TO: ALL HOLDERS OF NOSE GEAR MINOR COMPONENTS OVERHAUL MANUAL, 32-01-03

REVISION NO. 63, DATED JUL 1/09

HIGHLIGHTS

DESCRIPTION OF CHANGE	TOPICS AFFECTED												
	D & O	D / Assy	Cleaning	Insp/Chk	Repair	Assy	F/C	Test	T/Shooting	S/Tools	Storage	IPL	L/Overhaul
Added more vendor part numbers of 10-61970-series bearings (2, Fig. 7)												X	

NOSE GEAR MINOR COMPONENTS

32-01-03

BOEING P/N SEE PAGE 1

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
32-1003		PRR 30836	Nov 15/68
		PRR 30613	Nov 15/68
32-1029		PRR 31653	Nov 10/69
		MC 3453-1K	Mar 25/73
		PRR 32188	Dec 25/75
		PRR 32454	Dec 25/75
		PRR 32798	Jul 5/78
32-1094			Jan 5/79
32-1079			Jul 5/79
		PRR 32070-2	Dec 5/83
		PRR 32127	Dec 5/83
		PRR 32517	Dec 5/83
		PRR 33180-94	Dec 5/83
		PRR 33469	Dec 5/83
		PRR 33469-1	Mar 5/84
		SL 32-40	Sep 5/88
		PRR 34509	Mar 5/89
		PRR 34939	Mar 5/93

LIST OF EFFECTIVE PAGES

* Indicates pages revised, added or deleted in latest revision
F Indicates foldout pages - print one side only

	PAGE	DATE		PAGE	DATE		PAGE	DATE
	32-01-03			19	Mar 1/09			
	T-1	Mar 5/93		20	Mar 1/02			
	T-2	BLANK		20A	Nov 1/03			
*	LEP-1	Jul 1/09		20B	Nov 1/03			
	LEP-2	BLANK		20C	Mar 1/01			
	1	Jul 1/07		20D	BLANK			
	2	Jul 1/99		21	Sep 1/94			
	2A	Nov 1/03		22	Jul 1/02			
	2B	Mar 1/95		23	Sep 1/94			
	2C	Mar 1/95		24	Mar 1/95			
	2D	Mar 1/08		25	Dec 5/83			
	2E	Nov 1/03		26	Jul 1/99			
	2F	BLANK		26A	Nov 1/03			
	3	Nov 1/07		26B	Mar 1/95			
	4	Jul 1/04		27	Mar 1/95			
	4A	Jul 1/04		28	Mar 1/04			
	4B	Jul 1/07		29	Mar 1/04			
	4C	Jul 1/07		30	Sep 1/94			
	4D	BLANK		31	Dec 1/96			
	5	Jul 1/07		32	Dec 1/96			
	6	Jul 1/07		33	Mar 1/04			
	6A	Jul 1/00		34	Sep 1/94			
	6B	Sep 1/95		34A	Sep 1/94			
	6C	Sep 1/95		34B	Nov 1/03			
	6D	Jul 1/07		34C	Nov 1/03			
	7	Jul 1/01		34D	BLANK			
	8	Nov 1/04		35	Mar 1/09			
	8A	Sep 1/94		36	Jul 1/02			
	8B	Mar 1/96		37	Mar 1/08			
	8C	Mar 1/96		38	Nov 1/03			
	8D	Mar 1/96		39	Jul 1/99			
	8E	Mar 1/96		40	BLANK			
	8F	BLANK						
	9	Nov 1/03						
	10	Nov 1/06						
	11	BLANK						
	12	Sep 1/95						
*	13	Jul 1/09						
	14	Sep 1/95						
	14A	Nov 1/06						
	14B	BLANK						
	15	Sep 1/94						
	16	Sep 1/94						
	17	Nov 1/99						
	18	Sep 1/94						

TABLE OF CONTENTS

NOTE: This manual contains overhaul data for some of the components of the Nose Landing Gear Installation. Overhaul functions which cannot be done by standard industry practices are included in the individual section for each component.

1. Refer to these standard practices, as applicable:

   A. SOPM 20-10-01 for machining of high strength steels

   B. SOPM 20-10-03 for shot peening

   C. SOPM 20-10-05 for plasma flame spraying

   D. SOPM 20-20-01 for magnetic particle examination

   E. SOPM 20-20-02 for penetrant examination

   F. SOPM 20-30-02 for stripping of protective finishes

   G. SOPM 20-41-01 for explanation of F and SRF finish codes

   H. SOPM 20-42-03 for chrome plating

   I. SOPM 20-42-05 for cadmium plating

   J. SOPM 20-43-03 for chemical treatment of aluminum

   K. SOPM 20-50-03 for bushing and bearing replacement

   L. SOPM 20-60-02 for finishing materials

   M. SOPM 20-60-04 for miscellaneous materials

   N. CMM 32-00-03 for lube fitting replacement

   O. CMM 32-00-05 for repair of high strength steel landing gear parts

2. Reserved

3. PIN, DRAG BRACE CENTER (69-35391-1,-2)

   A. Inspection/Check

      (1) See Fig. 2A, 6 for wear limits.

      (2) Magnetic particle examine the pin per SOPM 20-20-01.

   B. Repair (Fig. 1)

      (1) Method 1 -- Chrome Plate Buildup

         (a) Machine OD as required, within repair limits, to remove defects.

         (b) Shot peen as indicated.

         (c) Build up machined surfaces with chrome plate and grind to dimensions and finish shown.

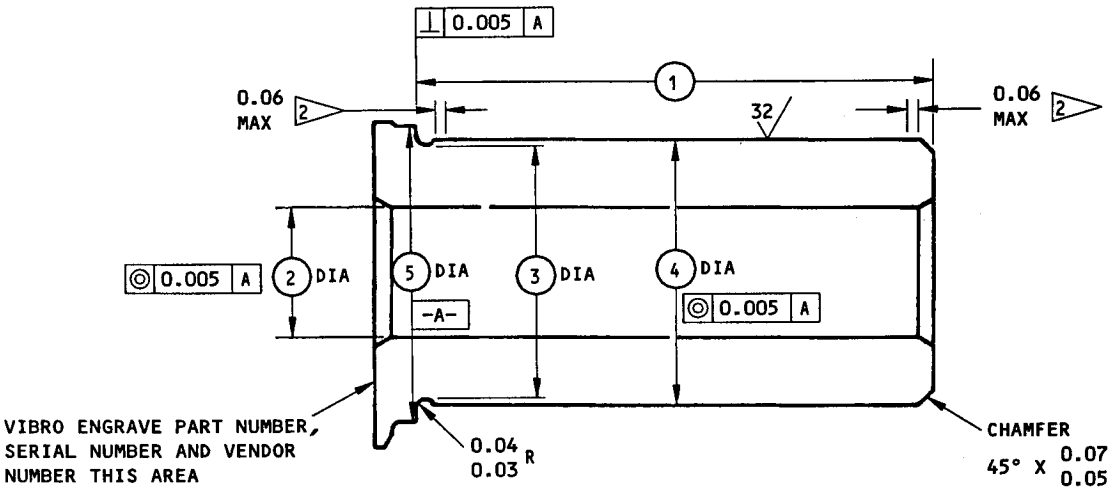
(2) Method 2 -- Thermal Spray Buildup

(a) Machine as required, within repair limits, to remove defects.

(b) Shot peen as indicated.

(c) Build up the surface with thermal spray coating as indicated.

C. Refinish (Fig. 1)



	1	2	3	4	5
DESIGN DIM	2.43 2.41	0.6255 0.6245	1.235 1.225	1.2490 1.2485	1.41 1.40
REPAIR LIMIT	---	---	---	1.2390 1 3	---

REFINISH

CADMIUM PLATE (F-15.06)

1 LIMIT FOR CHROME PLATE BUILDUP (SOPM 20-42-03) AND GRINDING TO DESIGN DIM AND FINISH, WITH PLATING RUNOUT AS SHOWN BY 2

2 CHROME PLATE RUNOUT

3 LIMIT FOR BUILDUP WITH BMS 10-67, TYPE 1 OR 17, CLASS 2, 3, OR 4 THERMAL SPRAY (SOPM 20-10-05), 0.010 MAX THICK. PUT A 0.080 MAX RUNOUT AT EDGES. GRIND TO DESIGN DIMENSIONS AND 4 MICROINCH FINISH. THEN CADMIUM-TITANIUM PLATE (SOPM 20-42-02) THE RUNOUT AREA.

REPAIR

REF 1 3

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN: (SOPM 20-10-03)
0.016-0.033 SHOT SIZE
0.012-0.015 A2 INTENSITY

MATERIAL: 17-4PH CRES (180-200 KSI)

ALL DIMENSIONS ARE IN INCHES

69-35391-1, -2
Pin Repair and Refinish
Figure 1

4. PIN, DRAG BRACE UPPER (69-35394-1, -2, -3, -4)

A. Inspection/Check

(1) See Fig. 6 for wear limits.

(2) Magnetic particle examine the pin.

B. Repair (Fig. 1B)

(1) OD — Diameter 4

(a) Machine as required, within repair limits, to remove defects.

(b) Shot peen as indicated.

(c) Build up machined surfaces with chrome plate and grind to design dimensions and finish.

(d) If this is a 69-35394-2 or -3 pin, we recommend you machine the OD to the 69-35394-4 design dimensions and identify the pin as a 69-35394-4.

(2) Bore — Diameter 2

(a) Machine as required, within repair limits, to remove defects.

(b) Refinish as indicated.

(3) Cross-bolt hole — Diameter 3

(a) Machine the hole as required, within repair limits, to remove defects.

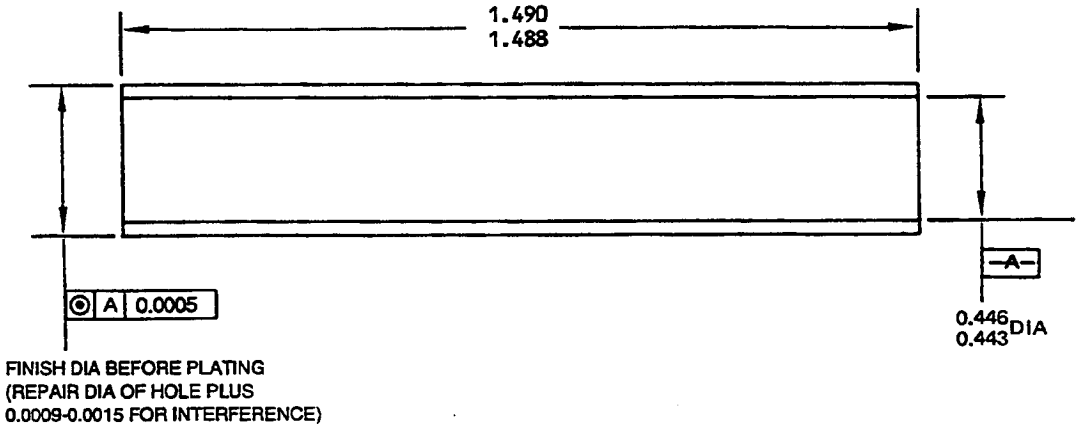
(b) Refinish the hole as indicated.

(c) Make a repair bushing (Fig. 1A).

(d) Install the bushing by the shrink-fit method of 20-50-03, with wet sealant BMS 5-95.

(e) Machine the ID of the bushing to design dimensions. Machine the ends of the bushing to be at the surface of the OD of the pin.

C. Refinish — See Fig. 1B.



REPAIR

125 MACHINE FINISH EXCEPT AS NOTED

BREAK SHARP EDGES 0.01-0.02R

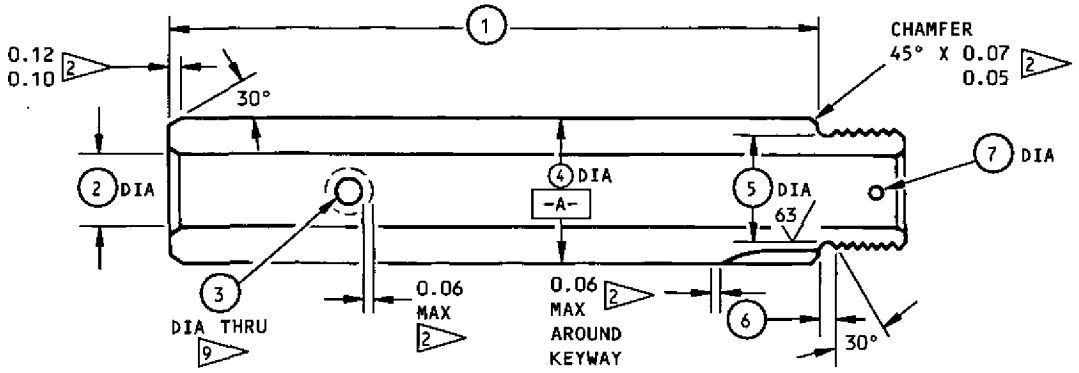
NO FINISH

MATERIAL: AL-NI-BRZ PER AMS 4640 OR 4880

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION ③ FIG. 1B

Repair Bushing Details
Figure 1A



	1	2 3	2 4 5 6	3	4 3	4 4	4 5	4 6	5	6	7
DESIGN DIM	6.11 6.09	0.51 0.49	0.76 0.74	0.446 0.443	1.3740 1.3735	1.4890 1.4885	1.4885 1.4880	1.4882 1.4877	1.005 0.995	0.18 0.16	0.151 0.141
REPAIR LIMIT	--	0.54 8	0.79 8	0.505 7	1.3635 1	1.4600 1	1.4600 1	1.4600 1	--	--	--

REFINISH

CHROME PLATE (F-15.34) DIA -A-. CADMIUM-TITANIUM PLATE (F-15.01) ALL OTHER INTERIOR AND EXTERIOR SURFACES. WIPE THREADS AND CHROME PLATE WITH PRIMER (F-19.45). APPLY PRIMER (F-20.03) ON OTHER SURFACES. APPLY CORROSION PREVENTIVE COMPOUND (F-19.03) ON INTERIOR.

1 LIMIT FOR CHROME PLATE BUILDUP (SOPM 20-42-03) AND GRIND TO DESIGN DIMENSIONS AND FINISH (SOPM 20-10-04). PUT A PLATING RUNOUT AS SHOWN BY 2

2 CHROME PLATE RUNOUT

3 69-35394-1

4 69-35394-2

5 69-35394-3

6 69-35394-4

7 LIMIT FOR INSTL OF REPAIR BUSHING

8 RESTORATION TO DESIGN DIMENSIONS NOT REQUIRED

9 SHOT PEEN OPTIONAL

REPAIR

REF 1 2 7 8

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN: (SOPM 20-10-03)
(DO NOT SHOT PEEN THREADS)
0.016-0.033 SHOT SIZE
0.012-0.015 A2 INTENSITY

MATERIAL: 4340M STEEL (270-300 KSI)

ALL DIMENSIONS ARE IN INCHES

69-35394-1 THRU -4

Pin Repair and Refinish
Figure 1B

E73202

5. BOLT, DRAG BRACE LOWER (69-35396-1, -2, -3, -4, -5)

A. Inspection/Check

(1) See Fig. 2A for wear limits.

(2) Magnetic particle examine the pin per SOPM 20-20-01.

B. Shank Repair (Fig. 1C)

(1) Method 1 -- Chrome Plate Buildup

(a) Machine as required, within repair limits, to remove defects.

(b) Shot peen, chrome plate, and grind to design dimensions and finish.

(2) Method 2 -- Thermal Spray Buildup

(a) Machine as required, within repair limits, to remove defects.

(b) Shot peen as indicated.

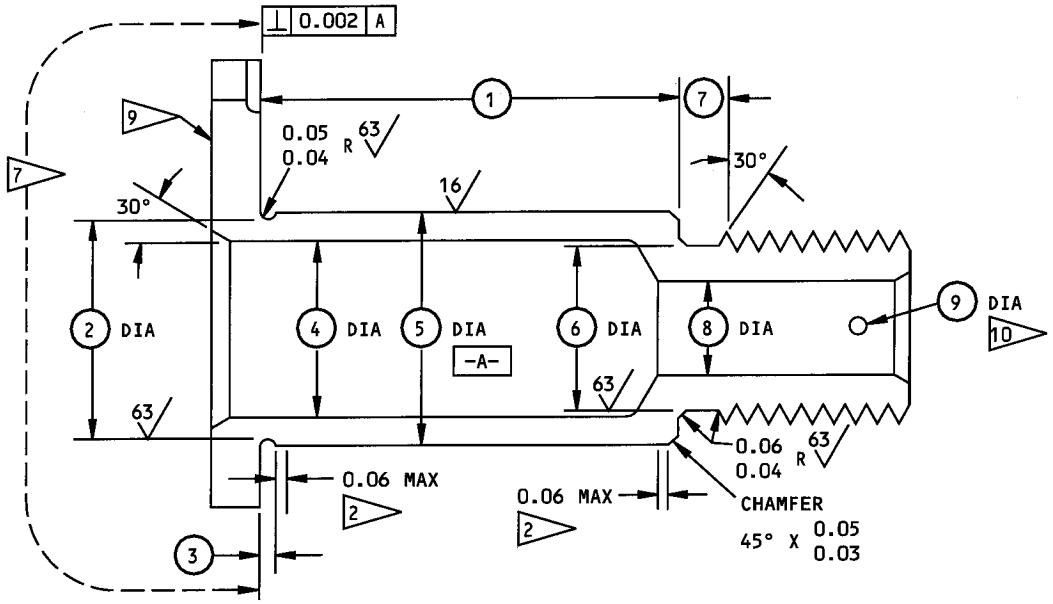
(c) Build up the surface with thermal spray coating as indicated.

C. Relief Grooves (Fig. 1C)

(1) Machine as required, within repair limits, to remove defects.

(2) Shot peen and refinish per par. D.

D. Refinish -- Fig. 1C.



	1	2	3	4 5	4 6	5	6	7	8	9
DESIGN DIM	2.27 2.25	1.23 1.22	0.07 0.05	0.89 0.87	0.81 0.79	1.2490 1.2485	0.881 0.871	0.26 0.24	0.51 0.49	0.151 0.141
REPAIR LIMIT	—	1.21 4	0.094 4	—	—	1.2204 1 8	0.857 4	—	—	—

REFINISH

CHROME PLATE (F-15.34) DIA -A-. CADMIUM-TITANIUM PLATE (F-15.01) ALL OTHER INTERIOR AND EXTERIOR SURFACES. WIPE CHROME PLATE AND THREADS WITH PRIMER (F-19.45). APPLY PRIMER AND CORROSION PREVENTIVE COMPOUND TO INTERIOR SURFACES PER 3. APPLY PRIMER AND ENAMEL TO HEAD AREA PER 7.

1. LIMIT FOR CHROME PLATE BUILDUP (REF SOPM 20-42-03) AND GRINDING TO DESIGN DIM AND FINISH WITH A PLATING RUNOUT PER 2.
2. CHROME PLATE RUNOUT
3. APPLY PRIMER BMS 10-11, TYPE 1 (F-20.03) FOLLOWED BY CORROSION PREVENTIVE COMPOUND MIL-C-11796, CLASS 1 (F-19.03).
4. RESTORATION TO DESIGN DIM NOT REQUIRED
5. 69-35396-1,-3
6. 69-35396-2,-4,-5
7. APPLY PRIMER BMS 10-11, TYPE 1 (F-20.02) AND ENAMEL BMS 10-11, TYPE 2 (F-21.02).

REPAIR

REF 1 4 8

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN: (SOPM 20-10-03) (OPT IN ID)
(DO NOT SHOT PEEN THREADS)
0.016-0.033 SHOT SIZE
0.012-0.015 A2 INTENSITY

MATERIAL: 4340M STEEL, 270-300 KSI

ALL DIMENSIONS ARE IN INCHES.

8. LIMIT FOR BUILDUP WITH BMS 10-67 TYPE 1 OR 17, CLASS 2, 3, OR 4 THERMAL SPRAY (SOPM 20-10-05), 0.010 MAX THICK. PUT A 0.080 MAX RUNOUT AT EDGES. GRIND TO DESIGN DIMENSIONS AND 4 MICROINCH FINISH. THEN CADMIUM-TITANIUM PLATE (SOPM 20-42-02) THE RUNOUT AREA.
9. VIBRO ENGRAVE PART NUMBER, SERIAL NUMBER AND VENDOR NUMBER THIS SURFACE.
10. CADMIUM-TITANIUM PLATE THROW-IN REQUIRED

69-35396-1,-2,-3,-4,-5

Bolt Repair and Refinish
Figure 1C

K25905

6. LOWER DRAG BRACE ASSEMBLY (65-46230) (Fig. 3)

A. Inspection/Check

(1) See Fig. 2A for wear limits.

(2) Magnetic particle examine drag brace (3).

B. Repair -- Holes for bearings (Fig. 2)

(1) Method 1 and 2 -- Installation of Repair Sleeves and Standard Bearing (1)

(a) Remove bearings (1) and lube fitting (2).

