TO: ALL HOLDERS OF MAIN GEAR ACTUATOR ASSEMBLY OVERHAUL MANUAL, 32-30-11

REVISION NO. 50, 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 clarifications and updated callouts					X								
Added repair of the rod end bore with back-to-back sleeves					X								
Added torques of hydraulic fittings						X							

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MAIN GEAR ACTUATOR ASSEMBLY

32-30-11

BOEING P/N 65-44910-6 thru -9, -11, -12, -13, -27 thru -32
65-44925-7 thru -9, -11, -12, -15, -16, -21, -22, -28 thru -31, -33, -34, -36, -41
69-77496-5 thru -14, -17 thru -23, -26 thru -30

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		PRR 30446	Aug 15/67
		PRR 30668	Nov 15/68
		PRR 30779	Nov 15/68
		PRR 30874	Nov 15/68
		PRR 31941	Dec 25/72
		PRR 32367	Sep 25/74
		PRR 33000	Jan 5/82
32-1144		MC 3454-37K	Dec 5/83
32-1170		MC 3454-43K	Mar 5/87
32-1186		PRR 34179-R	Mar 5/87
32-1179		MC 3015-60K	Sep 5/87
32-1184		MC 3454-47K	Sep 5/87
32-1187		MC 3454-56K	Sep 5/87
32-1198		PRR 34319	Mar 5/89
32-1198, Rev. 2			Sep 5/93
32-1264		PRR 35057	Sep 5/93
32-1270			Jun 5/93
32-1227			Sep 1/95
32-1303		PRR 35005-222	Jul 1/99
32-1227, Rev. 3			Nov 1/04

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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
	32-30-11		701	Mar 1/03		
	T-1	Nov 1/04	702	Mar 1/03		
	T-2	BLANK	801	Mar 1/03		
*	LEP-1	Jul 1/09	802	BLANK		
	LEP-2	BLANK	1001	Mar 1/04		
*	T/C-1	Jul 1/09	1002	BLANK		
	T/C-2	BLANK	1101	Dec 5/91		
	1	Sep 1/95	1102	Jul 1/98		
	2	Mar 5/89	1103	Jul 1/98		
	101	Mar 1/04	1104	Nov 1/06		
	102	BLANK	1105	Jul 1/04		
	201	Mar 5/89	1106	Jul 1/04		
	202	BLANK	1107	Jul 1/04		
	301	Mar 5/89	1108	Jul 1/04		
	302	BLANK	1109	BLANK		
*	401	Jul 1/09	1110	Jul 1/98		
*	402	Jul 1/09	1111	Jul 1/98		
*	403	Jul 1/09	1112	Nov 1/04		
*	404	Jul 1/09	1113	Nov 1/04		
*	404A	Jul 1/09	1114	Jul 1/98		
*	404B	Jul 1/09				
*	404C	Jul 1/09				
	404D	BLANK				
	405	Nov 1/01				
	406	Jul 1/02				
	407	Mar 1/01				
	408	Nov 1/03				
	409	Nov 1/98				
	410	Nov 1/98				
	411	Nov 1/98				
*	412	Jul 1/09				
*	413	Jul 1/09				
*	414	Jul 1/09				
*	415	Jul 1/09				
*	416	BLANK				
	501	Jul 1/08				
*	502	Jul 1/09				
*	503	Jul 1/09				
*	504	Jul 1/09				
	505	Sep 1/95				
	506	Sep 1/95				
*	507	Jul 1/09				
	508	BLANK				
	601	Dec 5/91				
	602	BLANK				

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*[1] Special instructions are not necessary. Use standard industry practices and the instructions in SOPM 20-44-02 and 20-70-01.

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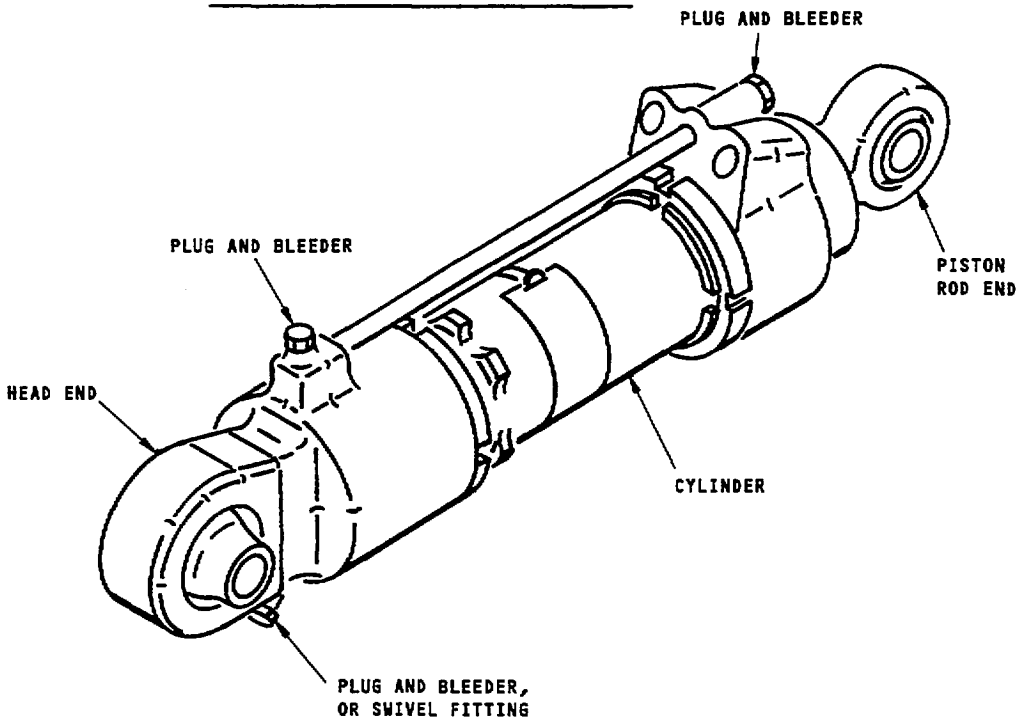
MAIN GEAR ACTUATOR ASSEMBLY



Main Gear Actuator Assembly
Figure 1

DESCRIPTION AND OPERATION

1. Description

   A. The main gear actuator assembly is a hydraulic unit that has a piston, a cylinder, and a sliding valve snubbing assembly.

2. Operation

   A. The actuator assembly retracts and extends the main gear. As the main gear retracts, the actuator piston extends and contacts the sliding valve assembly. This produces a snubbing action that slows down the main gear retraction. The main gear extends slowly at first, until the actuator piston retracts enough to release the sliding valve. Then the piston follows the free fall of the gear.

3. Leading Particulars (Approximate)

A. Operating Medium -- Hydraulic fluid, BMS 3-11

B. Operating Pressure -- 3000 psi

C. Proof Pressure -- 5400 psi

D. Length (between bearing centerlines)

(1) Extended -- 36 inches

(2) Retracted -- 24 inches

E. Port Sizes -- 9/16-18 UNF-3B for 3/8 inch OD tube (per AND10050-6)
-- 7/8-14 UNF-3B for 5/8 inch OD tube (per AND10050-10)

F. Weight -- 32 pounds

DISASSEMBLY

CAUTION: WHEN YOU WORK WITH ROD END (8), DO NOT TURN THE BALL, OR THE TEFLON LINER COULD COME LOOSE FROM THE HOUSING.

CAUTION: DO NOT APPLY A SIDE LOAD TO PISTON (30) WHILE IT IS EXTENDED OR YOU COULD BEND IT.

NOTE: Refer to Fig. 1101 for item numbers unless shown differently.

1. Hold actuator assembly with strap wrench on a flat surface. Pressurize extend port with 3000 psi hydraulic pressure. Extend piston (30) and keep pressurize on extend port. Hold piston (30) with a V block and strap wrench. Bend tab of lockwasher (9) out of rod end (8) groove. Remove rod end (8) with a F71313 spanner wrench. Remove lockwasher (9).

2. Remove all external lockwiring, transportation plugs and parts (1 thru 4, 6 thru 12, Fig. 1102) if installed.

3. Remove plug (47) and O-ring (48). Drain hydraulic fluid from unit.

4. Remove plug (1) and O-ring (2). Pull out transfer tube (5). Disassemble parts (3, 4, 6, 7).

5. With wrench A32045-109, loosen locknut (25). Remove key (26). Hold cylinder (29). Unscrew and remove cap (22). Disassemble parts (10 thru 16) and (23) from cap (24).

6. With wrench A32045-109, loosen locknut (35). Remove key (36). Hold head end (51). Unscrew and remove cylinder (29). Pull piston (30) from head end to let you cut the lockwire on screws (46) and remove screws (46).

CAUTION: SPRING (27) IS COMPRESSED 25 POUNDS. BE CAREFUL WHEN YOU REMOVE NUT (17). SLEEVE (33) AND SLIDE (34) MUST BE KEPT TOGETHER AS A MATCHED SET.

7. Remove head end (51) with attached valve (32) from piston (30). Disassemble parts (17 thru 21 or 21A, 27, 28, 33, 34, 38, 41 thru 45). Use adapter A32045-108 to loosen operator (20).

8. Remove locknuts (25, 35) from cylinder.

9. Remove parts (39, 40) from piston (30).

10. Remove nameplate (54) and strap (55) from cylinder.

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CLEANING

1. Clean all parts except bearings (8A, 52) in accordance with standard industry practices and the information contained in 20-30-03.

2. Clean bearings (8A, 52) only by special method for teflon lined bearings in 20-30-01.

INSPECTION/CHECK

1. Check all parts for obvious defects in accordance with standard industry practices. Refer to Fits and Clearances for design dimensions and wear limits.

2. Magnetic particle check spring (27), cylinder (29), piston (30) per 20-20-01.

3. Penetrant check transfer tube (5), retainer (12), bushing (23), cap (24), head end (53) per 20-20-02.

4. Check spring (27) per Fig. 301.

5. Check slide (34) and sleeve (33) as follows:

   A. Lubricate slide and sleeve thoroughly with hydraulic fluid, BMS 3-11, and assemble at room temperature.

   B. Check for sufficient diametrical clearance by turning assembly on end. Slide must move evenly by its own weight through sleeve.

   C. Repeat check with slide rotated to three different positions within sleeve approximately 120 degrees apart.

Item No. (Fig.1101)	Part No.	Approximate Free Length (Inches)	Test Length (Inches)	Allowable Load Limits (Pounds)
27	66-22767-1	4.54	3.37 2.32 1.85	22.5-27.5 42.5-52.5 *[1]
27	69-54682-1	4.35	3.37 2.26 1.90	34.0-42.0 73.0-89.0 *[1]

*[1] No permanent set shall result when compressed to this length.

Spring Check Data
Figure 301

REPAIR

1. Materials

   NOTE: Equivalent substitutes can be used.

   A. Primer -- BMS 10-11, Type 1 (SOPM 20-60-02)

   B. Enamel -- BMS 10-11, Type 2, white gloss color 702 (SOPM 20-60-02)

   C. Sealant -- BMS 5-45, Class B (Replaces BMS 5-26, class B) (SOPM 20-60-04)

   D. Sealant -- BMS 5-95 (SOPM 20-60-04)

   E. Solid film lubricant -- BMS 3-8 (SOPM 20-60-03)

   F. Grease -- MIL-G-21164 (SOPM 20-60-03)

2. Repair (Fig. 1101)

   A. Repair small defects by standard industry practices. Refer to Fits and Clearances for design dimensions and wear limits.

   B. Refer to the following standard practices for procedures applicable to repair:

      (1) SOPM 20-10-01 and CMM 32-00-05 for repair of high strength steel parts.

      (2) SOPM 20-10-02 for machining alloy steel parts.

      (3) SOPM 20-10-03 for shot peening.

      (4) SOPM 20-10-04 for grinding of chrome plate.

      (5) SOPM 20-42-03 for hard chrome plating.

      (6) SOPM 20-42-04 to prepare aluminum for electroplating.

      (7) SOPM 20-42-09 for nickel plating.

      (8) SOPM 20-50-08 for application of solid film lubricant.

   C. Rod End (8B) (Fig. 401, 401A)

      (1) Machine the bore for the bearing as necessary, within repair limits, to remove defects. Restore the bore chamfers as shown.

      (2) Shot peen (SOPM 20-10-03).

      (3) Method 1 -- Chrome Plate Buildup

         (a) Build up the machined bore with chrome plate (SOPM 20-42-03).

         (b) Grind the chrome plate (SOPM 20-10-04) to design dimensions and finish.

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(4) Method 2 -- Repair Sleeve Installation (69-66801-series)

(a) Make a repair sleeve (Fig. 408)

(b) Install the sleeve by the shrink fit method (SOPM 20-50-03)

(c) Roller swage the ends (SOPM 20-50-03)

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

(e) Install a replacement bearing and roller swage it over the sleeve (SOPM 20-50-03).

(5) Method 3 -- Repair Sleeve Installation (65C33018-series)

(a) Make a repair sleeve (Fig. 409)

(b) Install the sleeve by the shrink fit method (SOPM 20-50-03)

(c) Drill a hole through the wall of the sleeve, with the lube passage as a guide.

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

(e) Install a replacement bearing and roller swage it over the sleeve (SOPM 20-50-03).

(6) Method 4 -- Back-to-Back Repair Sleeve Installation

(a) Make two repair sleeves (Fig. 410 or Fig. 411, as applicable).

(b) Install the sleeves in the bore by the shrink fit method (SOPM 20-50-03) with BMS 5-95 sealant.

(c) Remove unwanted sealant from the gap between the sleeves. On 65C33018-series sleeves, make sure the lube passages are clear.

(d) Machine the bore of the sleeves to design dimensions and finish. Be sure to restore the bore chamfer.

(e) Install a replacement bearing and roller swage it over the sleeves (SOPM 20-50-03).

D. Cap (24) (Fig. 402)

(1) Examine the cap for the location of the lockwire hole. Drill a lockwire hole in the location shown (Fig. 402) if a lockwire hole is not at that location.

(2) Bore for bushing

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

(b) Penetrant examine (SOPM 20-20-02).

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(c) Shot peen as indicated (SOPM 20-10-03).

(d) Prepare the surface (SOPM 20-42-04).

