TO: ALL HOLDERS OF NOSE GEAR HYDRAULIC ACTUATOR ASSEMBLY OVERHAUL MANUAL, 32-30-41

REVISION NO. 17, DATED MAR 1/07

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 more sealing details and alternatives						X							

NOSE GEAR HYDRAULIC ACTUATOR ASSEMBLY

32-30-41

BOEING P/N 65-44610-3, -4
65-44625-5, -8, -9, -11

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		PRR 30668	Nov 15/67
32-1025		PRR 31395-4	Jun 10/70
		PRR 31941	Dec 25/72
		PRR 34339	Dec 5/88

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
	32-30-41					
	T-1	Dec 5/88				
	T-2	BLANK				
*	LEP-1	Mar 1/07				
	LEP-2	BLANK				
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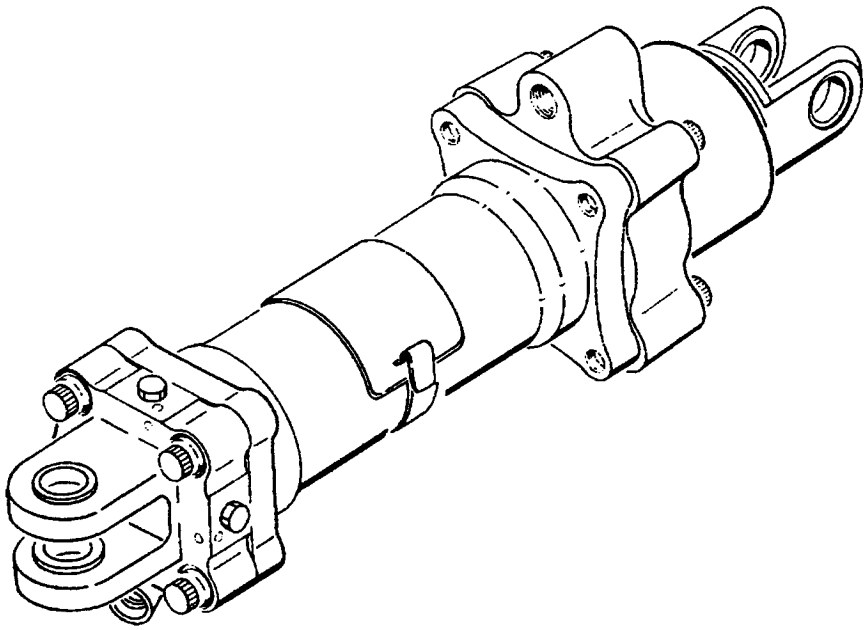
*[1] Special instructions not required. Use standard industry practices.

NOSE GEAR HYDRAULIC ACTUATOR ASSEMBLY



Nose Gear Hydraulic Actuator Assembly
Figure 1

DESCRIPTION AND OPERATION

1. Description

   A. The nose gear actuator assembly is a hydraulically operated cylinder and piston with O-ring packings, backup rings, and seals.

2. Operation

   A. Hydraulic pressure applied to the EXTEND or RETRACT port of the assembly extends or retracts the piston to extend or retract the nose landing gear. A snubbing valve slows the movement near the limits of travel.

3. Leading Particulars (approximate)

   Operating Fluid -- BMS 3-11 hydraulic fluid
   Operating Pressure -- 3000 psi
   Proof Pressure -- 5400 psi
   Length (overall) -- 19 inches
   Height (overall) -- 6 inches
   Width (overall) -- 4 inches
   Weight -- 17 pounds

DISASSEMBLY

NOTE: Unless shown differently, refer to Fig. 1101 for item numbers.

1. Install the actuator assembly in a fixture.

2. Remove lockwire from bolts (1, 38) and seal retainer nut (44). If installed, remove parts (1 thru 4, Fig. 1102).

3. Remove bolts (1) and washers (2). Pull out head end assembly (3) and attached valve slide (20). Remove spring pin (12). Hold valve slide (20) by the wrench flats and unscrew head end cap assembly (4) from valve slide (20).

4. Remove lockwire from screws (13). Hold rod end (47) and remove screws (13), nut retainer (14), snubbing nut (15), and valve assembly (19) from piston (31).

5. Hold piston (31) with a standard strap wrench or equivalent which will not damage the machined surface of piston rod. Straighten tab of cup lockwasher (45) and remove rod end assembly (46) with wrench F71313-10.

6. Remove seal retainer nut (44) and scraper ring (43) from cap (36).

7. Remove bolts (38), washers (39), and cap assembly (35). Remove seal retainer (42), seal assembly (40), or foot seal (41) and O-ring packing (40A) from cap (36).

8. Remove piston (31) from cylinder (32). Remove seal assembly (29), or cap ring (29A) and O-ring packing (30) from piston (31).

9. Hold valve sleeve (21) by the wrench flats. Remove spring pin (22) and sleeve retaining nut (28).

10. Hold valve slide (20) by the wrench flats. Remove cotter pin (27), nut (26), and washer (25). Remove spring guides (23) and spring (24) from valve sleeve (21).

    NOTE: Slide (20) and sleeve (21) are a matched set and must be kept together. Keep them in a container filled with hydraulic fluid. Do not remove wire (18) from slide (20) unless necessary.

11. Remove plugs (6, 8) and O-ring packings (7, 9) from head end cap (4).

INSPECTION/CHECK

NOTE: Refer to Fig. 1101 for items numbers.

1. Examine all parts for defects by standard industry practices. Refer to Fits and Clearances for design dimensions and wear limits.

2. Penetrant check per SOPM 20-20-02 -- Head end assembly (3) and cap assembly (35).

3. Magnetic particle check per SOPM 20-20-01 -- Piston (31), cylinder (32), and rod end assembly (46).

4. Spring (24) check.

   A. Compress spring to 2.98 inches length. The load must be 22.5-27.5 pounds.

   B. Compress spring to 2.13 inches length. The load must be 41.5-46.5 pounds.

5. Snubbing valve (19) check.

   CAUTION: THIS IS A PRECISION ASSEMBLY. GIVE IT PROTECTION.

   A. Lubricate the assemblies with BMS 3-11 hydraulic fluid and put at an angle of 45 degrees.

   B. Slide (20) must move down by its own weight at each of three positions approximately 120 degrees apart.

REPAIR

1. Repair (Fig. 1101)

   A. Remove small defects by standard industry practices. Refer to Fits and Clearances for design dimensions and wear limits. Refer to SOPM 20-10-01 and SOPM 20-10-02 and CMM 32-00-05 for repair of high strength steel parts.

      CAUTION: DO NOT POLISH SLIDE (20) OR SLEEVE (21). THESE ARE FINELY LAPPED AND MATCHED.

   B. Piston (31) (Fig. 401)

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

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

      (3) Refinish other areas as noted.

   C. Cylinder (32) (Fig. 402)

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

      (2) Build up with chrome plate per SOPM 20-42-03, or nickel plate per SOPM 20-42-09.

      (3) Grind the chrome plate per SOPM 20-10-04, or machine the nickel plate to design dimensions and finish.

2. Refinish

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

   A. Fig. 1101 Parts

      (1) Head end (4) -- Fig. 404.

