TO: ALL HOLDERS OF MAIN GEAR MINOR COMPONENTS OVERHAUL MANUAL, 32-16-31

REVISION NO. 72, 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 finish codes for the enamel on some actuator beam arms					X								
Added reference to SB 32A1355				X									
Added preferred bushing 69-41621-2 for a better fit at the outboard actuator beam bolt							X					X	

MAIN GEAR MINOR COMPONENTS

32-16-31

BOEING P/N SEE PAGE T/C-1

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
57-1052		PRR 31924	Dec 25/72
32-1084		PRR 32582	Jan 5/77
		PRR 32070-2	Jul 5/77
		PRR 33600-22	Sep 5/85
		PRR 32131	Dec 5/85
		PRR 32494-8	Jun 5/88
		PRR 34401	Jun 5/88
		PRR 34509-1	Jun 5/89
32-1224			Sep 5/89
32A1224, Rev 1			Jun 5/90
32A1224, Rev 2		PRR 34875	Sep 5/91
	32-20		Sep 5/91
32-1217			Sep 5/91
		PRR 34939	Mar 5/93
32-1217, Rev 3		PRR 35005-91	Dec 1/94
		MC 3210MP3006	Mar 1/95
32A1355		PRR 35005-245RS	Mar 1/03
32A1355, Rev 2			Jul 1/09

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
	32-16-31			19	Sep 5/92		44B	Dec 1/96
*	T-1	Jul 1/09		20	Jul 1/99		45	Nov 1/99
	T-2	BLANK		21	Nov 1/07		46	Mar 1/01
*	LEP-1	Jul 1/09		22	Dec 5/93		46A	Nov 1/99
	LEP-2	BLANK		22A	Mar 1/00		46B	Jul 1/99
	T/C-1	Mar 1/03		22B	BLANK		47	Jul 1/98
	T/C-2	BLANK		23	Sep 5/93		48	Mar 5/89
*	1	Jul 1/09		24	Dec 5/93		49	Mar 5/93
*	2	Jul 1/09		24A	Nov 1/02		50	BLANK
	3	Mar 1/03		24B	Dec 5/93		51	Jul 1/01
*	4	Jul 1/09		24C	Dec 5/93		52	Jul 1/01
*	4A	Jul 1/09		24D	Dec 5/93		53	Jul 1/99
	4B	Mar 1/03		25	Mar 1/01		54	Nov 1/00
	5	Mar 1/03		26	Jul 1/08		55	Mar 1/03
	6	Mar 1/03		26A	Mar 1/08		56	BLANK
	6A	Mar 1/03		26B	Jul 1/08			
	6B	BLANK		27	Mar 1/94			
	7	Jul 1/04		28	Sep 5/93			
	8	Mar 1/99		29	Jul 1/03			
	8A	Jul 1/04		30	Nov 1/02			
	8B	Jun 1/96		31	Nov 1/03			
*	8C	Jul 1/09		32	Nov 1/03			
	8D	BLANK		32A	Jul 1/04			
*	9	Jul 1/09		32B	Nov 1/03			
*	10	Jul 1/09		32C	Dec 1/94			
	10A	Mar 1/99		32D	BLANK			
*	10B	Jul 1/09		33	Mar 1/00			
	11	BLANK		34	Dec 1/94			
	12	Mar 1/97		35	Nov 1/03			
	12A	Nov 1/03		36	Mar 5/93			
	12B	Nov 1/03		37	Mar 5/93			
	12C	Dec 1/97		38	Jun 1/95			
	12D	BLANK		39	Mar 1/09			
	13	Nov 1/06		40	Mar 1/09			
	14	Dec 5/93		40A	Mar 1/09			
	15	Dec 5/93		40B	Mar 1/09			
	16	Dec 5/93		40C	Mar 1/09			
	16A	Nov 1/05		40D	BLANK			
	16B	Dec 5/93		41	Mar 1/09			
	17	Mar 1/94		42	Mar 1/09			
	18	Mar 1/94		43	Mar 1/09			
	18A	BLANK		44	Nov 1/00			
	18B	Sep 5/92		44A	Dec 1/96			

TABLE OF CONTENTS

NOTE: This manual contains overhaul data for some of the components of the main landing gear installation. Overhaul functions which cannot be done by standard industry practices are included in the individual section for each component.

MAIN GEAR MINOR COMPONENTS

1. DESCRIPTION AND OPERATION

   A. This subject is about some individual installation parts of the main gear which become operational when installed on the airplane.

2. INSPECTION/CHECK

   A. Examine all parts for defects with standard industry practices. Refer to Fits and Clearances tables for design dimensions and wear limits.

3. REPAIR

   A. Repair small defects by standard industry practices.

   B. Refer to SOPM 20-10-01 and CMM 32-00-05 for repair and refinish of high strength steel parts.

   C. Refer to SOPM 20-30-02 for stripping of protective finishes. Refer to SOPM 20-41-01 for the decoding table for Boeing finish codes.

4. Reserved.

5. ACTUATOR BEAM ASSEMBLY (65-46108-1, -3, -6, -12, -14, -15, -17, -19, -21, -23) (Fig. 3)

NOTE: Beam assemblies 65-46108-3 and on are serialized.

A. Inspection/Check

(1) Magnetic particle examine (SOPM 20-20-01) beam (4).

(2) Refer to SB 32A1355 for inspection details.

B. Repair (Fig. 1)

(1) Lug Faces (Dimensions 1, 2A)

(a) Machine the lug faces as required, within repair limits, to remove defects. A maximum of 0.030 inch can be removed from each lug (inner or outer faces or both).

(b) Build up the outside faces with sulfamate nickel plate except for the final 0.003-0.005 inch. Then apply a chrome plate buildup of 0.003-0.005 inch to get back to design dimension 1. Or, if the outside faces are within the applicable larger limit, apply nickel plate, 0.005 inch minimum thickness, to give protection from corrosion.

(c) If the inside faces were machined, make bushings with thicker flanges per Fig. 1A to make allowance for material removed. Install the bushings per par. D.(1).

(2) Bores for bushings (2) (Dimension 3A)

(a) Remove the old bushings. Machine the bores as required, within repair limits, to remove defects.

(b) Make oversize bushings per Fig. 1A.

(c) Install the bushings per par. D.(1).

(3) Bore for bearing (3) (Dimension 4A)

(a) Remove the old bearing.

(b) Machine the bore as required, within repair limits, to remove defects.

(c) Make a repair sleeve per Fig. 1A.

(d) Install the repair sleeve by the shrink fit method (SOPM 20-50-03). Make sure the sleeve ends are an equal amount above each face of the lug. Then roller swage the sleeve (SOPM 20-50-03).

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

(f) Machine the ID of the repair sleeve to the hole design diameter and finish. Chamfer the bore ends as shown.

(g) With the lube bore in beam (4) as a pilot, drill a hole thru the wall of the sleeve to open the lube passage for the bearing.

(h) Install a replacement bearing (3) per par. D.(2).

C. Refinish -- See Fig. 1.

D. Replacement (Fig. 3)

(1) Bushings (2) (Fig. 1)

(a) Remove the old bushings.

(b) Install replacement bushings by the shrink fit method (SOPM 20-50-03). For better corrosion resistance, we recommend you use BMS 3-27 or BMS 3-38 corrosion preventive compound as the installation finish.

(c) Machine the bushing ID to design dimensions and finish.

(d) Seal the bushings as shown.

(2) Bearing (3)

(a) Remove the old bearing.

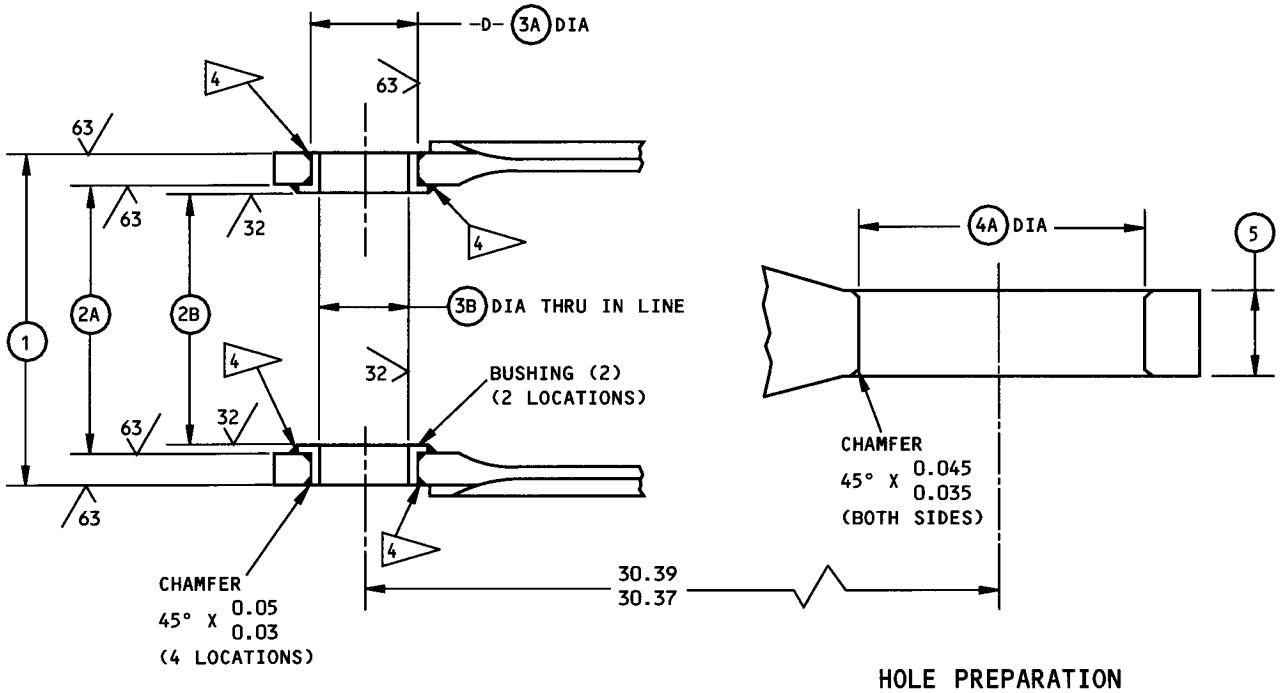
CAUTION: BEFORE YOU INSTALL THE BEARING, MAKE SURE ITS LUBE PASSAGE IS ALIGNED WITH THE MATING LUBE BORE IN THE BEAM HOLE.

(b) Apply grease to the mating surfaces of the bearing and the beam. Align the bearing lube passage with the lube passage in the beam and press the bearing into the beam.

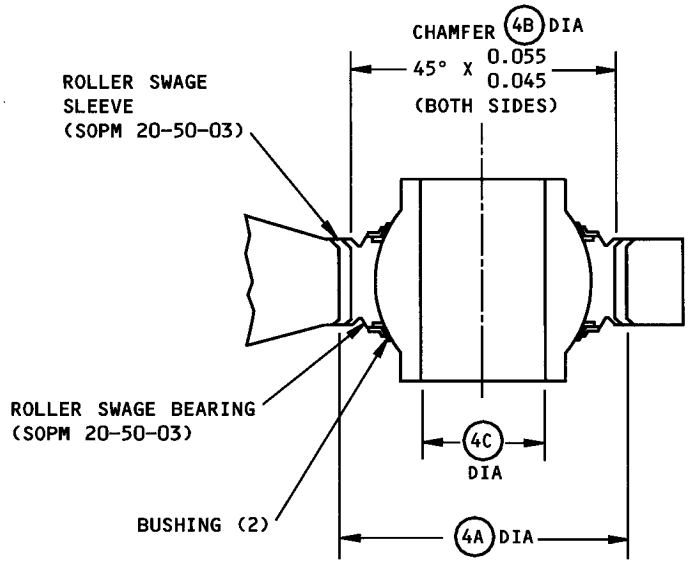
(c) Lubricate the bearing groove and the swaging tool with grease and roller swage the bearing (SOPM 20-50-03).

(d) After bearing installation, lubricate the bearing with grease at the lube fitting to be sure the lube passage is clear.

(3) Lube fitting (5) -- Replace per CMM 32-00-03. Be sure to turn the lube fitting to the position as shown in Fig. 3.



HOLE PREPARATION



INSTALLATION OF
REPAIR SLEEVE
AND BEARING

65-46108

Actuator Beam Repair and Refinish
Figure 1 (Sheet 1)

F14065

	(1)	(2A)	(2B)	(3A)	(3B)	(4A)	(4B)	(4C)	(5)
DESIGN DIM	5.605 5.595	4.605 4.595	4.480 4.475	1.626 1.625	1.501 1.500	2.3753 2.3748	2.3753 2.3748 3	1.2500 1.2495	1.125 1.120
REPAIR LIMIT	5.535 5 7 5.575 8 9	4.635 6 7	---	1.686 1	---	2.536 2	---	---	---

REFINISH

CADMIUM-TITANIUM PLATE (F-15.01) ALL OVER, INCLUDING HOLES (BUT NOT IN HOLE FOR LUBE FITTING).

65-46108-2,-4,-5,-7 (PRE SB 32A1355): APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02) IN HOLES FOR BUSHINGS, 0.0005 MAX THICK. AFTER INSTL OF BUSHINGS, BEARING AND LUBE FITTING, APPLY BMS 10-11, TYPE 1 PRIMER (SRF-12.205 OR F-20.02) AND BMS 10-11, TYPE 2 ENAMEL (SRF-12.63 OR F-21.02) BUT NOT ON BUSHINGS, BEARING, OR LUBE FITTING.

65-46108-16,-18,-20,-22 AND UNITS POST SB 32A1355: APPLY BMS 10-79 TYPE 3 PRIMER (F-19.66) ALL OVER. AFTER INSTALLATION OF BUSHINGS, BEARING AND LUBE FITTING, APPLY BMS 10-60, TYPE 2 ENAMEL (F-20.56-707) BUT NOT ON BUSHINGS, BEARINGS OR LUBE FITTING.

REPAIR

REF 1 2 5 THRU 9

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN (SOPM 20-10-03):
0.017-0.046 SHOT SIZE
0.010-0.016 A2 INTENSITY

MATERIAL: 4340M STEEL, 270-300 KSI

ALL DIMENSIONS ARE IN INCHES

1 LIMIT FOR INSTL OF OVERSIZE BUSHING (FIG. 1A)

2 LIMIT FOR INSTL OF REPAIR SLEEVE (FIG. 1A)

3 FINISH DIA OF REPAIR SLEEVE AFTER INSTL

4 SEAL BUSHINGS AS SHOWN WITH BMS 5-95 SEALANT

5 LIMIT FOR SULFAMATE NICKEL BUILDUP (SOPM 20-42-09) FOLLOWED BY 0.003-0.005 FINAL CHROME PLATE BUILDUP (SOPM 20-42-03)

6 LIMIT FOR INSTL OF BUSHING WITH THICKER FLANGE (FIG. 1A)

7 MAX MATERIAL REMOVAL 0.030 FROM EACH LUG USING EITHER OR BOTH REPAIRS PER 5 6

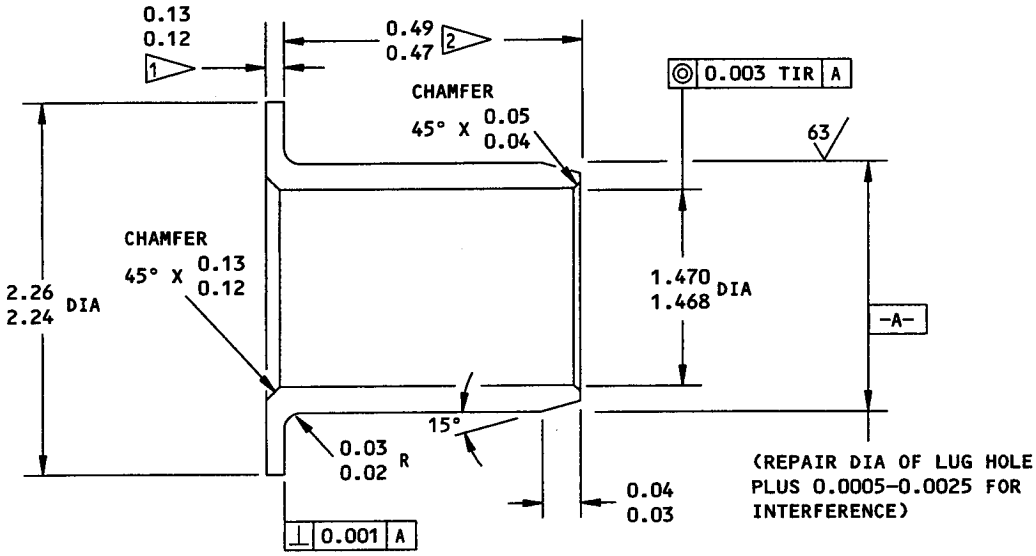
8 SULFAMATE NICKEL PLATE, 0.005 MINIMUM THICKNESS, THESE FACES (SOPM 20-42-09) TO HELP PREVENT CORROSION.

9 RESTORATION TO DESIGN DIMENSIONS NOT REQUIRED.

65-46108

Actuator Beam Repair and Refinish
Figure 1 (Sheet 2)

F12837



125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: 17-4PH CRES, 180-200 KSI

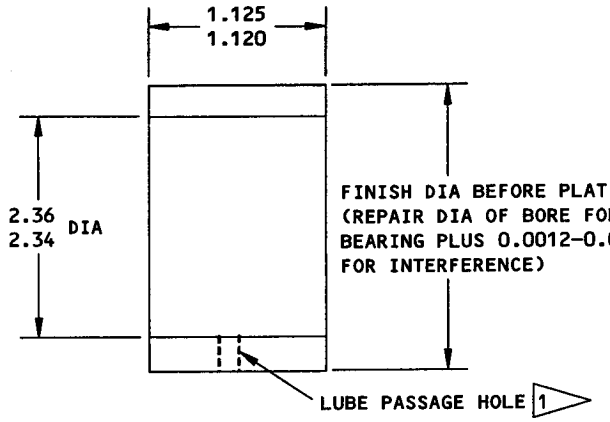
BREAK SHARP EDGES

CADMIUM PLATE (SOPM 20-42-05)

1 PLUS AMOUNT REMOVED FROM LUG FACE

2 MINUS AMOUNT REMOVED FROM LUG FACE

HOLE LOCATION (3A) FIG. 1 - REPLACES BUSHING (2) 65-46150-48



125 MACHINE FINISH

MATERIAL: AL-NI-BRZ PER AMS 4640 OR 4880, OR 17-4PH, 180-200 KSI

BREAK SHARP EDGES 0.01-0.02 R

CADMIUM PLATE (SOPM 20-42-05)

HOLE LOCATION (4A) FIG. 1 - REPAIR SLEEVE

1 THIS HOLE IS MADE AFTER SLEEVE INSTALLATION. REFER TO PAR. 5.B.(3)(g).

Oversize Bushing and Repair Sleeve Details
Figure 1A

F12815

(4) Rub Strip (6) -- Bond (SOPM 20-50-12), Type 70 (65-46108-1, -3, -12, -15, -17, -19 only).

NOTE: This rub strip is always installed on the aft side of the actuator beam to protect hydraulic tubing. But the aft side could be one side of the beam or the other, because the actuator beam can be installed on one side or the other of the aircraft. If you know which side of the beam will be the aft side, then install the rub strip per step (4) above. If you do not know which side will be aft, then install the rub strip when you install the beam on the airplane, per MM 32-32-11.

		Design Dimensions				Service Wear Limits		
Ref Letter Fig. 3	Mating Item No. Fig. 3	Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inch)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
A	ID 2 OD *[1]	1.5000 1.4970	1.5010 1.4990	0.0010	0.0040	1.4960	1.5030	0.0060
B	ID 4 OD 3	2.3748 2.3745	2.3753 2.3750	-0.0002	0.0008		2.3780	0.0050
C	ID 3 OD *[2]	1.2495 1.2480	1.2500 1.2490	0.0005	0.0020	1.2470	1.2520	0.0050
C	ID 3 OD *[3]	1.2495 1.2475	1.2500 1.2490	0.0005	0.0025	1.2470	*[4]	0.0050 *[4]

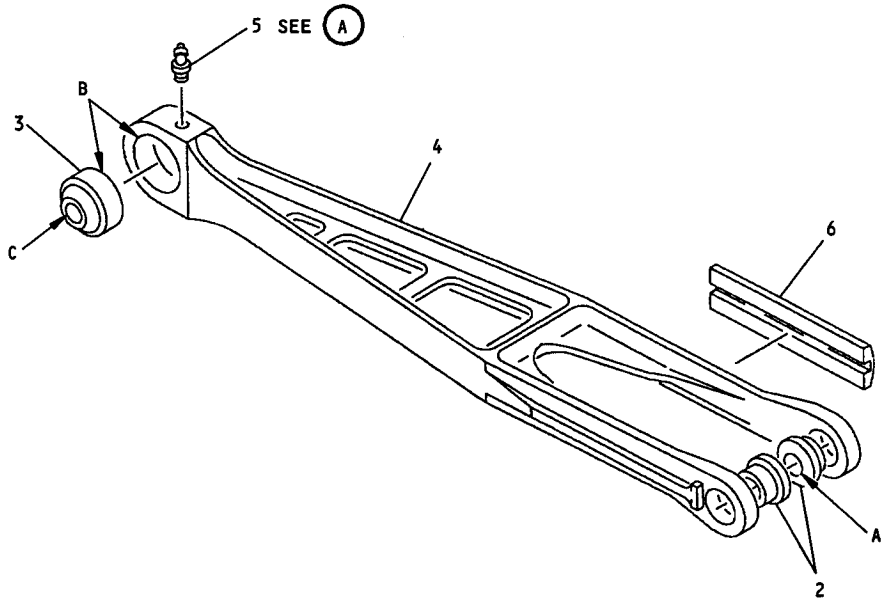
*[1] Outboard actuator beam bolt 69-39464 series (Ref par. 7)

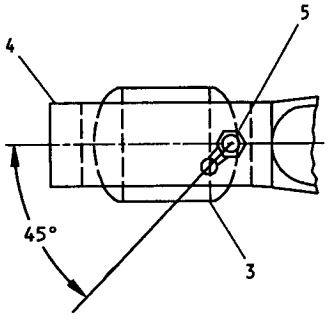
*[2] Inboard actuator beam bolt 69-42199-1 (Ref par. 7)

*[3] Installation bolt BACB30LJ20CD( ) (Ref par. 7). This bolt at this location is a non-serialized life-limited part. You must discard it and replace it with a new bolt at each overhaul, or give the bolt a serial number and use it with the life limit recommendations of Service Letter 737-SL-32-18.

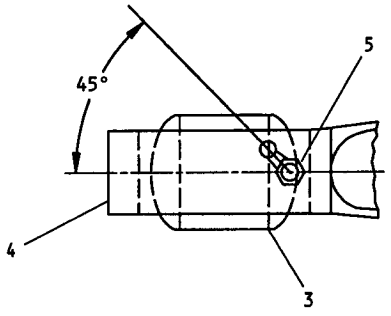
*[4] For this location, the total diametrical clearance between the bearing race, the bearing ball, and the bolt must be less than the specified maximum allowable clearance.

F. Illustrated Parts List





65-46108-3,-6,-17,-21



65-46108-12,-14,-19,-23

LUBE FITTING POSITION

(A)

Actuator Beam Assembly
Figure 3

E92389

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
3-					
1	65-46108-1		BEAM ASSY, ACTUATOR *[1]*[2]	A	RF
1	65-46108-3		BEAM ASSY, ACTUATOR (SB 32-1084)*[2]	B	RF
1	65-46108-6		BEAM ASSY, ACTUATOR *[2]	C	RF
1	65-46108-12		BEAM ASSY, ACTUATOR *[2]	D	RF
1	65-46108-14		BEAM ASSY, ACTUATOR *[2]	E	RF
1	65-46108-15		BEAM ASSY, ACTUATOR *[3]	F	RF
1	65-46108-17		BEAM ASSY, ACTUATOR *[3]	G	RF
1	65-46108-19		BEAM ASSY, ACTUATOR *[3]	H	RF
1	65-46108-21		BEAM ASSY, ACTUATOR *[3]	I	RF
1	65-46108-23		BEAM ASSY, ACTUATOR *[3]	J	RF
2	65-46150-48		. BUSHING		2
3	ABWT20V101		. BEARING, VS0352 (BOEING 10-60545-146S)	AF	1
3	NHSB20V8		. BEARING, V15860 (BOEING 10-60545-146S)	AF	1
3	SBSH40ATC76		. BEARING, V21335 (BOEING 10-60545-146S)	AF	1
3	WRG20BACH		. BEARING, V73134 (BOEING 10-60545-146S)	AF	1
3	KWB20N13		. BEARING, V97613 (BOEING 10-60545-146S)	AF	1
3	YTA175F		. BEARING, V77896 (BOEING 10-60545-146S)	AF	1
3	BLFR20-064		. BEARING, V81376 (BOEING 10-60545-146S)	AF	1
3	176184		. BEARING, V09455 (BOEING 10-60545-146S)	AF	1
3	ABW20V103		. BEARING, VS0352 (BOEING 10-61903-5)	B-E G-J	1
3	AGB20V6		. BEARING, V15860 (BOEING 10-61903-5)	B-E G-J	1
3	BDS20H121		. BEARING, V16746 (BOEING 10-61903-5)	B-E G-J	1
3	03-526-20E001		. BEARING, V09455 (BOEING 10-61903-5)	B-E G-J	1
4	65-46108-2		. BEAM	A	1
4	65-46108-4		. BEAM	BD	1
4	65-46108-5		. BEAM (OPT)	BD	1
4	65-46108-7		. BEAM	CE	1
4	65-46108-16		. BEAM	F	1
4	65-46108-18		. BEAM	GH	1
4	65-46108-20		. BEAM (OPT)	GH	1
4	65-46108-22		. BEAM	IJ	1
5	1646B		. FITTING, LUBE	B-E G-J	1
6	66-22835-1		. STRIP, RUB (LIMITED)	ABDFGH	1

*[1] THE 65-46108-1 BEAM ASSY WAS NOT SERIALIZED, BUT WE RECOMMEND YOU GIVE IT A SERIAL NUMBER.
*[2] PRE SB 32A1355
*[3] POST SB 32A1355

6. ACTUATOR BEAM SUPPORT LINK ASSEMBLY (65-46112-9, -13, -16, -19, -22, -24, -26, -30, -31) (Fig. 6)

A. Penetrant examine link (6) per SOPM 20-20-02.

B. Repair (Fig. 4)

(1) Bores for bushings (2, 3)

(a) Remove the old bushings.

(b) Machine the bore as required, within repair limits, to remove defects.

1) Shot peen the bore as indicated.

2) Chemical treat and apply primer, BMS 10-11, Type 1.

(c) Method 1 -- Installation of repair sleeve and standard bushings

1) Make a repair sleeve per Fig. 4A.

2) Install the sleeve by the shrink fit method per SOPM 20-50-03.

3) Swage the sleeve into a 0.050 in. x 45 degree chamfer.

4) Install new bushings per par. 6.D.

(d) Method 2 -- Installation of oversize bushings

1) Get the repair equivalents of bushings (2 or 3) as applicable for the amount of oversize.

2) Machine the OD of the bushing as necessary to get 0.0011-0.0029 inch interference with the repair diameter of the hole. Make a check of the face-to-face dimension, and machine the underside of the bushing flange as necessary to get the assembly design dimensions. Be sure to restore the chamfer and fillet radius of the OD to 0.01-0.03 inch.

3) Install the bushings per par. 6.D.

(2) Web of link (6)

(a) To remove damage in the cross hatch area shown, drill a 0.98-1.00 inch diameter hole centrally located through the web.

(b) Radius the hole edge 0.04-0.06 inch.

(c) Shot peen the reworked area as indicated.

(d) Refinish as indicated.

C. Refinish -- See Fig. 4

D. Replacement (Fig. 4)

(1) Bushings (2, 3)

(a) Remove the old bushings.

(b) If you find defects on lug holes, refer to par. B.(1) above for repair instructions.

