TO: ALL HOLDERS OF TAIL SKID ACTUATOR ASSEMBLY COMPONENT MAINTENANCE MANUAL 32-71-12

REVISION NO. 2 DATED JUL 01/03

HIGHLIGHTS

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
ALL PAGES	Changed callout in header to show only the basic part number.
CONTENTS 1	Added test fixture callouts.
102-108 901	Added clarifications and details.

COMPONENT
MAINTENANCE MANUAL

ACTUATOR ASSEMBLY - TAILSKID

PART NUMBER 273T4702-1

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

K17127

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

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL

PAGE	DATE	CODE
32-71-12		
TITLE PAGE		
1	JUL 01/99	01
2	BLANK	
REVISION RECORD		
*1	JUL 01/03	01.1
2	BLANK	
TR & SB RECORD		
*1	JUL 01/03	01.1
2	BLANK	
LIST OF EFFECTIVE PAGES		
*1	JUL 01/03	01
THRU LAST PAGE		
CONTENTS		
*1	JUL 01/03	01.1
2	BLANK	
INTRODUCTION		
*1	JUL 01/03	01.1
2	BLANK	
DESCRIPTION & OPERATION		
*1	JUL 01/03	01.1
*2	JUL 01/03	01.1
TESTING & FAULT ISOLATION		
*101	JUL 01/03	01.1
*102	JUL 01/03	01.1
*103	JUL 01/03	01.1
*104	JUL 01/03	01.1
*105	JUL 01/03	01.1
*106	JUL 01/03	01.1
*107	JUL 01/03	01.1
*108	JUL 01/03	01.1
*109	JUL 01/03	01.1
*110	JUL 01/03	01.1
CHECK		
*501	JUL 01/03	01.1
502	BLANK	
REPAIR-GENERAL		
*601	JUL 01/03	01.1
*602	JUL 01/03	01.1
REPAIR 2-1		
*601	JUL 01/03	01.1
*602	JUL 01/03	01.1
REPAIR 2-2		
*601	JUL 01/03	01.1
*602	JUL 01/03	01.1
*603	JUL 01/03	01.1
*604	JUL 01/03	01.1
*605	JUL 01/03	01.1
*606	JUL 01/03	01.1
REPAIR 3-1		
*601	JUL 01/03	01.1
*602	JUL 01/03	01.1
*603	JUL 01/03	01.1
*604	JUL 01/03	01.1
REPAIR 4-1		
*601	JUL 01/03	01.1
*602	JUL 01/03	01.1
REPAIR 4-2		
*601	JUL 01/03	01.1
*602	JUL 01/03	01.1
*603	JUL 01/03	01.1
*604	JUL 01/03	01.1
REPAIR 5-1		
*601	JUL 01/03	01.1
*602	JUL 01/03	01.1
*603	JUL 01/03	01.1
604	BLANK	

* = REVISED, ADDED OR DELETED

PAGE	DATE	CODE
ASSEMBLY		
*701	JUL 01/03	01.1
*702	JUL 01/03	01.1
*703	JUL 01/03	01.1
*704	JUL 01/03	01.1
*705	JUL 01/03	01.1
*706	JUL 01/03	01.1
*707	JUL 01/03	01.1
708	BLANK	
FITS AND CLEARANCES		
*801	JUL 01/03	01.1
*802	JUL 01/03	01.1
SPECIAL TOOLS		
*901	JUL 01/03	01.1
*902	BLANK	
ILLUSTRATED PARTS LIST		
*1001	JUL 01/03	01.1
*1002	JUL 01/03	01.1
*1003	JUL 01/03	01.1
*1004	JUL 01/03	01.1
*1005	JUL 01/03	01.1
*1006	JUL 01/03	01.1
*1007	JUL 01/03	01.1
*1008	JUL 01/03	01.1

PAGE	DATE	CODE

* = REVISED, ADDED OR DELETED

TABLE OF CONTENTS

*[1] Special instructions are not necessary. Use standard industry practices.

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.

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.

Design changes, optional parts, configuration differences and Service Bulletin modifications create alternate part numbers. These are identified in the Illustrated Parts List (IPL) by adding an alphabetical character to the basic item number. The resulting item number is called an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless otherwise indicated.

Verification:

TAIL SKID ACTUATOR ASSEMBLY

DESCRIPTION AND OPERATION

1. Description

   A. The tail skid actuator assembly has a barrel assembly with a bearing installed in one end. A rod end assembly with a bearing. A solenoid, pressure port, return port, nameplate and strap.

2. Operation

   A. The actuator assembly deploys the tail skid when hydraylic pressure is applied.

3. Leading Particulars (Approximate)

   A. Length (center to center on the bearings)
      14.7250 ±0.0500 inches (maximum retracted)
      19.9650 ±0.0900 inches (maximum extended)

   B. Width -- 5 inches

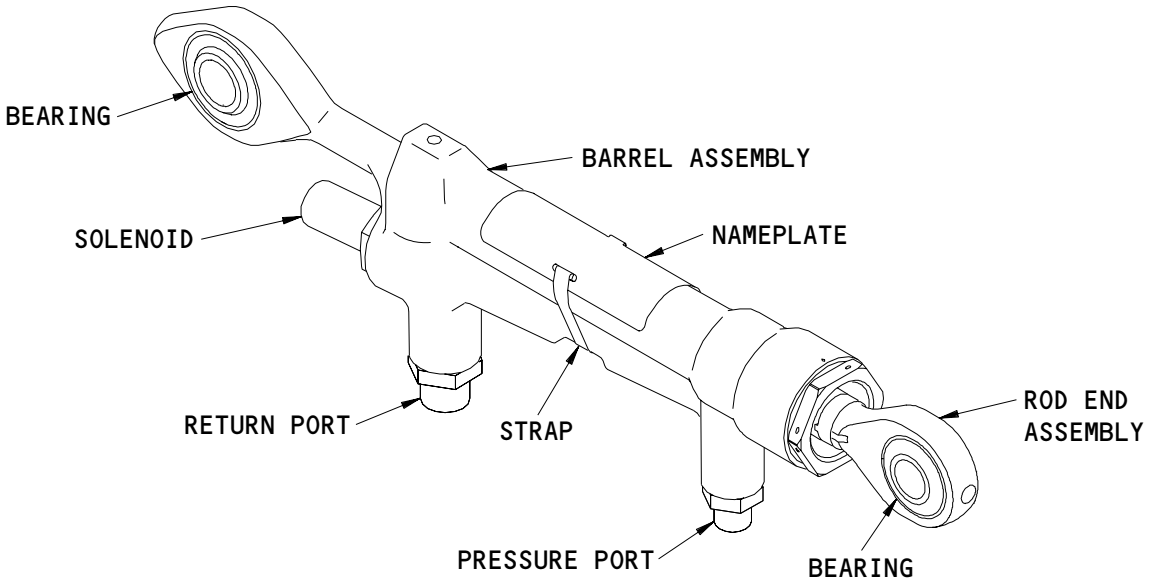
   C. Weight -- 9.2 pounds

   D. Fluid (Operate) -- BMS 3-11 Hydraulic Fluid

   E. Pressure (Operate) -- 3000 psi

   F. Proof Pressure -- 4500-4600 psi

   G. Stroke -- 5.24 ±0.14 inches



Tail Skid Actuator Assembly
Figure 1

K17133

TESTING AND FAULT ISOLATION

1. General

A. This procedure contains the data necessary to do a test of the actuator assembly after an overhaul or for fault isolation. The test includes the items:

(1) Insulation Resistance (Pre Exposure)

(2) Dielectric Strength

(3) Insulation Resistance (Post Exposure)

(4) Bonding and Grounding

(5) Coil Resistance

(6) Suppression

(7) Drop out voltage

(8) Pull in voltage

(9) Proof Pressure

(10) External Leakage

(11) Internal Leakage

(12) Extended Stroke Rate

(13) Retracted Stroke rate

(14) Extend and retract length

(15) Friction

(16) Bearing Friction

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

C. Refer to IPL Fig. 1 for item numbers.

2. Actuator Assembly Test

A. Special Tools and Equipment

NOTE: Equivalent equipment can be used.