      (2) Plug (6) -- Cadmium plate (F-15.02) the head and the adjacent relief. Material: 4340 steel, 180-200 ksi.

      (3) Retainer (14) -- Chrome acid anodize (F-2.26). Material: Al alloy.

      (4) Nut (15, 28, 44) -- Chrome acid anodize (F-17.02). Material: Al alloy.

      (5) Wire (18) -- No finish. Material: music wire QQ-W-470.

(6) Slide (20), sleeve (21) -- No finish. Material: Nitralloy or 4330M steel, 180-200 ksi.

(7) Guide (23) -- No finish. Material: 4340 steel, 180-200 ksi.

(8) Spring (24) -- No finish. Material: spring steel per ATSM A228 or A228M.

(9) Piston (31) -- See Fig. 401

(10) Cap (36) -- Fig. 405.

(11) Cylinder (32) -- See Fig. 402

(12) Seal retainer (42) -- Cadmium plate (F-4.201), 0.0003 - 0.0005 inch thick, but no plating on inside diameter. Material: Al-Ni-Bronze.

(13) Rod end (47) -- Fig. 406.

B. Fig. 1102 Parts

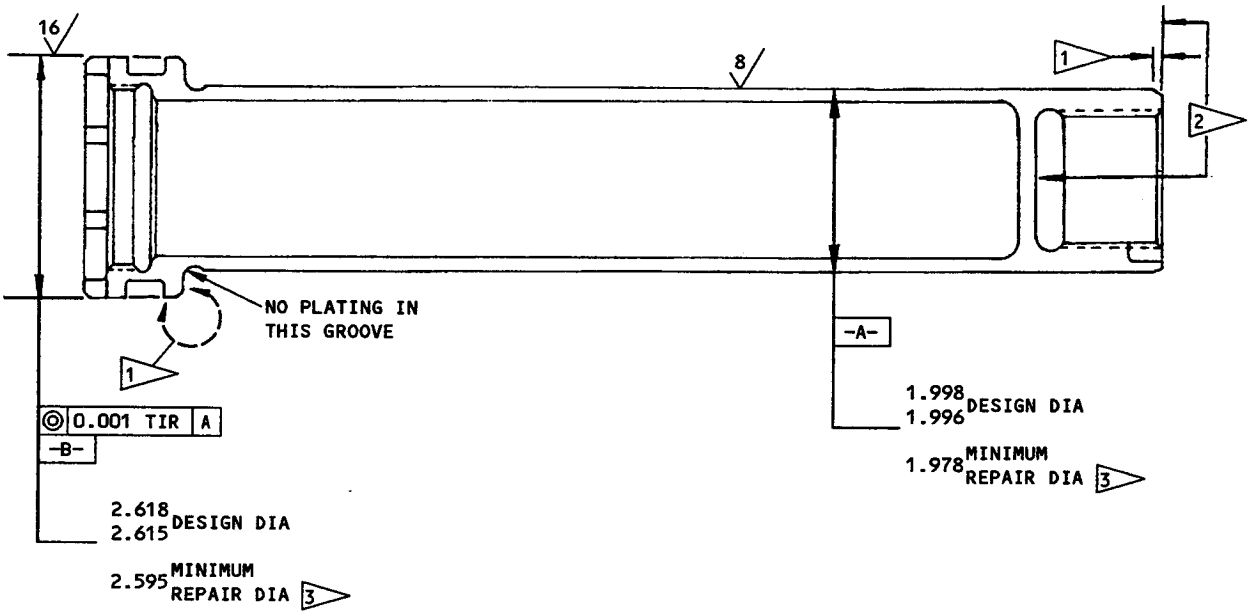
(1) Restrictor (3) -- Cadmium plate (F-15.02). Material: 4340 steel, 180-200 ksi.

3. Replacement (Fig. 1101)

A. Replace all O-ring packings, backup rings, seal assemblies (29, 40), cap ring (29A), foot seal (41), scraper ring (43), spring pins (12, 22), cotter pin (27), and cup lockwasher (45) at each overhaul.

B. Bushings (5, 37, 48) -- Remove the old bushings. Install replacement bushings by the shrink fit or press fit method of SOPM 20-50-03. Machine to design dimensions and finish as shown in Fig. 403, 405, 406.

C. Nameplate (50) -- Steel stamp the serial number and dash number on the replacement nameplate. Install the nameplate on cylinder (32) with strap (49) per SOPM 20-50-21 and with Type 70 adhesive per SOPM 20-50-12.



REFINISH

CHROME PLATE (F-1.90, WHICH REPLACES F-1.842) DIAS-A-,-B-, WITH PLATING RUNOUT AS SHOWN BY 1, CADMIUM PLATE AREAS SHOWN BY 2

1 CHROME PLATE RUNOUT AREA

2 CADMIUM PLATE (F-1.32, WHICH REPLACES F-1.1923) THIS AREA

3 LIMIT FOR CHROME PLATE BUILDUP AND GRIND TO DESIGN DIMENSIONS AND FINISH

REPAIR

REF 3

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

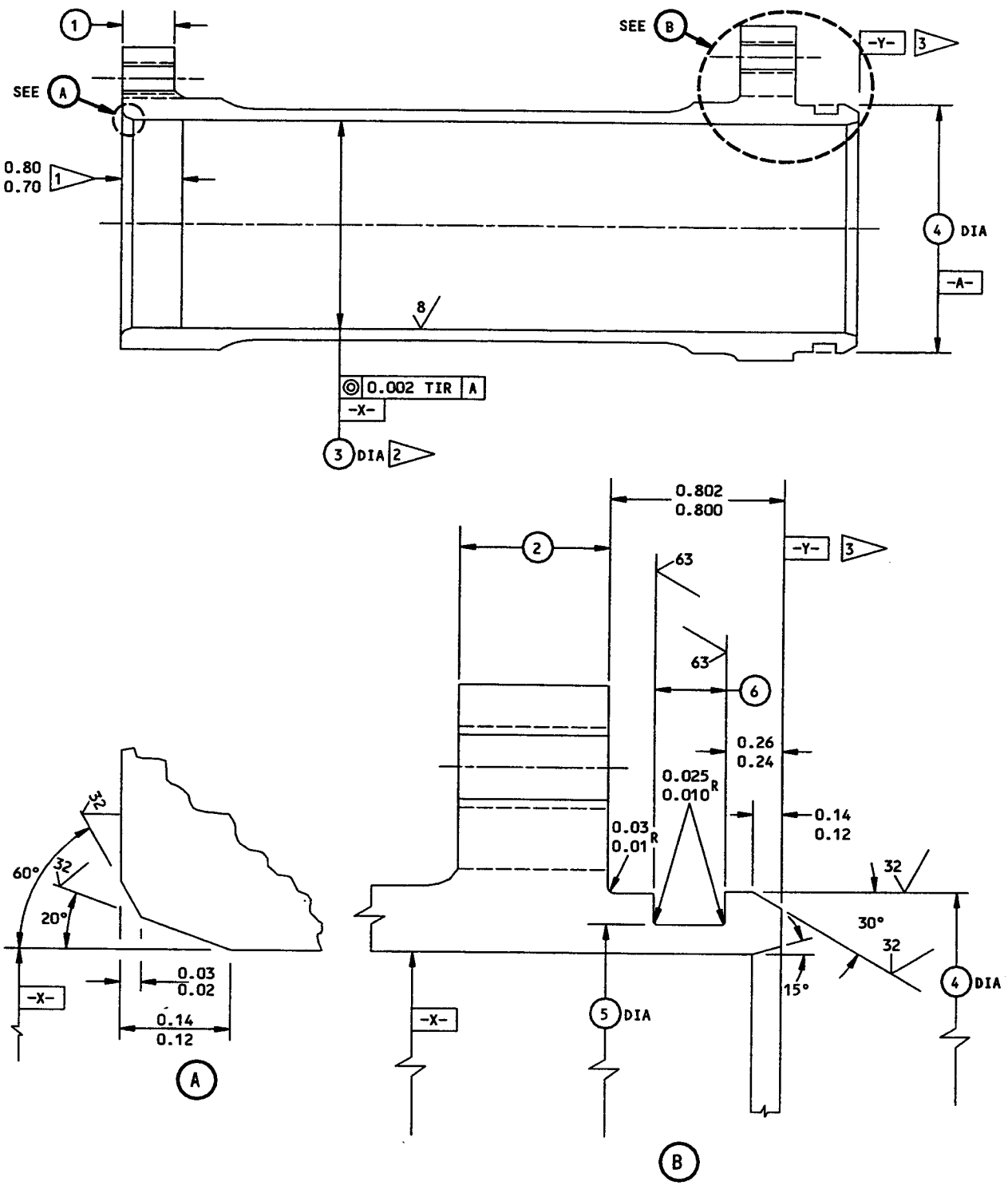
MATERIAL: 4340 STEEL, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