(c) Install replacement bushings by the shrink fit method per SOPM 20-50-03, with wet sealant BMS 5-95 on mating surfaces. (Bushing bores do not require machining after installation).

(d) Seal bushing edges with BMS 5-95 sealant.

(2) Marker (5) -- Remove the old marker. Install a new marker per SOPM 20-50-05.

(3) Rub strips (4)

(a) Remove the old rub strips. Bond new rub strips in position with Type 70 or 44 adhesive per SOPM 20-50-12, with bond thickness 0.02 inch minimum.

(b) Seal the edges of the rub strips with Type 41 clear finish per SOPM 20-44-01.

E. Materials

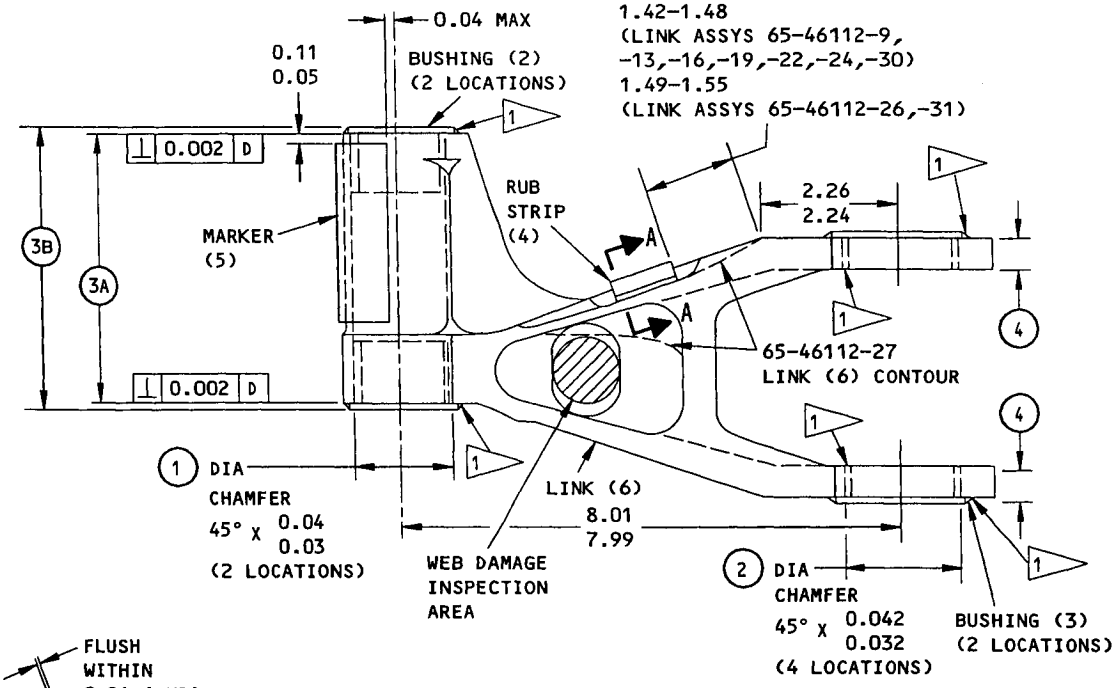
NOTE: Equivalent substitutes can be used.

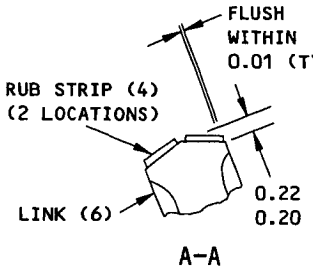
(1) Primer -- BMS 10-11, type 1 (Ref SOPM 20-60-02)

(2) Enamel -- BMS 10-11, type 2 (Ref SOPM 20-60-02)

(3) Protective finish, BMS 3-11 fluid resistant -- Type 41 (Ref SOPM 20-60-02)

(4) Sealant -- BMS 5-95 (Ref SOPM 20-60-04)





	1 (2)	1 (3)	2	3A	3B	4
DESIGN DIM	1.5010 1.5000	1.5022 1.5012	1.8760 1.8750	4.365 4.355	4.525 4.495	0.530 0.510
REPAIR LIMIT	1.598 (4) 1.582 (5)	1.598 (4) 1.582 (5)	1.955 (4) 1.938 (5)	4.325 (5)	—	0.490 (5)

REFINISH

CHEMICAL TREAT OR CHROMIC ACID ANODIZE AND APPLY BMS 10-11, TYPE 1 PRIMER (SRF-2.30 OR F-18.04 OR F-18.13).

AFTER BUSHING INSTALLATION APPLY BMS 10-11, TYPE 2 ENAMEL (SRF-12.63 OR F-21.02) ALL OVER EXCEPT ON BUSHINGS.

(1) SEAL BUSHINGS AS SHOWN WITH BMS 5-95 SEALANT.

(2) LINKS 65-46112-10,-15,-20

(3) LINKS 65-46112-23,-25,-27,-28,-29

(4) LIMIT FOR INSTALLATION OF REPAIR SLEEVE (FIG. 4A)

(5) LIMIT FOR INSTALLATION OF OVERSIZE BUSHINGS

REPAIR

REF (4) (5)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

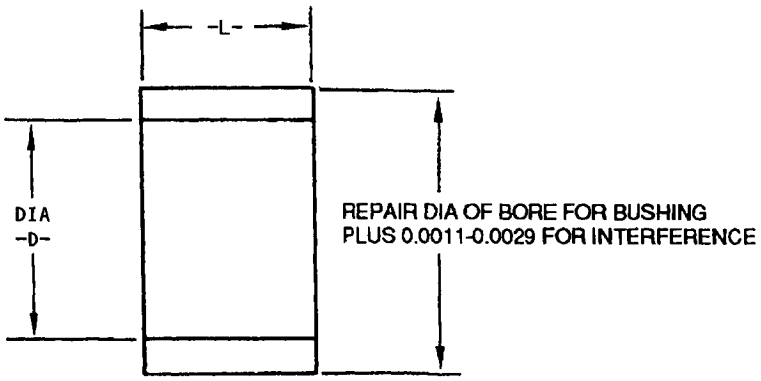
SHOT PEEN (REF SOPM 20-10-03):
0.023-0.028 SHOT SIZE
0.010 A2 INTENSITY

MATERIAL: AL ALLOY
ITEM NUMBERS REFER TO FIG. 6.

ALL DIMENSIONS ARE IN INCHES.

65-46112
Actuator Beam Support Link Repair and Refinish
Figure 4

E88729



125 MACHINE FINISH
MATERIAL: AL-NI-BRZ PER AMS 4640 OR 4880
BREAK SHARP EDGES 0.01-0.02 R

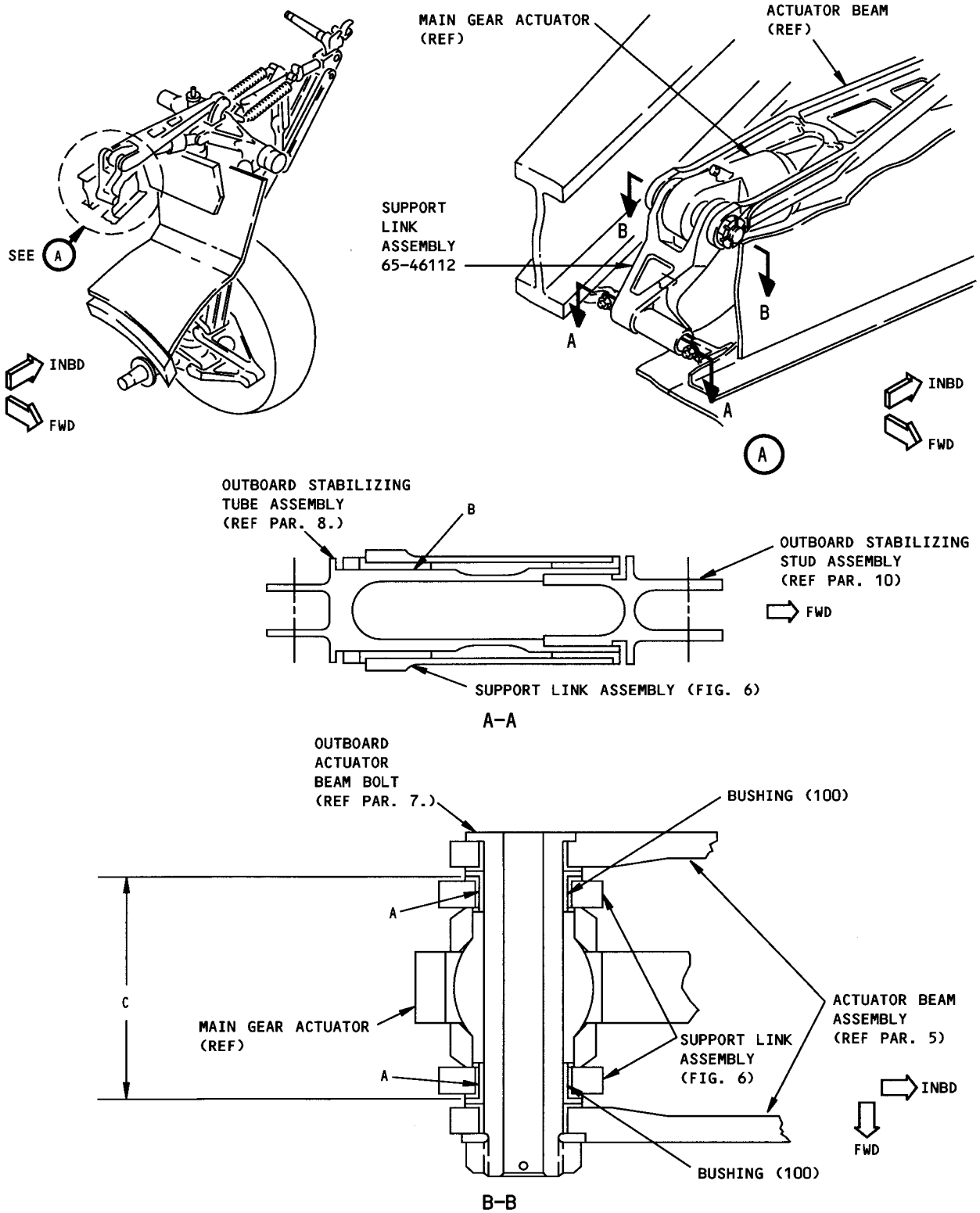
FOR LINK (6)	HOLE LOCATION FIG. 4	-D-	-L-
1	(1)	1.5010 1.5000	1.030 1.000
2	(1)	1.5022 1.5012	1.030 1.000
ALL	(2)	1.8760 1.8750	0.51 0.50

1 LINKS 65-46112-10,-15,-20
2 LINKS 65-46112-23,-25,-27,-28,-29

Repair Sleeve Details
Figure 4A

E88695

E. Fits and Clearances (Fig. 5)



Fits and Clearances
Figure 5 (Sheet 1)

E89439

Ref Letter Fig. 5	Mating Item No. Fig. 6	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 3	1.688	1.689	0.002	0.005		1.691	0.008
	OD 100	1.684	1.686			1.683		
B	ID 2 *[3]	1.3000	1.3010	0.0000	0.0025		1.3030	0.0050
	OD *[2]	1.2985	1.3000			1.2975		
B	ID 2 *[4]	1.3010	1.3020	0.0010	0.0035		1.3030	0.0050
	OD *[2]	1.2985	1.3000			1.2975		
C	*[5] 100 *[1]	4.295	4.306	0.002	0.024		4.311	0.035
	*[6] 3	4.282	4.293			4.276		
C	*[5] 100 *[7]	4.305	4.316	0.012	0.034		4.321	0.045
	*[6] 3	4.282	4.293			4.276		

*[1] Bushing 69-41621-1

*[2] Outboard stabilizing tube assy 69-37876-1, 69-61946-1 or 69-77044-1 (Ref par. 8)

*[3] Bushing 10-60516-224

*[4] Bushing 10-60516-278 or KJB442121B1

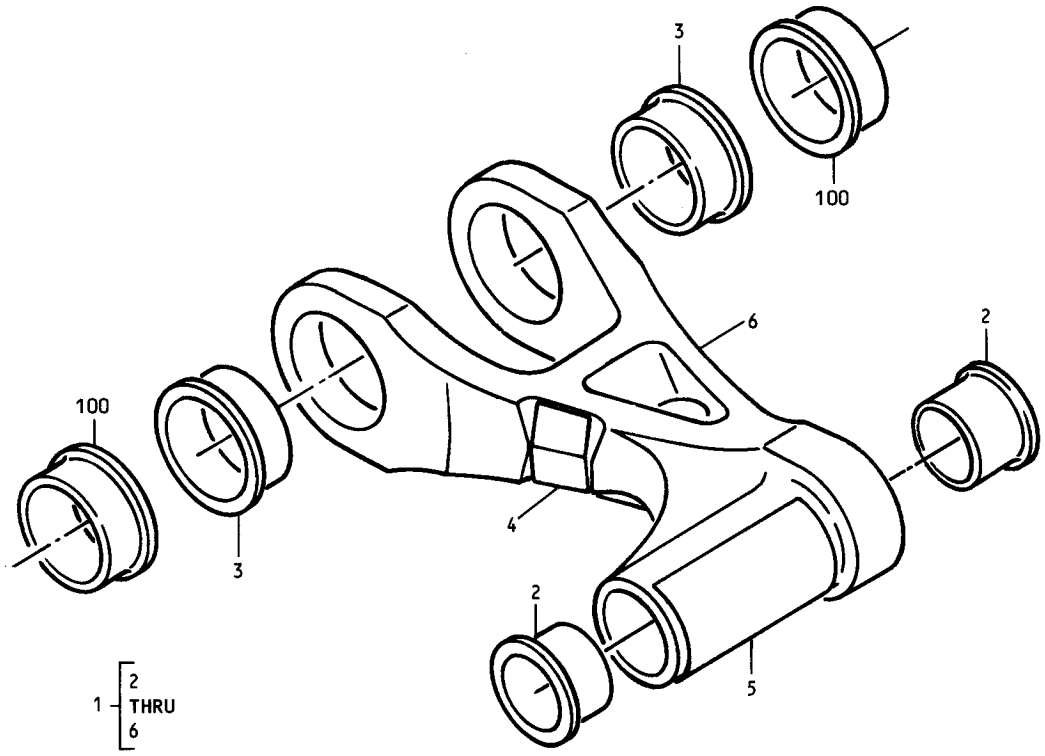
*[5] Dimension between inner flange faces

*[6] Dimension across flange faces

*[7] Bushing 69-41621-2

Fits and Clearances
Figure 5 (Sheet 2)

F. Illustrated Parts List



Actuator Beam Support Link Assembly
Figure 6

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
6-					
1	65-46112-9		LINK ASSY, ACTUATOR BEAM SUPPORT	A	RF
1	65-46112-13		LINK ASSY, ACTUATOR BEAM SUPPORT	B	RF
1	65-46112-16		LINK ASSY, ACTUATOR BEAM SUPPORT	C	RF
1	65-46112-19		LINK ASSY, ACTUATOR BEAM SUPPORT	D	RF
1	65-46112-22		LINK ASSY, ACTUATOR BEAM SUPPORT	E	RF
1	65-46112-24		LINK ASSY, ACTUATOR BEAM SUPPORT	F	RF
1	65-46112-26		LINK ASSY, ACTUATOR BEAM SUPPORT	G	RF
1	65-46112-30		LINK ASSY, ACTUATOR BEAM SUPPORT	H	RF
1	65-46112-31		LINK ASSY, ACTUATOR BEAM SUPPORT	I	RF

1850183

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
6-					
2	90526		. BUSHING, V09455 (BOEING 10-60516-224)	A-G	2
2	FBJW42TF48-32		. BUSHING, V21335 (BOEING 10-60516-224)	A-G	2
2	YTS579		. BUSHING, V77896 (BOEING 10-60516-224)	A-G	2
2	DBAF21-001		. BUSHING, V81376 (BOEING 10-60516-224)	A-G	2
2	KJN21-3		. BUSHING, V97613 (BOEING 10-60516-224)	A-G	2
2	NHLF21-201A		. BUSHING, V15860 (BOEING 10-60516-224)	A-G	2
2	FBR21A33BA		. BUSHING, V73134 (BOEING 10-60516-224)	A-G	2
2	AJF21A101		. BUSHING, V50294 (BOEING 10-60516-224)	A-G	2
2	ADLF21-4001		. BUSHING, V15860 (BOEING 10-60516-278)(OPT)		2
2	KJB442121B1		. BUSHING, V50632 (OPT)	A-G	2
2	KJB442121B1		. BUSHING, V50632	HI	2
2	KJB442121B2		. BUSHING, V50632 (0.03 OVERSIZE OD) (REPAIR PART)		AR
2	KJB442121B3		. BUSHING, V50632 (0.06 OVERSIZE OD) (REPAIR PART)		AR
3	90594		. BUSHING, V09455 (BOEING 10-60516-254) *[1]		2
3	FBJW54TF60-16		. BUSHING, V21335 (BOEING 10-60516-254) *[1]		2
3	YTS592		. BUSHING, V77896 (BOEING 10-60516-254) *[1]		2
3	DBAF27-006		. BUSHING, V81376 (BOEING 10-60516-254) *[1]		2
3	KJN27-1		. BUSHING, V97613 (BOEING 10-60516-254) *[1]		2
3	NHLF27-201A		. BUSHING, V15860 (BOEING 10-60516-254) *[1]		2
3	FBR27A16BA		. BUSHING, V73134 (BOEING 10-60516-254) *[1]		2
3	AJF27A101		. BUSHING, V50294 (BOEING 10-60516-254) *[1]		2
3	KJB424027B1		. BUSHING, V50632 (OPT)	A-G	2
3	KJB424027B1		. BUSHING, V50632	HI	2
3	KJB424027B2		. BUSHING, V50632 (0.03 OVERSIZE OD) (REPAIR PART)		AR
3	KJB424027B3		. BUSHING, V50632 (0.06 OVERSIZE OD) (REPAIR PART)		AR

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
6-					
4	65-46112-14		. STRIP, RUB	B-I	2
5	BAC27DLG51		. MARKER, FOIL	CDEH	1
6	65-46112-10		. LINK	A	1
6	65-46112-15		. LINK	BC	1
6	65-46112-20		. LINK	D	1
6	65-46112-23		. LINK	EH	1
6	65-46112-25		. LINK	F	1
6	65-46112-27		. LINK	GI	1
6	65-46112-28		. LINK (OPT)	EH	1
6	65-46112-29		. LINK (OPT)	GI	1
			INSTALLATION PARTS		
100	69-41621-1		BUSHING (OPT)		2
100	69-41621-2		BUSHING (PREF)		2

*[1] OPT ON ASSYS 65-46112-30, -31 (CODES HI)

7. ACTUATOR BEAM BOLT (69-39464-1, -2; -3; 69-42199-1 thru -5; BACB30LJ20CD43, BACB30LJ20CD46, BACB30LJ20CD48)

   A. Magnetic particle examine the 69-39464-series and 69-42199-series bolts per SOPM 20-20-01.

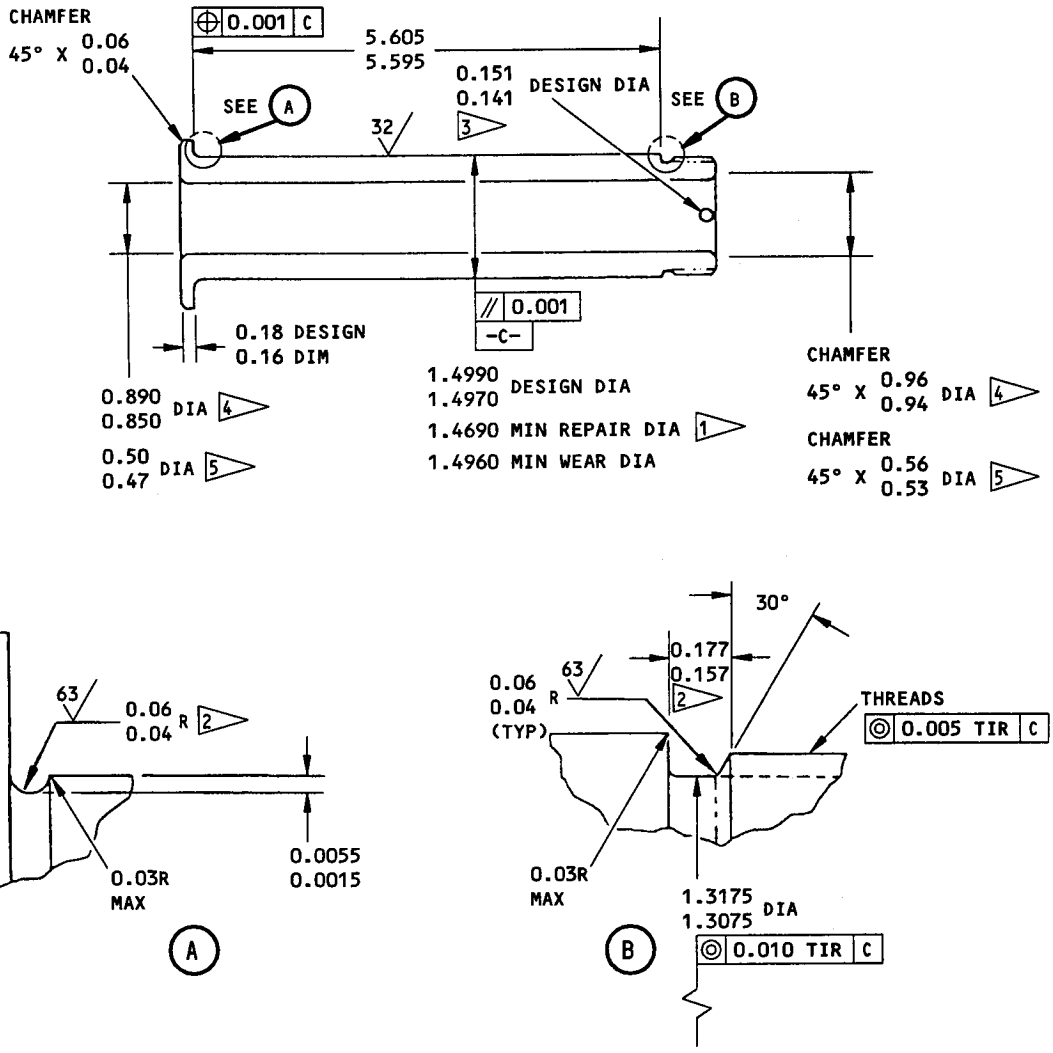
   B. Bolt shank (Fig. 7, 7B)

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

      (2) Shot peen as indicated.

      (3) Restore machined surface to design dimensions and finish as indicated. Do not chrome plate relief radii.

   C. Refinish -- See Fig. 7 thru 7C



REFINISH

CHROME PLATE (F-15.34) DIA -C-, 0.003 MIN THICK AFTER GRINDING. GRIND TO DESIGN DIMENSIONS SHOWN. PUT A 0.06 MAX PLATING RUNOUT AT EDGES AND RELIEFS. CADMIUM TITANIUM PLATE (F-15.01) ALL OTHER SURFACES. APPLY BMS 10-11, TYPE 1, PRIMER (F-20.03) TO BORE. APPLY PRIMER AS SHOWN BY 2. AFTER PLATING AND PRIMER APPLY CORROSION PREVENTIVE COMPOUND (F-19.03) TO BORE. WIPE WITH PRIMER (F-19.45) THREADS AND DIA -A-.

1. LIMIT FOR CHROME PLATE BUILDUP (REF 20-42-02) AND GRIND TO DESIGN DIMENSIONS AND FINISH. PUT A 0.06 MAX PLATING RUNOUT AT EDGES AND RELIEFS.
2. AFTER PLATING (F-15.01), APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02).

REPAIR

REF 1

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

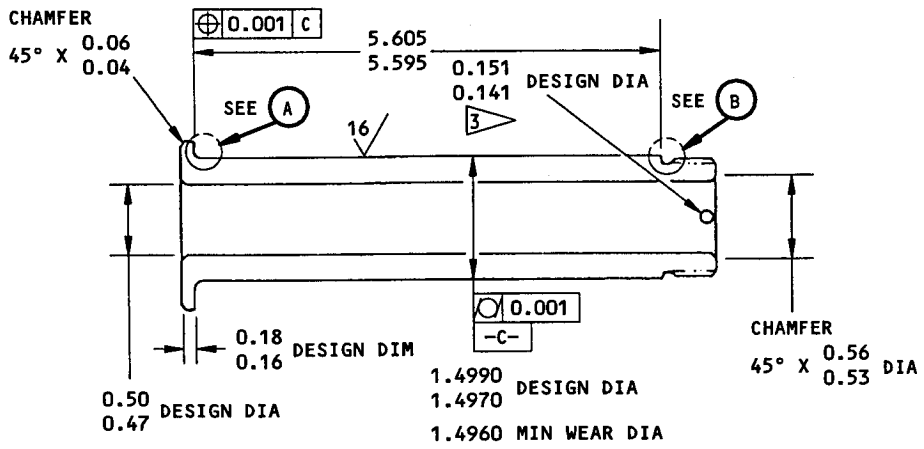
SHOT PEEN: (REF 20-10-03)
0.016-0.033 SHOT SIZE
0.009-0.015 A2 INTENSITY

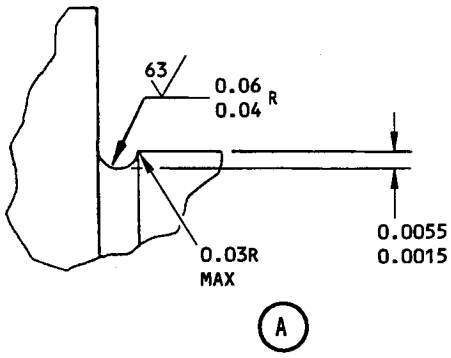
MATERIAL: 4340M STEEL (270-300 KSI)

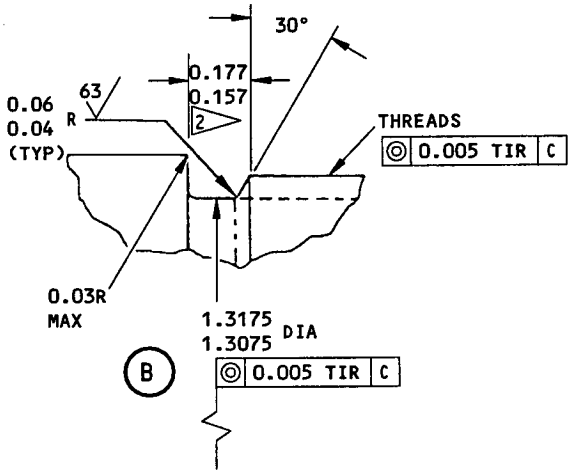
ALL DIMENSIONS ARE IN INCHES

3. CADMIUM PLATE THROW IN REQUIRED
4. 69-39464-1,-3
5. 69-39464-2,-4

69-39464-1 THRU -4
(POST SB 32A1224)
Actuator Beam Bolt Repair and Refinish
Figure 7







REFINISH

ON DIA -C-, APPLY 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. CADMIUM TITANIUM PLATE (F-15.01) ALL OTHER SURFACES. APPLY BMS 10-11, TYPE 1, PRIMER (F-20.03) TO BORE. APPLY PRIMER AS SHOWN BY 2. AFTER PLATING AND PRIMER APPLY CORROSION PREVENTIVE COMPOUND (F-19.03) TO BORE. WIPE WITH PRIMER (F-19.45) THREADS

1 RESERVED

2 AFTER PLATING (F-15.01), APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02).

3 CADMIUM PLATE THROW IN REQUIRED

REPAIR

(SAME AS REFINISH)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN: (REF 20-10-03)
0.016-0.033 SHOT SIZE
0.009-0.015 A2 INTENSITY

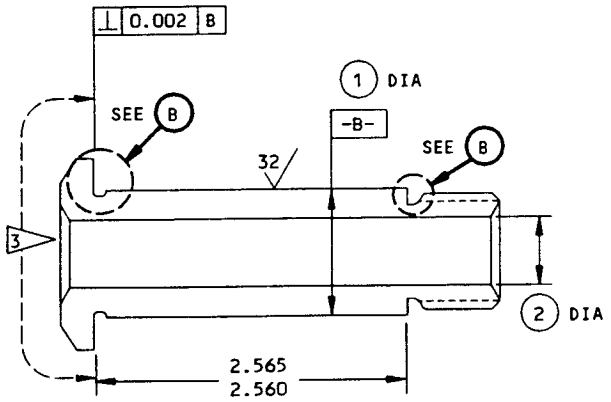
MATERIAL: 4340M STEEL (275-300 KSI)

ALL DIMENSIONS ARE IN INCHES

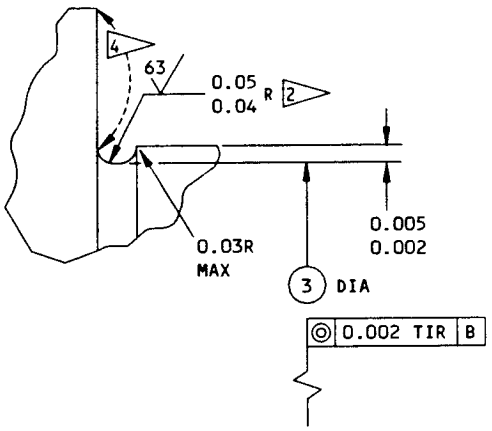
69-39464-5

Actuator Beam Bolt Repair and Refinish
Figure 7A

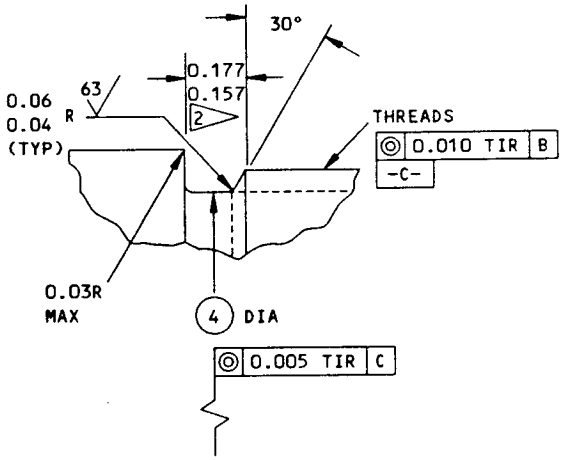
F94438



	1	2	3	4
DESIGN DIM	1.249 1.248	0.76 0.74	1.236 1.234	1.005 0.995
REPAIR LIMIT	1.228 1	----	1.210 5	----
WEAR LIMIT	1.247	----	----	----



(A)



(B)

REFINISH

CHROME PLATE (F-15.04) DIA -B-, 0.003 MIN THICK AFTER GRINDING. GRIND TO DESIGN DIMENSIONS SHOWN. PUT A 0.06 MAX PLATING RUNOUT AT EDGES AND RELIEFS.
CADMIUM TITANIUM PLATE (F-15.01) ALL OTHER SURFACES. APPLY BMS 10-11, TYPE 1, PRIMER (F-20.03) TO BORE. APPLY PRIMER AS SHOWN BY 2. AFTER PLATING AND PRIMER APPLY CORROSION PREVENTIVE COMPOUND (F-19.03) TO BORE. WIPE WITH PRIMER (F-19.45) THREADS AND CHROME PLATE.