(1) Actuator Assembly Fixture Equipment - A32121

(2) Insulation and Dielectric Tester

(a) Parameters

1) AC: 0 to 5000V AC, 60 Hz, 0-2.5A, Accuracy: ±5% (if available)

2) DC: 0 to 500V DC, 0-250 Megohms, Accuracy: ±5% (if available)

(b) Shown below are two examples that can be used. Equivalent models can be used.

1) Example 1: Manufacturer: Kikusui, Model: 860A

2) Example 2: Manufacturer: Hipotronics, Model: H300B Series

(3) Ohmmeter

(4) Oscilloscope

B. Standard Tools and Equipment

NOTE: Equivalent equipment can be used.

(1) A hydraulic test stand with these requirements:

(a) Can operate with BMS 3-11, type 4 hydraulic fluid.

(b) Can operate in a range of 0-4600 psi.

(c) The fluid must be continuously filtered by a filter no larger than 15 micron absolute.

(d) The fluid temperature to be 90°F ±30°F.

(e) Sufficient valves to change the direction of the hydraulic fluid flow.

C. Consumable Material

(1) D00208 Fluid, Hydraulic - BMS 3-11, type 4 (SOPM 20-60-03)

D. References

(1) 32-71-12/301, Disassembly

(2) 32-71-12/701, Assembly

(3) SOPM 20-60-03, Lubricants

E. Prepare for Test

(1) Test Conditions

(a) Ambient Conditions

1) Temperature - 80°F ±20°F.

2) Pressure - 15 psi ±2 psi

3) Relative Humidity - 10 to 90 percent

(2) Install the actuator in the holding fixture.

(3) Attach the hydraulic test stand lines to the ports.

(4) Fill the actuator with hydraulic fluid.

NOTE: The actuator will be continuously full of BMS 3-11, type 4 hydraulic fluid for each test.

(5) Remove all of the air from the actuator.

F. Procedure

(1) Do an insulation resistance test (Pre Exposure).

(a) With pins 1 and 3 tied together (Fig. 101), apply 500v dc for 1 minute between pin 1 and 2. Measure the insulation resistance with an insulation and dielectric tester. The insulation resistance must not be less than 40 megohms.

(2) Do a dielectric strength test.

(a) With pins 1 and 3 tied together (Fig. 101), apply 1500Vrms, 60Hz for one minute between pin 1 and 2. Measure the leakage current with an insulation and dielectric tester. The leakage current must not be more than 2.0 milliamps. There must be no arcing, flashover, sparkover or breakdown. The test voltage can be decreased to 1200Vrms, 60 Hz (80 percent of 1500Vrms) if the solenoid (95) had this test at 1500Vrms.

(3) Do an insulation resistance test (Post Exposure).

(a) With pins 1 and 3 tied together, see (Fig. 101), apply 500v dc for 1.0 minute between pins 1 and 2. Measure the insulation resistance. The insulation resistance must not be less than 40 megohms.

(4) Bonding and Grounding Test

(a) Apply 1.0 amp between the electrical connector on the solenoid (95) valve and the mounting surface for the ground strap on the head end of the actuator barrel. Meaure the voltage drop. Apply 1.0 amp between pin 2 and and the mounting surface for the ground strap. Measure the voltage drop. In both cases, the voltage drop must not be more than 10 millivolts.

(5) Coil resistance test

(a) With an ohmmeter, measure the coil resistance between pins 1 and 3, see Fig. 101. The coil resistance must be 85 - 115 ohms.

(6) Suppression Test

(a) Apply 28v dc across pins 1 and 3, see (Fig. 101), with a 10msec minimum power interruption. With a storage oscilloscope, measure the voltage during and after the power interruption. Voltage variations during and after the power interruption must be between -70 and +70v dc.

(7) Drop out voltage

(a) With the solenoid valve energized, 50 psi applied to the return (RTN) port and 3000 psi applied to the pressure (press) port, De-energize the solenoid valve and measure the drop out voltage. The drop out voltage must be 3 VDC or more.

(8) Pull in voltage

(a) With the solenoid valve De-energized 50 psi applied to the return (RTN) port and 3000 psi applied to the pressure (press) port, energize the solenoid valve, and measure the drop-in voltage. The drop in voltage must be 18 VDC or less.

(9) Proof Pressure Test

(a) Fill the actuator assembly with hydraulic fluid.

(b) With the actuator in the retracted position and the solenoid valve de-energized, slowly apply pressure to both ports to fully extend the actuator.

(c) With the actuator fully extended, continue to increase the pressure to 4500 - 4600 psi. Hold this pressure for at least 30 seconds. There must not be any external leakage or permanent deformation.

(10) External Leakage Test

(a) Fill the actuator assembly with BMS 3-11, type 4 hydraulic fluid.

(b) Before you operate the unit, clean around the shaft of the piston rod (72) where the rod scraper (30) and rod seal (40) touch the piston rod. Then operate the actuator assembly for a minimum of 25 full no-load cycles at a rate of approximately 2-3 cycles per minute. Use 3000 to 3100 psi inlet pressure and 40 to 60 psi return pressure. Let the unit touch the stops at both ends of the stroke. Leakage at the rod seal (40) must not be more than one drop. There must be no leakage at the packings (55, 80, 90, 97).

(c) Apply 2-5 psi to both ports and hold for two minutes. There must be no external leakage.

(11) Internal Leakage Test

(a) Fill the actuator assembly with BMS 3-11, type 4 hydraulic fluid.

(b) With the actuator assembly in the retracted position, apply 50 psi to the pressure (PRESS) port. Measure the internal leakage flow rate from the return (RTN) port. The flow rate leakage from the return (RTN) port must not be more than 2 cubic centimeters per minute.

(c) With the actuator assembly in the retracted position, apply 3000 psi to the pressure (PRESS) port. Measure the internal leakage flow rate from the return (RTN) port. The flow rate leakage from the return (RTN) port must not be more than 2 cubic centimeters per minute.

(d) With the actuator asembly in the extended position, apply 50 psi to the return (RTN) port. Measure the internal leakage flow rate from the pressure (PRESS) port. The flow rate leakage from the pressure (PRESS) port must not be more than 2 cubic centimeters per minute.

