TO: ALL HOLDERS OF MLG DRAG BRACE LOCK ACTUATOR ASSY COMPONENT MAINTENANCE MANUAL 32-32-25

REVISION NO. 11 DATED JUL 01/04

HIGHLIGHTS

All data which was in 767 CMMs 32-32-21 and 32-32-22 is now included in this manual 32-32-25.

Pages which have been added or revised are outlined below together with the highlights of the revision. Remove and insert the affected pages as listed and enter Revision No. and date on the Record of Revision Sheet.

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
301-302 701-702 901	Changed adapter part numbers.
302 701-702	Added clarifications and updated callouts.

BOEING

COMPONENT
MAINTENANCE MANUAL

MAIN LANDING GEAR
DRAG BRACE LOCK ACTUATOR ASSEMBLY

PART NUMBERS 273T6300-2,-3,-4,-6,-8,-11
273T6301-1 THRU -7

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

T21911

BOEING
COMPONENT
MAINTENANCE MANUAL

REVISION RECORD

- Retain this record in front of manual. On receipt of revision, insert revised pages in the manual, and enter revision number, date inserted and, initial.

REVISION NUMBER	REVISION DATE	DATE FILED	BY	REVISION NUMBER	REVISION DATE	DATE FILED	BY

T21903

COMPONENT
MAINTENANCE MANUAL

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
32-52		PRR B11387	JUL 10/87
32A71		PRR B11851	JAN 01/89
32-52R1			OCT 01/89
32-0180		PRR B12900-156	MAR 01/00

PAGE	DATE	CODE
32-32-25		
TITLE PAGE		
1	MAR 01/00	01.1
2	BLANK	
REVISION RECORD		
1	JAN 01/89	01.1
2	BLANK	
TR & SB RECORD		
1	MAR 01/00	01.1
2	BLANK	
LIST OF EFFECTIVE PAGES		
*1	JUL 01/04	01
THRU LAST PAGE		
CONTENTS		
1	MAR 01/00	01.1
2	BLANK	
INTRODUCTION		
1	JAN 01/89	01.1
2	BLANK	
DESCRIPTION & OPERATION		
1	NOV 01/03	01.1
2	BLANK	
TESTING & TROUBLE SHOOTING		
101	MAR 01/00	01.1
102	MAR 01/03	01.1
103	MAR 01/03	01.1
104	BLANK	
DISASSEMBLY		
*301	JUL 01/04	01.1
*302	JUL 01/04	01.1
CHECK		
501	MAR 01/00	01.1
502	BLANK	
REPAIR-GENERAL		
601	MAR 01/00	01.1
602	MAR 01/00	01.1
REPAIR 1-1		
601	MAR 01/00	01.1
602	BLANK	
REPAIR 1-2		
601	MAR 01/00	01.1
602	JAN 01/89	01.1
REPAIR 2-1		
601	MAR 01/00	01.1
602	JAN 01/89	01.1
603	JAN 01/89	01.1
604	MAR 01/00	01.1
REPAIR 3-1		
601	MAR 01/00	01.1
602	JAN 01/89	01.1
603	MAR 01/00	01.1
604	MAR 01/00	01.1
REPAIR 4-1		
601	MAR 01/00	01.1
602	BLANK	
REPAIR 5-1		
601	NOV 01/00	01.1
602	BLANK	
REPAIR 6-1		
601	MAR 01/00	01.1
602	BLANK	

* = REVISED, ADDED OR DELETED

PAGE	DATE	CODE
ASSEMBLY		
*701	JUL 01/04	01.1
*702	JUL 01/04	01.1
FITS AND CLEARANCES		
801	MAR 01/00	01.1
802	MAR 01/00	01.1
803	NOV 01/01	01.1
804	BLANK	
SPECIAL TOOLS		
*901	JUL 01/04	01.1
902	BLANK	
ILLUSTRATED PARTS LIST		
1001	JAN 01/89	01.1
1002	JAN 01/89	01.1
1003	MAR 01/00	01.1
1004	NOV 01/01	01.1
1005	BLANK	
1006	MAR 01/00	01.1
1007	MAR 01/00	01.1
1008	MAR 01/00	01.1
1009	MAR 01/00	01.1
1010	NOV 01/01	01.1
1011	MAR 01/00	01.1
1012	MAR 01/00	01.1

PAGE	DATE	CODE

* = REVISED, ADDED OR DELETED

TABLE OF CONTENTS

*[1] Special instructions are not required. Use standard industry practices and the instructions in SOPM 20-30-01 and 20-30-03.

INTRODUCTION

The instructions in this manual provide the information necessary to perform maintenance functions ranging from simple checks and replacement to complete shop-type repair.

This manual is divided into separate sections:

1. Title Page
2. Record of Revisions
3. Temporary Revision & Service Bulletin Record
4. List of Effective Pages
5. Table of Contents
6. Introduction
7. Procedures & IPL Sections

Refer to the Table of Contents for the page location of applicable sections. An asterisked flagnote *[ ] in place of the page number indicates that no special instructions are provided since the function can be performed using standard industry practices.

Throughout the manual IPL item number references include alpha-variants, unless otherwise stated.

The beginning of the REPAIR section includes a list of the separate repairs, a list of applicable standard Boeing practices, and an explanation of the True Position Dimensioning symbols used.

An explanation of the use of the Illustrated Parts List is provided in the Introduction to that section.

All weights and measurements used in the manual are in English units, unless otherwise stated. When metric equivalents are given they will be in parentheses following the English units.

Verification:

Testing/TS	Jun 10/82
Disassembly	Jun 10/82
Assembly	Jun 10/82

DRAG BRACE LOCK ACTUATOR ASSEMBLY

DESCRIPTION AND OPERATION

1. The drag brace lock actuator assembly is a piston-type actuator with a cylinder, piston and piston rod. During main gear extension, hydraulic pressure extends the lock actuator which moves the lock links into the overcenter position. On some of these actuators, when the gear is down and locked, the piston head floats to decrease jury strut loads.

2. Leading Particulars (Approximate)

   A. Length -- 27.520 inches minimum (extended)
      -- 18.568 inches maximum (retracted)

   B. Diameter -- 2 inches

   C. Weight -- 10.7 pounds (dry), 11.3 pounds (wet)

   D. Operating Medium -- BMS 3-11 Hydraulic Fluid

   E. Operating Pressure -- 3000 psi

   F. Proof Pressure -- 5400 psi

TESTING AND TROUBLE SHOOTING

1. Test Equipment and Materials

NOTE: Equivalent substitutes can be used.

A. Hydraulic test stand to supply BMS 3-11 hydraulic fluid at variable controlled pressures of 0 - 5400 psi. Fluid must be filtered to 15 microns absolute and fluid temperature must be 80-120°F.

B. Test fixture -- A32063-1

2. Preparation for Test

A. Install hydraulic fittings. Install the actuator in the test fixture and connect it to the test stand.

3. Test

WARNING: DO NOT APPLY AIR PRESSURE TO PORTS AT ANY TIME.

CAUTION: DO NOT EXTEND OR RETRACT ACTUATOR AT PROOF PRESSURE (5400 PSI).

A. Cycle and Leakage Test

(1) Apply 2950-3050 psi inlet pressure and 45-100 psi return pressure. Operate the unit for 25 complete strokes at 3 cycles per minute. Make sure rod seal leakage is not more than 1 drop.

B. Internal Leakage Test

(1) With unit fully extended, apply 2950-3050 psi at EXT port. Make sure leakage at RET port is not more than 2 cc/min. Do this again at 45-55 psi.

(2) With unit fully retracted, apply 2950-3050 psi at RET port. Make sure leakage at EXT port is not more than 2 cc/min. Do this again at 45-55 psi.

C. Proof Pressure Test

(1) Slowly apply hydraulic pressure of 5350-5450 psi to EXT port. Hold this pressure for 3 minutes. Make sure there is no failure, distortion, permanent set or external leakage.

(2) Do step (1) again at RET port.

TROUBLE	PROBABLE CAUSE	CORRECTION
Too much leakage at the rod end	Incorrectly installed or defective seal (45)	Disassemble and replace parts per par. 3.A., 3.B.
Too much leakage at the RET port	Defective packing (85)	Disassemble and replace parts per par. 3.A., 3.C.
Actuator does not operate smoothly	Defective piston (90), rod (30) or cylinder (110)	Disassemble and replace parts per par. 3.A., 3.D.

Trouble Shooting Chart
Figure 101

4. Corrective Procedures

A. Drain the hydraulic fluid from the unit.

B. Replacement of seal (45).

(1) Remove nut (25) and piston rod (30) and attached parts from cylinder (110). If applicable, remove nut (105), lockwasher (100), guide (95) and piston (90).

(2) Remove bushing (65).

(3) Replace defective parts.

(4) Install piston rod (30) on cylinder and install nut (25). Tighten the nut to 200-250 pound-inches.

(5) Do the test again per par. 3.

C. Replacement of packing (85).

(1) Disassemble the unit per DISASSEMBLY par. 3. Replace the seal if it is defective.

(2) Install piston rod (30) into cylinder (110) and install nut (25). Tighten the nut to 200-250 pound-inches.

(3) Do the test again per par. 3.

D. Replacement of piston (90), rod (30), or cylinder (110).

(1) Completely disassemble the unit per DISASSEMBLY. Replace defective parts.