1 LIMIT FOR CHROME PLATE BUILDUP (REF 20-42-02) AND GRIND TO DESIGN DIMENSIONS AND FINISH. PUT A 0.06 MAX PLATING RUNOUT AT EDGES AND RELIEFS.

2 AFTER PLATING (F-15.01), APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02).

REPAIR

REF 1 5

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN: (REF 20-10-03)
0.016-0.033 SHOT SIZE
0.009-0.015 A2 INTENSITY

MATERIAL: 4340M STEEL (270-300 KSI)

ALL DIMENSIONS ARE IN INCHES

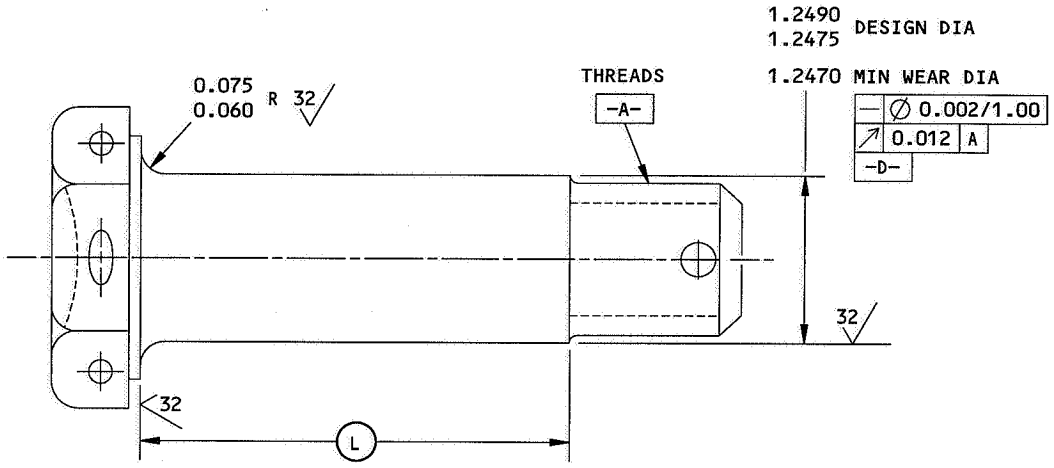
3 AFTER PLATING (F-15.01), APPLY PRIMER (F-20.02) AND ENAMEL (F-21.02) TO THESE SURFACES

4 FLASH CHROME PLATE TO 0.0003-0.0005 THICK

5 RESTORATION TO DESIGN DIMENSIONS NOT REQUIRED

69-42199-1,-2,-3
(POST SB 32A1224)
Actuator Beam Bolt Repair and Refinish
Figure 7B

F94455



PART NO.	(L)
BACB30LJ20CD43	2.6925 2.6725
BACB30LJ20CD46	2.8850 2.8650
BACB30LJ20CD48	3.0100 2.9900

REFINISH

CHROME PLATE (F-15.03) DIA -D-, 0.002 MIN THICK. PUT A 0.02-0.08 CHROME PLATE RUNOUT AT EDGES AND RADII. THEN PASSIVATE (F-17.25, WHICH REPLACES F-17.09) ALL SURFACES. WIPE THE CHROME PLATE WITH PRIMER (F-19.45).

CAUTION: THESE BOLTS ARE NON-SERIALIZED, LIFE-LIMITED PARTS AND MUST BE DISCARDED AND REPLACED WITH NEW BOLTS AT EACH OVERHAUL; OR GIVE THE BOLTS A SERIAL NUMBER AND USE THEM WITH THE LIFE LIMIT RECOMMENDATIONS OF SERVICE LETTER 737-SL-32-18.

REPAIR

(SAME AS REFINISH)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN:
0.017-0.039 SHOT SIZE
0.016 A2 INTENSITY

MATERIAL: A286 CRES PER AMS 5737 OR 5853

ALL DIMENSIONS ARE IN INCHES

BACB30LJ20CD43
BACB30LJ20CD46
BACB30LJ20CD48

Actuator Beam Bolt Repair and Refinish
Figure 7C

F94459

8. OUTBOARD STABILIZING TUBE ASSEMBLY (69-37876-1, 69-61946-1, 69-77044-1) (Fig. 11)

A. Magnetic particle examine tube (2) per 20-20-01.

B. Tube (2) Diameter -A- (Fig. 8, 8A).

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

(2) Shot peen as indicated.

(3) Build up with chrome plate per 20-42-03.

(4) Grind to design dimensions and finish.

C. Lug faces and holes (Fig. 8, 8A).

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

(2) Shot peen as indicated.

(3) Refinish repaired areas as necessary.

(4) Make oversize bushings per Fig. 9, 9A.

(5) Install the bushings per par. E.(3),(4).

D. Refinish — See Fig. 8, 8A

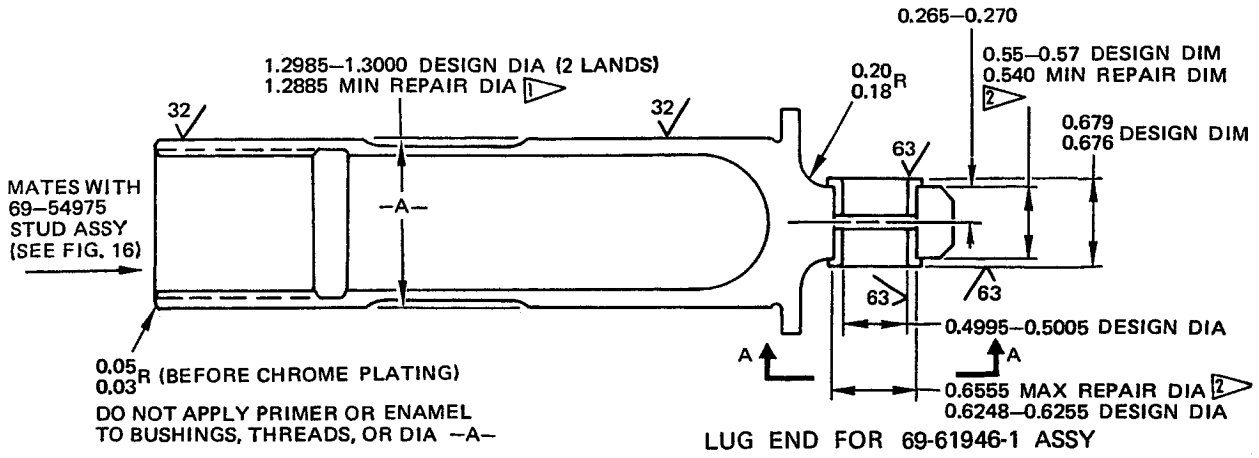
E. Bushing replacement (Fig. 8A)

(1) Remove the old bushings.

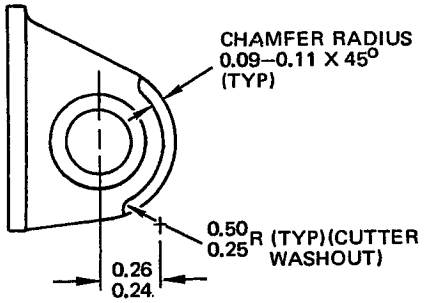
(2) If you find damage on lug faces or holes, refer to par. C. above for repair instructions.

(3) Install replacement bushings by the temperature differential method per 20-50-03.

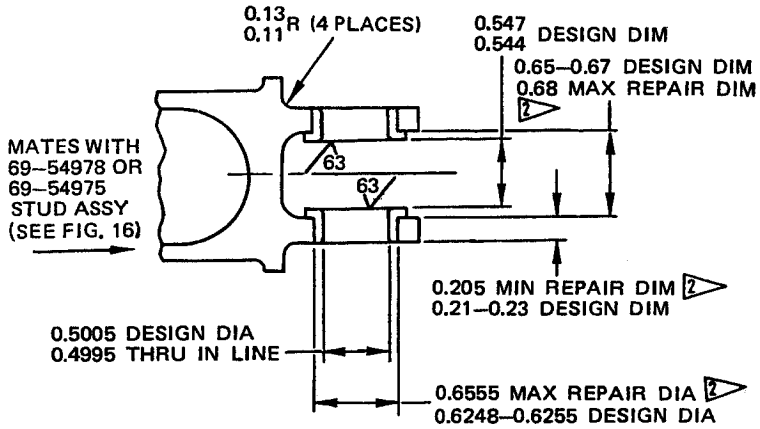
(4) Machine bushings to design dimensions and finish.



LUG END FOR 69-61946-1 ASSY



A–A



LUG END FOR 69-37876-1 ASSY

REFINISH

CHROME PLATE (F–1.843 OR F–15.04) DIA –A–. CADMIUM PLATE (F–1.1926) ALL OTHER EXTERNAL SURFACES AND THREADS, UNLESS OTHERWISE NOTED. APPLY PRIMER, BMS 10–11, TYPE 1 (SRF–12.205) AND ENAMEL, BMS 10–11, TYPE 2 (SRF–12.63) TO CADMIUM PLATED SURFACES. APPLY RUST-PREVENTIVE COMPOUND (F–1.73) TO INTERNAL SURFACES EXCEPT THREADS

REPAIR

REF 1 2

125 MACHINE FINISH EXCEPT AS NOTED

SHOT PEEN: (REF 20–10–03)
0.015–0.033 SHOT SIZE
0.009–0.015 A2 INTENSITY

MATERIAL: 433OM STEEL (180–200 KSI)

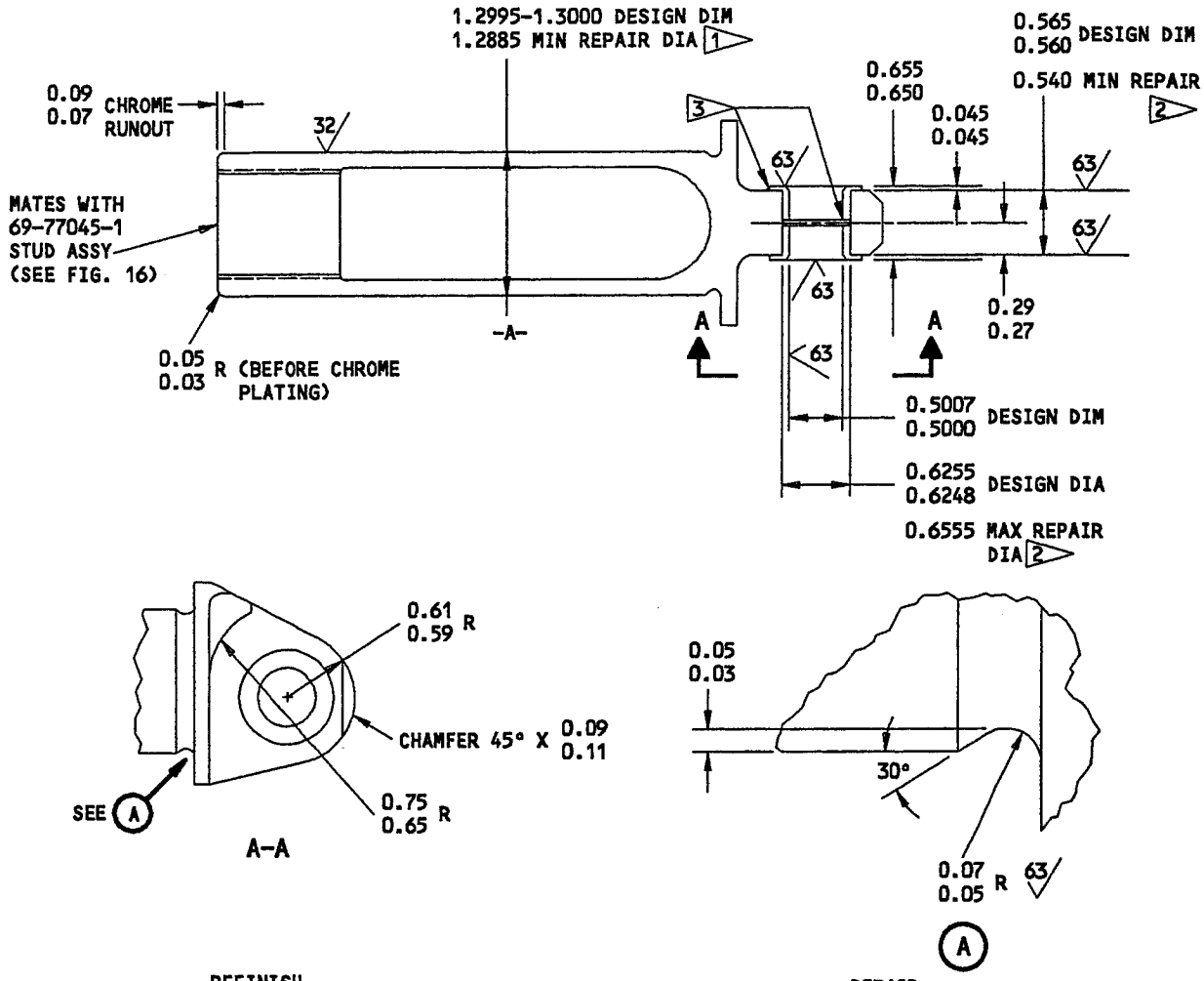
BREAK SHARP EDGES 0.01–0.03R

ALL DIMENSIONS ARE IN INCHES

1 LIMIT FOR BUILDUP WITH CHROME PLATE (REF 20–42–03) AND GRINDING TO FINISH AND DIMENSIONS SHOWN OBSERVE 0.100 PLATING RUNOUT AT EDGES AND RELIEFS

2 LIMIT FOR INSTALLATION OF OVERSIZE BUSHINGS

69–37876–1
69–61946–1



REFINISH

CHROME PLATE (F-15.04) DIA -A-. CADMIUM-TITANIUM PLATE (F-15.01) ALL OTHER SURFACES. APPLY PRIMER, BMS 10-11, TYPE 1 (F-20.02) AND ENAMEL, BMS 10-11, TYPE 2 (SRF-14-.9812), BUT NO PRIMER OR ENAMEL IN BUSHING BORES OR THREADS. APPLY CORROSION PREVENTIVE COMPOUND (F-19.03) TO INTERNAL SURFACES BUT NOT ON THREADS. WIPE THREADS AND CHROME PLATE WITH PRIMER (F-19.45)

1 LIMIT FOR BUILDUP WITH CHROME PLATE (REF 20-42-03) AND GRIND TO DESIGN DIMENSIONS AND FINISH. OBSERVE 0.100 PLATING RUNOUT AT EDGES AND RELIEFS

2 LIMIT FOR INSTALLATION OF OVERSIZE BUSHING

3 BMS 5-95 SEALANT

REPAIR

REF 1 2

125 MACHINE FINISH EXCEPT AS NOTED

SHOT PEEN: (REF 20-10-03) (NOT ON THREADS)
0.017-0.046 SHOT SIZE
0.010-0.014 A2 INTENSITY

GLASS BEAD PEEN: (THREADS ONLY)
0.0024-0.0049 SHOT SIZE
0.003-0.005 A2 INTENSITY

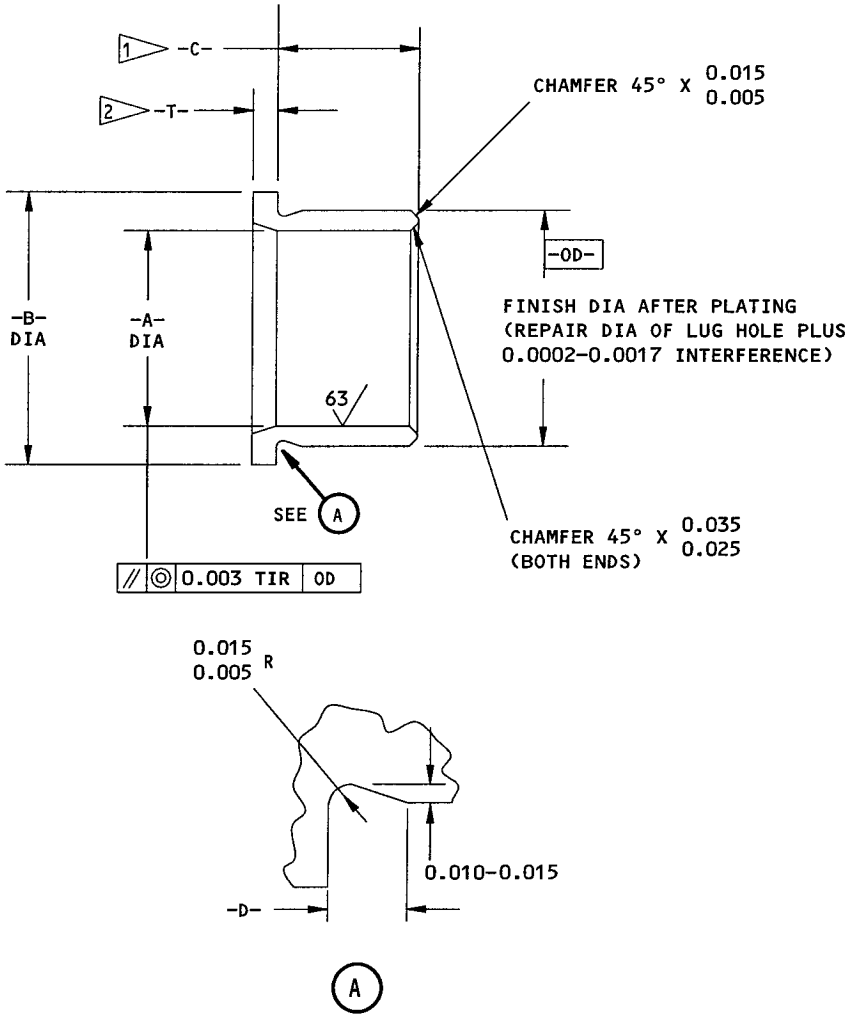
MATERIAL: 4340M STEEL (275-300 KSI)

BREAK SHARP EDGES 0.01-0.03R

ALL DIMENSIONS ARE IN INCHES

69-77044-1

Tube Assembly - Repair and Refinish
Figure 8A



REPLACES BUSHING	-A-	-B-	-C-	-D-	-T-	MATERIAL
69-37867-3	0.4910 0.4840	0.76 0.74	0.210 0.205	0.030 0.025	0.13 0.11	17-4PH (AMS 5643), (180-200 KSI)
69-37867-53	0.4910 0.4840	0.76 0.74	0.260 0.255	0.110 0.030	0.13 0.11	AL-NI-BRONZE (AMS 4640)

1 LESS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

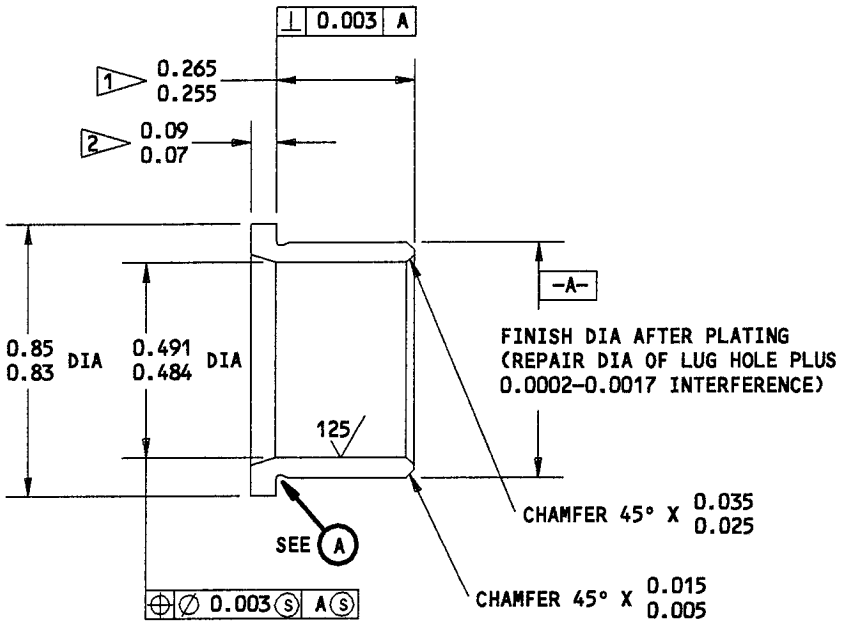
FINISH: CADMIUM PLATE (0.0003-0.0005 THICK, F-15.06)

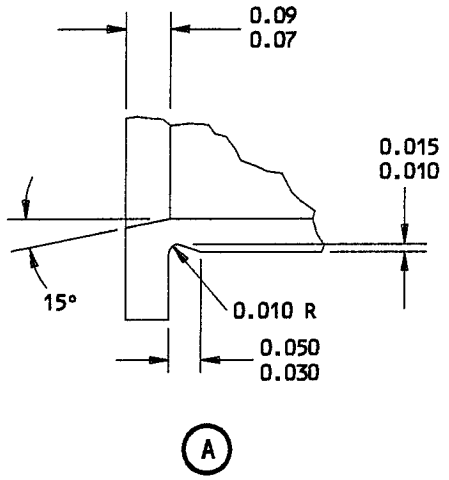
125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ALL DIMENSIONS APPLY AFTER PLATING

ALL DIMENSIONS ARE IN INCHES

Oversize Bushing Details
Figure 9





REFINISH

CADMIUM PLATE 0.0003-0.0005 THICK (F-15.06)

1 LESS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

MATERIAL: 15-5PH CRES
HEAT TREAT 180-200 KSI

63 ALL SURFACES EXCEPT AS NOTED

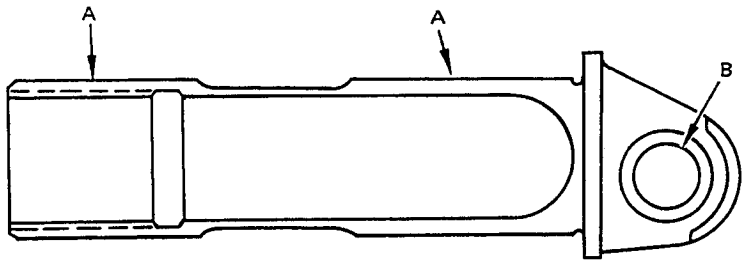
ALL DIMENSIONS ARE IN INCHES

ALL DIMENSIONS APPLY AFTER PLATING

REPLACE BUSHING 69-77058-2

Oversize Bushing Details
Figure 9A

D. Fits and Clearances



69–61946–1
69–37876–1

Fits and Clearances
Figure 10

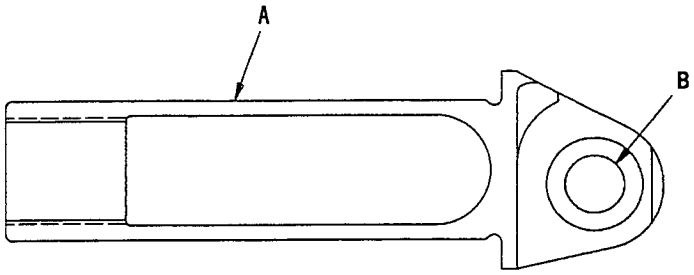
		Design Dimensions				Service Wear Limits		
Ref Letter Fig.10	Mating Item No. Fig.11	Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
A	ID *[1]	1.3000	1.3010	0.0000	0.0025		1.3030	0.0050
	OD 2	1.2985	1.3000			1.2975		
A	ID *[3]	1.3010	1.3020	0.0010	0.0035		1.3030	0.0050
	OD 2	1.2985	1.3000			1.2975		
B	ID 1	0.4995	0.5005	0.0000	0.0015		0.5025	0.0030
	OD *[2]	0.4990	0.4995			0.4965		

*[1] Bushing 10-60516-224 in actuator beam support link 65-46112 (Ref par. 6)

*[2] Bolt BACB30LM8U15 in beam instl 65-46400

*[3] Bushing 10-60516-278 in actuator beam support link 65-46112 (Ref par. 6)