(12) Extended Stroke Rate

(a) With the actuator assembly fully retracted, the piston rod (72) free to move, and the solenoid valve (95) energized, apply 50 psi to the return (RTN) port and 3000 psi to the pressure (PRESS) port.

(b) De-energize the solenoid valve (95) and measure the time required for the actuator to fully extend. The time to fully extend the actuator must be 10-14 seconds.

(13) Retract Stroke Rate

(a) With the actuator assembly fully extended, the piston rod (72) unrestrained, the solenoid valve (95) de-energize, apply 50 psi to the return (RTN) port and 3000 psi to the pressure (PRESS) port.

(b) Energize the solenoid valve (95). Measure and record the time required for the actuator assembly to fully retract. The time required to fully retract must be 13-17 seconds.

(14) Extend and Retract Length

(a) Measure the extended and retracted length of the actuator between the bearing centers. The extended length shall be 19.875-20.055 inches and retracted length must be 14.675-14.775 inches.

(15) Friction Test

(a) With the actuator assembly fully extended, the rod end assembly (5) free to move the solenoid valve (95) energized and the return (RTN) port open to atmospheric pressure, slowly apply 115 psi to the pressure (PRESS) port. The actuator assembly must retract smoothly and freely. When the actuator is fully retracted, de-energize the solenoid valve (95). The actuator assembly must extend smoothly and freely.

(16) Bearing Friction

(a) Measure the breakout torque for the bearings (10, 115) in the rod end (15) and the barrel (120). The breakout torque must not be greater then 30 in-lb for either bearing (10, 115).

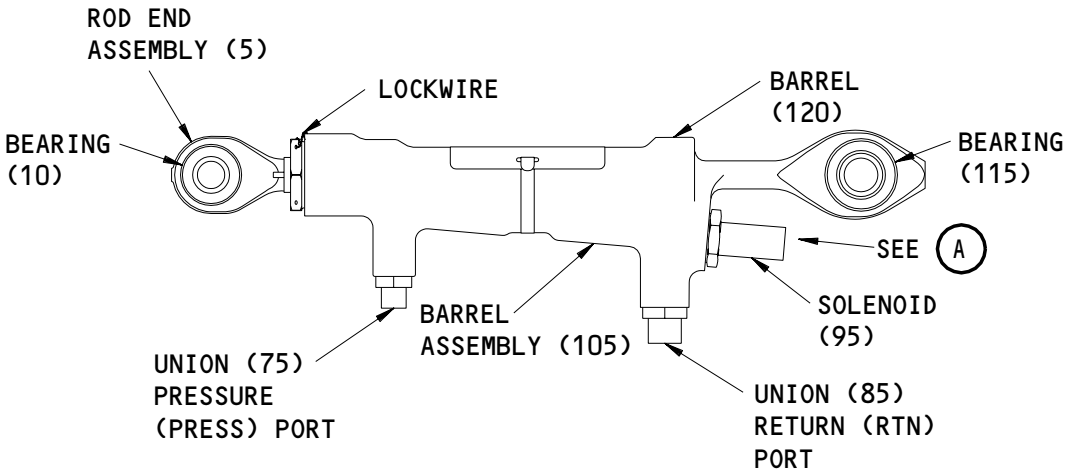
(17) After the tests, drain and refill the actuator assembly as follows:

(a) With the actuator assembly in the retracted position, drain the hydraulic fluid from the actuator.

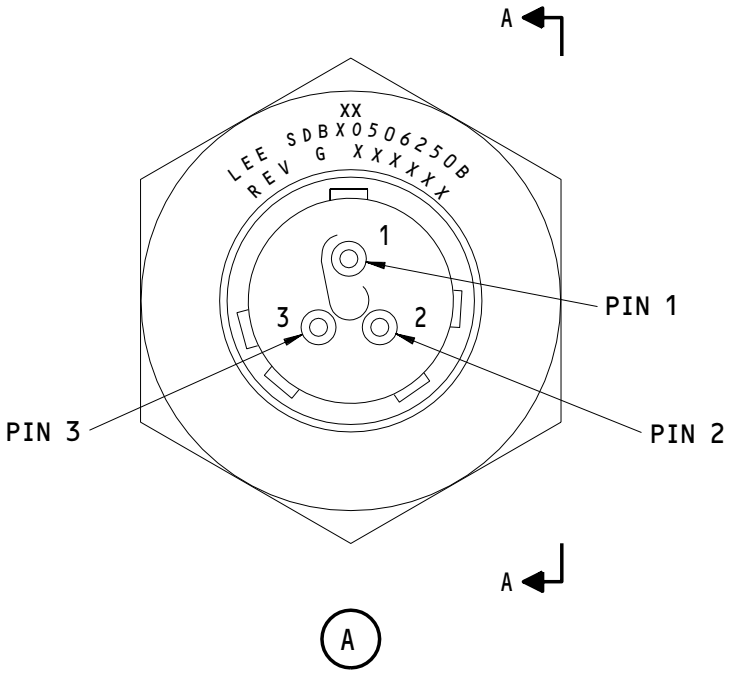
(b) Add approximately 1 fluid ounce of new BMS 3-11, type 4 hydraulic fluid through the pressure (PRESS) port. Seal off both the pressure (PRESS) port and return (RTN) port with BMS 3-11 hydraulic resistant shipping caps to prevent leakage during shipping. Remove the actuator from the fixture.

(c) Identify the actuator assembly with the test date.

(d) Install safety wire at the location shown in Fig. 101 and as shown in SOPM 20-50-02.

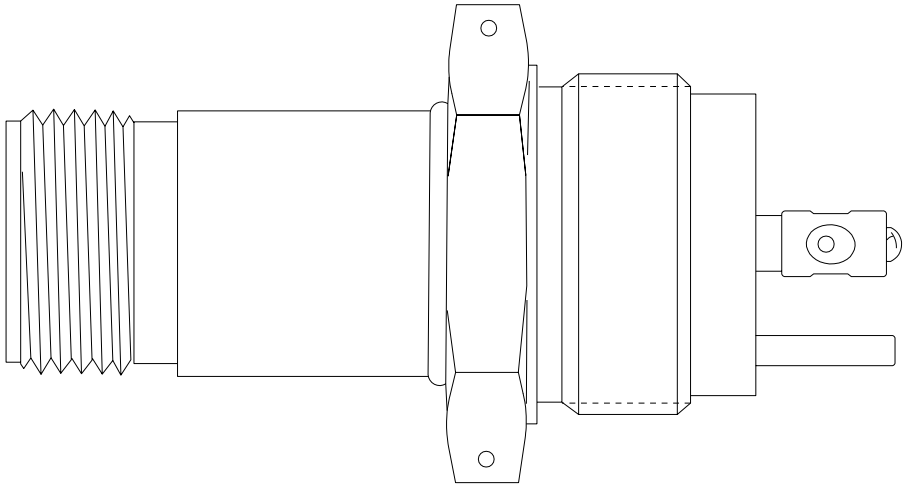


RETRACTED POSITION

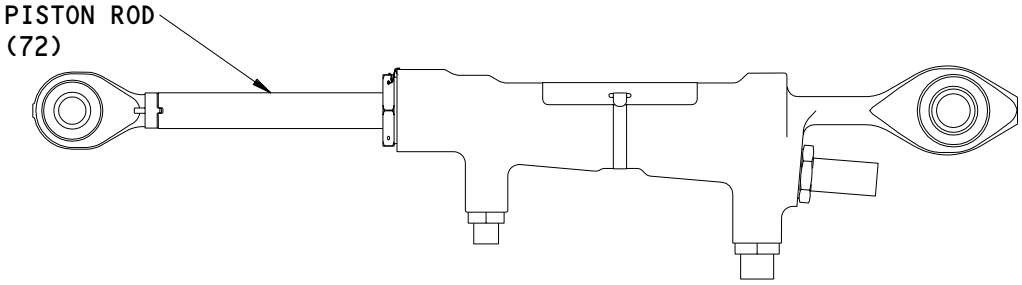


Actuator Test
Figure 101 (Sheet 1)