(2) Assemble the unit per ASSEMBLY.

(3) Do the test again per par. 3.

DISASSEMBLY

NOTE: Refer to TESTING AND TROUBLE SHOOTING to find the condition or possible cause of malfunctions and to find how much disassembly or repair is necessary.

1. Equipment

   NOTE: Equivalent substitutes can be used.

   A. Test Fixture -- A32063-1

   B. Torque Adapter -- A32045-45, Nut (45)

   C. Torque Adapter -- A32078-2, Nut (105)

   D. Torque Adapter -- A32078-4, Nut (105A)

2. Parts Replacement (IPL Fig. 1)

   NOTE: These parts are recommended for replacement. Unless shown differently, replacement of other parts can be by in-service experience.

   A. Packings (23, 55, 75, 85, 135, 145), hat seal (45), backup rings (60), scraper (35), cup lockwasher (100).

3. Disassembly (IPL Fig. 1)

   CAUTION: BEARING (15) HALVES ARE A MATCHED SET. BE SURE TO KEEP THEM TOGETHER.

   A. Remove bearing (15) from piston rod (30) and cylinder (110).

   B. Install cylinder in test fixture A32063-1.

   C. Remove lockwire from nut (25).

D. With torque adapter A32045-45, unscrew nut (25) until piston rod (30) with attached parts (35 thru 105) can be slid out of cylinder assy (110).

E. Remove piston rod (30) with applicable attached parts (35 thru 105) from cylinder (110).

F. On actuators 273T6301-1 thru -6, hold the bearing end of piston rod (30) upright, straighten the flange breaks on cup lockwasher (100), and remove nut (105 or 105A) with torque adapter A32078-2 or A32078-4, respectively. Actuator 273T6301-7 does not have these parts.

NOTE: Hat seal (45) has two ring-shaped parts. Make a note of the direction of the seal as you remove it, to help during assembly.

G. As applicable, remove lockwasher (100), guide (95), piston (90), bushing (65), hat seal (45), retainer (40), scraper (35) and nut (25) from piston rod (30).

H. Remove packings (85, 75) from piston (90). Remove packing (55) and backup rings (60) from bushing (65).

I. Remove plug (21), restrictors (130, 140) and packings (23, 135, 145) from cylinder assembly (110).

CHECK

1. Examine all parts for defects by standard industry practices.

2. Refer to FITS AND CLEARANCES for design dimensions and wear limits.

3. Magnetic particle check (SOPM 20-20-01) -- piston (90), piston rod (30), nuts (25, 105), cylinder (125).

4. Penetrant check (SOPM 20-20-02) -- guide (95), retainer (40), bushing (65).

REPAIR - GENERAL

1. Content

A. Repair, refinish and replacement procedures are included in separate repair sections as follows:

P/N	NAME	REPAIR
273T6302	CYLINDER	1-1, 1-2
273T6304	ROD, PISTON	2-1
273T6305	PISTON	3-1
273T6301	ACTUATOR	4-1
BAC27THY9	NAMEPLATE	5-1
- -	MISCELLANEOUS PARTS REFINISH	6-1

2. Standard Practices

A. Refer to the following standard practices as applicable, for details of procedures in individual repairs.

(1) SOPM 20-00-00, Introduction

(2) SOPM 20-10-04, Grinding of Chrome Plated Parts

(3) SOPM 20-30-02, Stripping of Protective Finishes

(4) SOPM 20-30-03, General Cleaning Procedures

(5) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

(6) SOPM 20-41-02, Application of Chemical and Solvent Resistant Finishes

(7) SOPM 20-42-03, Hard Chrome Plating

(8) SOPM 20-50-04, Installation of Permanent Pin and Plugs in Drill Passages

(9) SOPM 20-50-08, Application of Solid Film Lubricant

(10) SOPM 20-50-12, Application of Adhesives

(11) SOPM 20-50-21, How to Install Nameplate Straps and Seals

(12) SOPM 20-60-02, Finishing Materials

3. Materials

NOTE: Equivalent substitutes can be used.

A. Adhesive -- Type 54, Grade 1 (SOPM 20-50-12)

B. Primer -- BMS 10-11 type 1 (SOPM 20-60-02)

C. Enamel -- BMS 10-60, gray gloss color 707 (SOPM 20-60-02)

D. Lubricant -- BMS 3-8 (SOPM 20-50-08)

4. Dimensioning Symbols

A. Standard True Position Dimensioning Symbols used in applicable repair procedures are shown in SOPM 20-00-00.

CYLINDER - REPAIR 1-1

273T6302-1

NOTE: Refer to REPAIR - GENERAL for a list of applicable standard practices. If you find defects on cylinder surfaces, refer to REPAIR 1-2 for repair instructions.

1. Pin and Plug Replacement (Fig. 601)

   A. Remove the old pin (120) and plug (115) from cylinder (125).

   B. Install replacements per SOPM 20-50-04.

CYLINDER - REPAIR 1-2

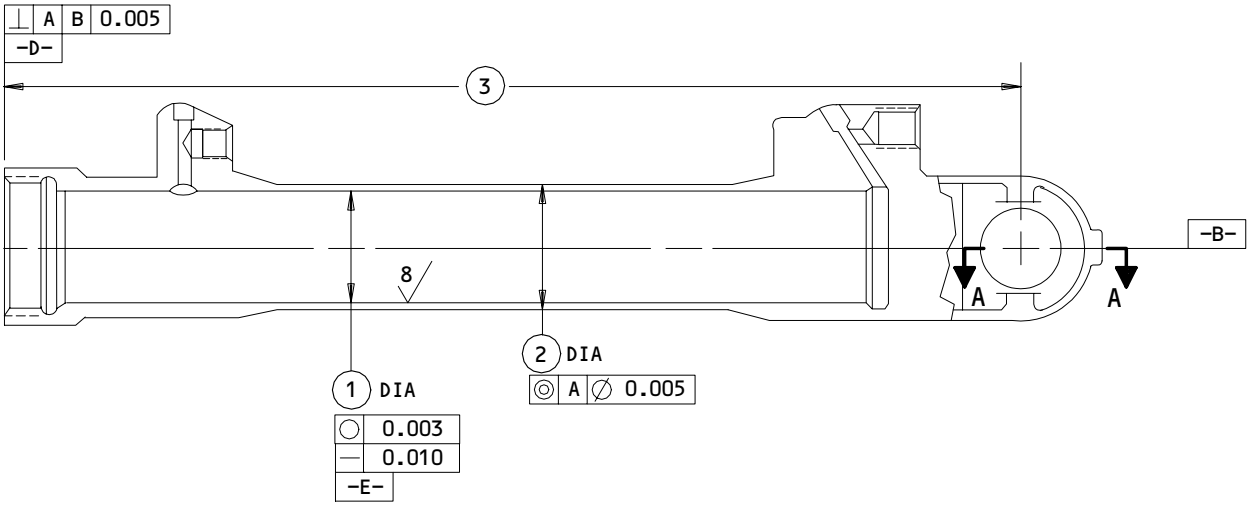
273T6302-2

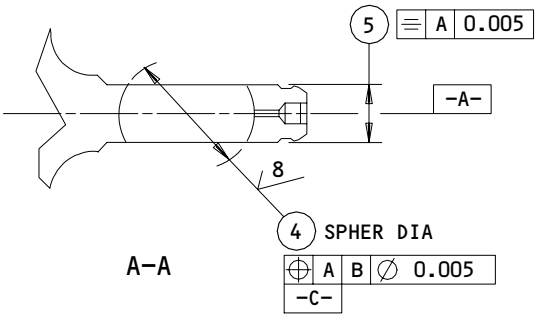
NOTE: Refer to REPAIR - GENERAL for a list of applicable standard practices. For repair of surfaces which is only replacement of the original finish, refer to Refinish instructions, Fig. 601.

1. Plating Repair (Fig. 601)

   A. Machine as required, within repair limits, to remove defects.

   B. Shot peen. Build up with chrome plate. Grind the chrome plate to design dimensions and finish.





A–A

	1	2	3	4	5
DESIGN DIM	1.680 1.678	1.830 1.820	15.30 15.10	1.3785 1.3770	0.570 0.565
REPAIR LIMIT	1.700 1	---	---	---	---

REFINISH

CHROME PLATE (F-15.34) DIA -E- 2
CHROME PLATE (F-15.03) DIA -C-,
0.0007-0.0010 THICK
PASSIVATE (F-17.09) ALL OTHER SURFACES