(e) Build up with nickel plate (SOPM 20-42-09).

(f) Machine the nickel plate to design dimensions and finish.

E. Cylinder (29) (Fig. 403)

(1) Machine the bore as necessary, within repair limits, to remove defects.

(2) Shot peen as indicated (SOPM 20-10-03).

(3) Build up with chrome plate (SOPM 20-42-03). Grind the chrome plate (SOPM 20-10-04) to design dimensions and finish shown.

F. Piston (30) (Fig. 404)

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

(2) Shot peen (SOPM 20-10-03) as indicated.

(3) Build up with chrome plate (SOPM 20-42-03). Grind the chrome plate (SOPM 20-10-04) to design dimensions and finish.

G. Head end (53) (Fig. 406)

(1) Bore for bearing

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

(b) Shot peen (SOPM 20-10-03) as indicated.

(c) Make a C-shaped repair sleeve as shown.

(d) Install the sleeve with BMS 5-95 sealant, with the gap of the sleeve in the position shown.

(e) Install a replacement bearing in the sleeve with wet BMS 5-95 sealant.

(f) Roller swage the sleeve over the bearing and the head end surfaces (SOPM 20-50-03).

(g) Make a check of the breakaway torque of the bearing per par. 4.D.(4).

(2) Outside diameter surfaces

(a) Blend out defects with a 5 to 1 ratio to the adjacent surfaces if this will not decrease the wall thickness below 0.285 inch, such as at the internal relief grooves.

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(b) Penetrant examine the surface (SOPM 20-20-02).

(c) Shot peen (SOPM 20-10-03) as indicated.

(d) Refinish as indicated. Or, if the finish was only locally removed, chemical treat the area (SOPM 20-43-03).

(e) Be sure to apply topcoat as shown in Fig. 405.

3. Refinish (Fig. 1101)

NOTE: Refer to SOPM 20-30-02 for stripping of protective finishes, and to SOPM 20-41-01 for explanation of F and SRF finish codes.

A. Transfer tube (5), nut (10), locknuts (25, 35), spacer (31), -- Chromic acid anodize (F-2.26) all over. Material: Al alloy.

B. Rod end assy (8) -- Fig. 401.

C. Retainer (12) -- Cadmium plate (F-4.201) the exterior surfaces only (2.488-2.490 inches OD after plating). Material: Al-Ni-Bronze.

D. Operator (20) -- No finish.

E. Cap (24) -- Fig. 402.

F. Cylinder (29) -- Fig. 403.

G. Piston (30) -- Fig. 404.

H. Plug (47) -- Cadmium plate (F-1.1926) the head and thread relief only. Material: 4340 steel, 180-200 ksi.

I. Head end (53) -- Fig. 406

J. Actuator assembly topcoat -- Fig. 405.

4. Replacement (Fig. 1101)

A. Replace lockwasher (9), backup rings, O-ring packings, spring pins (21, 38), foot seal (13) and cotter pin (19).

B. Replace parts that are unserviceable or cannot be repaired.

C. Slide (34) and sleeve (33) are a matched set. If one of these parts is unserviceable, replace the set.

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D. Bearing (52)

(1) Remove the old bearing.

(2) If you find defects on the mating bore of the head end, refer to par. 2.G.(1) for repair instructions.

(3) If the bore was repaired with a sleeve, refer to par. 2.G.(1) for replacement instructions. If not, clean the mating surfaces of the bore and the bearing. Install a replacement bearing with a thin layer of wet BMS 5-45 sealant on the mating surfaces. Remove unwanted sealant. Do not let sealant get on the Teflon surfaces of the bearing. Roller swage the bearing (SOPM 20-50-03).

(4) Measure the breakaway torque of the installed bearing. It must not be more than 60 pound-inches. Use this procedure:

(a) Turn the inner race through at least 360 degrees.

I (b) Do step (2) again, but make a note of the positions where the torque to turn the bearing is higher than average.

(c) Measure the breakaway torque at all positions where the torque was higher than average, or at 3 locations approximately 120 degrees apart if the torque was constant.

E. Bushing (23) -- Install a replacement bushing by the shrink fit method of SOPM 20-50-03. Make a check of the dimensions and machine them as necessary to design dimensions and finish shown (Fig. 402).

F. Nameplate (54) -- If necessary, steel stamp the serial number and part number on the replacement nameplate before installation. Bend the nameplate to fit the cylinder, then install it with a new strap (55).

G. Wire (37) -- Put a replacement wire in the bore of slide (34) and bend each end to the same
I side around the slide OD. The wire must not be outside a 0.72-inch diameter (Fig. 503).

I H. For better operation of the snubbing valve, replace the 66-22767-1 spring (27) with a 69-54682-1 spring. Then identify the actuator with suffix A after the vendor serial number.

I. Spacer (31) -- Press a replacement spacer onto piston (30).

J. Lube fittings (8C) -- Replace per CMM 32-00-03. Apply MIL-G-21164 grease at the lube fittings.

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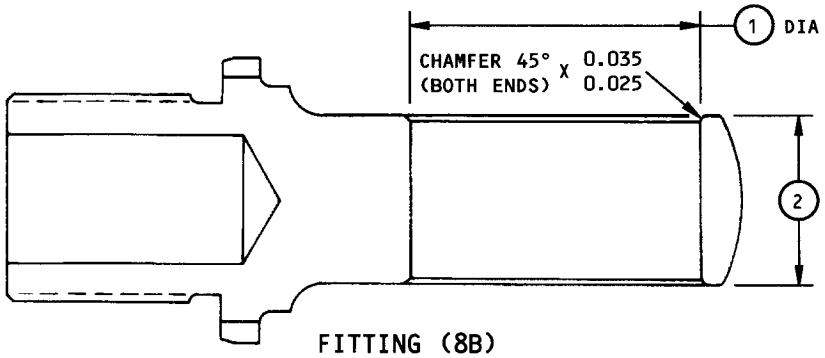
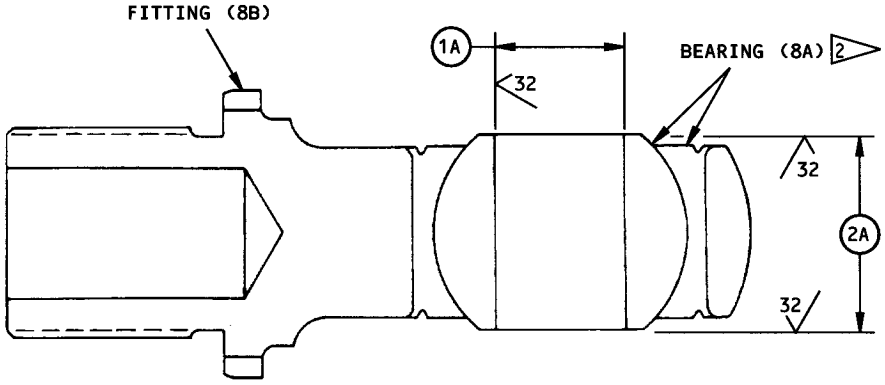


FITTING (8B)
69-66801-2



	1	1A	2	2A
DESIGN DIM	2.2505 2.2500	1.0000 0.9995	1.32 1.31	1.500 1.495
REPAIR LIMIT	2.2705 1 2.3100 3	---	---	---

REFINISH

FITTING (8B):

PASSIVATE (F-17.25, WHICH REPLACES F-17.09)
(15-5PH CRES ONLY)
CADMIUM PLATE (F-15.25) (4330M OR 4340 STEELS)

1 LIMIT FOR CHROME PLATE BUILDUP AND GRIND TO DESIGN DIMENSIONS AND FINISH. PUT A 0.04 MAXIMUM CHROME PLATE RUNOUT AT EACH END OF BORE.

2 ROLLER SWAGE (SOPM 20-50-03)

3 LIMIT FOR INSTALLATION OF REPAIR SLEEVE (FIG. 408) OR BACK-TO-BACK REPAIR SLEEVES (FIG. 410)

REPAIR

REF 1 3

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN: (SOPM 20-10-03)

0.017-0.046 SHOT SIZE
0.010 A2 INTENSITY
DO NOT SHOT PEEN THREADS

MATERIAL:

FITTING (8B): 15-5PH CRES, OR 4330M OR 4340 STEEL; 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

ROD END ASSY (8)
69-66801-1,-4

Rod End Repair and Refinish
Figure 401

H74830

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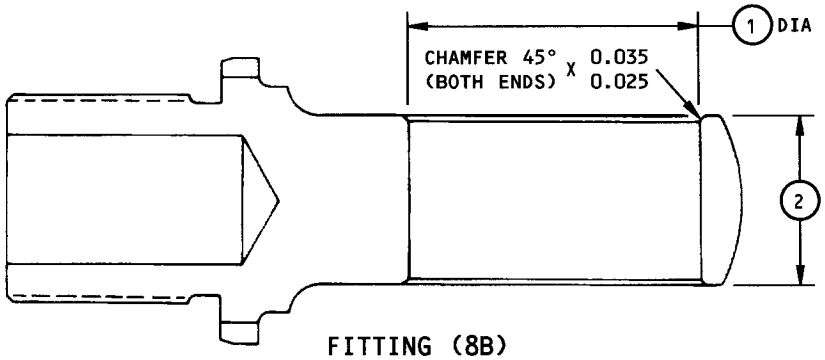
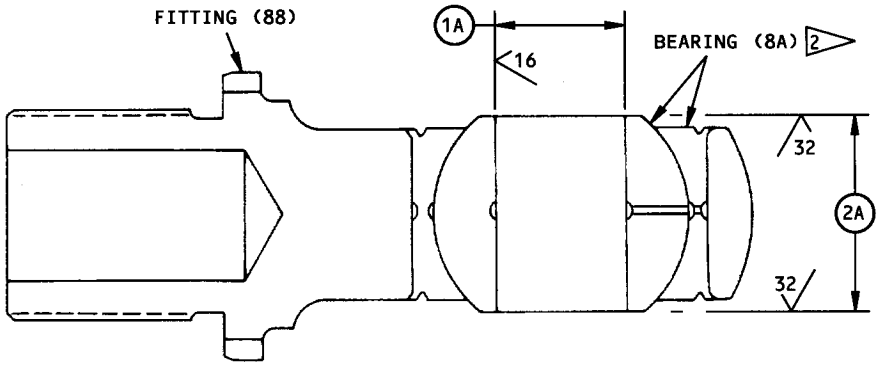


FITTING (8B)
65C33018-4,-8



	1 3	1 4	1A	2	2A
DESIGN DIM	2.3765 2.3760	2.3755 2.3750	1.2500 1.2495	1.125 1.120	1.501 1.499
REPAIR LIMIT	2.3965 1	2.3955 1 2.4355 5	—	—	—

REFINISH

FITTING (8B): PASSIVATE (F-17.25, WHICH REPLACES F-17.09) ALL OVER. ON THREADS, APPLY SOLID FILM LUBE BMS 3-8 (F-19.10)

1 LIMIT FOR CHROME PLATE BUILDUP AND GRIND TO DESIGN DIMENSION AND FINISH. PUT A 0.04 MAX CHROME PLATE RUNOUT AT LUBE HOLE EDGES AND EACH END OF BORE.

2 ROLLER SWAGE (SOPM 20-50-03)

3 65C33018-4 (PRE SB 32-1264)

4 65C33018-8 (POST SB 32-1264)

5 LIMIT FOR INSTALLATION OF REPAIR SLEEVE (FIG. 409) OR BACK-TO-BACK REPAIR SLEEVES (FIG. 411)

REPAIR

REF 1 5

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN: (SOPM 20-10-03)
0.017-0.046 SHOT SIZE
0.016 A2 INTENSITY
DO NOT SHOT PEEN THREADS

MATERIAL: FITTING (8B)
15-5PH CRES, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

ROD END ASSY (8)
65C33018-3,-7

Rod End Repair and Refinish
Figure 401A

H74841

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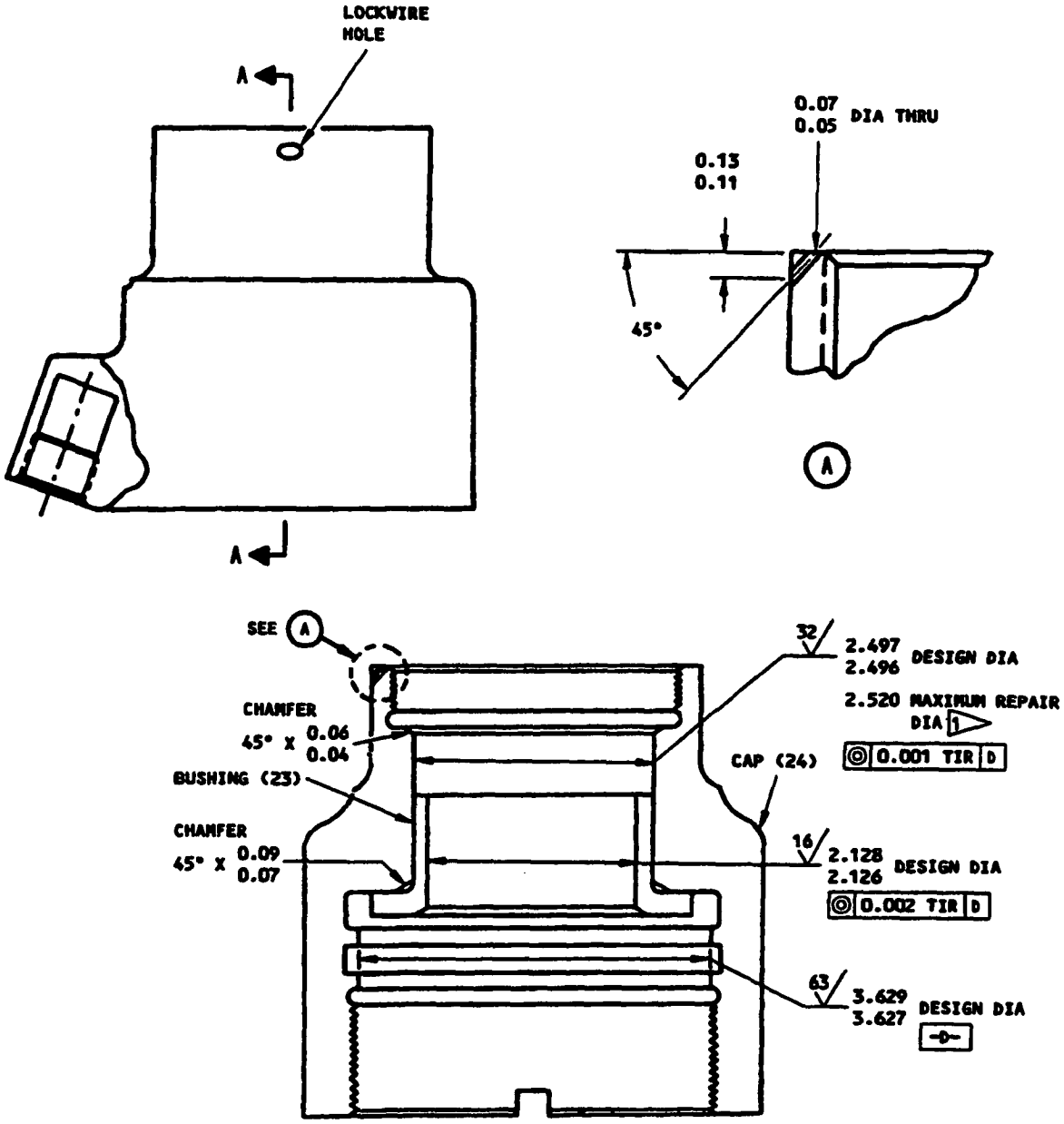

REFINISH

CAP (24):

CHROMIC ACID ANODIZE (F-2.26 OR F-17.02 OR F-17.04) ALL OVER.