(b) Machine holes oversize, within repair limits, to remove defects. Be sure to include the chamfer as shown.

(c) Shot peen. Refinish as indicated.

(d) Make one or two repair sleeves per Fig. 2A.

(e) Install the repair sleeves with BMS 3-24 grease by the shrink fit method per SOPM 20-50-03. Make sure the sleeve ends are an equal amount above each face of the lug. Then roller swage the sleeve per SOPM 20-50-03.

(f) Machine ID of the sleeves to the hole design dimensions and finish. Chamfer the bore ends as shown.

(g) Machine the swaged ends of the sleeve smooth with the lug faces.

(h) If the replacement bearing (1) has lube passages, drill a 0.175-inch lube hole through the sleeve in line with the lube hole which is in the brace. Break sharp edges. Make sure the lube passage is clear . Then install lube fitting (2) per par. D.(2). If the replacement bearing (1) does not have lube passages, it is not necessary to drill the hole through the sleeve or to install a lube fitting. Fill the lube hole in the drag brace with BMS 5-95 sealant, and refinish as necessary. Then mark this drag brace to tell you that lubrication of the bearing is not necessary.

(i) Install a replacement bearing (1) per par. D.(1).

(2) Method 3 -- Installation of Oversize Bearing (1)

(a) Remove bearing (1), and the repair sleeves if applicable.

NOTE: Five oversizes are available, in increments as shown.

(b) Machine the hole as shown in View B, Fig. 2, Sheet 2.

(c) Shot peen. Refinish as indicated.

(d) Get an oversize bearing (1) and install it per step D.(1) below.

C. Refinish -- Fig. 2

D. Replacement (Fig. 2)

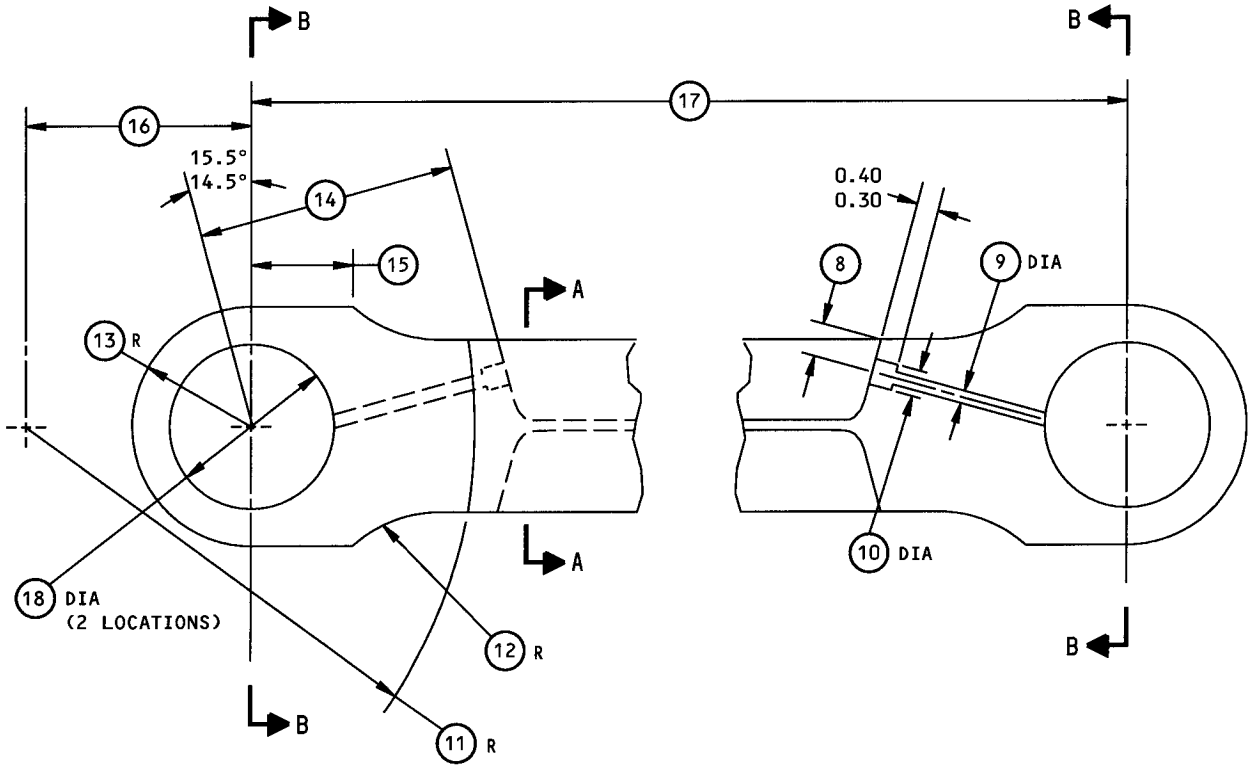
(1) Bearing (1)

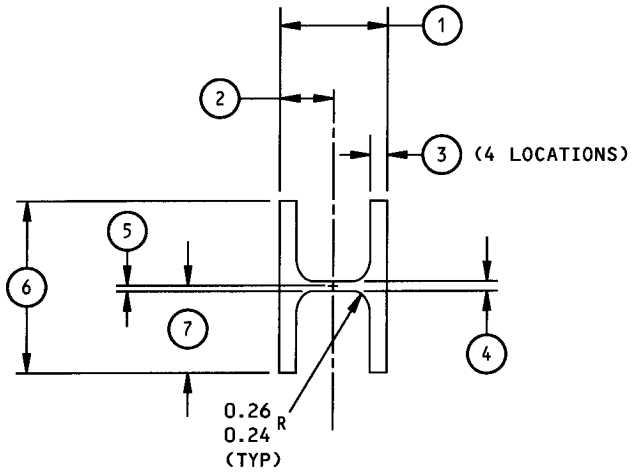
(a) Install the bearing in the brace with BMS 3-24 grease.

(b) Then roller swage the bearing per SOPM 20-50-03.

(c) Give the bearing a push out load test of 4670 pounds per SOPM 20-50-03.

(2) Lube fittings (2) -- If you did not fill the lube passages in the drag brace with sealant, replace the lube fittings per CMM 32-00-03.



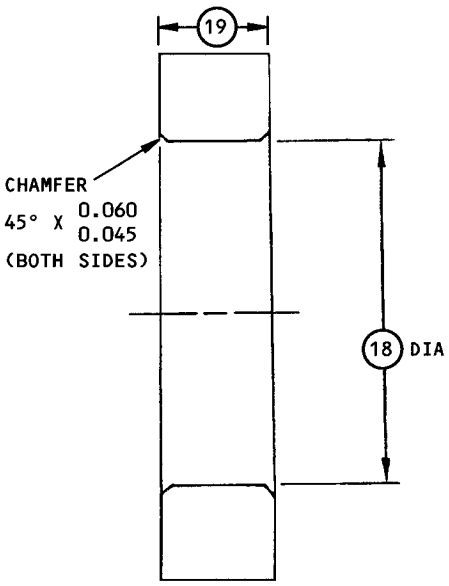


A-A

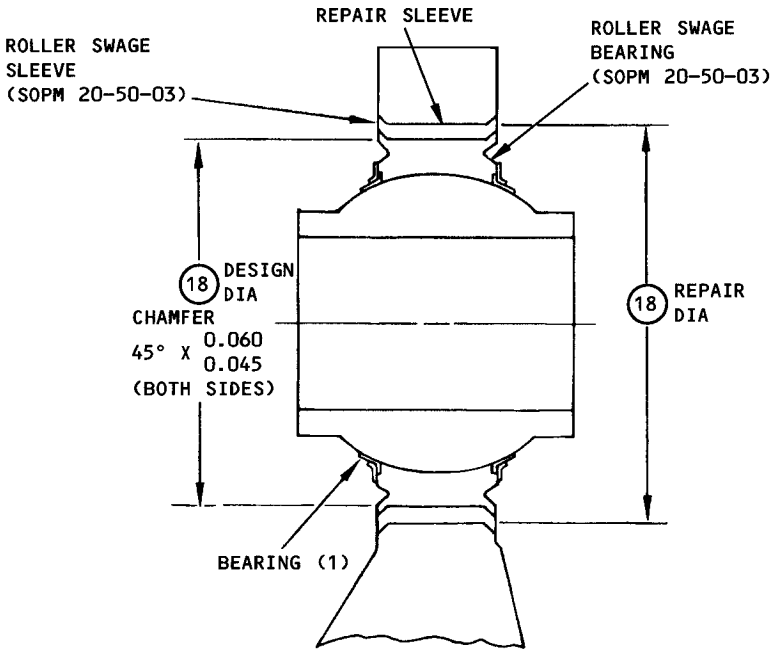
65-46230-2,-6,-10,-14,-16,-18,-20

Lower Drag Brace Repair and Refinish
Figure 2 (Sheet 1)

A42164

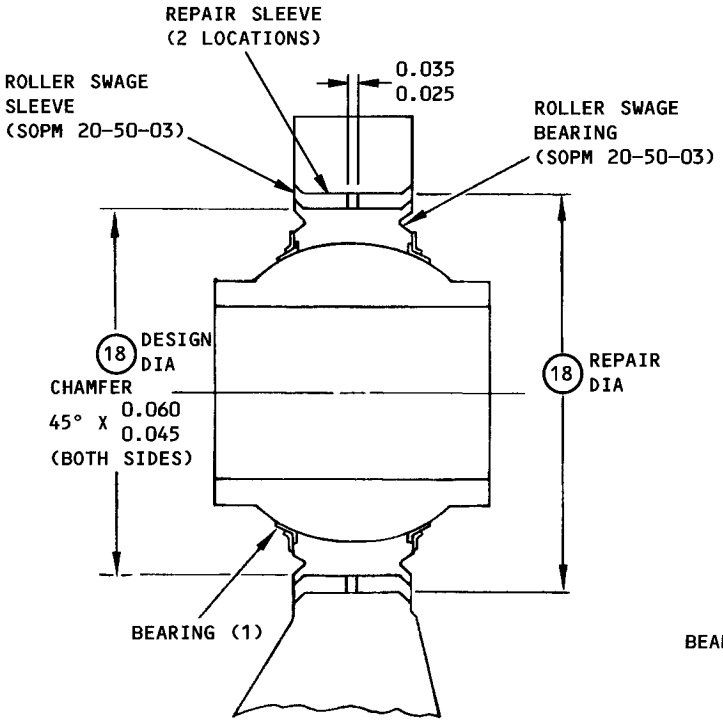


HOLE PREPARATION



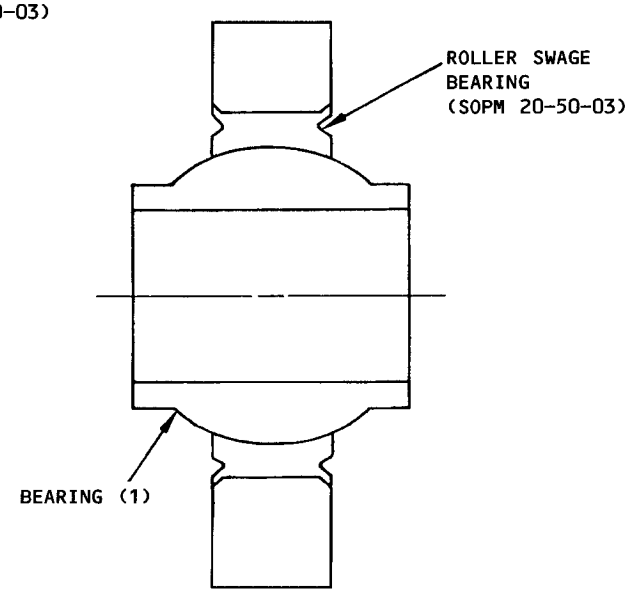
METHOD 1

INSTALLATION OF REPAIR SLEEVE
AND STANDARD BEARING



METHOD 2

INSTALLATION OF TWO REPAIR SLEEVES
AND STANDARD BEARING



METHOD 3

INSTALLATION OF OVERSIZE BEARING

B-B

65-46230-2,-6,-10,-14,-16,-18,-20

Lower Drag Brace Repair and Refinish
Figure 2 (Sheet 2)

F12781

	(1)	(2)	1 (3)	2 (3)	1 (4)	2 (4)	1 (5)	2 (5)	1 (6)	2 (6)
DESIGN DIM	1.36 1.34	0.685 0.665	0.16 0.14	0.19 0.17	0.12 0.10	0.16 0.14	0.065 0.045	0.085 0.065	2.21 2.19	2.07 2.05

TABLE A

	1 (7)	2 (7)	1 (8)	2 (8)	(9)	(10)	(11)	(12)	(13)	(14)
DESIGN DIM	1.11 1.09	1.04 1.02	0.55 0.53	0.48 0.46	0.186 0.175	0.186 0.185	7.25 7.12	2.01 1.99	1.48 1.46	3.24 3.22

TABLE A

	(15)	(16)	1 (17)	2 (17)	1 2 (18)	6 (18)	(19)
DESIGN DIM	1.26 1.24	4.31 4.29	20.19 20.17	20.86 20.84	2.0000 1.9995	2.0027 2.0022	0.937 0.927
REPAIR LIMIT	--	--	--	--	2.0005 5 2.125 3 OR SEE TABLE B 4	2.125 3 OR SEE TABLE B 4	--

TABLE A

(18) REPAIR LIMIT 1 2 4	(18) REPAIR LIMIT 4 6	OVERSIZE INCREMENT (REF)	MATING BEARING (1) (V16746)
2.0156 2.0151	2.0183 2.0178	1/64	BNG20E119P016
2.0312 2.0307	2.0340 2.0335	1/32	BNG20E119P032
2.0625 2.0620	2.0652 2.0647	1/16	BNG20E119P062
2.0937 2.0932	2.0964 2.0950	3/32	BNG20E119P093
2.1250 2.1245	2.1277 2.1272	1/8	BNG20E119P125

TABLE B

65-46230-2,-6,-10,-14,-16,-18,-20

Lower Drag Brace Repair and Refinish
Figure 2 (Sheet 3)

1378480

REFINISH

CADMIUM PLATE (F-15.06) (65-46230-2) OR CADMIUM-TITANIUM PLATE (F-15.01) (65-46230-6,-10,-14,-16) ALL OVER. THROW-IN REQUIRED IN HOLES FOR LUBE FITTINGS. APPLY PRIMER BMS 10-11, TYPE 1 (F-20.02) BUT NOT IN LUBE FITTING HOLES. AFTER INSTALLATION OF BEARINGS AND LUBE FITTINGS, APPLY ENAMEL BMS 10-11, TYPE 2 (F-21.02) BUT NOT ON BEARINGS OR LUBE FITTINGS.

1 65-46230-2, -6, -16

2 65-46230-10, -14

3 LIMIT FOR INSTALLATION OF REPAIR SLEEVE (FIG. 2A)

4 RANGE FOR INSTALLATION OF OVERSIZE BEARING

5 LIMIT FOR INSTALLATION OF STANDARD BEARING WITHOUT INTERFERENCE FIT. BUT THE INSTALLED BEARING MUST GET A PROOF LOAD TEST TO MAKE SURE IT WILL STAY IN POSITION.

6 65-46230-18,-20

REPAIR

REF 3 4 5

125 MACHINE FINISH

SHOT PEEN (SOPM 20-10-03)
0.016-0.033 SHOT SIZE
0.010-0.016 A2 INTENSITY

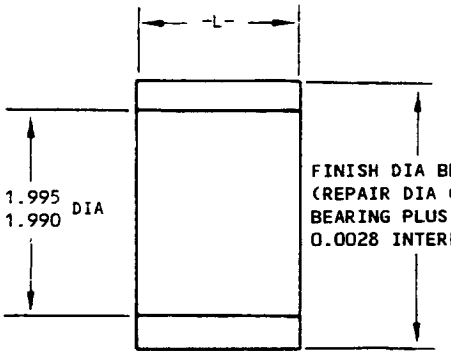
MATERIAL: 4330M STEEL RC33 MAX HEAT TREAT
180-200 KSI (65-46230-2) OR
220-240 KSI (65-46230-6,-10,-14,
-16,-18,-20)

ALL DIMENSIONS ARE IN INCHES

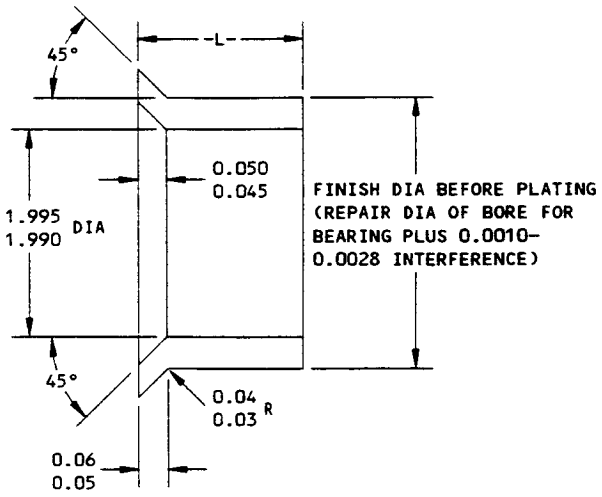
65-46230-2,-6,-10,-14,-16,-18,-20

Lower Drag Brace Repair and Refinish
Figure 2 (Sheet 4)

A42325



METHOD 1 SLEEVE



METHOD 2 SLEEVE

REPAIR METHOD	-L-	SLEEVE QUANTITY
1	0.947 0.937	1
2	0.461 0.451	2

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.01-0.02R

MATERIAL: 15-5PH CRES, 180-200 KSI

CADMIUM PLATE PER 20-42-05

ALL DIMENSIONS ARE IN INCHES

Repair Sleeve Details
Figure 2A

E. Fits and Clearances.

Mating Item No. Fig. 3	Design Dimensions				Service Wear Limits		
	Dimensions (inches)		Assembly Clearance inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
	Min	Max	Min	Max	Min	Max	
ID 1	1.2495	1.2500	0.0005	0.0015		*[3]	0.006 *[3]
OD *[1]	1.2485	1.2490			1.2470		
ID 1	1.2495	1.2500	0.0005	0.0015		*[3]	0.006 *[3]
OD *[2]	1.2485	1.2490			1.2475		

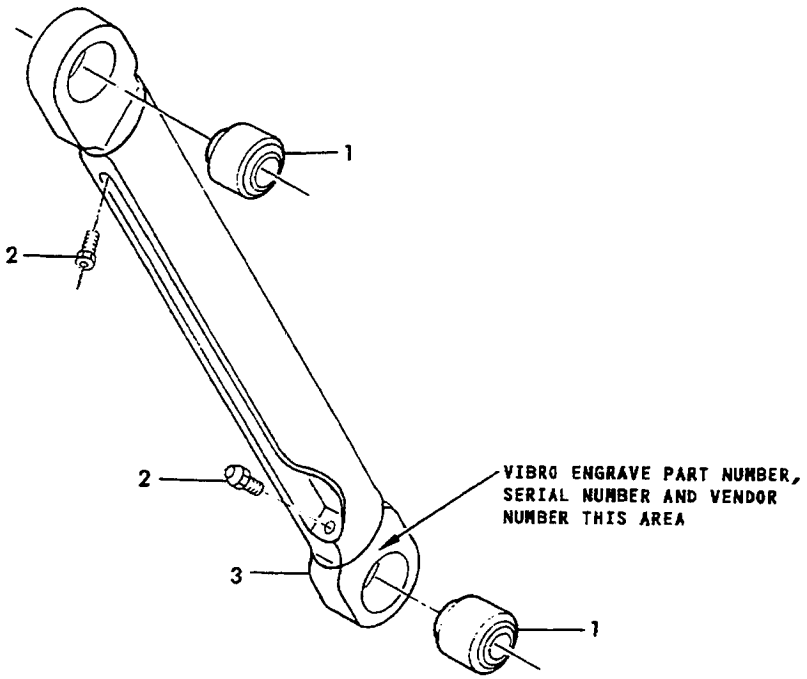
*[1] Drag brace centering pin, 69-35391-1, -2

*[2] Lower drag brace bolt, 69-35396-1, -2, -3, -4, -5

*[3] For this location, the total radial clearance between the bearing race, the bearing ball, and the pin or bolt must be no more than the specified maximum allowable clearance.