1 LIMIT FOR BUILDUP WITH CHROME PLATE AND GRINDING TO DESIGN DIM & FINISH

2 THIS CHANGES ORIGINAL PASSIVATED SURFACE OF DIA -E- TO CHROME PLATE. THE PASSIVATED CONFIGURATION IS NOT RECOMMENDED

REPAIR

REF 1

125 MACHINE FINISH EXCEPT AS NOTED

SHOT PEEN: 0.017-0.046 SHOT SIZE
0.003-0.006 A2 INTENSITY

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

DIMENSIONS APPLY AFTER PLATING

ALL DIMENSIONS ARE IN INCHES

273T6302-2
Cylinder Repair and Refinish
Figure 601

T21904

ROD, PISTON - REPAIR 2-1

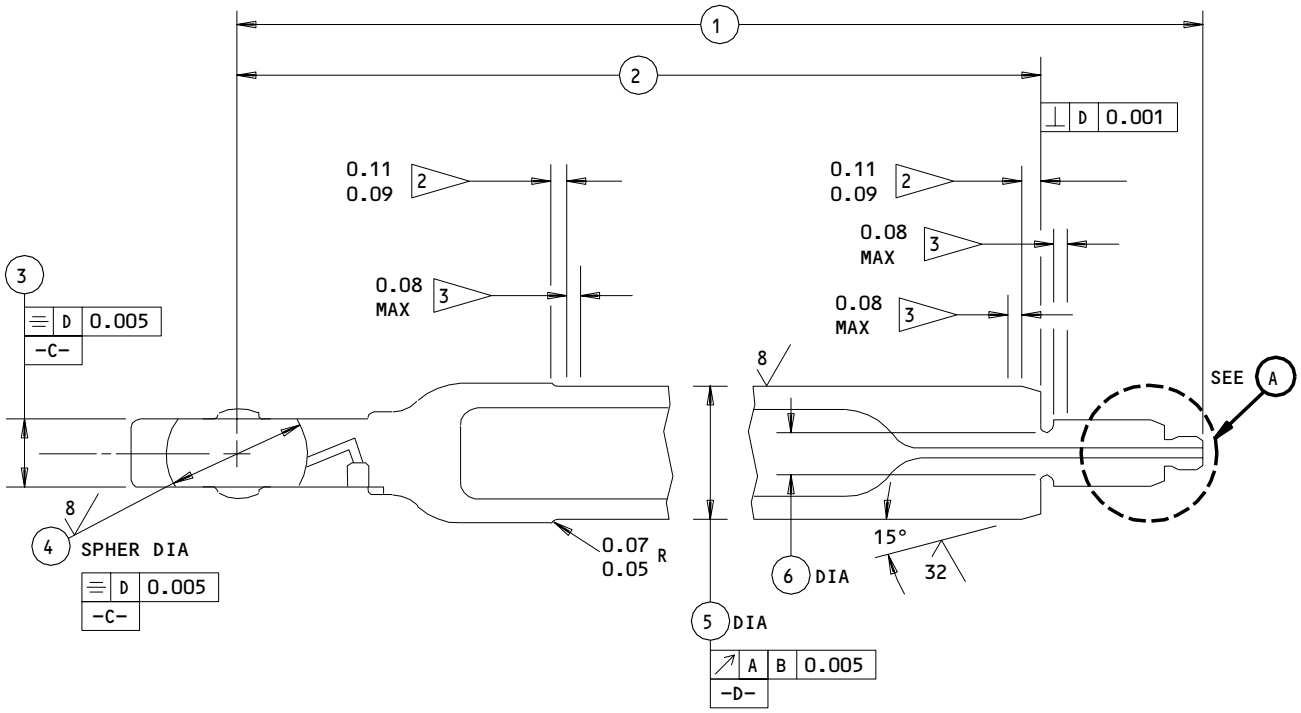
273T6304-1, -5, -6

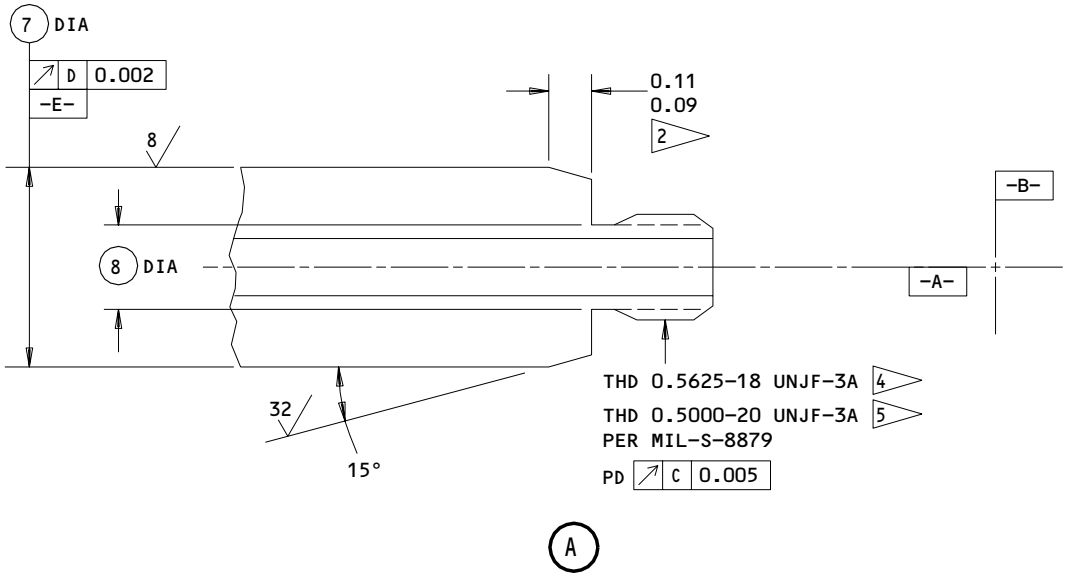
NOTE: Refer to REPAIR - GENERAL for a list of applicable standard practices. For repair of surfaces which is only replacement of the original finish, refer to Refinish instructions, Fig. 601 and 602.

1. Plating Repair (Fig. 601)

   A. Machine as required, within repair limits, to remove defects.

   B. Shot peen. Build up with chrome plate. Grind the chrome plate to design dimensions and finish.





A

273T6304-1,-5
Piston Rod Repair and Refinish
Figure 601 (Sheet 1)

T21906

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) 4	(8) 5
DESIGN DIM	16.69 16.59	14.75 14.55	0.570 0.565	1.3785 1.3770	1.248 1.246	0.710 0.690	0.748 0.746	0.428 0.421	0.482 0.475
REPAIR LIMIT	----	----	----	----	1.226 1	----	0.726 1	----	----

REFINISH

CHROME PLATE (F-15.03) DIAS -D-,-E-,-F-
(0.0007-0.0010 THICK ON DIA -D-)

1 LIMIT FOR BUILDUP WITH CHROME PLATE AND GRINDING TO DESIGN DIM & FINISH

2 NO CHROME PLATE

3 CHROME PLATE RUNOUT

4 273T6304-1

5 273T6304-5

REPAIR

REF 1

125 ALL MACHINED SURFACES

SHOT PEEN: 0.016-0.033 SHOT SIZE
0.010 A2 INTENSITY

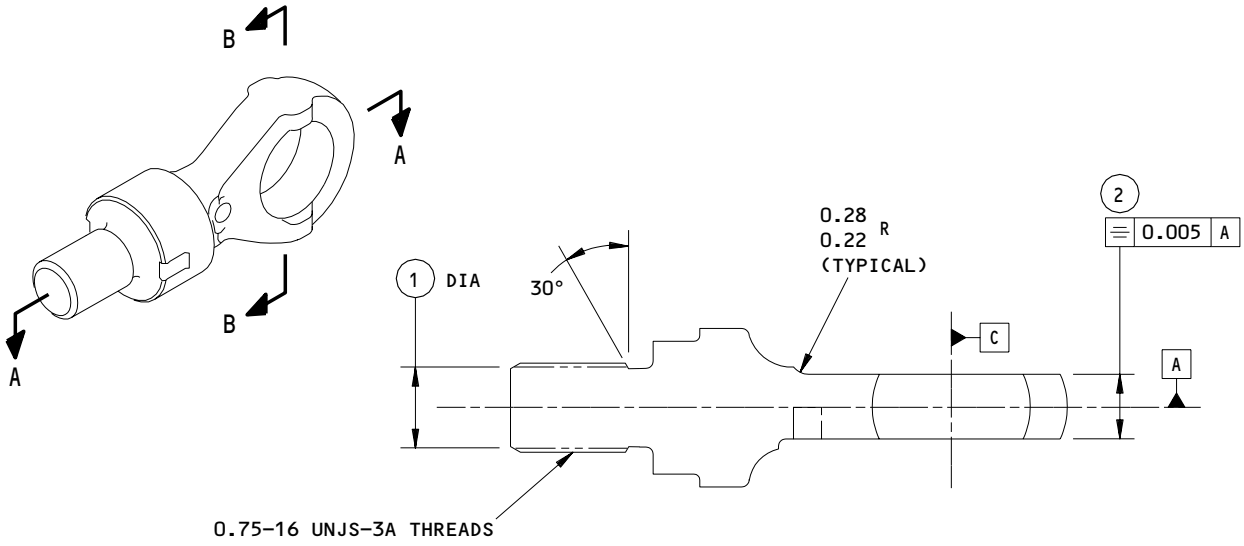
MATERIAL: 15-5PH CRES, 180-200 KSI

ALL DIMENSIONS ARE AFTER PLATING

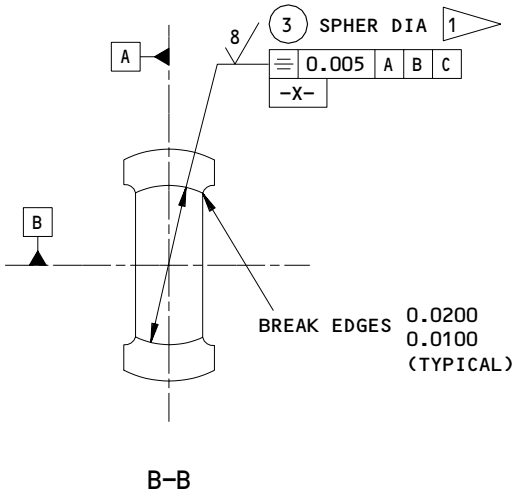
ALL DIMENSIONS ARE IN INCHES

273T6304-1,-5
Piston Rod Repair and Refinish
Figure 601 (Sheet 2)

