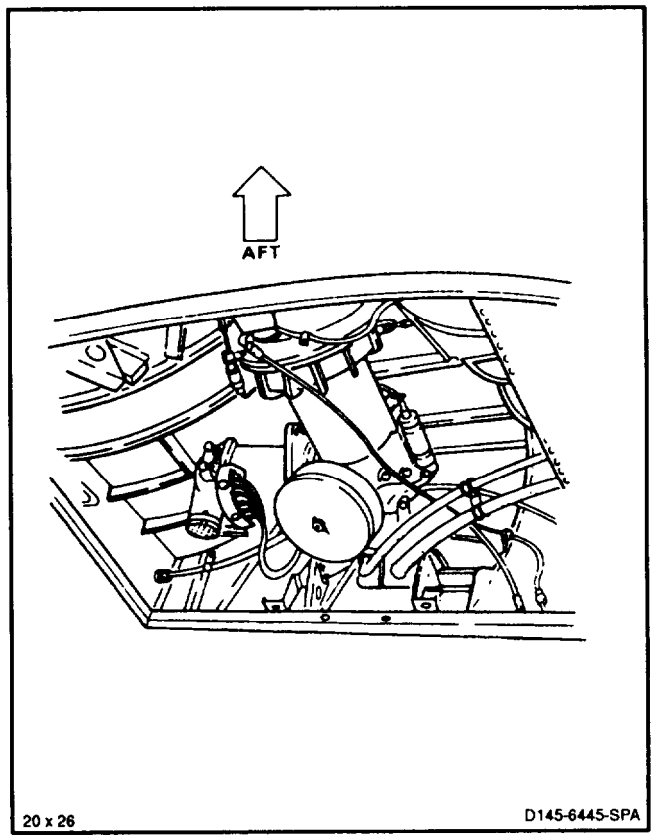
Install apu drip pan (Task 2-3).

Install aft transmission drip pan (Task 2-3).

Close aft transmission access panels (Task 2-2).

Close ramp work platform (Task 2-244).

Close cargo ramp (TM 55-1520-240-T).



END OF TASK

15-5 INSPECT APU AFT MOUNTS

INITIAL SETUP

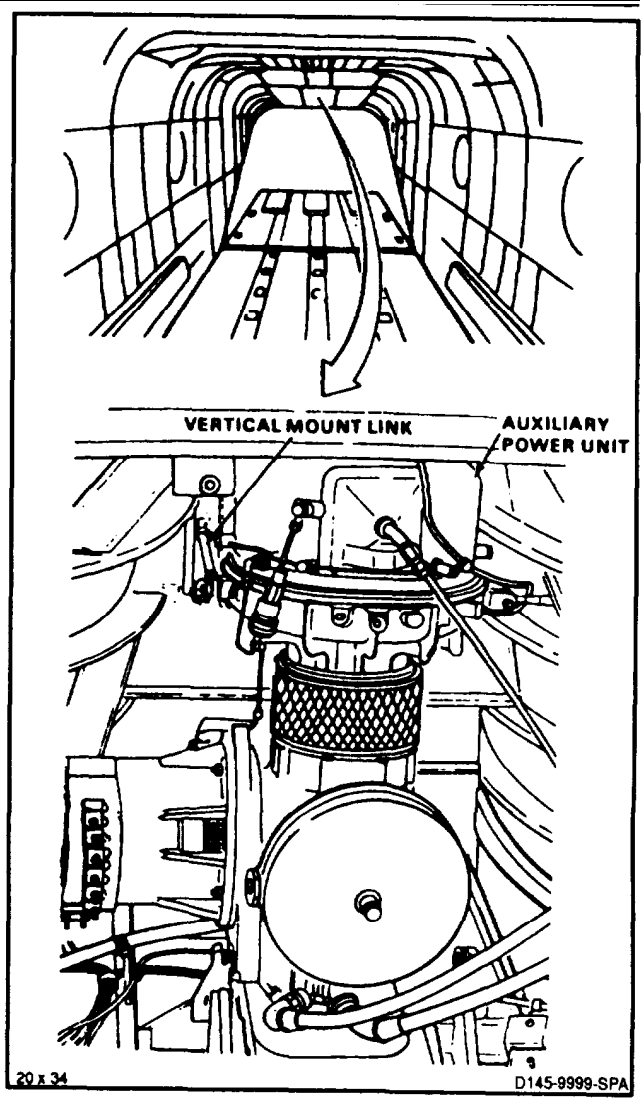
Applicable Configuratlions:
All

Tools:
Aircraft Inspection Tool Kit,
NSN 5180-00-323-5114
Workstand

Materials:
None

Personnel Required:
Medium Helicopter Mechanic (2)
Inspector

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Ramp open and Level (TM 55-1520-240-T)
Apu Drip Pan Removed (Task 2-3)



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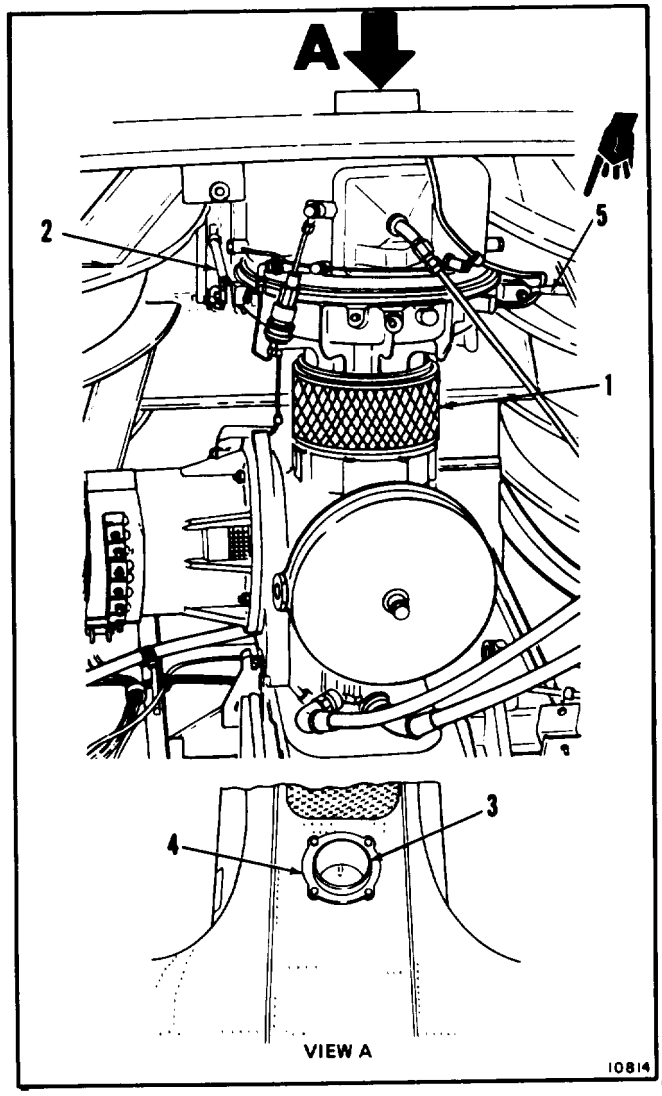
1. **Have helper push up on apu (1)** under vertical mount link (2) until all slack is taken up. **Move apu from side to side** as far as it will go.
2. **Measure total travel of exhaust duct (3) in exhaust closure (4). Total side to side or vertical measurement shall not exceed 1/8-inch.** If measurement exceeds 1/8-inch, check vertical mount link (2) and lateral mount link (5) for wear.



FOLLOW-ON MAINTENANCE:

None

END OF TASK

15-6 REMOVE APU AFT MOUNT CONNECTING LINKS

INITIAL SETUP

Applicable Con figurations:
All

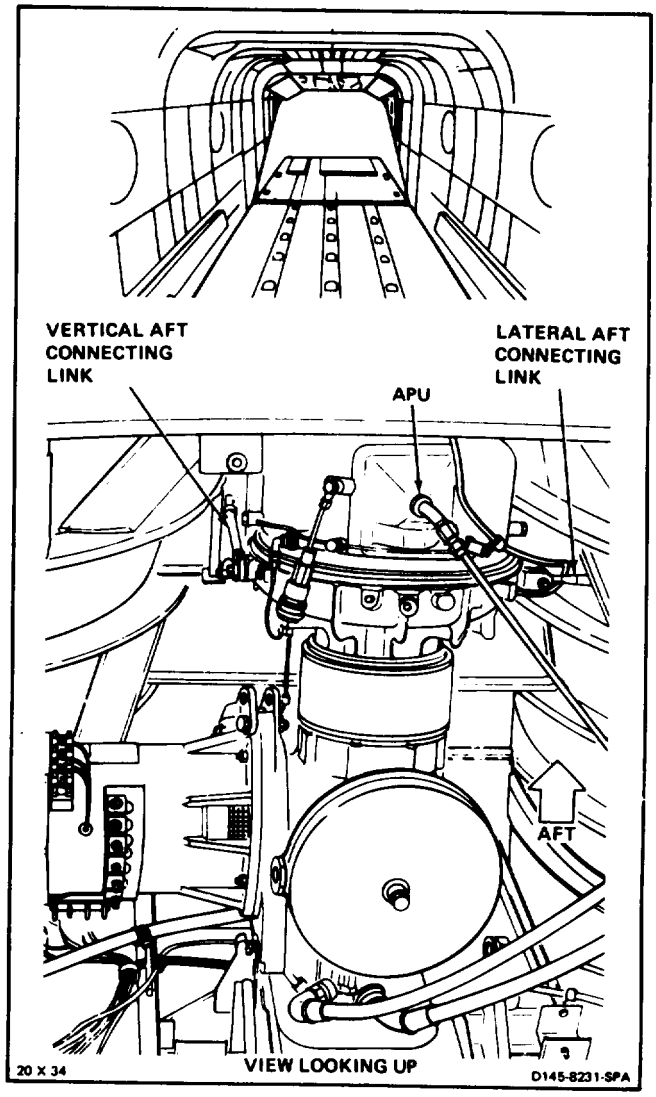
Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Bomb Hoist, Aero 14C
Tackle Block, 114E6058-23
Workstand

Materials:
None

Parts:
Bolt (2)
Nut (2)

Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Cargo Ramp Open and Level (TM 55-1520-240-T)
Ramp Work Platform Opened (Task 2-251)
Apu Drip Pan Removed (Task 2-3)

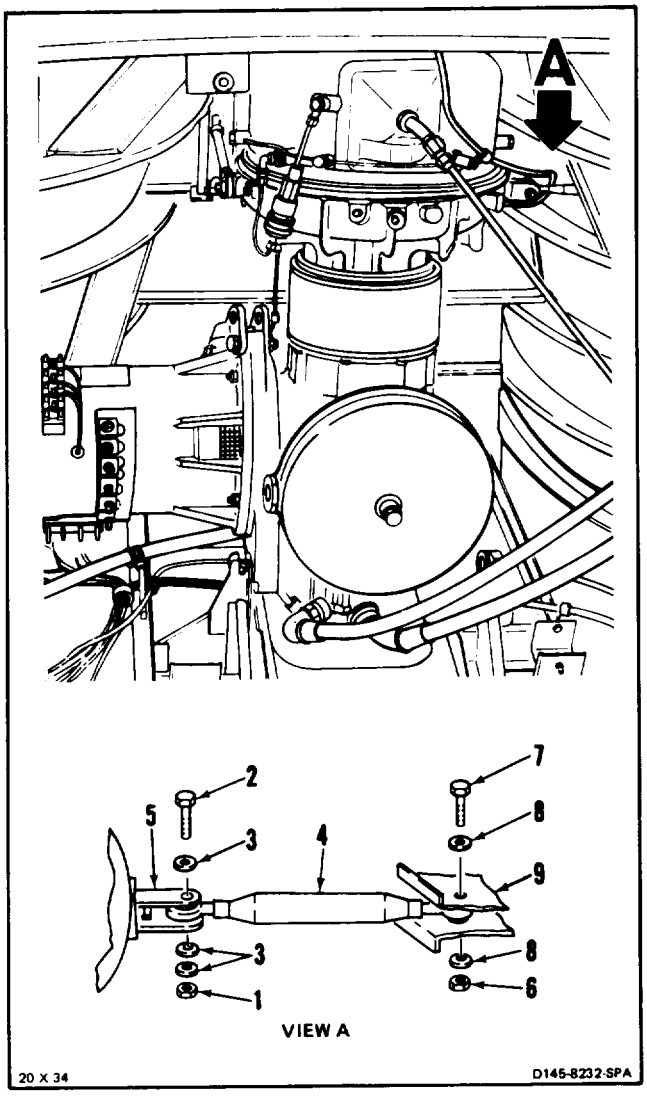


GO TO NEXT PAGE

15-6 REMOVE APU AFT MOUNT CONNECTING LINKS (Continued)

REMOVE APU HORIZONTAL AFT MOUNT CONNECTING LINK

1. **Remove nut (1), bolt (2), and three washers (3). Remove link (4) from clevis (5).**
2. **Remove nut (6), bolt (7), and two washers (8). Remove link (4) from fitting (9).**
3. **Loosely install bolt (7), washers (8) and nut (6) in fitting (9).**



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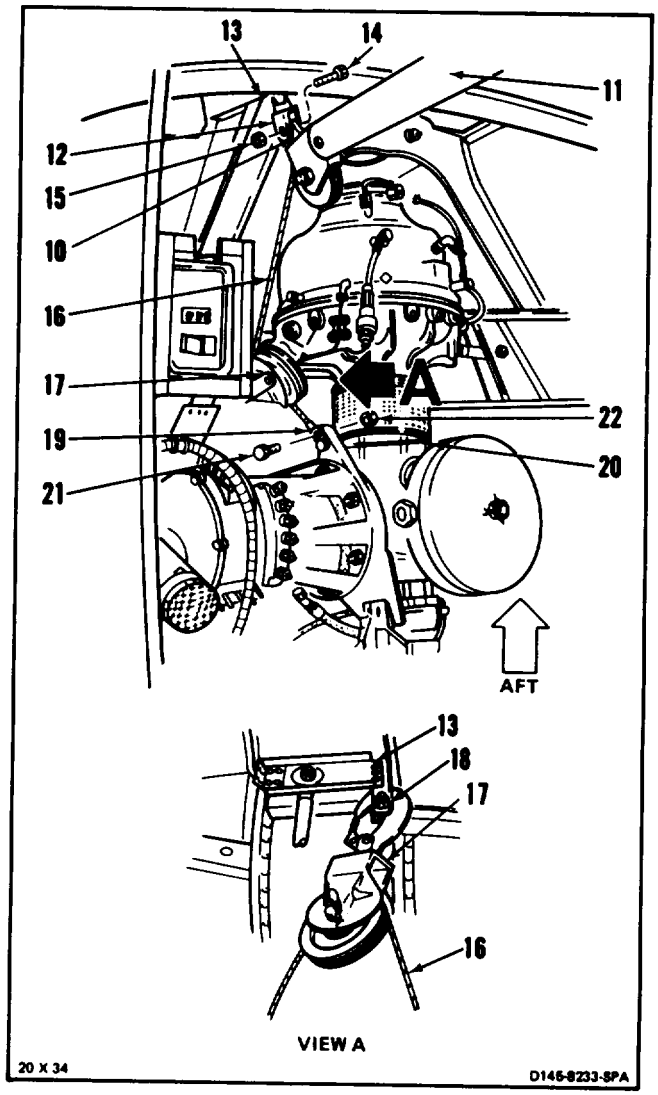
15-6 REMOVE APU AFT MOUNT CONNECTING LINKS (Continued)

REMOVE APU VERTICAL MOUNT CONNECTING LINK

NOTE

Hoist operating instructions are marked on hoist,

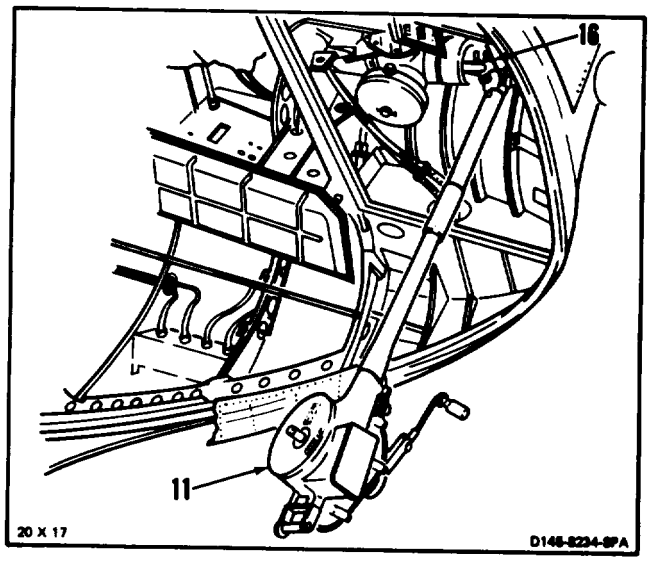
4. **Position lug (10) of hoist (11) in clevis (12) on structure (1 3). Install bolt (14) and nut (15).**
5. **Route cable (16) through tackle block (17). Hook tackle block to fitting (18) on structure (13).**
6. **Attach cable (16) to links (19) on apu (20) with bolt (21) and nut (22).**



WARNING

Make sure slack is removed from hoist cable. Otherwise, apu could drop when vertical connecting link is disconnected causing injury to personnel.

7. **Have helper operate hoist (11) to remove slack from cable (16).**



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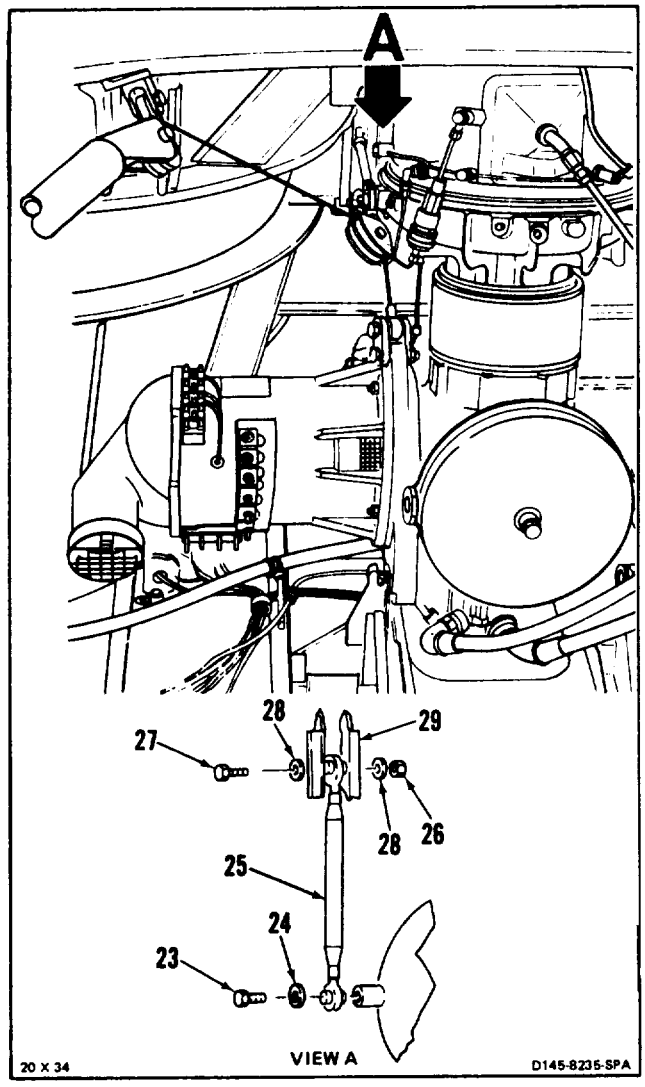
15-6 REMOVE APU AFT MOUNT CONNECTING LINKS (Continued)

8. Remove lockwire. Remove bolt (23) and washer (24) from link (25).
9. Remove nut (26), bolt (27) and two washers (28) from fitting (29). Remove link (25).
10. Loosely install bolt (27), washers (28) and nut (26) in fitting (29).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

15-7 INSTALL APU AFT MOUNT CONNECTING LINKS 15-7

INITIAL SETUP

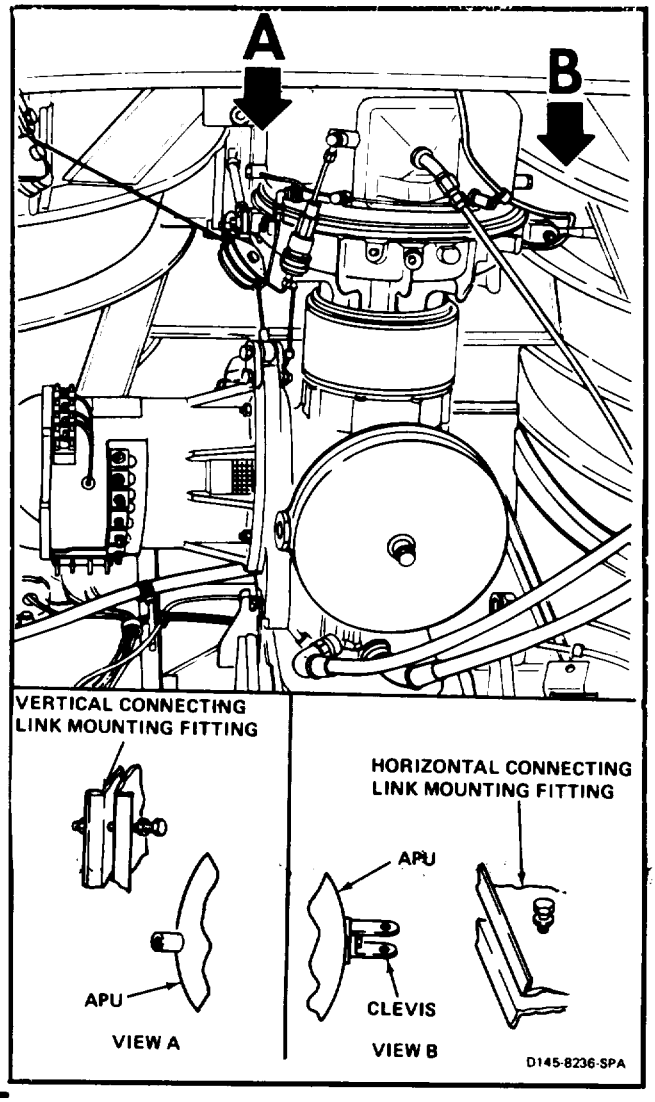
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Workstand

Materials:
Lockwire (E231)

Personnel Required:
Medium Helicopter Mechanic (2)
Inspector

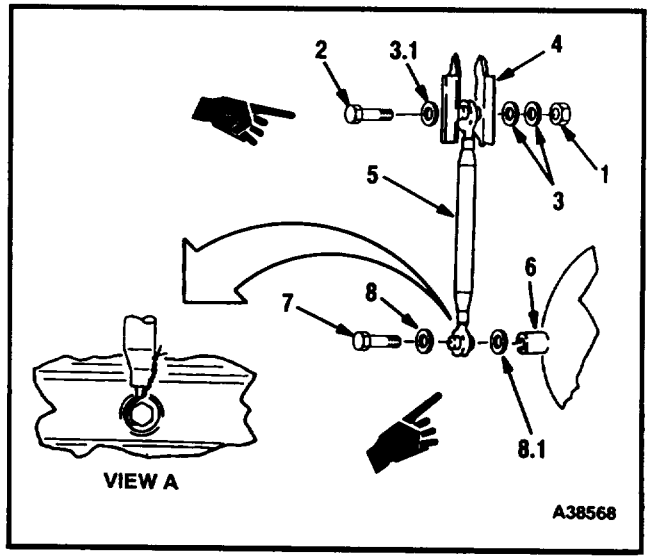
References:
TM 55-1520-240-23P



INSTALL APU VERTICAL AFT MOUNT CONNECTING LINK

NOTE
Two bushings are installed in fitting for link alignment.

1. **Remove nut (1), bolt (2), two washers (3), and washer (3.1) from fitting (4),**
2. **Position link (5) in fitting (4). Install bolt (2), washer (3.1), two washers (3), and nut (1).**
3. **Align link (5) with apu mount point (6). Install bolt (7), washer (8), and washer (8.1).**
4. **Lockwire bolt (7). Use lockwire (E231).**



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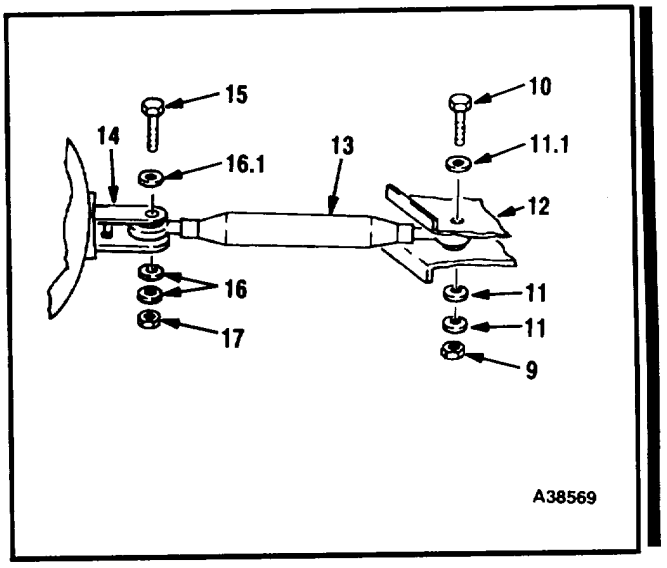
INSTALL APU HORIZONTAL AFT MOUNT CONNEC7ING LINK

NOTE

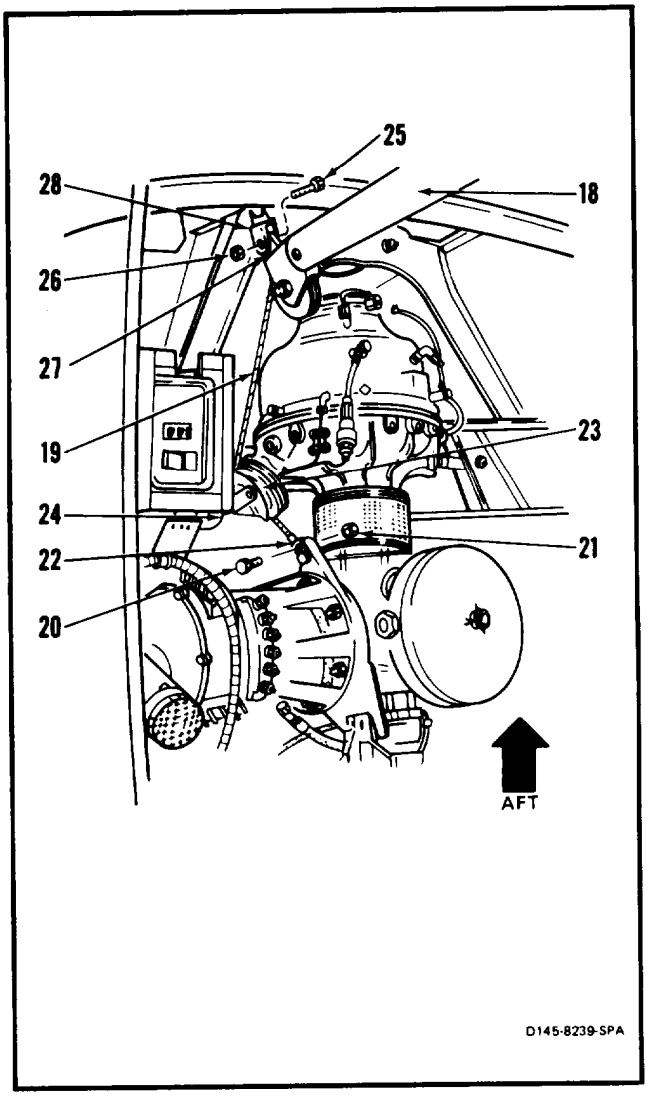
Two bushings are installed in fitting for link alignment.

5. **Remove nut (9), bolt (10), two washers (11), and washer (11.1) from fitting (12).**
6. **Position i ink (13) in fitting (12). Install bolt (10), washer (11.1), two washers (11), and nut (9).**
7. **Position link (13) in clevis (14). Install bolt (15), two washers (16), washer (16.1), and nut (17).**



8. **Have helper operate hoist (18) to remove tension from cable (19).**
9. **Remove bolt (20) and nut (21) to disconnect cable (19) from links (22).**
10. **Unhook tackle block (23) from fitting (24).**
11. **Remove bolt (25) and nut (26) from lug (27) and clevis (28). Remove hoist (18).**

INSPECT



FOLLOW-ON MAINTENANCE:
Install apu drip pan (Task 2-3).
Close ramp work platform (Task 2-255).
Close cargo ramp (TM 55-1520-240-T).

END OF TASK

15-7.1 REPLACE APU FORWARD MOUNTS

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Bomb Hoist, Aero 14C (T166)

Tackle Block (T165)

Workstand

Materials:

Lockwire (E231)

Parts:

Bolts (2)

Nuts (2)

Personnel Required:

Medium Helicopter Repairer (2)

Equipment Condition:

Battery Disconnected (Task 1-39)

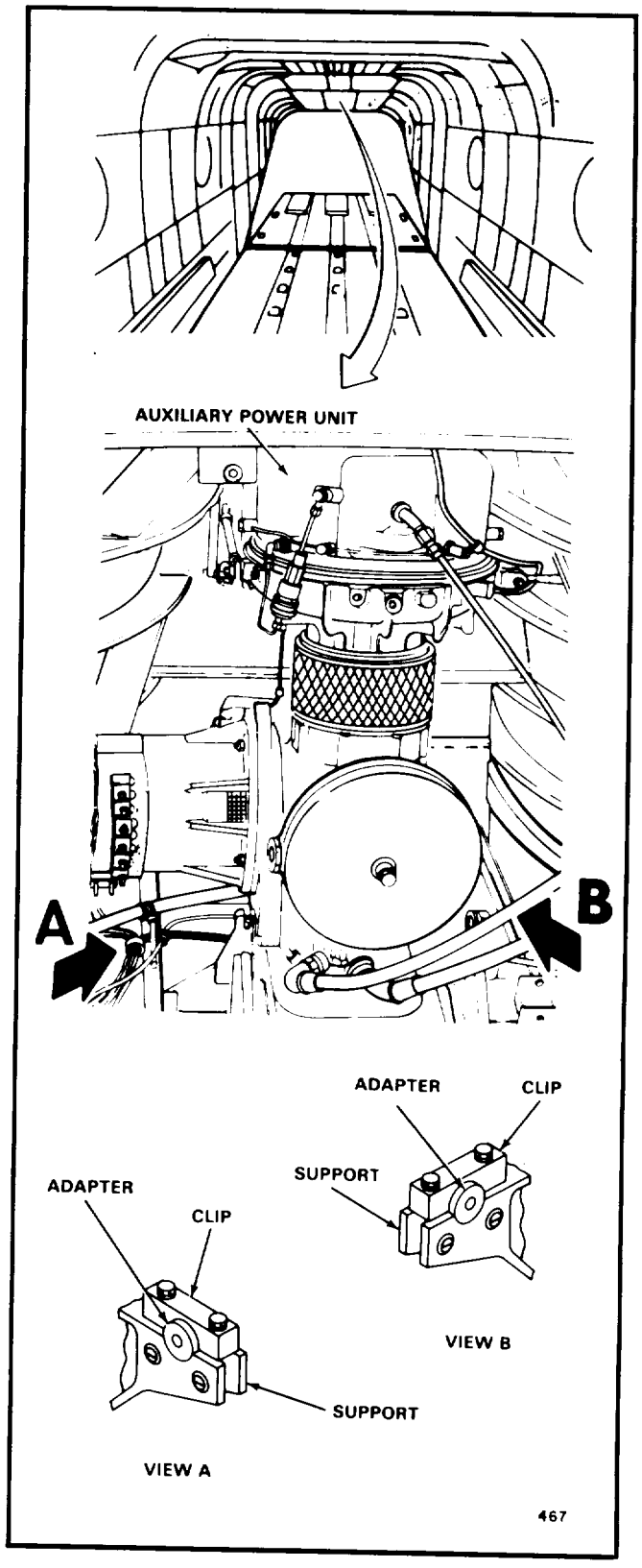
Electrical Power Off

Hydraulic Power Off

Cargo Ramp Open and Level (TM 55-1520-240-T)

Ramp Work Platform Open (Task 2-238)

APU Drip Pan Removed (Task 2-3)



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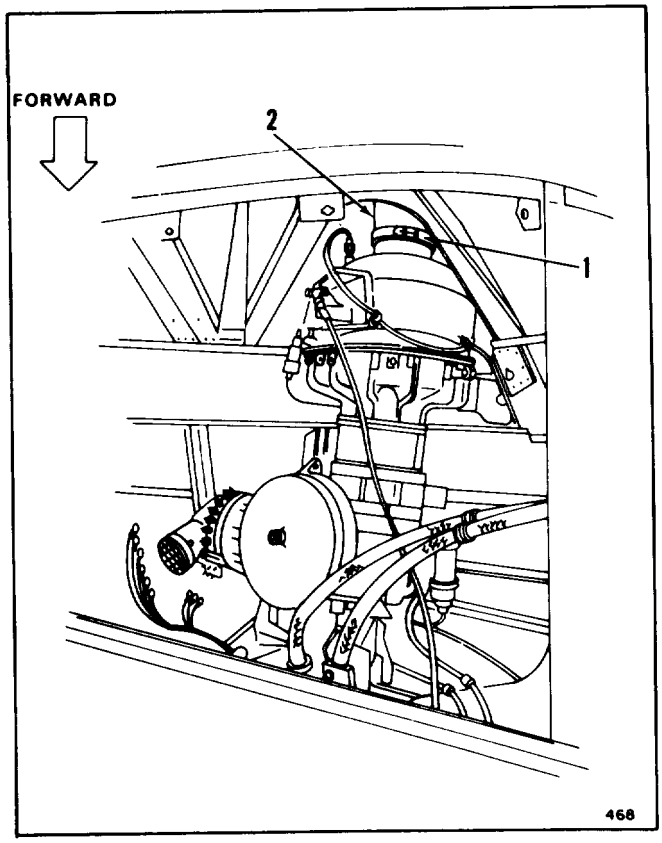
15-7.1 REPLACE APU FORWARD MOUNTS (Continued)

1. Loosen clamp (1). Slide exhaust duct (2) aft.



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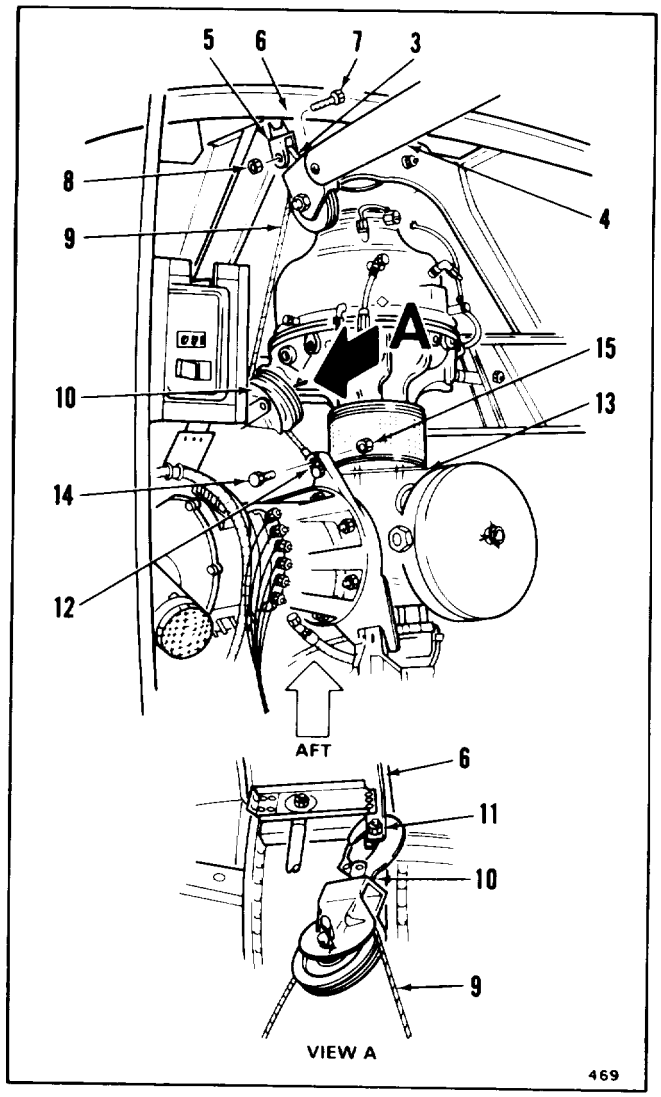
15-7.1 REPLACE APU FORWARD MOUNTS (Continued)

NOTE

Hoist operating instructions are marked on hoist.

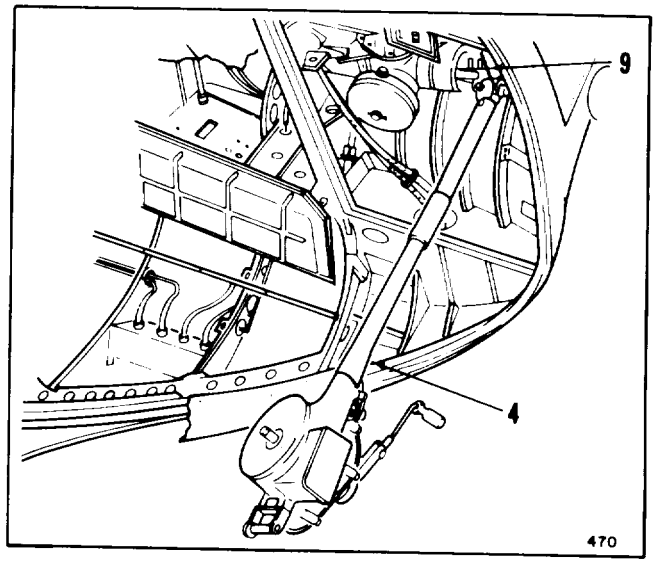
2. Position lug (3) of hoist (4) in clevis (5) on structure (6). Install bolt (7) and nut (8).
3. Route cable (9) through tackle block (10) Hook tackle block to fitting (11) on structure (6).
4. Attach cable (9) to links (12) on apu (13) with bolt (14) and nut (15).



WARNING

Make sure slack is removed from hoist cable. Otherwise, apu could drop when it is disconnected causing injury to personnel.

5. Have helper operate hoist (4) to remove slack from cable (9).



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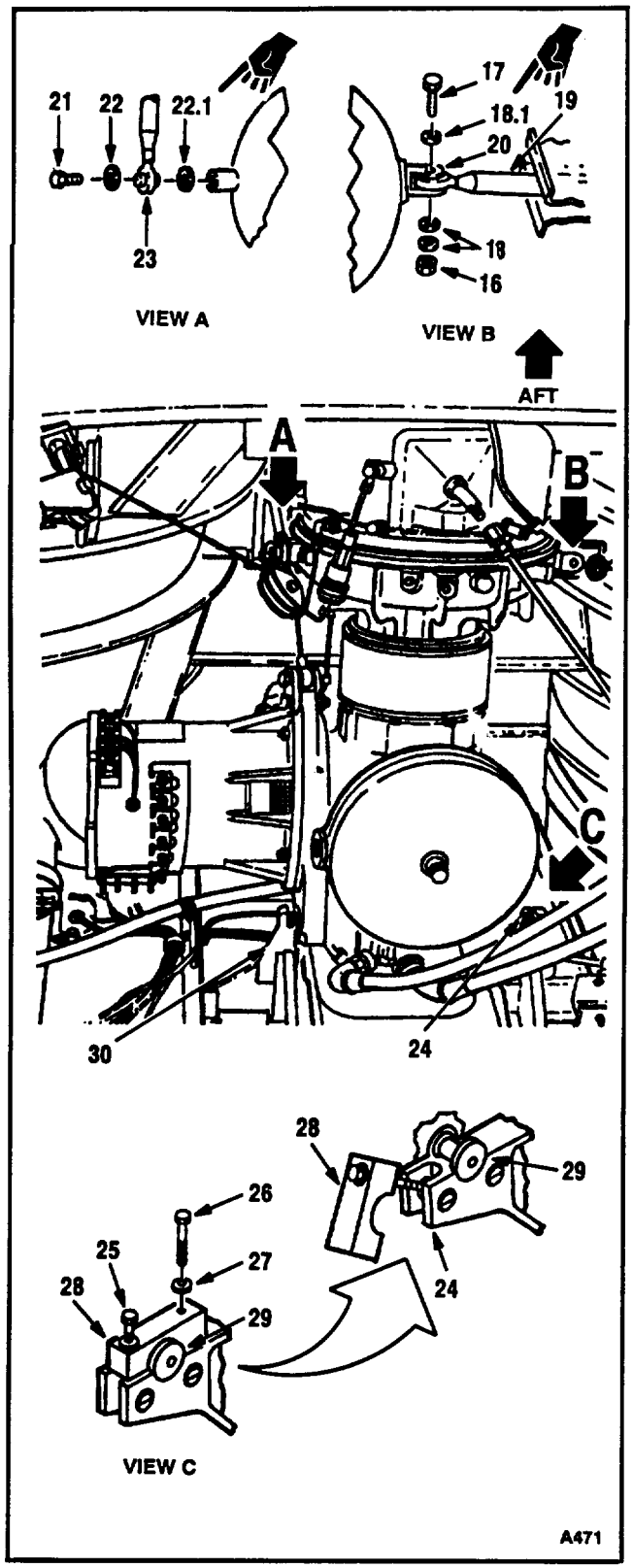
6. Remove nut (16), bolt (17), two washers (18), and washer (18.1). Remove link (19) from clevis (20).
7. Remove lockwire and remove bolt (21), washer (22), and washer (22.1) from link (23).
8. On right forward support (24), loosen aft bolt (25) and remove forward bolt (26) and washer (27). Rotate clip (28) away from adapter (29).
9. Repeat step 8 at left forward support (30).



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15-7.1 REPLACE APU FORWARD MOUNTS (Continued) 15-7.1

WARNING

When adapters are removed from supports, weight of apu will be supported by hoist only. Apu is heavy and can injure personnel if it drops. Apu must be supported by hoist and moved carefully to prevent injury to personnel.

CAUTION

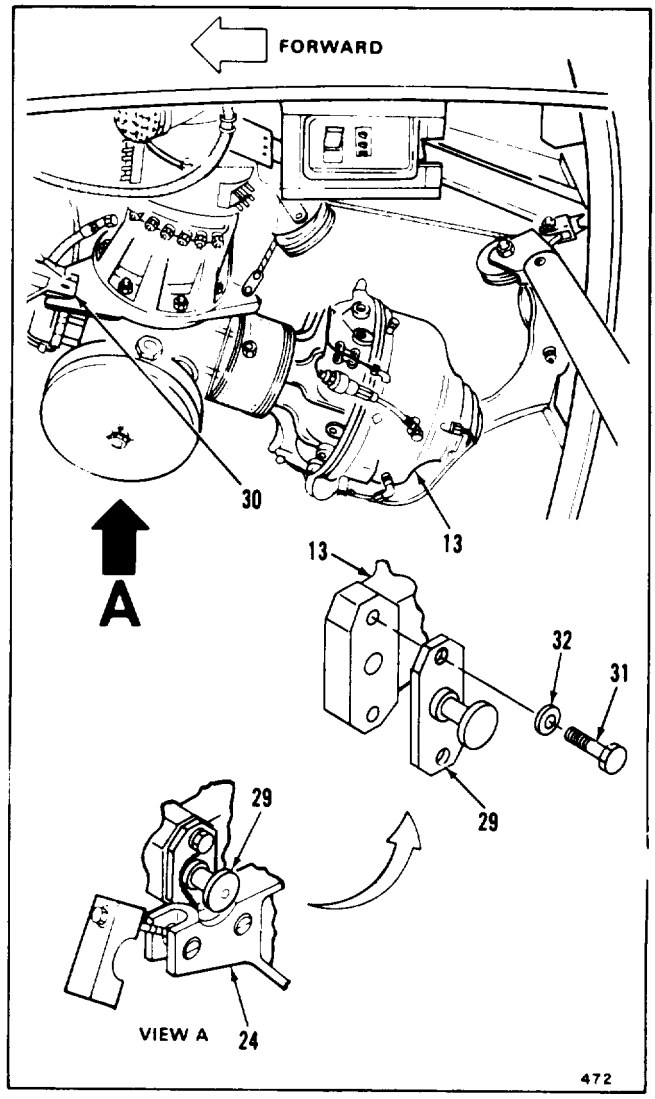
Do not let weight of apu crush its fittings, lines, or accessories.

10. **Have helpers lift forward end of apu (13) to remove adapters (29) from left support (30) and right support (24). Have helpers keep apu steady.**
11. **Remove lockwire and remove four bolts (3 1), washers (32), and two adapters (29).**
12. **Install two new adapters (29), four bolts (3 1), and washers (32). Install lockwire (E231) on bolts.**

WARNING

Apu is heavy and can injure personnel if it drops. Apu must be supported by hoist and moved carefully to prevent injury to personnel.

13. **Have helpers lift forward end of apu (13) to position adapters (29) in left support (30) and right support (24).**



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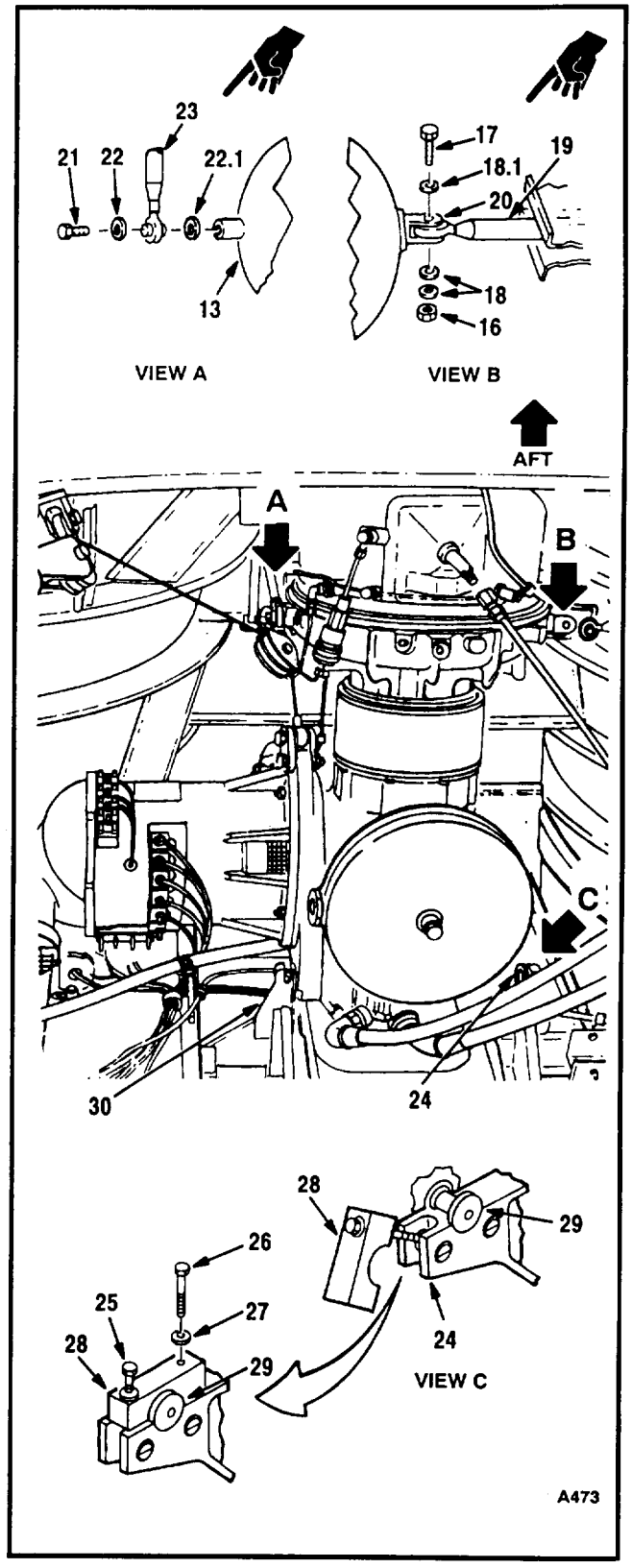
14. Align left link (23) with apu (13) and install bolt (21), washer (22), and washer (22.1). Lockwire bolt. Use lockwire (E231).
15. Position link (19) in clevis (20) and install bolt (17), nut (16), two washers (18), and washer (18,1).
16. On right forward support (24), position clip (28) over adapter (29). Install bolt (26) and washer (27). Tighten bolts (26 and 25).
17.. Repeat step 16 for left forward support (30).



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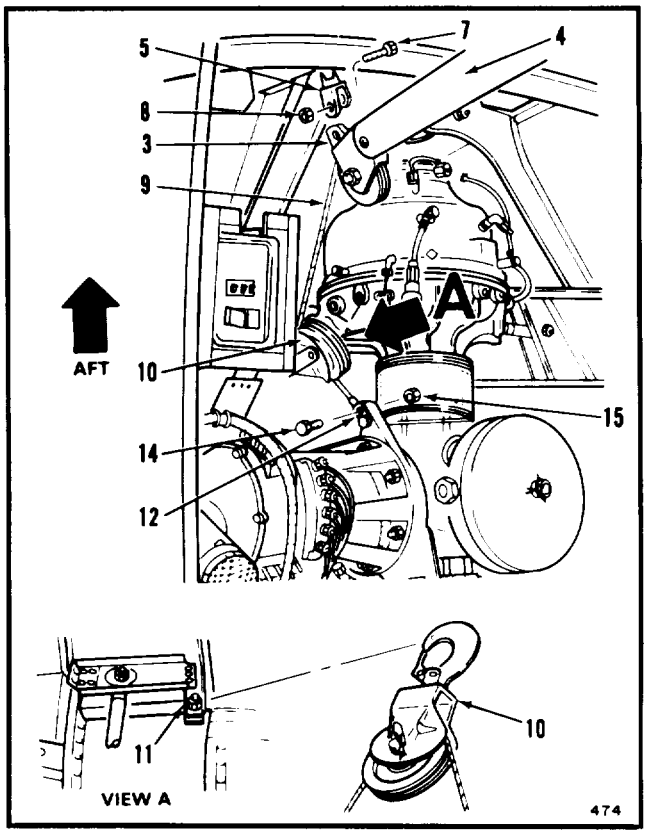
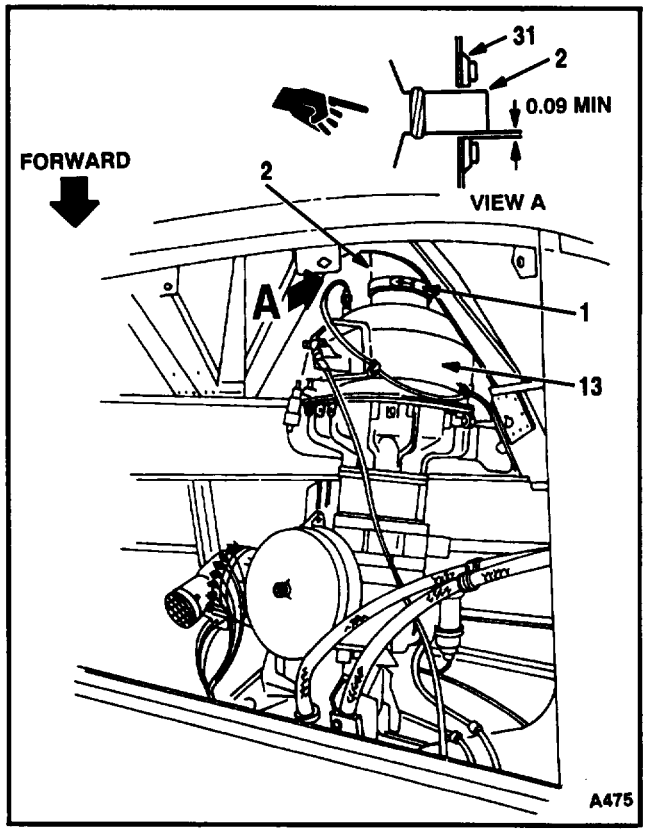
18. Operate hoist (4) to remove tension from cable (9).
19. Remove bolt (14) and nut (15) to disconnect cable (9) from links (12).
20. Unhook tackle block (10) from fitting (11).
21. Remove bolt (7) and nut (8) to remove lug (3) from clevis (5). Remove hoist (4).



22. Slide exhaust duct (2) forward over apu (13). Check for 0.09 inch minimum gap between duct (2) and tailcone closure (31). Tighten clamp (1).



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15-7.1 REPLACE APU FORWARD MOUNTS (Continued) 15-7.1

FOLLOW-ON MAINTENANCE:

Perform operational check of apu (TM 55-1520-240-T).

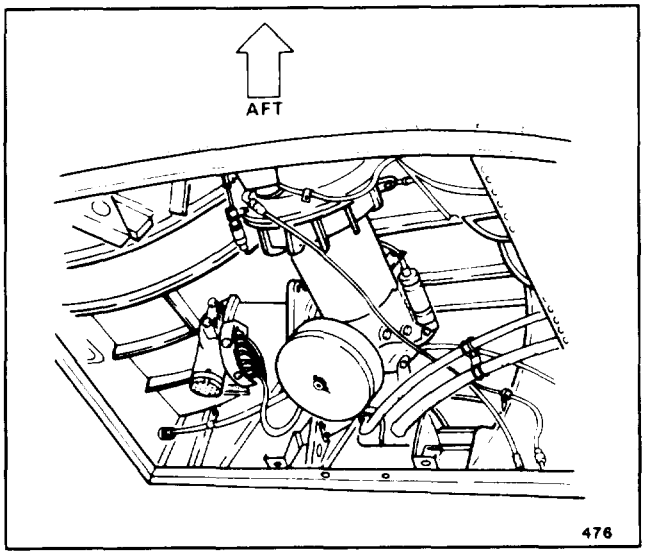
Install apu drip pan (Task 2-3).

Install aft transmission drip pan (Task 2-3).

Close aft transmission access panels (Task 2-2).

Close ramp work platform (Task 2-244).

Close cargo ramp (TM 55-1520-240-T).



END OF TASK

15-8 REMOVE APU EXHAUST DUCT CLOSURE

INITIAL SETUP

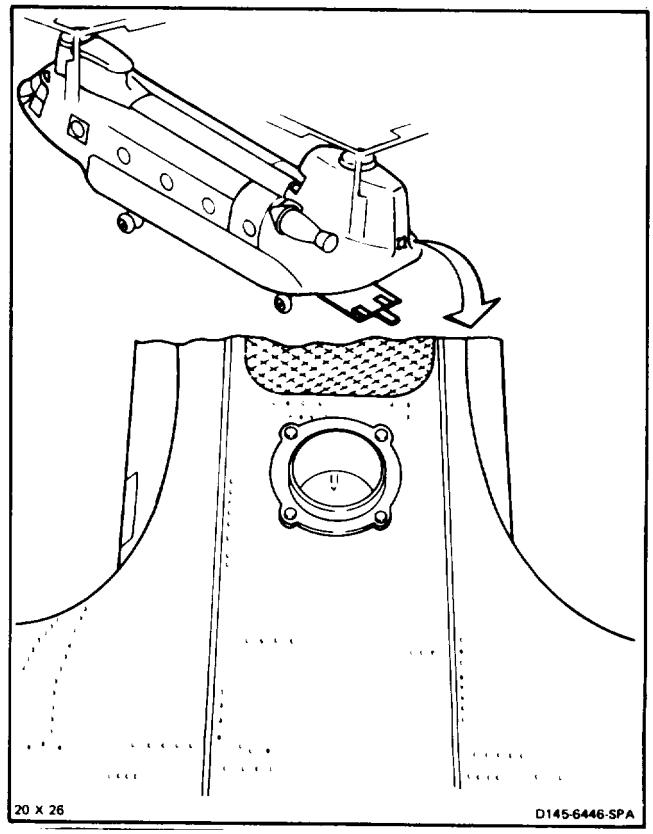
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Workstand

Materials:
None

Personnel Required:
Medium Helicopter Repairer

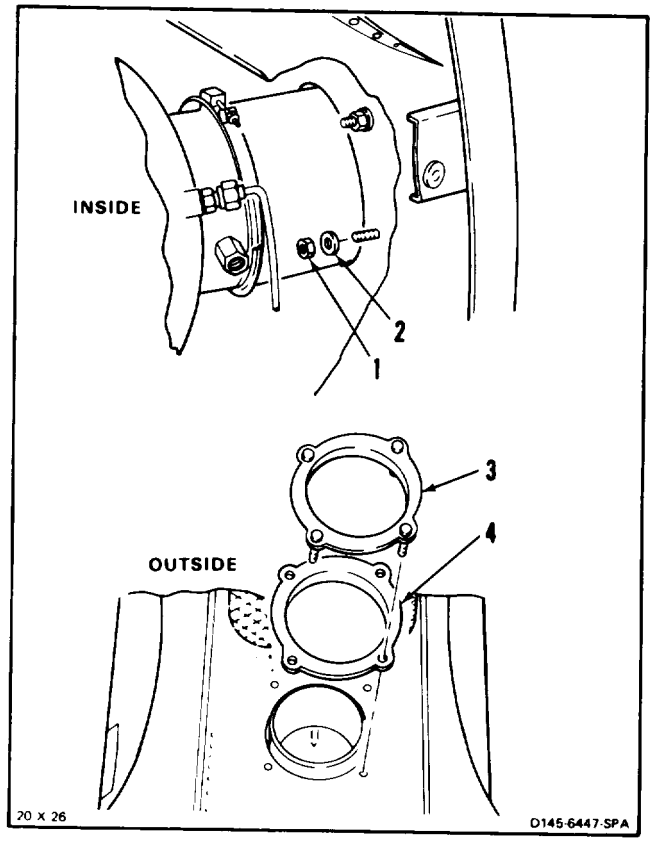
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Cargo Ramp Open and Level (TM 55-1520-240-T)
Ramp Work Platform Open (Task 2-251)
APU Drip Pan Removed (Task 2-3)



1. **From inside helicopter, remove four nuts (1) and washers (2).**
2. **From outside helicopter, remove closure (3) and gasket (4).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

INITIAL SETUP

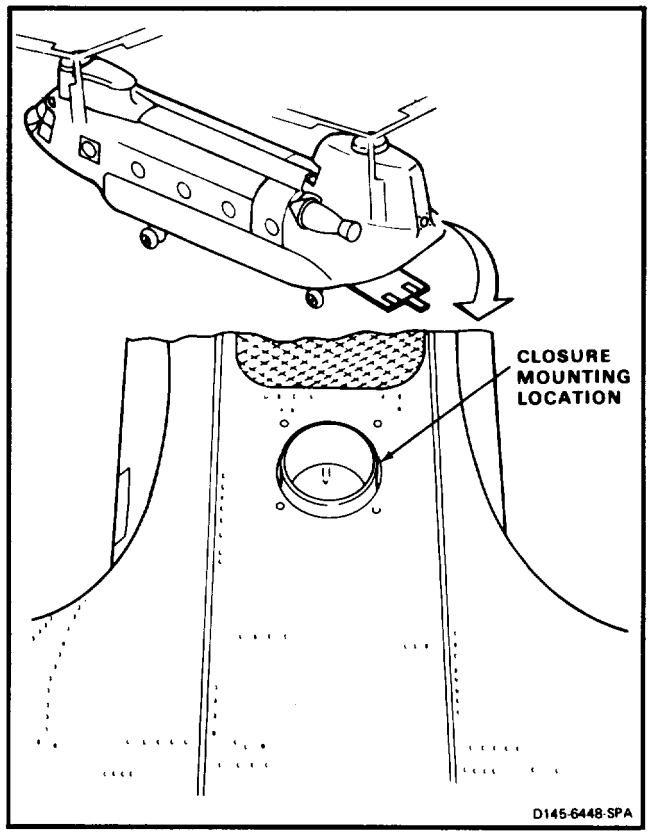
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Workstand

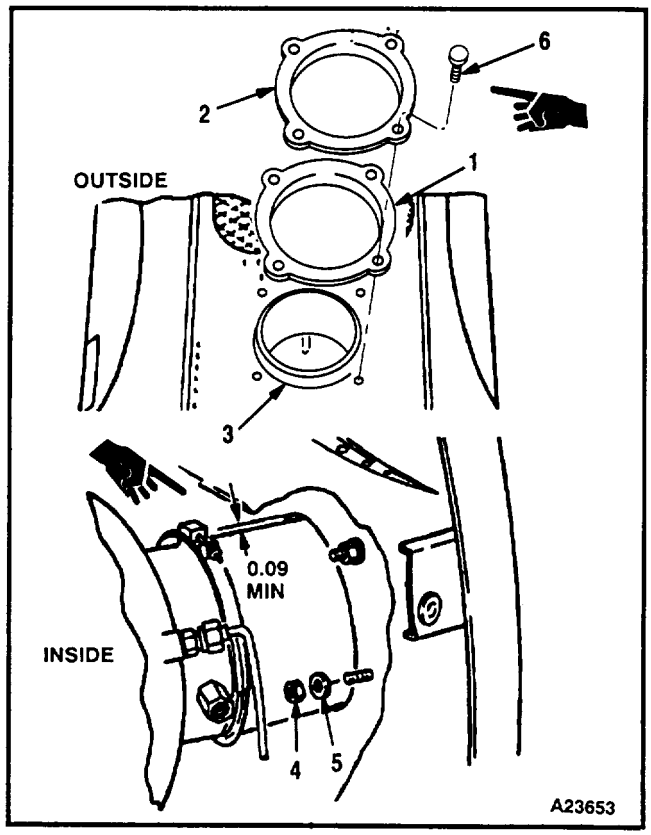
Materials:
None

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P



1. **Install gasket (1) on closure (2),**
2. **From outside helicopter, install closure (2) over exhaust duct (3).**
3. **From inside helicopter, install four nuts (4) and washers (5) on screws (6).**
4. **Check for 0.09 inch minimum gap between duct (3) and tailcone closure (2).**



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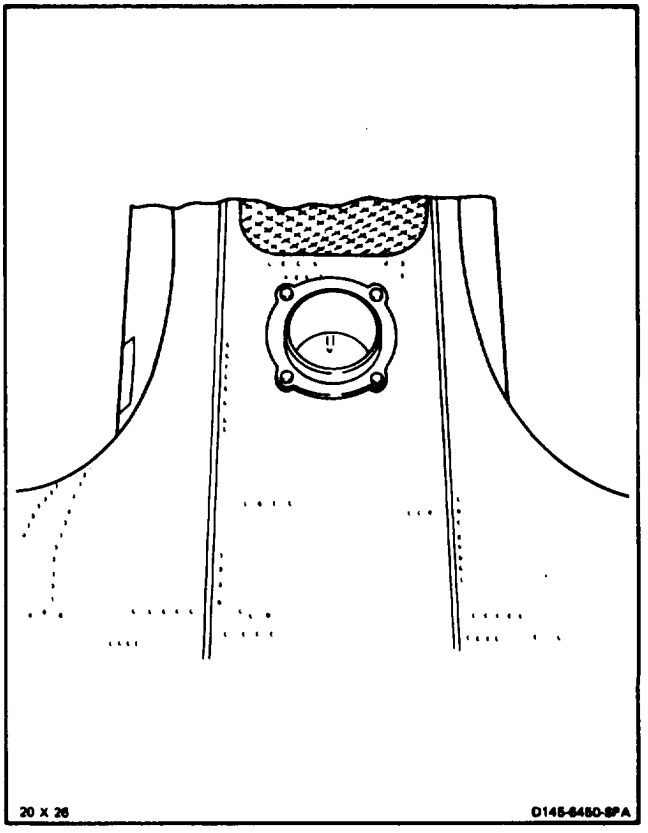
15-9 INSTALL APU EXHAUST DUCT CLOSURE (Continued) 15-9

FOLLOW-ON MAINTENANCE:

Install apu drip pan (Task 2-3).

Close ramp work platform (Task 2-255).

Close cargo ramp (TM 55-1520-240-T).



END OF TASK

CHAPTER 16
MISSION EQUIPMENT

SECTION I
CARGO CARRYING HOOK SYSTEM
DESCRIPTION
AND
THEORY OF OPERATION

16-1 EXTERNAL CARGO HOOK SYSTEM 16-1

DESCRIPTION

The external cargo hook system consists of three separate cargo hooks mounted on the underside of the helicopter. The system allows a single load to be carried suspended at up to three points or three separate loads to be carried at the same time.

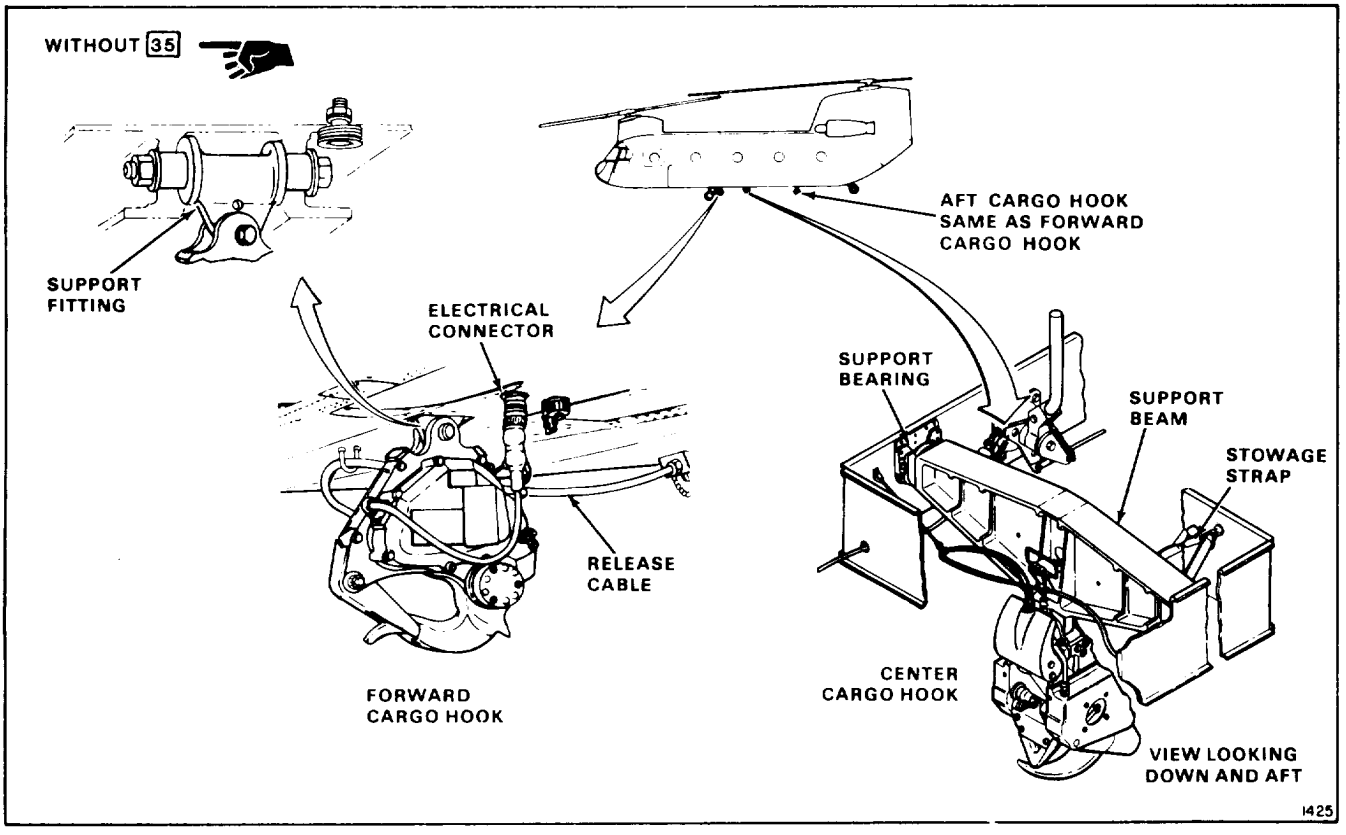
The center cargo hook is suspended from a beam under the cabin floor at station 331. The hook is attached to the beam with a bolt that lets the hook swing to each side. The beam is carried in bearings attached to structure at the sides of the rescue hatch in the floor. It can pivot forward and aft from the attaching points,

When not in use, the hook is stowed between cabin floor and rescue hatch door. In use, the hatch door is opened and the hook is unstrapped to hang down through the open hatch. The hook lifting capacity is 26,000 pounds.

The forward and aft hooks hang from fittings attached to the floor beams at stations 249 and 409. Each fitting is a universal type that allows the hook to swing forward and aft and from side to side. Normally the hook is electrically actuated through a connector on the fuselage skin. It can also be released manually through a cable that connects to a release mechanism. The lifting capacity of each hook is 17,000 pounds. When used together, the two hooks can lift a load of 25,000 pounds.

All three hooks can be released in any one of three modes — normal, emergency, or manual. See Task 16-2 for a description of hook operation in each of these modes.

Power to operate the cargo hook system in normal operation comes from the No. 228 volt dc bus. Two circuits are provided, each controlled by a separate circuit breaker. One circuit provides power to the system. The other contains the control switches and relays. Two separate power and control circuits are provided for emergency release of the hooks. Again, each has its own circuit breaker.



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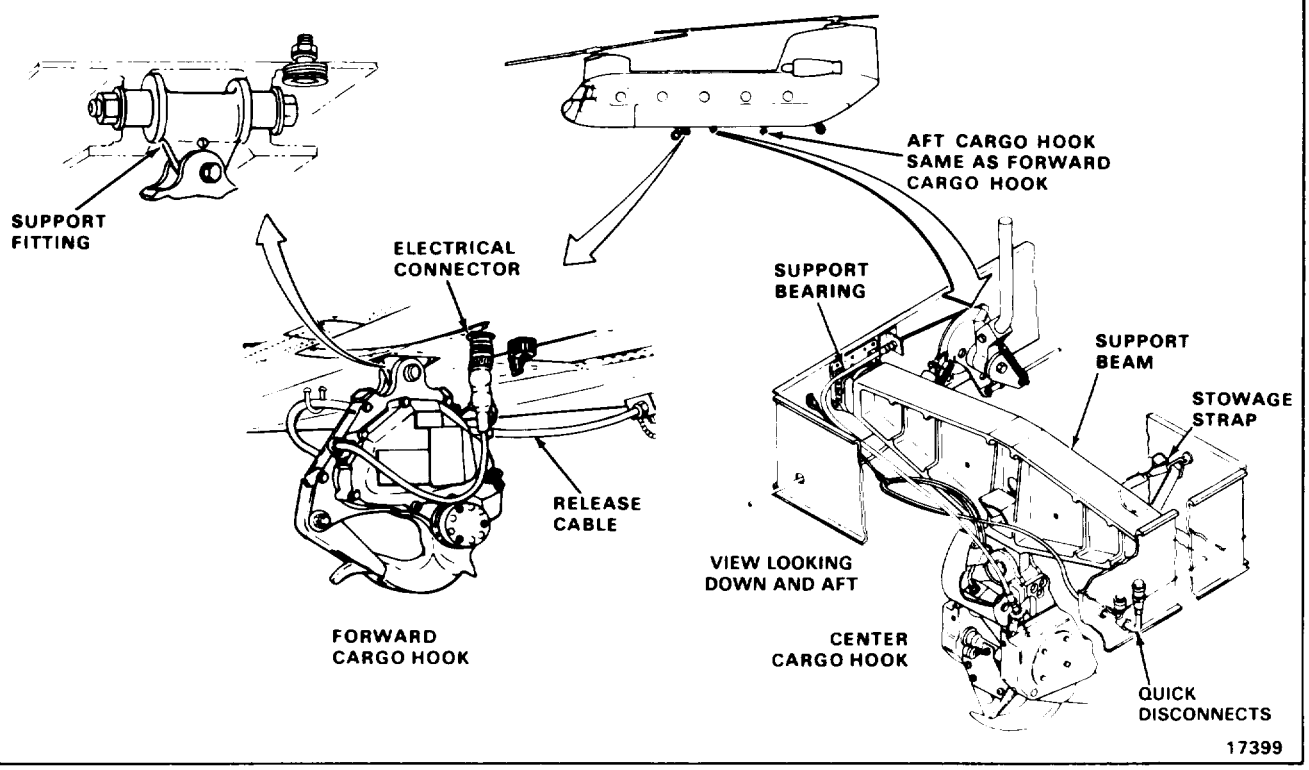

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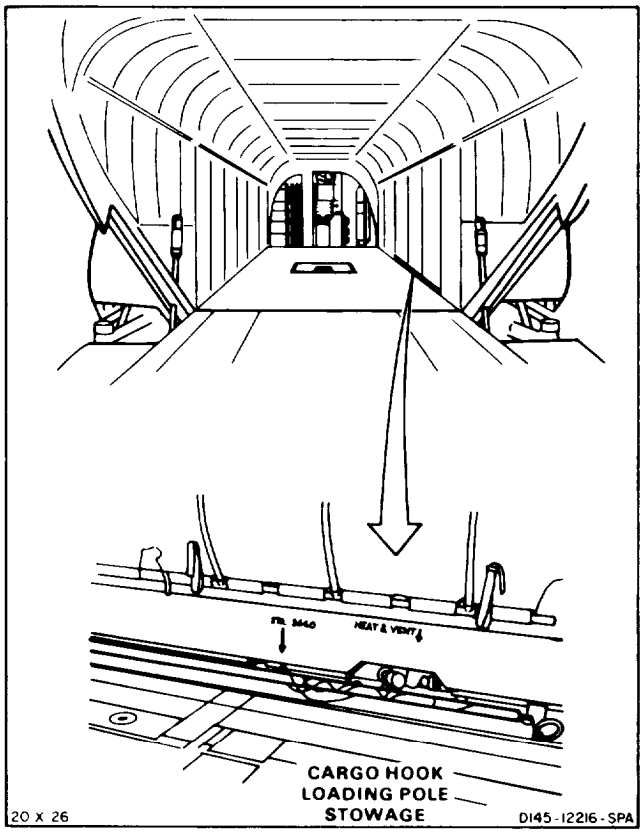
CENTER CARGO HOOK LOADING POLE

The cargo hook loading pole is used to pick up the sling loop of external cargo loads from inside the helicopter. The loop is then placed on the cargo hook by hand. The pole has a hook at one end and a cable at the other end. The cable is attached to the fuselage to prevent accidental loss of the pole when in use and to provide a discharge path for static electricity.

When not in use the pole is stowed on the lower right side of the cabin at about sta 360, just below the heater duct.



WARNING

Make sure the ground cable is connected when using the loading pole. With the rotors turning, static potential between the helicopter and a load on the ground can be as high as 40,000 volts.

THEORY OF OPERATION
Normal Release

NOTE

The relays referred to in this section are in the Normal Release Relay Box at the right side of the cabin near sta 280.

Setting the **MASTER switch** on the **CARGO HOOK control panel** to ARM energizes **power control relay K1** through the control circuit breaker, The energized relay lights the ARMED SW FAIL light on the cabin relay box and arms the following:

- System power circuit, through the power circuit breaker
- **CARGO REL buttons** on the pilot's and copilot's control stick grips
- **CARGO HOOK switch** on the HOIST OPERATOR PANEL in the cabin
- **Ground relay K4** contacts
- **Center hook release relay K3** contacts
- **Forward hook release relay K8** contacts
- **Aft hook release relay K9** contacts

Setting the CARGO HOOK switch on the HOIST OPERATOR PANEL to ARM arms the CARGO HOOK RELEASE switch on the control grip in the cabin.

Operating the hook release button on either of the control stick grips or the hook release switch in the cabin energizes **ground relay K4,** which is then latched energized through its own contacts. The RELEASE SW FAIL and GROUND RELAY ACTIVATE lights on the relay box come on. The FAIL light stays lit as long as the release switch (or button) is held. The ACTIVATE light will stay lit as long as relay K4 stays energized.

The closed contacts of relay K4 also provide a ground for the center hook **hydraulic solenoid valve** and for the normal release relay circuits of the forward and aft hook.

Finally, the release switch (or button) energizes one or more of **release relays K3** (center), **K8** (forward), and **K9** (aft), depending on the position of the HOOK SELECT switch on the cockpit overhead panel. Current from the power circuit flows through the closed release relay contacts to energize the **release solenoid** of the selected hook.

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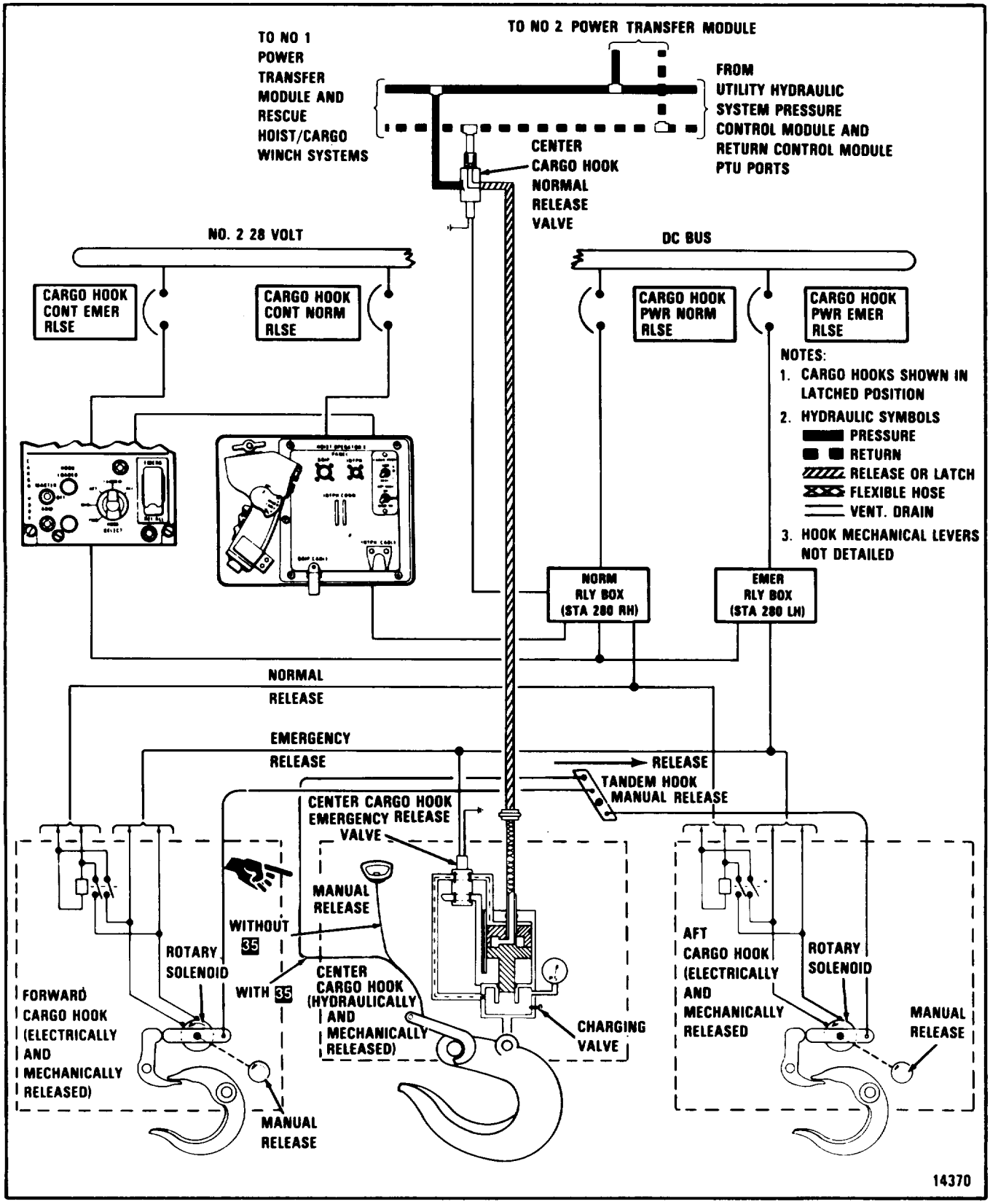
16-1 EXTERNAL CARGO HOOK SYSTEM (Continued) 16-1



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If the **center cargo hook** has been selected, the following sequence takes place:

- With **hydraulic solenoid valve 134L1** energized to open, pressurized fluid from the utility hydraulic system flows to the hook **actuating cylinder.** The cylinder is forced upward and the hook opens.
- As the hook opens, it closes normally-open **switch S3.** At the same time, the moving cylinder closes normally-open **switch S2.** These switches complete the circuit to light the MID HOOK OPEN light on the master caution panel.
- The hook will remain open until the **MASTER switch** on the cockpit overhead panel or the **CARGO HOOK switch** on the cabin panel is momentarily set to RESET. When this is done, latched relays K3 and K4 are deenergized, closing the hydraulic solenoid valve. The flow of hydraulic fluid to the cylinder is stopped and the fluid return line is opened, allowing pneumatic pressure stored in the cylinder to close the hook.

If the **forward or aft cargo hook** has been selected, the following sequence takes place:

- When the release solenoid is energized, it moves the hook's **release arm** up, unlatching the release lever that holds the load beam closed. Assuming that the load is heavy enough to overcome the spring-loading of the beam, the beam pivots open, releasing the load. With the load released, the spring-loading closes the hook.
- Almost immediately after the release solenoid is energized, a **solenoid protection switch** on the hook opens to reenergize the **normal release relay.** This deenergizes the solenoid, causing the protection switch to open again. The release solenoid is re-energized and the entire sequence repeats, continuing until the hook release button or switch is released.
- When a hook is open, hook-open and linkage-open **limit switches** on the hook close. This energizes relay K5 (aft) or K6 (forward) to close. Contacts on these relays close to light the FWD or AFT HOOK OPEN lights on the master caution panel. When the cockpit **MASTER switch** or the cabin **CARGO HOOK switch** is set to **RESET,** the relays are deenergized and the lights go out.
- A hook-loaded switch on each hook closes when a load of about 150 pounds is applied. The closed switch completes a circuit to light the forward or aft HOOK LOADED light in the cockpit.

Emergency Release

NOTE

The relays referred to in this section are in the Emergency Hook Release Relay Box at left side of the cabin near sta 280.

In the emergency release mode, all three hooks are opened at the same time by operating the **EMER REL ALL guarded switch** on the cockpit overhead panel. The sequence of operation is as follows:

- When the emergency switch is operated, current from the flight essential bus flows through the CARGO HOOK CONT EMER RLSE circuit breaker and the switch to engage **relay K1** and **time delay relay K2.**
- Closed contacts in energized relay K 1 allow current to flow through the CARGO HOOK CONT EMER RLSE circuit breaker to close contacts in the time delay relay. This activates the relay, holding the contacts closed for 10 seconds after the cockpit switch is released. These closed contacts hold the contacts in relay K1 closed for the same 10-second period. The closed K 1 contacts keep a release solenoid on each of the three hooks energized.
- The energized release solenoid on the center hook allows pneumatic pressure from a chamber in the hook actuating cylinder to flow to an auxiliary piston in the cylinder. Motion of this piston raises the cylinder to open the hook. When the solenoid is deenergized (after 10 seconds), the directed pressure is

GO TO NEXT PAGE

vented to atmosphere. The remaining pressure in the pressurized chamber moves the cylinder to close the hook.

- The release solenoids at the forward and aft hooks unlatch the hooks, allowing the load to pull them open. With the load released, the spring-loaded hooks close, latching when the release solenoids are deenergized (10 seconds after being deenergized).

Manual Release Without 35

Manual release of the center cargo hook is done by pulling a D-shaped ring at the top front of the hook. Pulling the D-ring releases a cam lock mechanism, allowing the hook to pivot open. **Switch S2** closes to light the MID HOOK OPEN capsule on the master caution panel. The hook is reset manually by pushing up on the tip to lock the cams into position. When the hook is reset, switch S2 opens and the HOOK OPEN light goes out.

Manual release of the forward and aft hooks is done by the handle in the rescue hatch. Pulling the handle aft rotates a lever arm in each hook. This frees a latch to pivot away from the load beam (hook). The weight of the load is then free to pull the load beam open and the load drops. At the same time, an actuator in the hook linkage lights the FWD and AFT HOOK OPEN lights on the master caution panel. The hooks then return to the closed and latched position and the lights go out

Manual Release With 35

Manual release of the center, forward, and aft cargo hooks is accomplished by using the handle in the rescue hatch.

Pulling the handle aft releases a cam lock mechanism, allowing the center hook to pivot open. **Switch S2** closes to light the MID HOOK OPEN capsule on the master caution panel. The hook is reset manually by pushing up on the tip to lock the cams into position. When the hook is reset, switch S2 opens and the HOOK OPEN light goes out.

Pulling the handle aft also rotates a lever in the forward and aft hooks, This frees a latch to pivot away from the load beam (hook). The weight of the load is then free to pull the load beam open and the load drops. At the same time, an actuator in the hook linkage lights the FWD and AFT HOOK OPEN lights on the master caution panel. The hooks then return to the closed and latched position and the lights go out.

END OF TASK

SECTION II
CARGO CARRYING HOOK SYSTEM

NORMAL RELEASE

The hook release system is normally operated from either cockpit or cabin. Selection of the hook or hooks to be released is made at a five position rotary HOOK SELECT switch on the overhead panel in the cockpit. Switch positions are FWD, MID, AFT, TANDEM, and ALL. The position of this switch determines which hook opens when the CARGO HOOK RELEASE switch on either control stick or the hoist operators grip is pressed. The switch operates through a dual hook relay box containing relays and three maintenance indicator lights.

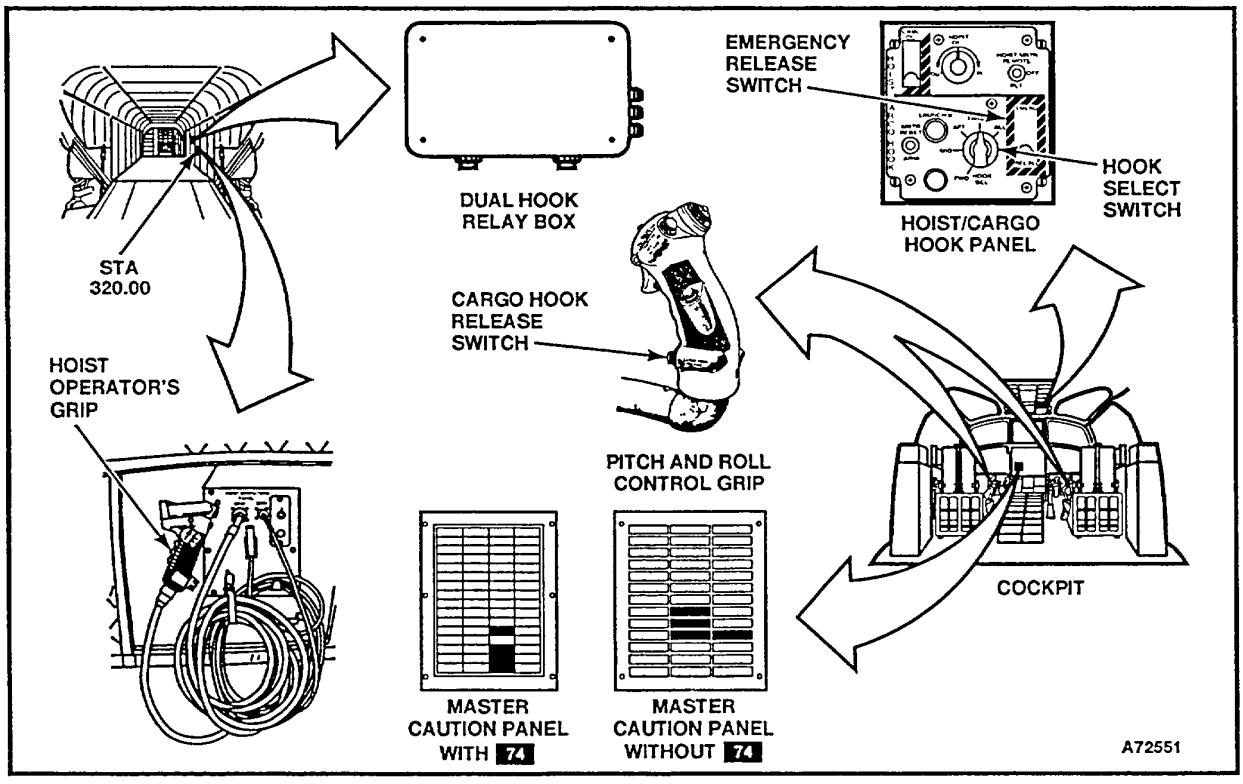
Actual release of the hook or hooks is done from the cockpit or cabin. Cockpit release is made by the CARGO HOOK MASTER switch on the CARGO HOOK panel. The switch has three positions ARM, RESET and OFF. When the switch is set to ARM, power is applied to the CARGO HOOK RELEASE switches on the cyclic sticks and also to the CARGO HOOK ARMING switch at the hoist operators station. OFF position is used to close the mid cargo hook. RESET position is used to turn off the HOOK OPEN caution lights. Cabin operation is by a switch on the hoist operators grip.

The forward and aft hooks are electrically released. The center hook is hydraulically released through a solenoid valve in the tunnel area.

Three indicator lights on the master caution panel show if any of the three hooks are open. A fourth light indicates a fault in dual hook operation. It comes on to show if one of the hooks is not prepared to open.

EMERGENCY RELEASE

In an emergency, all three hooks can be released at the same time from a switch on the overhead panel in the cockpit. It is a guarded switch marked EMERG REL ALL. The switch releases all three hooks regardless of the position of the HOOK SELECT switch. Setting the switch to REL ALL, energizes an emergency hook release relay. The relay then energizes electrical release solenoids in the forward and aft hooks and a solenoid valve in the center hook. The solenoid valve in the center hook releases an air-charge stored in the lower half of the hydraulic actuator, transferring the charge to the upper release half of the actuator to open the hook.



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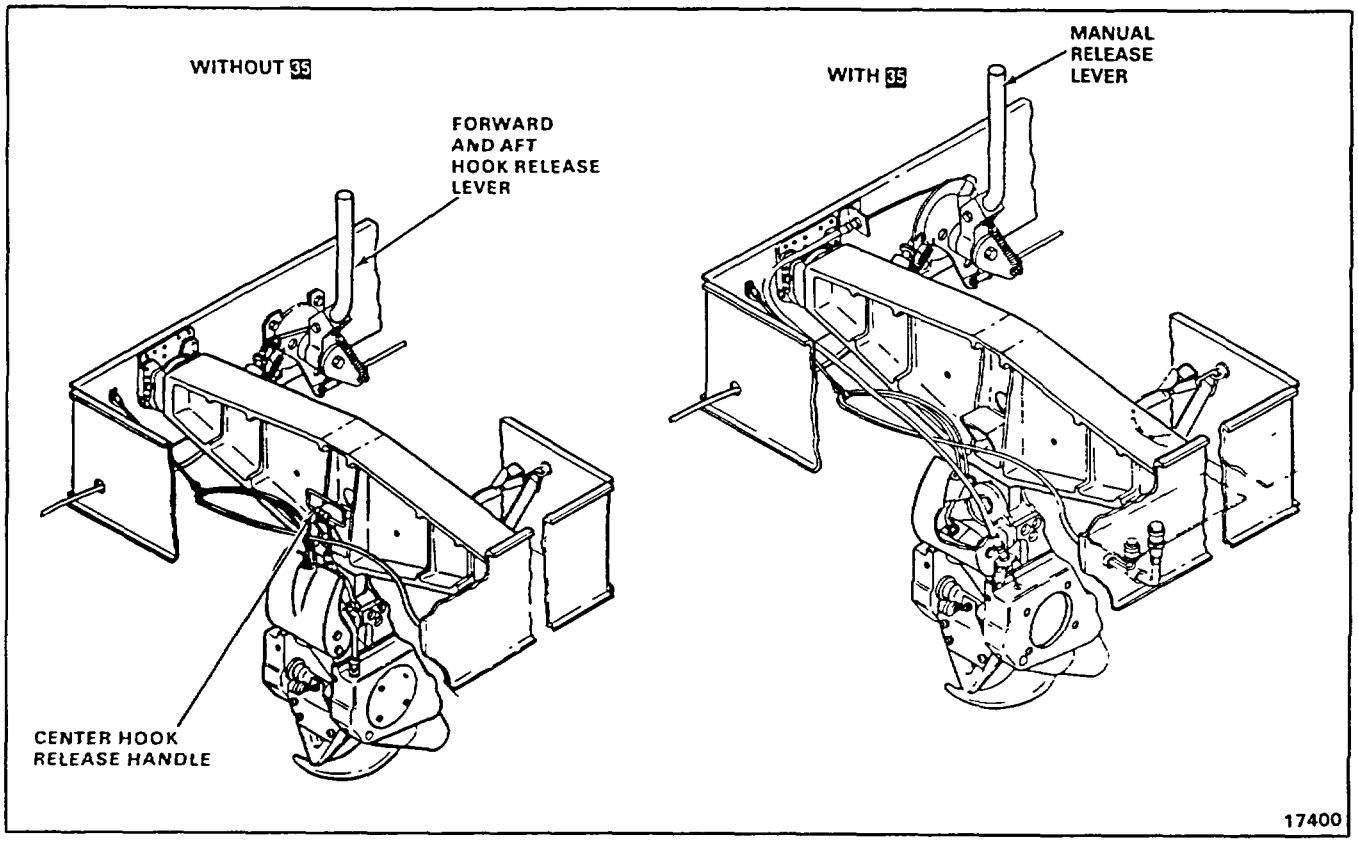
After emergency release, the forward and aft hook will relatch, automatically. The center hook must be manually reset and recharged with air to 2,000 to 2,200 psi.

MANUAL RELEASE WITHOUT 35

If needed, all three hooks can be released by manual controls in the cabin rescue hatch area. The center hook has a manual release handle (D-ring). Pulling the ring unlocks the hook and lets it drop open. The forward and aft hooks are released at the same time by pulling a lever at the right side of the hatch. The center hook must be closed by hand after manual release. The forward and aft hooks automatically reset closed after release. Manual release of all hooks is independent of the electrical, hydraulic, and pneumatic release systems.

MANUAL RELEASE WITH 35

All three hooks can be released at the same time by pulling a lever located at the right side of the hatch.



END OF TASK

16-3 INSPECTION AND REMATCHING OF CENTER HOOK MANUAL RELEASE MECHANISM

INITIAL SETUP

Applicable Configurations:

Without 35

Tools:

Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

Materials:

None

Personnel Required:

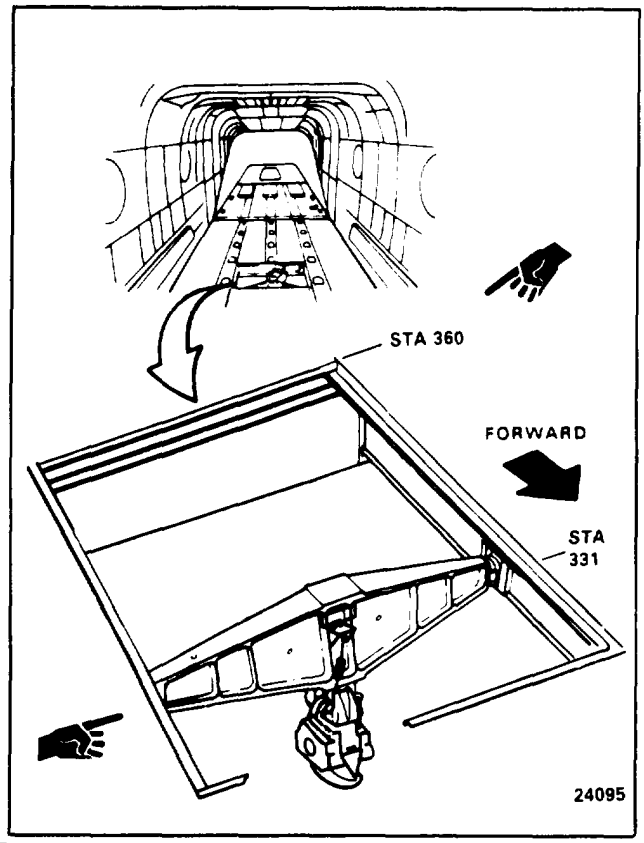
Medium Helicopter Repairer
Inspector

References:

Task 16-4 Task 16-7
Task 16-5 Task 16-8
Task 16-6

Equipment Condition:

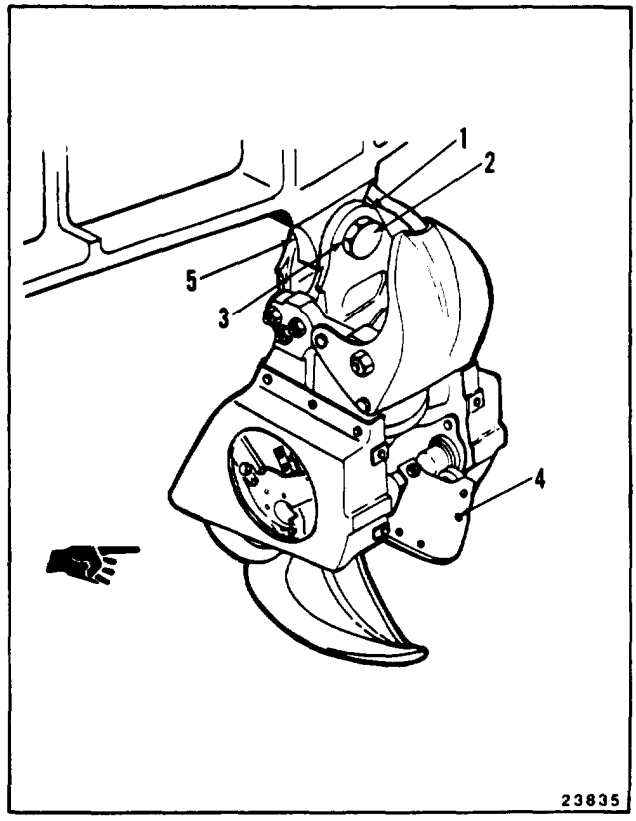
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Rescue Hatch Lower Door at Lowest Position (Task 2-1 93)
Rescue Hatch Access Door Opened (Task 2-2)



CAUTION

Following a manual release under load and before rematching, center hook must be inspected. Otherwise, damage which could affect operation of manual release mechanism may be overlooked.

1. **After each manual release, visually check block (1), bolt (2), sleeve spacer (3) and keeper (4) and beam (5) for damage, binding or distortion. There shall be no damage, binding or distortion.**



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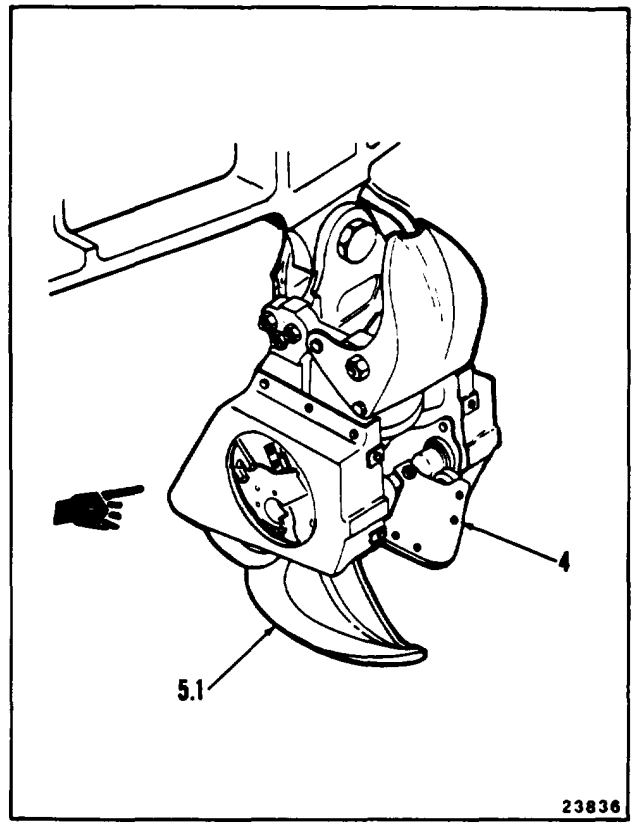
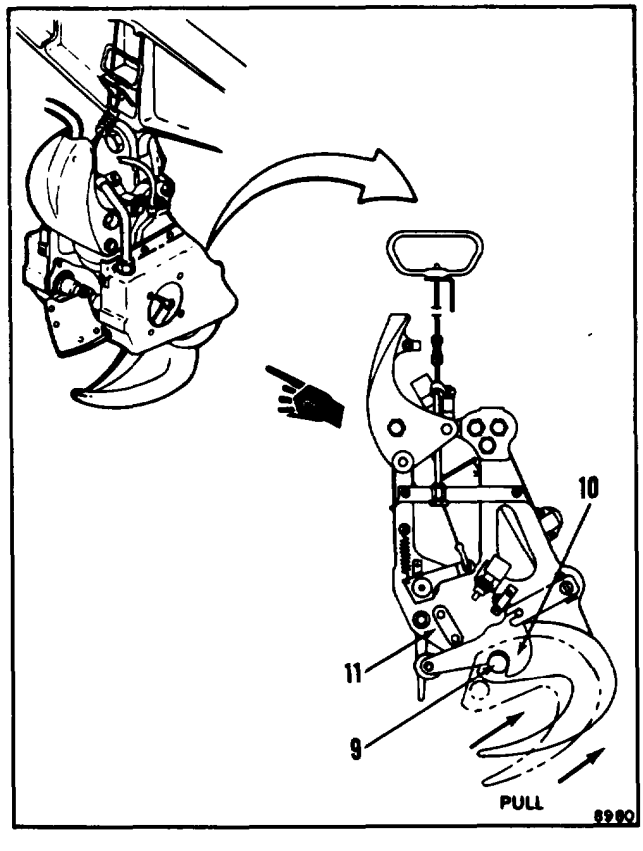
16-3 INSPECTION AND REMATCHING OF CENTER HOOK MANUAL RELEASE MECHANISM (Continued) 16-3

2. **After each manual release, check spring return operation of keeper (4) as follows:**
   a. Push keeper (4) in toward back of hook (5.1).
   b. Release keeper (4). Keeper shall return to original position.



3. **Relatch manual release mechanism as follows:**
   a. Deleted.
   b. Holding rear of hook, **position hook pivot pins (9) into cutouts of rotating cams (10)** and formers (11).



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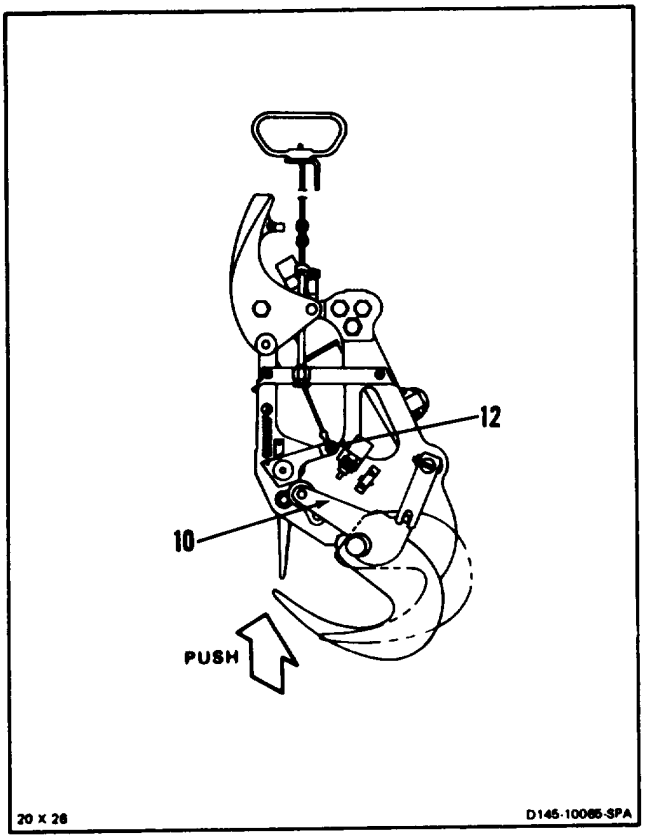
c. Pull rear of hook aft. Rotate tip of hook upwards until rotating cams (10) contact release lever (12).



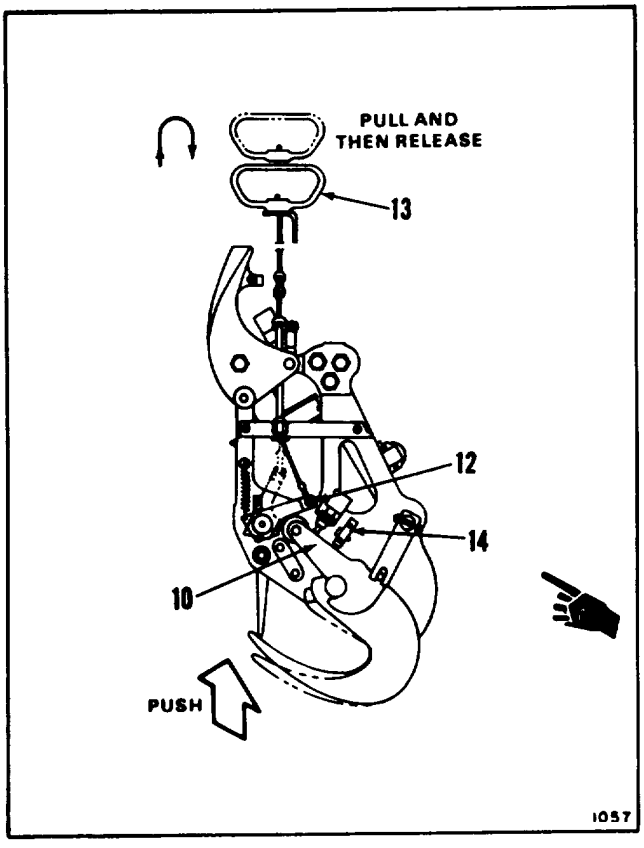
WARNING

Ensure cam roller is fully seated in locked position and hook is fully seated in cam lock, or hook will release under loaded conditions.

d. Pull manual release handle (13) and push tip of hook upward until rotating cams (10) are behind release lever (12).

e. Release manual release handle (13).

f. Ensure rotating cams (10) are against cam stop (14). Ensure release lever (12) is fully clockwise as shown.



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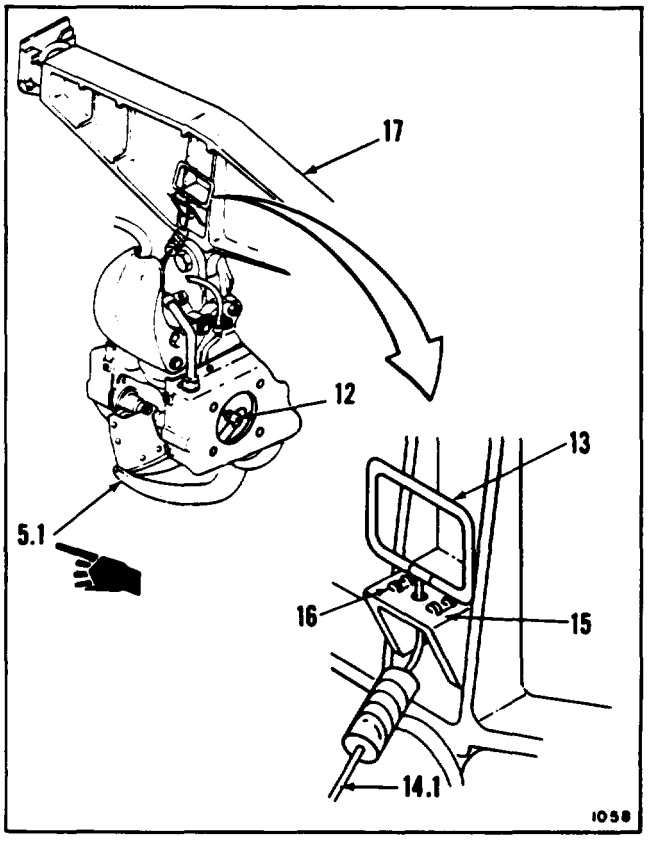
g. **Secure manual release handle (13) in angle plate (15) and cradle (16).**

h. **Move hook (5.1) to the left until it stops against beam (17) and then to the right until it stops against beam (17). There shall be no tension on cable (14.1) when hook is moved. Ensure release lever (12) did not move.**



INSPECT

NOTE

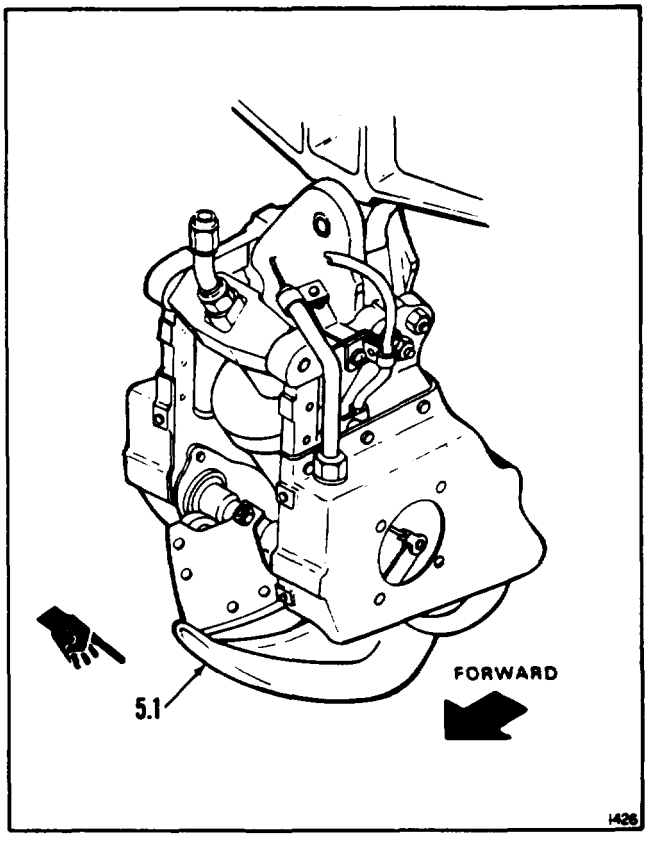
If performing a third manual release under load, continue with step 4. If not performing third release, go to FOLLOW-ON MAINTENANCE.

SPECIAL INSPECTION

4. **After every third manual release under load, perform a special inspection as follows:**

a. **Remove hook (5.1)** (Task 16-4).

b. **Disassemble hook (5.1)** (Task 16-5).



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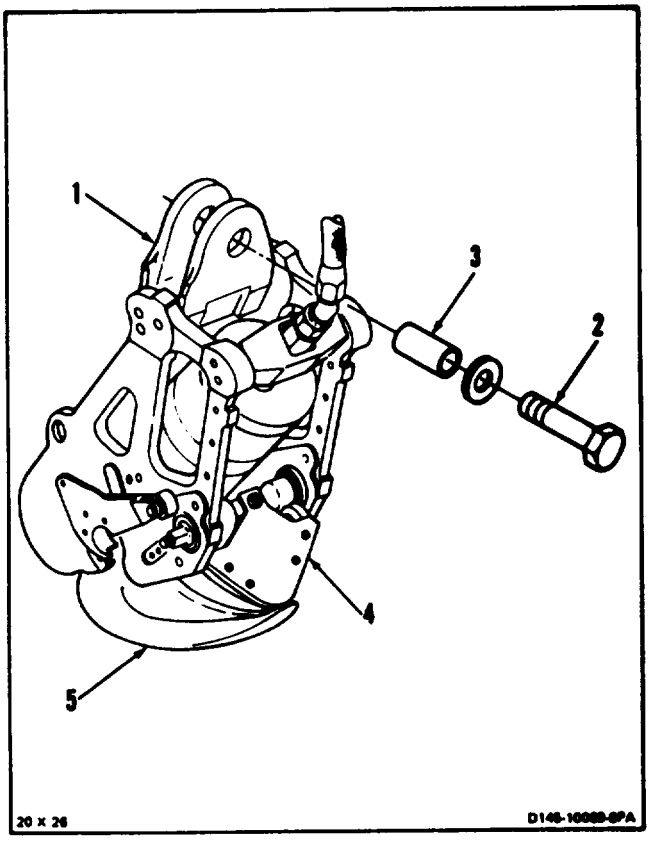
16-3 INSPECTION AND RELATCHING OF CENTER HOOK MANUAL RELEASE MECHANISM (Continued) 16-3

c. Check bolt (2), block (1), sleeve spacer (3) and keeper (4) for damage. Replace as required.

d. Inspect components of hook (5) (Task 16-6).



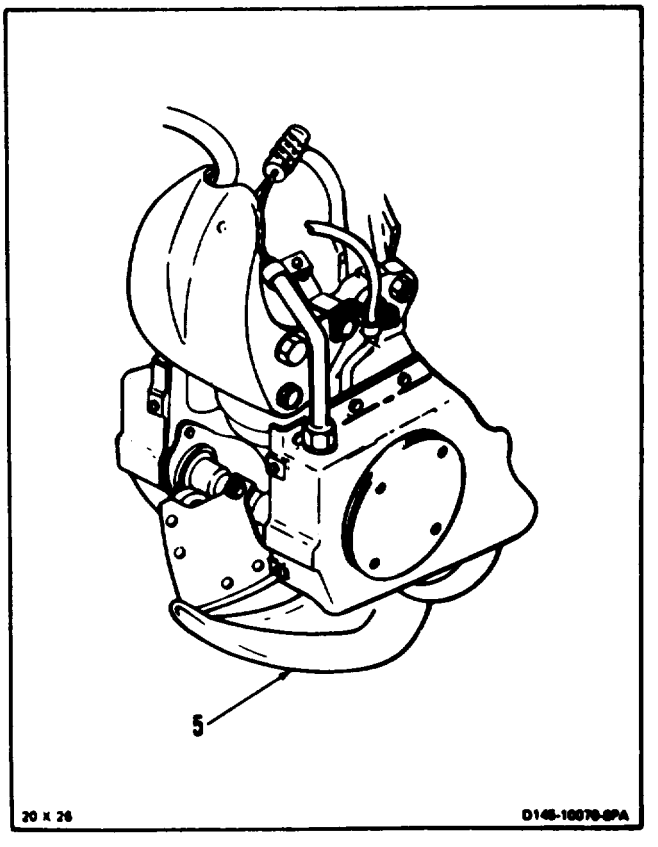
NOTE

During assembly procedure, manual release mechanism will automatically be assembled in relatched position.

e. Assemble hook (5) (Task 16-7).

f. Install hook (5) (Task 16-8).

g. Pull down on hook. Hook must be relatched.



FOLLOW-ON MAINTENANCE:

Perform operational check of hook (TM 55-1520-240-T).

END OF TASK

16-3.1 INSPECTION AND REMATCHING OF CENTER HOOK MANUAL RELEASE MECHANISM

INITIAL SETUP

Applicable Configurations:

With 35

Tools:

Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

Materials:

None

Personnel Required:

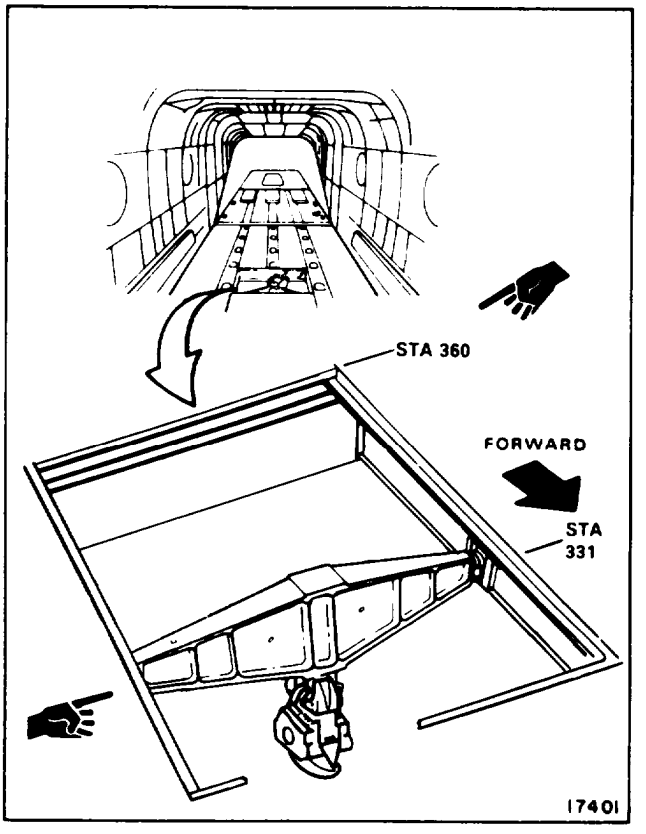
Medium Helicopter Repairer
Inspector

References:

Task 16-4.1
Task 16-5.1
Task 16-6
Task 16-7.1
Task 16-8,1

Equipment Condition:

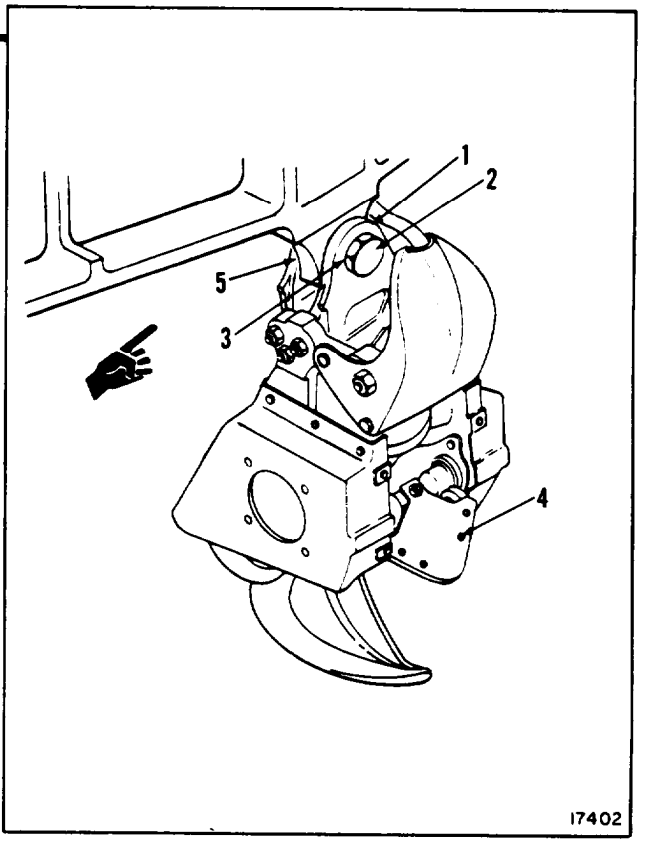
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Rescue Hatch Lower Door at Lowest Position (Task 2-193)
Rescue Hatch Access Door Opened (Task 2-2)



CAUTION

Following a manual release under load and before rematching, center hook must be inspected. Otherwise, damage which could affect operation of manual release mechanism may be overlooked.

1. **After each manual release, visually check block (1), bolt (2), sleeve spacer (3) and keeper (4) and beam (5) for damage, binding or distortion. There shall be no damage, binding or distortion.**



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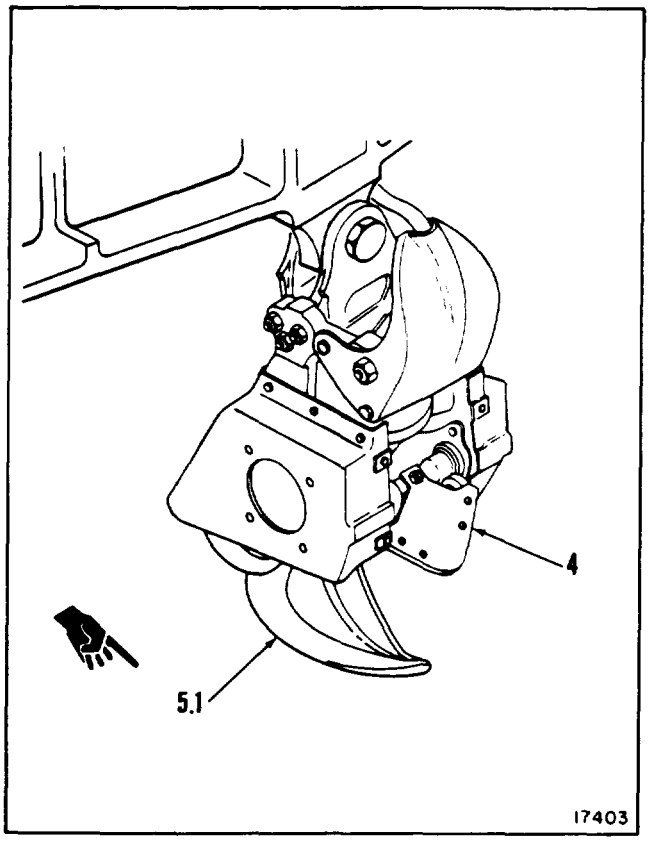
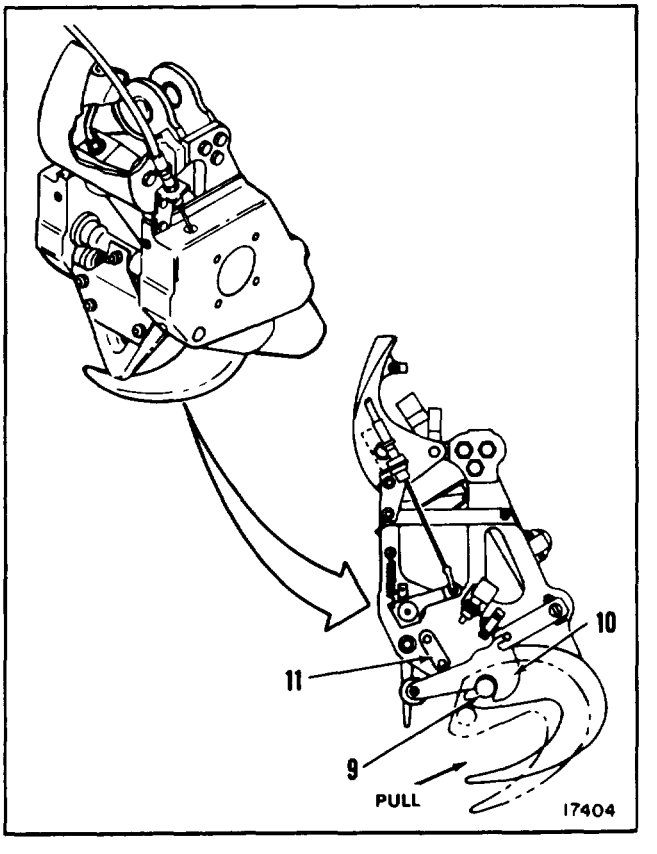
2. **After each manual release, check spring return operation of keeper (4) as follows:**
   a. **Push keeper (4)** in toward back of hook (5.1).
   b. **Release keeper (4).** Keeper shall return to original position.



3. **Relatch manual release mechanism as follows:**
   a. Deleted.
   b. Holding rear of hook, **position hook pivot pins (9) into cutouts of rotating cams (10)** and formers (11).



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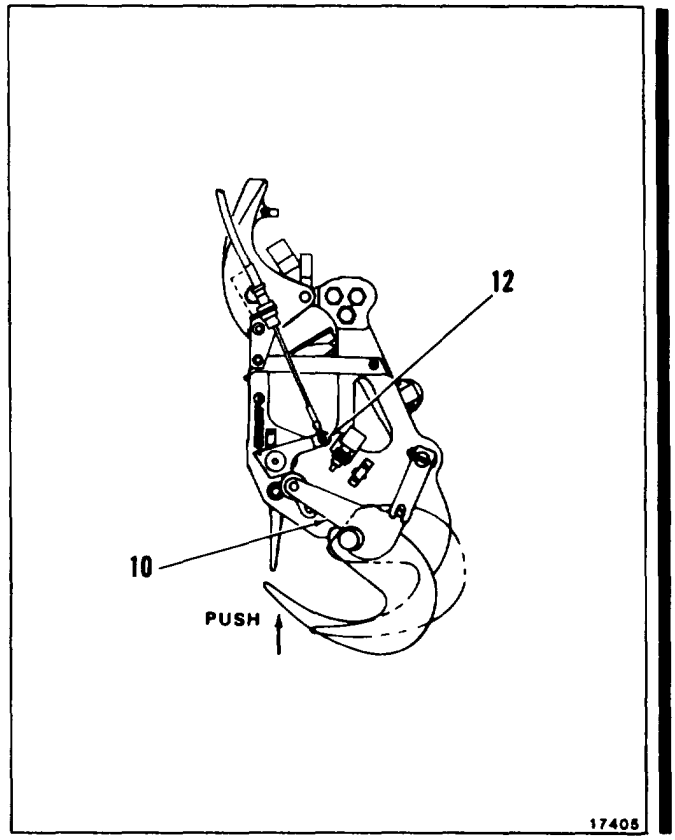
16-3.1 INSPECTION AND REMATCHING OF CENTER HOOK MANUAL RELEASE MECHANISM (Continued) 16-3.1

c. Pull rear of hook aft. Rotate tip of hook upwards until rotating cams (10) contact release lever (12).



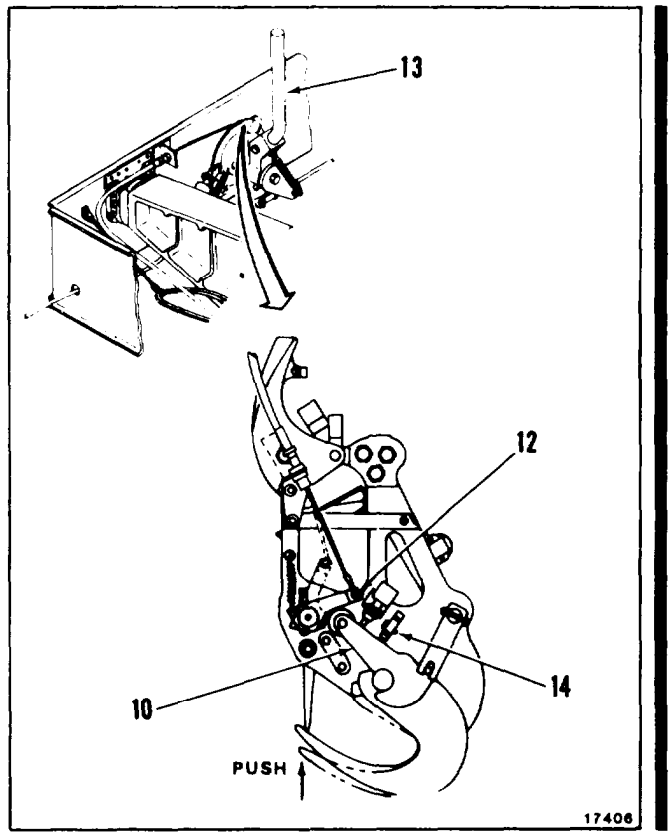
WARNING

Ensure cam roller is fully seated in locked position and hook is fully seated in cam lock, or hook will release under loaded conditions.

d. Rotate manual release lever (13) aft and push tip of hook upward until rotating cams (10) are behind release lever (12).

e. Release manual release lever (13).

f. Ensure rotating cams (10) are against cam stop (14). Ensure release lever (12) is fully clockwise as shown.



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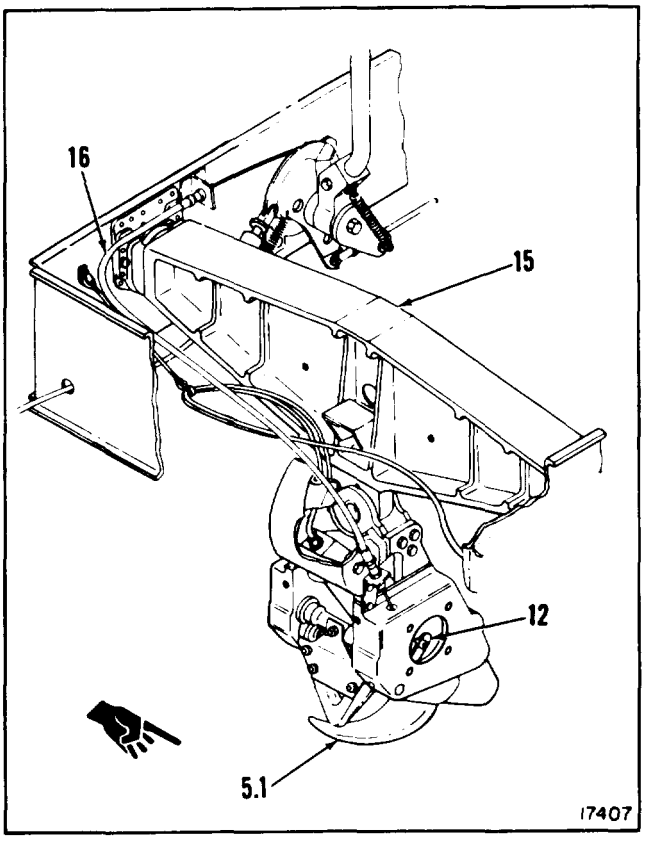
g. **Move hook (5.1) to the left until it stops against beam (15) and then to the right until it stops against beam (15). There shall be no tension on cable (16) when hook is moved. Ensure release lever (12) did not move.**



INSPECT

NOTE

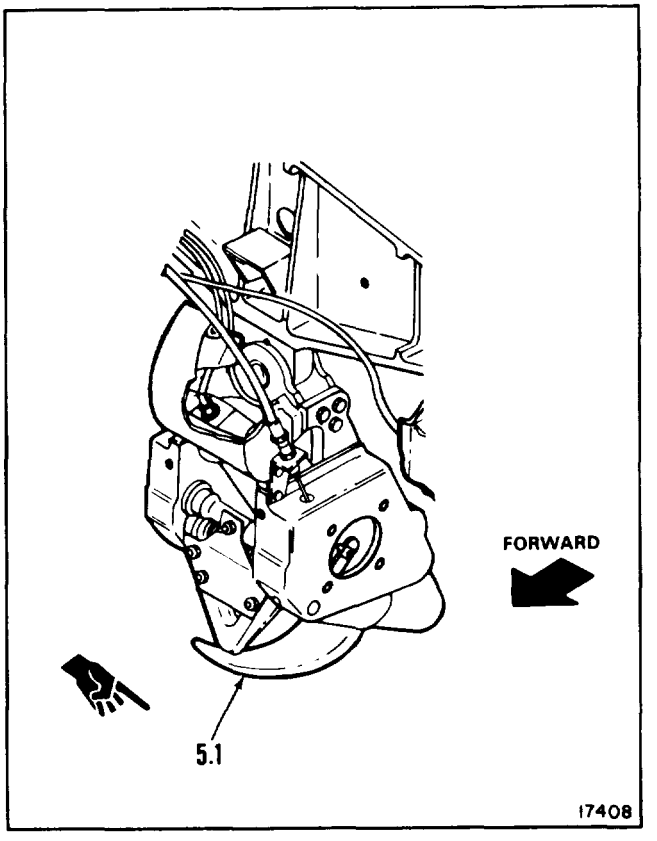
If performing a third manual release under load, continue with step 4. If not performing third release, go to FOLLOW-ON MAINTENANCE.

SPECIAL INSPECTION

4. After every third manual release under load, perform a special inspection as follows:

a. Remove hook (5.1) (Task 16-4.1).

b. Disassemble hook (5.1) (Task 16-5,1).



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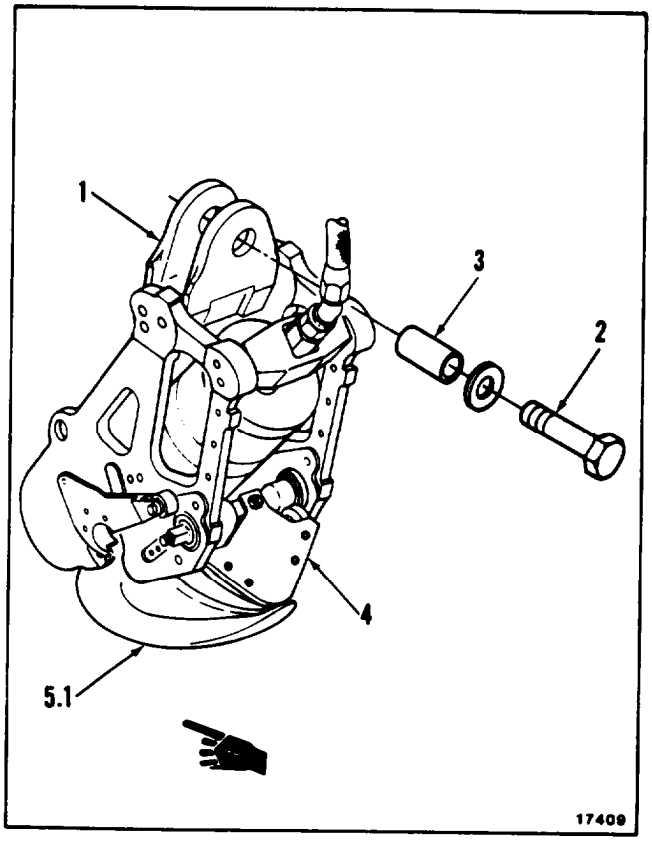
16-3.1 INSPECTION AND REMATCHING OF CENTER HOOK MANUAL RELEASE MECHANISM (Continued)

c. Check bolt (2), block (1), sleeve spacer (3) and keeper (4) for damage. Replace as required,

d. Inspect components of hook (5.1) (Task 16-6).



NOTE

During assembly procedure, manual release mechanism will automatically be assembled in relatched position.

e. Assemble hook (5.1) (Task 16-7.1).

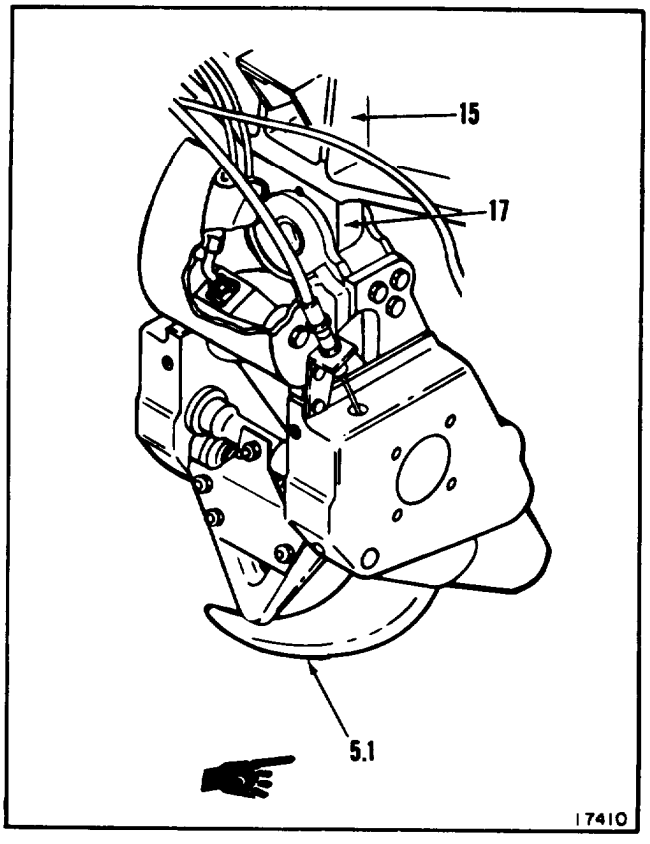
f. Inspect the support fitting (17) on the beam (15) for cracks and distortion.

g. Install hook (5.1) (Task 16-8,1).

h. Pull down on hook, Hook must be relatched.

FOLLOW-ON MAINTENANCE:.

Perform operational check of hook (TM 55-1520-240-T).



END OF TASK

16-3.2 REPLACE MANUAL RELEASE CABLE

INITIAL SETUP

Applicable Configurations:
Without 35

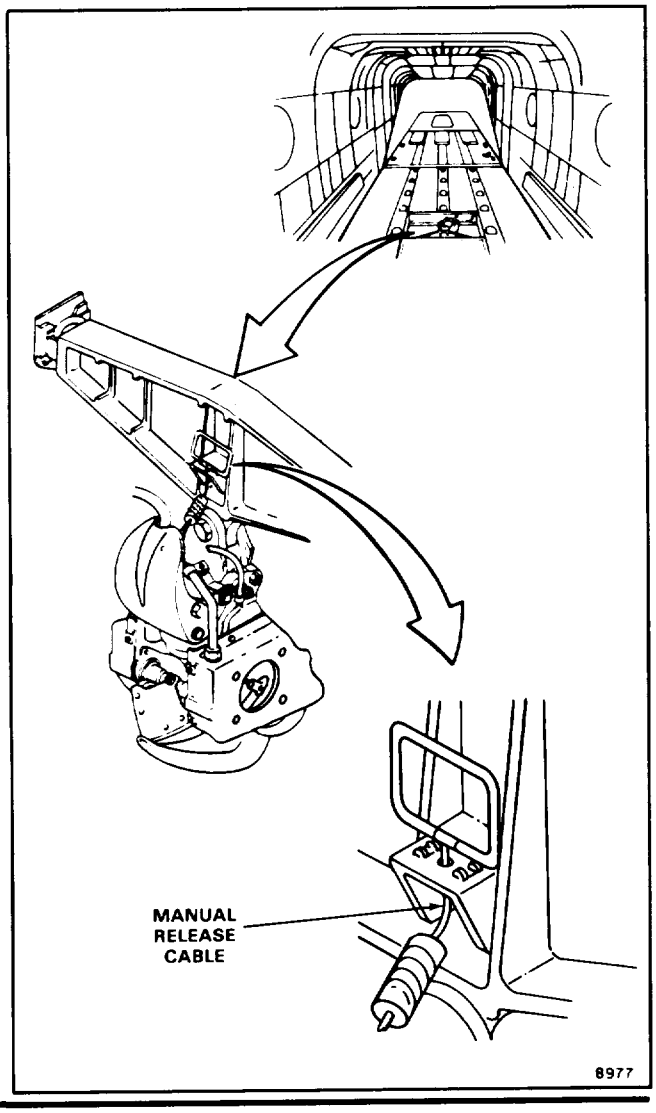
Tools:
None

Materials:
None

Personnel Required:
Medium Helicopter Repairer

References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Rescue Hatch Access Door Open (Task 2-2)
Rescue Hatch Lower Door Open (Task 2-193)
Cargo Hook Unstowed (Task 16-4)



REMOVE CABLE

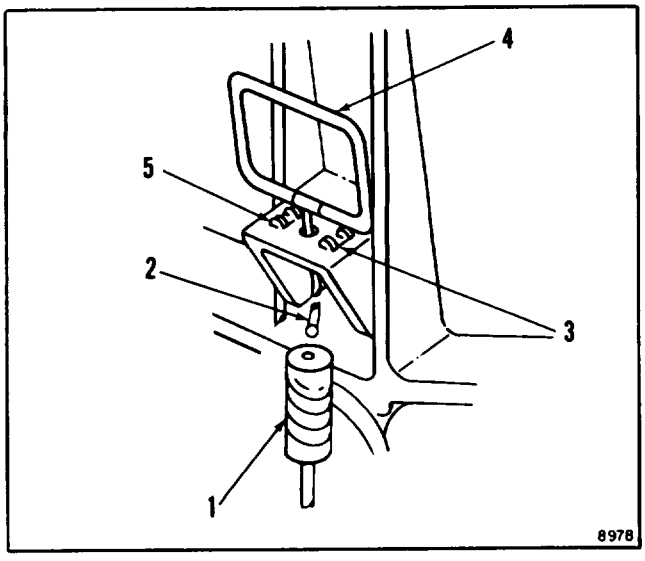
1. Compress cable lock (1) and pull out cable (2). Release cable lock.
2. Pull cable (2) through angle plate (3).

INSTALL CABLE

3. Thread cable (2) through angle plate (3).
4. Compress cable lock (1) and insert ball end of cable (2). Release cable lock.
5. Secure handle (4) in angle plate (3) and cradle (5).

FOLLOW-ON MAINTENANCE:

Perform operational check of hook (TM 55-1520-240-T).



END OF TASK

16-3.3 REMOVE CENTER HOOK MANUAL RELEASE CABLE

INITIAL SETUP

Applicable Configurations:
With 35

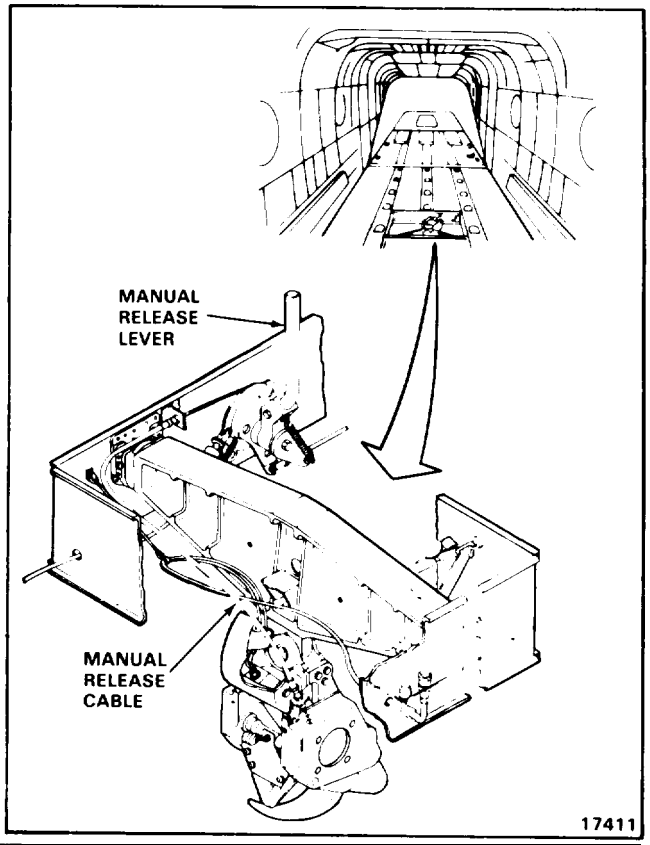
Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

Materials:
None

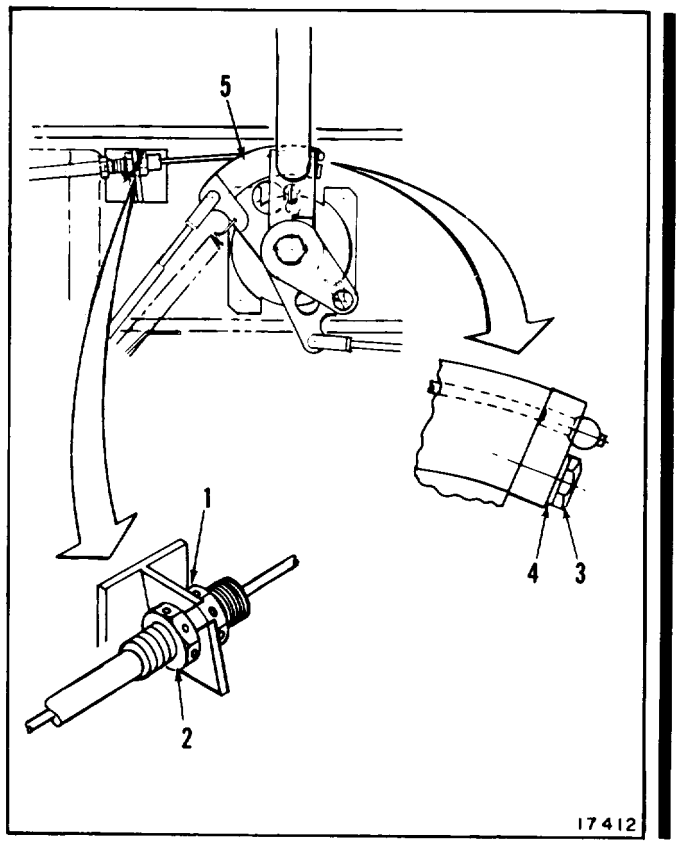
Personnel Required:
Medium Helicopter Repairer

References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Rescue Hatch Access Door Open (Task 2-2)
Rescue Hatch Lower Door Open (Task 2-193)
Cargo Hook Unstowed (Task 16-4.1)



1. Remove lockwire from jam nuts (1 and 2).
2. Loosen jam nut (1).
3. Remove lockwire from bolt (3).
4. Remove bolt (3) and washer (4) from bellcrank (5).



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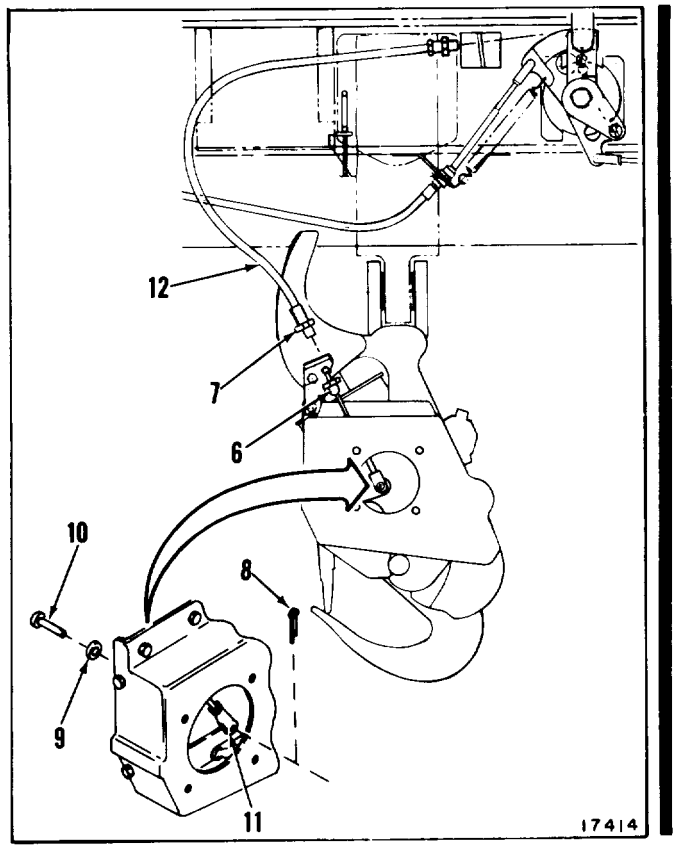
16-3.3 REMOVE CENTER HOOK MANUAL RELEASE CABLE (Continued)

5. Remove lockwire from jam nuts (6 and 7).
6. Loosen jam nut (6).
7. Remove cotter pin (8), washer (9), and straight head pin (10) from lever (11).
8. Remove cable (12).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-3.4 INSTALL CENTER HOOK MANUAL RELEASE CABLE

INITIAL SETUP

Applicable Configurations:

With 35

Tools:

Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692
1/4-inch Drive Torque Wrench
NSN 5120-00-542-4489

Materials:

Lockwire (E231)

Personnel Required:

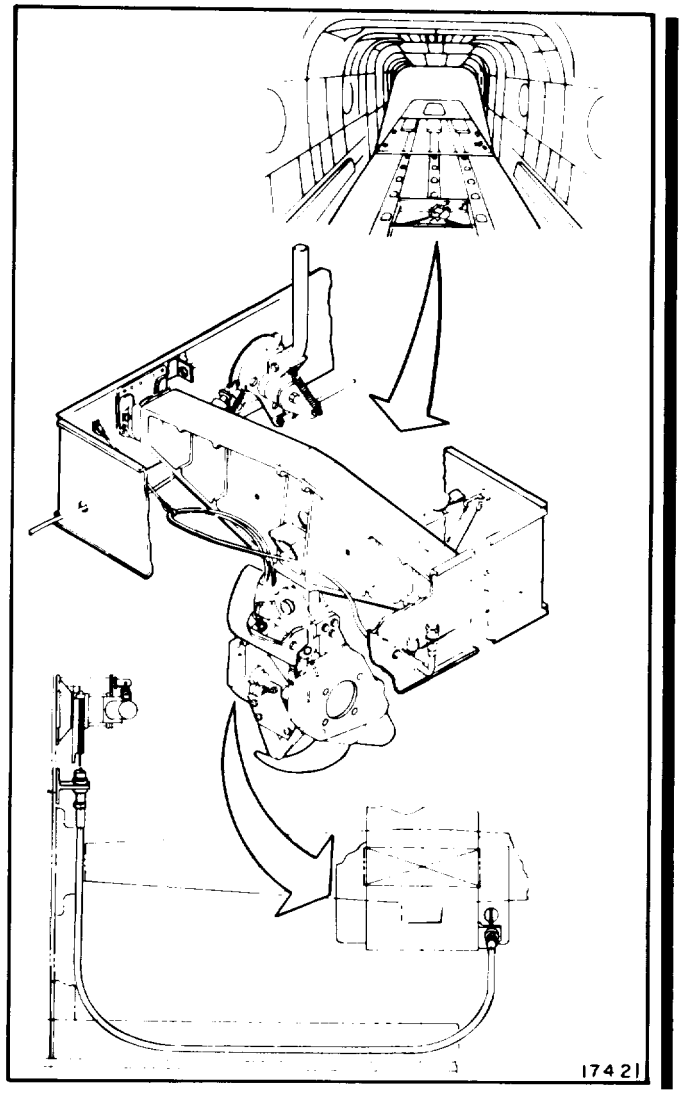
Medium Helicopter Repairer
Inspector

References:

TM 55-1520-240-23P

Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Rescue Hatch Lower Door at Lowest
Rescue Hatch Access Door Open (Task 2-2)
Rescue Hatch Lower Door Open (Task 2-193)
Cargo Hook Unstowed (Task 16-4.1)



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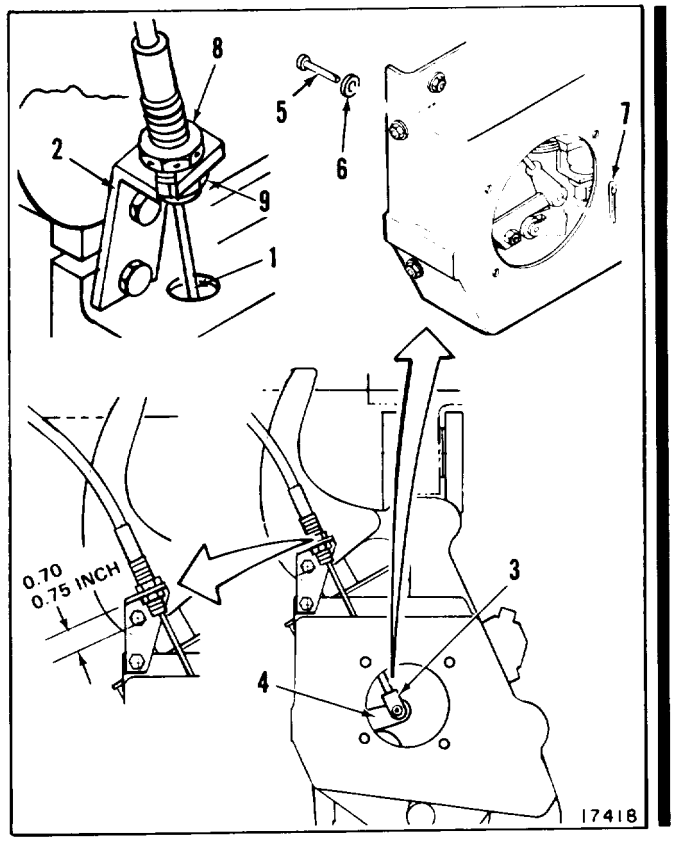
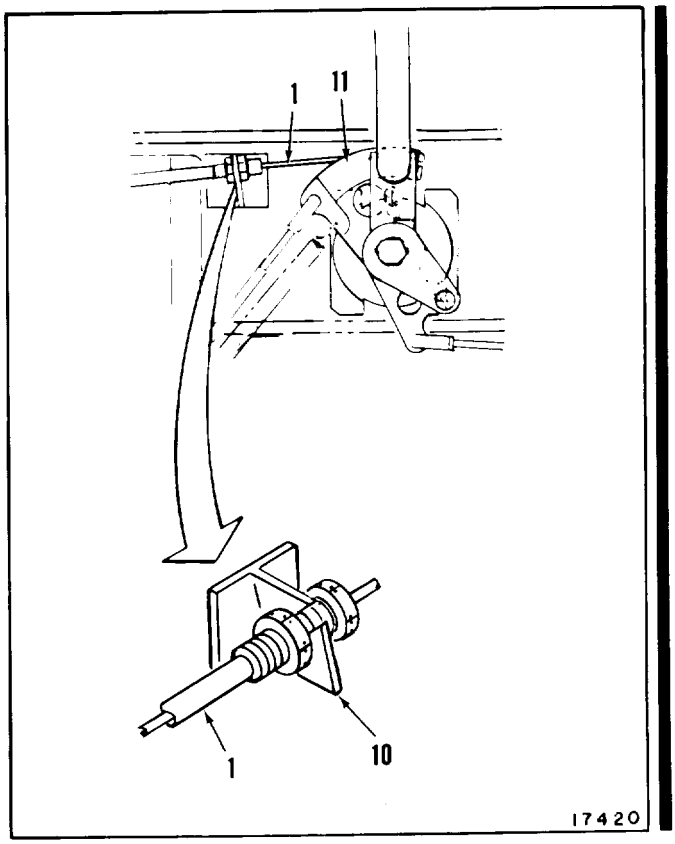
16-3.4 INSTALL CENTER HOOK MANUAL RELEASE CABLE (Continued)

1. Route cable (1) through slot in bracket (2).
2. Align holes in clevis (3) and lever (4). Install straight head pin (5), washer (6), and cotter pin (7).
3. Check that cable (1) protrudes past bracket (2) 0.70 to 0.75 inch. This dimension is for initial installation and may change during final adjustment.
4. Hold jam nut (8). Tighten jam nut (9). Lockwire nuts together. Use lockwire (E231).



5. Route cable (1) through slot in bracket (10) and over bellcrank (11).



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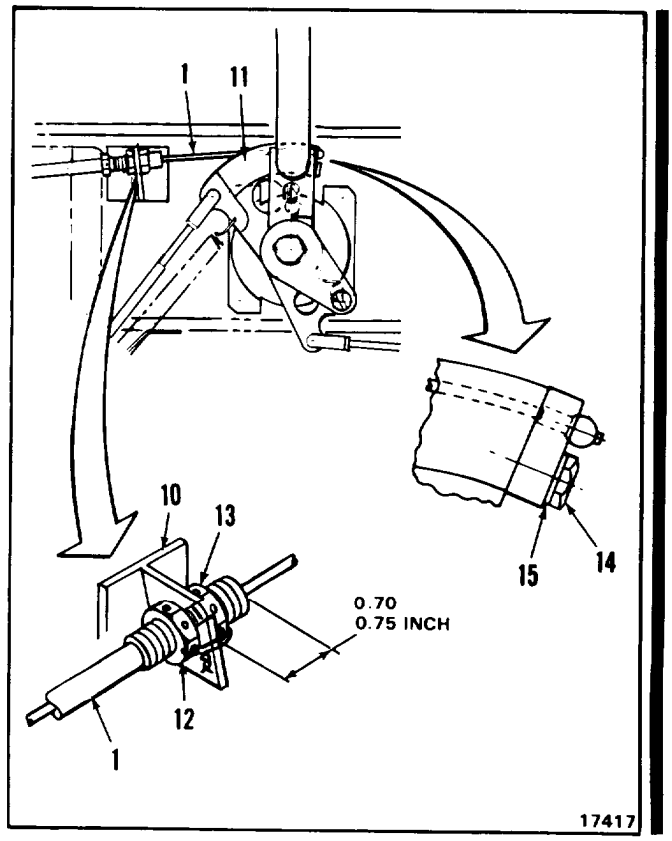
16-3.4 INSTALL CENTER HOOK MANUAL RELEASE CABLE (Continued)

6. Check that cable (1) protrudes past bracket (10) 0.70 to 0.75 inch. This dimension is for initial installation and may change during final adjustment.
7. Hold jam nut (12). Tighten jam nut (13). Lockwire nuts together, Use lockwire (E231).
8. Install bolt (14) and washer (15) securing cable (1) to bellcrank (11). Torque bolt 20 to 35 inch-pounds.
9. Lockwire bolt (14). Use lockwire (E231).



FOLLOW-ON MAINTENANCE:

Adjust cable (Task 16-3.5).

END OF TASK

16-3.5 ADJUST CENTER CARGO HOOK MANUAL RELEASE CABLE 16-3.5

INITIAL SETUP

Applicable Configurations:
With 35

Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 5 to 50 Inch-Pounds

Materials:
Lockwire (E231)

Parts:
None

Personnel Required:
Medium Helicopter Repairer
Inspector

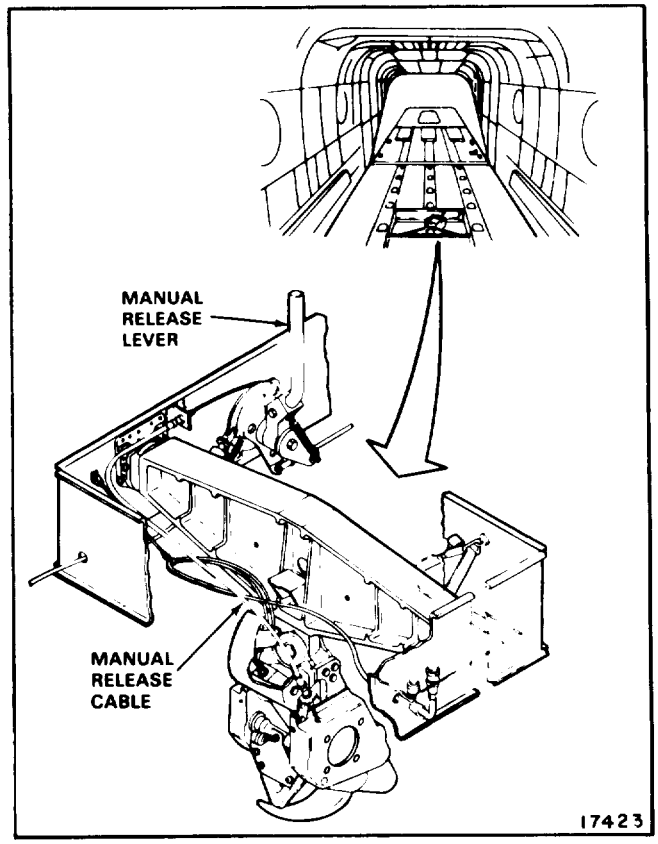
References:
TM 55-1520-240-23P
TM 55-1520-240-T

Equipment Condition:
Battery Disconnected (Task 1-3)
Electrical Power Off
Hydraulic Power Off
Forward and Aft Cargo
Hook Manual Release Cable Adjusted (Task 16-35.1)

General Safety Instructions:

WARNING

Improper adjustment of release cables can result in loss of and serious injury to personnel.



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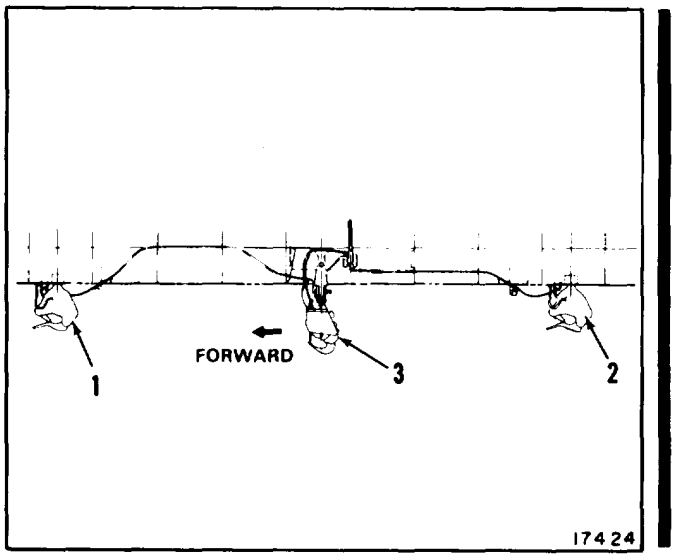
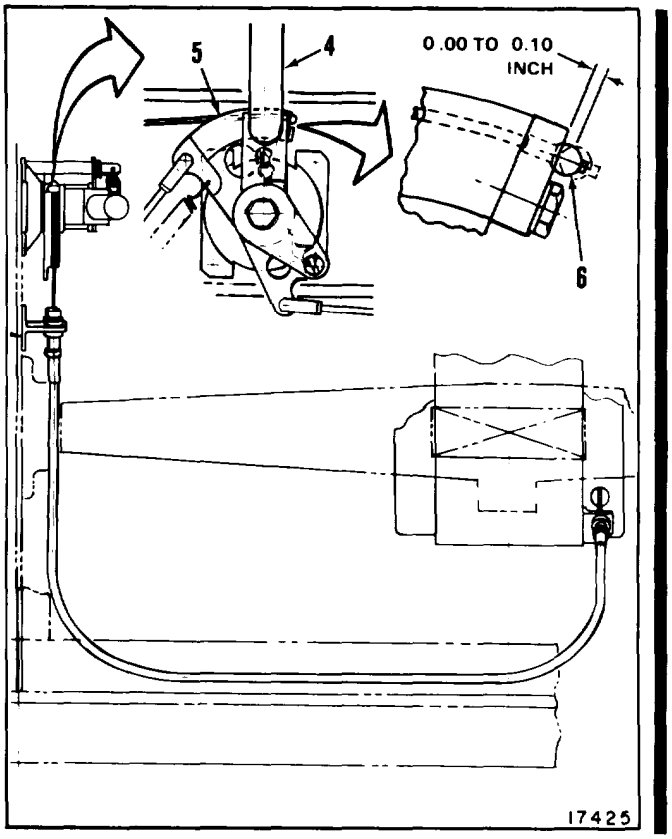
16-3.5 ADJUST CENTER CARGO HOOK MANUAL RELEASE CABLE (Continued) 16-3.5

1. Manually close forward, center, and aft cargo hooks (1, 2, and 3).



2. Set manual release handle (4) in vertical position.
3. Check clearance at bellcrank (5) and cable ball (6). Clearance shall be 0.0 to 0.10 inch.
4. If clearance is within limits specified, go to step 8. If clearance is not within limits specified, go to step 5.



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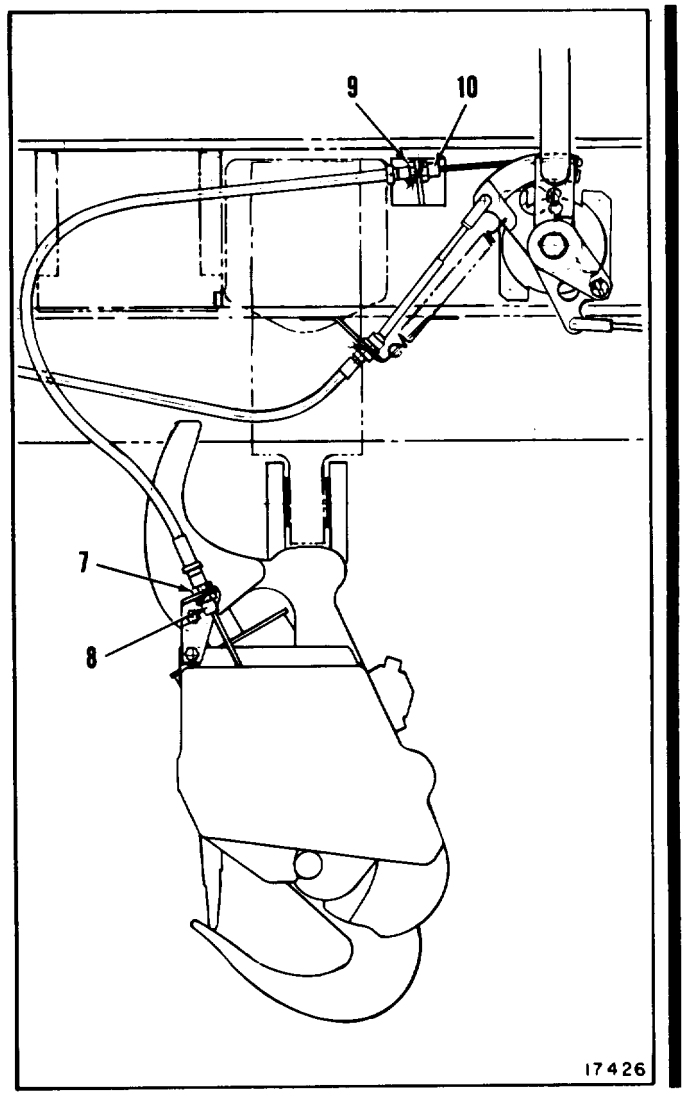
16-3.5 ADJUST CENTER CARGO HOOK MANUAL RELEASE CABLE (Continued) 16-3.5

5. Remove lockwire from jam nuts (7 and 8) and (9 and 10) if installed.



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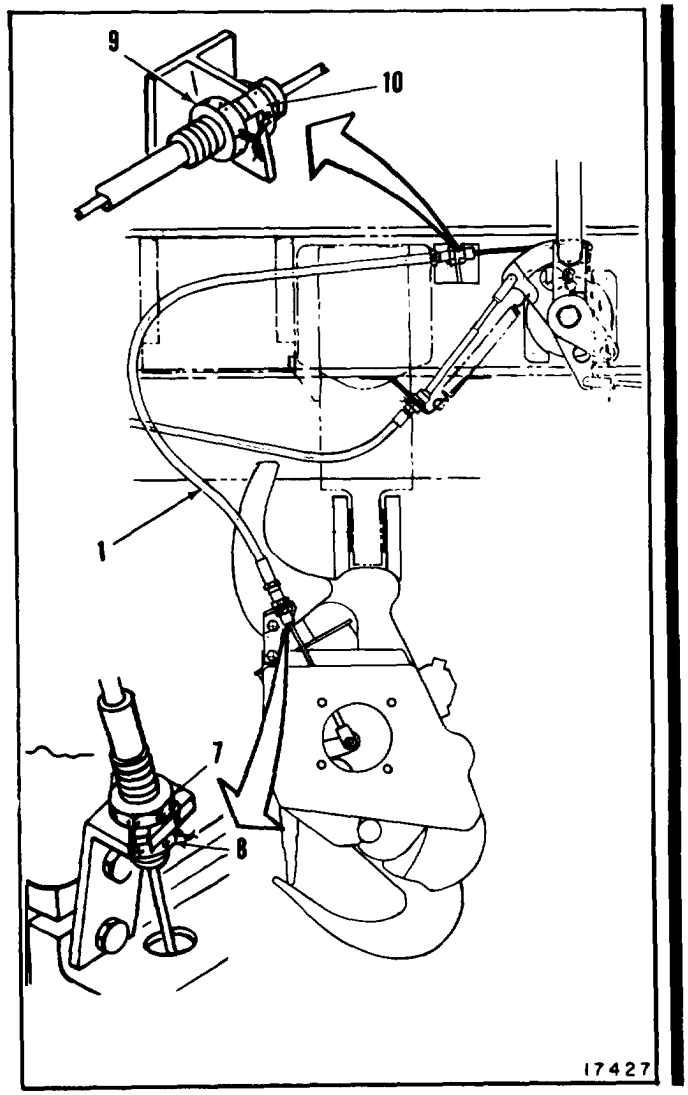
16-3.5 ADJUST CENTER CARGO HOOK MANUAL RELEASE CABLE (Continued) 16-3.5

6. Adjust cable (1) at both ends at bracket locations until clearance in step 3. is reached.
7. Tighten jam nuts (7 and 8) and (9 and 10). Use care not to move cable (1).
8. Perform operational check of cargo hook (TM 55-1520-240-T).
9. Lockwire jam nuts (7 and 8) together and (9 and 10) together. Use lockwire (E231).



FOLLOW-ON MAINTENANCE:

Close rescue hatch (Task 2-2).

END OF TASK

16-4 REMOVE CENTER CARGO HOOK

INITIAL SETUP

Applicable Configurations:

Without 35

Tools:

Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692
Open End Wrench (2), 1-1/16 Inch
Socket, 1-1/16 Inch

Materials:

None

Personnel Required:

Medium Helicopter Repairer (2)

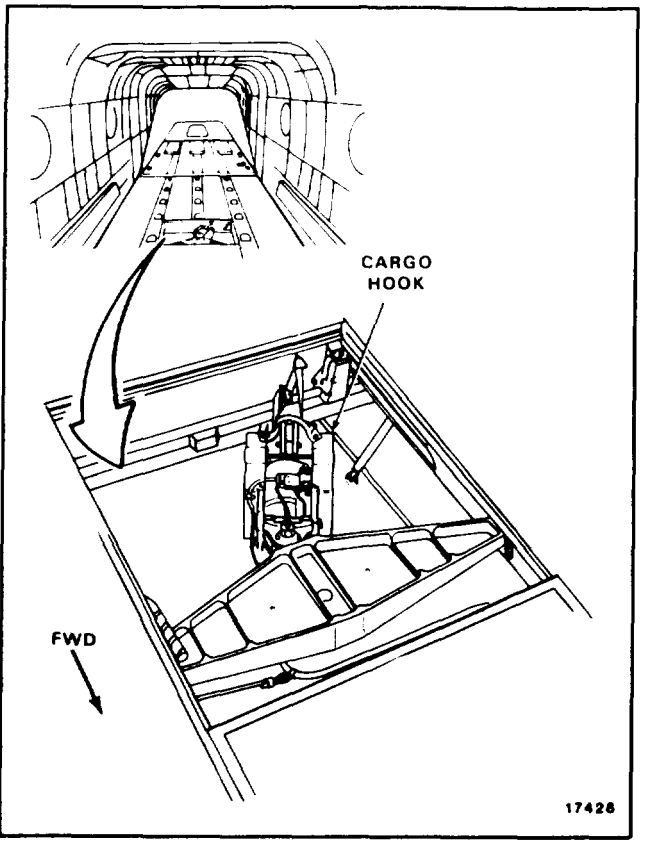
Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Rescue Hatch Open (Task 2-2)

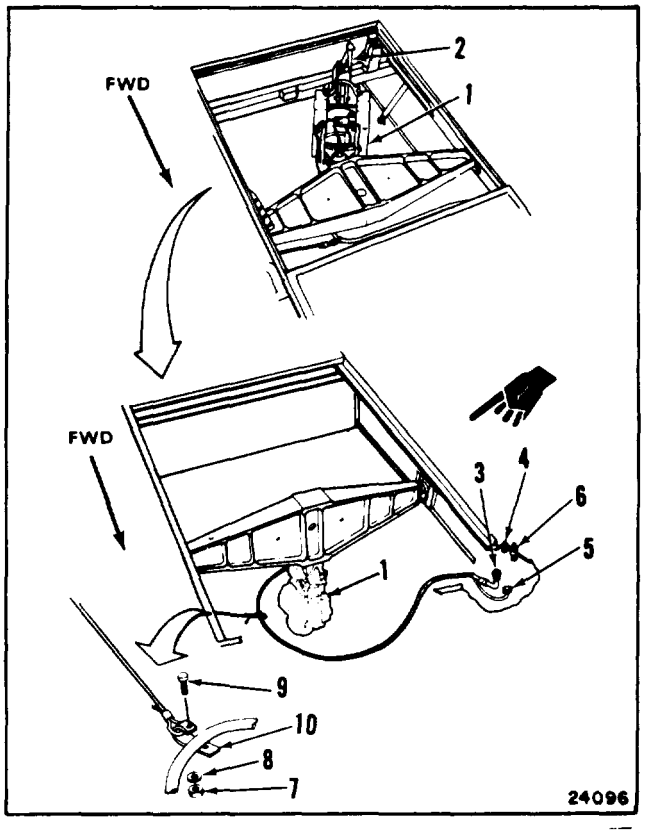
General Safety Precautions:

WARNING

Before removing cargo hook, release nitrogen precharge or personnel injury could occur.



1. Have helper support hook (1). Release stowage strap (2).
2. Lower hook (1) until it hangs free,
3. Disconnect hose (3) at quick-disconnect (4).
4. Disconnect electrical cable (5) at connector (6).
5. Remove nut (7), washer (8), and screw (9) from clamp (10).



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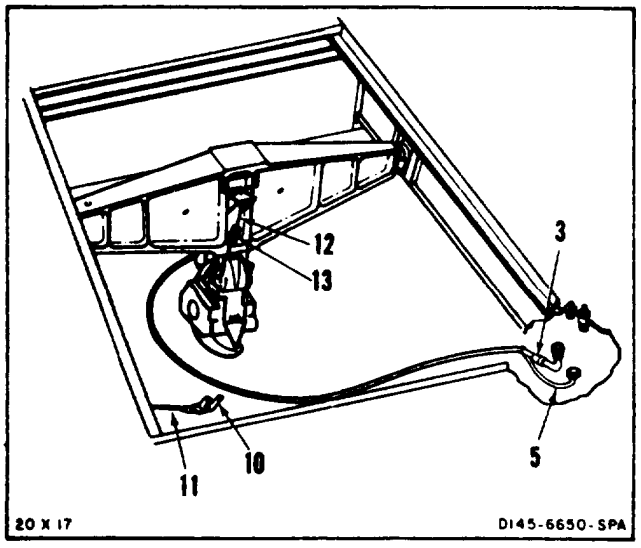
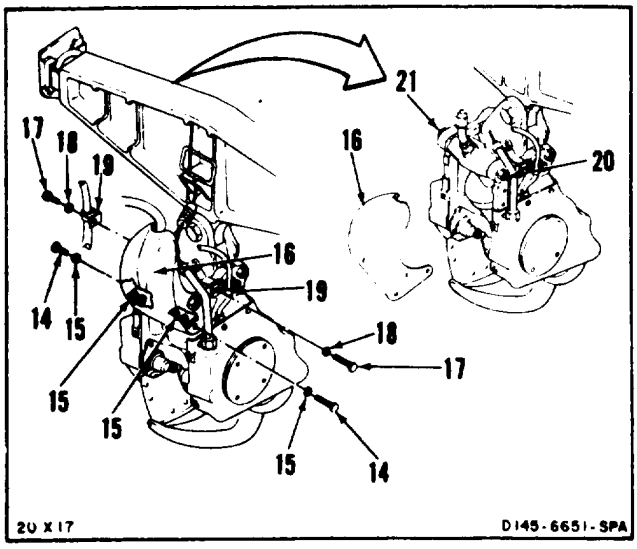
16-4 REMOVE CENTER CARGO HOOK (Continued) 16-4

6. **Remove clamp (10)** and bungee cord (11) from hose (3) and electrical cable (5).
7. **Disconnect manual release cable (12)** at cable lock (13).



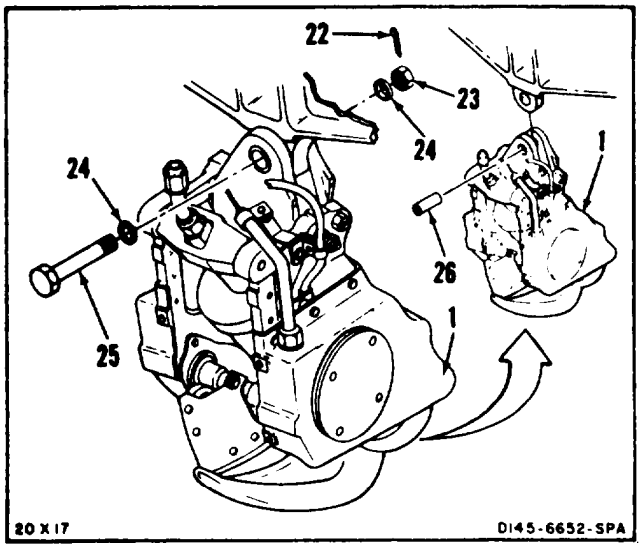
8. **Remove two bolts (14)** and six washers (15) from guard (16).
9. **Remove two bolts (17),** washers (18), and clamps(19) from guard (16).
10. Spread guard (16) to clear bolt (20) and nut (21). **Remove guard.**



11. **Remove** cotter pin (22), nut (23), two washers (24), and **bolt (25)** from cargo hook (1).
12. **Have helper support hook (1). Remove sleeve spacer (26).**
13. **Remove cargo hook (1).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-4.1 REMOVE CENTER CARGO HOOK

INITIAL SETUP

Applicable Configurations:
With 35

Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692
Open End Wrench (2), 1-1/16 Inch (2)
Socket, 1/16-inch

Materials:
None

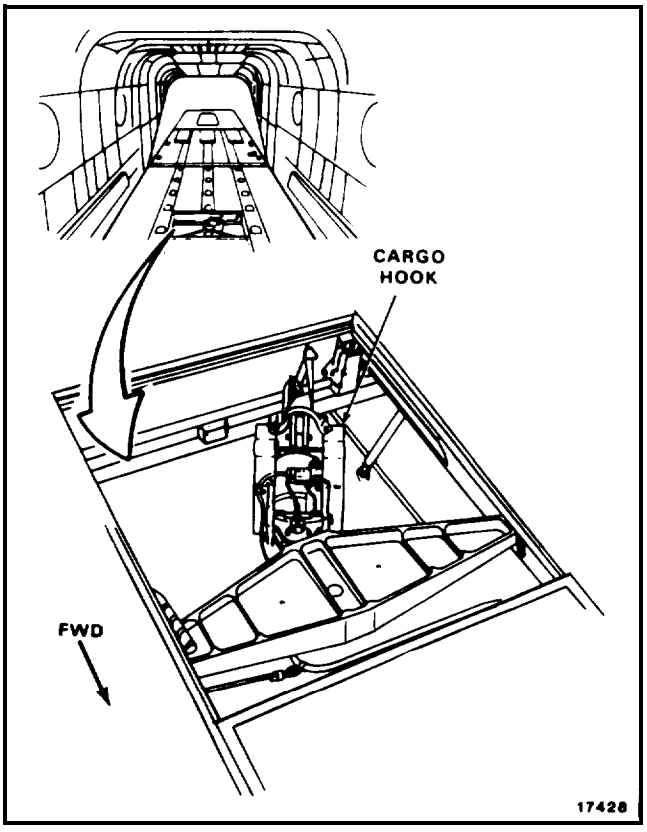
Personnel Required:
Medium Helicopter Repairer (2)

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Rescue Hatch Open (Task 2-2)

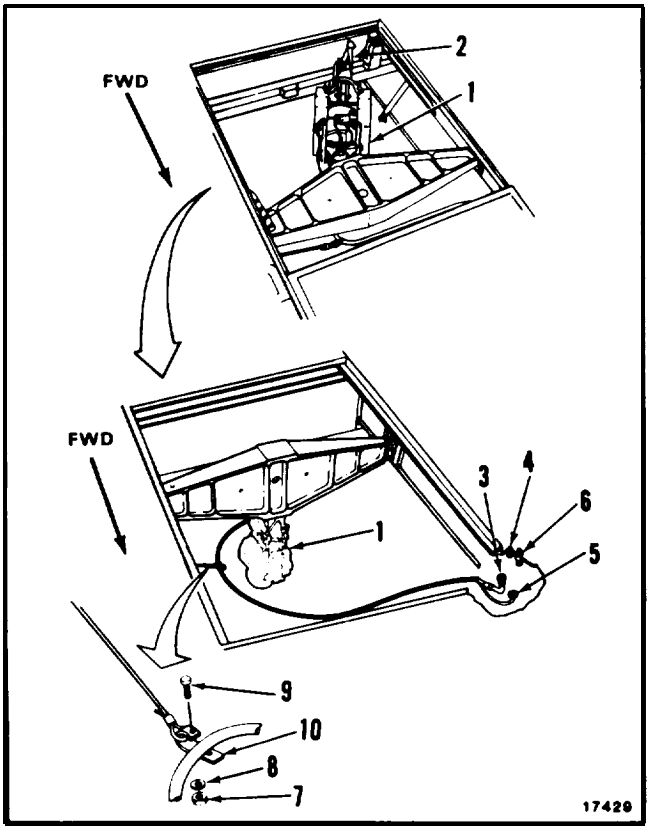
General Safety Precautions:

WARNING

Before removing cargo hook, release nitrogen precharge or personnel injury could occur.

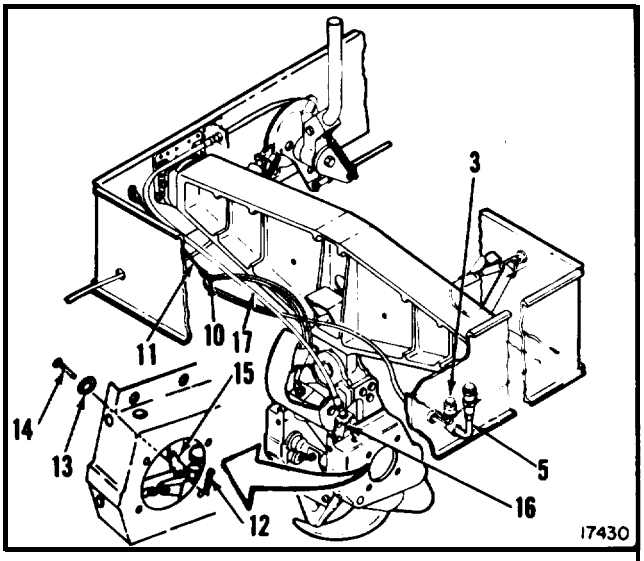


1. Have helper support hook (1). **Release stowage strap (2).**
2. **Lower hook (1)** until it hangs free.
3. **Disconnect hose (3)** at quick-disconnect (4).
4. **Disconnect electrical cable (5)** at connector (6).
5. Remove nut (7), washer (8), and screw (9) from clamp (10).

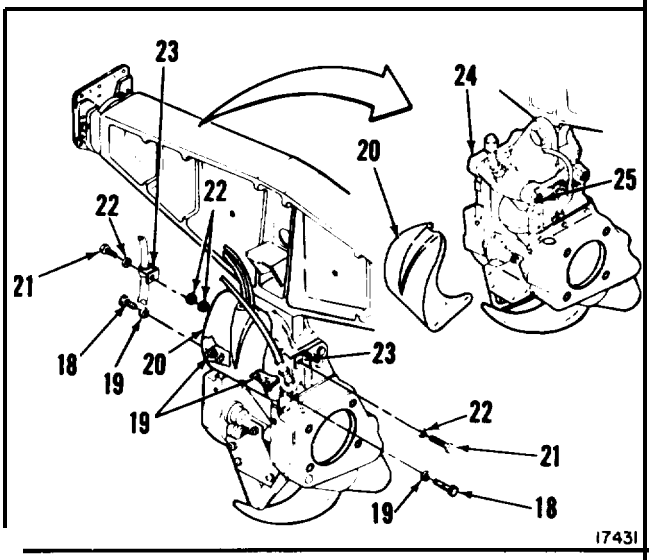


16-4.1 REMOVE CENTER CARGO HOOK (Continued) 16-4.1

6. **Remove clamp (10)** and bungee cord (11) from hose (3) and electrical cable (5).
7. Remove cotter pin (12), washer (13), and straight pin (14) from lever (15).
8. Remove lockwire from jam nut (16). Loosen jam nut (16). Remove cable (17) from hook (1).



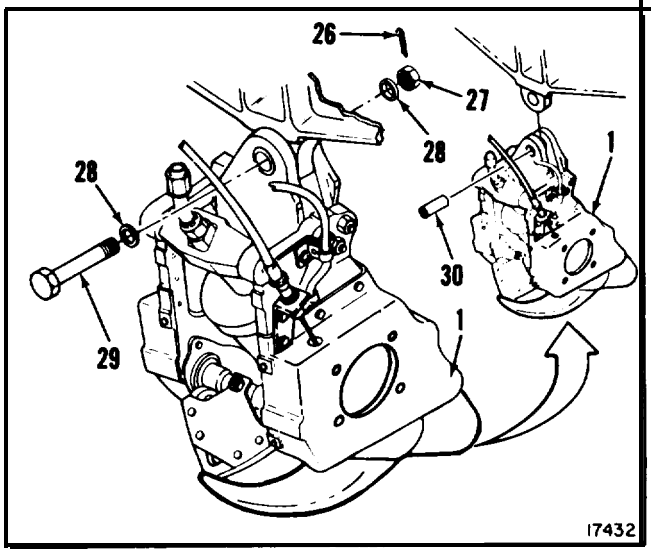
9. **Remove two bolts (18)** and six washers (19) from guard (20).
10. **Remove two bolts (21),** four washers (22), and clamps (23) from guard (20).
11. Spread guard (20) to clear bolt (24) and nut (25). **Remove guard.**



12. **Remove** cotter pin (26), nut (27), two washers (28), and **bolt (29)** from cargo hook (1).
13. **Have helper support hook (1). Remove sleeve spacer (30).**
14. **Remove cargo hook (1).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-5 DISASSEMBLE CENTER CARGO HOOK (AVIM) 16-5

INITIAL SETUP

Applicable Configurations:

Without 35

Tools:

Aircraft Mechanic Tool Kit, NSN 5180-00-323-4692

Materials:

None

Personnel Required:

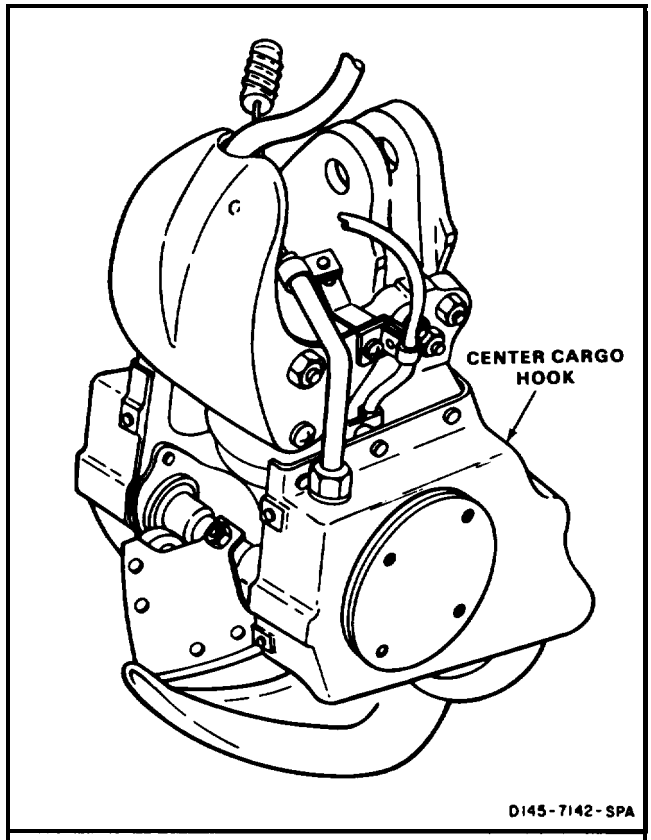
Medium Helicopter Repairer

References:

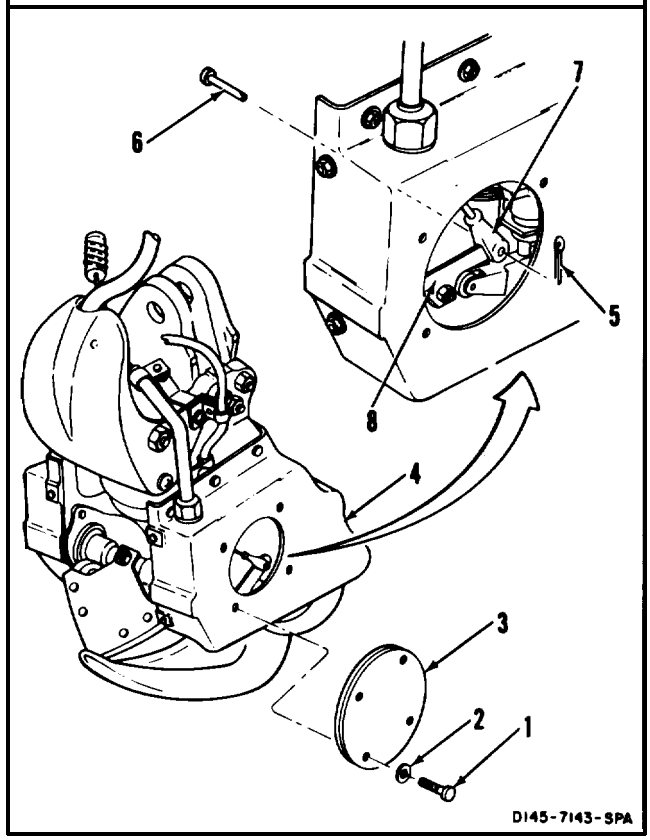
TM 55-1500-322-24

Equipment Condition:

Off Helicopter Task



1. **Remove** four screws (1), washers (2), and **access door (3)** from cover (4).
2. Remove cotter pin (5) and straight head pin (6) from strap (7). **Remove strap (7)** from lever (8).



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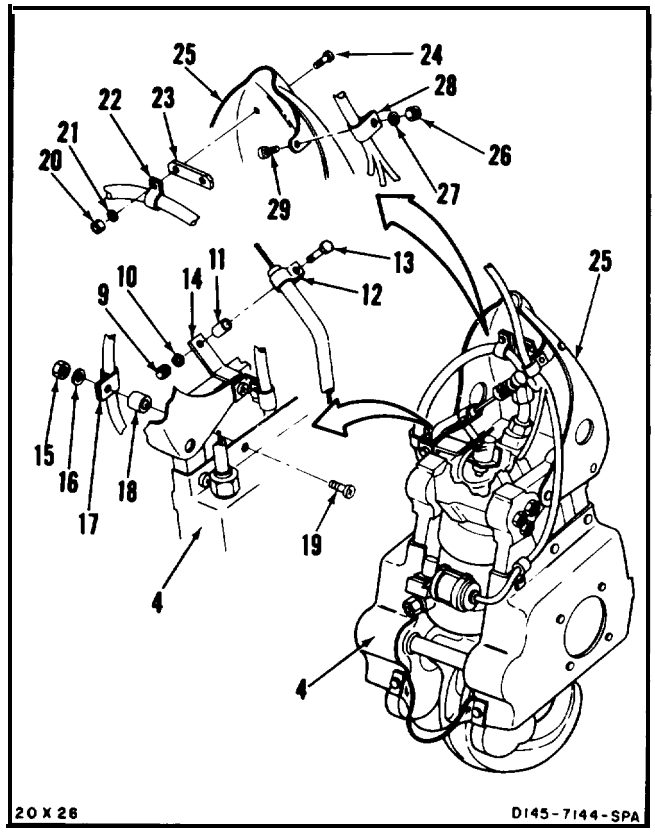
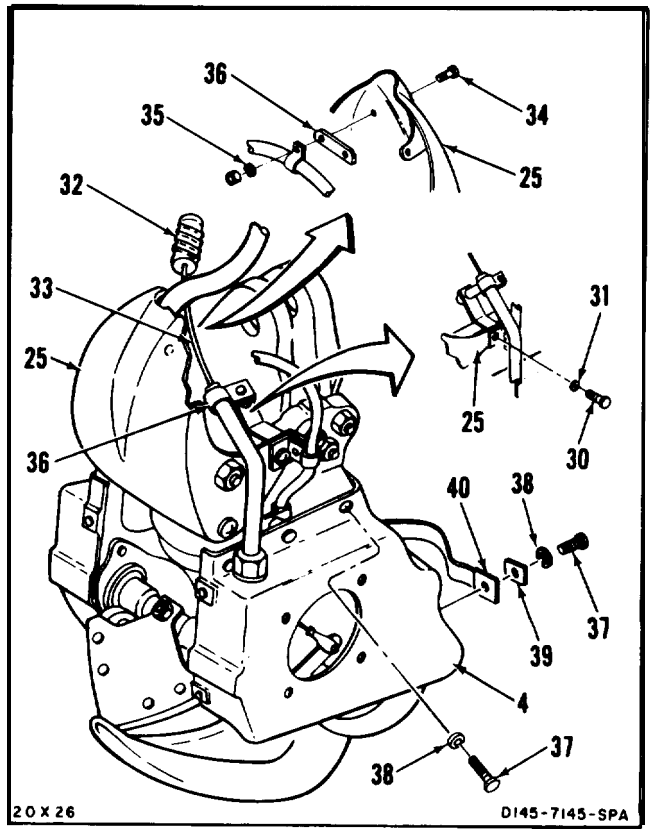
16-5 DISASSEMBLE CENTER CARGO HOOK (AVIM) (Continued)

3. **Remove** nut (9), washer (10), spacer (11), **clamp (12)** and bolt (13) from bracket (14).
4. **Remove** nut (15), washer (16), clamp (17), spacer (18) and screw (19) from cover (4).
5. **Remove** two nuts (20), washers (21), **clamp (22), bracket (23)** and screws (24) from guard (25).
6. **Remove** nut (26), washer (27), **clamp (28)** and screw (29) from guard 25).



7. **Remove bolt (30)** and washer (31).
8. **Remove cable lock (32)** from cable (33).
9. **Remove** bolt (34), washer (35) and **bracket (36)** from guard (25).
10. Remove six screws (37), washers (38), **plate (39) and strap (40)** from cover (4).
11. **Remove cover (4) with cable (33).**



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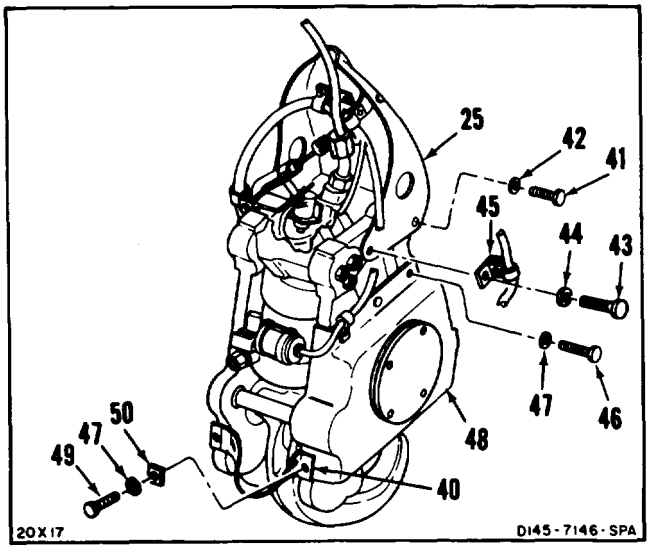
16-5 DISASSEMBLE CENTER CARGO HOOK (AVIM) (Continued)

12. **Remove bolt (41)** and washer (42).
13. **Remove** bolt (43), washer (44), and **bracket (45). Remove guard (25).**
14. Remove six screws (46) and washers (47) from cover (48). Remove screw (49), washer (47), **plate (50) and strap (40)** from cover. **Remove cover.**

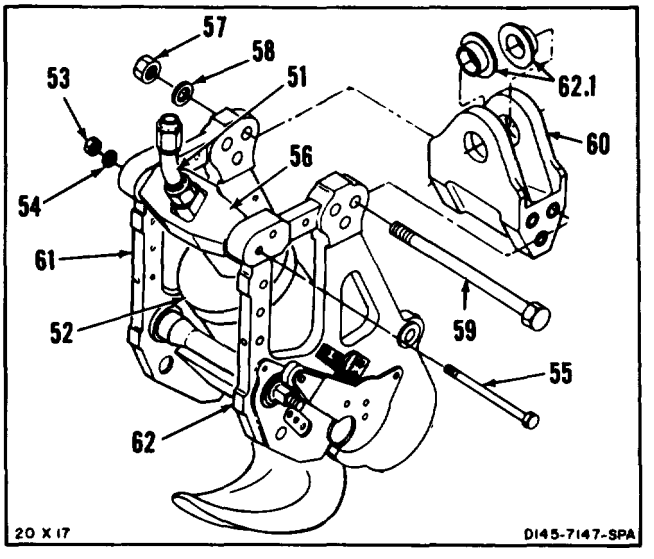


15. **Remove hose (51)** from actuating cylinder (52).
16. **Remove** nut (53), washer (54), and **bolt (55)** from actuating cylinder support (56).
17. Remove three nuts (57), washers (58) and bolts (59) from block (60). **Remove block** from formers (61 and 62).

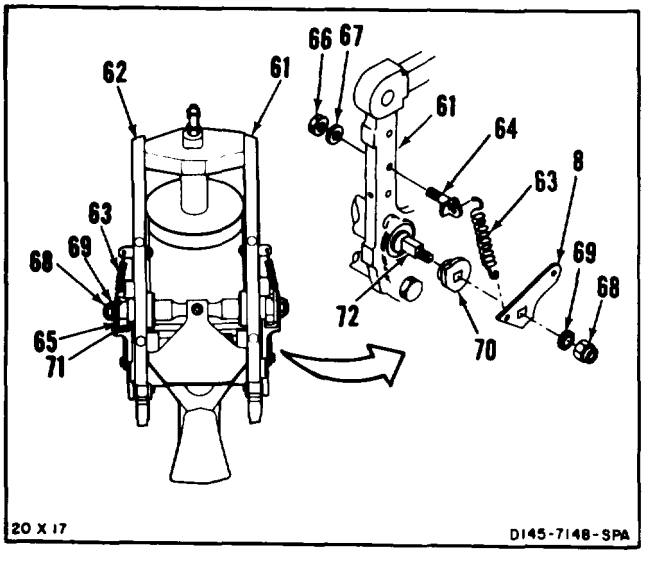
NOTE

Do not remove bearings unless they are worn.

17.1 Remove two bearings (62.1) (TM 55-1500-322-24).



18. **Remove two springs (63)** from eyebolts (64) and levers (8 and 65).
19. **Remove two** nuts (66), washers (67) and **eye bolts (64)** from formers (61 and 62).
20. **Remove two** nuts (68), washers (69), **levers (8 and 65), and cams (70 and 71)** from shaft (72).
21. **Remove two bolts (73) and bushings (74).**



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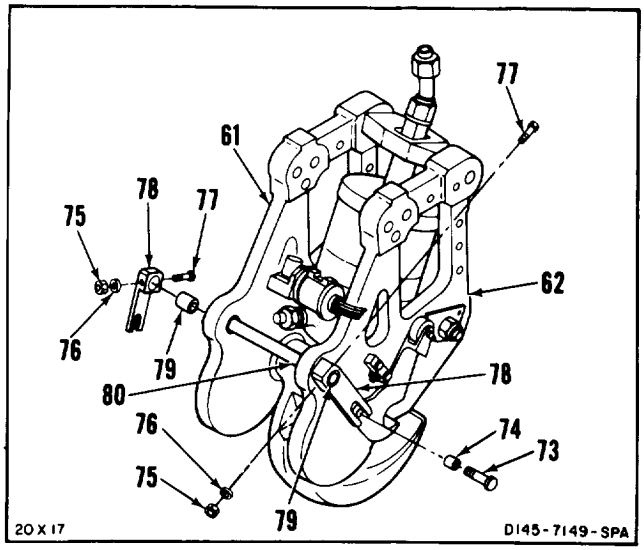
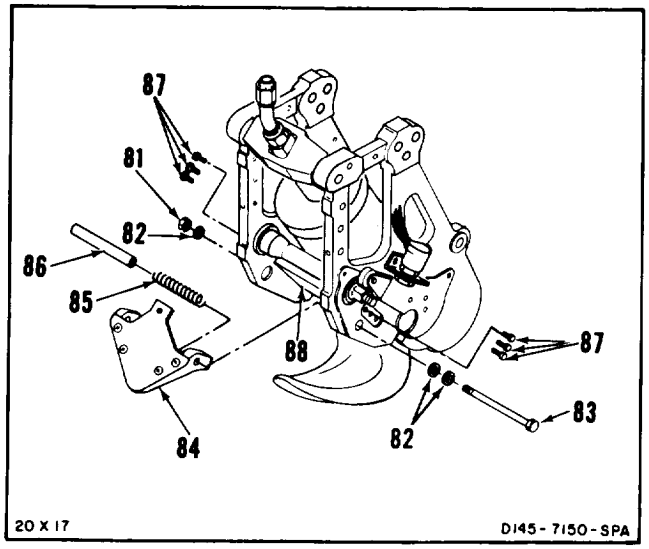
16-5 DISASSEMBLE CENTER CARGO HOOK (AVIM) (Continued)

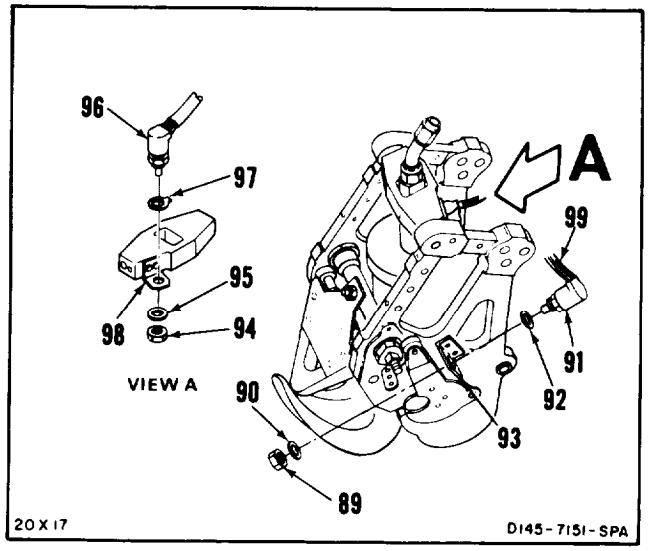
22. **Remove two** nuts (75), washers (76) and **bolts (77)** from synchronizer arms (78).
23. **Remove two synchronizer arms (78), bushings (79) and tube (80)** from formers (61 and 52).



24. **Remove** nut (81), three washers (82) and **bolt (83)** from keeper (84). **Remove keeper, spring (85) and spacer (86).**
25. Remove lockwire and six bolts (87) from support block (88). **Remove support block.**



26. **Remove** lockwire, nut (89), washer (90), **switch (91)** and washer (92) from bracket (93).
27. **Remove** lockwire, nut (94), washer (95), **switch (96)** and washer (97) from bracket (98).
28. **If switches (91 and 96) are to be replaced, cut and remove switch wires from wire pack (99).**



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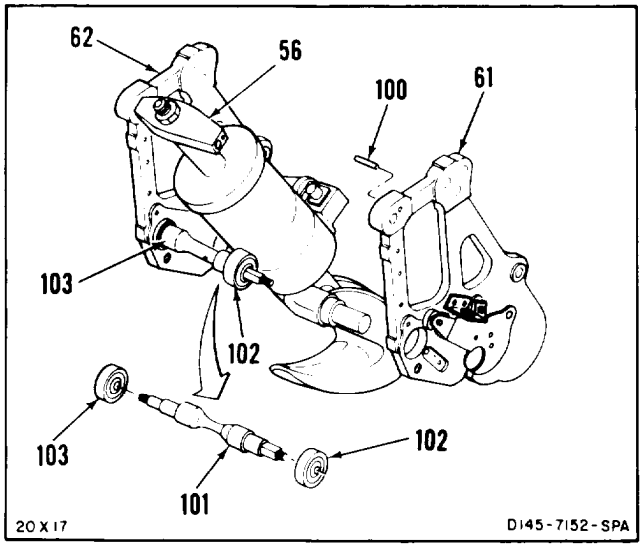
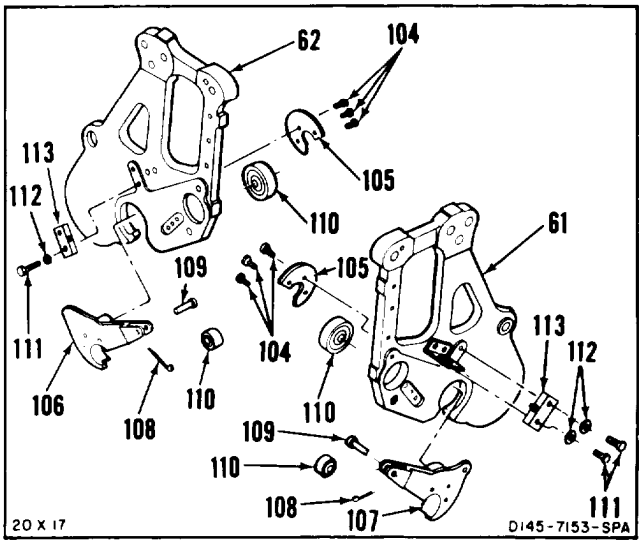
16-5 DISASSEMBLE CENTER CARGO HOOK (AVIM) (Continued) 16-5

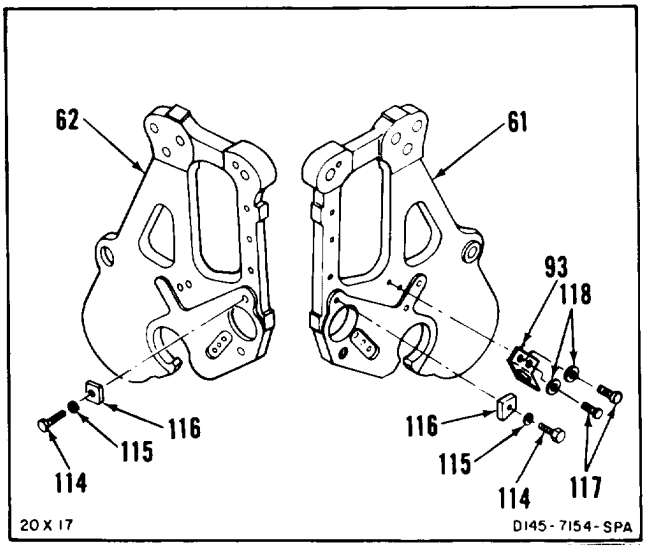
29. **Remove formers (61 and 62)** from actuating cylinder support (56). Use plastic or fiber mallet.
30. **Remove pin (100)** from former (61). **Remove shaft (101) and bearings (102 and 103)** from former (62).
31. **Remove bearings (102 and 103) from shaft (101)** (TM 55-1500-322-24).



32. Remove six bolts (104), **two cam plates** (105) and two cams (106 and 107) from formers (61 and 62).
33. **Remove two** cotter pins (108), **cam bearings pins (109) and cam roller bearing (110)** from cams (106 and 107).
34. **Remove** four bolts (111), four washers (112) and **two cam stops (113)** from formers (61 and 62).



35. **Remove** bolts (114), washers (115) and **two cam stops (116)** from formers (61 and 62).
36. **Remove** two bolts (117), washers (118) and **bracket (93)** from former (61).



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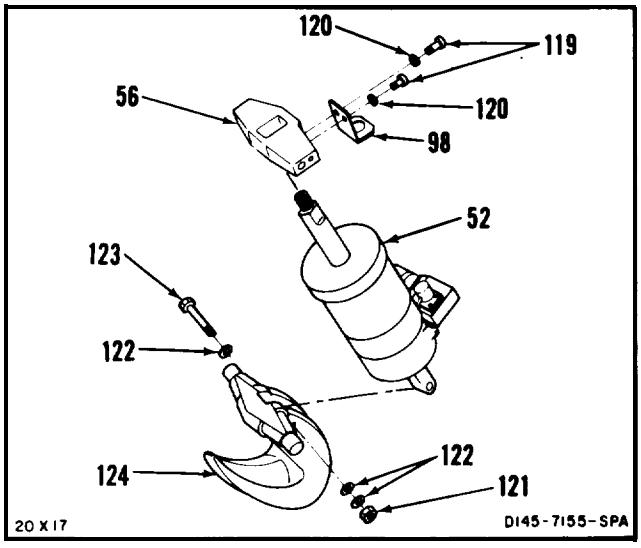
16-5 DISASSEMBLE CENTER CARGO HOOK (AVIM) (Continued)

37. **Remove actuating cylinder support (56).**
38. **Remove** two bolts (119), washers (120) and **bracket (98)** from actuating cylinder support (56).
39. **Remove** nut (121), washers (122), bolt (123) and **hook (124)** from actuating cylinder (52).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-5.1 DISASSEMBLE CENTER CARGO HOOK (AVIM)

INITIAL SETUP

Applicable Configurations:
With 35

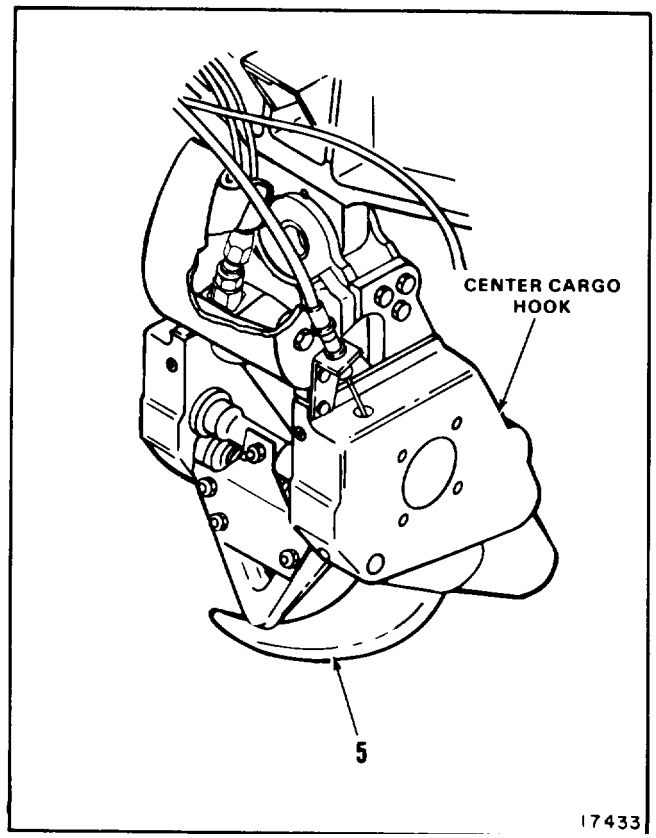
Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

Materials:
None

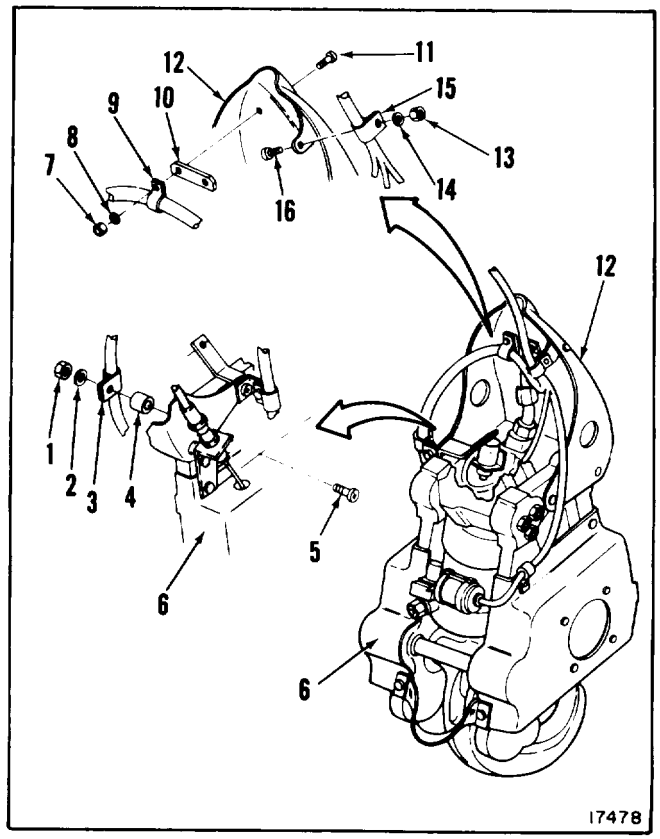
Personnel Required:
Medium Helicopter Repairer

References:
TM 55-1500-322-24

Equipment Condition:
Off Helicopter Task



1. **Remove** nut (1), washer (2), clamp (3), spacer (4), and screw (5) from cover (6).
2. Remove nut (7), washers (8), **clamp (9), bracket (10)** and screws (11) from guard (12).
3. **Remove** nut (13), washer (14), **clamp (15)** and screw (16) from guard (12).



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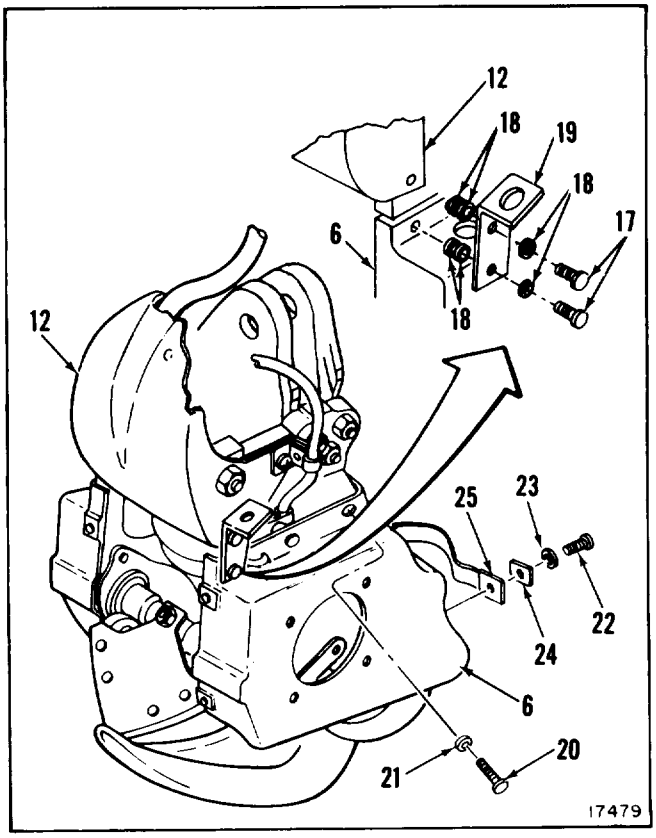
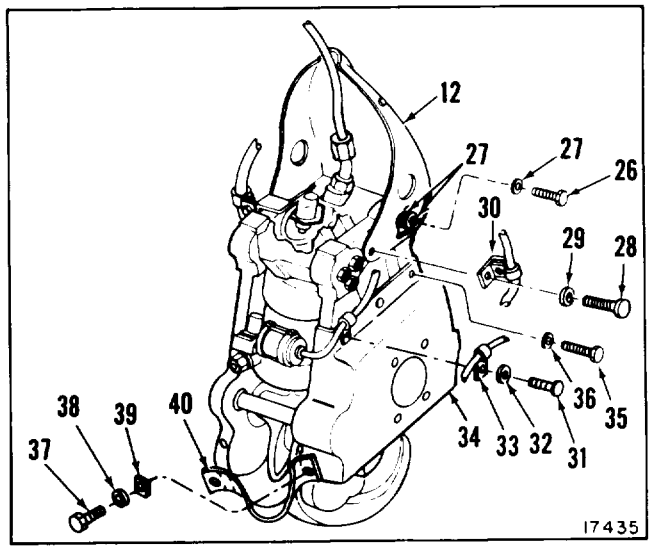
4. Remove two bolts (17), six washers (18), and bracket (19) from cover (6) and guard (12).
5. Remove five screws (20) and washers (21). **Remove screw (22),** washer (23), and **plate (24)** from cover (6). Disconnect strap (25) from cover.
6. **Remove cover (6).**



7. **Remove bolt (26)** and three washers (27).
8. **Remove** bolt (28), washer (29), and **bracket (30). Remove guard (12).**
9. Remove screw (31), washer (32) and bracket (33) from cover (34).
10. Remove five screws (35) and washers (36) **from cover (34).** Remove screw (37), washer (38), **plate (39) and strap (40)** from cover. **Remove cover.**



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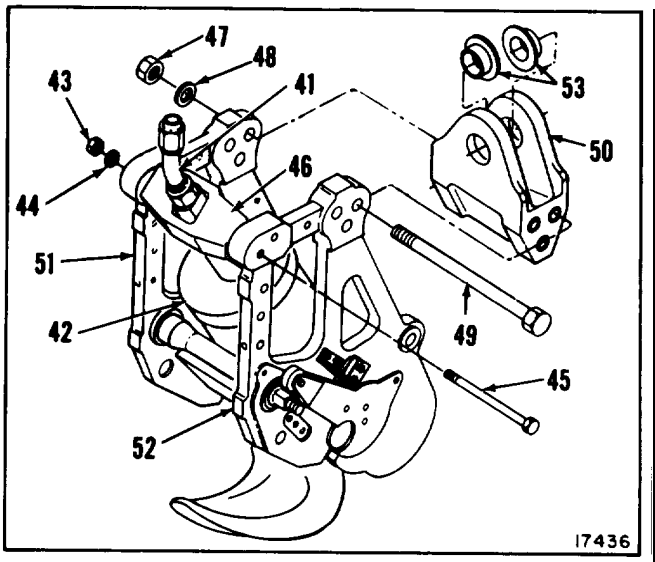
16-5.1 DISASSEMBLE CENTER CARGO HOOK (AVIM) (Continued) 16-5.1

11. **Remove hose** (41) from actuating cylinder (42).
12. **Remove** nut (43), washer (44), and **bolt (45)** from actuating cylinder support (46).

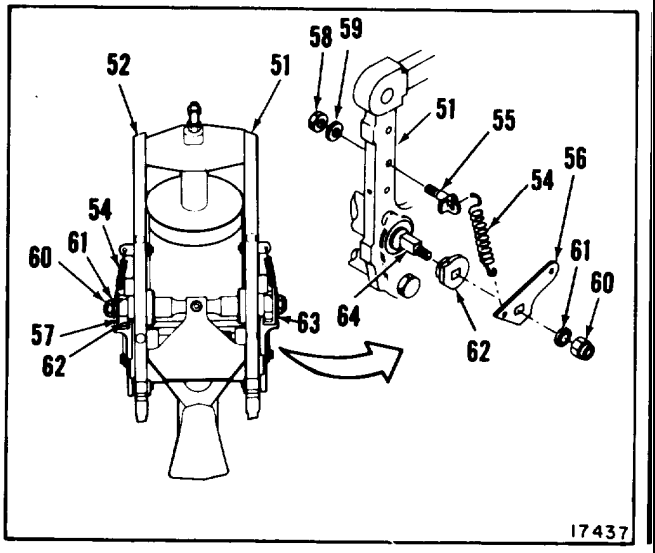
NOTE

Do not remove bearings unless they are worn.

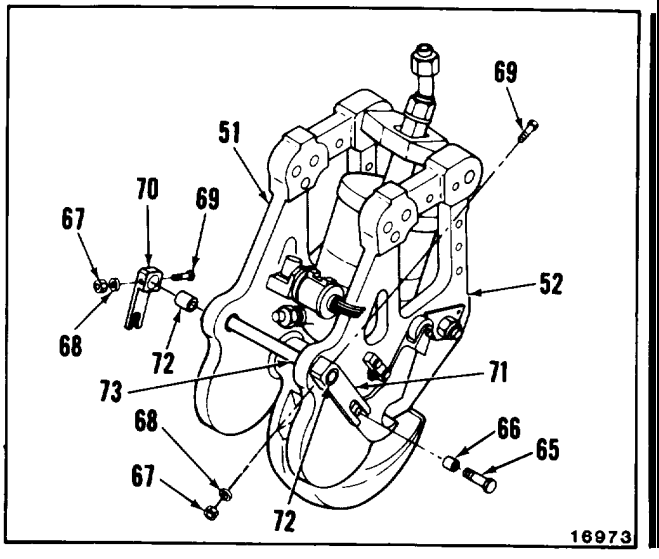
13. Remove three nuts (47), washers (48) and bolts (49) from block (50). **Remove block** from formers (51 and 52). Remove two bearings (53) (TM 55-1500-322-24).



14. **Remove two springs (54)** from eyebolts (55) and levers (56 and 57).
15. **Remove two** nuts (58), washers (59) and **eyebolts (55)** from formers (51 and 52).
16. **Remove two** nuts (60), washers (61), **levers (56 and 57), and cams (62 and 63)** from shaft (64).



17. **Remove two bolts (65) and bushings (66).**
18. **Remove two** nuts (67), washers (68) and **bolts (69)** from synchronizer arms (70 and 71).
19. **Remove two synchronizer arms (70 and 71), bushings (72) and tube (73)** from formers (51 and 52).



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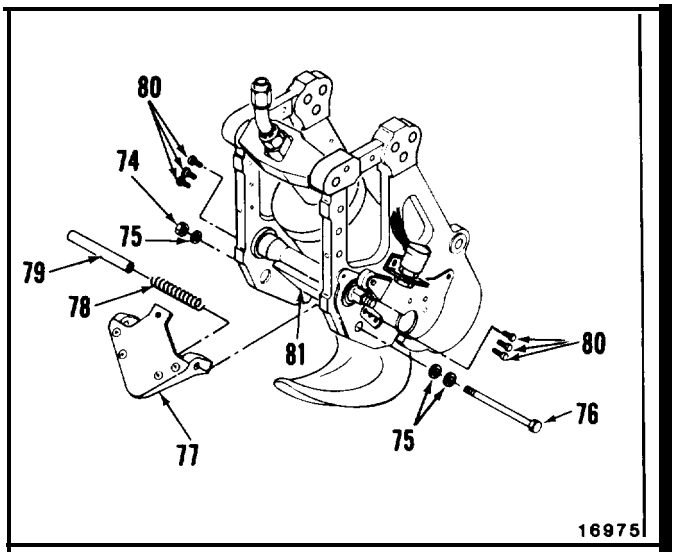
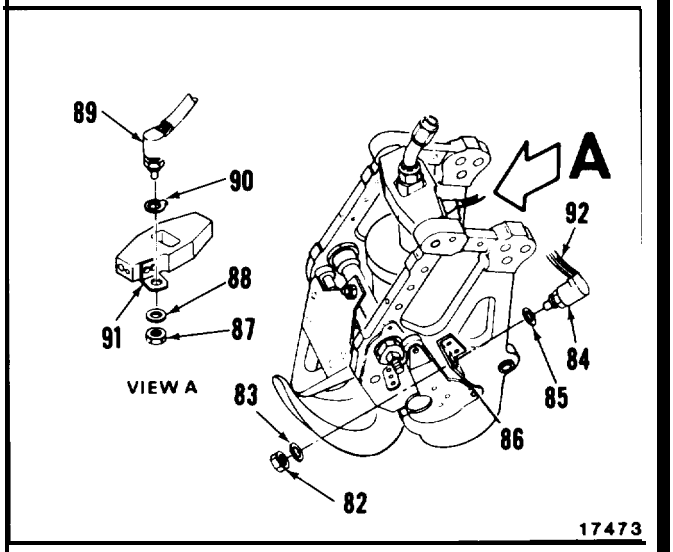
16-5.1 DISASSEMBLE CENTER CARGO HOOK (AVIM) (Continued) 16-5.1

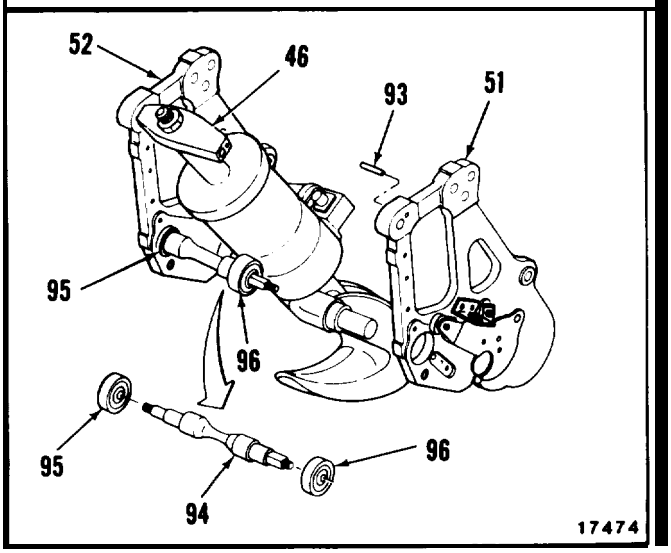
20. **Remove** nut (74), three washers (75) and **bolt (76)** from keeper (77). **Remove keeper, spring (78) and spacer (79).**
21. Remove lockwire and six bolts (80) from support block (81). **Remove support** block.



22. **Remove** lockwire, nut (82), washer (83), switch (84) and washer (85) from bracket (86).
23. **Remove** lockwire, nut (87), washer (88), **switch (89)** and washer (90) from bracket (91).
24. **If switches (84 and 89) are to be replaced, cut and remove switch wires from wire pack (92).**



25 **Remove formers (51 and 52)** from actuating cylinder support (46). Use plastic or fiber mallet.
26 **Remove pin (93)** from former (51). **Remove shaft (94) and bearings (95 and 96)** from former (52).
27 **Remove bearings (95 and 96) from shaft (94)** (TM 55-1500-322-24).



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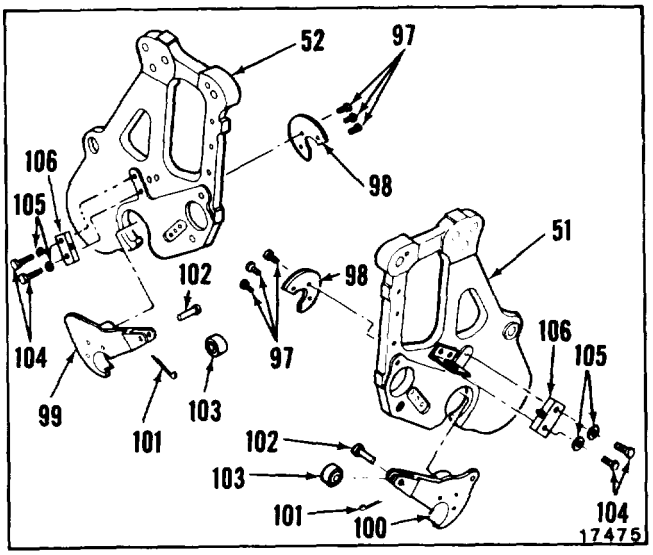
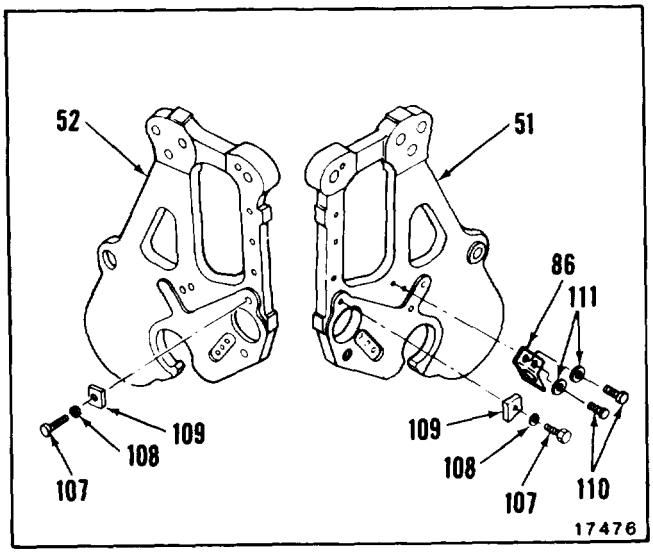
16-5.1 DISASSEMBLE CENTER CARGO HOOK (AVIM) (Continued) 16-5.1

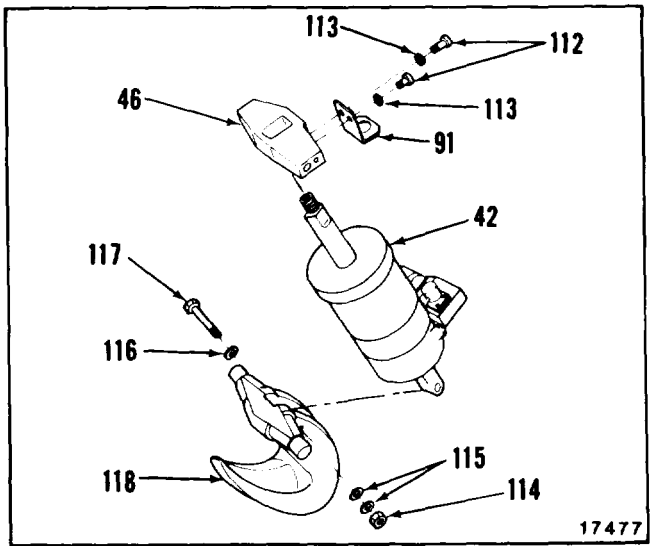
28. Remove six bolts (97), **two cam plates (98) and two cams (99 and 100)** from formers (51 and 52).
29. **Remove two** cotter pins (101), **cam bearings pins (102) and cam roller bearing (103)** from cams (99 and 100).
30. **Remove** four bolts (104), four washers (105) and **two cam stops (106)** from formers (51 and 52).



31. **Remove** bolts (107), washers (108) and **two cam stops (109)** from formers (51 and 52).
32. Remove two bolts (110), washers (111) and **bracket (86)** from former (54).



33. **Remove actuating cylinder support (46).**
34. **Remove** two bolts (112), washers (113) and **bracket (91)** from actuating cylinder support (46).
35. **Remove** nut (114), washers (115), washer (116), bolt (117) and **hook (118)** from actuating cylinder (42).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-6 INSPECT CENTER CARGO HOOK PARTS (AVIM)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Technical Inspector Tool Kit, NSN 5180-00-323-5114
Multimeter

Materials:

None

Personnel Required:

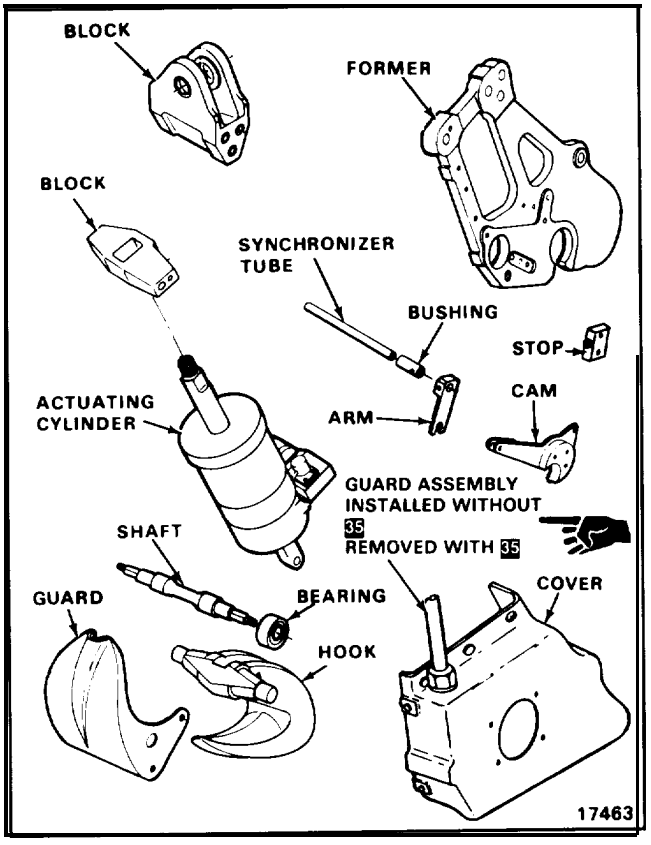
Inspector

References:

TM 55-1500-322-24

Equipment Condition:

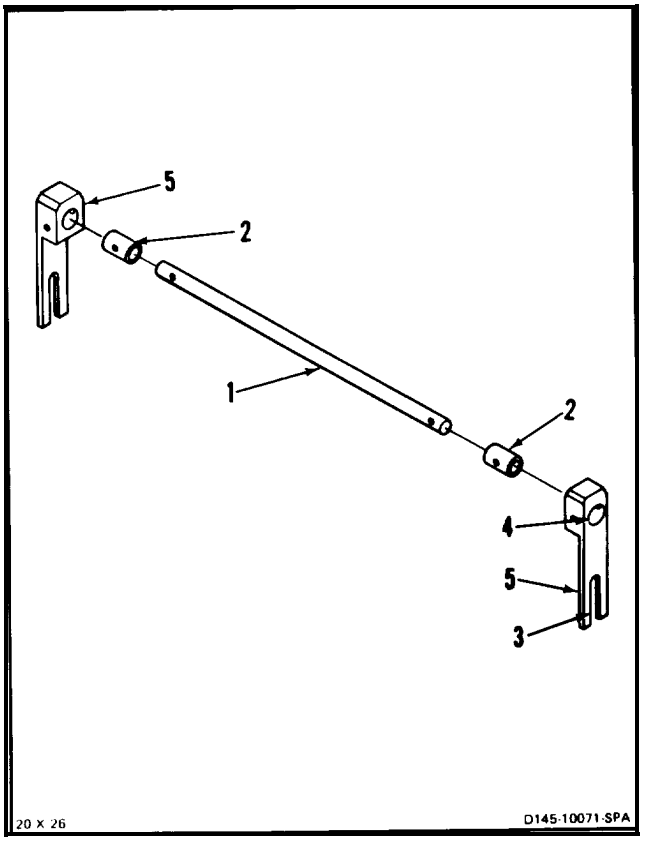
Off Helicopter Task
Center Cargo Hook Disassembled (Task 16-5 without 35) (Task 16-5.1 with 35)



NOTE

Inspection steps cover parts that are subject to wear.

1. **Check synchronizer tube (1), two bushings (2) and two synchronizer arms (3) for bending and distortion.**
2. **Measure diameter of tube (1).** Diameter shall not be less than 0.409 inch.
3. **Measure inside and outside diameters of bushings (2).** Od shall not be less than 0.718 inch. Id shall not be more than 0.410 inch.
4. **Measure width of slot (3) and diameter of hole (4)** in two arms (5). Width shall not be more than 0.321 inch. Diameter shall not be more than 0.721 inch.



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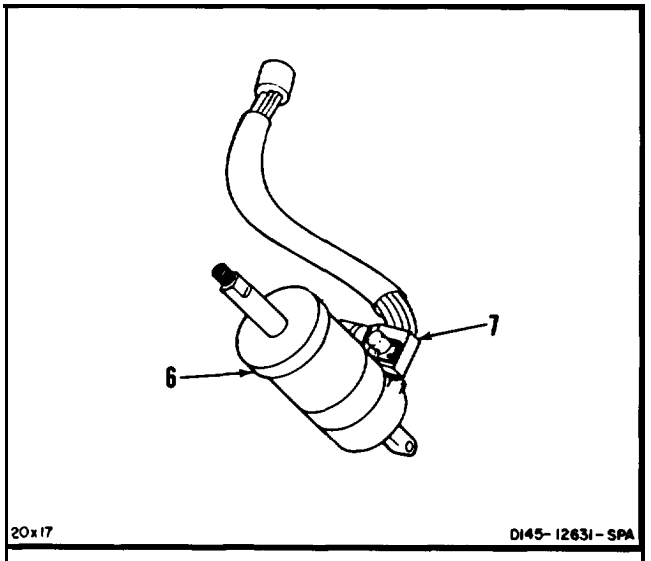
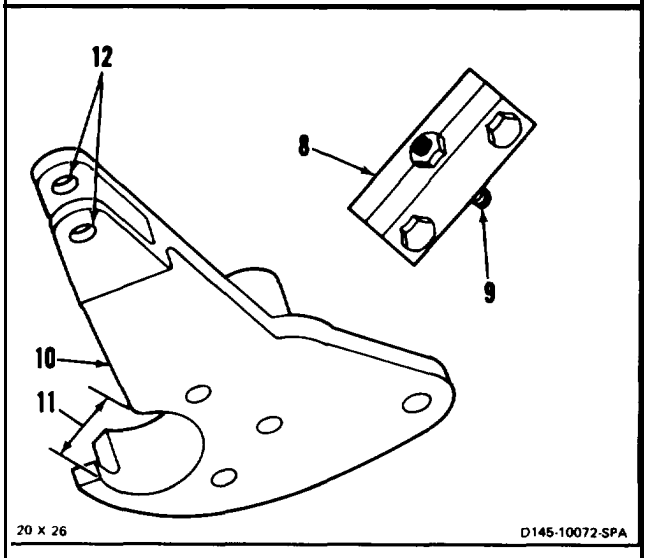
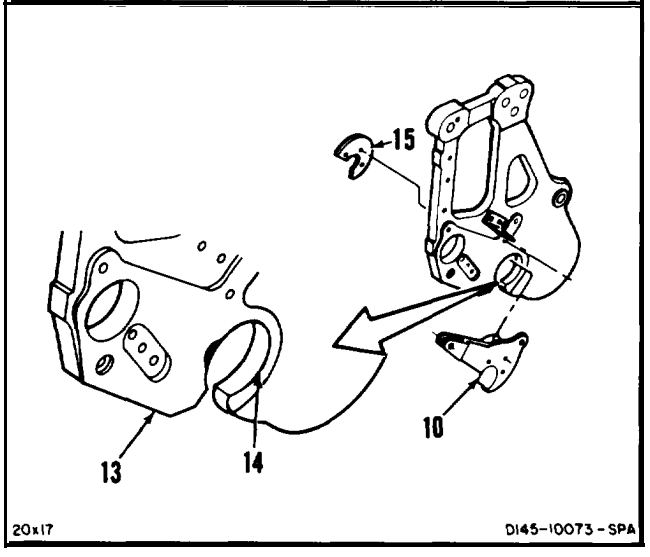
5. **Check actuating cylinder (6) for leaks** or damage. **Check cylinder emergency release valve (7) for loose or missing screws.**



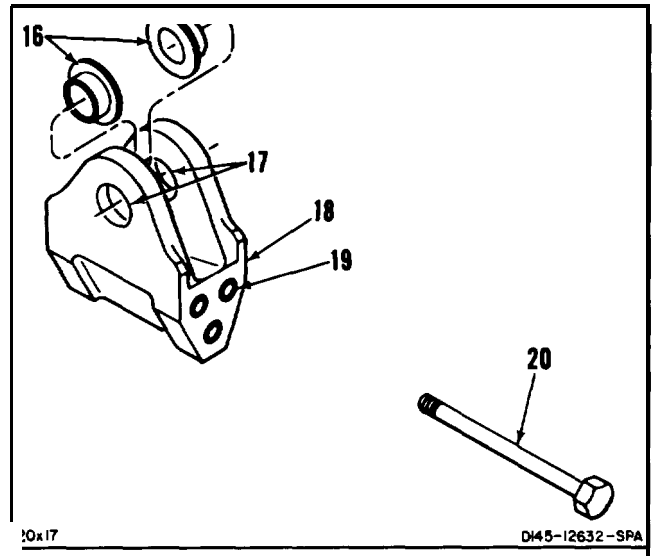
6. **Check two cam stops (8) for security of hardware and damage to tip of set-screw (9).**
7. **Check two large cams (10) for galling** on circumference of chromium plated surface and for damage from striking setscrew (9).
8. **Measure width of throat (11)** in cams (10). Width shall not be more than 1.014 inch.
9. **Measure diameter of bores (12)** in cams (10). Diameters shall not be more than 0.501 inch.



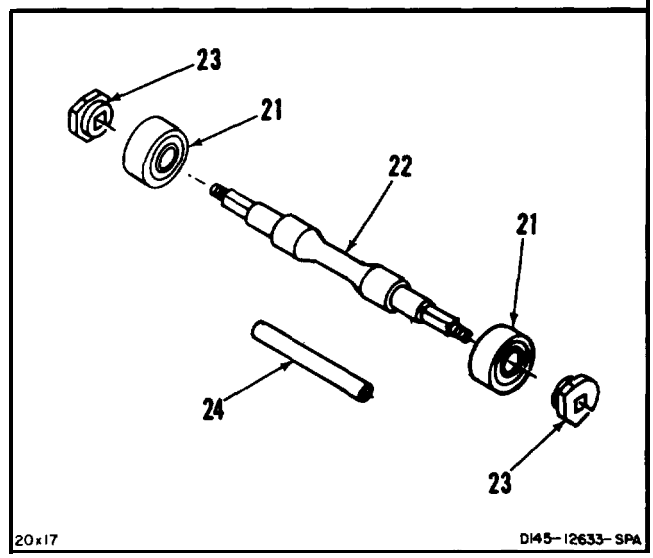
10. **Check two formers (13) in area of bore (14). There shall be no galling, cracks, or distortion.**
11. Fit cams (10) into bores (14). Cams shall rotate freely.
12. **Measure diameter of bore (14).** Diameter shall not be more than 2.322 inches, except in shaded area. Diameter across shaded area shall not be more than 2.327 inches,
13. **Inspect cam plates (15).** Cam plates shall not be bent.



14. **Inspect two bushings (16).** Teflon liner shall not be torn or worn through.
15. **Measure two bores (17)** in block (18). Diameter shall not be more than 1.188 inch.
16. **Measure inside diameter of six bushings (19).** Diameter shall not be more than 0.502 inch.
17. **Measure width of block (18).** Width shall not be less than 4.995 inches.
18. **Measure diameter of bolts (20).** Diameter shall not be less than 0.499 inch.



19. **Inspect bearings (21)** (TM 55-1500-322-24).
20. Inspect shaft (22). Shaft shall not be bent.
21. Measure diameter of bearing surfaces of shaft (22). Diameter shall not be less than 0.749 inch .
22.. **Inspect two cams (23).** Corners of cams shall not be rounded.
23. **Measure inside and outside diameter of spacer (24).** Id shall not be more than 0.751 inch. Od shall not be less than 0.999 inch.



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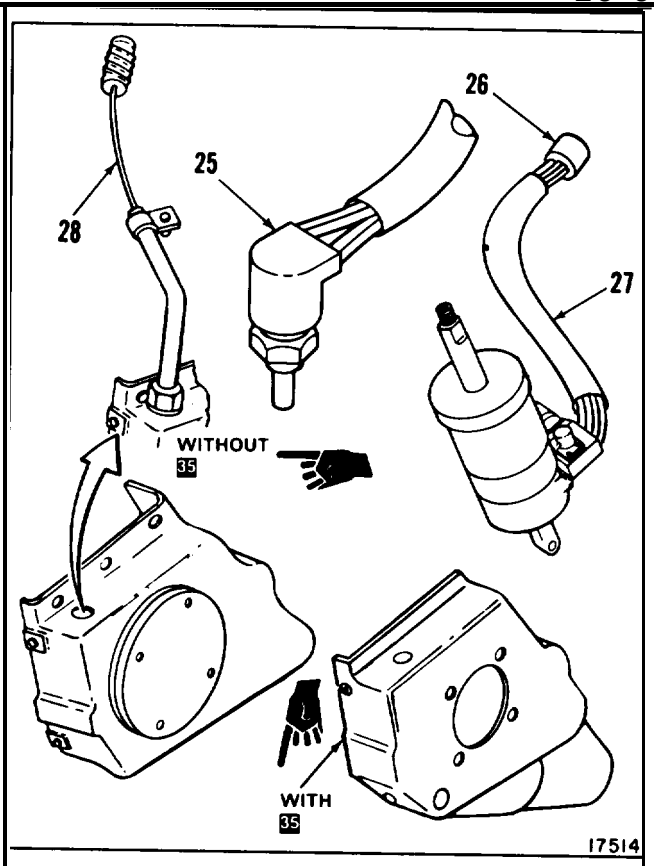
24. **Check two electrical switches (25) for continuity.** Use multimeter.
25. **Check plug connector (26) and electrical cable (27)** for fraying.
26. Check emergency release cable (28) for fraying.



27. **Inspect hook (29) for cracks and distortion.**
28. **Measure diameter of two lugs (30).** Diameter shall not be less than 0.990 inch.

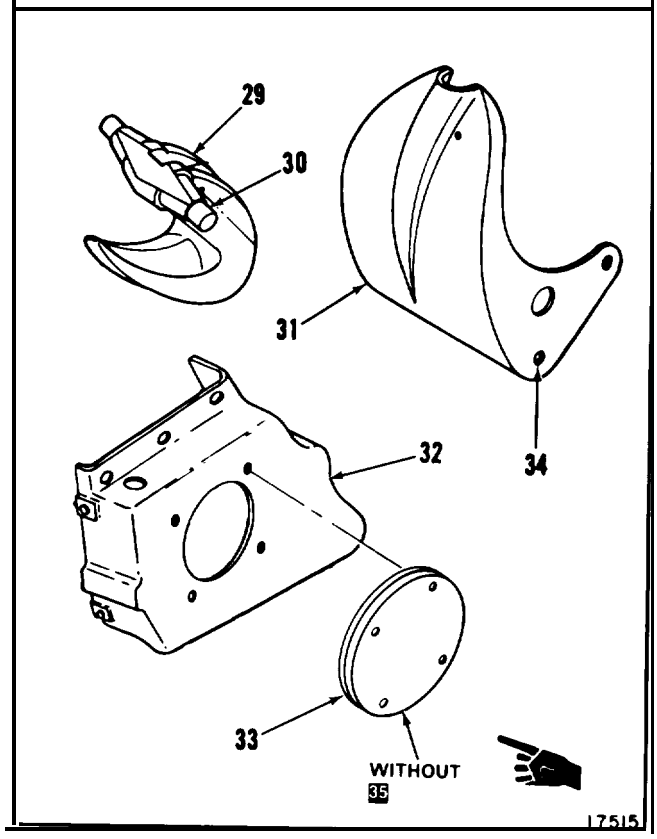
NOTE

Access door (33) is removed with 35.

29. **Check guard (31), two covers (32) and access door (33) for cracks and for elongated or damaged screw holes.**
30. **Measure diameter of four holes (34) in** guard (3 1). Diameter shall not be more than 0.288 inch.

FOLLOW-ON MAINTENANCE:

None



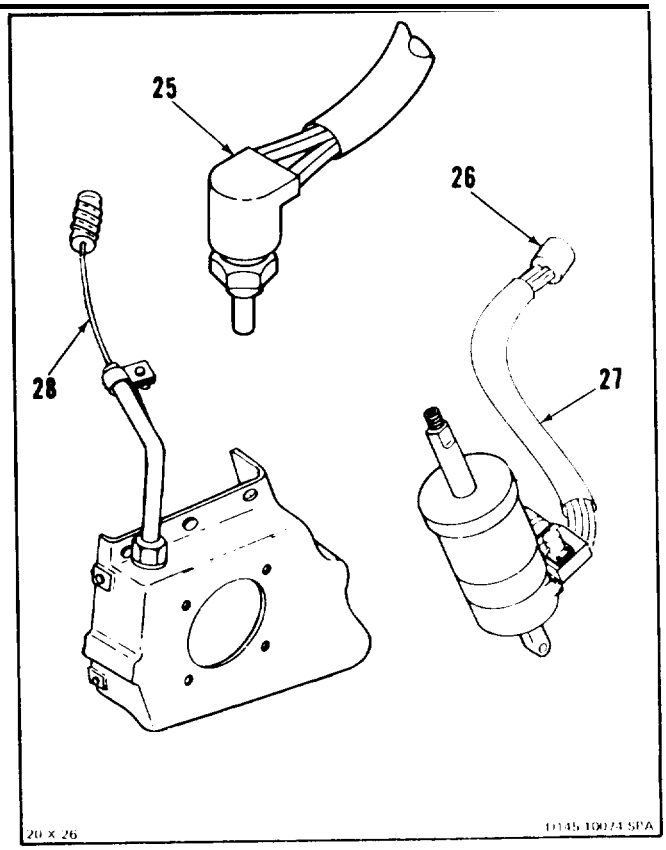
END OF TASK

16-6 INSPECT CENTER CARGO HOOK PARTS (AVIM) (Continued)

24 **Check two electrical switches (25) for continuity.** Use multi meter.

25 **Check plug connector (26) and electrical cable (27)** for fraying.

26 **Check emergency release cable (28) for fraying.**

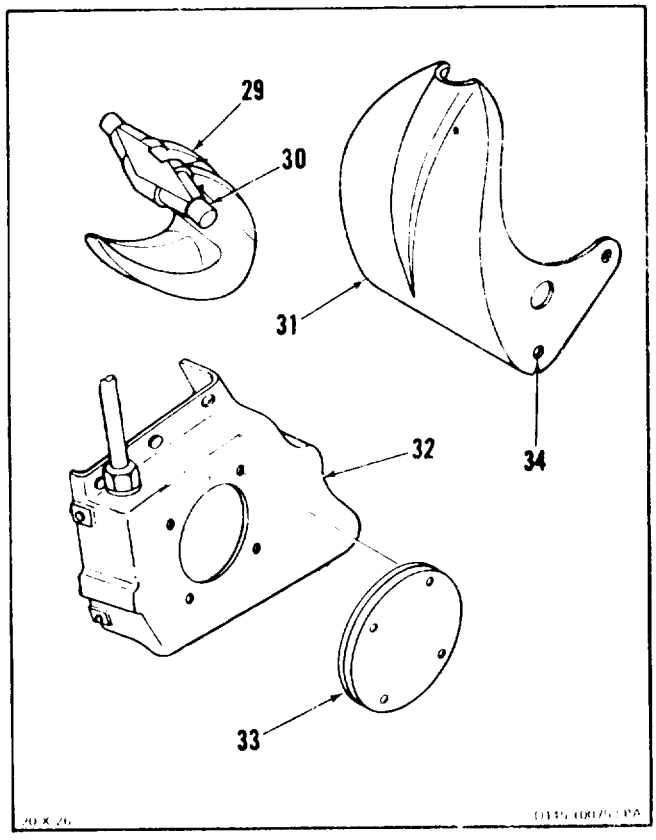


27. **Inspect hook (29) for cracks and distortion.**

28. **Measure diameter of two lugs (30).** Diameter shall not be less than O 990 Inch

29. **Check guard (31), two covers (32) and access door (33) for cracks and for elongated or damaged screw holes.**

30. **Measure diameter of four holes (34)** in guard (31) Diameter shall not be more than O.288 inch



FOLLOW-ON MAINTENANCE

None

END OF TASK

16-7 ASSEMBLE CENTER CARGO HOOK (AVIM)

INITIAL SETUP

Applicable Configurations:

Without 35

Tools:

Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692
Arbor Press
Torque Wrench, 100 to 750 Inch-Pounds
Torque Wrench, 5 to 50 Inch-Pounds

Materials:

Lockwire (E231)

Parts:

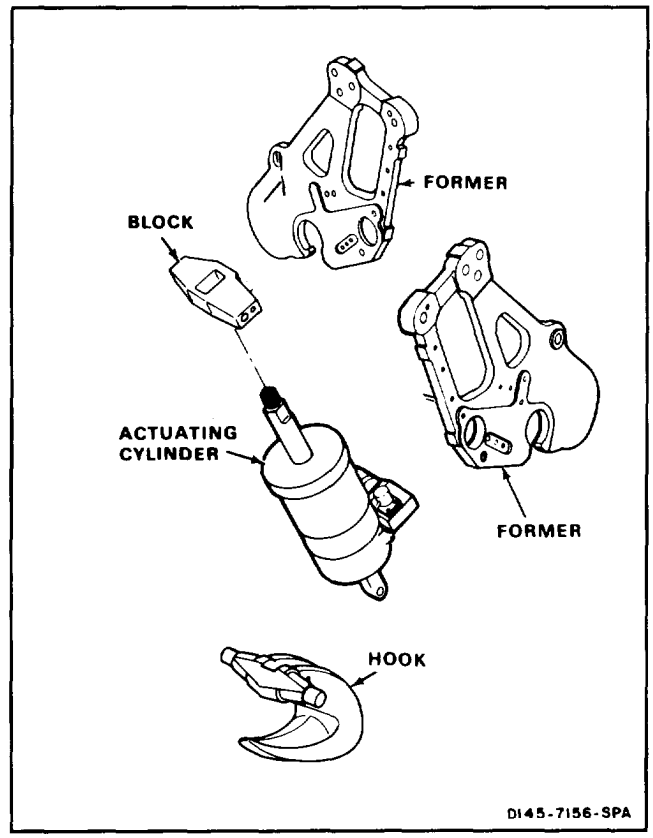
Cotter Pins

Personnel Required:

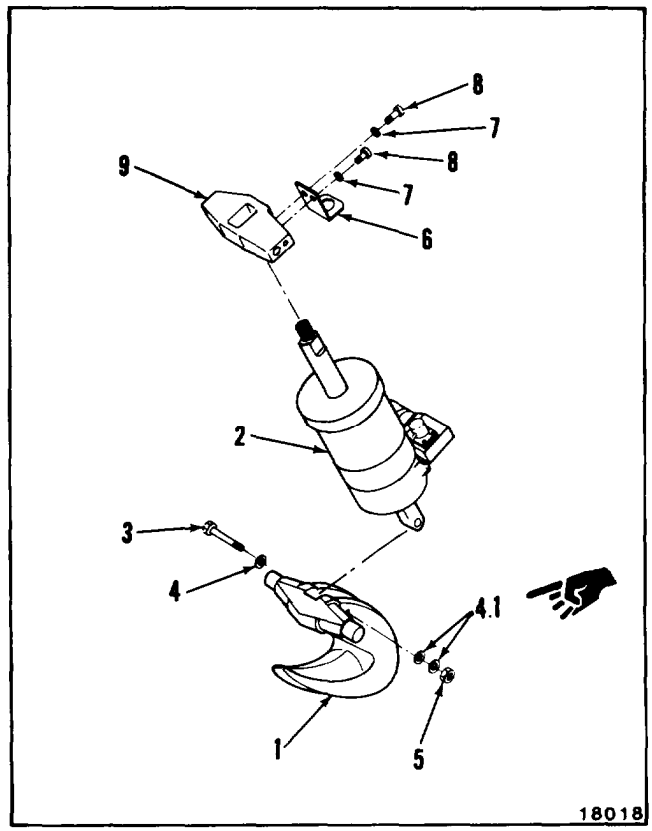
Medium Helicopter Repairer
Inspector

References:

TM 55-1500-322-24
TM 55-1520-240-23P



1. **Position hook (1)** on actuating cylinder (2) **Install bolt (3),** one washer (4) under bolt-**head, two washers (4.1) under nut (5), and nut.**
2. Install bracket (6), **two washers (7) and two bolts (8) on actuator support (9).**
3. **Install actuator support (9)** on actuating cylinder (2).



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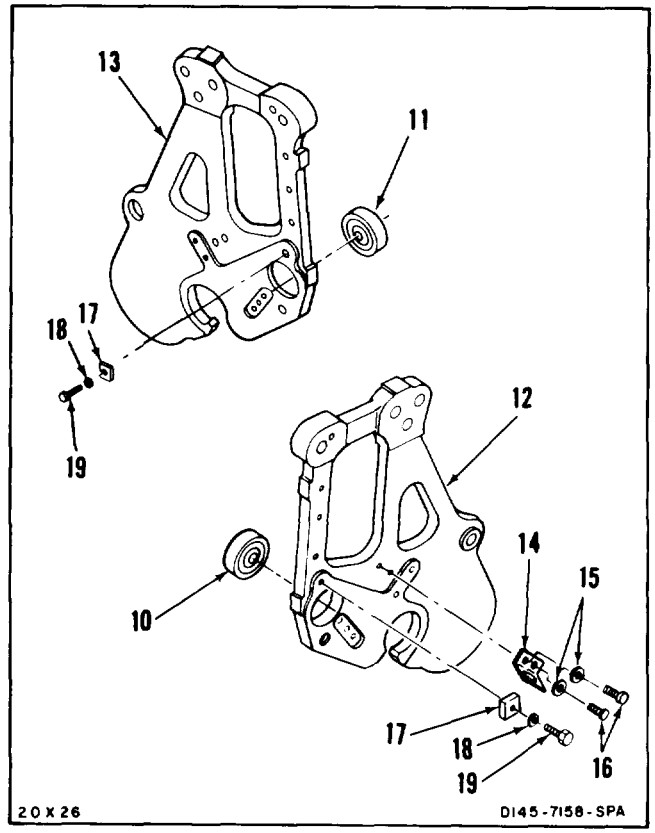
16-7 ASSEMBLE CENTER CARGO HOOK (AVIM) (Continuedl

CAUTION

Do not hammer bearings into formers. Damage to bearings and formers will result.

4. **Install bearings (10 and 11)** in formers (12 and 13) (TM 55-1500-322-24). Use arbor press,
5. **Install bracket (14)** with two washers (15) and two bolts (16) on former (12).
6. **Install two stops (17)** with two washers (18) and two bolts 19) on formers (12 and 13).

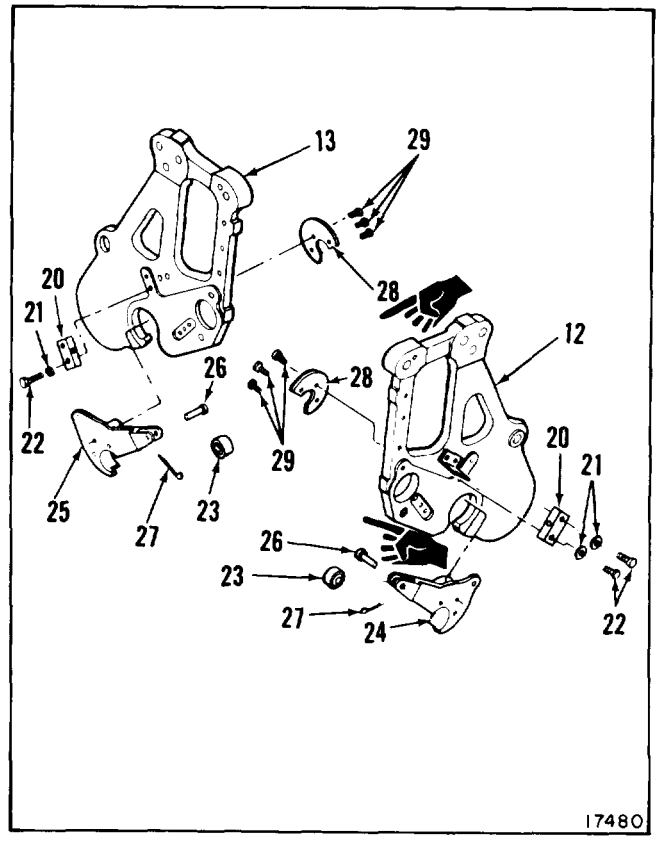


7. **Install two cam stops (20)** with four washers (21) and four bolts (22) on formers (12 and 13).
8. **Position two cam roller bearings (23)** in forks of two cams (24 and 25). Install two **cam bearing pins (26)** and cotter pins (27).

CAUTION

Cams and cam plates must be installed correctly or cargo hook will not function.

9. **Install two cams (24 and 25), two cam plates (28),** and six bolts (29) on formers (12 and 13).



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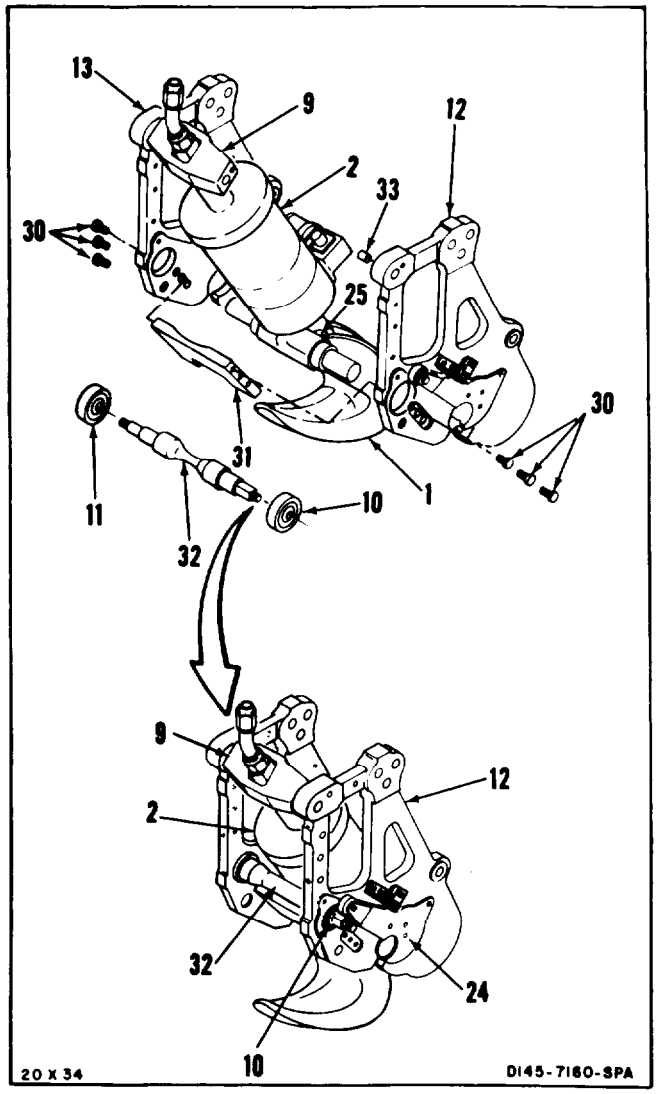
16-7 ASSEMBLE CENTER CARGO HOOK (AVIM) (Continued) 16-7

10. **Install** three bolts (30) and **support block (31)** on former (13). Do not tighten bolts at this time.
11. **Insert one and of shaft (32) in bearing (11).**
12. **Position actuating cylinder (2),** so that machined spindle on hook (1) fits into slot in cam (25).

CAUTION

Do not hammer alignment pin into former. If and of pin becomes enlarged it will not fit in actuator support.

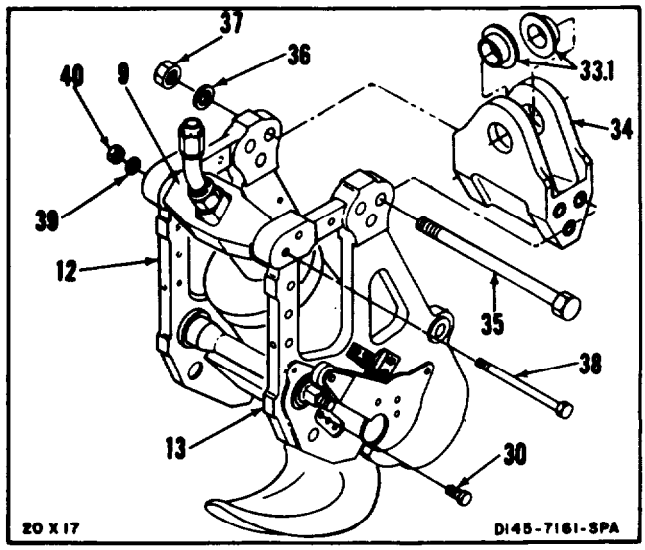
13. **Install alignment pin (33)** in former (12). Use arbor press,
14. **Position former (12) on actuating cylinder (2)** so that shaft (32) aligns with bearing (10). alignment pin (33) engages actuator support (9) and machined spindle on hook fits into slot in cam (24).
15. Lightly tap former (12) into place with plastic or fiber mallet.



16. **Install three bolts (30)** through former (12) into support block (31). Do not tighten belts at this time.

16.1. **Install two bearings (33.1)** (TM 55-1500-322-24).

17. **Position block (34) between formers (12 and 13). Install three bolts (35).** washers (36) and nuts (37). Do not tighten nuts at this time.
18. **Align holes in formers (12 and 13) and actuator support (9). Install bolt (38).** washer (39) and nut (40). Do not tighten nut at this time.



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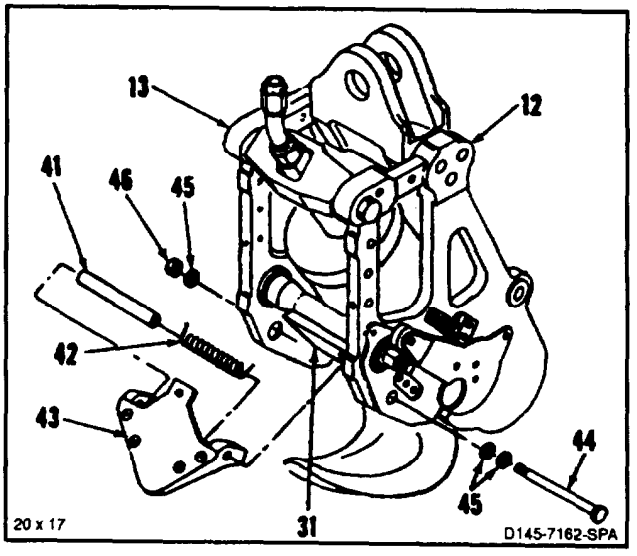
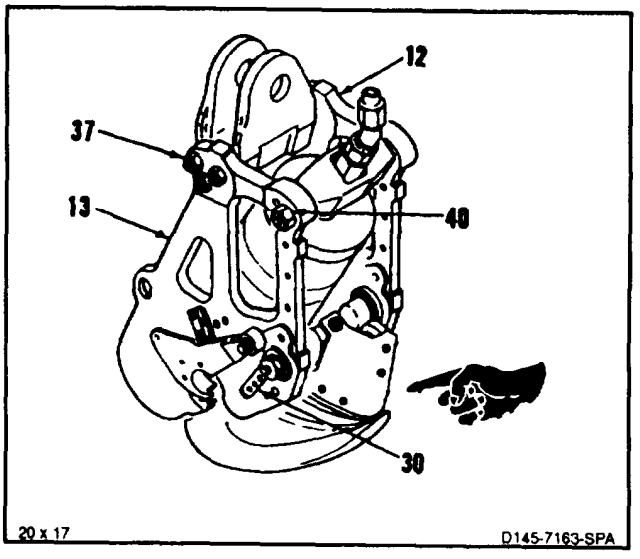
16-7 ASSEMBLE CENTER CARGO HOOK (AVIM) (Continued) 16-7

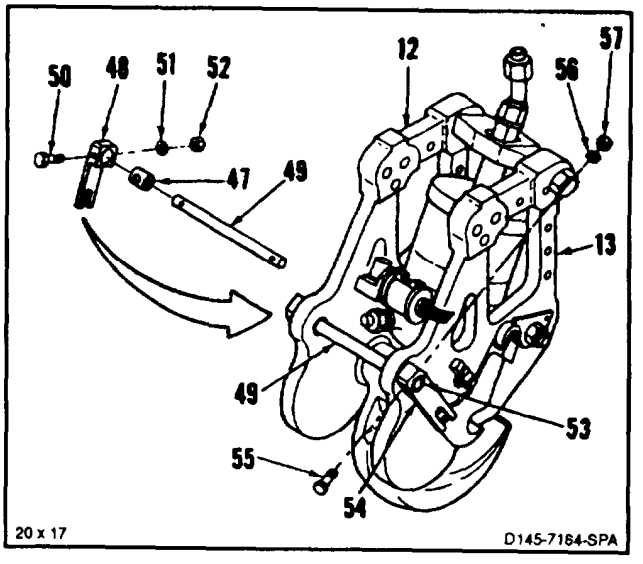
19. Install spacer (41) in sprint (42).
20. Insert end of spring (42) in hole in keeper (43). Insert other end of spring in hole in support block (31).
21. **Align holes In formers (12 and 13), keepers (43) and spacer (41). Install bolt (44),** three washers (45) and nut (46).



22. **Carefully tighten six bolts (39) and nuts (37 and 40), so that fomers (12 and 13) pull together squarely. Torque six bolts (30) to 200 Inch-pounds.** Lockwire bolts. Use lockwire (E231).



23. **Position bushing (47) and synchronizing arm (48) on tube (49)** so that bolt holes align. **Install bolt (50), washer (51) and nut (52). Torque nut to 30 inch-pounds .**
24. **slide tube (49) through holes In formers (12 and 13).**
25. **Position bushing (53) and synchronizing arm (54) on tube (49)** so that bolt holes align. **Install bolt (55), washer (56) and nut (57). Torque nut to 30 inch-pounds**



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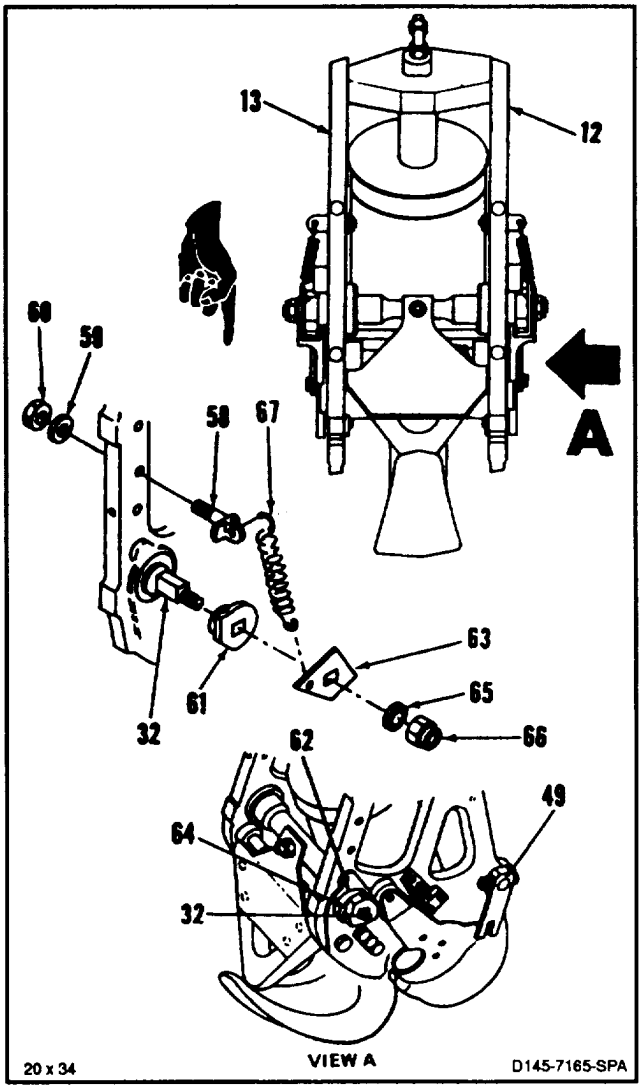
16-7 ASSEMBLE CENTER CARGO HOOK (AVIM) (Continued) 16-7

26. **Install two eyebolts (58),** washers (59) and nuts (60) in formers (12 and 13).

27. **Position cams (61 and 62),** rounded surface facing toward tube (49). on squared section of shaft (32).

28. **Install levers (63 and 64),** washers (65) and two nuts (66) on shaft (32).

29. **connect two springs (67)** to eyebolts (58) and levers (63 and 64).



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16-7 ASSEMBLE CENTER CARGO HOOK (AVIM) (Continued)

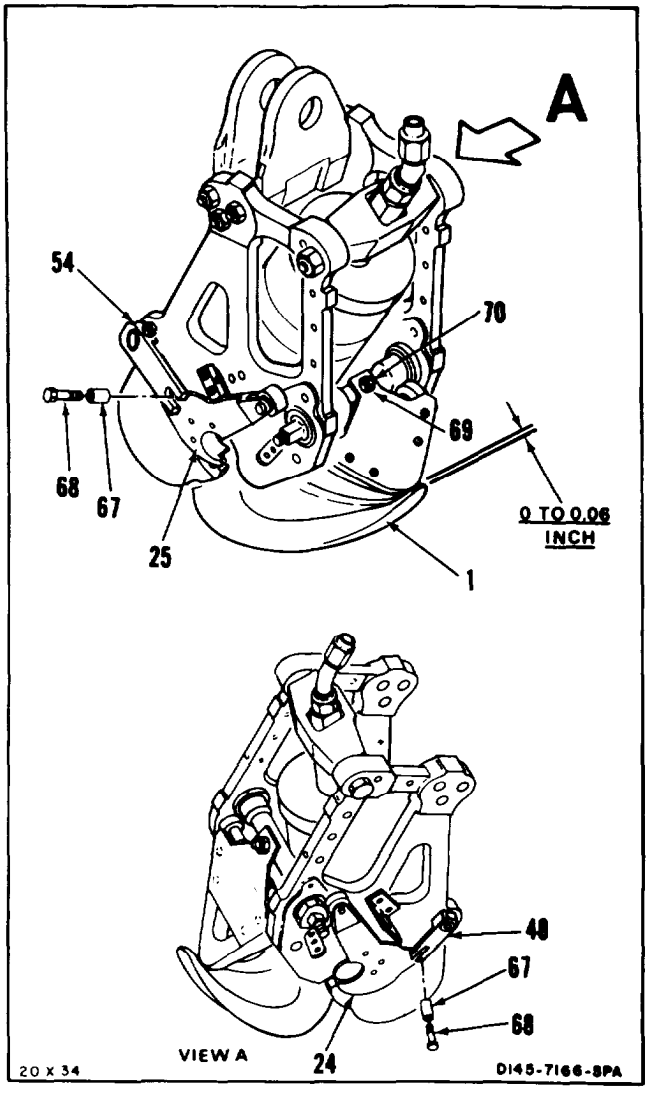
30. Rotate synchronizer arms (48 and 54) over holes in cams (24 and 25). **Install two bushings (167) and bolts (68)** through forks. in synchronizing arms into cams.

31. **Adjust keeper stop (69)** as follows:

    a. Remove lockwire from locknut (70) Loosen locknut.

    b. Adjust keeper stop (69) so that keeper contacts or is within 0.06 inch of hook (1).

    c. Tighten locknut (70). Lockwire locknut. Use lockwire (E231).



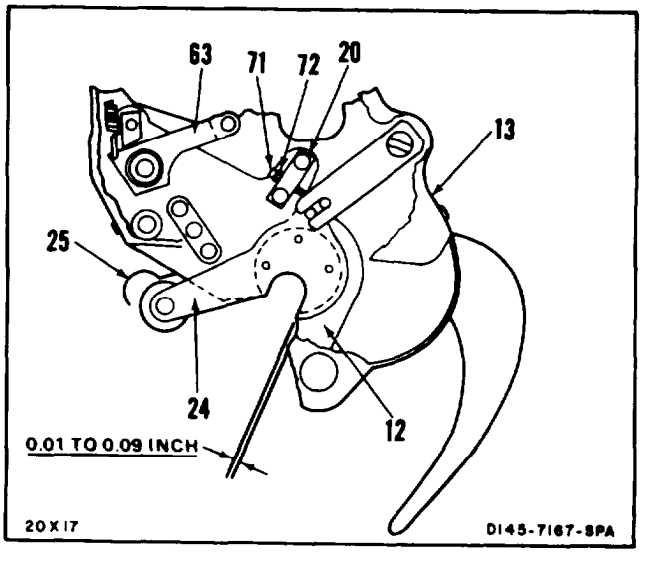
32. **Adjust cam stops (20) as follows:**

    a. Lift lever (63) and rotate cams (24 and 25) until they contact stop screws (71).

    b. Loosen locknuts (72).

    c. Adjust stop screws (71) until lower edge of cut out in cams (24 and 25) is 0.01 to 0.09 inch above lower edge of cut out in formers (12 and 13).

    d. Tighten locknuts (72).



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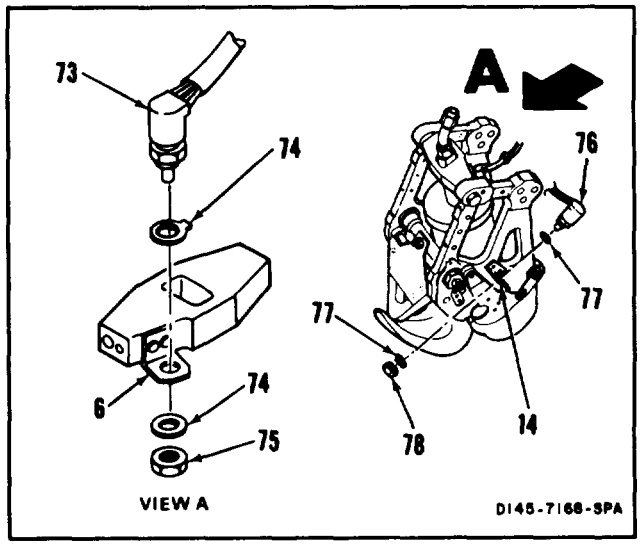
33. **Install switch (73),** two washers (74), and nut (75) in bracket (6).
34. **Install switch (76),** two washers (77) and nut (78) in bracket (14).

NOTE

Switches are lockwired after adjustment (Task 16-7.2).

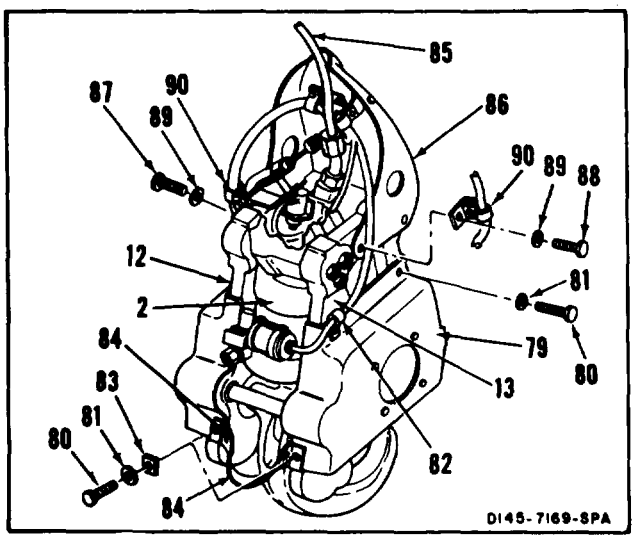


35. **Position cover (79) on former (13). Install six screws (80),** washers (81), **bracket (82), plate (83) and strap (84).**
36. **Install hose (85)** on actuating cylinder (2).

NOTE

Guard will be removed prior to installation. It is temporarily installed to prevent loss of hardware.

37. **Position guard (86)** on formers (12 and 13). **Temporarily install bolts (87 and 88),** washers (89) **and clamp (90).**

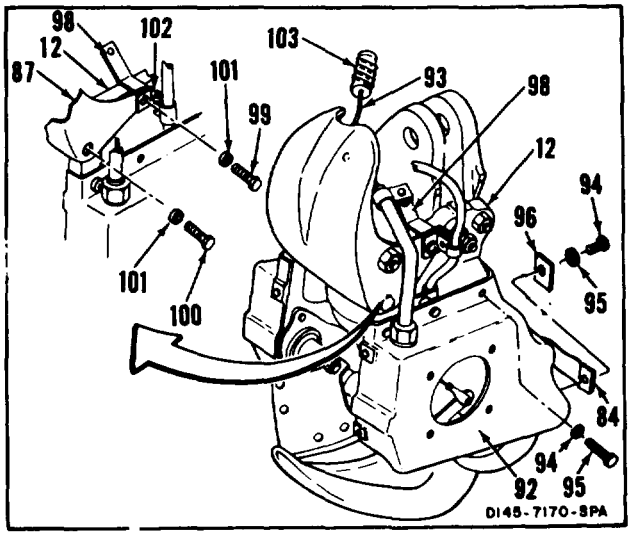


38. **Position cover (92)** with cable (93) on former (12). **Install five screws (94)** and washers (95), Install screw (96), washer (95), **plate (97) and strap (84).**

NOTE

Guard will be removed prior to installation. It is temporarily installed to prevent loss of hardware.

39. **Position bracket (98)** between guard (87) and former (12). **Temporarily install two bolts (99 and 100),** washers (101) **and bracket (102).**
40. **Install cable lock (103)** on cable (93).



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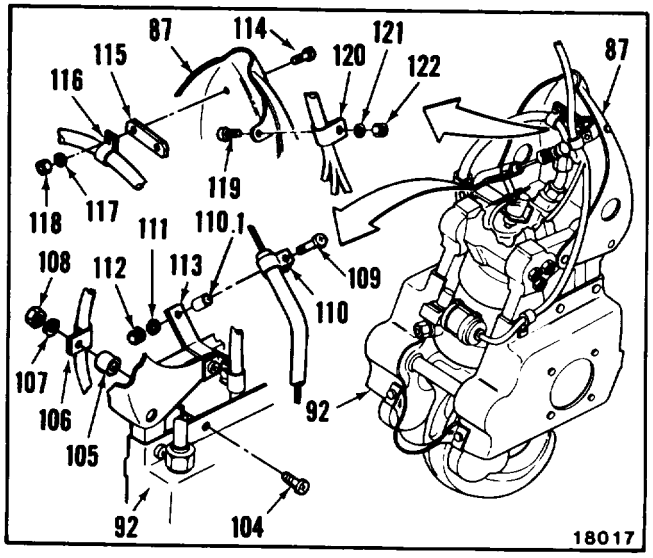
41. **Install** screw (104), **spacer (105),** clamp (106), washer (107), and nut (108) on cover (92).
42. **Install** screw (109), **clamp (110),** spacer (110.1), washer (111), and nut (112) on bracket (113).
43. **Temporarily install** two screws (114), **bracket (115), clamp (116),** washers (117), and nuts (118) on guard (87).
44. **Temporarily install** screw (119), clamp (120), washer (121), and nut (122) on guard (87).



45. Align holes in strap (123) and lever (63). **Install straight head pin (124)** and cotter pin (125).

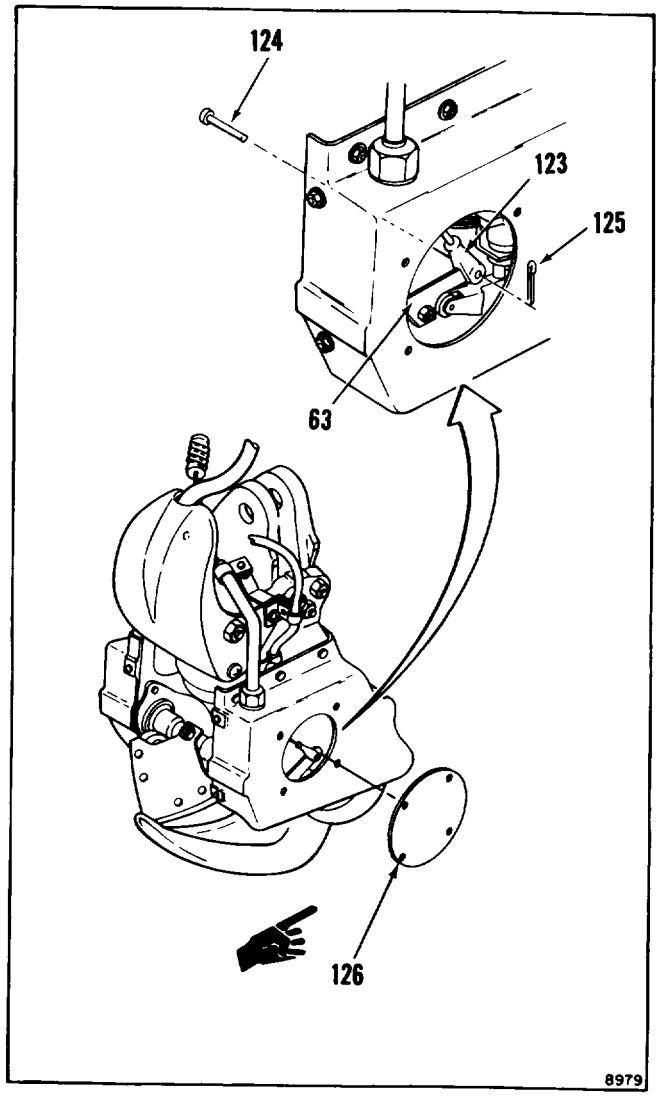
NOTE

Cover (126) is not to be installed. Discard cover.

INSPECT

FOLLOW-ON MAINTENANCE:

Test center cargo hook (Task 16-7.1.1).
Adjust switches (Task 16-7.2).



END OF TASK

16-7.1 ASSEMBLE CENTER CARGO HOOK (AVIM) 16-7.1

INITIAL SETUP

Applicable Configurations:

With 35

Tools:

Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692
Arbor Press
Torque Wrench, 100 to 750 Inch-Pounds
Torque Wrench, 5 to 50 Inch-Pounds

Materials:

Lockwire (E231)

Parts:

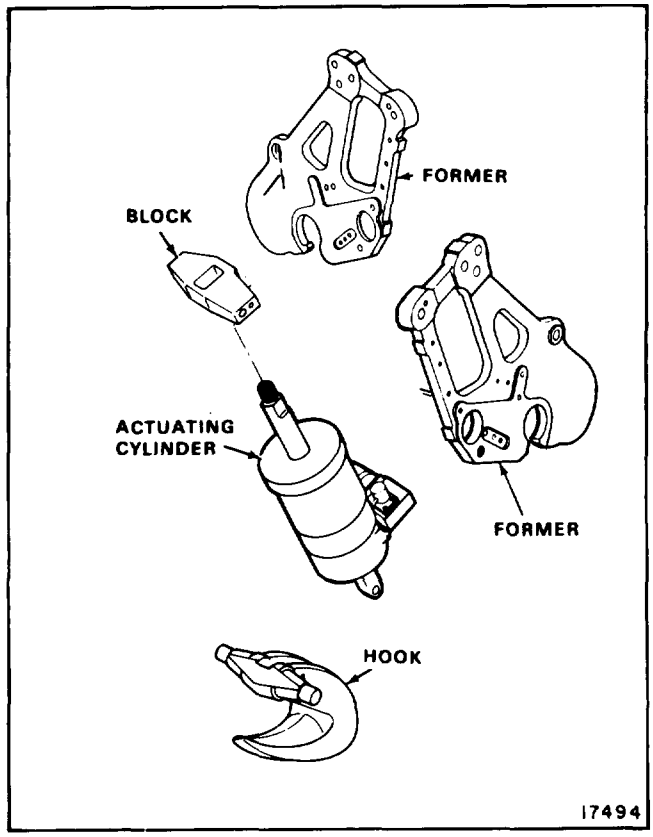
Cotter Pins

Personnel Required:

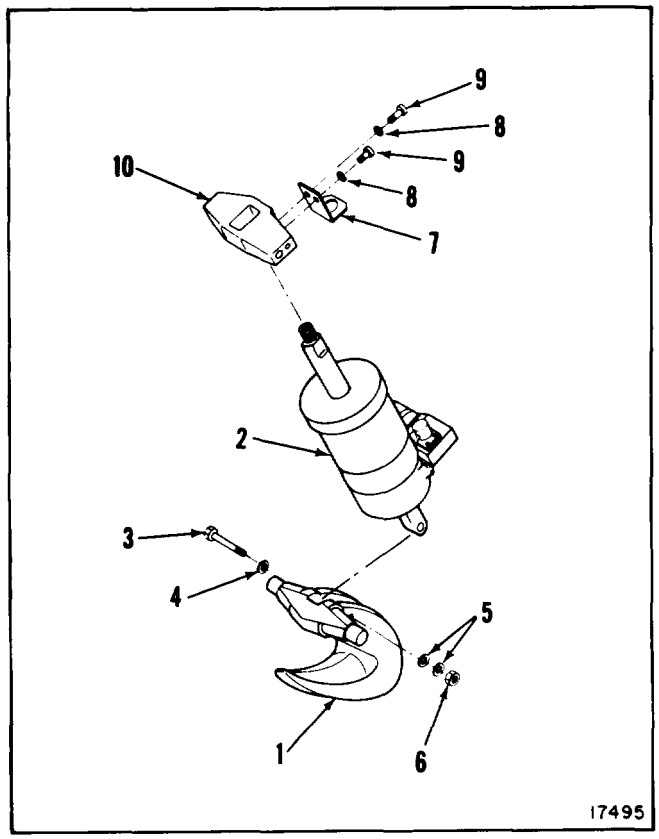
Medium Helicopter Repairer
Inspector

References:

TM 55-1500-322-24
TM 55-1520-240-23P



1. **Position hook (1)** on actuating cylinder (2). **Install bolt (3),** one washer (4) under bolthead and two washers (5) under nut (6), and nut.
2. **Install bracket (7),** two washers (8) and two bolts (9) **on actuator support (10).**
3. **Install actuator support (10)** on actuating cylinder (2).



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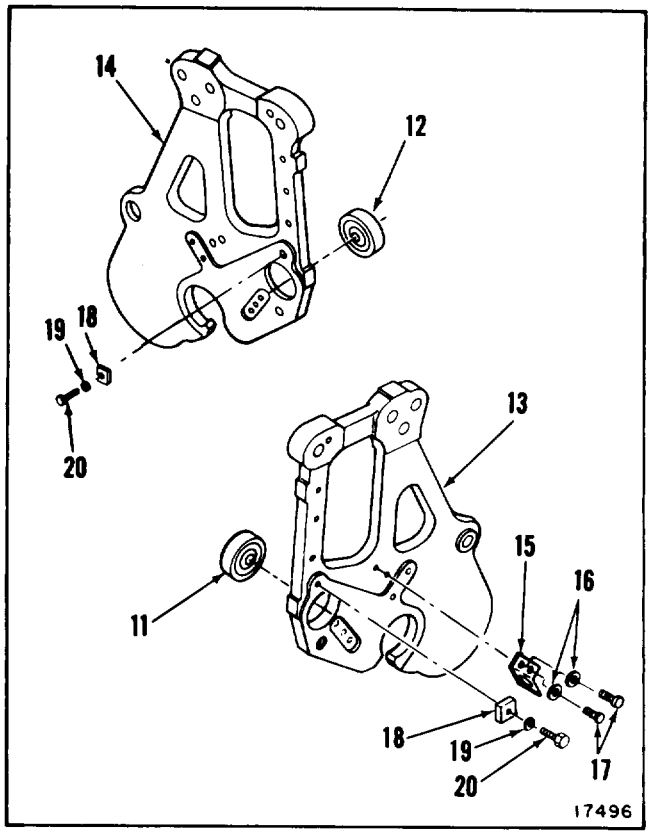
16-7.1 ASSEMBLE CENTER CARGO HOOK (AVIM) (Continued) 16-7.1

CAUTION

Do not hammer bearings into formers. Damage to bearings and formers will result.

4. **Install bearings (11 and 12)** in formers (13 and 14) (TM 55-1500-322-24). Use arbor press.
5. **Install bracket (15)** with two washers (16) and two bolts (17) on former (13).
6. **Install two stops (18)** with two washers (19) and two bolts (20) on formers (13 and 14).

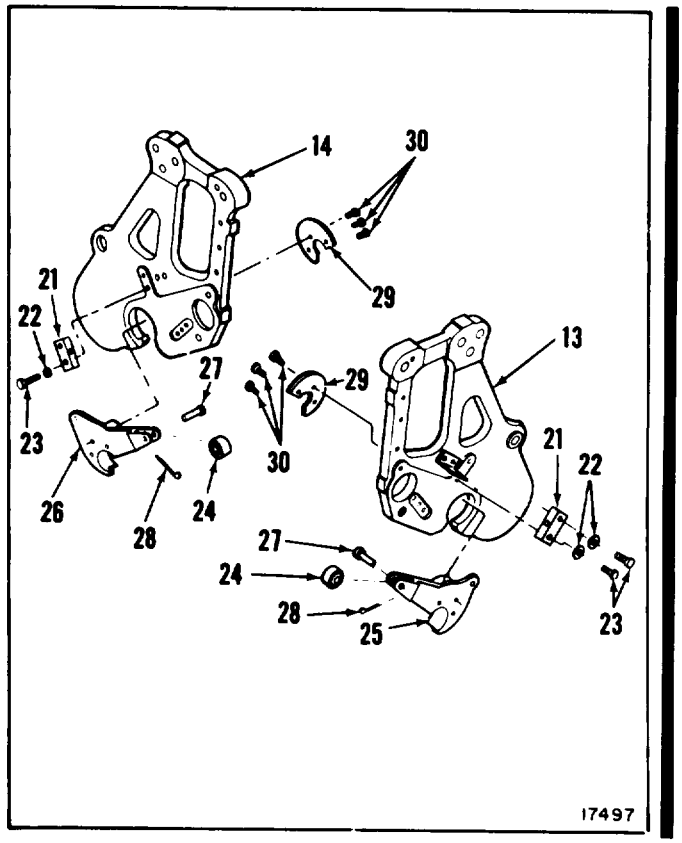


7. **Install two cam stops (21)** with four washers (22) and four bolts (23) on formers (13 and 14).
8. **Position two cam roller bearings (24)** in **forks of two cams (25 and 26). Install two cam bearing pins (27)** and cotter pins (28).

CAUTION

Cams and cam plates must be installed correctly or cargo hook will not function.

9. **Install two cams (25 and 26), two cam plates (29),** and six bolts (30) on formers (13 and 14).



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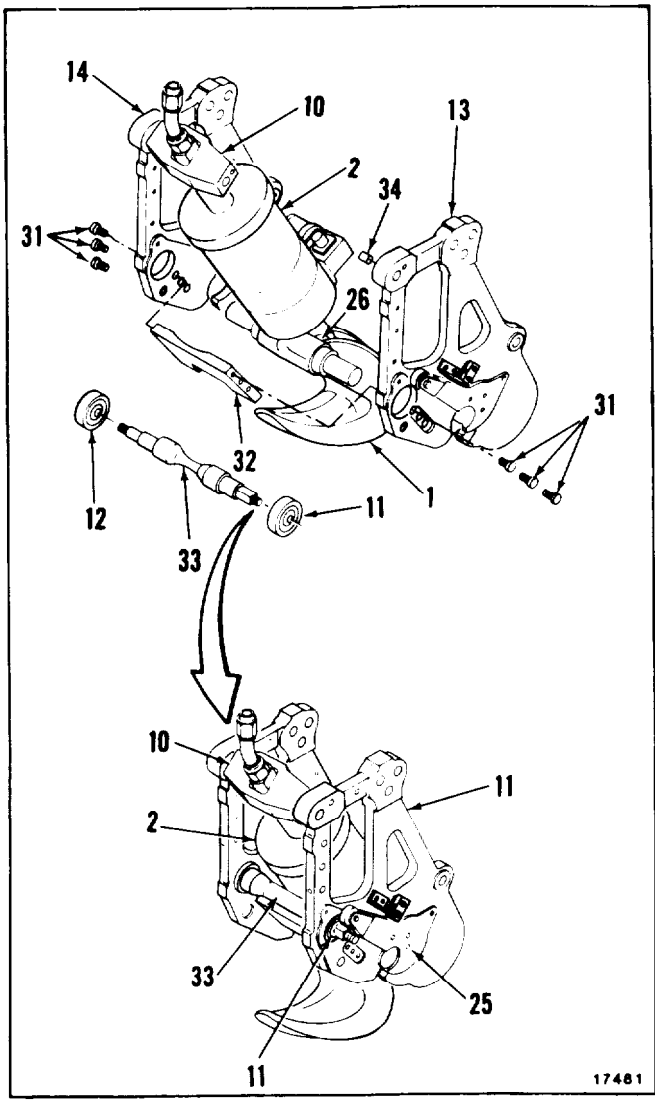
16-7.1 ASSEMBLE CENTER CARGO HOOK (AVIM) (Continued) 16-7.1

10. **Install** three bolts (31) and **support block (32)** on former (14). Do not tighten bolts at this time.
11. **Insert one end of shaft (33) in bearing (12).**
12. **Position actuating cylinder (2),** so that machined spindle on hook (1) fits into slot in cam (26).

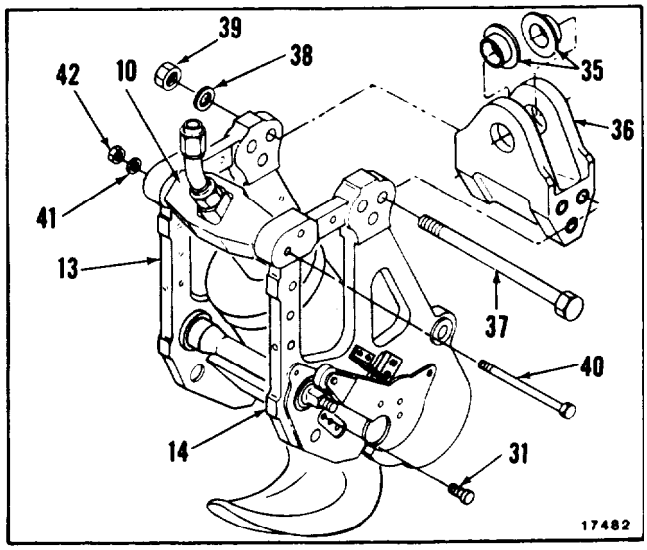
CAUTION

Do not hammer alignment pin into former. If end of pin becomes enlarged, it will not fit in actuator support.

13. **Install alignment pin (34)** in former (13). Use arbor press.
14. **Position former (13) on actuating cylinder (2)** so that shaft (33) aligns with bearing (1 1). alignment pin (34) engages actuator support (10) and machined spindle on hook fits into slot in cam (25).
15. Lightly tap former (13) into place with plastic or fiber mallet.
16. **Install three bolts (31)** through former (13) into support block (32). Do not tighten bolts at this time.



17. **Install two bearings (35)** (TM 55-1500-322-24).
18. **Position block (36) between formers (13 and 14). install three bolts (37),** washers (38) and nuts (39). Do not tighten nuts at this time.
19. **Align holes in formers (13 and 14) and actuator support (10). Install bolt (40),** washer (41) and nut (42). Do not tighten nut at this time.



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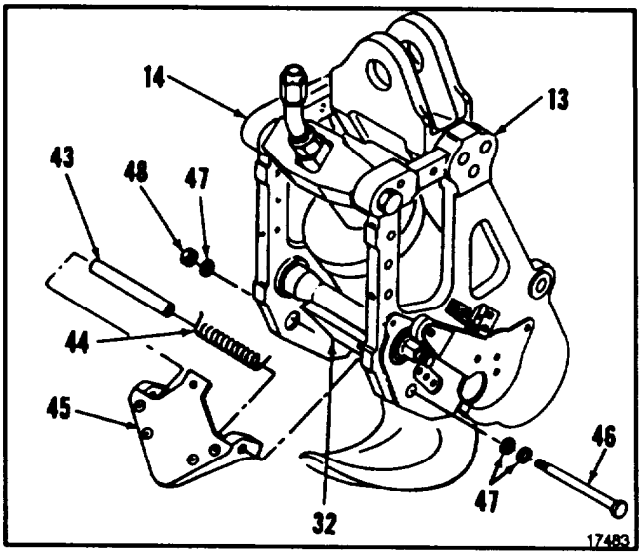
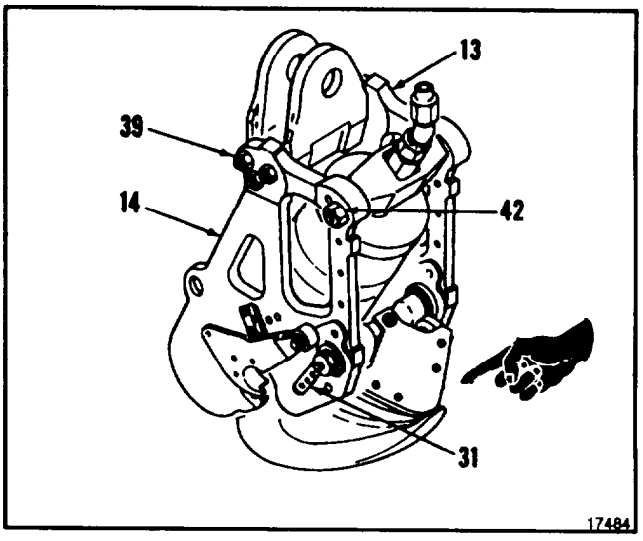
16-7.1 ASSEMBLE CENTER CARGO HOOK (AVIM) (Continued) 16-7.1

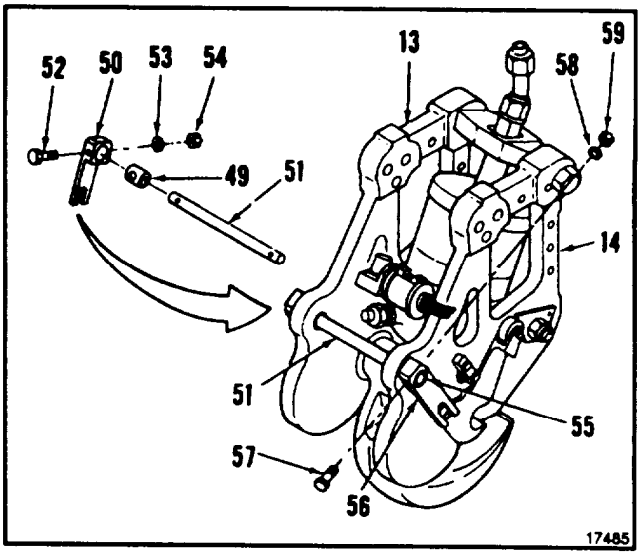
20. Install spacer (43) in spring (44).
21. Insert end of spring (44) in hole in keeper (45). Insert other end of spring in hole in support block (32).
22. **Align holes in formers (13 and 14), keeper (45) and spacer (43) Install bolt (46).** three washers *(47)* and nut (48).



23. **Carefully tighten six bolts (31) and nuts (39 and 42), so that formers (13 and 14) pull together squarely. torque six bolts (31) to 200 Inch-pounds.** Lockwire bolts. Use lockwire (E-231)



24. **position bushing (49) and synchronizing arm (50) on tube (51)** so that bolt holes align. **Install bolt (52), washer (53) and nut (54). Torque nut to 30 Inch-pounds**
25. **Slide tube (51) through holes In formers (13 and 14).**
26. **Position bushing (55) and synchronizing arm (56) on tub (51)** so that bolt holes align. **Install bolt (57),** washer (58) and nut (59). **Torque nut to 30 Inch-pounds**



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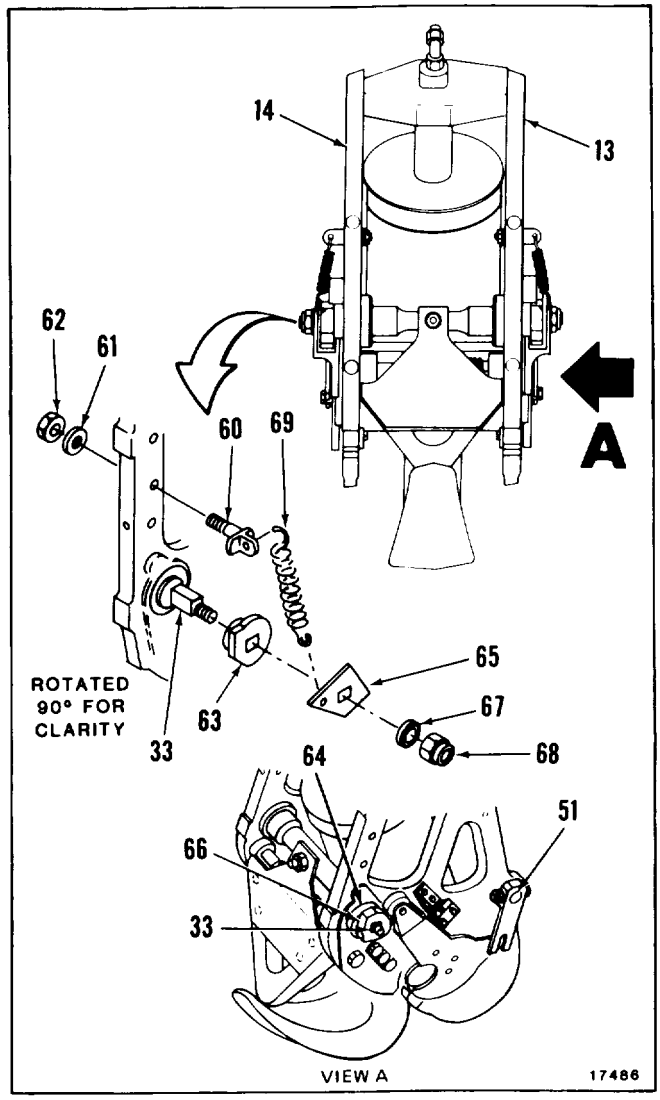
16-7.1 ASSEMBLE CENTER CARGO HOOK (AVIM) (Continued) 16-7.1

27. **Install two eyebolts (60),** washers (61) and nuts (62) in formers (13 and 14).
28. **Position cams (63 and 64),** rounded surface facing toward synchronizing tube (50), on squared section of shaft (33).
29. **Install levers (65 and 66),** washers (67) and two nuts (68) on shaft (33).
30. **Connect two springs (69)** to eyebolts (60) and levers (65 and 66).



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16-7.1 ASSEMBLE CENTER CARGO HOOK (AVIM) (Continued) 16-7.1

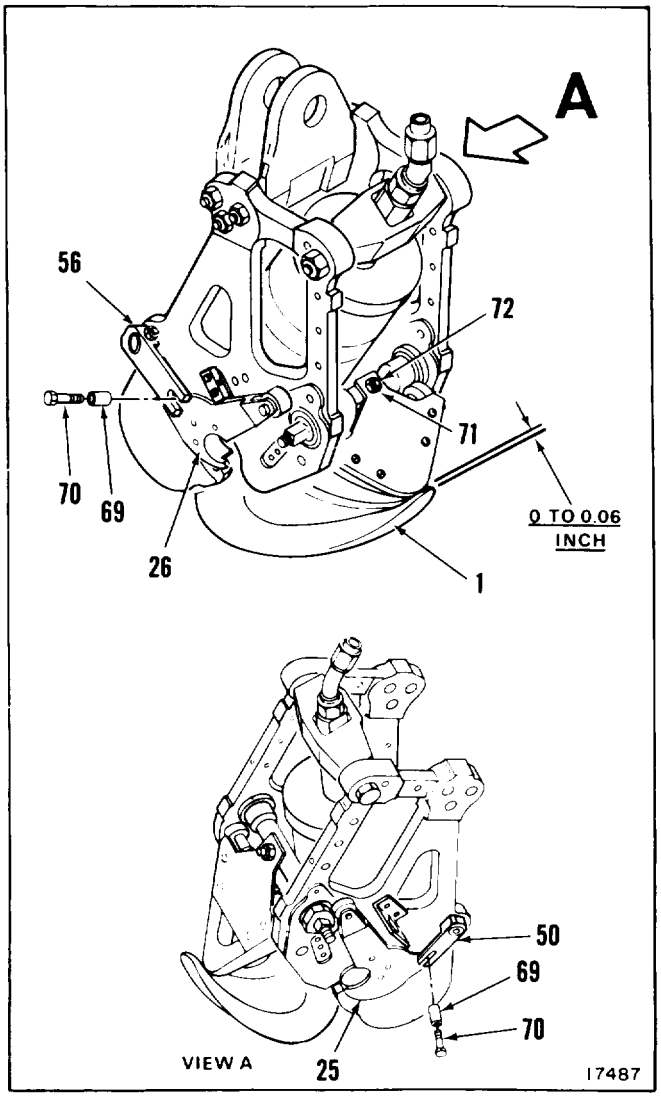
31. Rotate synchronizer arms (50 and 56) over holes in cams (25 and 26). **Install two bushings (69) and bolts (70)** through forks, in synchronizing arms into cams.

32. **Adjust keeper stop (71)** as follows:

    a. Remove lockwire from locknut (72). Loosen locknut.

    b. Adjust keeper stop (71) so that keeper contacts or is within 0.06 inch of hook (1).

    c. Tighten locknut (72). Lockwire locknut. Use lockwire (E231).



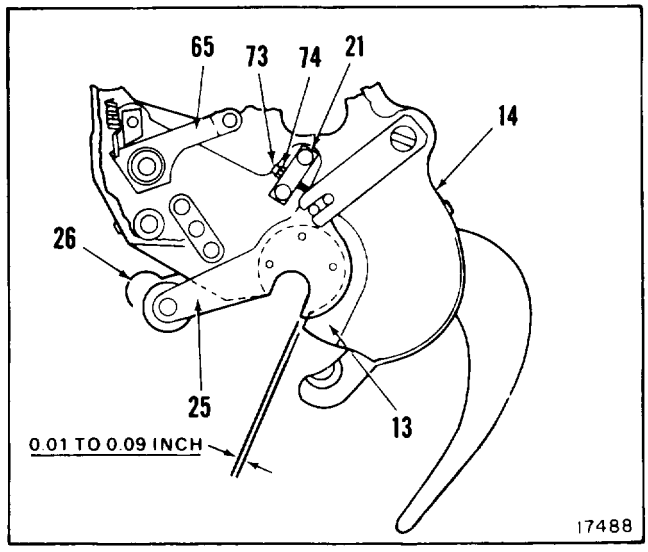
33. **Adjust cam stops (21) as follows:**

    a. Lift lever (65) and rotate cams (25 and 26) until they contact stop screws (73)

    b. Loosen locknuts (74),

    C. Adjust stop screws (73) until lower edge of cut out in cams (25 and 26) is 0.01 to 0.09 inch above lower edge of cut out in formers (13 and 14).

    d. Tighten locknuts (74),



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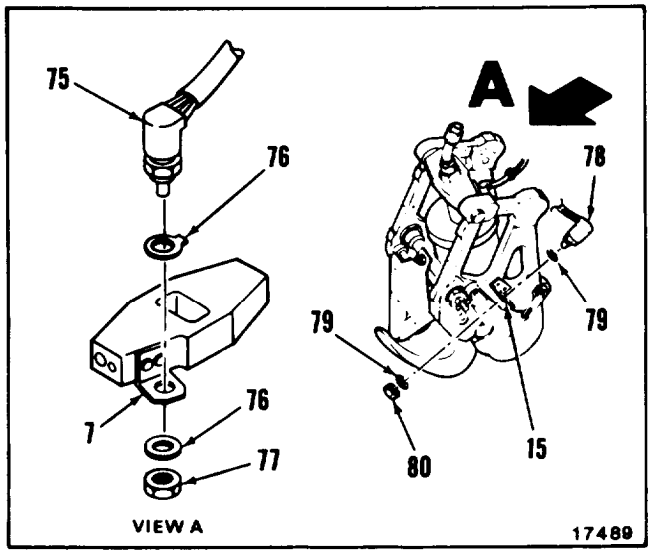
16-7.1 ASSEMBLE CENTER CARGO HOOK (AVIM) (Continued) 16-7.1

34. **Install switch (75),** two washers (76), and nut (77) in bracket (7).
35. **Install switch (78),** two washers (79) and nut (80) in bracket (15).

NOTE

Switches are lockwired after adjustment (Task 16-7.2).

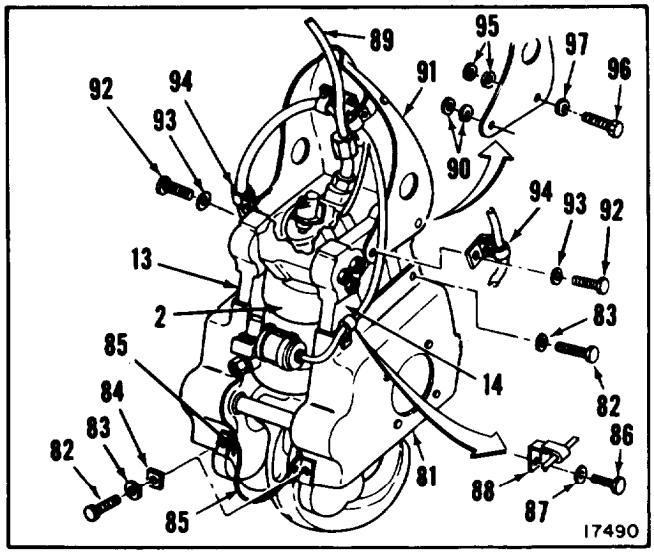


36. **Position cover (81) on former (14). Install five screws (82),** washers (83), **plate (84) and strap (85).**
37. Install screw (86), washer (87) and clamp (88) on cover (81).
38. **Install hose (89)** on actuating cylinder (2).

NOTE

Guard will be removed prior to installation. It is temporarily installed to prevent loss of hardware.

39. **Position two washers (90) under each side of guard (91) between guard and formers (13 and 14). Temporarily install two bolts (92),** washers (93), and clamps (94).
40. **Position two washers (95) between guard (91) and former (14). Temporarily install bolt (96)** and washer (97).



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16-7.1 ASSEMBLE CENTER CARGO HOOK (AVIM) (Continued) 16-7.1

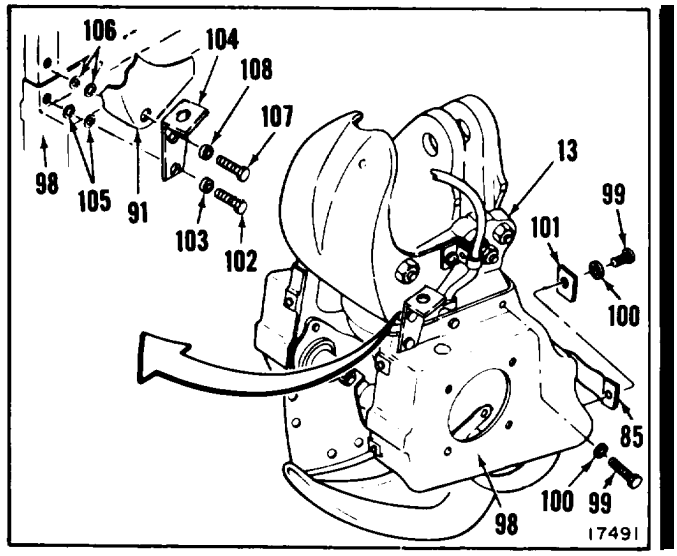
41. Position cover (98) on former (13). Install four screws (99) and washers (100). Install screw (99), washer (100), plate (101), and strap (85).
42. Install bolt (102), washer (103), and bracket (104) with two washers (105) between cover (98) and bracket (104).

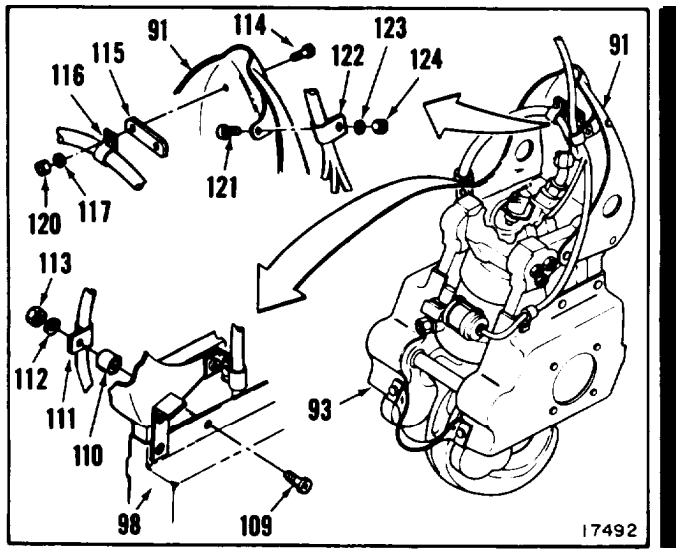
NOTE

Guard will be removed prior to installation. It is temporarily installed to prevent loss of hardware.

43. Position two washers (106) between guard (91) and former (13). Temporarily install bolt (107) and washer (108) through bracket (104).
44. **Install** screw (109), **spacer (110),** clamp (111), washer (112) and nut (113) on cover (98).
45. **Temporarily install** two screws (114), **bracket (115), clamp (116),** washers (117) and nuts (120) on guard (91).
46. **Temporarily install** screw (121), **clamp** (122), washer (123) and nut (124) on guard (91).

INSPECT





FOLLOW-ON MAINTENANCE:

Test center cargo hook (Task 16-7.1.1),
Adjust switches (Task 16-7.2).

END OF TASK

16-7.1.1 TEST CENTER CARGO HOOK (AVIM) 16-7.1.1

INITIAL SETUP

Applicable Configurations:

All

Tools:

Hydraulic Repairer Tool Kit, NSN 5180-00-323-4891
Hydraulic Test Stand
Dc Power Supply, 0 to 50 Volts
Multimeter
Stopwatch
Hoist, 300 Pound Capacity
Weight, 20 Pounds
Wire Rope Ring (Appx E-18)
Dial Indicating Scale, 0 to 50 pounds

Materials:

None

Personnel Required:

Aircraft Pneudraulics Repairer
Inspector

References:

Appendix E
Task 16-3 without 35
Task 16-3.1 with 35
Task 16-5 without 35
Task 16-5.1 with 35
Task 16-7 without 35
Task 16-7.1 with 35
Task 16-7.2

Equipment Condition:

Off Helicopter Task
Actuator Serviced to 2,100 Psi (Task 1-74)

General Safety Instructions:

WARNING

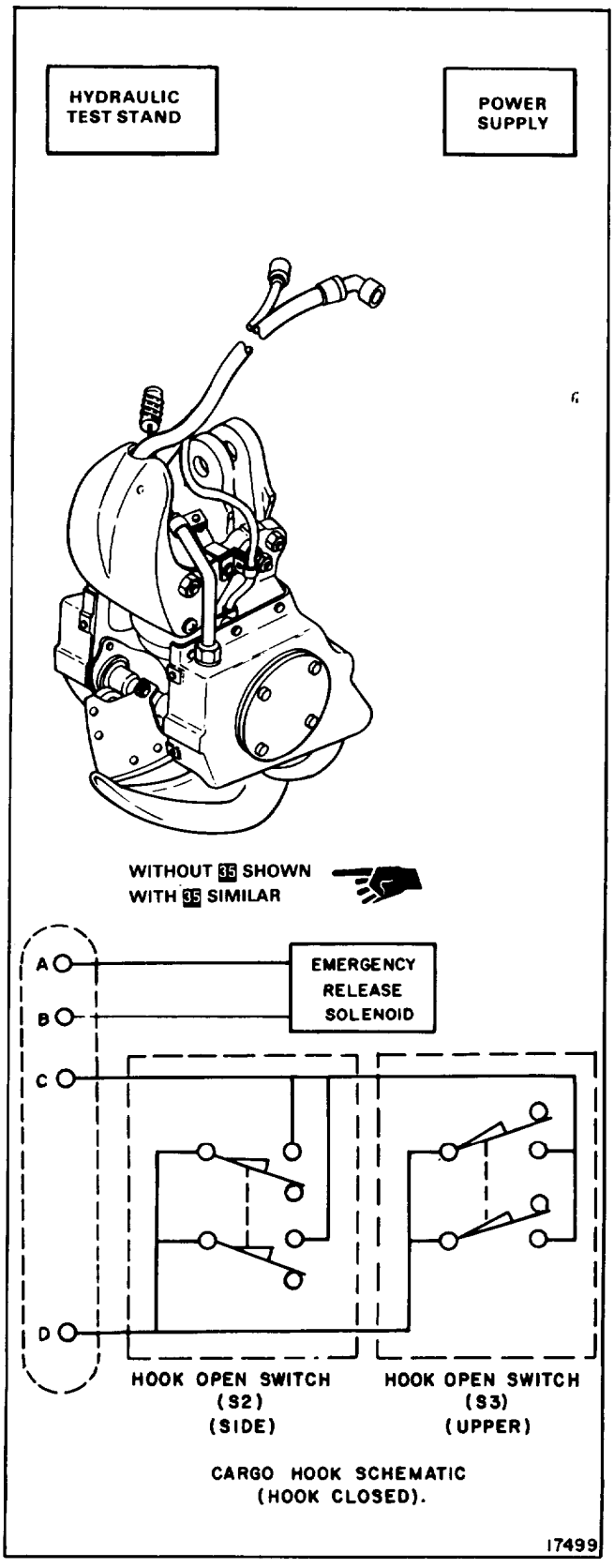
Stand clear of hook and load when raising, lowering or releasing load to prevent injury to personnel.

WARNING

Use suitable crash box to shield personnel and equipment in case of failure during test.

WARNING

Hydraulic fluid ejected under pressure can cause injury to personnel. Hydraulic fluid sprayed into the air is a fire hazard.



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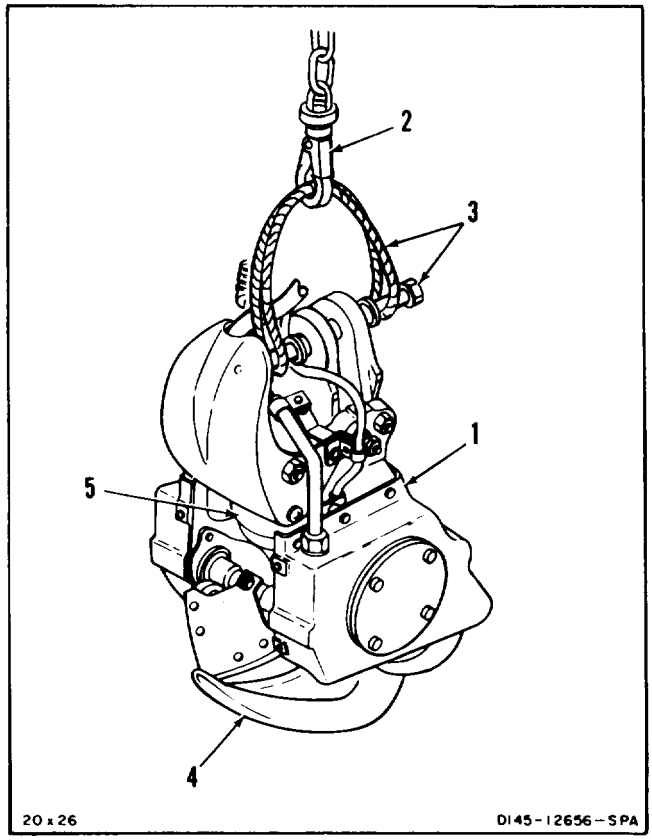
16-7.1.1 TEST CENTER CARGO HOOK (AVIM) (Continued) 16-7.1.1

1. Attach hook assembly (1) to hoist (2). Use wire rope ring (3).
2. Raise hoist (2) to lift hook assembly (1) clear of ground.
3. Push down firmly on hook (4) with foot. Hook shall not open.

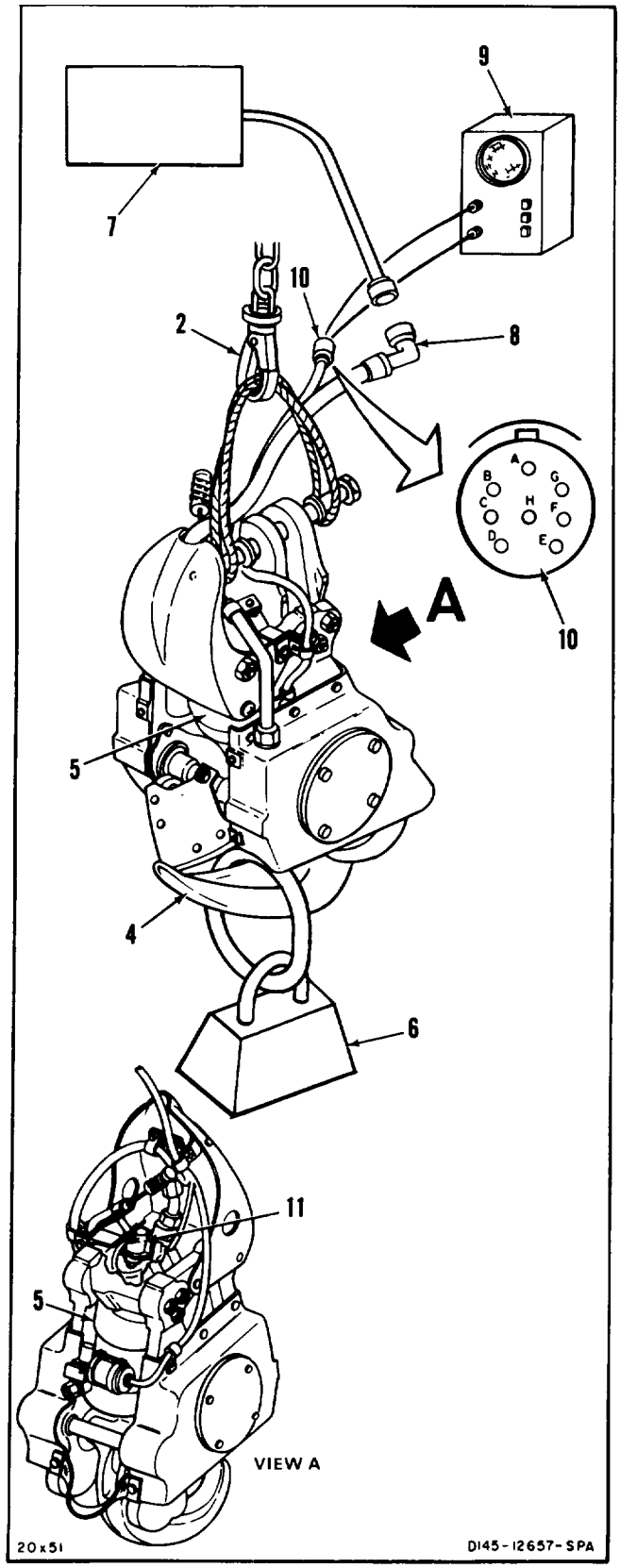
   a. If hook opens and cylinder (5) extends, replace cylinder (Task 16-5 without 35). (Task 16-5.1 with 35.)

   b. If hook opens, but cylinder (5) does not extend, reset and inspect hook mechanism (Task 16-3 without 35).(Task 16-3.1 with 35.)



NORMAL LOAD RELEASE TEST

4. **Attach 20-pound weight (6)** to hook (4). Raise hoist (2) until weight clears ground.
5. **Connect hydraulic test stand (7) to hose (8).**
6. **Connect multimeter (9)** to pins C and D of connector (10). Set scale to RX 1.
7. **Slowly apply 3,000 psi hydraulic pressure.** Hook (4) shall open and weight (6) shall drop. Multimeter shall indicate O ohm.
   a. If hook (4) does not open, replace cylinder (5) (Task 16-5 and 16-7 without 35)(Task 16-5.1 and 16-7,1 with 35.)
   b. If multimeter does not indicate O ohm, adjust switch S3 (11) (Task 16-7.2).
8. **Remove hydraulic pressure.** Hook (4) shall close. Multimeter (9) shall indicate infinity.
   a. If hook (4) does not close, replace cylinder (5) (Task 16-5 and 16-7 without 35)(Task 16-5.1 and 16-7.1 with 35.)
   b. If multimeter (9) does not indicate infinity, replace switch S3 (11) (Task 16-5 and 16-7 without 35).(Task 16-5.1 and 16-7,1 with 35.)
9. Disconnect hydraulic test stand (7) from hose (8).



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EMERGENCY LOAD RELEASE TEST (PNEUMATIC)

10. Check that actuator air pressure gage (12) indicates 2,100 psi. Service if needed (Task 1-74).

11. **Attach weight (6)** to hook (4).

NOTE

If hook is held open more than several seconds, air charge will deplete. Hook will not close.

12. **Momentarily apply 28 vdc** from power supply (13) to pins A and B of connector (10). Hook (4) shall open within 1 second and weight (6) shall drop. Multimeter shall indicate O ohm.

a. If hook (4) does not open within one second, replace cylinder (5) (Task 16-5 and 16-7 without 35).(Task 16-5.1 and 16-7.1 with 35.)

b. If multimeter (9) does not indicate 0 ohm, adjust switch S3 (11) (Task 16-7.2).

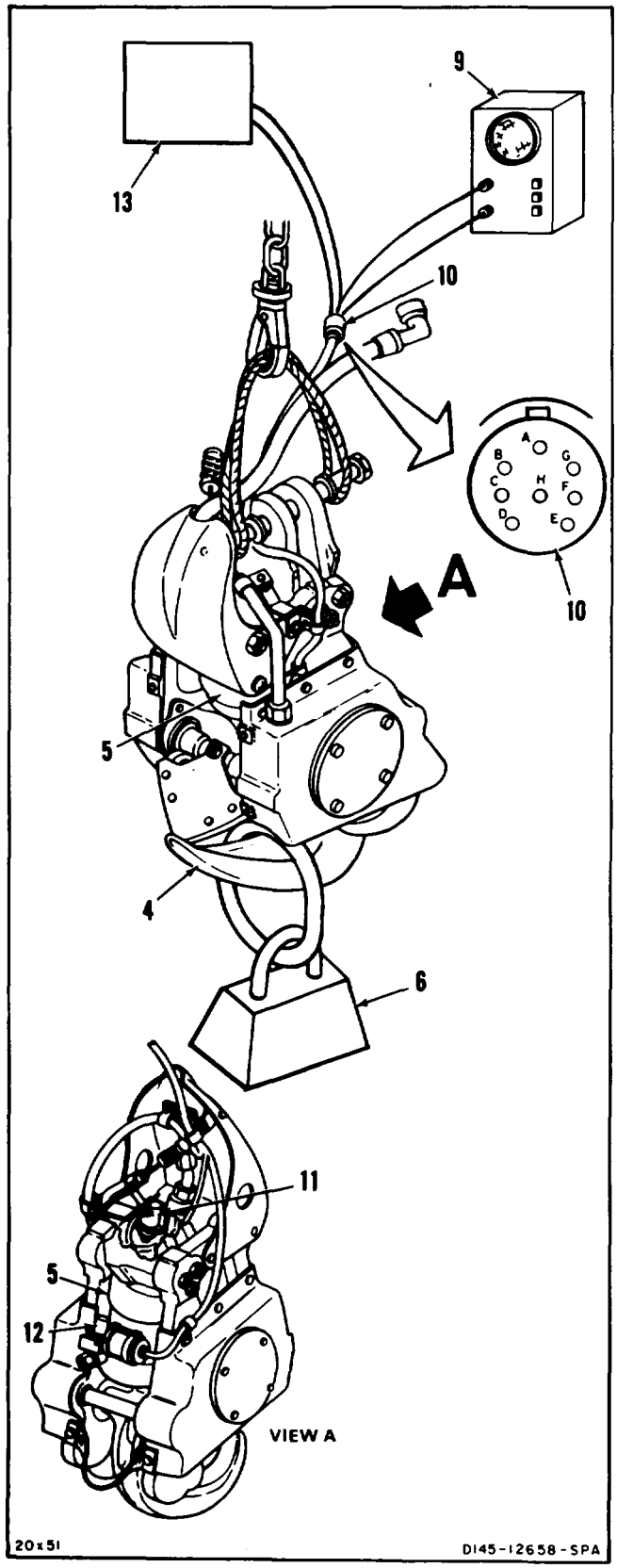
WARNING

When power is removed from hook, oil mixed with air may be vented from cylinder. Stand away from hook assembly or injury can occur.

13. **Remove 28 vdc** from connector (10). Hook (4) shall close. Multimeter (9) shall indicate infinity.

a. If hook (4) does not close, replace cylinder (5) (Task 16-5 and 16-7 without 35).(Task 16-5.1 and 16-7.1 with 35.)

b. If multimeter (9) does not indicate infinity, replace switch S3 (11) (Task 16-5 and 16-7 without 35).(Task 16-5. and 16-7.1 with 35.



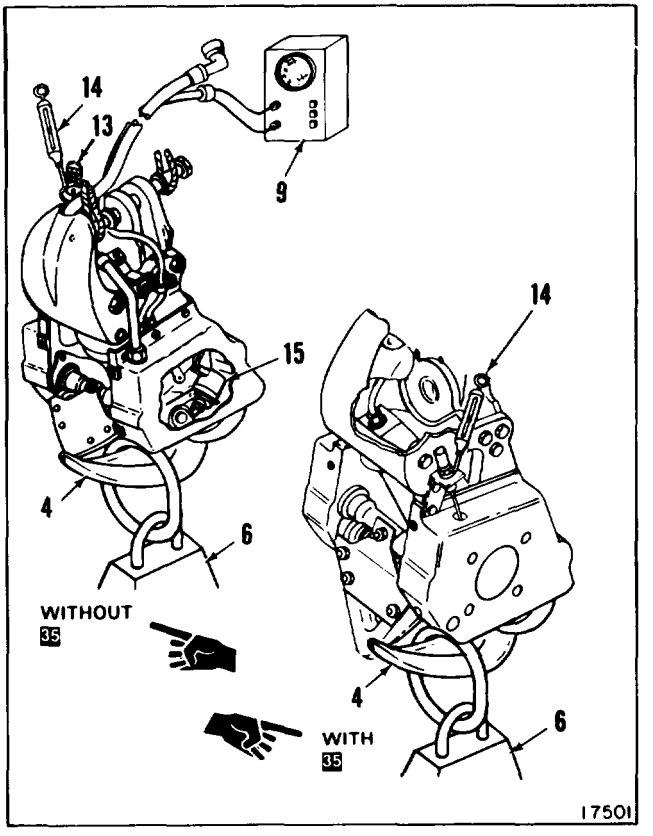
16-7.1.1 TEST CENTER CARGO HOOK (AVIM) (Continued) 16-7.1.1

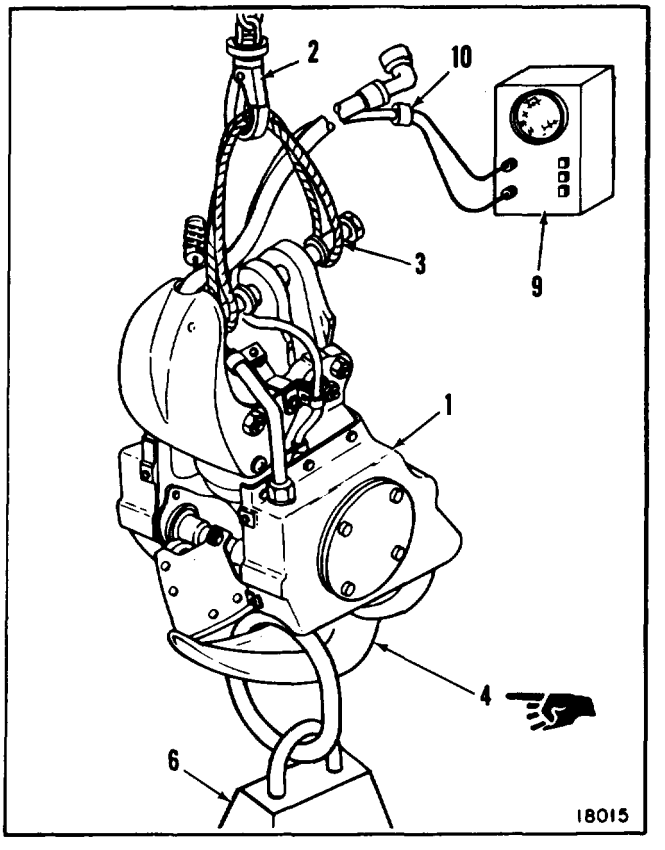
EMERGENCY LOAD RELEASE TEST (MANUAL)

14. **Attach weight (6)** to hook (4).
15. **Pull up on release cable (13).** Use a dial indicating scale (14). Hook (4) shall open with 20 pounds or less pull. Multimeter (9) shall indicate O ohm.
    a. If hook (4) does not open, or needs more than 20 pounds pull, inspect release mechanism (Task 16-6). Disassemble as needed (Task 16-5 without 35). (Task 16-5.1 with 35.)
    b. If multimeter (9) does not indicate O ohm, replace switch S2 (15) (Task–16-5 without 35 and Task 16-5,1 with 35). (Task 16-7 without 35 and Task 16-7.1 with 35.)
16. **Manually reset hook (4)** (Task 16-3 without 35). (Task 16-3.1 with 35.) Multimeter (9) shall indicate infinity. If not, adjust switch S2(15) (Task 16-7.2).
17. Remove multimeter (9) from connector (10).
18. Lower hook assembly (1) to ground with hoist (2).
19. Remove weight (6) from hook (4).
20. Remove hook assembly (1) and wire rope ring (3) from hoist (2).

FOLLOW-ON MAINTENANCE:

None





END OF TASK

16-7.2 ADJUST CENTER CARGO HOOK SWITCHES

INITIAL SETUP

Applicable Configurations:

All

Tools:

Hydraulic Repairer Tool Kit,
NSN 5180-00-323-4891
DC Power Supply, O to 50 Volts
Hoist, 300 Pound Capacity
Wire Rope Ring and Bolt Assembly (Appx E-18)
Multimeter

Materials:

Lockwire (E231)

Personnel Required:

Aircraft Pneudraulics Repairer
Aircraft Electrician
Inspector

References:

Appendix E
Task 16-3 without 35
Task 16-3.1 with 35
Task 16-5 without 35
Task 16-5.1 with 35
Task 16-7 without 35
Task 16-7.1 with 35

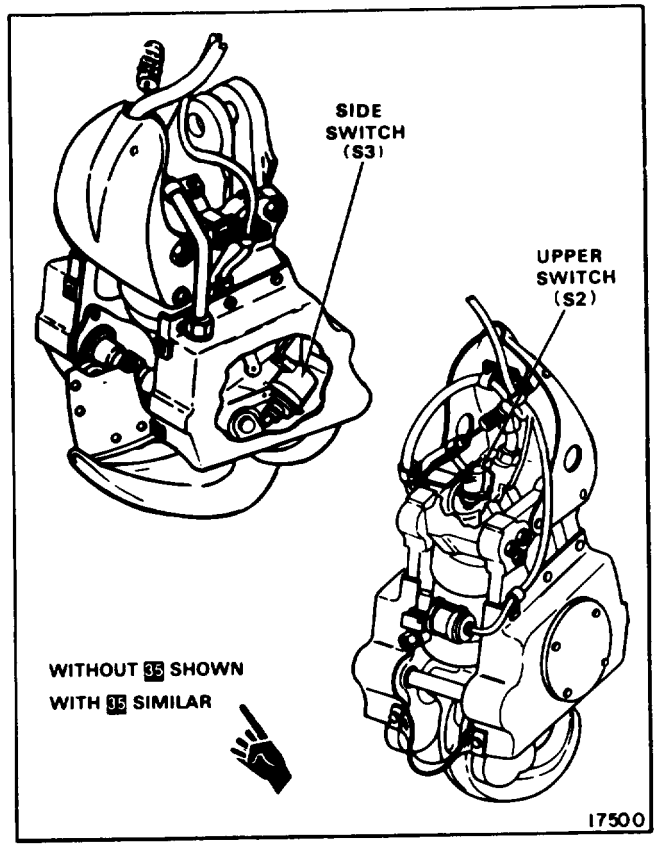
Equipment Condition:

Off Helicopter Task
Actuator Serviced to 2,100 Psi (Task 1 -74)

General Safety Instructions:

WARNING

Stand clear of hook assembly when raising, lowering, or releasing hook to prevent injury to personnel.



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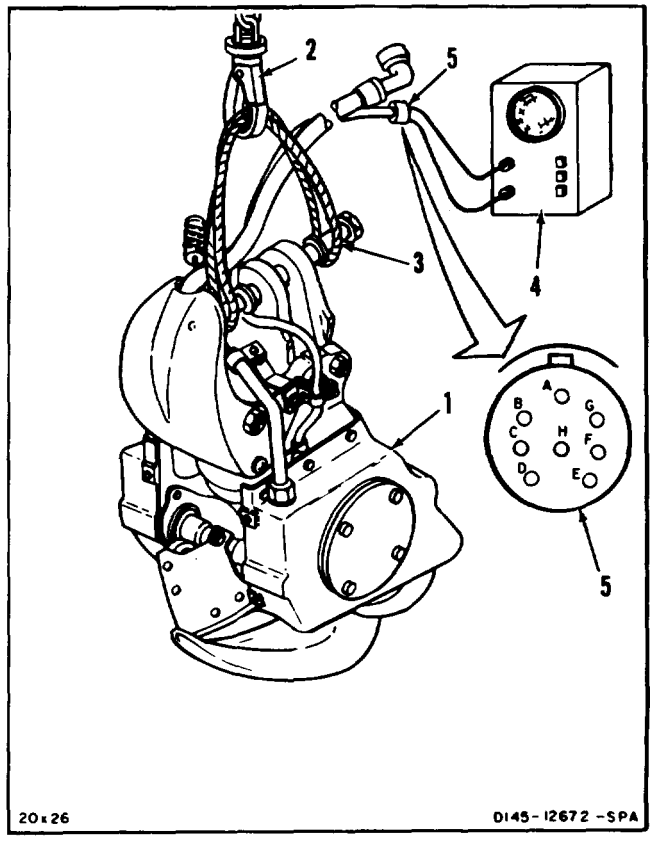
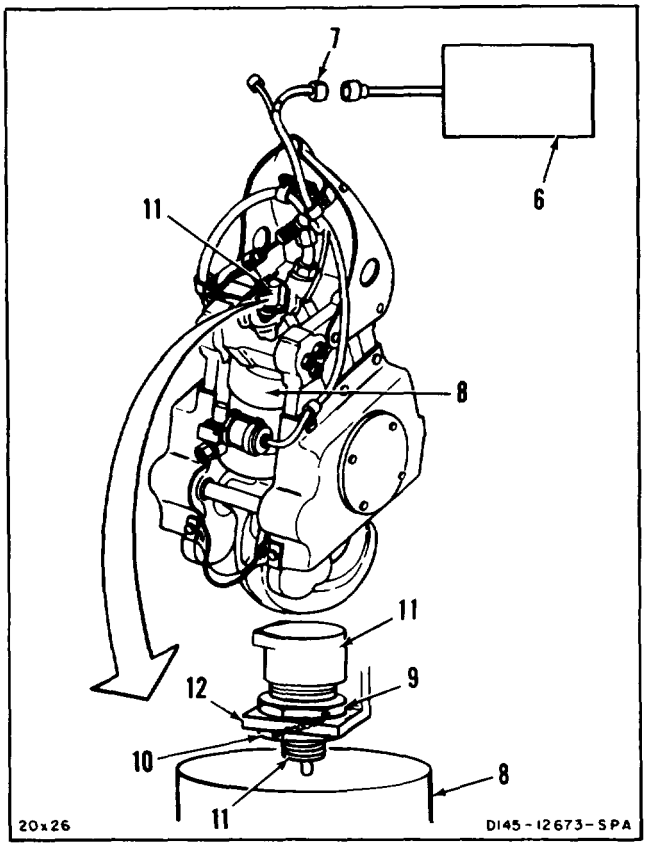
16-7.2 ADJUST CENTER CARGO HOOK SWITCHES (Continued) 16-7.2

1. Attach hook assembly (1) to hoist (2). Use wire rope ring and bolt assembly (3).
2. Raise hoist (2) to lift hook assembly (1) clear of ground.
3. **Connect multimeter (4)** to pins C and D of connector (5).



ADJUST UPPER SWITCH

4. Connect hydraulic teststand (6) to hose (7). **Apply 3,000 psi pressure to extend actuating cylinder (8).**
5. Remove lockwire from locknuts (9 and 10) on switch (12).
6. Turn upper locknut (9) away from bracket (12) as far as possible.
7. **Turn lower locknut (10) against bracket (12) until tip of switch (11) is against end of cylinder (8) and multimeter (4) reads O ohm.** Continue to turn locknut against bracket one full turn.
8. Turn upper locknut (9) down against bracket (12). Lockwire two locknuts (9 and 10). Use lockwire (E231).
9. Remove hydraulic pressure. Check that multimeter (4) reads infinity. If it does not, replace switch (11) (Task 16-5 and 16-7 without 35). (Task 16-5.1 and 16-7.1 with 35.)
10. Disconnect hydraulic test stand (6) from hose (7).



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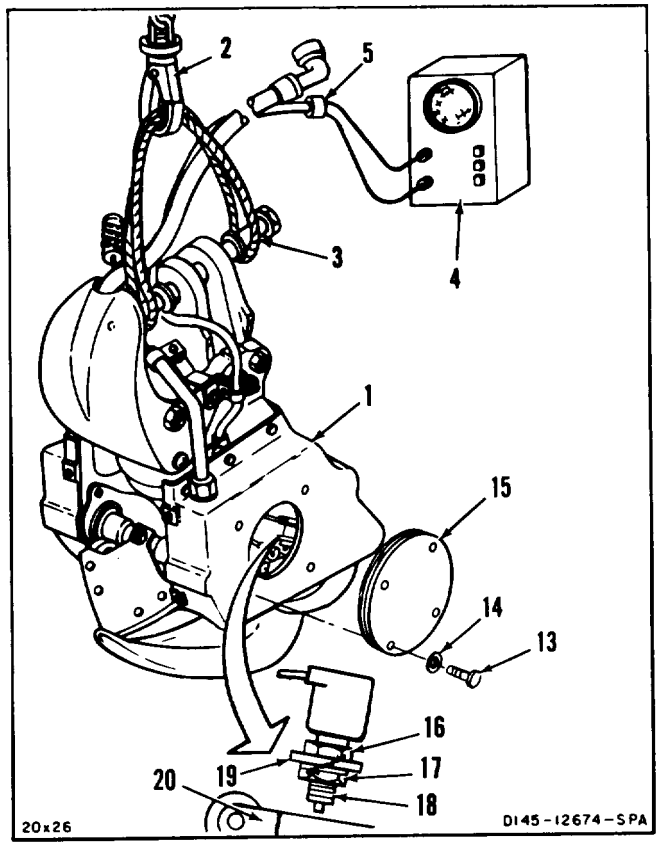
16-7.2 ADJUST CENTER CARGO HOOK SWITCHES (Continued)



ADJUST SIDE SWITCH

NOTE

Before adjusting switch, make sure hook is securely latched (Task 16-3 without 35. (Task 16-3.1 with 35.)

11. Remove four screws (13) and washers (14). Remove access door (15).
12. Remove lockwire from locknuts (16 and 17) on switch (18).
13. Turn upper locknut (16) away from bracket (19) as far as possible.
14. **Turn lower locknut (17) against bracket (19) until tip of switch (18) is against cam (20) and multimeter (4) just reads infinity.** Continue to turn locknut against bracket one full turn. If multimeter cannot be made to read infinity, replace switch (Task 16-5 and 16-7).
15. Turn locknut (16) down against bracket (19). Lockwire two locknuts (16 and 17). Use lockwire (E231).
16. Install access door (15) with four screws (13) and washers (14).
17. Remove multimeter (4) from connector (5).
18. Lower hook assembly (1) to ground. Remove hook assembly and wire rope ring and bolt assembly (3) from hoist (2).

FOLLOW-ON MAINTENANCE:

Test center cargo hook (Task 16-7.1.1).

END OF TASK

16-8 INSTALL CENTER CARGO HOOK

INITIAL SETUP

Applicable Configurations:

Without 35

Tools:

Aircraft Mechanic Tool Kit, NSN 5180-00-323-4692
Open End Wrench, 1-1/16 Inch
Socket, 1-1/16 Inch
Container, 2-Quart
Asbestos Gloves (E187)

Materials:

Carbon Dioxide (Dry Ice) (E92)
Methanol (E243)
Cloth (E 120)

Parts:

Cotter Pin

Personnel Required:

Medium Helicopter Repairer (2)
Inspector

References:

TM 55-1520-240-23P
Task 1-74

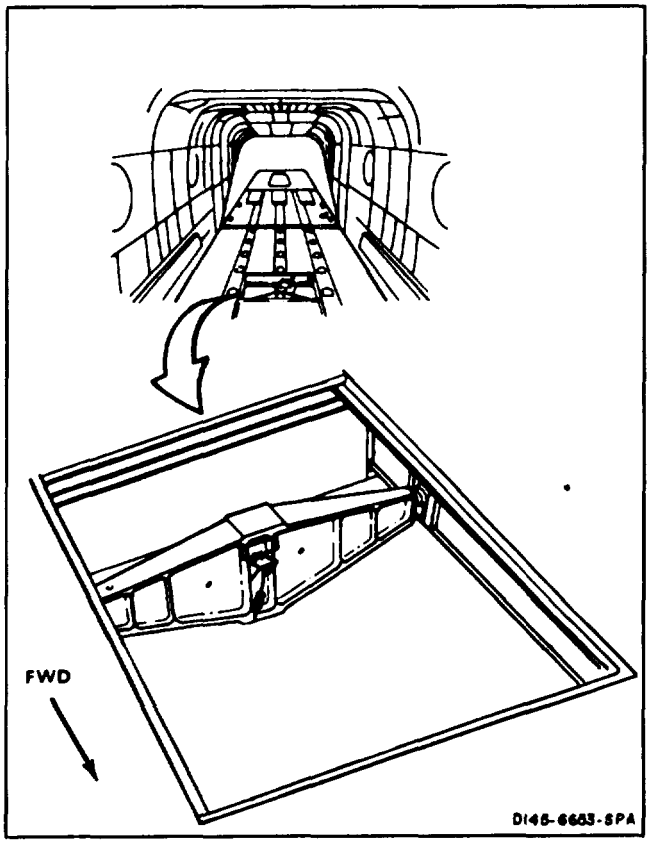
General Safety Instructions:

WARNING

Carbon dioxide (dry ice) (E92) causes severe burns (frost bite) and gives off toxic fumes. Use only in well-ventilated area. Do not get in eyes, on skin, or clothing. In case of contact, immediately flush with water. Get medical attention for eyes.

WARNING

Methanol (E243) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



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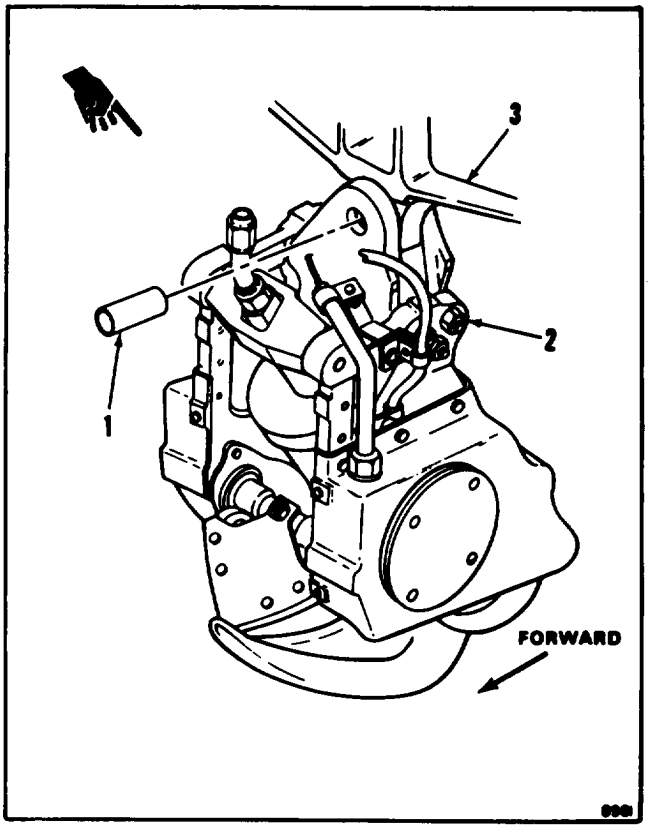
WARNING

Dry ice (E92) in methanol (E243) has a temperature of – 120°F (_84°C). Observe all safety measures when working with dry ice (E92) and methanol (E243) and when handling chilled parts. Avoid breathing carbon dioxide vapor.

WARNING

Wear protective gloves when handling chilled bearings or heated yoke.

1. **Place sleeve spacer (1)** in a solution of **dry ice (E92) and methanol (E243). Wear goggles and gloves (E187). Allow spacer to chill thoroughly.**
2. Have helper support hook (2), open end forward, at support beam (3).
3. **Align holes in hook (2) and support beam (3).**
4. Remove spacer (1) from solution and wipe clean and dry. Use cloth (E120). Wear goggles and gloves (E187).
5. **Install spacer (1)** through holes in hook (2) and support beam (3).



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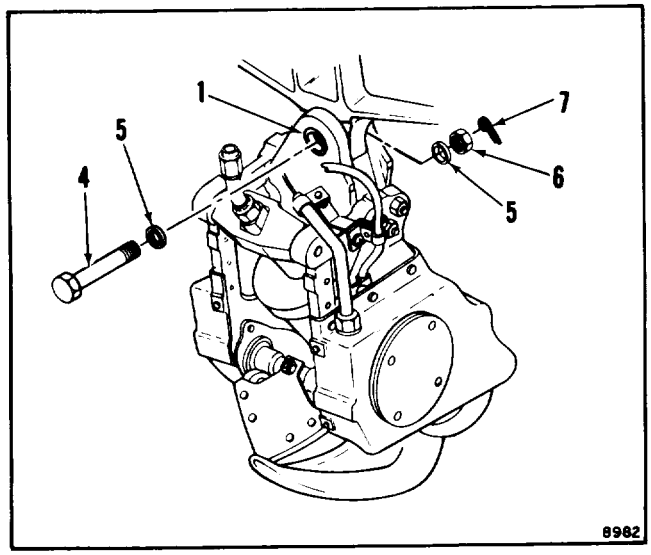
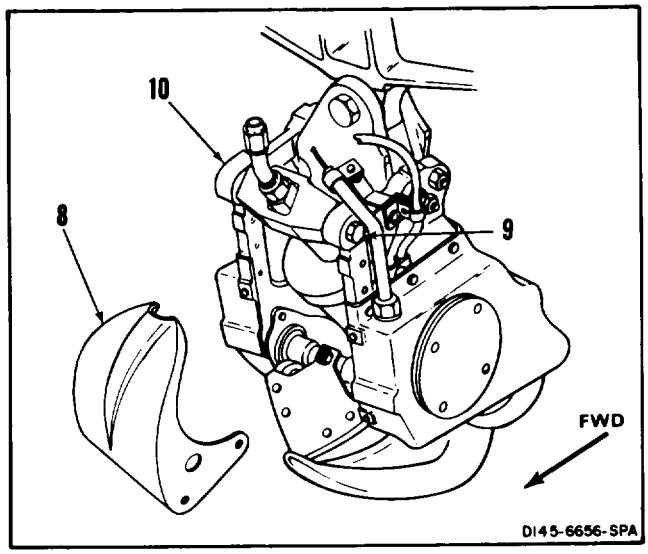
6. **Install bolt (4),** head forward, two washers (5), and nut **(6) in sleeve spacer** (1).
7. Install cotter pin (7).



8. Spread guard (8) enough to fit over bolt (9) and nut (10). **Install guard.**



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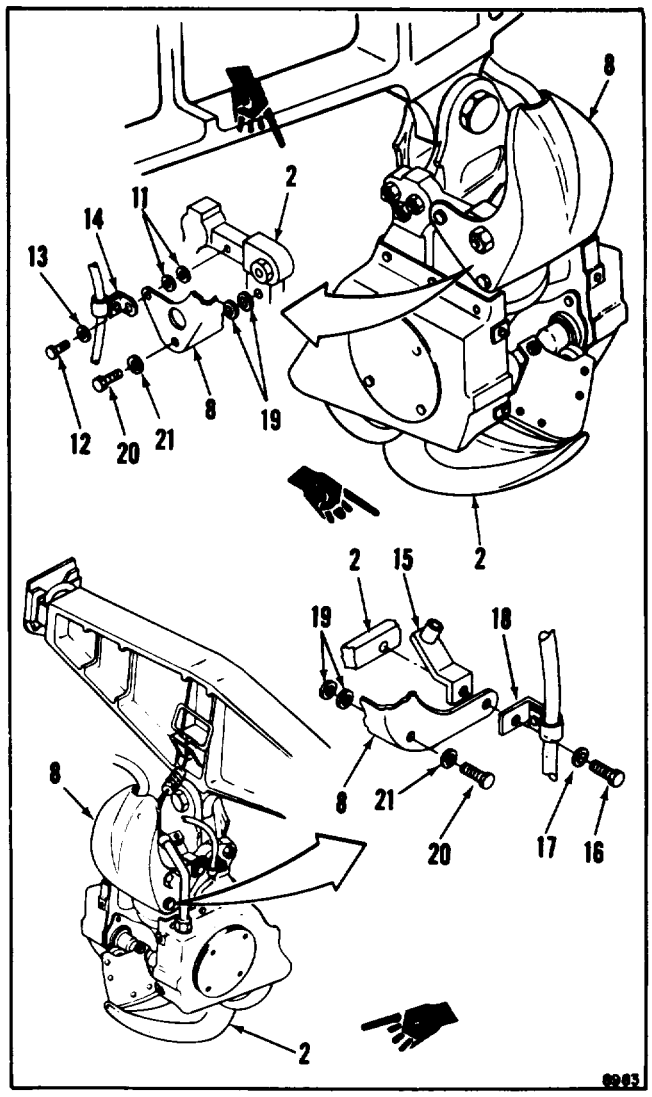
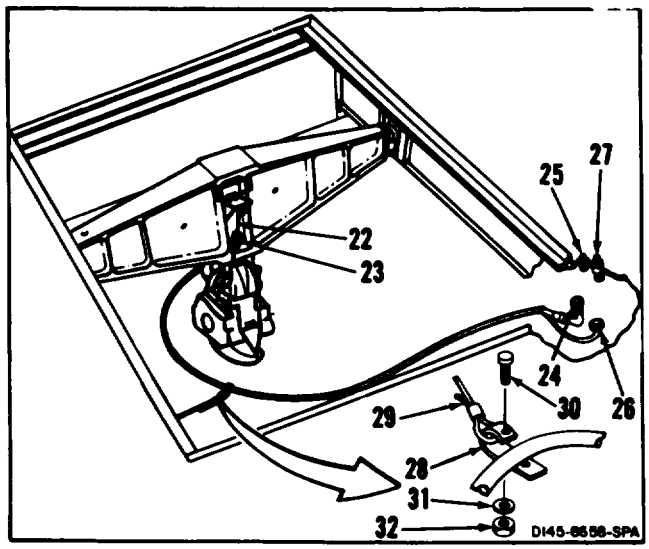
16-8 INSTALL CENTER CARGO HOOK (Continued)

9. Position two washers (11) between guard (8) and hook (2). **Install** bolt (12), washer (13), and clamp (14).
10. **Position bracket (15)** between guard (8) and hook (2). **Install bolt (16),** washer (17), **and clamp (18).**
11. Position two washers (19), two on each side of hook (2), between guard (8) and hook. **Install two bolts (20)** and washers (21).



12. **Connect manual release cable (22)** at cable lock (23).
13. **Connect electrical cable (24)** at connector (25).
14. **Connect hose (26)** at quick-disconnect (27).
15. **Position clamp (28)** with bungee cord (29) on hose (26) and electrical cable (24). **Install screw (30),** washer (31), and nut (32) in clamp.