PISTON (31)

Piston Repair and Refinish
Figure 401

H35762



CYLINDER (32)

Cylinder Repair and Refinish
Figure 402 (Sheet 1)

	①	②	③	④	⑤	⑥
DESIGN DIM	0.650 0.640	0.650 0.640	2.622 2.620	3.116 3.114	2.875 2.873	0.314 0.304
REPAIR LIMIT	0.625 4 5	0.625 4 5	2.640 4	3.084 4 5	2.845 4 5	------

REFINISH

CADMIUM PLATE (F-15.06), 0.0003-0.0005 THICK UNLESS SHOWN BY 1 2 3

1 CADMIUM PLATE (F-15.06) THIS AREA UNLESS REPAIRED PER 4

2 NO PLATING UNLESS REPAIRED PER 4

3 NO PLATING

4 LIMIT FOR CHROME PLATE BUILDUP AND GRIND TO DESIGN DIMENSIONS AND FINISH

5 LIMIT FOR NICKEL PLATE BUILDUP AND MACHINE TO DESIGN DIMENSIONS AND FINISH. PUT A 0.03-0.06 RUNOUT AT EDGES

REPAIR

REF 4 5

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: 4330M OR 4340 STEEL, 180-200 KSI

DIMENSIONS APPLY AFTER PLATING

ALL DIMENSIONS ARE IN INCHES

CYLINDER (32)

Cylinder Repair and Refinish
Figure 402 (Sheet 2)

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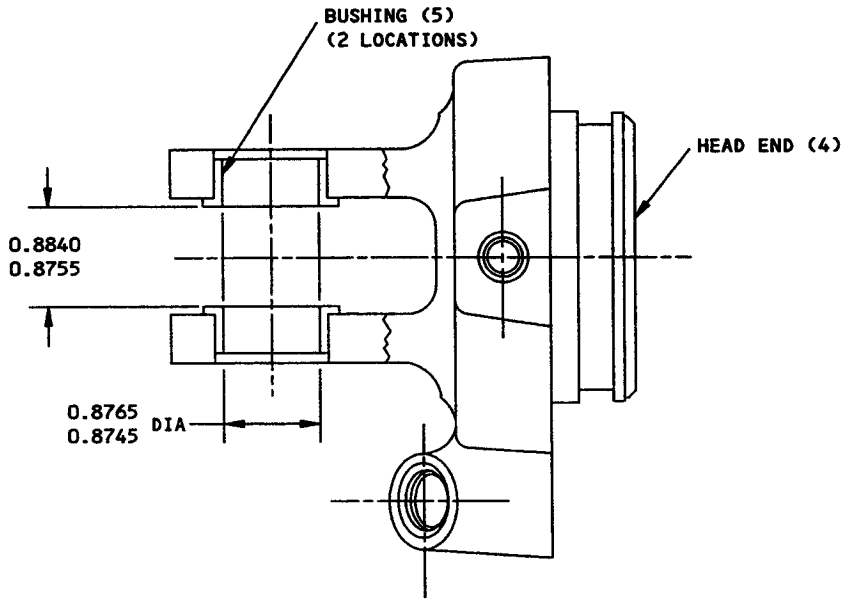
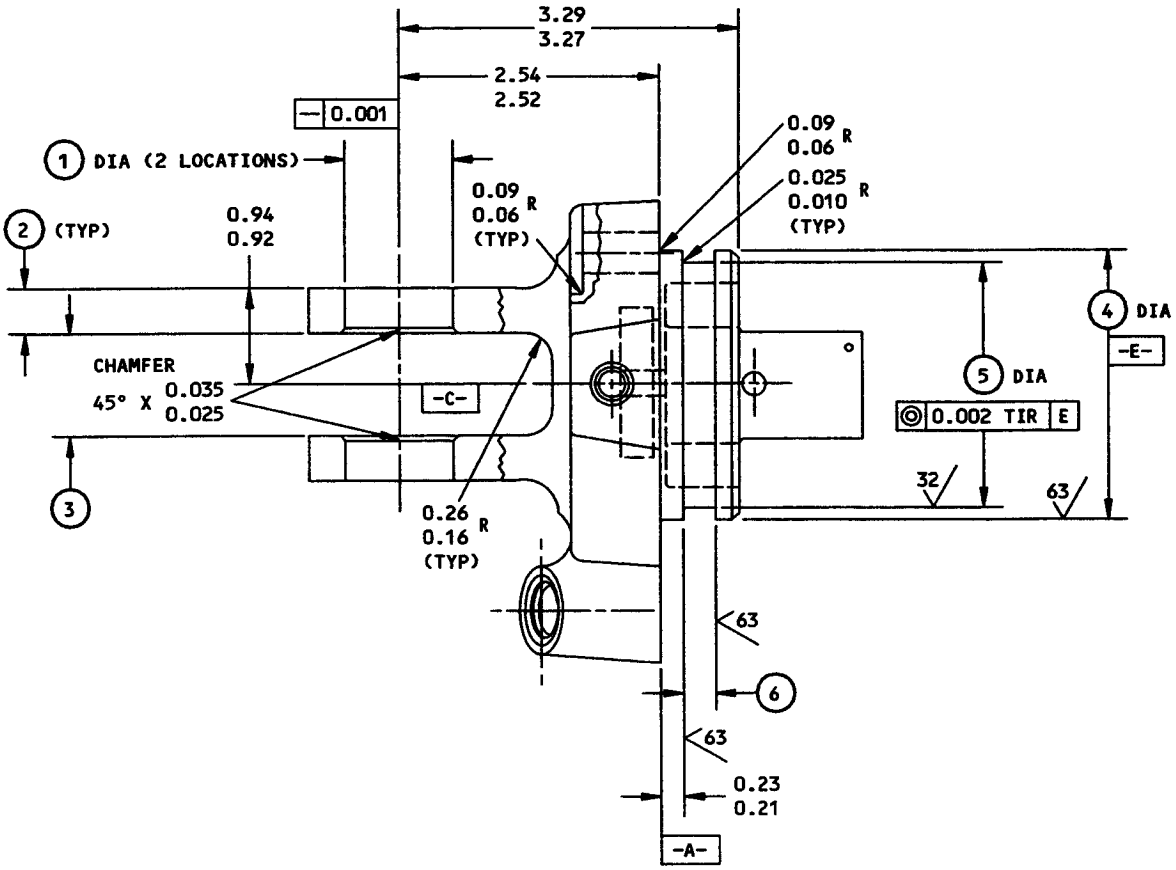