K17143



A–A



EXTENDED POSITION

Actuator Test
Figure 101 (Sheet 2)

K17149

CHECK

1. General

   A. This procedure contains the data necessary to find defects in the material of specified parts.

   B. Refer to FITS AND CLEARANCES for the design dimension and wear limits.

   C. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM chapters identified in this procedure.

   D. Refer to IPL Fig. 1 for item numbers.

2. Check

   A. References

      (1) SOPM 20-20-01, Magnetic Particle Inspection

      (2) SOPM 20-20-02, Penetrant Methods of Inspection

   B. Procedure

      (1) Use standard industry procedures to do a visual check of all the parts for defects.

      (2) Do a magnetic particle check (SOPM 20-20-01) of these parts:

         (a) Rod End (15)

         (b) Piston Rod (72)

         (c) Barrel (120)

      (3) Do a penetrant check (SOPM 20-20-02) of this part:

         (a) Gland Nut (20)

REPAIR - GENERAL

1. General

A. Instructions for repair, refinish, and replacement of the specified subassembly parts are included in each REPAIR when applicable:

PART NUMBER	NAME	REPAIR
273T4703	BARREL ASSEMBLY	2-1
273T4704	PISTON ROD	3-1
273T4705	ROD END ASSEMBLY	4-1

—	STRAIGHTNESS
▱	FLATNESS
⊥	PERPENDICULARITY (OR SQUARENESS)
//	PARALLELISM
○	ROUNDNESS
⌭	CYLINDRICITY
⌒	PROFILE OF A LINE
⌓	PROFILE OF A SURFACE
◎	CONCENTRICITY
⌯	SYMMETRY
∠	ANGULARITY
↗	RUNOUT
⌰	TOTAL RUNOUT
⌴	COUNTERBORE OR SPOTFACE
⌵	COUNTERSINK
⌖	THEORETICAL EXACT POSITION OF A FEATURE (TRUE POSITION)
∅	DIAMETER
S ∅	SPHERICAL DIAMETER
R	RADIUS
SR	SPHERICAL RADIUS
()	REFERENCE
BASIC (BSC) OR [DIM]	A THEORETICALLY EXACT DIMENSION USED TO DESCRIBE SIZE, SHAPE OR LOCATION OF A FEATURE. FROM THIS FEATURE PERMISSIBLE VARIATIONS ARE ESTABLISHED BY TOLERANCES ON OTHER DIMENSIONS OR NOTES.
[-A-]	DATUM
Ⓜ	MAXIMUM MATERIAL CONDITION (MMC)
Ⓛ	LEAST MATERIAL CONDITION (LMC)
Ⓢ	REGARDLESS OF FEATURE SIZE (RFS)
Ⓟ	PROJECTED TOLERANCE ZONE
FIM	FULL INDICATOR MOVEMENT

EXAMPLES

[— | 0.002]	STRAIGHT WITHIN 0.002
[⊥ | 0.002 | B]	PERPENDICULAR TO DATUM B WITHIN 0.002
[// | 0.002 | A]	PARALLEL TO DATUM A WITHIN 0.002
[○ | 0.002]	ROUND WITHIN 0.002
[⌭ | 0.010]	CYLINDRICAL SURFACE MUST LIE BETWEEN TWO CONCENTRIC CYLINDERS, ONE OF WHICH HAS A RADIUS 0.010 INCH GREATER THAN THE OTHER
[⌒ | 0.006 | A]	EACH LINE ELEMENT OF THE SURFACE AT ANY CROSS SECTION MUST LIE BETWEEN TWO PROFILE BOUNDARIES 0.006 INCH APART RELATIVE TO DATUM A
[⌓ | 0.020 | A]	SURFACES MUST LIE WITHIN PARALLEL BOUNDARIES 0.020 INCH APART AND EQUALLY DISPOSED ABOUT TRUE PROFILE
[◎ | ∅ 0.0005 | C]	CONCENTRIC TO DATUM C WITHIN 0.0005 DIAMETER
[⌯ | 0.010 | A]	SYMMETRICAL WITH DATUM A WITHIN 0.010
[∠ | 0.005 | A]	ANGULAR TOLERANCE 0.005 WITH DATUM A
[⌖ | ∅ 0.002 Ⓢ | B]	LOCATED AT TRUE POSITION WITHIN 0.002 DIA RELATIVE TO DATUM B, REGARDLESS OF FEATURE SIZE
[⊥ | ∅ 0.010 Ⓜ | A] [0.510 Ⓟ]	AXIS IS TOTALLY WITHIN A CYLINDER OF 0.010 INCH DIAMETER, PERPENDICULAR TO DATUM A, AND EXTENDING 0.510 INCH ABOVE DATUM A, MAXIMUM MATERIAL CONDITION
[2.000] OR 2.000 BSC	THEORETICALLY EXACT DIMENSION IS 2.000

True Position Dimensioning Symbols
Figure 601

K17195

BARREL ASSEMBLY - REPAIR 2-1

273T4703-1

1. General

   A. This procedure contains the data that is necessary to replace the bearing (115) in the barrel assembly (105).

   B. Refer to the Standard Overhaul Practices Manual (SOPM) for the standard practices shown.

   C. Refer to IPL Fig. 1 for item numbers.

2. Bearing Replacement

   A. Consumable Materials

      (1) AOO247 Sealant -- BMS 5-95 (SOPM 20-60-04)