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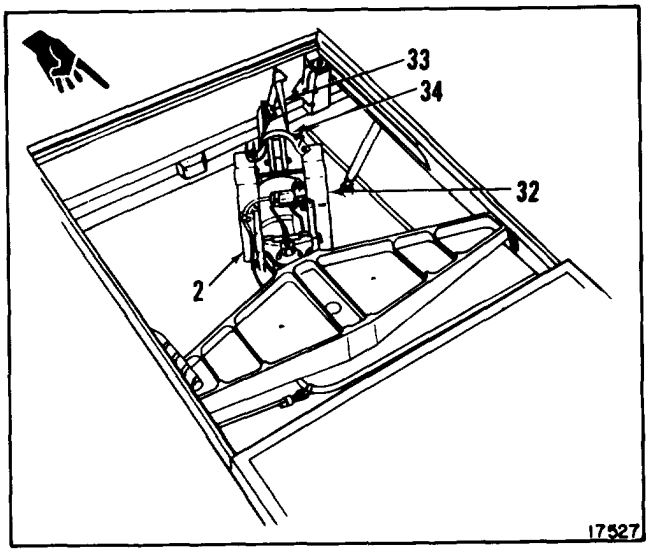
16-8 INSTALL CENTER CARGO HOOK (Continued) 16-8

16. **Service cargo hook actuating cylinder (32)** (Task 1-74).
17. Have helper **lift cargo hook (2) to stowed position. Slide stowage strap (33) through hook (34) and tighten strap.**

INSPECT



FOLLOW-ON MAINTENANCE:

Close rescue hatch (Task 2-2).

Perform operational check of cargo hook (TM 55-1520-240-T).

END OF TASK

16-8.1 INSTALL CENTER CARGO HOOK

INITIAL SETUP

Applicable Configurations:

With 35

Tools:

Aircraft Mechanic Tool Kit, NSN 5180-00-323-4692
Open End Wrench, 1-1/16 Inch
Socket, 1-1/16 Inch
Container, 2-Quart
Asbestos Gloves (E 187)

Materials:

Carbon Dioxide (Dry Ice) (E92)
Methanol (E243)
Cloth (E120)

Parts:

Cotter Pin

Personnel Required:

Medium Helicopter Repairer (2)
Inspector

References:

TM 55-1520-240-23P
Task 1-74

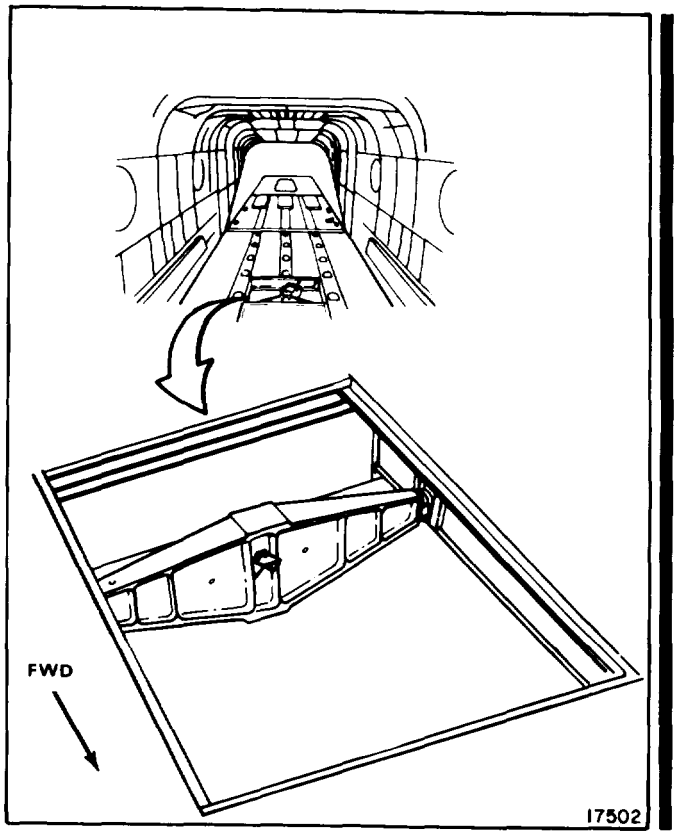
General Safety Instructions:

WARNING

Carbon dioxide (dry ice) (E92) causes severe burns (frost bite) and gives off toxic fumes. Use only in well-ventilated area. Do not get in eyes, on skin, or clothing. In case of contact, immediately flush with water. Get medical attention for eyes.

WARNING

Methanol (E243) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



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16-8.1 INSTALL CENTER CARGO HOOK (Continued)

WARNING

Dry ice (E92) in methanol (E243) has a temperature of -120-°F (-84°C). Observe all safety measures when working with dry ice (E92) and methanol (E243) and when handling chilled parts. Avoid breathing carbon dioxide vapor.

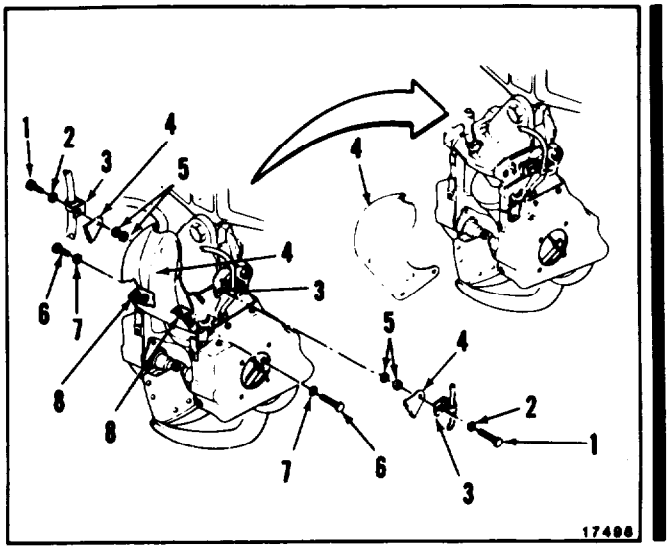
WARNING

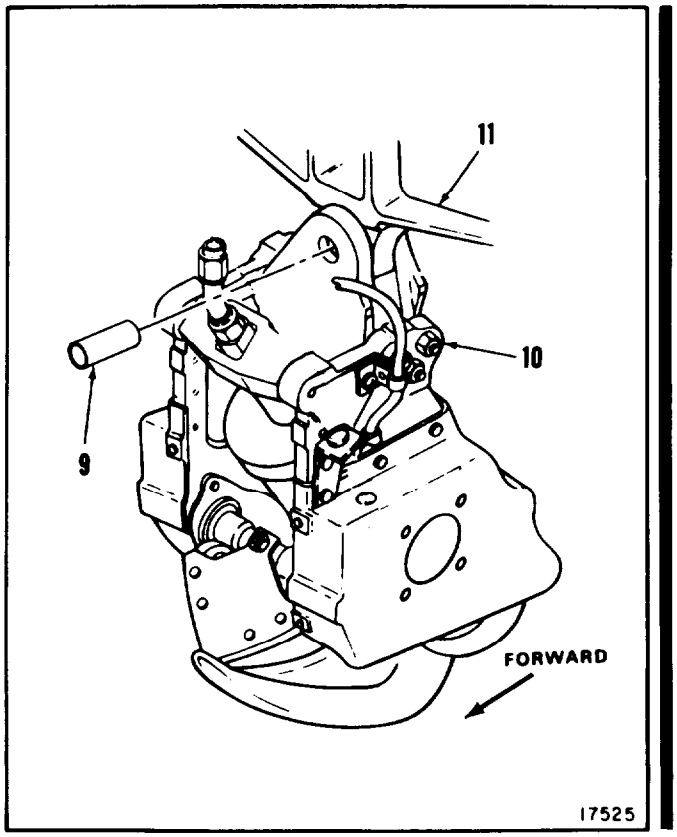
Wear protective gloves when handling chilled bearings or heated yoke.

NOTE

Guard was temporarily installed to prevent loss of hardware.

1. **Remove two bolts (1),** washers (2), and clamps (3) from guard (4). **Remove four washers (5) from behind guard.**
2. **Remove two bolts (6)** and washers (7) from guard (4). **Remove four washers (8) from behind guard. Remove guard.**
3. **Place sleeve spacer (9)** in a solution of **dry ice (E92) and methanol (E243).** Wear goggles and gloves (E 187). Allow spacer to chill thoroughly.
4. Have helper support hook (10). open end forward, at support beam (1 1).
5. **Align holes in hook (10) and support beam (11).**
6. Remove spacer (9) from solution and wipe clean and dry. Use cloth (E120). Wear goggles and gloves (E 187).
7. **Install spacer (9)** through holes in hook (10) and support beam (11).





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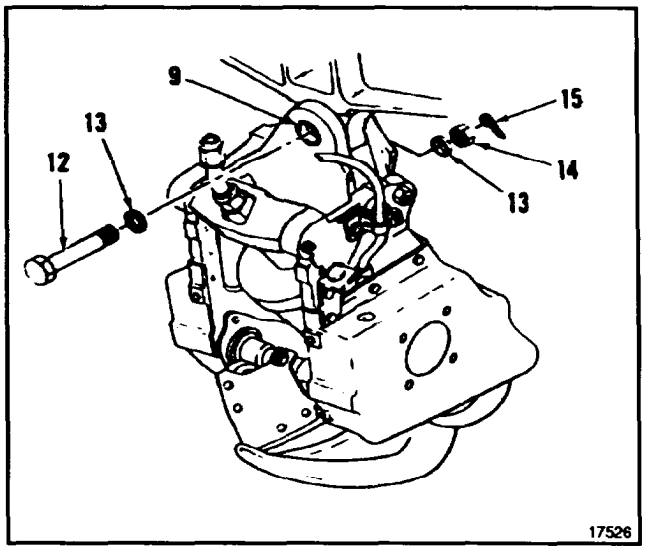
16-8.1 INSTALL CENTER CARGO HOOK (Continued) 16-8.1

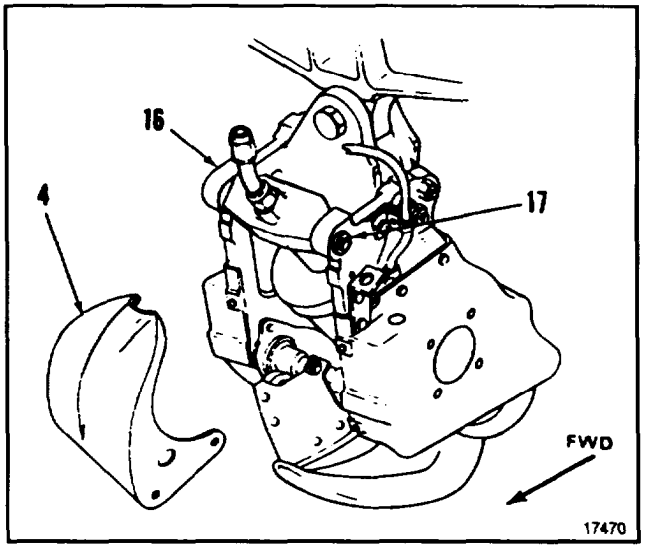
8. **Install bolt (12).** head forward, two washers (13). and nut (14) **In sleeve spacer (9).**
9. **Torque nut to a minimum 950 inch-pounds 1100 lnch-pounds maxmium (for cotter pin alignment).** Install cotter pin (15).

NOTE

Center pivot bolt assembly may be rotated by hand pressure only



10. Spread guard (4) enough to fit over bolt (16) and nut (17). **Install guard.**



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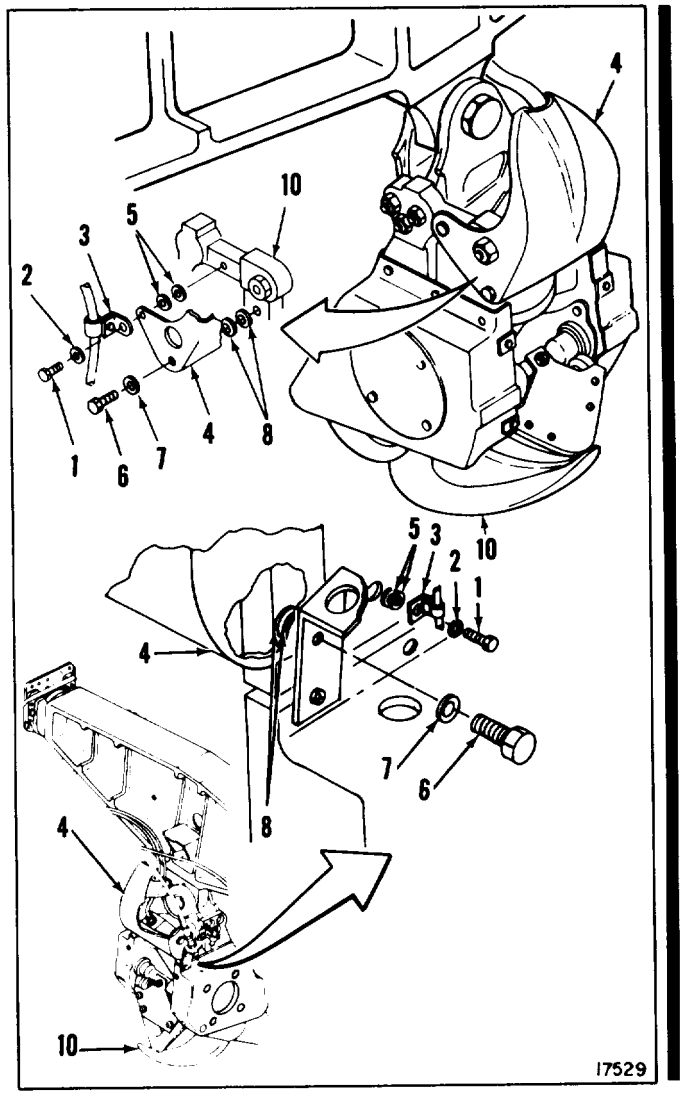
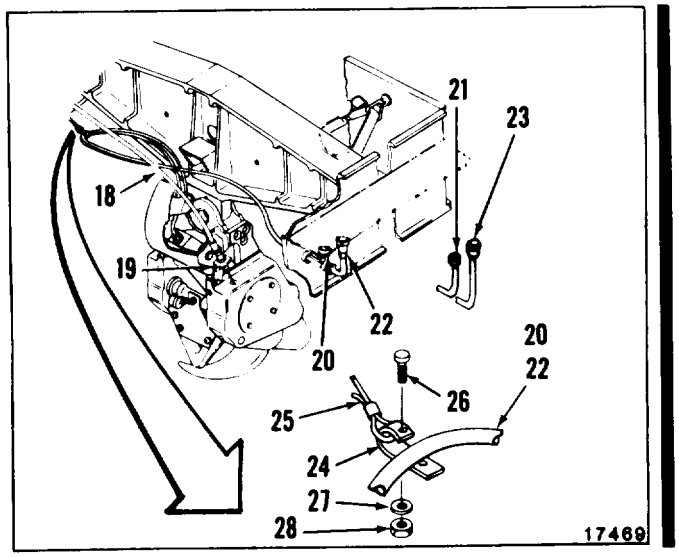
16-8.1 INSTALL CENTER CARGO HOOK (Continued)

11. **Position four washers (8) between guard (4) and hook (10). Install two bolts (6)** and washers (7).
12. Position four washers (5) between guard (4) and hook (10). Install two bolts (1), washers (2) and clamps (3).



13. **Connect manual release cable (18)** at bracket (19) (Task 16-3.4).
14. **Connect electrical cable (20)** at connector (21).
15. **Connect hose (22)** at quick-disconnect (23).
16. **Position clamp (24)** with bungee cord (25) on hose (22) and electrical cable (20). **Install screw (26),** washer (27), and nut (28) in clamp.



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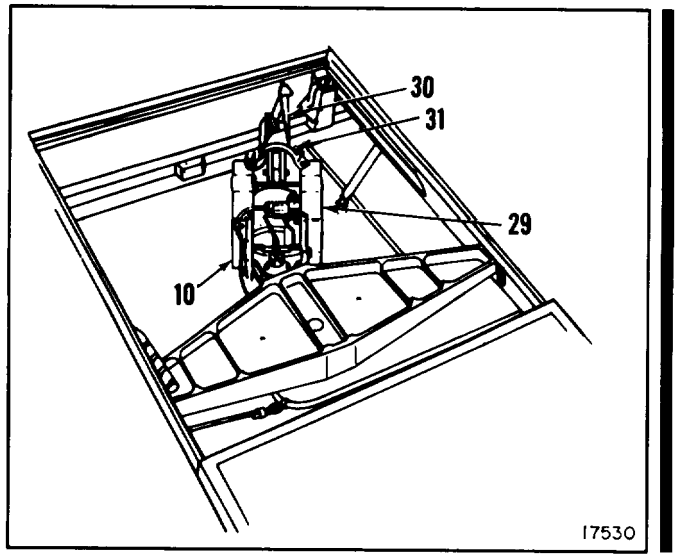
16-8.1 INSTALL CENTER CARGO HOOK (Continued)

17. **Service cargo hook actuating cylinder (29)** (Task 1-74).
18. Have helper **lift cargo hook (10) to stowed position. Slide stowage strap (30) through hook (31) and tighten strap.**

INSPECT



FOLLOW-ON MAINTENANCE:

Close rescue hatch (Task 2-2).

Perform operational check of cargo hook (TM 55-1520-240-T).

END OF TASK

16-8.1.1 INSPECT SUPPORT BEAM BUSHINGS

INITIAL SETUP

Applicable Configurations:
All

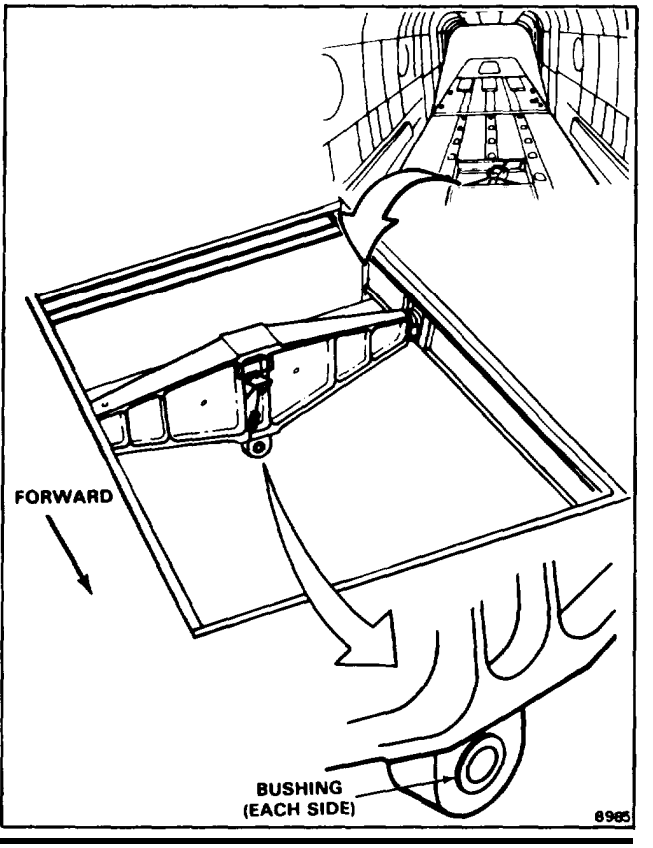
Tools:
Telescoping Gage, NSN 5120-00-221-2086
Outside Micrometer Caliper Set GGG-C-105

Materials:
Cloths (E 120)

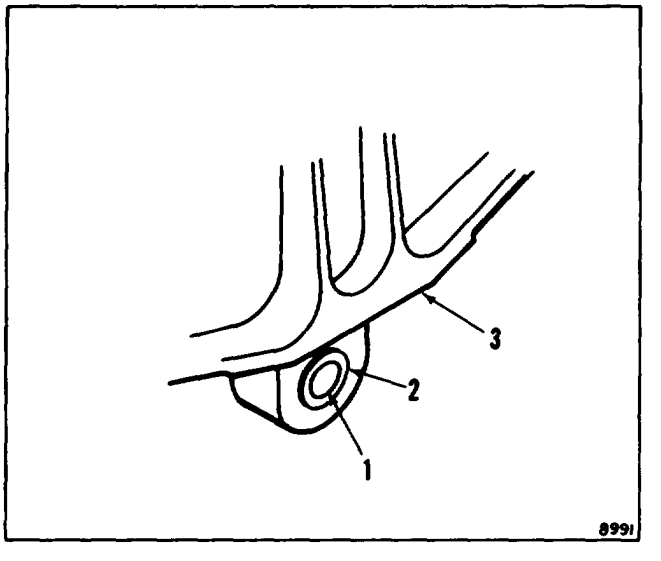
Personnel Required:
Medium Helicopter Repairer
Inspector

References:
Task 16-8.2
Task 16-8.3

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Center Cargo Hook Removed (Task 16-4 with 35) (Task 16-4.1 without 35)



1. Clean bushing hole (1). Use cloths (E120).
2. Measure diameter of hole (1) of bushing (2) on each side of beam (3) at several points. If any diameter is greater than 1.007 inch, replace bushing (Tasks 16-8.2 and 16-8.3).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-8.2 REMOVE SUPPORT BEAM BUSHINGS

INITIAL SETUP

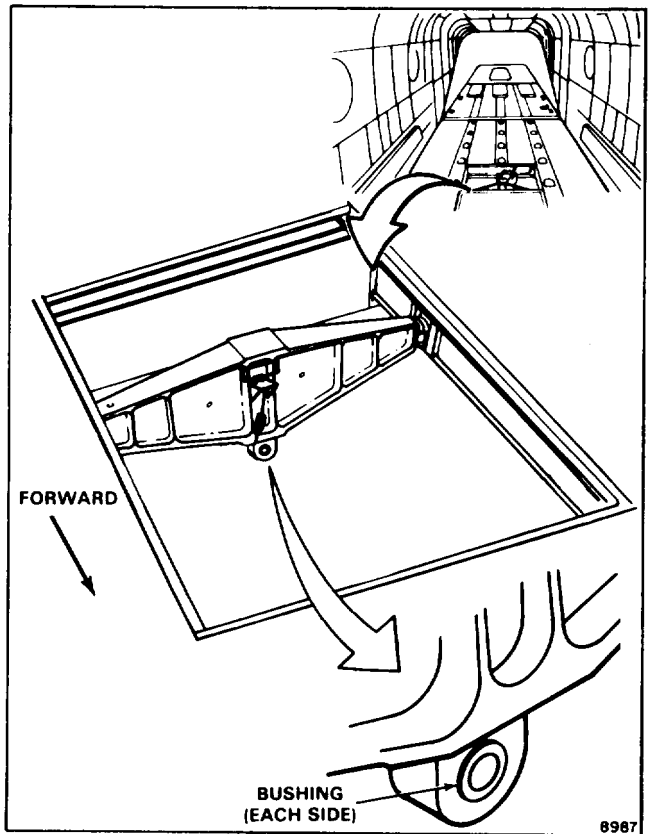
Applicable Configurations:
All

Tools:
Blind Hole Puller Set,
NSN 5120-01-008-7974

Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Center Cargo Hook Removed (Task 16-4 without 35) (Task 16-4.1 with 35)

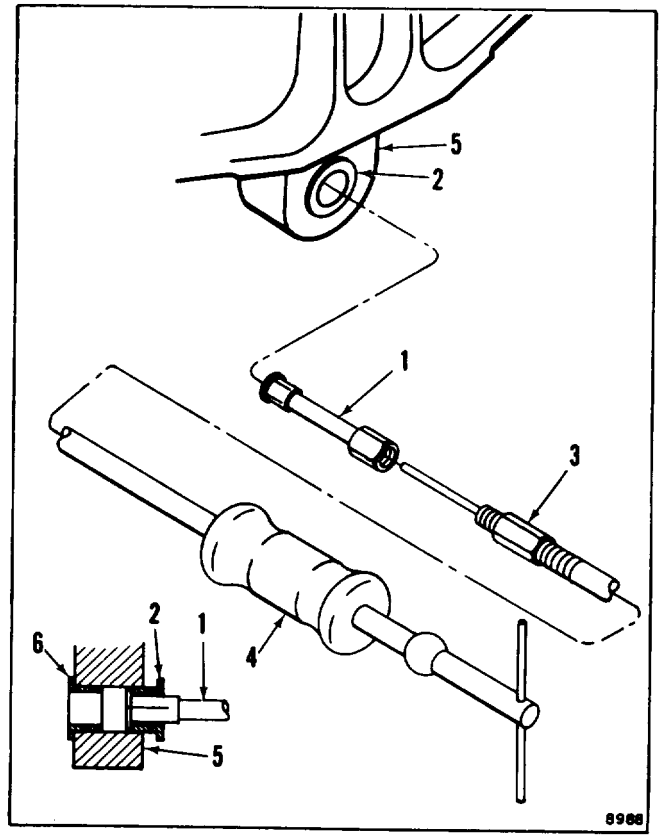


1. Install a 1 inch collet (1) through bushing (2) to be removed.
2. Thread actuator pin (3) into collet (1), Turn pin to expand flange of collet behind bushing (2).

CAUTION

Do not hit beam with slide hammer assembly. Beam can be damaged.

3. Screw slide hammer assembly (4) into pin (3). Use hammer to pull bushing (2) from beam (5).
4. Repeat steps 1. through 3. for remaining bushing (6).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

16-8.3 INSTALL SUPPORT BEAM BUSHINGS

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Wood, Teflon, or Phenolic Block

Materials:

Dry Cleaning Solvent (E162)
Cloths (E120)
Carbon Dioxide (Dry Ice) (E92)
Methanol (E243)
Epoxy Primer (E292)
Gloves (E184.1)
Kevlar Gloves (E187)

Personnel Required:

Medium Helicopter Repairer
Inspector

References:

TM55-1520-240-23P

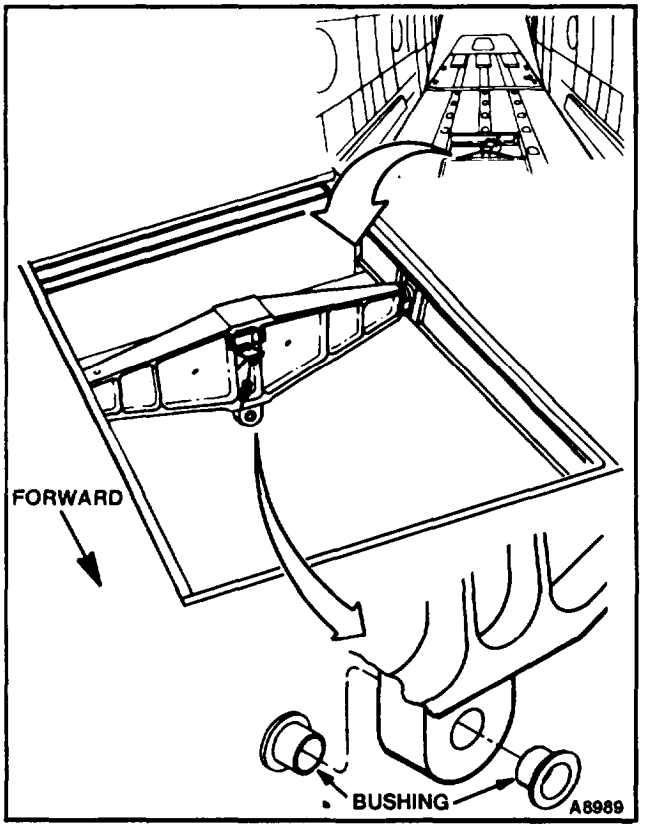
General Safety Instructions:

WARNING

Carbon dioxide (dry ice) (E92) causes severe burns (frost bite) and gives off toxic fumes. Use only in well-ventilated area. Do not get in eyes, on skin, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

WARNING

Methanol (E243) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



WARNING

Dry ice (E92) in methanol (E243) has a temperature of –120°F (-84°C). Observe all safety measures when working with dry ice (E92) and methanol (E243), and when handling chilled parts. Avoid breathing carbon dioxide vapor.

WARNING

Wear Kevlar gloves (El 87) when handling chilled bushings.

GO TO NEXT PAGE

1. Place two bushings (1) in a mixture of dry ice (E92) and methanol (E243). Wear Kevlar gloves (E187) and goggles. Allow bushings to cool.

WARNING

Dry cleaning solvent (E162) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

2. Clean inside of bore (2). Use solvent (E162) and clean cloths (E120). Wear gloves (E184.1).

WARNING

Epoxy primer (E292) is flammable and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from heat or open flame. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

NOTE

Bushings must be installed while primer is wet,

3. Coat inside of bore (2) with epoxy primer (E292). Wear gloves (E184.1).

NOTE

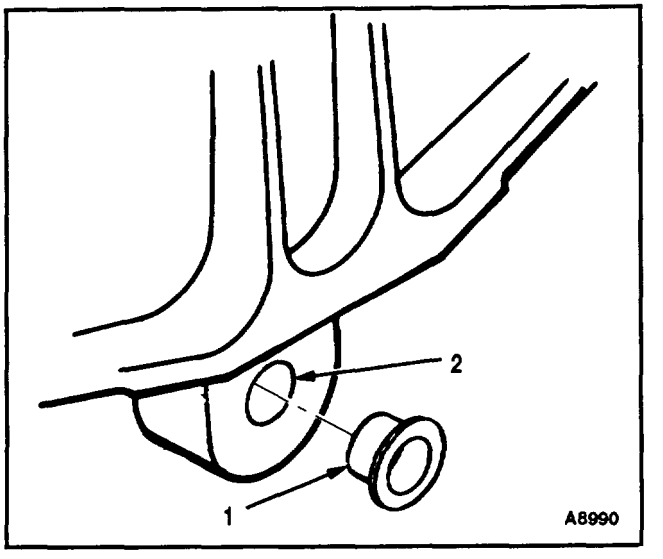
Work quickly with chilled bushing. Bushing must be installed before it warms.

4. Remove one bushing (1) from dry ice mixture. Wear Kevlar gloves (E187) and goggles.

CAUTION

Bushing is teflon coated. Careless handling can damage teflon.

5. While primer is still wet, press bushing (1) into bore (2). Use a wood, phenolic, or aluminum block.



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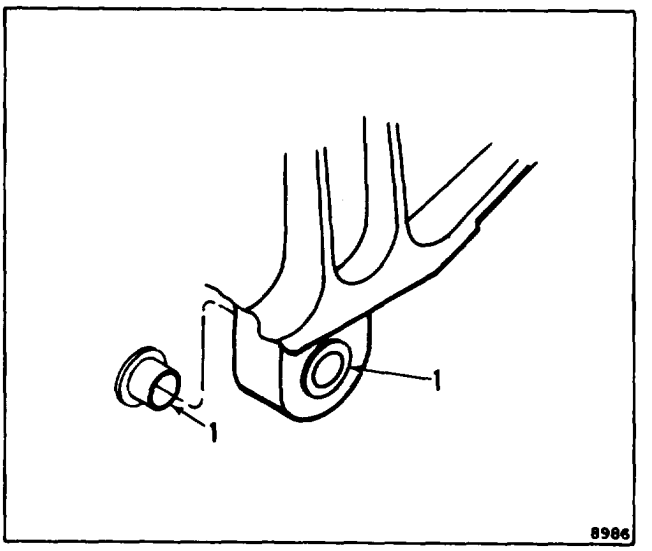
16-8.3 INSTALL SUPPORT BEAM BUSHINGS (Continued) 16-8.3

6. Wipe excess primer from around installed bushing (1). Use clean cloths (E 120).
7. Repeat steps 4. thru 6. for second bushing (l).



FOLLOW-ON MAINTENANCE:

Install center cargo hook (Task 16-8 without 35, (Task 16-8.1 with 35),

END OF TASK

16-9 REMOVE SUPPORT BEAM AND BEARINGS

INITIAL SETUP

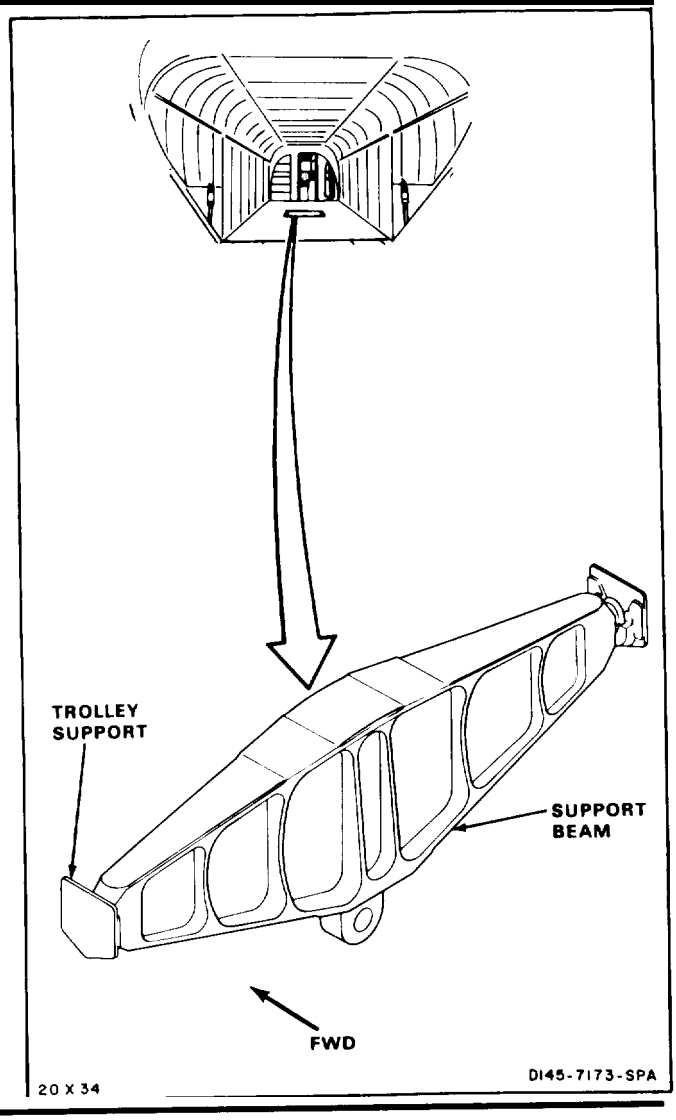
Applicable Configurations:
All

Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

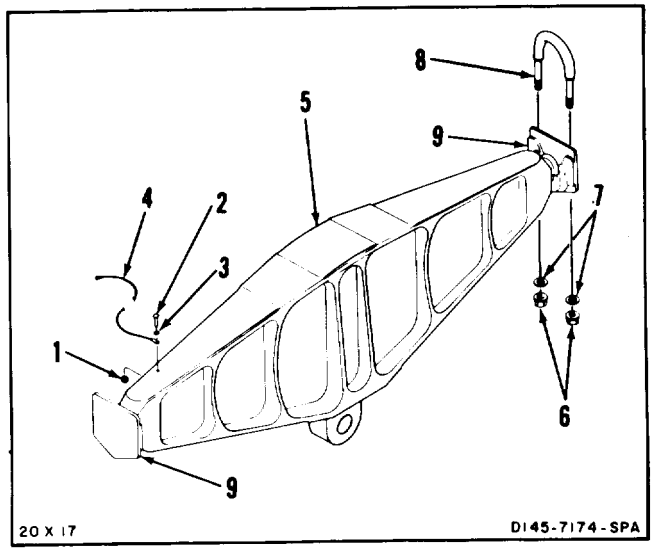
Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Center Cargo Hook Removed (Task 16-4 without 35)(Task 16-4.1 with 35)



1. **Remove** nut (l), screw (2), washer (3) and **jumper (4)** from beam (5).
2. **Remove** two nuts (6), two washers (7) and **u-bolts (8)** from each trolley support (9).



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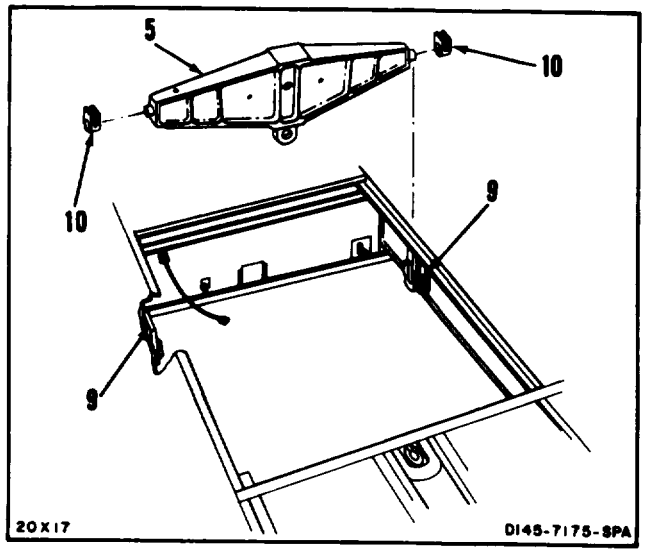
16-9 REMOVE SUPPORT BEAM AND BEARINGS (Continued)

3. **Lift beam (5) up and remove it** from trolley supports (9).
4. **Romove two bearings (10)** from beam (5).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-9.1 INSPECT SUPPORT BEAM AND BEARINGS 16-9.1

INITIAL SETUP

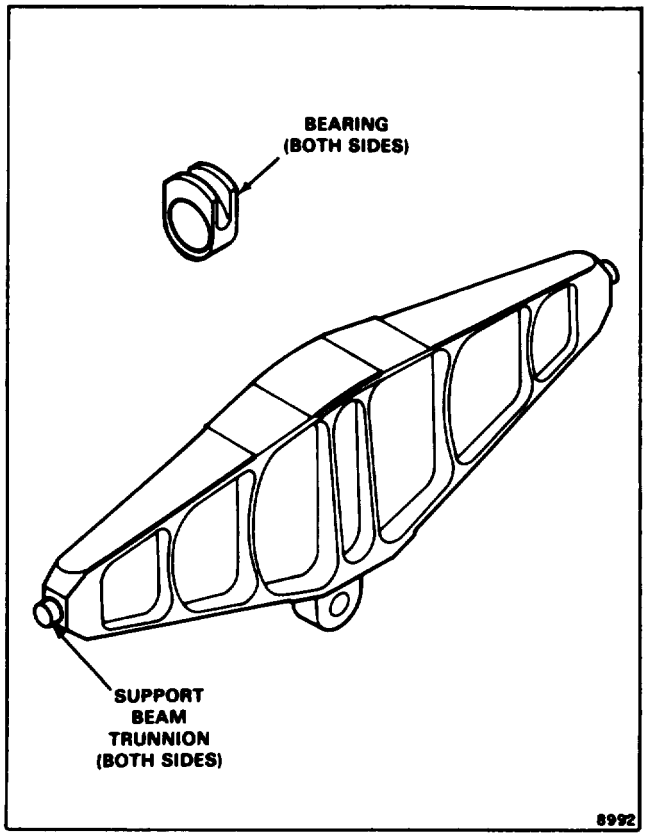
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

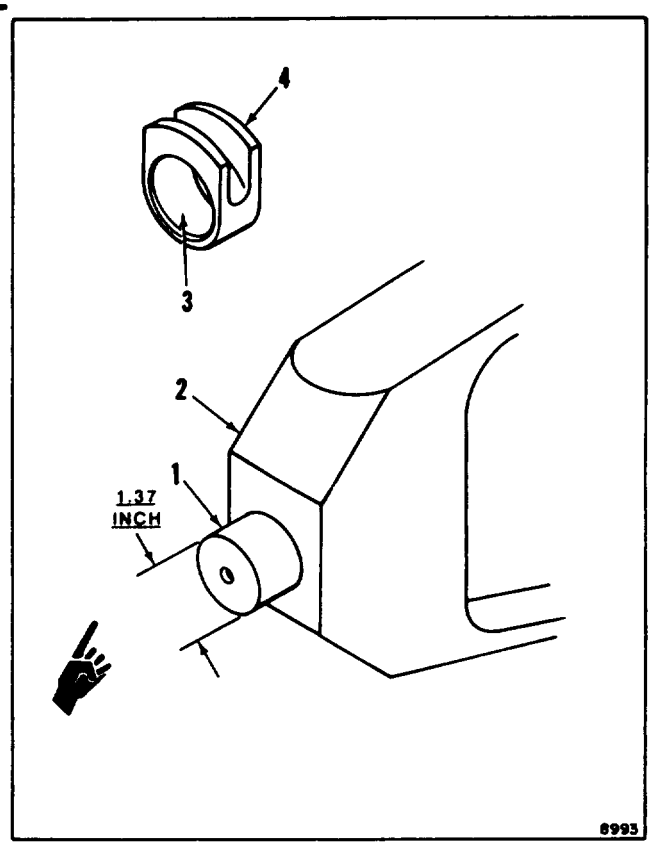
Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Off Helicopter Task



1. Measure diameter of trunnion (1) on each side of beam (2). Diameter shall not be less than 1.37 inch.
2. Check teflon liner (3) in each bearing (4) for wear. If liner is frayed or worn enough to expose metal, reject bearing.

FOLLOW-ON MAINTENANCE:
None



END OF TASK

INITIAL SETUP

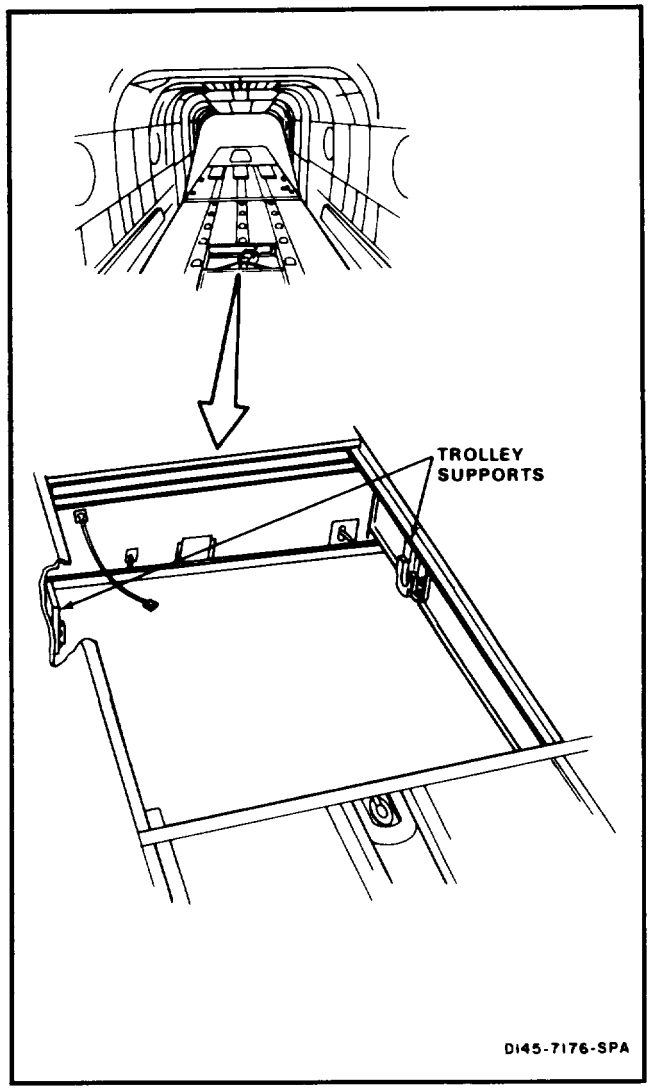
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 100 to 750 Inch-Pounds

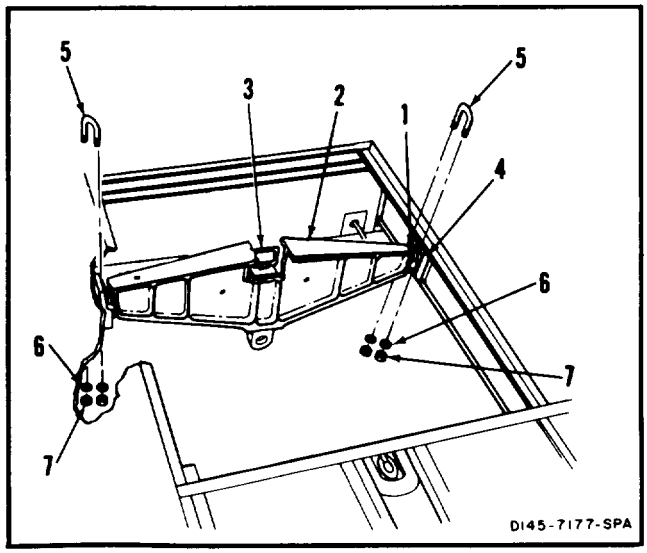
Materials:
Cloths (E135)
Gloves (E184.1)
Methy-Ethyl-Ketone (E244)
Epoxy Primer (E292.1)

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P



1. **Install bearing (1),** groove facing up, on each end of support beam (2).
2. **Install beam (2),** support (3), facing forward, in trolley supports (4).
3. **Install two u-bolts (5),** four washers (6), and four nuts (7). **Torque nuts to 180 to 240 inch-pounds.**



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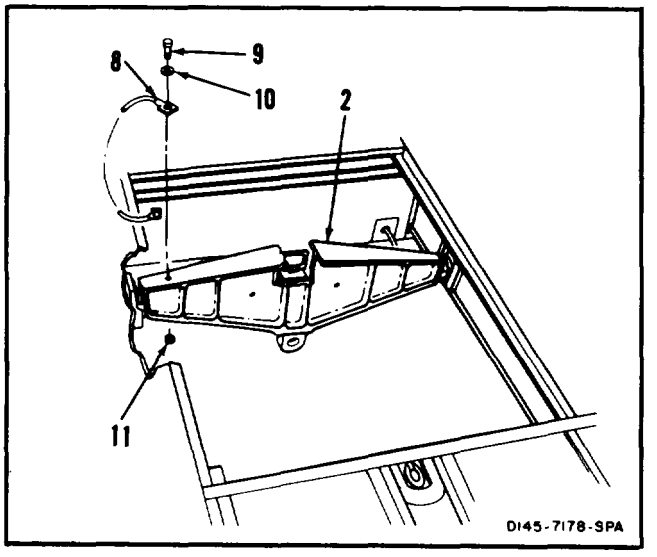
WARNING

Methyl-ethyl-ketone (E244) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

4. **Clean jumper (8)** and bonding point on beam (2), Use cloths (E135) and methyl-ethyl-ketone (E244). Wear gloves (E184.1).
5. **Install** screw (9), washer (10), **jumper (8)** and nut (11) on beam (2).



WARNING

Epoxy primer (E292.1) is flammable and toxic. it can irritate skin and cause burns. Use only with adequate ventilation, away from heat or open flame. Avoid contact with skin, eyes, or clothIng.in case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

6. Apply epoxy primer (E292.1) **to bonded area.**

INSPECT

FOLLOW-ON MAINTENANCE:
None

END OF TASK

16-11 INSPECT FORWARD AND AFT CARGO HOOKS 16-11

INITIAL SETUP

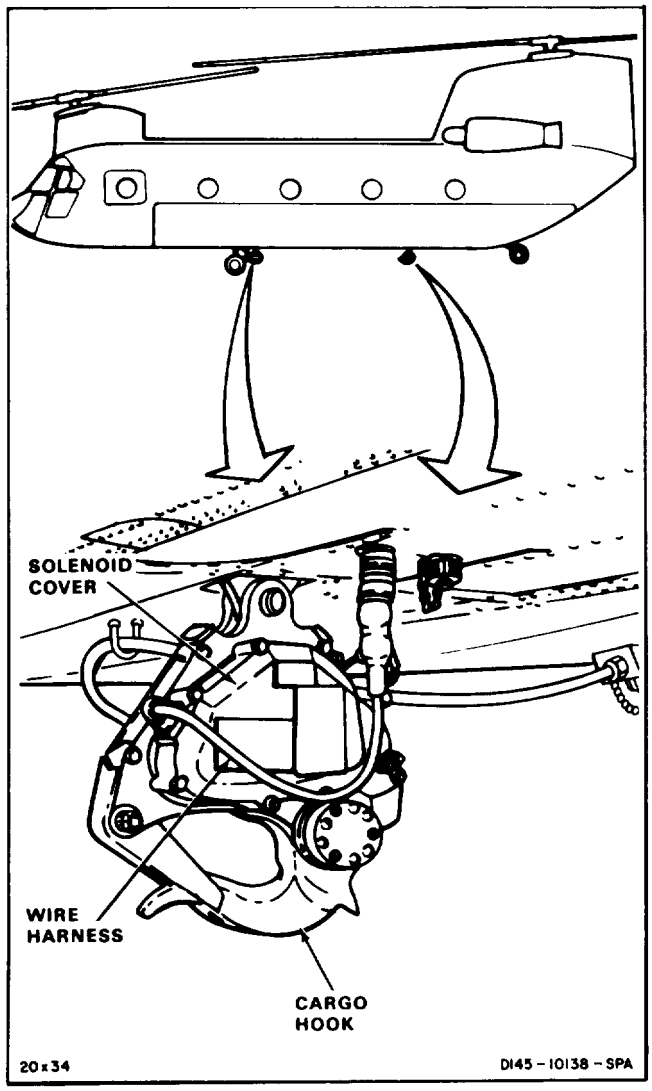
Applicable Configurations:
All

Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

Materials:
Corrosion-Preventive Compound (E154.1)
Abrasive Pads (E2)
Lockwire (E231)

Personnel Required:
Medium Helicopter Repairer
Inspector

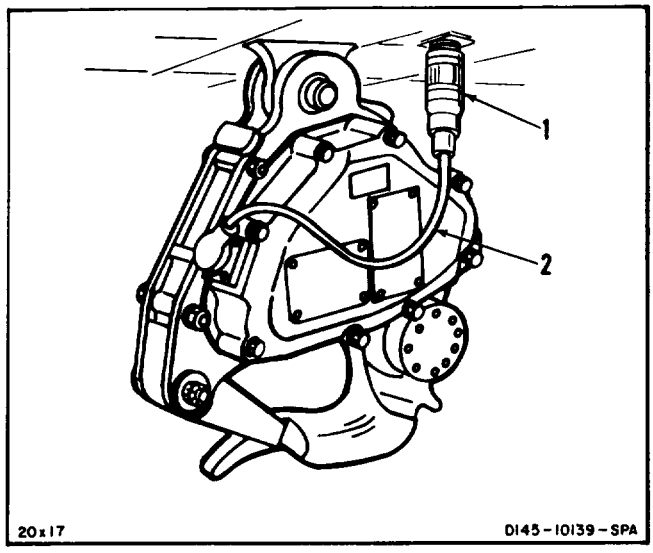
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedure is same to inspect forward or aft hook.

1. **Check electrical plug (1) for security.**
2. **Inspect electrical cable (2). There shall be no kinking, chafing or deterioration.**



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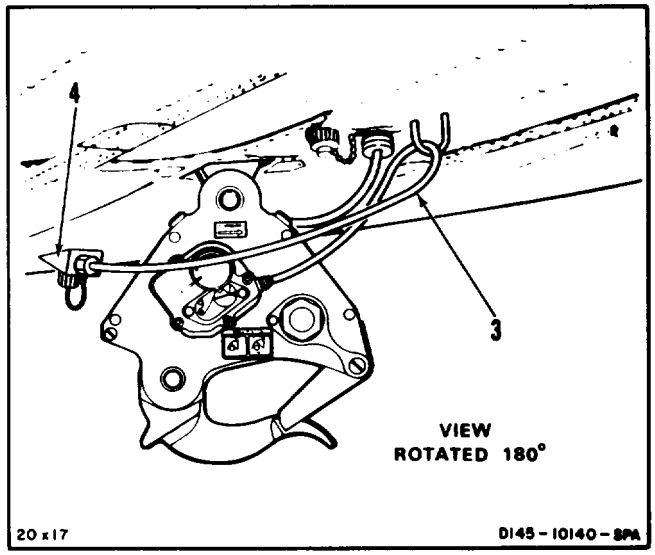
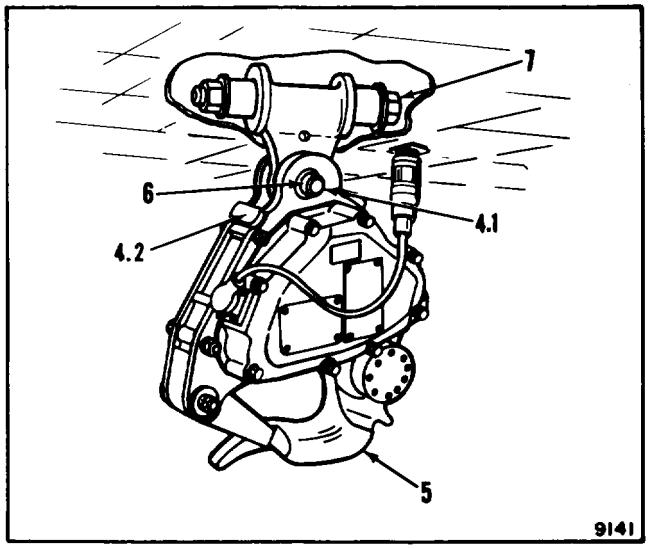
16-11 INSPECT FORWARD AND AFT CARGO HOOKS (Continued) 16-11

3. **Check mechanical release cable (3) for security.**
4. **Check mechanical release cable** in feed-thru-fitting (4) **for security.**



4.1. Check that trunnion bumpers (4.1) and side bumpers (4.2) are present and in good condition.

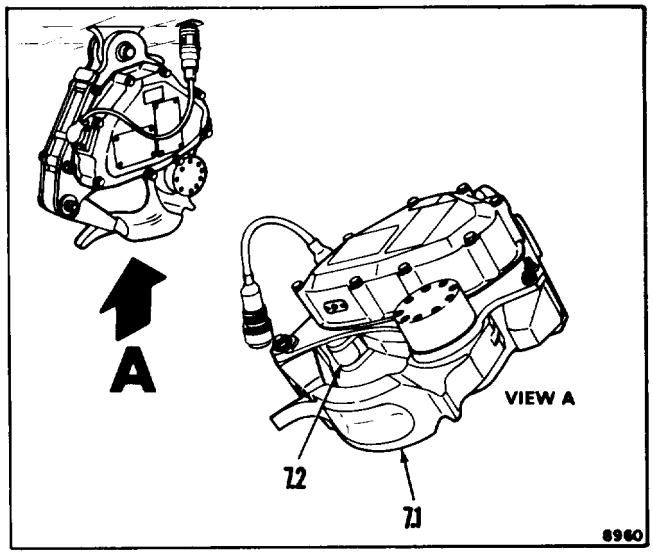
5. **Swing hook (5) forward and aft** and check that hook pivots freely on fitting (6).
6. **Swing hook (5) side to side** and check that hook pivots freely on bolt (7).



6.1. Push up on load beam (7.1) to take weight off roller (7.2). Check that roller rotates freely.

6.2. If roller (7.2) does not rotate freely, lubricate it. Use corrosion-preventive compound (E 154. 1). Clean outside surface of roller. Use abrasive pad (E2).

6.3. Check load beam (7.1) for corrosion. Remove corrosion with abrasive pad (E2).



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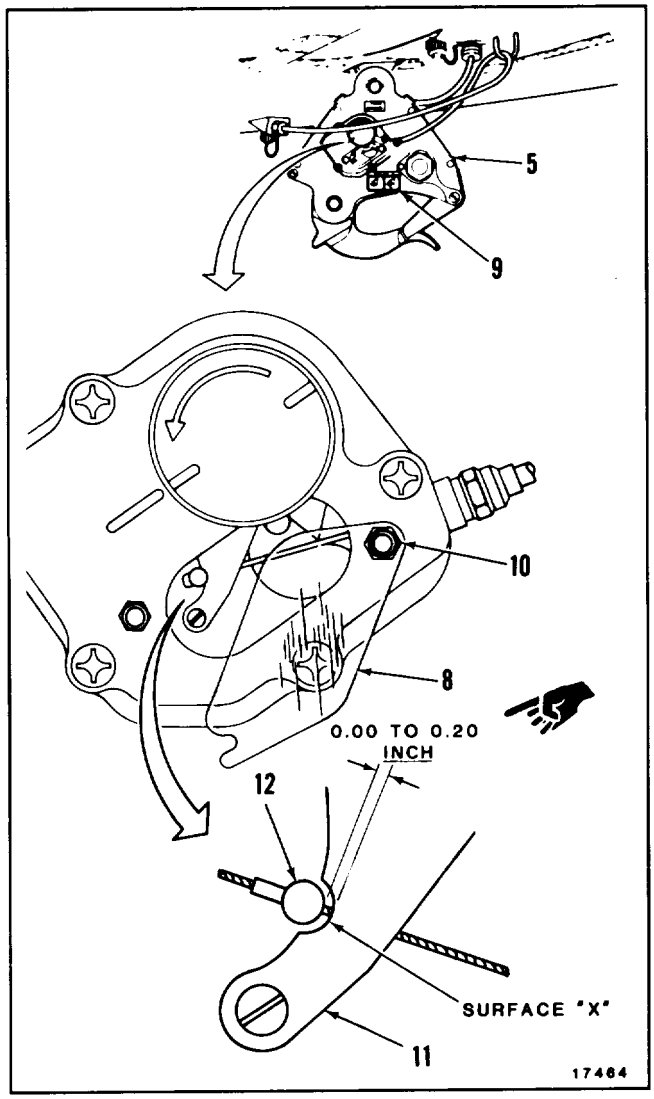
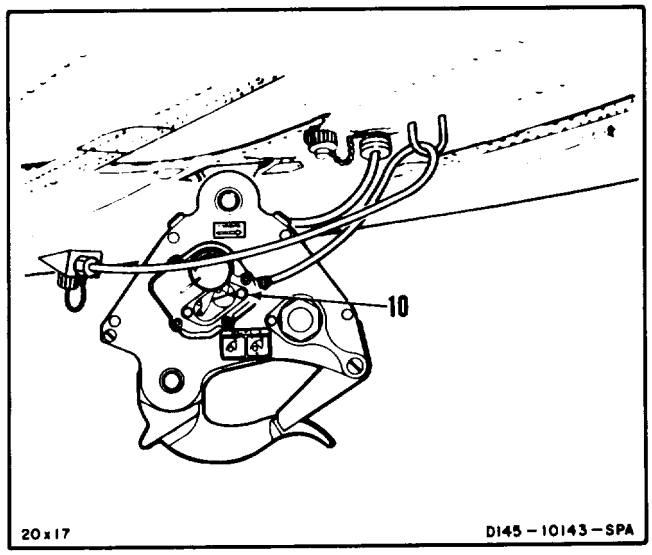
16-11 INSPECT FORWARD AND AFT CARGO HOOKS (Continued) 16-11

7. **Check** thru inspection window (8) **that hook linkage is locked.** Refer to decal (9) on side of hook (5).
8. **Remove lockwire and loosen two bolts (10).**
9. **Swing window (8)** down to clear release arm(11).
10. **Check clearance between ball end (12) and surface 'X' of arm (11). Clearance shall be 0.00 to 0.20 inch.**

10.1. If gap is not within limits, adjust forward or aft cargo hook manual release cable (Task 16-35.1).



11. **Position window on bolt (10). Torque bolts to 40 inch-pounds.**
12. Lockwire bolts (10). Use lockwire (E231).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-12 FORWARD OR AFT CARGO HOOK WATERTIGHTNESS TEST

INITIAL SETUP

Applicable Configurations:
All

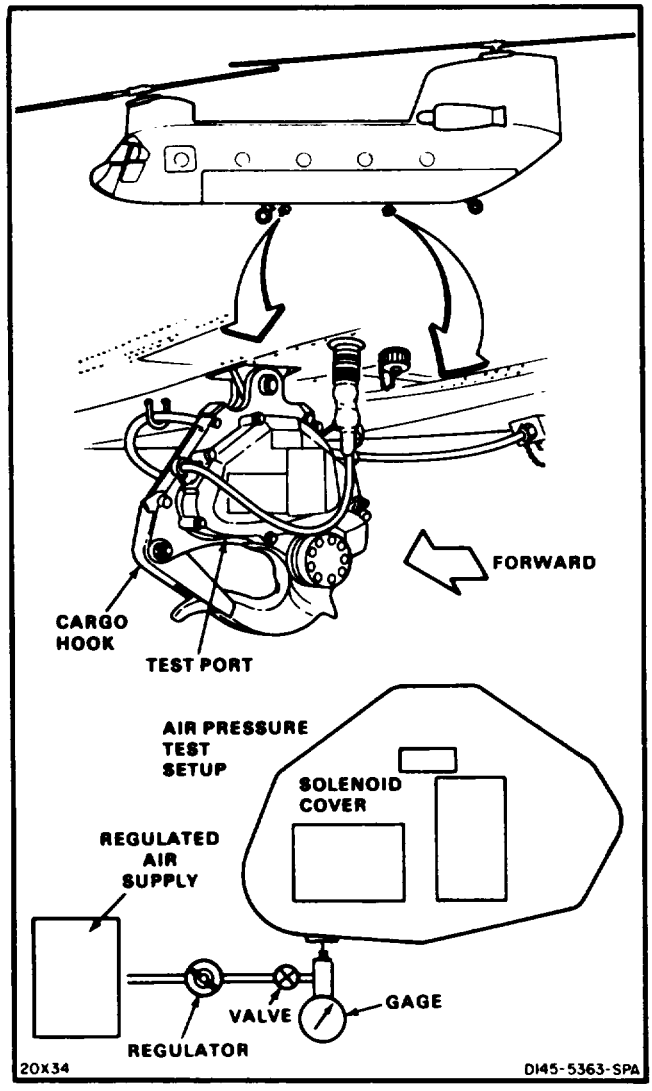
Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Stop Watch
Stowage Coupling, MS3180-16C
Regulator
Pressure Gage, 0 to 30 Psi
Shutoff Valve
Torque Wrench, 30 to 150 Inch-Pounds
Air Hose
Source of Low Pressure Compressed Air

Materials:
None

Parts:
Packing

Personnel Required:
67U10 Medium Helicopter Repairer
68F10 Aircraft Electrician
67U30 Inspector

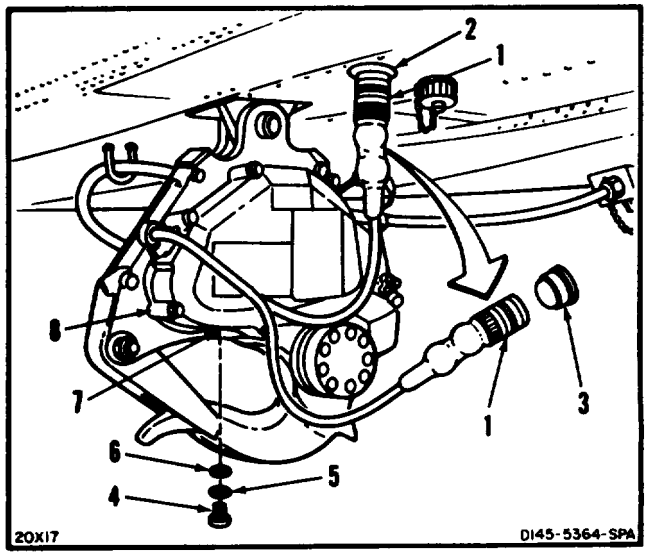
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Air Pressure Test Setup



NOTE

Procedure is same to test forward or aft cargo hook.

1. **Disconnect connector plug (1)** from receptacle (2).
2. **Install stowage coupling (3)** on Connector plug(l).
3. **Remove. bolt (4),** washer (5), and packing (6) from test PORt (7) of solenoid cover (8).



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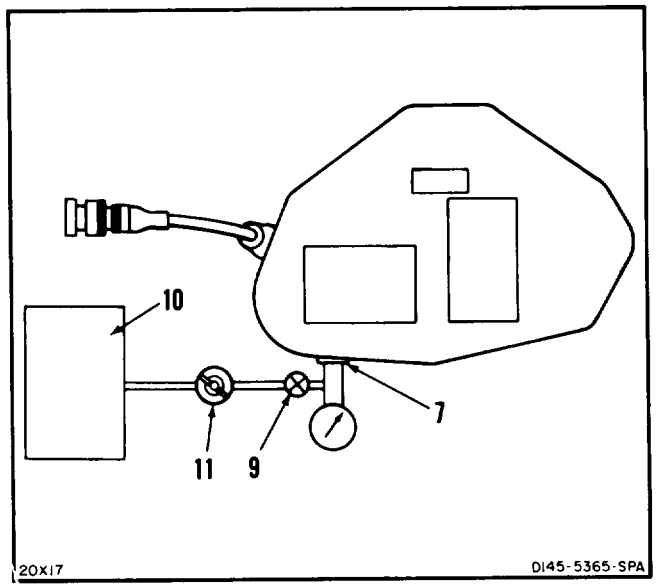
16-12 FORWARD OR AFT CARGO HOOK WATERTIGHTNESS TEST (Continued)

NOTE

Only solenoid cover of cargo hook is shown here for clarity.

4. **Close valve (9)** of test setup. Connect test setup to air supply (10).
5. **Adjust regulator (11) to 0 psi.**
6. **Connect test setup** to test port (7).

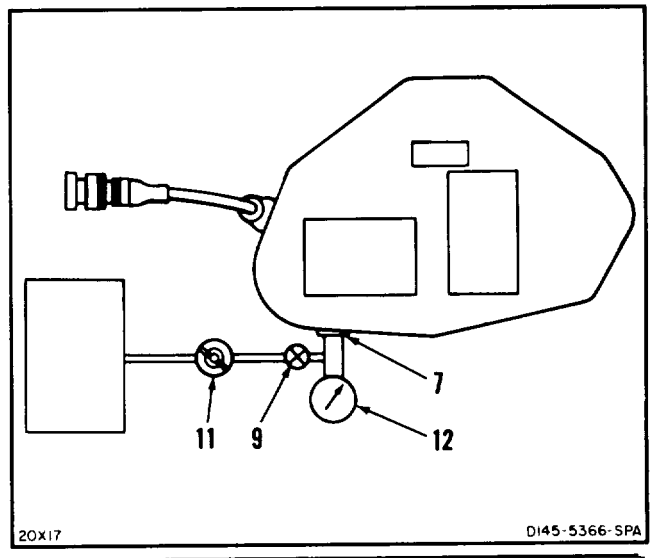


7. **Open valve (9).**

WARNING

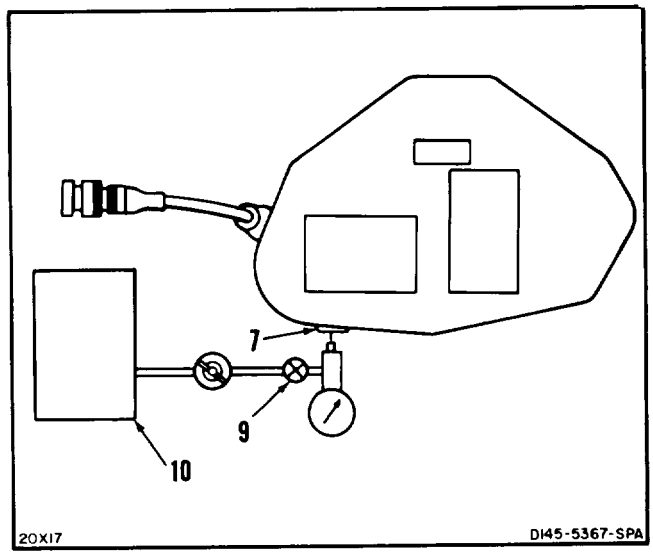
Do not apply more than 10 psi air pressure to test port. Otherwise, damage to solenoid cover or injury to personnel can occur..

8. **Adjust regulator (11) for 5.5 psi on gage (12).**
9. **Close valve (9). Adjust air supply regulator(11)to 0psi.**
10. **Check gage (12) for pressure loss. There** shall be no pressure loss for 30 minutes.



11 **open valve (9) and reduce pressure at port {7) to 0 psi.**

12. Disconnect test setup from port (7) and from air supply (10).



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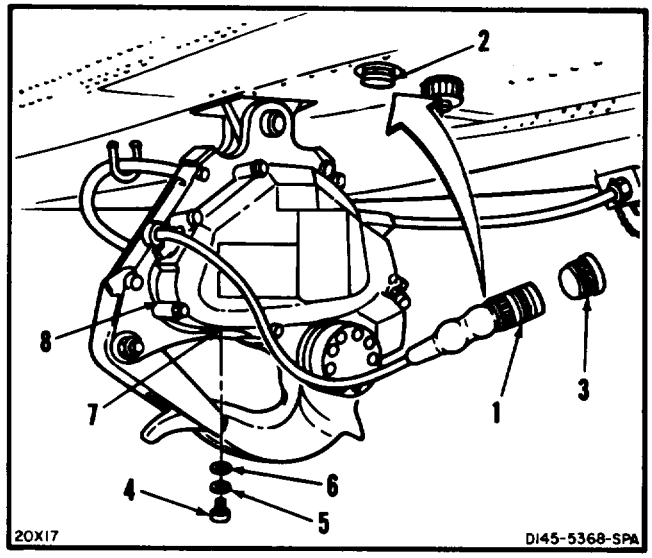
16-12 FORWARD OR AFT CARGO HOOK WATERTIGHTNESS TEST (Continued)

13. **Install** packing (6), washer (5), and **bolt (4)** in port (7). **Torque bolt to 50 inch-pounds**
14. Remove stowage coupling (3) from connector plug(l).
15. Connect connector plug (1) to receptacle (2).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-13 REMOVE CARGO HOOK LOAD BEAM BUMPER

INITIAL SETUP

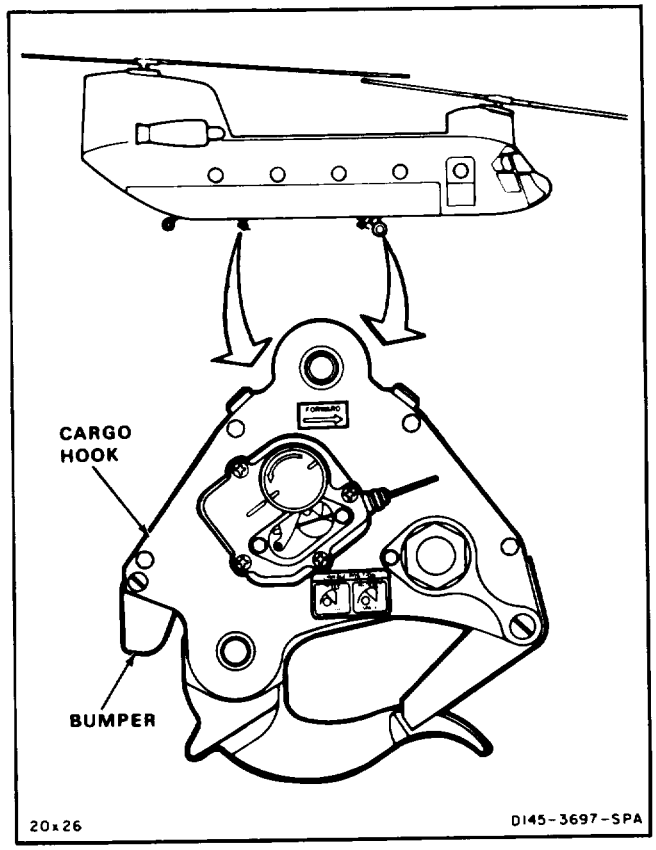
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U1O Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



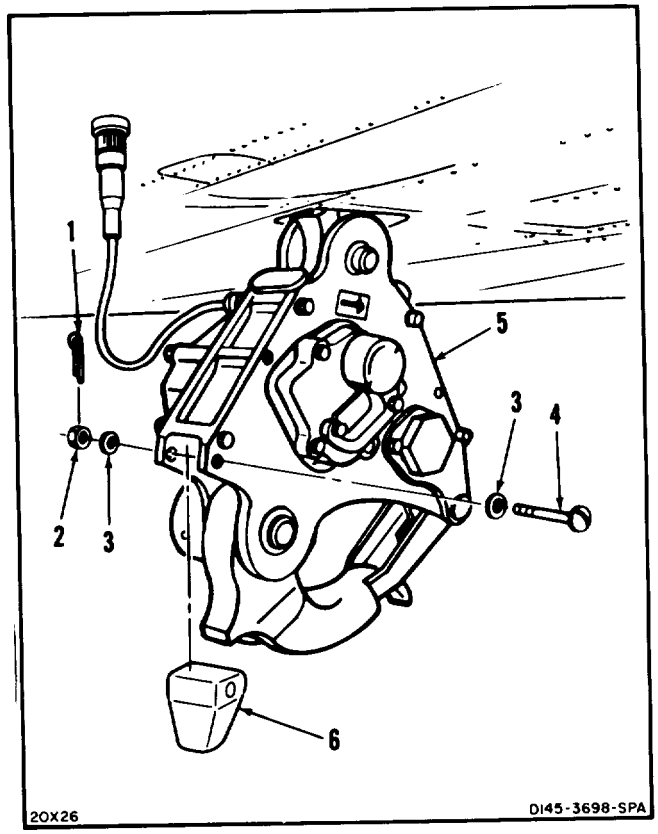
NOTE

Procedure is same to remove bumper on forward or aft cargo hooks.

1. **Remove** cotter pin (1), nut (2), two washers (3), and **bolt (4)** from cargo hook (5).
2. **Remove bumper (6).** Use soft faced hammer.

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-14 INSTALL CARGO HOOK LOAD BEAM BUMPER

INITIAL SETUP

Applicable Configurations:
All

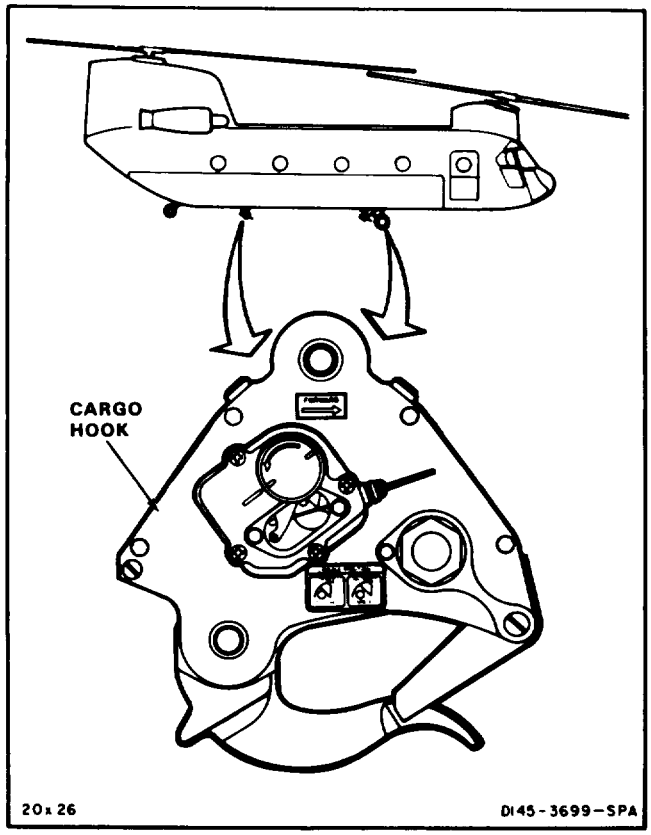
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Parts:
Cotter Pin

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P



NOTE

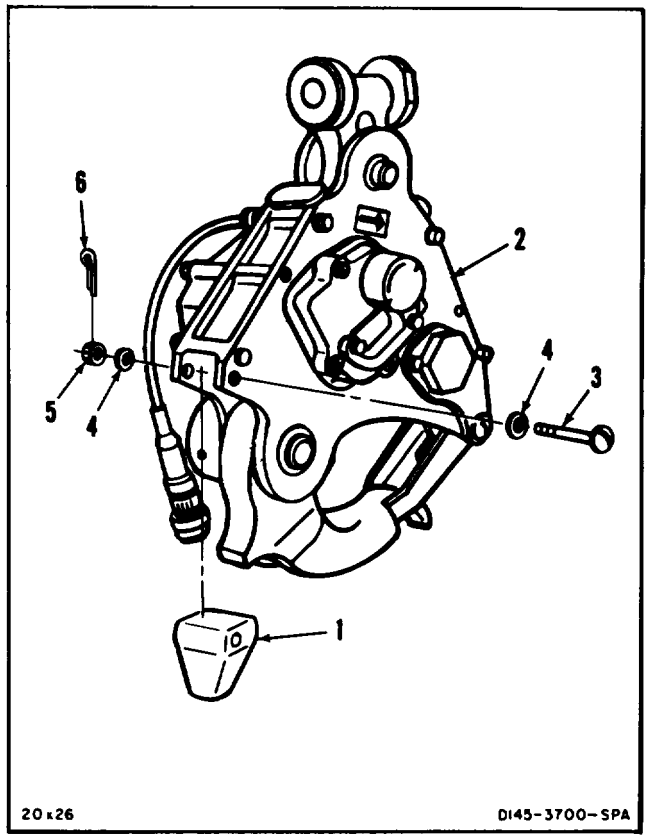
- Procedure is same to install bumper on aft cargo hook.
- Bumper must be tight fit. Do not trim or cut.

1. **Position bumper (1)** in cargo hook (2). Use soft faced hammer.
2. **Install bolt (3),** two washers (4), nut (5), and cotter pin (6).

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of cargo hook (TM 55-1520-240-T).



END OF TASK

16-15 REMOVE FORWARD OR AFT CARGO HOOK SOLENOID COVER OR WIRE HARNESS

INITIAL SETUP

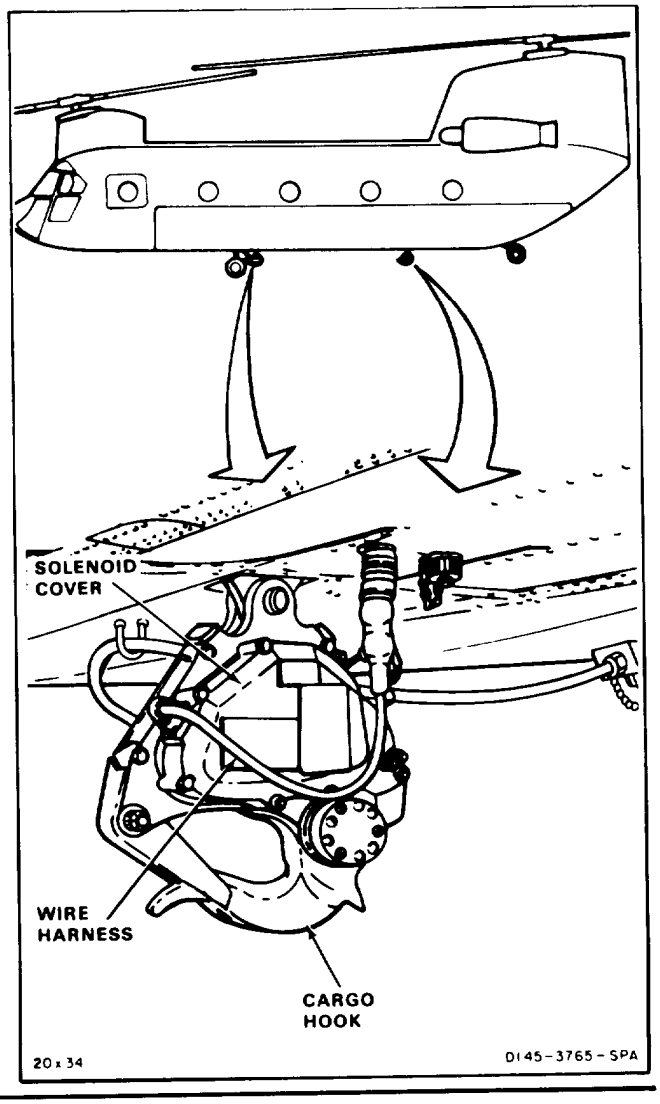
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Insertion/Extraction Tool

Materials:
Paper Tags (E264)

Personnel Required:
68F1O Aircraft Electrician

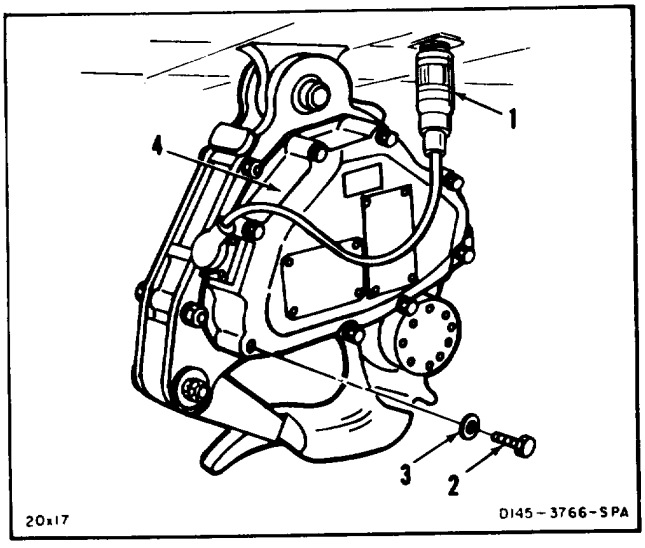
Equipment Conditions:
Battery Disconnected (Task 1-39)
Electrical Power Off



NOTE

Procedure is same to remove solenoid cover or wire harness on forward or aft hook.

1. **Disconnect cable plug (1).**
2. **Remove eight bolts (2)** and washers (3) from solenoid cover (4).



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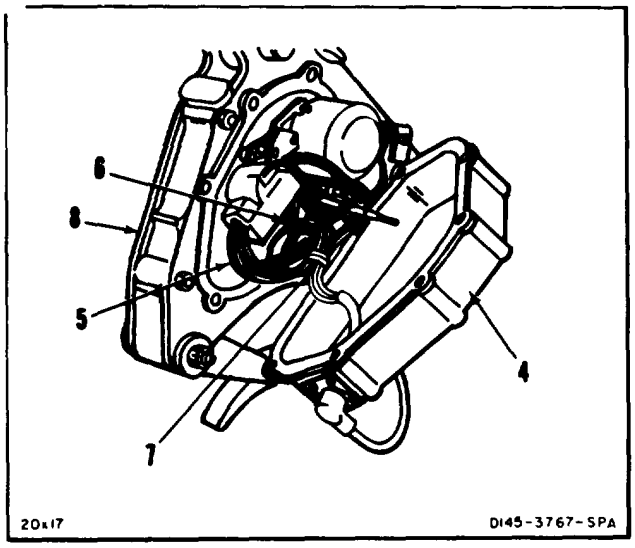
16-15 REMOVE FORWARD OR AFT CARGO HOOK SOLENOID COVER OR WIRE HARNESS (Continued)

NOTE

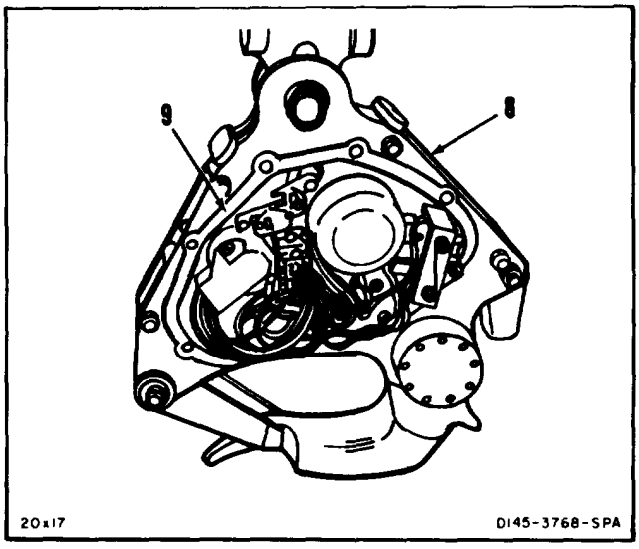
Wires are identified at manufacture, Before disconnecting any wire, make sure wire is identified.

3. Move solenoid cover (4) enough to gain access to harness wires (5). **Disconnect eight harness wires (5)** from modules (6). Use insertion/extraction tool.

4. Cut and remove strap (7). **Remove solenoid cover (4)** from cargo hook (8).

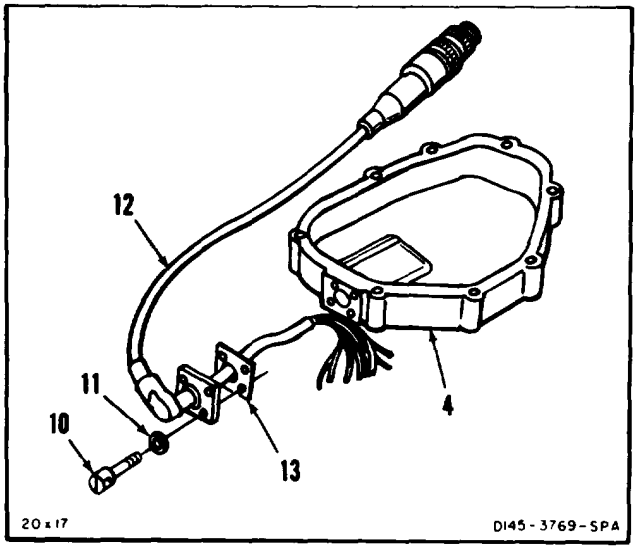


5. Remove gasket (9) from cargo hook (8)



6. Remove lockwire from four screws (10). **Remove** four screws (10), four washers (11), and **wire harness (12)** from solenoid cover (4).

7. Remove gasket (13) from wire harness (1 2).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-16 INSTALL FORWARD OR AFT CARGO HOOK SOLENOID COVER OR WIRE HARNESS

INITIAL SETUP

Applicable Configurations:
All

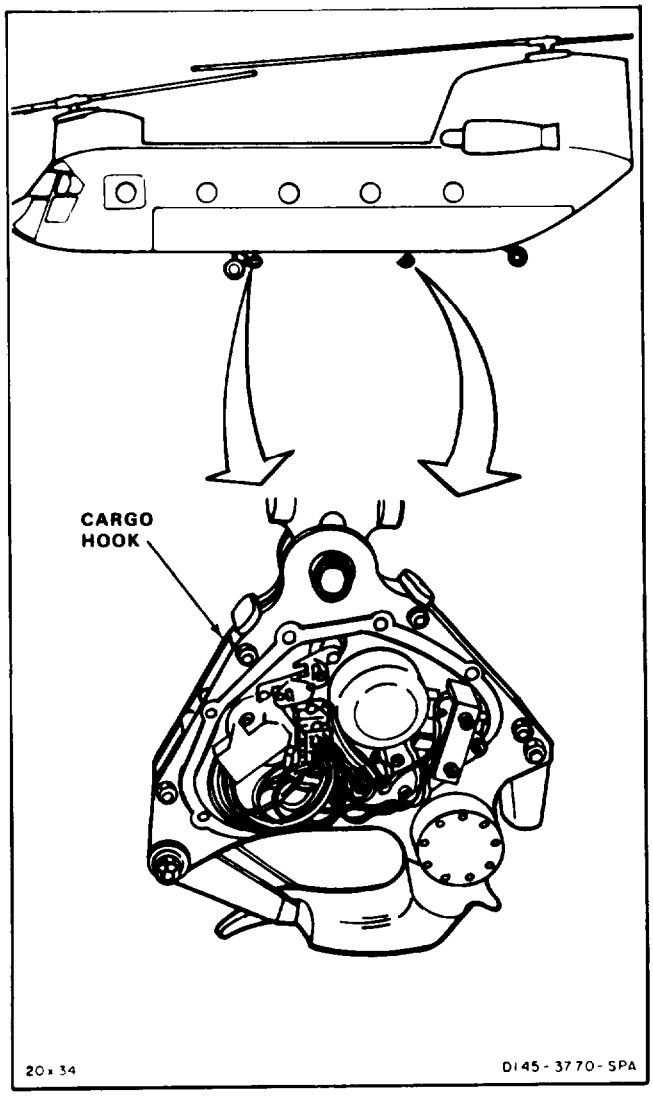
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Insertion/Extraction Tool
Self Clinching Strap, Hand Tool,
NSN 5120-00-781-7891
Torque Wrench, 30 to 150 Inch-Pounds
Torque Screwdriver, 0 to 25 Inch-Pounds

Materials:
Gloves (E 186)
Lockwire (E227)
Straps (E377)
Sealant (E340.1)

Parts
Gaskets

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P



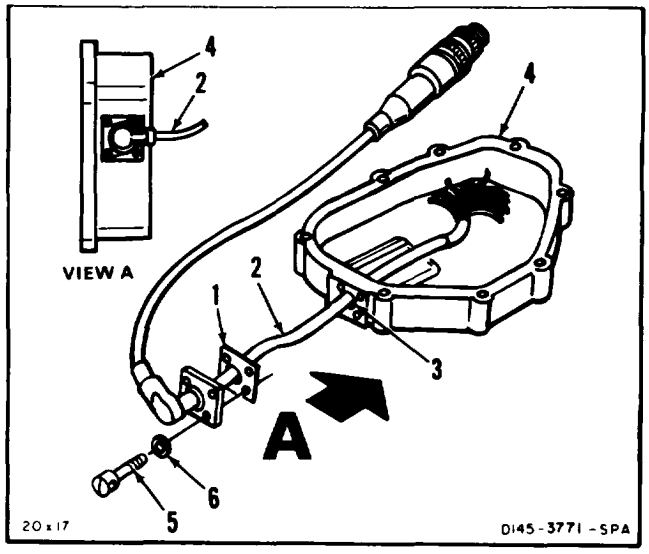
GO TO NEXT PAGE

16-16 INSTALL FORWARD OR AFT CARGO HOOK SOLENOID COVER OR WIRE HARNESS (Continued) 16-16

NOTE

Procedure is same to install solenoid cover or wire harness on forward or aft hook.

1. Install gasket (1) on wire harness (2).
2. **Feed wire harness (2) through hole (3)** in solenoid cover (4).
3. **Install four screws (5)** and washers (6). **Torque screws to 9 inch-pounds.** Lockwire screws. Use lockwire (E227).

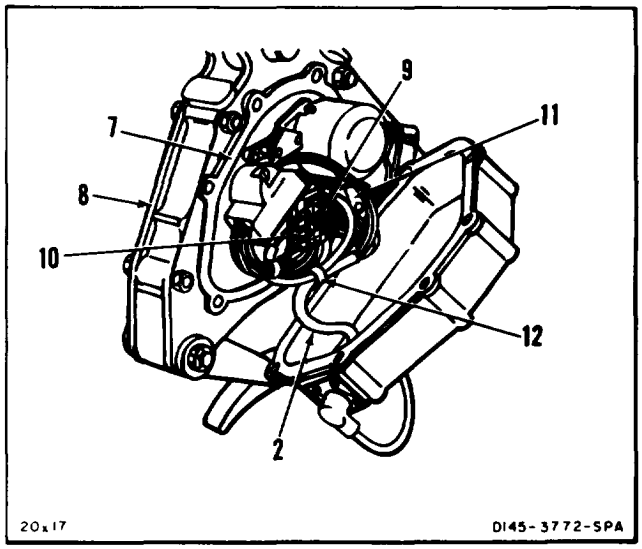


WARNING

Sealant (E340.1) can irritate skin and cause burns. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

3.1 Apply sealant (E340.1) around harness (2) where it comes through cover (4). Wear gloves (E 186).

4. **Position gasket (7) on cargo hook (8).**
5. **Remove any tags and connect eight harness wires (9) to modules (10). Use insertion/extraction tool.**
6. **Route wire harness (2) below modules (1 O) and tie harness to wires from solenoid protection switch (11). Tie harness and wires with strap (12).**



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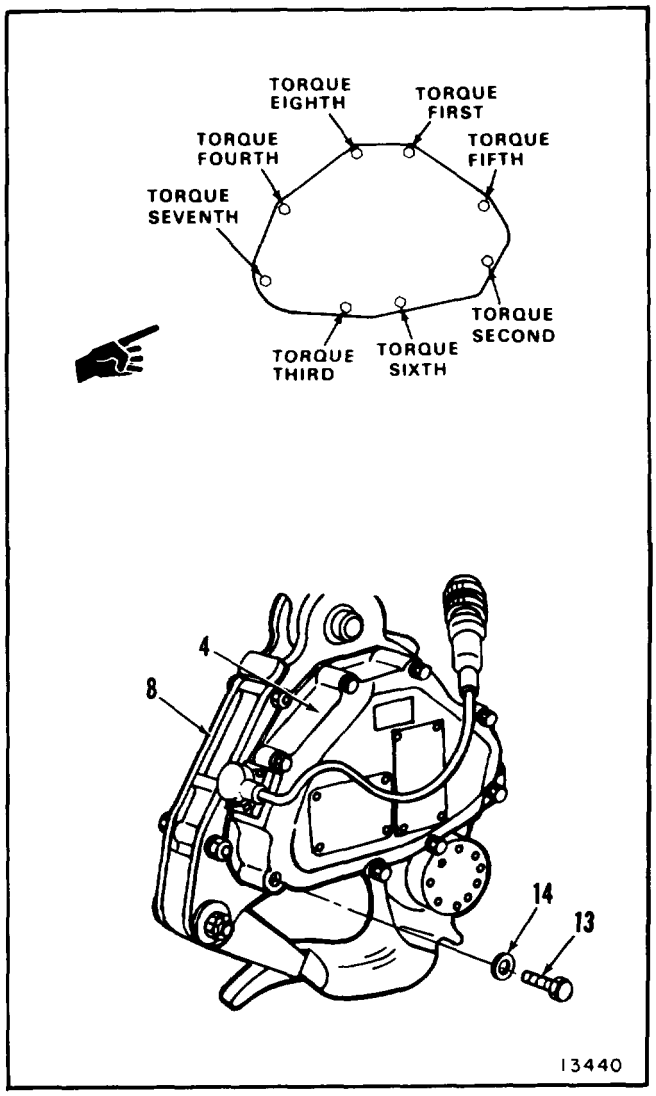
16-16 INSTALL FORWARD OR AFT CARGO HOOK SOLENOID COVER OR WIRE HARNESS (Continued) 16-16

7. Position solenoid cover (4) on cargo hook (8) and install eight bolts (13) and washers (14).

7.1. Follow torque sequence shown. **Torque bolts (13) alternately to 60 inch-pounds.** Repeat sequence to check torque.

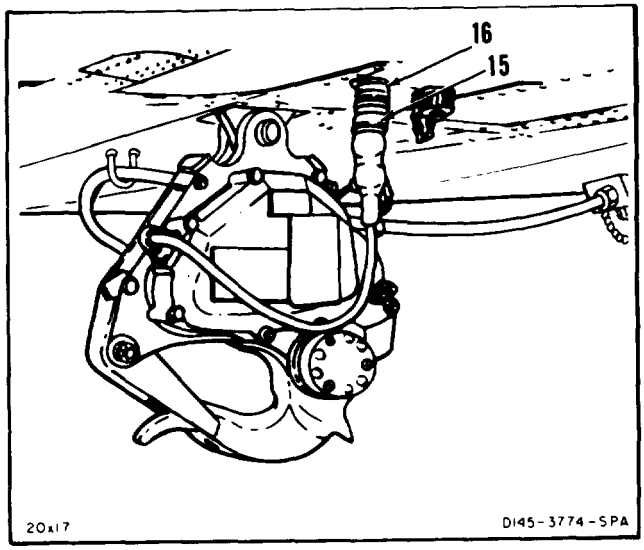


8. Connect cable plug (15) to receptacle (16).

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of cargo hook (TM 55-1520-240-T).



END OF TASK

16-17 REMOVE FORWARD OR AFT CARGO HOOK TRUNNION BUMPERS

INITIAL SETUP

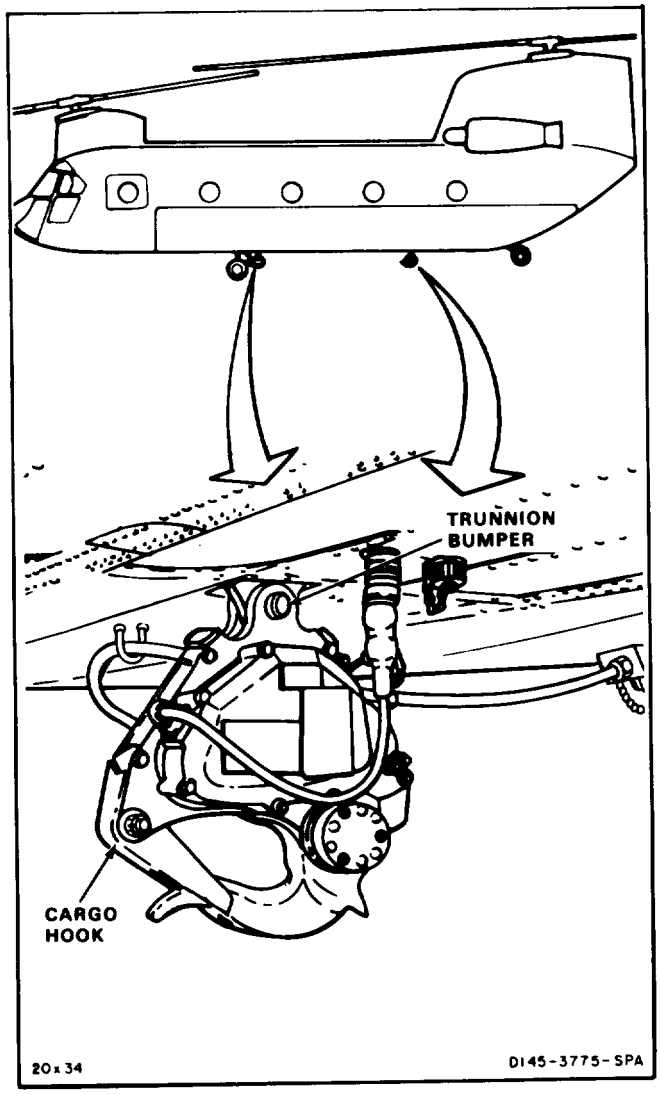
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



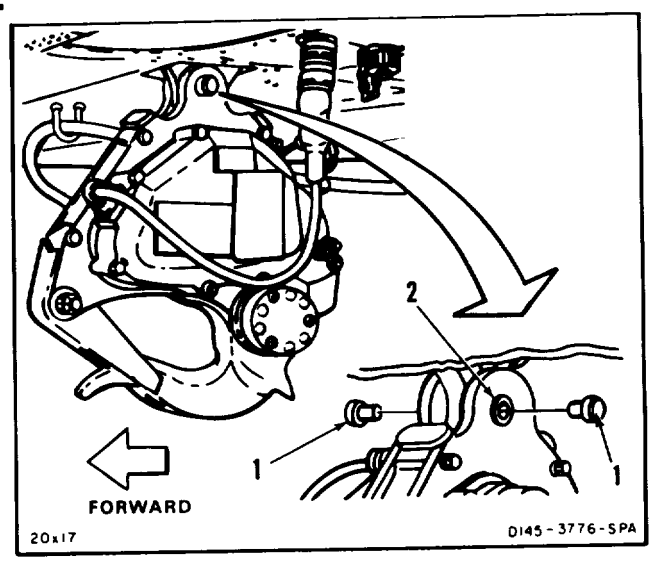
NOTE

Procedure is same to remove trunnion bumpers on forward or aft cargo hook.

1. Remove sealant from two bumpers (1). Use putty knife.

2. Remove bumpers (1) from trunnion fitting (2).

FOLLOW-ON MAINTENANCE:
None



END OF TASK

16-18 INSTALL FORWARD OR AFT CARGO HOOK TRUNNION BUMPERS

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:

Adhesive, Locktite 404 (E343)
Cloths (E120)
Methyl-Ethyl-Ketone (E244)

Personnel Required:

Medium Helicopter Repairer
Inspector

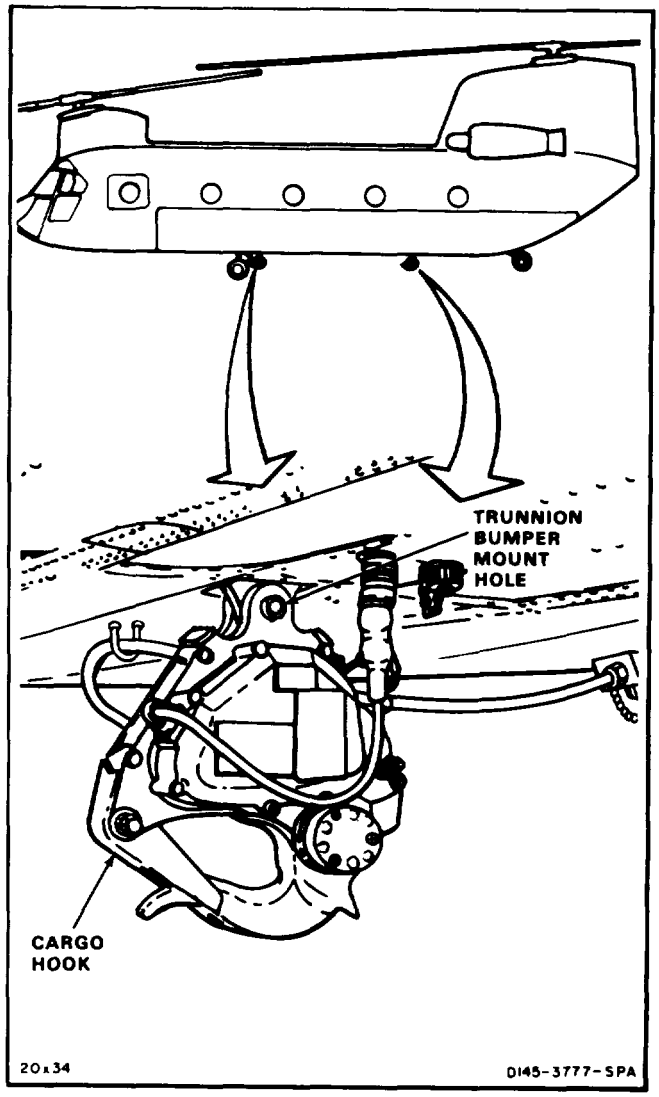
References:

TM 55-1520-240-23P

General Safety Instructions:

WARNING

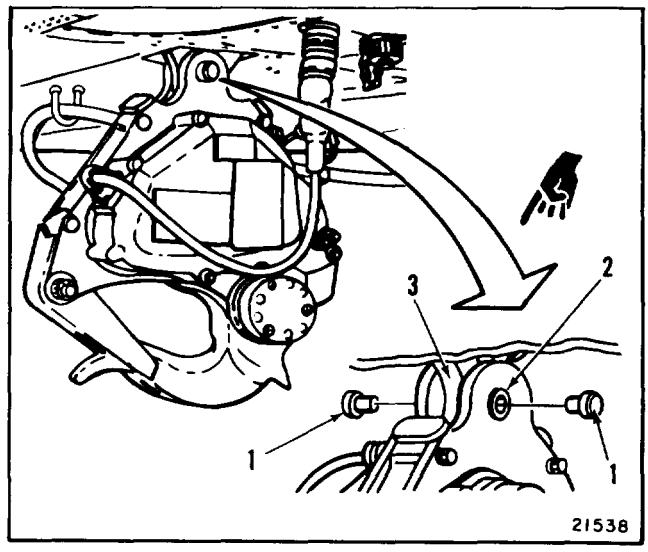
Methyl-ethyl-ketone (E244) is flammable. It can irritate skin and cause burns. Use only with adequate ventilation, away from heat or open flame. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



NOTE

Procedure is same to install forward or aft cargo hook trunnion bumpers.

1. **Clean** shank area of **bumpers (1) and ID of holes (2)** in trunnion fitting (3). Use a clean cloth (E 120) dampened with MEK (E244).
2. **Apply** a bead of **adhesive (E343) around ID of holes (2).**
3. Immediately **install two bumpers (1).** Use a soft faced hammer.



INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-19 REMOVE FORWARD OR AFT CARGO HOOK INSPECTION WINDOW

INITIAL SETUP

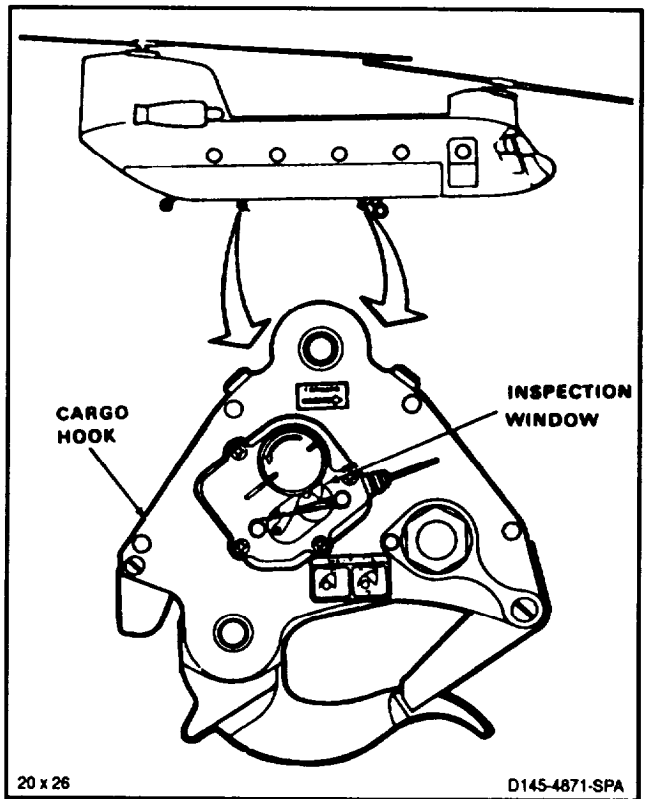
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



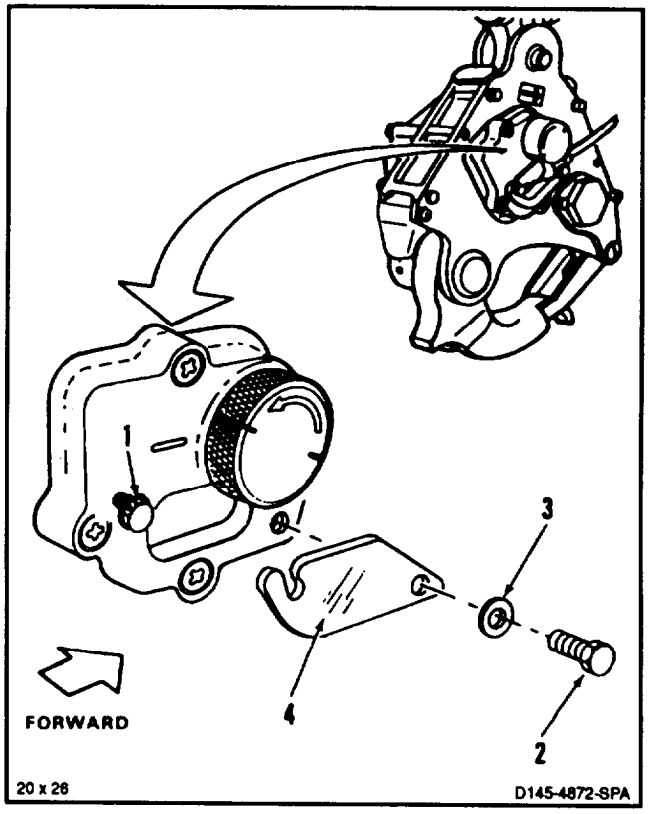
NOTE

Procedure is same to remove inspection window from forward or aft cargo hook

1. Remove lockwire and **loosen bolt (1). Remove bolt (2)** and washer (3).
2. **Remove Inspection window (4)**

FOLLOW-ON MAINTENANCE:
None

END OF TASK



16-20 INSTALL FORWARD OR AFT CARGO HOOK INSPECTION WINDOW 16-20

INITIAL SETUP

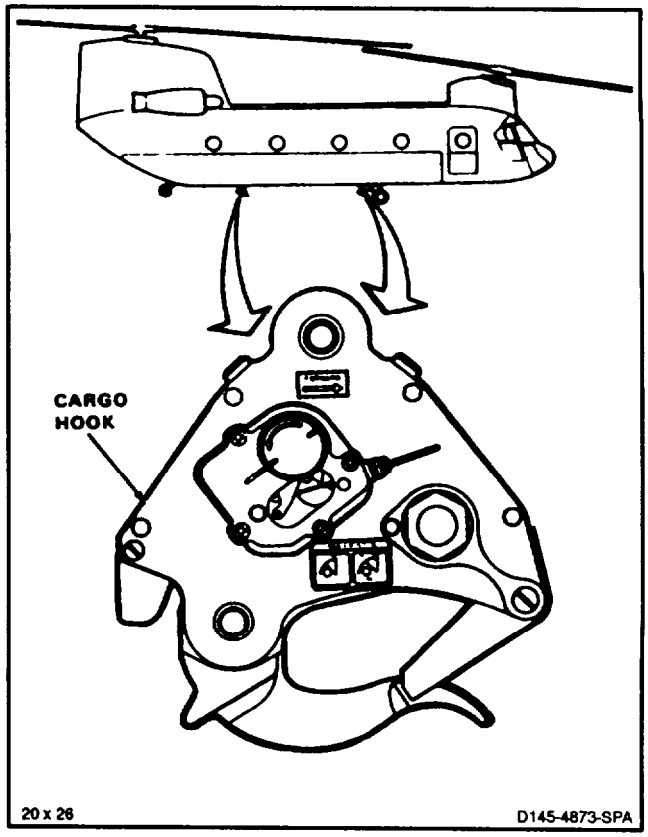
***Applicable* Configurations:**
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

Materials:
Lockwire (E231)

Personnei Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P



NOTE

Procedure is same to install inspection window on forward or after cargo hook

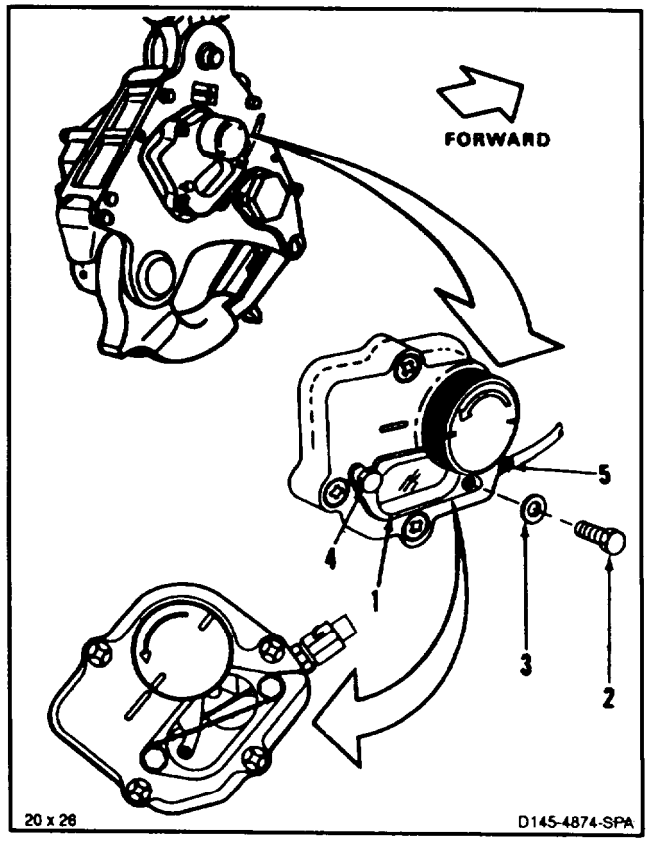
1. **Position Inspection window (1). Install bolt *(2)* and washer (3). Make sure dotted end of window is tight against bolt (4).**
2. **Torque bolts (2 and 4) to 40 inch-pounds**
3. Lockwire bolts (2 and 4) to each other and to cable adaptor (5). Use lockwire (E231).

INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK



16-21 REMOVE FORWARD OR AFT CARGO HOOK KEEPER

INITIAL SETUP

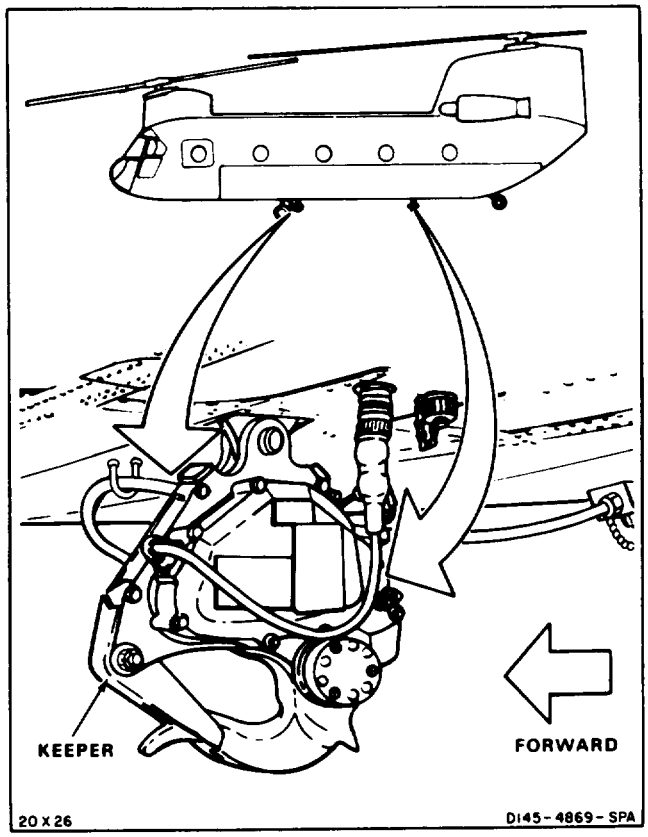
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



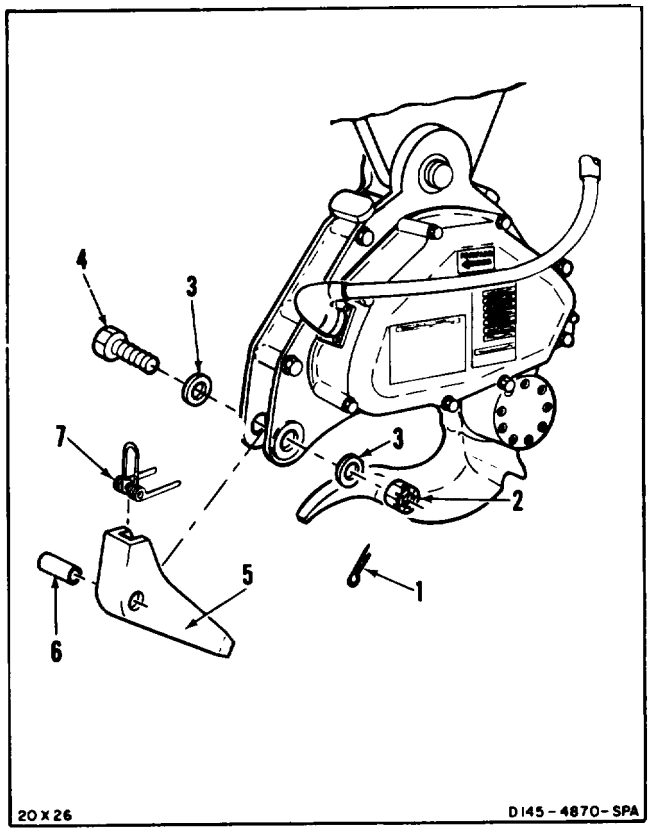
NOTE

Procedure is same to remove keeper from forward or aft cargo hook.

1. **Remove** cotter pin (1), nut (2), two washers (3) and **bolt (4).**
2. **Remove keeper (5).**
3. **Remove bushing {6) and spring (7)** from keeper (5).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-22 INSTALL FORWARD OR AFT CARGO HOOK KEEPER

INITIAL SETUP

Applicable Configurations:
All

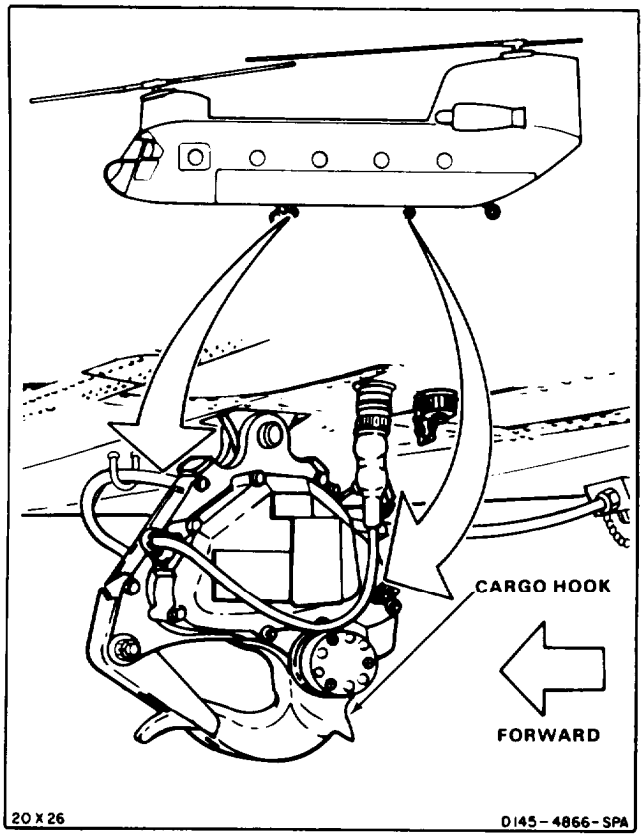
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Parts:
Cotter Pin

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P

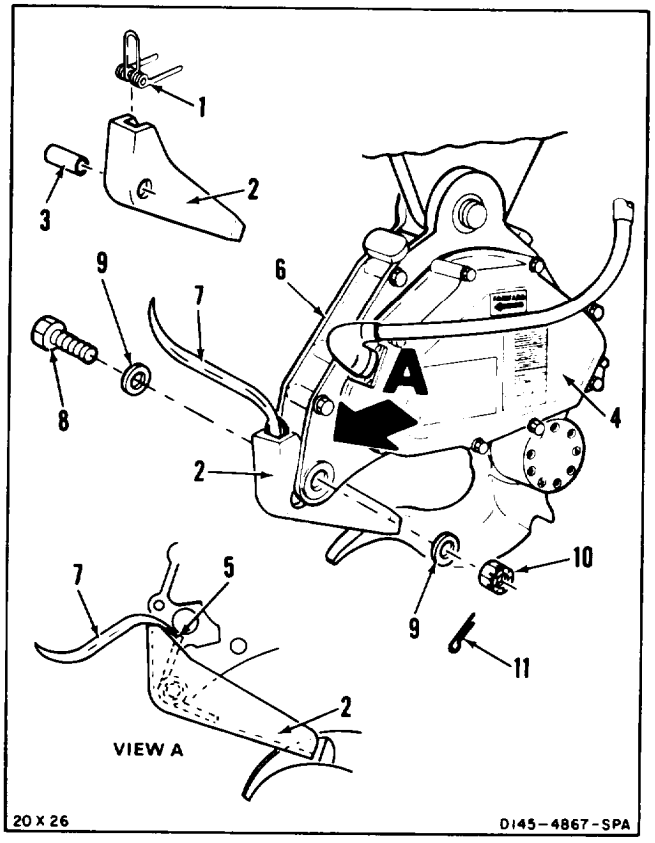


NOTE

Procedure is same to install keeper on forward or aft cargo hook.

1. Position spring (1) in keeper (2), closed end of spring up. Install bushing (3) through keeper and spring.
2. Install keeper (2) in cargo hook (4) with closed end of spring (1) positioned under projection (5) of rear cover (6). Use flat end of cotter pin extractor (7) to position spring.
3. Install bolt (8), two washers (9), and nut (10). Install cotter pin (11).
4. Cycle keeper (2) open and closed two times to ensure proper assembly.

INSPECT



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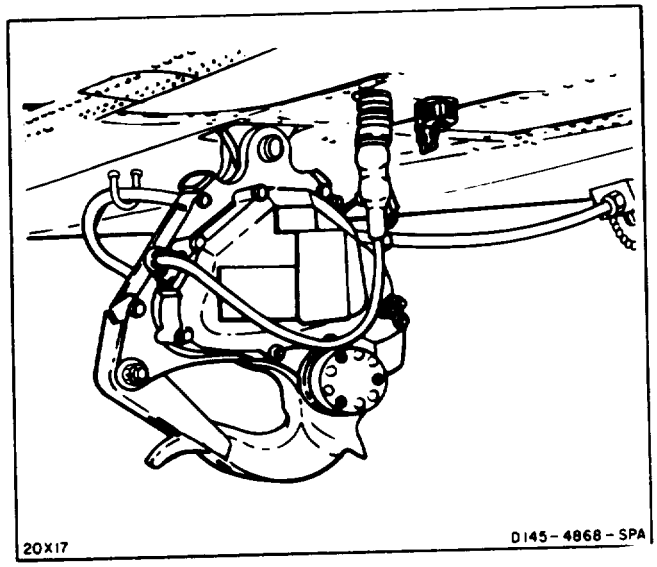
16-22 INSTALL FORWARD OR AFT CARGO HOOK KEEPER (Continued)

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-23 REMOVE FORWARD OR AFT CARGO HOOK

INITIAL SETUP

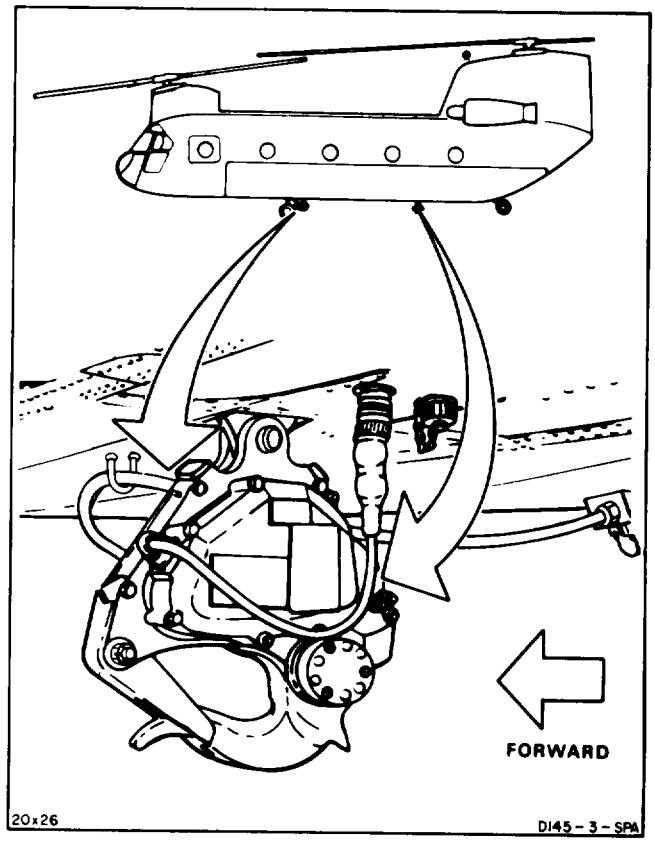
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

Materials:
None

Personnel Required:
67U1O Medium Helicopter Repairer
67U20 Medium Helicopter Repairer

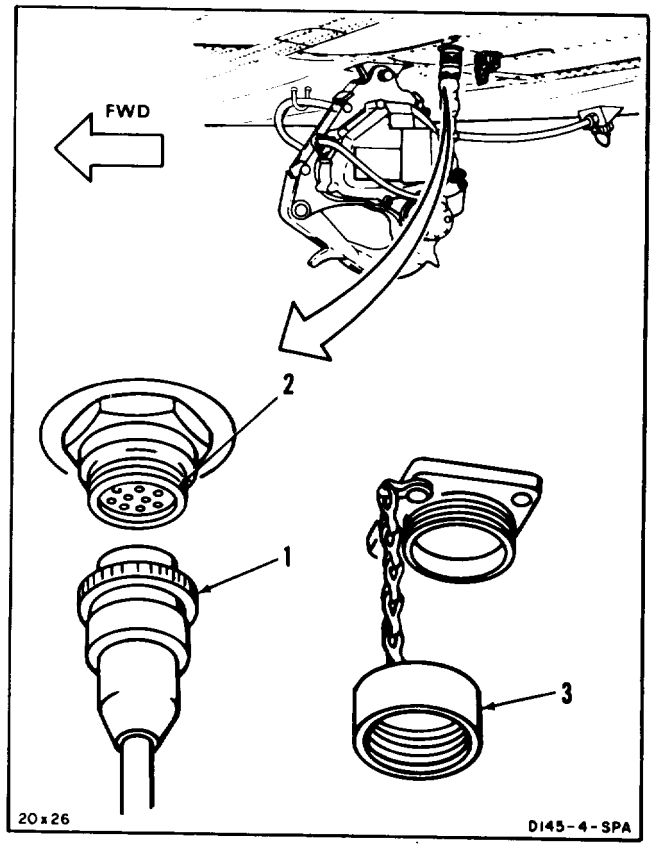
Equipment Condition:
Battery Disconnected (Task 1 -39)
Electrical Power Off
Hydraulic Power Off



NOTE

Forward and aft cargo hooks are removed in same way.

1. Loosen lockring (1) and disconnect plug from receptacle (2).
2. **Remove cap (3)** from stowed position. Install on receptacle (2).



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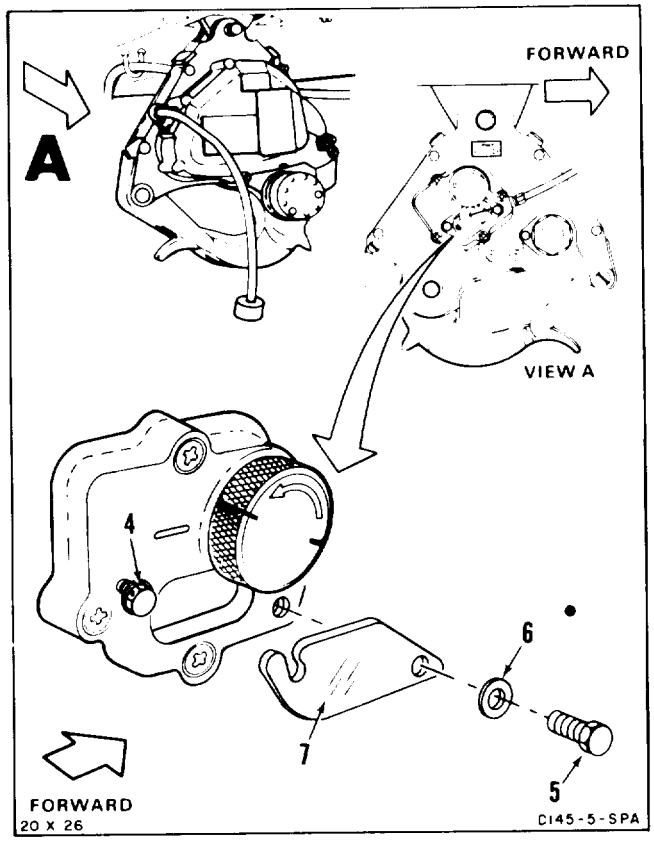
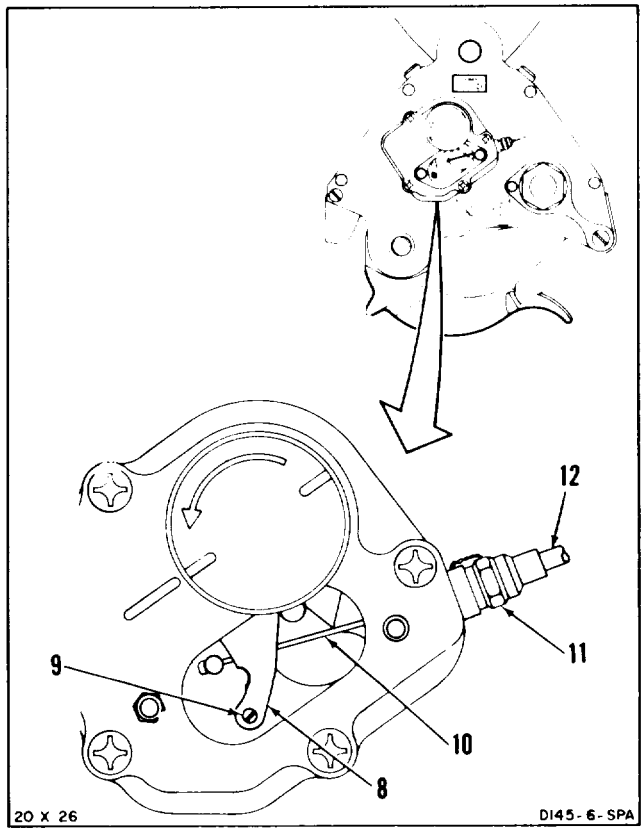
16-23 REMOVE FORWARD OR AFT CARGO HOOK (Continued)

3. Remove lockwire and **loosen bolt (4). Remove bolt (5)** and washer (6).
4. **Remove inspection window (7).**



5. **Move release arm (8) down** and hold. **Loosen straw (9). Remove cable (10)** from arm (8).
6. Remove lockwire from nut (11). **Loosen nut and disconnect cable (12).**



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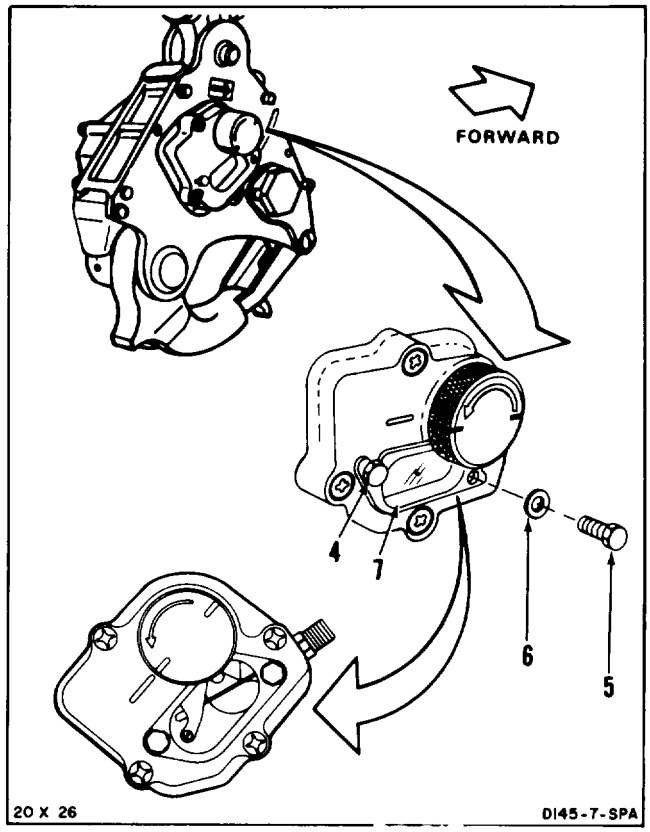
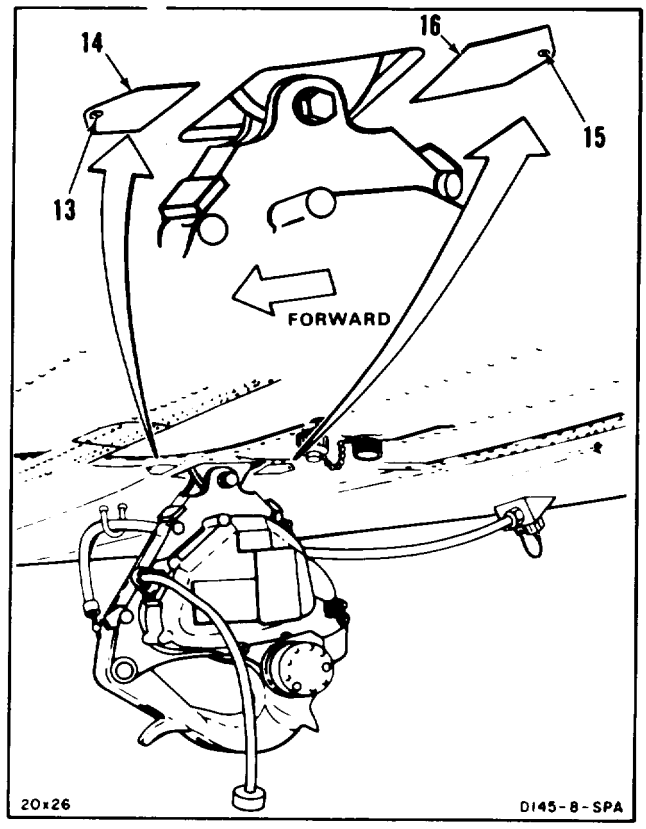
16-23 REMOVE FORWARD OR AFT CARGO HOOK (Continued)

7. **Position inspection window (7). Install bolt (5)** and washer (6). Make sure slotted end of window is tight against bolt (4).



8. Remove screw (13). **Remove forward access plate (14)** from fuselage.

9. Remove screw (15). **Remove aft access plate [16)** from fuselage.



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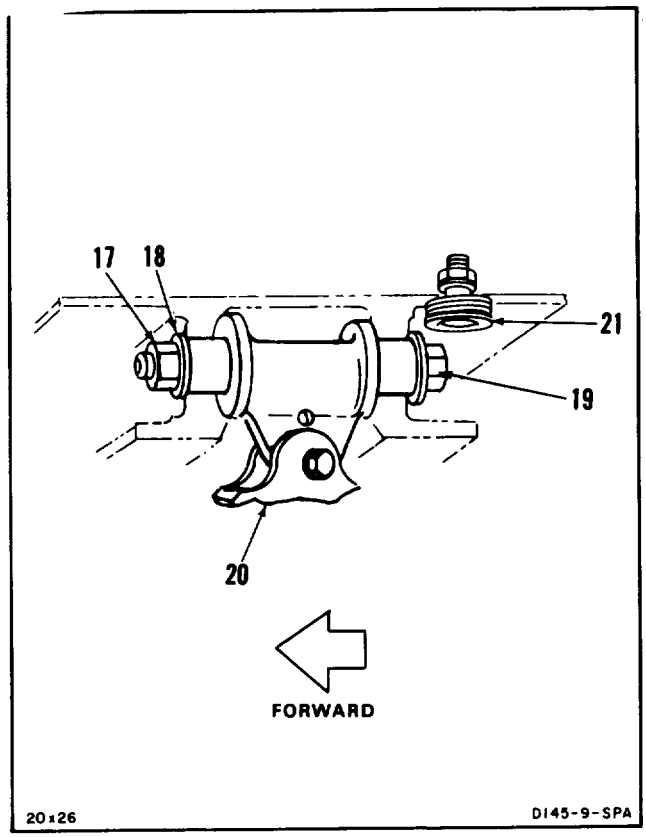
16-23 REMOVE FORWARD OR AFT CARGO HOOK (Continued)

10. **Remove nut (17)** and washer(18) from pivot bolt (19).
11. Have helper support weight of cargo hook (20).
12. Press safety stop (21) and **remove bolt (19).**
13. **Remove cargo hook (20).**

NOTE

If cargo hook will not be replaced immediately, do steps 14 thru 22.

14. Press safety stop (21) and **install bolt (19),** washer (18) and nut (17). **Torque nut to 120 inch-pounds.**



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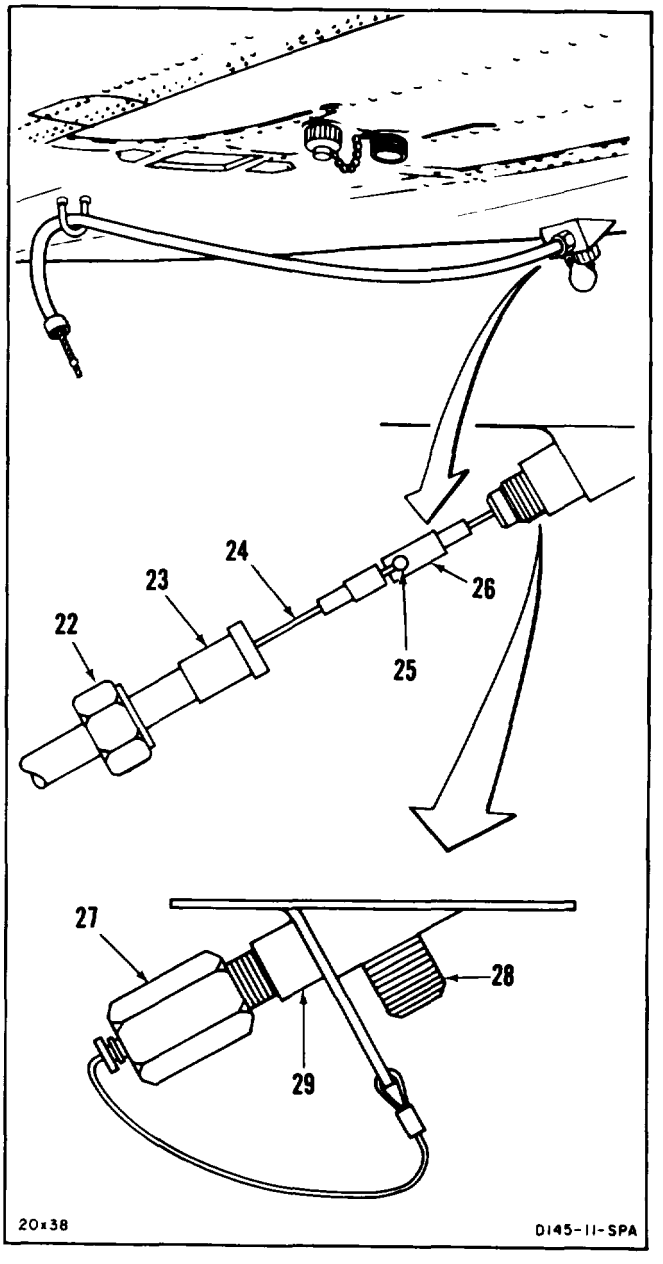
16-23 REMOVE FORWARD OR AFT CARGO HOOK (Continued)

15. Loosen nut (22).

16. Slide sleeve (23) down cable (24).

17. Remove cable ball end (25) from inner cable attachment (26). **Remove sleeve (23) and cable (24).**

18. Remove cap (27) from stowage fitting (28). Install cap on fitting (29).



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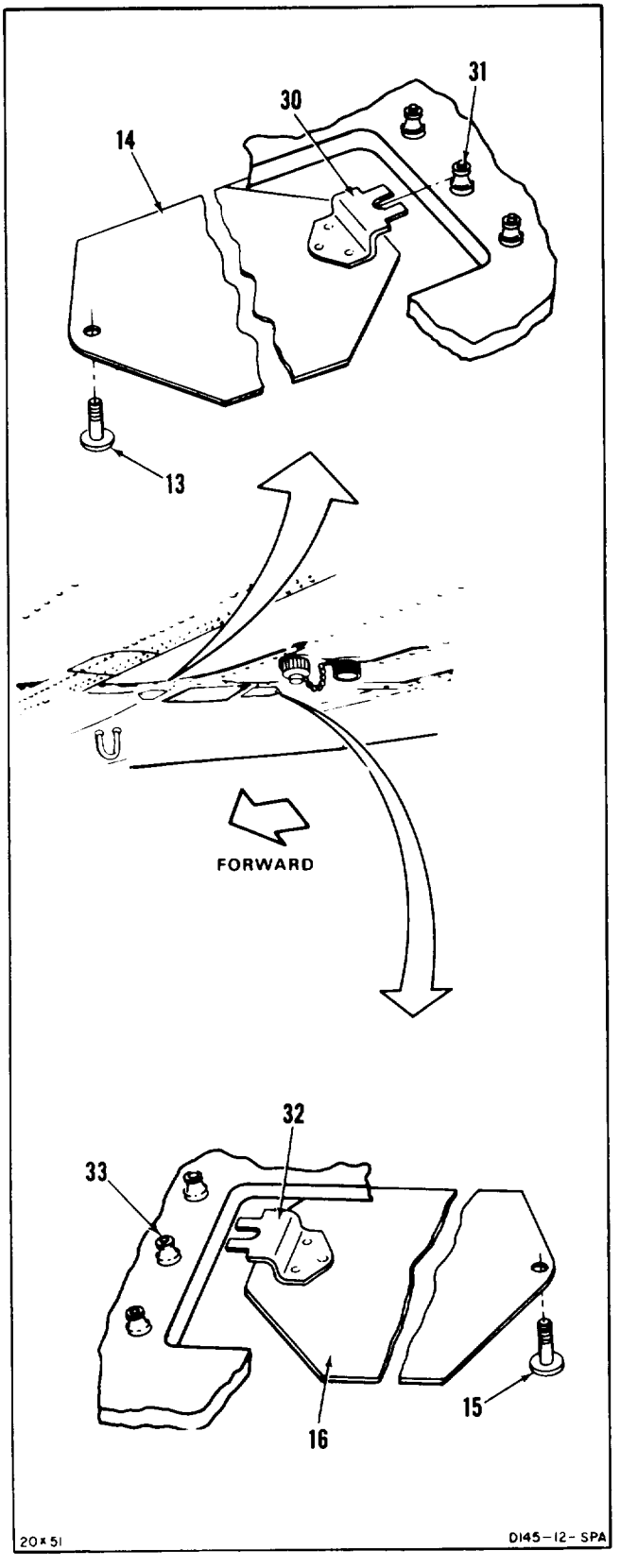
16-23 REMOVE FORWARD OR AFT CARGO HOOK (Continued)

19. **Position forward access plate (14)** over forward hole in fuselage with clip slot (30) around rivet tail (31).
20. **Install screw (13).**
21. **Position aft access plate (16)** over aft hole in fuselage with clip slot (32) around rivet tail (33).
22. **Install screw (15).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-24 DISASSEMBLE AND INSPECT FORWARD OR AFT CARGO HOOK (AVIM)

INITIAL SETUP

Applicable Configurations:
All

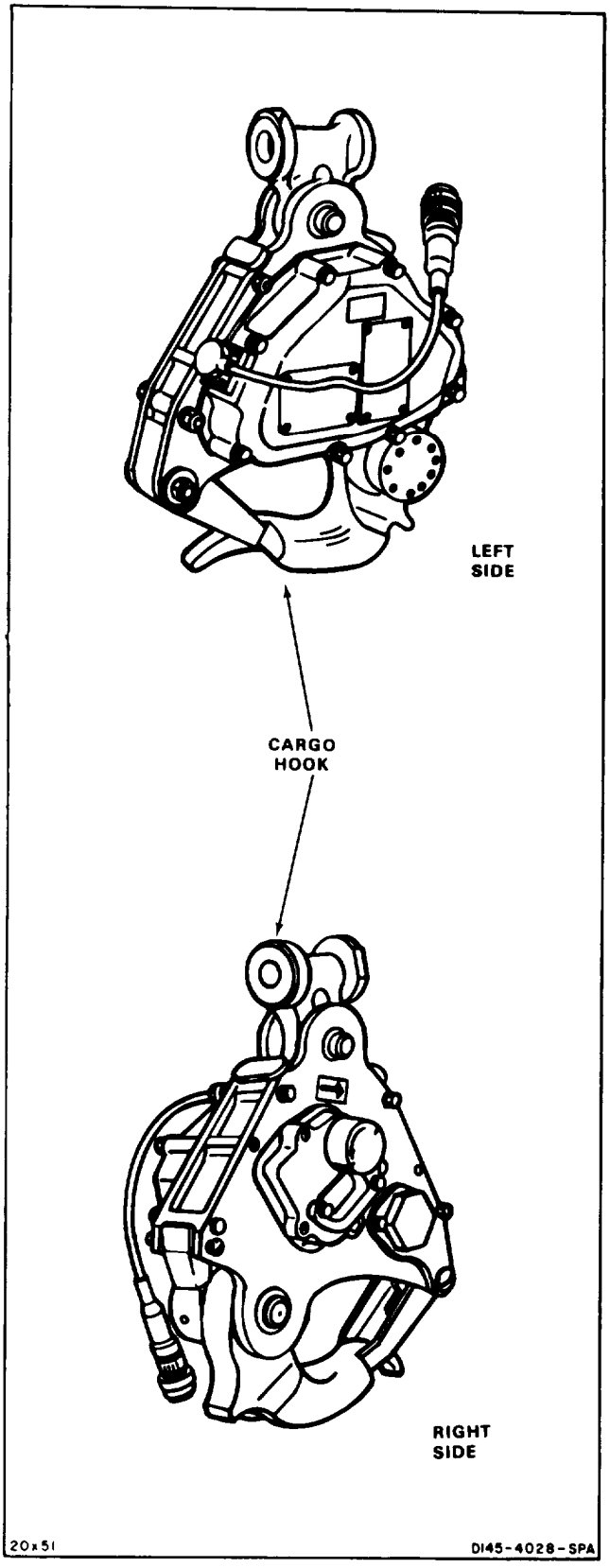
Tools:
Electrical Instrument Shop Set,
NSN 4920-00-165-1453
Tool Crib Shop Set,
NSN 4920-00-472-4183
Sheet Metal Shop Set,
NSN 4920-00-166-5505
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Aircraft Technical Inspection Tool Kit,
NSN 5180-00-323-5114
Contact Insertion/Extraction Tool (M83723/31-16
Arbor Press
Crowfoot Attachment, 1 15/16-inch
Brass, Round Stock, 1/8-inch X 6-inches

Materials:
Cloths (E120)
Paper Tags (E264)

Personnel Required:
44E10 Machinist
67U20 Medium Helicopter Repairer
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1500-322-24

Equipment Condition:
Off Helicopter Task



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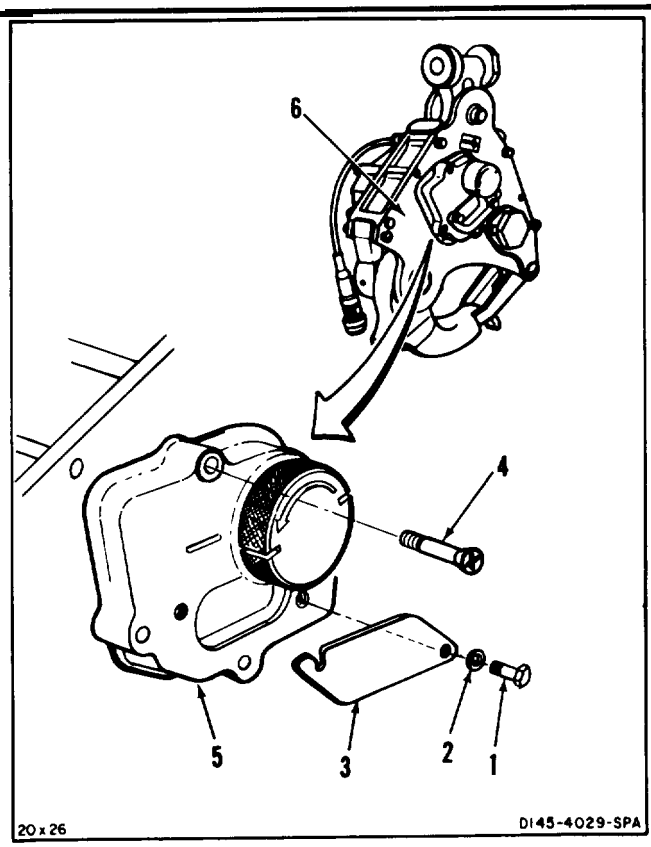
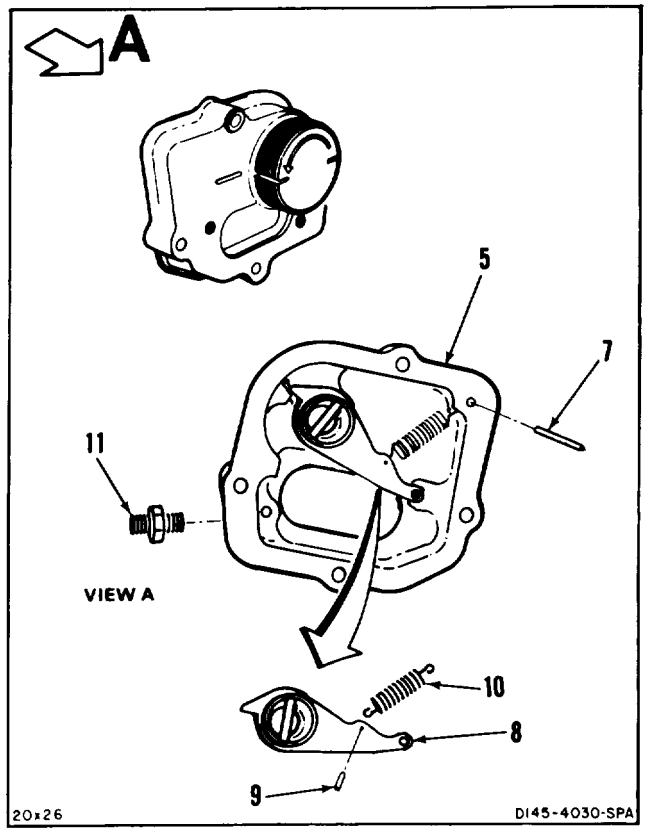
16-24 DISASSEMBLE AND INSPECT FORWARD OR AFT CARGO HOOK (AVIM) (Continued)

1. Remove lockwire and **remove** two bolts (1), washers (2), and **inspection window (3).**
2. **Remove** four screws (4). Remove **cover (5)** from hook (6).

2.1. Inspect window (3) and cover (5). There shall be no cracks.



3. **Remove** pin (7) and **arm (8)** from cover (5).
4. **Remove** pin (9) and **spring (10)** from arm (8).
5. **Remove cable adapter (11)** from cover (5).



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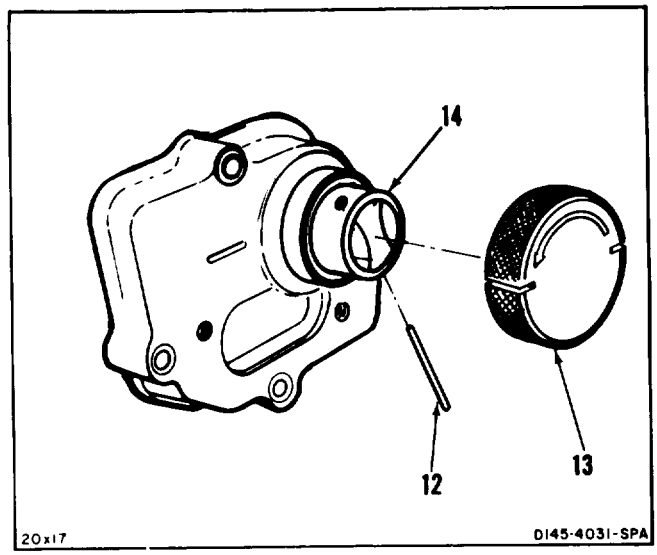
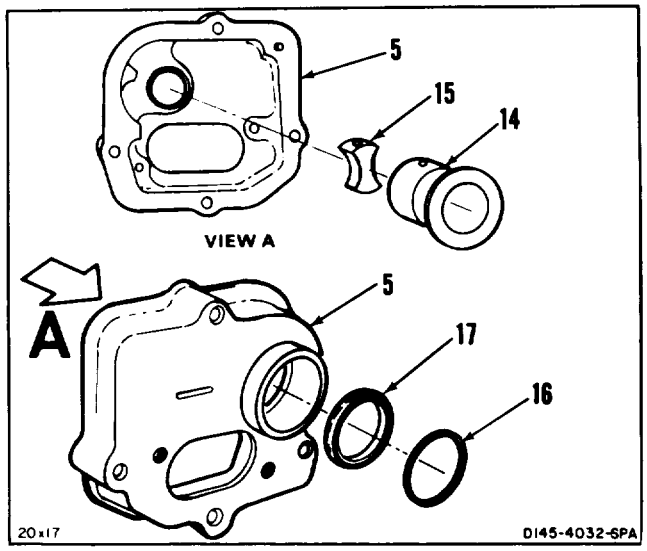
16-24 DISASSEMBLE AND INSPECT FORWARD OR AFT CARGO HOOK (AVIM) (Continued)

6. **Remove** pin (12) and **knob (13)** from knob retainer (14). Use 1/8-inch brass rod.



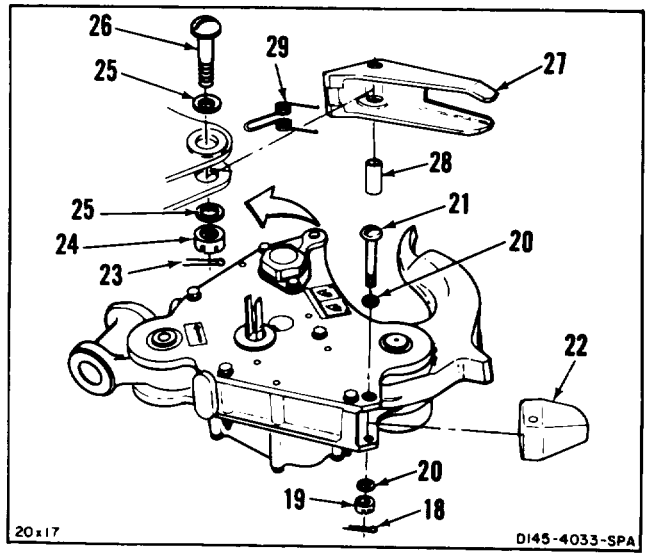
7. **Remove knob retainer (14)** and retainer plug (15) from cover (5),
8. **Remove** retaining ring (16) and **seal (17).**



NOTE

Bumper is fit tight.

9. **Remove** cotter pin (1 8), nut (19), two washers (20), bolt (21), and **bumper (22).**
9.1. **Inspect bumper** (22). There shall be no loss of material.
10. **Remove** cotter pin (23), nut (24), two washers (25), bolt (26), and keeper (27).
10.1. **Inspect keeper (27).** There shall be no cracks.
11. **Remove bushing (28) and spring (29)** from keeper (27).



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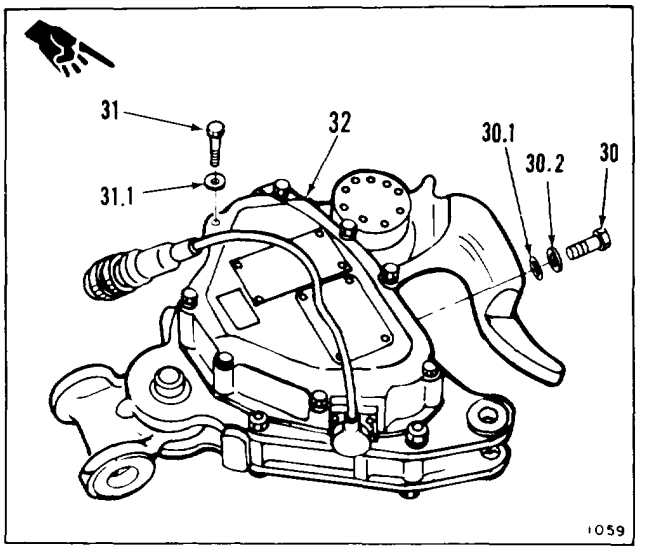
16-24 DISASSEMBLE AND INSPECT FORWARD OR AFT CARGO HOOK (AVIM) (Continued)

12. **Remove** lockwire, **bolt (30),** packing (30.1) and washer (30.2).

12.1. **Remove eight bolts (31)** and washers (31.1) from cover (32).



NOTE

Wires are identified at manufacture, Before disconnecting any wire, make sure wire is identified.

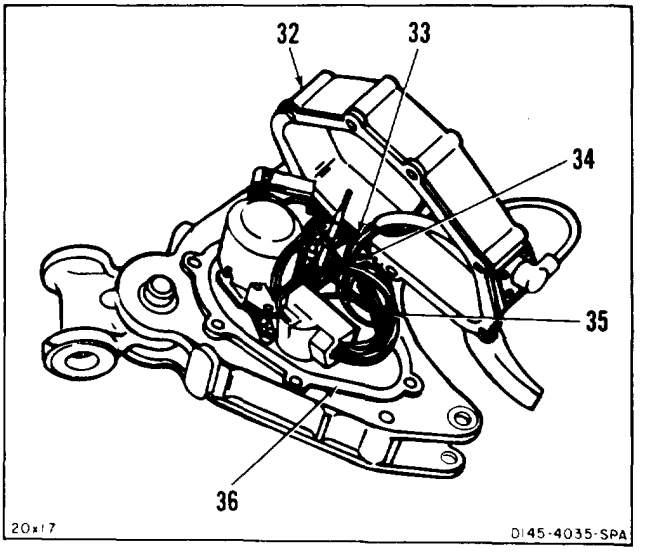
13. Raise cover (32).

14. **Disconnect eight harness wires (33)** from modules (34), Use contact insertion/extraction tool.

15. Remove strap (35).

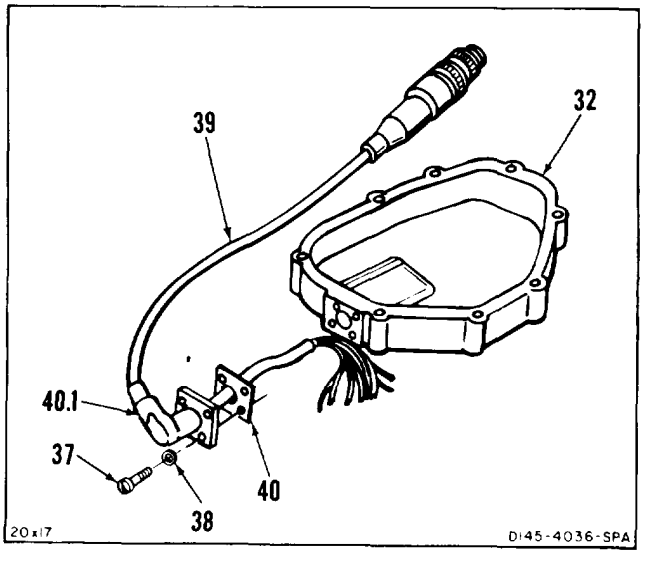
16. Remove cover (32) and gasket (36),

16.1. **Inspect cover (32).** There shall be no cracks.



17. Remove lockwire, four screws (37), and four washers (38). **Remove wire harness (39)** and gasket (40) from cover (32).

17.1. Inspect boot (40.1). There shall be no cracks, cuts, or other damage that lets moisture into harness (39).



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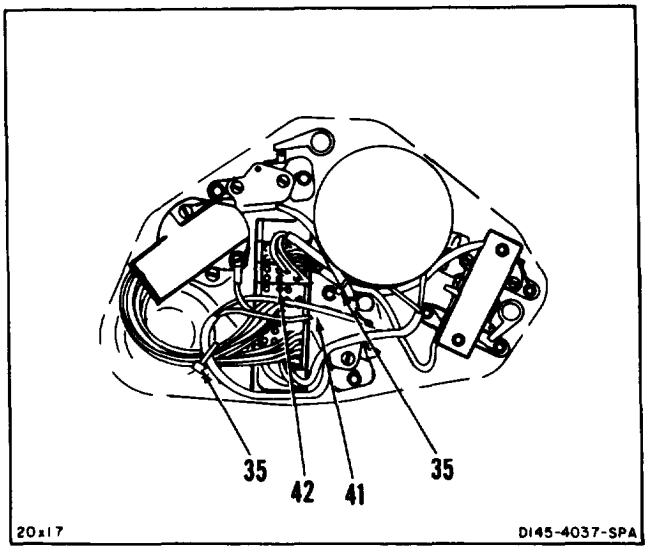
16-24 DISASSEMBLE AND INSPECT FORWARD OR AFT CARGO HOOK (AVIM) (Continued) 16-24

18. **Disconnect** all **wires (41)** from six modules (42). Use contact insertion/extraction tool. Remove two remaining straps (35).



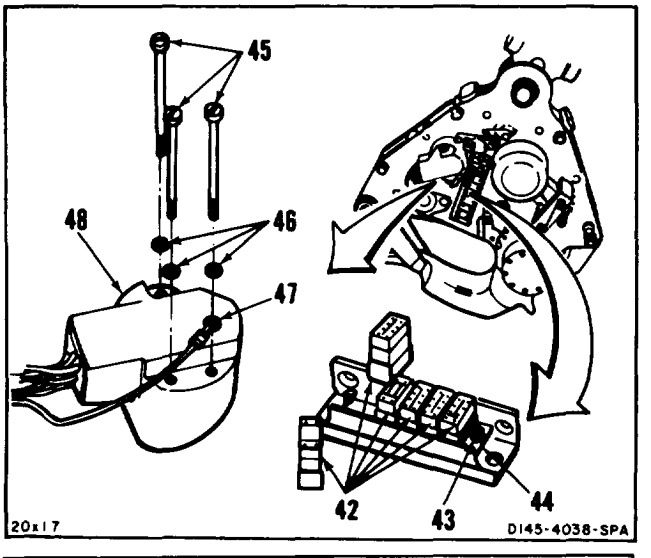
NOTE

Lock bar does not come off module rail.

19 **Loosen screw (43) and slide lock bar (44)** away from modules (42).

20 Tag and **remove six modules (42).** Slide modules to right and lift out.

21. **Remove** lockwire, three screws (45), three washers (46), **ground wire (47) and relay (46).**

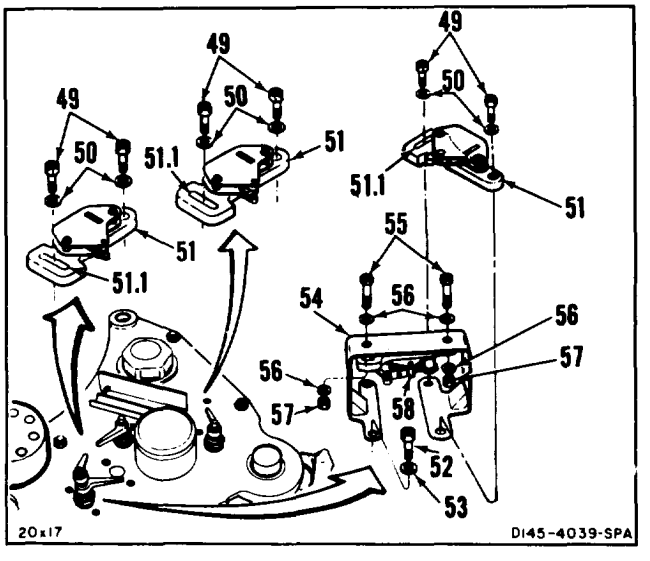


22. **Remove** lockwire, six screws (49), six washers (50), and **three switches (51).** Tag switches.

22.1. Inspect slots (51.1) in switches (51). There shall be no distortion.

230. **Remove** lockwire, two screws (52), two washers (53), and **bracket (54).**

24. Remove lockwire, two screws (55), four washers (56), two nuts (57), and **switch (58).** Tag switch.



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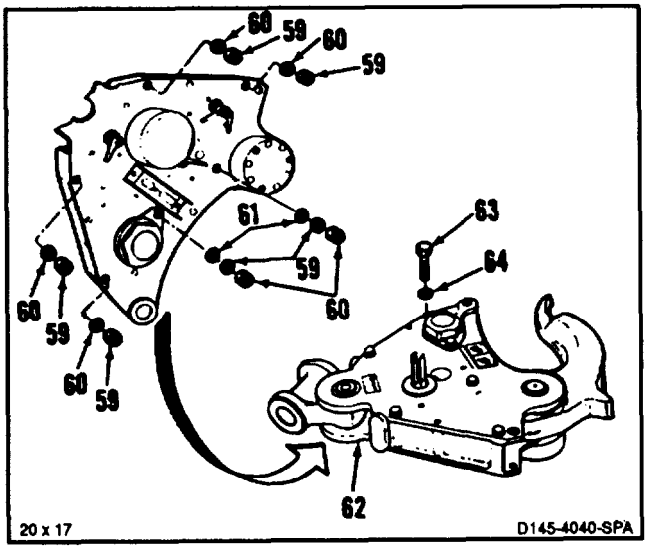
16-24 DISASSEMBLE AND INSPECT FORWARD OR AFT CARGO HOOK (AVIM) (Continued)

25. Remove six nuts (59), six washers (60), and two packings (61).

WARNING

Do not let cases separate when turning hook over, to prevent damage to equip ment, or injury to personnel.

26. Turn hook (62) over and remove six bolts (63) and washers (64).



27. Work front plate (65) loose from rear plate (66).

28. Remove front plate (65).

29. Remove fitting (67) from rear plate (66).

30. Remove two bumpers (68) from fitting (67).

INSPECT

30.1. Measure outside diameter of boss (68.1) on side of fitting (67). Diameter of large boss shall not be less than 1.119 inch. Diameter of small boss shall not be less than 1.056 inch

30.2. Measure inside diameter of bushing (68.2) in fitting (67). Diameter shall not be more than 1.022 inch

NOTE

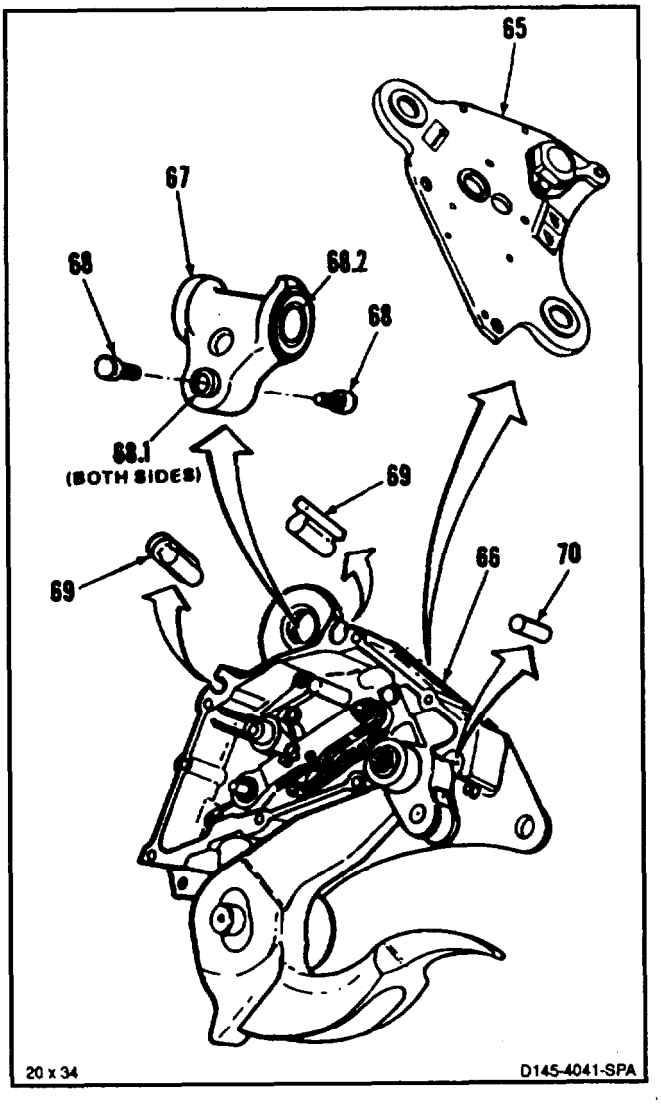
Do not remove bushing unless worn.

30.3. Remove bushing (66.2) from fitting (67) if needed. Use arbor press.

31. Remove two bumpers (69) from rear plate (66).

32. Remove latch bumper (70) from rear plate (66).

32.1. Inspect bumpers (68,69, and 70). There shall be no cracks or loss of material.



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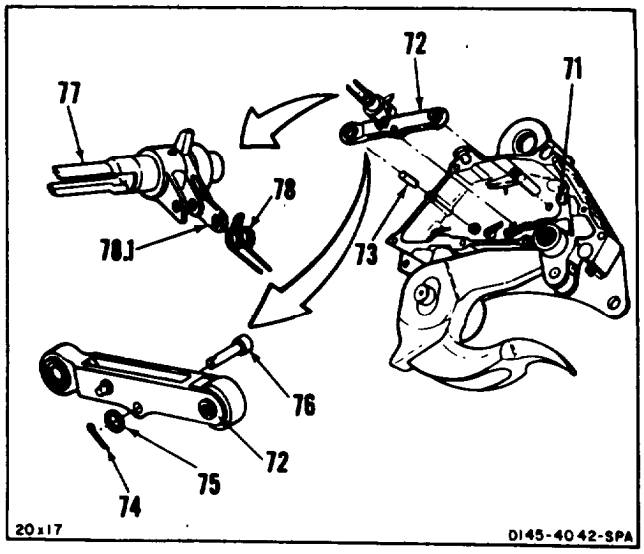
33. Hold latch (71) away from lever (72). **Remove lever and pivot pin (73).** Release latch.

34. **Remove** cotter pin (74). washer (75). and **clevis pin (76).**

35. **Remove shaft (77)** and spring (78) from lever (72). Do not remove link (78.1) from shaft (77).



INSPECT

35.1. **Check free play** between link (78.1) **and arms of shaft (77).** Total play shall be 0.025 to 0.035 inch.

35.2. **Check play of link (78.1)** on its pivot pin. Play shall be between 0.004 and 0.008 inch.

36. Disconnect spring (79) from retainer pin (80) **and remove latch (71).**

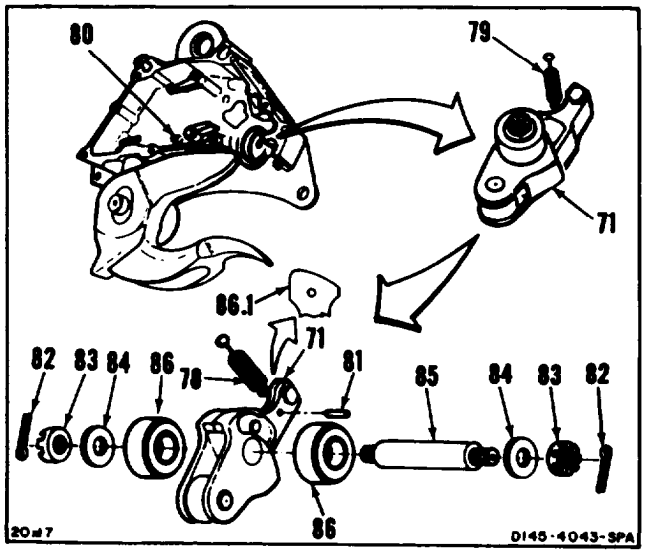
37. **Romove** lockwire, pin (81). and **spring (78) from latch (71).** Do not disassemble latch further.

38. Remove two cotter pins (82), nuts (83), and washers (84) from shaft (85). **Remove two bearings (86)** (TM 55-1500-322-24).

38.1. Inspect bearings (TM 55-1500-322-24).

39. Remove shaft (85) from latch (71).

39.1. Inspect surface (86.1). Surface shall be flat, with no gouges or depressions.



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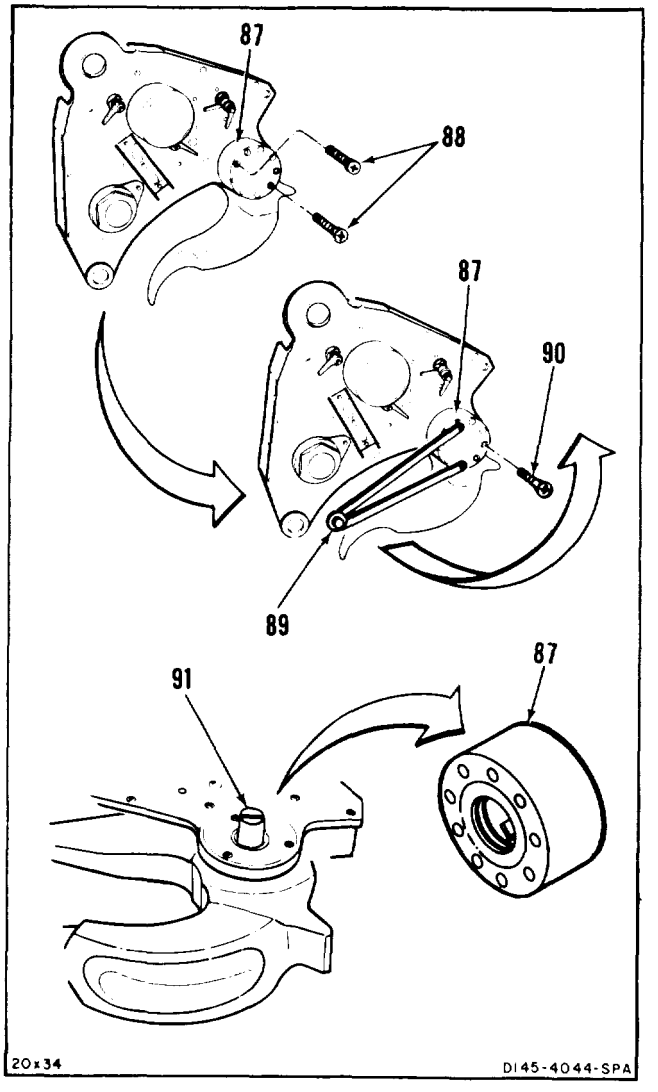
16-24 DISASSEMBLE AND INSPECT FORWARD OR AFT CARGO HOOK *(AVIM)* (Continued)

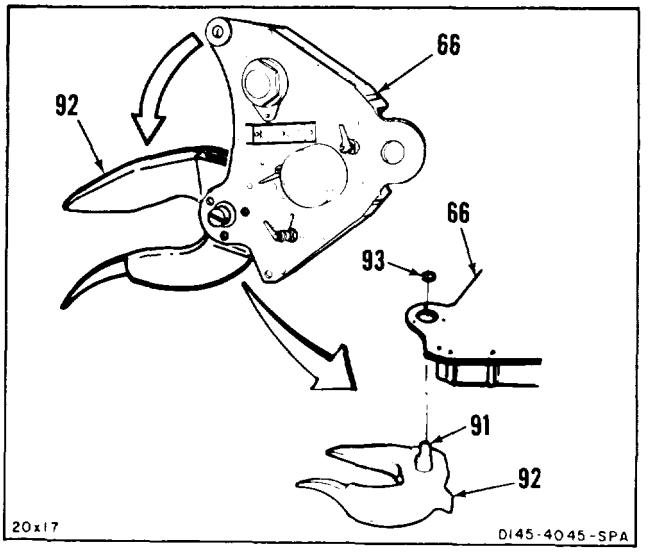
WARNING

Load beam spring return is preloaded. Be careful when removing three retaining straws to prevent injury to personnel or damage to equipment.

40. **Remove spring return (87)** as follows:
    a. Remove two screws (88).
    b. Position pin spanner (89) as shown,
    c. Relieve tension against third screw *(90)* and remove screw,
    d. Rotate spring return (87) counterclockwise until spring tension is relieved,
    e. Remove spring return (87) from trunnion shaft (91).



41. Rotate load beam (92) away from rear plate (66).
42. **Remove** retaining ring (93) and **rear plate (66)** from trunnion shaft (91).



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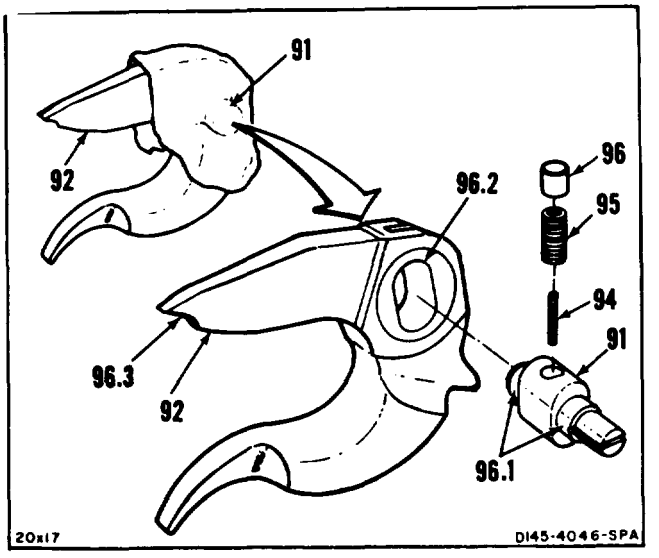
WARNING

Trunnion shaft contains spring loaded plunger. Be careful when removing springs and plunger, to prevent injury to personnel or damage to equipment.

43. **Release springs (94 and 95) and plunger (96)** as follows:
    a. Position load beam (92) upright. Place several layers of cloth over trunnion shaft (91) and load beam (92). Use cloth (E120).
    b. Tap one end of trunnion shaft (91) until plunger (96) and two springs (94 and 95) are released. Use soft faced hammer. Remove cloths after plunger is released.
44. **Remove trunnion shaft (91)** from load beam (92). **Remove springs (94 and 95) and plunger (96)** from trunnion shaft (91)
44.1. **Inspect bearing surfaces of trunnion shaft (91) and load beam (92).** There shall be no cracks, nicks, or gouges. Insert trunnion shaft in load beam. There shall be no binding.

INSPECT

44.2. **Measure outside diameter of trunnion shaft (91)** at two places (96.1). Diameter shall not be less than 0.995 inch.



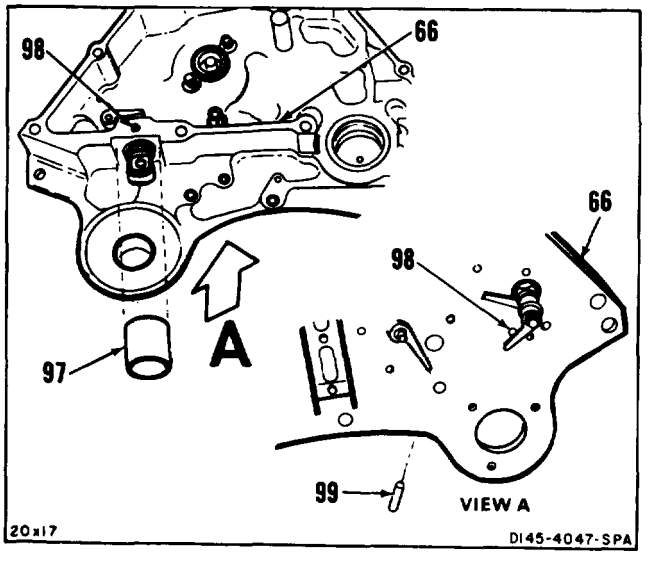
44.3. **Measure distance from tip of load beam (92) to farthest flat of trunnion shaft bore (96.2).** Distance shall not be less than 7.219 inch.

44.4. **Inspect tip (96.3)** of load beam (92). Tip shall not be scraped or gouged.

45. **Remove dust cover (97)** from rear case (66).

46. Remove sealant from hole (98). Use hand held No. 30 drill bit.

47. **Remove pin (99)** from hole (98). Use 1/8-inch pin punch. Drive pin from outer side of rear plate (66).



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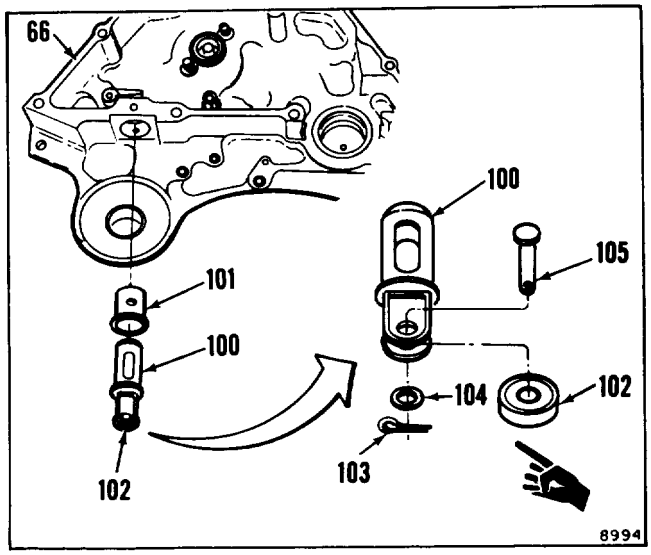
48. **Remove plunger (100) and bushing (101)** from rear plate (66).

48.1. Turn bearing (102) at end of plunger (100). Wheel shall turn smoothly, with no sticking or binding.

49. If bearing (102) sticks or binds, **remove** cotter pin (103), washer **(104),clevis pin (105), and bearing** (102) from plunger 100).

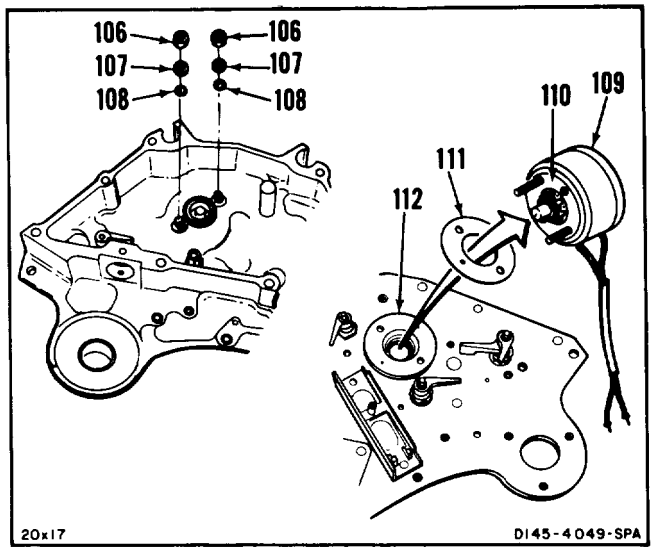


50. Remove two nuts (106), washers (107), and packings (108). Do not remove solenoid (109) at this time.

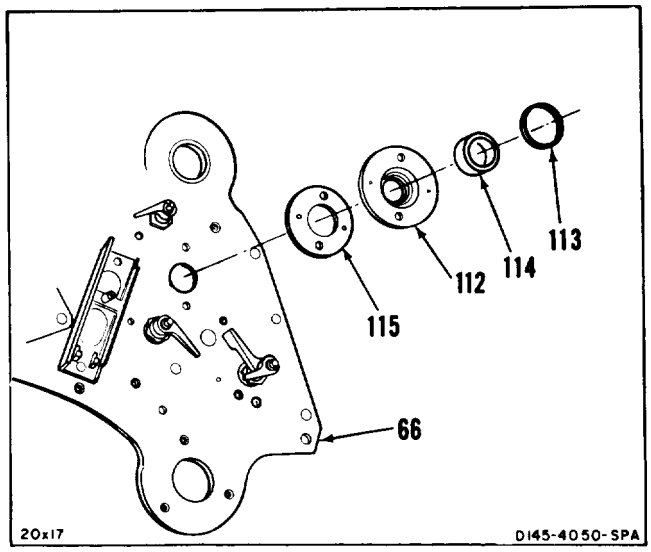
CAUTION

Solenoid and spring adjustment plate must not separate. Solenoid spring tension setting will be destroyed if separation occurs.

51. Separate plate (110) from gasket (111). Use knife.
52. **Remove solenoid (109)** with spring adjustment plate (110).
53. Remove gasket (111) from shaft support (112).



54. **Remove shaft support (112).** Tap out support from inside rear plate (66). Use soft faced hammer.
55. Remove retainer (113) and seal (114) from shaft support (112).
56. Remove gasket (115).



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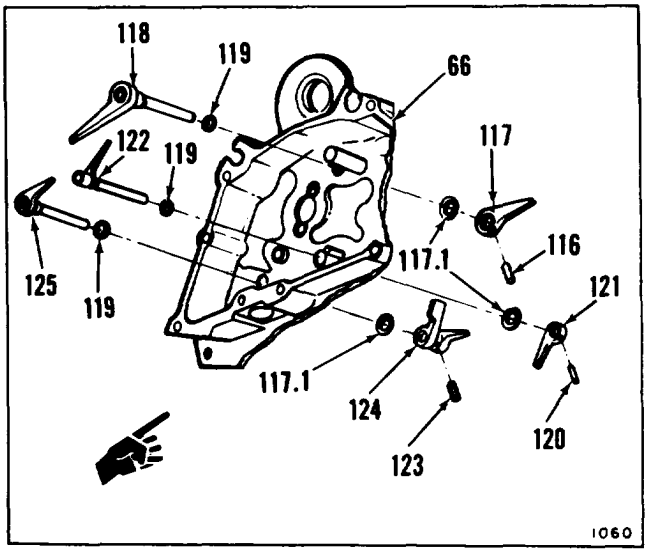
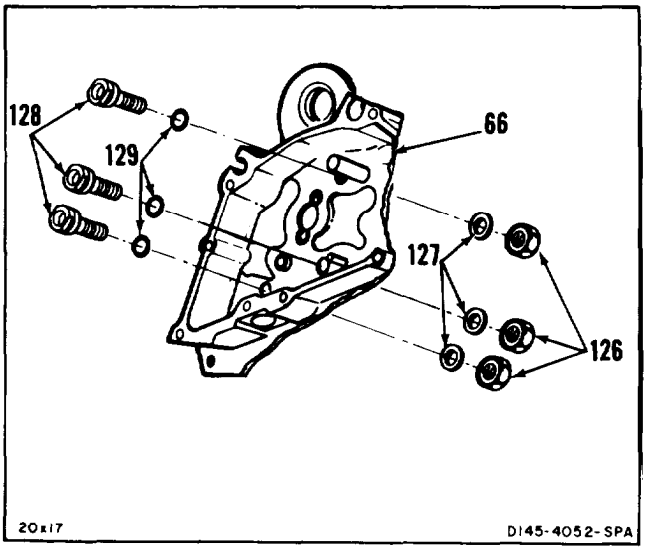
57. **Remove** lockwire, pin (116), and **arm (117)** and washer (117.1) if installed. **Remove shaft (118)** from rear plate (66). Remove packing (119) from shaft. Tag arm and shaft together.
58. **Remove** lockwire, pin (120), and **arm (121)** and washer (117.1) if installed. **Remove shaft (122)** from rear plate (66). **Remove packing (119)** from shaft. Tag arm and shaft together.
59. **Remove** ockwire, pin (123), and **arm** (124) and washer (117.1) if installed. **Remove shaft (125)** from rear plate (66). **Remove** packing (119) from shaft. Tag arm and shaft together.

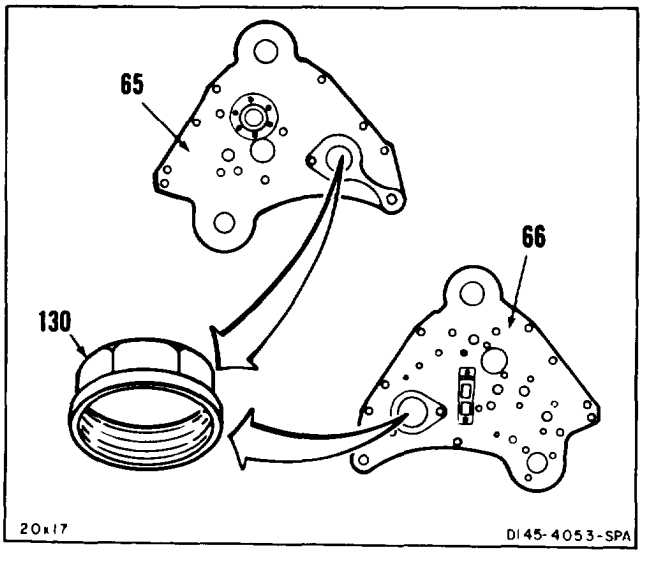
59.1. Inspect shafts (118, 122, and 125). Shafts shall not be bent. No straightening is allowed.



60. Remove three nuts (126) and washers (127) from inserts (128). **Remove inserts** from rear plate (66).
61. Remove packings (129) from inserts (128).



62. **Remove two caps (130),** one from front plate (65), one from rear plate (66). Use crowsfoot attachment.



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63. **Measure inside diameter of four bushings (131 thru 134), at two places 90 degrees apart. Average diameter shall not exceed the following;**
    a. Bushing (131) – 1.131 inch.
    b. Bushing (132) – 0.439 inch.
    c. Bushing (133) – 1.504 inch.
    d. Bushing (134) – 1.003 inch.

NOTE

Remove bushings only if worn.

64. **Remove four bushings (131 thru 134)** as needed from rear plate (66). Use arbor press.
65. **Remove stop pin (135)** and retainer pin (136) from rear plate (66).

INSPECT

66. **Measure inside diameter of four bushings (137 thru 140) at two places 90 degrees apart. Average diameter shall not exceed the following**
    a. Bushing (137) – 1.068 inch .
    b. Bushing (138) – 1.003 inch .
    c. Bushing (139) – 0.439 inch .
    d. Bushing (140) – 1.504 inch .

NOTE

Remove bushings only if worn.

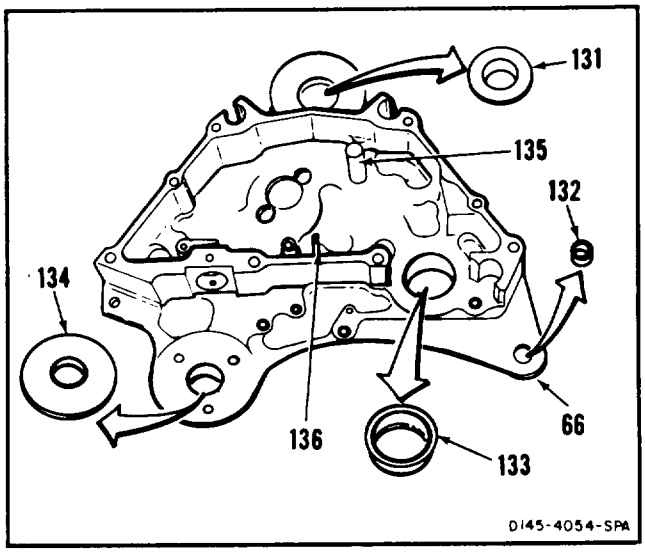
67. **Remove four bushings (137 thru 140)** from front plate (65). Use arbor press.
68. Inspect six rivets (141). Rivets shall not be loose or cracked.

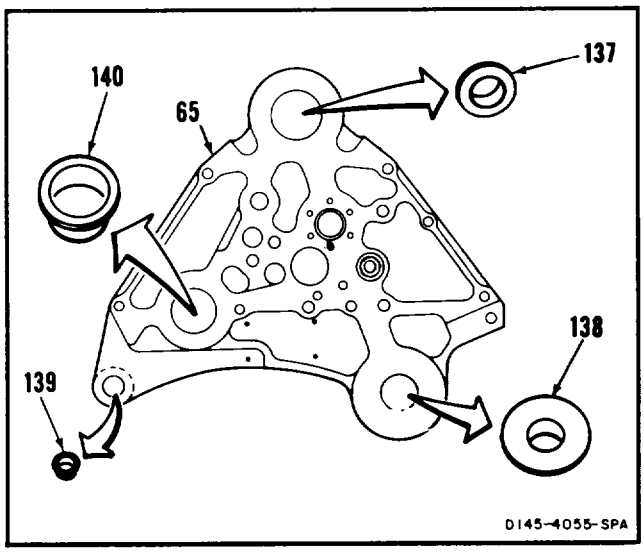
NOTE

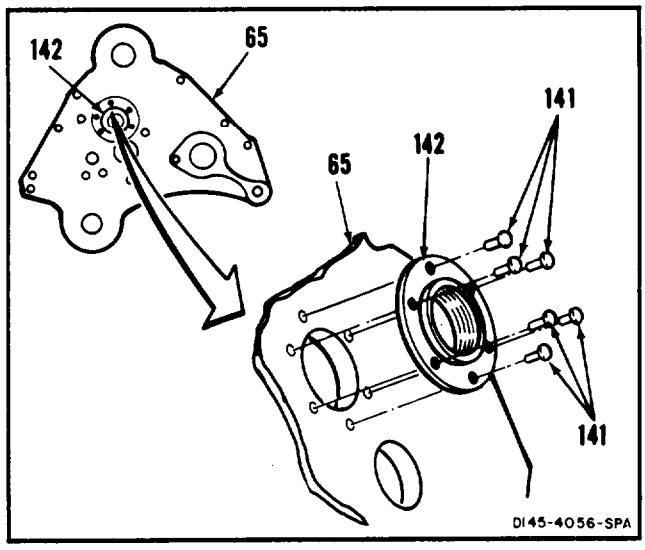
Remove rivets only if loose or cracked.

69. Turn front plate (65) over and remove six rivets (141) as needed from shaft support (142). Use No. 40 drill.
70. **Remove shaft support (142)** from front plate (65).

FOLLOW-ON MAINTENANCE:
None







END OF TASK

16-25 REMOVE FORWARD OR AFT CARGO HOOK THREADED INSERTS (AVIM)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Machine Shop Set,
NSN 4920-00-405-9279

Materials:
None

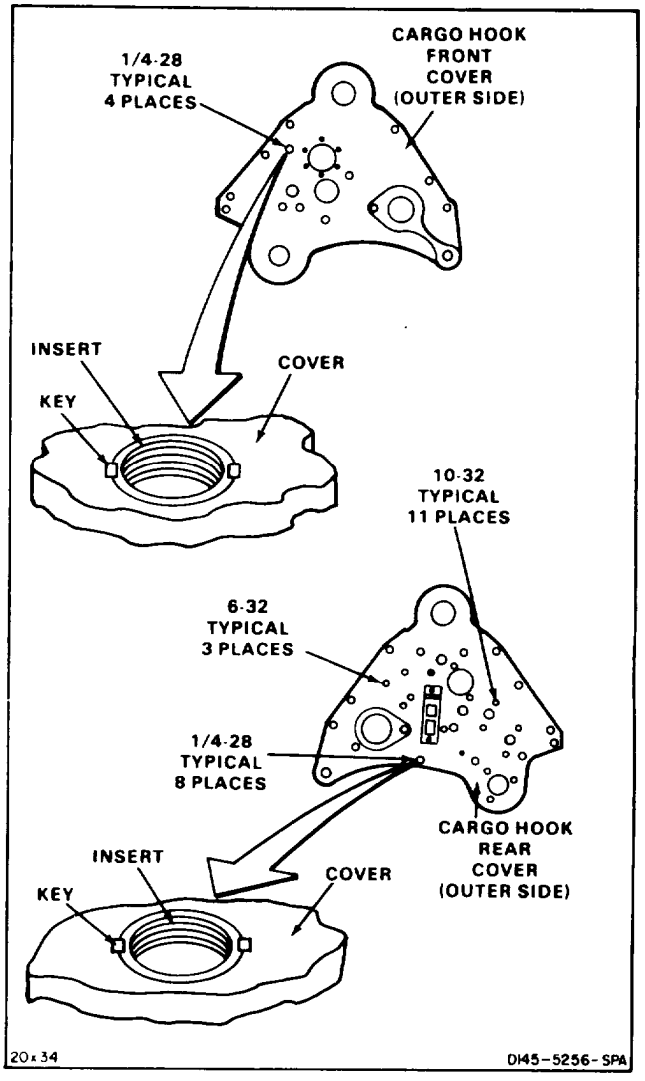
Personnel Required:
44E20 Machinist

Equipment Condition:
Off Helicopter Task
Forward or Aft Cargo Hook Disassembled (Task 16-24)

General Safety Instructions:

WARNING

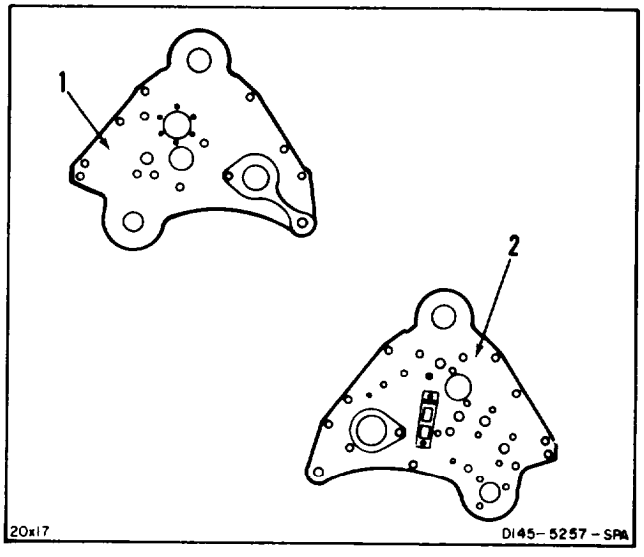
Use eye protection when drilling inserts and breaking keys.



NOTE

Procedure IS same for removal of threaded inserts from front or rear cover.

1. Position cover (1 or 2) outside up.



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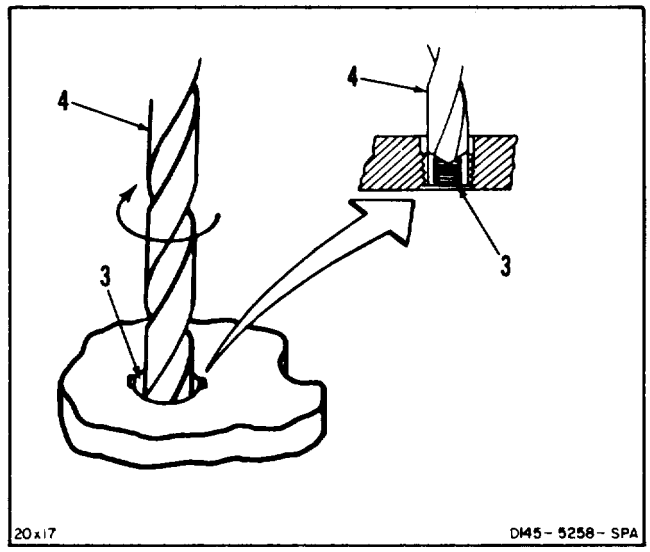
16-25 REMOVE FORWARD OR AFT CARGO HOOK THREADED INSERTS (AVIM) (Continued)

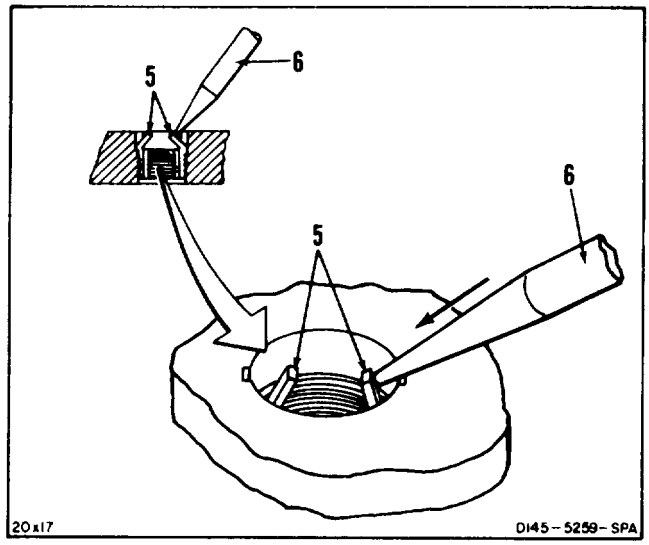
2. **Drill center of faulty insert (3).** Use drill bit (4) listed. Drill to depth listed. Use drill press.

Insert size	Drill Bit size	Depth
6-32	No. 21 in.	3/32 in,
10-32	7/32 in.	5/32 in.
1 /4-28	9/32 in.	3/16 in.

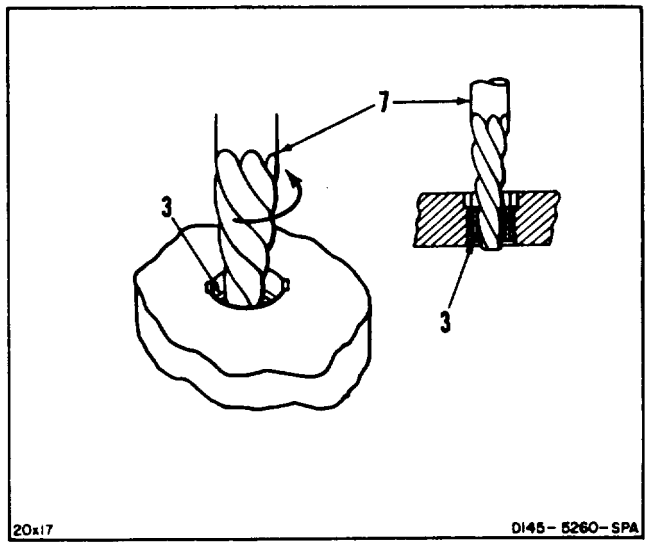


3. **Bend keys (5) inward.** Use drift pin (6).

4. **Break off keys (5).** Use drift pin (6).



5. **Remove insert (3).** Use screw extractor (7). Turn counterclockwise,



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-26 INSTALL FORWARD OR AFT CARGO HOOK THREADED INSERTS (AVIM)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Machine Shop Set,
NSN 4920-00-405-9279
Insert Installation Tool, TD428L
Insert Installation Tool, TD1032L
Insert Installation Tool, TKNC06
Source of Low Pressure Compressed Air

Materials:

Brush (E86)
Cloths (E120)
Dry Cleaning Solvent (E162)
Gloves (E184.1)
Sealant (E335)
Tongue Depressor (E424)
Epoxy Primer (E292)

Parts:

Inserts

Personnel Required:

Machinist
Inspector

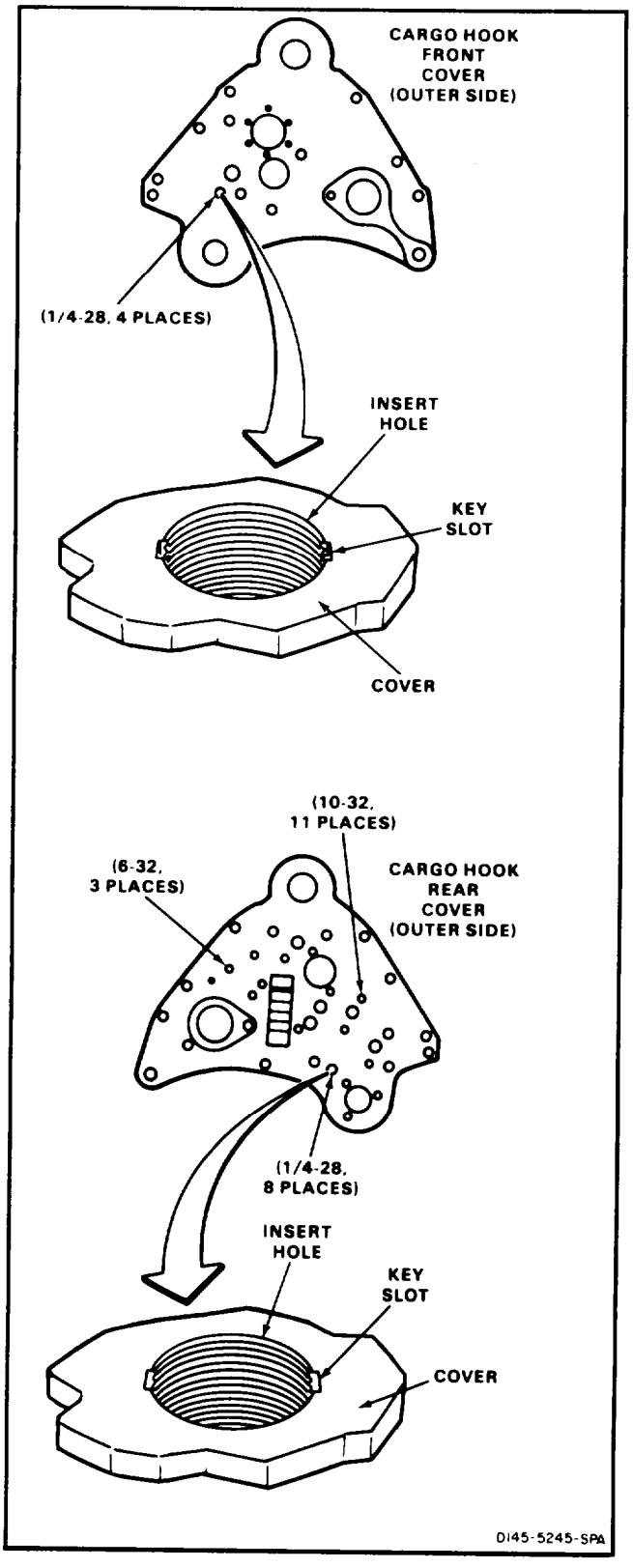
General Safety Instructions:

WARNING

Dry cleaning solvent (E162) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

WARNING

Sealant (E335) is toxic and can cause dermatitis. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



NOTE

Procedure is not same to install inserts in front or rear cover. If 1/4-28 insert in front cover is to be installed, go to step 1. If 10-32 or 1/4-28 insert in rear cover is to be installed, go to step 10. If 6-32 insert in rear cover is to be installed, go to step 22.

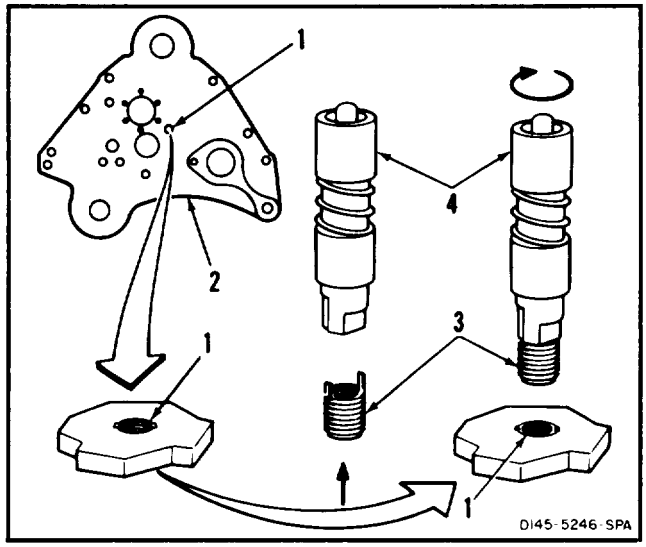
INSTALL 1/4-28 INSERT IN FRONT COVER

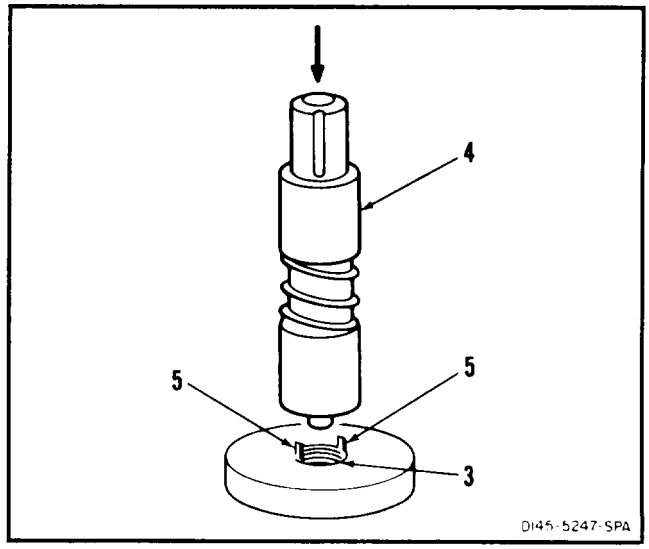
1. Clean any debris from hole (1) in front cover (2). Use dry cleaning solvent (E162) and low pressure air. Wear gloves (E184.1) and goggles.

WARNING

Epoxy primer (E292) is flammable and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from heat or open flame. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

2. Coat hole (1) with epoxy primer (E292). Use brush (E86). Wear gloves (E184.1).
3. Position insert (3) on tool TD428L (4).
4. Install insert (3) in hole (1) while primer is wet.
5. Remove tool (4) from insert (3), Turn tool over, 180 degrees and set over protruding keys (5) of insert.
6. Drive down keys (5). Use arbor press or hammer.
7. Remove tool (4).





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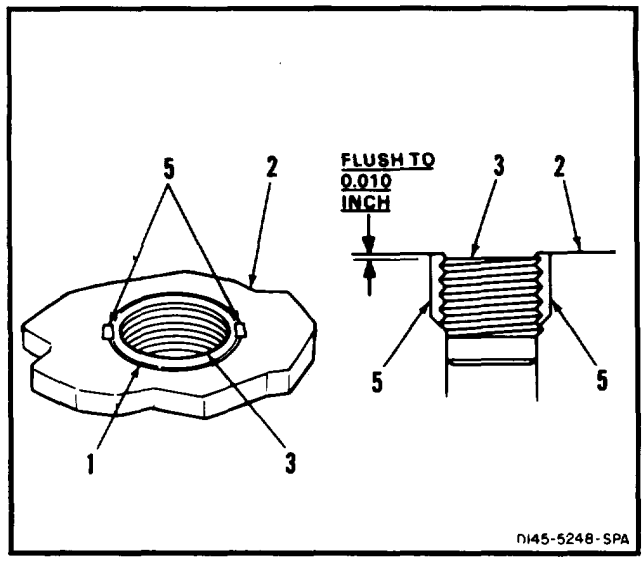
8. Remove excess primer from around insert hole (1) at both inside and outside of front cover (2). Use cloth (E 120) moist with dry cleaning solvent (E162). Wear gloves (E184.1) and goggles.

9. Check insert (3) and keys (5). Insert and keys shall be flush to 0.010 inch below outside surface of front cover (2).



INSPECT

INSTALL 10-32 OR 1/4-28 INSERT IN REAR COVER

10. If insert hole *(6)* in rear cover (7) has sealant inside rear cover, scrape sealant away.
11. Clean any debris from inside and around insert hole (6) at both inside and outside rear cover (7). Use dry cleaning solvent (E162) and low pressure compressed air. Wear gloves (E184.1) and goggles.

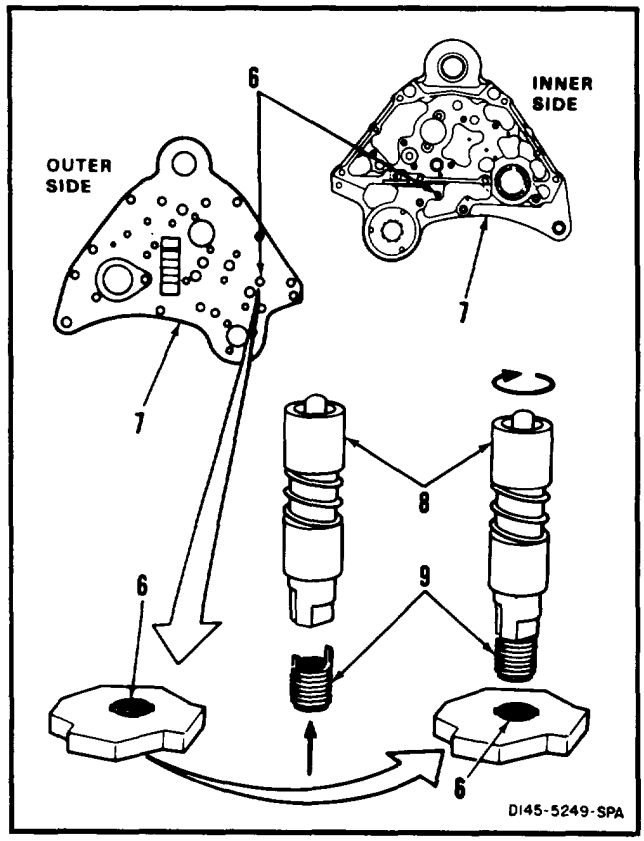
NOTE

- Avoid violent agitation of sealant mix, it reduces working time of sealant.
- Do not fill threaded portion of insert with sealant.

12. Coat insert hole (6). Use sealant (E335) and brush (E86). Wear gloves (E184.1).
13. Select insert tool (8) as follows:

INSERT SIZE	TOOL NO.
10-32TD1032L	
1/4-28	TD428L

14. Position insert (9) on tool (8).
15. **Install insert (9)** in hole (6) while sealant is wet.



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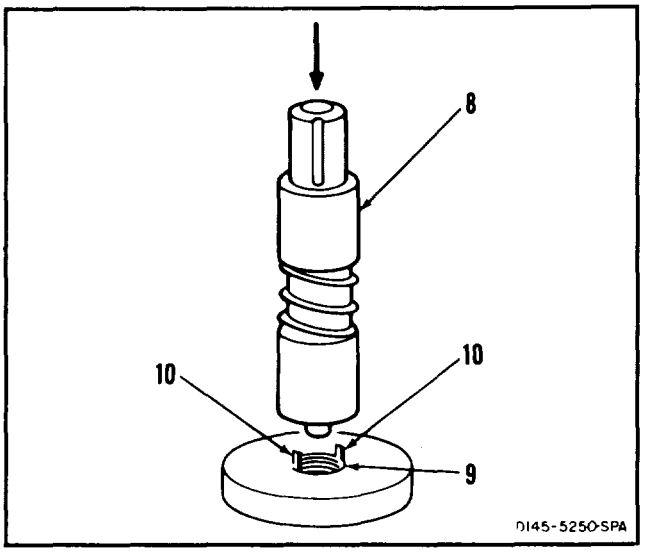
16. Remove tool (8) from insert (9), Turn tool over, 180 degrees and set over protruding keys (10) of insert.
17. **Drive down keys (10).** Use arbor press or hammer,
18. Remove tool (8).

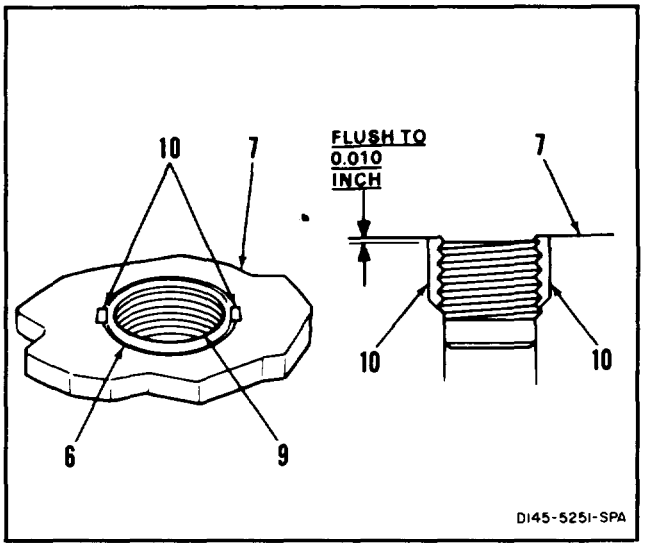


11. Remove excess sealant from around insert hole (6) at both inside and outside of rear cover (7). Use cloth (E120), moist with dry cleaning solvent (E162). Wear gloves (E184.1) and goggles,

20. Check insert (9) and keys (10). Insert and keys shall be flush to 0.010 inch below outside surface of rear cover (7).

INSPECT

21.When 10-32 insert is installed, go to step 31.



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INSTALLI 6-32 INSERT IN REAR COVER

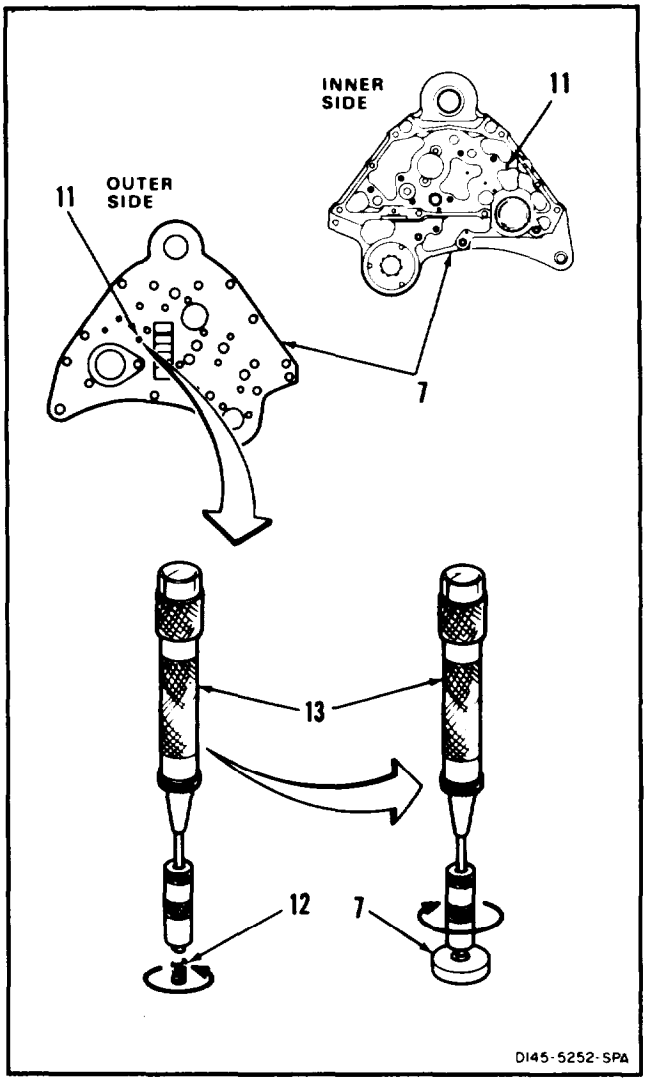
22. If insert hole (11) in rear cover (7) has sealant inside rear cover, scrape sealant away.

23. Clean any debris from inside and around insert hole (11) at both inside and outside rear cover (7). Use dry cleaning solvent (E162) and low pressure compressed air. Wear gloves (E184.1) and goggles.

24. Coat insert hole (11). Use sealant (E335) and brush (E86). Wear gloves (E184.1).

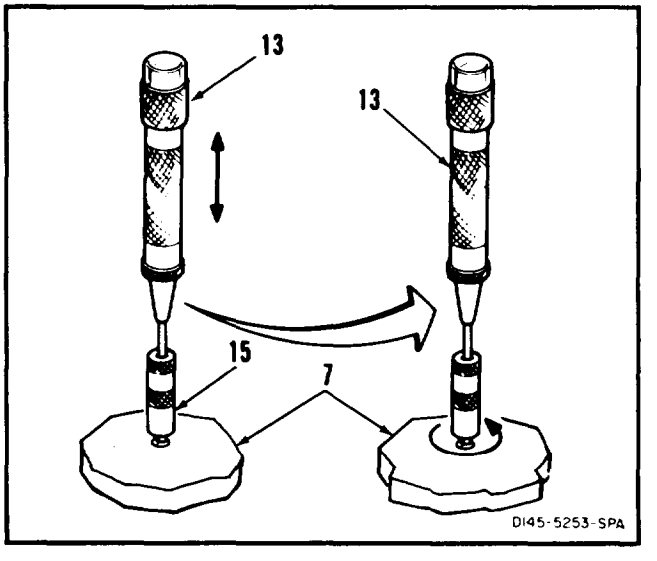
25. Install insert (12) on tool TKNC06 (13).

26. **Install insert (12) in rear cover (7)** with tool (13) by rotating bottom of tool clockwise until insert seats in cover. Install insert while sealant is wet.



27. **Depress handle of tool (13)** and let spring-loaded mechanism **drive down keys (15).** Repeat as necessary to drive down keys.

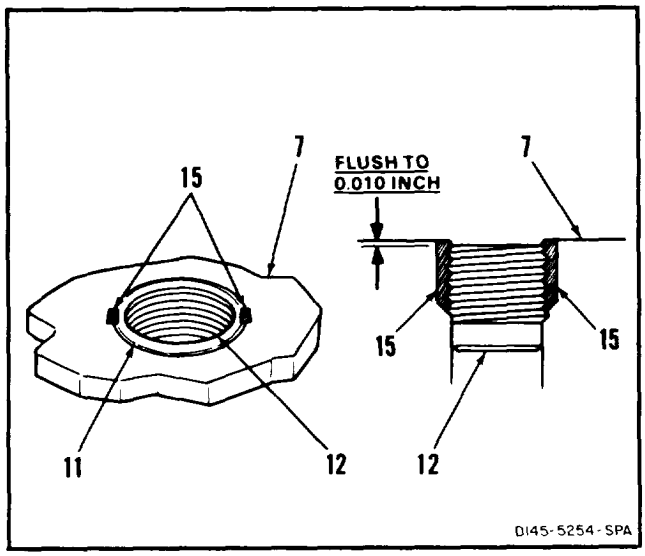
28. Turn bottom of tool (13) counterclockwise and remove tool from insert (12).



29. Remove excess sealant from around insert hole (11) at both inside and outside of rear cover (7). Use cloth (E120), moist with dry cleaning solvent (E162). Wear gloves (E184.1) and goggles.

30. Check insert (12) and keys (15). Insert and keys shall be flush to 0.010 inch below outside surface of rear case (7).

INSPECT



SEAL 6-32 OR 10-32 INSERT IN REAR COVER

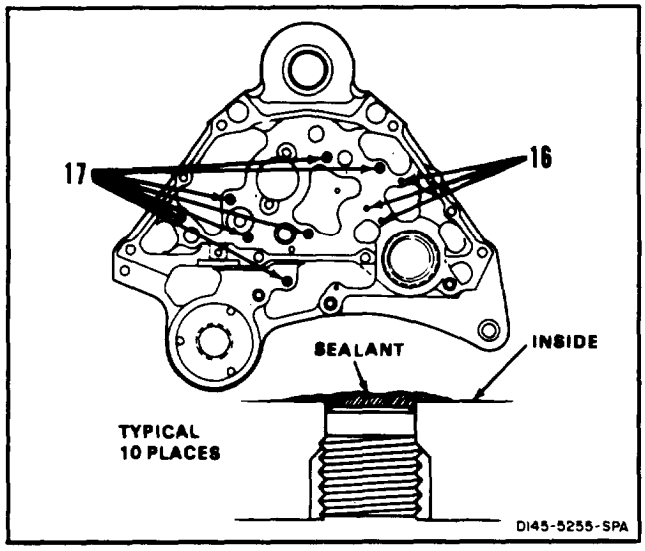
NOTE

- Avoid violent agitation of sealant mix. It reduces working time of sealant,
- Do not fill threaded portion of insert with sealant.
- Only inserts 6-32 or 10-32 are to be sealed,

31. Seal inner side of 6-32 inserts (16) or 10-32 inserts (17). Use sealant (E335). Wear gloves (E184.1).

INSPECT

FOLLOW-ON MAINTENANCE:
None



END OF TASK

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Instrument Shop Set, NSN 4920-00-165-1453
Tool Crib Shop Set, NSN 4920-00-472-4183
Sheet Metal Shop Set, NSN 4920-00-166-5505
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Self Clinching Strap Hand Tool, NSN 5120-00-781-7891
Contact Insertion/Extraction Tool (M83723/31-16)
Arbor Press
Crowfoot Attachment, 1 15/16-inch
Brass, Round Stock, 1/8-inch to 6 Inches
Torque Wrench, 0 to 50 Inch-Pounds
Torque Wrench, 30 to 150 Inch-Pounds

Materials:

Acetone (E20)
Adhesive (E43)
Adhesive, RTV108 (E57)
Cloth (E120)
Dry Film Lubricant (E238)
Lubricant (E238.1)
Gloves (E184.1)
Grease (E190)
Lockwire (E227 and E231)
Epoxy Primer (E292)
Sealant (E340.1)
Loctite 404 (E343)
Solvent (E413.4)

Parts:

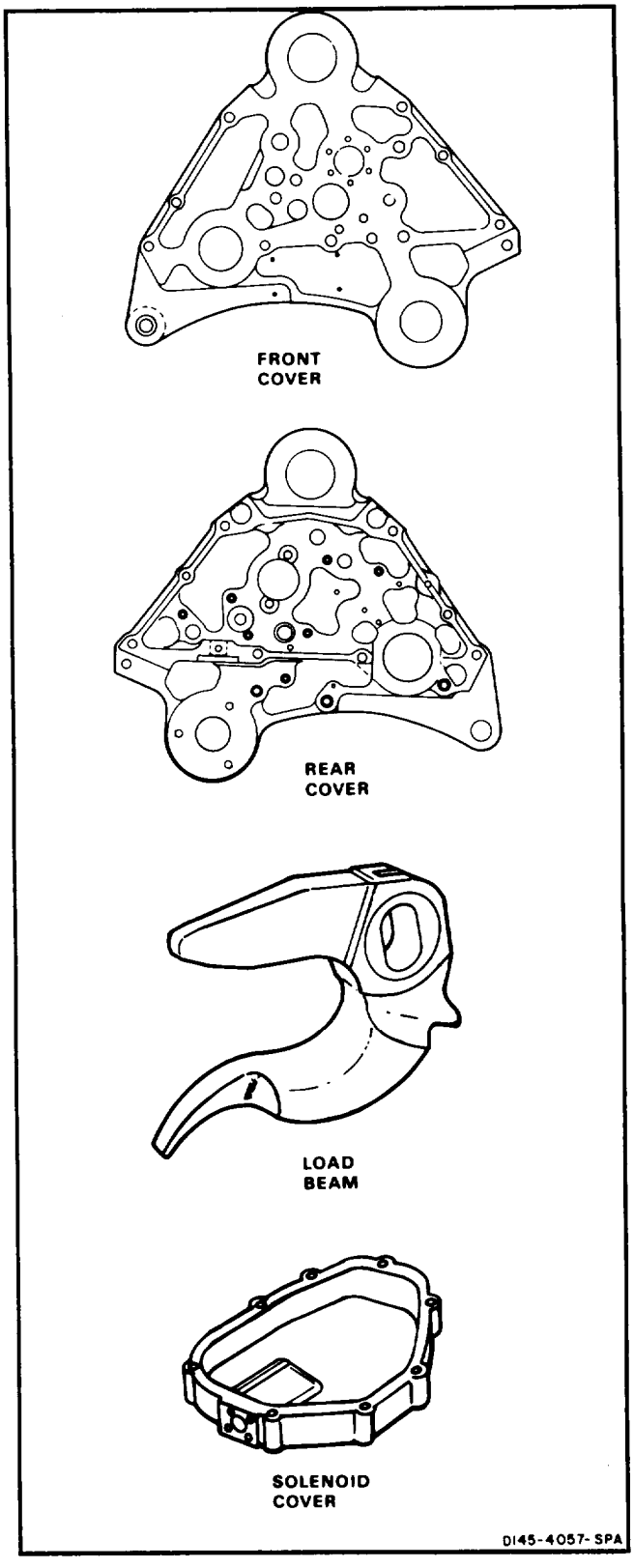
Cotter Pins
Gaskets
Packings
Retaining Rings
Rivets
Seals

Personnel Required:

Machinist
Medium Helicopter Repairer
Aircraft Electrician
Inspector

References:

TM 55-1520-240-23P



General Safety Instructions:

WARNING

Epoxy primer (E292) is flammable and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from heat or open flame. Avoid contact with skin, eyes, or clothing. in case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

WARNING

Sealant (E340.1) and adhesive (E57) can irritate skin and cause burns. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes . Get medical attention for eyes.

WARNING

Acetone (E20) is extremely flammable. It can be toxic. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. Keep away from heat, sparks, or open flame. In case of contact , immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

WARNING

Solvent (E413.4) is flammable and toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. Keep away from heat, sparks, or open flame. In case of contact immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

WARNING

Loctite 404 (E343) is combustible and toxic. It can irritate skin and cause burns. use only with adequate ventilation, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

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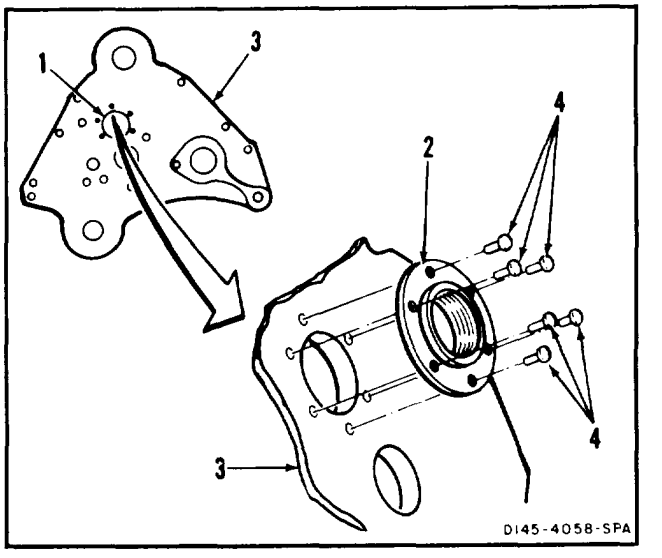
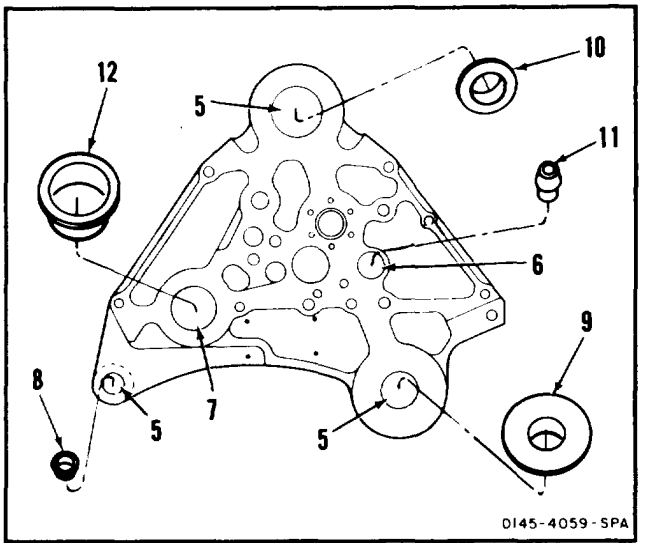
NOTE

All mating surfaces must be clean before assembly. Use solvent (E413.4) to clean teflon bearings. Use acetone (E20) to clean other components; Use cloths (E120). Wear gloves (E184.1).

1. Coat mount surface of front plate support hole (1) with primer (E292). Wear gloves (E184.1).
2. Align holes of shaft support (2) and front plate (3). **Press shaft support** in front plate while primer is wet. Use arbor press.
3. **Install six rivets (4).**



4. Coat mount surface of three bushing holes (5), pin boss hole (6), and latch bearing hole (7), with primer (E292). Wear gloves (E184.1).
5. **Press in three bushings (8, 9, 10), pin boss (11), and latch bearing (12)** while primer is wet. Use arbor press.2



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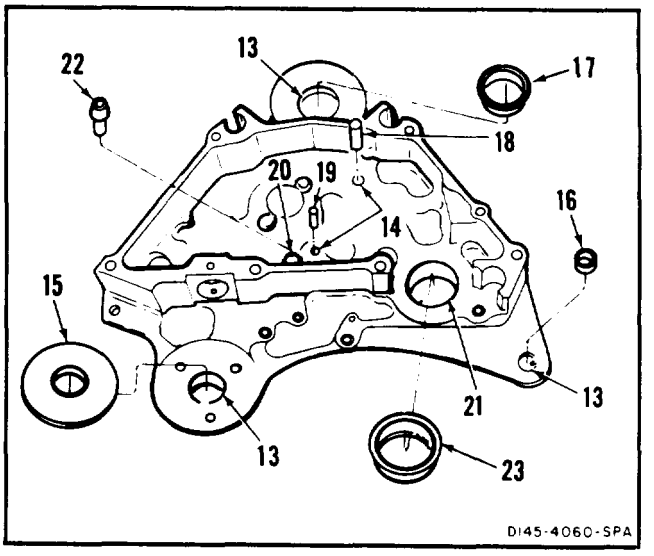
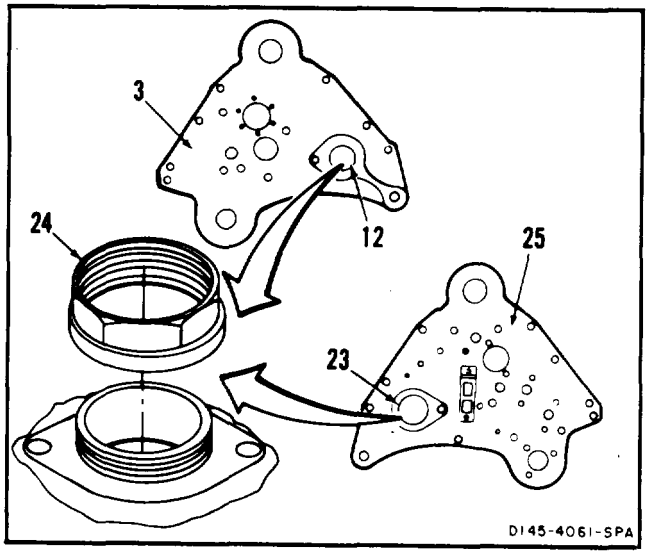
6. Coat mount surface of three bushing holes (13) and two pin mount holes (14) with primer (E292). Wear gloves (E184.1).
7. **Press in three bushings (15, 16, 17), stop pin (18), and retainer pin (19).** Use arbor press,



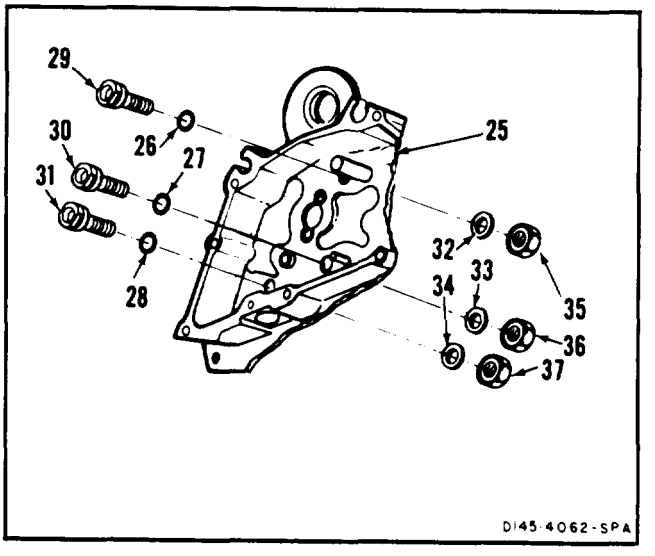
WARNING

Adhesive (E43) is toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. In case of contact immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

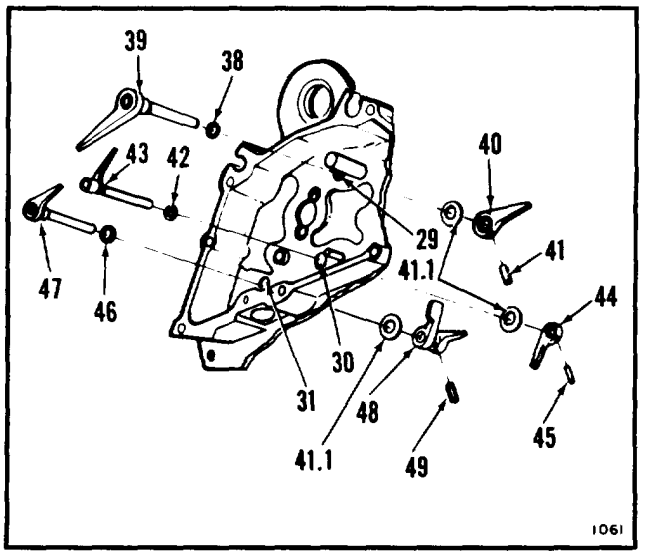
8. Coat mount surface of pin boss holes (20) and latch bearing hole (21) with adhesive (E43).
9. **Install pin boss (22) and latch bearing (23).** Use arbor press.
10. Coat threads of caps (24) with Loctite (E343). Wear gloves (E184.1). **Install two caps (24),** one on front cover plate (3) over latch bearing (12), and one on rear plate (25) over latch bearing (23). Use crowfoot attachment.



11. Install three packings (26, 27, 28) on inserts (29, 30, 31). **Install inserts** in rear plate (25).
12. **Install** three washers (32, 33, 34) and **nuts (35, 36, 37). Torque nuts to 120 inch-pounds.**
13. Apply grease to inside of three inserts (29, 30, 31). Use grease (E190).



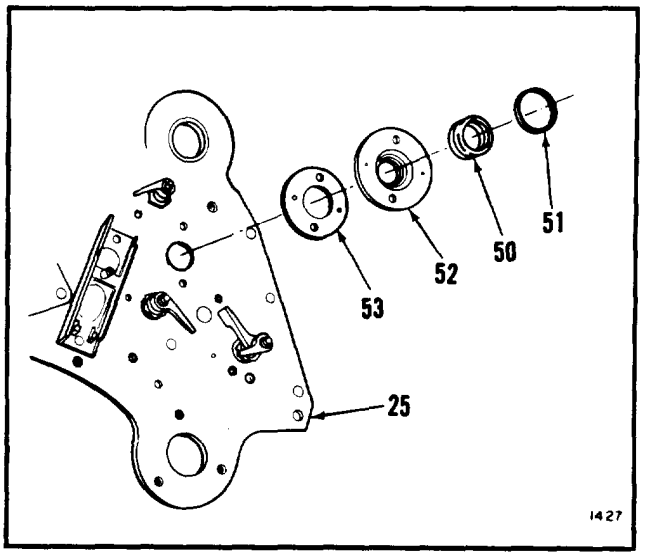
14. Remove tag and install packing (38) on shaft (39). **Install shaft** in insert (29).
15. **Install arm (40)** on shaft (39). Install pin (41) in arm and shim with washers (41.1) as required to remove end play. Lockwire pin. Use lockwire (E227).
16. Remove tag and install packing (42) on shaft (43). **Install shaft** in insert (30).
17. **Install arm (44)** on shaft (43). Install pin (45) in arm and shim with washers (41.1) as required to remove end play. Lockwire pin. Use lockwire (E227).
18. Remove tag and install packing (46) on shaft (47). **Install shaft** in insert (31).
19. **Install arm (48)** on shaft (47), Install pin (49) in arm and shim with washers (41.1) as required to remove end play. Lockwire pin. Use lockwire (E227).



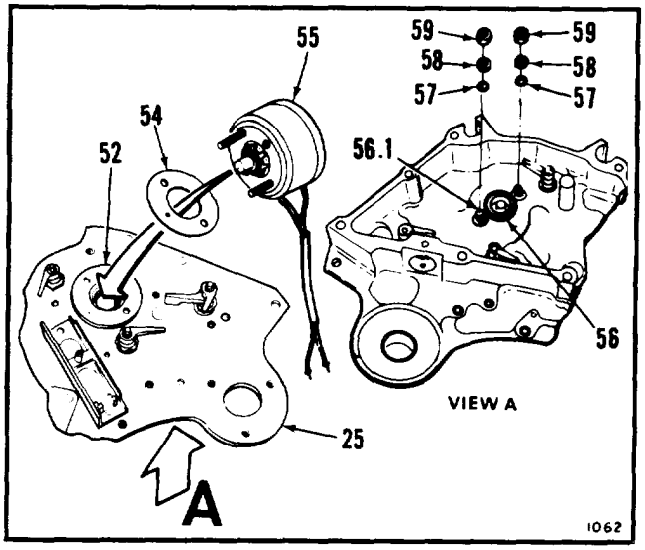
WARNING

Lubricant (E238.1) is toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. In case of contact Immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

Apply lubricant (E238.1) to O.D. of seal (50). Wear gloves (E184.1) **Install seal and retainer ring (51)** in shaft support (52),



21. Deleted.
22. **Apply sealant (E340.1) to support (52) Inside surface and seal (50). Position gasket (53) and install shaft support (52)** n rear plate (25). Use arbor press. Wear gloves (E184.1).
23. Install gasket (54) on solenoid (55). **Position solenoid** in shaft support (52), rotate rear plate (25) and solenoid (55) 180 degrees .
24. **Apply sealant (E340.1) to plate (25), around solenoid shaft (56), and studs 156.1). and to both sides of two packings (57). Install packings on studs.** Wear gloves (E184.1).
25. **Install washers (58) and nuts (59)** on solenoid (55). **Torque nuts to 72 inch-pounds** .



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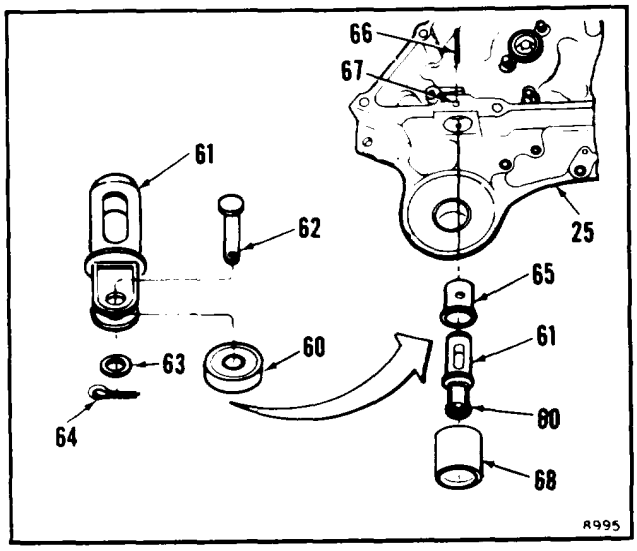
26. Position bearings **(60)** in plunger (61). **Install clevis pin (62),** washer (63), and cotter pin (64). Check that bearing rotates freely, with no binding.

27. **Install bushing (65), plunger (61), and pin (66)** in rear plate (25). Seal hole (67) with adhesive (E57). Wear gloves (E184.1).

28. **Install dust cover (68)** over plunger (61) and bushing (65). Apply Loctite 404 (E343) around edge of dust cover, Wear gloves (E184.1).



WARNING

Be careful when compressing trunnion springs to prevent injury to personnel or damage to equipment.

29. **Install springs (69 and 70) and plunger (71)** in trunnion shaft (72) as follows:
   a. Apply grease to springs (69 and 70) and plunger (71). Use grease (E190).
   b. Install springs (69 and 70) and plunger (71) in trunnion shaft (72).
   c. Install trunnion shaft (72) in vise (73), slotted end of shaft up and vise on half of plunger (71) as shown.
   d. Compress springs (69 and 70) and plunger (71) into trunnion shaft (72) with vise (73).

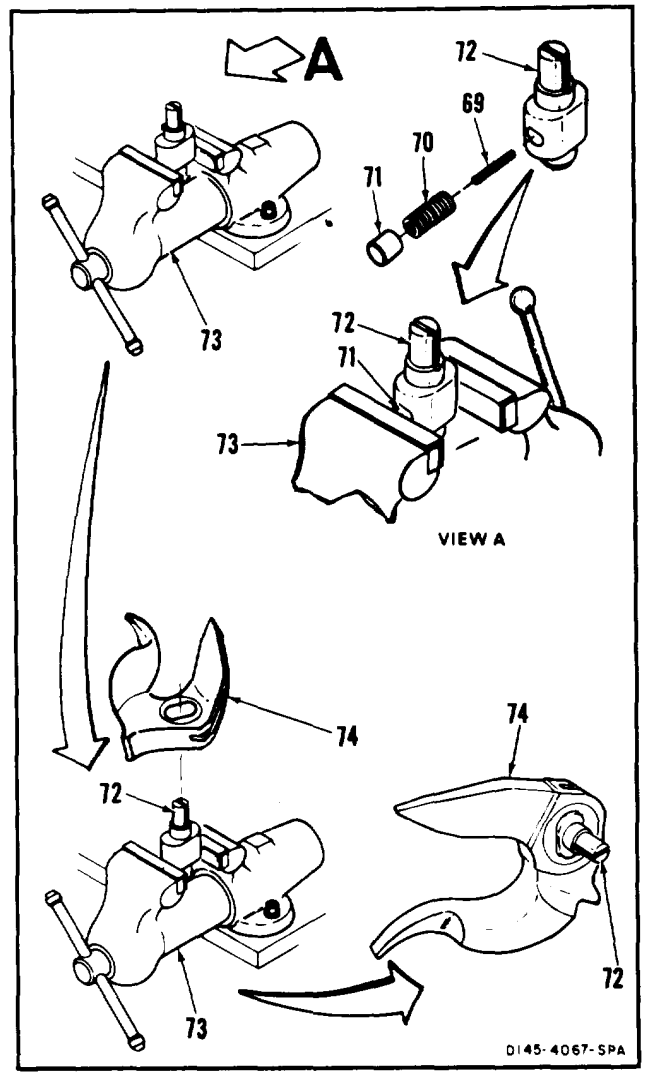
WARNING

Trunnion shaft contains spring loaded plunger. Be careful when placing load beam over trunnion shaft and releasing spring tension to prevent injury to personnel or damage to equipment.

30. **Position load beam (74)** over trunnion shaft (72). Make sure load beam (74) covers exposed part of plunger (71).

31. Hold load beam (74) in position and release trunnion shaft (72) from vise (73).

32. Position load beam (74) upright. **Tap trunnion shaft (72) into load beam.** Use soft faced hammer.



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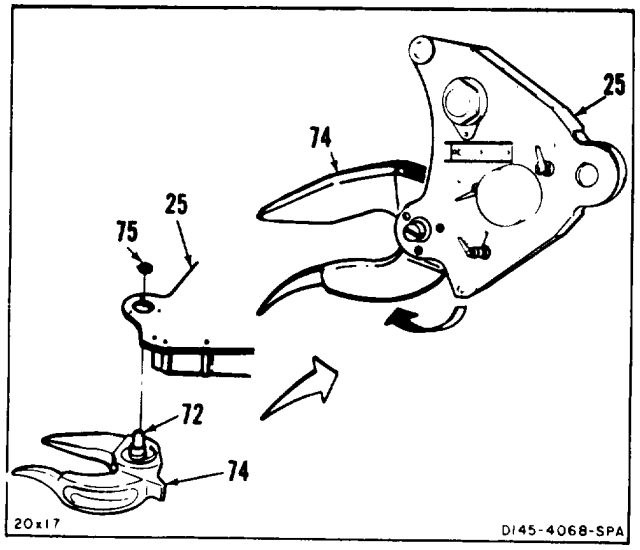
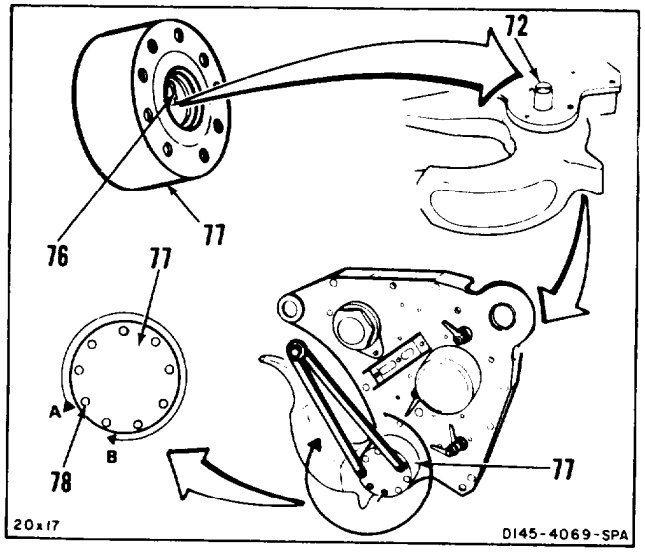
16-27 ASSEMBLE FORWARD OR AFT CARGO HOOK (AVIM) (Continued)

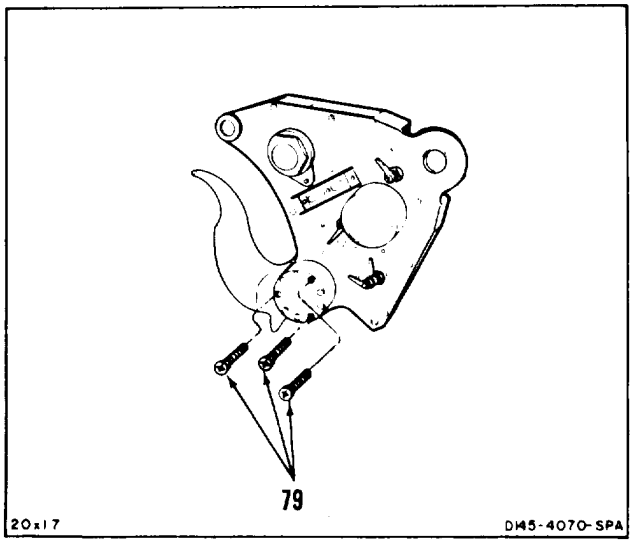
33. **Position load beam (74)** on its side, slotted end of trunnion shaft (72) up.
34. **Install rear plate (25)** over trunnion shaft (72) with opening in load beam (74) away from rear plate,
35. Install retaining ring (75).
36. **Rotate load beam (74)** up to rear plate (25).



37. **Align spring (76)** with slot in trunnion shaft (72) **and install spring return (77)** on shaft,
38. **Sat spring return (77) tension** as follows:
    a. Mark screw hole (78) at point A.
    b. Using adjustable pin spanner, rotate spring return (77) clockwise to point B.



39. **Install three screws (79). Torque screws to <u>13 inch-pounds.</u>**



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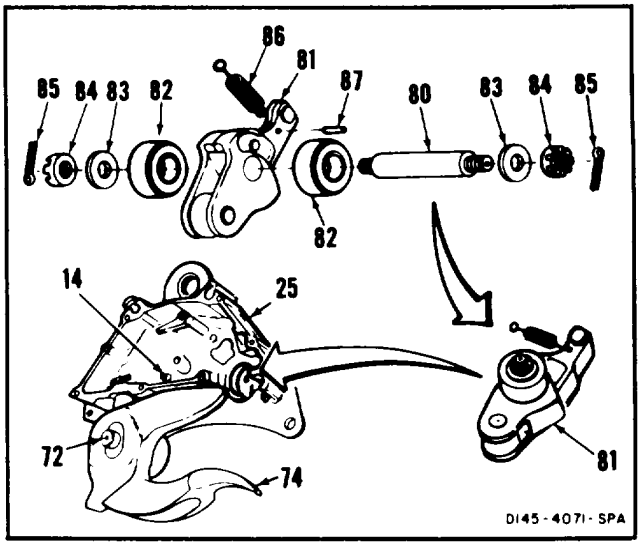
40. Rotate rear plate (25) and load beam (74) over 180 degrees . Make sure load beam (74) stays on trunnion shaft (72).

41. **Install shaft (80)** in latch (81). **Install two bearings (82),** washers (83) and nuts (84) on shaft. Install two cotter pins (85) on nuts.

42, **Position springs (86)** on latch (81) and **install pin (87).** Lockwire pin. Use lockwire (E227).

43, **Install latch (81)** in rear plate (25).

44. **Install spring (86)** over retainer pin (14). Position spring in groove of pin. 2

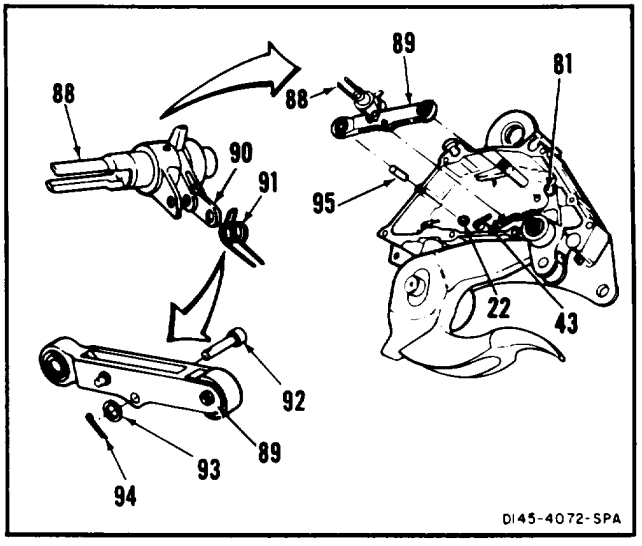


45. **Position shaft (88)** over lever (89) with link (90) in center of lever,

46. **Position spring (91)** over link (90). Depress spring and install clevis pin (92).

WARNING

Lubricant (E238) is toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. In case of contact immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



47. Install washer (93) and cotter pin (94). Spray shaft (88) and lever (89) with lubricant (E238). Wear gloves (E184.1)

48. **Install pivot pin (95)** in pin boss (22).

49. Hold latch (81) away from center of rear plate (25) and **install shaft (88) and lever (89).** Make sure actuator shaft arm (43) is below head of clevis pin (92).

GO TO NEXT PAGE

50. **Install latch bumper (96).** Position bumper so that latch (81) will strike area of bumper not previously contacted.
51. **Install two bumpers (97).**
52. **Install two fitting bumpers (98)** in fitting (99). **Install fitting** in rear plate (25), raised shoulder forward.

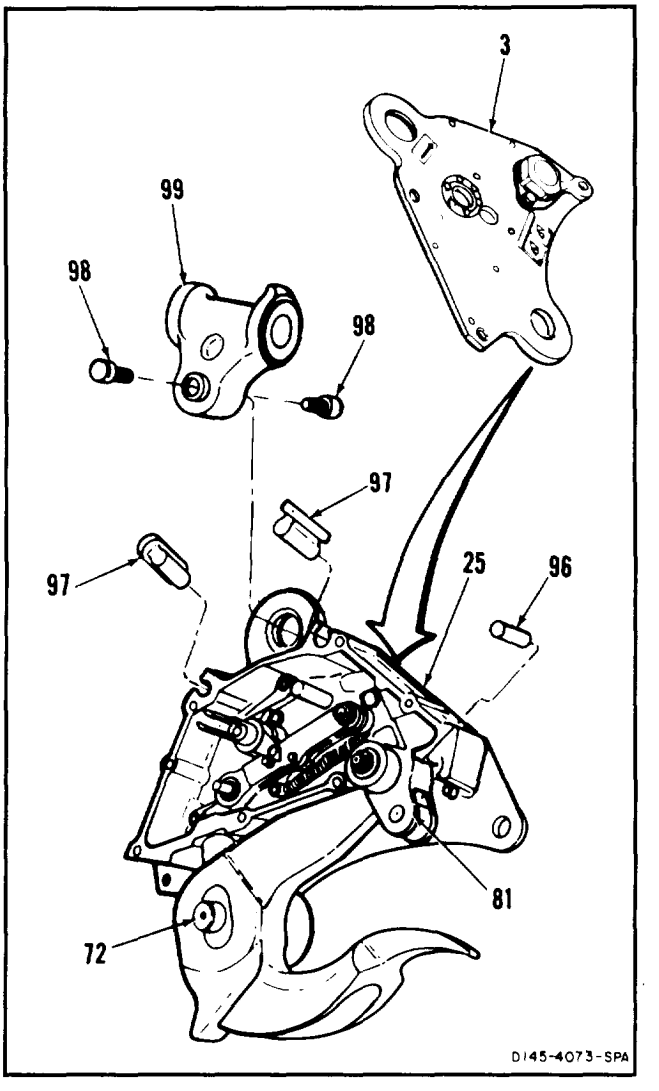
INSPECT

53. Coat mating surfaces of front plate (3) and rear plate (25) with adhesive (E57). Wear gloves (E184.1).

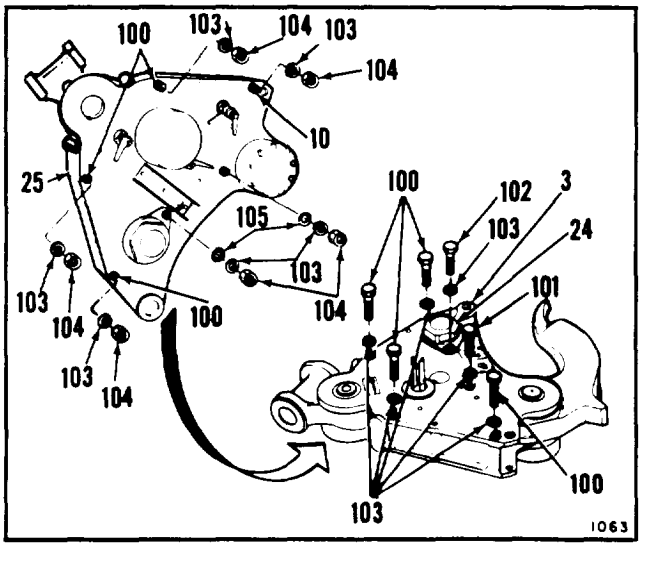
CAUTION

Do not force or hammer plates to seal plates together. Damage to plates can result.

54. **Position front plate (3)** on rear plate (25).



55. Apply primer (E292) under bolt heads (100, 101, and 102), on washers (103), and under nuts (104). Wear gloves (E184.1).
56. Install four short bolts (100), bolt (101), and washers (103), while primer is wet. Install long bolt (101) and washer (103) in hole closest to cap (24), while primer is wet.
57. Hold two plates (3 and 25) together and rotate 180 degrees . Install washers (103) and nuts (104) on four bolts (100), while primer is wet.
58. Apply sealant (E340.1) to two packings (105) both sides. Install packings, two washers (102), and two nuts (104) on bolts (101 and 102) while primer is wet. Wear gloves (E184.1). Torque nuts to 120 inch-pounds .



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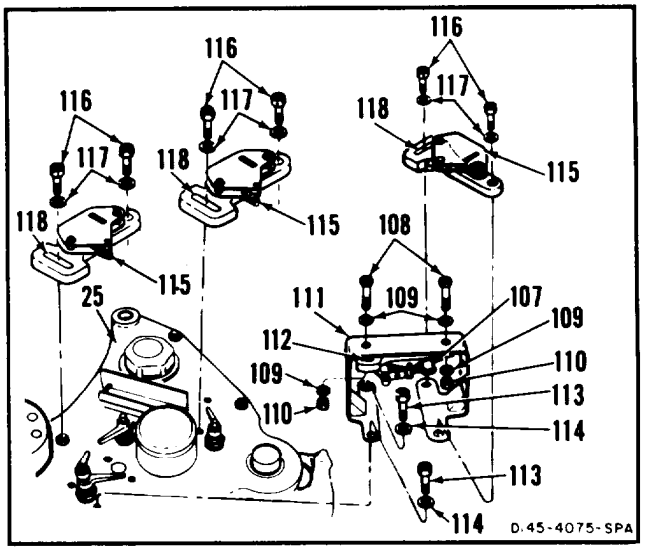
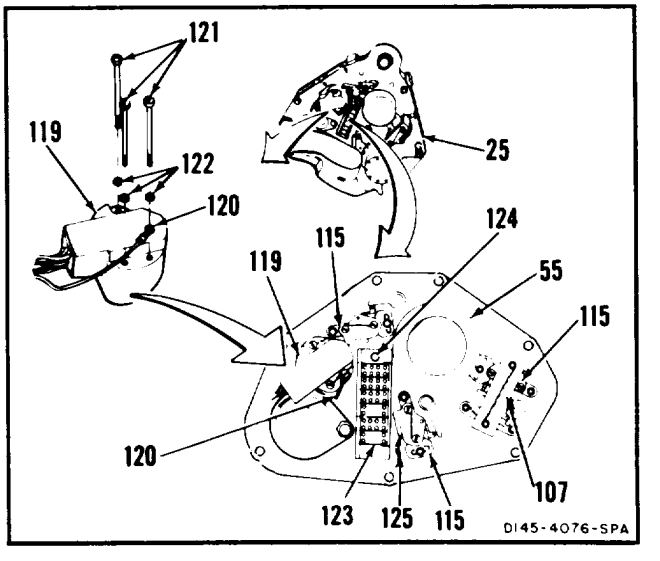
59. Remove tag, and **install switch (107),** two screws (108), four washers (109) and two nuts (110) on bracket (111). Center adjustment slot (112) of switch (107) on bracket (111).
60. Install bracket (111), two screws (113) and washers (114) on rear plate (25). Torque screws to 13 inch-pounds .
61. Lockwire screws (113) together. Use lockwire (E227).
62. Remove tags, and install three switches (115), six screws (116), and washers (117 rear plate (25). Center adjustment slots 118) of switches.



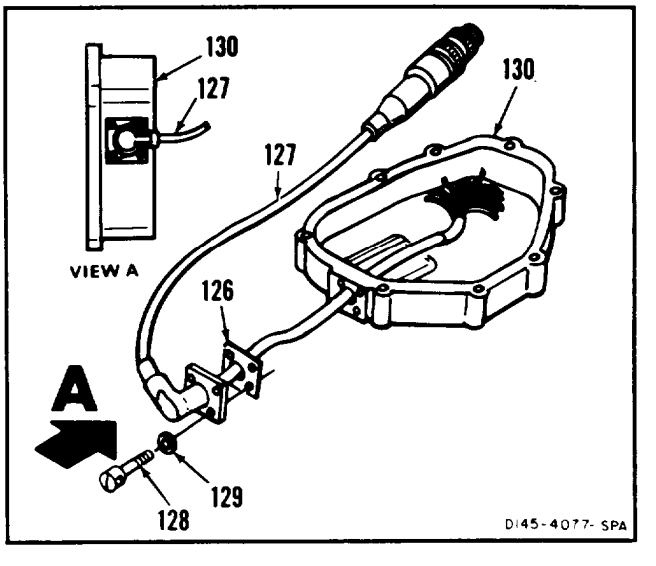
63. **Position relay 119) and ground wire (120)** on rear plate (25). **Install three screws (121)** and washers (122). **Torque screws to 9 inch-pounds** . Lockwire screws. Use lockwire (E227).
64. Remove tags and **install six modules (123).** Tighten lock screw (124).
65. **Connect wires (125)** from switches (107 and 115), relay (119), solenoid (55), and ground wire (120) to modules (123). Use contact insertion/extraction tool.



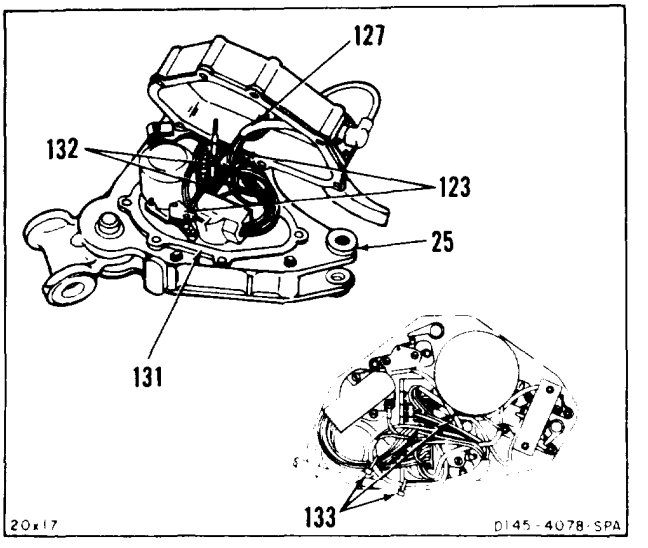
INSPECT

66. **Position gasket (126)** on harness (127). **Install harness,** four screws (128) and washers (129) in cover (130). **Torque screws 8 to 10 inch-pounds** . Lockwire screws. Use lockwire (E227).

66.1. Apply sealant (E340.1) around harness (127) where it comes through cover (130). Wear gloves (E184.1).

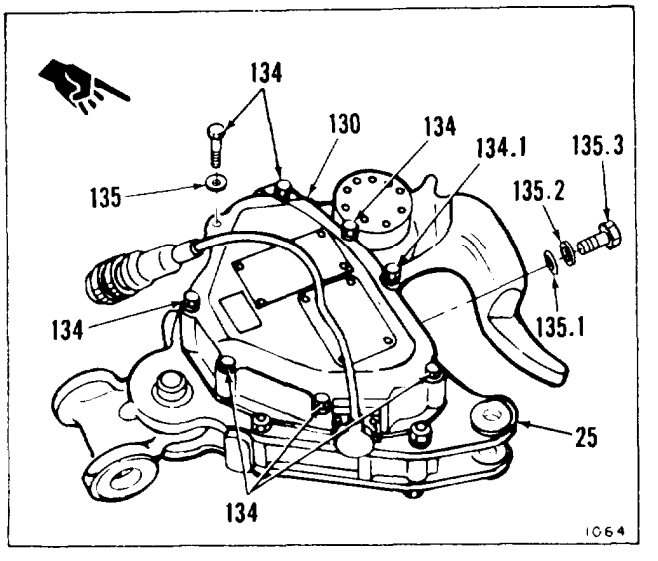


67. **Position gasket (131)** on rear plate (25).
68. **Connect harness wires (132) to modules (123).** Use insertion/extraction tool.
69. **Route wire harness (127)** below modules (123) and **install three straps (133).** Use strap tool.

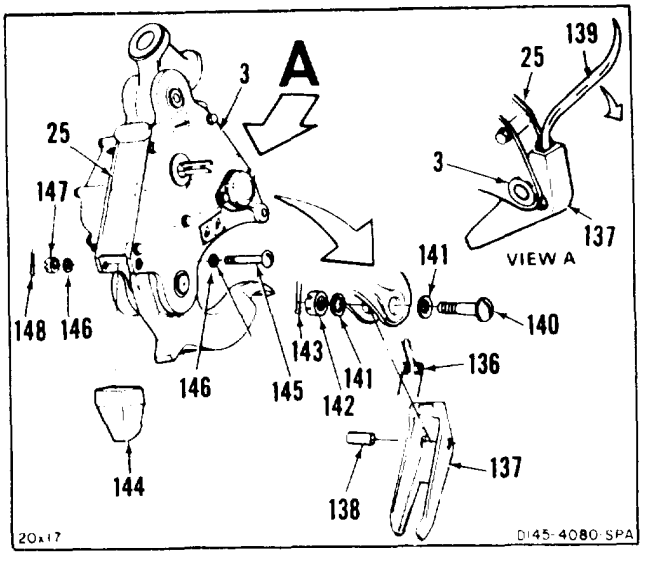


70. **Position solenoid cover (130)** on rear plate {25) and **install seven bolts (134),** bolt (134. 1), and washers (135). **Torque bolts to 50 inch-pounds.**

70.1 **Install** packing (135.1), washer (135.2), and **bolt (135.3)** in solenoid cover (130) **Torque bolt (135.3) to 50 inch-pounds.** Lockwlre bolt (1341) to bolt (135.3). Use lockwire (E231)



71. **Position spring (136)** in keeper (137) and **install bushing (138).**
72. **Position keeper (137)** between front plate (3) and rear plate (25), use cotter pin extractor (139) to **depress spring (136)** into position, as keeper is installed
73. **Install bolt (140),** two washers (141), nut (142), and cotter pin (143).
74. **Install bumper (144).** Bumper should be fit tight. **Install bolt (145),** two washers (146), nut (147), and cotter pin (148).



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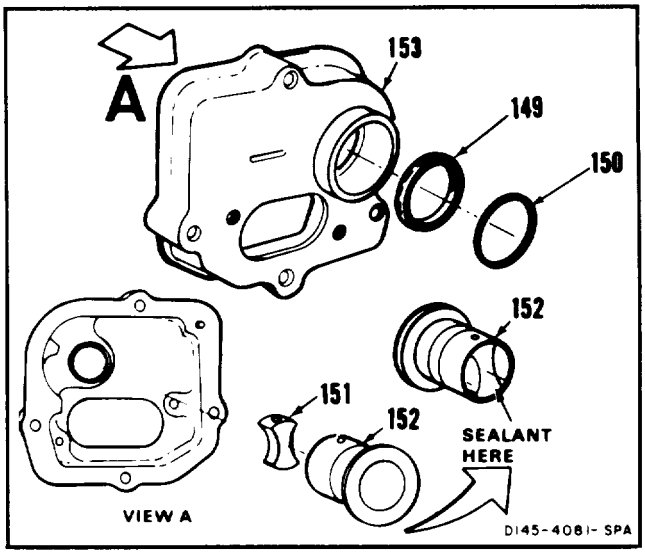
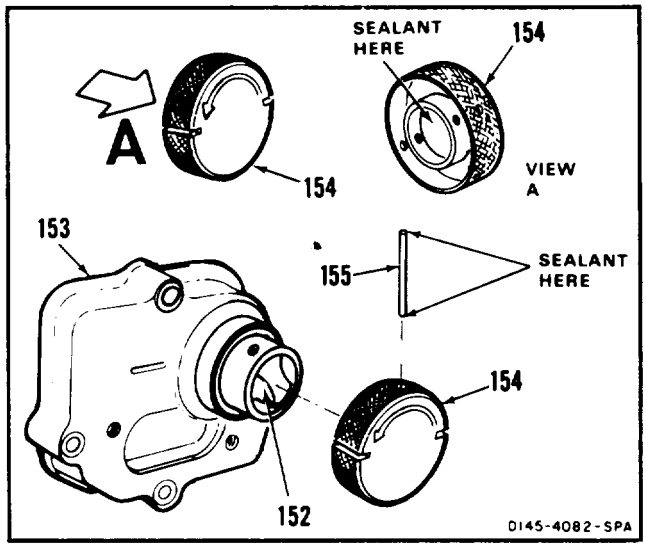
75. **Install seal (149),** spring facing out, and **retaining ring (150).**
76. Align holes of retainer plug (151) and knob retainer (152) and **install plug.** Seal plug end of retainer with adhesive (E57). Wear gloves (E184.1).
77. **Install retainer (152)** in cover (153).

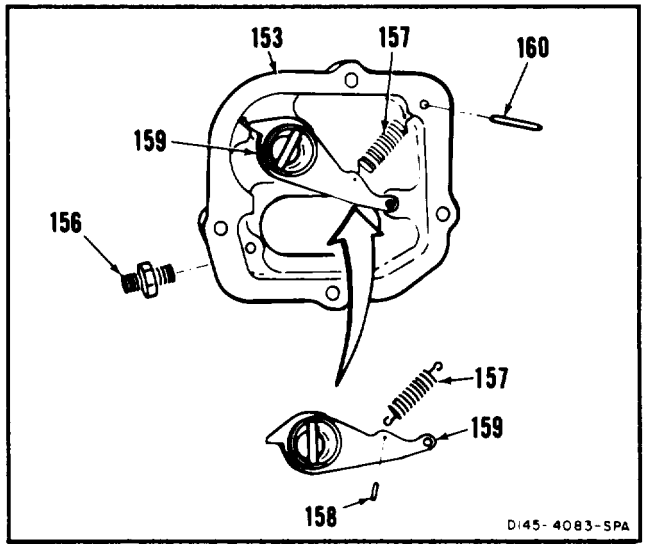


78. Apply adhesive (E57) inside knob (154). Align holes of knob and retainer (152). **Install knob** on retainer. Wear gloves (E184.1).
79. Fill roll pin (155) with adhesive (E57). **Install roll pin** in knob (154) and retainer plug (152). Center roll pin in knob. Wear gloves (E184.1).



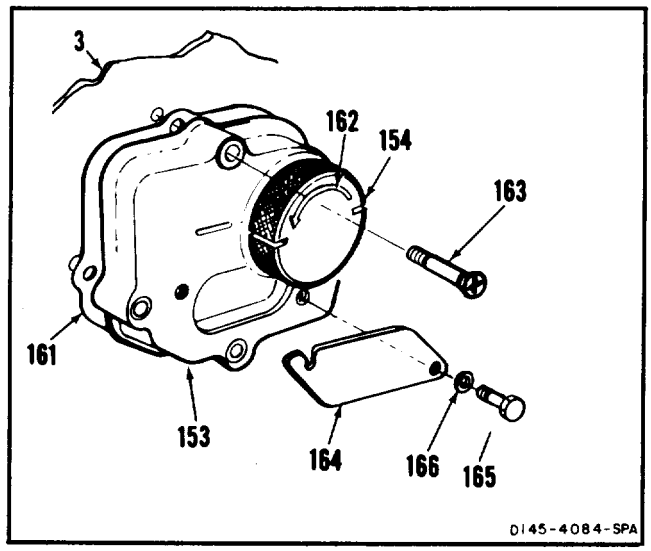
80. **Install cable adapter (156)** in cover (153).
81. **Position spring (157) and install pin (158)** in arm (159).
82. **Position arm (159) and spring (157)** in cover (153). Install pin (160).

INSPECT

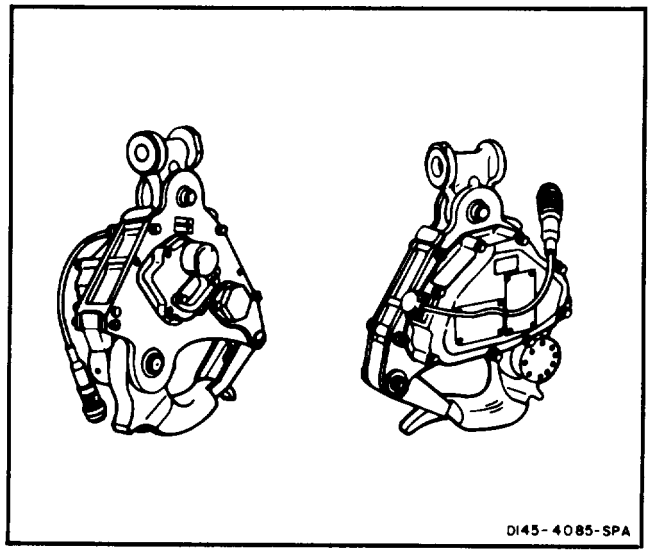


83. **Apply light coat of sealant (E340.1) to mating surface of cover (153). Position gasket (161) on cover (153).** Wear gloves (E184.1).
84. **Position cover (153)** with arrow (162) on knob (154) at top, on front cover (3).
85. **Install four screws (163). Torque screws to 35 inch-pounds** .
86. **Position window (164) and install two screws (165)** and two washers (166).

INSPECT



FOLLOW-ON MAINTENANCE:
Adjust external cargo hook switches (Task 16-28).
Perform functional test of external cargo hook (Task 16-29).



END OF TASK

16-28 ADJUST FORWARD OR AFT CARGO HOOK SWITCHES (AVIM)

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Work Hoist, Minimum 300 Pounds Capacity
Bolt, 3/4-inch X 6-inch
Wire Rope Ring (APPX E-18)
Weight, 250 Pounds
DC Power Supply, 0 to 50 Volt
Multimeter
Torque Wrench, 5 to 50 Inch-Pounds
Torque Wrench, 30 to 150 Inch-Pounds
Drill Bit, 5/64-inch

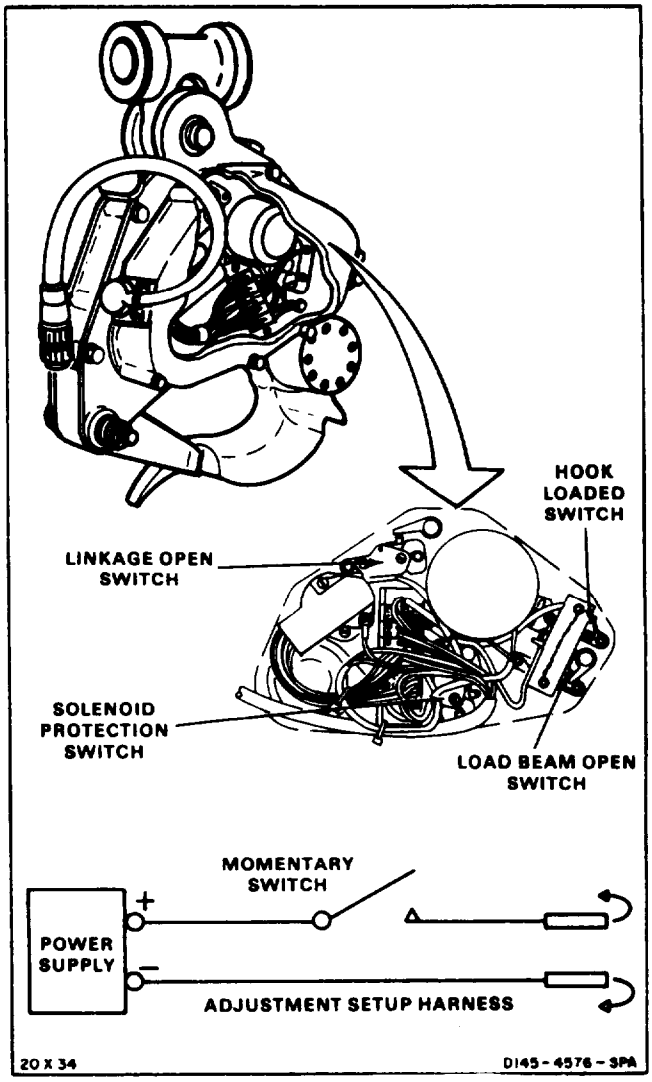
Adjustment Setup:
Momentary Switch, MS25089-1A
Contact Pins, M39029/1-14-16
Wire, M22759/16-20-9

Materiels:
Lockwire (E227)
Lockwire (E231)
Tongue Depressor (E424)
Twine (E433)

Personnel Required:
68F20 Aircraft Electrician
68F30 Inspector

References:
Appendix E

Equipment Condition:
Off Helicopter Task
Adjustment Setup



General Safety Instructions:

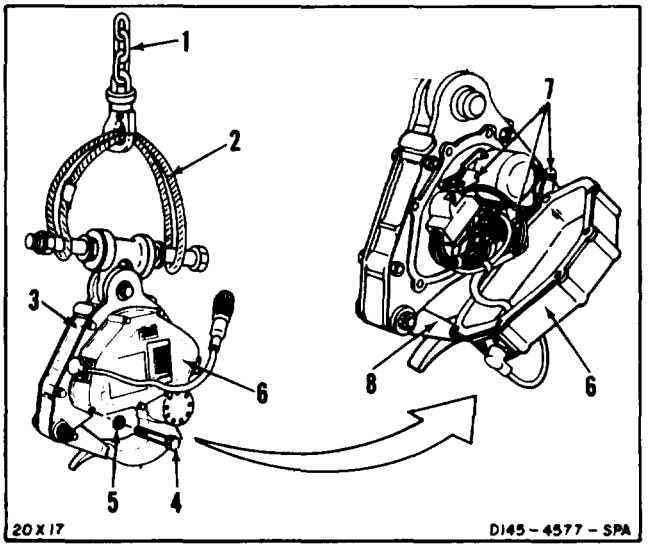
WARNING

Stand clear of hook and load when raising or lowering, to prevent injury to personnel.

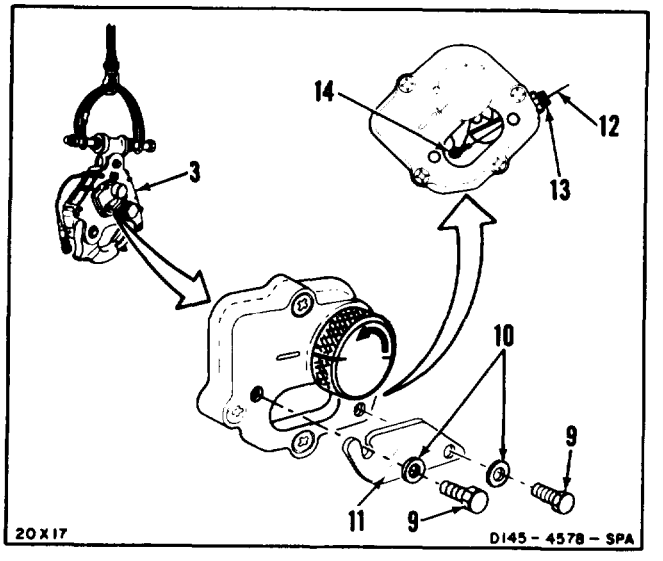
GO TO NEXT PAGE

16-28 ADJUST FORWARD OR AFT CARGO HOOK SWITCHES (AVIM) (Continued)

1. **Attach hoist (1) and wire rope ring (2) to hook (3).**
2. **Remove eight bolts (4)** and washers (5) from solenoid cover (6)
3. **Move solenoid cover (6)** to gain access to switches (7). Support cover in open position by tying cover to keeper (8). Use twine (E433).



4. On opposite side of hook (3) remove two bolts (9) and washers (10). **Remove inspection window (11).**
5. Route lockwire (12) through cable adaptor (13). **Fasten lockwire to arm (14).** Use lockwire (E231).



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16-28 ADJUST FORWARD OR AFT CARGO HOOK SWITCHES (AVIM) (Continued)

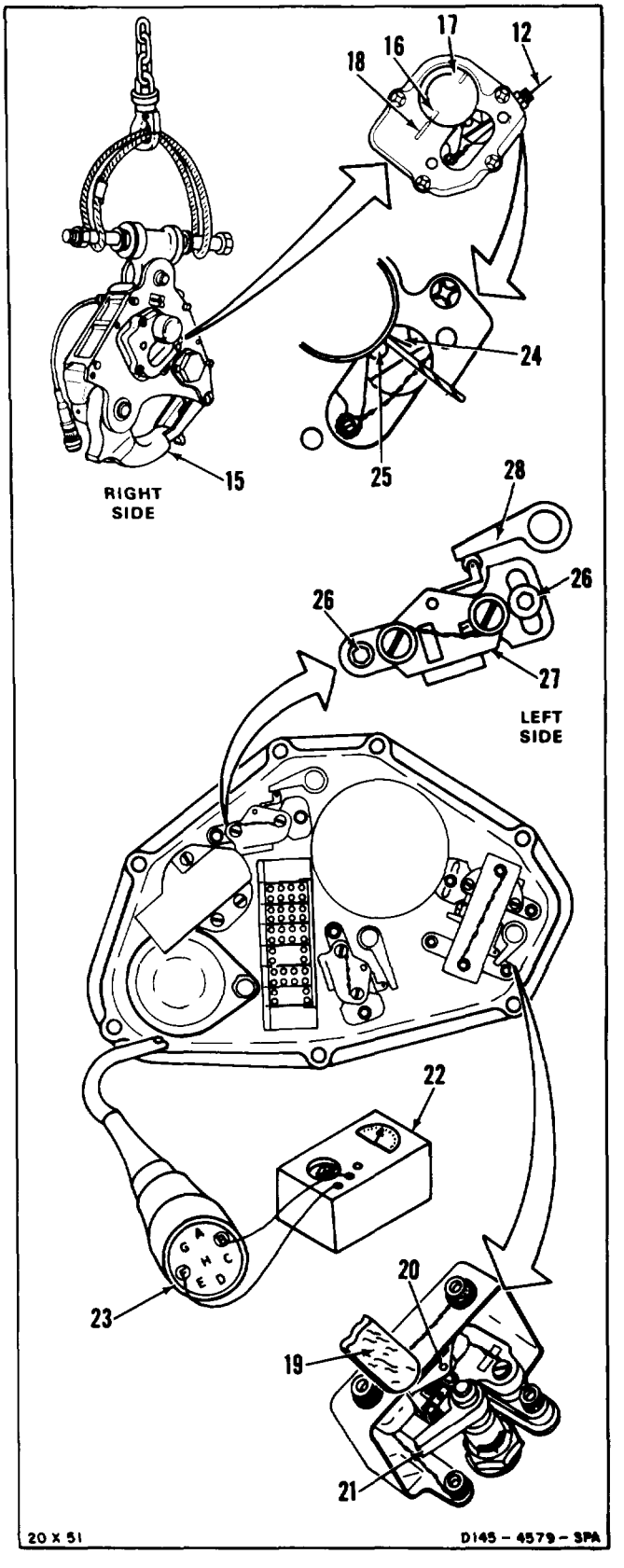
LINKAGE ***OPEN SW!TCH ADJUSTMENT***

6. **Check load beam (15).** Make sure beam is closed and latched. Make sure index mark (16) on knob (17) is aligned with index mark (18).
7. Position tongue depressor (19) between load-beam open switch (20) and actuator arm (21).

NOTE

Load-beam-open switch must be blocked during adjustment of linkage-open switch,

8. **Connect multimeter (22) set to RX1 scale, between pins B and F of connector plug (23).**
9. **Pull lockwire (12) until gap between arm (24) and pin (25) is 5/64-inch. Use 5/64 inch drill bit.** Maintain this distance.
10. Remove lockwire from screws (26) and **loosen screws.**
11. **Move linkage-open switch (27) away from actuator arm (28) as far as it will go.**
12. **Move linkage-open switch (27) toward actuator arm (28) until multimeter (22) reads O ohm. Tighten two screws (26).**
13. **Release lockwire (12). Check multimeter (22) reading.** Multimeter shall read infinity,
14. **Pull lockwire (12) until gap between arm (24) and pin (25) is 5/64-inch. Check multimeter (22) reading.** Multi meter shall read **O** ohm. Release lockwire.
15. **Rotate knob (171 counterclockwise until gap between arm (24) and pin (25) is 5/64-inch. Check multimeter (22) reading.** Multi meter shall read O ohm.
16. **Release knob (17). Check multimeter (22)** reading. Multimeter shall read infinity.
17. **Torque two screws (26) to 15 inch-pounds.** Lockwire screws. Use lockwire (E227). Remove tongue depressor (19).
18. Disconnect multimeter (22) from connector plug (23).



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16-28 ADJUST FORWARD OR AFT CARGO HOOK SWITCHES (AVIM) (Continued)

LOAD-BEAM OPEN SWITCH ADJUSTMENT

WARNING

Load beam is spring loaded closed. Be careful when opening or closing load beam, to prevent injury to personnel.

19. **Rotate knob (17) counter clockwise. Rotate and hold load beam (15) open. Release knob. Reset latch (29) to closed position. Release load beam.** Load beam shall rest on bottom of latch.
20. **Connect multimeter (22), set to RX1 scale, between pins B and F of connector plug (23).**
21. Remove lockwire and loosen two screws (30) and nuts (31).
22. **Move load-beam-open switch (20) toward actuator arm (21) as far as it will go.**
23. **Move load-beam-open switch (20) away from actuator arm (21) until multimeter (22) reads O ohm.**
24. **Tighten two screws (30) and nuts (31).**
25. **Rotate knob (17) counterclockwise.** Load beam (15) shall return to closed and latched position. **Release knob. Check multimeter (22) reading.** Multi meter shall read infinity.
26. **Rotate knob (17) counterclockwise. Rotate and hold load beam (15) open. Release knob. Reset latch (29) to closed position. Release load beam.** Load beam shall rest on bottom of latch. **Check multimeter (22) reading.** Multi meter shall read O ohm.
27. **Rotate knob (17) counterclockwise.** Load beam (15) shall return to closed and latched position. **Release knob. Check multimeter (22) reading.** Multi meter shall read infinity.
28. **Torque screws (30) and nuts (31) to 15 inch-pounds.** Lockwire screws. Use lockwire (E227).
29. Disconnect multi meter (22) from connector plug (23).

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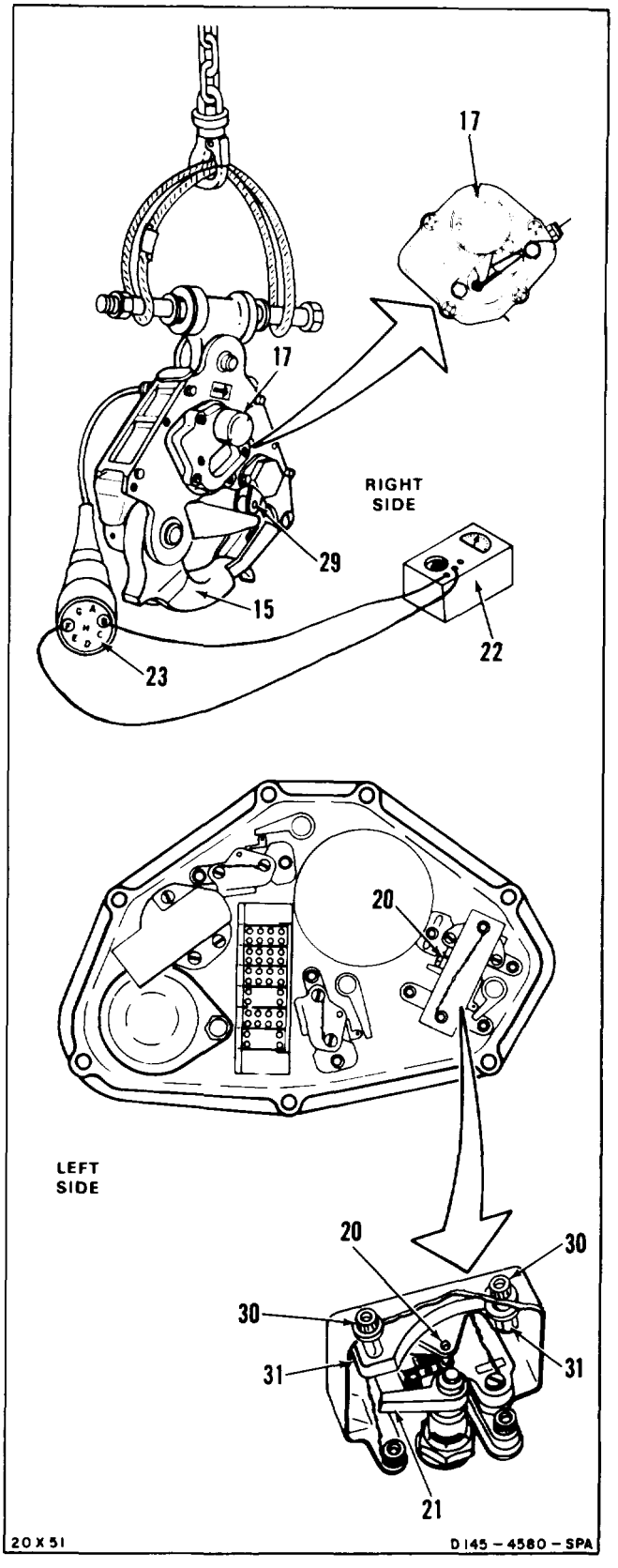
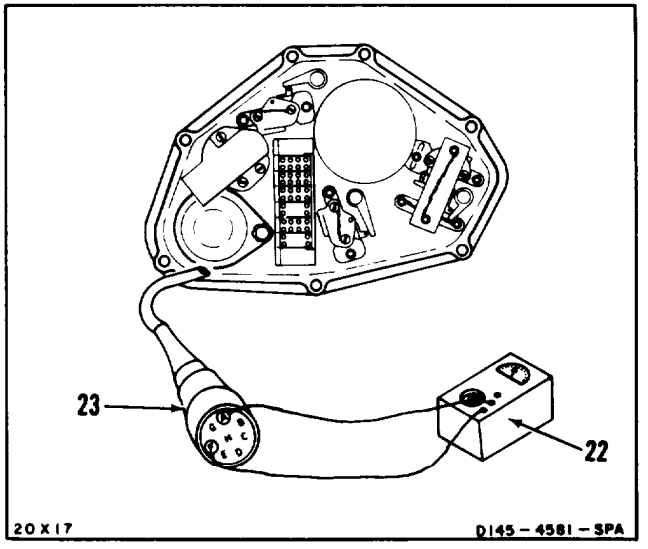


16-28 ADJUST FORWARD OR AFT CARGO HOOK SWITCH (AVIM) (Continued) 16-28

HOOK-LOADED SWITCH ADJUSTMENT

30. **Connect multimeter (22) set to RX1 scale, between pins A and F of connector plug (23).**



31 Remove lockwire and **loosen two screws (32).**

32 **Move hook-loaded switch (33) toward actuator arm (34) as far as it will go.**

33 **Connect 250 pound load (35)** to load beam (15). Load shall be straight down and centered on beam.

34. **Raise hoist (1) until load (35) clears ground.**

35. **Move hook-loaded switch (33) away from actuator arm (34) until multimeter reads 0 ohm.**

36 **Tighten two screws (32).**

37. Lower hoist (1). **Remove 250 pound load (35)** from load beam (15). **Check multimeter (22) reading.** Multimeter shall read Infinity.

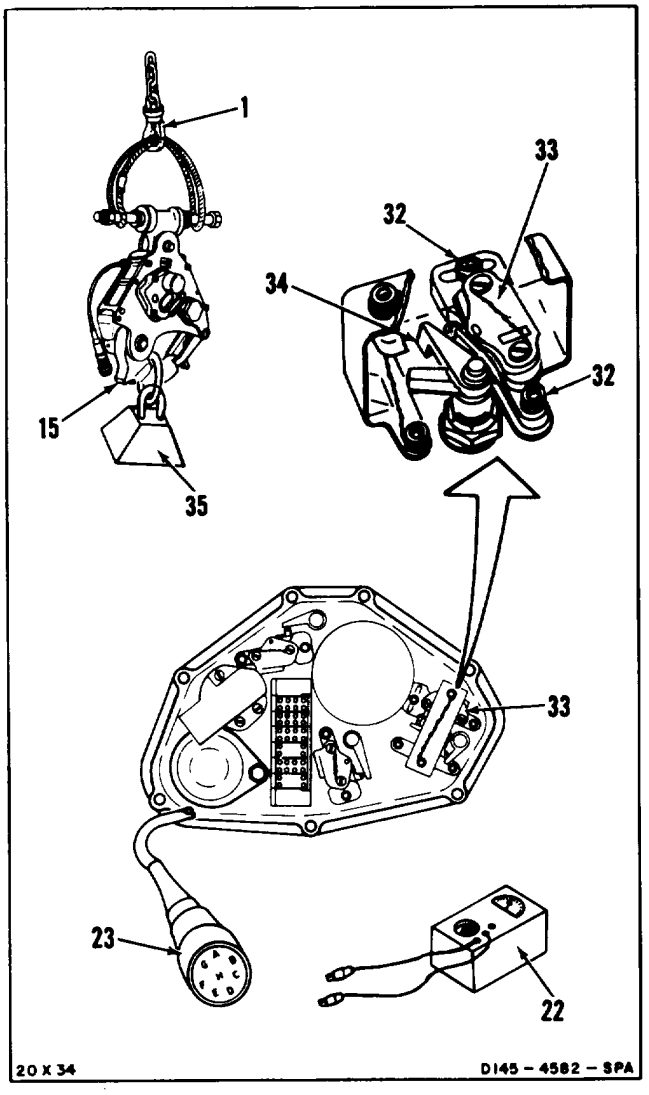
38 **Connect 250 pound load (35)** to load beam (15). Load shall be straight down and centered on beam.

39. **Raise hoist (1) until load (35) clears ground. Check multimeter (22) reading.** Multimeter shall read 0 ohm.

40. Lower hoist (1). **Remove 250 pound load (35)** from load beam (15).

41. **Torque two screws (32) to 15 inch-pounds.** Lockwire screws. Use lockwire (E227).

42. Disconnect multi meter (22) from connector plug (23).



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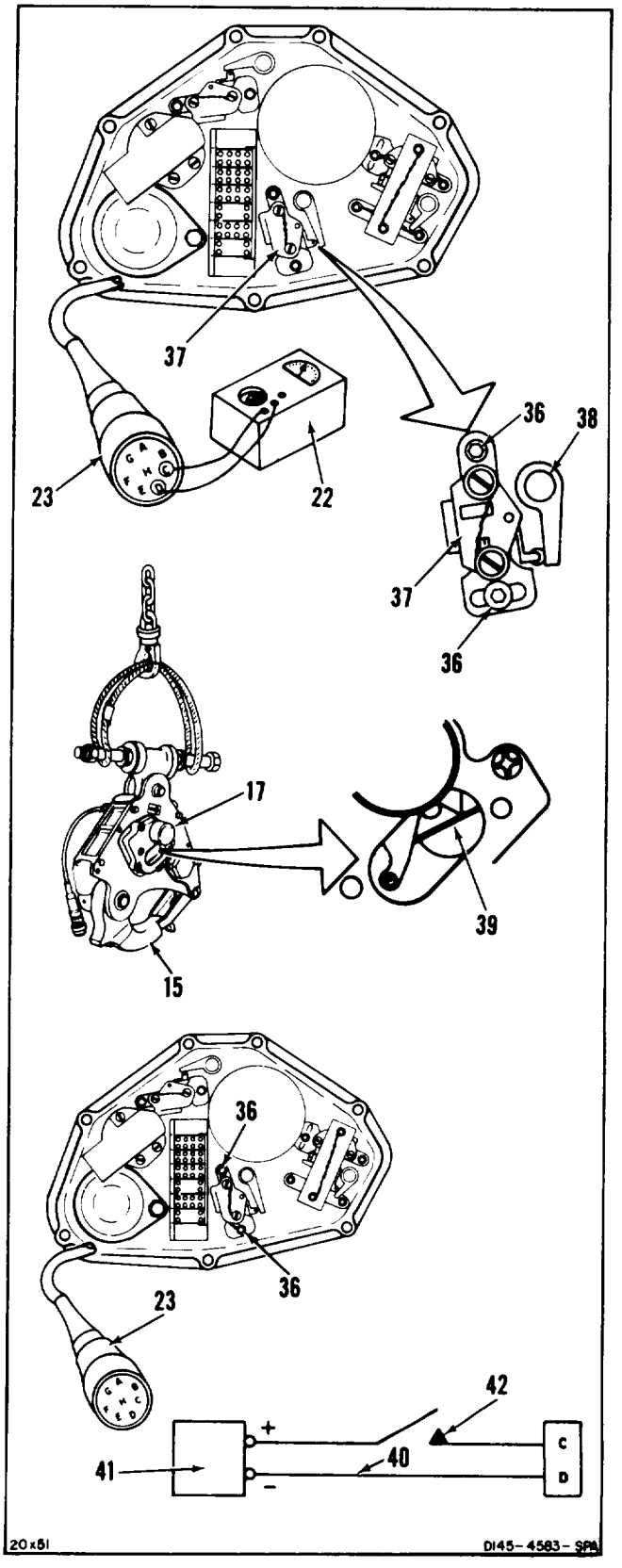
16-28 ADJUST FORWARD OR AFT CARGO HOOK SWITCHES (AVIM) (Continued) 16-28

SOLENOID-PROTECTION SWITCH ADJUSTMENT

43. **Make sure load beam (15) is closed and latched.**
44. **Connect multimete (22) set to RX 10,000 scale, to pins C and D of connector** plug (23).
45. **Remove lockwire and loosen two screws (36).** Move solenoid-protection switch (37) away from actuatorarm (38) as far as it will go.
46. Rotate knob (17) counterclockwise until internal lever (39) is raised to highest point. Turn knob clockwise until internal lever descends 1/16-inch. **Maintain this distance.**
47. Move solenoid-protection switch (37) toward actuator arm (38) until multimeter (22) reads infinity.
48. Tighten two screws (36).
49. Release knob (17). **Internal lever (39) shall drop to latch position. Check multimeter (22) reading. Multimeter shall read 0 ohm,**
50. Rotate knob (17) counterclockwise until internal lever (39) is raised to highest point. Turn knob clockwise until internal lever descends 1/16-inch. Check multimeter (22) reading. **Multimeter shall read infinity.**
51. **Release knob (17),**
52. **Disconnect multimeter (22) from connector plug (23).**
53. Connect adjustment setup harness (40) to connector plug (23) with positive test lead to pin C and negative lead to pin D.
54. Adjust power supply (41) to 22 volts. Actuate switch (42). Check internal lever (39). **Lever shall raise and drop rapidly.**
55. **Release switch (42),**
56. **Shut down power supply (41).**
57. **Remove adjustment setup harness (40) from connector plug (23).**
58. Torque two screws (36) to 15 inch-pounds. **Lockwire screws, Use lockwire**



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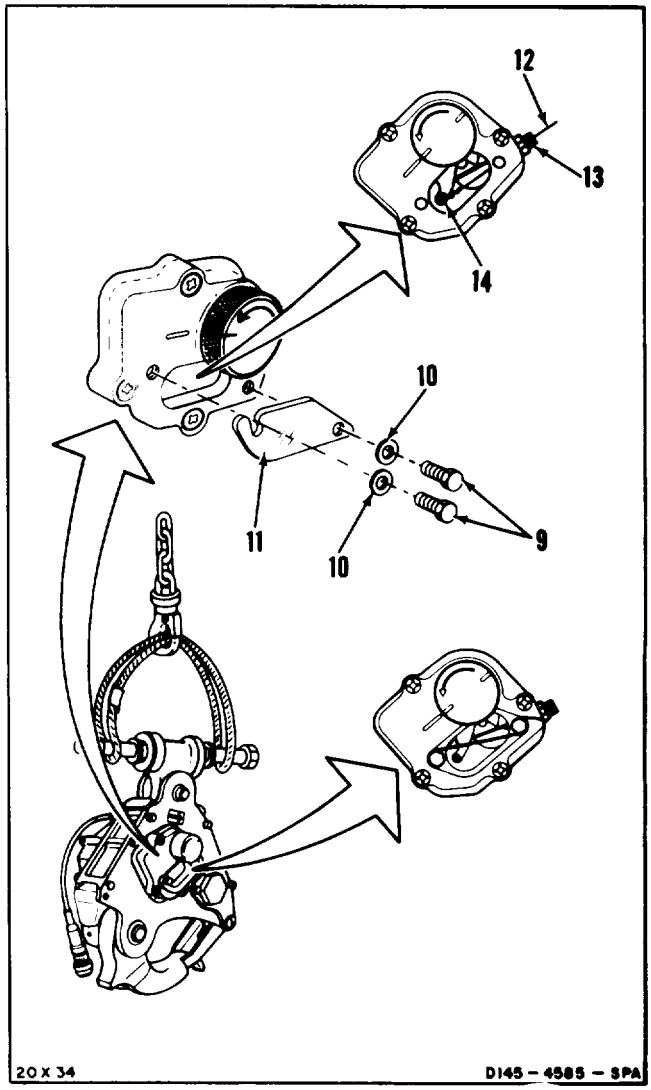
16-28 ADJUST FORWARD OR AFT CARGO HOOK SWITCHES (AVIM) (Continued) 16-28

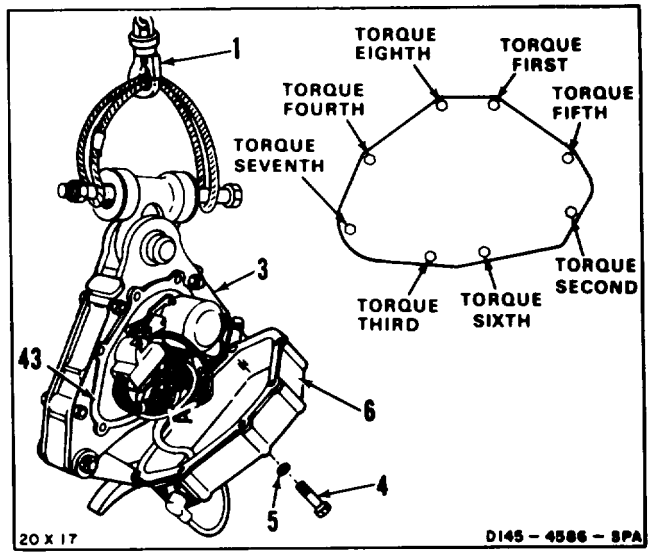
59. **Remove lockwire (12)** routed through **adaptor (13)** to arm (14).
60. **Position inspection window (11). Install two bolts (9)** and washers (10).
61. **Torque bolts (9) to 40 inch-pounds.**
62. Lockwire bolts (9) and cable adaptor (13) together, Use lockwire (E231).



63 Remove twine used to support solenoid cover (6). Make sure gasket (43) is positioned,

64 Position solenoid cover (6). **Install eight bolts (4)** and washers (5). **Torque bolts alternately, following torque sequence shown, to 60 inch-pounds.** Check torque again after torquing.

65. Lower hoist (1). Remove hook (3) and wire rope ring (2)



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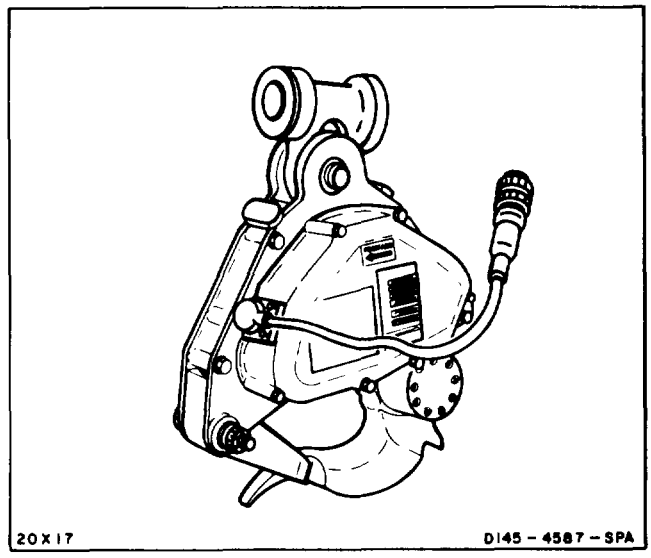
16-28 ADJUST FORWARD OR AFT CARGO HOOK SWITCHES (AVIM) (Continued) 16-28

FOLLOW-ON MAINTENANCE:

Pressure test solenoid cover (Task **6-30).**

Functional test external cargo hook **Task 16-**29).



END OF TASK

16-29 FORWARD OR AFT CARGO HOOK FUNCTIONAL TEST (AVIM) 16-29

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Hoist, Minimum 300 Pounds Capacity
Wire Rope Ring and Bolt Assembly (Appx E-18)
\Veight, 20 Pounds
Weight, 80 Pounds
DC Power Supply, 0 to 50 Volts
Multimeter
Torque Wrench, 5 to 50 Inch-Pounds
Scale, Dial Indicating, 0 to 50 Pounds
Brass, Round Stock, 1/8 Inch x 6 Inches
Momentary Switch, MS25089-1A
Contact Pins, M39029/16-20-9
Wire, M22759/16-20-9

Materials:

Lockwire (E2311

Personnel Required:

Medium Helicopter Repairer
Aircraft Electrician
Inspector

Refinances:

Appendix E

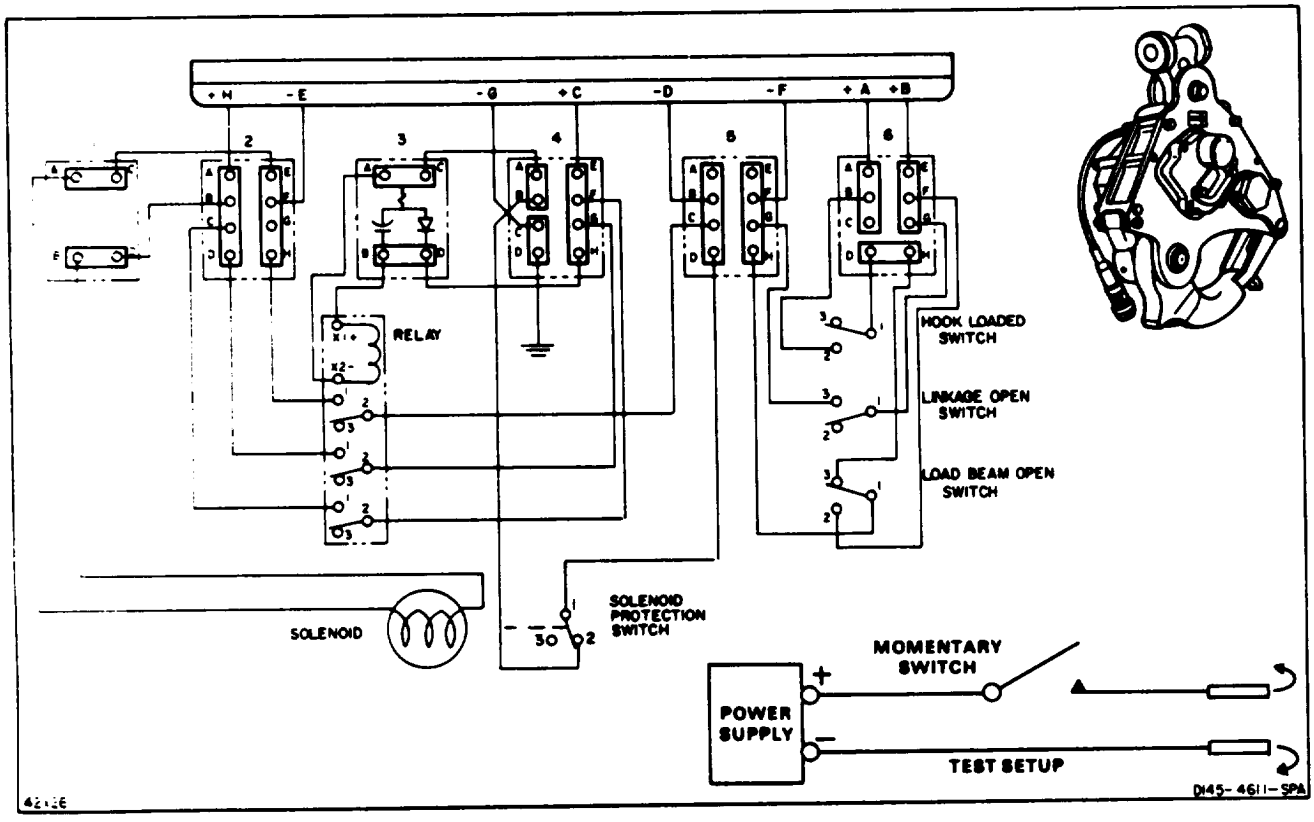
Equipment Condition:

Off Helicopter Task
Hook Switches Adjusted (Task 16-28)
Test Setup

General Safety Instructions:

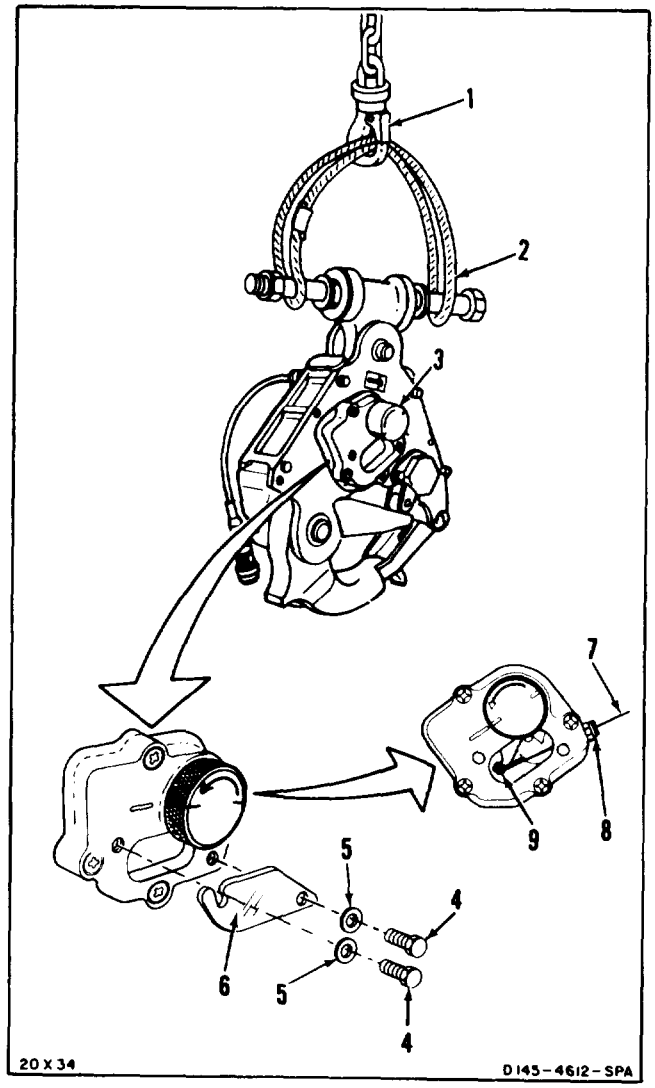
WARNING

Stand clear of hook and load when raising, lowering or releasing load to prevent injury to personnel.



16-29 FORWARD OR AFT CARGO HOOK FUNCTIONAL TEST (AVIM) (Continued)

1. **Attach hoist (1) and wire rope ring and bolt assembly (2)** to hook (3).
2. Remove lockwire and remove two bolts (4) and washers (5). **Remove inspection window (6).**
3. Route lockwire (7) through cable adapter (8). **Fasten lockwire to emergency release arm (9).** Use lockwire (E231).



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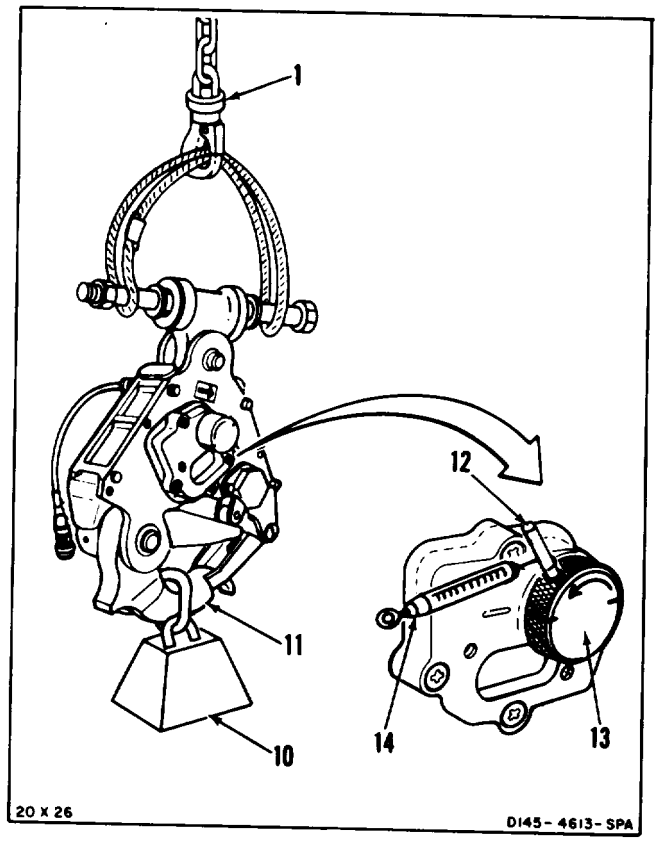
16-29 FORWARD OR AFT CARGO HOOK FUNCTIONAL TEST (AVIM) (Continued)

4. **Connect 20-pound load (10)** to load beam (11). Load shall be straight down and centered on beam.
5. **Raise hoist (1) until load (10) clears ground.**
6. **Insert brass rod (12)** in knob (13). **Attach dial indicating scale (14)** to rod next to knob, as shown,
7. **Pull scale (14) to rotate knob counter-clockwise. Check force required to turn knob.** Force shall not exceed 15 pounds. Load beam (11) shall release 20-pound load (10) and return to closed and latched position,
   a. If load (10) does not release, or force exceeds 15 pounds, check internal tip of load beam (11) for damage (Task 11-24, step 44.4),
   b. If load beam (11) does not close and latch, release knob (13). Repeat step 7, pulling scale (14) more slowly, If beam still does not close and latch, reject hook.
8. Release knob (13).
9. Remove dial indicating scale (14) and brass rod (12).
10. Lower hoist (1).



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11. **Connect test setup (15) to connector plug (16) pins C (+) and D.**

12. **Connect 80-pound load (1O) to load beam (11).** Load shall be straight down and centered on beam.

13. **Raise hoist (1) until load (10) clears ground.**

14. **Adjust power supply (17) to 22 volts.**

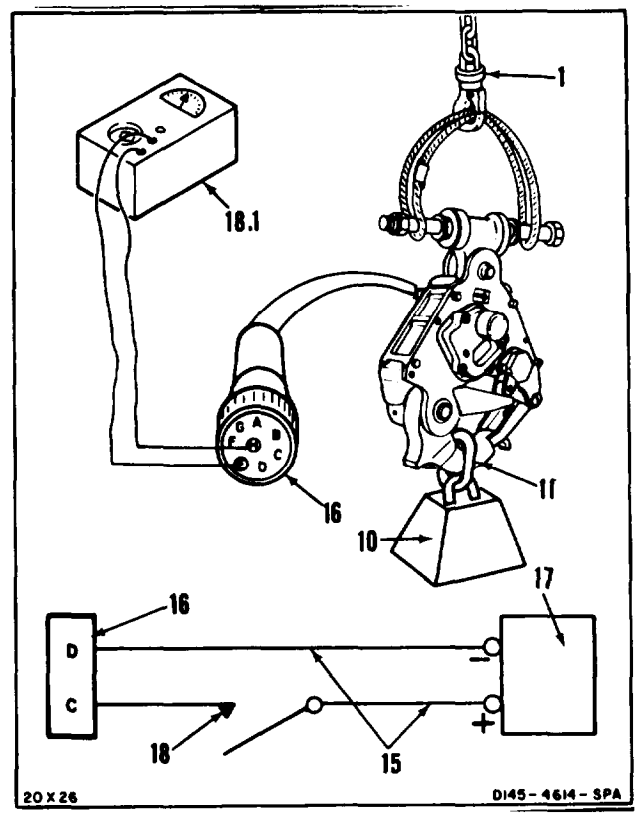
15. **Press test switch (18).** Load beam (11) shall release load (10) and return to closed and latched position.

    a. If load (10) does not release, connect multimeter (18.1) between pins E and H of connector (16). If meter indicates 0 ohm with test switch (18) pressed, replace relay (Task 16-24, step 21). If meter does not indicate 0 ohm, repair solenoid wiring or replace solenoid (Task 16-24, step 54).

    b. If load beam (11) does not close and latch, release test switch (18) and repeat step 15. If beam still does not close and latch, reject hook.

16. Release test switch (18).

17. Disconnect test setup (15) from connector plug (16).



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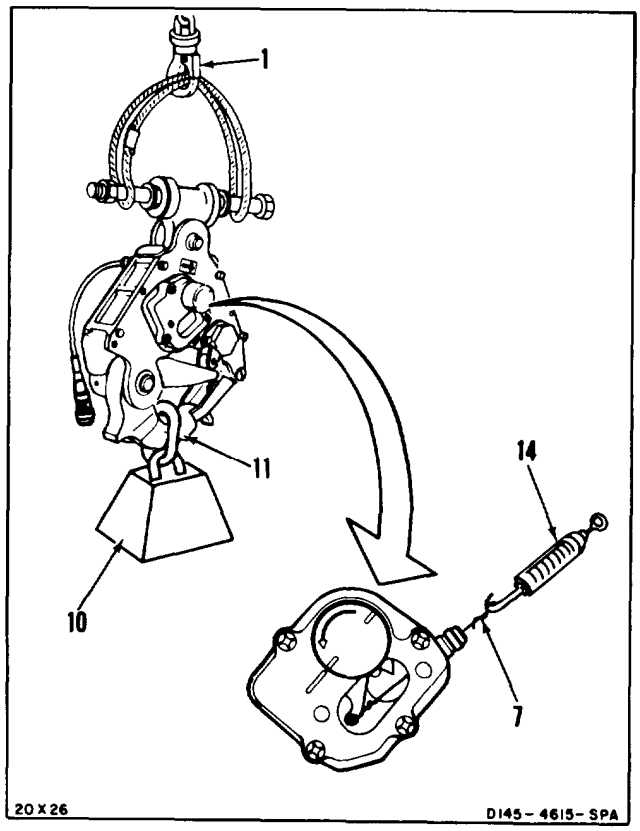
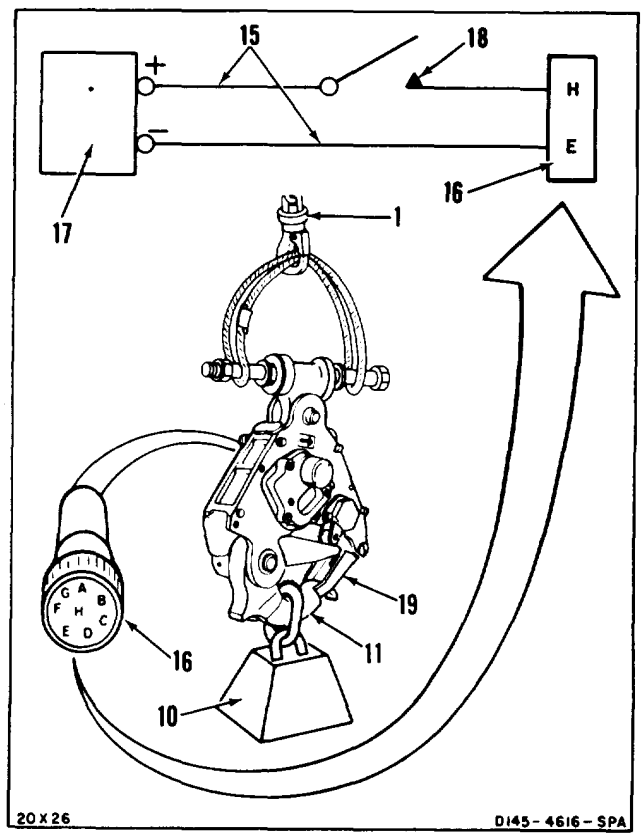
16-29 FORWARD OR AFT CARGO HOOK FUNCTIONAL TEST (AVIM) (Continued)

18. **Connect 20-pound load (10) to load beam (11).** Load shall be straight down and centered on beam,
19. **Raise hoist (1) until load (10) clears ground.**
20. **Attach dial indicating scale (14) to lockwire (7).**
21. **Pull scale (14) to release load (10). Check force required to release load.** Force shall not exceed 25 pounds. Load beam (11) shall release load and return to closed and latched position.
    a. If load does not release, or force exceeds 25 pounds, check internal tip of load beam (11) for damage (Task 11-24, step 44.4).
    b. If load beam (11) does not close and latch, release lockwire (7). Repeat step 21, pulling scale (14) more slowly, If beam still does not close and latch, reject hook.
22. Remove dial indicating scale (14).
23. Lower hoist (1).



24. **Connect test setup (15) to connector plug (16), pins H (+) and E.**
25. **Connect 20-pound load (10) to load beam (11).** Load shall be straight down and centered on beam.
26. **Raise hoist (1) until load (10) clears ground.**
27. **Adjust power supply (17) to 22 volts.**
28. **Press test switch (18). Load beam (11) shall release 20-pound load (10)** and return to closed and latched position.
    a. If load (10) does not release, repair solenoid wiring or replace solenoid (Task 16-24, step 54).
    b. If load beam (11) does not close and latch, release test switch (18) and repeat step 28. If beam still does not close and latch, reject hook.
29. Release test switch (18).
30. **Disconnect test setup (15) from connector plug (16).**
31. **Cycle keeper (19). Make sure keeper is spring-loaded down.**



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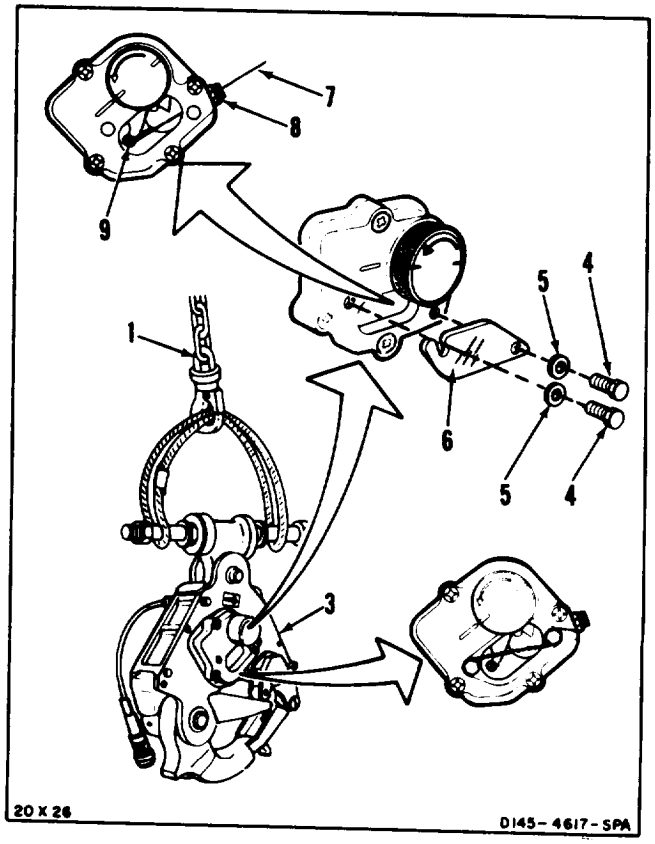
16-29 FORWARD OR AFT CARGO HOOK FUNCTIONAL TEST (AVIM) (Continued)

32. Remove lockwire (7) from cable adapter (8) and arm (9).
33. **Position inspection window (6). Install two bolts (4)** and washers (5).
34. **Torque bolts (4) to 40 inch-pounds.**
35. Lockwire bolts (4) and cable adapter (8) together, Use lockwire (E231).
36. Lower hoist (1) and remove hook (3).



FOLLOW-ON MAINTENANCE:

Pressure test solenoid cover (Task 16-30).

END OF TASK

INITIAL SETUP

Applicable *Configurations:*
All

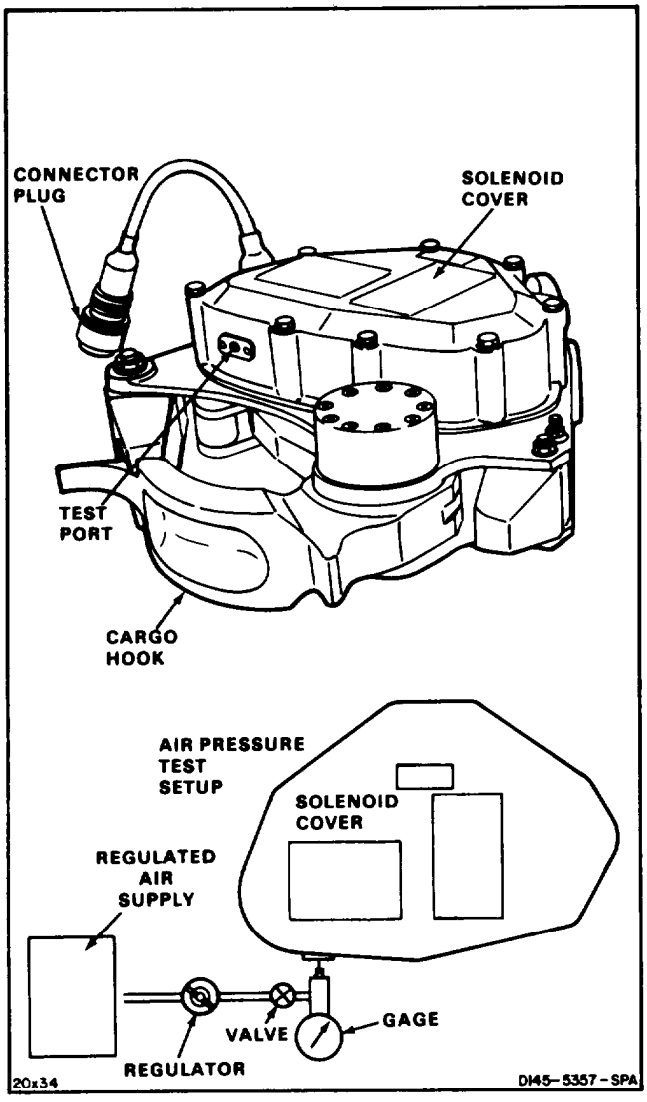
Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Stop Watch
Stowage Coupling MS3180-16C
Regulator
Pressure Gage, 0 to 30 Psi
Shutoff Valve
Torque Wrench, 30 to 150 Inch-Pounds
Air Hose
Source Of Low Pressure Compressed Air

Materials:
None

Parts:
Packing

Personnel Required:
Aircraft Electrician
Inspector

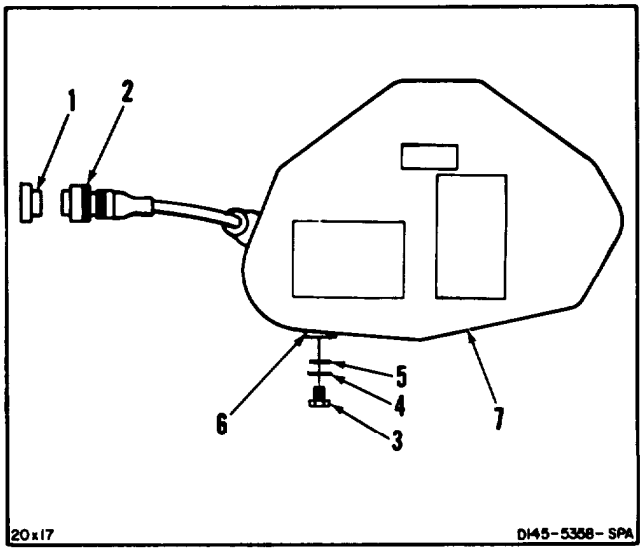
Equipment Condition:
Off Helicopter Task
Air Pressure Test Setup



NOTE

- Only solenoid cover of cargo hook is shown here for clarity.
- Procedure is same to test forward or aft cargo hook.

1. **Install stowage coupling (1)** on connector plug (2).
2. **Remove bolt (3),** washer (4), and packing (5) from test port (6) of solenoid cover (7).



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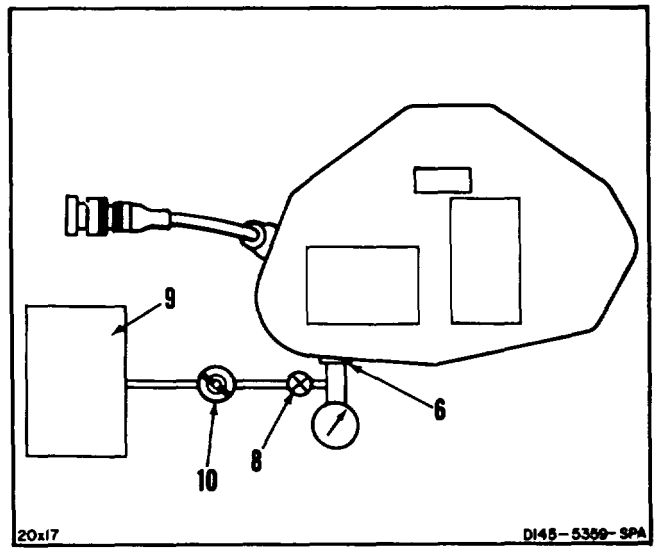
3. **Close valve (8)** of test setup. Connect test setup to air supply (9).
4. **Adjust regulator (10) to** 0 **psi.**
5. **Connect test setup** to test port (6).

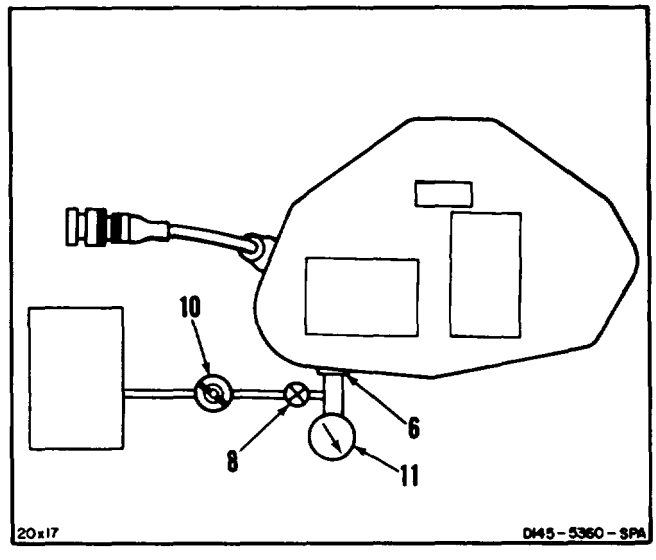


6. **Open valve (8).**

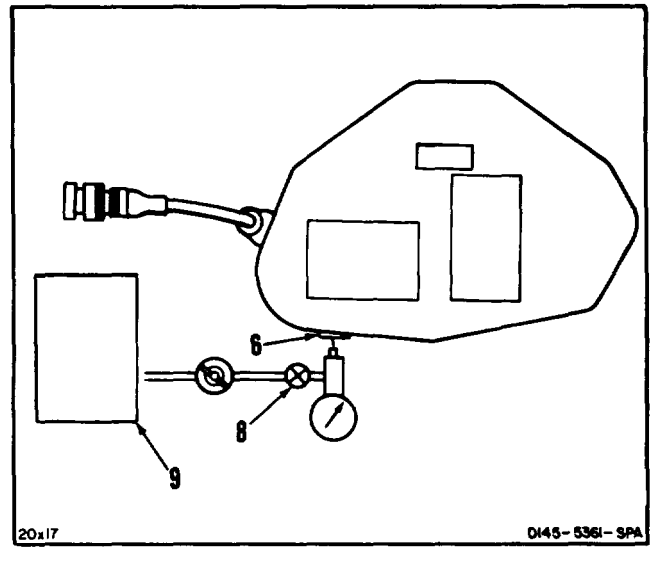
WARNING

Do not apply more than 10 psi air pressure to test port. Otherwise, damage to solenoid cover or injury to personnel can occur.

7. **Adjust regulator (10) for 5.5 psi on gage (11).**
8. **Close valve (8). Adjust air supply regulator (10) to 0 psi.**
9. **Check gage (11) for pressure loss.** There shall be no pressure loss for 30 minutes.

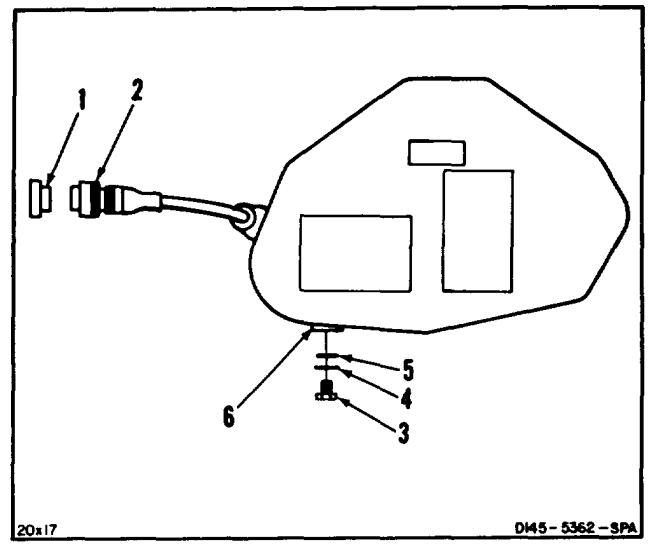


10. **Open valve (8) and reduce pressure at port (6) to 0 psi.**
11. Disconnect test setup from port (6) and from air supply (9).



12. **Install** packing (5), washer (4), and bolt (3) *in* port (6). Torque bolt to **50 inch-pounds.**
13. **Remove stowage coupling (1)** from connector plug (2).

FOLLOW-ON MAINTENANCE:
None



END OF TASK

16-31 INSTALL FORWARD AND AFT CARGO HOOK

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

Materials:
Lockwire (E231)
Cloths (E120)

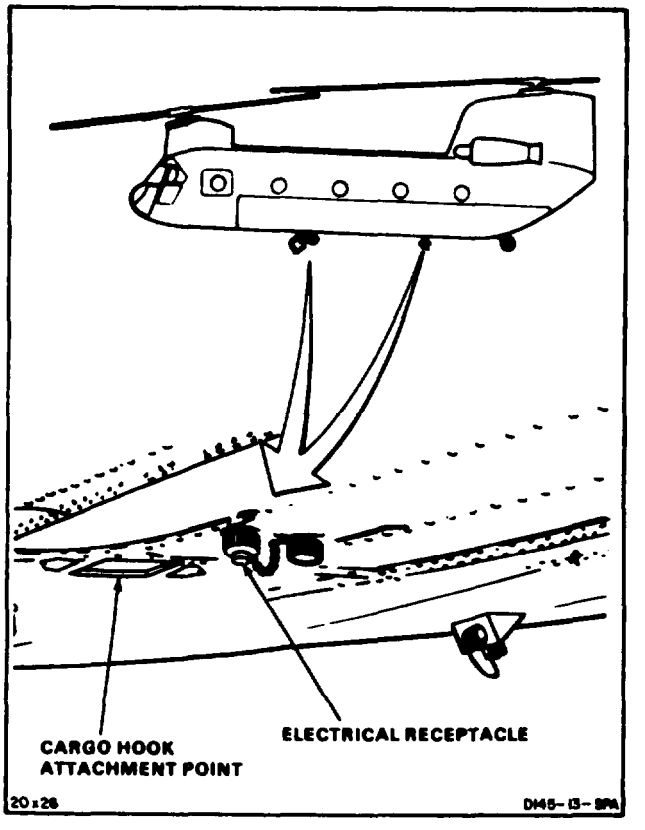
Personnel Required:
67U10 Medium Helicopter Repairer
67U20 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P

General *Safety Instructions:*

WARNING

If helicopter has been flown since cargo hook was removed, battery must be disconnected and electrical power must be off. Otherwise, injury to personnel can occur.



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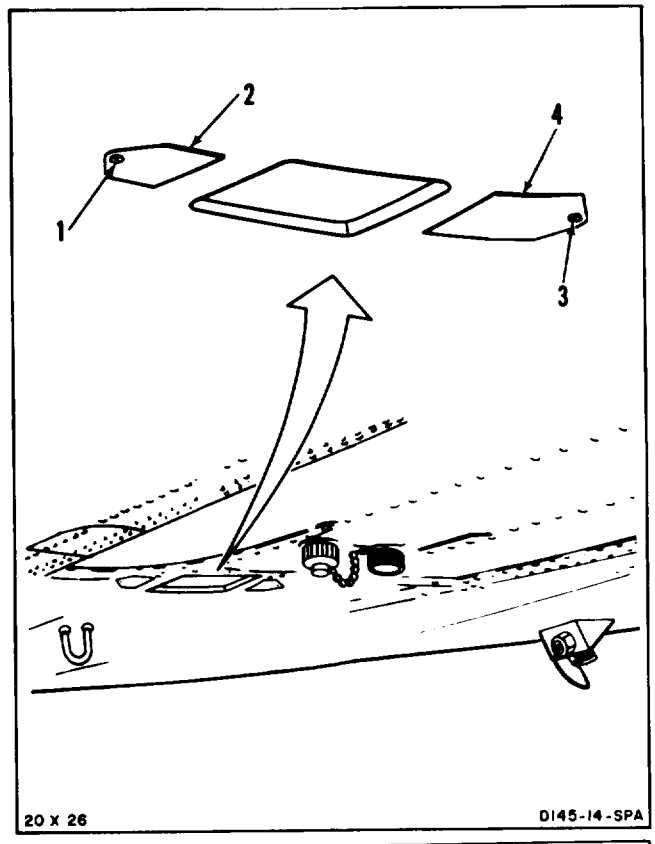
16-31 INSTALL FORWARD OR AFT CARGO HOOK *(Continued)*

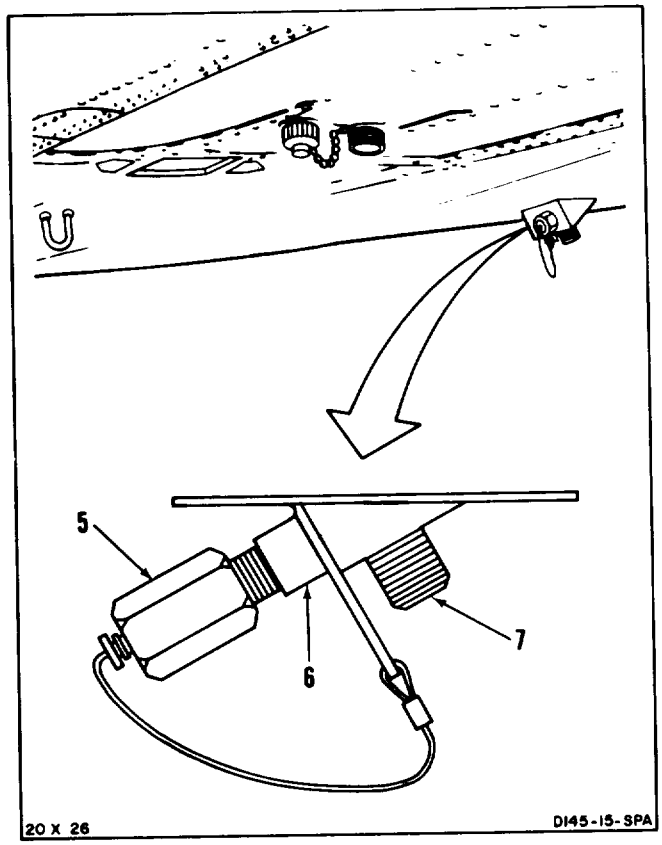
NOTE

- Forward and aft cargo hooks are installed in same way.
- If manual release cable is installed, and forward access plate and aft access plate are removed, go to step 8. Do steps 1 thru 7 if cargo hook was removed for a mission.

1. Remove screw (1) **Remove forward access plate (2)** from fuselage.
2. Remove screw (3). **Remove aft access plate (4)** from fuselage.



3. **Remove cap (5) from bulkhead fitting (6). Install cap on stowage fitting (7).**



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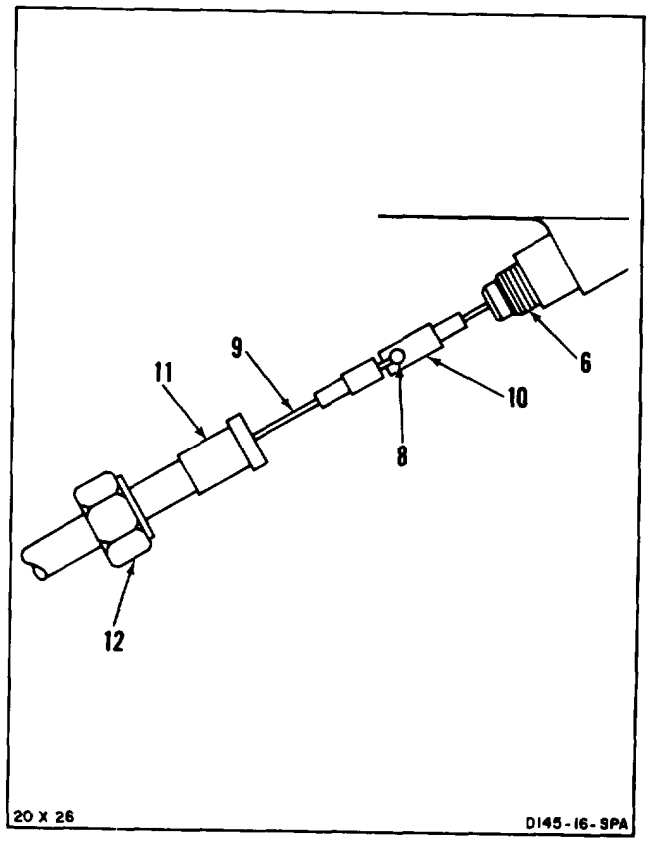
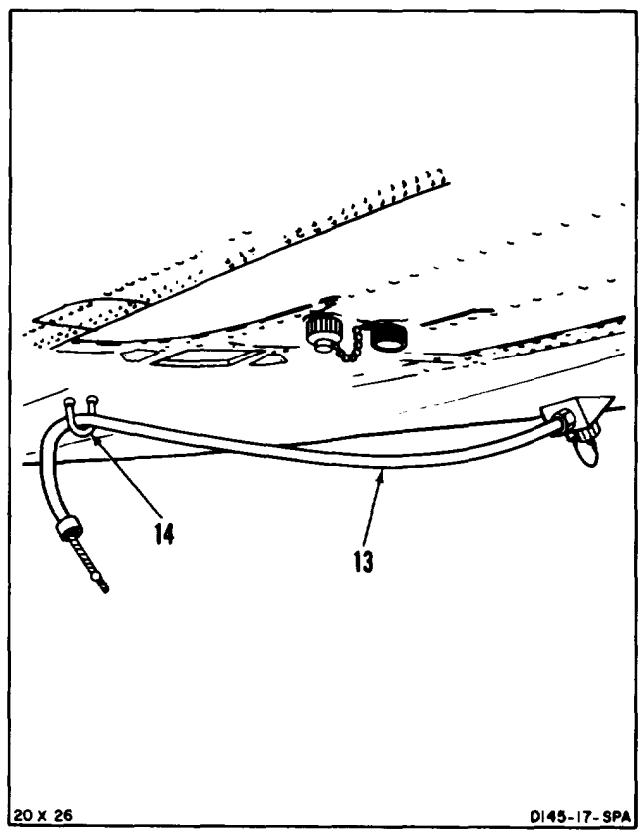
16-31 INSTALL FORWARD OR AFT CARGO HOOK *(Continued)*

4. **Slide ball end attachment (8) of cable (9) into recess in cable attachment (10).**
5. **Slide outer sleeve (11) up cable (9) and position over fitting (6).**
6. **Tighten nut (12)** on **fitting (6)**.



7. Put free end of control assembly (13) through clamp (14).



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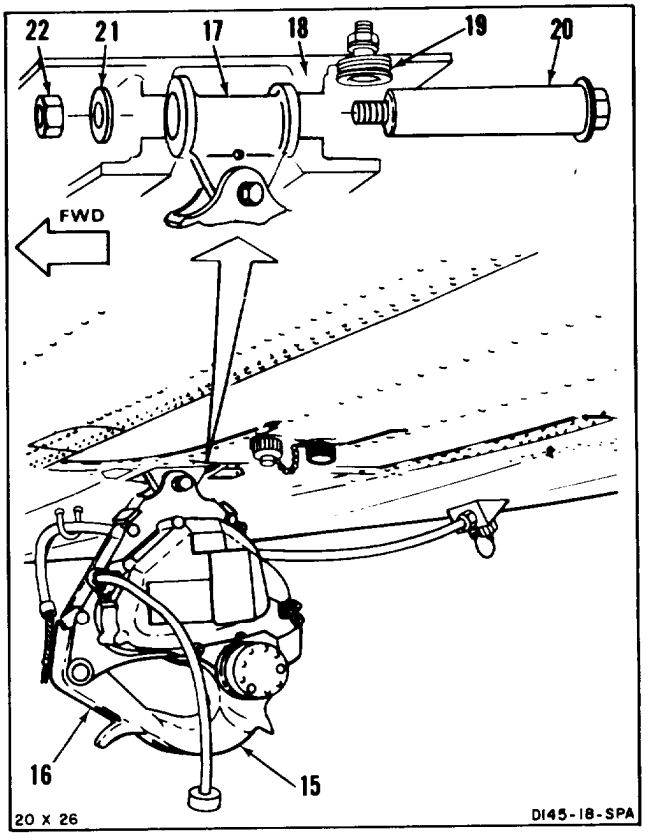
16-31 INSTALL FORWARD OR AFT CARGO HOOK (Continued)

8. **Position cargo hook (15)** with keeper (16) forward. **Position hook fitting (17)** in fuselage fitting (18).
9. Have helper support weight of hook (15) and align holes in hook with holes in fitting. Push up on safety stop (19) and **install pivot bolt (20).**
10. Install washer (21) and nut (22) on bolt (20). **Torque nut to 120 inch-pounds.**

WARNING

Safety stop must be fully extended to prevent bolt from falling out of fitting. Leas of bolt will result in loss of cargo hook and external load, causing injury or death to personnel.

11. Make sure safety stop (19) moves down to block bolt (20).



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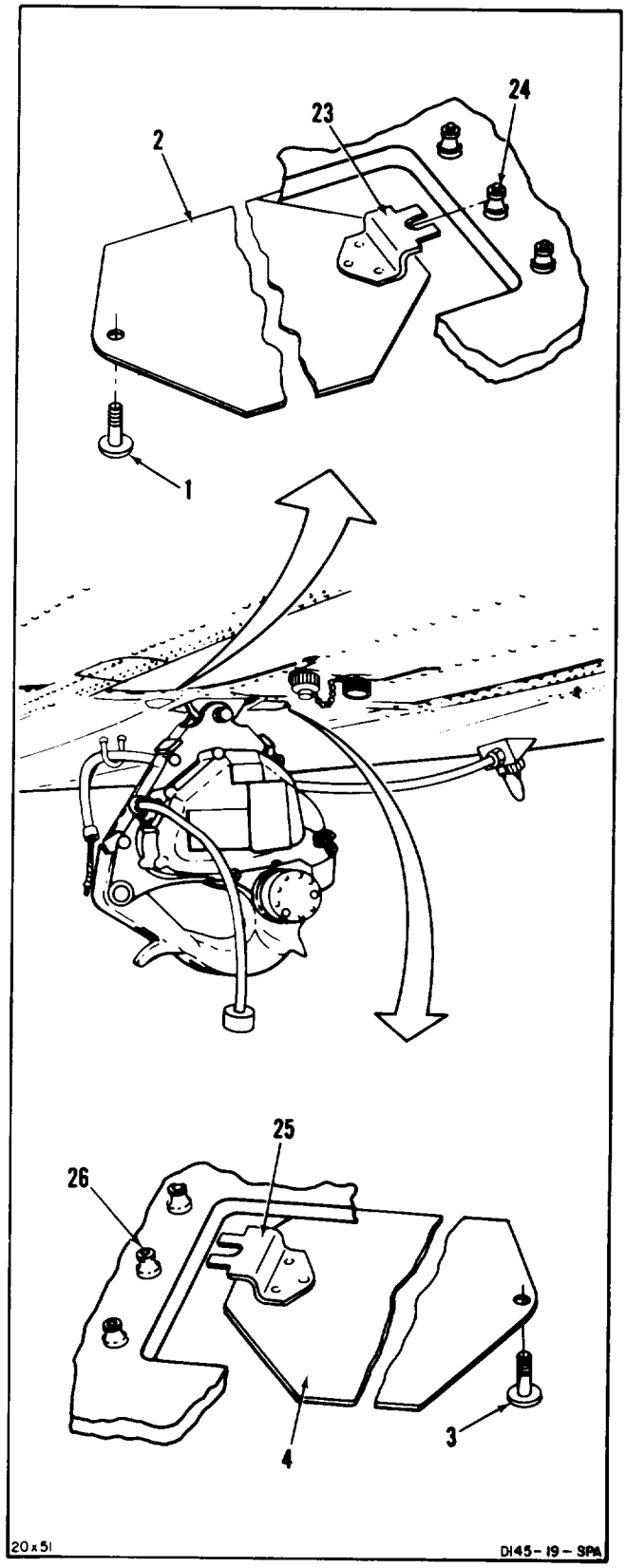
16-31 INSTALL FORWARD OR AFT CARGO HOOK (Continued)

12. **Position forward access plate (2)** over hole in fuselage, with clip slot (23) around rivet tail (24).
13. **Install screw (1).**
14. **Position aft access plate (4)** over hole in fuselage, with clip slot (25) around rivet tail (26).
15. **Install screw (3).**



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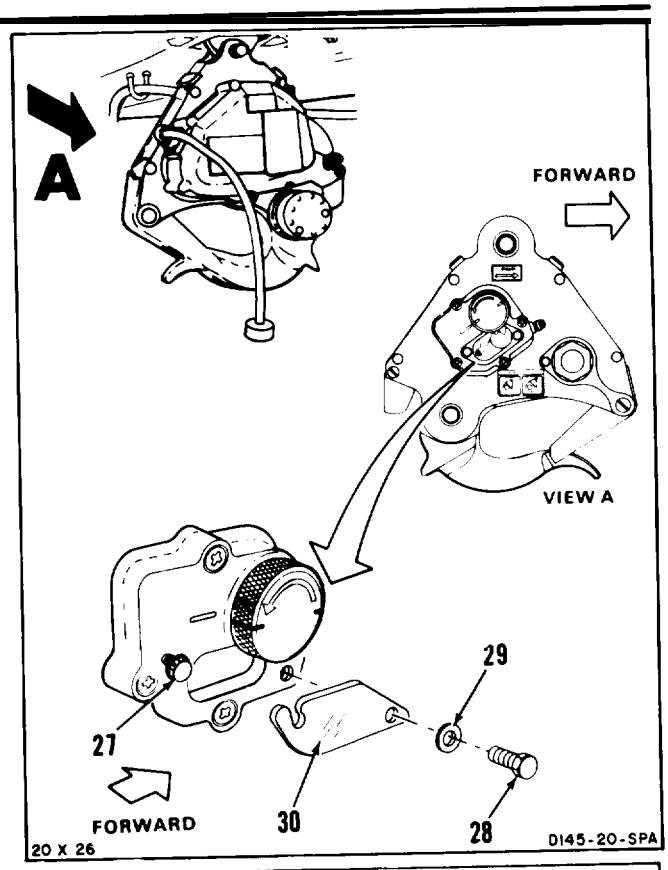
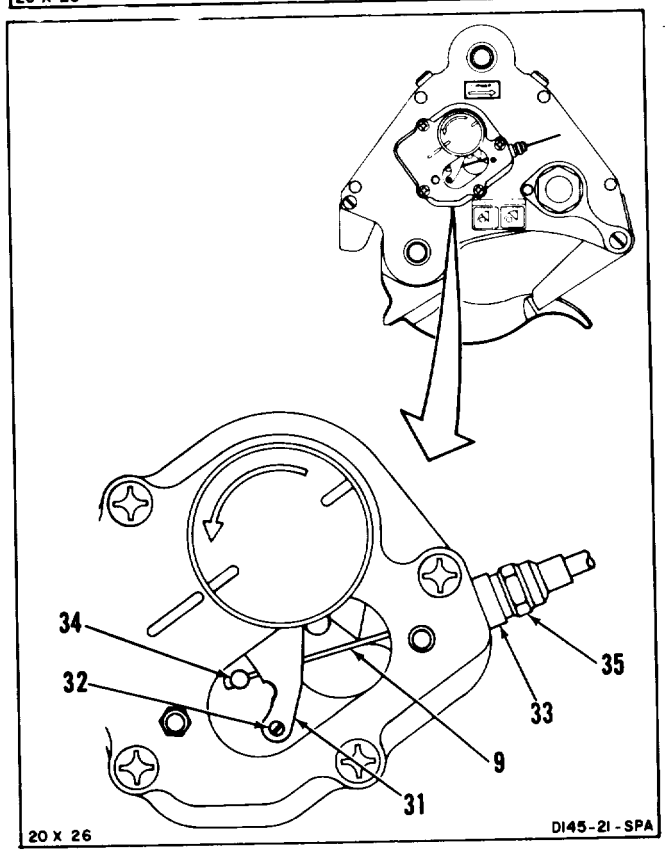
16-31 INSTALL FORWARD OR AFT CARGO HOOK (Continued)

16. Loosen bolt (27). Remove bolt (28) and washer (29).
17. Remove inspection window (30).



18. **Move release arm (31) straight down** and hold.
19. **Loosen screw (32). Feed cable (9) through cable adapter fitting (33).**
20. **Position ball end (34) of cable (9) into arm (31). Tighten screw (32). Let go of arm (31)**.
21. **Tighten nut (35) on cable adapter fitting (33).**



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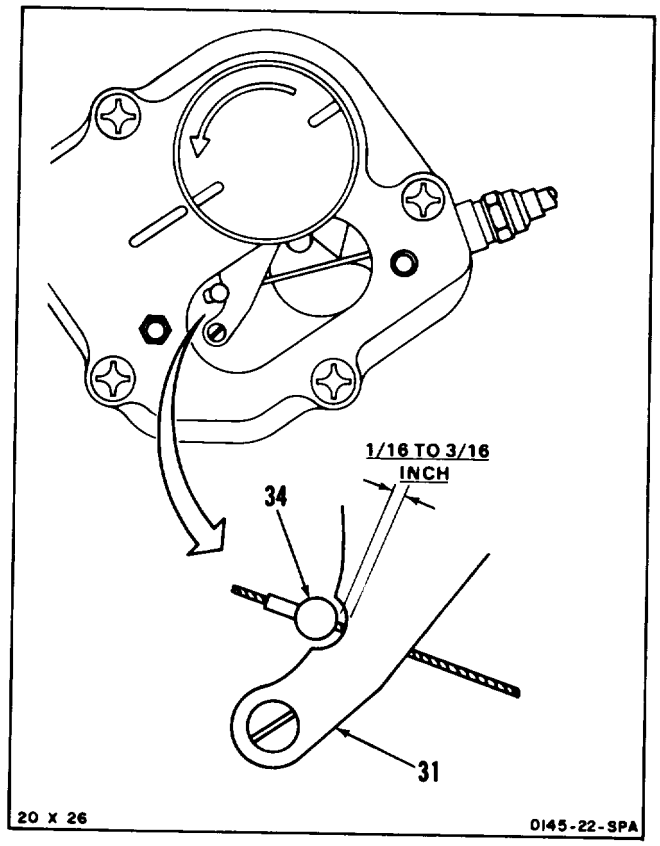
16-31 INSTALL FORWARD OR AFT CARGO HOOK (Continued)

WARNING

Inproper adjustment of release cable can result in loss of external load. Personnel can be injured or killed.

22. **Push up release arm (31).**

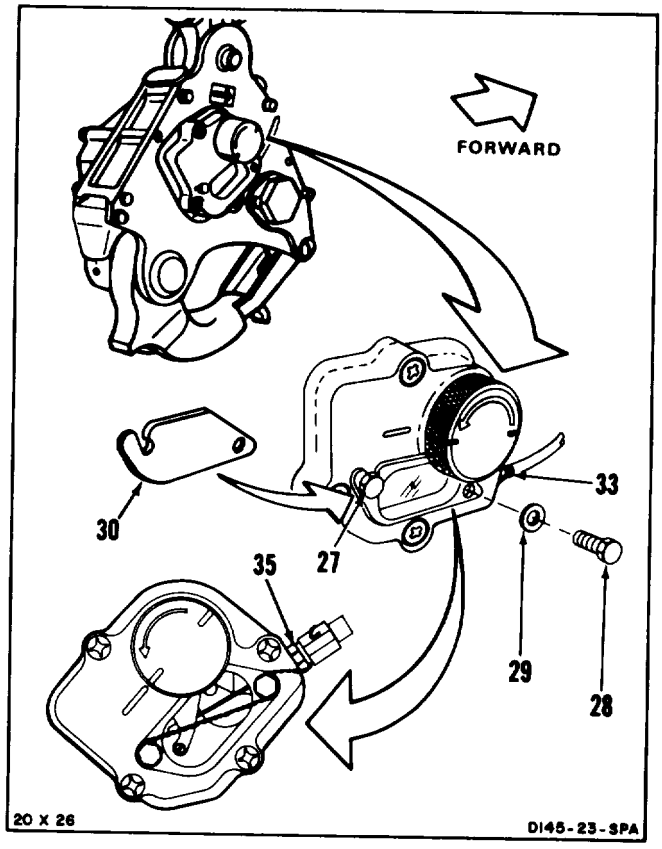
23. **Make sure clearance is <u>0.00 to 0.20 inch</u>** between ball end (34) and arm (31).



24. Clean and dry window (30), and area around hole. Use cloths (E120).

25. **Position window (30)** on hook (15). **Install bolt (28) and washer (29).**

26. **Torque bolts (27 and 28) to <u>40 inch-pounds.</u>** Lockwire bolts, cable adapter (33) and nut (35) together. Use lockwire (E231).