HEAD END ASSEMBLY (3, FIG. 1101)

Head End Bushing Replacement
Figure 403



	1	2	3	4	5	6
DESIGN DIM	1.0634 1.0625	0.440 0.430	1.004 0.999	2.618 2.615	2.377 2.375	0.314 0.304
REPAIR LIMIT	—	—	—	—	—	—

REFINISH

CHROMIC ACID ANODIZE (F-2.26)

REPAIR (SAME AS REFINISH)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

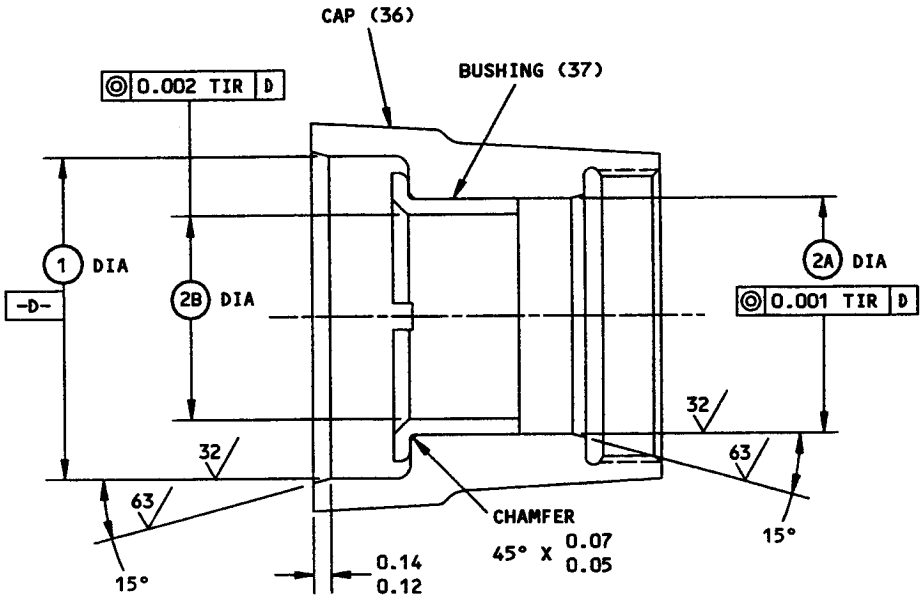
MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

HEAD END (4, FIG. 1101)

Head End Repair and Refinish
Figure 404

L03586



	1	2A	2B
DESIGN DIM	3.120 3.118	2.3709 2.3700	2.002 2.000
REPAIR LIMIT	—	—	—

REFINISH

CHROMIC ACID ANODIZE (F-2.26)

REPAIR

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

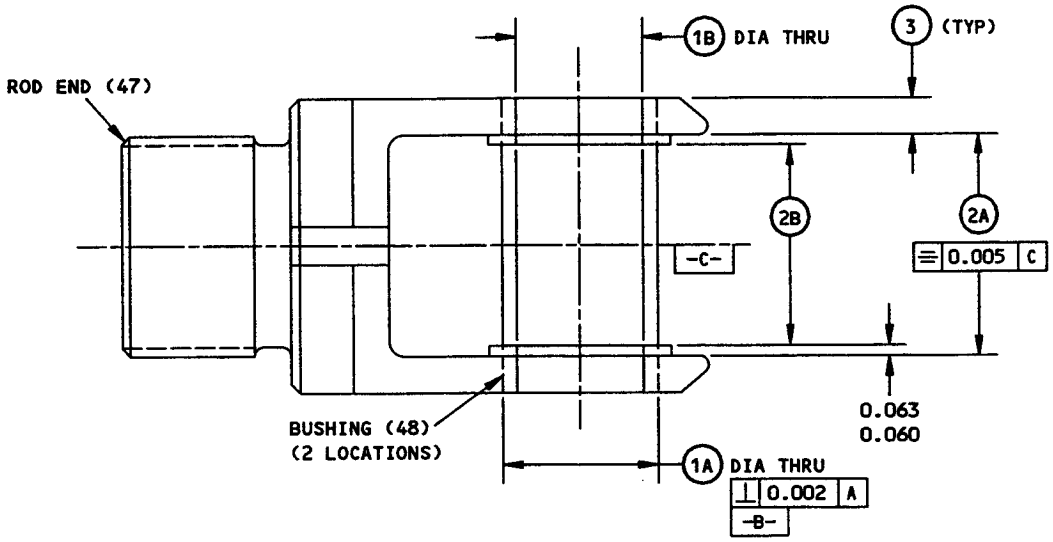
MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

CAP ASSEMBLY (35, FIG. 1101)

Cap Assembly Repair and Refinish
Figure 405

L03703



	1A	1B	2A	2B	3
DESIGN DIM	1.0636 1.0627	0.8765 0.8745	1.529 1.524	1.4090 1.4005	0.255 0.245
REPAIR LIMIT	—	—	—	—	—

REFINISH

CADMIUM PLATE (F-1.32, WHICH REPLACES F-1.1923), 0.0003-0.0005 THICK, BUT NOT IN LUG HOLES

REPAIR

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: 4340 STEEL, 180-200 KSI

DIMENSIONS APPLY AFTER PLATING

ALL DIMENSIONS ARE IN INCHES

ROD END ASSEMBLY (46, FIG. 1101)

Rod End Repair and Refinish
Figure 406

ASSEMBLY

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 -- Batco 8401 No. 1 (No. 2 optional) (SOPM 20-60-03)

   D. Grease -- BMS 3-33 or MIL-G-23827 (SOPM 20-60-03)

   E. Sealant -- BMS 5-45, Class B-1/2 (Replaces BMS 5-26, Type 1, Class B-1/2). Optional: BMS 5-45, Class B-2 (Replaces BMS 5-26, Type 2, Class B-2) (SOPM 20-60-04)

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

   G. Rod End Wrench -- F71313-10

2. Lubrication

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

   B. Apply a layer of BMS 3-33 or MIL-G-23827 grease to bolts (1, 38), washers (2, 39), at assembly.

3. Assembly (Fig. 1101)

   A. Valve (19) and related parts:

      (1) If wire (18) was removed from slide (20) install a new wire of same diameter and length, and bend the wire around the shaft of slide (20). Do not let the bent wire be above the 0.61-inch diameter of the slide.