F. Fits and Clearances



69–77044–1

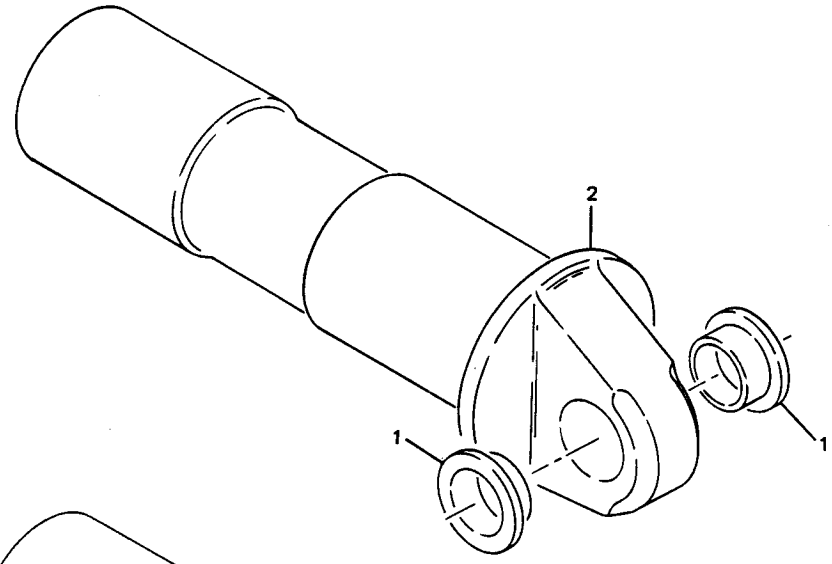
Fits and Clearances
Figure 10A

Ref Letter Fig.10A	Mating Item No. Fig.11	Design Dimensions				Service Wear Limits		
		Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
A	ID *[1]	1.3010	1.3020	0.0010	0.0035	1.2975	1.3030	0.0050
	OD 2	1.2985	1.3000					
B	ID 1	0.5000	0.5007	0.0005	0.0022			
	OD *[2]	0.4985	0.4995					

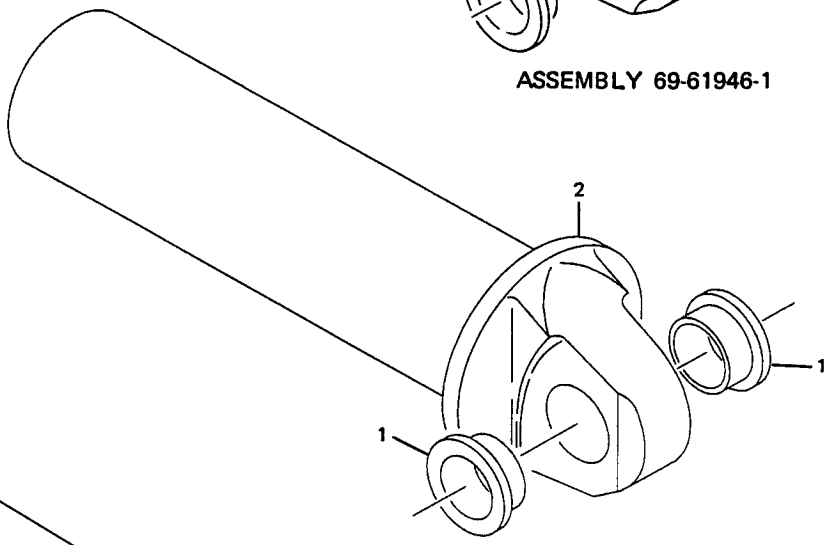
*[1] Bushing 10-60516-278 in actuator beam support link 65-46112 (Ref par. 6)

*[2] Bolt BACB30PW8CD27 in beam instl 65C32101

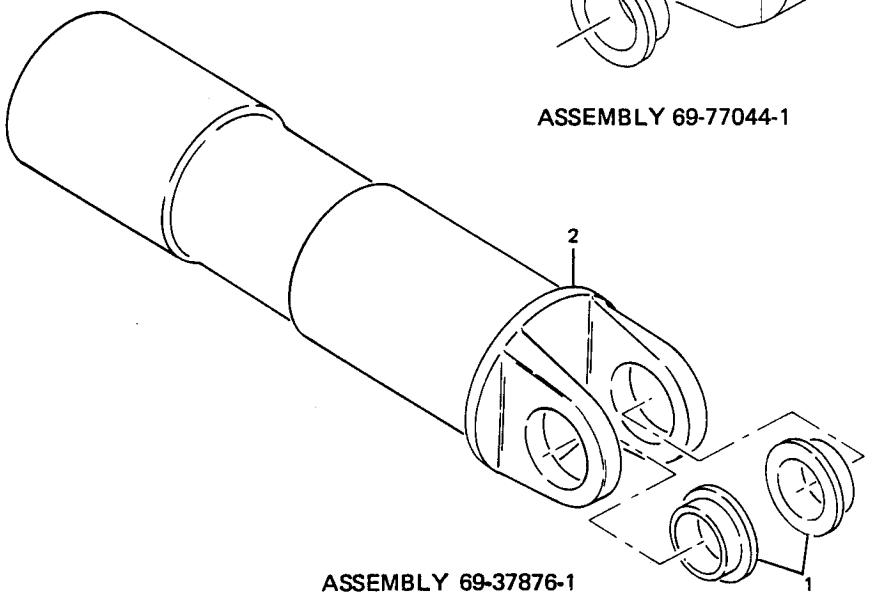
E. Illustrated Parts List



ASSEMBLY 69-61946-1



ASSEMBLY 69-77044-1



ASSEMBLY 69-37876-1

Outboard Stabilizing Tube 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-					
	69-37876-1		TUBE ASSY, OUTBOARD STABILIZING	A	RF
	69-61946-1		TUBE ASSY, OUTBOARD STABILIZING (SB 57-1052)	B	RF
	69-77044-1		TUBE ASSY, OUTBOARD STABILIZING	C	RF
1	69-37867-3		. BUSHING	A	2
1	69-37867-53		. BUSHING	B	2
1	69-77058-2		. BUSHING	C	2
2	69-37876-3		. TUBE	A	1
2	69-61946-2		. TUBE	B	1
2	69-77044-2		. TUBE	C	1

9. FORWARD TRUNNION BEARING ASSEMBLY (69-58871-1, 69-58873-1) (Fig. 15)

A. Magnetic particle examine housing (1) per SOPM 20-20-01.

B. Housing (1) Diameter D (Fig. 12)

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

(2) Build up with chrome plate per SOPM 20-42-03 or thermal spray coating per SOPM 20-10-05.

(3) Grind to design dimensions and finish.

(4) Apply dry film lubricant as shown.

C. Refinish

(1) Housing (1) -- Fig. 12.

(2) Nut (2) -- Passivate (F-8.07). Material: 17-4PH CRES, 180-200 ksi

D. Bearing (3) replacement (Fig. 13).

(1) Remove rivets (4).

(2) Put the bearing assembly in holding fixture F80096-1 or -4. Remove nut (2) with wrench F80018-1.

(3) With mandrel C32007-1, remove bearing (3) from housing (1). (Parts are shrink fit. The temperature differential procedure in SOPM 20-50-03 can be used to help you remove the bearing).

(4) Install bearing, nut and rivets per Fig. 13.

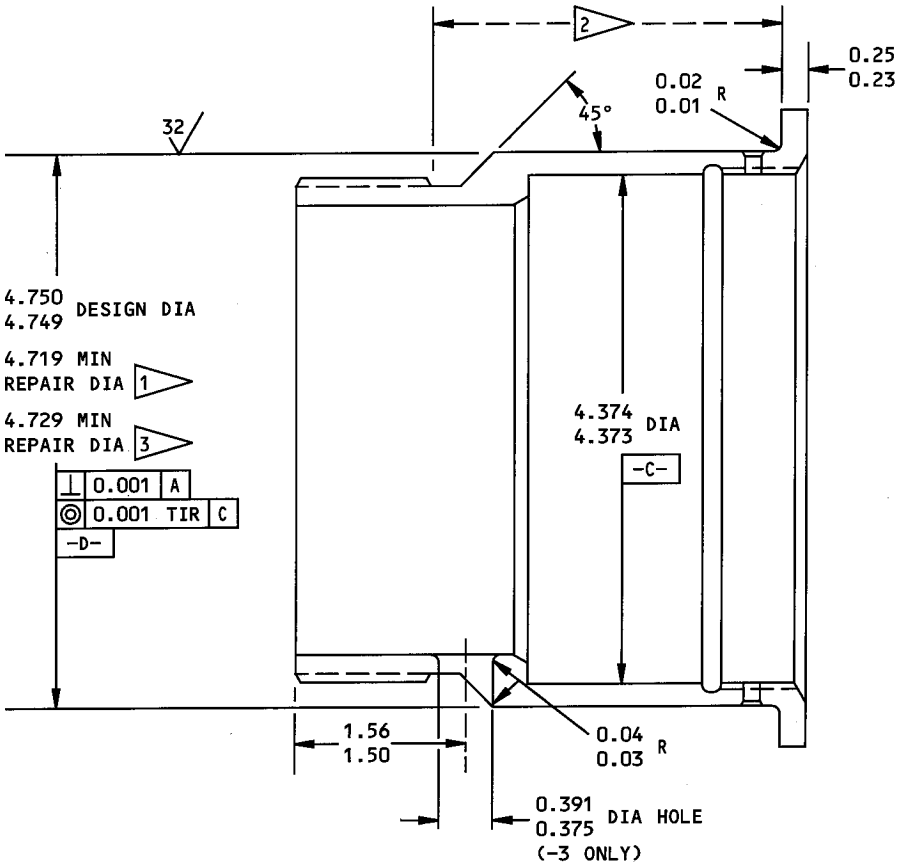
E. Special Tools and Equipment

NOTE: Equivalent substitutes can be used.

(1) F80096-1 or -4 -- Holding Fixture

(2) F80018-1 -- Wrench, Spanner

(3) C32007-1 -- Mandrel, Bearing Press Fitting



REFINISH

PASSIVATE (F-8.07, OR F-17.25, WHICH REPLACES F-17.09) ALL OVER. APPLY DRY FILM LUBRICANT TO AREA NOTED 1.

1. LIMIT FOR CHROME PLATE BUILDUP (SOPM 20-42-03). GRIND TO DESIGN DIMENSIONS AND FINISH WITH 0.080 INCH PLATING RUNOUT AT RADIUS AND EDGES.
2. APPLY BMS 3-8 DRY FILM LUBRICANT (F-19.10), 0.002-0.005 THICK.
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 (REF SOPM 20-10-03):
0.017-0.033 SHOT SIZE
0.016 A2 INTENSITY

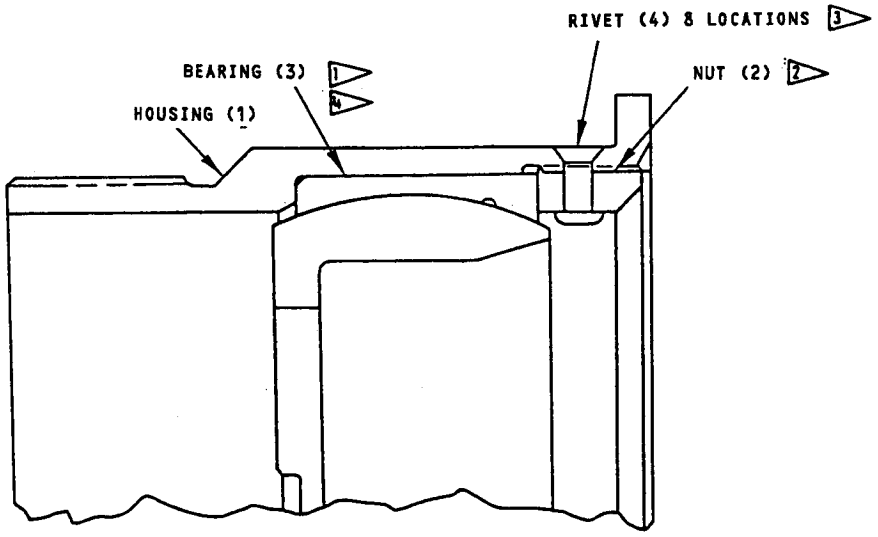
MATERIAL: 17-4PH CRES (180-200 KSI)

ALL DIMENSIONS ARE IN INCHES.

HOUSING (1)
69-55443-2,-3

Housing Repair and Refinish
Figure 12

K26979



NOTE: USE FIXTURE F80096-1 OR -4, MANDREL C32007-1, AND SPANNER WRENCH F80018-1 TO ASSEMBLE THE BEARING AND HOUSING.

1 INSTALL BEARING BY THE SHRINK FIT METHOD PER 20-50-03

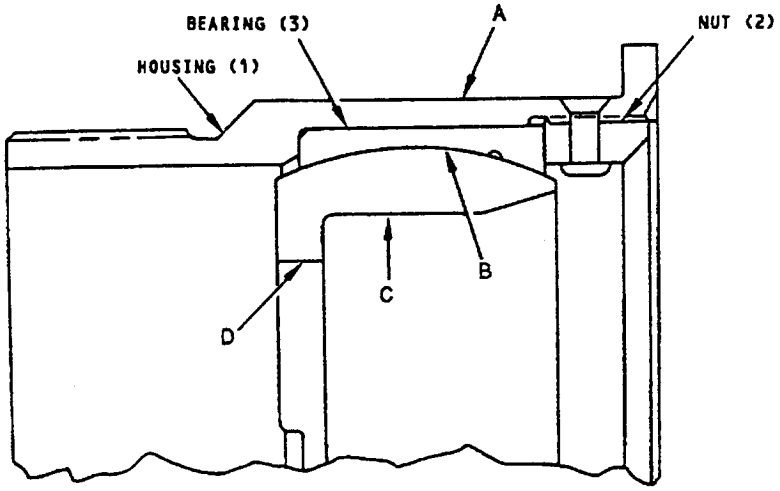
2 LUBRICATE THREADS WITH GREASE MIL-G-21164. TIGHTEN TO 50-100 POUND-FEET

3 DRILL 0.191-0.202 DIA HOLES THRU NUT USING EXISTING RIVET HOLES FOR LOCATION. DO NOT DRILL FOR A RIVET IF A INTERSECTION WITH SLOT IN NUT WOULD OCCUR. INSTALL RIVETS. (6 RIVETS MINIMUM)

4 AFTER BEARING INSTALLATION IN HOUSING, MAKE SURE THAT THE SPHERICAL BALL CAN MOVE IN ANY DIRECTION WITH A MAXIMUM OF 3 LB-FT TORQUE APPLIED.

Assembly Details
Figure 13

E. Fits and Clearances

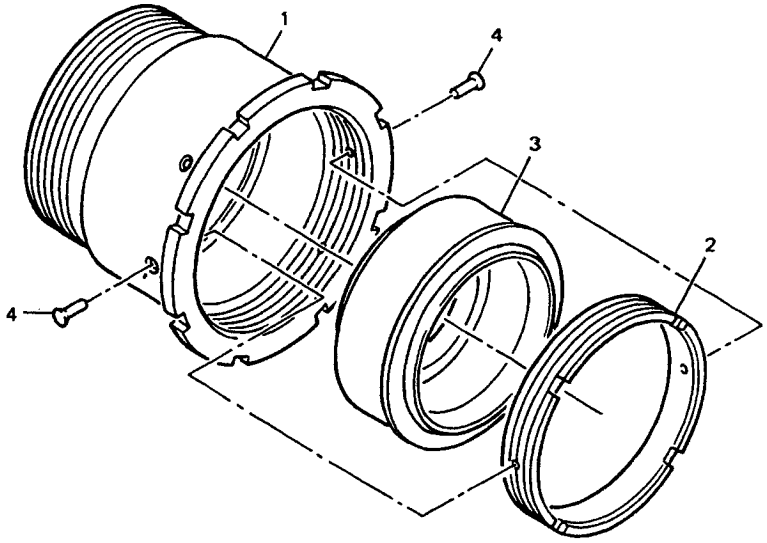


		Original Design Dimensions				Service Wear Limits		
Ref Letter Fig. 14	Mating Item No. Fig. 15	Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inch)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
A	ID *[1]	4.757	4.758	0.003	0.007		4.784	0.030
	OD 1 *[3]	4.751	4.754			4.727		
B	*[2] 3				0.003			0.015
C	ID 3 *[4]	3.250	3.251					
D	ID 3 *[4]	2.625	2.630					

*[1] Mating sleeve 69-37203 in WBL 103.56 forward trunnion support
*[2] Radial play between inner ball and outer race after bearing (3) installation in housing (1)
*[3] After installation of bearing (3) in housing (1)
*[4] Bearing ball

Fits and Clearances
Figure 14

F. Illustrated Parts List



Forward Trunnion Bearing Assembly
Figure 15

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
15-					
	69-58871-1		BEARING ASSY, FORWARD TRUNNION	A	RF
	69-58873-1		BEARING ASSY, FORWARD TRUNNION	B	RF
1	69-55443-2		. HOUSING	A	1
1	69-55443-3		. HOUSING	B	1
2	69-55444-1		. NUT		1
3	KSSB52-12		. BEARING, V97613 (BOEING 10-61341--6G)	A	1
3	BDS42H341		. BEARING, V16746 (BOEING 10-61341--6G)	A	1
3	55277-6G		. BEARING, V09455 (BOEING 10-61341--6G)	A	1
3	ASB52-102		. BEARING, V50294 (BOEING 10-61341--6G)	A	1
3	KSSB52-8		. BEARING, V97613 (BOEING 10-61341--5D)	A	1
3	55277-5D		. BEARING, V09455 (BOEING 10-61341--5D)	B	1
3	9668		. BEARING, V06144 (BOEING 10-61341--5D)	B	1
4	MS20427M6-10		. RIVET		8

10. OUTBOARD STABILIZING STUD ASSEMBLY (69-54975-1, 69-54978-1, 69-77045-1) (Fig. 18)

A. Magnetic particle examine stud (1) per 20-20-01.

B. Lug faces and holes (Fig. 16).

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

(2) Shot peen as indicated.

(3) Refinish repaired areas as necessary.

(4) Make oversize bushings per Fig. 16A.

(5) Install the bushings per par. D.(3),(4).

C. Refinish -- See Fig. 16

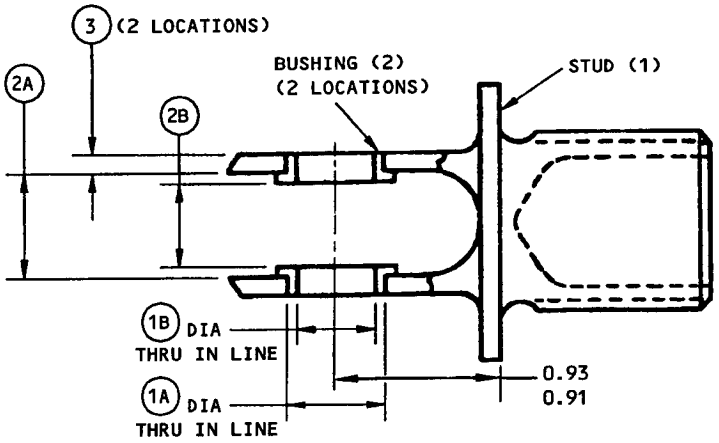
D. Bushing (2) replacement (Fig. 16).

(1) Remove the old bushings.

(2) If you find damage on lug faces or holes, refer to par. B. above, for repair instructions.

(3) Install replacement bushings by the shrink-fit method per 20-50-03.

(4) Machine bushings to dimensions and finish shown.



		1A	1B	2A	2B	3
69-54975-1 69-54978-1	DESIGN DIM	0.6255 0.6248	0.5005 0.4995	0.67 0.65	0.547 0.544	0.13 0.11
	REPAIR LIMIT	---	---	---	---	---
69-77045-1	DESIGN DIM	0.6255 0.6248	0.5007 0.5000	0.590 0.580	0.496 0.491	0.16 0.14
	REPAIR LIMIT [1]	0.6555	---	0.600	---	0.135

REFINISH

FOR 69-54975-2 AND 69-54978-2: CADMIUM-TITANIUM PLATE (F-1.181 OR F-15.01) ALL OVER. APPLY PRIMER, BMS 10-11, TYPE 1 (SRF-12.205 OR F-20.02) ALL OVER BUT NOT ON THREADS OR IN BUSHING HOLES. ON 69-54975-2, APPLY ONE MORE LAYER OF PRIMER ON INTERIOR. ON 69-54978-2, APPLY ENAMEL, BMS 10-60 (F-14.9812, WHICH REPLACES SRF-14.9812) OVER PRIMER.

FOR 69-77045-2: CADMIUM-TITANIUM PLATE (F-15.01). APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02) AND BMS 10-60, COLOR 702 WHITE GLOSS ENAMEL (F-14.9812, WHICH REPLACES SRF-14.9812) ALL OVER BUT NO PRIMER (F-20.02) OR ENAMEL (F-14.9812, WHICH REPLACES SRF-14.9812) IN BUSHING HOLES OR THREADS. APPLY ONE MORE LAYER PRIMER ON INTERIOR.

REPAIR

REF [1]

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN (SOPM 20-10-03)
0.017-0.033 SHOT SIZE
0.010 A2 INTENSITY

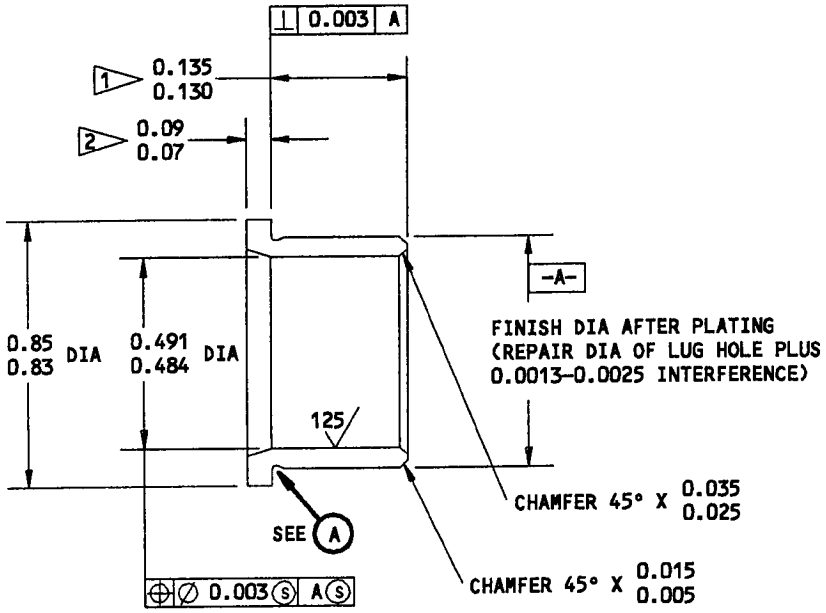
MATERIAL:
69-54975, 69-54978 --
4330M STEEL (180-200 KSI)

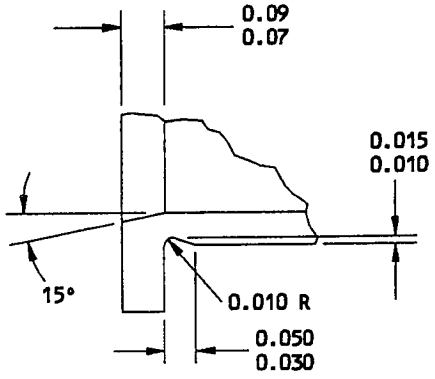
69-77045 --
4330M STEEL (220-240 KSI)

ALL DIMENSIONS ARE IN INCHES

[1] LIMIT FOR INSTALLATION OF OVERSIZE BUSHINGS

69-54975
69-54978
69-77045
Stud Repair and Refinish
Figure 16





A

REFINISH

CADMIUM PLATE 0.0003-0.0005 THICK (F-15.06)

1 LESS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

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

63 ALL SURFACES EXCEPT AS NOTED

ALL DIMENSIONS ARE IN INCHES

ALL DIMENSIONS APPLY AFTER PLATING

NOTE: BUSHING DWG 69-77058 SPECIFIES ALL DIMS ARE AFTER PLATING.

HOLE LOCATION 1A FIG. 16 - REPLACES BUSHING (1, FIG.18) 69-77058-6

Oversize Bushing Details
Figure 16A

E. Fits and Clearances

		Design Dimensions				Service Wear Limits		
Ref Letter Fig. 18	Mating Item No. Fig. 18	Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
A	ID 2 *[2]	0.4995	0.5005	0.0000	0.0015	0.4977	0.5021	0.0026
	OD *[1]	0.4990	0.4995					
A	ID 2 *[3]	0.5000	0.5007	0.0005	0.0017			
	OD *[4]	0.4990	0.4995					

*[1] Bolt BACB30LM8U15 in beam instl 65-46400

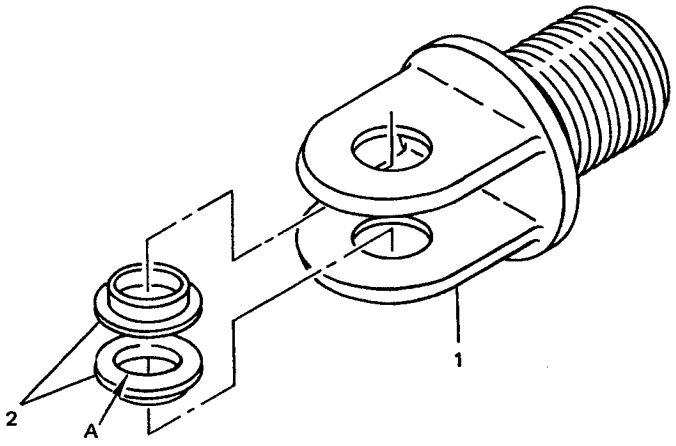
*[2] 69-37867-6

*[3] 69-77058-6

*[4] Pin 69-77255-1 in beam instl 65C32101

Fits and Clearances
Figure 17

F. Illustrated Parts List



Outboard Stabilizing Stud Assembly
Figure 18

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
18-					
	69-54975-1		STUD ASSY, OUTBOARD STABILIZING	A	RF
	69-54978-1		STUD ASSY, OUTBOARD STABILIZING	B	RF
	69-77045-1		STUD ASSY, OUTBOARD STABILIZING	C	RF
1	69-54975-2		. STUD	A	1
1	69-54978-2		. STUD	B	1
1	69-77045-2		. STUD	C	1
2	69-37867-6		. BUSHING	AB	2
2	69-77058-6		. BUSHING	C	2

11. SIDE STRUT BOLT ASSEMBLY 69-38991-1, 69-68151-1, -3, 69-77524-1, -3, -5 (Fig. 19)

NOTE: Refer to OHM 32-17-11 for bolts 69-39458-1 and 69-68148-1, -3.

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

B. OD Repair (Fig. 18A)

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

(2) Build up the machined surface with chrome plate (SOPM 20-42-03).

(3) Machine to design dimensions and finish.

C. Antirotation flat on head (69-77524-2 only) -- If there is interference between the head of this bolt and mating parts, machine the flat as shown (Fig. 18A).

D. Replace lube fitting (5) per CMM 32-00-03.

E. Threads (Fig. 18A)

(1) Cut the threads undersize, as shown.

(2) Permanently identify this bolt to be sure to use the nut and washer shown.

F. Head Face (Fig. 18A)

(1) Machine as required, within repair limits, to remove defects. Blend into the relief groove if necessary.