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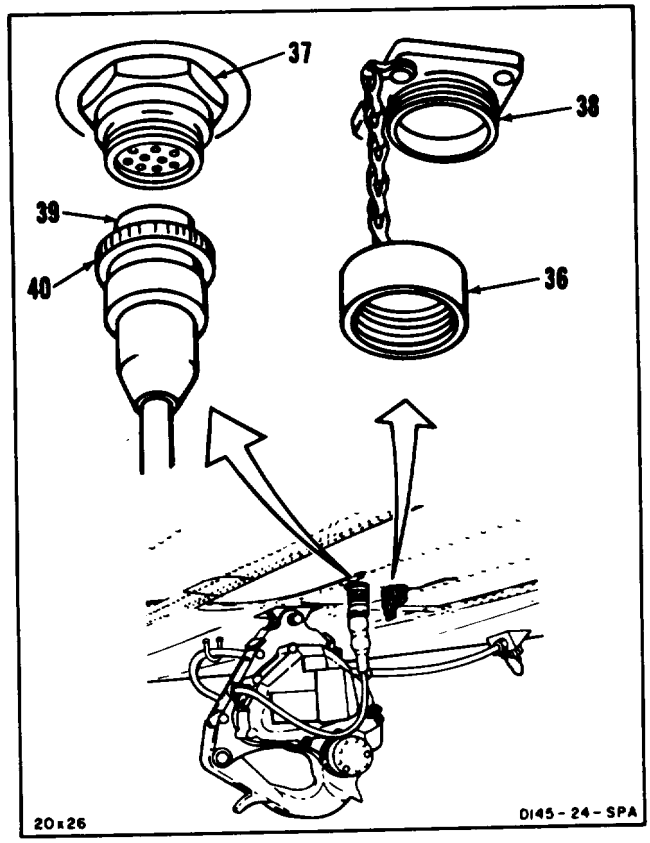
16-31 INSTALL FORWARD OR AFT CARGO HOOK (Continued)

27. Remove cap (36) from receptacle (37) and install on stowage location (38).

28. **Connect plug (39)** to receptacle (37). Tighten lockring (40).

INSPECT



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T)

END OF TASK

16-32 REMOVE FORWARD OR AFT CARGO HOOK EXTERNAL MANUAL RELEASE CABLE

INITIAL SETUP

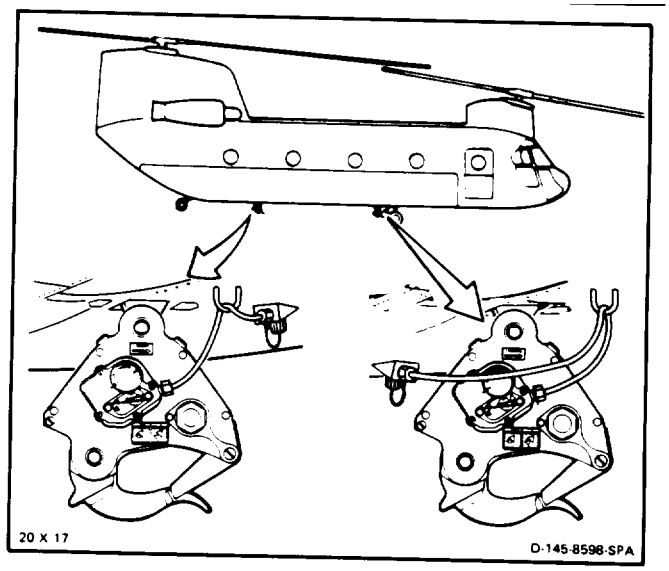
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

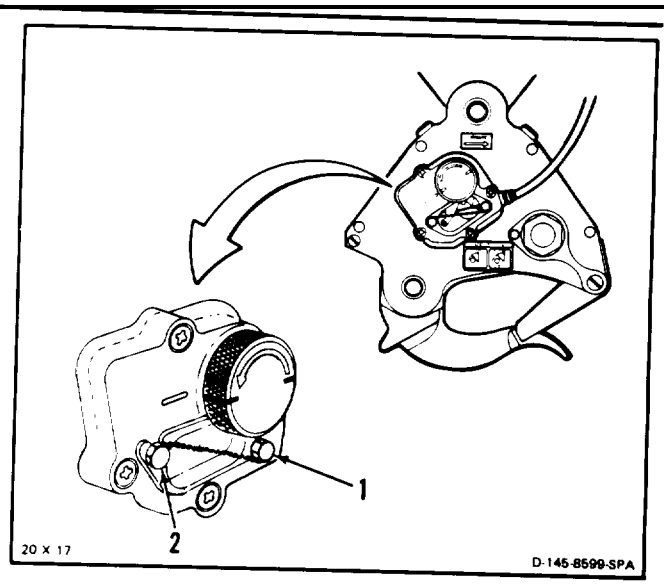
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



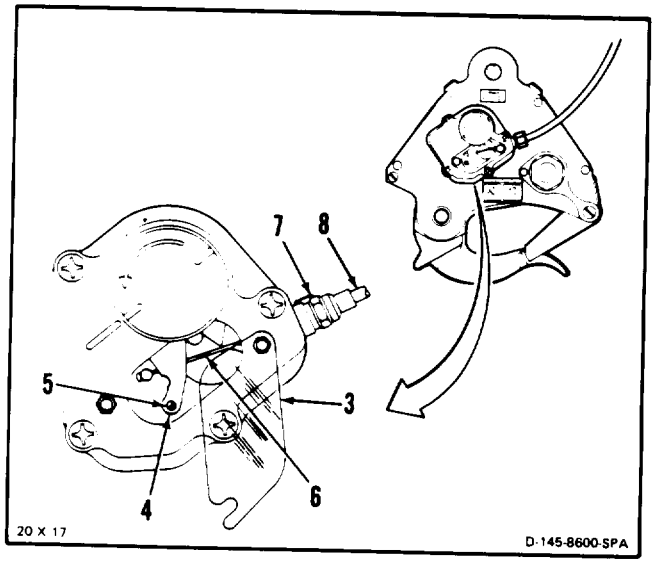
NOTE

Procedure to remove forward or aft external manual release cable is same. Forward cable shown here.

1. Remove lockwire and **loosen two bolts (1 and 2).**



2. **Swing inspection window (3) down** to gain access to release arm (4).
3. **Move release arm (4) down and hold. Loosen screw (5). Remove cable (6) from arm.**
4. Remove lockwire from nut (7). **Loosen nut and disconnect cable housing (8).**



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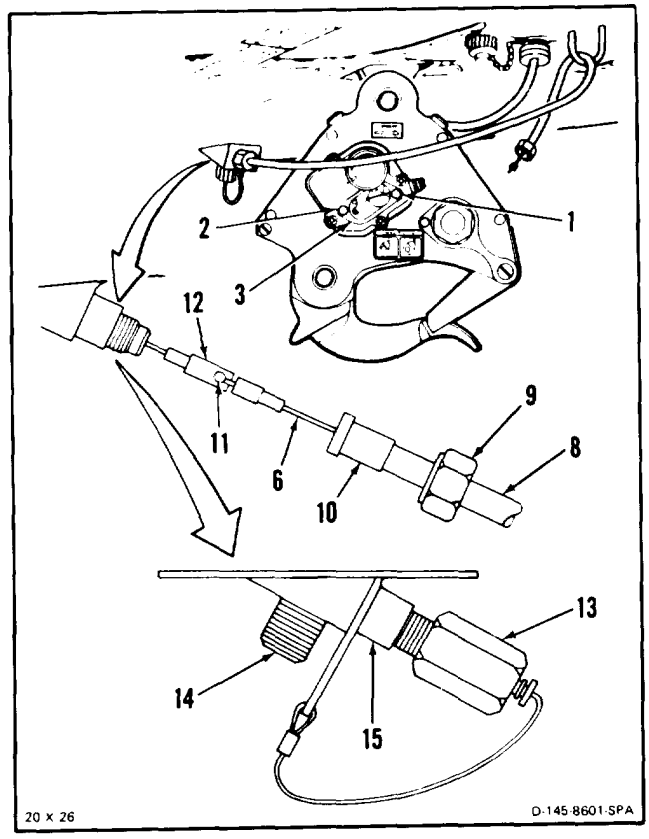
16-32 REMOVE FORWARD OR AFT CARGO HOOK EXTERNAL MANUAL RELEASE CABLE (Continued)

5. **Position inspection window (3) on bolt (2). Tighten bolts (1 and 2).**
6. **Loosen nut (9).**
7. **Slide sleeve (10) down cable housing (8).**
8. Remove cable ball end (11) from inner cable attachment (12). Remove cable housing (8).
9. **Remove cap (13) from stowage fitting (14). Install cap on feed thru fitting (15).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-33 INSTALL FORWARD OR AFT CARGO HOOK EXTERNAL MANUAL RELEASE CABLE

INITIAL SETUP

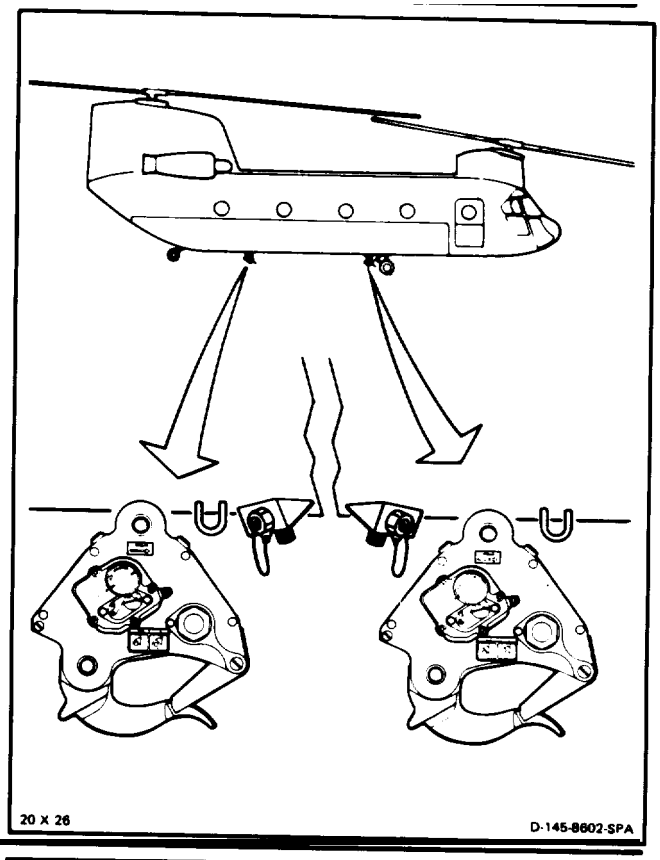
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

Materials:
Cloths (E120)
Lockwire (E231)

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

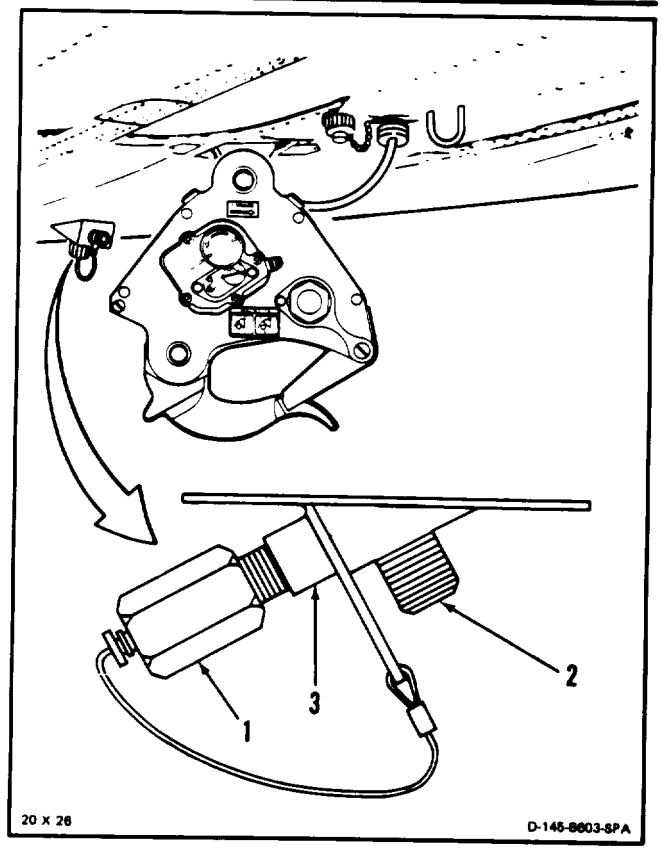
References:
TM 55-1520-240-23P



NOTE

Procedure is same to install forward or aft external manual release cable. Forward cable shown here.

1. **Remove cap (1) from feed-thru fitting (2). Install cap on stowage fitting (3).**



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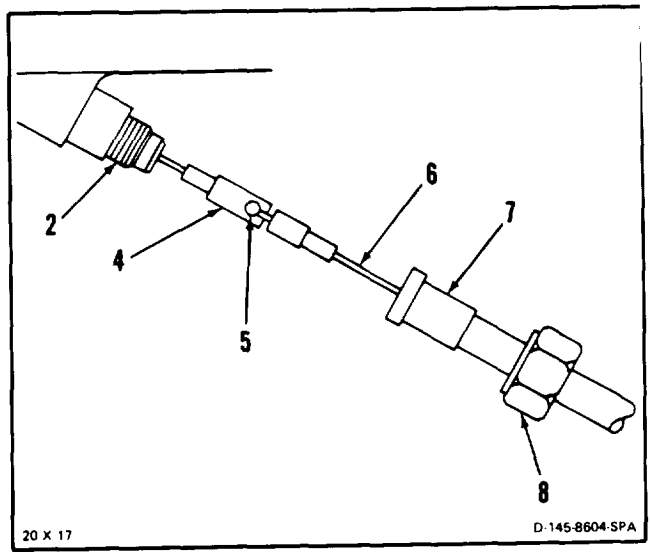
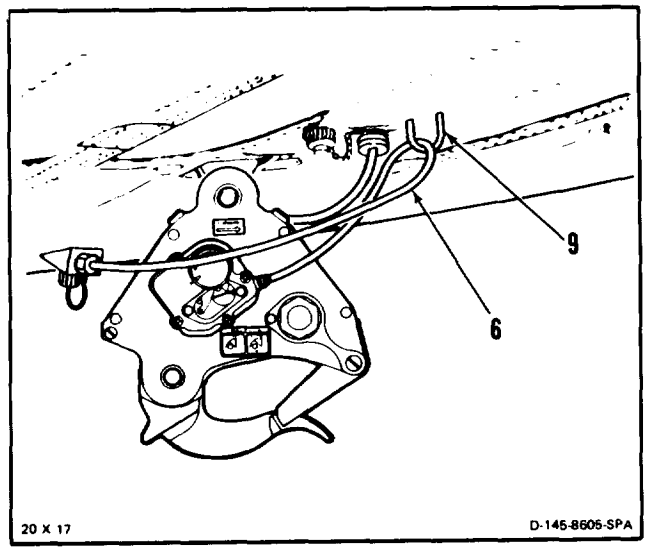
16-33 INSTALL FORWARD OR AFT CARGO HOOK EXTERNAL MANUAL RELEASE CABLE (Continued)

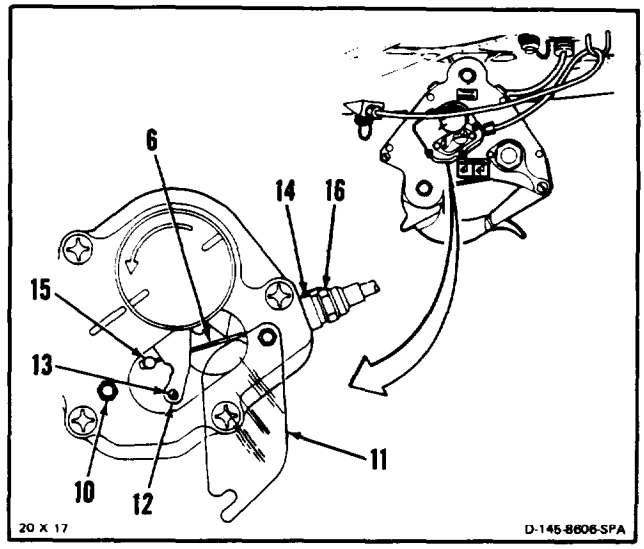
2. Pull cable attachment (4) from bulkhead fitting (2).
3. **Slide ball end attachment (5) of cable (6) into recess in cable attachment (4).**
4. **Slide outer sleeve (7) up cable (6)** and position over fitting (2).
5. **Tighten nut (8)** on fitting (2).



6. **On forward cargo hook, insert free end of cable (6) through clamp (9).**



7. **Loosen bolt (10). Swing inspection window (11) down** to clear release arm (12).
8. **Move release arm (12) straight down** and hold.
9. **Loosen screw (13). Feed cable (6)** through cable adapter fitting (14).
10. **Position ball end (15) of cable (6) into arm (12). Tighten screw (13).** Let go of arm (12).
11. **Tighten nut (16)** on cable adapter fitting (14).



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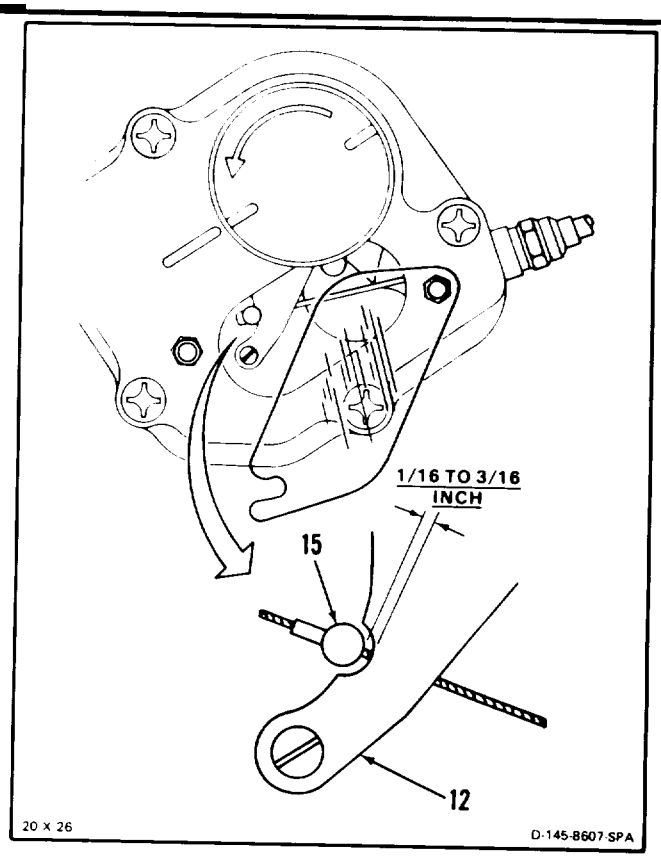
16-33 INSTALL FORWARD OR AFT CARGO HOOK EXTERNAL MANUAL RELEASE CABLE (Continued)

WARNING

Improper adjustment of release cable can result in loss of external load. Personnel can be injured or killed.

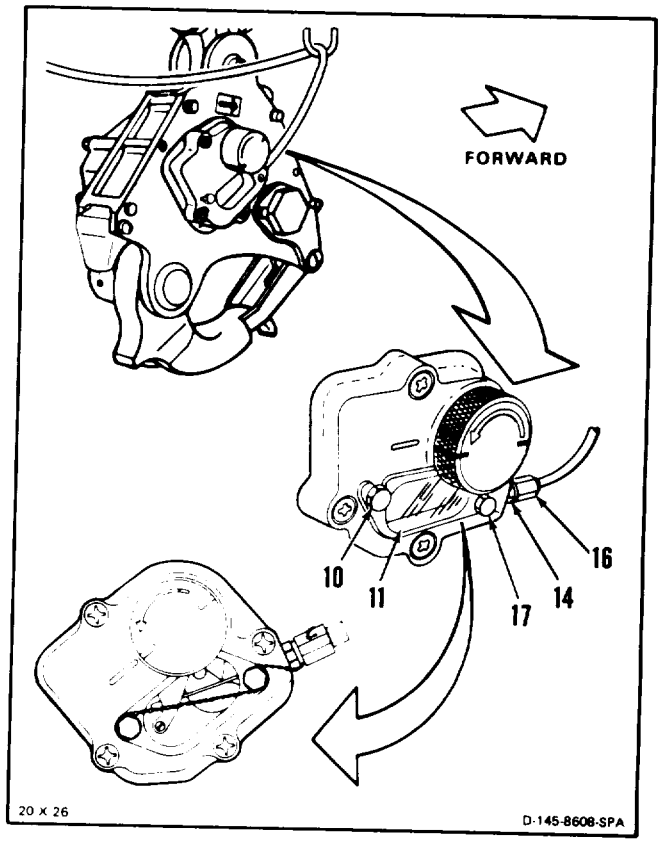
12. Push up release arm (12)

13. Make sure clearance is 1/16 to 3/16 inch between ball end (15) and arm (12).



14. Clean and dry window (11), and area around hold. Use cloths (E120).

15. **Position window (11)** on bolt (10). **Tighten bolts (10 and 17). Torque two bolts (10) and 17) to 40 inch-pounds.** Lockwire bolts, cable adapter fitting (14) and nut (16) together. Use lockwire (E231).



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

END OF TASK

16-34 REMOVE FORWARD OR AFT CARGO HOOK INTERIOR MANUAL RELEASE CABLE

INITIAL SETUP

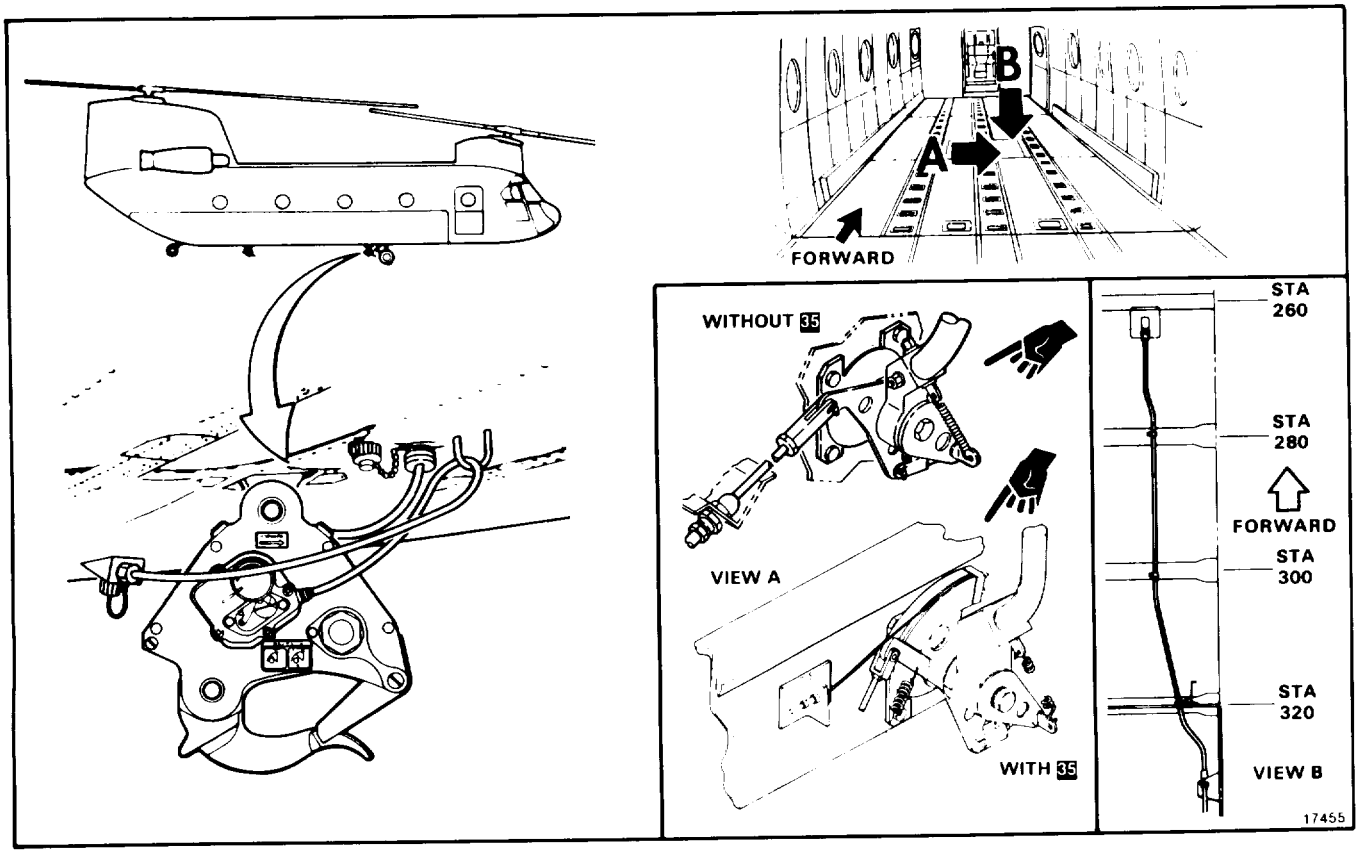
Applicable Configurations:
All

Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Right Center Cabin Floor Panel (Sta 240 to Sta 320) or Right Center Cabin Floor Panel (Sta 360 to Sta 486) Removed (Task 2-204)
Center Hook Access Door Opened (Task 2-2)



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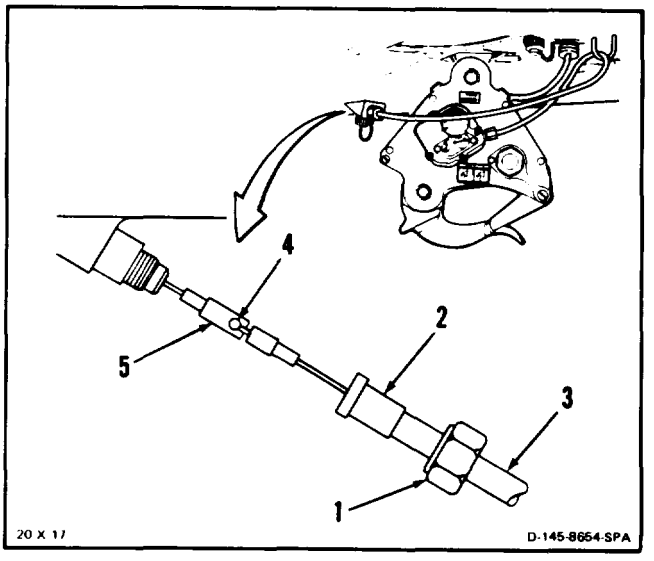
16-34 REMOVE FORWARD OR AFT CARGO HOOK INTERIOR MANUAL RELEASE CABLE (Continued)

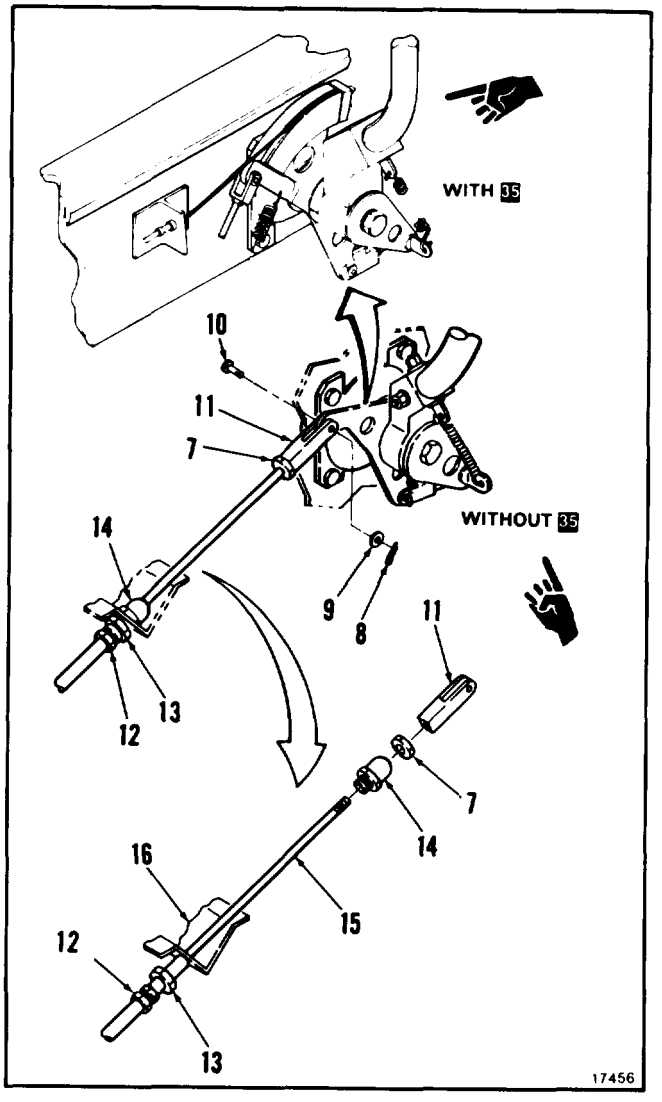
NOTE

Procedure is same to remove forward or aft cargo hook interior manual release cable except as noted. Forward cable shown here.

1. **Loosen nut (1).**
2. Slide sleeve (2) down cable (3).
3. **Remove cable ball end (4) from inner cable attachment (5).**



4. Working in cabin rescue hatch, remove lockwire and **loosen locknut (7).**
5. **Remove cotter pin (8),** washer (9) and **pin (10)** from clevis (11).
6. Remove lockwire from cable retaining nut (12) and swivel fitting locknut (13).
7. Hold swivel fitting (14) and **remove retaining nut (12) and locknut (13).**
8. **Remove clevis (11), locknut (7) and swivel fitting (14) from cable (15).**
9. Pull end of cable 15) through bracket (16).



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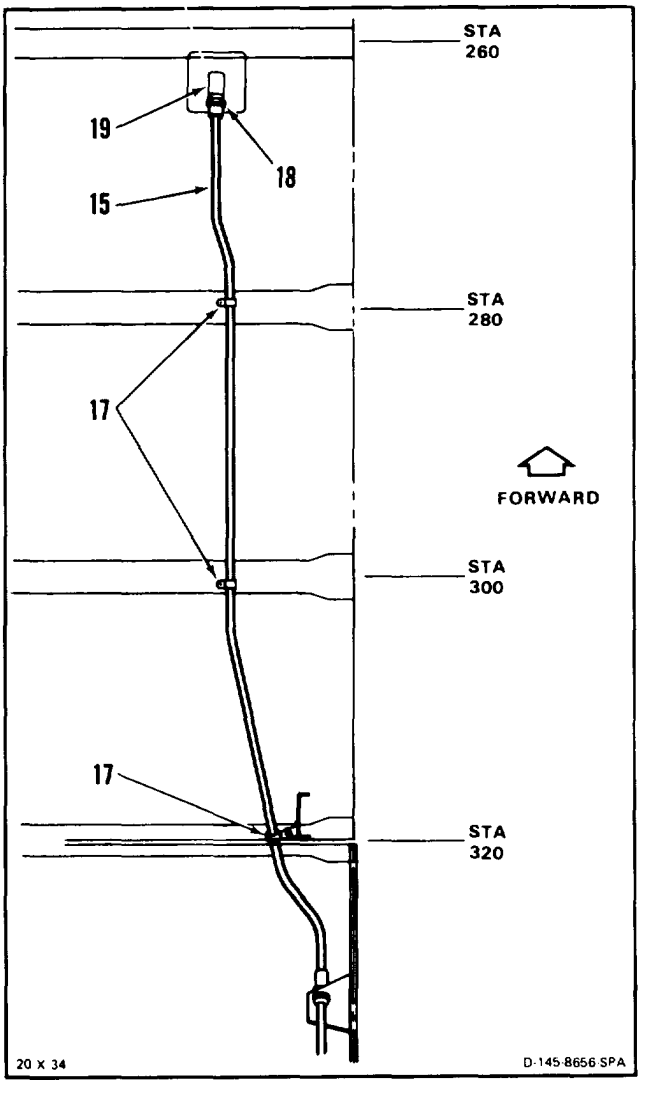
16-34 REMOVE FORWARD OR AFT CARGO HOOK INTERIOR MANUAL RELEASE CABLE (Continued)

10. **Remove three support clamps (17).**
11. **Remove** lockwire and **cable retaining nut (18)** from feed-thru fitting (19).
12. **Remove cable (15)** from fitting (19). Remove cable (15).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-35 INSTALL FORWARD OR AFT CARGO HOOK INTERNAL MANUAL RELEASE CABLE

INITIAL SETUP

Applicable Configurations:
All

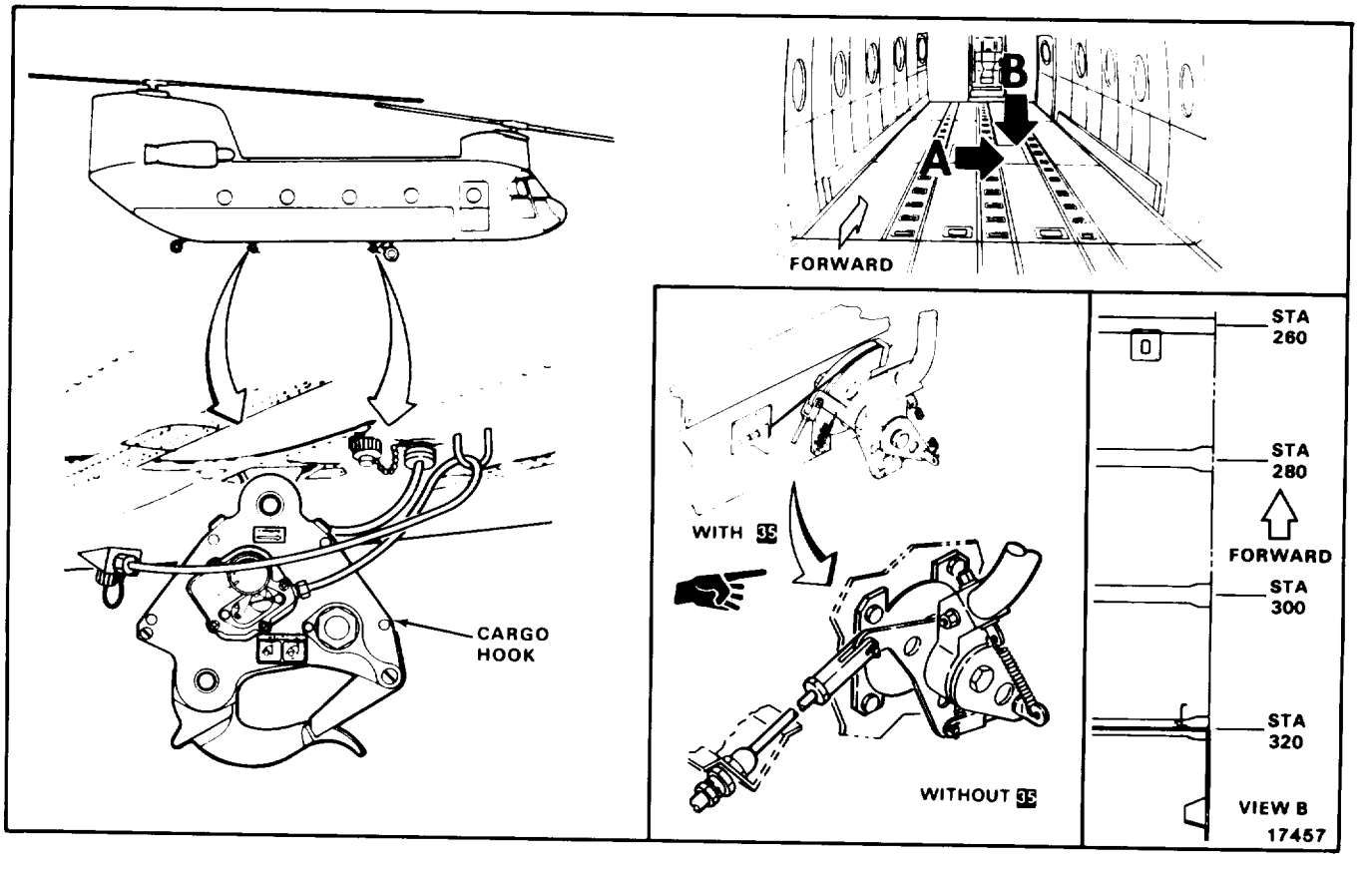
Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 5 to 50 Inch-Pounds

Materials:
Lockwire (E231)

Parts:
Cotter Pins

Personnel Required:
Medium Helicopter Repairer (2)
Inspector

References:
TM 55-1520-240-23P



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16-35 INSTALL FORWARD OR AFT CARGO HOOK INTERIOR MANUAL RELEASE CABLE (Continued)

NOTE

Procedure is same to install forward or aft cargo hook internal manual release cable except as noted. Forward cable shown here.

1. **Route cable (1)** through floor beams **and install in feed-thru fitting (2).**
2. **Tighten cable retaining nut (3).** Lockwire retaining nut. Use lockwire (E231).

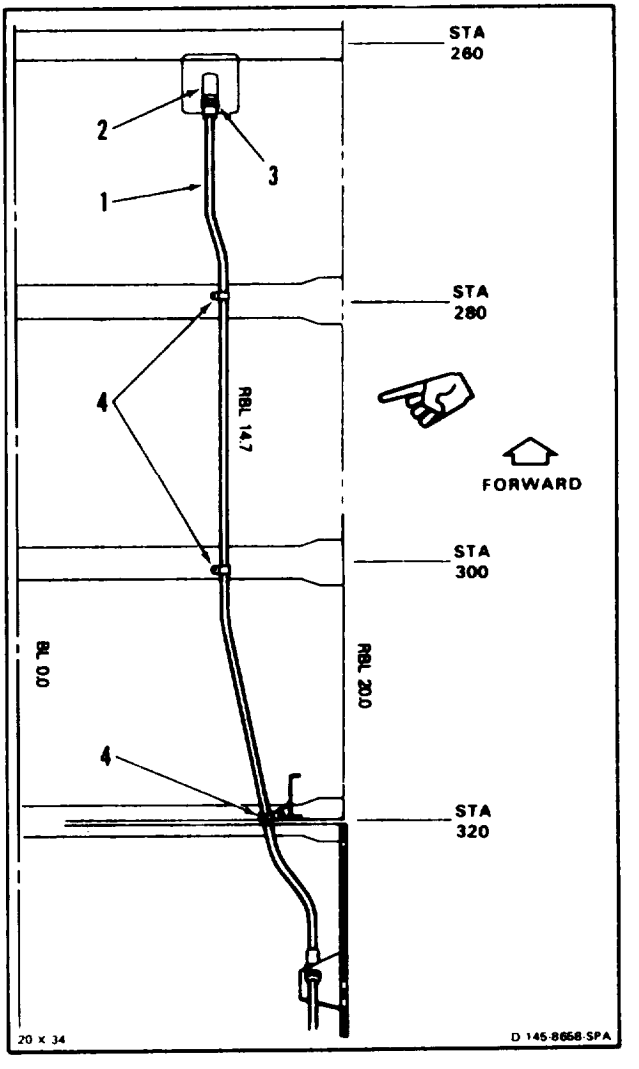
NOTE

On aft cargo hook interior manual release cable there are two support clamps.

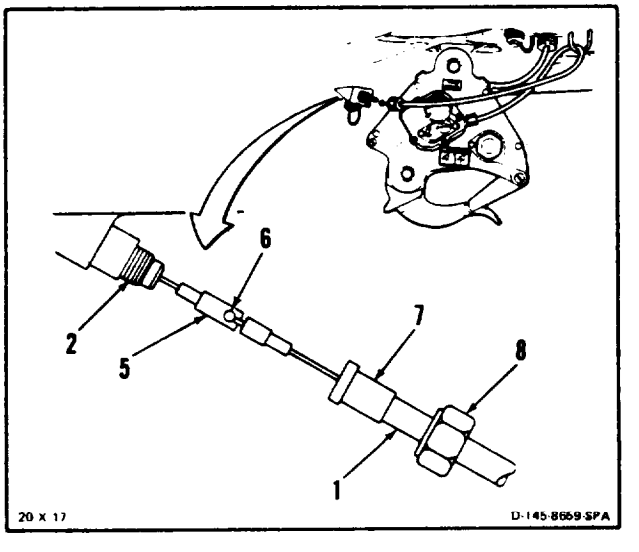
3. **Install three support clamps (4)** on cable (1).

WARNING

The clamps at STA 280 and 300 must be positioned with the cable outboard of the damp retaining bolt. This places the cable between floor "I" sections; not under one, where the cable could be crushed.



4. Working under aircraft at forward cargo hook feed-thru fitting (2), pull out cable attachment (5).
5. **Slide ball end attachment (6)** of cable (1) **into recess in cable attachment (5).**
6. **Slide outer sleeve (7) up cable (1)** and position over fitting (2).
7. **Tighten nut (8)** on fitting (2).



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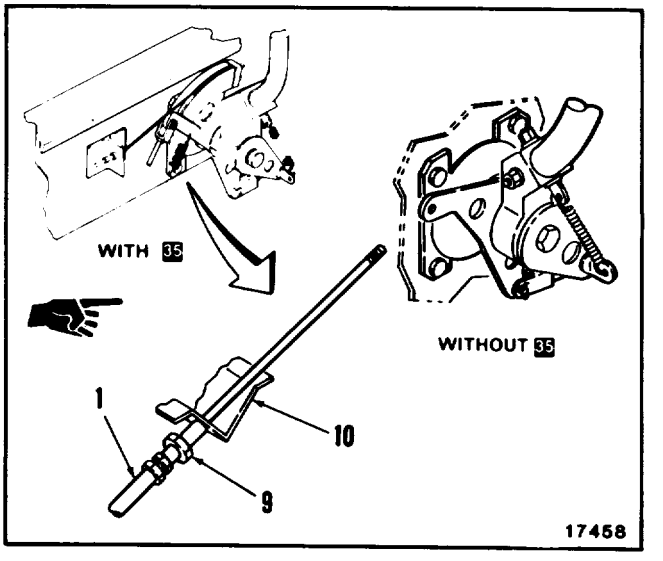
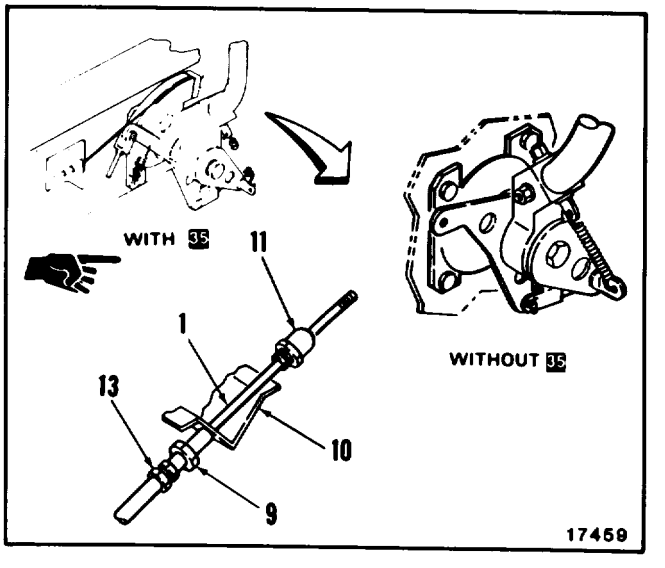
16-35 INSTALL FORWARD OR AFT CARGO HOOK INTERNAL MANUAL RELEASE CABLE (Continued)

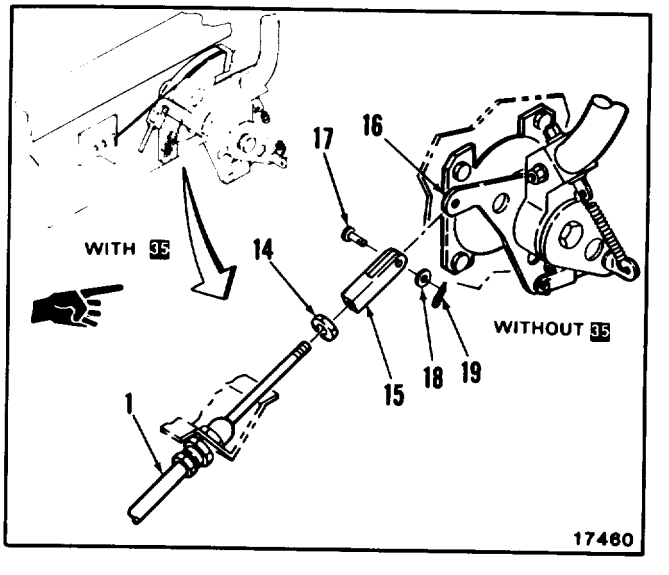
8. Working in rescue hatch compartment, **install swivel fitting locknut (9)** on cable (1).
9. **Route end of cable (1) through bracket (10).**



10. Slide swivel fitting (11) over cable (1) into bracket (10).
11. Hold swivel fitting (11) and **install swivel fitting locknut (9) and cable retaining nut (13).**
12. Lockwire fitting (11), locknut (9) and retaining nut (13) together. Use lockwire (E231).



13. **Install locknut (14) and clevis (15)** on cable (1).
14. Align holes in clevis (15) and manual release bellcrank (16). **Install pin (17),** washer (18) **and cotter pin (19).**



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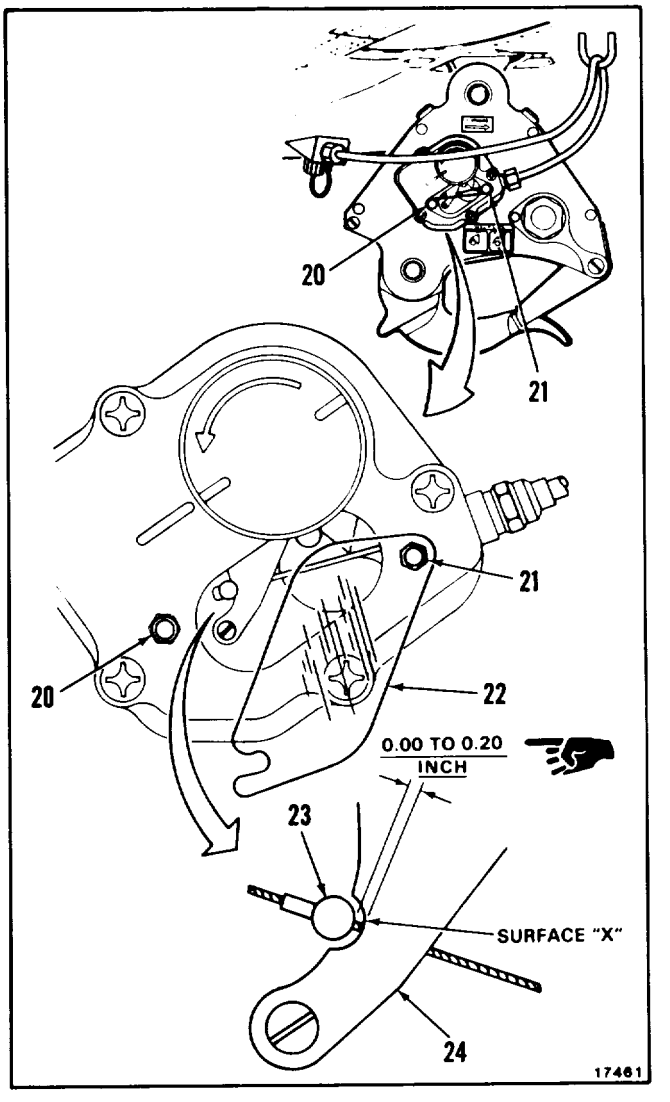
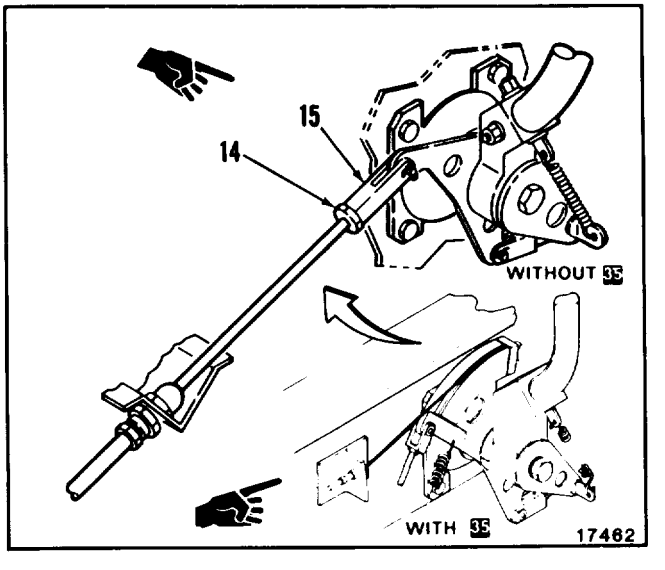
16-35 INSTALL FORWARD OR AFT CARGO HOOK INTERNAL MANUAL RELEASE CABLE (Continued)

15. Have helper, working at forward hook, remove lockwire from inspection window retaining bolts (20 and 21).
16. **Loosen bolts (20 and 21).** Swing inspection window (22) down.
17. **Make sure clearance is 0.00 +0.20 inch between ball end (23) and surface 'X' of release arm (24).**

17.1. If gap is not within limits, adjust forward or aft cargo hook manual release cable (Task 6-35.1)



18. **Tighten locknut (14)** against clevis (15). Lockwire locknut and clevis together. Use lockwire (E231).



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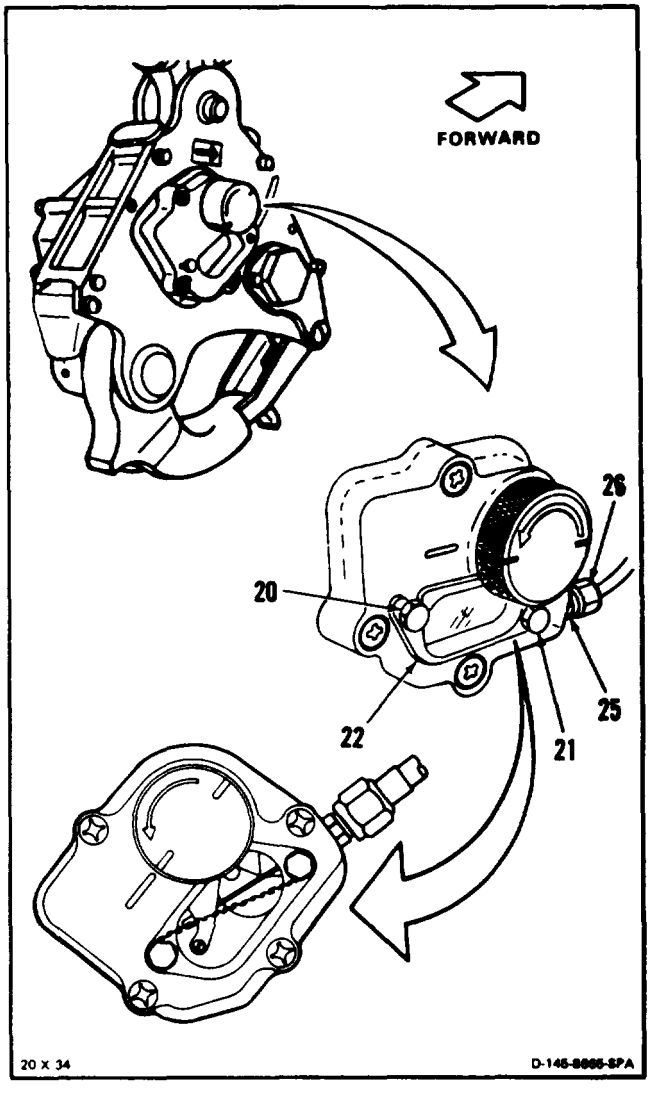
16-35 INSTALL FORWARD OR AFT CARGO HOOK INTERIOR MANUAL RELEASE CABLE (Continued) 16-35

19. **Position window (22)** on retaining bolt (20).

20. **Torque bolts (20 and 21) to <u>40 inch-pounds.</u>** Lockwire bolts, cable adapter (25) and nut (26) together. Use lockwire (E231).



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Close center hook access door (Task 2-2).

Close right center cabin floor panel (Sta 240 to 320) or right center cabin floor panel (Sta 360 to Sta 486) (Task 2-207).

END OF TASK

16-35.1 ADJUST FORWARD OR AFT CARGO HOOK MANUAL RELEASE CABLE

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 5 to 50 Inch-Pounds

Materials:
Lockwire (E231)

Parts:
Cotter Pins

Personnel Required:
Medium Helicopter Repairer (2)
Inspector

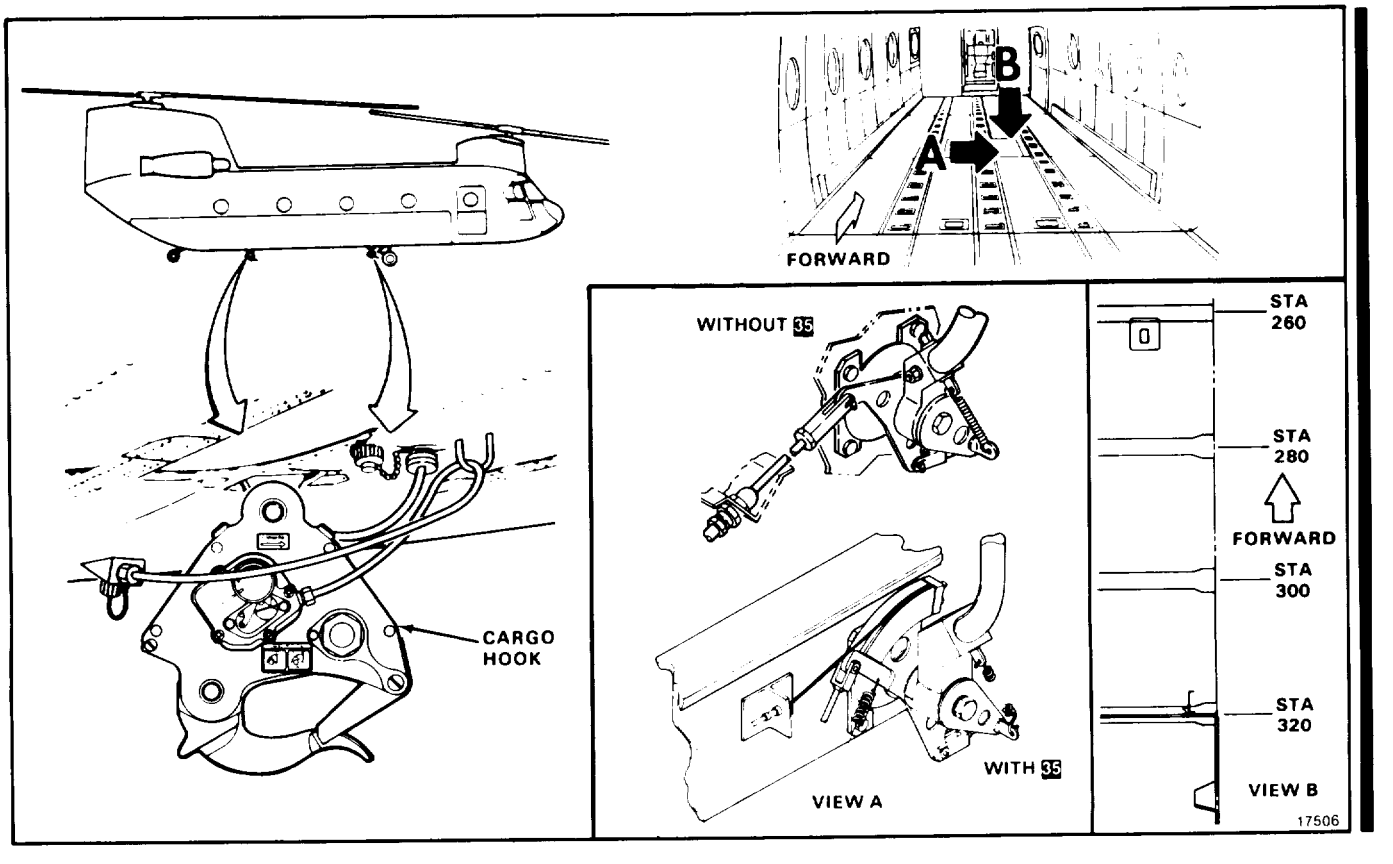
References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off

General Safety Instructions:

WARNING

Improper adjustment of release cables can result in loss of external load. Personnel can be seriously injured or killed.



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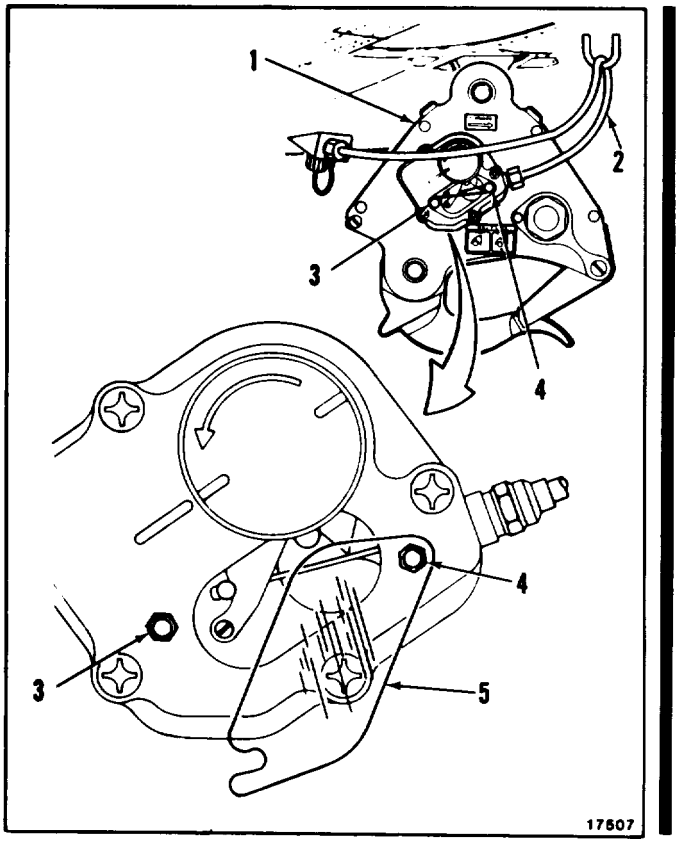
16-35.1 ADJUST FORWARD OR AFT CARGO HOOK MANUAL RELEASE CABLE (Continued)

NOTE

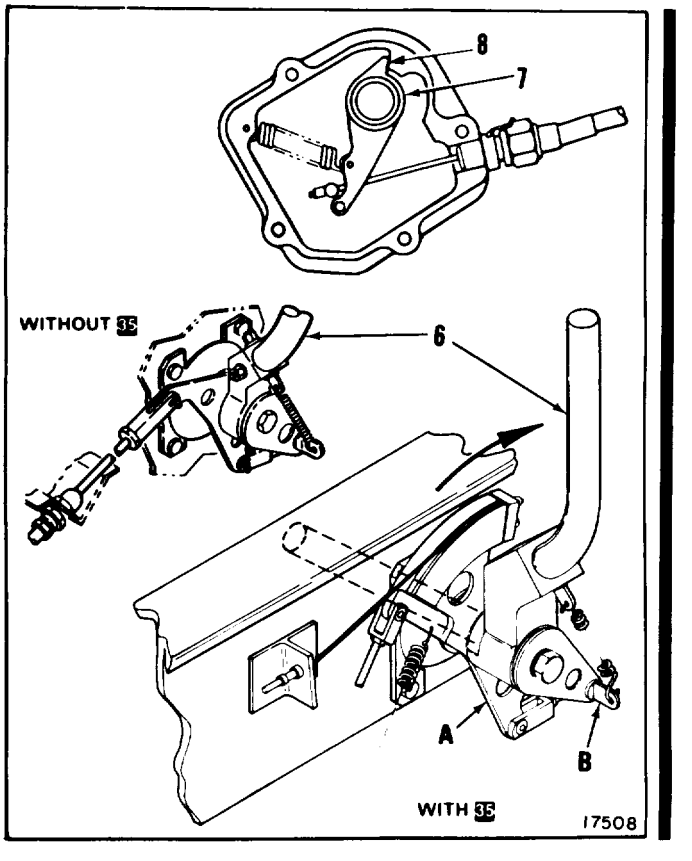
Manual release system final adjustment shall be accomplished with cargo hooks (1) installed and mated with external cable assemblies (2).

Procedure is same to adjust forward or aft cargo hook release cable. Forward hook is shown.

1. Remove lockwire from inspection window retaining bolts (3 and 4).
2. **Loosen bolts (3 and 4).** Swing inspection window (5) down.



3. **Manual release handle (6) should be set in vertical position. Ensure that manual release bellcrank (7) is against stop (8). Ensure that bellcrank (A) is against the eyebolt stop (B).**



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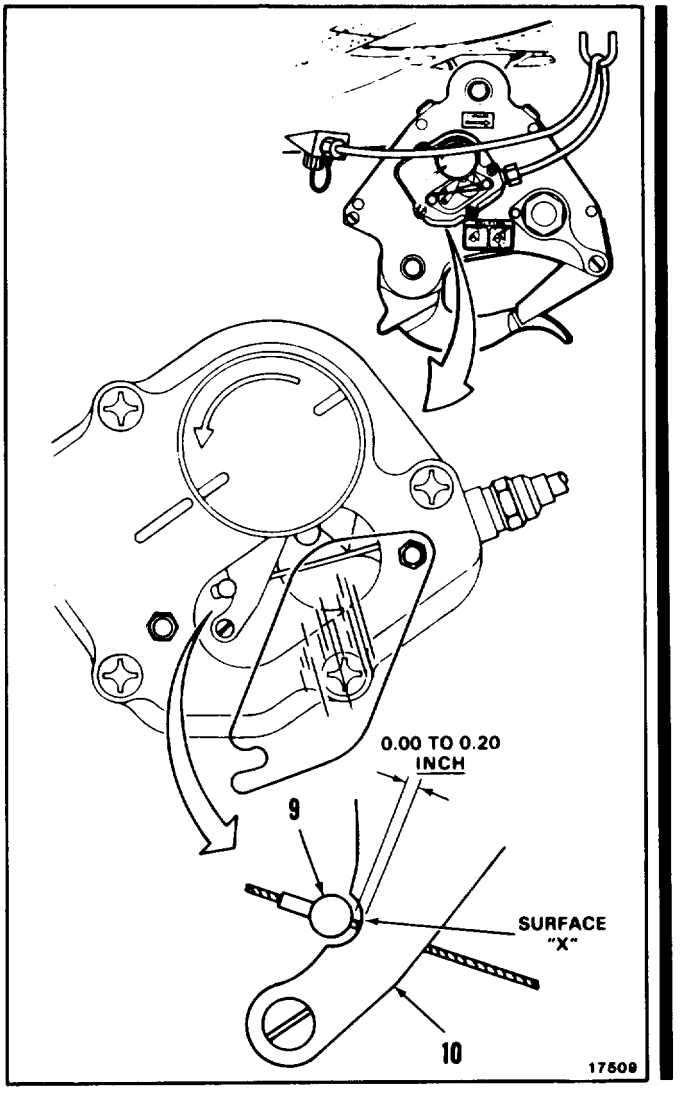
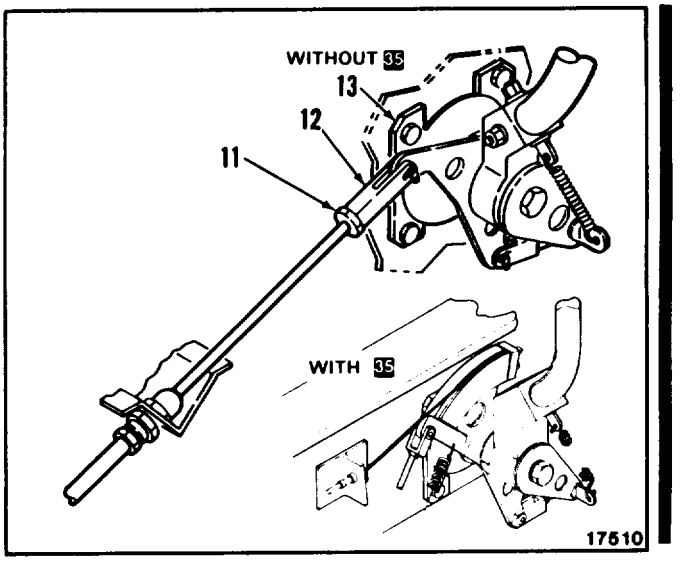
16-35.1 ADJUST FORWARD OR AFT CARGO HOOK MANUAL RELEASE CABLE (Continued)

4. Check clearance between ball end (9) and surface 'X' of release arm (10) at each cargo hook. **Clearance shall be 0.00 to 0.20 inch.**



5. If gap is not within limits, remove lockwire, **loosen locknut (11) and adjust cable clevis (12)** at bellcrank (13).
6. **Check for proper thread engagement at clevis (12).** Minimum engagement is cable threaded end visible through witness hole in clevis.
7. **Tighten locknut (11)** against clevis (12). Lockwire locknut and clevis together. Use lockwire (E231).



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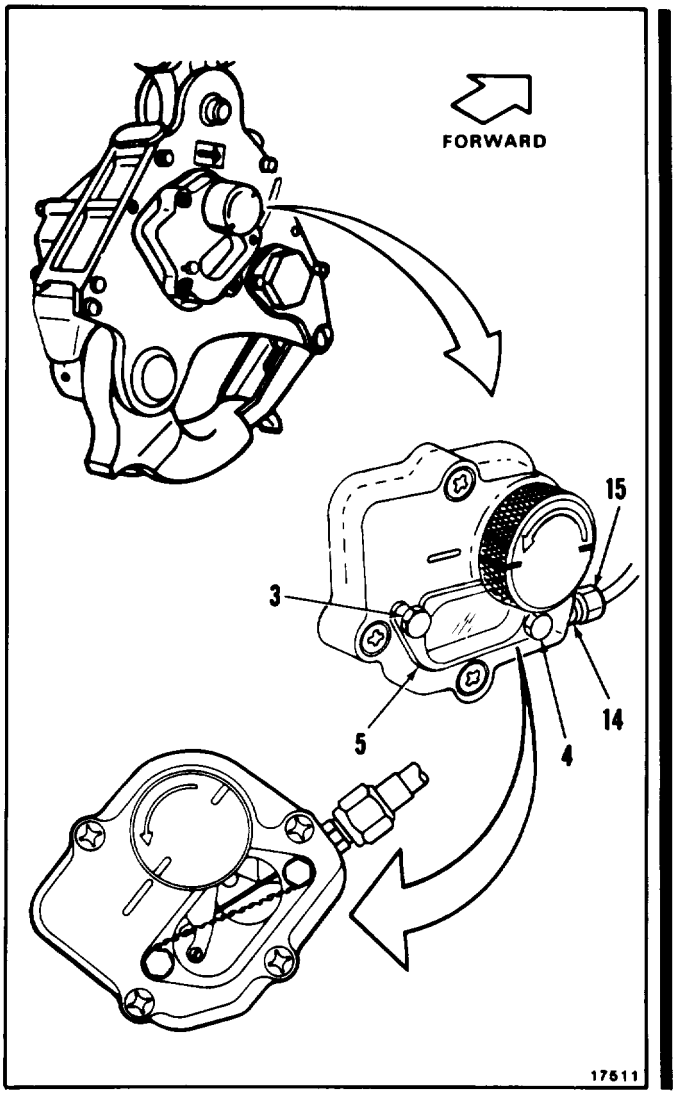
16-35.1 ADJUST FORWARD OR AFT CARGO HOOK MANUAL RELEASE CABLE (Continued) 16-35.1

8. **Position window (5)** on retaining bolt **(4).**
9. **Torque bolts (3 and 4) to 40 inch pounds.** Lockwire bolts, cable adapter (14) and nut (15) together. Use lockwire (E231).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-36 REMOVE CARGO HOOK MANUAL RELEASE LEVER

INITIAL SETUP

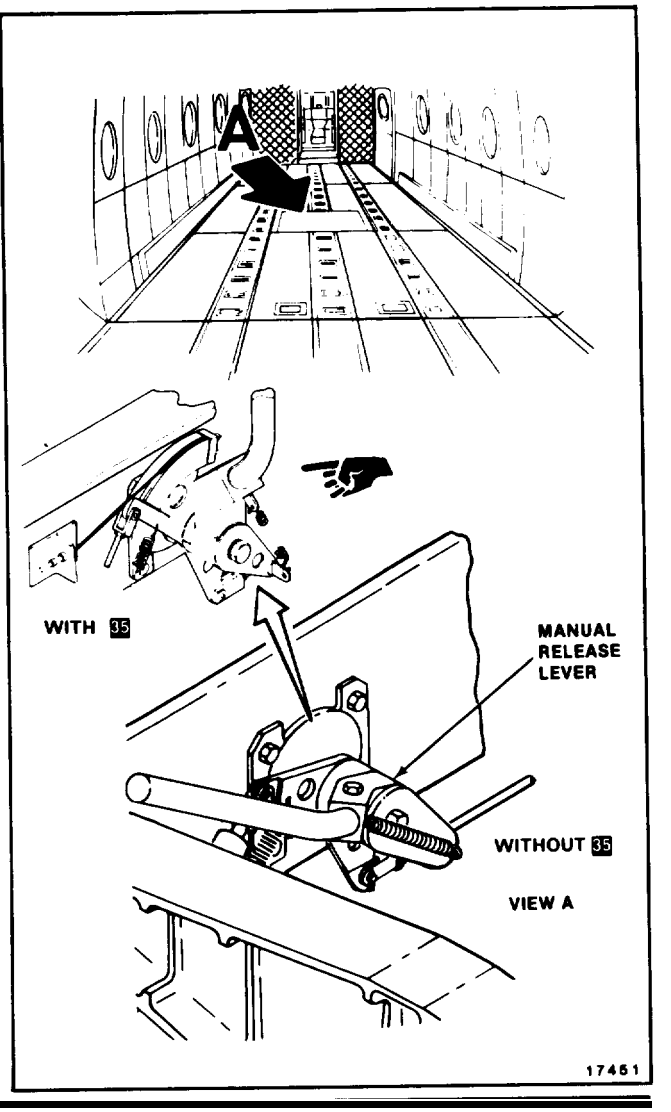
Applicable Configurations:
All

Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

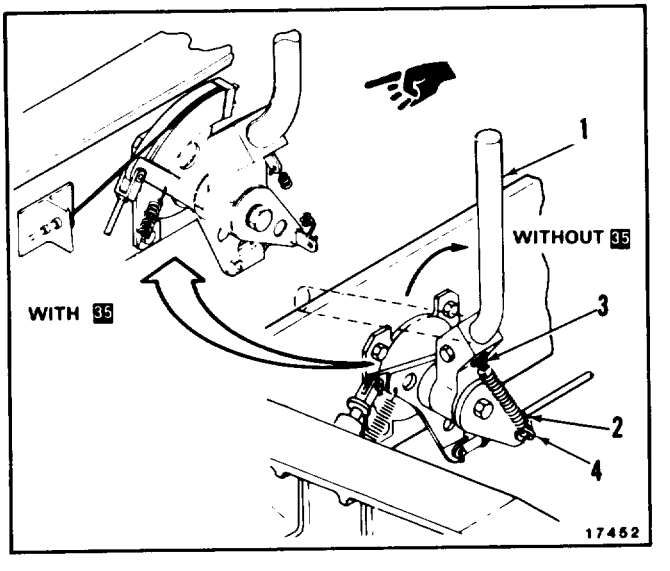
Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Center Hook Access Panel Opened (Task 2-2)



1. **Move handle (1)** from stowed position **to straight up position.**
2. **Remove spring (2)** from eyebolts (3 and 4).



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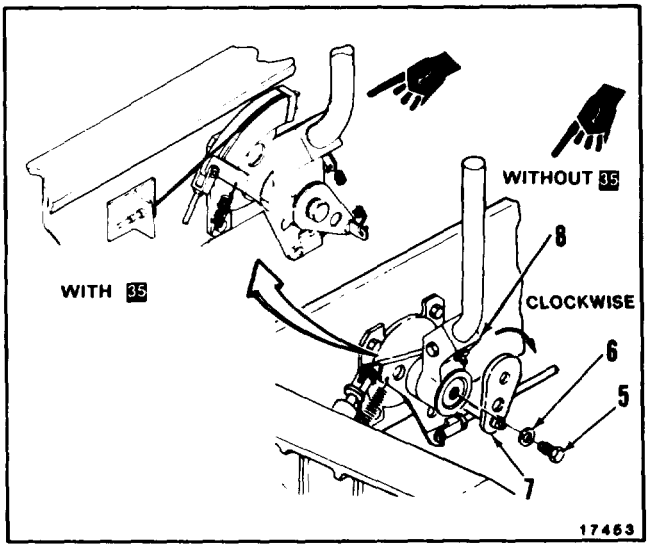
16-36 REMOVE CARGO HOOK MANUAL RELEASE LEVER (Continued)

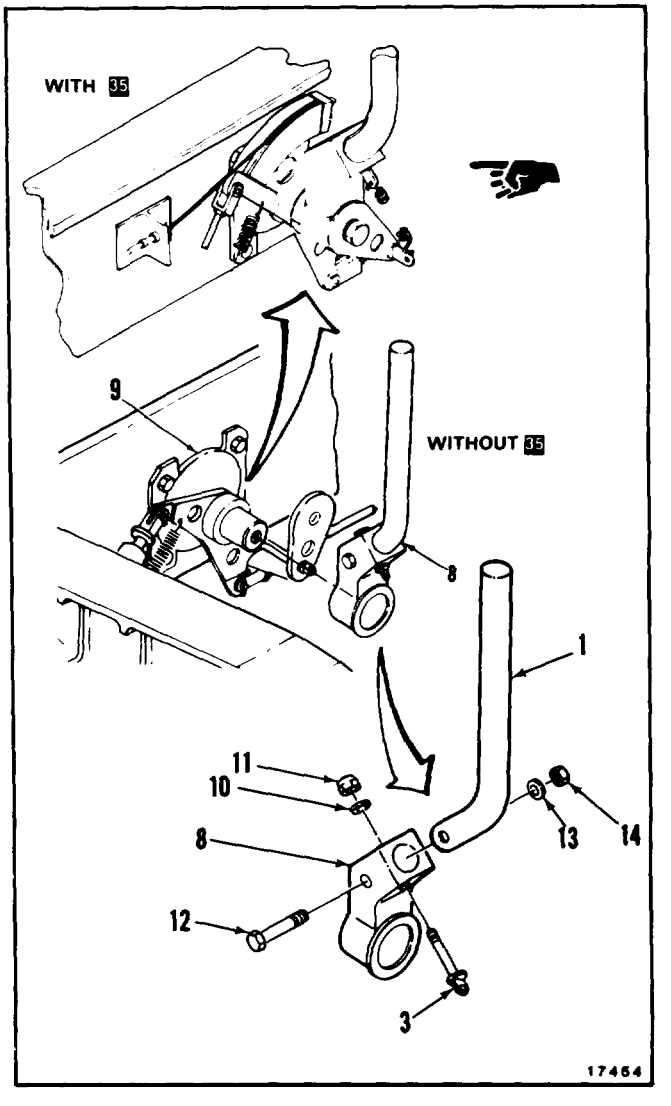
3. Remove lockwire and **remove bolt (5)** and washer (6).
4. **Rotate retainer (7) clockwise to clear lever (8).**



5. **Remove lever (8)** from mount (9).
6. **Remove eyebolt (3),** washer (10) and nut (11) from lever (8).
7. **Remove bolt (12),** washer (13), nut (14) **and handle (1)** from lever (8).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-37 REMOVE CARGO HOOK MANUAL RELEASE BELLCRANK

INITIAL SETUP

Applicable Configurations:

Without 35

Tools:

Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

Materials:

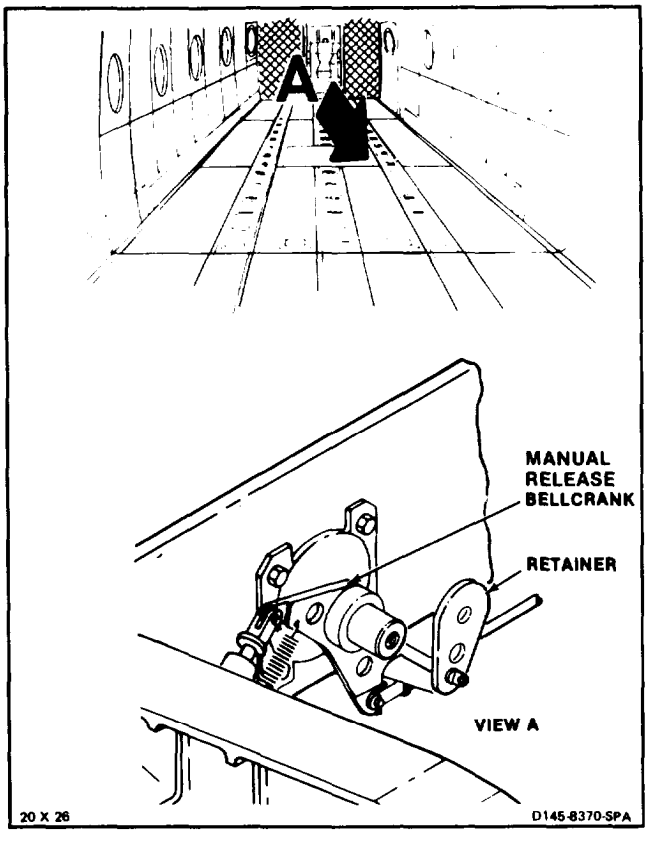
None

Personnel Required:

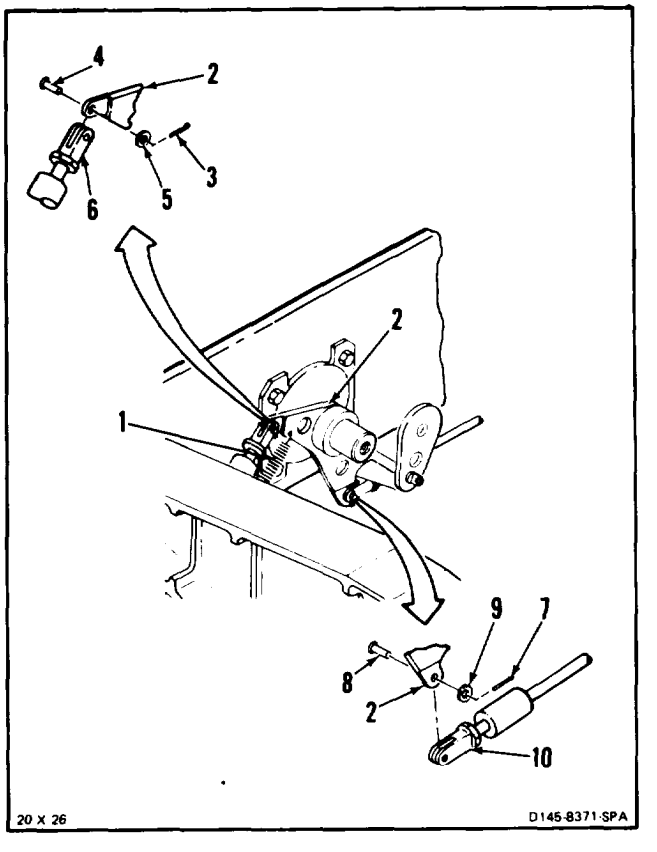
Medium Helicopter Repairer

Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Center Hook Access Panel Opened (Task 2-2)
Manual Release Lever Removed {Task 16-36)



1. **Remove spring (1)** from manual release bellcrank (2).
2. **Remove** cotter pin (3), **pin (4),** washers (5) **and forward release cable (6)** from bellcrank (2).
3. **Remove cotter pin (7), pin (8),** washer (9) **and aft release cable (10)** from bellcrank (2).



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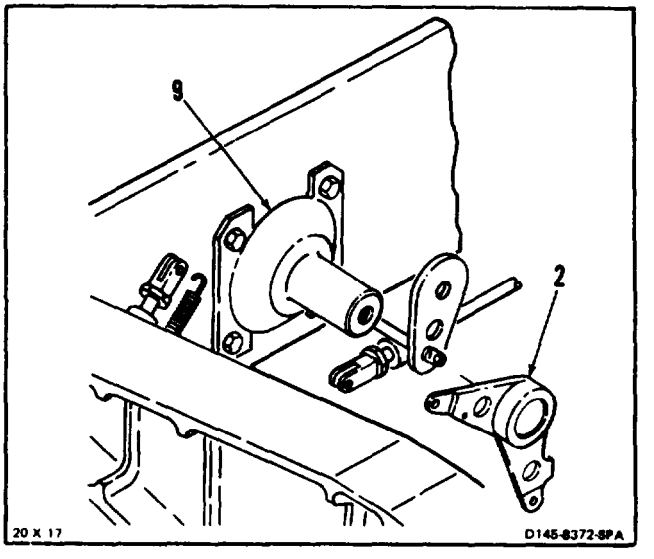
16-37 REMOVE CARGO HOOK MANUAL RELEASE BELLCRANK (Continued)

4. **Remove bellcrank (2)** from mount (9).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-37.1 REMOVE CARGO HOOK MANUAL RELEASE BELLCRANK

INITIAL SETUP

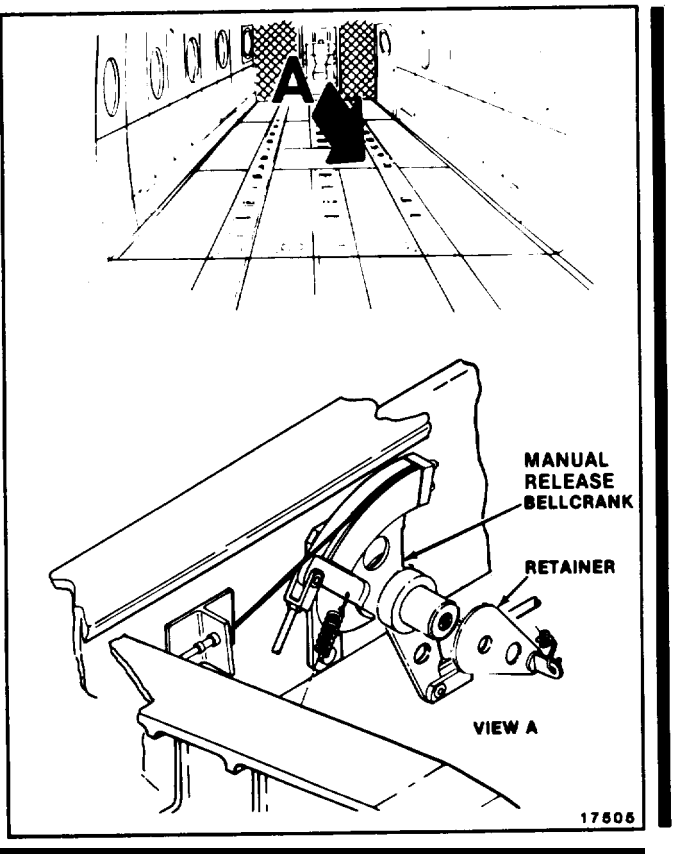
Applicable Configurations:
With 35

Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

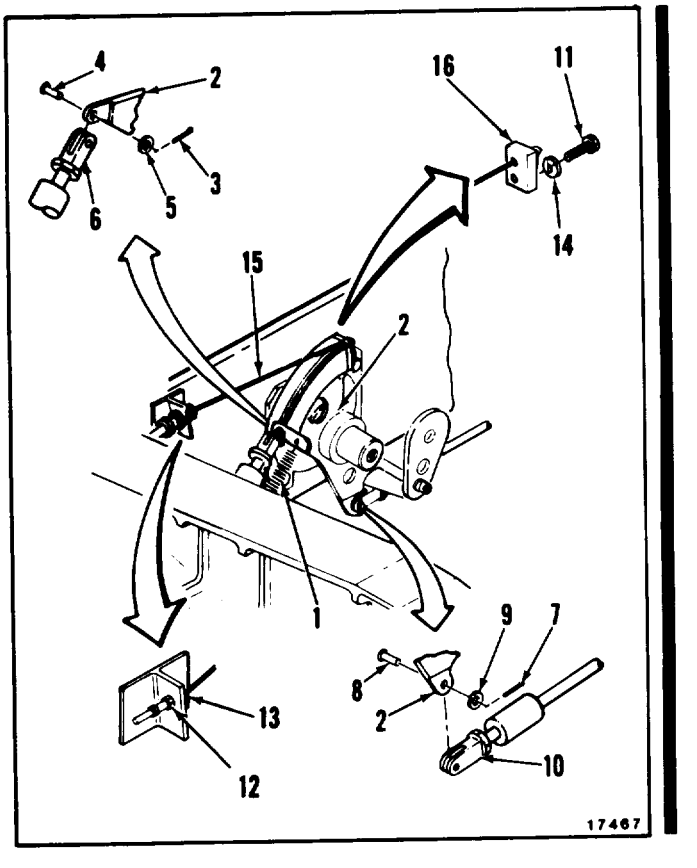
Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Center Hook Access Panel Opened (Task 2-2)
Manual Release Lever Removed (Task 16-36.1)



1. **Remove spring (1)** from manual release bellcrank (2).
2. **Remove** cotter pin (3), **pin (4),** washer (5) **and forward release cable (6)** from bellcrank (2).
3. **Remove cotter pin (7), pin (8),** washer (9) **and aft release cable (10)** from bellcrank (2).
4. Remove lockwire from bolt (11) and jam nuts (12 and 13).
5. Remove bolt (11) and washer (14).
6. Hold jam nut (13). Loosen jam nut (12).
7. Remove center release cable (15) together with retainer (16) from bellcrank (2).



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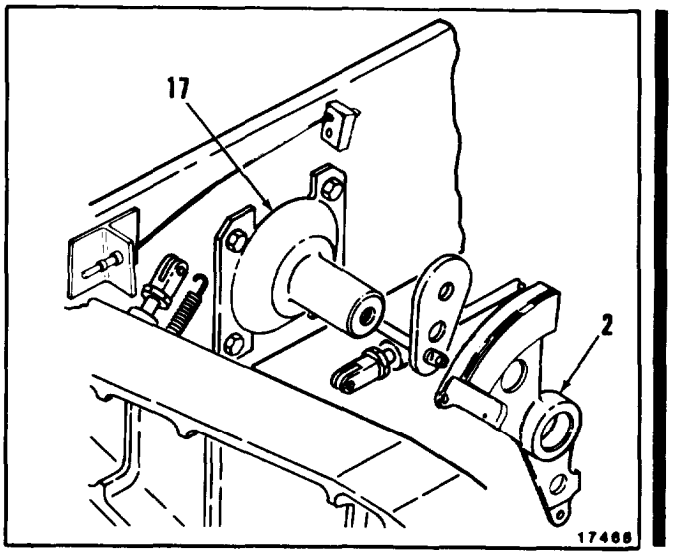
16-37.1 REMOVE CARGO HOOK MANUAL RELEASE BELLCRANK (Continued) 16-37.1

8. **Remove bellcrank (2)** from mount (17).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-38 REMOVE CARGO HOOK MANUAL RELEASE MOUNT 16-38

INITIAL SETUP

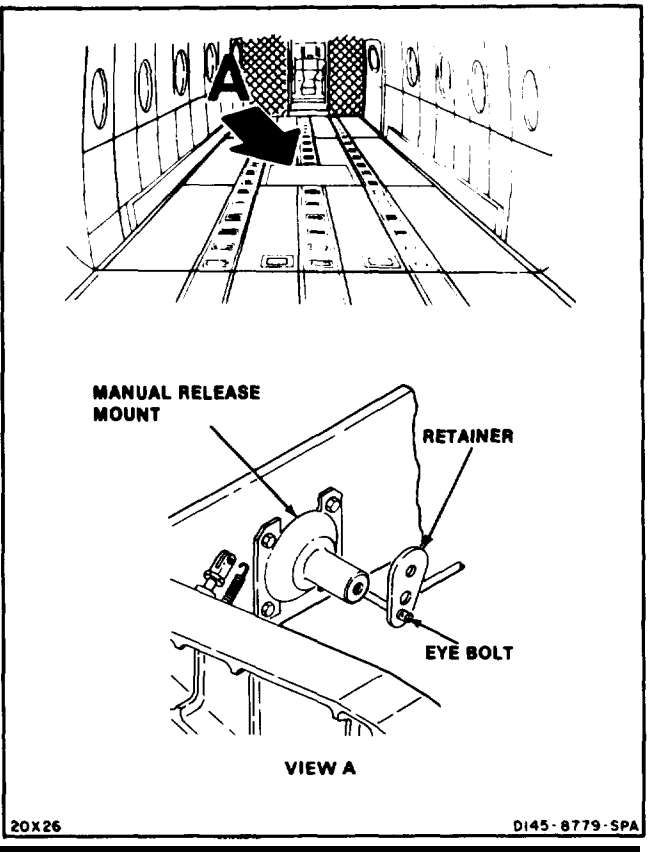
Applicable Configurations:
All

Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

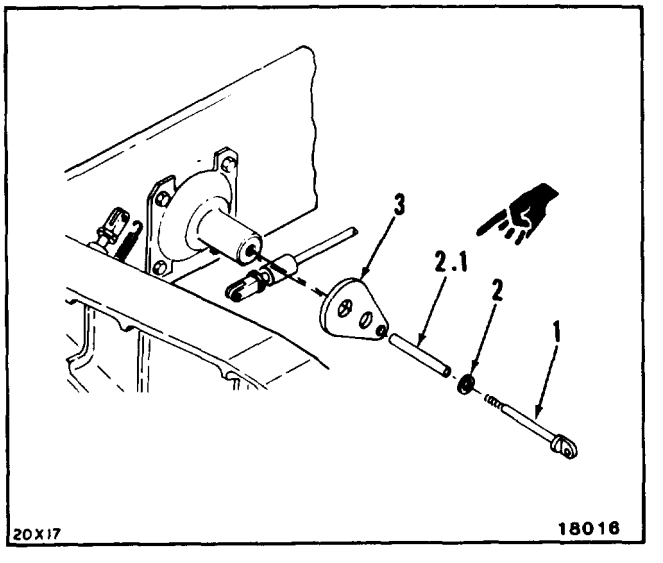
Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Center Hook Access Panel Opened (Task 2-2)
Manual Release Lever Removed (Task 16-36)
Manual Release Bellcrank Removed (Task 16-37 without 35) (Task 16-36.1 with 35)



1. **Remove eyebolt (1),** washer (2), spacer (2.1) and retainer (3).



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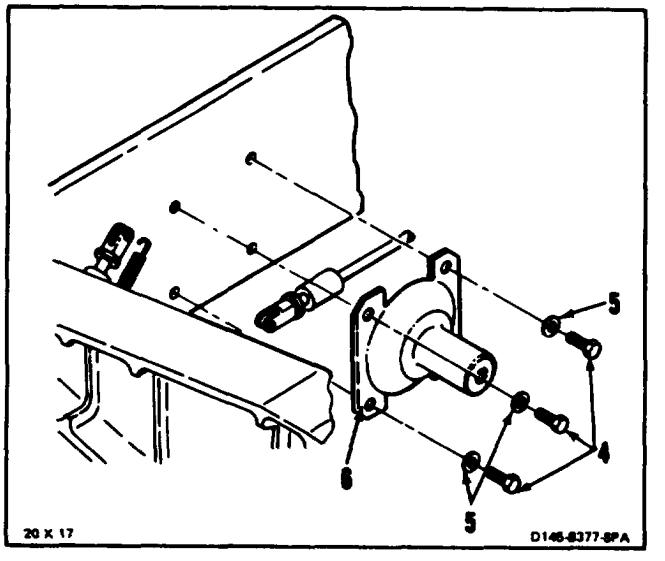
16-38 REMOVE CARGO HOOK MANUAL RELEASE MOUNT (Continued)

2. **Remove three bolts (4),** washers (5), **and manual release mount (6).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-39 INSTALL MANUAL RELEASE MOUNT

INITIAL SETUP

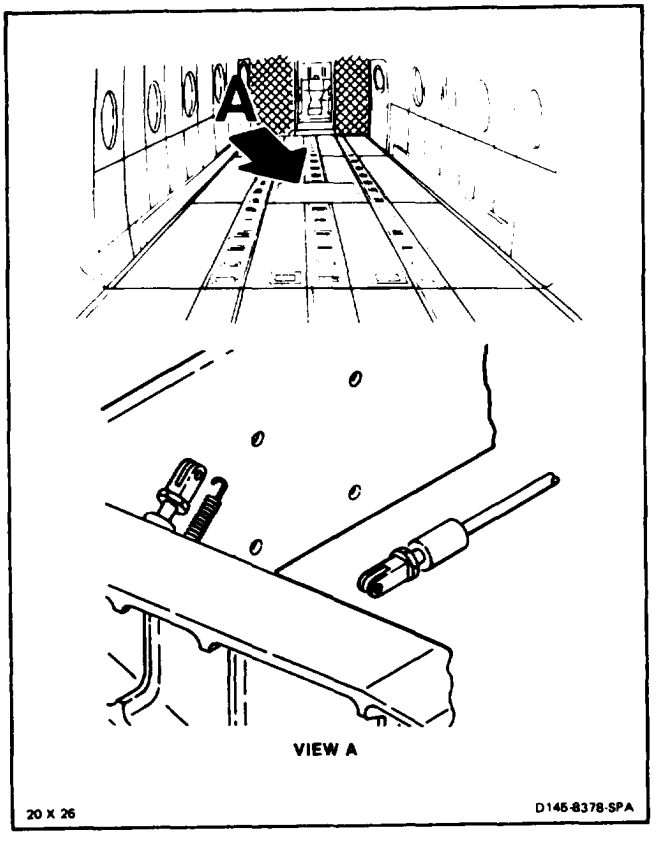
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

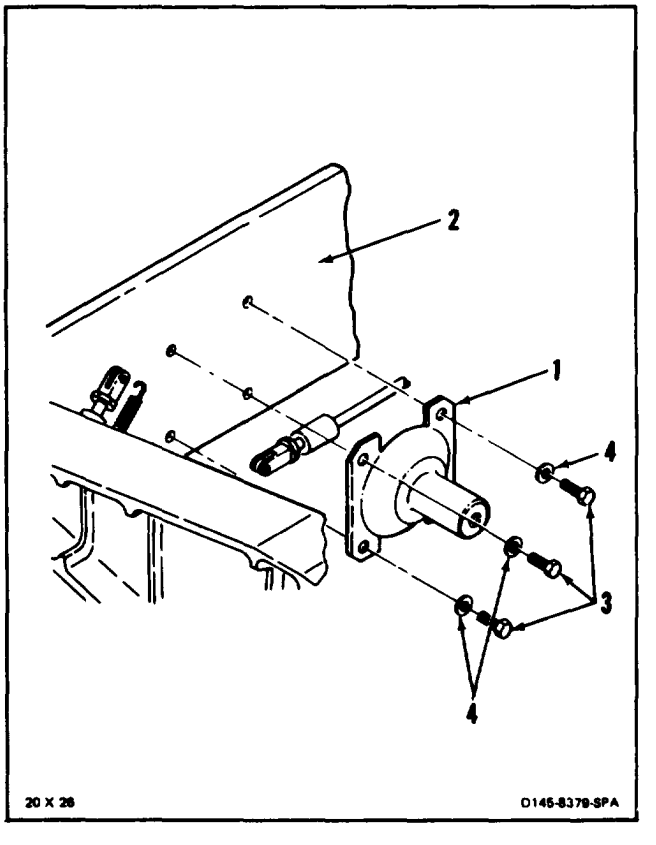
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P



1. Align holes in manual release mount (1) and structure (2). **Install three bolts (3)** and washers (4).



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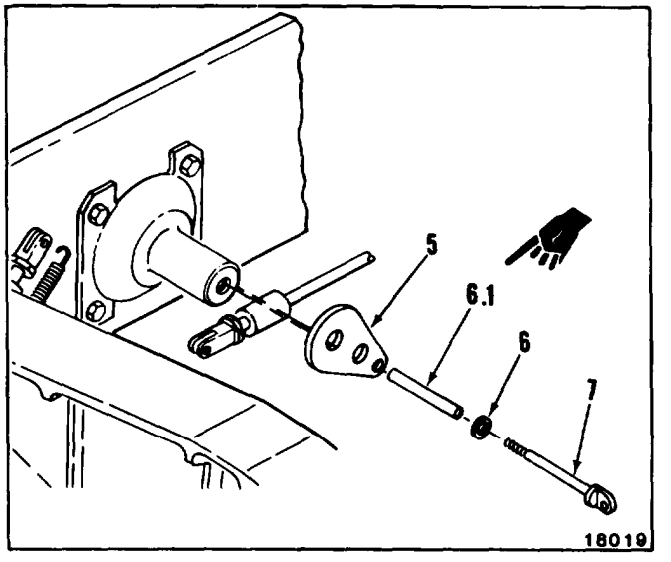
16-39 INSTALL MANUAL RELEASE MOUNT (Continued)

2. **Loosely install** retainer (5), washer (6), spacer (6.1) and **eyebolt (7).**



INSPECT

FOLLOW-ON MAINTENANCE:

Install manual release bellcrank (Task 16-40 without 35). (Task 16-40.1 with 35.)

Install manual release lever (Task 16-41).

Close center hook access panel (Task 2-2).

END OF TASK

16-40 INSTALL CARGO HOOK MANUAL RELEASE BELLCRANK 16-40

INITIAL SETUP

Applicable Configurations:
Without 35

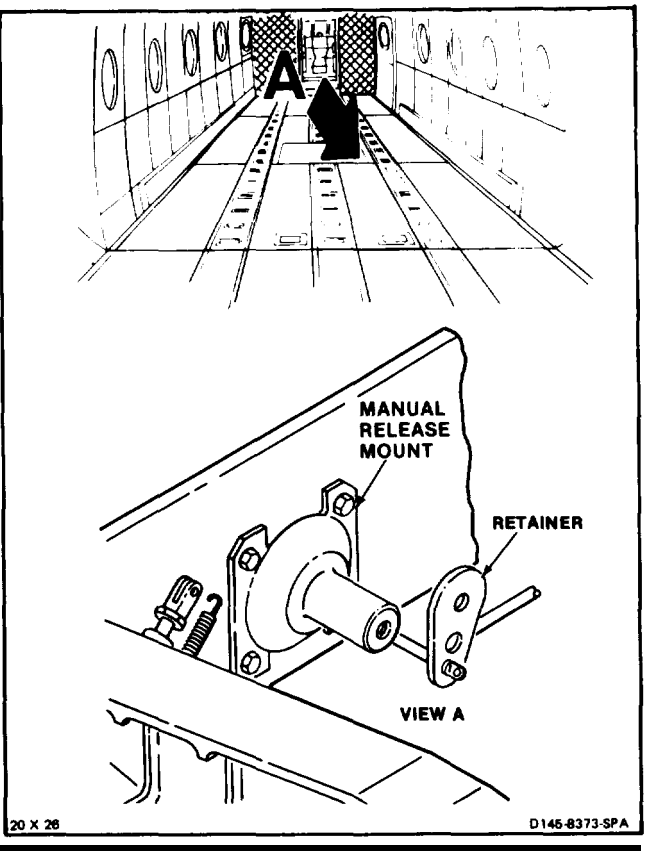
Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

Materials:
None

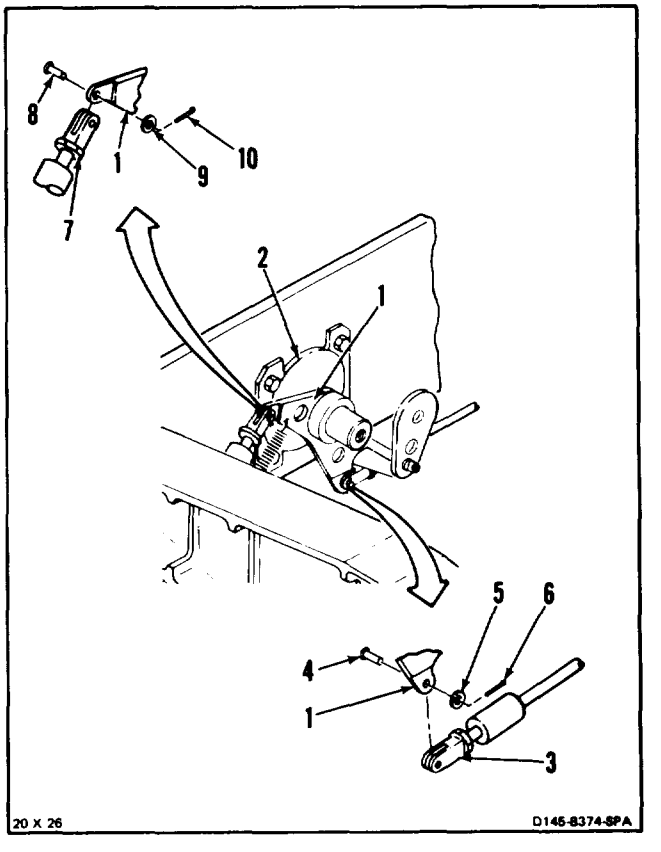
Parts:
Cotter Pins

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P



1. **Position manual release bellcrank (1) on mount (2).**
2. **Align hole in aft release cable (3) and bellcrank (1). Install pin (4), washer (5) and cotter pin (6).**
3. **Align hole in forward release cable (7) and bellcrank (1). Install pin (8), washer (9) and cotter pin (10).**



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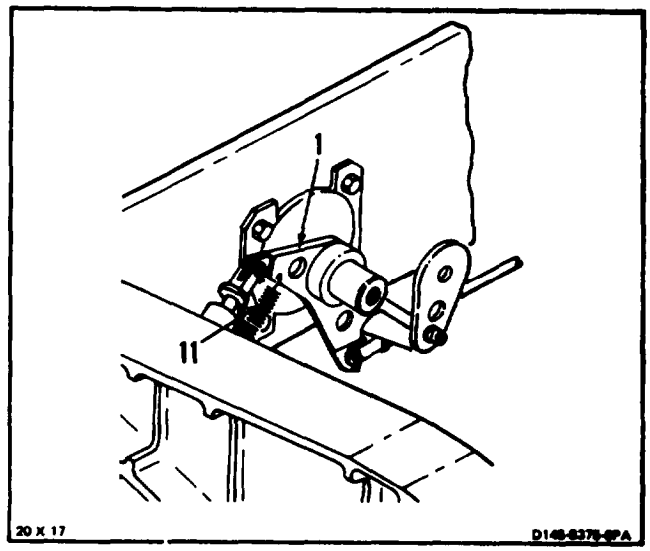
16-40 INSTALL CARGO HOOK MANUAL RELEASE BELLCRANK (Continued)

4. **Install spring (11)** in bellcrank (1).



INSPECT

FOLLOW-ON MAINTENANCE:

Install manual release lever (Task 16-41).

END OF TASK

16-40.1 INSTALL CARGO HOOK MANUAL RELEASE BELLCRANK 16-40.1

INITIAL SETUP

Applicable Configurations:
With 35

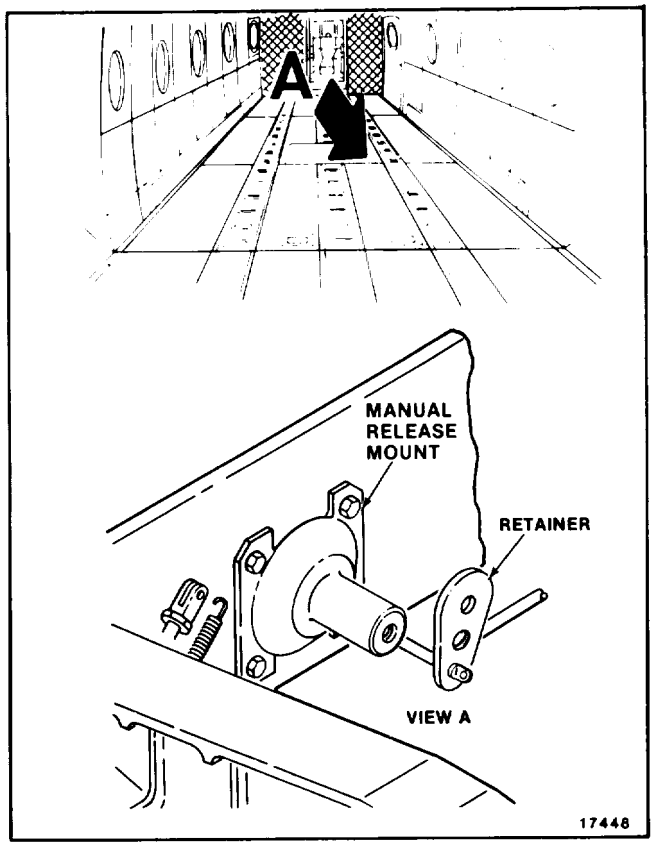
Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

Materials:
Lockwire (E231)

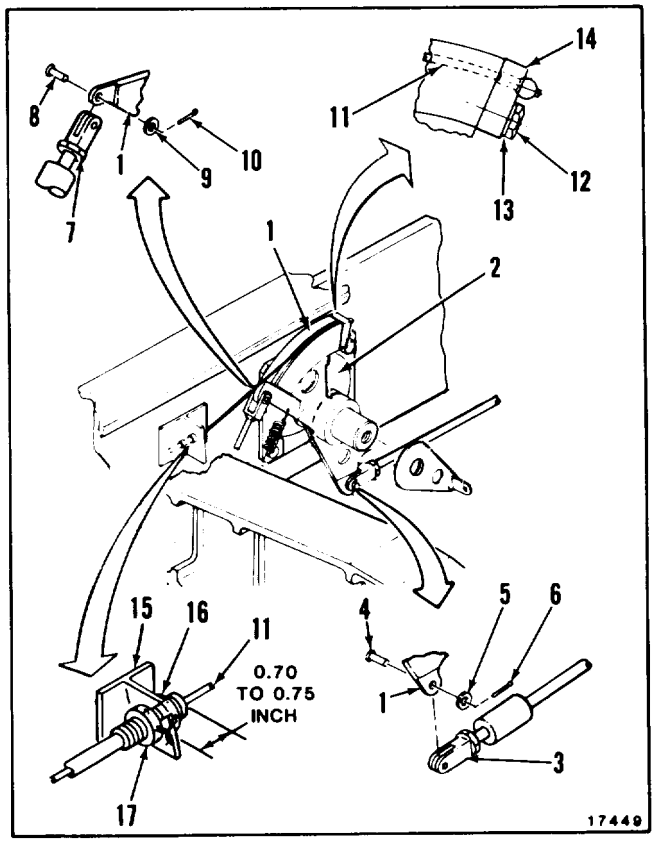
Parts:
Cotter Pins

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P



1. **Position manual release bellcrank (1) on mount (2).**
2. **Align hole in aft release cable (3) and bellcrank (1). Install pin (4), washer (5) and cotter pin (6).**
3. **Align hole in forward release cable (7) and bellcrank (1). Install pin (8), washer (9) and cotter pin (10).**
4. Route cable (11) past bellcrank (1). **Install bolt (12)** and washer (13) securing retainer (14). Lockwire bolt with lockwire (E231).
5. Check that cable (11) protrudes past bracket (15) 0.70 to 0.75 inch. This dimension is for initial installation and may change during final adjustment.
6. Hold jam nut (16). Tighten jam nut (17). Lockwire jam nuts together with lockwire (E231).



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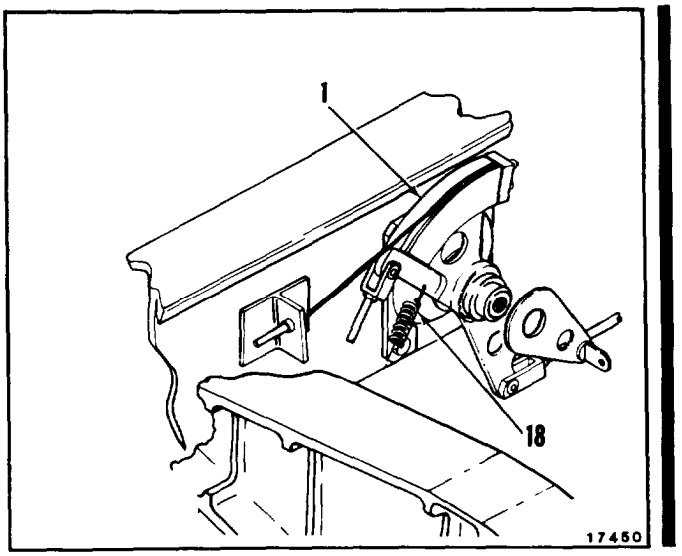
16-40.1 INSTALL CARGO HOOK MANUAL RELEASE BELLCRANK (Continued) 16-40.1

7. **Install spring (18)** in bellcrank (1).

INSPECT



FOLLOW-ON MAINTENANCE:

Install manual release lever (Task 16-41.1).

Adjust center cargo hook manual release cable (Task 16-3.5).

END OF TASK

16-41 INSTALL CARGO HOOK MANUAL RELEASE LEVER

INITIAL SETUP

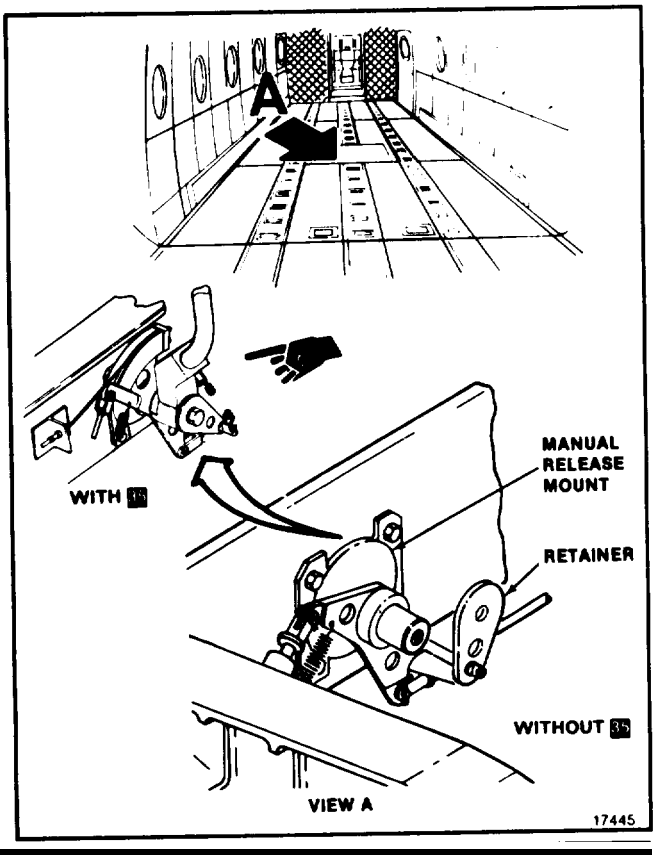
Applicable Configurations:
All

Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

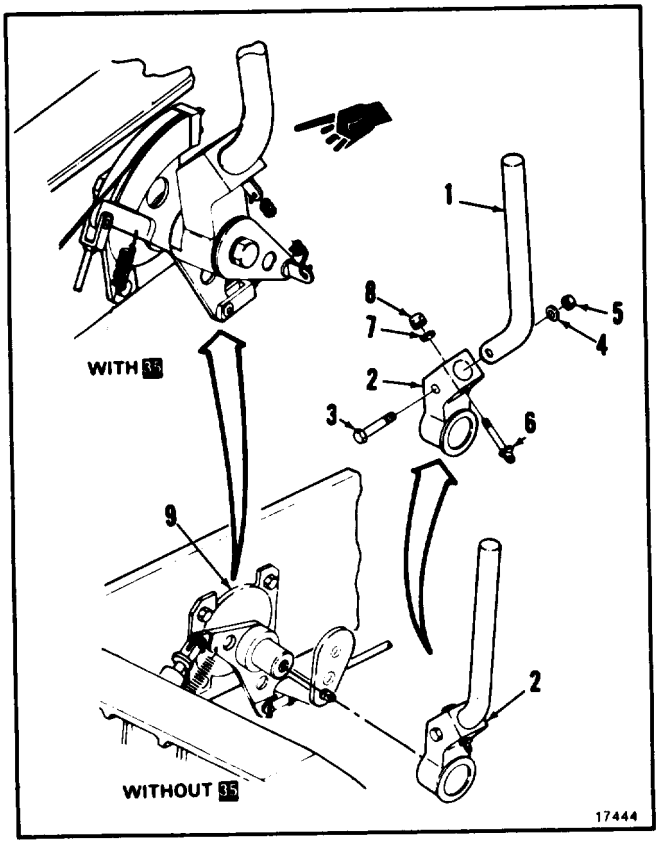
Materials:
Lockwire (E231)

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P



1. **Install handle (1)** in lever (2).
2. Align holes in handle (1) and lever (2). **Install bolt (3),** washer (4) and nut (5). **Install eyebolt (6),** washer (7) and nut (8).
3. **Install lever (2) on mount (9).**



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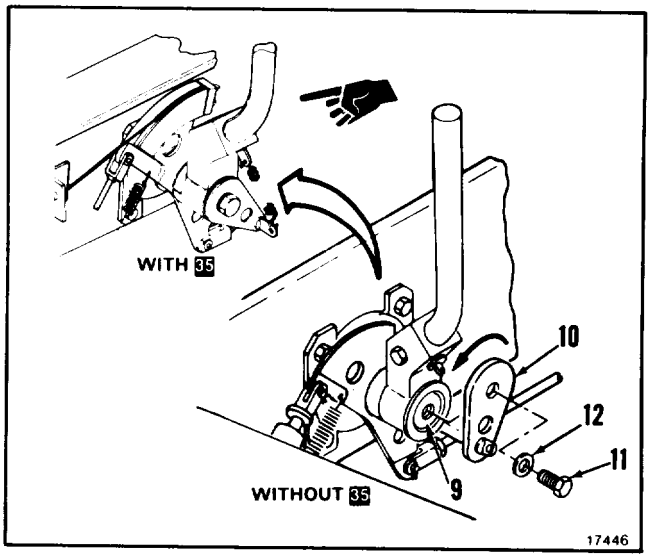
4. Align hole in retainer (10) and mount (9). **Install bolt (11)** and washer (12).
5. Lockwire bolt (11). Use lockwire (E231).



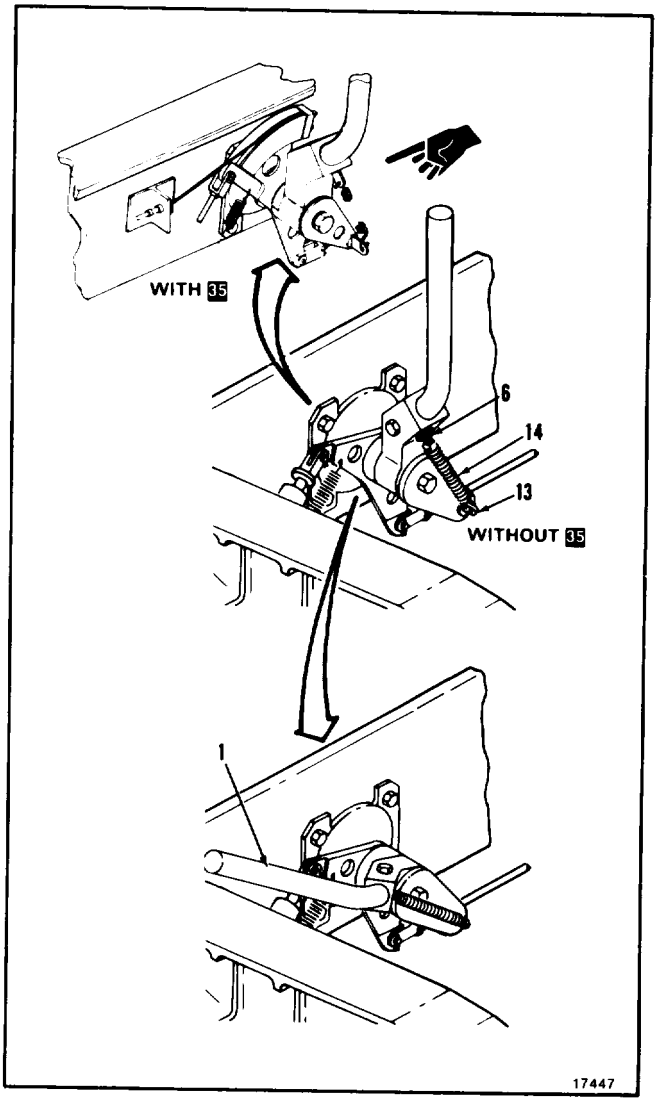
6. Deleted.
7. **Install spring (14)** in eyebolts (6 and 13).

INSPECT

8. **Move handle (1) to stowed position.**

FOLLOW-ON MAINTENANCE:

Close center hook access panel (Task 2-2).



END OF TASK

SECTION III

PARATROOP AND CARGO DROP EQUIPMENT

DESCRIPTION AND OPERATION

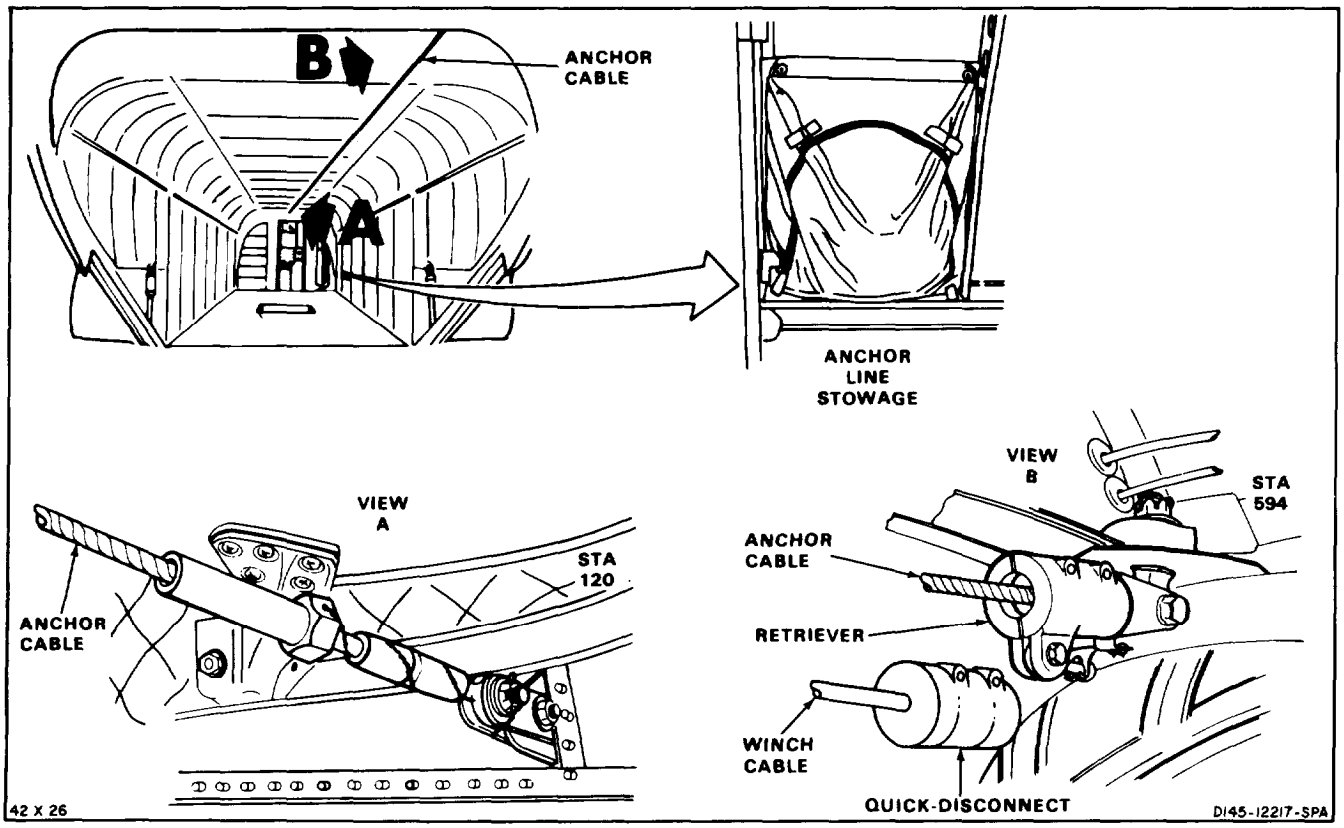
16-42 PARATROOP AND CARGO DROP EQUIPMENT 16-42

Paratroop and cargo drop equipment is used to ensure that the parachute opens when troops or cargo are dropped out the aft end of the helicopter. The equipment consists of an anchor cable, a retriever, and a quick-disconnect.

In use, the anchor cable is installed along the cabin ceiling from station 120 to station 594. Parachute static lines are hooked to the cable forward of the retriever.

The quick-disconnect is used to bring static lines into the helicopter after a mission. It can also be used to bring in a paratrooper if the static line fouls or does not disengage. To use this feature, the helicopter winch cable must be routed as shown. The quick-disconnect is hooked to the link on the retriever and the winch cable is coupled to the quick-disconnect. The winch is operated to pull the retriever forward along the anchor cable, pulling in the static lines.

When not in use, the equipment is stowed in a stowage bag. The bag is mounted aft of the cabin door, behind the troop seat.



END OF TASK

SECTION IV

PARATROOP AND CARGO DROP EQUIPMENT

16-43 INSPECT PARATROOP ANCHOR LINE

INITIAL SETUP

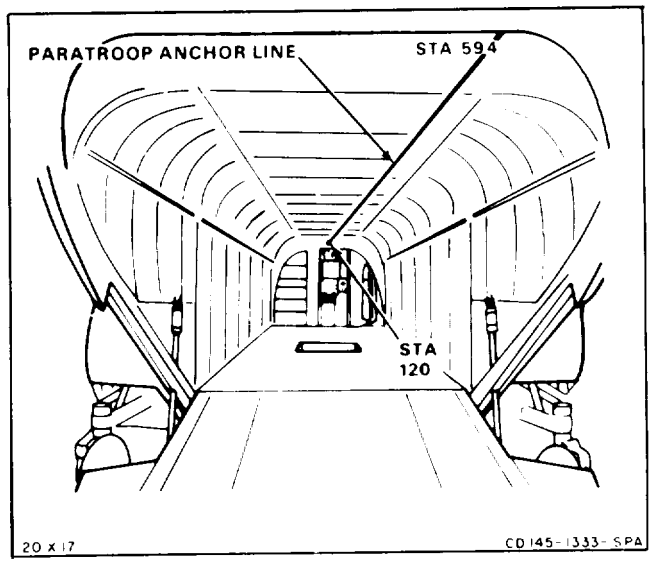
Applicable Configurations:
All

Tools:
None

Materials:
Cloth (E121)
Dry Cleaning Solvent (E162)
Wire Handling
Gloves (E185)

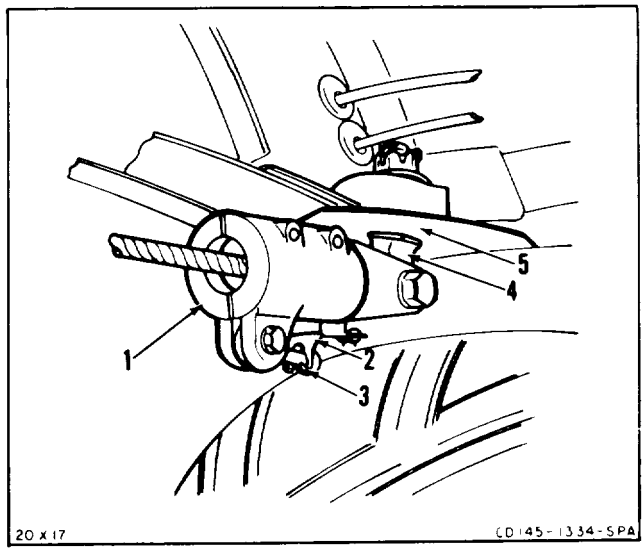
Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

Equipment Condition:
Battery Disconnected Task 1-39)
Electrical Power Off



INSPECT ANCHOR LINE

1. **Check retriever (1) and retriever stop (2).** There shall be no cracks, corrosion, or broken stop handle flanges (3).
2. **Check connector (4) and surrounding structure (5).** There shall be no cracks or corrosion.



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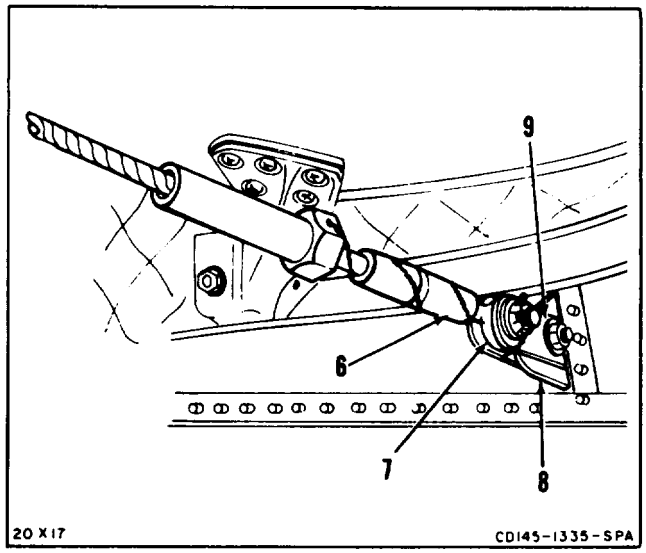
16-43 INSPECT PARATROOP ANCHOR LINE (Continued) 16-43

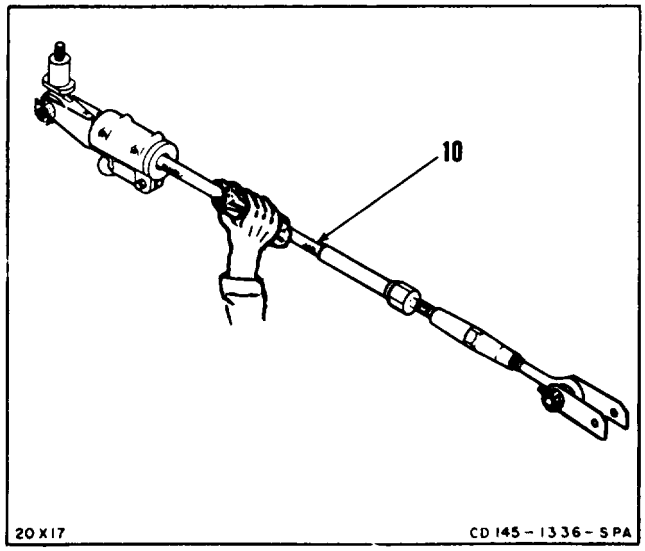
3. **Check turnbuckle (6) and eyebolt (7).** There shall be no cracks, corrosion, or broken lockwire.
4. **Check attach fitting (8) and two links (9).** There shall be no cracks and corrosion.



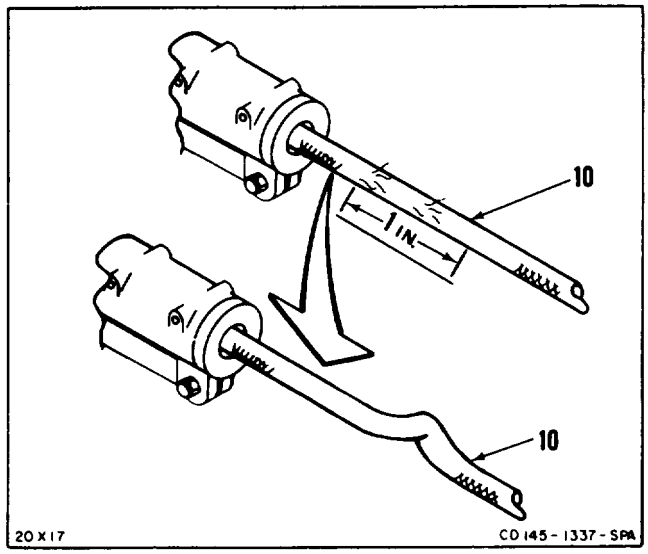
INSPECT ANCHOR LINE CABLE

WARNING

Dry cleaning solvent (E162) is flammable and toxic. It can irritate skin and cause burns. Use only in wall-ventilated area away from heat and open flares. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



5. Clean wire rope (10) with solvent (E162) and cloth (E121). Wear gloves (E185). Gloves shall be worn for the remainder of this task.
6. **Check wire rope (10) for broken wires by** pulling clean dry cloth (El 21) along wire rope (10). If cloth snags, there are broken wires. There shall be no more than four wires broken in any 1 -inch length.
7. **Check wire rope (10) for kinks.** There shall be no kinks.



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-44 REMOVE PARATROOP ANCHOR LINE ASSEMBLY 16-44

INITIAL SETUP

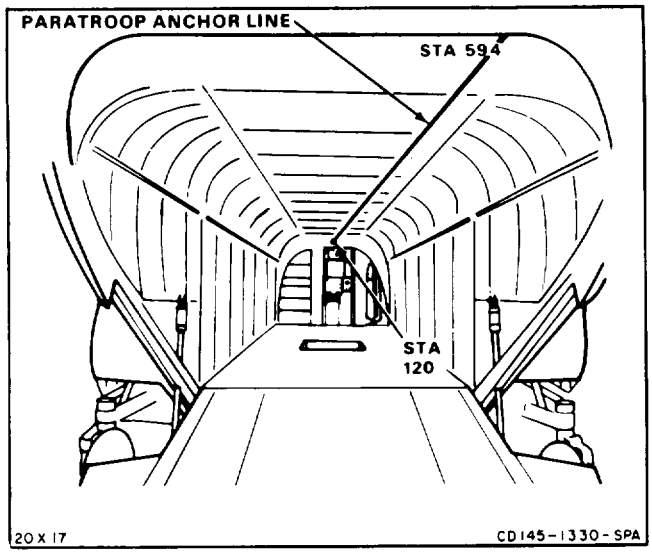
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

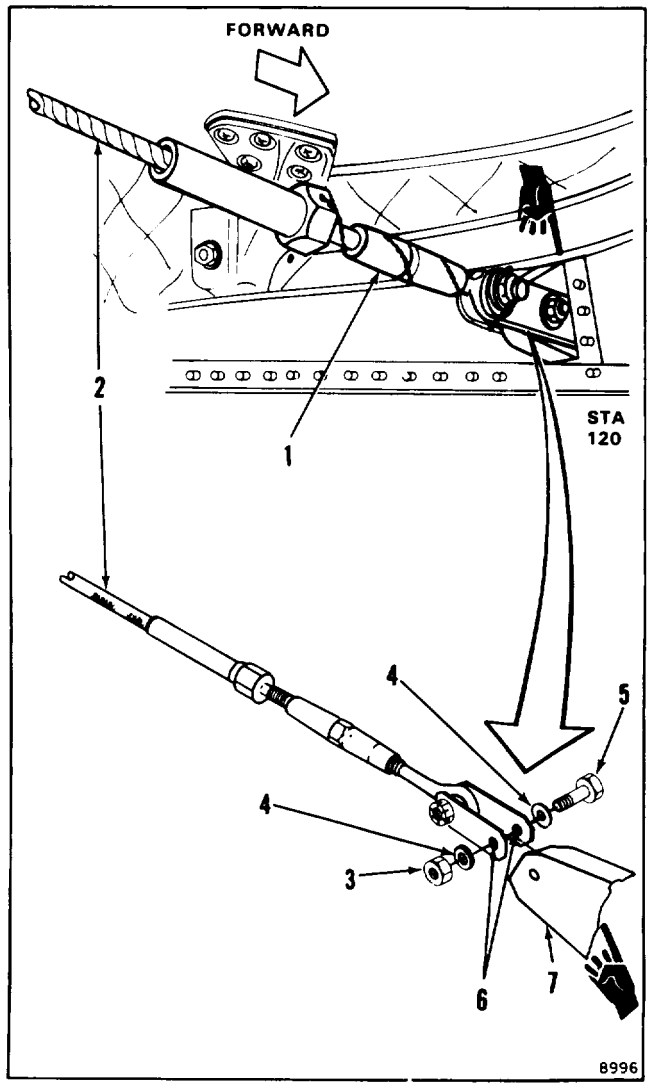
Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



1. Remove lockwire on turnbuckle (1).
2. Turn turnbuckle (1) to loosen anchor line (2).
3. Remove nut (3), two washers (4), and bolt (5).
4. **Remove anchor line (2)** from connect link (6) on fitting (7).



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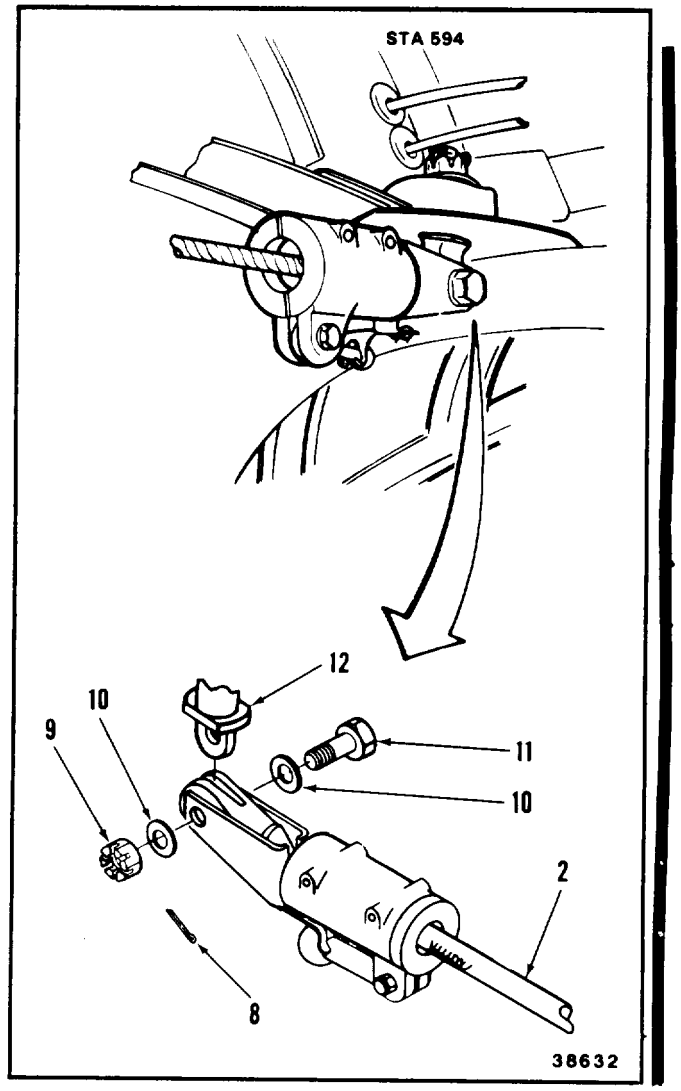
5. **Remove** cotter pin (8), nut (9), washers (10), and bolt (11).
6. **Remove anchor line (2)** from fitting (12).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

16-45 DISASSEMBLE PARATROOP ANCHOR LINE ASSEMBLY 16-45

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692

Materials:

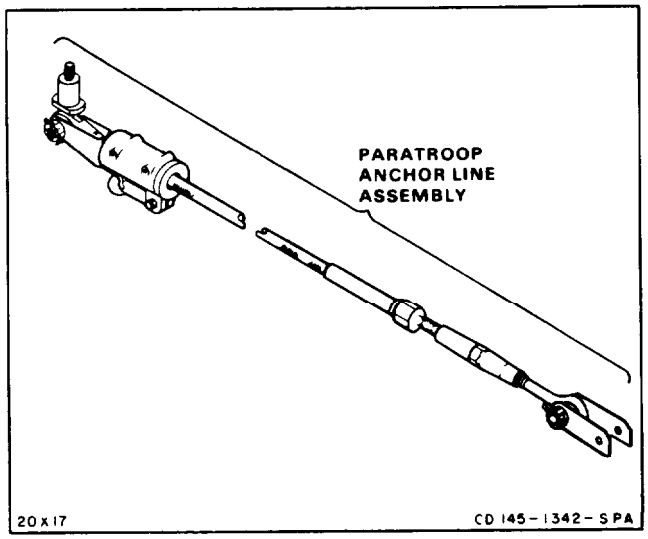
None

Personnel Required:

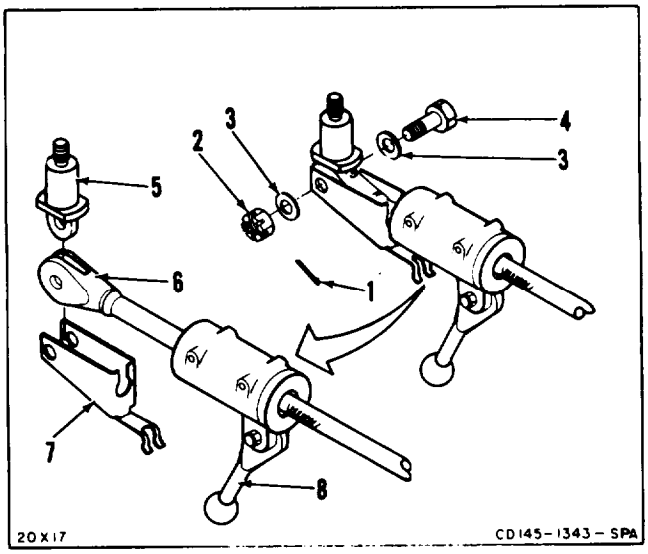
67U10 Medium Helicopter Repairer

Equipment Condition:

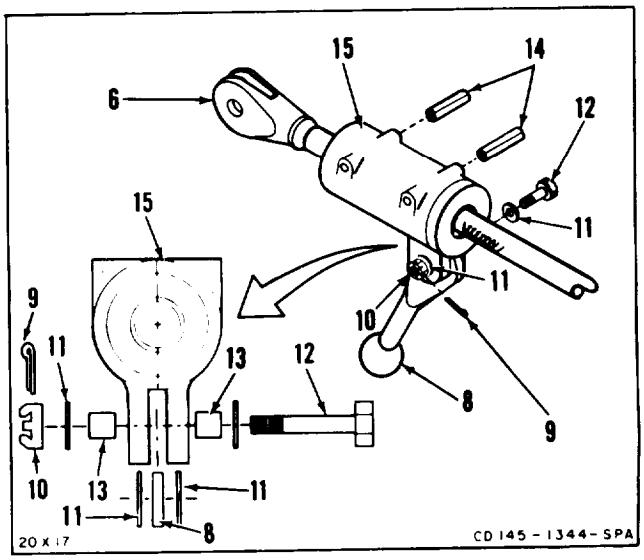
Off Helicopter Task



1. **Remove** cotter pin (1), nut (2), two washers (3), and **bolt (4).**
2. **Separate connector (5)** from clevis (6).
3. **Separate retriever stop (7)** from arm (8).



4. **Remove** cotter pin (9), nut (10), four washers (11) and **bolt (12).**
5. **Remove arm (8) and two bushings (13).**
6. **Remove two pins (14)** from retriever (15).
7. **Remove clevis (6).**



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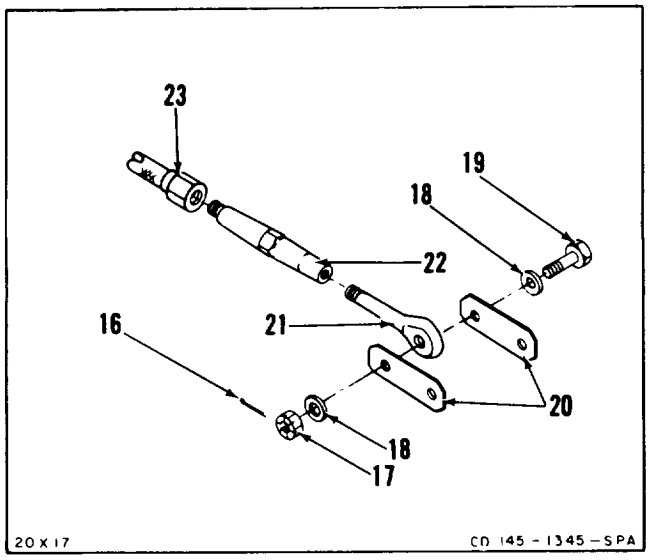
16-45 DISASSEMBLE PARATROOP ANCHOR LINE ASSEMBLY (Continued) 16-45

8. **Remove** cotter pin (16), nut (17), two washers (18), and **bolt (19).**
9. **Remove two links (20)** from eyebolt (21).
10. **Remove eyebolt (21)** from turnbuckle (22).
11. **Remove turnbuckle (22)** from stud (23).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-46 ASSEMBLE PARATROOP ANCHOR LINE ASSEMBLY 16-46

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692

Materials:

None

Parts:

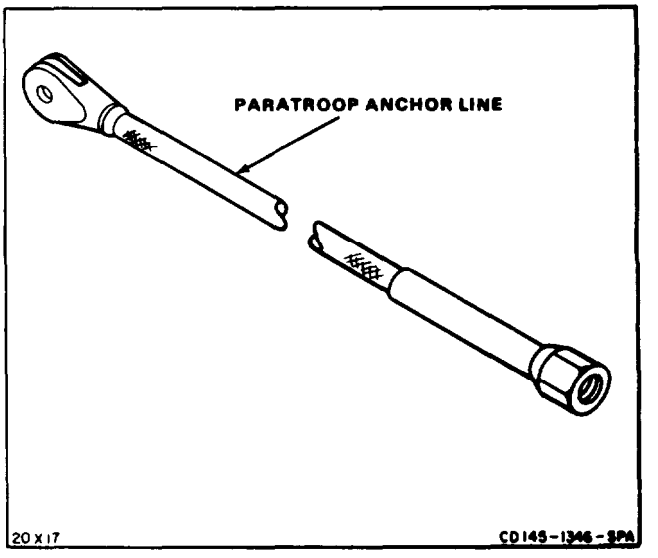
Cotter Pins
Spring Pins

Personnel Required:

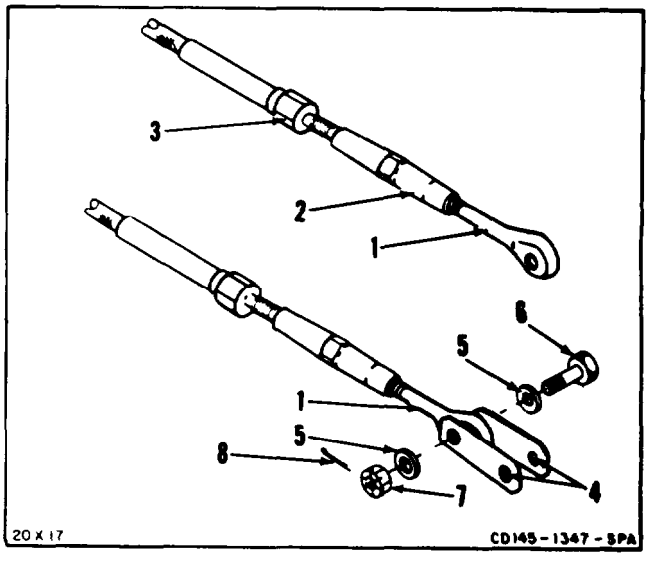
67U10 Medium Helicopter Repairer
67U30 Inspector

References:

TM 55-1520-240-23P



1. **Install eyebolt (1)** in turnbuckle (2).
2. **Install turnbuckle (2)** in terminal stud (3).
3. **Position two links (4) on eyebolt (1). Install** two washers (5), **bolt (6),** nut (7), and cotter pin (8).



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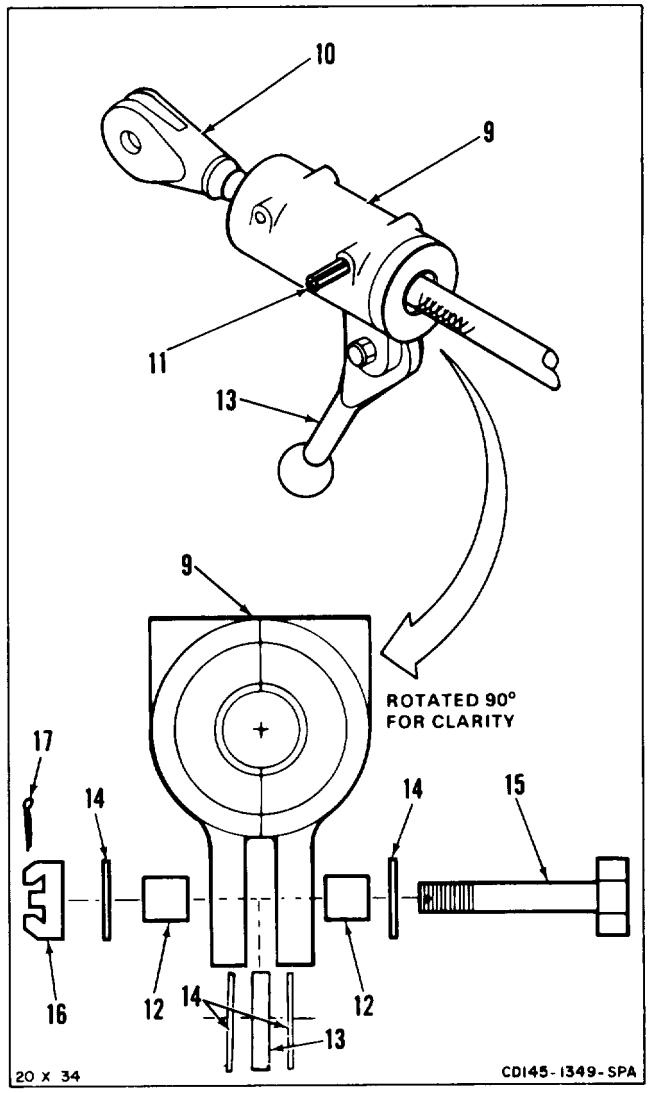
16-46 ASSEMBLE PARATROOP ANCHOR LINE ASSEMBLY (Continued)

4. Position retriever (9) on clevis (1O). **Install two spring pins (11) in retriever.**



5. Install two bushings (12) **in retriever 9).**

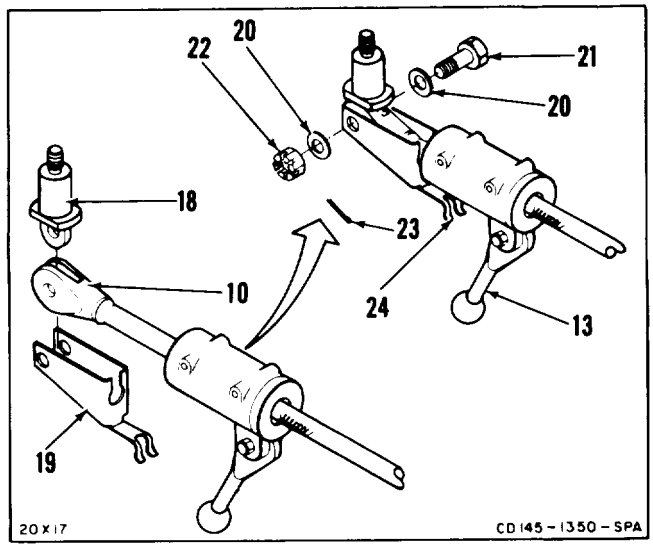
6. Install arm (13) **with four washers (14 . bolt (15), nut (16), and cotter pin (17).**

7. Position connector (18) **in clevis (10).** Position retriever stop (19) **on clevis. Align holes in connector and clevis.**

8. Install two **washers (20),** bolt (21), **nut (22), and cotter pin (23).**

9. Set arm (13) **in retriever clip (24).**

INSPECT



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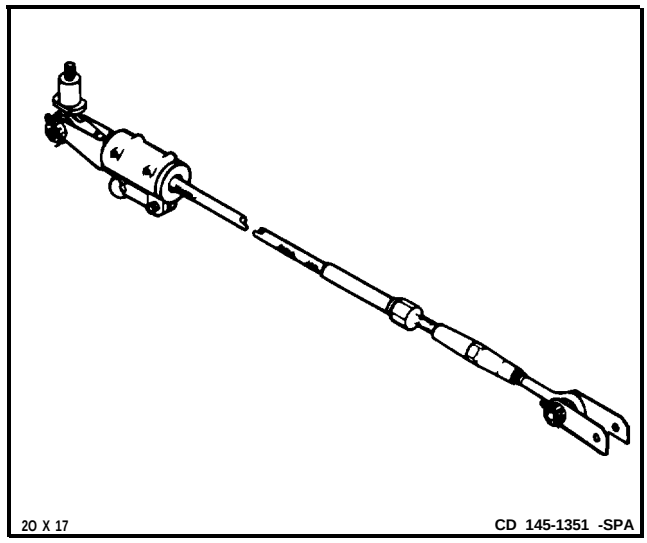
FOLLOW-ON MAINTENANCE

None



END OF TASK

16-47 INSTALL PARATROOP ANCHOR LINE

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692

Materials:

Lockwire (E230)

Parts:

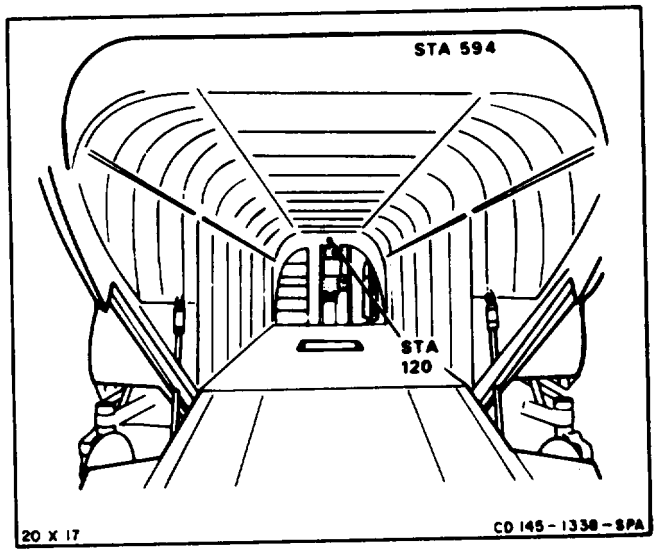
Cotter Pin

Personnel Required:

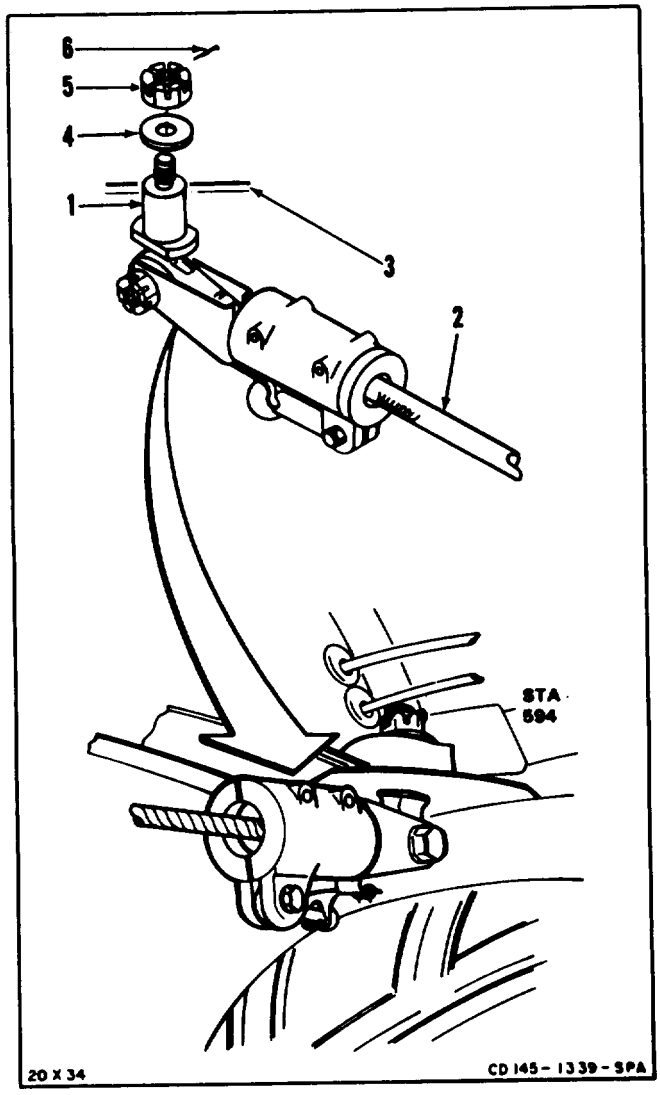
67U10 **Medium Helicopter Repairer**
67U30 Inspector

References:

TM 55-1520-240-23P



1. Install connector (1) with cable (2) in structure (3). Install washer (4), nut (5), and cotter pin (6).



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NOTE

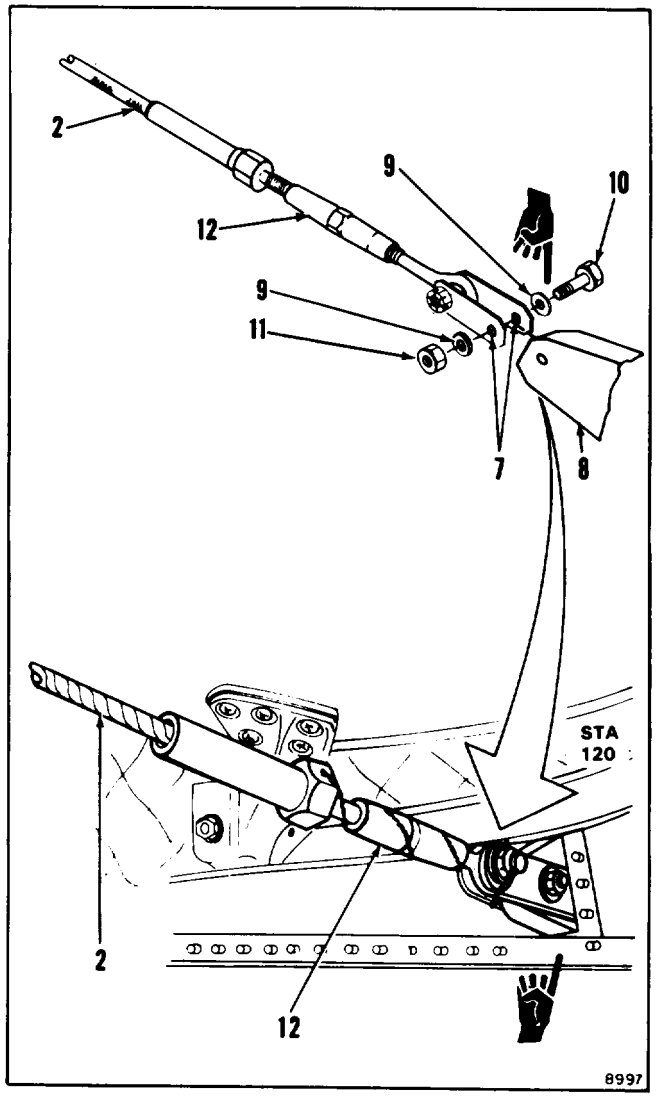
Make sure there is enough slack in anchor line wire rope to install bolt. If not, loosen turnbuckle.

2. Install connect links (7) **to fitting (8). Install two washers (9), bolt (10), and nut (11).**

3. Tighten wire rope (2) **with turnbuckle (12). Do not let wire rope sag more than 6 inches.**

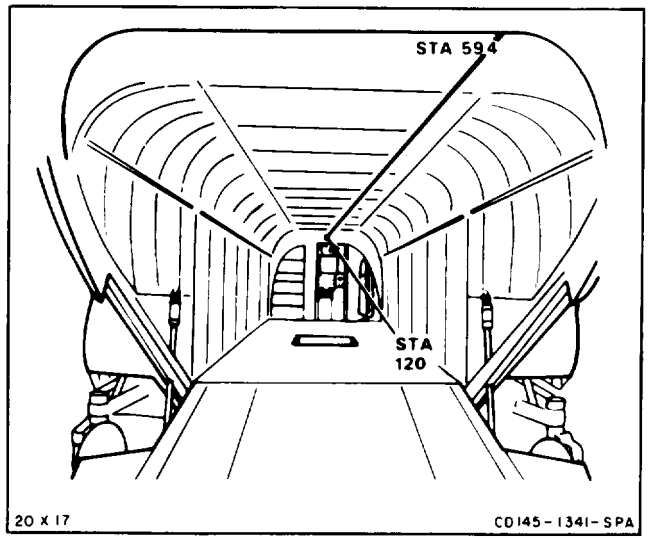
4. Install lockwire (E230) on turnbuckle (12).

INSPECT



FOLLOW-ON MAINTENANCE:

None



END OF TASK

SECTION V
FLARE DISPENSER SYSTEM
DESCRIPTION
AND
THEORY OF OPERATION

DESCRIPTION

The Flare Dispenser System is a countermeasure to infra-red guided heat-seeking missiles when the helicopter is airborne. The heart of the system is a flare dispenser assembly, consisting of a dispenser, electronics module, and payload module. Other components are a remote test panel, timer, cockpit control panel, six firing switches, and a safety relay. The system is operated by 28 volt dc.

When a missile launch is detected, either by sight or radar warning, the system is activated by pressing one of the six firing switches. There are four firing switches in the cabin and one on each cyclic stick control grip. Each time any of the firing switches is pressed, the system will fire a flare. If the switch is held down, the timer will cause a flare to be fired every 2.5 seconds.

The payload module has provisions for 30 flares. A digital counter on the dispenser control panel indicates the number of flares remaining. The panel also has a RIPPLE FIRE switch, which jettisons all remaining flares in case of an emergency, and an ARM/SAFE switch to arm the system in flight.

The electronics module programs the number of flares to fire on each firing order. It also has a safety switch to prevent accidental firing. This switch is activated by a safety pin which is removed before flight and installed immediately after landing.

When the helicopter is on the ground, a proximity switch on the aft landing gear disarms the system by deenergizing a safety relay in the circuit. Th system. The NORMAL/BYPASS switch stays in the NORMAL position until moved to BYPASS for ground testing. In this mode, the switch bypasses the landing gear switch to energize the safety relay. Two caution lights on the panel indicate a READY TO FIRE status and the landing gear switch status.

The CHAFF utility mode of the system is not used on the CH47 helicopter.

THEORY OF OPERATION

Power for the flare dispenser system is provided by 28 volts dc from the No. 1 dc bus **through the** CHAFF circuit breaker **on the No.** 1 power distribution panel. **The system is readied for operation by setting the toggle switch on the** cockpit control panel **to ARM.**

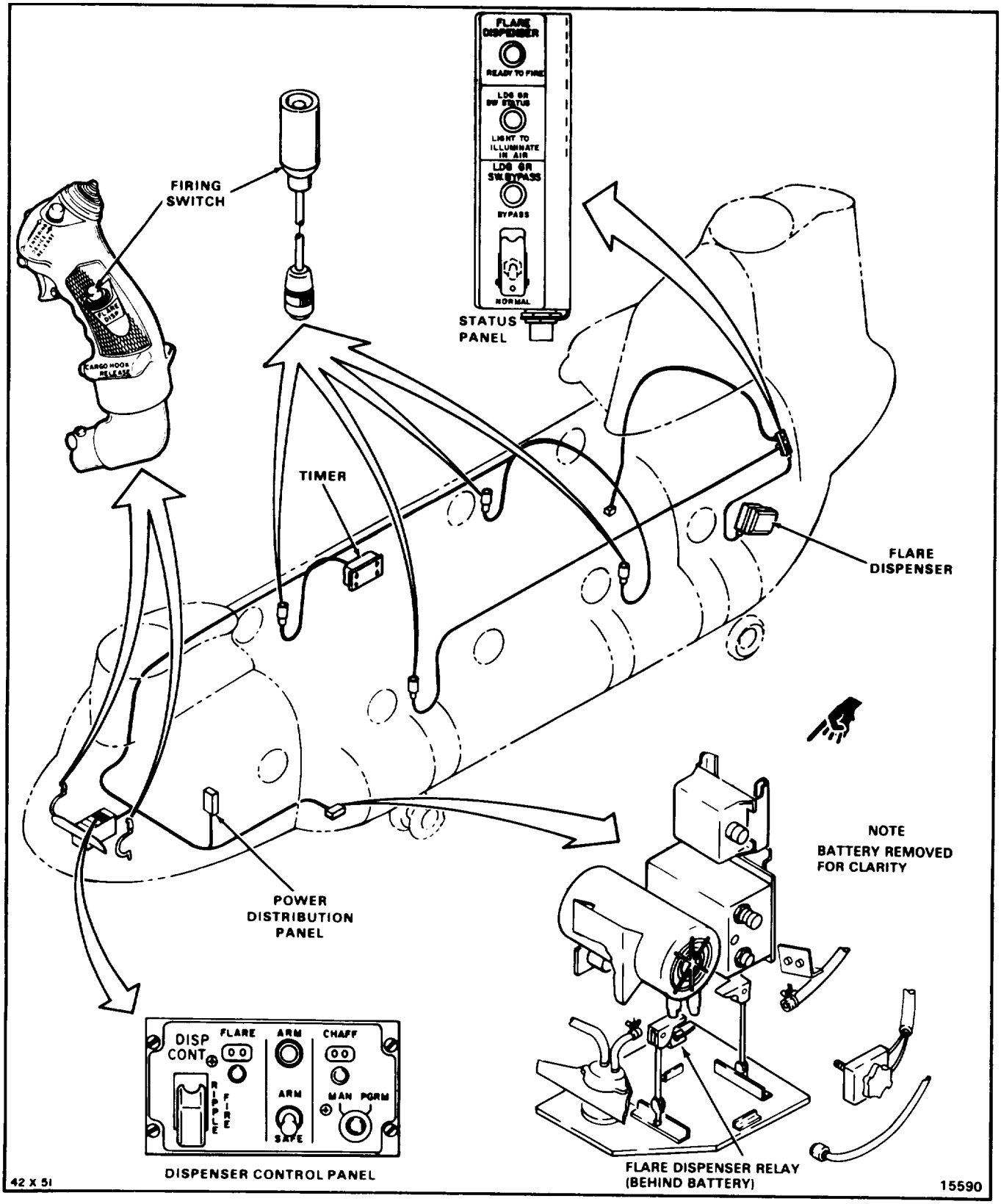
If the helicopter is on the ground, safety relay 147K1 **will be held deenergized by** landing gear switch 148K2 **and the system will remain disabled. When the helicopter is in the air, the switch closes, energizing the relay and allowing power to flow to the** remote test panel **and the** cockpit control panel. **With the safety pin removed from the electronics module and the test panel switch at ARM, the timer circuit is armed and lights on the test panel come on to indicate that the landing gear switch is closed and the system is armed and ready to fire.**

When a cockpit or cabin firing switch is pressed, a 28-volt firing signal is routed through the timer **to the flare dispenser. A flare from the payload module is fired and the READY TO FIRE light on the remote test panel goes out. A** flare sensor **in the dispenser checks for a successful firing by detecting the heat generated during ignition and relaying the information to a** flare detector **in the** electronic module. **If no such information is received, meaning that a flare was not successfully fired, the module automatically fires another flare. If the second flare also fails, a third flare is ejected. If the third fails, the automatic sequence stops until one of the firing switches is pressed again.**

With the successful firing of a flare, a 2.5 second delay is imposed by the timer before another flare can be fired. Readiness is signalled by the READY TO FIRE light on the remote test panel coming on. With that, the sequence may be repeated until all 30 flares have been fired.

GO TO NEXT PAGE

16-48 FLARE DISPENSER SYSTEM (Continued)



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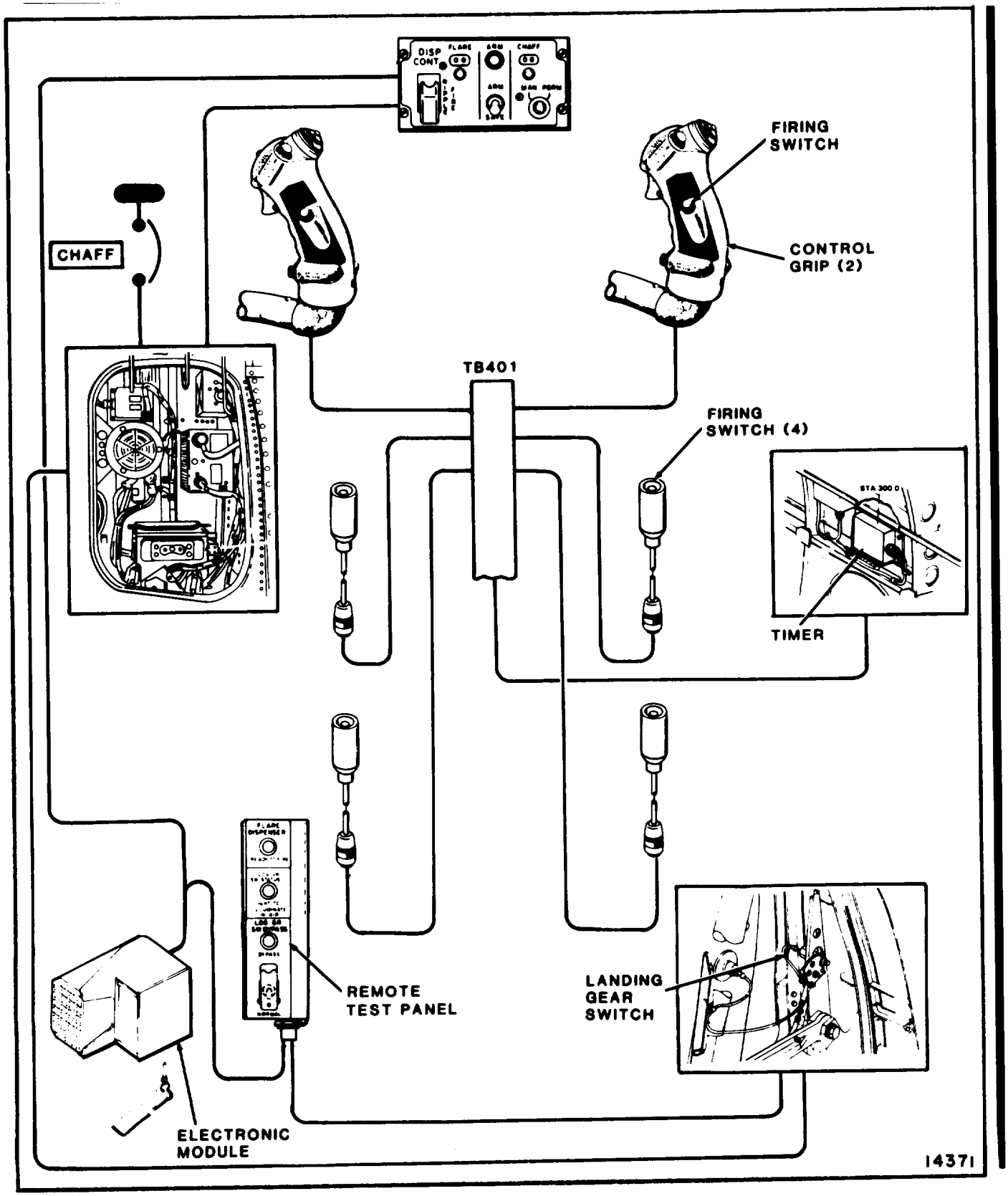
16-48 FLARE DISPENSER SYSTEM (Continued)



END OF TASK

SECTION VI

FLARE DISPENSER SYSTEM

16-49 REMOVE FLARE DISPENSER ASSEMBLY

INITIAL SETUP

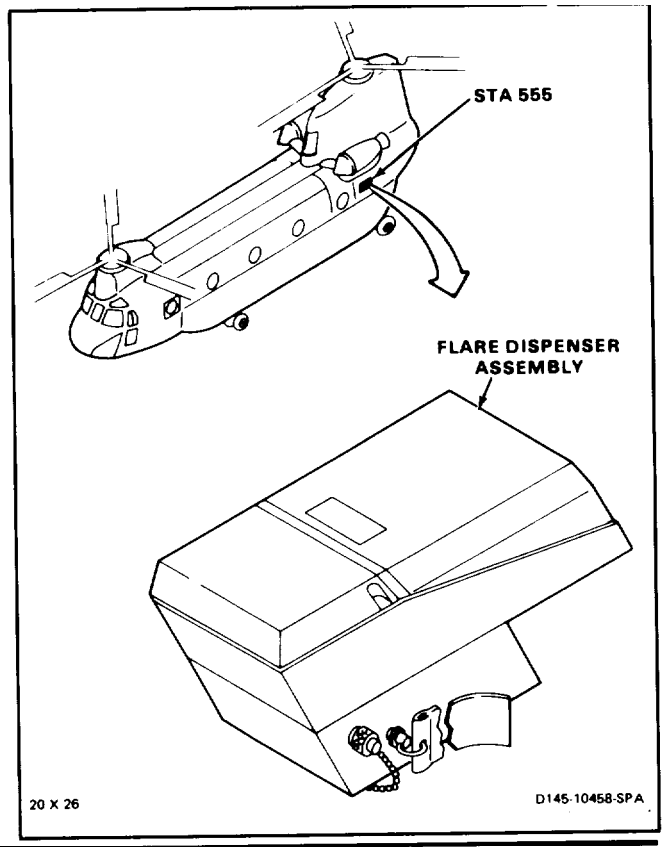
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Workstand

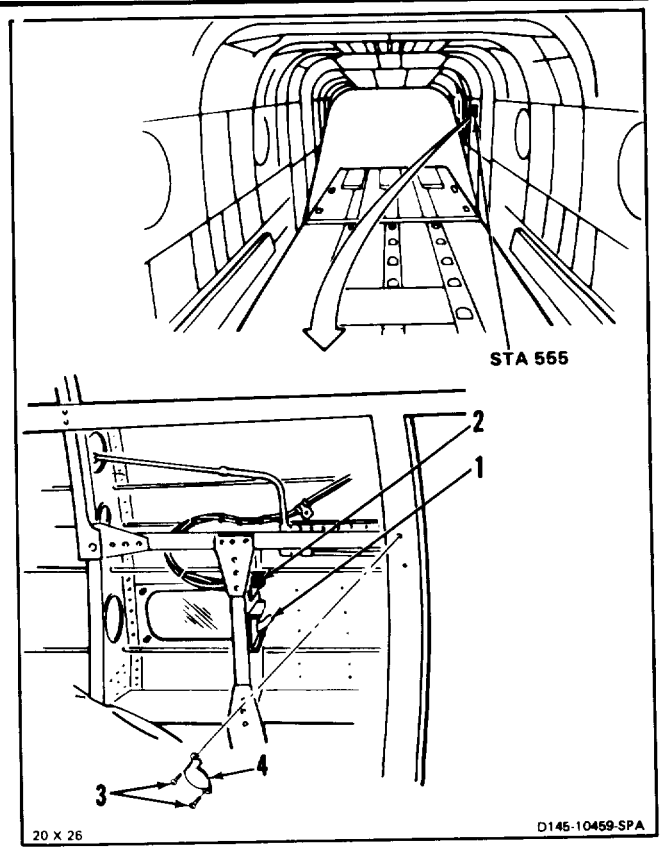
Materials:
None

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Cargo Ramp Open and Level (TM 55-1520-240-T)
Safety Pin Installed (TM 55-1520-240-10)
Acoustic Blanket at Right Side Sta 555 Removed (Task 2-208)



1. **From inside helicopter,** disconnect electrical plug (1) **from receptacle (2).**
2. Remove two screws (3) **from stowed cover (4). Remove cover.**



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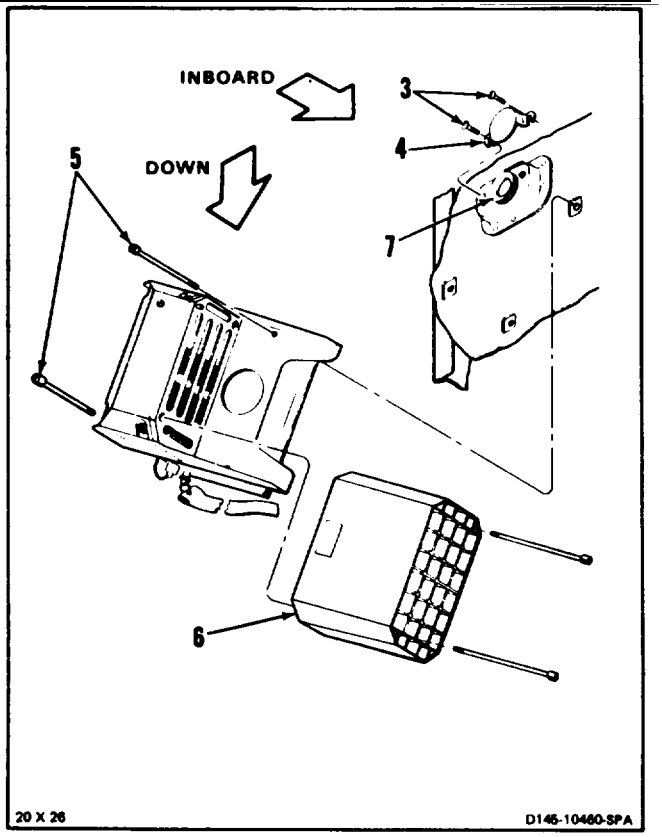
16-49 REMOVE FLARE DISPENSER ASSEMBLY (Continued) 16-49

3 From outside helicopter, remove four screws (5) from dispenser (6).

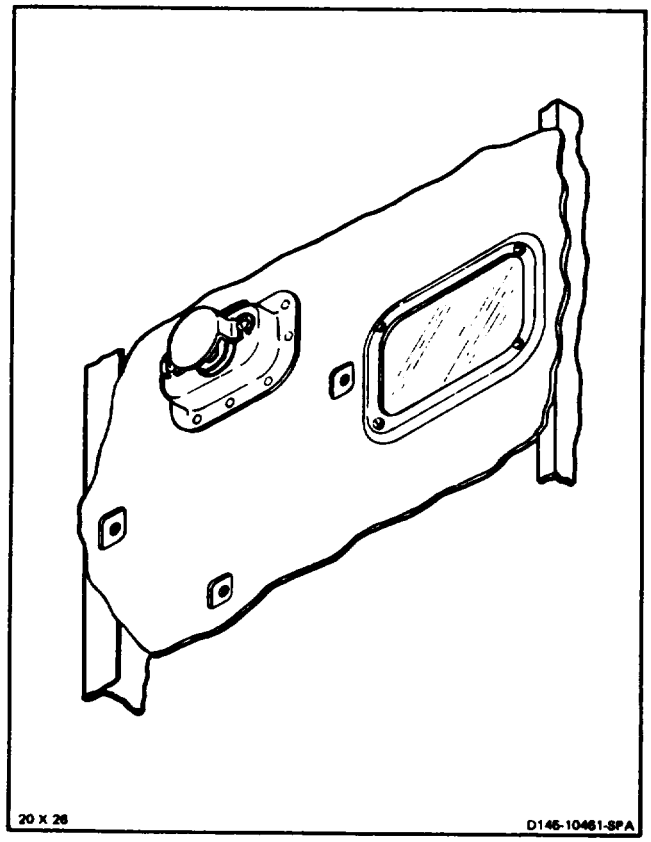
4. Remove dispensor (6).

5. Install two screws (3) and cover (4) on seal (7).



FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-50 INSTALL FLARE DISPENSER ASSEMBLY

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Torque Wrench, 5 to 50 Inch-Pounds

Materials:
None

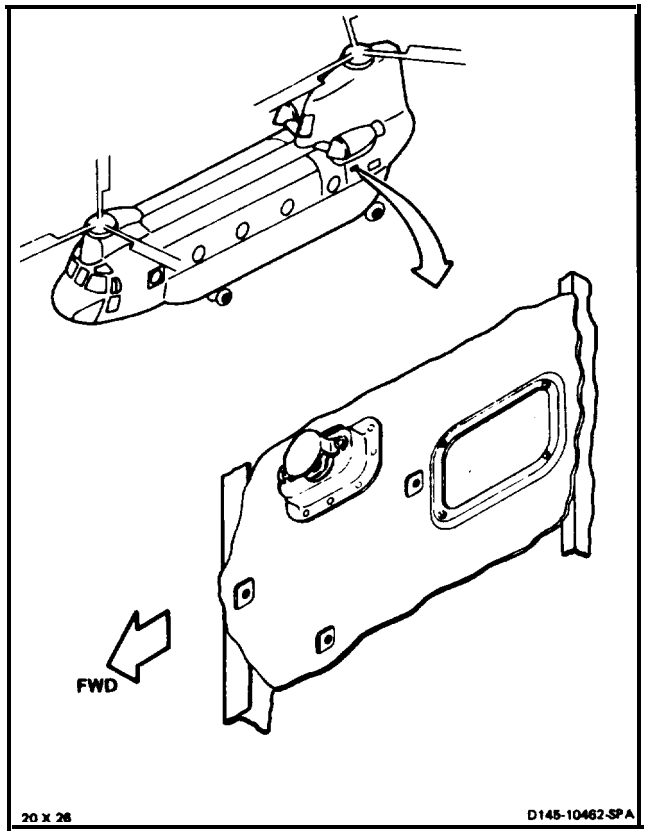
Personnel Required:
68F10 **Aircraft Electrician**
67U30 Inspector

References:
TM 55-1520-240-23P

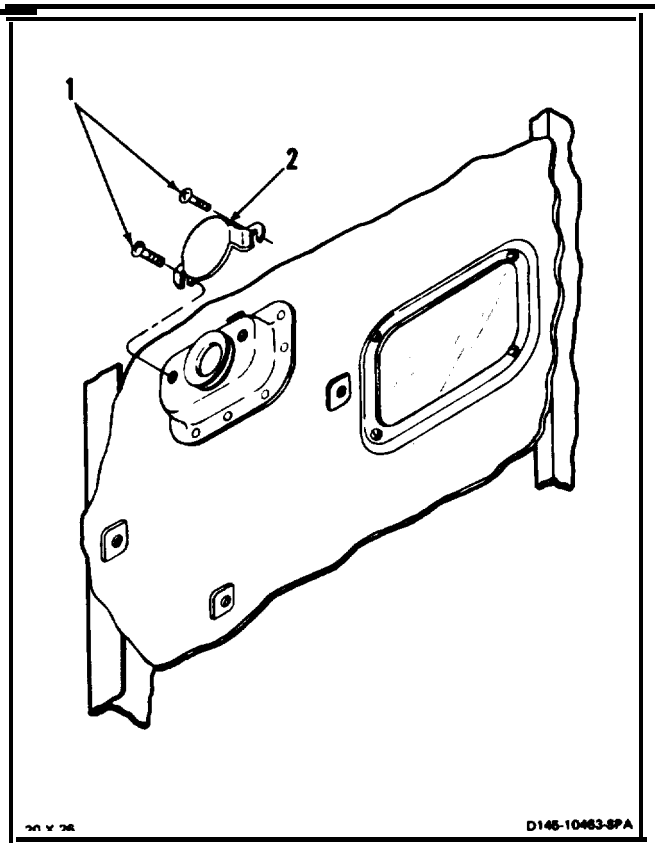
General Safety Instructions:

WARNING

Make sure battery is disconnected, electrical power off, arm **safe** switch is sat to safe, ripple fire switch is sat to down (guarded), and remote test switch is set to normal. Otherwise, damage, personal injury, or death can occur.



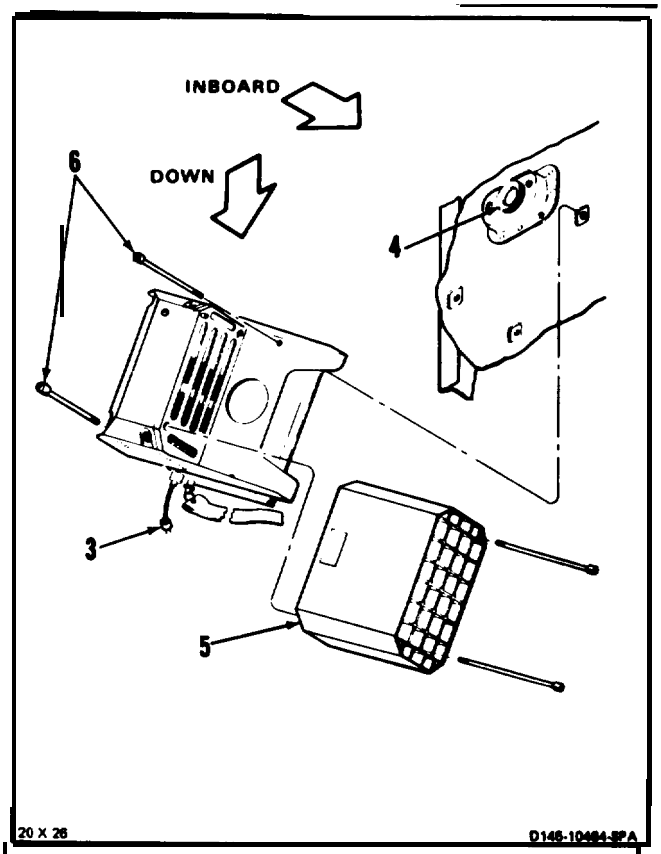
1. From outside helicopter, remove two screws (1) **from cover (2). Remove cover.**



GO TO NEXT PAGE

16-50 INSTALL FLARE DISPENSER ASSEMBLY (Continued)

2. Feed electrical plug (3) through seal (4).
3. Position **dispenser (5) over seal (4).** Install four screws (6).
4. Torque four screws (6) to 40 inch-pounds.



5. **From inside helicopter, stow cover (2) by** positioning **on** structure (7). Install two screws (1).
6. Connect electrical plug (3) to receptacle (8).

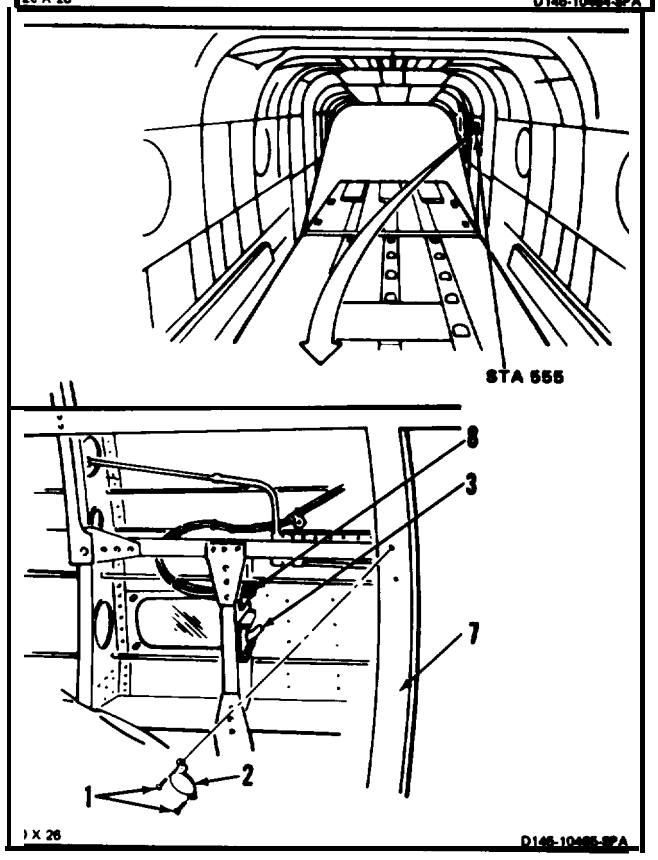
INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check **(TM 55-1520-240-T) .**

Close cargo ramp **(TM 55-1520-240-T).**

Install acoustic blanket at right side, sta 555 (Task 2-210).



END OF TASK

16-51 REMOVE FLARE DISPENSER STATUS PANEL

INITIAL SETUP

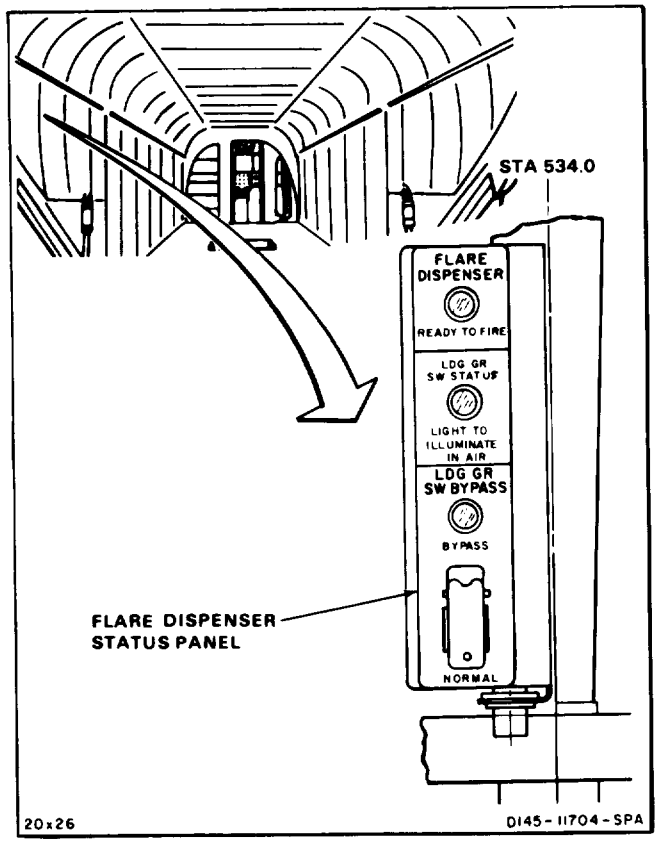
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 **Aircraft Electrician**

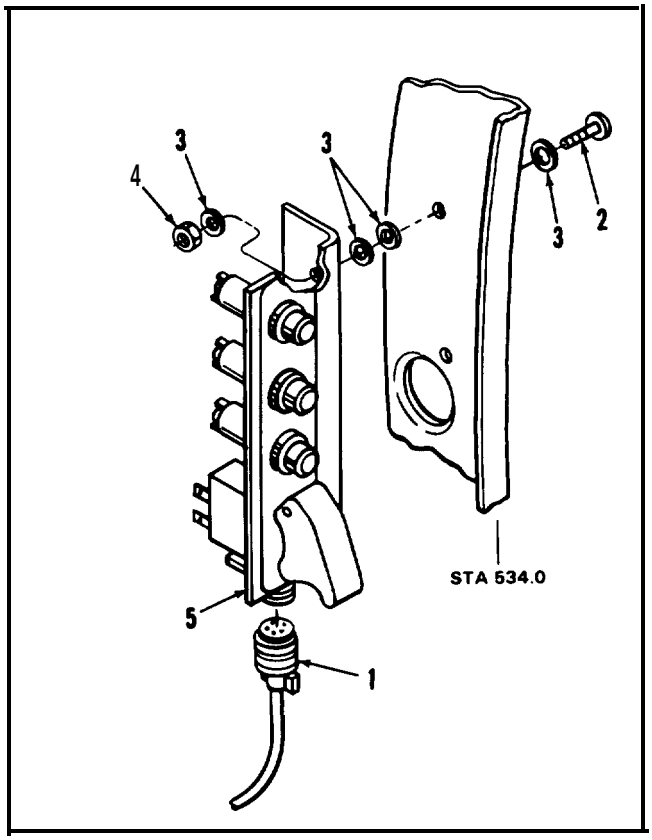
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Cargo Ramp Open and Level (TM 55-1520-240-T)



1. **Cut lockwire and** disconnect plug (1).
2. Remove two screws (2), **eight** washers (3), **and two nuts (4).**
3. Remove panal (5).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-52 DISASSEMBLE FLARE DISPENSER STATUS PANEL

INITIAL SETUP

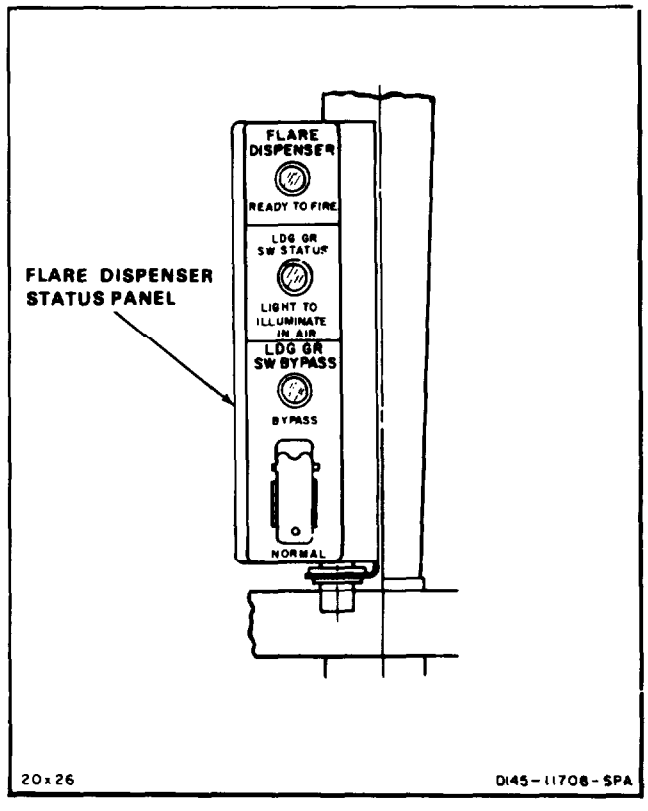
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Iron

Materials:
Paper Tags (264)

Personnel Required:
68F10 **Aircraft Electrician**

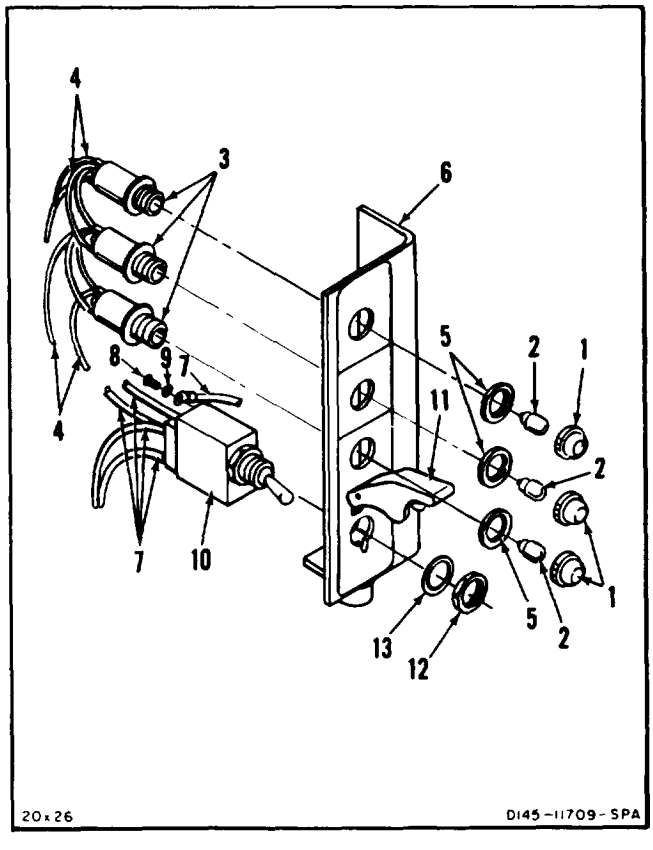
Equipment Condition:
Off **Helicopter Task**



1. Remove lens (1) and lamp (2) **from three lights (3).**
2. **Tag and** unsolder 12 wires (4) **from three lights (3).**
3. **Remove three nuts (5) and three lights (3) from bracket (6).**
4. **Tag five wires** (7). **Remove screws (8) and washers (9) to** disconnect wires **from switch (10).**
5. **Raise switch guard (1 1) and** remove nut (12) and washer (13).
6. Remove switch (10).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-53 ASSEMBLE FLARE DISPENSER STATUS PANEL

INITIAL SETUP

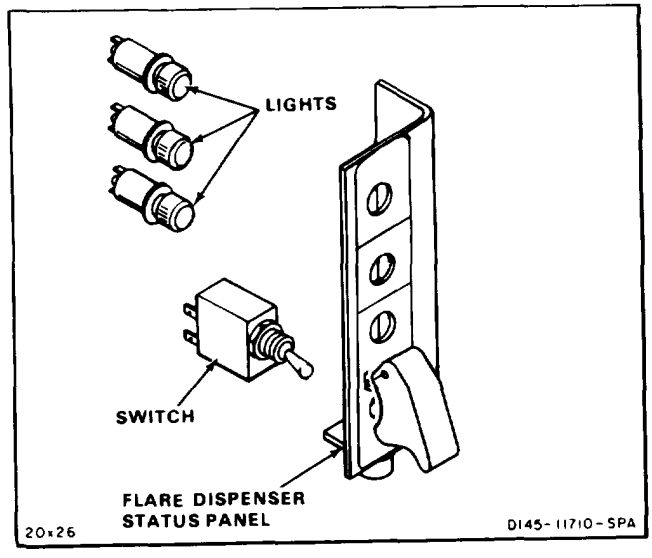
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Iron

Materials:
Solder (E360)
Electrical Insulation Tubing (E431)

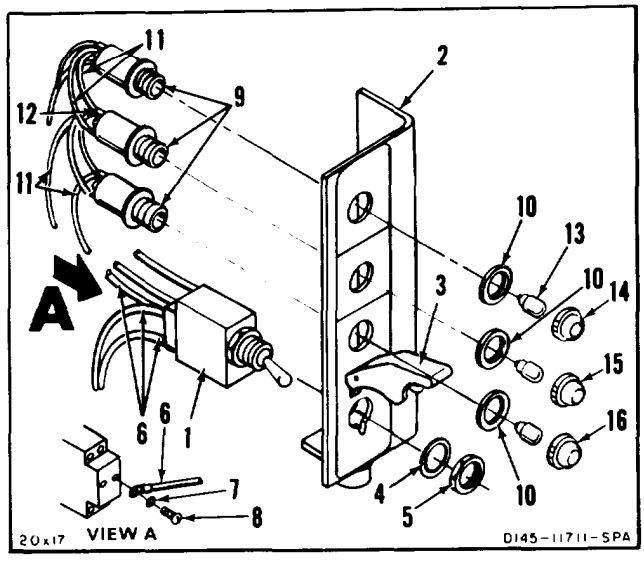
Personnel Required:
68F10 **Aircraft Electrician**
67U30 Inspector

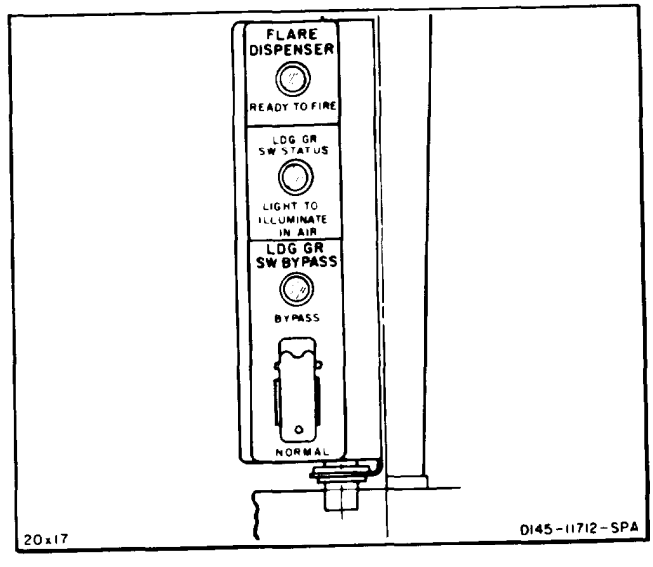
References:
TM 55-1520-240-23P



1. Position switch (1) **in bracket (2). Raise switch guard (3) and** install washer (4) and nuts (6).
2. **Remove tags from five wires (6).** Connect wires to switch (1). **Use washers (7) and screws (8).**
3. Position three lights (9) in bracket (2) Install three nuts (10) **on three lights.**
4. **Remove tags from 12 wires (11). Install electrical insulation tubing (E431) (12) on wires.** Solder wires to **three** lights (9). **Slide** tubing down over solder joints.
5. Install three lamps (13) **in** lights (9).
6. Install yellow lens (14) On top lamp (13). **Install** green lens **(15) on center lamp (13)** Install red lens (16) on bottom lamp (13).

INSPECT





FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-54 INSTALL FLARE DISPENSER STATUS PANEL

INITIAL SETUP

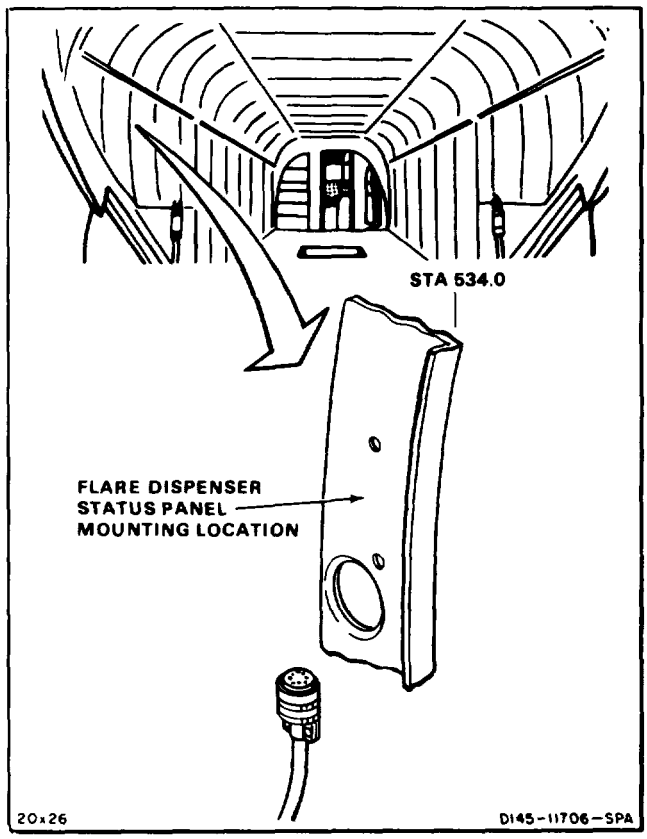
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Lockwire (229)

Personnel Required:
68F10 **Aircraft Electrician**
67U30 Inspector

References:
TM 55-1520-240-23P



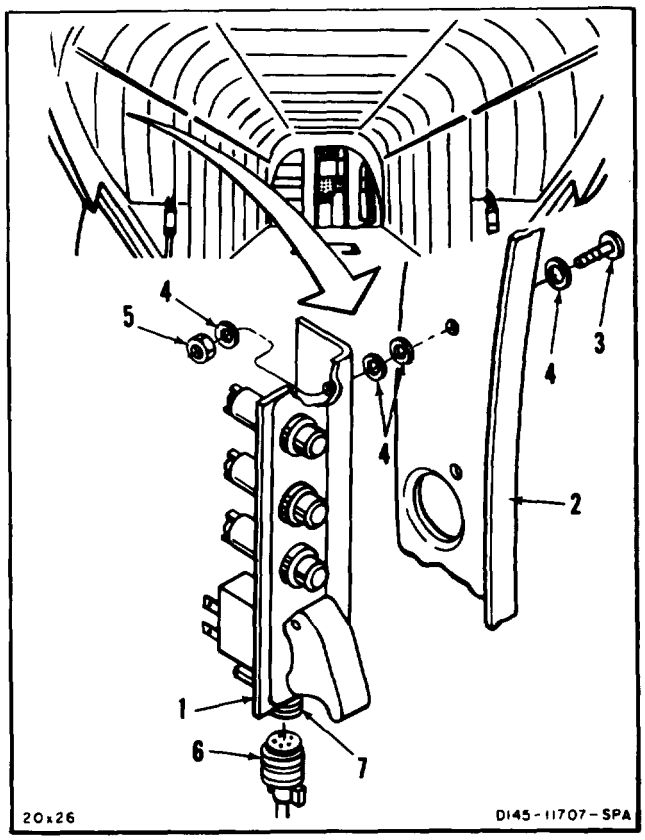
1. Position panel (1) **on former (2).**
2. Install two screws **(3), eight washers (4). and two nuts (5).**
3. Connect plug (6) **to receptacle (7). Lockwire plug.**

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of flare dispenser system (TM 55-1520-240-T).

Close cargo ramp (TM 55-1520-240-T).



END OF TASK

16-54.1 REMOVE FLARE DISPENSER CONTROL PANEL 16-54.1

INITIAL SETUP

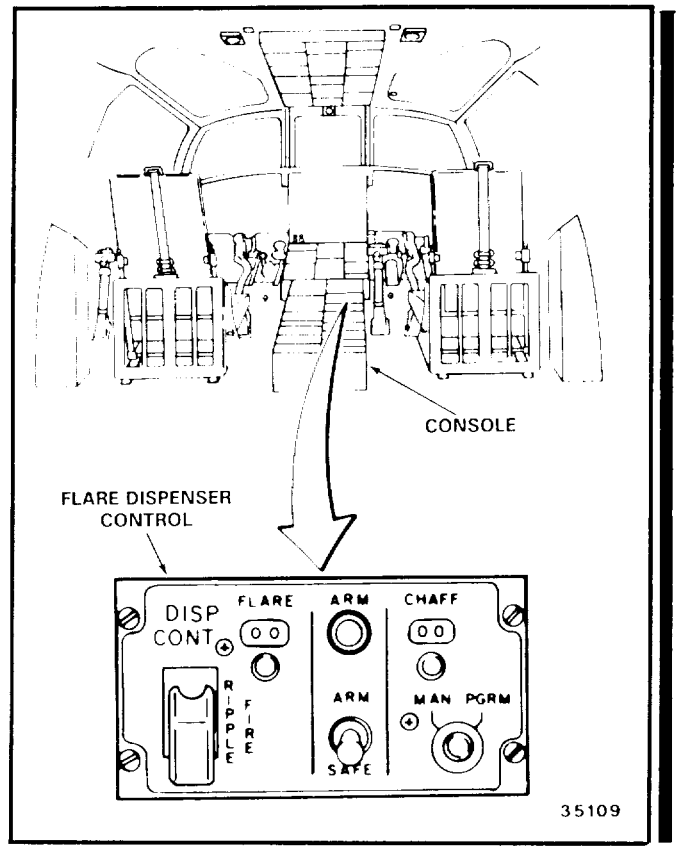
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915

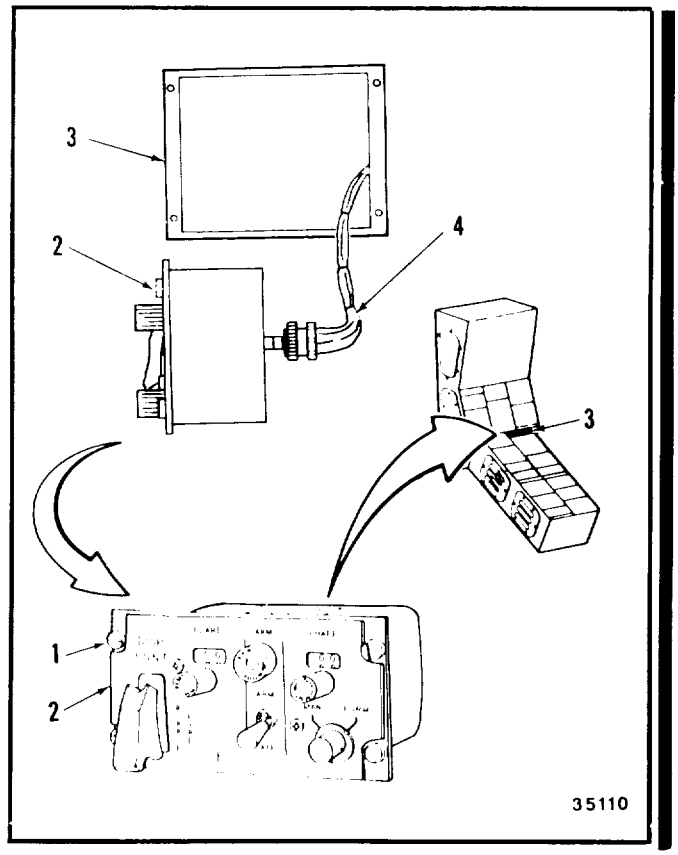
Materials:
Tag (E264)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. Loosen four fasteners (1) **on flare dispenser control panel (2).**
2. Lift flare dispenser control panel (2) **from console (3).**
3. Tag and disconnect electrical connector **(4) from flare dispenser control panel (2). Use tag (E264).**
4. Remove flare dispenser control panel (2).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

INITIAL SETUP

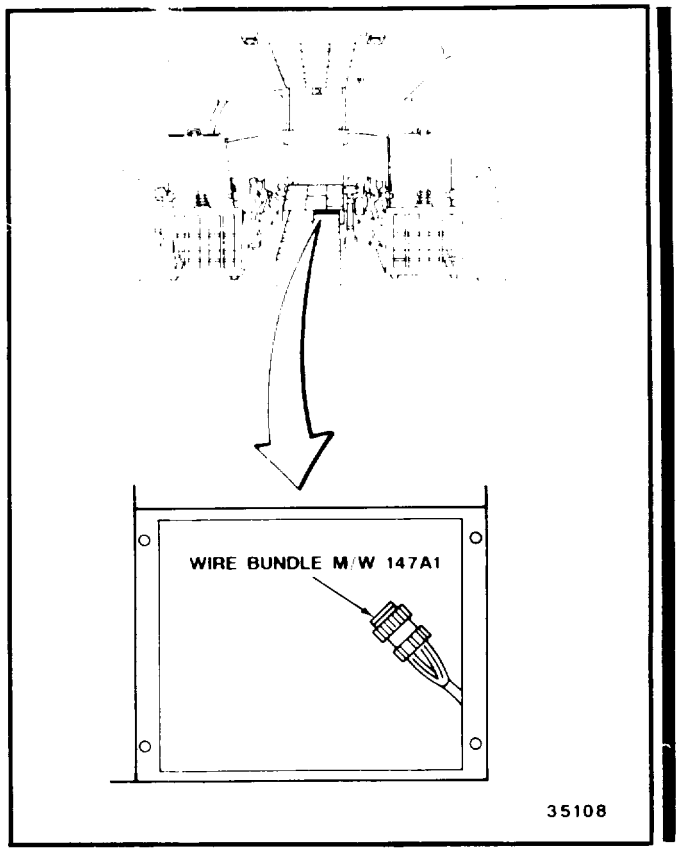
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P

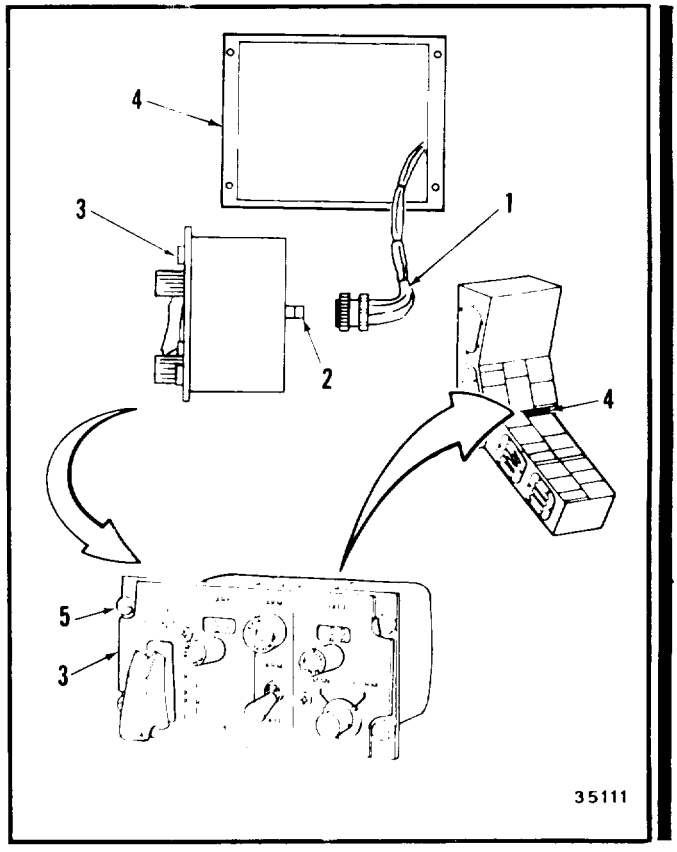


CAUTION

Insure that wire bundle marked as "mates with M/W 147A1" is connected to flare dispenser control connector.

1. Connect electrical connector (1) **to receptacle (2) on flare dispenser control panel (3). Remove tag.**
2. **Position flare dispenser control panel (3) on console (4).**
3. **Tighten four fasteners (5).**

INSPECT



FOLLOW-ON MAINTENANCE:
Perform operational check (TM 55-1520-240-T).

END OF TASK

16-55 TEST FLARE DISPENSER SYSTEM 16-55

INITIAL SETUP

Applicable Configurations:
All

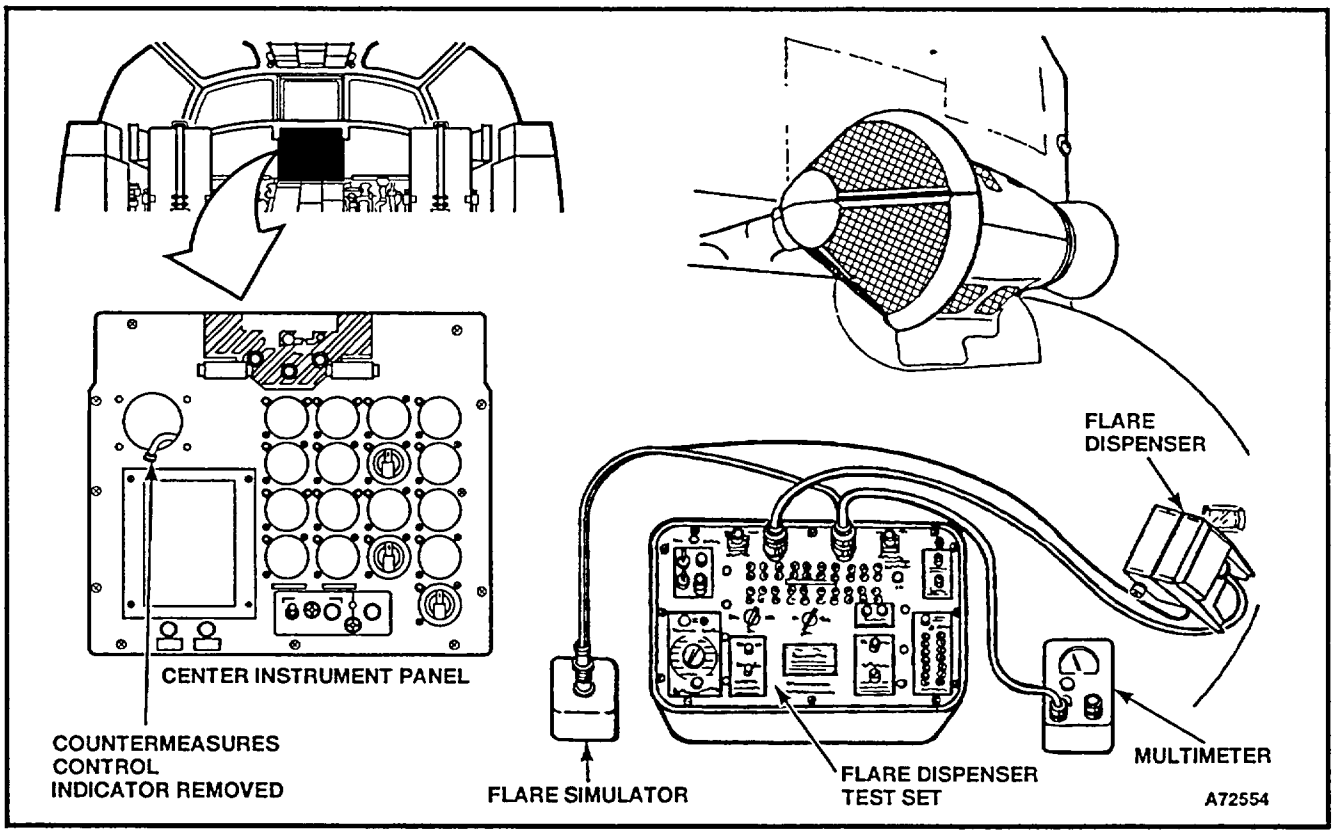
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter
Test Set, NSN 4940-01-048-9677
Stop Watch

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 9-1095-206-13
TM 11-1520-240-23

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Countermeasures Control Indicator Removed
(TM 11-1520-240-20)

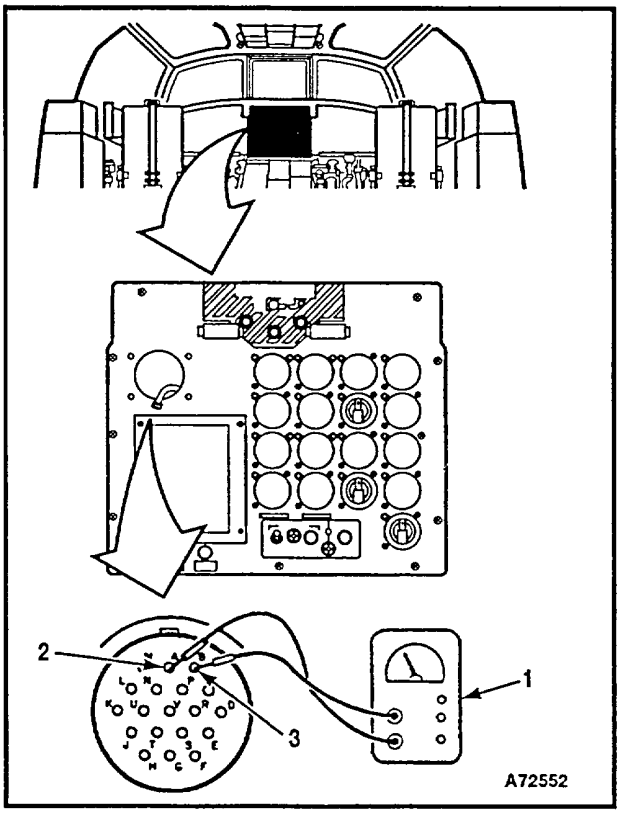


GO TO NEXT PAGE

1. **Connect multimeter (1) to pins A(2) and B(3).** Multimeter, set to Rx1, shall indicate more than 3000 ohms.

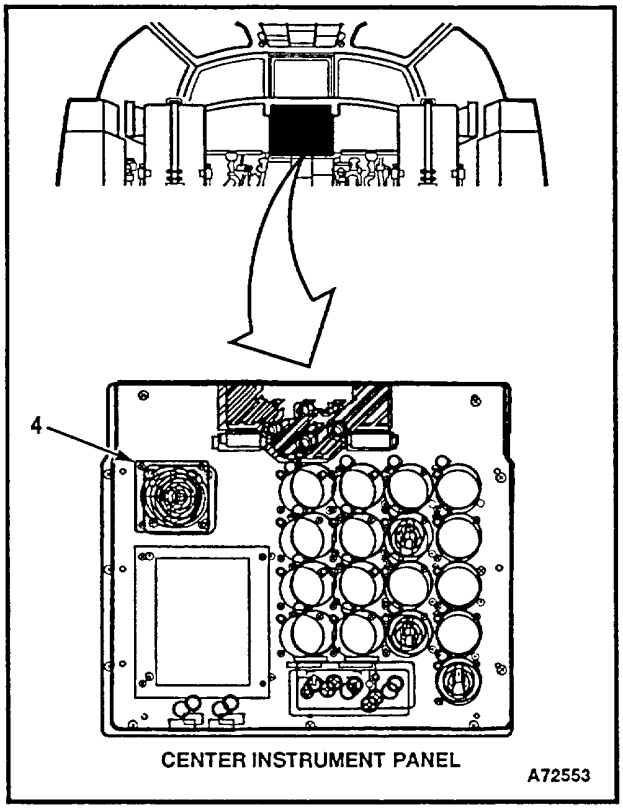
2. **Disconnect multimeter (1)** from pin B(3) and **connect to ground**. Multimeter shall indicate more than 3000 ohms.

3. Disconnect and **remove multimeter (1)**.



4. **Install countermeasures control indicator (4) (TM 11-1520-240-23).**

5. **Apply electrical power.**



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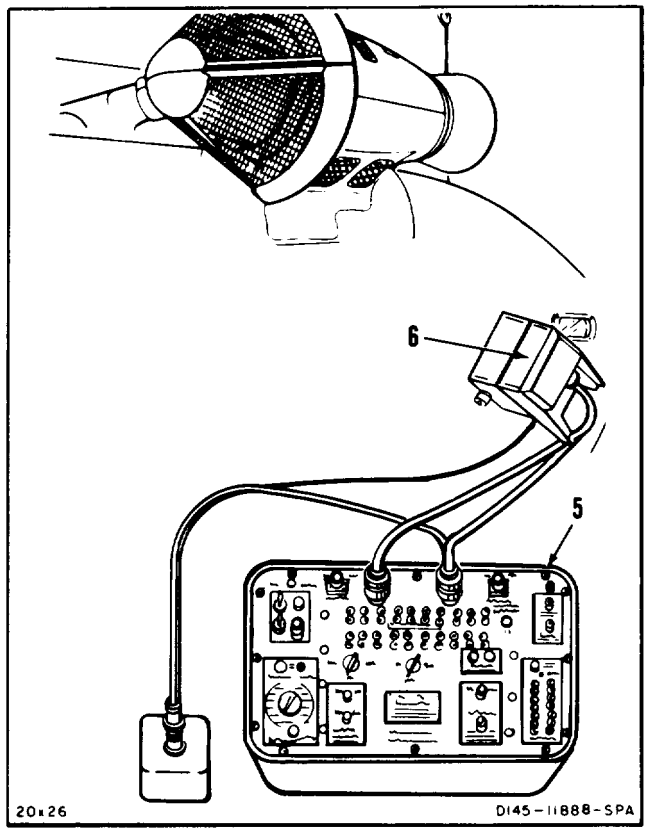
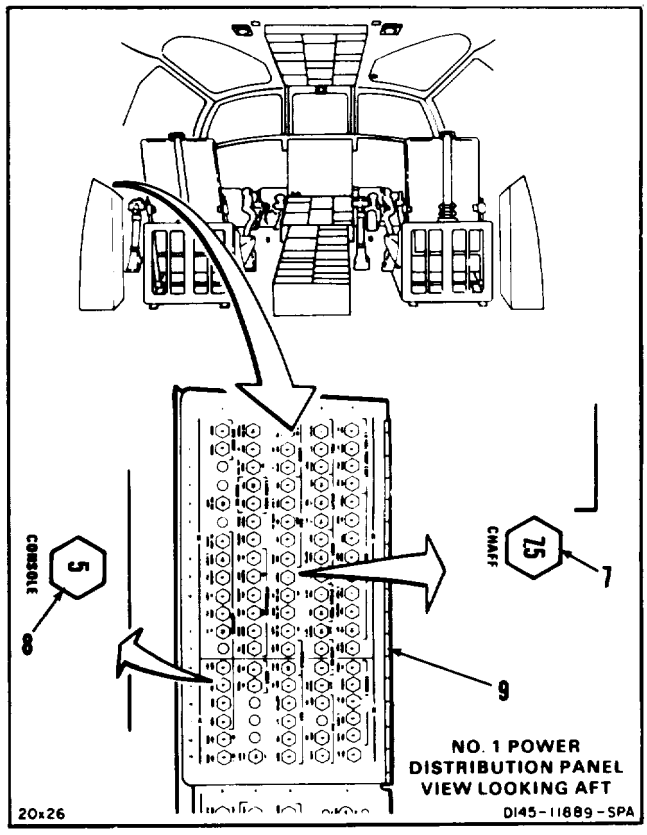
16-55 TEST FLARE DISPENSER SYSTEM (Continued)

6. Connect test sat (5) to **flare dispenser (6) (TM** *9-1095-206-13).*
7. Perform steps 1 thru 13 of flare dispenser electrical system test **on aircraft with one dispenser used for flare** (TM 9-1095-206-13).



8. Close CHAFF (7) and CONSOLE (8) circuit breakers **on No. 1 power distribution panel (9).**
9. Perform steps 14 thru 23 of **flare dispenser electrical system** TEST (TM 9-1095-208-13).



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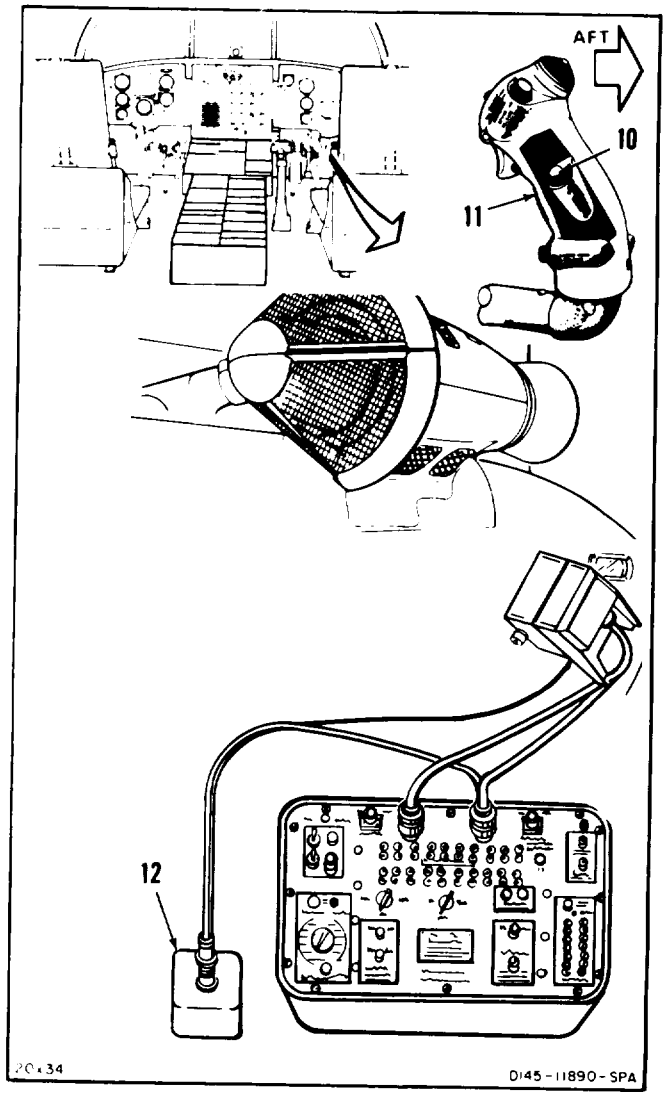
16-55 TEST FLARE DISPENSER SYSTEM (Continued)

10. Press switch (10) **on pilot's control stick grip (11) for 10 seconds. Flare simulator (12) will flash every 2.5 seconds.**

11. **Perform steps 24 thru 35 of FLARE DISPENSER ELECTRICAL SYSTEM** TEST (TM **9-1095-206-13)**



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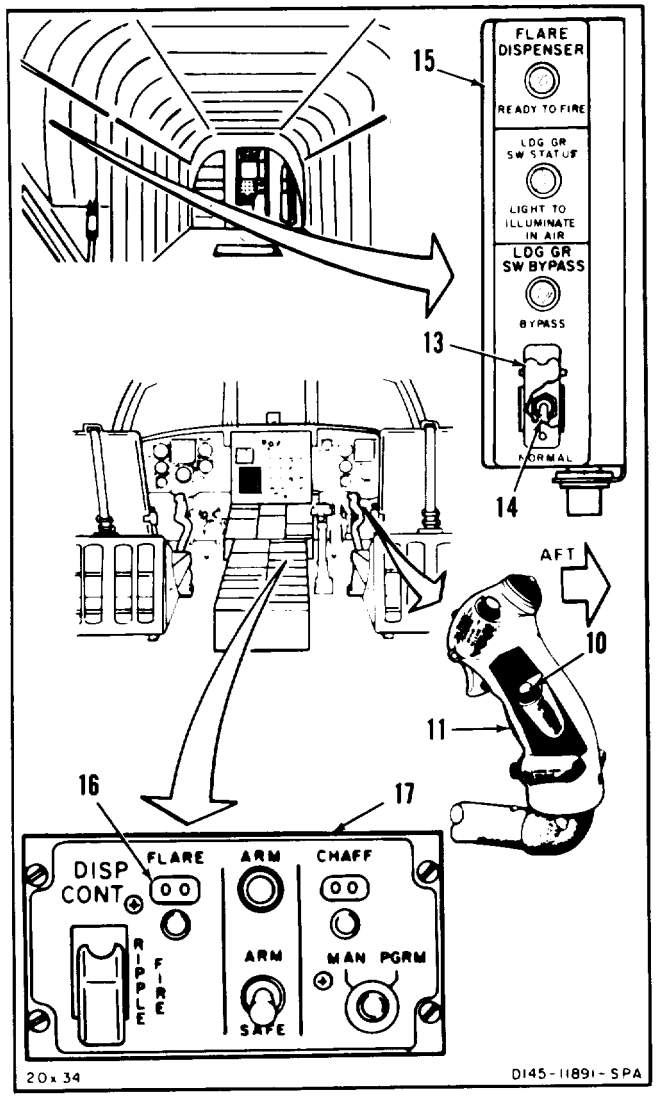
16-55 TEST FLARE DISPENSER SYSTEM (Continued) 16-55

12. **Raise switch guard (13) and set switch (14) on STATUS panel (15)** to **NORMAL.**

13. **Press switch (10) on pilot's control stick grip (11). Counter (16) on DISP CONTROL panel (17) shall read 30.**



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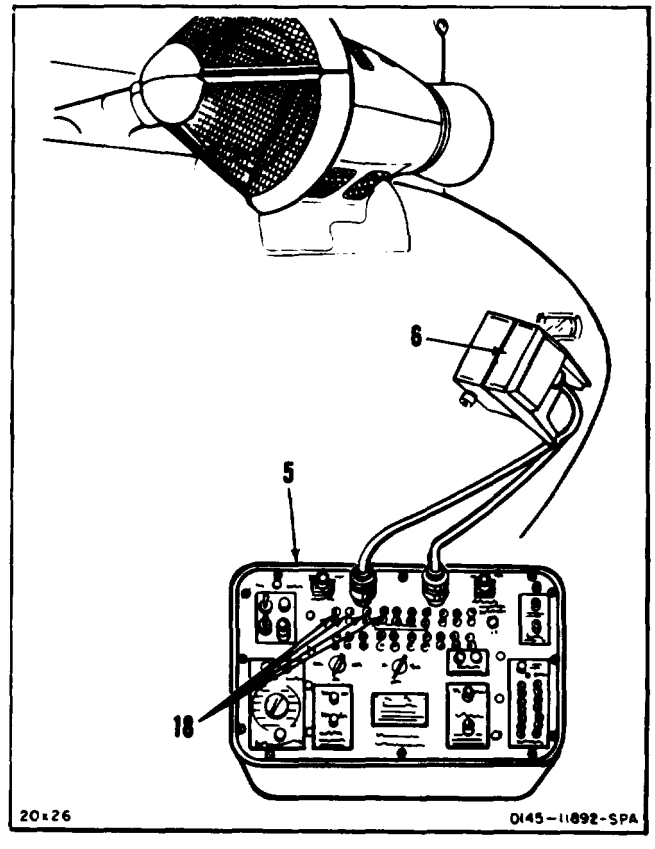
14. **Check test set (5).** Firing order indicators (18) shall be red.



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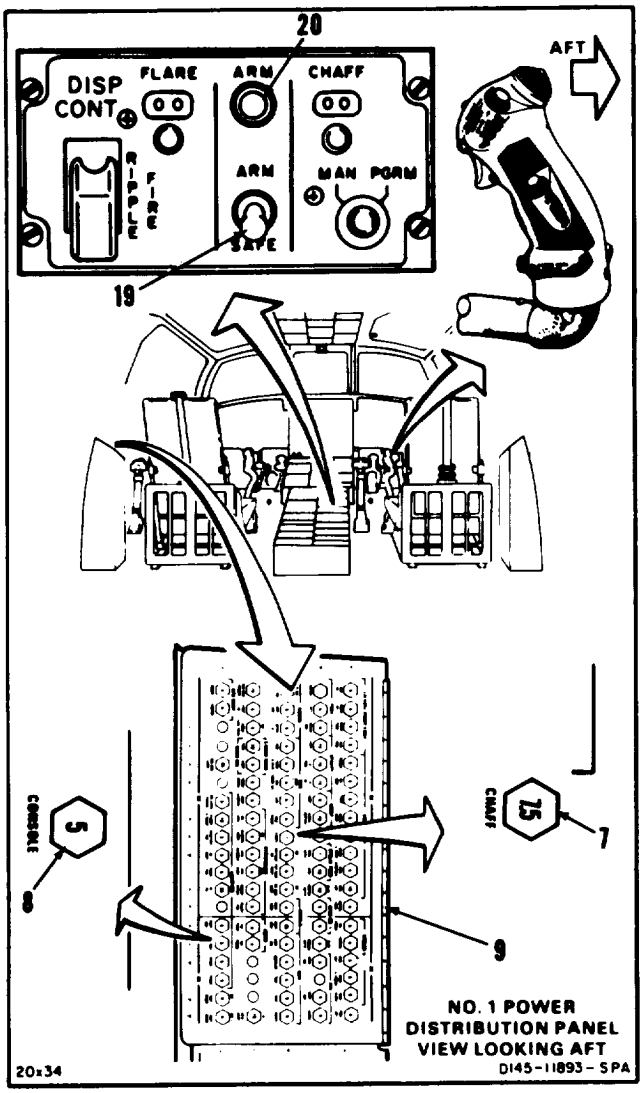
16-55 TEST FLARE DISPENSER SYSTEM (Continued) 16-55

15. Sot ARM-SAFE switch (19) on DISP **CONT panel (17)** to SAFE. **ARM light (20) shall go out.**

16. **Repeat steps 13 and 14.**

17. Open CHAFF (7) and CONSOLE (8) circuit breakers **on No. 1 power distribution panel (9).**

18. **Perform steps** *36 and 39* thru 44 of **Flare Dispenser Electrical System TEST (TM 9-1095-206-13).**



FOLLOW-ON MAINTENANCE:

Remove electrical power.

END OF TASK

16-56 REMOVE FLARE DISPENSER TIMER 16-56

INITIAL SETUP

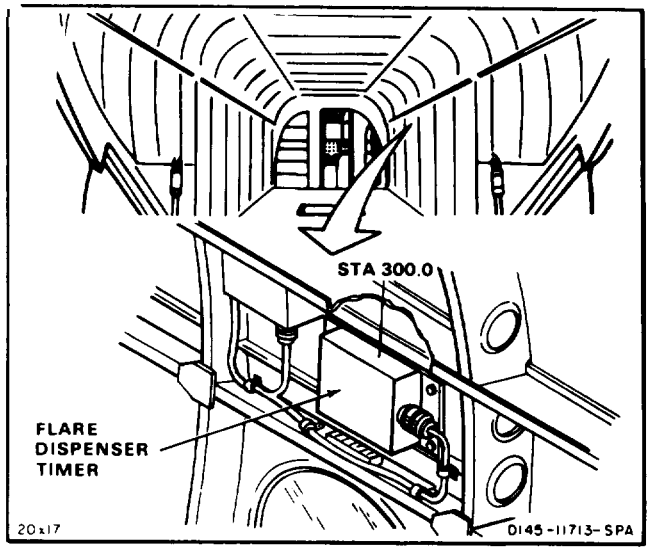
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915

Materials:
None

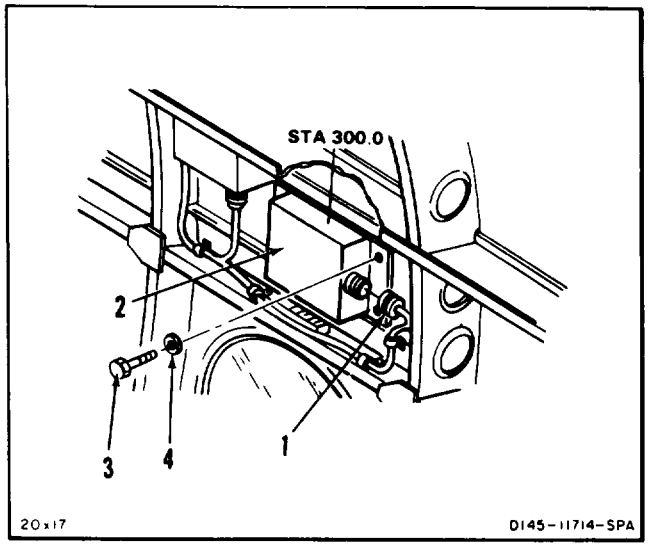
Personnel Required:
68F10 **Aircraft Electrician**

Equipment Condition:
Battery Removed (Task 1-39)
Electrical Power Off
Remove Blankets (Task 2-208)



1 Disconnect plug (1) **from timer (2).**

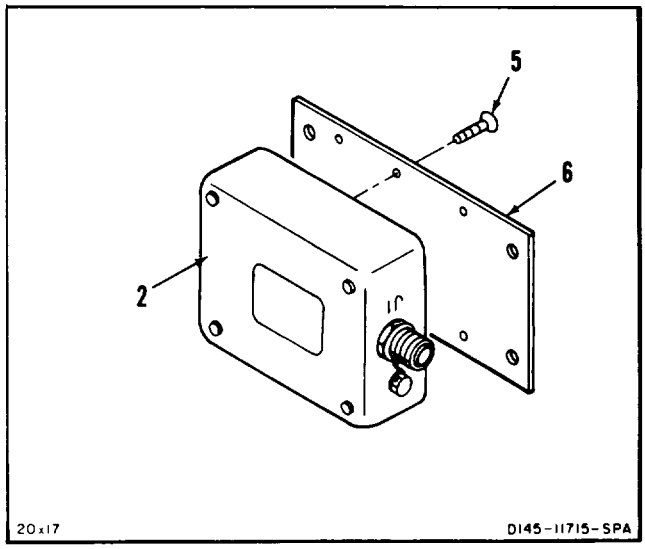
2. Remove four screws (3), washers (4) and **timer (2).**



3. **Remove six screws (5).** Remove base (6) **from timer (2).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-57 INSTALL FLARE DISPENSER TIMER 16-57

INITIAL SETUP

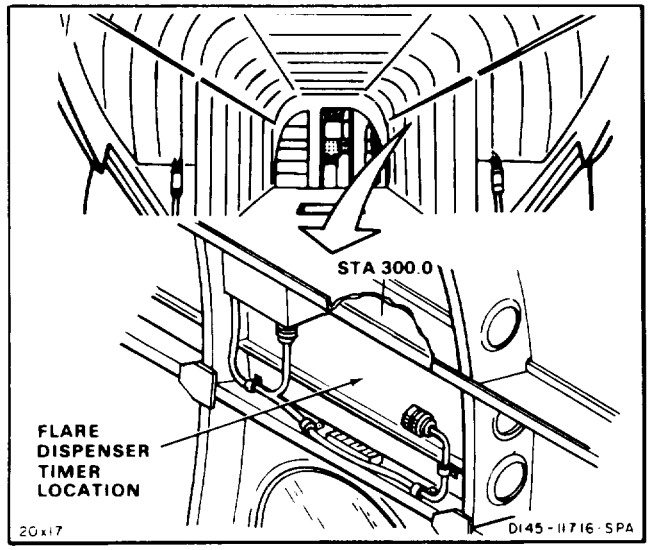
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915

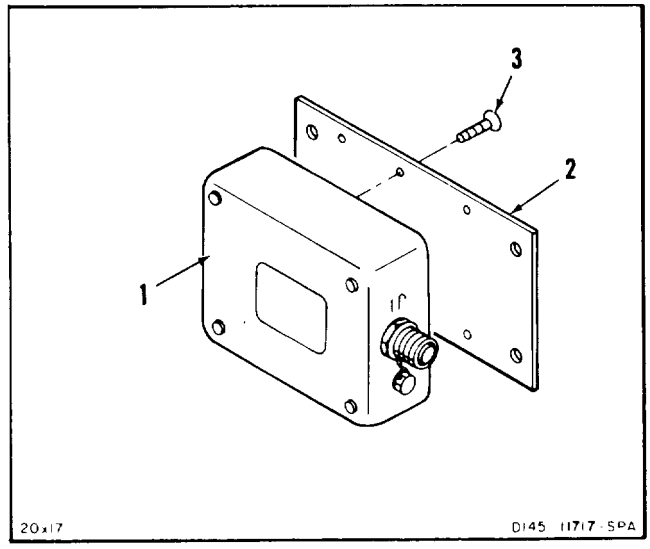
Materials:
None

Personnel Required:
68F10 **Aircraft Electrician**
67U30 Inspector

References:
TM 55-1520-240-23P

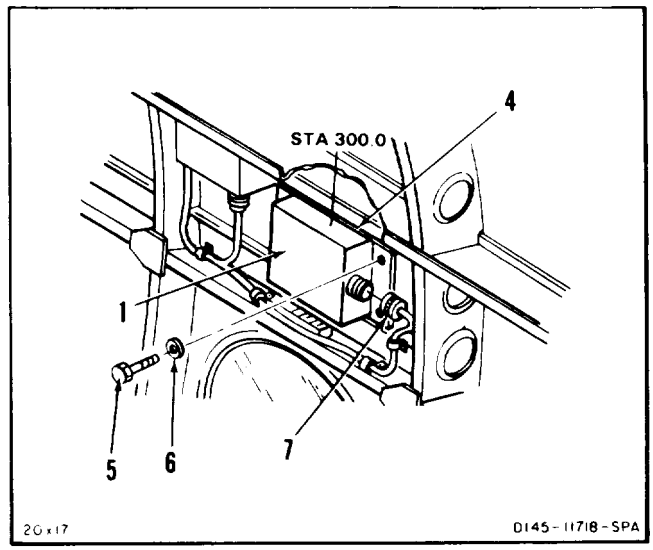


1, Position timer (1) **on base** (2). Install six screws (3) .



2. Position timer (1) **on mounting bracket (4).** Install four screws (5) and washers (6).

3. Connect plug (7) **to timer (1).**



FOLLOW-ON MAINTENANCE:

Perform operational check of flare dispenser system (TM 55-1520-240-T).

Install blankets (Task 2-210).

END OF TASK

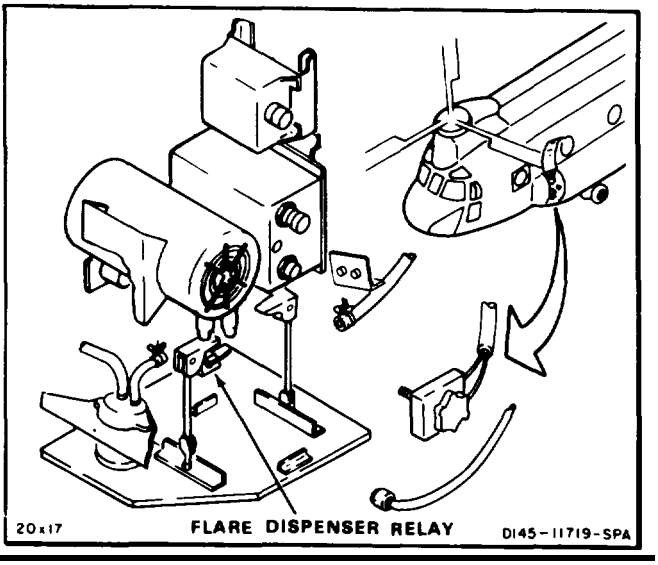
16-58 REMOVE FLARE DISPENSER RELAY

INITIAL SETUP

Applicable Configurations:
All
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Materials:
Tape (E385)
Paper Tags (E264)

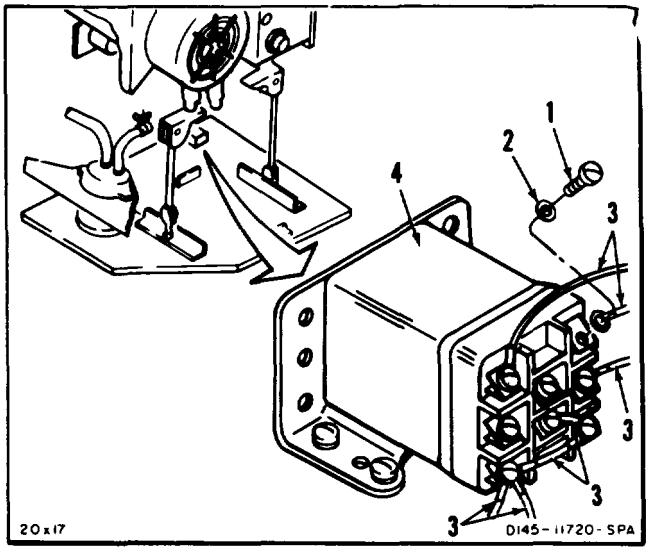
Personnel Required:
68F10 **Aircraft Electrician**

Equipment Condition:
Battery Removed (Task 9-25)
Electrical Power Off



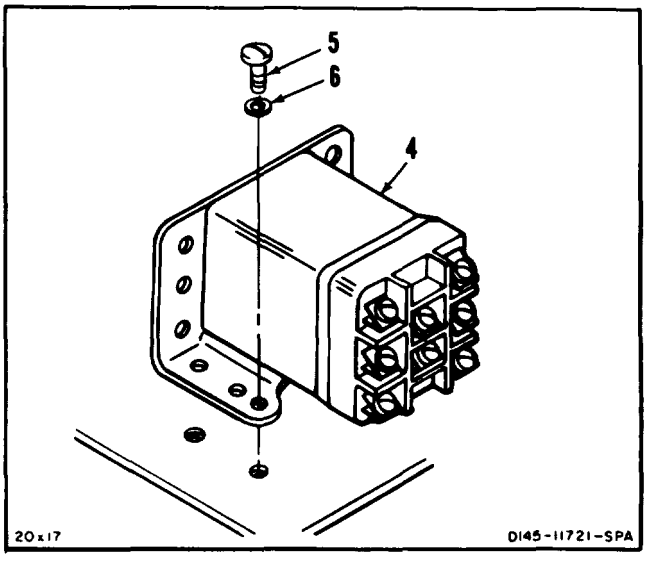
1, Remove six screws (1) and washers (2).

2. **Tag and** disconnect seven wires (3) **from relay (4). Tape wire ends.**



3. **Remove four screws (5) and washers (6).**

4. Remove relay (4).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-59 INSTALL FLARE DISPENSER RELAY

INITIAL SETUP

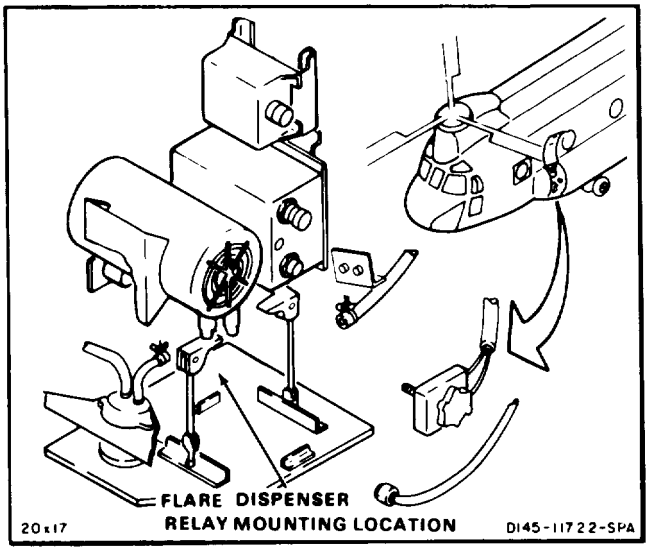
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

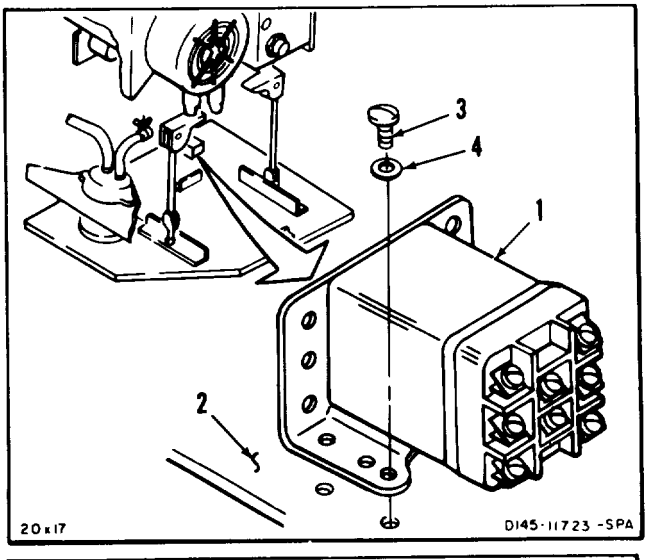
Materials:
None

Personnel Required:
68F1O **Aircraft Electrician**
67U30 Inspector

References:
TM 55-1520-240-23P

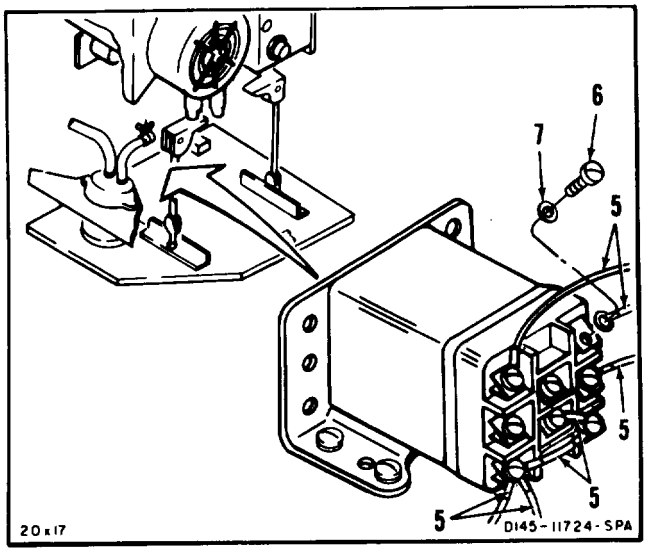


1. Position relay (1) **on shelf (2). Install** four screws (3) **and washers (4).**



2. Remove tape and tags from seven wires (5).

3. Connect seven wires (5) With six screws (6) **and washers (7).**



INSPECT

FOLLOW-ON MAINTENANCE:

Install battery (Task 9-27).

Perform operational check of flare dispenser system (TM 55-1520-240-T).

END OF TASK

SECTION VII

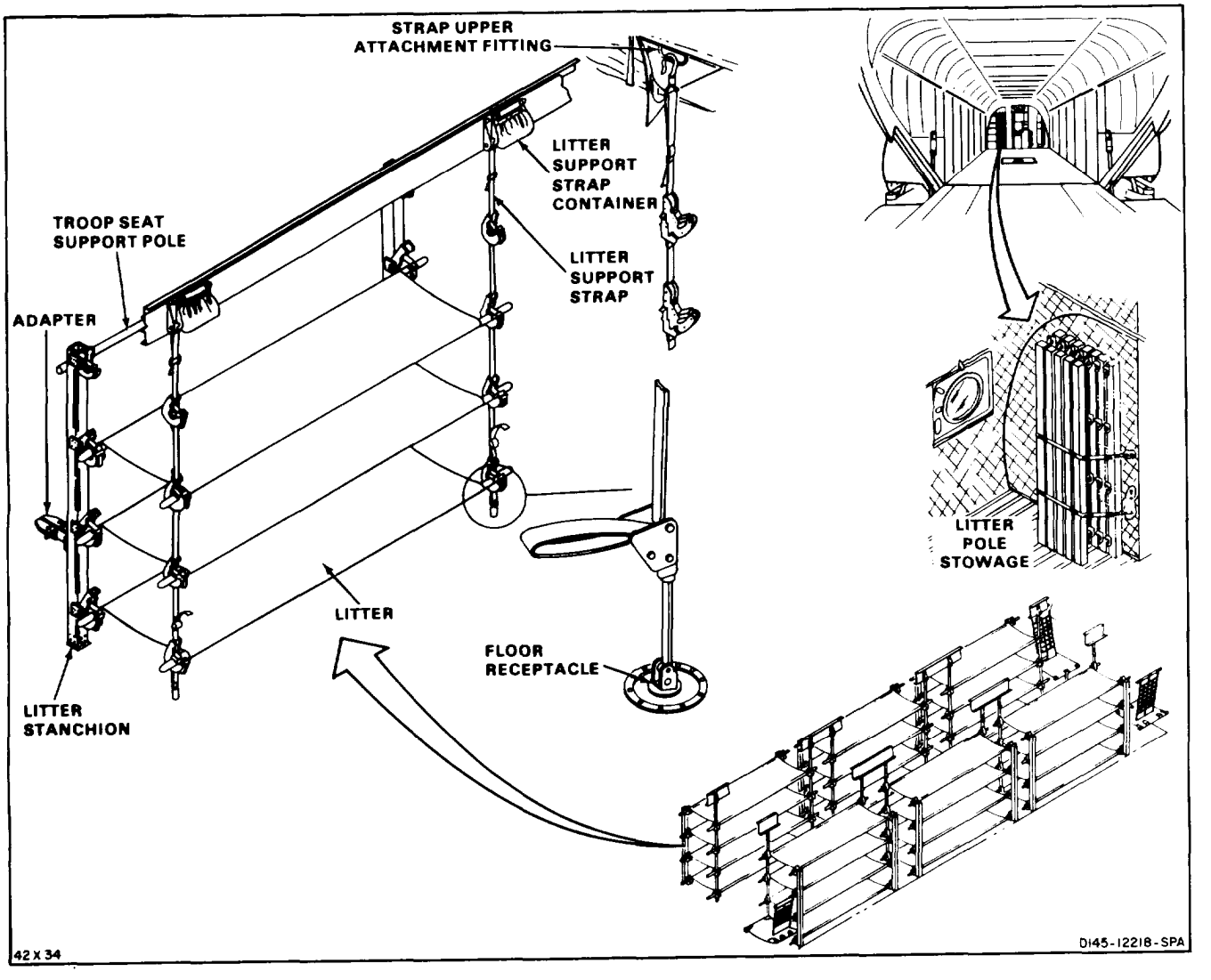
LITTER PROVISIONS

DESCRIPTION AND OPERATION

16-60 LITTER PROVISIONS

There are provisions in the cabin for the installation of 24 litters. The provisions consist of 12 removable litter stanchions and 12 litter straps. Each stanchion and each strap has four litter support brackets attached to it. This permits the installation of up to four tiers of litters. Provisions are made for stowage of the litter poles at sta 120 on the left side of the cabin. Provisions are made for the stowage of litter straps in 12 containers above the cabin ceiling.

Each stanchion rests on the floor between two stud spacers. The upper end of the stanchion is attached to fittings mounted on the support tube of the troop seat backrest, The center of the pole is connected to the troop seat support rail, Each litter strap is attached to an adapter on the floor. A hook at the top of the strap is attached to a horizontal bolt installed in the cabin ceiling.



END OF TASK

SECTION VIII

LITTER PROVISIONS

16-61 REMOVE LITTER STANCHION 16-61

INITIAL SETUP

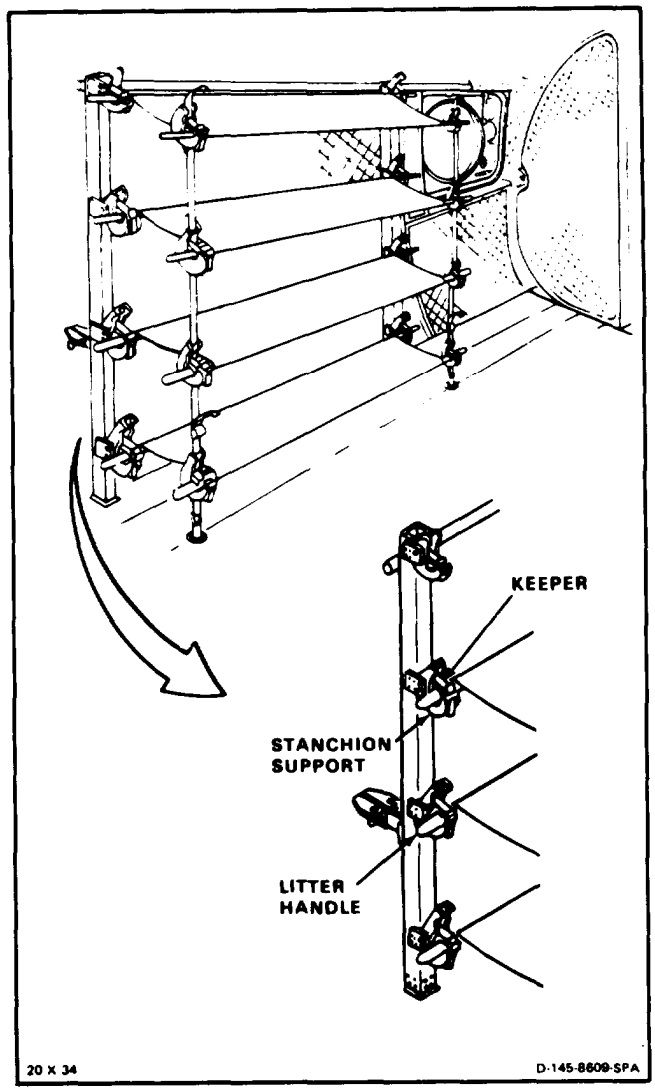
Applicable Configurations:
All

Tools:
None

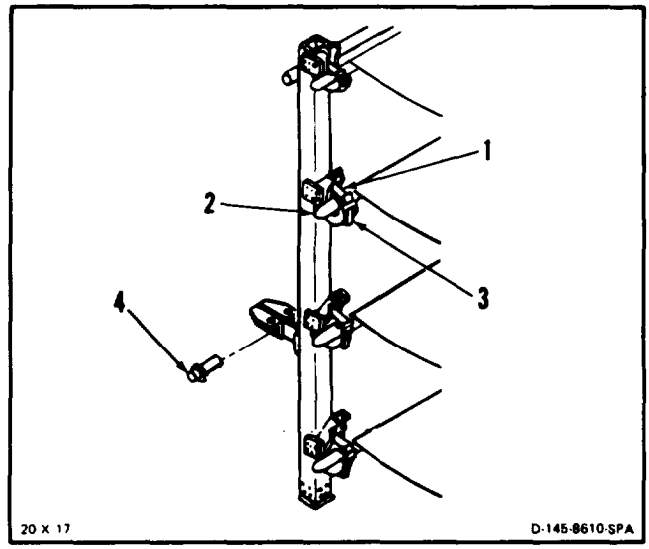
Materials:
None

Personnel Required:
67U1O **Medium Helicopter Repairer**

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



1. **Lift four keepers (1) and** remove **litter handles (2) from stanchion supports (3)**
2. Remove quick-disconnect pin (4).



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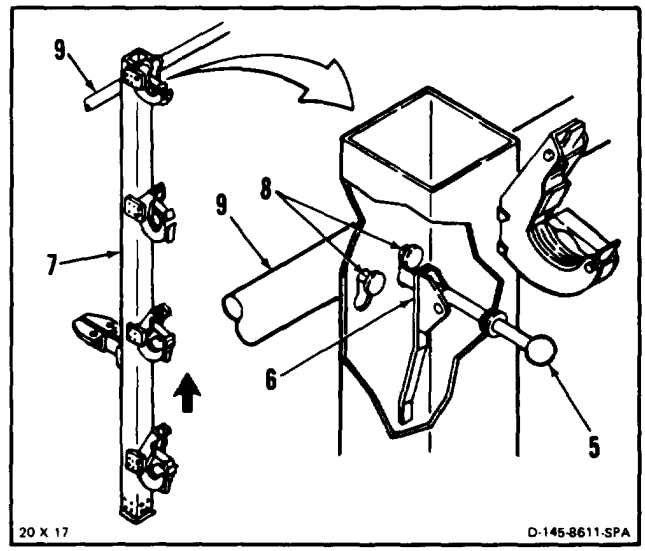
16-61 REMOVE LITTER STANCHION (Continued)

3. Pull knob (S) **to release stop (6).**

4. Lift litter stanchion (7) until two fittings (8) on tube (9) align with two slotted holes in stanchion.

5. Refmove stanchion (7).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-62 INSTALL LITTER STANCHION

INITIAL SETUP

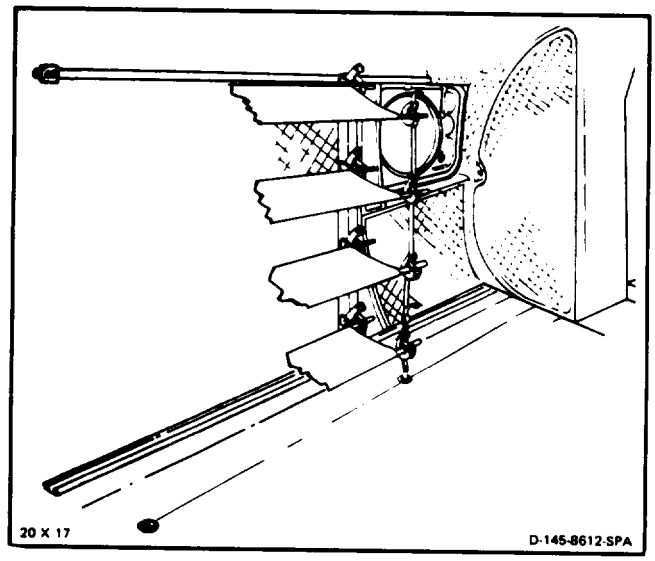
Applicable Configurations:
All

Tools:
None

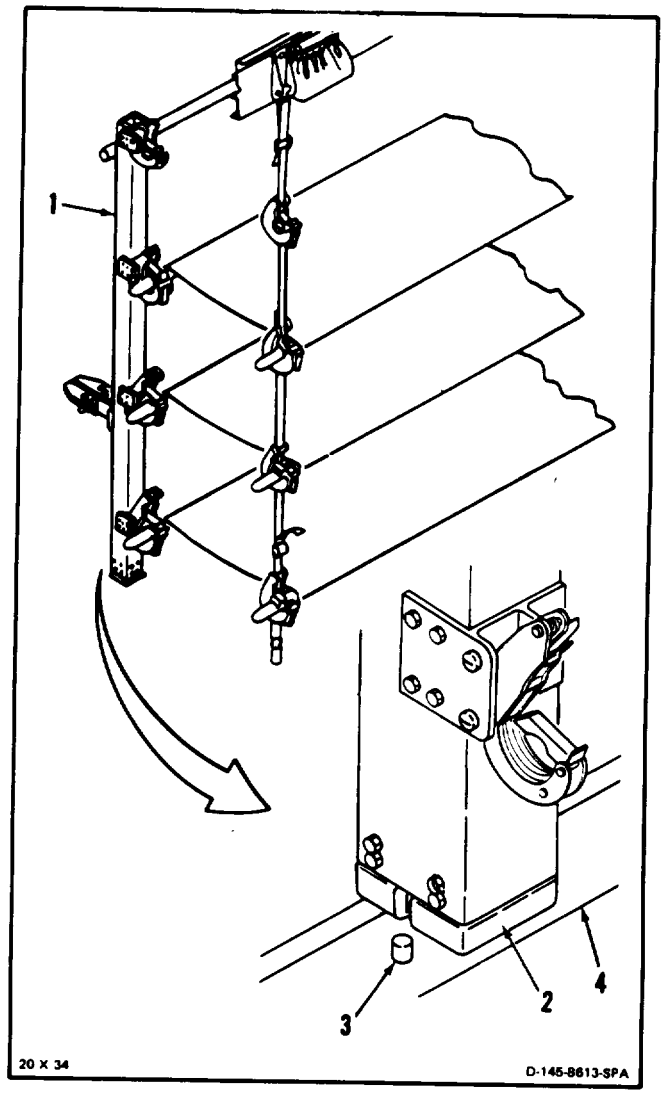
Materials:
None

Personnel Required:
67U10 **Medium Helicopter Repairer**

References:
TM 55-1520-240-23P



1. Position stanchion (1), **with bottom attachment (2) seated between two studs (3) in floor channel (4).**



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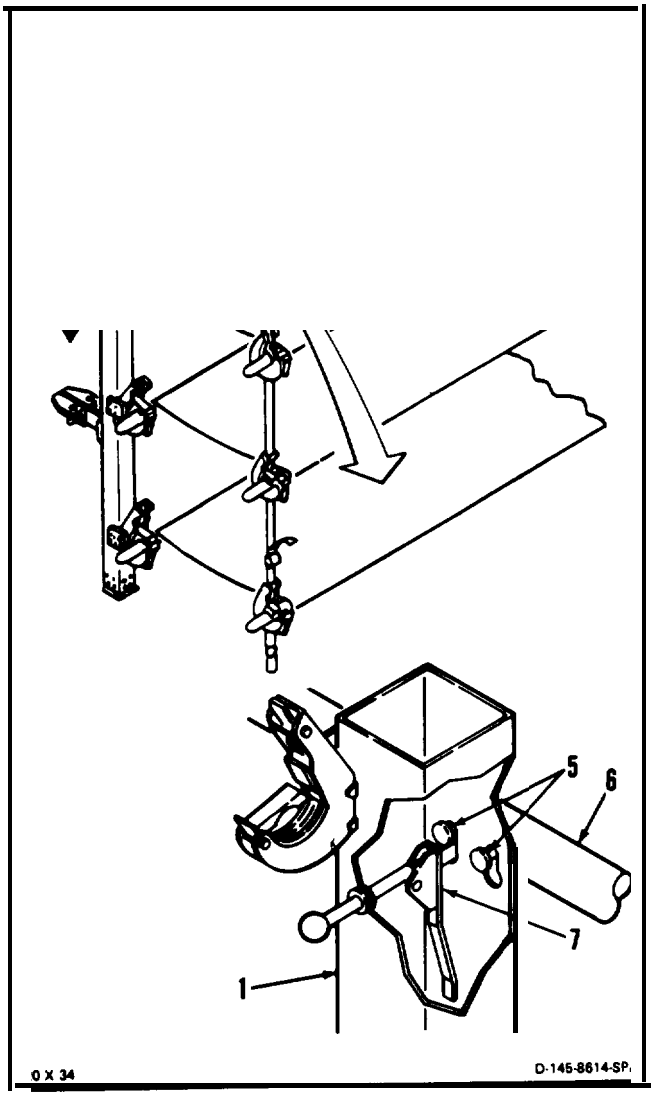
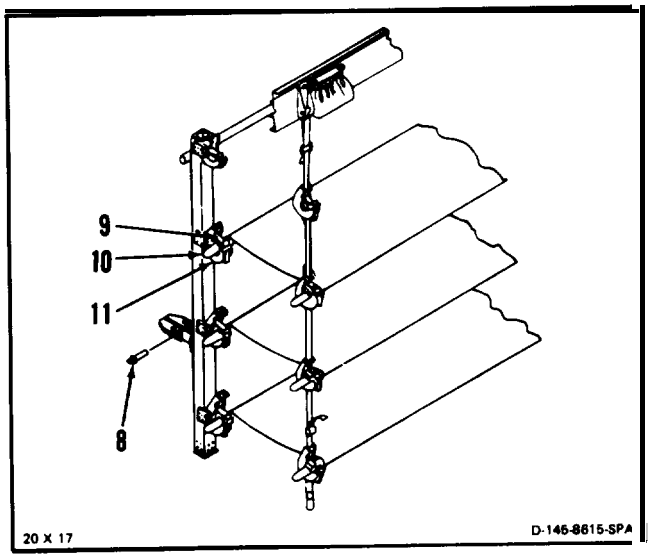
16-62 INSTALL LITTER STANCHION (Continued)

2. Align two slotted holes **in stanchion(1) with two fittings (5) on tube (6).**
3. Push stanchion (1) against tube (6) until **two slotted holes fit over two fittings (5).**
4. Push down on stanchion (1) until **stop (7) engages one fitting (5).**



5. Install quick-disconnect pin (8).
6. **Lift four keepers (9) and** install four litter handles (10) **in stanchion supports (11).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-63 REMOVE LITTER SUPPORT BRACKET

INITIAL SETUP

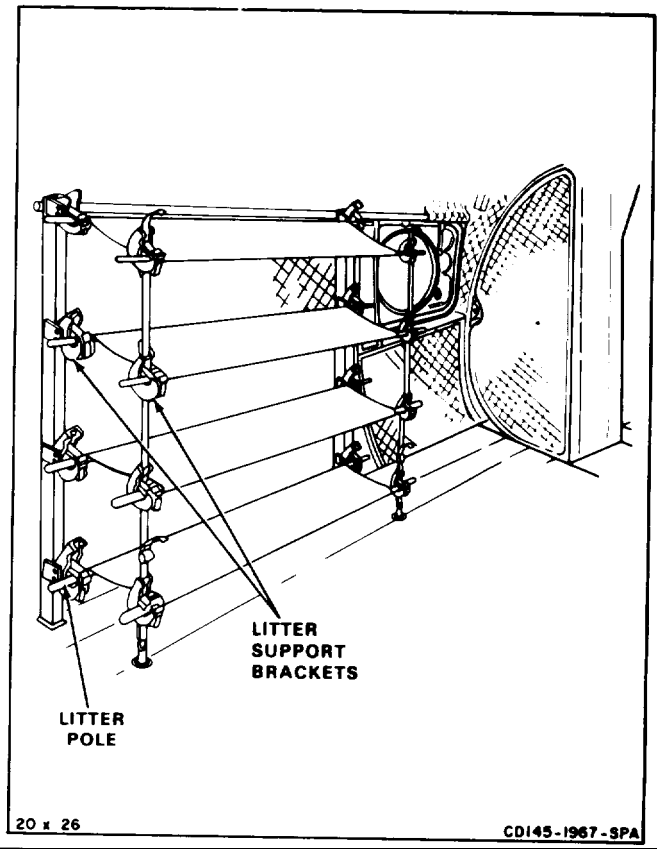
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U10 **Medium Helicopter Repairer**

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



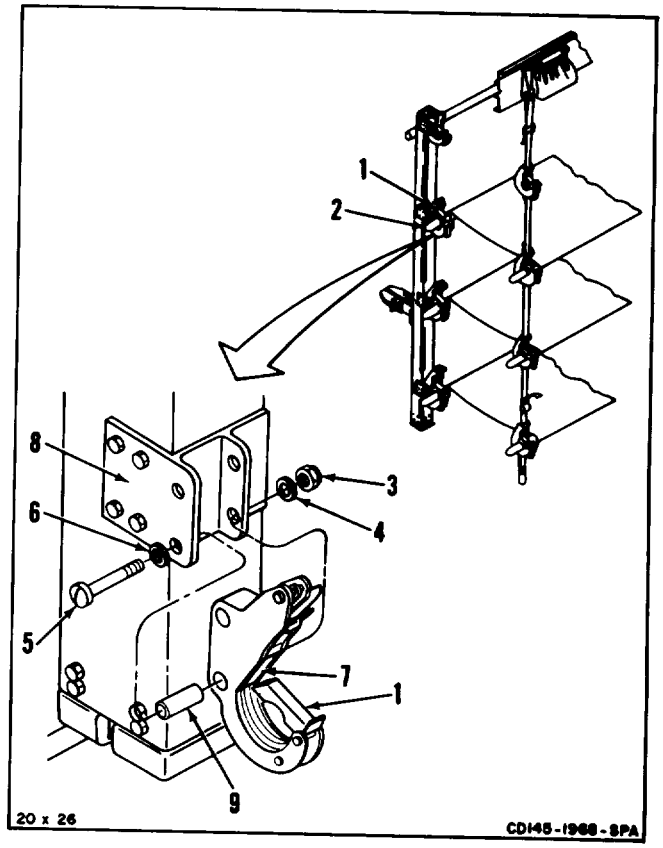
NOTE

Procedure can be used for all brackets.

1. **Raise keeper (1) and remove litter polo (2).**
2. **Remove two nuts (3) and washers (4).**
3. Remove two bolts (5) **and washers (6).**
4. Remove litter support bracket (7) **from mounting bracket (8).**
5. Remove two spacers (9) **from litter support bracket (7).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-64 INSTALL LITTER SUPPORT BRACKET

INITIAL SETUP

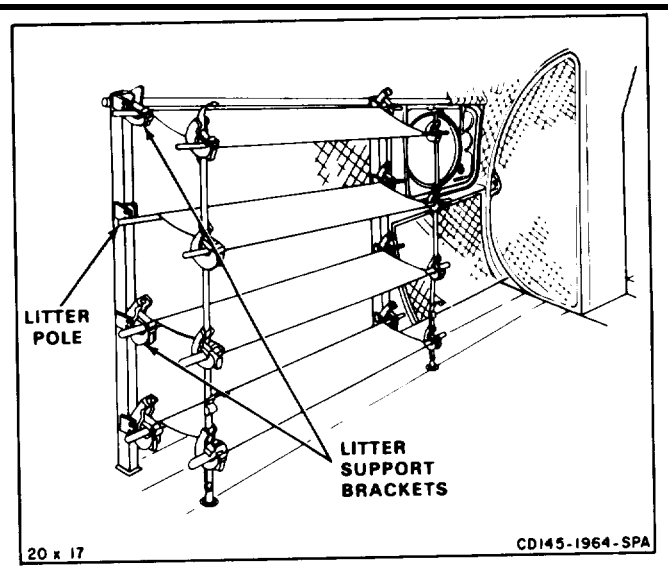
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U10 **Medium Helicopter Repairer**

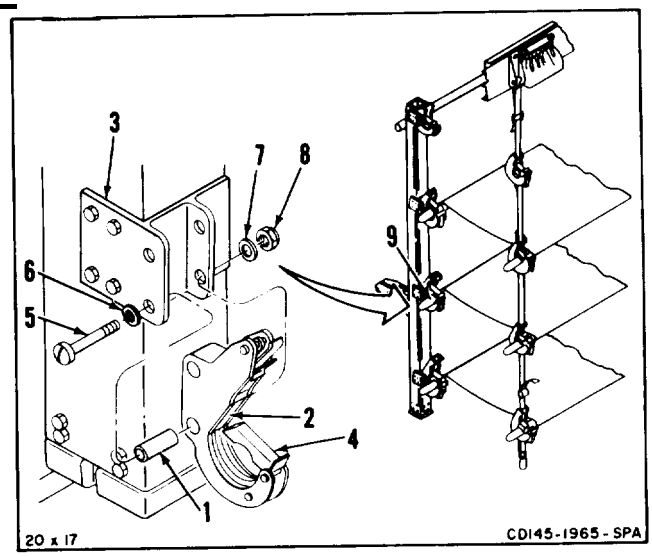
References:
TM 55-1520-240-23P

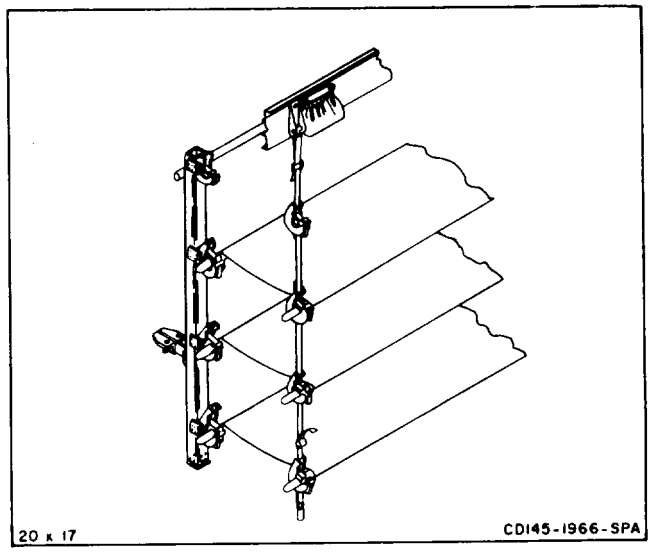


NOTE

Procedure can be used for all brackets.

1. **Install two spacers (1) in litter support bracket (2).**
2. Position support bracket (2) **in mounting bracket (3) with keeper (4) facing up.**
3. **Install two bolts** *(5) and washers (6)*
4. **Install two washers (7) and nuts (8)**
5. **Raise keeper (4) up and install litter pole (9).**





FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-65 REMOVE LITTER SUPPORT STRAP 16-65

INITIAL SETUP

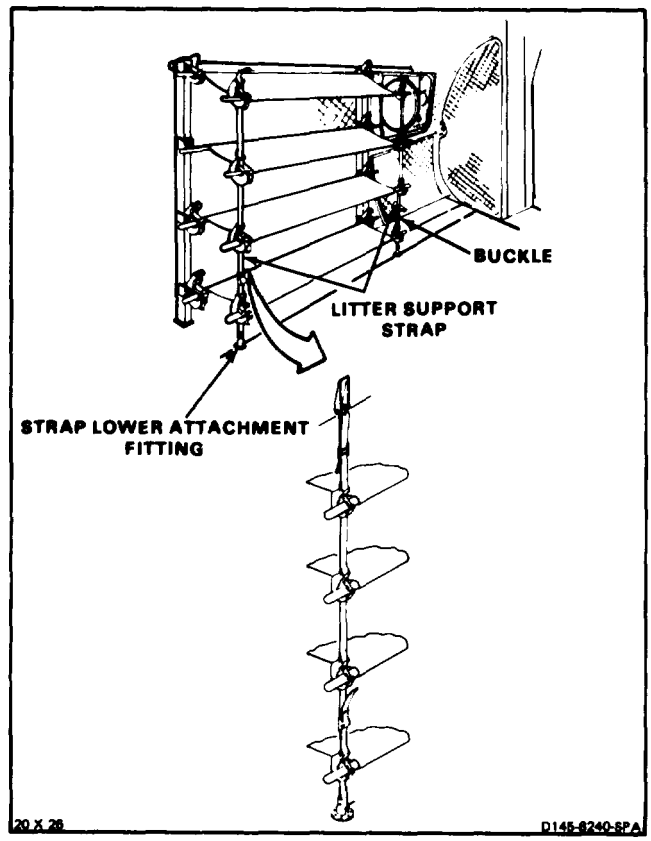
Applicable Configurations:
All

Tools:
None

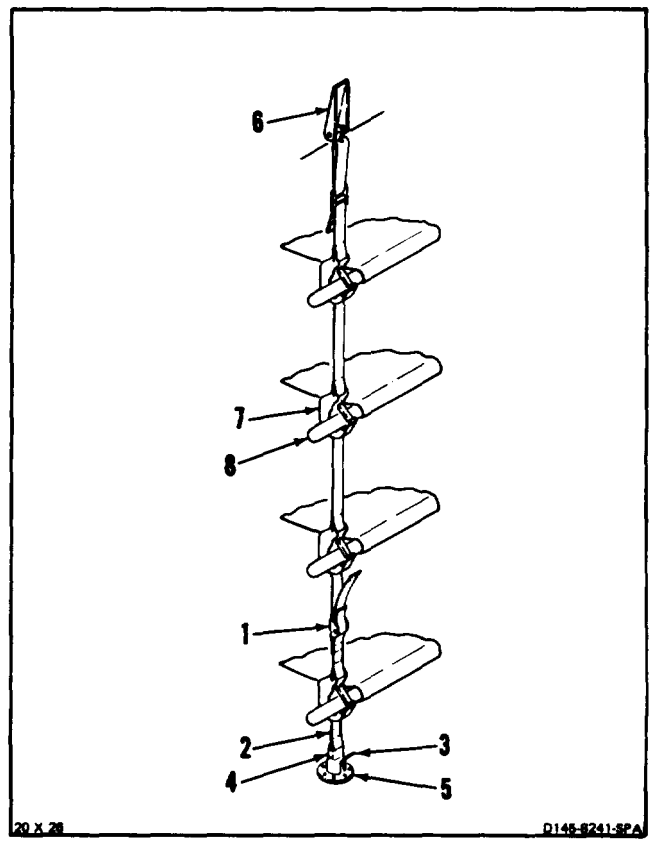
Materials:
None

Personnel Required
67U10 **Medium Helicopter Repairer**

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



1. Release buckle (1) **on litter support strap (2). Loosen strap.**
2. Press inward on spring lever (3) **and remove strap lower** attachment fitting (4) **from adapter (5).**
3. **Disconnect top end of strap (2) from support bracket (6).**
4. **Lift keeper from strap** support **and** remove four strap supports (7) from litter poles (8). **Remove strap (2).**



FOLLOW-ON MAINTENANCE

None

END OF TASK

16-66 INSTALL LITTER SUPPORT STRAP

INITIAL SETUP

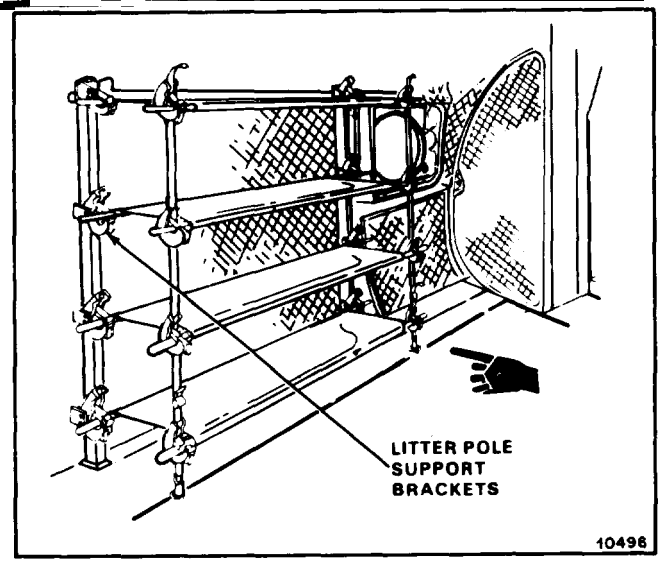
Applicable Configurations:
All

Tools:
None

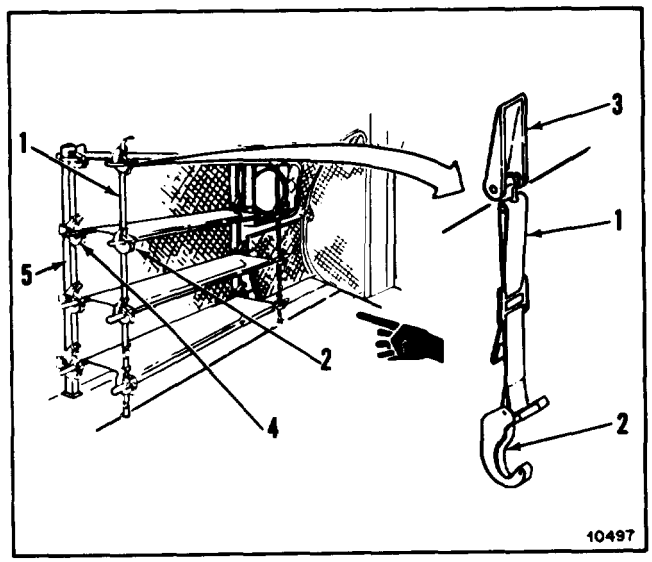
Materials:
None

Personnel Required:
Medium Helicopter Repairer

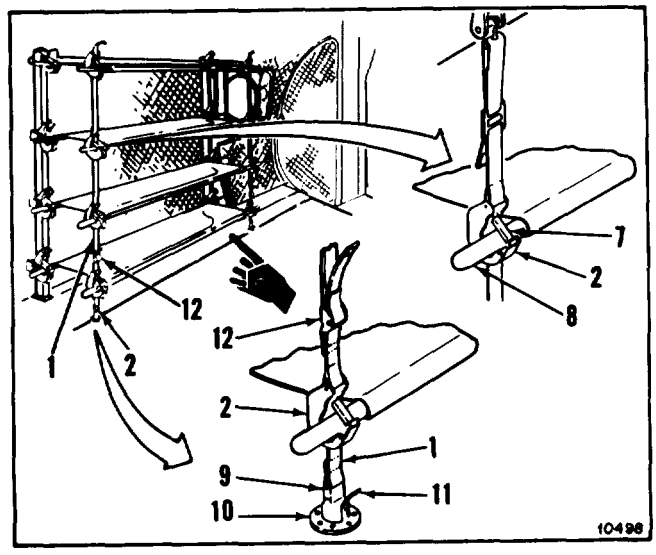
Referances:
TM 55-1520-240-23P



1. Connect strap (1) **supports (2) inboard,** to support bracket **(3).**
2. **Adjust strap (1) so that strap** supports (2) **are same height as corresponding supports (4) on litter pole (5).**



3. **Release locking handle (6) and lift locking bar (7). Install litter handles (8) in strap supports (2).**
4. **Insert locking bar (7) into slot in locking handle (6). Lift handle to lock position.**
5. Position lower attachment fitting (9) **on adapter (10). Press inward on spring lever (11) and** install fitting.
6. Adjust buckle (12), **above lowest support (2) to** remove slack in strap (l).



FOLLOW-ON MAINTENANCE:
None

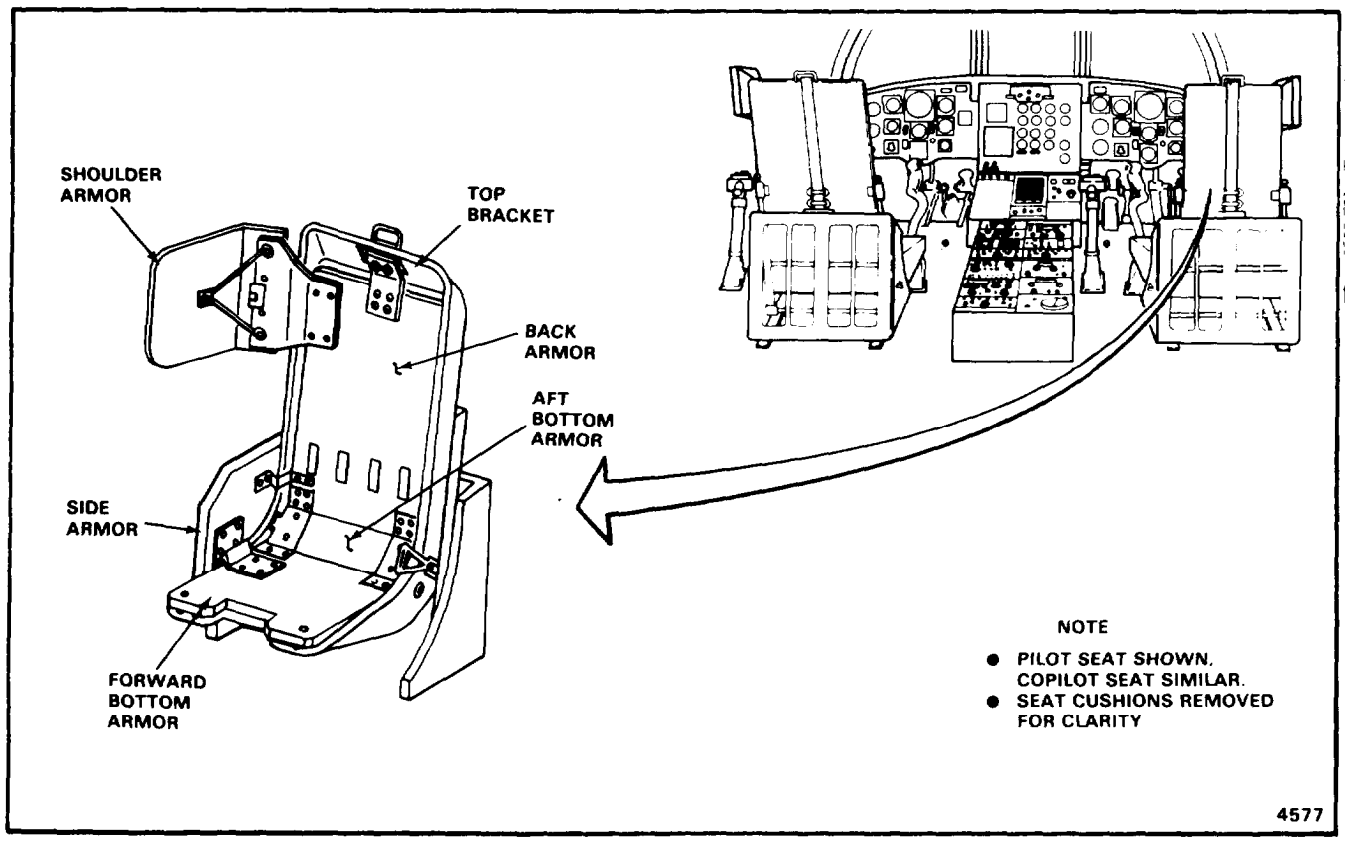
END OF TASK

SECTION IX
SEAT ARMOR PROVISIONS
DESCRIPTION

16-67 PILOT AND COPILOT SEAT ARMOR

Helicopters with are furnished with armor for the pilot and copilot seats. The armor for each seat consists of five protective panels, six mounting brackets, a harness reel guide bracket (top bracket), and installation hardware.

The panels are made of composite material faced with a fiber cover. Two of the panels are installed on the seat bottom, under the cushion. One panel is mounted under the seat back cushion and another is installed at the outboard side of the seat bottom. A shoulder protection panel for the outboard side of the seat back is hinged to allow quick exit through the jettisonable door.



END OF TASK

SECTION X
SEAT ARMOR PROVISIONS

16-68 INSTALL SEAT ARMOR PANELS

INITIAL SETUP

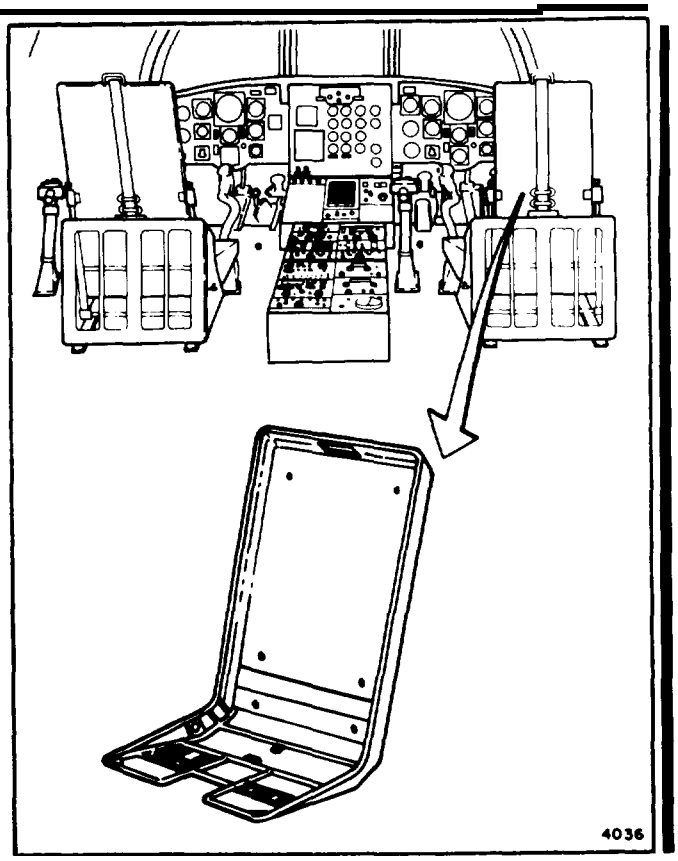
Applicable Configurations:
With 7

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

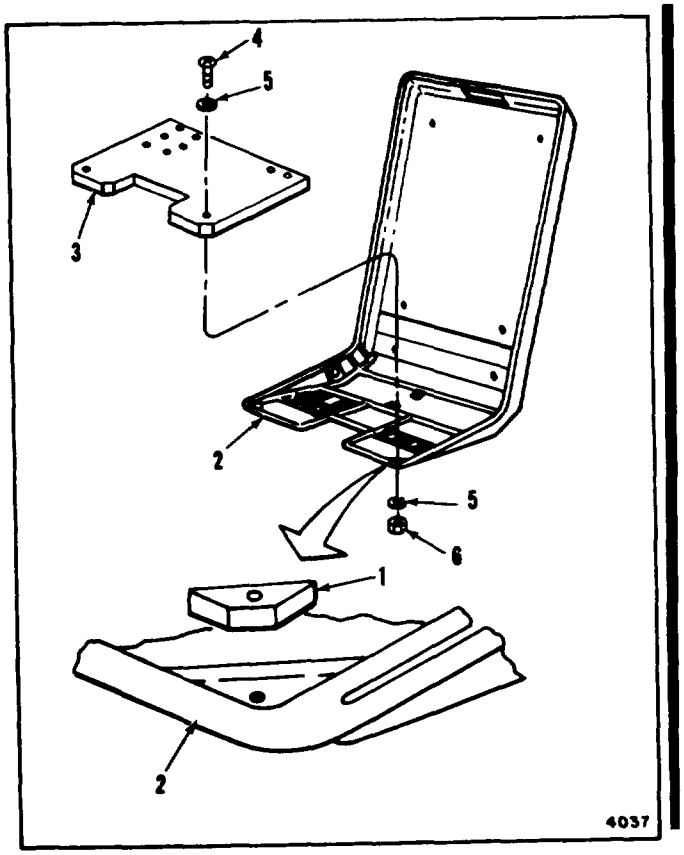
References:
TM 55-1520-240-23P



NOTE

Procedures are same for installing pilot's or copilot's seat armor. Pilot's seat shown here.

1. Check that spacers (1) **are** installed **in forward corners of seat bucket (2).**
2. Install armor panel **(3) in seat bucket (2).**
3. **Install screw (4), washers (5), and nut (6) in each forward corner of panel (3).**



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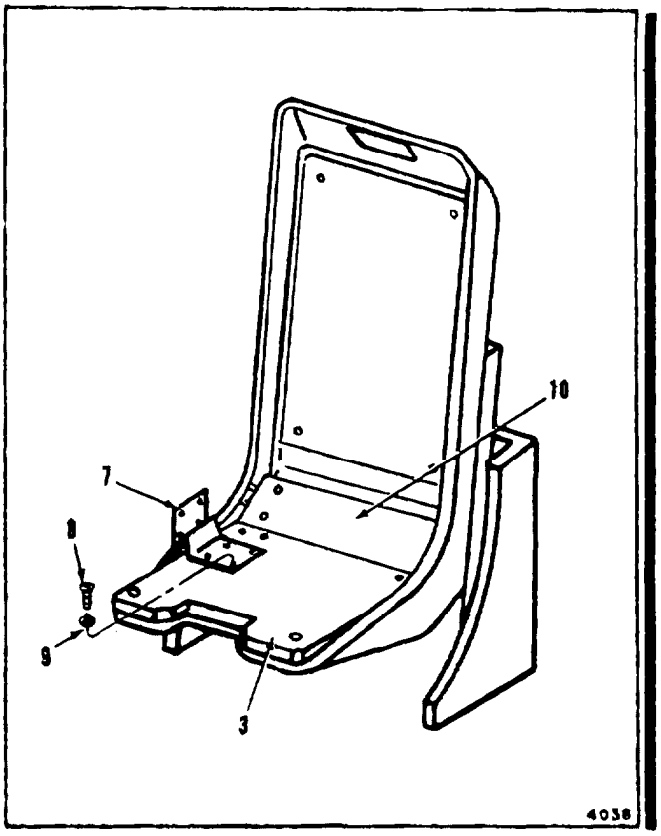
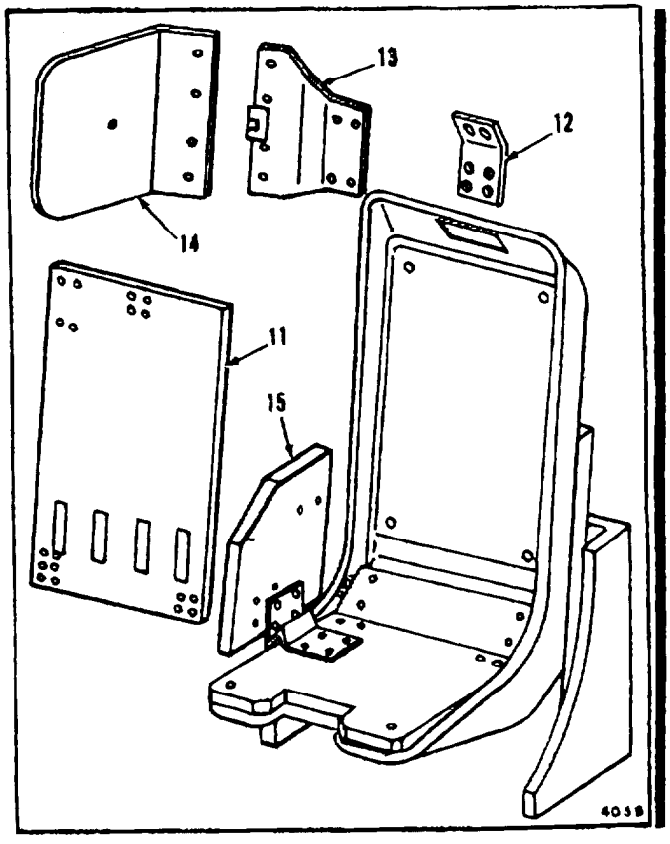
16-68 INSTALL SEAT ARMOR PANELS (Continued) 16-68

4. **Install bracket (7)** on seat armor panel (3). Use four screws (8) and washers (9).
5. **Install aft bottom armor panel (10).**



6. **Install back armor panel (11), top bracket (12), mounting plate (13), shoulder armor panel (14), and side armor panel (15).** (Refer to Task 16-73.)



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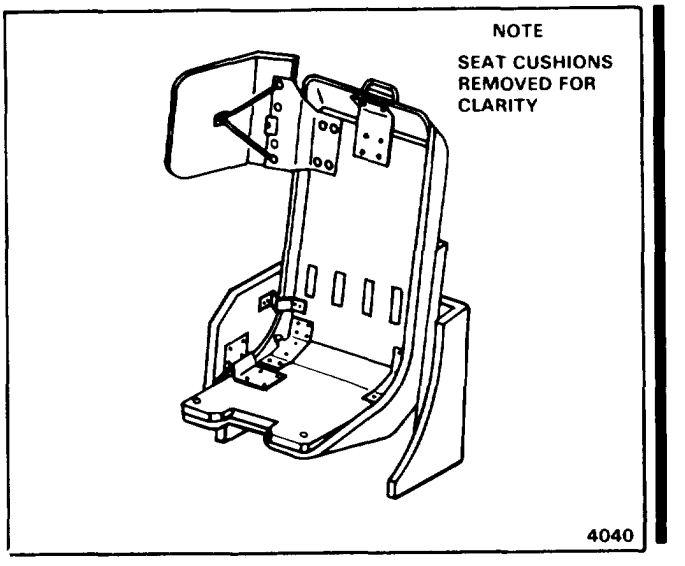
FOLLOW-ON MAINTENANCE:

Check seat armor clearance (Task 16-83).



END OF TASK

16-69 REMOVE SEAT ARMOR PANELS

INITIAL SETUP

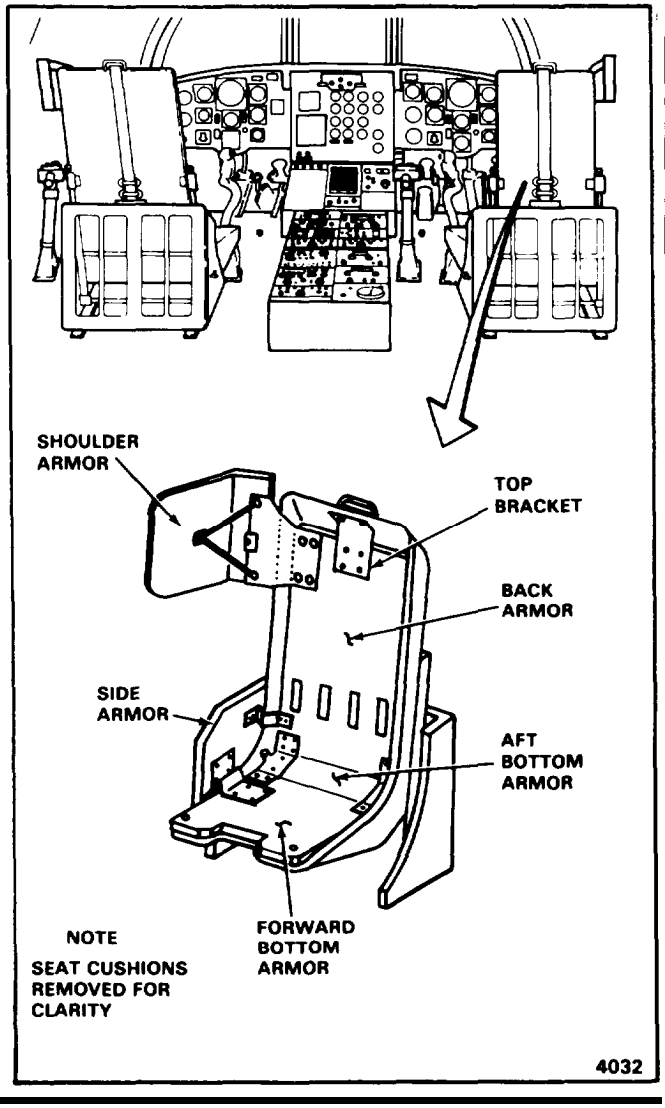
Applicable Configurations:
With 7

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off

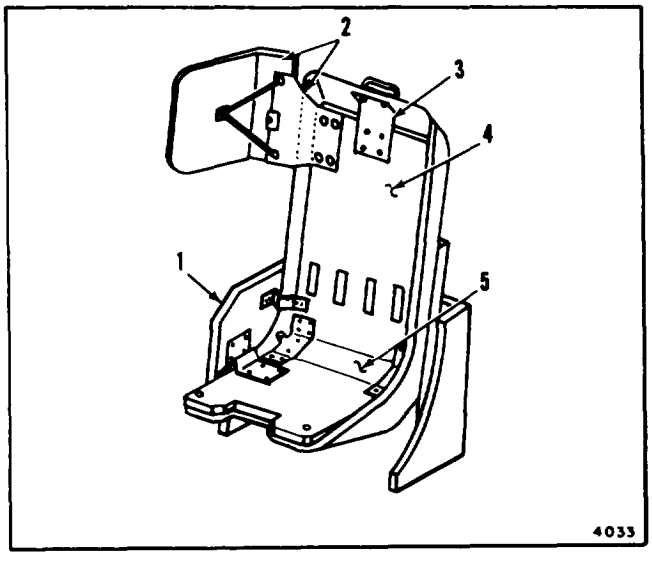


NOTE

- **Procedures are same for removing pilot's or copilot's seat armor. Pilot's seat shown here,**
- **Seat cushions removed for clarity.**

1 Remove side armor panel (1), shoulder armor panel and mounting plate (2), top bracket (3), and back armor panel (4). **(Refer to Task 16-72.)**

2 Remove aft bottom armor panel (5).



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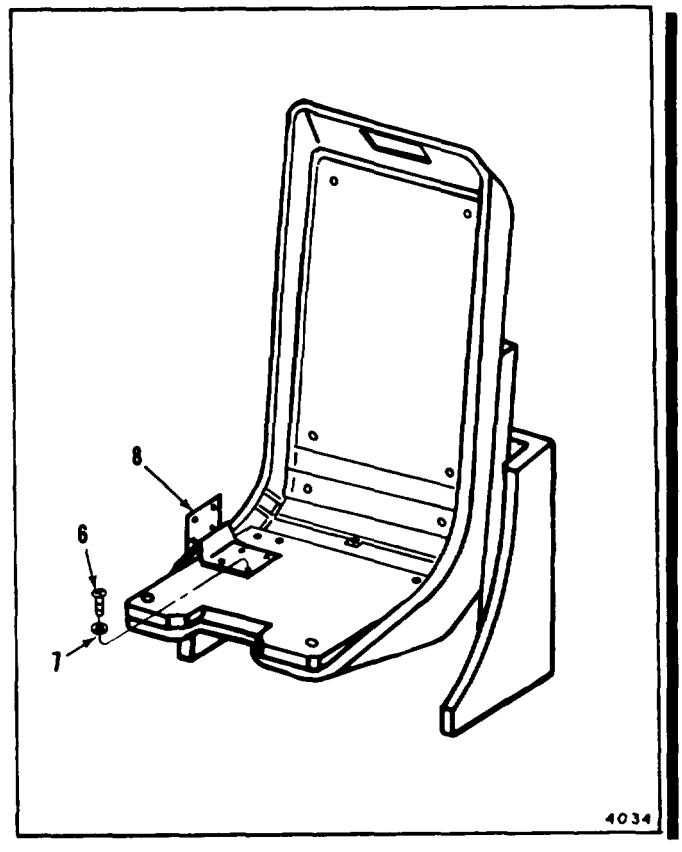
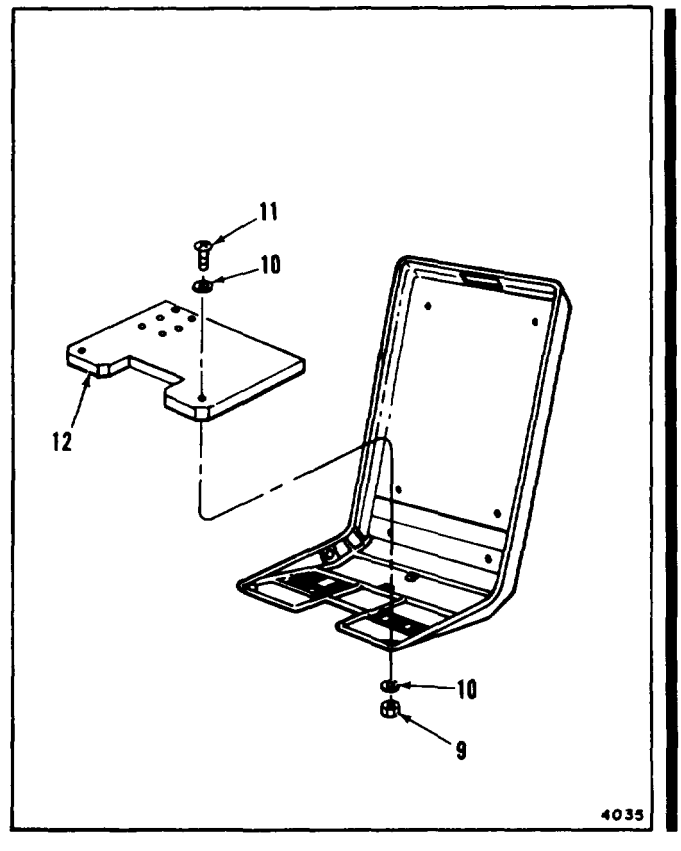
3. Remove four screws (6) and washers (7). Remove bracket (8).



4. **Remove nut (9), washers (10), and screw (11) from each forward corner of seat. Re-**move forward bottom armor panel (14).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-70 REMOVE BACK ARMOR TOP BRACKET

INITIAL SETUP

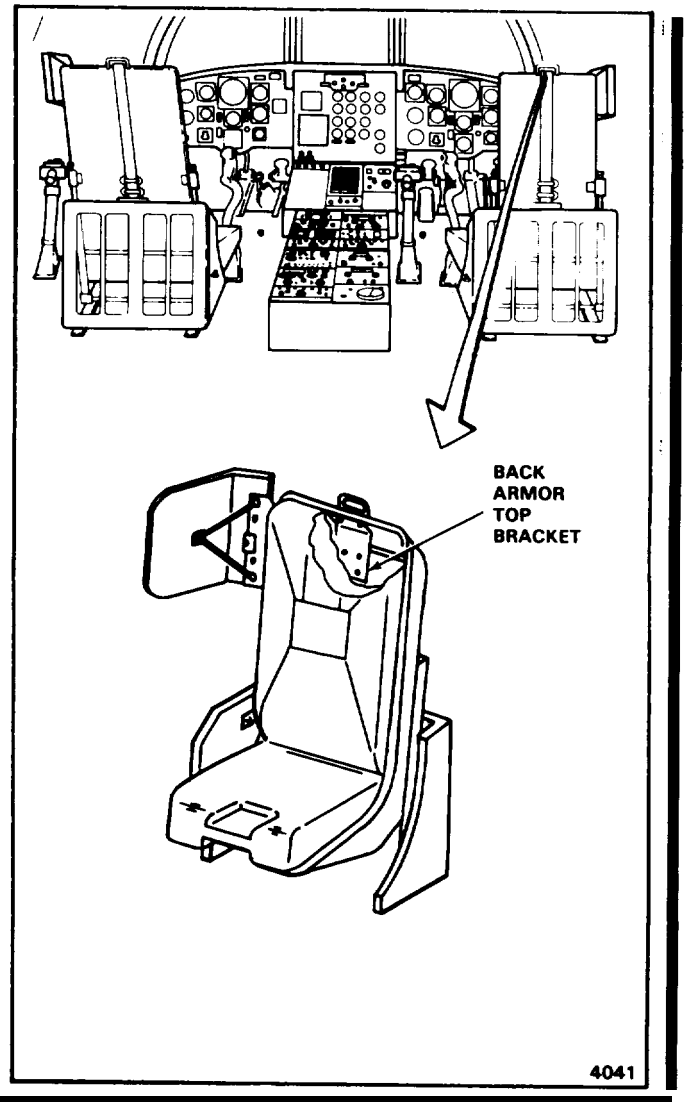
Applicable Configurations:
With 7

Tools:
Aircraft Mechanic's Took Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

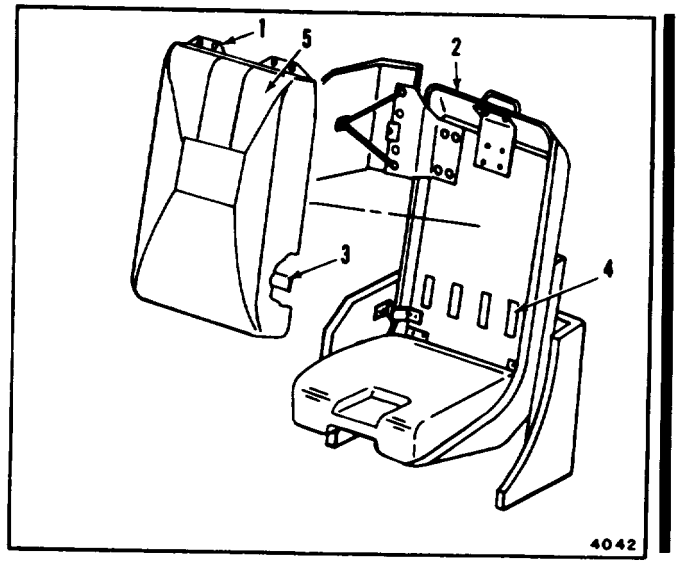
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedures are same for removing pilot's or copilot's seat bracket. Pilot's seat shown here.

1. Unsnap four fasteners (1) **from seat bucket (2).**
2. Separate hook taps (3) **from pile tape (4).** Remove cushion (5).



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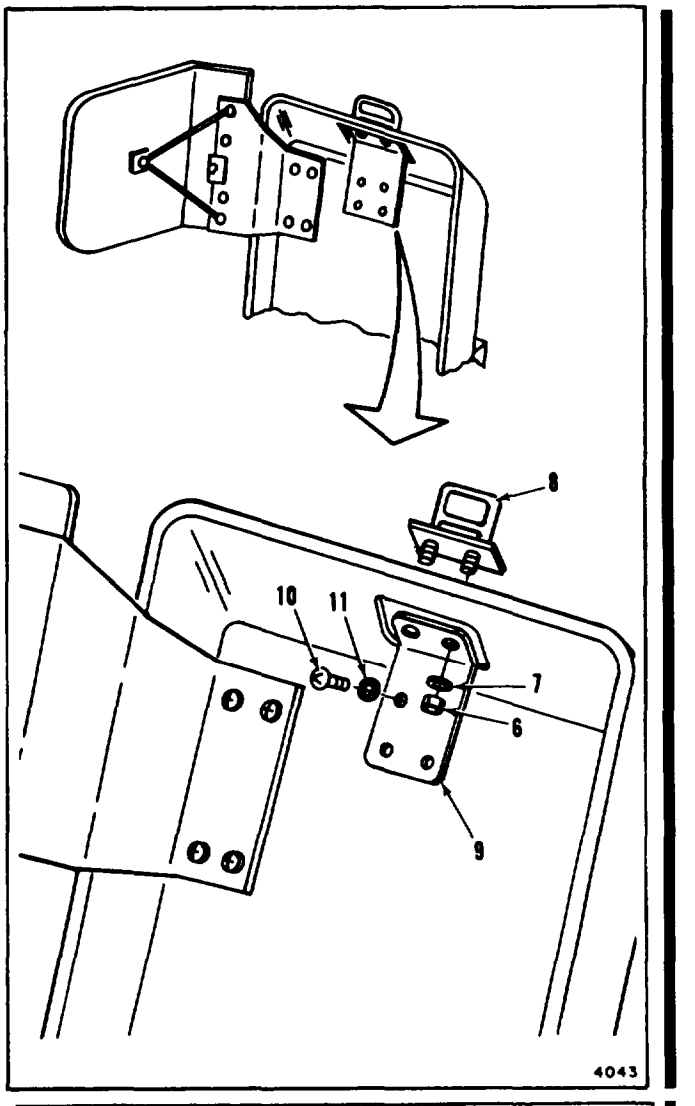
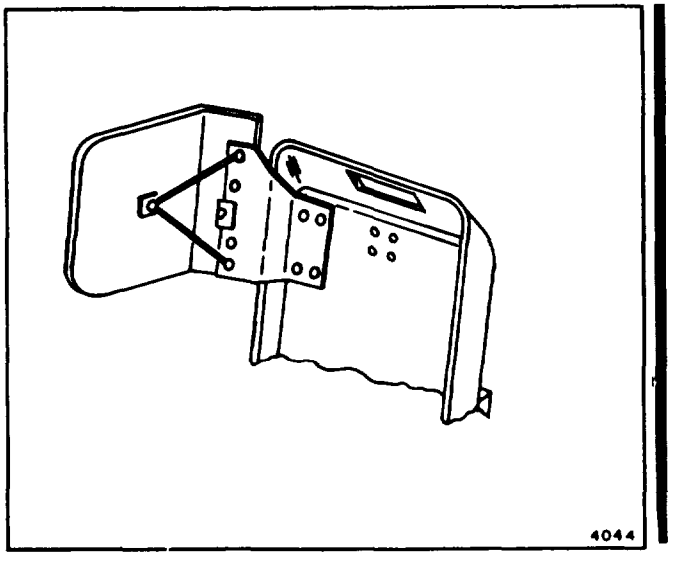
3. **Remove two nuts (6) and washers (7).** Remove harness guide (8) **from bracket (9).**
4. **Remove four screws (10) and washers (11).** Remove bracket (9).



FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-71 INSTALL BACK ARMOR TOP BRACKET

INITIAL SETUP

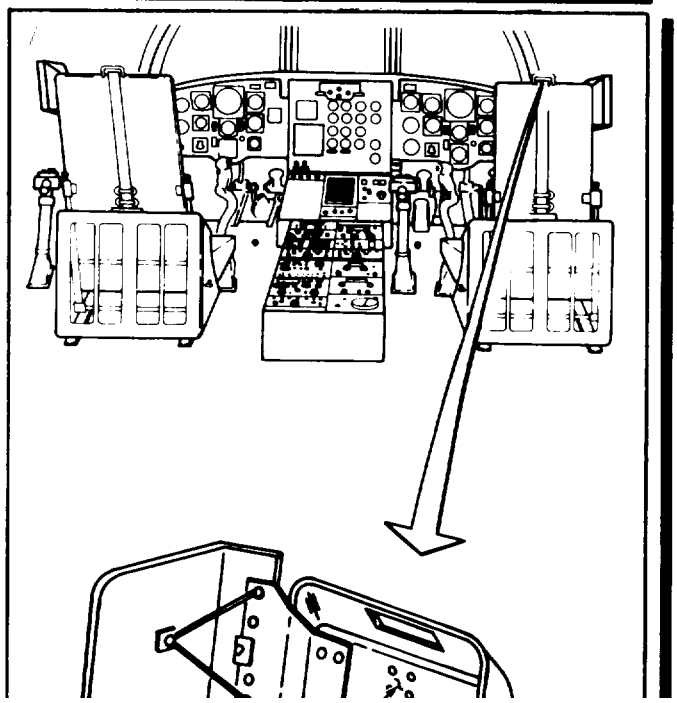
Applicable Configurations:
With 7

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

References:
TM 55-1520-240-23P



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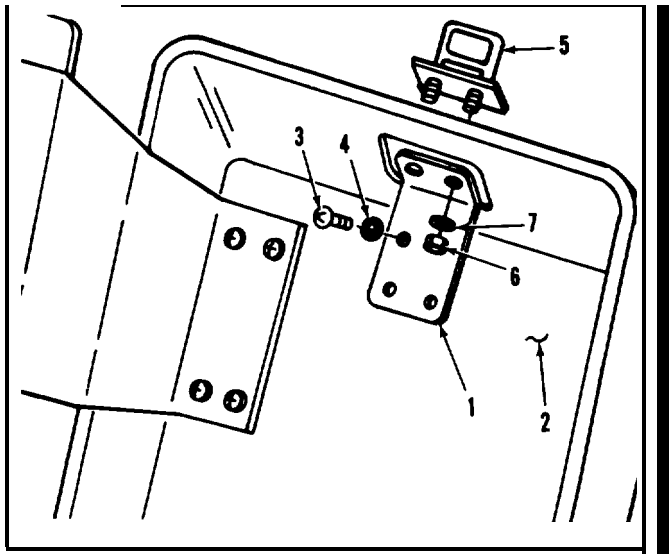
NOTE

Procedures are same for installing pilot's or copilot's seat bracket. Pilot's seat shown here.

1. Position bracket (1) **on back armor panel (2).** Install four screws (3) **and washers (4).**
2. Position harness guide (5) **on bracket (1).** Install two nuts (6) **and washers (7).**



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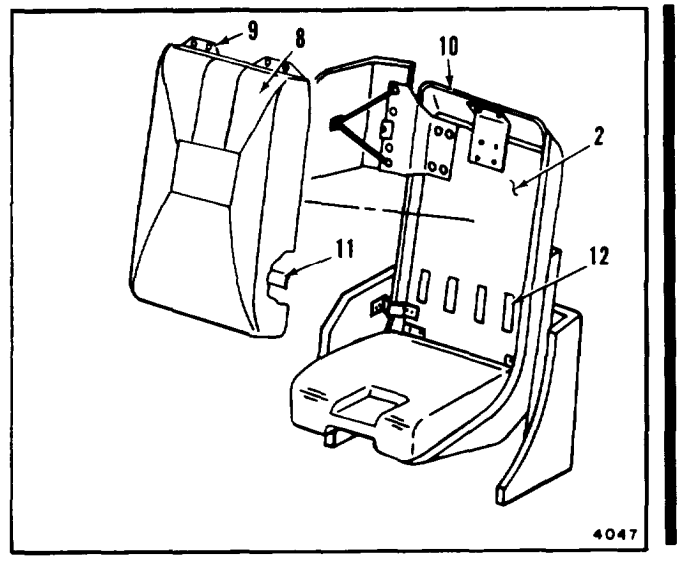
16-71 INSTALL BACK ARMOR TOP BRACKET (Continued) 16-71

3. Position back seat cushion (8) **on armor panel (2).**
4. Snap four fasteners (9) **to back of seat bucket (10).** Press against cushion (8) so **that hook tape (11) sticks to pile tape (12).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-72 REMOVE BACK ARMOR PANEL 16-72

INITIAL SETUP

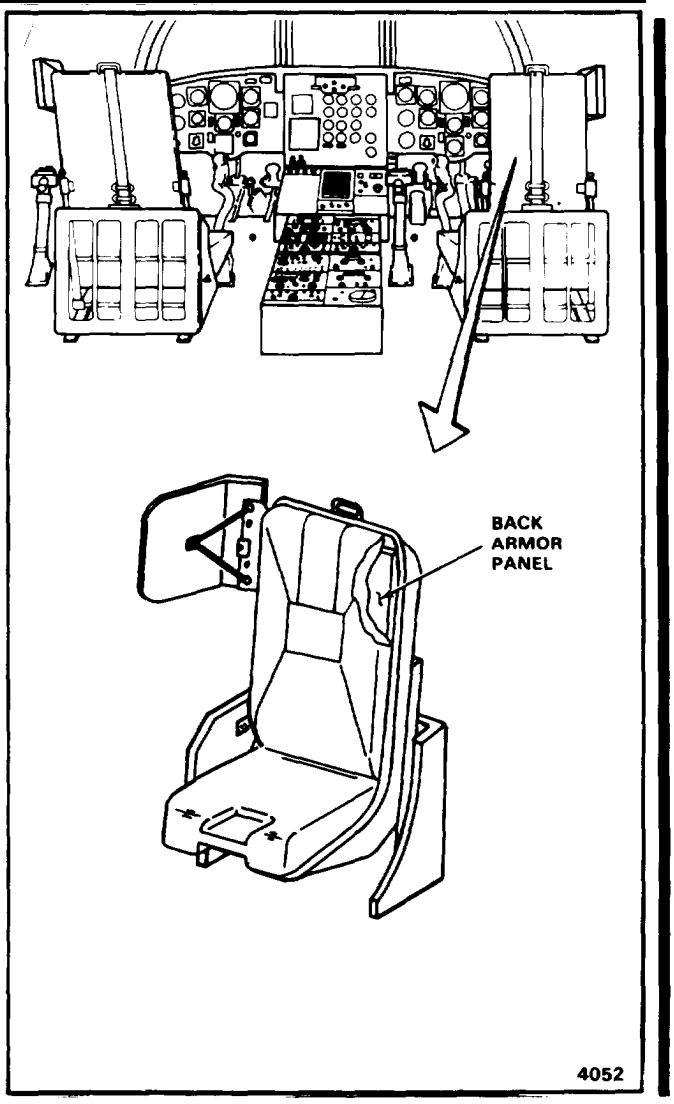
Applicable Configurations:
With 7

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

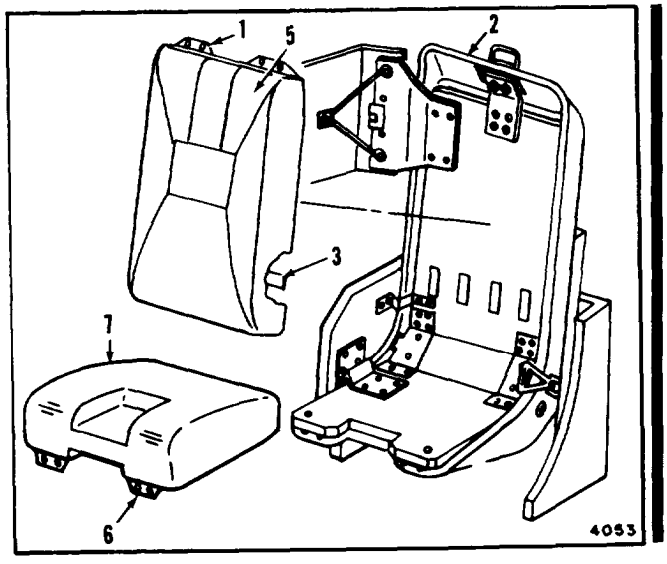
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedures are same for removing pilot's or copilot's seat armor. Pilot's seat shown here.

1. Unsnap four fasteners (1) **from seat bucket (2).**
2. Separate hook tape (3) **from pile tape (4).** Remove cushion (5).
3. **Unsnap four fasteners (6) from seat bucket (2).** Lift off cushion (7).



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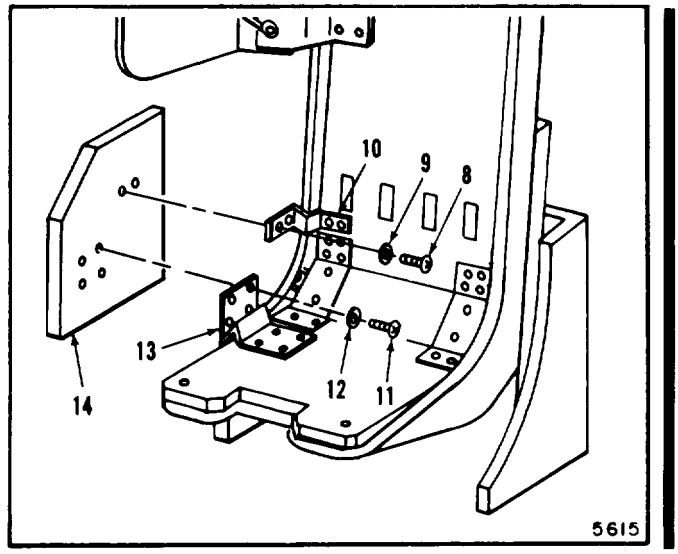
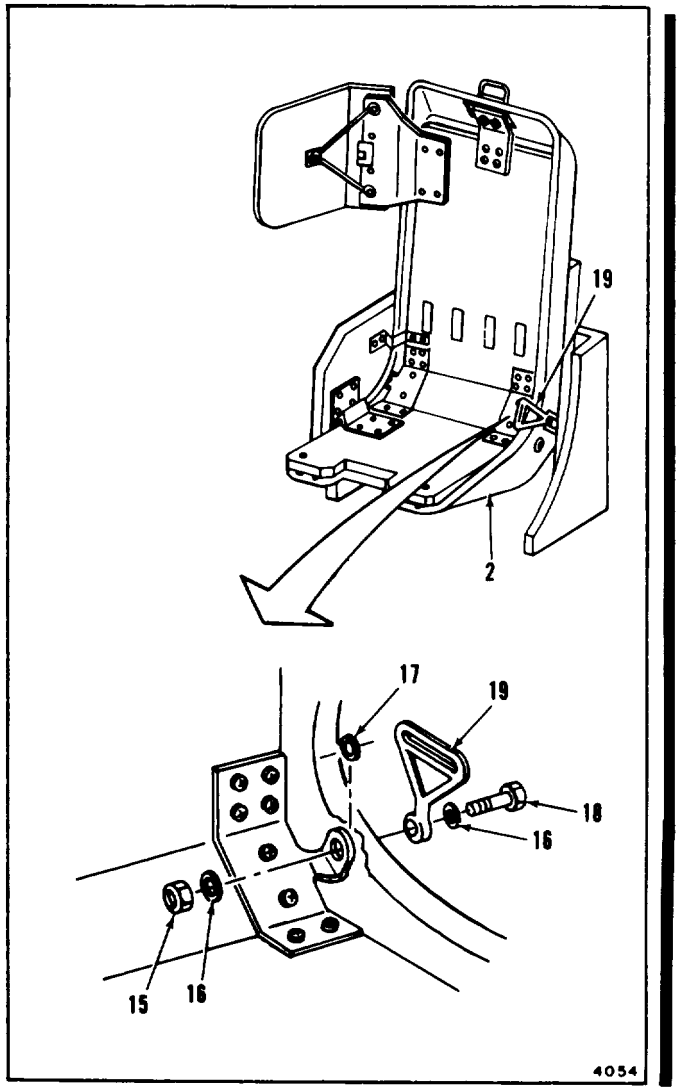
16-72 REMOVE BACK ARMOR PANEL (Continued) 16-72

4. Remove two screws (8) and washers (9) from side armor aft bracket (10).

5. Remove four screws (11) and washers (12) from side armor forward bracket (13). Re-move panel (14).



6. **Remove nut (15), washers (16 and 17), and bolt (18) from each side of seat bucket (2).** Remove seat belt fittings (19).



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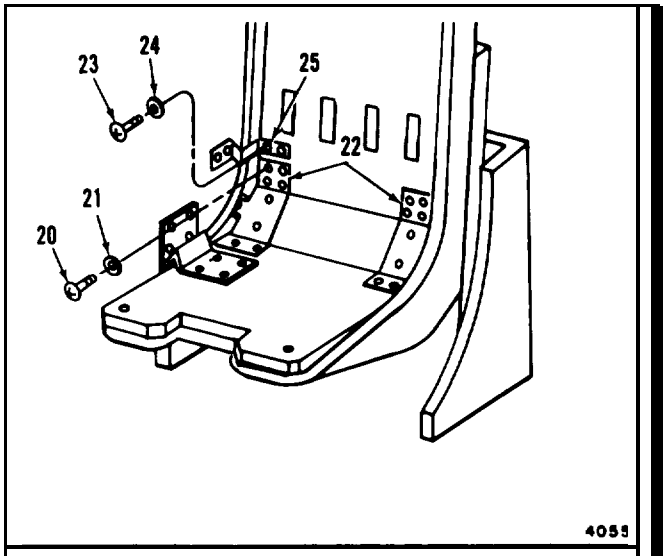
7. Remove eight screws (20) **and washers (21)** from two aft bottom armor brackets (22). Remove brackets.
8. Remove four screws (23) and washers (24) from side armor aft bracket (25). Remove bracket.



9. **Remove shoulder armor panel (26) and mounting plate assembly (27) as follows:**

   a. Disconnect exerciser cord (28) **from mounting plate assembly (27).**

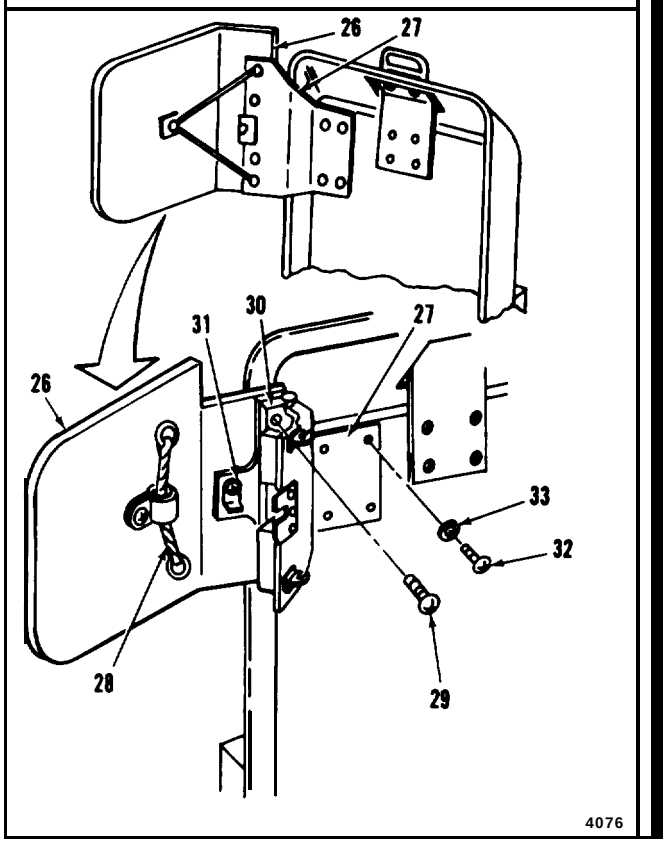
   NOTE

   Pilot's seat hinge has four screws. Copilot's seat hinge has three screws.

   b. Swing shoulder armor panel (26) aft. Support panel and remove screws **from hinge half (30).**

   c. Remove panel (26), **hinge half (30), and spacer (31) from mounting plate assembly (27).**

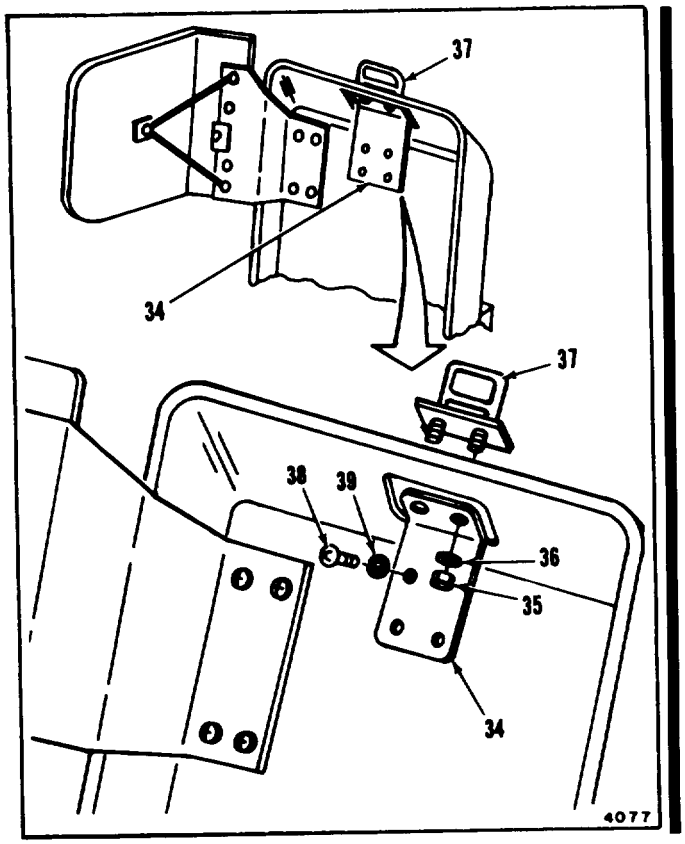
   d. Remove four screws (32) and washers (33). Remove mounting plate assembly (27).



10. Remove top bracket (34) as follows:

a. Remove two nuts (35) and washers (36). Remove harness guide (37) **from bracket (34).**

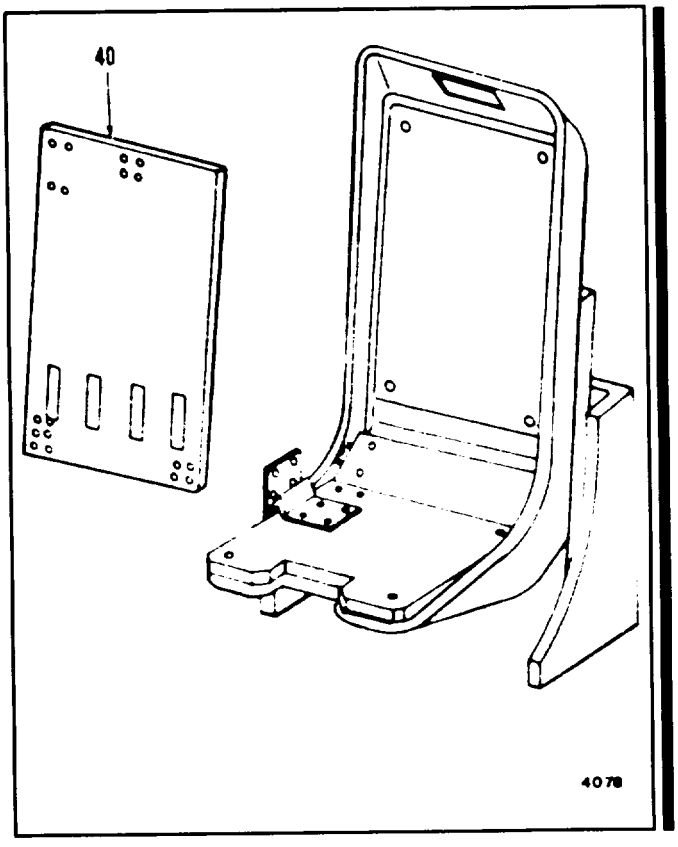
b. Remove four screws (38) and washers (39). Remove bracket (34).



11. Remove back armor panel **(40).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-73 INSTALL BACK ARMOR PANEL

INITIAL SETUP

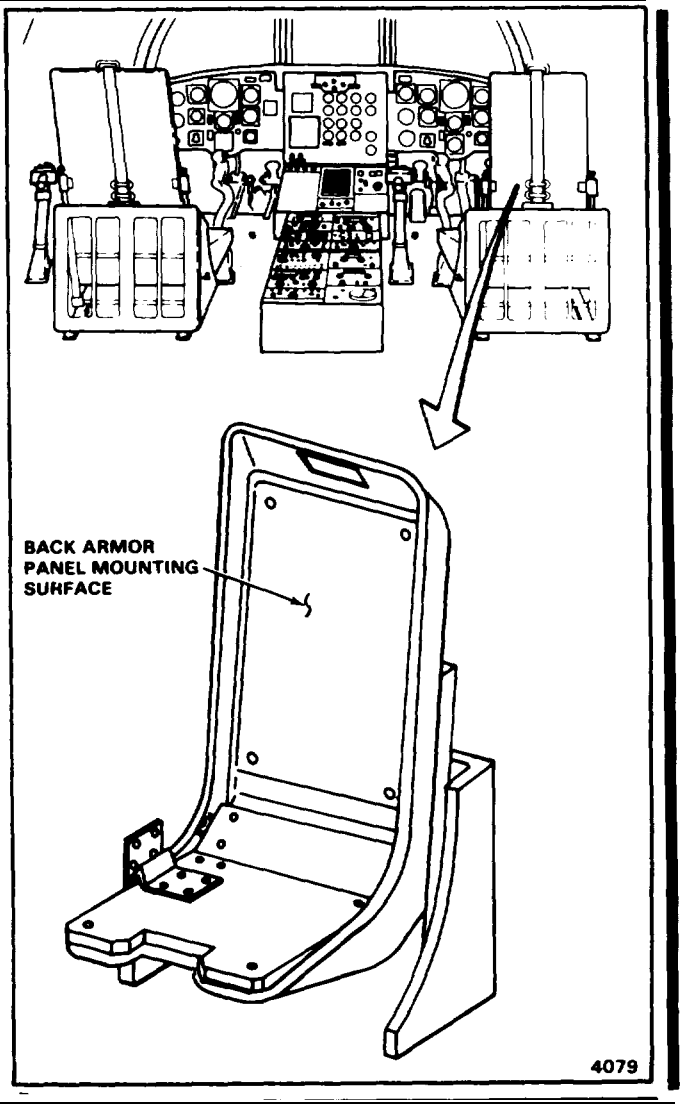
Applicable Configurations:
With 7

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Parts:
Medium Helicopter Mechanic

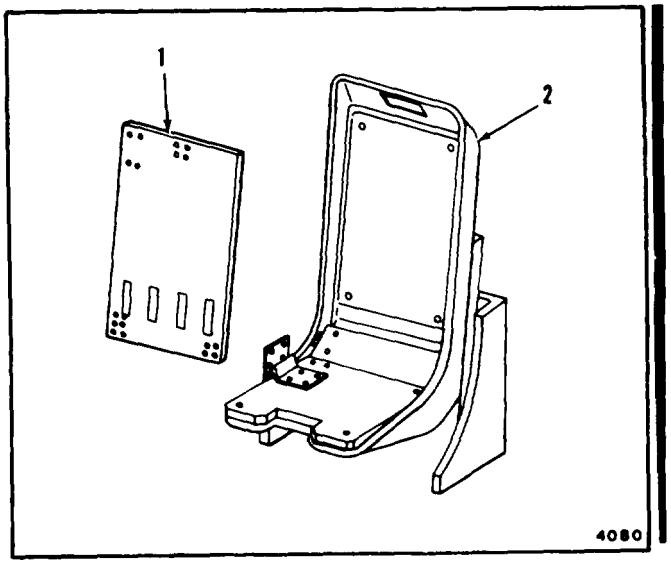
References:
TM 55-1520-240-23P



NOTE

Procedures are same for installing pilot's or copilot's seat back armor panel. Pilot's seat shown here.

1. Position back armor panel (1) against back of seat (2).



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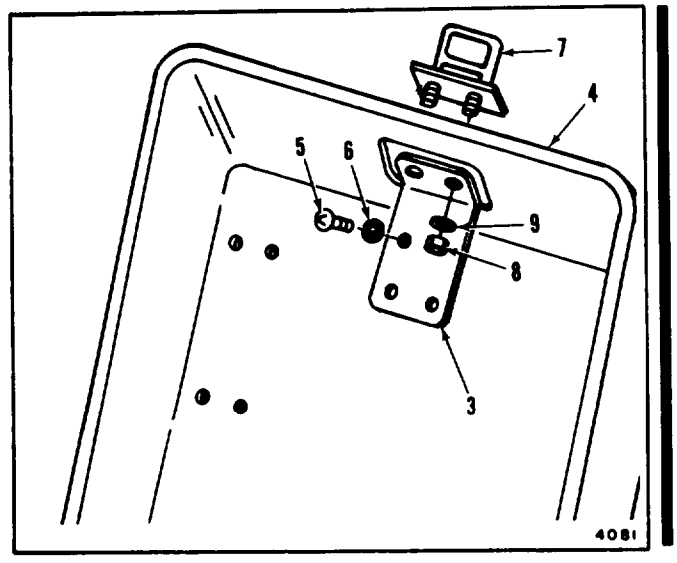
16-73 INSTALL BACK ARMOR PANEL (Continued)

2. Install top bracket (3) **as follows:**

   a. Install bracket (3) on seat bucket (4). Use four screws (5) and washers (6).

   b. Install harness guide (7) on bracket (3). Install two nuts (8) and washers (9).



3. Install mounting plate assembly (10) and shoulder armor panel (11) as **follows:**

   a. Install mounting plate assembly (10) on back armor panel (1). Use four screws (12) and washers (13).

   b. Remove hinge pin (14) from hinge halves (15 and 16) on mounting plate assembly (10).

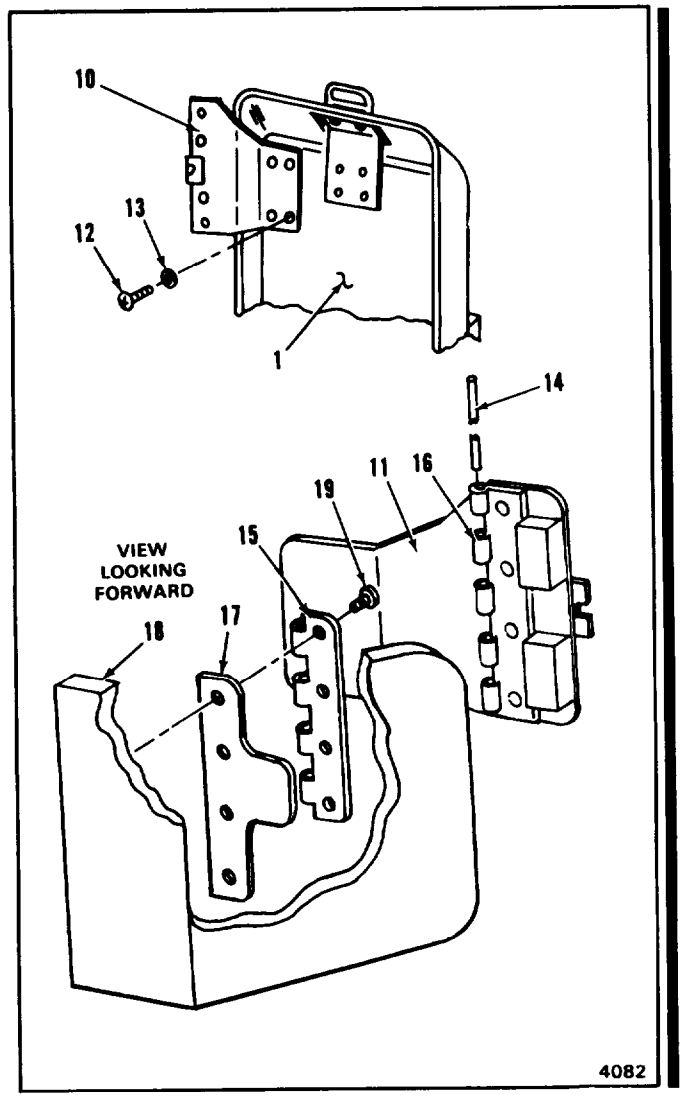
   c. Position spacer (17) on shoulder armor panel (11). Leave top insert (18) unused.

   NOTE

   Pilot's seat hinge has four screws. Copilot's seat hinge has three screws.

   d. Position hinge half (15) over spacer (17). Install screws (19).

   e. Align hinge halves (15 and 16). Install hinge pin (14).



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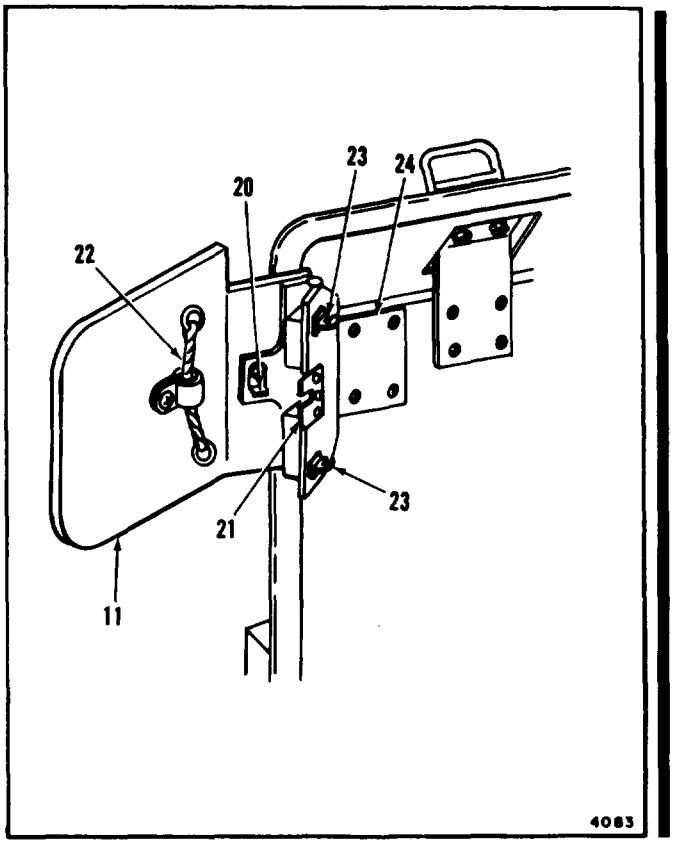
16-73 INSTALL BACK ARMOR PANEL (Continued) 16-73

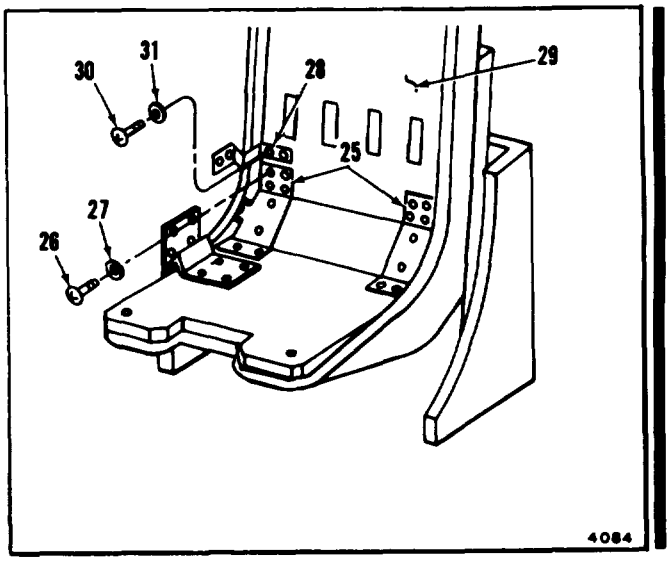
f. Rotate shoulder armor panel (11) **forward until spring latch (20) engages striker plate (21). If needed, bend spring latch slightly.**

g. Hook rings of each end of exerciser cord (22) to eyebolts (23) **on mounting plate assembly (24).**



4. Install two aft bottom armor brackets (25) **on seat. Use eight screws (26) and washers (27) on each bracket.**

5. Install side armor aft bracket (28) **on back armor panel (29). Use two screws (30) and washers (31).**



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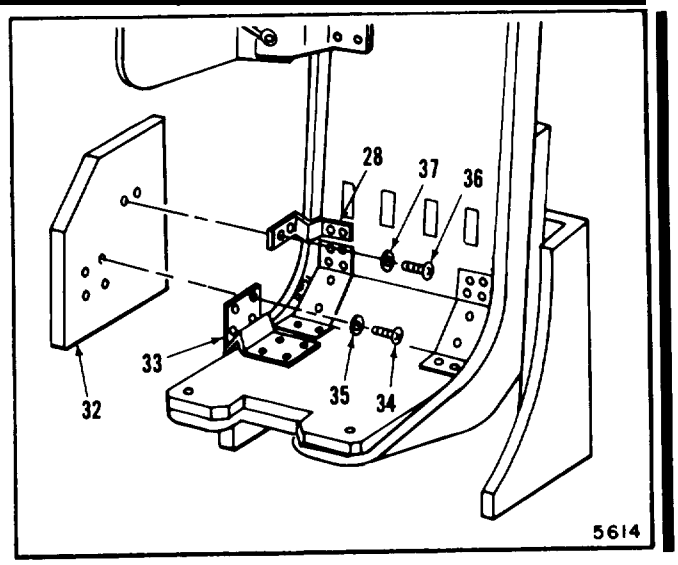
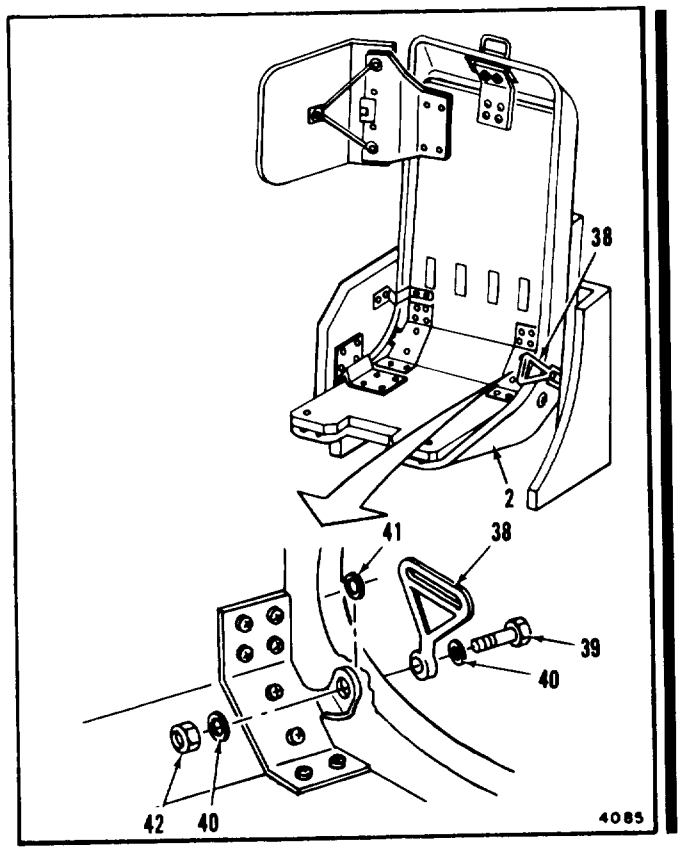
6. Position side armor panel (52) **against forward bracket (33) and aft bracket (28). install four screws (34) and washers (35).**

7. Install two screws (36) and washers (37).



8. Install seat belt fitting (38) **on each side of seat bucket** (2). **Install bolt (39), washers (40 and 41), and nut (42).**



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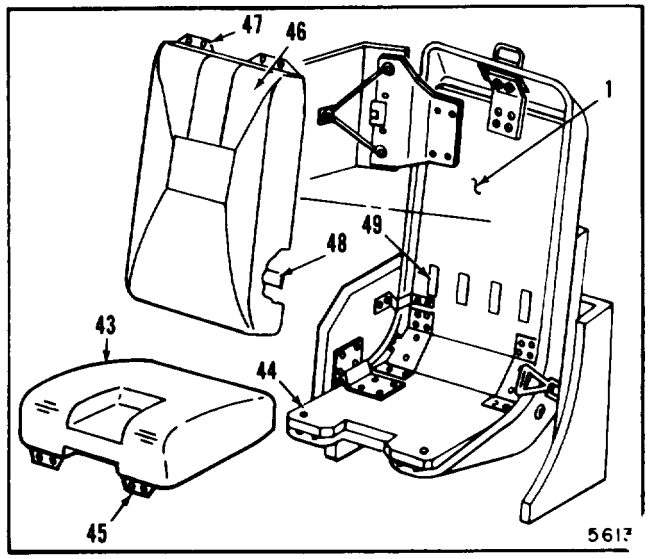
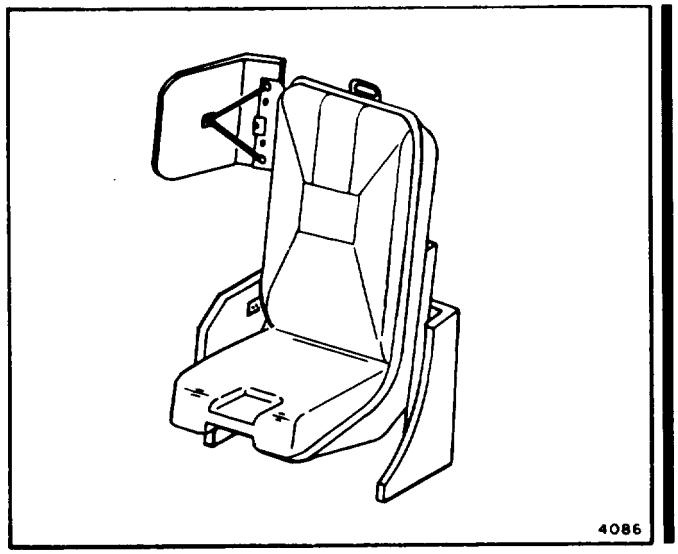
16-73 INSTALL BACK ARMOR PANEL (Continued) 16-73

9. Set bottom cushion (43) on bottom armor (44). **Snap four fasteners (45).**
10. Set back cushion (46) against back armor panel (1). **Snap four fasteners (47).**
11. Press against cushion (46) **to secure hook tape (48) on cushion to pile tape (49) on armor (1).**



FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-74 REMOVE FORWARD BOTTOM ARMOR PANEL

INITIAL SETUP

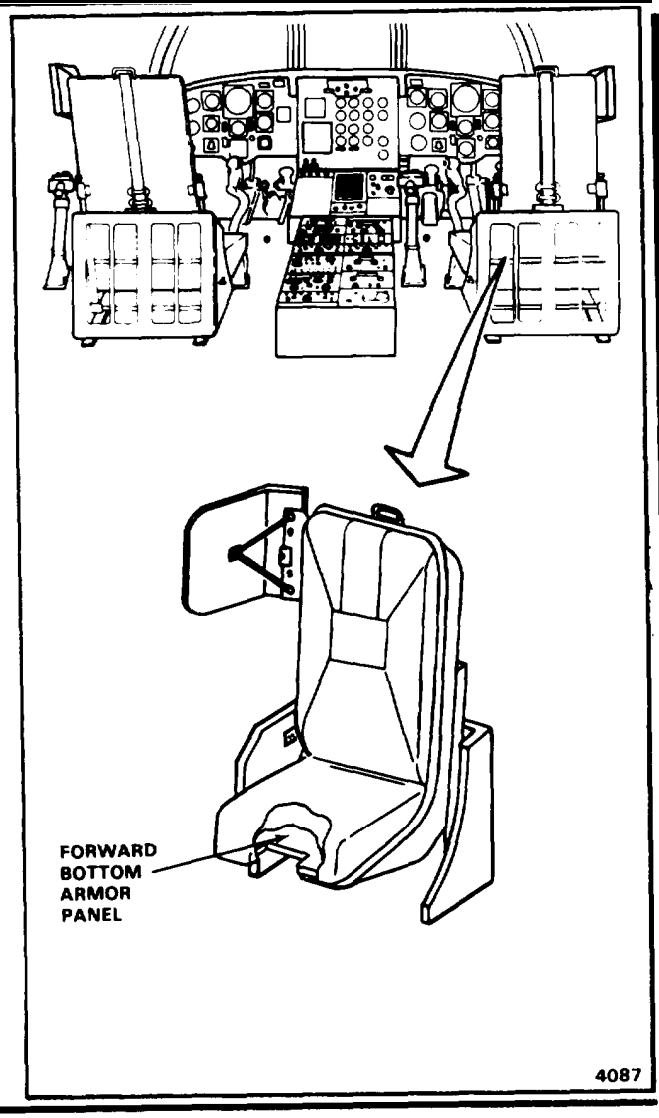
Applicable Configurations:
With 7

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required
Medium Helicopter Repairer

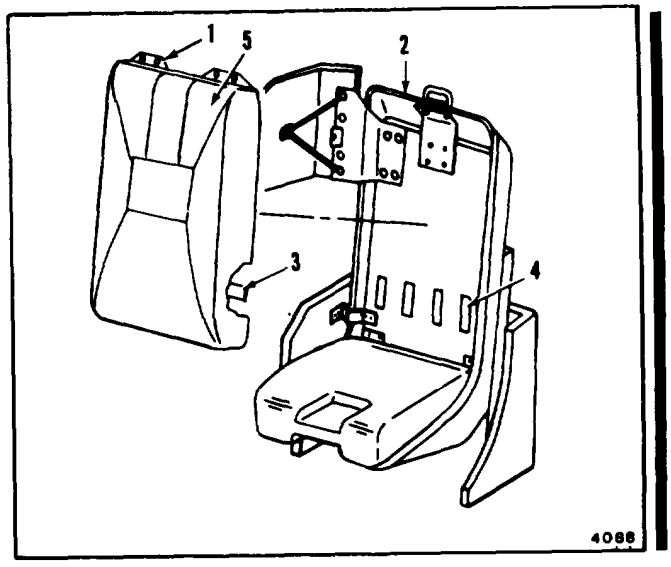
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedures are same for removing pilot's or copilot's seat armor. Pilot's seat shown here.

1. Unsnap four fasteners (1) **from seat bucket** (2).
2. Separate hook tape (3) **from pile tape** (4). Remove cushion (5).



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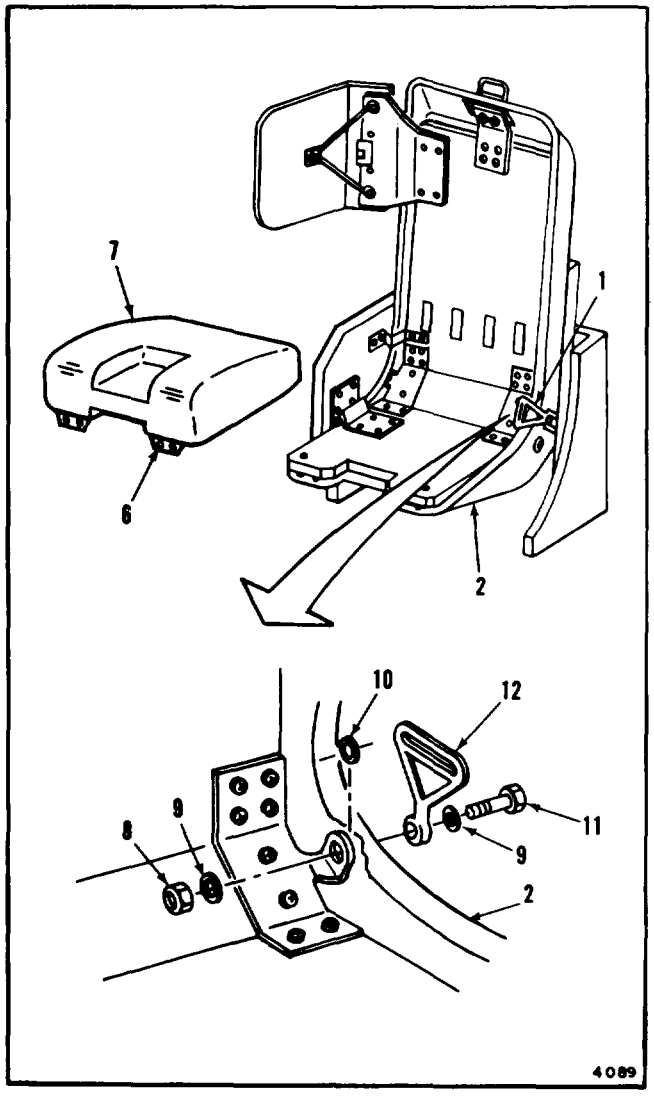
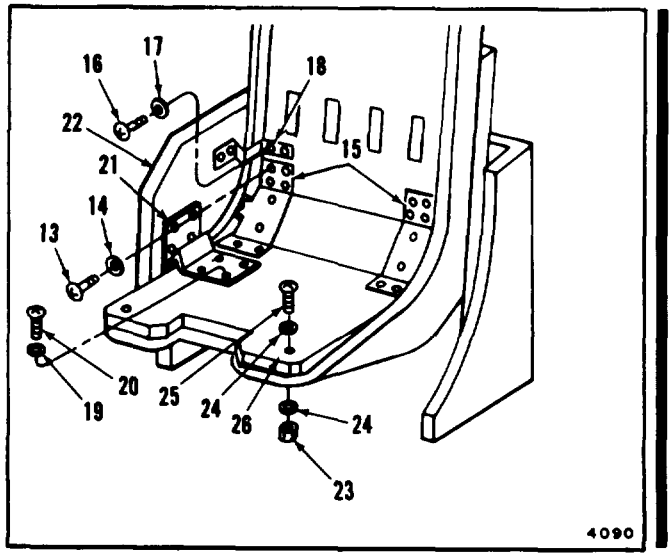
16-74 REMOVE FORWARD BOTTOM ARMOR PANEL (Continued) 16-74

3. **Unsnap four fasteners (6) from seat bucket (2). Lift off** cushion (7).
4. **Remove nut (8), washers** (9 **and 10), and bolt (11) from each side of seat bucket (2).** Remove seat belt fittings (12).