1 LIMIT FOR NICKEL PLATE BUILDUP (SOPM 20-42-09) AND MACHINE TO DESIGN DIMENSIONS AND FINISH.

REPAIR

REF 1

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN (SOPM 20-10-03)
0.023-0.055 SHOT SIZE
0.014 A2 INTENSITY

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

Cap Repair and Refinish
Figure 402

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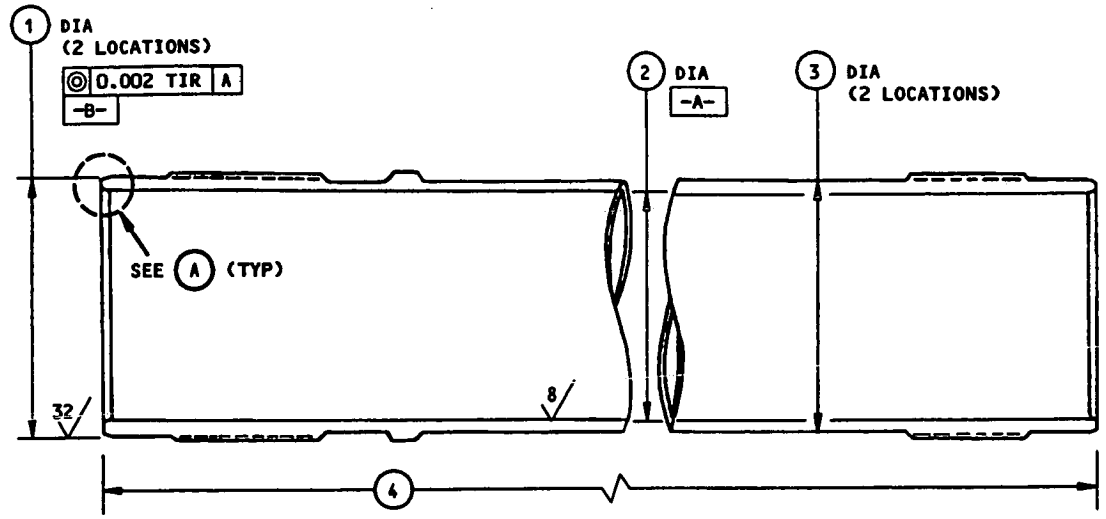

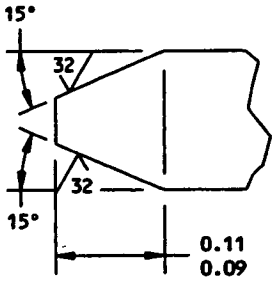

A

	1	2	3	4 [2]	4 [3]
DESIGN DIM	3.625 3.623	3.247 3.245	3.55 3.53	13.71 13.69	13.51 13.49
REPAIR LIMIT	—	3.267 [1]	—	—	—

REFINISH

CADMIUM PLATE (F-1.32), 0.0003–0.0005 INCH THICK, BUT NOT ON ID OR END FACES

[1] LIMIT FOR CHROME PLATE BUILDUP AND GRINDING TO DESIGN DIMENSIONS AND FINISH

[2] 65-44915-1

[3] 65-44915-2

REPAIR

REF [1]

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

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

MATERIAL: 4340 STEEL, 180–200 KSI

ALL DIMENSIONS ARE IN INCHES

CYLINDER (29, FIG. 1101)

Cylinder Repair and Refinish
Figure 403

L78875

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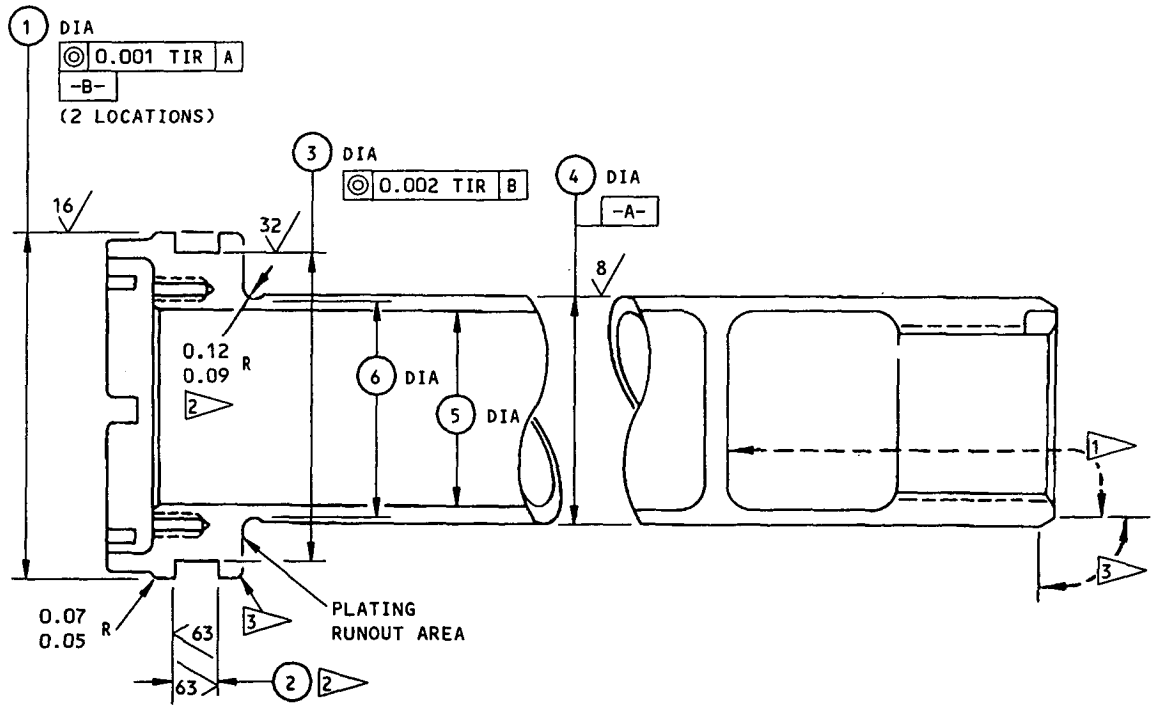

	1	2	3	4	5	6
DESIGN DIM	3.242 3.240	0.434 0.424	2.873 2.871	2.123 2.121	1.82 1.80	2.07 2.05
REPAIR LIMIT 4	3.220	—	—	2.101	—	—

REFINISH

CADMIUM PLATE AREAS SHOWN BY 1
CHROME PLATE DIAS -A-, -B-, AND AREAS SHOWN BY 3

1 CADMIUM PLATE (F-1.32) 0.0003-0.0005 INCH THICK

2 NO PLATING IN THIS AREA

3 CHROME PLATE (F-15.03), 0.003-0.005 INCH THICK

4 LIMIT FOR BUILDUP WITH CHROME PLATE AND GRINDING TO DESIGN DIMENSIONS AND FINISH

REPAIR

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

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

MATERIAL: 4340 STEEL, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

PISTON (30, FIG. 1101)

Piston Repair and Refinish
Figure 404

L78923

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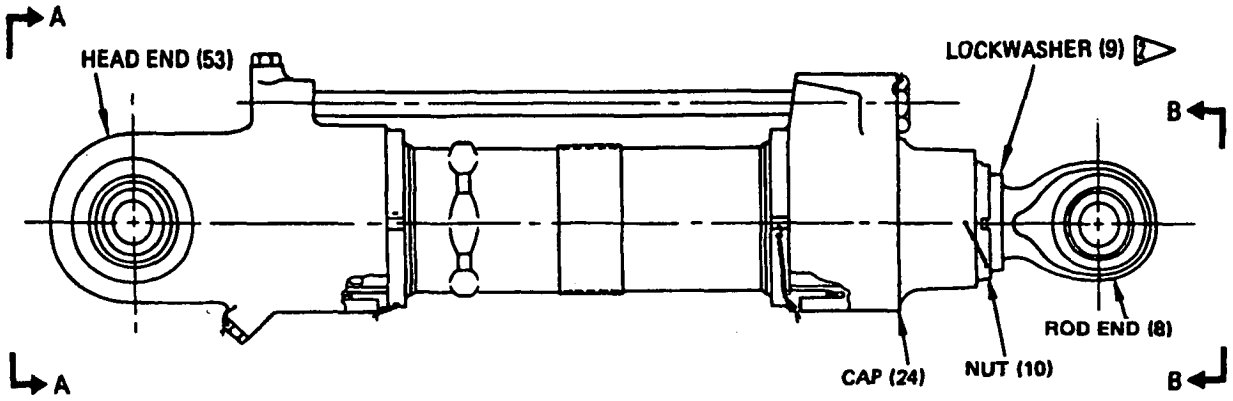
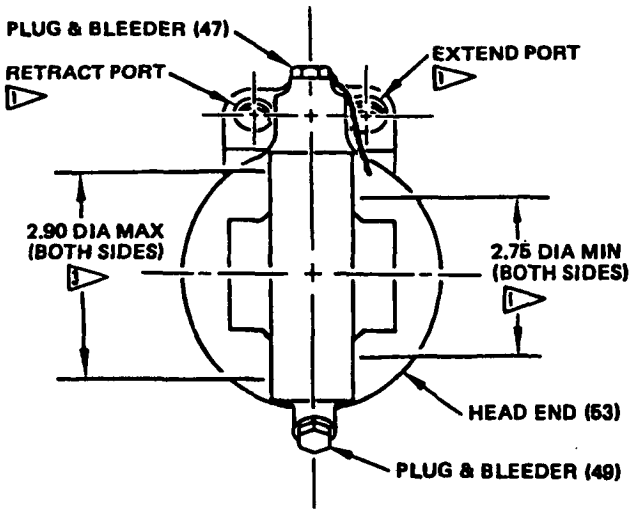
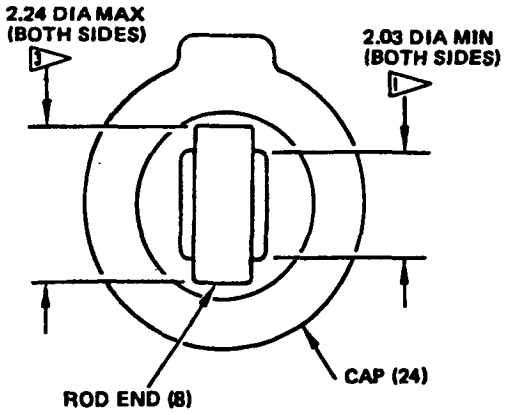




A–A



B–B

FINISH

APPLY BMS 10-11, TYPE 1 PRIMER, (F-20.03) AND BMS 10-11, TYPE 2 ENAMEL, WHITE GLOSS COLOR 702 (F-21.17, WHICH REPLACES F-21.03) UNLESS SHOWN BY 1 2 3

1 NO PRIMER AND ENAMEL

2 NO PRIMER OR ENAMEL OR OVERSPRAY PERMITTED ON THE ROD. A 0.125 RUNOUT IS ACCEPTABLE ON CUP LOCKWASHER (9) FROM THE ROD-CUP LOCKWASHER INTERFACE

3 PRIMER/ENAMEL RUNOUT AREA

65-44910-13, -28
(ALSO 65-44910-29 MADE FROM 65-44910-13 PER SB 32-1198)