      (2) Hold slide (20) by its wrench flats. Put spring guides (23) and spring (24) into sleeve (21). Install items (25 thru 27) in slide (20). Tighten nut (26) to 40 lb-in. maximum.

      CAUTION: SLIDE (20) AND SLEEVE (21) ARE A MATCHED SET.

      (3) Hold sleeve (21) by its wrench flats. Install sleeve retaining nut (28) and tighten it to 300-400 lb-in. Install spring pin (22) and stake it lightly at each end.

   B. Put cylinder (32) in a vise or something equivalent which will hold the unit without damage.

C. Install seal (29), or O-ring packing (30) and cap ring (29A) into the piston groove. Install piston (31) into cylinder (32) and valve (19) into piston (31).

D. Tighten snubbing nut (15) to 750 lb-in. maximum. Back off until the first available screw hole is aligned with the slot in the piston head. Install nut retainer (14), with screws (13). Tighten screws (13) to 2.5-4.5 lb-in. Lockwire the screws by the single wire method (SOPM 20-50-02).

E. Install O-ring packing (34) and backup rings (33) into the groove on cylinder (32) OD.

F. Slide cap (35) over piston rod (31) and cylinder (32). Install bolts (38) and washers (39). Tighten bolts (38) to 250-300 lb-in.

G. Install seal (40) or packings (40A, 41), retainer (42) and scraper (43). Install seal retainer nut (44) per SOPM 20-50-17 Type 1. Then tighten nut (44) to 100-150 lb-in.

H. Install packing (11) and backup rings (10) into the groove in head end cap (4) OD. Install packing (17) and backup rings (16) into the groove in slide (20).

I. Pull out slide (20) and hold it by its wrench flats. Turn head end cap assembly (3) onto valve slide (20) and tighten to 1150-1250 lb-in. Install spring pin (12) and stake it lightly at each end.

J. Install bolts (1) and washers (2). Tighten bolts (1) to 250-300 lb-in.

K. Install plugs (6, 8) and packings (7, 9) in head end cap (4).

L. Install hydraulic fittings in actuator as follows (Fig. 1102):

(1) Install packing (2) on union (1), then install union in the actuator EXTEND port.

WARNING: IF YOU USE RESTRICTOR 6F2496, MAKE SURE ITS SHORT THREADED END IS INSTALLED INTO THE ACTUATOR, OR THE UNIT WILL NOT OPERATE CORRECTLY.

(2) Install packing (4) on restrictor (3) and install the restrictor in actuator RETRACT port. If you use restrictor 6F2496, be sure to install it with the short threaded end into the actuator. The other end of restrictor 6F2496, with the cone shaped ID, mates with the hydraulic hose.

M. Apply hydraulic pressure to extend the piston fully.

N. Hold piston (31) with a strap wrench or something equivalent which will not damage the piston rod.

O. Clean lockwasher (45) and piston rod end (31) at the lockwasher tab grooves.

P. Install rod end (46) with cup lockwasher (45) in piston (31) per SOPM 20-50-17, Type 1. Then, with wrench F71313-10, tighten the rod end to 2500-3000 lb-in. With a punch approximately 0.18 inch square, locally break the flange of cup lockwasher (45) into the slot on rod end (45). Use the slot in rod end farthest from the slot in piston rod (31).

Q. Do a test of the actuator (Ref TESTING)

R. Lockwire these parts per SOPM 20-50-02, by the double-twist method.

(1) Nut (44) to cap (35)

(2) Bolts (1, 38), in pairs.

(3) Plugs (6, 8)

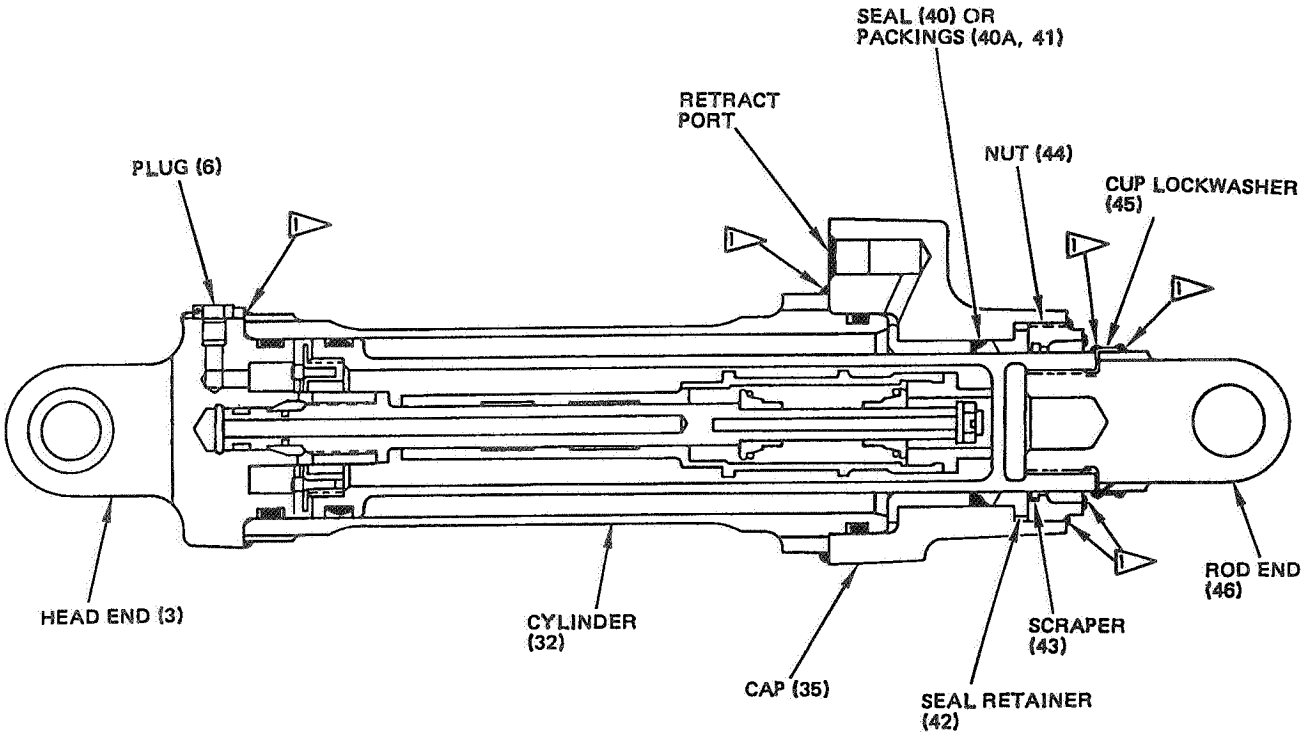
S. Apply a bead of sealant per Fig. 501 to seal the joints and splitlines at these threaded areas:

(1) Head end (3) and cylinder (32)

(2) Cap (35) and cylinder (32)

(3) Rod end (46), cap lockwasher (45), and piston (31)

(4) Nut (44) and cap (35)



ITEM NUMBERS REFER TO IPL FIG. 1101.