   B. References

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

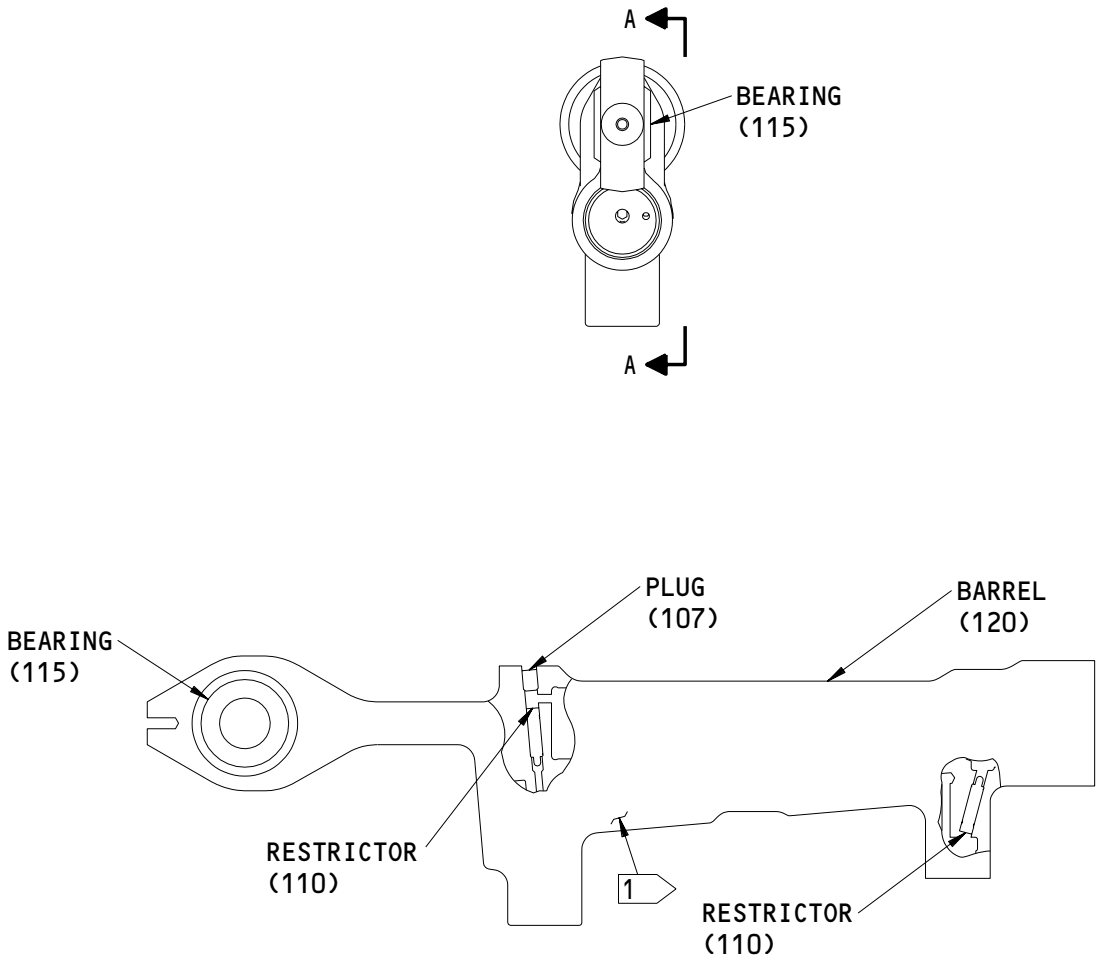
      (2) SOPM 20-50-03, Bearing Removal, Installation and Retention

      (3) SOPM 20-60-04, Miscellaneous Materials

   C. Procedure

      (1) Remove the bearing (115).

      (2) Install the bearing (115) with BMS 5-95 sealant and as shown in the SOPM 20-50-03.



A–A

1 PART NUMBER AND SERIAL NUMBER LOCATED HERE

ITEM NUMBERS REFER TO IPL FIG. 1

273T4703-1
Barrel Assembly Bearing Replacement
Figure 601

K17206

BARREL - REPAIR 2-2

273T4703-2

1. General

A. This repair gives the data necessary to repair the barrel (120).

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the standard practices shown in the procedure.

C. Refer to IPL Fig. 1 for item numbers.

D. General repair details:

(1)	Material:	15-5PH CRES, AMS 5659 180-200 Ksi
(2)	Shot peen:	Intensity 0.005A-0.010A Coverage 2.0

2. Bearing Hole Repair

A. References

(1) SOPM 20-10-02, Machining of Alloy Steel

(2) SOPM 20-10-03, Shot Peening

(3) SOPM 20-20-01, Magnetic Particle Inspection

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

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

(6) SOPM 20-42-09, Electrodeposited Nickel Plating

B. Procedure (Two Options)
OPTION 1: Bearing Hole Repair

(1) Machine the worn or damaged hole for the bearing (115) as necessary, to remove defects, cracks, and/or corrosion up to the limit shown in Fig. 601.

(2) Break all the sharp edges.

(3) Do a magnetic particle check as shown in SOPM 20-20-01.

(4) Shot peen the bearing hole as shown in SOPM 20-10-03.

(5) Chrome plate (F-15.34) and grind to dimensions and finish as shown in Fig. 601. Chrome plate thickness after grinding must be 0.003-0.010 inch.

(a) If necessary, nickel plate as shown in SOPM 20-42-09. Be sure that the chrome plating thickness on top of the nickel plating is 0.003-0.005 inch after final grind.

(b) Install the bearing (115) as shown in REPAIR 2-1.

C. OPTION 2: Oversize Bearings

(1) Provided below are oversize bearings to be used with oversized bearing holes. One is for machining a 0.015 inch oversize diameter bearing hole; another is for machining a 0.030 inch oversize diameter bearing hole. In both cases, the oversize bearings must be obtained from the Kamatics Corporation.

(a) For 0.015 inch diameter oversize hole:

1) Machine the worn or damaged bearing (115) hole to a 0.015 inch oversize diameter of 1.5785 ± 0.0005 inch diameter.

2) Be sure that the inner diameter has no defects, cracks and/or corrosion.

3) Do a magnetic particle check as shown in SOPM 20-20-01.

4) Shot peen the hole as shown in SOPM 20-10-03.

5) Install the oversize bearing KSC145700BZ-12-G-015 or KSC312312BZG-015 as shown in REPAIR 2-1.

(b) For a 0.030 inch diameter oversize hole:

1) Machine the worn or damaged bearing (115) hole to a 0.030 inch oversize diameter of 1.5935 ±0.0005 inch diameter.

2) Be sure that the inner diameter has no defects, cracks and/or corrosion.

3) Do a magnetic particle check as shown in SOPM 20-20-01.

4) Shot peen the hole as shown in SOPM 20-10-03.

5) Install the oversize bearing KSC145700BZ-12-G-030 or KSC312312BZG-030 as shown in REPAIR 2-1.

3. Barrel Bore Repair

A. References

(1) SOPM 20-10-02, Machining of Alloy Steels

(2) SOPM 20-10-03, Shot Peening

(3) SOPM 20-20-01, Magnetic Particle Inspection

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

(5) SOPM 20-42-09, Electrodeposited Nickel Plating

B. Procedure

CAUTION: BEFORE ANY MACHINING REMOVE RESTRICTED (110) TO PRECLUDE DAMAGE.

(1) Machine the barrel (120) bore as necessary, to remove defects, cracks, and/or corrosion up to the limit shown in Fig. 601.

C. Machine the barrel (120) bore as necessary, to remove defects, cracks, and/or corrosion up to the limit shown in Fig. 601.

NOTE: Refer to Lee company process specification 187 to remove and reinstall the restrictors.

(1) Break all sharp edges.

(2) Do a magnetic particle check as shown in SOPM 20-20-01.

(3) Shot peen, chrome plate (F-15.34) and grind the bore to dimensions and finish shown in Fig. 601. Chrome plate thickness after grinding must be 0.003-0.010 inch.