Assembly Topcoat Details
Figure 405

W51346

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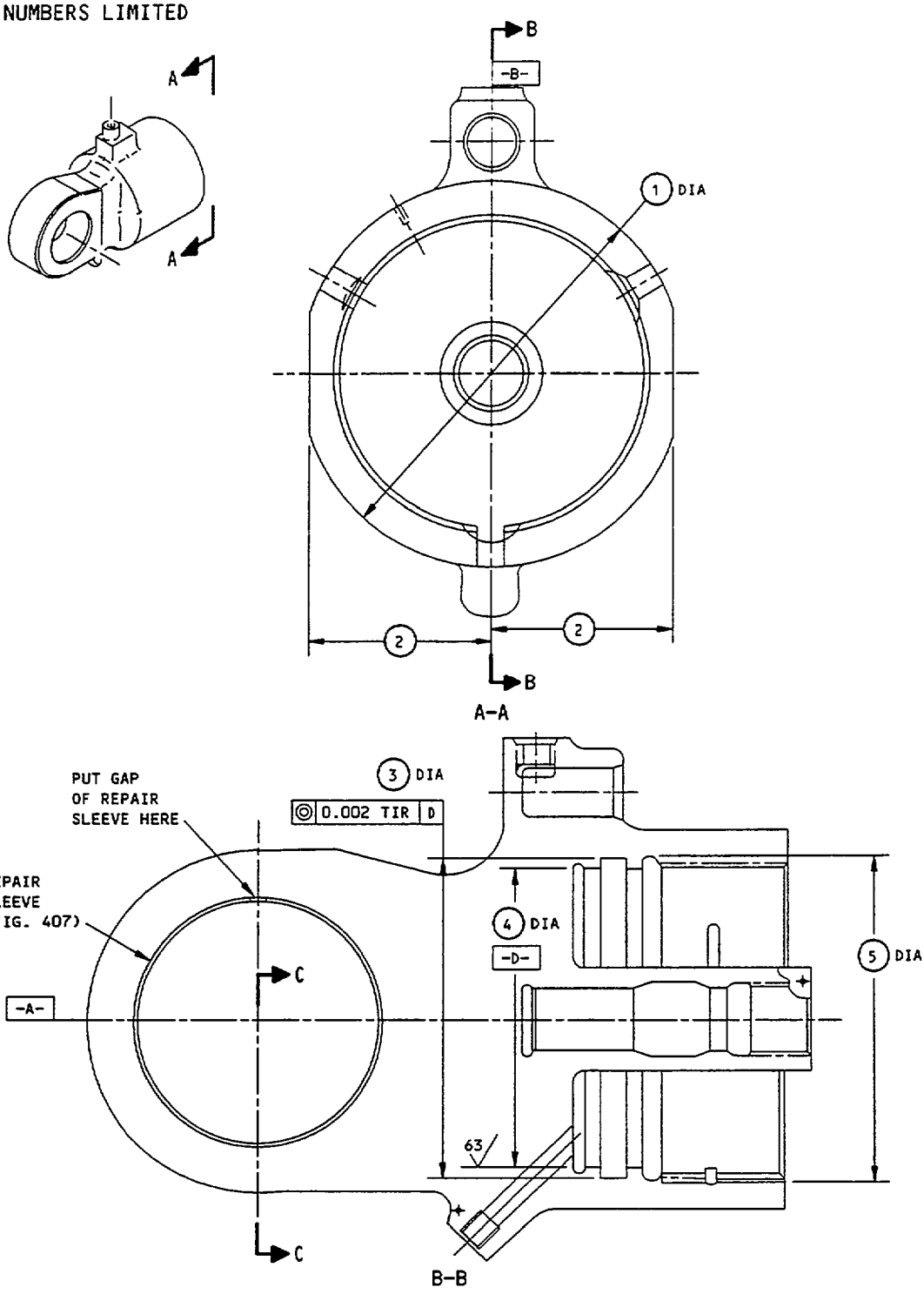
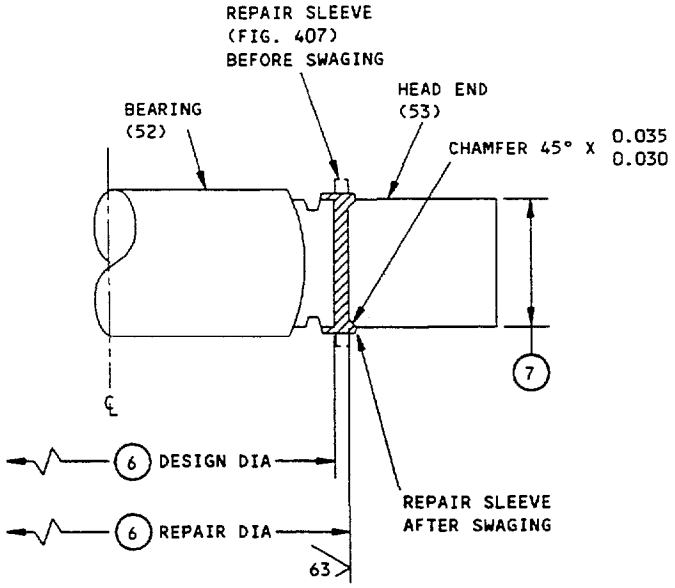


HEAD END (53)

Head End Repair and Refinish
Figure 406 (Sheet 1)



REPAIR SLEEVE INSTALLATION

C-C

	1	2	3	4	5	6	7
DESIGN DIM	4.62 4.58	2.24 2.22	3.870 3.868	3.629 3.627	3.783 3.773	2.9190 2.9185	1.495 1.485
REPAIR LIMIT	1	1	---	---	---	3.0452 3.0442 2	---

REFINISH

HEAD END (53):

CHROMIC ACID ANODIZE (F-17.04 OR F-17.02) ALL OVER.

1 DEFECTS CAN BE BLENDED OUT ON THESE SURFACES IF THE WALL THICKNESS IS NOT DECREASED BELOW 0.285

2 RANGE FOR INSTALLATION OF REPAIR SLEEVE

REPAIR

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

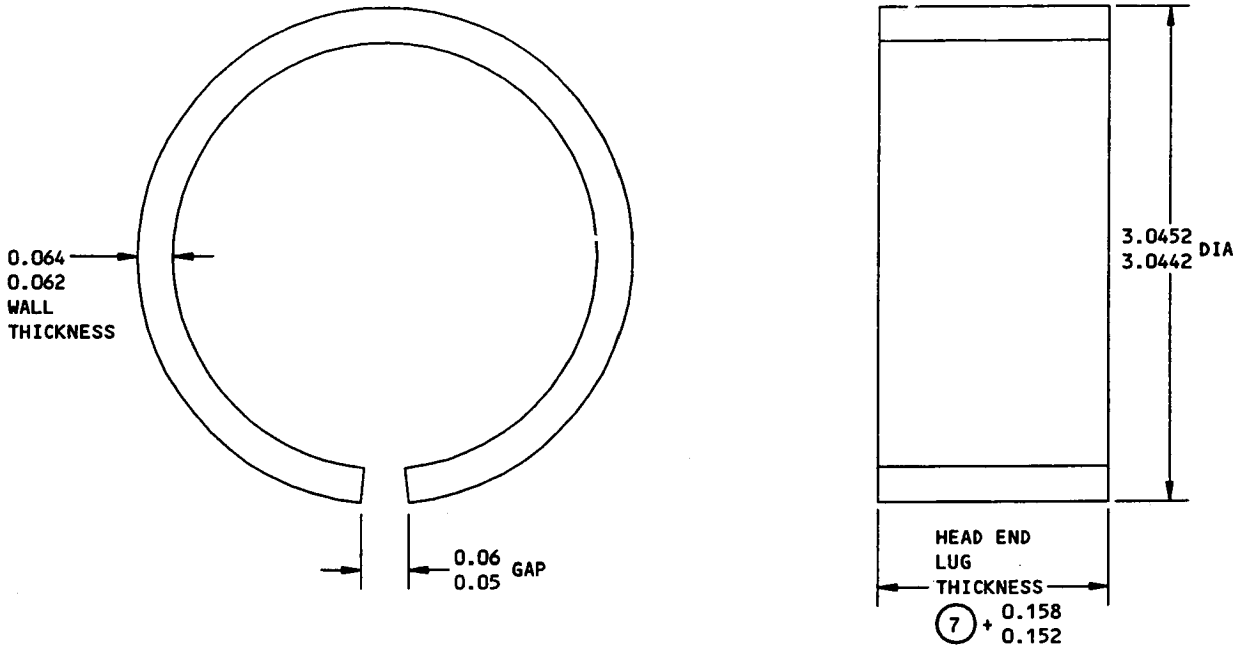
SHOT PEEN: (REF 20-10-03)
0.023-0.055 SHOT SIZE
0.014A A2 INTENSITY

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO FIG. 1101

HEAD END (53)

Head End Repair and Refinish
Figure 406 (Sheet 2)



FINISH

NO FINISH

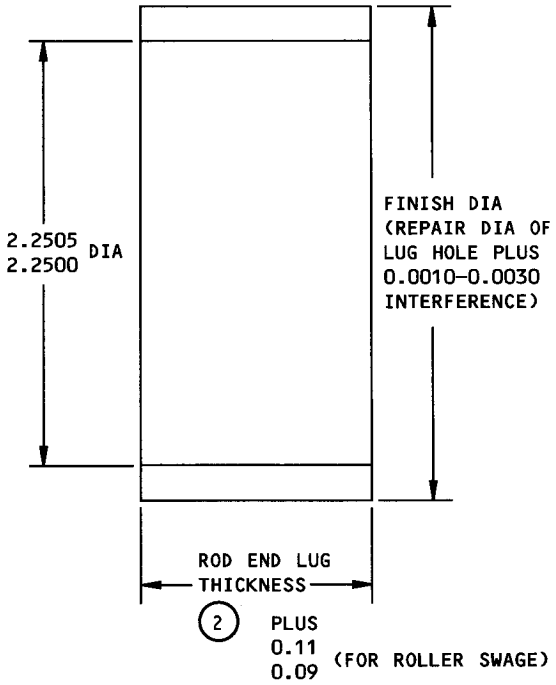
125 ALL MACHINED SURFACES

MATERIAL: 6061-T6 AL ALLOY

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (6) FIG. 406

Repair Sleeve Details
Figure 407



FINISH

PASSIVATE (F-17.25)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: 15-5PH OR 17-4PH CRES, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (1) FIG. 401

Repair Sleeve Details
Figure 408

L97881

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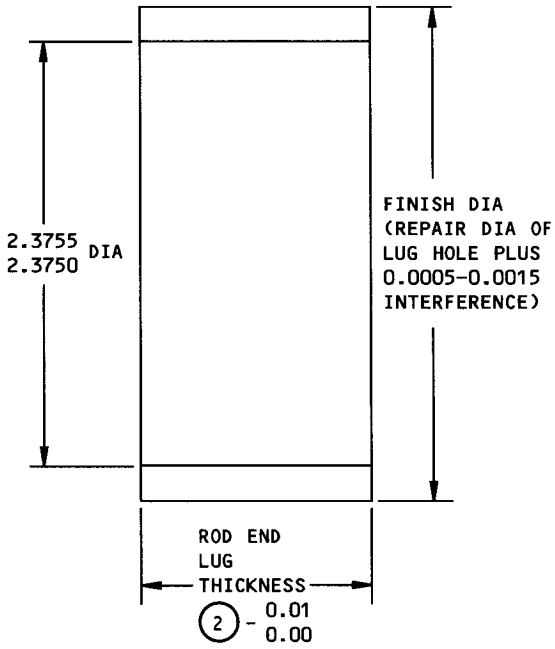

FINISH

PASSIVATE (F-17.25)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: 15-5PH OR 17-4PH CRES, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (1) FIG. 401A

Repair Sleeve Details
Figure 409

H77636

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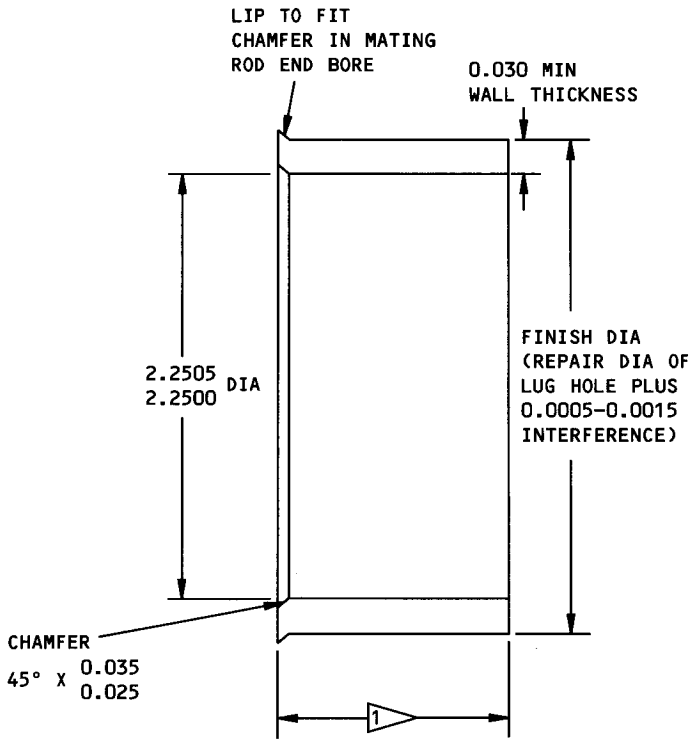

FINISH

PASSIVATE (F-17.25)

1 LENGTH FOR 0.030-0.080 GAP BETWEEN SLEEVES WHEN INSTALLED IN LUG

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: 15-5PH OR 17-4PH CRES, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (1) FIG. 401

Back-to-Back Repair Sleeve Details
Figure 410

1845791

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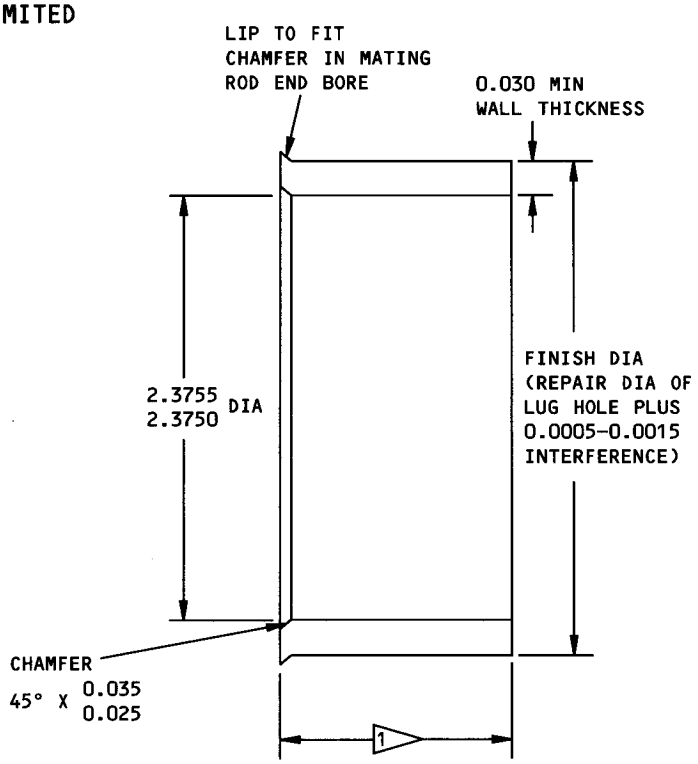

FINISH

PASSIVATE (F-17.25)

1 LENGTH FOR 0.030-0.080 GAP BETWEEN SLEEVES WHEN INSTALLED IN LUG

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: 15-5PH OR 17-4PH CRES, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (1) FIG. 401A

Back-to-Back Repair Sleeve Details
Figure 411

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ASSEMBLY

NOTE: Refer to Fig. 1101 for item numbers, unless shown differently.