1 APPLY SEALANT AS FOLLOWS (OR AS SHOWN IN SOPM 20-50-17, TYPE 1 OR TYPE 2):

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

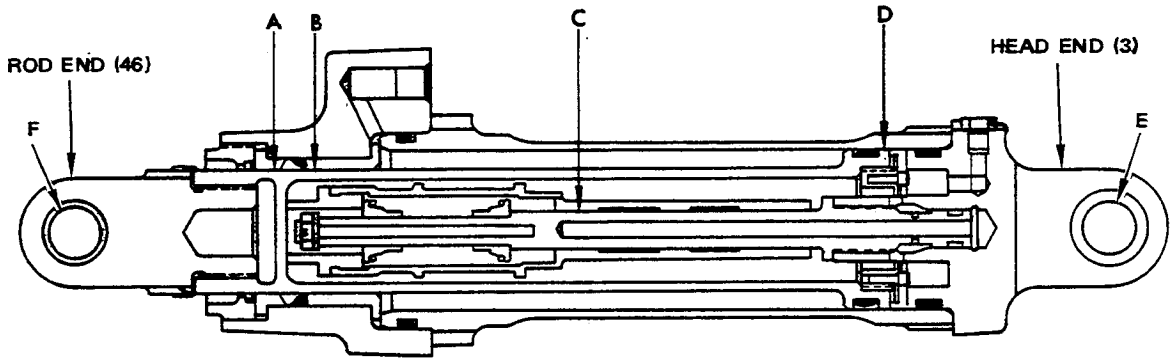
   CAUTION: DO NOT SQUIRT OR APPLY TOO MUCH CLEANING SOLVENT TO THE JOINTS.

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

Sealant Application
Figure 501

1340393

FITS AND CLEARANCES



Ref Letter Fig.601	Mating Item No. Fig.1101	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 42	2.000	2.002	0.002	0.006	---	2.006	0.008
	OD 31	1.996	1.998			1.994		
B	ID 37	2.000	2.002	0.002	0.006	---	2.006	0.008
	OD 31	1.996	1.998			1.994		
C	ID 21	Honed and lapped parts. Replace only as a matched set		0.0010	0.0020			0.0022
	OD 20							
D	ID 32	2.620	2.622	0.002	0.007		2.627	0.009
	OD 31	2.615	2.618			2.613		
E	ID 5	0.8750	0.8765	0.0010	0.0035		0.8780	0.008
	OD *[1]	0.8730	0.8740			0.8700		
F	ID 48	0.8750	0.8765	0.0010	0.0035		0.8780	0.008
	OD *[1]	0.8730	0.8740			0.8700		

*[1] Installation bolt

REF IPL		NAME	TORQUE*	
FIG. NO.	ITEM NO.		POUND-INCHES	POUND-FEET
1101	1	BOLT	250-300	
1101	13	SCREW	2.5-4.5	
1101	15	NUT	750 MAX 1	
1101	20	SLIDE	1150-1250 1	
1101	26	NUT	40 MAX	
1101	28	NUT	300-400 1	
1101	38	BOLT	250-300	
1101	44	NUT	100-150	
1101	46	ROD END	2500-3000 1	

* REFER TO SOPM 20-50-01 FOR TORQUE VALUES OF STANDARD FASTENERS.

1 TIGHTEN TO TORQUE SHOWN, THEN BACK OFF AS NECESSARY TO PERMIT LOCK INSTALLATION.

Torque Table
Figure 602

H73085

TESTING

1. Test Equipment

   A. Hydraulic test stand to supply BMS 3-11 hydraulic fluid at variable pressures up to 5400 psi.

2. Preparation for Test

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

   A. Do the test at room temperature. Refer to Fig. 701 for test port locations and other unit details.

      WARNING: IF RESTRICTOR 6F2496 IS USED, MAKE SURE THE SHORT THREADED END IS INSTALLED INTO THE ACTUATOR OR THE UNIT WILL NOT OPERATE CORRECTLY.

   B. Make sure that fittings (1 thru 4, Fig. 1102) are correctly installed.

   C. Fill the actuator with hydraulic fluid, and bleed off all air.

3. Proof Pressure Test

   A. With the piston fully extended, apply a proof pressure of 5400 psi to the extend port for a period of two minutes. There must be no external leakage or permanent set.

   B. Do the above test with two psi applied. There must be no external leakage.

   C. Do steps 3.A. and 3.B. with the piston fully retracted and the pressure applied to the retract port. There must be no external leakage or permanent set.

4. Operational Test

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

   B. Do step 4.A. with the unit fully retracted and the pressure applied to retract port. Leakage from the extend port must not be more than 5 drops per minute.

   C. Operate the unit for 25 full cycles, with applied pressure of 3000 psi. Leakage at the piston rod seal must not be more than one drop. The unit must operate smoothly.

D. Snubbing Valve Test (See step E for alternate test.)

(1) With the piston fully retracted, apply a pressure of 3000 psi to the extend port. Make sure that piston moves at a constant rate within approximately 0.65 inch from the retracted position to approximately 1.0 inch from the extended position, and that deceleration and snubbing action occurs within the last inch of the stroke.

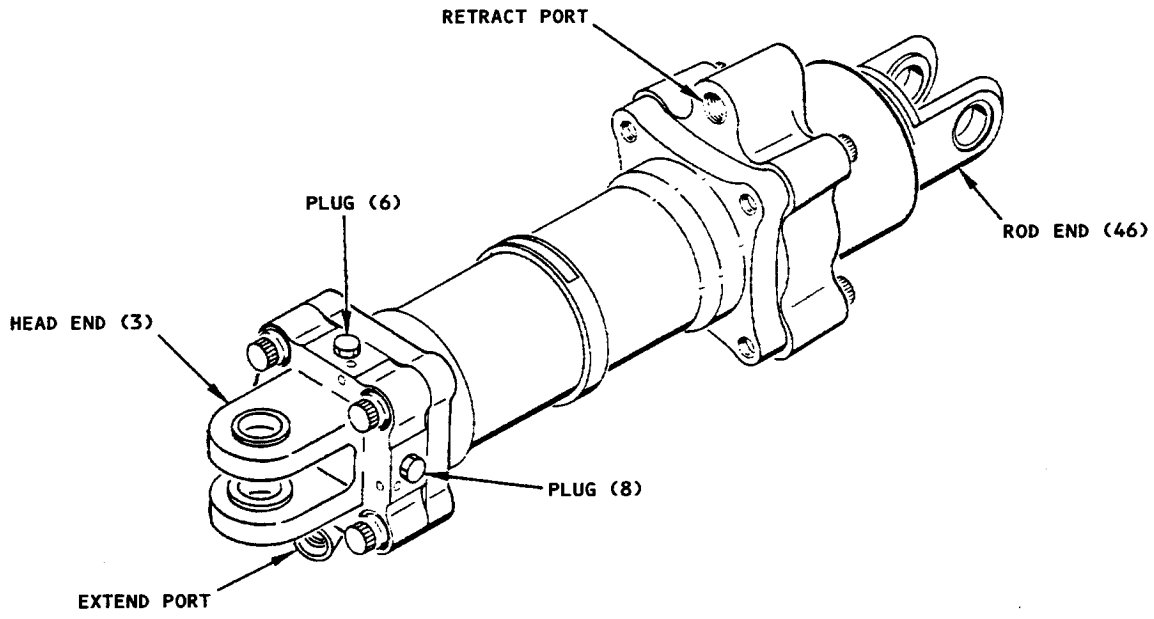
(2) With the piston fully extended, apply a pressure of 3000 psi to the retract port. Make sure that piston rate, the deceleration and the snubbing action are within the same limits as specified in step (1), but in the retract direction.