5. Remove six screws (13) **and washers (14) from two aft bottom armor brackets (15).** Remove brackets.
6. Remove two screws (16) **and washers (17)** from side armor aft bracket (18).
7. Remove four screws (19) **and washers (20) from side armor forward bracket (21).** Remove side armor panel **(22).**
8. **Remove nut (23), washers (24), and screw (25) from each forward corner of panel (26).**



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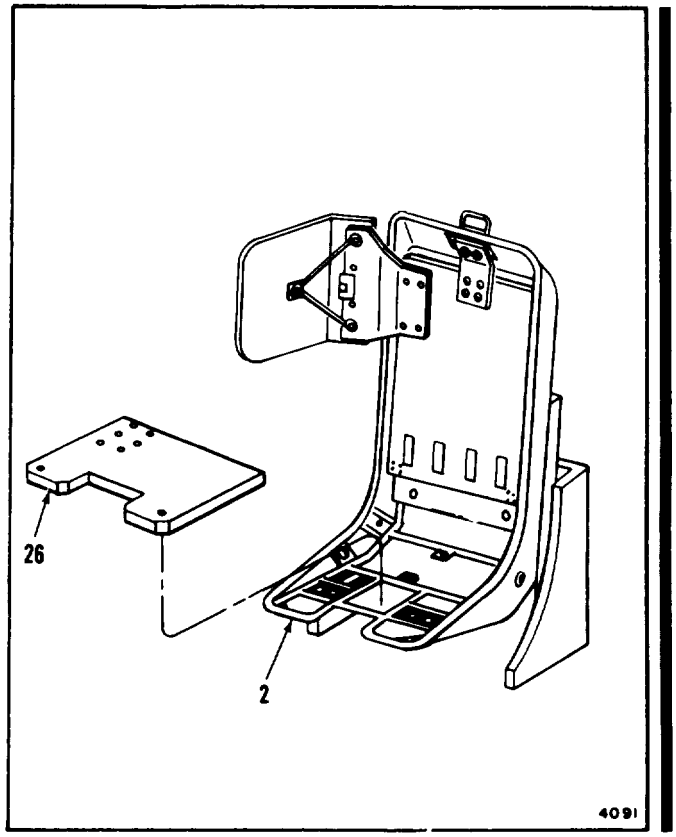
16-74 REMOVE FORWARD BOTTOM ARMOR PANEL (Continued) 16-74

9. Remove panel (26) **from seat bucket (2).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-75 INSTALL FORWARD BOTTOM ARMOR PANEL 16-75

INITIAL SETUP

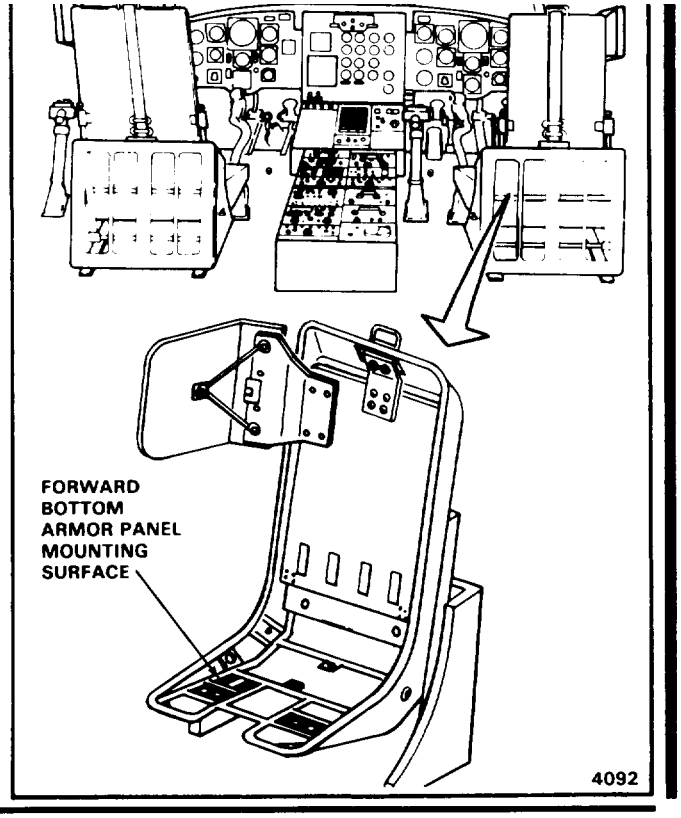
Applicable Configurations:
With 7

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

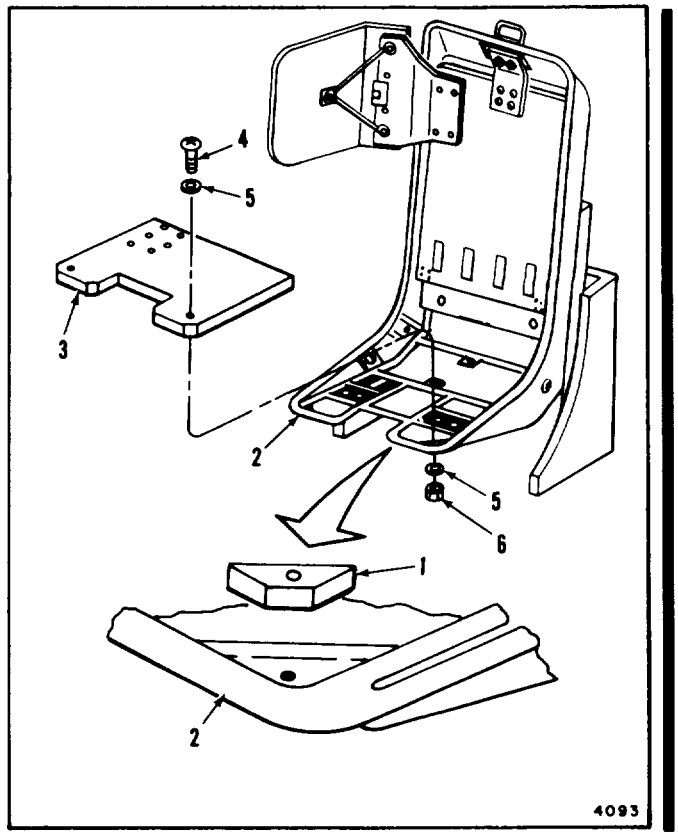
References:
TM 55-1520-240-23P



NOTE

Procedures are same for installing pilot's or copilot's seat armor

1. **Check that spacers (1) are installed in forward corners of seat bucket (2).**
2. Install armor panel (3) **in seat bucket (2).**
3. Install screw (4), washers (5), and nut (6) **in each forward corner of panel (3).**



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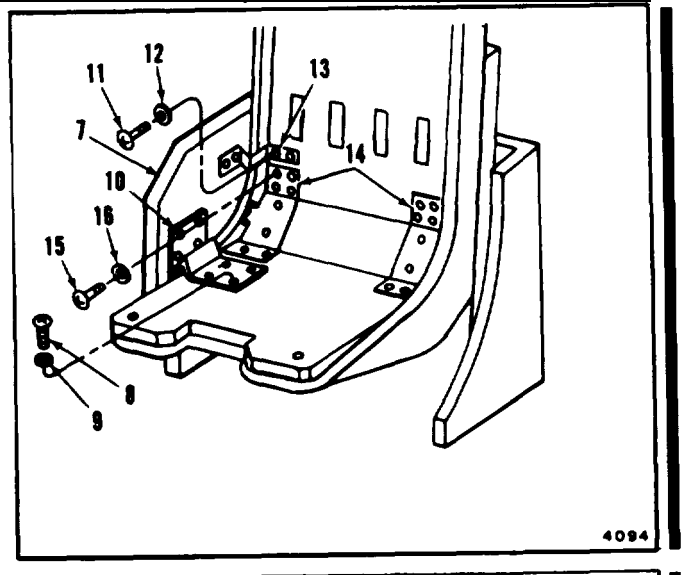
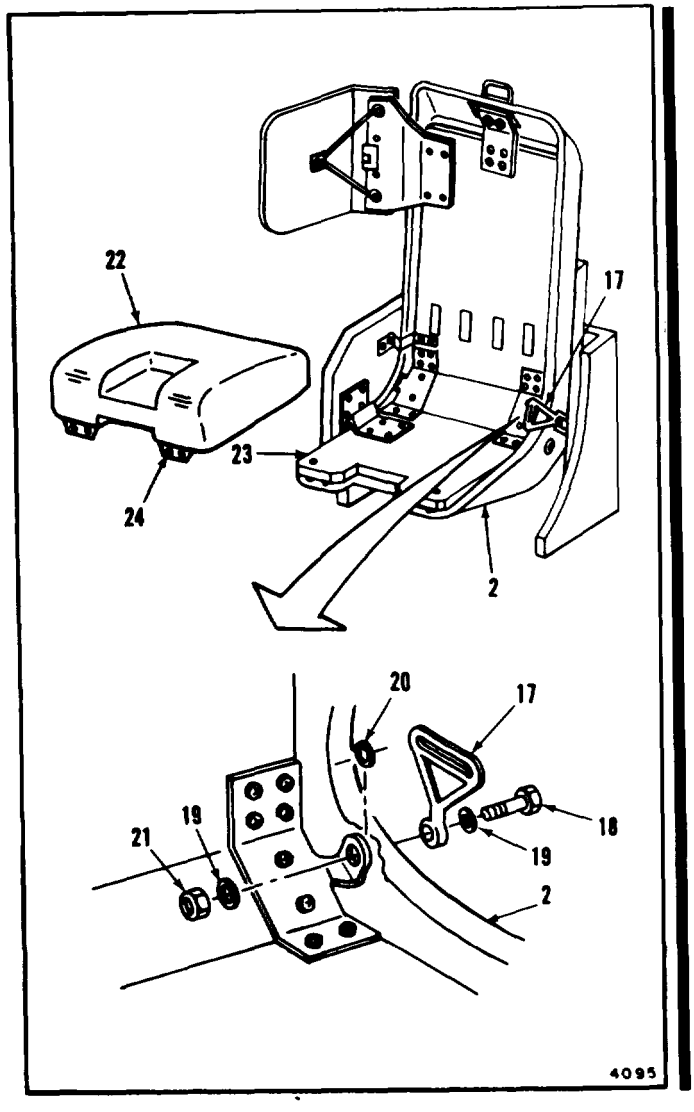
16-75 INSTALL FORWARD BOTTOM ARMOR PANEL (Continued) 16-75

4. Install side armor panel (7) **on seat bucket (2). Use four screws (8) and washers (9) in forward bracket (10).**
5. **Install two screws (11) and washers (12) through aft bracket (13).**
6. Install two aft bottom armor brackets (14) **on seat. Install six screws** (15) **and washers (16) in each bracket.**



7. Position seat belt fitting (17) **on each side of seat bucket (2).** Install bolt (18), washers (19 and 20), and nut (21).
8. Set bottom cushion (22) **on** bottom armor panel (23). **Snap four fasteners (24).**



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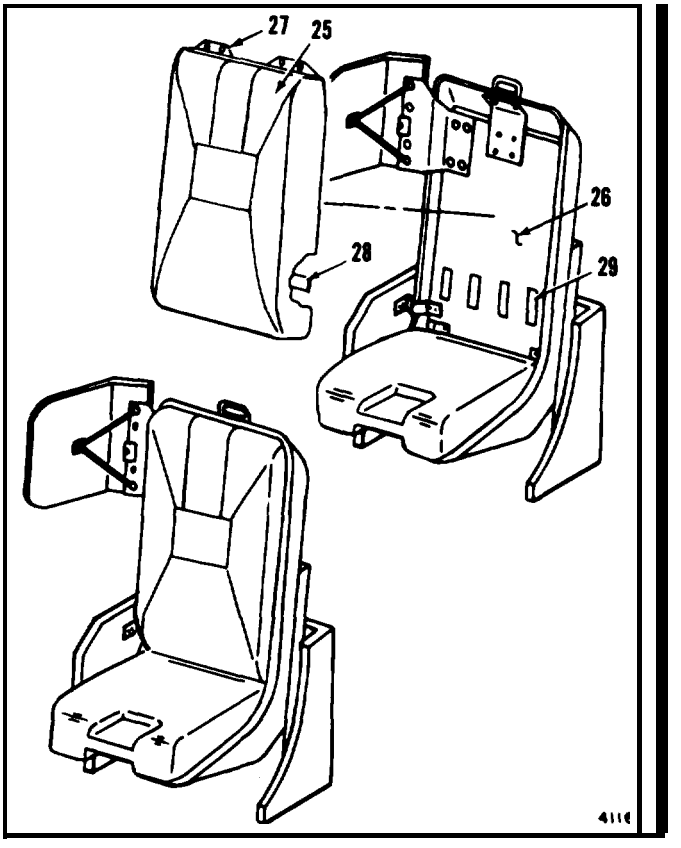
16-75 INSTALL FORWARD BOTTOM ARMOR PANEL (Continued) 16-75

9. Set back cushion (25) against back armor panel (26). **Snap four fasteners (27).**

10. Press against cushion (25) **to secure hook tape** (28) **on cushion to pile tape** (29) **on armor (26).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-76 REMOVE AFT BOTTOM ARMOR PANEL

INITIAL SETUP

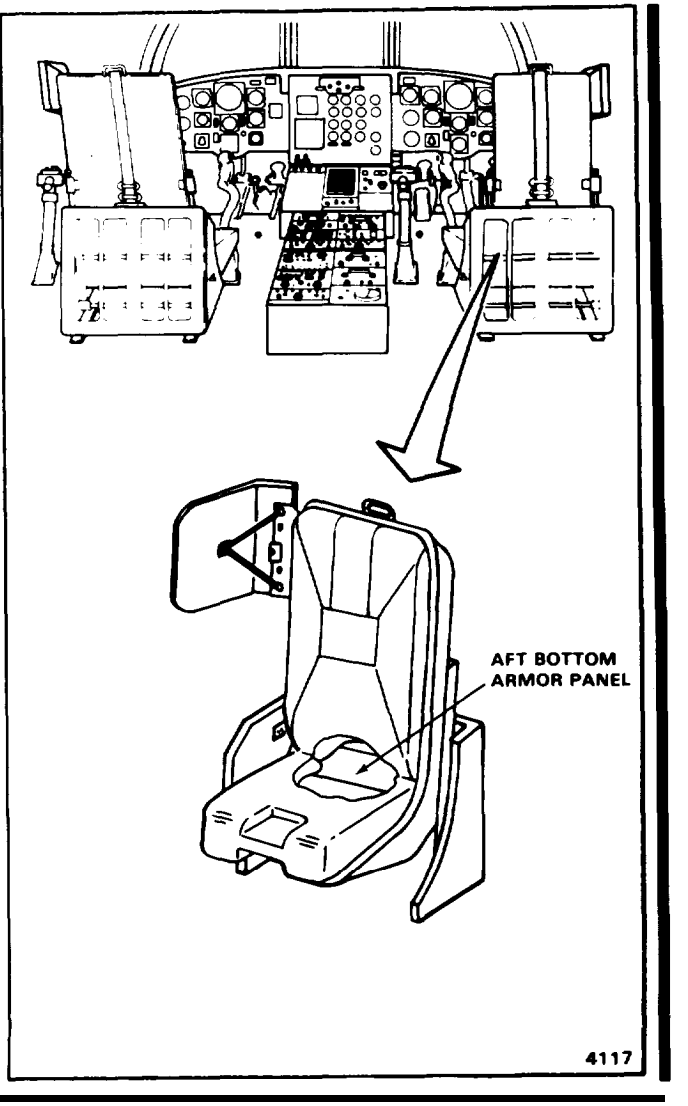
Applicable Configurations:
With 7

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

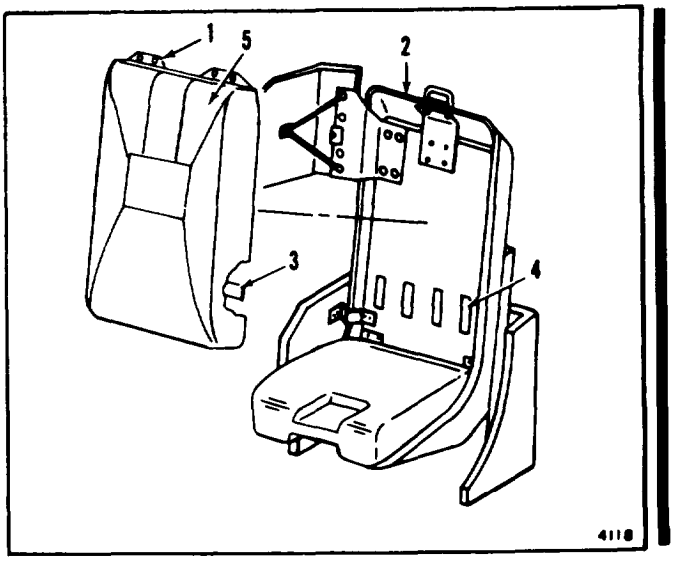
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedures are same for removing pilot's or copilot's seat armor. Pilot's seat shown here.

1. Unsnap four fasteners (1) **from seat bucket (2).**
2. Separate hook tape (3) **from pile tape (4).** Remove cushion (5).



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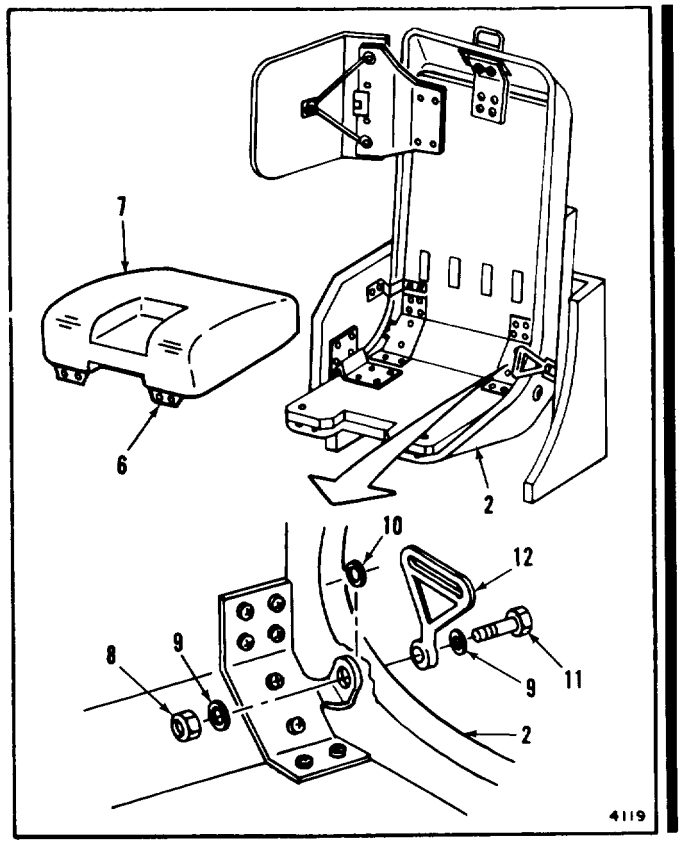
16-76 REMOVE AFT BOTTOM ARMOR PANEL (Continued) 16-76

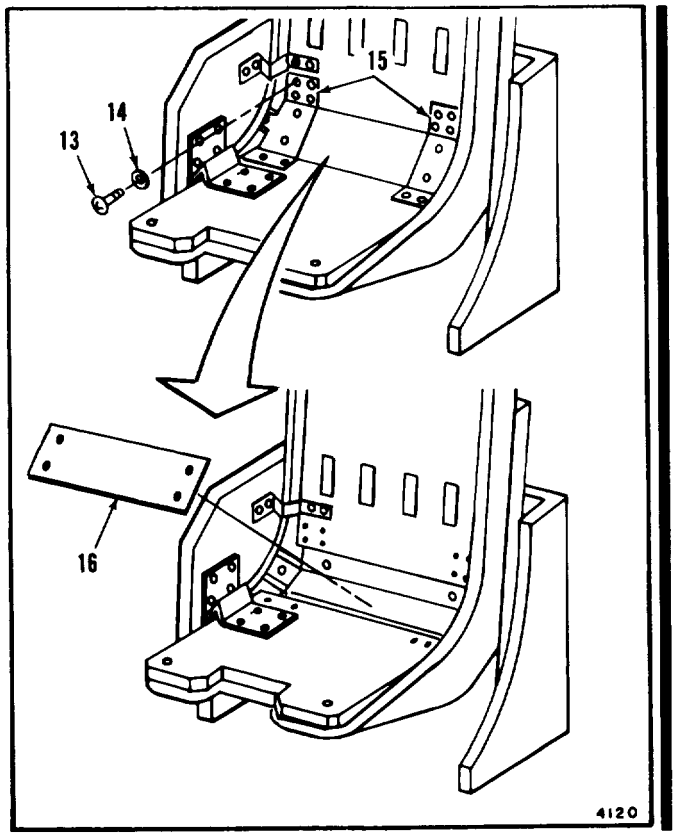
3. **Unsnap four fasteners (6) from seat bucket (2).** Lift off cushion (7).
4. **Remove nut (8), washers (9 and 10), and bolt (11) from each side of seat bucket (2).** Remove seat belt fittings (12).



5. Remove eight screws (13) **and washers (14)** from two aft bottom armor brackets (15). Remove brackets.
6. Remove aft bottom armor panel (16).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-77 INSTALL AFT BOTTOM ARMOR PANEL 16-77

INITIAL SETUP

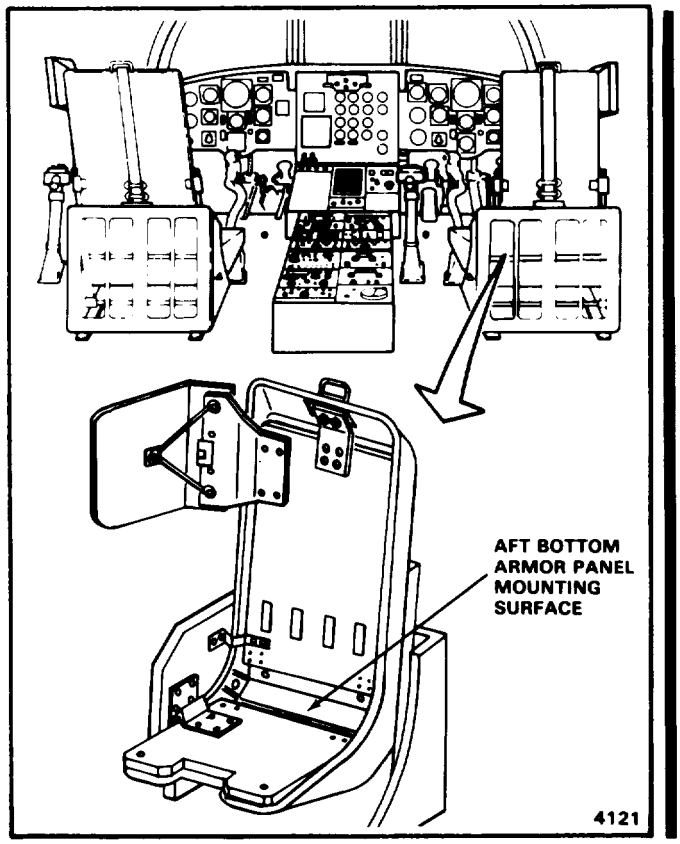
Applicable Configurations:
With 7

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

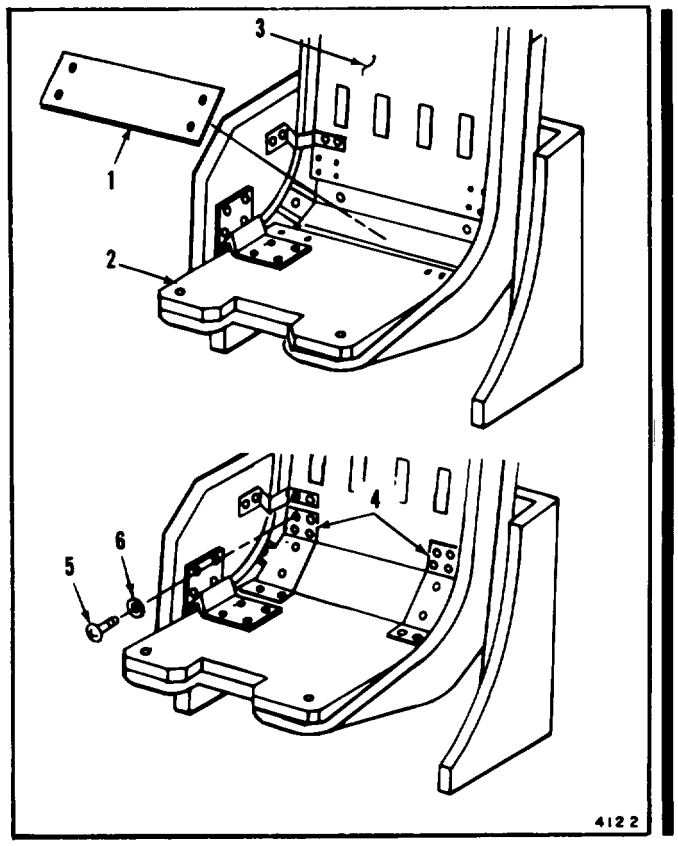
References:
TM 55-1520-240-23P



NOTE

Procedures are same for installing pilot's or copilot's seat armor. Pilot's seat shown here.

1. Install aft bottom armor panel (1) **between forward bottom armor panel (2) and back armor panel (3).**
2. Install two brackets (4) **on seat. Use eight screws (5) and washers (6) on each bracket.**



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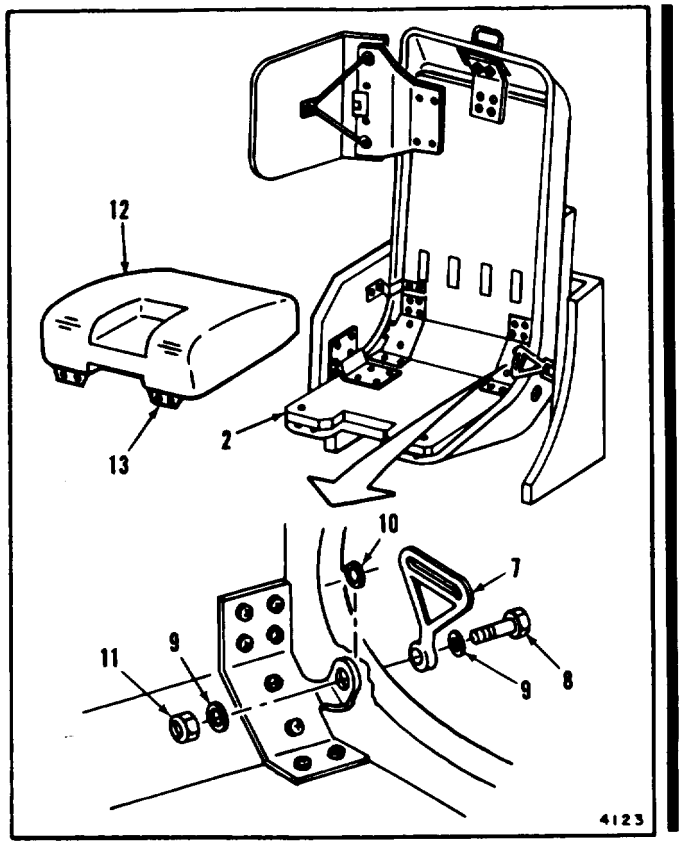
16-77 INSTALL AFT BOTTOM ARMOR PANEL (Continued)

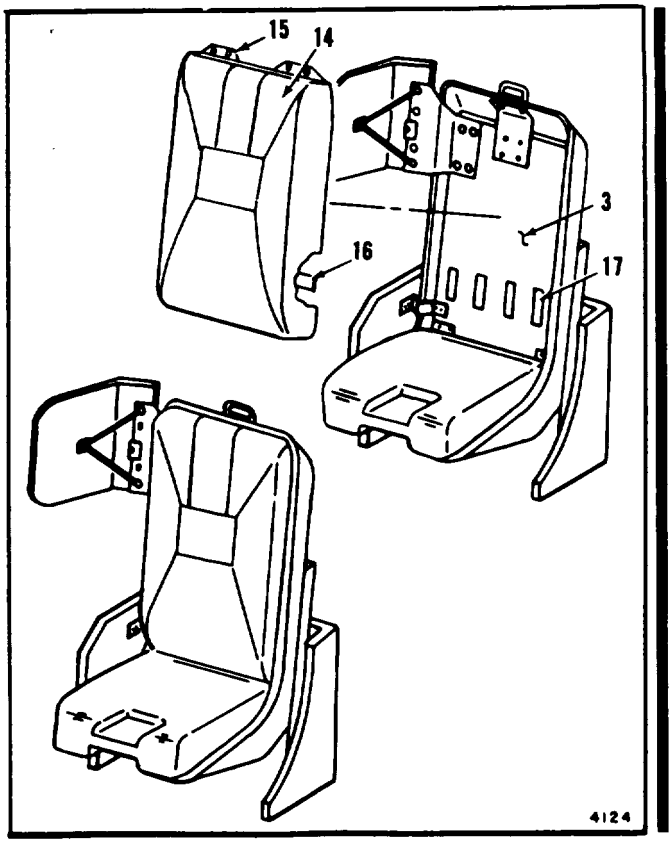
3. Install seat belt fitting (7) on each side **of seat. Use bolt** (8), **washers (9 and 10), and nut (11).**
4. Set bottom cushion (12) on bottom armor panel (2). **Snap four fasteners (13).**



5. Set back cushion (14) against back armor panel (3). **Snap four fasteners (15).**
6. Press against cushion (14) **to secure hook tape (16) on cushion to pile tape (17) on armor (3).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-78 REMOVE SIDE ARMOR PANEL 16-78

INITIAL SETUP

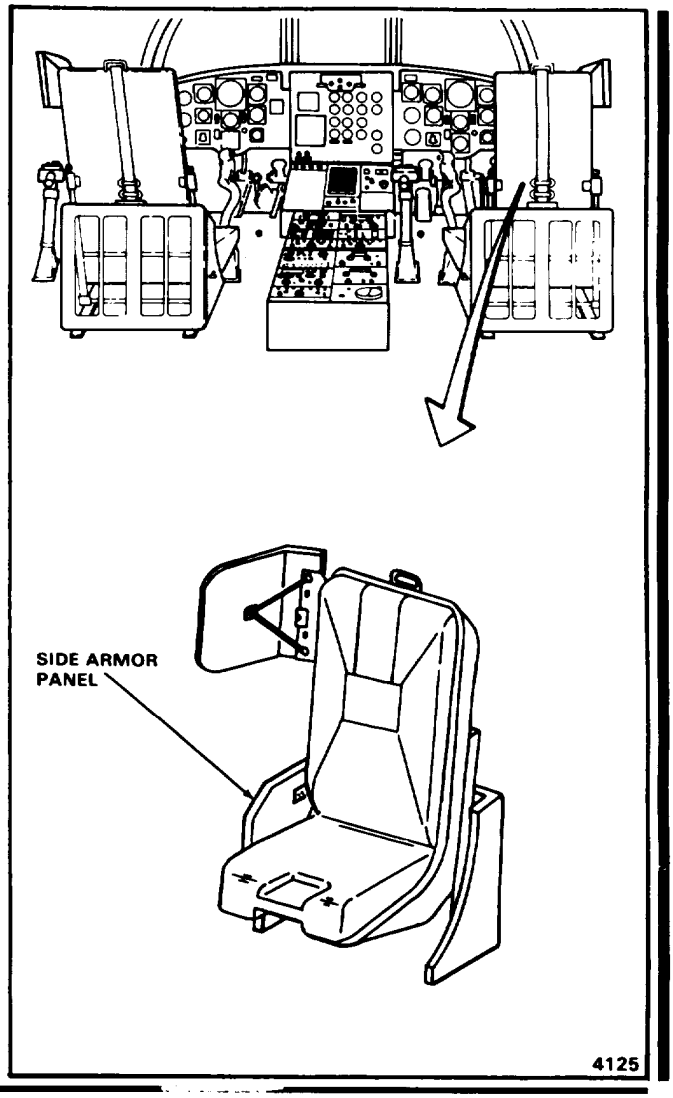
Applicable Configurations:
With 7

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

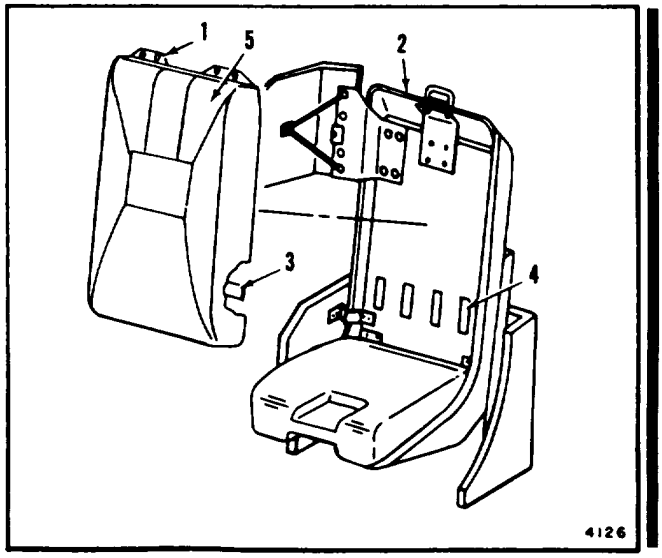
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedures are same for removing pilot's or copilot's seat armor. Pilot's **seat shown here.**

1. Unsnap four fasteners (1) from seat bucket (2).
2. Separate hook tape (3) from **pile tape** (4). Remove cushion (5).



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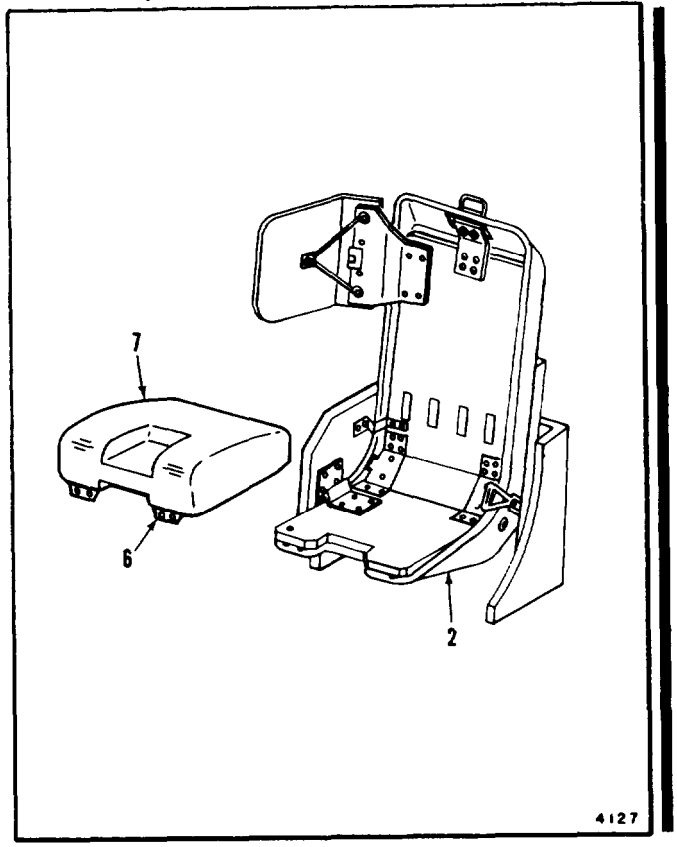
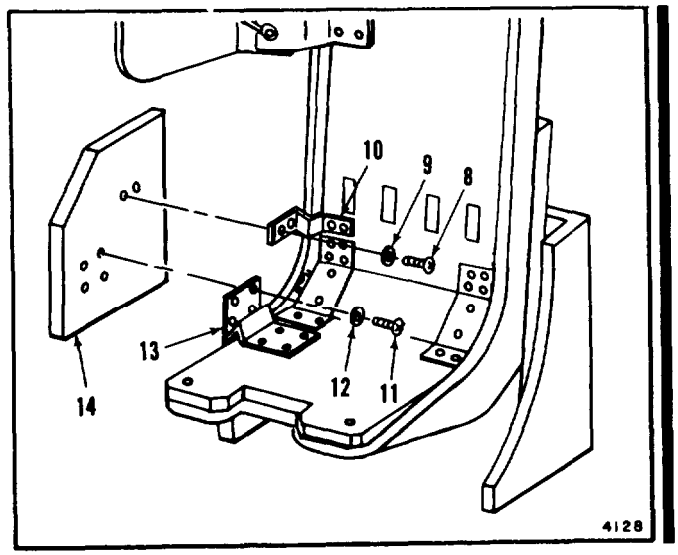
3. Unsnap four fasteners (6) from seat bucket (2). Lift off cushion (7).



4. **Remove two screws (8) and washers (9) from side armor aft bracket (10).**

5. Remove four screws (11) and washers (12) from side armor forward bracket (13). Re-move bracket (14).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-79 INSTALL SIDE ARMOR PANEL

INITIAL SETUP

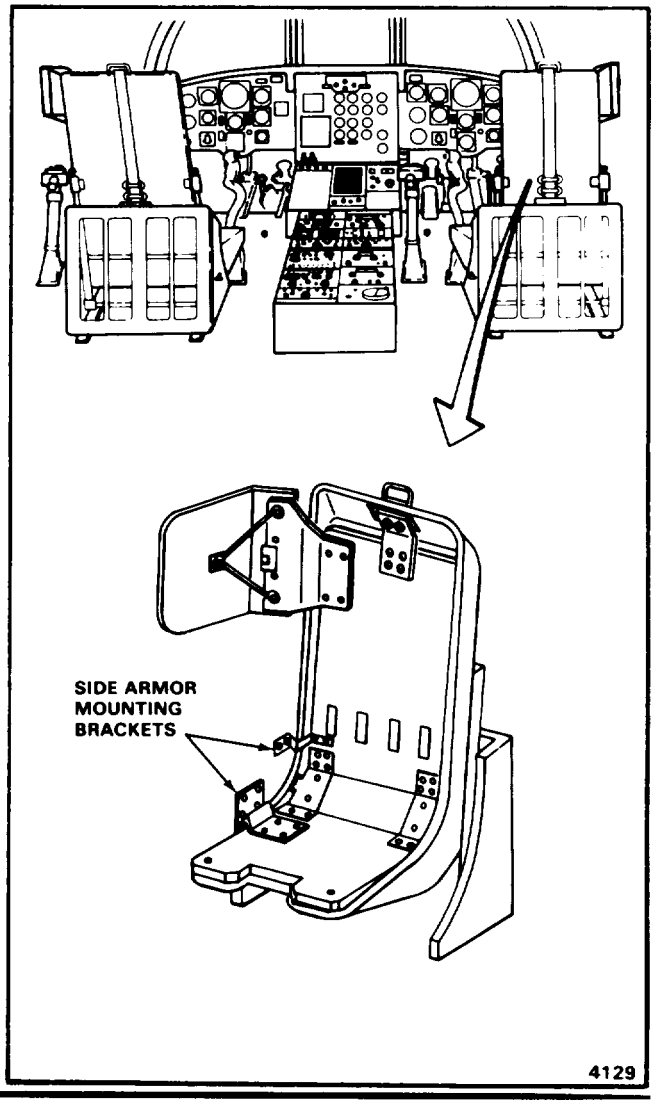
Applicable Configurations:
With 7

Tools:
Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

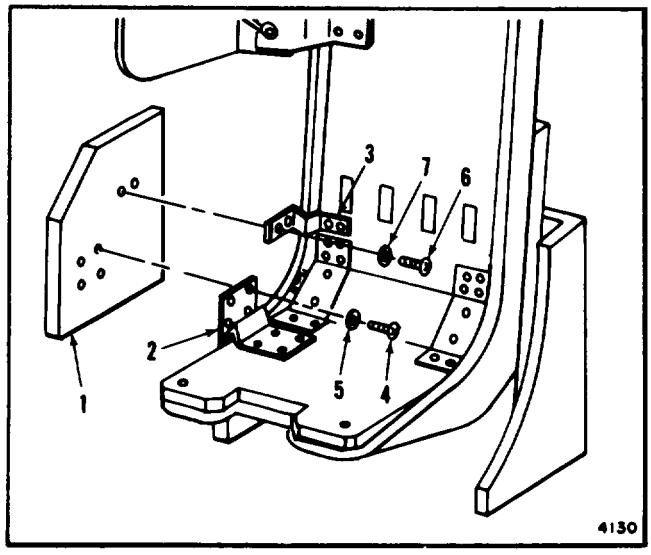
References:
TM 55-1520-240-23P



NOTE

Procedures are same for installing pilot's or copilot's seat armor. Pilot's seat shown here.

1. Install side armor panel (1) against forward bracket (2) and aft bracket (3). Use four screws (4) and washers (5).
2. Install two screws (6) and washers (7).



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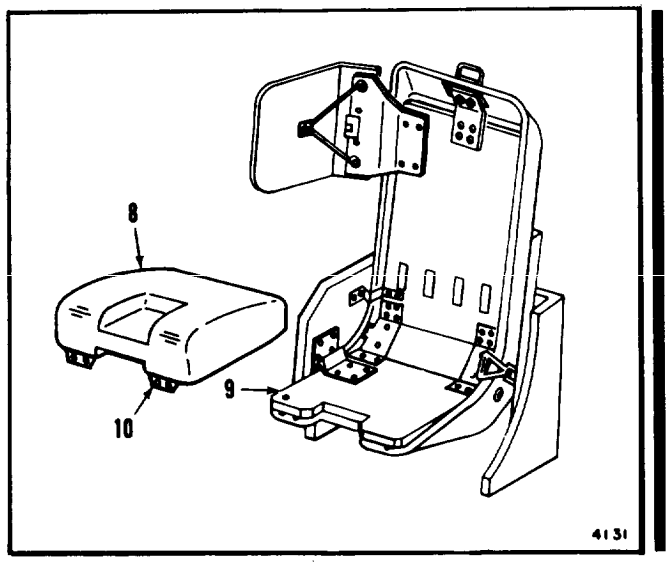
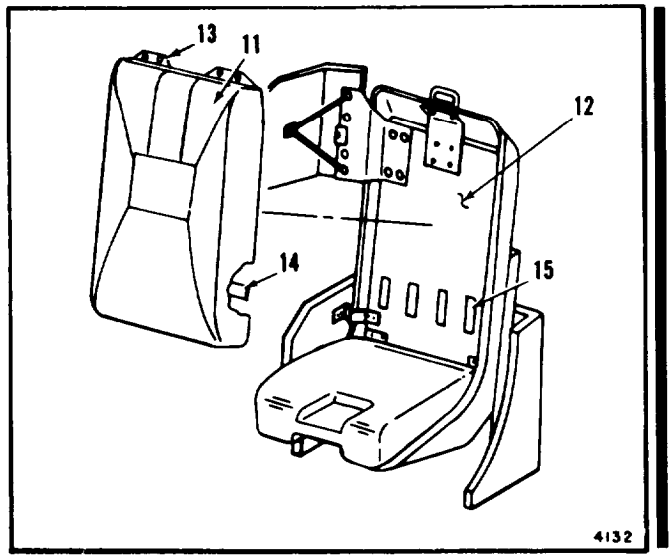
16-79 INSTALL SIDE ARMOR PANEL (Continued) 16-79

3. Set bottom cushion (8) on bottom armor panel (9). Snap four fasteners (1O).

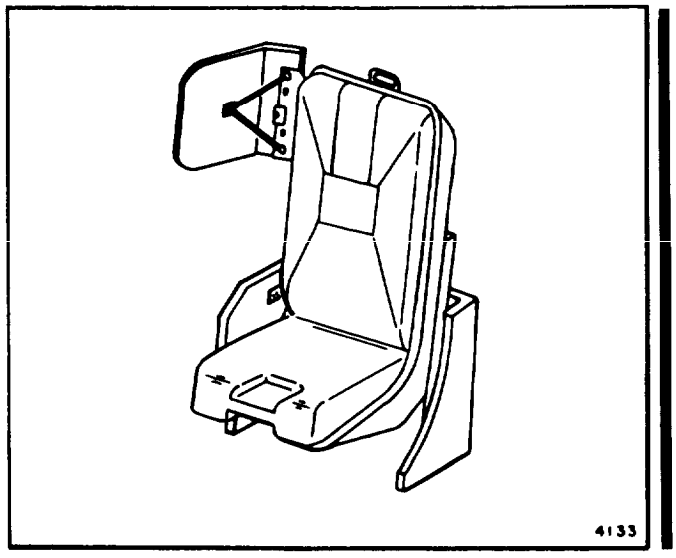


4. Set back cushion (11) against back armor panel (12). Snap four fasteners (13).
5. Press against cushion (11) to secure hook tape (14) on cushion to pile tape (15) on armor (12).



FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-80 REMOVE SHOULDER ARMOR PANEL 16-80

INITIAL SETUP

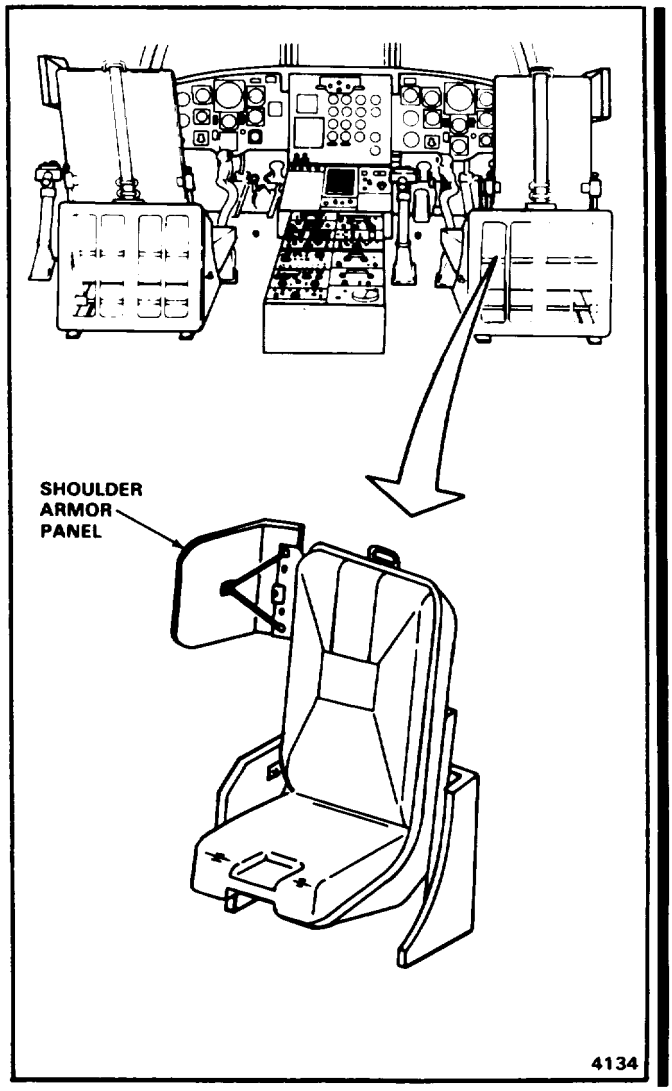
Applicable Configurations:
With 7

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

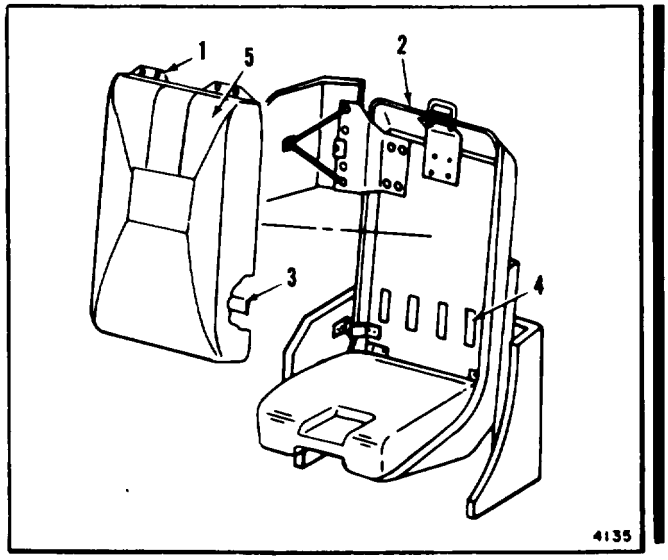
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedures are same for removing pi-**lot's or** copilot's seat bracket. Pilot's seat shown **here.**

1. Unsnap four fasteners (1) from seat bucket (2).
2. Separate hook tape (3) **from pile tape (4).** Remove cushion (5).



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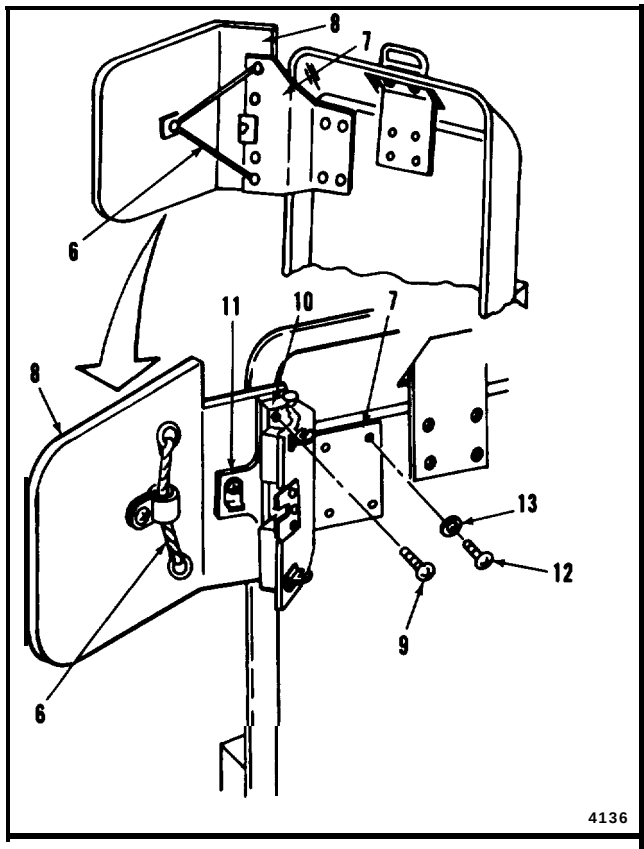
3. Disconnect exerciser cord (6) from mounting plate assembly (7).

NOTE

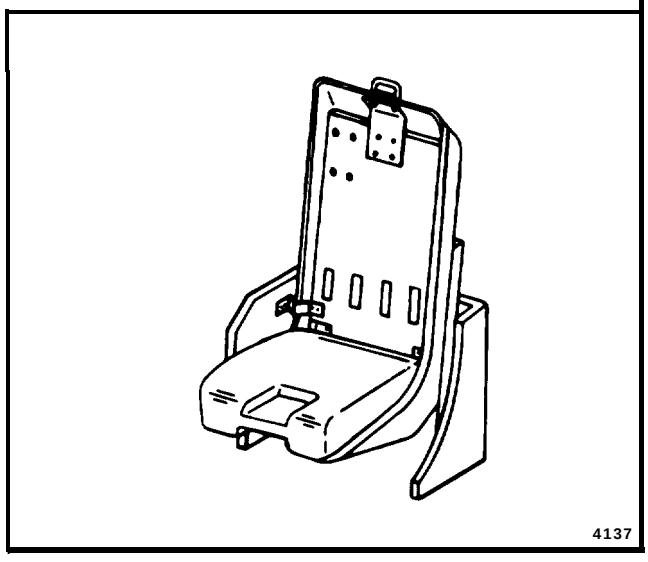
Pilot's seat hinge has four screws. Copilot's seat hinge has three.

4. **Swing shoulder armor panel (8) aft. Support panel and** remove screws **(9)** from hinge half (10).
5. Remove panel (8), hinge half (10), and spacer (11) **from mounting plate assembly (7).**
6. Remove four screws (12) **and washers** (13). Remove mounting plate assembly (7).



FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-81 INSTALL SHOULDER ARMOR PANEL 16-81

INITIAL SETUP

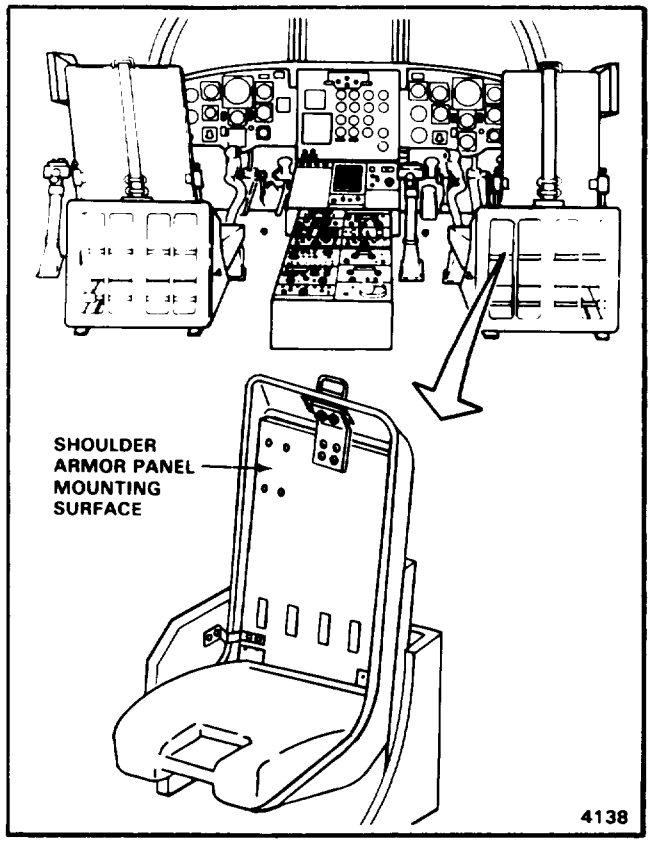
Applicable Configurations:
With 7

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

References:
TM 55-1520-240-23P



NOTE

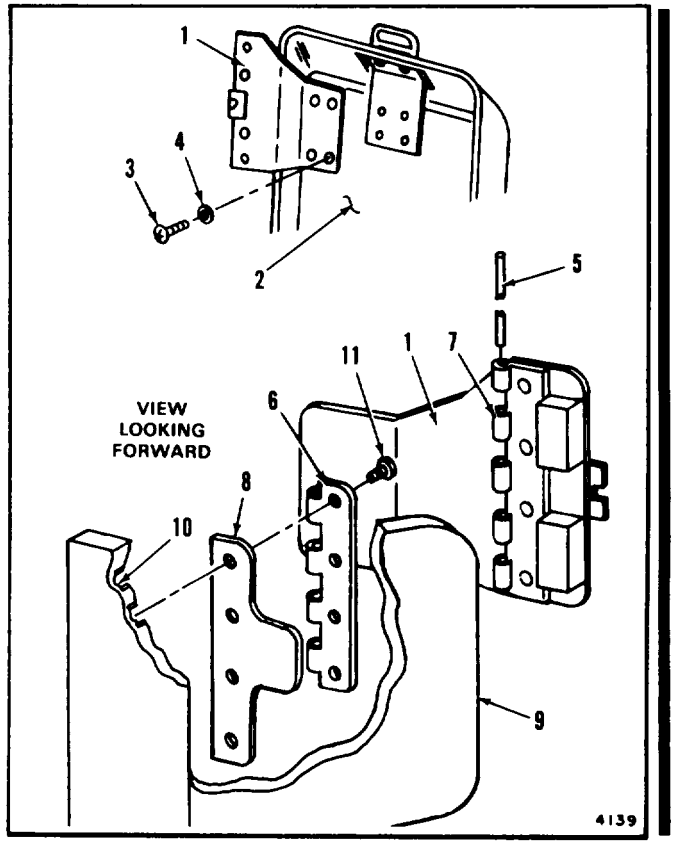
Procedures are same for installing **pilot's or copilot's seat armor. Pilot's seat shown here.**

1. Install mounting plate assembly (1) on back armor panel (2). Install four screws (3) and washers (4).
2. Remove hinge (5) from hinge halves (6 and 7) on mounting plate assembly (1).
3. Place spacer (8) on shoulder armor panel (9). **Leave top** insert (10) unused.

NOTE

Pilot's seat hinge has four screws. Copilot's seat hinge has three screws.

4. Install hinge half (6) over spacer (8). Use screws (11).
5. Align hinge halves (6 and 7). Install hinge pin (5).



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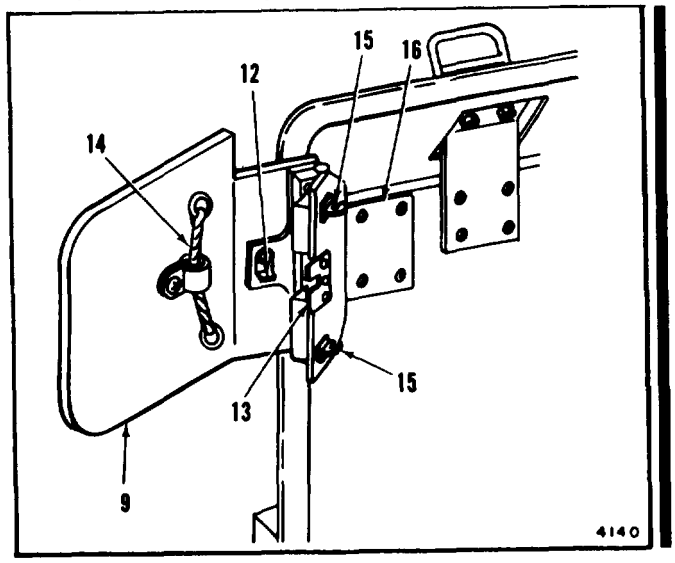
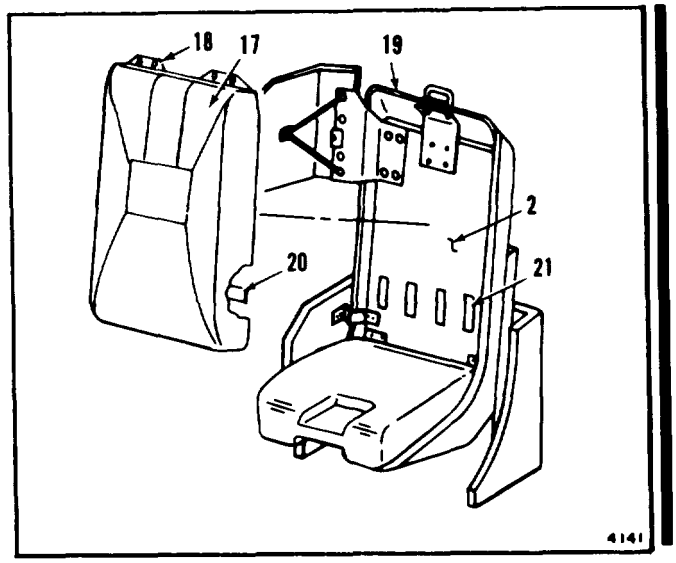
16-81 INSTALL SHOULDER ARMOR PANEL (Continued)

6. Rotate shoulder armor panel (9) forward until spring latch (12) engages striker plate (13). If needed, bend **spring latch slightly.**
7. Hook rings **of each end of exerciser cord (14) to** eyebolts (15) **on mounting plate assembly (16).**

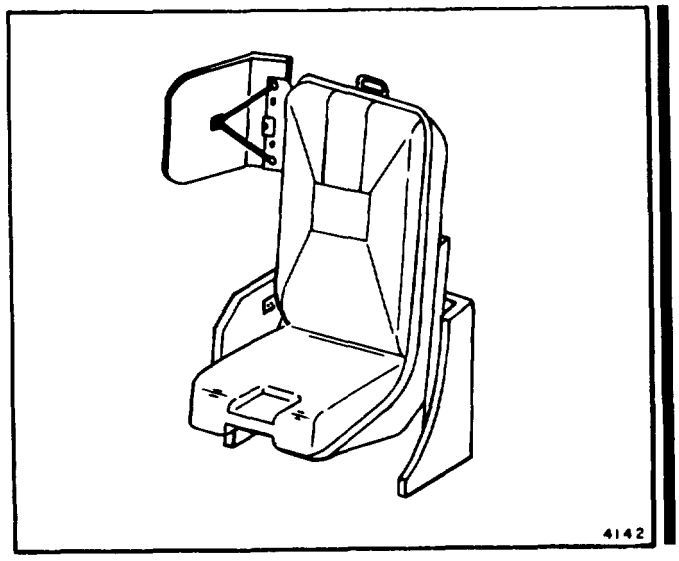


8. Position back seat cushion (17) on armor panel (2).
9. Snap four fasteners (18) to back of seat bucket (19). Press against cushion (17) so that **hook tape (20) sticks to pile tape (21).**



FOLLOW-ON MAINTENANCE:

None



END OF TASK

16-82 INSPECT SEAT ARMOR 16-82

INITIAL SETUP

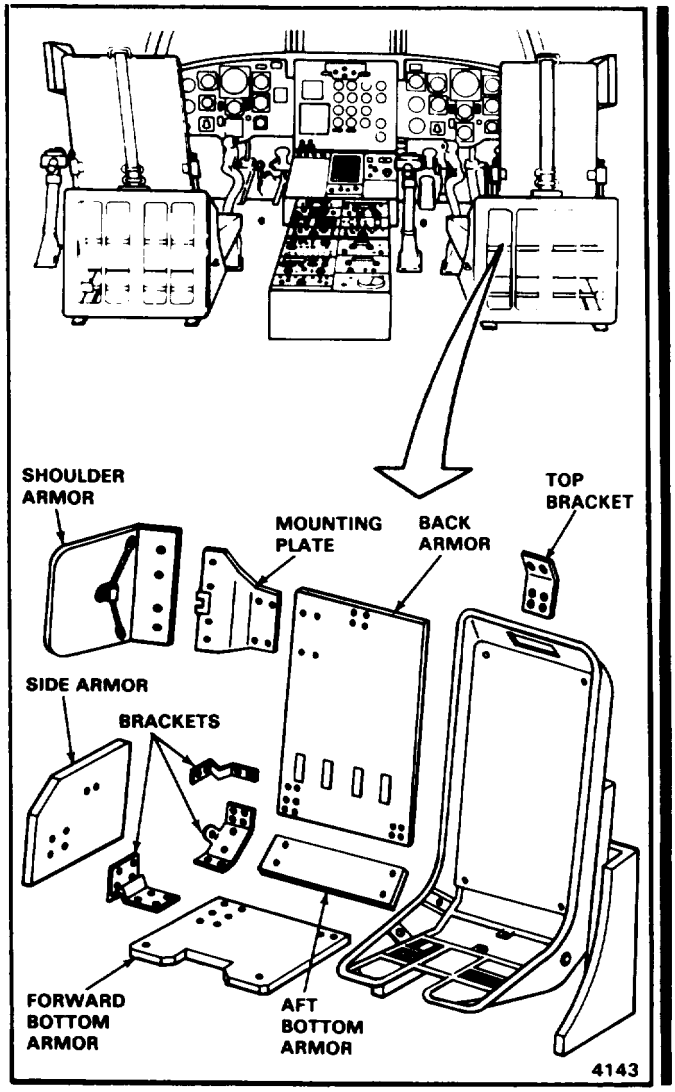
Applicable Configurations:
With 7

Tools:
None

Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Off **Helicopter Task**



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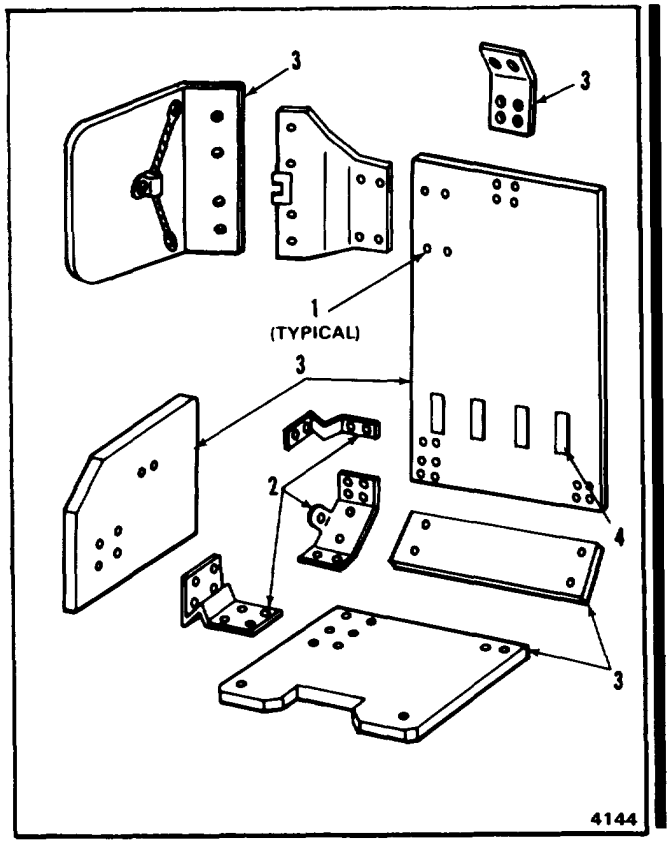
16-82 INSPECT SEAT ARMOR (Continued) 16-82

NOTE

- **Procedure is same to inspect pilot's or copilot's armor. Pilot's armor shown here.**
- **Armor must be removed from seat for complete inspection.**

1. Inspect armor for cracks and chips. **There shall be no cracks or chips.**
2. Inspect inserts (1) for looseness and damaged thread. **There shall be no loose or damaged inserts.**
3. Inspect brackets (2) for distortion. **There shall be no distortion.**
4. **Inspect panels (3) for loose nylon cloth covering. There shall be no loose cloth.**
5. **Inspect back panel for loose tape (4). There shall be no loose tape.**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

16-83 CHECK SEAT ARMOR CLEARANCE

INITIAL SETUP

Applicable Configurations:
With 7

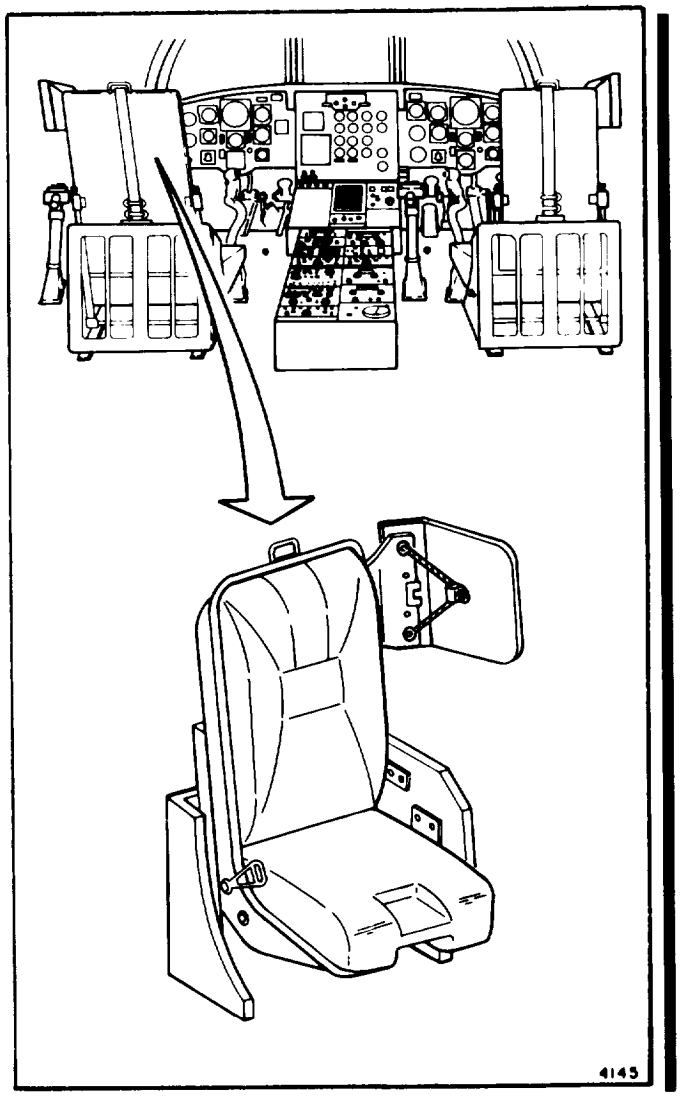
Tools:
None

Materials:
None

Personnel Required:
Medium Helicopter Repairer

References:
Task 1-36
Task 1-37
Task 1-38

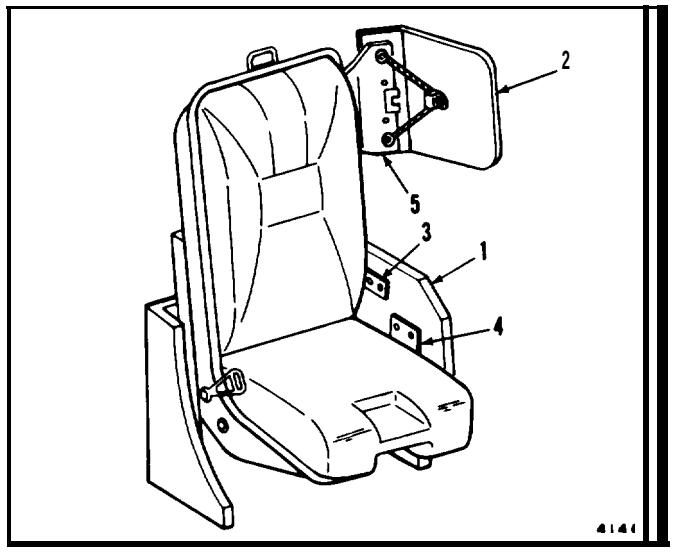
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedure is same for checking pilot's or copilot's seat armor, except as noted. Copilot's seat shown here.

1. **Operate seat fully up and aft.**
2. **Slowly move seat fully forward. As seat moves, check that side armor panel (1) and shoulder armor panel (2) clear helicopter structure by at least 0.25 inch.**
3. **If there is not enough clearance at side armor panel (1), adjust panel at slotted holes in brackets (3 and 4). As an alternate, bend brackets.**
4. **If there is not enough clearance at shoulder armor panel (2), bend mounting plate (5).**



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16-83 CHECK SEAT ARMOR CLEARANCE (Continued) 16-83

NOTE

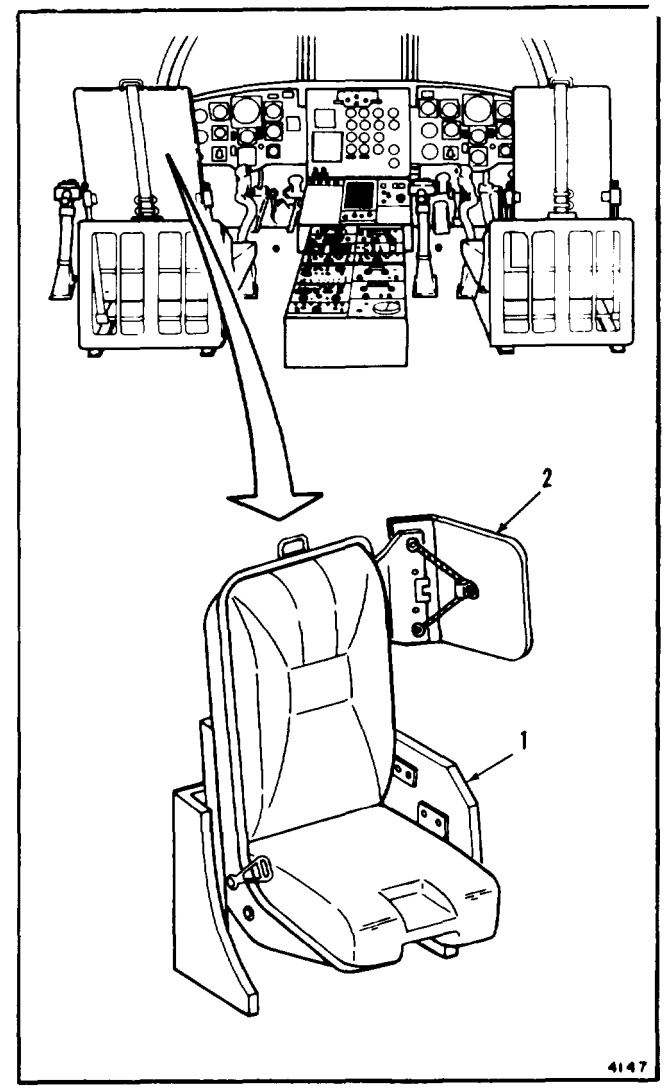
Steps *5.* **thru 8. apply to copilot's seat only.**

5. **Apply electrical and hydraulic power to the helicopter (Task 1-36 or 1-37 and 1-39).**
6. **Check that seat is fully up and forward.**

CAUTION

Before moving thrust control, check for obstructions near blades. As controls are moved, blades can swing through lead-lag range. Blade damage can result if blades strike an obstruction.

7. **Slowly pull thrust control (6) fully up. Check that side armor panel (1) clears thrust control by at least 0.25 inch . If not, adjust panel as in step 3.**
8. **Remove electrical and hydraulic power from helicopter (Task 1-36 or 1-37 and 1-38).**
9. **Operate seat fully down.**
10. **Slowly move seat fully aft. As seat moves, check that panels (1 and 2) clear helicopter structure by at least 0.25 inch . If not, adjust panels as in steps** *3.* **and** 4.



FOLLOW-ON MAINTENANCE:

None

END OF TASK

SECTION XI

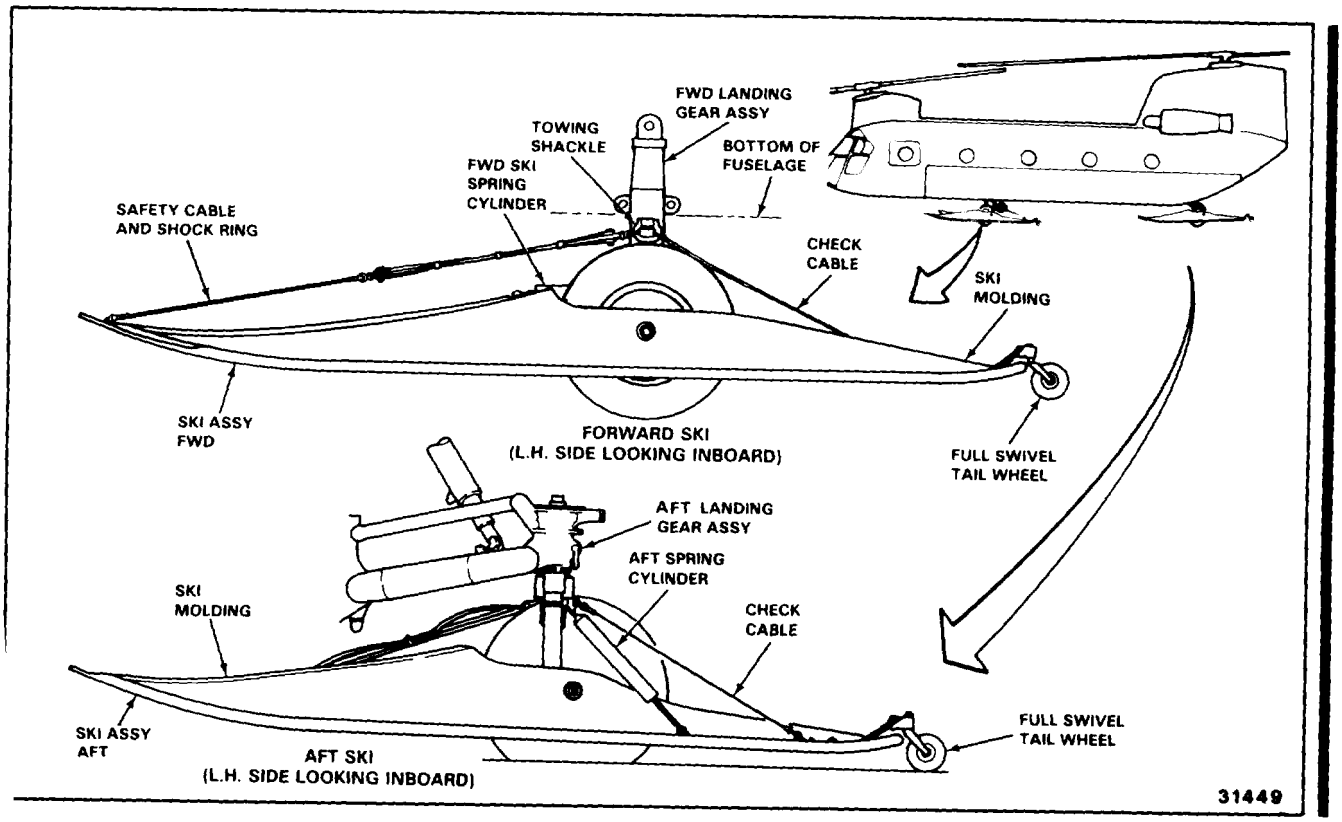
SKI PROVISIONS
DESCRIPTION

Skis are installed on forward and aft landing gears to prevent the helicopter from bogging down in snow after landing, They are made of fiberglass and the bottoms are finish coated with epoxy coating 462, graphite filled, cured and treated with silicone and paraffin wax to prevent freezing or sticking to snow.

Skis are designed for temporary installation, installation and removal of skis requires removal of very few permanent parts.

The forward skis are 46 inches wide and 136,75 inches long. The aft skis are 33 inches wide and 114.5 inches long.

Installation and operation of all four skis is similar, The helicopter can be towed in place over the skis, or it can be jacked and the skis placed under the landing gear, In both procedures, the tires are placed into cutouts in the skis. Each ski is supported on the landing gear by a spring-mounted swivel tail wheel, a spring cylinder, and axles. Ski axles on both sides screw into the landing gear axle stubs, Horizontal balance of the ski is maintained by a safety cable and shock ring assembly, a check cable, and the spring cylinder.



SECTION XII
SKI PROVISIONS

INITIAL SETUP

Applicable Configurations:
All

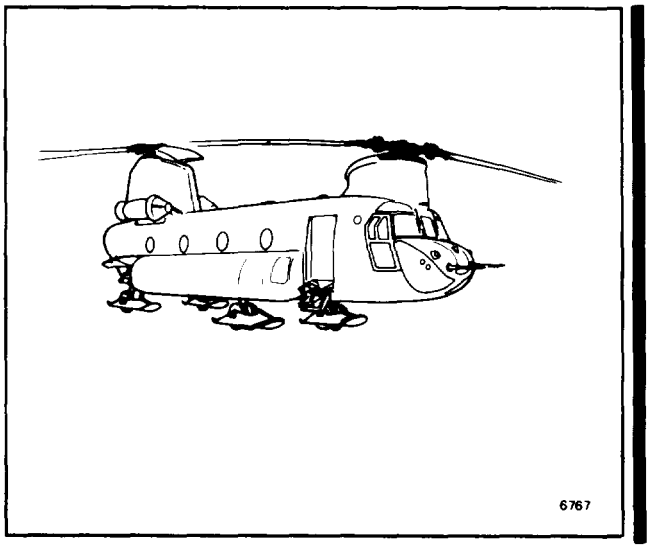
Tools:
Aircraft Mechanic Tool Kit, NSN 5180-00-323-4692
Adapter Set Arctic Tow Bar, NSN 1730-00-168-5439

Materials:
None

Personnel Required:
Medium Helicopter Repairer (3)

References:
Task 1-20
Task 1-21
Task 1-71

Equipment Condition:
Battery Disconnected (Task 1-39)
Helicopter on Hard Level Surface
Helicopter Roped Off
Signs Posted to Restrict Access



NOTE

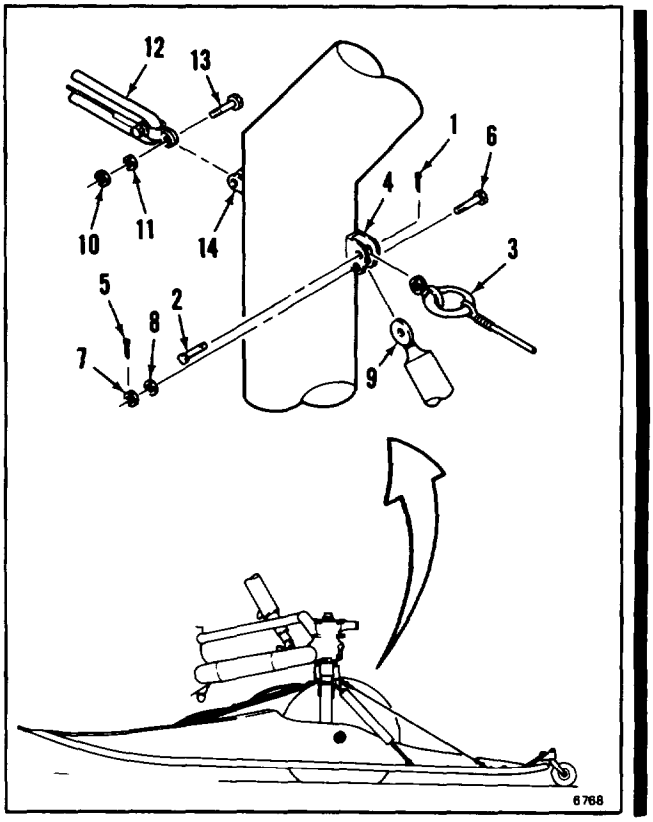
Remove skis by jacking or towing, Both methods are shown here,

TOWING METHOD

NOTE

Procedure for removing right and left aft skis is same, Removal of left ski is shown **here.**

1. Remove cotter pin (1), clevis pin (2), and check cable (3) from bracket (4).
2. Remove cotter pin (5) from bolt (6). Remove nut (7), washer (8), cylinder (9) and bolt (6) from bracket (4).
3. Remove nut (10), washer (11), shock-ring (12), and bolt (13) from eyebolt (14).



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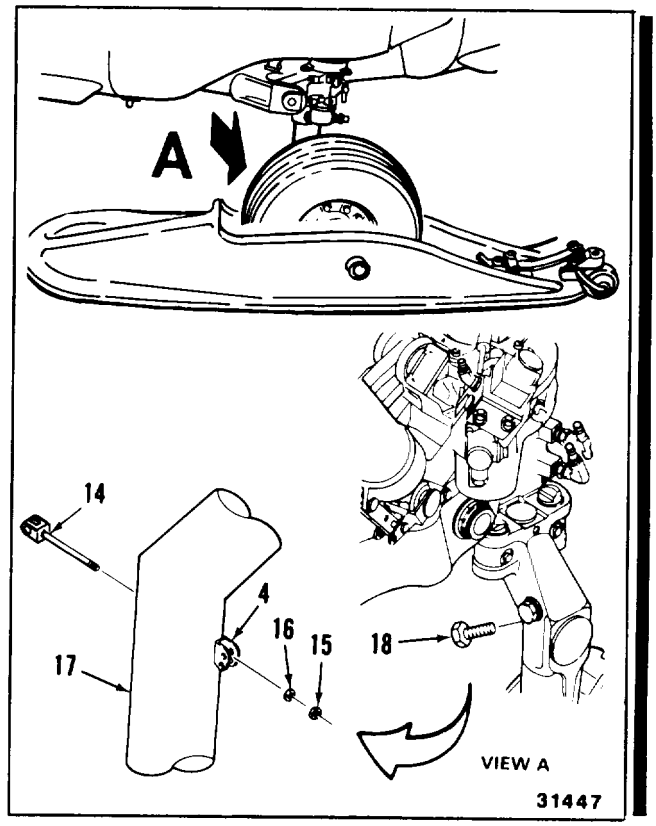
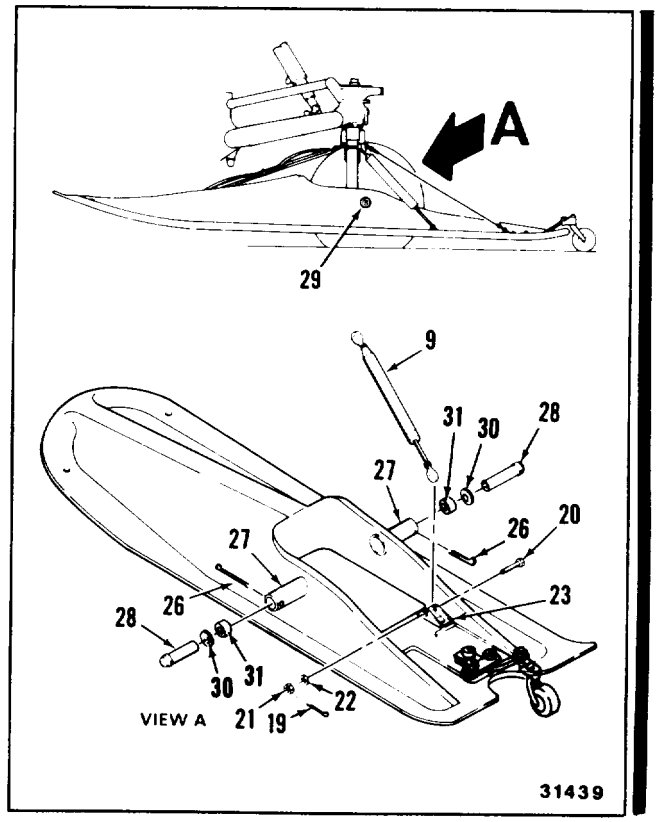
4. Remove nut **(15), washer (16), and eyebolt (14) from aft landing gear (17).**
5. **Remove bracket (4) from landing gear (17).**
6. **Install bolt (18) in landing gear (17).**



7. Remove cotter pins (19) from bolt (20).
8. Remove nut (21), washer (22), cylinder (9), and bolt (20) from bracket (23).
9. Remove cotter pin **(26) from bushings (27) and axles (28).**
10. **With the aid of helper,** unscrew axles (28) **from axle stubs (29).**
11. **With the aid of helper,** remove thrust washers (30) and bearings (31).



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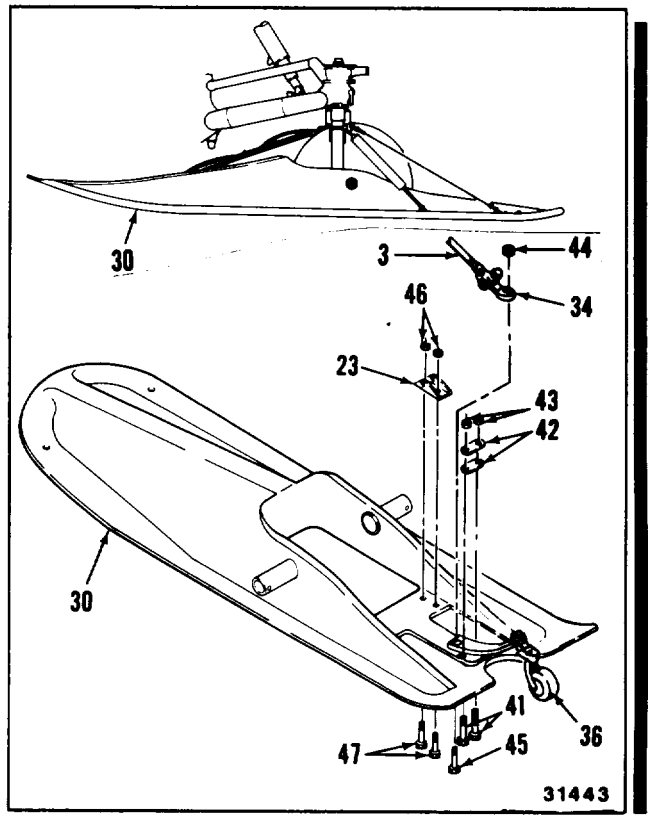
12. With aid of helper, lower aft ski (30) to ground,

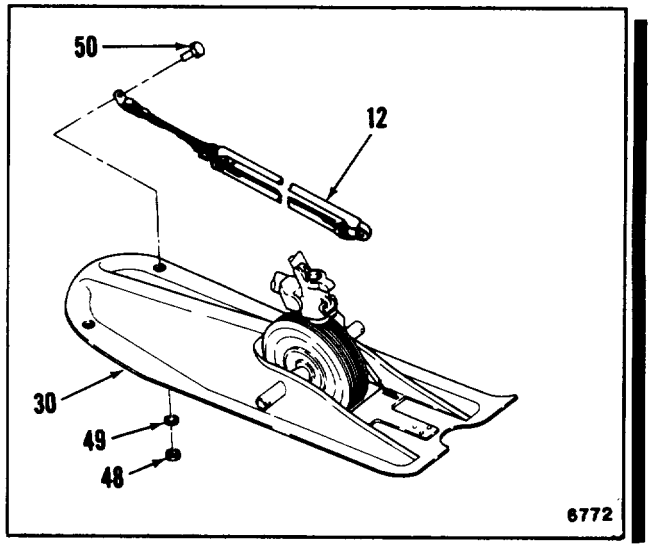
13. Remove bolts (41), tabs (42), and nuts (43) **from ski (30).**

14. Remove nut (44), tab (34), check cable (3), tail wheel assembly (36), and bolt (45) **from ski (30).**

15. Remove nuts (46), bracket (23), and bolts (47) from ski (30).



16. Remove nut (48); washer (49), safety cable and shock ring (12), and bolt (50) **from ski (30),**



NOTE

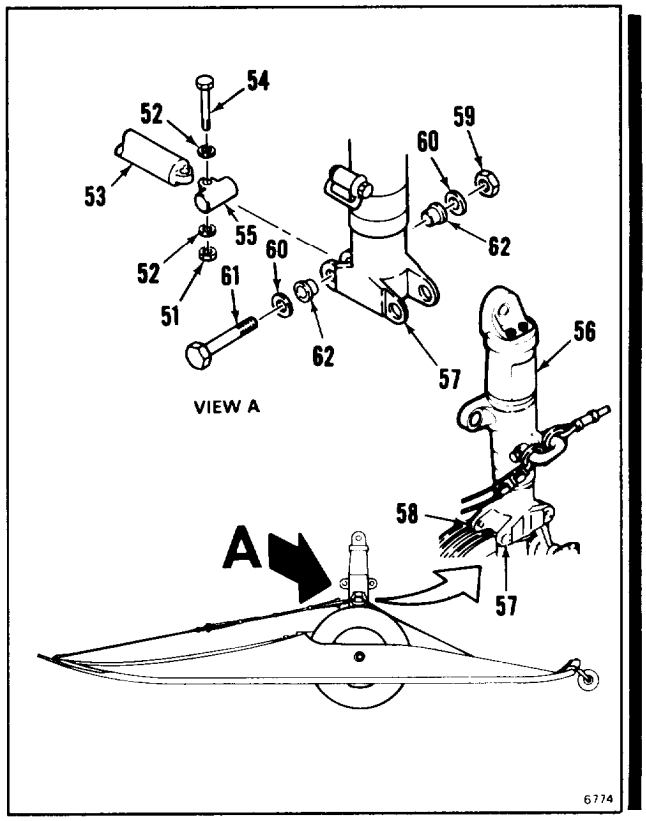
Procedure for removing right and left forward skis is same. Removal of left forward ski is shown here.

17. Remove nut (51), two washers (52), spring cylinder (53), and bolt (54)**from swivel fitting (55).**

18. Inflate forward landing gear (56) high enough for upper scissor point **(57)** to clear top of tires (58) (Task 1-71).

19. Remove nut (59), two washers (60), fitting (55), and bolt (61) from upper scissor point (57).

20. Remove two end fittings (62) from upper scissor point (57).



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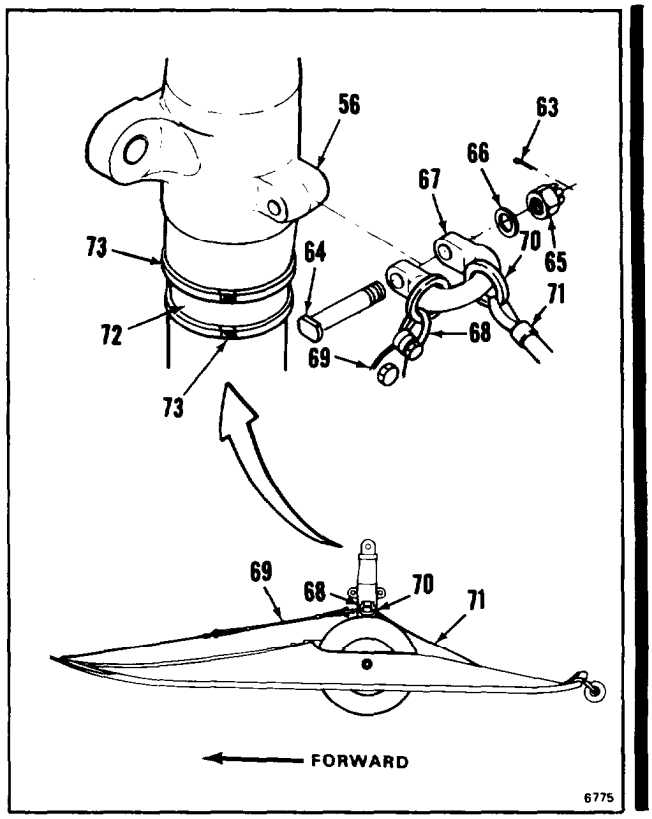
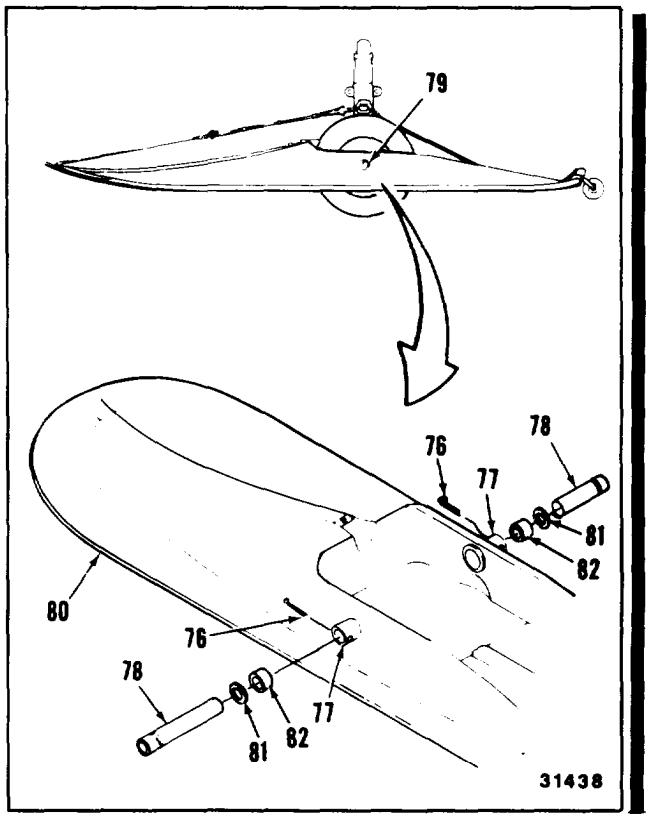
21. Remove cotter pin (63) from bolt (64). Remove nut (65), washer (66), towing shackle (67), and bolt (64) from landing gear (56).
22. Remove slip-ring (68) of safety cable (69), and ring (70) of check cable (71) **from towing shackle (67).**
23. Remove anti-chafing rubber pad (72) and straps (73) **from landing gear (56).**
24. **Position towing-shackle (67) on landing gear (56).**
25. Install bolt (64), washer (66), nut (65), and cotter pin (63).



26. Remove cotter pin (76) **from bushings (77) and ski axles (78).**
27. **With the aid of helper,** unscrew axles (78) from bushings (77) and landing gear axle stubs (79),
28. With the aid of helper, remove thrust washers (81) and bearings (82).
29. With the aid of helper, lower forward ski (80) to ground.



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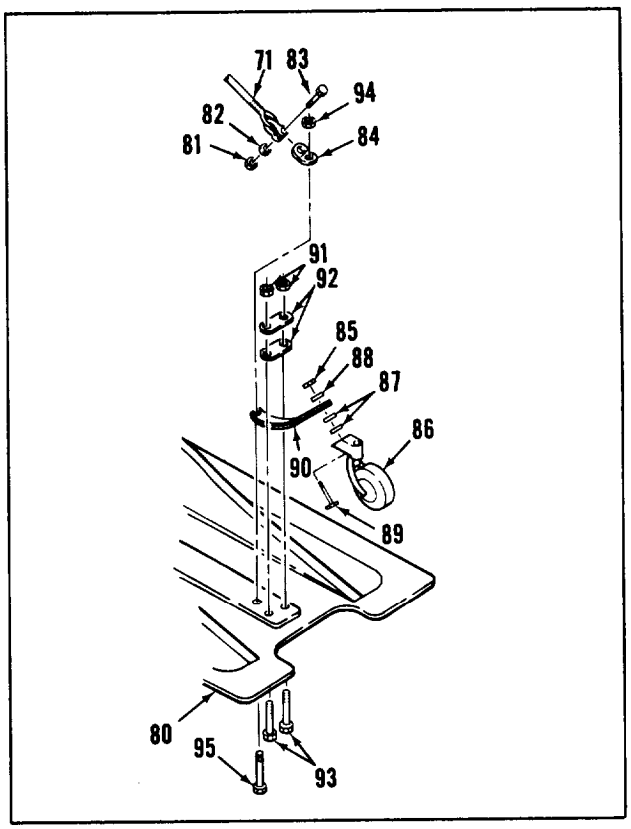
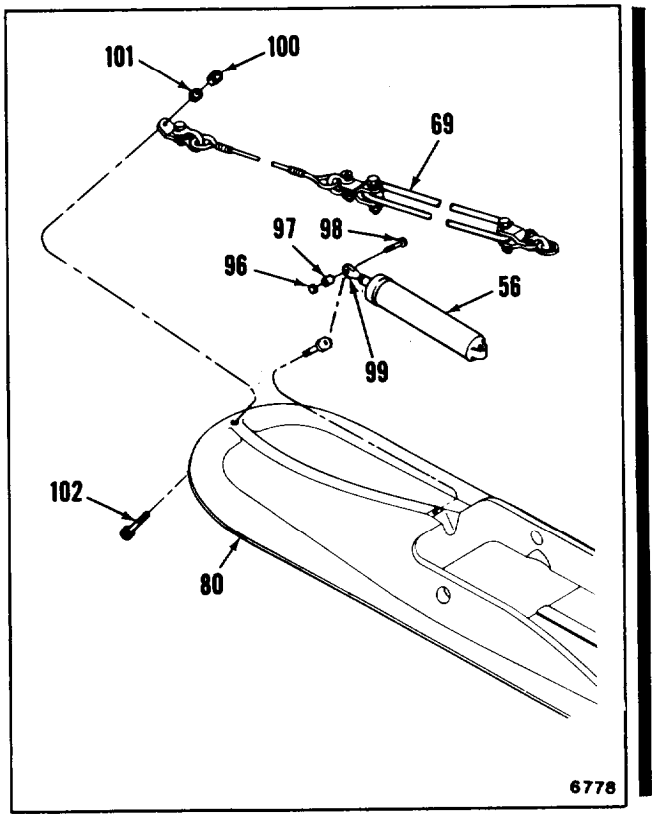
30. **Remove nut (81), washer (82), check cable (71), and bolt (83)** from tab (84).
31. **Remove nut (85), tail wheel (86), spacer (87), washer (88), and bolt (89)** from two leaf springs (90).
32. **Remove nuts (91), two tabs (92), and two bolts (93)** from ski (80).
33. **Remove nut (94), tab (84), leaf springs (90), and bolt (95)** from ski (80).



34. **Remove nut (96), bushing (97), spring cylinder (56), and bolt (98)** from eyebolt (99).
35. **Remove eyebolt (99)** from ski (80).
36. **Remove nut (100), washer (101), safety cable (69), and bolt (102)** from ski (80).



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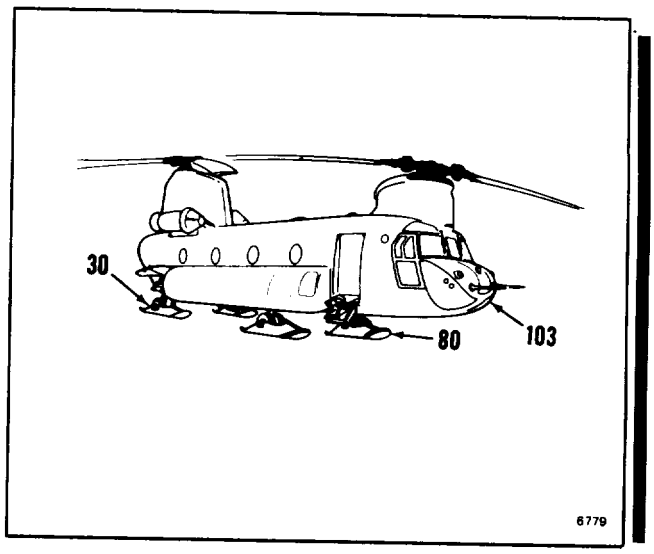
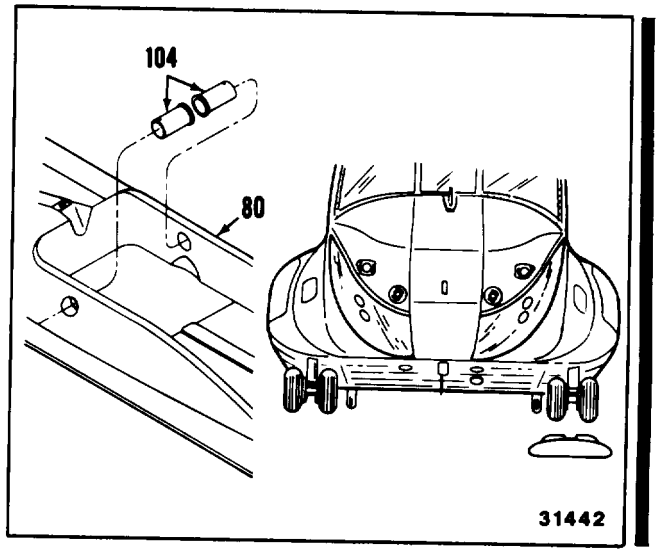
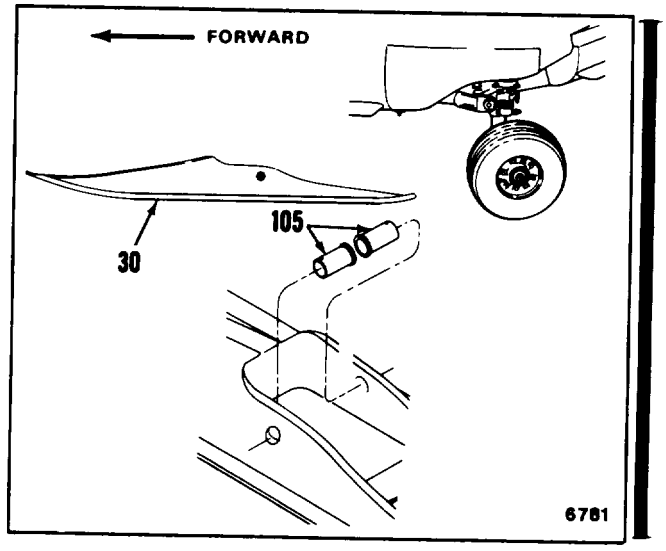
37. **Tow helicopter (103) backwards off skis (80 and 30).** Refer to alternate towing (Task 1-20).



38. **Remove two bushings (104)** from forward ski (80).
39. Remove ski (80).



40. **Remove two bushings (105)** from aft ski (30).
41. Remove ski (30).



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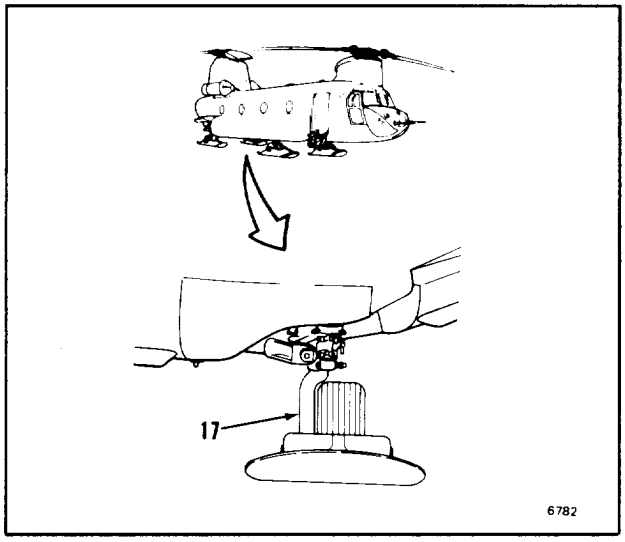
JACKING METHOD

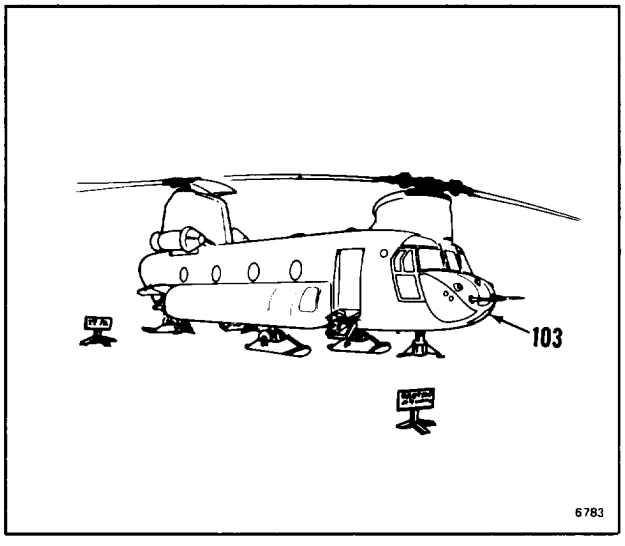
NOTE

Procedure for removing skis by jacking method is same for towing method in steps 1 thru 36.

42. Perform steps 1 thru 36.
43. **Turn aft landing gear (17) 90° outward.**



44. **Jack helicopter (103)** (Task 1-21).
45. Perform step 38.
46. **Lower helicopter (103).**



FOLLOW-ON MAINTENANCE:
Install retaining ring and sleeves (Task 3-12).
Remove signs and ropes restricting access.

END OF TASK

INITIAL SETUP

Applicable Configurations:
All

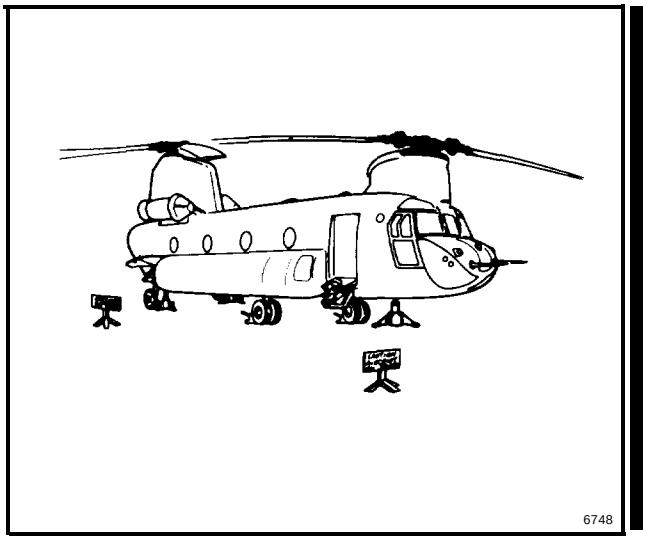
Tools:
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692

Materials:
Lubriplate (E240)

Personnel Required:
Medium Helicopter Repairer (3)

References:
Task 1-20
Task 1-21
Task 1-71

Equipment Condition:
Battery Disconnected (Task 1-39)
Helicopter on Hard Level Surface
Helicopter Roped Off
Signs Posted to Restrict Access
Lockrings and Sleeves on Landing Gear Axles Removed (Task 3-7)


6748

NOTE

- Install skis by jacking or by towing helicopter. Both methods are shown here.
- If towing method is used, go to step 34.

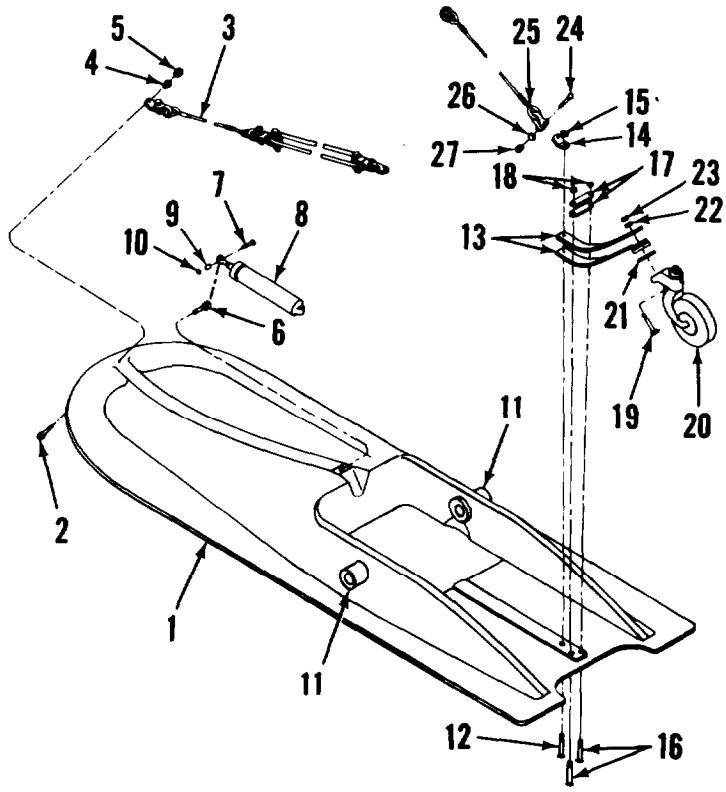
JACKING METHOD

NOTE

Procedure for preparing right and left forward and aft skis for installation is same. Preparation of left forward and left aft ski is shown here.

GO TO NEXT PAGE

1. Prepare forward ski (1) for installation by doing the following:
   a. Install bolt (2), safety cable (3), washer (4), and nut (5) on ski (1).
   b. Install eyebolt (6) on ski (1).
   c. Install bolt (7), spring cylinder (8), bushing (9), and nut (10) in eyebolt (6).
   d. Check that two bushings (11) in ski (1) are clean and free of obstructions.
   e. Install bolt (12), two leaf springs (13), tab (14), and nut (15) on ski (1).
   f. Install two bolts (16), tabs (17), and nuts (18) on ski (1).
   g. Install bolt (19), tail wheel (20), spacer (21), washer (22), and nut (23) on springs (13).
   h. Install bolt (24), check cable (25), washer (26), and nut (27) on tab (14).



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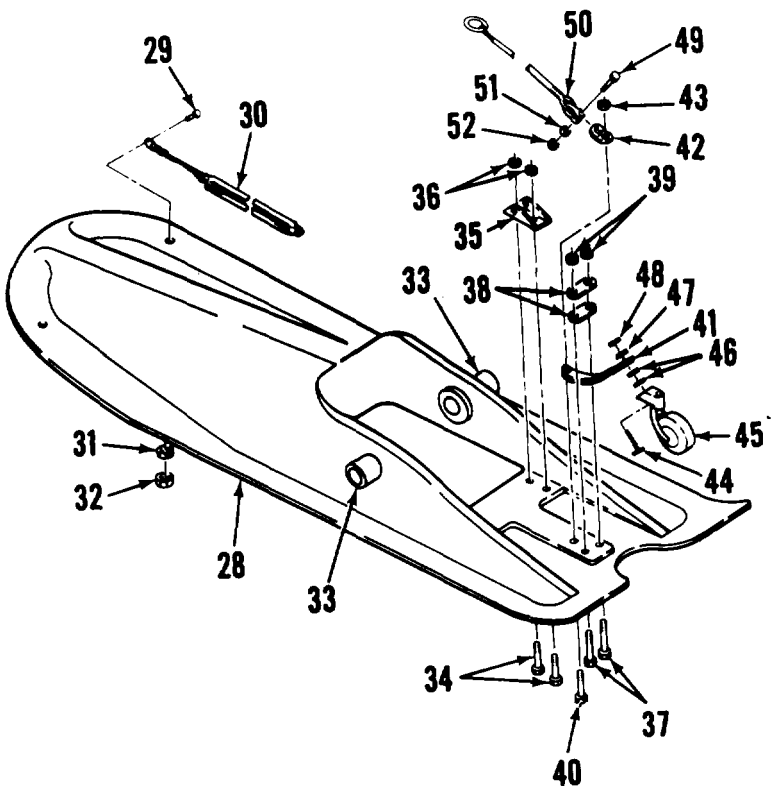
2. Prepare aft ski (28) for installation by doing the following:
   a. Install bolt (29), safety cable and shock ring (30), washer (31), and nut (32) on ski (28).
   b. Check that bushings (33) are clean and free of obstructions.

NOTE

For installation of right ski, cylinder bracket is installed on inboard side of ski.

   c. Install bolts (34), cylinder bracket (35), and nuts (36) on ski (28).
   d. Install bolts (37), tabs (38), and nuts (39) on ski (28).
   e. Install bolt (40), leaf springs (41), tab (42), and nut (43) on ski (28).
   f. Install bolt (44), tail wheel (45), spacers (46), washer (47), and nut (48) on leaf springs (41).
   g. Install bolt (49), check cable (50), washer (51), and nut (52) on tab (43).



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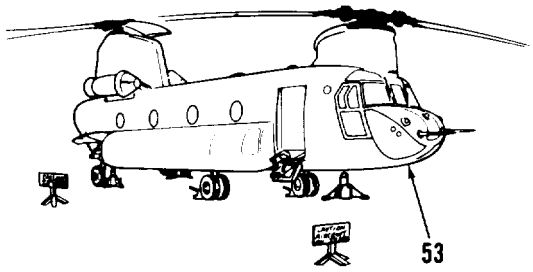
3. **Jack entire helicopter (53)** (Task 1-21).



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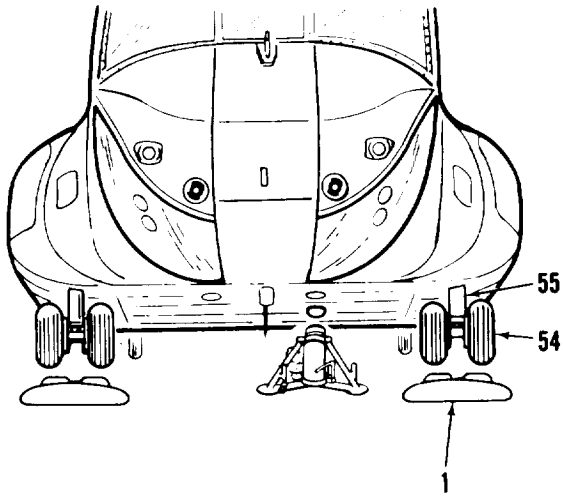
NOTE

Procedure for installing skis on right and left forward landing gears is same. Left forward landing gear installation is shown here.

4. Slide ski (1) into position under tires (54) on left forward landing gear (55).



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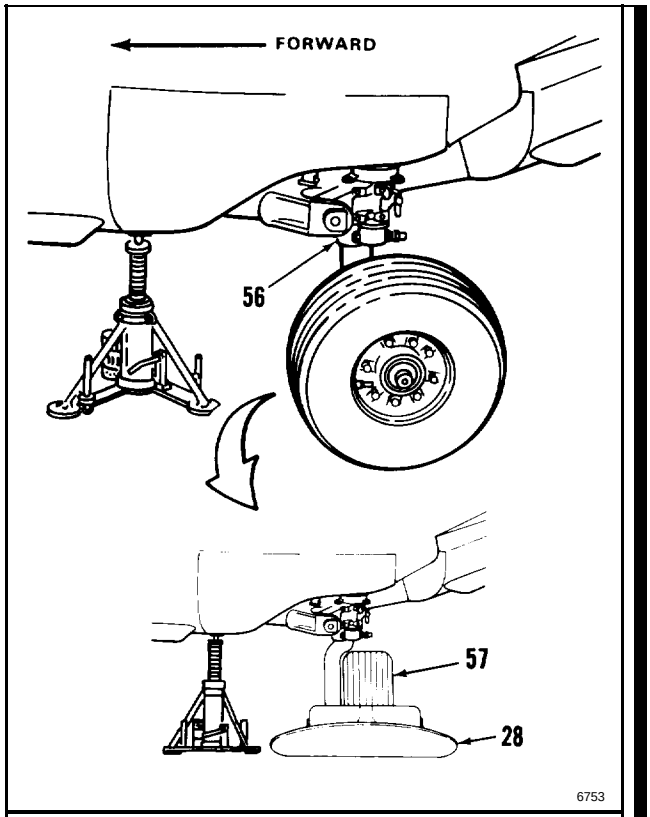
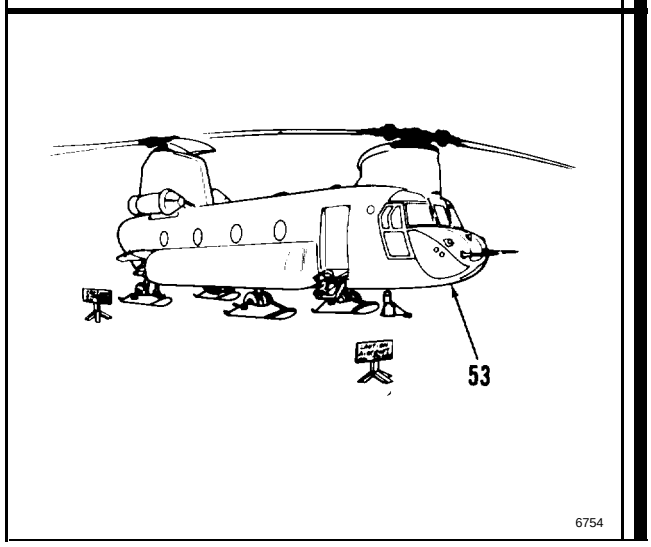
NOTE

Procedure for installing skis on right and left aft landing gear is same. Left aft landing gear installation is shown here.

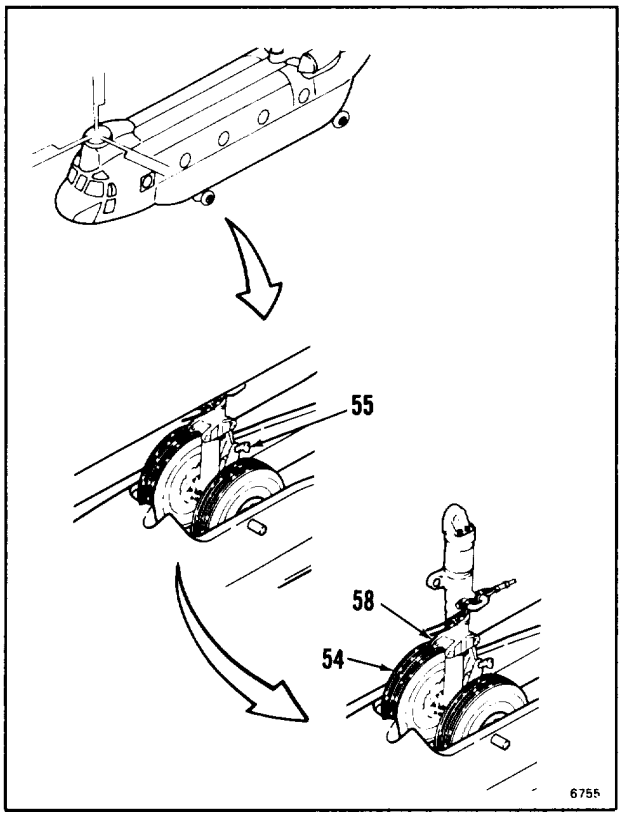
5. **Turn left aft lending gear (56) 90° outboard.**
6. Slide ski (28) into position under tires (57).



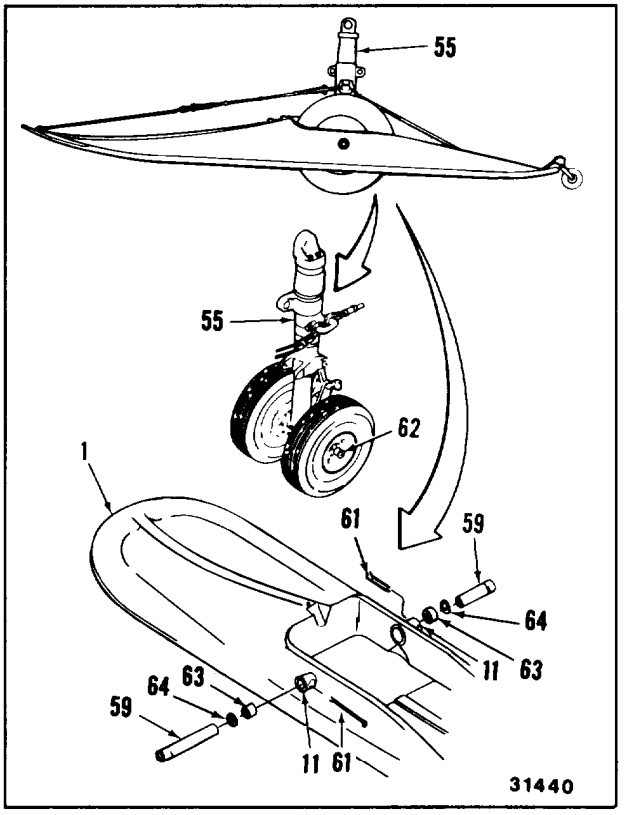
7. **Lower helicopter (53)** (Task 1-21).



8. **Inflate forward landing gear (55)** high enough for upper scissor point (58) to clear top of tires (54).



9. Apply a thin film of Iubriplate (E240) to axles (59) of forward ski (1).
10. With the aid of helper, **lift ski (1) into position on forward landing gear (55).**
11. **Install bearings (63), thrust washers (64), and axles (59) in bushings (11).**
12. **Screw axles (59) into bushings (11) and axle stubs (60) of forward landing gear (55) as far as possible.**
13. Unscrew axles (59) enough to align cotter pin holes in axle with cotter pin holes in bushings (11).
14. **Install cotter pin (61) in bushings (11) and axles (59).**



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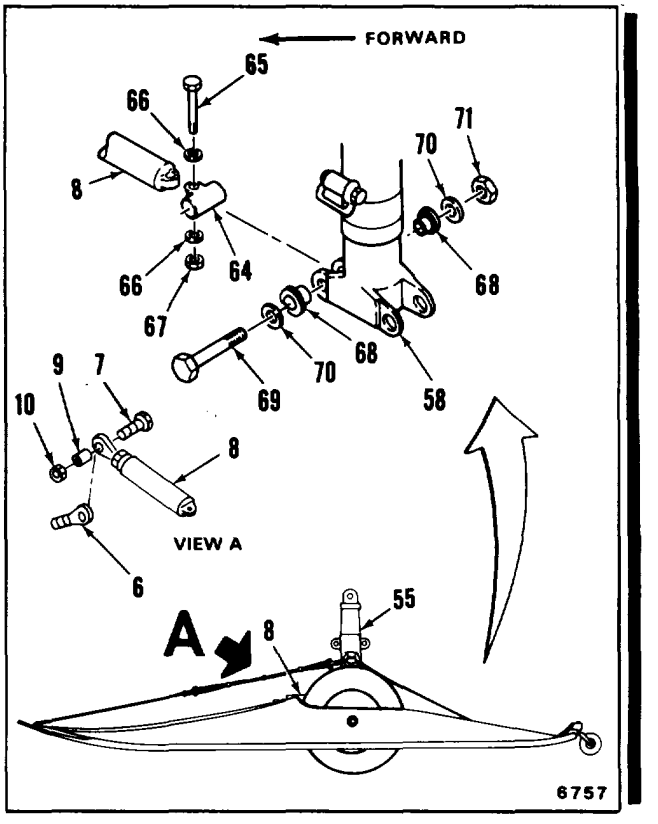
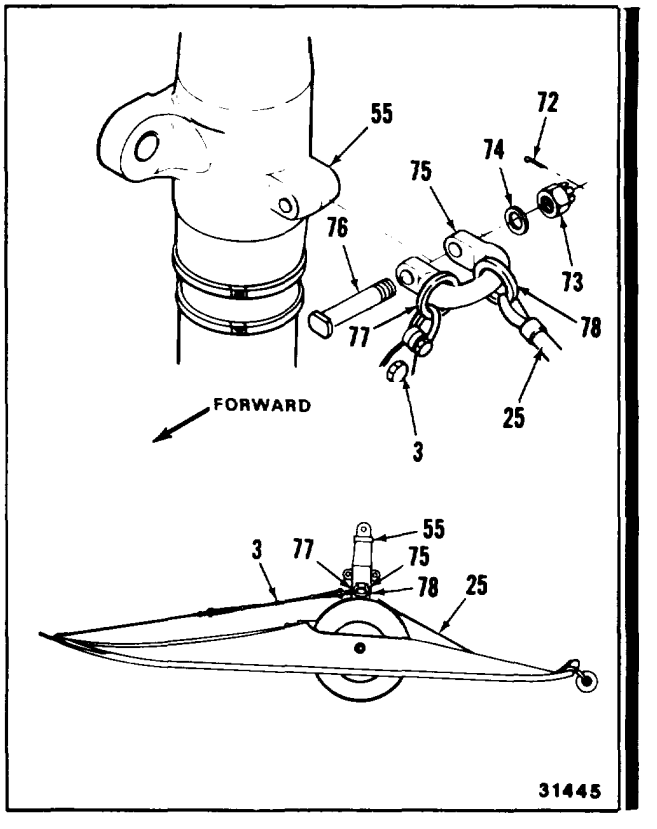
15. Position spring cylinder (8) on swivel fitting (64). Install bolt (65), two washers (66), and nut (67) on swivel fitting.
16. **Install two end fittings (68)** on landing gear (55) at upper scissor point (58).
17. Spring tension on cylinder (8) may be too strong to install cylinder and fitting (68) on landing gear (55). If so, **remove lower end of cylinder (8), bolt (7), bushing (9), and nut (10)** from eyebolt (6).
18. Position swivel fitting (64) on forward landing gear (55) at upper scissor point (58). **Install bolt (69), two washers (70), and nut (71).**



19. Remove cotter pin (72), nut (73), washer (74), towing shackle (75), and bolt (76) from forward landing gear (55).
20. **Slip ring (77) of safety cable (3), and ring (78) of check cable (25) on shackle (75).**
21. **Install shackle (75), bolt (76), washer (74), and nut (73) on landing gear (55). Install cotter pin (72) in nut (73).**



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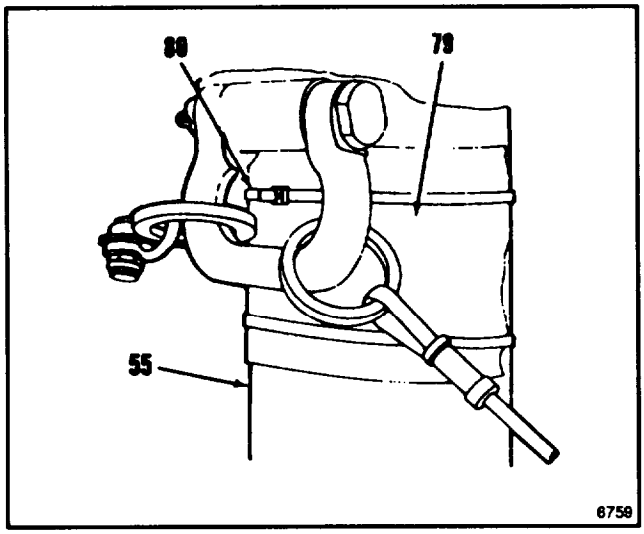
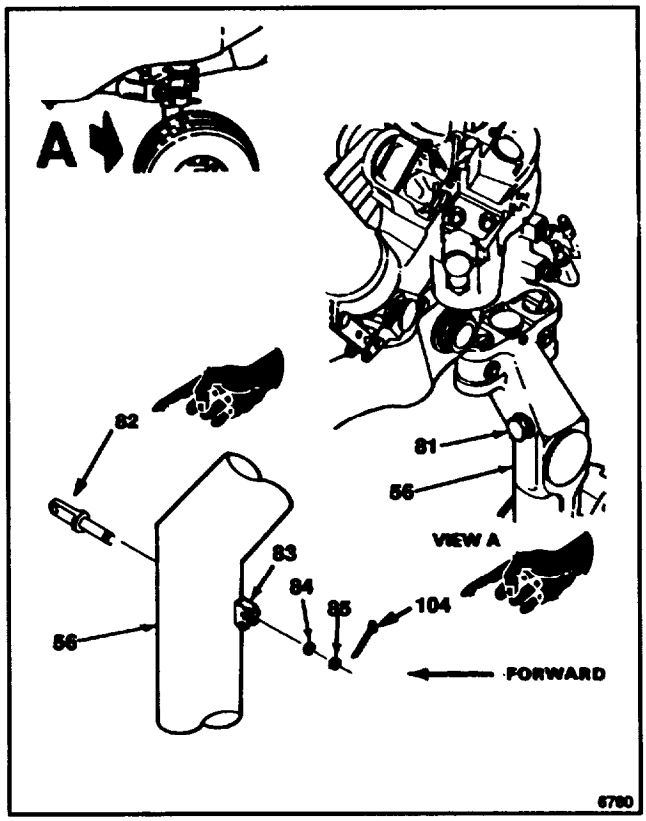
16-86 SKI INSTALLATION (Continued) 16-86

22. Install anti-chafing rubber pad (79) and straps (80) on landing gear (55).
23. If lower end of spring cylinder was removed in step 16.1, **reinstall cylinder** (step 1.c.).



24. Remove boll (81) from aft landing gear (56).
25. **Install eyebolt (82), spring cylinder mounting bracket (83), washer (84), nut (85), and cotter pin (104)** on landing gear (56).



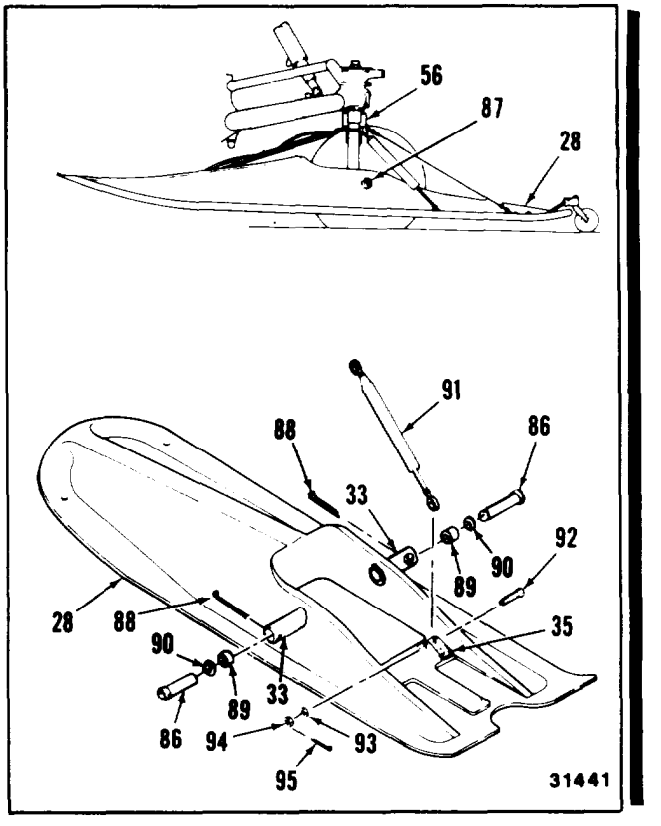
GO TO NEXT PAGE

26. Apply thin film of lubriplate (E240) to axles (86) of aft ski (28).
27. With aid of helper, **lift ski (28) into position on aft landing gear (50).**
28. **Install bearings (89), thrust washers (90). and axles (88) in bushings (33).**
29. **Screw axles (88) into bushings (33) and axle stubs (87) of aft landing gear (58) as far as possible.**
30. **Unscrew axles (88) enough to align cotter pin holes in axle with cotter pin holes in bushings (33).**
31. **Install cotter pin (88) in bushings (33) and axles (88).**

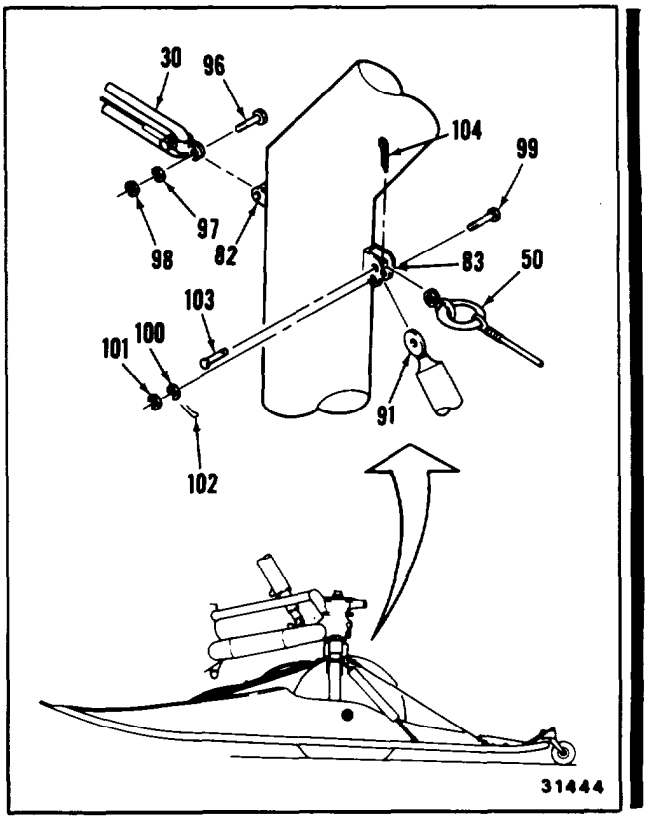
NOTE

Lower spring mounting bracket must be installed on inboard side of ski.

32. **Install lower end of cylinder (91), bolt (92). washer (93), and nut (94)** on bracket (35). Install cotter pin (95) in bolt (92).



33. **Install safety cable and shock ring (30), bolt (90). washer (97), and nut (98) on eyebolt (82).** Stretch the shock ring if necessary.
34. **Install top of cylinder (91), bolt (99), washer (100), and nut (101)** on bracket (83). **Install cotter pln (102)** in bolt (99).
35. **Install check cable (50), clevis bolt (103), and cotter pin (104)** on inboard lug of bracket (83).

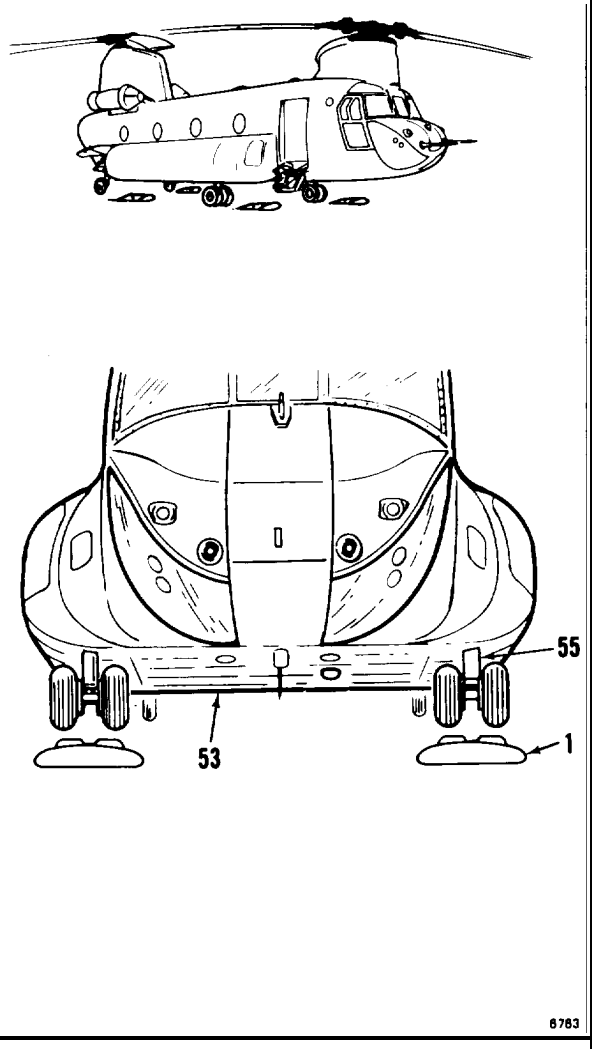


TOWING METHOD

NOTE

Procedure for installing right and left forward skis is same. Installation of left front ski is shown here.

36. Position forward ski (1) under helicopter (53), in front of forward landing gear (55).



NOTE

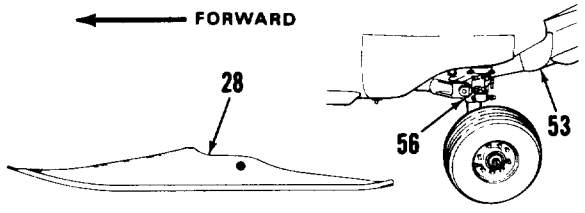
Procedure for installing right and left aft skis is same, Installation of left aft ski is shown here.

37. Position aft ski (28) under helicopter (53) in front of aft landing gear (56).

NOTE

Ensure aft swivel wheels on forward and aft skis have been removed.

38. **Tow helicopter (53) in position on skis (1 and 28).** Refer to alternate towing (Task 1-20).



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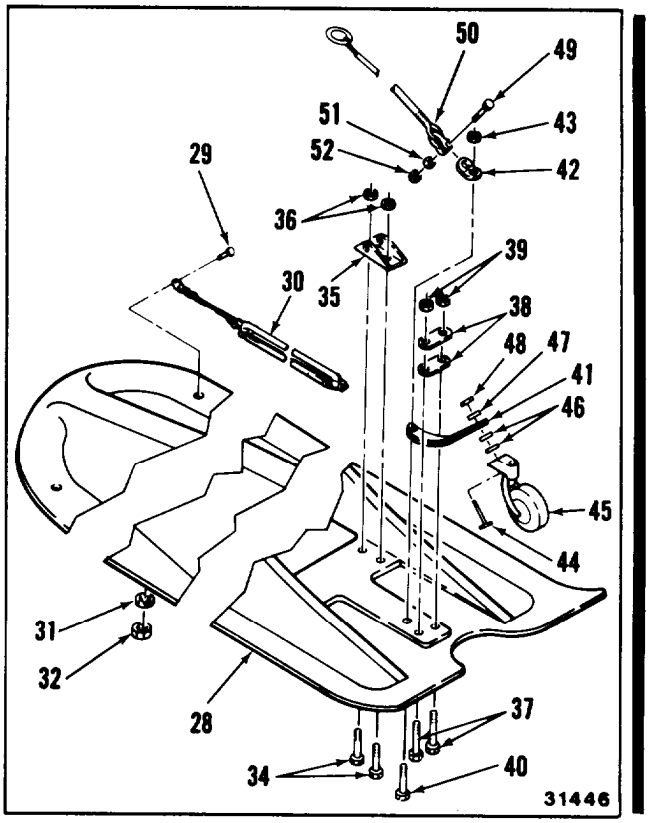
39. Prepare forward ski (1) for installation by doing the following:
    a. **Install bolt (2), safety cable (3), washer (4), and nut (5)** on ski (1).
    b. **Install eyebolt (6) on ski (1).**
    c. **Install bolt (7), spring cylinder (8), bushing (9), and nut (10)** on eyebolt (6).
    d. **Install bolt (12), two leaf springs (13), tab (14), and nut (15)** on ski (1).
    e. **Install two bolts (16), two tabs (17), and nuts (18)** on ski (1).
    f. **Install bolt (19), tail wheel (20), spacer (21), washer (22), and nut (23)** on springs (13).
    g. **Install bolt (24), check cable (25), washer (26), and nut (27)** on tab (14).

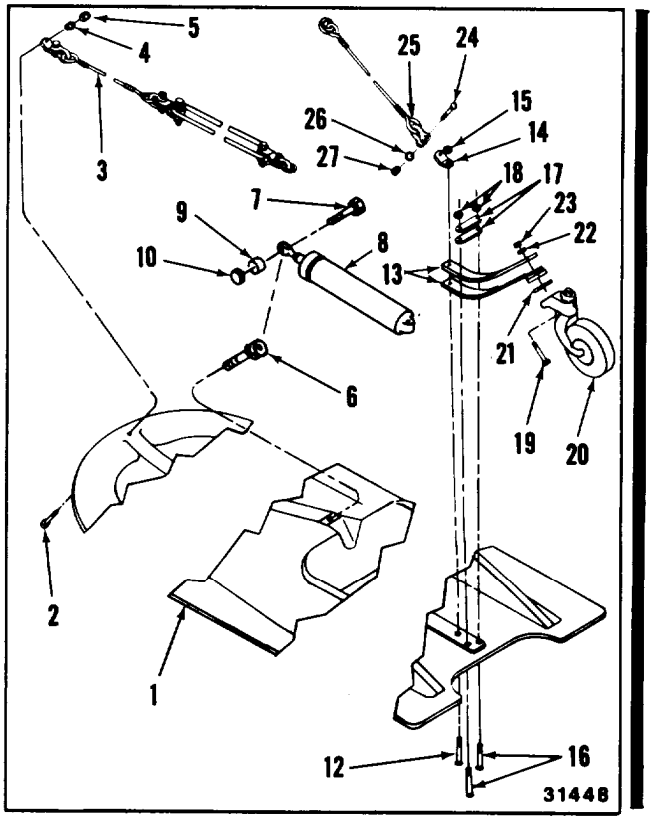


40. Prepare aft ski (28) for installation by doing the following:
    a. **Install bolt (29), safety cable and shock ring (30), washer (31), and nut (32)** on ski (28).
    b. **Install two bolts (34), cylinder bracket (35), and nuts (36)** on ski (28).
    c. **Install two bolts (37), two tabs (38), and two nuts (39)** on ski (28).
    d. **Install bolt (40), two leaf springs (41), tab (42), and nut (43)** on ski (28).
    e. **Install bolt (44), tail wheel (45), two spacers (46), washer (47), and nut (48),** on leaf springs (41).
    f. **Install bolt (49), check cable (50), washer (51), and nut (52)** on tab (43),

NOTE

Complete installation by performing steps 8 thru 35.

FOLLOW-ON MAINTENANCE:
None



END OF TASK

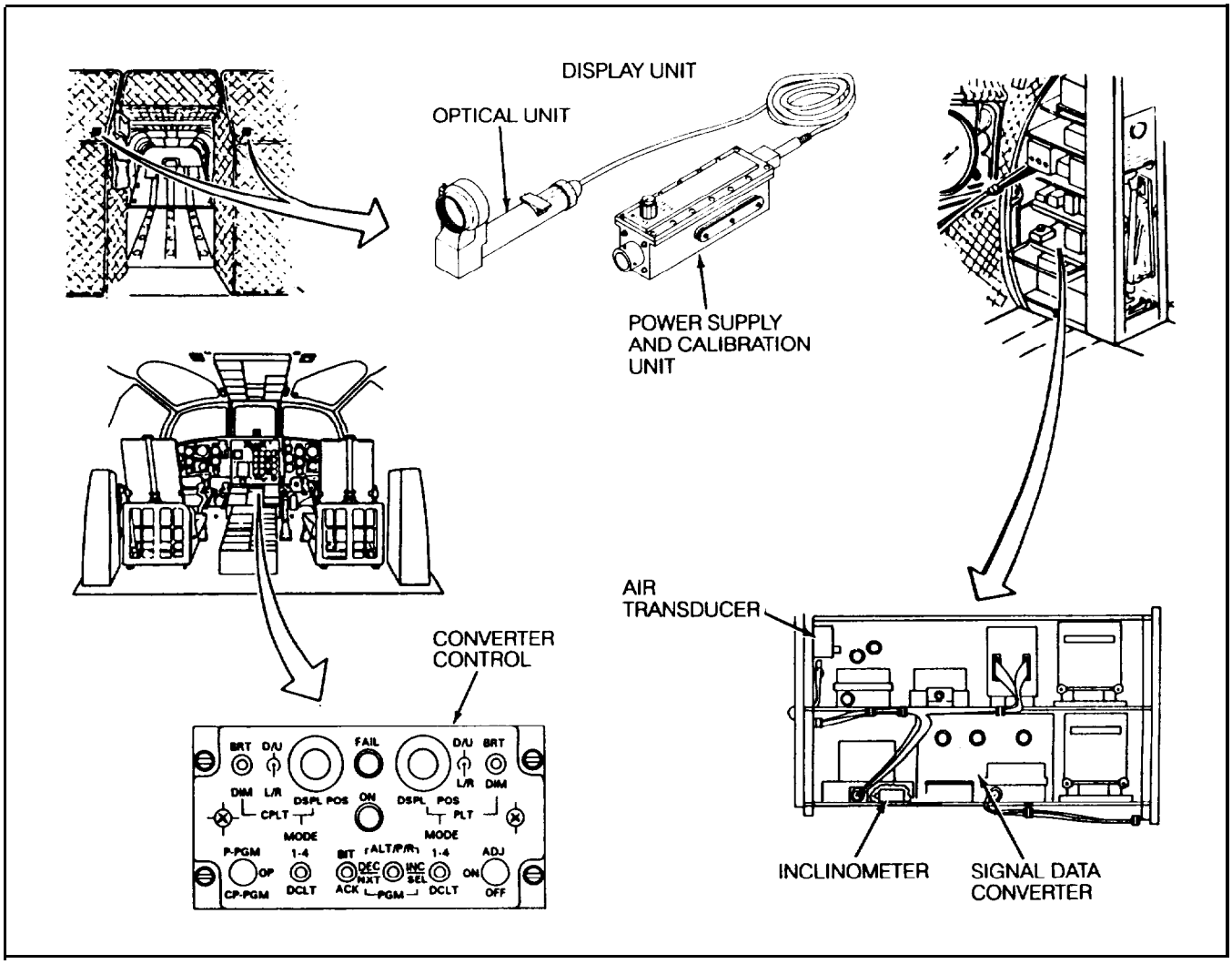
SECTION XIII

HEAD UP DISPLAY

DESCRIPTION AND OPERATION

16-87 HEAD UP DISPLAY 16-87

The head up display (HUD) consists of signal data converter (SDC), the converter control (CCU), air data transducer, inclinometer and the display unit (DU), consisting of the optical unit (OU) and power supply calibration unit (PSCU). The HUD display allows the pilots using the aviator night vision imaging system (ANVIS) during night flight operations to receive flight data about the aircraft through symbology without viewing the instrument panel. The OU is attached to the ANVIS. The HUD has two programming modes and one operational mode which allow the pilot and copilot to independently select the symbology for their respective display modes from a master set of symbols in the signal data converter. Power to operate the HUD system is taken from the 26VAC essential bus and the 28VDC bus through circuit breakers located on the copilots's circuit breaker panel, labeled HUD REF and HUD SYS. Pilot and copilot can independently select from four normal Symbology modes and four declutter modes that can be pre-programmed. Declutter mode has four vital symbols that will always be displayed: Air speed, Altitude (MSL), Attitude (pitch and roll), and Engine Torque(s). An adjust mode, during operation, is used to calibrate the barometric altitude, pitch and roll. A switch on the collective stick allows for brightness control and selection of one of four displays. The system self test is divided into power-up or operator initialized built-in-test (BIT) and in-flight BIT. A failure of the SDC, pilot's DU, or copilot's DU will illuminate the CCU FAIL light and display a FAIL message on display unit.



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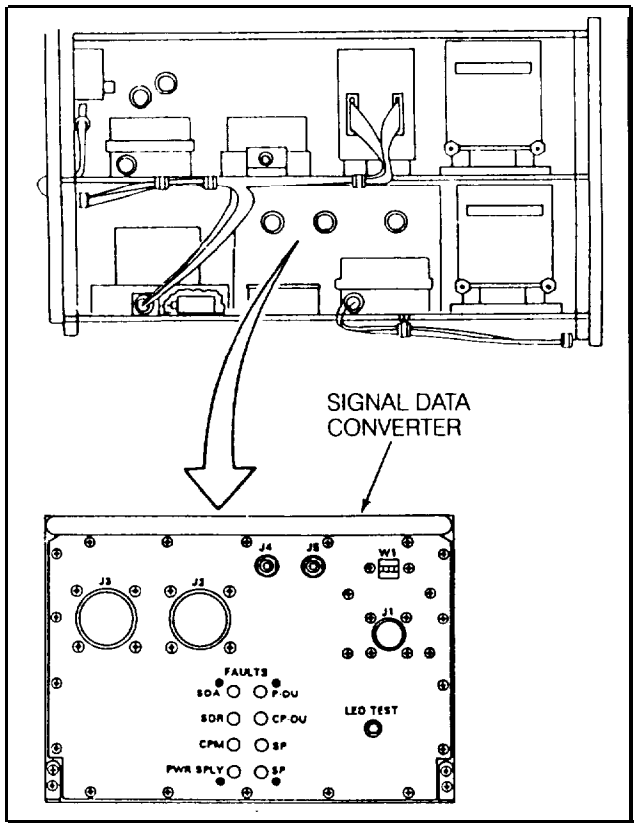
16-87 HEAD UP DISPLAY (Continued)

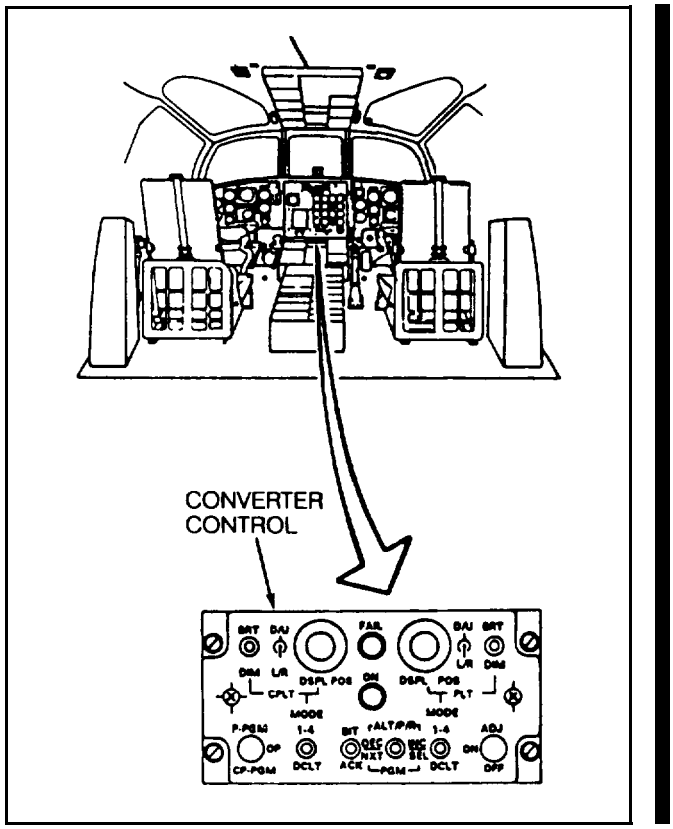
Signal Data Converter (SDC)

The SDC converts avionics data into display files which are prepared for dual display units. These files are processed by a digital processor generating real time signals which is the symbology displayed by the OU.



Converter Control Unit (CCU)

The CCU enables the pilot or copilot to operate and control the HUD. It consists of all the controls necessary to independently select the displays prior to and during flight,' to control the symbology position and intensity, to provide symbology selection at the AVUM level and allows initiation of the built-in test (BIT), system FAIL and ON indicators, and independent controls for the pilot and copilot to select the symbology to be displayed.



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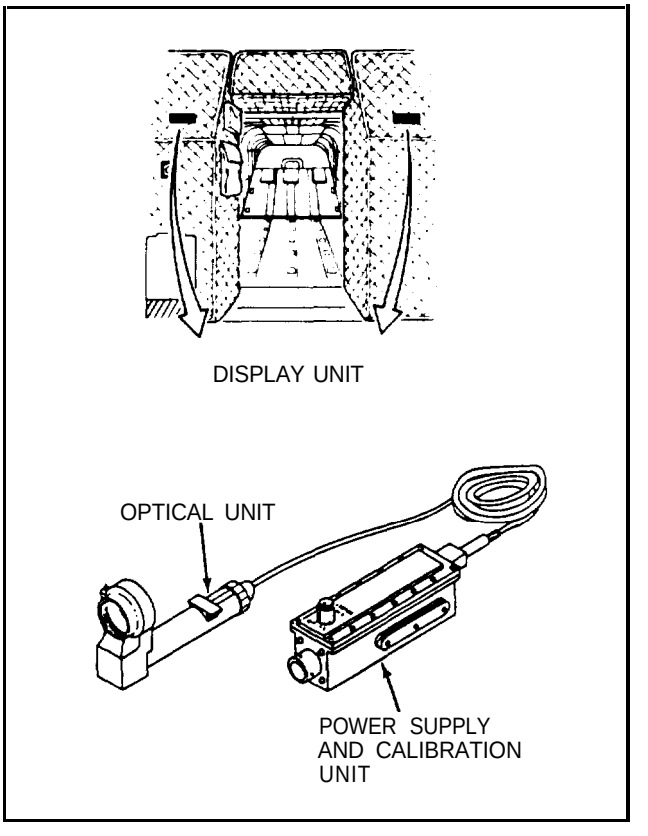
16-87 HEAD UP DISPLAY (Continued)

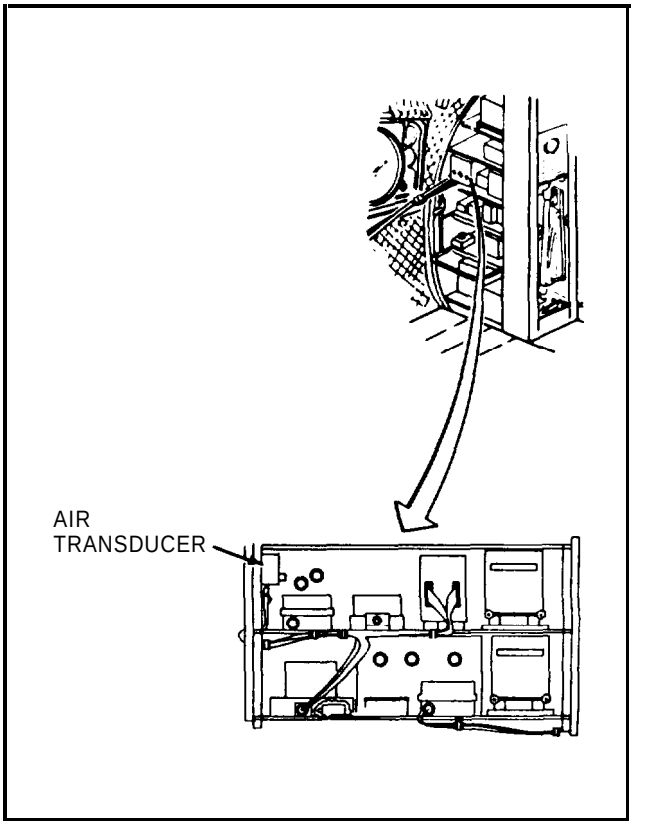
Display Unit (DU)

The DU is the output interface between system and operator. The DU superimposes aircraft information and flight data onto the ANVIS image. The DU, consisting of the optical unit (OU) and power supply and calibration unit (PSCU), is replaced as a complete unit. A L/R eye selector switch on the PSCU changes the scan direction for left or right eye viewing. All symbol data for the DU is generated in the SDC. Display intensity is preset to low each time the system is powered up. Connector P1 is part of the aircraft wiring and mates to J1, on the end of the PSCU. J1 is a quick-release connector for quick egress from the aircraft by the operator. The DU is calibrated during production and requires no further calibration. A focus ring on the OU is used to focus the display.



Air Data Transducer

The difference between dynamic pressure and static pressure as measured by the air data transducer provides both airspeed and barometic altitude output signals to the HUD signal data converter (SDC). These signals are processed by the SDC and applied to the HUD display unit (pilot's/copilot's). Power to operate the air data transducer is supplied by the HUD SDC.



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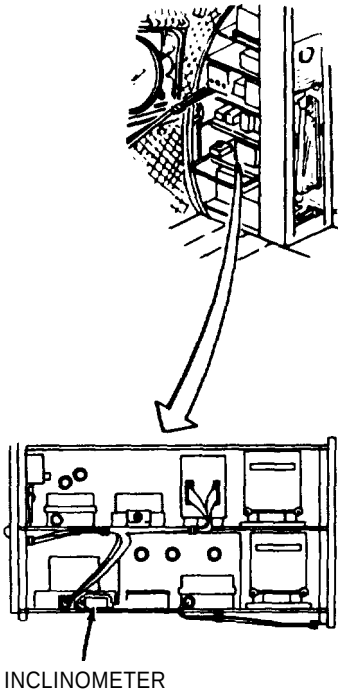
16-87 HEAD UP DISPLAY (Continued)

Inclinometer Sensor

The inclinometer sensor provides an electrical input to the head up display (HUD) simulating the pilot's/copilot's slip indication (centered ball) on their respective turn and slip indicators. The electrical signal is processed by the HUD signal data converter (SDC) and applied to the pilot's/copilot's HUD display unit (DU) as the trim symbology (centered ball ± 2 balls). Power to operate the inclimeter is supplied by the HUD SDC.



END OF TASK

SECTION XIV

HEAD UP DISPLAY

16-88 REMOVE SIGNAL DATA CONVERTER

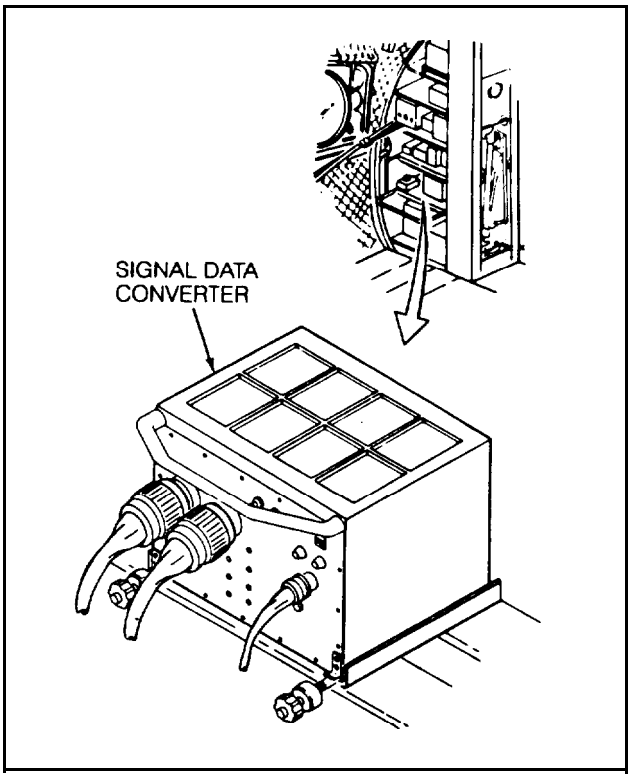
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692

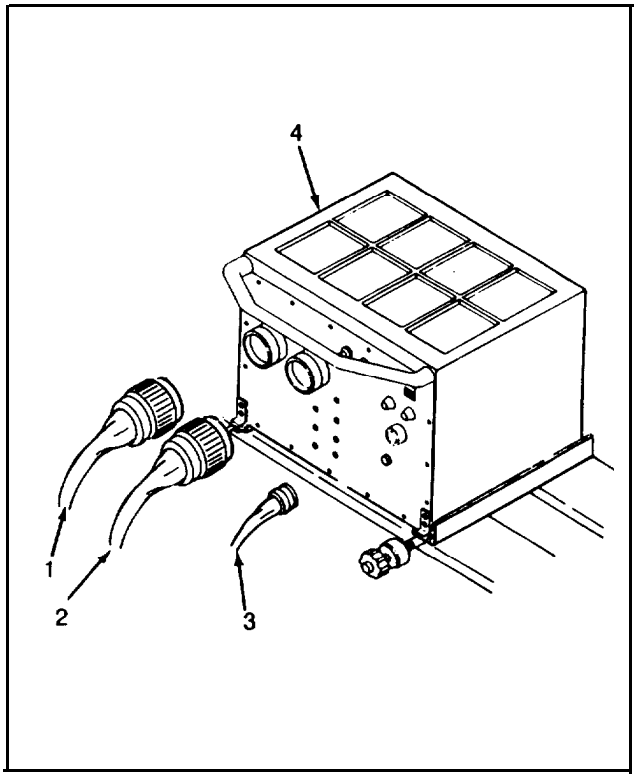
Materials:
Paper Tags (E264)

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Electronic Compartment Acoustic Blanket Removed (Task 2-107)
Vertical Gyro Removed (TM 11-1520-240-20)
Battery Unit Removed (TM 11-1520-240-20)



1. Tag (E264) and disconnect three connectors (1, 2 and 3) from signal data converter (4).



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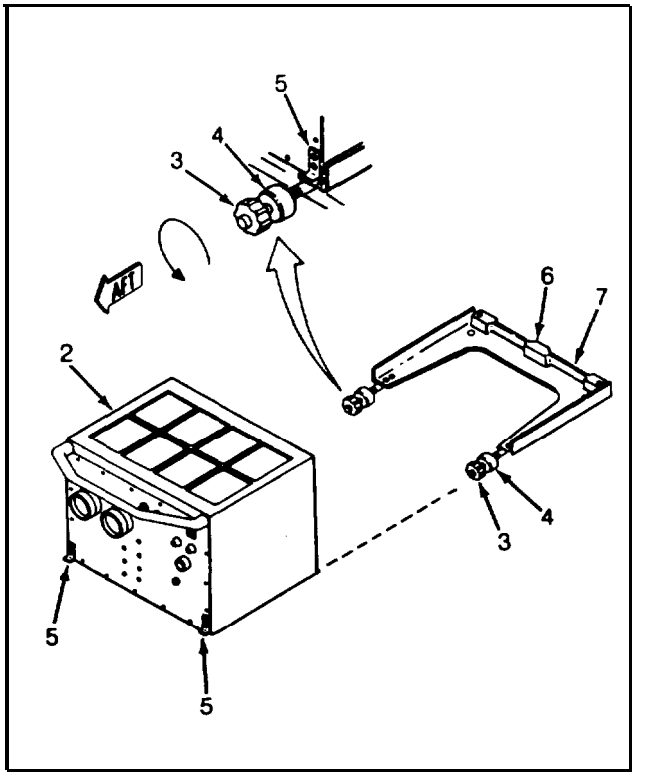
16-88 REMOVE SIGNAL DATA CONVERTER (Continued) 16-88

2. Turn two knobs (3) counterclockwise until collars (4) are loose. Slide collars (4) aft from holddown hooks (5).

3. Pull signal data converter (2) aft from mount holddown (6). Lift and remove signal data converter (2) from mounting base (7).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

16-89 INSTALL SIGNAL DATA CONVERTER

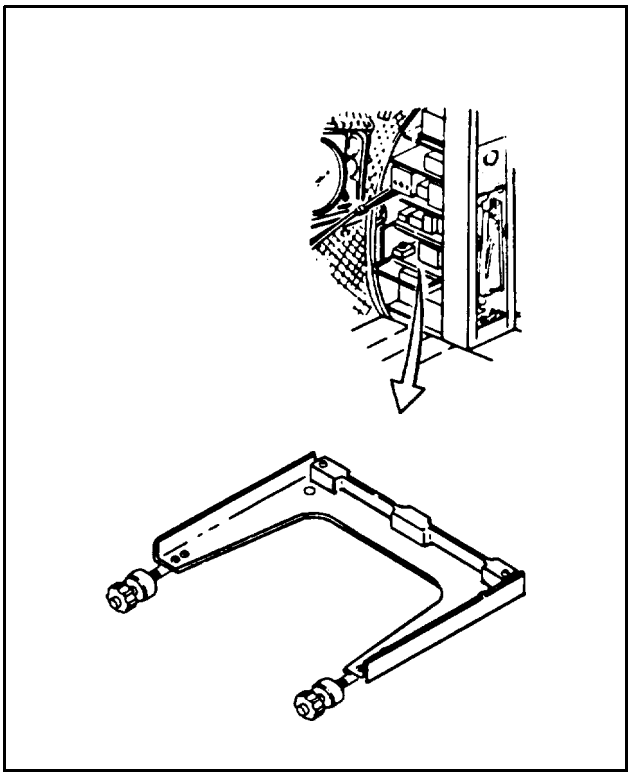
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692

Materials:
None

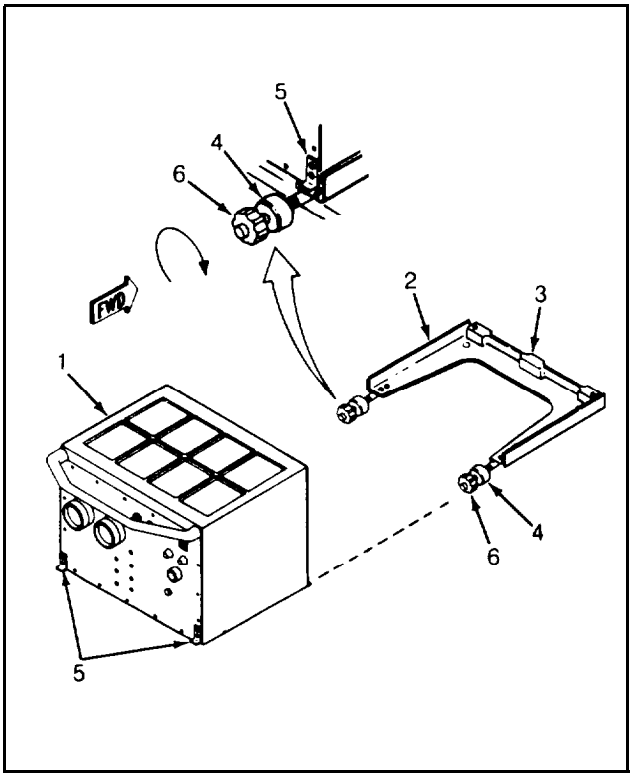
Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P
TM 11-5855-300-23&P



1. Position signal data converter (1) on mounting base (2). Push signal data converter forward until mounting base tab (31 fits into indentation at bottom of signal data converter.

2. Position two collars (4) on holddowns (5). Turn two knobs (6) clockwise until tight.



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16-89 INSTALL SIGNAL DATA CONVERTER (Continued) 16-89

3. Connect connector (7) to receptacle (8).

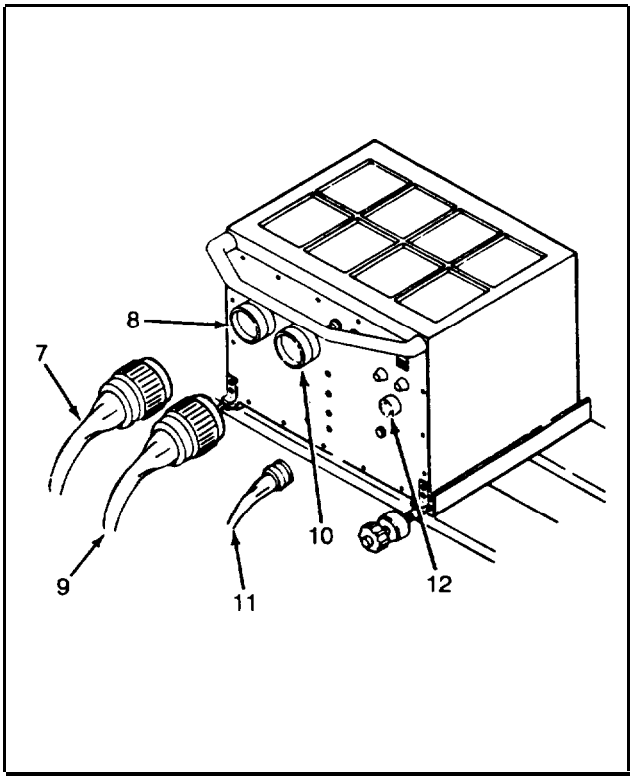
4. Connect connector (9) to receptacle (10).

5. Connect connector (11) to receptacle (12).

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of signal data converter (SDC) (TM 55-1520-240-T).
Install Vertical Gyro (TM 11-1520-240-20).
Install Battery Unit (TM 11-1520-240-20).
Install Electronic Compartment Acoustic Blanket (Task 2-107).



END OF TASK

16-90 REMOVE CONVERTER CONTROL UNIT

INITIAL SETUP

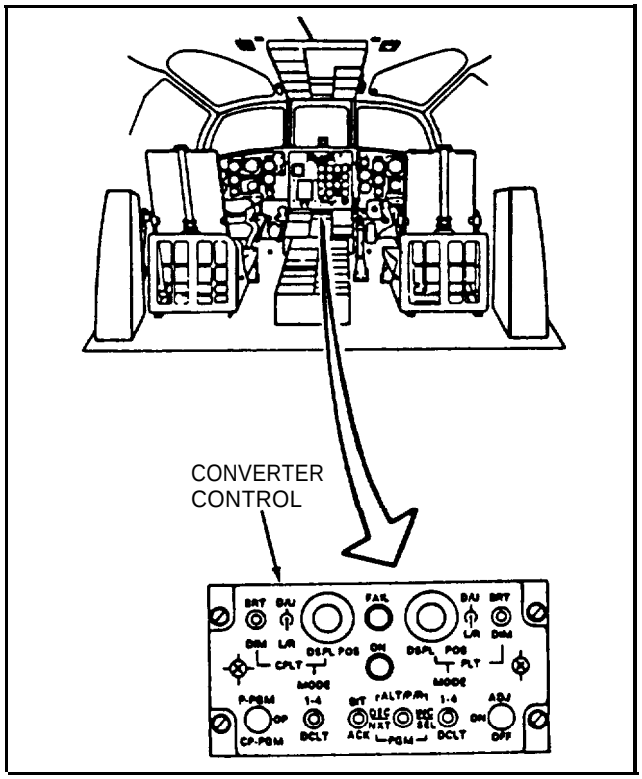
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician

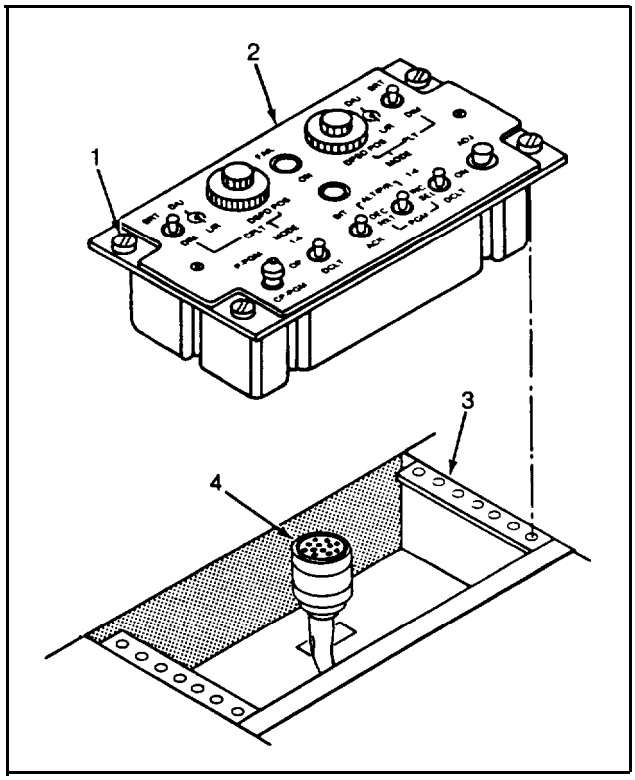
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. Loosen four fasteners (1) on converter control unit (2).
2. Lift converter control unit (2) from console (3) for access to connector (4).
3. Disconnect connector (4) from converter control unit (2). Remove converter control unit.

FOLLOW-ON MAINTENANCE:
None

END OF TASK



16-91 INSTALL CONVERTER CONTROL UNIT

INITIAL SETUP

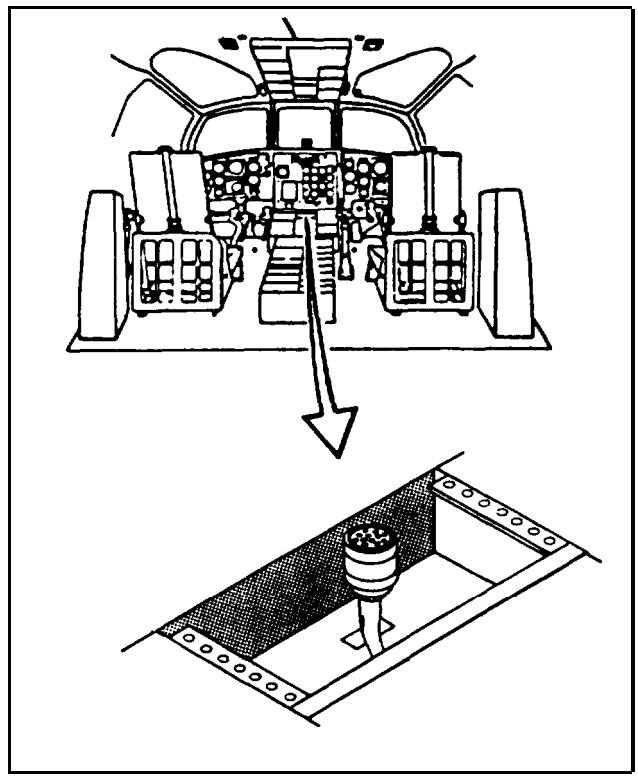
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P
TM 11-5855-300-23&P

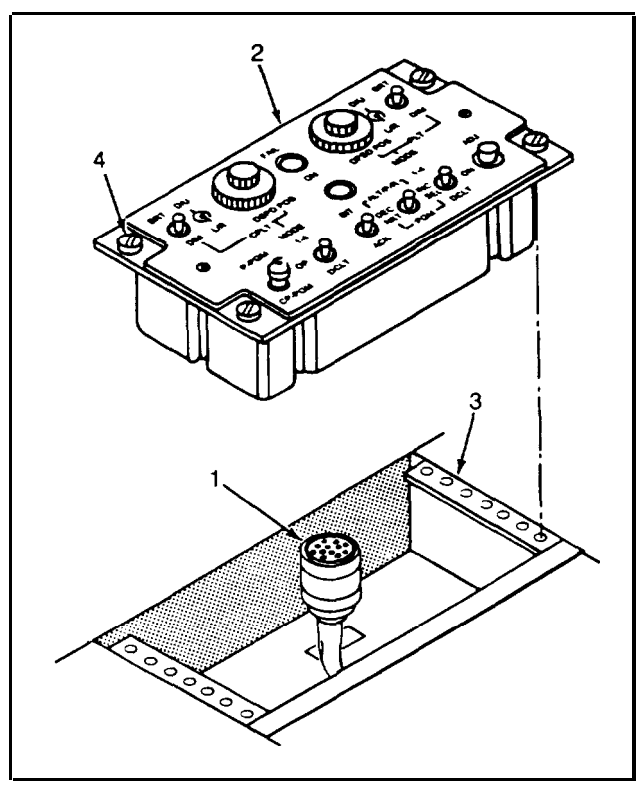


1. Connect plug (1) to converter control unit (2).
2. Position converter control unit (2) in console (3).
3. Tighten four fasteners (4).

INSPECT

FOLLOW-ON MAINTENANCE:
Perform operational check of converter control unit (TM 55-1520-240-T).

END OF TASK



16-92 REMOVE AIR DATA TRANSDUCER

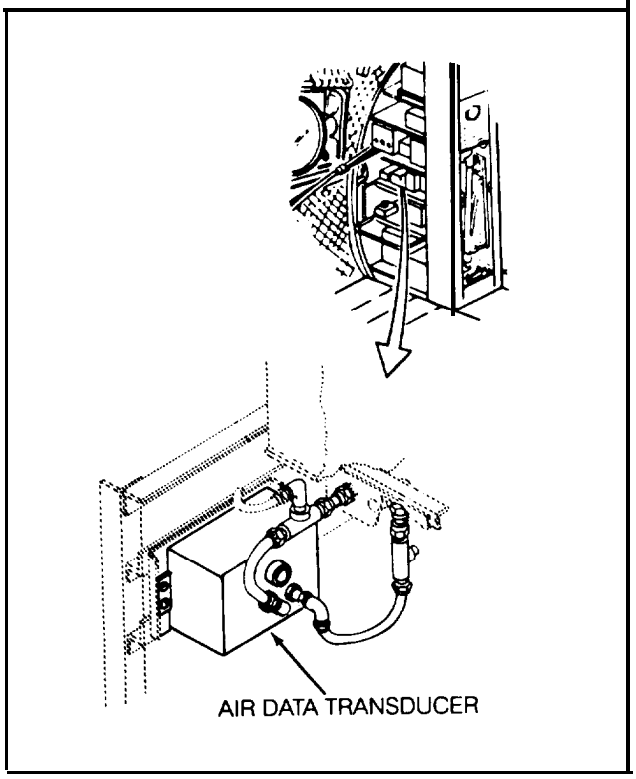
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692

Materials:
Paper Tags (E264)

Personnel Required:
Medium Helicopter Repairer

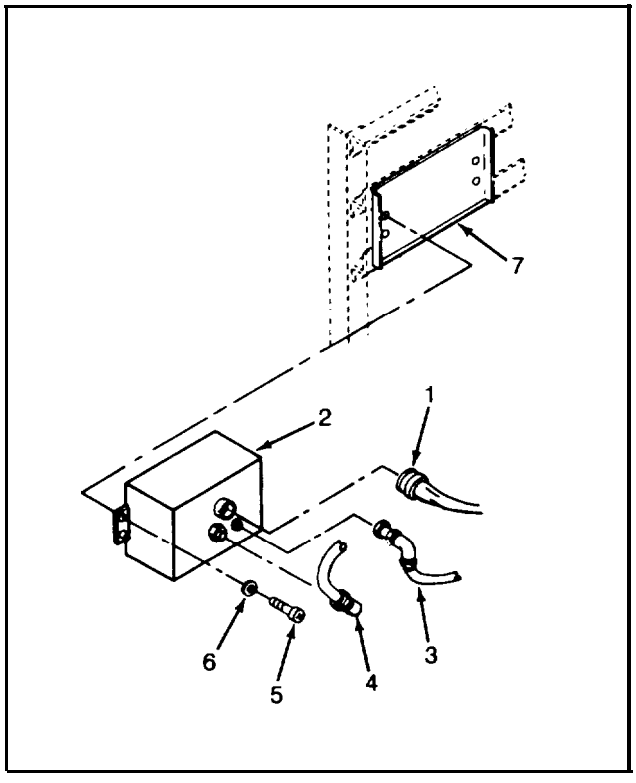
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Electronic Compartment Acoustic Blanket Removed (Task 2-107)



1. Tag (E264) and disconnect electrical connector (1) from transducer (2).
2. Tag (E264) and disconnect PITOT PRESS air hose (3) from transducer (2).
3. Tag (E264) and disconnect STATIC PRESS air hose (4) from transducer (2).
4. Remove four screws (5) and washers (6).
5. Remove transducer (2) from mounting plate (7).

FOLLOW-ON MAINTENANCE:
None

END OF TASK



16-93 INSTALL AIR DATA TRANSDUCER

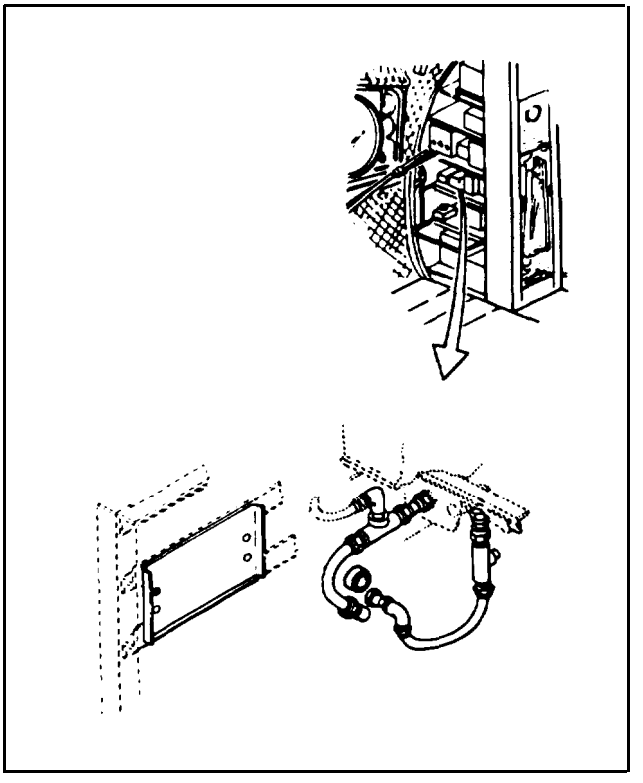
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer
inspector

Equipment Condition:
TM 55-1520-240-23P

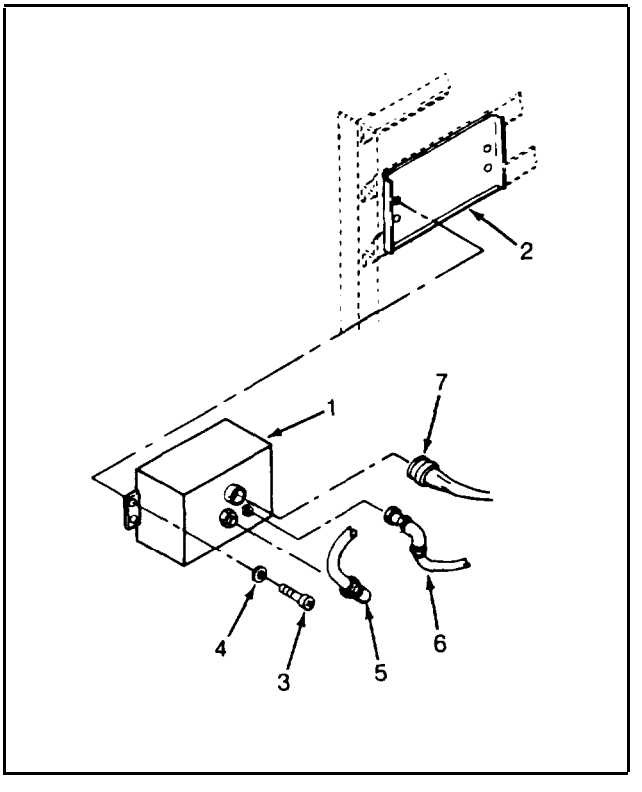


1. Position transducer (1) on mounting plate (2). Install four screws (3) and washers (4).
2. Connect PITOT PRESS air hose (5). Remove tag.
3. Connect STATIC PRESS air hose (6). Remove tag.
4. Connect electrical connector (7). Remove tag.

INSPECT

FOLLOW-ON MAINTENANCE:
Perform leak check of pitot-static system (TM 55 1520-240-T).

END OF TASK



16-94 REMOVE INCLINOMETER SENSOR 16-94

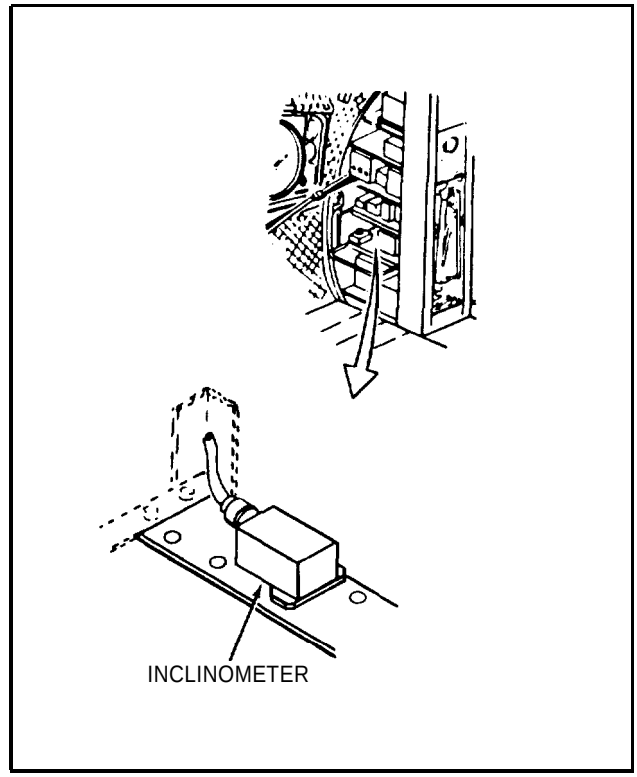
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692

Materials:
Paper Tags (E264)

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Electronic Compartment Acoustic Blanket Removed (Task 2-107)
Amplifier-Coupler Removed (TM 11-1520-240-20)
Receiver-Transmitter Removed (TM 11-1520-240-20)
KY-75 Processor Removed (TM 11-1520-240-20)
IFM Amplifier Removed (TM 11-1520-240-20)



1. Tag (E264) and disconnect connector (1) from inclinometer (2).

2. Loosen four captive screws (3).

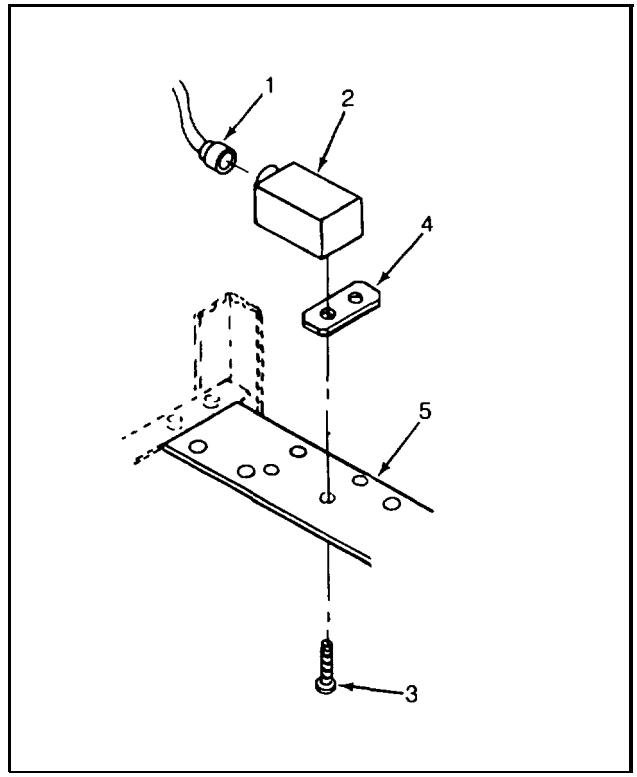
NOTE

If shim(s) (4) are installed, note location and retain for reinstallation.

3. Remove inclinometer (2) and shim(s) (4) from shelf (5).

FOLLOW-ON MAINTENANCE:
None

END OF TASK



16-95 INSTALL INCLINOMETER SENSOR 16-95

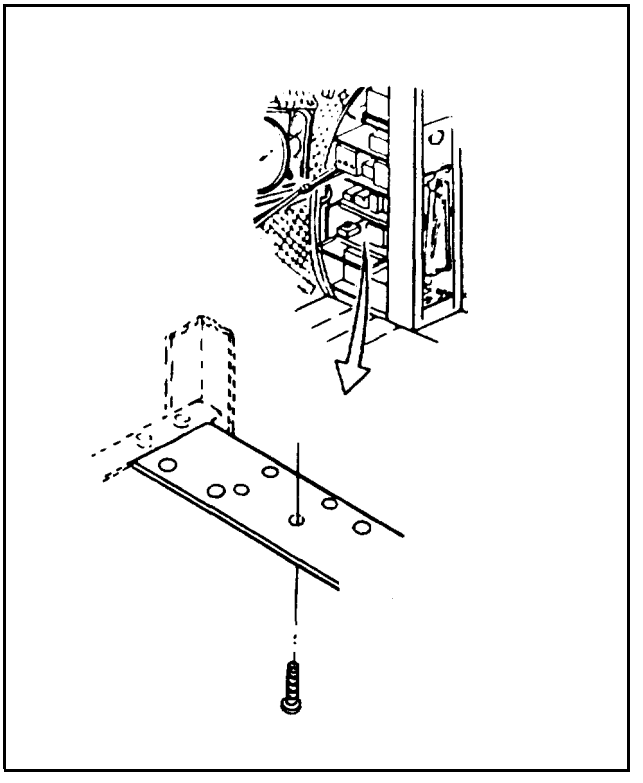
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692

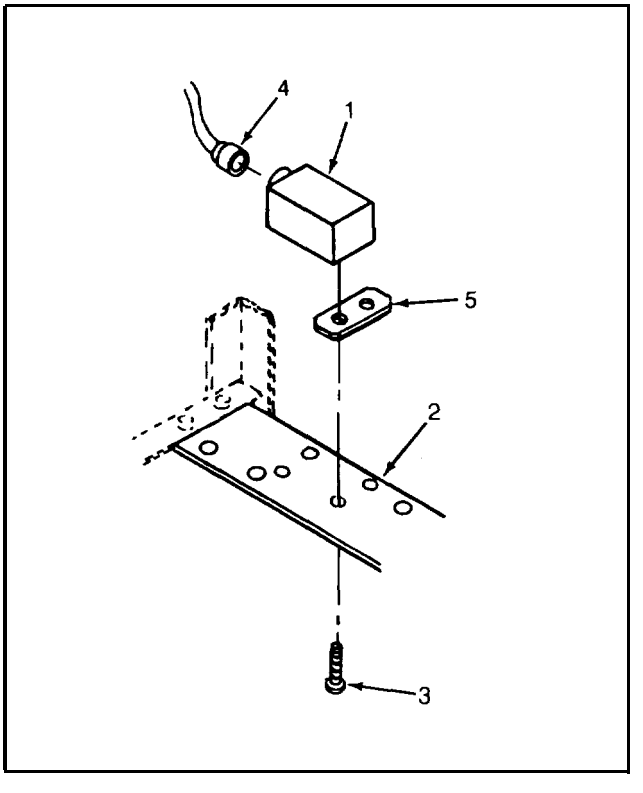
Materials:
None

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P



1. If installed, position shim(s) (5) and inclinometer (1) on shelf (2).
2. Tighten four captive screws (3).
3. Connect connector (4) to inclinometer (1).



INSPECT

FOLLOW-ON MAINTENANCE:
Adjustment of inclinometer sensor (Task 16-93)

END OF TASK

16-96 ADJUSTMENT OF INCLINOMETER SENSOR 16-96

ADJUST INCLINOMETER

1. Level aircraft (Task 1-21).
2. Connect battery (Task 1-39) and apply aircraft electrical power.
3. Apply power to head up display system and check for proper operation. (TM 55-1520-240-T).
4. While utilizing the ANVIS HUD goggles with appropriate filters for lighting conditions, view turn and bank indicator ball. If turn and bank indicator ball is centered, go to step 11. If position of turn and bank indicator ball is not centered, go to step 5.
5. Turn off head up display system.
6. Turn off aircraft power and disconnect battery (Task 1-39).
7. Remove inclinometer (Task 16-91).

NOTE

The inclinometer is level when the turn and bank indicator ball is centered in the ANVIS HUD goggles. One shim will shift the turn and bank indicator ball approximately one-tenth of its diameter.

8. Insert shim(s) as required under inboard or outboard end of inclinometer, in the direction of error.
9. Install inclinometer (Task 16-92).
10 Repeat steps 2 thru 9 until turn and bank indicator ball is centered in head up display.
11 Turn off head up display.
12. Turn off aircraft power and disconnect battery (Task 1-39).
13. Lower aircraft (Task 1-21).

INSPECT

FOLLOW-ON MAINTENANCE:
Install Amplifier-Coupler (TM 11-1520-240-20).
Install Receiver-Transmitter (TM 11-1520-240-20).
Install KY-75 Processor (TM 11-1520-240-20).
Install IFM Amplifier (TM 11-1520-240-20).
Install Electronic Compartment Acoustic Blanket (Task 2-107).

END OF TASK

SECTION XV
EXTENDED RANGE FUEL SYSTEM (ERFS II)
DESCRIPTION AND OPERATION

DESCRIPTION

The extended range fuel system (ERFS II) consists of one, two, or three 800 gallon fuel tanks, a restraint system for each tank, interconnecting hoses for using multiple tanks, hoses for interfacing with the aircraft and an electrical wire harness to provide power from the aircraft to the control panel. There is also a forward area refueling equipment (FARE) kit provided.

The ERFS II can be pressure refueled through the aircraft pressure refueling system (Chapter 10) or gravity filled through the openings on the top of each tank.

Four cavity drains are installed through the cabin floor at lbl 48, sta 290, 336, 370, and 443 to provide drainage to the outside of the aircraft in case fuel should ever migrate to the cavity between the outer tank and the bladder of the ERFS II tank.

Three ERFS II vents are located at wl 18, sta 254, 331, and 410 along the left side of the aircraft. These vents provide air to the tanks during normal operation and vents fuel vapors overboard.

Detailed description and operation information can be found in the Extended Range Fuel System manuals, TM 1-1560-312-10 or TM 1-1560-312-23 & P.

END OF TASK

SECTION XVI
EXTENDED RANGE FUEL SYSTEM (ERFS II)

16-98 REMOVE ERFS II CAVITY DRAIN 16-98

INITIAL SETUP

ApplicableConfiguration:
With 82

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

PersonnelRequired:
Medium Helicopter Repairer

EquipmentCondition:
Battery Disconnected (Task 1-39)
Electrical Power Off

NOTE

Removal procedures are similar for the four cavity drain elbow fittings. They are located in the cabin at Ibl 48, wl -30, sta 290, sta 336, sta 370 and sta 443.

1. Remove the cabin floor panels to gain access to the drain (8) and elbow fitting (2).
2. Loosen the clamps (6) attaching the hose of the elbow (2) and the drain (8).
3. Remove the hose (7) from the drain and the elbow fitting.
4. Remove the nut (3) and washer (4) from the elbow fitting (2).
5. Remove the elbow fitting (2).
6. Remove drain fitting by removing the nut (5) and washer (4).

FOLLOW-ON MAINTENANCE:
None

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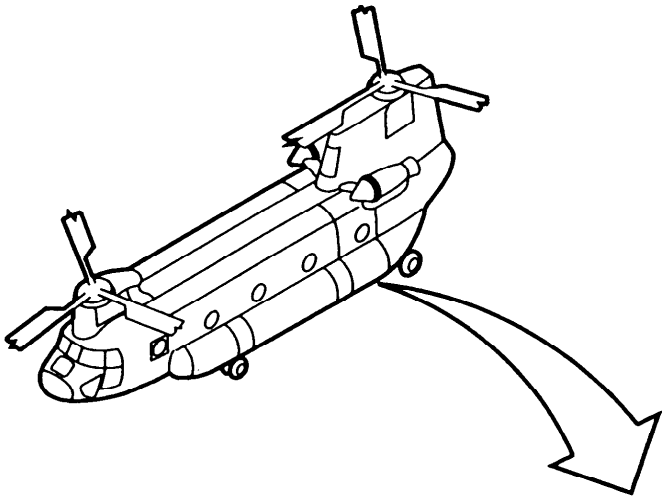

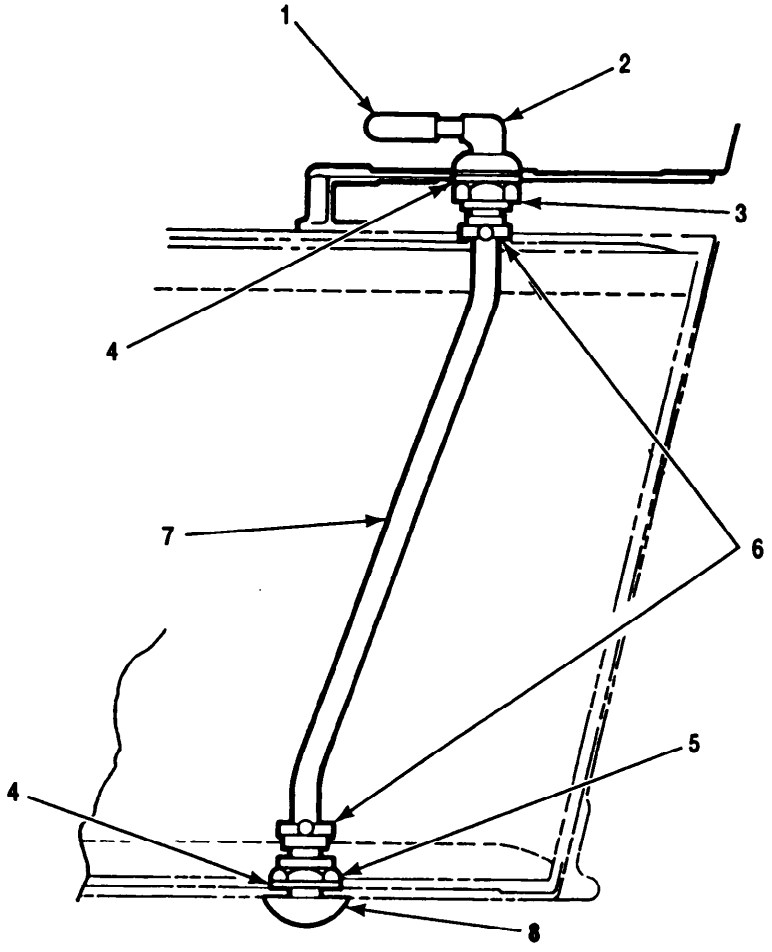

TYPICAL 4 PLACES
STA 290, 336, 370 AND 443

A72596

END OF TASK

INITIAL SETUP

ApplicableConfiguration:
With 82

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer (2)

1. Install elbow fitting (2) with cap (1) through hole in floor and install washer (4) and nut (3).
2. Orient the fitting facing 45 degrees inboard. Tighten nut (3).
3. Install hose (7) on elbow fitting (2) with clamp (6). Tighten clamp (6).
4. Have helper hold drain fitting (8) in place.
5. Install washer (4) and nut (5) on drain fitting (8). Tighten nut.
6. Install clamp (6) onto hose (7) and install hose onto drain fitting (8).
7. Install clamp (6) on hose (7) at drain fitting (8) and tighten.

FOLLOW-ON MAINTENANCE:
None

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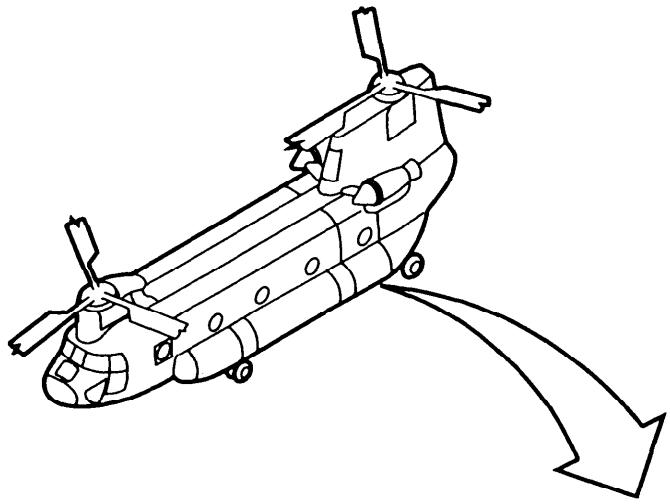
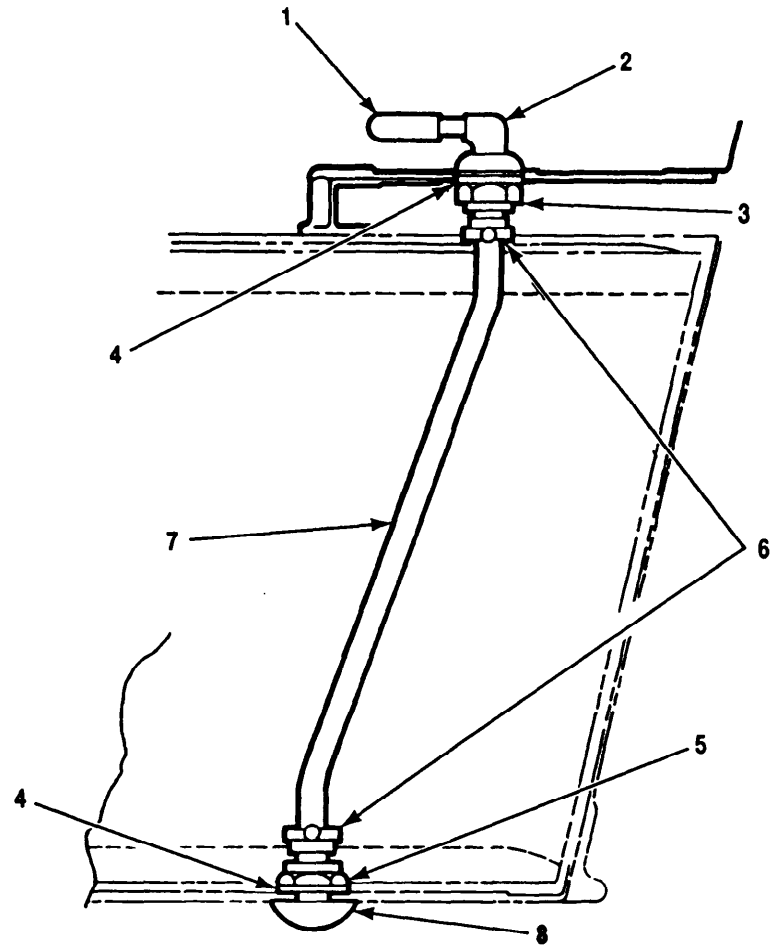




TYPICAL 4 PLACES
STA 290, 336, 370 AND 443

A72596

END OF TASK

CHAPTER 17

EMERGENCY EQUIPMENT

SECTION I

EMERGENCY EQUIPMENT

DESCRIPTION AND OPERATION

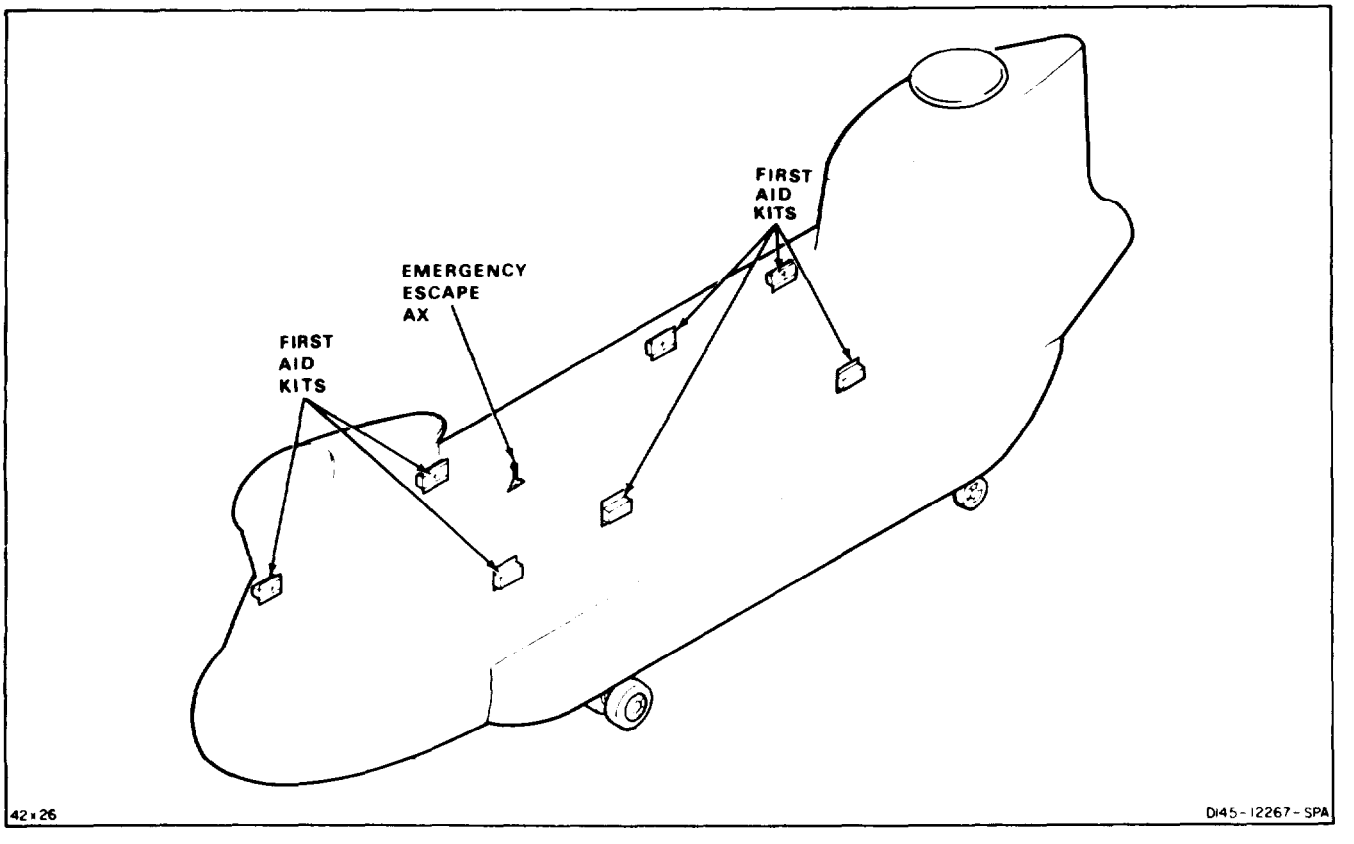
17-1 EMERGENCY EQUIPMENT

Emergency equipment consists of first aid kits, an ax, portable fire extinguishers, and an emergency exit lighting system.

There are seven first aid kits, one in the passageway and six in the cabin, three on each side. The ax is for emergency escapes. It is located near the cabin door about station 200.

There are three portable fire extinguishers; one is mounted on the cockpit floor to the right of pilot's seat, one at the forward end of cabin, and one in the ramp area. For description and operation, refer to TB 5-4200-200-10.

The emergency exit lighting system consists of three lights, an inertia switch, and a control switch on overhead panel. There is an exit light above the ramp, one by the cabin door, and one over cabin escape hatch. These lights can be turned on, off, or charged by operating the switch in the cockpit. The inertia switch will also cause the lights to come on if a hard landing in excess of 3g occurs. The lights have rechargeable internal batteries so they are portable. The lights can be removed by grasping handle and pulling. When the handle is down, the light is on; when the handle is up the light is off.



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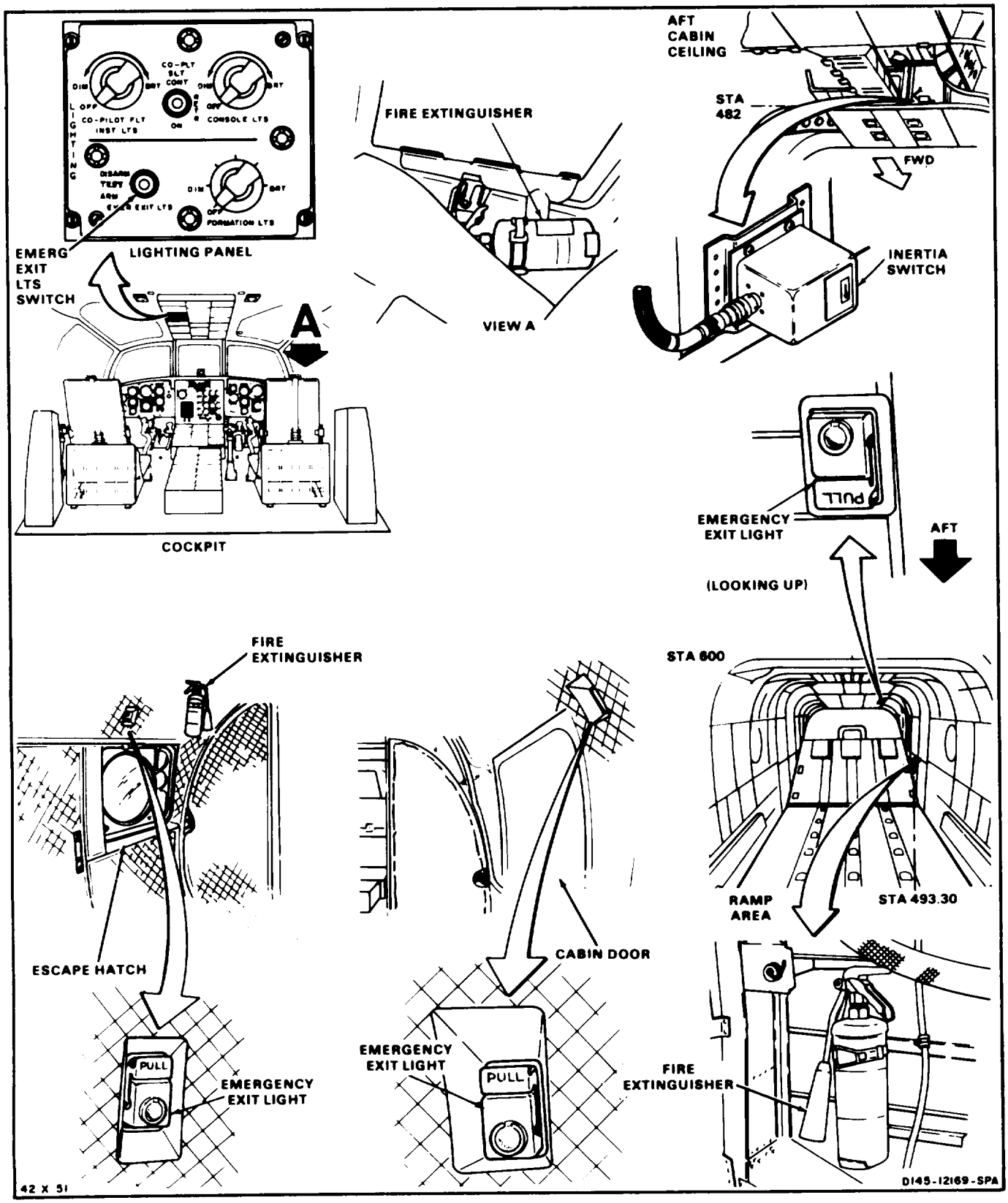
17-1 EMERGENCY EQUIPMENT (Continued)



END OF TASK

SECTION II

EMERGENCY EQUIPMENT

17-2 REMOVE PORTABLE FIRE EXTINGUISHER AND BRACKET

INITIAL SETUP

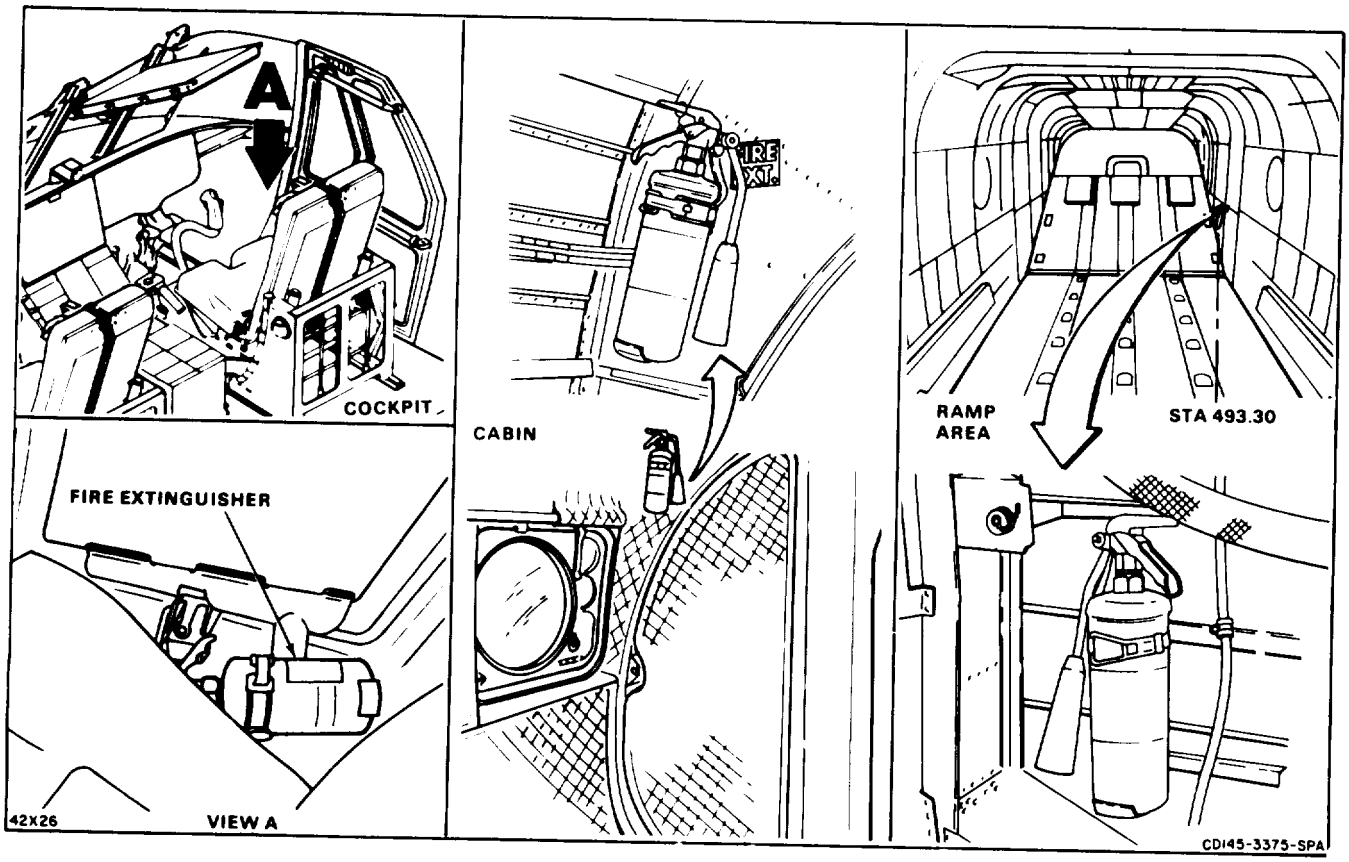
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



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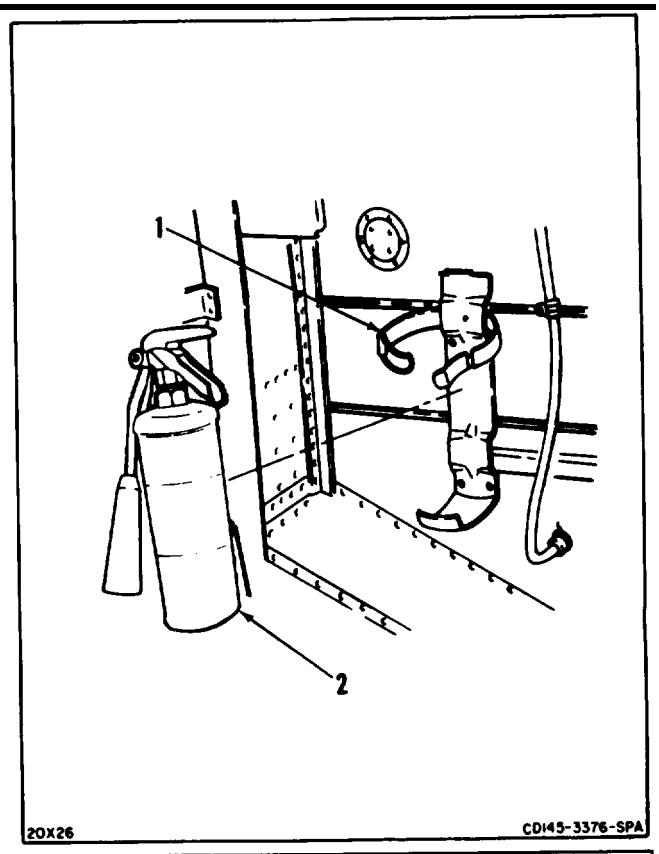
17-2 REMOVE PORTABLE FIRE EXTINGUISHER AND BRACKET (Continued)

NOTE

There are three portable extinguishers: one is mounted on cockpit floor to right of pilot's seat, one at left forward end of cabin, and one at left side of ramp area. Procedure is same to remove any extinguisher and bracket. Extinguisher in ramp area is shown here.

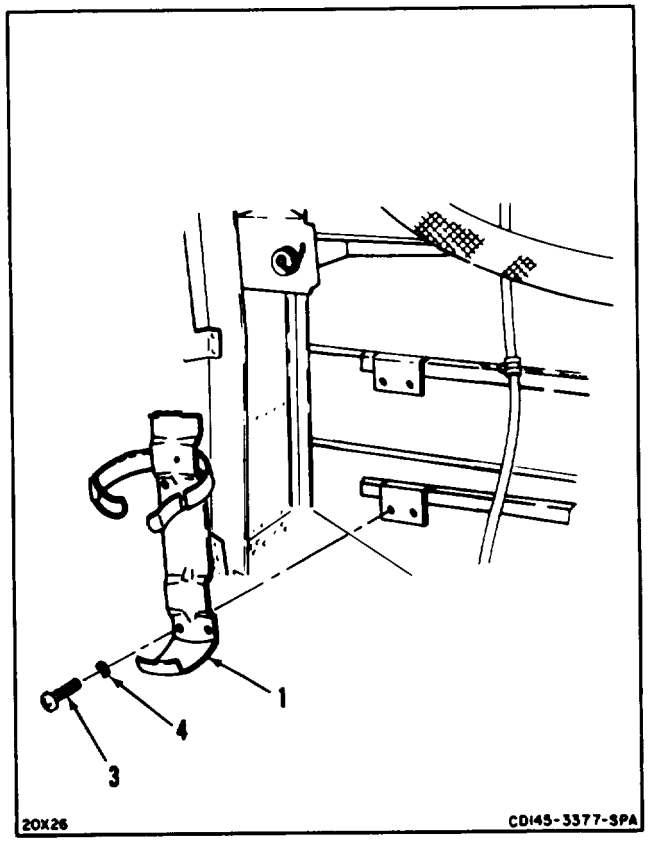
1. Unlock bracket (1) and **remove extinguisher (2).**



2. **Remove** four screws (3), washers (4), and **bracket (1).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

17-3 INSTALL PORTABLE FIRE EXTINGUISHER AND BRACKET 17-3

INITIAL SETUP

Applicable Configurations:
All

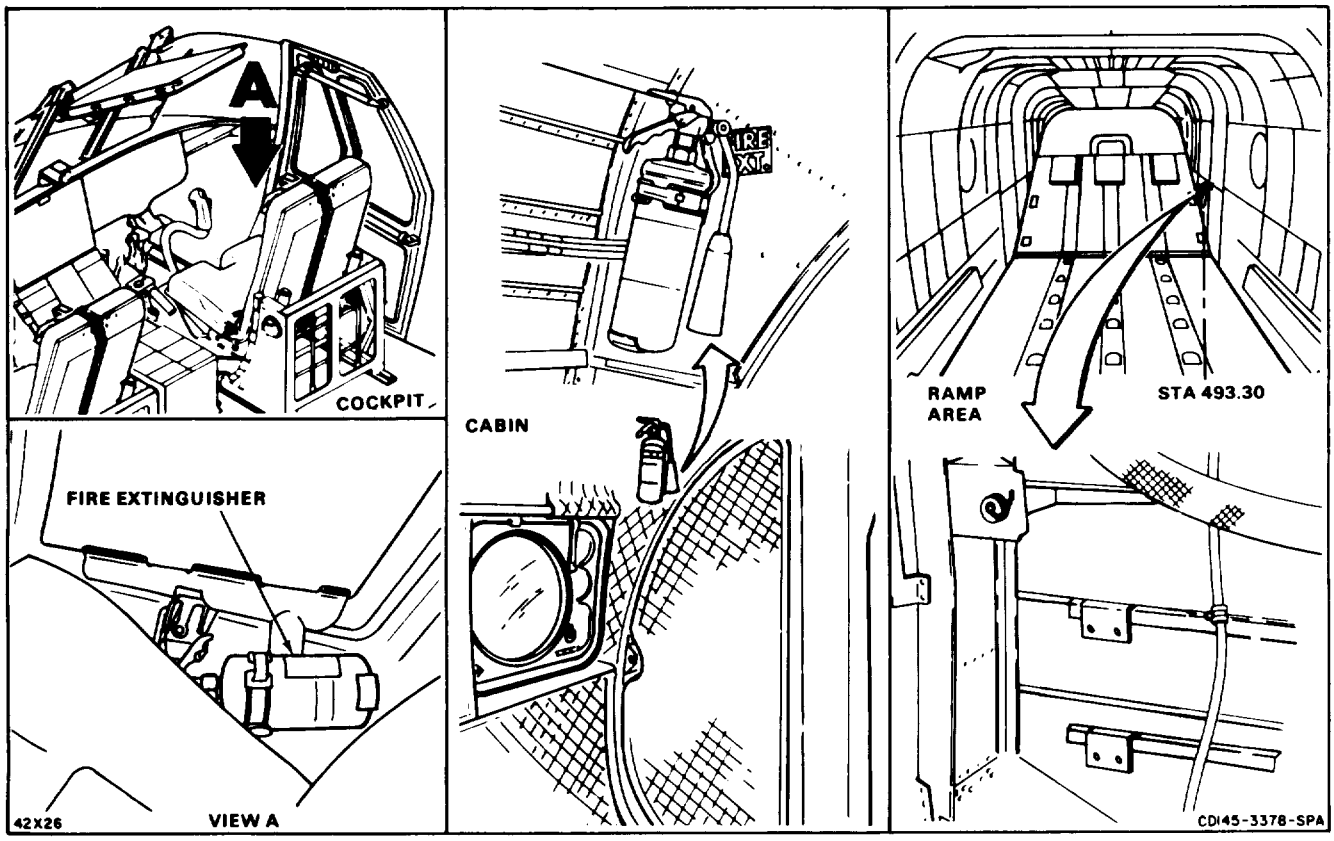
Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P

Equipment Condition:
Fire Extinguisher Inspected (TM 55-1500-204-25/1)



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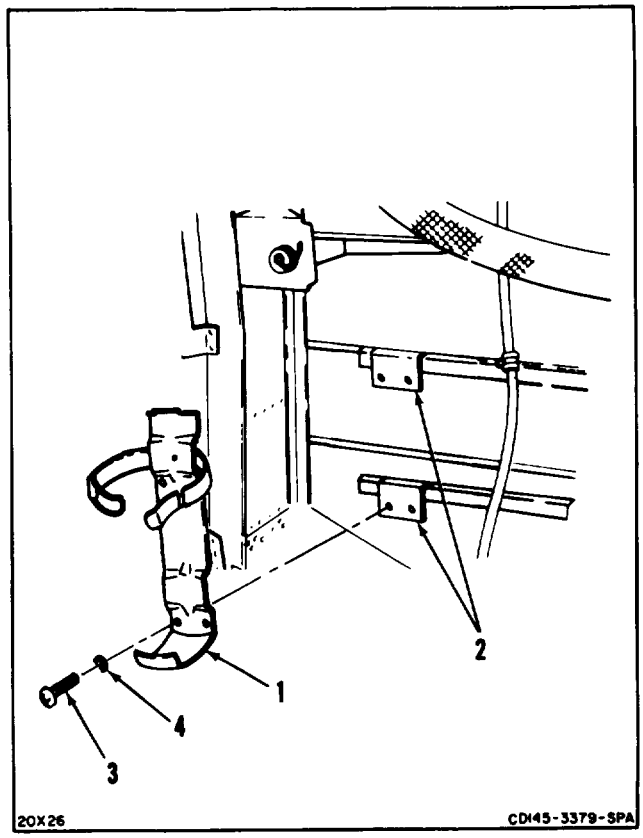
17-3 INSTALL PORTABLE FIRE EXTINGUISHER AND BRACKET (Continued)

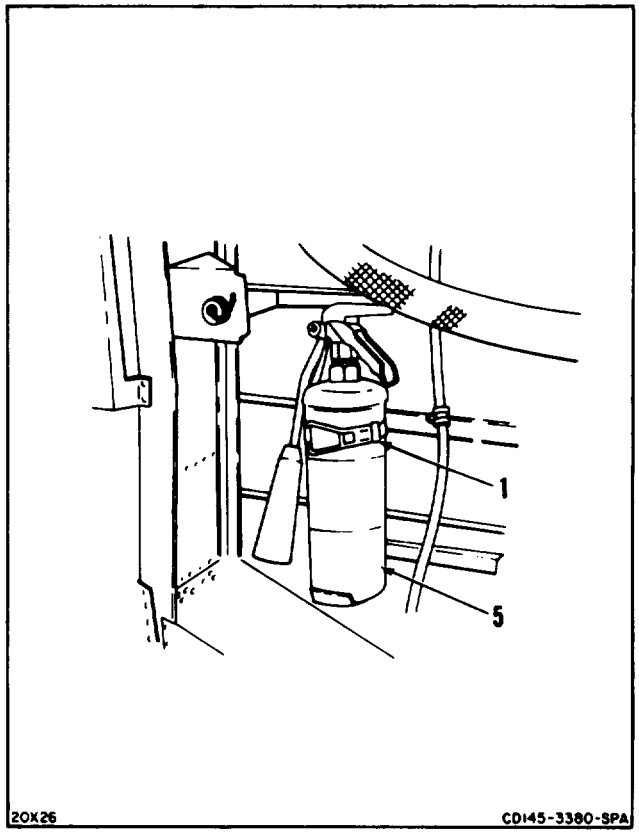
NOTE

There are three portable extinguishers: one is mounted on cockpit floor to right of pilot's seat, one at left forward end of cabin, and one at left side of ramp area. Procedure is same to install any extinguisher and bracket. Extinguisher in ramp area is shown here.

1. **Position bracket (1)** on structure (2). Align holes and **install four screws (3)** and washers (4).



2. **Position extinguisher (5)** in bracket (1) **and lock bracket.**



INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK

17-4 REMOVE EMERGENCY EXIT LIGHT 17-4

INITIAL SETUP

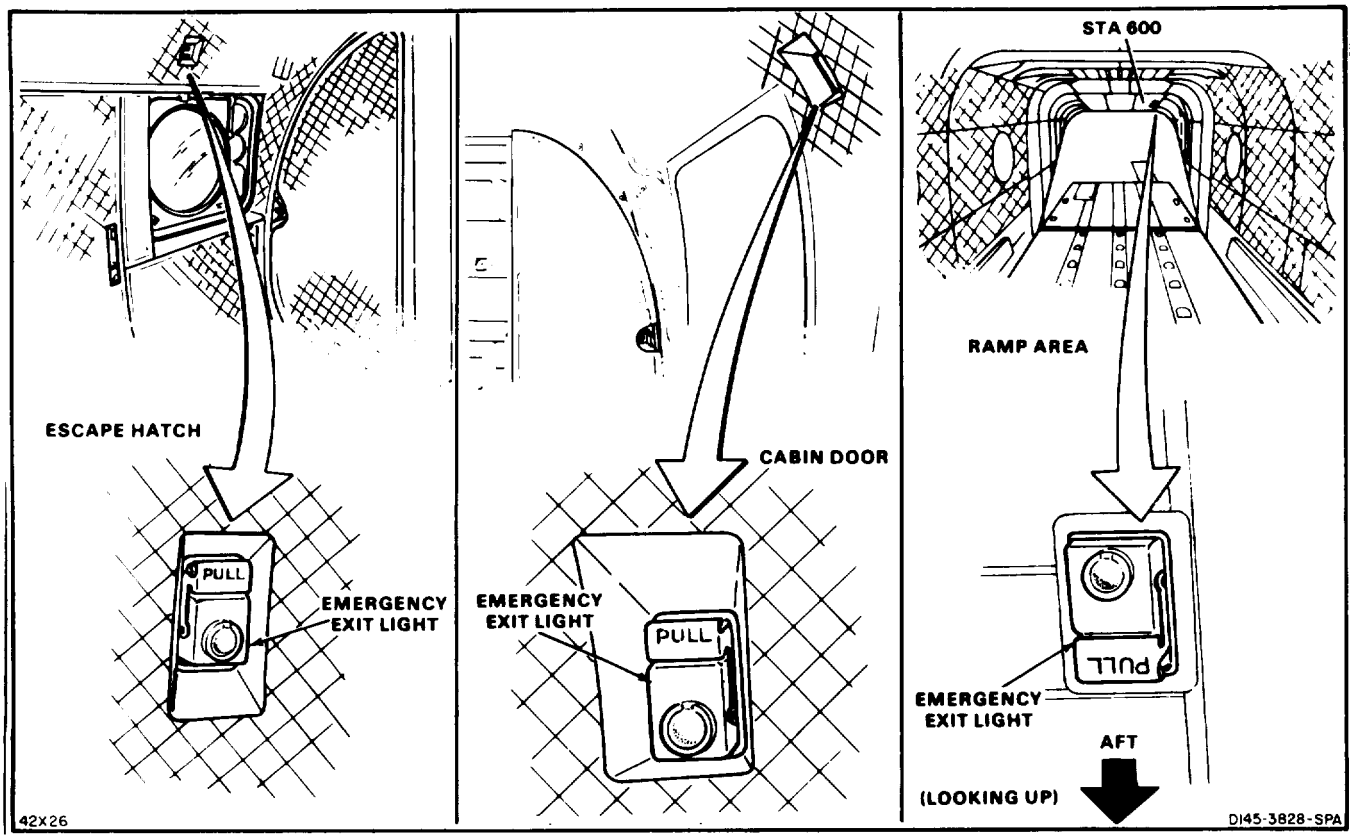
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
EMER EXIT LTS Switch at DISARM
Cargo Ramp Open and Level (TM 55-1520-240-T) (for Ramp Light)
Left Ramp Extension Removed (Task 2-238) (for Ramp Light)
Work Platform Installed in Maximum Left Position (Task 2-244) (for Ramp Light)



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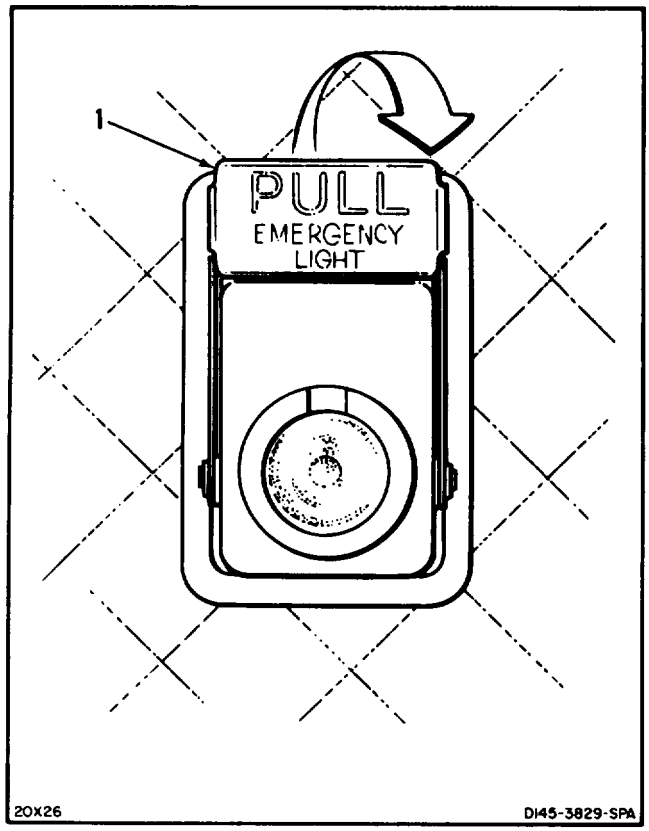
17-4 REMOVE EMERGENCY EXIT LIGHT (Continued) 17-4

NOTE

Procedure is same to remove any exit light. Light above escape hatch is shown here.

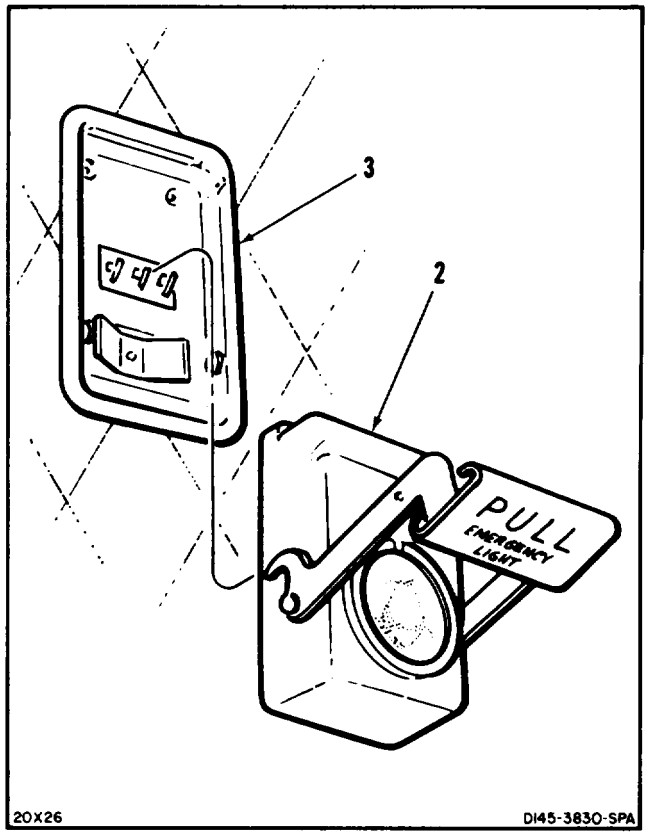
1. Remove lockwire from bar (1) (handle). Pull bar down.



2. **Remove light (2)** from panel (3).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

17-5 DISASSEMBLE EMERGENCY EXIT LIGHT 17-5

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Iron

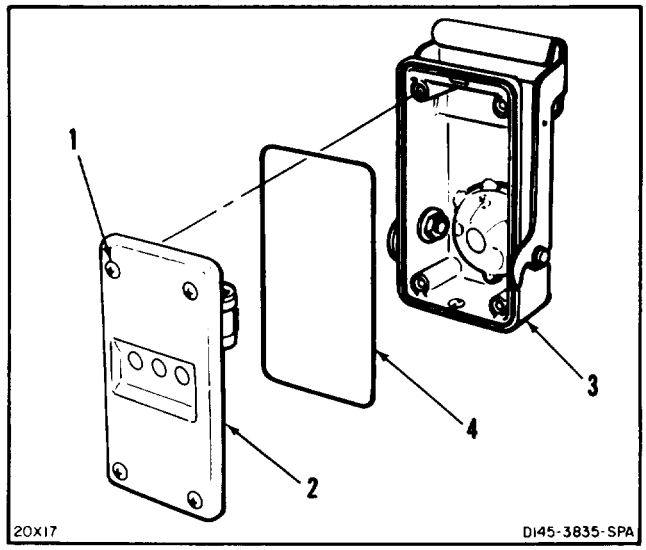
Materials:
None

Personnel Required:
68F20 Aircraft Electrician

Equipment Condition:
Off Helicopter Task

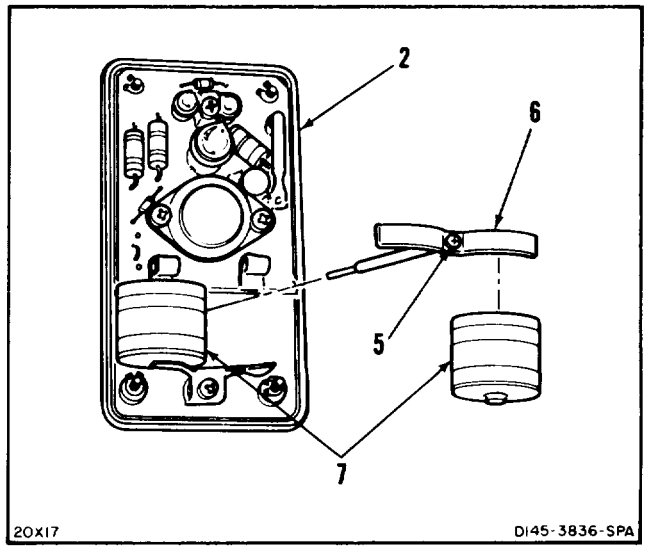
REMOVE HOUSING

1. Loosen four screws (1) in back of base (2). **Separate base** from housing (3).
2. **Remove packing (4)** from housing (3).



REMOVE BATTERIES

3. **Remove** screw (5) and **clamp (6).**
4. **Remove two batteries (7)** from base (2).



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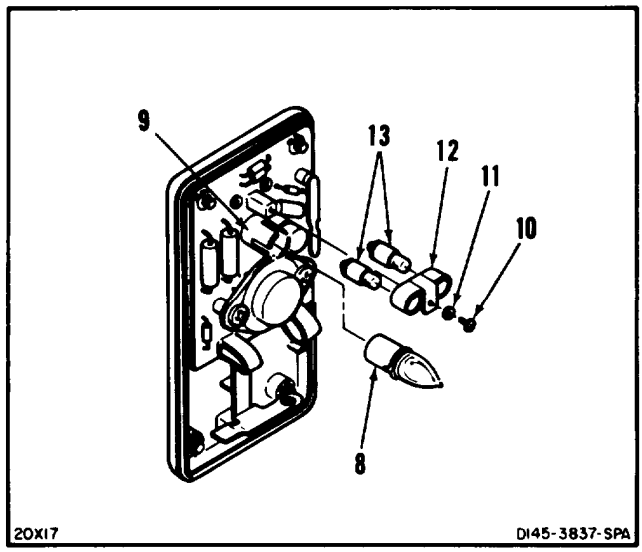
17-5 DISASSEMBLE EMERGENCY EXIT LIGHT (Continued) 17-5

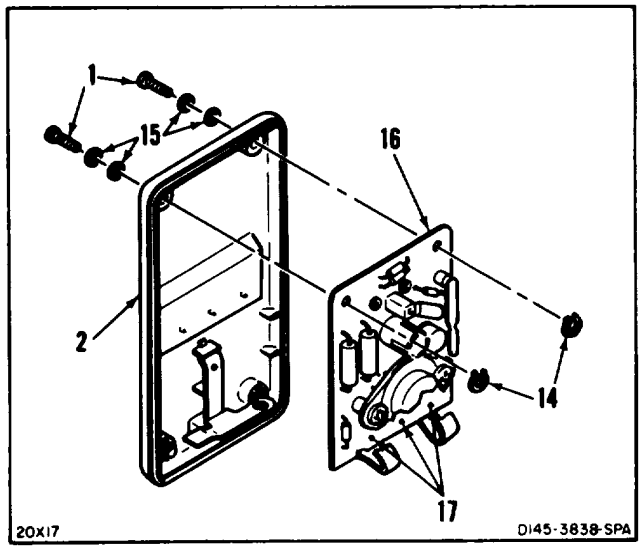
REMOVE LAMPS

5. **Pull main lamp (8)** from holder (9).
6. **Remove** screw (10), washer (11), and **holder (12).**
7. **Push two lamps (13)** from holder (12).



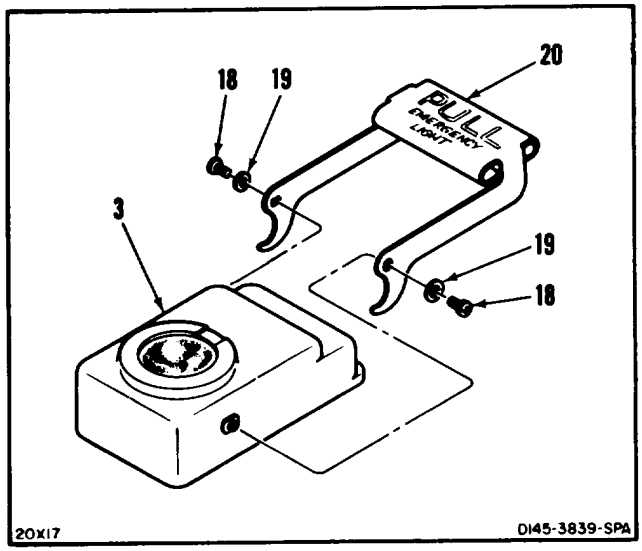
REMOVE CIRCUIT BOARD

8. **Remove two** retaining rings (14), **screws (1),** and four washers (15) from end of circuit board (16) in base (2).
9. Unsolder three contacts (17) and **remove circuit board (16)** from base (2).



DISASSEMBLE HOUSING

10. Remove two screws (18) and washers (19).
11. **Remove bar (handle) (20)** from housing (3).



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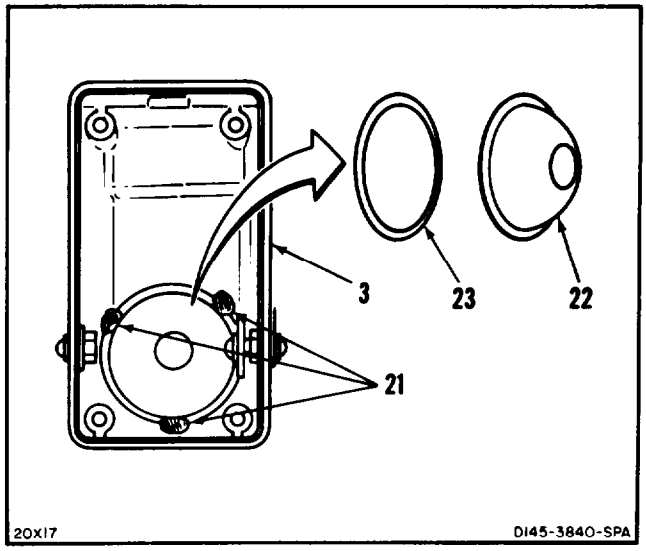
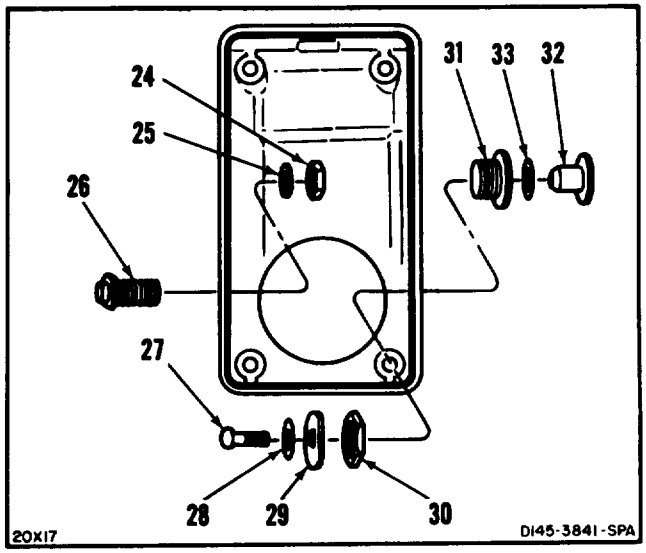
17-5 DISASSEMBLE EMERGENCY EXIT LIGHT (Continued) 17-5

12. Heat three tabs (21) and **remove reflector (22).**
13. **Push lens (23)** from housing (3).



14. **Remove** nut (24), washer (25) and **bushing (26).**
15. **Remove** screw (27), washer (28), **adapter (29),** nut (30), **and bushing (31).**
16. **Remove shaft (32)** and packing (33) from bushing (31).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

17-6 ASSEMBLE EMERGENCY EXIT LIGHT

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Iron

Materials:
Adhesive (E33)
Sealant (E328)
Solder (E360)

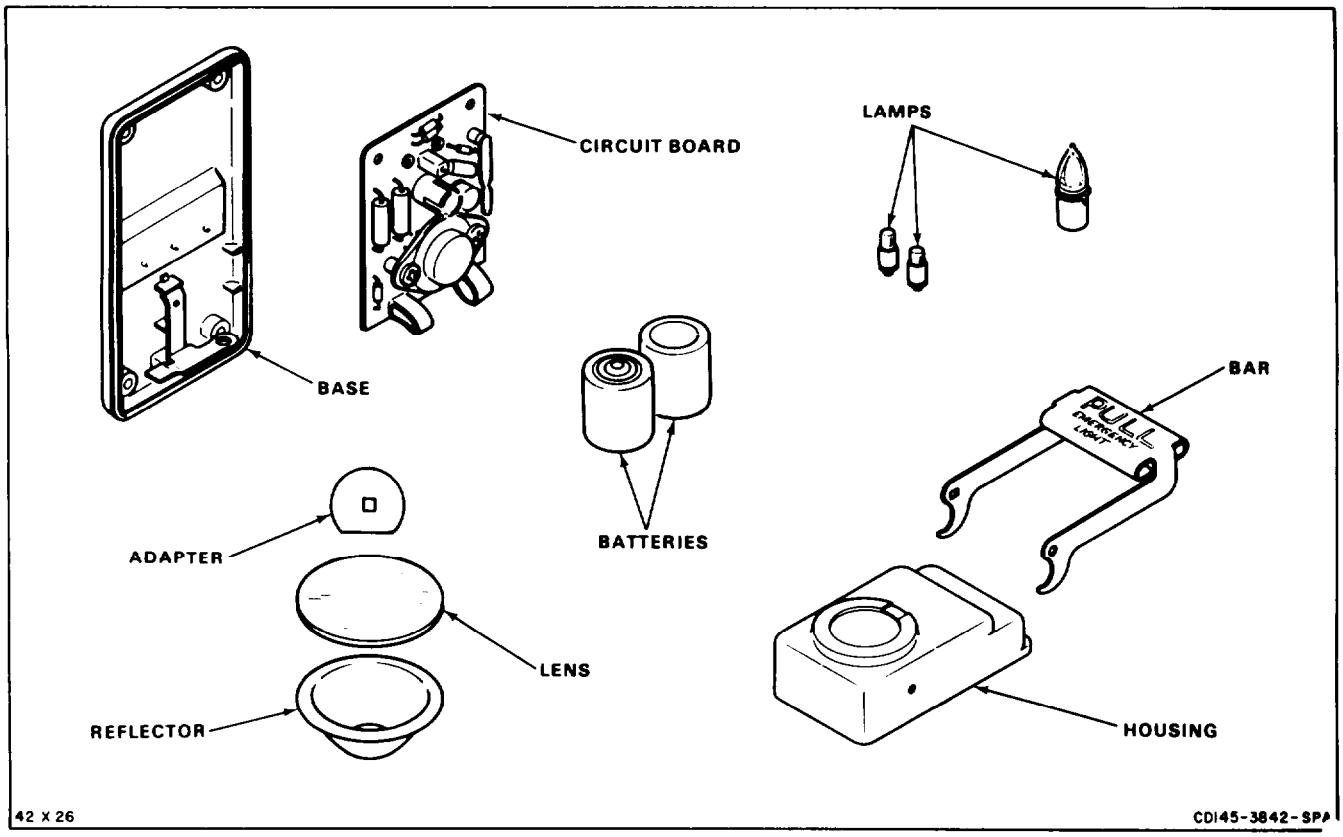
Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P

General Safety Instructions:

WARNING

Adhesive (E33) is toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



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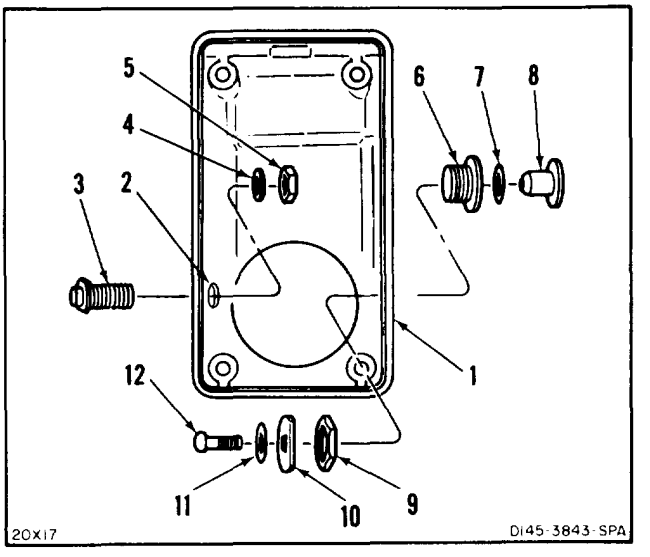
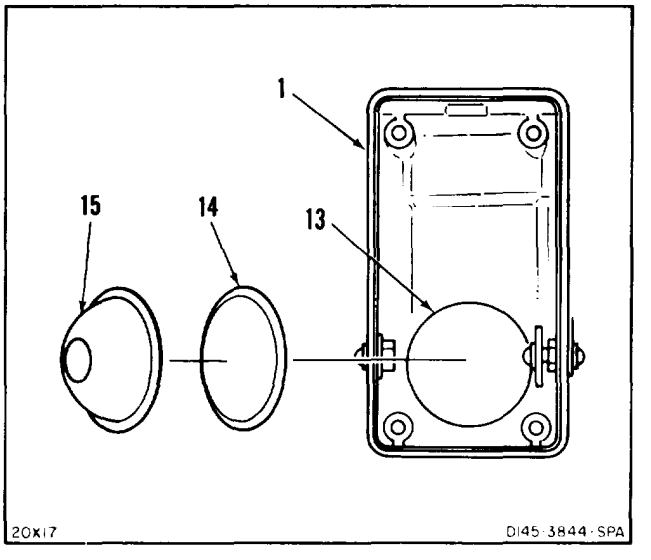
17-6 ASSEMBLE EMERGENCY EXIT LIGHT (Continued) 17-6

ASSEMBLE HOUSING

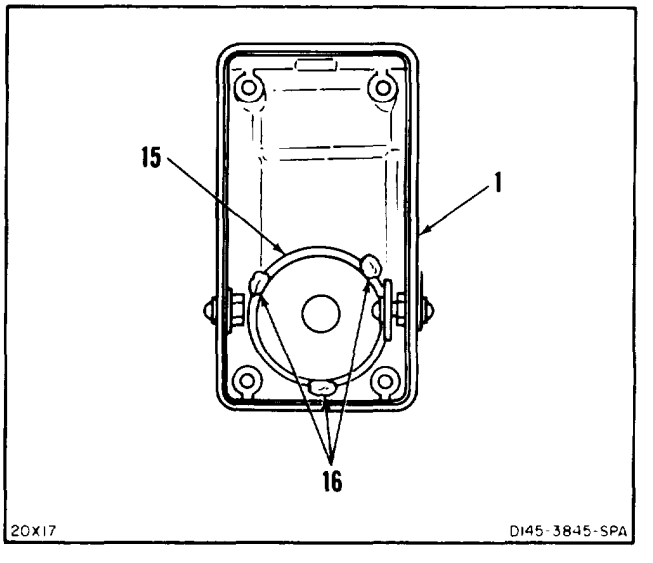
1. Apply small amount of sealant (E328) inside housing (1) around edge of hole (2).
2. **Install bushing (3),** washer (4), and nut (5)
3. Apply small amount of sealant (E328) under lip of bushing (6).
4. Install packing (7) in bushing (6). **Install bushing** in housing (1).
5. **Slide shaft (8) through bushing (6) and install nut (9), adapter (10),** washer (11), and screw (12).



6. **Apply adhesive (E33)** around edge of lens mounting (13) inside housing (1).
7. **Install lens (14),** smooth side out.
8. **Apply adhesive (E33)** around edge of lens (14).
9. **Install reflector (15)** over lens (14).



10. **Heat three tabs (16)** to hold reflector (15) to housing (1).



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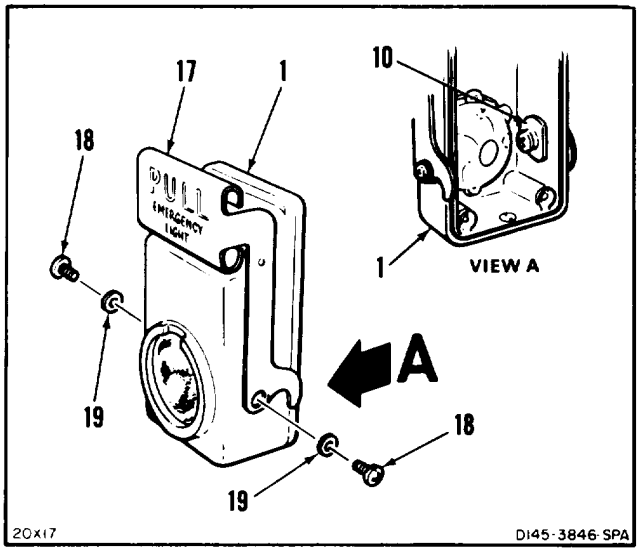
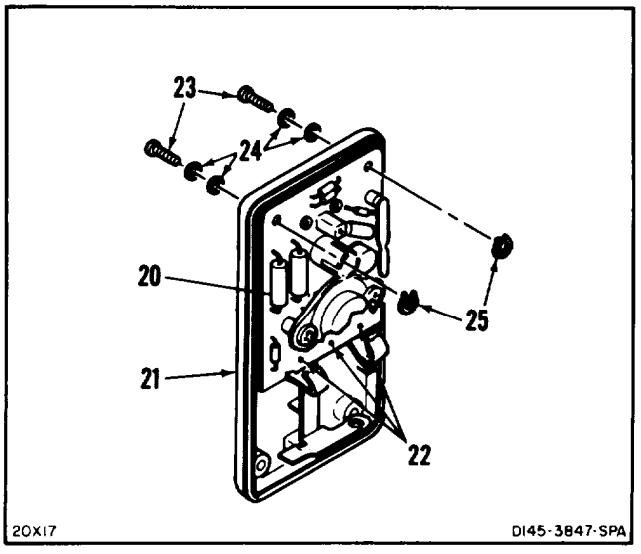
17-6 ASSEMBLE EMERGENCY EXIT LIGHT (Continued) 17-6

11. **Position bar (handle) (17)** on housing (1). With bar in closed position, flat side of adapter (10) shall be parallel to edge of housing (1).
12. **Install two screws (18)** and washers (19).



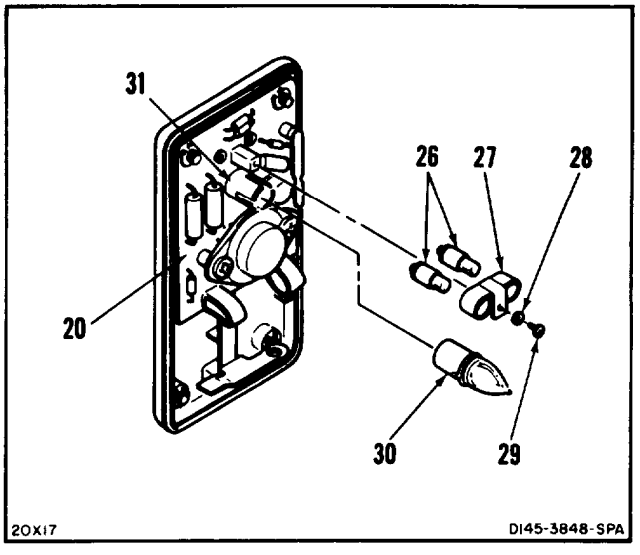
INSTALL CIRCUIT BOARD

13. **Position circuit board (20)** on base (21). **Solder three contacts (22).** Use solder (E360).
14. **Install two screws (23),** four washers (24), and two retaining rings (25).



INSTALL LAMPS

15. **Install two lamps (26)** in holder (27).
16. **Install holder (27),** washer (28), and screw (29) in circuit board (20).
17. **Install main lamp (30)** in holder (31).



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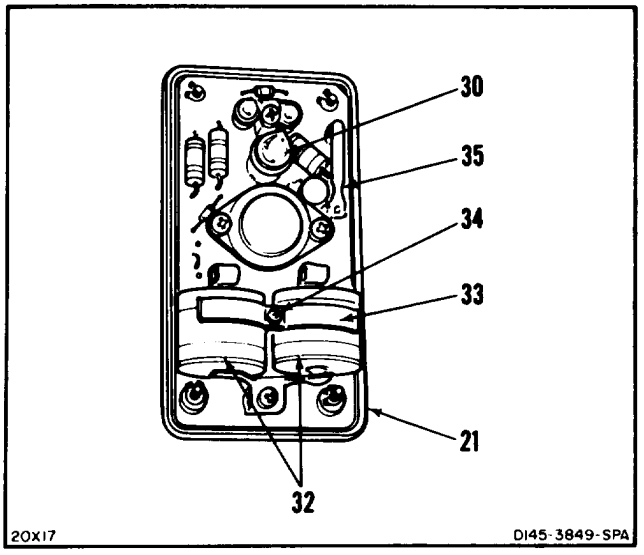
17-6 ASSEMBLE EMERGENCY EXIT LIGHT (Continued) 17-6

INSTALL BATTERIES

NOTE

Battery polarity is marked on base.

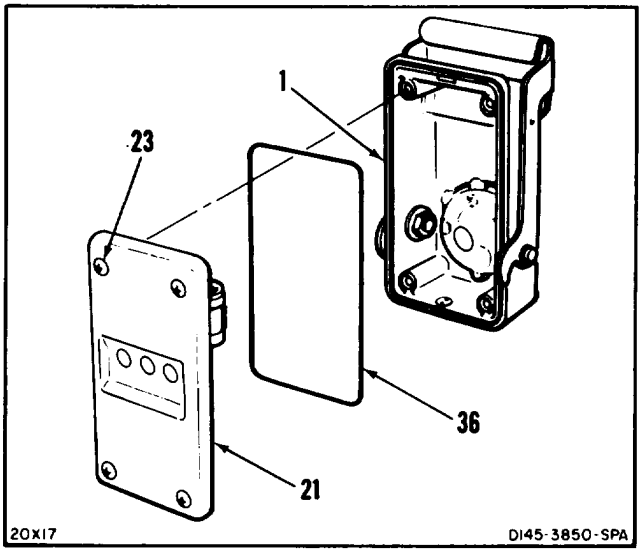
18. **Install two batteries (32)** in base (21).
19. **Position clamp (33)** over batteries (32) **and tighten screw (34).**
20. Push switch (35) to make contact with base (21). Check that main lamp (30) comes on. Release switch.



INSPECT

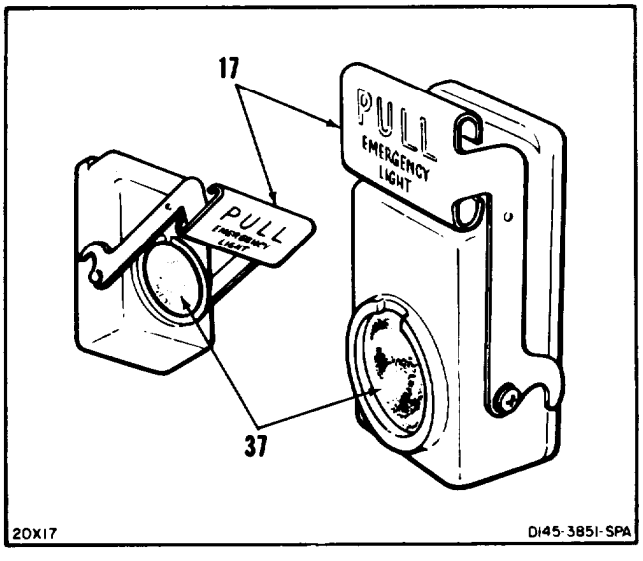
INSTALL HOUSING

21. **Install packing (36)** in housing (1).
22. **Position housing (1)** on base (21) **and tighten four screws (23).**



CHECK LIGHT

23. **Pull bar (17) down. Check light (37).** Light shall come on.
24. **Close bar (17). Check light (37).** Light shall go out.



INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK

17-7 CHARGE EMERGENCY EXIT LIGHT BATTERIES 17-7

INITIAL SETUP

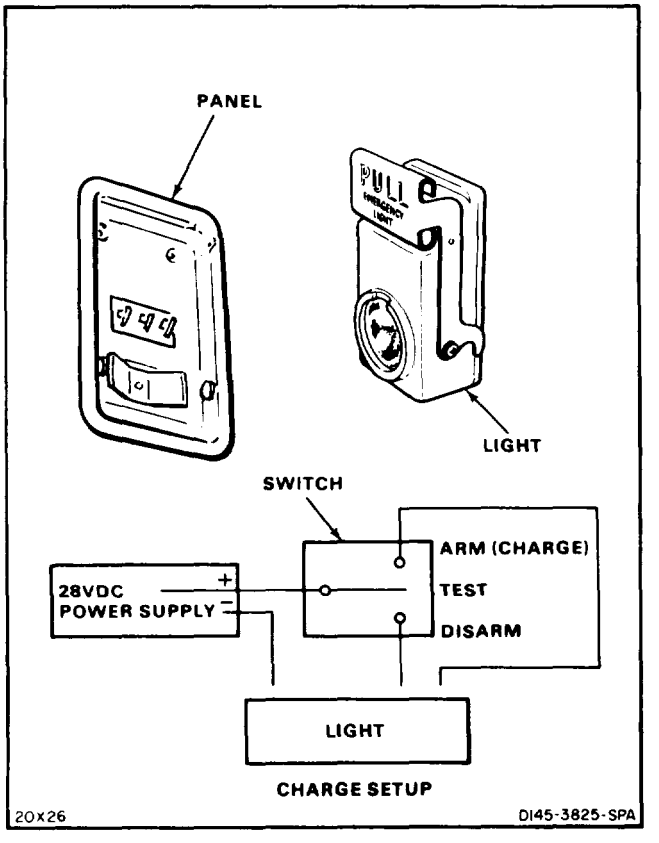
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Power Supply, 28 vdc
Toggle Switch, MS24523-21
Exit Light Panel

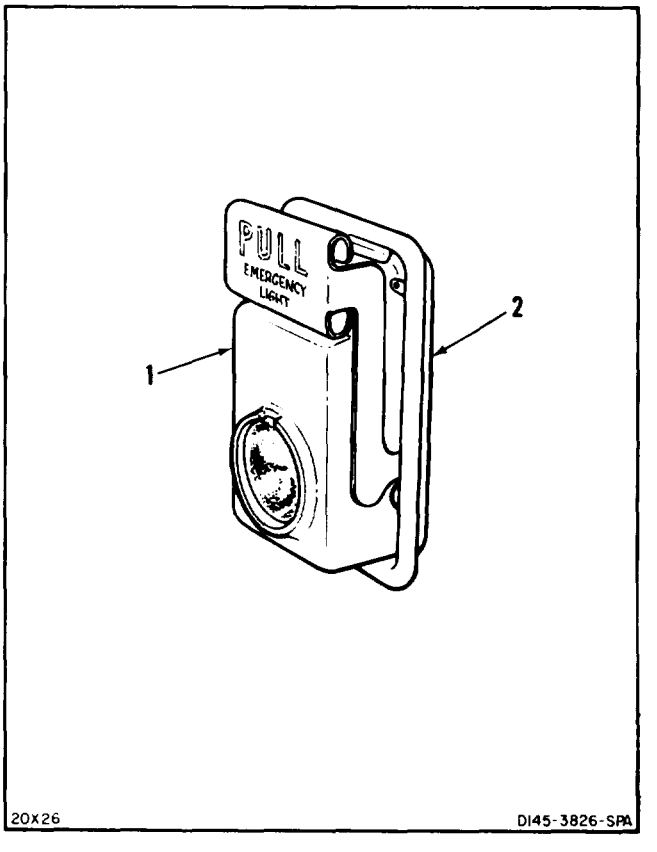
Materials:
None

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

Equipment Condition:
Off Helicopter Task
Charge Setup



1. Install light (1) in panel (2).



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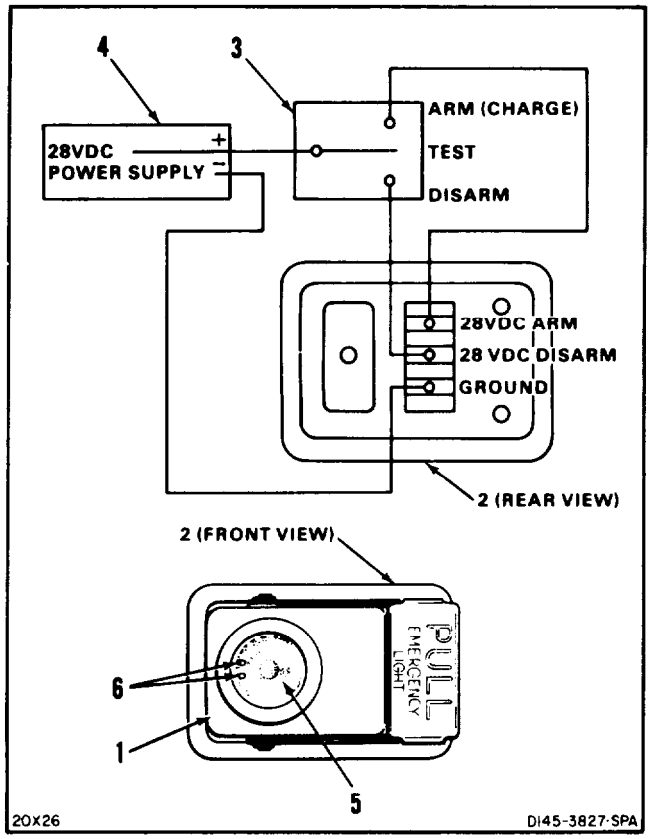
2. **Connect panel (2)** to switch (3) and power supply (4).

NOTE

Two small lamps inside light come on during battery charging. Glow of lamps can be seen through two pinholes in reflector.

3. **Set switch (3) to TEST. Turn on power supply (4) and adjust output to 28 vdc.**
4. **Check light (1).** Main lamp (5) shall be out and pinholes (6) shall not be lit.
5. **Set switch (3) to ARM (CHARGE).** Pinholes (6) shall be lit. **Let light (1)** charge for 16 hours.
6. **Set switch (3) to TEST.**
7. **Check light (1).** Main lamp (5) shall come on and pinholes (6) shall go out.
8. **Set switch (3) to DISARM.**
9. **Check light (1).** Main lamp (5) shall go out, pinholes (6) shall be lit.
10. Shut down power supply (4). Disconnect panel (2) from switch (3) and power supply.



INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK

17-8 INSTALL EMERGENCY EXIT LIGHT 17-8

INITIAL SETUP

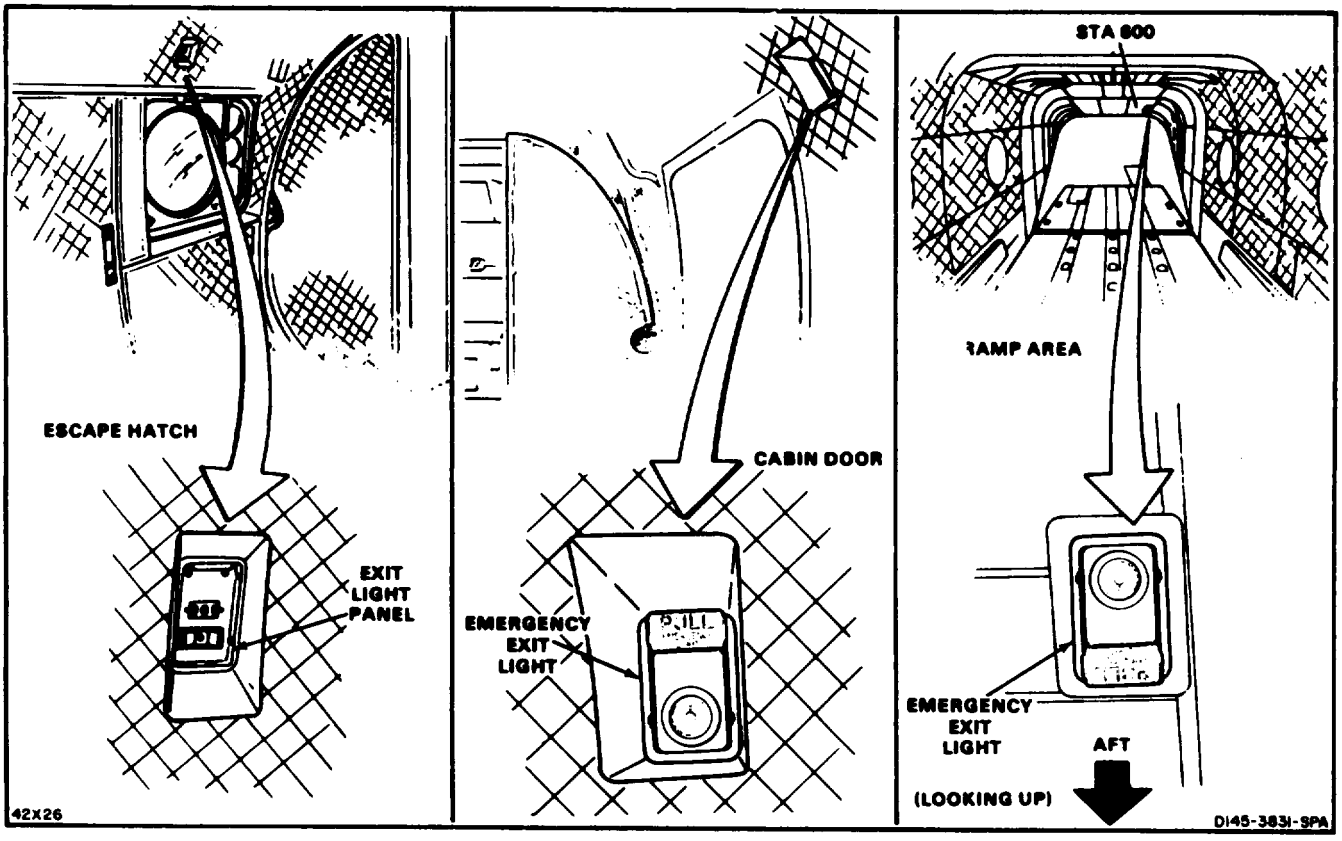
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Lockwire (E229)

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P



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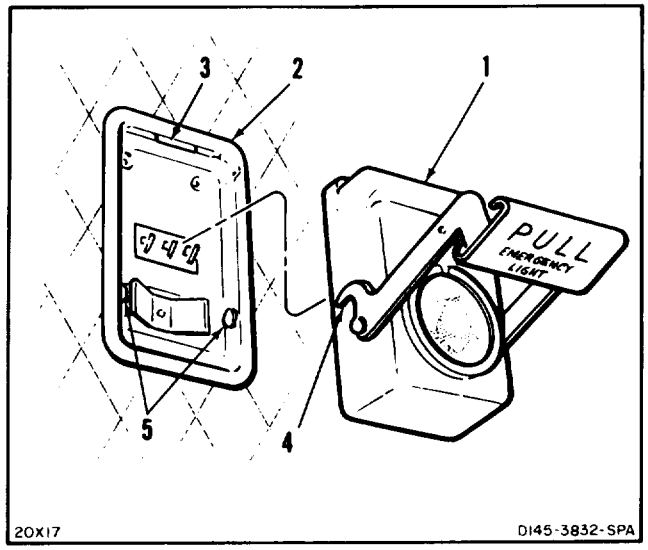
17-8 INSTALL EMERGENCY EXIT LIGHT (Continued) 17-8

NOTE

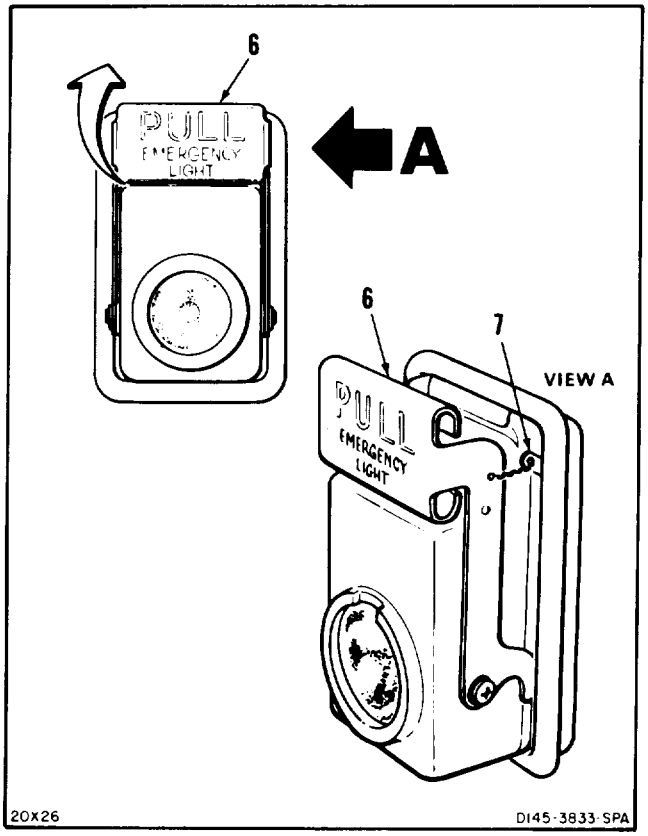
Procedure is same to install any exit light. Light above escape hatch is shown here.

1. **Position light (1) on panel (2)** with light under lip (3) and both dogs (4) engaged in pins (5).



2. **Push bar (6) (handle) up.**
3. **Lockwire bar (6)** to tab (7). Use lockwire (E229).

INSPECT



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Stow work platform (Task 2-244) (for ramp light).

Install left ramp extension (Task 2-244) (for ramp light).

Close cargo ramp (TM 55-1520-240-T) (for ramp light).

END OF TASK

17-9 REMOVE EMERGENCY EXIT LIGHT PANEL AND PAN 17-9

INITIAL SETUP

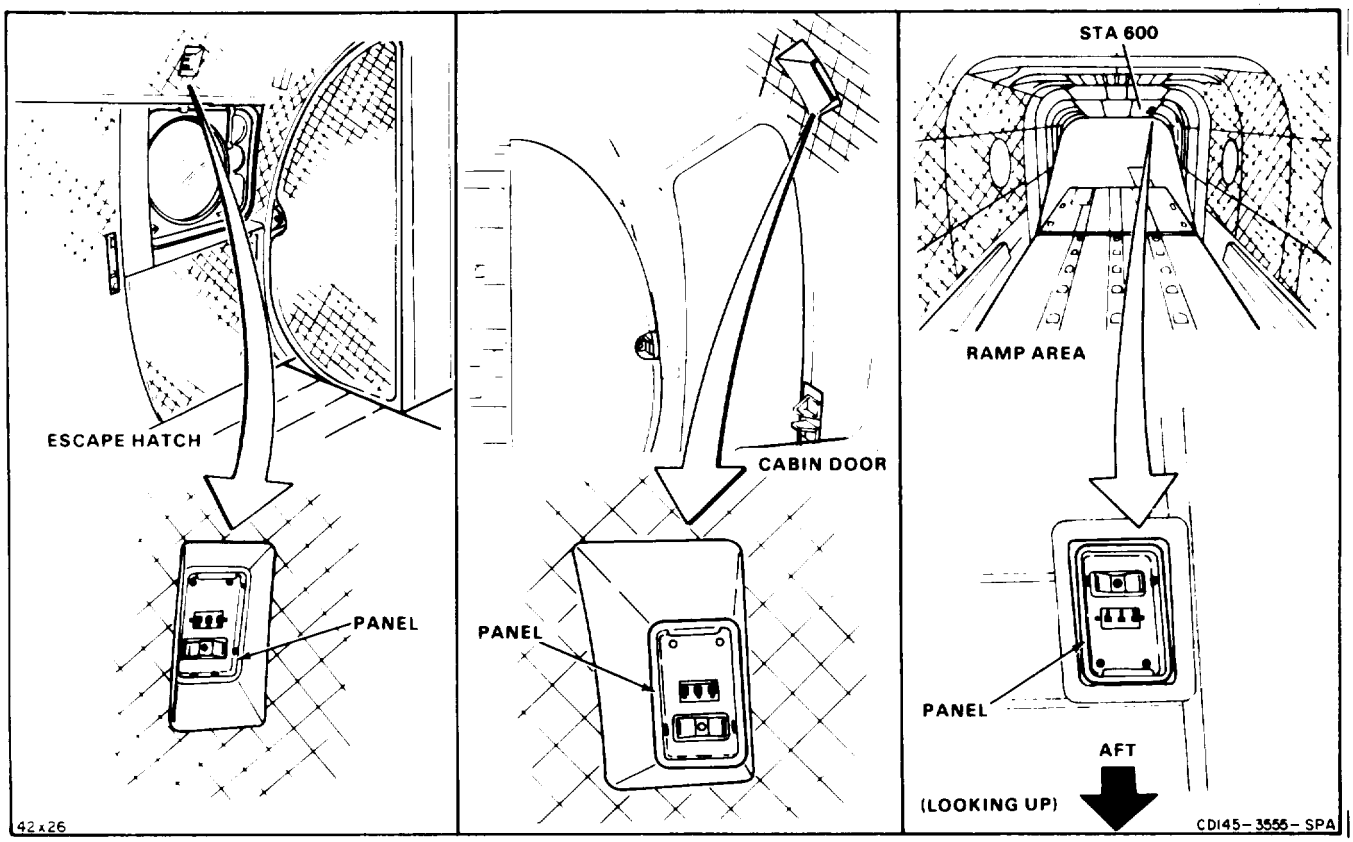
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
Paper Tags (E264)

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Emergency Exit Light Removed (Task 17-4)
Ramp Open and Level (TM 55-1520-240-T) (for Ramp Panel)
Left Ramp Extension Removed (Task 2-238) (for Ramp Panel)
Work Platform Installed in Maximum Left Position (Task 2-244) (for Ramp Panel)



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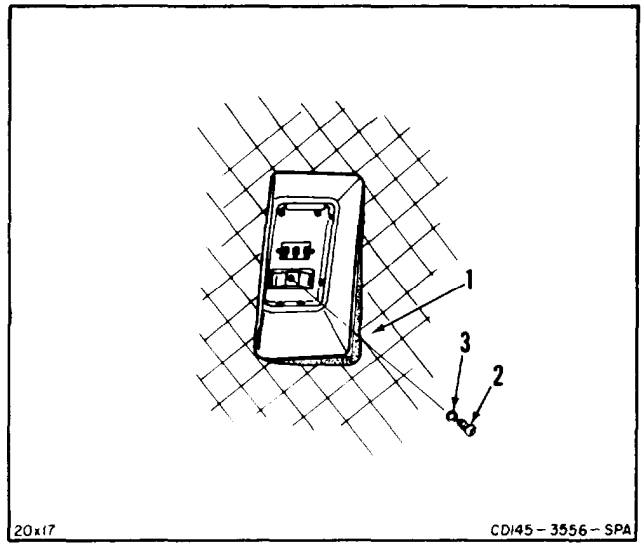
17-9 REMOVE EMERGENCY EXIT LIGHT PANEL AND PAN (Continued)

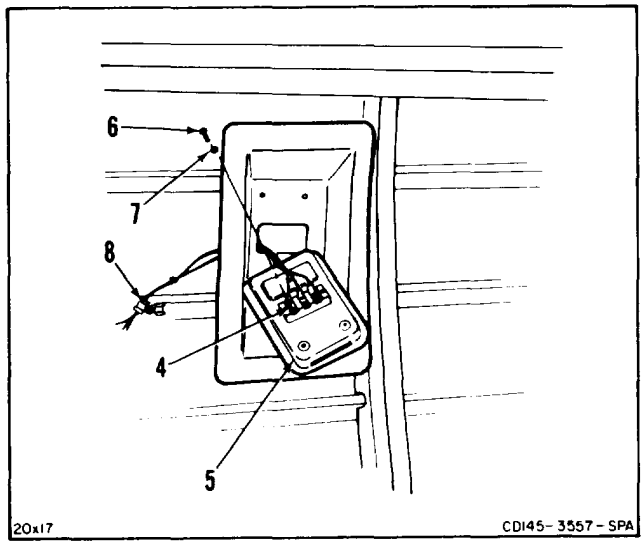
NOTE

Procedure is same to remove any exit light panel and pan. Panel and pan above escape hatch are shown here.

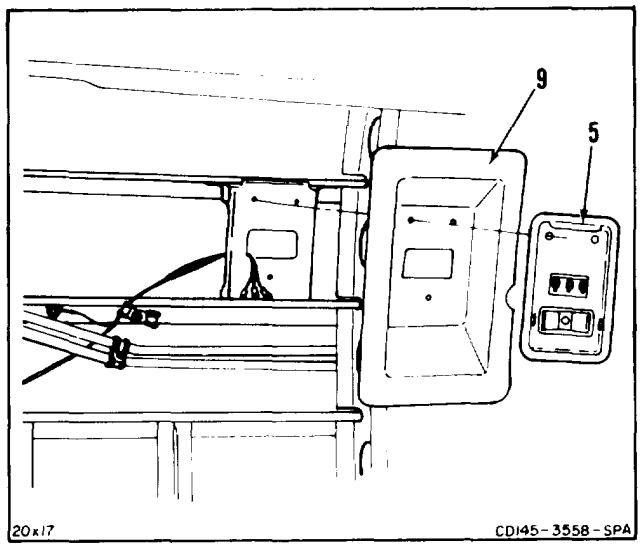
1. Remove blankets (1), if needed (Task 2-208).
2. **Remove three screws (2)** and washers (3).



3. Tag and **disconnect three wires (4)** from back of panel (5) by removing screws (6) and washers (7). Loosen clamp (8), if needed.



4. **Remove panel (5) and pan (9).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

17-10 INSTALL EMERGENCY EXIT LIGHT PANEL AND PAN 17-10

INITIAL SETUP

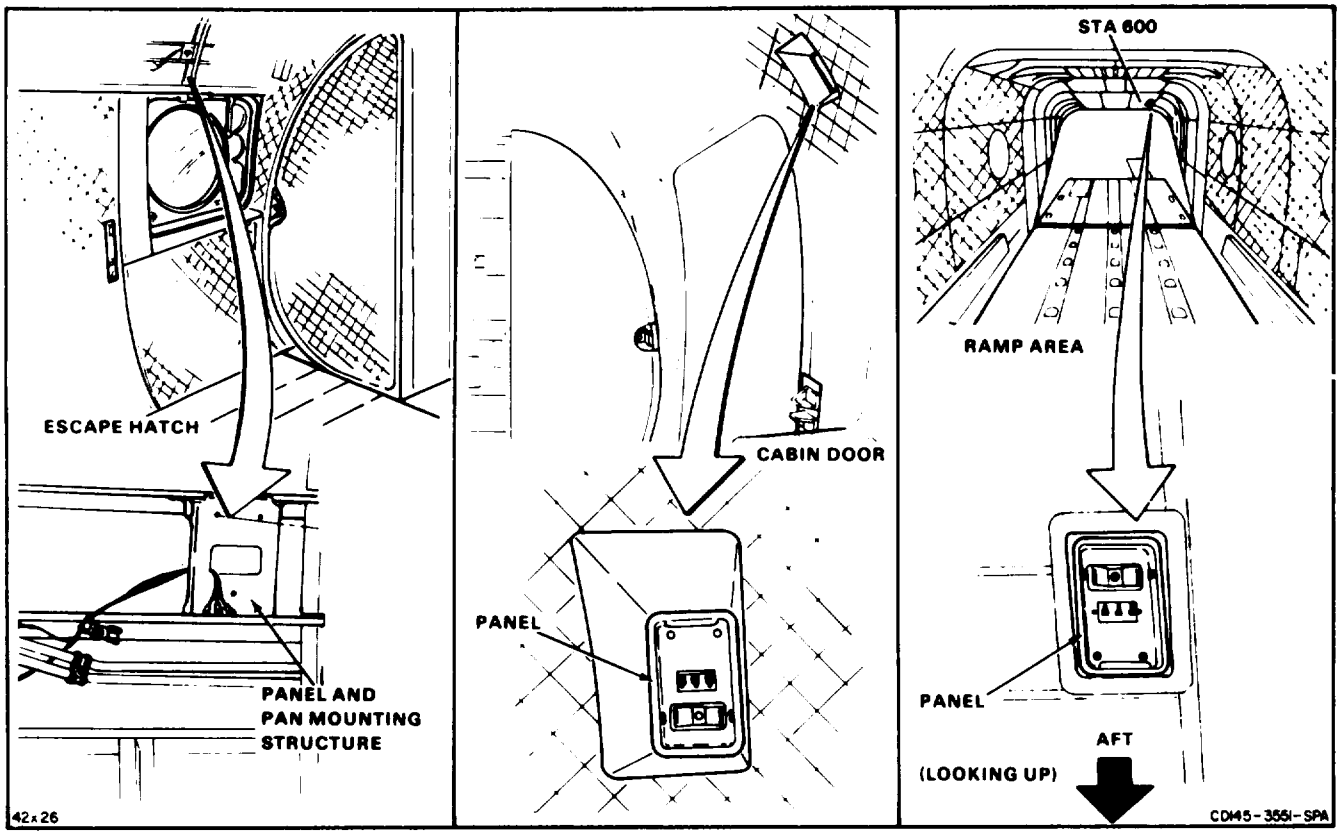
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
nSN 5180-00-323-4692

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer

References:
TM 55-1520-240-23P



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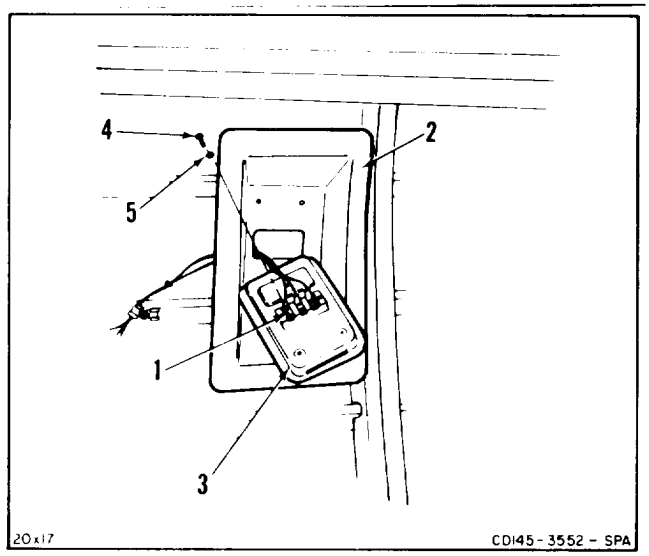
17-10 INSTALL EMERGENCY EXIT LIGHT PANEL AND PAN (Continued) 17-10

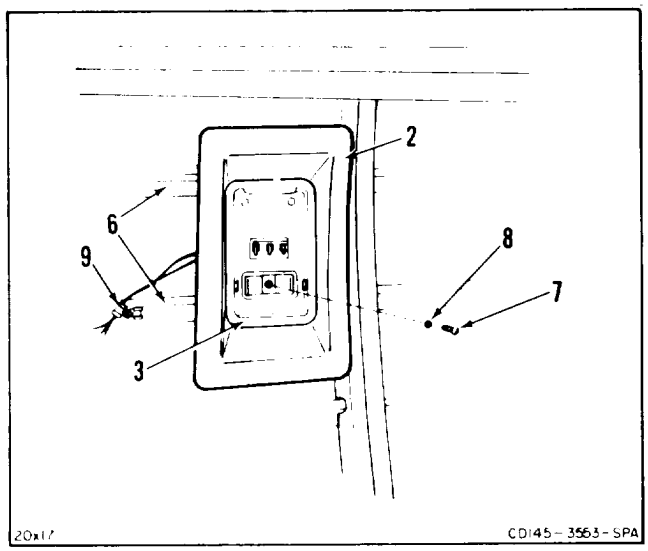
NOTE

Procedure is same to install any exit light panel and pan. Panel and pan above escape hatch are shown here.

1. Route wires (1) through pan (2). **Connect three wires** to back of panel (3) with screws (4) and washers (5). Remove tags.



2. Position pan (2) and panel (3) on structure (6). **Install three screws (7)** and washers (8).
3. Tighten clamp (9), if loosened.



4. Install blankets (10) if removed (Task 2-210).

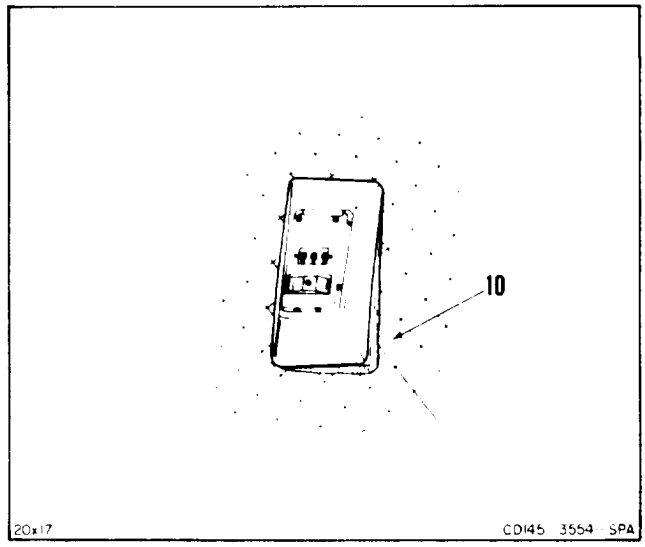
FOLLOW-ON MAINTENANCE:

Install emergency exit light (Task 17-8).

Stow work platform (Task 2-244) (for ramp panel).

Install left ramp extension (Task 2-244) (for ramp panel).

Close ramp (TM 55-1520-240-T) (for ramp panel).



END OF TASK

17-11 REMOVE INERTIA SWITCH 17-11

INITIAL SETUP

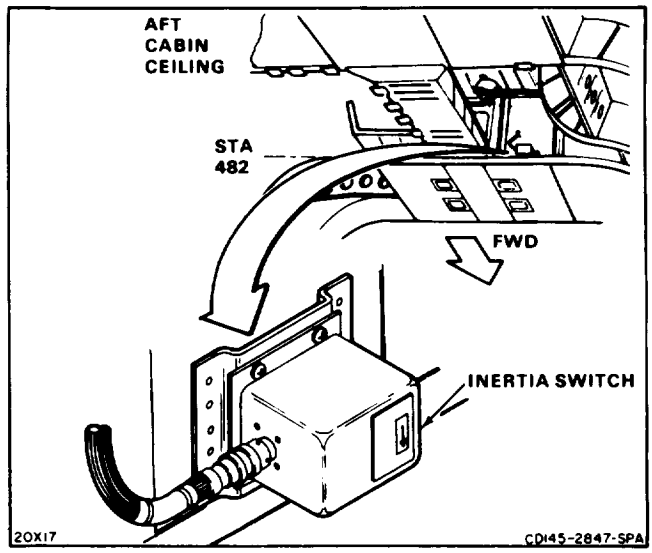
Appplicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

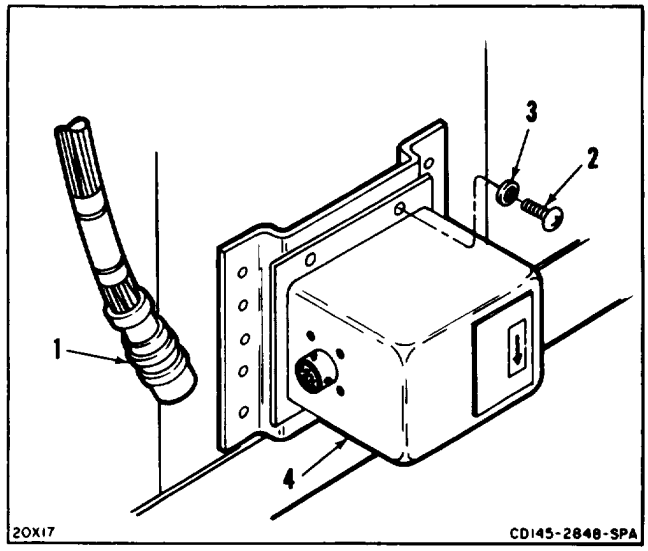
Materials:
None

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off

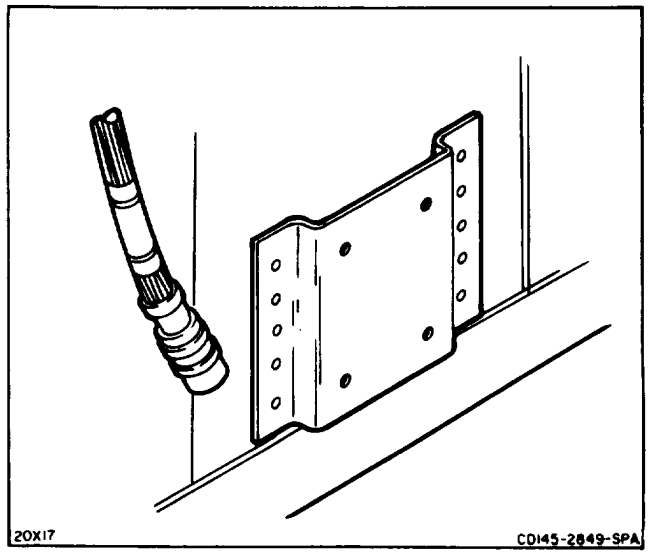


1. **Disconnect connector (1).**
2. Remove four screws (2) and washers (3).
3. **Remove inertia switch (4).**



FOLLOW-ON MAINTENANCE:

None



END OF TASK

17-12 INSTALL INERTIA SWITCH

INITIAL SETUP

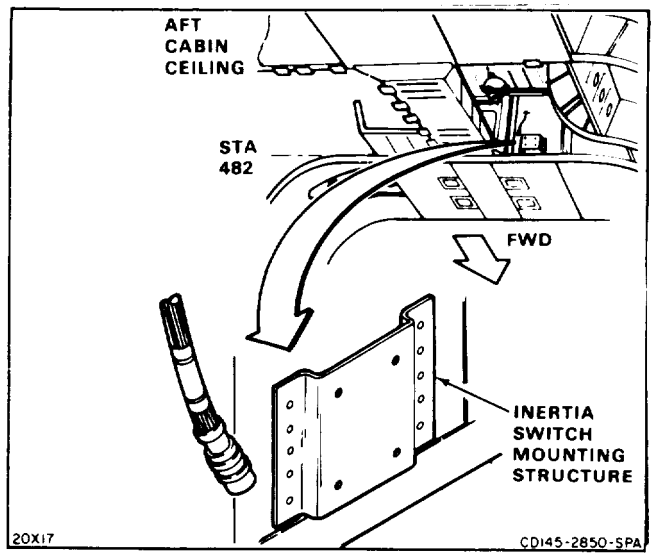
Applicable Configurations:
All

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915

Materials:
None

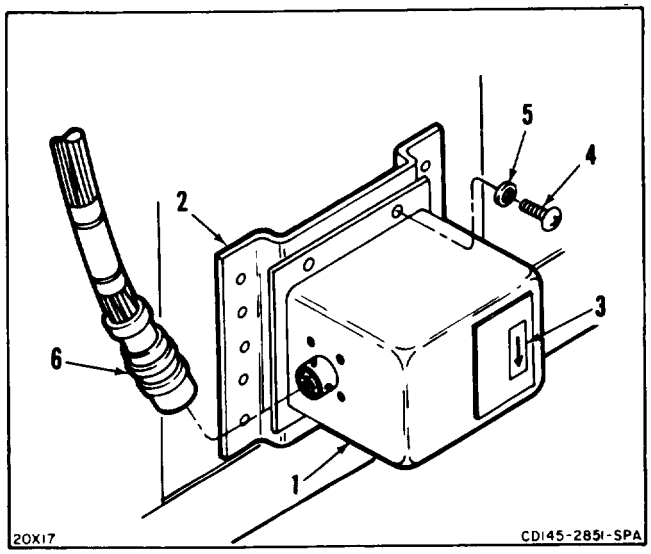
Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



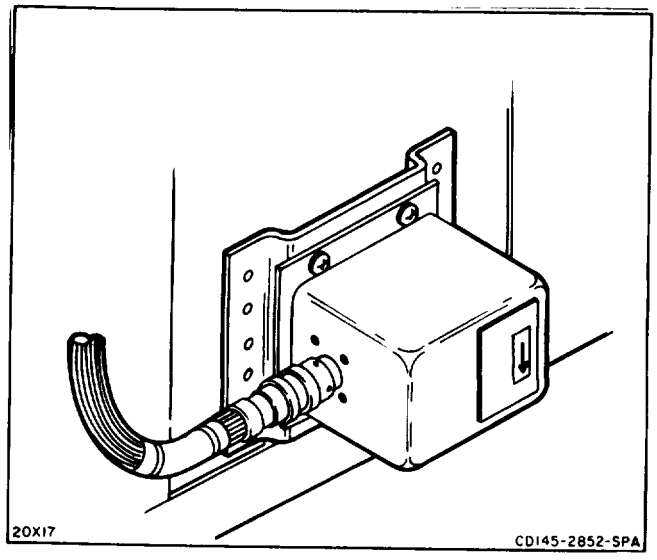
1. **Position inertia switch (1)** on structure (2) with arrow (3) pointing down.
2. **Install four screws (4)** and washers (5).
3. **Connect connector (6).**

INSPECT



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

APPENDIX A
REFERENCES

AMS 5680	Steel Welding Wire, Corrosion and Heat Resistant
AR 40-15	Medical Warning Tag and Emergency Medical Identification Symbol
DA Form 2408-15	Historical Record for Aircraft
DA Form 2408-17	Aircraft Inventory Record
DA PAM 738-751	Functional Users Manual for the Army Maintenance Management System-Aviation (TAMMS-A)
FM 1-202	Environmental Flight
FM 3-5	NBC Decontamination
FM 10-68	Aircraft Refueling
FM 21-11	First Aid for Soldiers
FM 1-409	Fundamentals of Aircraft Pneudraulics
FM 55-450-1	Army Helicopter External Load Operations
MIL-A-8625	Anodic Coatings for Aluminum and Aluminum Alloys
MIL-C-10578	Corrosion Removing & Metal Conditioning Compound (Phosphoric Acid Base)
MIL-C-22751	Coating System, Epoxy-Polyamide, Chemical and Solvent Resistant, Process for Application of
MIL-C-5541	Chemical Conversion Coatings on Aluminum and Aluminum Alloys
MIL-C-8507	Coating, Wash Primer (Pretreatment) For Metals, Application of (For Aeronautical Use) (Asg)
MIL-M-3171	Magnesium Alloy, Processes for Pretreatment and Prevention of Corrosion on,
MIL-M-45202	Magnesium Alloy, Anodic Treatment of
MIL-S-5002	Surface Treatments and Inorganic Coatings for Metal Surfaces of Weapons Systems
MIL-STD-865	Selective (Brush Plating) Electrodeposition
MIL-W-8611	Welding, Metal Arc and Gas, Steels, and Corrosion and Heat Resistant Alloys, Processes for
QQ-P-416	Plating, Cadmium (Electrodeposited)
TB MED 501	Occupational and Environmental Health: Hearing Conservation
TB 55-8100-200-24	Maintenance of Specialized Reuseable Containers for Aircraft Equipment
TB 750-125	Assembly and Inspection of Medium-Pressure Hose and Hose Assemblies Tetrafluoroethylene (Teflon)

TM 1-1520-250-23-1	Aviation Unit and Intermediate Maintenance Manual for General Tiedown and Mooring, All Series Army Models AH-64, UH-60, CH-47, UH-1, AH-1, and CH-58 Helicopters.
TM 11-1520-240-20	Aviation Unit Maintenance Manual for Electronic Equipment Configuration, Army Model CH-47D Helicopters
TM 11-1520-240-34	Aviation Intermediate Maintenance Manual for Electronic Equipment Configurations, Army Model CH-47D
TM 11-5855-300-23&P	Aviation Intermediate Maintenance Manual (Including Repair Parts and Special Tools List): Head Up Display AN/AVS-7, NSN 5855-01-350-0349
TM 11-6140-203-14-2	Operator's, Organizational, Direct Support, and General Support Maintenance Manual for Aircraft Nickel-Cadmium Batteries
TM 11-6625-273-12	Operation and Organizational Maintenance Insulation Breakdown
TM 11-6625-273-35	Field and Depot Maintenance Manual: Test Sets, Insulation Breakdown AN/GSM-6 and AN/GSM-6AS
TM 11-6625-277-14	Operator's, Organizational, Direct Support, and General Support Maintenance Manual: Meter Test Sets TS-682/GSM-1 and TS62A/GSM-1
TM 11 -6625-2843-14	Operator's, Organizational, Direct Support, and General Support Maintenance Manual for Test Set, Synchro TTU-23/E
TM 11-6625-396-12	Operator's and Organizational Maintenance Manual: Stroboscopes TS-8058/U, TS-805C/U, and TS-805D/U
TM 11 -6625-673-15-1	Operator's, Organizational, Direct Support, General Support and Depot Maintenance Manual: Test Set, Indicator-Generator, Tachometer TTU-27/E
TM 38-230	Packaging of Material: Preservation
TM 43-0104	General Use of Rosan Fasteners
TM 43-0139	Painting Instructions for Field Use
TM 1-1500-204-23/1	General Aircraft Maintenance Manual
TM 55-1500-322-24	Maintenance of Aeronautical Antifriction Bearings for Organizational, Intermediate, and Depot Maintenance Level
TM 55-1500-323-24	Organizational, Direct Support, General Support, and Depot Maintenance Manual: Installation Practices for Aircraft Electric and Electronic Wiring
TM 55-1500-328-25	Organizational, Direct Support, and General Support for Maintenance Manual Aeronautical Equipment Maintenance Management Policies and Procedures
TM 55-1500-333-24	Organizational, Direct, and General Support Maintenance Manual: Cleaning Procedures for Army Aircraft
TM 55-1500-335-23	Nondestructive Inspection Methods
TM 55-1500-343-23	Avionic Cleaning and Corrosion Prevention/Control
TM 55-1500-344-23	Aircraft Weapons Systems Cleaning and Corrosion Control
TM 55-1500-345-23	Painting and Marking of Army Aircraft
TM 55-1520-240-MTF	Maintenance Test Flight Manual for Army Model CH-47D Helicopter

TM 55-1520-240-PM	CH-47D Helicopter Phased Maintenance Checklist
TM 55-1520-240-PMD	CH-47D Helicopter Preventive Maintenance Daily Inspection Checklist
TM 55-1520-240-PPM	Progressive Preventive Maintenance Inspection Checklist (Including 14-Day Inspection Requirements)
TM 55-1520-240-T	Aviation Unit and Aviation Intermediate Troubleshooting Manual: CH-47D Helicopter
TM 55-1520-240-23P	Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) Helicopter, Cargo Transport CH-47D
TM 55-1520-241-S	Preparation for Shipment of CH-47 Helicopter
TM 55-2835-205-23	Aviation Unit and Intermediate Maintenance for Gas Turbine Engine (Auxiliary Power Unit-Apu) Model T-62T-2B, Part No. 16050-100
TM 55-2840-254-23	Aviation Unit and Aviation Intermediate Maintenance Manual for Engine, Gas Turbine, Model T55-L-712
TM 55-2840-254-23P	Aviation Unit and Intermediate Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Engine, Gas Turbine, T55-L-712
TM 55-405-9	Army Aviation Maintenance Engineering Manual: Weight and Balance
TM 55-405-10	Army Aviation Maintenance Engineering Manual, Ground Handling Test and Service Equipment
TM 55-4920-243-15	Operator, Organizational, Direct Support, General Support, and Depot Maintenance Manual: Vibration Monitoring Kit, Part No. 171170-0104
TM 55-4920-335-14	Operator's, Organizational, Direct Support, and General Support Maintenance Manual (Including Illustrated Parts Breakdown) : Hydraulic Test Stand Type D5-B, Part No. 674016
TM 55-4920-373-14 & P	Operating Instructions: Organizational, Direct, and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Gasoline Engine Driven Hydraulic Systems Test Stand, Type D5-B
TM 55-4920-378-14 & P	Operator's, Organizational, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List), Tester, Pitot and Static System (Mfr. Part No. TPS-2550-1) (Mfr. Part No. TPS 2550-2) (NSN 4920-00-7 18-6480)
TM 55-4920-401-13 & P	Operator's, Aviation Unit, and Aviation Intermediate Maintenance Manual (Including Repair Parts and Special Tools List) : Tester, Exhaust Gas Temperature, BH112BJ-53
TM 55-4920-402-13 & P	Operator's, Aviation Unit, and Aviation Intermediate Maintenance Manual (Including Repair Parts and Special Tools List) for Vibrex Balancing Kit, Part No. B4591
TM 55-4920-428-13	Operator's, Aviation Intermediate Maintenance and Illustrated Parts Breakdown Test Set, Bench, Integrated Lower Control Actuator (ILCA) 145GS278-1 NSN 4920-01-121-0604

TM 1-2840-265-23	Aviation Unit and Aviation Intermediate Maintenance Manual Engine, Gas Turbine Model T55-GA-714A
TM 1-2840-265-23P	Aviation Unit and Aviation Intermediate Maintenance Repair Parts and Special Tool List (Including Depot Maintenance Repair Parts and Special Tools) Engine, Gas Turbine Model T55-GA-714A
TM 55-4920-429-13	Operator's, Aviation Unit, and Aviation Intermediate Maintenance and Illustrated Parts Breakdown: Test Set, Line, Advanced Flight Control System 145G0009-1
TM 55-4920-430-13	Operator's, Aviation Intermediate Maintenance, and Illustrated Parts Breakdown: Test Set, Bench, Advanced Flight Control System (AFCS) 145G0008-1
TM 55-6695-200-15	Operator's, Organizational, Direct Support, General Support, and Depot Maintenance Manual: Tester, Pyrometer and Thermocouple Type N-3A, Part No. 81T27
TM 740-90-1	Administrative Storage of Equipment
TM 750-244-1-5	Procedures for the Destruction of Aircraft and Associated Equipment to Prevent Enemy Use
TM 9-1095-206-13&P	Operator's, Aviation Unit Maintenance and Aviation Intermediate Maintenance Manual Including Repair Parts and Special Tools List for Dispenser, General Purpose Aircraft: M130
TM 9-6625-975-35	Operations Manual for Biddle Ohmmeter, Part No. 247000, NSN 6625-01-125-3471

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I INTRODUCTION

B-1. MAINTENANCE ALLOCATION CHART.

a. This Maintenance Allocation Chart (MAC) assigns maintenance functions in accordance with the Three Levels of Maintenance concept for Army aviation, These maintenance levels (categories) — Aviation Unit Maintenance (AVUM), Aviation Intermediate Maintenance (AVIM), and Depot Maintenance — are depicted on the MAC as:

AVUM, which corresponds to an O Code in the Repair Parts and Special Tools List (RPSTL)

AVIM, which corresponds to an F Code in the Repair Parts and Special Tools List (RPSTL)

DEPOT, which corresponds to a D Code in the Repair Parts and Special Tools List (RPSTL)

b. The maintenance to be performed below depot and in the field is described as follows:

(1) Aviation Unit Maintenance (AVUM) activities will be staffed and equipped to perform high frequency On-Aircraft maintenance tasks required to retain or return aircraft systems to a serviceable condition. The maintenance capability of AVUM will be governed by the Maintenance Allocation Chart (MAC) and limited by the amount and complexity of ground support equipment (gse), facilities required, authorized manning strength, and critical skills available. The range and quantity of authorized spare modules/components will be consistent with the mobility requirements dictated by the air mobility concept. (Assignments of maintenance tasks to divisional company size aviation units will consider the overall maintenance capability of the division, the requirement to conserve personnel and equipment resources, and air mobility requirements.)

(a) Company Size Aviation Units. Perform those tasks which consist primarily of preventive maintenance and maintenance repair and replacement functions associated with sustaining a high level of aircraft operational readiness. Perform maintenance inspections and servicing to include preflight, daily, intermediate, periodic (or phased), and special inspections as authorized by the MAC or higher headquarters. Identify the cause of equipment/system malfunctions using applicable technical manual troubleshooting instructions, built-in-test equipment (bite), installed aircraft instruments, or test, measurement, and diagnostic equipment (tmde). Replace worn or damaged modules) components that do not require complex adjustments or system alignment and which can be removed/installed with available skills, tools, and ground support equipment. Perform operational and continuity checks and make minor repairs to the electrical system. Inspect, service and make operational, check capacity and pressure of hydraulic systems. Perform servicing, functional adjustments, and minor repair/replacement to the flight control, propulsion, power train, and fuel systems. Accomplish airframe repair that does not require extensive disassembly, jigging, or alignment. The manufacture of airframe parts will be limited to those items which can be fabricated with tools and equipment found in current air mobile tool and ship sets. Evacuate unserviceable modules/components and end items beyond the repair capability of AVUM to the supporting AVIM.

(b) Less than Company Size Aviation Units. Aviation elements organic to brigade, group, battalion headquarters, and detachment size units are normally small and have less than ten aircraft assigned. Maintenance tasks performed by these units will be those which can be accomplished by the aircraft crew chief or assigned aircraft repairman and will normally be limited to preventive maintenance, inspections, servicing, spot painting, stop drilling, application of nonstress patches, minor adjustments, module/component fault diagnosis, and replacement of selected modules/components, Repair functions will normally be accomplished by the supporting AVIM unit.

(2) Aviation Intermediate Maintenance (AVIM) provides mobile, responsive One-Stop maintenance support. (Maintenance functions which are not conducive to sustaining air mobility will be assigned to depot maintenance.) AVIM may perform all maintenance functions authorized to be done at AVUM. Repair of equipment for return to user will emphasize support or operational readiness requirements. Authorized maintenance includes replacement and repair of modules/components and end items which can be accomplished efficiently with available skills, tools, and equipment. AVIM establishes the Direct Exchange (dx) program for AVUM units by repairing selected items for return to stock when such repairs cannot be accomplished at the AVUM level. The AVIM level inspects, troubleshoots, performs diagnostic tests, repairs, adjusts, calibrates, and aligns aircraft system modules/components. AVIM units will have capability to determine the serviceability of specified modules/components removed prior to the expiration of the Time Between Overhaul (tbo) or finite life. Module/component disassembly and repair will support the DX program and will normally be limited to tasks requiring cleaning and the replacement of seals, fittings, and items of common hardware. Airframe repair and fabrication of parts will be limited to those maintenance tasks which can be performed with available tools and test equipment. Unserviceable reparable modules/components and end items which are beyond the capability of AVIM to repair will be evacuated to Depot Maintenance. AVIM will perform aircraft weight and balance inspections and other special inspections which exceed AVUM capability. AVIM provides quick response maintenance support, including aircraft recovery and air evacuation, on-the-job training, and technical assistance thru the use of mobile maintenance contact teams. Maintains authorized operational readiness float aircraft. Provides collection and classification services for serviceable/unserviceable material. Operates a cannibalization activity in accordance with AR 750-50. (The aircraft maintenance company within the maintenance battalion of a division will perform AVIM functions consistent with air mobility requirements and conservation of personnel and equipment resources. Additional intermediate maintenance support will be provided by the supporting nondivisional AVIM unit.)

Section II

B-2. Use of the Maintenance Allocation Chart.

NOTE

Nomenclatures used throughout the MAC are approved item names. Those terms/nomenclatures expressed in parentheses are generic in nature and are not to be considered as official terminology.

a. The Maintenance Allocation Chart assigns maintenance functions to the lowest category of maintenance based on past experience and the following considerations:

(1) Skills available.

(2) Work time required.

(3) Tools and test equipment required and/or available.

b. Only the lowest category of maintenance authorized to perform a maintenance function is indicated, If the lowest maintenance category cannot perform all tasks of any single maintenance function (e.g., test, repair), then the higher maintenance level(s) that can accomplish additional tasks will also be indicated,

c. A maintenance function assigned to a maintenance category will automatically be authorized to be performed at any higher maintenance category.

d. A maintenance function that cannot be performed at the assigned category of maintenance for any reason may be evacuated to the next higher maintenance category. Higher maintenance categories will perform the maintenance functions of lower maintenance categories when required or directed by the commander that has the authority to direct such tasking.

e. The assignment of a maintenance function will not be construed as authorization to carry the related repair parts or spares in stock. Information to requisition or otherwise secure the necessary repair parts will be as specified in the associated Repair Parts and Special Tools List (RPSTL).

f. Normally there will be no deviation from the assigned level of maintenance. In cases of operational necessity, maintenance functions assigned to a maintenance level may, on a one-time basis and at the request of the lower maintenance level, be specifically authorized by the maintenance officer of the level of maintenance to which the function is assigned. The special tools, equipment, etc., required by the lower level of maintenance to perform this function will be furnished by the maintenance level to which the function is assigned. This transfer of a maintenance function to a lower maintenance level does not relieve the higher maintenance level of the responsibility for the function. The higher level of maintenance has the authority to determine:

(1) If the lower level is capable of performing the work.

(2) If the lower level will require assistance or technical supervision and on-site inspection.

(3) If the authorization will be granted.

g. Changes to the Maintenance Allocation Chart will be based on continuing evaluation and analysis by responsible technical personnel and on reports received from field activities.

B-3. Maintenance Functions. Maintenance functions will be limited to and defined as follows:

a. inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b, Test. To verify serviceability by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. *Service.* Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance,

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement, Consists of comparisons of two instruments. one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared,

g. Install. The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services or other maintenance actions to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles. etc.) considered in classifying Army equipments/components.

B-4. Standard Groups (Columns 1 and 2). The standard groupings shown in the sample below are used, as applicable, throughout this MAC. Maintenance manuals and RPSTL will reflect these standard groupings as individual chapters, with sections in each chapter relative to the individual complete systems, subsystems, modules, components, assemblies, or specific parts noted.

GROUP NUMBER	DESCRIPTION
01	Aircraft General
02	Airframe System
03	Alighting Gear
04	Powerplant Installation
05	Blades/Rotor Systems
06	Train Systems
07	Hydraulic Systems
08	Instrument Systems
09	Electrical System
10	Fuel System
11	Flight Controls System
12	Utility System
13	Environmental Control System
14	Hoists and Winches
15	Auxiliary Powerplant System
16	Mission Equipment
17	Emergency Equipment

B-5. Maintenance Function (Column 3). column 3 lists the functions to be Performed On the items listed in column 2.

B-6. Maintenance Categories and Work Times (Column 4). The maintenance categories (levels) AVUM, AVIM, and DEPOT are listed on the Maintenance Allocation Chart with individual columns that include the work times for maintenance functions at each maintenance level. Work time presentations such

1Service — respect test. service adjust. align calibrate. or replace
2Acttions — welding, grinding, riveting. straighteing. facing. remachining. or resurfacing

as “0. 1“ indicate the average time it requires a maintenance level to perform a specified maintenance function. If a work time has not been established, the columnar presentation shall indicate
“ Maintenance levels higher than the level of maintenance indicated are authorized to perform the indicated function.

B-7. Tools and Tut Equipment (Column 5 and Section III). Common tool sets (not individual tools), special tools, test, and support equipment required to perform maintenance functions are listed alphabetically in Section Ill with a reference number to permit cross-referencing to column 5 in the MAC. In addition, the maintenance category authorized to use the device is listed along with the item National Stock Number (NSN) and, if applicable, the tool number to aid in identifying the tool/device.

B-8. Remarks (Column 6 and Section IV). Remarks (identified by an alphabetic code in column 6) and other notes (identified by a number in parentheses in the applicable column) are listed in Section IV to provide a ready reference to the definition of the remark/note.

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Catogorv			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
00	AIRCRAFT SYSTEM						
01	AIRCRAFT GENERAL						
0101	Aircraft Hoisting			- . -		T4,T71, 278	
0102	Spot Painting		- . -				
0103	Cleaning, Fuselage Exterior		- - -			203,204, 205,278	
0104	Servicing, General		- - -			250,278	
0105	Parking		- . -				
0106	Moor		- - -			T40,220	
0107	Tow		- - -			T75,T82 278	
0108	Jacking		- - -			278,279	
0109	preservation		- - -			T21,T58, T59,T60, T61,T66, T67,T68, T76,T80, T81,T103, T107, T131, T132,228, 278	
0110	Weight and Balance			- - -			
0111	Complete Painting				- - -		

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
0112	Subassembly Painting		.	- - -		226	
0113	Rosan Fittings and Studs	Replace	- . -	- - -		222,282, 222,237, 242	
02	AIRFRAME						
0201	Cockpit Section	Inspect	- - -			274	
		Replace		- - -			
		Repair	- - -			275,278	1,25
				- - -		275,278	15,25, 26
					- - -		
020101	Nose Enclosure	Inspect	- - -			274	
		Replace			- - -		
		Repair	- - -			275,278	1,25
				- - -		275,278	15,25, 26
					- - -		
020102	Bulkhead Sta 95	Inspect	- - -			274	
		Replace			- - -		
		Repair	- - -			275,278	1,25
				- - -		275,278	15,25, 26
020103	Frame Sta 120	Inspect	- - -			274	
		Replace			- . -		
		Repair	- - -			275,278	1,25
				- - -		275,278	15,25, 26
020104	Frame Sta 140	Inspect	- - -			274	
		Replace			- - -		
		Repair	- - -			275,278	1,25
				- - -		275,278	15,25, 26

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
020105	Frame Sta 160	Inspect	---			274	
		Replace			---		
		Repair	---			275,278	1,25
				---		275,278	15,25, 26
					-.-		
020106	Side Panel	Inspect	-.-			274	
		Replace			---		
		Repair	---			275,278	1,25
				---		275,278	15,25, 26
020107	Crown Panel	Inspect	---			274	
		Replace			---		
		Repair	---			275,278	1,25
				-.-		275,278	15,25, 26

020108	Former Sta 51.75	Inspect	-.-			274	
		Replace			---		
		Repair	---			275,278	1,25
				---		275,278	15,25, 26

020109	Former Sta 70.62	Inspect	---			274	
		Replace			---		
		Repair	---			275,278	1,25
				---		275,278	15,25, 26

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(6) Tools and Equipment	(6) Remarks
020110	Former Sta 95	Inspect	- . -			274	
		Replace			- . -		
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25, 26
					- . -		
)20111	Former Sta 120	Inspect	- . -			274	
		Replace			- . -		
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25, 26
					- . -		
020112	Former Sta 160	Inspect	- . -			274	
		Replace			- . -		
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25, 26
					- . -		
020113	Bottom Panel	Inspect	- . -			274	
		Replace			- . -		
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25, 26
					- . -		
020114	Flooring	Inspect	- . -			274	
		Replace	- . -			278	
		Repair	- . -			275	

MAINTENANCE ALLOCATION CHART

SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
020115	Access Doors, Covers, Panels, Jettison Doors and Work Platforms	Inspect	- . -			274	
		Replace	- . -			275,278	1,25
		Repair	- . -			275,278	1,25
				- . -		275,278	
020116	Windshield and Windows	Inspect	- . -			274	
		Replace	- . -			T167, T168 232,278	
		Repair	- . -			231,242 275,292, 293	
020117	Formers, Stringer Longerons, Brackets, Angles, Webs	Inspect	- . -			274	
		Replace		- . -		275,278	15,25, 26
					- . -		
		Repair	- . -			275,278	
				- . -		275,278	15,25, 26
					- . -		
020118	Skin, Cockpit	Inspect	- . -				
		Replace		- . -		275,278	15,25, 26
					- . -		
020119	Pilot & Copilot Seat & Cushions	Inspect	- . -				
		Test	- . -				
		Adjust	- . -			278	
		Replace	- . -			278	
		Repair	- . -				3
020120	Inertia Reel, Harness & Belt	Inspect	-.—			278	
		Adjust	- . -			278	
		Replace	- . -				
)20121	Acoustical Insulation	Inspect	- . -				
		Replace	- . -			278	
		Repair	-.-				

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
020122	Map/Data Case	Inspect	- . -			278	
		Replace	- . -				
020123	Self-Tuning Absorber	Inspect	- . -				
		Test	- . -			T112	
		Adjust	- . -			T112, T84	
		Replace	- . -			259,278	
					- . -		
020124	Absorber System Test Box (ACFT)	Inspect	- . -			278	
		Replace	- . -			278	
		Repair			- . -		
0202	Fwd Transmission Fixed Fairing	Inspect	- . -			274	
		Replace			- . -		
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25, 26
					- . -		
020201	Transmission Support Beams	Inspect	- . -			274	
		Replace			- . -		
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25, 26
					- . -		
020202	Transmission Mount Bushing	Inspect	- . -			274	
		Replace	- . -			275,278	
020203	Fwd Transmission Fwd & Aft Fairing	Inspect	- . -			274	
		Remove	- . -			275,278	
		Repair	- . -			275,278	
020204	Work Platforms & Panels	Inspect	- . -			274	
		Remove	- . -			275,278	
		Repair	- . -			275,278	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
020205	Bulkheads, Beams & Fittings	Inspect	- . -			274	
		Remove			- . -		
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25, 26
					- . -		
0203	Cabin Section	Inspect	- . -				
		Replace			- . -		
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25, 26
					- . -		
020301	Side Panels	Inspect	- . -				
		Replace			- . -		
		Repair	- - -			275,278	1,25
				- - -		275,278	15,25, 26
					- . -		
020302	Crown Panel	Inspect	- . -				
		Replace			- . -		
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25, 26
					- . -		
020303	Crown Formers Sta 180, 220, 260 300, 380, 420	Inspect	- . -				
		Replace			- . -		
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25 26
					- . -		

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
020304	Skin, Fuselage	Inspect	---				
		Replace		---		275,278	15,25, 26

		Repair	---			275,278	1,25
				---		275,278	15,25, 26

020305	Formers Sta 200 240, 280, 320, 360 400	Inspect	---			274	

		Replace			---		
		Repair	---			275,278	1,25
				---		275,278	15,25, 26

020306	Walkway	Inspect	---				
		Replace		---		275,278	15,25, 26

		Repair	---			275,278	1,25
				---		275,278	15,25, 26

)20307	Formers, Stringers, Longerons, Ribs, Brackets, Angles, Webs	Inspect	---			274	
		Replace		---		275,278	1,25

		Repair	---			275,278	1,25
				---		275,278	15,25, 26

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
020308	Fairings, Panels and Honeycomb Panels	Inspect	- . -			274	
		Replace	- . -				
		Repair	- . -				
				- . -		275,278	1,25
020309	Fuel Pods	Inspect	- . -			274	
		Replace	- . -			274	
				- . -		275,278	1,25
		Repair	- . -			206,247	1,25
				- . -		206,247	25,26
					- . -		
020310	Fuel Pods, Composite	Repair	- . -			275,303	
020311	Backing Boards and Isolation	Inspect	- . -			274	
		Replace	- . -			275	
020312	Cabin Access, Escape, Rescue Door and Actuating Mech	Inspect	- . -			274	
		Adjust	- . -			278	
		Replace	- . -			275,278	1,25
		Repair	- . -			262,263	
						274	
020313	Cabin Flooring	Inspect	- . -			274	
		Replace	- . -			275,278	1,25
		Repair	- . -			275,278	1,25
020314	Cargo Tiedown Fittings, 5000-Pound	Inspect	- . -			274	
		Replace	- . -			275,278	
020315	Cargo Tiedown Fittings, 10,000-Pound	Inspect	- . -			278	
		Replace	- . -			278	
020316	Water Drain System	Inspect	- . -			274	
		Replace	- . -			278	
020317	Windows	Inspect	- . -			274	
		Replace	- . -			262,263	

MAINTENANCE ALLOCATION CHART SECTION II							
NOMENCLATURE OF END ITEMS							
(1)	**(2)**	**(3)**	**(4)**			**(5)**	**(6)**
Group Number	**Component/Assembly**	**Maintenance Function**	**Maintenance Category**			**Tools and Equipment**	**Remarks**
			AVUM	**AVIM**	**DEPOT**		
020318	Seals/Retainers	Inspect Replace				 278,262 263	
020319	Troop, Troop Commander Seats & Webbing	Inspect Replace Repair				274 278 278	 3
020320	Acoustical Insulation and Curtain, Axe Holder, Stowage Bag & Container	Inspect Replace Repair				274 278 278	 3
020321	Rescue Door Actuator	Inspect Replace				 278	
0204	Aft Fuselage	Inspect Replace Repair				274 275,278 275,278	 1,25 15,25,26
020401	Support Assy, Combining Transmission (Beam & Support Fittings)	Inspect Replace Repair				274	 3
020402	Beam & Support Bushings	Inspect Replace				274 275,278	

MAINTENANCE ALLOCATION CHART

SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(6) Tools and Equipment	(6) Remarks
020403	Former Sta 440, 482, 502, 437, 520, 534, 555, 575, 594	Inspect	- . -			274	
		Replace			- . -		
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25, 26
					- . -		
020404	Aft Fuselage Crown Panel	Inspect	- . -			274	
		Replace			- . -		
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25, 26
					- . -		
020405	Aft Fuselage Side Panels	Inspect	- . -			274	
		Replace			- . -		
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25, 26
					- . -		
020406	Aft Fuselage Bottom Panel	Inspect	- . -			274	
		Replace			- . -		
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25, 26
					- . -		
020407	Formers, Ribs, Longerons Stringers/Beams	Inspect	- . -			274	
		Replace			- . -		
		Repair	- . -			275,278	1,25
				-.-		275,278	15,25, 26
					-.-		

MAINTENANCE ALLOCATION CHART

SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
020408	Access Doors, Panels, Work Platforms	Inspect	- . -			274	
		Replace	- . -			275,278	1,25
		Repair	- . -			275,278	1,25
				- . -		275,278	
020409	Cargo Loading Ramp & Ramp Extension	Inspect	- . -			274	
		Replace	- . -			275,278	
		Repair	- . -			275,278	1,25
				- . -		275,278	15,25, 26
					- . -		
020410	Ramp Flooring	Inspect	- . -			274	
		Replace	- . -			275,278	1,25
		Repair	- . -			275,278	1,25
020411	Cargo Loading Ramp, Composite	Inspect	- . -				
		Replace			- . -		
		Repair		- . -		275,278	25,26
020412	Ramp Hinge Fittings	Inspect	- . -				
		Replace		- . -		275,278	
020413	Ramp Door Actuator Mechanism	Inspect	- . -				
		Service	- . -				
		Test	- . -			231,278	
		Adjust	- . -			231,278	
		Replace	- . -				
		Repair	- . -			278	
020414	Cargo Door Ramp Seals	Inspect	- . -				
		Replace	- . -			275	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
020415	Ramp Door Assembly Track and Actuator Mechanism	Inspect Adjust Replace Repair				274 278 278 275,278 275,278	 1,25
020416	M-24 Sub System	Inspect Replace				274 278	
0205	Aft Pylon	Inspect Replace Repair				274 T17, T16, T32, T54, T55, T55.1 278, 282 275 275	 1,25
020501	Pylon Drain Lines	Inspect Replace				 278	
020502	Aft Pylon Fairings, Work Platforms, Panels	Inspect Replace Repair				274 278 275,278 275,278	 1, 2
020503	Pylon Fairing Latches	Inspect Repair				 278	
020504	Aft Transmission Support Structure	Inspect Replace Repair				274 275 275	 1,25 15,25,26

MAINTENANCE ALLOCATION CHART

SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintermnce Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
020505	Aft Rotary Wing Drive Shaft Support Structure	Inspect	- - -			274	
		Replace			- . -		
		Repair	- - -			275	1,25
				- - -		275	15,25, 26
020506	Formers, Stringers, Longerons, Beams	Inspect	- - -			274	
		Replace		- - -		275	15,25, 26
		Repair	- - -			275	1,25
				- - -		275	
020507	Skin Pylon	Inspect	- - -			274	
		Replace	- - -			275	
				- - -		275	
		Repair	- - -			274,275	
				- - -		274,275	
020508	Fwd Actuator Support	Inspect	- - -			274	
		Replace			- - -		
		Repair	- - -			278	1,25
				- o -		278	15,25, 26
020509	Aft Actuator Support	Inspect	- - -			274	
		Replace			- - -		
		Repair	- - -			278	1,25
				- - -		278	15,25, 26
020510	Support Aft Swiveling Actuator	Inspect	- - -			274	
		Replace			- - -		
		Repair	- - -			278	1,25
				- - -		278	15,25, 26

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
020511	Canted Deck	Inspect	–			274	
		Replace		–		278	
		Repair	–			278	1,25
						278	
0206	Drip Pans (Fiberglass)	Inspect	–			274	
		Replace	–			278	
		Repair	–			274,275	1,2
				–		274,275	
020601	Drip Pans (Aluminum)	Inspect	–			274	
		Replace	–	–		278	
		Repair	–			274, 275	
0207	Grounding Receptacle (Ferry Fuel)	Inspect	–				
		Replace	–			278	
0208	General						
020801	Hinges	Inspect	–			274	
		Repair		–		275	
020802	Extruded Parts	Inspect	–			274	
		Repair		–		275	
020803	Honeycomb	Inspect	–			274	
		Repair		–		275	
020804	Skins and Webbing	Inspect	–			274	
		Repair		–		275	
020805	Canvas and Webbing	Inspect	–			274	
		Repair		–		275	
020806	Aluminum Tubing	Inspect	–			274	
		Repair		–		275	
020807	Rubber Seals	Inspect	–	–		274	
		Repair				275	
020809	Minor Damage	Inspect	–			274	
		Repair		–		275	
020810	Partial Damage	Inspect	–			274	
		Repair		–		275	
02081 1	Complete Damage	Inspect	–			274	
		Repair		–		275	
03	A LIGHTING GEAR						

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Compoment/Assembly	(3) Maintenance Function	(4) Maintenance Catagory AVUM	AVIM		Tools and Equipment	(6) Remarks
0301	Shock Struts	Inspect	-.-			274	
		Service	-.-			278	
		Replace	-.-			243,244, 278,282,	
		Repair		-.-		243,244, 278,282, T108,221 , 237,242	
		Overhaul			-.-		
0302	Strut Air Valves	Inspect	-.-				
		Replace	-.-			278,282	
0303	Strut Grease Fittings and Tow Lug	Inspect	-.-				
		Replace	-.-			278,282	
0304	Torque Arm Assembly	Inspect	-.-				
		Replace	-.-			278,282	
0305	Wheel and Tire Assemblies	Inspect	-.-			274	
		Service	-.-			278	
		Replace	-.-			230,278, 282,309	
		Repair	-.-			278,282	
0306	Wheel bearing	Inspect	-.-			274	
		Service	-.-			278	
		Replace	-.-			278,282	
03060	Wheel Cups and Keys	Inspect	-.-				
		Replace	-.-			278	
0307	Forward and Aft Wheel Brake Disks and Wheel Brake Linings	Inspect				274	
		Replace	-.-			278	
0308	Wheel Brake Units	Inspect				274	
		Adjust	-.-			278	
		Replace	-.-			278,282	
		Repair	-.-			278,282	
0309	Drag Links	Inspect	-.-			274	
		Replace	-.-			245,278, 282,295	
		Repair		-,-		229,237	

MAINTENANCE ALLOCATION CHART SECTION II							
NOMENCLATURE OF END ITEMS							
(1)	(2)	(3)	(4)			(5)	(6)
Group Number	Component/Assembly	Maintenance Function	Maintenance Category			Tools and Equipment	Remarks
			AVUM	AVIM	DEPOT		
0310	Static Lock Mechanism	Inspect Replace				278, 282	
0311	Power Steering Lever	Inspect Replace				278	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
0312	Forward and Aft Landing Gear Axle	Inspect	-.-				
		Replace	-.-			278,282	
0313	Spindle and Swivel Housing Assembly	Inspect	-.-			278	
		Test	-.-				
		Replace	-.-			245, 278,282	
		Repair	-.-			278,282	
				-.-		T94, T97, 237,242, 245,278	
0314	Swivel Locks and Springs	Inspect	-.-				
		Replace	-.-			278	
0315	Static Ground Wire	Inspect	-.-				
		Replace	-.-			278	
0316	Proximity Switch	Inspect	-.-			278	
		Adjust	-.-			278	
		Replace	-.-			278,282	
031601	Proximity Switch Bracket	Inspect	-.-				
		Repair	-.-				
				-.-		T89	
		Replace		-.-		278,282	
04	POWERPLANT INSTALLATION						
0401	Demountable Powerplant	Inspect	-.-			278	
		Assembly	-.-			272,278	7
		Test	-.-			272,282	5
		Adjust	-.-			272	
		Disassembly	-.-			T134,272, 282	12

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
0401	Demountable Powerplant Assembly (Cont)	Assembly	—			T134, 272, 282	12
			—				
		Replace	—			T16, T134, 258, 278, 282	
			—				
			—				
		Repair				236, 249, 277	6
			—				
						236, 249, 277	6
			—				
		Depreserve	—			317	
040101	Fuel Boost Pump	Inspect	—				
		Replace	—			272, 282	
040102	Fuel Flow Divider	Inspect	—				
		Replace	—			272	
040103	Engine Accessory Gearbox Chip Detector	Inspect	—				
		Replace	—			272	
040104	Starter Drive Shaft Seal	Inspect	—				
		Replace	—			272	
040105	Starter Drive Housing	Inspect	—				
		Replace	—			272	
040106	Oil Pump	Inspect	—				
		Replace	—			272, 282	
040107	Oil Cooler	Inspect	—				
		Replace	—			272	
040108	Oil Filler Strainer Element	Inspect	—				
		Replace	—			272	
040109	Oil Filler	Inspect	—				
		Replace	—			272	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
040110	Ignition Switch	Inspect	—				
		Replace	—			277, 282	
040111	Inline Fuel Filter	Inspect	—				
		Replace	—			272	
040112	Interstage Air Bleed Band	Inspect	—				
		Replace	—			272	
040113	Air Bleed Band Actuator	Inspect	—				
		Replace	—			272	
0402	Engine Access Cover	Inspect	—				
		Adjust	—			278	
		Replace	—			278	
		Repair	—			278	1,2
				—		275	
040201	Cover Support Strut	Inspect	—				
		Replace	—			278	
0403	Engine Lower Access Door	Inspect	—				
		Replace	—			278	
		Repair	—			278	
				—		275	
0404	Engine Mount Drag Strut, Support Cap and Adapter	Inspect	—			274, 282	
		Replace	—			T134, 272, 278, 282 T109, 237	
		Repair	—			278, 282	
0405	Air Inlet and Bypass Screens	Adjust	—			275	
		Clean	—				
		Inspect	—				
		Replace	—			278	
		Repair	—				
				—			
040501	Screen Latch Assemblies, Cushions, Fasteners	Inspect	—				
		Replace	—			275	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
0406	Air Inlet Fairing/ Engine Cowling	Inspect	—				
		Adjust	—			275, 282	
		Repair	—				
		Replace		—		278, 282	
0407	Tailpipe	Inspect	—				
		Replace	—			278, 282	
		Repair	—			241	
				—		275, 291.1	
0408	Fireshield Former Assembly	Inspect	—				
		Adjust	—			278, 282	
		Replace	—			272	
		Repair	—			275	
0409	Control Linkages and Rods (N1 and N2)	Inspect	—			27	
		Adjust	—			272, 282	
		Replace	—			T122, 272,282	
		Repair	—			272, 282	
0410	Gas Producer Control Actuator (N1 or N2)	Inspect	—			272	27
		Replace	—			272, 282 T115	
		Overhaul			—		
0411	Turbine Control Actuator (N2 or N1)	Inspect	—				27
		Replace	—			T115, 272 282	
		Overhaul			—		
0412	Engine Condition Control Assembly	Inspect	—			282	
		Replace	—			277	
		Overhaul			—		
041201	Condition Control Panel	Inspect	—				
		Replace	—			277	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
041202	Actuator Control Bracket	Inspect	—				
		Replace	—			272, 282	27
0413	Engine Condition Control Resistor (N2)	Inspect	—				
		Adjust	—			272, 282, 277, 282	27
		Replace	—				
0414	Remote Positioning Control Box (N2)	Inspect	—				
		Replace	—			277	27
		Overhaul			—		
0415	Control Box (N1)	Inspect	—				27
		Replace	—			T115, 277	
		Overhaul			—		
0416	Engine Condition Relay and Emergency Trim Relay	Inspect	—				
		Replace	—			277	27
0417	Electrical Harness	Inspect	—				
		Replace	—			272	27, 28
		Repair	—			249	
				—		277	
041701	PTIT Wire Harness	Replace	—			272	27, 28
041702	Engine Harness	Inspect	—			311, 312	27, 28
		Repair	—				
0418	Deleted						
0419	Deleted						
0420	Droop Eliminator Variable Resistors	Inspect	—				27
		Adjust	—			T122, T133 277, 282	
		Replace	—			T122, 277, 282	
		Repair	—			277, 282	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
0421	Fuel/Oil Lines	Inspect	—				
		Replace	—			278, 282	
0422	Engine Water Wash System	Inspect	—				
		Replace	—			272	28
		Remove	—			272	
		Install	—			T185	
		Service	—			278	
0423	Water Wash Manifold	Remove	—				
		Install	—			278	28
0424	No. 1 and No. 2 Electronic Control Unit	Inspect	—			186, 268	28
		Replace	—			314	
		Test	—				
0425	Thrust Control Position Transducer Assembly	Inspect	—				
		Remove	—			28	
		Install	—			268	
		Adjust	—			T187	
0426	FADEC Control Panel	Inspect	—				
		Remove	—				
	Note **Refer to TM 1-2840-265-23 for other maintenance functions for T55-GA-714A engines.**						
	Note **Refer to TM 55-2840-254-23 for other maintenance functions for T55-L-712**						
05	BLADES/ROTOR SYSTEMS						
0501	Blade	Inspect	—				
		Adjust	—			T65	
		Clean	—			T19, T35,	
		Replace	—			T47, T48, T70, T77, T79, T85, T86, 264 278, 282	
		Repair	—	—	—	264, 304	

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SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
050101	Blade Trailing Edge	Inspect	—				
		Repair	—			T116, 242,275	
050102	Blade Tip Cap	Inspect	—				
		Replace	—			278, 282	
		Repair	—				
050103	Blade Leading Edge Erosion Strip	Inspect	—				
		Replace		—		T69, 242 275	
		Repair	—			T69	
050104	Blade Leading Edge Nose Cap	Inspect	—				
		Replace			—		
		Repair	—			275	
		Repair		—		T19, 275	

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SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
050105	Blade Fairing	Inspect	- . -				
		Repair	- . -			275,304	
050106	Trim Tab	Inspect	- . -				
		Adjust			- . -		
		Replace			- . -		
		Repair	- . -			275	
050107	Lag Damper Bracket	Inspect	- . -				
		Replace			- . -		
		Repair	- . -			275	
050107	Lag Damper Bracket Bushings	Inspect	- . -			T98	
		Replace	- . -			278	
050108	Rib Closure Inboard and Outboard	Inspect	- . -				
				- . -			
		Repair	- . -			275	
				- - -		242,275	
050109	Lightning Protection Jumper Wire	Inspect	- . -				
		Replace	- . -			275,282	
050109' 01	Lightning Protection Jumper Strip	Inspect	- . -				
		Replace	- . -			275	
050110	Tiedown Receiver	Inspect	- . -				
		Replace	- . -			T25,275, 282	
050111	Root End Sleeve	Inspect	- . -				
		Replace			- - -		
050112	Root End Slot Seal	Inspect	- . -				
		Repair	- . -			275	
050113	Blade Spar	Inspect	- . -				
		Repair	- . -			275	

MIAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Catagory AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
0502	Blade Shock Absorber (Damper)	Inspect					
		Service	-.-				
		Test			-.-		
		Adjust	-.-			T106, 242,278	
		Replace	-.-			278,282 T98,T35 T72	
		Repair	-.-			T108,	
				-.-		242,278	
		Overhaul			-.-		
0503	Rotary Wing Head	Inspect	-.-			273,274 282,278 T2,T28 T29,T161	
		Service	---				
		Replace	-.-			T2,T7, T13,T24, T26,T28, T29,T73 278	
		Repair	-.-				
				-.-		242,273,	
		Overhaul			-.-	274,278	
050301	Rotary-Wing Head Tie Bar	Inspect	-.-				
		Replace	-.-			273	
050302	Fixed Droop Stops	Inspect	-.-			274	
		Replace	-.-			278,282	
050303	Centrifugal Droop Stop Assembly	Inspect	-.-			278,282	
		Adjust	-.-			278	
		Replace	-.-			272,278	
		Repair	-.-				
050304	Centrifugal Droop Stop Springs and Limiters	Inspect	-.-				
		Replace	-.-			278,282	

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SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
050305	Centrifugal Droop Stop Shrouds	Inspect	- . -				
		Replace	- . -			275	
		Repair	- . -			275	
050306	Centrifugal Droop Stop Shroud Shields and Base	Inspect	- . -				
		Replace	- . -			278	
050307	Droop Stop Shroud	Replace	- . -			278	
0504	Pitch Varying Housing	Inspect	- . -				23
		Replace	- . -	- . -	- . -		
050401	Pitch Varying Housing Bearings	Replace			- . -		
050402	Pitch Varying Housing Bearing Oil Tank	Inspect	- . -			274	
		Service	- . -				
		Replace	- . -			273,282	
		Repair		- . -		274	
050403	Pitch Varying Housing Wear Sleeve	Inspect	- . -				
		Replace	- . -			227,273	
050404	Pitch Varying Housing Oil Seals	Inspect	- . -				
		Replace	- . -			T8,Tll, 273	
0505	Vertical Hinge Pin	Inspect	- . -				
		Replace	- . -			F79,275, 282	
050501	Vertical Hinge Pin Bearings	Inspect	- . -			273,274	
		Replace	- . -			T1O,T1O2, 242,273	
050502	Vertical Hinge Pin Bearing Oil Tanks	Inspect	- . -			273	
		Service	- . -				
		Replace	- . -			T33,273, 282	
050503	Vertical Hinge Pin Oil Seal	Inspect	- . -			273,274	
		Replace	- . -			T10,TI2, 273,274	

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SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
050504	Verticalcal Hinge Pin Oil Manifold Tube	Inspect	- . -				
		Replace	- . -			242,273	
0506	Horizontal Hinge Pin	Inspect	- . -			274	
		Replace	- . -			T5,T6, T87,273, 282	
		Repair			- . -		
050601	Horizontal Hinge Pin Bearings	Inspect	- . -			274	
		Replace	- . -			T5,T6,T9 T87,273, 282	
050602	Horizontal Hinge Pin Seals	Inspect	- . -				
		Replace	- . -			T6,273	
0507	Pitch Varying Shaft	Inspect	- . -			274	
		Replace	- . -				
0508	Hub Oil Tank	Inspect	- . -			274	
		Service	- . -				
		Replace	- . -			278,282	
		Repair		- . -		274	
0509	Liquid Sight Indicators and Plugs	Insert	- . -				
		Replace	- . -			278,282	
0510	Swashplate Assembly	Inspect	- . -			274	
		Service	- . -				
		Replace	- . -			T14,278, 282	
		Repair		- . -		274,273	
		Overhaul			- . -		

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SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
0511	Swashplate Bearing	Inspect	- - -			278,282	
		Replace		- - -		238,273	
0512	Ball (Upper and Lower) Spherical Bearings and Sliding Sleeve Bearings	Inspect	- - -			274,278, 282	
		Replace	- - -			T10,242, 273	
0513	Spherical Ball	Inspect	- - -			274	
		Replace	- - -			242,273	
		Repair	- - -	- - -	- - -		
0513	Drive Arms and Drive Collar	Inspect	- - -				
				- - -		274,282	
		Replace	- - -			T30,274, 238,241,	
		Repair	- - -	- - -		274	
0514	Pitch Link	Inspect	- - -				
				- - -			
		Adjust	- - -			278,282	
		Replace	- - -			T22,T31, T78,278, 282	
		Repair	- - -			T78,T105 242,274, 278	
0515	Weather Protective Cover	Inspect	- - -				
		Replace	- - -			278,282	
		Repair	- - -	- - -		201,242, 275,304	
0516	Weather Protective Cover Boots	Inspect	- - -				
		Replace	- - -			278	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
06	DRIVE TRAIN SYSTEMS						
0601	Forward Transmission Assembly	Inspect	- . -				
		Service	- . -				
		Disassembly					
		Assembly	- . -			278,282	12
		Replace	- . -			T2,T4, T15,T23, T32,T74, T92,T93, T94,T159, 225,242, 259,278, 282	
		Repair	- . -				
				- . -		272,278	
		Overhaul			- . -		
060101	Forward Transmission Accessory Mounting Seals, Input/Output Shaft Seals	Inspect	- . -				
		Replace	- . -			278,282	
060102	Forward Transmission Oil Level Sight Gage	Inspect	- . -				
		Replace	- . -			278,282	
060103	Forward Transmission Sump	Inspect	- . -				
		Replace	- - -			278,282	
		Repair		- . -		242,275	
060104	Forward Transmission Main Lube Pump and Relief Valve	Inspect	- . -				
		Adjust	- . -			278	
		Replace	- . -			278,282	
		Overhaul			- . -		
060105	Forward Transmission Auxiliary Lube Pump	Inspect	- . -				
		Replace	- . -			278,282	
		Overhaul			- . -		

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
060106	Forward Transmission Filter Elements Main and Aux	Inspect	- - -				
		Replace	- - -			278,282	
060106-01	Forward Transmission Oil Filler Assembly/Screen	Clean	- - -				
		Inspect	- - -				
		Replace	- - -			278	
602	Aft Transmission Assembly	Inspect	- - -				
		Service	- - -				
		Disassembly/ Assembly	- - -			278,282	12
		Replace	- - -			T17,T23, T37,T43, T49,T50, T85,T160, 225,259, 278,	
		Repair	- - -			282	
				- - -		242	
		Overhaul			- - -		
060201	Aft Transmission Accessory Mounting Seals, Input/Output Shaft Seal	Inspect	- - -				
		Replace	- - -			273,282	
060202	Aft Transmission Oil Level Sight Gage	Inspect	- - -				
		Replace	- - -			278,282	
060203	Aft Transmission Sump	Inspect	- - -				
		Replace	- - -			278,282	
		Repair		- - -		278,242	
060203-01	Aft Transmission Generator Oil Outlet Screen	Inspect	- - -				
		Replace	- - -			278	
60204	Aft Transmission Main Lube Pump and Relief Valve	Inspect	- - -				
		Adjust	- - -			278	
		Replace	- - -			278,282	
		Overhaul			- - -		

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Catagory AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
060205	Aft Transmission Auxiliary Oil Pump	Inspect	- . -				
		Replace	- . -			273,282	
		Overhaul			- . -		
060205-01	Aft Transmission Oil Filter Assembly/Screen	Clean	- . -				
		Inspect	- . -				
		Replace	- . -			278	
060206	Aft Transmission Filter Elements Main and Aux	Inspect	- . -				
		Replace	- . -			278,282	
060206-01	Aft Transmission Main Oil Filter Pressure Differential Indicator	Inspect	- . -				
		Replace	- . -			278	
0603	Combining Transmission Assembly	Inspect	- . -				
		Service	- . -				
		Disassembly					
		Assembly	- . -			278,282	12
		Replace	- . -			T20,T34, T36,278, 282	
		Repair	- . -			278,282	
				- . -		278,282	
		Overhaul			- . -		
060301	Combining Transmission Accessory Mounting Seals Input and Output Shaft Seals	Inspect	- . -				
		Replace	- . -			273,282, 278	
060302	Engine/Combining Transission Oil Level Sight Gage	Inspect	- . -				
		Replace	- . -			278,282	
060303	Engine/Combining Transission Oil Pump	Inspect			- . -		
		Replace			- . -		
		Repair			- . -		

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
060303 - 01	Engine/Combining Transmission Main Oil Filter Pressure Differential Indicator	Inspect	- . -				
		Replace	- . -			278	
060304	Engine/Combining Transmission Oil Filter and Relief Valve Assembly	Inspect	- . -				
		Adjust	- . -			278	
		Replace	- . -				
060304-01	Engine/Combining Transmission Oil Filler Assembly/Screen	Clean	- . -				
		Inspect	- . -				
		Replace	- . -			278	
060305	Engine/Combining Transmission Oil Filter Element	Inspect	- . -				
		Replace	- . -			278,282	
060306	Combining Transmission Auxiliary Bypass Valve	Inspect	- . -				
		Replace	- . -			278	
060307	Combining Transmission Sump	Inspect	- . -				
		Replace	- . -			278,282	
		Repair		- . -		242,278	
0604	Engine Transmission Assembly	Inspect	- . -				
		Service	- . -				
		Disassembly					
		Assembly	- . -			278, 282, T3,T38	12
		Replace	- . -			278,282	
		Repair	- . -				
				- . -		242	
		Overhaul			- . -		

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	Component/Assembly	(3) Maintenance Function	(4) Maintenance Catagory AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
060401	Engine Transmission Output Shaft Seal	Inspect Replace	-.- -.-			 273,282	
060401-01	Engine Transmission Main Oil Filter Pressure Differential Indicator	Inspect Replace	 -.-			278	
0605	Forward and Aft Slider Shaft Assemblies and Seals	Inspect Replace Repair .	-.- -.- -.-			 278,282 282	
0606	Transmission Oil Cooler	Inspect Test Replace Repair Overhaul	-.- -.- -.-		 -.- -.-	 278,282 282	
06060	Oil Cooler Bypass Valve	Inspect Test Replace	-.- -.- -.-			 278,282	
0607	Transmission Oil Cooler Fans	Inspect Replace Repair Overhaul	-.- -.-		 -.-	272 278.282	24
060701	Combining Transmission Qil Cooler Fan Shaft Bearings	Inspect Service Replace	-.- -.-	 -.-		 242.278	
060702	Aft Transmission Oil Cooler Fan Shaft Bearings	Inspect Replace				 242,278	
0608	Transmission Oil Cooler Fan Ducts	Inspect Replace Repair	-.- -.- -.-			 27,282	
609	Drain Valves-Transmission Sump, Tank and Filter	Inspect Replace	-.-			 278.282	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) maintenance Function	(4) Maintenance Catagory AVUM	AVIM	DEPOT	(5) Tools and Equipment
0610	Transmission Indicating Screen/ChipDetector/ Temperature Transmitter	Inspect	-.-			278,282
		Replace	-.-			
		Test	-.-			
0611	Fittings and Hoses	Inpect	-.-			278,282
		Replace	-.-			
0612	Trasnsmission Breather	Inpect	-.-			278,282
		Replace	-.-			
0613	Transmission Oil Screens	Inspect	-.-			278,282
		Replace	-.-			278,282
0614	Aft Rotor Drive Shaft	inspect	-.-			
		Replace	-.-			T1, T18, T32,278, 282
		Repair	-.-	-.-		278,282 242,278
		Overhaul			-.-	
0615	Drive Shaft Assemblies	Inspect	-.-			274
		Service	-.-			
		Replace	-.-			278,282
		Repair	-.-			T113, Tl14 273,278, 282
		Overhaul			-.-	
0616	Drive Shaft Bearings	Adjust	-.-			278
		Inspect	-.-			
		Service	-.-			
		Replace	-.-			273,282
0617	Drive Shaft Adapter & Plate Assemblies	Inspect	-.-			278
		Replace	-.-			278,282
		Repair	-.-			
0618	Drive Shaft Mounts and Bushings	Inspect	-.-			
		Replace	-.-			278,282

MAINTENANCE ALLOCATION CHART

SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
0619	Engine Drive Shaft Assembly	Inspect	- . -				
		Replace	- . -			278	
		Repair			- . -		
07	HYDRAULIC SYSTEMS						
0701	System Contamination	Inspect	- . -				
0702	Flushing Pressure Lines	Service	- . -			270	
0703	Flushing Return Lines	Service	- . -			270	
0704	Filling and Bleeding (With External Power)	Service	- . -			270	
070401	Filling and Bleeding (Without External Power)	Service	- . -			270	
070402	Tube Bending	Fabricate		- . -		270,T181	
0705	Tubing	Inspect	- . -			270,274	
		Replace	- . -			270,T181	
		Repair	- . -			270	
070501	Bulkhead Fittings	Inspect	- . -				
		Replace	- . -			270	
0706	Hoses	Inspect	- . -			270,274	
		Replace	- . -			270	
0707	Adapters Rosan	Inspect	- . -			270.1	
		Replace	- . -			278, T141.1, T143.1, T143.2, T145.1, T145.2, T145.3, T145.4	
0708	Flight Control No. 1 and No.2 Power Control Module	Inspect	- . -				
		Replace	- . -			278	
070801	Pilot Solenoid Valve	Inspect	- . -				
		Replace	- . -			278	
		Repair			- . -		

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assernbly	(3) Maintenance Function	(4) Maintenance Catagory AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
070802	High Pressure Relief Valve	Inspect Replace	-.- -.-			278,282	
070803	Filter Element	Replace	-.-			278,301	
070804	Filter Change Switch	Replace	-.-			278	
070805	Pressure Transmitter	Replace	-.-			278	
070806	Accumulator	Replace	-.-			278.299, 300	
070807	High Pressure Check Valve	Replace	-.-			278	
070808	Miscellaneous Check Valves	Replace	-.-			270, 270,1, T150.1. T150.2, T150.3, T-152, T152. 1, T152,2. T152.3. T152.4. T152.5. T152.6, T152.7, T152,8	
0709	Pivoting and Swiveling Servocylinders	Inspect Repair Replace	-.-	-.-		278 270 278	
070901	Pivoting and Swiveling Servocylinder Bearings	Inspect Repair	-.-	-.-		233.242 270 239.270	
070902	Pressure Indicator	Test	-.-			278	
070903	Control Valves	Inspect	-.-			270	
070904	Servocylinder Control Valve Boots	Inspect Replace	-.- -.-			278.282	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
0710	Lower Controls Module NO l and No 2	Inspect	- . -			278	
		Replace	- . -				
07001	Solenoid Valve	Inspect	- . -			78,282	
		Replace	-.-				
		Repair			- . -		
07002	Pressure Reducer Valve	Inspect	-.-			78,282	
		Replace	- . -				
0711	Lower Controls Actuating Cylinder Structural Manifold	Inspect	- . -			78,282	
		Replace	- . -				
		Repair	- . -				
0712	Integrated Lower Controls Actuator Assembly (ILCA)	Inspect	- . -			278,282	
		Test		- . -		T53,235, 242,270	
		Replace	- . -			278,282	
		Repair		- . -			
		Overhaul			- . -		
07120	Extensible Link	Inspect	- . -				
		Test	- . -			T53,235 242,278	
					- . -	278,282	
		Replace	- . -				
		Repair		- . -			
		Overhaul			- . -		
07121-02	Extensible Link Servo Valve	Inspect	- . -			266,270	
		Replace		- . -			
07121-03	Extensible Link Pressure Port Filter	Inspect	- . -			278	
		Replace	- . -				

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintanarms Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
071202	Cross Feedback Transducer	Inspect	-.-				
		Test	-.-			T51,278, 282	
				-.-		T51,T53	
		Adjust	-.-				
				-.-		T51,278 T53,242, 270	
		Replace	-.-			242,278	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(s) Tools and Equipment	(6) Remarks
071203	Self Feedback Transducer	Inspect	- . -				
		Test	- . -	- - -		T51 T53,235, 270,278 T53,235, 265,266, 270	
		Adjust		- . -		236,265, 266,270, T53	
		Replace		- . -			
171204	Jam Sensor	Inspect	- . -				
		Test	- . -	- . -		T53,235, 242,270	
		Replace	- . -			278	
071205	Relief Valve	Inspect	- . -				
		Test		- . -		T53,235, 242,278	
		Replace		- . -		278	
071206	Check Valve	Inspect	- . -				
		Test		- . -		T53,235, 242,270	
		Replace		- . -		278	
071207	Servo Valve	Inspect	- . -				
		Test	- . -			T53,235, 242,278	
		Replace		- . -		266,278	
		Repair			- . -		

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
0713	No 1 or No 2 Flight ControlReservoir/Cooler	Inspect	- . -				
				- . -		274	
		Service	- . -				
		Test		- . -		235,236, 242,270, 284	
		Replace	- . -			278,282,	
		Repair		- . -		235,242 270,274	
					- . -		

MAINTENANCE ALLOCATION CHART

SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
71301	Temperature Switch	Inspect	- . -				
		Replace	- . -			278	
71302	Relief Valve	Inspect	- . -				
		Replace	- . -			278	
71303	Bleed and Relief Valve	Inspect	- . -				
		Replace	- . -			278	
71304	Temperature Bulb	Inspect	- . -				
		Replace	- . -			278	
714	No. 1 or No. 2 Flight Control Reservoir/Cooler Fan	Inspect	- . -				
		Test			- . -	235,236, 238,242, 249,252, 277	
		Replace	- . -			278	
		Repair			- . -	236,242, 274,277	
		Overhaul			- . -		
715	No. 1 or No. 2 Flight Control Pump	Inspect	- . -				
				- . -		242,270	
		Service	- . -				
		Test		- . -		235,270	
		Replace	- . -			278,282	
		Repair		- . -		235,242, 270	
0716	Apu Start Module	Inspect	- . -				
		Replace	- . -			278,282	
071601	Accumulator	Inspect	- . -				
				- . -		270,274	
		Service	- . -				
		Test		- . -		T159,211, 215,235, 270	
		Replace	- . -			278,282	
		Repair		- . -		235,242, 270,274	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Aaaembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
071602	Start Valve	Inspect	- . -				
		Replace	- . -			278	
		Repair			- . -		
071603	Check and Depressuriza- tion Valve	Inspect	- . -				
		Replace	- . -			278	
071604	Solenoid Start Pilot Valve	Inspect	- . -				
		Replace	- . -			278,282	
		Repair			- . -		
0717	Apu Start Accumulator	Inspect	- . -				
		Service	- . -				
		Test			- - -		
		Replace	- . -			278,282	
		Repair			- - -		
071701	Apu Start Accumulator Air Charging Valve and Pressure Gage	Inspect	- . -				
		Replace	-.-			278	
071702	Apu Start Accumulator Transfer Tubes	Inspect	- . -				
		Replace	- . -			278	
071703	Apu Start Accumulator Mounting Plate	Inspect	- . -				
		Replace	- . -			270	
0718	Pressure Control Module	Inspect	- . -				
		Replace	- . -			278,282	
071801	Filter	Inspect	- . -				
		Replace	- . -			278	
071802	Filter Indicator	Inspect	- . -				
		Replace	- . -			278,282	

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SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Componont/Assembly	(3) Maintanance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
071803	High Pressure Relief Valve	Inspect Replace	-.- -.-			 278	
071804	Pressure Transmitter	Inspect Replace	-.- -.-			 278	
071805	Three-way Solenoid Valve	Inspect Replace Repair	-.- -.-		 -.-	 278	
071806	Check Valve	Inspect Replace	-.- -.-			 278	
071807	Utility System Pressure Switch	Replace	-.-			278	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remark
			AVUM	AVIM	DEPOT		
071807	Pilot Valve	Inspect Replace Repair				 278,282	
071809	Ptu Valve	Inspect Replace Repair				 278	
0719	Engine Start Valve	Inspect Replace Repair				 278,282	
0720	Return Control Module	Inspect Replace				 278,282	
072001	Transfer Cylinder	Inspect Test Replace Repair				270,274 T56, 235, 270 278,282 235,242, 270,274	
072002	Filter Indicator	Inspect Replace				 278,282	
072003	Filter By-Pass Valve	Inspect Replace				 278	
072004	Transfer Cylinder Check Valve	Inspect Replace				 278	
072005	Filter check Valve	Inspect Replace				 278	
072006	Filter	Inspect Replace				 278,282	

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SECTION II

NOMENCIATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
072007	Apu or Utility Pump Fail Indicater	Inspect					
		Replace	–			278	
0721	No 1 or No 2 Power Transfer Unit Module	Inspect	–				
		Replace	–			278,282	
072101	Hydraulic Motor and Pump	Inspect	–				
		Test		–		T118, 235,270	
					–		
		Replace	–			278	
		Repair		–		270	
		Overhaul			–		
D72101-01	Motor or Pump Shaft Seal	Inspect	–				
		Replace	–			235,270, 274,282	
072102	Three-Way Valve	Inspect	–				
		Replace	–			278	
072103	Check Valve	Inspect	–				
		Replace	–			278	
072104	Pilot Solenoid valve	Inspect	–				
		Replace	–			278	
		Repair			–		
072105	Flow Limiter	Inspect	–				
		Replace	–			278	
0722	Hand Pump	Inspect	–				
		Replace	–			242,270 278	

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SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Catagory AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
0723	Hydraulic Fill Module	Inspect	-.-			274,282	
		Test		-.-		212,216, 235,242 270	
		Replace	-.-			278,282	
		Repair	-.-			278	
				-.-		242,270 274,278 282	
0724	Engine Starter Motor	Inspect	-.-				
				-.-			
		Test		-.-			
		Replace	-.-			278	
		Repair		-.-			
		Overhaul			-.-		
0725	Apu Motor, Pump	Inspect	-.-				
				-.-			
		Test		-.-		235, 270	
		Replace	-.-			278	
		Repair		-.-		242,270	
					-.-		
0726	Utility Pump	Inspect	-.-				
				-,-			
		Test		-,-			
		Replace	-.-			278,282	
		Repair		-.-		270	
					-.-		
0727	Utility Reservoir/ Cooler	Inspect	-.-				
				-.-		274	
		Service	-.-				
		Test		-.-		235,236. 242.270. 284	
		Replace	-.-			278,282	
		Repair		-.-		235,242 270,274	
					-.-		

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SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
072701	Relief Valve	Inspect	- . -				
		Replace	- . -			278	
072702	Temperature Bulb	Inspect	- . -				
		Replace	- . -			278	
072703	Temperature Switch	Inspect	- . -				
		Replace	- . -			278	
072704	Bleed/Relief Valve	Inspect	- . -				
		Replace	- . -			278	
0728	Utility Reservoir/Cooler Fan	Inspect	- . -				
		Test			- . -	235,236, 238,242, 249,252, 277	
		Replace	- . -			278	
		Repair			- . -	236,242, 274,277	
		Overhaul			- . -		
0729	Winch Motor	Inspect	- . -				
		Replace	- . -			278	
9730	Hoist Control Valve	Inspect	- . -				
		Replace	- . -			278	
		Overhaul			- . -		
0731	Hoist Pressure Reducing Valve	Inspect	- . -			270,274	
		Test		- . -		210,211, 214,235, 242,270	
		Replace	- . -			270	
		Repair		- . -		242,270	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Catagory AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
0732	Hoist Control Relief Valve	Inspect	---				
		Replace	---			278	
0733	Hoist Control Shutoff Check Valve	Inspect	---				
		Replace	---			278	
0734	Brake Master Cylinder	Inspect	---				
				---		274	
		Test		---		214,235, 270,267, 288.289, 290	
		Replace	---			278,282	
		Repair		---		235,242, 270,274, 296	
0735	Parking Brake Valve	Inspect	---				
		Replace	---			278	
0736	Parking Brake	Inspect	—				
		Adjust	---			278,282	
0737	Brake Pressure Reducing Valve	Inspect	---				
		Test		---		210,211 214,235, 242,270	
		Replace	---			270	
		Repair		---		242,270	
0738	Brake Transfer Valves	Inspect	---			270,274, 270,274	
		Test		---		282, 214,235	
		Replace	---			270 278	
		Repair		---		235,242	
0739	Emergency Brake Accumulator	Inspect	---			270	
				---		242,270, 274,302	
		Service	---			278	
		Test		---		212,235,	
		Replace	---			270	
		Repair	---			278	
						235,242) 270,274	

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Componont/Assembly	(3) Maintenance Function	(4) Maintenance Catogory AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
0740	Power Steering and Swivel Lock Module	Inspect	---				
		Replace	---			278,282	
074001	Solenoid Control Valve	Inspect	---				
		Replace	---			278,282	
		Repair			---		
074002	Check Valve	Inspect	---				
		Replace	---			278	
074003	Accumulator	Inspect	---				
				---		270,274	
		Service	---				
		Test		---		T159,211 215,235, 270	
		Replace	---			278,282	
		Repair		---		235,242, 270,274	
0741	Power Steering Assembly	Inspect	---				
		Test	---				
		Replace	---			278,282	
		Repair	---				

		Overhaul			---		
074101	Servo Valve	Inspect	---				
		Replace	---			278	
074102	Out-of-Phase Switch	Inspect	---				
		Adjust	---			278	
		Replace	---			278	
074103	Pressure Tube	Inspect		---		274	
		Replace		---		274,278	

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
0742	Cargo Hook Release Valve	Inspect	- . -				
				- . -		242, 274	
		Test		- . -		214, 235, 236, 270	
		Replace	- . -			278	
		Repair		- . -		242, 270	
0743	Ramp Actuating Cylinder	Inspect	- . -				
		Adjust	- . -			278, 282	
		Replace	- . -			278, 282	
		Repair		- . -		221, 242, 270	
		Overhaul			- . -		
0744	Ramp Control Valve						
074401	Ramp Control Valve Without Sleev Sleev	Inspect	- . -				
				- . -		274	
		Test		- . -		214, 235, 242, 270	
		Replace	- . -			278	
		Repair		- . -		235, 242, 270, 274	
074402	Ramp Control Valve With C	Inspect	- . -				
				- . -		274	
		Test		- . -		T178, T179, 214, 235, 242, 270	
		Replace	- . -			278	
		Repair		- . -		T173, T174, T175, T176, T177, 235, 242, 270, 274	
0745	Cargo Door Sequence Valve	Inspect	- . -				
				- . -		242, 274	
		Test		- . -		208, 209, 235, 270	
		Adjust	- . -			278	
		Replace	- . -			278	
		Repair		- . -		235, 270	
0746	Cargo Door Pressure Actuated Valve	Inspect	- . -			274	
		Replace	- . -			278	
		Repair	- . -			270	
		Test	- . -			270	

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
0747	Motor, Cargo Door	Inspect	-				
		Test		-		235, 270	
		Replace	-			278, 282	
		Repair		-		235, 242, 270	
		Overhaul					
0748	Swivel Lock Actuator	Inspect	-				
				-		242, 274	
		Test				235, 270	
		Replace	-			278	
		Repair		-		235, 242, 270	
08	INSTRUMENT SYSTEMS						
0801	Engine Oil, Transmission Oil, Hydraulic Pressure Transmitters and Switches	Inspect	-				
		Replace				277, 278, 281, 282, 272	
080101	Engine Oil Pressure Transmitter Vibration Clamps and Mounts	Replace				272, 278	
0802	Transmission Oil Temperature Transmitters	Inspect					
		Replace				278, 281, 282	
0803	Engine Transmission Chip Detector/Temp Switch	Inspect				278	
		Test				T101, T111 282	
		Replace				278	
0804	Cruise Guide Indicator	Inspect	-				
		Test					
		Replace				277	
080401	Signal Processor/Conditioner	Inspect					
		Test					
		Replace				277	
		Repair					

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
080402	Strain Gage	Inspect	- . -				
		Test		- . -	- . -		
		Replace	- . -				13
		Repair			- . -		
0805	Rotor Tachometer Indicator	Inspect	- . -				
		Replace	- . -			278	
		Overhaul			- . -		
1805.1	Rotor Tachometer Capacitor	Replace		- . -		277	
0806	Transmission Oil Pressure Indicator and Switch	Inspect	- . -				
		Test		- . -		235, 236 242, 277	
		Replace	- . -			278	
		Overhaul			- . -		
0807	Transmission Oil Temperature Indicator and Switch	Inspect	- . -				
		Test		- . -		235, 236 242, 277	
		Replace	- . -			278	
		Overhaul			- . -		
0808	Hydraulic Temperature Indicator	Inspect	- . -				
		Test		- . -		236, 257 277	
		Replace	- . -				
0809	Hydraulic Temperature Probe	Inspect	- . -				
		Replace	- . -			278	
0810	Hydraulic Pressure Indicator	Inspect	- . -				
		Test	- . -			236, 277 285	
		Replace	- . -				
		Overhaul			- . -		

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NOMENCLATURE OF END ITEMS

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY			(5) TOOLS AND EQUIPMENT	(6) REMARKS
			AVUM	AVIM	DEPOT		
0811	Hydraulic Fluid Level	Inspect	—•—				
	Indicator/Signal	Test	—•—			255, 277	
	Conditioner	Replace	—•—			278	
		Overhaul			—•—		
0812	Hydraulic Fluid Level	Inspect	—•—				
	Transmitter (LDVT)	Replace	—•—			277	
0813	Vertical Velocity	Inspect	—•—				
	Indicator	Replace	—•—			277	
		Overhaul			—•—		
0814	Fuel Quantrty Indicator	Inspect	—•—				
		Test	—•—			T158, 277, 183, 184	
		Adjust	—•—			T-158, 277	
		Replace	—•—			277	
		Overhaul			—•—		
0815	Fuel Quantity Selector	Inspect	—•—				
	Switch	Replace	—•—			278	
081501	Fuel Quantity Switch Box	Assemble		—•—		277	
		Disassemble		—•—		277	
		Inspect	—•—				
		Install	—•—			277	
		Remove	—•—			277	
0816	Fuel Quantity Tank Unit	Inspect	—•—				
		Test	—•—			T158, 277, 183, 184	
		Adjust	—•—			T158, 277	
		Adjust	—•—			277, 281,	
		Replace	—•—			282	
0817	Mounts, Cables, Quick-	Inspect	—•—				
	Disconnects	Replace	—•—			277, 282	
		Repair	—•—				
0818	Fuel Flow Transmitter	Inspect					
		Test		—•—		T158	
		Replace				278	

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
0819	Low Fuel Sensor	Inspect	-.-				
		Test	-.-	-.-			
		Replace	-.-	-.-		278	
0820	High Fuel Sensor	Inspect	-.-				
		Test	-.-	-.-			
		Replace		-.-		278	
0821	Fuel Thermistor Control Unit	Inspect	-.-				
		Adjust	-.-				
		Replace	-.-			277	
0822	Deleted						
0822.1	Clock Aircraft Digital	Inspect	-.-				
		Replace	-.-			278	
0823	Compass. Magnetic	Inspect	-.-				
		Test	-.-				
		Adjust	-.-				
		Replace	-.-			271,28	
082301	Compass Bracket	Replace	-.-			271	
0824	Attitude Indicator	Inspect	-.-				9
		Test	-.-			268	9
		Replace	-.-			268	9
		Overhaul			-.-		
0825	Turn and Slip Indicator	Inspect	-.-				
		Replace	-.-			277	
		Overhaul			-.-		
0826	Airspeed Indicator and and Restrictor	Inspect	-.-				
		Test	-.-			T27,236, 271	
		Adjust	-.-			T27,236. 271,298	
		Replace	-.-			277	

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
0827	Barometric Altimeter	Inspect					
		Test				277	
		Replace				277	
		Overhaul					
0828	AIMS Altimeter	Inspect					9
		Test				278	9
		Replace				278	9
		Overhaul					
0829	Free Air Thermometer	Inspect					
		Test				257, 277	
		Replace				278	
0830	Gas Producer Tachometer Indicator	Inspect					
		Test				254, 277	27, 28
		Replace				278	
083001	No. 1 or No. 2 Power Turbine and Gas Producer Magnetic Pickup	Inspect					
		Replace				272	28
0831	Tachometer Generator	Inspect					27
		Test				254, 277	
		Replace				272	
0832	PTIT Indicator	Inspect					
		Test				T101, T104	27, 28
						277, 282	
						277	
		Adjust					
		Replace					
		Overhaul					
0833	Engine Oil Temperature Indicator	Inspect					27, 28
		Test				257,	
						277	
		Replace				278	

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
0834	Engine Oil Temperature Transmitter (Bulb)	Inspect	—				
		Replace	—			272	27
083401	Engine Oil Temperature Transmitter Probe	Inspect	—				
		Replace	—			272	28
0835	Engine Oil Pressure Indicator	Inspect	—				
		Test	—			253, 277	27, 28
		Replace	—				
0836	Engine Torque Indicator	Inspect	—				
		Test		—		236, 255, 277	27
		Adjust	—				
		Replace	—			278	
		Overhaul			—		
083601	Engine Torque Indicator	Inspect	—				
		Test		—		236, 277, T188	28
		Adjust	—				
		Replace	—			278	
		Overhaul			—		
083602	No. 1 or No. 2 Torque Signal Processor/Power Supply	Inspect/ Set Codes	—			277	28
		Remove	—			277	
		Install	—			277	
083603	Torque Sensor	Inspect	—				
		Remove	—			277	28
		Install	—			277	
083604	Junction Box (J-Box)	Inspect	—			277	
		Replace	—			277	28
		Test	—			277, T188	
0837	Power Supply, Engine Torquemeter	Inspect	—				
		Test		—		207, 236, 277, 283	27
		Replace	—			278	
		Overhaul			—		
0838	Pitot-Static and Sideslip Sensing System	Inspect	—			277	
		Test	—			277	
		Replace	—			234, 275, 277, 278	

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
083801	Pitot Static/Sideslip Tubing	Replace	—				
		Repair	—			277	
0839	Cyclic Trim Indicator	Inspect	—				
		Test	—			244, 277	
		Replace	—			278	
0840	Maintenance Panel	Inspect	—				
		Replace	—			256, 266, 277	
		Repair	—			256, 266, 277	
0841	Indicator, Magnetic	Inspect	—				
		Replace	—			256, 277	
0842	Indicator, Light	Inspect	—				
		Replace	—			277	
0843	Instrument Panels	Inspect	—				
		Replace	—			266, 277	
		Repair	—			278	
084301	Instrument Panel Lights	Replace	—			277	
0844	Light, Emergency Power	Inspect	—				27
		Test	—				
		Replace	—			277	
0845	Switches, Emergency Power	Inspect	—				27
		Test	—				
		Replace	—			277	
09	ELECTRICAL SYSTEMS						
0901	Main Generator	Inspect	—				
		Replace	—			277	
		Overhaul			—		
0902	Main Generator Control Panel	Inspect	—				
		Replace	—			278	
		Overhaul			—		

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
0903	Emergency Power Panel	Inspect	—				27
				—			
		Test		—		242, 277	
		Replace	—			278	
		Repair		—		242, 277	
0904	Apu Generator	Inspect	—				
		Replace	—				
		Repair	—			277	
		Overhaul			—		
0905	Apu Generator Control Panel	Inspect	—				
		Replace	—			277	
		Overhaul			—		
090501	Apu Generator Relay	Inspect	—				
		Replace	—			277	
0906	Apu Control Box (Esu)	Inspect	—				
		Replace	—			277	
		Repair			—		
		Overhaul			—		14
0907	DC Power Supplies	Inspect	—				
		Replace	—			277	
		Repair		—		277, 242	
		Overhaul			—		
0908	Contactor, Main Line	Inspect	—				
		Replace	—			277	
0909	Battery	Inspect	—			277	
		Service		—		276	
		Replace	—			278	
		Repair		—		276, 277	

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
090901	Battery Cables	Inspect	—				
		Test		—		249, 276, 277	
		Replace		—		236, 276, 277	
		Repair		—		276, 277	
0910	Battery Sump Jar	Inspect	—				
		Service	—				
		Replace	—			277	
0911	Battery Charger	Inspect	—				
		Replace	—			277	
		Repair			—		
091101	Battery Relay	Inspect	—				
		Replace	—			277	
0912	Power Monitor	Inspect	—				
		Replace	—			277	
0913	Relays, Transformers	Inspect	—				
		Replace	—			277	
0914	Switches, Circuit Breakers, and Fuses	Inspect	—				
		Replace	—			277	
0915	Terminal Board Module	Inspect	—				
		Replace	—			266, 277	
0916	Ground Device Module	Inspect	—				
		Replace	—			266, 277	

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
0917	Control Stick and Thrust Control Grip Assemblies	Inspect	—				
		Test	—			236	
		Replace	—			265, 266, 277	
		Repair	—			277, 282	
				—		236, 277	
0918	Landing Searchlights	Inspect	—				
		Test	—				
		Test NVG		—		236, 277	
		Adjust		—		277	
		Replace	—			278	
		Repair	—			277	
				—		277	
0919	Floodlight	Inspect	—				
		Replace	—			277, 282	
0920	Anticollision Lights	Inspect	—			277	
		Test	—				
				—		235, 236	
		Replace	—			277	
		Repair		—		236, 242, 277	
0921	Interior Lights, Navigation Lights, Switches, and Formation Lights	Inspect	—				
		Test	—				
		Replace	—			277, 282	
		Repair	—			277	
0922	Troop Warning Box	Inspect	—				
		Replace	—			277, 278	
		Repair	—			277, 278	
0923	Master Caution Panel	Inspect	—				
		Test		—		277	
		Replace	—			277	
		Repair	—			277	
				—		277	

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Catagory			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
092301	Caution Panel NVG Filter	Inspect	-				27
		Repair	-			277	
		Replace	-			277	
0924	Console Components	Inspect	-				
		Replace	-			277, 282	
0925	Power Steering Control Box	Inspect	-				
		Test	-			277 236	
		Adjust	-	-		277 236	
		Replace	-	-		277	
		Repair	-	-		236, 242, 265, 277	
0926	Overhead Panel	Inspect	-				
		Replace	-			266, 277	
		Repair				277	
092601	Overhead Panel Transformers and Relay	Inspect	-				
		Replace	-			277	
092602	Overhead Panel Transformer Fuses	Inspect	-				
		Replace	-			277	
0927	Cables and Connectors	Inspect	-				
		Replace	-			277, 282	
		Repair	-			249, 265, 266, 277, 282	
0928	Variable Resistors or Control Transformers	Inspect	-				
		Replace	-			277, 282	
0929	Lamps and Lenses	Inspect	-				
		Replace	-			277, 282	

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/assembly	(3) Maintenance Function	(4) Maintenance Catagory			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
0930	Grip, Winch Control	Inspect	-				
		Test	-			277,236	
				-			
		Replace	-			277	
		Repair		-		236, 277	
0931	External Power Control Relay	Inspect	-				
		Replace	-			277	

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
0933	Dual Hook Relay Box	Inspect	-.-			277	
		Test	-.-			277,282	
				-.-		236,277, 282	
		Replace	-.-			277	
		Repair		-.-		236,266, 277	
0934	Emergency Hook Release Relay Box	Inspect	-.-				
		Test	-.-			277,282	
				-.-		235,282, 277	
		Replace	-.-			277	
		Repair		-.-		218,236, 266,277	
0935	Alarm Bell and Troop Warning	Inspect	-.-				
		Replace	-.-			277,282	
		Repair	-.-			277,282	
0936	Avionics Cooling Fan	Inspect	-.-			274	
		Test		-.-		236,249, 252	
		Replace	-.-			265,277	
		Repair		-.-		236,242, 277,278	
0937	Power Distribution Panel	Inspect	-.-				
		Replace	-.-			277	
10	FUEL SYSTEM						
1001	Fuel System	Test	-.-			278, 282	
		Bleed	-.-			278,282	
100101	Flushing	Service	-.-			278	

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
1002	Fuel Tanks	Inspect	-.-				
		Purge	-.-			200,219, 282,278	
		Service	-.-				
		Test	-.-			223,235, 278,282	
		Replace	-.-			278,282, 297	
		Repair	-.-				
100201	Vent Fairing	Inspect	-.-				
		Replace	-.-			278	
1003	Fuel Cell	Inspect	-.-				
		Test	-.-			217,223, 278	
		Replace	-.-			278,282	
		Repair	-.-			278	
1004	Fuel Tank Vent Components	Inspect	-.-				
		Test	-.-			T158, 278,282	
		Replace	-.-			278	
1005	Filler Caps	Inspect	-.-				
		Replace	-.-			278	
1006	Fuel Booster Pumps	Inspect	-.-				
		Replace	-.-			278,282, 297	
		Overhaul			-.-		
1007	Fuel System Pressure Switches	Inspect	-.-				
		Replace	-.-			278	
1008	Fuel Check Valves	Inspect	-.-				
		Replace	-.-			278,282, 297	

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NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
1009	Defueling Valve	Inspect	-.-				
		Replace	-.-			278,282	
1010	Tank Unit Wire Harness	Inspect	-.-				
		Replace	-.-			278,282	
1011	Booster Pump Relays	Inspect	-.-				
		Replace	-.-			278	
1012	Apu Fuel Boost Pump	Inspect	-.-				
		Replace	-.-			278	
1013	Apu Fuel Shutoff Valve, Manual	Inspect	-.-				
		Replace	-.-			278	
1014	Drain Valves	Inspect	-.-				
		Replace	-.-			278,282	
		Repair		-.-		278	
1015	Fuel Gate Valves	Inspect	-.-				
		Test	-.-				
		Replace	-.-			278,282	
		Overhaul			-.-		
1016	Lines and Fittings	Inspect	-.-				
		Replace	-.-			278,282	
1017	Filters, Strainers, and Screens	Inspect	-.-				
		Replace	-.-			278,282	
1018	Fuel Level Shutoff Valve	Inspect	-.-				
		Replace	-.-			278,282	
		Repair			-.-		
1019	Fuel Crossfeed Valve	Inspect	-.-				
		Test	-.-				
		Replace	-.-			278,282	
		Overhaul			-.-		

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
1020	Fuel Level Control Valve	Inspect	-.-				
		Replace	-.-			278	
		Repair			-.-		
1021	Apu Fuel Solenoid Valve	Inspect	-.-			278	
		Replace	-.-			278	
1022	Jet Pump	Inspect	-.-				
		Replace	-.-			278	
1023	Fuel Precheck Panel	Inspect	-.-				
		Replace	-.-			278	
		Repair		-.-		277	
1024	Pressure Refueling Adapter	Inspect	-.-				
		Replace	-.-			278	
		Repair	-.-			278	
1025	Fuel Quantity Inverter	Inspect	-.-				
		Replace	-.-			278	
1026	Suction Feed Check Valve	Inspect	-.-				
		Replace	-.-			278	
1027	Engine Fuel Shutoff Valve	Inspect	-.-				
		Replace	-.-			278,282	
11	FLIGHT CONTROL SYSTEMS						
1101	Dash Actuator Assembly	Inspect	-.-				
		Test	-.-			T51	
				-.-		T51	
		Adjust	-.-			T41,T42, T130, 278,282	
		Replace	-.-			T42,T130, 278,282	
		Repair		-.-			
		Overhaul			-.-		

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
1102	Longitudinal Cyclic Trim (LCT) Actuator	Inspect	–				
		Test	–				
		Adjust	–	–		242, 278	
		Replace	–	–		242, 278	
		Repair		–		278, 282 221, 242, 278	
		Overhaul			–		
110201	LCT Variable Resistor	Inspect	–	–			
		Replace	–	–		277	
110202	LCT Actuator Motor	Replace	–			277, 282	
1103	Afcs Computer	Inspect	–				
		Test	–			T51, 277, 278	
		Replace	–	–		T27, T52, 236, 277 278	
		Repair		–		269	
					–		
110301	Afcs Roll Erection Cutout Relay	Assembly	–			269, 266	
		Disassembly	–			269, 266	
		Install	–			278	
		Remove	–			278	
110302	Sideslip/Airspeed/Barometric Pressure Transducers	Test		–		T27, 278	
		Adjust	–			T27, 278	
				–		T27, T52, 278	
1104	Afcs Computer Circuit Boards	Inspect	–				
		Replace		–		269	
110401	Closet Control Pallets	Inspect	–			275	
		Repair	–				
		Replace	–				
1105	Balance Springs	Inspect	–				
		Adjust	–			278, 282	
		Replace	–			278, 282	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
1106	Cockpit Control Assemblies and Interconnecting Links	Inspect	-.-			274 T39,T72, T122, T125, T127, 278,282	
		Adjust	-.-				
		Replace	-.-			T31,T39, T72,T119, T120, T121, T122, T123, T124, T125, T126, T127	
		Repair	-.-	-.-		278,282 239,242, 278	
1107	Flight Control Connecting Links	Inspect	-.-			274	
		Adjust	-.-			T44,278	
		Replace	-.-			T44,278, 282	
		Repair	-.-	-.-		278 242	
1108	Link, Idler	Inspect	-.-				
		Adjust	-.-				
		Replace	-.-			278,282	
		Repair	-.-			278	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
1109	Control Pallets	Inspect	-.-				
		Adjust	-.-			T128, T133,278 282	
		Replace	-.-			T128, T133,278, 282	
110901	Control Pallet Idler Bellcranks	Inspect	-.-				
		Adjust	-.-			T128,T133 278,282	
		Replace	-.-			T128,T133	
		Repair		-.-			
1110	Thrust Detent Capsule	Inspect	-.-				
		Adjust	-.-			278	
		Replace	-.-			278,282	
1111	Pitch, Roll, Yaw, and Thrust Viscous Dampers	Inspect	-.-				
		Test		-.-		T64,T100, 270	
		Adjust		-.-		T64,T100, 270	
		Replace	-.-			278,282	
		Repair		-.-		T64,242, 270,274	
1112	Damper Arms and Connecting Links	Inspect	-.-				
		Replace	-.-			278,282	
		Repair		-.-		278	
1113	Magnetic Brakes	Inspect	-.-				
		Test		-.-		242,278	
		Adjust		-.-		278	
		Replace	-.-			278,282	
		Repair		-.-		278	
		Overhaul			-.-		

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
1114	Ccda, Thrust and Pitch	Inspect	-.-				
				-.-		242,277	
		Test	-.-			T51	
				-.-		235,236, 242,268	
		Adjust	-.-			278	
		Replace	-.-			278,282	
		Repair		-.-		242,268, 269	
		Overhaul			-.-		
1115	Spring Assemblies, Pitch, Roll and Yaw (Artificial Feel)	Inspect	-.-				
		Test		-.-		208,278	
		Adjust		-.-		278	
		Replace	-.-			278,282	
		Repair		-.-		221,242, 278	
1116	Yaw, Pitch, and Roll Position Transducer	Inspect	-.-				
		Test	-.-			T128	
		Adjust	-.-			T128, T133,277, 278	
		Replace	-.-			T128, T133,278, 282	
		Repair		-.-		242,278,	
1117	Bellcranks, Intermediate	Inspect	-.-				
		Replace	-.-			245,278, 282	
		Repair	-.-			278,282	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
1118	Connecting Links Between Intermediate and First Stage Mixing	Inspect	-.-			274	
		Adjust	-.-				
		Replace	-.-			278,282	
		Repair	-.-			278,282	
				-.-		T169,237	
1119	Bellcranks, First Stage	Inspect	-.-				
		Adjust	-.-			T44,T135, 278,282	
		Replace	-.-			T44,T45, T46,T135, 278,282	
		Repair	-.-			T44,278	
1120	Bellcranks Second Stage	Inspect	-.-				
		Adjust	-.-			278,T44, T135,282	
		Replace	-.-			T44,T45, T46,T135, 278,282	
		Repair	-.-			278,282	
1121	Bellcranks, Between Second Stage and Forward Servocylinders	Inspect	-.-				
		Adjust	-.-			T44,T135, 278,282	
		Replace	-.-			T44,T135, 278,282	
		Repair	-.-			278	
1122	Connecting Links, Between Second Stage and Forward Servo-cylinders	Inspect	-.-			274	
		Adjust	-.-			278	
		Replace	-.-			278,282	
		Repair	-.-			282	
1123	Connecting Links Between First and Second Stage Mixing	Inspect	-.-			274	
		Adjust	-.-			278	
		Replace	-.-			278,282	
		Repair	-.-			282	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
1124	Bellcrank, Transfer Pitch, Thrust, Roll, and Yaw	Inspect	-.-				
		Replace	-.-			T128,278, 282	
		Repair	-.-			278	
112401	Bellcrank Support	Replace	-.-			278,282	
1125	Yoke Assemblies, Longitudinal Cyclic Trim	Inspect	-.-			274,278	
		Replace	-.-			231,278, 282	
		Repair		-.-		221,236, 242,274, 278	
1126	Tunnel Control Arms and Idlers	Inspect	-.-				
		Replace	-.-			T44,T135, 278,282	
		Repair	-.-			278	
1127	Connecting Links Between Second Stage and Aft Servocylinders	Inspect	-.-			274	
		Adjust	-.-			T44,T135, 278,282	
		Replace	-.-			T44,T135, 278,282	
		Repair	-.-			278,282	
1128	Bellcranks, Aft Fuselage and Pylon	Inspect	-.-				
		Adjust	-.-			T44,T135, 278,282	
		Replace	-.-			T44,T135, 278,282	
		Repair	-.-			278,282	
1129	Stick Position Indicator	Inspect	-.-				
		Adjust	-.-			278	
		Replace	-.-			282,278	
		Repair	-.-			278	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
1130	Longitudinal Cyclic Trim Link	Inspect	–				
		Adjust	–			278	
		Replace	–			278, 282	
		Repair		–		221, 242, 278	
1131	Thrust Control	Inspect	–			278	
		Adjust	–			278, 282	
		Replace	–			278, 282	
		Repair		–		221, 242, 266, 277, 278	
1132	Pitch and Roll Control Stick	Inspect	–				
		Replace	–			278, 282	
1133	Afcs Panel	Inspect	–				
		Test	–			T51	
				–		T52, 236, 268	
		Replace	–			269, 278	
		Repair		–		266, 269	
12	UTILITY SYSTEMS						
1201	Windshield Wiper Blades	Inspect	–				
		Replace	–			278	
1202	Windshield Wiper Arms	Inspect	–				
		Adjust	–			282, 294	
		Replace	–			278	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
1203	Windshield Wiper Motor	Inspect	-.-				
		Test		-.-		236,242, 277	
		Replace	-.-			278	
		Repair		-.-		277	
1204	Windshield Wiper Flexible Shaft	Inspect	-.-				
		Replace	-.-			278	
1205	Windshield Wiper Resistor and Switch	Inspect	-.-				
		Replace	-.-			277	
1206	Windshield Wiper Converter	Inspect	-.-				
		Adjust	-.-				
		Replace	-.-			278	
1207	Windshield Anti-Icing Element	Inspect	-.-				
		Test	-.-			277	
1208	Windshield Anti-Icing Relays	Inspect	-.-				
		Replace	-.-			277	
1209	Windshield Anti-Icing Controller	Inspect	-.-				
		Replace	-.-			277	
1210	Fire Extinguisher Container and Valve	Inspect	-.-			274,282	
		Replace	-.-			278,295	
		Overhaul			-.-		
1211	Fire Extinguisher Lines, and Check Valves	Inspect	-.-				
		Replace	-.-			278,282	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
1212	Fire Extinguisher Explosive Cartridge (Squib)	Inspect	-.-				
		Test	-.-				
		Replace	-.-			278,282	
1213	Fire Detection Control Unit	Inspect	-.-				
		Replace	-.-			277	
1214	Fire Detection Relay Panels, Sensing Elements, Wiring and Terminals	Inspect	-,-			274	
		Test	-.-			277,282	
		Replace	-.-			272,277 282	
1215	Emergency Fire Control Handle	Inspect	-.-				
		Replace	-.-			277	
		Repair	-.-				
121501	Emergency Fire Handle Covers	Inspect	-.-				
		Replace	-.-			278	
1216	Fire Extinguisher System Switch and Actuator Adapter	Test	-.-				
		Replace	-.-			277	
1217	Fire Extinguisher Agent Switch	Inspect	-.-				
		Replace	-.-			277	
1218	Fire Extinguisher System Discharge Nozzle	Inspect	-.-				
		Replace	-.-			278	
13	ENVIRONMENTAL CONTROL						
1301	Heater Unit	Inspect	-.-			274,282	
		Test		-.-		T62,T63, 242,278	
		Replace	-.-			278,282	
		Repair		-.-		275,278	
		Overhaul			-.-		

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
1302	Heater Fan	Inspect	-.-			274	
		Test		-.-		242,277	
		Replace	-.-			282	
		Repair		-.-		242,277, 278	
1303	Heater Ducts	Inspect	-.-				
		Replace	-.-			278	
		Repair	-.-			275	
130301	Nose Enclosure Air Diffuser	Inspect	-.-				
		Replace	-.-			278	
130302	Defroster Nozzle	Inspect	-.-				
		Replace	-.-			278	
130303	Defrost Control	Inspect	-.-				
		Replace	-.-			278	
130304	Cockpit Air Controls	Inspect	-.-				
		Replace	-.-			278	
130305	Cabin Air Control	Inspect	-.-				
		Replace	-.-			278	
1304	Defrost Valve	Inspect					
		Replace				278	
1305	Cabin Temperature Selector Switch	Inspect	-.-				
		Replace	-.-			277	
1306	Heater Air Pressure Switch	Inspect	-.-				
		Replace	-.-			278	
1307	Cabin Temperature Controller	Inspect	-.-				
		Replace	-.-			278	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
1308	Cabin Thermostat	Inspect	-.-				
		Replace	-.-			278	
1309	Heater Fuel Control	Inspect	-.-				
		Replace	-.-			278	
		Overhaul			-.-		
1310	Heater Fuel Solenoid Valve	Inspect	-.-				
		Replace	-.-			278	
1311	Heater Ignition Unit	Inspect	-.-				
		Replace	-.-			278	
		Overhaul			-.-		
131101	Ignition Unit Vibrator	Inspect	-.-				
		Replace	-.-			278	
1312	Shielded Lead Assembly	Inspect	-.-				
		Replace	-.-			278	
1313	Heater Thermostat Switches	Inspect	-.-				
		Replace	-.-			278	
1314	Heater Control Box Relays	Inspect	-.-				
		Replace	-.-			277,282	
1315	Heater Wiring, Hoses, Lines and Fittings	Inspect	-.-				
		Replace	-.-			278	
		Repair	-.-			278	
14	HOISTS AND WINCHES						
1401	Winch, Rescue and Cargo Handling	Inspect	-.-				
		Test	-.-				
		Adjust	-.-				
				-.-		278	
		Replace	-.-			278	
		Repair	-.-				
				-.-		278	
		Overhaul			-.-		

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
140101	Clutch Chains and Roller Chains	Inspect		-.-			
		Replace		-.-		278	
1402	Hook and Cable Assembly	Inspect	-.-			274	
		Replace	-.-			278	
				-.-		242,278	
1403	Cable Cutter Assembly	Inspect	-.-				
		Service	-.-			278	
		Replace	-.-			278	
1404	Winch Cable	Inspect	-.-				
		Replace	-.-			278	
1405	Tackle Block/Cable Block	Inspect	-.-				
		Replace	-.-			278	
1406	Stowage Container	Inspect	-.-				
		Replace	-.-			278	
1407	Hoist Operators Harness	Inspect	-.-				
15	AUXILIARY POWERPLANT						
1501	(T-62T-2B)						
	Apu Assembly	Inspect	-.-				
		Service	-.-				
		Test	-.-			14	
		Replace	-.-			T57,251, 260,278, 282	
		NOTE					
	Refer to the Maintenance Allocation Chart in TM 55-2835-205-23 for other maintenance functions for the gas turbine auxiliary power unit (apu).						
1502	Apu Exhaust Duct	Inspect	-.-				
		Replace	-.-			T57,251, 278,282	
1503	Apu Aft Mounts and Link	Inspect	-.-			274	
		Replace	-.-			T57,278	
		Repair	-.-			251,275	

MAINTENANCE ALLOCATION CHART SECTION II							
NOMENCLATURE OF END ITEMS							
(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
16	MISSION EQUIPMENT						
1601	Center Cargo Hook Assembly	Inspect	–			274	
		Service	–				
		Test	–			278, 282	
				–		231, 235, 236, 270, 286	
		Adjust	–			270	
				–		270	
		Replace	–			278	
		Repair	–			278	
				–		278	
		Disassemble		–		278	
		Assemble		–		278	
		Install	–			278	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equipment	(6) Remarks
			AVUM	AVIM	DEPOT		
160101	Emergency Cable, Manual	Inspect	–				
		Adjust	–			270	
		Replace	–			278	
160102	Spring Emergency Manual Release	Inspect	–				
		Replace	–			278	
160103	Handle, Emergency Manual Release	Inspect	–				
		Replace	–			278	
160103 01	Manual Release Mechanism	Inspect	–			278	
160103 02	Manual Release Cable	Replace	–				
160103 03	Manual Release Cable, Center Hook	Remove	–			278	
		Install	–			278,305	
		Adjust	–			278	
160104	Cylinder Assembly	Service	–				
		Inspect	–				
		Replace		–			
		Overhaul			–		
1602	Center Cargo Hook Support Beam and Bearings	Inspect	–				
		Replace	–			278, 282	
		Repair	–			278	
160201	Center Cargo Hook Support Beam Bushings and Bearings	Inspect	–			306,307	
		Replace	–			278,308	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
1603	Forward and Aft Cargo Hook Assembly	Inspect	-.-	-.-		274,278	
		Service	-.-				
		Test	-.-	-.-		202,235, 242,277, 286,291	
		Adjust		-.-		236,242, 277,286, 291	
		Replace	-.-			267,278	
		Repair	-.-	-.-		236,239, 242,266, 278	
160301	Solenoid Cover and Wire Harness	Inspect	-.-			266	
		Replace	-.-			267,277	
160302	Load Beam and Trunion Bumpers	Inspect	-.-				
		Replace	-.-			278	
160303	Inspection Windows	Inspect	-.-				
		Replace	-.-			278	
160304	Hook Keeper	Inspect	-.-				
		Replace	-.-			278	
160305	Threaded Inserts	Inspect		-.-			
		Replace		-.-		237	
160306	Manual Release Cable	Inspect	-.-				
		Replace	-.-			278,282	
		Adjust	-.-			278,282	
160307	Manual Release Lever	Inspect	-.-				
		Replace	-.-			278	
160308	Manual Release Bellcrank	Inspect	-.-				
		Replace	-.-			278	
160309	Manual Release Mount	Inspect	-.-				
		Replace	-.-			278	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
1604	Paratroop Anchor Lines Assembly	Inspect	-.-				
		Replace	-.-			278,282	
		Repair	-.-			278	
1605	Flare Dispenser System	Inspect	-.-				
		Replace	-.-			277	
		Repair		-.-		277	16
		Test	-.-				16
				-.-		248,277	16
160501	Status Panel	Inspect	-.-				
		Replace	-.-			277	
160502	Timer	Inspect	-.-				
		Replace	-.-			277	
160503	Relay	Inspect	-.-				
		Replace	-.-			277	
1606	Litters, Poles, and Straps	Inspect	-.-				
		Replace	-.-				
		Adjust	-.-				
160601	Litter Support Bracket	Inspect	-.-				
		Replace	-.-			278	
160602	Pilot and Copilot Seat Armor	Inspect	-.-				
		Replace	-.-			278	
17	EMERGENCY EQUIPMENT						
1701	First Aid Kit	Inspect	-.-				
		Replace	-.-			278	
1702	Emergency Escape Axe	Inspect	-.-				
		Replace	-.-			278	
1703	Emergency Exit Lighting	Inspect	-.-				
		Test	-.-				
		Replace	-.-			278	
		Repair	-.-			277,278	

MAINTENANCE ALLOCATION CHART
SECTION II

NOMENCLATURE OF END ITEMS

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category AVUM	AVIM	DEPOT	(5) Tools and Equipment	(6) Remarks
170301	Batteries	Service	-.-			277	
170302	Panel and Pan	Inspect	-.-				
		Replace	-.-			278	
1704	Inertia Switch	Inspect	-.-				
		Replace	-.-			277	
1705	Portable Fire Extinguishers and Brackets	Inspect	-.-				
		Replace	-.-			278	

NOTE

AVUM level replacement is limited to removal and reinstallation of the same pitch varying housing.