1. Materials and Equipment

   NOTE: Equivalent substitutes can be used.

   A. Hydraulic Fluid -- BMS 3-11 (SOPM 20-60-03)

   B. Assembly Lube -- MCS 352 (SOPM 20-60-03)

   C. Grease (SOPM 20-60-03)

      (1) Batco 8401 #1 (#2 optional)

      (2) MIL-G-21164

      (3) MIL-G-23827

      (4) BMS 3-33

   D. Sealant -- BMS 5-45, Class B-1/2 (class B-2 optional) (Replaces BMS 5-26, Type 2, class B) (SOPM 20-60-04)

   E. Solvent -- Methyl Ethyl Ketone (SOPM 20-60-01)

   F. Rod End Socket Wrench (10-60779-7 and 69-66801-( ) only) -- F71313-16

   G. Rod End Socket Wrench (65C33018-( ) only) -- F71313-22

   H. Wrench Adapter -- A32045-108

   I. Wrench Adapter -- A32045-109

2. Lubrication (Fig. 1101)

   A. Lightly lubricate all O-ring packings and backup rings at assembly with hydraulic fluid or assembly lube.

   B. During assembly, lubricate threads and thread relief cavities of operator (20) with assembly lube.

   C. After assembly, apply MIL-G-21164 grease at lube fittings (8C), if applicable.

3. Install packing (39) and cap ring (40) on piston (30).

4. Install packing (42) and backup rings (41) on head end (51). Install collar (45) in the head end.

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5. Install packing (44) and backup rings (43) on slide (34). Install wire (37) into slide (34) per Fig. 503. Screw slide (34) into head end assembly (51) and tighten it to 100-150 lb-in to align the holes for spring pin (38). Install spring pin (38) and stake it lightly on each end.

6. Put sleeve (33), spring guides (28) and spring (27) on slide (34). Install washer (18), nut (17) and cotter pin (19). If applicable, install tab lockwasher (21A) on the thread end of operator (20) with the tab away from the operator. With adapter A32045-108, turn operator (20) into sleeve (33) and tighten 100-150 lb-in until holes for spring pin (21) align, if applicable. On units per SB 32-1303, install spring pin (21) and stake it lightly on each end. If applicable, bend the sides of lockwasher (21A) up against the wrench flats of valve sleeve (33).

7. Install piston (30) over slide and sleeve (32) into head end (51). Attach collar (45) and piston with screws (46). Tighten the screws to 25-35 lb-in. Lockwire the screws together.

   NOTE: Spacer (31) is pressed onto piston (Ref REPAIR).

8. With wrench A32045-109, screw locknuts (25, 35) on cylinder (29). Slide the cylinder with the hexagon forward on piston (30). Install the cylinder in head end (51) as follows:

   A. Start the threaded parts to get an engagement of approximately 2 threads.

   B. Apply a thin layer of Batco grease to the exposed male (OD) threads, then continue to turn the parts together until they come to the bottom.

9. Install backup ring (15), packing (16), bushing (23), packing (14) if applicable, foot seal (13) and seal retainer (12) on cap (24). Put the thin end of foot seal (13) inward.

10. Slide cap (24) on piston rod. Install the cap on the cylinder as follows:

    A. Start the threaded parts to get an engagement of approximately 2 threads.

    B. Apply a thin layer of Batco grease to the exposed male (OD) threads, then continue to turn the parts together until they come to the bottom.

11. Slide scraper ring (11) on piston rod. Install nut (10) and tighten it to 100-150 lb-in.

12. To align bores in cap (24) and head end (51) for installation of transfer tube (5), back off cap (24) a minimum necessary to install key (26). Back off head end (51) one turn maximum until you can install key (36) and transfer tube (5).

13. Install keys (26, 36) and attach with locknuts (25, 35).

14. Install packings (4, 7) and backup rings (3, 6) on transfer tube (5). Put them through cap (24) in bore of head end (51) at the bottom. Install with packing (2) and plug (1). Tighten plug (1) to 360 lb-in.

15. Install packing (48) and plug (47) on head end (51). Tighten plug (47) to 110 lb-in.

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16. Install the transportation plugs and parts (1 thru 4, 6 thru 12, Fig. 1102).

    A. Tighten reducer (1) to 360 lb-in.

    B. Tighten restrictor (3) to 170 lb-in.

    C. Tighten plug or fitting (6) to 50 lb-in.

17. With wrench A32045-109, tighten locknuts (25, 35) to 700-1000 lb-in.

18. Lockwire these parts per Fig. 501 by the double-twist method (SOPM 20-50-02):

    A. Plug (47) to head end (51)

    B. Plug or swivel (6, Fig. 1102) to head end (51)

    C. Locknut (25) to key (26)

    D. Locknut (35) to key (36)

    E. Nut (10) to plug (1)

19. Apply a bead of sealant per Fig. 502 to seal the joints and splitlines at the following threaded areas:

    A. Head end (51), locknut (35) and cylinder (29)

    B. Cap (24), locknut (25) and cylinder (29)

    C. Cap (24) and nut (10)

    D. Piston (30), cup lockwasher (9) and rod end (8).

20. On assemblies 65-44910-13, -28, apply primer and enamel to exterior per Fig. 405.

21. Install nameplate (54) on the cylinder with strap (55).

CAUTION: WHEN YOU WORK WITH ROD END (8), DO NOT TURN THE BALL, OR THE TEFLON LINER COULD COME LOOSE FROM THE HOUSING.

22. With BMS 3-33 or MIL-G-23827 grease, lightly lubricate the rod end flat face which will touch lockwasher (9) and internal (piston rod) thread. Do not let the grease get on the end of the rod or the mating flat surface of the lockwasher. Do not lubricate the threads of the rod end.

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CAUTION: DO NOT APPLY A SIDE LOAD TO PISTON (30) WHILE IT IS EXTENDED, OR YOU COULD BEND IT.

23. Install rod end (8) and lockwire (9) on piston (30) as follows:

    A. Install lockwasher on the rod end. Start the threaded parts together to get an engagement of approximately 2 threads.

    B. Apply a thin layer of Batco grease to the exposed male (OD) threads, then continue to turn the parts together.

    C. By hand only, tighten the rod end into the piston until tightly assembled.

    D. Mark a line between the piston surface and the lockwasher flange to indicate relative motion.

    E. Hold the actuator assembly with a strap wrench on a flat surface.

    F. Hold the extended piston with a V block and a strap wrench.

    G. Tighten the rod end to 2500-3000 lb-in (210-250 lb-ft) with wrench F71313.

    H. Make sure the line indicates no more than 0.02 inch relative movement between the piston surface and the lockwasher. If you see that more than 0.02 inch relative movement occurred, disassemble the parts, discard the lockwasher, remove the grease from all parts, and then assemble them with a new lockwasher and by the procedure from step 22 on.

24. With approximately a 0.24-inch square punch, locally break the flange of 66-12156-10 lockwasher (9) into the slot on rod end (8). Use the slot farthest from the tab on the lockwasher. Make sure the break is complete.

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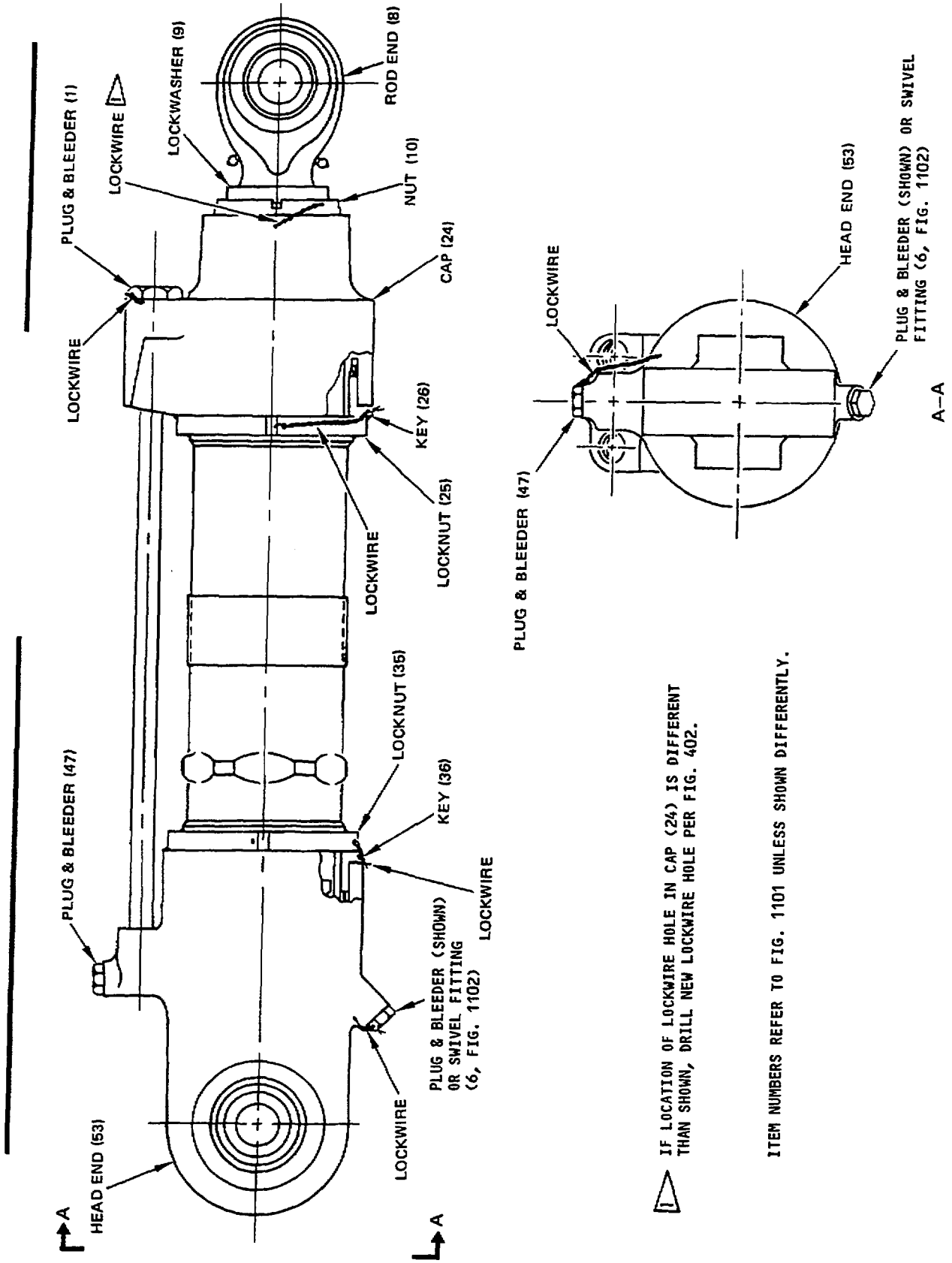
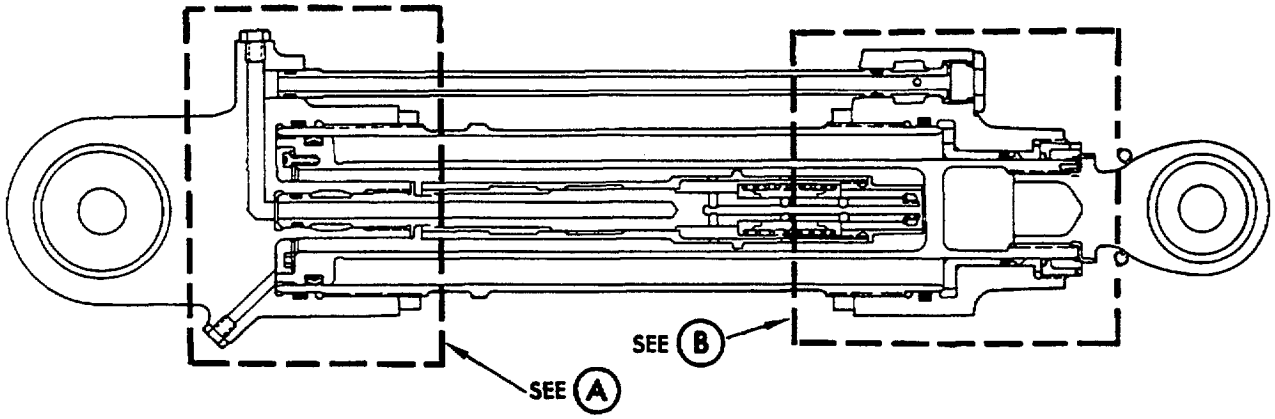
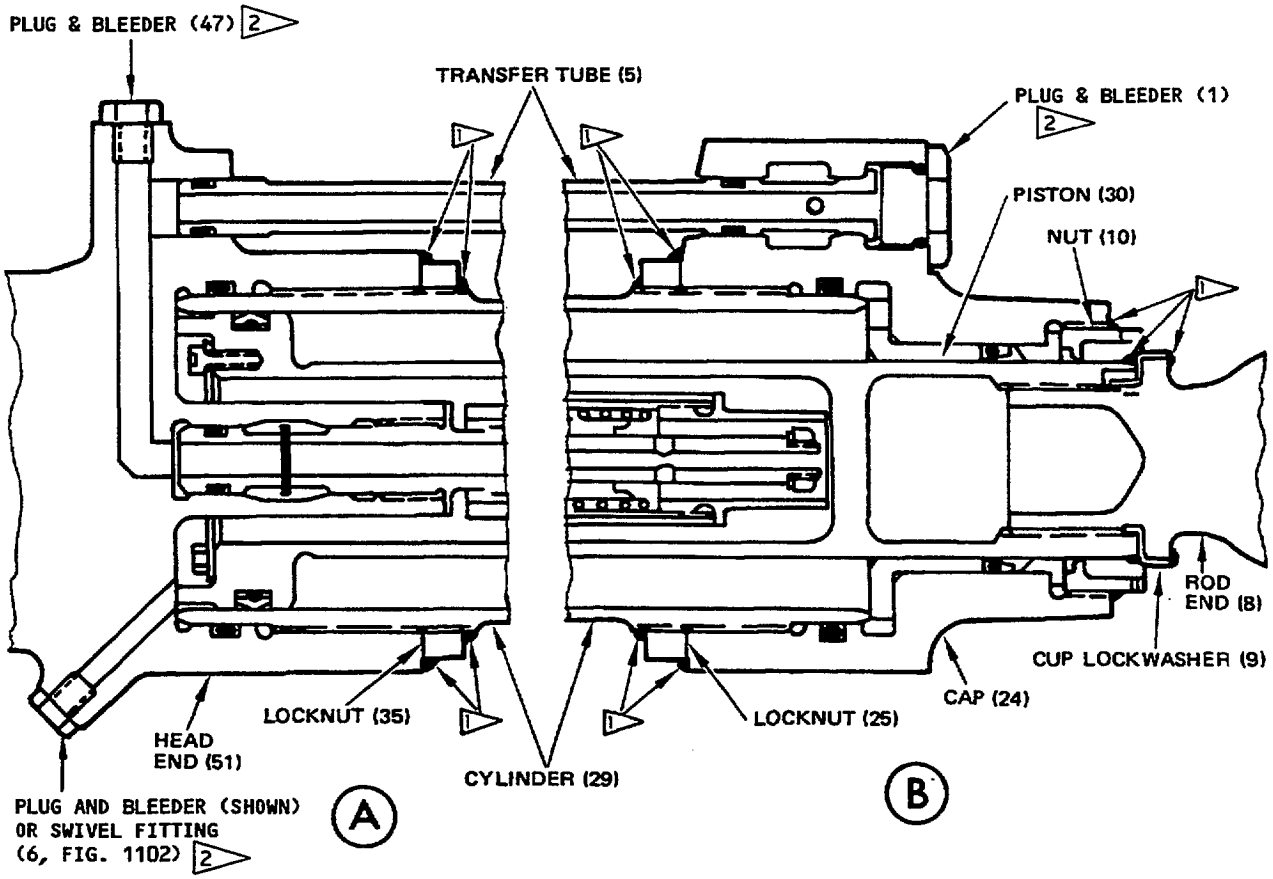