Fits and Clearances
Figure 2B

F. Illustrated Parts List



Lower Drag Brace Assembly
Figure 3

F12795

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
3-					
	65-46230-1		BRACE ASSY, LOWER DRAG (SB 32-1003)	A	RF
	65-46230-5		BRACE ASSY, LOWER DRAG (SB 32-1003)	B	RF
	65-46230-7		BRACE ASSY, LOWER DRAG (SB 32-1003)	C	RF
	65-46230-8		DELETED		
	65-46230-11		BRACE ASSY, LOWER DRAG	D	RF
	65-46230-13		BRACE ASSY, LOWER DRAG (SERIALIZED)	E	RF
	65-46230-15		BRACE ASSY, LOWER DRAG (SERIALIZED)	F	RF
	65-46230-17		BRACE ASSY, LOWER DRAG (SERIALIZED)	G	RF
	65-46230-19		BRACE ASSY, LOWER DRAG (SERIALIZED)	H	RF
1	BACB10AB20		. BEARING	AB	2
1	BACB10AB20M		. BEARING	C-H	2
1	BNG20E119P016		. BEARING, 1/64 INCH OVERSIZE (REPAIR PART), V16746		AR
1	BNG20E119P032		. BEARING, 1/32 INCH OVERSIZE (REPAIR PART), V16746		AR
1	BNG20E119P093		. BEARING, 3/32 INCH OVERSIZE (REPAIR PART), V16746		AR
1	BNG20E119P125		. BEARING, 1/8 INCH OVERSIZE (REPAIR PART), V16746		AR
1	BNG20E119P062		. BEARING, 1/16 INCH OVERSIZE (REPAIR PART), V16746		AR
2	1728B		. FITTING, LUBE, V95879		2
2	1645B		. FITTING, LUBE, V95879 (OPT)	A-F	2
3	65-46230-2		. BRACE	A	1
3	65-46230-6		. BRACE	BC	1
3	65-46230-9		DELETED		
3	65-46230-10		. BRACE	D	1
3	65-46230-14		. BRACE (SERIALIZED)	E	1
3	65-46230-16		. BRACE (SERIALIZED)	F	1
3	65-46230-18		. BRACE (SERIALIZED)	G	1
3	65-46230-20		. BRACE (SERIALIZED)	H	1

7. UPPER DRAG BRACE ASSEMBLY (65-46232, 65-80051) (Fig. 7)

A. Inspection/Check

(1) See Fig. 6 for wear limits.

(2) Penetrant examine drag brace (6).

B. Repair -- Holes for bushings (Fig. 4)

(1) Remove bushings (1, 4, 5) and machine holes as required, within repair limits, to remove defects.

(2) Refinish as indicated.

(3) Make oversize bushings per Fig. 5. As an option, on hole 2A, you can make the hole in the bushing for bolt (7) before you install the bushing.

(4) Install bushings by the shrink-fit method with BMS 5-95 sealant or BMS 3-27 or BMS 3-38 corrosion preventive compound. If applicable, be sure to align the hole in the bushing with the mating hole for bolt (7) in the drag brace.

(5) Machine ID and flange faces of bushings to design dimensions, and if applicable, the hole for bolt (7).

C. Repair -- Hole for bearing (2) (Fig. 4)

(1) Remove bearing (2), and sleeve (3) if applicable.

(2) Installation of bearing with oversize outer race.

(a) Machine the hole as shown in view B, Fig. 4, Sheet 3.

(b) Shot peen. Refinish as indicated.

(c) Get an oversize bearing (2) and install it per step E.(2) below.

(3) Installation of repair sleeve

NOTE: We recommend you not use a sleeve unless the oversize bearing necessary is not available.

(a) Machine hole as required, within repair limit, to remove defects. Restore chamfers as shown.

(b) Shot peen. Refinish as indicated.

(c) Make a repair sleeve per Fig. 5.

(d) Install the repair sleeve by the shrink-fit method (SOPM 20-50-03) with BMS 5-95 sealant or BMS 3-27 or BMS 3-38 corrosion preventive compound on mating surfaces. Make sure the sleeve ends are an equal amount above each face of the lug. Then, roller swage per SOPM 20-50-03.

(e) Machine the swaged ends of the repair sleeve smooth with the lug faces.

(f) Make a check of the ID dimensions and machine them as necessary, as shown in view A, Fig. 4, sheet 2. Be sure to restore the chamfers.

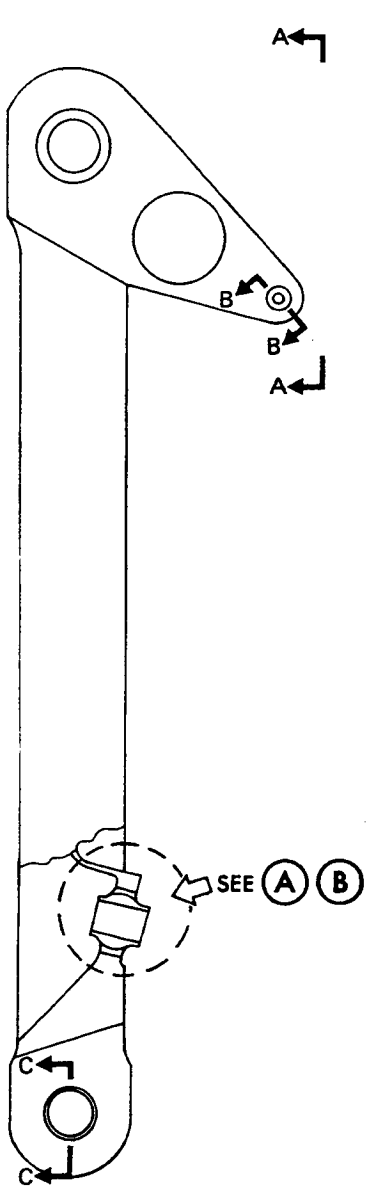
(g) Install teflon-lined bearing (2) per step E.(2) below. For standard size bores, the 10-61970-3 bearing per SB 32-1094 is preferred.

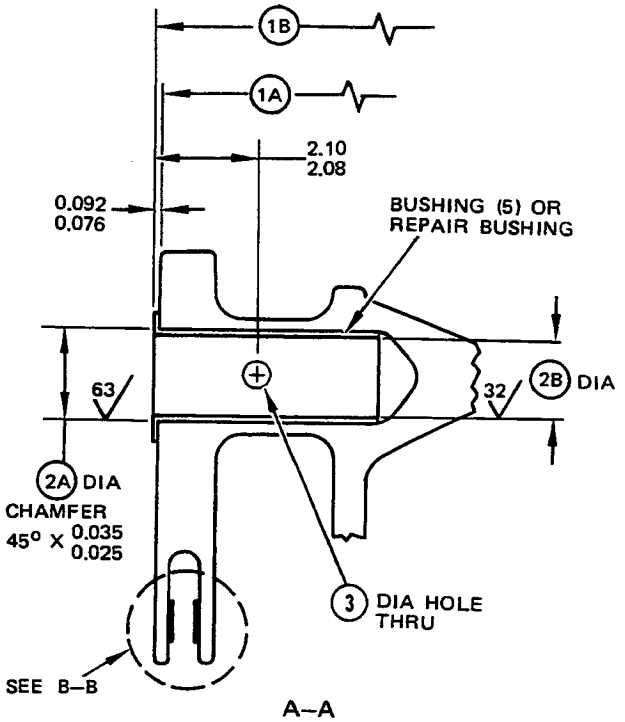
D. Refinish -- Fig. 4

E. Replacement

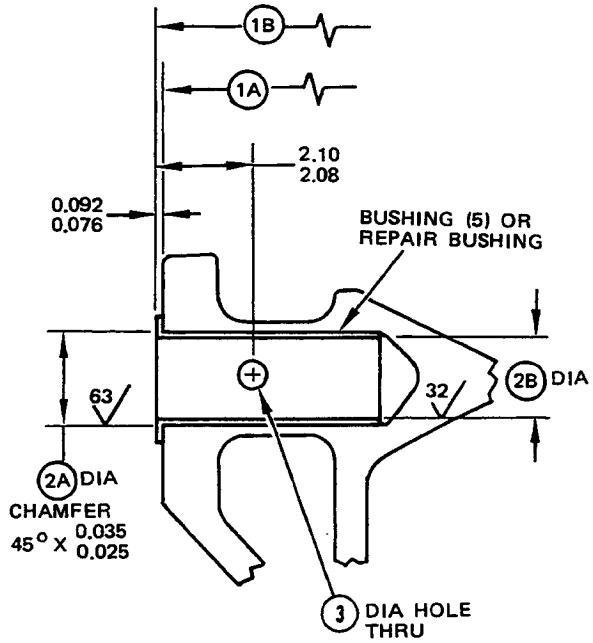
(1) Bushings (1, 4, 5) -- Install replacement bushings by the shrink-fit method (SOPM 20-50-03) with BMS 5-95 or BMS 3-27 or BMS 3-38 compound on mating surfaces. Machine to design dimensions per Fig. 4.

(2) Bearing (2) -- Install new bearing and sleeve (3), if applicable, with wet sealant BMS 5-95. Roller swage per SOPM 20-50-03. For standard size bores, the 10-61970-3 bearing per SB 32-1094 is preferred. If the bearing is installed without the sleeve, make sure the hole has a chamfer of 45 degrees by 0.045-0.055 inch before you install the bearing. Give the bearing a push-out load test of 4378 pounds minimum (SOPM 20-50-03).



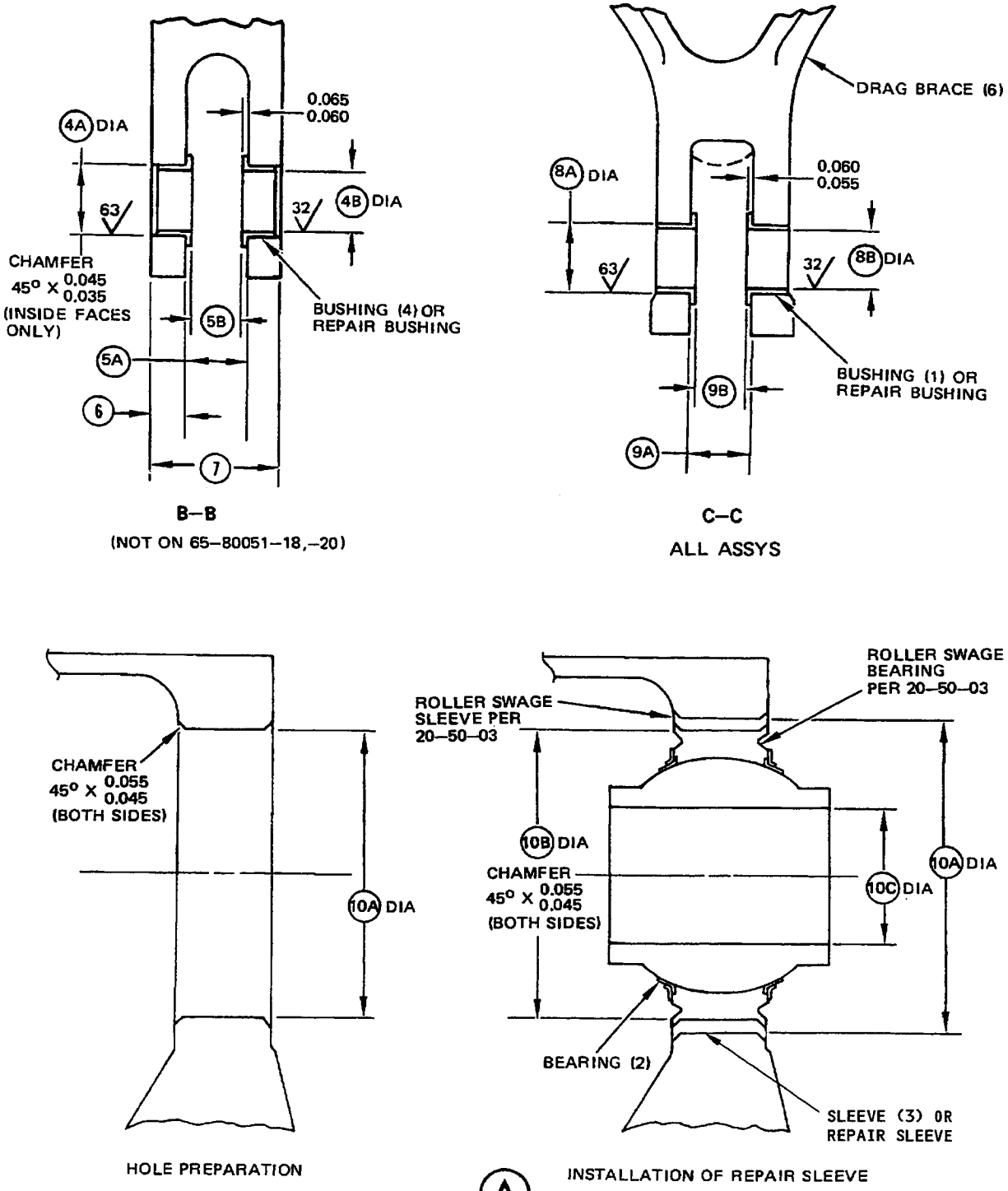


A–A
65-46232 SERIES
65-80051-1 THRU -14



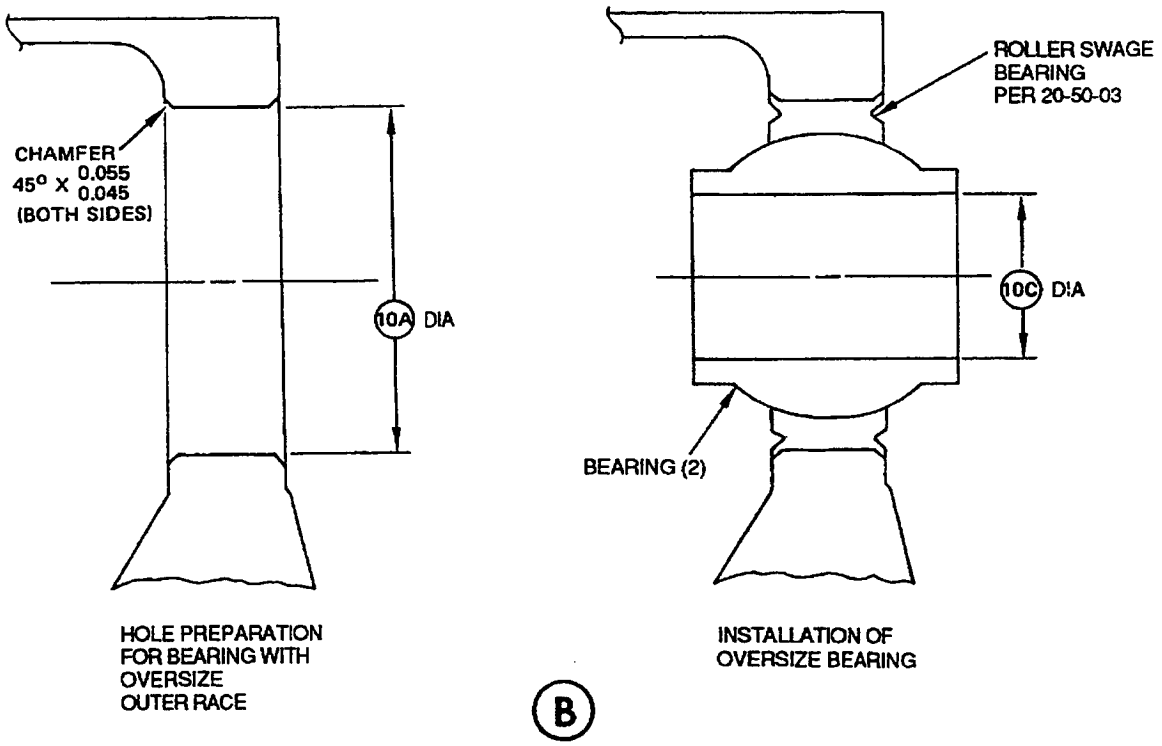
A–A
65–80051–18, –20

Upper Drag Brace Repair and Refinish
Figure 4 (Sheet 1)



Upper Drag Brace Repair and Refinish
Figure 4 (Sheet 2)

F55898



Upper Drag Brace Repair and Refinish
Figure 4 (Sheet 3)

	(1A)	(1B)	(2A) 2	(2A) 3	(2B) 2	(2B) 3	(3)	(4A)	(4B)	(5A)
DESIGN DIM	29.815 29.805	29.995 29.985	1.5005 1.4995	1.6155 1.6145	1.3752 1.3742	1.4912 1.4892	0.446 0.443	0.4380 0.4375	0.3125 0.3120	0.505 0.495
REPAIR LIMIT	29.775 1 5	—	1.560 1	1.675 1	—	—	0.466 4	0.4980 1	—	0.550 1

TABLE A

	(5B)	(6)	(7)	(8A)	(8B)	(9A)	(9B)	(10A) 10	(10A) 11	(10A) 12
DESIGN DIM	0.379 0.376	0.220 0.215	0.96 0.94	1.420 1.419	1.2500 1.2495	1.214 1.212	1.093 1.091	1.877 1.875 7	1.877 1.875 7	1.875 1.874 7
REPAIR LIMIT	—	0.170 1 5	0.895 4 5	1.480 1	—	1.244 1 5	—	SEE TABLE B	SEE TABLE B	SEE TABLE B

TABLE A

	(10B)	(10C)
DESIGN DIM	SEE TABLE B	0.8750 0.8745
REPAIR LIMIT	SEE TABLE B	—

TABLE A

(10A) 10 REPAIR LIMIT	(10A) 11 REPAIR LIMIT	(10A) 12 REPAIR LIMIT	REPAIR SLEEVE?	(10B) SLEEVE FINISH ID 8	MATING BEARING (2)	
					OVERSIZE INCREMENT (REF)	PART NO.
1.877 1.875	1.877 1.875	1.875 1.874	NO	—	0.000	10-61970-3
2.017 1.935 6	2.017 1.935 6	2.017 1.935 6	YES	1.875 1.874	0.000	10-61970-3
1.900 1.899 9	1.900 1.899 9	1.900 1.899 9	NO	—	0.025	10-61970-4
2.017 1.960 6	2.017 1.960 6	2.017 1.960 6	YES	1.900 1.899	0.025	10-61970-4
1.939 1.938 9	1.939 1.938 9	1.939 1.938 9	NO	—	0.064	10-61970-5
2.017 1.998 6	2.017 1.998 6	2.017 1.998 6	YES	1.939 1.938	0.064	10-61970-5
1.978 1.977 9	1.978 1.977 9	1.978 1.977 9	NO	—	0.103	10-61970-6
—	—	—	YES	—	0.103	10-61970-6
2.017 2.016 9	2.017 2.016 9	2.017 2.016 9	NO	—	0.142	10-61970-7
—	—	—	YES	—	0.142	10-61970-7

TABLE B
65-46232, 65-80051
Upper Drag Brace Repair and Refinish
Figure 4 (Sheet 4)

E28148

REFINISH

CHEMICAL TREAT OR CHROMIC ACID ANODIZE AND APPLY PRIMER, BMS 10-11, TYPE I (F-18.05) ALL OVER. AFTER BUSHING INSTL APPLY ENAMEL BMS 10-11 TYPE 2 COLOR 707 (F-21.02) EXCEPT ON BUSHINGS

1> LIMIT FOR INSTL OF OVERSIZE BUSHING (FIG.5)

2> 65-46232-1,-5; 65-80051-1,-5,-7,-11,-14

3> 65-46232-3,-6; 65-80051-3,-6,-8,-10,-13, -18,-20

4> RESTORATION TO DESIGN DIM NOT REQUIRED

5> LUG FACE MACHINING REQUIREMENTS:

1. MATERIAL REMOVED FROM ANY FACE MUST NOT EXCEED HALF THE DIFFERENCE BETWEEN THE DESIGN DIM AND REPAIR LIMIT
2. FLAT SURFACE MUST BE MINIMUM OF 0.02 LARGER THAN FLANGE DIA OF BUSHING TO BE INSTALLED
3. BLEND MISMATCH STEPS TO 0.18-0.26 RADIUS, OR IF WITHIN 0.10 OF LUG FILLET RADIUS USE SAME RADIUS AS LUG FILLET. BREAK SHARP EDGES 0.03 - 0.07R

6> RANGE FOR INSTL OF REPAIR SLEEVE (FIG. 5). THE SLEEVE IS NOT RECOMMENDED UNLESS THE OVERSIZE BEARING IS NOT AVAILABLE

REPAIR

REF 1> 4> 5> 6> 9>

125 MACHINED FINISH EXCEPT AS NOTED

SHOT PEEN: (REF 20-10-03)
(65-46232)
0.023-0.033 SHOT SIZE
0.010 A2 INTENSITY
(65-80051)
0.023-0.028 SHOT SIZE
0.010 A2 INTENSITY