(4) If necessary, nickel plate as shown in SOPM 20-42-09. Be sure that the chrome plating thickness on top of the nickel plating is 0.003-0.005 inch after final grind.

4. Barrel Refinish

A. References

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

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

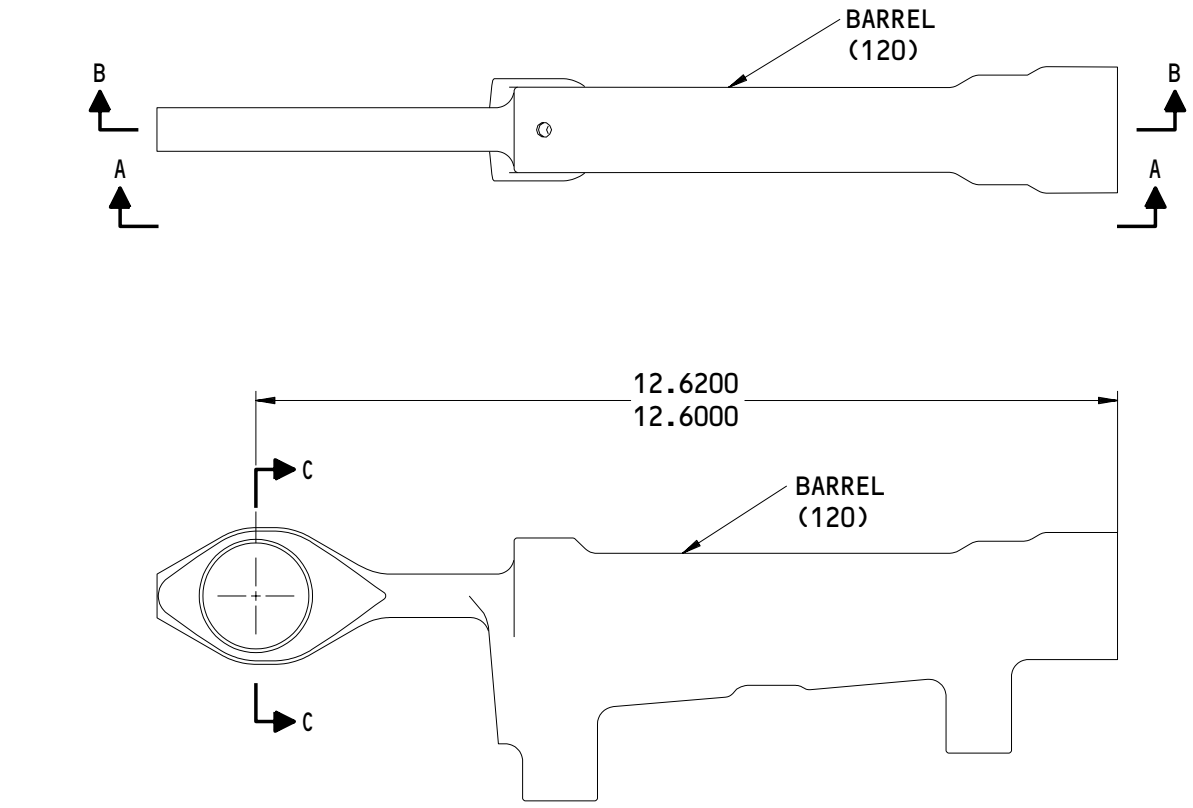
(3) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

B. Procedure

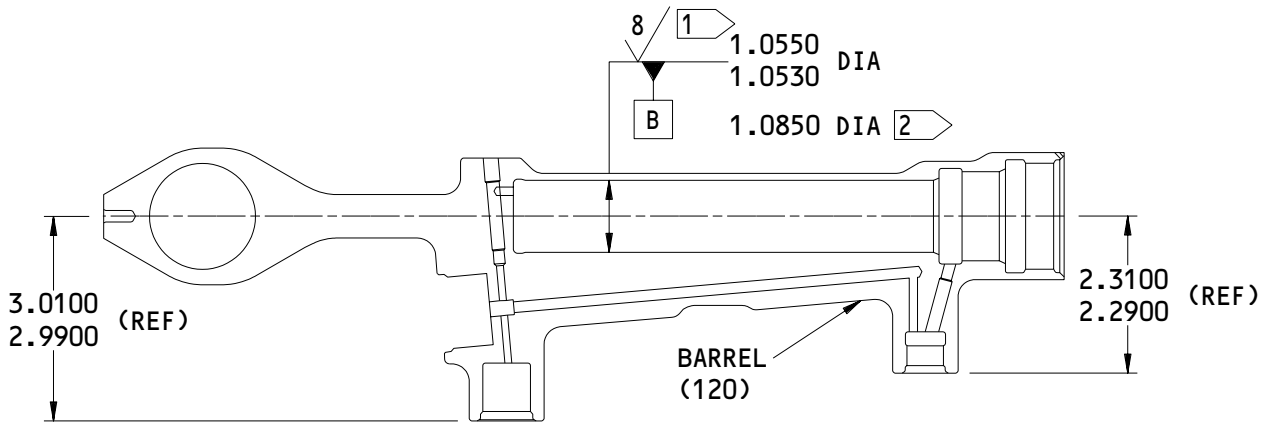
(1) Put a finish on the barrel (120).

(a) Passivate (F-17.25) all over.

(b) Reinstall restrictors per Lee company process Specification 187.



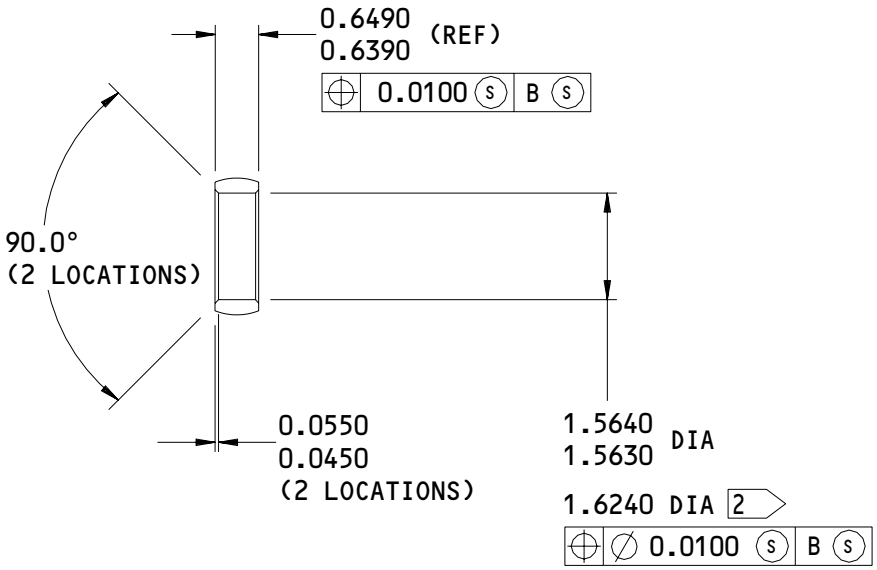
A–A



B–B

273T4703-2
Barrel Repair
Figure 601 (Sheet 1)

K17494



C–C

1 SURFACE FINISH CAN BE 8 TO 16 MICROINCHES

2 REPAIR LIMIT

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK ALL SHARP EDGES

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

273T4703-2
Barrel Repair
Figure 601 (Sheet 2)

K17509

PISTON ROD - REPAIR 3-1

273T4704-1

1. General

A. This repair gives the data that is necessary to repair and refinish the piston rod (72).

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the standard practices shown in the repair.