143567



A-A



B-B

	1	2	3
DESIGN DIM	0.699 0.662	0.570 0.565	1.3785 1.3770
REPAIR LIMIT	—	—	—

REFINISH

PASSIVATE (F-17.25) ALL OVER.
CHROME PLATE (F-15.03) DIA -X-, 0.0007-0.0010 THICK.
APPLY SOLID FILM LUBRICANT TO SURFACES SHOWN BY 1

1 APPLY BMS 3-8 SOLID FILM LUBRICANT (F-19.10) TO THESE SURFACES.

REPAIR

(SAME AS REFINISH)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK ALL SHARP EDGES

SHOT PEEN (SOPM 20-10-03) DIA -X-:
0.016-0.033 SHOT SIZE
0.010 A2 ITENSITY

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

ALL DIMENSIONS ARE IN INCHES

273T6304-6
Rod End Repair and Refinish
Figure 602

L00646

PISTON - REPAIR 3-1

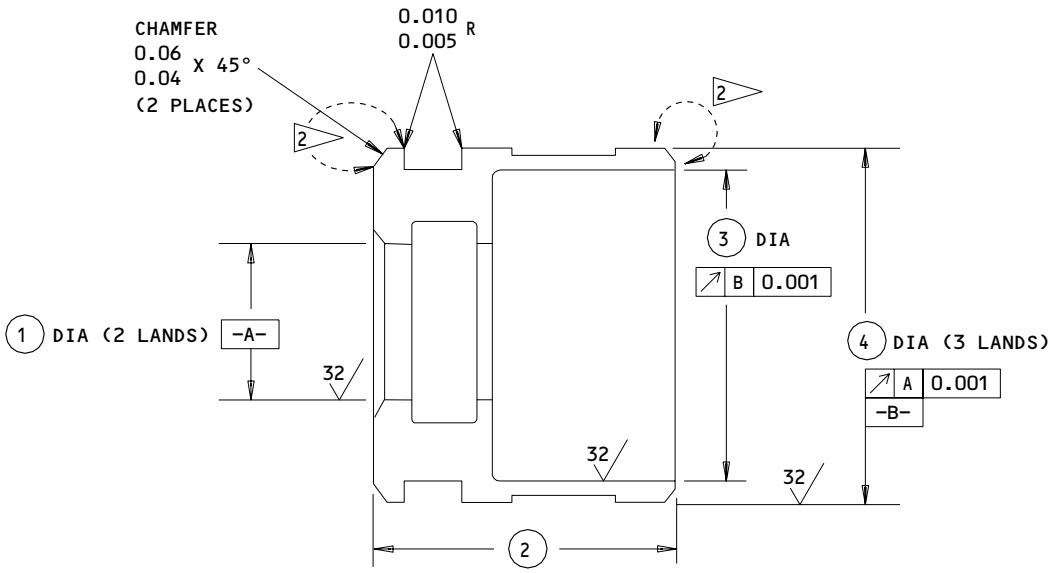
273T6305-1, -2, -3

NOTE: Refer to REPAIR - GENERAL for a list of applicable standard practices. For repair of surfaces which is only replacement of the original finish, refer to Refinish instructions, Fig. 601 and 6y02.

1. Plating Repair (Fig. 601)

   A. Machine as required, within repair limits, to remove defects.

   B. Shot peen. Build up with chrome or nickel plate as indicated. Grind the chrome plate, and machine the nickel plate to design dimensions and finish.



(273T6305-1 SHOWN)

	1	2	3	4
DESIGN DIM	0.751 0.750	1.51 1.49	1.430 1.429	1.676 1.675
REPAIR LIMIT	0.771 4	----	----	1.651 1

REFINISH

NO FINISH 3

1 LIMIT FOR BUILDUP WITH NICKEL PLATE AND MACHINING TO DESIGN DIM & FINISH. OBSERVE PLATING RUNOUT PER 2

2 PLATING RUNOUT

3 THIS REMOVES ORIGINAL CHROME PLATE OF DIA -B-. CHROME PLATED CONFIGURATION IS NOT RECOMMENDED

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

REPAIR

REF 3 4

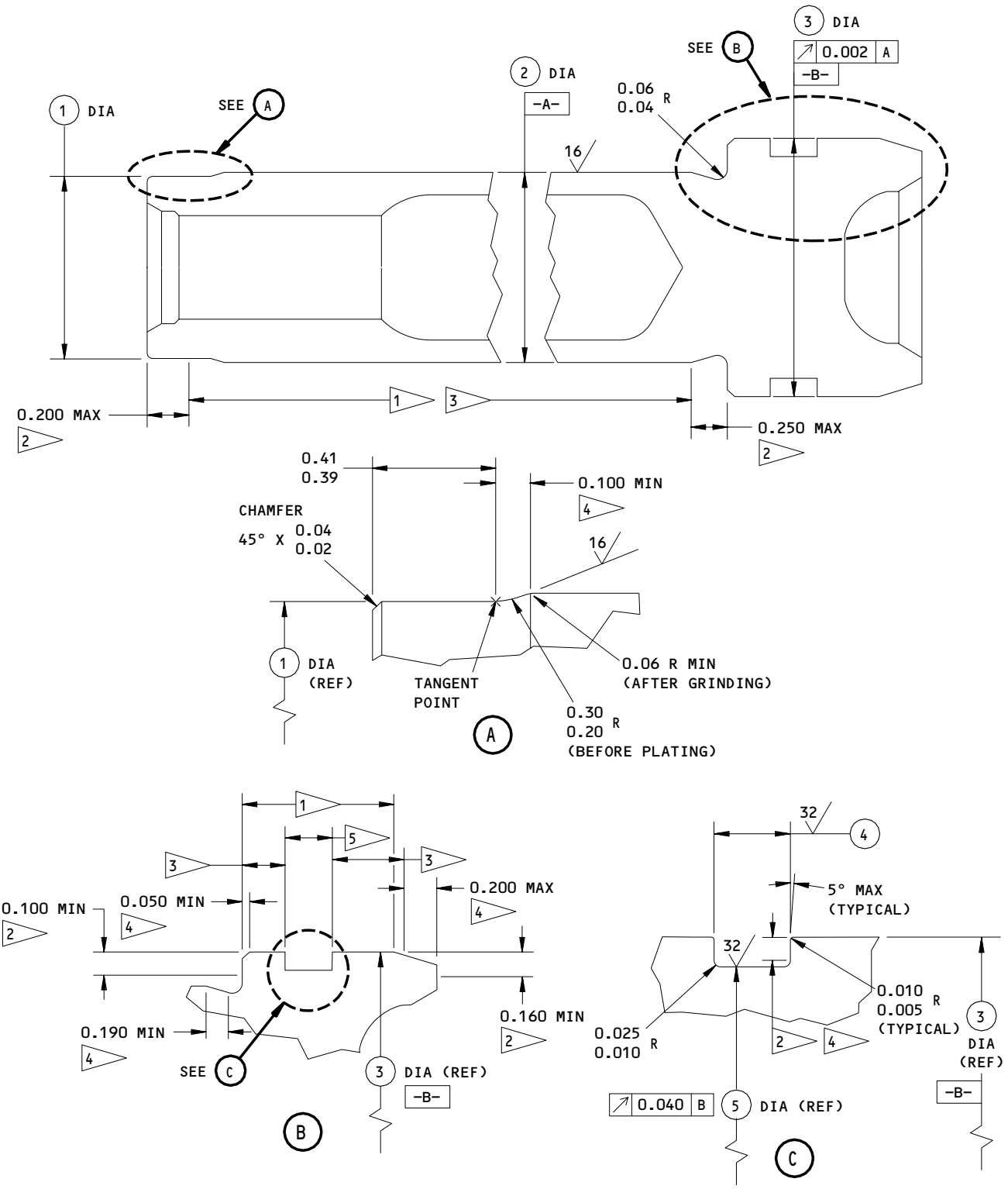
125 MACHINED FINISH EXCEPT AS NOTED

SHOT PEEN: 0.016-0.033 SHOT SIZE
0.010 A2 INTENSITY

MATERIAL: 4330M STEEL, 180-220 KSI

ALL DIMENSIONS ARE IN INCHES

273T6305-1,-2
Piston Repair and Refinish
Figure 601



273T6305-3
Piston Repair and Refinish
Figure 602 (Sheet 1)

L00649

	(1)	(2)	(3)	(4)	(5)
DESIGN DIM	1.198 1.196	1.248 1.246	1.6765 1.6755	0.314 0.304	1.435 1.433
REPAIR LIMIT	—	—	—	—	—

REFINISH

CHROME PLATE SURFACES SHOWN BY 3
PASIVATE (F-17.25) OTHER SURFACES

1 SHOT PEEN THIS AREA

2 SHOT PEEN RUN OUT AREA

3 CHROME PLATE (F-15.34) 0.003-0.005 THICK, WITH RUNOUT AS SHOWN BY 4

4 CHROME PLATE RUNOUT AREA

5 NO CHROME PLATE

REPAIR

(SAME AS REFINISH)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK ALL SHARP EDGES