SECTION Ill TOOL AND TEST EQUIPMENT REQUIREMENTS

SECTION III

TOOL AND TEST EQUIPMENT REQUIREMENTS				
NOOMENCLATURE OF END ITEMS CH-47D HELICOPTER				
TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINT. CAT.	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
T1	AVUM	Container, Aft Vertical Shaft	8145-01-128-1843	145G0031-1
T2	AVUM	Torque Applicator	5961-00-111-4795	145GS279-1
T3	AVUM	Sling Assembly, Engine Transmissions	1730-00-756-9186	114E5903-1
T4	AVUM	Hoisting Unit	1730-00-760-3367	114E5128-3
T5	AVUM	Socket, Horizontal Hinge Pin Locknut (End Cap)		145G0035-1
T6	AVUM	Pusher, Rotor Head	5120-00-979-7582	114E5803-1
Deleted				
T8	AVIM	Puller, Outboard Seal	5120-00-864-0510	114E5809-1
T9	AVUM	Puller, Bearing, Rotor Head	5120-00-944-2525	114 E5813-6
T10	AVUM	Puller, Bearing, and Seal, Rotor Hub	5120-00-917-1020	114E5814-7
T11	AVIM	Drift, Outboard Seal Installation		234G0096-1
T12	AVUM	Guide Set, Roller Bearing Seals, Rotor Hub	5120-00-867-5501	114E5824-4
T13	AVUM	Adapter, Rotor Head Assembly	1730-00-863-5785	114E5840-1
T14	AVIM	Sling, Rotor Head Controls	1730-00-179-1326	114E5852-1 6
T15	AVUM	Adapter, Forward Transmission	1560-00-863-5886	145E5871-1
T16	AVUM	Adapter, Powerplant	4920-00-917-1880	114E5872-35
T17	AVUM	Adapter, Aft Transmission	4920-01-128-6320	145E5874-1
T18	AVUM	Adapter, Vertical Shaft Assembly	4920-01-130-9688	114E5878-60
T19	AVUM	Adapter, Rotory-Wing Set	4920-01-115-6999	114G0020-1
T20	AVUM	Adapter, Combining Transmission	1730-00-863-5789	114E5888-1
T21	AVUM	Heater Exhaust Cover	1730-00-785-2055	114G1025-1
T22	AVUM	Pin Set, Blade Folding Pitch Lock	1730-00-867-1253	114E5897-11
T23	AVUM	Torque Pack	4920-01-059-2853	PD1220
T24	AVUM	Ring Assembly, Forward Transmission and Aft Vertical Shaft	1730-00-010-7462	114E5909-8
T25	AVUM	Tool Set (Easy-Out), Replacement, Tiedown Receiver	4920-01-123-2576	114G0039-1
T26		Deleted		
T27		Deleted		
T28	AVUM	Reaction Adapter	5120-01-130-1462	145G0037-1
T29	AVUM	Socket, Hub Nut		145G0141-1

TOOL AND TEST EQUIPMENT REQUIREMENTS

NOMENCLATURE OF END ITEMS
CH-47D HELICOPTER

TOOL OR TEST EQUIPMEMT REFERENCE CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATD STOCK NUMBER	TOOL MUMBER
T30	AVUM	Lifting Device, Rotor Head Assembly	1730-00-945-8251	114E5899-19
T31	AWM	Safety Blocks	1730-00-034-3874	l14E5900-17
T32	AVUM	Hoisting Eye, Forward Transmission and Aft Shaft		145E5902-1
T33	AVUM	Guide, Lip Seal, Vertical Hinge Pin	5120-01-130-1464	145G1471-1
T34	AVUM	Sling Assembly, Combining Transmission		145E5903-1
T35	AVUM	Sling, Handling, Rotary Wing Assembly	4920-01-115-7001	145E5911-101
T36	AVUM	Container, Combining Transmission	8145-01-128-4725	145G0024-1
37	AVUM	Container, Aft Transmission	8145-01-128-1857	145G0023-1
T38	AVUM	Container, Engine Transmission	8115-00-420-7824	114E5918-8
T39	AVUM	Rigging Set, Controls		145E5941-11
T40	AVUM	Line, Tiedown	1730-00-075-1055	114E5060-1
T41	AVUM	Rate Table, Aircraft Displacement (AN/ASM-120 Equiv)	4920-00-923-2391	114E5988-1
T42	AVUM	Dummy Link Assembly (Dash Actuator),P/O 145E5941-11 (T39)		145G5002-1
T43 (Deleted)				
T44	AVUM	Rigging Pin A, First Stage Mixing Linkage, P/O 145E5941-11 (T39)	1730-01-142-2851	145G5004-1
T45	AVUM	Rigging Pin B, First Stage Mixing Linkage, P/O 145E5941-11 (T39)		145G5004-2
T46	AVUM	Rigging Pin C, First Stage Mixing Linkage, P/O 145E5941-11 (T39)		145G5004-3
T47	AVUM	Reaction Adapter Set, Vertical Hinge Pin	5120-00-625-3885	PD1434
T48	AVUM	Torque Wrench	5120-00-169-2986	PD1201
T49	AVUM	'Sling, Aft Transmission, P/O 114E5124-1 (T85)	1730-00-073-3294	114E5119-2
T50	AVUM	Securing Device, Aft Vertical Shaft		145E5996-1
T51	AVUM	AFCS Line Test Set	4920-01-121-0603	145G0009-1

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TOOL AND TEST EQUIPMENT REQUIREMENTS				
NOMENCLATURE OF END ITEMS CH-47D HELICOPTER				
TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINT. CAT.	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
T52	AVIM	AFCS Bench Test Set	4920-01-121-0602	145G0008-1
T53	AVIM	ILCA Bench Test Set	4920-01-121-0604	145GS278-1
T54	AVIM	Sling, Aft Pylon	1730-00-844-2055	114E5855-2
T55	AVIM	Skid, Aft Pylon	1740-00-883-1658	114E5856-22
T55.1	AVIM	Skid Outrigger, Aft		
T56	AVIM	Test Manifold	4920-01-128-6317	145G0054-1
T57		Deleted		
T58	AVUM	Rotory-Wing Head Covers, Forward and Aft	1730-00-839-7063	114G1023-25
T59	AVUM	Heater Inlet Cover	1730-00-907-7676	114G1024-1
T60	AVUM	Hydraulic Cooler Exhaust Cover	1730-01-142-2851	145G0004-1
T61	AVUM	Apu Exhaust Cover	1730-01-139-4776	145G0005-1
T62		Deleted		
T63		Deleted		
T64	AVIM	Spanner Wrench, Viscous Damper	5120-00-097-8425	114GS225-1
T65	AVUM	Accessory Kit, Track and Balance (VIBREX)	4920-01-115-7002	114G0019-1
T66	AVUM	Oil Cooler Inlet Cover	1730-01-145-1182	145G0001-1
T67	AVUM	Oil Cooler Exhaust Cover	1730-01-136-9764	145G0002-5
T68	AVUM	Oil Cooler Exhaust Cover	1730-01-140-2842	145G0002-6
T69	AVUM	Replacement Fixture, Nickel Erosion Cap	4920-01-115-7000	114G0021-1
T70	AVUM	Protective Cap, Vertical Pin	1560-01-123-2575	114G0017-1
T71	AVIM	Sling Assembly, Aircraft Hoisting	1730-00-071-1690	114G1013-1
T72	AVIM	Rigging Tool, Lead-Lag Damper	5180-00-168-2294	114G1014-17
T73	AVUM	Shipping Container, Rotory-Wing Head	8145-01-128-1739	114G1017-70
T74	AVUM	Shipping Container, Forward Transmission	8145-01-128-1856	145G0022-1
T75	AVUM	Steering Bar, Aft Landing Gear	1730-00-080-7833	114G1034-46
T76	AVUM	Air Inlet Cover	1730-01-139-4775	145G0003-1
T77	AVUM	Attachment Fittings, Transport Tiedown	1730-00-168-6153	114G1049-14
T78	AVUM	Assembly Fixture, Pitch Link	4920-00-879-3045	114G1102-11
T79	AVUM	Puller, Vertical Pin, Rotor Head	5180-00-103-0001	114G1137-10

TOOL AND TEST EQUIPMENT REQUIREMENTS

NOMENCLATURE OF END ITEMS
CH-47D HELICOPTER

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
T80	AVUM	Engine Outlet Cover	1730-00-191-9373	114G1323-1
T81	AVUM	Pitot Tube Cover	1730-00-435-7802	114E5040-33
T82		Deleted		
T83		Deleted		
T84	AVUM	Adapter, Handling	1740-00-462-8761	114G1354-1
T85	AVUM	Hoist, Aft Transmission	1730-00-960-4004	114E5124-1
T86	AVUM	Container, Shipping and Storage, Rotor Blade	8145-01-102-3048	114G0015-65
T87	AVUM	Pusher, Horizontal Hinge Pin	4920-00-842-5899	114G1185-1
T88	AVIM	Heater Probe	4920-01-152-7450	BH22231
T89	AVUM	Bracket Locating Fixture, Proximity Switch	4920-01-147-6321	145G0059-1
T90	AVUM	Test Set, Hydraulic System	4920-00-174-7823	114G1038-86
T91		Deleted		
T92		Deleted		
T93	AVUM	Adapter, Socket, Forward Transmission Mounting Bolts		145G0140-1
T94	AVUM	Drift, Bearing, Aft Landing Gear	5120-00-891-1369	114G1200-1
T95		Deleted		
T96		Deleted		
T97	AVUM	Drift, Bearing, Aft Landing Gear	5120-00-993-5117	114G1203-1
T98	AVUM	Puller/Pusher, Damper Bracket Bushing	5120-01-123-2682	114G0018-6
T99		Deleted		
T100	AVIM	Test Set, Viscous Damper	4920-00-484-3958	114G1208-1
T101	AVUM	Jetcal Analyzer, Temperature Tester	4920-00-372-4593	BH112JB-53
T102	AVUM	Puller Assembly, Bearing, Pitch Housing	5120-00-879-3710	114G1236-1
T103	AVUM	Protective Cover, Cockpit	1730-01-136-5619	145G0006-1
T104	AVUM	Test Harness, Engine PTIT Indicator System and Emergency Power Panel	4920-01-152-7452	BH22101
T105	AVUM	Swaging Tool, Pitch Link	5120-00-247-0216	114G1263-1
T106	AVIM	Setting Fixture, Blade Lag Shock Absorber	4920-00-369-9545	114G1306-1
T107	AVUM	Container, Blade Lag Shock Absorber	8115-00-400-7730	114G1322-1

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TOOL AND TEST EQUIPMENT REQUIREMENTS				
MOMENCLATURE OF END ITEMS CH-47D HELICOPTER				
TOOL OR TEST EQUIPMENT REFERENCE CODE	**MAINTENANCE CATEGORY**	**NOMENCLATURE**	**NATIONAL/NATO STOCK NUMBER**	**TOOL NUMBER**
T108	AVIM	Staking Die, Shock Absorber Assembly	5120-00-400-7708	114G1334-1
T109	AVIM	Staking Tool, Aft Engine Mount	5180-00-176-3726	114G1359-1
T110	AVIM	Fixture, Locating, Sliding Bearing, Rotor Head Controls	4920-00-522-3784	114G1373-1
T111	AVUM	Tempcal Probe, Temperature Transmitter Chip Detector	4920-01-151-9218	BH22223
T112	AVUM	Test Harness, Self-Tuning Dynamic Absorber	4920-00-134-4534	114G1408-1
T113	AVIM	Locating and Drill Fixture, Sync Shaft Brackets	4920-00-176-4260	114G1410-1
T114	AVIM	Locating and Drill Fixture, Sync Shaft Brackets	4920-00-157-1427	114G1411-1
T115	AVUM	Test Harness Set, N1 Actuator System	4920-00-150-5955	145G1414-1
T116	AVUM	Repair Fixture, Rotor Blade Trailing Edge	4920-01-115-6998	145G1004-1
T117	AVIM	Test Block, Flight Control Power Control Module Accumulator	4920-01-128-6315	145G0055-1
T118	AVIM	Test Block, Ptu Motor Shaft Seal	4920-01-128-6316	145G0056-1
T119	AVUM	Yaw Travel Quadrant, p/o 145E5941-11 (T39)		145G5310-1
T120	AVUM	Roll Travel Quadrant, p/o 145E5941-11 (T39)		145G5310-5
T121	AVUM	Pitch Travel Quadrant, p/o 145E5941-11 (T39)		145G5310-8
T122	AVUM	Thrust Rig Pin, p/o 145E5941-11 (T39)		114E5941-4
T123	AVUM	Cockpit Rig Fixture, p/o 145E5941-11 (T39)		114E5941-21
T124	AVUM	Pointer Assembly, p/o 145E5941-11 (T39)		114E5941-26
T125	AVUM	Control Stick Yoke, p/o 145E5941-11 (T39)		114E5941-57
T126	AVUM	Pedal Pointer, p/o 145E5941-11 (T39)		114E5941-73
T127	AVUM	Pedal Rig Pin, p/o 145E5941-11 (T39)		114E5941-74

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TOOL AND TEST EQUIPMENT REQUIREMENTS				
NOMENCLATURE OF END ITEMS CH-47D HELICOPTER				
TOOL OR TEST EQUIPMENT REFERENCE CODE	**MAINTENANCE CATEGORY**	**NOMENCLATURE**	**NATIONAL/NATO STOCK NUMBER**	**TOOL NUMBER**
T128	AVUM	Transfer Bellcrank Rig Pin, p/o 145E5941-11 (T39)		114E5941-108
T129		Deleted		
T130	AVUM	Dash Actuator Rigging Tool, p/o 145E5941-11 (T39)		14565306-1
T131	AVUM	Engine Inlet Cover (Helicopter with Screens)	5961-00-847-5244	219G1001-1
T132	AVUM	Engine Inlet Cover (Helicopter without Screens)	1730-00-990-9838	114G1206-1
T133	AVUM	Pallet Rig Pin, p/o 114E5941-11 (T39)		114E5941-4
T134	AVUM	Sling, Engine	1730-01-007-6990	LTCT14700
T135	AVUM	Second Stage Rig Pin, p/o 114E5941-11 (T39)	1730-00-760-3375	114E5985-9
T136	AVIM	Repair Kit, Hydraulic Tube, p/o D12102C-15-H10 (T181)	5180-01-115-7008	D12102C01-01
T137	AVIM	Repair Kit, Hydraulic Tube, p/o D12102C-15-H10 (T181)	5180-01-026-0255	D12102C06-06
T138	AVIM	Repair Kit, Hydraulic Tube, p/o D12102C-15-H10 (T181)	5180-01-026-0254	D12102609-04
T139	AVIM	Power Supply, Hydraulic Tube Repair, p/o D12102C-15-H10 (T172)	4320-01-098-6713	D12025-001
T140	AVUM	Tool Kit, Rosan Adapter	5180-00-283-6993	KM13
T141	AVUM	Tool Kit, Rosan Adapter	5180-00-283-6992	KM14
T141.1	AVUM	Tool Kit, Rosan Adapter		KM15
T142	AVUM	Tool Kit, Rosan Adapter	5180-00-283-6999	KM18
T143	AVUM	Tool Kit, Rosan Adapter	5180-00-283-6989	KM19
T143.1	AVUM	Tool Kit, Rosan Adapter		KM28
T143.2	AVUM	Tool Kit, Rosan Adapter		KM29
T144	AVUM	Tool Kit, Rosan Adapter	5180-00-075-0766	KM30
T145	AVUM	Tool Kit, Rosan Adapter	5180-00-077-1578	KM31
T145.1	AVUM	Tool Kit, Rosan Adapter		KM32
T145.2	AVUM	Tool Kit, Rosan Adapter		KM33
T145.3	AVUM	Tool Kit, Rosan Adapter		KM35
T145.4	AVUM	Tool Kit, Rosan Adapter		KM36
T146	AVIM	Bender Set, Hydraulic Tube		130-8500800
T147	AVUM	Drive Tool, Clinch Nut, Aft Trans	5120-00-455-2734	REA048D
T148	AVUM	Drive Tool, Clinch Nut, Aft Trans	5120-01-130-1458	REA064D
T149	AVUM	Removal Tool, Rosan Adapter		RF12LPDE

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TOOL AND TEST EQUIPMENT REQUIREMENTS				
NOMENCLATURE OF END ITEMS CH-47D HELICOPTER				
TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
T150	AVUM	Removal Tool, Rosan Adapters	5120-01-047-9302	RF16LPDE
T150.1	AVUM	Drive Tool and Combination Wrench, Rosan Adapters		RF9806DW
T150.2	AVUM	Drive Tool and Combination Wrench, Rosan Adapters		RF9808DW
T150.3	AVUM	Drive Tool and Combination Wrench, Rosan Adapters		RF9810DW
T151	AVUM	Drive Tool and Combination Wrench, Rosan Adapters	5120-01-130-1459	RF9812DW
T152	AVUM	Drive Tool and Combination Wrench, Rosan Adapters	5120-01-130-1460	RF9816DW
T152.1	AVUM	Locking Removal Tool, Rosan Adapters		RF9806LPD
T152.2	AVUM	Lockring Removal Tool, Rosan Adapters		RF9808LPD
-152.3	AVUM	Lockring Removal Tool, Rosan Adapters		RF9810LPD
T152.4	AVUM	Lockring Removal Tool, Rosan Adapters		RF9816LPW
T152.5	AVUM	Packing Tool, Rosan Adapters		ORT437
T152.6	AVUM	Packing Tool, Rosan Adapters		ORT562
T152.7	AVUM	Packing Tool, Rosan Adapters		ORT687
T152.8	AVUM	Packing Tool, Rosan Adapters		ORT1125
T153	AVIM	Insertion Tool, Cargo Hook	5120-00-964-3494	TD428L
T154	AVIM	Insertion Tool, Cargo Hook	5120-00-134-7498	TD1032L
T155	AVIM	Insertion Tool, Cargo Hook		TKNC06
T156		Deleted		
T157	AVIM	Spanner Wrench - Spring Return Assembly Cargo Hook		34-151
T158	AVUM	Test Set, Fuel Vent Check		2TE414P0200-8
T159	AVUM	Torque Reactor, Fwd Transmission Mounting Bolts	5120-01-130-1463	145G0051-1
T160	AVUM	Torque Plate, Aft Transmission	1730-01-130-9689	145G0034-1
T161	AVUM	Tee Handle, P/O PD1220 (T23)	5120-01-140-3480	PD1612
T162	AVIM	Test Fixture, Accumulator, Apu start Module	4920-01-128-6318	1323TF100-1
T163	AVUM	Sling, Handling, Aft Transmission (Alternate use with T3)	1730-00-226-3069	114E5924-1
T164		Deleted		

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TOOL AND TEST EQUIPMENT REQUIREMENTS				
NOMENCLATURE OF END ITEMS CH-47D HELICOPTER				
TOOL OR TEST EQUIPMENT REFERENCE CODE	**MAINTENANCE CATEGORY**	**NOMENCLATURE**	**NATIONAL/NATO STOCK NUMBER**	**TOOL NUMBER**
T165		Tackle Block		114E6058-23
T166		Bomb Hoist	1730-00-685-5626	Aero 14C
T167	AVUM	Seal and Window Retainer Installation Tool P/O Kit CS1154	5120-00-366-5065	756460/756461
T168	AVUM	Seal Filler Installation Tool, P/O Kit CS1154	5120-00-075-8307	756470/756476
T169		Roller Staking Kit		114G1425-1
T170	AVUM	Spray Gun		MMM8897
T171		Trim Tab Fixture		145G1019-29
T172		Tool Set, Hydraulic Tube		D12102C-15-H10
T173	AVIM	Seal Installation Tool, Ramp Control Valve (Cage 26437)		T-1FA13043-007
T174	AVIM	Seal Sizing Tool, Ramp Control Valve (Cage 26437)		T-1FA13043-007A
T175	AVIM	Seal Installation Tool, Ramp Control Valve (Cage 26437)		T-1FA1305592
T176	AVIM	Seal Sizing Tool, Ramp Control Valve (Cage 26437)		T-1FA1305593
T177	AVIM	Seal Sizing Tool, Ramp Control Valve (Cage 26437)		T-1FA1305594
T178	AVIM	Thermal Relief Valve Test Fixture, Ramp Control Valve (Cage 26437)		TF-1FA1304375
T179	AVIM	Plug, Thermal Relief Valve Test, Ramp Control Valve (Cage 26437)		TP-1FA1304375
T180		Deleted		
T181		Tube Bending Set, Acro		130-850080
T182		Tool Kit, Combining Transmission Support Fittting Replacement		234SK033-3
T183	AVUM	Fuel Quantity Test Set	6625-01-297-5305	PSD60-1AF
T184	AVUM	Fuel Quantity System Test Cable	5995-01-384-3961	PSDAF-106
T185	AVUM	Engine Water Wash System		LTCT 23980-01
T185.1	AVUM	Juniper Engine Wash System		JMP/SHWR/D/0376/ 0800/BH
T186.1	AVUM	Ohmmeter, Low Resistance (Biddle)		Model 247000
T187	AVUM	Digital Multimeter		AN/PSM-45A
T188	AVUM	Elec Torquemeter, Flight Line Test Set		LTCT 29089-01/-03

TOOL AND TEST EQUIPMENT REQUIREMENTS

NOMENCLATURE OF END ITEMS
CH-47D HELICOPTER

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
200	AVUM	Air Remover, Lamb		
200.1	AVUM	Assembly Fixture		ST71188
201	AVUM	Bag,Shot		
202	AVUM	Coupling Stowage	5935-00-982-1906	MS3180-16C
203	AVUM	Container, Lead Lined		2S
204	AVUM	Container, Rubber Lined		
205	AVUM	Container, Engine		
206	AVUM	Counterbore, Craig		850-20
207	AVIM	Counter, Electronic		AM/USM26
208	AVIM	Dial, Spring Reversing -25 to +25 Pounds		
208.1	AVIM	Driver, Seal	5120-00-942-1605	ST70273
208.2	AVIM	Driver, Seal	2835-00-620-9876	ST90889-01
209	AVIM	Flowmeter,0-2 gpm		
210	AVIM	Flowmeter,0-5 gpm		
210.1	AVIM	Gage Set, Wire		ST60880
211	AVIM	Graduate,5cc		
212	AVIM	Graduate,10cc		
213	AVIM	Graduate,20cc		
214	AVIM	Graduate,50cc		
215	AVIM	Graduate,100cc		
216	AVIM	Graduate,500cc		
217	AVUM	Graduate,2000cc		
218	AVIM	Heat Sink	3439-00-973-2249	
219	AVUM	Indicator, Combustible Gas		
220	AVUM	Kit, Mooring	1730-00-338-6374	AN8015-2
221	AVUM/ AVIM	Kit, Roller Staking	5120-00-311-5446	
222	AVIM	Kit, Rosan	5180-00-778-3789	
222.1	AVUM	Lifting Fixture	4920-01-135-5987	ST93929
223	AVUM	Manometer		
224	AVIM	Meter,Test Set	6625-00-669-0747	TS-682A/GSM-1
225	AVUM	Multiplier	5120-00-506-9092	SWE-101
226	AVUM	Mixer, Power		
227	AVIM	Pilot, Seal		
227.1		Deleted		
228	AVUM	Pump, Siphon		
229	AVIM	Reamer 1.876 to 1.877 Inch		
229.1		Deleted		
230	AVUM	Repair Tool, Pneumatic		
231	AVUM/ AVIM	Scale, 0 to 100 Pounds		

TOOL AND TEST EQUIPMENT REQUIREMENTS

NOMENCLATURE OF END ITEMS
CH-47D HELICOPTER

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
232	AVUM	Screwdriver, Torque 0-30 Inch-Pounds		
233	AVIM	Scale, Dial Indicating 0 to 0.5 Inch		
234	AVUM	Screwdriver, Torque 0 to 50 Inch-Pounds		
235	AVIM	Shop Set,Hydraulic	4920-00-165-1454	SC492099CLA9LHYA
236	AVIM	Shop Set,Electrical and Instrument	4920-00-165-1453	SC492099CLA91ELA
237	AVIM	Shop Set,Machine	4920-00-405-9279	SC492099CLA91MAA
238	AVIM	Shop Set,Power Train	4920-00-001-4132	SC492099CLAMTAM
239	AVIM	Shop Set,Sheet Metal	4920-00-166-5505	SC492099CLA91SMA
240	AVIM	Shop Set, Turbine Engine	4920-00-224-3684	SC492099CLA91ENT
241	AVIM	Shop Set, Welding	4920-00-163-5093	SC492099CLA91WEA
242	AVIM	Shop Set, Tool Crib	4920-00-472-4183	AC492099CLA91TCA
243	AVUM	Socket, 1 3/16 Inch		
244	AVUM	Socket, 1 1/2 Inch		
245	AVUM/ AVIM	Socket, 2 1/8 Inch		
245.1	AVUM	Support Fixture	4920-00-939-1521	ST91717
246	AVUM	Strap,Tiedown	1670-00-622-3632	SP-4435-2
247	AVUM	Support, Guide		SLT600T9
248	AVIM	Test Set	4940-01-048-9677	
249	AVIM	Test Set, Resistance	6625-00-5422-1331	AN/GSM-6
250	AVUM	Tester Squib	4925-00-973-3759	MOD115
251	AVUM	Deleted		
252	AVIM	Test Set Dielectric		HYP0T1404
253	AVUM	Test Set, Synchro	4920-00-556-8108	TTU-23/E
254	AVUM	Test Set, Tach	4920-00-621-2427	TTU-27/E
255				
256	AVUM	Tool, Module Extraction	5120-01-097-5219	CTJ-R06
257	AVUM	Thermometer Tester, Elect		
258	AVUM	Trailer, Powerplant		
259	AVUM	Trailer Trans, 2000 Pounds		
260	AVUM	Trailer,APU	1740-00-516-7929	100334
260.1	AVUM	Tool Set, AVUM, Set No. 2	4920-00-569-0476	SC492099CLA92
261	AVUM	Tool, Guide		SLT600G9
262	AVUM	Tool, Window		756460
263	AVUM	Tool, Window		756475
264	AVUM	Tool, Installation		TMD-428L
265	AVIM	Tool, Contact Removal/ Insertion	5120-00-915-4588	M81969/14-03

SECTION II

TOOL AND TEST EQUIPMENT REQUIREMENTS				
NOMENCLATURE OF END ITEMS CH-470 HELICOPTER				
EQUIPMENT REFERENCE CODE	**MAINTENANCE CATEGORY**	**NOMENCLATURE**	**NATIONAL/NATO STOCK NUMBER**	**TOOL NUMBER**
266	AVUM/ AVIM	Tool, Contact Removal/ Insertion	M83723-31-20	
267	AVUM/ AVIM	Tool Hand, Self Clinching	5120-00-781-7891	
268	AVUM/ AVIM	Tool Kit, Electronic Repairer	5180-00-064-5178	SC518091CLR13
269	AVUM/ AVIM	Tool Kit, Electronic Equipment	5180-00-610-8177	SC518091CLR07
269.1		Deleted		
270	AVUM/ AVIM	Tool Kit, Hydraulic Repairer	5180-00-323-4891	SC518097CLA05HR
270.1	AVUM/ AVIM	Tool Kit, Aircraft Inspector	5180-00-323-5114	SC518097CLA09
271	AVUM	Tool Kit, Instrument Repairer	4920-00-323-4913	SC518099CLA05
272	AVUM/ AVIM	Tool Kit, Powerplant Repairer	5180-00-323-4944	SC518099CLA07
273	AVUM/ AVIM	Tool Kit, Powertrain Repairer	5180-00-003-5267	SC518099CLA13
274	AVUM/ AVIM	Tool Kit, Technical Repairer	5180-00-323-5114	SC518099CLA09
275	AVUM/ AVIM	Tool Kit, Airframe Repairer	5180-00-323-4876	SC518099CLA02
276	AVUM	Tool Kit, Battery Service	5180-00-542-5812	SC518091CLR03
277	AVUM/ AVIM	Tool Kit, Electrical Repairer	5180-00-323-4915	SC518099CLA06
278	AVUM/ AVIM	Tool Kit, Aircraft Mechanic	5180-00-323-4692	SC518099CLA01HR
279	AVUM	Tool Set, No. 1 Recipro cating Engine	4920-00-159-8728	SC492099CLA90REC
280	AVUM	Tool Set, No. 1 Fixed Base	4920-00-504-9258	SC492099CLA90W0S
281	AVUM	Tool Set, No. 1 Airmobile	4920-00-159-8727	SC492099CLA90
282	AVUM	Tool Set, No. 2 Airmobile	4920-00-567-0476	SC492099CLA92
283	AVIM	Voltmeter ,Differential		Fluke 803B
284	AVIM	Voltmeter, Digital		
285	AVUM	Voltmeter		
286	AVIM	Weight, 20 Pounds		
287	AVIM	Weight, 25 Pounds		
288	AVIM	Weight, 50 Pounds		
289	AVIM	Weight, 94 Pounds		
290	AVIM	Weight, 160 Pounds		
291	AVIM	Weight, 250 Pounds		
291.1	AVIM	Welding Set, Inert Gas	3431-00-079-0498	

SECTION III

TOOL AND TEST EQUIPMENT REQUIREMENTS				
NOMENCLATURE OF END ITEMS CH-47D HELICOPTER				
TOOL OR TEST EQUIPMENT REFERENCE CODE	**MAINTENANCE CATEGORY**	**NOMENCLATURE**	**NATIONAL/NATO STOCK NUMBER**	**TOOL NUMBER**
292	AVUM	Wheel, Buffing, Unstitched		
293	AVUM	Wheel, Buffing Stitched		
294	AVUM	Wrench	5120-00-076-4380	XW20509
295	AVUM	Wrench, Box, 1-1/2 Inch		
296	AVUM	Wrench, Open-End, 1-3/4 Inch		
297	AVUM	Wrench, Open-End, 1-7/8 Inch		
298	AVUM	Wrench, Spline	5120-00-288-9085	
299	AVUM	Wrench, Open-End, 1 Inch		
300	AVUM	Wrench, Open-End, 2-1/2 Inch		
301	AVUM	Crowfoot Attachment 11/16 inch		
302	AVIM	Wrench, Open-End, 1-1/8 Inch		
303	AVUM	Vacuum Pump		
304	AVUM	Trip Balance	6670-00-401-7195	
305		Wrench, 1/4 Inch Drive Torque	5120-00-542-4489	
306	AVUM	Telescoping Gage	5120-00-221-2086	
307	AVUM	Outside Micrometer Caliper Set		GGG-C-105
308	AVUM	Blind Hole Puller Set	5120-01-008-7974	
309	AVUM	Remote Tire Inflator		AS1675
310	AVIM	Test Adapter		145GS278-20
311	AVUM	Engine Harness Connector Retention Tool		SK32193-1
312	AVUM	Engine Harness Connector Retention Tool		SK32193-5
313	AVUM	Spanner Wrench		145G1150-1
314	AVUM	On Wing Diagnostic Computer Set		LTCT 29330-02

SECTION IV REMARKS

REFERENCE CODE	REMARKS\NOTES

The notes 1 thru 28 indicate a notation or remark on that particular maintenance function as follows:

1. Limited to airframe repairman's tool kit and portable handtools
2. Epoxy
3. Patching by hand methods only
4. Tire recap
5. Vibration check
6. Refer to TM 55-2840-254-23
7. Includes filter replacement
8. Test equipment 13819-2A
9. Refer to TM 11-1520-240-23
10. Cable adjustment
11. Using teststand
12. Buildup
13. Replace cyclic trim link
14. Refer to TM 55-2835-205-23
15. Not Requiring jigs or fixtures
16. Refer to TM 9-1095-206-13 & P
17. Water/solvent wash-engine in airframe
18. Weld repair
19. Replace inserts, helicoils and studs
20. Replace support brackets, plugs and packings
21. Inspect for chafing, security of installation, dents, kinks, and cracks
22. Replace nut plates
23. Limited to reinstallation of same housing
24. Replacement of impellers limited to Depot level only
25. As indicated by instructions in this manual
26. Limited to the capability (skills, tool, test/support equipment, and facilities) available
27. Without **74**
28. With **74**

APPENDIX C
AIRCRAFT INVENTORY

(See Chapter 1, Task 1-109.)

APPENDIX D
EXPENDABLE SUPPLIES AND MATERIALS

(See Chapter 1, Task 1-18.)

APPENDIX E
ILLUSTRATED FIELD
MANUFACTURED ITEMS LIST

INTRODUCTION.

This appendix includes complete instructions for making items authorized to be manufactured or fabricated at aviation unit maintenance.

A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers fabrication criteria.

All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

E-1	Engine Vibration Test Adapter
E-2	Pitch Housing Seal Removal Tool
E-3	Ramp Control Valve Spanner
E-4	Rotory-Wing Head Pressure Test Fittings and Hose
E-5	Rotor Blade Phasing Block Tool
E-6	LCT Shaft Rotation Lever
E-7	Drive Arm Bushing Installation Adapter
E-8	Sleeve Bearing Removal Adapter
E-9	Sleeve Bearing Installation Adapter
E-10	Drive Arm Removal/Installation Adapter
E-11	Accumulator Leak Test Reservoir
E-12	Hand Pump Test Hydraulic Fluid Reservoir
E-13	Forward LCT Yoke Bushing Removal Tool
E-14	Aft LCT Yoke Bearing Removal Tool
E-15	Cockpit Control Bearing Installation Tool
E-16	Fuel Cell Support Rig
E-17	Refueling System Test Closure Plates
E-18	Forward and Aft Cargo Hook Wire Rope
E-19	Brake Master Cylinder Test Stand
E-20	Heater Fan Support Plate
E-21	Flight Control Cooling Fan Support Plate
E-22	Hydraulic Cooling Fan Support Plate
E-23	(Deleted)
E-24	Lower Drive Arm Bolt Removal Tool
E-25	Upper Drive Arm Bolt Removal Tool
E-26	Strap 145S4908-2 and -16
E-27	(Deleted)
E-28	(Deleted)
E-29	Aluminum Scraper
E-30	PTU Spanner Wrench

E-31 Fill Module Support Plate
E-32 Servocylinder Inspection Fixture
E-33 Avionics Cooling Fan Support Plate
E-34 Extensible Link Test Cable 145GS278-20
E-35 Landing Gear Disk Brake Spanner
E-36 Pitot Static Tester Hose No. 1
E-37 Pitot Static Tester Hose No. 2
E-38 Cockpit Transfer Bellcrank Shaft Puller
E-39 Fuel Hose Assemblies (Various Part Numbers)
E-40 Forward and Aft Cargo Hook Mount Bushing Tool
E-41 Shock Absorber Rod End Bearing Adapter
E-42 Torquemeter Zero-Adjust Cable
E-43 Fuel Quantity Indicator Test Cable
E-44 Rotor Blade Balance Weight Spacer 114R1737-2
E-45 Forward Transmission Mounting Structure Bushing Puller
E-46 Engine Screen Latch Eyelet 234P5052-7
E-47 Engine Screen Latch 234P5052-4
E-48 Engine Screen Latch Clip 234P5052-3, -8, and -9
E-49 Engine Screen Latch Retainer 114P8080-18
E-50 Tube Assemblies (Various Part Numbers)
E-51 Three-Prong Seal Insertion Tool
E-52 Seal Forming Tool
E-53 Aft Landing Gear Drag Link/Shock Strut Liners 145L2330-2 and -3/SK31250
E-54 Teflon Washer 234R2205-1
E-55 Fuel Tank Test Plug
E-56 Inboard Seal Installation Drift
E-57 Modified Socket
E-58 Exhaust Duct and Partition Seal 145S4106-4
E-59 De-Ice Protection Hinge Half 145R2215-8
E-60 De-Ice Protection Hinge Pin 145R2215-9
E-61 Thrust and Yaw Controls Strap 145C1460-10
E-62 Heater Drain Tube 114E4042-31
E-63 Heat Airflow Control Tube 114E4072-13
E-64 Troop Commander Jump Seat Strap 114E4004-7
E-65 Tackle Block Cable 114E6058-19
E-66 Acoustic Ceiling Blankets Rope 145E4019-28
E-67 Acoustic Ceiling Blankets Tube 145E4019-29
E-68 Acoustic Ceiling Blankets Rope 145E4019-40
E-69 External Cargo Hook Release Cable 145E5507-2
E-70 Emergency Release Cable 114E5090-13
E-71 Hose Assembly MS27371E0460
E-72 Troop Seat Upper Tube 114E4116-23
E-73 Troop Seat Support Tube 114E4079-35
E-74 Cabin First Aid Kit Blanket 114E4014-11
E-75 Hoist Operator Panel Bracket 114E4153-3 and -4
E-76 Hoist Operator Panel Blanket 114E4153-5
E-77 Loading Pole Stowage Angle 114E5105-13
E-78 Loading Pole Stowage Pad 114E5105-15
E-79 Loading Pole Stowage Angle 114E5105-19
E-80 Loading Pole Stowage Angle 114E5105-21
E-81 Hoist Operator Panel Support Clip 114E4108-27
E-82 Hoist Operator Panel Support Clip 114E4108-29

E-83 Hoist Operator's Panel Support Strap 114E4108-31
E-84 Support Assembly Cable 114E4108-35
E-85 Forward Transmission Drain Hose TS000-012-0280
E-86 Combining Transmission Drain Hose TS000-012-0300
E-87 Drive Shaft and Gearbox Spacer 114P5003-141
E-88 Engine Bypass Screen Fairing Cushion 114P8073-9
E-89 Engine Bypass Screen Nose Cushion 114P8073-13
E-90 Electrical Lead MS25083-2AA4
E-91 Engine Access Cover Hinge 114P8030-89, -91, -63
E-92 Engine Access Cover Hinge 114P8030-77, -93, -95
E-93 Access Cover Bracket 114P8043-1
E-94 Engine Access Cover Cable 114P8031-61
E-95 External Cargo Hook Manual Release Cover 145E5511-2
E-96 Fwd Pylon Cooling Air Inlet Frame 145S1903-3
E-97 Fwd Pylon Cooling Air Inlet Retainer Strip 145S1903-5
E-98 Fwd Pylon Cooling Air Inlet Screen 145S1903-9
E-99 Fwd Pylon Cooling Air Inlet Strap 145S1903-19
E-100 Fwd Pylon Cooling Air Inlet Retainer Strip 145S1903-21
E-101 Fwd Pylon Cooling Air Inlet Door Hinge 145S1903-16
E-102 Engine Remountable Bracket 114P5018-1
E-103 Engine Remountable Bracket 114P5018-2
E-104 Fwd Pylon Fixed Fairing Hinge 114S1902-117
E-105 Fwd Pylon Fixed Fairing Rubber Seal 114S1902-215
E-106 Cabin Escape Hatch Rubber Seal 114S1619-21
E-107 Cabin Lower Door Retainer 114S1620-21
E-108 Cabin Lower Rubber Seal 114S1620-43
E-109 Electrical Lead MS25083-2AB7
E-110 Packing Material MS28932C09
E-111 Bonding Jumper MS25083-2AC8
E-112 Access Tunnel Cover Seal 114S2915-38
E-113 Leading Edge Fairing Seal 145S4906-31
E-114 Angle 414E3302-23
E-115 Electronics Compartment Hat Section 414E3301-6
E-116 Cabin Floor Plate 114S2554-19
E-117 Gang Channel 114S2554-53
E-118 Gang Channel 114S2554-47
E-119 Access Door Strap 114S4603-19
E-120 Lower Engine Access Panel Cable 114P8052-3
E-121 Lower Engine Access Panel Stud 114P8052-2
E-122 Aft Pylon Hydraulic Bay Door Bracket 145S4607-9
E-123 Engine Drag Strut Slotted Bushing Installation Bar
E-124 Angle 414E3325-6
E-125 Radio Compartment Rack Bracket 145S1621-12
E-126 Corner Angle 145E3102-17
E-127 Seal 114S4901-105
E-128 Chafing Strip 114S4901-213
E-129 Fuel Pod Access Panel Strap 114S5913-8
E-130 Cargo Door Seal Strip 114S6002-161, -162
E-131 Cargo Door Seal Plug 114S6002- 105
E-132 Ramp Forward Edge Bearing Pad 145S6554-19

E- 133 Ramp Forward Edge Bearing Pad 114S6554-17
E-134 Ramp Forward Edge Bearing Pad 114S6554-15
E-135 Aft Transmission Drip Tray Bumper 234S3607-19
E-136 Auxiliary Fuel Pod Bottom Isolation Strap 114S5824-62
E-137 Aft Transmission Drip Tray Chip Detector Cover Strap 145S3620-11
E-138 Aft Landing Gear Door Chafing Strip (Upper) 114S5905-111
E-139 Aft Transmission Cooler Exhaust Screen 145S3504-2
E- 140 Cabin Crown Tunnel Drain Hose 145S1652-19
E-141 Cabin Crown Tunnel Drain Hose 145S1652-18
E- 142 Cargo Door Coaling Seal Clamp 114S3908-25, -26
E-143 Fuselage Step Door 114S5602-19
E-144 Cabin Crown Support Angle 114S2710-45
E- 145 APU Closure Deck installation Bracket 114S3157-96
E- 146 Aft Transmission Exhaust Duct Seal 145S3701-4
E- 147 Aft Transmission Drip Pan Seal Retainer 114S3607-198
E- 148 Aft Transmission Drip Pan Seal Retainer 114S3607
E- 149 Electric Compartment Access Panel Seal 114S59816-43
E- 150 Nose Door Assembly Hinge Pin 114S1632-23
E-151 Lower Cockpit Enclosure Door Seal 114S1604-247
E-152 Forward Transmission Drip Pan Angle 145S1112-10
E-153 Aft Transmission Drip Tray Chip Detector Cover Seal 145S3620-12
E-154 Angle Rail (Radar Warning Mount) 145E3002-10
E-155 Angle Rail (Radar Warning Mount) 145E3002-30
E- 156 Left Hand Electrical Pod Bracket 145E2118-3
E-157 Left Hand Electrical Pod Bracket 145E2118-6
E-158 Overhead Panel Channel 414E2029-2
E- 159 Overhead Panel Tee 414E2029-10
E- 160 Overhead Panel Channel 414E2029-14
E-161 Overhead Panel Channel 414E2029-34
E-162 Relay Bracket Power Distribution Panel 414E2009-15
E- 163 Auxiliary Pod Plate Isolation Installation 414S5824-13
E- 164 Forward Pylon Work Platform Seal 114S1903-739
E-165 Forward Pylon Fairing Seal 114S1902-387
E- 166 Forward Pylon Fairing Seal 114S1902-386
E-167 Upper Cabin Door Shim 114S1621-35
E-168 Upper Cabin Door Shim 114S1621-33
E-169 Upper Cabin Door Shim 114S1621-39
E- 170 Upper Cabin Door Shim 114S1621-37
E-171 Left Hand Electrical Compartment Battery Angle 114E2156-32
E-172 Left Hand Electrical Compartment Battery Angle 114E2156-31
E-173 Fuselage Cabin Section Seal 114S2903-31, -33
E-174 Terminal Board Cover MS18029-2S9, -1S12, -2S16
E-175 Spacer Beam Cover Panel 114S1655-14
E-176 Beam Cover Hinge Halves 114S1655-15, -16
E-177 PDP Housing Assembly Support 145E2158-21
E-178 PDP Housing Assembly Wire Support 145E2158-33
E-179 Drive Shaft and Gearbox Fairing Spacer 114P5003-142
E- 180 Drive Shaft and Gearbox Fairing Channel 114P5003-143
E-181 Drive Shaft and Gearbox Fairing Former 114P5003-144 and -145
E-182 Drive Shaft and Gearbox Fairing Hinge Half 114P5003-124 and -125
E-183 Drive Shaft and Gearbox Fairing Hinge Half 114P5003-133 and -134

E-184 Drive Shaft and Gearbox Faring Hinge Fin 114P5003-132
E-185 Drive Shaft and Gearbox Faking Hinge Pin Retainer 114P5003-135
E-186 Drive Shaft and Gearbox Faking Clip 114P5003-108
E-187 Drive Shaft and Gearbox Fairing Clip 114P5003-91
E-186 Drive Shaft and Gearbox Fairing Spacer 114P5003-95
E-189 Cockpit Enclosure Seals 114S1608-2, -3, -4, -5, and -6
E-190 Upper Cockpit Enclosure Seal 114S1602-139
E-191 Pilots and copilots Windshield Retainer 114S1716-1
E-192 Flight Control Support Structure Pile and HookTape 145S1121-18 and -19
E-193 Upper Cabin Door Assembly Seal 114S1621-11
E-194 Access Door Seal 114S3904-50
E-195 Access Door Hinge Half 114S3904-17
E-196 Bellcrank Support Fitting Radius Block 145S1614-2
E-197 Glare Shield plate 414S1763-6
E-198 Glare Shield Angle 414S1763-18
E-199 Upper Cabin Door Assembly Seal 114S1621-9
E-200 Ramp Gate Hinge Pin 114S6109-33
E-201 Cockpit Nose Compartment Door Assembly Angle 114s1632-17and-18
E-202 Cockpit Nose Compartment Door Assembly Angle 114S1632-19 and-20
E-203 Cockpit Nose Compartment Door Assembly Hinge Half 114S632-21
E-204 Cabin Door Assembly Bracket 114S1716-5
E-205 Cabin Door Assembly Plate 114S1716-7
E-206 Cabin Crown Access Tunnel Cover Installation Hinge Pin 114S2915-23
E-207 Cabin Structure, Tandem Hooks Clip 145S2617-3 and -4
E-208 Cabin Structure, Tandem Hooks Clip 145S2617-9
E-209 lsolation Installation, Auxiliary Fuel Pod Bottom, Strip 114S5824-10
E-210 Isolation Installation, Auxiliary Fuel Pod Bottom, Shim 114S5824-18
E-211 Cabin Crown Access Tunnel Cover Installation Seals 114S2915, -39, -40, -41, and -42
E-212 Forward Landing Gear Access Panel Seal 114S5901-148
E-213 Forwad Landing Gear Access Panel Hinges 114S5901
E-214 Cabin Crown Access Tunnel Cover lnstallation Retainer 114S2915-43
E-215 Cabin Crown Access Tunnel Cover Installation Seal Retainers 114S2915-44,-45, -46,and-47
E-216 Isolation installation Auxiliary Fuel Pod Bottom Hinge Components 114S5824-12, -13, and -29
E-217 Isolation Installation Auxiliary Fuel Pod Bottom Hinge Components 114S5824-14, -15, and -30
E-218 Isolation installation Auxiliary Fuel Pod Bottom Retainer 114S5824-22
E-219 Cabin Crown Access Tunnel Cover Installation Hinge 114S2915-67
E-220 lsolation Installation Auxiliary Fuel Pod Bottom Strap 114S5824-49
E-221 Cabin Crown Access Tunnel Cover Installation Half Hinge 114S2915-74
E-222 Cabin Crown Access Tunnel Cover lnstallation Strap Assembly 114S2915-79
E-223 Pod Attachment Hinge Pins 114S5701-1, -3, -5, -7,-9, and -10
E-224 Deleted

E-225 Deleted
E-226 Direcectional Stability Strake Former 114S6505-15 and -16
E-227 Directional Stability Strake Former 114S6505-17 and -18
E-228 Engine Harness Retention Tool SK32193-1 and -5
E-229 lsolator Panel, Main Fuel Cell Filler 114S5823-10
E-230 lsolator Panel, Main Fuel Cell - Hinge Half 114S5823-18
E-231 Isolator Panel, Main Fuel Cell - Hinge Assemblies 114S5823
E-232 Isolator Panel, Main Fuel Cell - Filler 114S5823-26
E-233 Isolator Panel, Main Fuel Cell - Filler 114S5823-27
E-234 Isolator Panel, Main Fuel Cell - Strip 114S5823-31 and -32
E-235 Isolator Panel, Main Fuel Cell - Filler 114S5823-38
E-236 Isolator Panel, Main Fuel Cell - Hinge Half 114S5823-57
E-237 Isolator Panel, Main Fuel Cell - Hinge Half 114S823-58
E-238 Isolator Panel, Main Fuel Cell - Hinge Pin 114S5823-62
E-239 Isolator Panel, Auxiliary Fuel Pod Bottom - Filler 114S5824-24
E-240 lsola!or Panel, Auxiliary Fuel Pod Bottom - Filler 414S5824-10
E-241 lsolator Panel, Auxiliary Fuel Pod Bottom - Strip 414S5824-11
E-242 Isolator Panel, Auxiliary Fuel Pod Bottom - Shim 414S5824-12
E-243 Handgrip Installation Drain Tube 114S261O-31 and -74
E-244 Cabin Crown Stiffener Clip 114S2710-41
E-245 Cargo Ramp Seal Retainer 114S6608-15, -25, and -26
E-246 Cargo Ramp Seal Filler 114S6608-17
E-247 Cargo Ramp Seal Filler 114S6608-19
E-248 Cargo Ramp Seal Splice Channel 114S6608-27
E-249 Cargo Ramp Seal 114S6608-33
E-250 Cargo Ramp Seal Retainer 114S6608-35
E-251 Cargo Ramp Hinge Pin 114S3613-39 and -43
E-252 Cargo Ramp Hinge 114S3613-31 and -32
E-253 Cargo Ramp Hinge 114S3613-35, -36, -37, and -38
E-254 Center Ramp Floor Panel 114S6551-11
E-255 Center Ramp Floor Panel 114S6551-13 and -14
E-256 Center Ramp Floor Panel 114S6551-15 and -16
E-257 Center Ramp Floor Panel 114S6551-17 and -18
E-258 Ramp Gate Hinge Pin 114S6109-32
E-259 Aft Transmission Drip Pan Pile Tape 114S3607-49
E-260 Aft Transmission Drip Pan Hinge Half 114S3607-79
E-261 Aft Transmission Drip Pan Hinge Pin 114S3607-81
E-262 Aft Transmission Drip Pan Hinge Half 114S3607-163
E-263 Aft Transmission Drip Pan Hinge Pin 114S3607-167
E-264 Aft Transmission Drip Pan Retainer 114S3607-191 and -195
E-265 Aft Transmission Drip Pan Strap 145S3616-2
E-266 Chip Detector Fuzz Burn-Off Test Set Test 145-02~5400-1
E-267 Upper Cabin Door Escape Hatch Rubber Seal 1141621-5 and Seal filler 114S1621-7
E-268 Out Rigger Assembly 1730CH47-002 For Vertical Pylon Handling Skid 114E5856-22

E-269 Electrical Lead MS25083-1AB3
E-270 Engine Inlet Lower Screen Hinge Assembly MS20001P8-2075
E-271 Lower Cabin Door Seal Retaining Strips VS25201-030-1935 and VS25201-030-2560
E-272 Electrical Lead MS25083-1BB7 and MS25083-1BB10
E-273 Fold Out Step Assembly Half Hinge 114S5612-18 and -12
E-274 Fold Out Step Assembly Hinge Pin 114S5612-19
E-275 Main Fuel Pod Isolator Panel Channel 145S5805-2
E-276 Electrical Lead MS25083-7BC10
E-277 Main Fuel Pod Isolator Strip 114S5823-36
E-278 Auxiliary Fuel Pod Isolator Installation Filler 114S5824-26
E-279 Forward Auxiliary Fuel Pod Transition Fairing Seal 145S2907-3
E-280 Aft Transmission Drip Tray Installation Seals 145S3607-181 and -187
E-281 Ramp Forward Edge Bearing Pad 114S6554-19
E-282 Cargo Door Seals 114S6002-182, -183, and -184
E-283 Cargo Door Seals 114S6002-175
E-284 Ramp Work Platform Brace Hinge Pin 114S6701-37
E-285 Ramp Work Platform Brace Hinge Half 114S6701-32
E-286 Ramp Work Platform Brace Hinge Half 114S6701-31
E-287 Ramp Work Platform Brace Hinge Half 114S6701-33
E-288 Ramp Work Platform Brace Attachment 114S6701-36
E-289 Electrical Lead MS25083-2BB10
E-290 Pod Work Platform Fairing Installation Half Hinge 114S5551-89
E-291 Pod Work Platform Fairing Installation Hinge Half 114S5551-85, -86, -87, and -88
E-292 Pod Work Platform Fairing Installation Hinge Pin 114S5551-95
E-293 Apu Drip Tray Mod Installation Tee 145S3617-4 and -5
E-294 Apu Access Panel Installation Hinge Half 114S3615-27
E-295 Apu Access Panel Installation Hinge Half 114S3615-29
E-296 Apu Access Panel Installation Hinge Pin 114S3615-31
E-297 Aft Landing Gear Pod Fairing Installation Hinge Half 114S5910-35
E-298 Aft Landing Gear Pod Fairing Installation Seals 114S5910-27, and -28
E-299 Aft Landing Gear Access Panel Assembly Hinge Half 114S5909-55
E-300 Aft Landing Gear Access Panel Assembly Hinge Pin 114S5909-56
E-301 Electrical Lead MS25083-3BB7
E-302 Electrical Lead MS25083-2AC7
E-303 Engine Pylon Fairing Installation Seal 114S3902-241, -247, -365, -366, -379, and -380
E-304 Engine Pylon Fairing Installation Seals 234S3902-19 and -20
E-305 Hinged Lower Panel Access Cover Assembly Hinge Pin 114P8032-45
E-306 Hinged Lower Panel Access Cover Assembly Half Hinge 114P8032-93
E-307 Hinge Lower Panel Access Cover Assembly Seal 114P8032-39
E-308 Installation of Engine Access Door Assembly Half Hinge 114S3915-63 and -64
E-309 Hydraulic Test Panel Access Door Installation Seals 114S3905-47, -49, -65, and -67
E-310 Aft Pylon Latch Shim 145S4706-36
E-311 Cargo Hook Release Switch Guard EGD-1001
E-312 Ball Staking Tool
E-313 Cargo Hook Light Switch Box
E-314 Balance Control Bracket
E-315 Doubler, Cargo Hook Light
E-316 C-Box Doors Latch Assembly
E-317 Remove Ramp Control Valve Test Set
E-318 Engine Fuel Depreservation Drain Line
E-319 Thrust LVDT Test Harness
E-320 Diaphragm Replacement Tool

PART NUMBER AND E NUMBER INDEX

Part Number	Appendix E Number
HP437-PF1	E-23
HP973AT-3	E-27
HP973AT-4	E-25
HP973AT-5	E-24
MS18029-2S9, -1S12, -2S16	E-174
MS20001P8-2075	E-270
MS25083-1AB3	E-269
MS25083-1BB7	E-272
MS25083-1BB10	E-272
MS25083-2AA4	E-90
MS25083-2AB7	E-109
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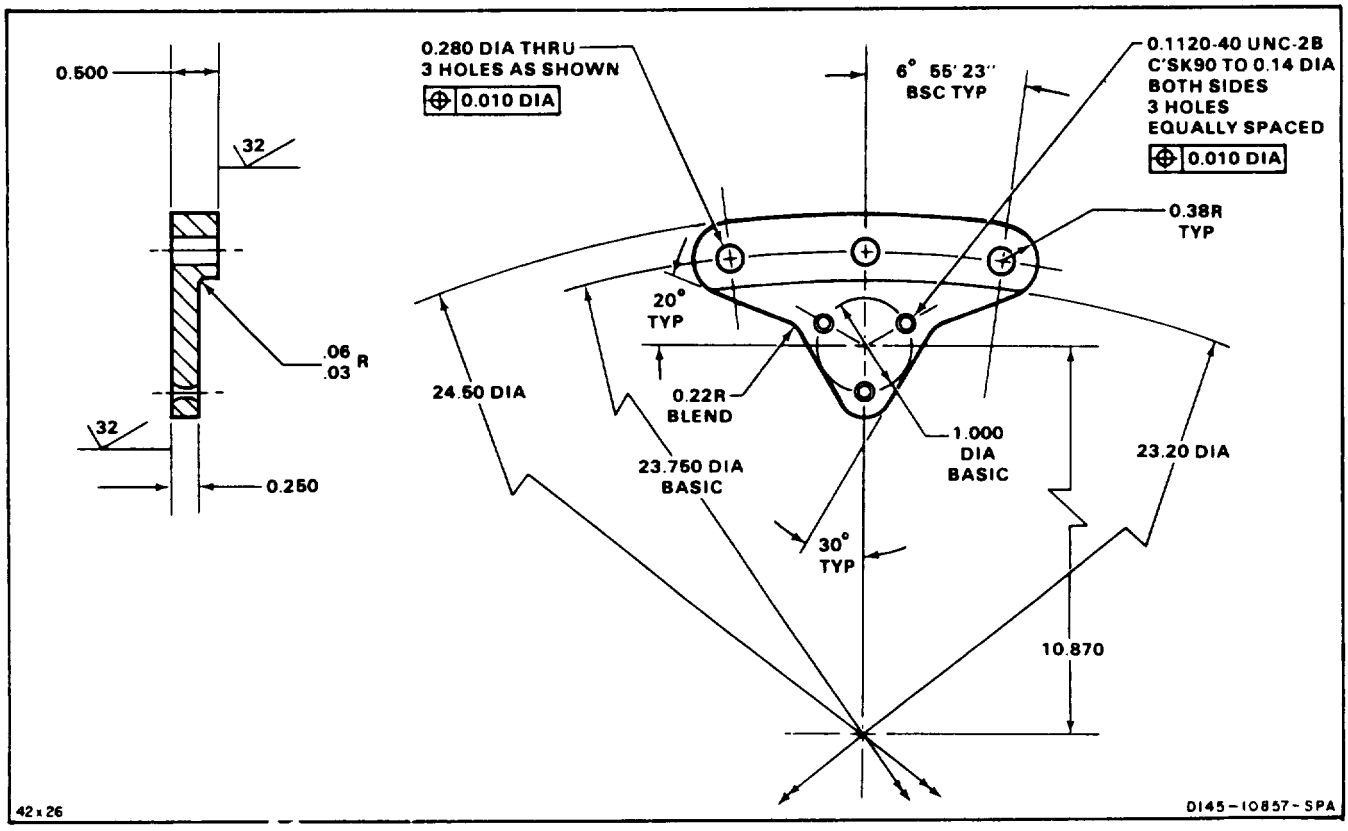
E-1 ENGINE VIBRATION TEST ADAPTER

NOTES:

1. FABRICATE FROM METAL PLATE QQ-S-635. NSN 9515-00-596-1894.
2. ALL DIMENSIONS IN INCHES.
3. TOLERANCES:
   .X = ±.03
   .XX = ±.03
   .XXX = .010
   ANGLES ±2°
4. BREAK SHARP EDGES.
5. SURFACE TREATMENT PER MIL-C-13924CL1.

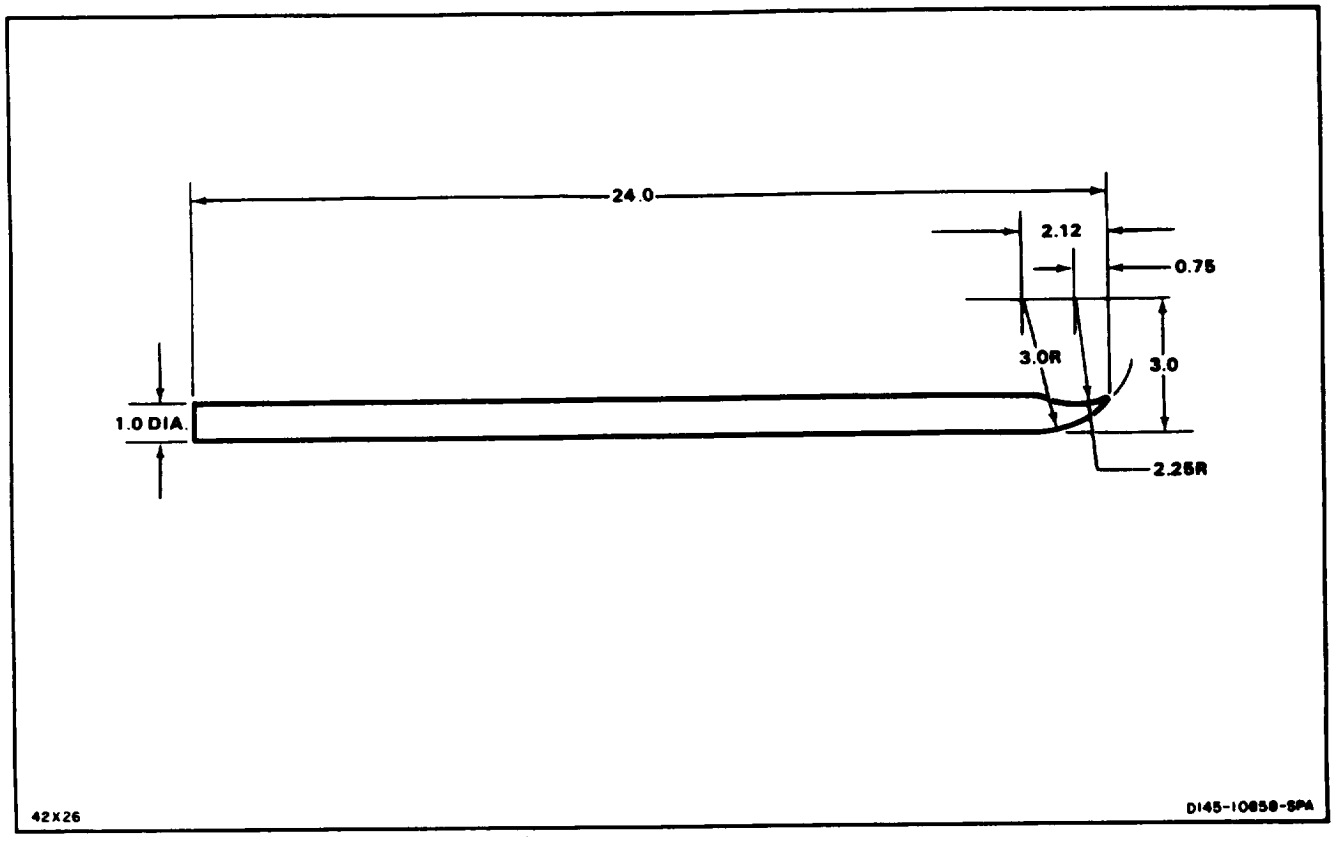


END OF TASK

E-2 PITCH HOUSING SEAL REMOVAL TOOL E-2

NOTES:

1. FABRICATE FROM METAL BAR QQ-A-200/5 NSN 9530-00-236-1378.
2. ALL DIMENSIONS IN INCHES.

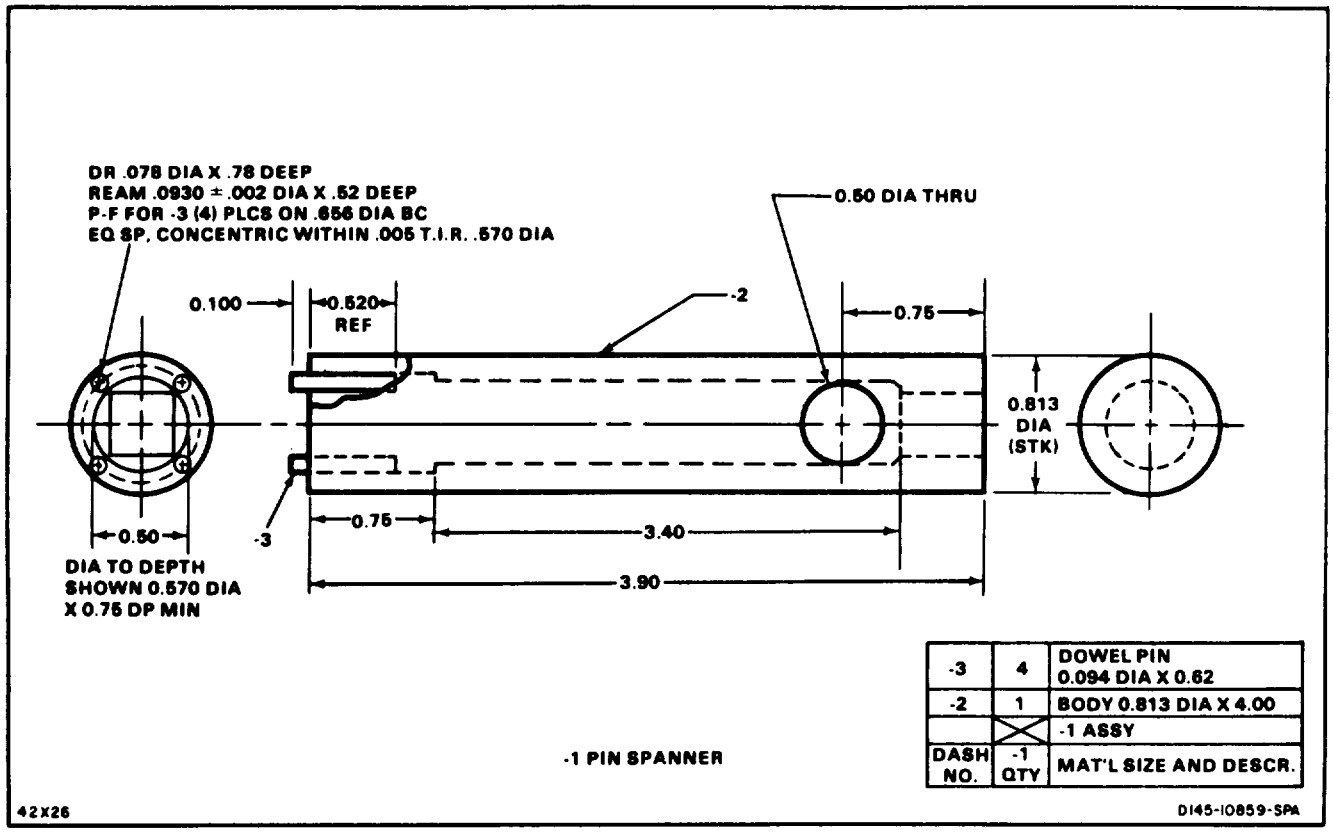


END OF TASK

E-3 RAMP CONTROL VALVE SPANNER

NOTES:

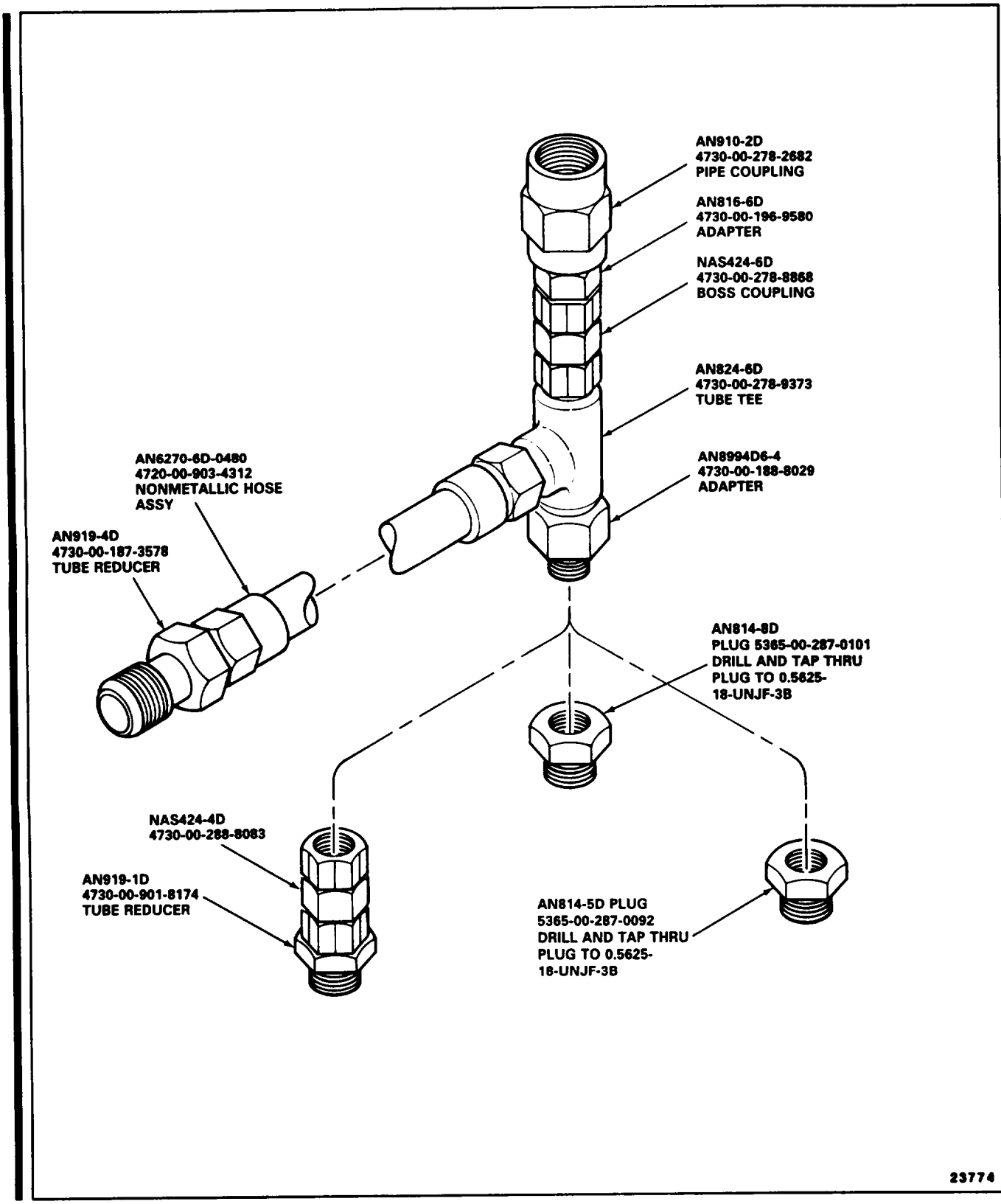
1. FABRICATE FROM METAL BAR QQ-S-763 NSN 9510-00-975-2640.
2. ALL DIMENSIONS IN INCHES,
3. FOR REMOVAL/INSTALIATION OF END PLUGS ON RAMP CONTROL VALVE 114HS111-1.



DASH NO.	-1 QTY	MAT'L SIZE AND DESCR.
-3	4	DOWEL PIN 0.094 DIA X 0.62
-2	1	BODY 0.813 DIA X 4.00
	X	-1 ASSY

END OF TASK

E-4 ROTARY-WING HEAD PRESSURE TEST FITTINGS AND HOSE E-4

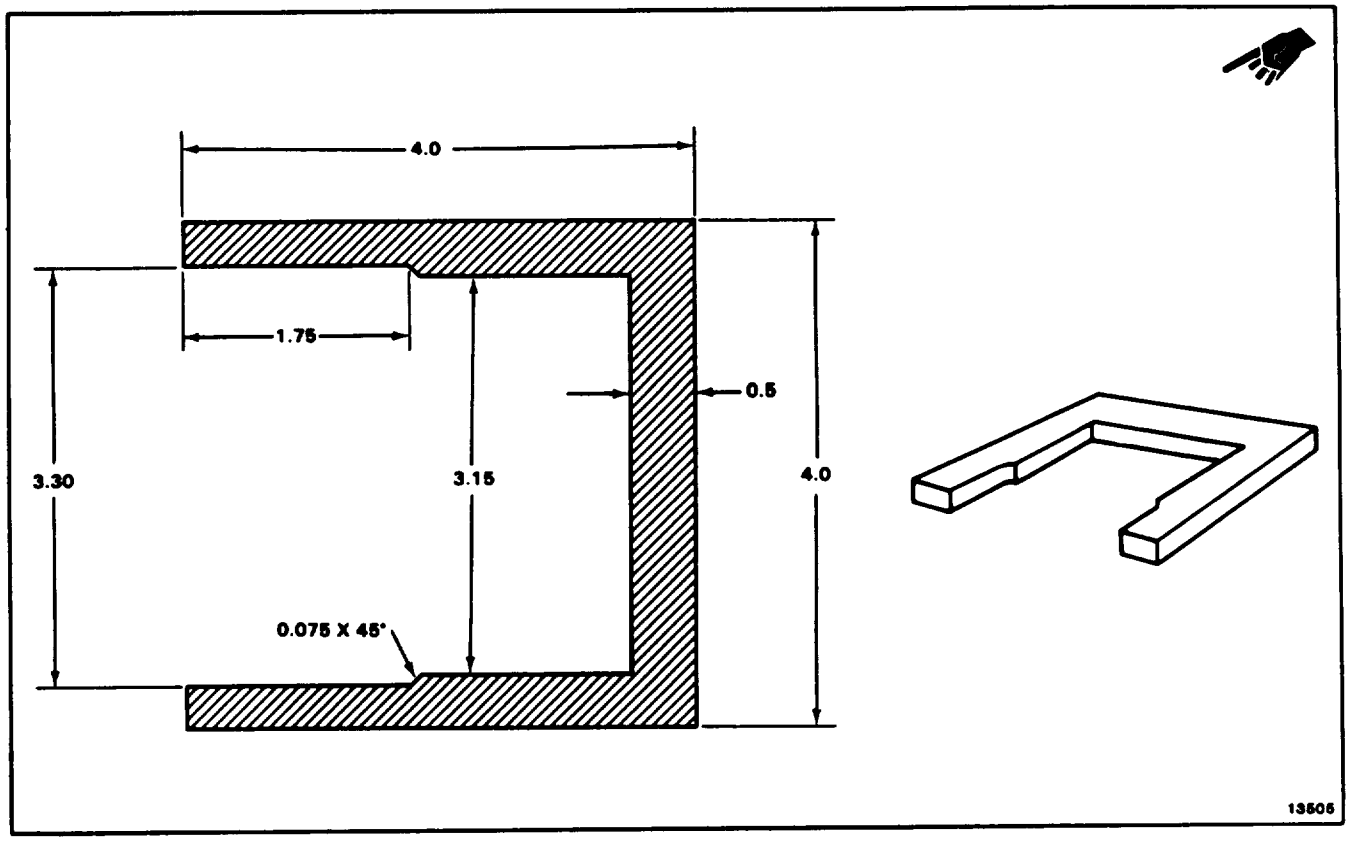


END OF TASK

E-5 ROTOR BLADE PHASING BLOCK TOOL E-5

NOTES:

1. FABRICATE FROM METAL PLATE PER
   QQ-A-25014
   NSN 9535-00-232-6948
2. ALL DIMENSIONS IN INCHES.

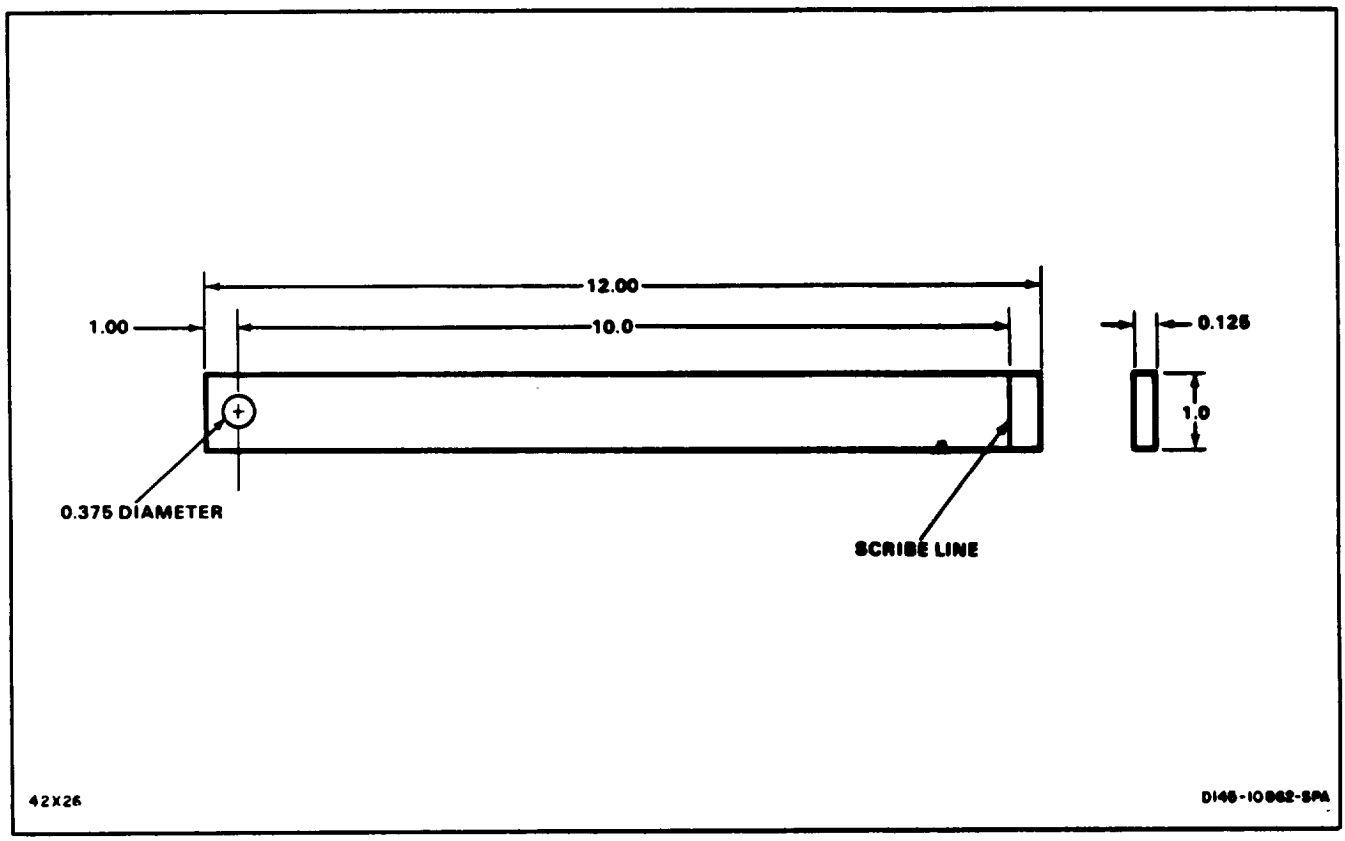


END OF TASK

E-6 LCT SHAFT ROTATION LEVER E-6

NOTES:

1. FABRICATE FROM METAL SHEET QQ-A-250/5.
   NSN 9535-00-232-0532.
2. ALL DIMENSIONS IN INCHES.

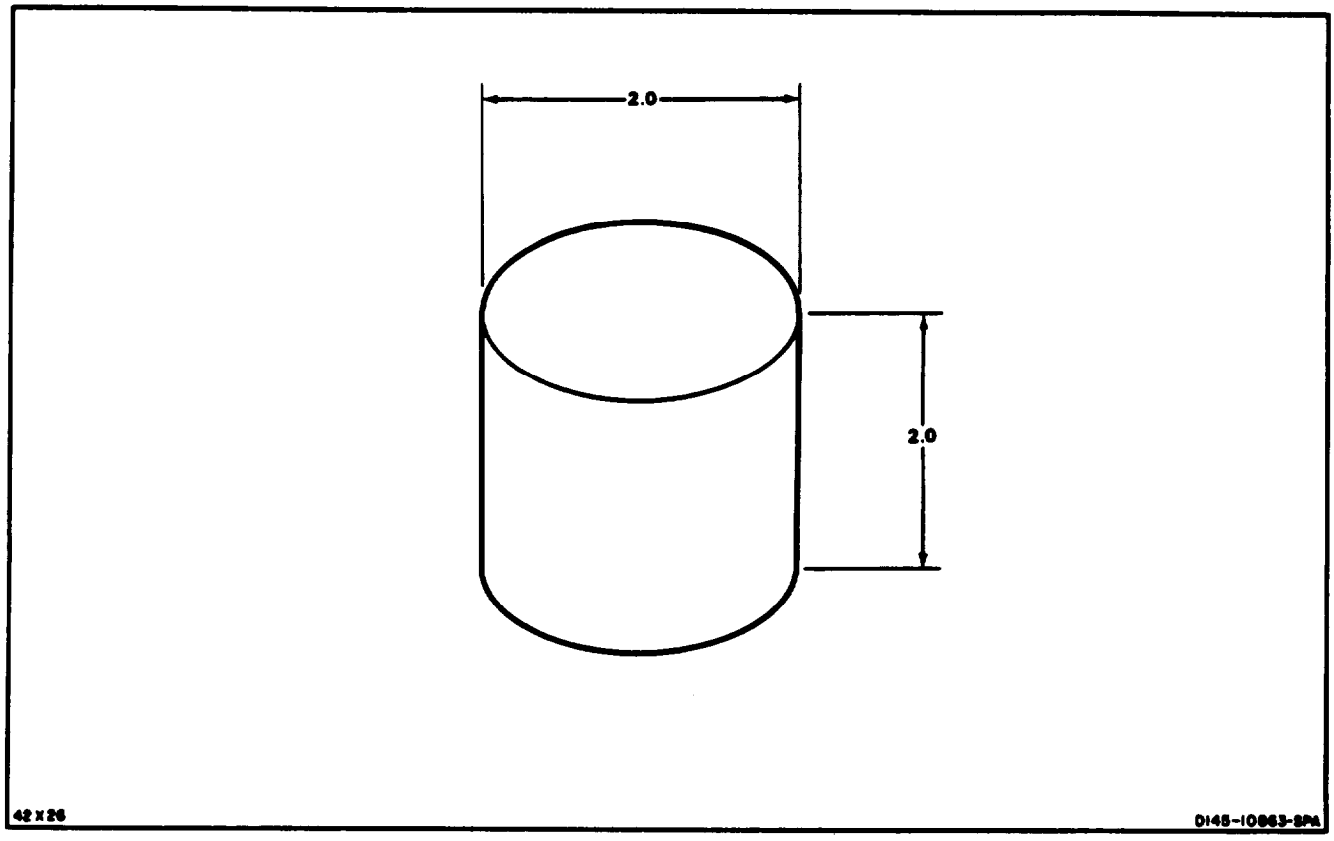


END OF TASK

E-7 DRIVE ARM BUSHING INSTALLATION ADAPTER E-7

NOTES:

1. FABRICATE FROM METAL BAR QQ-A-22516 NSN 9530-00-236-7690.
2. ALL DIMENSIONS IN INCHES.

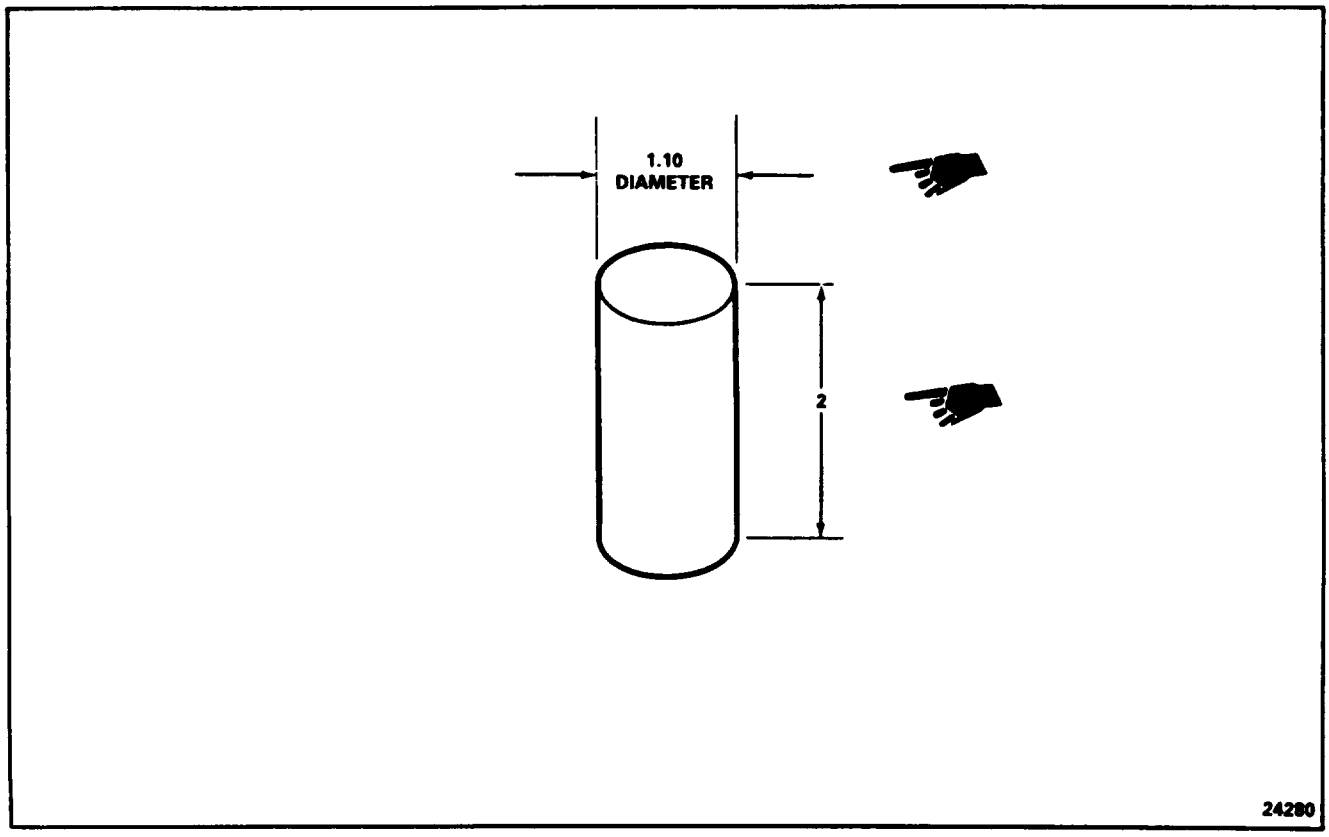


END OF TASK

E-8 SLEEVE BEARING REMOVAL ADAPTER E-8

NOTES:

1. FABRICATE FROM METAL BAR QQ-A-20013 NSN 9530-00-236-1378.
2. ALL DIMENSIONS IN INCHES.



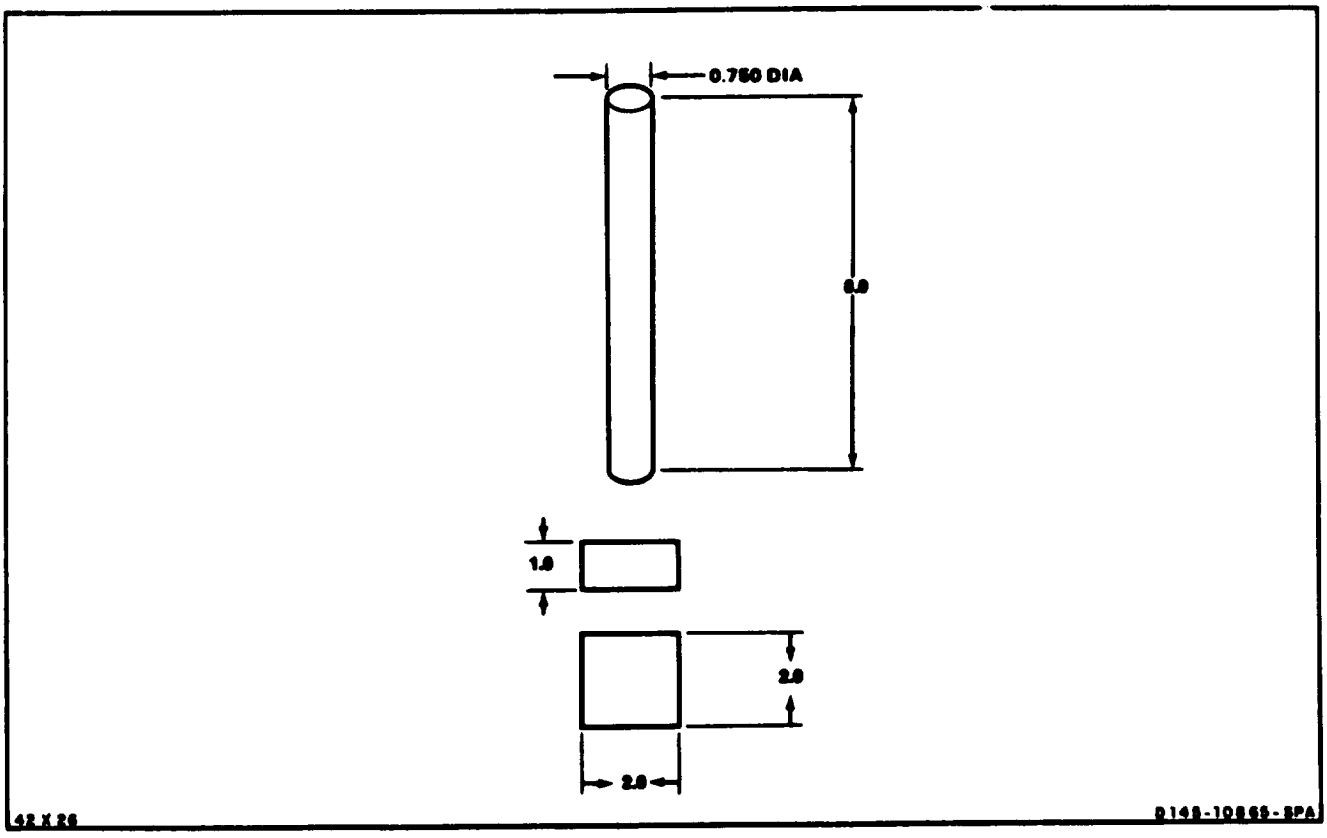
END OF TASK

E-9 SLEEVE BEARING INSTALLATION ADAPTER E-9

NOTES:

1, FABRICATE FROM METAL BAR QQ-A-225/6
NSN 9530-00-228-9313

2. ALL DIMENSIONS IN INCHES.

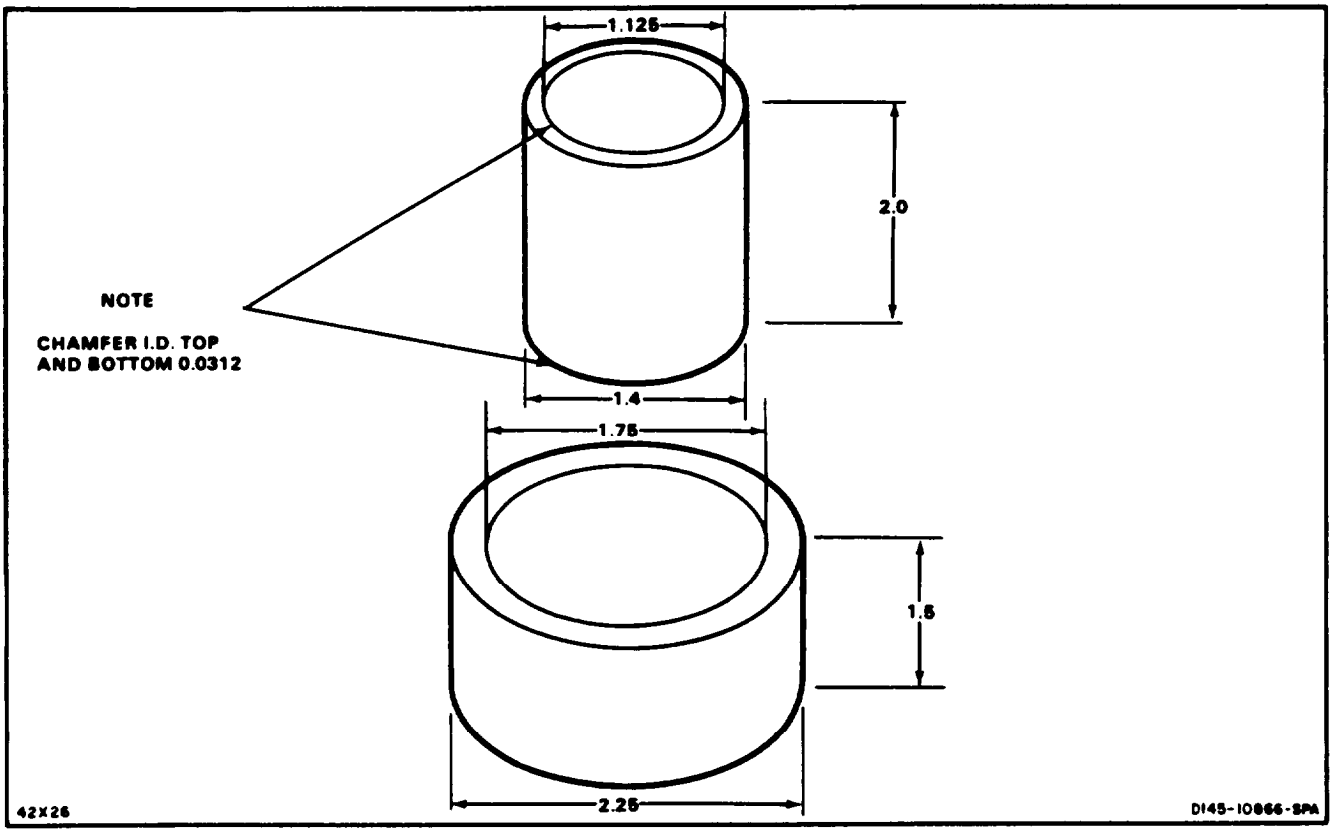


END OF TASK

E-10 DRIVE ARM BEARING REMOVAL/INSTALLATION ADAPTER

NOTES:

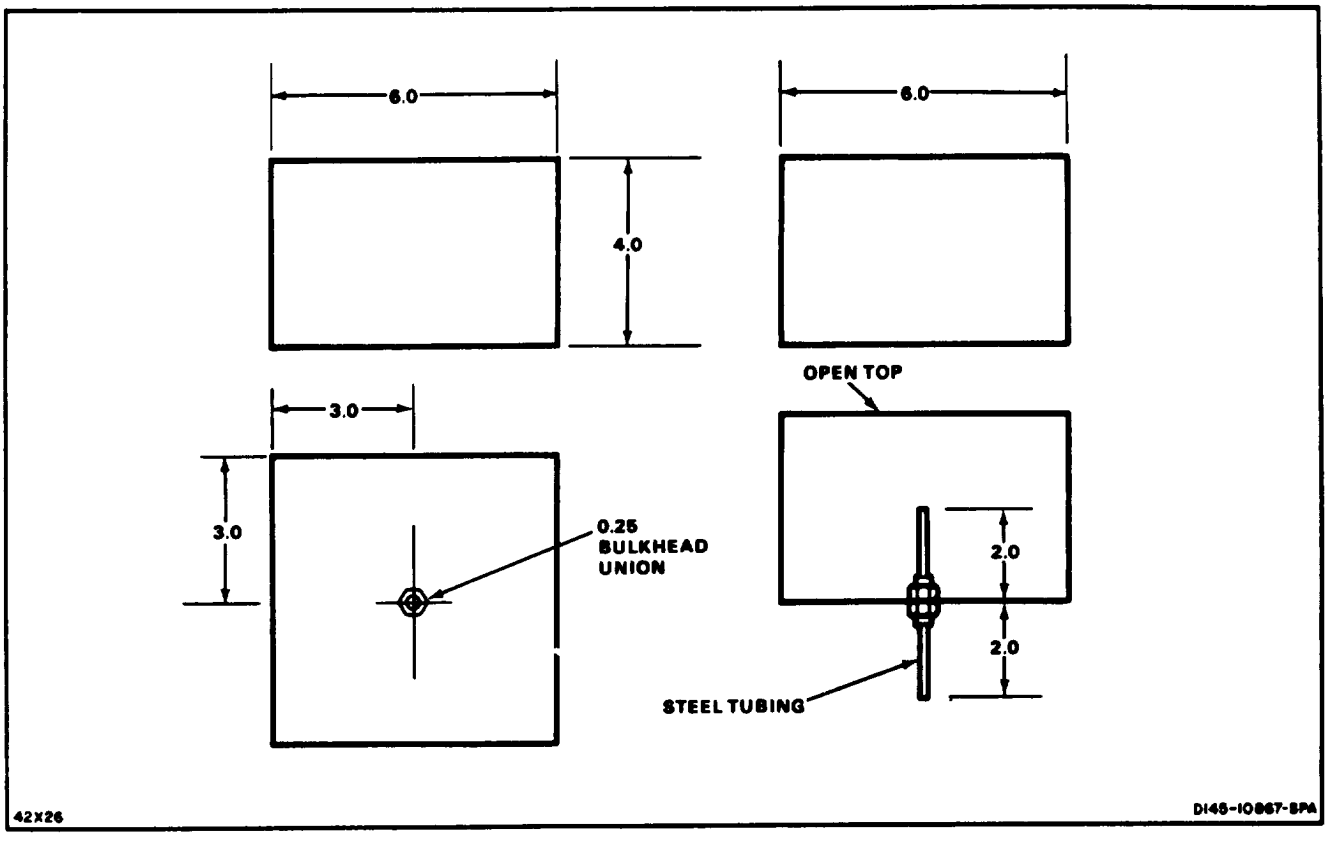
1. FABRICATE FROM METAL BAR QQ-A-22519
   NSN 9530-00-244-6931
2. ALL DIMENSIONS IN INCHES.



END OF TASK

NOTES:

1. FABRICATE FROM METAL SHEET MIL-S-18729 NSN 9515-00-269-5824,
2. ALL DIMENSIONS IN INCHES.
3. WELD PER MIL-W-8611A.

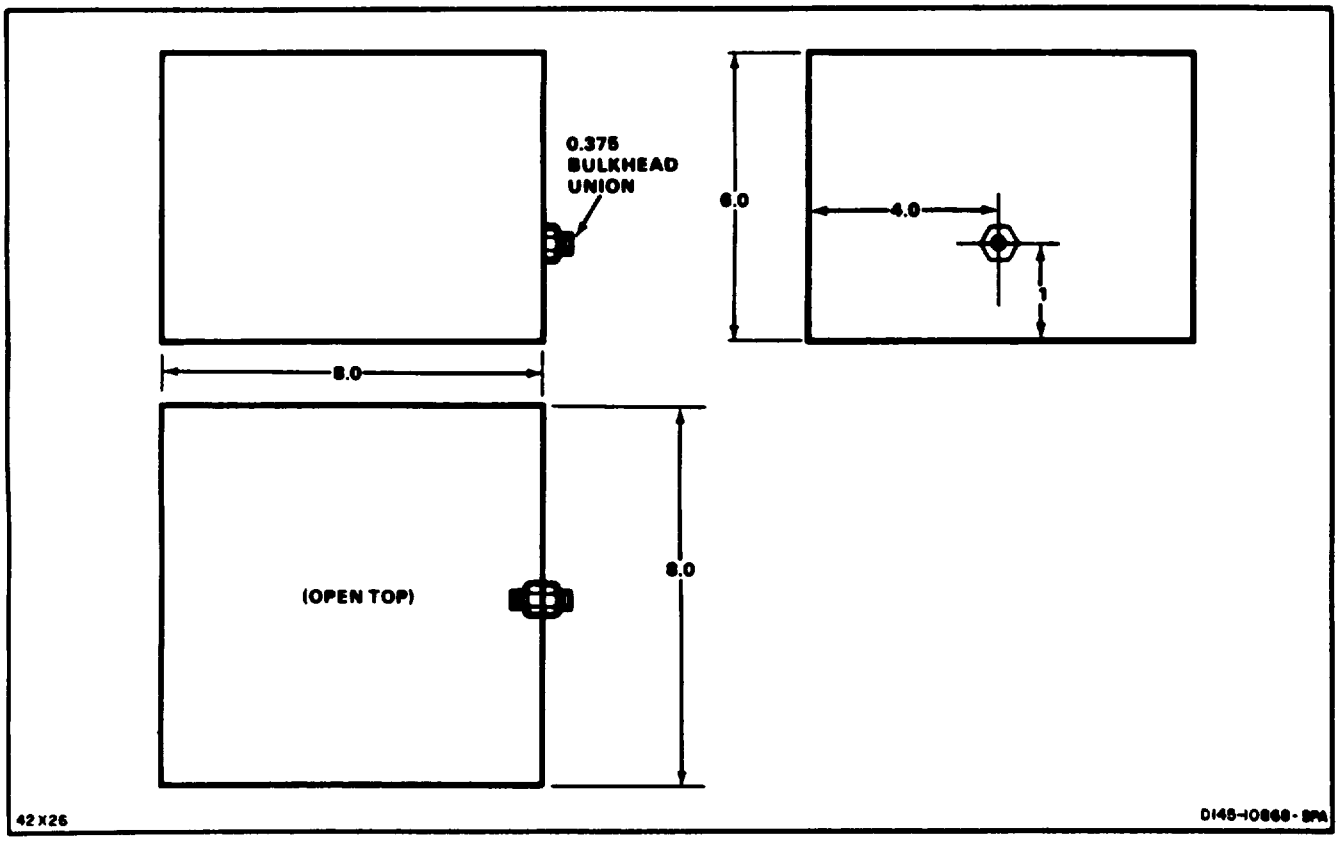


END OF TASK

E-12 HAND PUMP TEST HYDRAULIC FLUID RESERVOIR E-12

NOTES:

1. FABRICATE FROM METAL SHEET MIL-S-18729 NSN 9515-00-269-5824,
2. ALL DIMENSIONS IN INCHES.
3. WELD PER MIL-W-8611A.

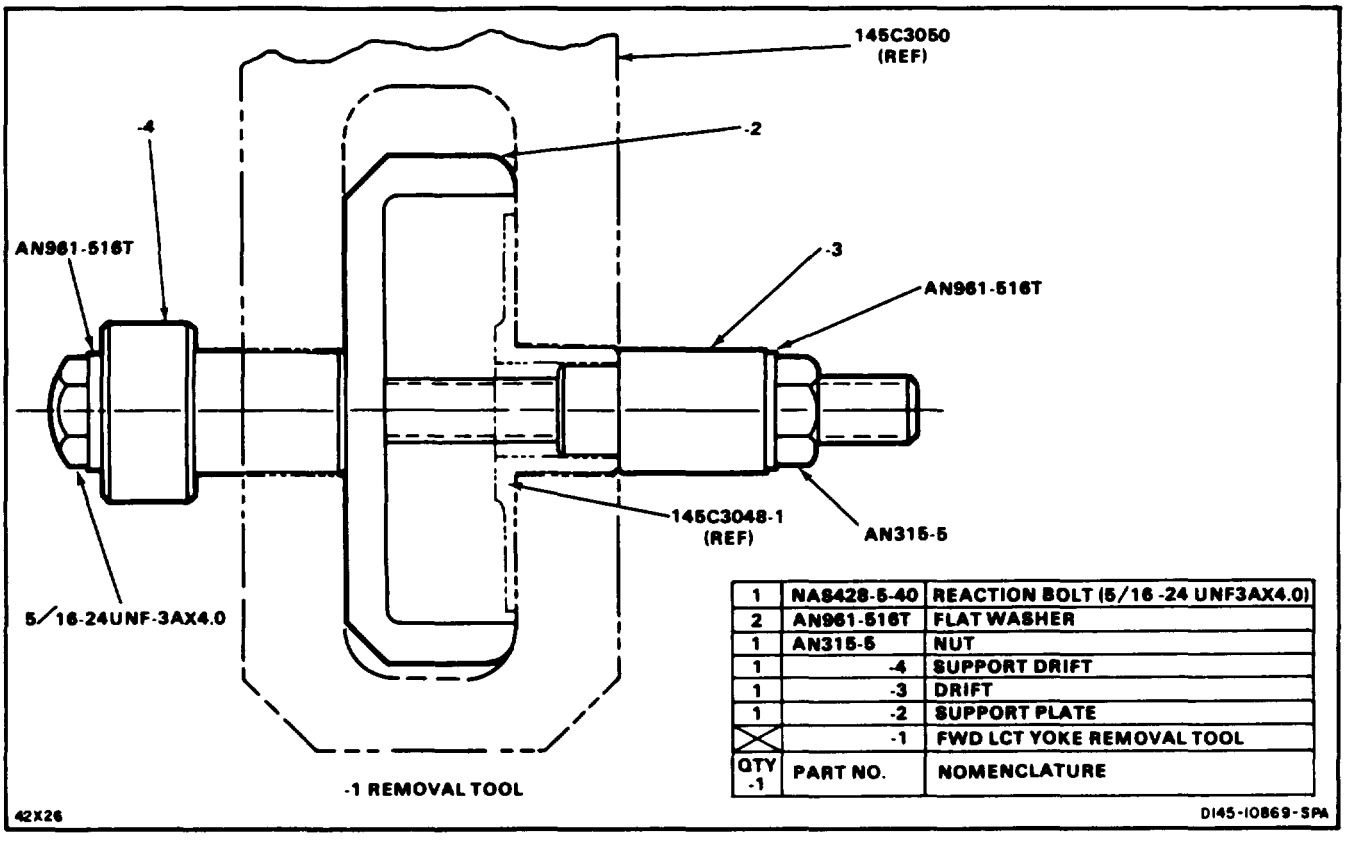


END OF TASK

E-13 FORWARD LCT YOKE BUSHING REMOVAL TOOL E-13

NOTES:

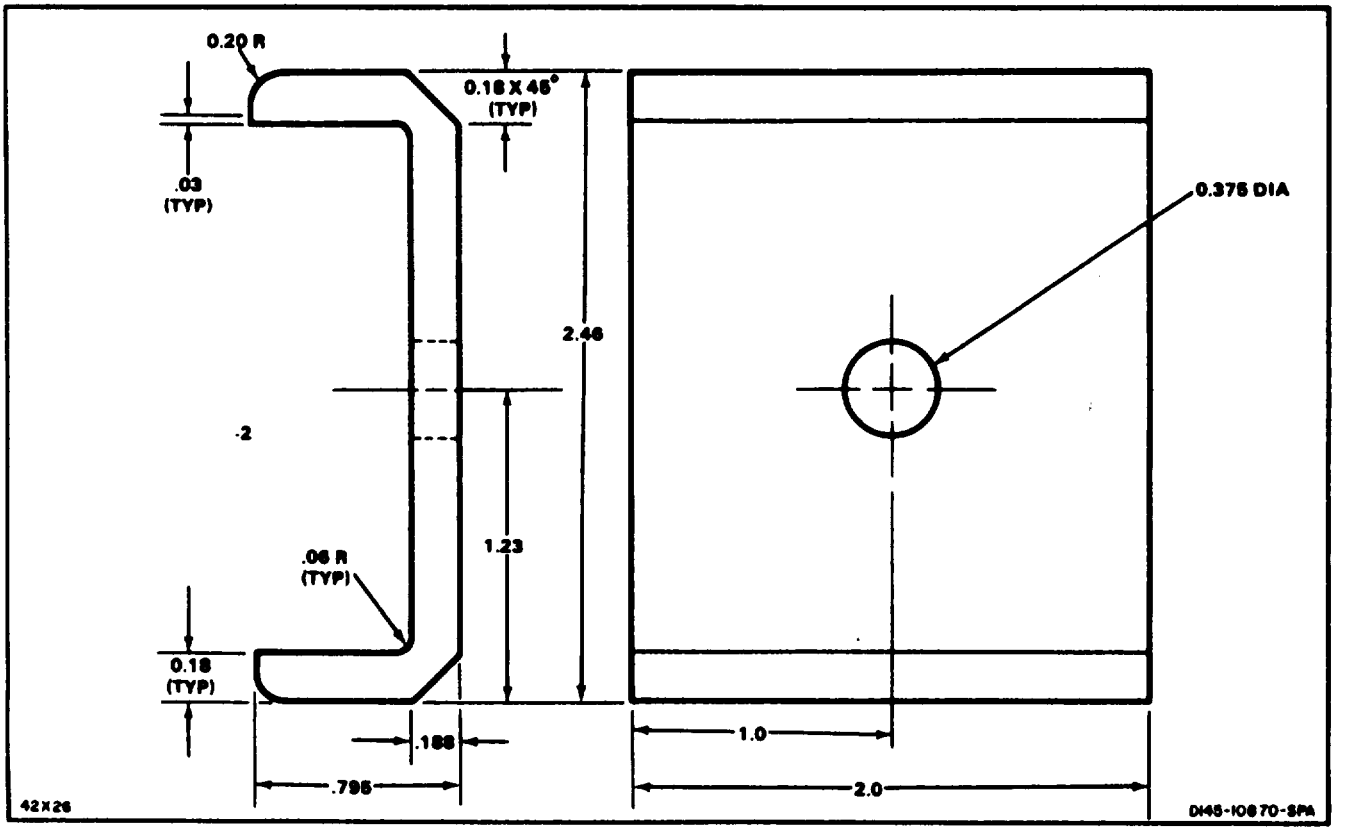
1. FABRICATE FROM:
   -2 METAL PLATE QQ-S-766, NSN 9591-00-051-1840
   -3 AND -4 METAL BAR QQ-S-763, NSN 9515-00-975-2640
2. ALL DIMENSIONS IN INCHES.



QTY -1	PART NO.	NOMENCLATURE
1	NAS428-5-40	REACTION BOLT (5/16 -24 UNF3AX4.0)
2	AN961-516T	FLAT WASHER
1	AN315-5	NUT
1	-4	SUPPORT DRIFT
1	-3	DRIFT
1	-2	SUPPORT PLATE
X	-1	FWD LCT YOKE REMOVAL TOOL

GO TO NEXT PAGE

E-13 FORWARD LCT YOKE BUSHING REMOVAL TOOL (Continued) E-13



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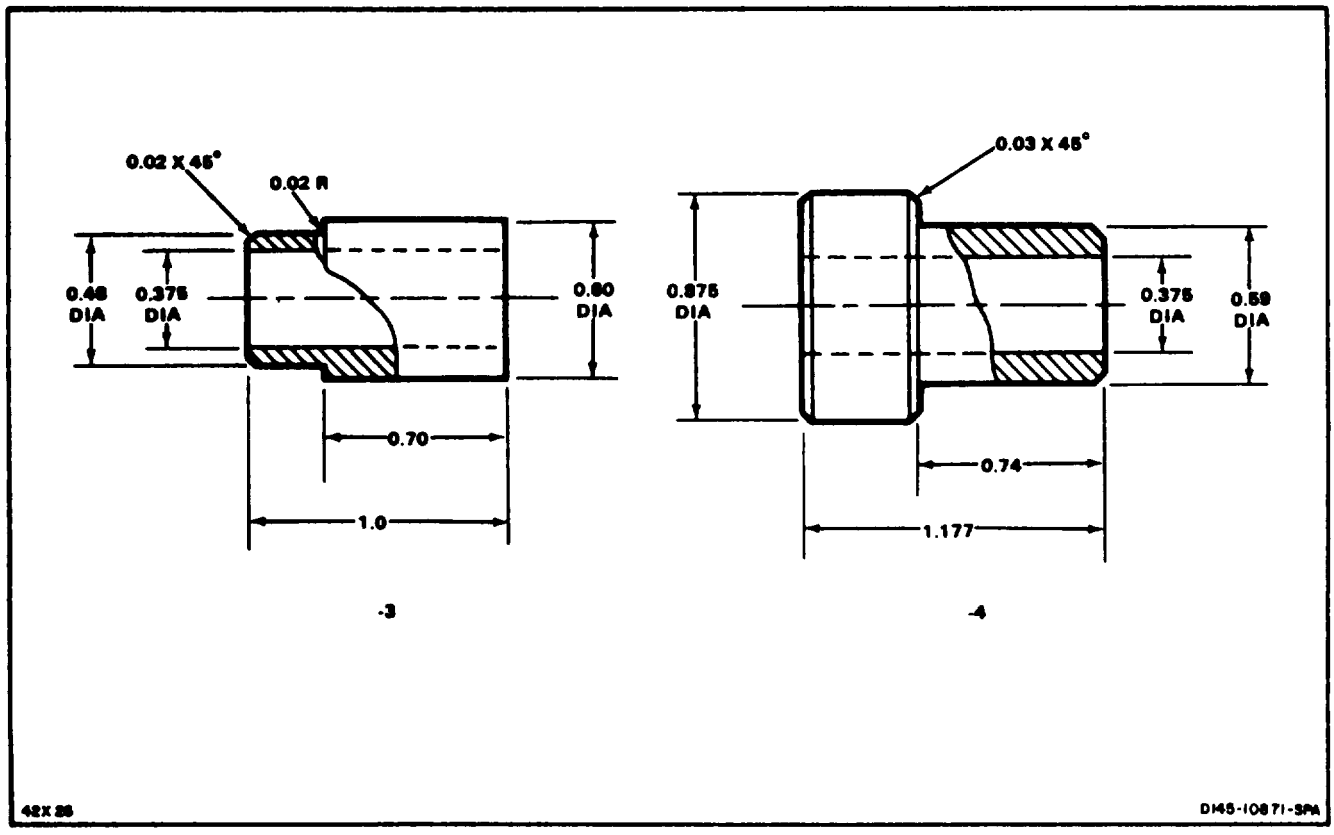
E-13 FORWARD LCT YOKE BUSHING REMOVAL TOOL (Continued) E-13



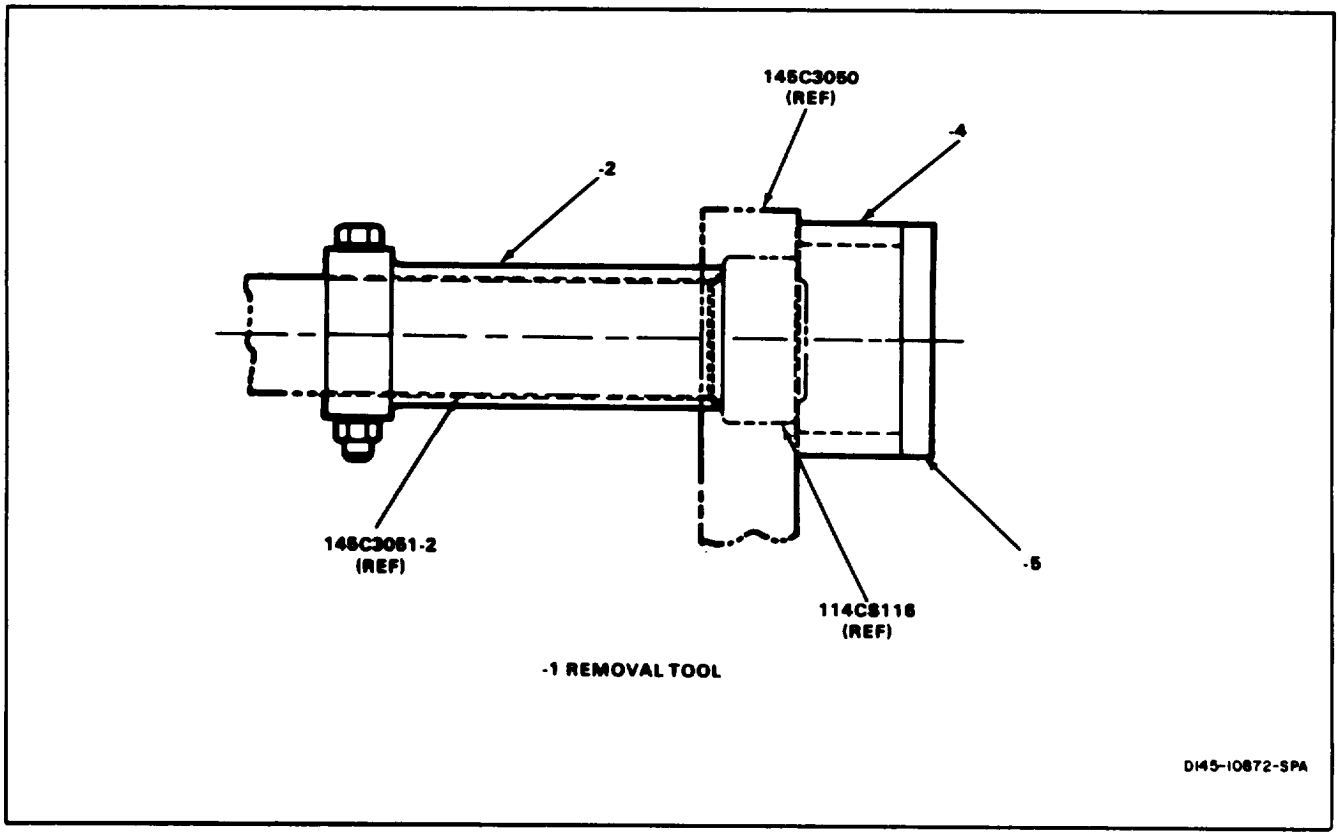
END OF TASK

E-14 AFT LCT YOKE BEARING REMOVAL TOOL E-14

SHEET 1 OF 3

QTY REQ'D -2	QTY REQ'D -1	PART NO.	TITLE	MATERIAL	NSN
2		MS35338-139	WASHER, LOCK		5310-01-249-9376
2		AN960XC416	WASHER, FLAT		5310-00-419-6566
2		AN4C24	BOLT	1/4-28UNF-3A X 2.5L	5306-00-151-2446
2		AN315C4R	NUT	1/4-28UNF-3B	5310-00-268-6023
	1	-5	REACTION PLATE	304 CRES 2.37 DIA. X .18	9515-00-204-4571
	1	-4	REACTION TUBE	304 CRES 2.37 O.D. X .18W X 1.3L	9510-01-274-0429
2		-3	PUSHER	304 CRES 2.1 X 4.9 X 5.4	9515-01-010-2546
	1	-2	PUSHER ASSY		
		-1	REMOVAL TOOL		

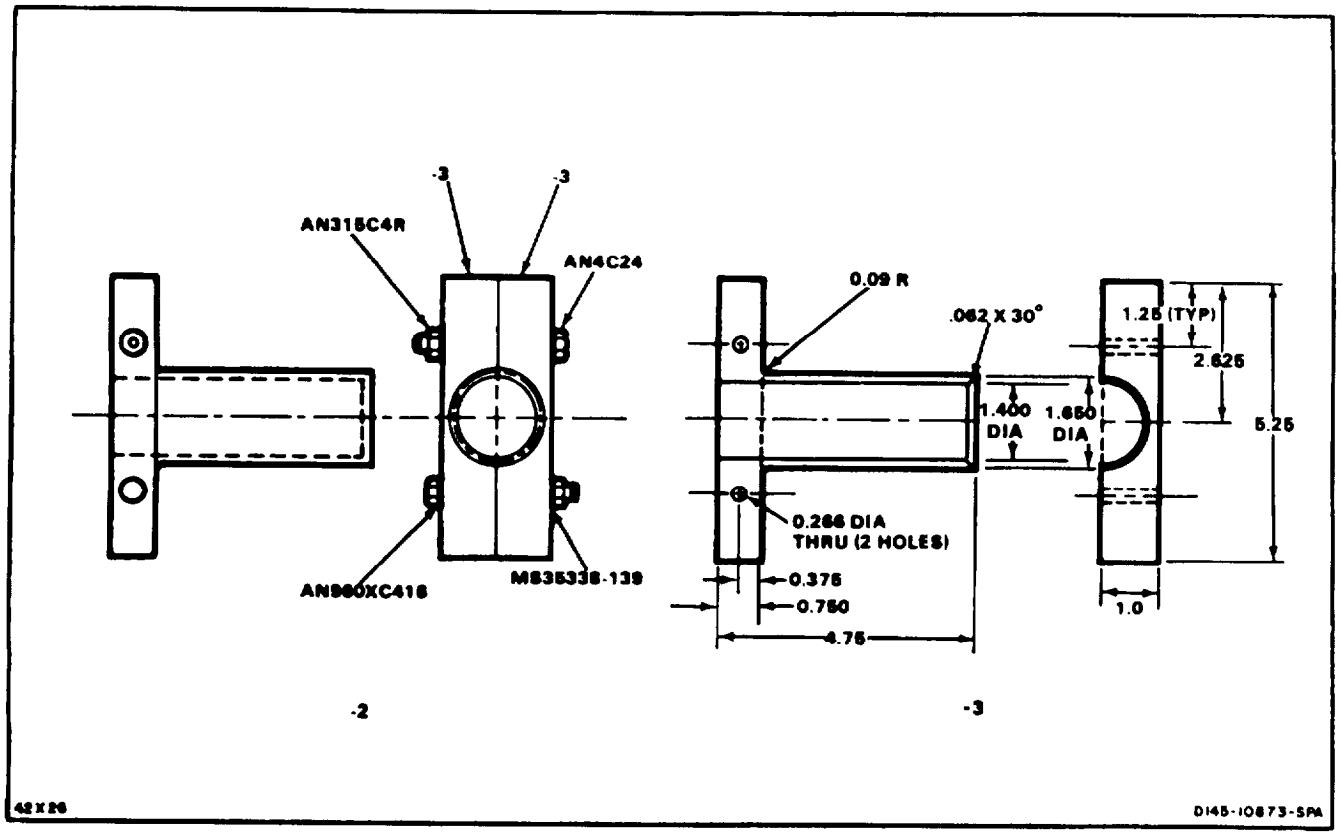
NOTE:
ALL DIMENSIONS IN INCHES.



GO TO NEXT PAGE

E-14 AFT LCT YOKE BEARING REMOVAL TOOL (Continued) E-14

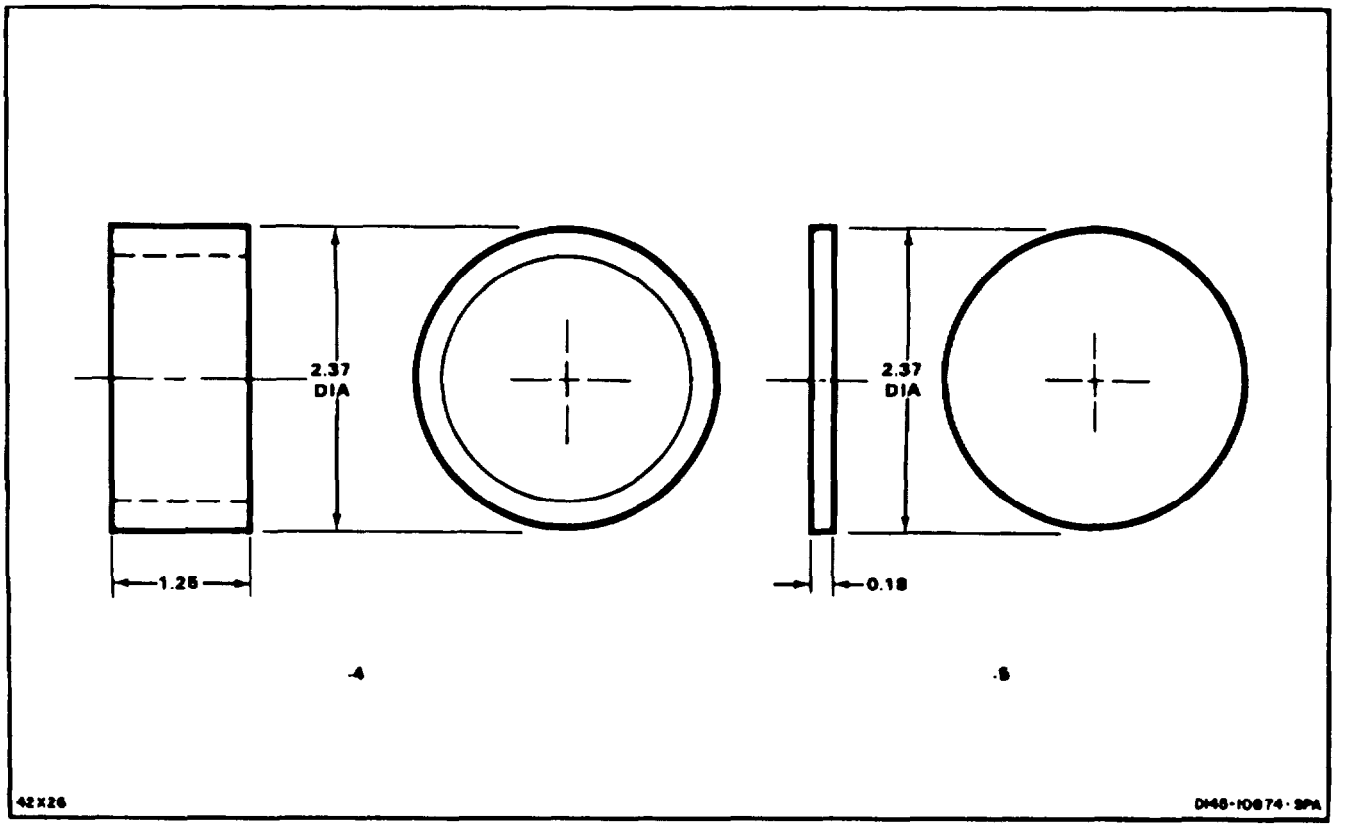
SHEET 2 OF 3



GO TO NEXT PAGE

E-14 AFT LCT YOKE BEARING REMOVAL TOOL (Continued) E-14

SHEET 3 OF 3

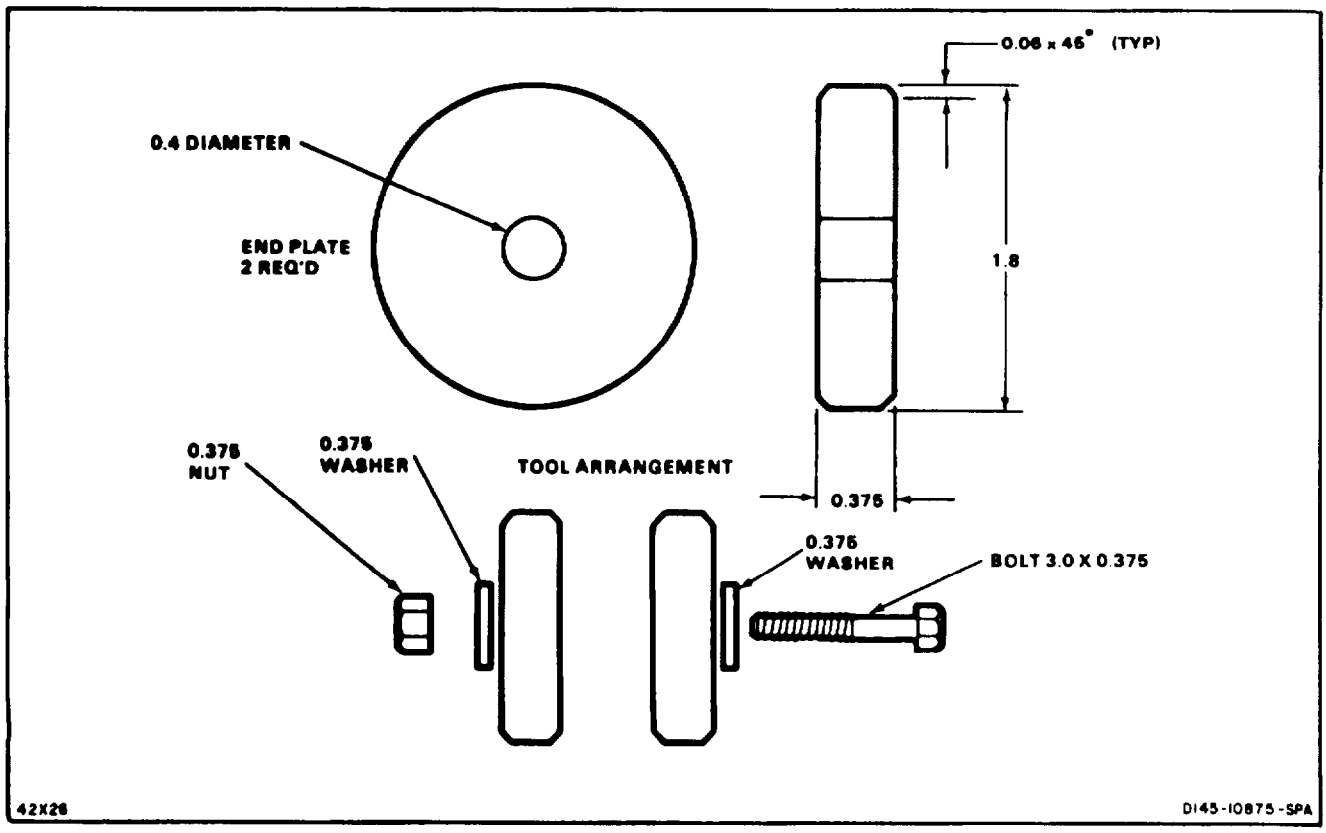


END OF TASK

E-15 COCKPIT CONTROL BEARING INSTALLATION TOOL E-15

NOTES:

1. FABRICATE FROM STEEL, CRES, TYPE 304.
2. ALL DIMENSIONS IN INCHES.

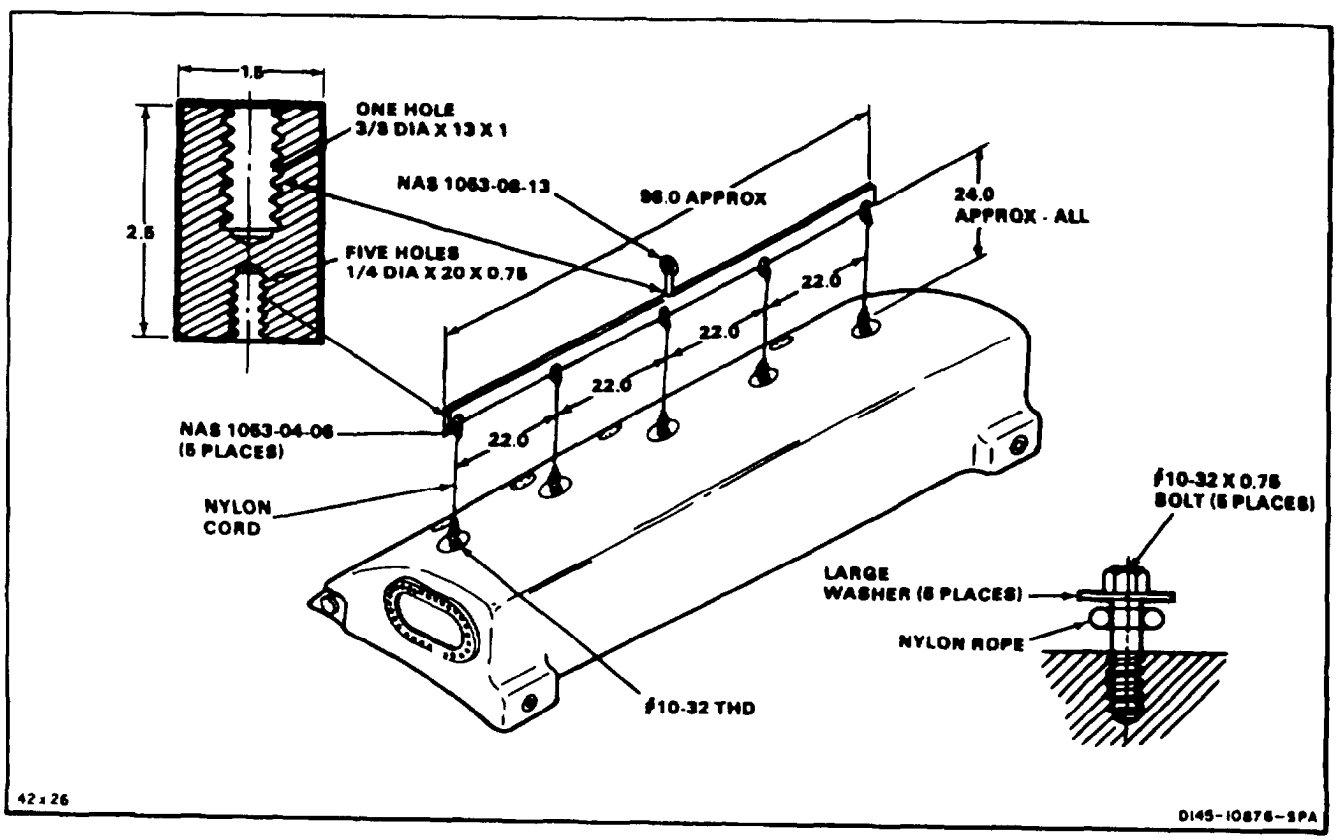


END OF TASK

E-16 FUEL CELL SUPPORT RIG E-16

NOTES:

1. FABRICATE FROM NSN 9530-00-017-6412.
2. ALL DIMENSIONS IN INCHES.



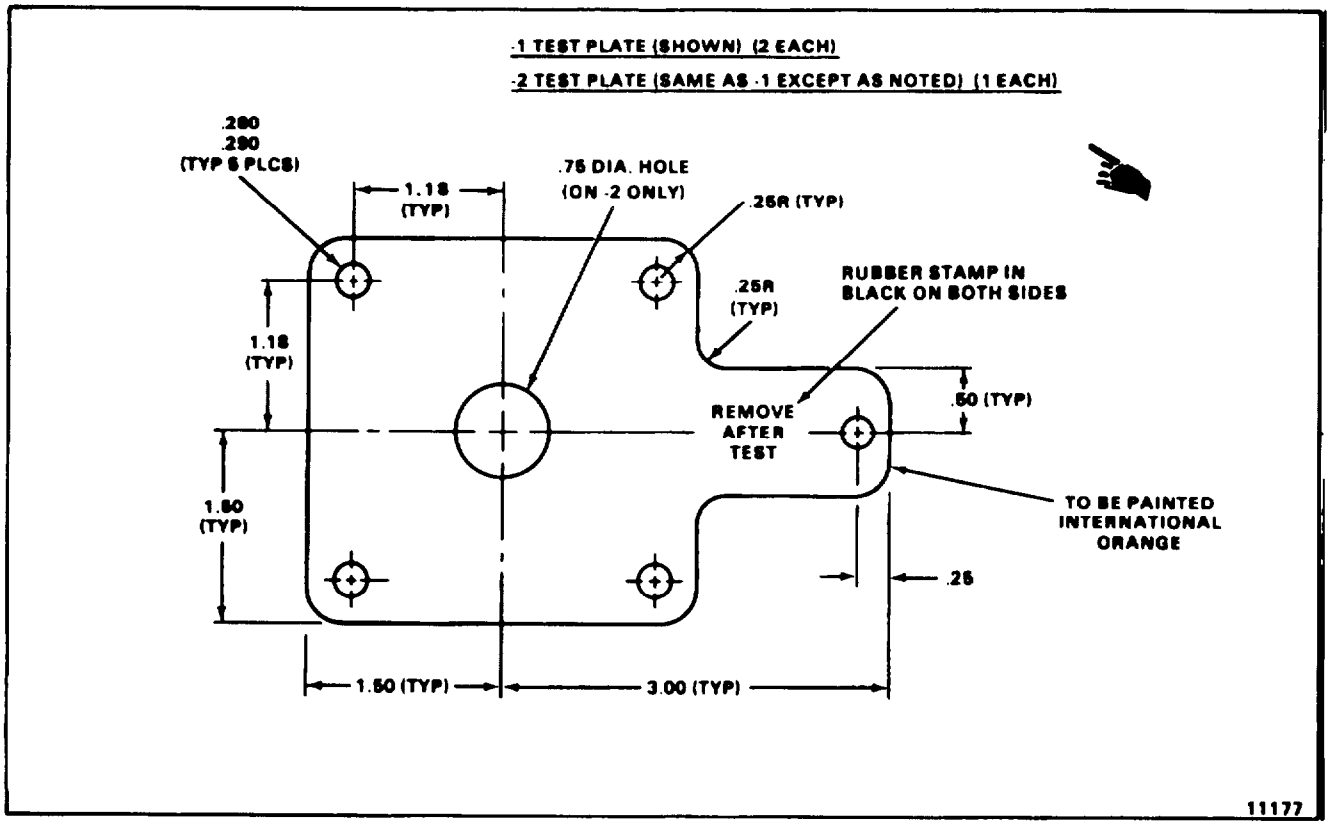
END OF TASK

E-17 REFUELING SYSTEM TEST CLOSURE PLATES

NOTES:

1. FABRICATE FROM QQ-A-250-5, NSN 9535-00-084-4551.

2. ALL DIMENSIONS IN INCHES.

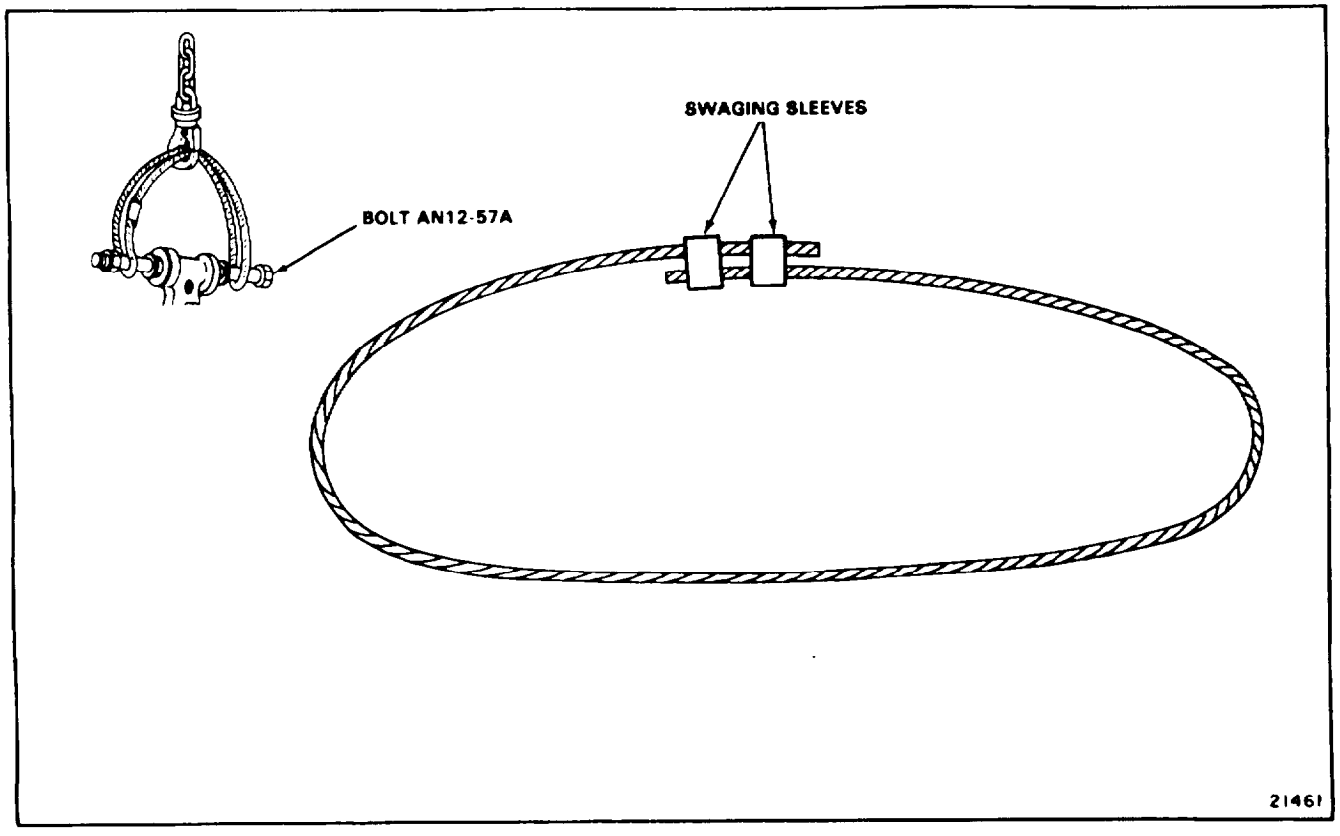


END OF TASK

E-18 FORWARD AND AFT CARGO HOOK WIRE ROPE

NOTES:

1. FABRICATE FROM WIRE ROPE 0.375 DIAMETER X 24.0, NSN 4010-00-270-5495.
2. USE WIRE ROPE SWAGING SLEEVES MS51844-70.



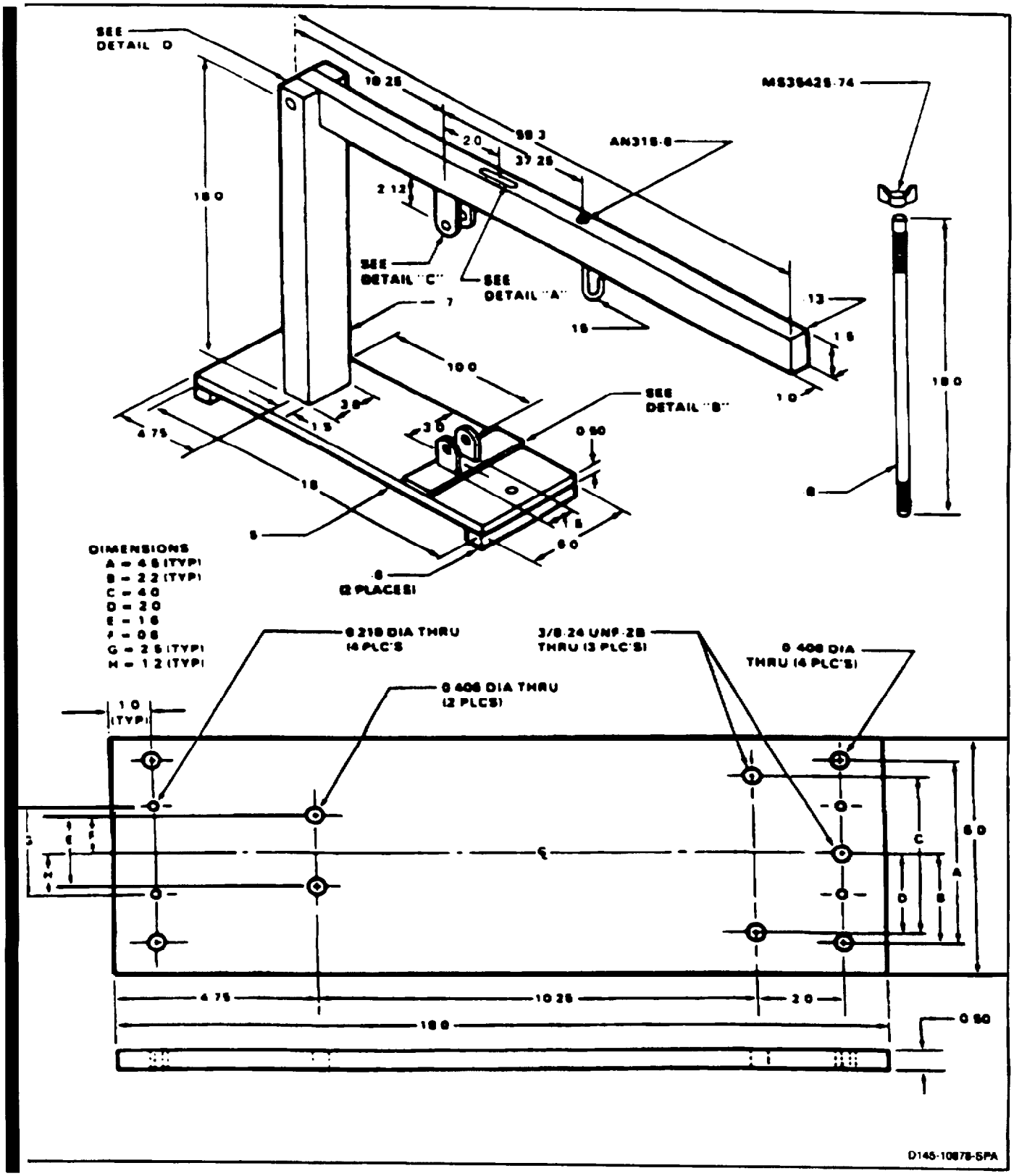
END OF TASK

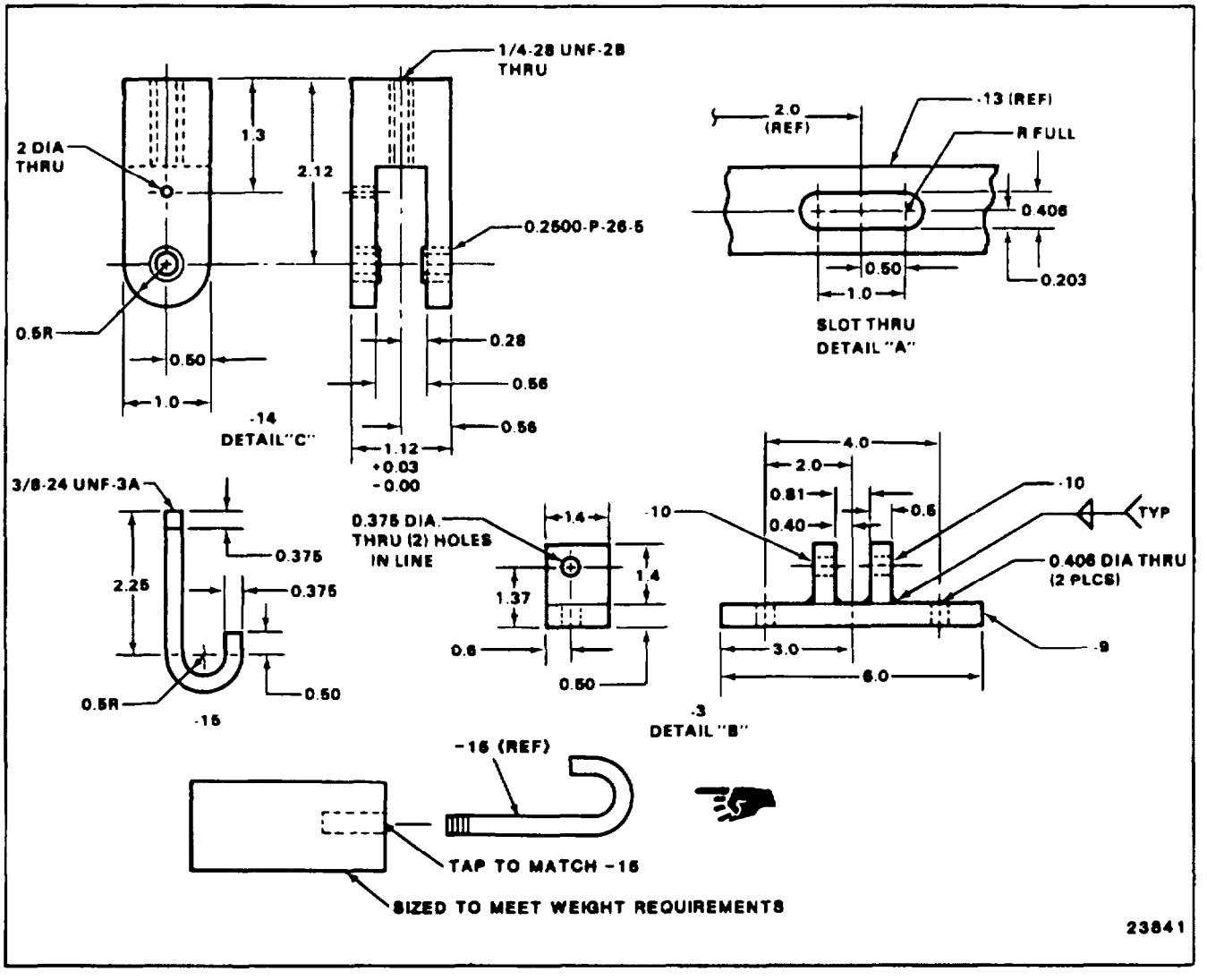
4	-3	-2	-1	DASH NO.	NOMENCLATURE	MATERIAL	NSN
			1		WEIGHT. 25 POUNDS	CRS, CYLINDRICAL	
			1		WEIGHT; 50 POUNDS	CRS, CYLINDRICAL	
			1		WEIGHT, 94 POUNDS	CRS, CYLINDRICAL	
			1		WEIGHT, 160 POUNDS	CRS, CYLINDRICAL	
		1			CARR LANE CL-9-LP	L PIN	5315-00-547-3809
1	1				CARR LANE CL-5-LP	L PIN	5315-00-075-7845
			3		CARR LANE CL-2-C-9.0	NYLON CABLE	4018-00-069-5180
			6		CARR LANE CL-2-F	FERRULE	4030-01-219-8678
2					ACE OR EQUIV. 2500-P-26-5	HEADLESS P.F. BUSHING	3120-00-598-8720
			1		MS35425-74	WING NUT	5310-01-088-2490
		4			MS27039-4-12	PAN HD. SCREW	5305-00-891-1784
1					AN315-6	SELF-LOCKING NUT	5310-00-843-4824
		4			AN960-616	FLAT WASHER	5310-01-016-4871
1					AN960-416	FLAT WASHER	5310-00-141-1795
		4			AN6-10A	HEX HD. BOLT	5306-00-208-3636
		1			AN526-1032R7	TRUSS HD. MACH. SCREW	5305-00-272-4951
1					AN4-17A	HEX HD. BOLT	5306-00-151-1417
1				-15	HOOK	CRS 3/8 DIA. X 8.1	9510-00-607-1491
1				-14	BRACKET	CRS 1 X 1-1/4 X 2.8	9510-00-481-0671
1				-13	ARM	2024-T351 1 X 1-1/2 X 59.3	
	2			-12	BUSHING	CRS 1.0 DIA. X .5	9510-00-975-2640
	2			-11	SPACER	2024-T3 .190 X 1.2 X 1.5	
	2			-10	LUG	6061-T651 1/2 X 1.4 X 1.4	
	1			-9	BASE	6061-T651 1/2 X 1.4 X 6.0	
		1		-8	RETAINER	CRS 3/8-16 UNC X 18.0	9510-00-607-1491
		1		-7	COLUMN	CRS 1-1/2 X 3 X 18-1/2	
		2		4	PAD	2024-T351 ALUM BAR 1/2 X 2 X 6	
		1		-5	BASE	CRS 1/2 x 6 x 18.0	9510-00-001-3315
			1	-4	ARM ASSY		
		1		-3	LOWER BRACKET ASSY		
			1	-2	BASE ASSY		
				-1	TEST STAND ASSY		

NOTE
ALL DIMENSIONS IN INCHES

GO TO NEXT PAGE

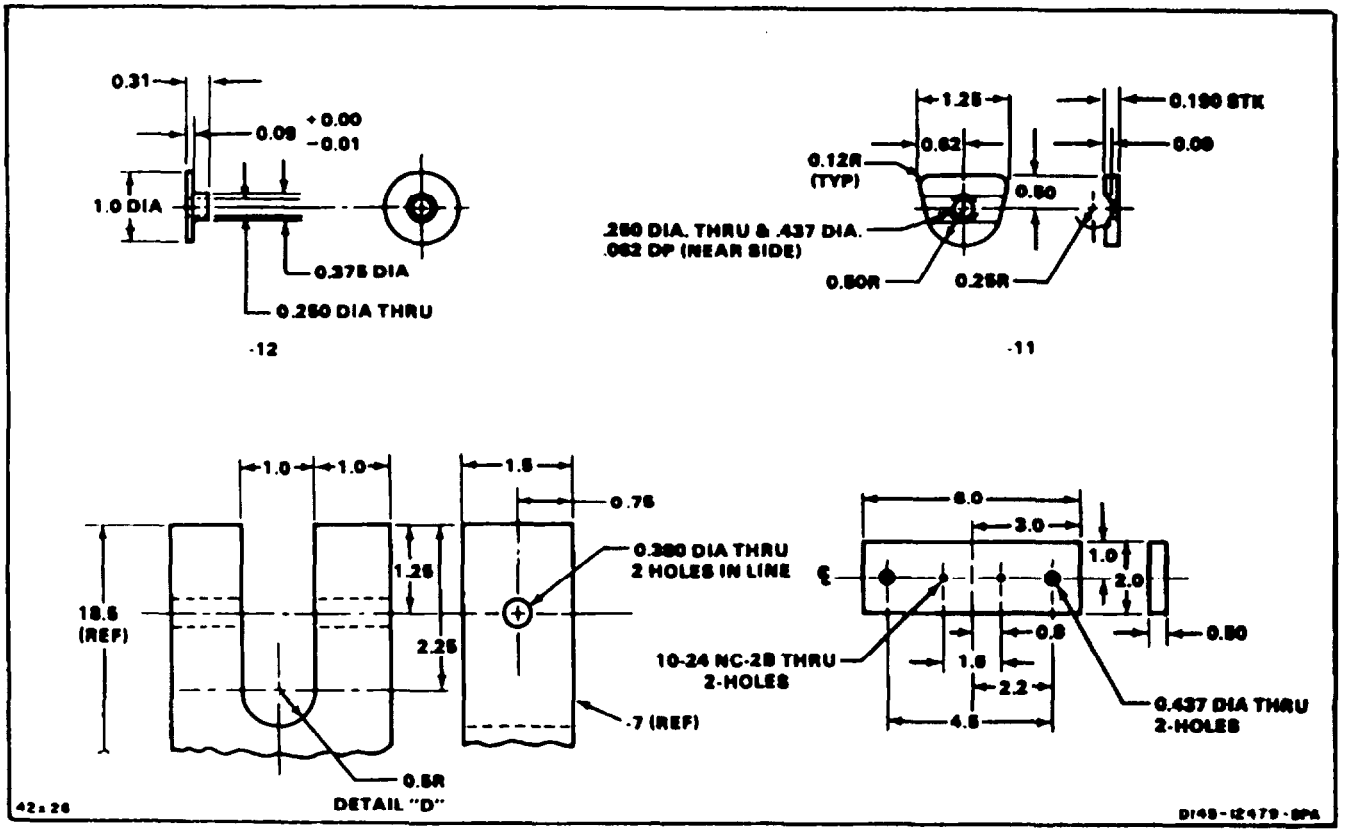
E-19 BRAKE MASTER CYLINDER TEST STAND (Continued) E-19





GO TO NEXT PAGE

E-19 BRAKE MASTER CYLINDER TEST STAND (Continued)

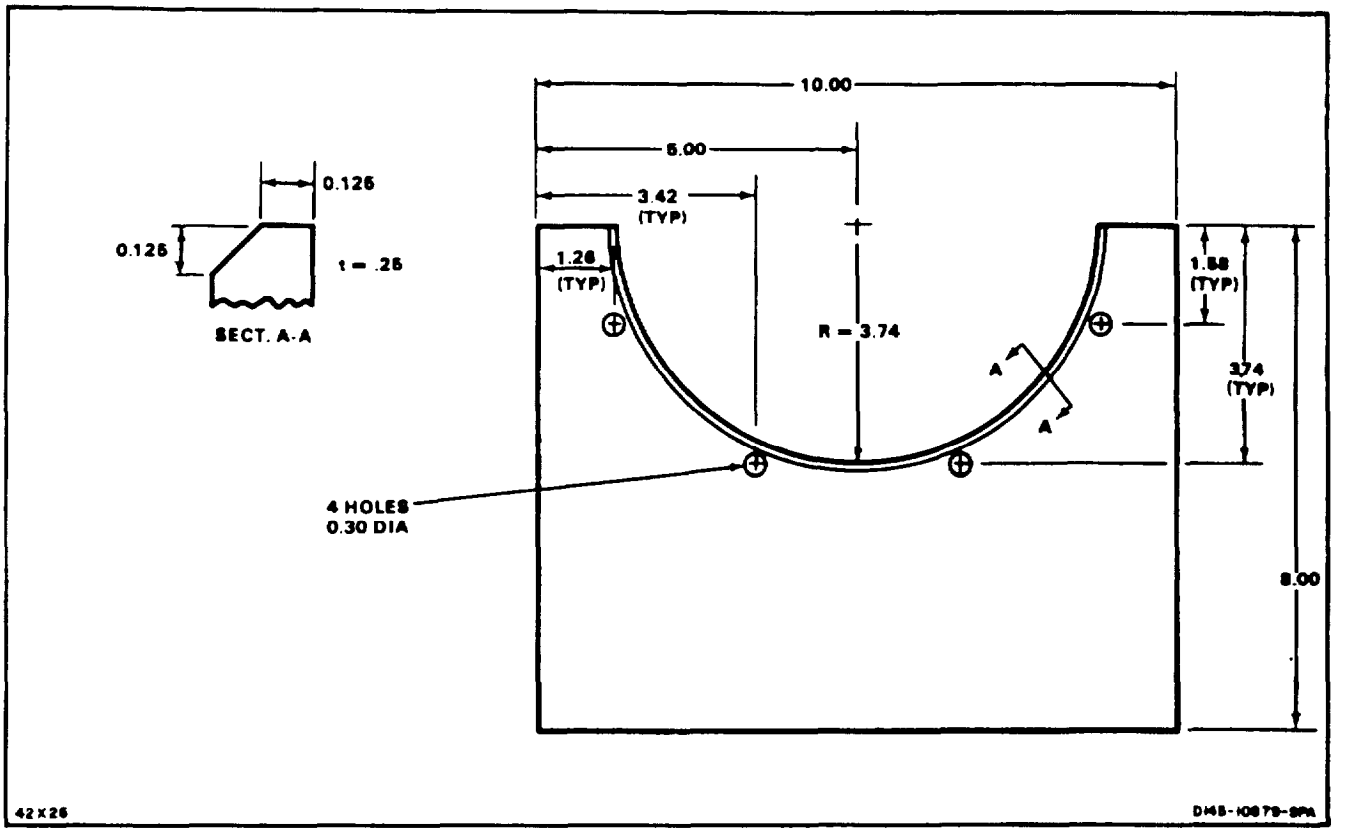


END OF TASK

E-20 HEATER FAN SUPPORT PLATE

NOTES:

1. FABRICATE FROM METAL PLATE
   NSN 9515-00-234-7944.
2. ALL DIMENSIONS IN INCHES ± 0.02.
3. CUT STOCK TO SIZE 10.00 X 8.00 X 0.25.
4. BREAK SHARP EDGES,

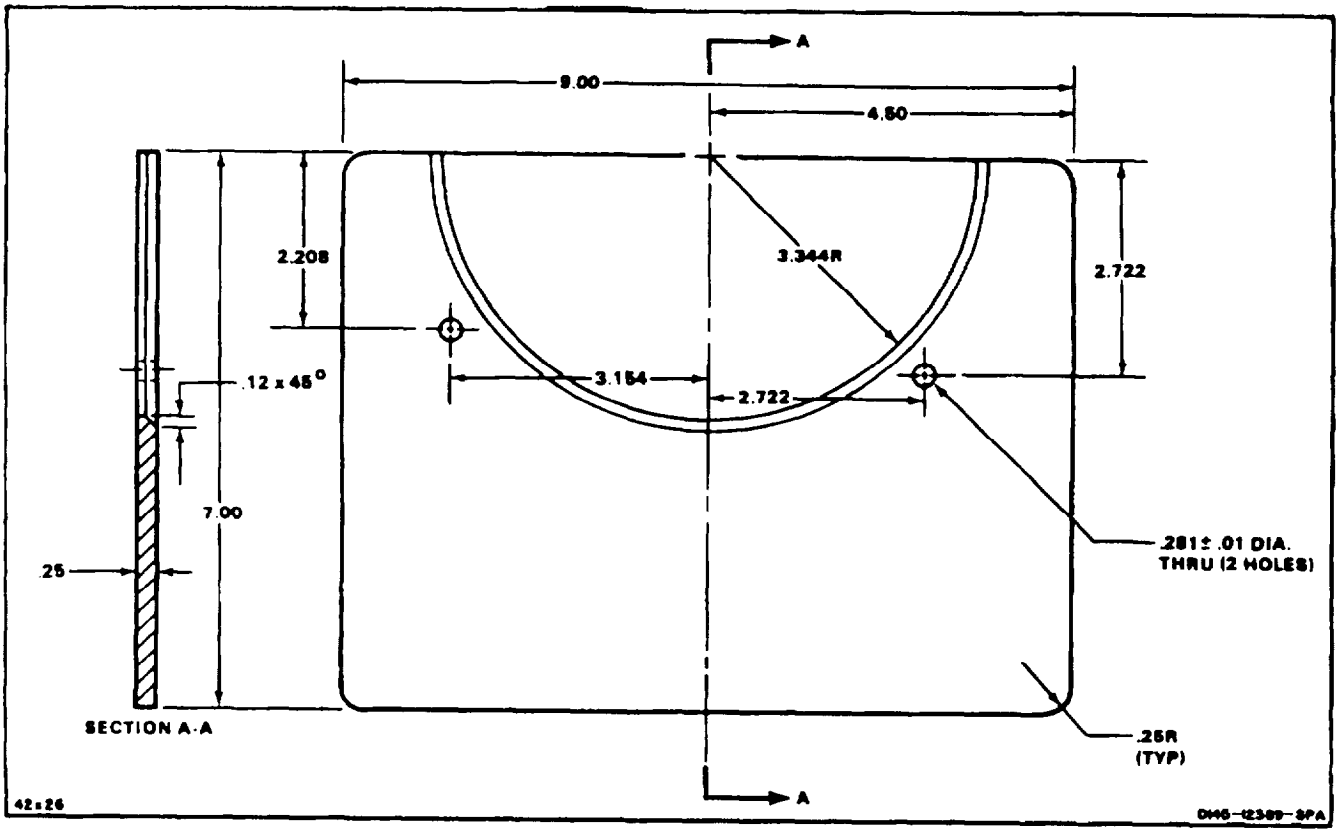


END OF TASK

E-21 FLIGHT CONTROL COOLING FAN SUPPORT PLATE

NOTES:

1. FABRICATE FROM METAL PLATE, 4340 STEEL
   NSN 9515-00-901-4241
2. ALL DIMENSIONS IN INCHES,
3. TOLERANCES:
   .X = ± .1
   .XX = ±.03
   .XXX = .010
4. BREAK SHARP EDGES,

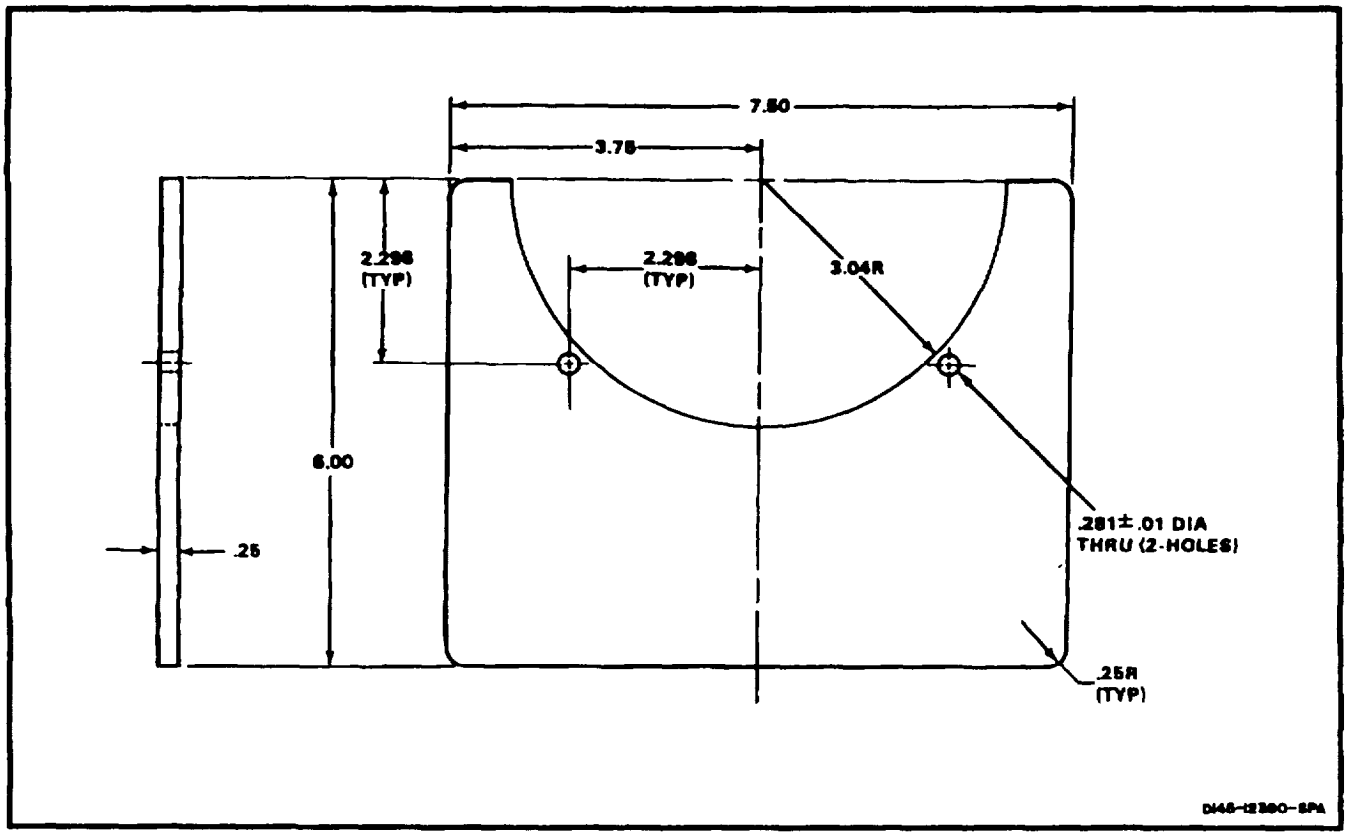


END OF TASK

E-22 HYDRAULIC COOLING FAN SUPPORT PLATE

NOTES:

1. FABRICATE FROM METAL PLATE, 4340 STEEL, NSN 9515-00-9014241
2. ALL DIMENSIONS IN INCHES.
3. TOLERANCES:
   .X = +/- .1
   .XX = +I- .03
   .XXX = +/- .010
4. BREAK SHARP EDGES.

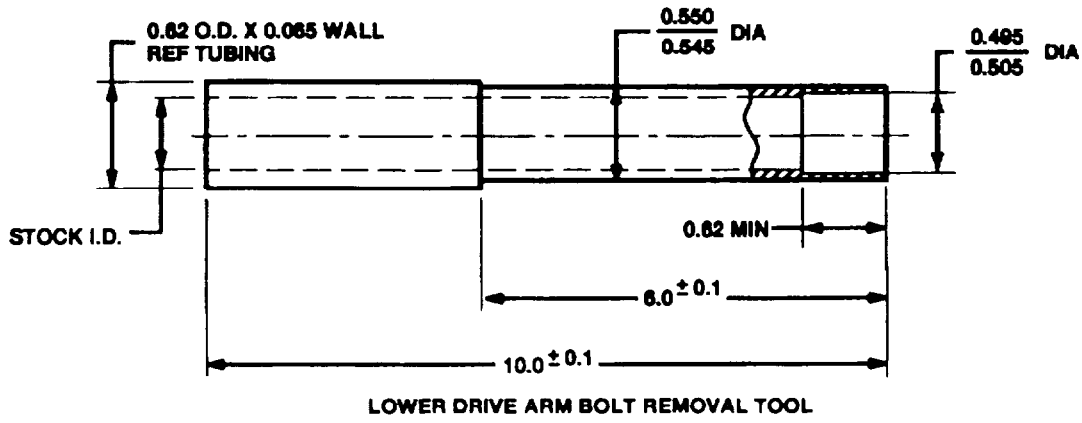


END OF TASK

E-24 LOWER DRIVE ARM BOLT REMOVAL TOOL

NOTES:

1. FABRICATE FROM STEEL TUBING ONLY.
2. ALL DIMENSIONS IN INCHES.
3. BREAK SHARP EDGES AND REMOVE BURRS.
4. TUBE STOCK I.D. TO BE MEASURED. MACHINING NOT REQUIRED IF WITHIN SPECIFIED TOLERANCE.



LOWER DRIVE ARM BOLT REMOVAL TOOL

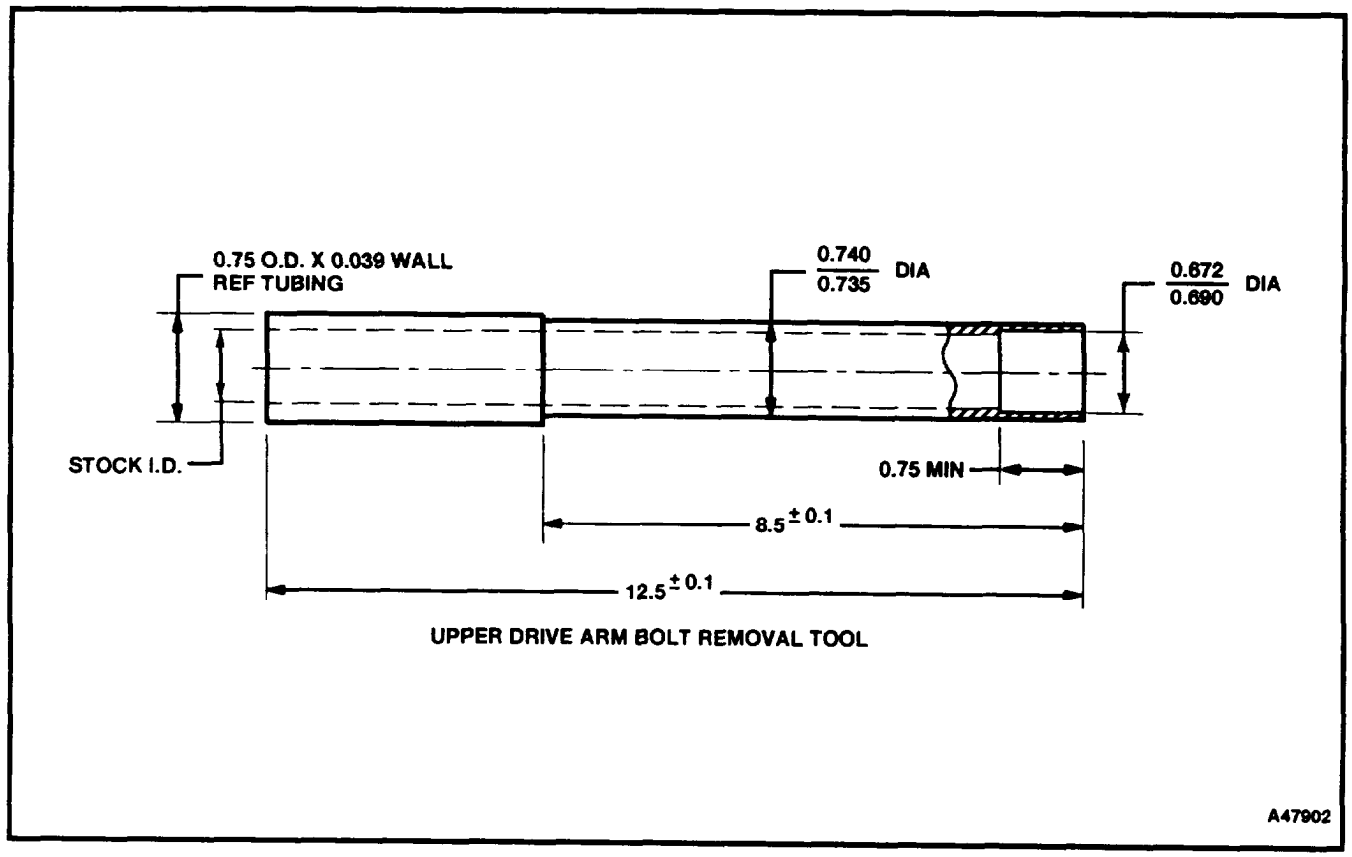
A47901

END OF TASK

E-25 UPPER DRIVE ARM BOLT REMOVAL TOOL E-25

NOTES:

1. FABRICATE FROM STEEL TUBING ONLY.
2. ALL DIMENSIONS IN INCHES.
3. BREAK SHARP EDGES AND REMOVE BURRS.
4. TUBE STOCK I.D. TO BE MEASURED. MACHINING NOT REQUIRED IF WITHIN SPECIFIED TOLERANCE.



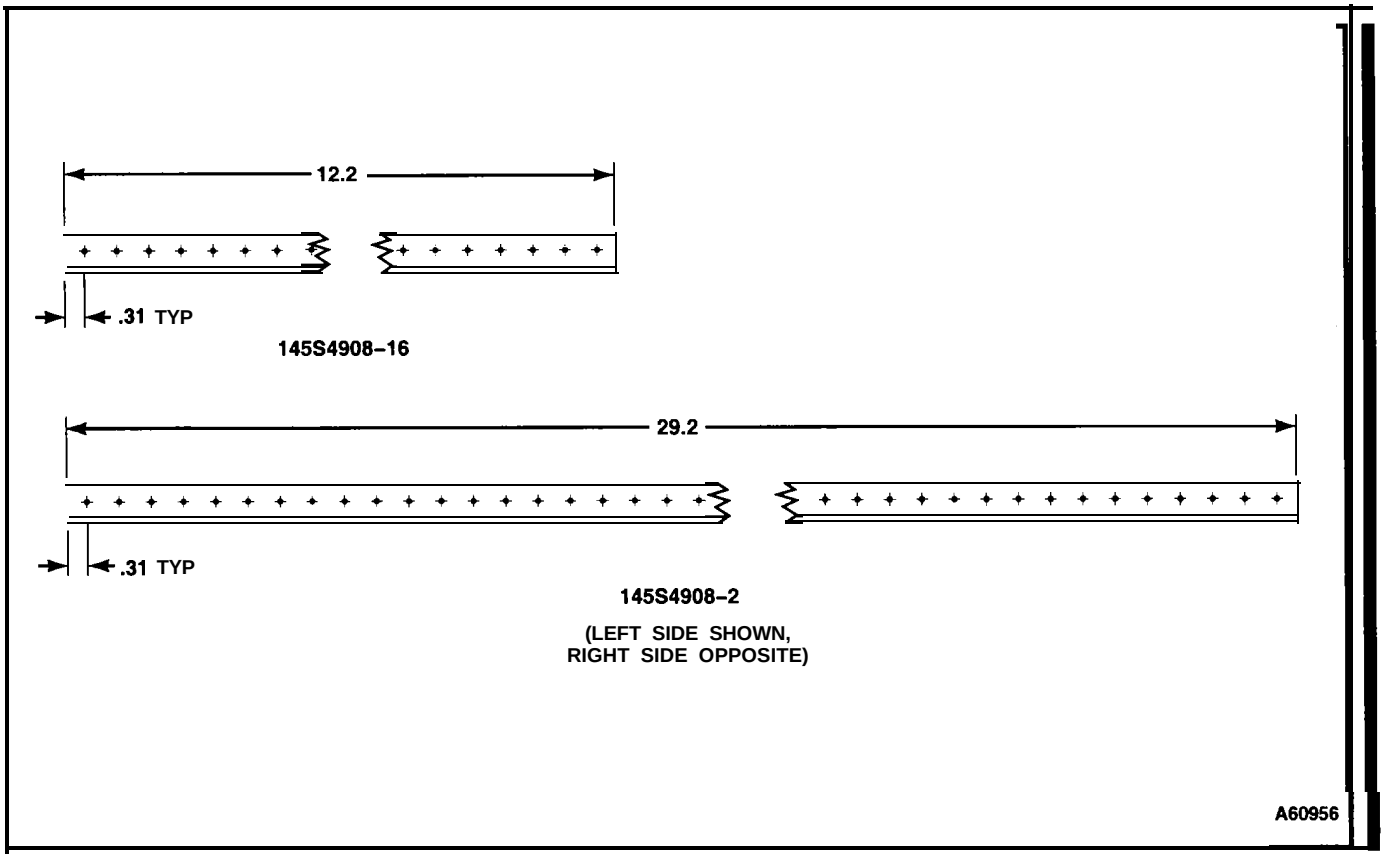
UPPER DRIVE ARM BOLT REMOVAL TOOL

END OF TASK

E-26 STRAPS 14584908-2 AND -16

NOTES:

1. ALL DIMENSIONS IN INCHES.
2. FABRICATE FROM 2024-T3 ALUMINUM ALLOY CLAD SHT PER QQ-A-250/5.
3. STOCK SIZE -2: 0.020 X 0.70 X 29.2.
   STOCK SIZE -16: 0.020 X 0.70 X 12.2.
4. FINISH AS REQUIRED.

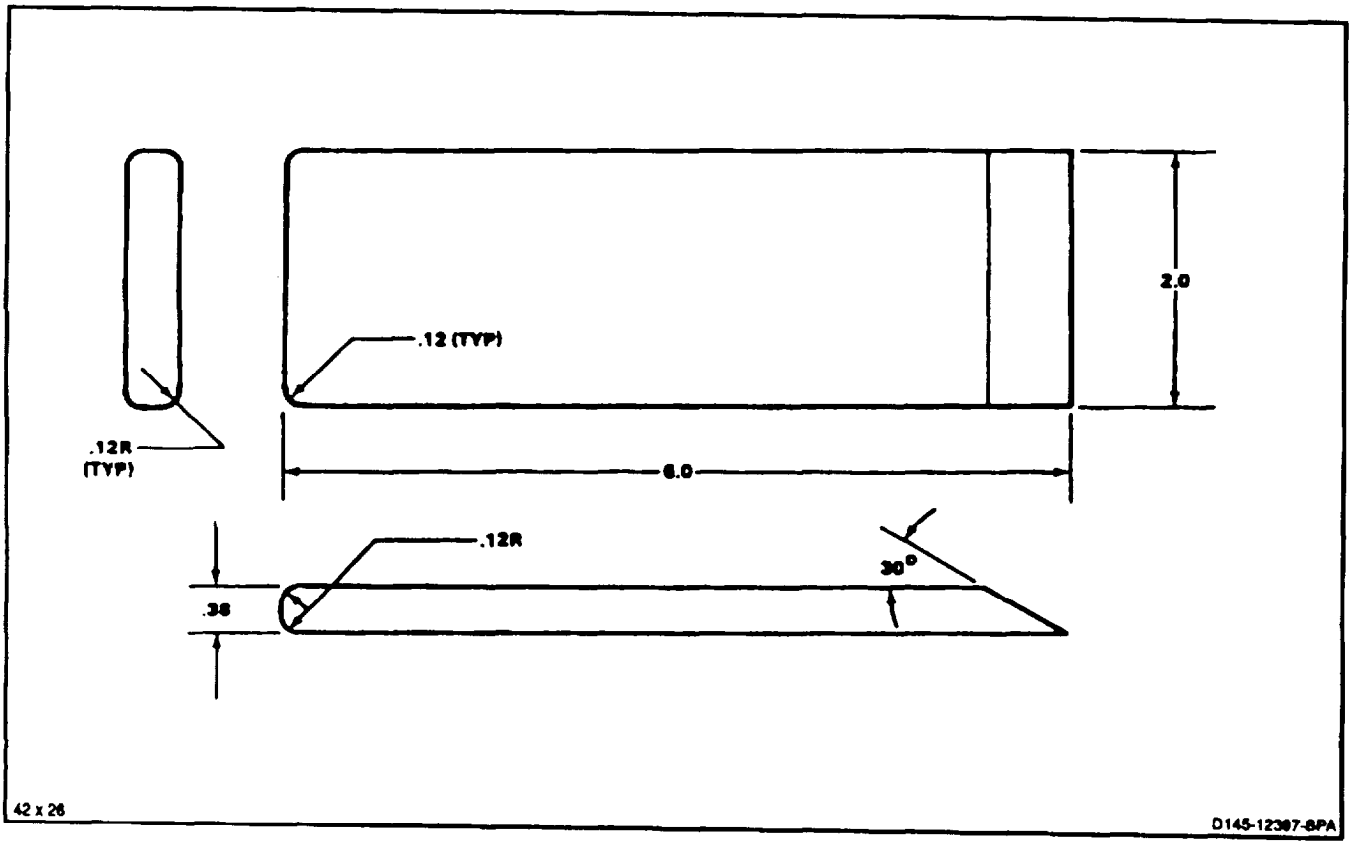


END OF TASK

E-29 ALUMINUM SCRAPER

NOTES:

1. FABRICATE FROM METAL PLATE, AL ALLOY 6061, MINIMUM THICKNESS .040 INCH. NSN 9535-00-314-6903
2. ALL DIMENSIONS IN INCHES.
3. TOLERANCES:
   .X- ± .1
   .xx - ± .03
   .xxx - .010
4. BREAK SHARP EDGES EXCEPT SCRAPING EDGE.



END OF TASK

 Page E-37 is a blank page.

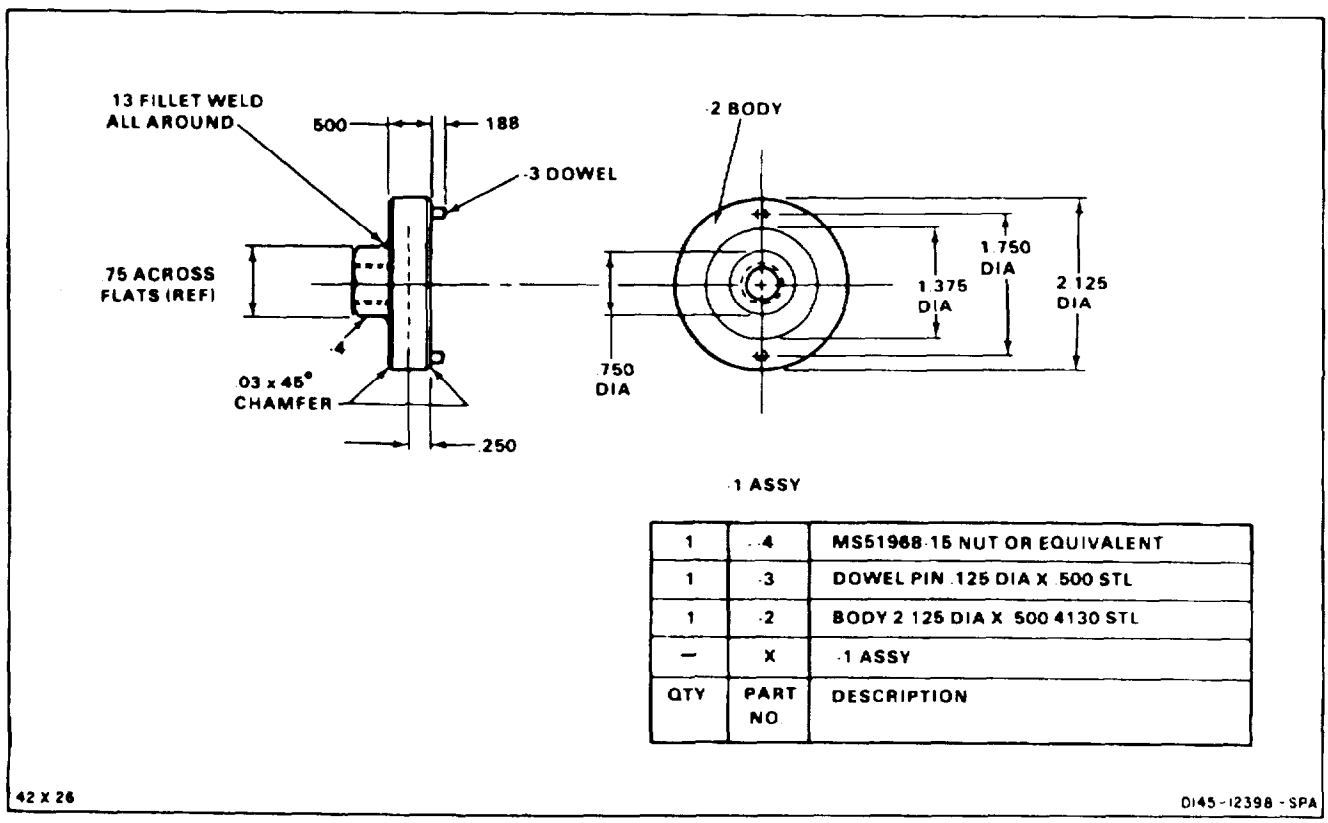
E-30 PTU SPANNER WRENCH

NOTES:

1. ALL DIMENSIONS IN INCHES.

2. TOLERANCES:

   .X = ± .1
   .XX = ± .02
   .XXX = ± .010



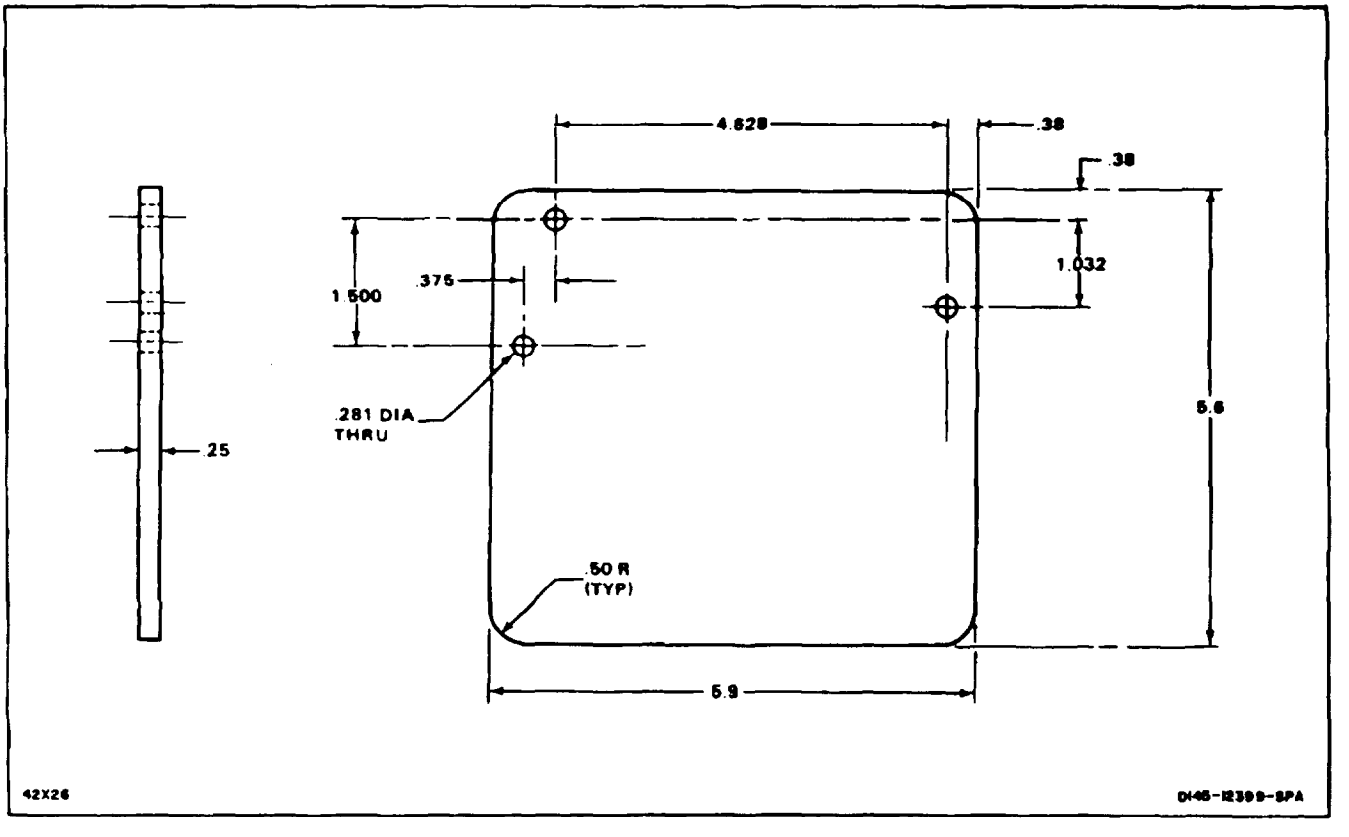
QTY	PART NO	DESCRIPTION
1	-4	MS51968-15 NUT OR EQUIVALENT
1	-3	DOWEL PIN .125 DIA X .500 STL
1	-2	BODY 2.125 DIA X .500 4130 STL
—	X	-1 ASSY

END OF TASK

E-31 FILL MODULE SUPPORT PLATE

NOTES:

1. FABRICATE FROM 4140 STEEL.
2. ALL DIMENSIONS IN INCHES.
3. TOLERANCES:
   .X = ± .1
   .XX = ± .03
   .XXX = ± .010
4. BREAK SHARP EDGES.

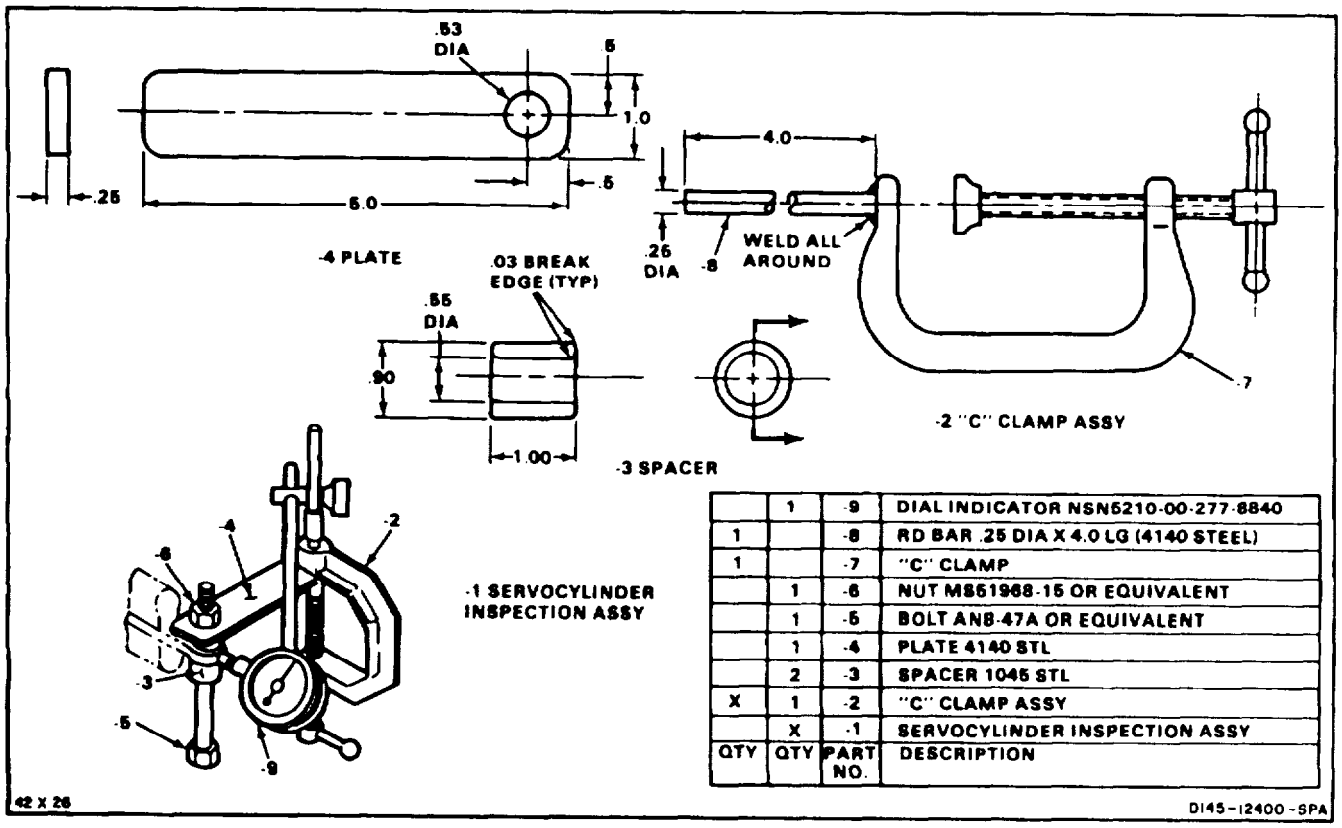


END OF TASK

E-32 SERVOCYLINDER INSPECTION FIXTURE

NOTES:

1. ALL DIMENSIONS IN INCHES.
2. TOLERANCES:
   .X = ± .1
   .XX = ± .03
   .XXX = ± .010
3. BREAK SHARP EDGES.



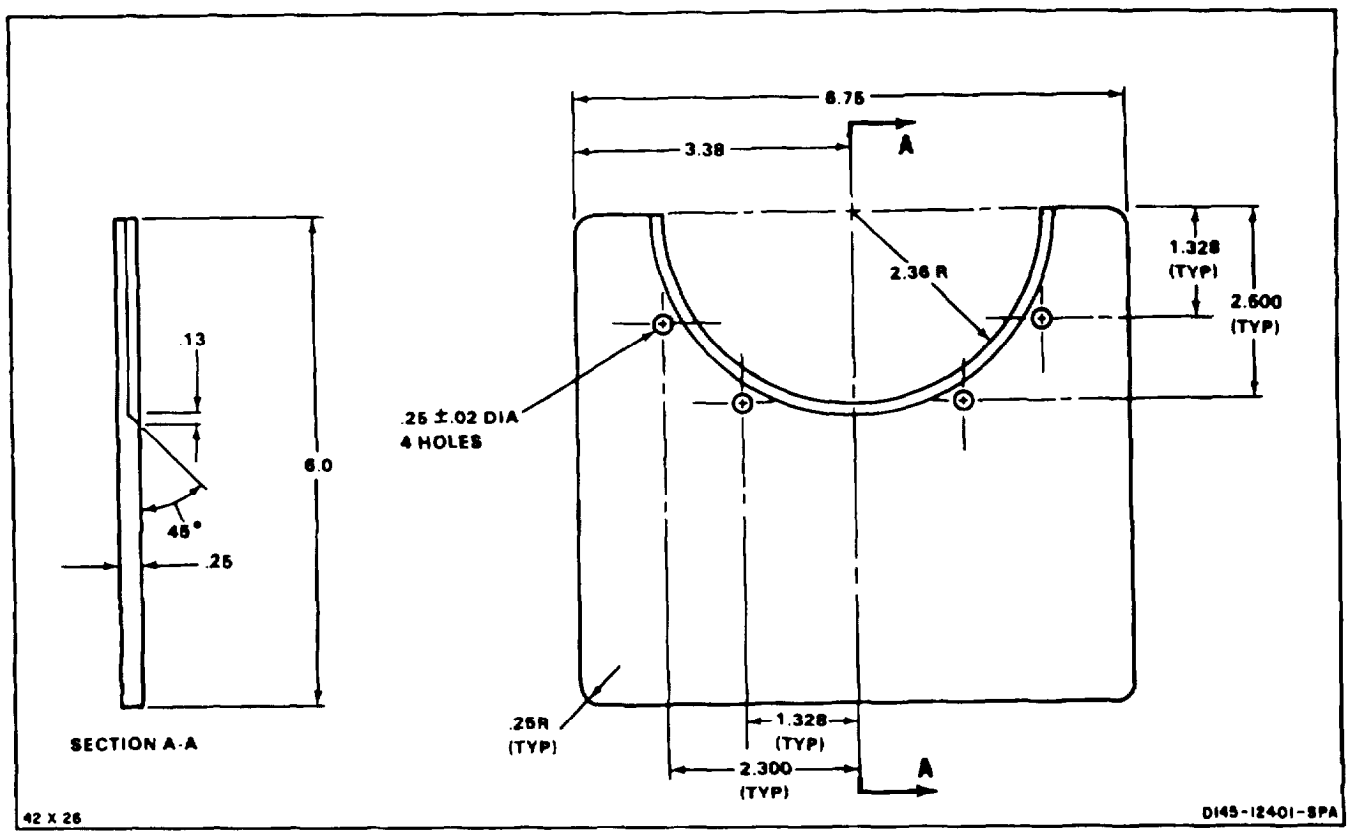
	1	-9	DIAL INDICATOR NSN5210-00-277-8840
1		-8	RD BAR .25 DIA X 4.0 LG (4140 STEEL)
1		-7	"C" CLAMP
	1	-6	NUT MS51968-15 OR EQUIVALENT
	1	-5	BOLT AN8-47A OR EQUIVALENT
	1	-4	PLATE 4140 STL
	2	-3	SPACER 1045 STL
X	1	-2	"C" CLAMP ASSY
	X	-1	SERVOCYLINDER INSPECTION ASSY
QTY	QTY	PART NO.	DESCRIPTION

END OF TASK

E-33 AVIONICS COOLING FAN SUPPORT PLATE

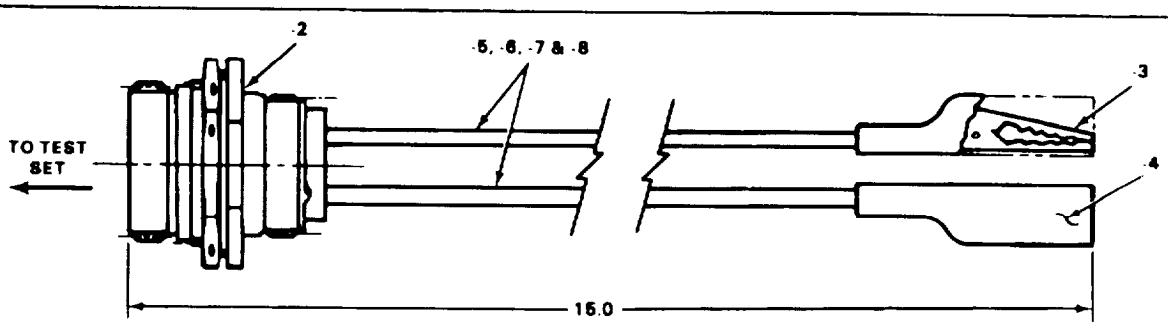
NOTES:

1. FABRICATE FROM 4140 STEEL.
2. ALL DIMENSIONS IN INCHES.
3. TOLERANCES:
   .X = ± .1
   .XX = ± .03
   .XXX = ± .010
4. BREAK SHARP EDGES,



END OF TASK

E-34 EXTENSIBLE LINK TEST CABLE



NOTES:

1. CABLE USED FOR ADJUSTMENT OF EXTENSIBLE LINK TRANSDUCER.
2. ALL DIMENSIONS IN INCHES.
3. TOLERANCES:
   .X = ±0.01
   .XX = ±0.03

TERMINAL NO.	WIRE COLOR	DASH NO.
1	YELLOW	-5
2	GREEN	-6
3	RED	-7
4	ORANGE	-8

QTY	PART NO.	DESCRIPTION
1	-8	NO. 20 TEST LEAD (ORANGE)
1	-7	NO. 20 TEST LEAD (RED)
1	-6	NO. 20 TEST LEAD (GREEN)
1	-5	NO. 20 TEST LEAD (YELLOW)
4	-4	2" INSULATOR BOOT
4	-3	2" ALLIGATOR CLIP
1	-2	M83723-85R1415N CONNECTOR
X	-1	EXTENSIBLE LINK TEST CABLE

42 X 26

D145-12530-SPA

END OF TASK

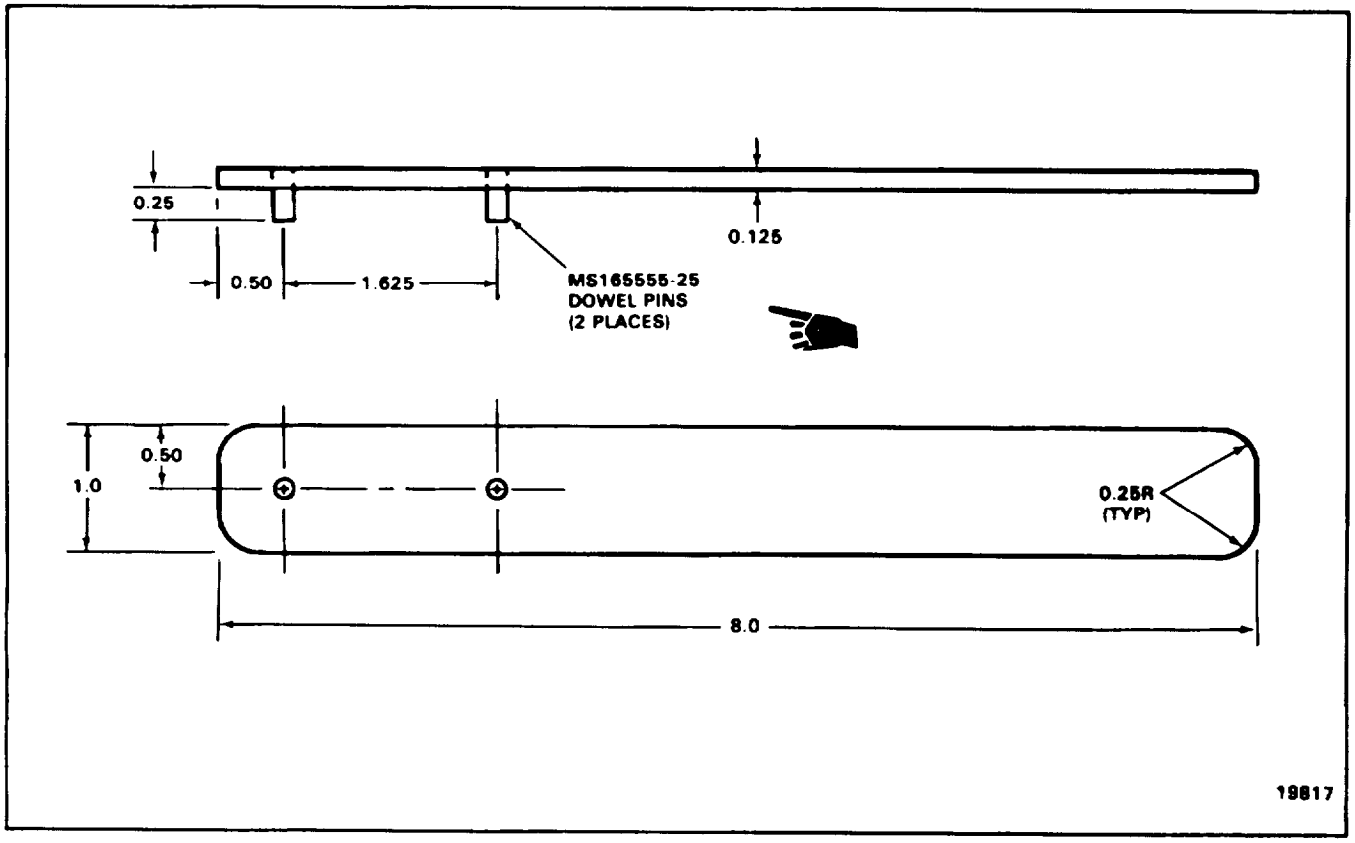
E-35 LANDING GEAR BRAKE LINING SPANNER

NOTES:

1. FABRICATE FROM 4140 STEEL SHT.
2. STOCK SIZE 0.125 X 1.0 X 8.0.
3. ALL DIMENSIONS IN INCHES.
4. TOLERANCES:

   .X= ± .1
   .XX= ± .03
   .XXX= ± ..010

5. BREAK SHARP EDGES.

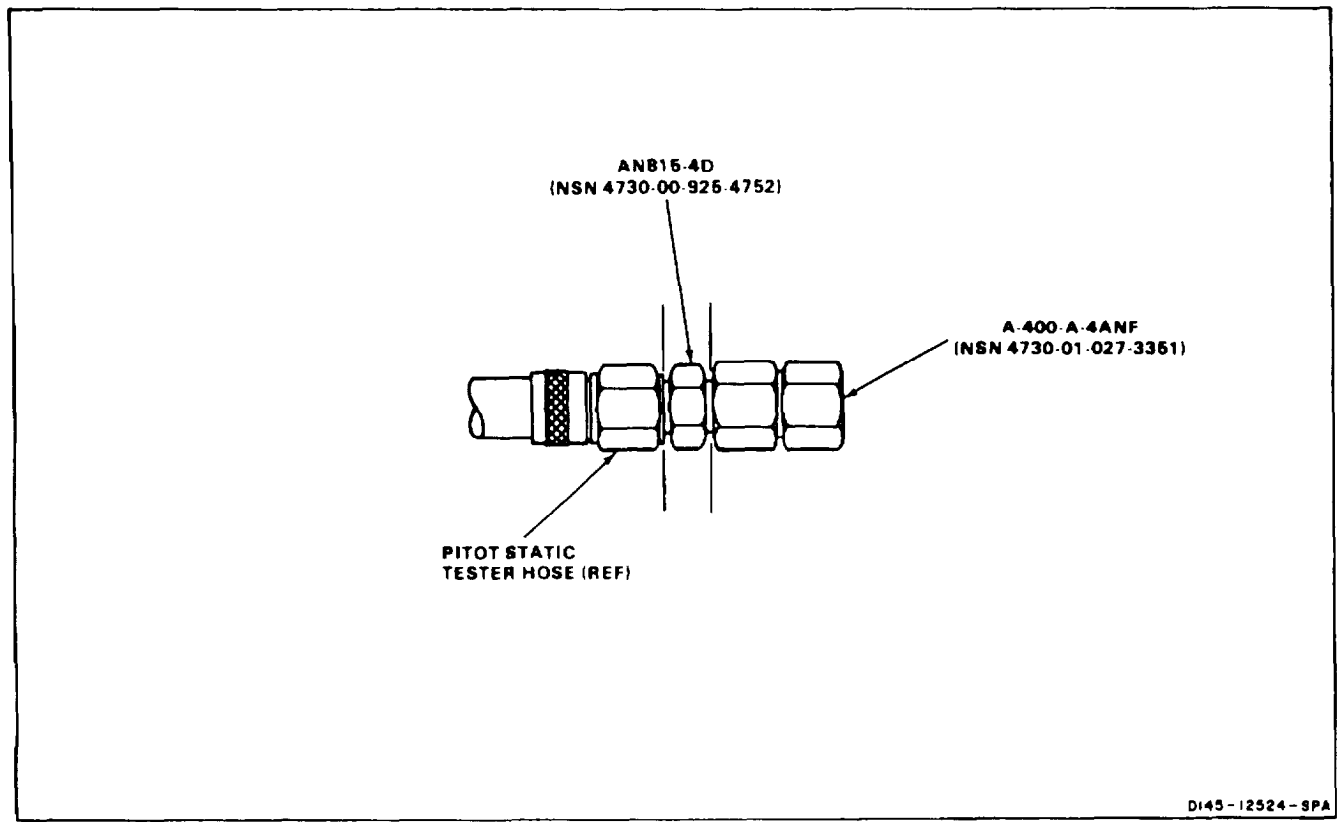


END OF TASK

E-36 AFCS COMPUTER TEST HOSE 1

NOTES:

PITOT STATIC TESTER HOSE CONNECTOR
USED FOR AFCS BENCH TEST OF COMPUTER

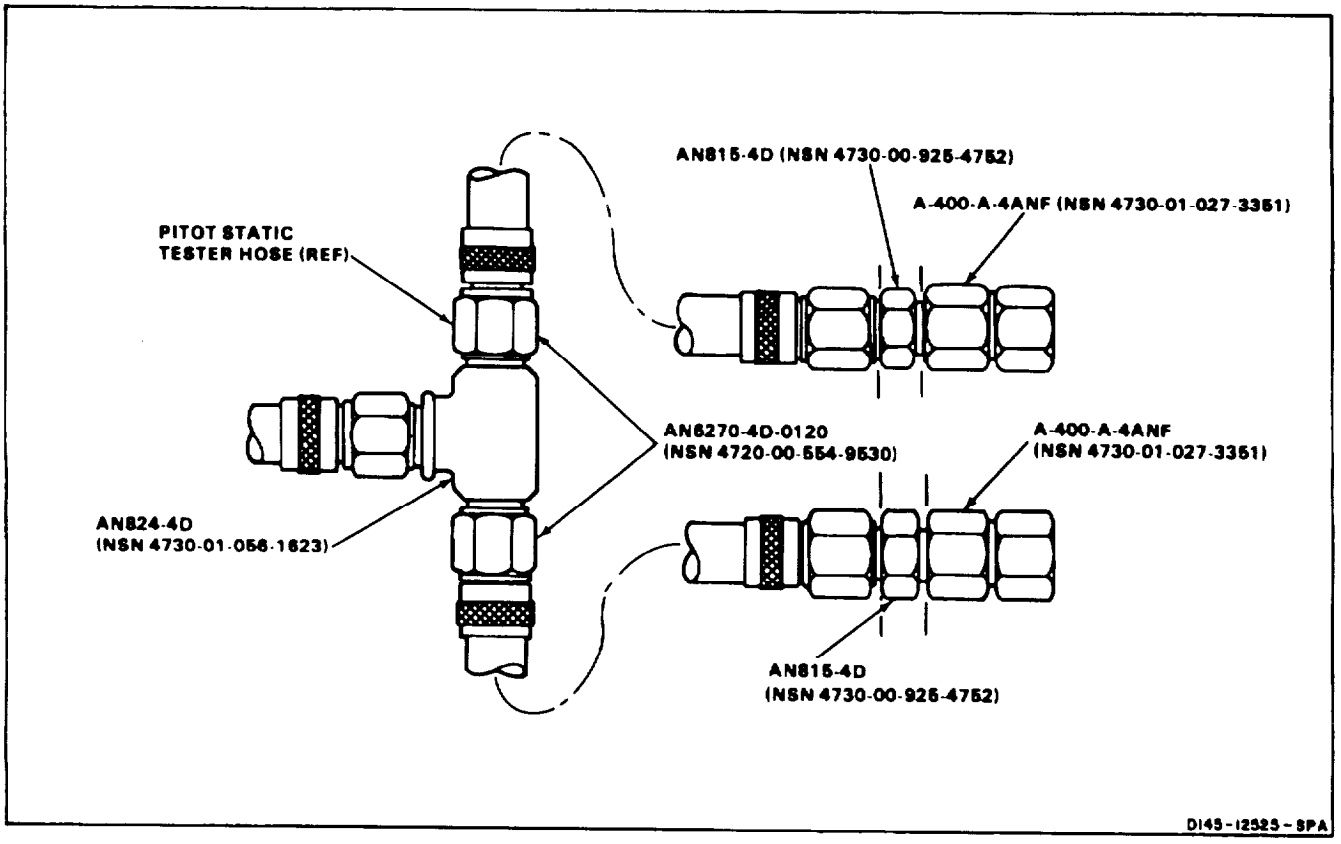


END OF TASK

E-37 AFCS COMPUTER TEST HOSE 2

NOTES:

PITOT STATIC TESTER HOSE CONNECTOR
USED FOR AFCS BENCH TEST OF COMPUTER.



END OF TASK

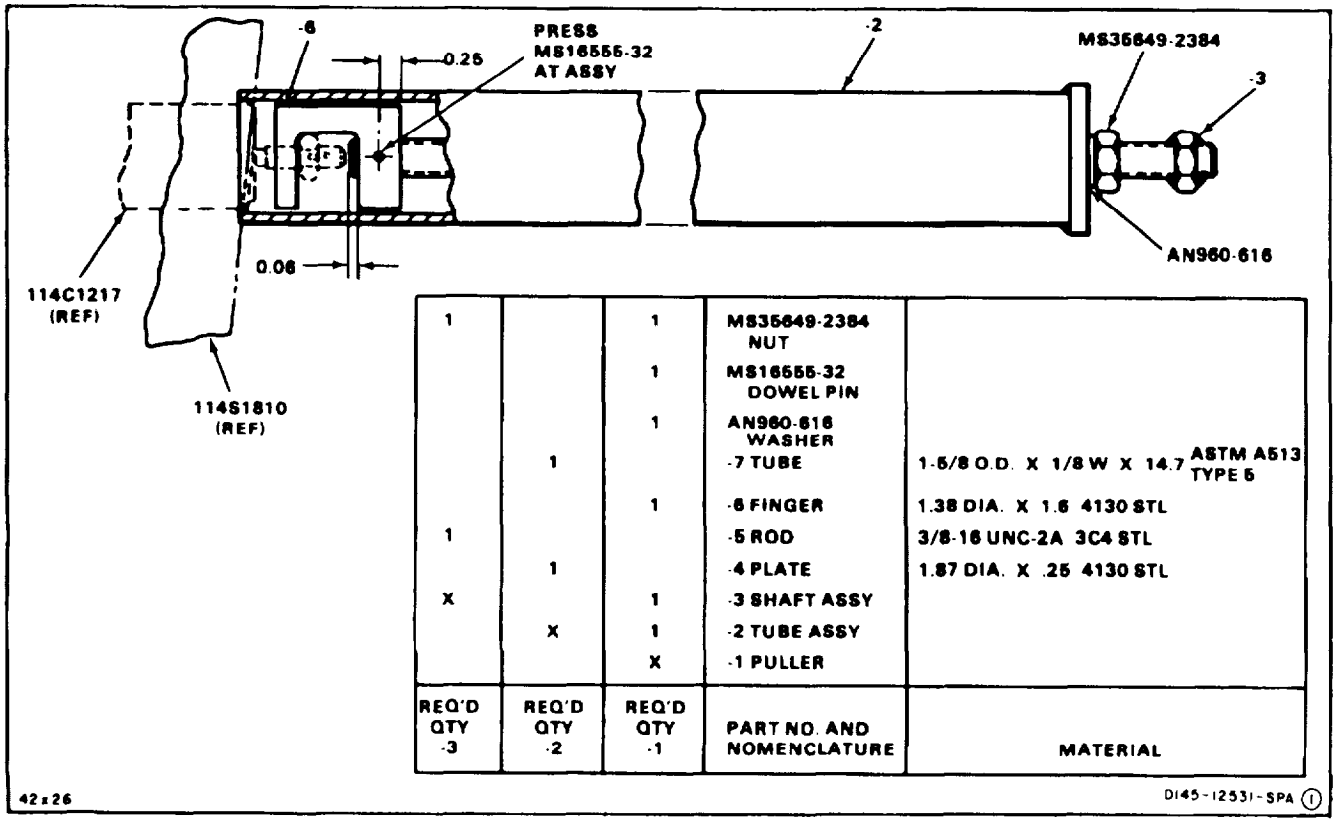
E-38 COCKPIT TRANSFER BELLCRANK SHAFT PULLER

NOTES:

1. ALL DIMENSIONS IN INCHES.

2. TOLERANCES

   .X= ± .1
   .XX= ± .03
   .XXX= ± .010



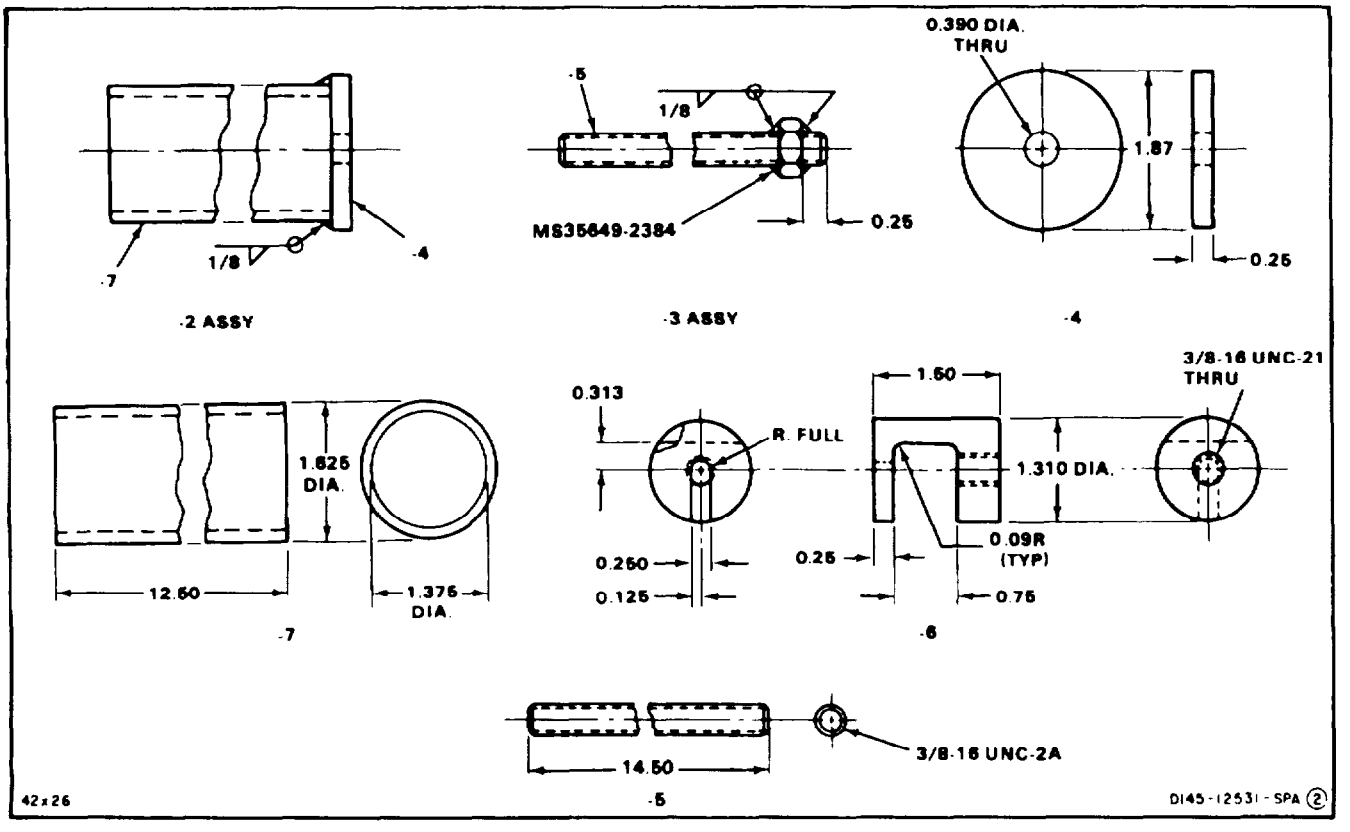
REQ'D QTY -3	REQ'D QTY -2	REQ'D QTY -1	PART NO. AND NOMENCLATURE	MATERIAL
1		1	MS35649-2384 NUT	
		1	MS16555-32 DOWEL PIN	
		1	AN960-616 WASHER	
	1		-7 TUBE	1-5/8 O.D. X 1/8 W X 14.7 ASTM A513 TYPE 5
		1	-6 FINGER	1.38 DIA. X 1.6 4130 STL
1			-5 ROD	3/8-16 UNC-2A 3C4 STL
	1		-4 PLATE	1.87 DIA. X .25 4130 STL
X		1	-3 SHAFT ASSY	
	X	1	-2 TUBE ASSY	
		X	-1 PULLER	

42 x 26

DI45-12531-SPA (1)

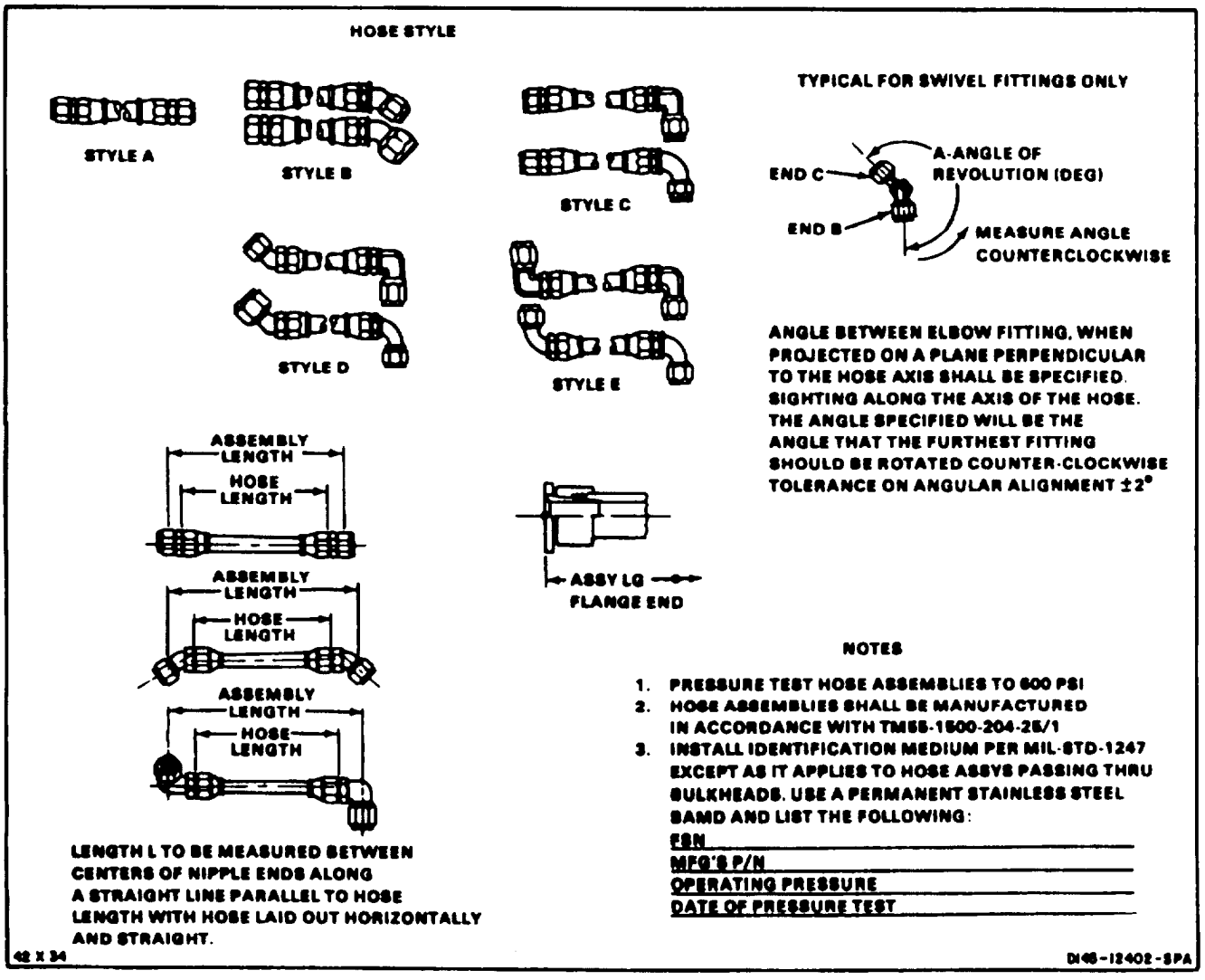
GO TO NEXT PAGE

E-38 COCKPIT TRANSFER BELLCRANK SHAFT PULLER (Continued)



END OF TASK

E-39 FUEL HOSE ASSEMBLIES



GO TO NEXT PAGE

HOSE ASSEMBLY PART NUMBER	HOSE PART NUMBER	END B	END C	ASSEMBLIED HOSE LENGTH (INS.)	A-DEGREE OF ANGLE
114PS100-1	AE701-4	816-4	8846-4	16.75	
114PS100-4	AE701-4	816-4	816-4	29.75	
114PS100-7	AE701-4	8816-4	8891-4	24.75	330*
114PS100-10	AE701-10	8891-10D	—	51.50	
114PS100-15	AE701-4	8891-4	8846-4	10.00	270*
114PS100-19	AE701-4	816-4	8891-4	22.25	
114PS100-22	AE701-4	816-4	816-4	7.875	
114PS100-47	AE701-4	816-4	816-4	15.00	
114PS100-53	AE701-16	8891-16D	816-16D	31.00	
114PS100-95	AE701-4	8891-4	8891-4	5.25	180*
114PS100-97	AE701-10	816-10D	AE13716	60.00	
114PS100-98	AE701-8	816-8D	816-8D	16.00	
114PS100-100	AE701-4	816-4	816-4	11.00	
114PS100-101	AE701-4	816-4	8891-16D	8.50	
114PS403-1	AE701-16	8891-16D	8891-16D	35.75	45*
114PS403-2	AE701-16	8891-16D	8891-16D	35.75	315*
114PS404-1	AE701-6	816-6D	8891-6D	11.25	
114PS4051	AE701-16	8846-16D	8891-16D	23.25	260
114PS405-2	AE701-16	8846-16D	8891-16D	23.25	100
114PS406-1	AE705796-1	8891-6D	816-6D	24.50	
114PS417-1	AE701-6	816-6D	8846-6D	7.25	
114PS418-1	AE701-6	8891-6D	8891-6D	8.12	90
114PS421-1	AE701-16	816-16D	8846-16D	29.00	
114PS479-1	AE701-4	816-4	816-4	48.00	
114PS480-1*	AE601-32	AE23797R	8844-32D	34.31	
114PS480-2*	AE601-32	AE23786R	8844-32D	34.31	
114PS481-1	AE701-16	816-16D	8891-16D	25.00	
114PS482-1	AE701-16	816-16D	816-16D	25.50	
114PS483-1	AE701-4	816-4	816-4	72.00	
114PS484-1	AE701-16	816-16D	816-16D	28.25	
114PS485-1	AE701-6	8891-6D	816-6D	21.75	
114PS486-1	AE701-6	816-6D	8891-6D	18.50	
114PS492-1	AE705800-1	816-16D	816-16D	24.75	
114PS487-1	AE701-16	816-16D	816-16D	29.50	
114PS487-2	AE701-16	816-16D	816-16D	20.00	
114PS495-1	AE701-16	816-16D	8891-16D	18.50	
114PS498-1	AE601-32	AE23797R*	AE23797R*	110.12	
114PS499-1	AE701-8	8891-8D	8846-8D	19.00	90
114PS499-2	AE701-8	8891-80	8846-8D	19.00	270

* This hose requires a socket 516-32D to complete the assembly.

GO TO NEXT PAGE

HOSE ASSEMBLY PART NUMBER	HOSE PART NUMBER	END B	END C	ASSEMBLIED HOSE LENGTH (INS.)	A-DEGREE OF ANGLE
114PS502-1	AE701-16	816-16D	8891-16D	50.75	
114PS502-2	AE701-16	816-16D	8891-16D	49.75	
114PS503-1	AE701-16	816-16D	8891-16D	60.50	
114PS505-1	AE701-16	816-16D	8846-16D	28.75	
114PS507-1	AE701-16	816-16D	8891-16D	70.75	
114PS511-1	AE701-6	816-6D	816-6D	18.12	
114PS516-1	AE701-16	816-16D	8891-16D	28.38	
114PS517-2	AE701-16	816-16D	8891-16D	45.75	
114PS519-1	AE701-6	816-6D	8846-6D	15.5	
114PS520-1	AE701-6	816-6D	816-6D	24.5	
145PS100-5	AE701-4	8846-4	8891-4	30.62	330*
145PS100-6	AE701-6	816-6D	8891-6D	29.00	
145PS452-1	AE701-16	816-16D	8891-16D	26.50	

* This hose requires a socket 516-320 to complete the assembly of END FITTING B.

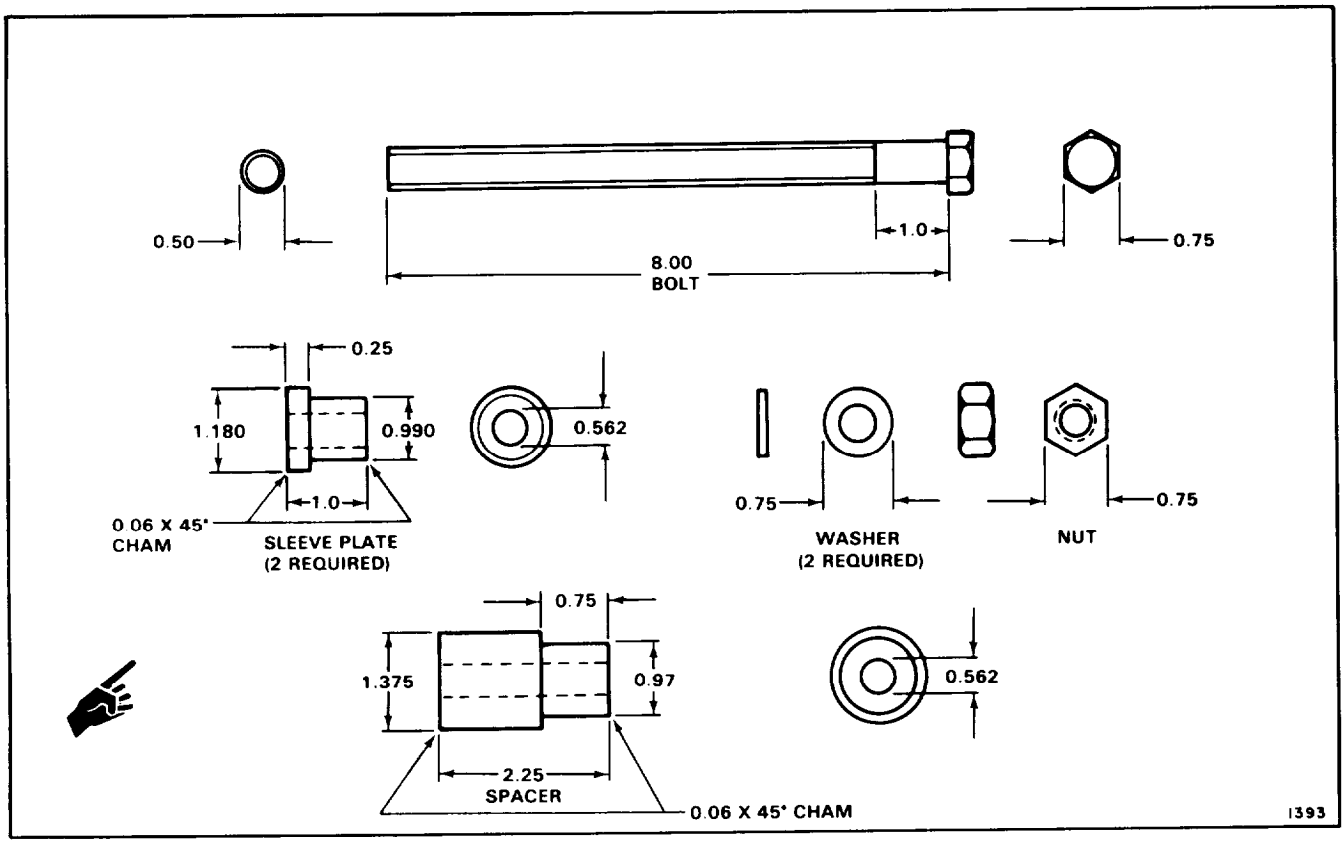
END OF TASK

E-40 FORWARD AND AFT CARGO HOOK MOUNT BUSHING TOOL

E-40

NOTE

ALL DIMENSIONS IN INCHES

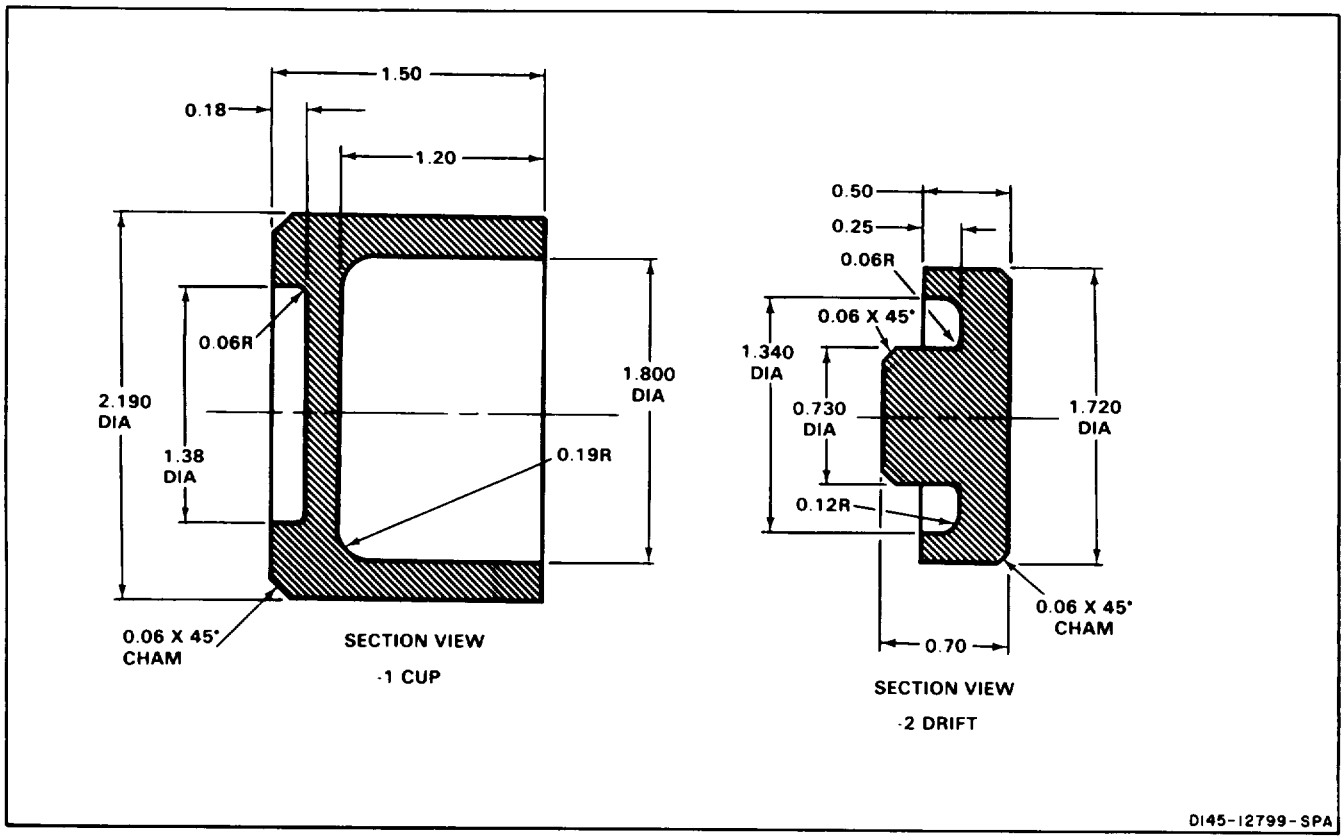


END OF TASK

E-41 SHOCK ABSORBER ROD END BEARING PUSHER ASSEMBLY

NOTES:

1. FABRICATE FROM 4140 STEEL.
2. ALL DIMENSIONS IN INCHES,

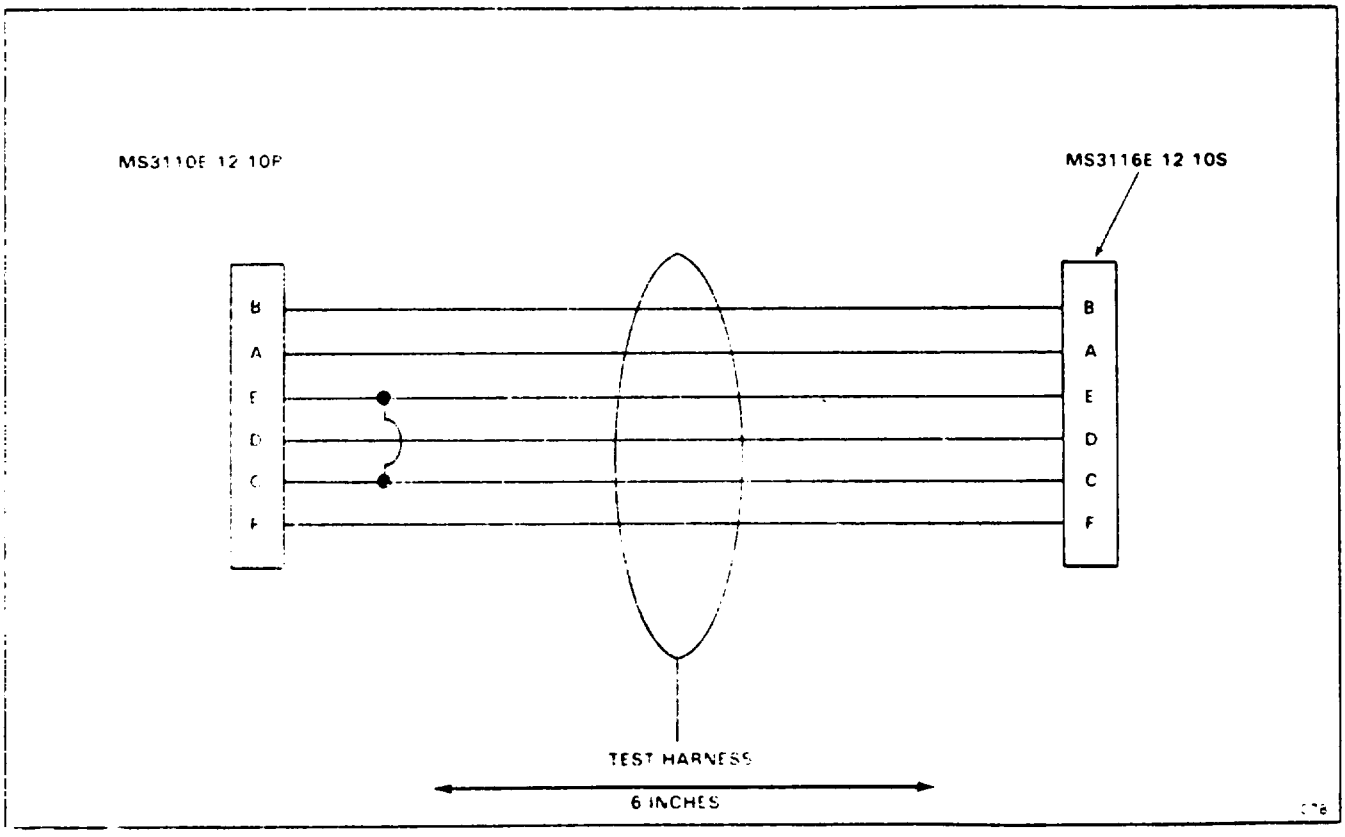


END OF TASK

E-42 TORQUEMETER ZERO-ADJUST TEST CABLE

FABRICATE FROM

CONNECTOR, ELECTRICAL, MS3110E-12-10P
CONNECTOR, ELECTRICAL, MS3116E-12-10S
HOOKUP WIRE NO 20 AS REQUIRED



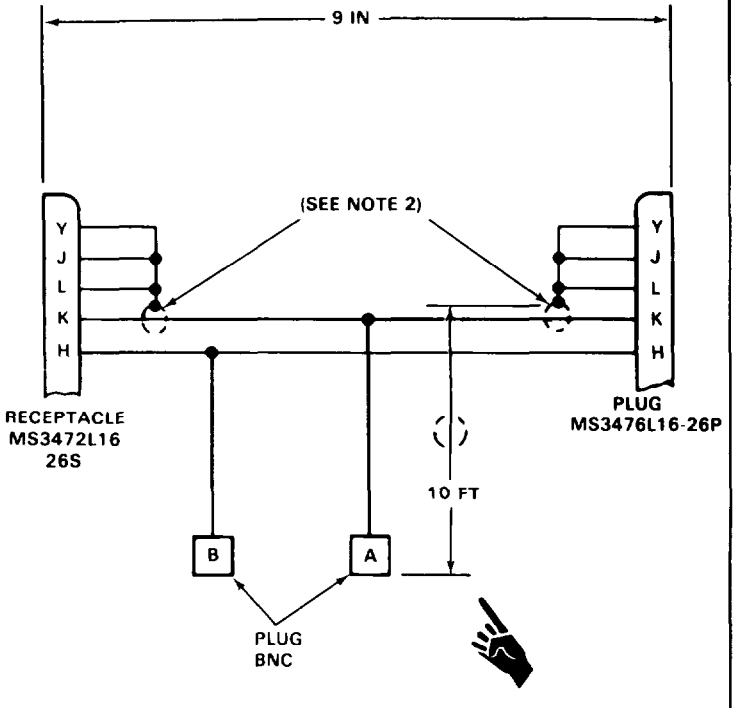
END OF TASK

NOTE:

FABRICATE FROM:

	STANDARD PART NUMBER	NATIONAL STOCK NUMBER
RECEPTACLE	MS3472L16-26S	5935-00-568-3706
PLUG	MS3476L16-26P	5935-00-165-3342
PLUG	BNC	5935-00-080-4183
WIRE	BMS13-48/8-1-22 M22759/16-22-9	
COAXIAL CABLE	RG-188A/U	6145-00-918-9494

NOTES:
1. WIRE IS NO. 22 INSULATED BMS 13-48/8-1-22 M22759/16-22-9 UNLESS OTHERWISE NOTED.
2. TERMINATE SHIELD OF COAXIAL CABLE WITH WIRE JUMPERS CLOSE AS POSSIBLE TO BACK OF CONNECTOR. USING MS21981-080 INNER SLEEVE MS21980-156 OUTER SLEEVE. INSULATE SLEEVE TERMINATION WITH HEAT SHRINK TUBING.
3. TWO CABLE ASSEMBLIES REQUIRED FOR TEST SET UP.



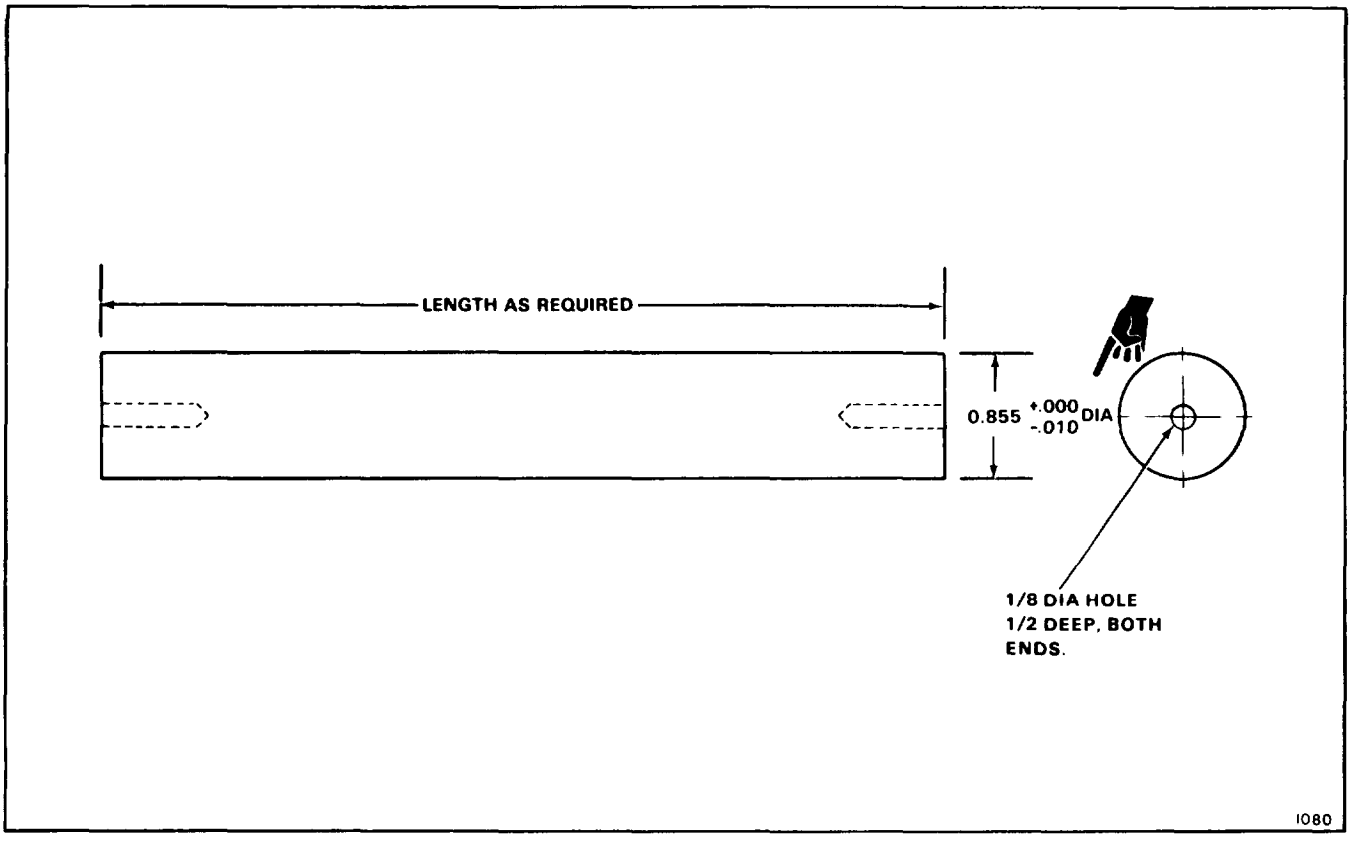
END OF TASK

E-44 ROTOR BLADE BALANCE WEIGHT SPACER 114R1737-2

NOTES:

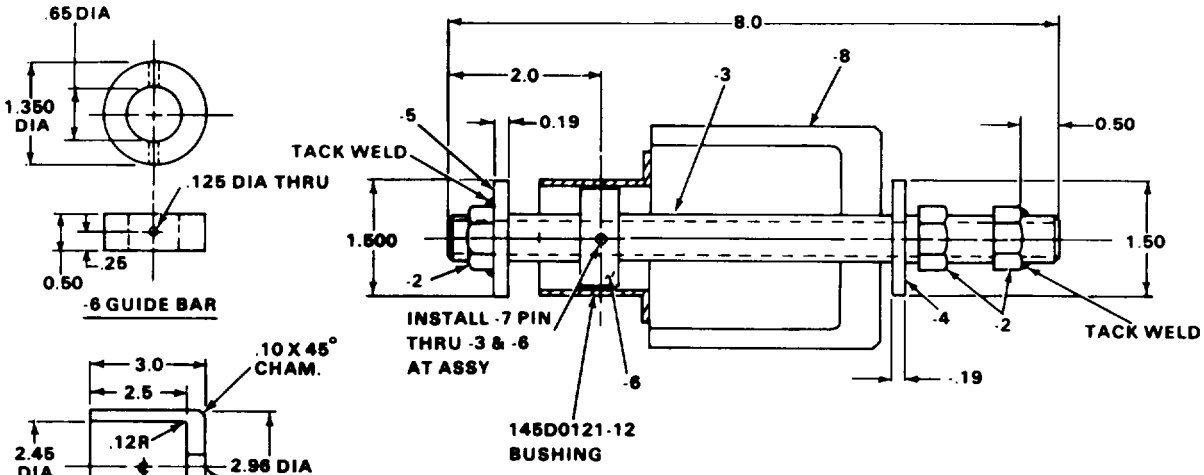
1. FABRICATE FROM HARD WOOD DOWEL, (E 160.1) 0.855-INCH DIAMETER.

2. ALL DIMENSIONS IN INCHES.



END OF TASK

E-45 FORWARD TRANSMISSION MOUNTING STRUCTURE BUSHING E-45 PULLER



BUSHING PULLER

QTY	PART NO	DESCRIPTION
1	-8	BLOCK ASSY 4140 STL
1	-7	ROLL PIN STL .133 DIA X 1.30LG
1	-6	GUIDE BAR 6061 ALUM ALLOY
1	-5	WASHER 4140 STL 1.50 OD X .65 I.D.
1	-4	LOAD COLLAR-BRASS 1.50 OD X .65I.D.
1	-3	STUD 4140 STL. 5/8-11 UNC
3	-2	MS51971-7 NUT OR EQUIVALENT
X	-1	PULLER ASSY

NOTES

1. ALL DIMENSIONS IN INCHES .X ± .1, .XX ± .03, .XXX ± .010
2. BREAK ALL SHARP EDGES

11200

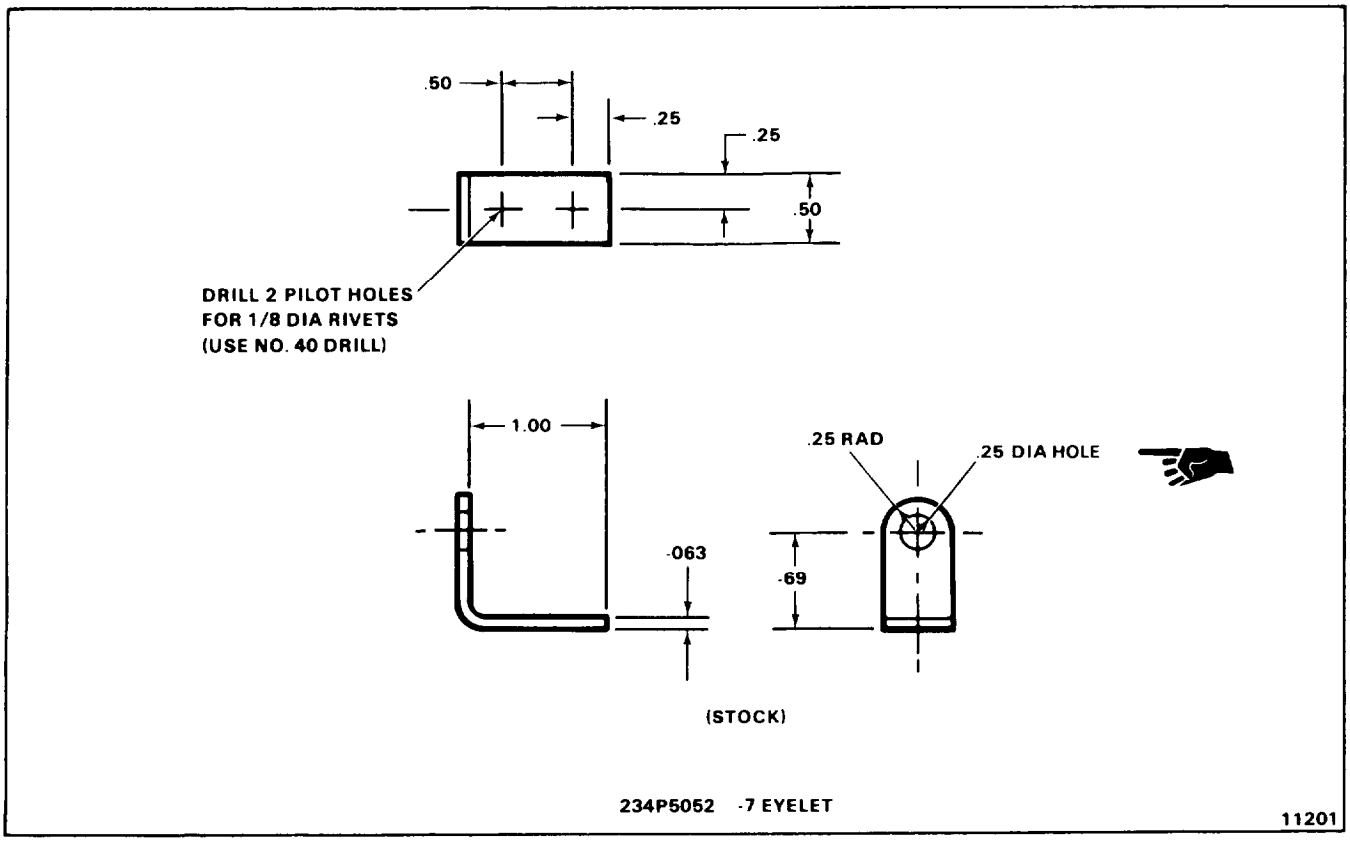
END OF TASK

E-46 ENGINE SCREEN LATCH EYELET 234P5052-7

NOTES:

1. MAKE FROM 0.063 CRES 301 OR 304, 1/4 HARD OR ANNEALED.

2. ALL DIMENSIONS IN INCHES.

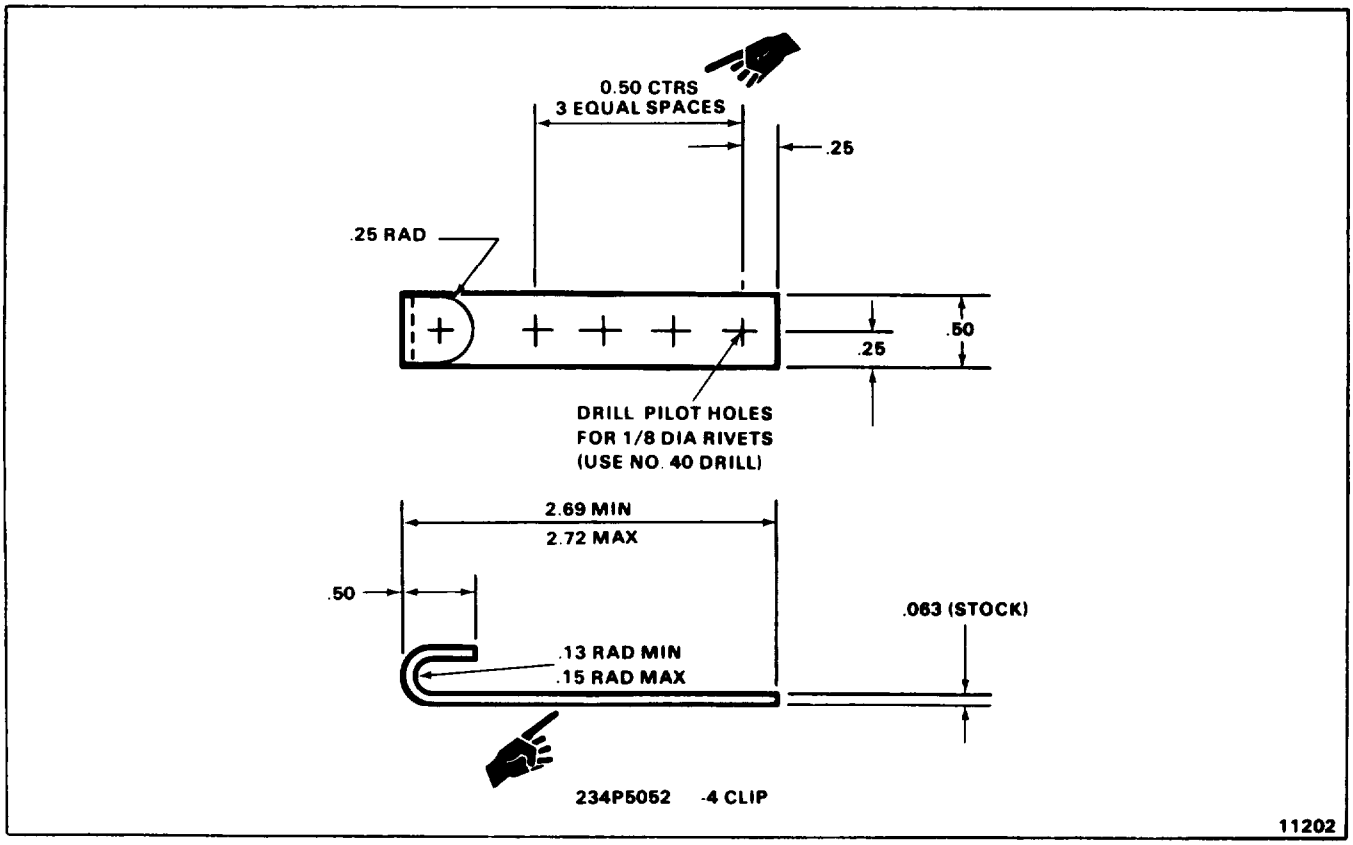


END OF TASK

E-47 ENGINE SCREEN LATCH CLIP 234P5052-4 E-47

NOTES:

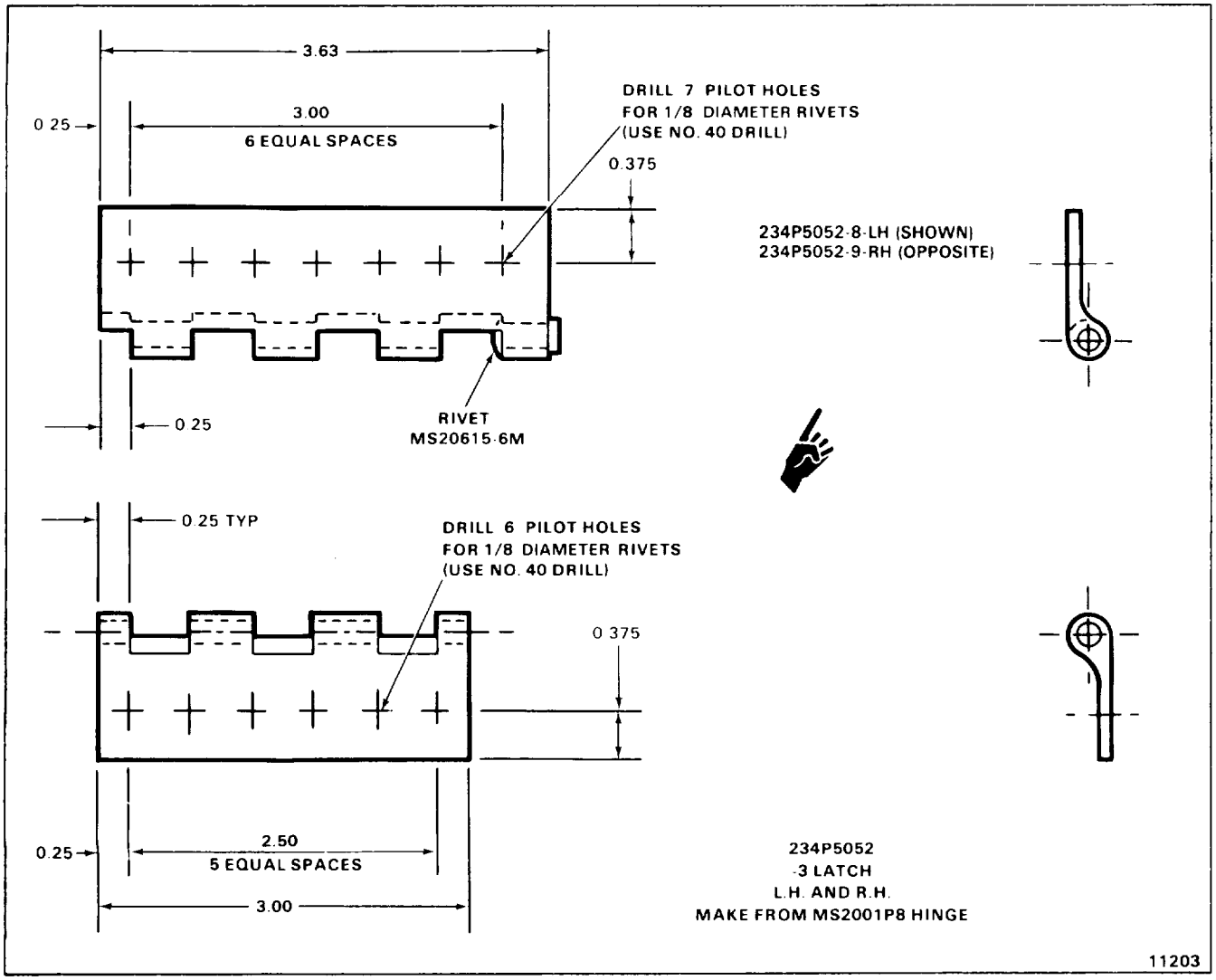
1. MAKE FROM 0.063 CRES 301 OR 304, 1/4 HARD OR ANNEALED.
2. ALL DIMENSIONS IN INCHES.



END OF TASK

NOTES:

1. MAKE FROM MS2001P8 HINGE (E196.1).
2. ALL DIMENSIONS IN INCHES.
3. FINISH WITH ZINC CHROMATE PRIMER (E291).



END OF TASK

A. Tube Fabrication Data

NOMENCLATURE	PART NUMBER	FUNCTION	FINISHED LENGTH ALONG TUBE C/L	MATERIAL	NOTES
TUBE	114E1042-418	PITOT-STATIC	18	1/4 O.D. ALUMINUM	3
TUBE ASSY	114E4048-125	HEATER	12-5/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	114E4048-151	HEATER	9	1/2 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-1	BRAKE	19-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-3	BRAKE	19-1/4	1/4 O.D. CRES STEEL	1,2
TUBE	145H1301-6	BRAKE	10-3/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-7	BRAKE	13-3/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-9	BRAKE	27-1/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-11	BRAKE	30-1/2	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-13	BRAKE	4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-15	BRAKE	7-5/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-17	BRAKE	23	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-21	BRAKE PRESS	9-1/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-23	BOOST PRESS %1	17	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-25	BRAKE PRESS	5-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-27	BRAKE	8-7/8	1/4 O.D. CRES STEEL	1,2
TUBE	145H1301-30	BRAKE PRESS	17-5/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-31	BRAKE	8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-33	BRAKEPRESS	9-3/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-35	BOOST PRESS #1	29-1/2	1/4 O.D. CRES STEEL	1,2
TUBE	145H1301-38	BRAKE PRESS	10-5/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-39	HOIST PRESS	11-7/16	1/4 O.D. CRES STEEL	1,2
TUBE	145H1301-42	BRAKE PRESS	6-1/2	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-45	BRAKE	30	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-47	BRAKE	31-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-52	BRAKE PRESS	51-7/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-53	BRAKE	78	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-55	BRAKE	75-1/2	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-59	BRAKE PRESS	80	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-61	BOOST PRESS #1	57-1/2	3/8 O.D. CRES STEEL	1,2
TUBE	145H1301-64	BOOST PRESS #1	33-1/2	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-65	BOOST PRESS #1	3-5/16	3/8 O.D. CRES STEEL	1,2
TUBE	145H1301-68	BOOST PRESS #1	51-3/8	3/8 O.D. CRES STEEL	1,2
TUBE	145H1301-74	BOOST PRESS #2	75	3/E O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-75	BOOST PRESS #2	9-1/2	3/8 O.D. CRES STEEL	1,2
TUBE	145H1301-78	BOOST PRESS #2	9	3/8 O.D. CRES STEEL	1,2
TUBE	145H1301-80	BOOST PRESS #1	5-3/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-81	BOOST PRESS #2	21-5/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-83	BOOST PRESS #2	20-3/16	1/4 O.D. CRES STEEL	1,2
TUBE	145H1301-86	BOOST PRESS #2	37-3/8	1/4 O.D. CRES STEEL	1,2
TUBE	145H1301-88	BOOST PRESS #2	34-13/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-89	BOOST PRESS #1	22-3/0	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-91	BRAKE PRESS	41	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-93	HOIST PRESS	5-1/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-95	BRAKE	34-3/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-97	BRAKE PRESS	23-3/4	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-99	BRAKE	90	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-101	BRAKE	49	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-103	BRAKE	33-3/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-105	UTILITY PRESS	19-7/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-115	BOOST PRESS #1	11-11/16	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-117	BOOST PRESS #1	22-5/16	1/2 O.D. CRES STEEL	1,2

GO TO NEXT PAGE

E-50 TUBING (Continued) E-SO

A. Tube Fabrication Data (Sheet 2 of 10)

NOMENCLATURE	PART NUMBER	FUNCTION	FINISHED LENGTH ALONG TUBE C/L	MATERIAL	NOTES
TUBE ASSY	145H1301-119	BOOST PRESS #1	54-15/16	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-121	BOOST PRESS #2	39-1/16	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-123	UTILITY PRESS	13-3/16	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-125	UTILITY PRESS	55-1/4	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-127	PRESS	52-5/8	1/2 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-129	BOOST PRESS #1	21-1/4	1/2 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-131	BOOST PRESS #1	45	1/2 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-133	BOOST PRESS #1	36	1/2 O.D. CRES STEEL	1,2
TUBE	145H1301-136	PRESS	46-3/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-137	PRESS	24-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-139	BOOST PRESS #1	19-1/4	5/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-141	BRAKE PRESS	43-1/4	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-143	BRAKE	36-1/2	1/4 O.D. CRES STEEL	1,2
TUBE	145H1301-146	BRAKE	33-1/2	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-151	BRAKE PRESS	28-9/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-155	UTILITY PRESS	9-3/4	3/8 O.D. CRES STEEL	1,2
TUBE	145H1301-158	HOIST PRESS	7	3/8 O.D. CRES STEEL	1,2
TUBE	145H1301-160	HOIST -UP-	12-3/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-161	HOIST -DOWN-	20-1/2	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-163	HOIST -UP-	27-7/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-165	HOIST -DOWN-	20-9/16	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1301-169	HOIST BRAKE	52-3/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1302-1	BOOST RETURN #1	19-3/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1302-3	BOOST RETURN #2	19	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1302-5	BOOST RETURN #1	19-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1302-7	BOOST RETURN #2	18-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1302-9	BOOST RETURN #1	5-1/2	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-11	BOOST RETURN #1	52-1/4	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-13	BOOST RETURN #2	7-1/2	3/8 O.D. ALUM ALLOY	3
TUBE	145H1302-18	BOOST RETURN #2	52-1/2	3/8 O.D. ALUM ALLOY	3
TUBE	145H1302-20	BOOST RETURN #2	16-3/16	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	146H1302-21	BOOST RETURN #2	54-1/4	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	14SH1302-23	BRAKE RETURN	24-1/2	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	14SH1302-26	RETURN	19-7/8	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-27	CASE RETURN	23-3/4	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-29	BOOST SUCTION	19-3/8	3/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-31	UTILITY RETURN	13-1/8	3/8 O.D. ALUM ALLOY	3
TUBE	145H1302-34	UTILITY RETURN	42-1/2	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-35	UTILITY RETURN	24-1/8	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-37	UTILITY RETURN	30-3/16	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-39	UTILITY RETURN	41-5/8	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-41	BOOST RETURN #2	45-3/8	3/8 O.D. ALUM ALLOY	3
TUBE	145H1302-44	RETURN	23-3/8	3/4 O.D. ALUM ALLOY	3
TUBE	145H1302-46	BOOST SUCTION	20-3/4	1 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-47	BOOST SUCTION	12-5/8	3/4 O.D. ALUM ALLOY	3
TUBE	145H1302-50	BOOST SUCTION	5-7/8	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-51	RETURN	34-7/16	5/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-53	BOOST RETURN #1	21-1/4	5/8 O.D. ALUM ALLOY	3

GO TO NEXT PAGE

E-50 TUBING (Continued)

A. Tube Fabrication Data (Sheet 3 of 10)

NOMENCLATURE	PART NUMBER	FUNCTION	FINISHED LENGTH ALONG TUBE C/L	MATERIAL	NOTES
TUBE ASSY	145H1302-55	BOOST RETURN #1	46-3/4	5/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-57	BOOST RETURN #1	38-1/4	5/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-59	CASE DRAIN	16-1/8	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-61	CASE DRAIN	11-7/16	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-63	CASE DRAIN	32-1/4	3/8 O.D. ALUM ALLOY	3
TUBE	145H1302-66	OVERBOARD DRAIN	9-3/4	1/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-67	OVERBOARD DRAIN	22-11/16	1/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-69	OVERBOARD DRAIN	34-1/4	1/4 O.D. ALUM ALLOY	3
TUBE	145H1302-72	OVERBOARD DRAIN	7-1/2	1/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-73	OVERBOARD DRAIN	30-7/16	1/4 O.D. ALUM ALLOY	3
TUBE	145H1302-76	OVERBOARD DRAIN	54	1/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-77	UTILITY RETURN	8	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-79	HOIST RETURN	8-7/8	3/8 O.D. ALUM ALLOY	3
TUBE	145H1302-82	HOIST RETURN	23-7/16	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-83	HOIST RETURN	12-3/8	3/8 O.D. ALUM ALLOY	3
TUBE	145H1302-86	HOIST RETURN	11-15/16	3/8 O.D. ALUM ALLOY	3
TUBE	145H1302-88	HOIST RETURN	7-1/2	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-69	HOIST RETURN	8-15/16	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-93	BRAKE RETURN	44	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-95	BOOST RETURN #1	15-1/4	3/8 0.0. ALUM ALLOY	3
TUBE ASSY	145H1302-97	BOOST RETURN #1	13-3/8	3/8 O.D. ALUM ALLOY	3
TUBE	145H1302-100	BOOST RETURN #1	59-1/16	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-103	BRAKE RETURN	9-1/4	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-105	BRAKE RETURN	5-7/8	3/8 O.D. ALUM ALLOY	3
TUBE	145H1302-108	BRAKE RETURN	20	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-109	BRAKE RETURN	9-1/2	3/8 O.D ALUM ALLOY	3
TUBE	145H1302-112	BRAKE RETURN	10-5/16	3/8 O.D. ALUM ALLOY	3
TUBE	145H1302-114	BRAKE RETURN	6	3/8 O.D. ALUM ALLOY	3
TUBE	145H1302-116	BRAKE RETURN	37-3/16	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-117	BRAKE RETURN	82-5/8	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-119	BRAKE RETURN	38-5/8	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-123	CASE DRAIN	4-11/16	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-125	HOIST RETURN	18-13/16	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1302-127	BOOST RETURN #1	15-1/4	5/8 O.D. ALUM ALLOY	3
TUBE	145H1401-2	UTILITY PRESS	26-3/4	3/8 O.D. CRES STEEL	1,2
TUBE	145H1401-4	CARGO RELEASE	7	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-5	UTILITY PRESS	96	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-7	BRAKE PRESS	144	3/8 O.D. CRES STEEL	1,2
TUBE	145H1401-10	BRAKE	144	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-11	BOOST PRESS #1	144	3/8 O.D. CRES STEEL	1,2
TUBE	145H1401-14	UTILITY PRESS	30	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-15	BRAKE PRESS	114-1/4	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-17	BOOST PRESS #1	129-1/2	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-19	UTILITY PRESS	144	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-21	BRAKE	129-3/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-23	BOOST PRESS #2	136-3/4	3/8 O.D. CRES STEEL	1,2
TUBE	145H1401-26	BRAKE	78-5/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-27	BOOST PRESS #2	144	3/8 O.D. CRES STEEL	1,2

E-50 TUBING (Continued)

A. Tube Fabrication Data (Sheet 4 of 10)

NOMENCLATURE	PART NUMBER	FUNCTION	FINISHED LENGTH ALONG TUBE C/L	MATERIAL	NOTES
TUBE ASSY	145H1401-29	BRAKE	50	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-31	BRAKE	144	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-33	BRAKE	12-1/2	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-35	BRAKE	27-5/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-37	BRAKE	50-3/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	l45H1401-41	BRAKE PRESS	56-1/2	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-43	BRAKE	44	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-45	BRAKE	49-1/2	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-48	BRAKE	29-11/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-49	BRAKE	56-3/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-51	BRAKE	42-1/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-53	BRAKE	16-1/2	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-57	CARGO RELEASE	58	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-59	CARGO RELEASE	47	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-61	BRAKE	16-3/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-63	CARGO RELEASE	42-13/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-65	BRAKE	13-3/4	1/4 O.D. CRES STEEL	1,2
TUBE	145H1401-68	UTILITY PRESS	53	3/8 O.D. CRES STEEL	1,2
TUBE	145H1401-70	BRAKE	47-3/4	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-71	UTILITY PRESS	58-5/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-73	BRAKE PRESS	51	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-75	BRAKE	3-1/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-77	BRAKE	6-3/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-79	BRAKE PRESS	31	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1401-61	CARGO HOOK	32	3/8 O.D. CRES STEEL	1,2
TUBE	145H1402-2	UTILITY RETURN	7-3/8	1/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1402-3	UTILITY RETURN	103	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1402-5	BRAKE RETURN!	138	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1402-7	BOOST RETURN #1	138	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1402-9	BRAKE RETURN	120-3/4	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1402-11	BOOST RETURN #2	133-5/8	3/8 O.D. ALUM ALLOY	3
TUBE	145H1402-14	UTILITY RETURN	32	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1402-15	BOOST RETURN #1	135	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1402-17	UTILITY RETURN	138	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1402-19	BOOST RETURN #2	143	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1402-21	BRAKE RETURN	57-3/4	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1402-23	BRAKE RETURN	3	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1402-25	BRAKE RETURN	21-3/4	3/8 O.D. ALUM ALLOY	3
TUBE	145H1402-28	UTILITY RETURN	66-5/8	1/2 O.D. ALUM ALLOY	3
TUBE	145H1402-30	BRAKE RETURN	65-3/8	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1402-31	BOOST RETURN #1	55	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1402-33	BOOST RETURN #2	50-1/2	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1801-1	BOOST PRESS #1	13-5/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-3	BOOST PRESS #2	18-5/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-5	UTILITY PRESS	32-1/4	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-7	BRAKE PRESS	22-5/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-9	BRAKE	22	3/8 O.D. CRES STEEL	1,2

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A. Tube Fabrication Data (Sheet 5 of 10)

NOMENCLATURE	PART NUMBER	FUNCTION	FINISHED LENGTH ALONG TUBE C/L	MATERIAL	NOTES
TUBE ASSY	145H1801-13	BRAKE	61-11/16	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-15	BRAKE	26-3/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-17	BRAKE	26-9/16	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-19	BRAKE	36-3/4	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-21	BRAKE	35-3/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-23	UTILITY PRESS	18-3/4	3/8 O.D. CRES STEEL	1,2
TUBE	145H1801-25	UTILITY PRESS	27	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-27	UTILITY PRESS	48-3/4	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-29	UTILITY PRESS	34-15/16	1/4 O.D CRES STEEL	1,2
TUBE	145H1801-31	UTILITY PRESS	63-7/8	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-33	UTILITY PRESS	44	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-35	UTILITY PRESS	30	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-37	UTILITY PRESS	9-1/8	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-40	RAMP UP	34-5/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-41	RAMP UP	13-1/8	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-44	RAMP UP	35-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-45	SWIVEL LOCK	105-1/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-47	SWIVEL UNLOCK	105-1/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-49	RAMP UP	13	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-52	RAMP UP	35-11/16	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-54	SWIVEL UNLOCK	19-1/2	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-55	SWIVEL UNLOCK	10-1/2	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-57	SWIVEL UNLOCK	33-13/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-59	SWIVEL UNLOCK	17-5/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-61	SWIVEL UNLOCK	17-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-63	SWIVEL UNLOCK	5-5/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-65	SWIVEL LOCK	15-9/16	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-67	SWIVEL LOCK	11-3/4	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-70	SWIVEL LOCK	34-15/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-71	SWIVEL LOCK	14-3/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-73	SWIVEL LOCK	15-1/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-75	SWIVEL LOCK	8-1/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-77	POWER STEERING	20-5/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-79	UTILITY PRESS	37-5/8	3/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-81	START PRESS	20	3/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-83	PRESS	14-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-85	RAMP UNLOCK	13	1/4 O.D CRES STEEL	1,2
TUBE	145H1801-88	RAMP UNLOCK	31-5/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-89	RAMP UNLOCK	20-3/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-91	RAMP UP	9-1/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-93	PRESS	26-1/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-95	ACCUMULATOR	10-7/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-97	POWER STEERING	28	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-99	ENG START PRESS	17	5/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-101	BRAKE	39-9/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-103	BRAKE	8-3/16	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-106	BRAKE	58-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-107	UTILITY PRESS	35-5/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-111	RAMP DOOR CLOSE	8-7/8	1/4 O.D. CRES STEEL	1,2

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A. Tube Fabrication Data (Sheet 6 of 10)

NOMENCLATURE	PART NUMBER	FUNCTION	FINISHED LENGTH ALONG TUBE C/L	MATERIAL	NOTES
TUBE ASSY	145H1801-113	RAMP DOOR OPEN	9-3/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-131	BOOST PRESS #2	37	1/2 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-135	PRESS	25-5/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-141	UTILITY PRESS	45-1/2	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-143	UTILITY PRESS	46-1/4	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-145	PRESS	33	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-150	PRESS	29-15/16	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-152	ACCUMULATOR PRESS	21	3/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-153	UTILITY PRESS	56-1/4	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-156	UTILITY PRESS	27-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-157	UTILITY PRESS	23	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-160	ENG START PRESS	12-1/2	5/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-161	ENG START PRESS	41-3/4	5/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-163	ENG START PRESS	50-1/2	5/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-165	ENG START PRESS	17-1/4	5/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-167	RAMP DOWN	17-1/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-169	RAMP DOWN	34-3/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-171	BOOST PRESS #2	26	1/2 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-173	BOOST PRESS #2	47-1/16	1/2 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-175	UTILITY PRESS	13-3/4	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-177	ENG START PRESS	44-1/4	5/8 O.D. CRES STEEL	1,2
TUBE	145H1801-180	ENG START PRESS	10-5/8	5/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-181	RAMP UP	105-1/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-183	UTILITY PRESS	18-5/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-187	RAMP UNLOCK	105-1/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-191	RAMP UNLOCK	20-1/16	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-196	RAMP UNLOCK	34-5/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-197	UTILITY PRESS	51	1/2 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-199	UTILITY PRESS	71-3/4	1/2 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-201	UTILITY PRESS	11-3/4	1/2 O.D. CRES STEEL	1,2
TUBE	145H1801-206	RAMP DOOR CLOSE	36	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-208	RAMP DOOR OPEN	38	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-211	RAMP DOOR CLOSE	32-1/2	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-213	RAMP DOOR OPEN	31-3/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-215	SWIVEL UNLOCK	15-5/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-217	SWIVEL LOCK	15-5/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-219	BRAKE	15-5/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-221	SWIVEL LOCK	10-5/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-223	BRAKE	21-3/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-225	BRAKE	17-1/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-227	SWIVEL LOCK	19-1/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-229	SWIVEL UNLOCK	19-1/2	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-231	BRAKE	14-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-233	SWIVEL LOCK	10-5/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-235	UTILITY PRESS	19-3/8	1/2 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-237	UTILITY PRESS	14-1/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-239	UTILITY PRESS	21-3/16	3/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-241	UTILITY PRESS	28-1/4	3/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-243	UTILITY PRESS	39-7/8	3/4 O.D. CRES STEEL	1,2

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A. Tube Fabrication Data (Continued)

NOMENCLATURE	PART NUMBER	FUNCTION	FINISHED LENGTH ALONG TUBE C/L	MATERIAL	NOTES
TUBE ASSY	145H1801-245	BOOST PRESS #2	32	1/2 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-247	RAMP DOWN	14-7/8	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-250	RAMP DOWN	30-3/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-251	RAMP DOWN	17-7/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-253	RAMP DOWN	105-1/8	1/4 O.D. CRES STEEL	1,2
TUBE	145H1801-256	BOOST PRESS #1	18-7/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-257	BOOST PRESS #1	65	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-261	BOOST PRESS #1	28-1/16	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-263	BOOST PRESS #1	39-1/18	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-267	BOOST PRESS #2	8-11/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-269	BOOST PRESS #2	10-15/16	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1801-271	BOOST PRESS #2	49-1/2	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-1	BOOST RETURN #1	17	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-3	BOOST RETURN #2	17-5/8	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-5	RETURN	33-7/8	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-7	UTILITY RETURN	16	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-9	UTILITY RETURN	17-3/4	3/8 O.D ALUM ALLOY	3
TUBE ASSY	145H1802-11	UTILITY RETURN	36-15/16	3/8 O.D. ALUM ALLOY	3
TUBE	145H1802-14	RESERVOIR FILL	18-5/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-15	UTILITY RETURN	34-1/4	5/8 O.D ALUM ALLOY	3
TUBE ASSY	145H1802-17	UTILITY RETURN	15-1/4	3/8 O.D. ALUM ALLOY	3
TUBE	145H1802-20	OVERBOARD DRAIN	36-1/16	3/8 O.D. ALUM ALLOY	3
TUBE	145H1802-22	OVERBOARD DRAIN	43-3/16	3/8 O.D. ALUM ALLOY	3
TUBE	145H1802-24	OVERBOARD DRAIN	35	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-25	OVERBOARD DRAIN	25-1/2	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-27	PWR STRG RETURN	9	3/8 O.D CRES STEEL	1,2
TUBE ASSY	145H1802-29	UTILITY RETURN	34	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-33	RAMP RETURN	21	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-35	UTILITY RETURN	15-5/8	5/8 O.D ALUM ALLOY	3
TUBE	145H1802-38	UTILITY RETURN	23	5/8 O.D. ALUM ALLOY	3
TUBE	145H1802-40	PUMP SUCTION	27-5/8	3/8 O.D ALUM ALLOY	3
TUBE ASSY	145H1802-41	ENG START RETURN	28-3/4	3/4 O.D ALUM ALLOY	3
TUBE ASSY	145H1802-43	ENG START RETURN	37-1/2	3/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-45	ENG START RETURN	25-5/8	3/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-47	ENG START RETURN	55-3/8	3/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-49	ENG START RETURN	29-1/2	3/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-51	OVERBOARD DRAIN	15-1/4	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-53	BOOST RETURN #2	36	5/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-55	BOOST RETURN #2	31-1/2	5/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-57	BOOST RETURN #2	43-1/8	5/8 O.D. ALUM ALLOY	3
TUBE	145H1802-60	OVERBOARD DRAIN	52	1/2 O.D. ALUM ALLOY	3
TUBE	145H1802-62	OVERBOARD DRAIN	8-5/8	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-67	SUCTION	50-3/8	3/8 O.D. ALUM ALLOY	3
TUBE	145H1802-70	OVERBOARD DRAIN	46-7/8	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-71	UTILITY RETURN	18-1/4	3/4 O.D ALUM ALLOY	3
TUBE ASSY	145H1802-73	UTILITY RETURN	36-3/4	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-75	CASE DRAIN	14-3/16	1/2 O.D. ALUM ALLOY	3

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A. Tube Fabrication Data (Sheet 8 of 10)

NOMENCLATURE	PART NUMBER	FUNCTION	FINISHED LENGTH ALONG TUBE C/L	MATERIAL	NOTES
TUBE ASSY	145H1802-77	CASE DRAIN	9-5/16	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-79	UTILITY RETURN	14-3/8	5/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-81	UTILITY RETURN	24-1/2	5/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-83	UTILITY RETURN	23	1 O.D. ALUM ALLOY	3
TUBE	145H1802-86	PUMP SUCTION	34-1/4	1 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-87	CASE DRAIN	20-7/16	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-89	CASE DRAIN	49	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-91	PUMP SUCTION	30-3/8	3/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-93	OVERBOARD DRAIN	4-1/2	1/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-97	BOOST RETURN #1	15-9/16	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-99	BOOST RETURN #1	61	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-103	BOOST RETURN #1	28-1/8	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-105	BOOST RETURN #1	29-3/16	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-107	BOOST RETURN #2	50-9/16	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-109	BOOST RETURN #2	11	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-111	PWR STRG RETURN	22-1/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-117	RETURN	7-1/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-119	RETURN	13	1/4 O.D. CRES STEEL	1,2
TUBE	145H1802-122	RAMP RETURN	3-3/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-123	RETURN	65-1/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-125	RETURN	42-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-127	RETURN	22-1/2	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-129	RETURN	30-3/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-133	RESERVOIR FILL #1	22-3/4	1/4 O.D. CRES STEEL	1,2
TUBE	145H1802-136	RESERVOIR FILL #1	42	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-137	RESERVOIR FILL #1	35-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-139	RESERVOIR FILL #1	34	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-141	RESERVOIR FILL #2	62-3/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-143	RESERVOIR FILL #2	31	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-147	RESERVOIR FILL	23-7/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-149	OVERBOARD DRAIN	27-1/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-151	OVERBOARD DRAIN	18-1/8	1/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-153	OVERBOARD DRAIN	38-9/16	1/4 O.D. CRES STEEL	1,2
TUBE	145H1802-164	RETURN	38-1/2	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-165	RETURN	31-1/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-167	BOOST RETURN #1	19-1/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-169	BOOST RETURN #2	18-15/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-171	BOOST RETURN #1	19-1/16	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-173	BOOST RETURN #2	18-3/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1802-175	RETURN	19-1/2	1 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-177	SUCTION	29-1/2	1 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-179	SUCTION	16-1/4	3/8 O.D ALUM ALLOY	3
TUBE ASSY	145H1802-181	RETURN	10-1/8	1 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-183	CASE DRAIN	28-7/8	3/8 O.D. ALUM ALLOY	3
TUBE	145H1802-186	CASE DRAIN	47-7/8	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-189	UTILITY RETURN	25-3/4	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-191	UTILITY RETURN	22-7/8	5/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1802-193	POWER STEERING RETURN	22	1/4 O.D. CRES STEEL	1.2

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A. Tube Fabrication Data (Sheet 9 of 10)

NOMENCLATURE	PART NUMBER	FUNCTION	FINISHED LENGTH ALONG TUBE C/L	MATERIAL	NOTES
TUBE ASSY	145H1802-197	ENG START RETURN	7-1/8	3/4 O.D. ALUM ALLOY	3
TUBE	145H1802-200	RETURN	36-3/4	5/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1803-1	PRESSURE	14	1/2 O.D. CRES STEEL	1,2
TUBE	145H1803-6	UTILITY PRESS	20-5/8	1/4 O.D. CRES STEEL	1,2
TUBE	145H1803-8	UTILITY PRESS	21-3/8	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1803-11	PRESS	45-3/4	1/2 O.D. CRES STEEL	1,2
TUBE	145H1803-14	PRESS	18	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1803-15	PRESS	68-1/2	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1803-17	BOOST PRESS #2	30-7/16	1/2 O.D. CRES STEEL	1,2
TUBE ASSY	145H1803-23	PRESS	13-1/8	1/2 O.D. CRES STEEL	1,2
TUBE ASSY	145H1803-25	BOOST PRESS #1	71-1/8	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1803-27	BOOST PRESS #2	70	3/8 O.D. CRES STEEL	1,2
TUBE ASSY	145H1804-1	RETURN	10-1/4	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1804-3	UTILITY RETURN	25-3/4	3/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1804-5	BOOST RETURN #2	41-1/8	1/2 O.D. ALUM ALLOY	3
TUBE ASSY	145H1804-7	BOOST RETURN #2	28-15/16	1/2 O.D. ALUM ALLOY	3
TUBE	145H1804-10	RETURN	61-1/8	3/4 O/D. ALUM ALLOY	3
TUBE	145H1804-12	UTILITY RETURN	11-1/2	3/4 O.D. ALUM ALLOY	3
TUBE ASSY	145H1804-21	BOOST SUCTION	49-5/8	1 O.D. ALUM ALLOY	3
TUBE	145H1804-24	RETURN	29-1/4	5/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1804-25	DRAIN	3-1/4	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1804-27	BOOST RETURN # 1	68-1/2	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1804-29	BOOST RETURN #2	67-1/2	3/8 O.D. ALUM ALLOY	3
TUBE ASSY	145H1804-31	FILL	17-3/4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1804-33	CASE DRAIN	4	1/4 O.D. CRES STEEL	1,2
TUBE ASSY	145H1804-35	CASE DRAIN	15-5/8	3/8 O.D. ALUM ALLOY	3

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A. ***Tube Fabrication Data (Continued)***

NOTES

1. ***21-6-9*** **corrosion resistant steel tube. This is original material but is difficult to bend without distortion. It is best used in bending tubes up to 1/2 inch diameter or in straight run tubing with no bends,**

Wall Thickness	**1/4 inch O.D. X 0.020 inch wall**
	3/8 inch O.D. X 0.020 inch wall
	1/2 inch O.D. X 0.026 inch wall
	5/8 inch O.D. X 0.033 inch wall
	3/4 inch O.D. X 0.039 inch wall

2. **MIL-T-6845 corrosion resistant steel tube. This tubing is recommended for all field fabricated tubes and repair sections, This is an acceptable alternate to original tube material. (See note 1.)**

Wall Thickness	**1/4 inch O.D. X 0.028 inch wall (E429.1)**
	3/8 inch O.D. X 0.028 inch wall (E429.2)
	1/2 inch O.D. X 0.042 inch wall (E429.3)
	5/8 inch O.D. X 0.049 inch wall (E429.4)
	3/4 inch O.D. X 0.049 inch wall (E429.5)

3. **6061-T6 aluminum alloy tubing (MIL-T-7081, temp. T-6)**

Wall Thickness	**1/4 inch O.D. X 0.035 inch wall (E427.1)**
	3/8 inch O.D. X 0.035 inch wall (E427.2)
	1/2 inch O.D. X 0.035 inch wall (E427.3)
	5/8 inch O.D. X 0.035 inch wall (E427.4)
	3/4 inch O.D. X 0.035 inch wall (E427.5)
	1 inch O.D. X 0.049 inch wall (E427.6)

4. **All dimensions are in inches.**

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B. Tube Bend Data

PART NUMBER	FLOW REL TO X END	BEND 1				BEND 2				BEND 3				BEND 4			
		DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
114E1042-418		STRAIGHT															
114E4046-125	FROM	9-7/8	1-1/4	80	0												
114E4048-151	–	3-3/8	1-1/4	85	85	4-15/16	1-1/4	30	240	6-15/16	1-1/4	55	0				
114P4302	TO	3-3/8	1	45	150	9-1/4	1	45	330	19-5/8	1	23	266	23-3/8	1	88	0
145H1301-1	–	18-3/4	1	90	0	12-1/2	1	90	200	2-3/16	1	48	292				
145H1301-3	–	18-1/2	1	90	0	13-3/8	1	90	200	2	1	48	292				
145H1301-6	–	8-3/4	1	28	0												
145H1301-7	–	13	1	90	0	2-1/4	1	49	0								
145H1301-9	–	25-13/16	1	90	0	20-5/8	1	15	180	17-1/2	1	95	270	3	1	30	345
145H1301-11	–	29-1/2	1	35	0	18-11/16	1	90	0	7	1	45	180	2-3/8	1	45	180
145H1301-13	–	3-1/4	1	134	0												
145H1301-15	–	3	1	90	0												
145H1301-17	–	22	1	61	0	13-1/2	1	79	176	9	1	92	79				
145H1301-21	FROM	7-5/8	1	30	0	5-3/4	1	30	180								
145H1301-23	TO	14-1/4	1-1/2	16	0	10-1/8	1-1/2	52	90								
145H1301-25	TO	4-1/2	1	36	0	2-3/4	1	36	180								
145H1301-27	-	7-7/8	1	25	0	3-1/8	1	90	180								
145H1301-30	FROM	16-1/4	1	90	0	3-1/8	1	90	0								
145H1301-31	–	5-15/16	1	90	0	2-1/2	1	11	84								
145H1301-33	TO	STRAIGHT															
145H1301-35	FROM	27-7/8	1-3/4	90	0	17-3/16	1-3/4	90	0	4-5/8	1-3/4	25	2				
145H1301-38	TO	9-1/16	1	39	0	4-9/16	1	75	180								
145H1301-39	FROM	9-11/16	1-1/2	163	0	4-1/16	1-1/2	17	0								
145H1301-42	FROM	5-5/8	1	58	0	2-5/16	1	50	130								
145H1301-45	-	30-5/8	1	90	0	22-3/8	1	104	180								
145H1301-47	–	29	1	23	0	24-1/4	1	108	90	20-1/8	1	28	180	4-3/4	1	12	180
145H1301-52	TO	49-3/16	1-1/2	90	0	43-7/8	1-1/2	90	180	31-3/8	1-1/2	90	344	32-7/8	1-1/2	92	257
145H1301-53	-	76-1/8	1	90	0	72-1/2	1	85	0	58-1/2	1	96	230	52-3/4	1	5	322
145H1301-55	-	74	1	45	0	71	1	45	180	55-3/4	1	94	90	45-3/4	1	90	0
145H1301-59	FROM	78-3/4	1-1/2	73	0	76	1-1/2	73	180	58-1/2	1-1/2	94	90	47	1-1/2	90	0
145H1301-61	TO	56-3/8	1-1/2	98	0	42-1/2	1-1/2	75	90	21-7/8	1-1/2	75	134	11-7/8	1-1/2	90	58
145H1301-64	FROM	32-1/2	1-1/2	34	0	30-1/2	1-1/2	34	180	24-1/2	1-1/2	90	180	15-7/16	1-1/2	12	90
145H1301-65	TO	STRAIGHT															
145H1301-68	FROM	45-7/8	1-1/2	6	0	21-3/4	1-1/2	93	180								
145H1301-74	TO	68-1/2	1-1/2	70	0	44-15/15	1-1/2	11	265	34-7/8	1-1/2	87	265	14-1/2	1-1/2	90	193
145H1301-75	FROM	STRAIGHT															
145H1307-78	TO	7-5/8	1-1/2	26	0					2-9/16	1-1/2	26	180				
145H1301-80	TO	4-1/8	1-1/2	45	0												
145H1301-81	TO	20-9/16	1	31	0	19-1/16	1	33	180	17-3/4	1	98	270	13-11/16	1	29	55
145H1301-83	TO	19-1/4	1	60	0	17-1/8	1	62	180	12-5/16	1	90	305	9	1	50	125
146H1301-85	FROM	36-5/8	1	62	0	35	1	90	270	19-3/16	1	90	90	11-5/8	1	31	0
145H1301-88	FROM	34-1/18	1	26	0	33	1	26	180	31-3/4	1	90	270	28	1	90	180
145H1301-89	FROM	20-13/16	1-3/4	90	0	12-7/8	1-3/4	90	262	7-9/16	1-3/4	75	172				
145H1301-91	TO	37-3/4	1-1/2	20	0	35-3/4	1-1/2	27	180	20-1/8	1-1/2	22	180	18-5/8	1-1/2	90	270
145H1301-83	TO	3-1/2	1-1/4	90	0												
145H1301-95	–	33-1/4	1	40	0	31	1	40	195	13-34	1	9	170	7-1/4	1	90	267
145H1301-97	FROM	22-3/4	1-1/2	55	0	19	1-1/2	58	180								

B. Tube Bend Data (Sheet 2 of 20)

BEND DATA																	
		BEND 5				BEND 6				BEND 7				BEND 8			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END		DIAL H DEG BEND	DIAL C SET
145H1301-47	-	3-1/8	1	12	0												
145H1301-52	TO	13-7/16	1-1/2	90	311												
145H1301-53	-	43-11/16	1	90	140	14-5/8	1	76	235	7-1/4	1	92	322				
145H1301-55	-	1	1	90	0	11-1/2	1	45	270	7-5/8	1	45	270		1	90	180
145H1301-59	ROM	21-1/2	1-1/2	90	0	10	1-1/2	98	270	5-5/8	1-1/2	88	186				
145H1301-61	TO	3-3/4	1-1/2	90	235												
145H1301-64	ROM	6	1-1/2	7	90												
145H1301-74	TO	8-1/2	1-1/2	90	13												
145H1301-81	TO	4-5/8	1	90	355												
145H1301-83	TO	3-5/8	1	40	135												
145H1301-86	FROM	7-9/16	1	59	0	2-5/8	1	90	208								
145H1301-88	ROM	13-5/16	1	90	180	5-15/16	1	50	266	3-3/16	1	65	104				
145H1301-91	TO	6	1-1/2	90	151												

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B. Tube Bend Data (Sheet 3 of 20)

BEND DATA																	
		BEND 1				BEND 2				BEND 3				BEN04			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	IAL C SET	DIST FROM X END	RAD	IAL H DEG BEND	HAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	HAL H DEG BEND	HAL C SET
145H1301-99	-	83-3/4	1	95	0	70-1/2	1	60	0	61-3/4	1	90	101	39-1/4	1	90	306
145H1301-101	-	42-5/8	1	85	0	34-1/4	1	2	90	23-1/2	1	16	90	4-1/2	1	16	90
145H1301-103	—	31-1/2	1	23	0	29-5/8	1	23	180	4-1/8	1	23	160	1-1/2	1	23	340
145H1301-105	FROM	19	1-1/2	19	0	17-1/8	1-1/2	90	90	3-7/18	1-1/2	92	342				
145H1301-115	FROM	10-3/8	1-1/2	55	0	6-7/8	1-1/2	51	180								
145H1301-117	TO	16-15/16	2	15	0	8-7/8	2	28	280								
145H1301-119	FROM	46-7/16	1-1/2	90	0	40-5/8	1-1/2	90	270	34-3/8	1-1/2	90	90	26-3/8	1-1/2	60	90
145H1301-121	TO	36-7/16	1-1/2	36	0	33-5/8	1-1/2	38	180	19-1/2	1-1/2	50	315	15-11/16	1-1/2	10	60
145H1301-123	TO	10-3/4	1-1/2	15	0	4-3/16	1-1/2	19	260								
145H1301-125	TO	45-1/4	1-1/2	30	0	41-5/8	1-1/2	90	270	35-3/8	1-1/2	90	90	28	1-1/2	43	90
145H1301-127	FROM	50-5/8	2	90	0	42-5/8	2	43	46	32-13/16	2	29	320	21-7/8	2	46	63
145H1301-129	TO	15-1/4	2	90	0												
145H1301-131	TO	40-5/8	2	12	0	30-1/2	2	18	0	20-1/8	2	44	0	5-3/4	2	88	80
145H1301-133	FROM	31-1/4	1-3/4	10	0	6	1-3/4	22	0	3-1/4	1-3/4	22	180				
145H1301-136	TO	44-5/8	1-1/2	180	0	37-3/4	1-1/2	90	95	30-11/16	1-1/2	45	250	22-1/4	1-1/2	60	48
145H1301-I37	FROM	23-13/16	1	18	0	19-1/2	1	43	340	15	1	45	125	9-3/4	1	40	235
145H1301-139	TO	13-3/4	2	66	0	9-9/16	2	12	90								
145H1301-141	FROM	40-1/4	1-1/2	80	0	34-1/2	1-1/2	80	180	5-3/4	1-1/2	90	0				
145H1301-143		35-1/4	1	24	0	29-1/2	1	34	180	24-1/2	1	90	90				
145H1301-146	-	24	1	41	0	20-5/8	1	41	180	17-1/4	1	65	7	10-1/4	1	65	192
145H1301-151	FROM	24-5/8	1	30	0	21	1	30	180	11-3/16	1	23	172	5-3/8	1	27	282
145H1301-155	FROM	8-3/4	1-1/4	60	0	3-15/16	1-1/4	110	253								
145H1301-158	FROM	5-1/2	1-1/4	20	0	2-15/16	1-1/4	86	30								
145H1301-160	TO	9-1/16	1-1/2	20	0	3-15/16	1-1/4	20	180								
145H1301-161	FROM	19-5/8	1-1/2	90	0	12-5/16	1-1/2	20	74	9-1/2	1-1/2	93	180	3-1/2	1-1/2	90	171
145H1301-163	TO	25-13/16	1 1/4	20	0	21	1-1/4	20	180	17-1/8	1-1/4	90	19				
145H1301-165	TO	19-3/8	1-1/4	16	0	14-5/8	1-1/4	16	180								
145H1301-169	FROM	39-3/4	1	30	0	37-1/4	1	30	180	16-3/4	1	45	180	11-1/2	1	45	180
145H1302-1	TO	18-3/4	1	45	0	15-1/4	1	48	180								
145H1302-3	TO	17	1	45	0	12-7/8	1	30	225								
145H1302-5	TO	17-7/8	1	58	0	14-11/16	1	58	180								
145H1302-7	TO	18	1	48	0	15-7/8	1	48	180								
145H1302-9	TO	4-5/16	1-1/2	20	0												
145H1302 11	FROM	51-1/16	1-1/2	15	0	49-13/16	1-1/2	36	180	47-5/16	1-1/2	99	90	28-5/16	1-1/2	90	18
145H1302-13	TO	6-3/8	1-1/4	44	0	3-15/16	1-1/4	139	180								
145H1302-18	FROM	51-3/8	1-1/2	30	0	49-9/16	1-1/2	52	270	22-1/4	1-1/2	25	220	18-3/16	1-1/2	90	310
145H1302-20	FROM	14-11/16	1-1/2	88	0	6-9/16	1-1/2	90	169								
145H1302-21	TO	53-3/8	1-1/2	90	0	50-3/16	1-1/2	12	90	46-1/4	1-1/2	90	180	42-9/16	1-1/2	90	90
145H1302-23	TO	22-1/2	1-1/2	55	0	18-3/4	1-1/2	58	180								
145H1302-25	FROM	17-15/16	1-1/2	92	0	5-3/16	1-1/2	90	270								
145H1302-27	FROM	20-3/4	1-1/2	104	0	12-3/16	1-1/2	90	251	7	1-1/2	20	341				
145H1302-29	TO	14-11/16	2-1/2	87	0	5-3/16	2-1/2	55	271								
145H1302-31	FROM	8-3/16	1-1/2	20	0												
145H1302-34	TO	38-3/8	2	67	0	30-3/4	2	34	180	25-7/8	2	90	90	14-5/8	2	90	208
145H1302-35	TO	22-13/16	1-1/2	38	0	19-1/2	1-1/2	38	180								

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6. Tube Bend Data (Sheet 4 of 20)

BEND DATA																	
		BEND 5				BEND 6				BEND 7				BEND 8			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
145H1301-119	FROM	19-3/1	1-1/2	90	180												
145H1301-121	TO	9-13/16	1-1/2	50	142												
145H1301-125	TO	19	1-1/2	90	181	7-5/8	1-1/2	63	205	4-1/2	1-1/2	79	15				
145H1301-127	FROM	6-7/8	2	54	302												
145H1301-136	TO	16-7/8	1-1/2	80	325	3-13/16	1-1/2	90	20								
145H1301-137	FROM	5-7/16	1	38	55	2-5/8	1	90	147								
145H1302-11	FROM	20-7/16	1-1/2	90	123	7-1/16	1-1/2	11	303	5-7/16	1-1/2	55	123				
145H1302-21	TO	38-1/2	1-1/2	90	90	20 1/4	1-1/2	90	270	13-1/8	1-1/2	80	157	4-5/16	1-1/2	85	8
145H1302-34	TO	5-1/8	2	68	8												

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B. Tube Bend Data (Sheet 5 of 20)

BEND DATA																	
		BEND 1								BEND 3				BEND4			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
145H1302-37	FROM	26-1/4	1-1/2	34	0	17-5/16	1-3/4	53	198	12	1-3/4	70	22	7-3/16	1-3/4	68	120
145H1302-39	TO	34-1/2	1-1/2	90	0	30-1/4	1-1/2	90	270	24	1-1/2	90	90	14-1/2	1-1/2	55	93
145H1302-41	TO	21-5/8	2	93	0	12-1/4	2	48	90								
145H1302-44	TO	21-5/8	2	93	0	12-1/4	2	48	90								
145H1302-46	FROM	15-1/4	2	40	0	9-1/4	3	40	90								
145H1302-47	FROM	10-15/16	2	40	0	3-7/16	2	40	180								
145H1302-50	FROM	4-1/2	1-1/4	75	0												
145H1302-51	TO	6-7/8	2	53	275	18-3/16	2	40	35	30-7/16	2	54	0				
145H1302-53	FROM	17-1/2	2	90	0												
145H1302-55	FROM	42-3/8	2	12	0	32-1/4	2	18	0	21-7/8	2	44	0	10-3/8	2	90	90
145H1302-57	TO	33-1/2	1-3/4	10	0	8-1/4	1-3/4	25	0	5-1/2	1-3/4	25	180				
145H1302-59	FROM	13-3/4	1-1/2	65	0	9-9/16	1-1/2	65	0								
145H1302-61	FROM	7-1/16	1-3/4	90	0												
145H1302-63	TO	30-1/2	1-1/2	23	0	24-3/8	1-1/2	19	90	15-1/8	1-1/2	62	5	10-1/8	1-1/2	27	5
145H1302-66	FROM	6-13/16	1	90	0												
145H1302-67	TO	21-7/16	1	90	0	14-1/4	1	88	270								
145H1302-69	FROM	28-1/2	1	25	0	13-7/16	1	87	180	6-1/2	1	35	90	2-11/16	1	87	350
145H1302-72	TO	8-3/16	1	45	0												
145H1302-73	TO	19-5/8	1	25	0												
145H1302-76	FROM	52-1/4	1	45	0	46-3/16	1	82	171	38	1	8	320				
145H1302-77	FROM	6	1-1/4	129	0												
145H1302-79	FROM	8	1-1/4	70	0	4-9/16	1-1/4	20	90	3-1/8	1-1/4	20	270				
145H1302-82	TO	19-3/8	1-1/4	90	0												
145H1302-83	TO	STRAIGHT															
145H1302-86	—	STRAIGHT															
145H1302-88	FROM	4-3/8	1-1/2	20	0												
145H1302-89	TO	STRAIGHT															
145H1302-93	TO	42-1/2	1-1/2	78	0	37-1/4	1-1/2	80	180	8-1/2	1-1/2	90	0				
145H1302-95	FROM	14-7/16	1-1/2	92	0	10-1/16	1-1/2	20	90								
145H1302-97	FROM	12-5/16	1-1/2	26	0	10-7/8	1-1/2	21	180	9-1/8	1-1/2	90	270	3-1/2	1-1/2	90	180
145H1302-100	TO	51-5/8	1-1/2	5	0	45-5/8	1-1/2	107	0	41-1/4	1-1/2	18	141	7-3/4	1-1/2	90	181
145H1302-103	TO	7-5/8	1	30	0	5-3/4	1	30	180								
145H1302-105	FROM	4-1/2	1	38	0	2-3/4	1	30	180								
145H1302-108	TO	17-7/16	1	90	0	4-5/16	1	90	0								
145H1302-109	FROM	STRAIGHT															
145H1302-112	FROM	9-1/16	1	39	0	4-9/16	1	75	180								
145H1302-114	TO	4-1/2	1	59	0	2-5/8	1	29	180								
145H1302-116	TO	36-3/16	1-1/2	20	0	32-5/16	1-1/2	115	180	10-5/8	1-1/2	104	185	2-11/18	1-1/2	35	90
145H1302-117	TO	81-3/8	1-1/2	30	0	79-5/8	1-1/2	30	180	62-3/8	1-1/2	91	90	51-3/8	1-1/2	90	0
145H1302-119	FROM	35-3/4	1-1/2	20	0	33-3/4	1-1/2	27	180	18-5/8	1-1/2	31	180	18-5/8	1-1/2	90	270
145H1302-123	TO	3-1/2	1	54	0												
145H1302-125	FROM	16-3/8	1	30	0	13-1/8	1	30	180								
145H1302-127	FROM	12-1/8	1	11	0	8	1-3/4	60	90								
145H1401-2	TO	25-7/8	1-1/2	110	0	18-7/8	1-1/2	90	270	13-1/8	1-1/2	90	290	6-3/4	1-1/2	21	305
145H1401-4	TO	6-1/2	1-1/2	21	0												

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B. Tube Bend Data (Sheet 6 of 20)

BEND DATA																	
		BEND 5				BEND 6				BEND 7				BEND 8			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
145H1302-39	TO	7	1-1/2	90	183												
145H1302-63	TO	8-3/8	1-1/2	27	185												
145H1302-100	TO	30	1-1/2	40	55	27-3/16	1-1/2	62	100	20-5/8	1-1/2	10	160	19-7/16	1-1/2	8	340
145H1302-117	TO	23-3/8	1-1/2	90	0	10-3/4	1-1/2	90	270	6-3/8	1-1/2	90	182				
145H1320-119	FROM	3-1/4	1-1/2	90	140												

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B. Tube Bend Data (Sheet 7 of 20)

BEND DATA

PART NUMBER	BEND 1					BEND 2				BEND 3				BEND 4			
	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
145H1401-5	FROM	UNION STRAIGHT															
145H1401-7	FROM	STRAIGHT															
145H1401-10	-	52	1	30	0	49-1/4	1	30	180	39-5/8	1	30	180	37	1	30	0
145H1401-11	TO	STRAIGHT															
145H1401-14	-	STRAIGHT															
145H1401-15	FROM	113-3/8	1-1/2	18	0	112-1/4	1-1/2	18	180								
145H1401-17	TO	STRAIGHT															
145H1401-19	FROM	STRAIGHT															
145H1401-21	FROM	STRAIGHT															
145H1401-23	FROM	STRAIGHT															
145H1401-26	-	77-1/8	1	18	0	75-5/8	1	18	180								
145H1401-27	FROM	STRAIGHT															
145H1401-29	-	48-1/2	1	18	0	47	1	18	180								
145H1401-31	-	STRAIGHT															
145H1401-33	-	11-3/8	1	90	0	3-3/16	1	90	270								
145H1401-35	-	26-3/4	1	90	0	7-3/8	1	20	0	3-5/16	1	90	270				
145H1401-37	-	48-7/8	1	18	0	45-3/4	1	18	180	36-1/8	1	33	270	27-1/8	1	35	270
145H1401-41	TO	54-3/4	1-1/2	90	0	45-1/8	1-1/2	40	5	42-13/16	1-1/2	40	185	40-9/16	1-1/2	40	185
145H1401-43	-	42	1	40	0	39-1/8	1	45	168	18	1	90	224	9-5/8	1	20	135
145H1401-45	-	46	1	10	0	42-1/4	1	10	180								
145H1401-48	-	27-3/8	1	30	0	22-15/16	1	28	180	9-3/8	1	90	25	2-7/16	1	21	42
145H1401-49	-	49-3/8	1	13	0	44-5/8	1	19	0	35-13/16	1	17	0	26-15/16	1	33	0
145H1401-51	-	39-1/4	1	21	0	35-1/4	1	27	165	17-1/8	1	46	195	14-7/16	1	44	45
145H1401-53	-	11-7/16	1	31	0	6-1/2	1	54	42								
145H1401-51	FROM	54-5/8	1-1/2	43	0	51-5/16	1-1/2	43	0	11-3/16	1-1/2	9	180				
145H1401-59	FROM	43	1-1/2	8	0	37-1/4	1-1/2	38	240	29-1/16	1-1/2	23	250	21	1-1/2	9	250
145H1401-61	-	15-1/4	1	85	0	3-1/16	1	105	90								
145H1401-63	FROM	41-13/16	1	90	0	35-1/8	1	90	0	29-3/8	1	90	204	10-5/16	1	80	244
145H1401-65	-	11	1	34	0	8-1/8	1	34	180								
145H1401 68	TO	50-7/8	1-1/2	30	0	47-1/8	1-1/2	90	270	12-1/2	1-1/2	47	270	7-5/8	1-1/2	47	90
145H1401 70	TO	96	1-1/2	10	0	43-5/8	1-1/2	90	90	8-7/8	1-1/2	43	80	3-5/8	1-1/2	43	260
145H1401 71	FROM	57-3/4	1-1/2	90	0	46-3/4	1-1/2	90	180	14-1/16	1-1/2	50	174	9-1/4	1-1/2	61	23
145H1401-73	TO	50-1/4	1-1/2	90	0	43-1/2	1-1/2	90	180	9-1/4	1-1/2	60	152	5-3/4	1-1/2	60	332
145H1401-75	-	2-5/8	1	51													
145H1401-77	-	5-5/16	1	51	0	2-1/2	1	90	270								
145H1401-79	TO	25	1-1/2	12	0	21	1-1/2	21	180								
145H1402-2	TO	5-5/8	1	32	0												
145H1402-3	TO	STRAIGHT															
145H1402-5	TO	STRAIGHT															
145H1402-7	FROM	STRAIGHT															
145H1402-9	TO	STRAIGHT															
145H1402-11	TO	STRAIGHT															
145H1402-14	-	STRAIGHT															

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B. Tube Band Data (Sheet 8 of 20)

PART NUMBER	FLOW REL TO X END	BEND 5				BEND 6				BEND 7				BEND 8			
		DIST FROM X END	RAD	DIAL H DEG BEND	NAL C SET	DIST FROM X END	RAD	DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
145H1401-37	-	2-3/4	1	83	97												
145H01401-41	TO	23-5/8	1-1/2	30	180	16-1/8	1-1/2	38	180	5-1/8	1-1/2	12	180				
145H1401-43		7-1/4	1	20	315	5-5/8		88	45								
145H1401-49	-	17-1/4	1	35	56	13-1/8	1	35	235								
145H1401-59	FROM	15	1-1/2	12	250	8-1/2	1-1/2	18	163	3-7/8	1-1/2	90	70				
145H1401-63	FROM	2-15/16	1	39	165												
145H1401-68	TO	5-1/4	1-1/2	15	178	3-3/4	1-1/2	15	352								
145H1401-71	FROM	3	1-1/2	28	257												

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B. Tube Bend Data (Sheet 9 of 20)

BEND DATA																	
		BEND 1				BEND 2				BEND 3				BEND 4			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
145H1402-15	FROM UNION	STRAIGHT															
145H1402-17	TO	STRAIGHT															
145H1402-19	TO	STRAIGHT															
145H1402-23	-	STRAIGHT															
145H1402-25	FROM	15-1/4	1-1/2	30	0	12	1-1/2	30	165								
145H1402-28	FROM	64	1-1/2	17	0	61-3/4	1-1/2	90	90	24-7/8	1-1/2	90	0	14-1/2	1-1/2	45	90
145H1402-30	FROM	63-1/4	1-1/2	17	0	61-1/6	1-1/2	90	90	25-1/8	1-1/2	90	0	14-1/2	1-1/2	45	90
145H1402-31	TO	54-1/8	1-1/2	96	0	46-1/2	1-1/2	39	175	14-1/8	1-1/2	39	175	9	1-1/2	54	32
145H1402-33	FROM	49-3/4	1-1/2	90	0	41-3/4	1-1/2	90	180	7-7/8	1-1/2	66	160	4-7/8	1-1/2	66	340
145H1801-1	TO	3-3/4	1-1/2	49	270												
145H1801-3	TO	17-3/4	1-1/2	90	0	13-1/4	1-1/2	90	180	4-5/8	1-1/2	90	82				
145H1801-5	FROM	29-3/8	1-1/2	45	0	25-1/8	1-1/2	45	180	7-3/8	1-1/2	45	10	4	1-1/2	45	190
145H1801-7	FROM	21-1/2	1-1/2	90	0	15	1/1/2	90	180	2-1/8	1-1/2	18	180				
145H1601-9	-	20-1/4	1	90	0	17-1/4	1	53	95	4-7/8	1	31	275				
145H1801-15	-	24-3/8	1	108	0	20-3/4	1	25	160	7-5/16	1	41	215	3-7/8	1	40	33
145H1801-17	-	24-1/2	1	90	0	21	1	90	270	6-7/8	1	37	90				
145H1801-19	TO	34	1	42	0	28-1/8	1	62	180	24-3/16	1	66	0	3-7/8	1	7	0
145H1801-21	-	34-11/16	1	98	0	27-5/8	1	26	170	23-1/8	1	16	350	13-7/16	1	52	267
145H1801-23	TO	14-3/4	1-1/2	90	0	5-1/8	1-1/2	90	180								
145H1801-25	TO	25-3/4	1	40	0	19-3/8	1	40	180	8-3/4	1	48	4	3-1/2	1	48	4
145H1801-27	FROM	46-3/8	1	90	0	4-3/16	1	30	95								
145H1801-29	TO	32-3/18	1	35	0	29-3/18	1	39	90	25-3/8	1	41	275	14-11/18	1	90	270
145H1801-31	FROM	58-1/2	1	60	0	41	1	72	180	7-5/16	1	77	180				
145H1801-33	FROM	42-15/16	1	70	0	39-5/8	1	67	181	34-3/8	1	12	104	28-1/8	1	30	101
145H1801-35	FROM	28	1	45	0	21-1/2	1	55	34								
145H1801-37	TO	7-3/4	1	66	0	5-3/8	1	47	185		1	58	180				
145H1801-40	TO	33-1/4	1	60	0	27-1/2	1	90	90	23-1/4	1	90	210	20-7/8	1	44	117
145H1801-41	TO	8	1	90	0												
145H1801-44	TO	28-1/8	1	90	0	20-1/2	1	90	180	16-3/16	1	90	0	6-15/16	1	90	340
145H1801-45	TO	104	1	45	0	97-3/16	1	45	0	8-3/16	1	45	0	1-15/16	1	45	0
145H1801-47	TO	104	1	45	0	97-3/16	1	45	0	8-3/16	1	45	0	1-15/16	1	46	0
145H1801-49	FROM	8	1	90	0												
145H1801-52	TO	30-5/16	1	90	0	21-7/16	1	24	5	12-7/16	1	17	280	9-13/16	1	68	25
145H1801-54	FROM	16-1/8	1	90	0	13-1/8	1	73	270	7-15/16	1	41	270	5-1/8	1	90	180
145H1801-55	FROM	8-13/16	1	108	0	4-3/8	1	49	253								
145H1801-57	FROM	31-3/16	1	53	0	27-5/8	1	20	0	25-15/16	1	20	160	14-5/16	1	47	290
145H1801-59	FROM	15-11/16	1	30	0	12-5/16	1	31	180	10-1/4	1	90	270				
145H1801-61	TO	16-1/4	1	30	0	13-1/16	1	31	180	11-1/8	1	90	90				
145H1801-63	TO	5-3/16	1	70	0	2-3/4	1	90	90								
145H1801-65	TO	14-1/2	1	90	0	9-3/16	1-1/2	68	270	6-3/8	1-1/2	90	180				
145H1801-67	FROM	9-1/2	1	90	0	3-5/16	1	29	270								
145H1801-70	FROM	32-13/16	1	52	0	18-11/16	1	62	307	13-5/8	1	65	128	8-3/16	1	30	160
145H1801-71	FROM	12-13/16	1	8	0	7-7/8	1	90	270								
145H1801-73	TO	13-5/8	1	8	0	8-7/8	1	90	90								

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B. Tube Bend Data (Sheet 10 of 20)

BEND DATA																	
		BEND 5				BEND 6				BEND 7				BEND B			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
45H1402-28	FROM	9-1/2	1-1/2	90	180												
45H1402-30	FROM	9-3/8	1-1/2	90	180												
45H1402-31	TO	4	1-1/2	29	262												
45H1801-21	—	8-7/8	1	50	90	5-5/8	1	34	3	3-11/16	1	34	178				
145H1801-29	TO	6-13/16	1	90	86	3-5/8	1	16	357								
145H1801-33	FROM	7-11/16	1	62	186	8-1/4	1	71	35								
145H1801-40	TO	19	1	35	291	15-1/4	1	30	297	12-3/8	1	21	117	5-1/8	1	90	205
145H1801-57	FROM	11-3/16	1	47	110												
145H1801-70	FROM	6-7/8	1	27	340												

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B. Tube Bend Data (Sheet 11 of 20)