C. Refer to IPL FIg. 1 for item numbers.

D. General repair details:

(1)	Material:	15-5PH CRES, AMS 5659 180-200 KSI
(2)	Shot Peen:	Intensity 0.005A-0.010A Coverage 2.0

2. Piston Rod Repair

A. References

(1) SOPM 20-10-02, Machining of Alloy Steels

(2) SOPM 20-10-03, Shot Peening

(3) SOPM 20-20-01, Magnetic Particle Inspection

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

(5) SOPM 20-42-09, Electrodeposited Nickel Plating

B. Procedure

(1) Machine the worn or damaged surface of the piston rod (72) as necessary, to remove defects, cracks, and/or corrosion up to the limits shown.

(2) Break all the sharp edges.

(3) Do a magnetic particle inspection as shown in the SOPM 20-20-01.

(4) Shot peen only as shown in Fig. 601 and as shown in the SOPM 20-10-03.

(5) Chrome plate (F-15.34) and grind to dimensions and finish shown in Fig. 601. Chrome plate thickness after grinding must be 0.003-0.010 inch.

(a) If necessary, nickel plate as shown in SOPM 20-42-09. Be sure that the chrome plating thickness on top of the nickel plating is 0.003-0.005 inch after final grind.

3. Piston Refinish

A. References

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

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

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

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

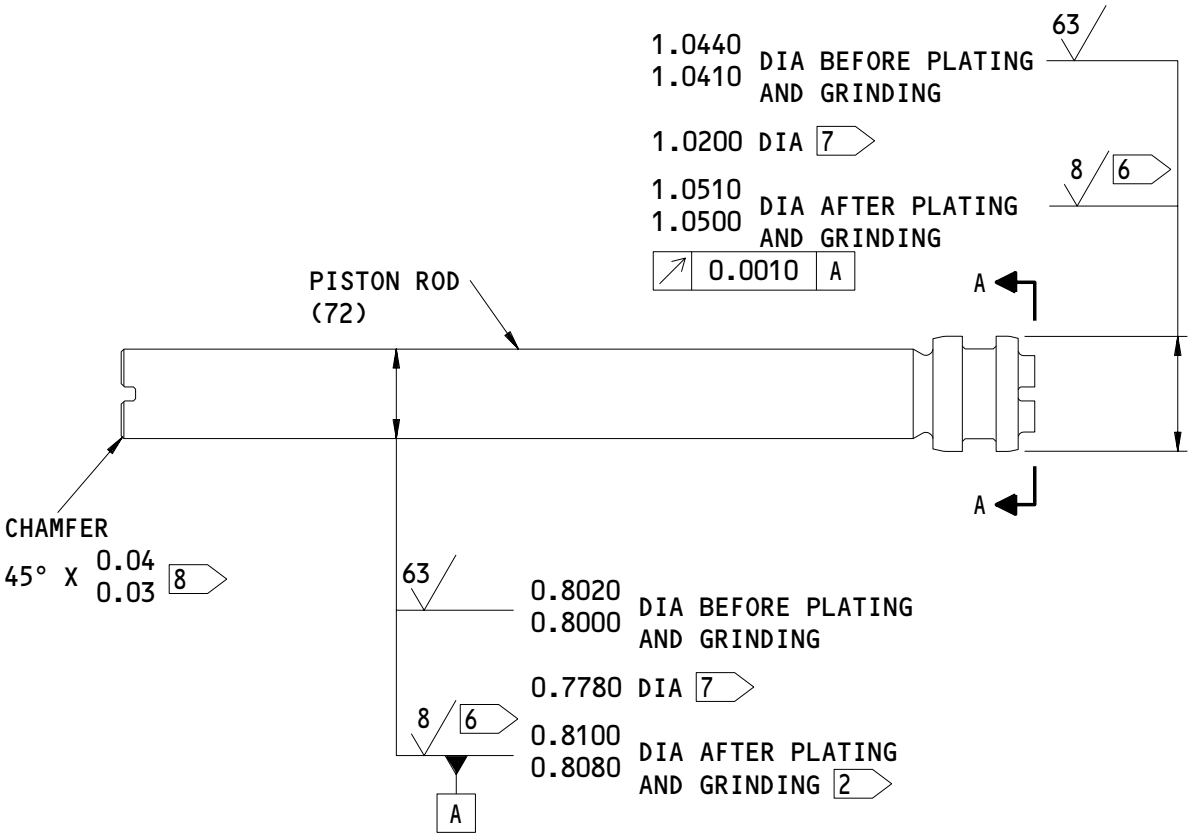
B. Procedure

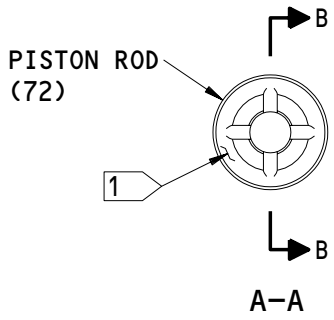
(1) Put a finish on the piston rod (72).

(a) Chrome plate (F-15.34) as shown in Fig. 601 and as shown in the SOPM 20-42-03.

(b) Grind chrome plated areas to dimensions and finish shown in Fig. 601. The final chrome plate thickness must be 0.003-0.005 inches if chrome plated area is on top of nickel plate. otherwise chrome plating thichness will be 0.003 -0.010 inches.

(c) Passivate (F-17.25) all over.