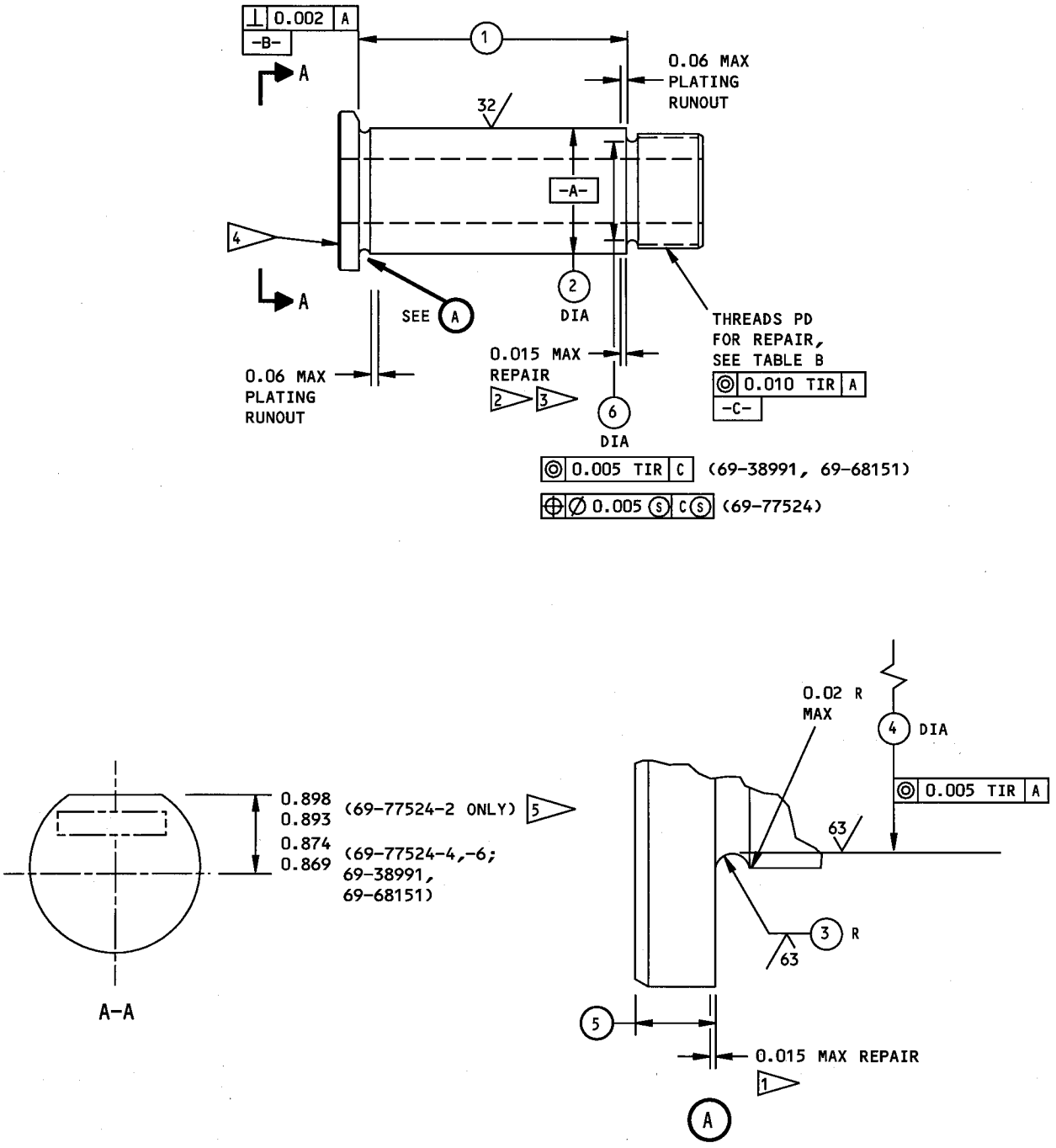
(2) Shot peen, chrome plate and grind to restore grip length. Do not chrome plate the relief groove.

NOTE: As an alternative to this chrome plate buildup, machine the shoulder face at the thread end to adjust the grip length.

G. Relief Grooves (Fig. 18A)

(1) Machine as required, within repair limits, to remove defects. To adjust the grip length, machine the shoulder at the thread relief.

(2) Shot peen. Cadmium-titanium plate. Apply primer.



Bolt Repair and Refinish
Figure 18A (Sheet 1)

F39746

		①	②	③	④	⑤	⑥
69-38991	DESIGN DIM	3.240 3.230	1.374 1.373	0.06 0.04	1.359 1.355	0.210 0.190	1.130 1.120
	REPAIR LIMIT	---	1.353 [1]	0.15	1.332 [3][6]	0.175 [1]	0.995 [3][6]
	WEAR LIMIT	---	1.372	---	---	---	---
69-68151	DESIGN DIM	3.240 3.230	1.374 1.373	0.06 0.04	1.359 1.355	0.210 0.190	1.130 1.120
	REPAIR LIMIT	---	1.345 [1]	---	1.330 [3]	0.175 [1]	0.995 [3]
	WEAR LIMIT	---	1.372	---	---	---	---
69-77524	DESIGN DIM	3.240 3.230	1.436 1.435	0.04 0.03	1.421 1.416	0.210 0.190	1.130 1.120
	REPAIR LIMIT	---	1.405 [1][6]	---	1.342 [3]	0.175 [1]	0.995 [3]
	WEAR LIMIT	---	1.434	---	---	---	---

TABLE A

UNJF-3 THREAD SIZE	1.250-12 (DESIGN)	1.125-12 (1/8 UNDERSIZE)
MAJOR DIA	1.2500 1.2386	1.1250 1.1136
PITCH DIA	1.1959 1.1913	1.0709 1.0664
MINOR DIA	1.1538 1.1442	1.0288 1.0192
ROOT RADIUS	0.0150 0.0125	0.0150 0.0125
THREAD RELIEF DIA	1.130 1.120	1.005 0.995
NUT (REF)	BACN10BY520 BACN10JC20	BACN10JC18
WASHER (REF)	AN960-2016	AN960-1816L

TABLE B

Bolt Repair and Refinish
Figure 18A (Sheet 2)

F39898

REFINISH

69-38991:
CHROME PLATE (F-15.04) DIA -F-. CADMIUM-TITANIUM PLATE (F-15.01) ALL OTHER SURFACES. APPLY BMS 10-11, TYPE 1 PRIMER (F-20.03) ALL OVER BUT NOT ON THREADS AND CHROME PLATE. WIPE THREADS AND CHROME PLATE WITH PRIMER (F-19.45). APPLY CORROSION PREVENTIVE COMPOUND (F-19.03) IN BORE.

69-68151:
CHROME PLATE (F-15.34) DIA -F-. CADMIUM-TITANIUM PLATE (F-15.01) ALL OTHER SURFACES. AFTER INSTALLATION OF LUBE FITTING, APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02) AND BMS 10-60 ENAMEL (F-14.9813, WHICH REPLACES SRF-14.9813) BUT NOT ON CHROME PLATE, THREADS OR FITTING. WIPE THREADS AND CHROME PLATE WITH PRIMER (F-19.45).

69-77524:
CHROME PLATE (F-15.34) DIA -F-. CADMIUM-TITANIUM PLATE (F-15.01) ALL OTHER SURFACES. APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02) BUT NOT ON CHROME PLATE, THREADS AND LUBE PASSAGES. AFTER INSTALLATION OF LUBE FITTING, APPLY BMS 10-11, TYPE 2 ENAMEL (F-21.02) OVER PRIMED SURFACES. WIPE THREADS AND CHROME PLATE WITH PRIMER (F-19.45).

REPAIR

REF 1 2 3

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN (SOPM 20-10-03):
0.016-0.039 SHOT SIZE
0.015 A2 INTENSITY

MATERIAL: 4340M STEEL, 270-300 KSI

ALL DIMENSIONS ARE IN INCHES

1 LIMIT FOR BUILDUP WITH CHROME PLATE (SOPM 20-42-03). PUT A 0.06 MAX PLATING RUNOUT AT EDGES. GRIND TO DESIGN DIMENSIONS AND FINISH.

2 TO ADJUST GRIP LENGTH, MACHINE THE HEAD END AND THREAD END FACES.

3 RESTORATION TO DESIGN DIM NOT REQUIRED.

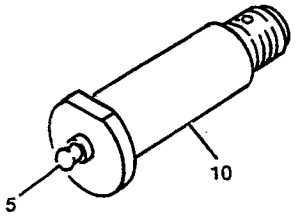
4 VIBRO ENGRAVE PART NUMBER, SERIAL NUMBER AND VENDOR NUMBER HERE (69-68151, 69-77524)

5 TO REMOVE AN INTERFERENCE PROBLEM WITH MATING PARTS, MACHINE THIS DIMENSION TO 0.869-0.874 AND CHANGE THE PART NUMBER TO 69-77524-4 (ASSEMBLY 69-77524-3).

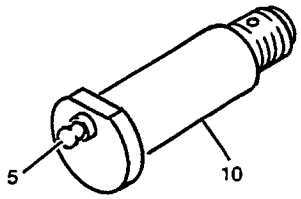
6 IF MORE MATERIAL REMOVAL THAN THIS IS NECESSARY, THE BOLT MUST BE SCRAPPED.

Bolt Repair and Refinish
Figure 18A (Sheet 3)

L76547



69-68151
69–77524



69–38991

Side Strut Bolt Assembly
Figure 19

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
19-					
1	69-38991-1		BOLT ASSY, SIDE STRUT	A	RF
1	69-39458-1		DELETED *[1]		
1	69-68148-1		DELETED *[1]		
1	69-68151-1		BOLT ASSY, SIDE STRUT	B	RF
1	69-68151-3		BOLT ASSY, SIDE STRUT (SERIALIZED)	C	RF
1	69-77524-1		BOLT ASSY, SIDE STRUT	D	RF
1	69-77524-3		BOLT ASSY, SIDE STRUT	E	RF
1	69-77524-5		BOLT ASSY, SIDE STRUT	F	RF
5	1645B		. FITTING, LUBE (V95879)	A	1
5	1728B		. FITTING, LUBE (V95879)	B-F	1
10	69-38991-2		. BOLT	A	1
10	69-39458-2		DELETED		
10	69-68148-1		DELETED		
10	69-68151-2		. BOLT	B	1
10	69-68151-4		. BOLT	C	1
10	69-77524-2		. BOLT	D	1
10	69-77524-4		. BOLT	E	1
10	69-77524-6		. BOLT	F	1

*[1] REFER TO OHM 32-17-11

12. MAIN GEAR UPLOCK SUPPORT SHAFT (65-46146-1 thru -4)

NOTE: Shaft 65-46146-4 is serialized.

A. Magnetic particle examine the shaft per 20-20-01.

B. Shank Repair -- Diameters D, X (Fig. 20)

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

(2) Shot peen as indicated.

(3) Build up with chrome plate per 20-42-03.

(4) Grind to design dimensions and finish.

C. Crossbolt Hole — Diameter Y (Fig. 20)

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

(2) Make a repair sleeve as shown (Fig. 21).

(3) Install the sleeve by the shrink fit method per 20-50-03.

(4) Machine the sleeve ID to design dimensions and finish.

D. Head face (Fig. 20)

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

(2) Shot peen as indicated.

(3) Build up with chrome plate per 20-42-03.

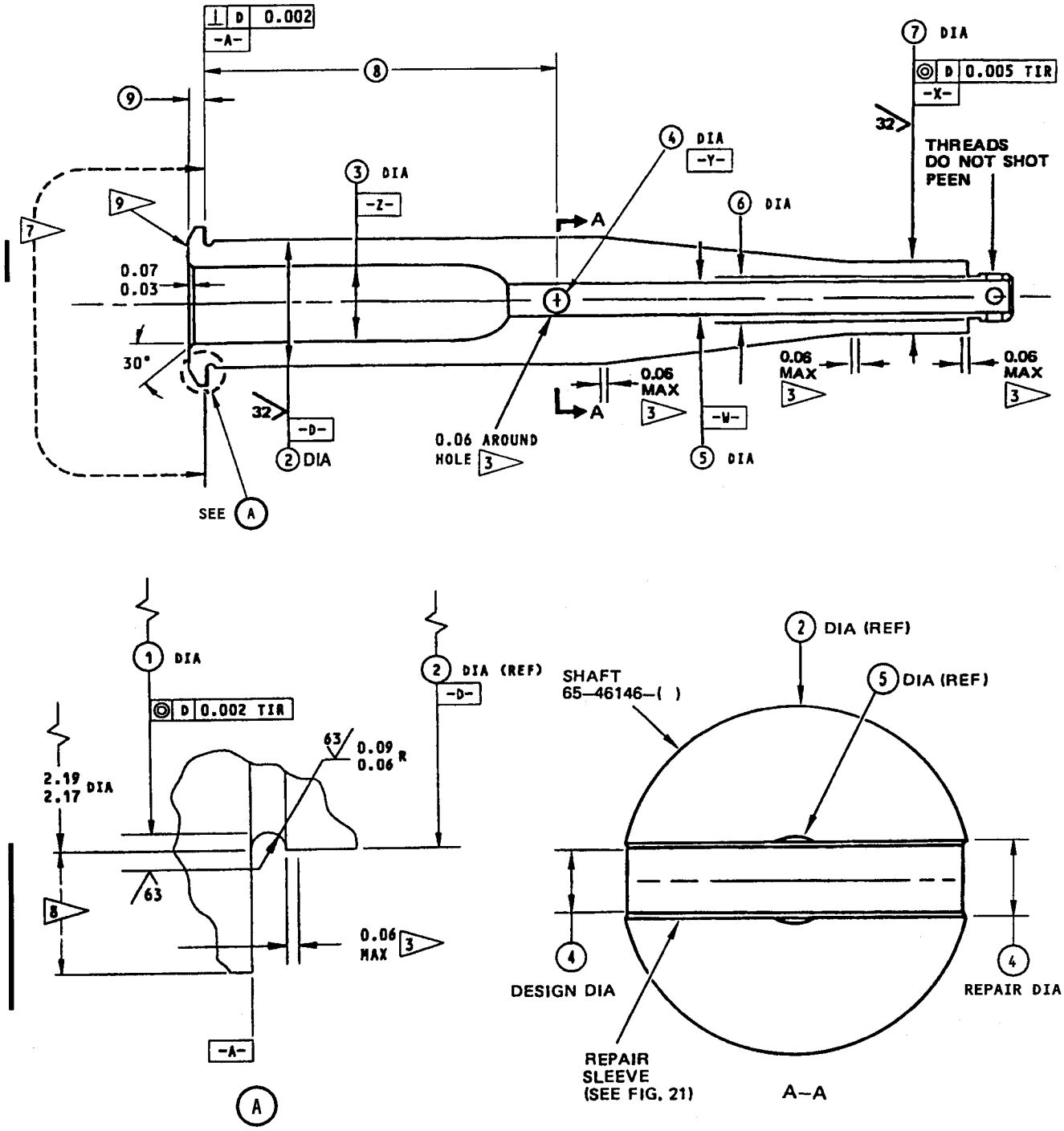
(4) Grind to design dimensions and finish.

E. Bore — Diameters W, Z (Fig. 20)

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

(2) Refinish as indicated.

F. Refinish — See Fig. 20.



65-46146-1 THRU -4

Uplock Support Shaft Repair and Refinish
Figure 20 (Sheet 1)

	(1)	(2)	(3) [1]	(3) [2]	(4)	(5)	(6)	(7)	(8)	(9)
DESIGN DIM	1.985 1.980	1.998 1.997	1.210 1.190	1.010 0.990	0.379 0.375	0.505 0.500	0.660 0.653	1.122 1.121	5.505 5.495	0.26 0.25
REPAIR LIMIT	1.960 [6]	1.967 [4]	1.215 [6]	1.015 [6]	0.502 [5]	0.515 [6]	---	1.092 [4] [10]	5.520 [4]	0.235 [4]
WEAR LIMIT	1.960	1.996	---	---	0.425	---	---	1.120	---	---

REFINISH

CHROME PLATE (F-15.34) -D-,-X-.

FLASH CHROME PLATE THE HEAD FACE AS NOTED [8]

CADMIUM-TITANIUM PLATE (F-15.01) ALL OTHER INTERNAL AND EXTERNAL SURFACES.

APPLY PRIMER, BMS 10-11 TYPE 1 (F-20.03) AND THEN CORROSION PREVENTIVE COMPOUND (F-19.03) TO INTERIOR SURFACES

APPLY PRIMER (F-20.03) TO RELIEF AREAS.

APPLY PRIMER AND ENAMEL AS NOTED [7] .

WIPE THREADS AND DIAS -D-, -X- WITH PRIMER (F-19.45).

[1] 65-46146-1

[2] 65-46146-2, -3, -4

[3] CHROME PLATE RUNOUT

[4] LIMIT FOR CHROME PLATE BUILDUP (SOPM 20-42-03) AND GRINDING TO DESIGN DIMENSIONS AND FINISH

[5] LIMIT FOR INSTL OF REPAIR SLEEVE. (SEE FIG. 21)

[6] RESTORATION TO DESIGN DIMENSION NOT REQUIRED

REPAIR

REF [4] [5] [6] [10]

125 MACHINE FINISH EXCEPT AS NOTED

SHOT PEEN (SOPM 20-10-03)
0.017-0.039 SHOT SIZE
0.014 A2 INTENSITY

MATERIAL: 4340M STEEL (270-300 KSI)

ALL DIMENSIONS ARE IN INCHES

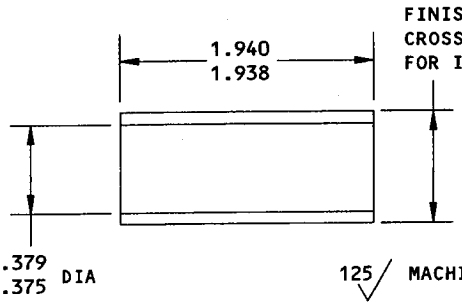
[7] APPLY PRIMER (F-20.02) AND ENAMEL (F-21.02) THIS AREA

[8] FLASH CHROME PLATE (SOPM 20-42-03, CLASS 4) 0.0003-0.0005 THICK THEN WIPE WITH PRIMER (F-19.45)

[9] VIBRO ENGRAVE PART NUMBER, SERIAL NUMBER AND VENDOR NUMBER THIS AREA

[10] LIMIT FOR NICKEL PLATE BUILDUP, 0.001 MIN THICK (SOPM 20-42-09), THEN CHROME PLATE BUILDUP (SOPM 20-42-03) TO MAKE A LAYER UP TO 0.015 THICK AFTER GRIND TO DESIGN DIMENSIONS AND FINISH. (OPTIONAL TO [4])

Uplock Support Shaft Repair and Refinish
Figure 20 (Sheet 2)



125 MACHINE FINISH

MATERIAL: AL-NI-BRZ PER AMS 4640 OR 4880, OR 17-4PH CRES PER AMS 5643, OR 17-7PH CRES TUBING PER AMS 5568, 180-200 KSI

FINISH:

CADMIUM PLATE (SOPM 20-42-05)

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (4) FIG. 20

Repair Sleeve Details
Figure 21

E42455

13. FORWARD TRUNNION BEARING ASSEMBLY (65C31332-1 thru -6) (Fig. 25)

A. Magnetic particle examine housing (5) (SOPM 20-20-01).

B. Housing (5) -- (Fig. 22, 22A)

(1) Outside Diameter A

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

(b) Build up with chrome plate (SOPM 20-42-03).

(c) Grind to design dimensions and finish.

(d) Apply dry film lubricant as shown.

(2) Hole for pin (20) (65C31320-4 only)

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

(b) Refinish as indicated.

(c) Be sure to attach a note to the housing to tell which pin (20) to use when you install the repaired housing.

C. Refinish -- See Fig. 22, 22A

D. Bearing Replacement (65C31332-1 thru -5)

(1) Remove the old rivets.

(2) On 65C31332-4, -5 only, bake the bearing assembly at 500°F for 20-24 hours.

(3) Put the bearing assembly in holding fixture F80096-4. Remove the bearing with wrench F80018-1.

(4) Install a replacement bearing as shown in Fig. 23.

E. Bearing Replacement (65C31332-6)

(1) Remove cotter pin (25) and pin (20).

(2) Remove bearing (10). If it is too tight to easily remove, put the assembly in holding fixture F80096-4 and remove the bearing with wrench F80018-1.

(3) Apply MIL-G-21164 grease to threads of housing (5) and replacement bearing (10).

(4) Turn the bearing into the housing until it is down against the step on the housing.

(5) Turn the bearing back a minimum amount to align the slots.

(6) Put a wooden dowel in the aligned slots to keep them aligned. Then drill a 0.1845-0.1855 hole in the bearing with the hole in the housing as a pilot.

(7) Apply BMS 5-95 sealant to the shank of pin (20). Press fit the pin through the hole. Remove unwanted sealant but let sealant stay to make a fillet seal around the pin head.

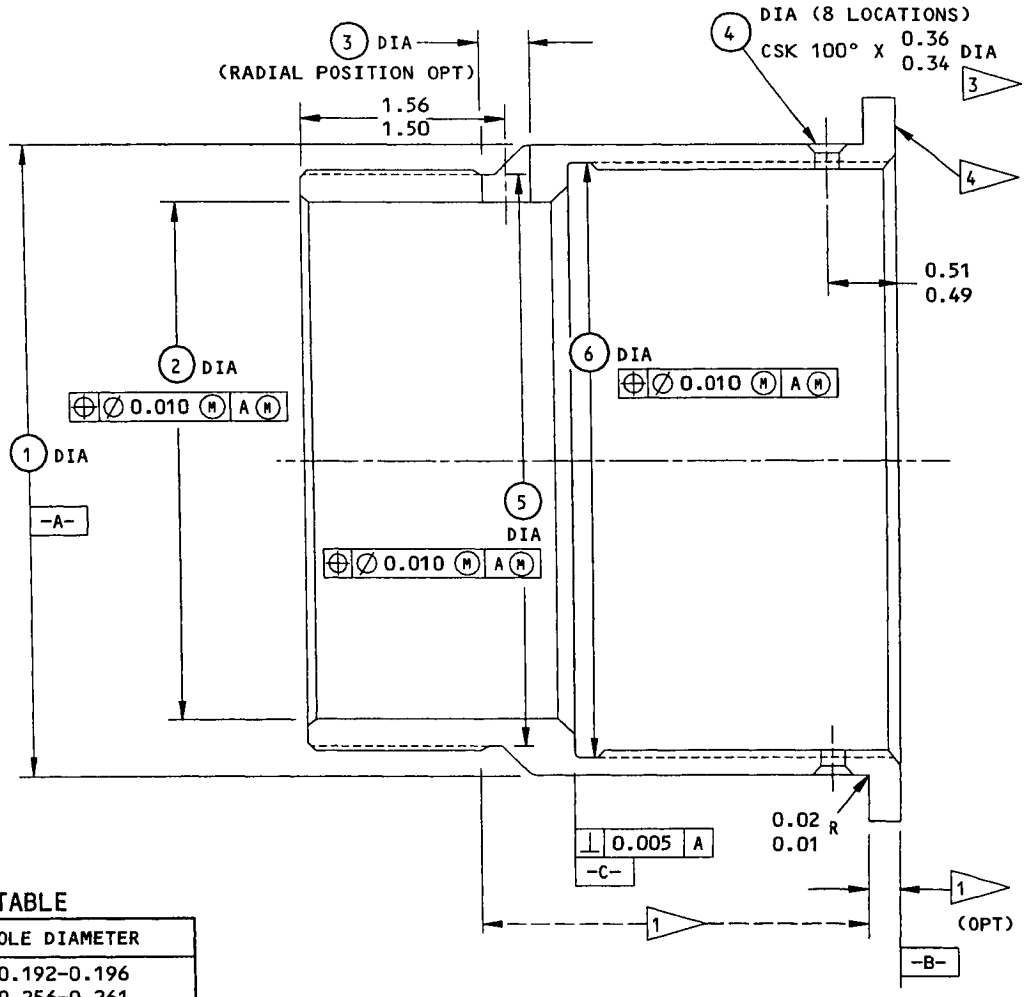
(8) Install cotter pin (25).

F. Special Tools and Equipment

NOTE: Equivalent substitutes can be used.

(1) F80096-4 -- Holding fixture

(2) F80018-1 -- Spanner wrench



FASTENER TABLE

FASTENER	HOLE DIAMETER
CR3522-6-5	0.192-0.196
CR3522-8-5	0.256-0.261
MS20427M6-8	0.191-0.202
MS20427M8-8	0.254-0.265

TABLE A

	1	2	3	4	5	6
DESIGN DIM	4.750 4.749	3.910 3.890	0.391 0.375	0.196 0.192	4.265 4.250	4.528 4.518
REPAIR LIMIT 2	4.719	---	---	3	---	---

REFINISH

PASSIVATE (F-17.25, WHICH REPLACES F-17.09) ALL OVER.
APPLY DRY FILM LUBRICANT TO AREA NOTED 1

1. APPLY DRY FILM LUBRICANT BMS 3-8 (F-19.10)
2. LIMIT FOR CHROME PLATE BUILDUP (SOPM 20-42-03) AND GRIND TO DESIGN DIMENSIONS AND FINISH, WITH 0.08 MAX PLATING RUNOUT AT EDGES AND RELIEF.
3. REFER TO FASTENER TABLE FOR CORRECT HOLE SIZE AND FASTENER COMBINATION.
4. ELECTROCHEMICALLY ETCH SERIAL NUMBER THIS AREA

REPAIR

REF 2 3

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

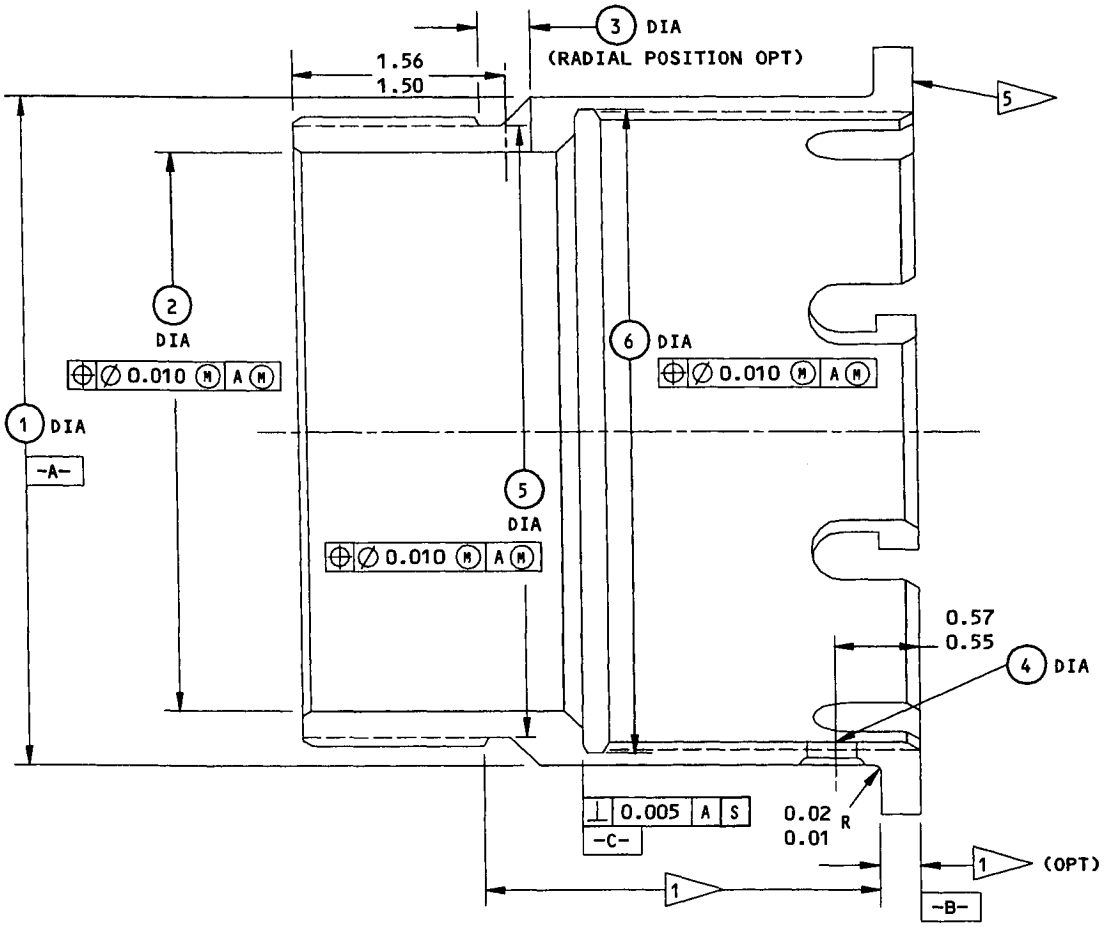
SHOT PEEN: (SOPM 20-10-03)
0.017-0.033 SHOT SIZE
0.016 A2 INTENSITY

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

ALL DIMENSIONS ARE IN INCHES

65C31320-1,-2,-3

Housing Repair and Refinish
Figure 22



	1	2	3	4	5	6
DESIGN DIM	4.750 4.749	3.910 3.890	0.391 0.375	0.1855 0.1845	4.265 4.250	4.528 4.518
REPAIR LIMIT	4.719 2	---	---	0.194 3 0.254 4 0.250	---	---

REFINISH

PASSIVATE (F-17.25, WHICH REPLACES F-17.09) ALL OVER. APPLY DRY FILM LUBRICANT TO AREA NOTED 1

1 APPLY DRY FILM LUBRICANT BMS 3-8 (F-19.10)

2 LIMIT FOR CHROME PLATE BUILDUP (SOPM 20-42-03) AND GRINDING TO DESIGN DIMENSIONS AND FINISH, WITH 0.08 MAX PLATING RUNOUT AT EDGES AND RELIEF.