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

7> ORIGINAL DESIGN DIM, BEFORE REPAIR PER 6> 9>

8> FINISH DIA OF REPAIR SLEEVE AFTER INSTL

9> RANGE FOR INSTL OF OVERSIZE BEARING

10> 65-46232-1,-3,-5,-6; 65-80051-1,-3,-5, -6,-7,-8 USING 66-24410-2,-3 SLEEVE TO RETAIN BEARING

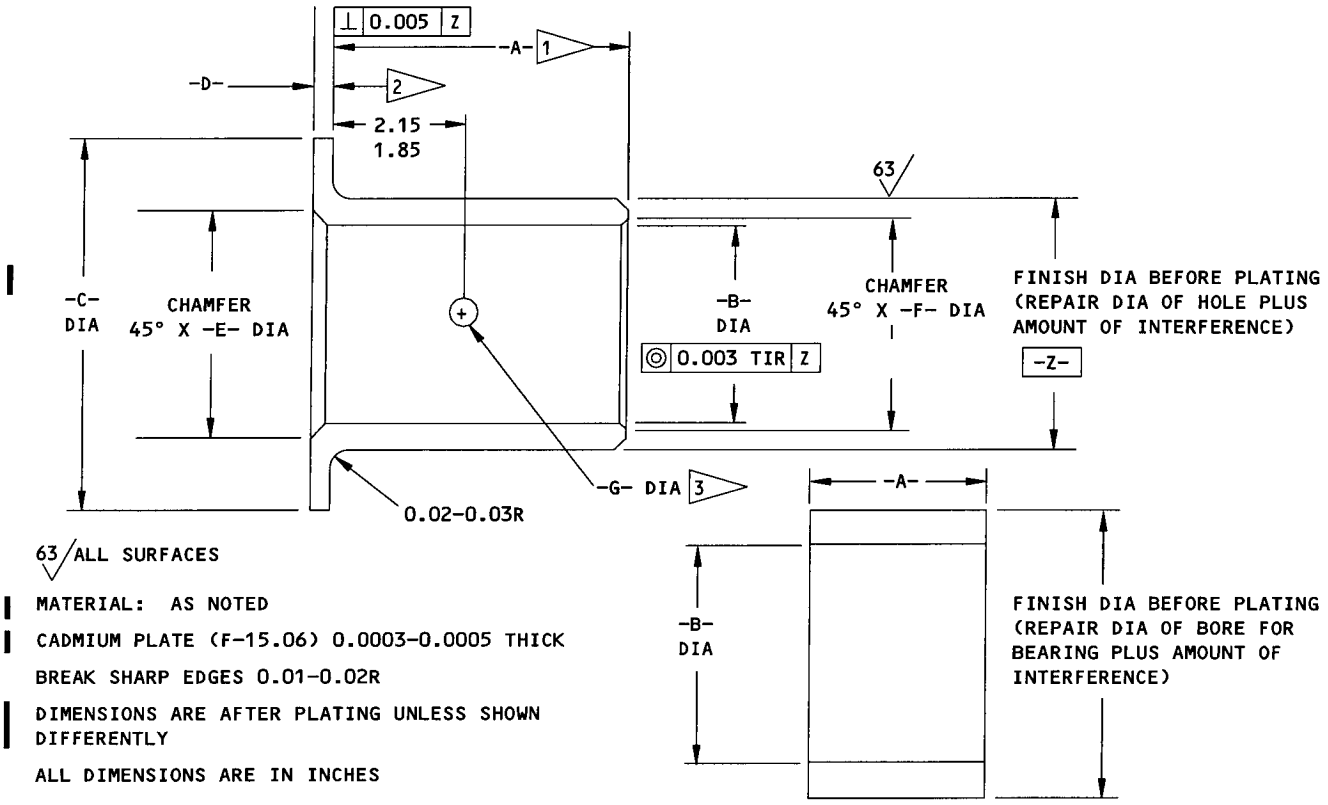
11> 65-80051-10,-11,-13,-14,-18

12> 65-80051-20

65-46232, 65-80051

Upper Drag Brace Repair and Refinish
Figure 4 (Sheet 5)

F55902



63 ALL SURFACES

MATERIAL: AS NOTED

CADMIUM PLATE (F-15.06) 0.0003-0.0005 THICK

BREAK SHARP EDGES 0.01-0.02R

DIMENSIONS ARE AFTER PLATING UNLESS SHOWN DIFFERENTLY

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (FIG 4)	BUSHING TO BE REPLACED	-A-	-B-	-C-	-D-	-E-	-F-	-G-	INTER-FERENCE	MATERIAL
2A	(5) 65-46150-32	3.585 3.565	1.354 1.334	2.01 1.99	0.13 0.12	1.43 1.41	1.43 1.41	0.5625 MAX	0.0023 0.0005	5
8A	(1) 65-46150-33	0.620 0.619	1.229 1.209	1.89 1.87	0.10 0.09	NO CHAMFER	NO CHAMFER	---	0.0023 0.0005	6
4A	(4) 65-46150-34	0.220 0.200	0.291 0.271	0.635 0.615	0.065 0.055	0.37 0.35	0.37 0.35	---	0.0016 0.0003	5
2A	(5) 65-46150-53	3.585 3.565	1.469 1.449	2.13 2.11	0.13 0.12	1.55 1.53	1.55 1.54	0.5625 MAX	0.0025 0.0006	5
2A	(5) 65-46150-81	3.585 3.565	1.469 1.449	2.13 2.11	0.13 0.12	1.67 1.65	1.55 1.53	0.5625 MAX	0.0023 0.0005	5
2A	(5) 65-46150-82	3.585 3.565	1.354 1.334	2.01 1.99	0.13 0.12	1.56 1.54	1.43 1.41	0.5625 MAX	0.0023 0.0005	5
10A	REPAIR SLEEVE	0.783 0.777	4	---	---	---	---	---	0.0025 0.0017	6 7

1 MINUS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

3 OPTIONAL TO MAKE THIS HOLE WHEN YOU MAKE THE BUSHING

4 SEE 10B, TABLE B, FIG. 4

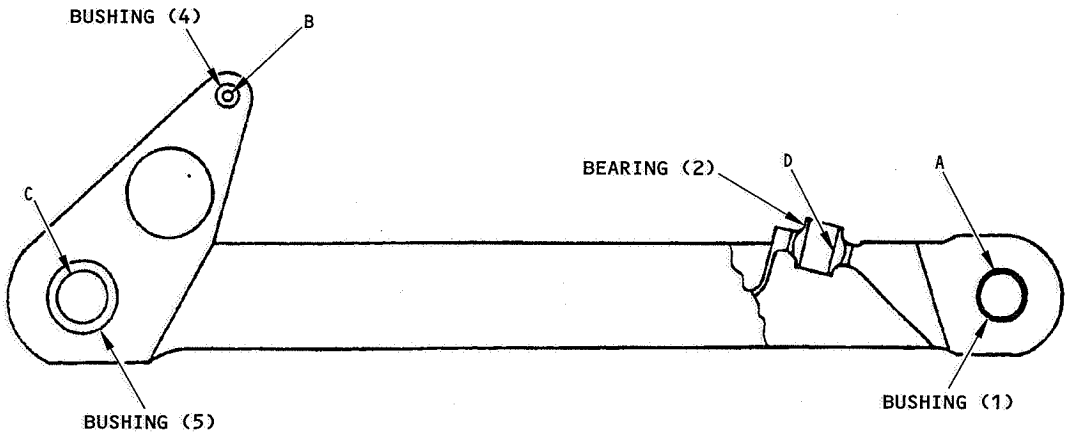
5 AL-NI-BRZ PER AMS 4640

6 17-4PH CRES, 180-200 KSI

7 15-5PH CRES, 180-200 KSI

Oversize Bushing and Repair Sleeve Details
Figure 5

F13413

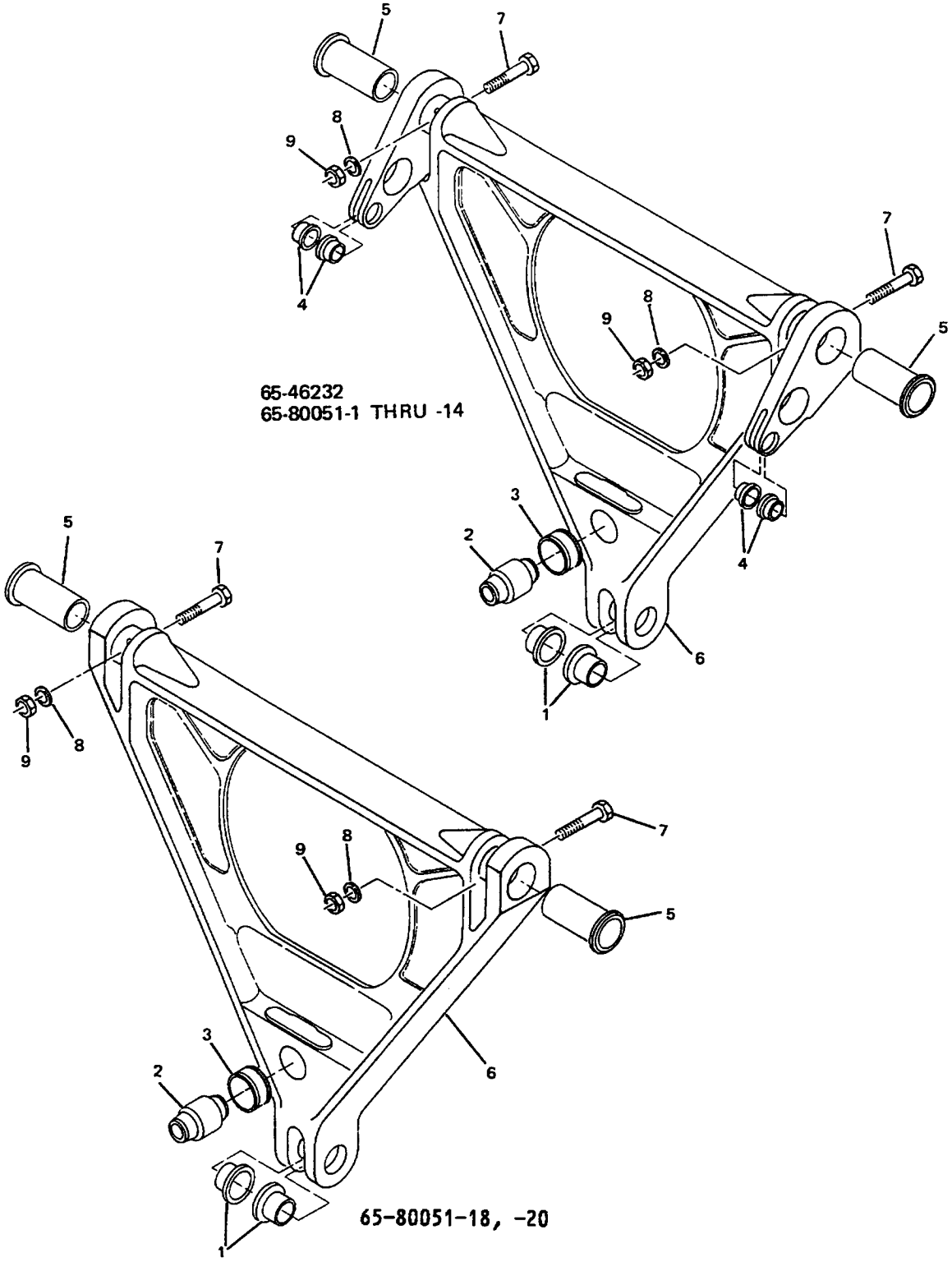


Ref Letter Fig. 6	Mating Item No. Fig. 7	Design Dimensions				Service Wear Limits		
		Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inch)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
A	ID 1	1.2495	1.2500	0.0005	0.0015		1.2530	0.0050
	OD *[1]	1.2485	1.2490			1.2470		
B	ID 4	0.3120	0.3125	0.0000	0.0010		0.3175	0.0050
	OD *[2]	0.3115	0.3120			0.3100		
C	ID 5 *[3]	1.3742	1.3752	0.0002	0.0017		1.3785	0.0050
	OD *[4]	1.3735	1.3740			1.3725		
C	ID 5 *[5]	1.4892	1.4912	0.0002	0.0027		1.4930	0.0050
	OD *[6]	1.4885	1.4890			1.4870		
C	ID 5 *[5]	1.4892	1.4912	0.0007	0.0032		1.4930	0.0050
	OD *[7]	1.4880	1.4885			1.4870		
C	ID 5 *[5]	1.4892	1.4912	0.0010	0.0035		1.4930	0.0050
	OD *[8]	1.4877	1.4882			1.4870		
D	ID 2	0.8745	0.8750					

*[1] Lower drag brace pin, 69-35391-1, -2
*[2] Bolt, BACB30LJ5DU15
*[3] Bushing, 65-46150-32, -82
*[4] Upper drag brace pin, 69-35394-1
*[5] Bushing, 65-46150-53, -81
*[6] Upper drag brace pin, 69-35394-2
*[7] Upper drag brace pin, 69-35394-3
*[8] Upper drag brace pin, 69-35394-4

Fits and Clearances
Figure 6

E. Illustrated Parts List



Upper Drag Brace Assembly
Figure 7

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
7-					
	65-46232-1		DRAG BRACE ASSY, UPR	A	RF
	65-46232-3		DRAG BRACE ASSY, UPR	B	RF
	65-46232-5		DRAG BRACE ASSY, UPR (POST 32-1029) (PRE SB 32-1094)	C	RF
	65-46232-6		DRAG BRACE ASSY, UPR (POST 32-1029) (PRE SB 32-1094)	D	RF
	65-80051-1		DRAG BRACE ASSY, UPR (PRE SB 32-1094)	E	RF
	65-80051-3		DRAG BRACE ASSY, UPR (PRE SB 32-1094)	F	RF
	65-80051-5		DRAG BRACE ASSY, UPR (PRE SB 32-1094)	G	RF
	65-80051-6		DRAG BRACE ASSY, UPR (PRE SB 32-1094)	H	RF
	65-80051-7		DRAG BRACE ASSY, UPR (PRE SB 32-1094)	I	RF
	65-80051-8		DRAG BRACE ASSY, UPR (PRE SB 32-1094)	J	RF
	65-80051-10		DRAG BRACE ASSY, UPR (PRE SB 32-1094)	K	RF
	65-80051-11		DRAG BRACE ASSY, UPR (PRE SB 32-1094)	L	RF
	65-80051-13		DRAG BRACE ASSY, UPR (POST SB 32-1094)	M	RF
	65-80051-14		DRAG BRACE ASSY, UPR (POST SB 32-1094)	N	RF
	65-80051-18		DRAG BRACE ASSY, UPR	O	RF
	65-80051-20		DRAG BRACE ASSY, UPR	P	RF
1	65-46150-33		. BUSHING		2
2	ABYT14-101		. BEARING, V50294 (BOEING 10-60545-148)	A-F	1
2	BLFR14-073		. BEARING, V81376 (BOEING 10-60545-148)	A-F	1
2	KSBY14N2		. BEARING, V97613 (BOEING 10-60545-148)	A-F	1
2	NHBY14-201		. BEARING, V15860 (BOEING 10-60545-148)	A-F	1
2	WBS28ATC56		. BEARING, V21335 (BOEING 10-60545-148)	A-F	1
2	WR14-44BACH		. BEARING, V73134 (BOEING 10-60545-148)	A-F	1
2	YTA215		. BEARING, V77896 (BOEING 10-60545-148)	A-F	1
2	176216		. BEARING, V09455 (BOEING 10-60545-148)	A-F	1
2	KDSY14-2		. BEARING, V97613 (BOEING 10-61846-2)	G-J	1
2	LHSSR14-44A		. BEARING, V73134 (BOEING 10-61846-2)	G-J	1
2	NHBY14-202		. BEARING, V15860 (BOEING 10-61846-2)	G-J	1
2	76855		. BEARING, V09455 (BOEING 10-61846-2)	G-J	1
2	KSC139714BZ		. BEARING, V50632 (BOEING 10-61970-2)	K-O	1
2	KSC216614B		. BEARING, V50632 (BOEING 10-61970-3)	P	1
2	KSC216614B		. BEARING, V50632 (BOEING 10-61970-3) (STANDARD SIZE) (REPAIR PART)		1
2	KSC212814B		. BEARING, V50632 (BOEING 10-61970-4) (0.025 OVERSIZE) (REPAIR PART)		1
2	KSC212814B5		. BEARING, V50632 (BOEING 10-61970-5) (0.064 OVERSIZE) (REPAIR PART)		1
2	KSC212814B6		. BEARING, V50632 (BOEING 10-61970-6) (0.103 OVERSIZE) (REPAIR PART)		1
2	KSC212814B7		. BEARING, V50632 (BOEING 10-61970-7) (0.142 OVERSIZE) (REPAIR PART)		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
7-					
2	ADBY14V301N		. BEARING, V15860 (BOEING 10-61846-3) (OPT)	KL	1
2	65-80051-15		. BEARING (OPT)	MNO	1
3	66-24410-2		. SLEEVE	AB	1
3	66-24410-3		. SLEEVE	C-J	1
3	66-24410-3		. SLEEVE (POST SB 32-1029)	CD	1
3	SLEEVE		. SLEEVE (REPAIR PART)		1
4	65-46150-34		. BUSHING		4
5	65-46150-32		. BUSHING	ACEG	2
5	65-46150-53		. BUSHING	BDFH	2
5	65-46150-81		. BUSHING	JKMOP	2
5	65-46150-82		. BUSHING	ILN	2
6	65-46232-2		. BRACE	AC	1
6	65-46232-4		. BRACE	BD	1
6	65-80051-2		. BRACE	EGI	1
6	65-80051-4		. BRACE	FHJ	1
6	65-80051-9		. BRACE	KM	1
6	65-80051-12		. BRACE	LN	1
6	65-80051-19		. BRACE	O	1
6	65-80051-21		. BRACE	P	1
			INSTALLATION PARTS *[1]		
7	NAS1307-38		BOLT		2
8	AN960-716		WASHER		2
9	NAS679A7		NUT		2

*[1] USED UPON INSTL OF PIN 69-35394-( ) (FIG. 1)

8. BUNGEE SPRING ASSEMBLY (69-53800-1, -4; 69-67545-1) (Fig. 9)

A. Inspection/Check

(1) See Fig. 8 for wear limits.

(2) Magnetic particle examine (SOPM 20-20-01) or penetrant examine (SOPM 20-20-02) springs (15).

(3) Penetrant examine (SOPM 20-20-02) terminals (20, 25).

(4) Do a load check of springs (15) (Fig. 7A).

ITEM NO. (FIG. 9)	APPROXIMATE FREE LENGTH (IN.)*[1]	TEST LENGTH INCHES *[1]	ALLOWABLE LOAD LIMITS (POUNDS)
15	9.91	15.20	109-115
(69-53800)		12.95	62-68
15	9.91	15.20	107-117
(69-67545)		12.95	60-70

*[1] DISTANCE BETWEEN TERMINAL (20, 25) CENTERS

Spring Check Data
Figure 7A

B. Refinish

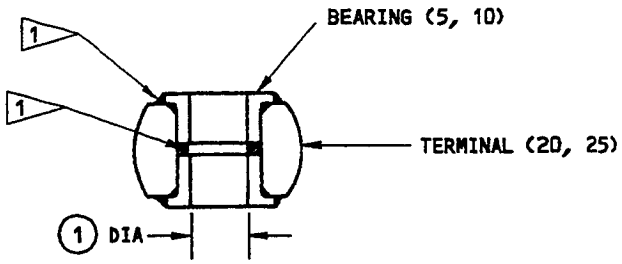
(1) Spring (30), terminals (20, 25) -- Passivate (F-8.07). Material: 17-7 PH CRES (spring) or 303 CRES (terminals).

(2) Spring Assy (15) (69-53800-2 only) -- If necessary, extend the spring until there are spaces between the coils. Apply PT 201 resin coating (SOPM 20-60-02 or 20-60-04) all over, 0.0015-0.0020 inch thick and cure at 300°F for one hour.

NOTE: The resin coating was the original finish for the 69-53800-2 spring. Replacement of this coating during overhaul is optional. This coating is not applicable to the 69-53800-5 spring.

C. Replacement (Fig. 8)

(1) Bearings (5, 10) -- Remove the old bearings. Install replacement bearings by the procedure for sintered bearings in SOPM 20-50-03. Apply sealant as shown.