E. Snubbing Valve Test (Alternate to test per step D)

(1) Extend the piston at a rate necessary to get a flow of 3.4 gpm from the retract port (nonsnubbing range). When the flow starts to decrease (the start of snubbing action), make sure the piston position is within the limits of step D.(1).

(2) Retract the piston at a rate necessary to get a flow of 6.0 gpm from the extend port (nonsnubbing range). When the flow starts to decrease (the start of snubbing action), make sure the piston position is within the limits of step D.(2).

F. With both ports depressurized, operate the unit through one cycle (but not in the snubbing range). The force necessary to do this must not be more than 100 pounds.



Testing Port Locations
Figure 701

TROUBLE SHOOTING

1. Trouble During Test After Overhaul. (See figure 1101.)

	Trouble	Possible Cause	Correction
A.	Deceleration does not occur	Malfunction of spring (24)	Check spring per data on page 301, and replace if necessary
B.	Leakage at piston rod seal exceeds one drop	Defective seal assembly (40), or foot seal (41) or packing O-ring (40A)	Replace seal assembly (40), foot seal (41) and packing O-ring (40A). Ensure careful installation
C.	Movement of piston (31) is erratic, or it sticks	Presence of foreign matter or defective seal assembly (29), or piston cap ring (29A) or packing O-ring (30)	Replace seal assembly (29), or cap ring (29A) and packing O-ring (30). Ensure careful installation
D.	External leakage at packing O-ring (11) and backup rings (10) or packing O-ring (34) and backup rings (33)	Defective O-rings and/or backup rings	Replace packing O-ring and backup rings at point of leakage. Ensure careful installation
E.	Excessive leakage from retract port with pressure applied to extend port	Excessive clearance in valve assembly (19). Damaged or incorrectly installed seal assembly (29), or piston ring set (29A and 30)	Check seal assembly (29), or piston ring set (29A and 30). Replace valve assembly (19)

STORAGE INSTRUCTIONS

1. Partially fill the actuator with BMS 3-11 hydraulic fluid, and put caps or plugs in the ports to prevent leakage during the period of storage. If Skydrol 7000 was used during testing, fully drain the unit before you put the BMS 3-11 hydraulic fluid in.

2. Include a note or tag to tell you the unit contains BMS 3-11 hydraulic fluid.

3. Give protection to the unit and put it away by standard industry practices and the instruction in SOPM 20-44-02 and 20-70-01.

SPECIAL TOOLS, FIXTURES AND EQUIPMENT

NOTE: Equivalent substitutes can be used.

1. Rod End Wrench -- F71313-10

ILLUSTRATED PARTS LIST

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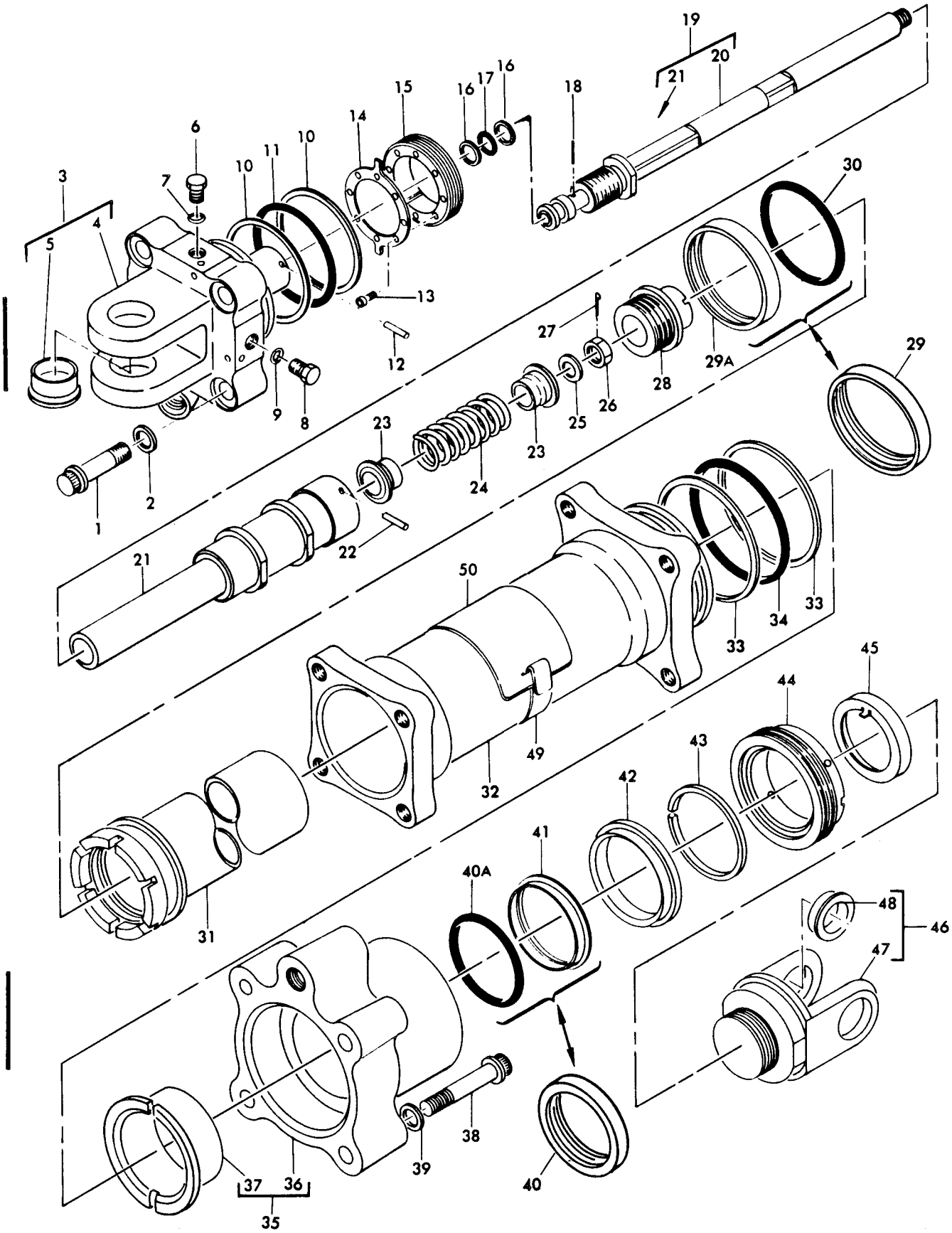