SHOT PEEN (SOPM 20-10-03) AREAS SHOWN BY 1
WITH RUNOUT SHOWN BY 2. DO NOT SHOT PEEN
SEAL GROOVE OR INTERNAL ARES
0.017-0.046 SHOT SIZE
0.005-0.010 A2 ITENSITY

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

ALL DIMENSIONS ARE IN INCHES

273T6305-3
Piston Repair and Refinish
Figure 602 (Sheet 2)

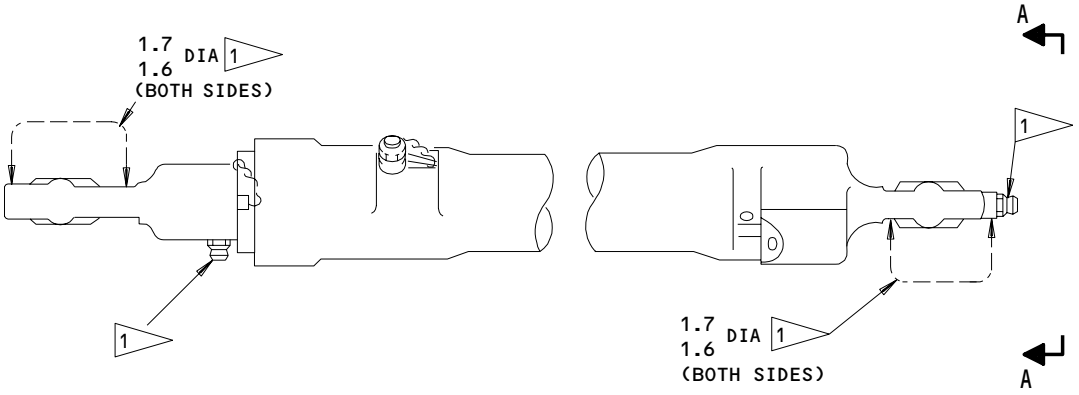
L00671

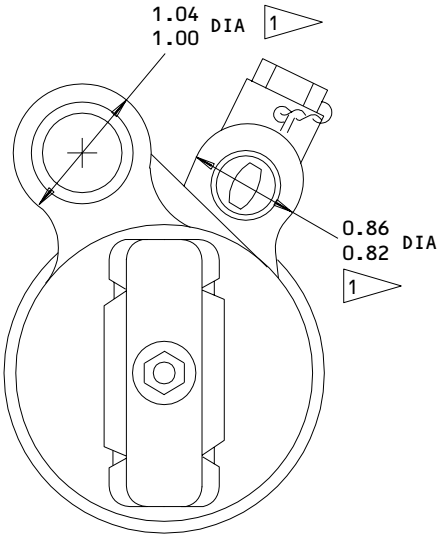
ACTUATOR - REPAIR 4-1

273T6301-Series

1. Topcoat Repair

A. Repair is only replacement of the original finish. Refer to Refinish instructions, Fig. 601. Refer to REPAIR - GENERAL for a list of applicable standard practices.





REFINISH

APPLY PRIMER, BMS 10-11, TYPE 1 (F-20.02) AND ENAMEL (F-14.9813, WHICH REPLACES SRF-14.9813) UNLESS SHOWN BY 1

1 NO PRIMER OR ENAMEL THIS SURFACE

ALL DIMENSIONS ARE IN INCHES

A-A

273T6301-Series
Actuator Refinish
Figure 601

T21908

NAMEPLATE - REPAIR 5-1

BAC27THY9

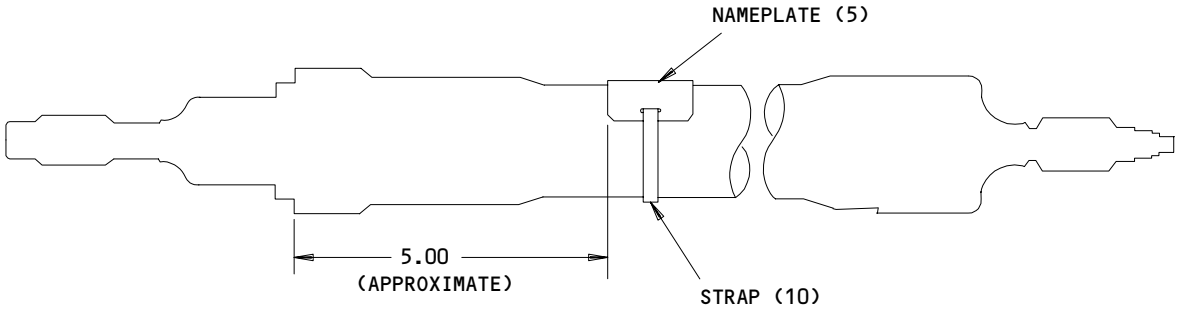
1. Nameplate Replacement (Fig. 601)

NOTE: Refer to REPAIR - GENERAL for a list of applicable standard practices.

A. Steel stamp the serial number and assembly number on the replacement nameplate (5, IPL Fig. 1).

B. Bend nameplate (5) to the curved surface of cylinder (125).

C. With a new strap (10), bond nameplate (5) to cylinder with Type 54 grade 1 adhesive per SOPM 20-50-12 and per SOPM 20-50-21.



ALL DIMENSIONS ARE IN INCHES

BAC27THY9
Nameplate Replacement
Figure 601

T21910

MISCELLANEOUS PARTS REFINISH - REPAIR 6-1

1. Repair of these parts is only replacement of the original finish. Refer to REPAIR - GENERAL for a list of applicable standard practices.

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Nut (25)	15-5PH CRES	Passivate (F-17.25, which replaces F-17.09).
Seal retainer (40), bushing (65), guide (95)	Al-Ni-Bronze per AMS 4640	No finish.
Nut (105)	4340 steel, 182-200 psi	No finish.

Refinish Details
Figure 601

ASSEMBLY

1. Equipment and Materials

NOTE: Equivalent substitutes can be used.

A. Lubricant -- BMS 3-11, Hydraulic fluid (Assembly Lube MCS 352 optional) (SOPM 20-60-03)

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

C. Grease -- Batco 8401 (SOPM 20-60-03)

D. Solid Film Lubricant -- MIL-L-46010, Type 2 (SOPM 20-50-08)

E. Lockwire -- MS20995NC32 (MS20995N32 optional) (SOPM 20-60-04)

2. Equipment

NOTE: Equivalent substitutes can be used.

A. Test Fixture -- A32063-1

B. Torque Adapter -- A32045-45, Nut (25)

C. Torque Adapter -- A32078-2, Nut (105)

D. Torque Adapter -- A32078-4, Nut (105A)

3. Lubrication (IPL Fig. 1)

A. Apply a thin layer of lubricant to the threads of nut (105), packings (23, 55, 75, 85), backup rings (60) and seal (45).

B. Apply a thin layer of BMS 3-33 or MIL-G-23827 grease to the threads of nut (25).

C. Apply solid film lubricant to the threads of plug (21) and restrictors (130, 140) per SOPM 20-50-08.

4. Assembly (IPL Fig. 1)

CAUTION: IN SOME CONFIGURATIONS, THE CYLINDER ID IS NOT PLATED, AND THE MATING PISTON OD IS CHROME PLATED. IN OTHER CONFIGURATIONS, THE CYLINDER ID IS CHROME PLATED AND THE MATING PISTON OD IS NOT PLATED. A CHROME-PLATED CYLINDER MUST NOT BE USED WITH A CHROME-PLATED PISTON. FOR REPAIRED CONFIGURATIONS, A NICKEL PLATED PISTON CAN BE USED WITH A CHROME-PLATED CYLINDER.

A. Install plug (21) and packing (23) on cylinder assembly (110). Tighten plug (21) to 41-43 pound-inches.

B. Install scraper (35) on retainer (40). Install hat seal (45) as noted during disassembly, packing (55) and backup rings (60) on bushing (65). Install packings (75, 85) on piston (90).

C. Hold piston rod (30) with its threaded end upright. Slide nut (25), retainer (40), bushing (65), piston (90), and, on 273T6301-1 thru -6 actuators, guide (95) and cup lockwasher (100), over piston rod (30).

D. On 273T6301-1 thru -6 actuators, install nut (105 or 105A) on piston rod (30). Tighten nut (105) to 245-255 pound-inches and or tighten nut (105A) to 390-400 lb-in., with torque adapter A32078-2 or A32078-4, as applicable. Completely break flange of cup lockwasher (100) onto wrench flat area of nut (105) with a square punch.

E. On 273T6301-7 actuators, apply Batco greatse to external threads. Install lockwasher (32) and rod (30R) in piston (90B). Make sure the keys of the lockwasher are in the slot of the piston. Turn the rod into the piston until it comes to the bottom. Then tighten the rod to 600-650 pound-inches above running torque.

F. Install cylinder (110) on test fixture A32063-1. Carefully slide piston rod (30) with attached parts into the cylinder.