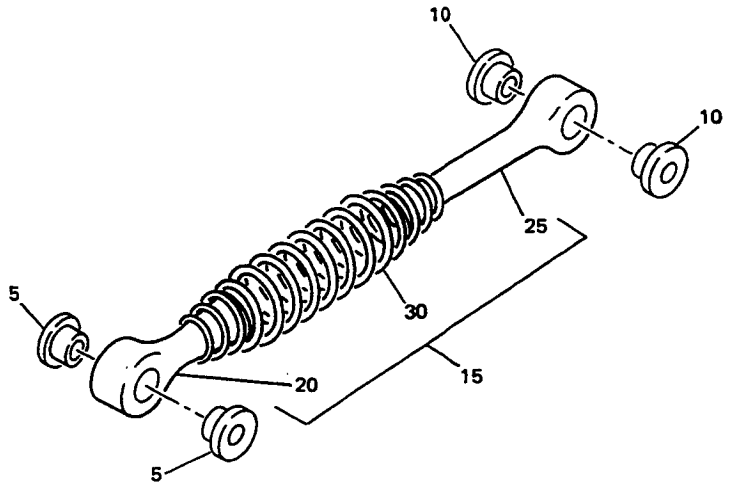


TYPICAL BOTH ENDS

	1	
	BEARING (5)	BEARING (10)
DESIGN DIM	0.2545 0.2540	0.3135 0.3125
WEAR LIMIT	0.2580	0.3170

1 BMS 5-95 SEALANT

Bearing Details
Figure 8



Bungee Spring Assembly
Figure 9

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
9-					
1	69-53800-1		SPRING ASSY, BUNGEE	A	RF
1	69-53800-4		SPRING ASSY, BUNGEE	B	RF
1	69-67545-1		SPRING ASSY, BUNGEE	C	RF
5	BACB10D4F		. BEARING		1
10	BACB10D87F		. BEARING		1
15	69-53800-2		. SPRING ASSY	A	1
15	69-53800-5		. SPRING ASSY	B	1
15	69-67545-2		. SPRING ASSY	C	1
20	69-53299-1		. . TERMINAL (USED ON 69-53800-2,-5)		1
20	69-53299-3		. . TERMINAL (USED ON 69-67545-2)		1
25	69-53299-2		. . TERMINAL (USED ON 69-53800-2,-5)		1
25	69-53299-4		. . TERMINAL (USED ON 69-67545-2)		1
30	69-53800-3		. . SPRING (USED ON 69-53800-2)		1
30	69-53800-6		. . SPRING (USED ON 69-53800-5)		1
30	69-67545-3		. . SPRING (USED ON 69-67545-2)		1

9. DOOR OPERATOR CRANK ASSEMBLY (65-46204, 65-84163, 65C27360) (Fig. 11)

A. Inspection/Check

(1) See Fig. 10 for wear limits.

(2) Penetrant examine crank (10) per SOPM 20-20-02.

B. Repair (Fig. 10)

(1) Lug faces and holes.

(a) Machine as required, within repair limits, to remove defects.

(b) Shot peen. Refinish as indicated.

(c) Make repair or oversize bushings (Fig. 10A, 10B, 10C) as necessary to adjust for the material removed in step (a).

(d) Install the bushings per par. D.

(e) If applicable, include a note to use washers on the lug faces when you install the crank on the airplane.

C. Refinish -- Fig. 10

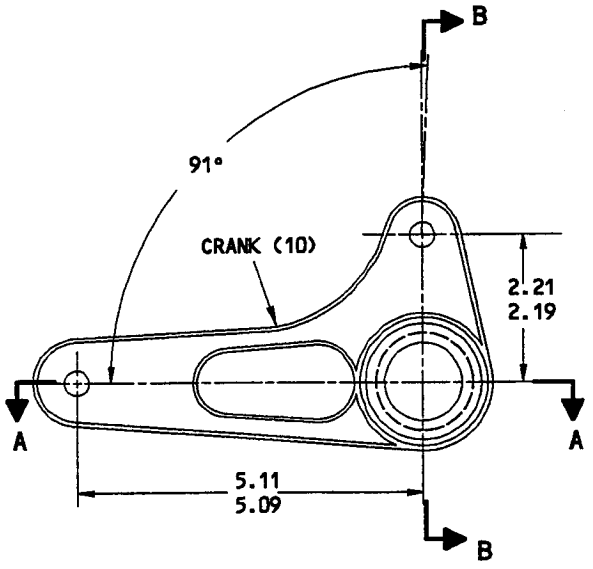
D. Replacement -- (Fig. 10)

(1) Install replacement bushings (5, 8) by the shrink-fit method, with wet sealant BMS 5-95.

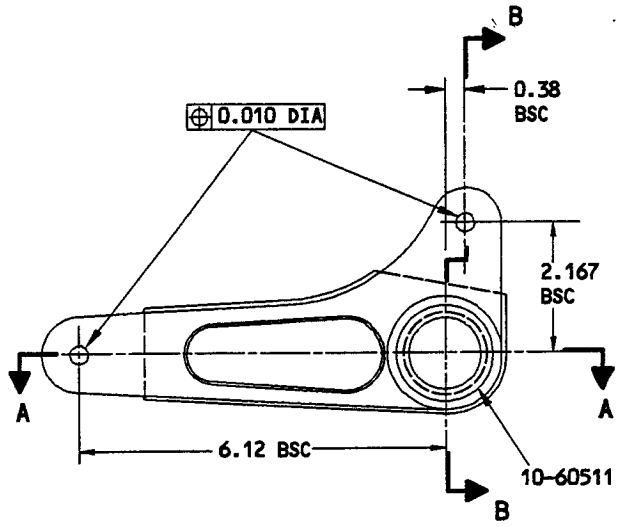
(2) Make a check of the dimensions and machine them as necessary to design dimensions and finish shown.

NOTE: Bushings (5) are self-lubricating lined. Machining is not necessary after installation. But Kamatics KJB-Series bushings can be lightly reamed after installation if necessary to get to design dimensions.

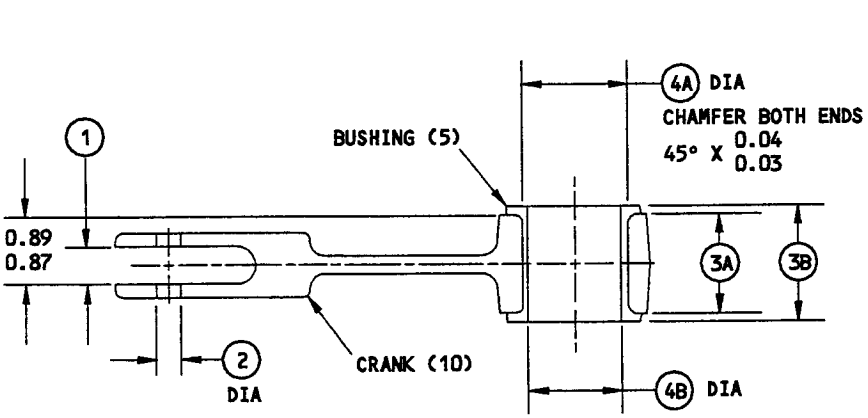
(3) Fillet seal bushings (5, 8) with sealant BMS 5-95.



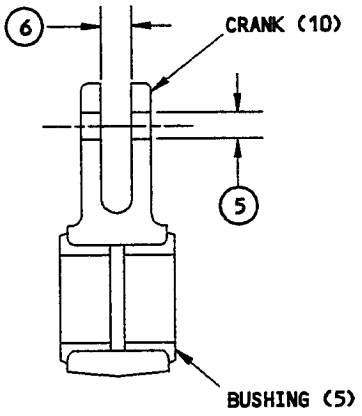
65-46204



65-84163



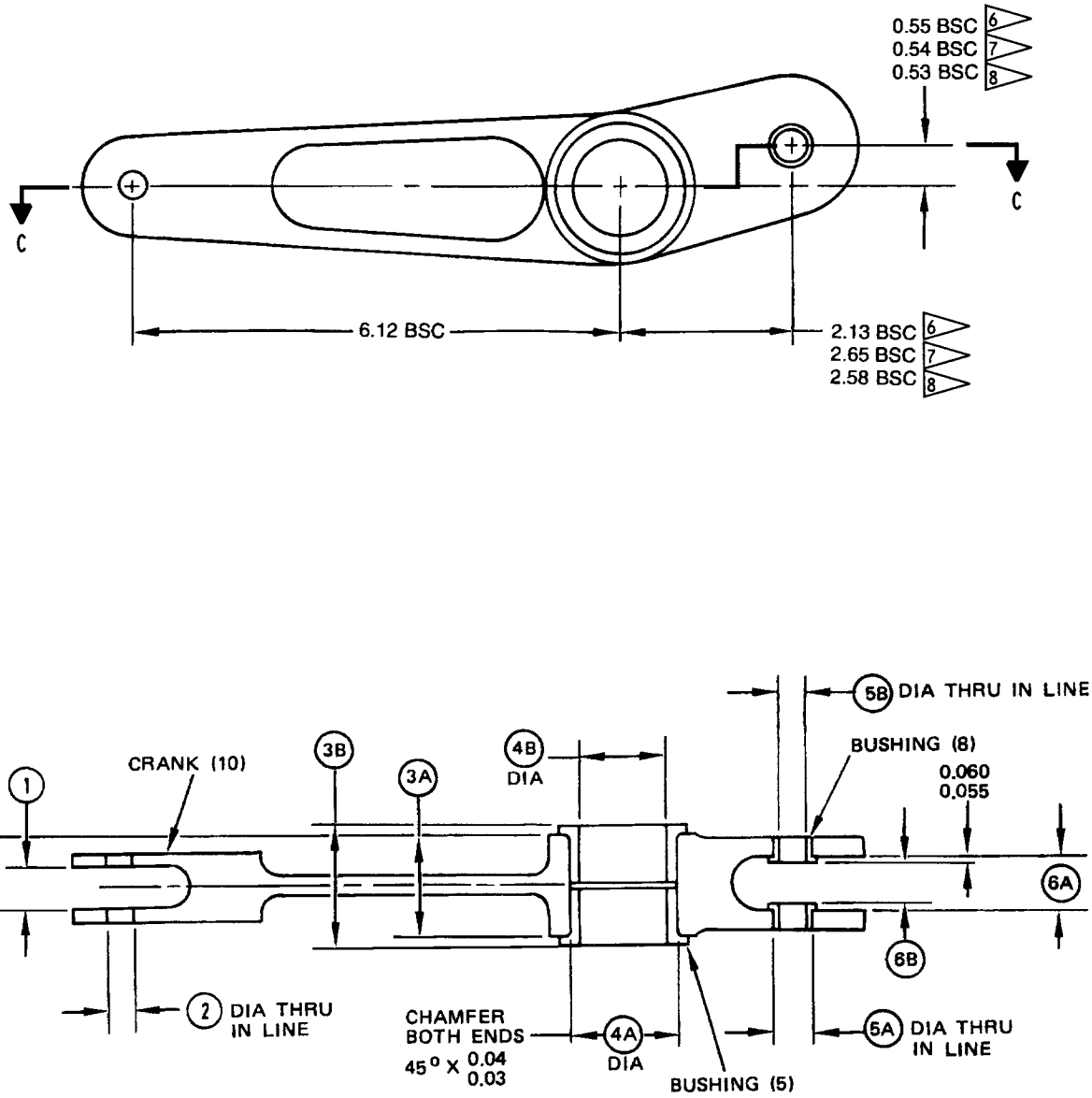
A-A



B-B

65-46204
65-84163

Crank Repair and Refinish
Figure 10 (Sheet 1)



C-C

65C27360

Crank Repair and Refinish
Figure 10 (Sheet 2)

K55969

	(1)	(2)	(3A)	(3B)	(4A)	(4B)	(5)	(5A)	(5B)
DESIGN DIM	0.503 0.501	0.3125 0.3120	1.250 1.248	1.456 ▷5 1.448	1.3445 1.3435	1.126 ▷5 1.125	0.3125 0.3120	0.5006 0.5000	0.3765 0.3750
REPAIR LIMIT	0.533 ▷1 ▷2	0.3225 ▷4 0.4105 ▷2	—	—	1.3865 ▷2	—	0.3225 ▷4 0.4105 ▷2	0.6560 ▷2	—
WEAR LIMIT	—	0.3225	—	—	—	1.131	—	—	0.381

	(6)	(6A)	(6B)
DESIGN DIM	0.378 0.376	0.611 0.601	0.504 0.501
REPAIR LIMIT	—	0.641 ▷2 ▷3	—
WEAR LIMIT	—	—	—

REFINISH

CHEMICAL TREAT OR CHROMIC ACID ANODIZE AND APPLY BMS 10-11, TYPE 1 PRIMER (SRF-2.19 OR F-18.05) ALL OVER.

AFTER BUSHING INSTL APPLY BMS 10-11, TYPE 2 ENAMEL (SRF-12.63 OR F-21.02) BUT NOT ON BUSHINGS AND IN HOLES

▷1 LIMIT FOR INSTALLATION OF WASHERS BETWEEN LUG FACES AND MATING ROD END

▷2 LIMIT FOR INSTL OF OVERSIZE OR REPAIR BUSHINGS

▷3 LUG FACE MACHINING REQUIREMENTS:

1. MATERIAL REMOVED FROM ANY FACE MUST NOT BE MORE THAN HALF THE DIFFERENCE BETWEEN THE DESIGN DIM AND REPAIR LIMIT
2. FLAT SURFACE MUST BE MINIMUM OF 0.02 LARGER THAN FLANGE DIA OF BUSHING TO BE INSTALLED
3. BLEND MISMATCH STEPS TO 0.18-0.26 RADIUS, OR IF WITHIN 0.10 OF LUG FILLET RADIUS USE SAME RADIUS AS LUG FILLET. BREAK SHARP EDGES 0.03 - 0.07R

REPAIR

REF ▷1 THRU ▷8

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN:
0.023-0.028 SHOT SIZE
0.010 A2 INTENSITY

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

▷4 RESTORATION TO DESIGN DIM NOT REQUIRED

▷5 REF DIM ONLY; BUSHING HAS PRE-SIZED SELF LUBRICATING LINER

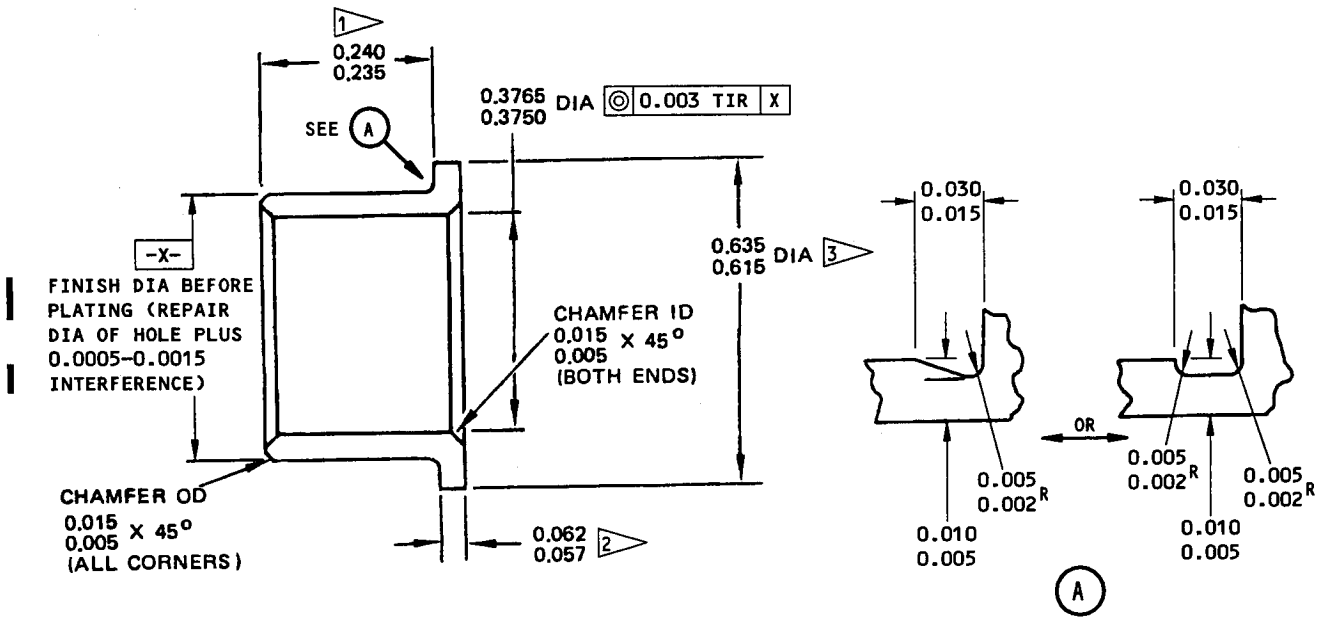
▷6 65C27360-2

▷7 65C27360-4, -8

▷8 65C27360-10

65-46204, 65-84163, 65C27360

Crank Repair and Refinish
Figure 10 (Sheet 3)



HOLE LOCATION (5A) FIG. 10 – REPLACES BUSHING (8) BACB28X6M024

63 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.010-0.020 R

CADMIUM PLATE (F-15.06) BUT NOT IN BORE

MATERIAL: AL-NI-BRZ (AMS 4640)

DIMENSIONS ARE AFTER PLATING UNLESS SHOWN DIFFERENTLY

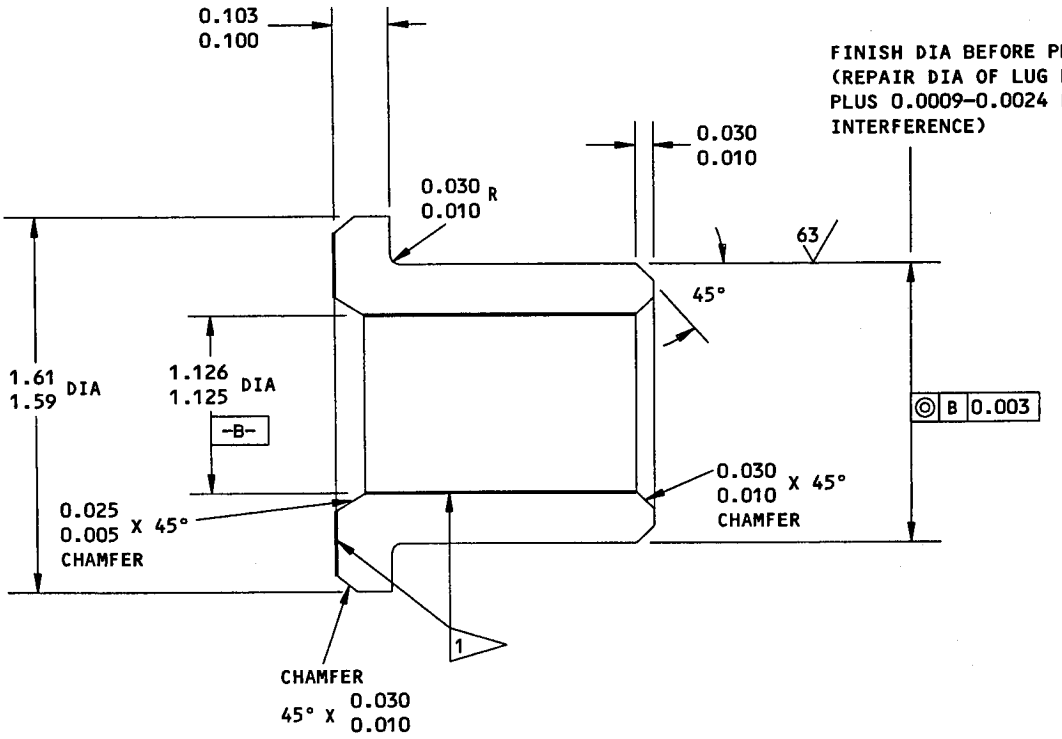
ALL DIMENSIONS ARE IN INCHES

1 MINUS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

3 INCREASE FLANGE OD AS NECESSARY TO 0.75 MAX TO GO WITH THE LARGER REPAIR LIMIT.

Oversize Bushing Details
Figure 10A



1 KARON B COATING PER MIL-B-81934

63 MACHINE FINISH

BREAK SHARP EDGES 0.01–0.02R

CHEMICAL TREAT OR CHROMIC ACID ANODIZE MACHINED SURFACES

MATERIAL: AL ALLOY 7075-T6

ALL DIMENSIONS ARE IN INCHES

NOTE: OVERSIZE REPAIR BUSHINGS ARE AVAILABLE FROM KAMATICS CORPORATION (V50632) AS FOLLOWS:

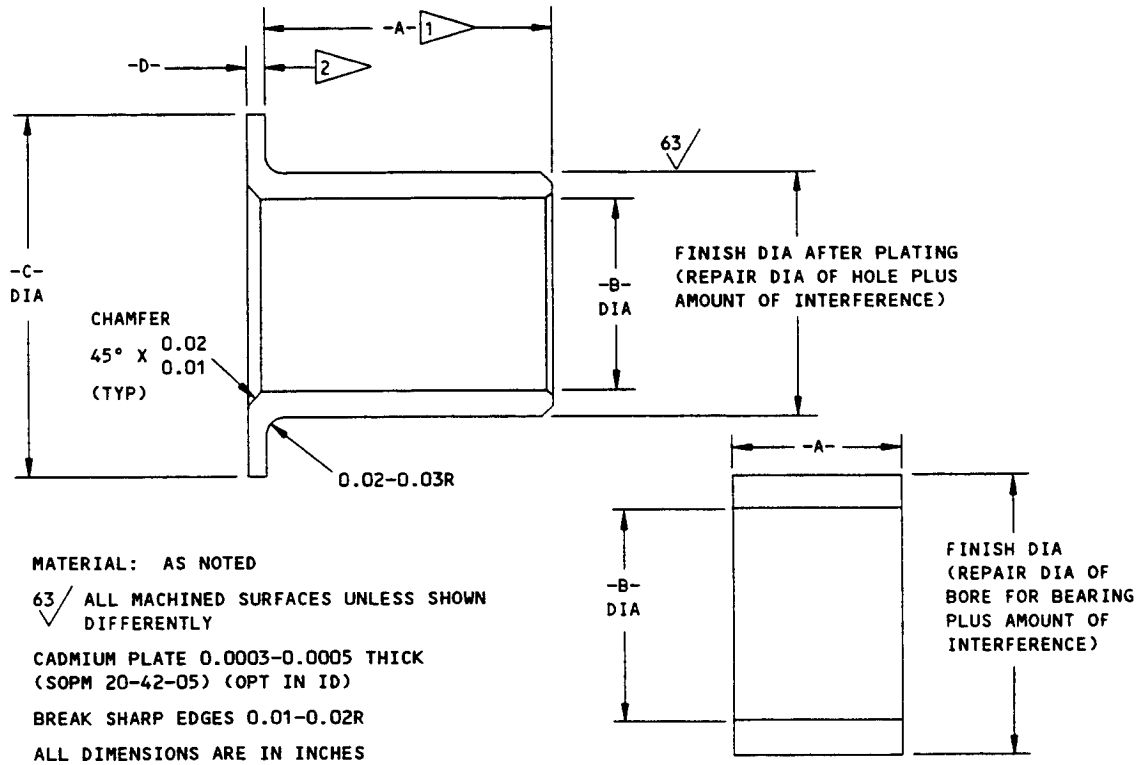
KJB423918B2 (0.030 OVERSIZE)