F12216

Lockwire Diagram
Figure 501





1> APPLY SEALANT AS FOLLOWS:

1. WIPE UNWANTED GREASE AND LUBRICANT FROM UNIT, WITH A CLEAN CLOTH.
2. CLEAN AREAS WHERE SEALANT WILL BE APPLIED, WITH A CLEAN CLOTH WET WITH SOLVENT.

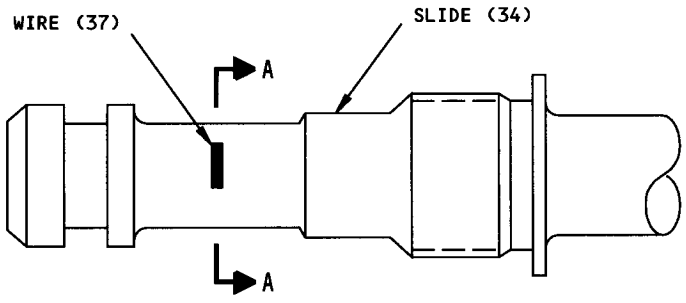
   CAUTION: DO NOT SQUIRT OR APPLY LARGE AMOUNTS OF CLEANING SOLVENT TO JOINTS.

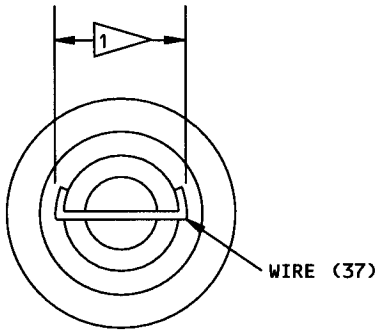
3. APPLY BEAD OF SEALANT TO JOINTS AND SPLITLINES IDENTIFIED.
4. LET THE SEALANT CURE FOR 48 HOURS.
5. MAKE SURE THE SEALANT IS CURED AND THAT IT IS BONDED TO THE SURFACES.

2> DO NOT SEAL

Application of Sealant
Figure 502

F12231





A-A

1 BEND THE WIRE APPROXIMATELY AS SHOWN. KEEP THE BENT WIRE ENDS INSIDE A 0.72 DIAMETER.

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO FIG. 1101

Wire (37) Installation
Figure 503

982567

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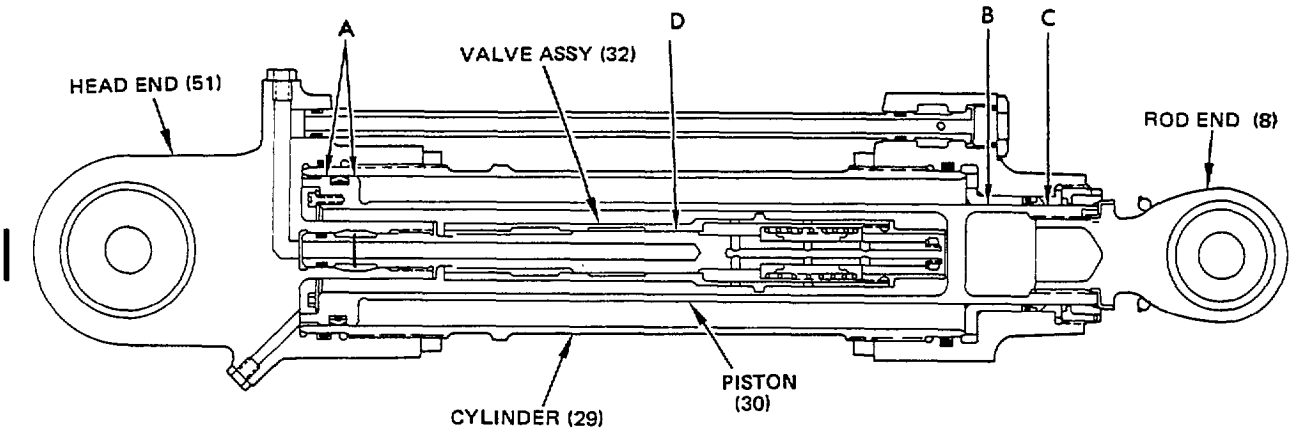
FITS AND CLEARANCES



		Design Dimensions				Service Wear Limits		
Ref Letter Fig.601	Mating Item No. Fig. 1101	Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
A	ID 29	3.245	3.247	0.003	0.007		3.251	0.009
	OD 30	3.240	3.242			3.238		
B	ID 23	2.127	2.128	0.004	0.007		2.132	0.009
	OD 30	2.121	2.123			2.119		
C	ID 12	2.126	2.128	0.003	0.007		2.132	0.009
	OD 30	2.121	2.123			2.119		
D	ID 33	*[1]	*[1]	0.0015	0.0020		*[1]	0.0022
	OD 34	*[1]	*[1]			*[1]		

*[1] Honed and lapped parts. Replaceable only as a matched set.

Fits and Clearances
Figure 601

TESTING

1. Test Equipment

   A. Hydraulic test stand to supply hydraulic pressure controlled 0-5400 psi.

2. Preparation for Test

   CAUTION: DO NOT OPERATE THE ACTUATOR AT PROOF PRESSURE. DO NOT APPLY COMPRESSED AIR TO PORTS AT ANY TIME.

   A. Install hydraulic fittings as necessary for test setup. Remove parts (1 thru 4, Fig. 1102), if installed.

   B. Do the tests at room temperature with hydraulic fluid BMS 3-11 or equivalent (Skydrol 7000 optional).

   C. Operate the actuator to bleed the air from the actuator and the test stand.

   D. Do the tests in the sequence shown below.

   E. Tolerance on pressure values is + 2 percent unless shown differently.

3. Pressure Tests

   A. With the piston fully extended, apply pressure of 2-10 psi to the extend port for two minutes. There must be no external leakage.

   B. With the piston fully extended, apply pressure of 5400 psi to the extend port for two minutes. There must be no external leakage.

   C. Do steps 3.A and 3.B. again with the piston fully retracted and the pressure applied to the retract port.

4. Operational Tests

   A. Leakage Test

      (1) With the piston fully extended, apply 3000 psi pressure to the extend port. Leakage from the retract port must not be more than 5 drops per minute.

      (2) With the piston fully retracted, apply 3000 psi pressure to the retract port. Leakage from extend port must not be more than 5 drops per minute.

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B. Snubbing Valve Test (See step C for alternate test.)

(1) With piston fully retracted, apply pressure of 3000 psi to extend port. Check that piston moves at uniform rate within approximately 1.1 inches from retracted position to approximately 1.3 inches from extended position, and that deceleration and snubbing action occurs within the last 1.3 inches of stroke.

(2) With piston fully extended, apply pressure of 3000 psi to retract port. Check that piston rate, deceleration, and snubbing action occurs within same limits as specified in step (1) (except as applicable for retract direction).

C. Snubbing Valve Test (Alternate to test per step B.)

(1) Extend piston at necessary rate to obtain flow of 3.4 gpm from retract port (non-snubbing range). When flow begins to decrease (beginning of snubbing action), check piston location relative to limits in step B.(1).

(2) Retract piston at necessary rate to obtain flow of 6.0 gpm from extend port (non-snubbing range). When flow begins to decrease (beginning of snubbing action) check piston location relative to limits in step B.(2).

D. Cycling Test

(1) With both retract and extend ports depressurized, cycle actuator through one complete cycle. Force required to cycle unit shall not exceed 50 pounds outside of the snubbing range.

(2) Regulate the flow to and from actuator head end. Cycle actuator for 25 full cycles, applying pressure of 3000 psi. Flow from head end should be approximately 6 gpm with the actuator retracting. Check that leakage at rod seal does not exceed 1 drop total in 25 cycles. Unit shall operate without sticking or binding.

(3) With piston in the fully extended position and 4500-psi pressure applied to extend port, retract the piston by switching the 4500-psi pressure to the retract port by a step input. There shall be no binding of snubber valve as evidenced by slow retraction of piston outside normal snubbing range outlined in step B.(1). Repeat test three times.

E. After the test, keep the unit partially filled with BMS 3-11 hydraulic fluid. Install parts (1 thru 4, Fig. 1102). Seal the ports with hydraulic fluid resistant caps or plugs. If you used Skydrol 7000 for the test, be sure to fully flush the unit before you partially fill it with BMS 3-11 hydraulic fluid.

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TROUBLE SHOOTING

Trouble	Possible Cause	Correction
External leakage at head end (53)	Incorrectly installed or defective O-rings (7, 42, 48, 50)	Replace defective parts
External leakage at rod end (more than permitted at scraper)	Incorrectly installed or defective O-ring (14, 16) or foot seal (13)	Replace defective parts
Operation not smooth	Something between sliding surfaces of valve (32). Unwanted matter in restrictor bores	Disassemble and examine parts
Return flow too small	Restrictor not removed before the test	Remove parts (1 thru 4, Fig. 1102)

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SPECIAL TOOLS, FIXTURES AND EQUIPMENT

NOTE: Equivalent substitutes can be used.

1. Hydraulic test stand capable of controlled pressure from zero to 5400 psi.
2. F71313-16 -- Rod End Bearing Socket Wrench (10-60779-7 and 69-66801-( ) only)
3. F71313-22 -- Rod End Bearing Socket Wrench (65C33018-( ) only)
4. A32045-108 -- Wrench Adapter
5. A32045-109 -- Spanner Wrench

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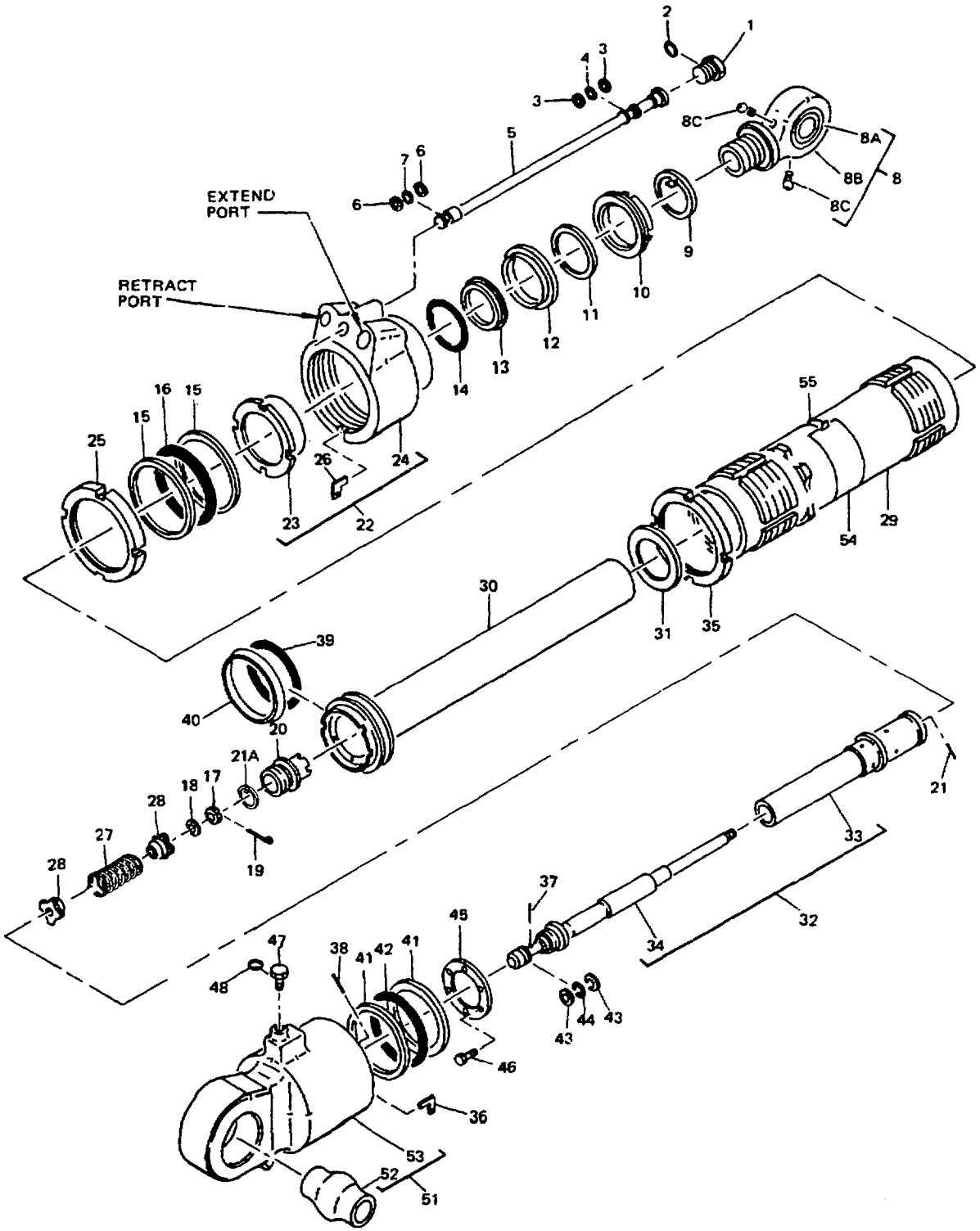