3 LIMIT FOR INSTALLATION OF STANDARD PIN (20) MS20392-2C9

4 RANGE FOR INSTALLATION OF REPAIR PIN (20) MS20392-3C11

REPAIR

REF 2 3 4

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

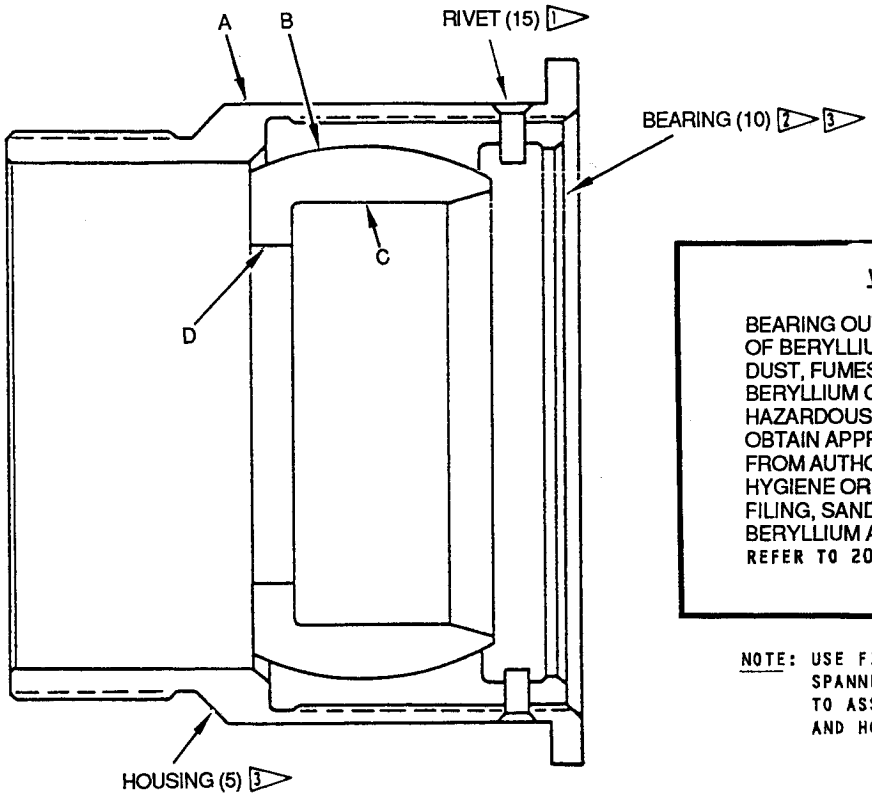
SHOT PEEN: (SOPM 20-10-03)
0.017-0.033 SHOT SIZE
0.016 A2 INTENSITY

MATERIAL: 15-5PH CRES (180-200 KSI)

ALL DIMENSIONS ARE IN INCHES

5 ELECTROCHEMICALLY ETCH SERIAL NUMBER THIS AREA

65C31320-4
Housing Repair and Refinish
Figure 22A



WARNING

BEARING OUTER RACE IS MADE OF BERYLLIUM COPPER ALLOY. DUST, FUMES, OR MISTS OF BERYLLIUM COMPOUNDS ARE HAZARDOUS IF INHALED. OBTAIN APPROVAL OF PROCEDURES FROM AUTHORIZED INDUSTRIAL HYGIENE OR MEDICAL UNIT BEFORE FILING, SANDING, OR MACHINING BERYLLIUM ALLOY PARTS. REFER TO 20-10-09 FOR MORE DATA.

NOTE: USE FIXTURE F80096-4 AND SPANNER WRENCH F80018-1 TO ASSEMBLE THE BEARING AND HOUSING.

1 (1) IF THE RIVET HOLES IN THE BEARING HOUSING AND IN THE BEARING RACE DO NOT ALIGN AFTER THE TORQUE IS APPLIED, NEW HOLES MUST BE DRILLED. USE THE HOLES IN THE BEARING HOUSING TO DRILL THROUGH THE BEARING RACE IF THERE WILL BE A MINIMUM EDGE MARGIN OF 0.58 INCH BETWEEN THE OLD RIVET HOLE AND THE NEW RIVET HOLE. SEE FASTENER TABLE, FIG. 22, FOR HOLE SIZE AND RIVET COMBINATION. DRILL THE NEW HOLES THROUGH THE BEARING RACE. DEBURR THE HOLES.

IF THIS MINIMUM EDGE MARGIN IS LESS THAN 0.58 INCH, DRILL 8 NEW HOLES THROUGH BOTH THE HOUSING AND BEARING RACE SPACED EQUALLY 45 DEGREES APART. MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 0.58 INCH BETWEEN THESE NEW HOLES AND ANY EXISTING HOLES. COUNTERSINK THE HOLES 100 DEGREES BY 0.353 INCH DIAMETER. DEBURR THE HOLES.

(2) INSTALL RIVETS; REMOVE SHARP PROTRUSIONS FROM THE RIVET HEADS.

2 SPHERICAL BALL MUST TURN FREELY BY HAND AFTER ASSEMBLY IS COMPLETE. MAKE SURE NO LOCKING COMPOUND IS ON THE SPHERICAL SURFACES OF THE BEARING ASSEMBLY.

3 (1) DEGREASE THE THREADS OF THE BEARING AND THE HOUSING (SOLVENT CLEAN BY 20-30-03).

(2) APPLY 8 EQUALLY SPACED, 1/8 INCH DIAMETER BEADS OF LOCKING COMPOUND (MIL-S-22473, GRADE HVV) ON THE AXIAL LENGTH OF THE THREADS ON THE HOUSING AND THE BEARING RACE.

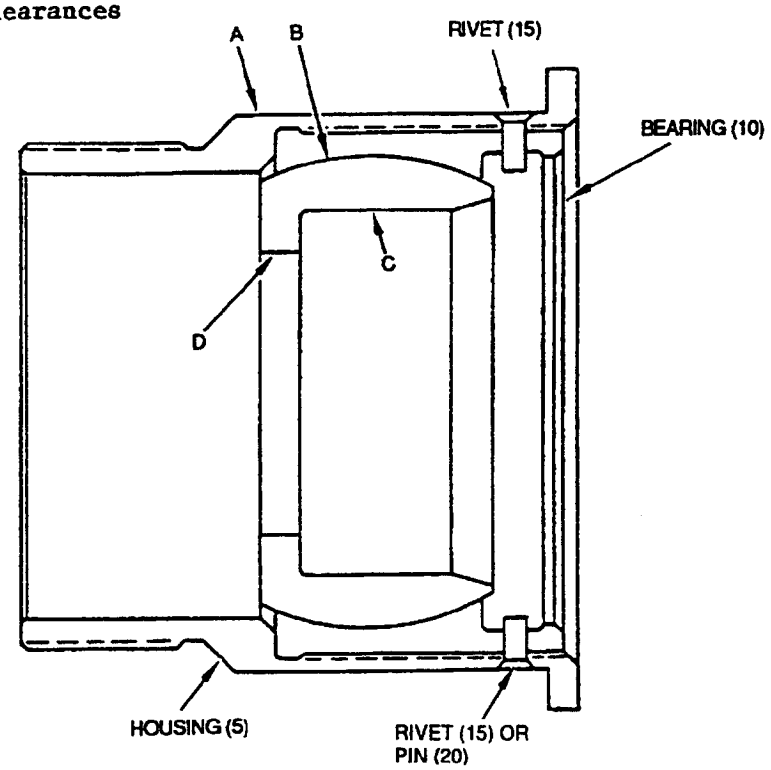
CAUTION: DO NOT ALLOW ANY LOCKING COMPOUND TO CONTACT THE SPHERICAL SURFACES OF THE BEARING ASSEMBLY.

(3) INSTALL THE BEARING RACE IN THE BEARING HOUSING. TORQUE THE BEARING TO 50-100 FOOT-POUND. THE TORQUE MUST BE APPLIED WITHIN 10 MINUTES OF ASSEMBLY.

65C31332-1 THRU -5

Assembly Details
Figure 23

G. Fits and Clearances

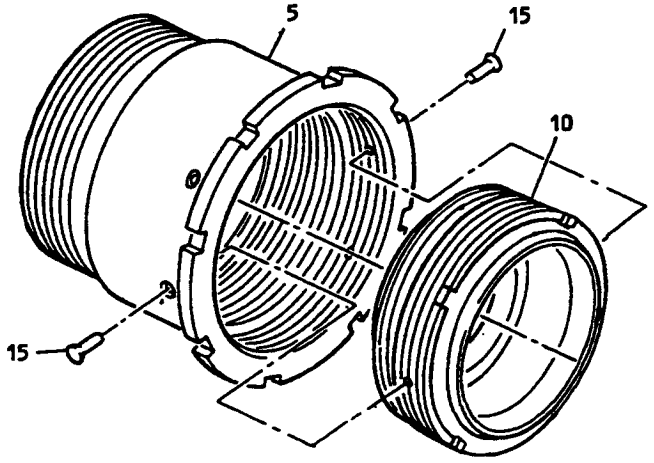


		Design Dimensions				Service Wear Limits		
Ref Letter Fig. 24	Mating Item No. Fig. 25	Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
A	ID *[1]	4.757	4.758	0.007	0.009	4.727	4.784	0.030
	OD 5	4.749	4.750					
B	ID 10*[2]	4.1265	4.1270	*[4] 0.0015	*[4] 0.0030			*[4] 0.0150
	OD 10*[3]	4.1240	4.1250					
C	ID 10*[3]	3.250	3.251					
D	ID 10*[3]	2.625	2.630					

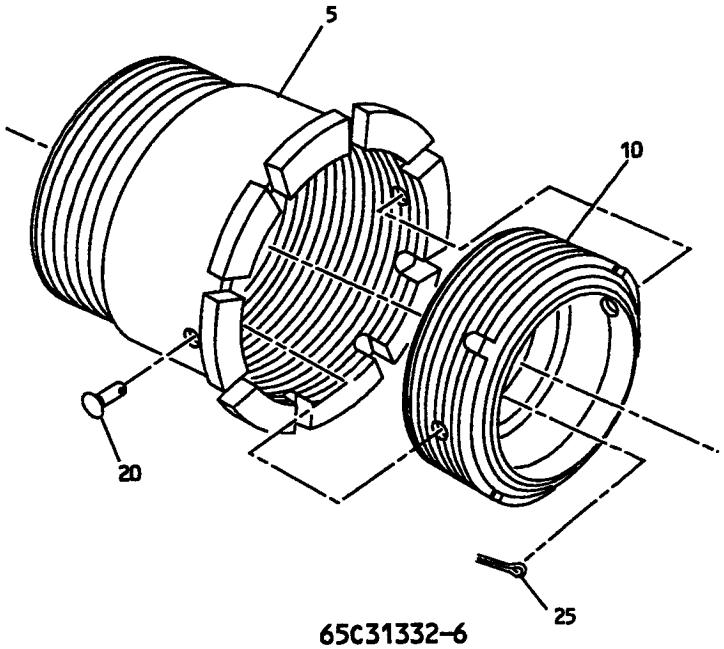
*[1] Mating sleeve 69-37203 or 65C30931 in WBL 103.56 forward trunnion support
*[2] Outer race
*[3] Inner ball
*[4] Radial Play

Fits and Clearances
Figure 24

H. Illustrated Parts List



65C31332-1 THRU -5



65C31332-6

Forward Trunnion Bearing Assembly
Figure 25

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
25-					
1	65C31332-1		BEARING ASSY, FORWARD TRUNNION (PRE SB 32-1217)	A	RF
1	65C31332-2		BEARING ASSY, FORWARD TRUNNION (PRE SB 32-1217)	B	RF
1	65C31332-3		BEARING ASSY, FORWARD TRUNNION *[1] (PRE SB 32-1217)	C	RF
1	65C31332-4		BEARING ASSY, FORWARD TRUNNION (PRE SB 32-1217)	D	RF
1	65C31332-5		BEARING ASSY, FORWARD TRUNNION (PRE SB 32-1217)	E	RF
1	65C31332-6		BEARING ASSY, FORWARD TRUNNION (POST SB 32-1217)	F	RF
5	65C31320-1		. HOUSING	A	1
5	65C31320-2		. HOUSING (OPT TO 65C31320-3)	BCD	1
5	65C31320-3		. HOUSING (PREF)(OPT TO 65C31320-2) (SERIALIZED)	BCD	1
5	65C31320-3		. HOUSING (SERIALIZED)	E	1
5	65C31320-4		. HOUSING	F	1
10	10-62080-1		. BEARING	A	1
10	10-62080-1		. BEARING (OPT)	BC	1
10	10-62080-5		. BEARING (OPT TO 10-62080-6)	BCD	1
10	10-62080-6		. BEARING (PREF)(OPT TO 10-62080-5) (SERIALIZED)	BCD	1
10	10-62080-6		. BEARING (SERIALIZED)	E	1
10	10-62080-9		. BEARING	F	1
15	CR3522-6-5		. RIVET, V11815	A-E	8
15	CR3522-8-5		. RIVET, V11815	A-E	8
15	MS20427M6-8		. RIVET, SQUEEZE (OPT)(SB 32-1217)	A-E	8
15	MS20427M8-8		. RIVET, SQUEEZE (OPT)	A-E	8
20	MS20392-2C9		. PIN	F	1
20	MS20392-3C11		. PIN (REPAIR PART)	F	1
25	MS24665-132		. PIN, COTTER	F	1

*[1] 65C31332-3 ASSY SAME AS -2 EXCEPT THAT BEARING IS TIGHTENED TO INDICATED TORQUE (FIG. 23)

14. AFT TRUNNION FUSE NUT ASSEMBLY (65-84161-1,-4) (Fig. 27)

A. Magnetic particle check collar (5) and nut (10) per 20-20-01.

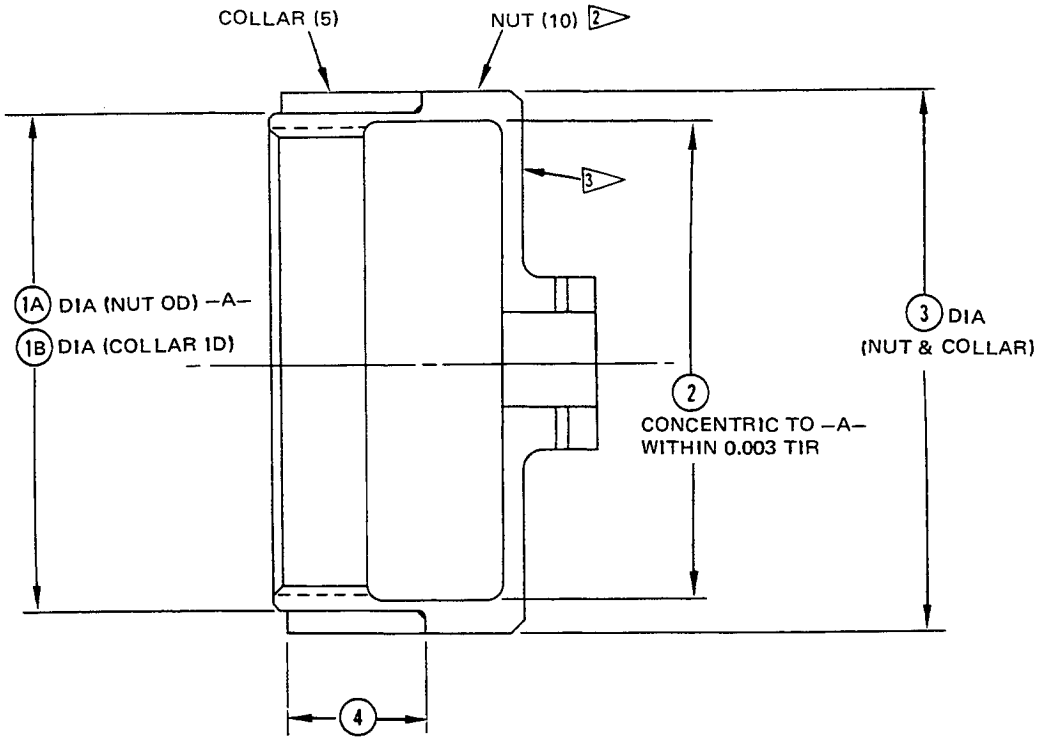
B. Repair (Fig. 26).

CAUTION: THIS IS A STRUCTURAL FUSE. DO NOT MACHINE BASE METAL OR EXCEED NUT (10) HEAT TREAT SHOWN.

(1) Cool nut (10) to -60°F to facilitate separation of parts. Remove collar (5) from nut (10).

(2) Refinish or replace parts as needed.

(3) Cool nut (10) to -60°F and install collar as shown.



	1A	1B	2	3	4
DESIGN DIM	2.6610 2.6605	2.6600 2.6595	2.5560 2.5460	2.91 2.89	0.76 0.74
REPAIR LIMIT 1	2.6597	2.6587	—	—	—

REFINISH

COLLAR (5), NUT (10):
CADMIUM PLATE (F–1.1926) ALL OVER.

REPAIR

(REPLACEMENT & REFINISH)

125/ MACHINE FINISH

MATERIAL:
COLLAR (5): 4340 STEEL, 180–200 KSI
NUT (10): 4340 STEEL, 125–145 KSI

ALL DIMENSIONS ARE IN INCHES

1 LIMIT FOR PLATING REPAIR. DO NOT MACHINE BASE METAL

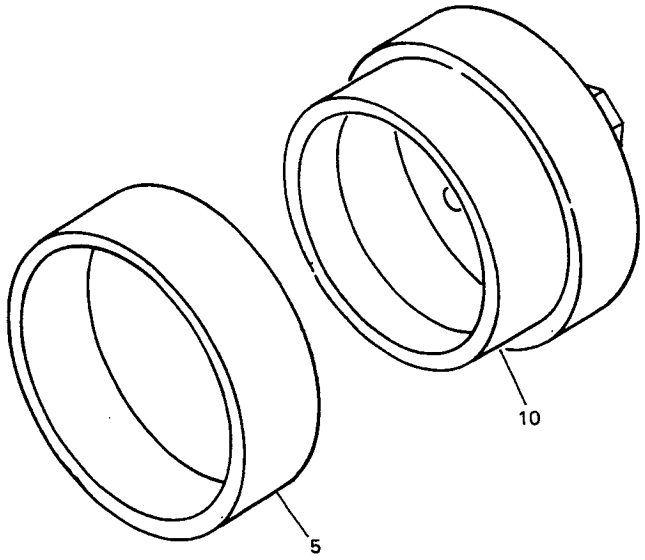
2 COOL NUT TO –60° F FOR SHRINK FIT INSTL

3 VIBRO ENGRAVE OR CHEMICALLY ETCH PART NUMBER, SERIAL NUMBER AND VENDOR NUMBER THIS AREA

65-84161-1, -4

Aft Trunnion Fuse Nut Repair and Refinish
Figure 26

C. Illustrated Parts List.



Aft Trunnion Fuse Nut Assembly
Figure 27

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
27-					
1	65-84161-1		NUT ASSY, AFT TRUNNION FUSE	A	RF
1	65-84161-4		NUT ASSY, AFT TRUNNION FUSE	B	RF
5	65-84161-2		. COLLAR	AB	1
10	65-84161-3		. NUT (OPT TO 65-84161-5)	A	1
10	65-84161-5		. NUT (OPT TO 65-84161-3)(PREF) (SERIALIZED)	A	1
10	65-84161-5		. NUT (SERIALIZED)	B	1

15. FORWARD TRUNNION BEARING ASSEMBLY (65C32649-1 thru -4) (Fig. 31)

A. Magnetic particle examine housing (5) (SOPM 20-20-01).

B. Housing (5) -- Outside diameter 1 (Fig. 28)

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

(2) Build up with chrome plate (SOPM 20-42-03).

(3) Grind to design dimensions and finish (SOPM 20-10-04).

(4) Apply dry film lubricant as shown.

C. Refinish -- See Fig. 28.

D. Bearing Replacement (65C32649-1, -2, -3)

(1) Remove rivets (15).

CAUTION: DO NOT HEAT THE ASSEMBLY FOR MORE THAN 24 HOURS, TO HELP PREVENT HEAT DAMAGE.

(2) On 65C32649-2 only, bake the bearing assembly at 450-550°F for 20-24 hours.

(3) Let the unit cool to room temperature.

(4) Put the bearing assembly in holding fixture F80096-7. Remove the bearing with wrench F80018-2.

(5) Install a replacement bearing as shown in Fig. 29.

E. Bearing Replacement (65C32649-4)

(1) Remove cotter pin (25) and pin (20).

(2) Remove stop bushing (30), if applicable (a clearance fit with sealant).

(3) Remove bearing (10). If it is too tight to easily remove, put the assembly in holding fixture F80096-7 and remove the bearing with wrench F80018-2.

(4) Apply MIL-G-21164 grease to threads of housing (5) and replacement bearing (10).

(5) Turn the bearing into the housing until it is down against the step on the housing.

(6) Turn the bearing back a minimum amount to align the slots.

(7) Put a wooden dowel in the aligned slots to keep them aligned. Then drill a 0.1845-0.1855 hole in the bearing with the hole in the housing as a pilot.

(8) Apply BMS 5-95 sealant to the shank of pin (20). Press fit the pin through the hole. Remove unwanted sealant but let some sealant stay to make a fillet seal around the pin head.

(9) Install cotter pin (25).

(10) Install stop bushing (30) with wet BMS 5-95 sealant against the bearing (10) outer race. Do not let sealant get into the interface between the bearing ball and outer race.

F. Special Tools and Equipment

NOTE: Equivalent substitutes can be used.

(1) F80096-7 -- Holding fixture

(2) F80018-2 -- Spanner wrench

G. Materials

(1) Grease -- MIL-G-21164 (SOPM 20-60-03)

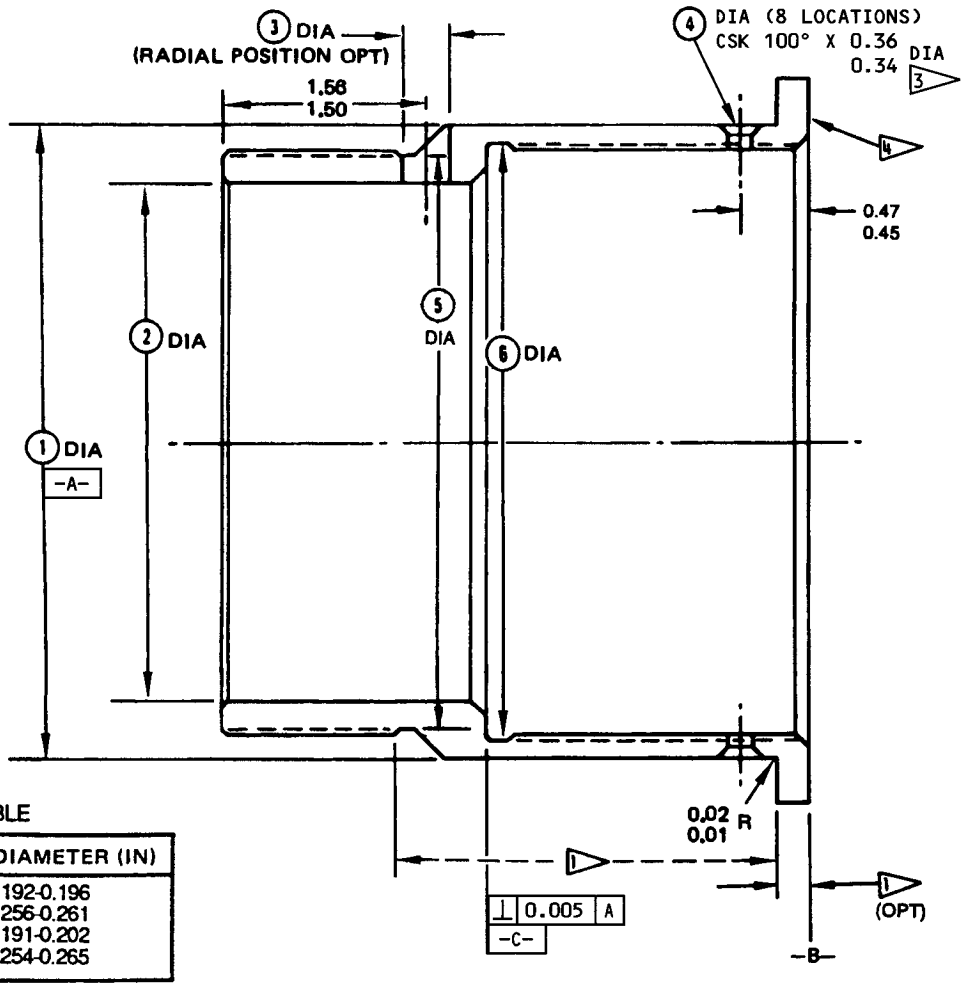
(2) Sealant -- BMS 5-95 (SOPM 20-60-04)

(3) Locking compound (SOPM 20-60-04)

(a) Loctite 277

(b) MIL-S-46163 Type 1, Grade L

(c) MIL-S-22473 Grade HVV



FASTENER TABLE

FASTENER	HOLE DIAMETER (IN)
CR3522-6-5	0.192-0.196
CR3522-8-5	0.256-0.261
MS20427M-6-8	0.191-0.202
MS20427M-8-8	0.254-0.265

	1	2	3	4	5	6
DESIGN DIM	5.020 5.019	4.160 4.140	0.391 0.375	0.196 0.192	4.495 4.485	4.780 4.775
REPAIR LIMIT 2	4.989	—	—	3	—	—

REFINISH

PASSIVATE (F-17.25, WHICH REPLACES F-17.09) ALL OVER. APPLY DRY FILM LUBRICANT TO AREA NOTED BY 1

REPAIR

REF 2

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN: (SOPM 20-10-03)
0.017-0.033 SHOT SIZE
0.016 A2 INTENSITY

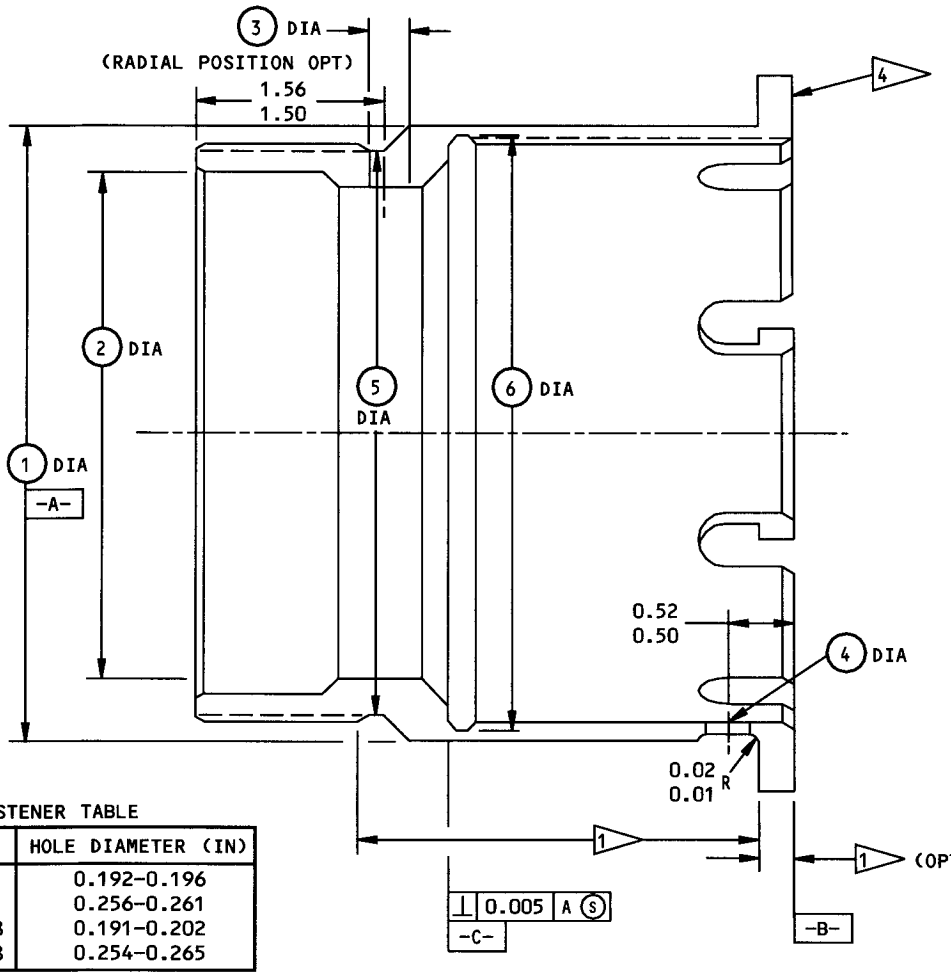
MATERIAL: 15-5PH CRES, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

65C32650-1,-2

Housing Repair and Refinish
Figure 28 (Sheet 1)

1750615



FASTENER TABLE

FASTENER	HOLE DIAMETER (IN)
CR3522-6-5	0.192-0.196
CR3522-8-5	0.256-0.261
MS20427M-6-8	0.191-0.202
MS20427M-8-8	0.254-0.265

	1	2	3	4	5	6
DESIGN DIM	5.020 5.019	4.160 4.140	0.391 0.375	0.1855 0.1845	4.495 4.485	4.780 4.775
REPAIR LIMIT 2	4.989	---	---	---	---	---

REFINISH

PASSIVATE (F-17.25, WHICH REPLACES F-17.09) ALL OVER.