BEND DATA																	
		BEND 1				BEND 2				BEND 3				BEND 4			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL N DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL N DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL N DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL N DEG BEND	DIAL C SET
145H1801-75	TO	6-1/2	1	90	0	3-3/16	1	70	90								
145H1801-77	FROM	19-7/8	1	90	0	10-3/4	1	41	50	8-7/16	1	40	228	2	1	59	265
145H1801-79	FROM	32	1	90	0												
145H1801-81	FROM	17-1/4	2-1/4	90	0	4-5/8	2-1/4	12	280								
145H1801-83	-	12-1/2	1	90	0												
145H1801-85	FROM	11-3/8	1	18	0	8-5/8	1	59	105	2-3/4	1	40	65				
145H1801-88	TO	30	1	25	0	23-11/16	1	90	90	6-5/16	1	45	0	4-13/16	1	90	270
145H1801-89	FROM	18-1/2	1	30	0	15-1/8	1	31	180	11-11/16	1	90	270				
145H1801-91	FROM	7-1/2	1	28	0	3-3/8	1	49	155								
145H1801-93	TO	25-3/16	1	20	0	22-13/16	1	19	170	7-1/2	1	22	155	5-3/16	1	56	66
145H1801-95		9	1	31	0	2-3/8	1	46	355								
145H1801-97	FROM	26-1/16	1	120	0	22-9/16	1	32	180	16-1/4	1	62	90	11-5/16	1	83	270
145H1801-99	TO	15-5/8	1	92	0												
145H1801-101		35-1/8	1	15	0	29-7/8	1	15	180								
145H1801-103	TO	7-7/16	1	180	0	2	1	15	115								
145H1801-106	-	44-5/18	1	90	0	40-1/2	1	90	180	23-13/16	1	80	188	20-3/8	1	81	3
145H1801-107	FROM	32-1/8	1-1/2	50	0	28-5/8	1-1/2	50	180	24-1/8	1-1/2	36	90	18-3/4	1-1/2	90	180
145H1801-111	FROM	7-1/8	1	46	0	3-3/4	1	55	5								
145H1801-113	FROM	7-3/16	1	75	0	3-1/2	1	74	84								
145H1801-131	FROM	35	1-1/2	30	0	23-1/4	1-1/2	93	270	9-3/4	1-1/2	90	65	4-3/8	1-1/2	17	155
145H1801-135	FROM	24-1/2	1-1/2	90	0	17-5/8	1-1/2	90	0	8-3/4	1-1/2	90	246	3-5/16	1-1/2	86	79
145H1801-141	FROM	41-3/8	1-1/4	90	0	20-3/16	1-1/4	47	240	3-1/4	1-1/4	90	190				
145H1801-143	TO	37	1-1/2	50	0	32-7/16	1-1/2	50	180	20-5/16	1-1/2	40	177	13-7/16	1-1/2	38	10
145H1801-145	FROM	32-5/16	1	112	0	29-11/16	1	19	180	23-13/16	1	90	180	14-1/2	1	80	270
145H1801-150	TO	29-3/16	1	104	0	24-15/16	1	27	247	14-1/8	1	20	270	9-1/4	1	80	270
145H1801-152	FROM	15-1/2	2-1/4	97	0												
145H1801-153	FROM	55-1/4	1	10	0	53-7/8	1	90	90	24-11/18	1	90	255	17-7/8	1	25	165
145H1801-156	TO	23-11/16	1	94	0	14-1/2	1	15	287	8-1/2	1	20	244				
145H1801-157	FROM	22-1/8	1	90	0	13-1/8	1	47	38	9-7/8	1	90	262	4	1	88	83
145H1801-160	TO	9-5/8	1-3/4	46	0	4-5/16	1-3/4	45	23								
145H1801-161	TO	32-7/8	2	50	0	27-1/8	2	50	180	13-3/4	2	40	152	10-1/8	2	40	333
145H1801-163	FROM	48-7/8	2	92	0	44-7/8	2	45	94	32-3/18	2	20	96	27-1/16	2	90	178
145H1801-165	TO	15-13/16	1	144	0	5	2	66	228								
145H1801-167	TO	15-1/4	1	5	0	9-1/16	1	90	90								
145H1801-165	TO	33-5/8	1	90	0	29-15/16	1	40	270	19	1	90	180	2-7/8	1	96	227
145H1801-171	TO	19-1/2	1-1/2	90	0												
145H1801-173	FROM	42-13/16	1-3/4	72	0	37-9/16	1-3/4	47	200	25-1/16	1-3/4	30	335	17-5/16	1-3/4	13	349
145H1801-175	TO	12-3/4	1-1/2	109	0	3-5/8	1-1/2	40	165								
145H1801-177	FROM	41-1/16	2	45	0	35-15/16	2	45	180	24-1/8	2	89	292	8-5/8	2	48	207
145H1801-180	FROM	9-3/16	1-3/4	45	0	5	1-3/4	45	0								
145H1801-181	TO	104	1	45	0	97-3/16	1	45	0	8-13/16	1	45	0	1-15/16	1	45	0
145H1801-182	TO	17-3/8	1	68	0	10	1	75	270	3	1	90	174				
145H1801-187	TO	104	1	45	0	97-3/16	1	45	0	8-13/18	1	45	0	1-15/16	1	45	0
145H1801-191	TO	18-3/16	1	30	0	14-7/8	1	31	180	11-1/2	1	90	90				
145H1801-196	FROM	32-7/16	1	44	0	15-7/16	1	90	40	2-5/8	1	8	310				
145H1801-197	FROM	44-3/8	1-1/2	28	0	31-3/8	1-1/2	23	5	23-5/8	1-1/2	91	96	10-5-/8	1-1/2	88	300

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B. Tube Bend Data (Sheet 12 of 20)

		BEND DATA															
		BEND 5				BEND 6				BEND 7				BEND 8			
145H1801-93	TO	3-1/8	1	130	245												
145H1801-97	FROM	2-3/8	1	90	100												
145H1801-106	-	15-3/16	1	19	107	8-9/16	1	15	277								
145H1801-143	TO	7-1/4	1-1/2	22	128	5-5/16	1-1/2	90	30								
145H1801-145	FROM	11-5/16	1	90	0	5-5/16	1	90	193								
145H1801-153	FROM	9-3/16	1	20	165	3-5/8	1-1/2 1	90	255								
145H1801-163	FROM	4-3/4	2	90	38												
145H1801-173	FROM	8-1/2	1-3/4	90	68												

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E-50 TUBING (Continued) E-50

B. Tube Bend Data (Sheet 13of 20)

BEND DATA																	
		BEND 1				BEND 2				BEND 3				BEND 4			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
145H1801-199	TO	66-3/4	1-1/2	89	0	53-5/8	1-1/2	6	255	32-1/8	1-1/2	87	160	14-1/8	1-1/2	20	70
145H1801-201	TO	8-1/8	1-1/2	108	0	3	1-1/2	24	90								
145H1801-206	FROM	34-1/4	1	14	0	33-1/8	1	90	270	5	1	67	270	2-1/4	1	66	270
145H1801-208	FROM	36-3/4	1	45	0	35	1	90	270	5-3/16	1	66	499	2-7/16	1	66	122
145H1801-211	TO	24-3/8	1	65	0	17-3/4	1	65	180	5-7/8	1	75	305	2-9/16	1	75	125
145H1801-213	TO	30-1/8	1	45	0	28-7/8	1	45	180	22-9/16	1	75	305	5-3/16	1	75	298
145H1801-215	TO	14-1/8	1	50	0	2-3/4	1	65	10								
145H1801-217	TO	14-1/8	1	50	0	2-3/4	1	65	10								
145H1801-219	TO	14-1/8	1	50	0	2-3/4	1	65	10								
145H1801-221	TO	2-7/16	1	130	0												
145H1801-223	--	17-13/16	1	90	0	12-7/16	1	90	270	3-1/8	1	53	90				
145H1801-225	--	6-3/8	1	35	0	2-1/8	1	80	10								
145H1801-227	TO	18-1/2	1	75	0	1-5/8	1	45	295								
145H1801-229	FROM	18-3/4	1	60	0	2-5/8	1	80	305								
145H1801-231	--	13-1/4	1	45	0	10-1/6	1	40	0	3-5/16	1	68	270				
145H1801-233	TO	9-7/8	1	130	0	2-7/16	1	78	109								
145H1801-235	TO	17-1/2	1-1/2	90	0	6-5/8	1-1/2	90	180								
145H1801-237	FROM	13-1/4	1-1/2	90	0	9-7/8	1-1/2	132	270	4-3/8	1-1/2	90	180				
145H1801-239	TO	15-9/16	2-1/2	88	0	6-5/16	2-1/2	29	90								
145H1801-241	FROM	26-3/8	2-1/2	115	0	13-3/8	2-1/2	90	242	2-3/4	2-1/2	9	332				
145H1801-243	FROM	38-1/4	2-1/4	115	0	31-7/8	2-1/4	90	90	7-5/8	2-1/4	92	155				
145H1801-245	TO	30-3/4	1-3/4	8	0	26-11/16	1-3/4	90	90	15-3/4	1-3/4	40	0	9-1/2	1-3/4	48	266
145H1801-247	FROM	14	1	45	0	12	1	43	180	9-3/4	1	50	62	2-3/8	1	38	52
145H1801-250	TO	28-5/8	1	90	0	25-7/8	1	59	270	9-3/4	1	90	180	3	1	19	270
145H1801-251	TO	15-13/16	1	5	0	9-5/16	1	90	270								
145H1801-253	TO	104	1	45	0	97-3/16	1	45	0	8-13/16	1	45	0	1-15/16	1	45	0
145H1801-256	TO	17-5/8	1-1/2	90	0	9-1/8	1-1/2	90	180								
145H1801-257	FROM	62-1/2	1-1/2	90	0	54-15/16	1-1/2	90	292	41-7/8	1-1/2	16	106	21-1/8	1-1/2	90	19
145H1801-261	FROM	27-3/16	1-1/2	90	0	3-3/8	1-1/2	90	0								
145H1801-263	FROM	35-7/8	1-1/2	15	0	28-3/8	1-1/2	92	115	15-1/2	1-1/2	45	198	10-5/8	1-1/2	45	114
145H1801-267	FROM	7-1/2	1	41	0	2-5/16	1	35	160								
145H1801-269	TO	10	1-1/4	102	0	5	1-1/4	108	85								
145H1801-271	FROM	47-15/16	1-1/2	90	0	36-1/4	1-1/2	90	270								
145H1802-1	FROM	14-7/8	1-1/2	90	0	6-1/4	1-1/2	45	270								
145H1802-3	FROM	15-5/8	1-1/2	90	0	10-1/4	1-1/2	90	180	3-1/2	1-1/2	90	60				
145H1802-5	TO	29-3/4	1-1/2	90	0	25	1-1/2	90	180								
145H1802-7	TO	14-1/2	1-1/2	90	0	9-5/8	1-1/2	90	180								
145H1802-9	TO	STRAIGHT															
145H1802-11	TO	36	1-1/2	60	0	32-7/8	1-1/2	82	255	3-15/16	1-1/2	31	145				
145H1802-14	TO	17-3/8	1	20	0	15-1/2	1	38	211	11-7/8	1	90	150	6-3/4	1	40	55
145H1802-15	FROM	32-5/8	2	28	0	24-5/16	2	25	180	14-1/8	2	25	180	2-11/16	2	23	0
145H1802-17	TO	14	1-1/2	32	0	11-5/8	1-1/2	90	270								
145H1802-20	TO	23	1-1/2	24	0	17-11/16	1-1/2	24	0	8-3/16	1-1/2	24	0	1-13/16	1-1/2	31	90
145H1802-22	FROM	41-9/16	1-1/2	20	0	20-15/16	1-1/2	74	310								
145H1802-24	TO	33-1/8	1-1/2	35	0	29-13/16	1-1/2	35	180	14-5/8	1-1/2	10	130	2-3/4	1-1/2	15	154

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E-50 TUBING (Continued) E-50

B. Tube Bend Data (Sheet 14of 20)

BEND DATA																	
		BEND 5				BEND 6				BEND 7				BEND 8			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
145H1801-199	TO	6	1-1/2	15	160	3-1/2	1-1/2	12	340								
145H1801-213	TO	2-7/8	1	74	118												
145H1801-245	TO	3-1/4	1-3/4	62	20												
145H1801-257	FROM	2-3/8	1-1/2	40	109												
145H1801-263	FROM	5	1-1/2	35	193	2-13/16	1-1/2	65	10								
145H1801-14	TO	3-5/16	1	40	236												

E-50 TUBING(Continued) E-50

B. Tube Bend Data (Continued)

BEND DATA																	
		BEND 1				BEND 2				BEND 3				BEND 4			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
145H1802-25	TO	14-15/16	1-1/4	80	0	9-7/8	1-1/4	75	114	2-1/2	1-1/4	30	39				
145H1802-27	FROM	7-3/4	1-1/2	90	0	3-1/2	1-1/2	17	90								
145H1802-29	TO	32-3/16	1-1/2	24	0	28-9/16	1-1/2	90	250	22-9/16	1-1/2	90	75	12-7/8	1-1/2	40	80
145H1802-33	FROM	19-7/8	1-1/2	50	0	11-3/16	1-/12	10	9	6-3/4	1-1/2	61	190				
145H1802-35	TO	13-5/8	2	82	0	6-5/8	2	71	322								
145H1802-38	FROM	21-1/4	1-3/4	35	0	17-1/2	1-3/4	90	90								
145H1802-40	FROM	26-3/4	1	170	0	19-1/8	1	110	115	14-5/16	1	90	209	3	1	90	115
145H1802-41	TO	27-5/16	2	175	0	17	2	54	85	9-3/4	2	28	176	5-1/8	2	92	194
145H1802-43	TO	34-1/4	2	90	0	27-7/8	2	90	180	7	2	90	355				
145H1802-45	FROM	23-5/8	2	42	0	19-1/8	2	40	178	15-1/8	2	30	153	11-3/8	2	30	330
145H1802-47	TO	52-1/8	2	90	0	45-5/8	2	90	181	24-7/8	2	90	8				
145H1802-49	TO	27-9/16	2	177	0	17-1/4	2	54	275	10	2	25	184	5-3/8	2	92	164
145H1802-51	FROM	14-1/8	1-1/2	90	0	11	1-1/2	135	180	5	1-1/2	45	0				
145H1802-53	FROM	33	1-3/4	30	0	27-1/4	1-3/4	45	180	18-1/2	1-3/4	25	180	6-3/4	1-3/4	90	9
145H1802-55	TO	STRAIGHT															
145H1802-57	TO	41-1/2	2	45	0	36-9/16	2	45	223	23-7/8	2	31	296	7-1/4	2	90	28
145H1802-60	TO	50-3/16	1/1-2	27	0	46-9/16	1-1/2	50	45	32-7/8	1-1/2	20	43	16-5/8	1-1/2	45	116
145H1802-62	TO	STRAIGHT															
145H1802-67	FROM	41-7/8	1-1/2	33	0	33-11/16	1-1/2	17	0	25-11/16	1-1/2	17	0	2-13/16	1-1/2	70	177
145H1802-70	TO	36-3/8	1-1/2	92	0	22-1/8	1-1/2	89	150	11-3/16	1-1/2	68	236	2-7/8	1-1/2	45	272
145H1802-71	TO	16-7/8	2	38	0	12-1/4	2	47	356	7-7/8	2	31	72	4	2	23	266
145H1802-73	TO	33-1/16	1/1/2	42	0	27-7/8	1-1/2	42	180	25-1/2	1-1/2	43	270	19	1-1/2	90	180
145H1802-75	FROM	12-3/16	1-1/2	90	0	8-3/16	1-1/2	90	1								
145H1802-77	FROM	6-9/16	1-1/2	90	0												
145H1802-79	TO	11-5/8	2	90	0	5-3/8	2	90	273								
145H1802-81	FROM	22-5/16	2	90	0	11-15/16	2	90	273								
145H1802-83	TO	18	3-1/4	90	0	7-3/4	3-1/4	60	255								
145H1802-86	TO	31-1/4	3-1/4	95	0	24-1/8	3-1/4	88	67	12-7/8	3-1/4	37	7	8-3/4	3-1/4	120	155
145H1802-87	FROM	18-11/16	1-1/2	42	0	16-9/16	1-1/2	42	180	5-11/16	1-1/2	45	127	3-3/16	1-1/2	45	310
145H1802-89	FROM	45	1-1/2	90	0	39-3/4	1-1/2	90	140	32	1-1/2	50	50	18-1/2	1-1/2	90	320
145H1802-91	TO	28-7/8	2-1/4	130	0	18	2-1/4	32	277	10	2-1/4	90	199				
145H1802-93	TO	3-5/8	1	35	0												
145H1802-97	FROM	7-3/4	1-1/2	22	0	6-1/4	1-1/2	22	180		1-1/2						
148H1802-99	TO	60	1-/12	90	0	54	1-1/2	90	193	41-1/16		17	101	18-5/16	1-1/2	90	2
145H1802-103	TO	27-3/16	1-1/2	90	0	3-3/8	1-1/2	90	0		1-1.2						
145H1802-105	TO	28-5/16	1-/12	86	0	18-7/8	1-1/2	55	267	5	1-1/2	90	210				
145H1802-107	TO	48-5/16	1-1/2	45	0	45-7/8	1-1/2	45	180	36-1/4		90	152				
145H1802-109	FROM	9-3/4	1-1/4	90	0	4-7/16	1-1/4	109	87		1						
145H1802-111	FROM	21-1/4	1	43	0	18-13/16	1	44	180	2-15/16		61	265				
145H1802-117	FROM	5-9/16	1	29	0	3-3/16	1	67	170								
145H1802-119	FROM	12-1/4	1	35	0	3-7/8	1	90	270								
145H1802-122	TO	2-1/4	1	48	0						1						
145H1802-123	FROM	62	1	50	0	55-15/16	1	20	330	40-1/16	1	20	355	34-1/8	1	20	175
145H1802-127	TO	21-5/8	1	103	0	17-7/8	1	90	170	13-1/2	1	90	30	3-1/4	1	90	210
145H1802-129	TO	28-3/16	1	128	0	22-15/16	1	41	180	13-7/8	1	90	273	8-3/8	1	90	180
145H1802-133	TO	21-7/8	1	70	0	17-1/8	1	90	90	11-3/16		90	195				

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B. Tube Bend Data (Sheet 16of 20)

BEND DATA																	
		BEND 5				BEND 6				BEND 7				BEND 8			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
145H1802-29	TO	8-1/16	1-1/2	40	263	4-3/8	1-1/2	30	0								
145H1802-60	TO	13-1/8	1-1/2	45	291	10-3/4	1-1/2	72	289	3-3/4	1-1/2	20	282				
145H1802-89	FROM	2-5/8	1-1/2	50	30												
145H1802-123	FROM	32-9/16	1	20	355	26-1/2	1	90	80	11-3/8	1	50	265	7-5/16	1	50	85
145H1802-129	TO	5-7/8	1	90	90												

E-50 TUBING (Continued) E-50

B. Tube Bend Data (Continued)

BEND DATA																	
		BEND 1				BEND 2				BEND 3				BEND 4			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
145H1802-137	TO	34-1/16	1	90	0	31-3/8	1	90	180	21-5/16	1	90	165	17-1/4	1	30	310
145H1802-139	FROM	33-1/8	1	90	0	23-5/16	1	92	93	10-13/16	1	45	246	8-15/16	1	43	68
145H1802-141	TO	61-1/8	1	15	0	54-7/8	1	90	270	41-1/4	1	90	113	34-1/8	1	22	200
145H1802-143	FROM	29-3/8	1	63	0	19-1/2	1	28	46	10-1/2	1	24	224	6-3/8	1	67	32
145H1802-147	FROM	29-3/8	1	90	0	18-1/16	1	90	180	6-1/8	1	90	40				
145H1802-149	TO	26-3/8	1	25	0	20-15/16	1	90	90	16-3/16	1	90	180	12-3/4	1	90	115
145H1802-151	FROM	15-3/8	1	90	0	11-1/2	1	90	180								
145H1802-153	TO	37-3/4	1	90	0	34-1/8	1	13	260	29-13/16	1	67	126	24-3/16	1	63	305
145H1802-164	FROM	36-13/16	1	61	0	33-15/16	1	66	180	10-3/8	1	90	145	4	1	90	324
145H1802-165	FROM	30-1/4	1	40	0	38-1/8	1	40	180	23-3/4	1	60	180	17-13/16	1	50	0
145H1802-167	TO	18-1/8	1	45	0	16-1/8	1	45	180								
145H1802-169	TO	17-15/16	1	45	0	15-15/16	1	45	180								
145H1802-171	TO	18	1	45	0	16	1	45	180								
145H1802-173	TO	17-3/4	1	45	0	15-3/4	1	45	180								
145H1802-175	TO	17-3/4	3-1/4	90	270	11-3/4	3-1/4	90	270								
145H1802-177	TO	26-1/2	3-1/4	50	0	17-1/2	3-1/4	50	180								
145H1802-179	FROM	14-1/2	1-1/2	97	0	6-5/8	1-1/2	22	230								
145H1802-181	FROM	8-1/4	3-1/4	32	0												
145H1802-183	TO	26-3/8	1-1/2	38	0	12-1/2	1-1/2	90	5	3-1/2	1-1/2	90	185				
145H1802-186	FROM	46-7/8	1-1/2	58	0	32-7/8	1-1/2	50	334	29-5/8	1-1/2	50	143	11-5/8	1-1/2	90	275
145H1802-189	FROM	23-1/2	1-1/2	82	0	14	1-1/2	90	90								
145H1802-191	TO	17-1/2	2	90	0	6-5/16	2	90	180								
145H1802-193	TO	20-3/16	1	125	0	15-15/16	1	30	180	11-1/8	1	62	90	2-15/16	1	10	90
145H1802-197	FROM	5-1/4	2	90	0												
145H1802-200	TO	35-1/8	1-3/4	25	0	33-3/8	1-3/4	25	180	29	1-3/4	95	0	14-1/8	1-3/4	88	110
145H1803-1	TO	12-7/16	1-3/4	112	0	7-13/16	1-3/4	155	293								
145H1803-6	FROM	19-11/16	1	85	0	17-1/16	1	85	0	8-9/16	1	55	140	4-11/16	1	58	233
145H1803-8	TO	19-15/16	1	30	0	6-5/8	1	80	200								
145H1803-11	FROM	43-3/4	1-3/4	40	0	37	1-3/4	80	332	32-5/16	1-3/4	80	38	17-7/16	1-3/4	90	52
145H1803-14	FROM	16-5/8	1-1/2	85	0	3-9/16	1-1/2	92	90								
145H1803-17	FROM	28-15/16	1-3/4	73	0	17-13/16	1-3/4	73	216	11-11/16	1-3/4	76	45	4-7/8	1-3/4	90	320
145H1803-23	FROM	11-3/8	1-3/4	45	0	5-11/16	1-3/4	40	90	3-1/8	1-3/4	40	270				
145H1803-25	TO	66-3/8	1-1/2	21	0	60-3/4	1-1/2	23	180	50-15/16	1-1/2	74	81	13-11/16	1-1/2	35	240
145H1803-27	FROM	66-5/8	1-1/2	25	0	60-3/4	1-1/2	29	180	49-3/4	1-1/2	73	270	12-3/8	1-1/2	36	114
145H1804-1	FROM	8-1/8	1-3/4	90	0	3-3/4	1-3/4	38	270								
145H1804-3	TO	16-5/8	2-1/2	88	0												
145H1804-5	TO	21-3/8	1-3/4	90	0	16-13/16	1-3/4	47	90	8	1-3/4	57	90	4-1/8	1-3/4	90	0
145H1804-7	TO	27-3/8	1-3/4	75	0	23	1-3/4	25	270	11-15/16	1-3/4	90	76	5-1/16	1-3/4	90	256
145H1804-10	TO	59-11/16	2-1/2	45	0	50-7/16	2-1/2	90	33	38	2-1/2	48	269	31-7/16	2-1/2	11	7
145H1804-12	TO	9-1/8	2-1/2	55	0	5	2-1/2	55	182								
145H1804-19	TO	16-3/4	2-1/2	49	0		10-7/8	2-1/2	46	172	5	2-1/2	49	299			
145H1804-21	TO	42-11/16	3	15	0	35-3/4	3	41	264	14-3/4	3	90	323				
145H1804-24	TO	27-13/16	2	52	0	21-15/16	2	93	268	11	2	92	1				
145H1804-25	TO	2-3/8	1-1/2	45	0												
145H1804-27	TO	58-7/8	1-1/2	20	180	49-9/16	1-1/2	75	83	13-3/16	1-1/2	35	235	6-7/16	1-1/2	51	283

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B. Tube Bend Data (Sheet 18 of 20)

BEND DATA																	
		BEND 5				BEND 6				BEND 7				BEND 8			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL K DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
145H1802-137	TO	15	1	25	195												
145H1502-141	TO	32-1/4	1	26	20	27-1/2	1	22	211	6-1/2	1	56	205				
145H1808-153	TO	6-1/8	1	56	218	2-11/16	1	60	35								
145H1802-165	FROM	5-7/8	1	65	118	2-7/16	1	63	298								
145H1802-200	TO	9-1/8	1-3/4	15	20												
145H1803-3	FROM	2-3/4	1	58	51												
145H1803-25	TO	6-7/8	1-1/2	52	66												
145H1803-27	FROM	5-13/16	1-1/2	51	281												
145H1804-10	TO	23-7/8	2-1/2	40	50	14-1/2	2-1/2	38	102	5-1/6	2-1/2	38	59				

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E-50 TUBING (Continued) E-50

B. Tube Bend Data (Sheet 19 of 20)

BEND DATA																	
		BEND 1				BEND 2				BEND 3				BEND 4			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
145H1804-29	TO	63-7/8	1-1/2	18	0												
145H1804-31	TO	16-3/4	1	42	0	13-3/4	1	42	190	5-3/4	1	85	247	3	1	38	145
145H1804-33	TO	STRAIG															
145H1804-35	TO	5-1/2	1-1/4	90	270	13-1/8	1-1/4	100	0	8-3/4	1-1/4	88	85				
145H1402-21	FROM	5-1/2	1-1/2	20	90	45	1-1/2	40	0	42-3/4	1-1/2	40	180	40-1/8	1-1/2	40	180
-21 BEND 9	FROM	51-3/8	1-1/2	45	323												
145H1801-13	FROM	2-7/8	1	90	0	56-1/2	1	90	180	39-15/16	1	12	190	38-1/4	1	8	10
-13 BEND 9	FROM	60-5/8	1	34	188												
145H1802-125	FROM	3-3/16	1	90	0	37-7/16	1	90	270	32-1/4	1	90	0	21-3/8	1	44	270
-125 BEND 9	6-1/6	41-7/8	90	0													
145H1802-136	FROM	1	1	70	0	33-13/16	1	20	90	31-3/8	1	26	220	25-1/4	1	17	140
-136 BEND 9	FROM	39-1/2	1	12	130												
145H1803-15	TO	4-1/16	1	71	0	63-5/8	1	96	90	55-1/4	1	86	154	43-5/8	1	44	58
15 BEND 9	TO	67-5/8	1	6	251												
145P0171-1	TO	3-1/8	2	90	90	9-9/16	2	10	0								
145P0171-2	TO	7-3/4	2	90	270	9-9/16	2	10	0								
		7-3/4															

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E-50 TUBING (Continued) E-50

B. Tube Bend Data (Sheet 20 of 20)

BEND DATA																	
		BEND 5				BEND 6				BEND 7				BEND 8			
PART NUMBER	FLOW REL TO X END	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET	DIST FROM X END	RAD	DIAL H DEG BEND	DIAL C SET
145H1402-21	FROM	37-3/4	1-1/2	35	0	23-5/16	1-1/2	30	180	15-7/8	1-1/2	38	180	4-5/8	1-1/2	12	180
145H1801-13	FROM	34-3/8	1	90	110	22-5/16	1	90	276	11	1	41	262	6-15/16	1	41	88
145H1802-125	FROM	19-9/16	1	35	90	16-1/16	1	30	90	13-5/16	1	21	270	8-1/16	1	33	270
145H1802-136	FROM	17-3/16	1	24	45	15-1/4	1	24	280	12-5/8	1	90	70	7-1/4	1	90	220
145H1803-15	TO	32-1/8	1	42	60	24-1/4	1	88	169	19-15/16	1	90	354	10-1/2	1	90	181

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C. Tube Assembly Data

PART NUMBER	END FITTING		END Y FITTING		FLOW REL TO X END	NOMENCLATURE	NOTES
	SLEEVE	NUT	SLEEVE	NUT			
114E4048-125	MS21922-R6	MS21921-6	MS21922-R6	MS21921-6			
114E4028151			BACS13AP8	MS21921-8		TUBE ASSY	4.5
114PA302-1	-	FNAS593-4	-		TO	TUBE ASSY	2
145H1301-1	D10007-04	D10006-04				TUBE ASSY	2
145H1301-3	D10007-04	D10006-04				TUBE ASSY	2
145H1301-8						TUBE	3
145H1301-7			D10007-04	D10006-04		TUBE ASSY	2
145H1301-9			D10007-04	D10006-04		TUBE ASSY	2
145H1301-11	D10007-04	D10007-04				TUBE ASSY	2
145H1301-13			D10007-04	D10006-04		TUBE ASSY	2
145H1301-16	D10007-04	D10006-04				TUBE ASSY	2
145H1301-17			D10019-04	-		TUBE ASSY	2
145H1301-21	D100019-04	-			FROM	TUBE ASSY	2
145H1301-23	D100036-08	-			TO	TUBE ASSY	2
145H1301-25			D10019-04	-	TO	TUBE ASSY	2
145H1301-27	D10019-04	-				TUBE ASSY	2
145H1301-30					FROM	TUBE	3
145H1301-31			D10019-04	-		TUBE ASSY	2
145H1301-33	D10021A-04	-			TO	TUBE ASSY	2
145H1301-35	D10007-08	D10006-08			FROM	TUBE ASSY	2
145H1301-38					FROM	TUBE	3
145H1301-39	D10007-08	D10006-08				TUBE ASSY	2
145H1341-42						TUBE	3
145H1301-45	D10019-04	-				TUBE ASSY	2
145H1301-47	D10019-04	-			TO	TUBE ASSY	2
145H1301-52					TO	TUBE ASSY	2
145H1301-53	D10019-04	-				TUBE ASSY	2
145H1301-55			D10019-04	-		TUBE ASSY	2
145H1301-59			D10019-04	-	FROM	TUBE ASSY	2
145H1301-61			D10007-06	D10006-06	TO	TUBE ASSY	2
145H1301-64					FROM	TUBE	3
145H1301-65	D10019-06	-			TO	TUBE ASSY	2
145H1301-68					FROM	TUBE	3
145H1301-74					TO	TUBE	3
145H1301-75			D10041-0604	-	FROM	TUBE ASSY	2
145H1301-78					TO	TUBE	3
145H1301-80					TO	TUBE	3
145H1301-81			D10007-04	D10006-04	TO	TUBE ASSY	2
145H1301-83			D10007-04	D10006-04	TO	TUBE ASSY	2
145H1301-86					FROM	TUBE	3
145H1301-88					FROM	TUBE	3
145H1301-89	D10019-10	-			FROM	TUBE ASSY	2
145H1301-91	D10019-06	-			TO	TUBE ASSY	2
145H1301-93	D10019-06	D10006-06			TO	TUBE ASSY	2
145H1301-95			D10019-04	-		TUBE ASSY	2
145H1301-97			D1007-08	D10006-06	FROM	TUBE ASSY	2
145H1301-99	D10036-04	-				TUBE ASSY	2
145H1301-101			D10036-04	-		TUBE ASSY	2
145H1301-103			D10007-04	D10006-04		TUBE ASSY	2
145H1301-105			D10007-06	D10006-05	FROM	TUBE ASSY	2
145H1301-115			D100019-06	-	FROM	TUBE ASSY	2
145H1301-117	D10007-08	D10006-08			TO	TUBE ASSY	2
145H1301-119			D10036-06	-	FROM	TUBE ASSY	2

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C. Tube Assembly Data (Sheet 2 of 10)

PART NUMBER	END X FITTING				FLOW REL TO X END	NOMENCLATURE	NOTES
	SLEEVE	NUT	SLEEVE	NUT			
145H1301-121			D10036-06	-	TO	TUBE ASSY	2
145H130-123	D10019-06	-			TO	TUBE ASSY	2
145H1301-125	D10007-06	D10006-06			TO	TUBE ASSY	2
145H1301-127	D10007-08	D10006-08			FROM	TUBE ASSY	2
145H1301-129			D10036-08	-	TO	TUBE ASSY	2
145H1301-131			D10019-08		TO	TUBE ASSY	2
145H1301-133			D10007-08	D10006-08	FROM	TUBE ASSY	2
145H1301-136					TO	TUBE	3
145Hl301-137	D10007-04	D10006-04			FROM	TUBE ASSY	2
145H1301-139			D10019-10		TO	TUBE ASSY	2
l45H1301-141			D10036-06	-	FROM	TUBE ASSY	2
145H1301-143	D10036-04	-			-	TUBE ASSY	2
145H1301-146					-	TUBE	3
145H130-151	D10007-04	D10006-04			FROM	TUBE ASSY	2
145H1301-155	D10019-06	-			FROM	TUBE ASSY	2
145H130-158					FROM	TUBE	3
145H1301-160					TO	TUBE	3
145H1301-161			D10007-06	D10006-06	FROM	TUBE ASSY	2
145H1301-163	D10019-06	-			TO	TUBE ASSY	2
145H1301-165			D10007-06	D10006-06	TO	TUBE ASSY	2
145H1301-169	D10007-04	D10006-04			FROM	TUBE ASSY	2
145H1302-1	D10021A-04	D10021A-04			TO	TUBE ASSY	2
145H1302-3	D10021A-04	D10021A-04			TO	TUBE ASSY	2
145H1302-5	D10021A-04	D10021A-04			TO	TUBE ASSY	2
145H1302-7	D10021A-04	D10021A-04			TO	TU8E ASSY	2
145H1302-9	D10007-06	D10006-06	D10007-06	D10006-06	TO	TUBE ASSY	2
145H1302-11					FROM	TUBE ASSY	2
145H1302-13					TO	TUBE ASSY	2
145H1302-18					FROM	TUBE	3
145H1302-20					FROM	TUBE	3
145H1302-21	D10007-06	D10006-06	D10007-06	D10006-06	TO	TUBE ASSY	2
145H1302-23			D10007-06	D1-0006-06	TO	TUBEASSY	2
145H1302-25	D10007-06	D10006-06			FROM	TUBE ASSY	2
145H1302-27	D10019-06	-			FROM	TUBE ASSY	2
145H1302-29	D10019012	-			TO	TUBE ASSY	2
145H1302-31	D10019-06	-			FROM	TUBE ASSY	2
145H1302-34					TO	TUBE	3
145H1302-35			D10019-06	-	TO	TUBE ASSY	2
145H1302-37	D10007-08	D10006-08			FROM	TUBE ASSY	2
145H1302-39			D10036-06	-	TO	TUBE ASSY	2
145H1302-41			D10019-06	-	TO	TUBE ASSY	2
145H1302-44					TO	TUBE	3
145H1302-46					FROM	TUBE	3
145H1302-47					FROM	TUBE ASSY	2
145H1302-50			D10019D12	-	FROM	TUBE	3
145H1302-51	D10007D10	D10006D10			TO	TUBE ASSY	2
145H1302-53			D10036D10		FROM	TUBE ASSY	2
145H1302-55			D10019D10	-	FROM	TUBE ASSY	2
145H1302-57			D10007D10	010006D10	TO	TUBE ASSY	2

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C. Tube Assembly Data (Sheet 3 of 10)

PART NUMBER	END X FITTING		END Y FITTING		FLOW REL TO X END	NOMENCLATURE	NOTES
	SLEEVE	NUT	SLEEVE	NUT			
45H1302-59			D10045-0604	-	FROM	TUBE ASSY	2
45H1302-61	D10007-08	D10006-08			FROM	TUBE ASSY	2
45H1302-63			D10019-06	-	TO	TUBE ASSY	2
45H1302-66					FROM	TUBE	3
45H1302-67			D10007-04	D10006-04	TO	TUBE ASSY	2
45H1302-69	D10036-04				FROM	TUBE ASSY	2
45H1302-72					TO	TUBE	3
45H1302-73	D10036-04	-			TO	TUBE ASSY	2
45H1302-76					FROM	TUBE	3
45H1302-77			D10041-0806	-	FROM	TUBE ASSY	2
45H1302-79			D10007-06	D10006-06	FROM	TUBE ASSY	2
45H1302-82					TO	TUBE	3
45H1302-83			D10007-06	D10006-06	TO	TUBE ASSY	2
45H1302-86					-	TUBE	3
45H1302-88					FROM	TUBE	3
45H1302-89			D10007-06	D10006-06	TO	TUBE ASSY	2
45H1302-93			D10036-06	-	TO	TUBE ASSY	2
45H1302-95			D10007-06	D10006-06	FROM	TUBE ASSY	2
45H1302-97	D10041-0608	-			FROM	TUBE ASSY	2
45H1302-100					TO	TUBE	3
145H1302-103	D10019-04				TO	TUBE ASSY	2
145H1302-105			D10019-04	-	FROM	TUBE ASSY	2
145H1302-108					TO	TUBE	3
145H1302-109	D10021-04				FROM	TUBE ASSY	2
145H1302-112					FROM	TUBE	3
145H1302-114					TO	TUBE	3
145H1302-116					TO	TUBE	3
145H1302-117			D10019-06	-	TO	TUBE ASSY	2
145H1302-119	D10009-06	-			FROM	TUBE ASSY	2
145H1302-123			D10007-04	D10006-04	TO	TUBE ASSY	2
145H1302-125	010019-04	-			FROM	TUBE ASSY	2
145Hl302-127	D10036D10	-			FROM	TUBE ASSY	2
145H1401-2					TO	TUBE	3
145H1401-4					TO	TUBE	3
145H1401-5	D10036-06	-			FROM UNION	TUBE ASSY	2
145H1401-7	D10036-06	-			FROM	TUBE ASSY	2
145H1401-10					-	TUBE	3
145H1401-11	D10036-06	-			TO	TUBE ASSY	2
145H1401-14					-	TUBE	3
145H1401-15	D10036-06	-	D10007-06	D10006-06	FROM	TUBE ASSY	2
145H1401-17	D10036-06	-			TO	TUBE ASSY	2
145H1401-19	D10036-06	-			FROM	TUBE ASSY	2
145H1401-21	D10036-04	-			FROM	TUBE ASSY	2
145H1401-23	D10036-06				FROM	TUBE ASSY	2
145H1401-26					-	TUBE ASSY	2
145H1401-27	D10036-06	-			FROM	TUBE ASSY	2
145H1401-29	D10036-04	-			-	TUBE ASSY	2
145H1401-31	D10054-04	-			-	TUBE ASSY	2
145H1401-33			D10007-04	D10006-04	-	TUBE ASSY	2

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C. Tube Assembly Data (Sheet 4 of 10)

PART NUMBER	END X FITTING		END Y FITTING		FLOW REL TO X END	NOMENCLATURE	NOTES
	SLEEVE	NUT	SLEEVE	NUT			
145H1401-35	D10019-04	-			-	TUBE ASSY	2
145H1401-37			D10019-04			TUBE ASSY	2
145H1401-41			D10007-08	D10006-06	TO	TUBE ASSY	2
145H1401-43			D10007-04	D10006-04		TUBE ASSY	2
145H140145	D10007-04	D10006-04				TUBE ASSY	2
145H140146						TUBE ASSY	2
145H1401-49			D10019-04			TUBE ASSY	2
145H1401-51			D10007-04	D10006-04		TUBE ASSY	2
145H1401-53	D10036-04	-				TUBE ASSY	2
145H1401-57			D10041-0804	-	FROM	TUBE ASSY	2
145H1401-59			D10019-06	-	FROM	TUBE ASSY	2
145H1401-61	D10007-04	D10006-04			-	TUBE ASSY	2
145H1401-63	D10007-04	D10006-04	D10007-04	D10006-04	FROM	TUBE ASSY	2
145H1401-85			D10007-04	D10006-04	-	TUBE ASSY	2
145H1401-66					TO	TUBE	3
145H1401-70					TO	TUBE	3
145H1401-71			D10007-06	D10006-06	FROM	TUBE ASSY	2
145H1401-73			D10007-06	D1006-06	TO	TUBE ASSY	2
145H1401-75	D10007-04	D1000-04	D10007-04	D10006-04	-	TUBE ASSY	2
145H1401-77	D10007-04	DI0006-04	D10007-04	D10006-04	-	TUBE ASSY	2
145H1401-79			D10019-06	-	TO	TUBE ASSY	2
145H1401-81					TO	TUBE ASSY	2
145H1402-2					TO	TUBE	3
145H1402-3	D10036-08	-			TO	TUBE ASSY	2
145H1402-5	D10036-06	-			TO	TUBE ASSY	2
145H1402-7	D10036-06	-			FROM	TUBE ASSY	2
145H1402-9	D10036-06	-			TO	TUBE ASSY	2
145H1402-11	D10036-06	-			TO	TUBE ASSY	2
145H1402-14					-	TUBE	3
145H1402-15	D10036-06				FROM UNION	TUBE ASSY	2
145H1402-17	D10036-08	-			TO	TUBE ASSY	2
145H1402-19	D10036-06	-			TO	TUBE ASSY	2
145H1402-21			D10007-06	D10006-08	FROM	TUBE ASSY	2
145H1402-23	D10045-0806	-	D10007-08	D10006-08	-	TUBE ASSY	2
145H1402-25			D10019-06	-	FROM	TUBE ASSY	2
145H1402-28					FROM	TUBE	3
145H1402-30					FROM	TUBE	3
145H1402-31			D10007-06	D10006-06	TO	TUBE ASSY	2
145H1402-33			D10007-06	DI0006-06	FROM	TUBE ASSY	2
145H1801-1			D10019-06	-	TO	TUBE ASSY	2
145H1801-3	D10019-06	-			TO	TUBE ASSY	2
145H1801-5			D10019-06	-	FROM	TUBE ASSY	2
145H1801-7			D10019-06		FROM	TUBE ASSY	2
145H1801-9	D10036-04	-			-	TUBE ASSY	2
145H1801-13			D10019-04	-	-	TUBE ASSY	2
145H1801-15			D10019-04	-	-	TUBE ASSY	2
145H1801-17			D10153-04	-		TUBE ASSY	2

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C. Tube Assembly Data (Sheet 5 of 10)

PART NUMBER	END X FITTING		END Y FITTING		FLOW REL TO X END	NOMENCLATURE	NOTES
	SLEEVE	NUT	SLEEVE	NUT			
14H1801-19			D10036-04	-	TO	TUBE ASSY	2
145H1801-21			D10019-04	-	-	TUBE ASSY	2
1451801-23	D10007-06	D10006-06			-	TUBE ASSY	2
145H1801-25			D10007-04	D10006-04	TO	TUBE	3
145H1801-27			D10036-04		FROM	TUBE	3
145H1801-29			D10038-04	-	TO	TUBE	3
145H1801-31	D10008-04	-	D100036-04	-	FROM	TUBE	3
145H1801-33			D10036-04	-	FROM	TUBE	3
145H1801-35			D10007-04	D10006-04	FROM	TUBE	3
145H1801-37	D10007-04	D10006-04	D10013-04	-	TO	TUBE	3
145H1801-40					TO	TUBE	3
145H1801-41			D10007-04	D10006-04	-	TUBE ASSY	2
145H1801-44					TO	TUBE	3
145H1801-45	D10019-04	-	D10019-04	-	TO	TUBE ASSY	2
145H1801-47	D10019-04	-	D10019-04	-	TO	TUBE ASSY	2
145H180-49	D10007-04	D10006-04	D10007-04	D10006-04	FROM	TUBE ASSY	2
145H1801-52					TO	TUBE	3
145H1801-54					FROM	TUBE	3
145H1801-55			D10019-04	-	FROM	TUBE ASSY	2
145H1801-57	D10036-04	-			FROM	TUB ASSY	2
145H1801-59	D10007-04	D10006-04			FROM	TUBE ASSY	2
145H1801-61	D10019-04	-			TO	TUBE ASSY	2
145H1801-63	D10019-04	-			TO	TUBE ASSY	2
145H1801-65	D10045-0604	-			TO	TUBE ASSY	2
145H1801-67			D10019-04	-	FROM	TUBE ASSY	2
45H1801-70					FROM	TUBE	3
145H1801-71	D10007-04	D10006-04			FROM	TUBE ASSY	2
145H1801-73	D10019-04	-			TO	TUBE ASSY	2
145H1801-75	D10019-04	-			TO	TUBE ASSY	2
145H1801-77			D10036-04	-	FROM	TUBE ASSY	2
145H1801-79	D10007-12	D10006-12			FROM	TUBE ASSY	2
145H1801-81			D10007-12	D10006-12	FROM	TUBE ASSY	2
145H1801-83			D10019-04	-		TUBE ASSY	2
145H1801-85			D10007-04	D10006-04	FROM	NBE ASSY	2
145H1801-88					TO	TUBE	3
145H1801-89	D10007-04	D10006-04			FROM	TUBE ASSY	2
145H1801-91			D10019-04	-	FROM	TUBE ASSY	2
145H1801-93			D10007-04	D10006-04	TO	TUBE ASSY	2
145H1801-95	D10007-04	D10006-04			-	TUBE ASSY	2
145H1801-97			D100019-04	-	FROM	TUBE ASSY	2
145H1801-99			D10007-10	D10006-10	TO	TUBE ASSY	2
145H1801-101	**D10007-04**	D10006-04			-	TUBE ASSY	2
145H1801-103			D10007-04	D10006-04	TO	TUBE ASSY	2
145H1801-106	D10007-04	D10006-04				TUBE	3
145H1801-107			D10007-06	D10006-06	FROM	TUBE ASSY	2
145H1801-111			D10019-04	-	FROM	TUBE ASSY	2
145H1801-113	D10019-04	-			FROM	TUBE ASSY	2
145H1801-131			D10036-08	-	FROM	TUBE ASSY	2
145H1801-135			D10007-06	D10006-06	FROM	TUBE ASSY	2

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C. Tube Assembly Data (Sheet 6 of 10)

PART NUMBER	END X FITTING		END Y FITTING		FLOW REL TO X END	NOMENCLATURE	NOTES
	SLEEVE	NUT	SLEEVE	NUT			
145H1801-141			D10007-06	D10006-06	FROM	TUBE ASSY	2
145H1801-143			D10019-06	-	TO	TUBE ASSY	2
145H1801-145	D10007-04	D10006-04			FROM	TUBE ASSV	2
145H1801-150					TO	TUBE	3
145H1801-152					FROM	TUBE	3
145H1801-153	D10007-04	D10006-04	D10007-04	D10006-04	FROM	TUBE ASSY	2
145H1801-156					TO	TUBE	3
145H18o1-157	D10036-04				FROM	TUBE ASSY	2
145H1801-160					TO	TUBE	3
145H1801-161			D10019-10	-	TO	TUBE ASSY	2
145H1801-163			D10007-10	D10006-10	FROM	TUBE ASSY	2
145H1801-165			D10007-10	D10006-10	TO	TUBE ASSY	2
145H1801-167	D10007-04	D10006-04			TO	TUBE ASSY	2
145H1801-169			D10019-04		TO	TUBE ASSY	2
145H1801-171	D10019-08	-			TO	TUBE ASSY	2
145H1801-173			D10007-08	D10006-08	FROM	TUBE ASSY	2
145H1801-175			D10007-06	D10006-06	TO	TUBE ASSY	2
145H1801-177			D10007-10	D10006-10	FROM	TUBE ASSY	2
145H1801-180					FROM	TUBE	3
145H1801-181	D10019-04	-	D10019-04		TO	TUBE ASSY	2
145H1801-183	D10007-04	D10006-04			TO	TUBE ASSY	2
145H1801-187	D10019-04	-	D10019-04	-	TO	TUBE ASSY	2
145H1801-191	D10007-04	D10006-04			TO	TUBE ASSY	2
145H1801-196					FROM	TUBE	3
145H1801-197			D10007-08	D10006-08	FROM	TUBE ASSY	2
145H1801-199			D10019-008	-	TO	TUBE ASSY	2
145H1801-201			D10007-08	-	TO	TUBE ASSY	2
145H1801-206					FROM	TUBE	3
145H1801-208					FROM	TUBE	3
145H1801-211			D10019-04	-	TO	TUBE ASSY	2
145H1801-213			D10019-04	-	TO	TUBE ASSY	2
145H1801-215	D10008-04	-	D10008-04		TO	TUBE ASSY	2
145H1801-217	D10008-04		D10008-04	-	TO	TUBE ASSY	2
145H1801-219	D10008-04	-	D10008-04		TO	TUBE ASSY	2
145H1801-221	D10007-04	D10006-04	D10007-04	D10006-04	TO	TUBE ASSY	2
145H1801-223	D10007-04	-	D10006-04	-	-	TUBE ASSY	2
145H1801-225	D10008-04		D10008-04	-		TUBE ASSY	2
145H1801-227	D10008-04	-	D10008-04	-	TO	TUBE ASSY	2
145H1801-229	D10008-04	-	D10008-04		FROM	TUBE ASSY	2
145H1801-231	D10007-04	D10006-04				TUBE ASSY	2
145H1801-233	D10007-04	D10006-04	D10007-04	D10006-04	TO	TUBE ASSY	2
145H1801-235	D10007-08	D16006-08			TO	TUBE ASSY	2
145H1801-237	D10007-06	D10006-06			FROM	TUBE ASSY	2
145H1801-239			D10007-12	D10006-12	TO	TUBE ASSY	2
145H1801-241	D10007-12	D10006-12			FROM	TUBE ASSY	2
145H1801-243			D10019-12	-	FROM	TUBE ASSY	2
145H1801-245	D10007-08	D10006-08	D10007-08		TO	TUBE ASSY	2
145H1801-247			D10007-04	D10006-04	FROM	TUBE ASSY	2
145H1801-250					TO	TUBE	3

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C. Tube Assembly Data (Continued)

PART NUMBER	END X FITTING		END Y FITTING		FLOW REL TO X END	NOMENCLATURE	NOTES
	SLEEVE	NUT	SLEEVE	NUT			
145H1801-251	D10007-04	D10006-04			TO	TUBE ASSY	2
145H1801-253	D10019-04	-	D10019-04	-	TO	TUBE ASSY	2
145H1801-256					TO	TUBE	3
145H1801-257			D10007-06	D10006-06	FROM	TUBE ASSY	2
145H1801-261	D10019-06	-	D10019-06	-	FROM	TUBE ASSY	2
145H1801-263			D10019-06	-	FROM	TUBE ASSY	2
145H1801-267					FROM	TUBE ASSY	2
145H1801-269	D10007-06	D10006-06			TO	TUBE ASSY	2
145H1801-271			D10041-0604	-	FROM	TUBE ASSY	2
145H1802-1	D10007-06	D10006-06			FROM	TUBE ASSY	2
145H1802-3	D10019-06	-			FROM	TUBE ASSY	2
145H1802-5			D10019-08	-	TO	TUBE ASSY	2
145H1802-7			D10007-06	D10006-06	TO	TUBE ASSY	2
145H1802-9	D10019-06	-			TO	TUBE ASSY	2
145H1802-11			D10007-06	D10006-06	TO	TUBE ASSY	2
145H1802-14					TO	TUBE	3
145H1802-15			D10007D10	D10006D10	FROM	TUBE ASSY	2
145H1802-17	D10007-06	D10006-06			TO	TUBE ASSY	2
145H1802-20					TO	TUBE	3
145H1802-22					*FROM*	TUBE	3
145H1802-24					TO	TUBE	3
145H1802-25			D10036-06	-	TO	TUBE ASSY	2
145H1802-27	D10045-0604	-			FROM	TUBE ASSY	2
145H1802-29	D10036-06	-			TO	TUBE ASSY	2
145H1802-33			D10007-06	D10006-06	FROM	TUBE ASSY	2
145H1802-35			D10007D10	D10006D10	TO	TUBE ASSY	2
145H1802-38					FROM	TUBE	3
145H1802-40					FROM	TUBE	3
145H1802-41	D10019D12	-			TO	TUBE ASSY	2
145H1802-43			D10007D12	D10006D12	TO	TUBE ASSY	2
145H1802-45	D10019D12	-			FROM	TUBE ASSY	2
145H1802-47	D10007D12	D10006D12			TO	TUBE ASSY	2
145H1802-49	D10019D12		D10007D12	BACN10ZA12D	TO	TUBE ASSY	2
145H1802-51			D10007-08	D10006-08	FROM	TUBE	3
145H1802-53	D10036D10	-			FROM	TUBE ASSY	2
145H1802-55			D10019D10	-	TO STRAIGHT	TUBE ASSY	2
145H1802-57			D10007D10	D10006D10	TO	TUBE ASSY	2
145H1802-60					TO	TUBE	3
145H1802-62					TO	TUBE	3
145H1802-67	D10036-06	-			FROM	TUBE ASSY	2
145H1802-70					TO	TUBE	3
145H1802-71	D10007D12	D10006D12			TO	TUBE ASSY	2
145H1802-73			D10007-06	D10006-06	TO	TUBE ASSY	2
145H1802-75	D10007-08	D10006-08			FROM	TUBE ASSY	2
145H1802-77	D10007-08	D10006-08			FROM	TUBE ASSY	2
145H1802-79			D10007D10	D10006D10	TO	TUBE ASSY	2

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C. Tube Assembly Data (Sheet 8 of 10)

PART NUMBER	END X FITTING		END Y FITTING		FLOW REL TO X END	NOMENCLATURE	NOTES
	SLEEVE	NUT	SLEEVE	NUT			
145H1802-81	D10019010		D10007010	D10006010	FROM	TUBE ASSY	
145H1802-83	D10007016	D10006D16			TO	TUBE ASSY	2
145H1802-86					TO	TUBE	2
145H1802-87	D10007-06	D10006-06			FROM	TUBE ASSY	3
145H1802-89			D10007-06	D10006-06	FROM	TUBE ASSY	2
145H1802-91	D10019012	-			TO	TUBE ASSY	2
145H1802-93			D10007-04	D10006-04	TO	TUBE ASSY	2
145H1802-97	D10041-0608	-			FROM	TUBE ASSY	2
145H1802-99			D10007-06	D10006-06	TO	TUBE ASSY	2
145H1802-103	D10019-06		D10073-06		TO	TUBE ASSY	2
145H1802-105			D10041-0808	-	TO	TUBE ASSY	2
145H1802-107			D10019-06		TO	TUBE ASSY	2
145H1802-109			D10007-06	D10006-06	FROM	TUBE ASSY	2
145H1802-111	D10036-04	-			FROM	TUBE ASSY	2
145H1802-117	D10007-04	D10006-04	D10019-04		FROM	TUBE ASSY	2
145H1802-119	D10007-04	D10006-04			FROM	TUBE ASSY	2
145H1802-122					TO	TUBE	3
145H1802-123			D10045-0406		FROM	TUBE ASSY	2
145H1802-125	D10007-04	D10006-04			FROM	TUBE ASSY	2
145H1802-127	D10019-04				TO	TUBE ASSY	2
145H1802-129	D10007-04	D10006-04	D10019-04		TO	TUBE ASSY	2
145H1802-133	D1OO36-04				TO	TUBE ASSY	2
145H1802-136					FROM	TUBE	3
145H1802-137			D1007-04	D10006-04	TO	TUBE ASSY	2
145H1802-139	D10038-04				FROM	TUBE ASSY	2
145H1802-141	D10038-04				TO	TUBE ASSY	2
145H1802-143			D10007-04	D10006-04	FROM	TUBE ASSY	2
145H1802-147			D10019-04		FROM	TUBE ASSY	2
145H1802-149			D10007-04	D10006-04	TO	TUBE ASSY	2
145H1802-151			D10007-04	D10006-04	FROM	TUBE ASSY	2
145H1802-153			D10007-04	D10006-04	TO	TUBE ASSY	2
145H1802-164					FROM	TUBE	3
145H1802-165			D10019-04	-	FROM	TUBE ASSY	2
145H1802-167					TO	TUBE ASSY	2
145H1802-169					TO	TUBE ASSY	2
145H1802-171					TO	TUBE ASSY	2
145H1802-173					TO	TUBE ASSY	2
145H1802-175			D10059016	-	TO	TUBE ASSY	2
145H1802-177			D10059016		TO	TUBE ASSY	2
145H1802-179			D10007-06	D10006-06	FROM	TUBE ASSY	2
145H1802-181	D10059016				FROM	TUBE ASSY	2
145H1802-183	D10041-0608				TO	TUBE ASSY	2
145H1802-188					FROM	TUBE	3
145H1802-189	D10007-06	D10006-06			FROM	TUBE ASSY	2
145H1802-191	D1007D10	D10006D10			TO	TUBE ASSY	2
145H1802-193			D10019-04		TO	TUBE ASSY	2
145H1802-197	D10007D12	D10006D12			FROM	TUBE ASSY	2
145H1802-200					TO	TUBE	3

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C. Tube Assembly Data (Continued)

PART NUMBER	END X FITTING		END Y FITTING		FLOW REL TO X END	NOMENCLATURE	NOTES
	SLEEVE	NUT	SLEEVE	NUT			
145H1803-1			D10007-08	D10006-08	TO	TUBE ASSY	2
145H1803-6					FROM	TUBE	3
145H1803-11	D10007-08	D10006-08			FROM	TUBE	3
145H1803-14					FROM	TUBE ASSY	2
145H1803-15			D10007-04	D10006-04	TO	TUBE	3
145H1803-17			D10007-08	D10006-08	FROM	TUBE ASSY	2
145H1803-23	D10007-08	D10006-08			FROM	TUBE ASSY	2
145H1803-25	D10019-06	-	D10019-06	-	TO	TUBE ASSY	2
145H1803-27	D10007-06	D10006-06	D10019-06	-	FROM	TUBE ASSY	2
145H1804-1			D10007-08	D10006-08	FROM	TUBE ASSY	2
145H1804-3			D10019D12	-	TO	TUBE ASSY	2
145H1804-5	D10007-08	D10006-08	D10007-08	D10006-08	TO	TUBE ASSY	2
145H1804-7			D10007-08	D10006-08	TO	TUBE ASSY	2
145H1804-10					TO	TUBE	3
145H1804-12					TO	TUBE	3
145H1804-19	BACE21BW12D				TO	TUBE ASSY	3
145H1804-21	DlW19D16	-			TO	TUBE ASSY	2
145H1804-24					TO	TUBE	3
145H1804-25			D10007-06	D10006-06	TO	TUBE ASSY	2
145H1804-27	D10019-06	-	D10019-06	-	TO	TUBE ASSY	2
145H1804-29	D10007-06	D10006-06	D100019-06	-	TO	TUBE ASSY	2
145H1804-31			D10007-04	D10006-04	TO	TUBE ASSY	2
145H1804-33	D10021A-04	-			TO	TUBE ASSY	2
145H1804-35	D10007-06	D10006-06	D10045-0604	-	TO	TUBE ASSY	2
145P0171-1	-			NAS593-16	TO	TUBE ASSY	-
145P0171-2	-			NAS593-16	TO	TUBE ASSY	-

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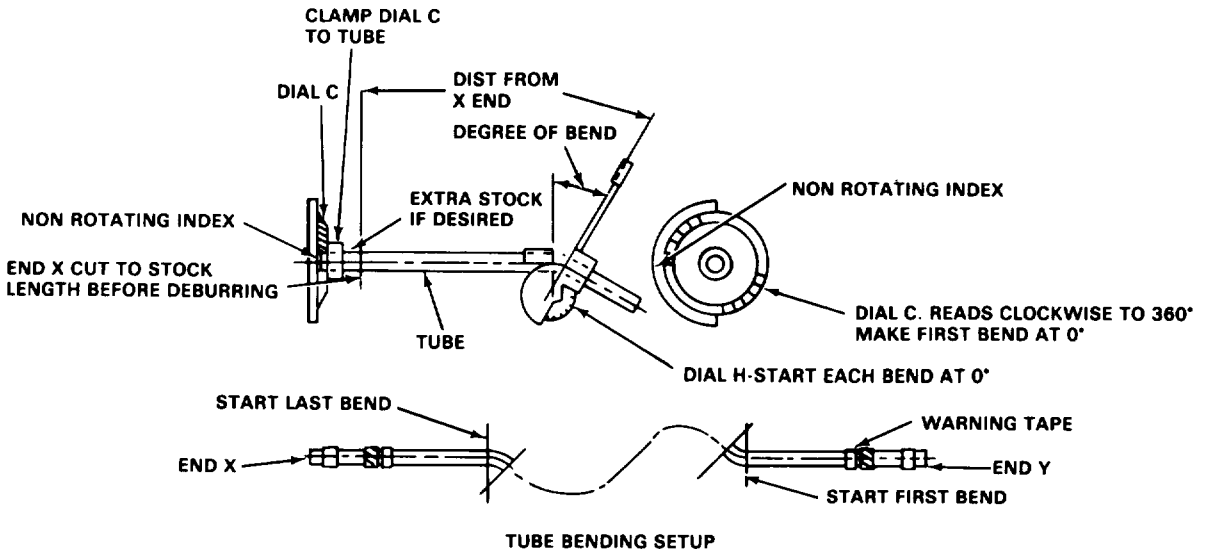
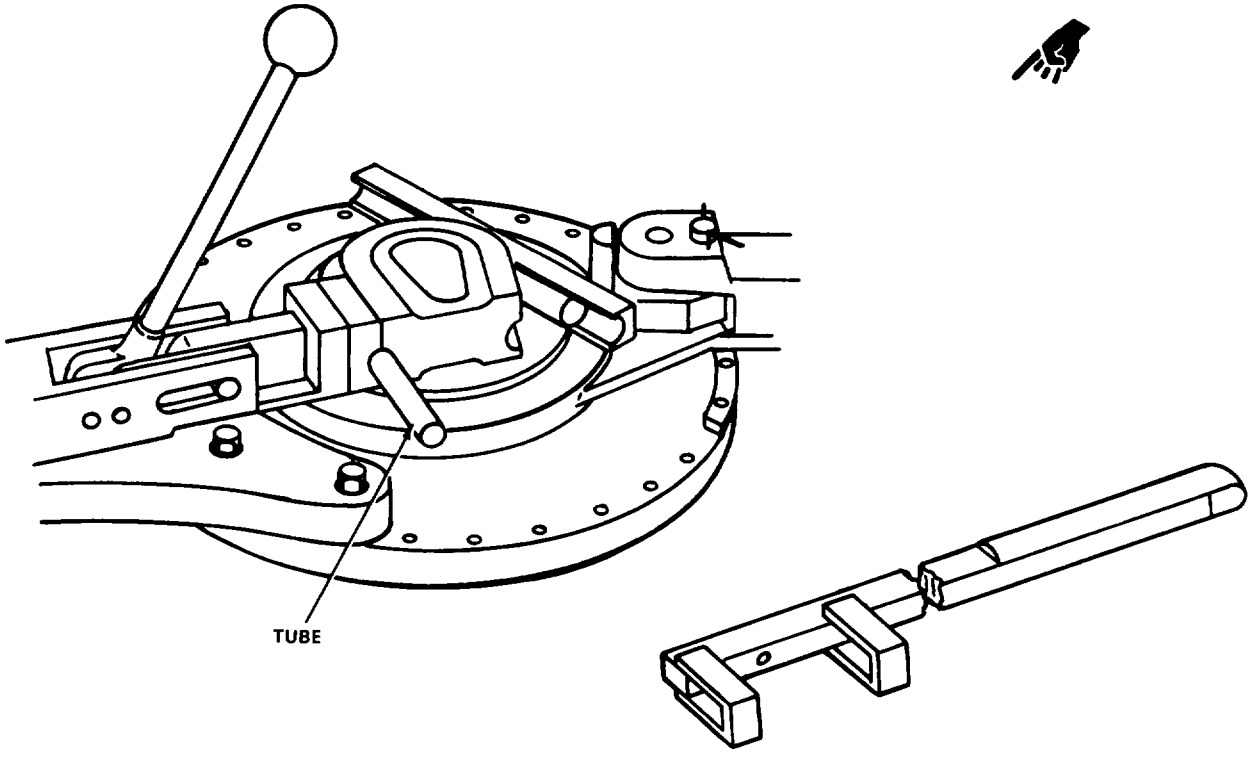
C. Tube Assembly Data (Sheet 10 of 10)



TUBE BENDING SETUP

NOTES:

1. FABRICATE AND TEST PER TM 55-1500-240 -25/1 AIRCRAFT MAINTENANCE MANUAL.
2. INSTALL IDENTIFICATION PER MIL-STD-1247.
3. BEND RADII TO BE IN ACCORDANCE WITH MS33611.
4. ALL DIMENSIONS ARE IN INCHES.



END OF TASK

E-51 THREE PRONG SEAL INSTALLATION TOOL

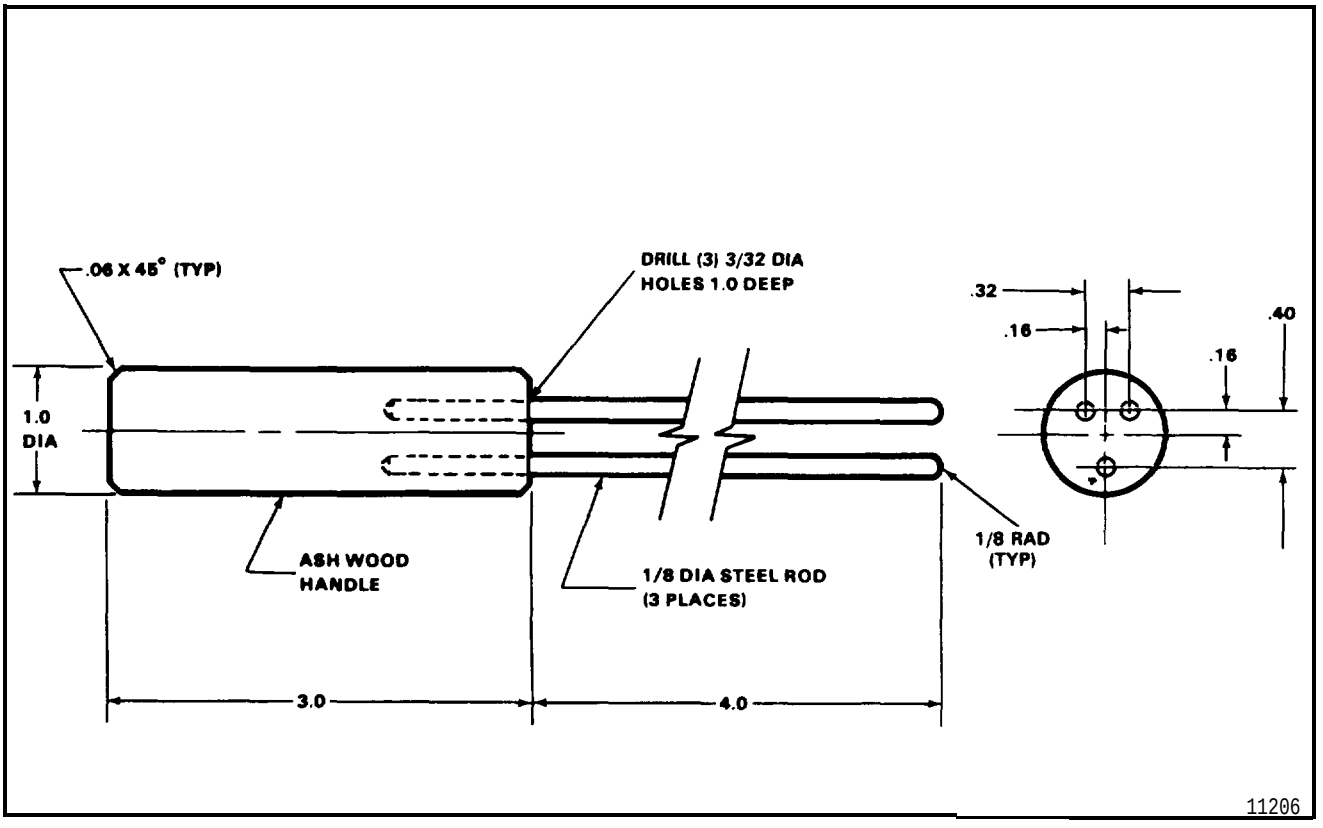
NOTES:

1. FABRICATE FROM 4130 STEEL (E369.1) AND WHITE ASH WOOD (E 160.2).

2. ALL DIMENSIONS IN INCHES.

3. TOLERANCES:

   .X = ±.1
   .XX = ± .02



END OF TASK

NOTES:

1. FABRICATE FROM NYLON OR DELRIN PLASTIC (E160.3).

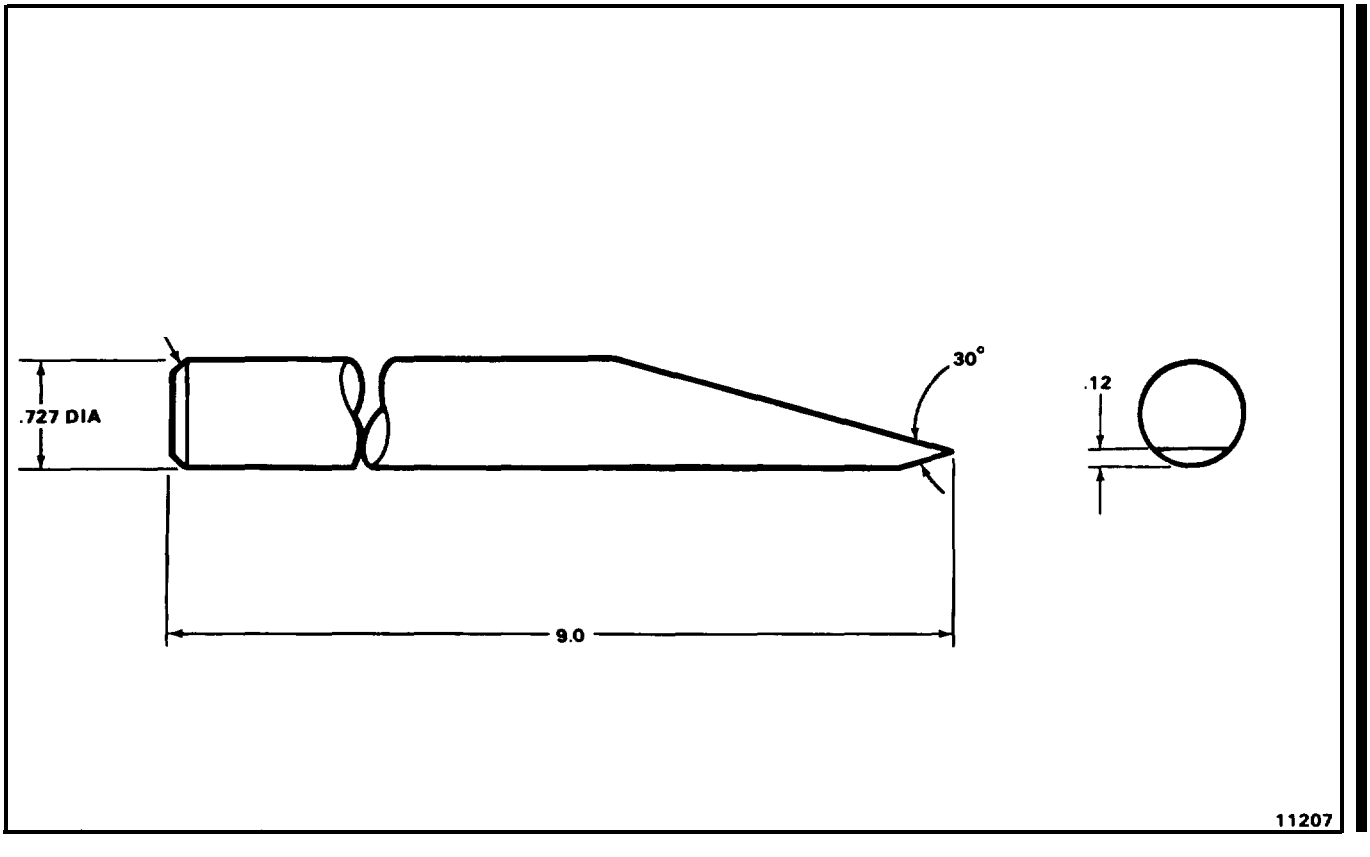
2. ALL DIMENSIONS IN INCHES.

3. TOLERANCES:

. X = ± . 1
.XX = ± .03
.XXX = ± .010

ANGLES: ± 2°

4. BREAK ALL EDGES TO .04 MIN.



END OF TASK

E-53 AFT LANDING GEAR DRAG LINK/ SHOCK STRUT LINERS E-53

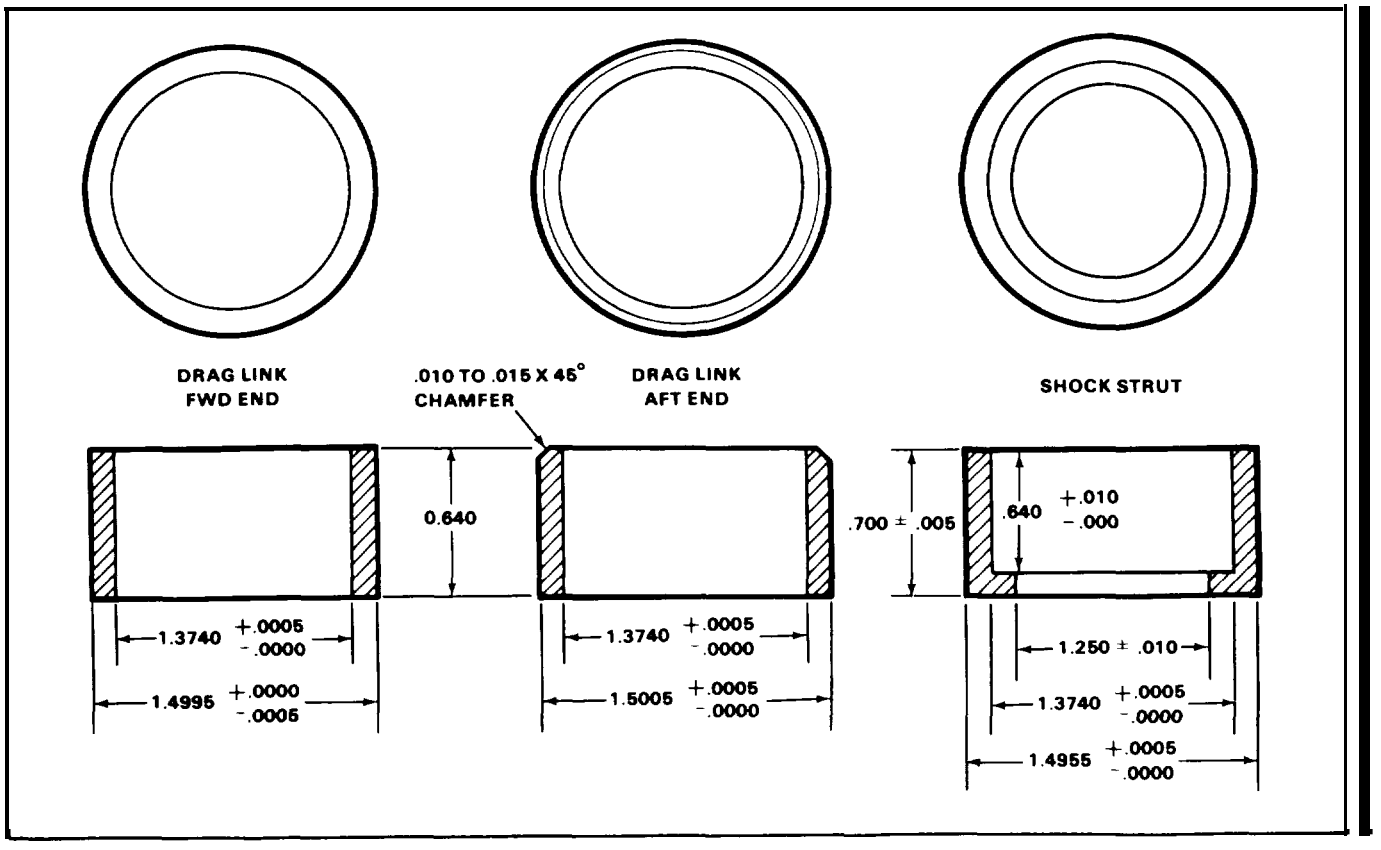
PREFERRED

1. ALL DIAMETERS CONCENTRIC WITHIN 0.005 TIR
2. MACHINE FINISH
3. CADMIUM PLATE PER QQ-P-416
4. HEAT TREAT TO 150,000 PSI UTS MIN
5. MATERIAL: 4340 STEEL BAR PER AMS 6415 OR MIL-S-5000 (E366.1)
6. BREAK SHARP EDGES 0.005 MAX

ALTERNATE

1. MATERIAL: 4340 CONDITION N
2. ALL DIAMETERS CONCENTRIC WITHIN 0.005 TIR
3. BREAK SHARP EDGES 0.005 MAX

ALL DIMENSIONS IN INCHES

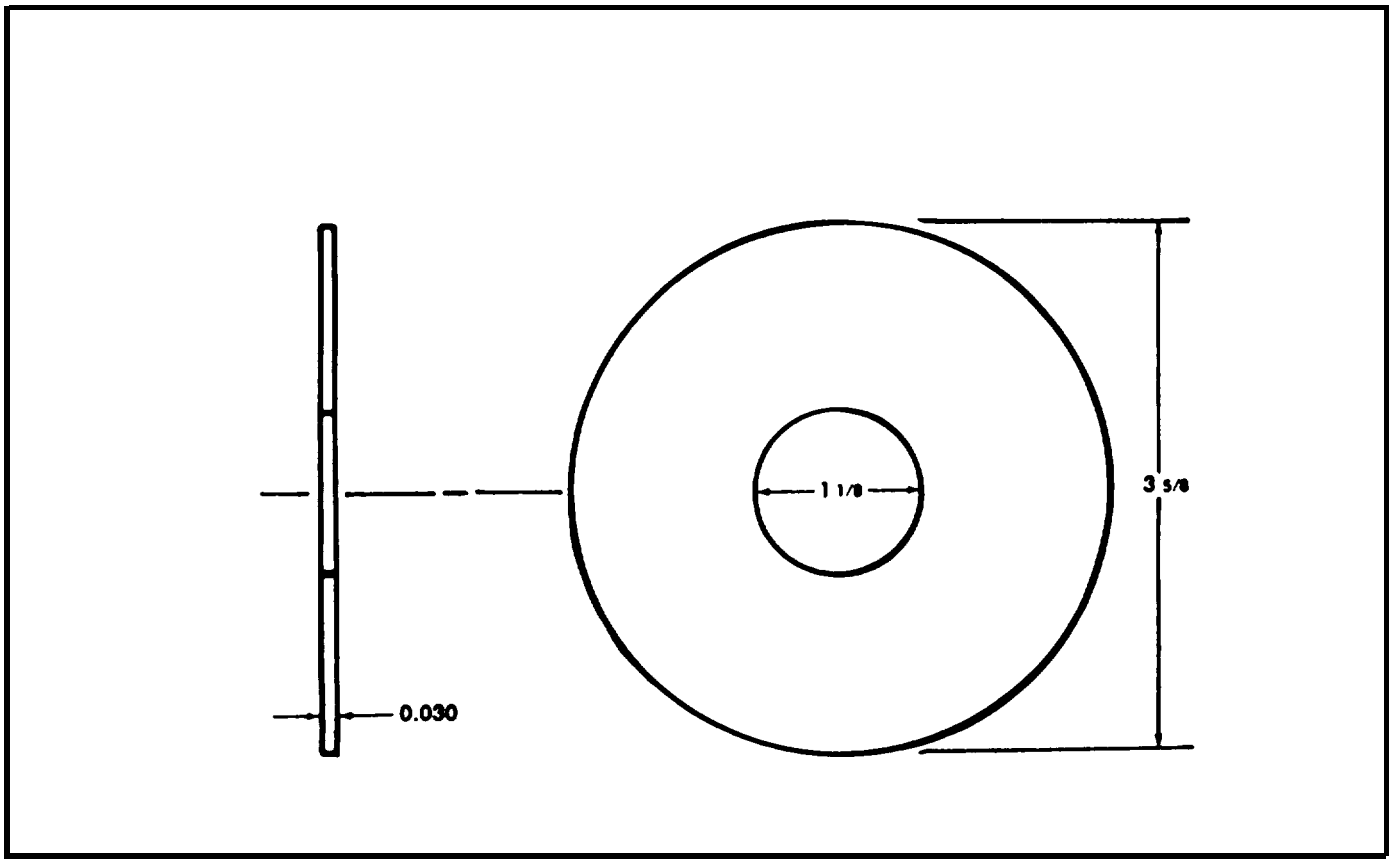


END OF TASK

NOTES:

1. FABRICATE FROM 9330-00-421-4218.

2. ALL DIMENSIONS IN INCHES.

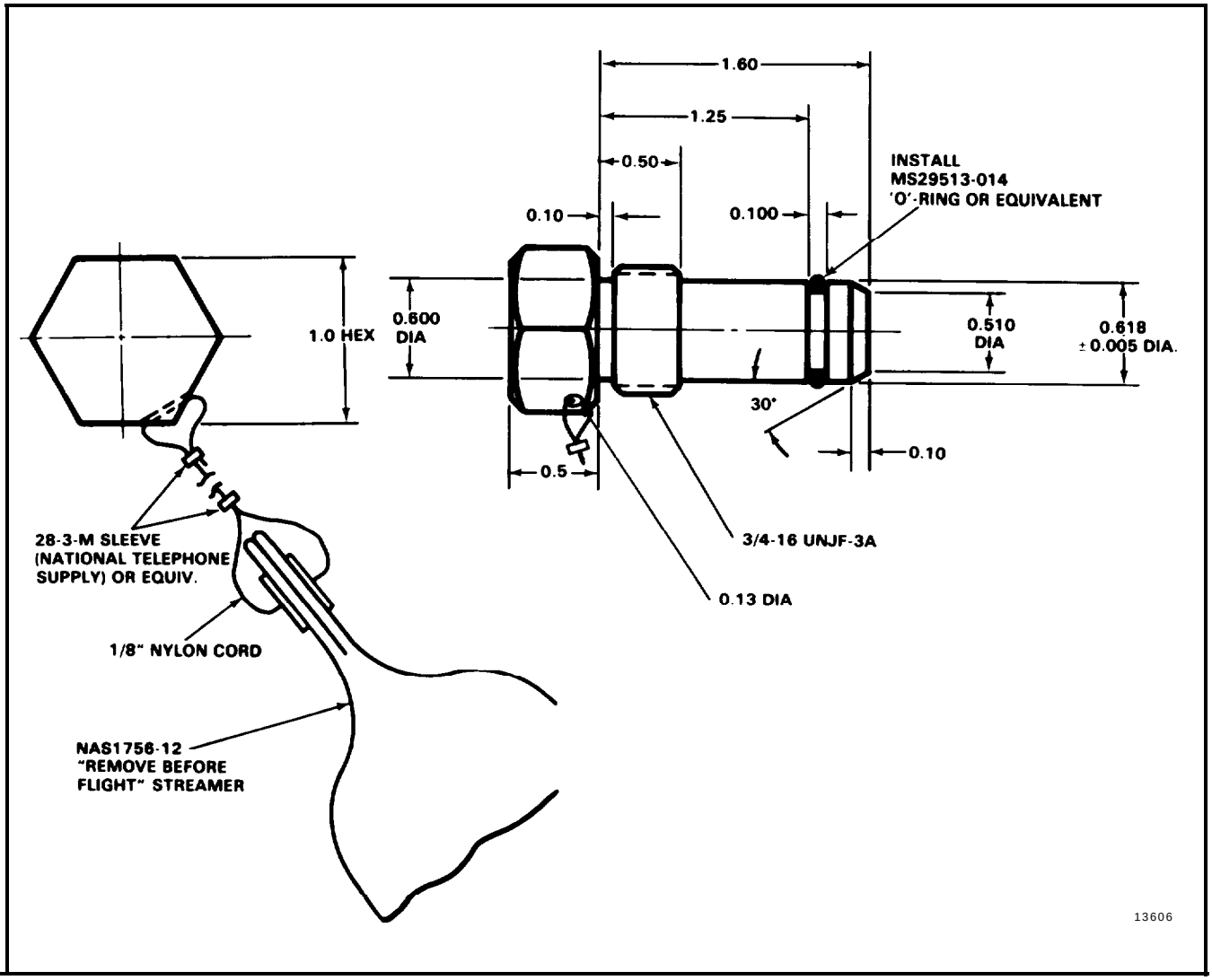


END OF TASK

E-55 FUEL TANK TEST PLUG E-55

NOTES:

1. THIS SKETCH IS FOR LOCAL MANUFACTURE OF A PLUG TO BE USED IN PLACE OF 114PS509-1 DRAIN VALVE.
2. BREAK ALL SHARP EDGES.
3. TOLERANCES .X ±0.1, .XX ±0.03, .XXX ±0.010 EXCEPT AS NOTED.
4. PLUG MATERIAL: 2024-T3 AL ALY OR EQUIVALENT.
5. ALL DIMENSIONS IN INCHES.



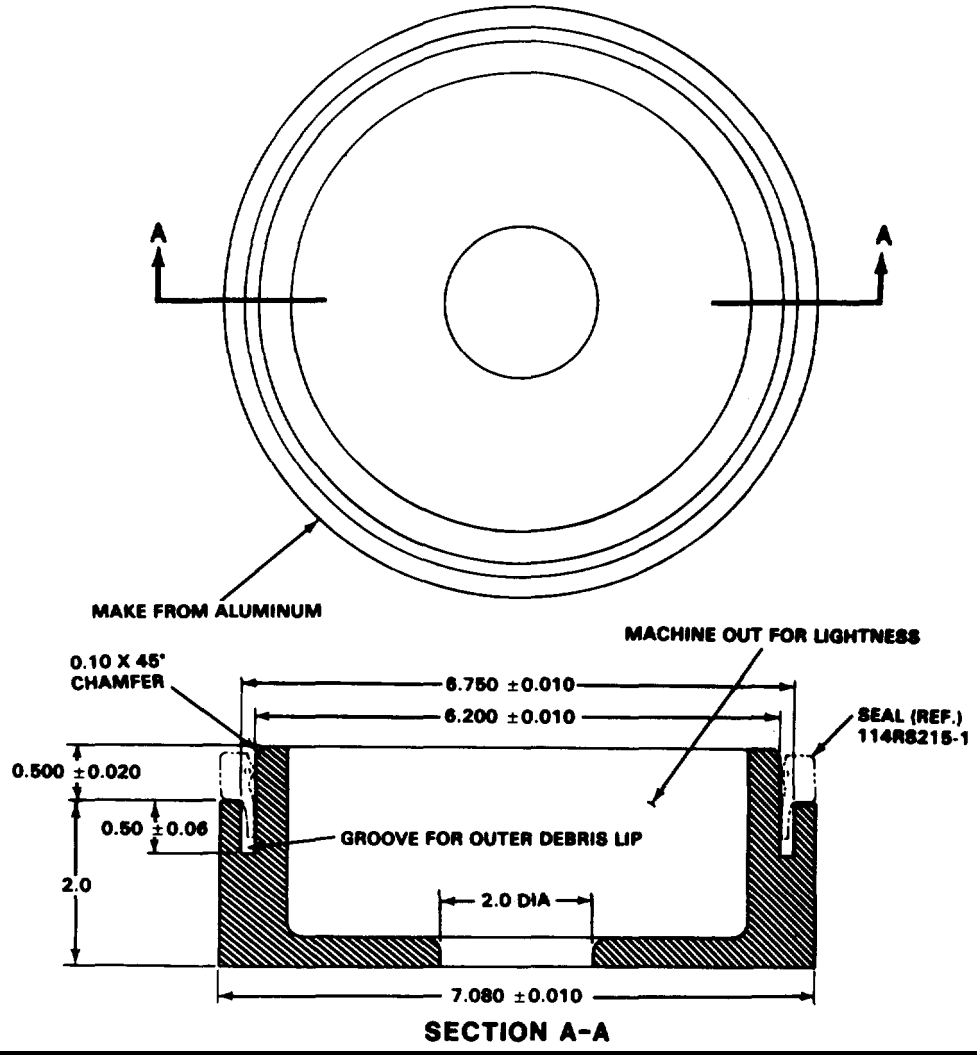
END OF TASK

NOTES:

1. FABRICATE FROM ALUMINUM.

2. ALL DIMENSIONS IN INCHES.

3. BREAK ALL SHARP EDGES 0.030 TO 0.060.



END OF TASK

E-57 MODIFIED SOCKET

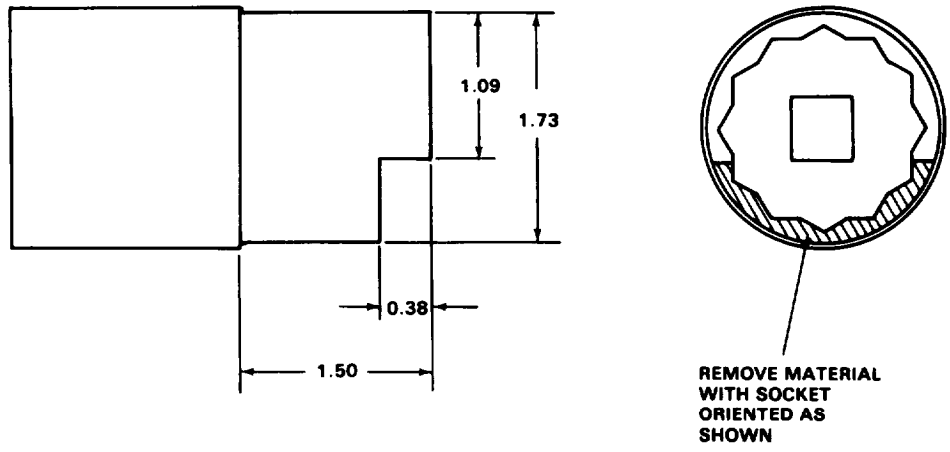
NOTES:

1. FABRICATE FROM A DEEP, 12 POINT, 1 -3/8 INCH SOCKET WITH 1/2 INCH DRIVE.

2. ALL DIMENSIONS IN INCHES,

3. MACHINE DIMENSIONS TO ±0.03 INCH.

4. REMOVE ALL SHARP EDGES.

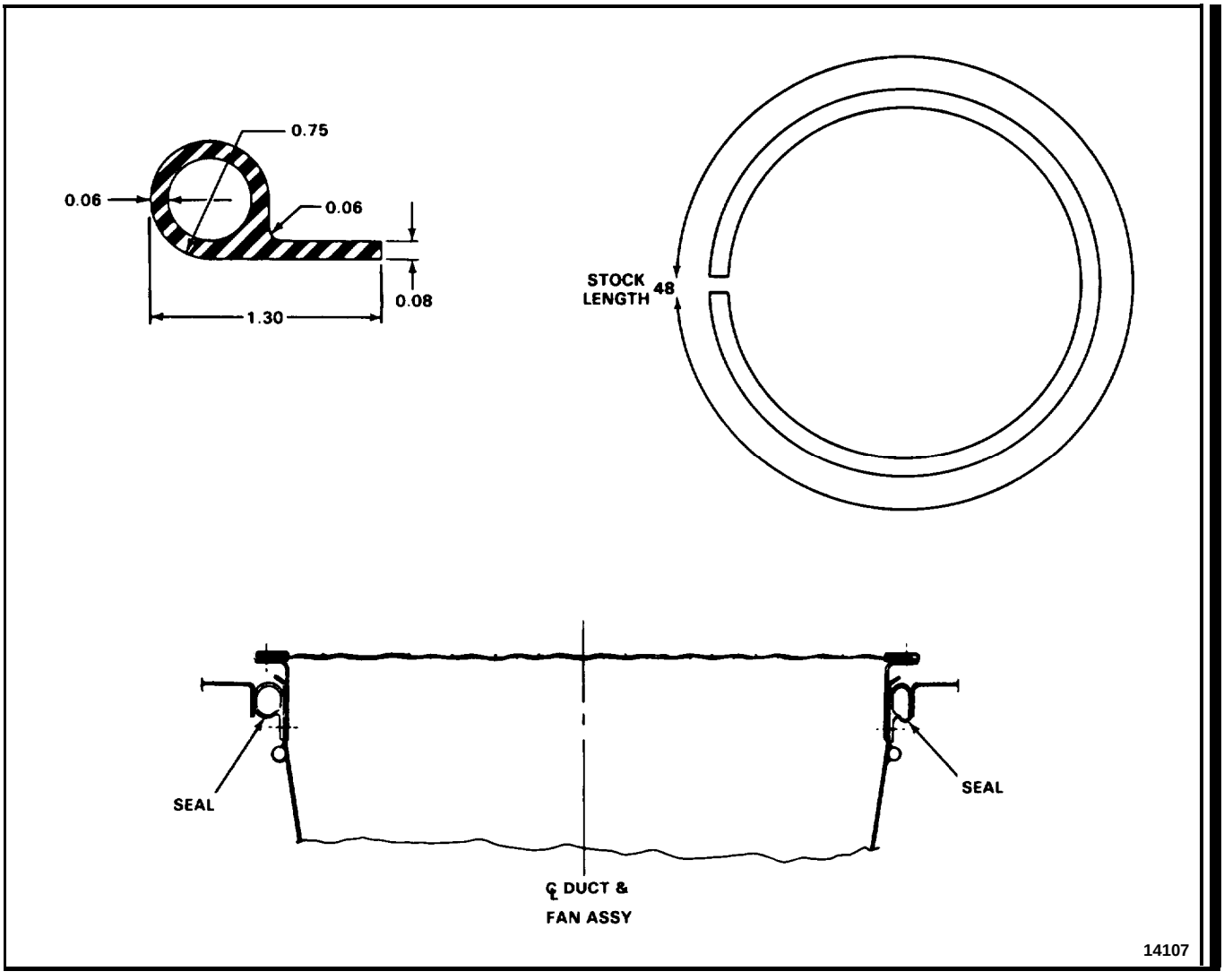


13508

END OF TASK

NOTES:

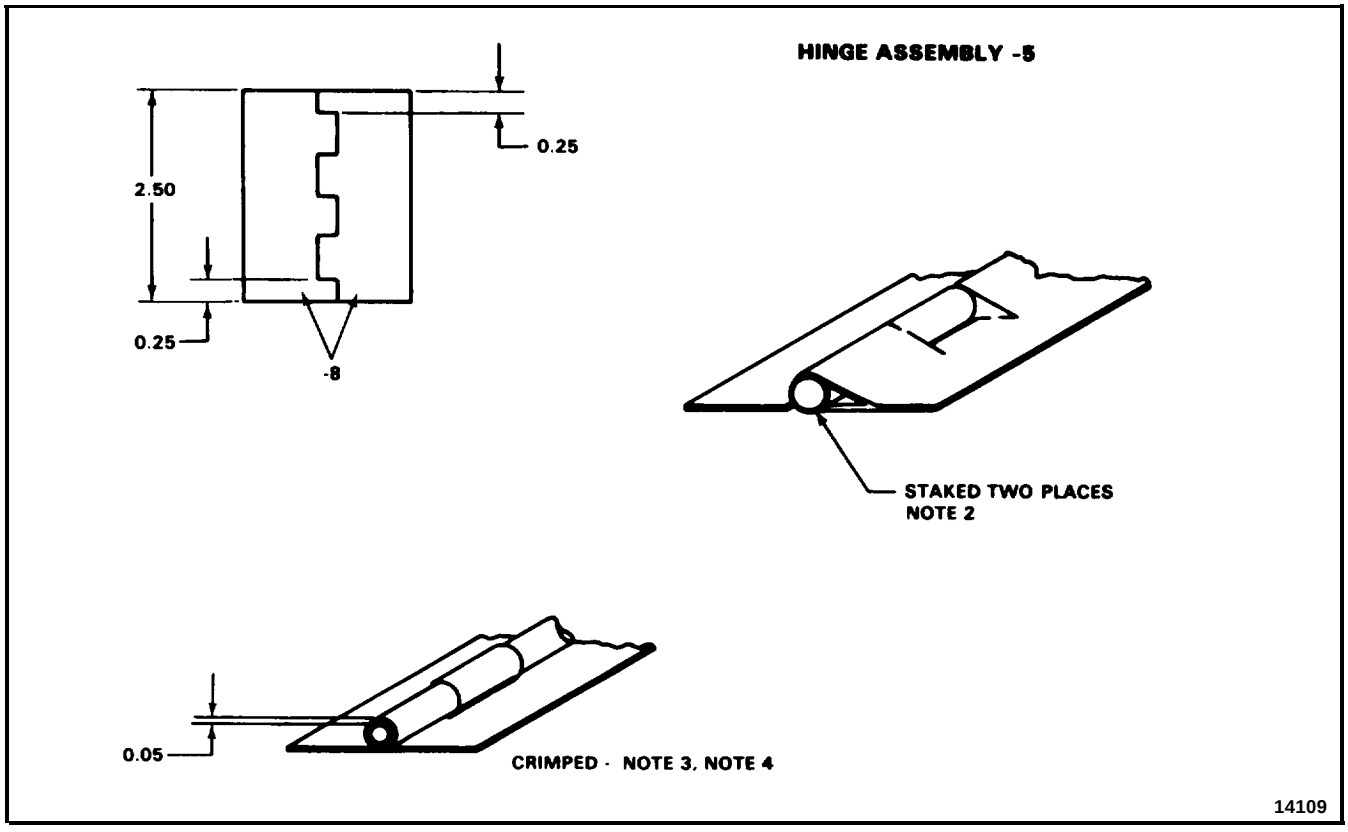
1. BAC1521-350 SILICONE RUBBER. FABRICATE FROM ZZ-R-769/19 AND ZZ-R-765/GEN.
2. ALL DIMENSIONS IN INCHES.
3. CUT REPLACEMENT SEAL TO SAME LENGTH AS ORIGINAL.



END OF TASK

NOTES:

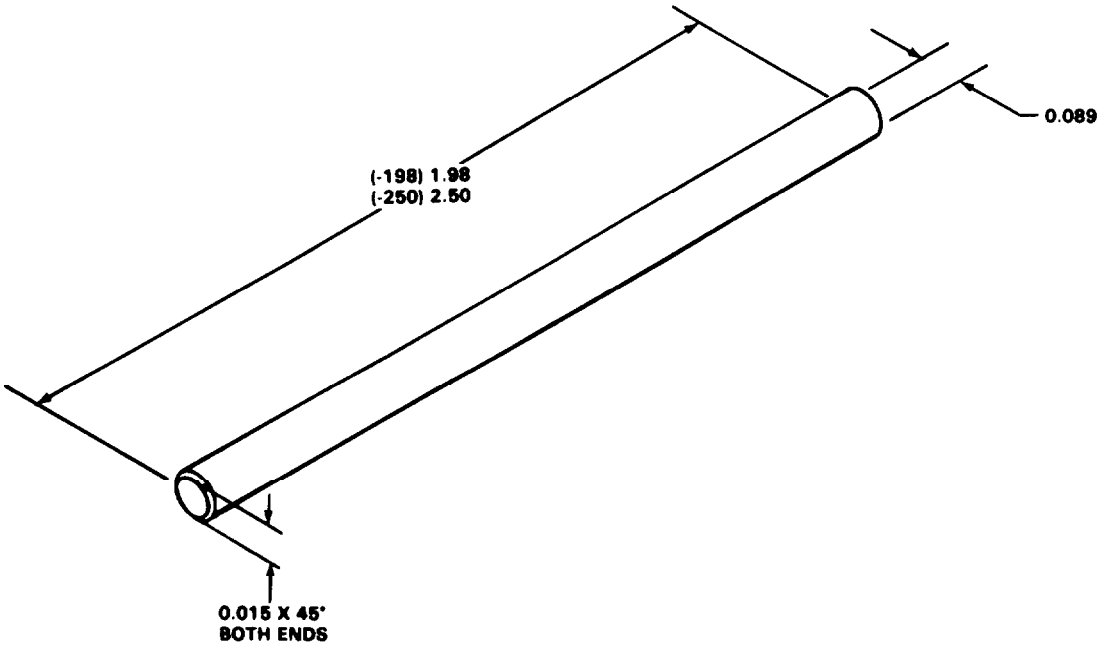
1. FABRICATE FROM MS20001CH6-250.
2. STAKE BOTH ENDS OF HINGE -9 TO SPECIFICATIONS OF MS33540 IF HINGE PIN IS MADE FROM MS20253P2-250.
3. CRIMP END OF EACH HINGE HALF 0.25 INCH TO AN OPENING OF 0.05 IF PIN IS MADE FROM MS20253P2-198.
4. LEAVE AN OPENING IN CRIMPED HOLE SO THAT IT CAN SPREAD IF NECESSARY TO REMOVE PIN.
5. REFER TO E-60.
6. ALL DIMENSIONS IN INCHES.
7. FINISH ENDS OF PIN WITH ZINC CHROMATE PRIMER (E-290).
8. FINISH HINGE TO MIL-L-19538 AND MIL-F-1824.



END OF TASK

NOTES:

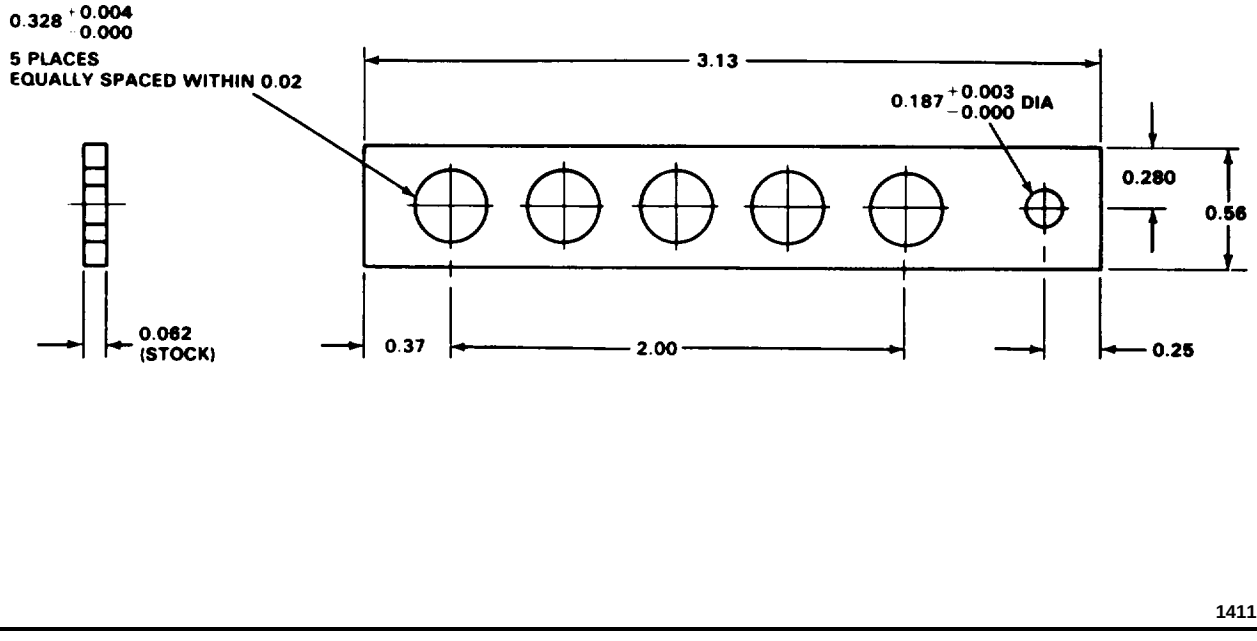
1. FABRICATE FROM MS20253P2-198 (PREFERRED) OR MS20253P2-250.
2. REFER TO E-59.
3. ALL DIMENSIONS INCHES.



END OF TASK

NOTES:

1. FABRICATE FROM STOCK MATERIAL 301 CRES SHEET MIL-S-5059.
2. ALL DIMENSIONS IN INCHES.
3. FINISH AS REQUIRED.



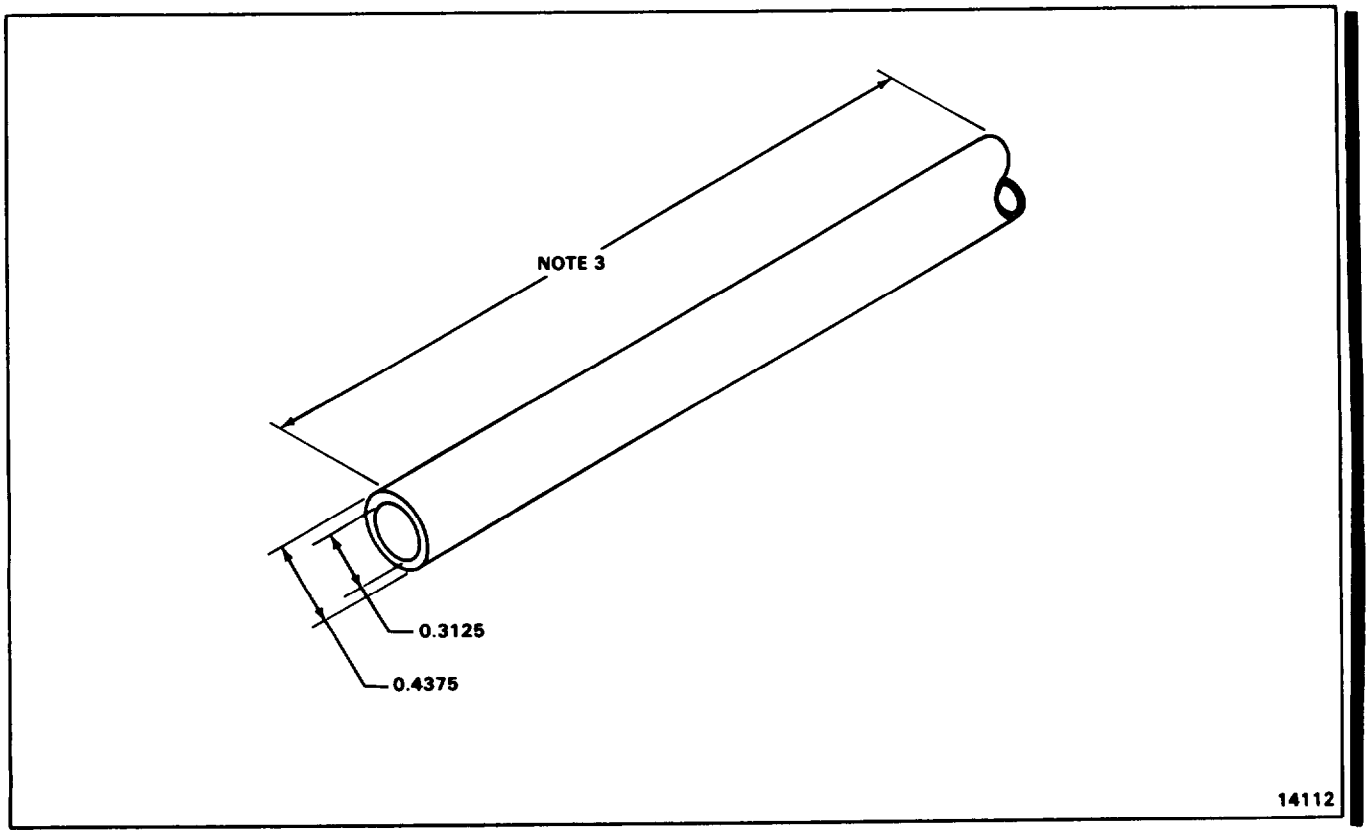
NOTES:

1. FABRICATE FROM RUBBER TUBING MIL-R-6855, CLASS II GR40.

2. ALL DIMENSIONS IN INCHES.

3. LENGTH OF REPLACEMENT IS SAME AS ORIGINAL PART.

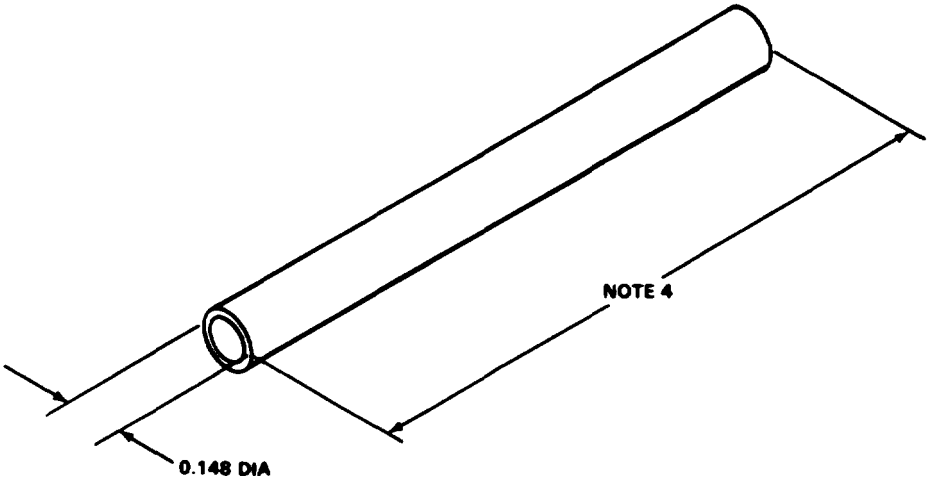
4. STOCK SIZE 0.437 OD X 0.312 ID X 15.



END OF TASK

NOTES:

1. FABRICATE FROM 321 CRES ROUND SEAMLESS TUBING MIL-T-8808 TYPE I COND. A.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.148 DIA X 0.015 WAU THICKNESS X 104 LENGTH.
4. LENGTH OF REPLACEMENT IS SAME AS ORIGINAL PART.



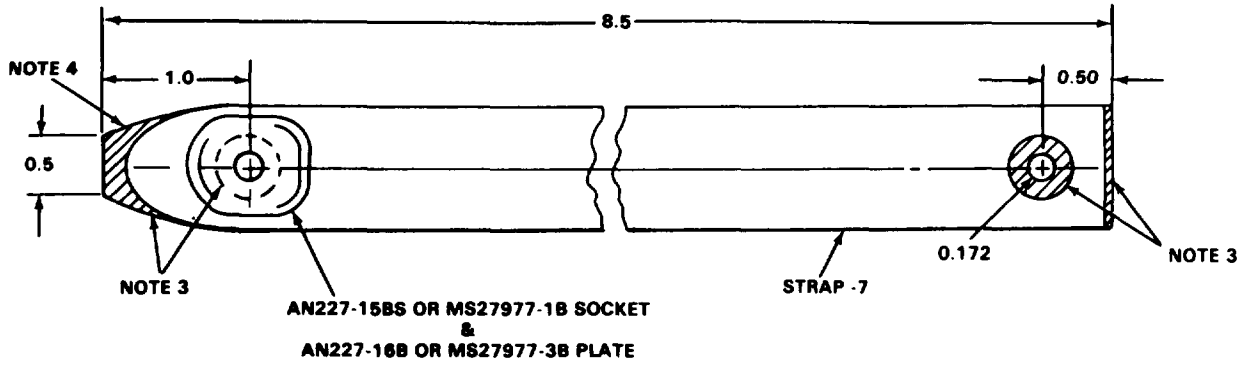
14113

END OF TASK

NOTES:

1. FABRICATE FROM NYLON WEB 0.030 X 1.0 X 8.6, MIL-W-4088 TYPE II.
2. ALL DIMENSIONS IN INCHES.
3. SEAR END TO PREVENT FRAYING.
4. THIS RADIUS IS OPTIONAL.

STRAP ASSEMBLY -S

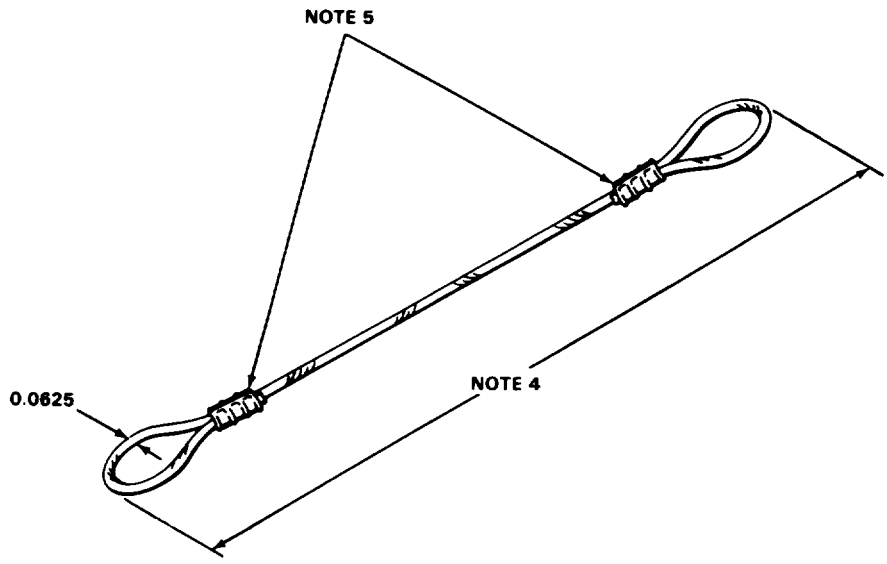


1411

END OF TASK

NOTES:

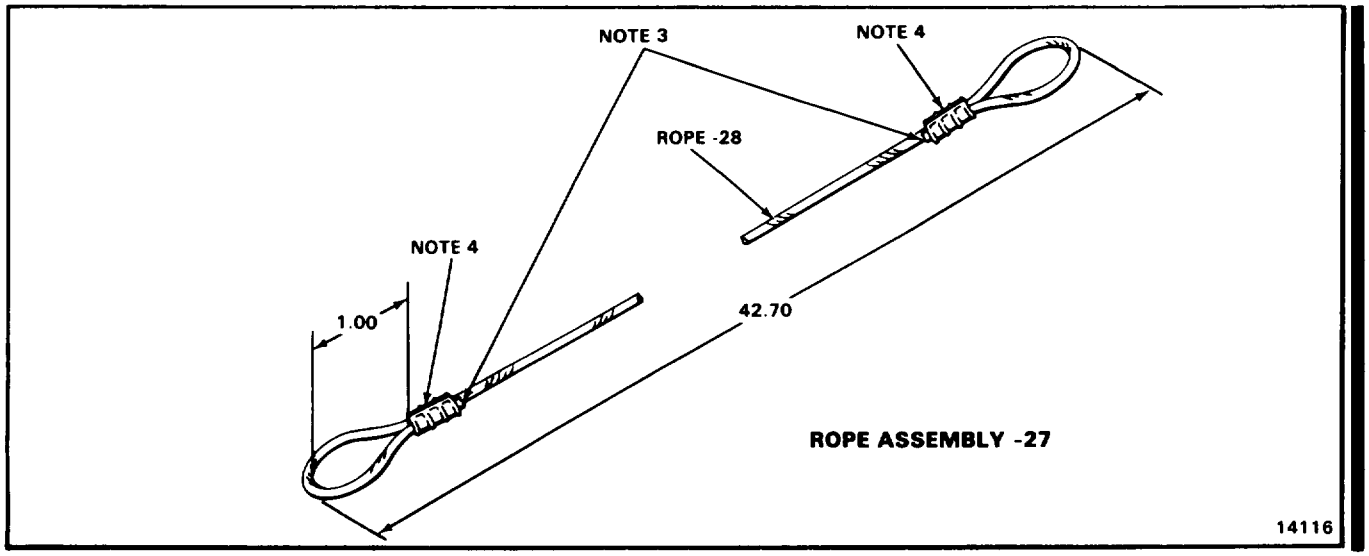
1. FABRICATE FROM 1 X 19 CRES STEEL CABLE MIL-C-5424.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.0625 X 8.
4. LENGTH OF REPLACEMENT IS SAME AS ORIGINAL.
5. SWAGE SLEEVE 18-1 -C IN ACCORDANCE WITH SPEC MIL-T-6117.



END OF TASK

NOTES:

1. FABRICATE FROM NYLON ROPE MIL-R-17343 0.1875 DIAMETER X 50 LENGTH.
2. ALL DIMENSIONS IN INCHES.
3. SEAR END OF ROPE.
4. CRIMP TUBE 145E4019-29 ON ROPE.
5. REFER TO E-67.

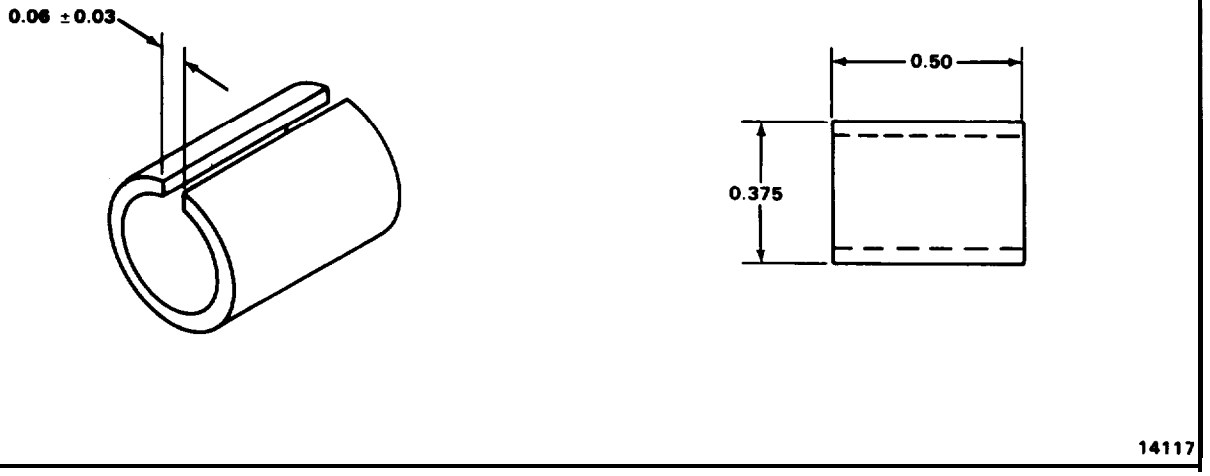


END OF TASK

E-67 ACOUSTIC CEILING BLANKETS TUBE 145E4019-29

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY TUBE 6061-0 MIL-T-7081.
2. STOCK SIZE 0.035 WALL THICKNESS X 0.375 DIA X 0.50 LENGTH.
3. ALL DIMENSIONS IN INCHES.
4. REFER TO E-66.
5. REFER TO E-68.

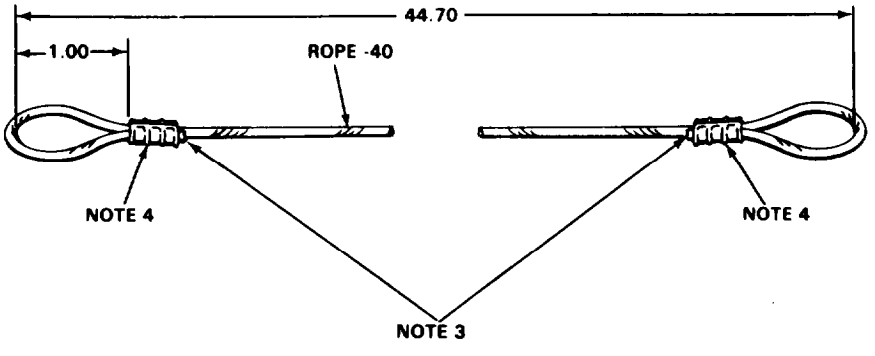


END OF TASK

NOTES:

1. FABRICATE FROM NYLON ROPE MIL-R-17343 0.1875 DIAMETER X 52 LENGTH.
2. ALL DIMENSIONS IN INCHES.
3. SEAR ENDS OF ROPE.
4. CRIMP TUBE 145E4019-29 ON ROPE. APPLY REQUIRED PRESSURE TO RETAIN LOOP UNDER LIGHT LOAD.
5. REFER TO E-67.

ROPE ASSEMBLY -39

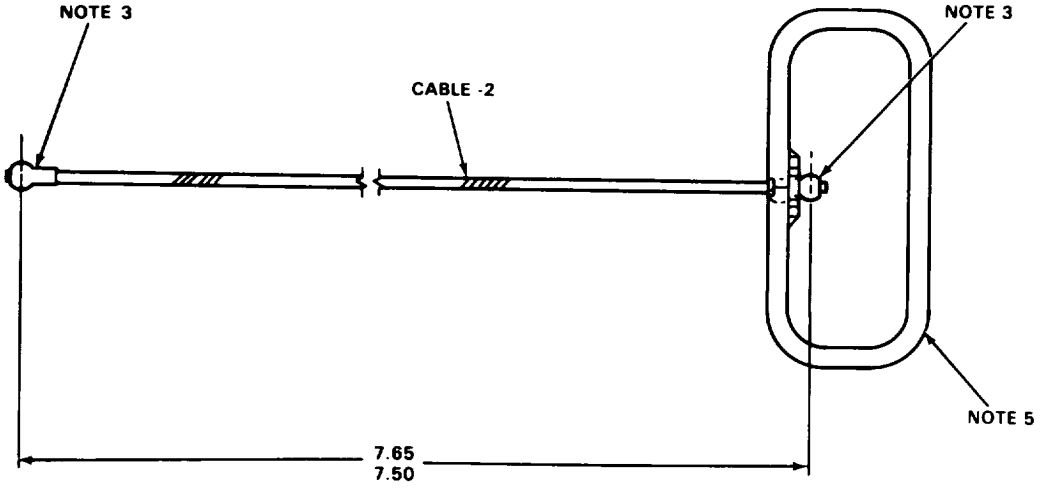


END OF TASK

NOTES:

1. FABRICATE CRES STEEL FLEX PREF WIRE ROPE MIL-W-83420.
2. STOCK SIZE 0.125 X 7 X 19 X 8.
3. SWAGE MS20664C4 BALL END IN ACCORDANCE WITH SPEC MIL-T-6117.
4. ALL DIMENSIONS IN INCHES.
5. 145E5507-3 WELD HANDLE ASSEMBLY.

HANDLE ASSEMBLY 145E5507-1



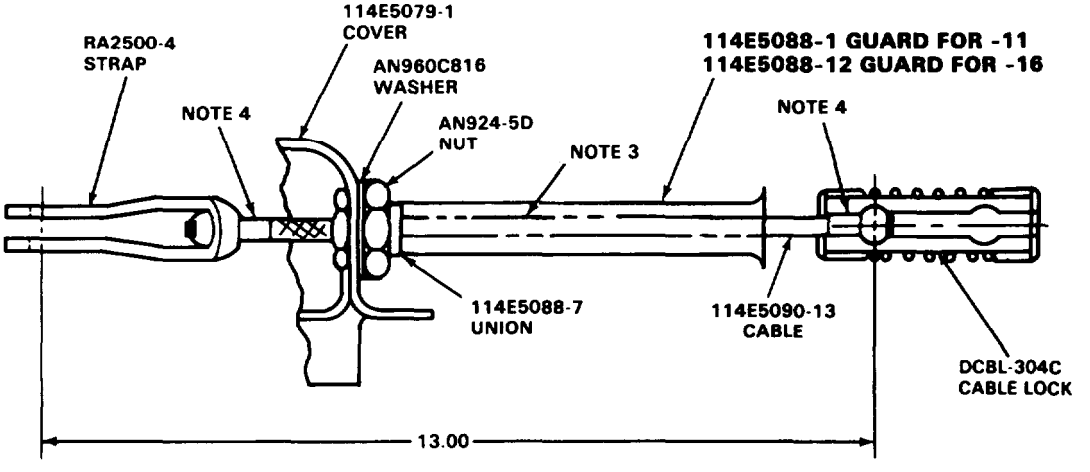
14119

END OF TASK

NOTES:

1. FABRICATE FROM CRES STEEL FLEX PREF MIL-C-5424.
2. STOCK SIZE 0.125 DIAMETER X 7 X 19 X 13 LENGTH.
3. LENGTH OF REPLACEMENT CABLE IS SAME AS ORIGINAL.
4. SWAGE AN664C-4 BALL END IN ACCORDANCE WITH SPEC MIL-T-6117.
5. ALL DIMENSIONS IN INCHES.

EMERGENCY RELEASE CABLE ASSEMBLY 114E5090-11 AND -16



14120

END OF TASK

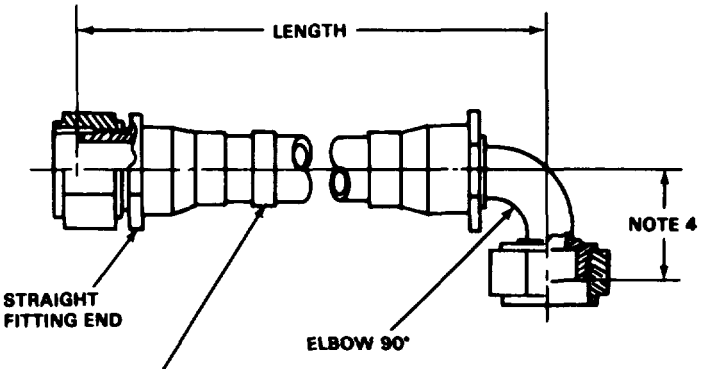
NOTES:

1. FABRICATE FROM NSN4720-00-923-0399.

2. ALL DIMENSIONS IN INCHES.

3. SIZE 0.25 0D X 0.21875 ID X 46 LENGTH
   STRAIGHT FITTING END (NSN4730-00-948-9314) TO
   ELBOW 90° FLARELESS (NSN4730-00-949-1656).

4. 0.660 MINIMUM 0.956 MAXIMUM REACH.



PERMANENT BAND CARRYING THE FOLLOWING MARKING:

MS PART NO.
MFR. NAME OR TRADEMARK
HOSE MFR. FED. SUPPLY CODE NO.
OPERATING PRESSURE 1000 P.S.I.
PRESSURE TEST SYMBOL "PT"
DATE OF HOSE ASSY. MFR. EXPRESSED
IN TERMS OF MONTH AND YEAR

14219

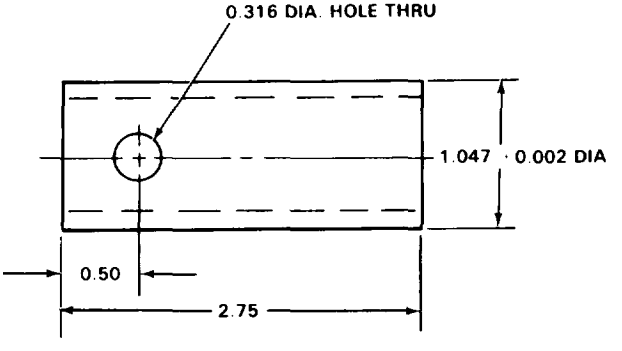
END OF TASK

NOTES:

1. FABRICATE FROM 7075-T6 SEAMLESS ALUMINUM ALLOY TUBE.

2. ALL DIMENSIONS IN INCHES.

3. STOCK SIZE 1.125 OD X 0.125 WALL THICKNESS X 3.0 LENGTH.



DETAIL OF TUBE

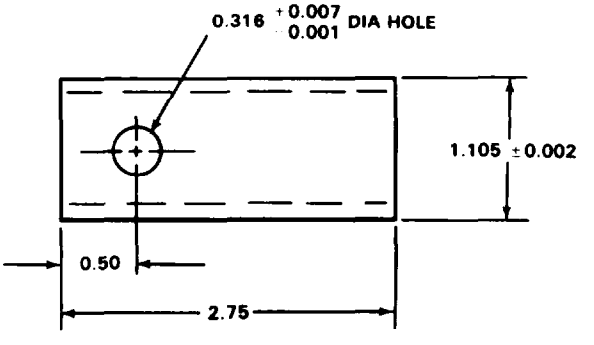
14220

END OF TASK

E-73 TROOP SEAT SUPPORT TUBE 114E4079-35 E-73

NOTES:

1. FABRICATE FROM 7075-T6 SEAMLESS ALUMINUM ALLOY TUBE.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 1.125 OD X 0.095 WALL THICKNESS X 3.0 LENGTH.
4. FINISH AS REQUIRED.



DETAIL OF TUBE

14221

END OF TASK

NOTES:

1. BLANKET STOCK SIZE IS 20.0 X 20.0.

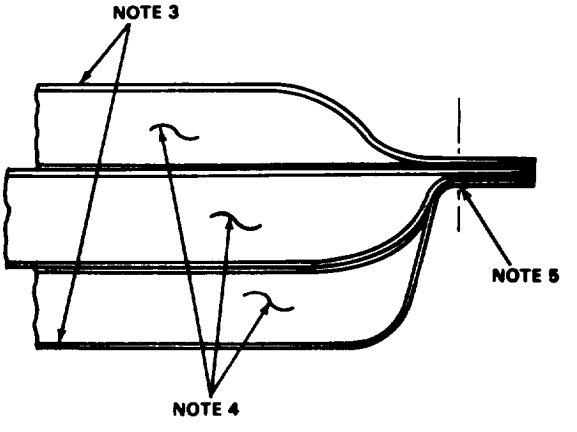
2. AU DIMENSIONS IN INCHES.

3. TRIM CLOTH IS IMPERVIOUS FILM OF VINYL COPOLYMER 0.0015 THICK. REFER TO MIL-P-6264.

4. BLANKET INTERIOR IS THREE LAYERS 0.5 THICK GLASS WOOL BATTS TYPE 1. REFER TO MIL-B-5924.

5. THREAD TO SPECIFICATIONS OF MIL-T-7807. THREAD IS NYLON TYPE 1. CLASS 2, SIZE B.

6. USE OLD BLANKET FOR TEMPLATE.



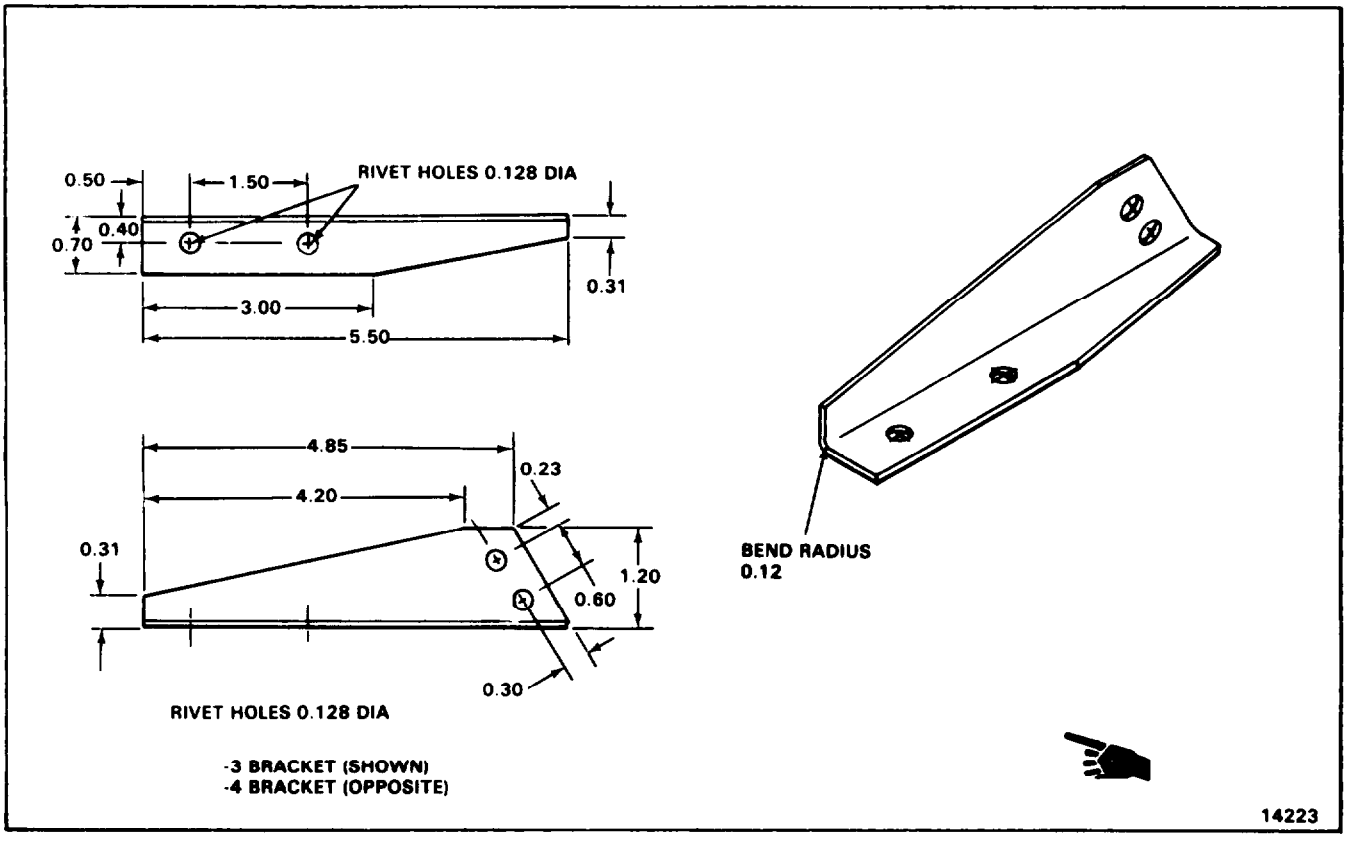
14222

END OF TASK

E-75 BRACKET HOIST OPERATOR PANEL 114E153-3 AND -4

NOTES:

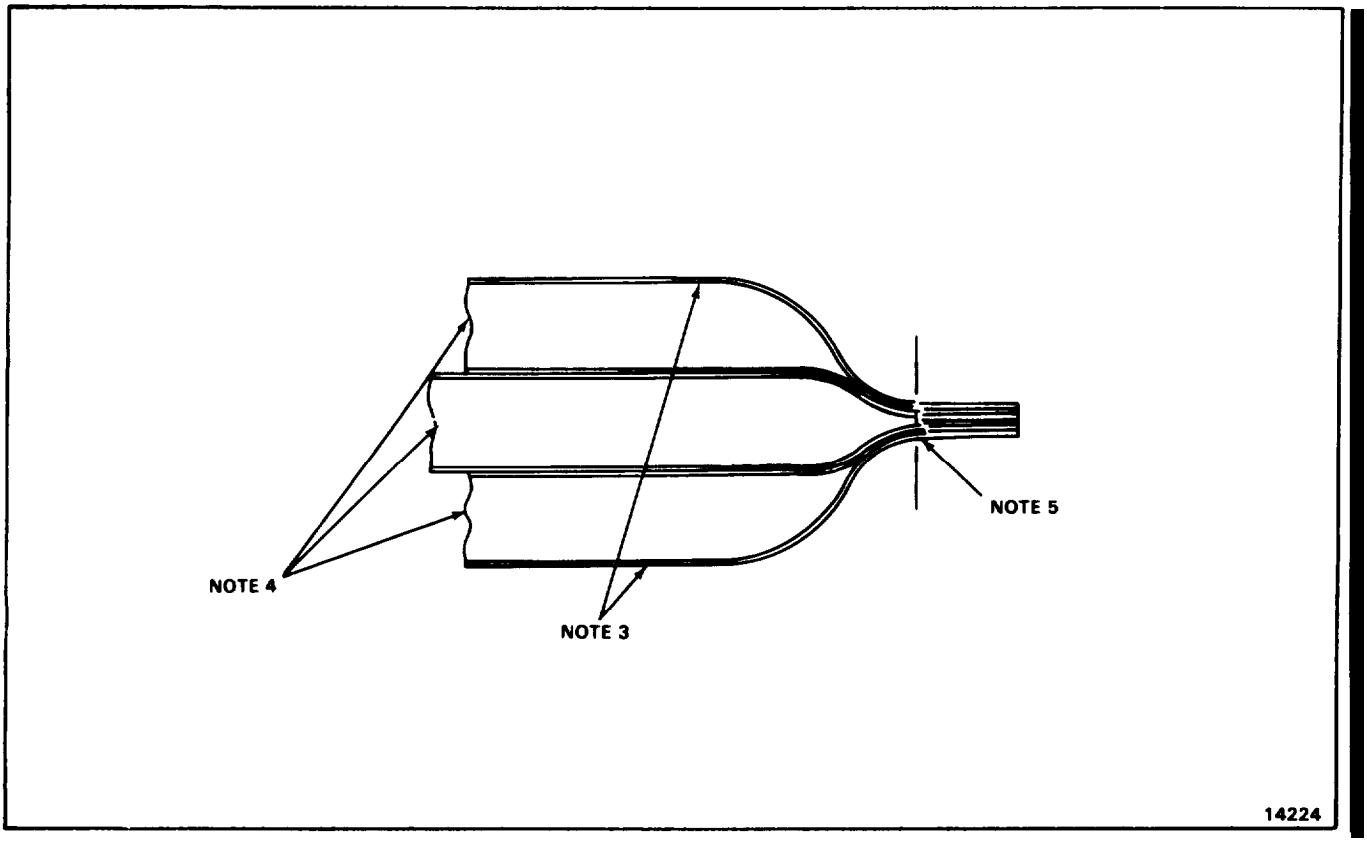
1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/5.
2. ALL DIMENSIONS IN INCHES.
3. BRACKET STOCK SIZE 0.040 X 2.1 x 5.7.
4. FINISH AS REQUIRED.
5. 114E4153-4 IS OPPOSITE TO -3.



END OF TASK

NOTES:

1. BLANKET STOCK SIZE IS 23.0 X 28.5
2. ALL DIMENSIONS IN INCHES.
3. TRIM CLOTH IS IMPERVIOUS FILM OF VINYL COPOLYMER 0.0015 THICK, TYPE 1. REFER TO MIL-P-6264. BMC 6-8-7A.
4. BLANKET INTERIOR IS THREE LAYERS 0.5 THICK GLASS WOOL BATTS TYPE 1. REFER TO MIL-L-5924.
5. THREAD TO SPECIFICATIONS OF MIL-T-7807. THREAD IS NYLON TYPE 1 CLASS 2 SIZE B.

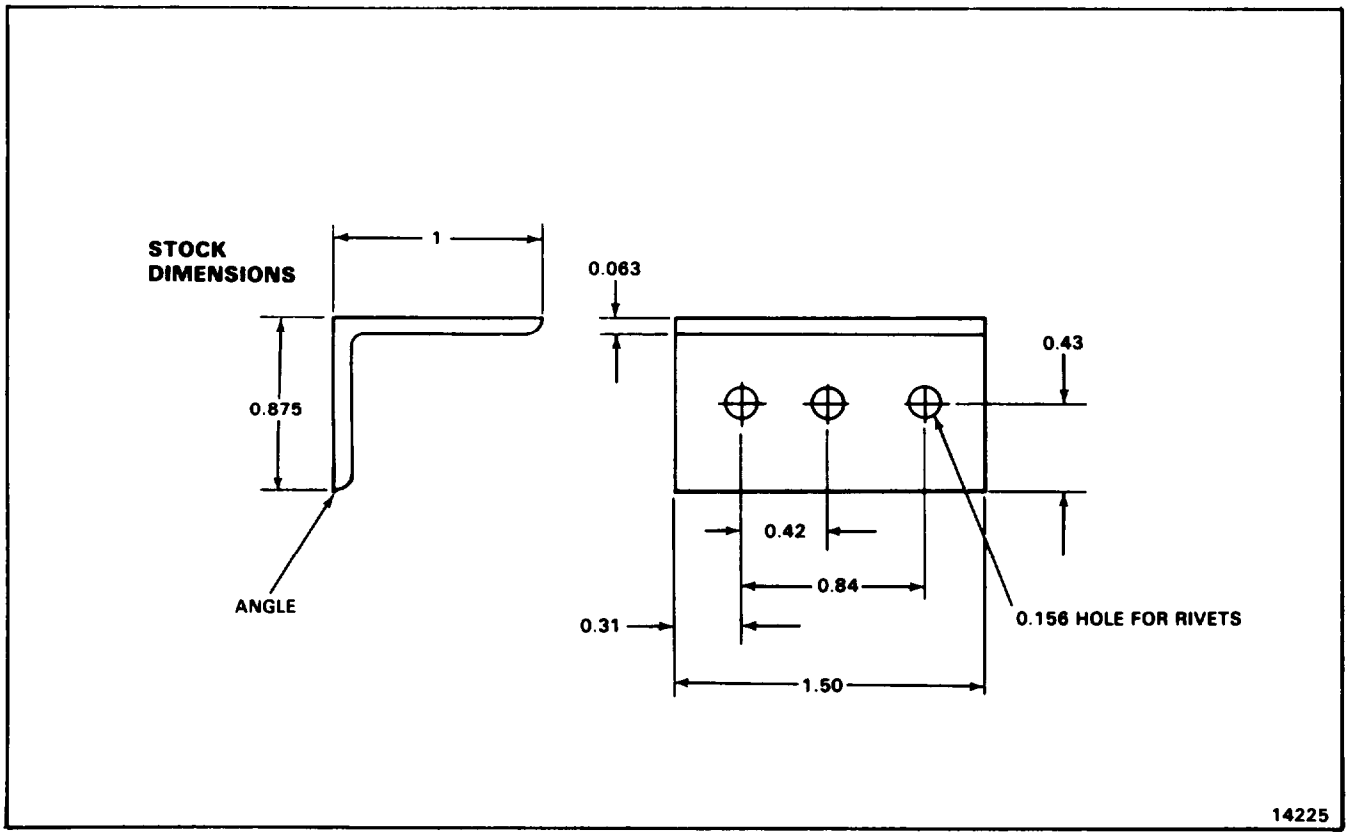


END OF TASK

E-77 ANGLE LOADING POLE STOWAGE 114E5105-13

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY 7075-T6511 EXTRUSION.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE AND 10134-1005 X 1.6.
4. FINISH WITH YELLOW ZINC CHROMATE PRIMER (E-290).

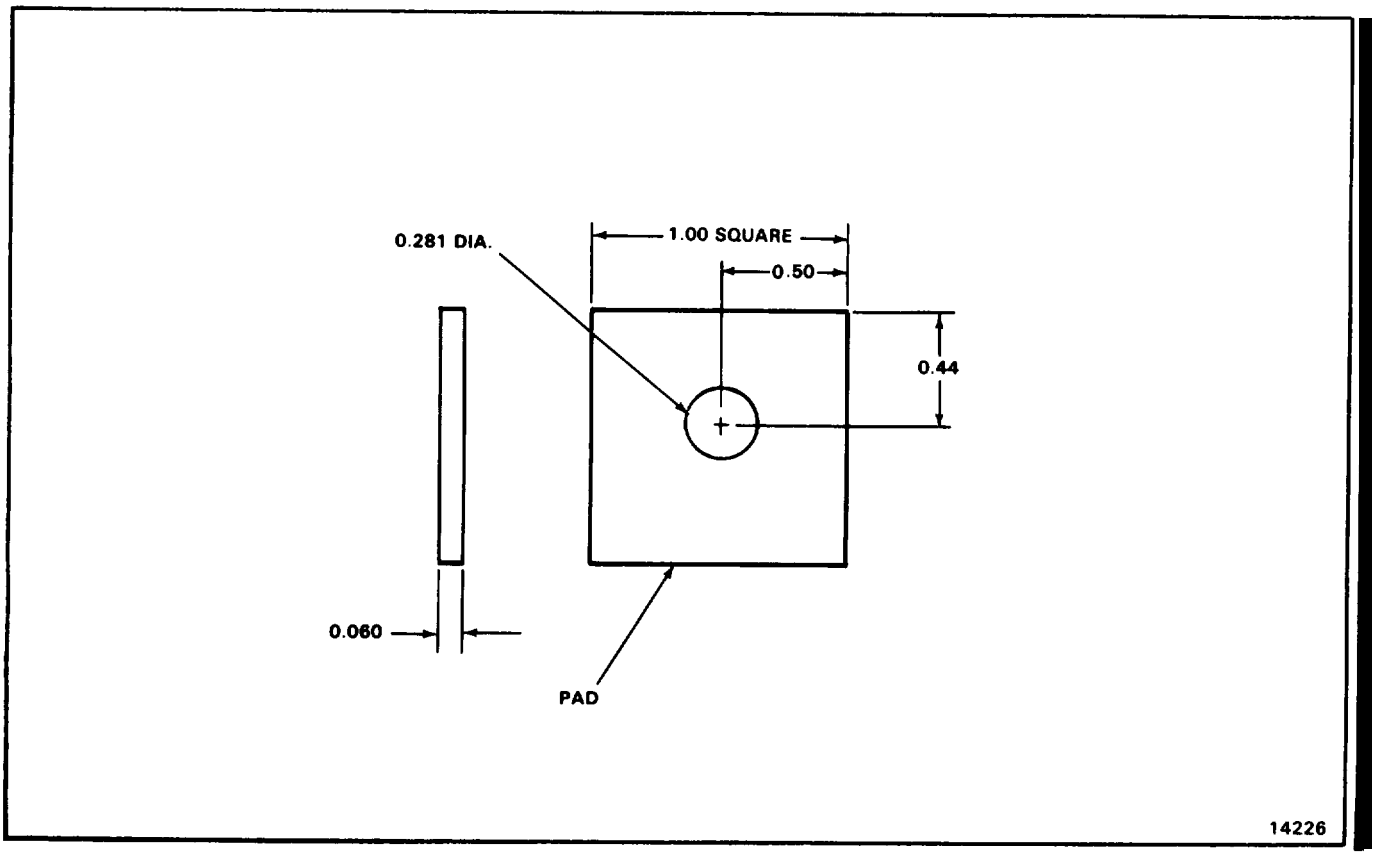


END OF TASK

E-78 PAD LOADING POLE STOWAGE 114E5105-15

NOTES:

1. FABRICATE FROM SYNTHETIC RUBBER SHEET MIL-R-6855 CL II GR40.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.060 X 1.0 X 1.0.

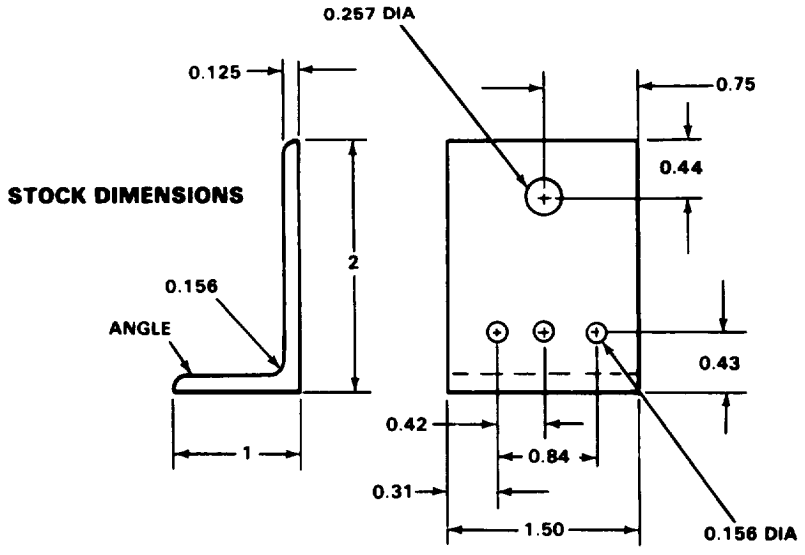


END OF TASK

E-79 ANGLE LOADING POLE STOWAGE 114E5105-19 E-79

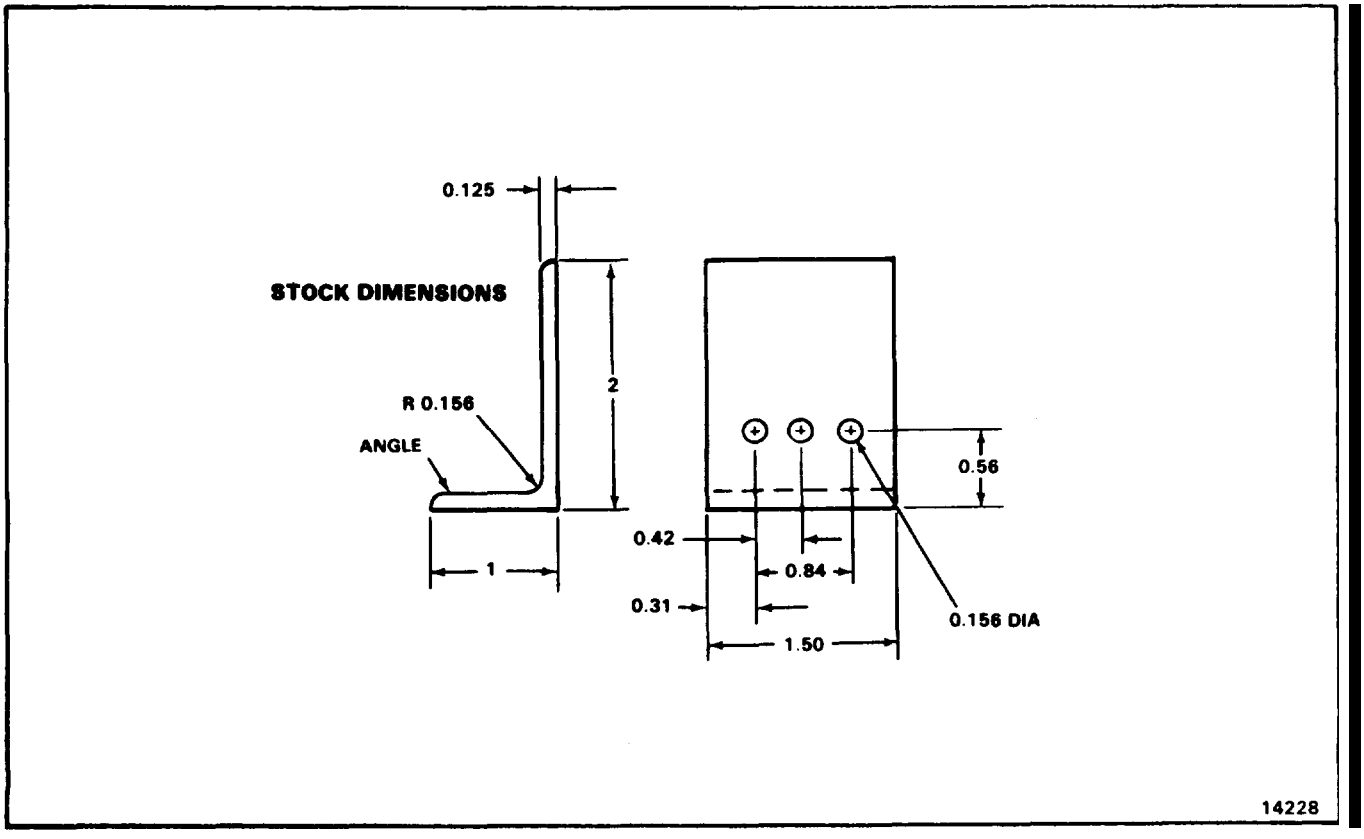
NOTES:

1. FABRICATE FROM ALUMINUM ALLOY 7075-T6511 EXTRUSION.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE AND 10134-2001 X 1.6.
4. FINISH WITH YELLOW ZINC CHROMATE PRIMER (E-290.)



NOTES:

1. FABRICATE FROM ALUMINUM ALLOY 7075-T6511 EXTRUSION.
2. ALL DIMENSIONS IN INCHES,
3. STOCK SIZE AND 10134-2001 X 1.6.
4. FINISH WITH YELLOW ZINC CHROMATE PRIMER (E2-90).

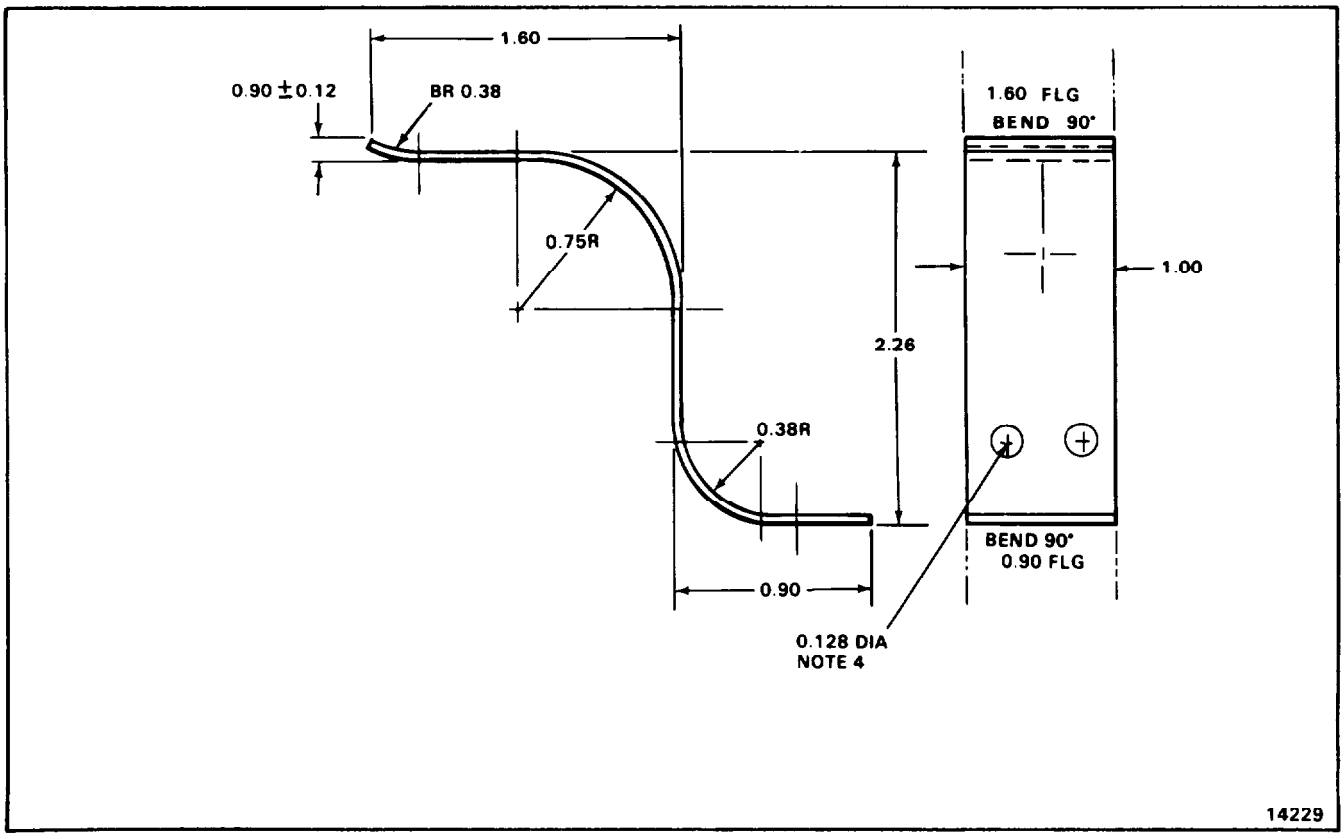


END OF TASK

E-81 CLIP HOIST OPERATOR PANEL SUPPORT 114E4108-27 E-81

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY SHEET CLAD 7075-T6.
2. STOCK SIZE 0.063 X 1.2 X 7.0.
3. ALL DIMENSIONS IN INCHES.
4. USE OLD CLIP FOR TEMPLATE TO LOCATE RIVET HOLES IN REPLACEMENT.
5. FINISH WITH YELLOW ZINC CHROMATE PRIMER (E-290.)

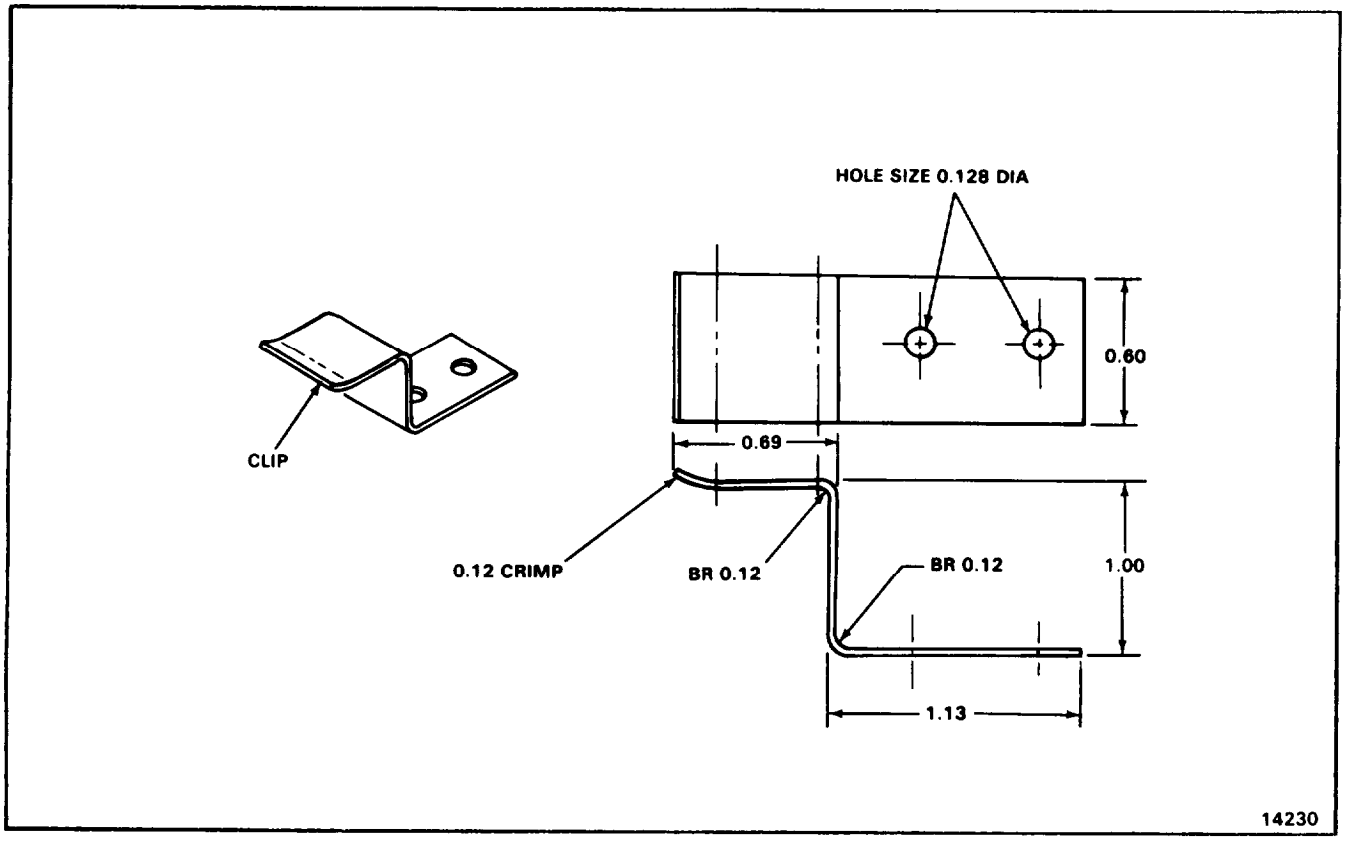


END OF TASK

E-82 HOIST OPERATOR PANEL SUPPORT CLIP 114E4108-29

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY SHEET CLAD 2024-T3.
2. STOCK SIZE 0.040 X 0.8 X 4.7.
3. ALL DIMENSIONS IN INCHES.
4. USE OLD CLIP FOR TEMPLATE TO LOCATE RIVET HOLES IN REPLACEMENT.
5. LENGTH OF REPLACEMENT IS SAME AS ORIGINAL.
6. FINISH WITH YELLOW ZINC CHROMATE PRIMER (E-290).

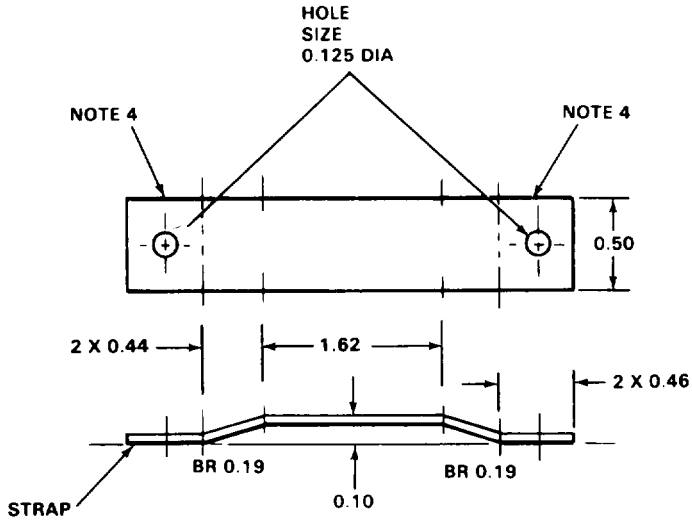


END OF TASK

E-83 STRAP HOIST OPERATOR PANEL SUPPORT 114E4108-31 E-83

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY SHEET CLAD 2024-T3.
2. STOCK SIZE 0.063 X 0.6 X 3.2.
3. ALL DIMENSIONS IN INCHES.
4. USE OLD STRAP FOR TEMPLATE TO LOCATE RIVET HOLES IN REPLACEMENT.
5. MAKE REPLACEMENT STRAP SAME LENGTH AS ORIGINAL.
6. FINISH WITH YELLOW ZINC CHROMATE PRIMER (E-290).

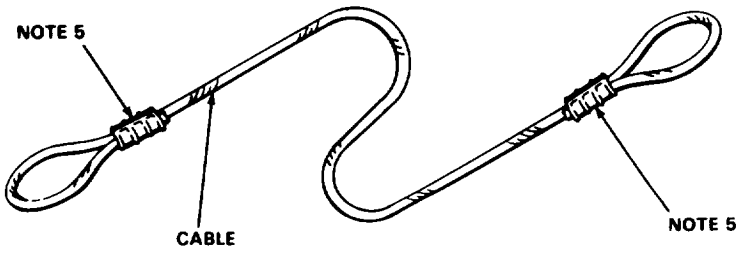


14231

END OF TASK

NOTES:

1. FABRICATE FROM CRES CABLE MIL-C-5424.
2. STOCK SIZE 0.0625 DIA X 6.0.
3. ALL DIMENSIONS IN INCHES.
4. REPLACEMENT CABLE IS SAME LENGTH AS ORIGINAL.
5. SWAGE SLEEVE 18-1 -C IN ACCORDANCE WITH SPEC MIL-T-6117.



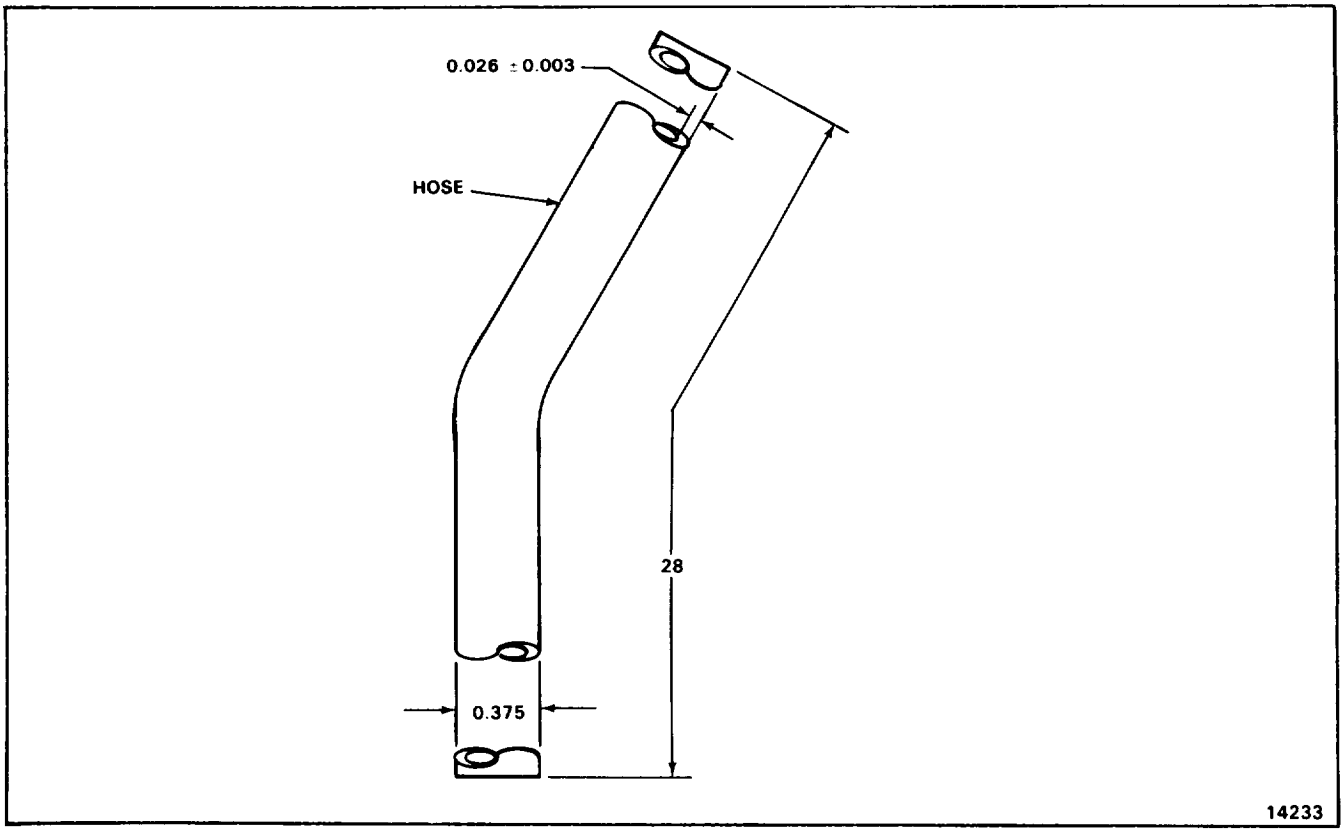
14232

END OF TASK

E-85 DRAIN HOSE FORWARD TRANSMISSION TS000-012-0280 E-85

NOTES:

1. FABRICATE FROM CONVOLUTED NONMETALLIC TEFLON NSN4720-01-130-8532.
2. ALL DIMENSIONS IN INCHES.
3. SHAPE HOSE TO THE CONFIGURATION OF ORIGINAL.



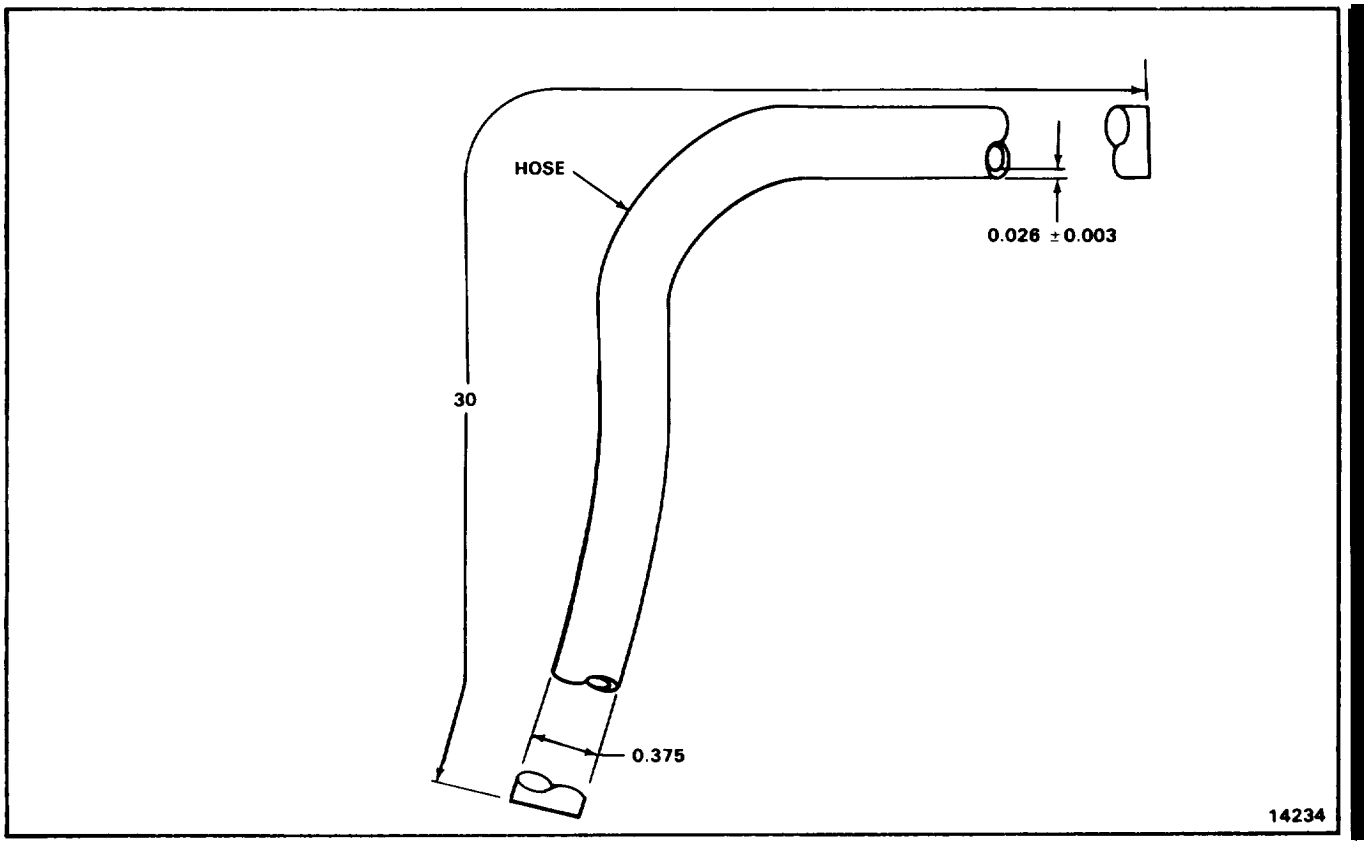
END OF TASK

NOTES:

1. FABRICATE FROM CONVOLUTED NONMETALLIC TEFLON NSN4720-01-130-8532.

2. ALL DIMENSIONS IN INCHES.

3. SHAPE HOSE TO THE CONFIGURATION OF ORIGINAL.

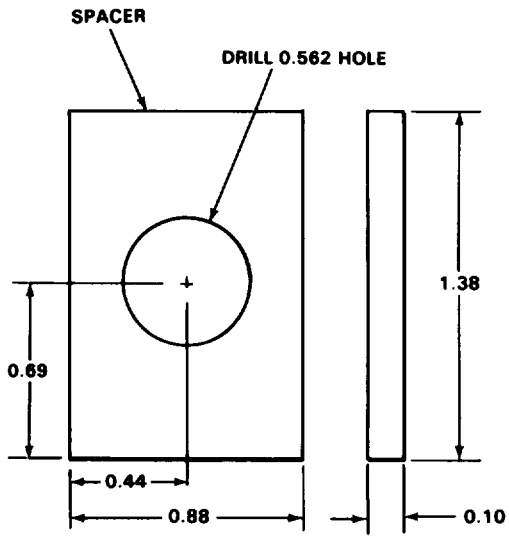


END OF TASK

E-87 DRIVE SHAFT AND GEARBOX SPACER 114P5003-141 E-87

NOTES:

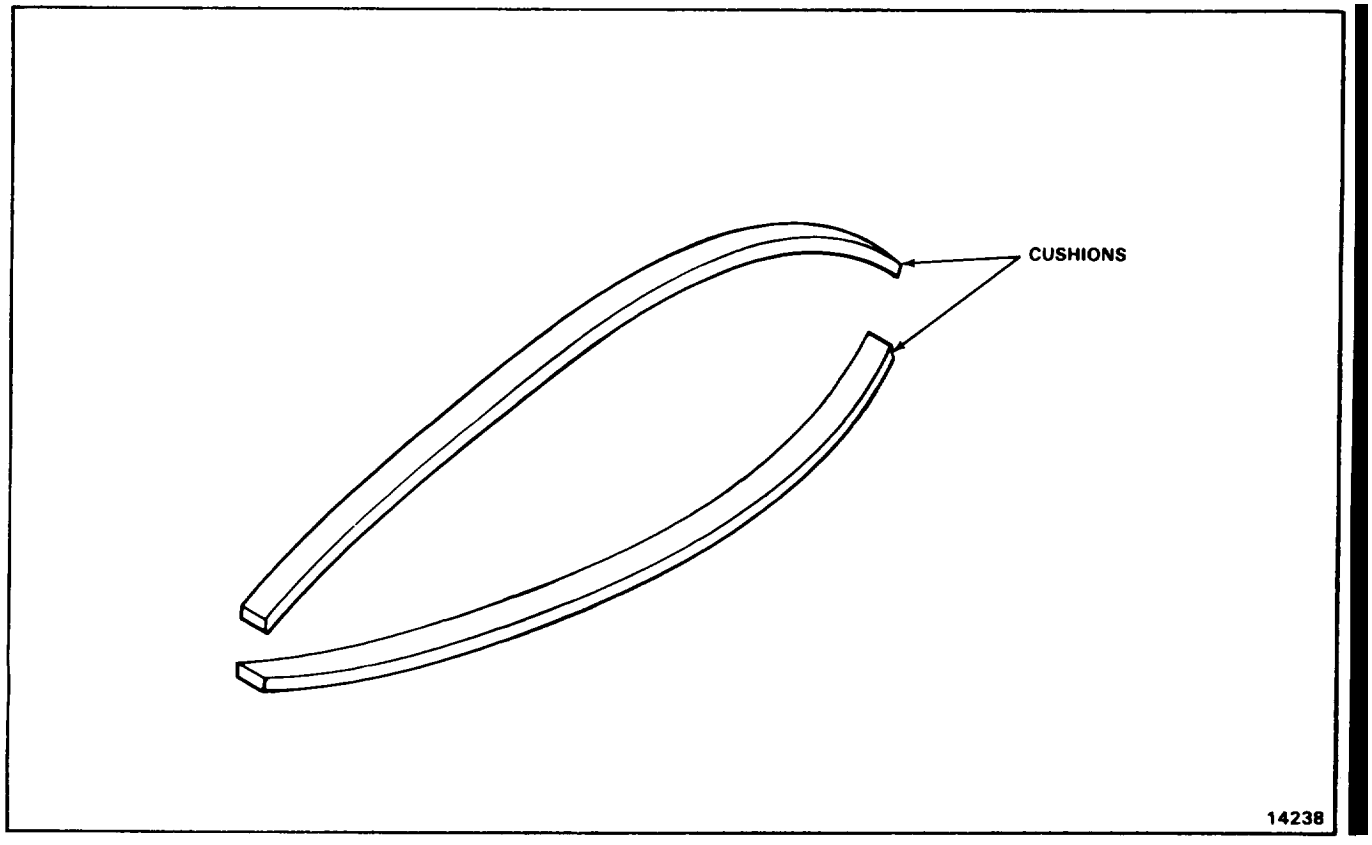
1. FABRICATE FROM 6061-T6 SHEET ALUMINUM ALLOY QQ-A-250/11 TEMP T6.
2. ALL DIMENSIONS IN INCHES.
3. USE OLD SPACER AS **TEMPLATE** FOR MAKING HOLES.



E-88 FAIRING CUSHION ENGINE BYPASS SCREEN 114P8073-9 E-88

NOTES:

1. FABRICATE FROM SILICONE RUBBER TO SPEC ASTMD 1056-85.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.25 X 1.0 X 24.0.
4. CUT AND TRIM CUSHION TO FIT.
5. -9 CUSHION HAS BEEN CHANGED TO -27.

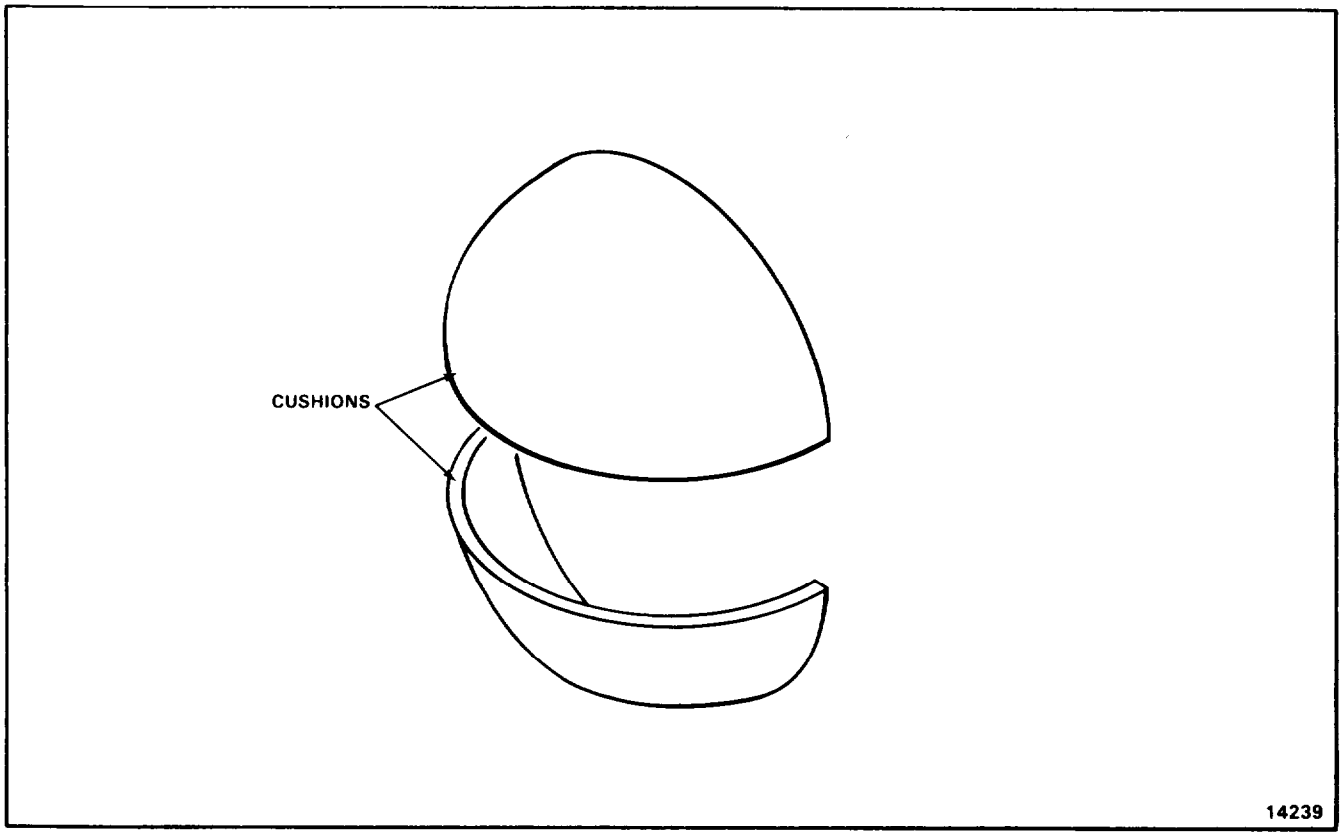


END OF TASK

E-89 NOSE CUSHION ENGINE BYPASS SCREEN 114P8073-13 E-89

NOTES:

1. FABRICATE CUSHION FROM SILICONE RUBBER TO SPEC ASTMD 1056-85.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.25 X 9 X 18
4. CUT AND TRIM CUSHION TO FIT.



END OF TASK

NOTES:

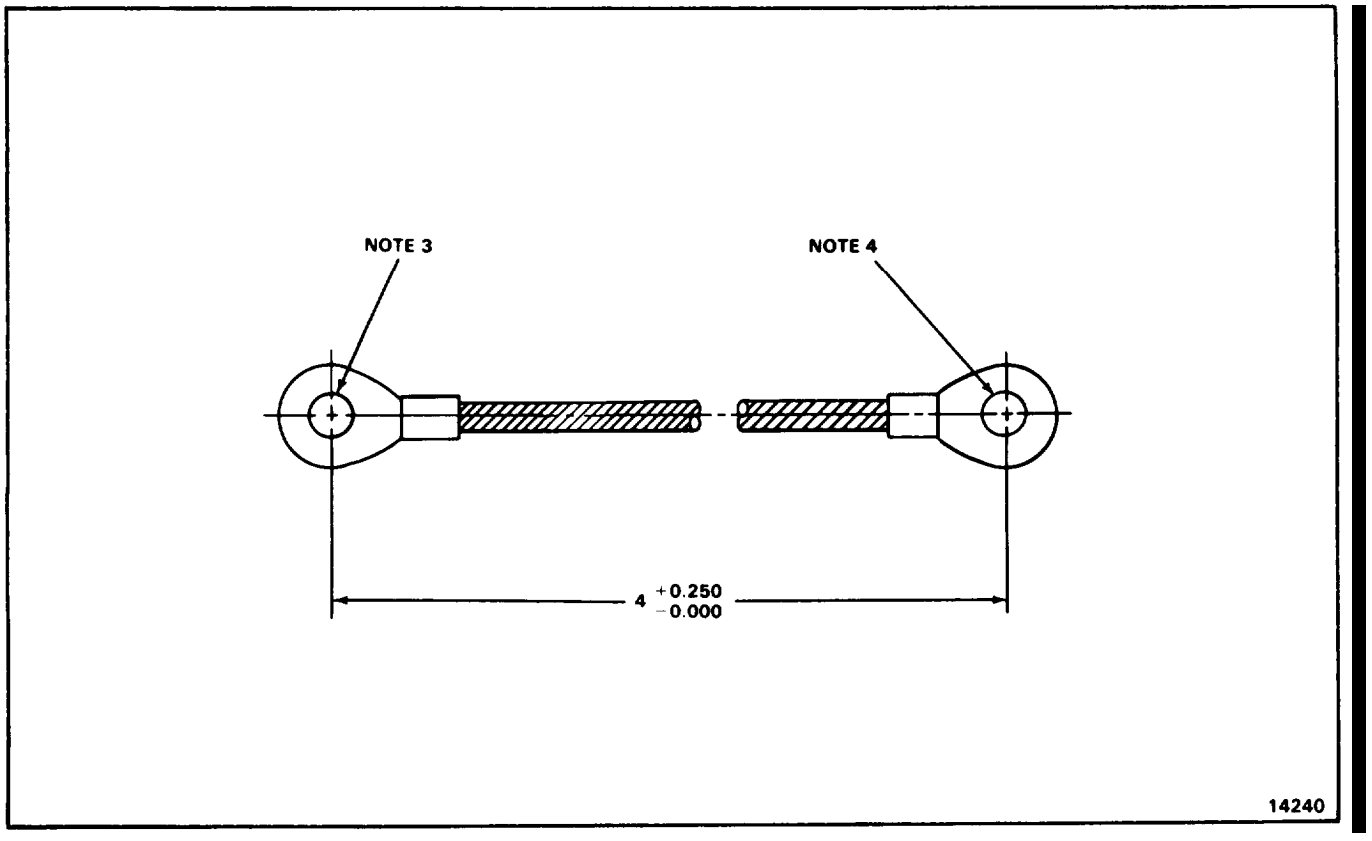
1. FABRICATE FROM PURE TINNED STRANDED SOFT COPPER WIRE SIZE AWG 12 NSN6145-819-0058.

2. ATTACH TERMINALS (MS25036-111, 112, 113, OR 114) TO WIRE WITH CRIMPING TOOL (MS25441).

3. TERMINAL NSN5940-204-8890 ACCOMMODATES NUMBER 4 OR 6 SIZE STUD HOLE DIA 0.142 TO 0.152.

4. TERMINAL NSN5940-204-8890 ACCOMMODATES NUMBER 4 OR 6 SIZE STUD HOLE DIA 0.142 TO 0.152.

5. ALL DIMENSIONS IN INCHES.

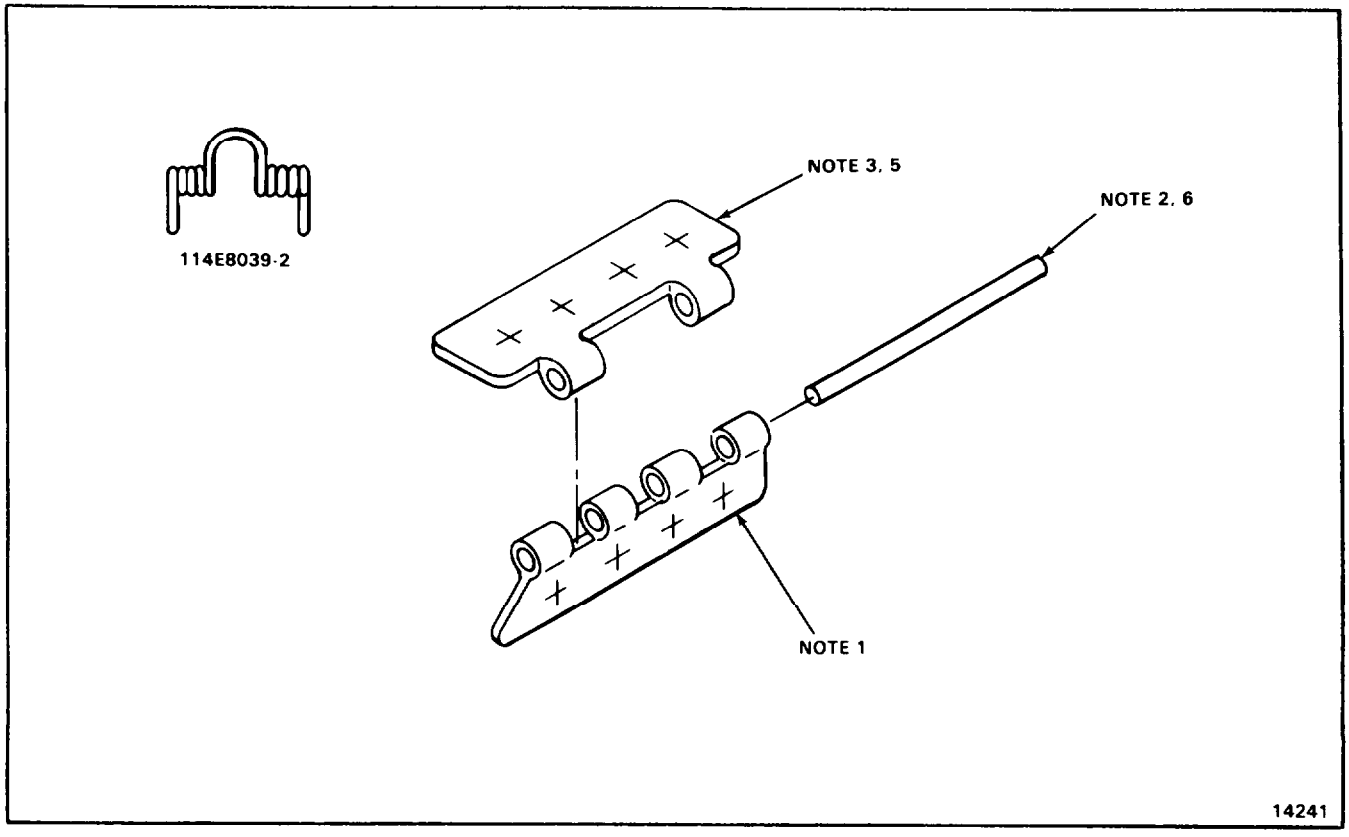


END OF TASK

E-91 ENGINE ACCESS COVER HINGE 114P8030-89,-91,-63 E-91

NOTES:

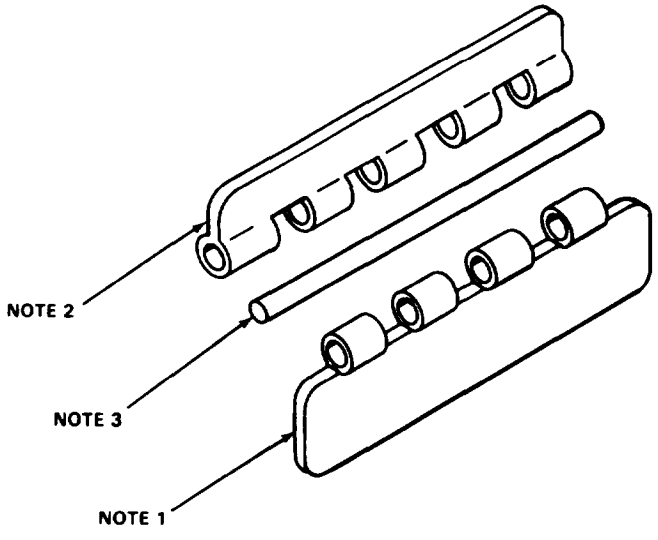
1. MAKE -89 HALF HINGE FROM MS20257HP4-7200.
2. MAKE -91 HINGE PIN FROM MS20253-2-7200.
3. MAKE -63 HALF HINGE FROM MS20257HP4-7200.
4. USE OLD HINGE HALVES FOR TEMPLATES AND FOR MAKING HOLES IN NEW HINGES.
5. REMOVE CENTER LOBE. INSTALL SPRING 114P8039-2.
6. CRIMP ENDS OF PIN (E-60).
7. MAKE NEW HINGE SAME LENGTH AS ORIGINAL.
8. FINISH WITH YELLOW ZINC CHROMATE PRIMER (E-290).



END OF TASK

NOTES:

1. MAKE -77 HALF HINGE FROM MS20257HP4-7200.
2. MAKE -93 HALF HINGE FROM MS20257HP4-7200.
3. MAKE -95 HINGE PIN FROM MS20253-2-7200.
4. USE OLD HINGE HALVES FOR TEMPLATES AND FOR MAKING HOLES IN NEW HINGES.
5. CRIMP ENDS OF PIN (E-60).
6. HINGE STOCK SIZE 1.50 WIDTH X 72 LENGTH.
7. PIN STOCK SIZE 0.089 DIA X 72 LENGTH.
8. MAKE NEW HINGE SAME LENGTH AS ORIGINAL.
9. FINISH WITH YELLOW ZINC CHROMATE PRIMER (E-290).

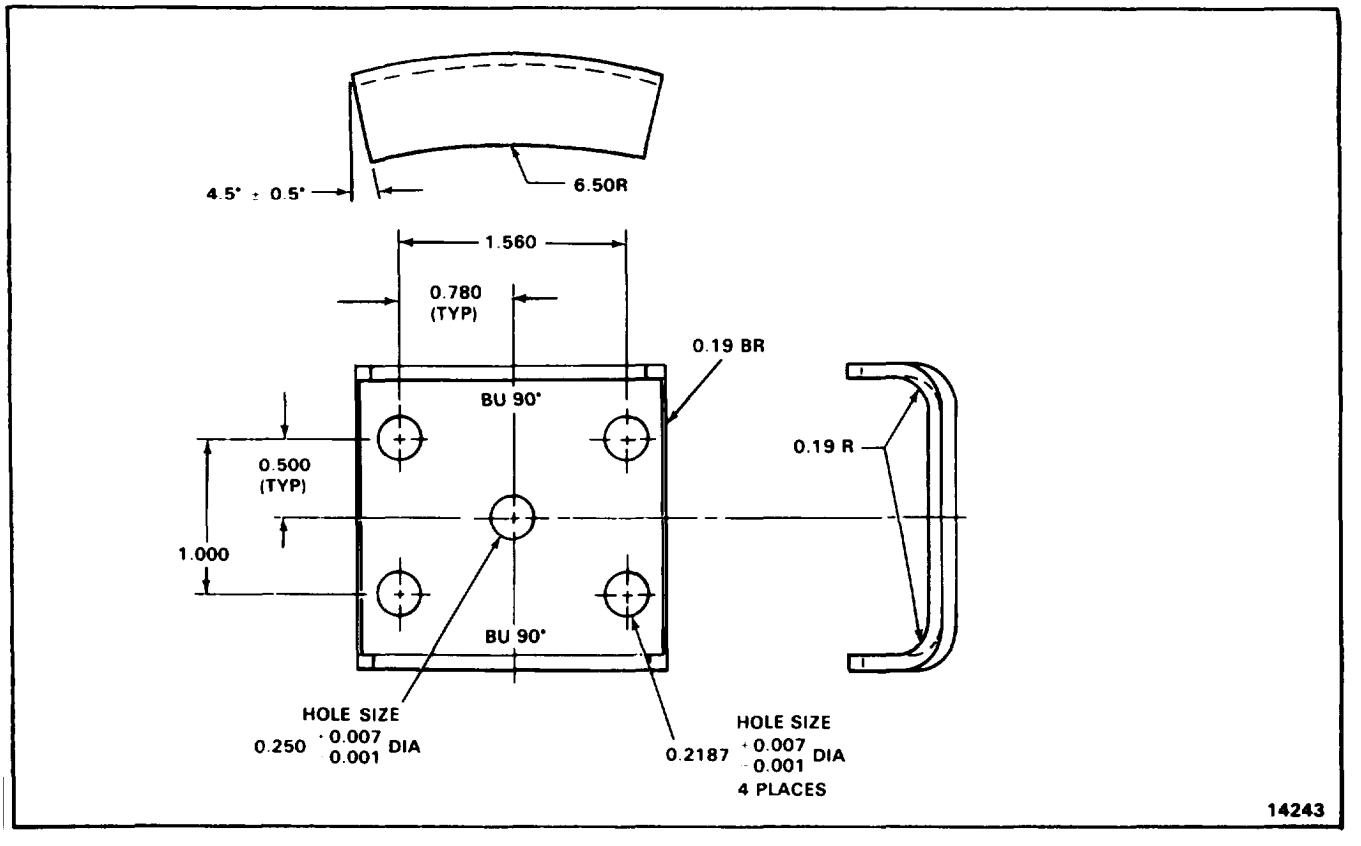


END OF TASK

E-93 ACCESS COVER BRACKET 114P8043-1 E-93

NOTES:

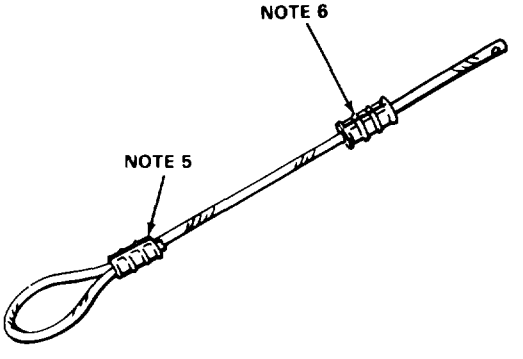
1. FABRICATE FROM ALUMINUM ALLOY 2024-T4 CLAD SHEET.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.063 X 2.2 X 3.1.
4. USE ORIGINAL FOR TEMPLATE WHEN MAKING REPLACEMENT.



E-94 ENGINE ACCESS COVER CABLE 114P8031-61 E-94

NOTES:

1. FABRICATE FROM CRES STEEL CABLE TO SPEC MIL-C-5424.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.0625 X 7 X 7 X 8.
4. MAKE REPLACEMENT CABLE AND LOOPS SAME LENGTH AS ORIGINAL.
5. SWAGE SLEEVES 28-1 -C IN ACCORDANCE WITH SPEC MIL-T-6117.
6. INSTALL AND SWAGE AT INSTALLATION.



14244

END OF TASK

E-95 EXTERNAL CARGO HOOK MANUAL RELEASE COVER 145E5511-2

NOTES:

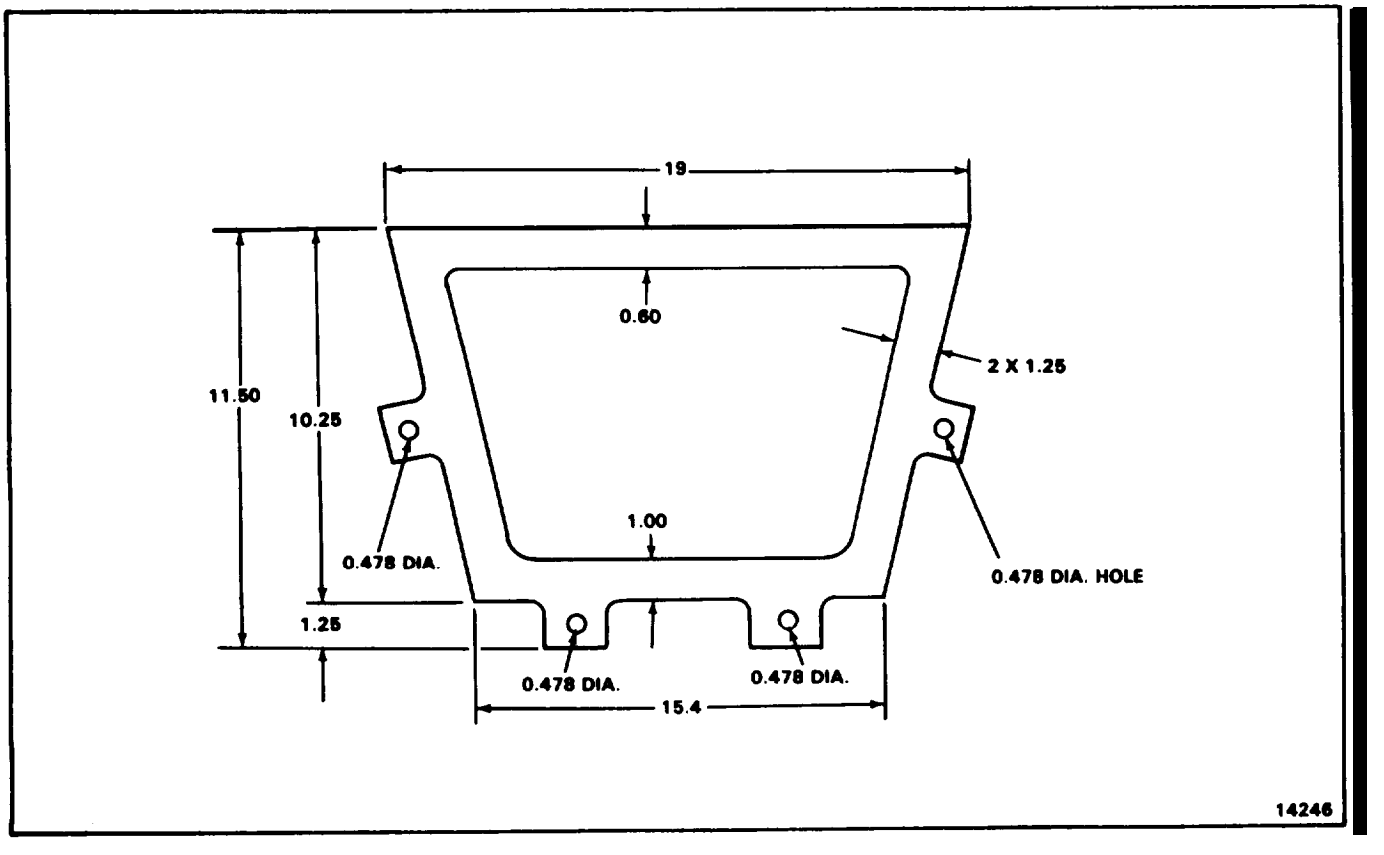
1. FABRICATE FROM FLEXIBLE POLYVINYL CHLORIDE TUBING CLEAR COLOR.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.375 OD X 0.062 WALL X 3.9 LENGTH.
4. CUT TO FIT.

END OF TASK

E-96 FWD PYLON COOLING AIR INLET FRAME 145S1903-3 E-96

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.032 X 11.6 X 19.2.
4. USE OLD FRAME FOR TEMPLATE WHEN MAKING REPLACEMENT FRAME.
5. FINISH AS REQUIRED.

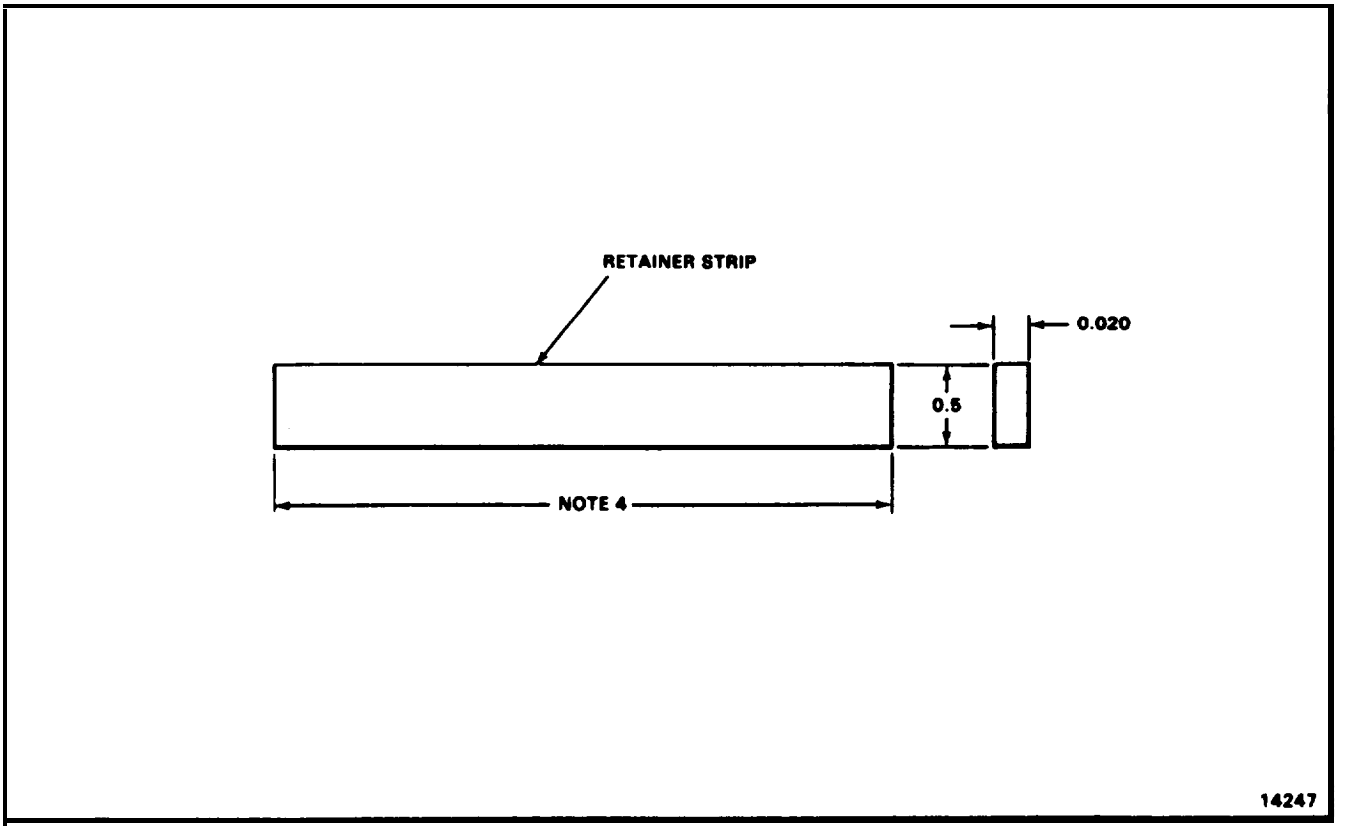


END OF TASK

E-97 FWD PYLON COOLING AIR INLET RETAINER STRIP 145S1903-5 E-97

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.020 X 0.5 X 8.1.
4. CUT TO FIT.
5. FINISH AS REQUIRED.

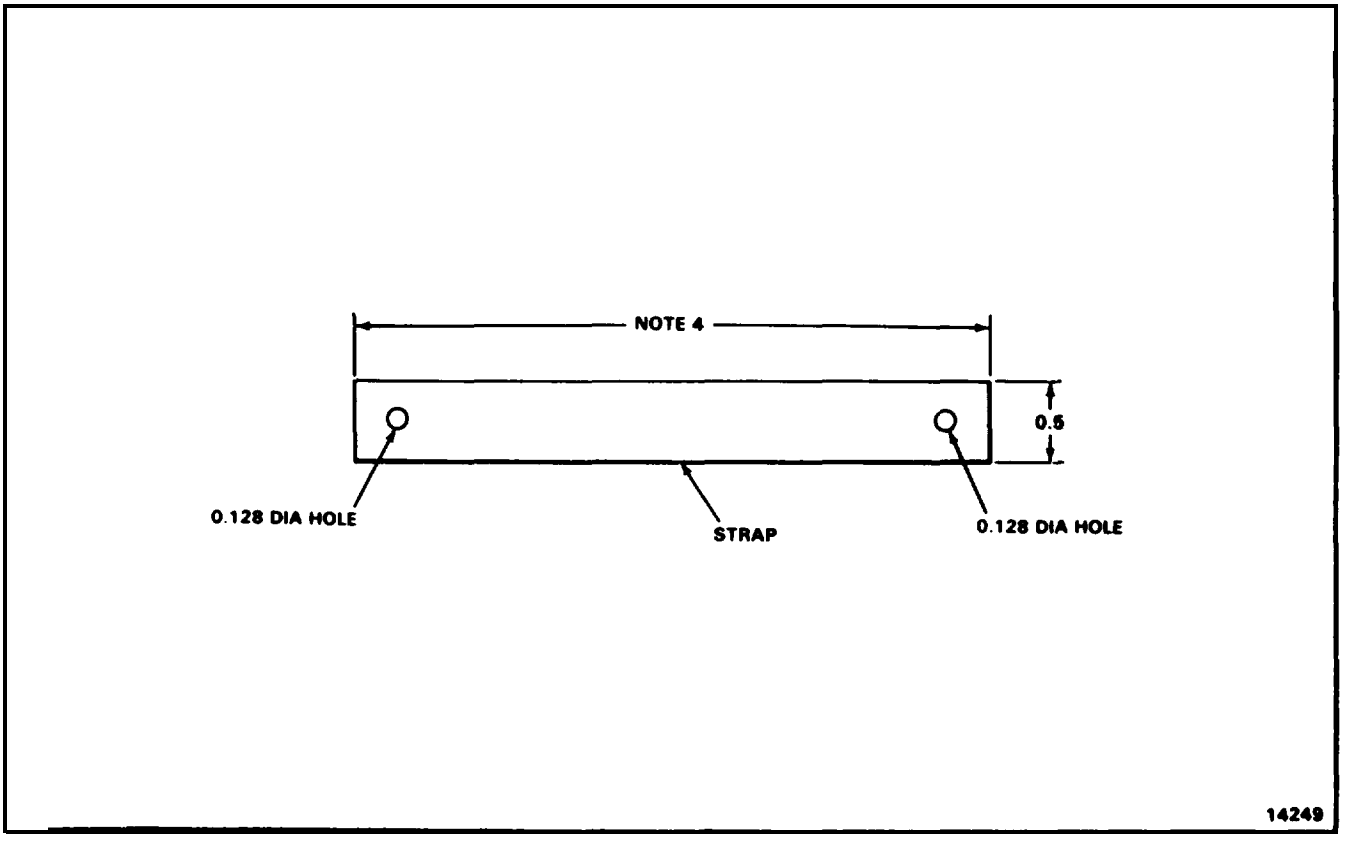


END OF TASK

E-99 FWD PYLON COOLING AIR INLET STRAP 145S1903-19 E-99

NOTES:

1. FABRICATE FROM TUBULAR WEBBING 0.070-10 MIL-W-5625-1000-BS.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.5 X 4.5.
4. MAKE REPLACEMENT SAME LENGTH AS ORIGINAL.

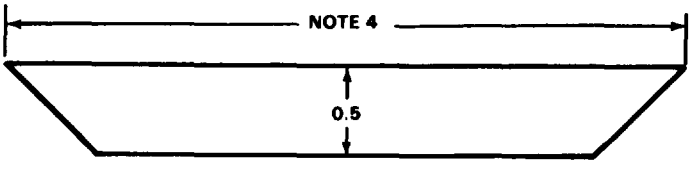


END OF TASK

Task E-98 and Page E-143 deleted.

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.020 X 0.5 X 4.3.
4. MAKE REPLACEMENT SAME LENGTH AS ORIGINAL.
5. FINISH AS REQUIRED.



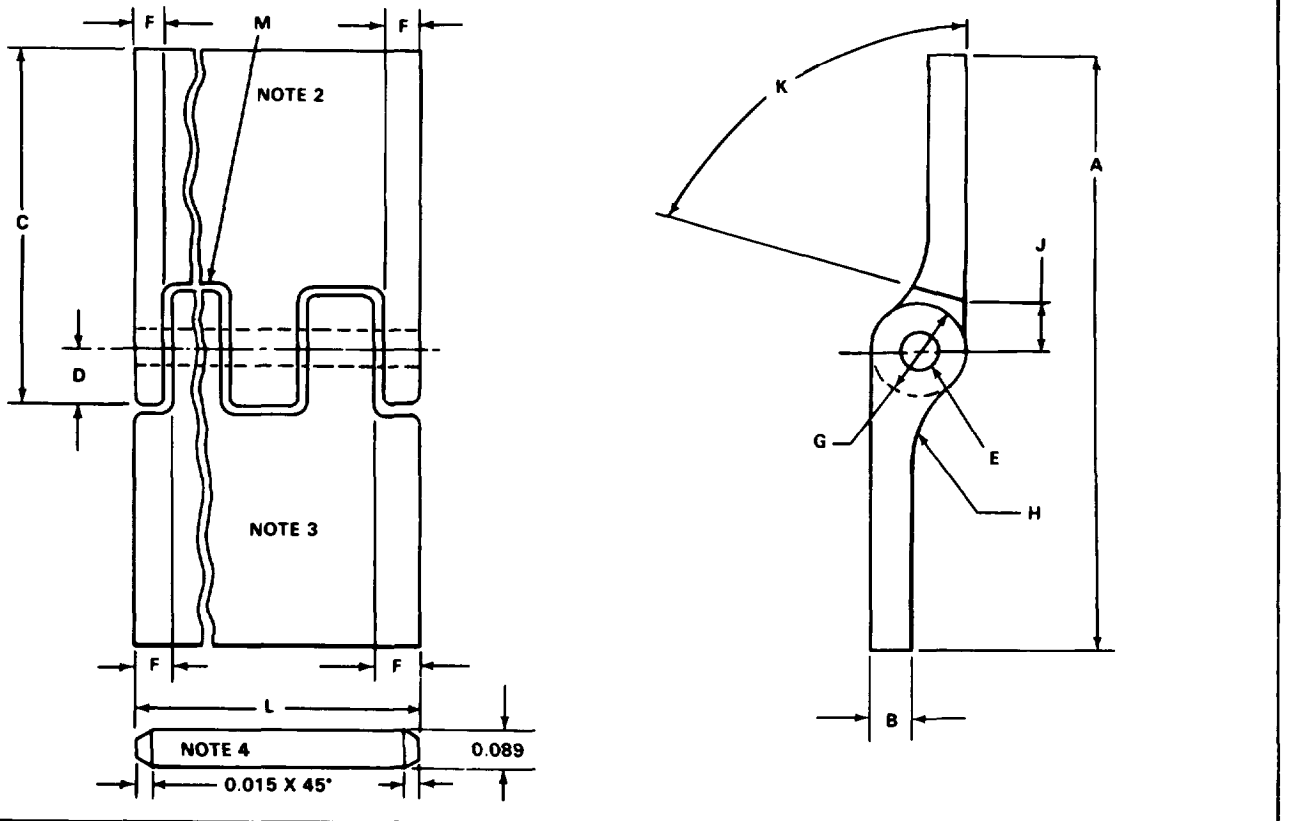
14250

END OF TASK

E-101 FWD PYLON COOLING AIR INLET DOOR HINGE 145S1903-16 E-101

NOTES:

1. FABRICATE HINGE HALVES FROM ALUMINUM ALLOY 2024-T73511.
2. Y HALF HINGE MS20001 PY4-1700.
3. X HALF HINGE MS20001 PX4-1700.
4. HINGE PIN MS20253 P2-1680 MADE FROM CAD PLATED CRES STEEL.
5. ALL DIMENSIONS IN INCHES.
6. STAKE PIN TO SPEC MS33540.
7. FINISH WITH YELLOW ZINC CHROMATE PRIMER (E-290).



A REF WIDTH OPEN	B MAX	B MIN	C MAX	C MIN	D ±0.005	E DIA +0.005 −0.000	F MIN	G DIA MAX	G DIA MIN	H ±0.031 RAD	J ±0.016	PIN DIA	K ±2°	L ±0.020	M RAD ±0.005
1.5	0.056	0.044	0.850	0.830	0.090	0.093	0.188	0.187	0.183	0.174	0.135	0.089	75°	17	0.031

14251

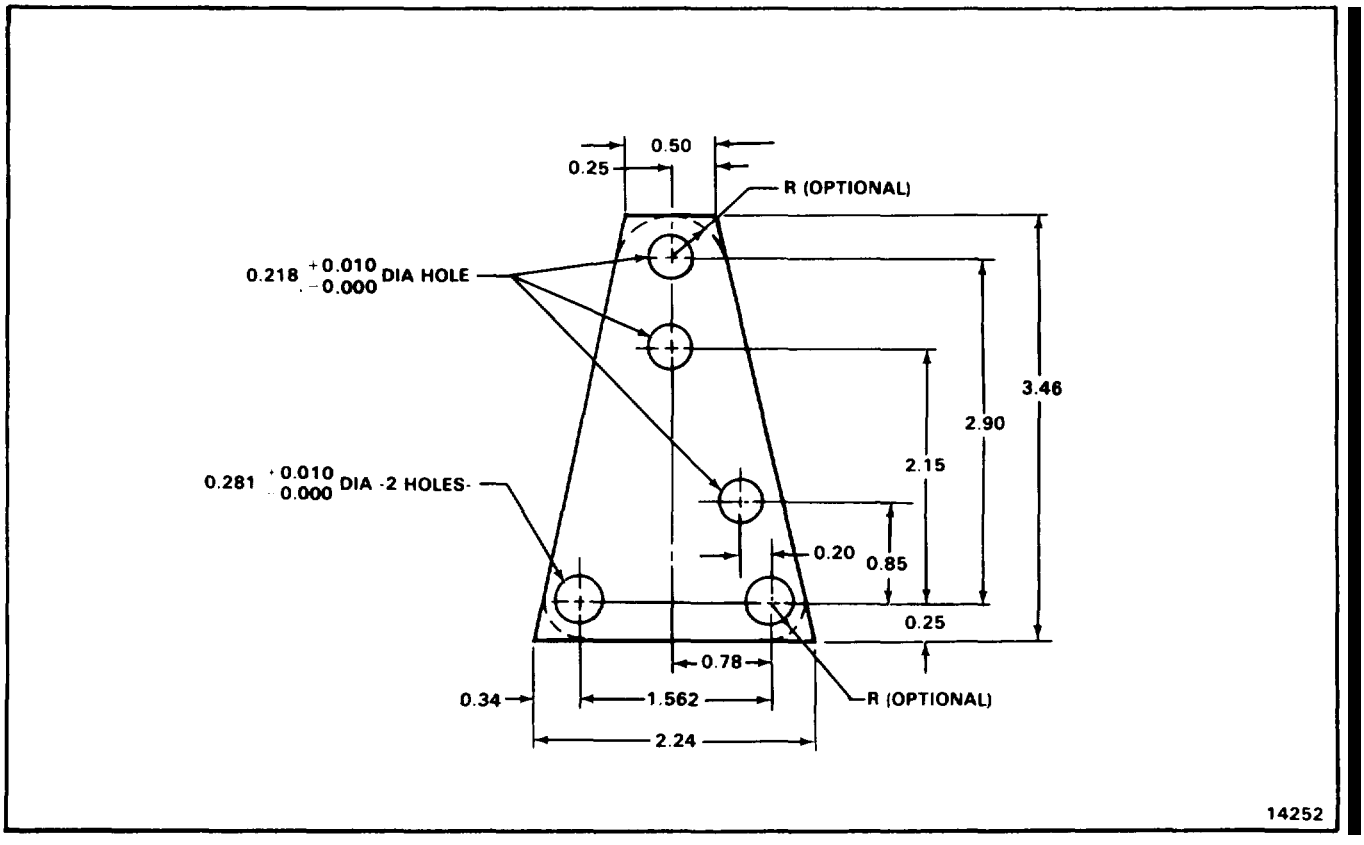
END OF TASK

NOTES:

1. FABRICATE FROM AISI-301 CORROSION RESISTANT SHEET TO SPEC MIL-S-5059 COMP 301, 1/2 HARD.

2. ALL DIMENSIONS IN INCHES.

3. STOCK SIZE 0.50 X 2.25 X 3.60.



END OF TASK

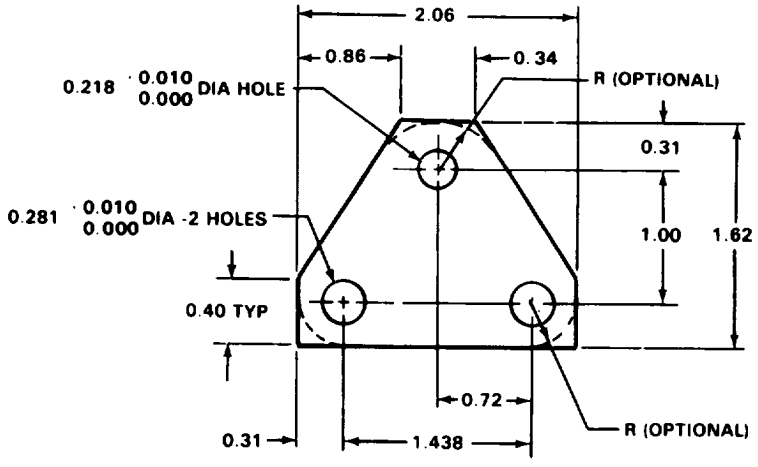
E-103 ENGINE REMOUNTABLE BRACKETS 114P5018-2 E-103

NOTES:

1. FABRICATE FROM AISI-301 CORROSION RESISTANT SHEET TO SPEC MIL-S-5059 COMP 301, 1/2 HARD.

2. ALL DIMENSIONS IN INCHES.

3. STOCK SIZE
   0.050 x 1.70 x 2.10.



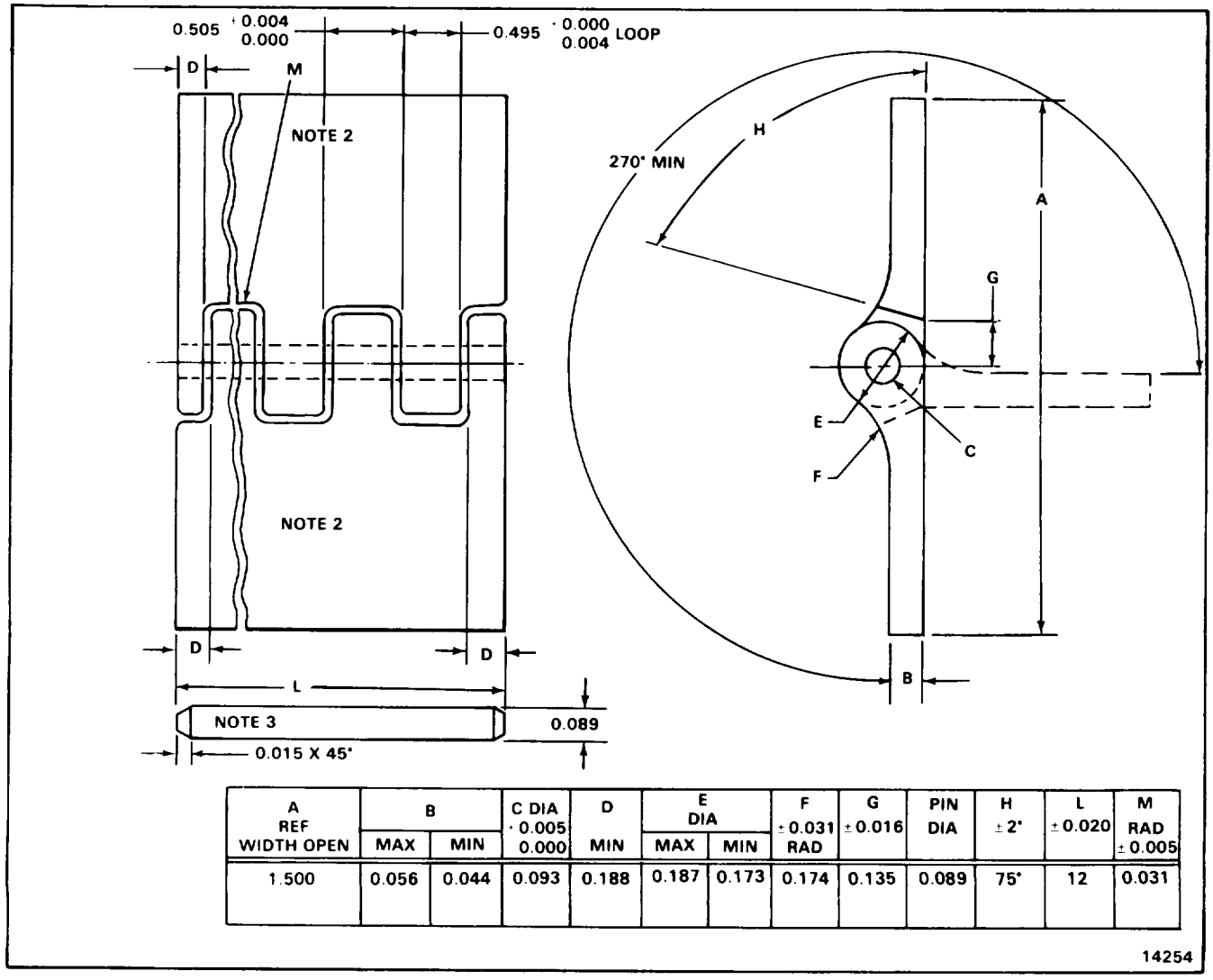
14253

END OF TASK

E-104 FWD PYLON FIXED FAIRING HINGE HALF 114S1902-117 E-104

NOTES:

1. MADE FROM ALUMINUM ALLOY 2024-T3511.
2. H TYPE HALF HINGE MS2001-PH4.
3. HINGE PIN MS20253 P2-1 680 MADE FROM CAD PLATED CRES STEEL.
4. ALL DIMENSIONS IN INCHES.
5. FINISH WITH YELLOW ZINC CHROMATE PRIMER (E-290).



A REF WIDTH OPEN	B MAX	B MIN	C DIA +0.005 -0.000	D MIN	E DIA MAX	E DIA MIN	F ±0.031 RAD	G ±0.016	PIN DIA	H ±2°	L ±0.020	M RAD ±0.005
1.500	0.056	0.044	0.093	0.188	0.187	0.173	0.174	0.135	0.089	75°	12	0.031

14254

END OF TASK

E-105 FWD PYLON FIXED FAIRING RUBBER SEAL 114S1902-215 E-10S

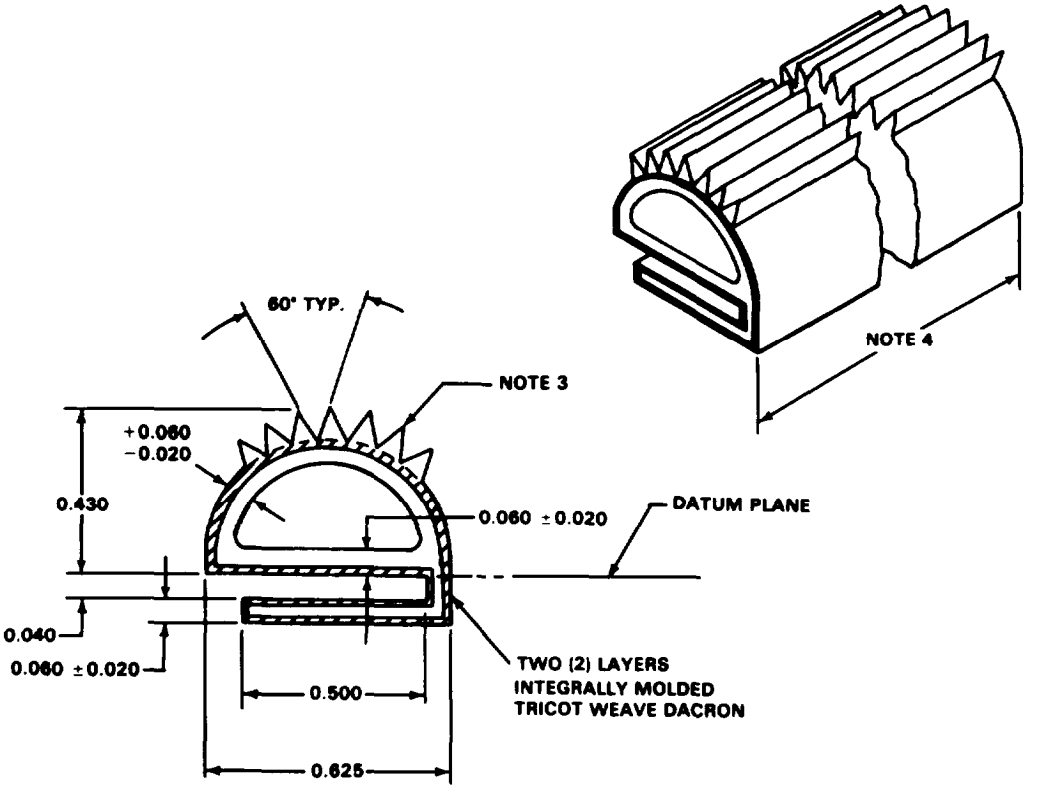
NOTES:

1. MADE OF SILICONE RUBBER
   ZZ-R-765 CLASS 1b.
   GRADE 40.

2. ALL DIMENSIONS IN INCHES.

3. STANDARD SHAPE VS80572
   LENGTH 31, COLOR GRAY.

4. CUT SEAL TO FIT.



END OF TASK

E-106 CABIN ESCAPE HATCH RUBBER SEAL 114S1619-21 E-106

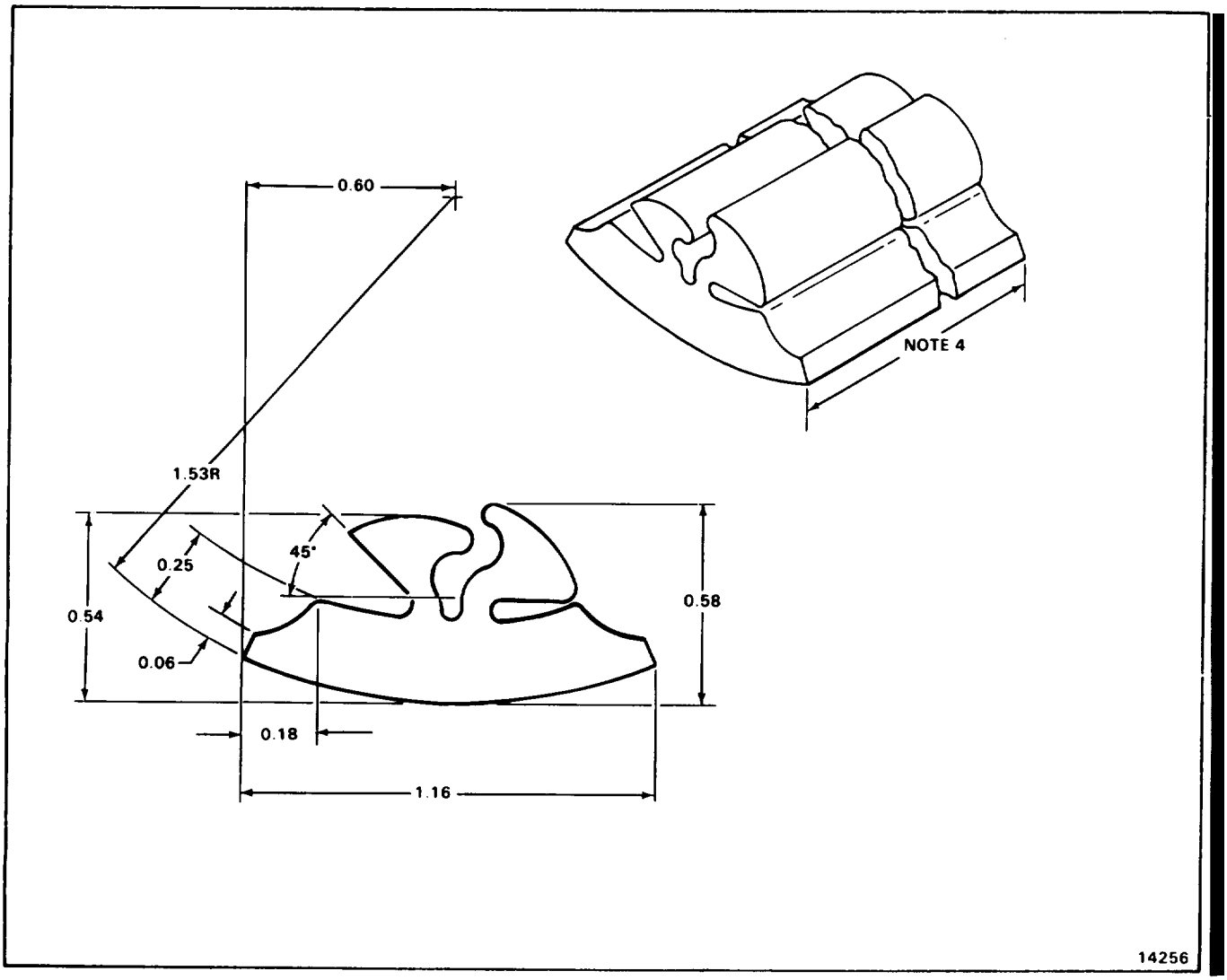
NOTES:

1. MADE OF SILICONE RUBBER
   22-R-765 CLASS III
   GRADE 80.

2. ALL DIMENSIONS IN INCHES.

3. STANDARD SHAPE VS80570-2
   LENGTH 120, COLOR BLACK.

4. CUT SEAL TO FIT.

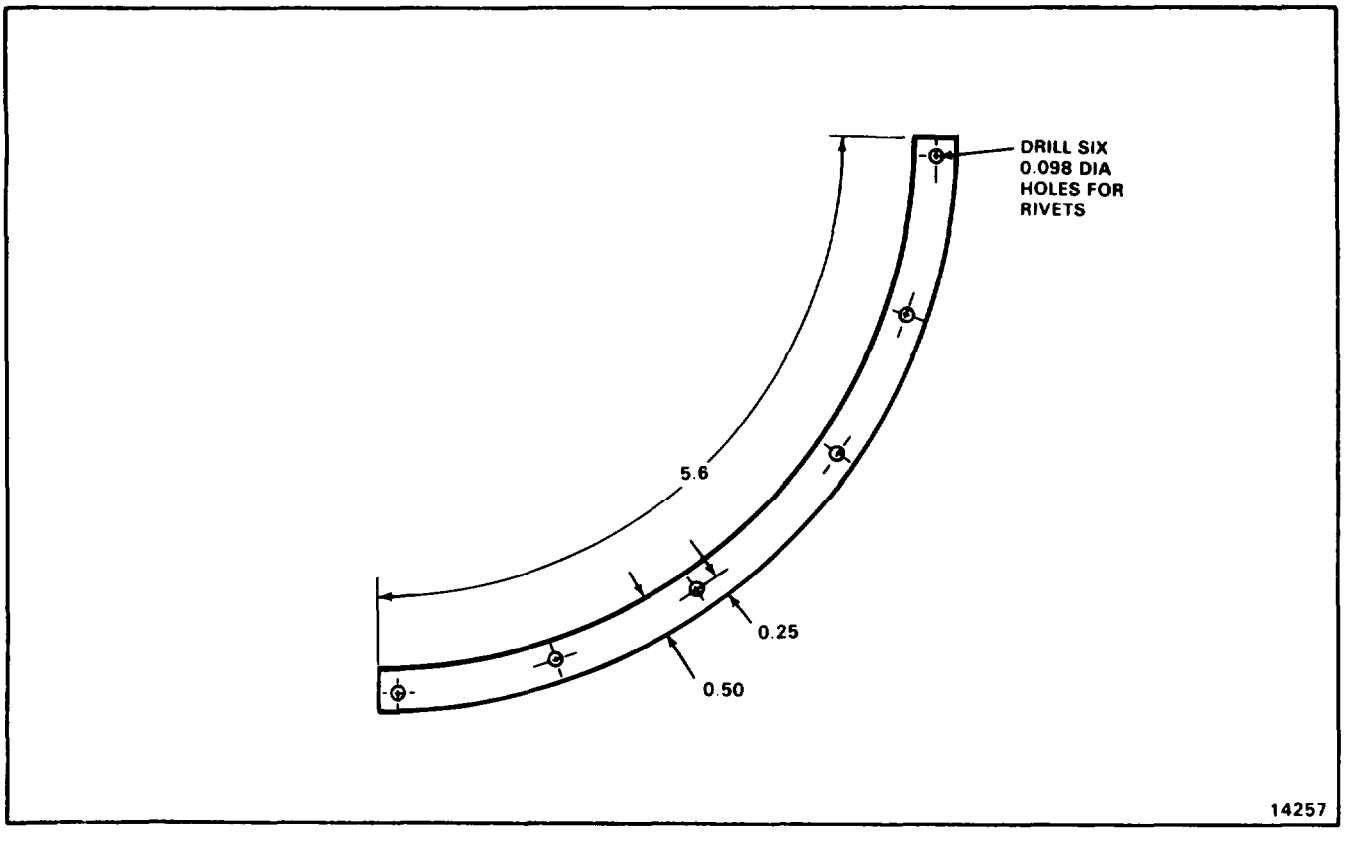


END OF TASK

E-107 RETAINER CABIN LOWER DOOR 114S1620-21 E-107

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.025 X 2.5 X 8.0.
4. USE ORIGINAL RETAINER FOR TEMPLATE IN LOCATING RIVET HOLES IN REPLACEMENT.



END OF TASK

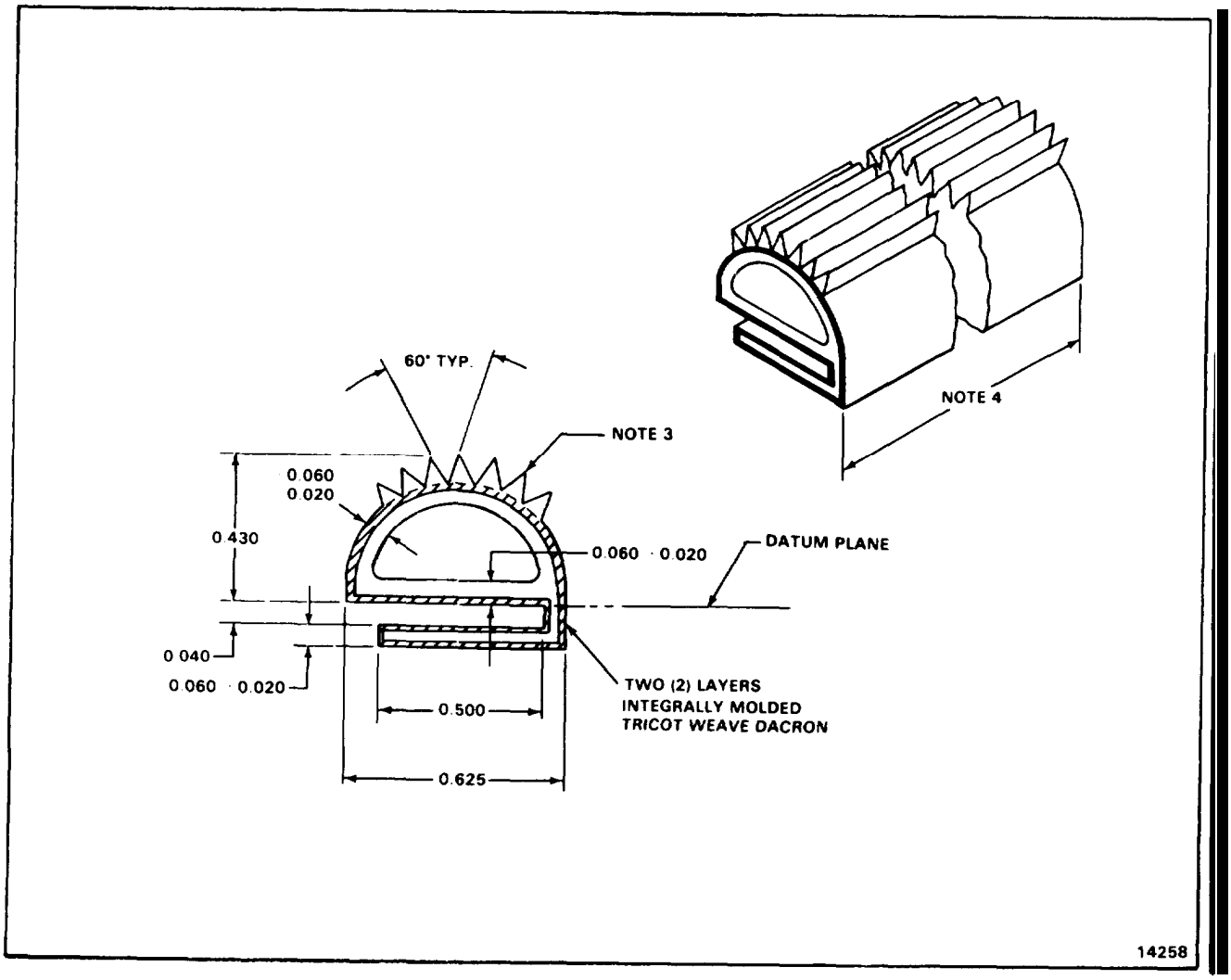
NOTES:

1. MADE OF SILICONE RUBBER
   ZZ-R-765 CLASS 1b.
   GRADE 40.

2. ALL DIMENSIONS IN INCHES.

3. STANDARD SHAPE VS80572-1.
   LENGTH 85, COLOR GRAY.

4. CUT SEAL TO FIT.

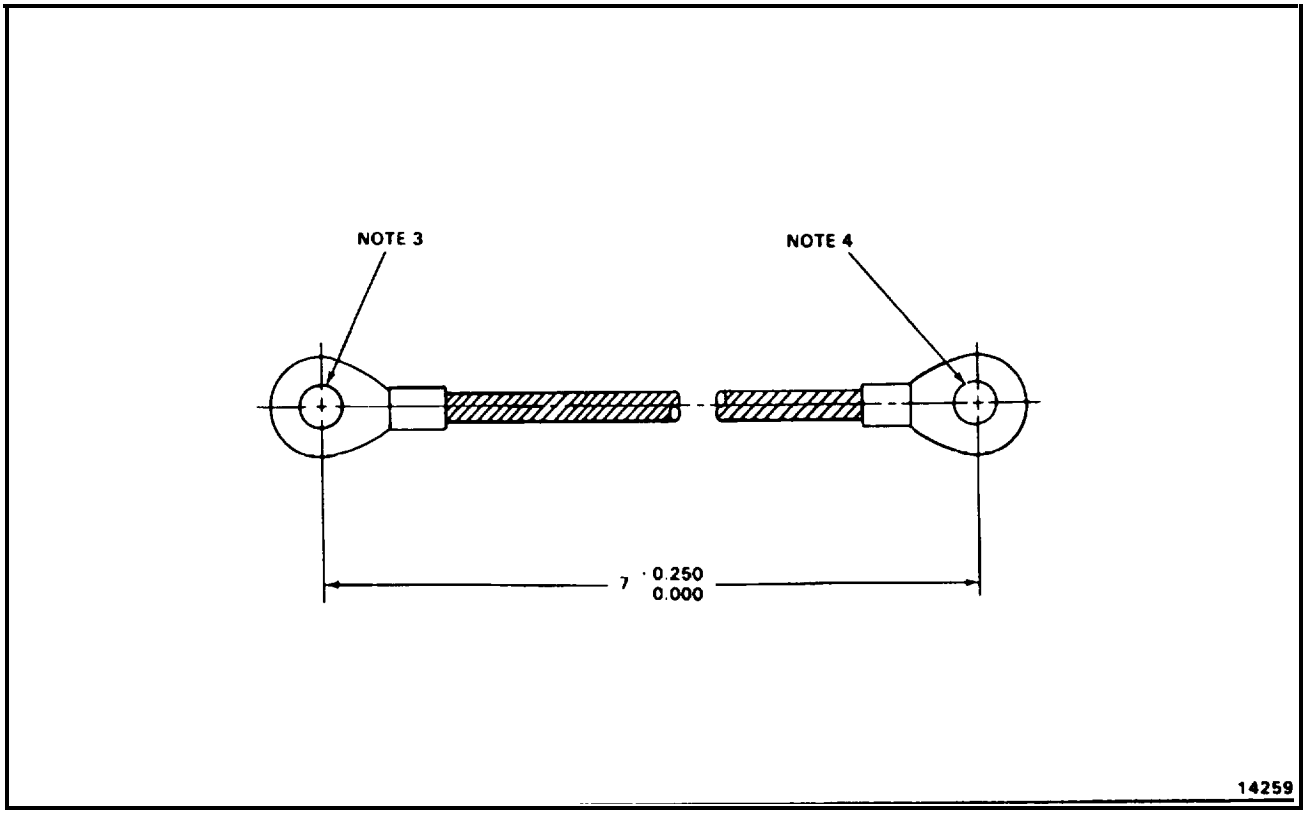


END OF TASK

E-109 ELECTRICAL LEAD MS25083-2AB7 E-109

NOTES:

1. FABRICATE FROM PURE TINNED STRANDED SOFT COPPER WIRE SIZE AWG12 NSN6145-819-0058.
2. ATTACH TERMINALS (MS25036-111,112, 113, 114, 156 0R 157) TO WIRE WITH CRIMPING TOOL (MS25441).
3. TERMINAL NSN5940-00-204-8990 ACCOMMODATES NUMBER 4 OR 6 SIZE STUD. HOLE DIA 0.142 TO 0.152.
4. TERMINAL NSN5940-00-1 43-4795 ACCOMMODATES NUMBER 8 SIZE STUD. HOLE DIA 0.193 TO 0.203
5. TERMINAL 5940-00-143-4794 ACCOMMODATES NUMBER 10 SIZE STUDS.
6. ALL DIMENSIONS IN INCHES.



END OF TASK

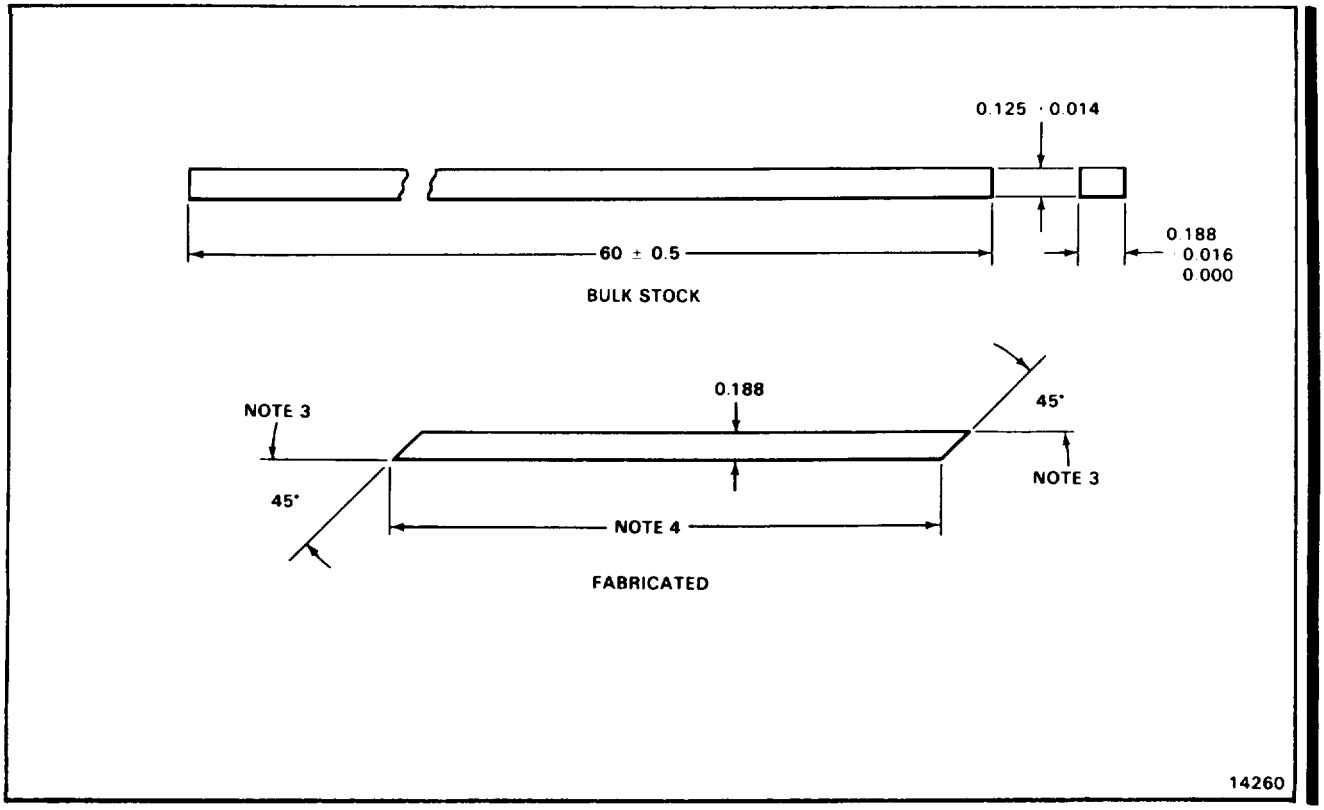
NOTES:

1. FABRICATE FROM FELT STRIP TYPE 1, CLASS 12RI NSN5330-530-4341.

2. ALL DIMENSIONS IN INCHES.

3. CUT ENDS TO OVERLAP AT 45" ANGLES ±5° AS INDICATED.

4. CUT STRIP TO MATCH PERIPHERY OF ROD.



END OF TASK

NOTES:

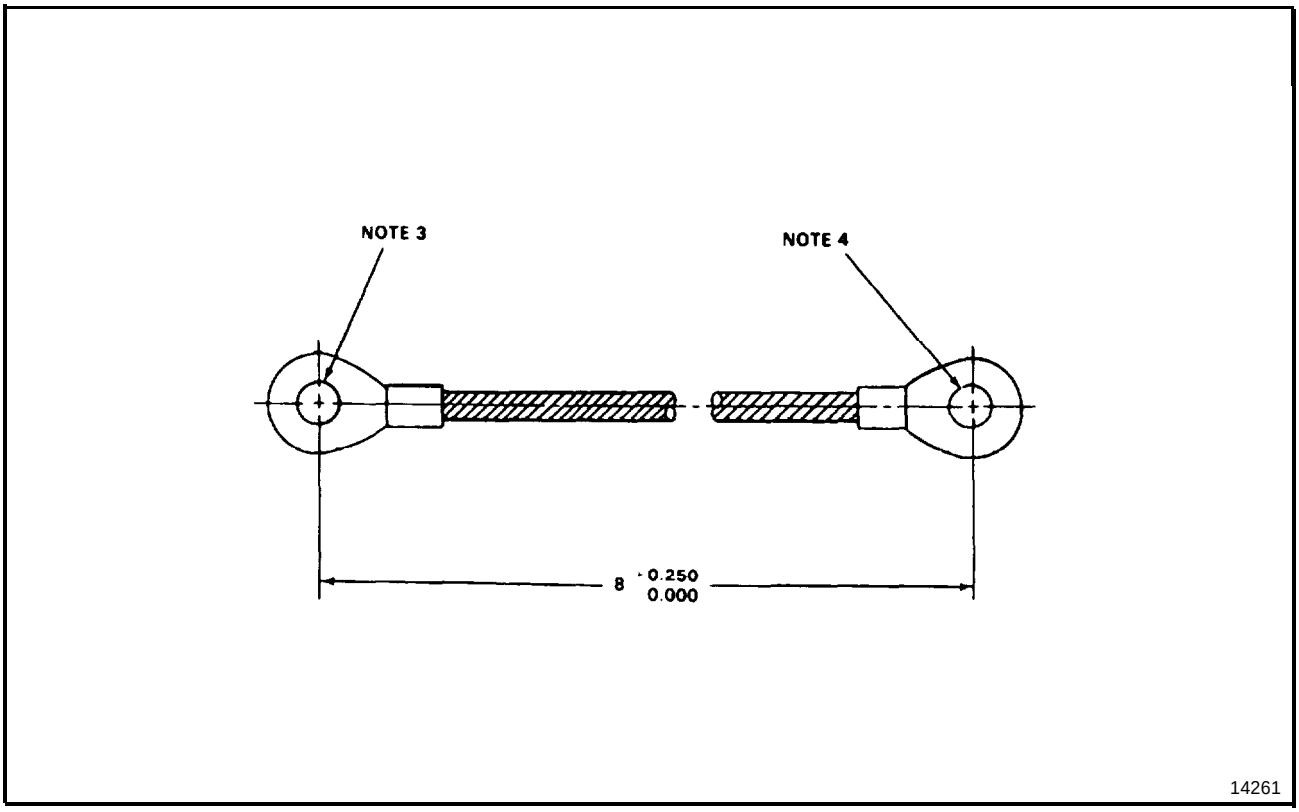
1. FABRICATE FROM PURE TINNED STRANDED SOFT COPPER WIRE SIZE AWG12 NSN6145-819-0058.

2. ATTACH TERMINALS (MS25036-111,112, 113,114, 156 0R 157) TO WIRE WITH CRIMPING TOOL (MS25441).

3. TERMINAL HOLE ACCOMMODATES NUMBER 4 OR 6 SIZE STUD NSN5940-00-204-8990.

4. STUD HOLE (ID) REQUIRED IN TERMINAL NSN5940-00-143-4777 is 0.250..

5. ALL DIMENSIONS IN INCHES.



END OF TASK

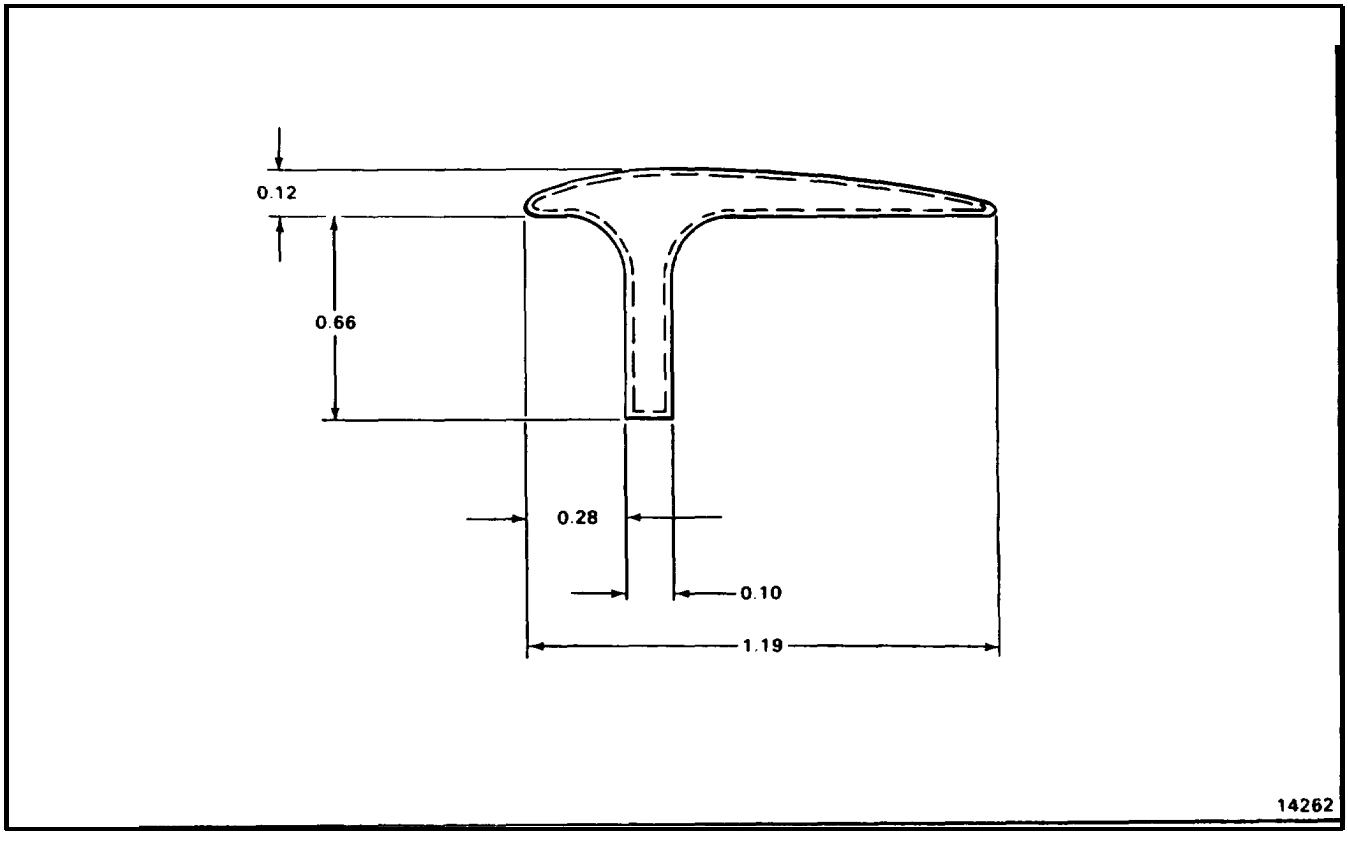
NOTES:

1. FABRICATE FROM SILICONE RUBBER TRICOT KNOT DACRON FABRIC OR EQUIVALENT.

2. COLOR BLACK
   STANDARD SHAPE BAC1530-86.

3. ALL DIMENSIONS IN INCHES.

4. STOCK LENGTH 35.9.
   CUT SEAL TO FIT.

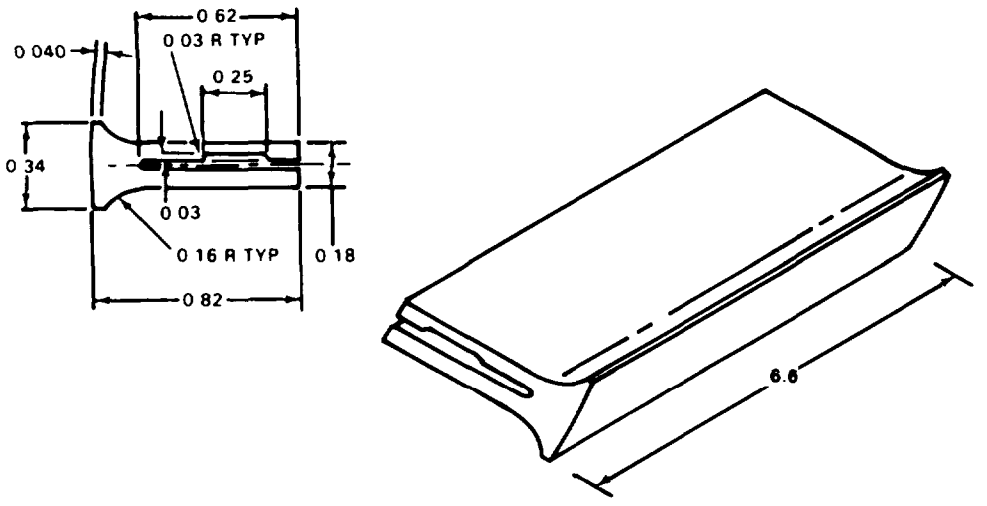


END OF TASK

E-113 SEAL, LEADING EDGE FAIRING 145S4906-31

NOTES:

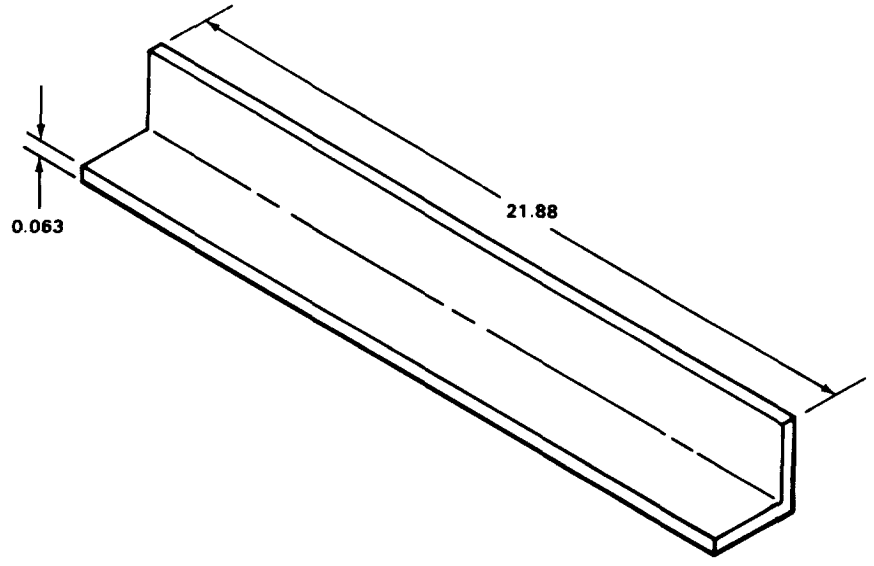
1. MADE OF SILICON RUBBER MIL-R-5847, CLASS III, GRADE 50.
2. ALL DIMENSIONS IN INCHES.
3. STANDARD SHAPE VS80546-1 LENGTH 6.6, COLOR BLACK.
4. CUT SEAL TO FIT.



END OF TASK

NOTES:

1. FABRICATE FROM ALUMINUM EXTRUSION 0.063 THICK 2024-T 3511 PER QQ-A-200/3
2. ALL DIMENSIONS IN INCHES.
3. STOCK AND 10134-0602 X 22.00 (0.063) THICK.
4. FINISH AS REQUIRED.



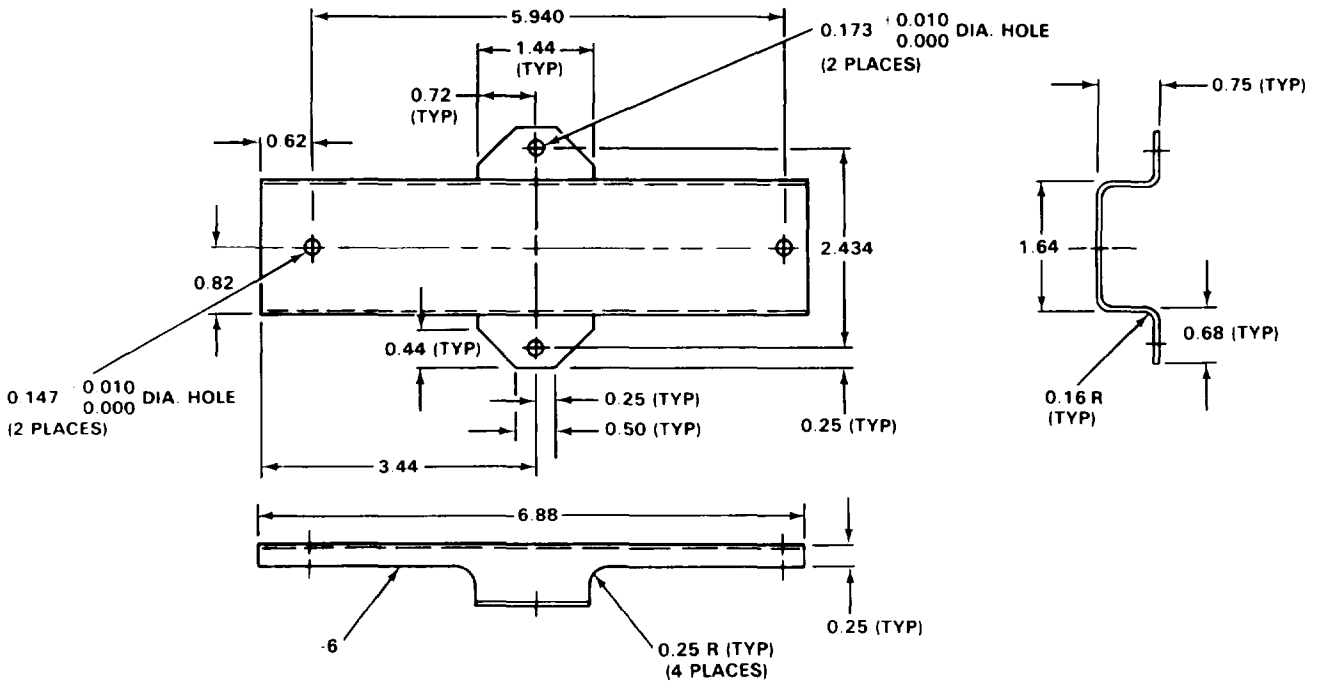
17042

END OF TASK

E-115 HAT SECTION. ELECTRONICS COMPARTMENT 414E3301-6 E-115

NOTES:

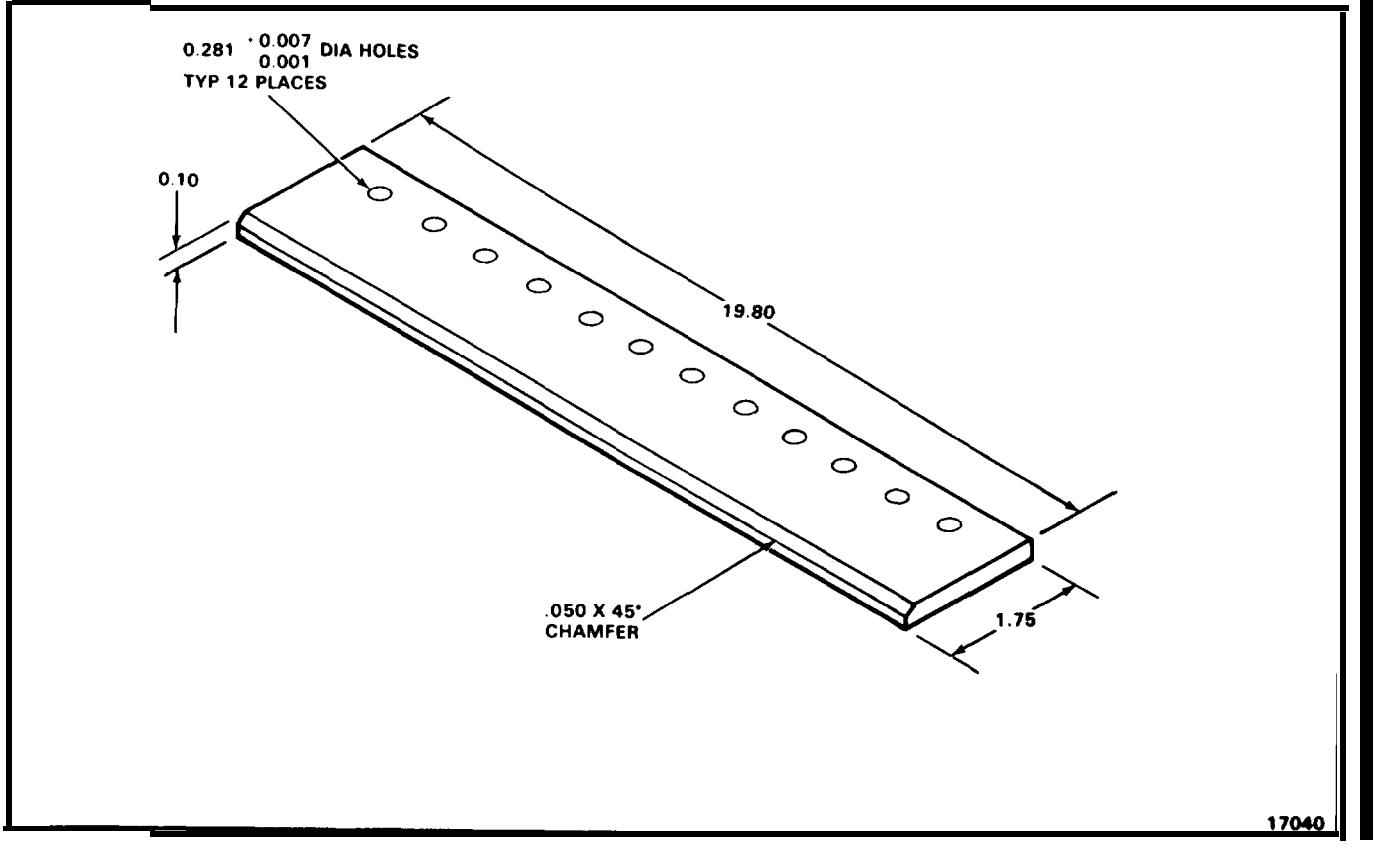
1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/5.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.040 X 5.0 X 7.0.
4. FINISH AS REQUIRED



END OF TASK

NOTES:

1. FABRICATE FROM CLAD ALUMINUM ALLOY 7075-T6 PER QQ-A-25015
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.100 X 1.800 X 19.8.
4. USE ORIGINAL FOR TEMPLATE WHEN MAKING REPLACEMENT.
5. FINISH AS REQUIRED.

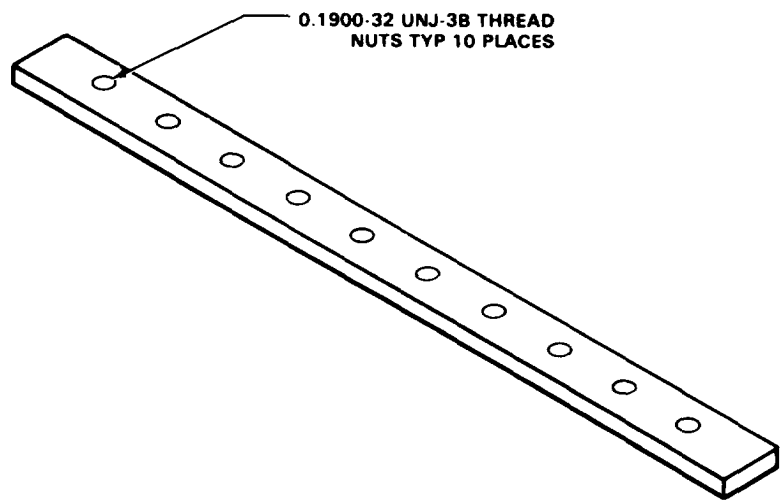


END OF TASK

E-117 GANG CHANNEL 114S2554-53

NOTES:

1. FABRICATE FROM NAS689P16-10 GANG CHANNEL.
2. ALL DIMENSIONS IN INCHES.
3. NUTS ARE 0.1900-32 UNJ-3B THREAD IN ALUMINUM CHANNEL.
4. CUT LENGTH SAME AS REPLACEMENT PART.



17039

END OF TASK

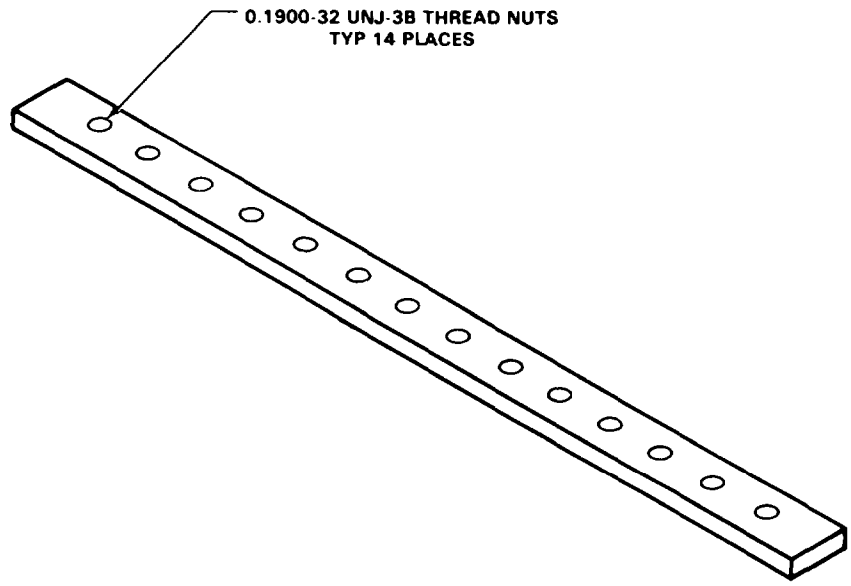
NOTES:

1. FABRICATE FROM NAS689P16-14 GANG CHANNEL.

2. ALL DIMENSIONS IN INCHES.

3. NUTS ARE 0.1900-32 UNJ-3B THREAD IN ALUMINUM CHANNEL.

4. CUT LENGTH SAME AS REPLACEMENT PART.

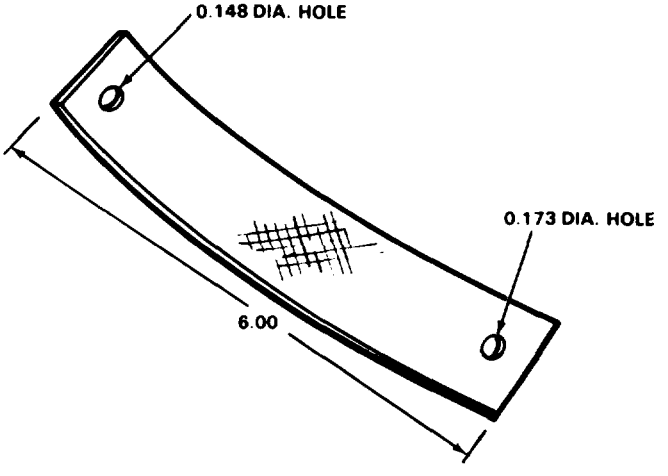


END OF TASK

E-119 STRAP ACCESS DOOR 114S4603-19 E-119

NOTES:

1. FABRICATE FROM TUBULAR WEBBING PER MIL-W-5625 COLOR MED. GRAY.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.070 –0. 10 X 0.50 LENGTH 6 INCHES.
4. SEAR FASTENER HOLES AND STRAP ENDS TO PREVENT FRAYING.



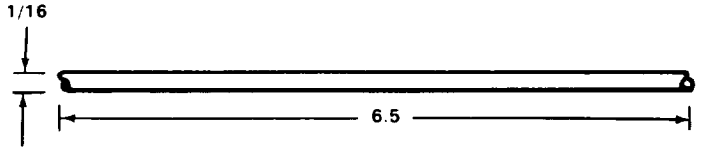
17038

END OF TASK

E-120 CABLE LOWER ENGINE ACCESS PANEL 114P8052-3

NOTES:

1. FABRICATE FROM CRESCENT CABLE PER MIL-W-83420 TYPE 1, COMPOSITION B.
2. ALL DIMENSIONS IN INCHES,
3. CABLE STOCK 1/16 X 7 X 7 LENGTH 6.5.



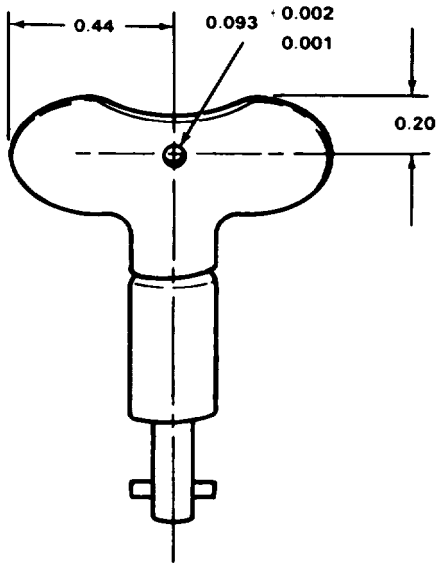
17037

END OF TASK

E-121 STUD ACCESS PANEL LOWER ENGINE 114P8052-2 E-121

NOTES:

1. FABRICATE FROM 4002-10W CAMLOCK FASTENER.
2. ALL DIMENSIONS IN INCHES.
3. FINISH AS REQUIRED.



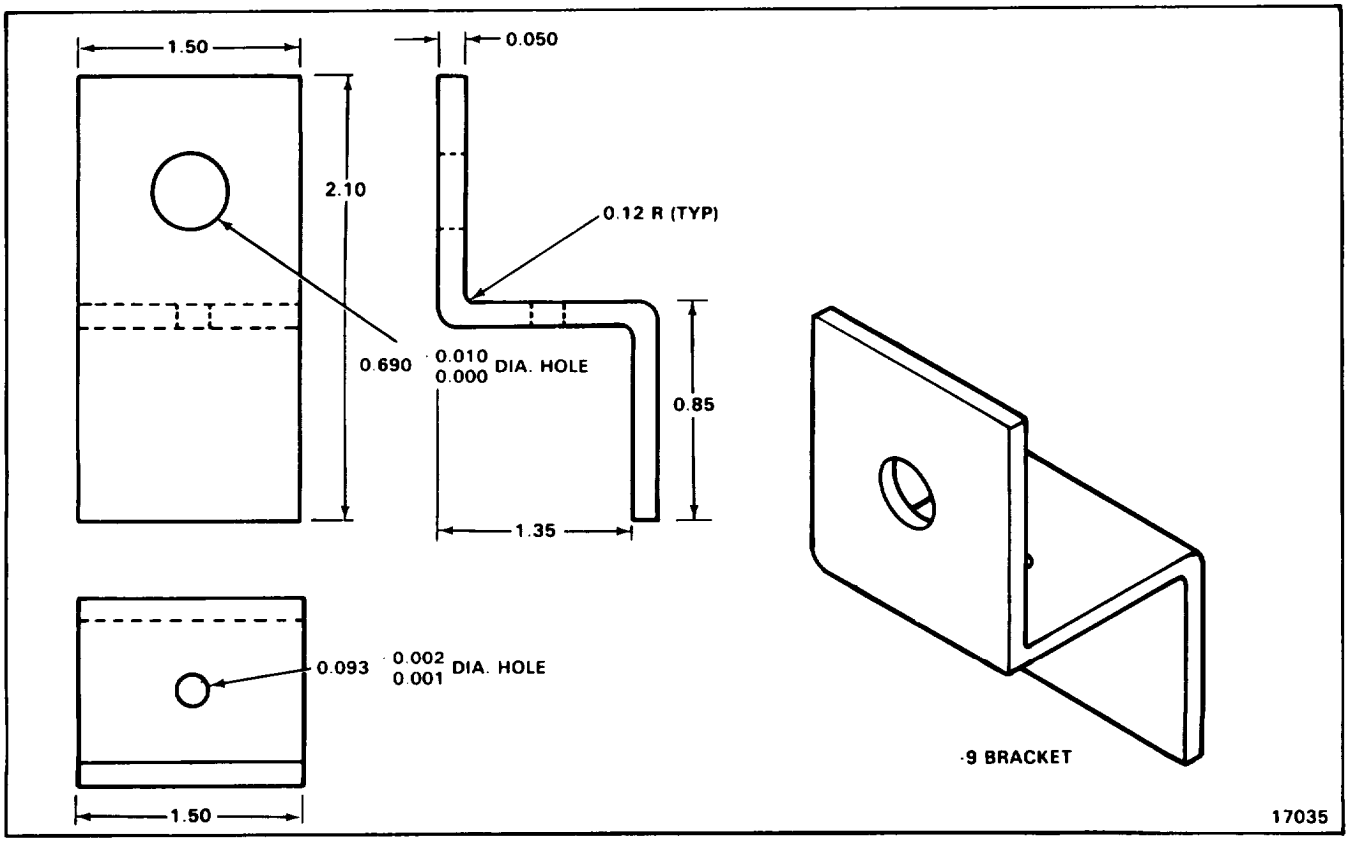
17036

END OF TASK

E-122 BRACKET, AFT PYLON HYDAULIC BAY DOOR 145S4607-9 E-122

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY BARE SHT 7075 PER QQ-A-250/12.
2. ALL DIMENSIONS IN INCHES.
3. BRACKET STOCK SIZE .050 X 3.6 X 1.6.
4. USE ORIGINAL FOR TEMPLATE WHEN MAKING REPLACEMENT.
5. HEAT TREAT TO -T6 CONDITION PER BAC 5602.
6. FINISH AS REQUIRED.

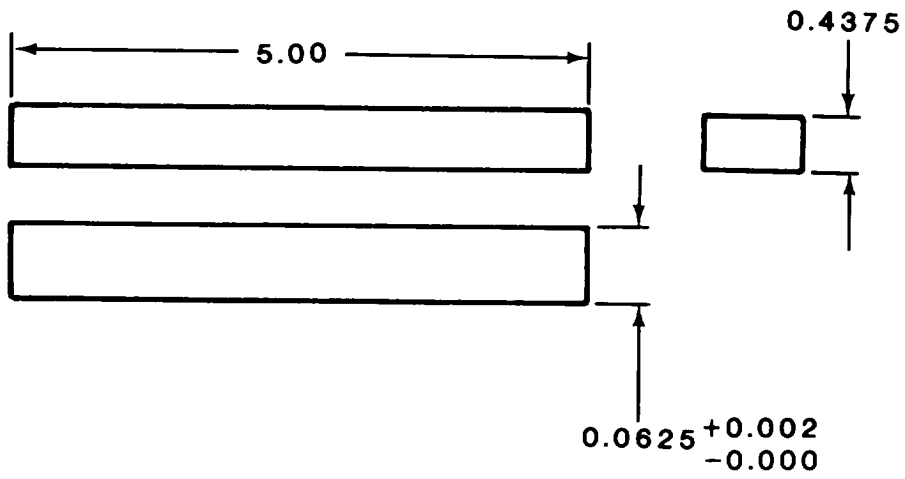


END OF TASK

E-123 ENGINE DRAG STRUT SLOTTED BUSHING INSTALLATION BAR E-123

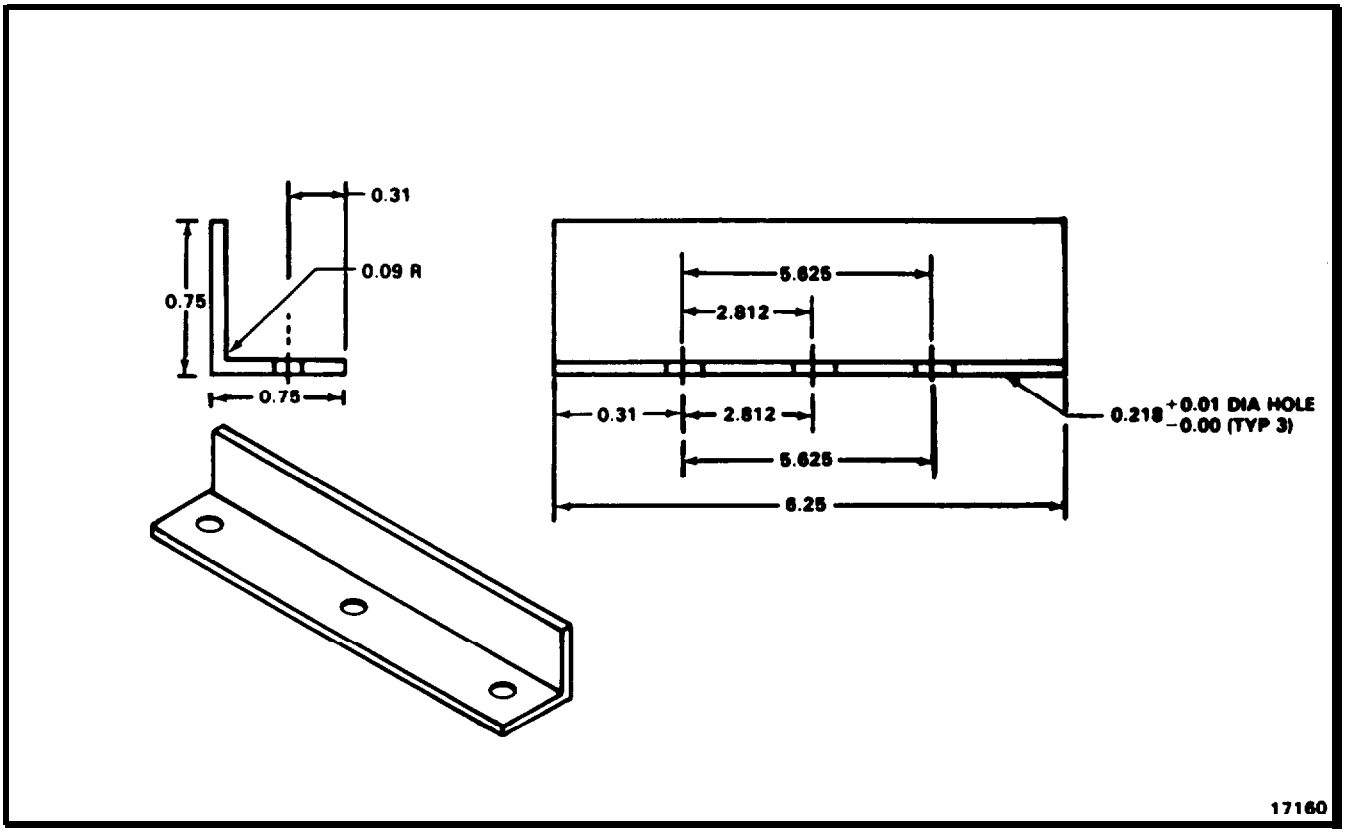
NOTES:

1. FABRICATE FROM 4130 STEEL
2. ALL DIMENSIONS IN INCHES
3. BREAK SHARP EDGES



NOTES:

1. FABRICATE FROM ALUMINUM EXTRUSION 0.063 THICK 2024-T3511 PER QQ-A-200/3.
2. ALL DIMENSIONS IN INCHES.
3. STOCK AND 10133-0601 EXTRUSION 0.063 THICK.
4. FINISH AS REQUIRED.



END OF TASK

E-125 BRACKET, RADIO COMPARTMENT RACK 145S1621-12 E-125

NOTES:

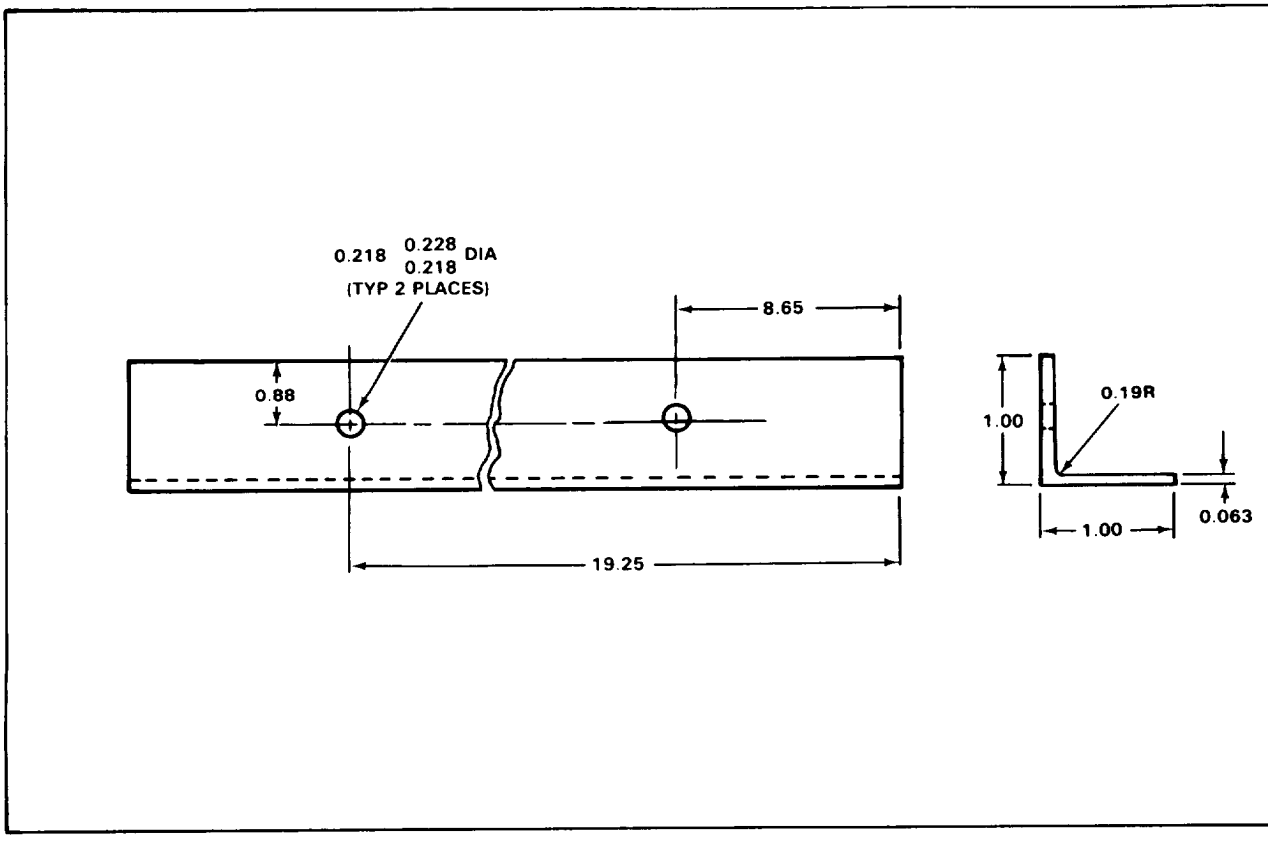
1. FABRICATE FROM ALUMINUM CLAD ALLOY 2024-T3 PER QQ-A-250/5.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.050 X 3.2 X 5.3.
4. USE ORIGINAL PART TO LOCATE HOLES.
5. FINISH AS REQUIRED.

END OF TASK

E-126 ANGLE, CORNER 145E3102-17 E-126

NOTES:

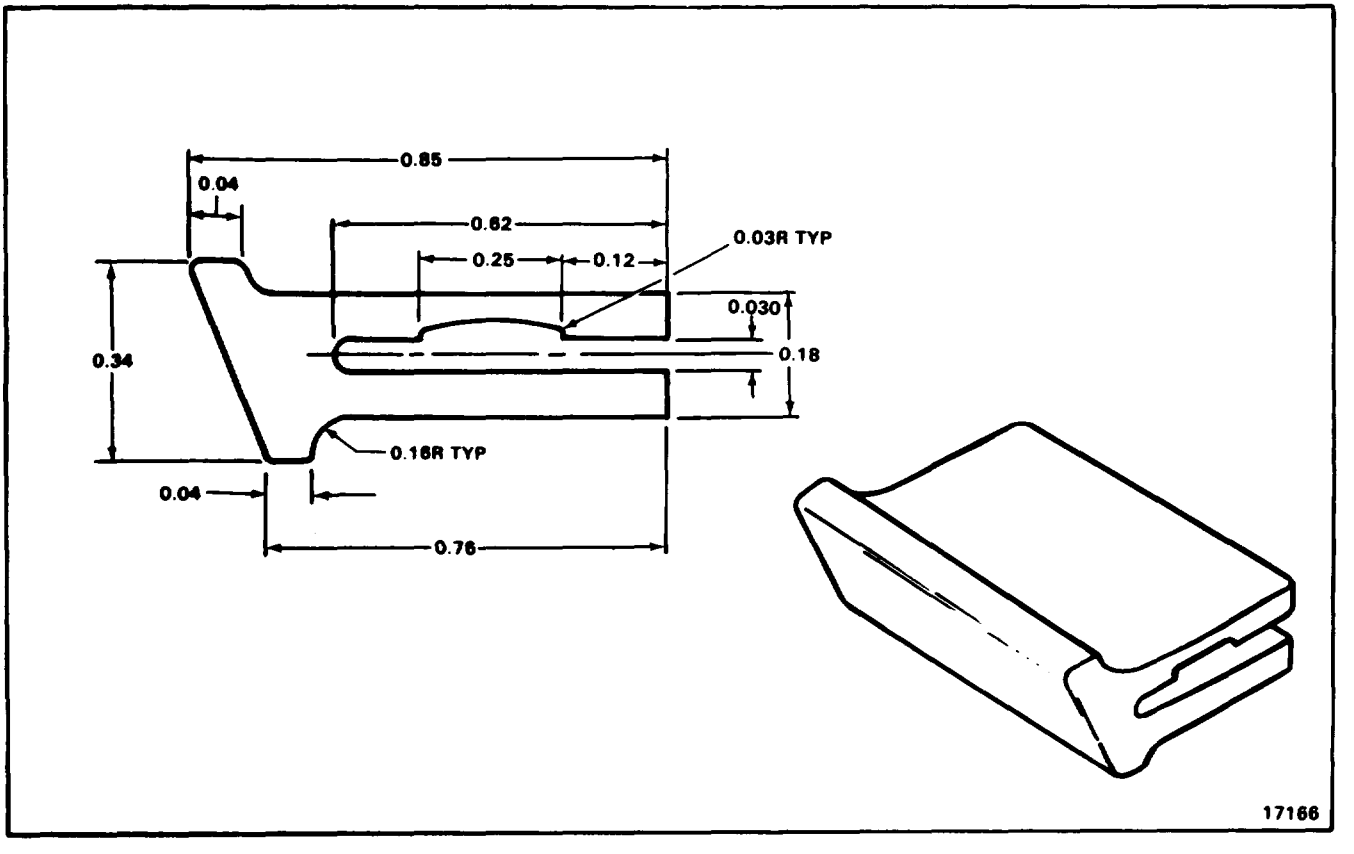
1. **FABRICATE FROM ALUMINUM EXTRUSION 2024-T3511 PER QQ-A-200/3.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE AND 10133-1001 X 23.8.**
4. **USE OLD PART AS TEMPLATE WHEN MAKING REPLACEMENT.**
5. **FINISH AS REQUIRED.**



END OF TASK

NOTES:

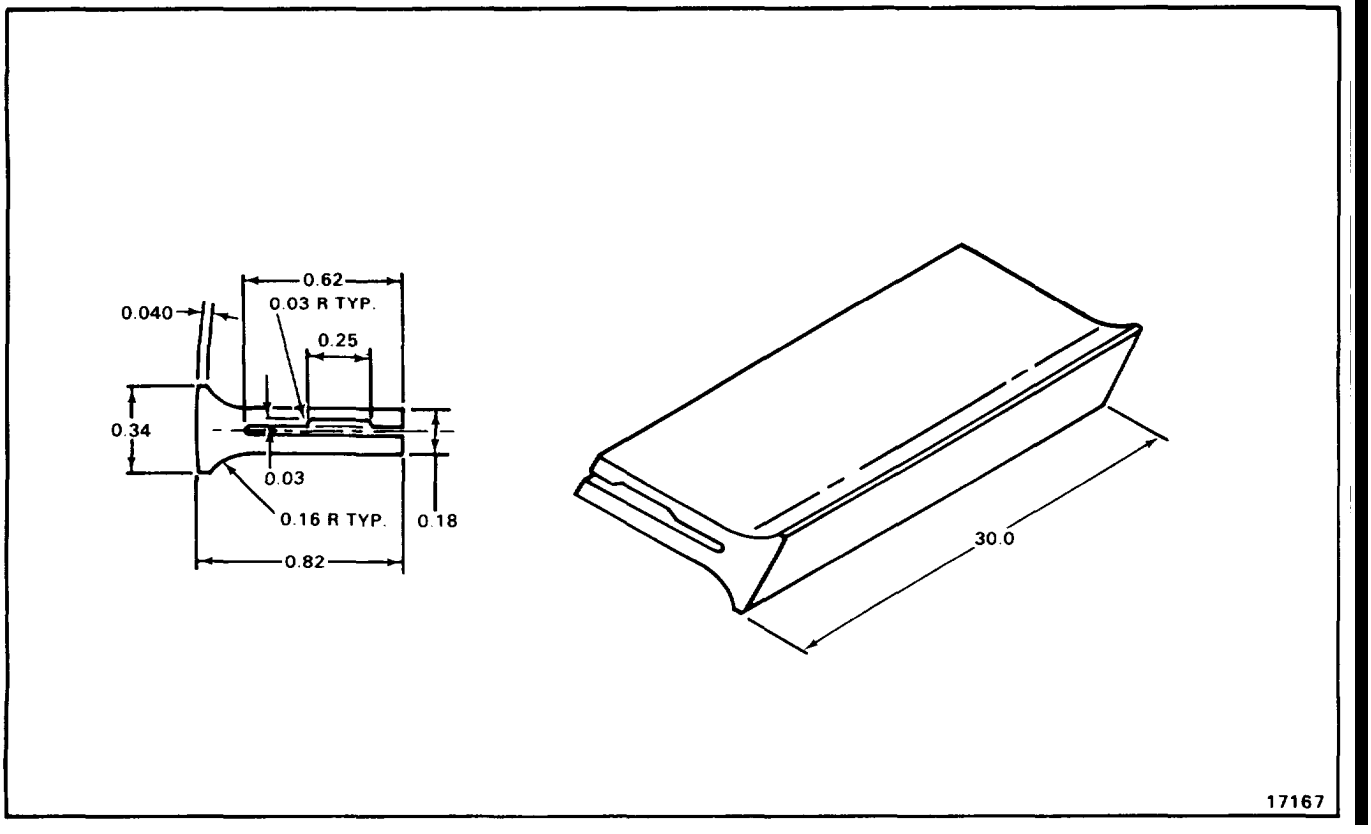
1. **MAKE FROM SILICON RUBBER MIL-R-5847 CLASS III, GRADE 50, COLOR BLACK.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SHAPE NUMBER VS80555-1 X 22.8.**
4. **CUT LENGTH TO FIT.**



E-128 CHAFING STRIP 114S4901-213

NOTES:

1. **MAKE FROM SILICON RUBBER MIL-R-5847 CLASS III, GRADE 50, COLOR BLACK.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SHAPE NUMBER VS80546-1 X 30.0.**
4. **CUT LENGTH TO FIT.**

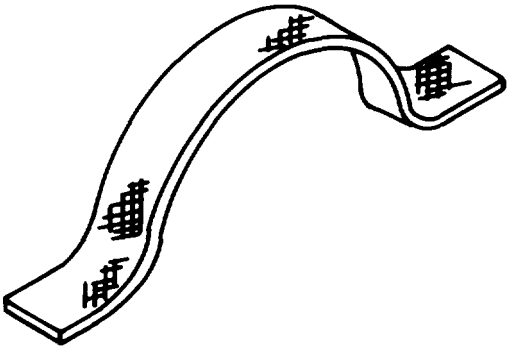


END OF TASK

E-129 FUEL POD ACCESS PANEL STRAP 114S5913-8 E-129

NOTES:

1. **MAKE FROM WOVEN NYLON WEBBING MIL-W-4088, TYPE 1, COLOR CINDER GRAY.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE: 10.0 LONG X 5/8 WIDE.**

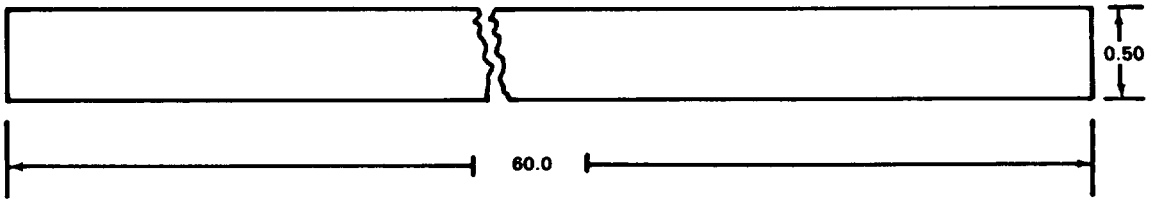


17006

END OF TASK

NOTES:

1. **FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 7075-T6 PER QQ-A-250/5.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.025 X 0.50 X 60.0.**
4. **PICK UP RIVET LOCATIONS FROM EXISTING HOLES IN DOOR.**



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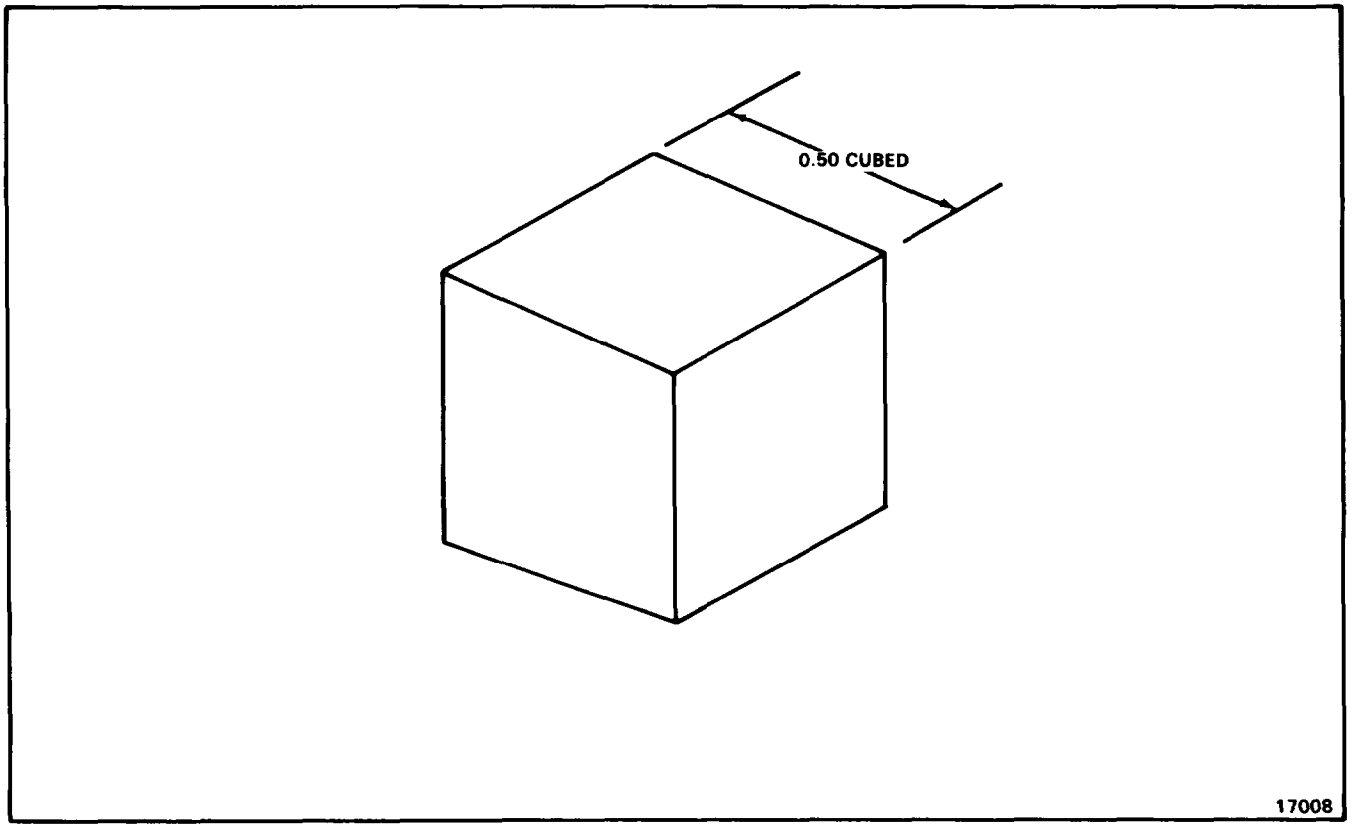
END OF TASK

E-131 CARGO DOOR SEAL PLUG 114S6002-105

NOTES:

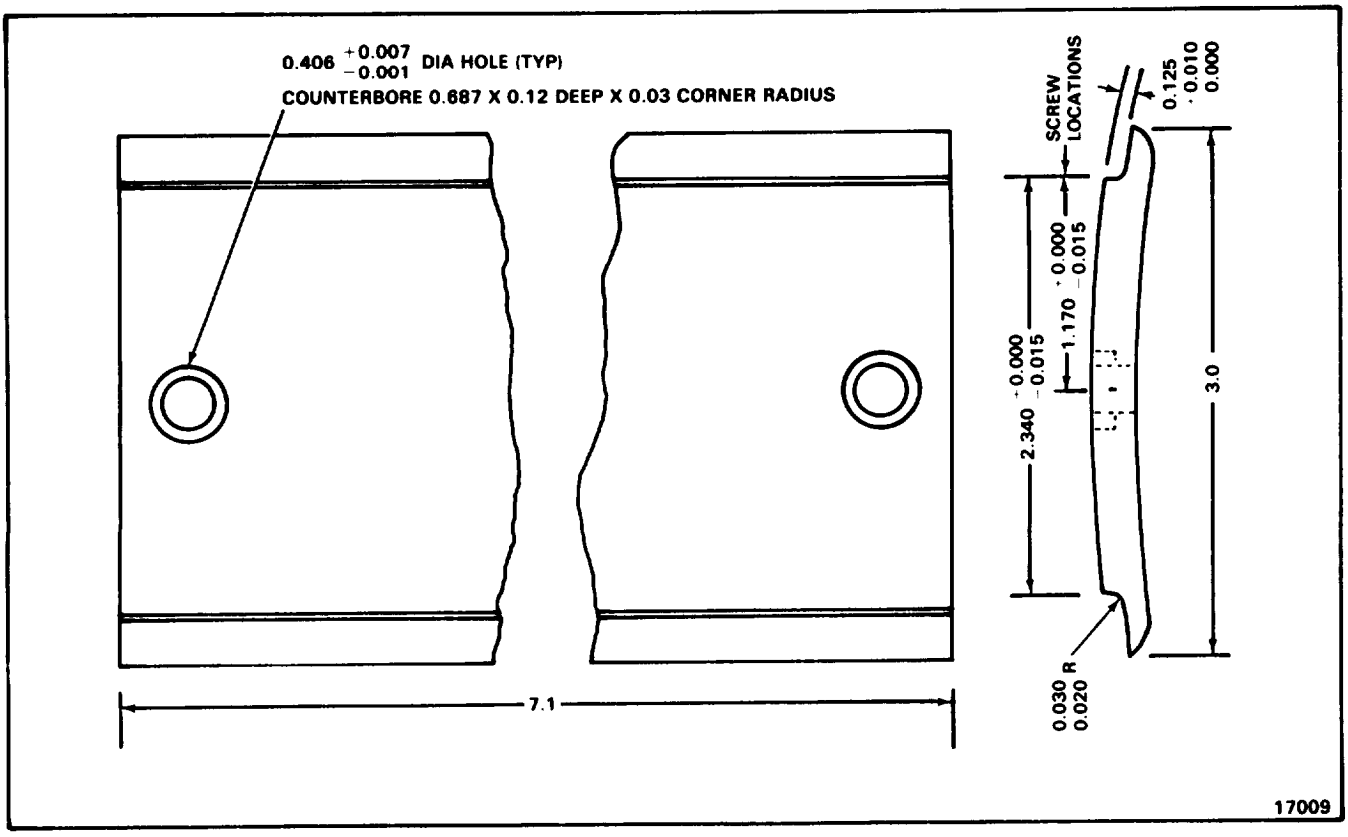
1. **FABRICATE FROM SILICON RUBBER SHEET AMS 3195.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.50 X 0.50 X 0.50.**
4. **TRIM TO FIT.**



END OF TASK

NOTES:

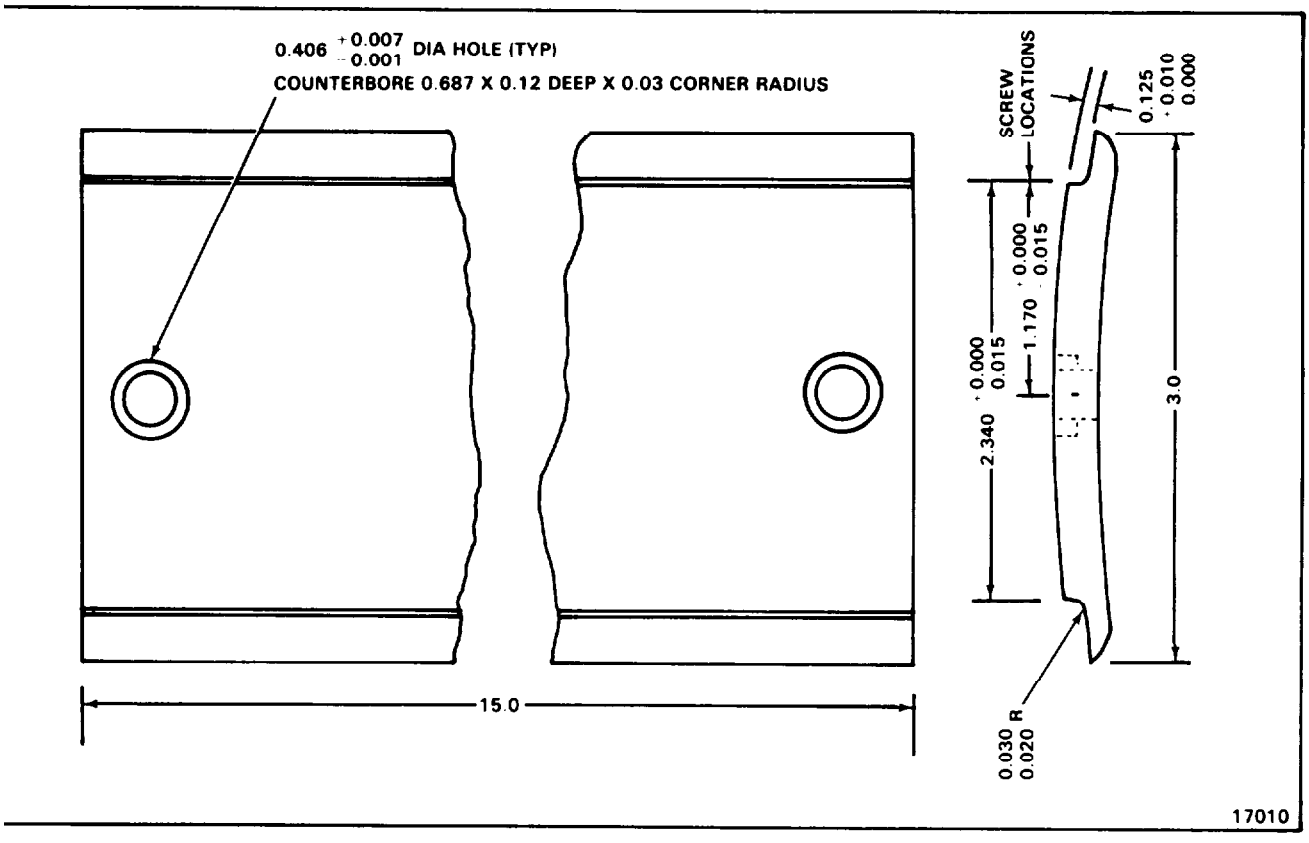
1. **FABRICATE FROM VS80574 NYLATRON GS. THE POLYMER CORP. OF PA., READING, PA 19603 (IDENT. NO. 836 16) OR NYLON PER MIL-P-46060 COLOR LIGHT TO DARK GREY.**
2. **ALL DIMENSIONS IN INCHES.**
3. **TOLERANCES: .XX 0.02, .XXX 0.010 UNLESS OTHERWISE SPECIFIED.**
4. **LATERAL HOLE LOCATION USE OLD BEARING PAD OR TRANSFER DRILL FROM AIRFRAME TO NEW PAD.**
5. **STOCK SIZE VS80574 X 7.1.**
6. **TRIM AS NECESSARY TO FIT.**



END OF TASK

NOTES:

1. **FABRICATE FROM VS80574 NYLATRON GS. THE POLYMER CORP. OF PA., READING, PA 19603 (IDENT NO. 83616) OR NYLON PER MIL-P-46060 COLOR LIGHT TO DARK GREY.**
2. **ALL DIMENSIONS IN INCHES.**
3. **TOLERANCES: .XX ± 0.02, .XXX ± 0.010 UNLESS OTHERWISE SPECIFIED.**
4. **FOR LATERAL HOLE LOCATION USE OLD BEARING PAD OR TRANSFER DRILL FROM AIRFRAME TO NEW PAD.**
5. **STOCK SIZE VS80574 X 15.0**
6. **TRIM AS NECESSARY TO FIT.**

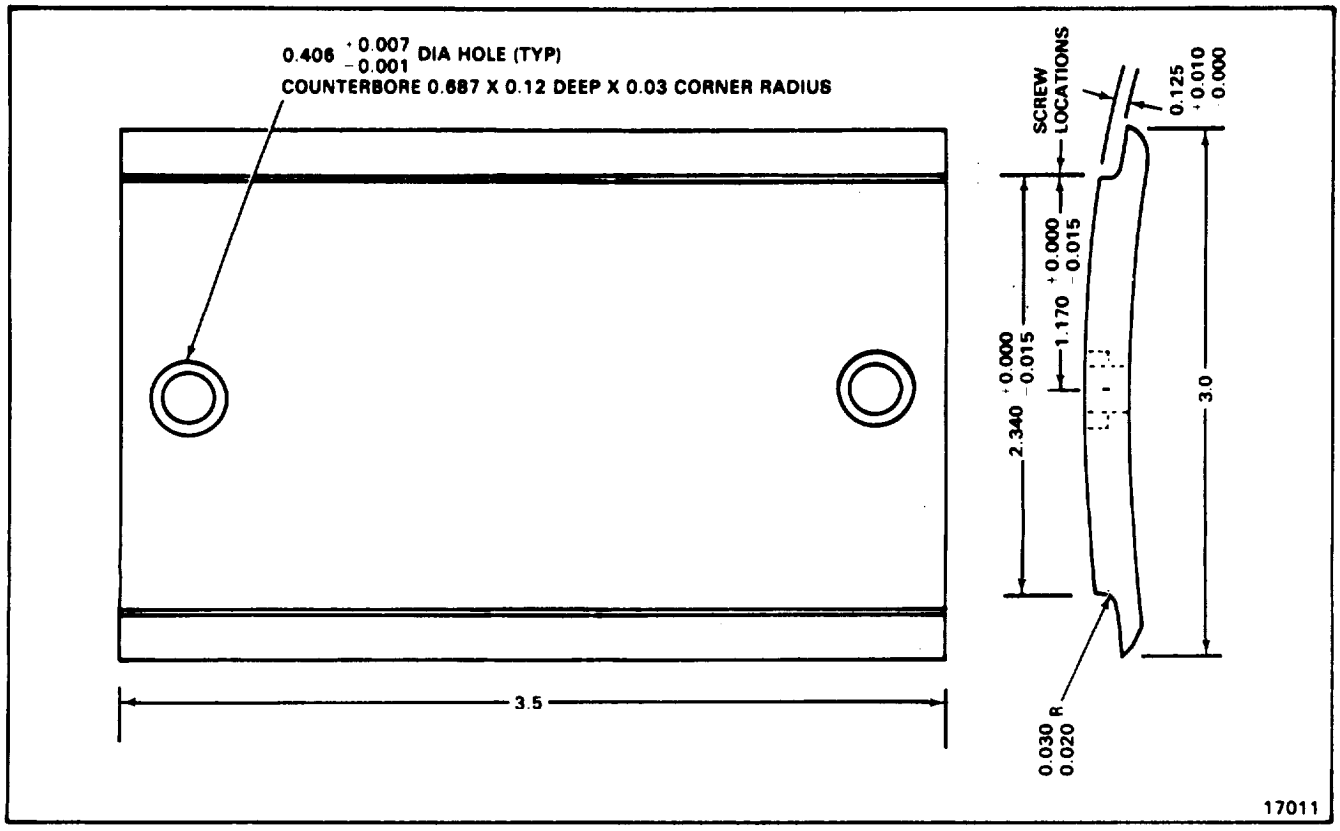


END OF TASK

E-134 RAMP FORWARD EDGE BEARING PAD 11486554-15 E-134

NOTES:

1. FABRICATE FROM VS80574 NYLATRON GS. THE POLYMER CORP. OF PA., READING, PA 19603 (IDENT NO. *83616)* OR NYLON PER MIL-P-46060 COLOR LIGHT TO DARK GREY.
2. ALL DIMENSIONS IN INCHES.
3. TOLERANCES: .XX ± 0.02, .XXX ± 0.010 UNLESS OTHERWISE SPECIFIED.
4. FOR LATERAL HOLE LOCATION USE OLD BEARING PAD OR TRANSFER DRILL FROM AIRFRAME TO NEW PAD.
5. STOCK SIZE VS80574 X 3.5
6. TRIM AS NECESSARY TO FIT.

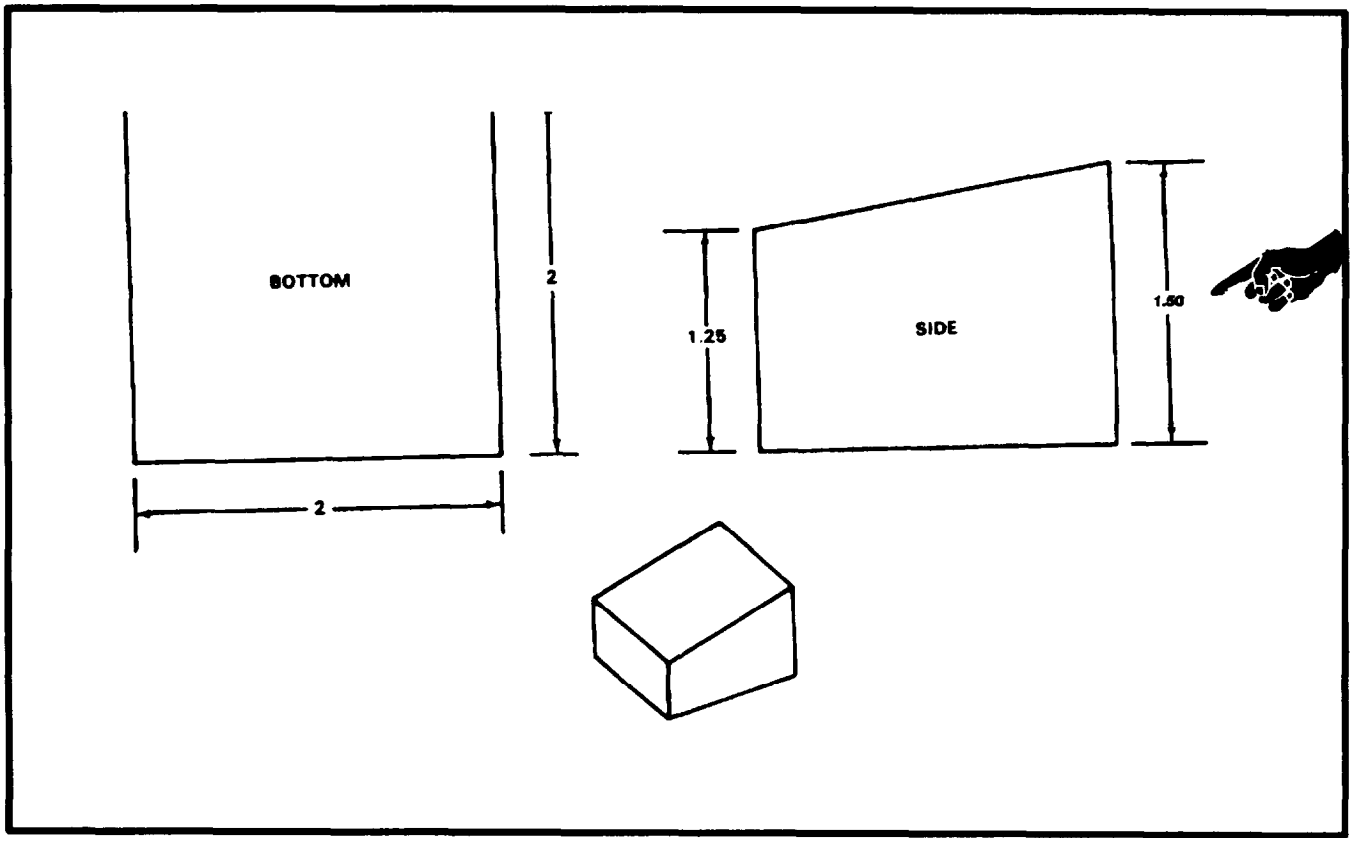


END OF TASK

E-135 AFT TRANSMISSION DRIP TRAY BUMPER 234B3607-19 E-135

NOTES:

1. FABRICATE FROM BUNA-N-RUBBER, NSN 9320-01-317-4700.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 1.5 THICK X 2.0 X 2.0.

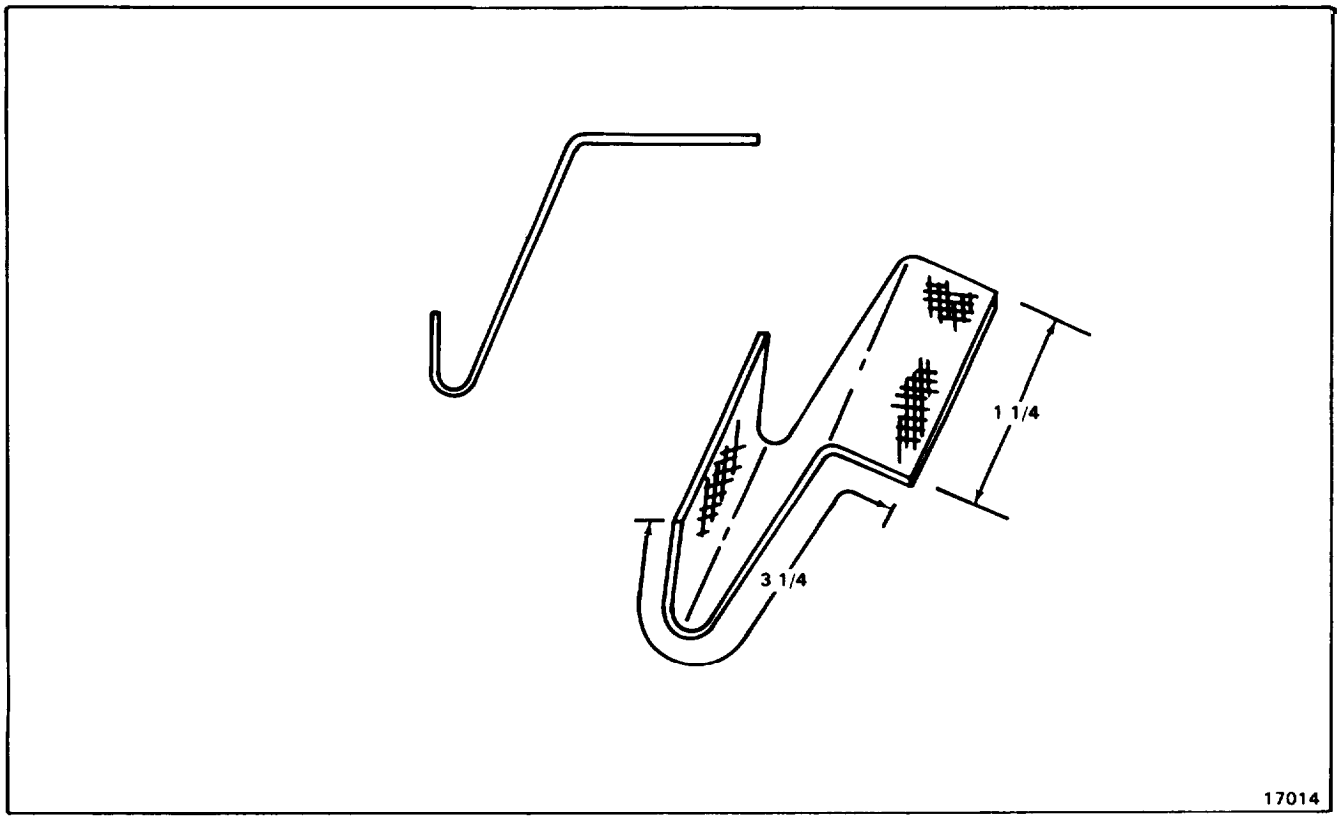


END OF TASK

E-136 AUXILIARY FUEL POD BOTTOM ISOLATION STRAP 114S5824-62

NOTES:

1. **FABRICATE FROM NYLON WEBBING MIL-W-4088, TYPE XXI.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZED 0.065 X 1.25 X 3.25.**
4. **SHEAR ALL EDGES AND HOLES TO PREVENT FRAYING.**



END OF TASK

E-137 AFT TRANSMISSION DRIP TRAY CHIP DETECTOR COVER STRAP 145S3620-11 E-137

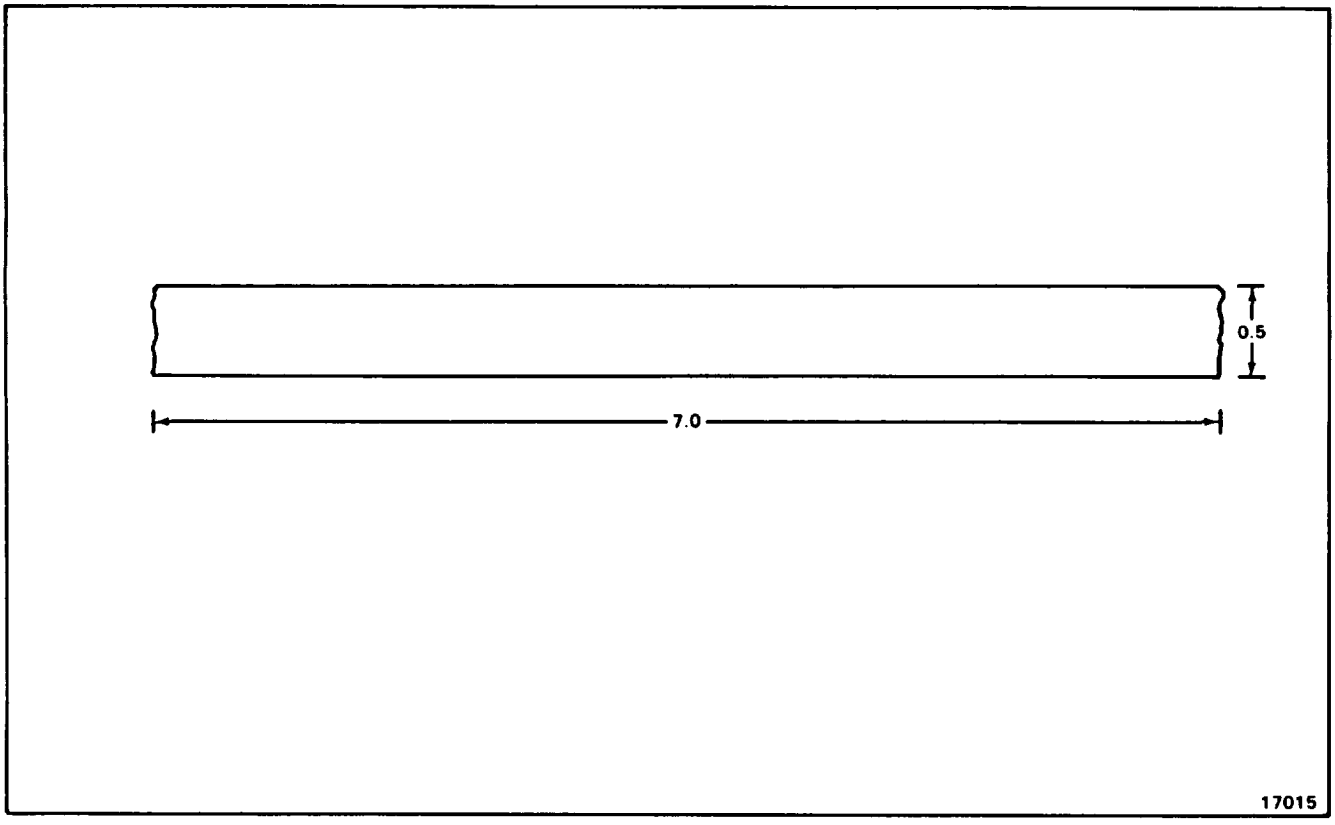
NOTES:

1. **FABRICATE FROM WOVEN NYLON WEBBING MIL-W-4088, TYPE XIV, COLOR CINDER GRAY TCA CABLE NO. 16522**

2. **ALL DIMENSIONS IN INCHES.**

3. **STOCK SIZE 7.0 X 0.5.**

4. **SHEAR ALL CUT EDGES AND HOLES TO PREVENT FRAYING.**

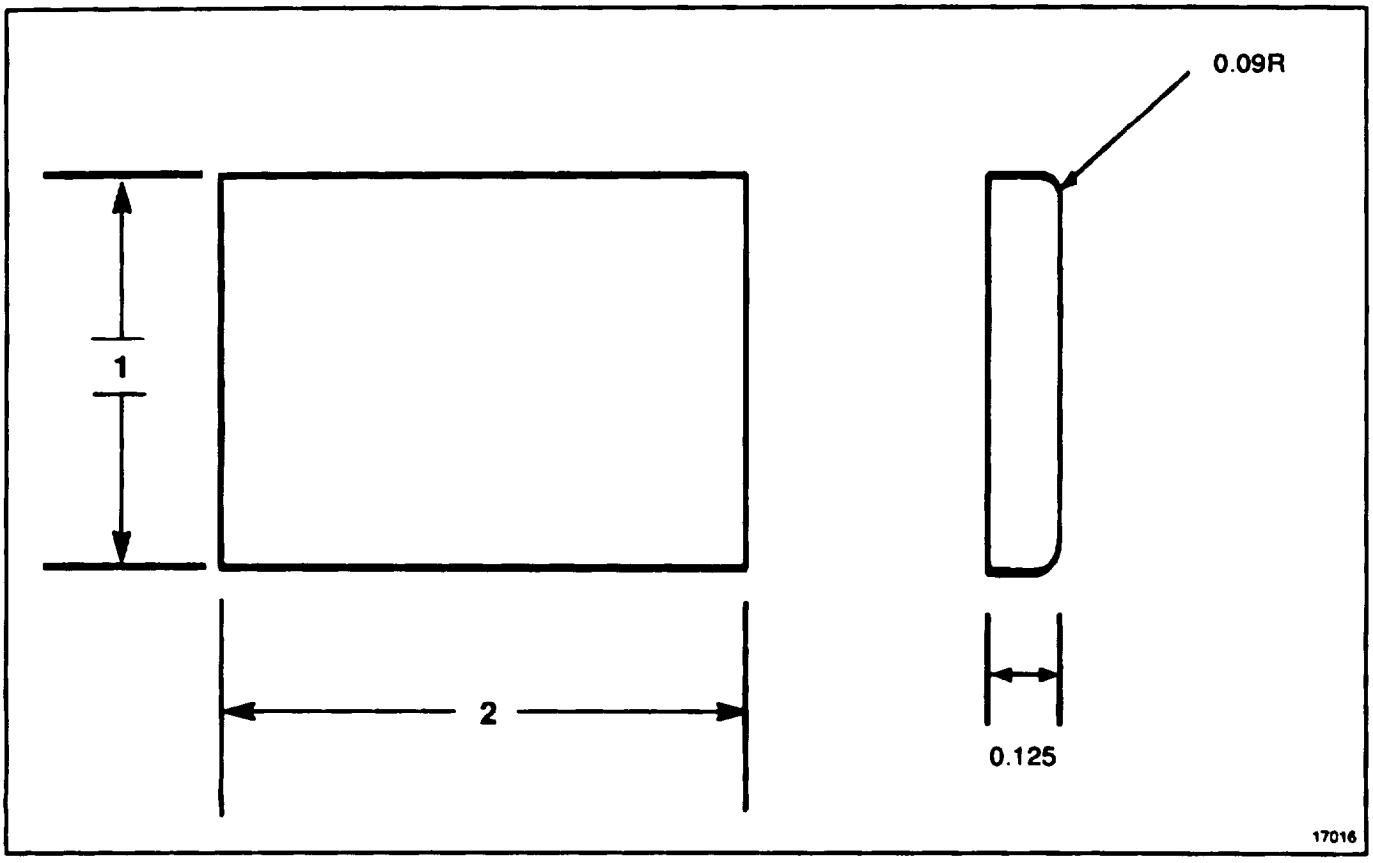


END OF TASK

E-138 AFT LANDING GEAR DOOR CHAFING STRIP (UPPER) 114S5905-111 E-138

NOTES:

1. FABRICATE FROM COTTON BASE LAMINATED PHENOLIC PER ML-P-1 8035 TYPE FBM.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.125 X 1.0 X 2.0.
4. FINISH AS REQUIRED.



END OF TASK

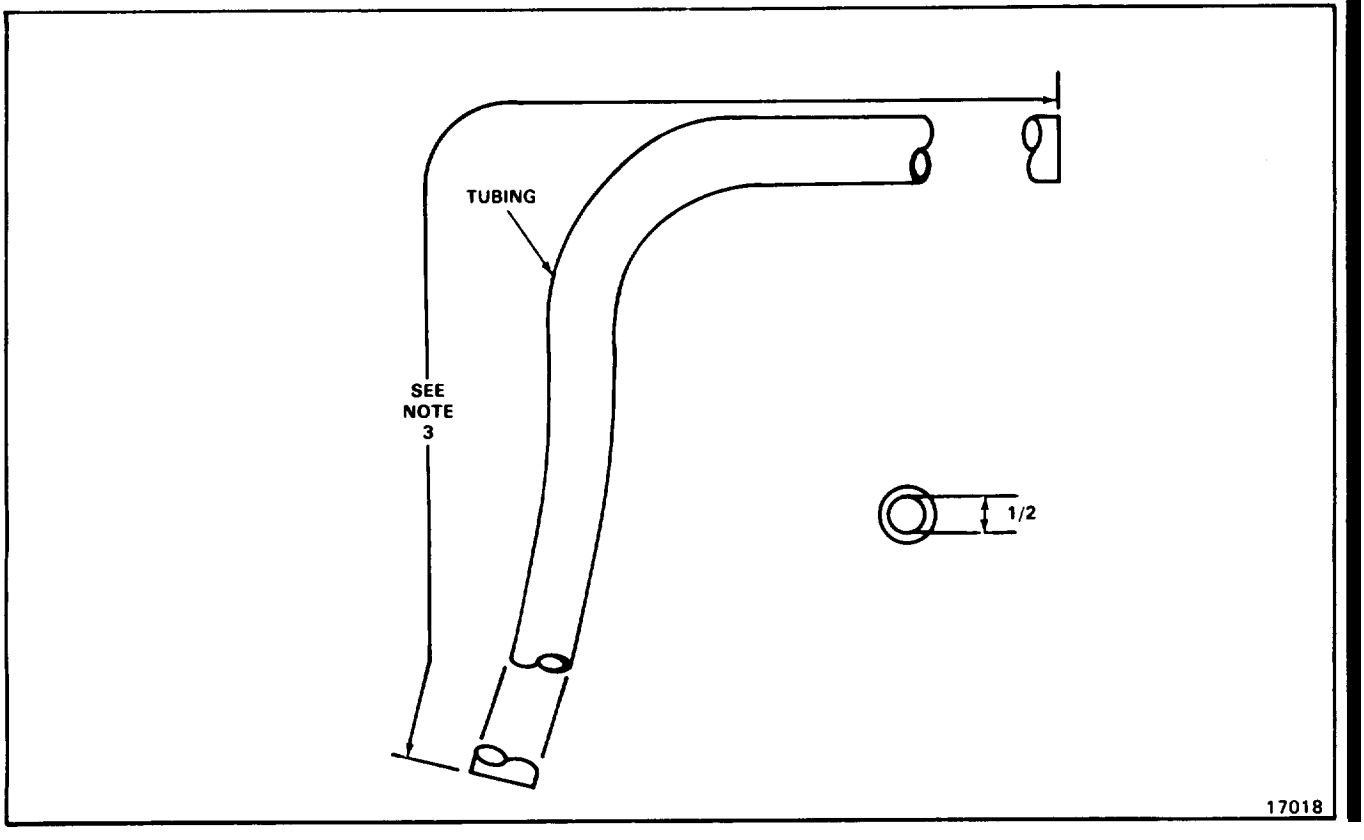
Page E-184, Task E-139 deleted.

NOTES:

1. **FABRICATE FROM RT-1150 OR RT-1162 CONVOLEX TUBING - (POLYVINYLIDENE FLUORIDE) RAYCHEM CORP, 300 CONSTITUTION DR., MENLO PARK, CAL 94025**

2. **ALL DIMENSIONS IN INCHES.**

3. **STOCK SIZE 1/2 INCH DIA**
   145S1652-19 = 11 IN. LG.
   145S1652-21 = 30 IN. LG.
   145S1652-20 = 142 IN. LG.



END OF TASK

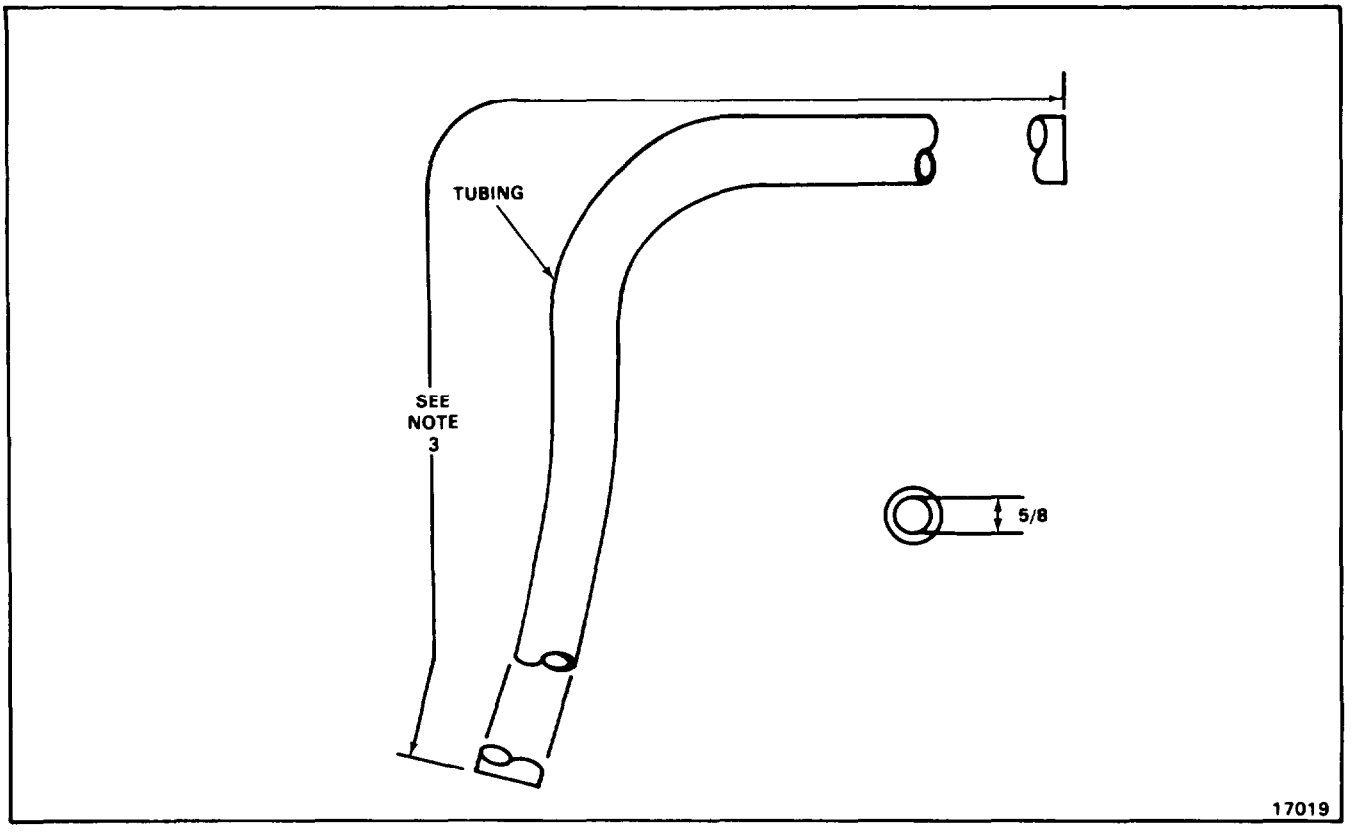
E-141 DRAIN HOSE CABIN CROWN TUNNEL 145S1652 E-141

NOTES:

1. **FABRICATE FROM RT-1150 OR RT-1162 CONVOLEX TUBING - (POLYVINYLIDENE FLUORIDE) RAYCHEM CORP, 300 CONSTITUTION DR., MENLO PARK, CAL 94025.**

2. **ALL DIMENSIONS IN INCHES.**

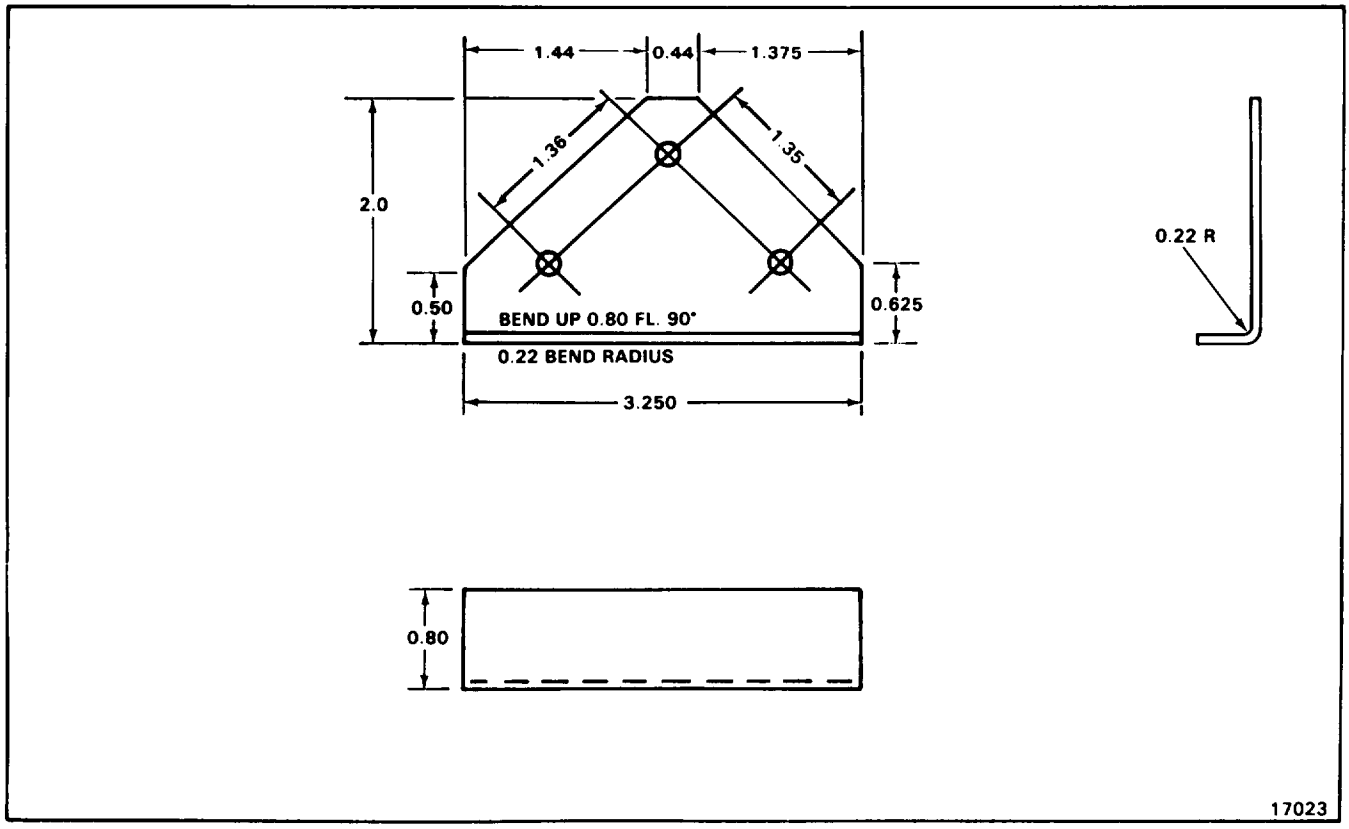
3. **STOCK SIZE 5/8 DIA**
   145S1652-18 = 146.0 IN. LG.
   145S1652-22 = 20.0 IN. LG.



END OF TASK

NOTES:

1. **FABRICATE FROM ALUMINUM ALLOY CLAD 2024-T3 PER QQ-A-250/5.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.022 X 3.0 X 3.5.**
4. **USE OLD CLAMP AS TEMPLATE TO LOCATE HOLES.**
5. **FINISH AS REQUIRED.**

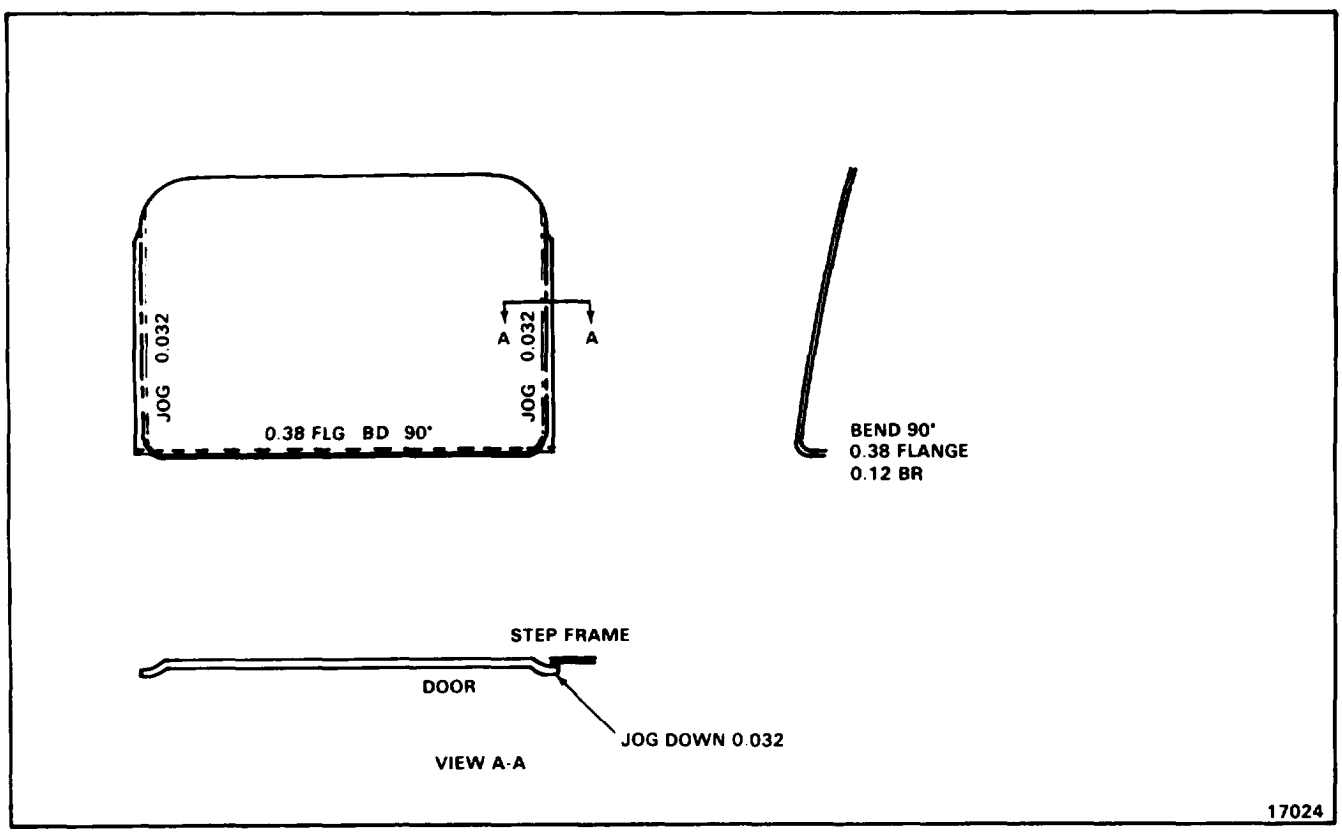


END OF TASK

E-143 FUSELAGE STEP DOOR 114S5602-19 E-143

NOTES:

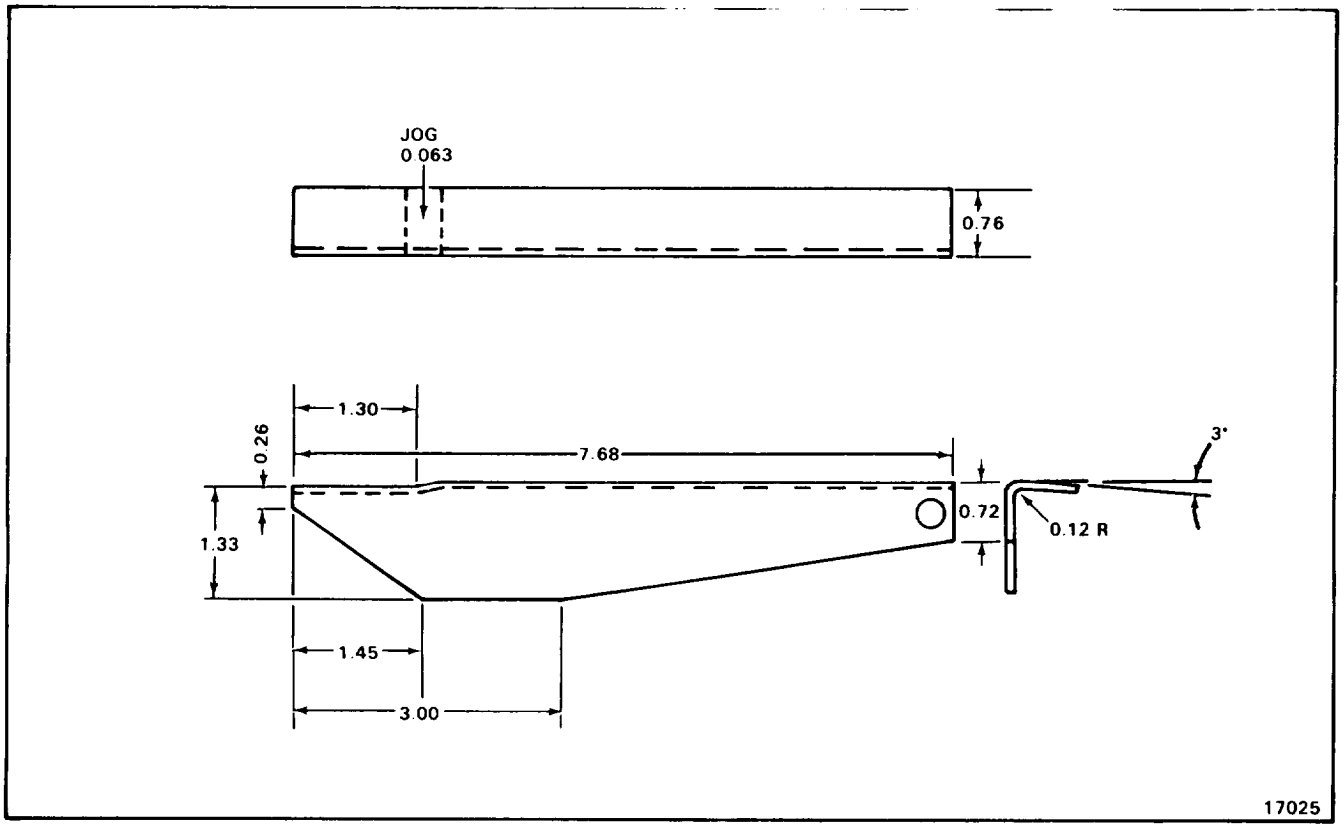
1. **FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.032 X 5.5 X 7.7.**
4. **USE ORIGINAL OR SIMILAR DOOR AS TEMPLATE.**
5. **COORDINATE RIVET HOLES WITH HINGE.**
6. **FINISH AS REQUIRED.**



END OF TASK

NOTES:

1. **FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 7075-TO.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.063 X 2.3 X 7.8.**
4. **USE OLD SUPPORT FOR TEMPLATE WHEN MAKING NEW SUPPORT.**
5. **HEAT TREAT TO -T6 CONDITION PER BAC 5602.**
6. **COORDINATE RIVET HOLES WITH ATTACHING ASSEMBLY.**
7. **FINISH AS REQUIRED.**

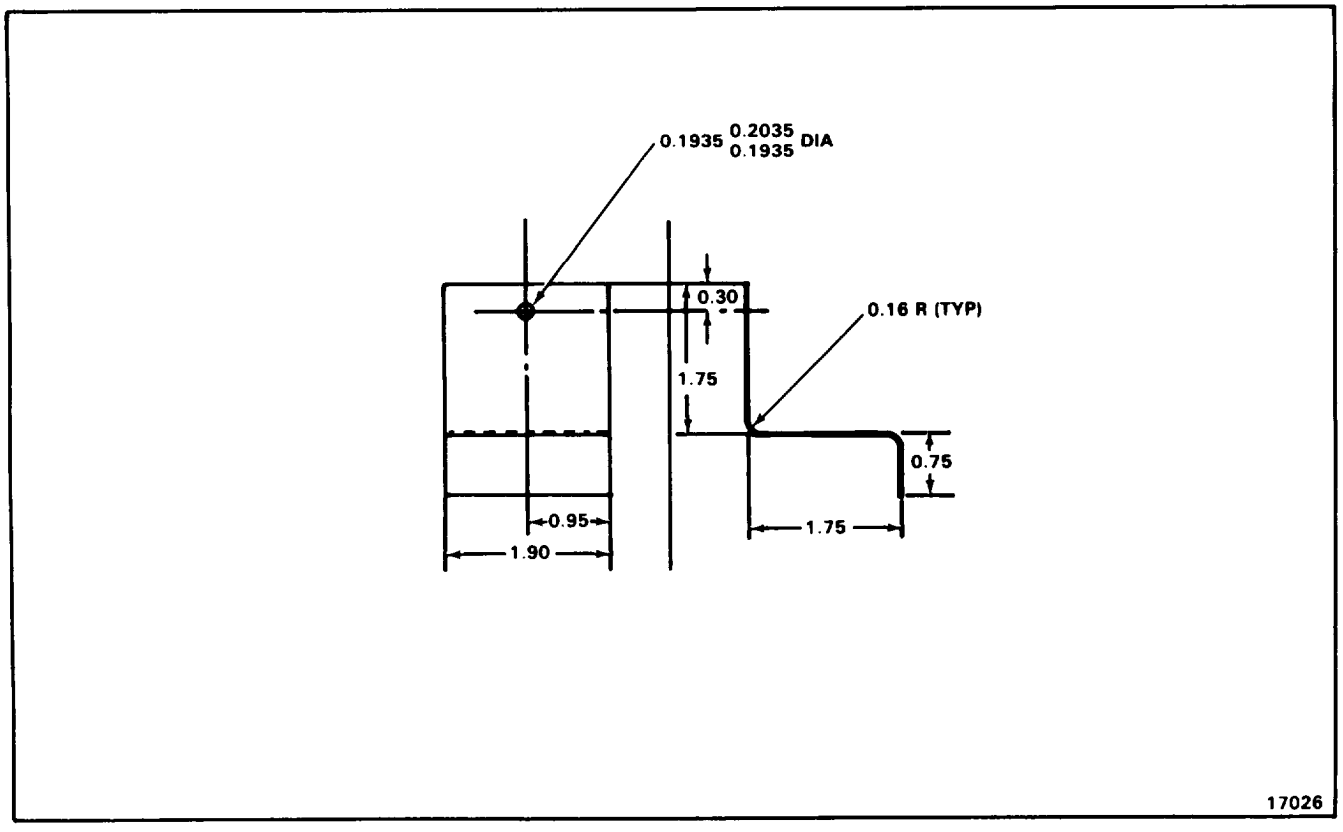


END OF TASK

E-145 APU CLOSURE DECK INSTALLATION BRACKET 114S3157-96 E-145

NOTES:

1. **FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.040 X 2.0 X 4.5**
4. **FINISH AS REQUIRED.**



END OF TASK

NOTES:

1. **MAKE FROM RUBBER EXTRUDED BAC1521-204 PER MIL-S-6855, TYPE II, GRADE 40.**

2. **ALL DIMENSIONS IN INCHES.**

3. **STOCK SIZE 38.0 LG.**

4. **CUT TO FIT**

END OF TASK

E-147 AFT TRANSMISSION DRIP PAN SEAL RETAINER 114S3607

E-147

NOTES:

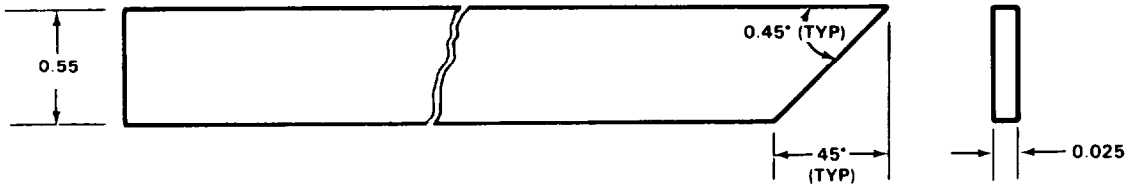
1. **FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3.**

2. **ALL DIMENSIONS IN INCHES.**

3. **STOCK SIZE 0.025 X 0.55.**

4. **114S3607-198 = 4.0 IN. LG.**
   114S3607-196 = 58.5 IN. LG.
   114S3607-194 = 17.1 IN. LG.
   114S3607-193 = 60.5 IN. LG.
   114S3607-192 = 12.5 IN. LG.

5. **TRIM TO FIT.**



17204

END OF TASK

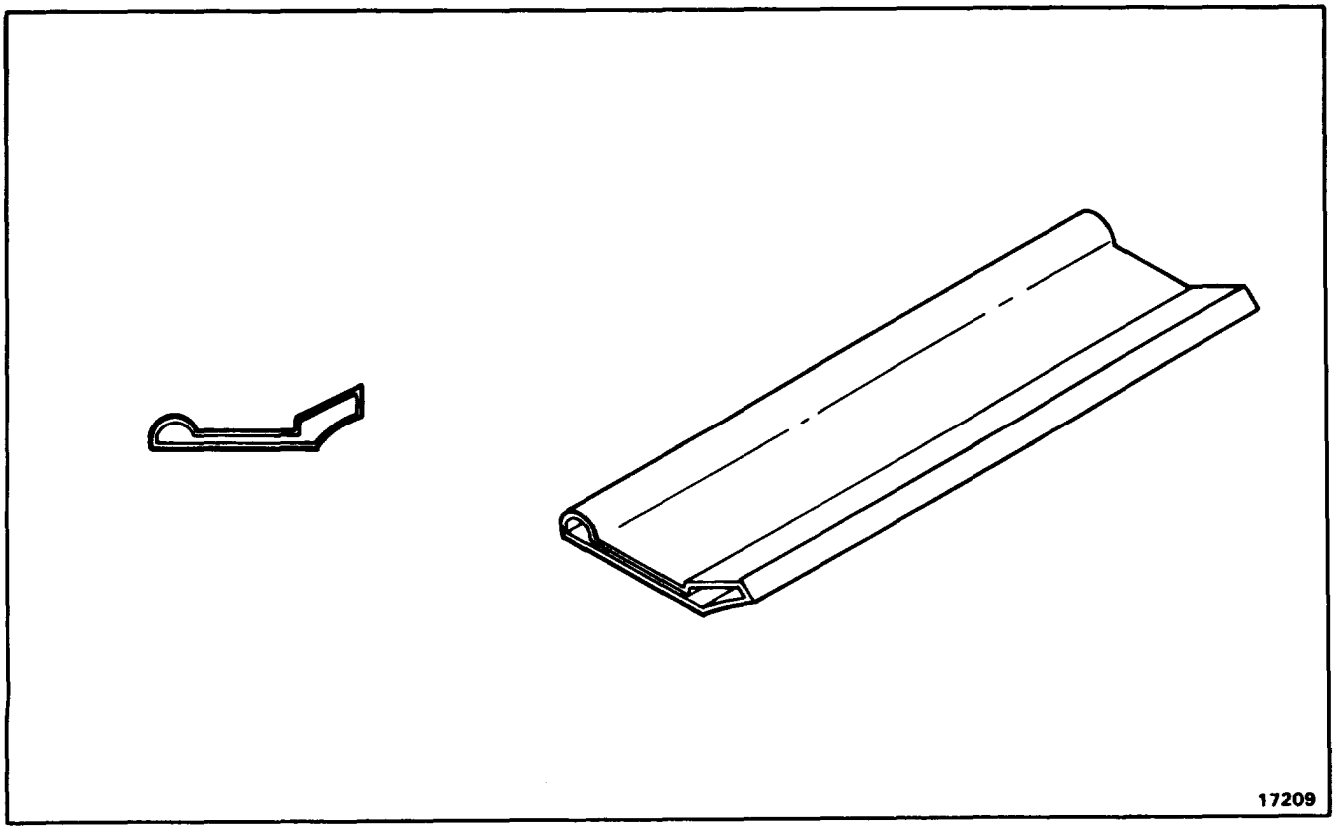
NOTES:

1. **MAKE FROM NONMETALLIC SPECIAL BAC1530-48.**

2. **ALL DIMENSIONS IN INCHES.**

3. **114S3607-182 STOCK SIZE 12.5 LG.**
   114S3607-183/184 STOCK SIZE 60.5 LG.
   114S3607-185/186 STOCK SIZE 17.1 LG.
   114S3607-188 STOCK SIZE 58.5 LG.
   114S3607-189 STOCK SIZE 4.0 LG.