KJB423918B3 (0.060 OVERSIZE)

HOLE LOCATION (4A) FIG. 10 - REPLACES BUSHING (5, FIG. 11) 10-60516-229

Oversize Bushing Details
Figure 10B

E27935



MATERIAL: AS NOTED

63 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

CADMIUM PLATE 0.0003-0.0005 THICK (SOPM 20-42-05) (OPT IN ID)

BREAK SHARP EDGES 0.01-0.02R

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (FIG. 10)	-A-	-B-	-C-	-D-	INTER-FERENCE	MATERIAL
(2) (5)	3	0.3125 0.3120	0.50 0.42	2	0.0013 0.0004	4
(2) (5)	3	0.3125 0.3120	---	---	0.0013 0.0004	4

1 MINUS AMOUNT REMOVED FROM LUG FACE

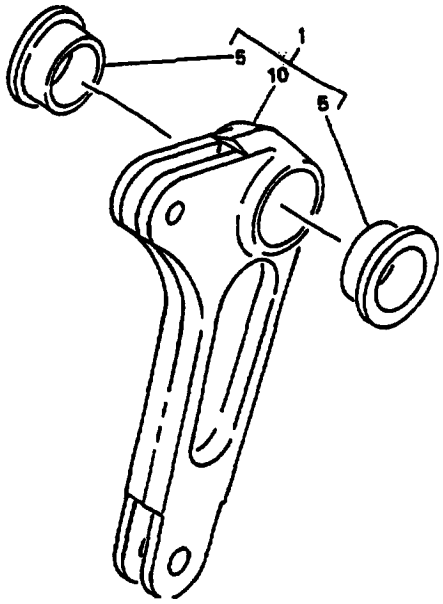
2 AMOUNT REMOVED FROM LUG FACE

3 AS REQUIRED FOR A FIT FLUSH TO 0.005 BELOW THE LUG SURFACE

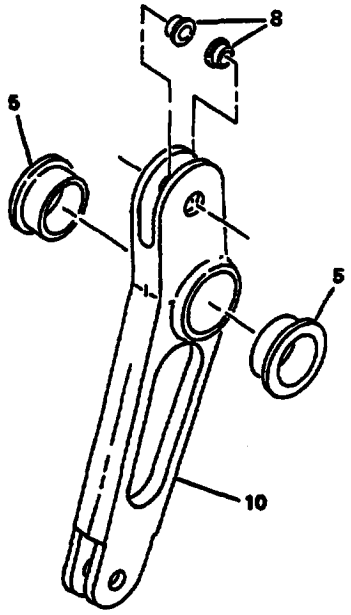
4 AL-NI-BRZ PER AMS 4640

Repair Bushing Details
Figure 10C

K56311



65-46204
65-84163



65C27360

Door Operator Crank Assembly
Figure 11

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
11-					
1	65-46204-4		CRANK ASSY, DOOR OPERATOR	A	RF
1	65-84163-1		CRANK ASSY, DOOR OPERATOR	B	RF
1	65C27360-1		CRANK ASSY, DOOR OPERATOR	C	RF
1	65C27360-5		CRANK ASSY, DOOR OPERATOR	D	RF
1	65C27360-7		CRANK ASSY, DOOR OPERATOR	E	RF
1	65C27360-9		CRANK ASSY, DOOR OPERATOR	F	RF
1	65C27360-11		CRANK ASSY, DOOR OPERATOR	G	RF
1	65C27360-12		CRANK ASSY, DOOR OPERATOR	H	RF
5	AJF18A104		. BUSHING, V50294 (BOEING 10-60516-229)	A-F	2
5	DBAF18-016		. BUSHING, V81376 (BOEING 10-60516-229)	A-F	2
5	FBJW36TF43-19		. BUSHING, V21335 (BOEING 10-60516-229)	A-F	2
5	FBR18A19BA		. BUSHING, V73134 (BOEING 10-60516-229)	A-F	2
5	KJN18-13		. BUSHING, V97613 (BOEING 10-60516-229)	A-F	2
5	NHLF18-202A		. BUSHING, V15860 (BOEING 10-60516-229)	A-F	2
5	YTS611		. BUSHING, V77896 (BOEING 10-60516-229)	A-F	2
5	90541		. BUSHING, V09455 (BOEING 10-60516-229)	A-F	2
5	KJB423918B1		. BUSHING (V50632) (OPT)	A-F	2
5	KJB423918B1		. BUSHING (V50632)	GH	2
5	KJB423918B2		. BUSHING, 0.030-INCH OVERSIZE (V50632) (REPAIR PART)		2
5	KJB423918B3		. BUSHING, 0.060-INCH OVERSIZE (V50632) (REPAIR PART)		2
8	BACB28X6M024		. BUSHING	C-H	2
10	65-46204-5		. CRANK, MACHINE (PRE SB 32-1079)	A	1
10	65-84163-2		. CRANK, MACHINE (POST SB 32-1079)	A	1
10	65-84163-2		. CRANK, MACHINE	B	1
10	65C27360-2		. CRANK, MACHINE	C	1
10	65C27360-4		. CRANK, MACHINE	DG	1
10	65C27360-8		. CRANK, MACHINE	EH	1
10	65C27360-10		. CRANK, MACHINE	F	1

10. DOOR OPERATOR LINK ASSEMBLY (65-46205-1,-7,-9) (Fig. 13)

A. Penetrant check link (10) per 20-20-01.

B. Repair (Bores for bearings) (Fig. 12).

(1) Build up with plasma spray.

(a) Machine as required, within repair limits shown, to remove defects.

(b) Build up with Al alloy plasma flame spray per 20-10-05. Machine to design diameter. Restore chamfer as shown.

(c) Chemical treat per 20-43-03. Apply primer BMS 10-11, Type 1 all over.

(d) Install bearings with wet BMS 5-95 sealant. Roller swage them per 20-50-03 both sides.

(e) Apply enamel BMS 10-11, Type 2 all over, but not on bearings.

(2) Installation of repair sleeves.

(a) Machine as required, within repair limits shown, to remove defects.

(b) Chamfer hole edges 45° by 0.02-0.03. Chemical treat per 20-43-03. Apply primer BMS 10-11, Type 1 all over.

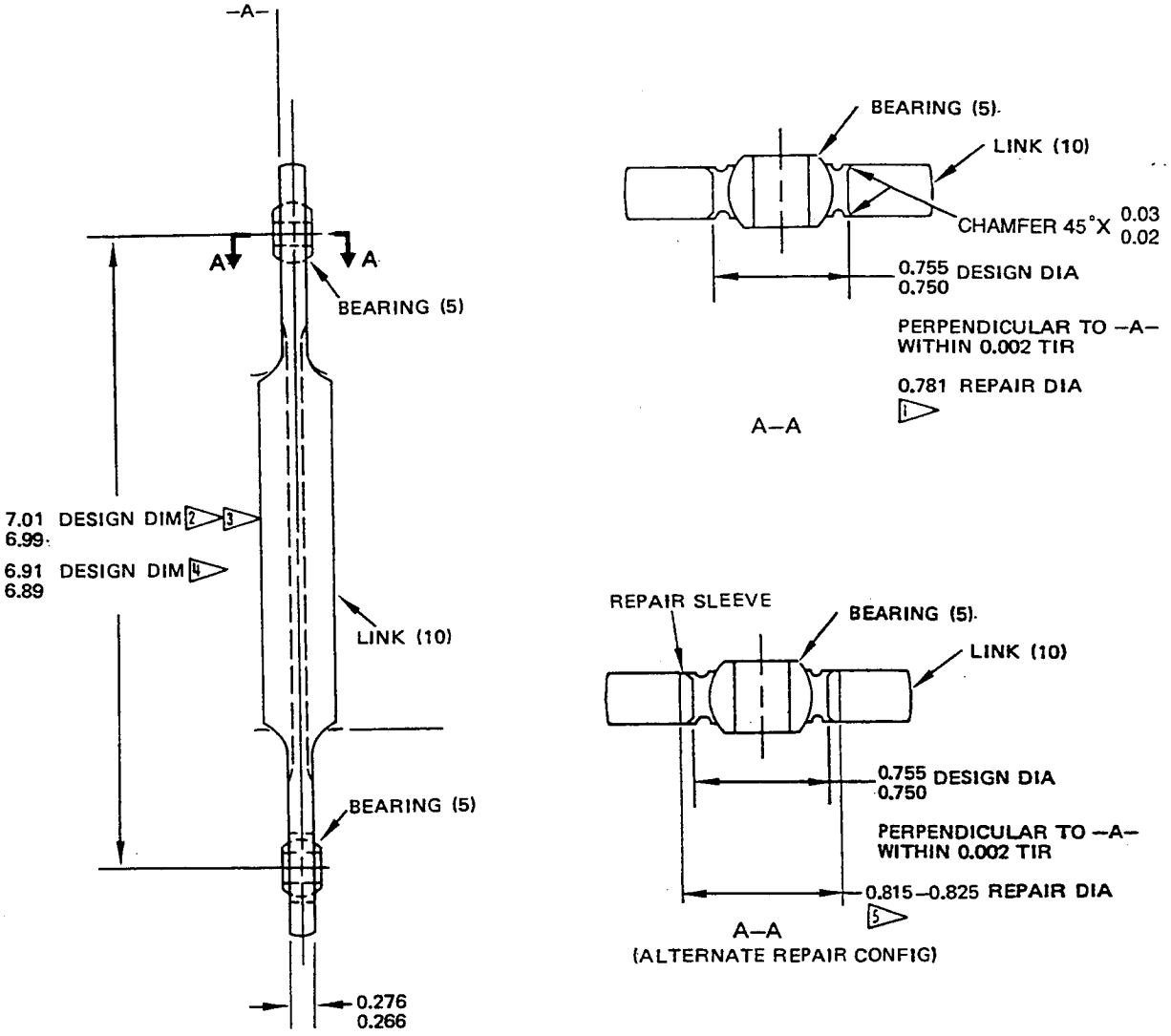
(c) Make Al alloy repair sleeves 0.276-0.282 inch long, with OD to give interference fit of 0.001-0.003 inch, and 0.720-0.725 ID. Chemical treat the sleeves per 20-43-03.

(d) Install the sleeve by the shrink-fit method, with wet BMS 5-95 sealant. Make sure the ends of the sleeve are an equal amount above each face of the lug, then roller swage per 20-50-03.

(e) Machine the swaged ends of the repair sleeve smooth with the lug face. Machine the sleeve ID to design dimensions. Restore chamfer as shown. Chemical treat per 20-43-03. Apply primer, BMS 10-11, Type 1.

(f) Install bearings with wet sealant BMS 5-95. Roller swage them per 20-50-03 both sides.

(g) Apply enamel BMS 10-11, Type 2 all over but not on bearings.



REFINISH

CHEMICAL TREAT OR CHROMIC ACID ANODIZE AND APPLY PRIMER BMS 10-11, TYPE 1 (F-18.05) ALL OVER. AFTER INSTALLATION OF BEARINGS, APPLY ENAMEL BMS 10-11, TYPE 2 (F-21.02) ALL OVER, BUT NO ENAMEL ON BEARINGS

REPAIR

REF 1 5

125 MACHINE FINISH EXCEPT AS NOTED
BREAK SHARP EDGES 0.03 R EXCEPT AS NOTED
RESTORE HOLE CHAMFERS 45° X 0.02–0.03

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

1 LIMIT FOR BUILDUP WITH AL ALLOY PLASMA FLAME SPRAY (20–10–05) BMS 10–67, TYPE 10 & MACHINE TO DESIGN DIA.

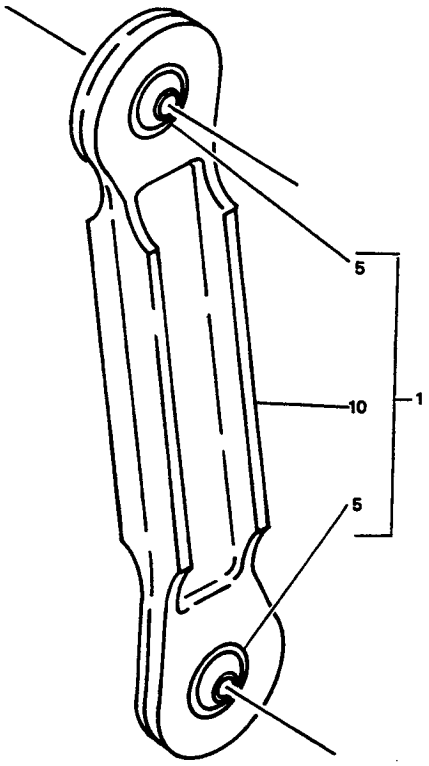
2 65–46205–1

3 65–46205–7

4 65–46205–9

5 RANGE FOR INSTL OF 2024-T4 OR 7075-T6 AL ALLOY REPAIR SLEEVE. ROLLER SWAGE SLEEVE AND MACHINE ID TO DESIGN DIM.

Link Repair and Refinish
Figure 12



Door Operator Link Assembly
Figure 13

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
13-					
1	65-46205-1		LINK ASSY, DOOR OPERATOR	A	RF
1	65-46205-7		LINK ASSY, DOOR OPERATOR	B	RF
1	65-46205-9		LINK ASSY, DOOR OPERATOR	C	RF
5	BLFN5-033		. BEARING, V81376 (BOEING 10-60545-112S)	A	2
5	SBS10ATC24		. BEARING, V21335 (BOEING 10-60545-112S)	A	2
5	YTA119		. BEARING, V77896 (BOEING 10-60545-112S)	A	2
5	03-728-0312		. BEARING, V09455 (BOEING 10-60545-112S)	A	2
5	MS14101-5		. BEARING (REPLS 10-60545-112S)	A	2
5	MS21232-5		. BEARING	BC	2
5	MS21235-5		DELETED		
10	65-46205-2		. LINK, MACHINE	A	1
10	65-46205-8		. LINK, MACHINE	B	1
10	65-46205-10		. LINK, MACHINE	C	1
10	65-46205-11		. LINK, MACHINE (OPT)	C	1

11. NOSE GEAR AFT LOCK MECHANISM SHAFT (69-35385-1,-2) (Fig. 14)

A. Inspection/Check

(1) See Fig. 14 for wear limits.

(2) Magnetic particle examine the shaft per SOPM 20-20-01.

B. Repair (Fig. 14)

(1) Diameters A and B

(a) Method 1 -- Chrome Plate Buildup

1) Machine OD as required, within repair limits, to remove defects.

2) Shot peen as indicated.

3) Build up repaired surfaces with chrome plate and machine to design dimensions and finish shown.

(b) Method 2 -- Thermal Spray Buildup

1) Machine as required, within repair limits, to remove defects.

2) Shot peen as indicated.

3) Build up the surface with thermal spray coating as indicated.

(2) Cross-bolt hole -- Diameter Y

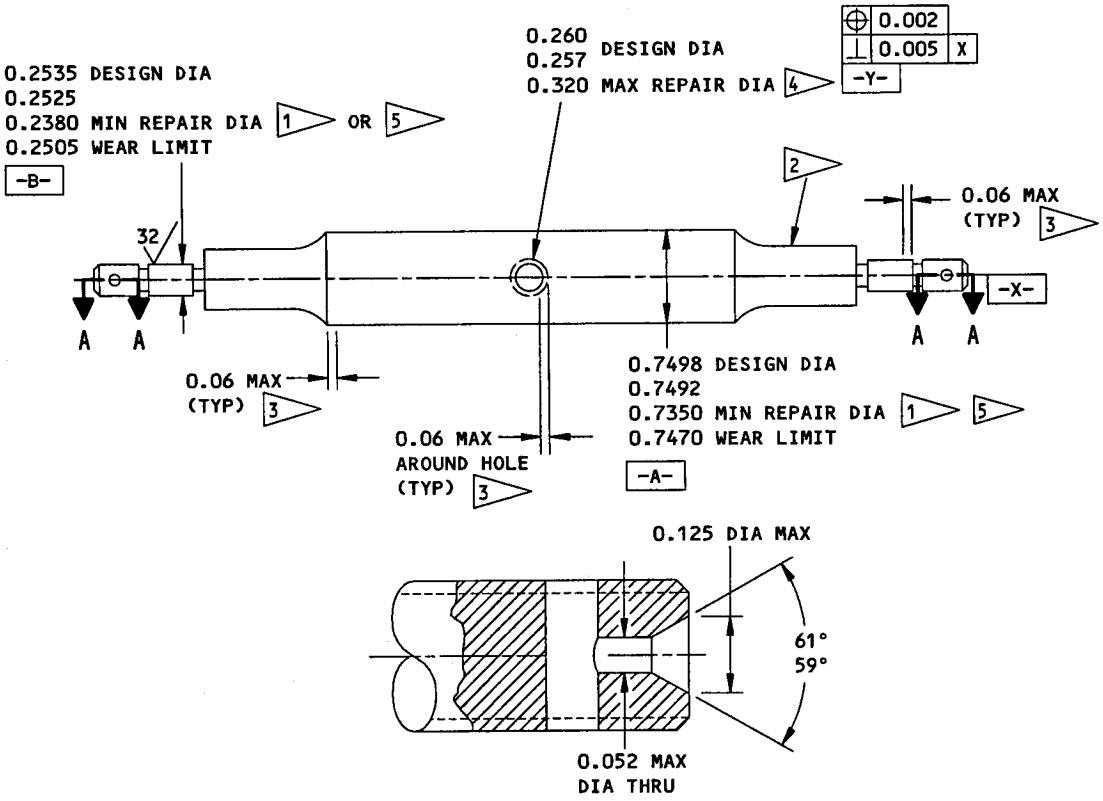
(a) Machine the hole as required, within repair limits, to remove defects.

(b) Refinish the hole as indicated.

(c) Make a repair bushing (Fig. 15).

(d) Install the bushing by the shrink-fit method of SOPM 20-50-03, with wet sealant BMS 5-95.

(e) Machine the ID of the bushing to design dimensions. Machine the ends of the bushing to be at the surface of the OD of the pin.



OPTIONAL TOOL CENTER (TYP)
A-A

REFINISH

CHROME PLATE (F-15.34) DIA -A-,-B-

CADMIUM PLATE (F-15.02) ALL OTHER SURFACES

1> LIMIT FOR CHROME PLATE BUILDUP (REF SOPM 20-42-03) AND GRIND TO DESIGN DIMENSIONS SHOWN AND FINISH WITH 0.06 PLATING RUNOUT AS SHOWN BY 3>

2> VIBRO ENGRAVE PART NUMBER, SERIAL NUMBER AND VENDOR NUMBER THIS AREA

3> CHROME PLATE RUNOUT

4> LIMIT FOR INSTALLATION OF REPAIR BUSHING (FIG. 15)

5> LIMIT FOR BUILDUP WITH BMS 10-67, TYPE 1 OR 17, CLASS 2,3 OR 4 THERMAL SPRAY (SOPM 20-10-05), 0.010 MAX THICK. PUT A 0.080 MAX RUNOUT AT EDGES. GRIND TO DESIGN DIMENSIONS AND 4 MICROINCH FINISH. THEN CADMIUM-TITANIUM PLATE (SOPM 20-42-02) THE RUNOUT AREA.