G. Install nut (25) on cylinder (110) and with torque adapter A32045-45 tighten this nut to 200-250 pound-inches.

CAUTION: BEARING (15) HALVES ARE A MATCHED SET. MAKE SURE THE BEARING HALVES ARE ASSEMBLED WITH INDEX MARKS ALIGNED.

H. Align the index marks on the bearing halves, then install bearings (15) on piston rod (30) and cylinder (110) with BMS 3-33 or MIL-G-23827 grease.

I. Do the test (ref TESTING AND TROUBLE SHOOTING).

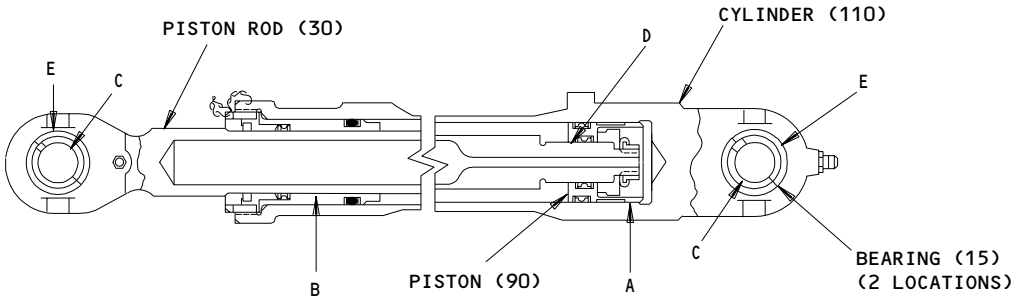
J. After the test, lockwire nut (25) and plug (21) to cylinder (110) by the double-twist method.

5. Storage Instructions

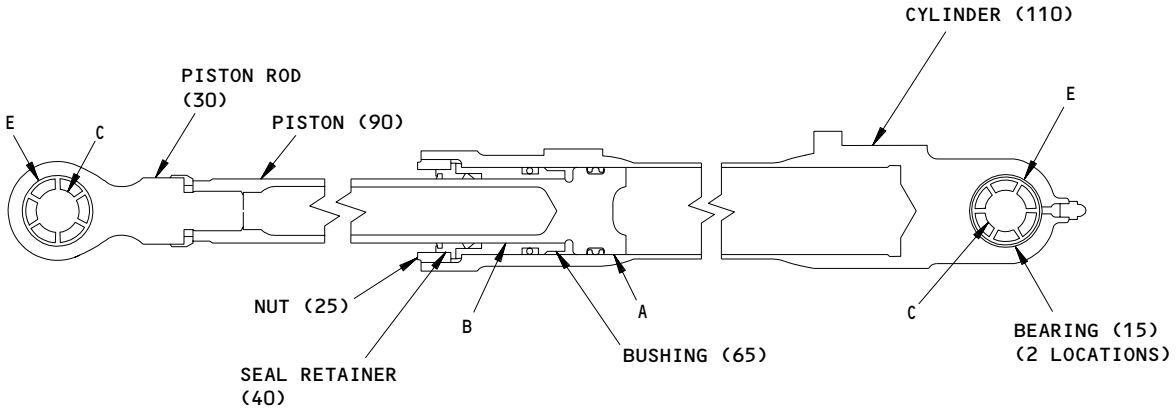
A. Partially fill unit with BMS 3-11 hydraulic fluid.

B. Seal ports with BMS 3-11 resistant plugs or caps.

C. Give protection to the unit and put it away by standard industry practices and the instructions in SOPM 20-44-02.



273T6301-1 THRU -6



273T6301-7

Fits and Clearances
Figure 801 (Sheet 1)

REF LETTER	REF IPL FIG. 1, MATING ITEM NO.	DESIGN DIMENSION*				SERVICE WEAR LIMIT*		
		DIMENSION		ASSEMBLY CLEARANCE		DIMENSION		MAXIMUM CLEARANCE
		MIN	MAX	MIN	MAX	MIN	MAX	
A 1	ID 110	1.678	1.680	0.002	0.005		1.684	0.008
	OD 90	1.675	1.676			1.671		
A 2	ID 110	1.6780	1.6800	0.0015	0.045			
	OD 90	1.6755	1.6765					
B 1	ID 40,65	1.250	1.251	0.002	0.005		1.255	0.009
	OD 30	1.246	1.248			1.243		
B 2	ID 40,65	1.250	1.251	0.002	0.005		1.255	0.009
	OD 90	1.246	1.248			1.243		
C	ID 15	0.8745	0.8750					
D 1	ID 90	0.750	1.751	0.002	0.005		0.756	0.008
	OD 30	0.746	1.748			0.743		
E	ID 30,110 1	1.3770	1.3785	0.0020	0.0040		1.3788	0.005
	OD 15 1	1.3745	1.3750			1.3738		

* ALL DIMENSIONS ARE IN INCHES

1 273T6301-1 THRU -6

2 273T6301-7

Fits and Clearances
Figure 801 (Sheet 2)

L00753

REF IPL	NAME	TORQUE*	
ITEM NO. IPL FIG. 1		POUND-INCHES	POUND-FEET
21	PLUG	41-43	
25	NUT	200-250	
30B	ROD	600-650 1	
105	NUT	245-255	
105A	NUT	390-400	

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

1 ABOVE RUNNING TORQUE

Torque Table
Figure 802

7983

SPECIAL TOOLS, FIXTURES AND EQUIPMENT

NOTE: Equivalent substitutes can be used.

1. A32063-1 -- Test Fixture

2. A32045-45 -- Torque Adapter, Nut (25)

3. A32078-2 -- Torque Adapter, Nut (105)

4. A32078-4 -- Torque Adapter, Nut (105A)

ILLUSTRATED PARTS LIST

1. This section lists and illustrates replaceable or repairable component parts. The Illustrated Parts Catalog contains a complete explanation of the Boeing part numbering system.

2. Indentures show parts relationships as follows:

    Assembly
      Detail Parts for Assembly
      Subassembly
      Attaching Parts for Subassembly
        Detail Parts for Subassembly

    Detail Installation Parts (Included only if installation parts may be returned to shop as part of assembly)

3. One use code letter (A, B, C, etc.) is assigned in the EFF CODE column for each variation of top assembly. All listed parts are used on all top assemblies except when limitations are shown by use code letter opposite individual part entries.

4. Letter suffixes (alpha-variants) are added to item numbers for optional parts, Service Bulletin modification parts, configuration differences (except left- and right-hand parts), product improvement parts, and parts added between two sequential item numbers. The alpha-variant is not shown on illustrations when appearance and location of all variants of the part is the same.

5. Service Bulletin modifications are shown by the notations PRE SB XXXX and POST SB XXXX.

    A. When a new top assembly part number is assigned by Service Bulletin, the notations appear at the top assembly level only. The configuration differences at detail part level are then shown by use code letter.

    B. When the top assembly part number is not changed by the Service Bulletin, the notations appear at the detail part level.

6. Parts Interchangeability

Optional (OPT)	The parts are optional to and interchangeable with other parts having the same item number.
Supersedes, Superseded By (SUPSDS, SUPSD BY)	The part supersedes and is not interchangeable with the original part.
Replaces, Replaced By (REPLS, REPLD BY)	The part replaces and is interchangeable with, or is an alternate to, the original part.