APPLY DRY FILM LUBRICANT TO AREA NOTED 1

1 APPLY BMS 3-8 DRY FILM LUBRICANT (F-19.10)

2 LIMIT FOR CHROME PLATE BUILDUP (SOPM 20-42-03) AND GRINDING TO DESIGN DIMENSIONS AND FINISH (SOPM 20-10-04), WITH 0.08 MAX PLATING RUNOUT AT EDGES AND RELIEF.

3 REFER TO FASTENER TABLE FOR APPLICABLE HOLE SIZE AND FASTENER COMBINATION.

4 ELECTROCHEMICALLY ETCH THE SERIAL NUMBER HERE

REPAIR

REF 2

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN: (SOPM 20-10-03)
0.017-0.033 SHOT SIZE
0.016 A2 INTENSITY

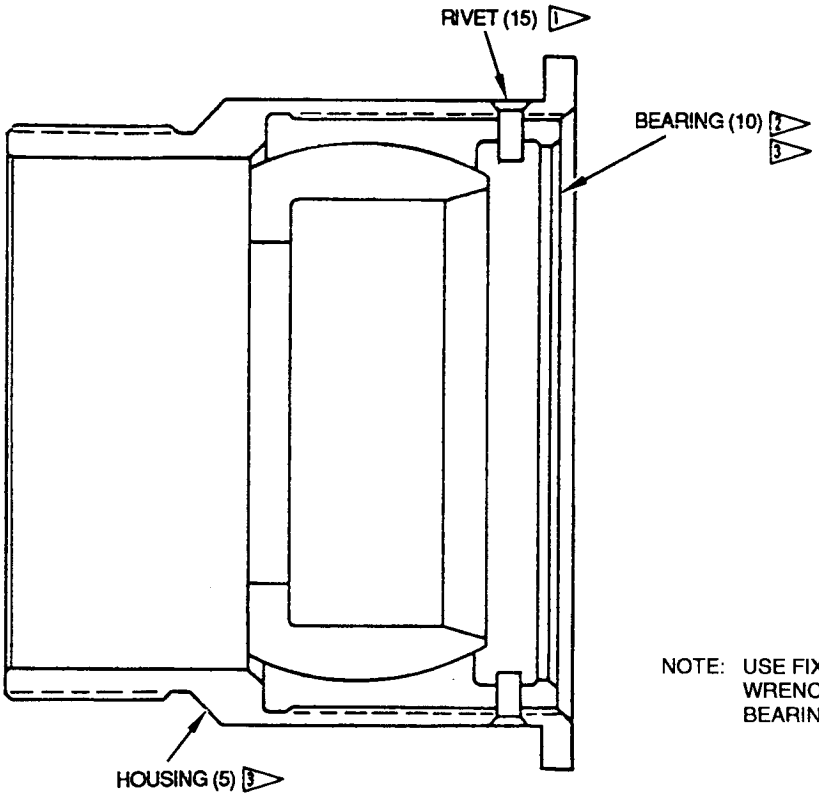
MATERIAL: 15-5PH CRES, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

65C32650-3

Housing Repair and Refinish
Figure 28 (Sheet 2)

E52102



NOTE: USE FIXTURE F80096-7 AND SPANNER WRENCH F80018-2 TO ASSEMBLE THE BEARING AND HOUSING

1 (1) IF THE RIVET HOLES IN THE BEARING HOUSING AND IN THE BEARING RACE DO NOT ALIGN AFTER THE TORQUE IS APPLIED, NEW HOLES MUST BE DRILLED. USE THE HOLES IN THE BEARING HOUSING TO DRILL THROUGH THE BEARING RACE IF THERE WILL BE A MINIMUM EDGE MARGIN OF 0.58 INCH BETWEEN THE OLD RIVET HOLE AND THE NEW RIVET HOLE. SEE FASTENER TABLE, FIG. 22, FOR HOLE SIZE AND RIVET COMBINATION. DRILL THE NEW HOLES THROUGH THE BEARING RACE. REMOVE BURRS FROM THE HOLES.

IF THIS MINIMUM EDGE MARGIN IS LESS THAN 0.58 INCH, DRILL 8 NEW HOLES THROUGH BOTH THE HOUSING AND BEARING RACE SPACED EQUALLY 45 DEGREES APART. MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 0.58 INCH BETWEEN THESE NEW HOLES AND ANY OLD HOLES. COUNTERSINK THE HOLES 100 DEGREES BY 0.353 INCH DIAMETER. REMOVE BURRS FROM THE HOLES.

(2) INSTALL THE RIVETS. REMOVE SHARP EDGES OR BURRS FROM THE RIVET HEADS.

2 THE SPHERICAL BALL MUST TURN FREELY BY HAND AFTER ASSEMBLY IS COMPLETE. MAKE SURE NO LOCKING COMPOUND IS ON THE SPHERICAL SURFACES OF THE BEARING ASSEMBLY.

3 (1) DEGREASE THE THREADS OF THE BEARING AND THE HOUSING (SOLVENT CLEAN BY THE FINAL CLEANING PROCEDURE IN SOPM 20-30-03).

(2) APPLY 8 EQUALLY SPACED, 1/8 INCH DIAMETER BEADS OF LOCKING COMPOUND ON THE AXIAL LENGTH OF THE THREADS ON THE HOUSING AND THE BEARING RACE.

CAUTION: DO NOT GET ANY LOCKING COMPOUND ON THE SPHERICAL SURFACES OF THE BEARING ASSEMBLY.

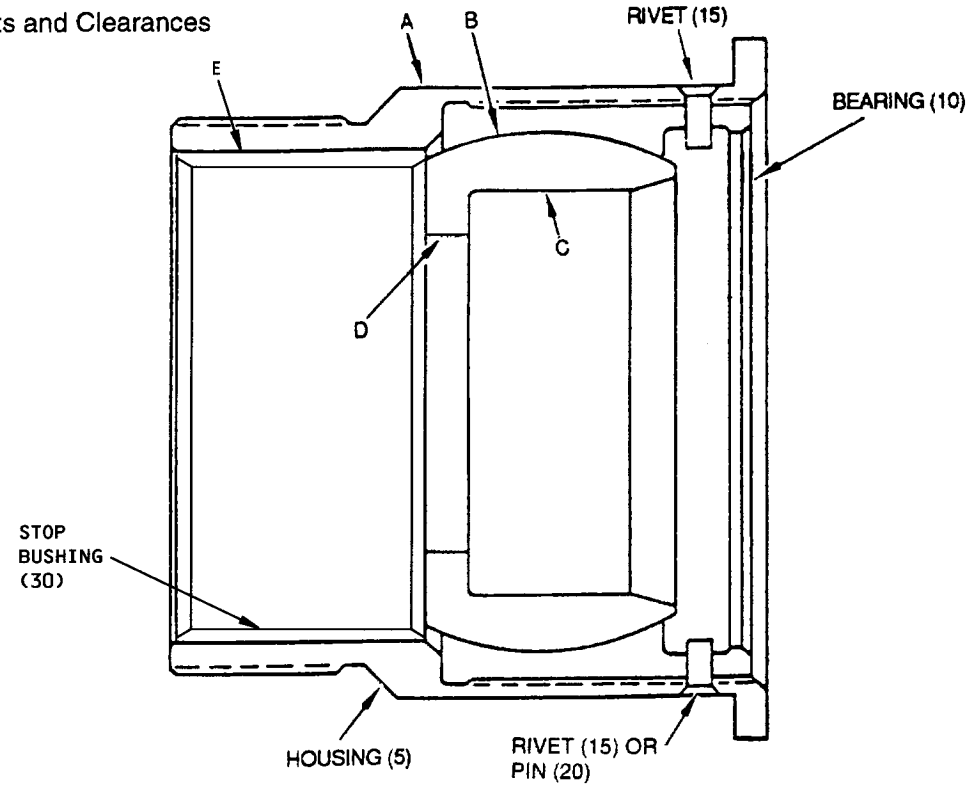
(3) INSTALL THE BEARING RACE IN THE BEARING HOUSING. TIGHTEN THE BEARING TO 50-100 POUND-FEET. THE TORQUE MUST BE APPLIED WITHIN 10 MINUTES OF ASSEMBLY.

65C32649-1,-2,-3

Assembly Details
Figure 29

1750760

G. Fits and Clearances



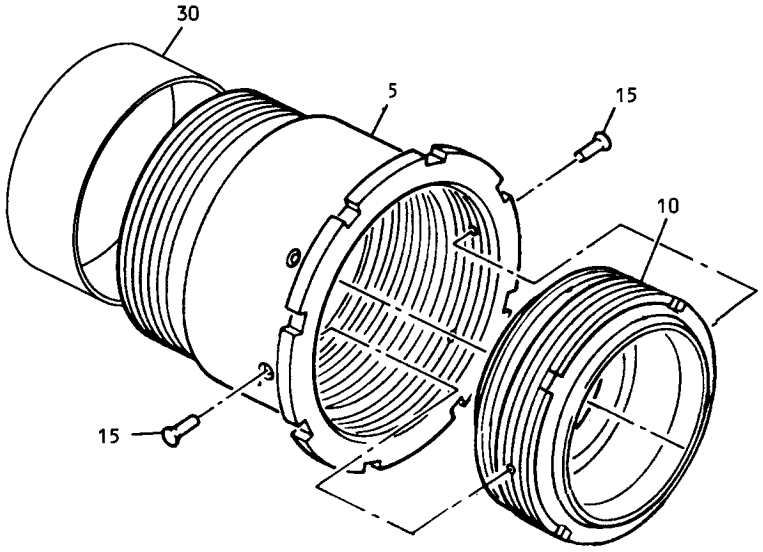
Ref Letter Fig. 30	Mating Item No. Fig. 31	Original Design Dimensions: Dimensions (inches) Min	Original Design Dimensions: Dimensions (inches) Max	Original Design Dimensions: Assembly Clearance (inch) Min	Original Design Dimensions: Assembly Clearance (inch) Max	Service Wear Limits: Dimension Limits (inch) Min	Service Wear Limits: Dimension Limits (inch) Max	Service Wear Limits: Maximum Allowable Clearance (inch)
A	ID *[1]	5.027	5.028	0.007	0.009		5.054	0.030
	OD 5	5.019	5.020			4.997		
B	ID 10*[2]	4.3765	4.3775	*[4] 0.0015	*[4] 0.0035			*[4] 0.0150
	OD 10*[3]	4.3740	4.3750					
C	ID 10*[3]	3.250	3.251					
D	ID 10*[3]	2.625	2.630					
E	ID 5	4.1400	4.1600	0.0050	0.0450			
	OD 30	4.1150	4.1350					

*[1] Mating sleeve 69C32645 in WBL 103.56 forward trunnion support
*[2] Outer race
*[3] Inner ball
*[4] Radial Play

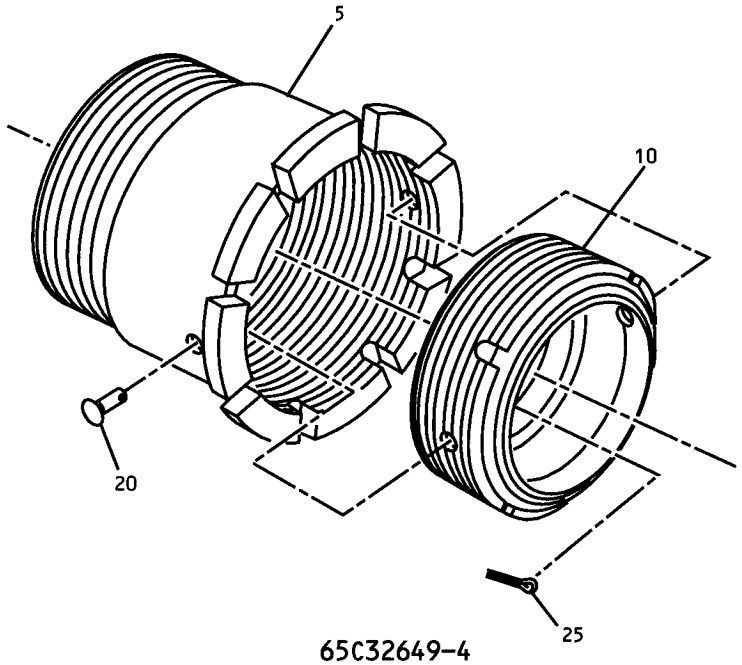
Fits and Clearances
Figure 30

H45347

H. Illustrated Parts List



65C32649-1,-2,-3



65C32649-4

Forward Trunnion Bearing Assembly
Figure 31

E52210

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
31-1	65C32649-1		BEARING ASSY, FORWARD TRUNNION (PRE SB 32-1217)	A	RF
1	65C32649-2		BEARING ASSY, FORWARD TRUNNION *[1] (PRE SB 32-1217)	B	RF
1	65C32649-3		BEARING ASSY, FORWARD TRUNNION (SERIALIZED)(PRE SB 32-1217)	C	RF
1	65C32649-4		BEARING ASSY, FORWARD TRUNNION (POST SB 32-1217)	D	RF
5	65C32650-1		. HOUSING (OPT TO 65C32650-2)	AB	1
5	65C32650-2		. HOUSING (SERIALIZED)(PREF) (OPT TO 65C32650-1)	AB	1
5	65C32650-2		. HOUSING (SERIALIZED)	C	1
5	65C32650-3		. HOUSING	D	1
10	10-62097-1		. BEARING (OPT TO 10-62097-4)	AB	1
10	10-62097-4		. BEARING (SERIALIZED)(PREF) (OPT TO 10-62097-1)	AB	1
10	10-62097-4		. BEARING (SERIALIZED)	C	1
10	10-62097-7		. BEARING	D	1
15	CR3522-6-5		. RIVET, V11815	ABC	8
15	CR3522-8-5		. RIVET, V11815	ABC	8
15	MS20427M6-8		. RIVET, SQUEEZE, (OPT)(SB 32-1217)	ABC	8
15	MS20427M8-8		. RIVET, SQUEEZE, (OPT)	ABC	8
20	MS20392-2C9		. PIN	D	1
25	MS24665-132		. PIN, COTTER	D	1
30	65C37436-1		. BUSHING, STOP (POST SB 32-1217)	D	1

*[1] 65C32649-2 ASSY SAME AS -1 EXCEPT LOCKING COMPOUND IS USED BETWEEN THE HOUSING AND THE BEARING

16. REACTION LINK BOLT (65C33723-1,-2,-3, 69-38993-1,-2,-3) (Fig. 32, 32A)

NOTE: 65C33723-3 and 69-38993-3 have serial numbers.

A. Magnetic particle examine these bolts per SOPM 20-20-01.

B. Repair (Fig. 32, 32A)

(1) Shank OD

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

(b) Build up the machined surface with chrome plate (SOPM 20-42-03).

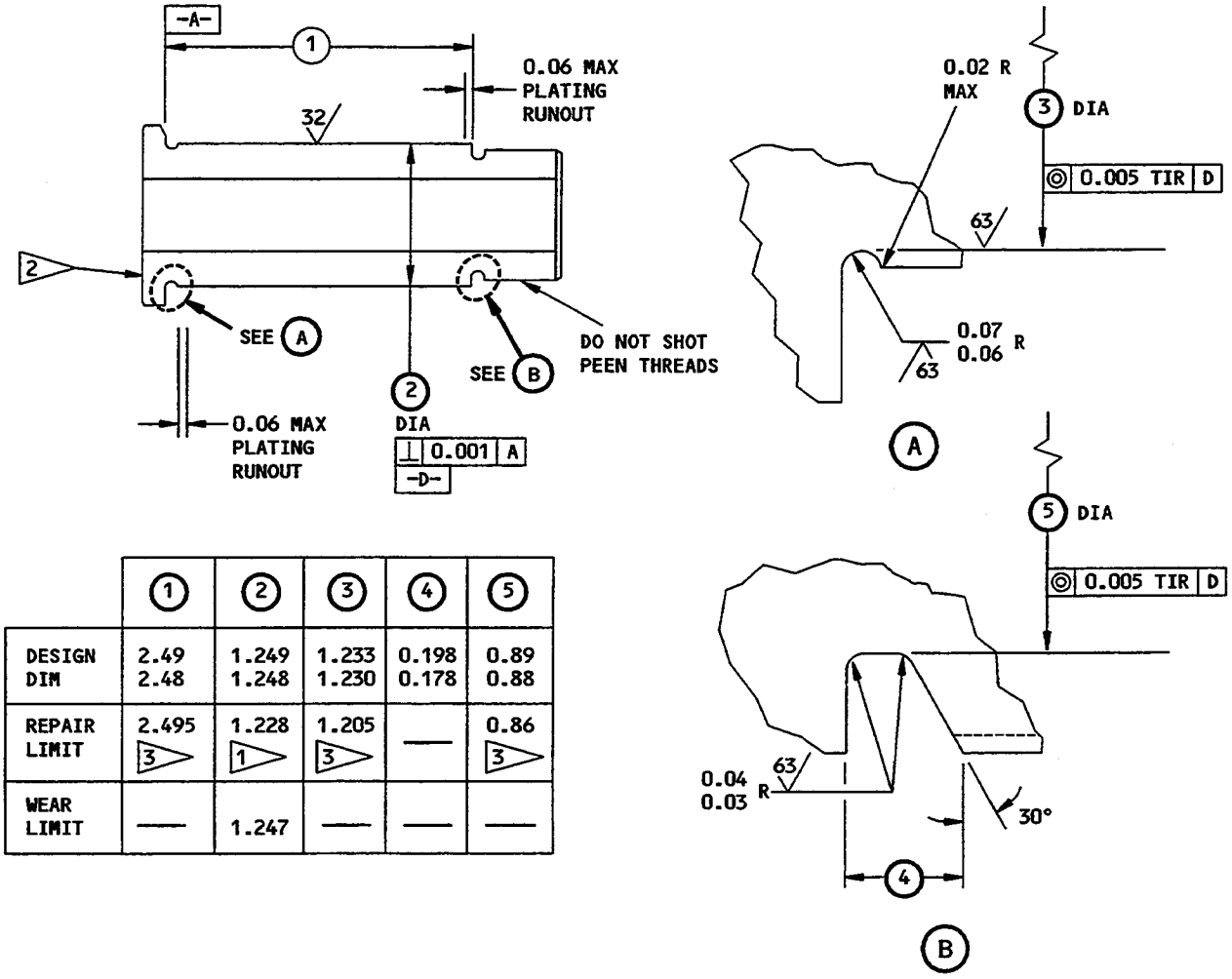
(c) Grind to design diameter and finish.

(2) Relief grooves

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

(b) Refinish as indicated.

C. Refinish -- See Fig. 32, 32A



	1	2	3	4	5
DESIGN DIM	2.49 2.48	1.249 1.248	1.233 1.230	0.198 0.178	0.89 0.88
REPAIR LIMIT	2.495 ▷3	1.228 ▷1	1.205 ▷3	—	0.86 ▷3
WEAR LIMIT	—	1.247	—	—	—

REFINISH

CHROME PLATE (F-15.34) DIA -D-, 0.003 MIN THICK. CADMIUM-TITANIUM PLATE (F-15.01) AND APPLY BMS 10-11, TYPE 1 PRIMER (F-20.03) ON OTHER SURFACES, BUT NO PRIMER ON THREADS. WIPE THREADS WITH PRIMER (F-19.45). APPLY CORROSION PREVENTIVE COMPOUND (F-19.03) TO BORE.

REPAIR

REF ▷1▷3

125/ MACHINE FINISH EXCEPT AS NOTED

SHOT PEEN (REF 20-10-03):
0.016-0.039 SHOT SIZE
0.015 A2 INTENSITY

MATERIAL: 4340M STEEL, 270-300 KSI

ALL DIMENSIONS ARE IN INCHES.

▷1 LIMIT FOR BUILDUP WITH CHROME PLATE (REF 20-42-03), WITH 0.06 MAX PLATING RUN OUT AT EDGES. GRIND TO DESIGN DIMENSIONS AND FINISH.

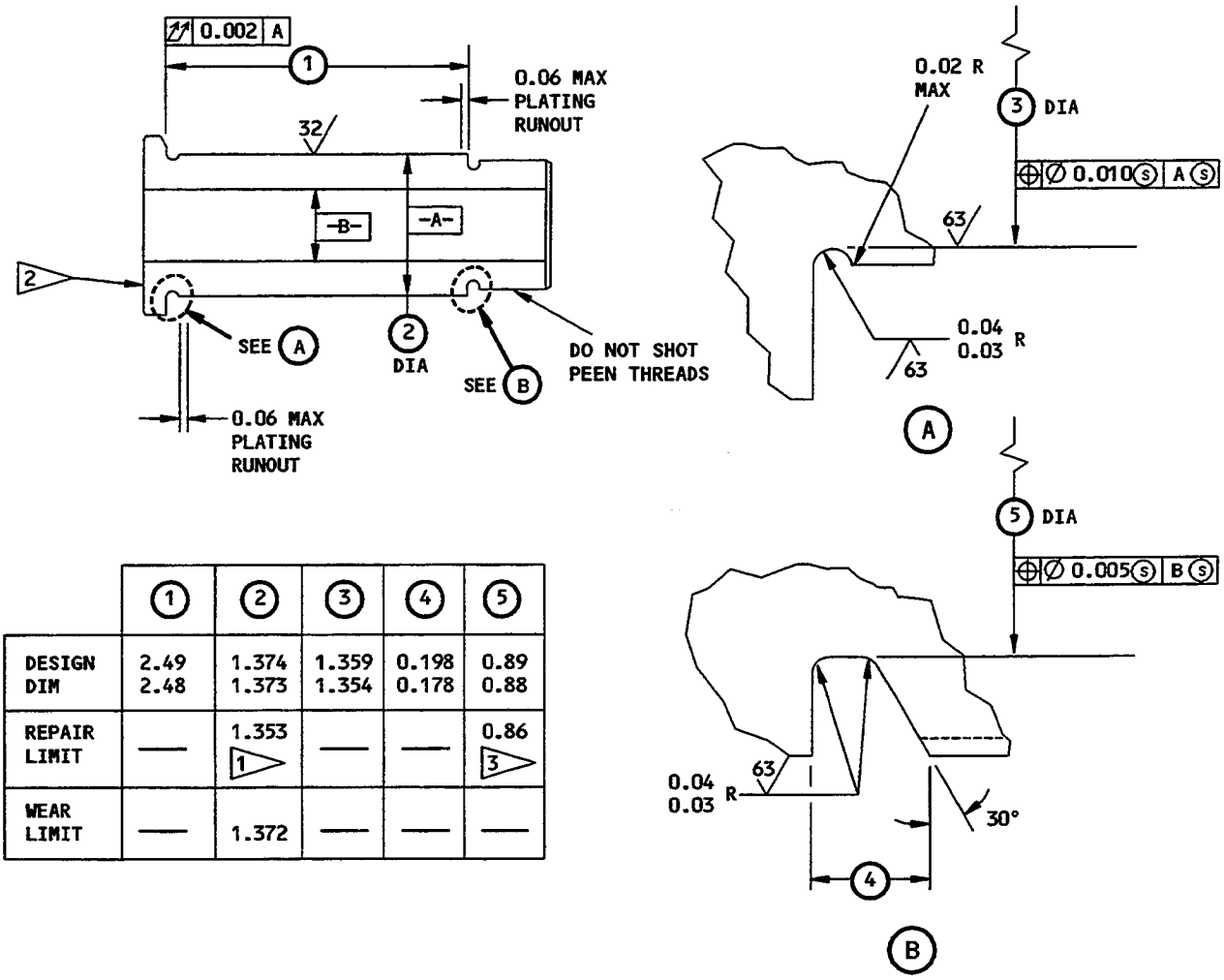
▷2 VIBRO ENGRAVE SERIAL NUMBER, PART NUMBER AND VENDOR NUMBER THIS AREA.

▷3 RESTORATION TO DESIGN DIM NOT REQUIRED.

69-38993-1,-2,-3

Bolt Repair and Refinish
Figure 32

G16172



	1	2	3	4	5
DESIGN DIM	2.49 2.48	1.374 1.373	1.359 1.354	0.198 0.178	0.89 0.88
REPAIR LIMIT	—	1.353 1	—	—	0.86 3
WEAR LIMIT	—	1.372	—	—	—

REFINISH

CHROME PLATE (F-15.34) DIA -A-. CADMIUM-TITANIUM PLATE (F-15.01) AND APPLY PRIMER BMS 10-11, TYPE 1 (F-20.02) TO OTHER SURFACES, BUT NO PRIMER ON THREADS. APPLY ONE MORE LAYER OF PRIMER IN BORE. WIPE CHROME PLATE AND THREADS WITH PRIMER (F-19.45). APPLY ENAMEL BMS 10-11, TYPE 2 (F-21.02) BUT NOT ON THREADS, CHROME PLATE AND BORE. APPLY MIL-C-11796, CLASS 1, CORROSION PREVENTIVE COMPOUND (F-19.03) TO THE FULL LENGTH OF THE BORE.

REPAIR

REF 1 3

125 MACHINE FINISH EXCEPT AS NOTED

SHOT PEEN (REF 20-10-03):
0.016-0.039 SHOT SIZE
0.015 A2 INTENSITY

MATERIAL: 4340M STEEL, 270-300 KSI

ALL DIMENSIONS ARE IN INCHES.

1 LIMIT FOR BUILDUP WITH CHROME PLATE (REF 20-42-03), WITH A 0.06 MAX PLATING RUN OUT. GRIND TO DESIGN DIMENSIONS AND FINISH.

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

3 RESTORATION TO DESIGN DIM NOT REQUIRED.

65C33723-1,-2,-3

Bolt Repair and Refinish
Figure 32A

G16271

17. BELLCRANK COLLAR (69-51838-1,-2,-3) (Fig. 33)

NOTE: 69-51838-3 has a serial number.

A. Magnetic particle examine the collar per SOPM 20-20-01.

B. Main Bore (Fig. 33)

(1) Method 1 -- Nickel plate buildup

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

(b) Build up with sulfamate nickel plate (Ref SOPM 20-42-09).

(c) Machine to design dimensions and finish.

(2) Method 2 -- Installation of repair sleeve

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

(b) Make a repair sleeve (Fig. 33A)

(c) Install the sleeve by the shrink fit method of SOPM 20-50-03.

(d) Machine the bore of the sleeve to design dimensions and finish.