Main Gear Actuator Assembly
Figure 1101

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
	65-44910-6		ACTUATOR ASSY, MAIN GEAR (PRE SB 32-1198)	A	RF
	65-44910-7		ACTUATOR ASSY, MAIN GEAR (PRE SB 32-1198	B	RF
	65-44910-8		ACTUATOR ASSY, MAIN GEAR (PRE SB 3201198)	C	RF
	65-44910-9		ACTUATOR ASSY, MAIN GEAR (PRE SB 32-1198)	D	RF
	65-44910-10		DELETED		
	65-44910-11		ACTUATOR ASSY, MAIN GEAR (PRE SB 32-1198)	E	RF
	65-44910-12		ACTUATOR ASSY, MAIN GEAR *[3] (PRE SB 32-1198)	F	RF
	65-44910-13		ACTUATOR ASSY, MAIN GEAR *[3] (PRE SB 32-1198)	G	RF
	65-44910-27		ACTUATOR ASSY, MAIN GEAR *[3] (POST SB 32-1198)	H	RF
	65-44910-28		ACTUATOR ASSY, MAIN GEAR *[3]	I	RF
	65-44910-29		ACTUATOR ASSY, MAIN GEAR (PRE SB 32-1270, SB 32-1264)	J	RF
	65-44910-30		ACTUATOR ASSY, MAIN GEAR (POST SB 32-1270)	K	RF
	65-44910-31		ACTUATOR ASSY, MAIN GEAR	L	RF
	65-44910-32		ACTUATOR ASSY, MAIN GEAR	M	RF
	69-77496-5		ACTUATOR ASSY, MAIN GEAR (POST SB 32-1198)	N	RF
	69-77496-6		ACTUATOR ASSY, MAIN GEAR (POST SB 32-1198)	O	RF
	69-77496-7		ACTUATOR ASSY, MAIN GEAR (POST SB 32-1198)	P	RF
	69-77496-8		ACTUATOR ASSY, MAIN GEAR (POST SB 32-1198)	Q	RF
	69-77496-9		ACTUATOR ASSY, MAIN GEAR (POST SB 32-1198)	R	RF
	69-77496-26		ACTUATOR ASSY, MAIN GEAR (POST SB 3201198)	S	RF
	69-77496-27		ACTUATOR ASSY, MAIN GEAR (POST SB 32-1198)	T	RF
	69-77496-28		ACTUATOR ASSY, MAIN GEAR (POST SB 32-1198)	U	RF
	69-77496-29		ACTUATOR ASSY, MAIN GEAR (POST SB 32-1198)	V	RF
	69-77496-30		ACTUATOR ASSY, MAIN GEAR (POST SB 32-1198)	W	RF

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
1	AN814-10DL		. PLUG AND BLEEDER		1
2	NAS1612-10		. PACKING		1
3	MS28782-9		. RING		2
4	NAS1611-111		. PACKING		1
5	69-35727-1		. TUBE, TRANSFER	ANS	1
5	69-35727-2		. TUBE, TRANSFER	B-MO-RT	1
6	MS28782-9		. RING		2
7	NAS1611-111		. PACKING		1
8	ARHT16E101		. ROD END, V50294 (BOEING 10-60779-7) (PRE SB 32-1198)	A-D	1
8	DREM16-101		. ROD END, V81376 (BOEING 10-60779-7) (PRE SB 32-1198)	A-D	
8	HSPR16BA		. ROD END, V73134 (BOEING 10-60779-7) (PRE SB 32-1198)	A-D	1
8	YTM189		. ROD END, V77896 (BOEING 10-60779-7) (PRE SB 32-1198)	A-D	1
8	177154		. ROD END, V09455 (BOEING 10-60779-7) (PRE SB 32-1198)	A-D	1
8	69-66801-1		. BEARING ASSY, ROD END (PRE SB 32-1198)	A-E	1
8	69-66801-4		. BEARING ASSY, ROD END (PRE SB 32-1198)	FG	1
8	65C33018-3		. BEARING ASSY, ROD END (OPT TO 65C33018-7)(PRE SB 32-1264)	HIN-R	1
8	65C33018-7		. BEARING ASSY, ROD END (PREF)(OPT TO 65C33018-3)(POST SB 32-1264)	HIN-R	1
8	65C33018-7		. BEARING ASSY, ROD END (POST SB 32-1198)	A-H N-R	1
8	65C33018-7		. BEARING ASSY, ROD END	J-MS-W	1
8	VTA09560		. BEARING ASSY, ROD END V06710 (OPT)	J-W	1
8A	69-66801-3		. . BEARING (USED ON 69-66801-1)		1
8A	WHT16V102		. . BEARING, V50294 (BOEING 10-62000-1)(USED ON 69-66801-4)		1
8A	ABW20V103		. . BEARING, V50294 (BOEING 10-61903-5)(USED ON65C33018-3,-7)		1
8A	AGB20V6		. . BEARING, V15860 (BOEING 10-61903-5)(USED ON65C33018-3,-7)		1
8A	03-526-20E001		. . BEARING, V09455 (BOEING 10-61903-5)(USED ON 65C33018-7)		
8B	69-66801-2		. . FITTING (USED ON 69-66801-1, -4, 65C33018-3,-7)		1
8B	65C33018-4		. . ROD END (FITTING)(USED ON 65C33018-3)		1
8B	65C33018-8		. . ROD END (FITTING)(USED ON 65C33018-7)		1

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FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-8C	1728B		. . FITTING, LUBE, V95879 (USED ON 65C33018-3-7)		2
9	66-12156-10		. LOCKWASHER, CUP	A-D	1
9	66-12156-10		. LOCKWASHER, CUP (OPT TO 69-72097-1)	E-R	1
9	69-72097-1		. LOCKWASHER, CUP	E-W	1
10	69-35619-1		. NUT		1
11	BACS34A22A		. RING, SCRAPER		1
12	66-22764-1		. RETAINER, SEAL		1
13	S33121-330-19		. SEAL ASSY, V97820 (PREF) *[1]		1
13	GTC5394C330		. SEAL ASSY, V72902 *[1]		1
13	BACS11AA330A		. SEAL, FOOT *[1]		1
14	NAS1611-330		. SEAL, FOOT *[1]		1
15	BACR12BP239		. RING		2
15	MS28783-17		. RING (OPT)		2
16	NAS1611-239		. PACKING		1
17	AN320C6		. NUT		1
18	AN960D616		. WASHER		1
19	MS24665-304		. PIN		1
20	69-35620-1		. OPERATOR (PRE SB 32-1303)	A-LN-W	1
20	69-35620-2		. OPERATOR	M	1
20	69-35620-2		. OPERATOR (POST SB 32-1303)	A-LN-W	1
21	MS39086-109		. PIN, SPRING (PRE SB 32-1303)	A-LN-W	1
21	NAS561C2-14		. PIN - SPRING (OPT) (PRE SB 32-1303)	A-LN-W	1
21A	69-72097-2		. LOCKWASHER	M	1
21A	69-72097-2		. LOCKWASHER (POST SB 32-1303)	A-LN-W	1
22	65-44914-4		. CAP ASSY	ABCNOP STU	1
22	65-44914-7		. CAP ASSY (OPT)	ABCNOP STU	1
22	65-44914-9		. CAP ASSY (OPT)	ABCNOP STU	1
22	65-44914-9		. CAP ASSY	D-KQRV W	1
22	65-44914-12		. CAP ASSY (PREF) *[4]	A-K N-W	1
22	65-44914-12		. CAP ASSY *[4]	LM	1
23	66-22765-1		. . BUSHING		1
24	65-44914-5		. . CAP (USED ON 65-44914-4)		1
24	65-44914-8		. . CAP (USED ON 65-44914-7)		1
24	65-44914-10		. . CAP (USED ON 65-44914-9, -12)		1
24	65-44914-13		. . CAP (USED ON 65-44914-12) (OPT)		1
25	69-35626-1		. LOCKNUT		1
26	66-22831-2		. KEY		1
27	69-54682-1		. SPRING		1
27	66-22767-1		. SPRING (REPLD BY 69-54682-1)	A-DS-W	1
28	66-22766-1		. GUIDE, SPRING		2

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FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
29	65-44915-1		. CYLINDER	ANS	1
29	65-44915-2		. CYLINDER	B-MO-R TW	1
30	65-44912-1		. PISTON		1
31	69-35977-1		. SPACER	ANS	1
32	69-35502-2		. VALVE ASSY (MATCHED SET)(REPLD BY 69-35502-4)	A-DS-W	1
32	69-35502-4		. VALVE ASSY (MATCHED SET)(REPLS 69-35502)	A-LN-W	1
32	69-35502-6		. VALVE ASSY (MATCHED SET)	M	1
33	65-44917-1		. . SLEEVE (USED ON 69-35502-2,-4)		1
33	65-44917-3		. . SLEEVE (USED ON 69-35502-6)		1
34	65-44918-1		. . SLIDE (USED ON 69-35502-2) (OPT)		1
34	65-44918-3		. . SLIDE (USED ON 69-35502-2)		1
34	65-44918-4		. . SLIDE (USED ON 69-35502-4,-6)		1
35	69-35626-1		. LOCKNUT		1
36	66-22831-2		. KEY		1
37	65-44910-3		. WIRE, MUSIC, 0.063 DIA X 1.06 IN.		1
38	MS16562-216		. PIN		1
39	7336MT952T		. SEAL ASSY, V72902 (PREF) *[2]		1
39	NAS1611-336		. PACKING *[2]		1
40	69-54540-336		. RING, CAP *[2]		1
41	BACR12BP239		. RING		2
41	MS28783-17		. RING(OPT)		2
42	NAS1611-239		. PACKING		1
43	MS28782-11		. RING		2
44	NAS1611-113		. PACKING		1
45	66-22763-1		. COLLAR		1
46	MS24678-9		. SCREW		6
47	69-35850-1		. PLUG AND BLEEDER		1
48	NAS1612-4		. PACKING		1
49	AN814-2DL		DELETED		
49	69-54750-2		DELETED		
50	NAS1612-2		DELETED		
51	65-44913-1		. HEAD END ASSY	ABNOST	1
51	65-44913-5		. HEAD END ASSY (OPT)	ABNOST	1
51	65-44913-5		. HEAD END ASSY	C-JPQR U-W	1
51	65-44913-9		. HEAD END ASSY (PREF)	A-J N-W	1
51	65-44913-9		. HEAD END ASSY	KLM	1

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FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-52	ABYT24V101		. . BEARING, V50294 (BOEING 10-60545-205S)(OPT)(USED ON 65-44913-1,-5)(PRE SB 32-1264, 32-1270)		1
52	BLFR24-052		. . BEARING, V81376 (BOEING 10-60545-205S)(OPT)(USED ON 65-44913-1,-5)(PRE SB 32-1264, 32-1270)		1
52	KSBY24N2		. . BEARING, V97613 (BOEING 10-60545-205S)(OPT)(USED ON 65-44913-1, -5)(PRE SB 32-1264,32-1270)		1
52	KSBY24N2		. . BEARING, V97613 (BOEING 10-60545-205S)(OPT)(USED ON 65-44913-1, -5)(PRE SB 32-1264,32-1270)		1
52	NSBY24V5		. . BEARING, V15860 (BOEING 10-60545-205S)(OPT)(USED ON 65-44913-1, -5)(PRE SB 32-1264,32-1270)		1
52	WRG24-96BAC		. . BEARING, V73134 (BOEING 10-60545-205S)(OPT)(USED ON 65-44913-1, -5)(PRE SB 32-1264,32-1270)		1
52	WSBS48ATC93		. . BEARING, V21335 (BOEING 10-60545-205S)(OPT)(USED ON 65-44913-1, -5)(PRE SB 32-1264,32-1270)		1
52	YTA213		. . BEARING, V77896 (BOEING 10-60545-205S)(OPT)(USED ON 65-44913-1,-5)(PRE SB 32-1264, 32-1270)		1
52	176201		. . BEARING, V09455 (BOEING 10-60545--205S)(OPT)(USED ON 65-44913-1, -5 (PRE SB 32-1264, 32-1270)		1
52	ADBY24V5		. . BEARING, V50394 (BOEING 10-60545--205S)(USED ON 65-44913-1,-5) (PRE SB 32-1264, 32-1270)		1
52	KSC218124B		. . BEARING (OPT)(USED ON 65-44913-1, -5)(POST SB 32-1264, 32-1270)		1
52	KSC218124B		. . BEARING (USED ON 65-44913-9)(POST SB 32-1264, 32-1270)		1
52	HTY24V101		. . BEARING, V15860 (BOEING 10-60545-205SA)(USED ON 65-44913-1-5)(PRE SB 32-1264, 32-1270)		1

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FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-52	WRRG24-96BAC		. . BEARING, V73134 (BOEING 10-60545-205SA)(USED ON 65-44913-1,-5)(PRE SB 32-1264,32-1270)		1
53	65-44913-2		. . HEAD END (USED ON 65-44913-1)		1
53	65-44913-6		. . HEAD END (USED ON 65-44913-5,-9)		1
54	BACN12A3LX		. NAMEPLATE		1
55	69-35587-7		. STRAP, NAMEPLATE		1

*[1] BACS11AA330A WITH NAS1611-330 IS OPTIONAL TO GTC5394C330 WITHOUT A PACKING, WHICH IS OPTIONAL TO S33121-330-19 WITH NAS1611-330 (PREF).