REPAIR

REF 1> 4> 5>

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

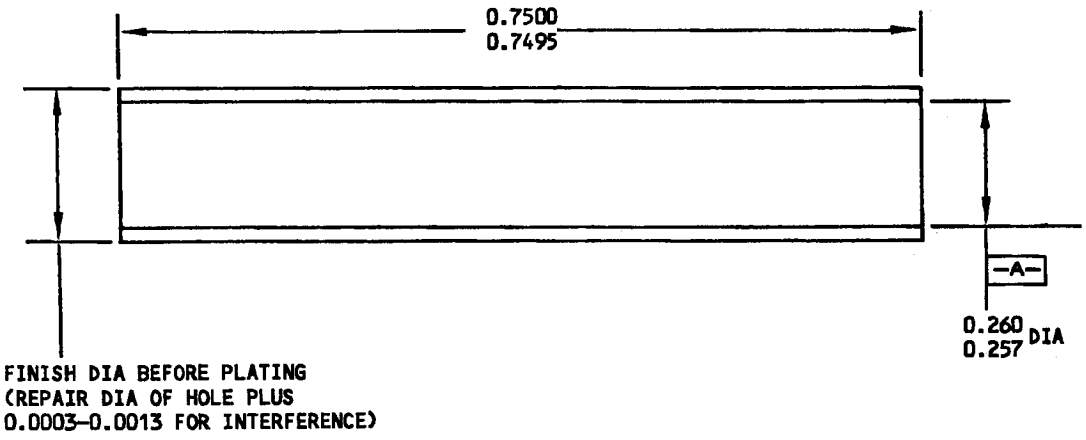
SHOT PEEN: (SOPM 20-10-03)
0.016-0.033 SHOT SIZE
0.012 A2 INTENSITY

MATERIAL: 4340M STEEL (180-200 KSI)

ALL DIMENSIONS ARE IN INCHES

69-35385-1,-2

Mechanism Shaft Repair and Refinish
Figure 14



REPAIR

125 MACHINE FINISH EXCEPT AS NOTED

BREAK SHARP EDGES 0.01-0.02R

FINISH: CADMIUM PLATE (F-15.06)

MATERIAL: AL-NI-BRZ PER AMS 4640 OR 4880

ALL DIMENSIONS ARE IN INCHES

Repair Bushing Details
Figure 15

E73170

12. DOOR OPERATOR ROD ASSEMBLY (69-38709, 69-68115, 69-73677) (Fig. 17)

A. Inspection/Check

(1) See Fig. 16 for wear limits.

(2) Penetrant examine rod (5) per 20-20-02.

B. Refinish

(1) Rod (5) (69-38709-series) -- Chemical treat and apply primer, BMS 10-11, Type 1 (F-18.07). Then apply enamel, BMS 10-11, Type 2 (F-21.02) on exterior only, but no enamel on threads. Material: Al alloy.

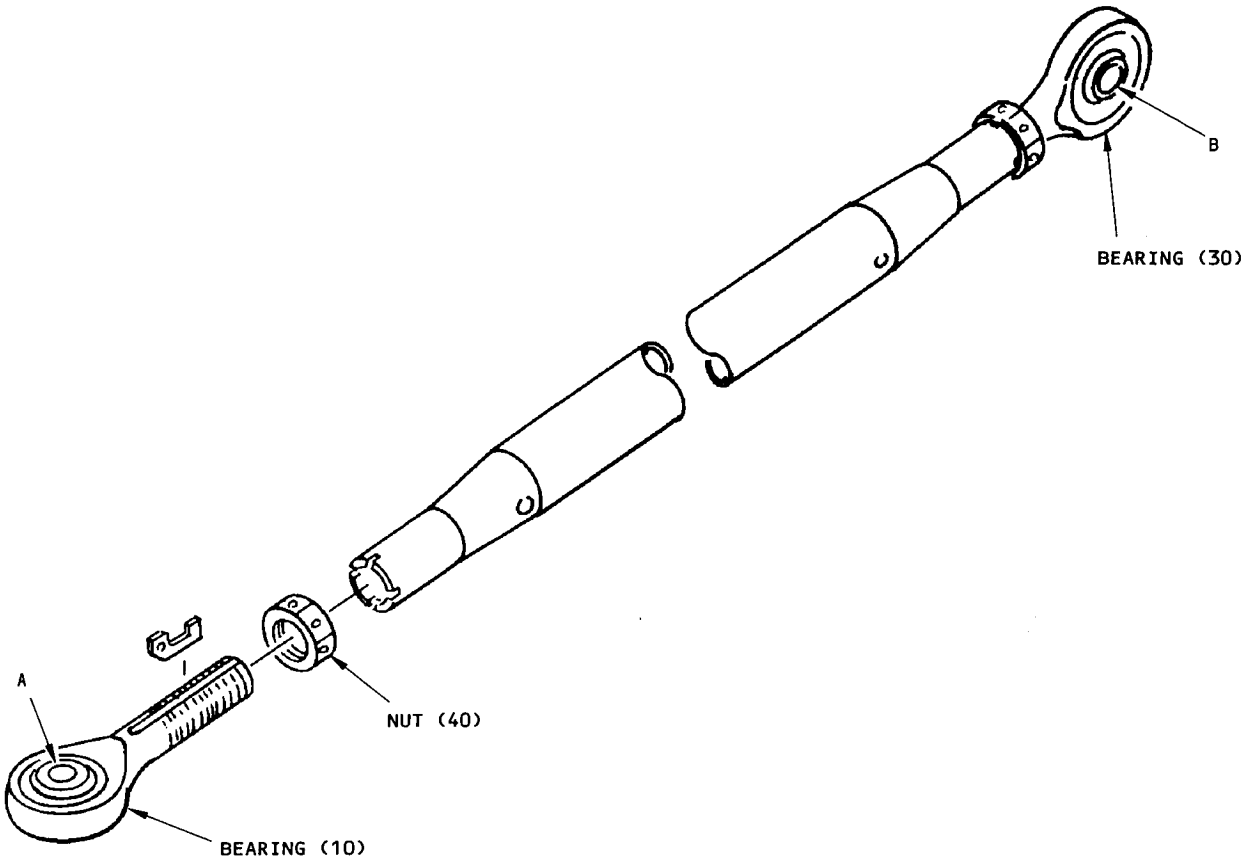
(2) Rod (5) (69-73677-series) -- Passivate (F-17.09). Material: 304 CRES.

C. Assembly

(1) Use standard industry practices and these special instructions.

(2) Coat threads of bearings (10, 30) and rod (5) with grease MIL-G-23827 before you assemble them.

D. Fits and Clearances.



Fits and Clearances
Figure 16

Ref Letter Fig. 16	Mating Item No. Fig. 17	Design Dimensions				Service Wear Limits		
		Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inch)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
A	ID 10,30 *[4]	0.3120	0.3125	0.0000	0.0015		*[3]	0.0050 *[3]
	OD *[1]	0.3110	0.3120			0.3100		
B	ID 10,30 *[5]	0.3745	0.3750	0.0000	0.0015		*[3]	0.0050 *[3]
	OD *[2]	0.3735	0.3745			0.3720		

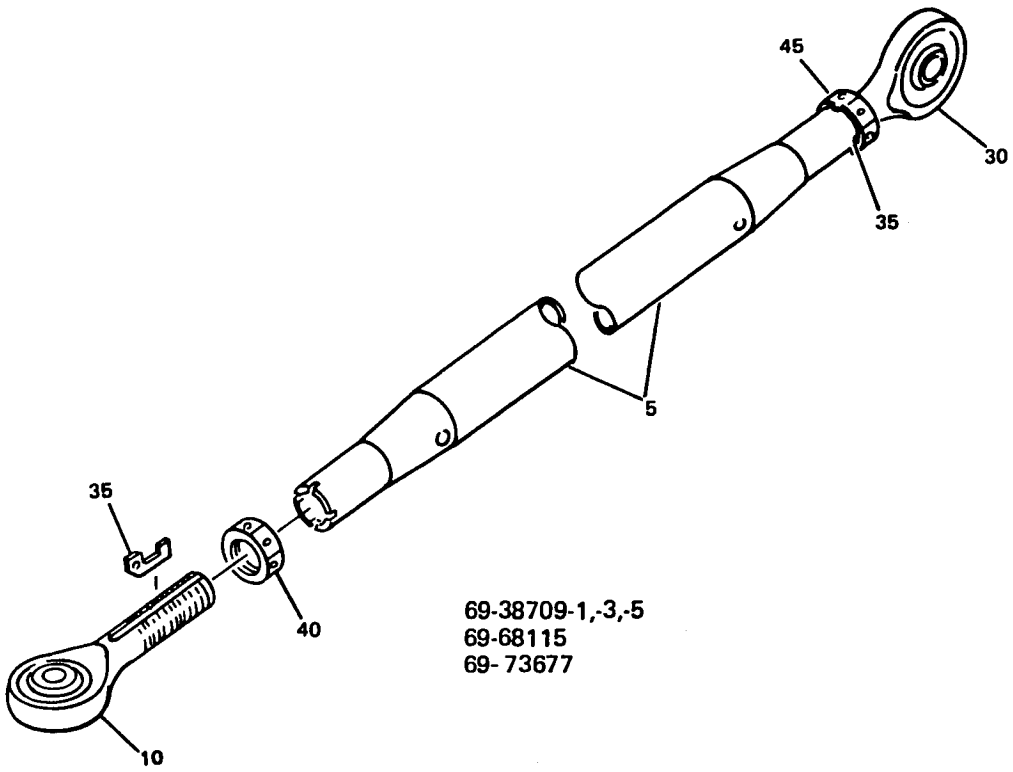
*[1] Bolt BACB30LJ5D( )

*[2] Bolt BACB30LJ6D( )

*[3] For this location, the total clearance between the bearing race, bearing ball, and the bolt must be less than the specified maximum allowable clearance.

*[4] 10-60779-172, -172L, -302, -302L, 69-68115-2, -3

*[5] 10-60779-167, -167L



Door Operator Rod Assembly
Figure 17

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
17-					
1	69-38709-1		ROD ASSY, DOOR OPERATOR	A	RF
1	69-38709-3		ROD ASSY, DOOR OPERATOR	B	RF
1	69-38709-5		ROD ASSY, DOOR OPERATOR	C	RF
1	69-38709-7		DELETED		
1	69-68115-1		ROD ASSY, DOOR OPERATOR	D	RF
1	69-73677-1		ROD ASSY, DOOR OPERATOR	E	RF
1	69-73677-3		ROD ASSY, DOOR OPERATOR	F	RF
1	69-73677-5		ROD ASSY, DOOR OPERATOR	G	RF
1	69-73677-9		ROD ASSY, DOOR OPERATOR	H	RF
5	69-38709-2		. ROD	A	1
5	69-38709-4		. ROD	BCD	1
5	69-38709-6		DELETED		
5	69-73677-2		. ROD	E	1
5	69-73677-4		. ROD	F	1
5	69-73677-6		. ROD	G	1
5	69-73677-8		. ROD	H	1
10	ARHT5E109		. BEARING, V50294 (BOEING 10-60779-172)	AB	1
10	DREM5-084		. BEARING, V81376 (BOEING 10-60779-172)	AB	1
10	KBDE5-21		. BEARING, V97613 (BOEING 10-60779-172)	AB	1
10	MSSKR58-16BAC		. BEARING, V73134 (BOEING 10-60779-172)	AB	1
10	NHNE5-210		. BEARING, V15860 (BOEING 10-60779-172)	AB	1
10	REMS10ATC16		. BEARING, V21335 (BOEING 10-60779-172)	AB	1
10	YTM141		. BEARING, V77896 (BOEING 10-60779-172)	AB	1
10	77278		. BEARING, V09455 (BOEING 10-60779-172)	AB	1
10	ARHT5E114		. BEARING, V50294 (BOEING 10-60779-302)	C	1
10	NHNE5-210		. BEARING, V15860 (BOEING 10-60779-302)	C	1
10	01-740-05E001		. BEARING, V09455 (BOEING 10-60779-302)	C	1
10	69-68115-3		. BEARING	D	1
10	ART6E113		. BEARING, V50294 (BOEING 10-60779-167)	E-H	1
10	DREM6-081		. BEARING, V81376 (BOEING 10-60779-167)	E-H	1
10	KBDE6-23		. BEARING, V97613 (BOEING 10-60779-167)	E-H	1
10	MSSKR67-16BAH		. BEARING, V73134 (BOEING 10-60779-167)	E-H	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
17-					
10	NHNE6-205		. BEARING, V15860 (BOEING 10-60779-167)	E-H	1
10	REMS12ATC14-3		. BEARING, V21335 (BOEING 10-60779-167)	E-H	1
10	TFM106B		. BEARING, V77896 (BOEING 10-60779-167)	E-H	1
10	77267		. BEARING, V09455 (BOEING 10-60779-167)	E-H	1
15	69-74493-1		DELETED		
20	BACB28X5M011		DELETED		
25	69-74493-2		DELETED		
30	ARHTL5E109		. BEARING, V50294 (BOEING 10-60779-172L)	AB	1
30	DREMLH5-084		. BEARING, V81376 (BOEING 10-60779-172L)	AB	1
30	KBDEL5-21		. BEARING, V97613 (BOEING 10-60779-172L)	AB	1
30	MSSKLR58-16BAC		. BEARING, V73134 (BOEING 10-60779-172L)	AB	1
30	NHNEL5-310		. BEARING, V15860 (BOEING 10-60779-172L)	AB	1
30	REMSL10ATC16		. BEARING, V21335 (BOEING 10-60779-172L)	AB	1
30	YTM141L		. BEARING, V77896 (BOEING 10-60779-172L)	AB	1
30	67278		. BEARING, V09455 (BOEING 10-60779-172L)	AB	1
30	ARHTL5E114		. BEARING, V50294 (BOEING 10-60779-302L)	C	1
30	NHNEL5-219L		. BEARING, V15860 (BOEING 10-60779-302L)	C	1
30	11-740-05E001		. BEARING, V09455 (BOEING 10-60779-302L)	C	1
30	69-68115-2		. BEARING	D	1
30	ARTL6E113		. BEARING, V50294 (BOEING 10-60779-167L)	E-H	1
30	DREMLH6-081		. BEARING, V81376 (BOEING 10-60779-167L)	E-H	1
30	KBDEL6-23		. BEARING, V97613 (BOEING 10-60779-167L)	E-H	1
30	MSSKLR67-16BAH		. BEARING, V73134 (BOEING 10-60779-167L)	E-H	1
30	NHNEL6-205		. BEARING, V15860 (BOEING 10-60779-167L)	E-H	1
30	REMSL12ATC14-3		. BEARING, V21335 (BOEING 10-60779-167L)	E-H	1
30	TFM106BL		. BEARING, V77896 (BOEING 10-60779-167L)	E-H	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
17-30	11-052-0375		. BEARING, V09455 (BOEING 10-60779-167L)	E-H	1
35	NAS559-3		. LOCK, ROD END		2
40	NAS509-8		. NUT, JAM	A-D	1
40	NAS509-7		. NUT, JAM	E-H	1
45	NAS509L8		. NUT, JAM	A-D	1
45	NAS509L7		. NUT, JAM	E-H	1

13. DOOR OPERATOR BRACKET ASSEMBLY (65C27531-1, -3; 65C31786-1, -4) (Fig. 20)

A. Magnetic particle examine bracket (10) (SOPM 20-20-01).

B. Lug faces and holes (Fig. 18 or 18A)

(1) Machine as required, within repair limits, to remove defects.

(2) Shot peen. Refinish as indicated.

(3) Make oversize bushings per Fig. 19.

(4) Install the bushings per par. D.

C. Refinish (Fig. 18 or 18A)

D. Replacement (Fig. 18 or 18A)

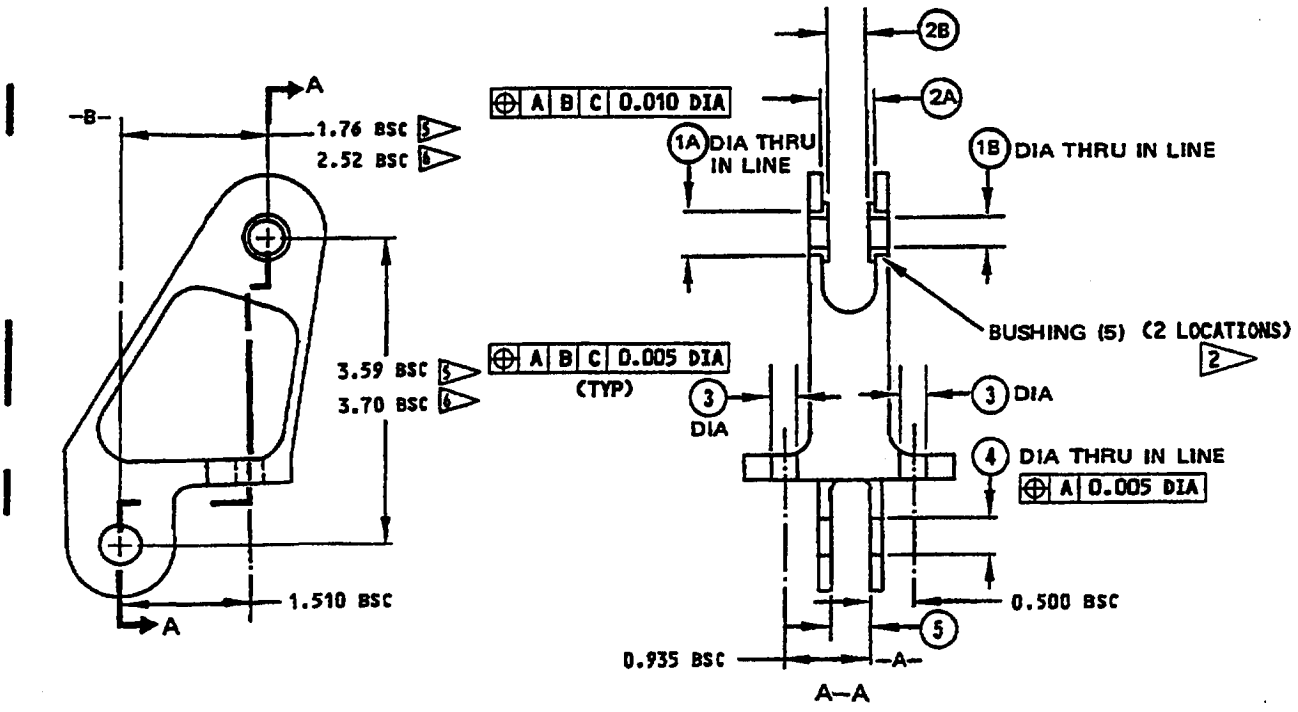
(1) Remove the old bushings.

(2) If you find defects on lug surfaces, refer to par. B. above for repair instructions.

(3) Install replacement bushings by the shrink fit method (SOPM 20-50-03), with wet BMS 5-95 sealant.

(4) Make a check of the dimensions and machine them as necessary to design dimensions and finish.

(5) Fillet seal the bushings with BMS 5-95 sealant.



65C27531

Bracket Repair and Refinish
Figure 18 (Sheet 1)

E28269

	(1A)	(1B)	(2A)	(2B)	(3)	(4)	(5)
DESIGN DIM	0.5006 0.5000	0.3765 0.3750	0.611 0.601	0.504 0.501	0.3910 0.3870	0.4540 0.4500	0.435 0.430
REPAIR LIMIT	0.5606 ▷1	—	0.641 ▷1 ▷4	—	0.4110 ▷3	0.4740 ▷3	0.455 ▷3
WEAR LIMIT	—	0.381	—	—	—	—	—

REFINISH

(4330 M STEEL)
CADMIUM-TITANIUM PLATE (F-15.01) ALL OVER.
APPLY PRIMER, BMS 10-11, TYPE I (F-20.03) EXCEPT NO PRIMER IN HOLES FOR BUSHINGS.

(15-5PH CRES)
APPLY PRIMER, BMS 10-11, TYPE I (F-20.02) EXCEPT NO PRIMER IN HOLES FOR BUSHINGS

AFTER BUSHING INSTL APPLY ENAMEL, BMS 10-11, TYPE 2 (F-21.02) EXCEPT ON BUSHINGS AND IN HOLES.