4. **TRIM TO FIT.**

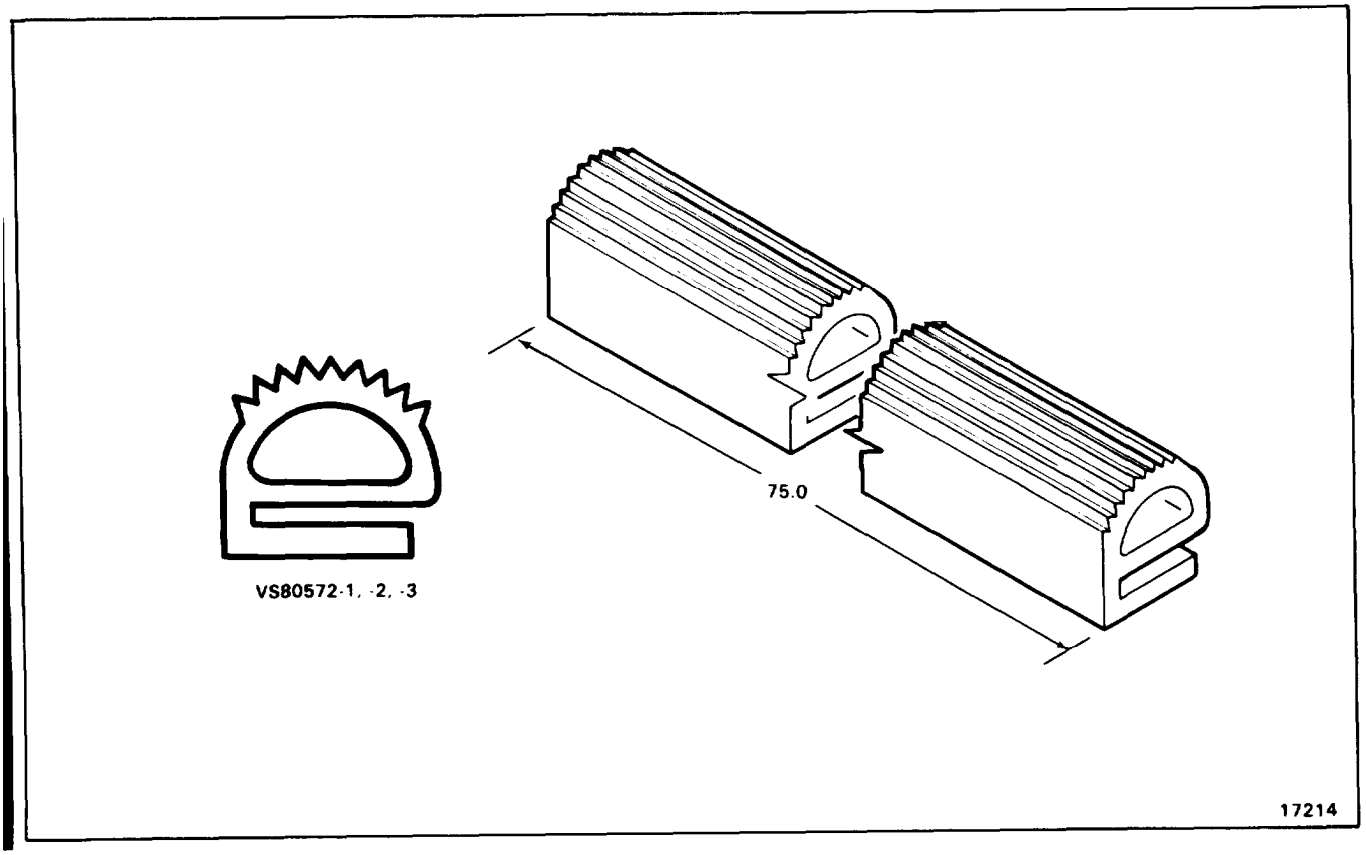


END OF TASK

E-149 ELECTRIC COMPARTMENT ACCESS PANEL SEAL 114S5916-43

NOTES:

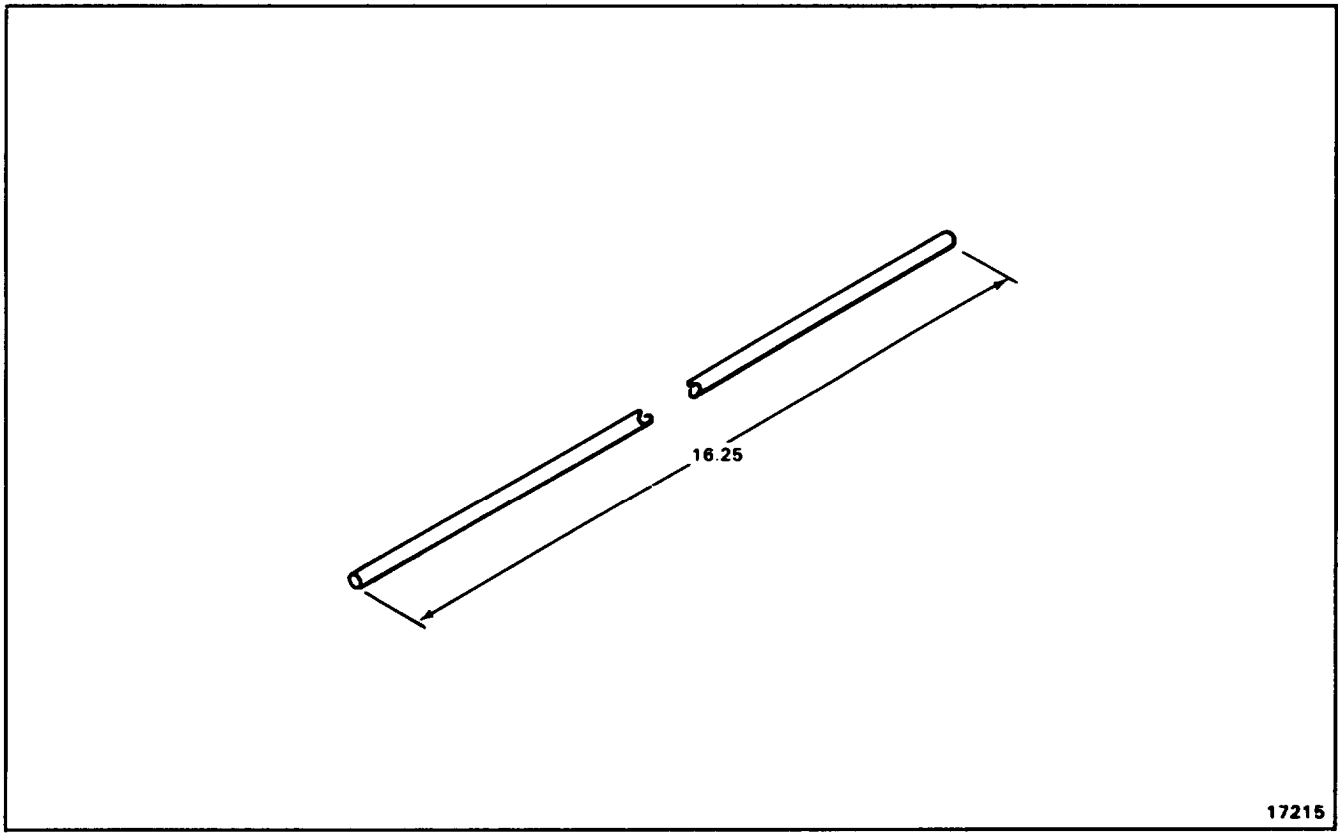
1. **MAKE FROM NONMETALLIC SPECIAL VS80572-3 STRIP.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 75.0 LG.**
4. **TRIM TO FIT.**
5. **-3 PREFERRED, USE -1, -2 TILL DEPLETION.**



END OF TASK

NOTES:

1. **FABRICATE FROM HINGE PN MS2053-2.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 16.25 INCHES.**



END OF TASK

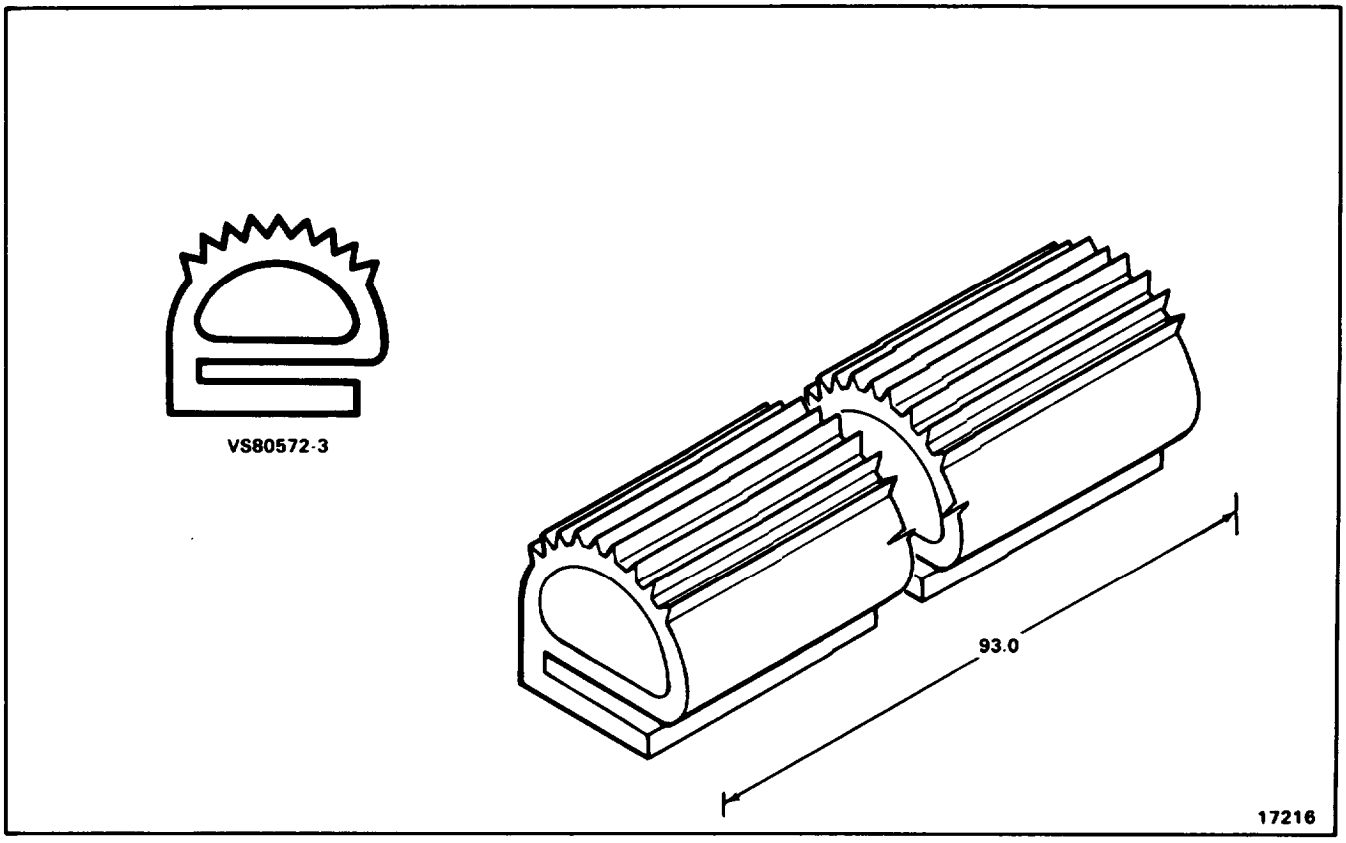
E-151 LOWER COCKPIT ENCLOSURE DOOR SEAL 114S1604-247 E-151

NOTES:

1. **MAKE FROM SHAPE, NONMETALLIC SILICONE RUBBER CL IB GR 40 PER ZZ-R-765 VS80572-3.**

2. **ALL DIMENSIONS IN INCHES.**

3. **STOCK SIZE 93.0 INCHES LG.**

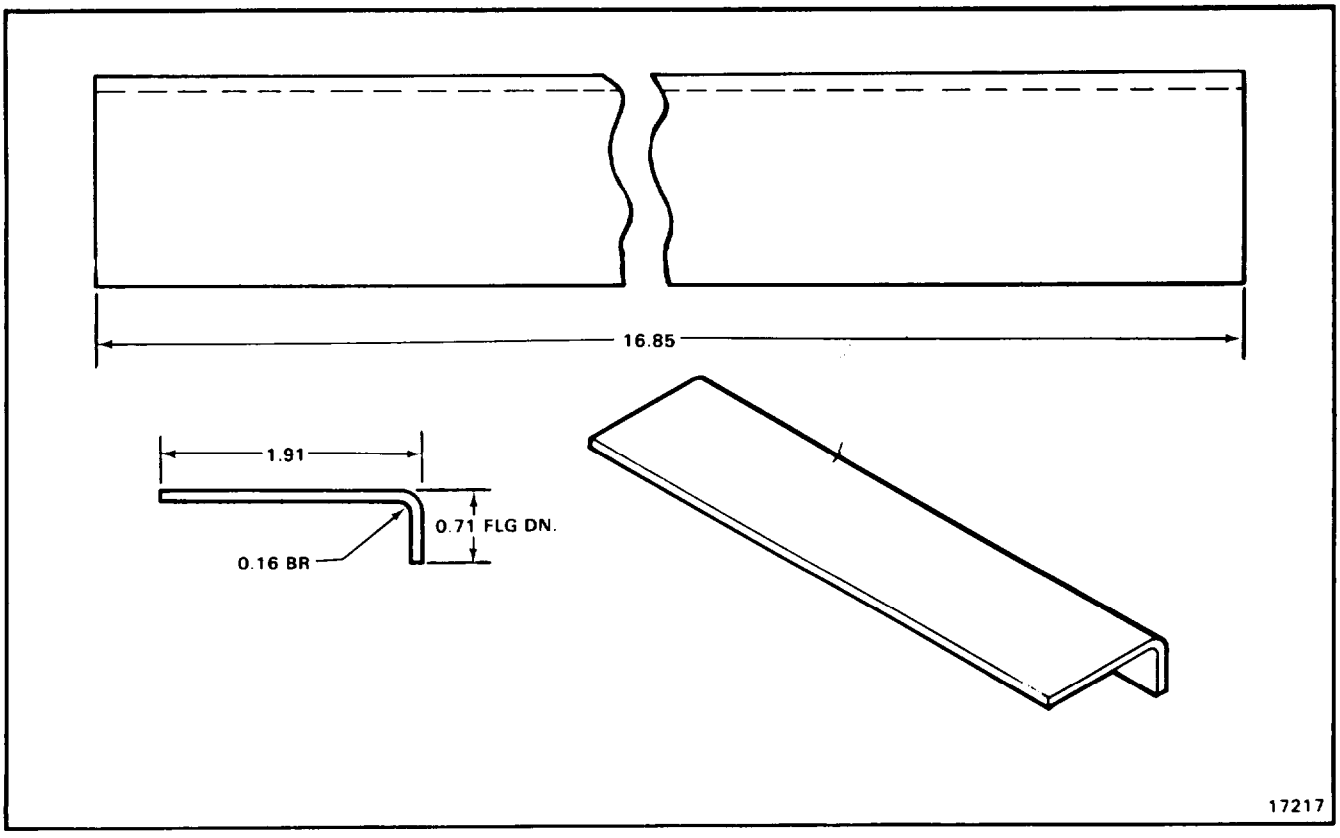


END OF TASK

E-152 FORWARD TRANSMISSION DRIP PAN ANGLE 145S1112-10 E-152

NOTES:

1. **FABRICATE FROM ALUMINUM ALLOY BARE 2024-T3 PER QQ-A-250/4.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.040 X 2.4 X 16.85**
4. **FINISH AS REQUIRED.**

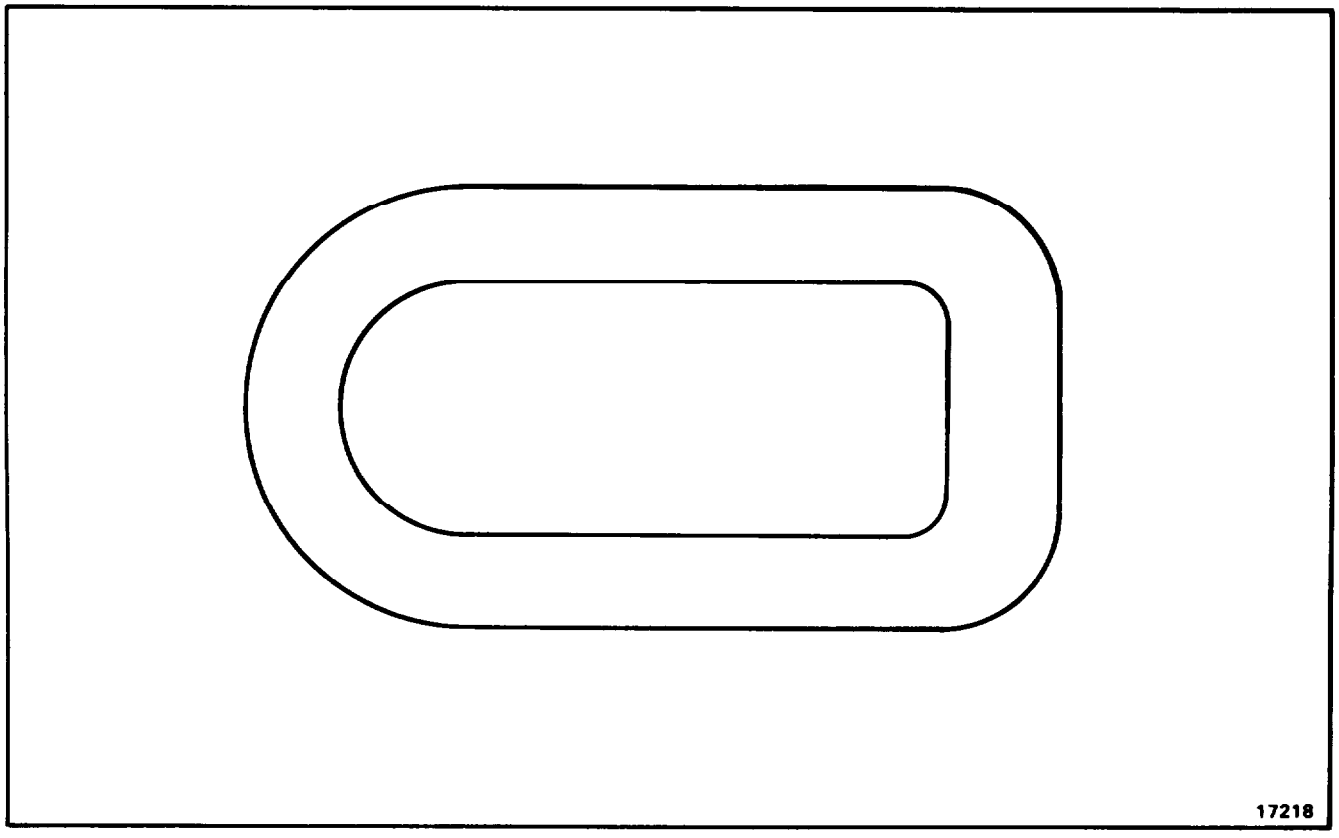


END OF TASK

E-153 AFT TRANSMISSION DRIP TRAY CHIP DETECTOR COVER SEAL 145S3620-12

NOTES:

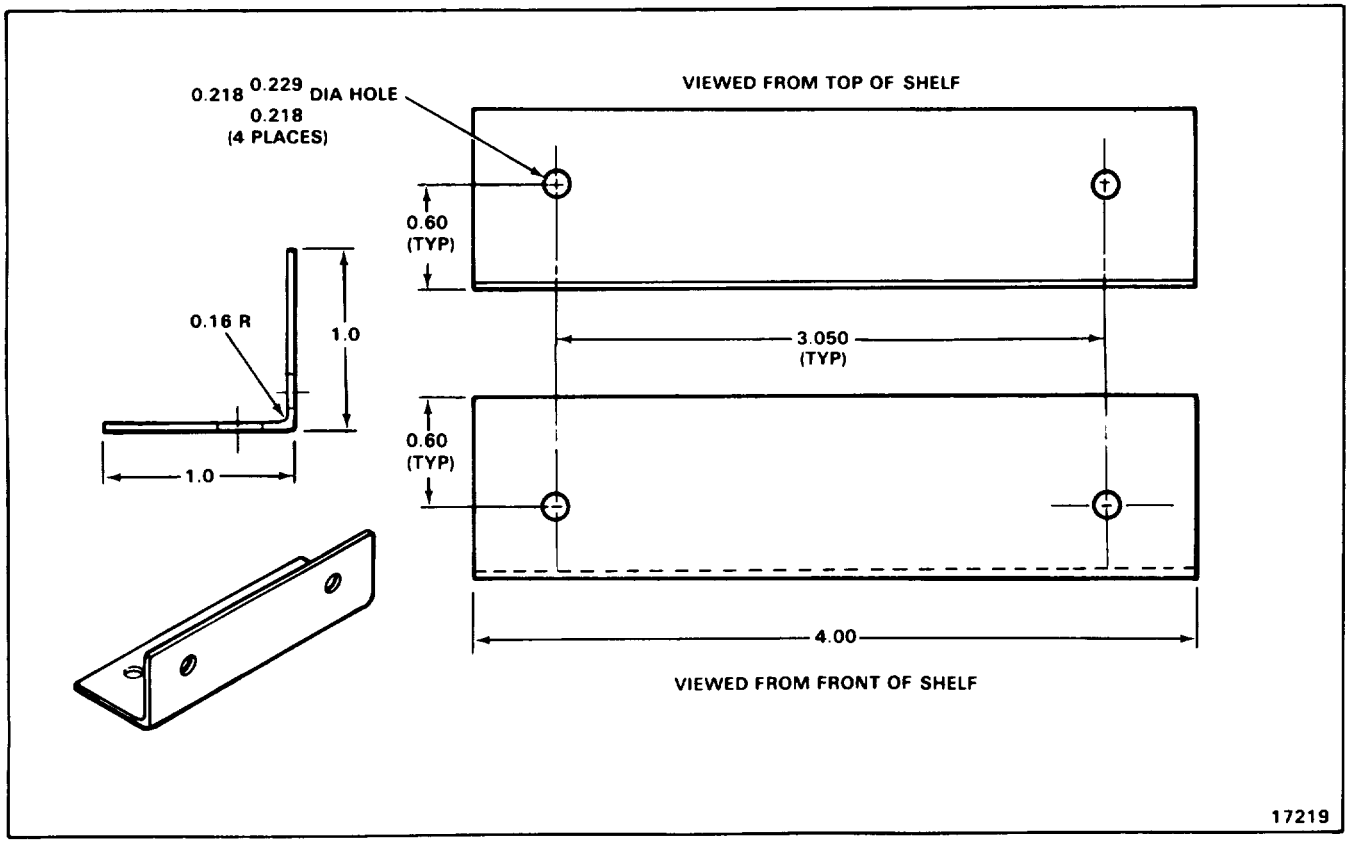
1. **FABRICATE FROM SYNTHETIC RUBBER SHEET MIL-R-6855, CL II, GR 40.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.063 X 10.0 X 7.7.**
4. **USE OUTSIDE OF 145S3620-9 COVER AS TEMPLATE TO DETERMINE OUTSIDE: SHAPE 2ND DIMENSIONS AND INSIDE OF 145S3620-10 RETAINER AS TEMPLATE FOR INSIDE CUTOUT.**



END OF TASK

NOTES:

1. **FABRICATE FROM ALUMINUM ALLOY 2024-T4QQ-A-25015.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.040 X 1.0 X 1.0 X 4.0 LG.**
4. **FINISH AS REQUIRED.**

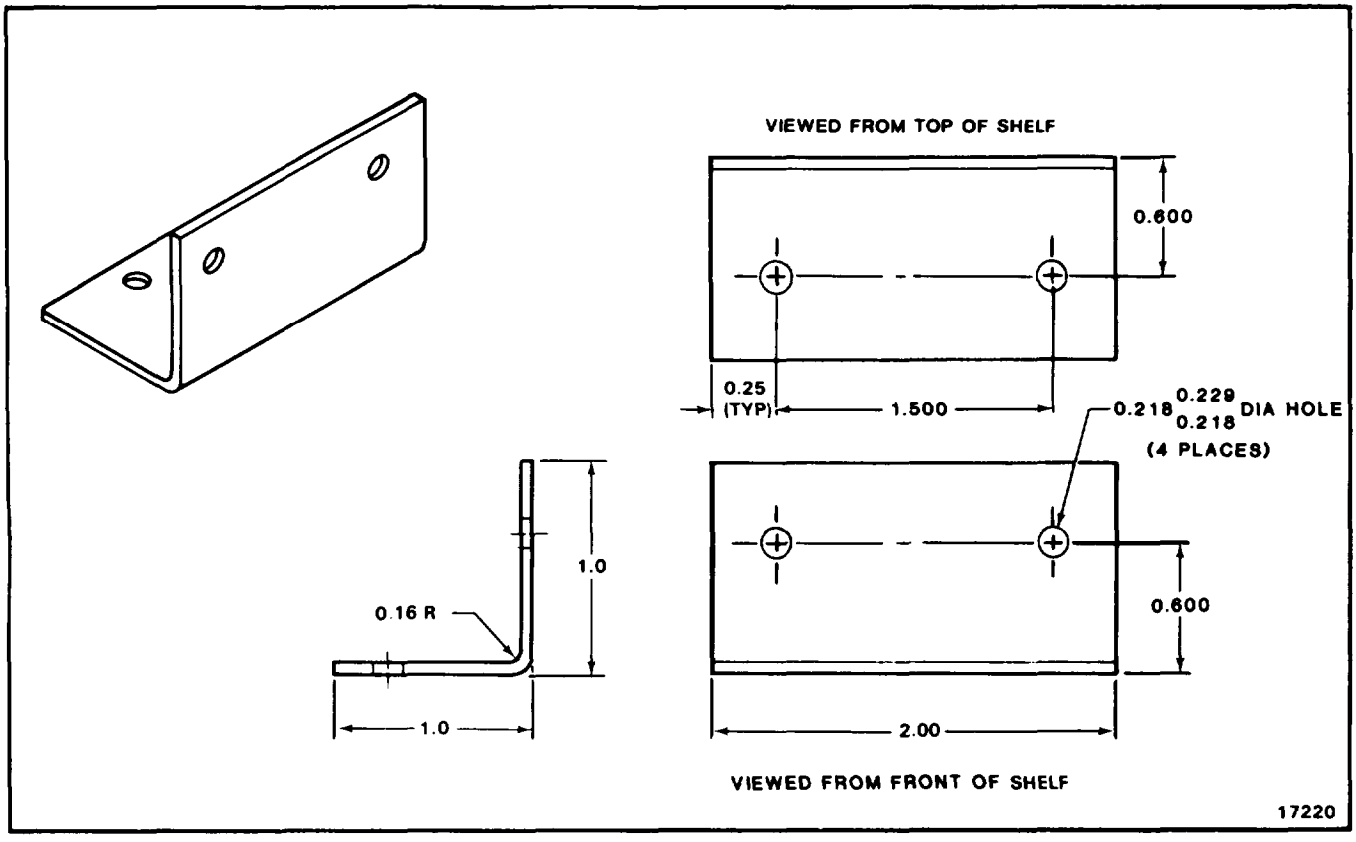


END OF TASK

E-155 ANGLE RAIL (RADAR WARNING MOUNT) 145E3002-30 E-155

NOTES:

1. **FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/5.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.040 X 1.0 X 1.0 X 2.0 LG.**
4. **FINISH AS REQUIRED.**

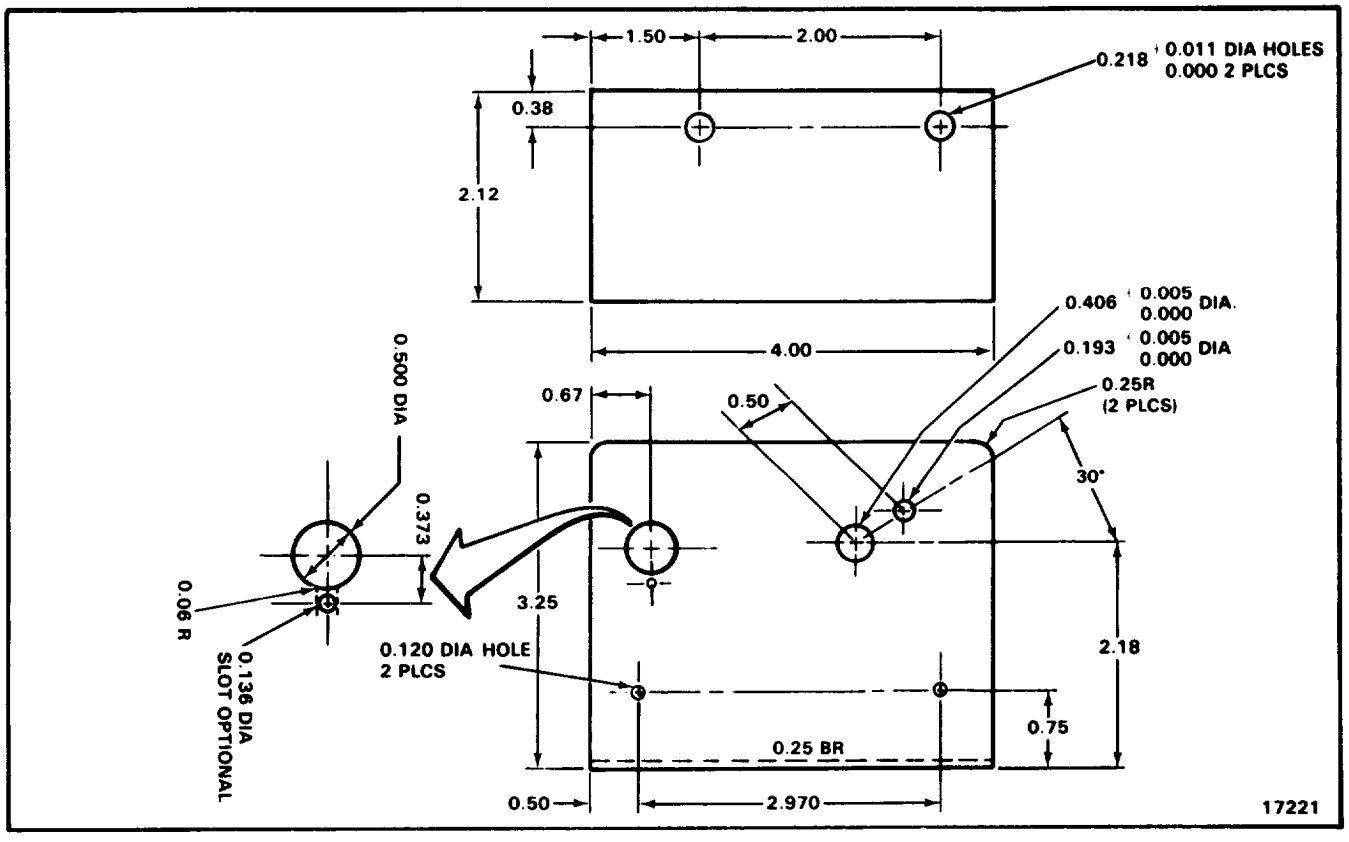


END OF TASK

E-156 LEFT HAND ELECTRICAL POD BRACKET 145E2118-3 E-156

NOTES:

1. **FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/4.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.040 X 5.5 X 5.1.**
4. **FINISH WITH ONE COAT OF RED EPOXY PRIMER (E293) MIL-P-52192 (MR) COMPOSITION G, 2 PART SYSTEM APPLIED PER MFR INST. APPLY OVER TWO COATS OF YELLOW PRIMER MIL-P-23377 (E292) APPLIED PER MIL-C-22751.**
5. **APPLY IDENTIFICATION MARKER TO FACE OF BRACKET.**



END OF TASK

E-157 LEFT HAND ELECTRICAL POD BRACKET 145E2118-6 E-157

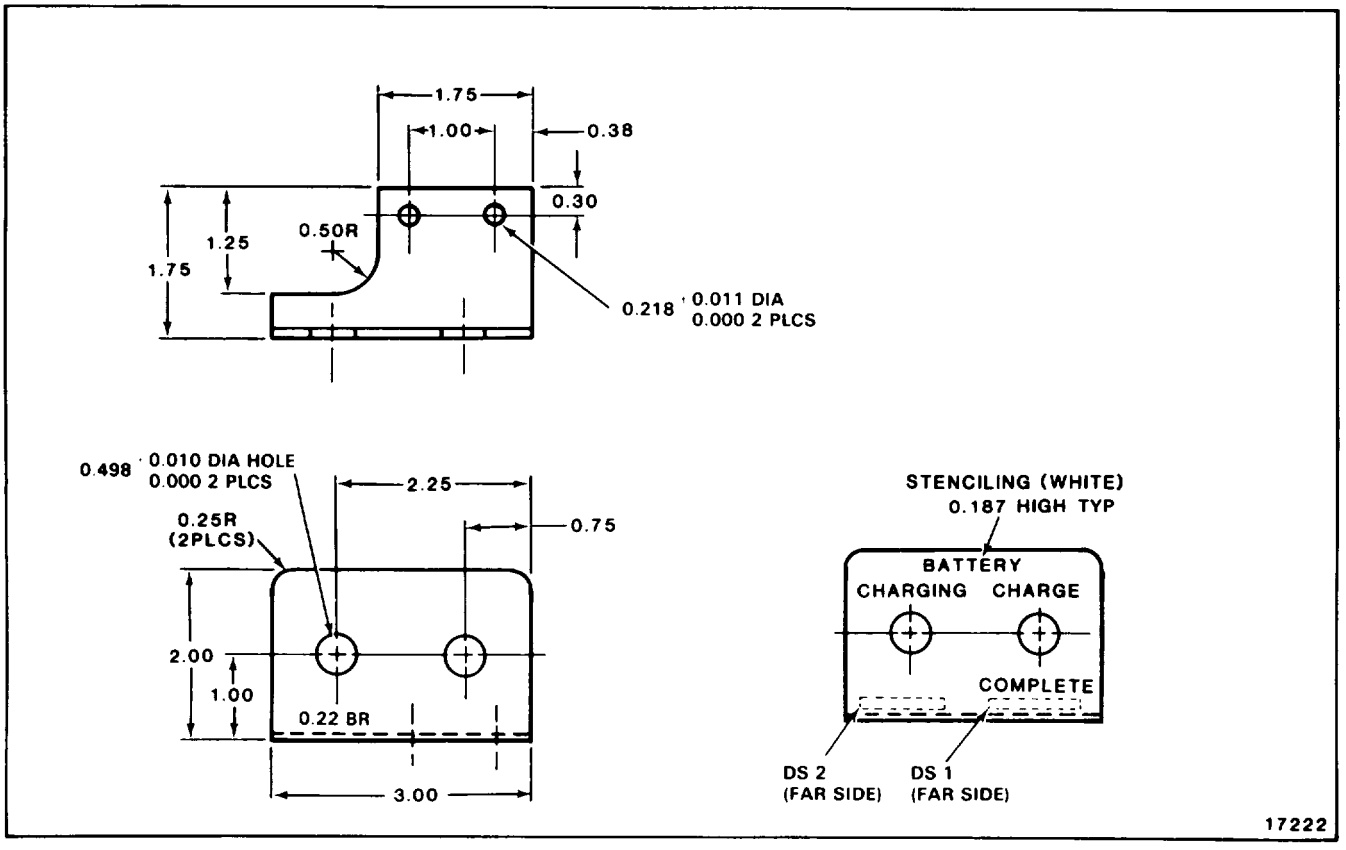
NOTES:

1. **FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/4.**

2. **ALL DIMENSIONS IN INCHES.**

3. **STOCK SIZE 0.063 X 3.0 X 3.8.**

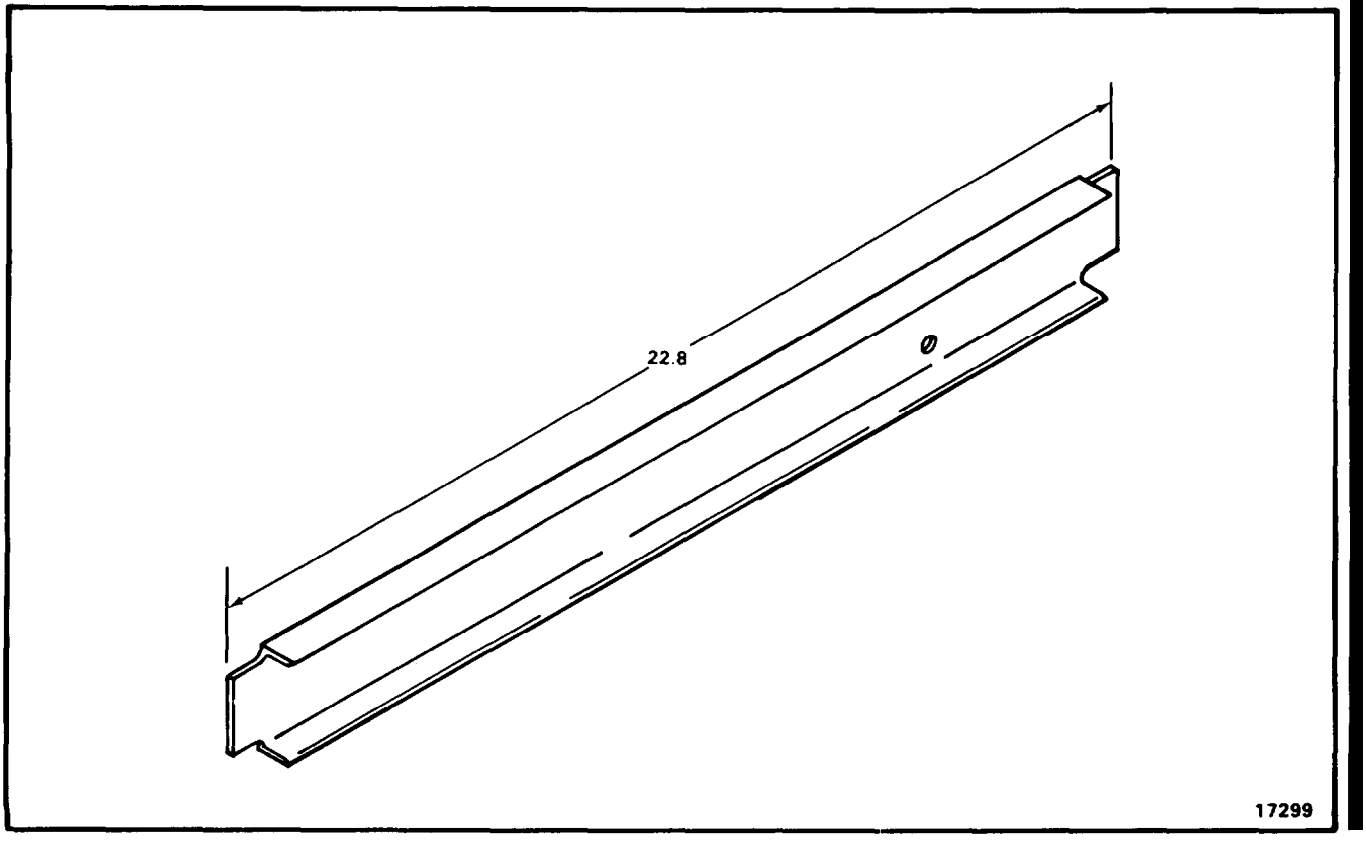
4. **FINISH WITH ONE COAT OF RED EPOXY PRIMER (E293) MIL-P-52192 (MR) COMPOSIITON G, 2 PART SYSTEM APPLIED PER MANUFACTURERS INSTRUCTIONS ON CONTAINER. APPLY TWO COATS OF YELLOW EPOXY PRIMER MIL-P-23377 (E292) APPLIED PER MIL-C-22751 .**



END OF TASK

NOTES:

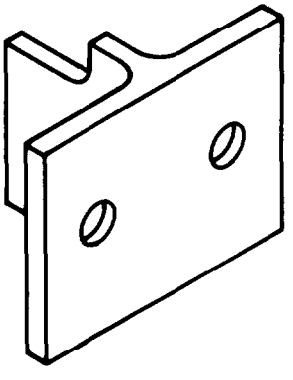
1. **FABRICATE FROM ALUMINUM EXTRUSION 2024-T3511 PER QQ-A-200/3.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK AND 10137-1601 X 23.0.**
4. **USE EXISTING PART AS TEMPLATE.**
5. **FINISH AS REQUIRED.**

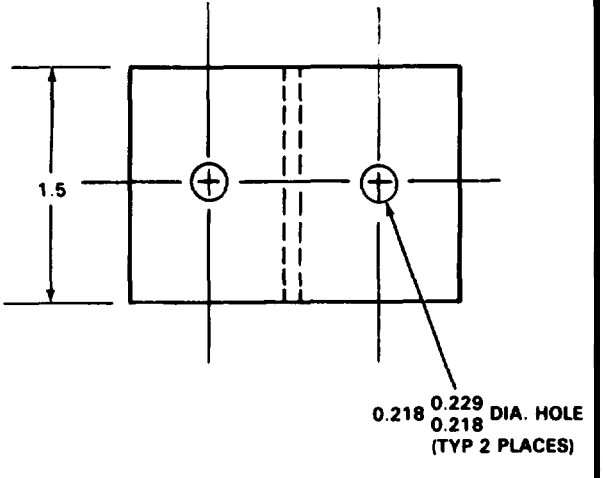


END OF TASK

NOTES:

1. **FABRICATE FROM ALUMINUM EXTRUSION 2024-T3511 PER QQ-A-200/3.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK AND 10136-2404 X 1.5.**
4. **USE EXISTING PART AS TEMPLATE.**
5. **FINISH AS REQUIRED.**

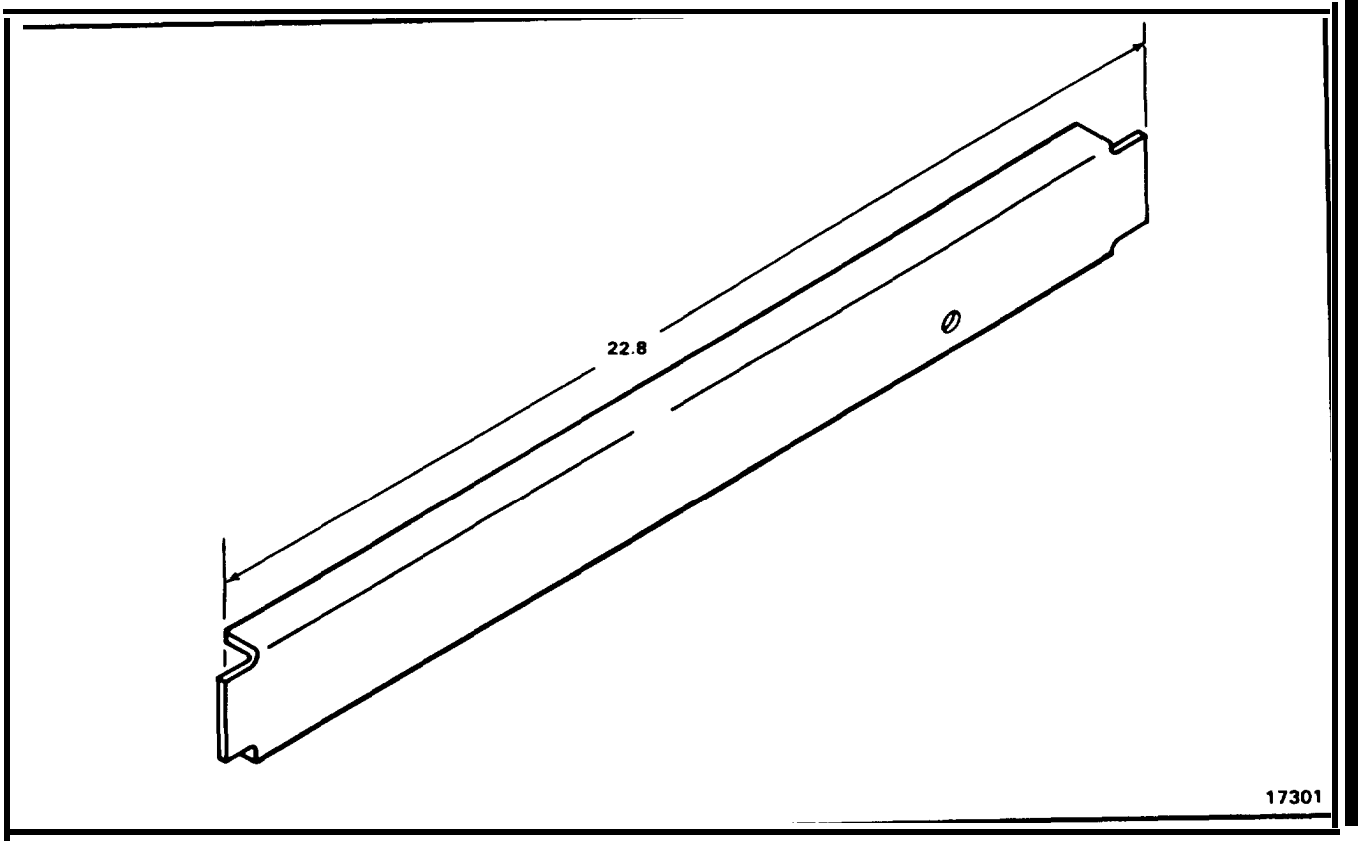




17300

NOTES:

1. **FABRICATE FROM ALUMINUM EXTRUSION 2024-T3511 PER QQ-A-200/3.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK AND 10137-1601 X 23.0.**
4. **USE EXISTING PART AS TEMPLATE.**
5. **FINISH AS REQUIRED.**

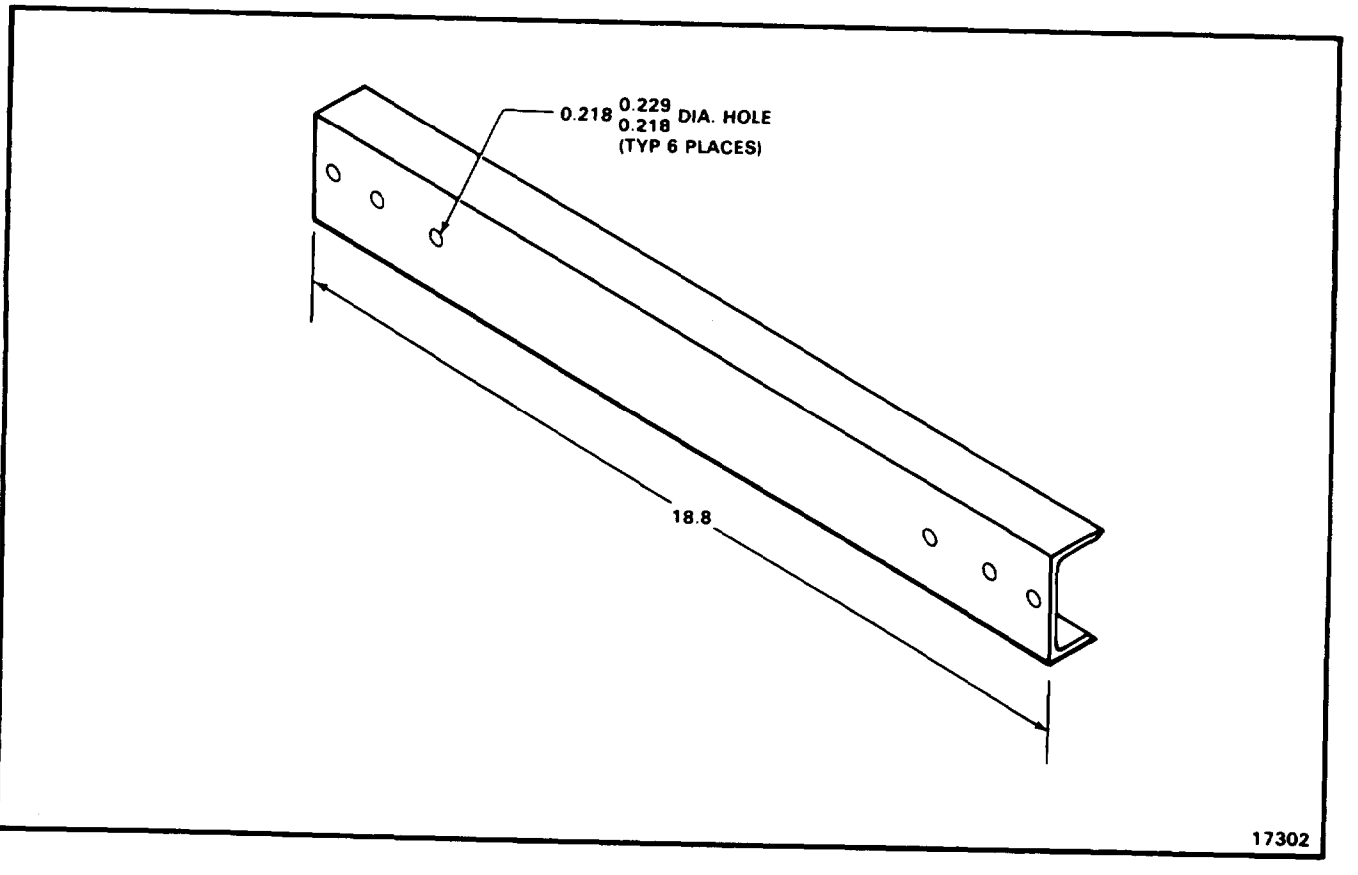


END OF TASK

E-161 OVERHEAD PANEL CHANNEL 414E2029-34

NOTES:

1. **FABRICATE FROM ALUMINUM EXTRUSION 2024-T3511 PER QQ-A-200/3.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK AND 10137-1601 X 19.0.**
4. **USE EXISTING PART AS TEMPLATE.**
5. **FINISH AS REQUIRED.**



END OF TASK

NOTES:

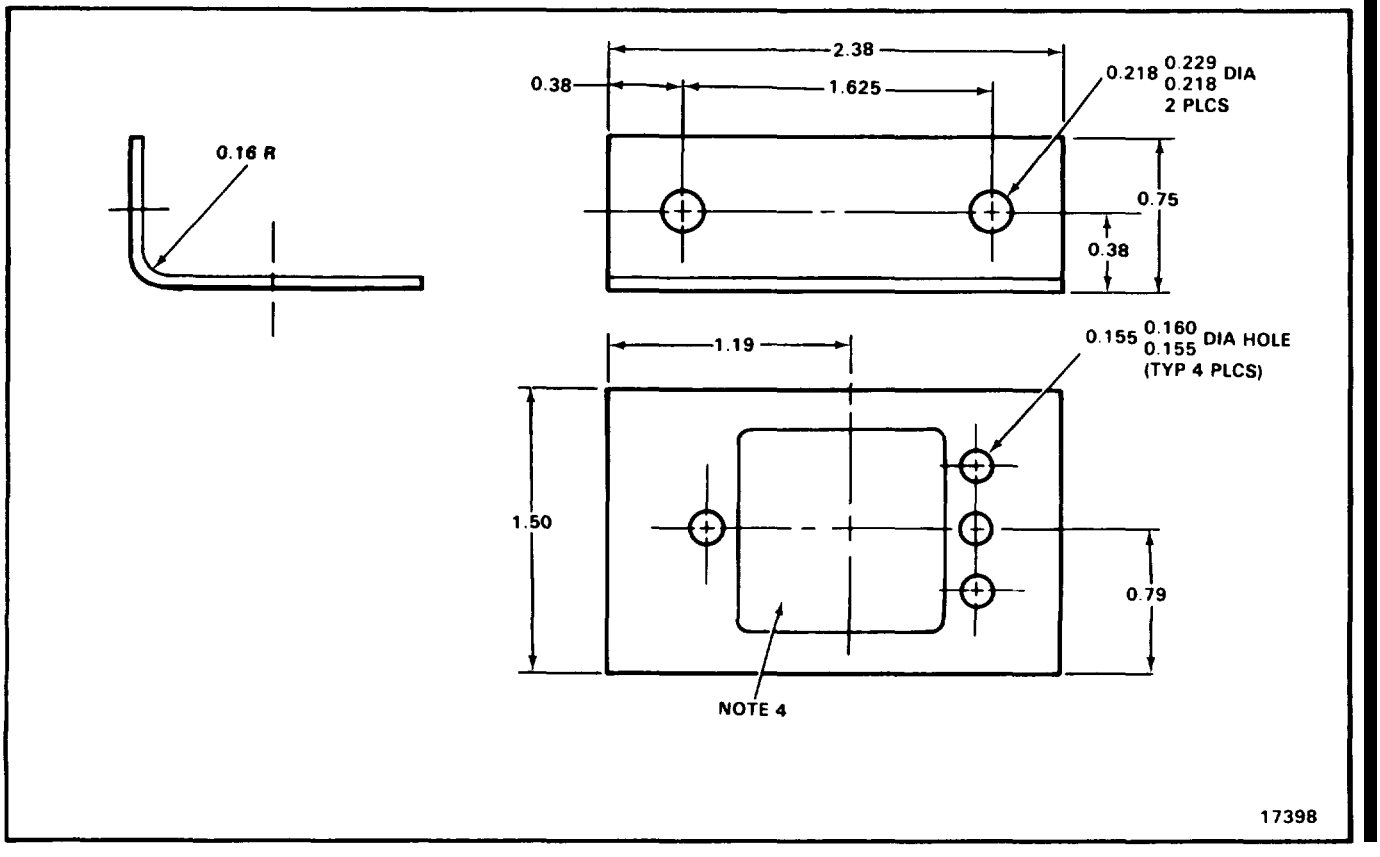
1, MAKE FROM ALUMINUM ALLOY 2024-T3 CLAD SHEET PER QQ-A-250/5.

2. ALL DIMENSIONS IN INCHES.

3. STOCK SIZE 0.040 X 2.25 X 2.38.

4. USE OLD BRACKET FOR TEMPLATE TO MATCH RELAY AND MOUNT HOLES.

5. PAINT WITH WHITE CLYPTOL 1201 (E164) AS REQUIRED.

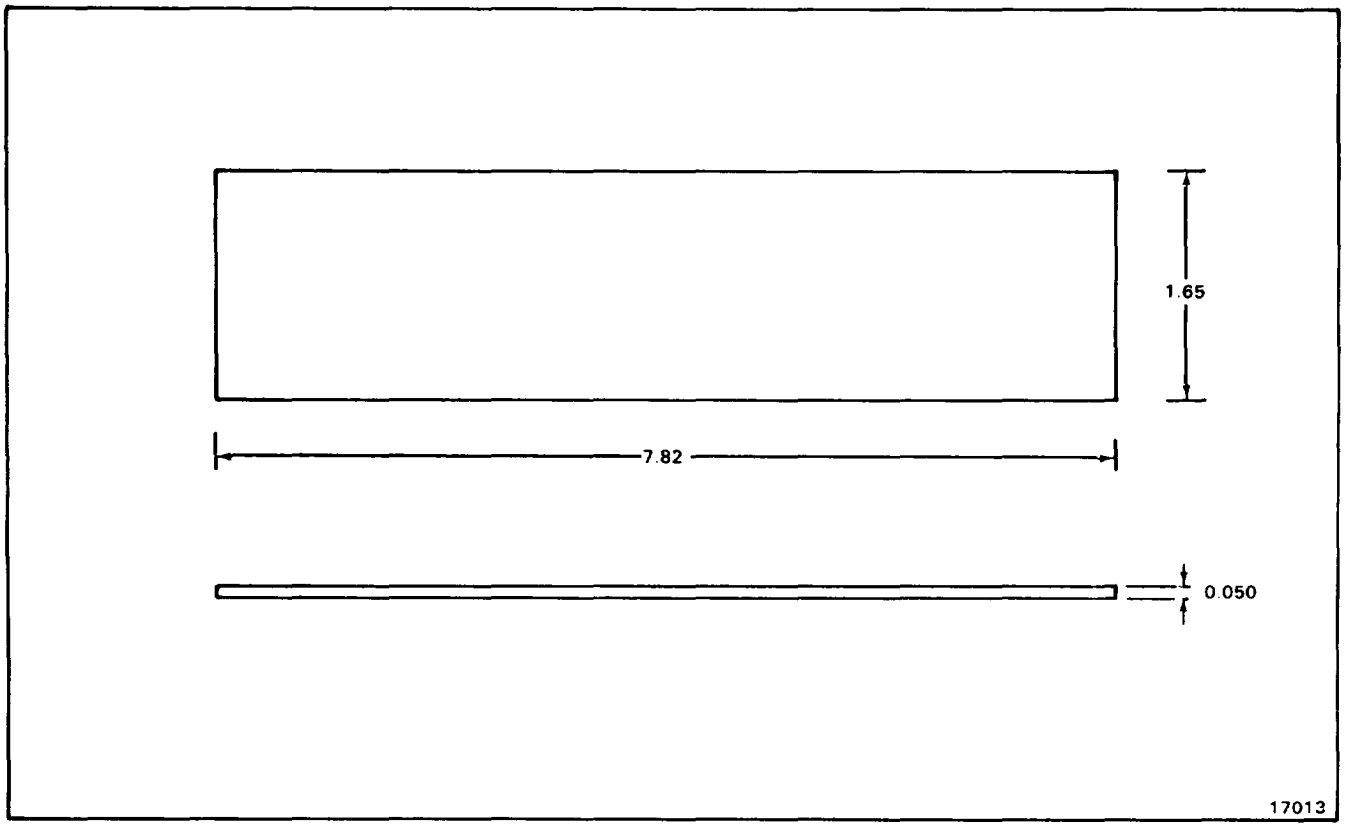


END OF TASK

E-163 PLATE AUXILIARY FUEL POD BOTTOM 414S5824-13 E-163

NOTES:

1. **FABRICATE FROM ALUMINUM ALLOY SHEET CLAD 2024-T3.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.050 X 1.7 X 7.9.**
4. **USE OLD PLATE FOR TEMPLATE TO LOCATE RIVET HOLES AND CENTER HOLE IN REPLACEMENT.**
5. **LENGTH OF REPLACEMENT IS SAME AS ORIGINAL.**
6. **FINISH AS REQUIRED.**



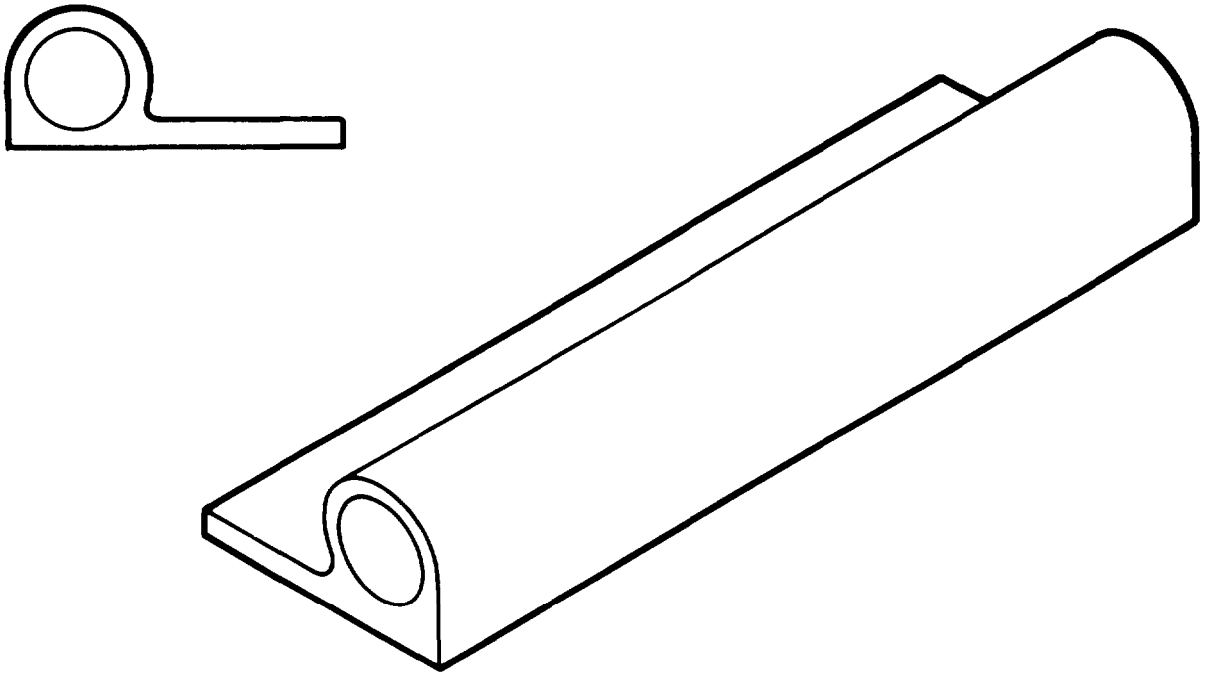
NOTES:

1. MAKE FROM NONMETALLIC SPECIAL RUBBER SEAL VS80526, NSN 9390-00-289-8702.

2. ALL DIMENSIONS IN INCHES.

3. STOCK SIZE 64.4 LG.

4. TRIM TO FIT.

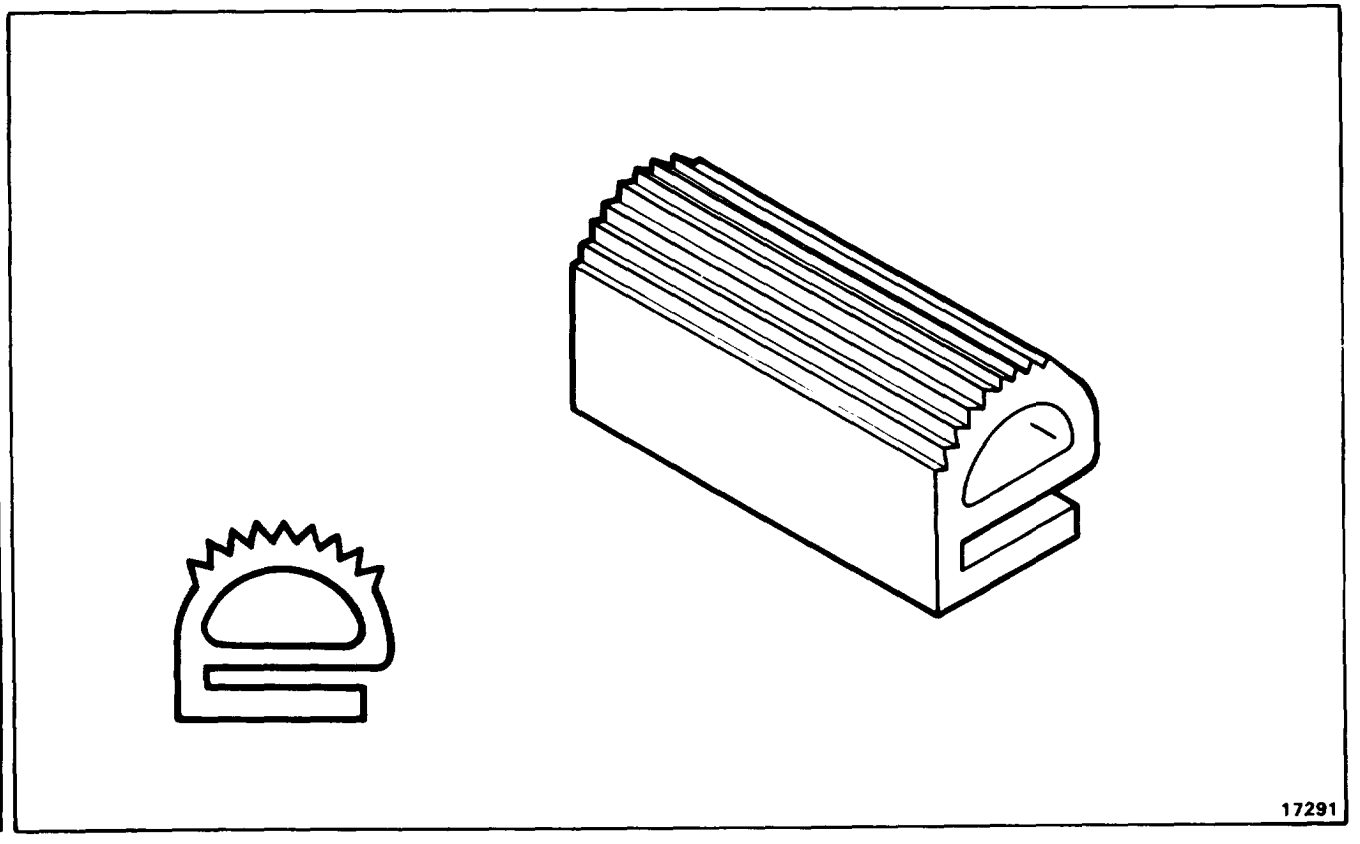


1729

END OF TASK

NOTES:

1. **MAKE FROM RUBBER SPECIAL NON-METALLIC VS80572-1,-2, OR -3.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 20.0 LG.**
4. **TRIM TO FIT.**
5. **USE -1 AND -2 TILL DEPLETION.**

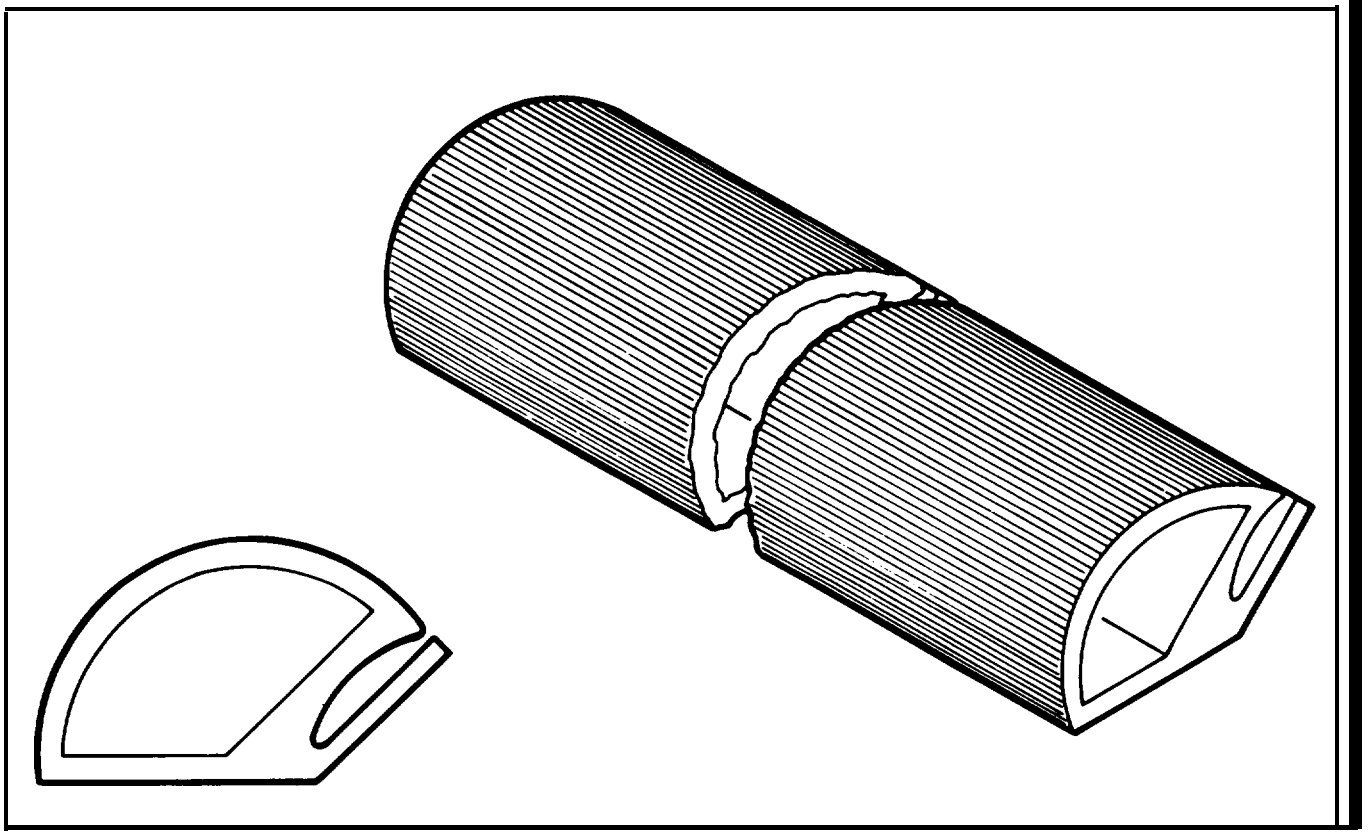


END OF TASK

E-166 FORWARD PYLON FAIRING SEAL 114S1902-386 E-166

NOTES:

1. **MAKE FROM RUBBER SHAPE NON-METALLIC VS80536-1.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 32.0 LG.**
4. **TRIM TO FIT.**

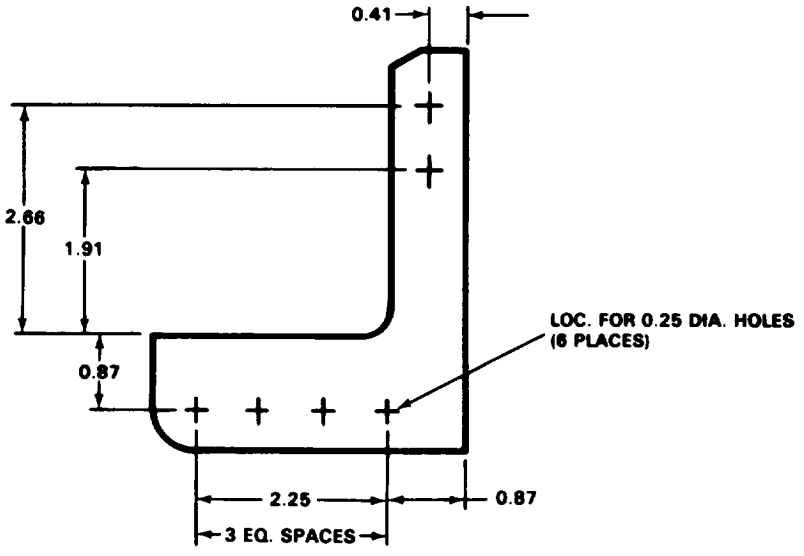


END OF TASK

E-167 UPPER CABIN DOOR SHIM 114S1621-35 E-167

NOTES:

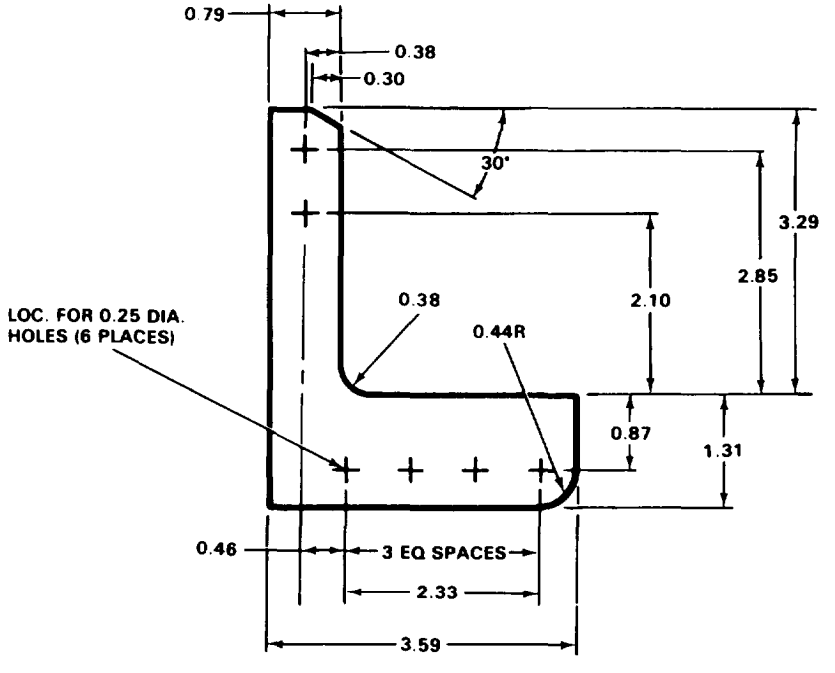
1. **FABRICATE FROM ALUMINUM LAMINATED SHIM PER MIL-S-22499 COMPOSITION 1, TYPE 1.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.032 X 3.6 X 4.7.**
4. **REFER TO -33 FOR SHIM DIMENSIONS.**
5. **FINISH AS REQUIRED.**



END OF TASK

NOTES:

1. **FABRICATE FROM ALUMINUM LAMINATED SHIM PER MIL-S-22499 COMPOSITION I, TYPE I.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.032 X 3.6 X 4.7.**
4. **FINISH AS REQUIRED.**

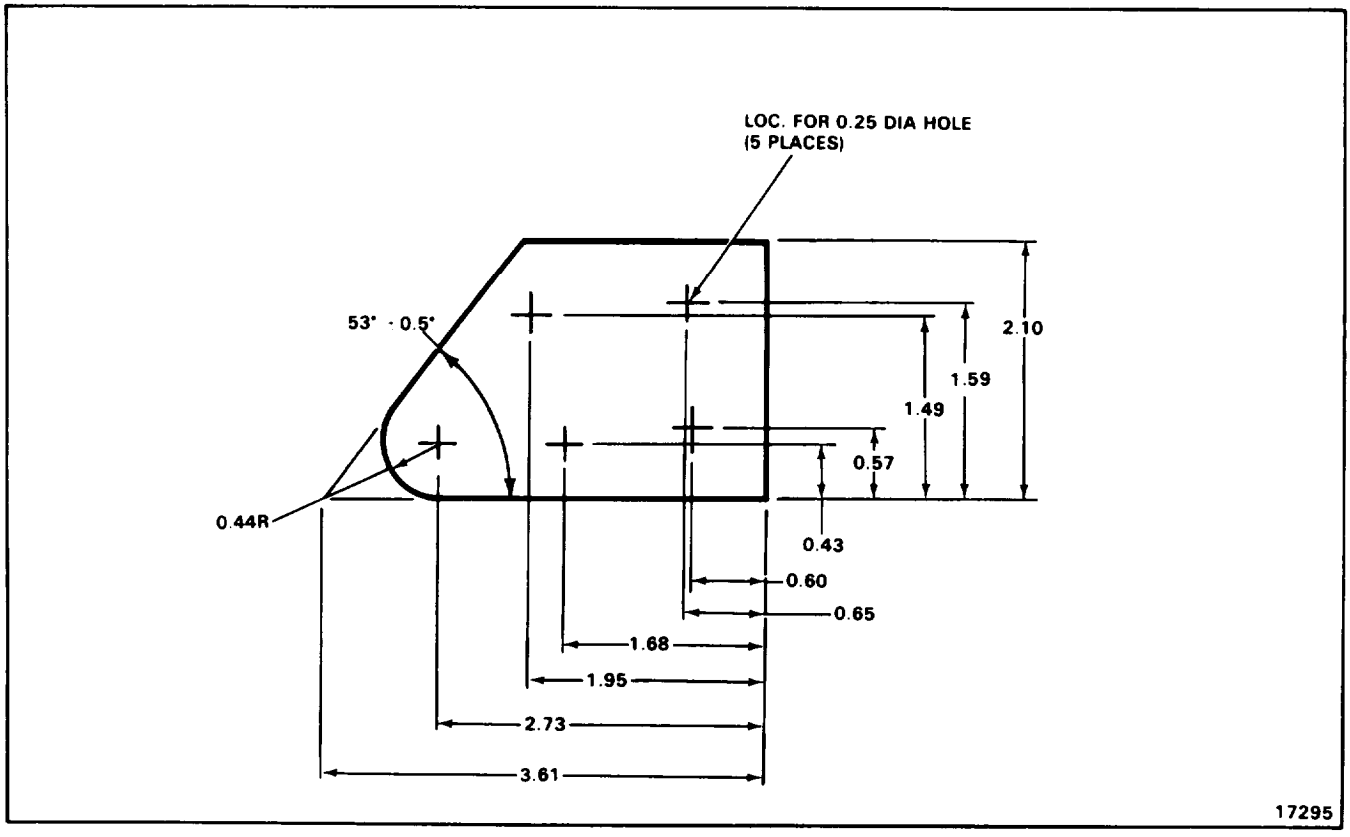


END OF TASK

E-169 UPPER CABIN DOOR SHIM 114S1621-39 E-169

NOTES:

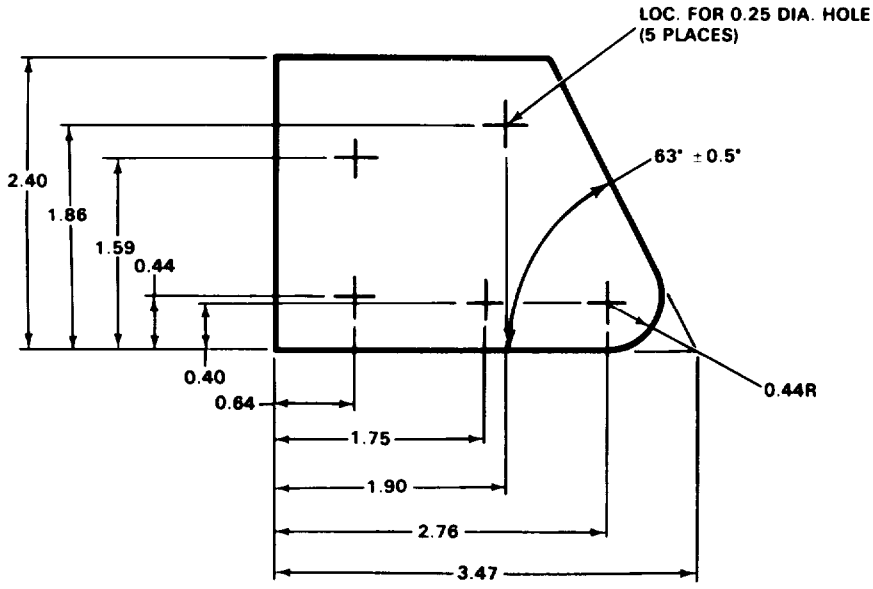
1. **FABRICATE FROM ALUMINUM LAMINATED SHIM PER MIL-S-22499 COMPOSITION I, TYPE I.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.032 X 2.2 X 3.7.**
4. **FINISH AS REQUIRED.**



END OF TASK

NOTES:

1. **FABRICATE FROM ALUMINUM LAMINATED SHIM PER MIL-S-22499 COMPOSITION 1, TYPE 1.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.032 X 2.5 X 3.5.**
4. **FINISH AS REQUIRED.**

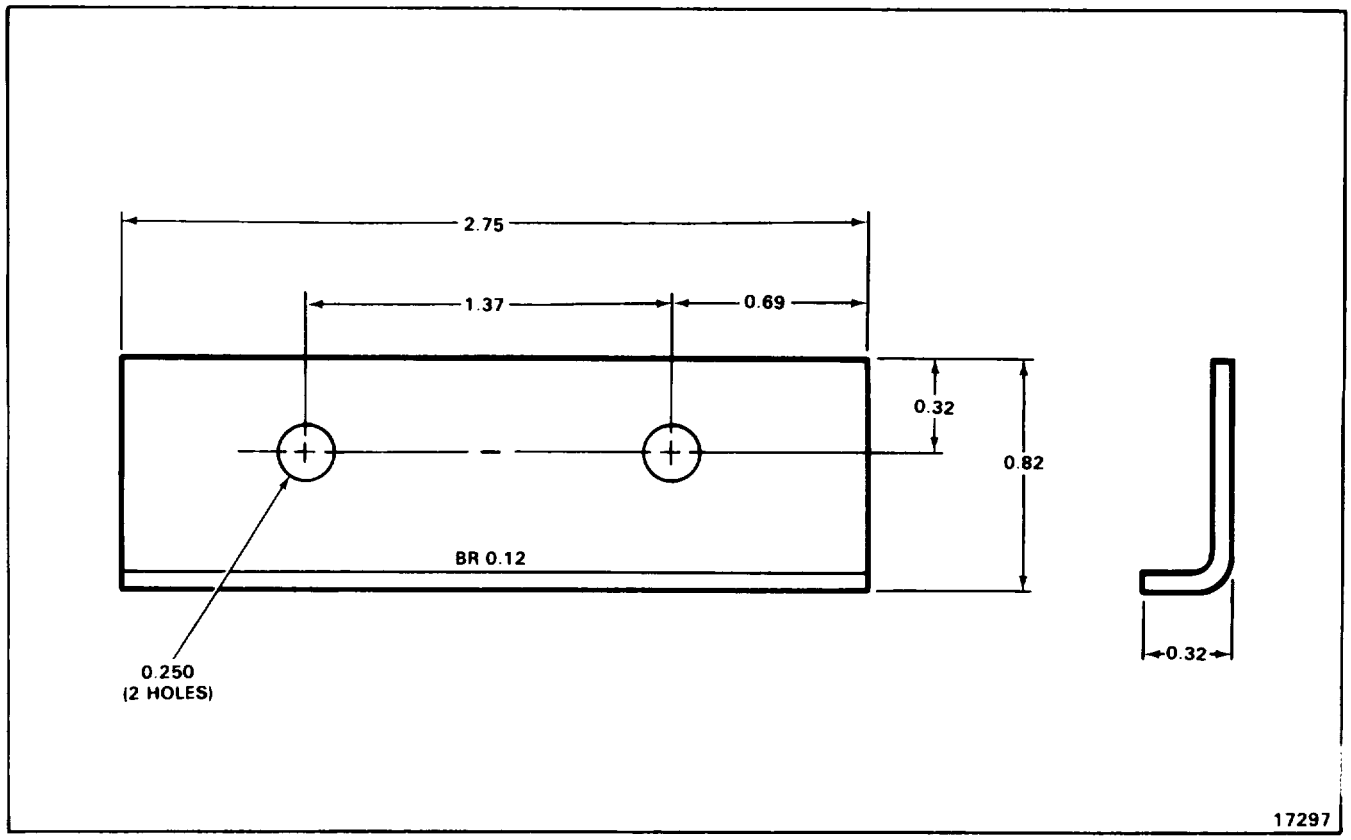


END OF TASK

E-171 LEFT HAND ELECTRICAL COMPARTMENT BATTERY ANGLE 114E2156-32

NOTES:

1. **FABRICATE FROM ALUMINUM ALLOY 2024-T3 CLAD SHEET PER QQ-A-200/5.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.032 X 1.2 X 2.8.**
4. **FINISH WITH ONE COAT OF RED EPOXY PRIMER (E293) MIL-P-52192 (MR) COMPOSITIONING, 2 PART SYSTEM APPLIED PER MANUFACTURER'S INSTRUCTIONS ON CONTAINER. APPLY OVER TWO COATS OF YELLOW EPOXY PRIMER (E292) MIL-P-23377 APPLIED PER MIL-C-22751.**



END OF TASK

E-172 LEFT HAND ELECTRICAL COMPARTMENT BATTERY ANGLE 114E2156-31

E-172

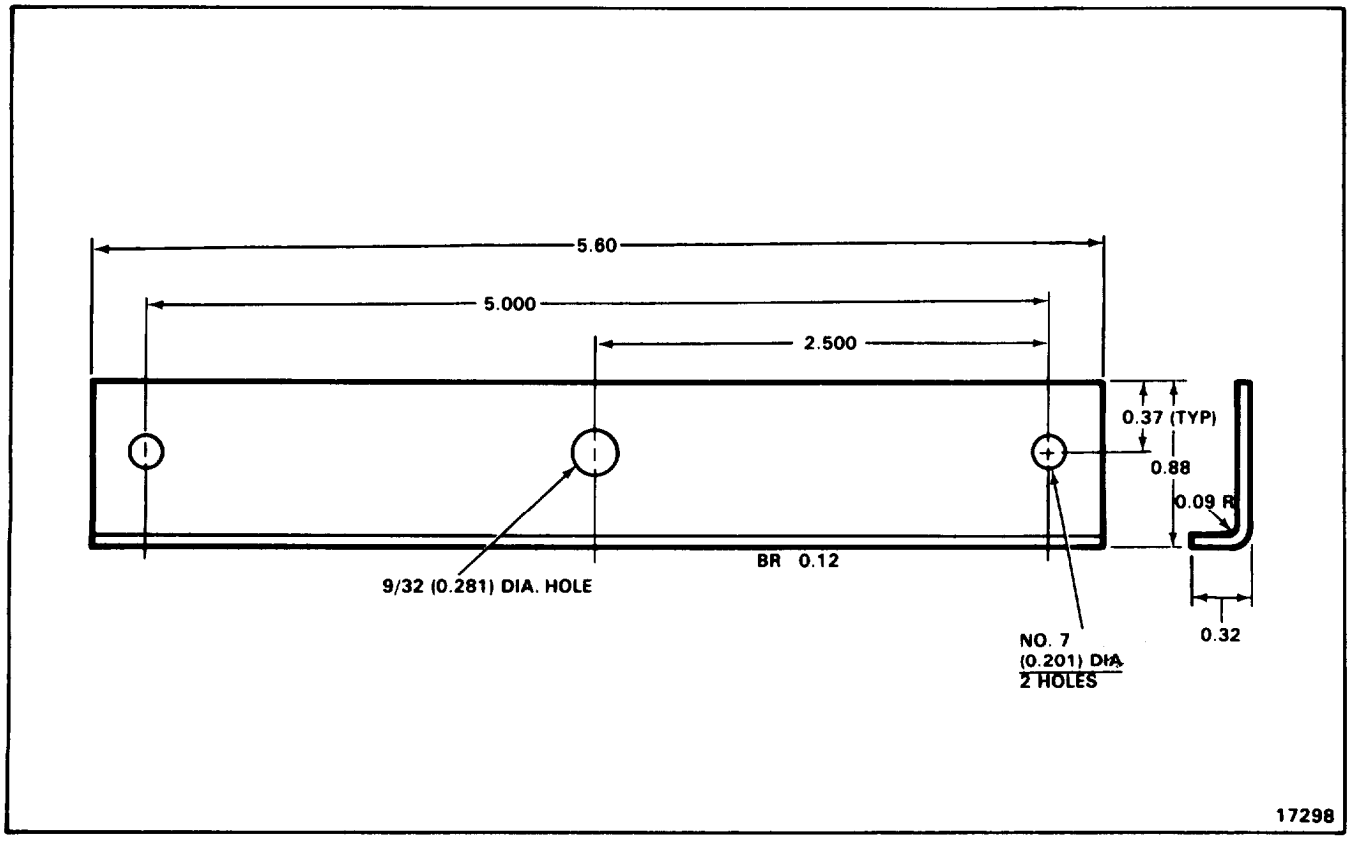
NOTES:

1. **FABRICATE FROM ALUMINUM ALLOY 2024-T3 CLAD SHEET PER QQ-A-200/5.**

2. **ALL DIMENSIONS IN INCHES.**

3. **STOCK SIZE 0.032 X 1.2 X 5.7.**

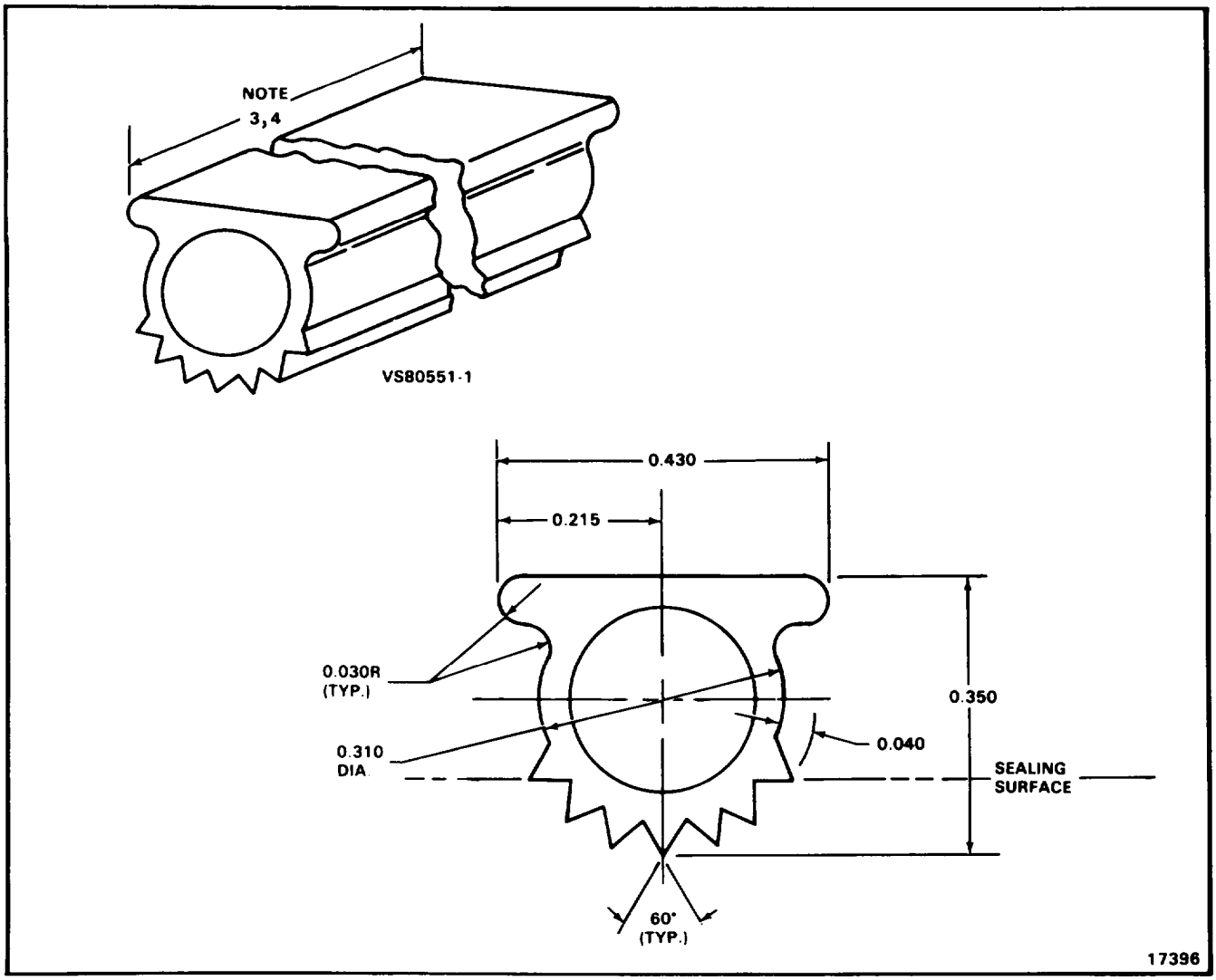
4. **FINISH WITH ONE COAT OF RED EPOXY PRIMER (E293) MIL-P-52192 (MR) COMPOSITIONING, 2 PART SYSTEM APPLIED PER MANUFACTURER'S INSTRUCTIONS ON CONTAINER. APPLY OVER TWO COATS OF YELLOW EPOXY PRIMER (E292) MIL-P-23377 APPLIED PER MIL-C-22751.**



END OF TASK

NOTES:

1. **MAKE FROM VS8055-1 SILICONE RUBBER.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK LENGTH FOR -31 IS 39.20.**
4. **STOCK LENGTH FOR -33 IS 34.90.**
5. **TRIM TO FIT.**

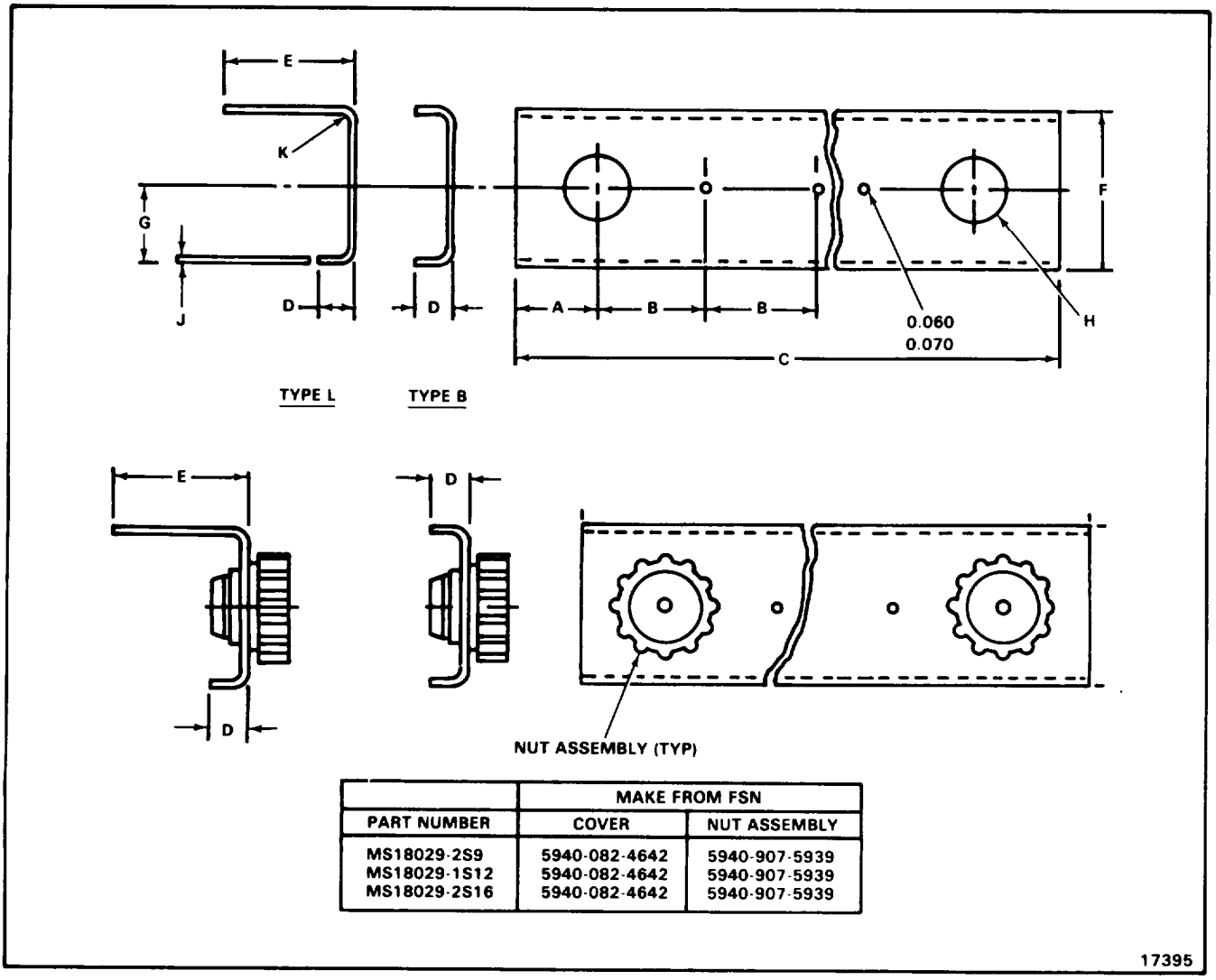


END OF TASK

E-174 TERMINAL BOARD COVER MS18029-2S9, -1S12, -2S16 E-174

NOTES:

1. **MAKE FROM PLASTIC LAMINATE AS REQUIRED BY MIL-P-25518, TYPE L.**
2. **ALL DIMENSIONS IN INCHES.**
3. **USE OLD COVER FOR TEMPLATE TO DETERMINE A, B, C, D, E, F, G, AND J DIMENSIONS.**
4. **USE OLD COVER FOR TEMPLATE TO DETERMINE HOLE SIZE E.**
5. **USE OLD COVER FOR TEMPLATE TO DETERMINE BEND RADIUS K.**
6. **FINISH AS REQUIRED.**



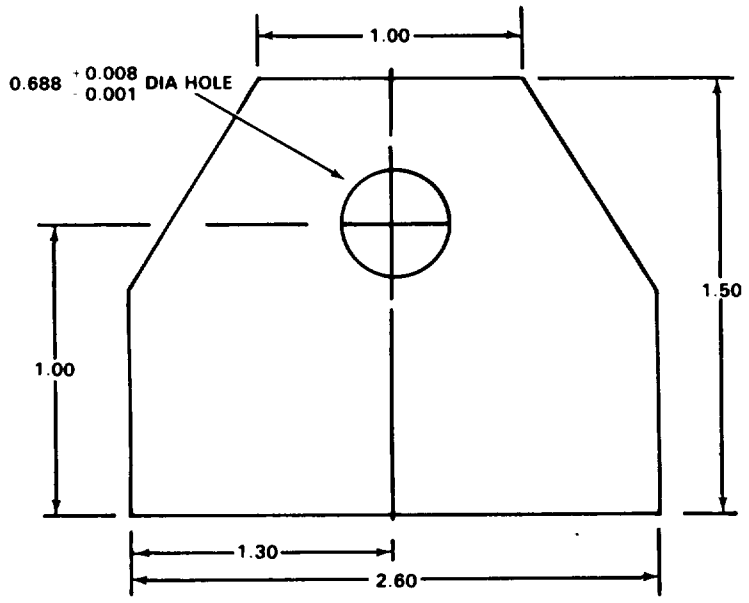
	MAKE FROM FSN	
PART NUMBER	COVER	NUT ASSEMBLY
MS18029-2S9	5940-082-4642	5940-907-5939
MS18029-1S12	5940-082-4642	5940-907-5939
MS18029-2S16	5940-082-4642	5940-907-5939

END OF TASK

E-175 SPACER BEAM COVER PANEL 114S1655-14

NOTES:

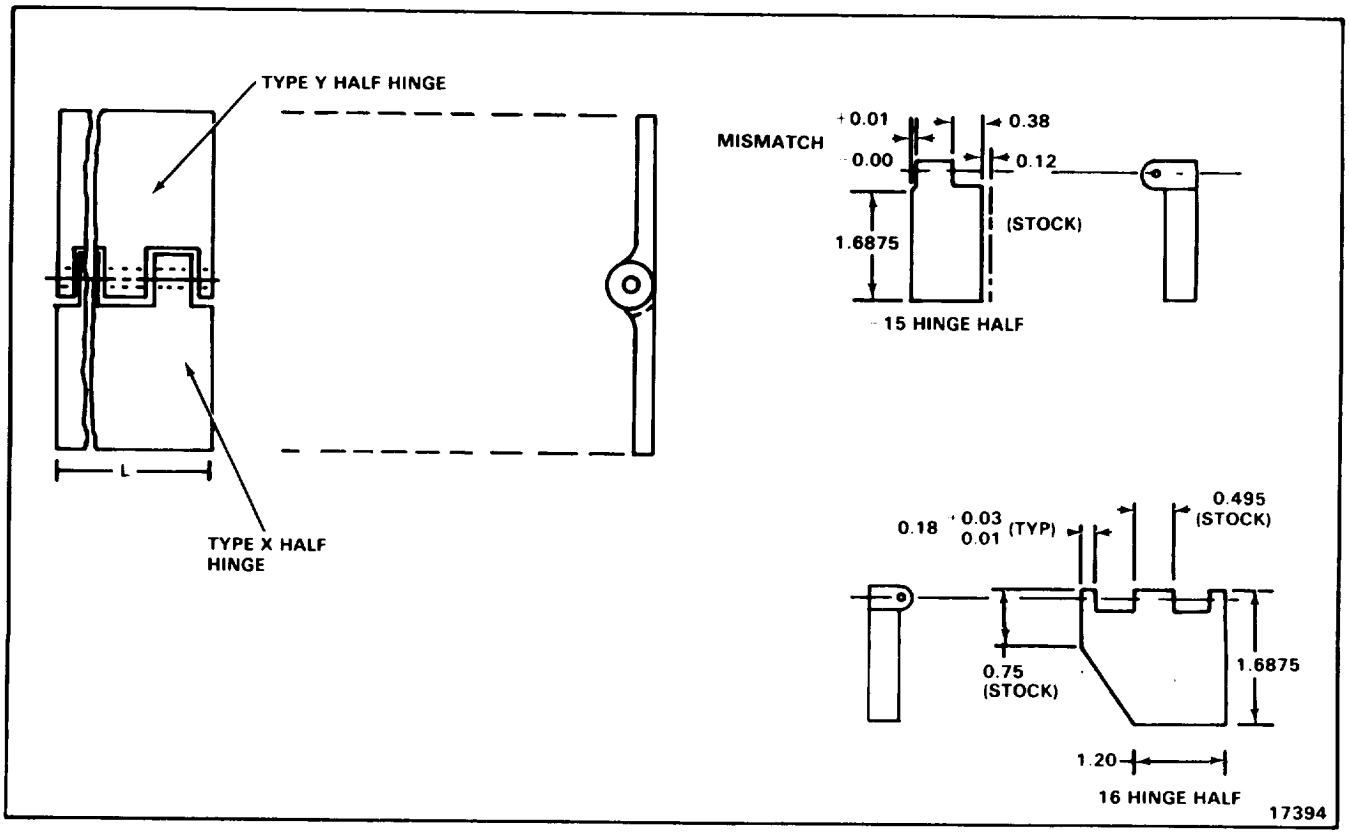
1. **FABRICATE FROM ALUMINUM ALLOY SHEET CLAD 2024-T3 PER QQ-A-250/5.**
2. **ALL DIMENSIONS IN INCHES.**
3. **STOCK SIZE 0.063 X 1.8 X 2.8.**
4. **USE OLD SPACER FOR TEMPLATE TO DETERMINE EXACT DIMENSIONS.**
5. **FINISH AS REQUIRED.**



END OF TASK

NOTES:

1. -15 TYPE HALF HINGE IS MADE FROM MS2000 1PX12-100.
2. -16 TYPE HALF HINGE IS MADE FROM MS2000 1PX12-190.
3. TYPE X HALF HINGE MATES WITH TYPE Y HALF HINGE.
4. ALL DIMENSIONS ARE IN INCHES.
5. FINISH AS REQUIRED.

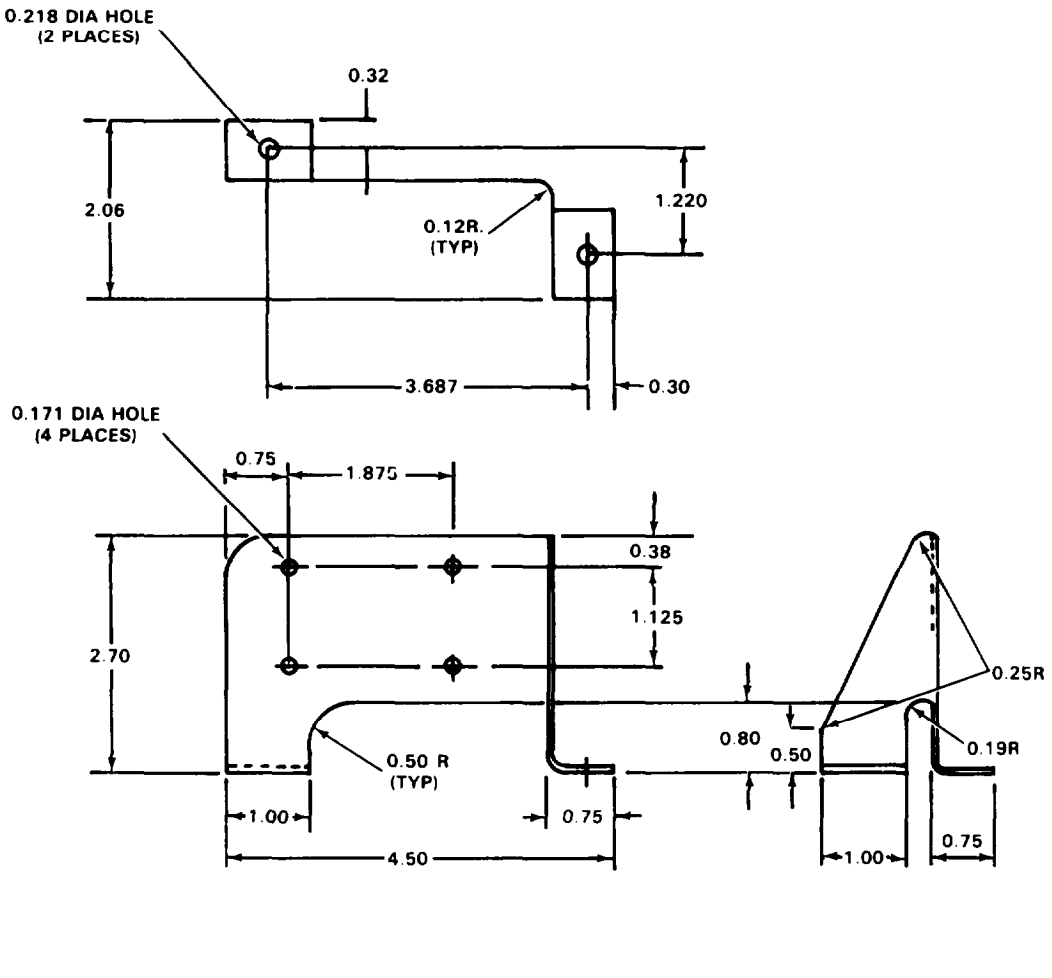


END OF TASK

E-177 PDP HOUSING ASSEMBLY SUPPORT 145E2158-21 E-177

NOTES:

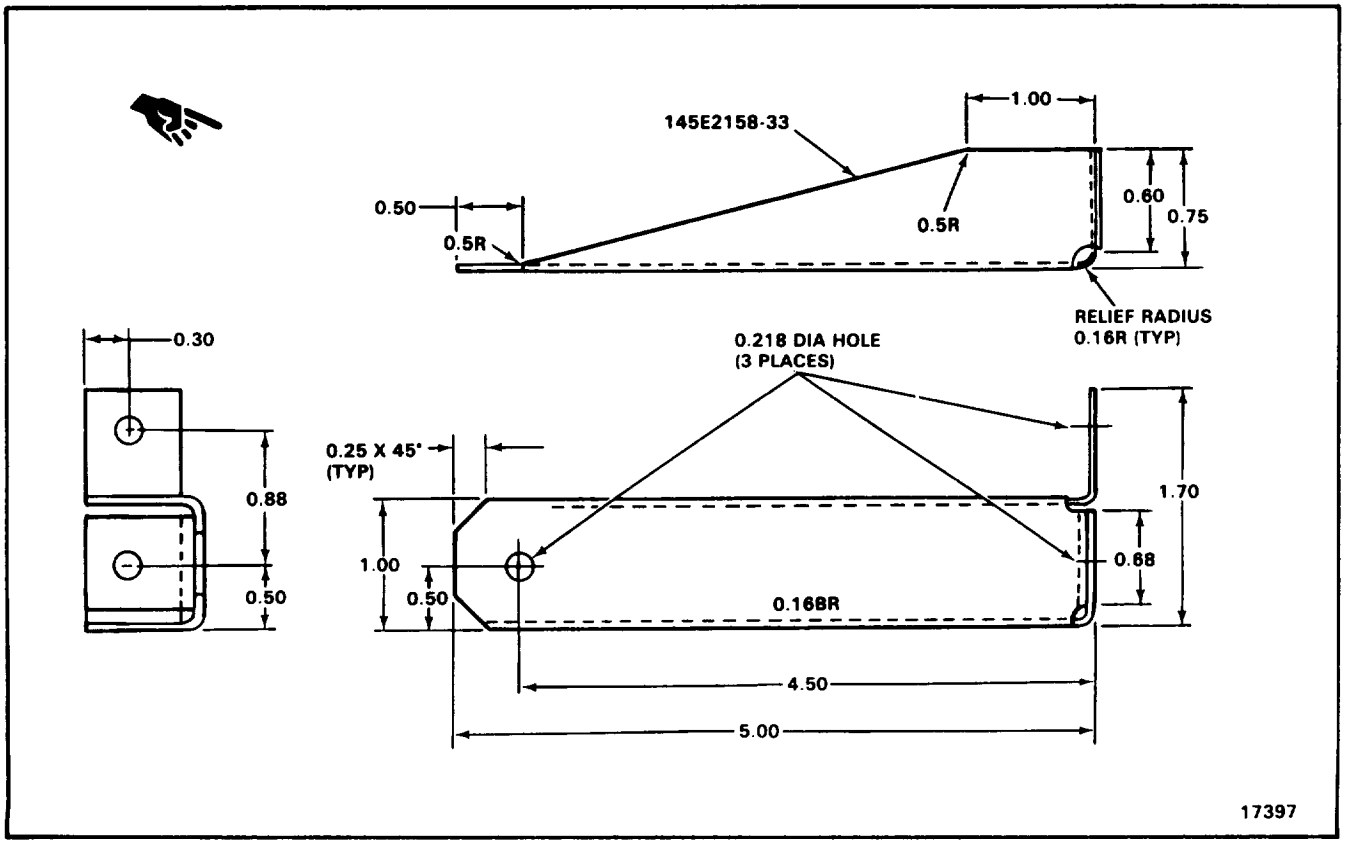
1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/5.
2. ALL DIMENSIONS IN INCHES.
3. STOCK 0.040 X 4.00 X 7.00.
4. FINISH AS REQUIRED.



END OF TASK

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/5.
2. ALL DIMENSIONS IN INCHES.
3. STOCK 0.032 X 2,75 X 6.00.
4. FINISH PS362.

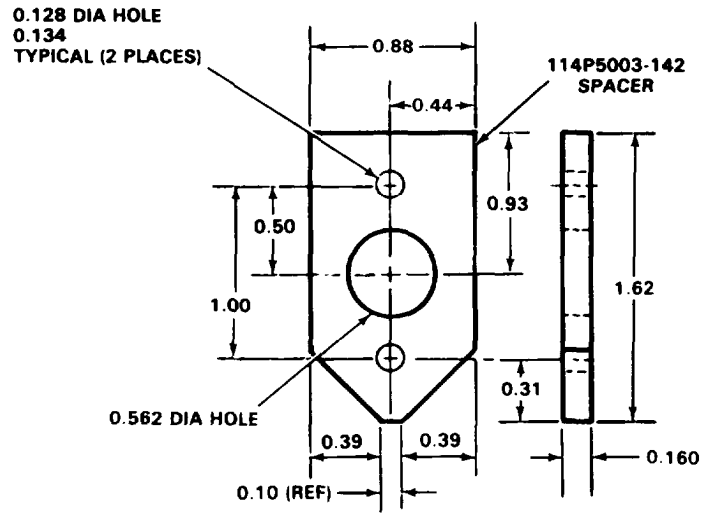


END OF TASK

E-179 DRIVE SHAFT AND GEARBOX FAIRING SPACER 114P5003-142

NOTES:

1. FABRICATE FROM SHEET ALUMINUM ALLOY 6061-T6 PER QQ-A-250/11 TEMP T6.
2. ALL DIMENSIONS IN INCHES.
3. FINISH WITH ZINC CHROMATE PRIMER (E291).

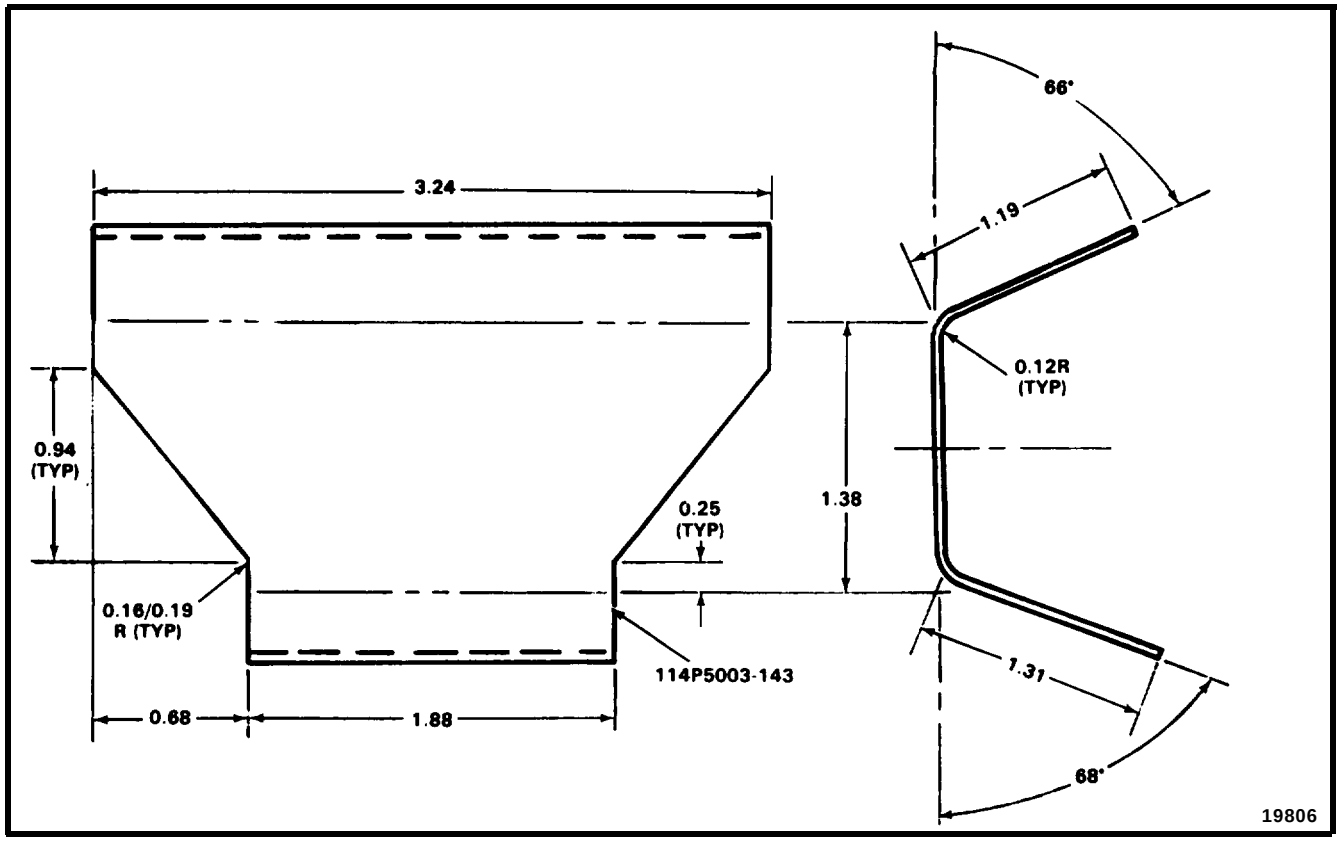


19805

END OF TASK

NOTES:

1. FABRICATE FROM 2024-T4 CLAD ALUMINUM ALLOY SHEET QQ-A-250/50
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.032 X 3.3 X 4.5.
4. FINISH WITH ZINC CHROMATE PRIMER (E291).

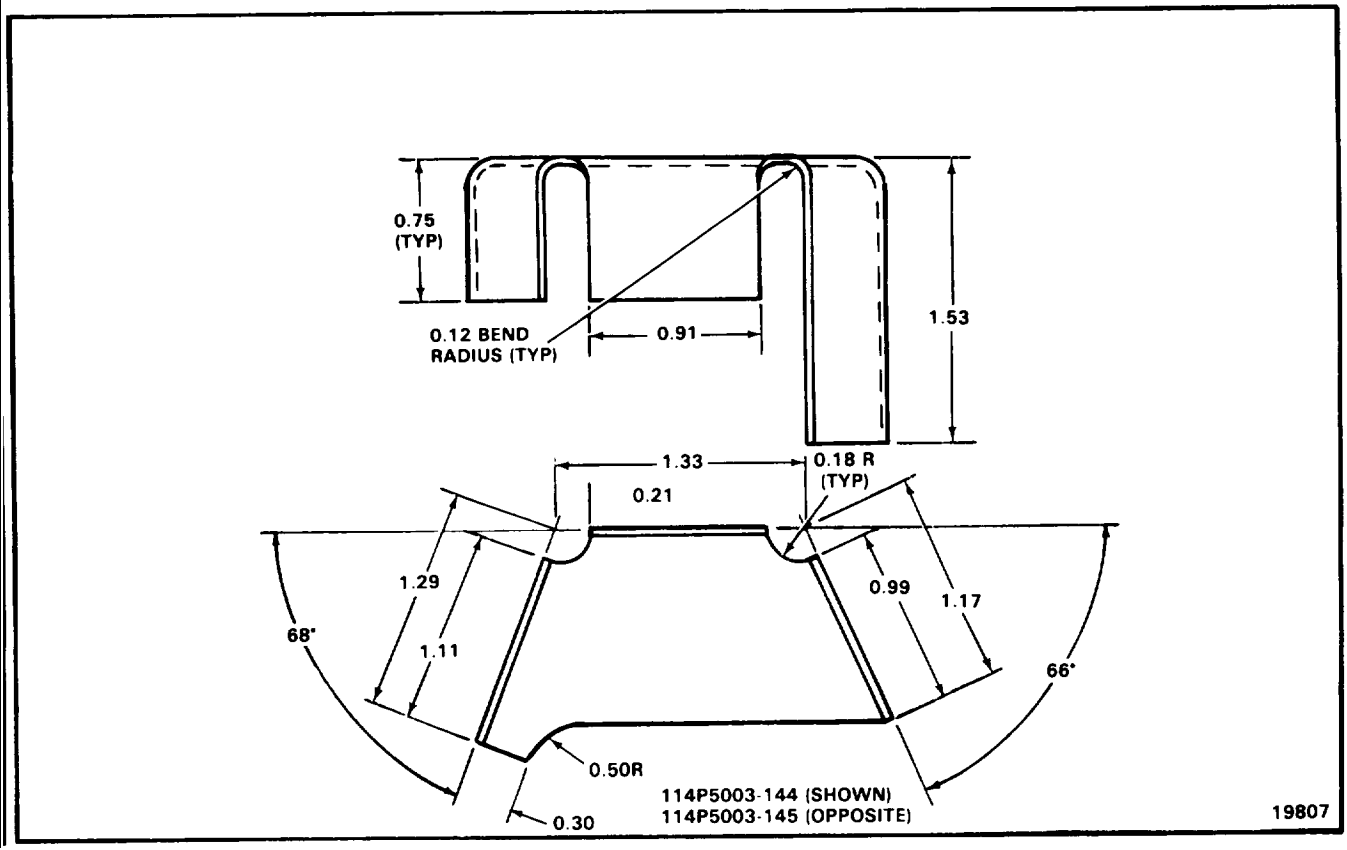


END OF TASK

E-181 DRIVE SHAFT AND GEARBOX FAIRING FORMER 114P5003-144 AND -145

NOTES:

1. FABRICATE FROM 2024-T4 CLAD ALUMINUM ALLOY SHEET QQ-A-250/5.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.032 X 2.6 X 4.6.
4. FINISH WITH ZINC CHROMATE PRIMER (E291).

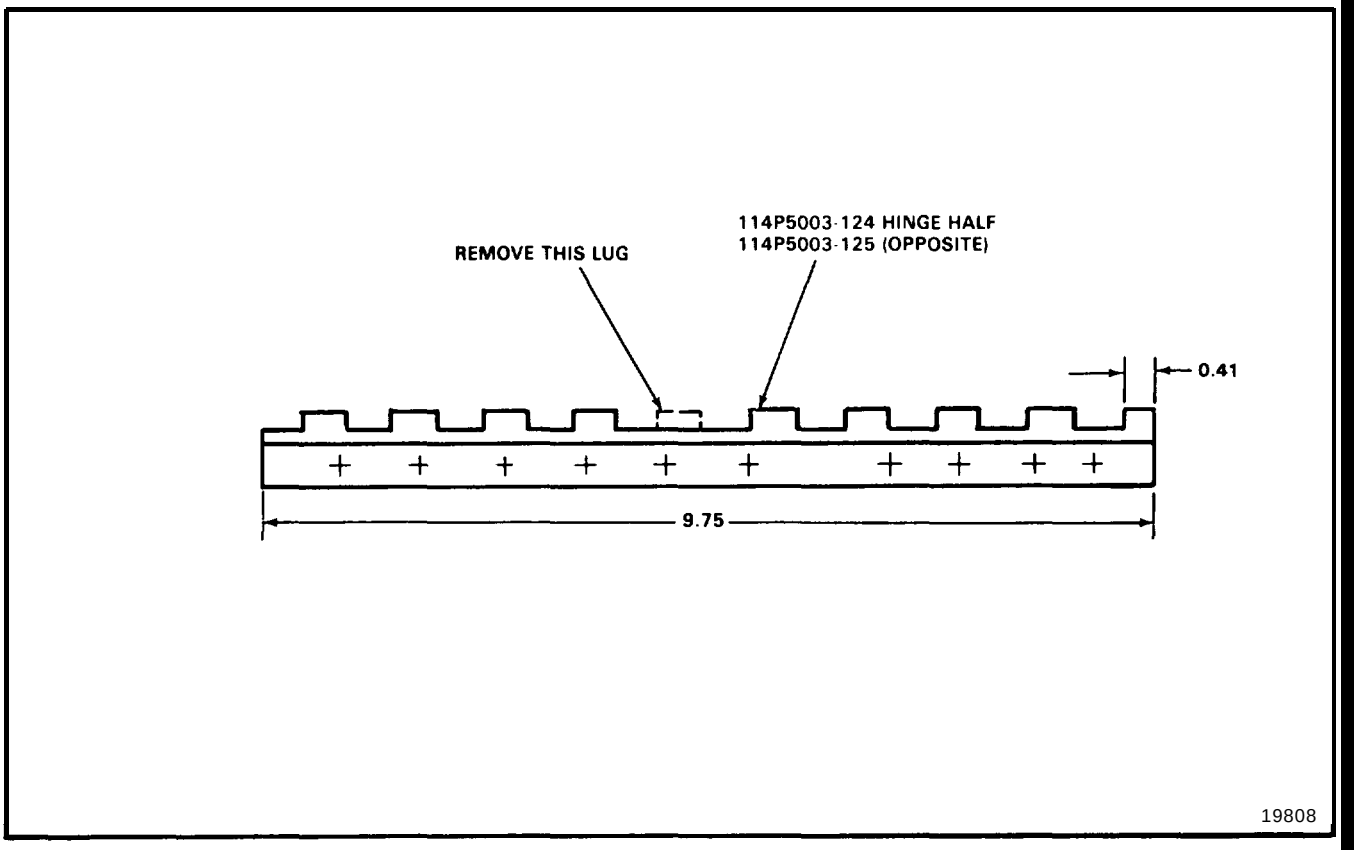


END OF TASK

E-182 DRIVE SHAFT GEARBOX FAIRING HINGE HALF 114P5003-124 AND -125

NOTES:

1. FABRICATE FROM MS20001PX4-1 0.09.
2. USE FAIRING ASSEMBLY TO LOCATE RIVET HOLES.
3. FINISH ALL CUT EDGES WITH ZINC CHROMATE PRIMER (E291).

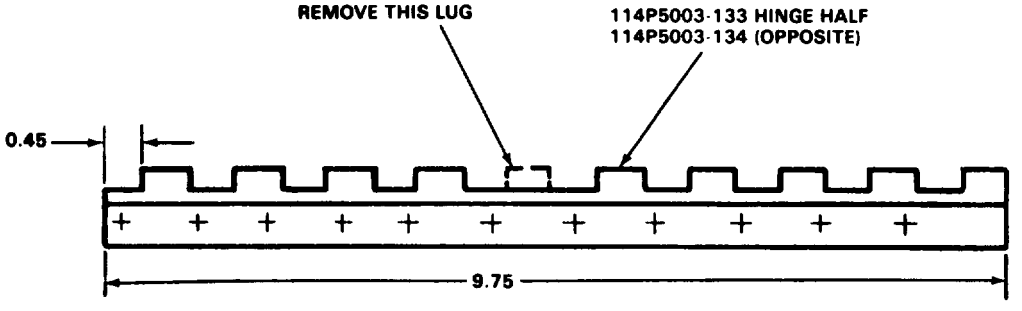


END OF TASK

E-183 DRIVE SHAFT GEARBOX FAIRING HINGE HALF 114PS003-133 AND -134

NOTES:

1. FABRICATE FROM MS20001PX4-10.09.
2. USE FAIRING ASSEMBLY TO LOCATE RIVET HOLES.
3. FINISH ALL CUT EDGES WITH ZINC CHROMATE (E291).



19809

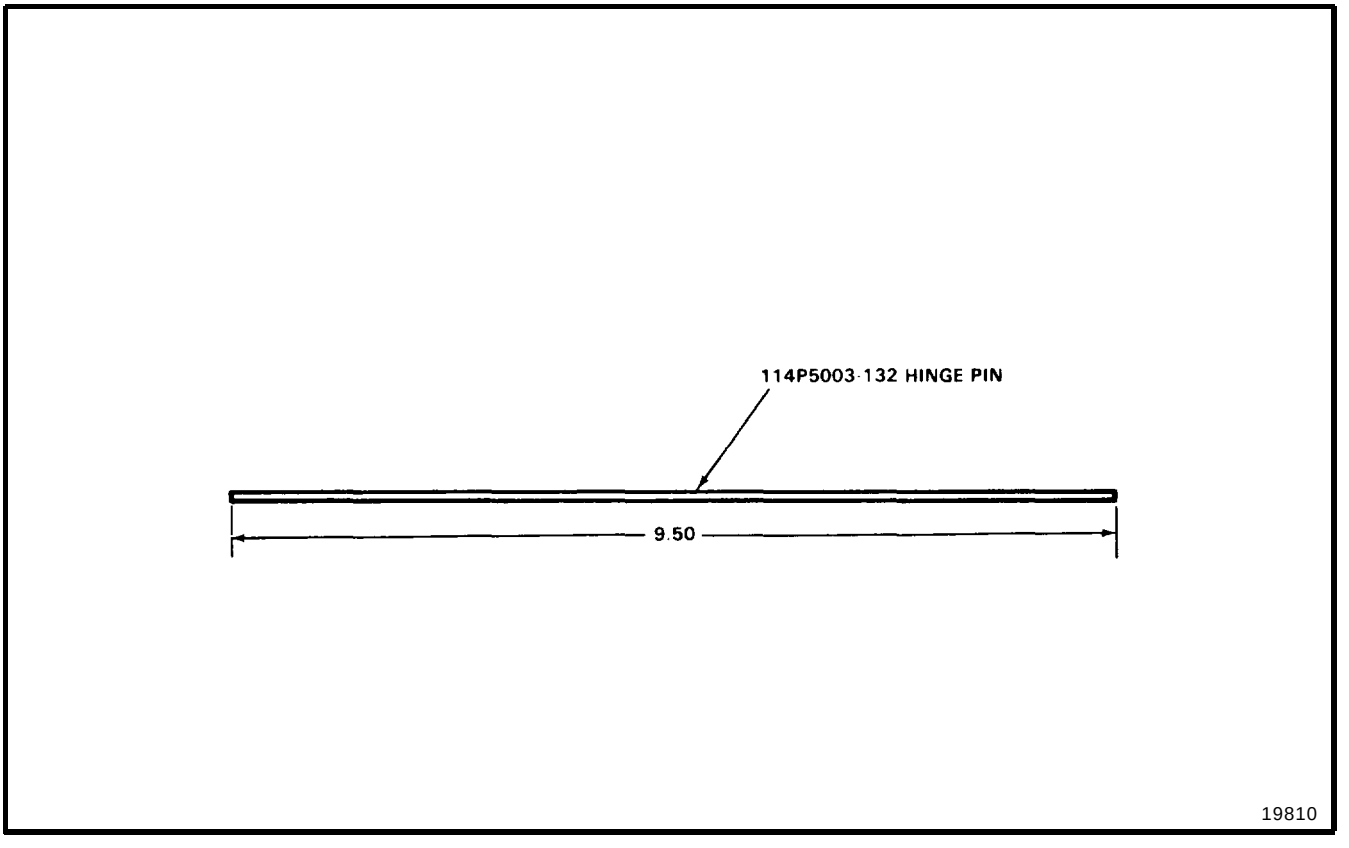
END OF TASK

E-184 DRIVE SHAFT GEARBOX FAIRING HINGE PIN 114P5003-132 E-184

NOTES:

1. FABRICATE FROM MS20253P2-943.

2. DIMENSION IN INCHES.

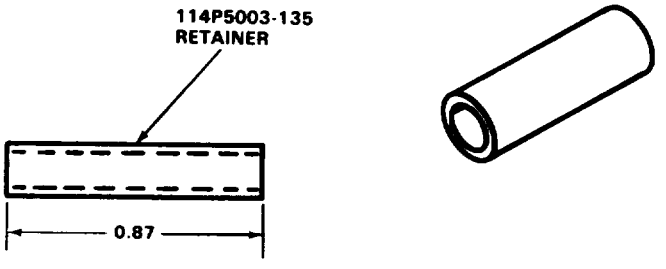


END OF TASK

E-185 DRIVE SHAFT GEARBOX FAIRING HINGE PIN RETAINER 114P5003-135 E-185

NOTES:

1. FABRICATE FROM PD70 TUBING. (RAYCHEM CORP., MENLO PARK, CA 94025.)
2. STOCK SIZE 0.018 ID X 0.87 LONG.
3. ALL DIMENSIONS IN INCHES.



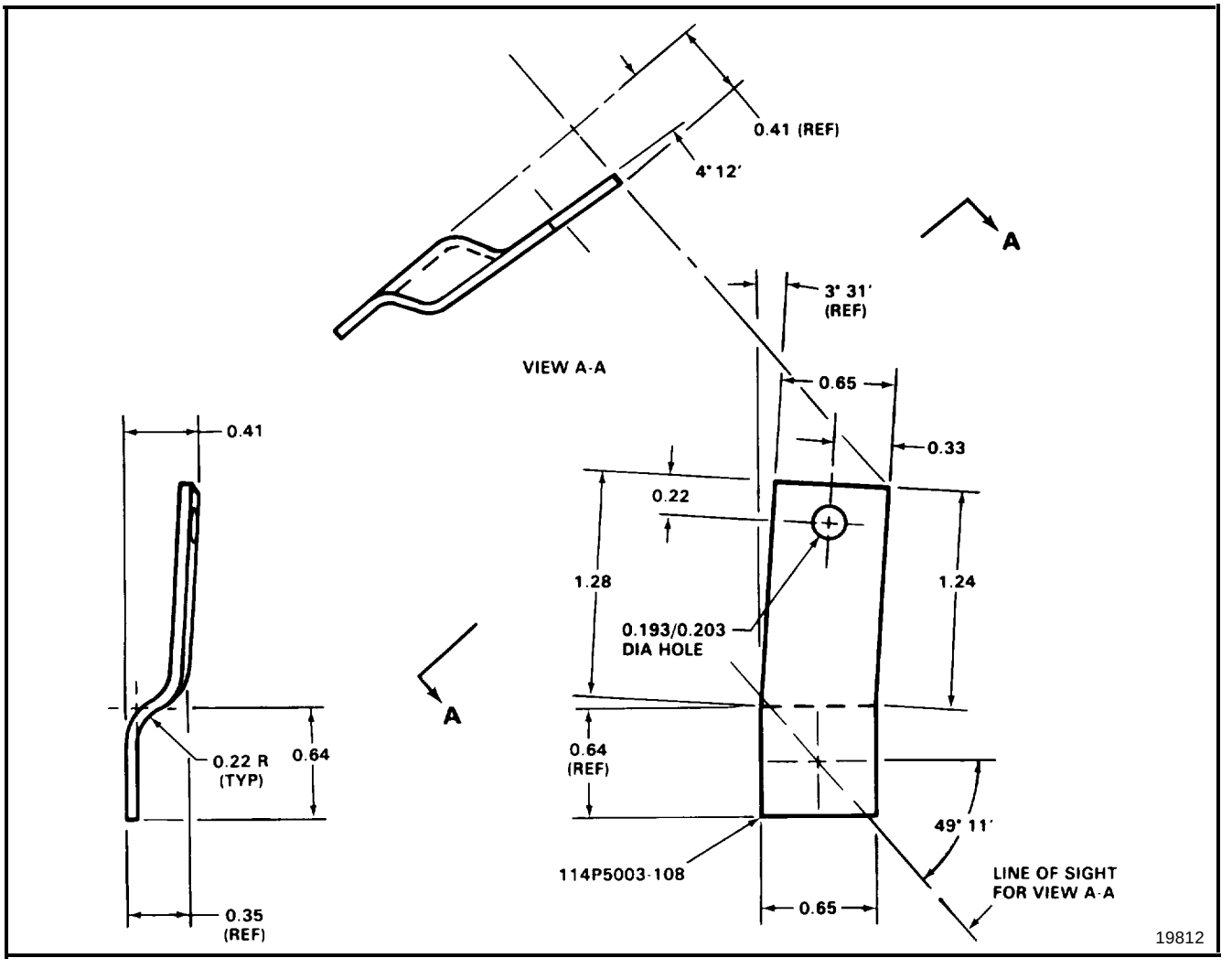
19811

END OF TASK

E-186 DRIVE SHAFT AND GEARBOX FAIRING CLIP 114P5003-108 E-186

NOTES:

1. FABRICATE FROM 2024-T4 ALUMINUM ALLOY CLAD SHEET QQ-A-250/5.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.063 X 0.8 X 2.3.
4. FINISH WITH ZINC CHROMATE PRIMER (E291).

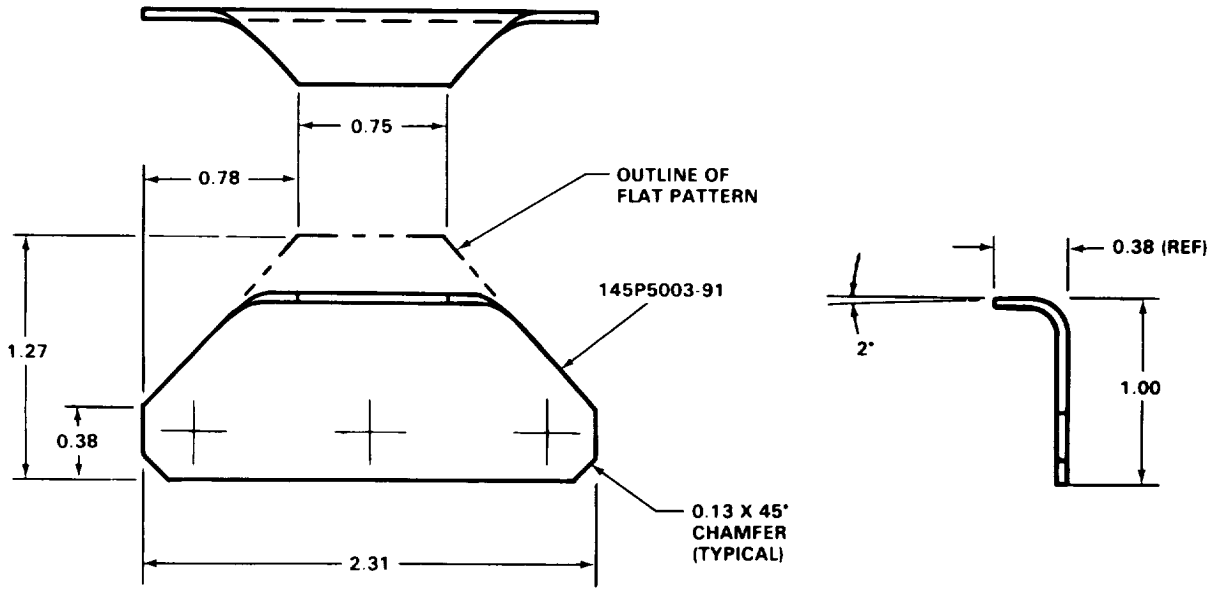


END OF TASK

E-187 DRIVE SHAFT AND GEARBOX FAIRING CLIP 114P5003-91 E-187

NOTES:

1. FABRICATE FROM 2024-T4 ALUMINUM ALLOY CLAD SHEET QQ-A-250/5.
2. STOCK SIZE 0.040 X 1.3 X 2.4.
3. ALL DIMENSIONS IN INCHES.
4. USE FAIRING ASSEMBLY TO LOCATE RIVET HOLES.
5. FINISH WITH ZINC CHROMATE PRIMER (E291).

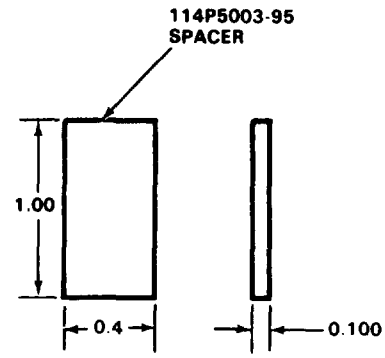


END OF TASK

E-188 DRIVE SHAFT AND GEARBOX FAIRING SPACER 114P5003-95

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY SHEET 6061-T6 PER QQ-A-250/11.
2. STOCK SIZE 0.100X 0.4 X 0.8.
3. USE FAIRING ASSEMBLY TO LOCATE RIVET HOLES.
4. FINISH WITH ZINC CHROMATE PRIMER (E291).
5. ALL DIMENSIONS IN INCHES.



19814

END OF TASK

E-189 COCKPIT ENCLOSURE SEALS 114S1608-2, -3, -4, -5, AND -6 E-189

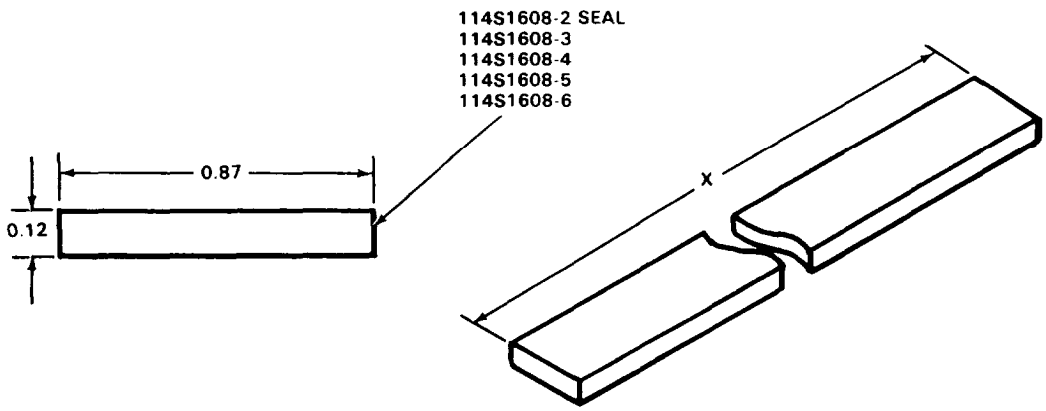
NOTES:

1. FABRICATE FROM AMS3195 SILICONE RUBBER SPONGE SHEET.

2. STOCK SIZE 0.12 X 0.87 WIDE.

3. ALL DIMENSIONS IN INCHES.

4. TWO REQUIRED FOR EACH INSTALLATION BETWEEN WINDSHIELD AND STRUCTURE. USE ORIGINAL SEAL TO DETERMINE X DIMENSION.



19815

END OF TASK

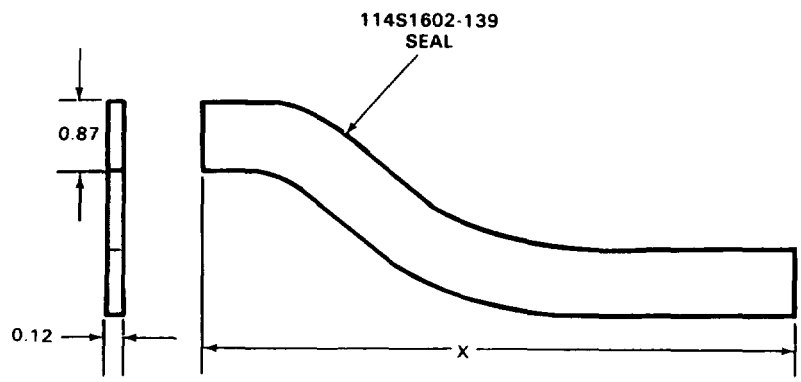
NOTES:

1. FABRICATE FROM AMS3195 SILICONE RUBBER SPONGE SHEET.

2. STOCK SIZE 0.12 X 0.87 WIDE X 8.5 LONG.

3. ALL DIMENSIONS IN INCHES.

4. USE ORIGINAL SEAL TO DETERMINE DIMENSION X AND EXACT SHAPE.



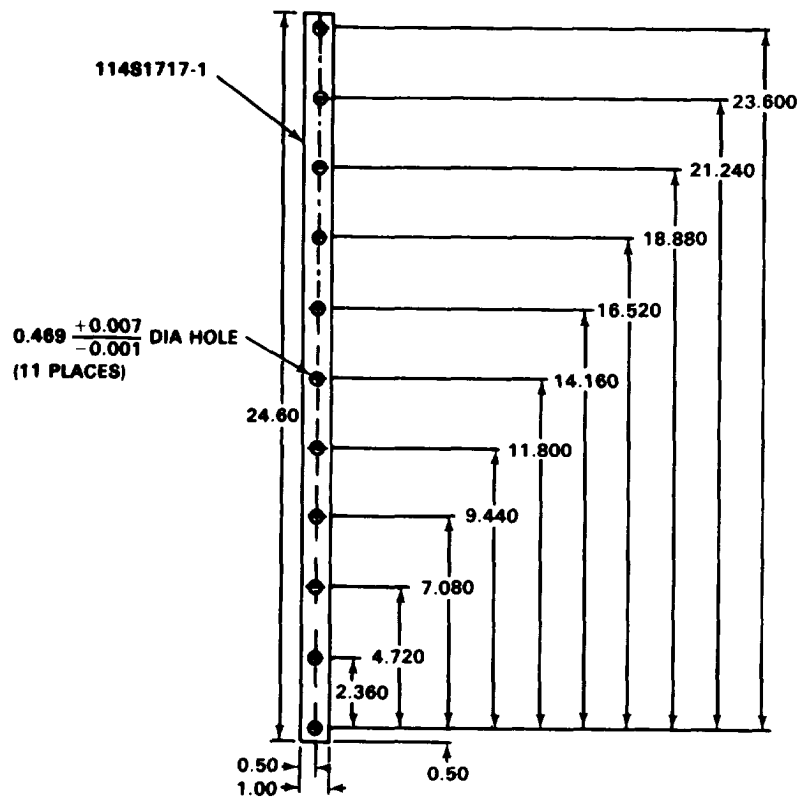
19816

END OF TASK

E-191 PILOTS AND COPILOTS WINDSHIELD RETAINER 114S1717-1E-191

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T4 PER QQ-A-250/11.
2. STOCK SIZE 0.040 X 1.1 X 24.7.
3. ALL DIMENSIONS IN INCHES.
4. FINISH AS REQUIRED.



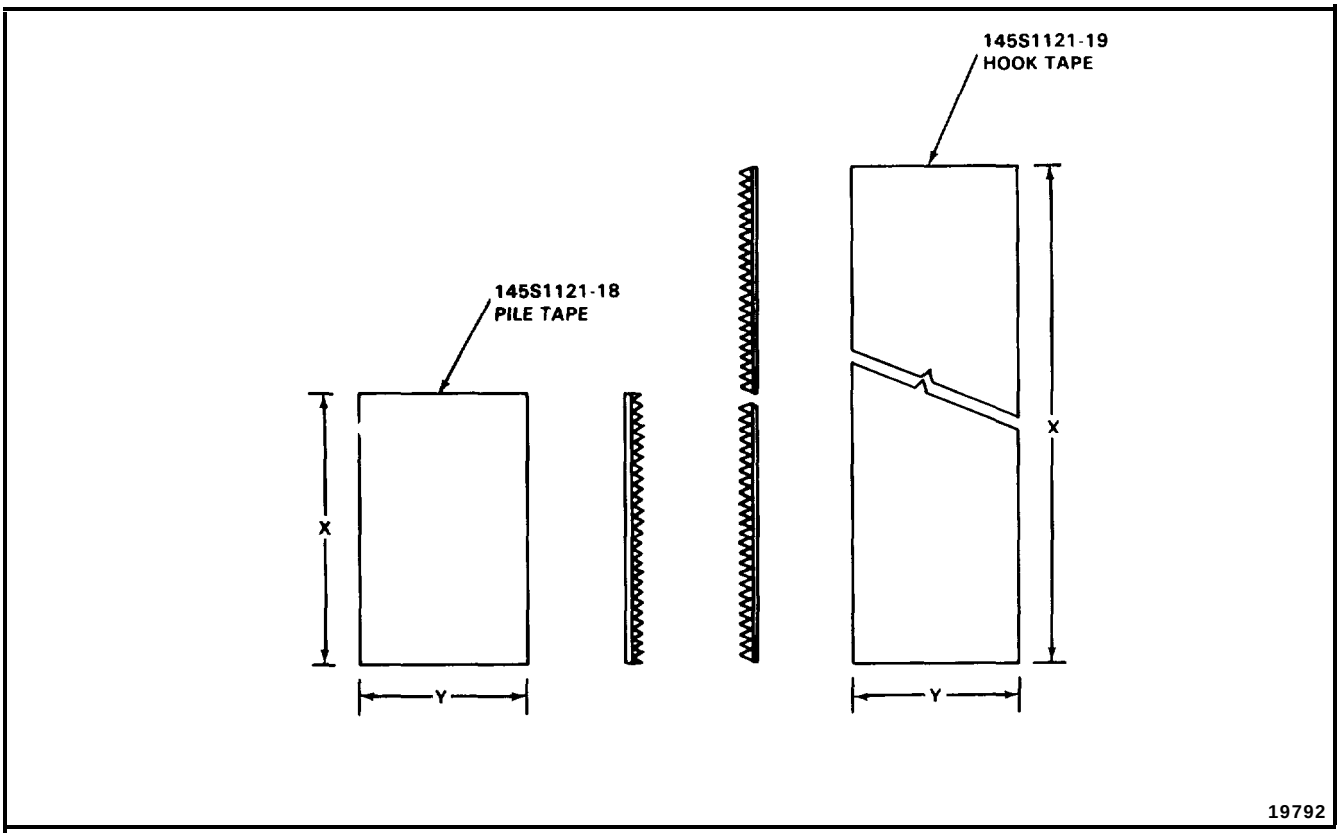
19791

END OF TASK

E-192 FLIGHT CONTROL SUPPORT STRUCTURE PILE AND HOOK TAPE 145S1121-18 AND -19

NOTES:

1. FABRICATE -18 FROM VELCRO PILE TAPE V-32O-2(80)-100.
2. FABRICATE -19 FROM VELCRO HOOK TAPE V-320-1(80)- 100.
3. STOCK SIZES: -18: 1.6 LONG, -19: 5.2 LONG.
4. ALL DIMENSIONS IN INCHES.
5. USE ORIGINAL TAPES TO DETERMINE X AND Y DIMENSIONS.



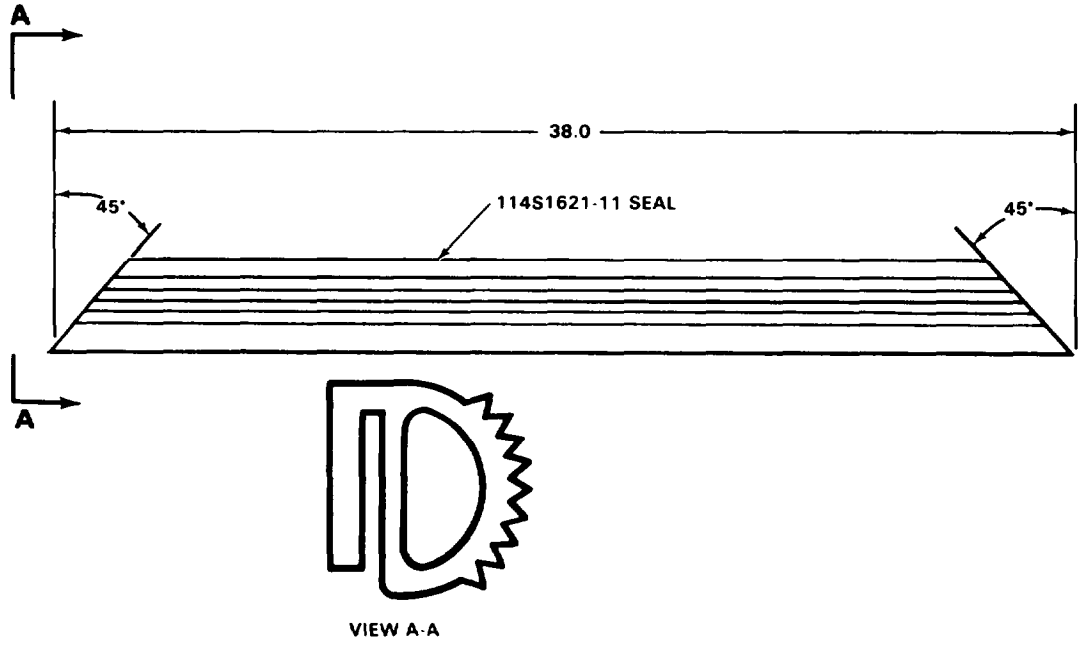
END OF TASK

E-193 UPPER CABIN DOOR ASSEMBLY SEAL 114S1621-11 E-193

NOTES:

1. FABRICATE FROM VS80540-1.

2. ALL DIMENSIONS IN INCHES.

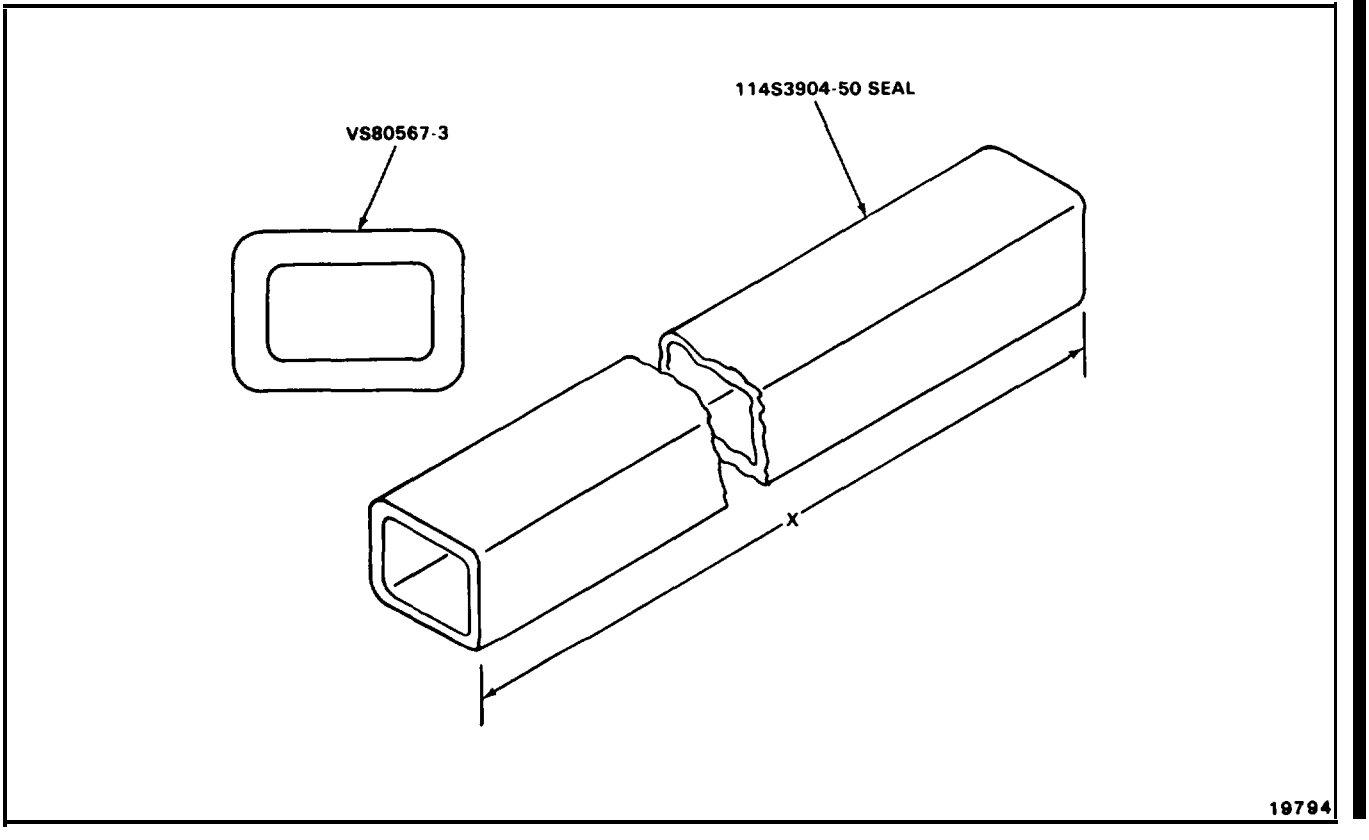


END OF TASK

NOTES:

1. FABRICATE FROM VS80567-3 (TYPE II SILICONE RUBBER SEAL MIL-R-25988).

2. USE ORIGINAL SEAL TO DETERMINE X DIMENSION.



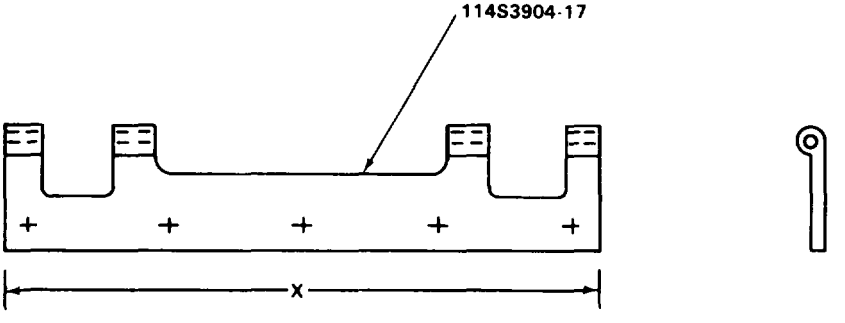
END OF TASK

E-195 ACCESS DOOR HINGE HALF 114S3904-17 E-195

NOTES:

1. FABRICATE FROM VS20101-2-2 HINGE. (2024-T4 AL PER QQ-A-267, ALCOA 10573.)

2. USE ORIGINAL HINGE HALF TO DETERMINE X DIMENSION AND LOCATE PILOT HOLES.



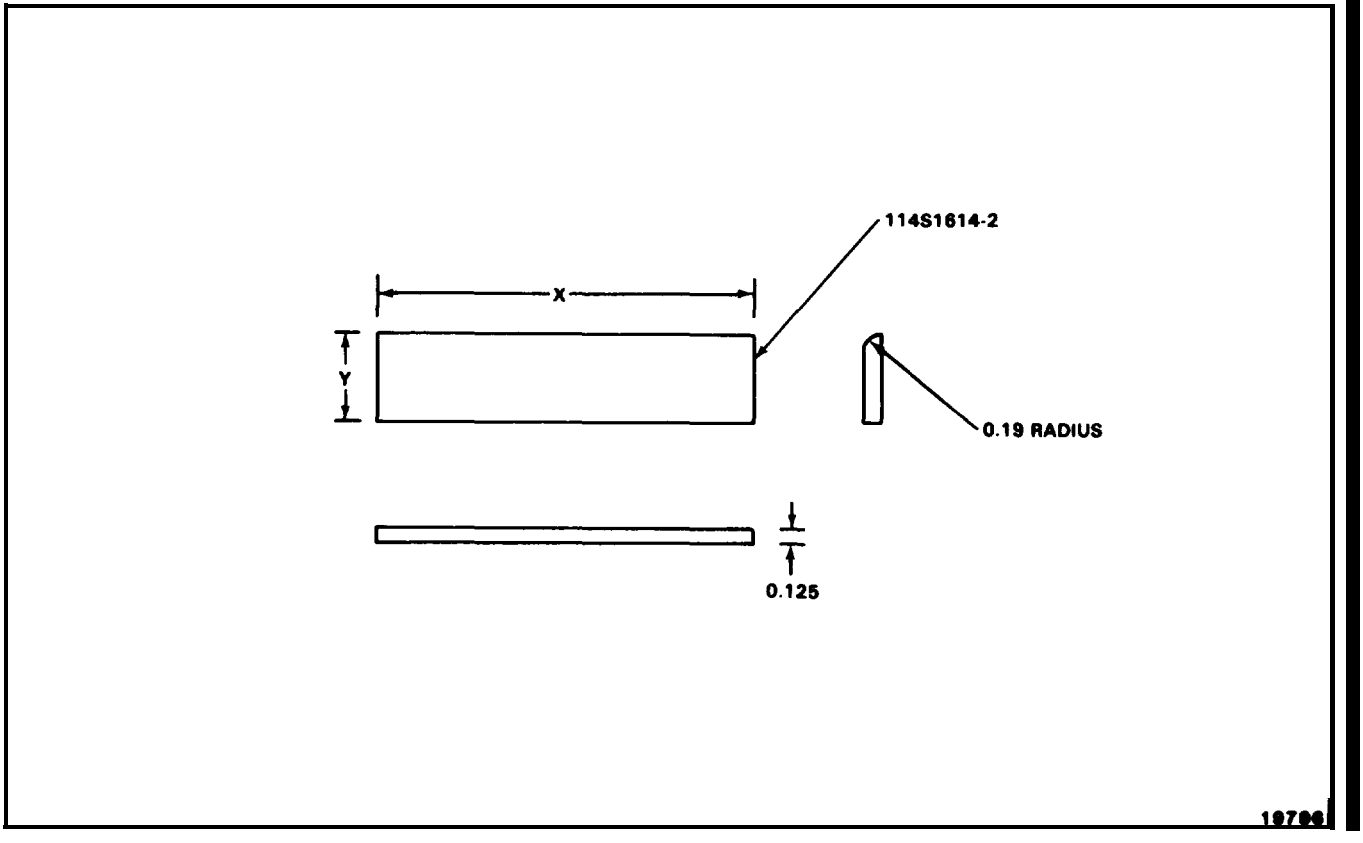
19795

END OF TASK

E-196 BELLCRANK SUPPORT FITTING RADIUS BLOCK 145S1614-2 E-196

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY BARE SHEET 7075-T6 PER QQ-A-250/12.
2. STOCK SIZE 0.125 X 0.9 X 3.3.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL RADIUS BLOCK TO DETERMINE X AND Y DIMENSIONS.

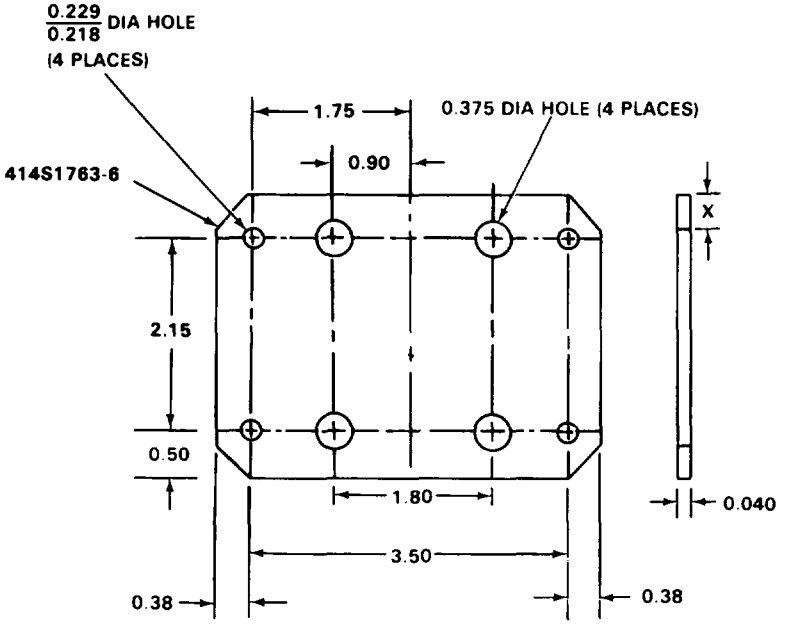


END OF TASK

E-197 GLARE SHIELD PLATE 414S1763-6 E-197

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY SHEET 2024-T3 PER QQ-A-250/5.
2. STOCK SIZE 0.040 X3.2X4.3.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL PLATE TO DETERMINE DIMENSION X.
5. FINISH AS REQUIRED.

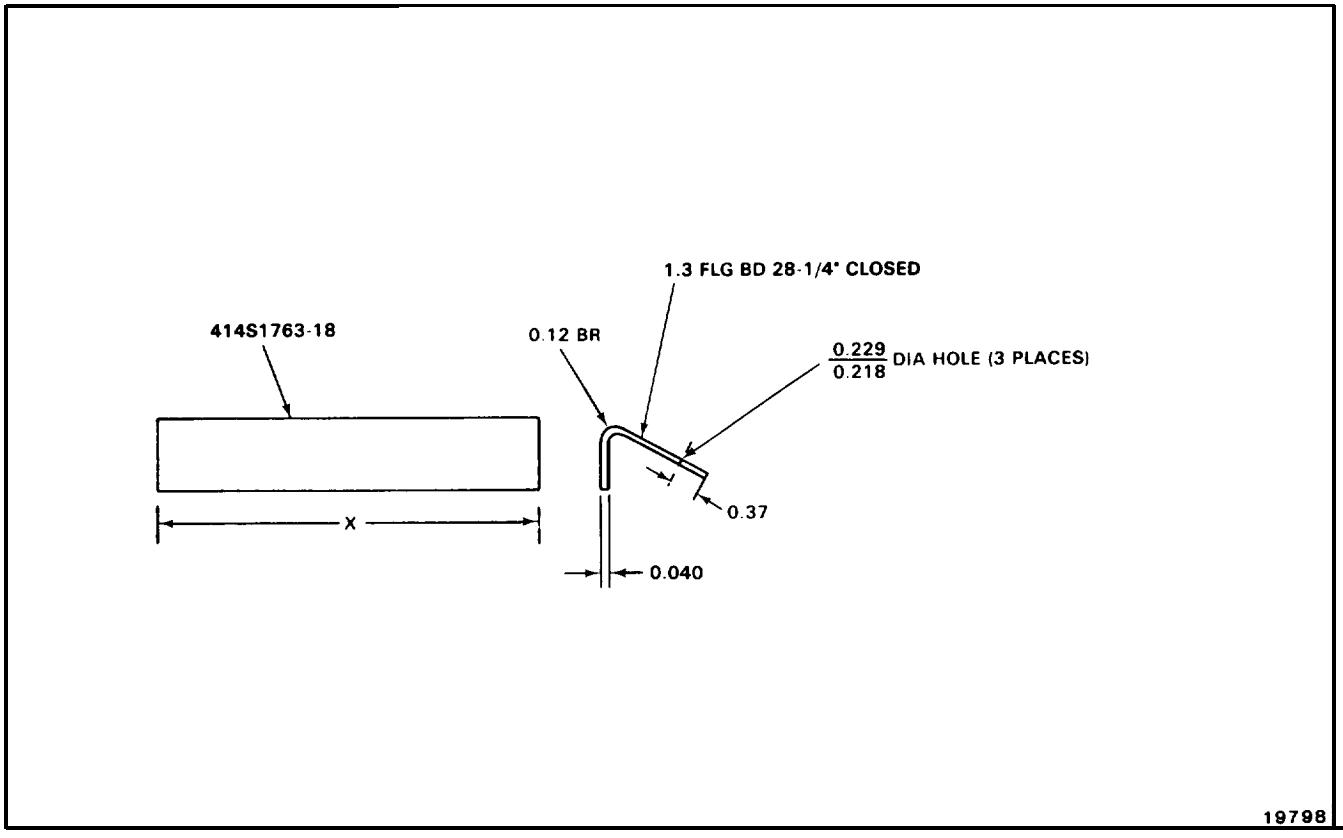


END OF TASK

E-198 GLARE SHIELD ANGLE 414S1763-18 E-198

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY SHEET 2024-T3 PER QQ-A-250/5.
2. STOCK SIZE 0.040 X 2.3 X 4.5.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL ANGLE TO DETERMINE HOLE LOCATIONS AND DIMENSION X.

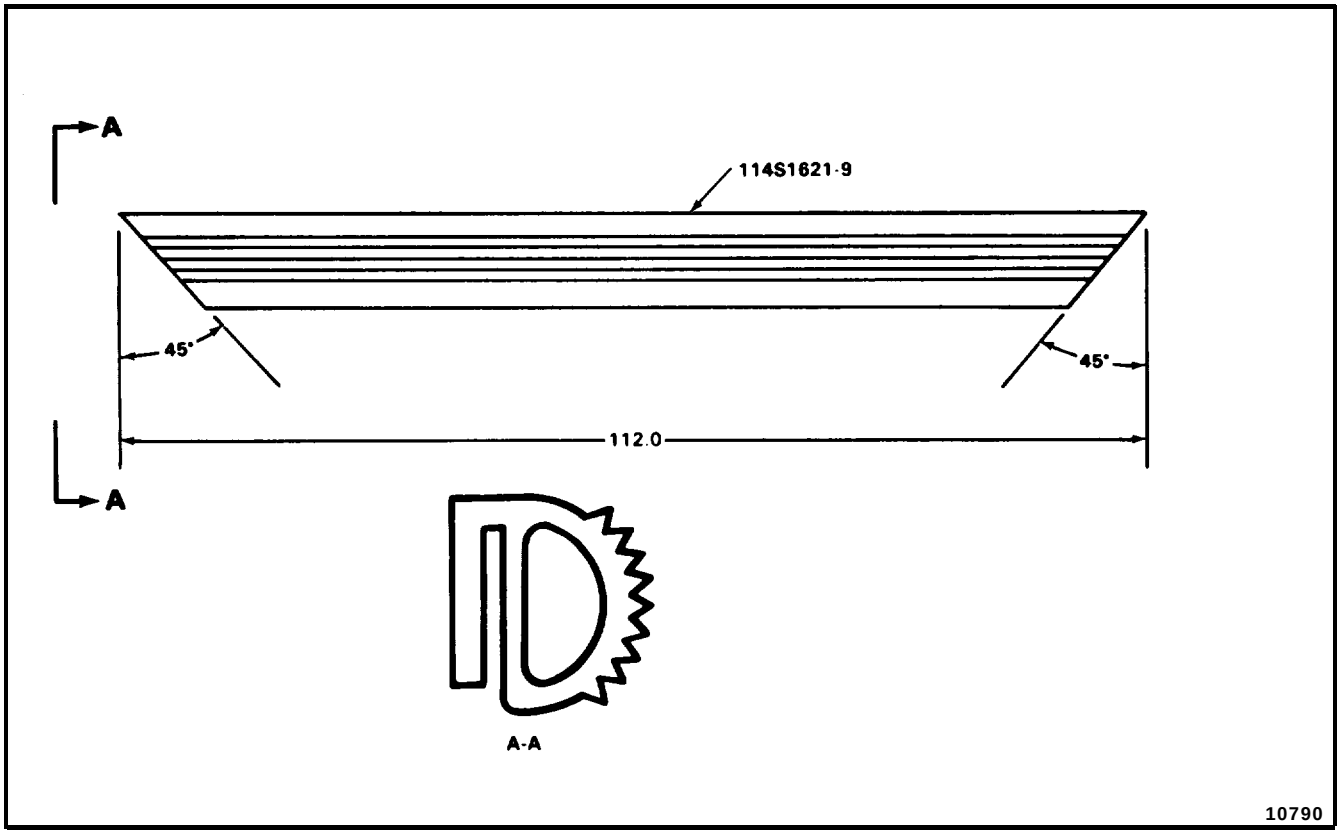


END OF TASK

E-199 UPPER CABIN DOOR ASSEMBLY SEAL 114S1621-9 E-199

NOTES:

1. FABRICATE FROM NONMETALLIC SPECIAL VS80540 SEAL.
2. STOCK SIZE 112.0 LG.
3. ALL DIMENSIONS IN INCHES.
4. TRIM TO FIT.



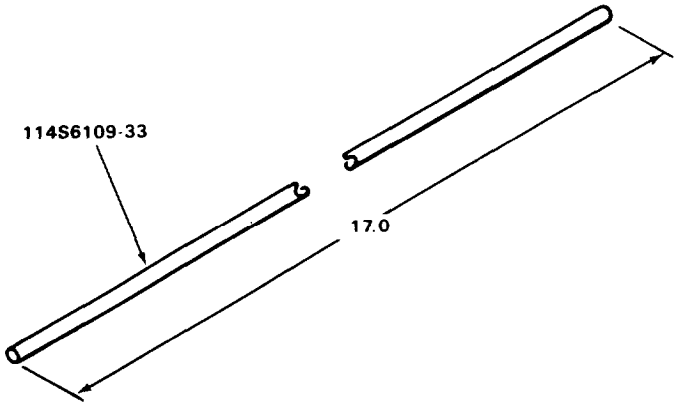
END OF TASK

NOTES:

1. FABRICATE FROM MS20253P5 CADMIUM PLATED CORROSION RESISTANT STEEL.

2. STOCK SIZE 17.0.

3. ALL DIMENSIONS IN INCHES.



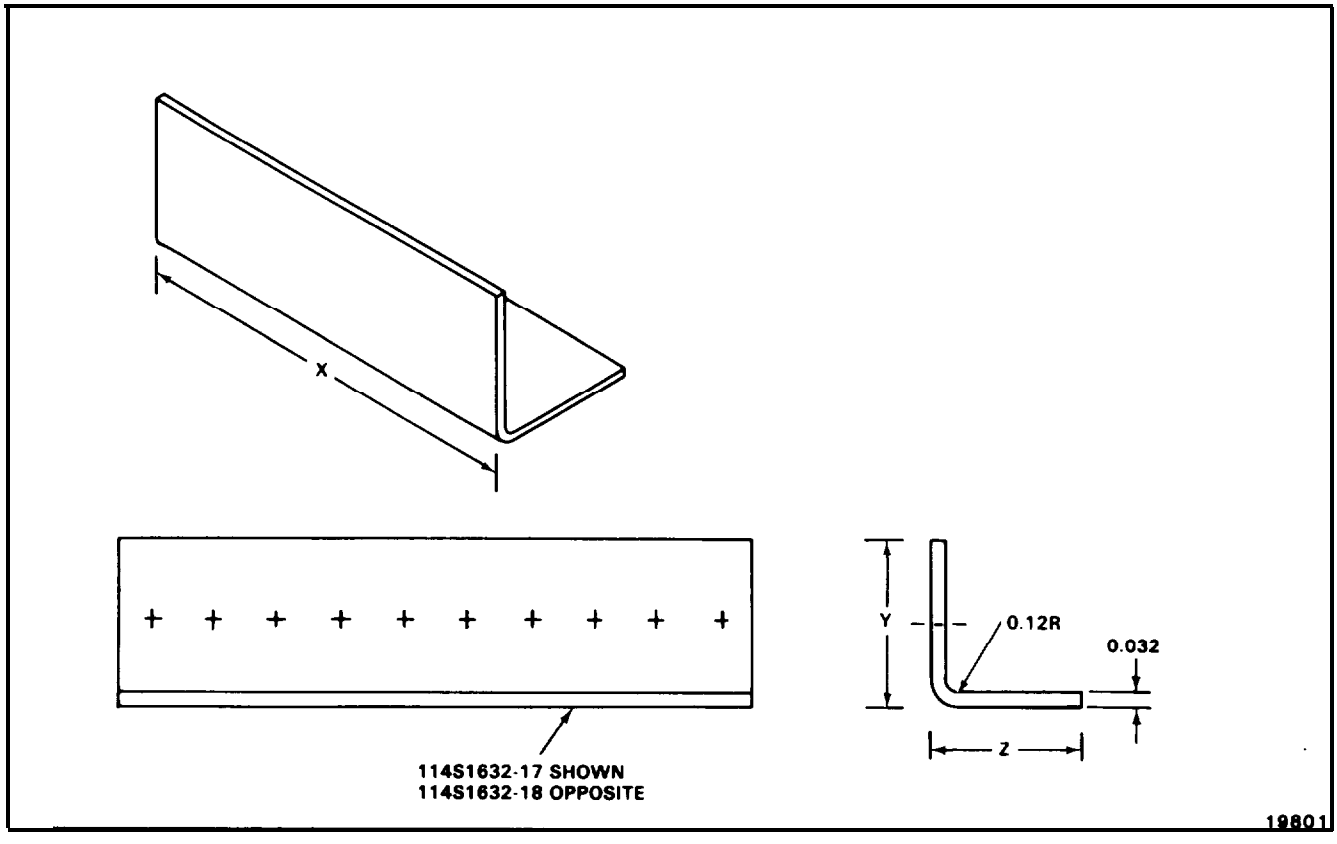
19962

END OF TASK

E-201 COCKPIT NOSE COMPARTMENT DOOR ASSEMBLY ANGLE 114S1632-17 AND -18 E-201

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T4 PER QQ-A-250/5.
2. STOCK SIZE 0.032 X 2.0 X 9.9.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL ANGLE TO DETERMINE HOLE LOCATIONS AND DIMENSIONS X, Y, AND Z.
5. FINISH AS REQUIRED.

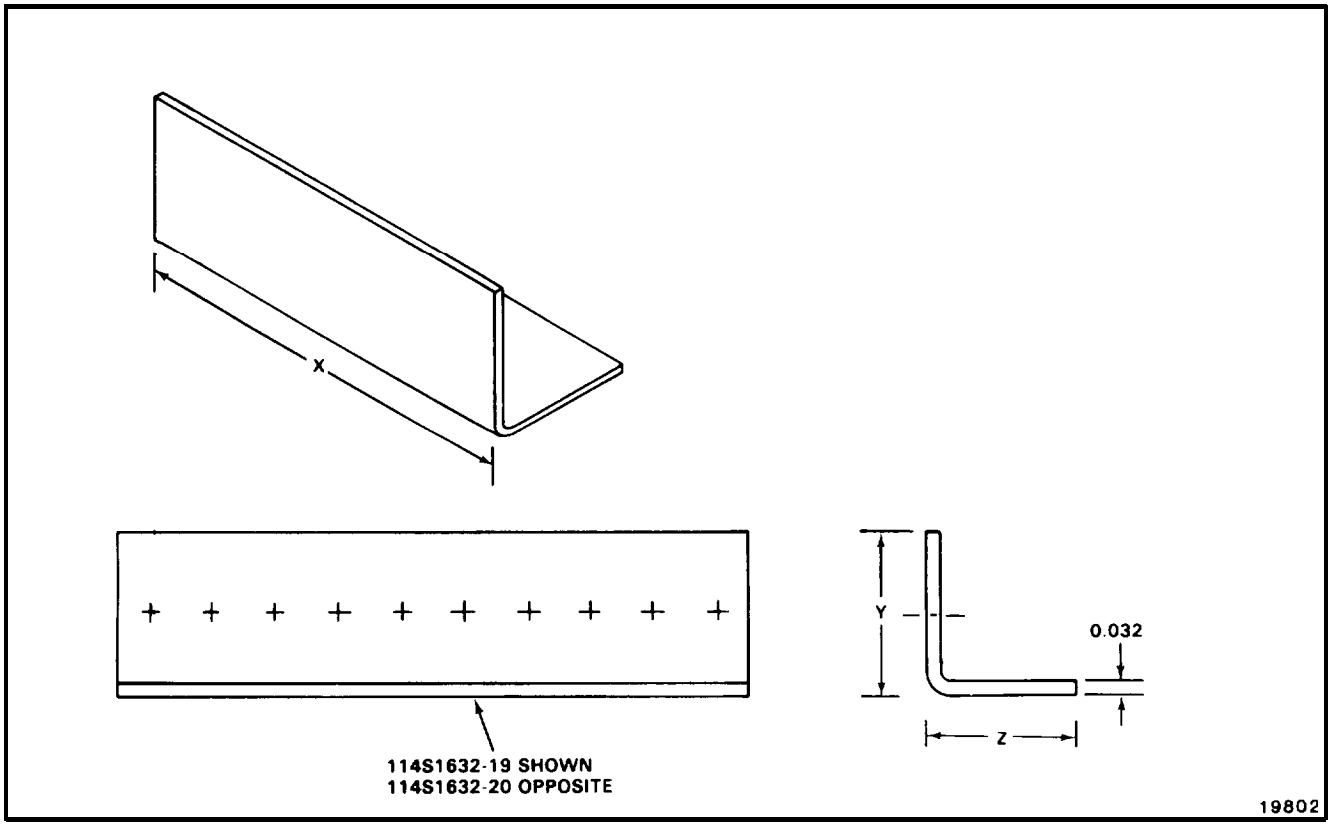


END OF TASK

E-202 COCKPIT NOSE COMPARTMENT DOOR ASSEMBLY ANGLE 114S1632-19 AND -20 E-202

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T4 PER QQ-A-250/5.
2. STOCK SIZE 0.032 X 2.0 X 5.4.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL ANGLE TO DETERMINE DIMENSIONS X, Y, AND Z.
5. FINISH AS REQUIRED.

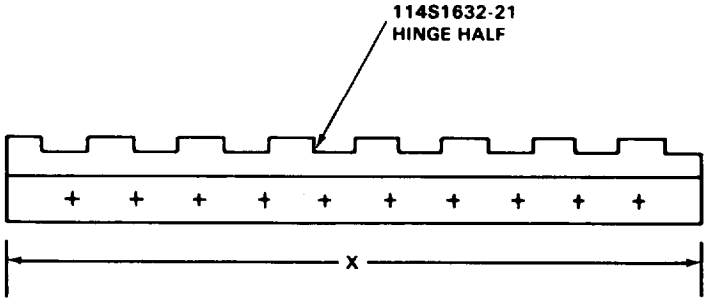


END OF TASK

E-203 COCKPIT NOSE COMPARTMENT DOOR ASSEMBLY HINGE HALF 114S1632-21 E-203

NOTES:

1. FABRICATE FROM MS2001-PH4. STOCK SIZE 17.5 INCHES.
2. USE ORIGINAL HINGE HALF TO LOCATE PILOT HOLES AND DETERMINE DIMENSION X VALUE.
3. FINISH AS REQUIRED.

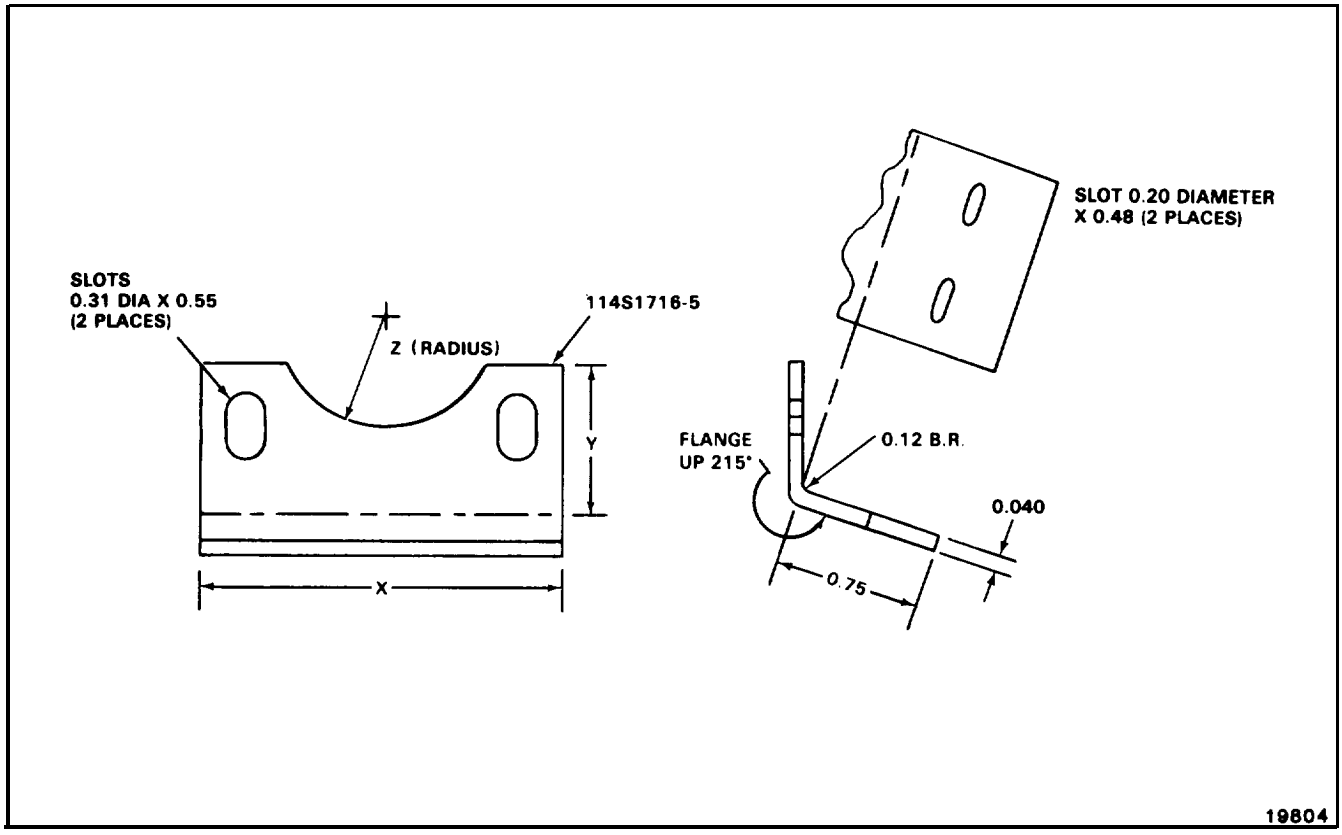


19603

END OF TASK

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T4 PER QQ-A-250/11.
2. STOCK SIZE 0.040 X 2.3 X 3.1.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL BRACKET TO DETERMINE X, Y, AND Z DIMENSIONS AND SLOT LOCATIONS.
5. FINISH AS REQUIRED.

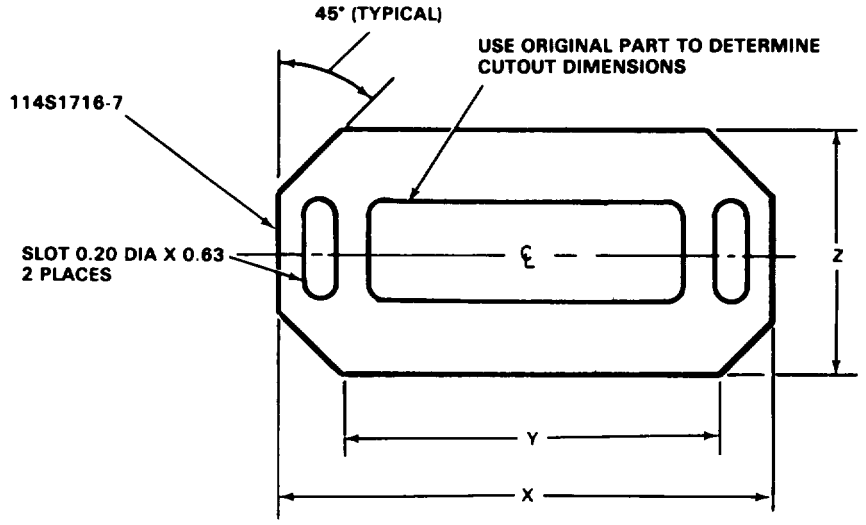


END OF TASK

E-205 CABIN DOOR ASSEMBLY PLATE 114S1716-7 E-205

NOTES:

1. FABRICATE FROM CRES SHEET 301, 1/2 HARD, PER MIL-S-5059.
2. STOCK SIZE 0.040 X 1.6 X 3.2.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL PLATE TO DETERMINE X, Y, Z, AND CUTOUT DIMENSIONS.
5. FINISH AS REQUIRED.

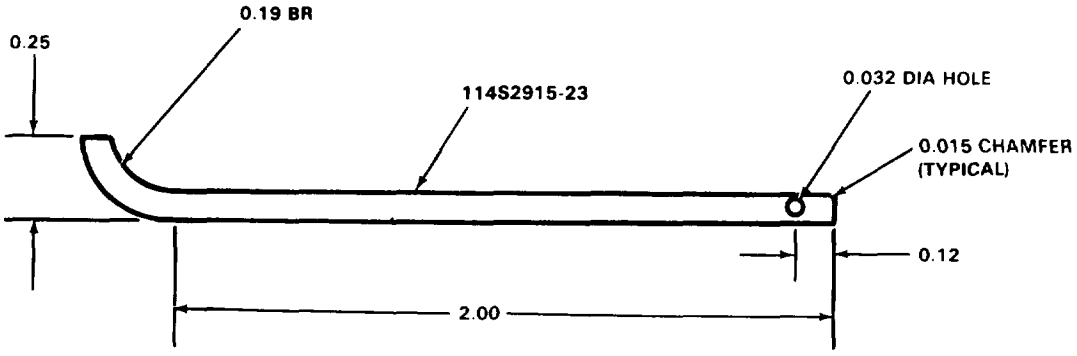


END OF TASK

E-206 CABIN CROWN ACCESS TUNNEL COVER INSTALLATION HINGE PIN 114S2915-23

NOTES:

1. FABRICATE FROM MS20253P2-250.
2. STOCK SIZE 2.50 INCHES.
3. ALL DIMENSIONS IN INCHES.

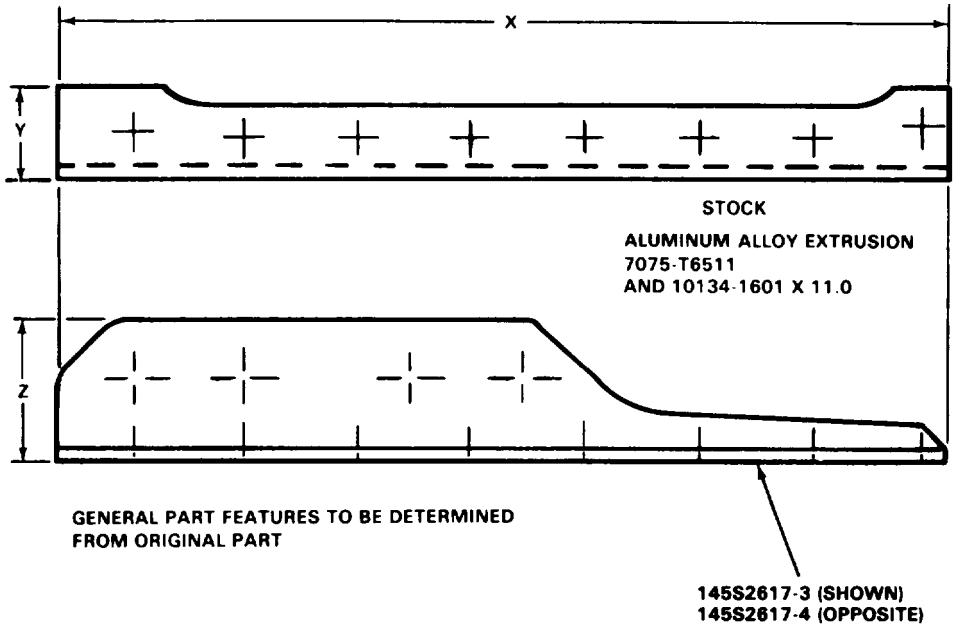


19778

E-207 CABIN STRUCTURE TANDEM HOOKS CLIP 145S2617-3

NOTES:

1. FABRICATE FROM AND 10134-1601 ALUMINUM ALLOY EXTRUSION 7075-T6511 PER QQ-A-200/11.
2. STOCK SIZE 11.0 INCHES.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL CLIP TO LAYOUT SHAPE, PILOT HOLES, AND DIMENSIONS X, Y, AND Z.
5. FINISH AS REQUIRED.

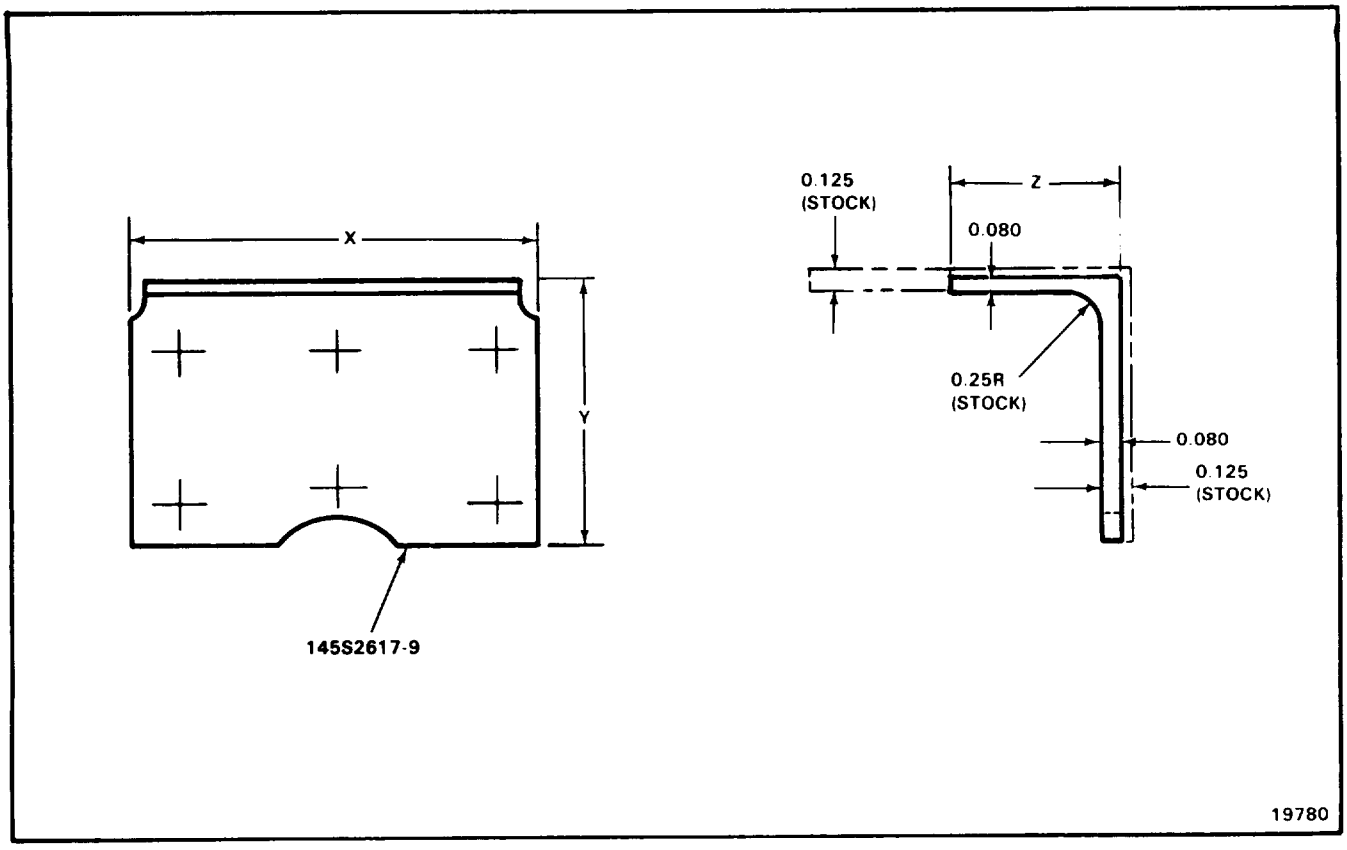


19779

END OF TASK

NOTES:

1. FABRICATE FROM AND10133-2401 ALUMINUM ALLOY EXTRUSION 7075-T6511.
2. STOCK SIZE 5.0.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL PART TO LOCATE PILOT HOLES AND DETERMINE X, Y, AND Z VALUES.
5. FINISH AS REQUIRED.

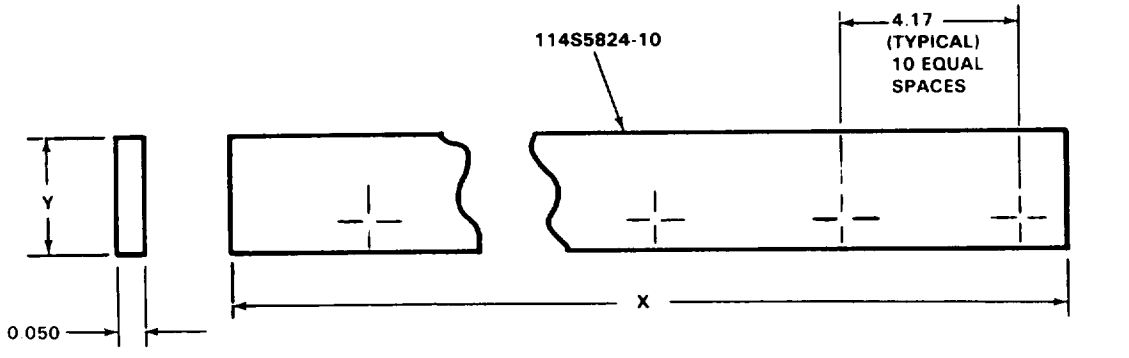


END OF TASK

E-209 ISOLATION INSTALLATION, AUXILIARY FUEL POD BOTTOM STRIP 114S5824-10 E-209

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHT 2024-T3 PER QQ-A-250/5.
2. STOCK SIZE 0.050 X 1.2 X 43.4.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL PART TO DETERMINE DIMENSIONS X AND Y AND PILOT HOLE LOCATIONS.
5. FINISH AS REQUIRED.



STOCK - ALUMINUM ALLOY CLAD SHEET

STOCK SIZE 0.050 X 1.2 X 43.4

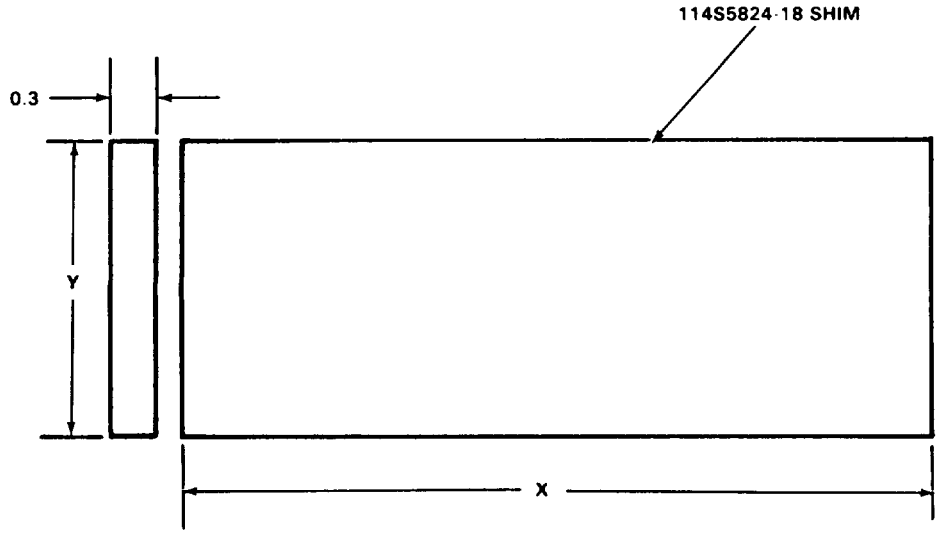
19781

END OF TASK

E-210 ISOLATION INSTALLATION, AUXILIARY FUEL POD BOTTOM SHIM 114S5824-18

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD PLATE 2024-T351 PER QQ-A-250/5.
2. STOCK SIZE 0.30 X 1.3 X 3.9.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL PART TO DETERMINE DIMENSIONS X AND Y.
5. FINISH AS REQUIRED.



19782

END OF TASK

E-211 CABIN CROWN ACCESS TUNNEL COVER INSTALLATION SEALS 114S2915-39, -40, -41, AND -42

NOTES:

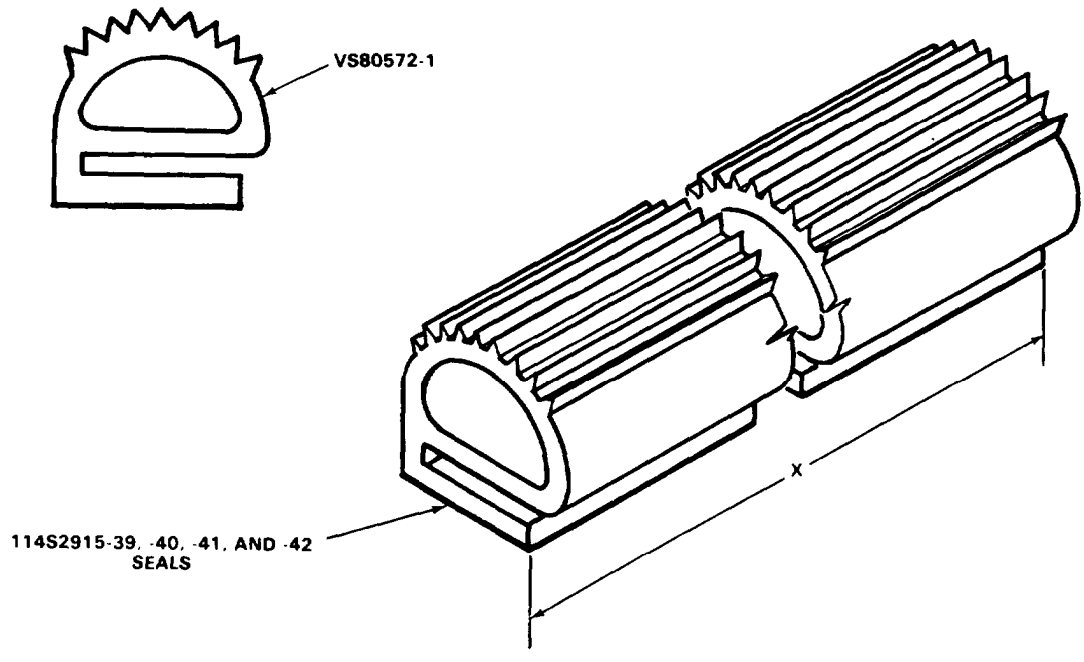
1. FABRICATE FROM VS80572-1 SEAL.

2. STOCK SIZE SEE NOTE 3.

3.

PART NUMBER	STOCK SIZE (X DIMENSION) IN INCHES
114S2915-39	56.2
114S2915-40	39.0
114S2915-41	60.5
114S2915-42	22.0

4. USE ORIGINAL PART TO DETERMINE DIMENSION X.



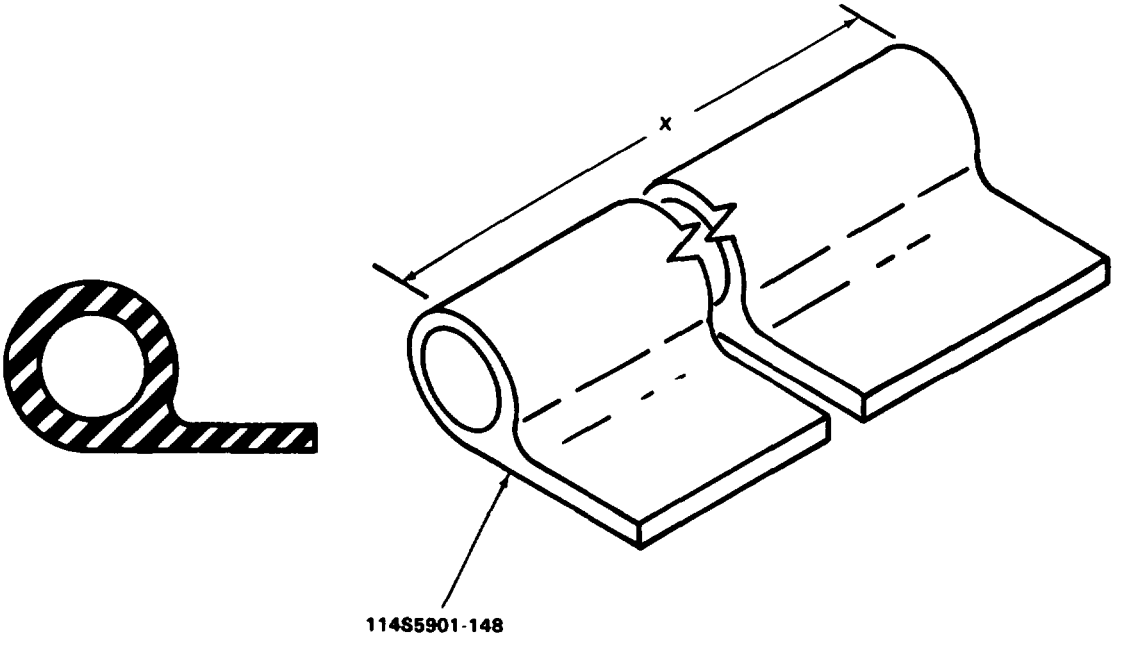
END OF TASK

E-212 FORWARD LANDING GEAR ACCESS PANEL SEAL 114S5901-148

NOTES:

1. FABRICATE FROM SILICONE RUBBER BAC1521-699.

2. USE ORIGINAL PART TO DETERMINE DIMENSION X.



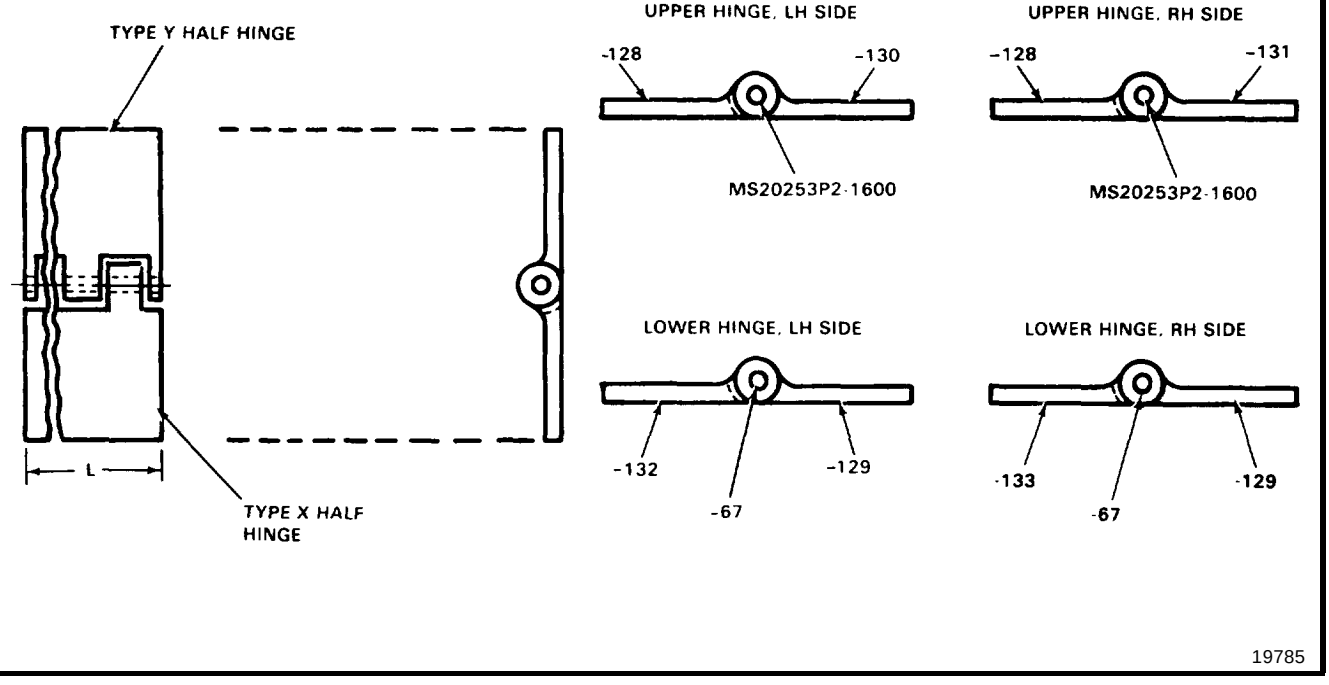
END OF TASK

E-213 FORWARD LANDING GEAR ACCESS PANEL HINGE ASSEMBLIES 114S5901

NOTES:

1. FABRICATE HINGE HALVES FROM HINGE MATERIAL LISTED IN NOTE 5.
2. ALL DIMENSIONS IN INCHES.
3. CUT AND DRILL HINGE HALVES TO MATCH ORIGINAL HINGE HALVES.
4. MAKE HINGE PIN 114S5901-67 FROM MATERIAL LISTED IN NOTE 5.
5.

PART NUMBER	MATERIAL	LENGTH
114S5901-128	MS20001PX6	16.2
114S5901-129	MS20001PY6	22.2
114S5901-130	MS20001PY6	16.2
114S5901-131	MS20001PY6	16.2
114S5901-132	MS20001PX6	22.2
114S5901-133	MS20001PX6	22.2
114S5901-67	MS20253P2	22.0
MS20253P2-1600	MS20253P2	16.0



END OF TASK

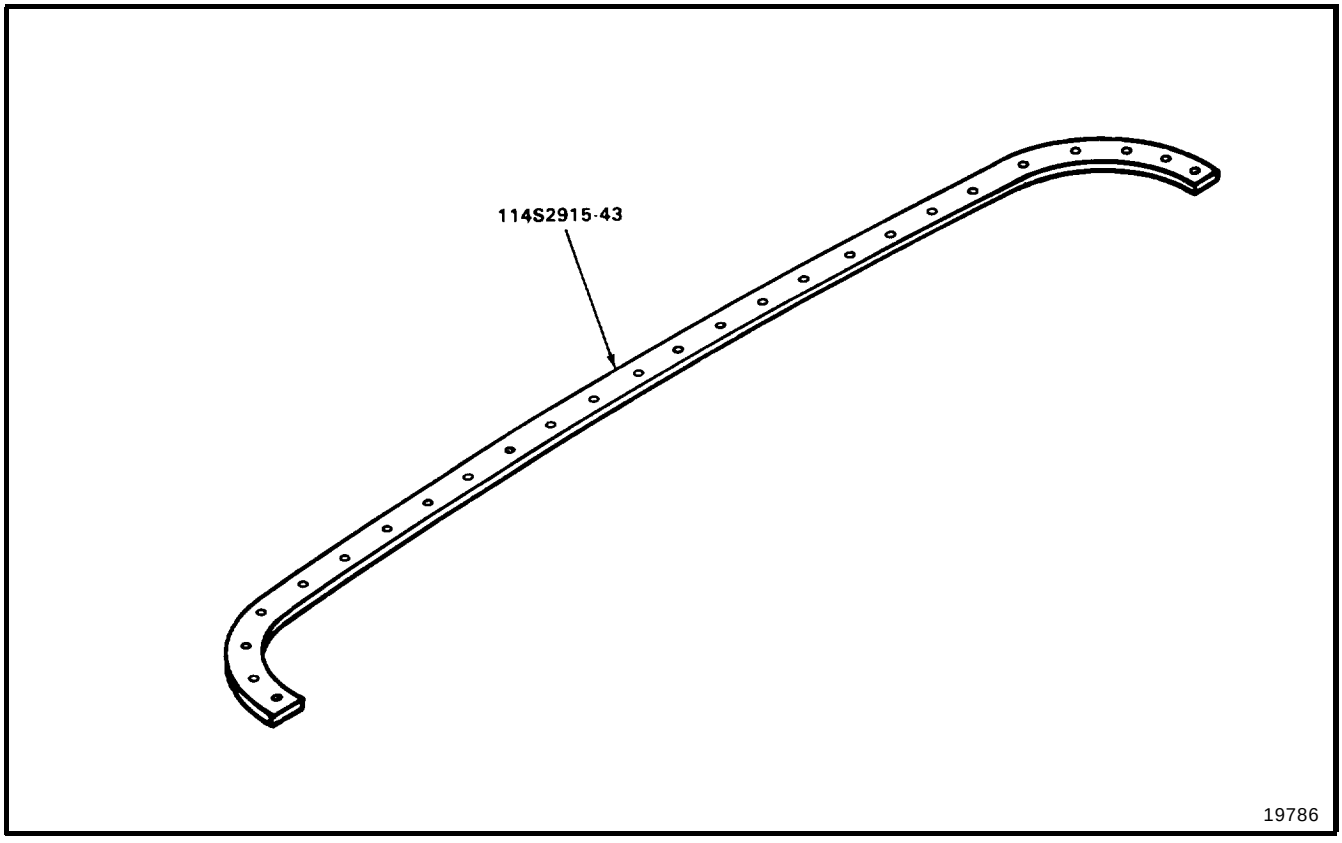
E-214 CABIN CROWN ACCESS TUNNEL COVER INSTALLATION RETAINER 114S2915-43

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/5.

2. STOCK SIZE 0.032 X 3.8 X 30.5 INCHES.

3. USE ORIGINAL RETAINER TO LAYOUT SHAPE AND TO DETERMINE DIMENSIONS AND HOLE LOCATIONS.



END OF TASK

E-215 CABIN CROWN ACCESS TUNNEL COVER INSTALLATION SEAL RETAINERS 114S2915-44, -45, -46, AND -47

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHT 2024-T3 PER QQ-A-250/5.

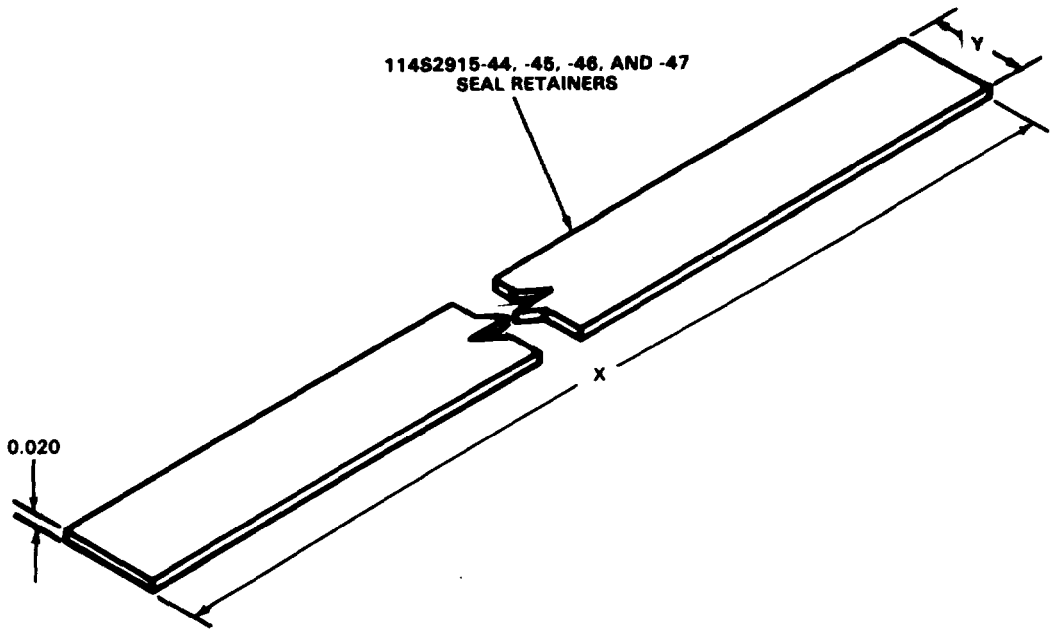
2. STOCK SIZE 0.020 X 0.62 (SEE NOTE 4 FOR LENGTH).

3. ALL DIMENSIONS IN INCHES.

4.

PART NUMBER	STOCK SIZE (X DIMENSION)
114S2915-44	55.9
114S2915-45	38.8
114S2915-46	60.2
114S2915-47	21.7

5. USE ORIGINAL PART TO DETERMINE DIMENSIONS X AND Y.



19787

END OF TASK

E-216 ISOLATION INSTALLATION, AUXILIARY FUEL POD BOTTOM HINGE COMPONENTS 114S5824-12, -13, AND -29

NOTES:

1. FABRICATE HINGE HALVES FROM MS20001PH5-4540.

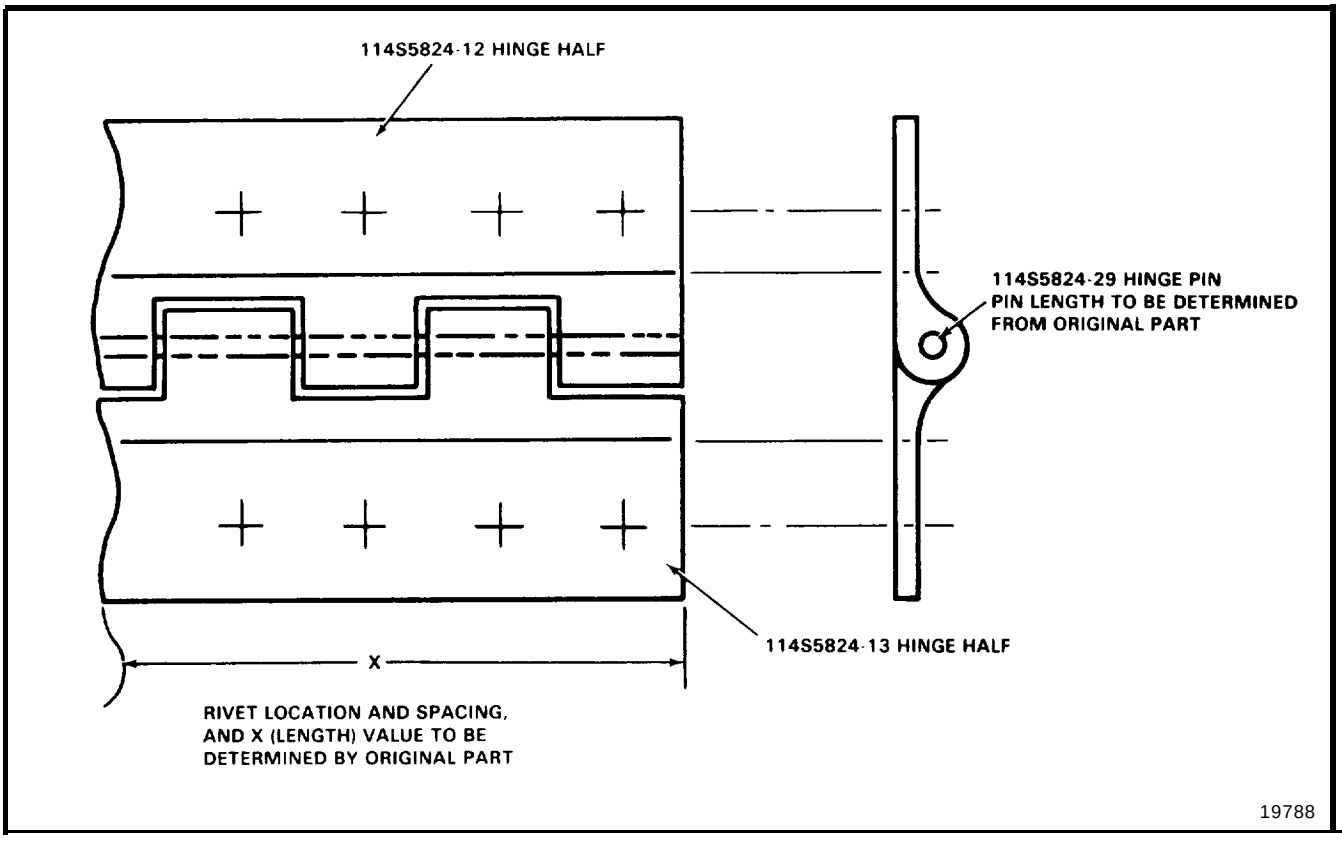
2. FABRICATE PIN FROM MS20253-2-4340.

3. USE ORIGINAL PARTS TO DETERMINE PILOT HOLE LOCATIONS, HINGE HALF, AND HINGE PIN LENGTH.

4. FINISH AS REQUIRED.

5.

NOMENCLATURE	PART NO.	MATERIAL
HINGE HALF	114S5824-12	MS20001PH5-4540
HINGE HALF	114S5824-13	MS20001PH5-4540
HINGE PIN	114S5824-29	MS20253-2-4340



END OF TASK

E-217 ISOLATION INSTALLATION, AUXILIARY FUEL POD BOTTOM HINGE COMPONENTS 114S5824-14, -15, AND -30

NOTES:

1. FABRICATE HINGE HALVES AS SHOWN BELOW.

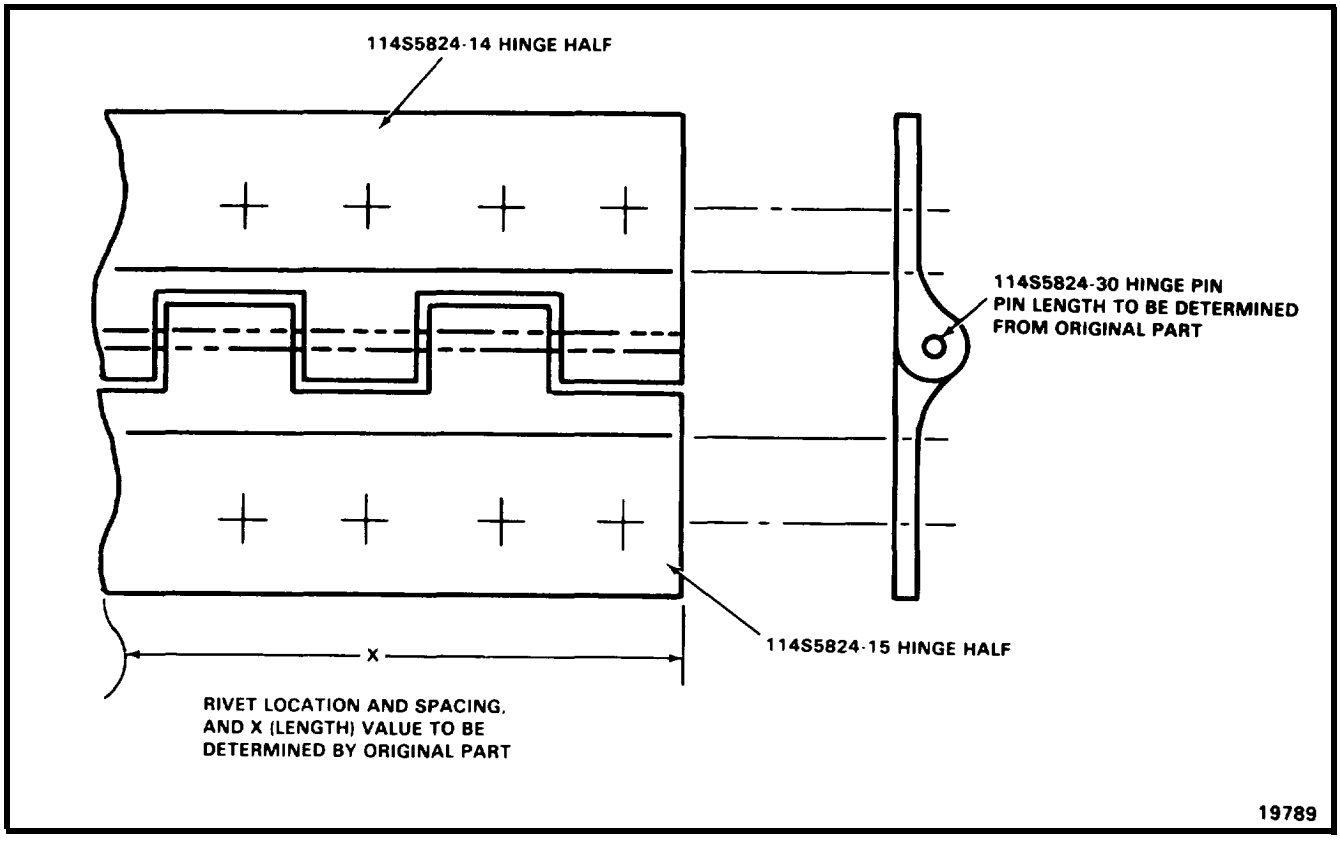
2. FABRICATE PIN FROM MS20253-2-4780.

3. USE ORIGINAL PARTS TO DETERMINE PILOT HOLE LOCATIONS, HINGE HALF, AND HINGE PIN LENGTH.

4. FINISH AS REQUIRED.

5.

NOMENCLATURE	PART NO.	MATERIAL
HINGE HALF	114S5824-14	MS20001PH5-4850
HINGE HALF	114S5824-15	MS20001PH9-4850
HINGE PIN	114S5824-30	MS20253-2-4780



END OF TASK

E-218 ISOLATION INSTALLATION, AUXILIARY FUEL POD BOTTOM RETAINER 114S5824-22 E-218

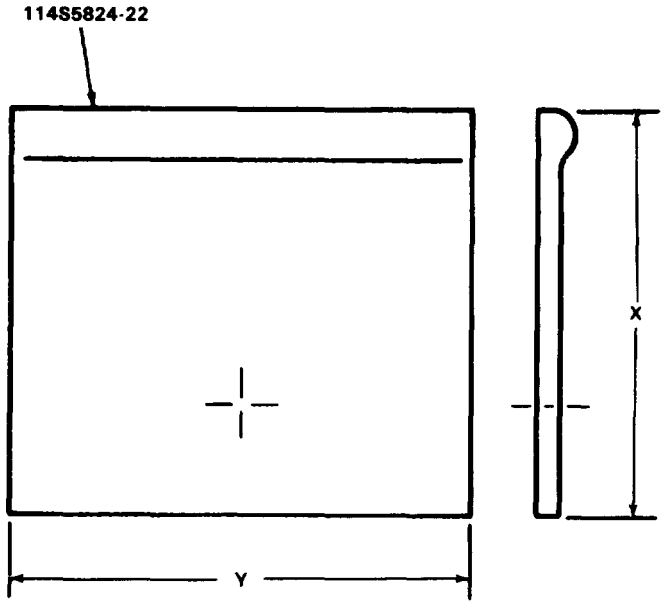
NOTES:

1. FABRICATE FROM ALCOA 83264 AL ALY EXTRUSION 7075-T6 PER QQ-A-200/11.

2. STOCK SIZE 1.6 INCHES.

3. USE ORIGINAL RETAINER TO LOCATE PILOT HOLE AND DETERMINE X AND Y DIMENSIONS.

4. FINISH AS REQUIRED.



19790

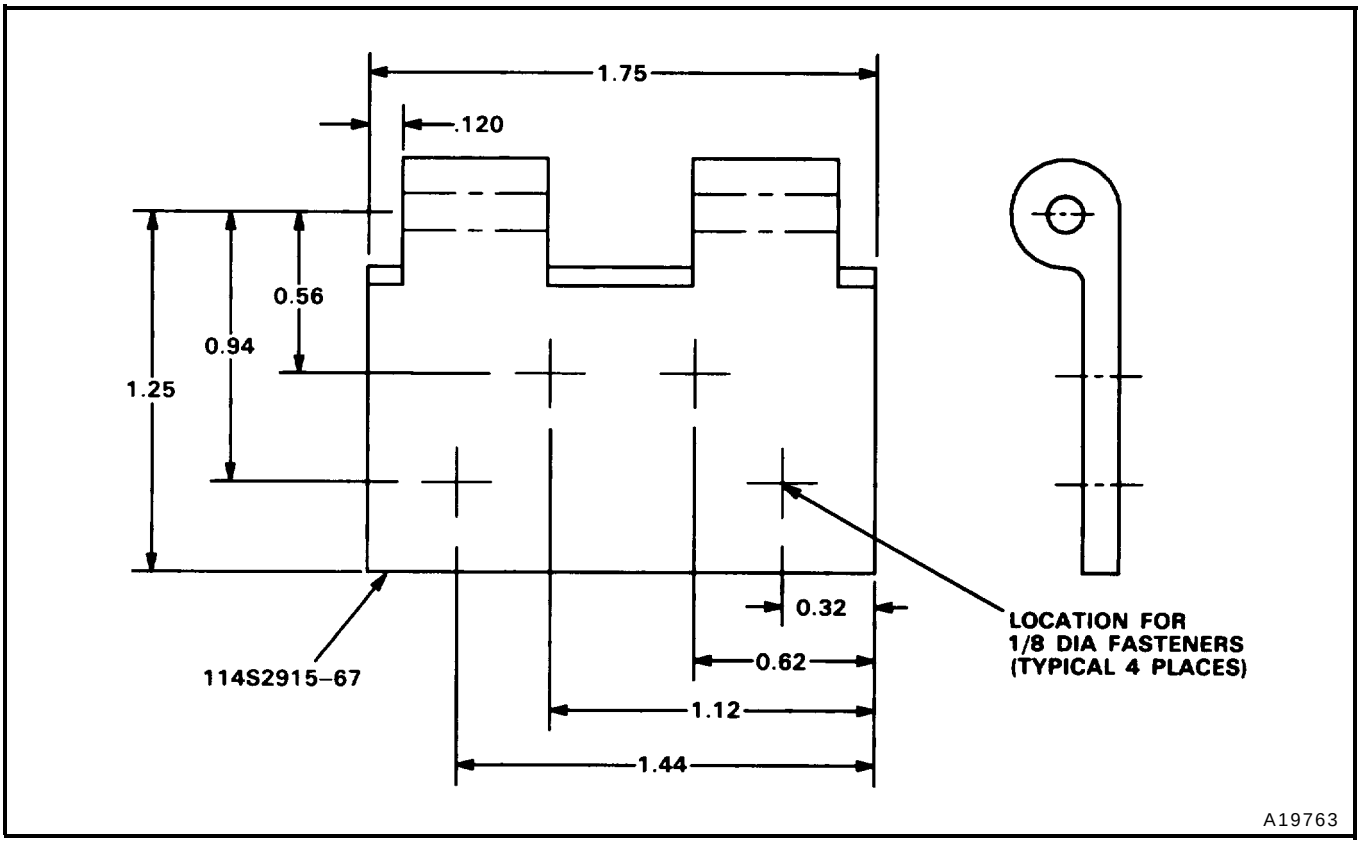
END OF TASK

E-219 CABIN CROWN ACCESS TUNNEL COVER INSTALLATION HINGE 114S2915-67

NOTES:

1. FABRICATE FROM MS20001PH12X0180.

2. ALL DIMENSIONS IN INCHES.

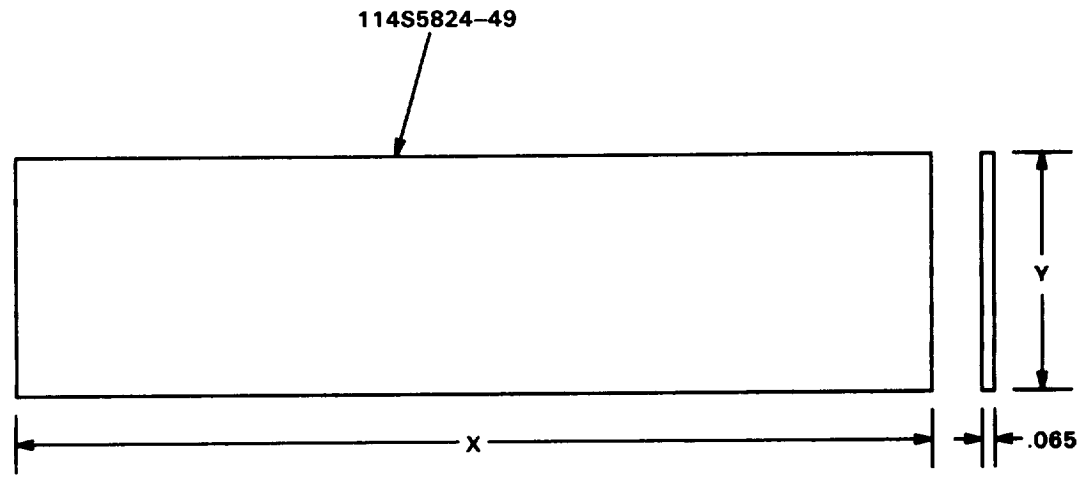


END OF TASK

E-220 ISOLATION INSTALLATION, AUXILIARY FUEL POD BOTTOM STRAP 114S5824-49

NOTES:

1. FABRICATE FROM NYLON WEBBING - MIL-W-4088 TYPE XXI.
2. STOCK SIZE 0.065 X 1.25 X 4.75.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL PART TO DETERMINE DIMENSIONS X AND Y.



A19764

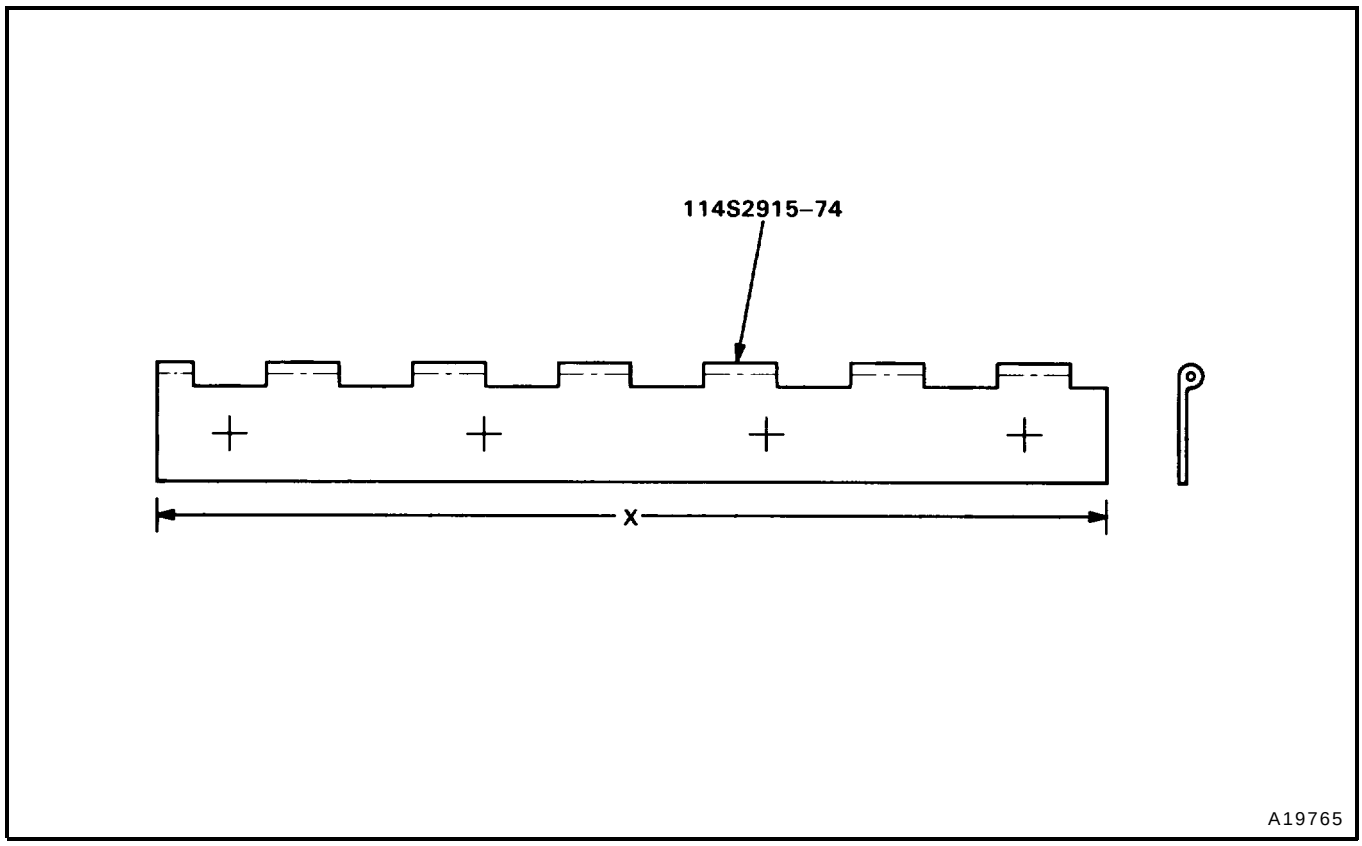
END OF TASK

E-221 CABIN CROWN ACCESS TUNNEL COVER INSTALLATION HALF HINGE 114S2915-74

NOTES:

1. FABRICATE FROM MS20257H4-730.

2. USE ORIGINAL HALF HINGE TO DETERMINE X DIMENSION AND TO LOCATE PILOT HOLES.

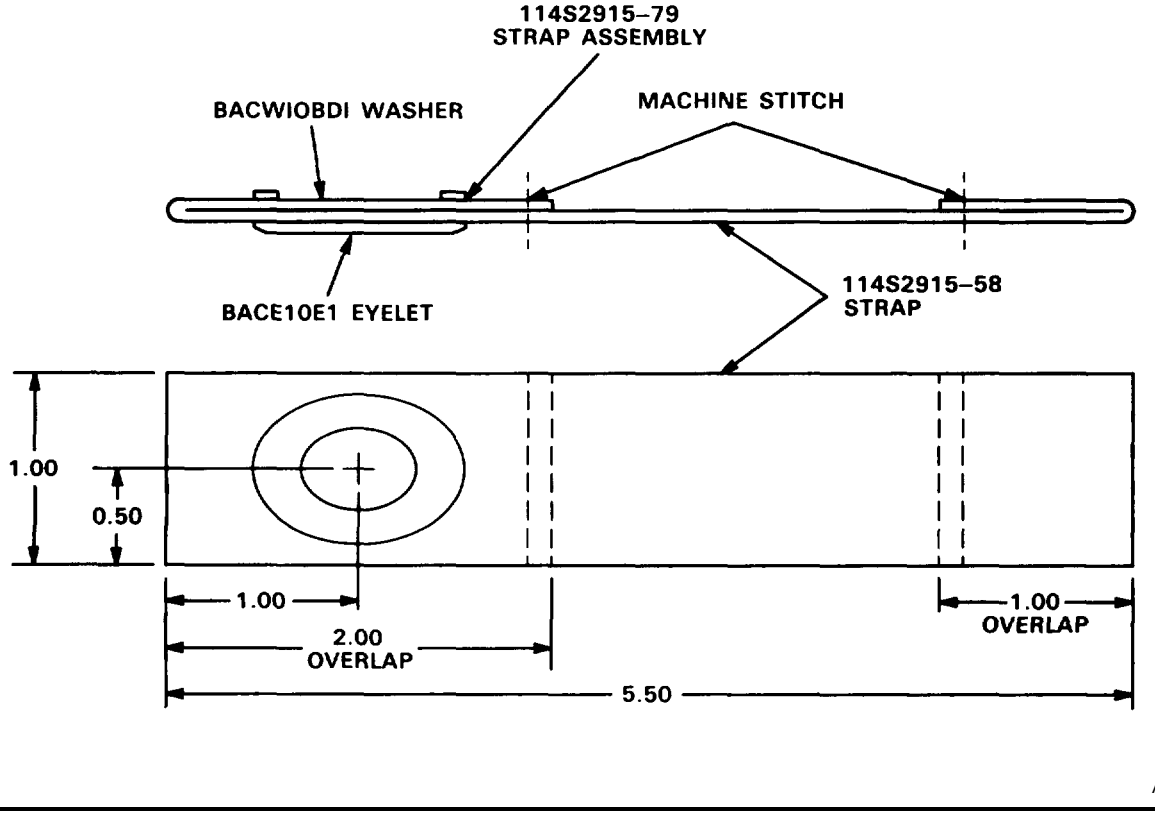


END OF TASK

E-222 CABIN CROWN ACCESS TUNNEL COVER INSTALLATION E-222
STRAP ASSEMBLY 114S2915-79

NOTES:

1. FABRICATE 114S2915-58 STRAP FROM NYLON WEBBING - TCA CABLE 36231 MIL-W-4088 TYPE II CINDER GRAY.
2. STOCK SIZE 1.00 X 8.50.
3. ASSEMBLE USING BACW10BD1 WASHER AND BACE10E1 EYELET.
4. ALL DIMENSIONS IN INCHES.



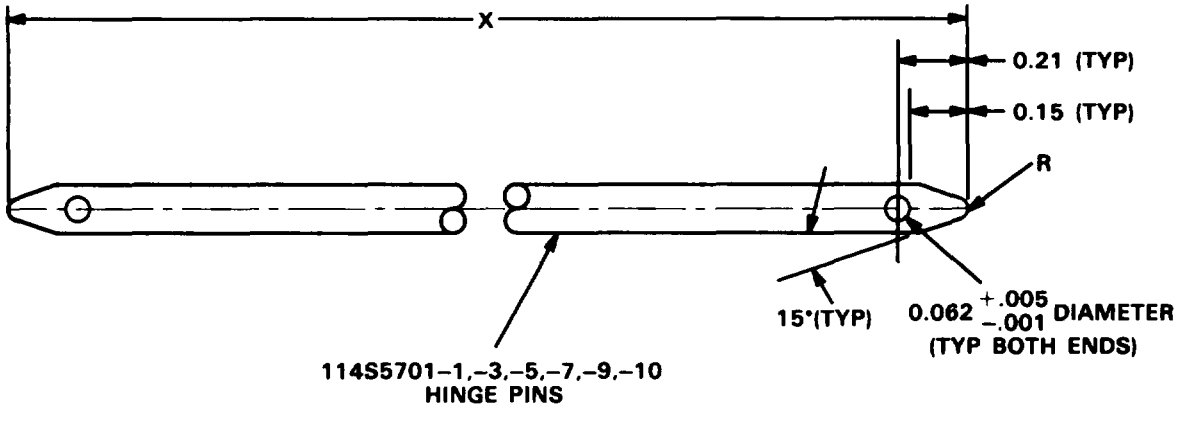
END OF TASK

NOTES:

1. FABRICATE FROM MS20253P3 X LENGTH (SEE NOTE 3).
2. ALL DIMENSIONS IN INCHES.
3.

PART NUMBER	LENGTH (X DIMENSION)
114S5701-1	28.00
114S5701-3	22.40
114S5701-5	20.75
114S5701-7	9.40
114S5701-9	30.00
114S5701-11	19.60

4. 250/ MAX MACHINED SURFACE FINISH PER MIL-STD-10.
5. FINISH: AFTER MACHINING DIP ENDS OF HINGE PINS IN ZINC CHROMATE PRIMER (E291) TO A DEPTH OF 0.50 INCH.
6. APPLY DRY FILM SPRAY LUBE MIL-L-23398 TO HINGE PINS PER MANUFACTURERS INSTRUCTIONS.



A19767

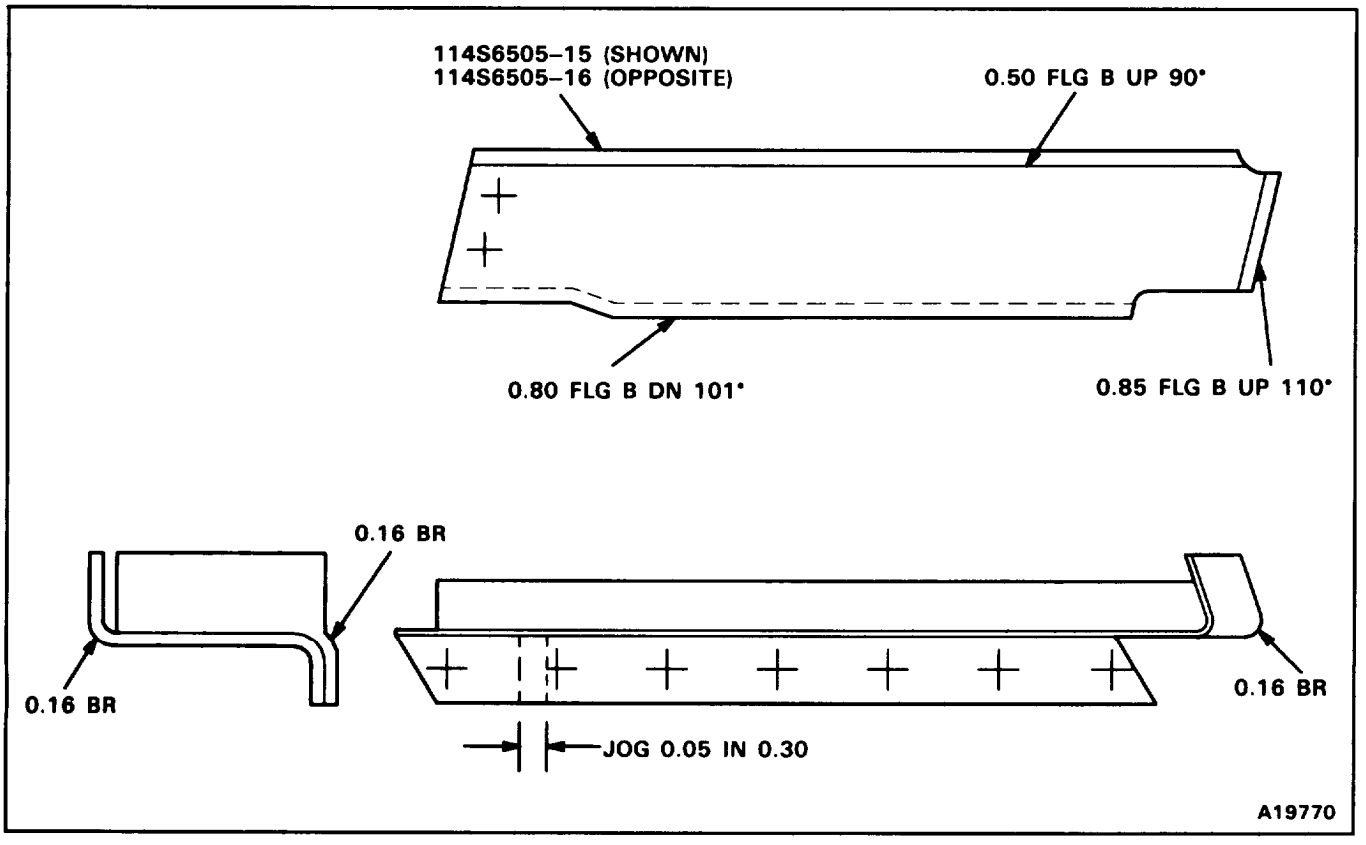
END OF TASK

E-224 DELETED

E-225 DELETED E-225

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHT 2024-T3 PER QQ-A-250/5.
2. STOCK SIZE 0.040 X 3.0 X 9.5.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL FORMER TO LAYOUT DIMENSIONS, BENDS, AND PILOT HOLES.
5. FINISH AS REQUIRED.

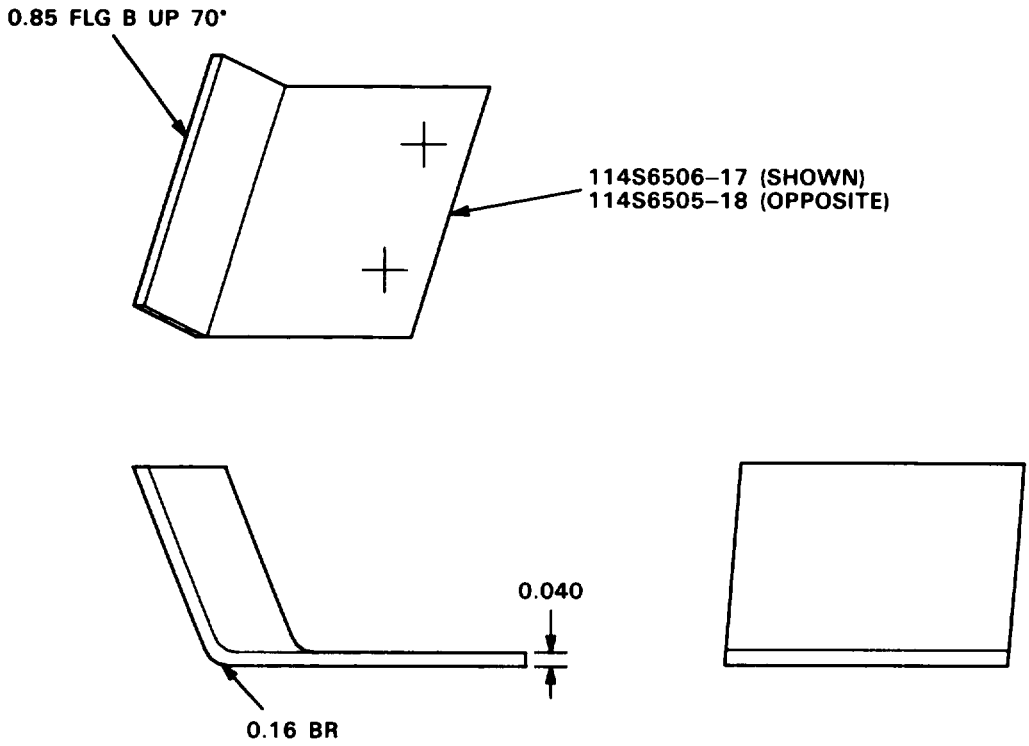


END OF TASK

E-227 DIRECTIONAL STABILITY STRAKE CLIP 114S6505-17 AND -18

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHT 2024-T3 PER QQ-A-250/5.
2. STOCK SIZE 0.040 X 2.0 X 2.0.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL CLIP AS TEMPLATE TO DETERMINE DIMENSIONS, BENDS, AND PILOT HOLES.

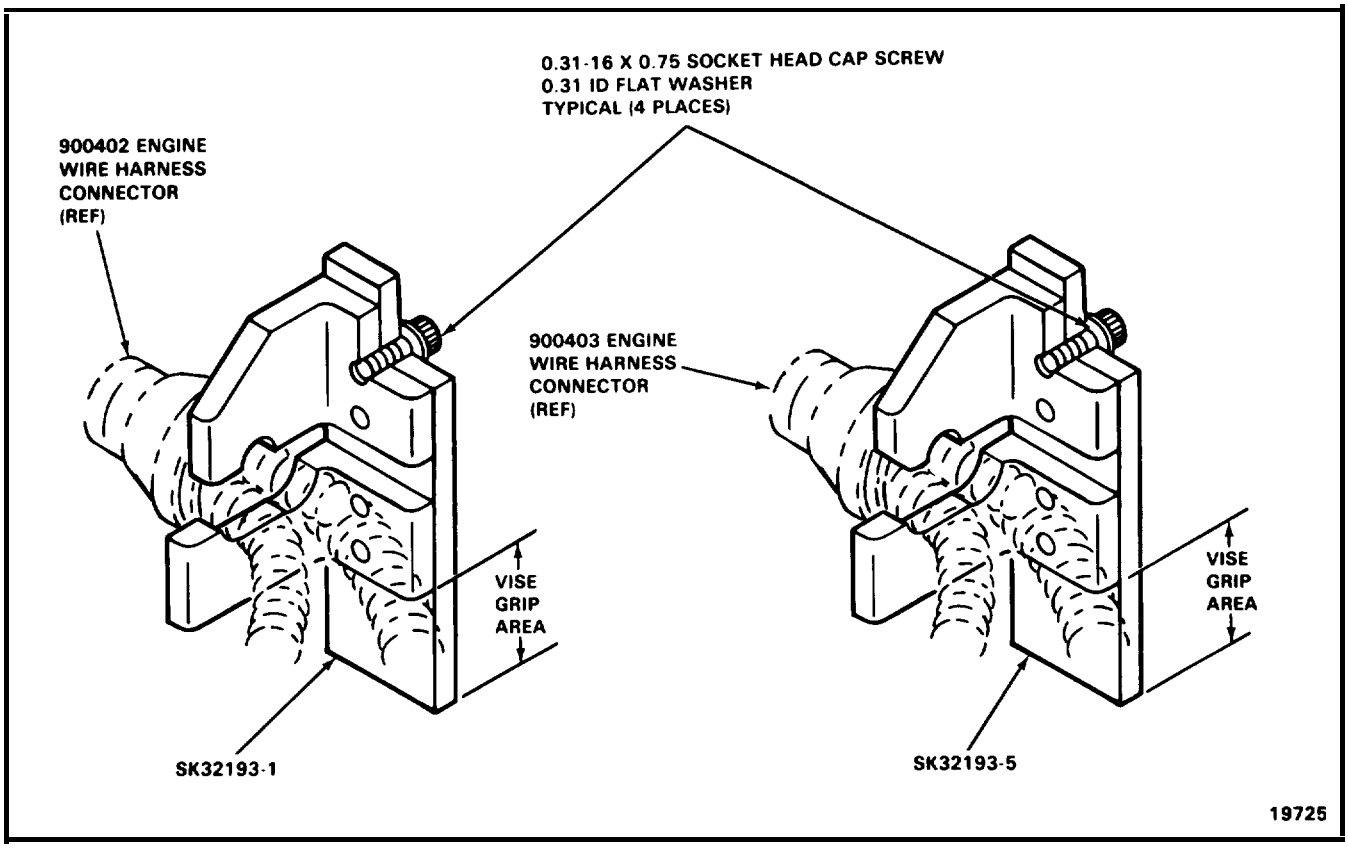


END OF TASK

E-228 ENGINE HARNESS CONNECTOR RETENTION TOOL SK32193-1 AND -5

NOTES:

1. ALL DIMENSIONS IN INCHES.
2. DIMENSION TOLERANCE ±0.03.
3. BREAK ALL SHARP EDGES 0.020 RAD. MIN.



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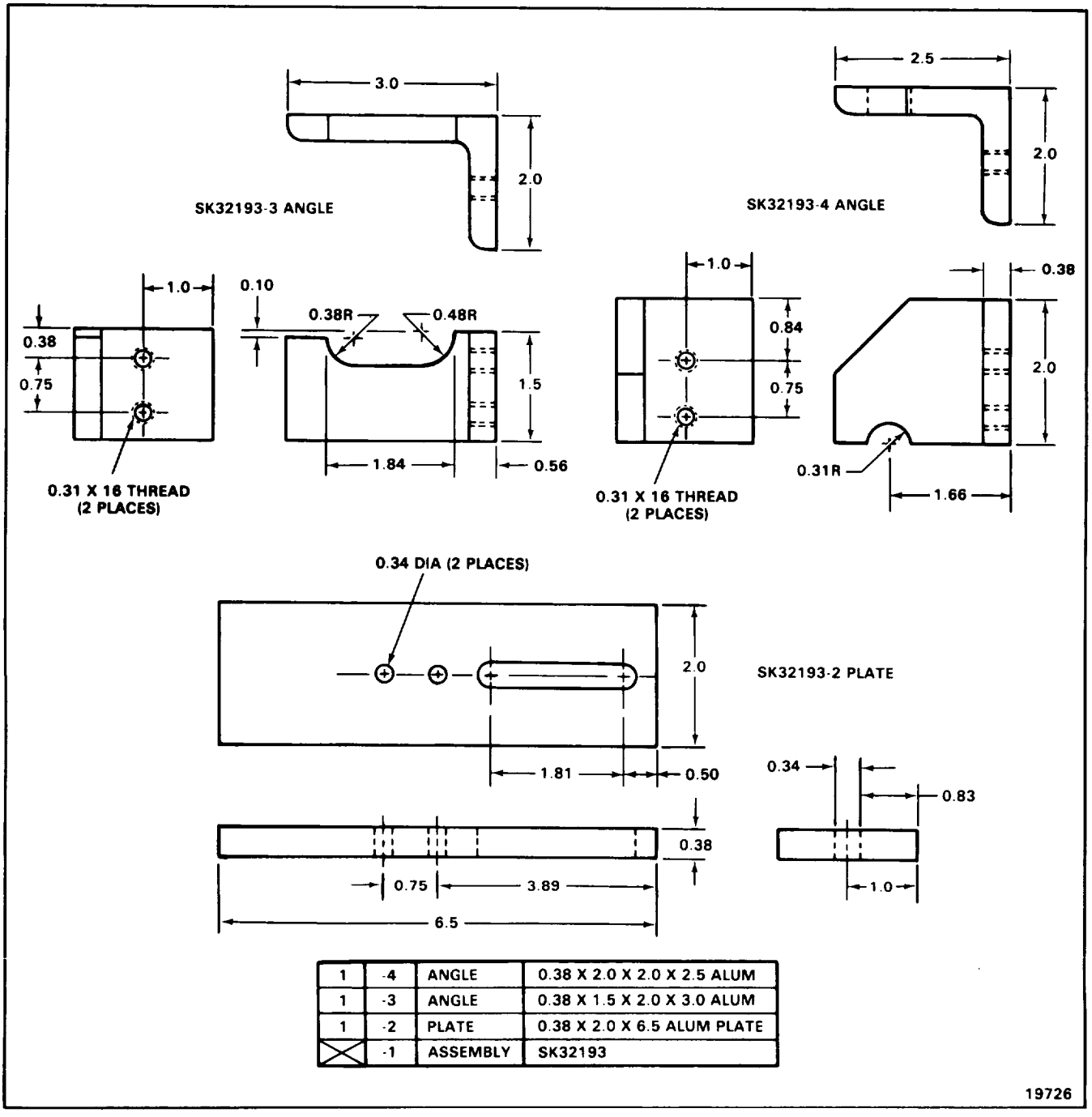
NOTES:

1. ALL DIMENSIONS IN INCHES.
2. DIMENSION TOLERANCE ± 0.03.
3. BREAK ALL SHARP EDGES 0.020 RAD. MIN.



1	-4	ANGLE	0.38 X 2.0 X 2.0 X 2.5 ALUM
1	-3	ANGLE	0.38 X 1.5 X 2.0 X 3.0 ALUM
1	-2	PLATE	0.38 X 2.0 X 6.5 ALUM PLATE
X	-1	ASSEMBLY	SK32193

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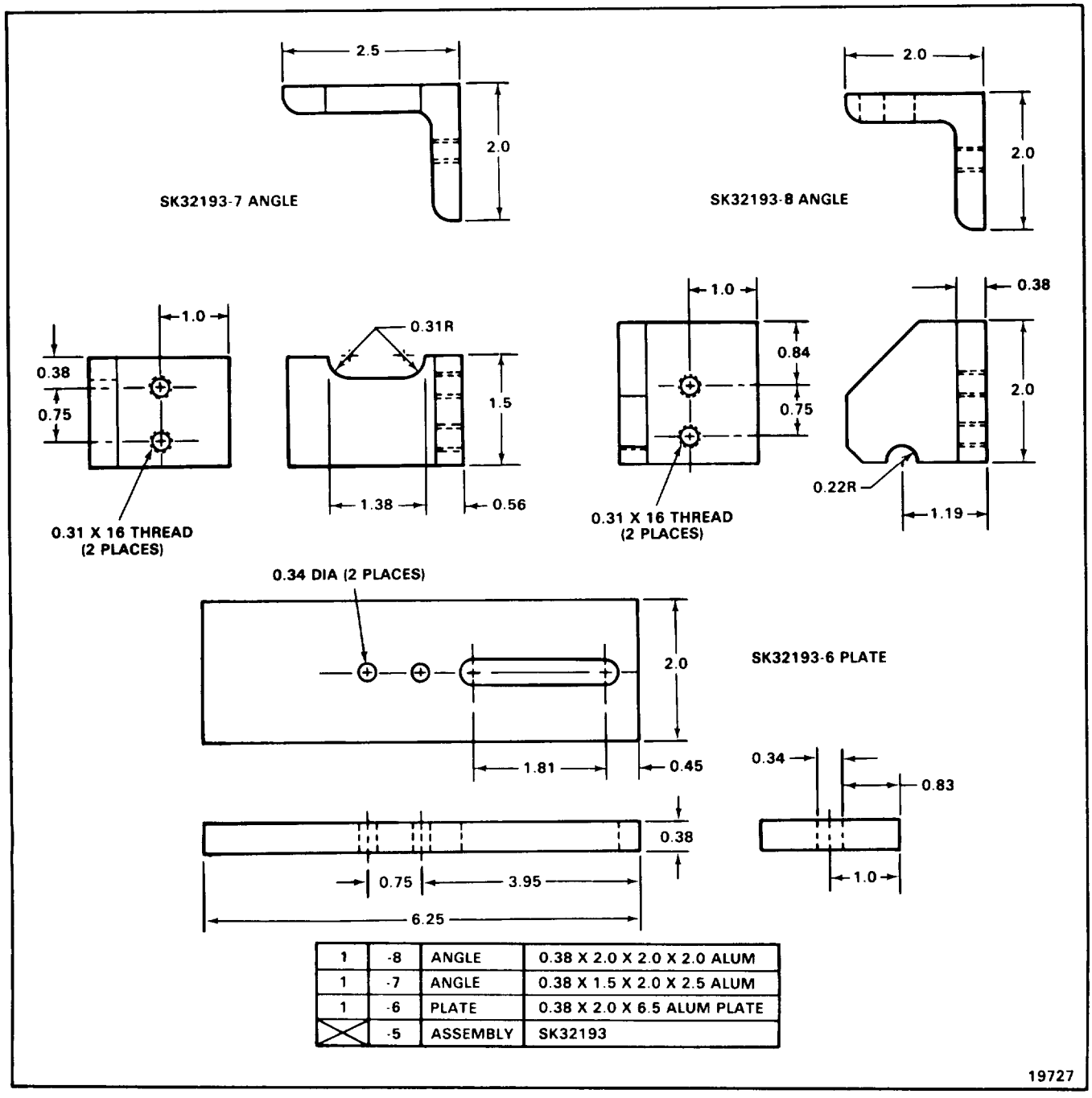
GO TO NEXT PAGE

E-228 ENGINE HARNESS CONNECTOR RETENTION TOOL SK32193-1 AND -5 (Continued)

NOTES:

1. ALL DIMENSIONS IN INCHES.
2. DIMENSION TOLERANCE ± 0.03.
3. BREAK ALL SHARP EDGES 0.020 RAD. MIN.



1	-8	ANGLE	0.38 X 2.0 X 2.0 X 2.0 ALUM
1	-7	ANGLE	0.38 X 1.5 X 2.0 X 2.5 ALUM
1	-6	PLATE	0.38 X 2.0 X 6.5 ALUM PLATE
X	-5	ASSEMBLY	SK32193

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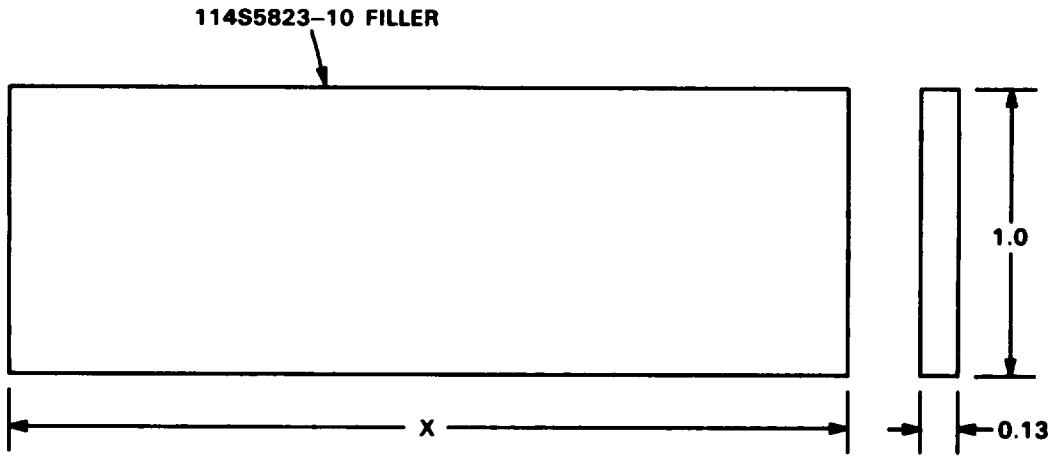
END OF TASK

E-229 ISOLATOR PANEL, MAIN FUEL CELL FILLER 114S5823-10 E-229

NOTES:

1. FABRICATE FROM LAMINATED PHENOLIC TYPE FBM PER MIL-P-15035.
2. STOCK SIZE 0.13 X 1.0 X 2.9.
3. ALL DIMENSIONS IN INCHES.
4. FINISH AS REQUIRED.
5. USE ORIGINAL PART TO DETERMINE DIMENSION X.

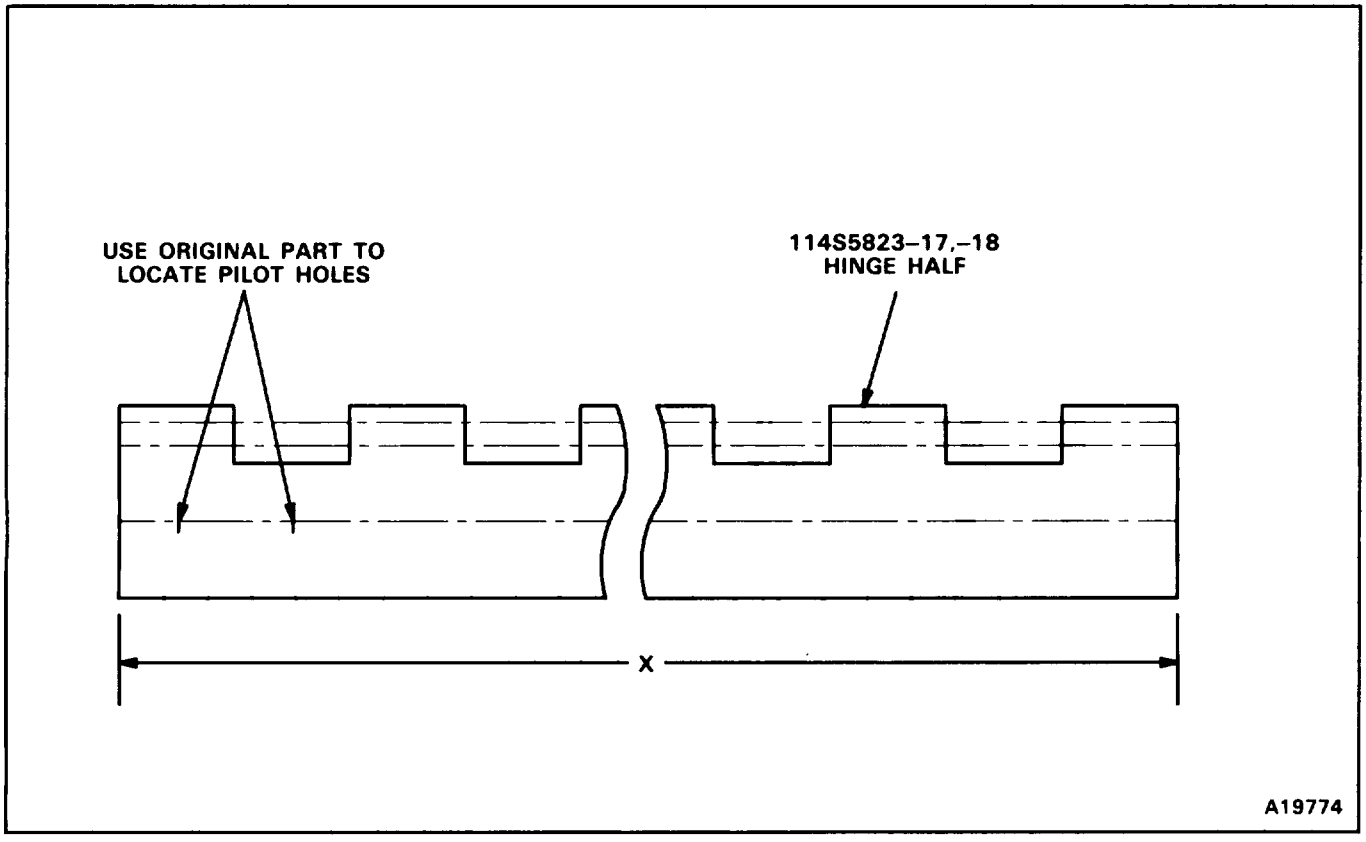


END OF TASK

E-230 ISOLATOR PANEL, MAIN FUEL CELL HINGE HALF 114S5823-17 AND -18

NOTES:

1. FABRICATE FROM MS20001PH9-5500.
2. THE 114S5823-17 HINGE HALF IS THE OPPOSITE OF THE 114S5823-18 HINGE HALF.
3. USE ORIGINAL PART TO DETERMINE DIMENSION X AND LOCATE PILOT HOLES.
4. FINISH AS REQUIRED.

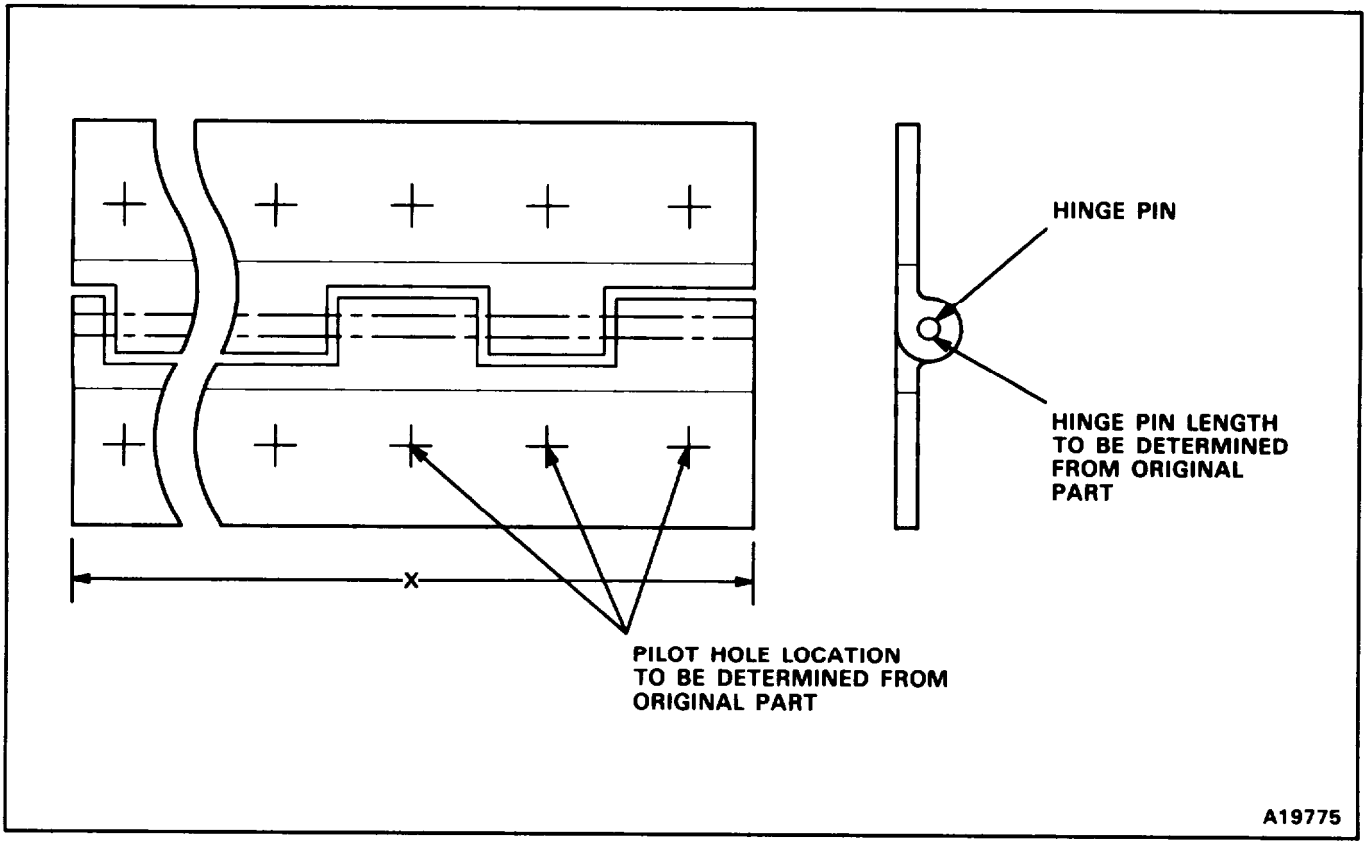


END OF TASK

NOTES:

1. USE ORIGINAL PARTS TO DETERMINE PILOT HOLE LOCATIONS, HINGE HALF, AND HINGE PIN LENGTH.
2. FINISH AS REQUIRED.
3. FABRICATE FROM:

NOMENCLATURE	PART NO.	MATERIAL
HINGE HALF	114S5823-19	MS20001PH5-5500
HINGE PIN	114S5823-33	MS20253-2-5500
HINGE HALF	114S5823-20	MS20001PH5-5500
HINGE HALF	114S5823-21	MS20001PH5-5500
HINGE PIN	114S5823-34	MS20253-2-5500
HINGE HALF	114S5823-22	MS20001PH5-5500
HINGE HALF	114S5823-23	MS20001PH5-5500
HINGE PIN	114S5823-35	MS20253-2-5500
HINGE HALF	114S5823-24	MS20001PH5-5500

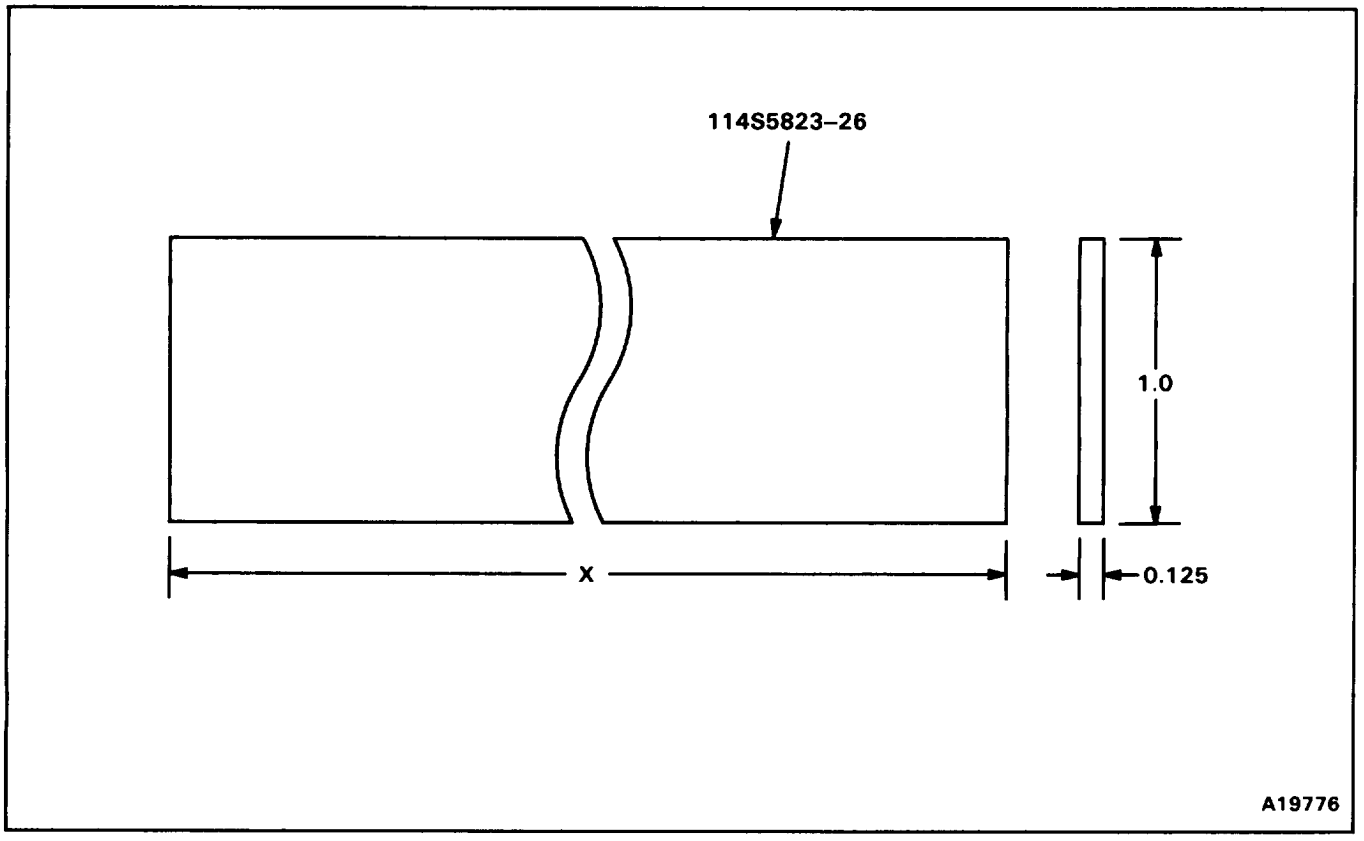


END OF TASK

E-232 ISOLATOR PANEL, MAIN FUEL CELL FILLER 114S5823-26 E-232

NOTES:

1. FABRICATE FROM LAMINATED PHENOLIC, TYPE FBM PER MIL-P-15035.
2. STOCK SIZE 0.125 X 1.0 X 89.0.
3. ALL DIMENSIONS IN INCHES.
4. FINISH AS REQUIRED.
5. USE ORIGINAL PART TO DETERMINE DIMENSION X.

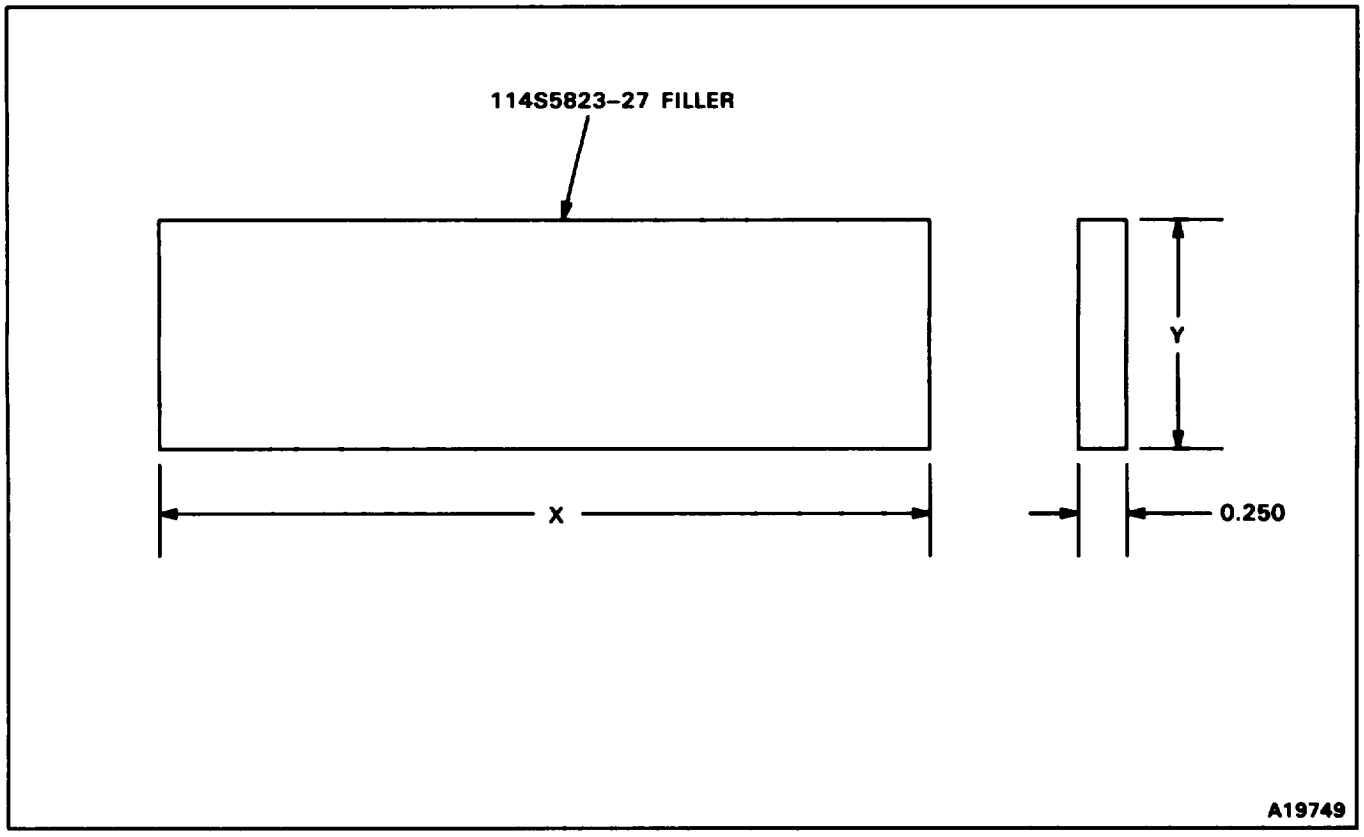


END OF TASK

E-233 ISOLATOR PANEL, MAIN FUEL CELL FILLER 114S5823-27 E-233

NOTES:

1. FABRICATE FROM AL ALY CLAD PLATE 2024-T3 PER QQ-A-250/5.
2. STOCK SIZE 0.250 X 1.2 X 4.0.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL PART TO DETERMINE DIMENSIONS X AND Y.
5. FINISH AS REQUIRED.



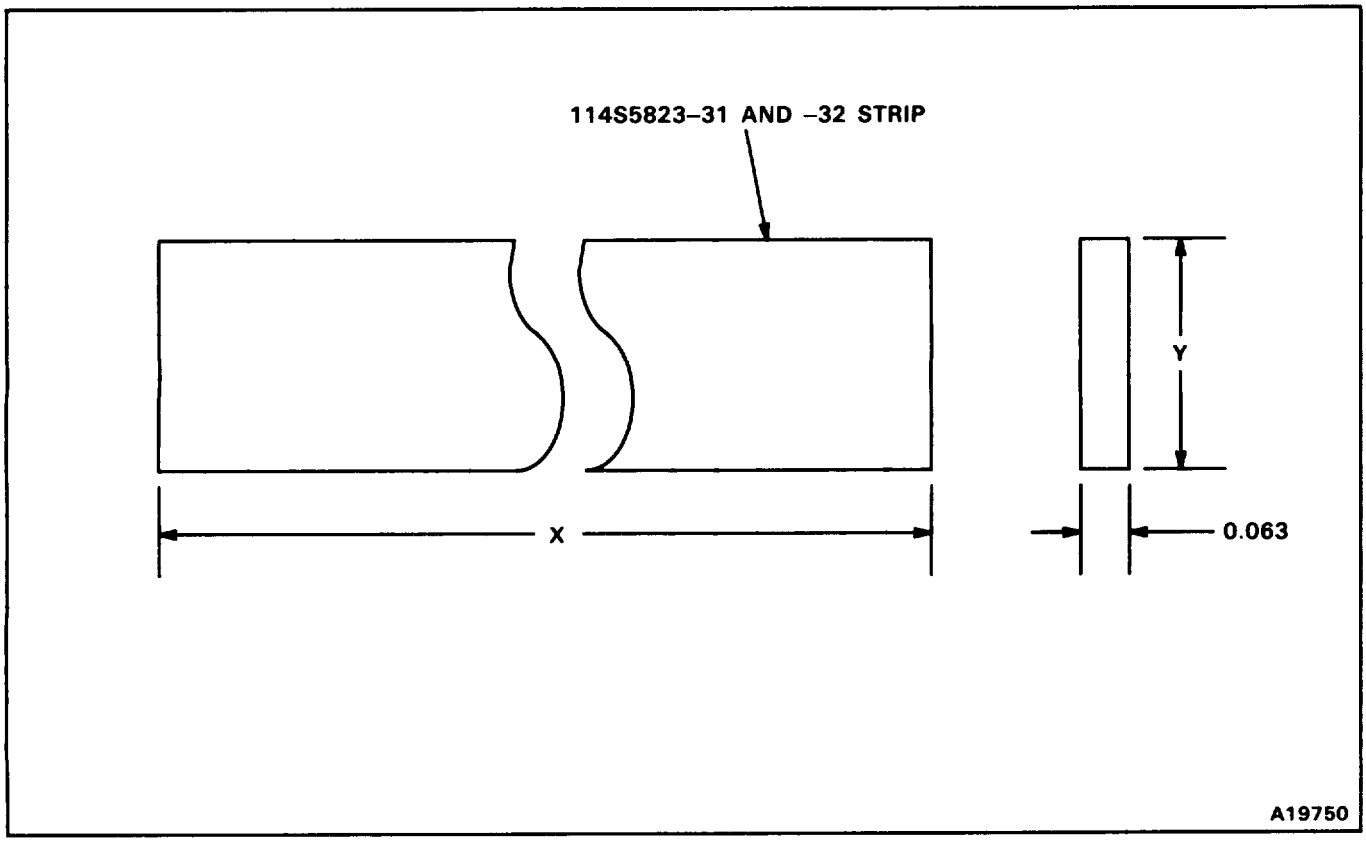
END OF TASK

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/5.
2. ALL DIMENSIONS IN INCHES.
3. FINISH AS REQUIRED,
4.

PART NO.	STOCK SIZE X DIM.	Y DIM.	Z DIM.
114S5823-31	88.0	0.063	2.1
114S5823-32	104.6	0.063	1.3

5. USE ORIGINAL PART TO DETERMINE DIMENSIONS X AND Y.

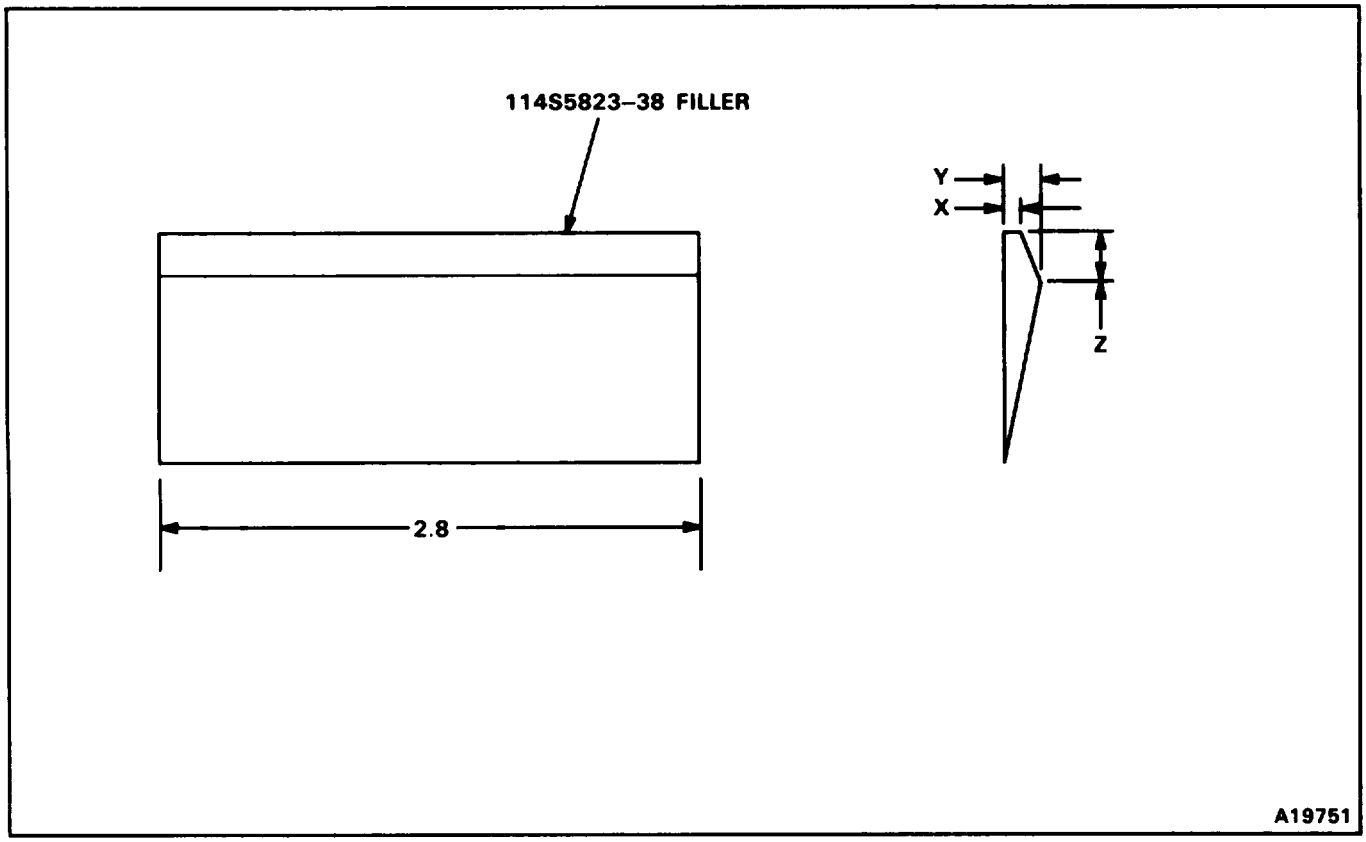


END OF TASK

E-235 ISOLATOR PANEL, MAIN FUEL CELL FILLER 114S5823-38 E-235

NOTES:

1. FABRICATE FROM LAMINATED PHENOLIC, TYPE FBM PER MIL-P-15035.
2. STOCK SIZE 0.19 X 1.2 X 2.8.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL PART TO DETERMINE DIMENSIONS X, Y, AND Z.
5. FINISH AS REQUIRED.



END OF TASK

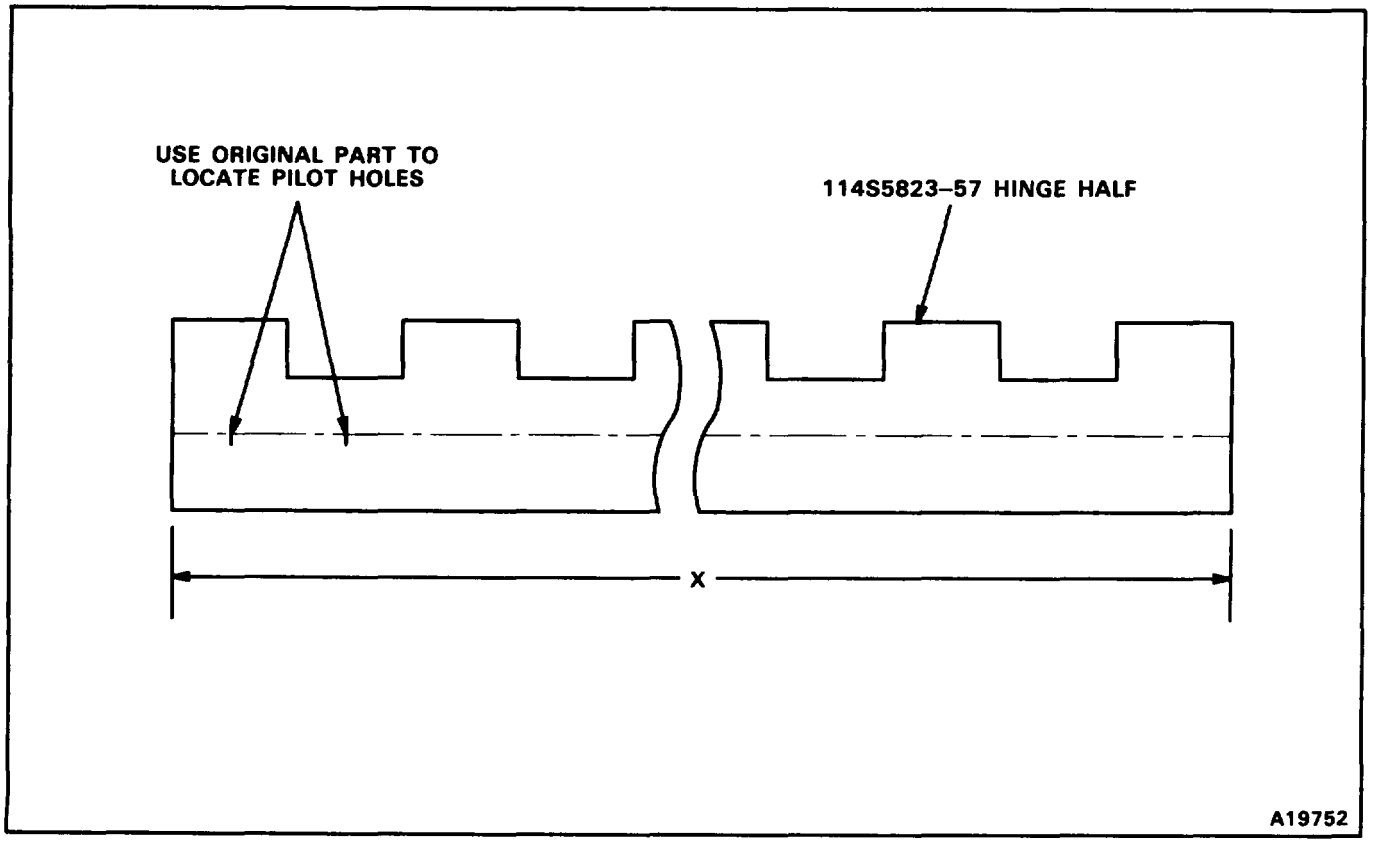
E-236 ISOLATOR PANEL, MAIN FUEL CELL HINGE HALF 114S5823-57

NOTES:

1. FABRICATE FROM MS20001PH9-5300.

2. USE ORIGINAL PART TO DETERMINE DIMENSION X AND LOCATE PILOT HOLES.

3. FINISH AS REQUIRED.



END OF TASK

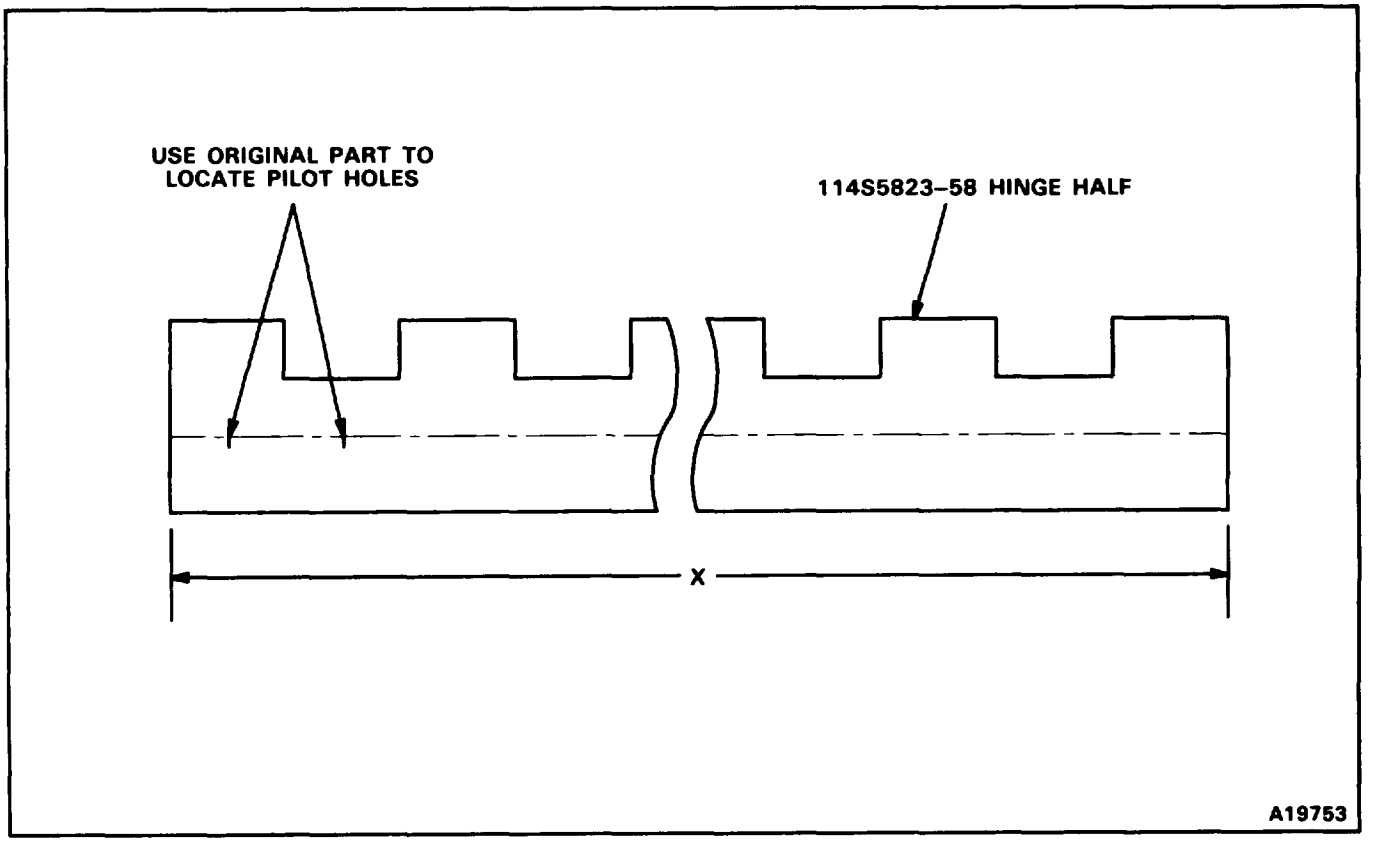
E-237 ISOLATOR PANEL, MAIN FUEL CELL HINGE HALF 114S5823-58 E-237

NOTES:

1. FABRICATE FROM MS20001PH5-5300.

2. USE ORIGINAL PART TO DETERMINE DIMENSION X AND LOCATE PILOT HOLES.

3. FINISH AS REQUIRED.



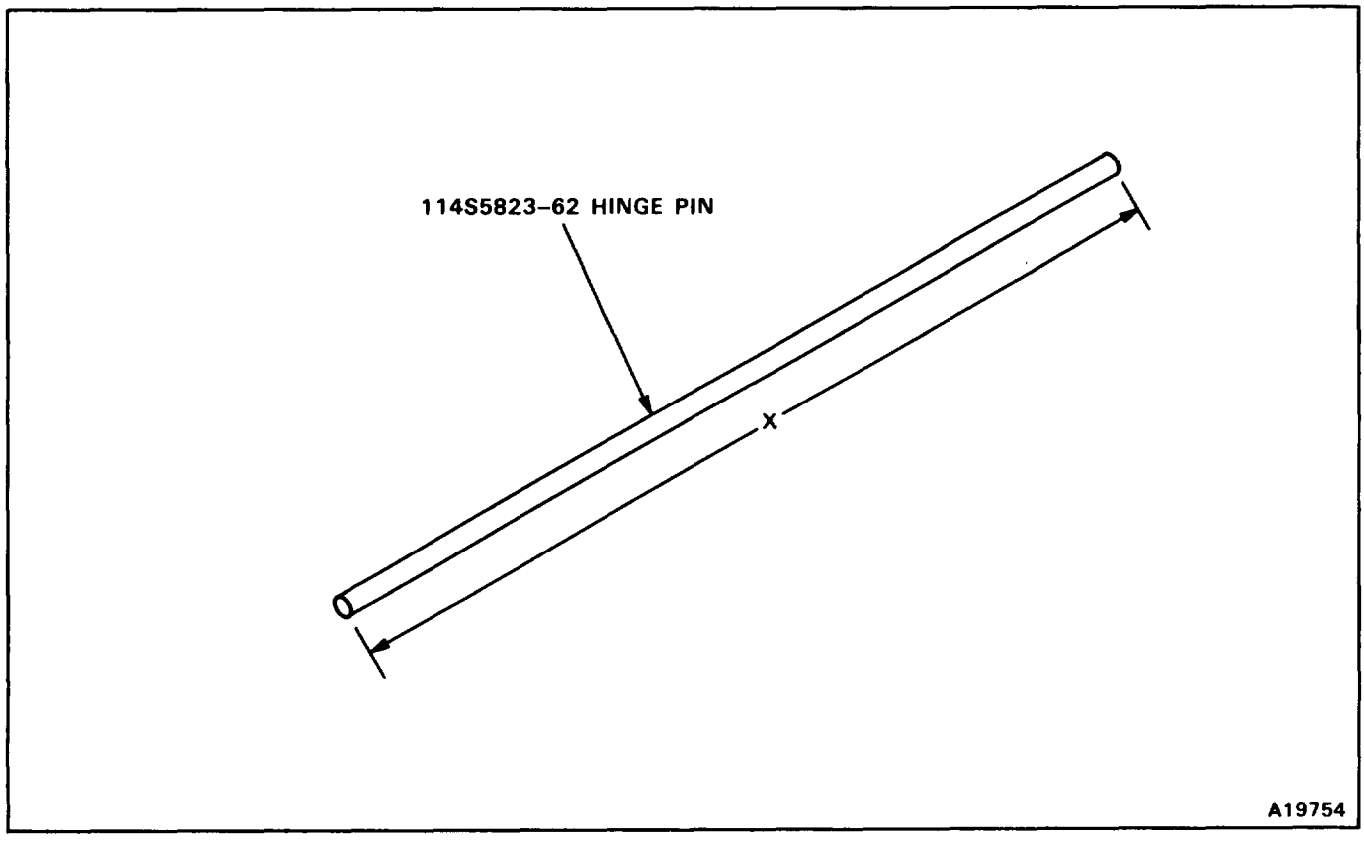
END OF TASK

NOTES:

1. FABRICATE FROM MS20253-2-5300.

2. USE ORIGINAL PART TO DETERMINE DIMENSION X.

3. FINISH AS REQUIRED.

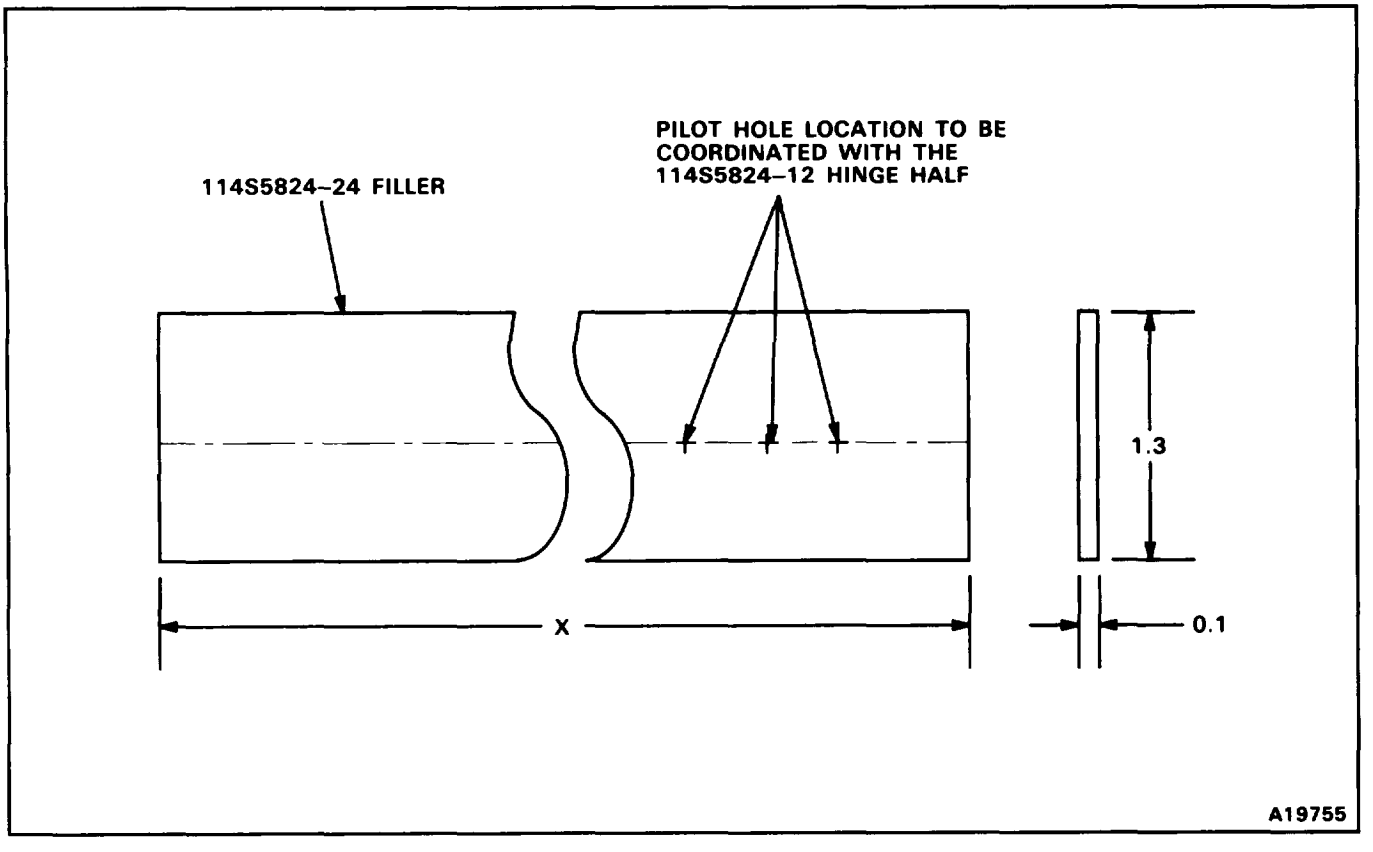


END OF TASK

E-239 ISOLATION INSTALLATION, AUXILIARY FUEL POD BOTTOM FILLER 114S5824-24

NOTES:

1. FABRICATE FROM MIL-P-15035 LAMINATED PHENOLIC, TYPE FBM.
2. STOCK SIZE 0.1 X 1.3 X 26.5.
3. ALL DIMENSIONS IN INCHES.
4. COORDINATE PILOT HOLE LOCATION WITH THE 114S5824-12 HINGE HALF.
5. USE ORIGINAL PART TO DETERMINE DIMENSION X.
6. FINISH AS REQUIRED.



END OF TASK

E-240 ISOLATION INSTALLATION, AUXILIARY FUEL POD BOTTOM FILLER 414S5824-10

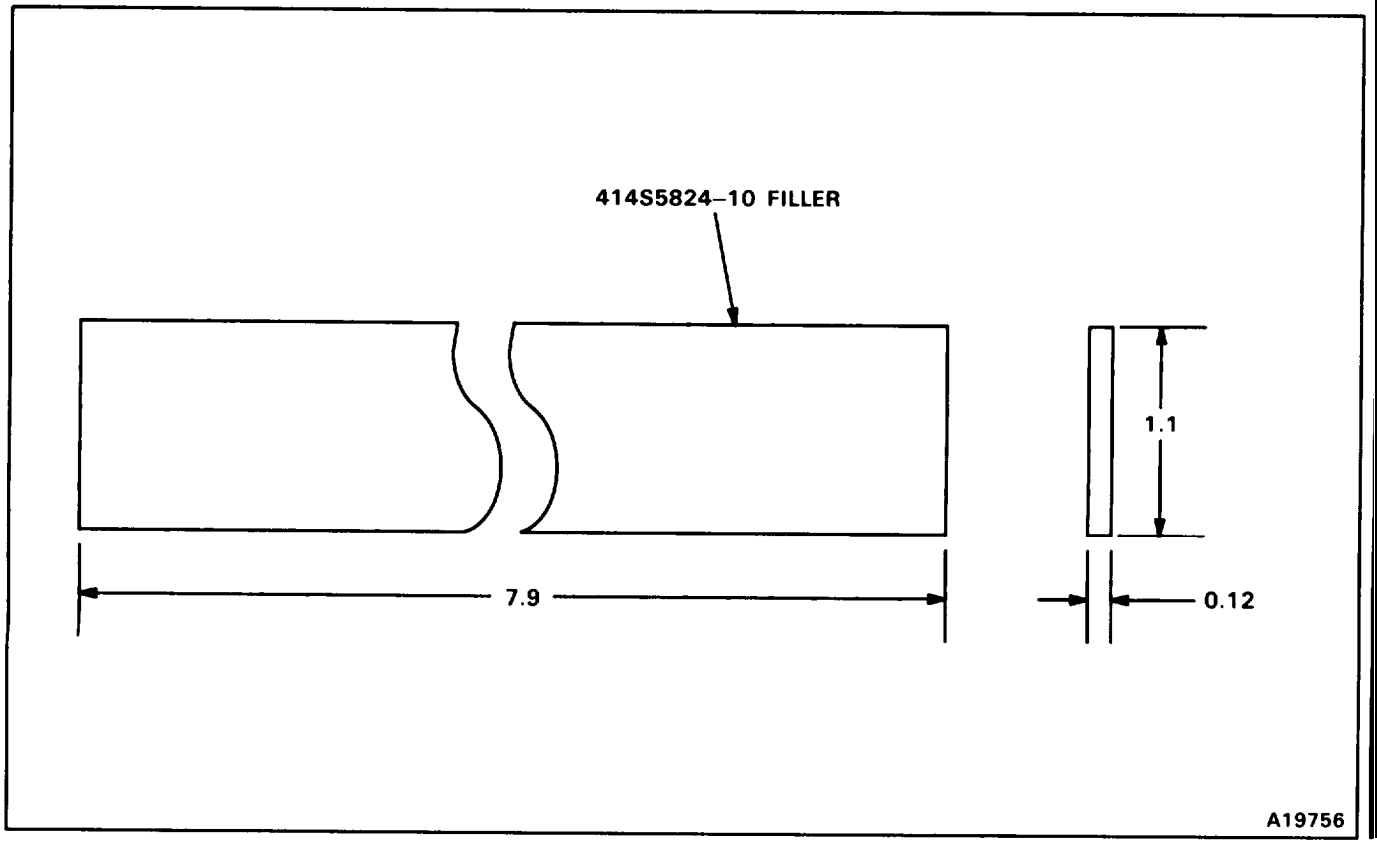
NOTES:

1. FABRICATE FROM LAMINATED PHENOLIC TYPE FBM PER MIL-P-15035.

2. STOCK SIZE 0.12 X 1.1 X 7.9.

3. ALL DIMENSIONS IN INCHES.

4. FINISH AS REQUIRED.

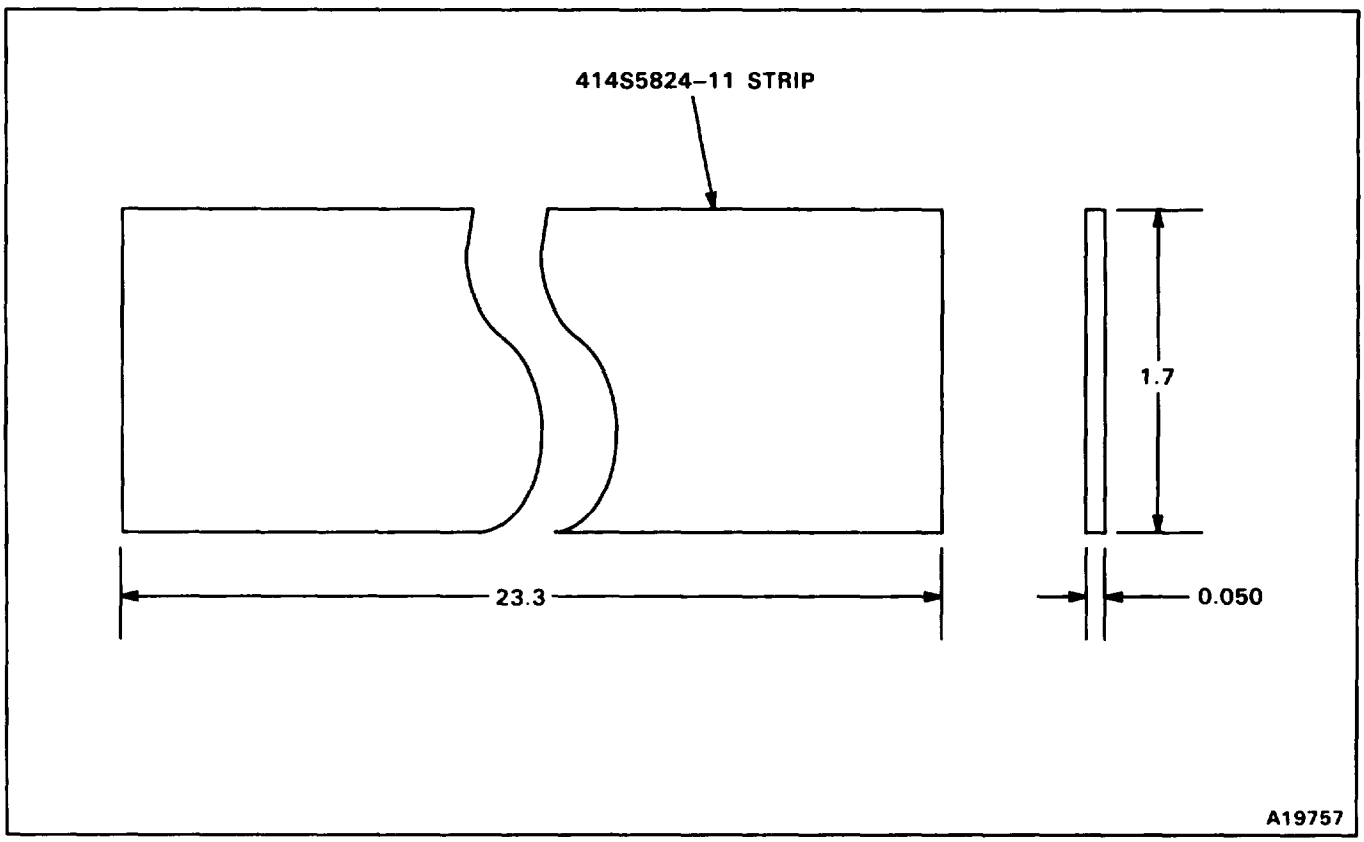


END OF TASK

E-241 ISOLATION INSTALLATION, AUXILIARY FUEL POD BOTTOM STRIP 414S5824-11

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/5.
2. STOCK SIZE 0.050 X 1.7 X 23.3.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL STRIP FOR PILOT HOLE LOCATIONS.



END OF TASK

E-242 ISOLATION INSTALLATION, AUXILIARY FUEL POD BOTTOM SHIM 414S5824-12 E-242

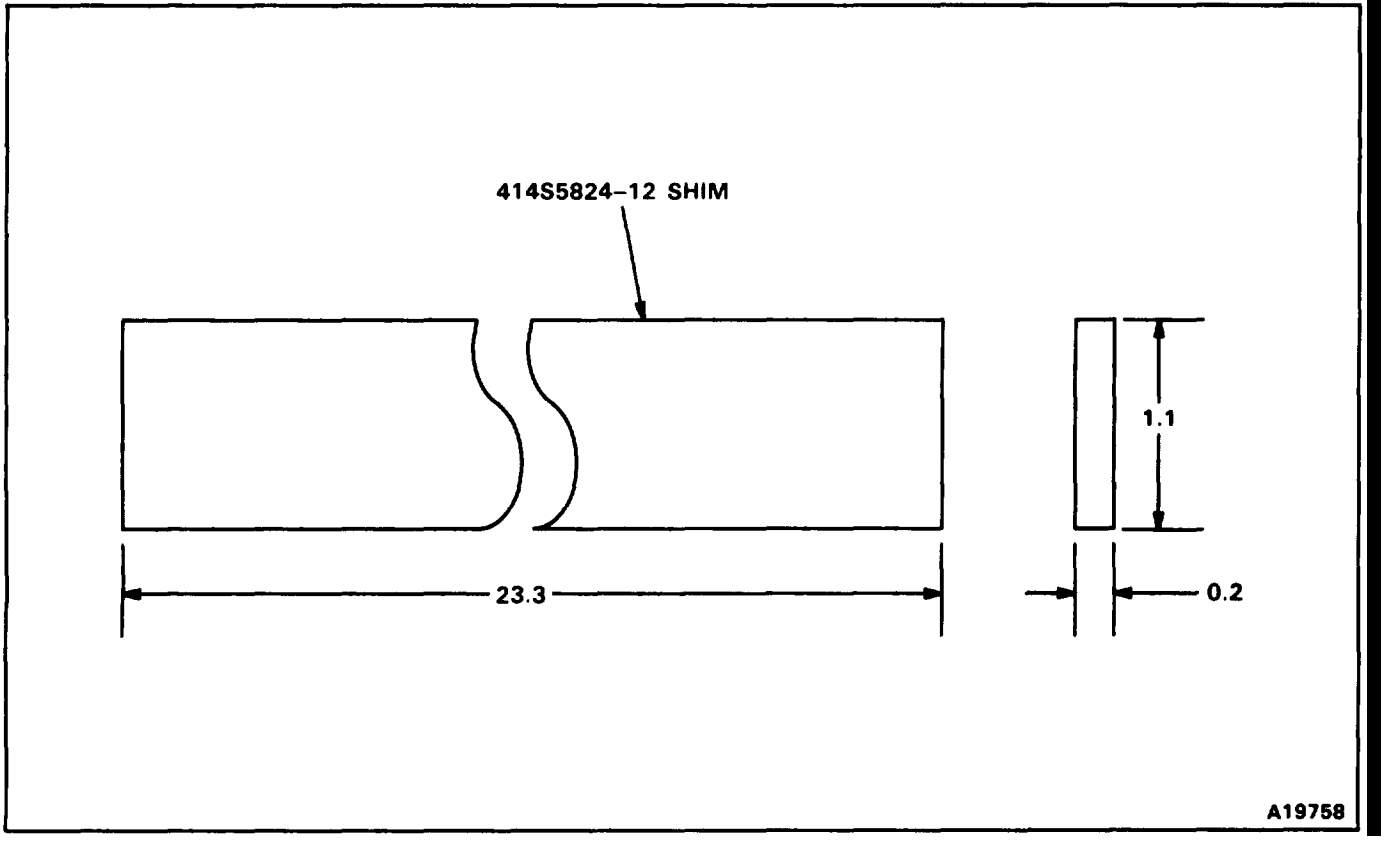
NOTES:

1. FABRICATE FROM LAMINATED PHENOLIC, TYPE FBM PER MIL-P-15035.

2. STOCK SIZE 0.2 X 1.1 X 23.3.

3. ALL DIMENSIONS IN INCHES.

4. FINISH AS REQUIRED.



END OF TASK

E-243 HANDGRIP INSTALLATION DRAIN TUBE 114S2610-31 AND -74

NOTES:

1. FABRICATE FROM RUBBER HOSE MIL-R-6855, CL II, GR 60.

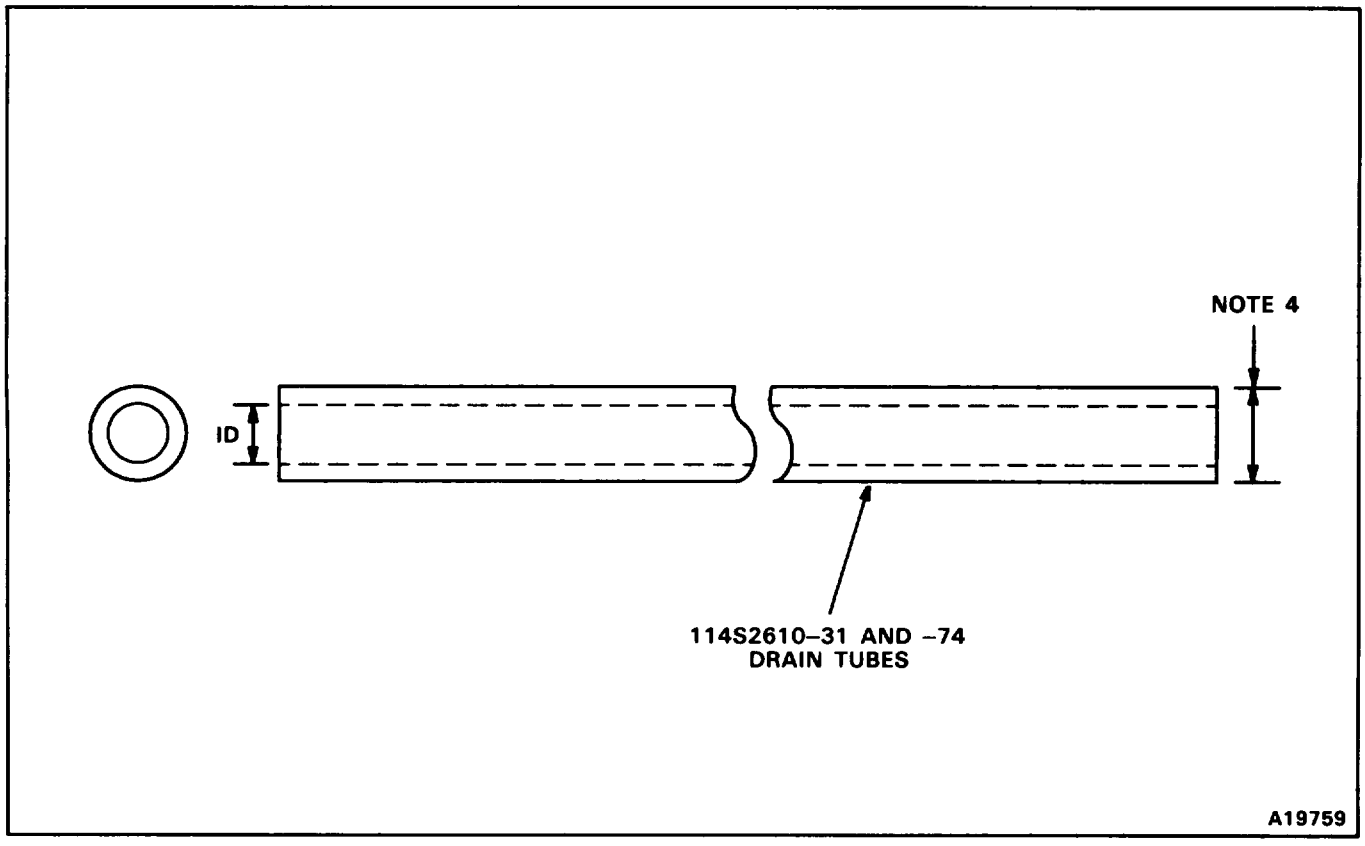
2. ALL DIMENSIONS IN INCHES.

3. CUT TO LENGTHS SPECIFIED.

4. NOMINAL OUTSIDE DIAMETER TO BE 0.688, WITH A NOMINAL WALL THICKNESS OF 0.188.

5.

PART NUMBER	ID	LENGTH
114S2610-31	0.312	15.1
114S2610-74	0.312	28.0



END OF TASK

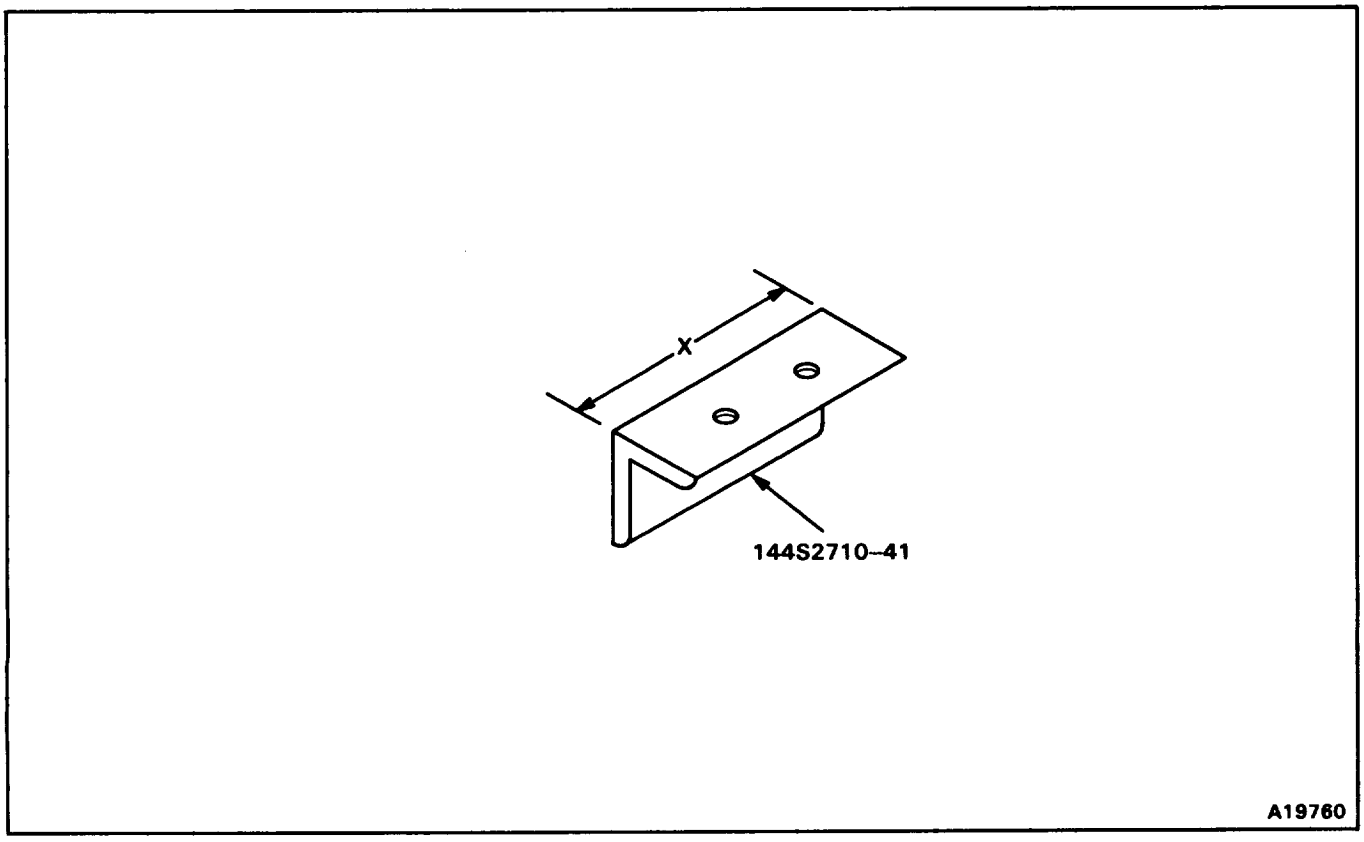
E-244 CABIN CROWN STIFFENER CLIP 114S2710-41 E-244

NOTES:

1. FABRICATE FROM AND 10133-1201 AL ALY EXTRUSION 7075-T6 PER QQ-A-277.

2. USE ORIGINAL CLIP TO DETERMINE PILOT HOLES AND DIMENSION X.

3. FINISH AS REQUIRED.



END OF TASK

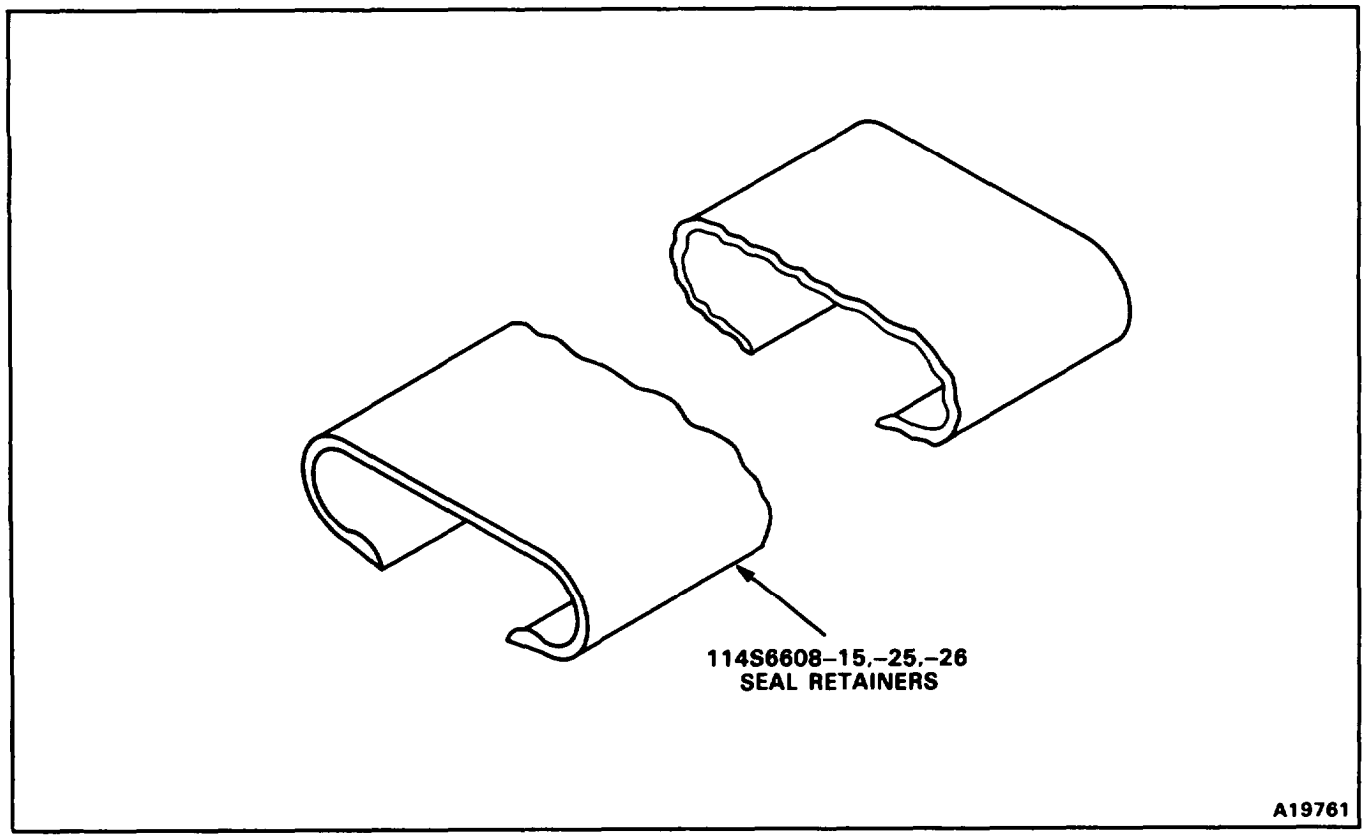
NOTES:

1. FABRICATE FROM VS90415 ALUMINUM EXTRUSION 6061-T6 PER QQ-A-270 CUT TO THE FOLLOWING LENGTHS:

PART NUMBER	LENGTH
114S6608-15	132
114S6608-25 AND -26	84

2. FINISH AS REQUIRED.

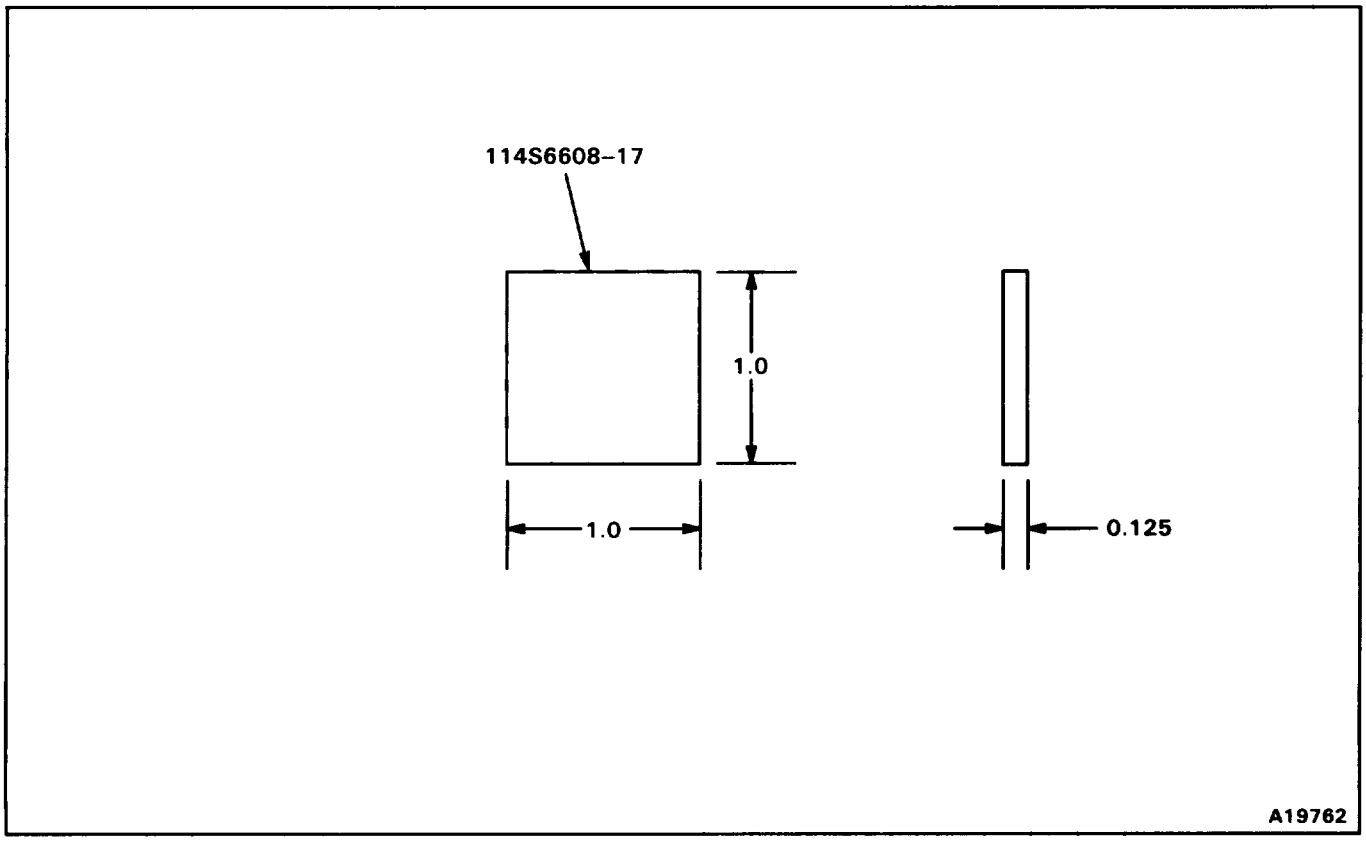
3. ALL DIMENSIONS IN INCHES.



END OF TASK

NOTES:

1. FABRICATE FROM RECTANGULAR BAR STOCK 2024-T4 PER QQ-A-268.
2. STOCK SIZE 0.125 X 1.0 X 1.0.
3. ALL DIMENSIONS IN INCHES.
4. FINISH AS REQUIRED.



END OF TASK

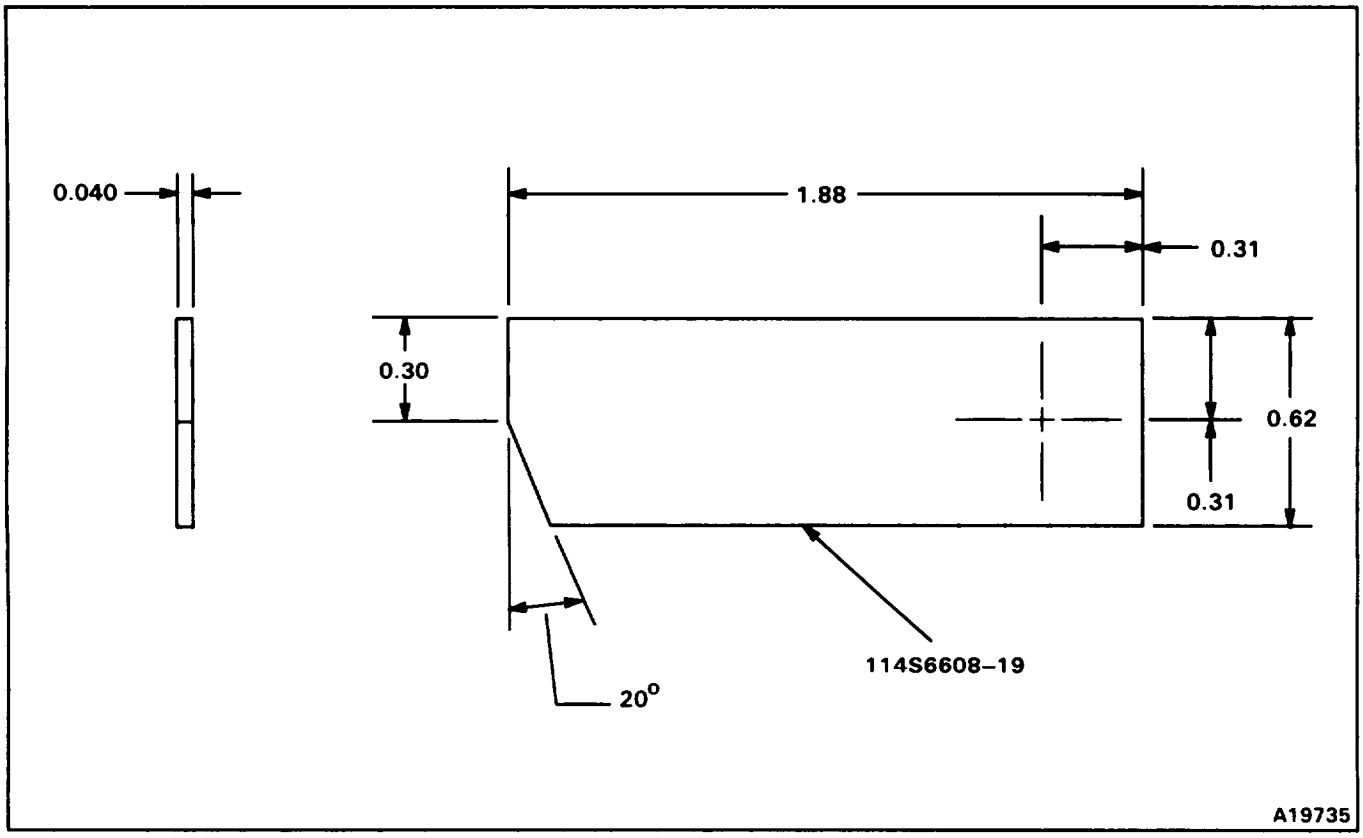
NOTES:

1. FABRICATE FROM CLAD SHEET 2024-T4 PER QQ-A-362.

2. CUT TO DIMENSIONS SHOWN. STOCK SIZE 0.040 x 2.0 x 1.0.

3. ALL DIMENSIONS IN INCHES.

4. FINISH AS REQUIRED.



END OF TASK

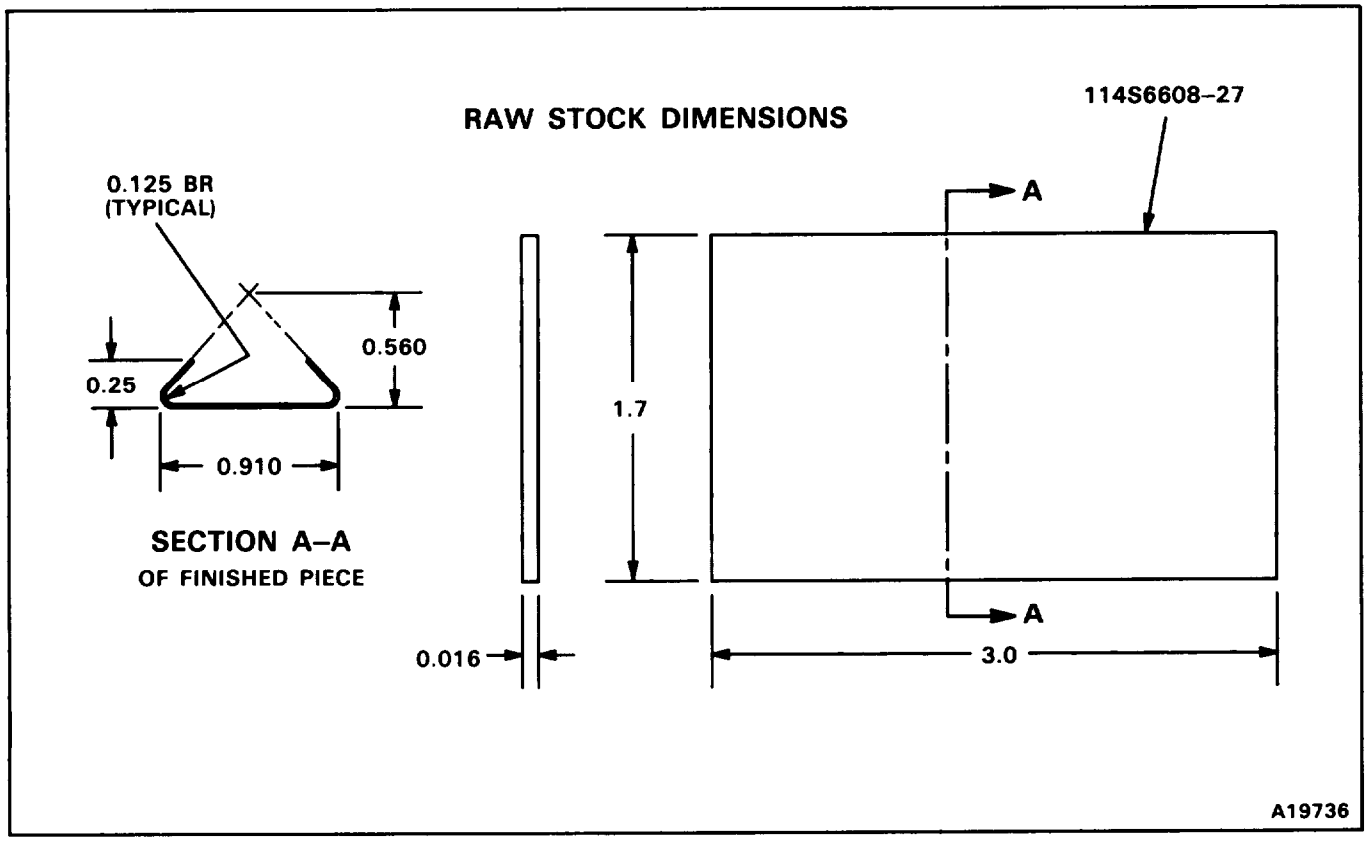
NOTES:

1. FABRICATE FROM AL ALY CLAD SHEET 2024-T4 PER QQ-A-362.

2. CUT AND FORM TO THE DIMENSIONS SHOWN.

3. ALL DIMENSIONS IN INCHES.

4. FINISH AS REQUIRED.

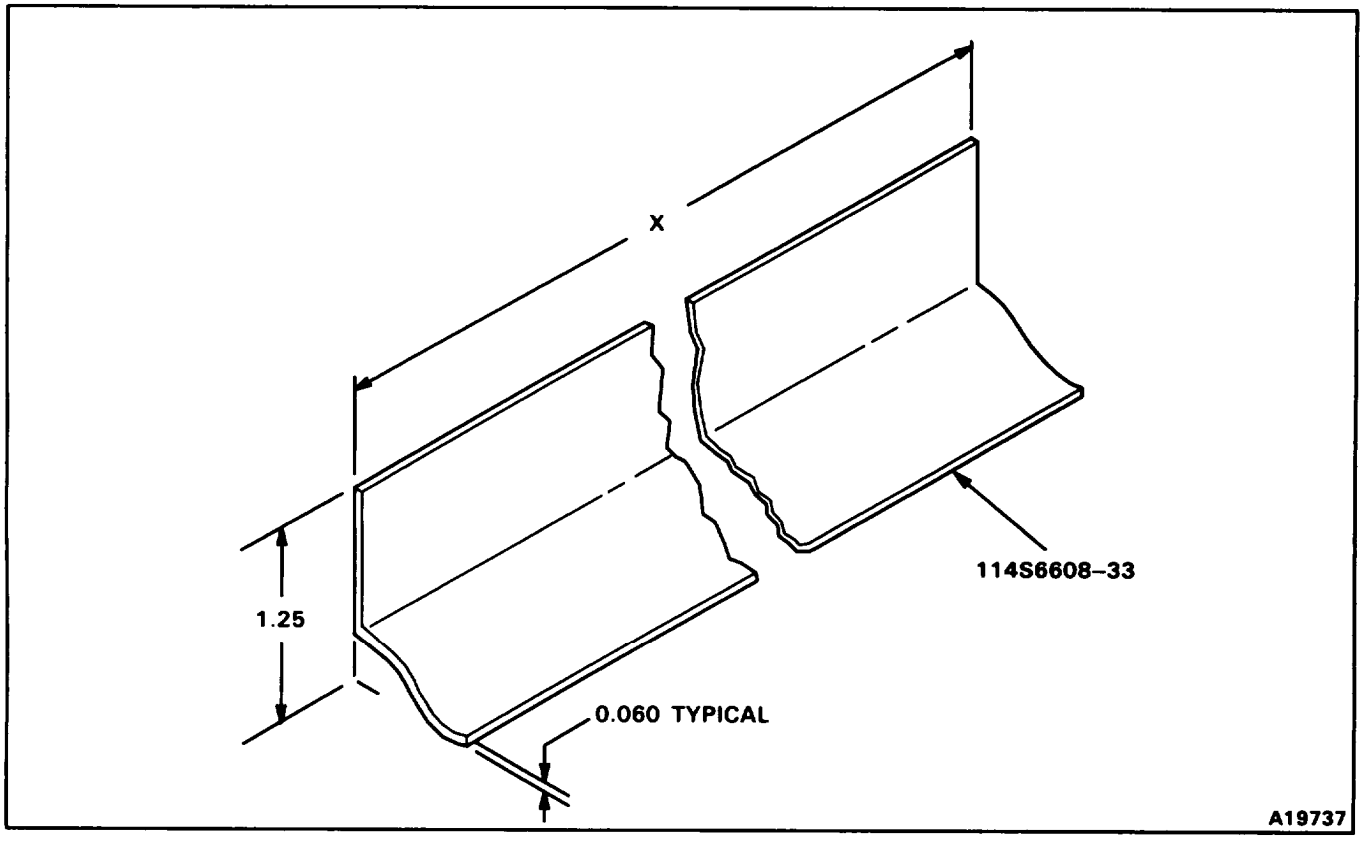


END OF TASK

E-249 CARGO RAMP SEAL 114S6608-33

NOTES:

1. FABRICATE FROM VS80550-2 RUBBER EXTRUSION.
2. STOCK SIZE 15.2 INCHES.
3. ALL DIMENSIONS IN INCHES.
4. USE ORIGINAL PART TO DETERMINE DIMENSION X.



END OF TASK

NOTES:

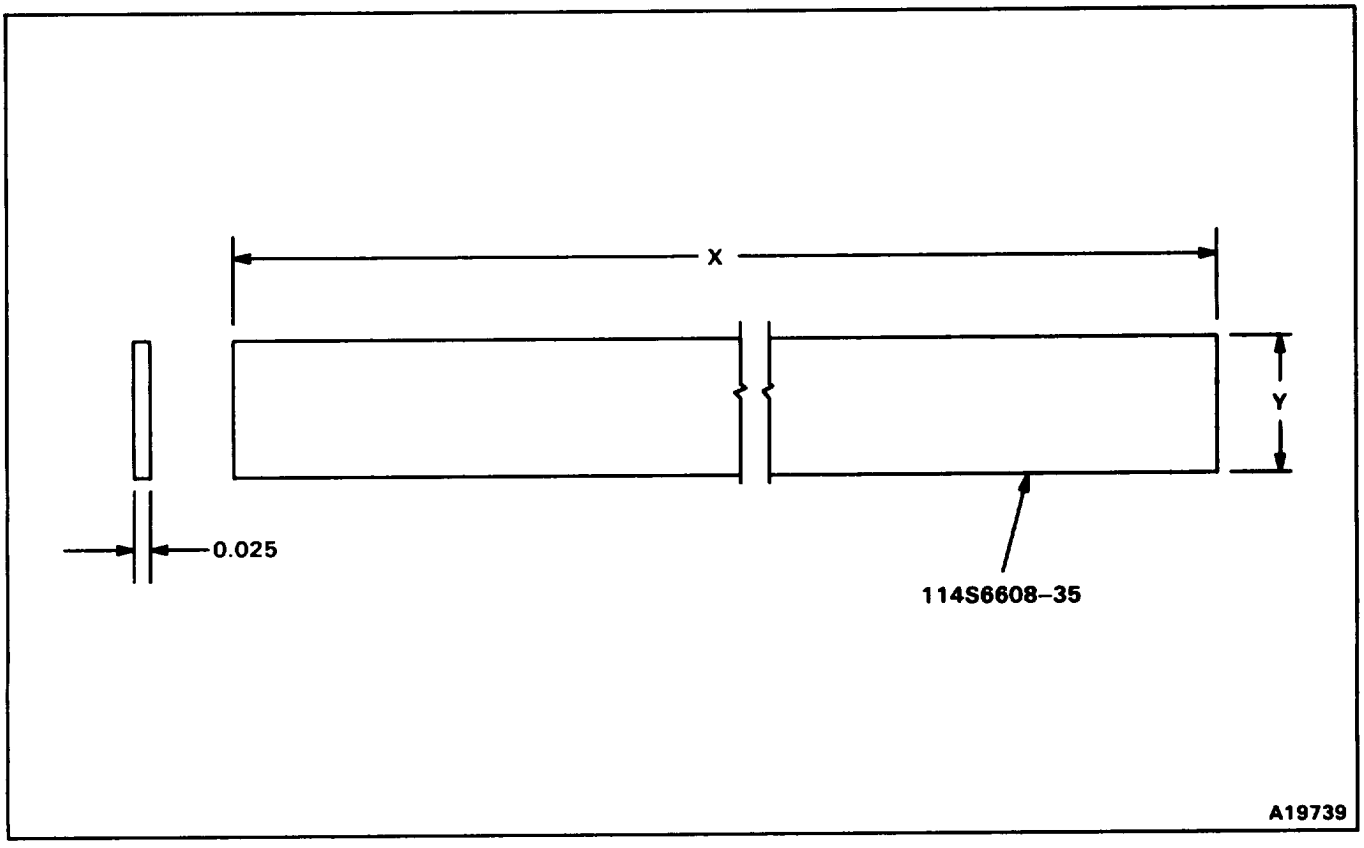
1. FABRICATE FROM AL ALY CLAD SHEET 2024-T4 PER QQ-A-362.

2. STOCK SIZE 0.025 X 0.62 X 15.2

3. ALL DIMENSIONS IN INCHES.

4. USE ORIGINAL PART TO DETERMINE DIMENSIONS X AND Y.

5. FINISH AS REQUIRED.

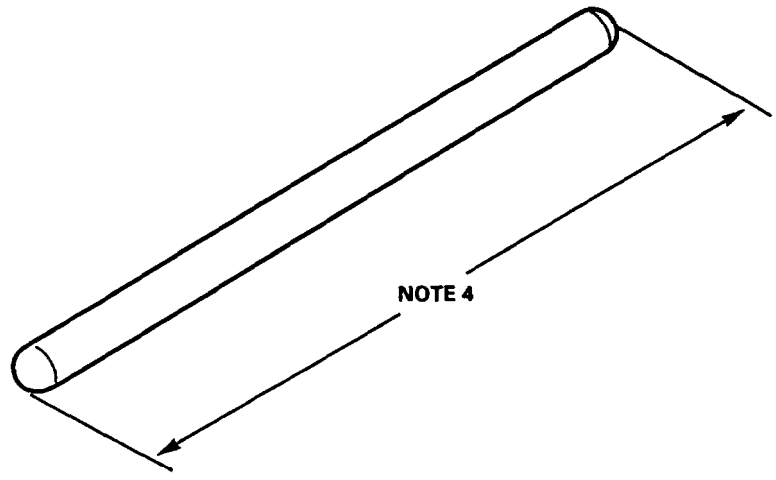


END OF TASK

E-251 CARGO RAMP HINGE PIN 114S3613-39, -41 AND -43

NOTES:

1. FABRICATE HINGE PIN FROM MS20253-P2 NSN 5315-01-305-6528.
2. ALL DIMENSIONS IN INCHES.
3. CUT PINS TO LENGTH AND ROUND ENDS. REMOVE ALL BURRS AND SHARP EDGES. FINISH AS REQUIRED.
4. HINGE PIN LENGTHS:
   114S3613-39 49.3
   114S3613-43 48.8
   114S3613-41 48.8



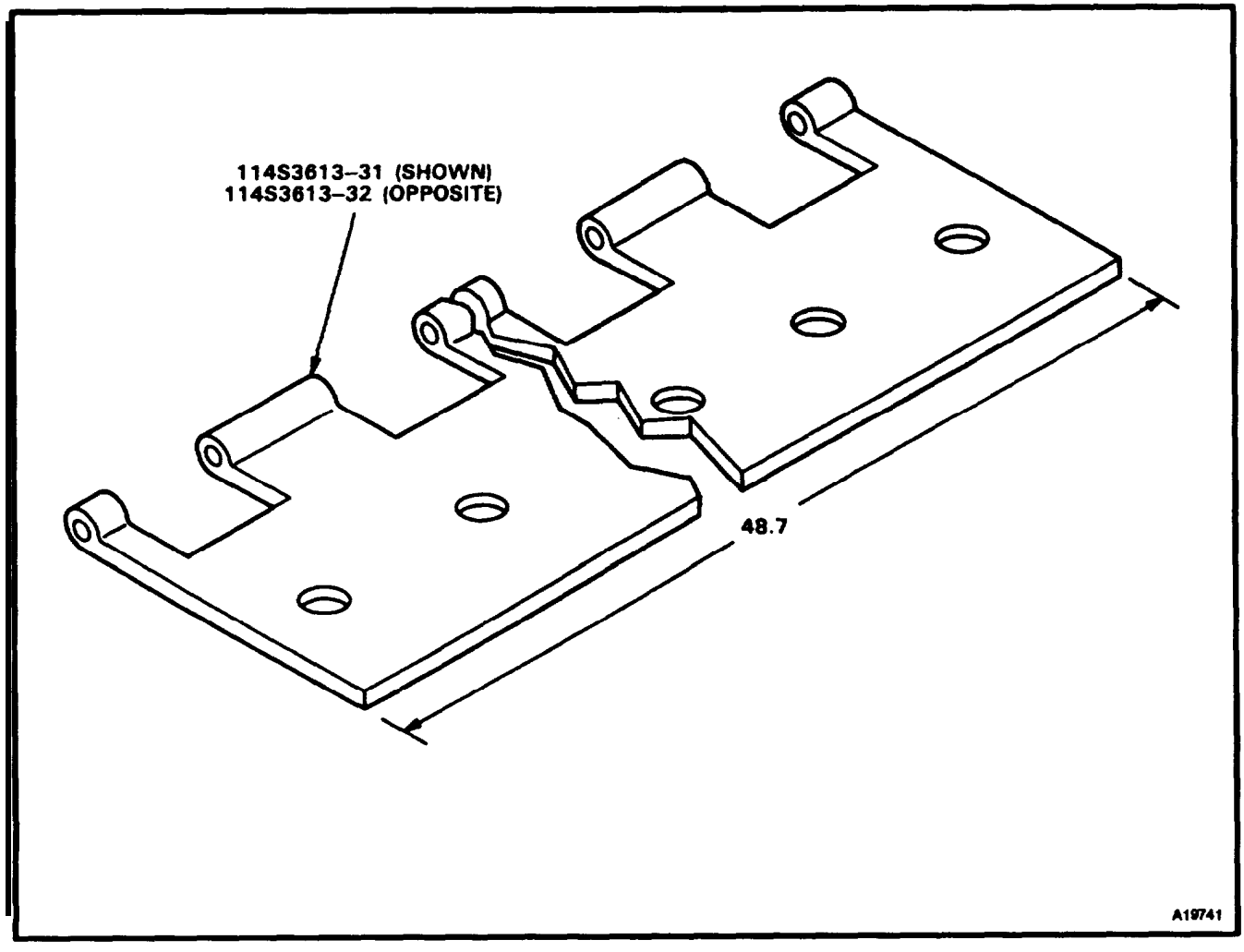
9740

END OF TASK

E-252 CARGO RAMP HINGE HALF 114S3613 AND -32

NOTES:

1. FABRICATE FROM MS20001PH9-7200, NSN 5340-00-807-1070.
2. AU DIMENSIONS IN INCHES.
3. USE ORIGINAL HINGE AS A TEMPLATE FOR PILOT HOLES.
4. FINISH AS REQUIRED.



END OF TASK

E-253 CARGO RAMP HINGE HALF 11483613-35,-36,-37,AND-38 E-253

NOTES:

1, FABRICATE FROM VS20106-1 AL ALY EXTRUSION 2024-T4 ALCOA 137692 PER QQ-A-267 TO DIMENSIONS SPECIFIED IN NOTE 3.

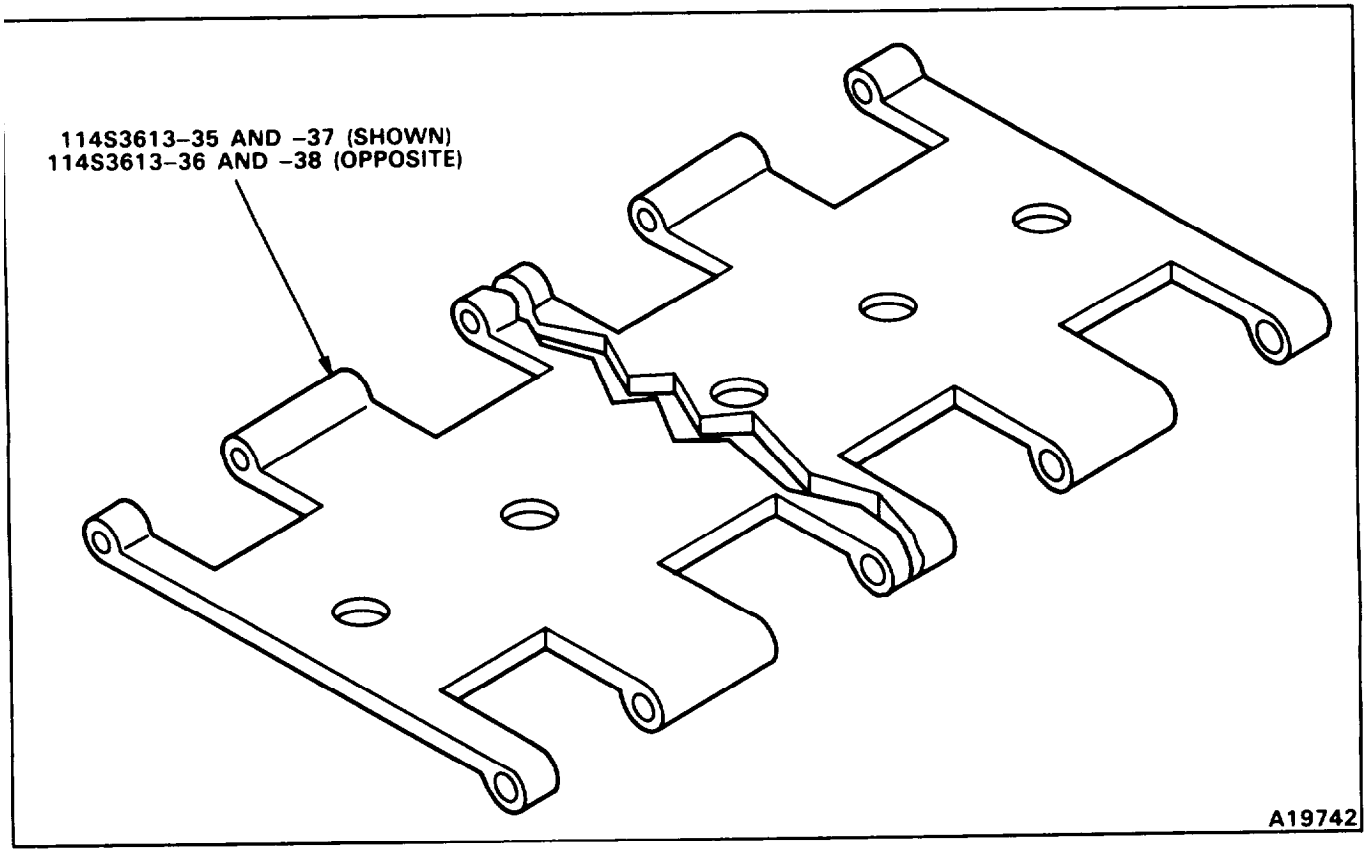
2. ALL DIMENSIONS IN INCHES.

3.