*[2] NAS1611-336 TOGETHER WITH 69-54540-336 ARE OPTIONAL TO 7336MT952T.

*[3] THE 65-44910-13 IS SAME AS THE 65-44910-12, AND THE 65-44910-28 IS THE SAME AS THE 65-44910-27, BUT THE 65-44910-13 AND 65-44910-28 ACTUATORS HAVE A PRIMER AND ENAMEL TOPCOAT (FIG. 405). SOME 65-44910-29 ACTUATORS COULD ALSO HAVE THIS TOPCOAT IF THEY WERE CHANGED FROM 65-44910-13 PER SB 32-1198.

*[4] CAP 65-44914-12 IS SAME AS THE 65-44914-9, BUT THE HOLE IN THE 65-44914-12 CAN BE MADE BY A DIFFERENT PROCEDURE.

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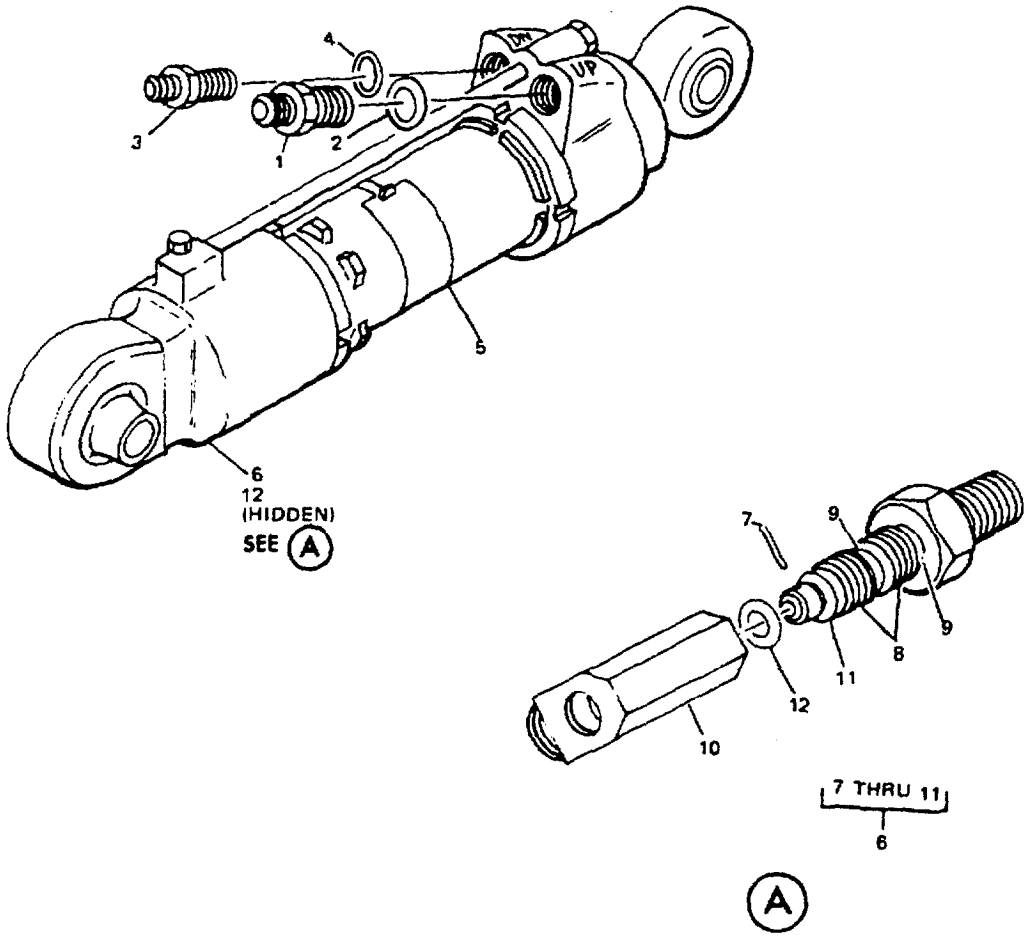

Main Gear Actuator Assembly
Figure 1102

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1102-					
	65-44925-7		ACTUATOR ASSY, MAIN GEAR RETRACT (PRE SB 32-1198)	A	RF
	65-44925-8		ACTUATOR ASSY, MAIN GEAR RETRACT (PRE SB 32-1198)	B	RF
	65-44925-9		ACTUATOR ASSY, MAIN GEAR RETRACT (PRE SB 32-1198)	C	RF
	65-44925-10		DELETED		
	65-44925-11		ACTUATOR ASSY, MAIN GEAR RETRACT (PRE SB 32-1198)	D	RF
	65-44925-12		ACTUATOR ASSY, MAIN GEAR RETRACT (PRE SB 32-1198)	E	RF
	65-44925-15		ACTUATOR ASSY, MAIN GEAR RETRACT (PRE SB 32-1198)	F	RF
	65-44925-16		ACTUATOR ASSY, MAIN GEAR RETRACT (PRE SB 32-1198)	G	RF
	65-44925-21		ACTUATOR ASSY, MAIN GEAR RETRACT (PRE SB 32-1198)	H	RF
	65-44925-22		ACTUATOR ASSY, MAIN GEAR RETRACT (PRE SB 32-1198)	I	RF
	65-44925-28		ACTUATOR ASSY, MAIN GEAR RETRACT (POST SB 32-1198)	J	RF
	65-44925-29		ACTUATOR ASSY, MAIN GEAR RETRACT (POST SB 32-1198)	K	RF
	65-44925-30		ACTUATOR ASSY, MAIN GEAR RETRACT	L	RF
	65-44925-31		ACTUATOR ASSY, MAIN GEAR RETRACT	M	RF
	65-44925-33		ACTUATOR ASSY, MAIN GEAR RETRACT	N	RF
	65-44925-34		ACTUATOR ASSY, MAIN GEAR RETRACT	O	RF
	65-44925-36		ACTUATOR ASSY, MAIN GEAR RETRACT	P	RF
	65-44925-41		ACTUATOR ASSY, MAIN GEAR RETRACT	Q	RF
	69-77496-10		ACTUATOR ASSY, MAINGEAR RETRACT (POST SB 32-1198)	R	RF
	69-77496-11		ACTUATOR ASSY, MAIN GEAR RETRACT (POST SB 32-1198)	S	RF
	69-77496-12		ACTUATOR ASSY, MAIN GEAR RETRACT (POST SB 32-1198)	T	RF
	69-77496-13		ACTUATOR ASSY, MAIN GEAR RETRACT (POST SB 32-1198)	U	RF
	69-77496-14		ACTUATOR ASSY, MAIN GEAR RETRACT (POST SB 32-1198)	V	RF
	69-77496-17		ACTUATOR ASSY, MAIN GEAR RETRACT (POST SB 32-1198)	W	RF
	69-77496-18		ACTUATOR ASSY, MAIN GEAR RETRACT (POST SB 32-1198)	X	RF
	69-77496-19		ACTUATOR ASSY, MAIN GEAR RETRACT (POST SB 32-1198)	Y	RF
	69-77496-20		ACTUATOR ASSY, MAIN GEAR RETRACT (POST SB 32-1198)	Z	RF

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1102-					
	69-77496-21		ACTUATOR ASSY, MAIN GEAR RETRACT (POST SB 32-1198)	BA	RF
	69-77496-22		ACTUATOR ASSY, MAIN GEAR RETRACT (POST SB 32-1198)	CA	RF
	69-77496-23		ACTUATOR ASSY, MAIN GEAR RETRACT (POST SB 32-1198)	DA	RF
1	MS21916-10-8		. REDUCER		1
2	NAS1612-10		. PACKING		1
3	6F2432		. RESTRICTOR, V99240 (OPT)	A-DR-UY-CA	
3	6F2436		. RESTRICTOR, V99240 (PRE SB 32-1170, 32-1179, 32-1184, 32-1186, 32-1187, 32-1227)	A-DFR-UWY-CA	1
3	6F2436		. RESTRICTOR, V99240 (POST SB 32-1144)	EGHKV X-DA	1
3	6F2436		. RESTRICTOR, V99240	IJLW	1
3	6F2812		. RESTRICTOR, V99240 (PRE SB 32-1144, POST SB 32-1170, 32-1179, 32-1184, 32-1186, 32-1187, 32-1227)		1
3	6F2812		. RESTRICTOR, V99240	KM-PQX	1
4	NAS1612-6		. PACKING		1
5	65-44910-6		. ACTUATOR ASSY (FIG. 1101)(OPT)	BS	1
5	65-44910-7		. ACTUATOR ASSY (FIG. 1101)	BS	1
5	65-44910-8		. ACTUATOR ASSY (FIG. 1101)	AERV	1
5	65-44910-9		. ACTUATOR ASSY (FIG. 1101)	CESV	1
5	65-44910-10		DELETED		
5	65-44910-11		. ACTUATOR ASSY (FIG. 1101)	DEUV	1
5	65-44910-12		. ACTUATOR ASSY (FIG. 1101)	FGHJK	1
5	65-44910-13		. ACTUATOR ASSY (FIG. 1101)	IJ	1
5	65-44910-27		. ACTUATOR ASSY (FIG. 1101)	JKM	1
5	65-44910-27		. ACTUATOR ASSY (FIG. 1101)(LIMITED)	L	1
5	65-44910-28		. ACTUATOR ASSY (FIG. 1101)	L	1
5	65-44910-29		. ACTUATOR ASSY (FIG. 1101)	NOWX	1
5	65-44910-30		. ACTUATOR ASSY (FIG. 1101) (OPT)	P	1
5	65-44910-31		. ACTUATOR ASSY (FIG. 1101)	P	1
5	65-44910-32		. ACTUATOR ASSY (FIG. 1101)	PQ	1
5	69-77496-5		. ACTUATOR ASSY (FIG. 1101)	BS	1
5	69-77496-6		. ACTUATOR ASSY (FIG. 1101)	BS	1
5	69-77496-7		. ACTUATOR ASSY (FIG. 1101)	AERV	1
5	69-77496-8		. ACTUATOR ASSY (FIG. 1101)	CESV	1
5	69-77496-9		. ACTUATOR ASSY (FIG. 1101)	DEUV	1
5	69-77496-26		. ACTUATOR ASSY (FIG. 1101)	Z	1
5	69-77496-27		. ACTUATOR ASSY (FIG. 1101)	Z	1
5	69-77496-28		. ACTUATOR ASSY (FIG. 1101)	YDA	1
5	69-77496-29		. ACTUATOR ASSY (FIG. 1101)	BADA	1
5	69-77496-30		. ACTUATOR ASSY (FIG. 1101)	CADA	1

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FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1102-6	AN814-2DL		. PLUG AND BLEEDER (PRE SB 32-1170, 32-1179, 32-1184, 32-1186, 32-1187) *[1]		1
6	69-54750-1		. FITTING ASSY SWIVEL (POST SB 32-1170, 32-1179, 32-1184, 32-1186, 32-1187) *[1]	EGHKM NVXDA	1
6	69-54750-2		. FITTING ASSY, SWIVEL	OPQ	1
7	MS16562-12		. . PIN (USED ON 69-54750-1,-2)		1
8	NAS1611-008		. . PACKING (USED ON 69-54750-1-2)		2
9	BACR12BM008		. . RING (USED ON 69-54750-1,-2)		1
10	69-54733-1		. . HOUSING (USED ON 69-54750-1)		1
10	69-54733-2		. . HOUSING (USED ON 69-54750-2)		1
11	69-54734-1		. . HOUSING (USED ON 69-54750-1)		1
11	69-54734-2		. . HOUSING (USED ON 69-54750-2)		1
12	NAS1612-2		. PACKING *[1]	EGHK-Q VX-DA	1

*[1] REFER TO SB 32-1186 OR 32-1227 FOR DETAILS OF WHICH PART TO USE WITH THE DIFFERENT CONFIGURATIONS OF BRAKES WHEELS AND TIRES AND ANTI-SKID SYSTEMS INSTALLED ON THE AIRPLANE.

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VENDORS

V06710	LAMSON AND SESSIONS CO., THE VALLEY-TODECO, 12975 BRADLEY AVE., SYLMAR, CALIFORNIA 91342-3830
V09455	RBC TRANSPORT DYNAMICS CORP., P.O. BOX 1953, 3131 WEST SEGERSTROM AVE.,, SANTA ANA, CALIFORNIA 92702-1953
V15860	NEW HAMPSHIRE BALL BEARINGS, INC., ASTRO DIV.,, 155 LEXINGTON AVE., LACONIA, NEW HAMPSHIRE 03246-2937
V21335	TORRINGTON CO., FAFNIR BEARING DIV., 59 FIELD ST., TORRINGTON, CONNECTICUT 06790-4942
V50294	NEW HAMPSHIRE BALL BEARINGS (NHBB), INC., 9727 DESOTO AVE., P.O. BOX 2515, CHATSWORTH, CALIFORNIA 91311-4373
V72902	PALMETTO INC. DIV., DENTON INDUSTRIAL PARK, 25 ENGERMAN AVE., DENTON, MARYLAND 21629
V73134	ROLLER BEARING CO. OF AMERICA, INC., HEIM BEARINGS 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 91706-1026
V95879	ALEMITE DIV. OF STEWART WARNER CORP., 1826 DIVERSEY PARKWAY, CHICAGO, ILLINOIS 60614-1540
V97613	SARGENT CONTROLS AND AEROSPACE, KAHR BEARING DIV., 5675 W. BURLINGAME RD., P.O. BOX 730, CORTARO, ARIZONIA 85652-0730
V97820	BUSAK AND SHAMBAUGH, INC., BEARING DIV., 711 MITCHELL RD., P.O. BOX 665, NEWBURY PARK, CALIFORNIA 91320-2214
V99240	CRISSAIR, INC., 38905 TENTH ST., EAST, P.O. BOX 4000, PALMDALE CALIFORNIA 93550