(e) Drill holes for the crossbolt through the wall of the sleeve, with the crossbolt holes in the collar as a guide.

C. Crossbolt Holes (Fig.33)

(1) Method 1 -- Nickel plate buildup

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

(b) Build up with sulfamate nickel plate (Ref SOPM 20-42-09).

(c) Machine to design dimensions and finish.

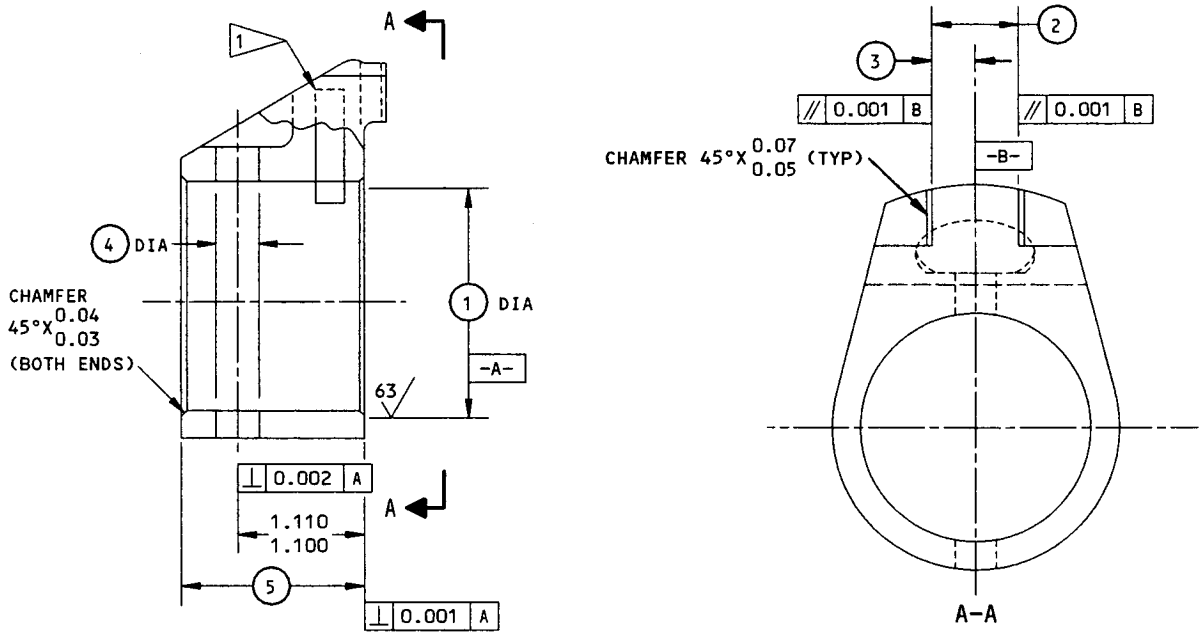
(2) Method 2 – Installation of repair sleeves

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

(b) Make repair sleeves (Fig. 33A)

(c) Install the sleeves by the shrink fit method of SOPM 20-50-03.

(d) Machine the bore of the sleeves to design dimensions and finish.



	1	2 69-51838-1	2 69-51838-2, -3	3	4	5
DESIGN DIM	2.002 2.000	0.765 0.760	0.770 0.765	0.385 0.380	0.379 0.375	1.62 1.60
REPAIR LIMIT	2.060 ▷2 2.082 ▷3	———	———	———	0.439 ▷2 ▷3	1.56 ▷4
WEAR LIMIT	2.006	———	———	———	0.385	1.56

REFINISH

CADMIUM PLATE (F-1.32 OR F-15.02). ON COLLARS 69-51838-3, APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02) ALL OVER. NO BEADS, RUNS OR SAGS IN THE PRIMER ARE PERMITTED IN DIA -A- BORE. THE PRIMER IS RECOMMENDED ON COLLARS 69-51838-1,-2.

▷1 VIBRO ENGRAVE PART NUMBER, SERIAL NUMBER, AND VENDOR NUMBER IN THIS AREA.

▷2 LIMIT FOR SULFAMATE NICKEL PLATE BUILDUP.

▷3 LIMIT FOR INSTALLATION OF REPAIR SLEEVE (FIG. 33A).

▷4 RESTORATION TO DESIGN DIMENSIONS NOT REQUIRED.

REPAIR

REF ▷2 ▷3 ▷4

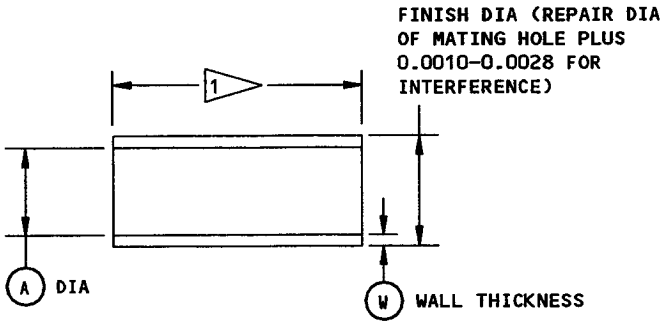
125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: 4340 STEEL, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

69-51838-1,-2,-3
Collar Repair and Refinish
Figure 33

H40370



HOLE LOCATION (FIG. 33)	(A)	(W)
(1)	2.002 2.001	0.035 MIN
(4)	0.379 0.375	0.030 MIN

FINISH:

CADMIUM PLATE (REF SOPM 20-42-05)

(1) LENGTH AS NECESSARY FOR A FIT FLUSH TO 0.010 MAX BELOW SURFACES

125 MACHINE FINISH

MATERIAL: AL-NI-BRZ PER AMS 4640 OR 4880, OR 17-4PH CRES PER AMS 5643, OR 17-7PH CRES TUBING PER AMS 5568, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

Repair Sleeve Details
Figure 33A

D. Collar Length (Fig. 33)

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

(2) Refinish as indicated.

E. Refinish -- See Fig. 33

18. UPLOCK RELEASE ROD ASSEMBLY (69-53869-1,-3,-5) (Fig. 35)

A. Penetrant examine rod (5) and nut (10) per SOPM 20-20-02.

B. Refinish

(1) Rod (5) -- Chemical treat and apply primer, BMS 10-11, Type 1 (SRF-2.901), but not on threads. Material: Al alloy.

C. Parts Replacement -- See Fig. 34.

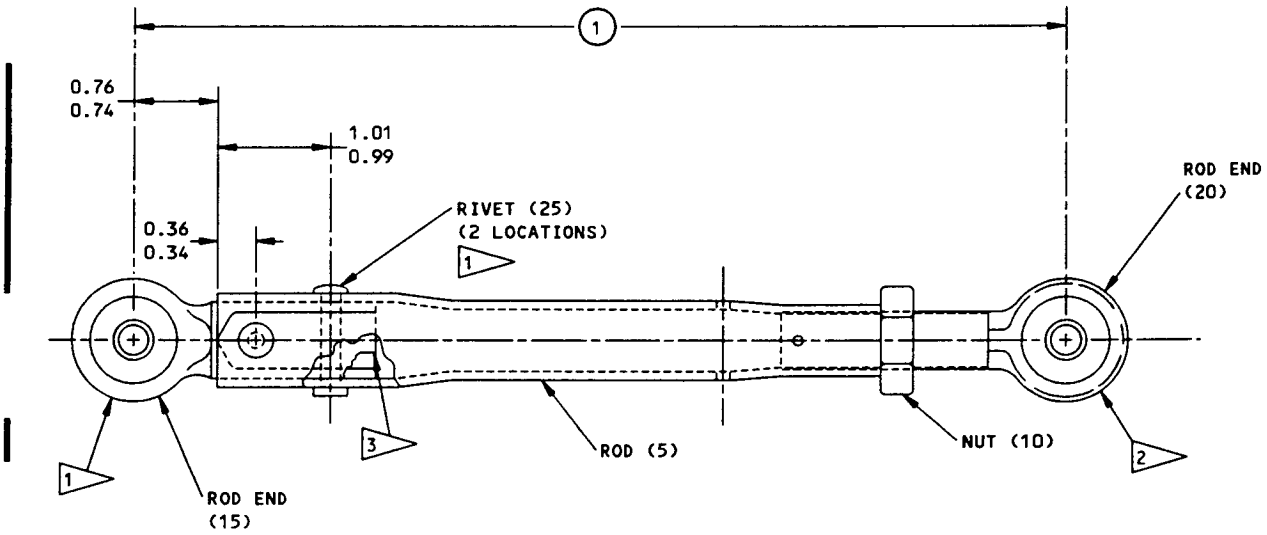
D. Materials

NOTE: Equivalent substitutes can be used.

(1) Potting Compound -- BMS 5-28, Type 3 (Ref SOPM 20-60-04). Optional: Narmco 3199 epoxy resin with curing agent 7103

(2) Primer -- BMS 10-11, Type 1 (Ref SOPM 20-60-02)

(3) Corrosion Preventive Compound -- MIL-C-11796, Class 3 (Ref SOPM 20-60-02)



	1
69-53868-1,-3	8.25 8.23
69-53869-5	8.36 8.34

1 INSTALL WITH WET BMS 10-11, TYPE 1 PRIMER (F-12.46)

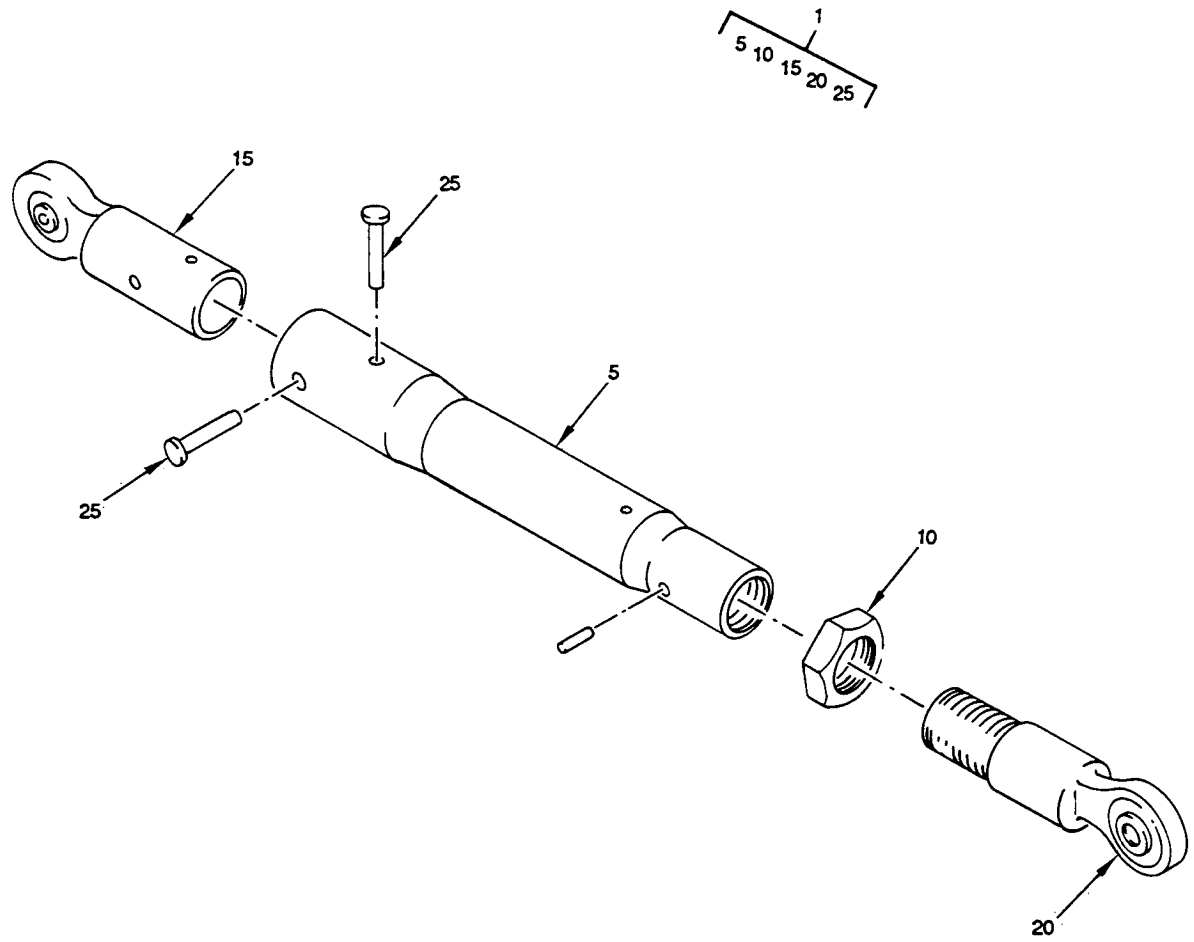
2 INSTALL WITH MIL-C-11796, CLASS 3 CORROSION PREVENTIVE COMPOUND (F-12.44)

3 FILL WITH POTTING COMPOUND

ITEM NUMBERS REFER TO FIG. 35
ALL DIMENSIONS ARE IN INCHES

Parts Replacement
Figure 34

H40397



Manual Extension Uplock Release Rod
Figure 35

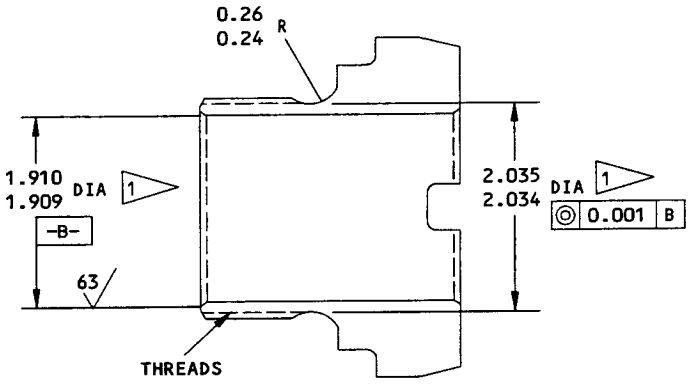
FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
35-					
1	69-53869-1		ROD ASSY	A	RF
1	69-53869-3		ROD ASSY	B	RF
1	69-53869-5		ROD ASSY	C	RF
5	69-53869-2		. ROD	A	1
5	69-53869-4		. ROD	BC	1
10	AN316-9R		. NUT	AB	1
10	NAS509-9		. NUT (OPT TO NAS1423-9)	C	1
10	NAS1423-9		. NUT (PREF)(OPT TO NAS509-9)	C	1
15	RR4H11FS428		. ROD END		1
15	RR4H11EG531		. ROD END (OPT TO 35)		1
20	RR4M9FS428		. ROD END		1
20	RR4M9E6531		. ROD END (OPT TO 45)		1
25	MS20470D5		. RIVET		2

21. FORWARD TRUNNION BEARING BOLT (69-42196-4,-5)

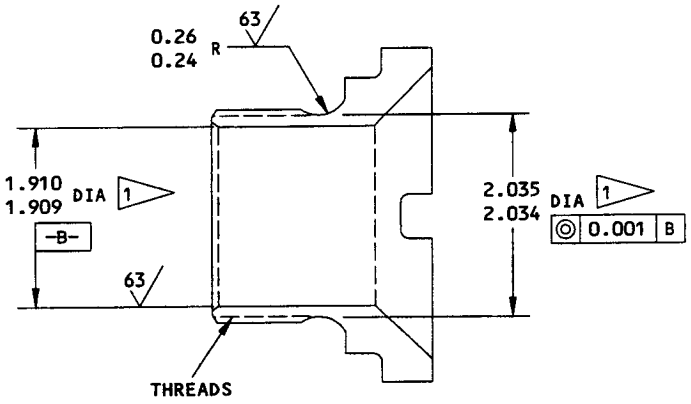
A. Magnetic particle examine the bolt (SOPM 20-20-01).

B. Repair (Fig. 36)

(1) These bolts are structural fuses. Repair is only a replacement of the original finish.



69-42196-4



69-42196-5

REFINISH

CADMIUM-TITANIUM PLATE (F-15.01) ALL OVER.

1 BEFORE PLATING

REPAIR

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: 4330M STEEL, 185-200 KSI

ALL DIMENSIONS ARE IN INCHES

69-42196-4,-5

Bolt Repair and Refinish
Figure 36

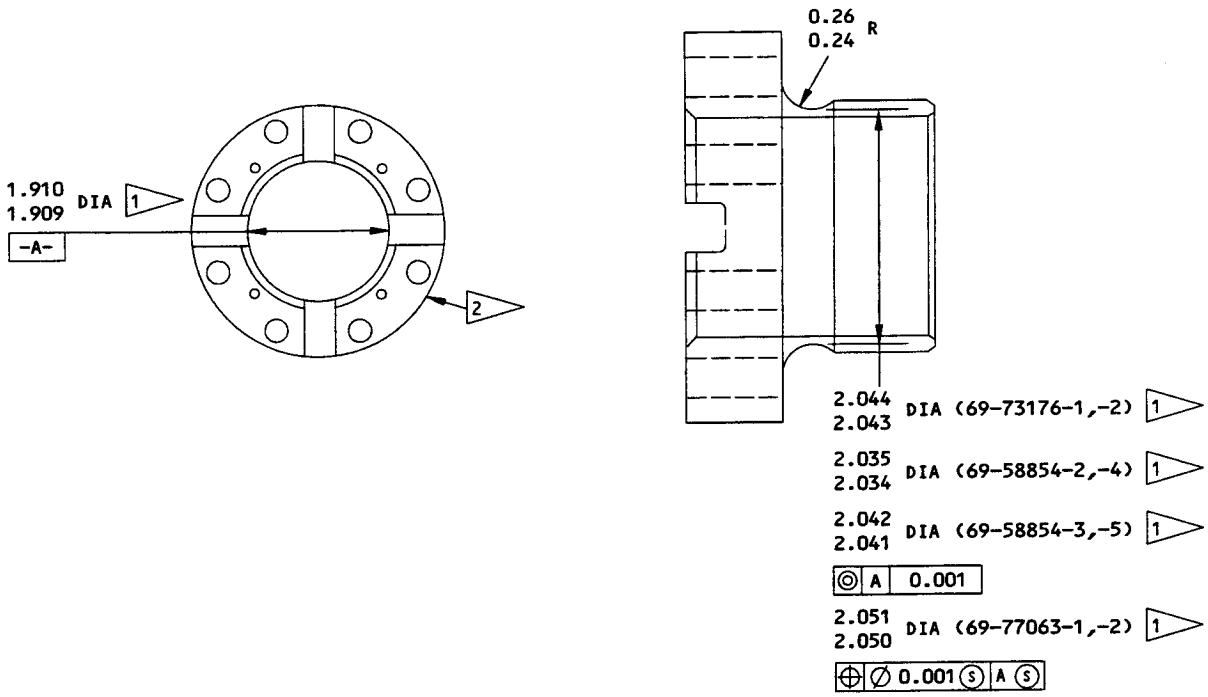
22. FORWARD TRUNNION BEARING BOLT (69-58854-2 THRU -5; 69-73176-1,-2; 69-77063-1,-2

NOTE: Bolts 69-58854-4,-5, 69-73176-2 and 69-77063-2 have a serial number.

A. Magnetic particle examine the bolt (SOPM 20-20-01).

B. Repair (Fig. 37)

(1) These bolts are structural fuses. Repair is only the replacement of the original finish.



REFINISH

CADMIUM-TITANIUM PLATE (F-15.01) ALL OVER.

1 BEFORE PLATING

2 VIBRO ENGRAVE PART NUMBER, SERIAL NUMBER AND VENDOR NUMBER THIS AREA WITH SPHERICAL NOSE TO 0.015 MAX DEPTH, LETTERS 0.25 MAX HEIGHT

REPAIR

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: 4330M STEEL, 185-200 KSI

ALL DIMENSIONS ARE IN INCHES

69-58854-2 THRU -5
69-73176-1,-2
69-77063-1,-2

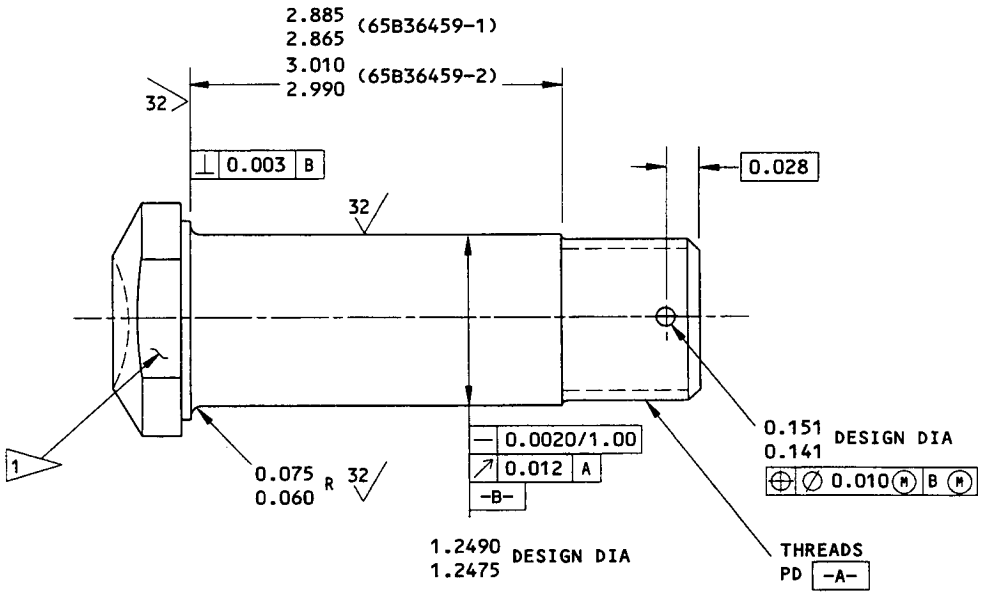
Bolt Repair and Refinish
Figure 37

23. ACTUATOR ATTACH BOLT (65C36459-1,-2)

NOTE: This bolt has a serial number.

A. Penetrant examine the bolt per SOPM 20-20-02.

B. Refinish -- See Fig. 38.



REFINISH

CHROME PLATE (F-15.03) DIA -B-.
CADMIUM PLATE (F-15.06) ALL OTHER SURFACES.

1 VIBRO ENGRAVE PART NUMBER, SERIAL NUMBER AND VENDOR NUMBER THIS AREA WITH SPHERICAL SPHERICAL NOSE TO 0.015 MAX DEPTH, LETTERS 0.25 MAX HEIGHT

REPAIR

(SAME AS REFINISH)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: A286 STEEL

SHOT PEEN:

0.017-0.039 SHOT SIZE
0.016 A2 INTENSITY

ALL DIMENSIONS ARE IN INCHES.

65C36459-1,-2

Bolt Repair and Refinish
Figure 38

24. ACTUATOR UPLOCK PIN (69-41625-1)

A. Magnetic particle examine the pin per SOPM 20-20-01, Class A.

B. Repair (Fig. 39)

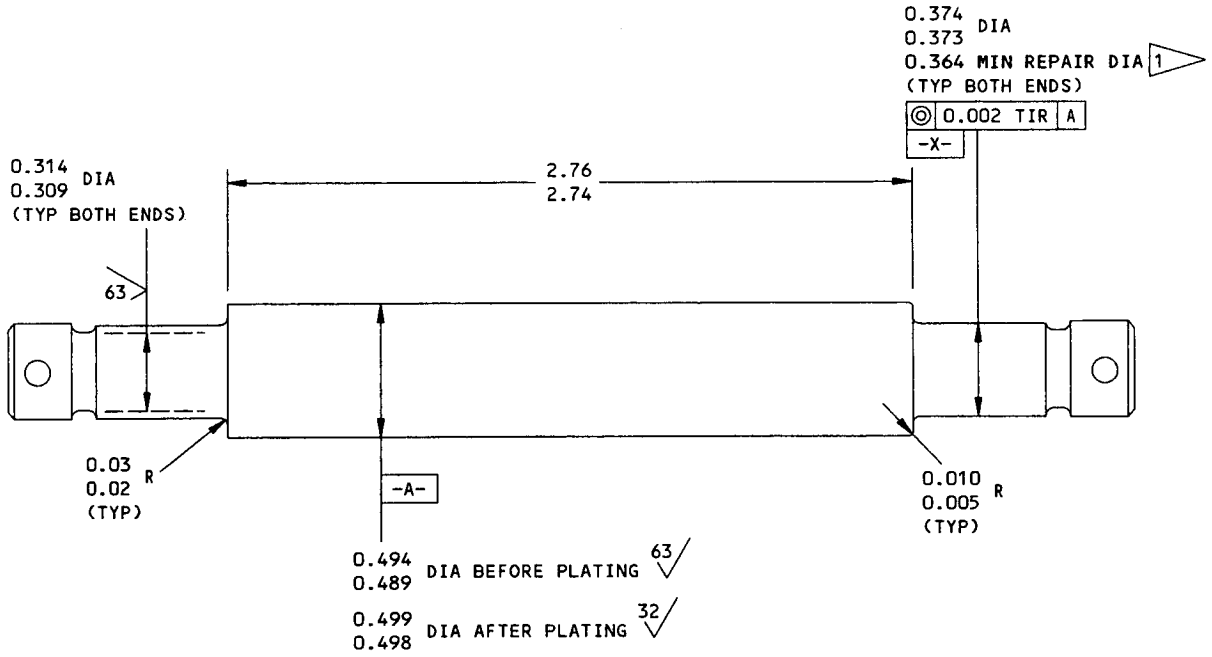
(1) Shank OD - Diameter X

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

(b) Build up machined surface with chrome plate (SOPM 20-42-03) or nickel plate (SOPM 20-42-09).

(c) Grind the chrome plate, and machine the nickel plate, to design diameter and finish.

C. Refinish -- See Fig. 39.



REFINISH

CHROME PLATE (F-15.04) DIA -A-, 0.002 THICK AFTER GRINDING. PUT A 0.06 MAX PLATING RUNOUT AT EDGES. CADMIUM-TITANIUM PLATE (F-15.01) ALL OTHER SURFACES.

1 LIMIT FOR CHROME OR NICKEL PLATE BUILDUP AND GRIND OR MACHINE TO DESIGN DIMENSIONS AND FINISH

REPAIR

REF 1

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: 4340M STEEL, 270-300 KSI

SHOT PEEN:

0.017-0.046 SHOT SIZE
0.010-0.016 A2 INTENSITY

ALL DIMENSIONS ARE IN INCHES

69-41625-1

Pin Repair and Refinish
Figure 39

K53700

VENDORS

VS0352	NIPPON MINIATURE BEARING CO., LTD., TOKYO, JAPAN
V09455	BFM TRANSPORT DYNAMICS CORP., BOX 1953, 3131 W. SEGERSTROM AVE., SANTA ANA, CALIFORNIA 92702-1953
V11815	CHERRY AEROSPACE FASTENERS, DIV. OF TEXTRON, INC., BOX 2157, 1224 E. WARNER AVE, SANTA ANA, CALIFORNIA 92707-0157
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 BEARING DIV., 59 FIELD ST., TORRINGTON, CONNECTICUT 06730-4942
V50294	NEW HAMPSHIRE BALL BEARINGS, INC., 9730 INDEPENDENCE AVE., P.O. BOX 2515, CHATSWORTH, CALIFORNIA 91311-4323
V73134	IMO INDUSTRIES, INC., HEIM BEARINGS DIV., 60 ROUND HILL ROAD, P.O. BOX 430, FAIRFIELD, CONNECTICUT 06430-0430
V77896	REXNORD CORP., BEARING OPERATION, 2400 CURTIS ST., DOWNERS GROVE, ILLINOIS 60515-4307
V81376	SOUTHWEST PRODUCTS CO., 2240 BUENA VISTA ST., BALDWIN PARK, CALIFORNIA 91706-2046
V95879	STEWART-WARNER CORP., ALEMITE DIV., 1826 DIVERSEY PARKWAY, CHICAGO, ILLINOIS 60614-1540
V97613	SARGENT CONTROLS AND AEROSPACE, KAHR BEARING DIV., 5675 W. BURLINGAME RD., TUCSON, ARIZONA 85743, OR P.O. BOX 730, CORTARO, ARIZONA 85652-0730