▷1 LIMIT FOR INSTL OF OVERSIZE BUSHINGS

▷2 FILLET SEAL WITH BMS 5-95

▷3 RESTORATION TO DESIGN DIM NOT REQUIRED

▷4 LUG FACE MACHINING REQUIREMENTS:

1. MATERIAL REMOVED FROM ANY FACE MUST NOT EXCEED HALF THE DIFFERENCE BETWEEN THE DESIGN DIM AND REPAIR LIMIT
2. FLAT SURFACE MUST BE MINIMUM OF 0.02 LARGER THAN FLANGE DIA OF BUSHING TO BE INSTALLED
3. BLEND MISMATCH STEPS TO 0.18-0.26 RADIUS, OR IF WITHIN 0.10 OF LUG FILLET RADIUS USE SAME RADIUS AS LUG FILLET. BREAK SHARP EDGES 0.03-0.07R

▷5 65C27531-2

▷6 65C27531-4

REPAIR

REF ▷1 ▷3 ▷4

125/ MACHINED SURFACES EXCEPT AS NOTED

SHOT PEEN: (REF 20-10-03)
0.017-0.046 SHOT SIZE
0.012 A2 INTENSITY

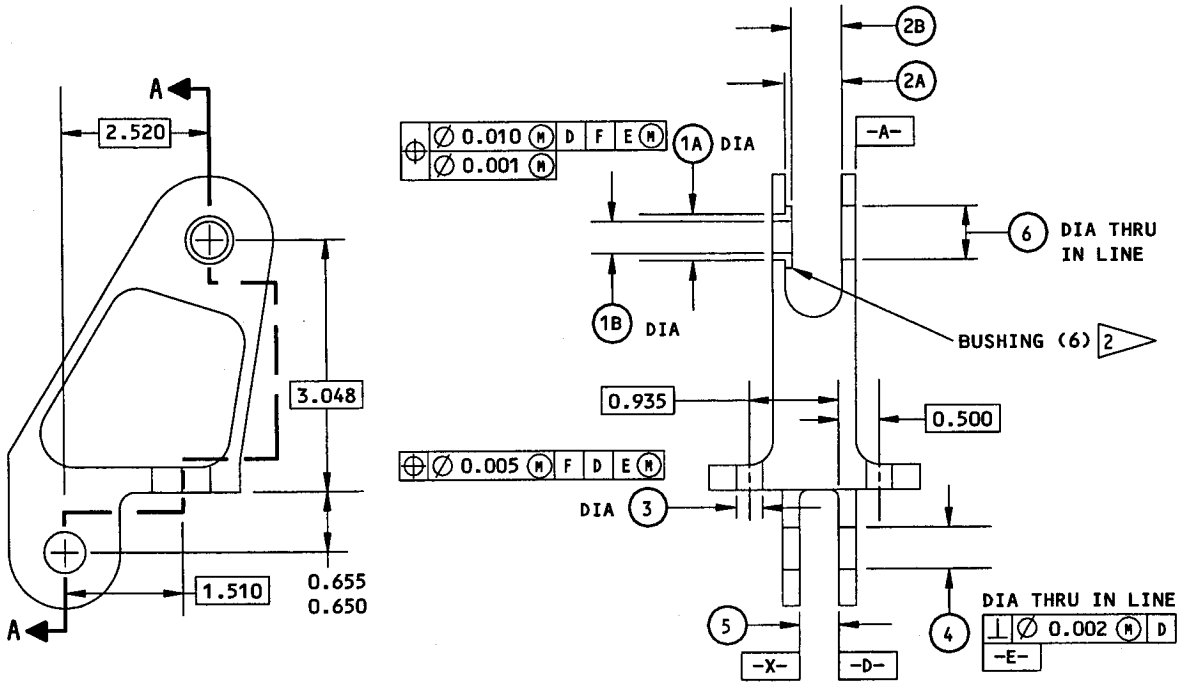
MATERIAL:
4330M STEEL OR
15-5PH CRES, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

65C27531

Bracket Repair and Refinish
Figure 18 (Sheet 2)

E28309



	1A	1B	2A	2B	3	4	5	6
DESIGN DIM	0.5006 0.5000	0.3765 0.3750	0.630 0.620	0.573 0.558	0.3910 0.3870	0.4540 0.4500	0.435 0.431	0.5620 0.5615
REPAIR LIMIT	0.5606 <1>	—	0.645 <1>	—	0.4110 <3>	0.4740 <3>	0.455 <3>	—

REFINISH

PASSIVATE (F-17.25, WHICH REPLACES F-17.09) ALL OVER. APPLY PRIMER BMS 10-11, TYPE 1 (F-20.02) AND ENAMEL BMS 10-60 TYPE 1 (F-14.9813, WHICH REPLACES SRF-14.9813) BUT NOT IN HOLES OR LUG FACES -D-, -X-

<1> LIMIT FOR INSTL OF OVERSIZE BUSHING

<2> FILLET SEAL WITH BMS 5-95 SEALANT

<3> RESTORATION TO DESIGN DIM NOT REQUIRED

<4> LUG FACE MACHINING REQUIREMENTS:

1. MATERIAL REMOVED FROM ANY FACE MUST NOT BE MORE THAN HALF THE DIFFERENCE BETWEEN THE DESIGN DIM AND REPAIR LIMIT
2. FLAT SURFACE MUST BE MINIMUM OF 0.02 LARGER THAN FLANGE DIA OF BUSHING TO BE INSTALLED
3. BLEND MISMATCH STEPS TO 0.18-0.26 RADIUS, OR IF WITHIN 0.10 OF LUG FILLET RADIUS USE SAME RADIUS AS LUG FILLET. BREAK SHARP EDGES 0.03-0.07 R

REPAIR

REF <1> <3> <4>

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

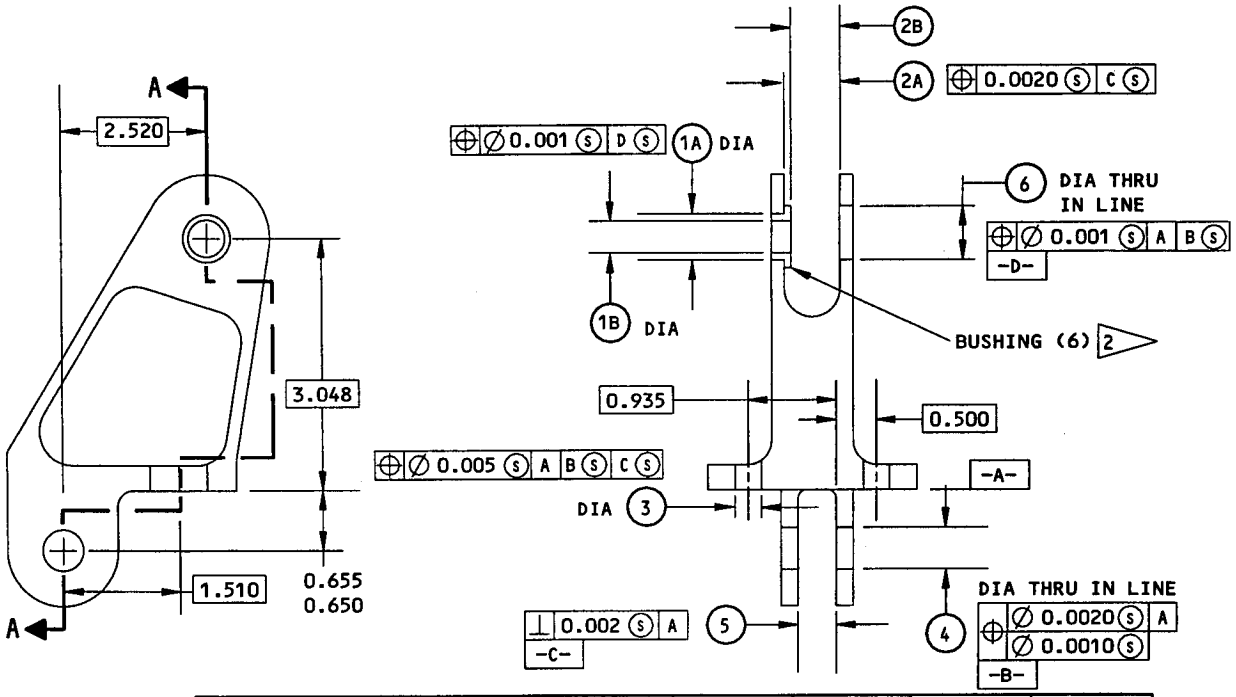
SHOT PEEN: (SOPM 20-10-03)
0.017-0.046 SHOT SIZE
0.012 A2 INTENSITY

MATERIAL:
17-4PH CRES, 180 KSI MINIMUM

ALL DIMENSIONS ARE IN INCHES

65C31786-1
Bracket Repair and Refinish
Figure 18A

C49724



	1A	1B	2A	2B	3	4	5	6
DESIGN DIM	0.5006 0.5000	0.3765 0.3750	0.635 0.620	0.573 0.558	0.3910 0.3870	0.4520 0.4500	0.435 0.431	0.5619 0.5617
REPAIR LIMIT	0.5606 <1>	—	0.645 <1>	—	0.4110 <3>	0.4720 <3>	0.455 <3>	—

REFINISH

PASSIVATE (F-17.25, WHICH REPLACES F-17.09) ALL OVER. APPLY PRIMER BMS 10-11, TYPE 1 (F-20.02) AND ENAMEL BMS 10-60 TYPE 1 (F-14.9813, WHICH REPLACES SRF-14.9813) BUT NOT IN HOLES OR LUG FACE -C-

<1> LIMIT FOR INSTL OF OVERSIZE BUSHING

<2> FILLET SEAL WITH BMS 5-95 SEALANT

<3> RESTORATION TO DESIGN DIM NOT REQUIRED

<4> LUG FACE MACHINING REQUIREMENTS:

1. MATERIAL REMOVED FROM ANY FACE MUST NOT BE MORE THAN HALF THE DIFFERENCE BETWEEN THE DESIGN DIM AND REPAIR LIMIT
2. FLAT SURFACE MUST BE MINIMUM OF 0.02 LARGER THAN FLANGE DIA OF BUSHING TO BE INSTALLED
3. BLEND MISMATCH STEPS TO 0.18-0.26 RADIUS, OR IF WITHIN 0.10 OF LUG FILLET RADIUS USE SAME RADIUS AS LUG FILLET. BREAK SHARP EDGES 0.03-0.07 R

REPAIR

REF <1> <3> <4>

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

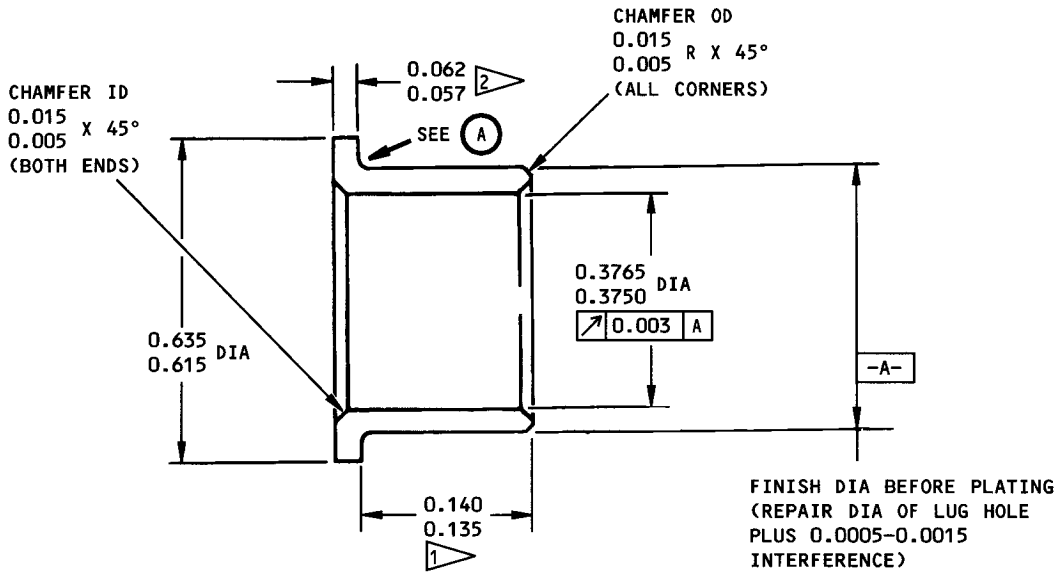
SHOT PEEN: (SOPM 20-10-03)
0.017-0.046 SHOT SIZE
0.012 A2 INTENSITY

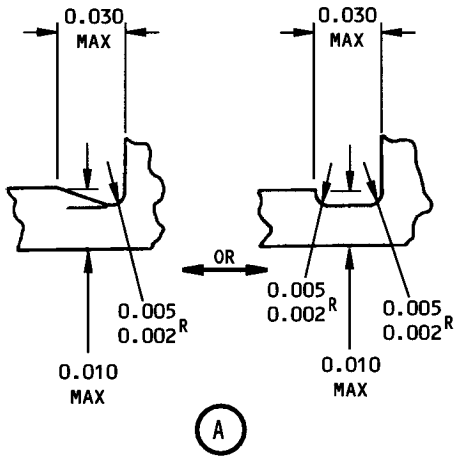
MATERIAL:
15-5PH CRES, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

65C31786-4
Bracket Repair and Refinish
Figure 18B

M88279





HOLE LOCATION (1A) FIG. 18 - REPLACES BUSHING (5, FIG. 20) BACB28X6M014

HOLE LOCATION (1A) FIG. 18A, 18B - REPLACES BUSHING (6, FIG. 20) BACB28X6C014

63 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.010-0.020 R

1 MINUS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

CADMIUM PLATE (F-15.06) BUT NOT IN BORE

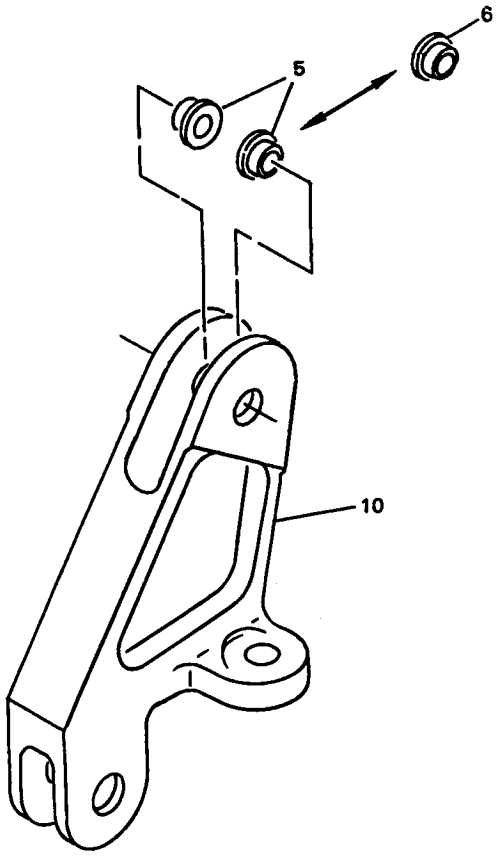
MATERIAL: FOR BUSHING (5): AL-NI-BRZ (AMS 4640)
FOR BUSHING (6): 17-4PH CRES, RC 40-43,
(AMS 5643)

DIMENSIONS ARE AFTER PLATING UNLESS SHOWN DIFFERENTLY

ALL DIMENSIONS ARE IN INCHES

Oversize Bushing Details
Figure 19

M88294



Door Operator Bracket Assembly
Figure 20

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
20-					
1	65C27531-1		BRACKET ASSY, DOOR OPERATOR	A	RF
1	65C27531-3		BRACKET ASSY, DOOR OPERATOR	B	RF
1	65C31786-1		BRACKET ASSY, DOOR OPERATOR	C	RF
1	65C31786-4		BRACKET ASSY, DOOR OPERATOR	D	RF
5	BACB28X6M014		. BUSHING	AB	2
6	BACB28X6C014		. BUSHING	CD	1
10	65C27531-2		. BRACKET	A	1
10	65C27531-4		. BRACKET	B	1
10	65C31786-2		. BRACKET	C	1
10	65B31786-5		. BRACKET	D	1

M89509

14. BOLT, DOOR OPERATOR (69-38710-1, -2)

A. Inspection/Check

(1) See Fig. 21 for wear limits.

(2) Magnetic particle examine the pin per SOPM 20-20-01.

B. Repair (Fig. 21)

(1) Method 1 -- Chrome Plate Buildup

(a) Machine OD as required, within repair limits, to remove defects.

(b) Shot peen as indicated.

(c) Build up repaired surfaces with chrome plate and grind to design dimensions and finish shown.

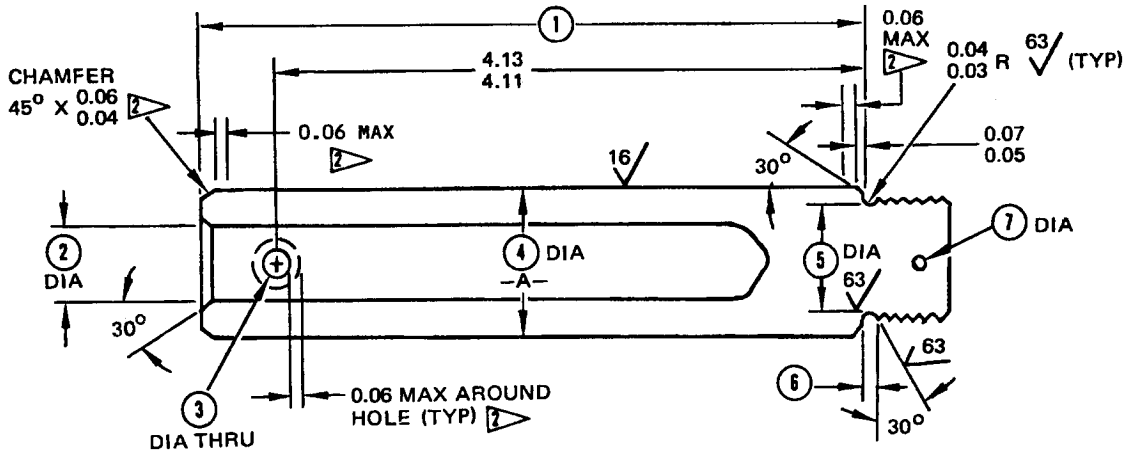
(2) Method 2 -- Thermal Spray Buildup

(a) Machine as required, within repair limits, to remove defects.

(b) Shot peen as indicated.

(c) Build up the surface with thermal spray coating as indicated.

C. Refinish (Fig. 21)



	1	2	3	4	5	6	7
DESIGN DIM	4.63 4.61	0.51 0.49	0.1955 0.1925	1.124 1.122	0.66 0.65	0.135 0.115	0.160 0.156
REPAIR LIMIT	—	—	—	1.114 1 3	—	—	—
WEAR LIMIT	—	—	—	1.120	—	—	—

REFINISH

CHROME PLATE (F-15.34) DIA -A-. CADMIUM-TITANIUM PLATE (F-15.01) ALL OTHER SURFACES, INTERIOR AND EXTERIOR. WIPE CHROME PLATE AND THREADS WITH PRIMER (F-19.45). APPLY PRIMER BMS 10-11, TYPE I (F-20.03) ON OTHER SURFACES. ON INTERIOR, APPLY CORROSION PREVENTIVE COMPOUND MIL-C-11796, CLASS 1 (F-19.03)

1 LIMIT FOR CHROME PLATE BUILDUP (REF SOPM 20-42-03) AND GRIND TO DESIGN DIM AND FINISH WITH A PLATING RUNOUT PER 2.

2 CHROME PLATE RUNOUT AREA

3 LIMIT FOR BUILDUP WITH BMS 10-67, TYPE 1 OR 17, CLASS 2,3, OR 4 THERMAL SPRAY (SOPM 20-10-05), 0.010 MAX THICK. PUT A 0.080 MAX RUNOUT AT THE EDGES. GRIND TO DESIGN DIMENSIONS AND 4 MICROINCHES FINISH. THEN CADMIUM-TITANIUM PLATE (SOPM 20-42-02) THE RUNOUT AREA.

REPAIR

REF 1 3

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN: (SOPM 20-10-03) (DO NOT SHOT PEEN THREADS)
0.016-0.033 SHOT SIZE
0.012 A2 INTENSITY

MATERIAL: 4340 STEEL, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES.

69-38710-1, -2

Bolt Repair and Refinish
Figure 21

VENDORS

V09455	BFM TRANSPORT DYNAMICS CORP., BOX 1953, 3131 W. SEGERSTROM AVE., SANTA ANA, CALIFORNIA 92702-1953
V15860	NEW HAMPSHIRE BALL BEARINGS, INC., ASTRO DIV., 155 LEXINGTON AVE., LACONIA, NEW HAMPSHIRE 03246-2937
V16746	SPECLINE, INC., 2230 MOUTON DR., CARSON CITY, NEVADA 89706
V21335	TORRINGTON CO., FAFNIR BEARINGS DIV., 59 FIELD ST., TORRINGTON, CONNECTICUT 06790-4942
V50632	KAMATICS CORP., SUB. OF KAMAN CORP., 1330 BLUE HILLS AVE., P.O. BOX 3, BLOOMFIELD, CONNECTICUT 06002-1304
V73134	ROLLER BEARING CO. OF AMERICA, INC., HEIM BEARING DIV., 60 ROUND HILL RD., P.O. BOX 430, FAIRFIELD, CONNECTICUT 06430-0430
V77896	REXNORD INC., BEARING OPERATION, 2400 CURTIS ST., DOWNERS GROVE, ILLINOIS 60515-4005
V81376	SOUTHWEST PRODUCTS CO., 2240 BUENA VISTA ST., P.O. BOX 2046, IRVINDALE, CALIFORNIA 91706-2046
V95879	STEWART-WARNER ALEMITE CORP., 1826 DIVERSEY PARKWAY, CHICAGO, ILLINOIS 60614-1540
V97613	SARGENT INDUSTRIES, CONTROLS AND AEROSPACE, KAHR BEARING DIV., 5675 W. BURLINGAME RD., TUCSON, ARIZONA 85743, OR P.O. BOX 730, CORTARO, ARIZONA 85652-0730