PART NUMBER	MATERIAL	LENGTH
114836 13-35 AND -36	VS20 106-1	49.0
114836 13-37 AND -38	VS20 106	48.7

4. USE ORIGINAL HINGE AS A TEMPLATE FOR PILOT HOLES.

5. FINISH AS REQUIRED.



END OF TASK

E-254 CENTER RAMP FLOOR PANEL 114S6551-11 E-254

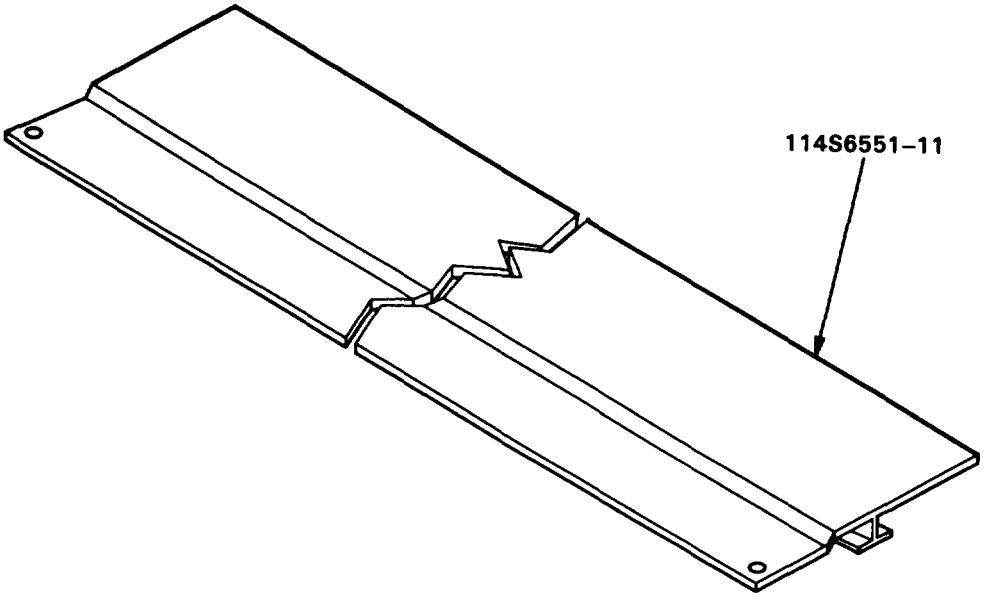
NOTES:

1. FABRICATE FROM VS90540 MAGNESIUM ALLOY EXTRUSION ZK60A-T5 PER QQ-M-31.

2. STOCK SIZE 91.4 INCHES.

3. USE ORIGINAL PANEL AS TEMPLATE. CUT AND DRILL NEW PANEL TO MATCH.

4. FINISH AS REQUIRED.



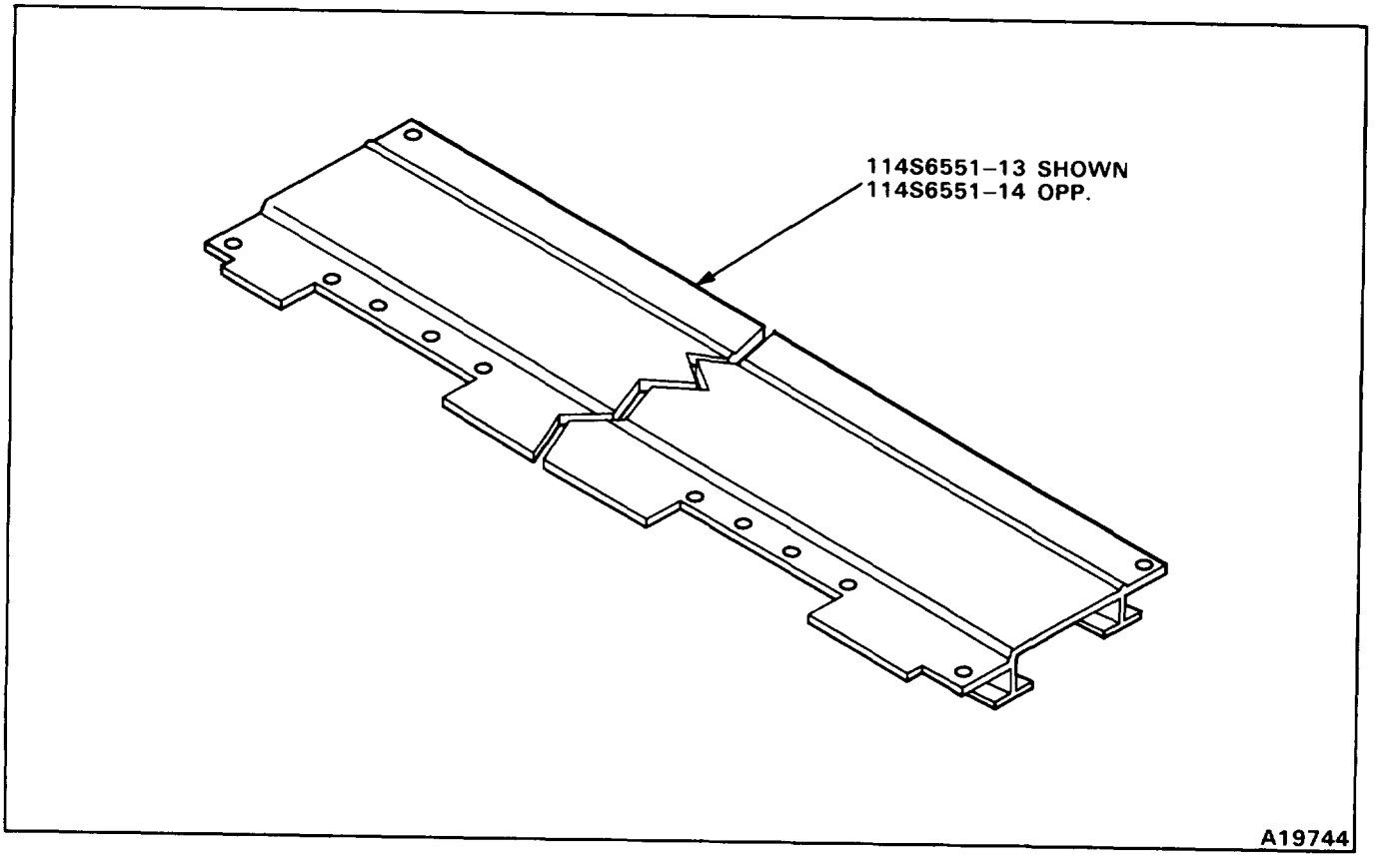
A19743

END OF TASK

E-255 CENTER RAMP FLOOR PANEL 114S6551-13 AND -14

NOTES:

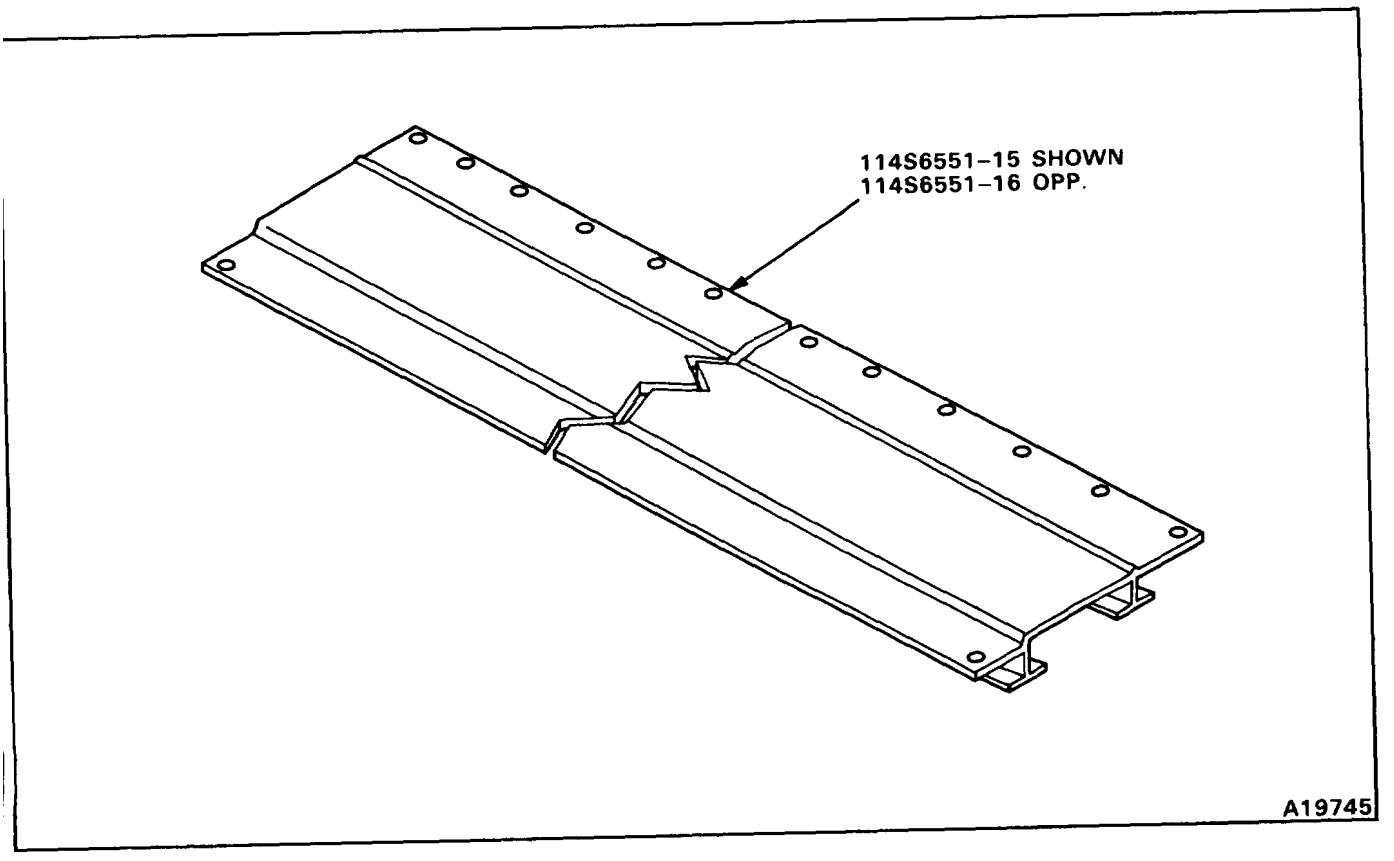
1. FABRICATE FROM VS90578 MAGNESIUM ALLOY EXTRUSION ZK60A-T5 PER QQ-M-31.
2. STOCK SIZE 91.4 INCHES.
3. USE ORIGINAL PANEL AS TEMPLATE. CUT AND DRILL NEW PANEL TO MATCH.
4. FINISH AS REQUIRED.



END OF TASK

NOTES:

1. FABRICATE FROM VS90578 MAGNESIUM ALLOY EXTRUSION ZK60A-T5 PER QQ-M-31.
2. STOCK SIZE 91.4 INCHES.
3. USE ORIGINAL PANEL AS TEMPLATE. CUT AND DRILL NEW PANEL TO MATCH.
4. FINISH AS REQUIRED.

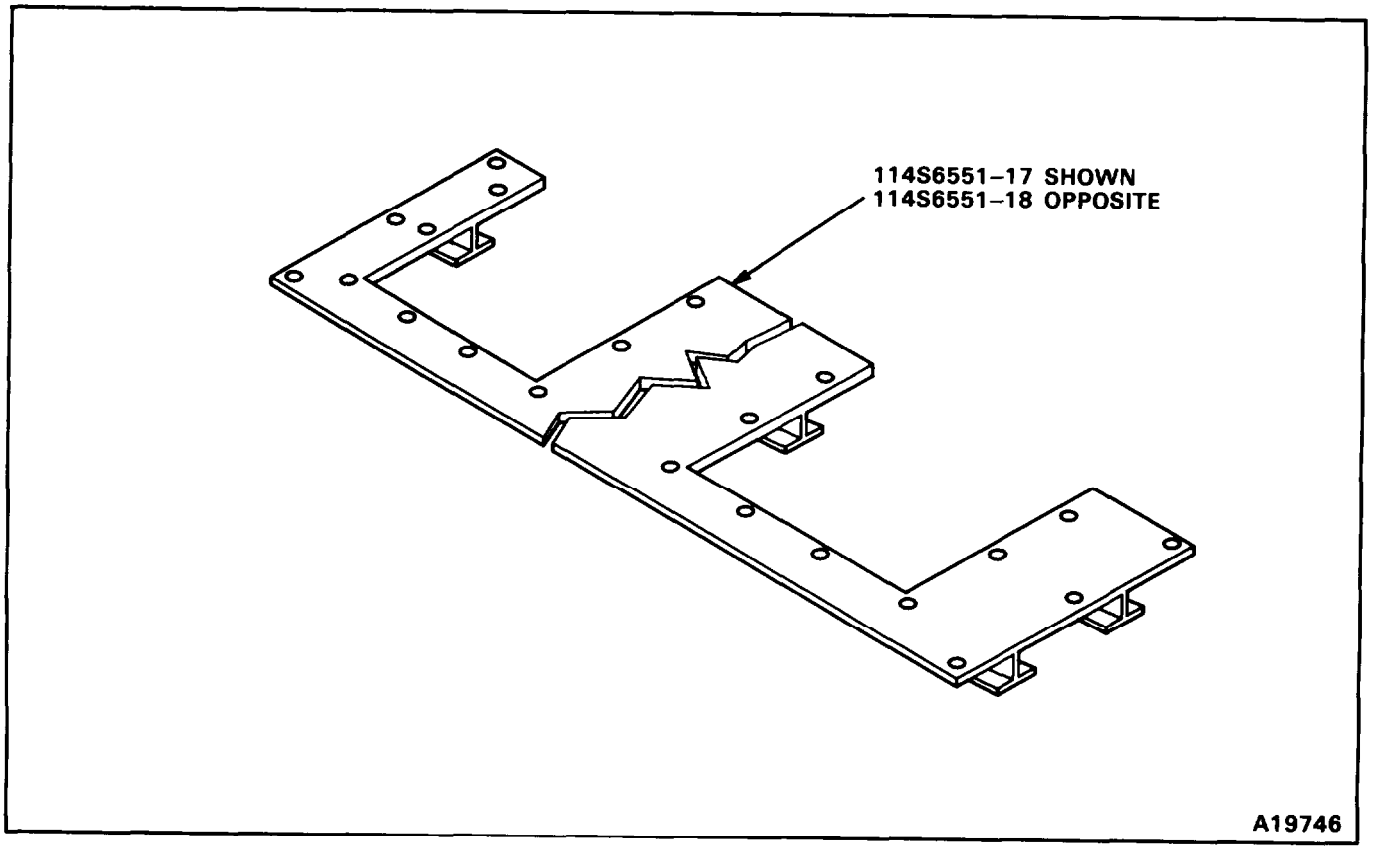


END OF TASK

E-257 CENTER RAMP FLOOR PANEL 114S6551-17 AND -18 E-257

NOTES:

1. FABRICATE FROM VS90579 MAGNESIUM ALLOY EXTRUSION ZK60A-T5 PER QQ-M-31.
2. STOCK SIZE 91.4 INCHES.
3. USE ORIGINAL PANEL AS TEMPLATE. CUT AND DRILL NEW PANEL TO MATCH.
4. FINISH AS REQUIRED.

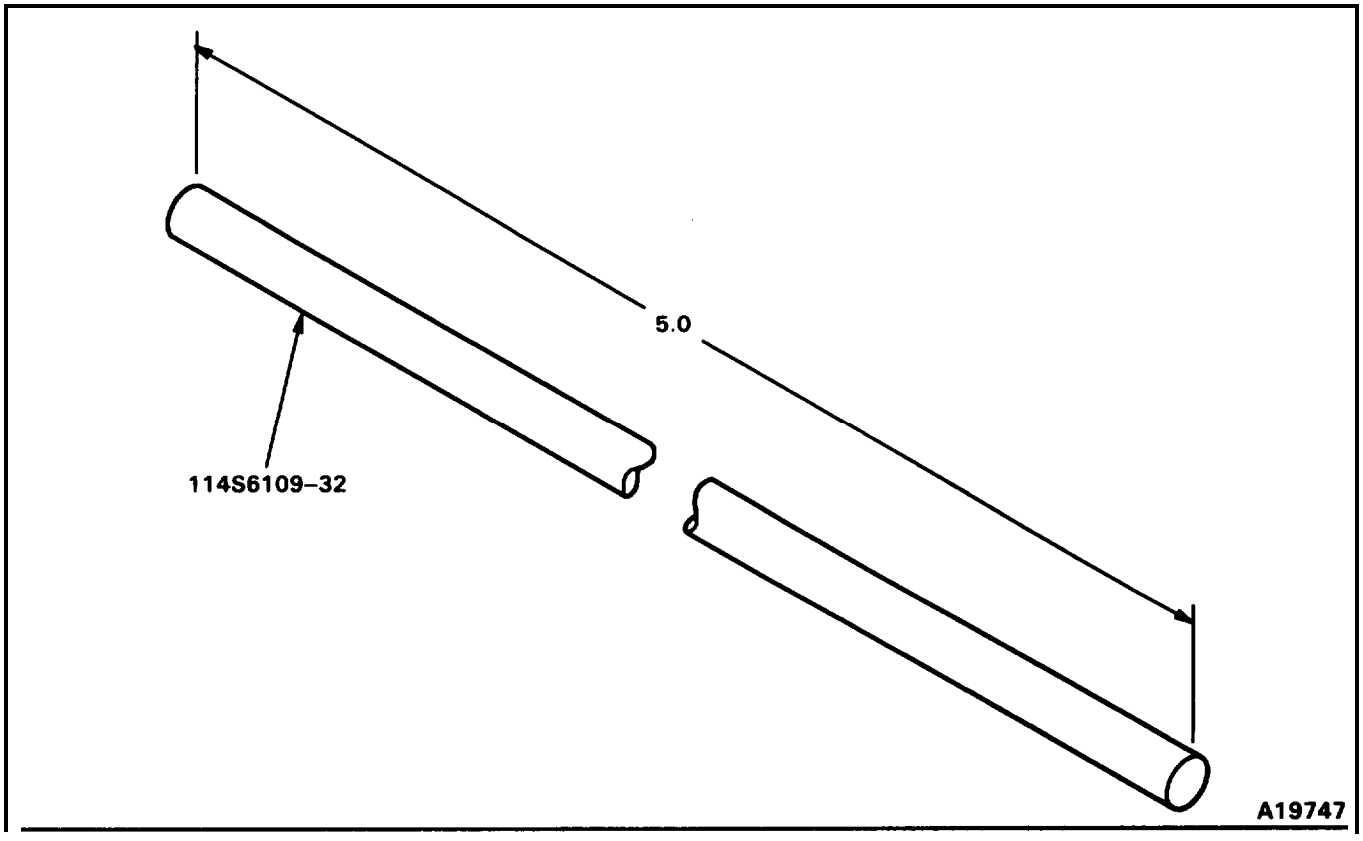


END OF TASK

NOTES:

1. FABRICATE FROM MS20253P5 CADMIUM PLATED CORROSION RESISTANT STEEL.

2. STOCK SIZE 5.0 INCHES.

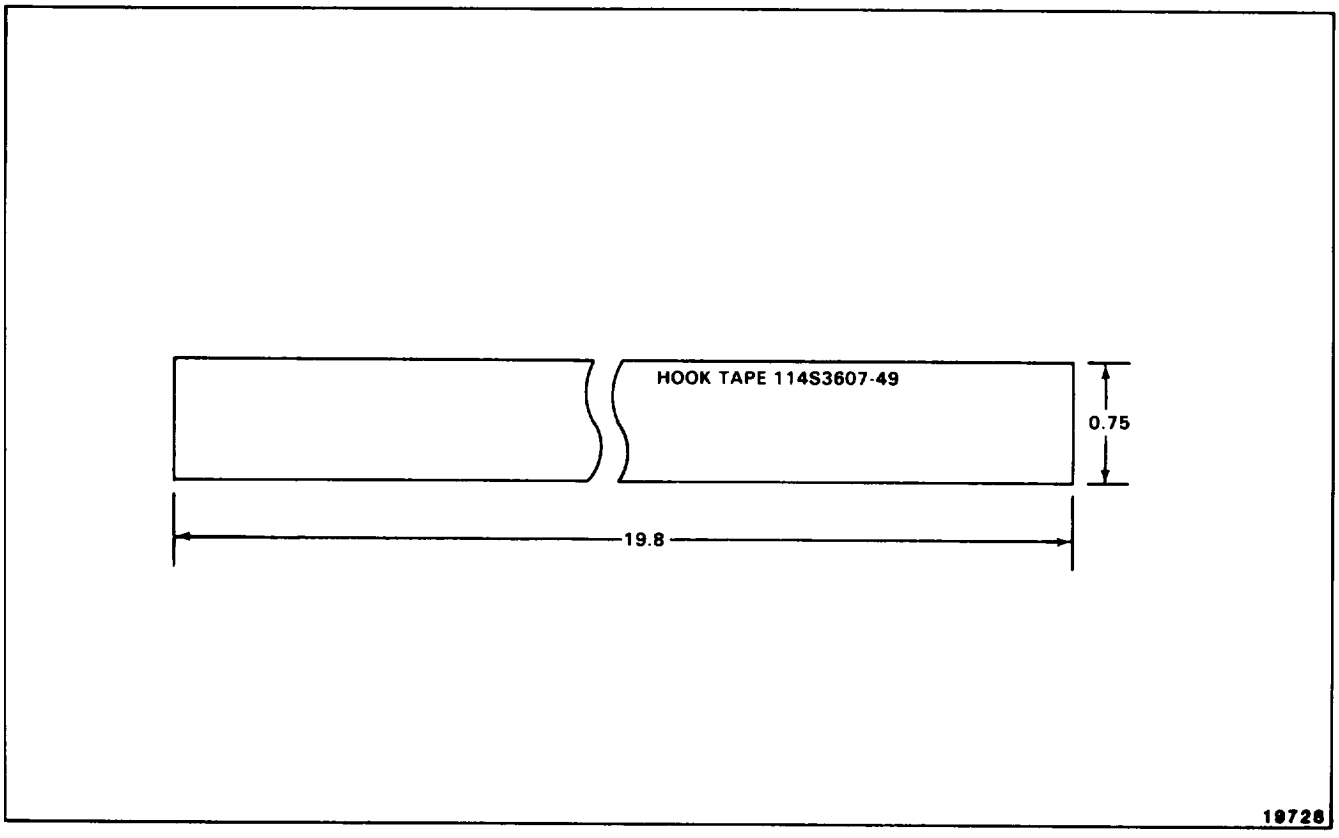


END OF TASK

E-259 AFT TRANSMISSION DRIP PAN ASSEMBLY PILE TAPE 114S3607-49

NOTES:

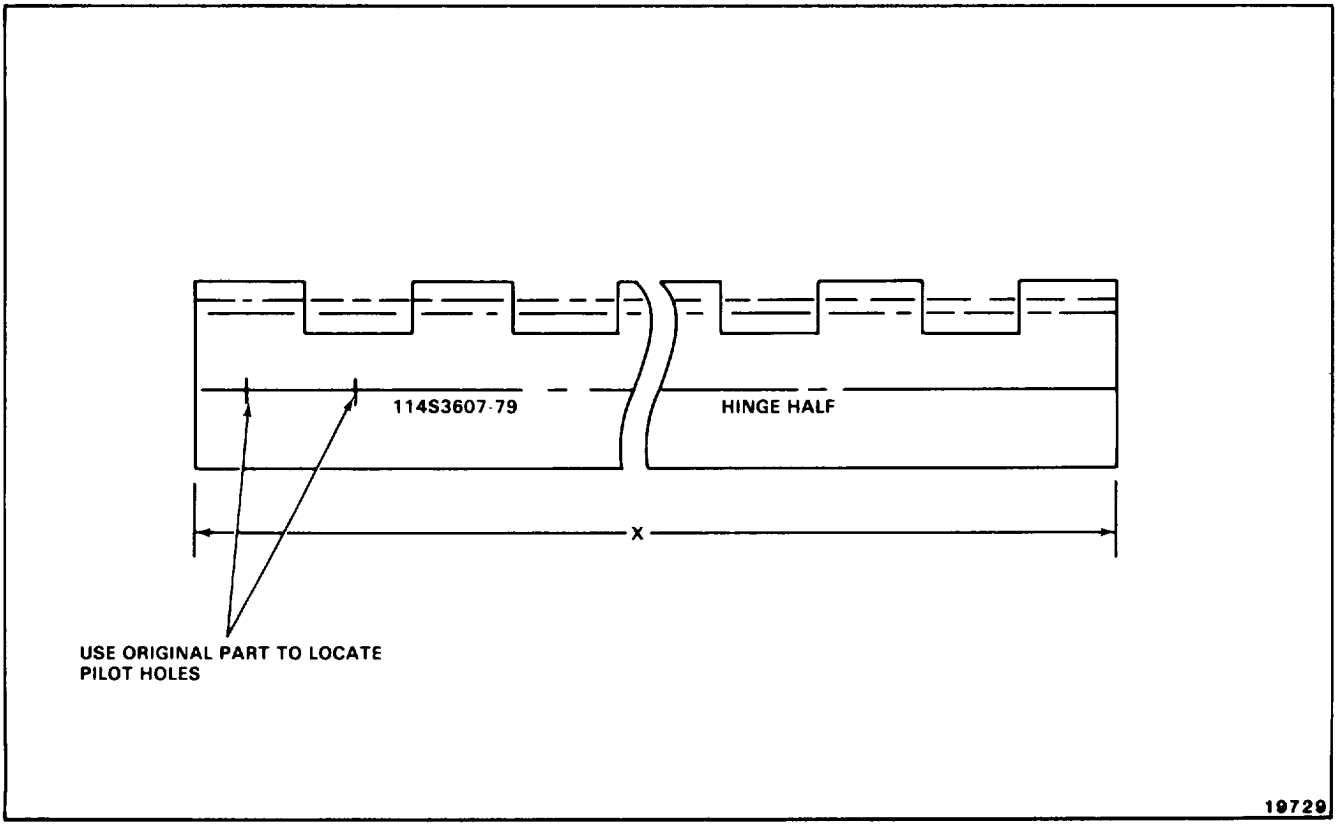
1. FABRICATE FROM VELCRO 80 HOOK TAPE, COLOR NO. 320.
2. STOCK SIZE 0.75 X 19.8.
3. ALL DIMENSIONS IN INCHES.



END OF TASK

NOTES:

1. FABRICATE FROM MS20001Y6-5417.
2. USE ORIGINAL PART TO DETERMINE PILOT HOLE LOCATIONS AND X DIMENSION.
3. FINISH AS REQUIRED.



END OF TASK

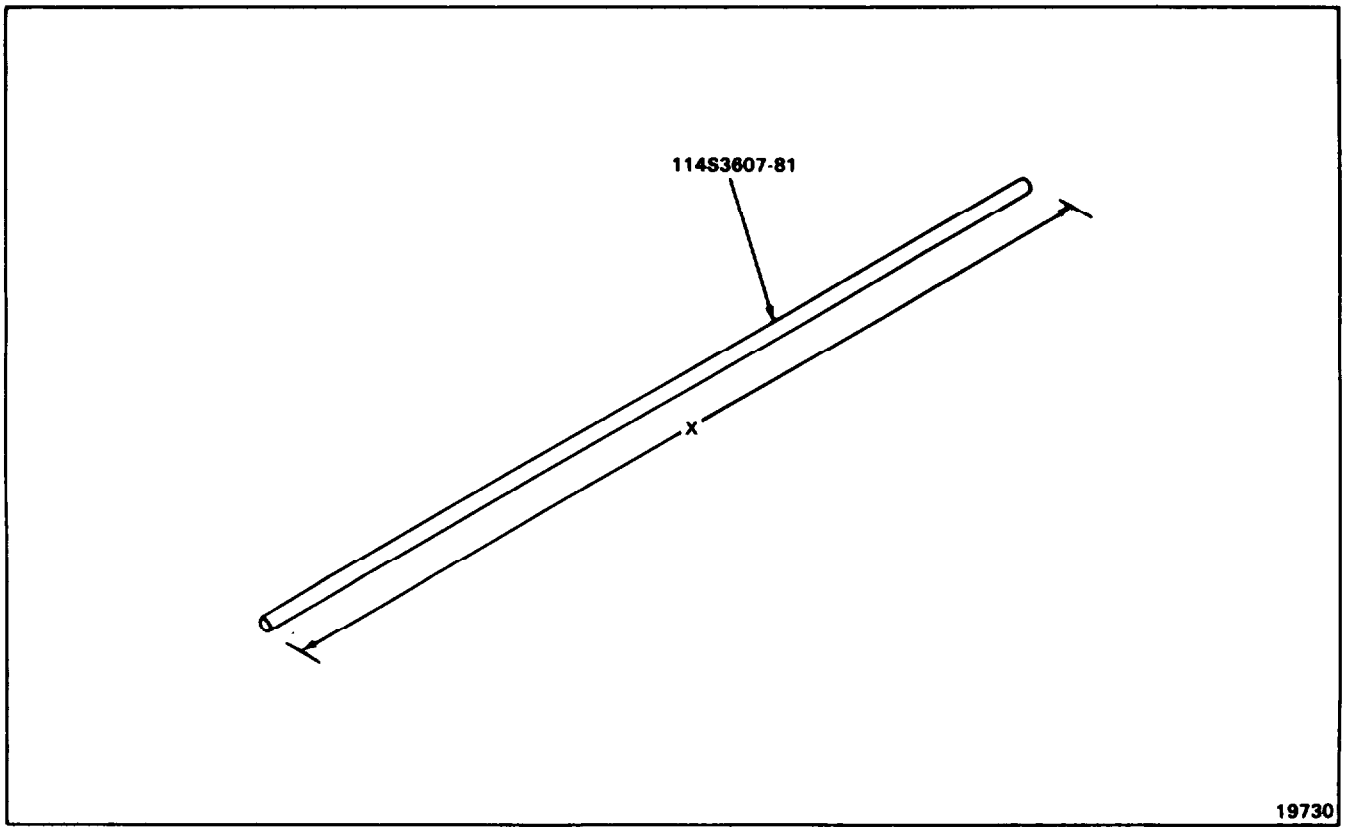
E-261 AFT TRANSMISSION DRIP PAN ASSEMBLY HINGE PIN 114S3607-81

NOTES:

1. FABRICATE FROM MS20253P2-5417.

2. USE ORIGINAL HINGE PIN TO DETERMINE X DIMENSION.

3. FINISH AS REQUIRED.



END OF TASK

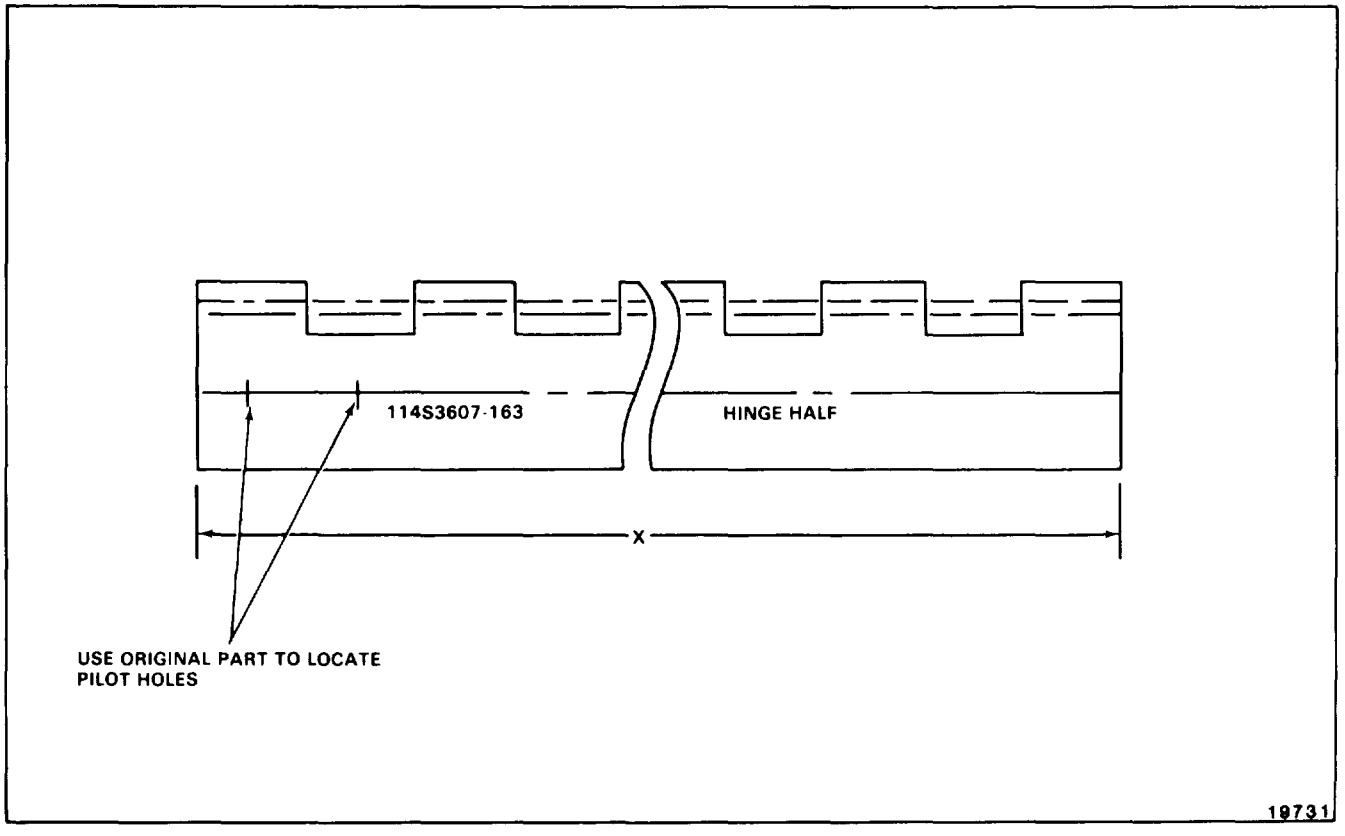
E-262 AFT TRANSMISSION DRIP PAN ASSEMBLY HINGE HALF 114S3607-163 E-262

NOTES:

1. FABRICATE FROM MS20001PX6-5350.

2. USE ORIGINAL HINGE HALF TO DETERMINE PILOT HOLE LOCATIONS AND X DIMENSION.

3. FINISH AS REQUIRED.

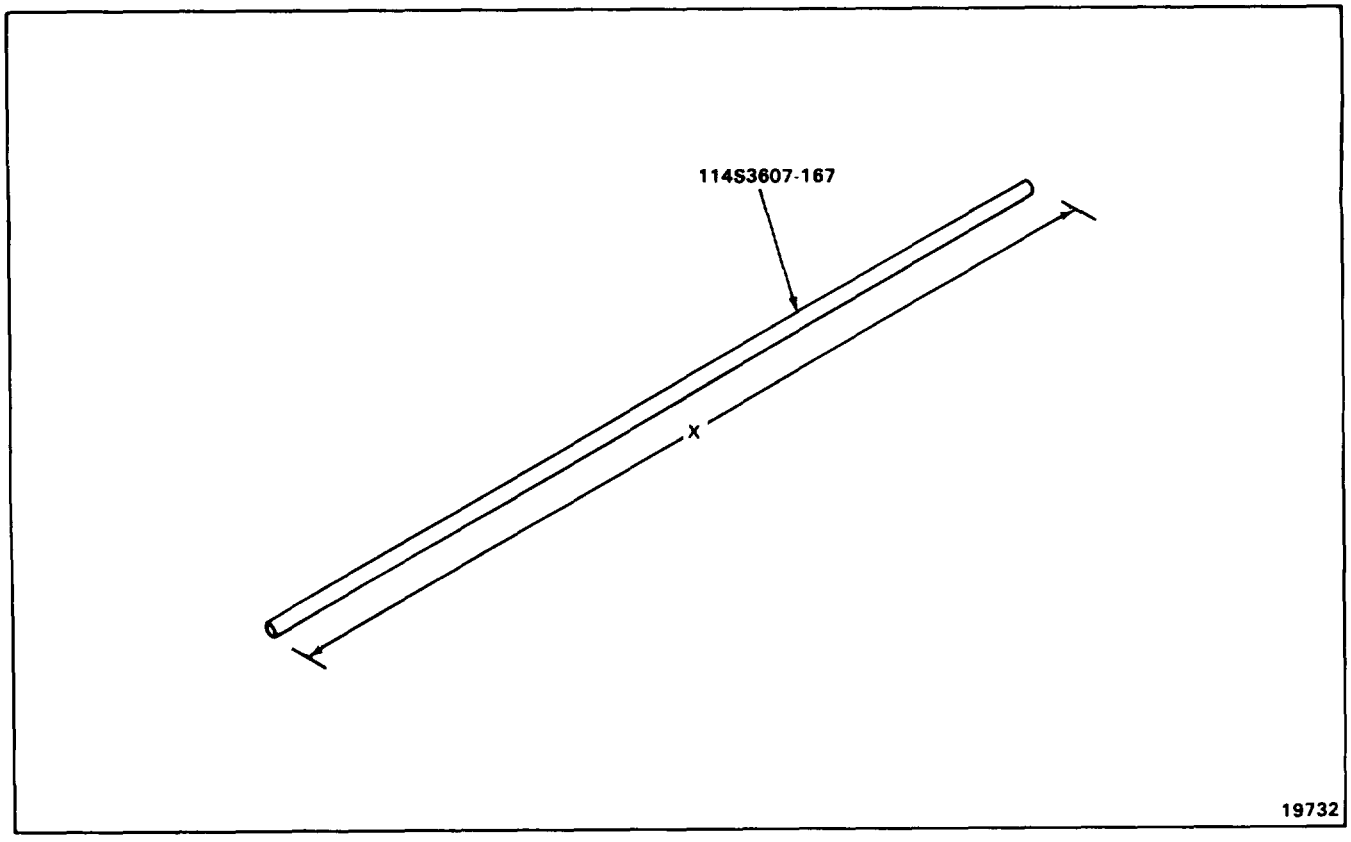


END OF TASK

E-263 AFT TRANSMISSION DRIP PAN ASSEMBLY HINGE PIN 114S3607-167

NOTES:

1. FABRICATE FROM MS20253P2-5365.
2. USE ORIGINAL HINGE PIN TO DETERMINE X DIMENSION.
3. FINISH AS REQUIRED.



END OF TASK

E-264 AFT TRANSMISSION DRIP PAN ASSEMBLY RETAINER 114S3607-191 AND -195

NOTES:

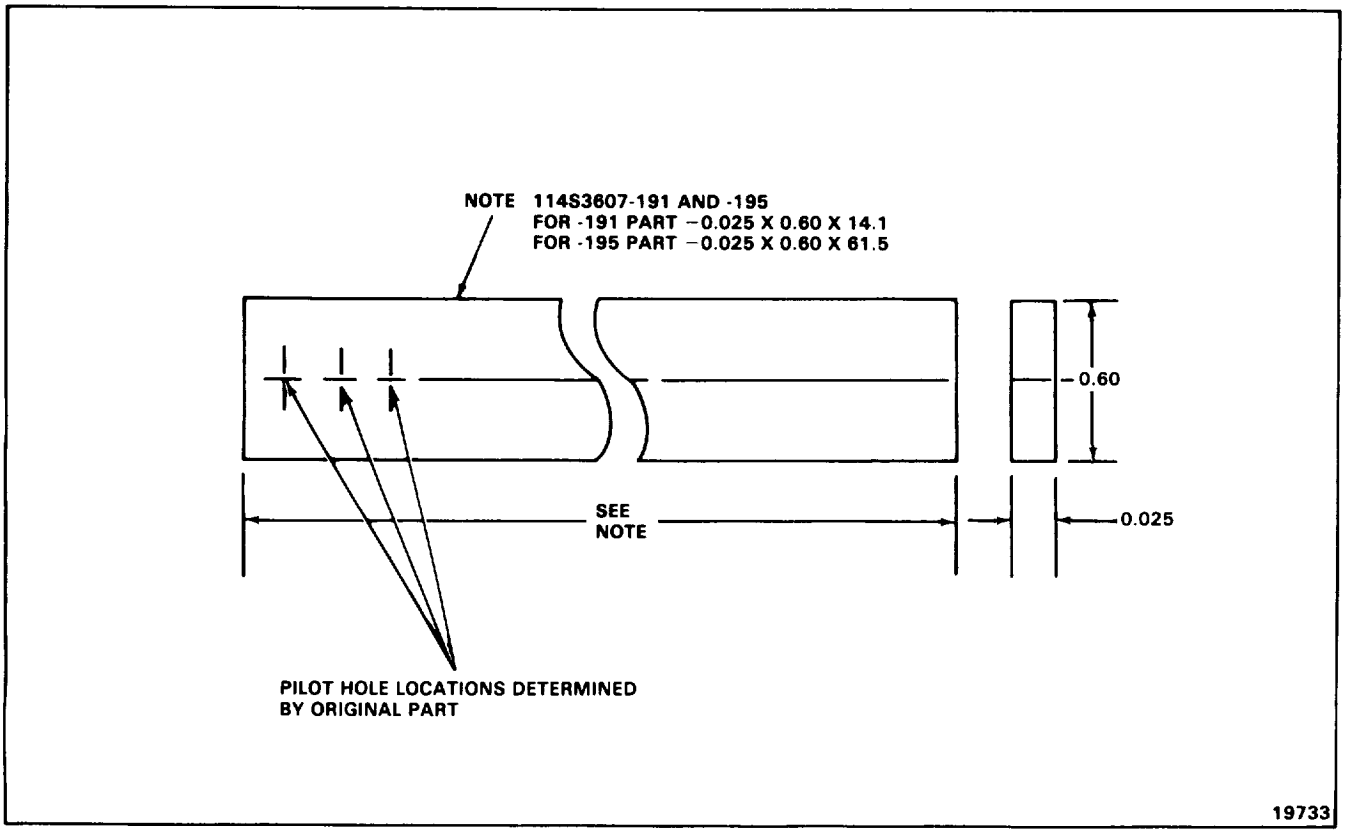
1. FABRICATE FROM ALUMINUM ALLOY CLAD SHT 2024-T4 PER QQ-A-362.

2. STOCK SIZE -191:0.025 X 0.60 X 14.1.
   STOCK SIZE -195:0.025 X 0.60 X 61.5.

3. ALL DIMENSIONS IN INCHES.

4. PILOT HOLE LOCATIONS TO BE DETERMINED FROM ORIGINAL PART.

5. FINISH AS REQUIRED.

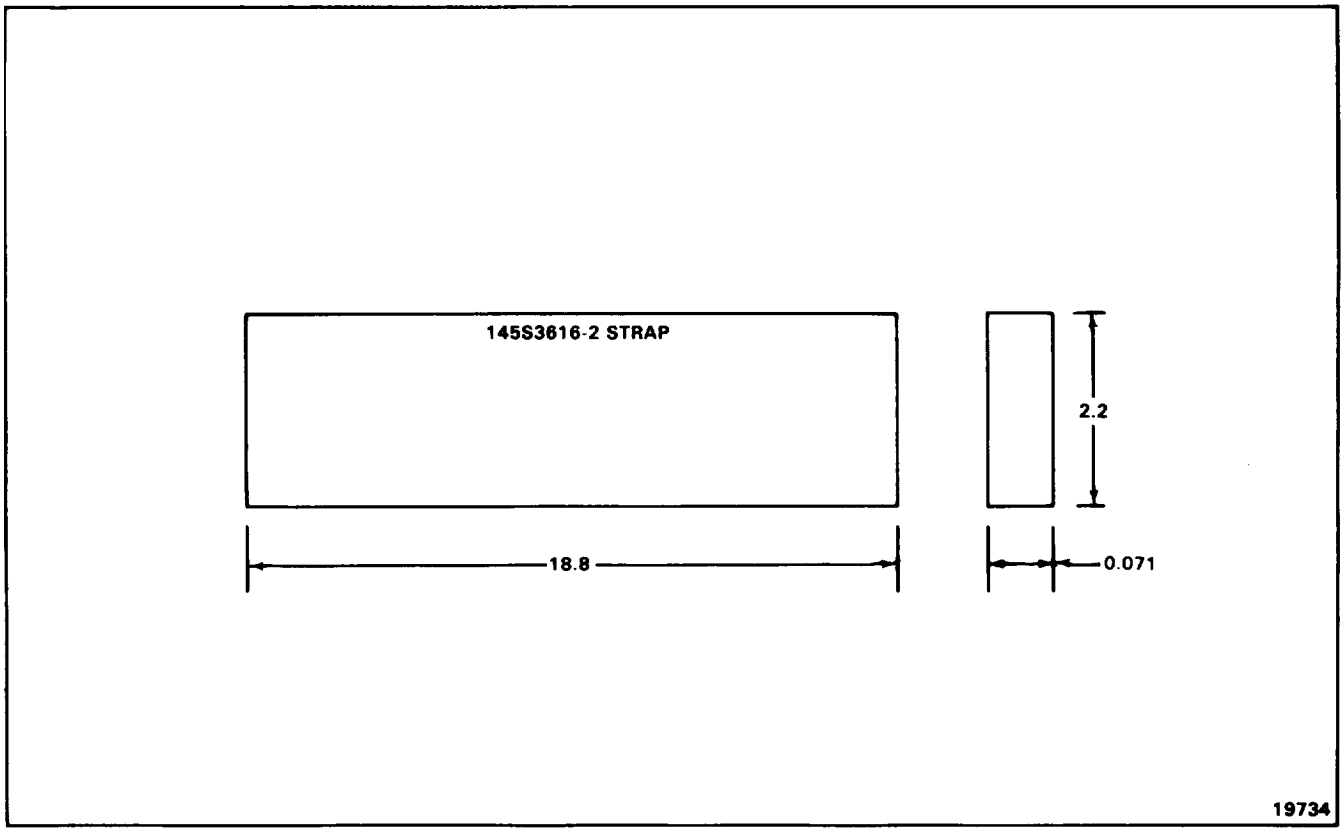


END OF TASK

E-265 AFT TRANSMISSION DRIP PAN STRAP 145S3616-2 E-265

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY BARE SHEET 7075-T6 PER QQ-A-250/12.
2. STOCK SIZE 0.071 X 2.2 X 18.8.
3. **ALL DIMENSIONS IN INCHES.**
4. FINISH AS REQUIRED.



END OF TASK

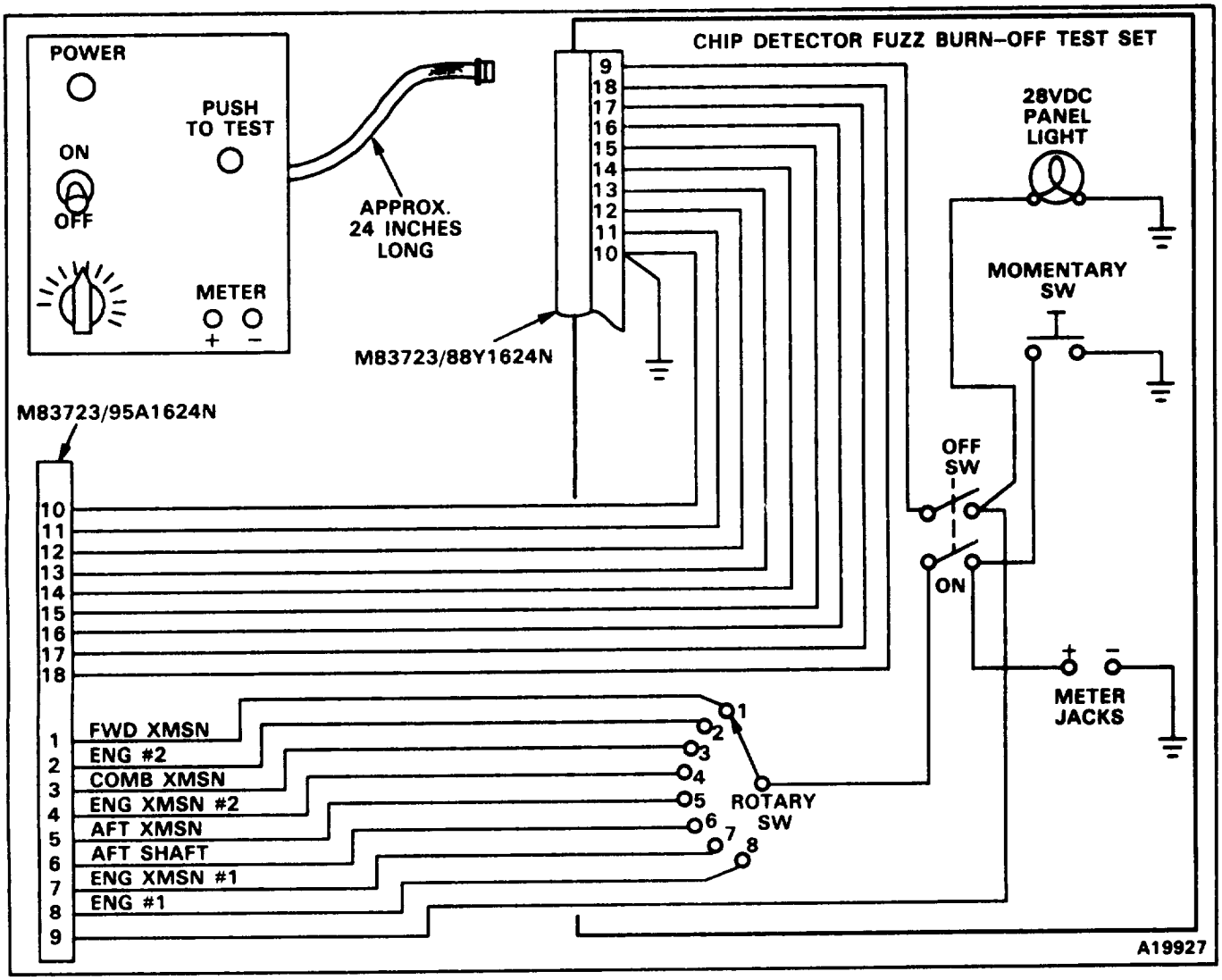
E-266 CHIP DETECTOR FUZZ BURN-OFF TEST SET TE145-02-5400-1

E-266

NOTE:

FABRICATE FROM:

CABINET (SIZE OPTIONAL)	PORTACAB 91F615	TYPE WA-1540	QTY 1
ROTARY SWITCH	PA100 NON-SHORT	22F801	QTY 1
KNOB	P-120	22F646	QTY 1
CONNECTOR	M83723/88Y1624N		QTY 1
CONNECTOR	M83723/95A1624N		QTY 1
LAMP HOLDER	25F1291		QTY 1
PANEL LIGHT	SHORT CYL. 28VDC	25F1434 (RED)	QTY 1
MOMENTARY SWITCH	PUSHBUTTON SPST	23F050	QTY 1
TOGGLE SWITCH	DPST OFF-ON	23F025 (6T2)	QTY 1
JACK	(MUST MATE WITH MULTIMETER TEST LEADS) 1 RED, I BLACK		QTY **2**
WIRE	#22 AWG (stranded)		**QTY A/R**

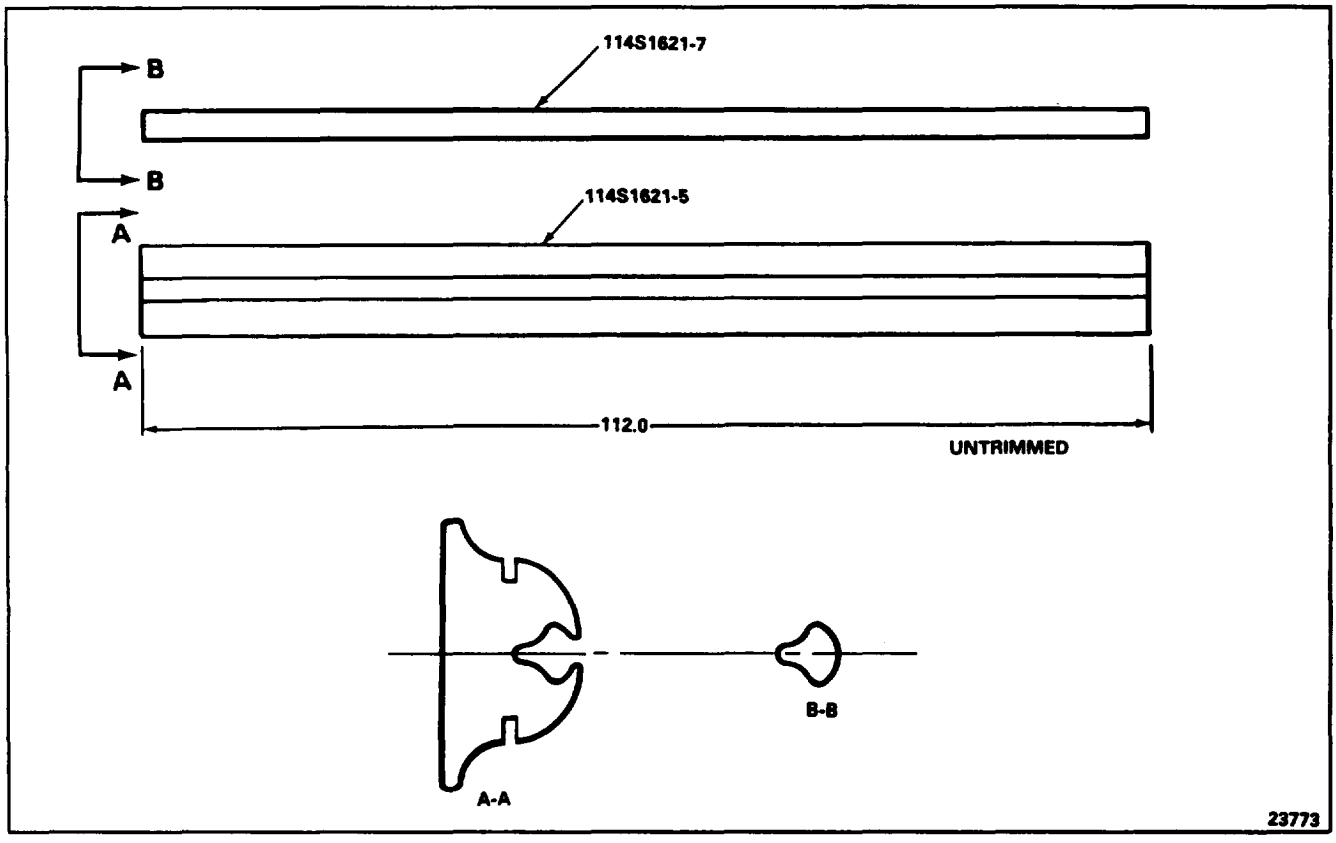


END OF TASK

E-267 UPPER CABIN DOOR ESCAPE HATCH RUBBER SEAL 114S1621-5 AND SEAL FILLER 114S1621-7

NOTES:

1. FABRICATE SEAL FROM VS80570-2 BLACK SEAL,
   NSN 9390-00-937-2611 OR
   VS80570-1 GREY SEAL,
   NSN 9390-00-849-6239.
2. FABRICATE SEAL FILLER FROM VS80569-3 BLACK FILLER,
   NSN NOT AVAILABLE OR
   VS80569-2 GREY FILLER,
   NSN 5330-01-218-3259 OR 33197R FILLER,
   NSN 9390-00-379-2615.
3. ALL DIMENSIONS IN INCHES.
4. TRIM TO FIT AT INSTALLATION.



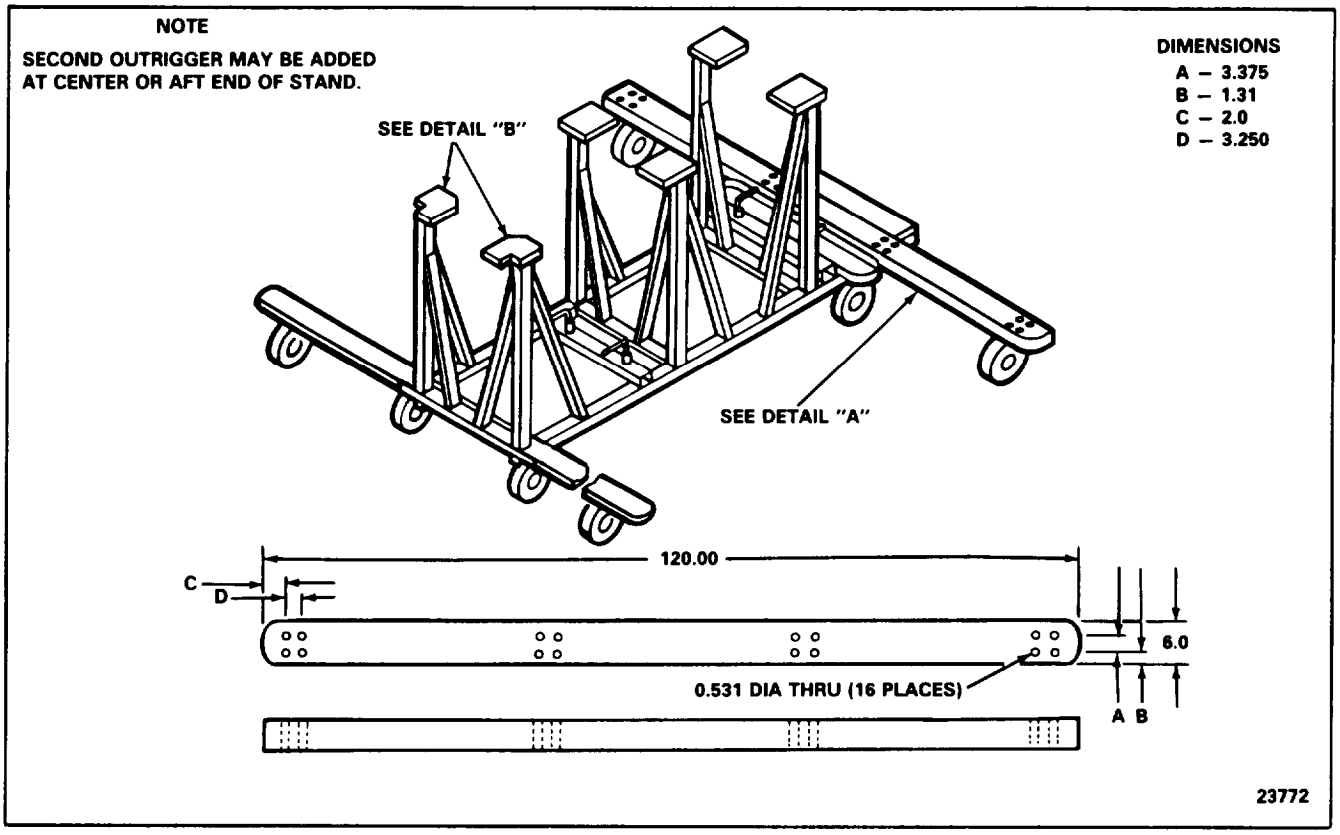
END OF TASK

E-268 OUTRIGGER ASSEMBLY 1730CH47-002 FOR VERTICAL PYLON HANDLING SKID 114E5856-22 E-268

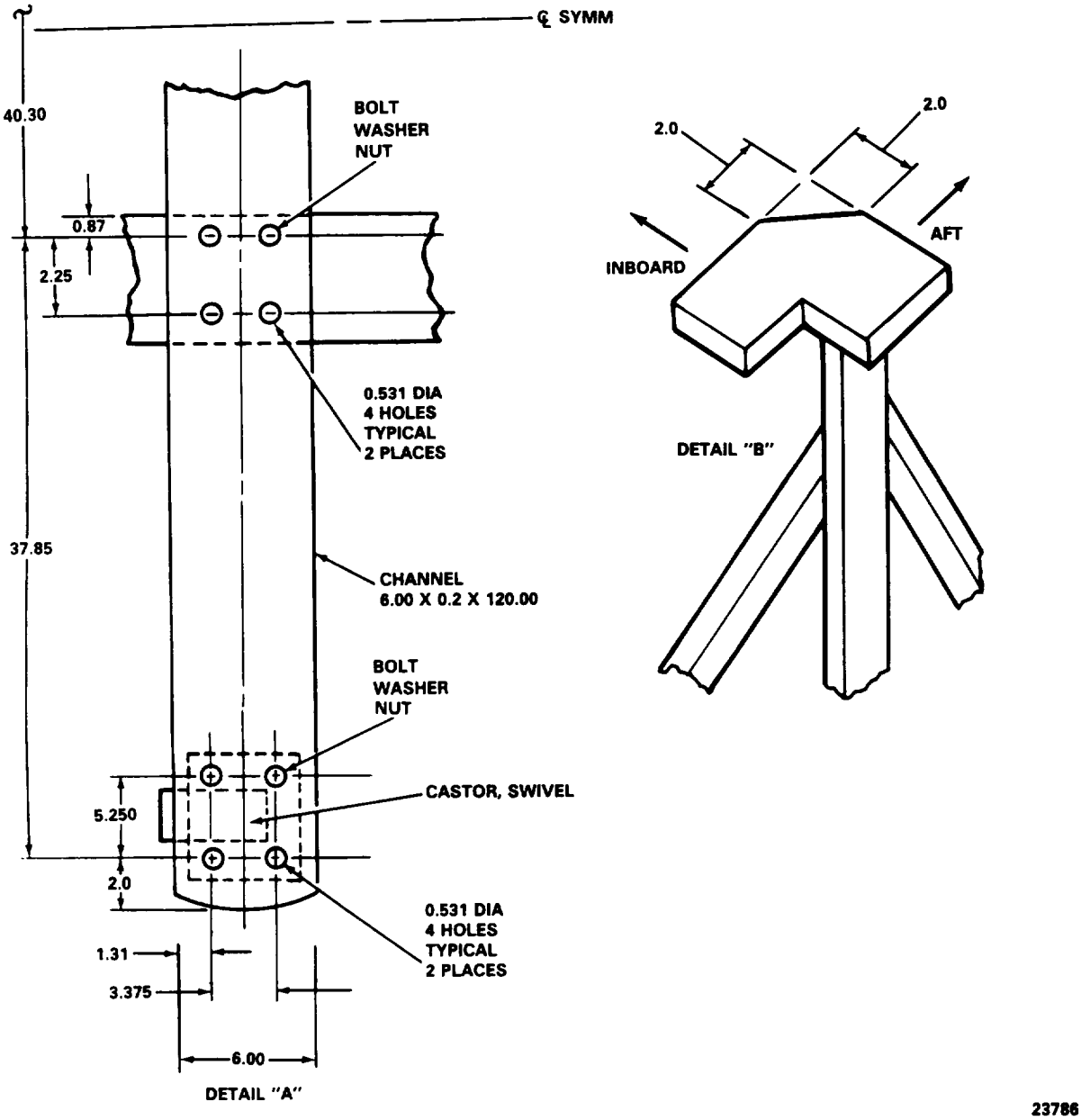
NOTES:

FABRICATE FROM:

1. STEEL ASTM A36, NSN 9520-00-596-1877
2. CASTER, SWIVEL, S8996R2 NSN 5340-00-489-3491
3. BOLT, HEX HEAD, AN8-11A NSN 5306-00-208-3646
4. NUT, SELF LOCKING, MS21045-8 NSN 5310-00-062-4954
5. WASHER, AN960-816 NSN 5310-00-332-0813
6. ALL DIMENSIONS IN INCHES,



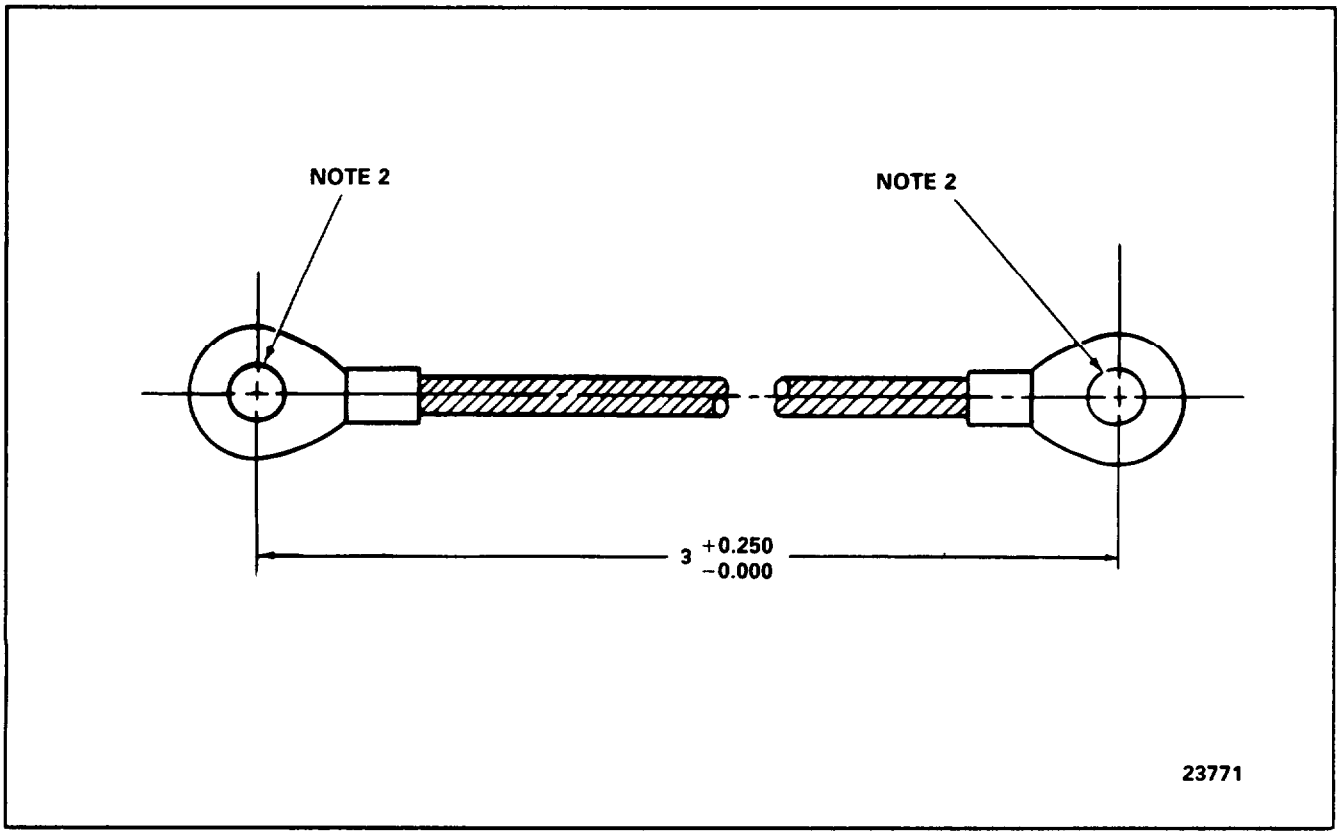
GO TO NEXT PAGE


℄ SYMM
40.30
BOLT
WASHER
NUT
0.87
2.25
0.531 DIA
4 HOLES
TYPICAL
2 PLACES
37.85
CHANNEL
6.00 X 0.2 X 120.00
BOLT
WASHER
NUT
CASTOR, SWIVEL
5.250
2.0
0.531 DIA
4 HOLES
TYPICAL
2 PLACES
1.31
3.375
6.00
DETAIL "A"
2.0
2.0
AFT
INBOARD
DETAIL "B"
23786

END OF TASK

NOTES:

1. FABRICATE ELECTRICAL LEAD (NO NSN) FROM ALUMINUM STRANDED ALUMINUM WIRE AWG1O AND TERMINALS.
2. STOCK IS:
   WIRE, AWG10, NSN 6145-00-926-3344
   TERMINAL MS25036-111(NSN 5940-00-204-8990), HOLE DIAMETER IS 0.142 TO 0.152 AND ACCOMMODATES NUMBER 4 OR 6 STUD.
   TERMINAL MS25036-112(NSN 5940-00-143-4794), HOLE DIAMETER IS 0.193 TO 0.203 AND ACCOMMODATES NUMBER 8 OR 10 STUD.
3. ATTACH TERMINALS (MS25036-111 AND -112) TO WIRE WITH CRIMPING TOOL (MS25441).
4. ALL DIMENSIONS IN INCHES,

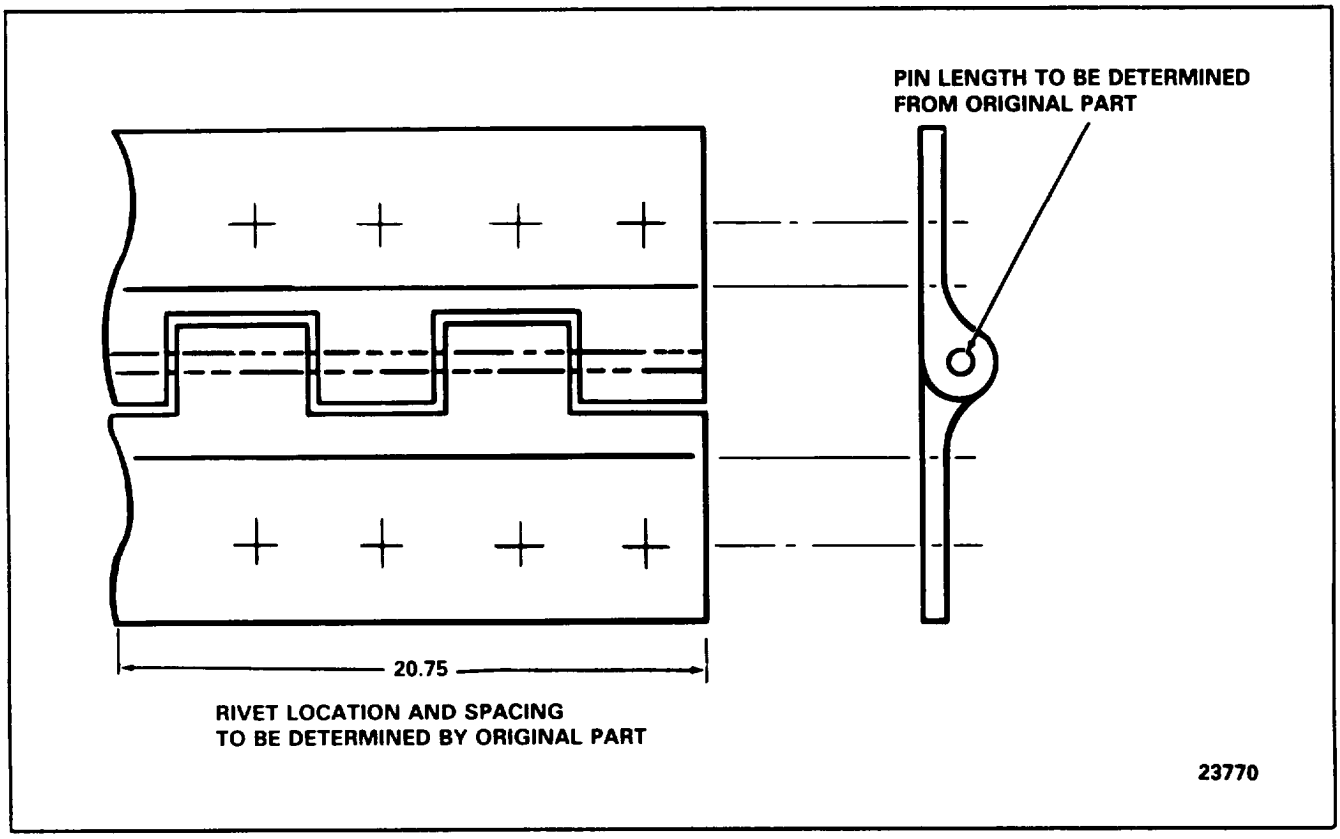


END OF TASK

E-270 ENGINE INLET LOWER SCREEN HINGE ASSEMBLY E-270
MS20001-P8-2075

NOTES:

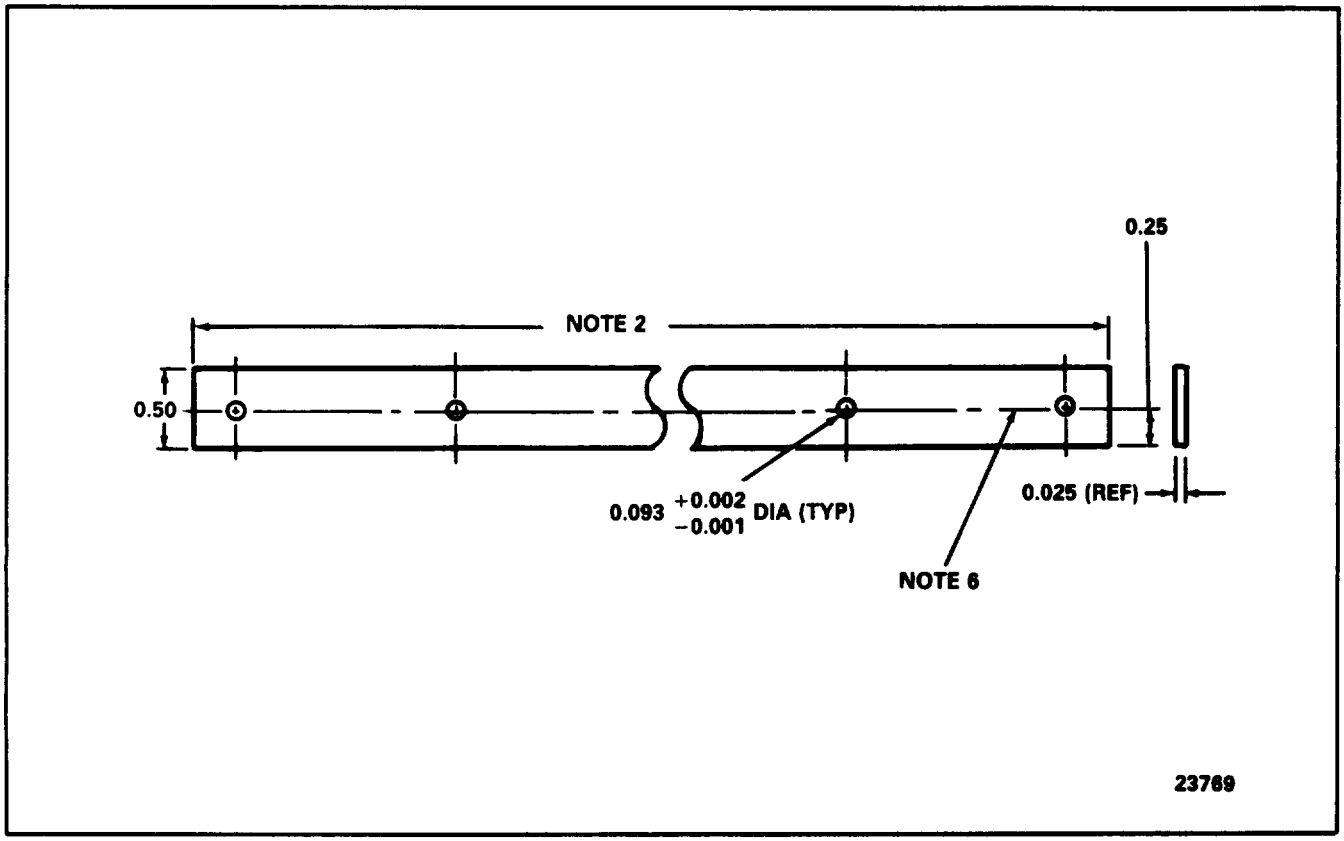
1. FABRICATE HINGE ASSEMBLY FROM MS20001-P8.
2. FABRICATE PIN FROM MS20253-2.
3. FINISH AS REQUIRED.
4. ALL DIMENSIONS IN INCHES.



END OF TASK

NOTES:

1. FABRICATE RETAINING STRIPS FROM: ALUMINUM ALLOY 2024-T4 CLAD SHEET METAL NSN 9535-00-167-2278.
2. LENGTH FOR VS25201-030-1935 IS 19.35 INCHES, LENGTH FOR VS25201-030-2560 IS 25.60 INCHES,
3. ALL DIMENSIONS ARE INCHES.
4. TOLERANCES ±0.03 UNLESS OTHERWISE NOTED,
5. MATCH DRILL SEAL RETAINING STRIPS TO EXISTING HOLES, BREAK ALL SHARP EDGES (0.005 MAX).
6. ALODIZE PER MIL-C-5541 .
7. APPLY ONE COAT OF ZINC CHROMATE PRIMER, FSM 8010-00-515-2208 PER MIL-P-8585, TB746-93-Z.
8. MARK PART BY INK STAMPING,

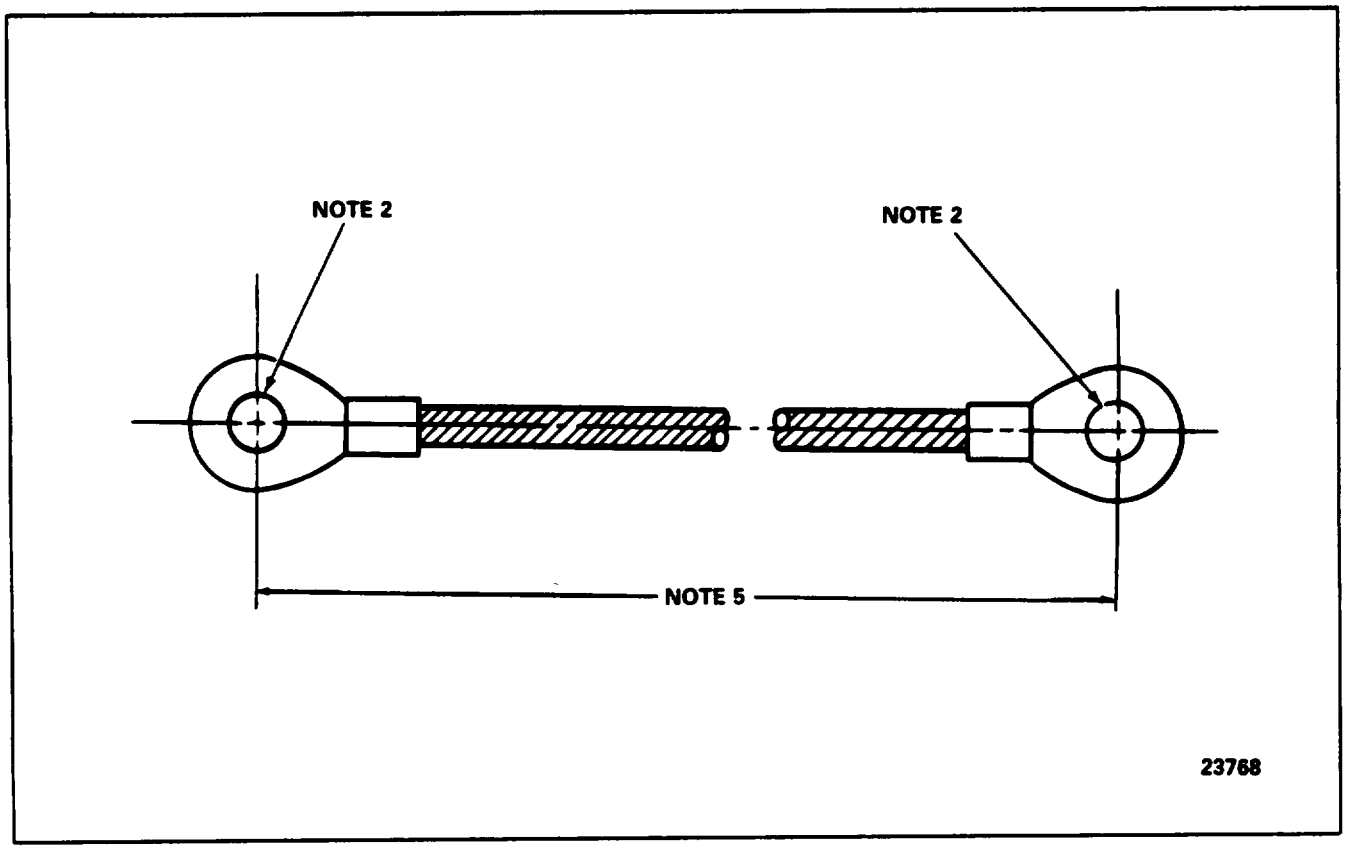


END OF TASK

NOTES:

1. FABRICATE ELECTRICAL LEADS, NSN 6150-00-655-2512 AND NSN 6150-00-807-9802, FROM ALUMINUM STRANDED WIRE SIZE AWG10 AND TERMINALS.
2. WIRE, AWG10, NSN 6145-00-926-3344. TERMINAL, MS25036-112(NSN 5940-00-143-4794), HOLE DIAMETER IS 0.193 TO 0.203 AND ACCOMMODATES NUMBER 8 OR 10 STUD.
3. ATTACH TERMINALS (MS25036-112) TO WIRE WITH CRIMPING TOOL (MS25441).
4. ALL DIMENSIONS IN INCHES.
5. **LENGTH FOR MS25083-1BB7 IS 7 $^{+0.250}_{-0.000}$ INCHES.**

   LENGTH FOR MS25083-1BB10 IS 10 $^{+0.250}_{-0.000}$ INCHES.

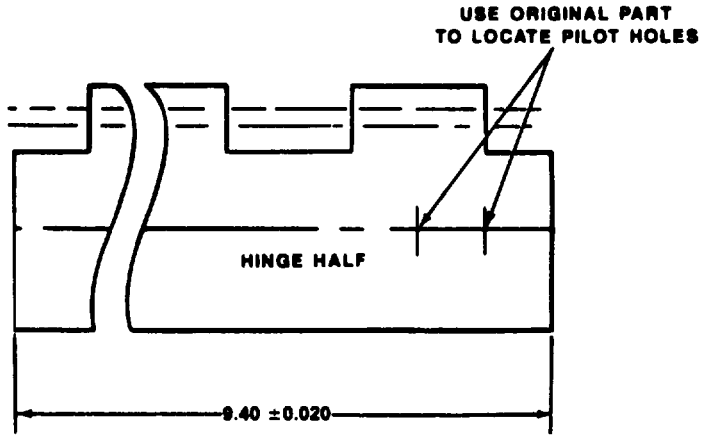


END OF TASK

E-273 FOLD OUT STEP ASSEMBLY HALF HINGE 114S5612-12 AND -19 E-273

NOTES:

1. FABRICATE HALF HINGE FROM MS20001H8-940.
2. ALL DIMENSIONS IN INCHES.
3. USE ORIGINAL PART TO DETERMINE PILOT HOLE LOCATIONS AND SHAPE. HALF HINGE MATES WITH HALF HINGE.
4. FINISH AS REQUIRED. ALODINE PER MIL-C-5541. APPLY ONE COAT OF ZINC CHROMATE PRIMER, NSN 8010-00-515-2208, PER MIL-P-8585, TB746-93-2.

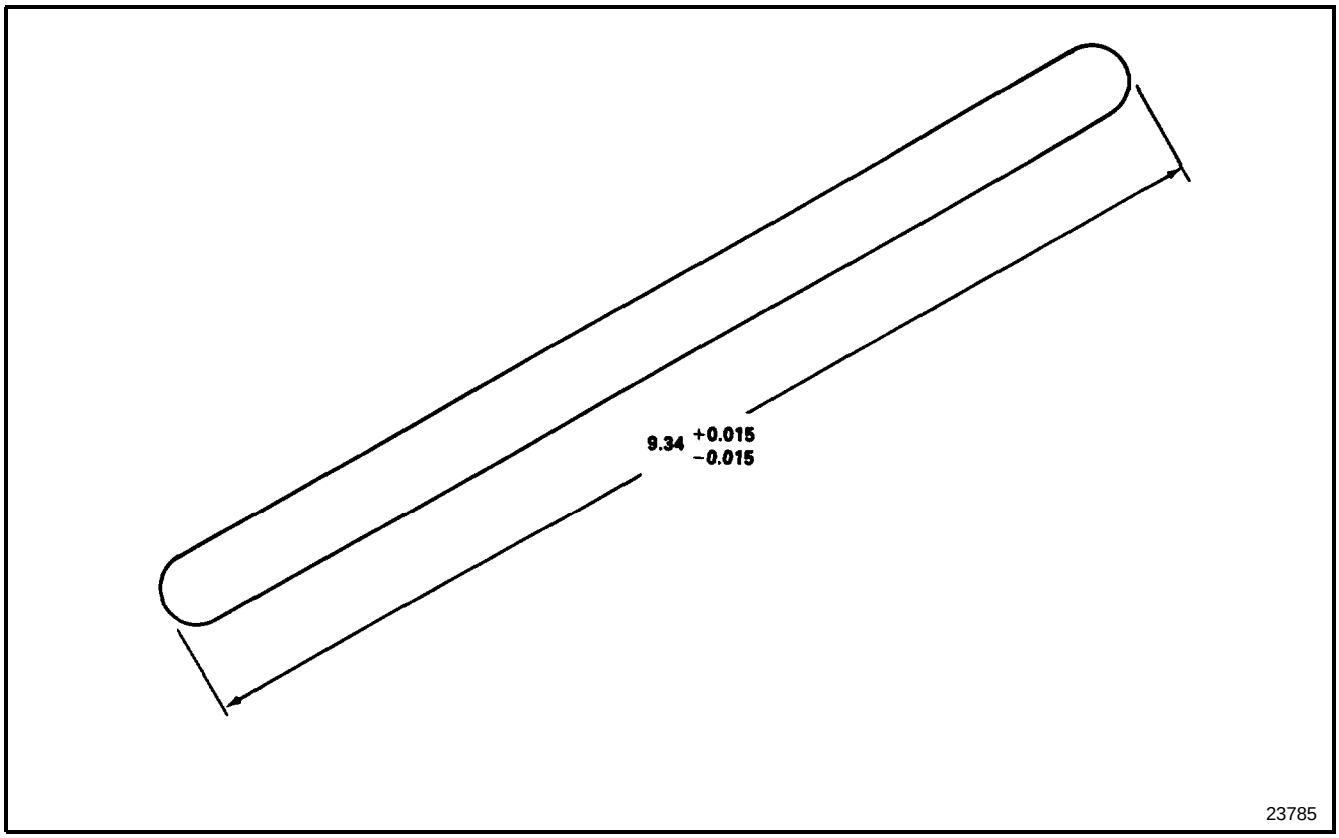


23767

END OF TASK

NOTES:

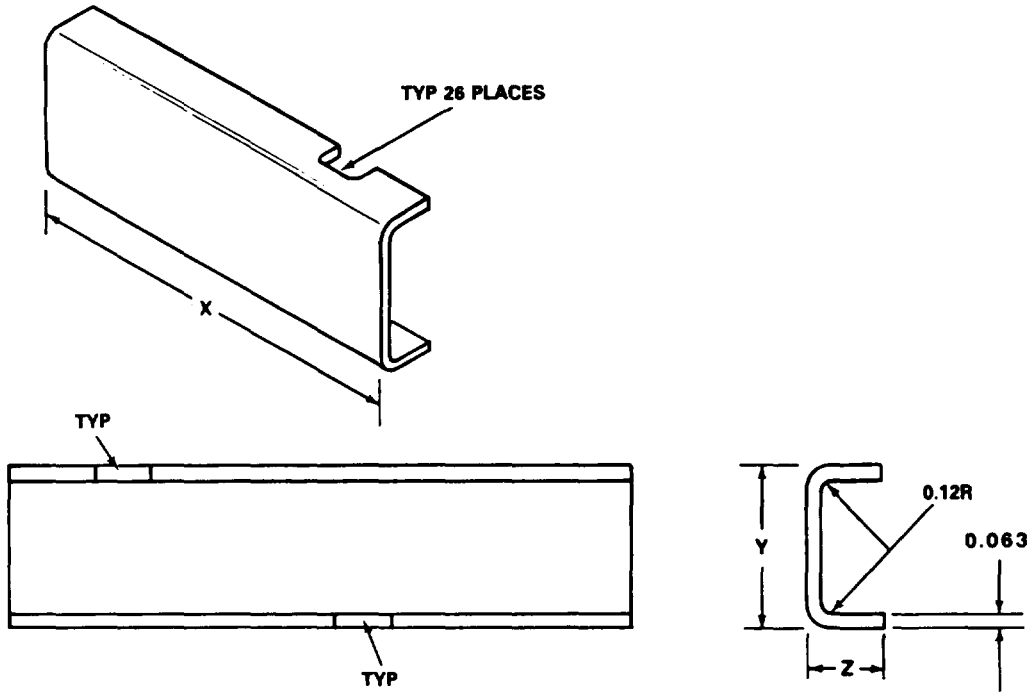
1. FABRICATE HINGE PIN FROM MS20253P4 NSN 5340-00-043-3724.
20 ALL DIMENSIONS IN INCHES.
3. CUT PINS TO LENGTH AND ROUND ENDS. REMOVE ALL BURRS AND SHARP EDGES.
4. FINISH AS REQUIRED.



END OF TASK

NOTES:

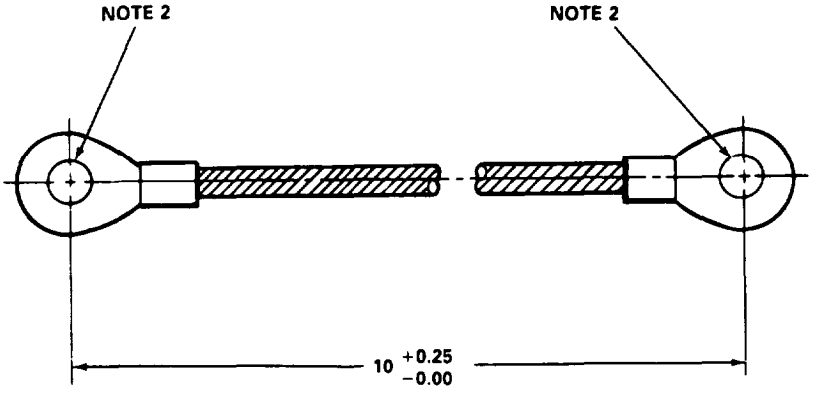
1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-TO PER QQ-A-250/5.
2. STOCK SIZE 0.063 X 2.0 X 105.0
3. DIMENSIONS ARE IN INCHES.
4. USE ORIGINAL CHANNEL TO DETERMINE Dimensions X, Y, Z AND SHAPE. SOLUTION HEAT TREAT TO T42 PER MIL-H-6088 AFTER FORMING.
5. FINISH AS REQUIRED.



END OF TASK

NOTES:

1. FABRICATE ELECTRICAL LEAD (NO NSN) FROM STRANDED ALUMINUM WIRE SIZE AWG10 AND TERMINALS.
2. WIRE, AWG10, NSN 6145-00-926-3344
   TERMINAL, MS25036-112 (NSN 5904-00-204-8990), HOLE DIAMETER IS 0.142 TO 0.152 AND ACCOMMODATES NUMBER 8 OR 10 STUD.
   TERMINAL, MS25036-152 (NSN 5940-00-143-4777), HOLE DIAMETER IS 0.250 TO 0.285 AND ACCOMMODATES 0.250 STUD.
3. ATTACH TERMINALS (MS25036-112 AND 157) TO WIRE WITH CRIMPING TOOL (MS25441).
4. ALL DIMENSIONS IN INCHES.

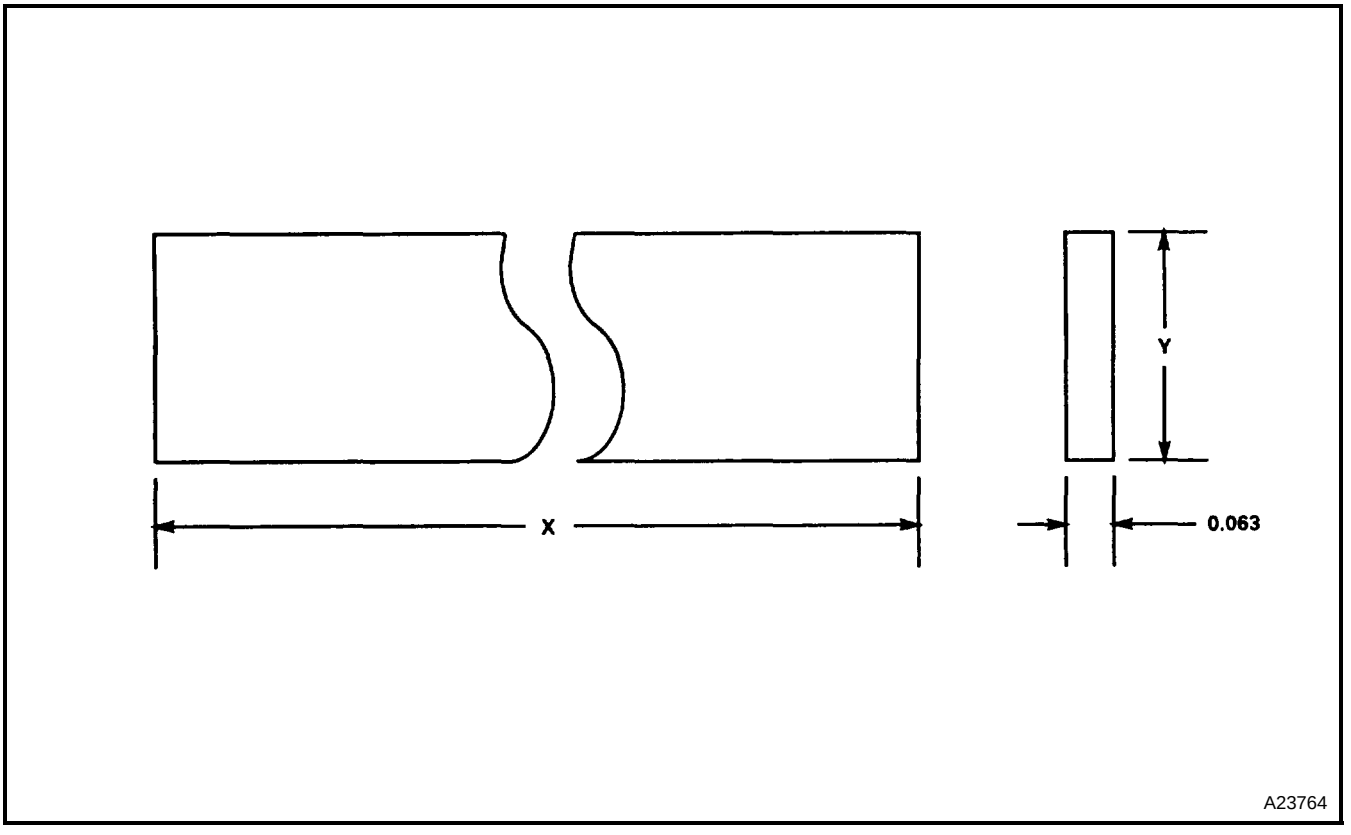


23765

END OF TASK

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/5.
2. ALL DIMENSIONS IN INCHES.
3. FINISH AS REQUIRED.
4. STOCK SIZE X = 2.9
   Y = 1.7
5. USE ORIGINAL PART TO DETERMINE DIMENSIONS X AND Y.

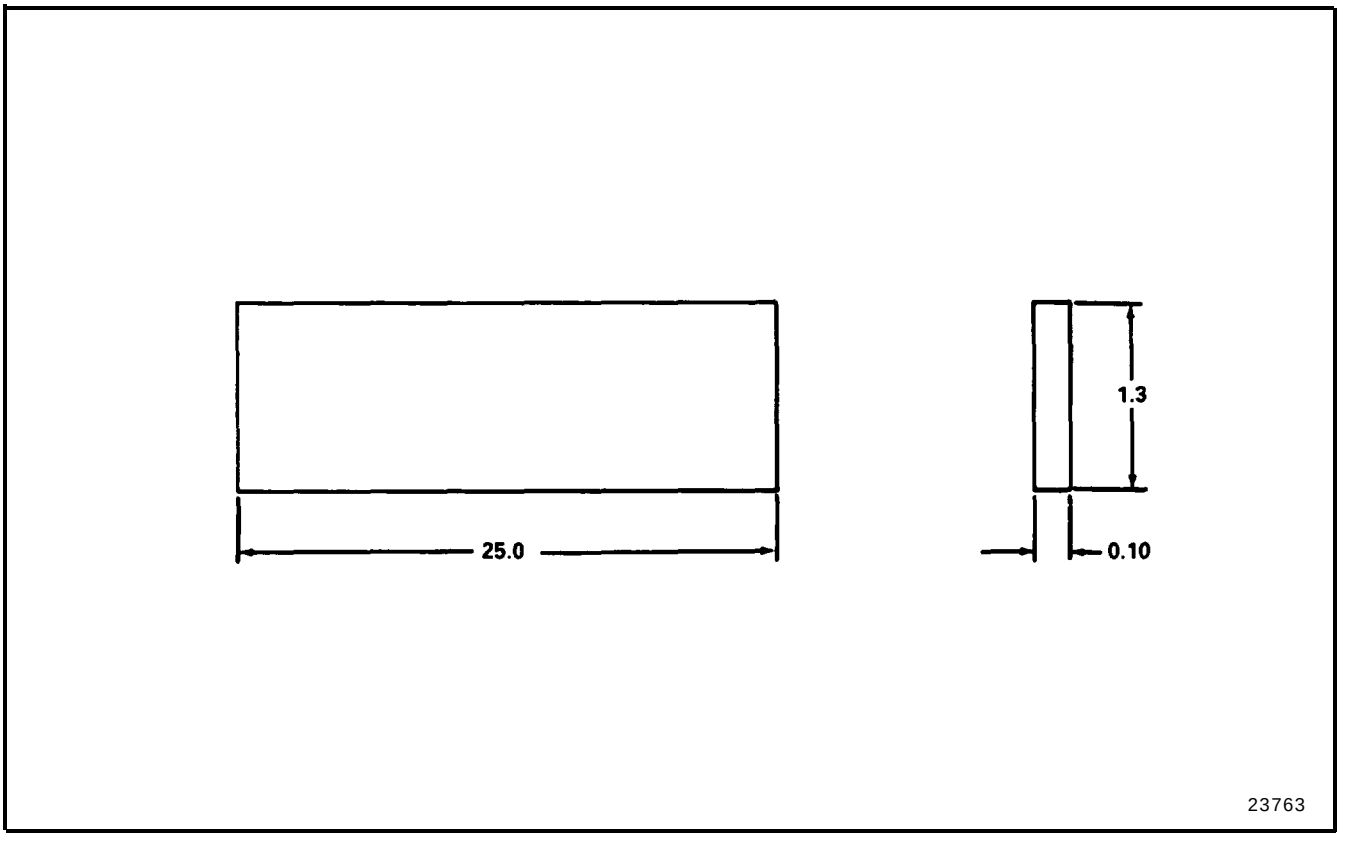


END OF TASK

E-278 ISOLATOR INSTALLATION AUXILIARY FUEL POD FILLER 114S5824-26

NOTES:

1. FABRICATE FROM LAMINATED PHENOLIC TYPE FBM PER MIL-P-15035.
2. ALL DIMENSIONS IN INCHES.
3. FINISH AS REQUIRED.

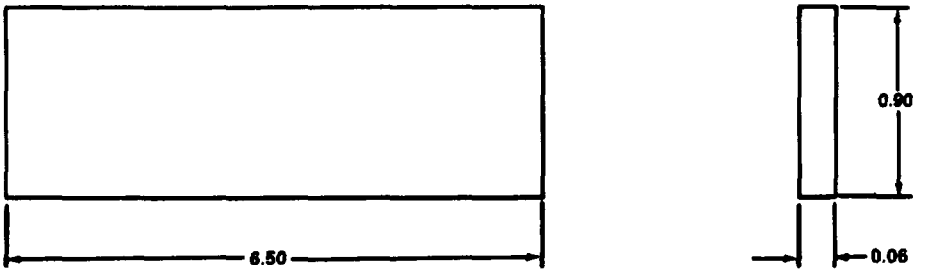


END OF TASK

E-279 FORWARD AUXILIARY POD TRANSITION FAIRING SEAL 145S2907-3 E-279

NOTES:

1. FABRICATE FROM SILICONE SPONGE RUBBER CLOSED CELL SHEET, (MEDIUM) AMS 3195.
2. ALL DIMENSIONS IN INCHES.



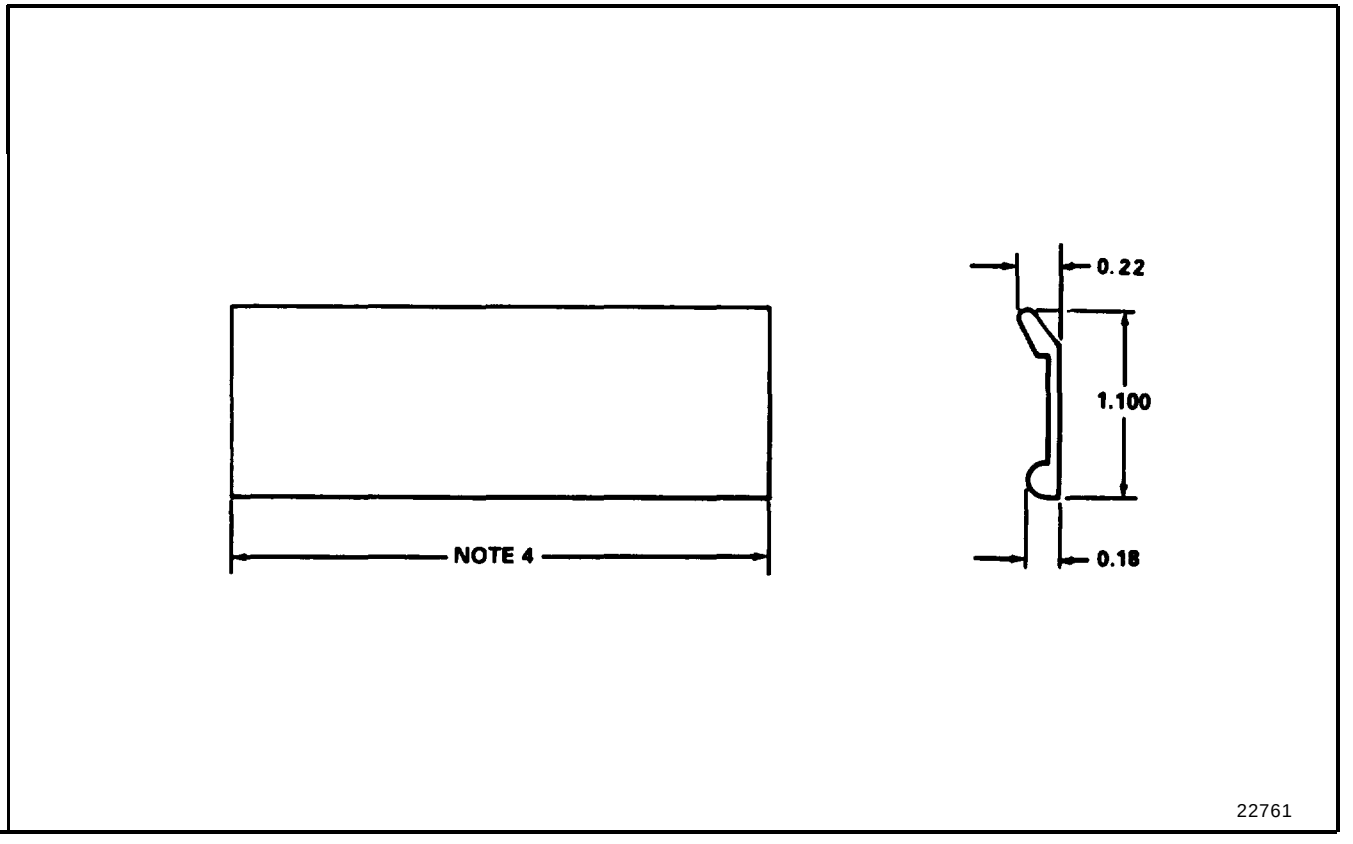
23762

END OF TASK

E-280 AFT TRANSMISSION DRIP TRAY INSTALLATION SEALS 114S3607-181 AND 187

NOTES:

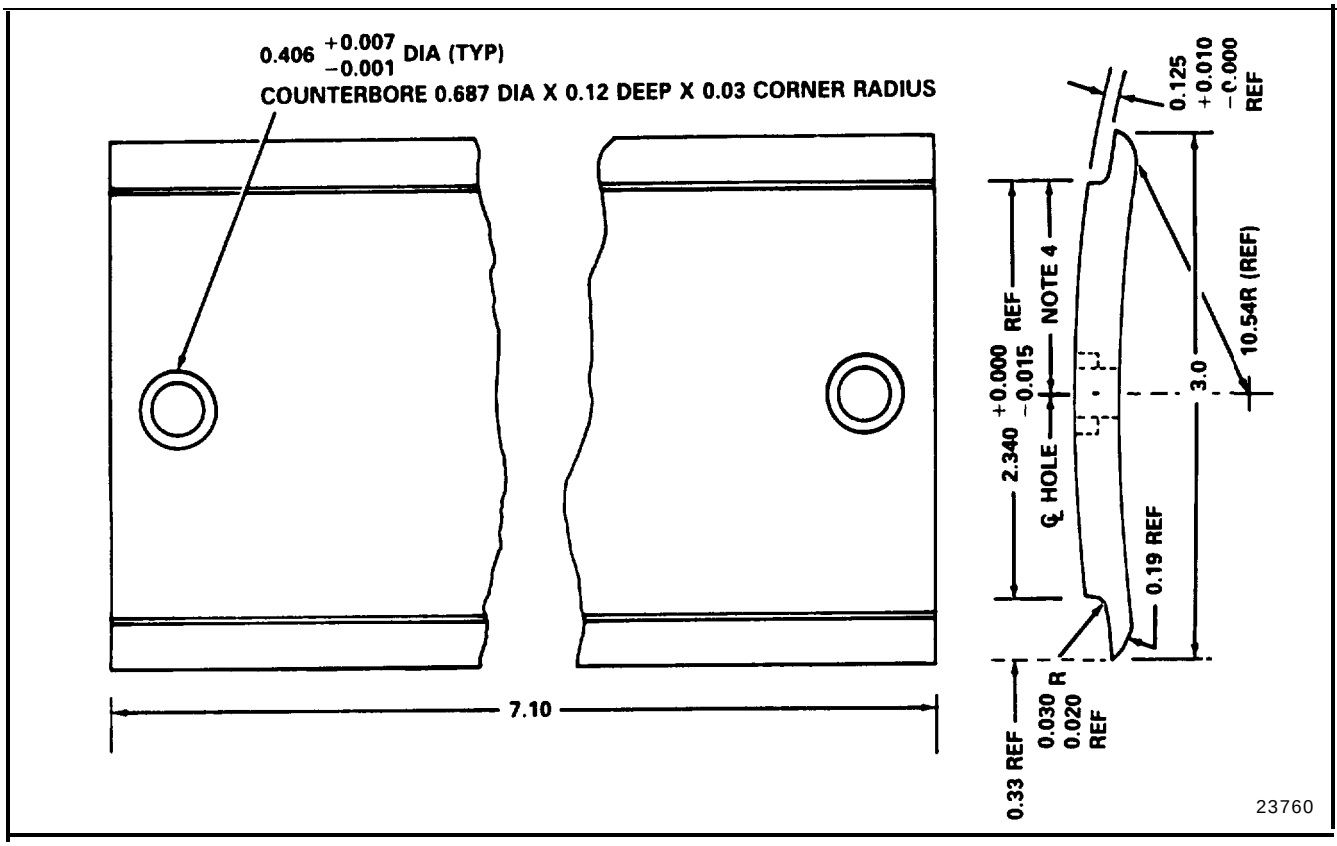
1. FABRICATE FROM AMS 3326 SILICONE RUBBER BAC 1530-48 NSN 9390-00-945-4826.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 80.000
4. LENGTH:
   114S3607-181 = 14.100
   114S3607-187 = 61.500



END OF TASK

NOTES:

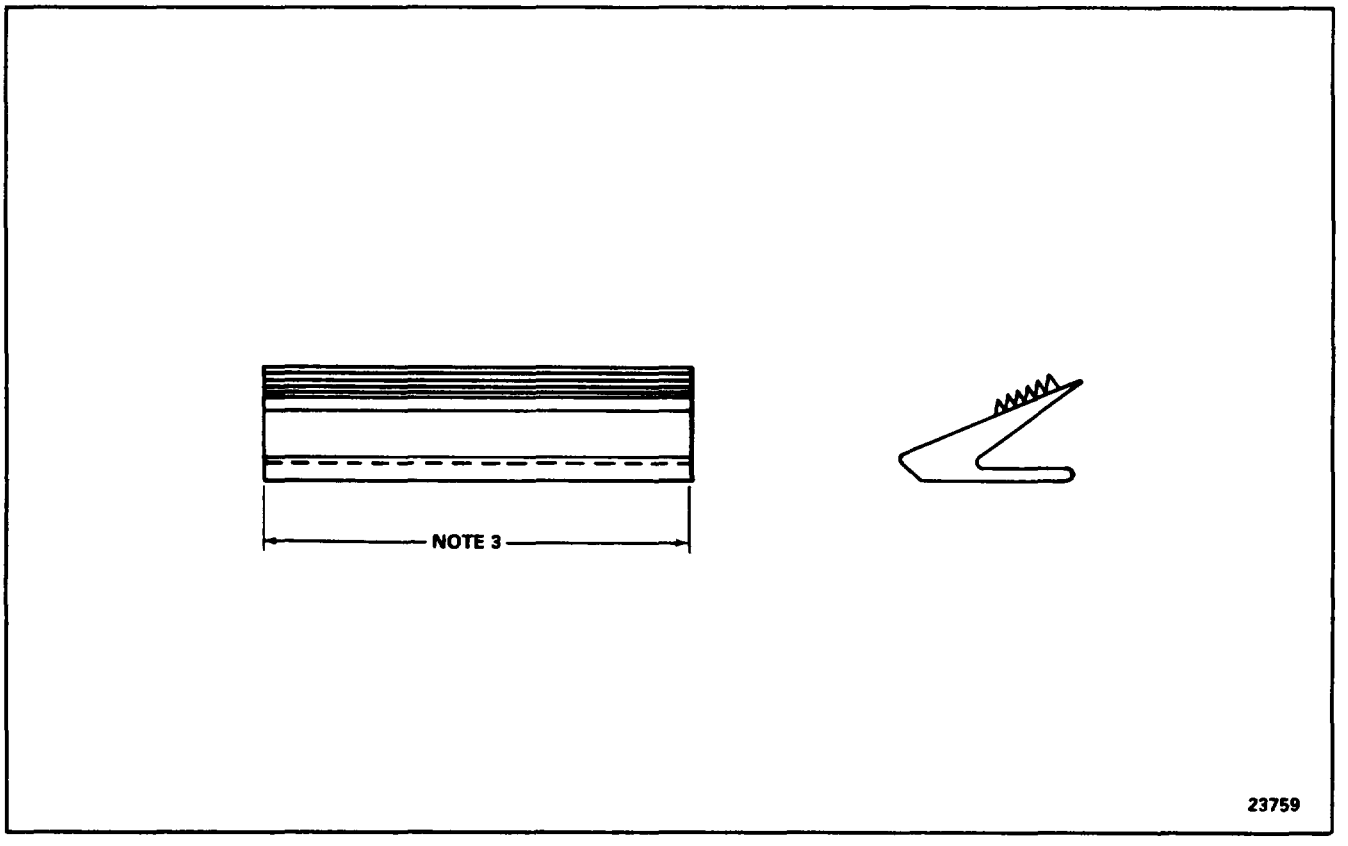
1. FABRICATE FROM VS80574 NYLATRON GS. THE POLYMER CORP. OF PA, READING, PA. 19603 (CAGE NO. 83616) OR NYLON PER MIL-P-46060 COLOR LIGHT TO DARK GREY.
2. ALL DIMENSIONS IN INCHES.
3. TOLERANCES: 0.02, 0.010 UNLESS OTHERWISE SPECIFIED.
4. LATERAL HOLE LOCATION USE OLD BEARING PAD OR TRANSFER DRILL FROM AIRFRAME TO PAD.
5. STOCK SIZE VS80574 X 7.10.
6. TRIM AS NECESSARY TO FIT.



END OF TASK

NOTES:

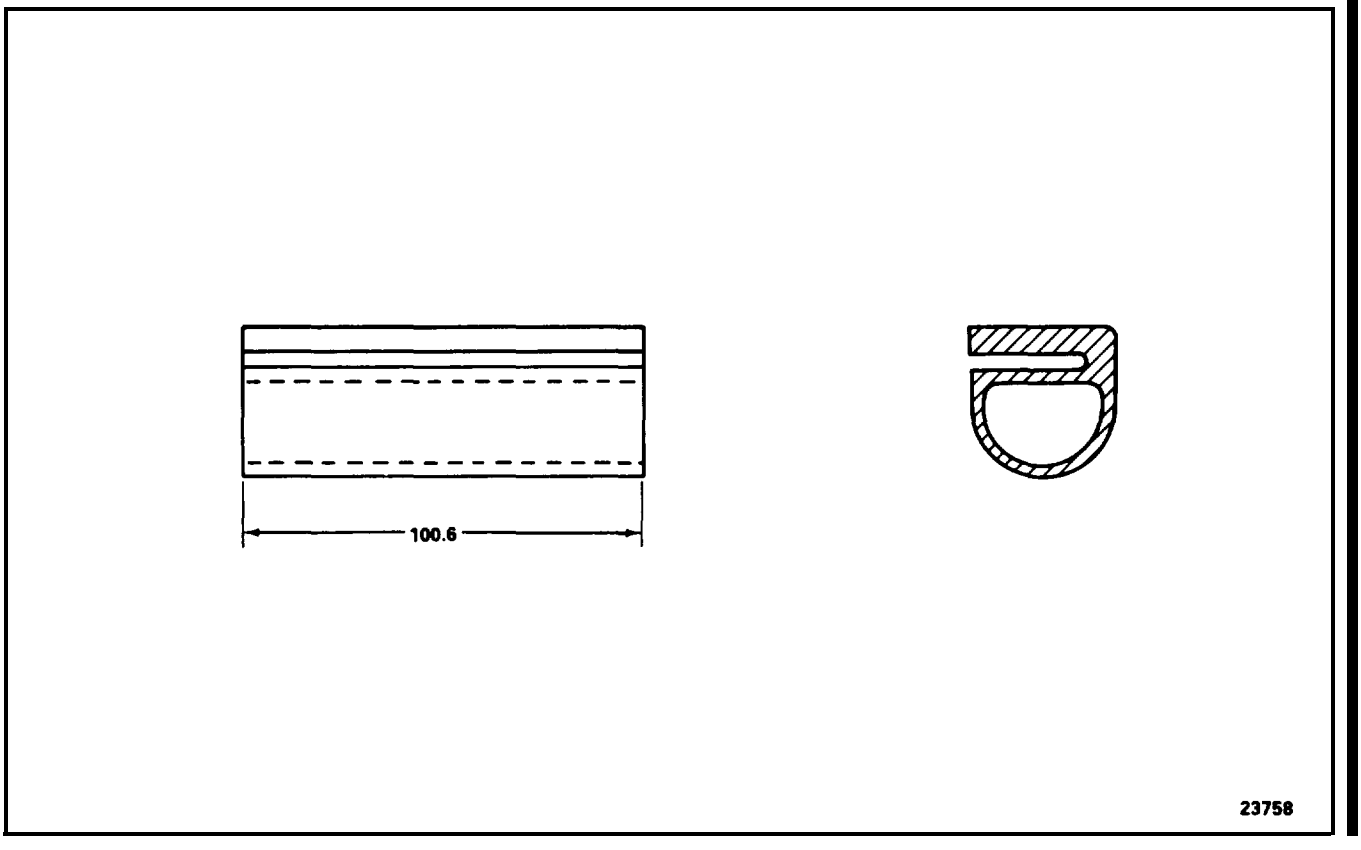
1. FABRICATE FROM BAC 1530-43 NSN 9390-00-791-7789.
2. ALL DIMENSIONS IN INCHES.
3. LENGTH:
   114S6002-182 = 105.00
   114S6002-183 = 53.00
   114S6002-184 = 53.00



END OF TASK

NOTES:

1. FABRICATE FROM BAC 1530-7
   NSN 9390-00-792-1501.
2. ALL DIMENSIONS IN INCHES.

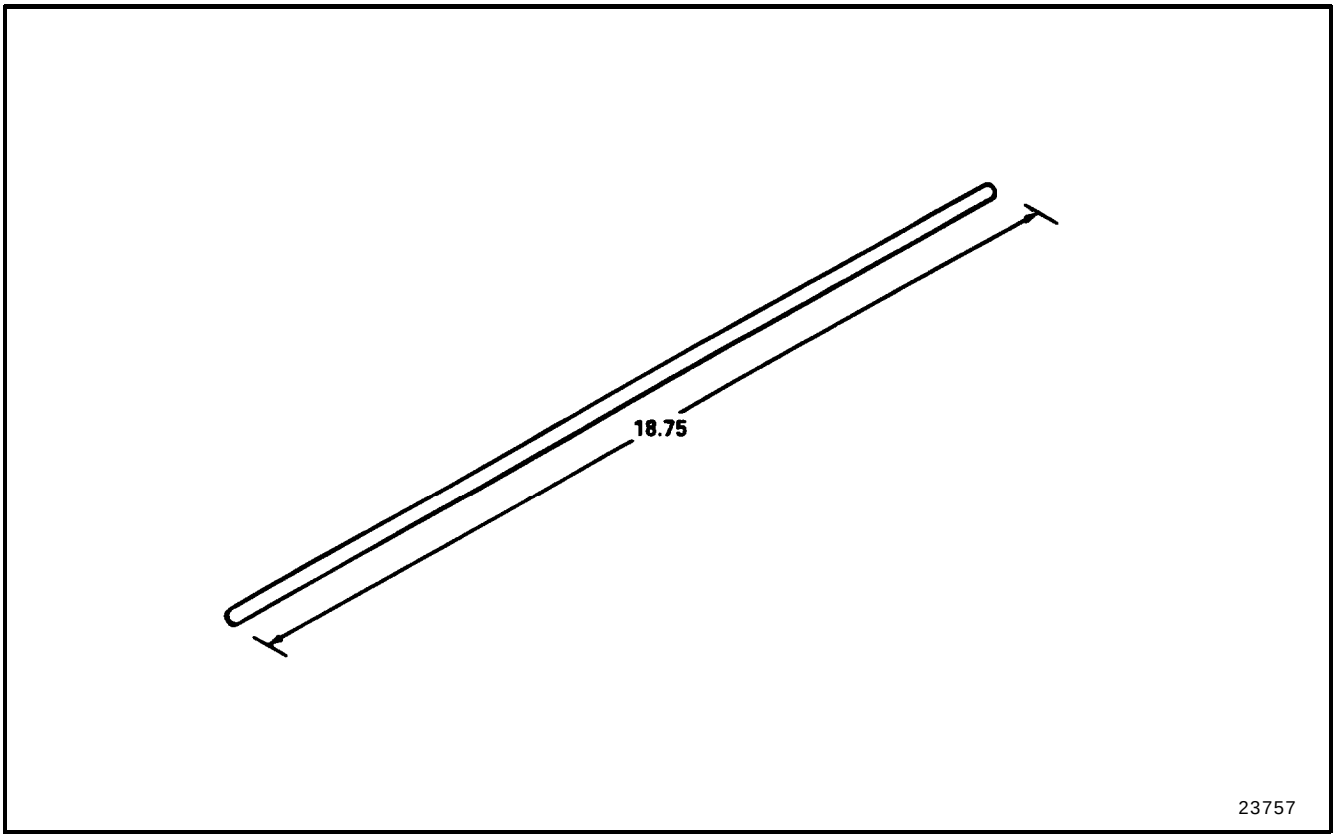


END OF TASK

E-284 RAMP WORK PLATFORM BRACE HINGE PIN 114S6701-37 E-284

NOTES:

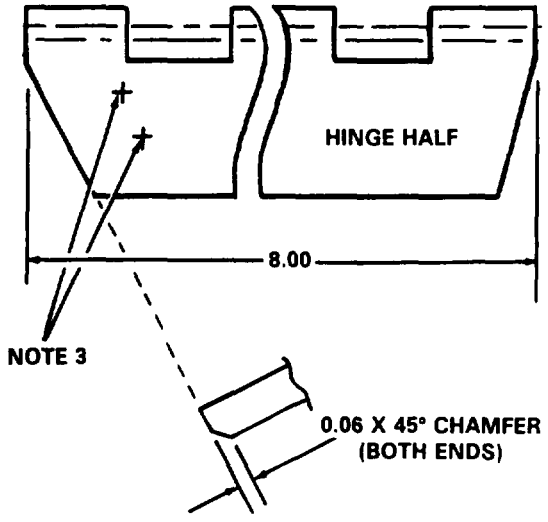
1. FABRICATE FROM MS20253P2-188 (5315-00-091-3429).
2. ALL DIMENSIONS IN INCHES.
3. CUT PINS TO LENGTH AND ROUND ENDS. REMOVE ALL BURRS AND SHARP EDGES.
4. FINISH AS REQUIRED.



END OF TASK

NOTES:

1. FABRICATE FROM MS20001Y12-800.
2. ALL DIMENSIONS IN INCHES.
3. USE ORIGINAL PART TO DETERMINE PILOT HOLE LOCATIONS AND SHAPE.
4. FINISH AS REQUIRED.

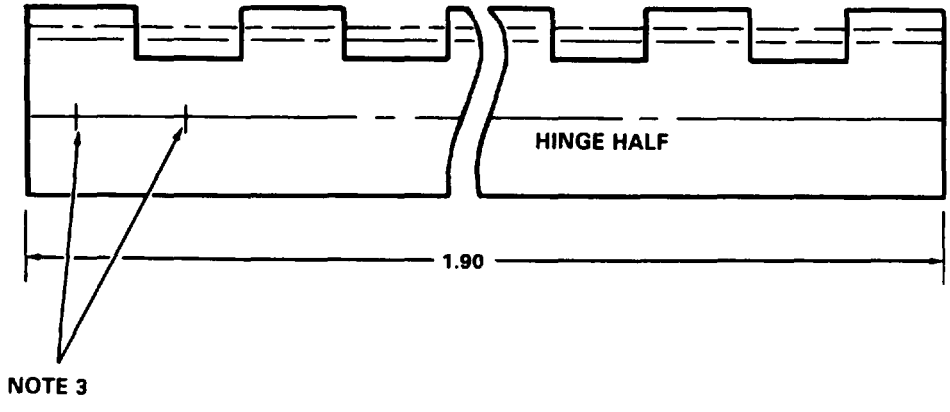


23756

END OF TASK

NOTES:

1. FABRICATE FROM MS20001X12-190.
2. ALL DIMENSIONS IN INCHES.
3. USE ORIGINAL PART TO DETERMINE PILOT HOLE LOCATIONS AND SHAPE.
4. FINISH AS REQUIRED.



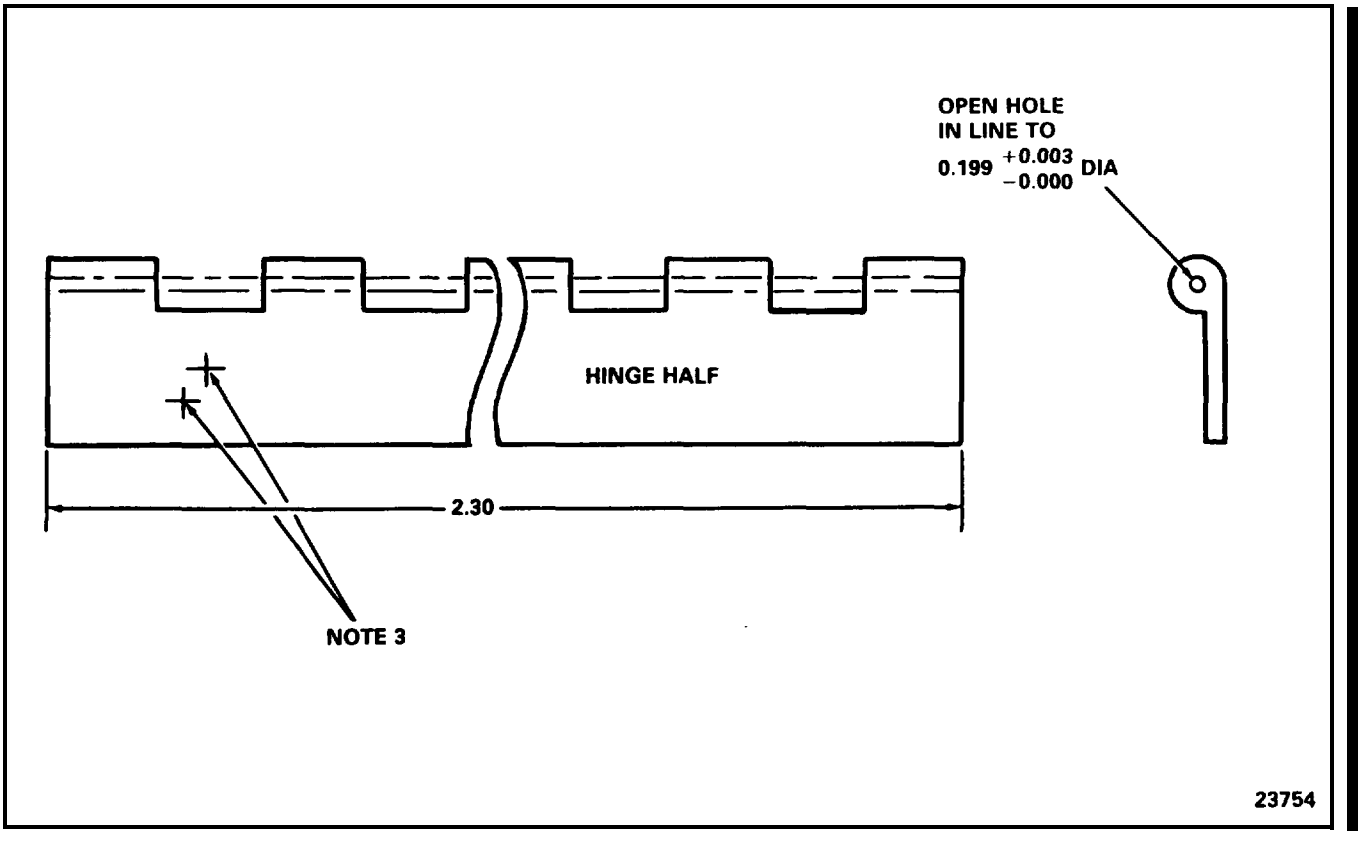
23755

END OF TASK

E-287 RAMP WORK PLATFORM BRACE HINGE HALF 114S6701-33 E-287

NOTES:

1. FABRICATE FROM MS20001X14-230.
2. ALL DIMENSIONS IN INCHES.
3. USE ORIGINAL PART TO DETERMINE PILOT HOLE LOCATIONS AND SHAPE.
4. FINISH AS REQUIRED.

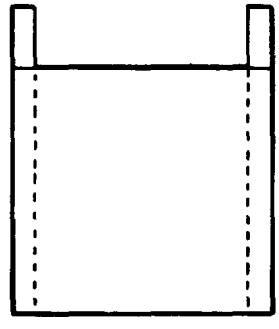


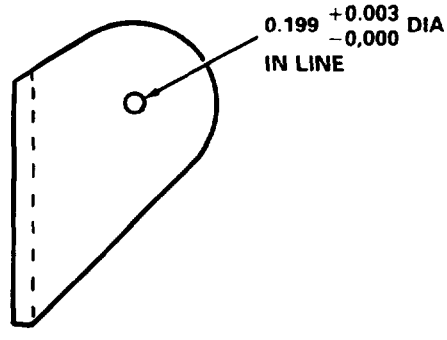
END OF TASK

E-288 RAMP WORK PLATFORM BRACE ATTACHMENT 114S6701-36 E-288

NOTES:

1. FABRICATE FROM AND 10137-1405 NSN 9540-00-234-0588.
2. ALL DIMENSIONS IN INCHES.
3. USE ORIGINAL PART TO DETERMINE PILOT HOLE LOCATIONS AND SHAPE.
4. FINISH AS REQUIRED.



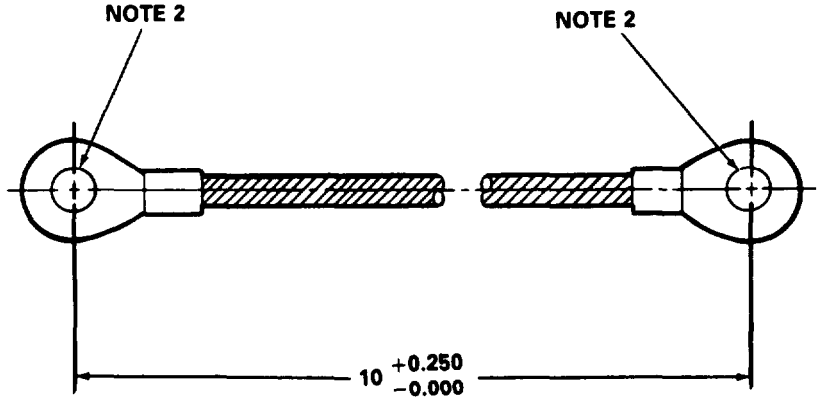


23753

END OF TASK

NOTES:

1. FABRICATE ELECTRICAL LEAD, NSN 6150-00-661-0182, FROM PURE TINNED STRANDED SOFT COPPER WIRE SIZE AWG12 AND TERMINALS.
2. STOCK IS:
   WIRE, AWG12, NSN 6145-00-819-0058
   TERMINAL, MS25036-112 (NSN 5940-00-204-8990), HOLE DIAMETER IS 0.193 TO 0.203 AND ACCOMMODATES NUMBER 10 OR 12 STUD.
3. ATTACH TERMINALS (MS25036-112) TO WIRE WITH CRIMPING TOOL (MS25441).
4. ALL DIMENSIONS IN INCHES.



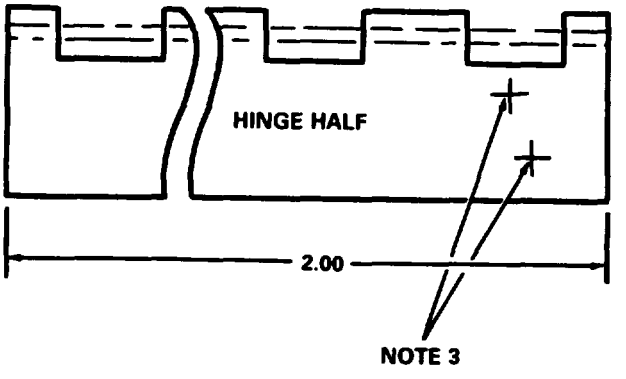
23752

END OF TASK

E290 POD WORK PLATFORM FARING INSTALLATION HINGE HALF 114S5551-89 E-290

NOTES:

1. FABRICATE FROM MS20001Y12-200.
2. ALL DIMENSIONS IN INCHES.
3. USE ORIGINAL PART TO DETERMINE PILOT HOLE LOCATIONS AND SHAPE.
4. FINISH AS REQUIRED.



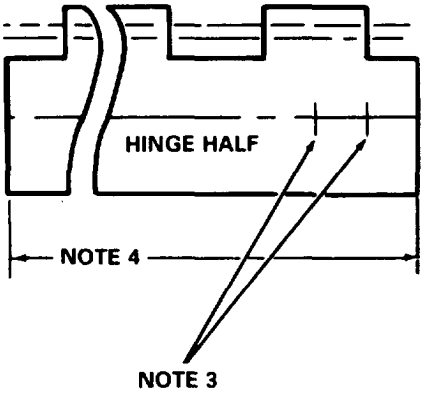
23751

END OF TASK

E-291 POD WORK PLATFORM FARING INSTALLATION HINGE HALF 114S5551-85, -86, -87, AND -88 E-291

NOTES:

1. FABRICATE FROM MS20001X1 2-200.
2. ALL DIMENSIONS IN INCHES.
3. USE ORIGINAL PART TO DETERMINE PILOT HOLE LOCATIONS AND SHAPE.
4. LENGTH:
   114S5551-85 = 1.50
   114S5551-86 = 1.50 (OPP -85)
   114S5551-87 = 1.70 (OPP -88)
   114S5551-88 = 1.70
5. FINISH AS REQUIRED.



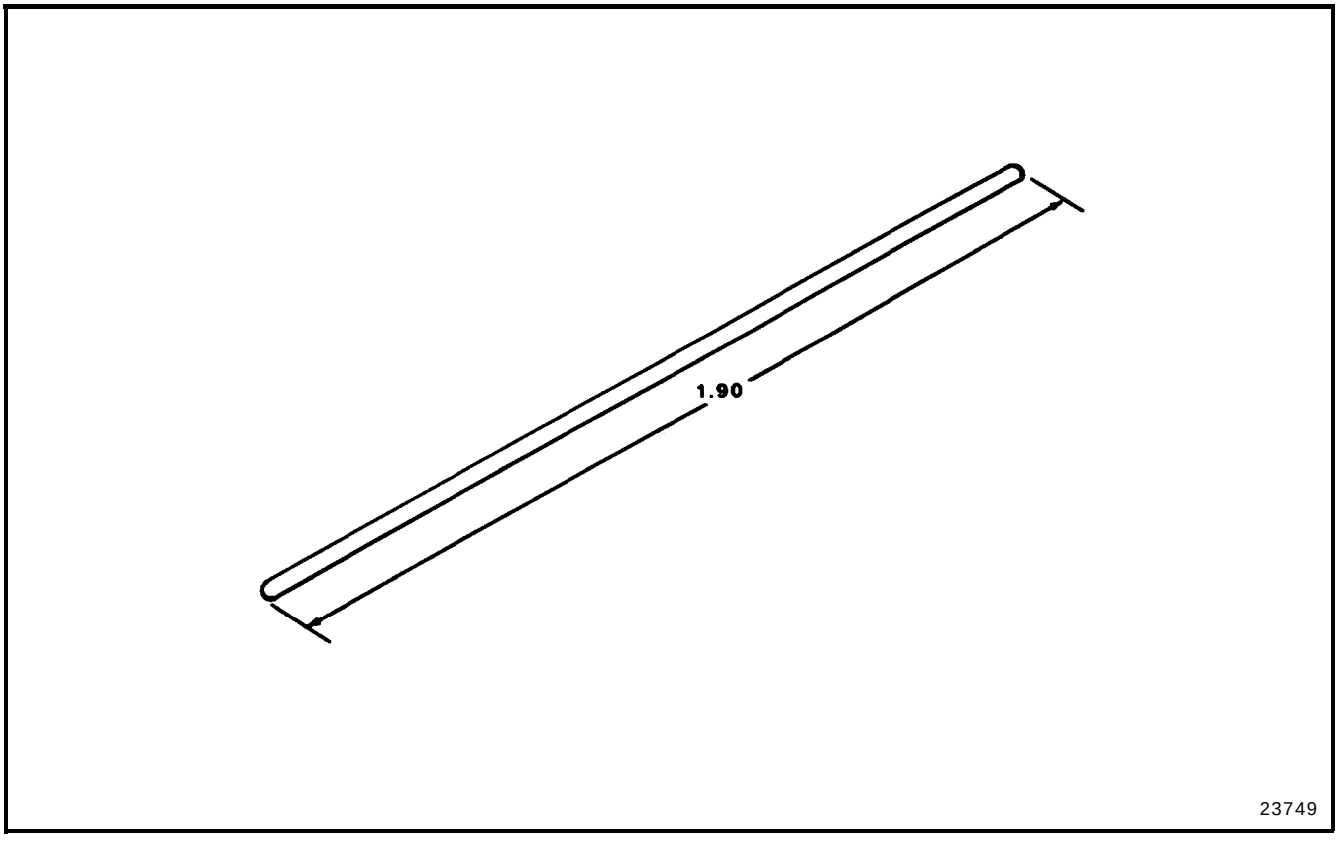
23750

END OF TASK

E-292 POD WORK PLATFORM FAIRING INSTALLATION HINGE PIN 114S551-95

NOTES:

1. FABRICATE FROM MS20253P5-190 (NSN 5340-00-133-1974).
2. ALL DIMENSIONS IN INCHES.
3. CUT PINS TO LENGTH AND ROUND ENDS. REMOVE ALL BURRS AND SHARP EDGES.
4. FINISH AS REQUIRED.

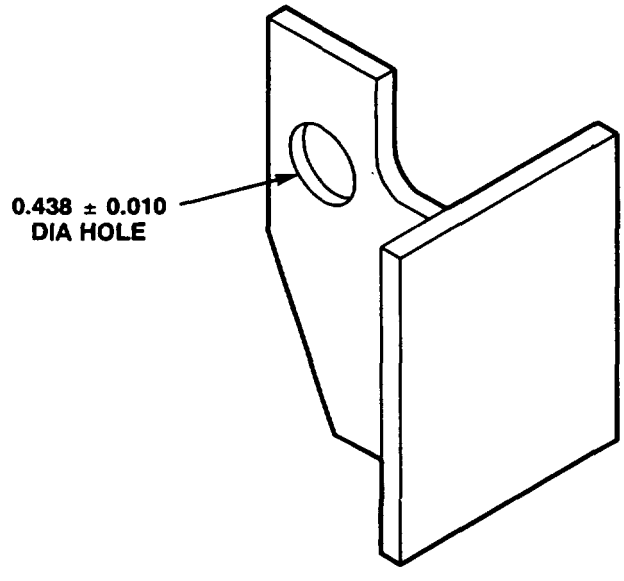


END OF TASK

E293 APU DRIP TRAY MOD INSTALLATION TEE 145S3617-4 AND -5 E-293

NOTES:

1. FABRICATE FROM ALCOA EXTRUSION NUMBER 32220, ALUMINUM ALLOY 7075-T6511 PER QQ-A-200/11.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 1.9
4. USE OLD TEE AS TEMPLATE WHEN MAKING NEW TEE.
5. MATCH DRILL ATTACH POINTS WITH MATCHING ASSEMBLY.
6. 145S3617-4 AND -5 ARE OPPOSITE.
7. FINISH AS REQUIRED.



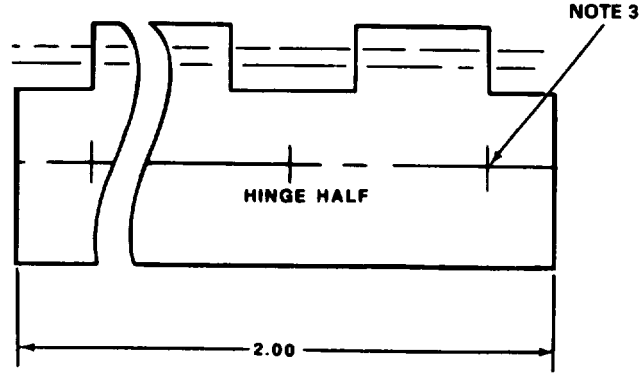
A23680

END OF TASK

E-294 APU ACCESS PANEL INSTALLATION HINGE HALF 114S3615-27

NOTES:

1. FABRICATE FROM MS20001PX5-200.
2. ALL DIMENSIONS IN INCHES.
3. USE ORIGINAL PART TO DETERMINE PILOT HOLE LOCATIONS AND SHAPE.
4. FINISH AS REQUIRED.



23853

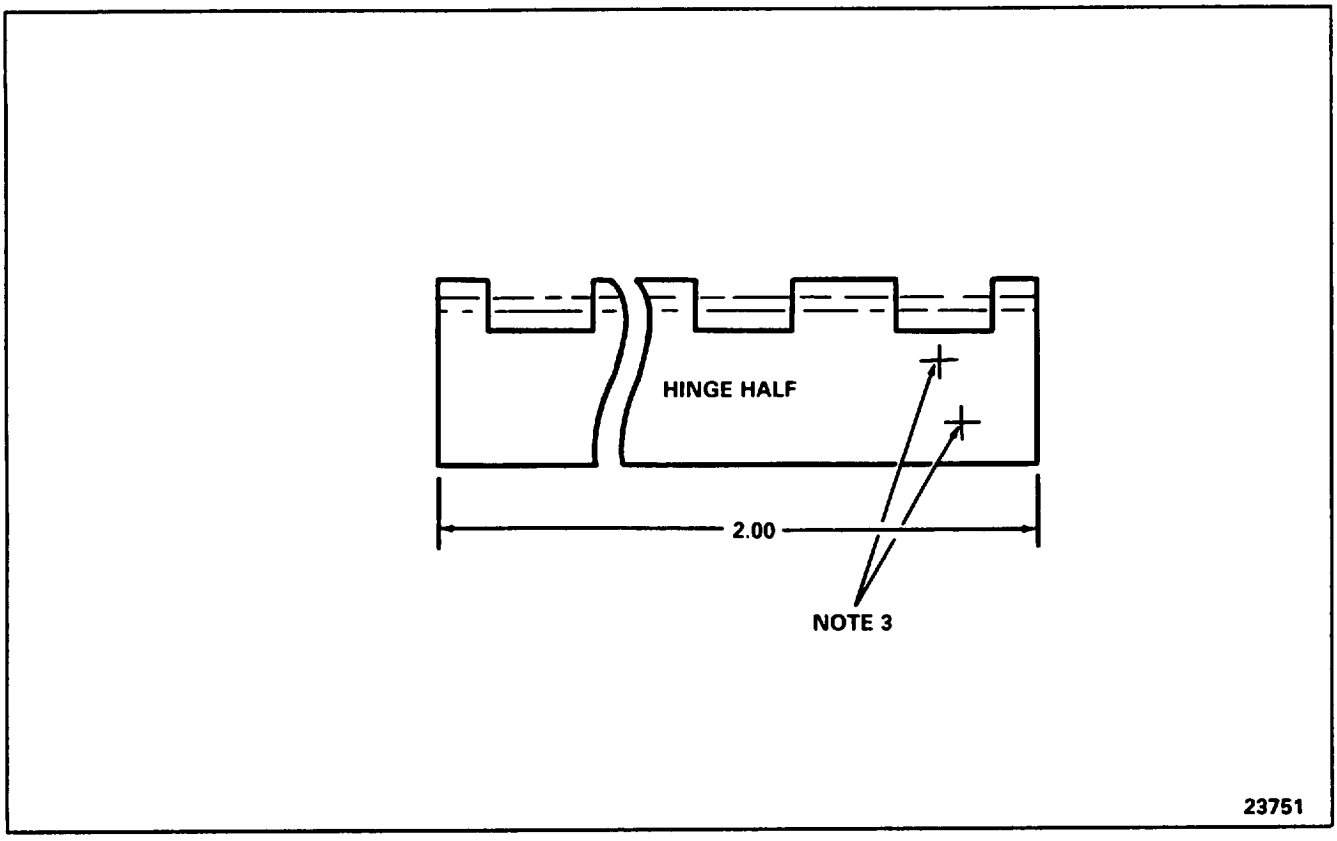
END OF TASK

E-295 APU ACCESS PANEL INSTALLATION HINGE HALF 114S3615-29

E-295

NOTES:

1. FABRICATE FROM MS20001PY5-200.
2. ALL DIMENSIONS IN INCHES.
3. USE ORIGINAL PART TO DETERMINE PILOT HOLE LOCATIONS AND SHAPE.
4. FINISH AS REQUIRED.

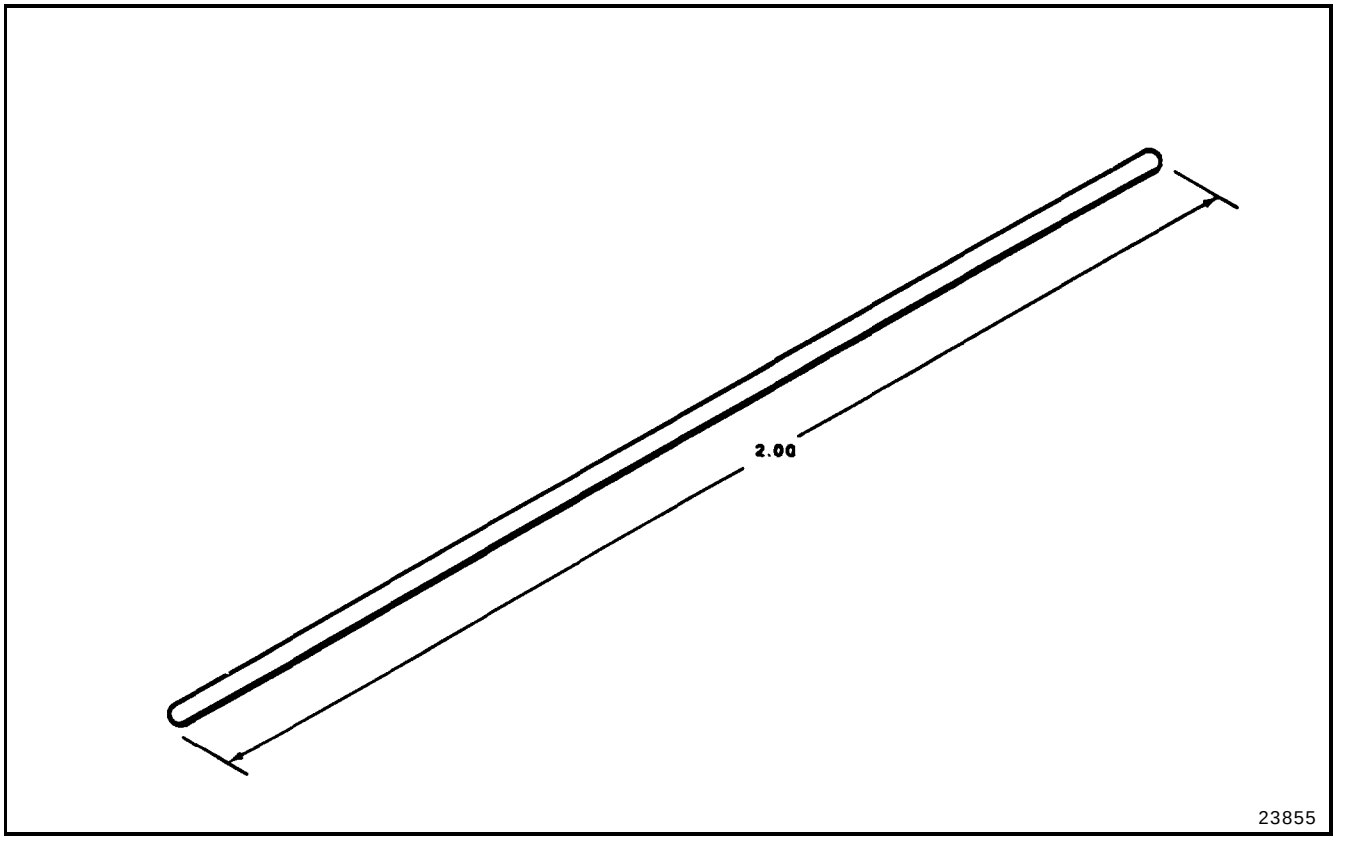


END OF TASK

E-296 APU ACCESS PANEL INSTALLATION HINGE PIN 114S3615-31 E-296

NOTES:

1. FABRICATE FROM MS20253P2-200 NSN 5315-00-761-6876.
2. ALL DIMENSIONS IN INCHES.
3. CUT PINS TO LENGTH AND ROUND ENDS. REMOVE ALL BURRS AND SHARP EDGES.
4. FINISH AS REQUIRED .

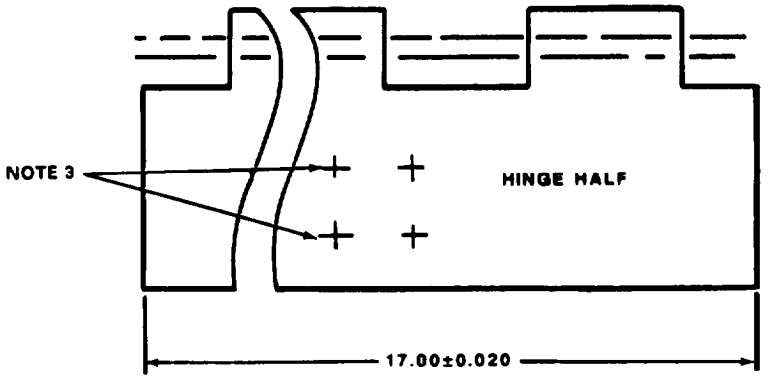


END OF TASK

E-297 AFT LANDING GEAR POD FAIRING INSTALLATION HINGE HALF E-297 114S910-35

NOTES:

1. FABRICATE FROM MS20001PH10-1700.
2. ALL DIMENSIONS IN INCHES.
3. USE ORIGINAL PART TO DETERMINE PILOT HOLE LOCATIONS AND SHAPE.
4. FINISH AS REQUIRED.



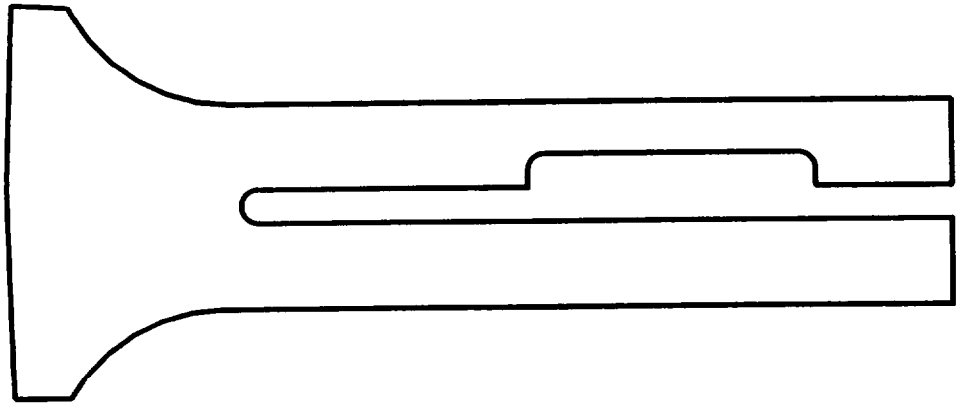
23844

END OF TASK

E-298 AFT LANDING GEAR POD FAIRING INSTALLATION SEALS 114S5910-27, -28

NOTES:

1. FABRICATE FROM VS80546-1 NSN 9390-00-759-9765.
2. ALL DIMENSIONS IN INCHES.
3. 114S5910-27 LENGTH = 16.00
   114S5910-28 LENGTH = 2.80



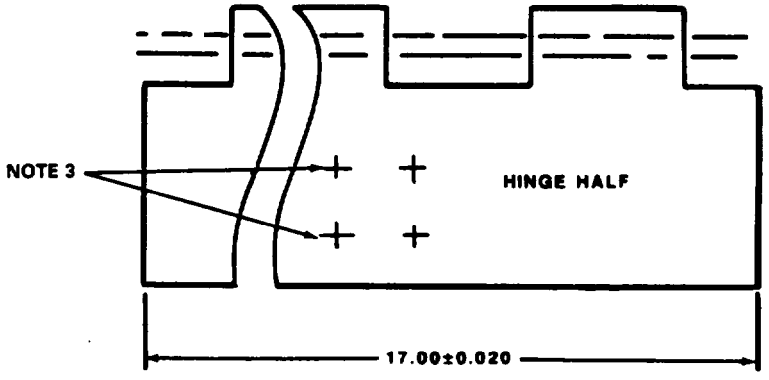
A23842

END OF TASK

E-299 AFT LANDING GEAR ACCESS PANEL ASSEMBLY HINGE HALF 114S5909-55 E-299

NOTES:

1. FABRICATE FROM MS20001PH10-1700.
2. ALL DIMENSIONS IN INCHES.
3. USE ORIGINAL PART TO DETERMINE PILOT HOLE LOCATIONS AND SHAPE.
4. FINISH AS REQUIRED.



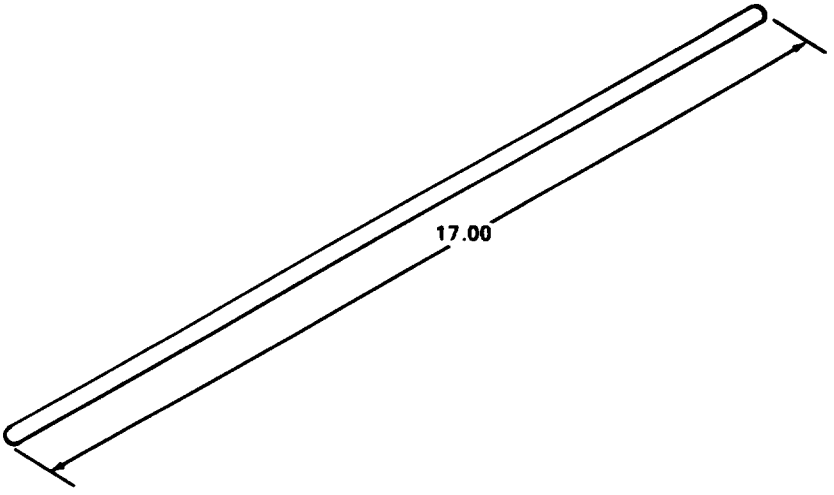
23844

END OF TASK

E-300 AFT LANDING GEAR ACCESS PANEL ASSEMBLY HINGE PIN 114S5909-56 E-300

NOTES:

1. FABRICATE HINGE PIN FROM MS20253P2-1700 NSN 5340-00-133-1974.
2. ALL DIMENSIONS IN INCHES.
3. CUT PINS TO LENGTH AND ROUND ENDS. REMOVE ALL BURRS AND SHARP EDGES.
4. FINISH AS REQUIRED.

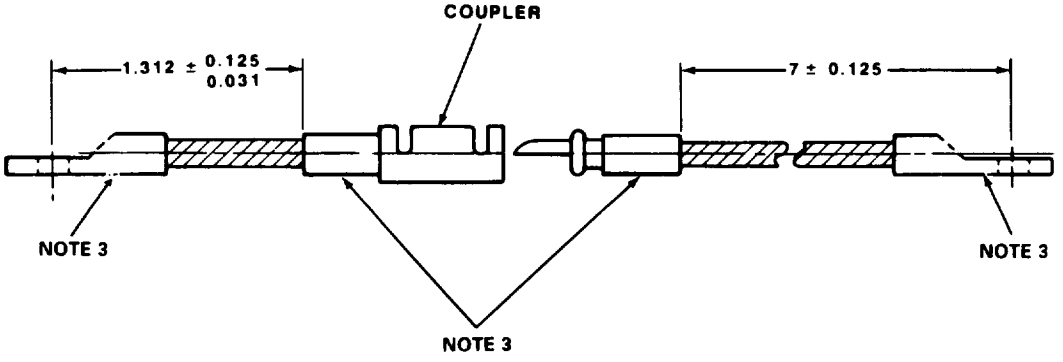


23749

END OF TASK

NOTES:

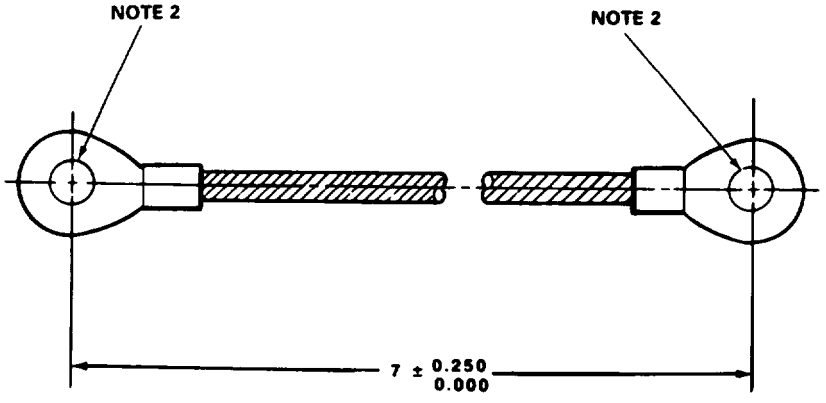
1. FABRICATE ELECTRIC LEAD, NSN 6150-01-136-5909, FROM PURE TINNED STRANDED SOFT COPPER WIRE SIZE AWG12, TERMINALS, AND QUICK DISCONNECT SPLICE SET.
2. STOCK IS:
   WIRE, AWG12, NSN 6145-00-819-0058
   TERMINAL, MS250036-112 (NSN 5940-00-143-4794), HOLE DIAMETER IS 0.193 TO 0.203 AND ACCOMMODATES NUMBER 8 OR 10 STUD.
   QUICK DISCONNECT SPLICE SET, NSN 5940-00-611-3945.
3. ATTACH TERMINALS (MS25036-112) TO WIRE WITH CRIMPING TOOL (MS25441).
4. ALL DIMENSIONS IN INCHES.



END OF TASK

NOTES:

1. FABRICATE ELECTRICAL LEAD, NSN 6150-00-642-1310, FROM PURE TINNED STRANDED SOFT COPPER WIRE SIZE AWG12 AND TERMINALS.
2. STOCK IS:
   WIRE, AWG12, NSN 6145-00-819-0058
   TERMINAL, MS25036-111 (NSN 5940-00-204-8990), HOLE DIAMETER IS 0.142 TO 0.152 AND ACCOMMODATES NUMBER 4 OR 6 STUD.
   TERMINAL, MS25036-157 (NSN 5940-00-143-4777), HOLE DIAMETER 0,250 TO 0.285 ACCOMMODATES 0.250 STUD.
3. ATTACH TERMINALS (MS25036-111 AND -157) TO WIRE WITH CRIMPING TOOL (MS25441).
4. ALL DIMENSIONS IN INCHES.



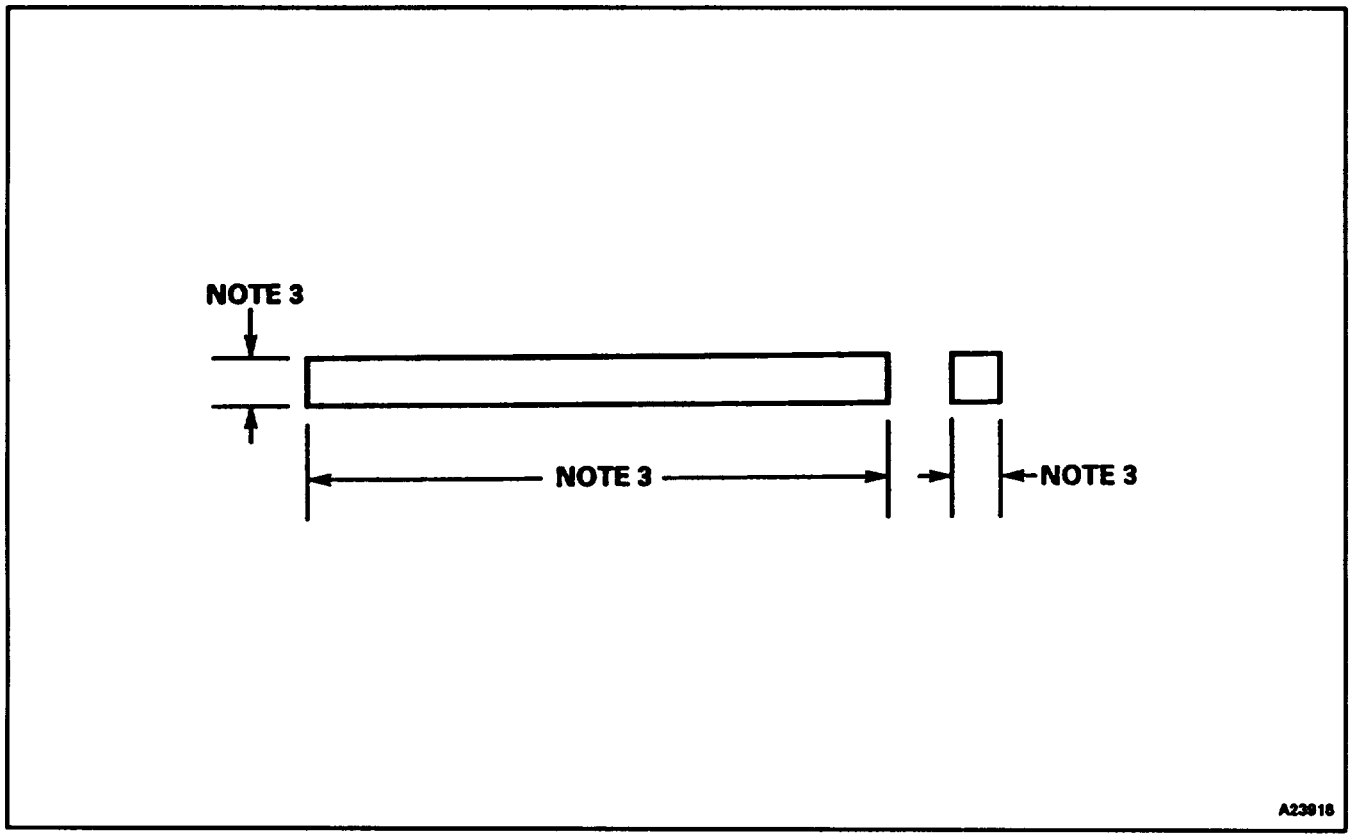
23858

END OF TASK

E-303 ENGINE PYLON FAIRING INSTALLATION SEALS 114S3902-241, -247, -365, -366,478, AND -380 E-303

NOTES:

1. FABRICATE FROM SYNTHETIC RUBBER (NSN 5330-00-261 -5471) SHEET PER ML-R-6855, CLASS 1, GRADE 40.
2. ALL DIMENSIONS IN INCHES.
3. DIMENSIONS FOR SEALS:
   114S3902-241 - 0.062 x 0.5 x 2.7
   114S3902-247 - 0.032 x 0.5 x 36
   114S3902-365-0.032x0.5x3.5
   114S3902-366-0.032x0.5x14
   114S3902-379 - 0.032 x 0.5 x 6.1
   114S3902-380 - 0.032 x 0.5 x 7.5
4. USE ORIGINAL PART TO DETERMINE SHAPE.

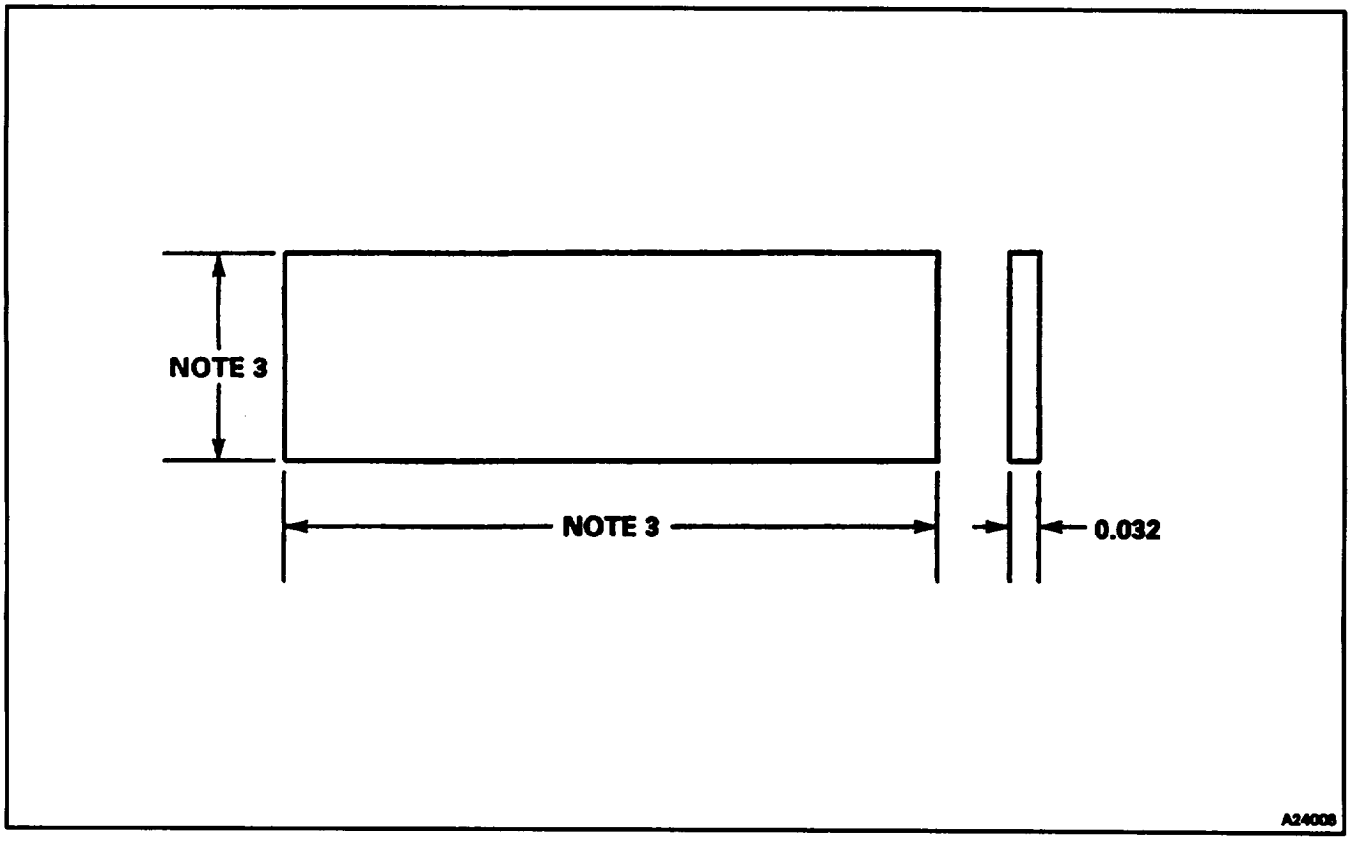


END OF TASK

E-304 ENGINE PYLON FAIRING INSTALLATION SEALS 234S3902-19 AND -20

NOTES:

1. FABRICATE FROM SYNTHETIC RUBBER (NSN 5330-00-261-5471) SHEET PER MIL-R-6855, CLASS 1, GRADE 40.
2. AU DIMENSIONS IN INCHES.
3. DIMENSIONS FOR SEALS:
   234S902-19-0.032x1.1X20.4
   234S3902-20 - 0.032 x 1 .0 x 19.3
4. USE ORIGINAL PART TO DETERMINE SHAPE.

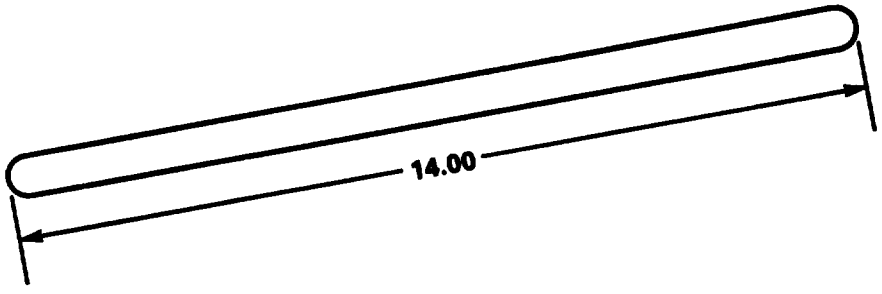


END OF TASK

E-305 HINGED LOWER PANEL ACCESS COVER ASSEMBLY HINGE PIN E-305 114P8032-45

NOTES:

1. FABRICATE FROM AN253-2 OR MS20253-2 (NSN 5340-00-804-9880).
2. ALL DIMENSIONS IN INCHES.
3. CUT PINS TO LENGTH AND ROUND ENDS. REMOVE ALL BURRS AND SHARP EDGES.
4. FINISH AS REQUIRED.



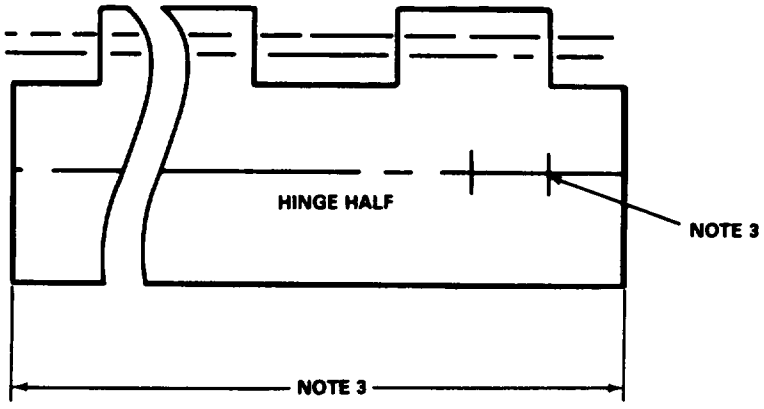
A24007

END OF TASK

E-306 HINGED LOWER PANEL ACCESS COVER ASSEMBLY HALF HINGE 114P8032-93 AND -94

NOTES:

1. FABRICATE FROM MS20001PH3-7200 (NSN 5340-00-899-4454).
2. THE -94 HALF HINGE IS OPPOSITE OF THE -93 HALF HINGE.
3. USE ORIGINAL PART TO DETERMINE PILOT HOLE LOCATIONS AND SHAPE. LENGTH IS 14.00.
4. FINISH AS REQUIRED.



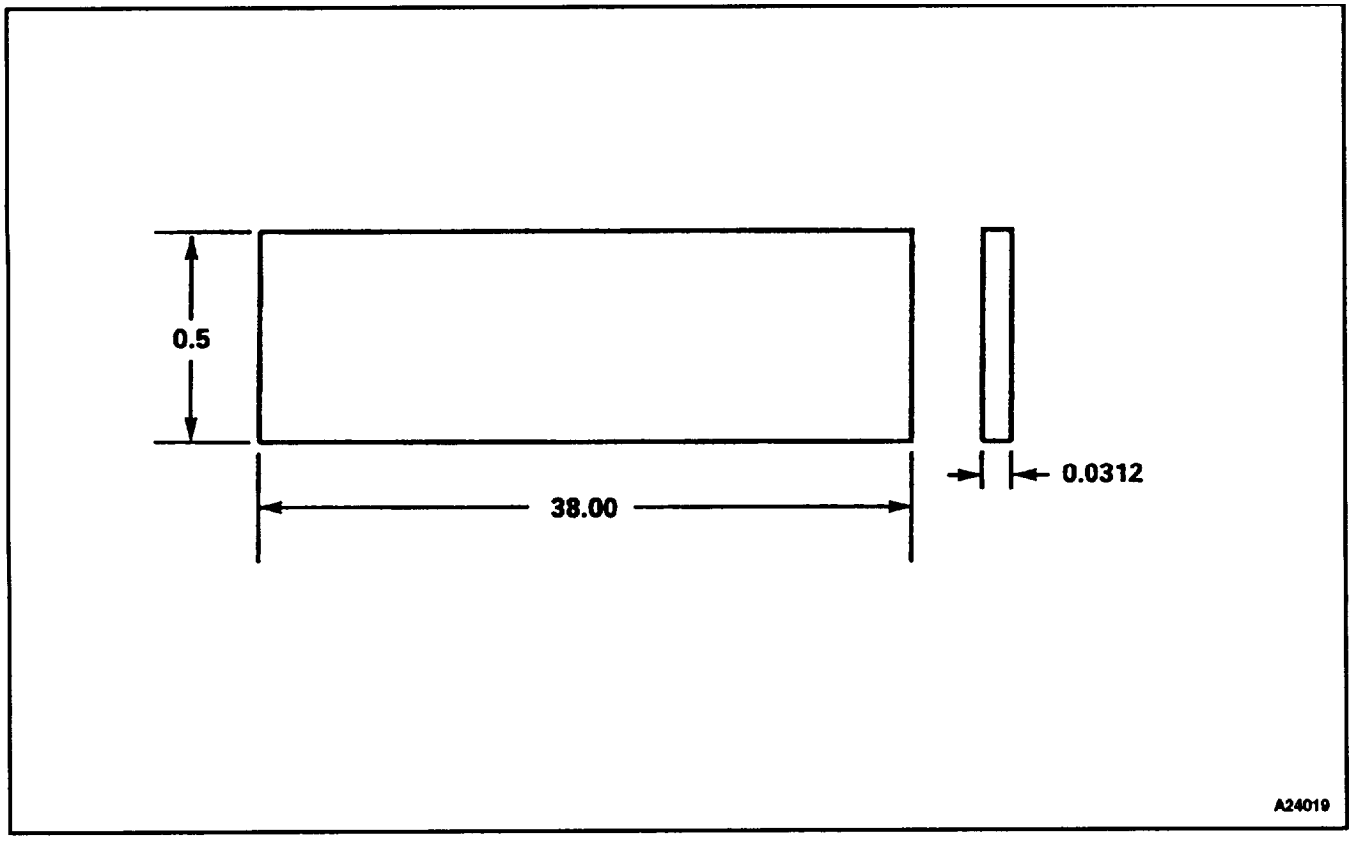
24006

END OF TASK

E-307 HINQED LOWER PANEL ACCESS COVER ASSEMBLY SEAL 114P8032-39 E-307

NOTES:

1. FABRICATE FROM SYNTHETIC RUBBER (NSN 5530-00-261-5471) SHEET PER MIL-R-6655, CLASS 1, GRADE 40.
2. ALL DIMENSONS IN INCHES.

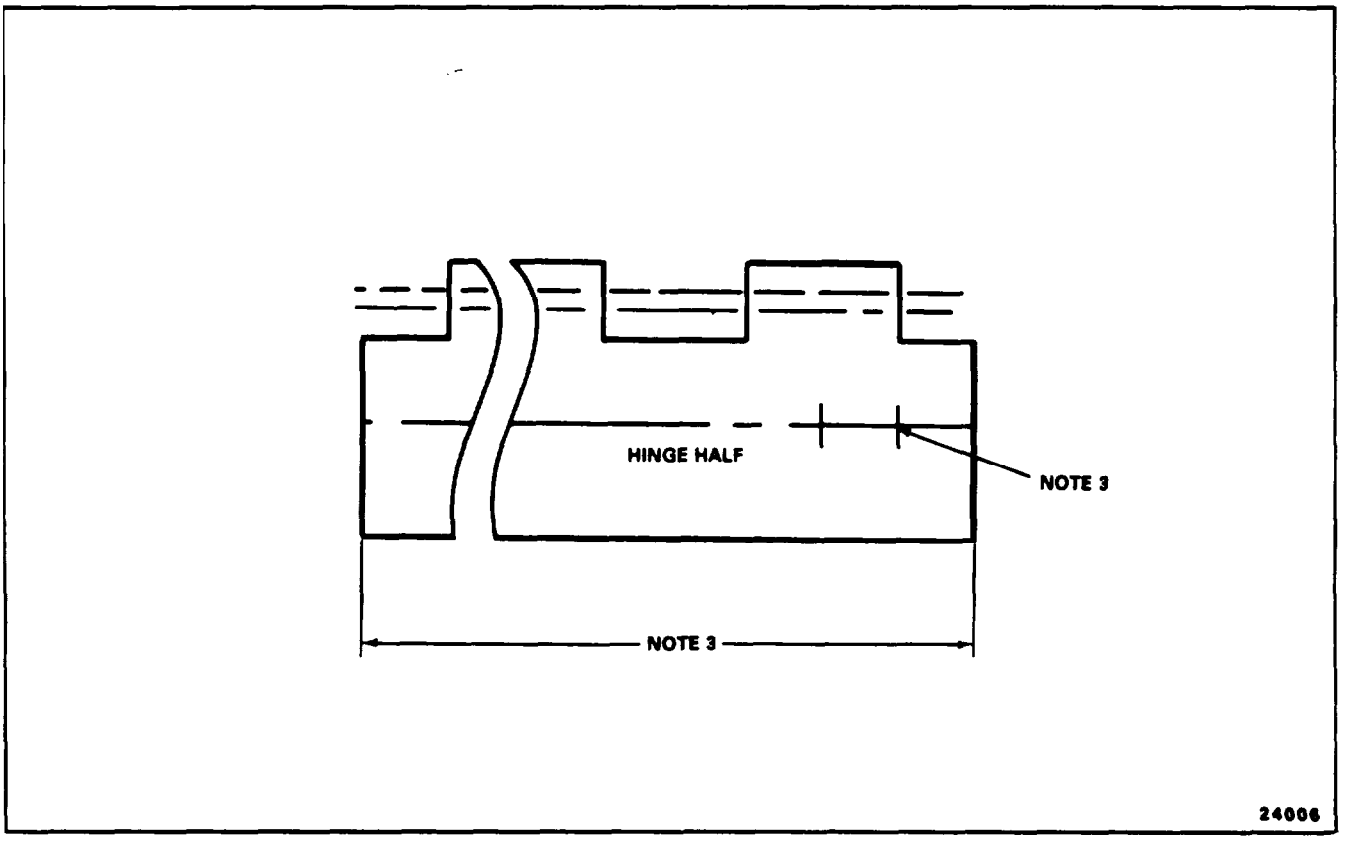


END OF TASK

E-308 INSTALLATION OF ENGINE ACCESS DOOR ASSEMBLY HALF HINGE 114S3915-63 AND -64 E-308

NOTES:

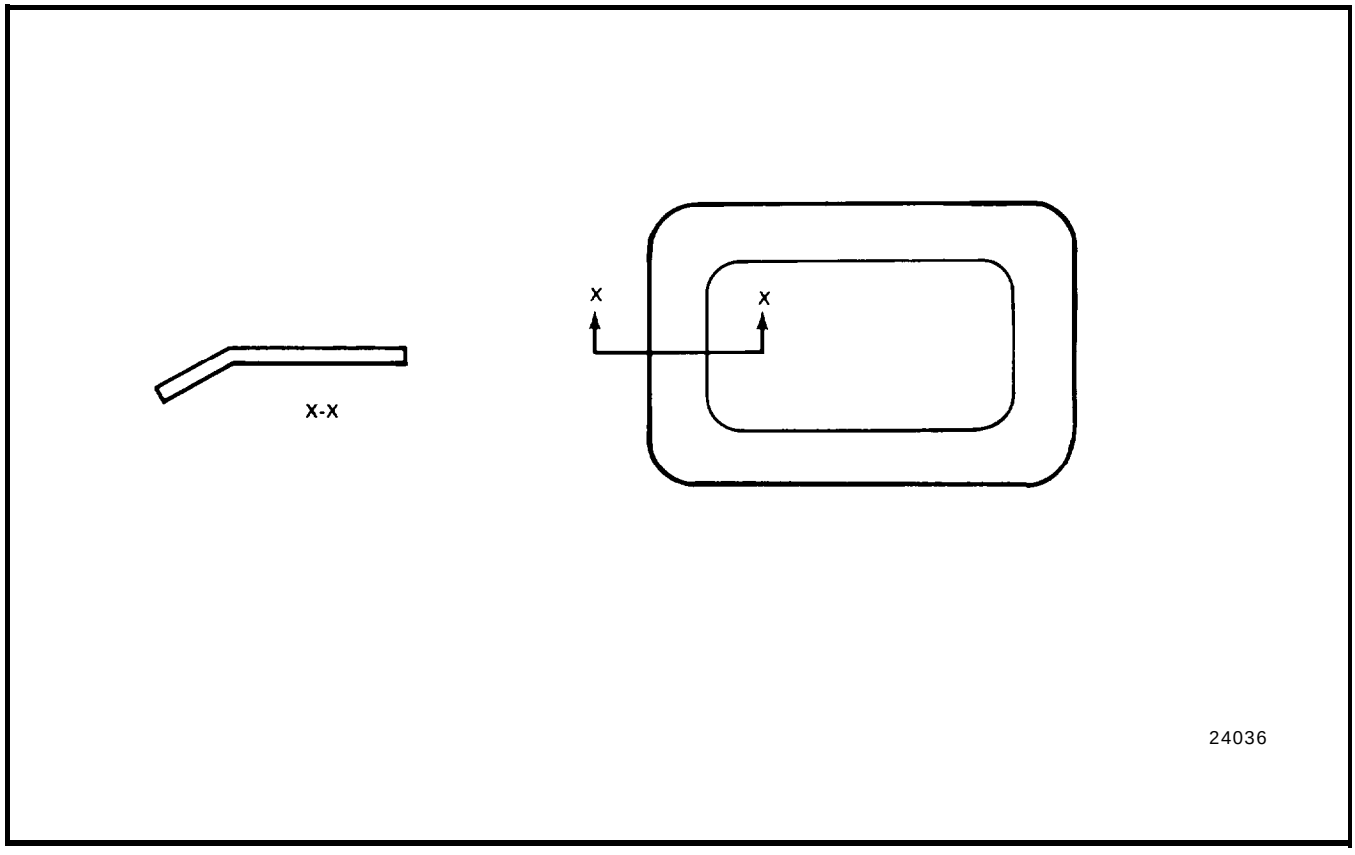
1. FABRICATE FROM MS20001PH5 (NSN 5340-00-582-3721).
2. ALL DIMENSIONS IN INCHES. THE -63 HALF HINGE IS OPPOSITE OF THE -64 HALF HINGE.
3. USE ORIGINAL PART TO DETERMINE PILOT HOLE LOCATIONS AND SHAPE. LENGTH IS 14.20
4. FINISH AS REQUIRED.



END OF TASK

NOTES:

1. FABRICATE FROM RUBBER GASKET VS80567-1, NSN 5330-00-759-0786.
2. USE ORIGINAL PART TO DETERMINE LENGTH AND SHAPE.
3. IDENTIFY THE NEW PART WITH A SUITABLE MARKING INK.

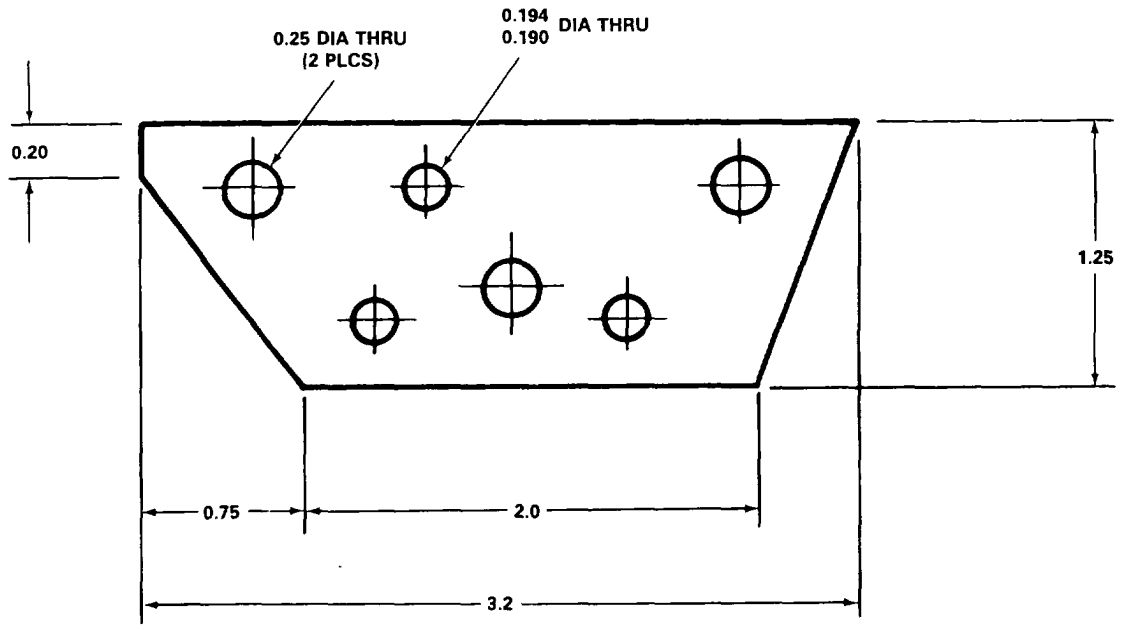


END OF TASK

E-310 AFT PYLON LATCH SHIM 145S4706-36

NOTES:

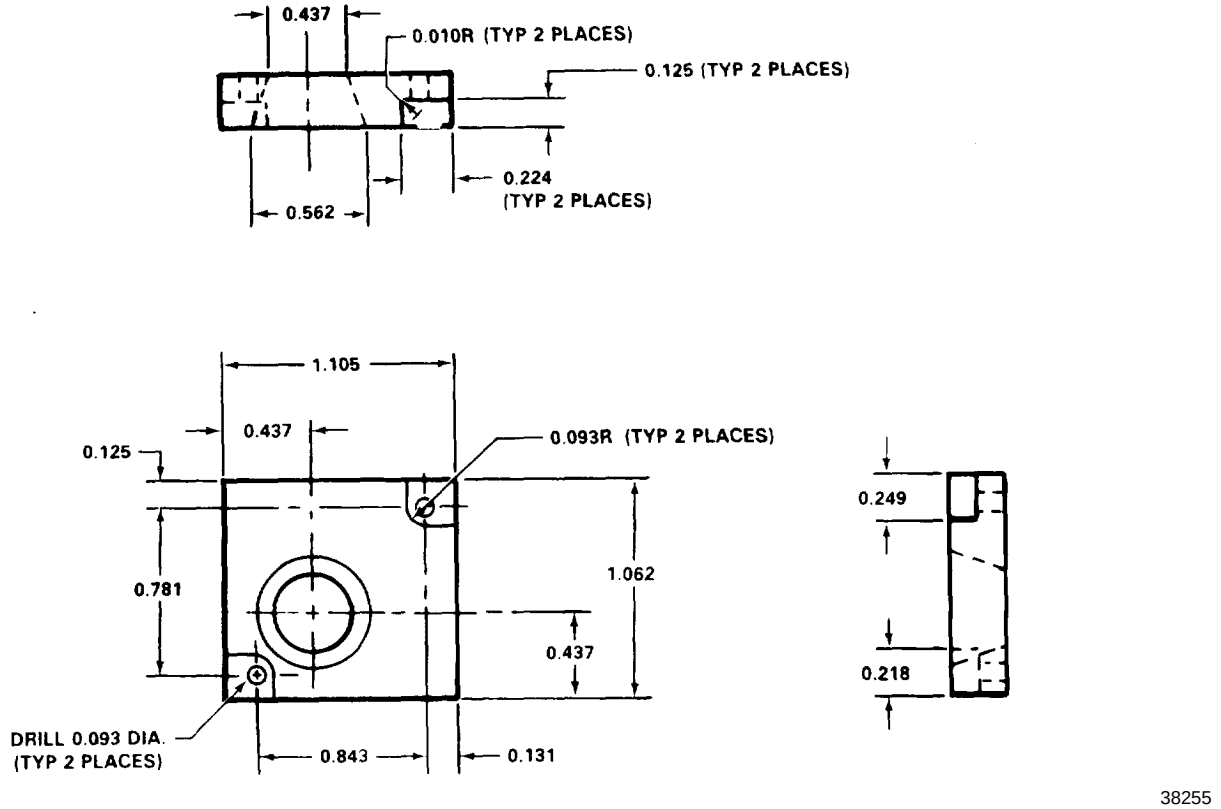
1. FABRICATE FROM ALUMINUM LAMINATED SHIM PER MIL-S-22499 COMPOSITION 1, TYPE 1.
2. ALL DIMENSIONS IN INCHES.
3. STOCK SIZE 0.092 X 1.4 X 3.3
4. FINISH AS REQUIRED.



END OF TASK

NOTES:

1. FABRICATE FROM CLEAR MODIFIED ACRYLIC SHEET 0.25 THICKNESS.
2. ALL DIMENSIONS INCHES.
3. BREAK ALL SHARP EDGES NOT SPECIFIED, TO A RADIUS OR CHAMFER OF 0.010 TO 0.020.
4. TOLERANCES +/-0.005; HOLES +/-0.002



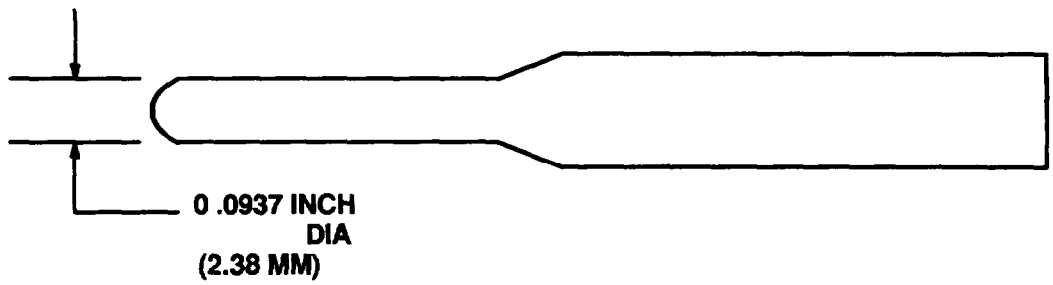
END OF TASK

E-312 BALL STAKING TOOL E-312

NOTES:

1. FABRICATE FROM SUITABLE SIZE DRIFT.

2. DIMENSIONS IN INCHES.

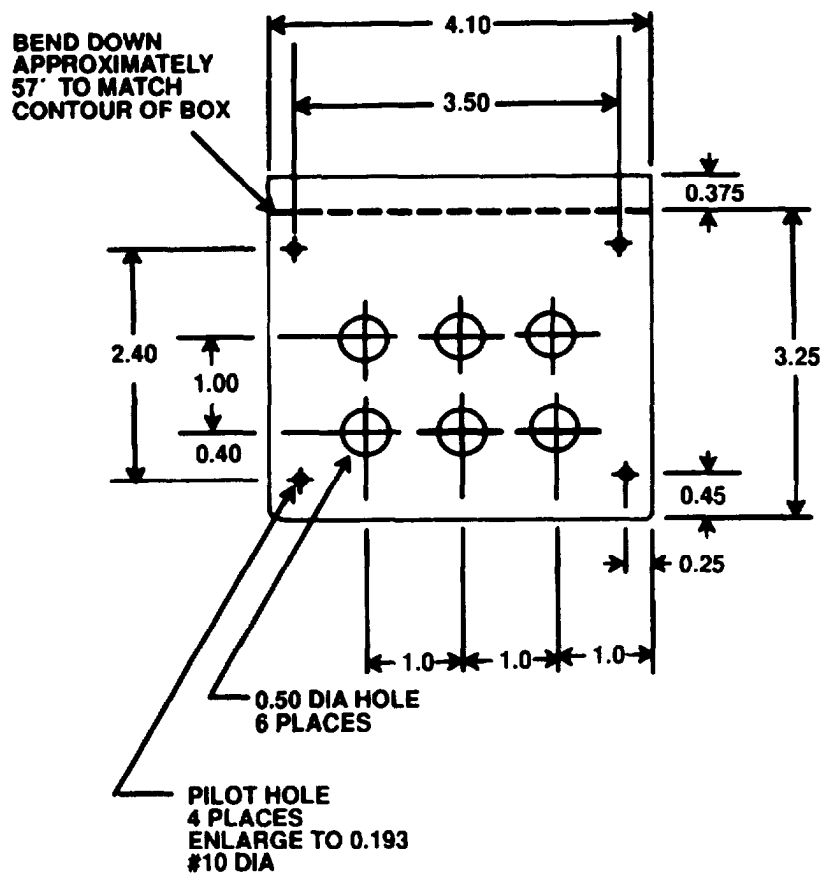


END OF TASK

E-313 CARGO HOOK LIGHT SWITCH BOX E-313

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/5.
3. STOCK SIZE 0.032 X 3.625 X 4.0.
2. ALL DIMENSIONS IN INCHES.
4. FINISH AS REQUIRED.

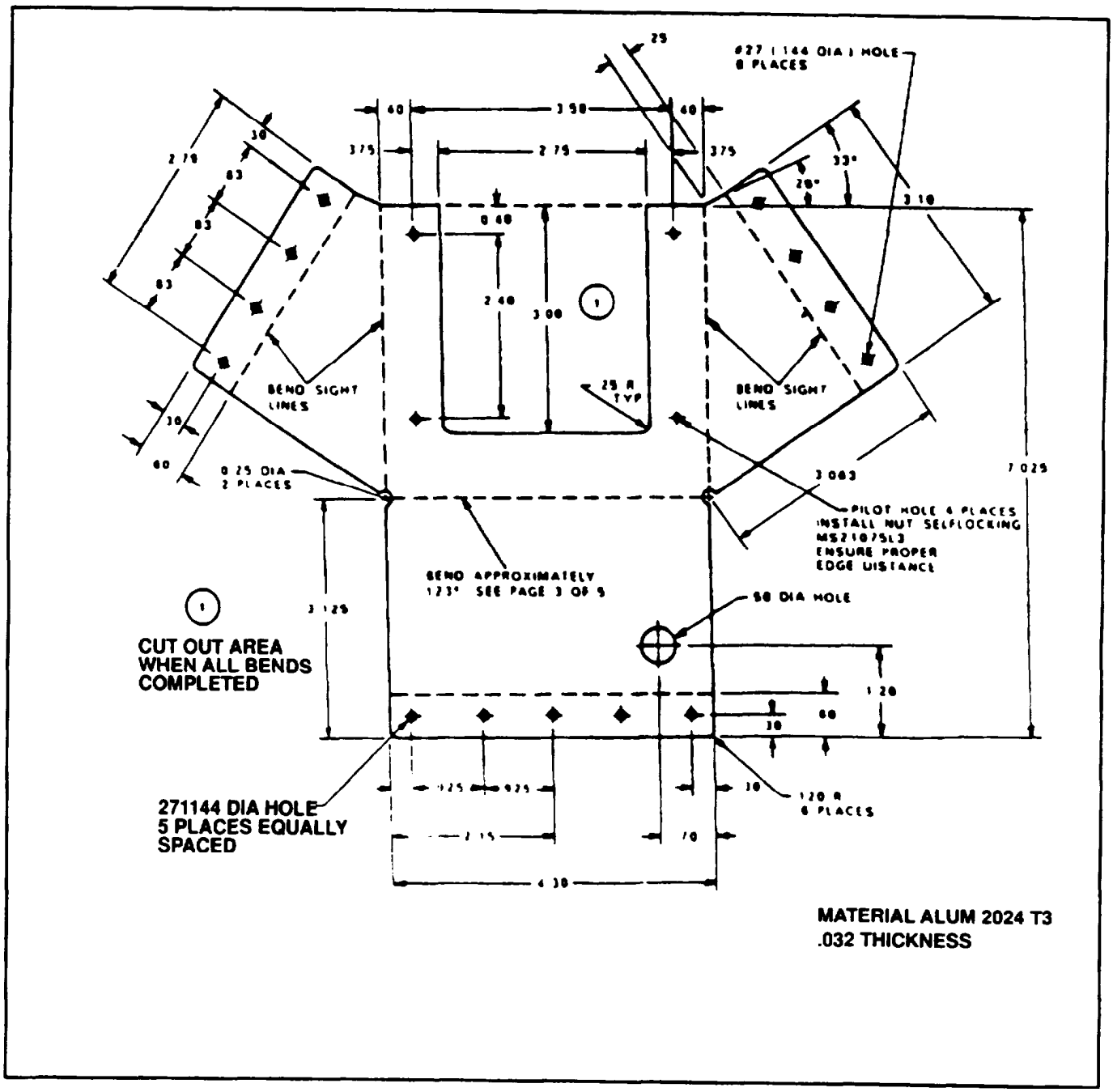


GO TO NEXT PAGE

E-313 CARGO HOOK LIGHT SWITCH BOX (Continued) E-313

NOTES:

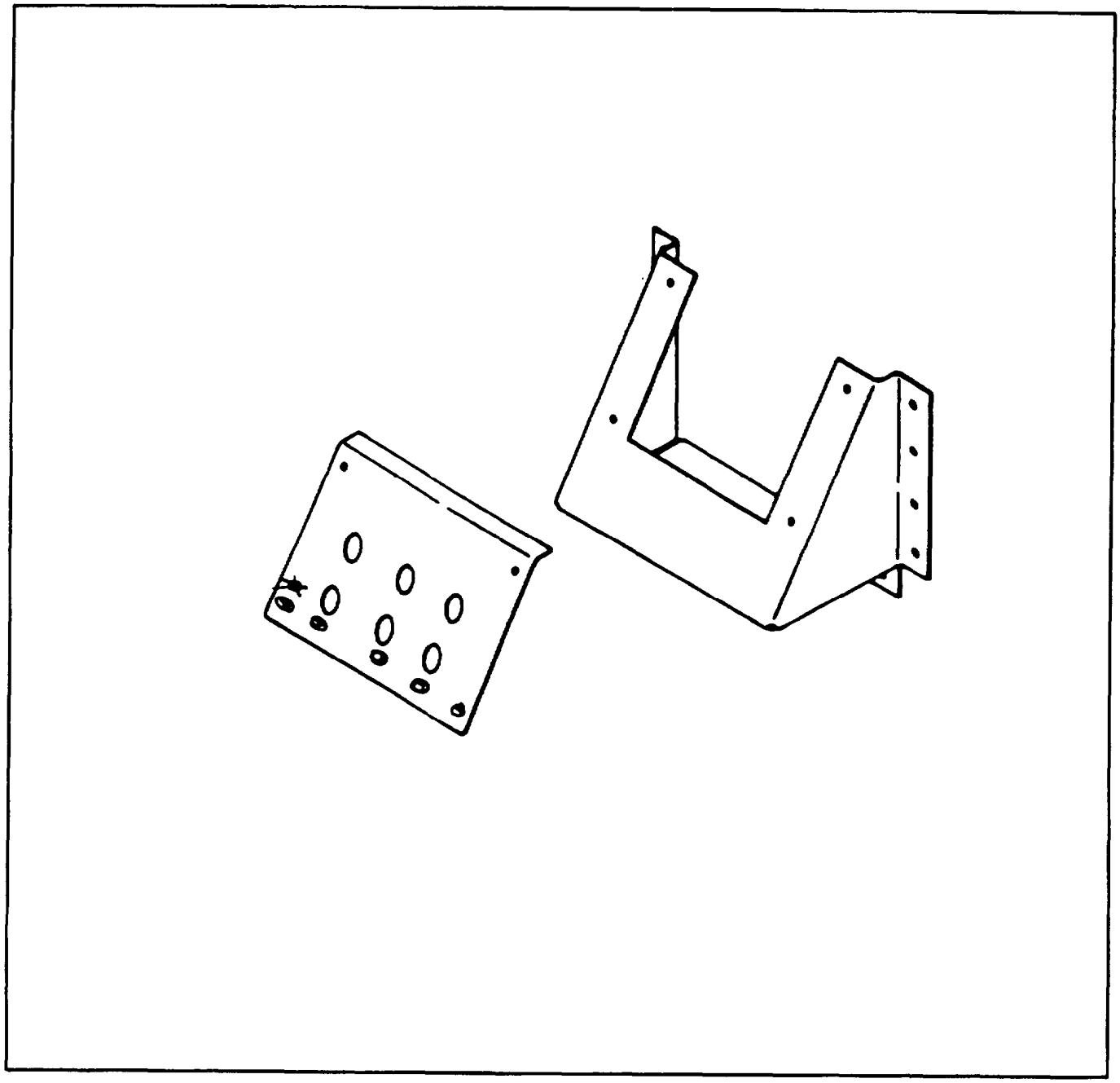
1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/5.
3. STOCK SIZE 0.032 X 3.625 X 4.0.
2. ALL DIMENSIONS IN INCHES.
4. FINISH AS REQUIRED.



GO TO NEXT PAGE

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/5.
3. STOCK SIZE 0.032 X 3.625 X 4.0.
2. ALL DIMENSIONS IN INCHES.
4. FINISH AS REQUIRED.

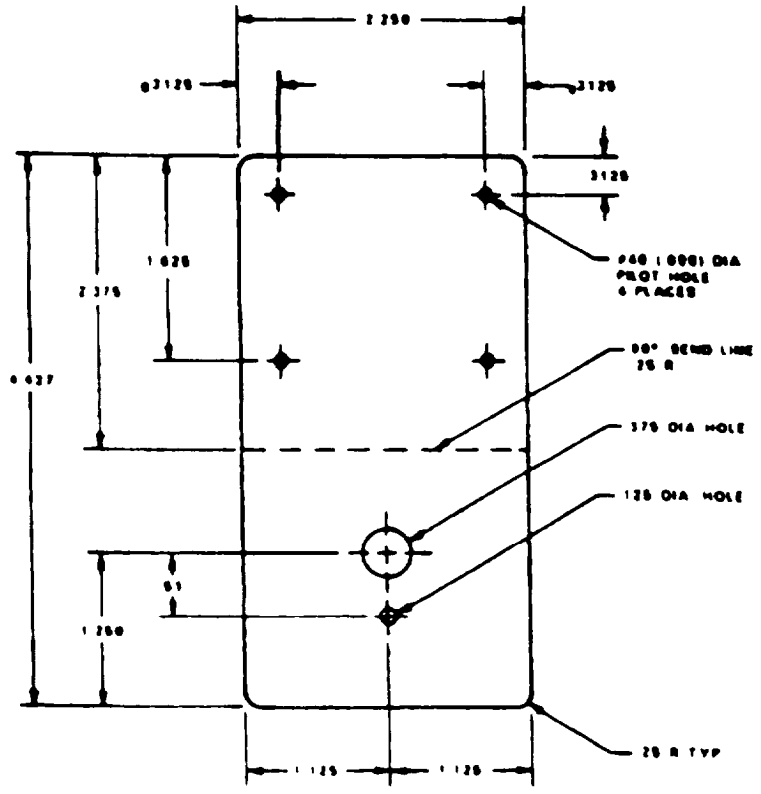


END OF TASK

E-314 BALANCE CONTROL BRACKET E-314

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/5.
3. STOCK SIZE 0.50.
2. ALL DIMENSIONS IN INCHES.
4. FINISH AS REQUIRED.

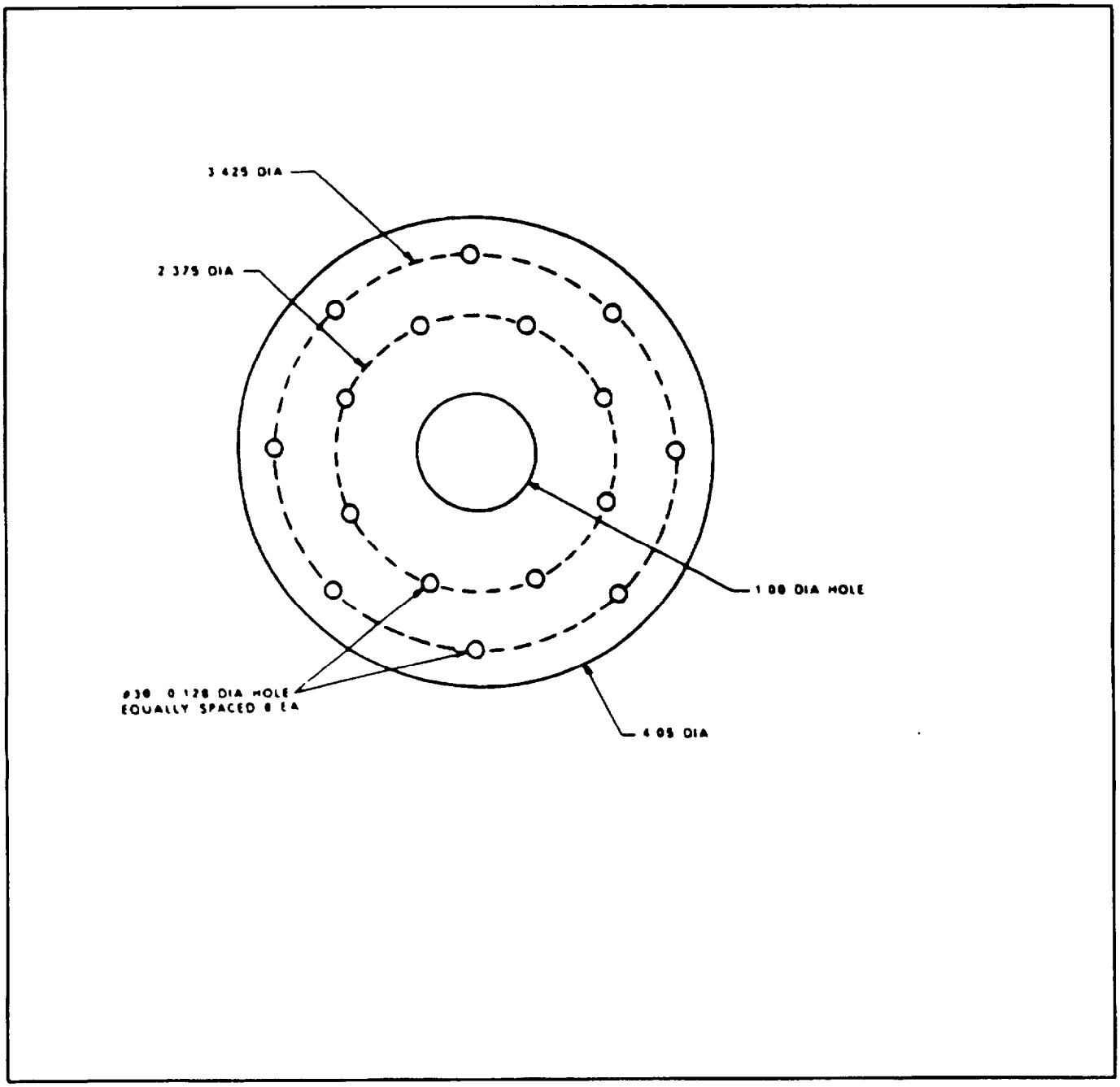


END OF TASK

E-315 DOUBLER, CARGO HOOK LIGHT

NOTES:

1. FABRICATE FROM ALUMINUM ALLOY CLAD SHEET 2024-T3 PER QQ-A-250/5.
3. STOCK SIZE 0.50
2. ALL DIMENSIONS IN INCHES.
4. FINISH AS REQUIRED.

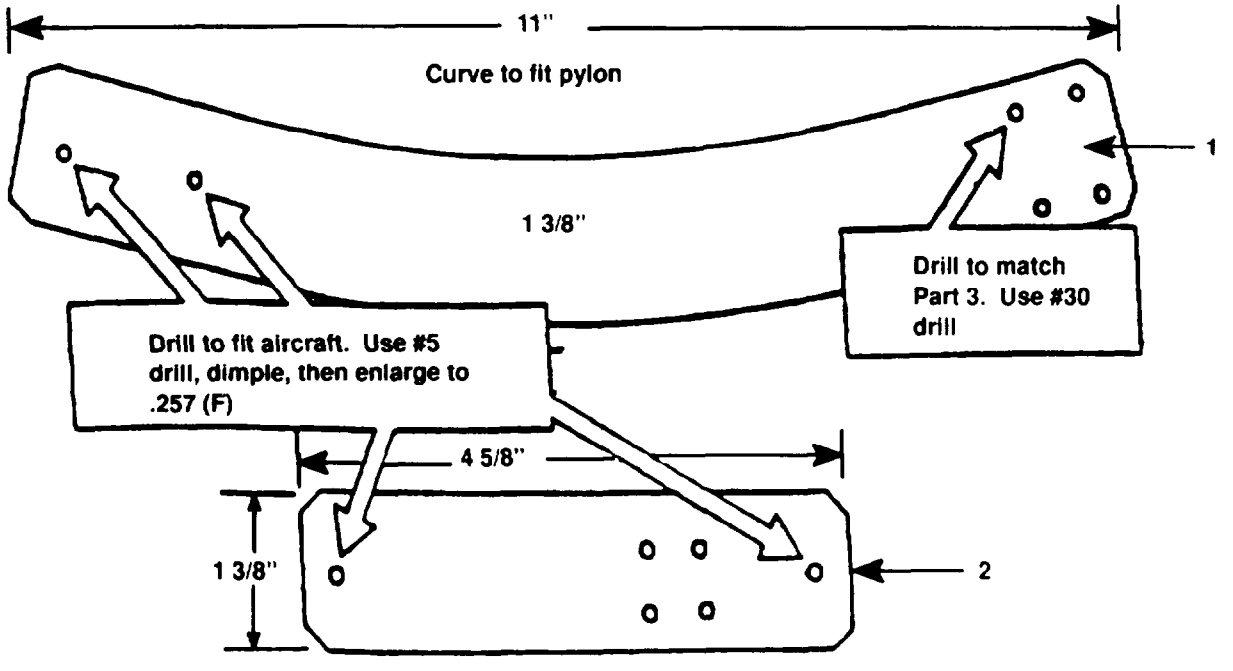


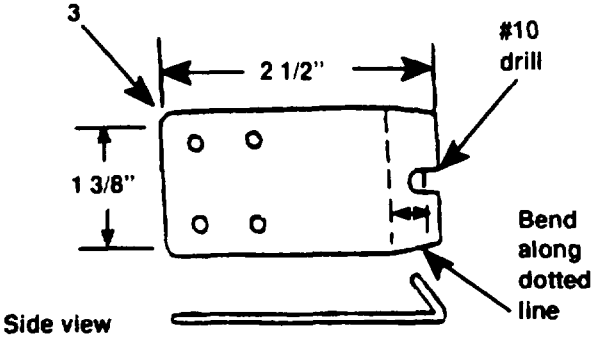
END OF TASK

E-316 C-BOX DOORS LATCH ASSEMBLY E-316

NOTES:

1. FABRICATE ITEMS 1 AND 2 FROM .040-IN THICK, TYPE 301, 1/4 HARD STAINLESS STEEL.
2. FABRICATE ITEM 3 FROM .063-IN TYPE 301, 1/4 HARD STAINLESS STEEL.
3. ALL DIMENSIONS IN INCHES.
4. USE NSN 5340-01-244-4124 OR NSN 5340-01-028-0086 FOR LATCH ASSY.
5. FINISH AS REQUIRED.





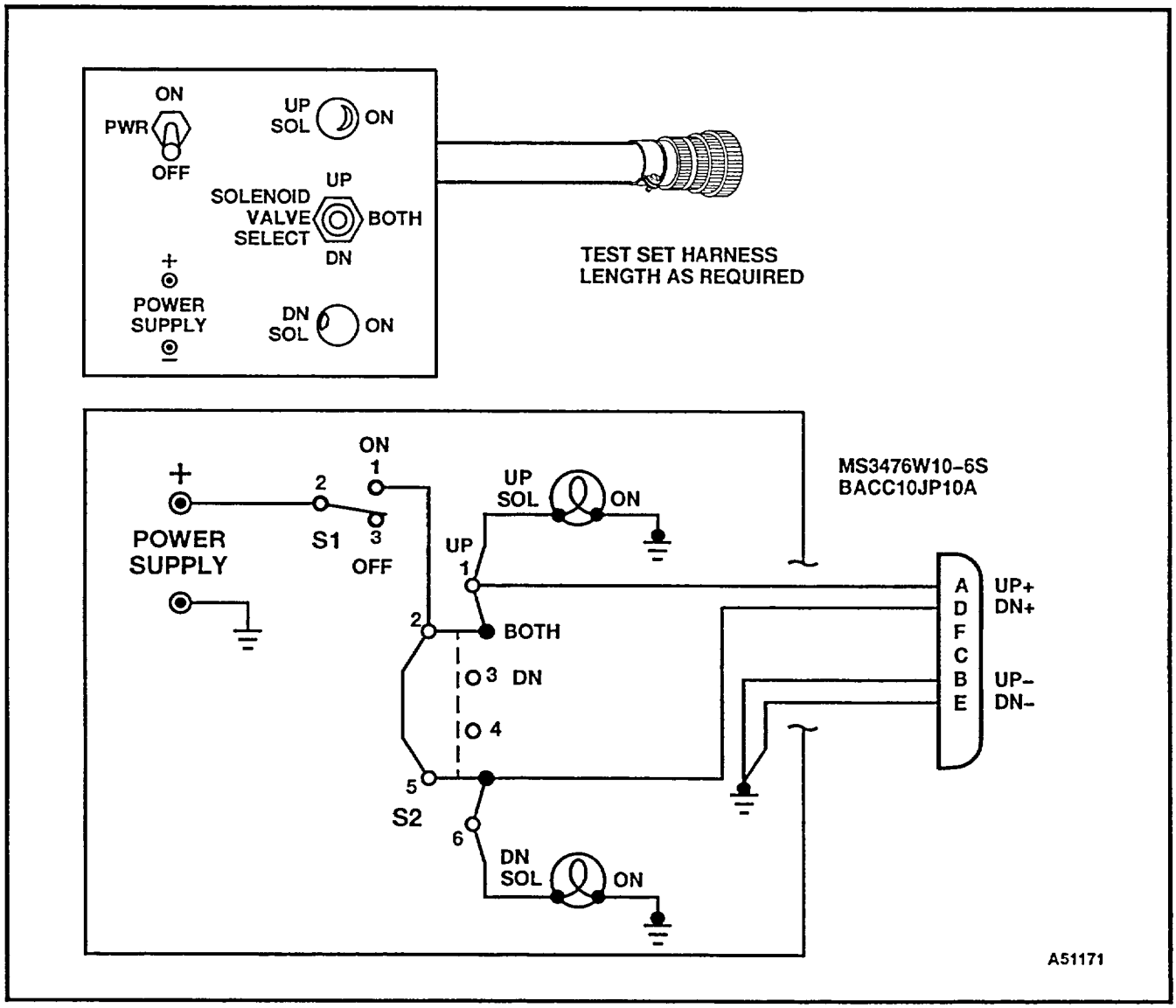
END OF TASK

NOTES:

1. FABRICATE FROM:

SWITCH BOX (SIZE OPTIONAL)	0.032, 2024-T3 CLAD AL		A/R
SWITCH (SPDT) (S1)	MS24523-21		QTY 1
SWITCH (DPTT) (S2)	MS27407-4		QTY 1
CONNECTOR	MS3476W1 0-6S		QTY 1
BACKSHELL		BACC10JP10A	QTY 1
WIRE	20 AWG (STRANDED)		A/R
TERMINALS (POWER SUPPLY)	TYPE MATEABLE WITH AVAILABLE POWER SUPPLY		QTY 2
LAMP HOLDER		25F1291	QTY 2
PANEL LIGHT	SHORT CYL. 28VDC	25F1434 (RED)	QTY 2

2. HOLES FOR SWITCHES AND THEIR ORIENTATION TAB OR KEY, MUST BE PROPERLY INSTALLED IN FACE OF BOX TO ASSURE PROPER ORIENTATION OF SWITCHES TO MARKINGS AS SHOWN.



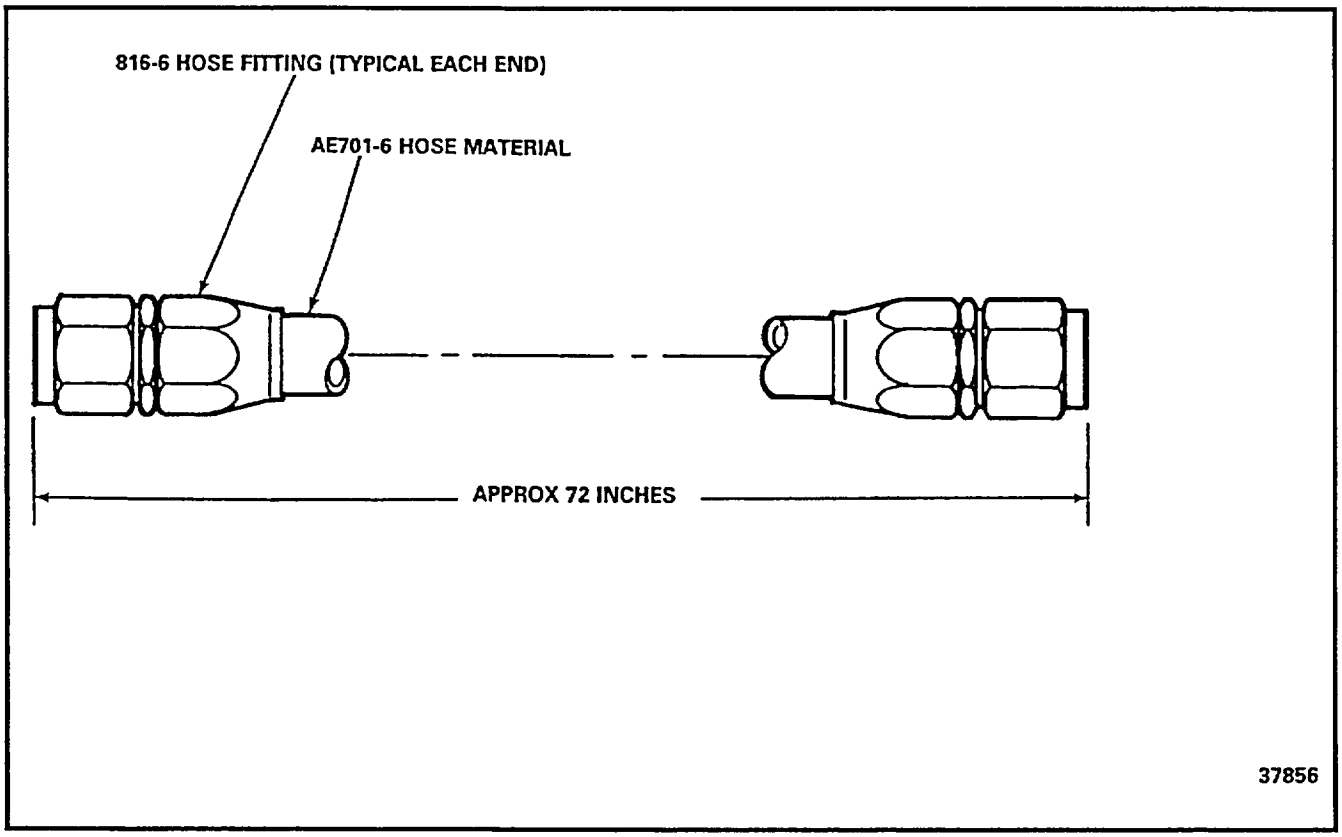
END OF TASK

E-318 ENGINE FUEL DEPRESERVATION DRAIN LINE E-318

NOTES:

1. FABRICATE FROM 72.0 INCH LENGTH OF AEROQUIP AE701-6 HOSE.

2. INSTALL AEROQUIP 816-6 FITTING ON EACH END OF HOSE.

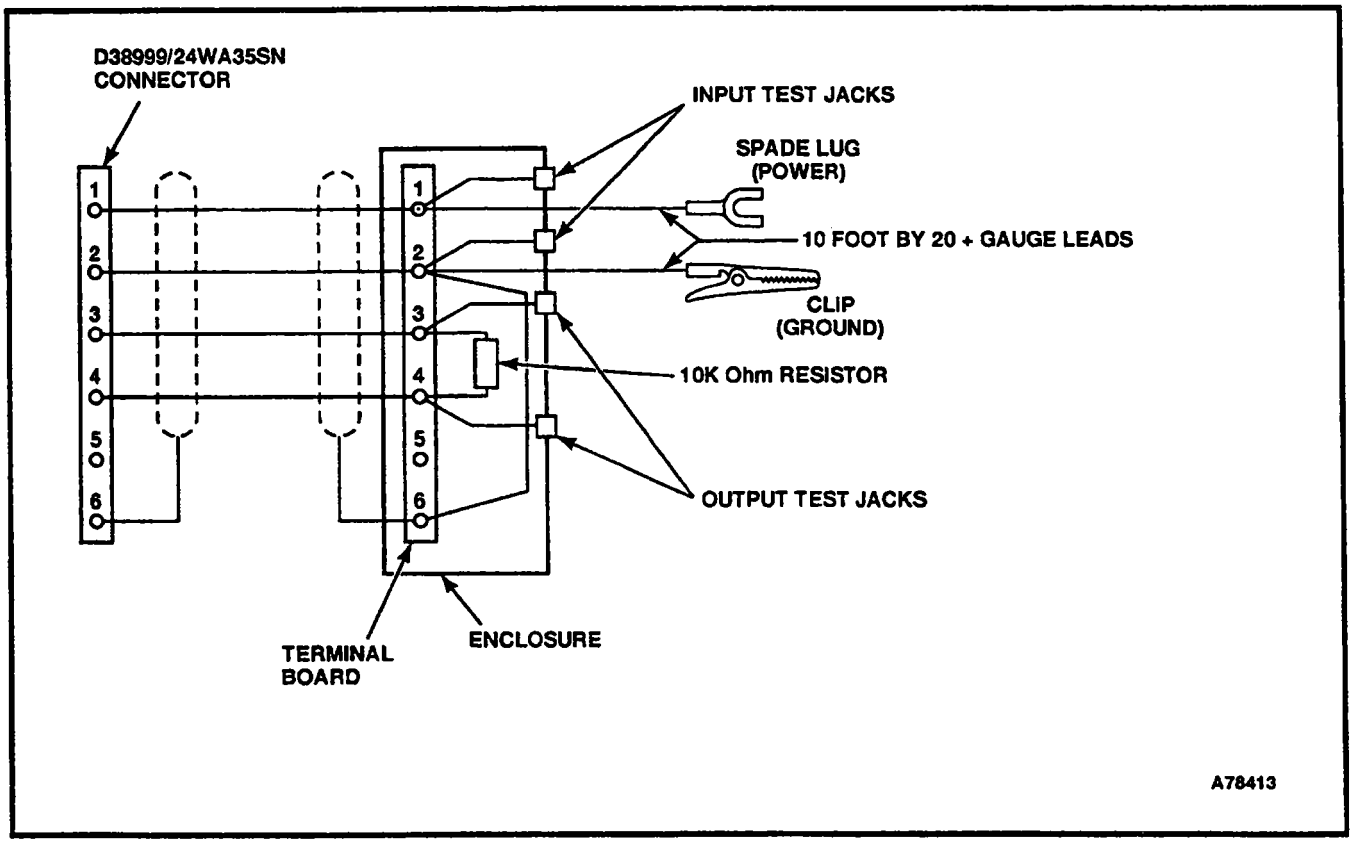


END OF TASK

E-319 THRUST LVDT TEST HARNESS E-319

NOTES:

1. MOUNT A SUITABLE TERMINAL BOARD IN AN ENCLOSURE.
2. USE 3 OR 4 FEET OF SHIELDED DUEL TWISTED PAIR WIRE BETWEEN CONNECTOR (D38999/24AWA35SN) PINS AND TERMINAL BOARD.
3. INSTALL A 10K OHM RESISTOR BETWEEN STUDS 3 AND 4 OF THE TERMINAL BOARD (LVDT LOAD).
4. CONNECT A 10 FT LENGTH OF 20 GAUGE (OR LARGER) WIRE TO STUD 1 OF THE TERMINAL BOARD AND CRIMP A SPADE LUG TO THE FREE END OF THE WIRE.
5. CONNECT A 10 FOOT LENGTH OF 20 GAUGE (OR LARGER) WIRE TO STUD 2 OF TERMINAL BOARD AND CRIMP A GROUND (ALLIGATOR) CLIP TO THE FREE END OF THE WIRE.
6. ATTACH JUMPER BETWEEN STUDS 2 AND 6 OF THE TERMINAL BOARD.
7. MOUNT FOUR INPUT TEST JACKS ON THE FRONT OF THE ENCLOSURE. CONNECT THE JACKS TO THE TERMINAL BOARD PER THE ILLUSTRATION.
8. LABEL THE JACKS INPUT AND OUTPUT PER THE ILLUSTRATION.

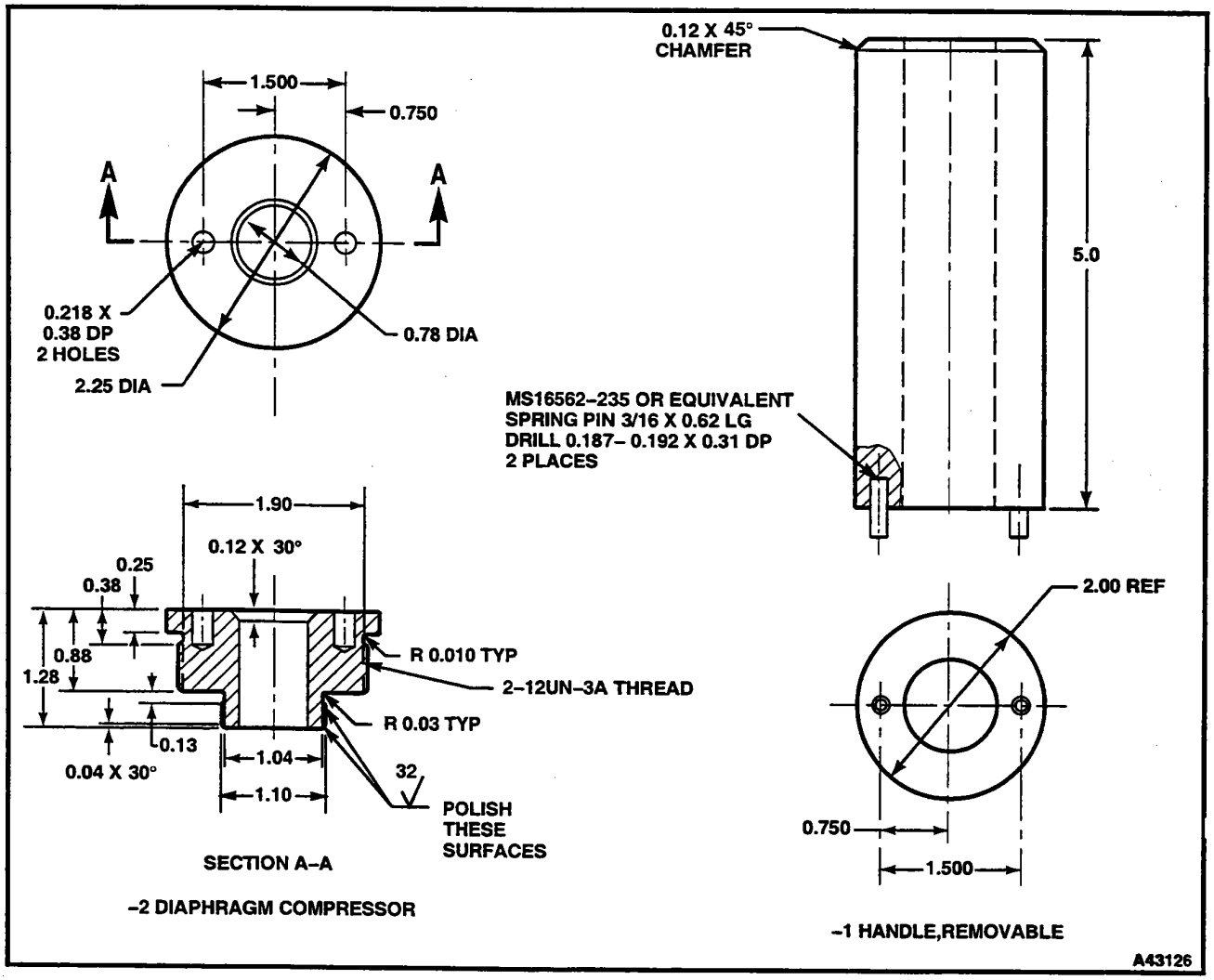


END OF TASK

E-320 DIAPHRAGM REPLACEMENT TOOL E-320

NOTES:

1. DIAPHRAGM REPLACEMENT TOOL CONSISTS OF SK33086-1 HANDLE AND SK33086-2 DIAPHRAGM COMPRESSOR.
2. BREAK ALL SHARP EDGES AND DEBURR.
3. TOLERANCES:
   .X ± .1
   .XX ± .03
   .XXX ± .005
4. ALL DIMENSIONS ARE IN INCHES.
5. DIAPHRAGM COMPRESSOR TOOL SK33086-2 IS FABRICATED FROM STL 1040 RD BAR.
6. HANDLE SK33086-1 IS FABRICATED FROM ALUM 6061 TUBE OF 2.00 OD X 1.00 ID.



END OF TASK

APPENDIX F
WIRING DIAGRAMS

(See TM 55-1520-240-T.)

APPENDIX G
WEIGHT AND BALANCE

SECTION I
GENERAL INFORMATION

G-1. WEIGHT AND BALANCE.

a. This appendix contains procedures required for intermediate maintenance personnel to perform their phase of the weight and balance control. The procedures are specifically applicable to the CH-47D and include the use of certain forms in the DD 365 series. For general weight and balance information, refer to TM 55-1500-342-23. It is not the intent of this appendix to duplicate information contained in TM 55-1500-342-23.

b. The weight and balance data provides the service activities with a standard system of intermediate maintenance weight and balance control. It contains brief instructive information to be used with the forms and charts which provide for continuous control of weight and balance of the aircraft. The data to be inserted on the charts and forms are applicable only to the individual aircraft, the serial number of which appears on the various forms and charts. These data are to remain with the aircraft in accordance with existing directives. The charts and forms referred to herein may differ in nomenclature and arrangement from those shown in previously published copies, since these charts are revised from time to time; however, the general principle of use will not change.

G-2. Responsibility. The aircraft manufacturer inserts all aircraft identifying data on the various charts, including one sample weight and balance clearance Form 365F, if applicable, at time of delivery. This record constitutes the basic weight and balance data of the aircraft at delivery. It is the maintenance officer's responsibility to monitor the technician who maintains the weight and balance data records. These data shall be maintained in a permanent binder for each aircraft. The binder shall reflect the model designation and the aircraft serial number. All DD 365-series forms, charts, and any other pertinent weight and balance data shall be maintained therein. All subsequent changes in weight and balance are compiled by the weight and balance technician in accordance with instructions contained herein.

G-3. Weight definition. Tare is the weight of equipment necessary for weighing the aircraft (chocks, blocks, slings, jacks, etc.) which is included in the scale reading (or reactions) but is not a part of the aircraft weight. Reference is made to TM 55-1500-342-23 for weight and balance definitions.

SECTION II
USE OF FORMS AND CHARTS

G-4. Instructions for use of the forms and charts. There are two parts to the weight and balance problem. First, one must have correct information as to the basic weight and moment. Second, gross weight and balance must be maintained within weight and CG limits with the addition of load. The first part is controlled by basic weight check list and basic weight and balance record after the basic weight and balance have been determined by weighing the aircraft. The second part is carried out on form F with the aid of a balance computer or loading data charts or graphs.

NOTE

The DD 365-series forms shall have no security classification until filled in. The forms, when filled in, shall take on the security classification of the aircraft for which they are used.

G-5. Forms. The standard system of intermediate maintenance weight and balance control requires the use of several different forms and shall be presented as samples in this appendix. They are identified as follows:

a. Record of Weight and Balance Personnel, DD Form 365 (Figure G-1).

b. Basic Weight Check List, DD Form 365-1 (Figure G-2).

c. Airplane Weighing Record, DD Form 365-2 (Figure G-3).

d. Basic Weight and Balance Record, DD Form 365-3 (Figure G-4).

e. Loading Data, Charts and Graphs. Chart E (Figure G-5).

f. Weight and Balance Clearance Form F, DD Form 365-4 (Figure G-6).

G-6. Record of Weight and Balance Personnel, DD Form 365 (Figure G-1). Listed at the top of this form are the aircraft designation and serial numbers. The form provides a continuous record of the name and grade (civilian or military) of weight and balance personnel responsible for the records, the station, the date assigned, and the date relieved. All entries shall be complete and legible.

G-7. Basic Weight Checklist, DD Form 365-1 (Figure G-2). The basic weight checklist is a tabulation of all operating equipment that is or may be installed and for which provision for fixed stowage has been made in a definite location in the aircraft. It gives the weight, arm, and moment/constant of the individual items for use in correcting the basic weight and moment on Form 365-3 as changes are made in this equipment. When check marks are entered in the IN AIRCRAFT column, it serves as the inventory of equipment included in the basic weight and moment/constant.

a. inventories shall be made periodically, and when:

(1) The aircraft undergoes modification, major overhaul, or repair.

(2) The aircraft is received at a new base.

(3) Changes in equipment are made for a different type of operation or mission.

(4} The aircraft is reweighed.

(5) The pilot reports unsatisfactory flight characteristics (tail or nose heaviness).

b. The manufacturer of the aircraft placed check marks in the IN AIRCRAFT column to identify the items of equipment in the aircraft for the delivery condition. This delivery inventory shows equipment included in the initial basic weight entry on Form 365-3.

c. Subsequent checklist inventories shall be carried as follows:

(1) Inspect aircraft for equipment actually installed, placing check marks in the next unused IN AIRCRAFT column. A check in the column headed IN AIRCRAFT indicates the presence of the item in the aircraft on the date at the head of the column, and a zero (0) indicates its absence. Items should not be checked unless they are installed, and items marked zero are not to be included in the basic weight and balance tabulated on Form 365-3 for the corresponding date. During this inventory, note whether any new items of equipment have been installed, and if so, enter item number and name or description, together with other data required through column Moment/Constant, including date in parentheses following description.

RECORD OF WEIGHT AND BALANCE PERSONNEL		FOR USE IN T.O. 1-1B-40, NAVAIR 01-1B-40, AND TM-55-1500-342-23		
MODEL/DESIGN		SERIAL NUMBER		
NAME (LAST, FIRST, M.I.)	WHERE AND WHEN QUALIFIED	STATION	DATE ASSIGNED (YYMMDD)	DATE RELIEVED (YYMMDD)

DD FORM 365 PREVIOUS EDITION WILL BE USED
82 JAN

14193

Figure G-1. DD Form 365 Record of Weight and Balance Personnel

FOR USE IN T.O. 1-1B-40, NAVAIR 01-1B-40, AND TM-55-1500-342-23

CHART A - BASIC WEIGHT CHECK LIST RECORD

PAGE OF PAGES	MODEL/DESIGN/SERIES	SERIAL NUMBER

COMPARTMENT AND ITEM NUMBER	ITEMS AND LOCATION *(GROUPED BY COMPARTMENT)*	WEIGHT	ARM	MOMENT/ ENTER CONSTANT	RECORD OF CHECKING (ENTER DATE) *(YYMMDD)*																	
					1		2		3		4		5		6		7		8		9	
					IN AIRCRAFT	CHART CENTRY	IN AIRCRAFT	CHART CENTRY	IN AIRCRAFT	CHART CENTRY	IN AIRCRAFT	CHART CENTRY	IN AIRCRAFT	CHART CENTRY	IN AIRCRAFT	CHART CENTRY	IN AIRCRAFT	CHART CENTRY	IN AIRCRAFT	CHART CENTRY	IN AIRCRAFT	CHART CENTRY

(2) Compare this inventory with that under last CHECK heading, noting any changes in items of equipment installed in aircraft. Refer to Form 365-3 to ascertain whether necessary weight and moment corrections have been made. If so, place check marks opposite such items in CHART C ENTRY column on the DD Form 365-1. If not, correct basic weight and moment/constant data on Form 365-3 and then enter CHART C ENTRY column check marks.

(3) Check marks are made only at the time of a complete inventory. Never change check marks or add new ones under a previously accomplished check heading. Use next CHECK column. When an inventory is included as part of a weighing, the procedures outlined in the preceding paragraph should not be omitted since this correction makes possible the comparison of calculated and actual weight figures. Check marks in CHART C ENTRY column indicate only a calculated change in the basic chart C figures.

(4) Ensure the same date is entered over CHECK heading on Form 365-1 and in date column on Form 365-3 for corresponding corrected basic weight and moment/constant.

G-8. Airplane Weighing Record, DD Form 365-2 (Figure G-3). Fill out DD Form 365-2 as follows:

a. Fill in identifying data and enter actual scale readings in first columns.

NOTE

The example weighing forms, provided in Figure G-3 have been modified specifically for use with CH-47D helicopters. A reproducible modified DD Form 365-2 is also provided in Figure G-3. This form is usable for 3 or 4 point weighing.

b. Subtract tare, if any, from scale readings to obtain net weight.

CAUTION

If the helicopter is to be weighed using the 3-point method, the gross weight must be determined by using the chart in task 1-30. If the 4-point method is used, the helicopter is restricted to a maximum gross weight of 33,000 lbs.

NOTE

Actual measurements are not necessary when the helicopter is weighed using either the forward fuselage jack point or the forward landing gear scissor jack pads and the aft fuselage jack points.

c. When weighing on 3 points, the forward fuselage jack pad is used in lieu of the 2 jack pads located on the forward landing gear. The forward fuselage jack pad is a jig point located at fuselage sta 96.0 designated as I on weighing form (Figure G-3, sample DD Form 365-2). The 2 aft fuselage jack points as described in the 4 point weighing procedure are used in conjunction with the forward jack pad. They are also jig points and are located at fuselage sta 484,5. They are designated as J on weighing form Fig. G-3. When weighing on 4 points, the jack pads on the landing gear scissors LH and RH are used for the forward reactions. They are located at fuselage sta 251.6 and designated as F on weighing form. The two aft fuselage jack points are jig points and are located at fuselage sta 484.5 and designated as J on the weighing form. Moments are taken about the reference datum.

d. Add net weights and moments of forward and aft reaction

e. Divide total moment by total net weight to obtain as weighed CG position in inches from reference datum (H).

f. Transfer TOTAL (As Weighed) weight, arm, and moment, to back of weighing form.

ROTORCRAFT WEIGHING RECORD

DATE WEIGHED	MODEL	SERIAL NUMBER

PLACE WEIGHED	WEIGHING PERSONNEL

REACTION (WHEELS, JACKPOINTS, ETC.)	SCALE READING	TARE	NET WEIGHT	ARM	MOMENT
LEFT FWD.	8630	— 0 —	8630		
RIGHT FWD.	—	—	—		
SUBTOTAL (BOTH FWD.) OR FWD. ONLY	8630		8630	F OR I 96.0	828480
LEFT AFT	6290	— 0 —	6290		
RIGHT AFT	8490	— 0 —	8490		
SUBTOTAL (BOTH AFT)	14780	— 0 —	14780	E OR J 484.5	7160910
TOTAL (AS WEIGHED)	23410	— 0 —	23410	341.3	7989390

MEASUREMENTS

B = — THE DISTANCE FROM THE JIG POINT, TO THE CENTER LINE OF THE AFT REACTIONS. OBTAINED BY MEASUREMENT.

I = 96.0 THE DISTANCE FROM THE REFERENCE DATUM TO THE JIG POINT ALSO THE FORWARD FUSELAGE JACKPOINT (I). FROM WHICH A PLUMB BOB CAN BE DROPPED TO THE GROUND. OBTAIN FROM THE ROTORCRAFT DIAGRAM IN CHART E.

E = — 1/THE DISTANCE FROM THE REFERENCE DATUM TO THE CENTER LINE OF THE AFT REACTIONS. E = I + B

D = — THE WHEEL BASE (OR THE DISTANCE BETWEEN FORE AND AFT REACTIONS.) OBTAINED BY MEASUREMENT.

F = — 1/THE DISTANCE FROM THE REFERENCE DATUM TO THE CENTER LINE OF THE FWD. REACTIONS. F = E - D

J = 484.5 THE DISTANCE FROM THE REFERENCE DATUM TO THE AFT FUSELAGE JACKPOINTS (2) OBTAIN FROM THE ROTORCRAFT DIAGRAM IN CHART E.

EXAMPLE
Three point weighing

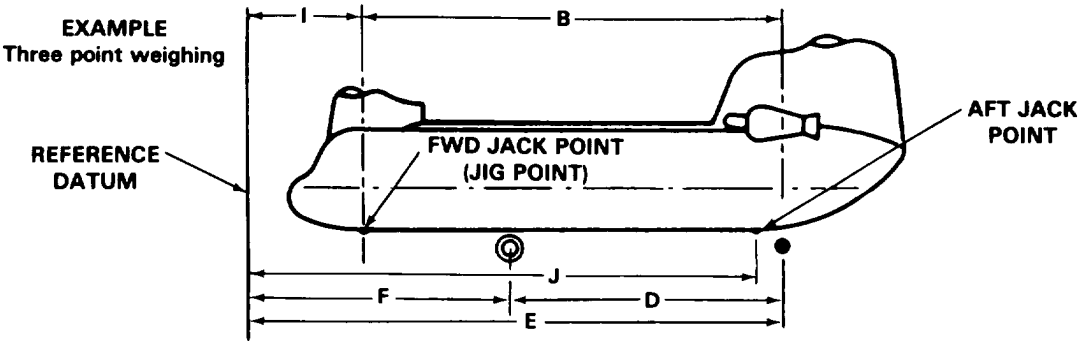


DIAGRAM FOR MEASURING ROTORCRAFT TO DETERMINE ARM OF SUPPORT POINTS

1/CHECK DIMENSIONS E AND F AGAINST DIMENSIONS LISTED ON CHART E.

DD FORM 365-2 (MODIFIED)

14190

Figure G-3. DD Form 365-2 (Sheet 1 of 6)

DESCRIPTION	NET WEIGHT	ARM	MOMENT	INDEX OR MOM/1000
TOTAL *(AS WEIGHED) (FROM FRONT SIDE)*	*23410*	*(341.3)*	*7989390*	
OIL IN AIRPLANE	—	—	—	
TOTAL OF ITEMS WEIGHED BUT NOT PART OF BASIC WEIGHT *(FROM COLUMN I BELOW)*	*10*	*(251.6)*	*2516.*	
TOTAL OF BASIC WEIGHT ITEMS NOT IN AIRCRAFT WHEN WEIGHED *(FROM COLUMN II BELOW)*				
BASIC AIRCRAFT *(POST TO CHART C)*	*23400*	*(341.3)*	*7986874*	*7986.9*

COLUMN I				COLUMN II			
ITEMS WEIGHED BUT NOT PART OF BASIC WEIGHT	WEIGHT	ARM	MOMENT	BASIC WEIGHT ITEMS NOT IN AIRCRAFT WHEN WEIGHED	WEIGHT	ARM	MOMENT
CHAINS, FWD STRUTS	*10*	*251.6*	*2516*				
TOTAL	*10*	*251.6*	*2516*	TOTAL			

REACTIONS USED

FORWARD REACTION – *FWD FUSELAGE JACKING PAD*
AFT REACTION – *AFT LANDING GEAR JACKING PAD (2)*

TYPE SCALE *COX & STEVENS (REVERE CORP)*
SERIAL NUMBER *S/N 4391*
CALIBRATION DATE *11/17/87*
CALIBRATED ACCURACY *11/18/88*

REMARKS

1. *AIRCRAFT WEIGHED IN A LEVEL ATTITUDE IN A CLOSED HANGAR.*
2. *BASIC WEIGHT INCLUDES FULL ENGINE OIL, TRAPPED AND UNUSABLE FUEL.*

EXAMPLE

Three point weighing

'ENTER CONSTANT NEED

14191

Figure G-3. DD Form 365-2 (Reverse) (Sheet 2 of 6)

ROTORCRAFT WEIGHING RECORD

DATE WEIGHED	MODEL	SERIAL NUMBER

PLACE WEIGHED	WEIGHING PERSONNEL

REACTION (WHEELS, JACKPOINTS, ETC.)	SCALE READING	TARE	NET WEIGHT	ARM	MOMENT
LEFT FWD.	9582	-0-	9577		
RIGHT FWD.	9692	-0-	9687		
SUBTOTAL (BOTH FWD.) OR FWD. ONLY	19274	-0-	19274	F OR 251.6	4849338
LEFT AFT	5411	-0-	5411		
RIGHT AFT	5456	-0-	5456		
SUBTOTAL (BOTH AFT)	10867	-0-	10867	E OR 484.5 J	5265062
TOTAL (AS WEIGHED)	30,141		30,141	(335.6)	10114400

MEASUREMENTS

B = ___ THE DISTANCE FROM THE JIG POINT, TO THE CENTER LINE OF THE AFT REACTIONS. OBTAINED BY MEASUREMENT.

I = ___ THE DISTANCE FROM THE REFERENCE DATUM TO THE JIG POINT ALSO THE FORWARD FUSELAGE JACKPOINT (I). FROM WHICH A PLUMB BOB CAN BE DROPPED TO THE GROUND. OBTAIN FROM THE ROTORCRAFT DIAGRAM IN CHART E.

E = ___ 1/THE DISTANCE FROM THE REFERENCE DATUM TO THE CENTER LINE OF THE AFT REACTIONS. E = I + B

D = ___ THE WHEEL BASE (OR THE DISTANCE BETWEEN FORE AND AFT REACTIONS.) OBTAINED BY MEASUREMENT.

F = 251.6 1/THE DISTANCE FROM THE REFERENCE DATUM TO THE CENTER LINE OF THE FWD. REACTIONS. F = E - D

J = 484.5 THE DISTANCE FROM THE REFERENCE DATUM TO THE AFT FUSELAGE JACKPOINTS (2) OBTAIN FROM THE ROTORCRAFT DIAGRAM IN CHART E.

EXAMPLE
Four point weighing

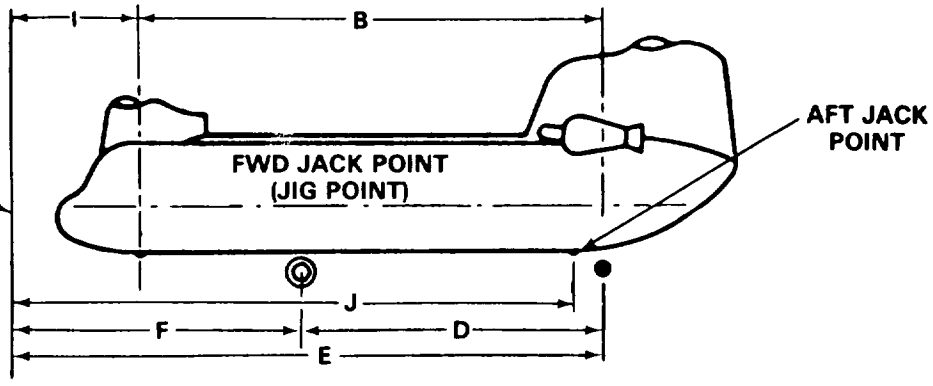


DIAGRAM FOR MEASURING ROTORCRAFT TO DETERMINE ARM OF SUPPORT POINTS

1/CHECK DIMENSIONS E AND F AGAINST DIMENSIONS LISTED ON CHART E.

DD FORM 365-2 (MODIFIED) 14188

Figure G-3. DD Form 365-2 (Sheet 3 of 6)

DESCRIPTION	NET WEIGHT	ARM	MOMENT	INDEX OR MOM/100
TOTAL *(AS WEIGHED) (FROM FRONT SIDE)*	*30,141*	*335.6*	*10114400*	
OIL IN AIRPLANE	—	—	—	
TOTAL OF ITEMS WEIGHED BUT NOT PART OF BASIC WEIGHT *(FROM COLUMN I BELOW)*	*6731*	*315.7*	*2124336*	
TOTAL OF BASIC WEIGHT ITEMS NOT IN AIRCRAFT WHEN WEIGHED *(FROM COLUMN II BELOW)*				
BASIC AIRCRAFT *(POST TO CHART C)*	*23410*	*(341.3)*	*7990064*	*7990.0*

COLUMN I				COLUMN II			
ITEMS WEIGHED BUT NOT PART OF BASIC WEIGHT	WEIGHT	ARM	MOMENT	BASIC WEIGHT ITEMS NOT IN AIRCRAFT WHEN WEIGHED	WEIGHT	ARM	MOMENT
FUEL JP4	*6721*	*315.7*	*2121820*				
FWD GEAR CHAINS	*10*	*251.6*	*2516*				
TOTAL	*6731*	*(315.6)*	*2124336*	TOTAL			

REACTIONS USED

FORWARD REACTION = *FWD GEAR JACKING PADS*
AFT REACTION = *AFT GEAR JACKING PADS*

TYPE SCALE *COX & STEVENS (REVERE CORP.)*
SERIAL NUMBER *S/N 4391*
CALIBRATION DATE *(YYMMDD) 11/17/87*
CALIBRATED ACCURACY *11/18/88*

REMARKS

1. *AIRCRAFT WEIGHED IN A LEVEL ATTITUDE IN A CLOSED HANGAR.*
2. *BASIC WEIGHT INCLUDES FULL ENGINE OIL.*
3. *FULL FUEL TANKS, 1034 GAL. JP-4 6.5 LBS PER GAL.*

EXAMPLE
Four point weighing

'ENTER CONSTANT NEED

14189

Figure G-3. DD Form 365-2 (Reverse) (Sheet 4 of 6)

ROTORCRAFT WEIGHING RECORD

DATE WEIGHED	MODEL	SERIAL NUMBER

PLACE WEIGHED	WEIGHING PERSONNEL

REACTION (WHEELS, JACKPOINTS, ETC.)	SCALE READING	TARE	NET WEIGHT	ARM	MOMENT
LEFT FWD					
RIGHT FWD					
SUBTOTAL (BOTH FWD.) OR FWD ONLY					
LEFT AFT					
RIGHT AFT					
SUBTOTAL (BOTH AFT)					
TOTAL (AS WEIGHED)					

MEASUREMENTS

B _____ THE DISTANCE FROM THE JIG POINT, TO THE CENTER LINE OF THE AFT REACTIONS OBTAINED BY MEASUREMENT

I _____ THE DISTANCE FROM THE REFERENCE DATUM TO THE JIG POINT ALSO THE FORWARD FUSELAGE JACKPOINT (I) FROM WHICH A PLUMB BOB CAN BE DROPPED TO THE GROUND OBTAIN FROM THE ROTORCRAFT DIAGRAM IN CHART E

E _____ 1/THE DISTANCE FROM THE REFERENCE DATUM TO THE CENTER LINE OF THE AFT REACTIONS E - I - B

D _____ THE WHEEL BASE (OR THE DISTANCE BETWEEN FORE AND AFT REACTIONS) OBTAINED BY MEASUREMENT

F _____ 1/THE DISTANCE FROM THE REFERENCE DATUM TO THE CENTER LINE OF THE FWD REACTIONS F - E - D

J _____ THE DISTANCE FROM THE REFERENCE DATUM TO THE AFT FUSELAGE JACKPOINTS (2) OBTAIN FROM THE ROTORCRAFT DIAGRAM IN CHART E

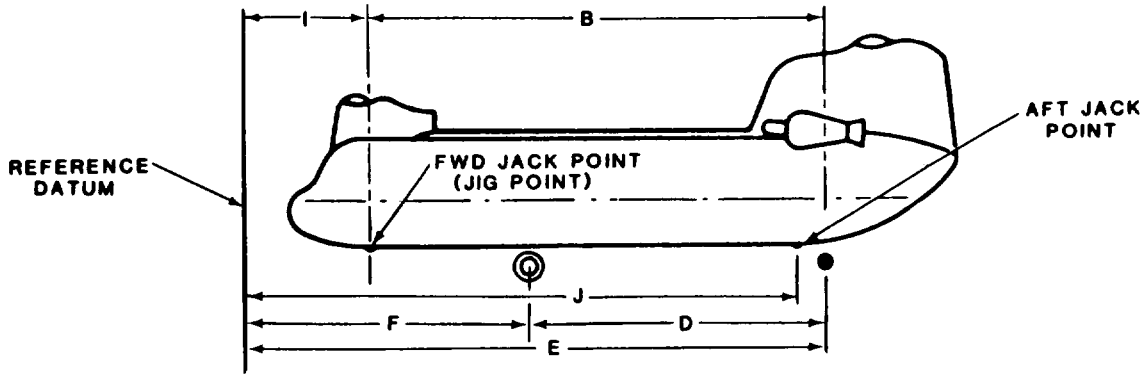


DIAGRAM FOR MEASURING ROTORCRAFT TO DETERMINE ARM OF SUPPORT POINTS

1/CHECK DIMENSIONS E AND F AGAINST DIMENSIONS LISTED ON CHART E

DD FORM 365-2 (MODIFIED) 14186

Figure G-3. DD Form 365-2 Weighing Record (Sheet 5 of 6)

DESCRIPTION	NET WEIGHT	ARM	MOMENT	INDEX OR MOM/1000
TOTAL *(AS WEIGHED) (FROM FRONT SIDE)*				
OIL IN AIRPLANE	—	—	—	
TOTAL OF ITEMS WEIGHED BUT NOT PART OF BASIC WEIGHT *(FROM COLUMN 1 BELOW)*				
TOTAL OF BASIC WEIGHT ITEMS NOT IN AIRCRAFT WHEN WEIGHED *(FROM COLUMN II BELOW)*				
BASIC AIRCRAFT *(POST TO CHART C)*				

COLUMN I				COLUMN II			
ITEMS WEIGHED BUT NOT PART OF BASIC WEIGHT	WEIGHT	ARM	MOMENT	BASIC WEIGHT ITEMS NOT IN AIRCRAFT WHEN WEIGHED	WEIGHT	ARM	MOMENT
TOTAL				TOTAL			

REACTIONS USED	TYPE SCALE SERIAL NUMBER CALIBRATION DATE *(YYMMDD)* CALIBRATED ACCURACY
FORWARD REACTION = AFT REACTION =	

REMARKS

[1] *ENTER CONSTANT NEED*

14187

Figure G-3. DD Form 365-2 (Reverse) (Sheet 6 of 6)

g. Subtract total weight and moment of items entered in column I. These items should not be checked on chart A as IN AIRCRAFT.

h. Add total weight and total moment of items in column II. These items must be checked in chart A as IN AIRCRAFT to indicate their inclusion in the basic weight. If aircraft is weighed after overhaul with a completely dry fuel or oil system, include trapped fuel or oil in column II.

i. Enter new basic weight and moment/constant on Form 365-3. All subsequent aircraft loadings will be based on the latest figures entered on Form 365-3.

j. Fill in reactions and type scales used.

k. Include under REMARKS, information as to attitude of aircraft when weighed, method of support, etc.

G-9. Basic Weight and Balance Record, DD Form 365-3 (Figure G-4). Form 365-3 is a continuous history of the basic weight, moment, and balance computer index resulting from structural and equipment changes in service. At all times the last weight, moment/constant, and index entry is considered the current weight and balance status of the basic aircraft. The basic index for the balance computer can be determined by means of the index scale or index formula on the computer.

a. At time of delivery of a new aircraft, the manufacturer entered on this chart the basic weight, moment/constant, and index of the aircraft. The itemized list of the equipment included herein is shown and checked on chart A in the IN AIRCRAFT column.

b. Make additions to or subtractions from basic weight and moment on Form 365-3 when:

(1) Equipment is added to or removed from the aircraft. If item is listed on Form 365-1, enter identical item number, description and applicable weight, arm, and moment data on Form 365-3. If item is not listed on Form 365-1, determine its actual weight and arm, and record this information on both Form 365-1 and Form 365-3.

NOTE

Do not enter check marks on Form 365-1 for these items until a complete inventory is made, but enter the date in parentheses following the description.

(2) A complete inventory reveals equipment changes not previously recorded. Post equipment changes as noted above. Date newly calculated basic weight and moment to correspond with date entered at head of CHECK column on Form 365-1 identifying equipment content of new figures. It is also helpful to record the check column number which substantiates this new basic weight and moment.

(3) Structural changes are made in the aircraft. If structural changes are provisions for equipment, list them separately from equipment to be installed thereon.

(4) The aircraft is reweighed. Before weighing make a complete inventory and bring calculated Form 365-3 figures up to date. Enter new as weighed basic weight and moment from aircraft weighing record.

c. Any changes or modifications which are caused by a specific order should carry a reference to the order number and date which authorizes the change.

NOTE

The date entered on Form 365-3 must be consistent with the delivery date or the date entered on the top of the CHECK column on Form 365-1, and with the date on the aircraft weighing record if used.

CHART C – BASE WEIGHT AND BALANCE RECORD

(CONTINUOUS HISTORY OF CHANGES IN STRUCTURE OR EQUIPMENT AFFECTING WEIGHT AND BALANCE)

FOR USE IN T.O. 1-1B-40, NAVAIR 01-1B-40, AND TM-55-1500-342-23

MODEL/DESIGN/SERIES	SERIAL NUMBER	PAGE NUMBER

DATE (YYMMDD)	ITEM NUMBER		DESCRIPTION OF ARTICLE OR MODIFICATION	WEIGHT CHANGE						CURRENT TOTAL BASIC AIRCRAFT		
				ADDED(+)			REMOVED(-)					
	IN	OUT		WEIGHT	ARM	MOMENT [1]	WEIGHT	ARM	MOMENT [1]	WEIGHT	MOMENT [1]	INDEX [2]

G-10. Loading data (Figure G-5). The loading data illustrations provide information necessary to work a loading problem for the aircraft. The balance computer, if furnished, accomplishes the same purpose and requires less computation. From the loading graphs or tables, weight and moment/constant are obtained for all variable load items and are added arithmetically to the current basic weight and moment/constant (from DD Form 365-3) to obtain the gross weight and moment. The CG of the loaded aircraft is represented by the intersection of the gross weight and moment lines on the CG graph or by a moment figure if tables are used. If the aircraft is loaded within the forward and aft CG limits, the intersection will fall between the limiting CG lines on the CG graph, or if a table is used, the moment figure will fail numerically between the limiting moments. The effect of the CG on the expenditures in flight of such items as fuel and expendable stores may be checked by subtracting the weights and moments of such items from the takeoff gross weight and moment and repotting on the CG graph or checking the new moment with the CG table. This check should be made to determine whether or not the CG will remain within limits during the entire flight.

G-11. Weight and Balance Clearance Form F, DD Form 365-4 (Figure G-6). Form F is the summary of the actual disposition of load in the aircraft. It records the balance status of the aircraft step by step. It serves as a work sheet on which the weight and balance technical records and calculations, and any corrections, must be made to insure that the aircraft will be within weight and CG limits. It is necessary to accomplish Form F prior to flight whenever an aircraft is loaded in a manner for which no previous valid Form F is available. Form F is furnished in expendable pads, or as separate sheets, which can be replaced when exhausted. An original and a carbon copy are prepared for each loading. The original sheets, carrying the signature of responsibility, can be removed to serve as certificates of proper weight and balance as required by existing clearance directives. The carbon copy must remain in the aircraft for the duration of the flight. On a cross-country flight, this form aids the weight and balance technician at refueling bases and stopover stations. There are two versions of this form: TRANSPORT and TACTICAL. They were designed to provide for the respective loading arrangements of these two types of aircraft. It will be noted that the general use and fulfillment of either version is the same, although specific instructions for filling out each version are given in the -10 manual. The choice of which version to use in case of a tactical aircraft which is used to transport cargo items, or of a cargo ship which is armed for protection, is the responsibility of the weight and balance technicians at the takeoff base.

NOTE

U.S. Army Special Mission Aircraft shall use DD Form 365-4 titled TRANSPORT.

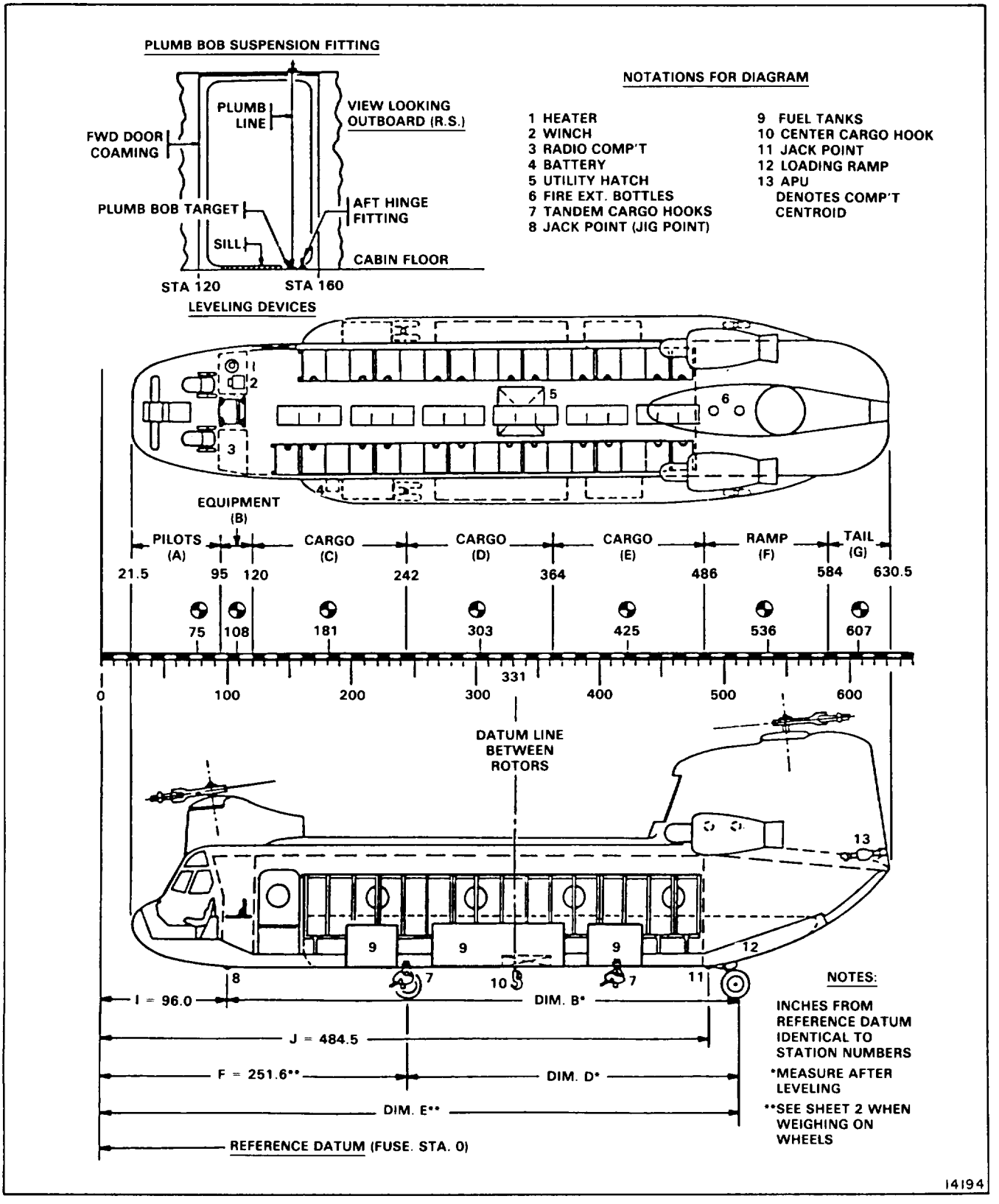


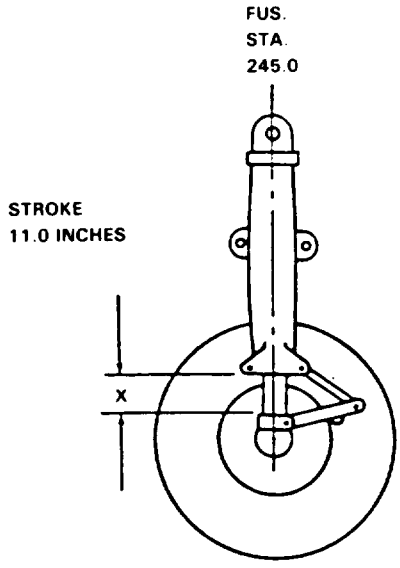
Figure G-5. Chart E (Sheet 1 of 23)

LANDING GEAR DIMENSIONS

FORWARD WHEELS			AFT WHEELS		
	X	DIM. F		Y	* DIM. E
FULLY COMPRESSED	0.0	245.0	FULLY COMPRESSED	0.0	513.8
	1.0			1.0	514.2
STATIC CONDITION	1.6			2.0	514.5
	2.0			3.0	514.8
	3.0		STATIC CONDITION	3.9	515.0
	4.0			5.0	515.1
	5.0			6.0	515.2
	6.0			7.0	515.2
	7.0			8.0	515.1
	8.0		FULLY EXTENDED	9.2	515.0
	9.0				
	10.0				
FULLY EXTENDED	11.0				

NOTES:

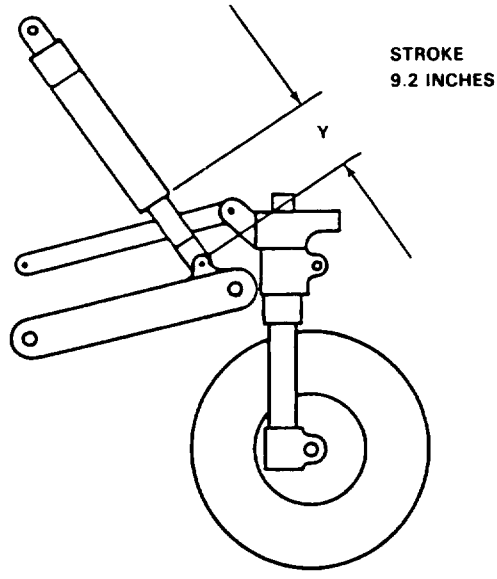
1. X = Exposed chrome on forward shock strut.



RH GEAR LOOKING OUTB'D

NOTES:

1. Y = Exposed chrome on aft shock strut.
2. * = Approximate. Determine actual dimensions during weighing.
3. A shock strut stroke of 9.2 inches produces a vertical wheel travel of 11.5 inches.



RH GEAR LOOKING OUTB'D

14195

Figure G-5. Chart E (Sheet 2 of 23)

FUEL LOADING CHART
MID TANKS

WEIGHT (LB)	ARM = 317.3 MOM/1000	WEIGHT (LB)	ARM = 317.3 MOM/1000	WEIGHT (LB)	ARM = 317.3 MOM/1000
50	15.9	1400	444.2	2750	872.6
100	31.7	1450	460.1	2800	888.4
156	47.6	1500	476.0	2850	904.3
200	63.5	1550	491.8	2900	920.2
250	79.3	1600	507.7	2950	936.0
300	95.2	1650	523.5	3000	951.9
350	111.1	1700	539.4	3050	967.8
400	126.9	1750	555.3	3100	983.6
450	142.8	1800	571.1	3150	999.5
500	158.7	1850	587.0	3200	1015.4
550	174.5	1900	602.9	3250	1031.2
600	190.4	1950	618.7	3300	1047.1
650	206.2	2000	634.6	3350	1063.0
700	222.1	2050	650.5	3400	1078.8
750	238.0	2100	666.3	3450	1094.7
800	253.8	2150	682.2	3500	1110.6
850	269.7	2200	698.1	3550	1126.4
900	285.6	2250	713.9	3600	1142.3
950	301.4	2300	729.8	*3627	1150.8
1000	317.3	2350	745.7	3650	1158.1
1050	333.2	2400	761.5	3700	1174.0
1100	349.0	2450	777.4	3750	1189.9
1150	364.9	2500	793.3	**3794	1203.8
1200	380.8	2550	809.1	3850	1221.6
1250	396.6	2600	825.0	3900	1237.5
1300	412.5	2650	840.8	3950	1253.3
1350	428.4	2700	856.7	4000	1269.2

NOTES:

1. Two Mid tanks. Fuel consumed simultaneously, 558 gallons, total.
2. Asterisk (*) indicates approximate weight and moment for full Mid tanks (100% self-sealing) based on JP-4 fuel (MIL-F-5624B) at 6.5 pounds per gallon.
3. Double asterisk (**) indicates approximate weight and moment for full Mid tanks (100% self-sealing) based on JP-5 fuel (MIL-F-5624B) at 6.8 pounds per gallon.
4. Total weight of fuel is dependent upon the specific gravity and temperature. Therefore, the notation "FULL" does not appear on the fuel quantity gages. Variation should be anticipated in gage readings when tanks are full.
5. See sheet 1 of 23 for tank arrangement.

14196

Figure G-5. Chart E (Sheet 3 of 23)

FUEL LOADING CHART
FWD. & AFT TANKS

NORMAL OPERATION

WEIGHT (LB)	COMMON ARM = 314.0 MOM/1000
100	31.4
200	62.8
300	94.2
400	125.6
500	157.0
600	188.4
700	219.8
800	251.2
900	282.6
1000	314.0
1100	345.4
1200	376.8
1300	408.2
1400	439.6
1500	471.0
1600	502.4
1700	533.8
1800	565.2
1900	596.6
2000	628.0
2100	659.4
2200	690.8
2300	722.2
2400	753.6
2500	785.0
2600	816.4
2700	847.8
2800	879.2
2900	910.6
3000	942.0
*3094	971.5
3200	1004.8
**3236	1016.1
3300	1036.2
3400	1067.6
3500	1099.

Two fwd, and two aft tanks. Fuel consumed simultaneously, 476 gallons, total.

EMERGENCY OPERATION ONLY

WEIGHT (LB)	FORWARD ARM = 214.0 MOM/1000	AFT ARM = 414.0 MOM/1000
50	10.7	20.7
100	21.74	41.4
150	32.1	62.1
200	42.8	82.8
250	53.5	103.5
300	64.2	124.2
350	74.9	144.9
400	85.6	165.6
450	96.3	186.3
500	107.0	207.0
550	117.7	227.7
600	128.4	248.4
650	139.1	269.1
700	149.8	289.8
750	160.5	310.5
800	171.2	331.2
850	181.9	351.9
900	192.6	372.6
950	203.3	393.3
1000	214.0	414.0
1050	224.7	434.7
1100	235.4	455.4
1150	246.1	476.1
1200	256.8	496.8
1250	267.5	517.5
1300	278.2	538.2
1350	288.9	558.9
1400	299.6	579.6
1450	310.3	600.3
1500	321.0	621.0
*1547	331.1	640.4
1600	342.4	662.4
**1618	346.2	669.9
1650	353.1	683.1
1700	363.8	703.8
1750	374.5	724.5

Two fwd, and two aft tanks. Fuel consumed individually, 238 gallons fwd, and 238 gallons aft.

NOTES:

1. Asterisk (*) indicates approximate weight and moment for full fwd, and aft tanks (100% self-sealing) based on JP-4 fuel (MIL-F-5624B) at 6.5 pounds per gallon.
2. Double asterisk (**) indicates approximate weight and moment for full fwd, and aft tanks (100% self-sealing) based on JP-5 fuel (MIL-F-5624B) at 6.8 pounds per gallon.
3. Total weight of fuel is dependent upon the specific gravity and temperature. Therefore, the notation "FULL" does not appear on the fuel quantity gages. Variation should be anticipated in gage readings when tanks are full.
4. See sheet 1 of 23 for tank arrangement.

14197

Figure G-5. Chart E (Sheet 4 of 23)

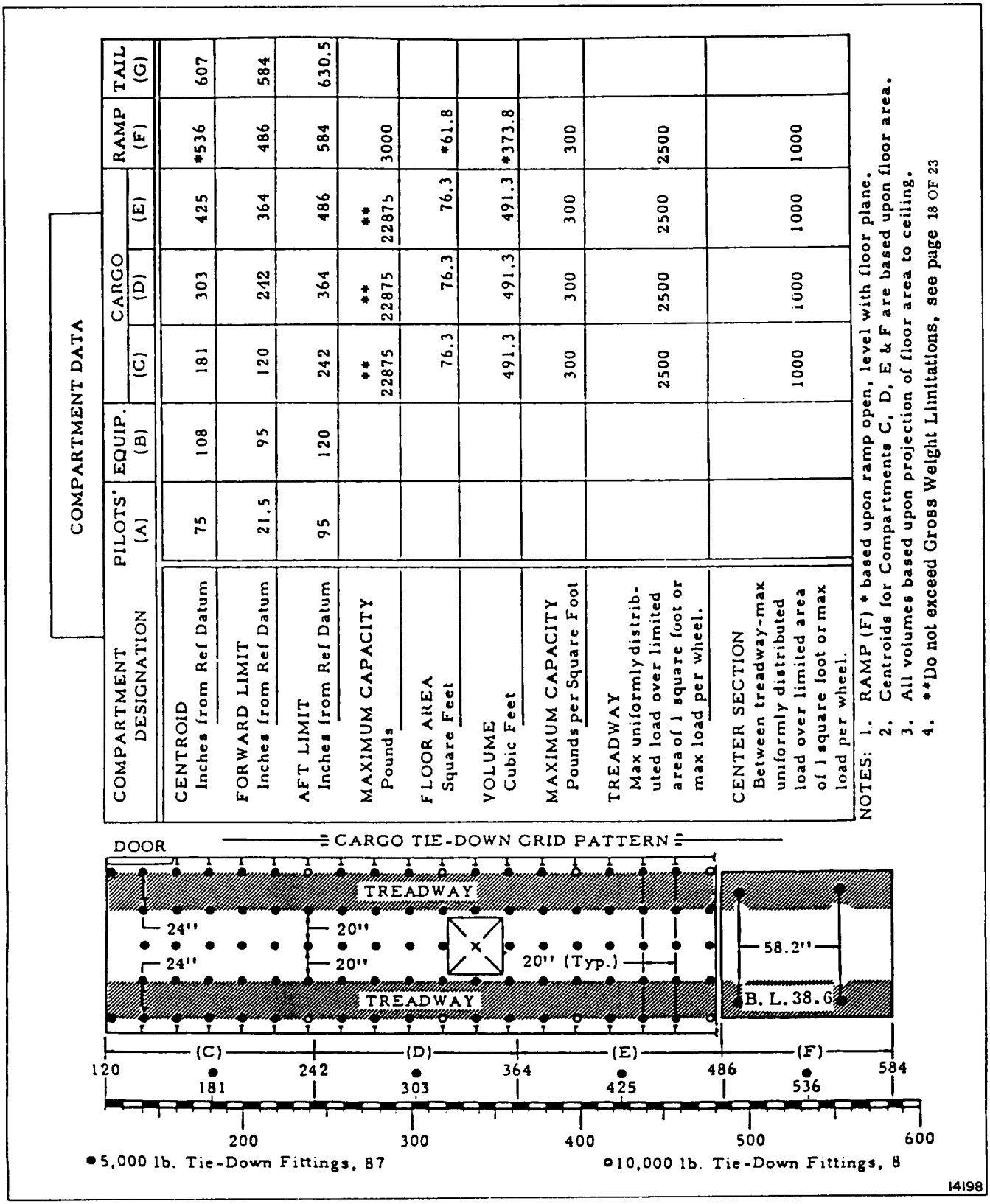
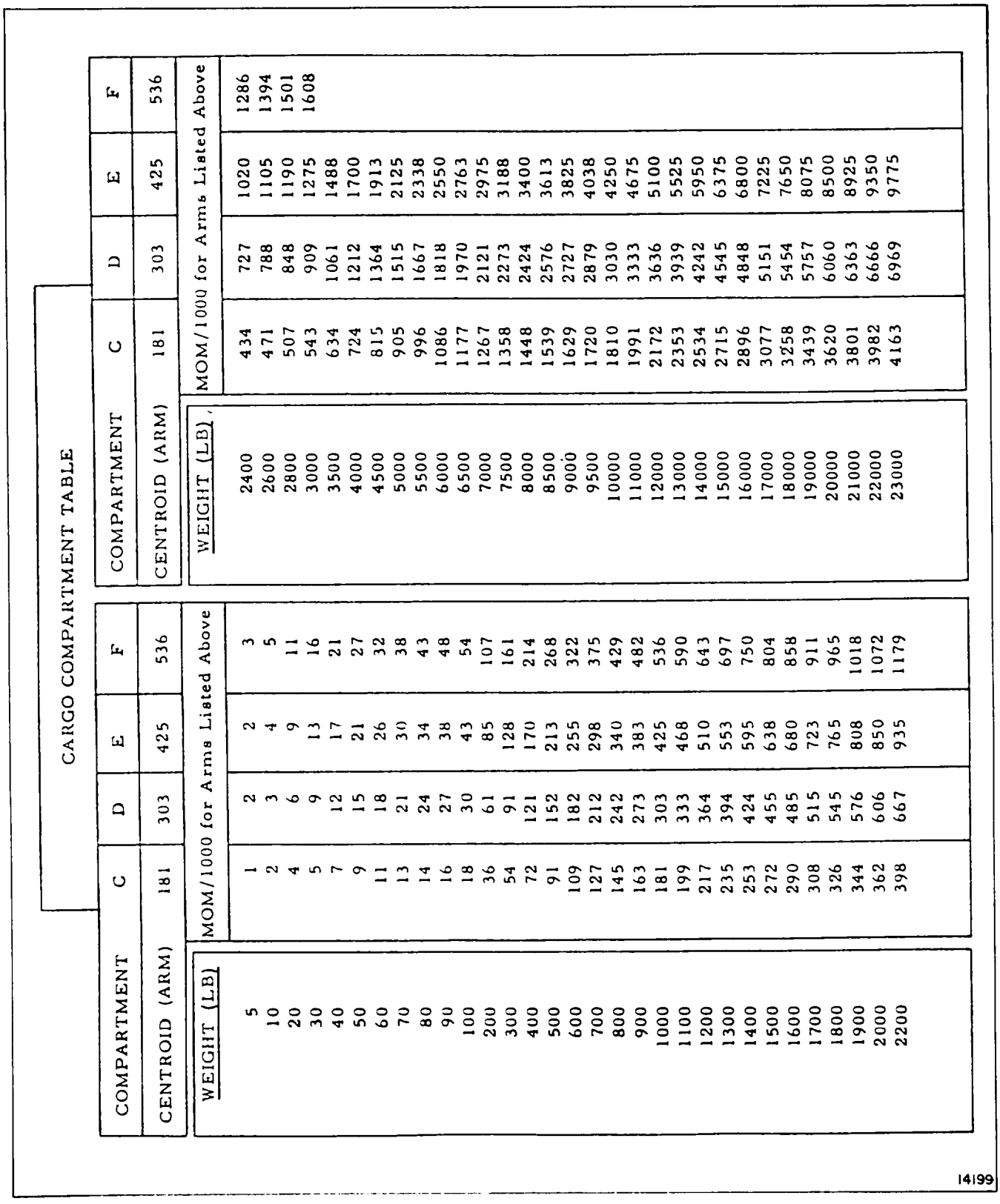


Figure G-5. Chart E (Sheet 5 of 23)



CARGO COMPARTMENT TABLE

COMPARTMENT	C	D	E	F
CENTROID (ARM)	181	303	425	536

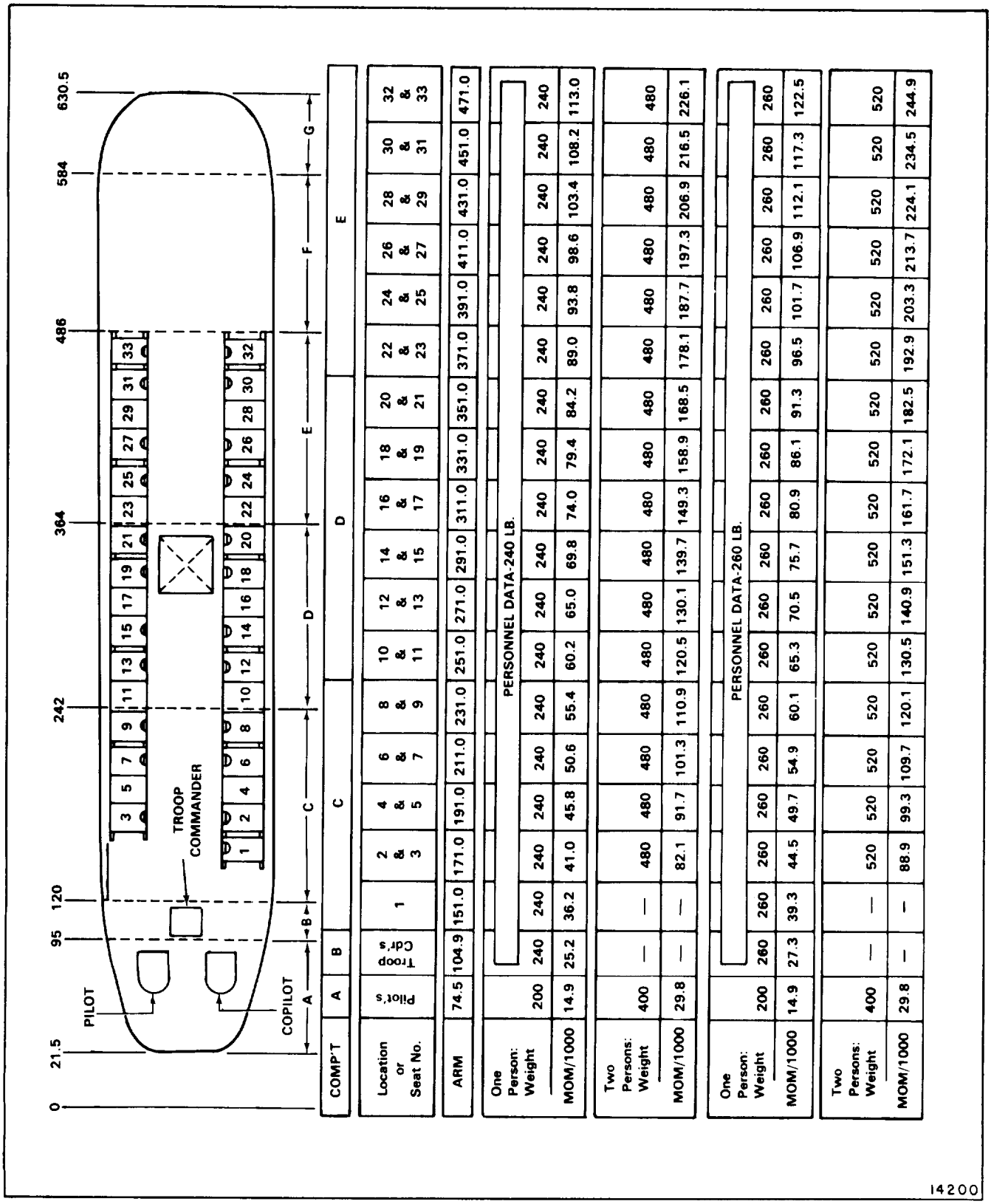
WEIGHT (LB)	MOM/1000 for Arms Listed Above			
5	1	2	2	3
10	2	3	4	5
20	4	6	9	11
30	5	9	13	16
40	7	12	17	21
50	9	15	21	27
60	11	18	26	32
70	13	21	30	38
80	14	24	34	43
90	16	27	38	48
100	18	30	43	54
200	36	61	85	107
300	54	91	128	161
400	72	121	170	214
500	91	152	213	268
600	109	182	255	322
700	127	212	298	375
800	145	242	340	429
900	163	273	383	482
1000	181	303	425	536
1100	199	333	468	590
1200	217	364	510	643
1300	235	394	553	697
1400	253	424	595	750
1500	272	455	638	804
1600	290	485	680	858
1700	308	515	723	911
1800	326	545	765	965
1900	344	576	808	1018
2000	362	606	850	1072
2200	398	667	935	1179

COMPARTMENT	C	D	E	F
CENTROID (ARM)	181	303	425	536

WEIGHT (LB)	MOM/1000 for Arms Listed Above			
2400	434	727	1020	1286
2600	471	788	1105	1394
2800	507	848	1190	1501
3000	543	909	1275	1608
3500	634	1061	1488	
4000	724	1212	1700	
4500	815	1364	1913	
5000	905	1515	2125	
5500	996	1667	2338	
6000	1086	1818	2550	
6500	1177	1970	2763	
7000	1267	2121	2975	
7500	1358	2273	3188	
8000	1448	2424	3400	
8500	1539	2576	3613	
9000	1629	2727	3825	
9500	1720	2879	4038	
10000	1810	3030	4250	
11000	1991	3333	4675	
12000	2172	3636	5100	
13000	2353	3939	5525	
14000	2534	4242	5950	
15000	2715	4545	6375	
16000	2896	4848	6800	
17000	3077	5151	7225	
18000	3258	5454	7650	
19000	3439	5757	8075	
20000	3620	6060	8500	
21000	3801	6363	8925	
22000	3982	6666	9350	
23000	4163	6969	9775	

14199

Figure G-5. Chart E (Sheet 6 of 23)

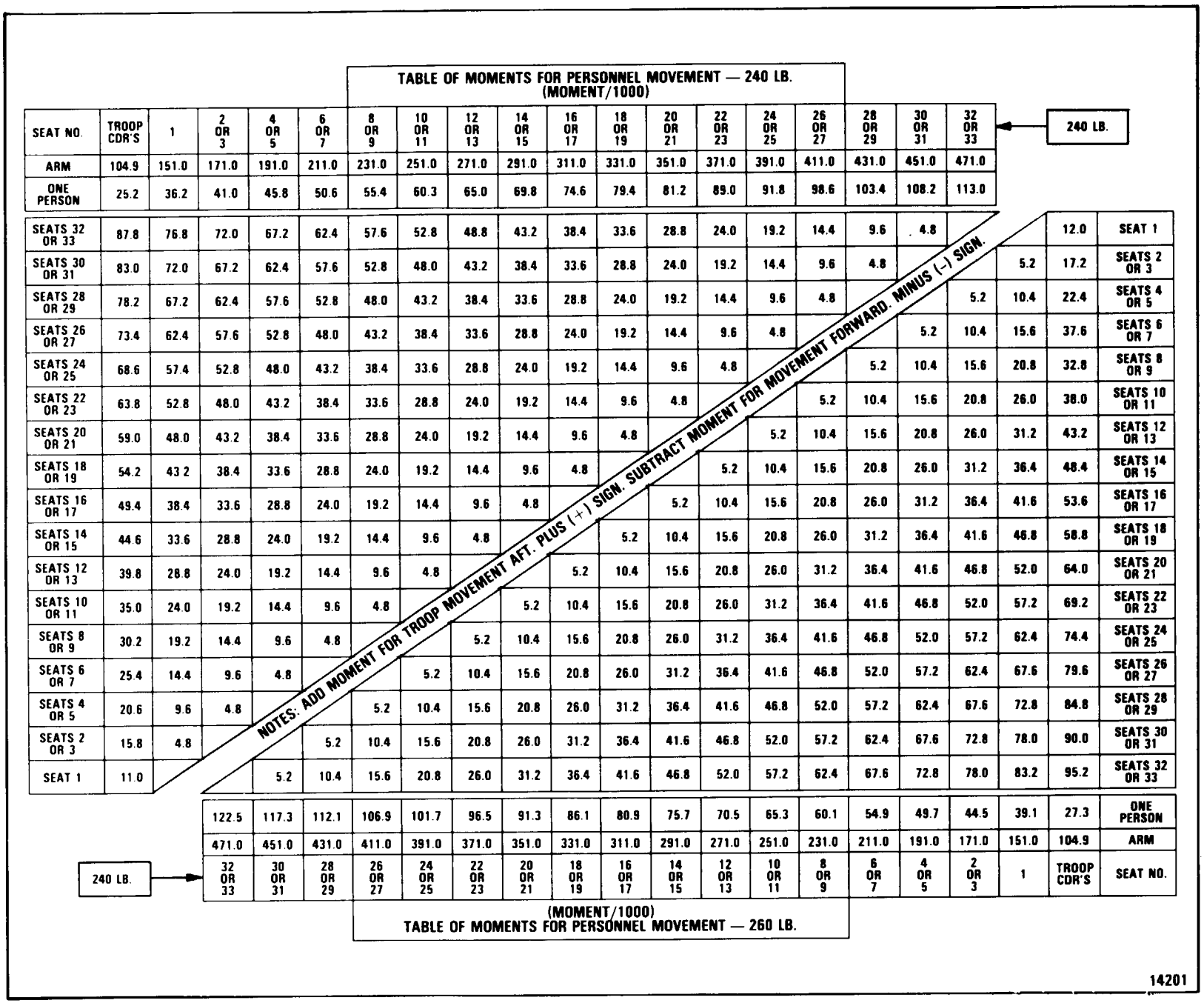


COMP'T	A	B	C								D								E				
Location or Seat No.	Pilot's	Troop Cdr's	1	2 & 3	4 & 5	6 & 7	8 & 9	10 & 11	12 & 13	14 & 15	16 & 17	18 & 19	20 & 21	22 & 23	24 & 25	26 & 27	28 & 29	30 & 31	32 & 33
ARM	74.5	104.9	151.0	171.0	191.0	211.0	231.0	251.0	271.0	291.0	311.0	331.0	351.0	371.0	391.0	411.0	431.0	451.0	471.0
One Person: Weight	200	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
MOM/1000	14.9	25.2	36.2	41.0	45.8	50.6	55.4	60.2	65.0	69.8	74.0	79.4	84.2	89.0	93.8	98.6	103.4	108.2	113.0
Two Persons: Weight	400	—	—	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	480
MOM/1000	29.8	—	—	82.1	91.7	101.3	110.9	120.5	130.1	139.7	149.3	158.9	168.5	178.1	187.7	197.3	206.9	216.5	226.1
One Person: Weight	200	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260
MOM/1000	14.9	27.3	39.3	44.5	49.7	54.9	60.1	65.3	70.5	75.7	80.9	86.1	91.3	96.5	101.7	106.9	112.1	117.3	122.5
Two Persons: Weight	400	—	—	520	520	520	520	520	520	520	520	520	520	520	520	520	520	520	520
MOM/1000	29.8	—	—	88.9	99.3	109.7	120.1	130.5	140.9	151.3	161.7	172.1	182.5	192.9	203.3	213.7	224.1	234.5	244.9

PERSONNEL DATA-240 LB.

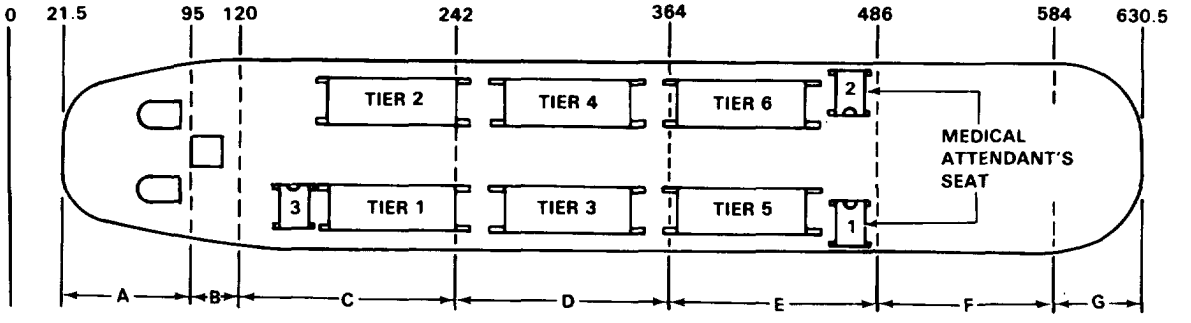
PERSONNEL DATA-260 LB.

Figure G-5. Chart E (Sheet 7 of 23)



SEAT NO.	TROOP CDR'S	1	2 OR 3	4 OR 5	6 OR 7	8 OR 9	10 OR 11	12 OR 13	14 OR 15	16 OR 17	18 OR 19	20 OR 21	22 OR 23	24 OR 25	26 OR 27	28 OR 29	30 OR 31	32 OR 33	SEAT NO.
ARM	104.9	151.0	171.0	191.0	211.0	231.0	251.0	271.0	291.0	311.0	331.0	351.0	371.0	391.0	411.0	431.0	451.0	471.0	ARM
ONE PERSON	25.2	36.2	41.0	45.8	50.6	55.4	60.3	65.0	69.8	74.6	79.4	81.2	89.0	91.8	98.6	103.4	108.2	113.0	ONE PERSON
SEATS 32 OR 33	87.8	76.8	72.0	67.2	62.4	57.6	52.8	48.8	43.2	38.4	33.6	28.8	24.0	19.2	14.4	9.6	4.8		SEAT 1
SEATS 30 OR 31	83.0	72.0	67.2	62.4	57.6	52.8	48.0	43.2	38.4	33.6	28.8	24.0	19.2	14.4	9.6	4.8		5.2	SEATS 2 OR 3
SEATS 28 OR 29	78.2	67.2	62.4	57.6	52.8	48.0	43.2	38.4	33.6	28.8	24.0	19.2	14.4	9.6	4.8		5.2	10.4	SEATS 4 OR 5
SEATS 26 OR 27	73.4	62.4	57.6	52.8	48.0	43.2	38.4	33.6	28.8	24.0	19.2	14.4	9.6	4.8		5.2	10.4	15.6	SEATS 6 OR 7
SEATS 24 OR 25	68.6	57.4	52.8	48.0	43.2	38.4	33.6	28.8	24.0	19.2	14.4	9.6	4.8		5.2	10.4	15.6	20.8	SEATS 8 OR 9
SEATS 22 OR 23	63.8	52.8	48.0	43.2	38.4	33.6	28.8	24.0	19.2	14.4	9.6	4.8		5.2	10.4	15.6	20.8	26.0	SEATS 10 OR 11
SEATS 20 OR 21	59.0	48.0	43.2	38.4	33.6	28.8	24.0	19.2	14.4	9.6	4.8		5.2	10.4	15.6	20.8	26.0	31.2	SEATS 12 OR 13
SEATS 18 OR 19	54.2	43.2	38.4	33.6	28.8	24.0	19.2	14.4	9.6	4.8		5.2	10.4	15.6	20.8	26.0	31.2	36.4	SEATS 14 OR 15
SEATS 16 OR 17	49.4	38.4	33.6	28.8	24.0	19.2	14.4	9.6	4.8		5.2	10.4	15.6	20.8	26.0	31.2	36.4	41.6	SEATS 16 OR 17
SEATS 14 OR 15	44.6	33.6	28.8	24.0	19.2	14.4	9.6	4.8		5.2	10.4	15.6	20.8	26.0	31.2	36.4	41.6	46.8	SEATS 18 OR 19
SEATS 12 OR 13	39.8	28.8	24.0	19.2	14.4	9.6	4.8		5.2	10.4	15.6	20.8	26.0	31.2	36.4	41.6	46.8	52.0	SEATS 20 OR 21
SEATS 10 OR 11	35.0	24.0	19.2	14.4	9.6	4.8		5.2	10.4	15.6	20.8	26.0	31.2	36.4	41.6	46.8	52.0	57.2	SEATS 22 OR 23
SEATS 8 OR 9	30.2	19.2	14.4	9.6	4.8		5.2	10.4	15.6	20.8	26.0	31.2	36.4	41.6	46.8	52.0	57.2	62.4	SEATS 24 OR 25
SEATS 6 OR 7	25.4	14.4	9.6	4.8		5.2	10.4	15.6	20.8	26.0	31.2	36.4	41.6	46.8	52.0	57.2	62.4	67.6	SEATS 26 OR 27
SEATS 4 OR 5	20.6	9.6	4.8			5.2	10.4	15.6	20.8	26.0	31.2	36.4	41.6	46.8	52.0	57.2	62.4	67.6	SEATS 28 OR 29
SEATS 2 OR 3	15.8	4.8			5.2	10.4	15.6	20.8	26.0	31.2	36.4	41.6	46.8	52.0	57.2	62.4	67.6	72.8	SEATS 30 OR 31
SEAT 1	11.0			5.2	10.4	15.6	20.8	26.0	31.2	36.4	41.6	46.8	52.0	57.2	62.4	67.6	72.8	78.0	SEATS 32 OR 33
ONE PERSON	122.5	117.3	112.1	106.9	101.7	96.5	91.3	86.1	80.9	75.7	70.5	65.3	60.1	54.9	49.7	44.5	39.1	27.3	ONE PERSON
ARM	471.0	451.0	431.0	411.0	391.0	371.0	351.0	331.0	311.0	291.0	271.0	251.0	231.0	211.0	191.0	171.0	151.0	104.9	ARM
240 LB.	32 OR 33	30 OR 31	28 OR 29	26 OR 27	24 OR 25	22 OR 23	20 OR 21	18 OR 19	16 OR 17	14 OR 15	12 OR 13	10 OR 11	8 OR 9	6 OR 7	4 OR 5	2 OR 3	1	TROOP CDR'S	SEAT NO.

Figure G-5. Chart E (Sheet 8 of 23)



LITTER PATIENT DATA

COMPARTMENT			C	D	E
TIER			1 & 2	3 & 4	5 & 6
ARM			208	308	408
	1	WEIGHT	200	200	200
		MOM/1000	41.6	61.6	81.6
	2	WEIGHT	400	400	400
		MOM/1000	83.2	123.2	163.2
	3	WEIGHT	600	600	600
		MOM/1000	124.8	184.8	244.8
	4	WEIGHT	800	800	800
		MOM/1000	166.4	264.4	326.4
	5	WEIGHT	1000	1000	1000
		MOM/1000	208.0	308.0	408.0
	6	WEIGHT	1200	1200	1200
		MOM/1000	249.6	369.6	489.6
	7	WEIGHT	1400	1400	1400
		MOM/1000	291.2	431.2	571.2
	8	WEIGHT	1600	1600	1600
		MOM/1000	332.8	492.8	652.8

MEDICAL ATTENDANT DATA

COMPARTMENT	E
SEAT	1 & 2
ARM	474.0
ONE ATTENDANT:	
WEIGHT	200
MOM/1000	94.8
TWO ATTENDANTS:	
WEIGHT	400
MOM/1000	189.6

COMPARTMENT	C
SEAT	3
ARM	150.0
ALTERNATE ATTENDANT:	
WEIGHT	200
MOM/1000	30.0

NOTES:

Litters listed on Chart "A"
Each tier contains 4 litters.

14202

Figure G-5. Chart E (Sheet 9 of 23)

EXTERNAL CARGO HOOK LOADING CHART -CENTER

ARM = 331.0	
WEIGHT (LB)	MOM/1000
5	2
10	3
20	7
50	17
100	33
200	66
300	99
400	132
500	166
600	199
700	232
800	265
900	298
1000	331
1100	364
1200	397
1300	430
1400	463
1500	497
1600	530
1700	563
1800	596
1900	629
2000	662
2200	728
2400	794
2600	861
2800	927
3000	993
3500	1159
4000	1324
4500	1490
5000	1655
5500	1821
6000	1986
6500	2152
7000	2317
7500	2483
8000	2648
8500	2814

ARM = 331.0	
WEIGHT (LB)	MOM/1000
9000	2979
9500	3145
10000	3310
10500	3476
11000	3641
11500	3807
12000	3972
12500	4138
13000	4303
13500	4469
14000	4634
14500	4800
15000	4965
15500	5131
16000	5296
16500	5462
17000	5627
17500	5793
18000	5958
18500	6124
19000	6289
19500	6455
20000	6620
20500	6786
21000	6951
21500	7117
22000	7282
22500	7448
23000	7613
23500	7779
24000	7944
24500	8110
25000	8275
25500	8441
26000	8606
26500	8772
27000	8937
27500	9103
28000	9268

14203

Figure G-5. Chart E (Sheet 10 of 23)

EXTERNAL - CARGO HOOK LOADING CHART - TANDEM

COMMON ARM = 329.0	
WEIGHT (LB)	MOM/1000
5	2
10	3
20	7
50	16
100	33
200	66
300	99
400	132
500	165
600	197
700	230
800	263
900	296
1000	329
1100	362
1200	395
1300	428
1400	461
1500	494
1600	526
1700	559
1800	592
1900	625
2000	658
2200	724
2400	790
2600	855
2800	921
3000	987
3500	1152
4000	1316
4500	1481
5000	1645
5500	1810
6000	1974
6500	2139
7000	2303
7500	2468
8000	2632
8500	2797

COMMON ARM = 329.0	
WEIGHT (LB)	MOM/1000
9000	2961
9500	3126
10000	3290
10500	3455
11000	3619
11500	3784
12000	3948
12500	4113
13000	4277
13500	4442
14000	4606
14500	4771
15000	4935
15500	5100
16000	5264
16500	5429
17000	5593
17500	5758
18000	5922
18500	6087
19000	6251
19500	6416
20000	6580
20500	6745
21000	6909
21500	7074
22000	7238
22500	7403
23000	7567
23500	7732
24000	7896
24500	8061
25000	8225

14204

Figure G-5. Chart E (Sheet 11 of 23)

EXTERNAL CARGO HOOK LOADING CHART — FWD HOOK

ARM = 249.0	
WEIGHT (LB)	MOM/1000
5	1
10	2
20	5
50	12
100	25
200	50
300	75
400	100
500	125
600	149
700	174
800	199
900	224
1000	249
1100	274
1200	299
1300	324
1400	349
1500	374
1600	398
1700	423
1800	448
1900	473
2000	498
2200	548
2400	598
2600	647
2800	697
3000	747
3500	872
4000	996
4500	1121
5000	1245
5500	1370
6000	1494
6500	1619
7000	1743
7500	1868
8000	1992
8500	2117

ARM = 249.0	
WEIGHT (LB)	MOM/1000
9000	2241
9500	2366
10000	2490
10500	2615
11000	2739
11500	2864
12000	2988
12500	3113
13000	3237
13500	3362
14000	3486
14500	3611
15000	3735
15500	3860
16000	3984
16500	4109
17000	4233

NOTE:

Fwd External cargo hook capacity is 17000 pounds.
Caution must be exercised when utilizing fwd tandem hook in single point lifting mode to assure fwd C.G. Limit is not exceeded, see sheet 18 of 23.

14205

Figure G-5. Chart E (Sheet 12 of 23)

EXTERNAL CARGO HOOK LOADING CHART - AFT HOOK

ARM - 409.0	
WEIGHT (LB)	MOM/1000
5	2
10	4
20	8
50	20
100	41
200	82
300	123
400	164
500	205
600	245
700	286
800	327
900	368
1000	409
1100	450
1200	491
1300	532
1400	573
1500	614
1600	654
1700	695
1800	736
1900	777
2000	818
2200	900
2400	982
2600	1063
2800	1145
3000	1227
3500	1432
4000	1636
4500	1841
5000	2045
5500	2250
6000	2454
6500	2649
7000	2863
7500	3068
8000	3272
8500	3477

ARM = 409.0	
WEIGHT (LB)	MOM/1000
9000	3681
9500	3886
10000	4090
10500	4295
11000	4499
11500	4704
12000	4908
12500	5113
13000	5317
13500	5522
14000	5726
14500	5931
15000	6135
15500	6340
16000	6544
16500	6749
17000	6953

NOTE:

Aft external cargo hook capacity is 17000 pounds.
Caution must be exercised when utilizing aft tandem hook in single point lifting mode to assure aft c.g. limit is not exceeded. See Sheet 18 of 23

14206

Figure G-5. Chart E (Sheet 13 of 23)

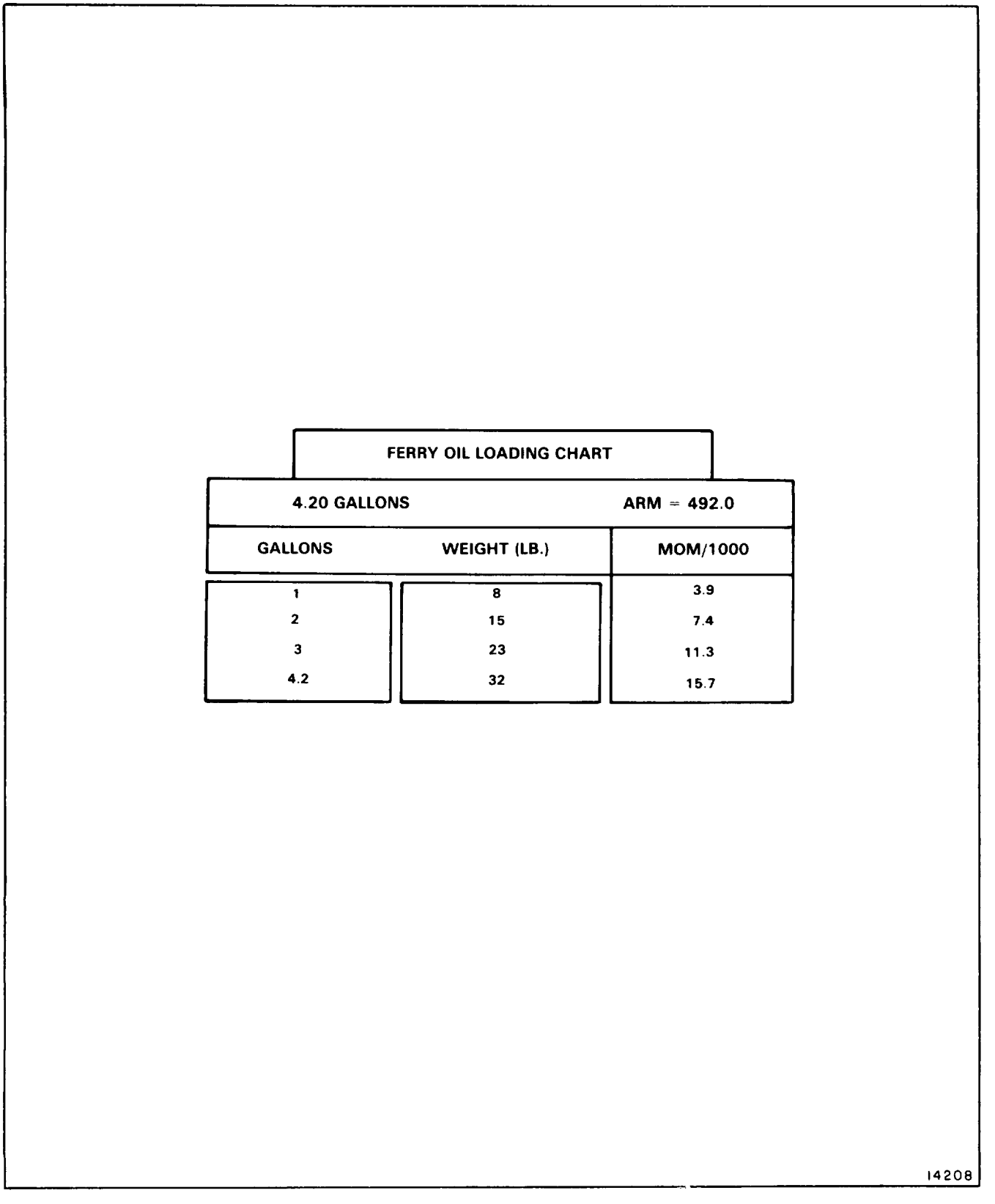
FERRY FUEL LOADING CHART				
WEIGHT (LB) (EACH TANK)	ARM 194.5 MOM/1000	ARM 253.5 MOM/1000	ARM 312.5 MOM/1000	ARM 371.5 MOM/1000
50	9.7	12.7	15.6	18.6
100	19.3	25.4	31.3	37.2
150	29.2	38.0	46.9	53.7
200	38.9	50.7	62.3	74.3
250	49.6	63.4	78.1	92.9
300	58.4	76.1	93.6	111.3
350	68.1	88.7	109.4	130.0
400	77.8	101.4	125.0	148.6
450	87.3	114.1	140.6	167.2
500	97.3	126.6	156.3	185.8
550	107.0	139.4	171.9	204.3
600	116.7	152.1	187.5	222.9
650	126.4	164.8	203.1	241.5
700	136.2	177.5	218.8	280.1
750	145.9	190.1	234.4	278.6
800	155.6	202.8	250.0	297.2
850	165.3	215.5	265.6	315.8
900	175.1	228.2	281.3	334.4
950	184.8	240.8	296.9	352.9
1000	194.5	253.5	312.5	371.5
1100	214.0	278.9	343.8	408.7
1200	233.4	304.2	375.0	445.8
1300	252.9	329.6	406.3	483.0
1400	272.3	354.9	437.5	520.1
1500	291.8	380.3	468.8	557.3
1600	311.2	405.6	500.0	594.4
1700	330.7	431.0	531.3	631.6
1800	350.1	456.3	562.5	668.7
1900	369.6	481.7	593.8	705.9
2000	389.0	507.0	625.0	743.0
2200	427.9	557.7	687.5	817.3
2400	466.8	608.4	750.0	891.6
2600	505.7	659.1	812.5	965.9
2800	544.6	709.8	875.0	1040.2
3000	583.5	760.5	937.5	1114.5
3200	622.4	811.2	1000.0	1188.8
3400	661.3	861.9	1062.5	1263.1
3600	700.2	912.6	1125.0	1337.4
3800	739.1	963.3	1187.5	1411.7
*3900	758.6	988.7	1218.8	1448.9
4000	778.0	1014.0	1250.0	1486.0

NOTES

1. Each moment column represents one ferry fuel tank (600 gallons each).
2. Fuel can be consumed from any individual tank, any combination of tanks or simultaneously. The sequence can be alternated and is completely optional.
3. Either one, two, three, or four tanks can be used.
4. Asterisk (*) indicates approximate weight and moment for a full ferry fuel tank based on JP-4 fuel (MIL-E-5624B) at 6.5 pounds per gallon.

14207

Figure G-5. Chart E (Sheet 14 of 23)

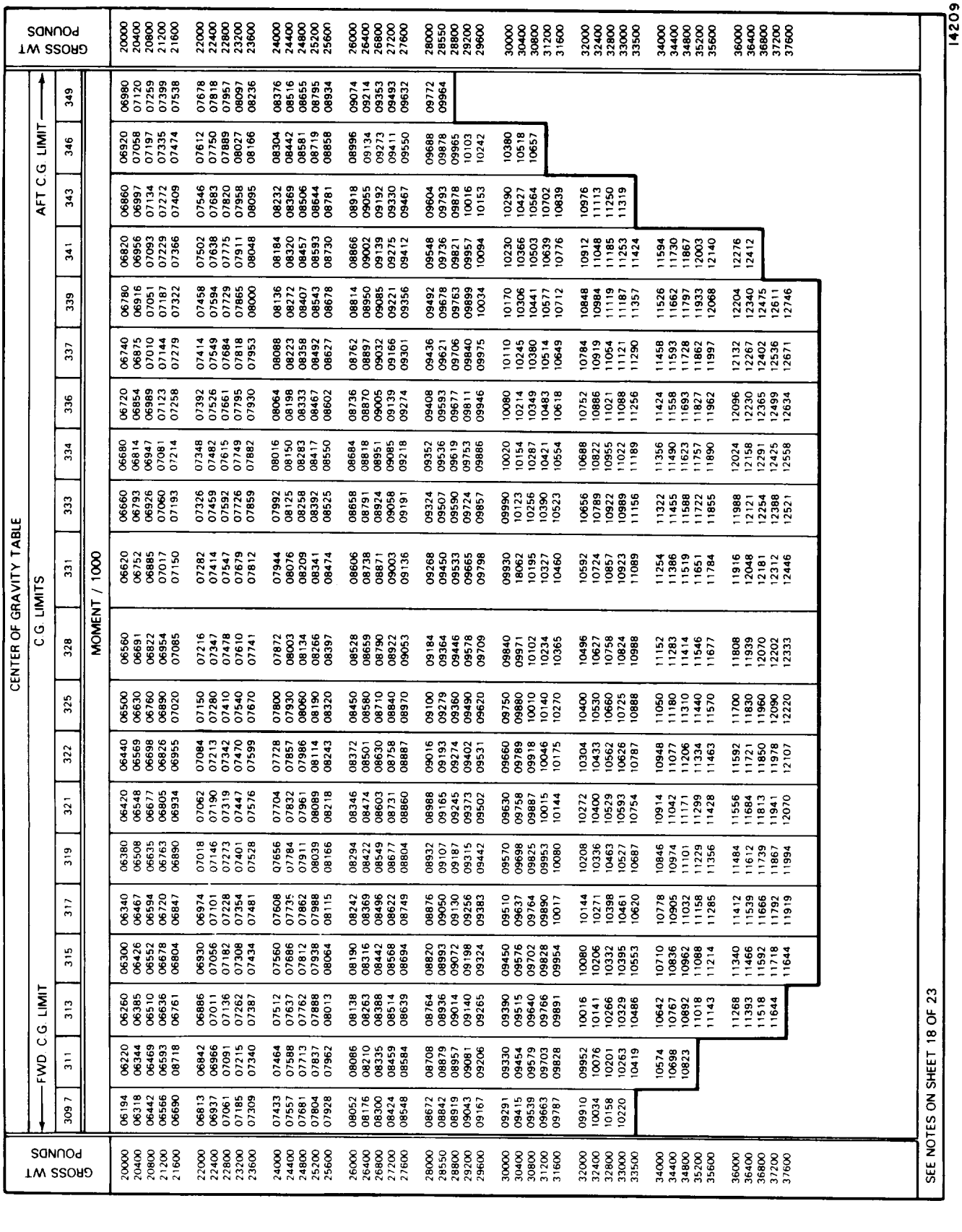


FERRY OIL LOADING CHART

4.20 GALLONS		ARM = 492.0
GALLONS	WEIGHT (LB.)	MOM/1000
1	8	3.9
2	15	7.4
3	23	11.3
4.2	32	15.7

14208

Figure G-5. Chart E (Sheet 15 of 23)



GROSS WT POUNDS	CENTER OF GRAVITY TABLE — C.G. LIMITS — FWD C.G LIMIT ← → AFT C.G LIMIT — MOMENT / 1000																					GROSS WT POUNDS
	309.7	311	313	315	317	319	321	322	325	328	331	333	334	336	337	339	341	343	346	349		
20000	06194	06220	06260	06300	06340	06380	06420	06440	06500	06560	06620	06660	06680	06720	06740	06780	06820	06860	06920	06980		20000
20400	06318	06344	06385	06426	06467	06508	06548	06569	06630	06691	06752	06793	06814	06854	06875	06916	06956	06997	07058	07120		20400
20800	06442	06469	06510	06552	06594	06635	06677	06698	06760	06822	06885	06926	06947	06989	07010	07051	07093	07134	07197	07259		20800
21200	06566	06593	06636	06678	06720	06763	06805	06826	06890	06954	07017	07060	07081	07123	07144	07187	07229	07272	07335	07399		21200
21600	06690	06718	06761	06804	06847	06890	06934	06955	07020	07085	07150	07193	07214	07258	07279	07322	07366	07409	07474	07538		21600
22000	06813	06842	06886	06930	06974	07018	07062	07084	07150	07216	07282	07326	07348	07392	07414	07458	07502	07546	07612	07678		22000
22400	06937	06966	07011	07056	07101	07146	07190	07213	07280	07347	07414	07459	07482	07526	07549	07594	07638	07683	07750	07818		22400
22800	07061	07091	07136	07182	07228	07273	07319	07342	07410	07478	07547	07592	07615	07661	07684	07729	07775	07820	07889	07957		22800
23200	07185	07215	07262	07308	07354	07401	07447	07470	07540	07610	07679	07726	07749	07795	07818	07865	07911	07958	08027	08097		23200
23600	07309	07340	07387	07434	07481	07528	07576	07599	07670	07741	07812	07859	07882	07930	07953	08000	08048	08095	08166	08236		23600
24000	07433	07464	07512	07560	07608	07656	07704	07728	07800	07872	07944	07992	08016	08064	08088	08136	08184	08232	08304	08376		24000
24400	07557	07588	07637	07686	07735	07784	07832	07857	07930	08003	08076	08125	08150	08198	08223	08272	08320	08369	08442	08516		24400
24800	07681	07713	07762	07812	07862	07911	07961	07986	08060	08134	08209	08258	08283	08333	08358	08407	08457	08506	08581	08655		24800
25200	07804	07837	07888	07938	07988	08039	08089	08114	08190	08266	08341	08392	08417	08467	08492	08543	08593	08644	08719	08795		25200
25600	07928	07962	08013	08064	08115	08166	08218	08243	08320	08397	08474	08525	08550	08602	08627	08678	08730	08781	08858	08934		25600
26000	08052	08086	08138	08190	08242	08294	08346	08372	08450	08528	08606	08658	08684	08736	08762	08814	08866	08918	08996	09074		26000
26400	08176	08210	08263	08316	08369	08422	08474	08501	08580	08659	08738	08791	08818	08870	08897	08950	09002	09055	09134	09214		26400
26800	08300	08335	08388	08442	08496	08549	08603	08630	08710	08790	08871	08924	08951	09005	09032	09085	09139	09192	09273	09353		26800
27200	08424	08459	08514	08568	08622	08677	08731	08758	08840	08922	09003	09058	09085	09139	09166	09221	09275	09330	09411	09493		27200
27600	08548	08584	08639	08694	08749	08804	08860	08887	08970	09053	09136	09191	09218	09274	09301	09356	09412	09467	09550	09632		27600
28000	08672	08708	08764	08820	08876	08932	08988	09016	09100	09184	09268	09324	09352	09408	09436	09492	09548	09604	09688	09772		28000
28550	08842	08879	08936	08993	09050	09107	09165	09193	09279	09364	09450	09507	09536	09593	09621	09678	09736	09793	09878	09964		28550
28800	08919	08957	09014	09072	09130	09187	09245	09274	09360	09446	09533	09590	09619	09677	09706	09763	09821	09878	09965			28800
29200	09043	09081	09140	09198	09256	09315	09373	09402	09490	09578	09665	09724	09753	09811	09840	09899	09957	10016	10103			29200
29600	09167	09206	09265	09324	09383	09442	09502	09531	09620	09709	09798	09857	09886	09946	09975	10034	10094	10153	10242			29600
30000	09291	09330	09390	09450	09510	09570	09630	09660	09750	09840	09930	09990	10020	10080	10110	10170	10230	10290	10380			30000
30400	09454	09515	09576	09637	09698	09758	09789	09880	09971	18062	10123	10154	10214	10245	10306	10366	10427	10518				30400
30800	09539	09579	09640	09702	09764	09825	09887	09918	10010	10102	10195	10256	10287	10349	10380	10441	10503	10564	10657			30800
31200	09663	09703	09766	09828	09890	09953	10015	10046	10140	10234	10327	10390	10421	10483	10514	10577	10639	10702				31200
31600	09787	09828	09891	09954	10017	10080	10144	10175	10270	10365	10460	10523	10554	10618	10649	10712	10776	10839				31600
32000	09910	09952	10016	10080	10144	10208	10272	10304	10400	10496	10592	10656	10688	10752	10784	10848	10912	10976				32000
32400	10034	10076	10141	10206	10271	10336	10400	10433	10530	10627	10724	10789	10822	10886	10919	10984	11048	11113				32400
32800	10158	10201	10266	10332	10398	10463	10529	10562	10660	10758	10857	10922	10955	11021	11054	11119	11185	11250				32800
33000	10220	10263	10329	10395	10461	10527	10593	10626	10725	10824	10923	10989	11022	11088	11121	11187	11253	11319				33000
33500		10419	10486	10553	10620	10687	10754	10787	10888	10988	11089	11156	11189	11256	11290	11357	11424					33500
34000		10574	10642	10710	10778	10846	10914	10948	11050	11152	11254	11322	11356	11424	11458	11526	11594					34000
34400		10698	10767	10836	10905	10974	11042	11077	11180	11283	11386	11455	11490	11558	11593	11662	11730					34400
34800		10823	10892	10962	11032	11101	11171	11206	11310	11414	11519	11588	11623	11693	11728	11797	11867					34800
35200			11018	11088	11158	11229	11299	11334	11440	11546	11651	11722	11757	11827	11862	11933	12003					35200
35600			11143	11214	11285	11356	11428	11463	11570	11677	11784	11855	11890	11962	11997	12068	12140					35600
36000			11268	11340	11412	11484	11556	11592	11700	11808	11916	11988	12024	12096	12132	12204	12276					36000
36400			11393	11466	11539	11612	11684	11721	11830	11939	12048	12121	12158	12230	12267	12340	12412					36400
36800			11518	11592	11666	11739	11813	11850	11960	12070	12181	12254	12291	12365	12402	12475						36800
37200			11644	11718	11792	11867	11941	11978	12090	12202	12312	12388	12425	12499	12536	12611						37200
37600				11644	11919	11994	12070	12107	12220	12333	12446	12521	12558	12634	12671	12746						37600

SEE NOTES ON SHEET 18 OF 23

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Figure G-5. Chart E (Sheet 16 of 23)

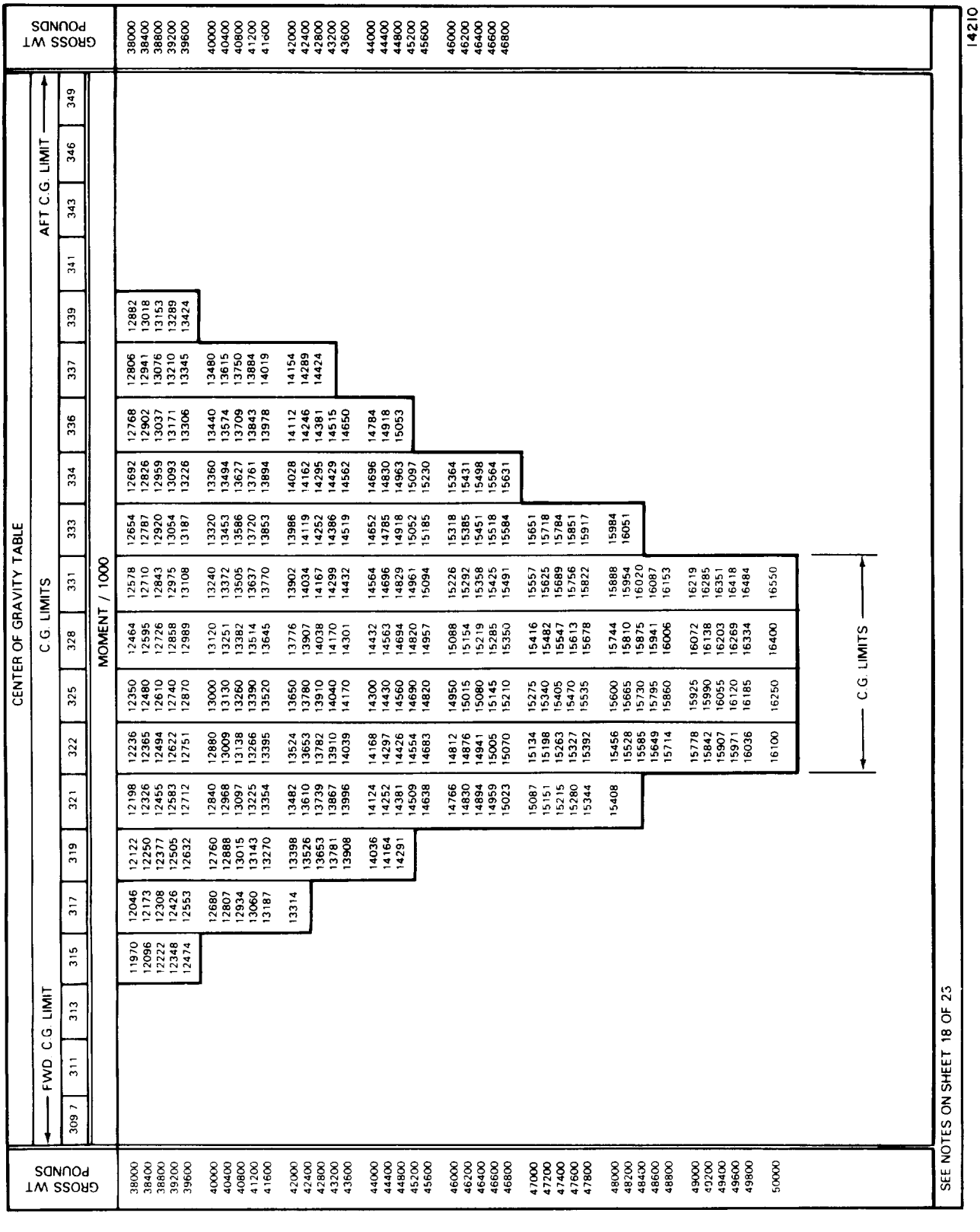


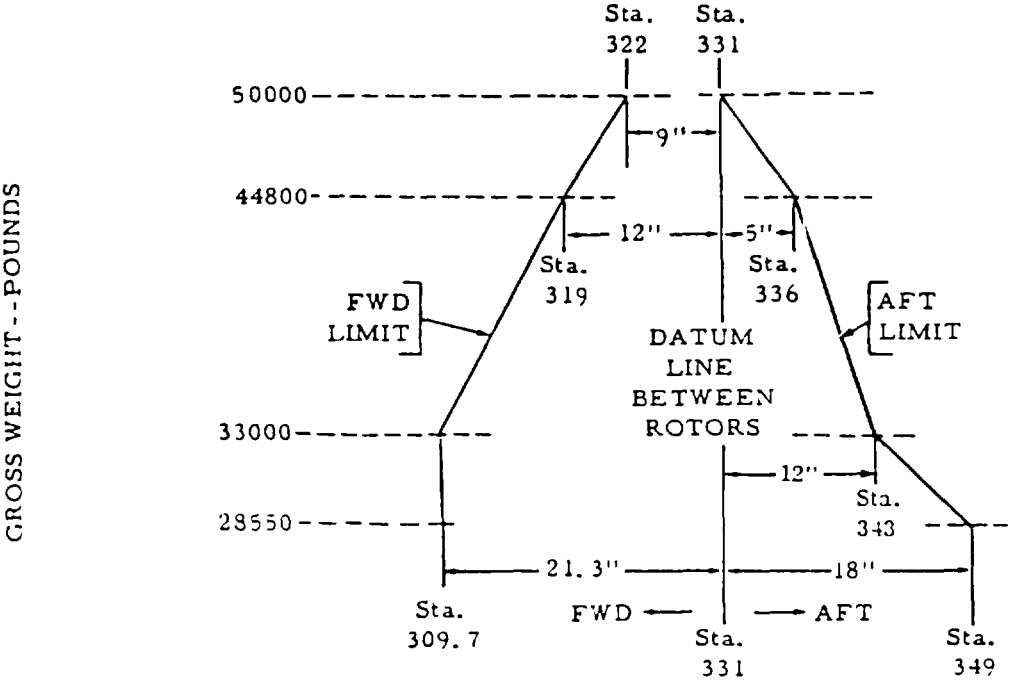
Figure G-5. Chart E (Sheet 17 of 23)

NOTES FOR CENTER OF GRAVITY TABLE

1. Explanation of center of gravity limits:

   Fwd - The forward CG limit is 21.3 inches forward of the datum line between rotors, up to the gross weight of 33000 pounds. This limit varies in a linear manner from 21.3 inches forward at the gross weight of 33000 pounds to 12 inches forward of the datum line between rotors, at the gross weight of 44800 pounds and to 9.0 inches forward of the datum line between rotors, at the gross weight of 50000 pounds. (See illustration below.)

   Aft - The aft CG limit is 18 inches aft of the datum line between rotors, up to the gross weight of 28550 pounds. This limit varies in a linear manner from 18 inches aft at the gross weight of 28550 pounds to 12 inches aft of the datum line between rotors, at the gross weight of 33000 pounds and to 5 inches aft of the datum line between rotors, at the gross weight of 44800 pounds and to 0.0 inches (datum line between rotors) at the gross weight of 50000 pounds. (See illustration below.)



2. Gross weight limitations:

   Takeoff _____ Pounds*
   Landing _____ Pounds*

   *NOTE: Service activities shall insert, or substitute, current figures from latest applicable technical manual covering operating restrictions.

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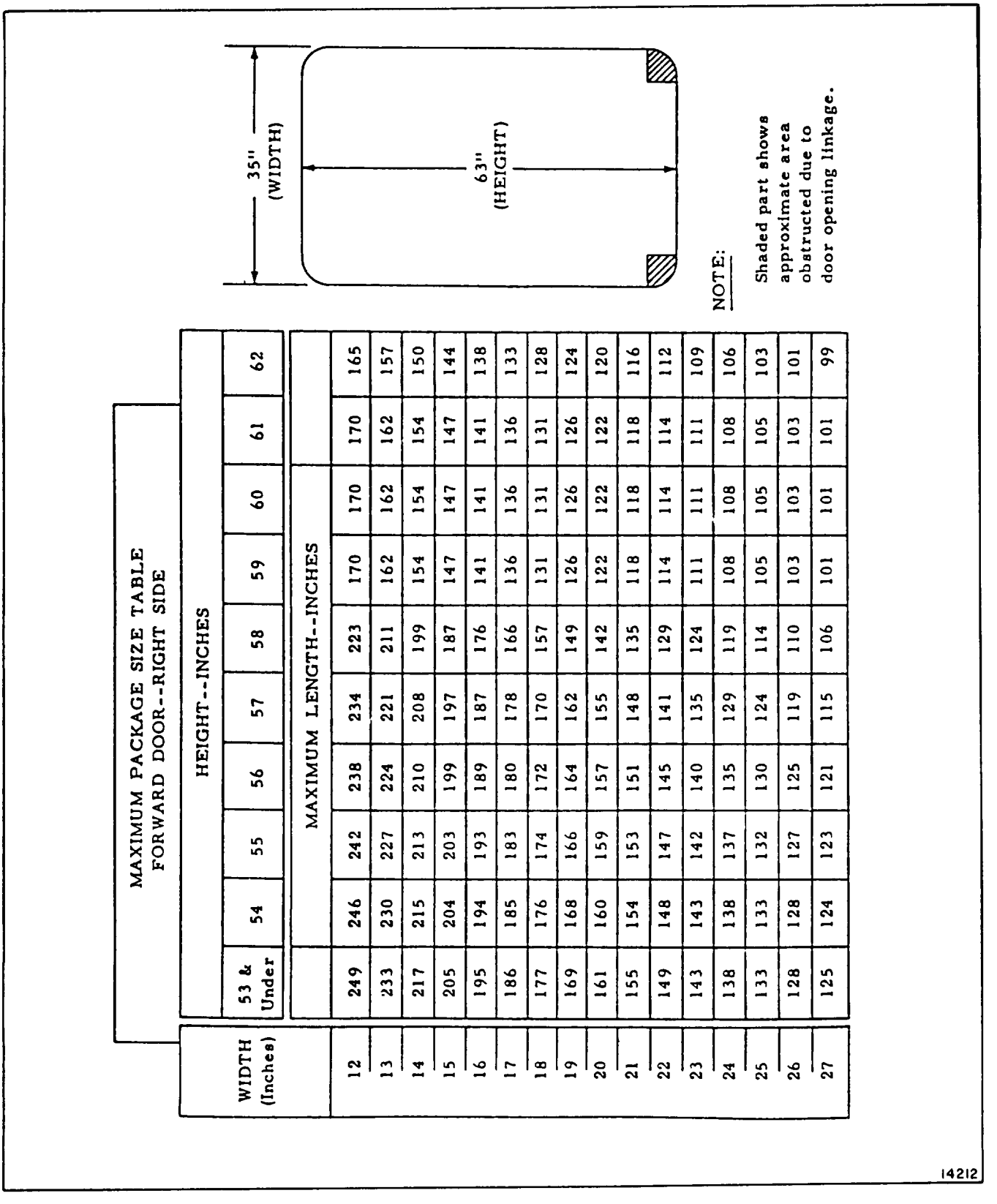
Figure G-5. Chart E (Sheet 18 of 23)



MAXIMUM PACKAGE SIZE TABLE
FORWARD DOOR--RIGHT SIDE

WIDTH (Inches)	HEIGHT--INCHES										
	53 & Under	54	55	56	57	58	59	60	61	62	
	MAXIMUM LENGTH--INCHES										
12	249	246	242	238	234	223	170	170	170	165	
13	233	230	227	224	221	211	162	162	162	157	
14	217	215	213	210	208	199	154	154	154	150	
15	205	204	203	199	197	187	147	147	147	144	
16	195	194	193	189	187	176	141	141	141	138	
17	186	185	183	180	178	166	136	136	136	133	
18	177	176	174	172	170	157	131	131	131	128	
19	169	168	166	164	162	149	126	126	126	124	
20	161	160	159	157	155	142	122	122	122	120	
21	155	154	153	151	148	135	118	118	118	116	
22	149	148	147	145	141	129	114	114	114	112	
23	143	143	142	140	135	124	111	111	111	109	
24	138	138	137	135	129	119	108	108	108	106	
25	133	133	132	130	124	114	105	105	105	103	
26	128	128	127	125	119	110	103	103	103	101	
27	125	124	123	121	115	106	101	101	101	99	

Figure G-5. Chart E (Sheet 19 of 23)

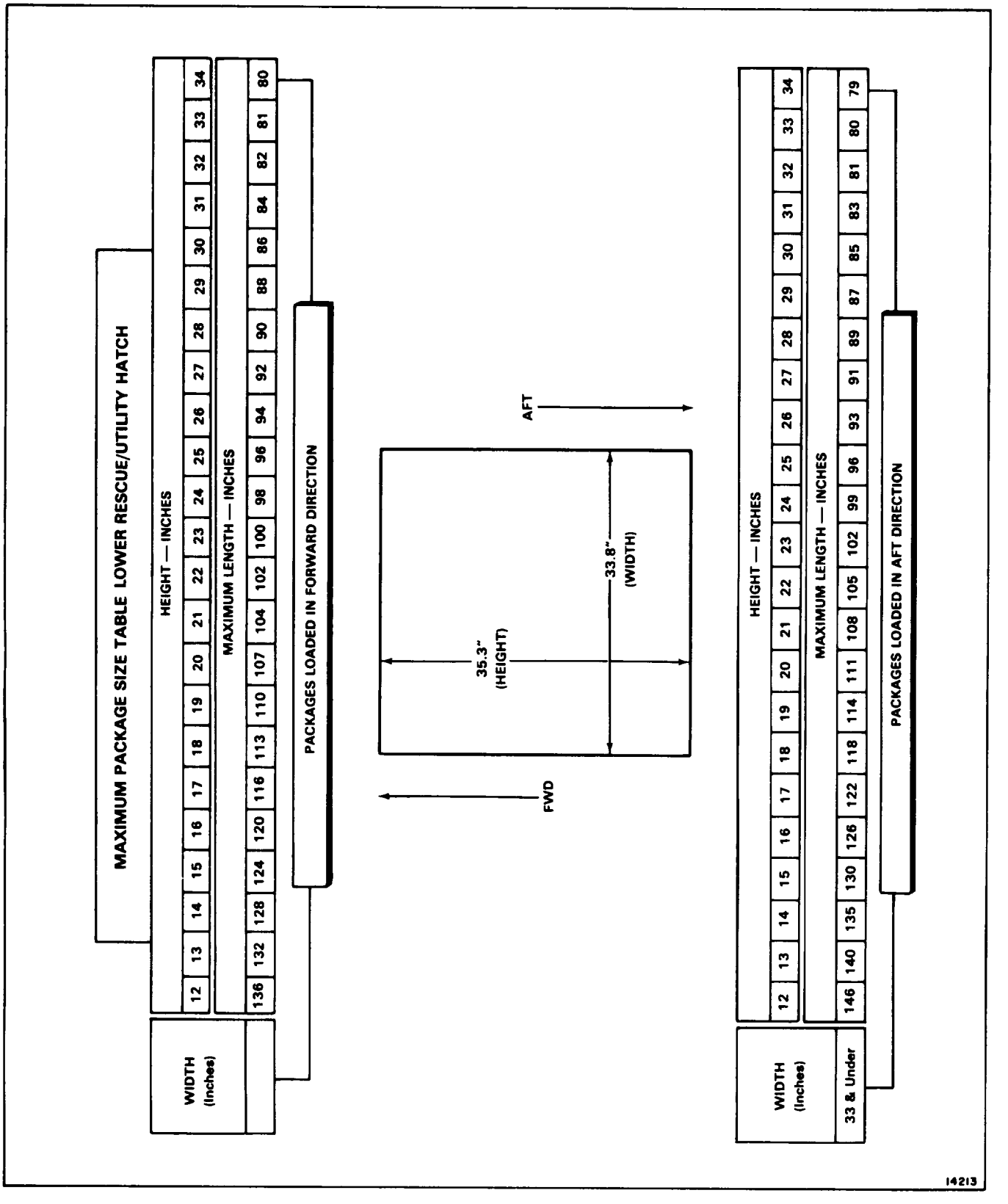


Figure G-5. Chart E (Sheet 20 of 23)

MAXIMUM PACKAGE SIZE TABLE
RAMP DOOR

WIDTH (INCHES)	HEIGHT - INCHES															
	62 & Under	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77
	MAXIMUM LENGTH--INCHES															
62 & Under	362	362	362	362	362	362	362	362	330	282	230	180	135	100	67	30
63	362	362	362	362	362	362	362	362	328	280	228	178	133	98	66	
64	362	362	362	362	362	362	362	362	326	278	226	176	130	96	64	
65	362	362	362	362	362	362	362	362	322	274	222	173	127	93		
66	362	362	362	362	362	362	362	362	318	270	218	169	123	90		
67	362	362	362	362	362	362	362	362	313	266	214	165	119	86		
68	362	362	362	362	362	362	362	357	307	260	208	160	114	81		
69	362	362	362	362	362	362	362	348	299	252	201	154	107	75		
70	362	362	362	362	362	362	362	339	290	243	193	146	99			
71	362	362	362	362	362	362	362	330	281	234	185	139	91			
72	362	362	362	362	362	362	362	321	272	226	177	131	83			
73	362	362	362	362	362	362	352	312	263	216	167	122	75			
74	362	362	362	362	362	362	339	298	250	203	156	112				
75	362	362	362	362	362	362	325	284	237	190	144	101				
76	362	362	362	362	362	348	311	270	223	177	132	90				
77	362	362	362	362	362	334	297	256	209	164	119					
78	362	362	362	362	346	316	278	237	191	147	104					
79	362	362	362	362	329	298	258	218	173	129	85					
80	362	362	362	362	310	276	236	195	151	108						
81	362	362	362	362	289	253	213	172	128	85						
82	362	362	362	362	267	230	188	148	105							
83	362	362	362	362	241	202	161	121								
84	362	362	362	362	213	174	133	93								
85	362	362	362	362	182	142	100									
86	362	362	362	362	146	105										
87	362	362	362	362	105											
88	362	362	362	362												
89	362	362	362	362												
90	362															

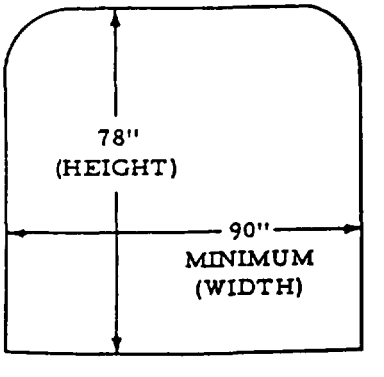


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Figure G-5. Chart E (Sheet 21 of 23)

MISCELLANEOUS DATA

GENERAL HELICOPTER DIMENSIONS	(Inches)
ROTOR BLADE DIAMETER	720.0
DISTANCE BETWEEN CENTER LINE OF ROTORS	470.0
SPAN--MINIMUM; BLADES UNFOLDED, STATIC, DEPHASED (One Blade Each Rotor, At Right Angles to Center Line of Aircraft, Both Rotors Same Attitude)	540.0
SPAN--MINIMUM; BLADES UNFOLDED, STATIC, IN PHASE (One Blade, Either Rotor on ℄ Aircraft)	624.0
SPAN--BLADES FOLDED	149.0
LENGTH--MINIMUM; BLADES UNFOLDED, STATIC, DEPHASED (One Blade of Forward Rotor on ℄ Aft, One Blade of Aft Rotor on ℄ Forward)	827.0
LENGTH--MINIMUM; BLADES UNFOLDED, STATIC, IN PHASE (One Blade, Either Rotor, On Center Line of Aircraft and In Forward Position)	1007.0
LENGTH--BLADES FOLDED--FUSELAGE	609.0
HEIGHT--FORWARD AND AFT LANDING GEAR STRUTS FULLY COMPRESSED	221.0
HEIGHT--STATIC	225.0
HEIGHT--FORWARD AND AFT LANDING GEAR STRUTS FULLY EXTENDED	232.0
WHEEL BASE	270.0
TREAD--FORWARD	126.0
TREAD--AFT	134.0

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Figure G-5. Chart E (Sheet 22 of 23)

TYPICAL SERVICE LOAD EXAMPLES

The basic weights and moments/1000 are normally obtained from Chart C, where they are the last figures shown in the weight and moment columns. For the purpose of these examples, it is assumed that the basic weights and moments are as shown. The following calculations are normally accomplished by utilizing weight and balance clearance Form F.

ITEM	ARM	CARGO		TROOP		LITTER		FERRY	
		WT	MOM/1000	WT	MOM/1000	WT	MOM/1000	WT	MOM/1000
BASIC WEIGHT		23353	7908.8	23472	7957.9	23863	8069.7	28253	8816.7
Cargo									
Internal-Compt C	181.0	4775	865.0						
Internal-Compt D	303.0	4774	1447.2						
Internal-Compt E	425.0	4775	2030.0						
External-Fwd Hook	249.0	1000	249.0						
External-Ctr Hook	331.0	2000	662.0						
External-Aft Hook	409.0	2000	818.0						
Pilot & Copilot	74.5	400	29.3	400	29.8	400	29.8	400	29.8
Flight Engineer (At Troop Cdr Loc)	104.9	200	21.0					200	21.0
Troop Commander	104.9			240	25.2				
Troops									
Compt C Seat 1 thru 9	195.4			2180	422.2				
Compt D Seat 10 thru 21	301.0			2880	867.0				
Compt E Seat 22 thru 33	421.0			2880	1212.7				
Litter Patients									
Tier 1 & 2 (8)	208.0					1600	332.8		
Tier 3 & 4 (7)	308.0					1400	431.2		
Tier 5 & 6 (6)	408.0					1200	489.6		
Medical Attendant (2)	471.0					400	188.4		
MINIMUM LANDING GROSS WEIGHT & MOMENT		43277	14030.8	32032	10514.8	28865	9541.5	26853	8867.5

The total weight and moment, as located on the center of gravity limit table, fall within the recommended CG limits. Therefore, the loading is satisfactory for landing.

LANDING WEIGHT & MOMENT		43277	14030.8	32032	10514.8	28865	9541.5	26853	8867.5
Fuel-Mid Tanks	317.3	3662	1162.0	3662	1162.0	3662	1162.0	3662	1162.0
Fuel-Fwd & Aft Tanks	314.0	1611	505.9			3103	974.3	3103	974.3
Fuel-Ferry	312.5							16350	5117.6
Oil-Ferry	492.0							32	15.7
TAKEOFF WEIGHT & MOMENT		48550	15698.7	35694	11676.8	35630	11677.3	50000	16137.1

The total weight and moment, as located on the center of gravity limit table, fall within the recommended CG limits. Therefore, the loading is satisfactory for takeoff.

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Figure G-5. Chart E (Sheet 23 of 23)

WEIGHT AND BALANCE CLEARANCE FORM F · TRANSPORT

FOR USE IN TO 14B+0, NAVAIR 01-4B+0, AND TM55-1500-342-23

DATE (YY MM DD)	AIRCRAFT TYPE	FROM	HOME STATION
MISSION	SERIAL NO	TO	PILOT

REMARKS

LOAD ADJUSTER NUMBER

REF		
1	BASIC AIRCRAFT (From Chart C)	
2	OIL (Gal)	
3	CREW (NO.)	
4	CREW'S BAGGAGE	
5	STEWARD'S EQUIPMENT	
6	EMERGENCY EQUIPMENT	
7	EXTRA EQUIPMENT	
8		
9	OPERATING WEIGHT	
10	TAKEOFF FUEL (Gal)	
11	WATER INJ	
12	TOTAL AIRCRAFT WEIGHT	

CORRECTIONS/MOST FWD/MOST AFT

13 DISTRIBUTION OF ALLOWABLE LOAD (PAYLOAD)

ZERO FUEL WT - - -
ZERO FUEL WT INDEX OR MOM - - -
ZERO FUEL % MAC - - -

COMP OR ARM	ITEM	CHANGES (+ or -) WEIGHT	CHANGES (+ or -) INDEX OR MOM	PASSENGERS NO	PASSENGERS WEIGHT	COMPT OR ARM	CARGO	CARGO	COMPT OR ARM

SECTION III
WEIGHING INSTRUCTIONS

G-12. Aircraft Weighings. Aircraft must be weighed.

a. Periodically as required by pertinent directives. (Refer to AR 95-16.)

b. When major modifications or repairs are made.

c. When the pilot reports unsatisfactory flight characteristics (nose or tail heaviness).

d. When the basic weight data is suspected to be in error. The basic weight and CG location obtained from a weighing can be only as accurate as the scale equipment employed. Scales must be calibrated as required by existing directives.

G-13. Preliminary weighing instructions. Preliminary weighing instructions are as follows:

a. Assemble necessary equipment, including scales, hoisting equipment, jacks, cribbing, leveling bars, level, measuring tape, plumb bob, and string.

b. Remove dirt, grease, moisture, etc., from aircraft.

c. Drain fuel from all tanks, using tank drains, with aircraft in its normal attitude on ground. If impracticable to drain due to fire hazard or local regulations, fill to capacity. Since weight of fuel varies with temperature, determine actual weight per gallon by use of a hydrometer. Multiply by gallons capacity, obtained from loading data sheets, for total fuel weight. Never weigh with partially filled tanks.

If the helicopter is to be weighed with full fuel tanks, the helicopter must be weighed using the 4 point method.

d. Fill oil tanks to operating capacity.

e. Fill hydraulic systems and reservoirs to normal levels.

f. Inflate or deflate main landing gear oleo struts to normal extension or to anticipated desired height. It may be helpful for leveling and in jacking to lash a rope around the torque arm of the forward landing gear and apply the aft shock strut static lock so that the strut will not extend when the aircraft is lifted.

g. Conduct an inventory of fixed operating equipment actually installed in aircraft. This shall be accomplished on the Basic Weight Check List, DD Form 365-1.

NOTE

A basic weight without the equivalent inventory is of no value to the activity receiving the aircraft.

h. Release brakes before aircraft is placed on scales to reduce possibility of side loads and thrusts on scales which may give erroneous weighing results.

i. Jacking the aircraft shall be accomplished in accordance with requirements of Chapter 1 of the -23 maintenance manual. Refer to figure G-7 for location of jack pads and weight restrictions.

NOTE

The aircraft must be weighed in a closed hangar.

G-14. Weighing equipment. Weighing aircraft with accurately calibrated scales is the only sure method of obtaining an accurate basic weight and CG location. Reference is made to TM 55-1500-342-23 for use of the electronic weighing kit. Additional instruction for aircraft weighing that is not contained in TM 55-1500-342-23 for the individual aircraft shall be covered in this section.

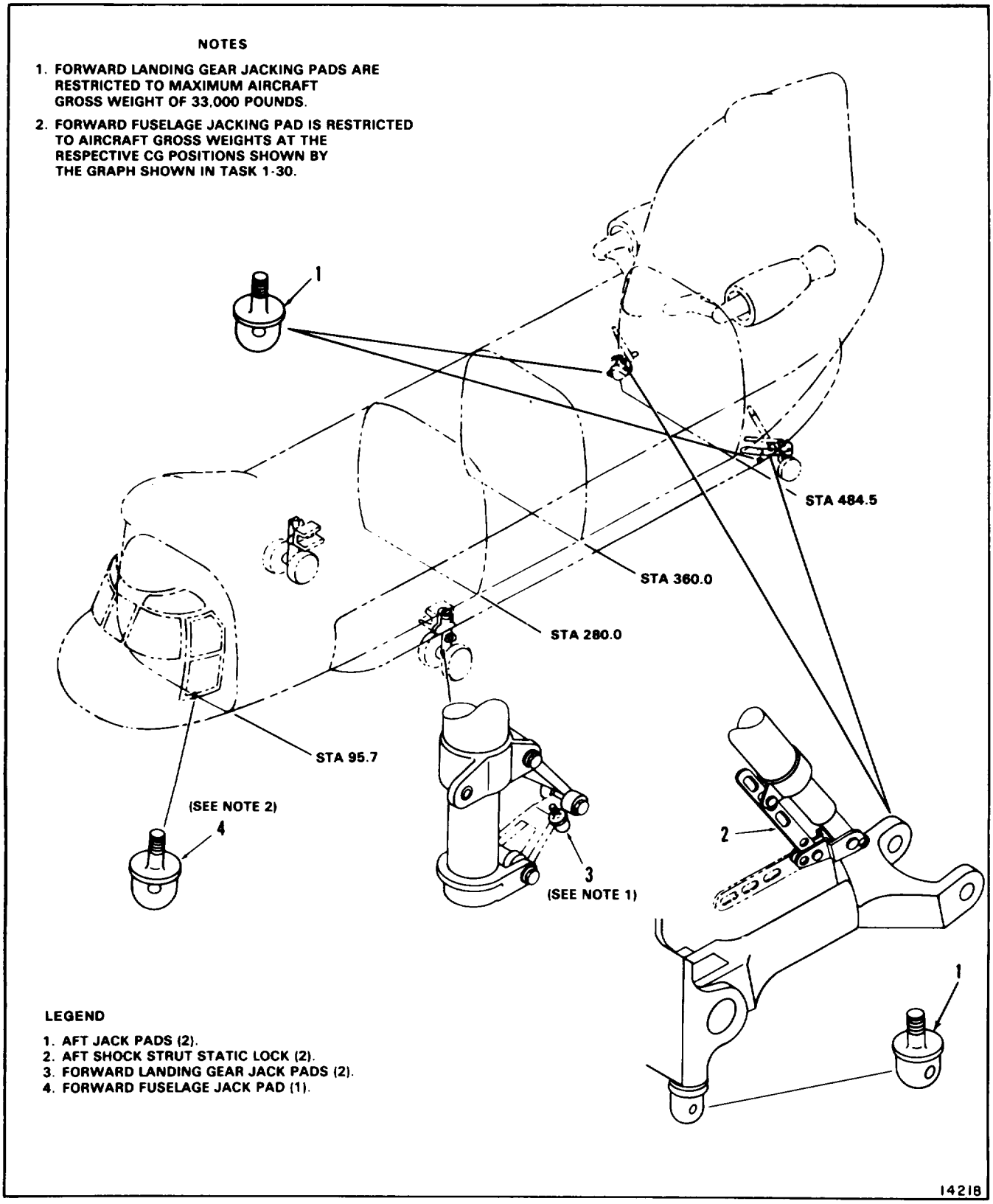

Figure G-7. Jack Pad Locations

APPENDIX H
STORAGE OF AIRCRAFT

(See Chapter 1, Section IX.)

APPENDIX J
TORQUE LIMITS

(See Chapter 1, Task 1-13.)

APPENDIX K
MARKING INFORMATION

(See Chapter 2, Section VI.)

GLOSSARY

Section I ABBREVIATIONS

ABBREVIATIONS	TERM
ac	alternating current
acft	aircraft
actr	actuator
adf	automatic direction finder
afcs	automatic flight control system
a g b	accessory gearbox
agl	above ground level
AIMS	Altitude Information Monitoring System
al	aluminum
alct	aft longitudinal cyclic trim
altm	altimeter
ang	angle
ANVIS	aviation night vision imaging system
appx	appendix
approx	approximately
apu	auxillary power unit
assy	assembly
attn	attention
aux	auxiliary
bat	battery
bc	bolt circle
bite	built-in test equipment
bk	brake
bkr	breaker
bl	butt line
brkr	breaker
bst	boos t
btry	battery
C	Celsius (centigrade)
c a p	capacity
cb	circuitbreaker
cbore	counterbore
cc	cubic centimeter
ccda	cockpit control driver actuator
c c u	converter control unit
ccw	counterclockwise
CF, BR	monobromotrifluoromethane
cg	center of gravity
CGI	Cruise Guide Indicator
c h	chapter
ckpt	cockpit
ckt	circuit
cmps	compass
co	cutout
CO_2	carbon dioxide
col	column
condition	condition
cont	control

ABBREVIATIONS	TERM
conv	converter
cplt	copilot
cpo	complete provisions only
cps	cycles per second
cpt	cockpit position transducer
cres	corrosion resistant steel
crks	crash resistant fuel system
csk	countersink
ctr	center
cw	clockwise
dash	differential airspeed hold actuator
dc	direct current
dcp	differential collective pitch
DE	dial empty
dec	decrease
deg	degree
det	detector
dia	
dim	dimension
disc	disconnect
distr	distribution
dmwr	depot maintenance work requirement
dn	down
du	display unit
dwg	drawing
dx	direct exchange
ea	each
egt	exhaust gas temperature
emer	emergency
emf	electromotive force
eng	engine
equrv	equivalent
esu	electronic sequencing unit
ext	external
ext	extinguisher
F	Fahrenheit
FAT	free air temperature
fed	federal
fig	figure
flt	flight
flct	foward longitudinal cyclic trim
fod	foreign object damage
ftlb	foot pound
FSN	federal stock number
fwd	forward
gal	gallon
gen	generator
gpm	gallons per minute
gnd	ground
gse	ground support equipment
hex	hexagon
hf	high frequency

ABBREVIATIONS	TERM
Hg	mercury
HIT	Health Indicator Test
HUD	head up display
hydr	hydraulic
Hz	Hertz(cyclespersecond)
ias	indicated air speed
id	inside diameter
iff	identification friend or foe
ign	ignition
ilca	Integrated lower control actuator
imp.	imperial (measurement)
in.	inch
in. lb	inch-pound
incr	incremental
ind	indicator
inst	instrument
instpn	instrument panel
instr	instrument
kn	knot
knts	knots
kva	kilovolt-ampere
l	left
lb	pound
lbft	poundfoot
lb in.	pound-inch
lct	longitudinal cyclic trim
le	leading edge
lf	low frequency
lg	length
lh	lefthand
long	longitudinal
los	line of sight
lt	sight
lvdt	linear variable differential transducer
mac	maintenance allocation chart
mag	magnetic
manf	manifold
max	maximum
mfg	manufacturing
mil	military
min	minimum
misc	miscellaneous
mot	motor
mph	miles per hour
mpi	magnetic particle inspection
MWO	Modification Work Order
na	not applicable
nac	nacelle
neg	negative
NC	normally closed
NO	normally open

ABBREVIATIONS	TERM
No	number
norm	normal
N1	gas producer (speed)
N2	power turbine (speed)
NR	Rotor Speed (in rpm)
nrp	normal rated power
od	outside diameter
ohco	over haul change order
oper	operating
ou	opticalunit
ovhd	overhead
P_3	compress discharge pressure
para	paragraph
pf	picofarad
ph	phase
phr	pounds per hour
ph	pilot
pmg	permanent magnetic generator
pmp	pump
pms	Preventive Maintenance Services
pot	..panel
p/o	part of
pos	positive
posn	..position
press	pressure
pn	primary
prim	..primary
psas	pitch stability augmentation system
pscu	power supply calibration unit
pst	pounds per square inch
psta	pounds per square inch absolute
psld	pounds per square inch differential
psrg	pounds per square inch page
pt	point
ptit	power turbine inlet temperature
pwr	power
pws	proximity warnmg system
qt	quart
qty	quantity
r	right
rad	radius
rcco	reverse current cutout
recp	receptacle
rect	rectifier
ref	reference
reg	regulator
rel	release
rev cur	reverse current
rh	right hand
rhr	roughness height rating
rlse	release

ABBREVIATIONS	TERM
rly	relay
rmi	radio magnetic indicator
rms	root mean square
rmte	remote
rpm	revolutions per minute
rpstl	repair parts and special tools list
seem	standard cubic centimeters per minute
scfm	standard cubic feet per minute
sdc	signal data converter
scr	silicon controlled rectifier
set	second
set	secondary
sect,	second
seq	sequence
sh	sheet
shp	shaft horsepower
sie	standard inspection equipment
sig	signal
sol	solenoid
spec	specification
sply	supply
sta	staion
std	standard
strg	steering
subq	subsequent
SW	switch
sync	synchronizing
sys	system
tach	tachometer
tas	true airspeed
tbo	time between overhaul
tc	thermocouple
te	trailing edge
teat	turbine engine analysis check
temp	temperature
thd	thread
tir	total indicator reading
trq	torque
typ	typical
uhf	ultra high frequency
unk	unknown
US	United States
util	utility
uuf	micromicrofarad
u/w	used with
v	volt
va	volt-ampere
vat	volts alternating current
var	volt-ampere reactive
vdc	volts direct current

ABBREVIATIONS	TERM
vgl	vertical gyro indicator
vhf	very high frequency
vl	varies with load
vne	velocity never exceed
vs	versus
wl	waterline
wshld	windshield
wt	weight
xmitr	transmitter
xmsn	transmission
3 pdt	triple pole double throw

Section II DEFINITION OF UN USUAL TERMS

TERM	DEFINITION
aerodynamic	Pertaining to motion of air acting on aircraft.
anodizing	Treatment of exterior aluminum alloy parts to prevent corrosion.
ballast	Added weight to gain stability.
b o w i n g	Curving or gradual change from original line or plane. Usually caused by lateral force or heat.
brinelling	Circular indentations on surface of bearing races. Usually caused by shock loading of balls or rollers.
burnishing	Smoothing minor damage using a hand tool.
burr	Rough edge or sharp protrusion on edge or surface.
chafing	Damage caused by two parts rubbing together.
chamfer	Beveled edge.
chromidize	Treatment for aluminum alloys to receive organic finish.
coaling	Raised frame around door.
delamination	Separation of material layers.
excluder	Screen that will prevent passage of particles larger than allowable size.
extruded	Formed by forcing through a shaped hole in a die.
ferrules	Metal band or socket.
frayed	Worn into shreds by rubbing action.
fusion	Joining together of two materials. Usually caused by heat, friction, or electrical current.
galling	Fretting or wearing away by friction.
gouged	Scooping out of material.
graduate	Mark with measurements.
impregnated	Saturated or soaked.
inclinometer	A device used to measure the angle from the horizontal.
insulate	Restrict passage of heat or sound.
integral	Formed as a unit with another part.
lee side	Downwind side.
Iimited measures	Measures used only if preferred equipment or materials are not available.
manometer	An instrument for measuring pressure.
nicked	A sharp surface indention. Parent material is displaced, seldom separated.
oilcanning	Skin that springs back when pressed in like an oil can.
pawl	A pivoted lever that allows another part to move only in one direction.
pitting	Small irregular shaped cavities, usually caused by corrosion. chipping, or heavy electrical discharge.
radius	Distance from center to edge of circle. Half the diameter.
scored	Deep scratch or scratches. Material is removed.
scratched	Light, narrow, shallow, mark or marks on surface. Material is displaced not removed.
sheet	A broad, thin surface of material.
spalllng	Rough area resulting from progressive chipping away of material.
tacky	Sticky to the touch.
transverse	ln a side-to-side direction

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Remove (AVIM)	11-215	11-748
Yoke, Forward Let		
Clean	11-2	11-6
Inspect	11-211	11-735
Inspect — General	11-7	11-16
Install	11-217	11-754
Remove	11-212	11-738

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-31, Organizational Maintenance requirements for CH-47B/C & D Aircraft.

*U.S. GOVERNMENT PRINTING OFFICE : 19930- 342421 (63416)

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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@avma27.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 EQUIPMENT TECHNICAL PUBLICATIONS

THEN . .JOT DOWN THE DOPE ABOUT IT ON THIS FORM, CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

PFC John DOE
CO A 3rd Engineer Bn
Ft. Leonardwood, MO 63108

DATE SENT

10 January 1999

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 55-1520-240-23-10		

BE EXACT PIN–POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
6	2-1 a		
B1		4-3	

IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

In line 6 of paragraph 2-1a the manual states the engine has 6 cylinders. The engine on my set only has 4 cylinders. Change the manual to show 4 cylinders.

Callout 16 on figure 4-3 is pointed at a bolt. In key to figure 4-3, item 16 is calle a shim. Please correct one or the other

EXAMPLE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

JOHN DOE, PFC (268) 317–7111

SIGN HERE

JOHN DOE John Doe

DA FORM 1 JUL 79 2028–2

PREVIOUS EDITIONS ARE OBSOLETE.

DRSTS-M verprint2, 1 Nov 80

P.S.- - IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION, MAKE A CARBON COPY OF THIS AND GIVE TO YOUR HEADQUARTERS.

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DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE

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PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

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REVERSE OF DA FORM 2028-2 Reverse of DRSTS-M Overprint 2, 1 Nov 80

TEAR ALONG PERFORATED LINE

FILL IN YOUR UNITS ADDRESS

FOLD BACK

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OFFICIAL BUSINESS

COMMANDER
U.S. ARMY AVIATION AND MISSILE COMMAND
ATTN: AMSAM-MMC-MA-NP
REDSTONE ARSENAL, AL 35898-5230

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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

Weights

1 centigram = 10 milligram = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigrams = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 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

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 38.82 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 26418 gallons

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
inches	centimeters	2.540
feet	meters	.305
yards	meters	.914
miles	kilometers	1.609
square inches	square centimeters	6.451
square feet	square meters	.093
square yards	square meters	.836
square miles	square kilometers	2.590
acres	square hectometers	.405
cubic feet	cubic meters	.028
cubic yards	cubic meters	.765
fluid ounces	milliliters	29,573
pints	liters	.473
quarts	liters	.946
gallons	liters	3,785
ounces	grams	28.349
pounds	kilograms	.454
short tons	metric tons	.907
pound-feet	newton-meters	1.365
pound-inches	newton-meters	.11375

To change	To	Multiply by
ounce-inches	newton-meters	.007062
centimeters	inches	3.94
meters	feet	3.280
meters	yards	1,094
kilometers	miles	.621
square centimeters	square inches	.155
square meters	square feet	10,764
square meters	square yards	1.196
square kilometers	square miles	.386
square hectometers	acres	2.471
cubic meters	cubic feet	35,315
cubic meters	cubic yards	1.308
milliliters	fluid ounces	.034
liters	pints	2.113
liters	quarts	1.057
liters	gallons	,264
grams	ounces	,035
kilograms	pounds	2.205
metric tons	short tons	1.102

Temperature (Exact)

“F Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	℃

PIN: 053348-023