VENDORS

02107 SPARTA MANUFACTURING COMPANY
PO BOX 449 5200 NORTH WOOSTER ROAD
DOVER, OHIO 44622

07128 TETRAFLUOR INC
2051 EAST MAPLE AVENUE
EL SEGUNDO, CALIFORNIA 90245

26303 OHIO AIRCRAFT SUPPLIES INC
717 HINDRY AVENUE
INGLEWOOD, CALIFORNIA 90301

26879 CORONADO MFG INC
11069 PENROSE AVENUE
SUN VALLEY, CALIFORNIA 91352

72902 GREENE TWEED AND CO INC
320 ELM AVENUE
NORTH WALES, PENNSYLVANIA 19454

92555 LEE COMPANY
2 PETTIPAUG ROAD
WESTBROOK, CONNECTICUT 06498

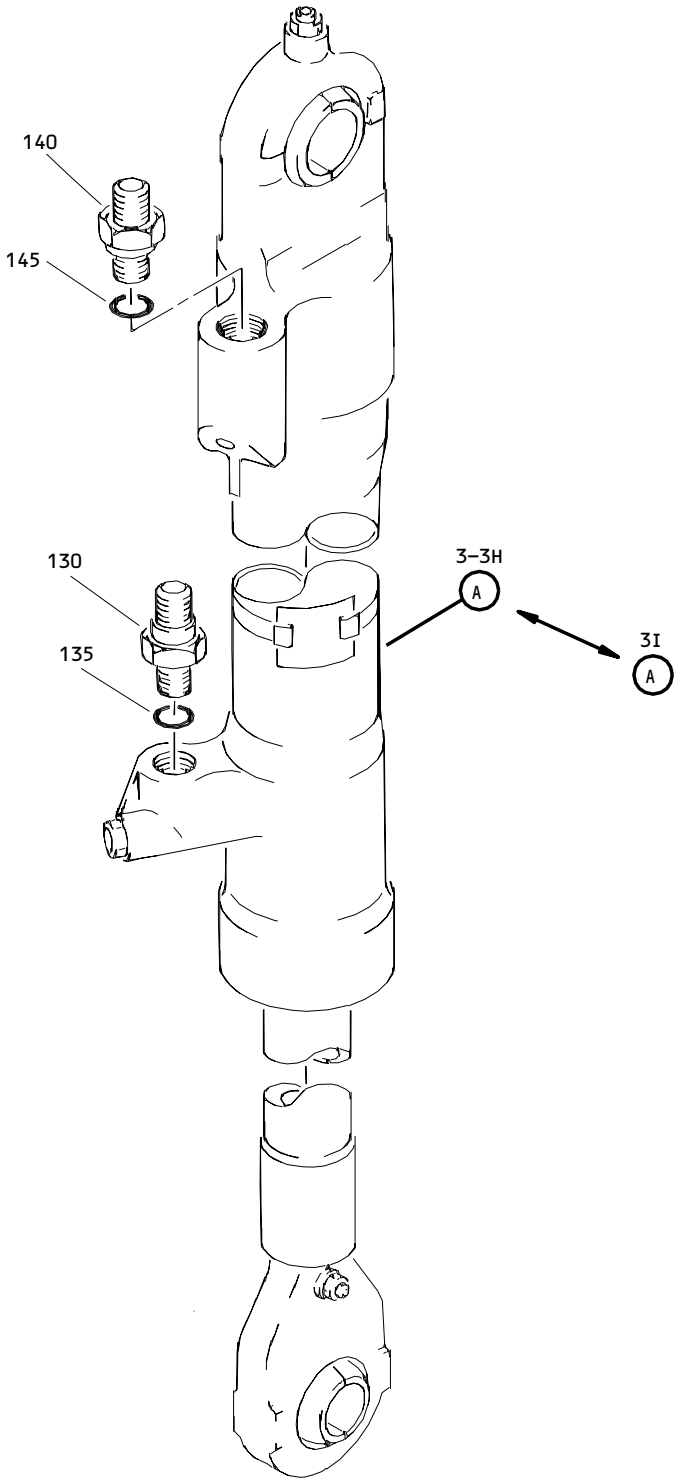
94878 RAYBESTOS-MANHATTAN INC PACIFIC COAST DIV
1400 E. ORANGETHROPE
FULLERTON, CALIFORNIA 92631

97820 SHAMBAN W S AND CO
711 MITCHELL ROAD
NEWBURY PARK, CALIFORNIA 91320

99240 CRISSAIR, INCORPORATED
122 ARENA STREET
EL SEGUNDO, CALIFORNIA 90246

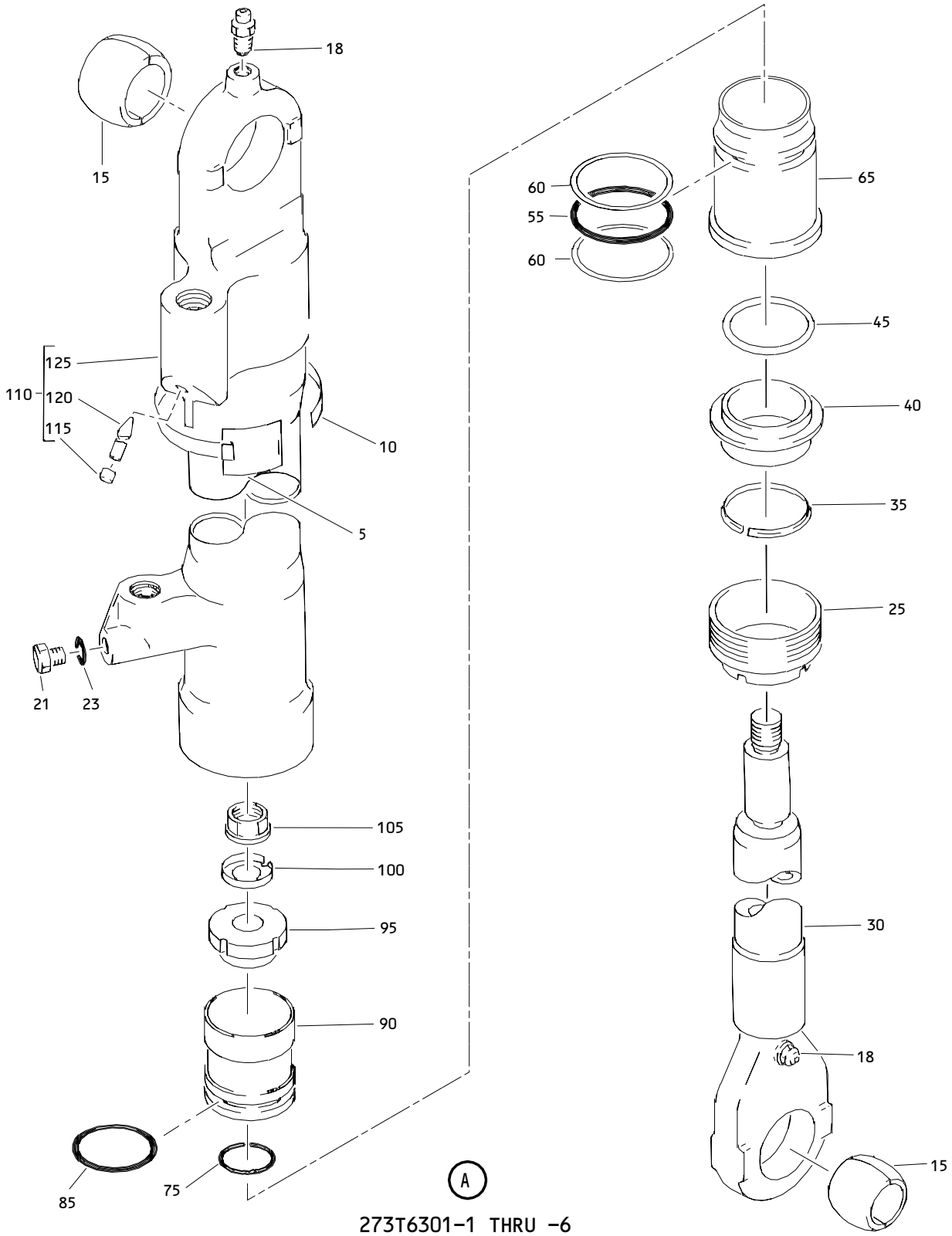
PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
BACP20AX18		1	115	1
BACP20AX18P		1	120	1
BACR12BM221		1	60	2
BACS34A13A		1	35	1
BAC27THY9		1	5	1
JEHC187565OL		1	130A	1
MS15004-1		1	18	2
MS9902-01		1	21	1
NAS1611-008		1	23	1
NAS1611-218		1	46	1
NAS1611-218A		1	48	1
NAS1611-221		1	55	1
NAS1611-221A		1	55A	1
NAS1611-6A		1	145A	1
NAS1612-4		1	135	1
NAS1612-4A		1	135A	1
NAS1612-6		1	145	1
S33121-218-5		1	49	1
		1	45A	1
S33555-218H99		1	45	1
270T0002-14		1	15	2
273T6300-11		1	1F	RF
273T6300-2		1	1A	RF
273T6300-3		1	1B	RF
273T6300-4		1	1C	RF
273T6300-6		1	1D	RF
273T6300-8		1	1E	RF
273T6301-1		1	1	
		1	3	1
		1	3B	1
273T6301-2		1	3A	1
		1	3C	1
273T6301-3		1	3D	1
		1	3E	1
273T6301-4		1	3F	1
273T6301-5		1	3G	1
273T6301-6		1	3H	1
273T6301-7		1	3I	1
		1	3J	1
273T6301-8		1	47	1
273T6302-1		1	110	1
273T6302-2		1	125	1
273T6304-1		1	30	1
273T6304-5		1	30A	1
273T6304-6		1	30B	1
273T6305-1		1	90	1
273T6305-2		1	90A	1

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
273T6305-3		1	90B	1
273T6306-1		1	95	1
273T6306-2		1	95A	1
273T6306-3		1	95B	1
273T6306-4		1	95C	1
273T6307-1		1	105	1
273T6307-3		1	105A	1
273T6308-1		1	65	1
273T6309-1		1	40	1
273T6310-1		1	25	1
273T6311-1		1	100	1
273T6311-2		1	100A	1
293W2515-4		1	32	1
69B80300-18		1	10	1
7210FT952T		1	75	1
722R1MT952-5708		1	85A	1
		1	85B	1
7221MT952-5708		1	85	1
9R3208		1	130	1
9R3210		1	140	1