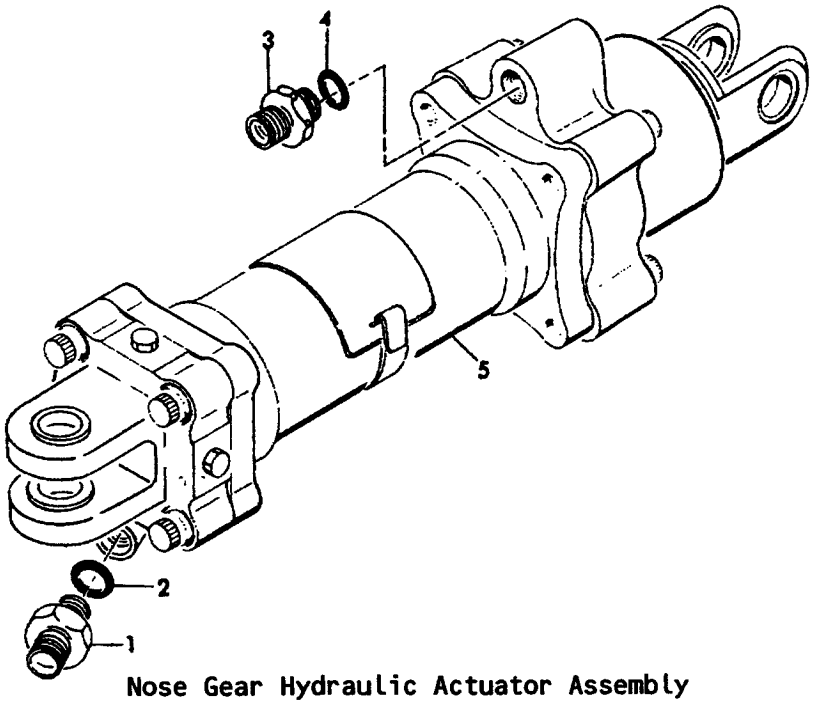
Nose Gear Hydraulic Actuator Assembly
Figure 1101

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101					
	65-44610-3		ACTUATOR ASSY, NOSE GEAR	A	RF
	65-44610-4		ACTUATOR ASSY, NOSE GEAR	B	RF
1	BACB30LE6H12		. BOLT (REPLS BACB30CW6H12)		4
2	BACW10BN6C		. WASHER (REPLS AN960PD616)		4
2	AN960PD616		. WASHER		4
3	65-44614-1		. HEAD END ASSY	A	1
3	65-44614-3		. HEAD END ASSY	B	1
4	65-44614-2		. . HEAD END (USED ON 65-44614-1)		1
4	65-44614-4		. . HEAD END (USED ON 65-44614-3)		1
5	69-35849-2		. . BUSHING		2
6	69-35862-1		. PLUG		1
7	NAS1612-4		. PACKING, O-RING		1
8	AN814-2L		. PLUG		1
9	NAS1612-2		. PACKING, O-RING		1
10	MS28783-7		. RING, BACKUP		2
11	NAS1611-229		. PACKING, O-RING		1
12	MS16562-196		. PIN, SPRING		1
13	MS24677-8		. SCREW		8
14	66-22822-1		. RETAINER, NUT		1
15	66-22819-1		. NUT, SNUBBING		1
16	MS28782-9		. RING, BACKUP		2
17	NAS1611-111		. PACKING, O-RING		1
18	65-44610-2		. WIRE (MUSIC WIRE 0.026 IN. DIA. X 1.25 IN. LONG)		1
19	69-35636-2		. VALVE ASSY, SNUBBING		1
19	69-35636-1		. VALVE ASSY, SNUBBING (OPT TO 69-35636-2)		1
20	65-44618-2		. . SLIDE (USED ON 69-35636-2)		1
20	65-44618-1		. . SLIDE (USED ON 69-35636-1)		1
21	69-35622-1		. . SLEEVE (USED ON 69-35636-2)		1
21	69-35622-1		. . SLEEVE (USED ON 69-35636-1)		1
22	MS16562-197		. PIN, SPRING		1
23	66-22818-1		. GUIDE, SPRING		2
24	66-22770-1		. SPRING, COMPRESSION		1
25	AN960D616		. WASHER		1
26	BACN10JD106AU		. NUT (REPLS AN320C6)		1
27	MS24665-302		. COTTER PIN		1
28	66-22820-1		. NUT, SLEEVE RETAINING		1
29	7331MT952T		. SEAL ASSY, V72902		1
29A	69-54540-331		. RING, CAP *[1]		1
30	NAS1611-331		. PACKING, O-RING *[1]		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
31	65-44615-1		. PISTON		1
32	65-44611-1		. CYLINDER		1
33	MS28783-11		. RING, BACKUP		2
34	NAS1611-233		. PACKING, O-RING		1
35	65-44612-1		. CAP ASSY	A	1
35	65-44612-4		. CAP ASSY	B	1
36	65-44612-2		. . CAP (USED ON 65-44612-1)		1
36	65-44612-5		. . CAP (USED ON 65-44612-4)		1
37	66-22777-1		. . BUSHING		1
38	BACB30LE6H20		. BOLT (REPLS BACB30CW6H20)		4
39	BACW10BN6C		. WASHER (REPLS AN960PD616)		4
39	AN960PD616		. WASHER		4
40	GTC5394C329		. SEAL ASSY, V72902		1
40A	NAS1611-329		. PACKING, O-RING *[2]		1
41	BACS11AA329		. PACKING, FOOT SEAL *[2]		1
41	S33121-329-5		. PACKING (PREF) *[2]		1
42	66-22731-1		. RETAINER, SEAL		1
43	BACS34A21		. SCRAPER, RING SEAL		1
44	66-22732-1		. NUT, SEAL RETAINER		1
45	66-12156-21		. CUP LOCKWASHER		1
46	69-35580-1		. ROD END ASSEMBLY		1
47	69-35580-2		. . ROD END		1
48	69-35849-3		. . BUSHING		2
49	69-35587-5		. STRAP, NAMEPLATE		1
50	BAC27DHY0261		. NAMEPLATE		1
50	BACN12A3MF		. NAMEPLATE (OPT)		1

*[1] ITEM (30) NAS1611-331 USED WITH ITEM (29A) 69-54540-331 OPTIONAL TO ITEM (29) 7331MT952T

*[2] ITEM (40A) NAS1611-329 USED WITH ITEM (41) BACS11AA329 OR S33121-329-5 (PREF) OPTIONAL TO ITEM (40) GTC5394C329



Nose Gear Hydraulic 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-					
	65-44625-5		ACTUATOR ASSY, NOSE GEAR	A	RF
	65-44625-8		ACTUATOR ASSY, NOSE GEAR (SB 32-1025)	B	RF
	65-44625-9		ACTUATOR ASSY, NOSE GEAR	C	RF
	65-44625-11		ACTUATOR ASSY, NOSE GEAR	D	RF
1	MS21902-6		. UNION		1
2	NAS1612-6		. PACKING, O-RING		1
3	66-22711-1		. RESTRICTOR	AC	1
3	6F2496		. CHECK VALVE, V99240	BD	1
4	NAS1612-6		. PACKING, O-RING		1
5	65-44610-3		. ACTUATOR ASSY, NOSE GEAR	AB	1
5	65-44610-4		. ACTUATOR ASSY, NOSE GEAR	CD	1

VENDORS

V72902	PALMETTO, INC., (FORMERLY GREENE, TWEED AND CO., INC.) 25 ENGERMAN AVE., DENTON, MARYLAND 21629
V99240	CRISSAIR INC., 38905-10TH STREET E., P.O. BOX 4000, PALMDALE, CALIFORNIA 93550