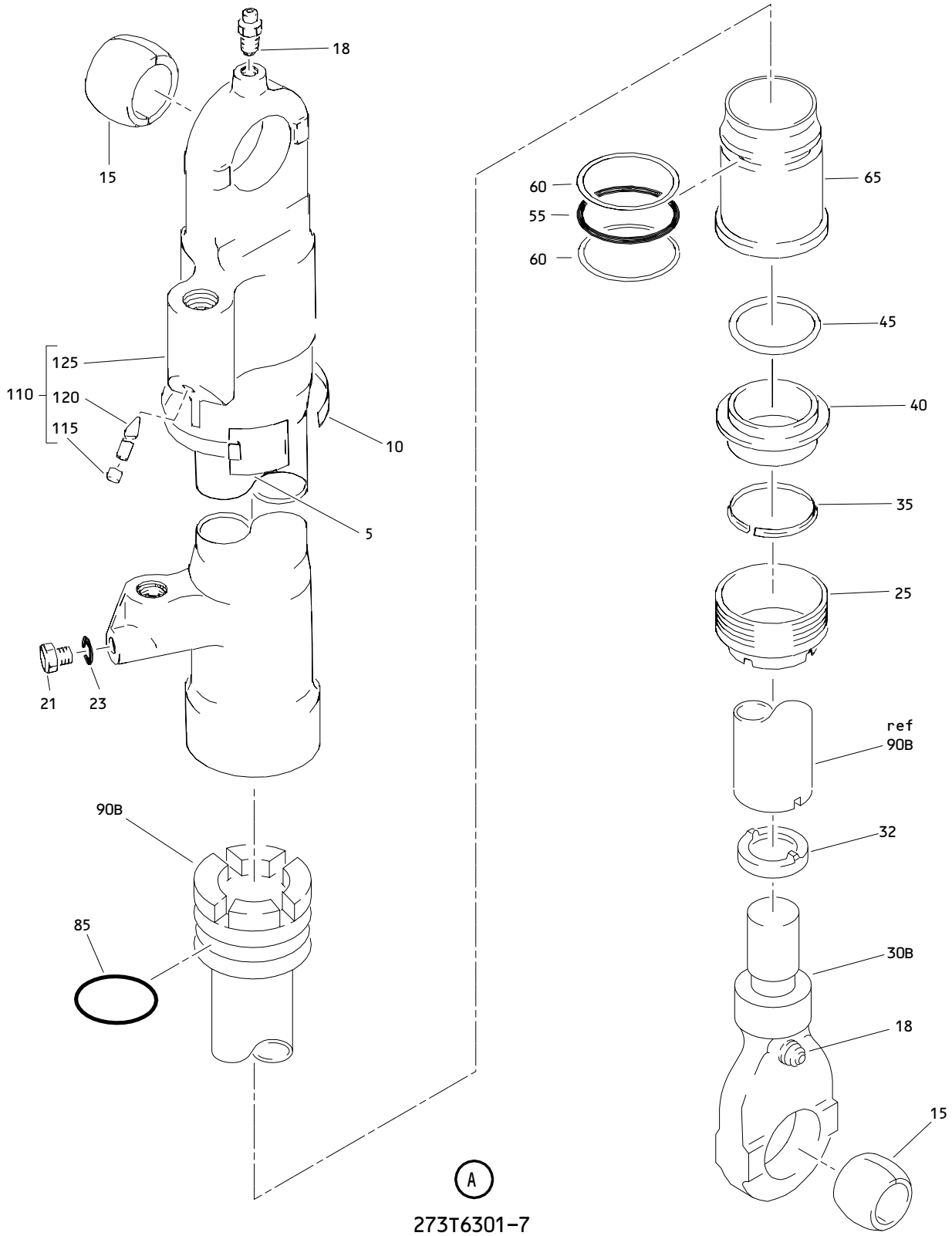
Main Landing Gear Drag Brace Actuator Assembly
Figure 1 (Sheet 1)

T58723



273T6301-1 THRU -6
Main Landing Gear Drag Brace Actuator Assembly
Figure 1 (Sheet 2)

T58724



273T6301-7

Main Landing Gear Drag Brace Actuator Assembly
Figure 1 (Sheet 3)

L00927

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-1	273T6301-1		DELETED		
-1A	273T6300-2		ACTUATOR ASSY-MLG DRAG BRACE	A	RF
-1B	273T6300-3		ACTUATOR ASSY-MLG DRAG BRACE	B	RF
-1C	273T6300-4		ACTUATOR ASSY-MLG DRAG BRACE	C	RF
-1D	273T6300-6		ACTUATOR ASSY-MLG DRAG BRACE	D	RF
-1E	273T6300-8		ACTUATOR ASSY-MLG DRAG BRACE	E	RF
-1F	273T6300-11		ACTUATOR ASSY-MLG DRAG BRACE	F	RF
3	273T6301-1		.ACTUATOR ASSY (OPT TO ITEM 3A) (PRE SB 32-52,32-0180)	A	1
-3A	273T6301-2		.ACTUATOR ASSY (OPT ITEM 3) (PRE SB 32-52,32-0180)	A	1
-3B	273T6301-1		.ACTUATOR ASSY (PRE SB 32-52,32-1080)	B	1
-3C	273T6301-2		.ACTUATOR ASSY (PRE SB 32-52,32-0180)	C	1
-3D	273T6301-3		.ACTUATOR ASSY (PRE SB 32-52,32-0180)	AC	1
-3E	273T6301-3		.ACTUATOR ASSY (PRE SB 32-0180)	D	1
-3F	273T6301-4		.ACTUATOR ASSY (PRE SB 32-52,32A71, 32-0180)	AB	1
-3G	273T6301-5		.ACTUATOR ASSY (POST SB 32-52,32A71) (PRE SB 32-0180)	E	1
-3H	273T6301-6		.ACTUATOR ASSY (POST SB 32-52,32A71) (PRE SB 32-0180)	AB	1
-3I	273T6301-7		.ACTUATOR ASSY (POST SB 32-0180)	A-E	1
-3J	273T6301-7		.ACTUATOR ASSY	F	1
5	BAC27THY9		..NAMEPLATE		1
10	69B80300-18		..STRAP		1
15	270T0002-14		..BEARING		2

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
18	MS15004-1		..FITTING-LUBE		2
21	MS9902-01		..PLUG		1
23	NAS1611-008		..PACKING		1
25	273T6310-1		..NUT-ROD SEAL		1
30	273T6304-1		..ROD-PISTON (USED ON ITEMS 3,3B,3F, 3H)		1
-30A	273T6304-5		..ROD-PISTON (USED ON ITEMS 3A,3C,3D, 3E,3G)		1
30B	273T6304-6		..ROD-PISTON (USED ON ITEMS 3I,3J)		1
32	293W2515-4		..LOCKWASHER (USED ON ITEMS 3I,3J)		1
35	BACS34A13A		..SCRAPER-RING		1
40	273T6309-1		..RETAINER-SEAL		1
45	S33555-218H99		..SEAL-HAT (V97820)		1
-45A	S33121-218-5		..SEAL (V97820) (OPT TO ITEM 45) (OPT TO ITEMS 3-3H)		1
-46	NAS1611-218		..PACKING (USED WITH ITEM 45A)		1
-47	273T6301-8		..SEAL KIT-SUBSTITUTE (OPT TO ITEM 45) (USED ON ITEMS 3I,3J)		1
-48	NAS1611-218A		...PACKING		1
-49	S33121-218-5		...SEAL-HAT (V97820)		1
55	NAS1611-221		..PACKING (USED ON ITEMS 3-3H)		1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-55A	NAS1611-221A		..PACKING (USED ON ITEMS 3I,3J)		1
60	BACR12BM221		..RING-BACKUP		2
65	273T6308-1		..BUSHING		1
75	7210FT952T		..PACKING (V72902)		1
85	7221MT952-5708		..PACKING (V72902) (USED ON ITEMS 3 THRU 3C)		1
-85A	722R1MT952-5708		..PACKING (V72902) (POST SB 32A71) (POST SB 32-52R1) (USED ON ITEMS 3 THRU 3F)		1
-85B	722R1MT952-5708		..PACKING (V72902) (USED ON ITEMS 3G-3J)		1
90	273T6305-1		..PISTON (USED ON ITEMS 3-3C)		1
90A	273T6305-2		..PISTON (USED ON ITEMS 3D-3H)		1
90B	273T6305-3		..PISTON (USED ON ITEMS 3I,3J)		1
95	273T6306-1		..GUIDE-PISTON (USED ON ITEMS 3,3B)		1
-95A	273T6306-2		..GUIDE-PISTON (USED ON ITEMS 3A,3C)		1
-95B	273T6306-3		..GUIDE-PISTON (USED ON ITEMS 3D,3E, 3G)		1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-95C	273T6306-4		..GUIDE-PISTON (USED ON ITEM 3F,3H)		1
100	273T6311-1		..LOCKWASHER-CUP (USED ON ITEMS 3,3B,3F, 3H)		1
-100A	273T6311-2		..LOCKWASHER-CUP (USED ON ITEMS 3A,3C,3D, 3E,3G)		1
105	273T6307-1		..NUT (USED ON ITEMS 3,3B,3F, 3H)		1
-105A	273T6307-3		..NUT (USED ON ITEMS 3A,3C,3D, 3E,3G)		1
110	273T6302-1		..CYLINDER ASSY		1
115	BACP20AX18		...PLUG		1
120	BACP20AX18P		...PIN		1
125	273T6302-2		...CYLINDER		1
130	9R3208		.RESTRICTOR (V99240) (OPT TO ITEM 130A)		1
-130A	JEHC1875650L		.RESTRICTOR (V92555) (OPT ITEM 130)		1
135	NAS1612-4		.PACKING	A-E	1
-135A	NAS1612-4A		.PACKING	F	1
140	9R3210		.VALVE (V99240)		1
145	NAS1612-6		.PACKING	A-E	1
-145A	NAS1611-6A		.PACKING	F	1