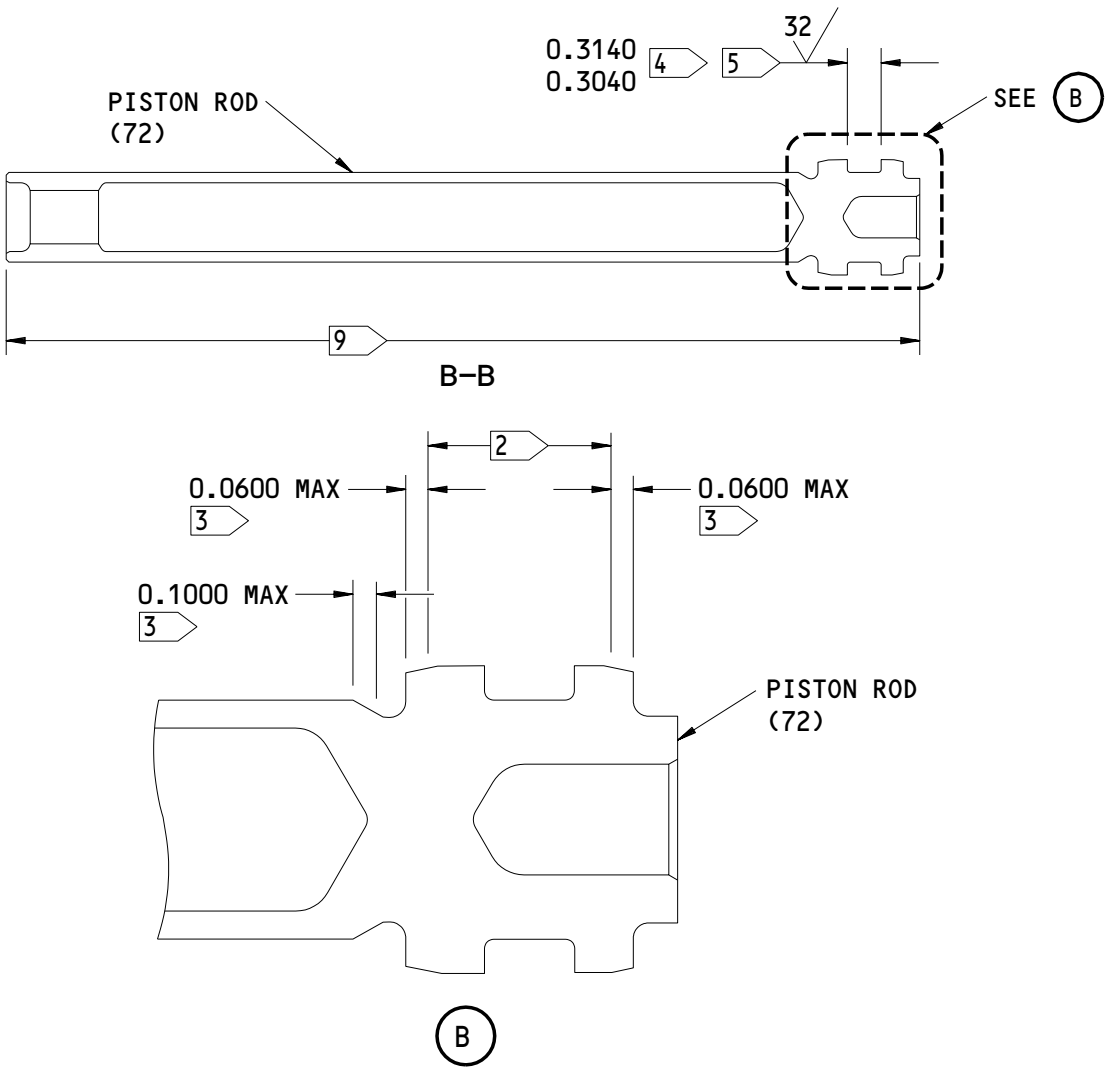




A–A

273T4704-1
Piston Rod Repair
Figure 601 (Sheet 1)

K17668



1 PART NUMBER AND SERIAL NUMBERS LOCATED HERE

2 CHROME PLATE (F-15.34)

3 CHROME PLATE RUNOUT AREA

4 NO CHROME PLATE

5 NO SHOT PEEN

6 SURFACE FINISH CAN BE 8 TO 12 MICROINCHES

7 REPAIR LIMIT

8 MAINTAIN THIS CHAMFER AFTER PLATING AND GRINDING

9 SHOT PEEN THIS AREA EXCEPT AS NOTED BY FLAG NOTE 5, PRIOR TO CHROME PLATING PER FLAG NOTES 2 AND 3

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK ALL SHARP EDGES

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

273T4704-1
Piston Rod Repair
Figure 601 (Sheet 2)

K17693

ROD END ASSEMBLY - REPAIR 4-1

273T4705-1

1. General

   A. This repair gives the data that is necessary to replace the bearing (10) in the rod end (15).

   B. Refer to the Standard Overhaul Practices Manual (SOPM) for the standard practices shown in the repair.

   C. Refer to IPL Fig. 1 for item numbers.

2. Bearing Replacement

   A. Consumable Materials

      (1) AOO247 Sealant - BMS 5-95 (SOPM 20-60-04)

   B. References

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

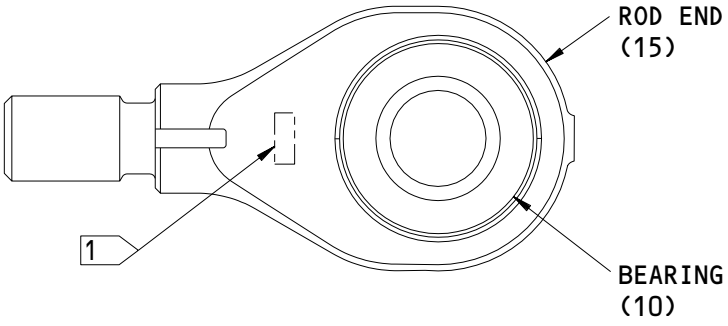
      (2) SOPM 20-50-03, Bearing Removal, Installation and Retention

      (3) SOPM 20-60-04, Miscellaneous materials

   C. Procedure

      (1) Remove the bearing (115).

      (2) Install the bearing (115) with BMS 5-95 sealant and as shown in the SOPM 20-50-03.



1 PART NUMBER AND SERIAL NUMBER LOCATED HERE

ITEM NUMBERS REFER TO IPL FIG. 1

273T4705-1
Rod End Assembly
Figure 601

K18029

ROD END - REPAIR 4-2

273T4705-2

1. General

A. This repair gives the data that is necessary to repair the rod end (15).

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the standard practices shown in the repair.

C. Refer to IPL Fig. 1 for item numbers.

D. General repair details:

(1) Materials: 15-5PH CRES, AMS 5659, 180-200 KSI

2. Bearing Hole Repair

A. References

(1) SOPM 20-10-02, Machining of Alloy Steel

(2) SOPM 20-10-03, Shot Peening

(3) SOPM 20-20-01, Magnetic Particle Inspection

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

(5) SOPM 20-42-09, Electrodeposited Nickel Plating

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

B. Procedure (Two Options)
OPTION 1: Bearing Hole Repair

(1) Machine the worn or damaged hole for the bearing (10) as necessary, to remove defects, cracks, and/or corrosion up to the limits shown in Fig. 601.

(2) Break all the sharp edges.

(3) Do a magnetic particle check as shown in SOPM 20-20-01.

(4) Shot peen the bearing hole as shown in SOPM 20-10-03.

(5) Chrome plate (F-15.34) and grind to dimensions and finish as shown in Fig. 601. Chrome plate thickness after grinding must be 0.003-0.010 inch.

(a) If necessary, nickel plate as shown in SOPM 20-42-09. Be sure that the chrome plating thickness on top of the nickel plating is 0.003-0.005 inch after final grind.

(6) Install bearing (10) as shown in REPAIR 4-1.

C. OPTION 2: Oversize Bearings

(1) Provided below is oversize bearings to be used with an oversized bearing hole. One is for machining a 0.015 inch oversize diameter bearing hole; another is for machining a 0.030 inch oversize diameter bearing hole. In both cases, the oversize bearings must be obrained from the Kamatics Corporation.

(a) For a 0.015 inch diameter oversize hole:

1) Machine the worn or damaged bearing (10) hole to a 0.015 inch oversize diameter of 1.3281 inch max.

2) Be sure that the inner diameter has no defects, cracks and/or corrosion.

3) Do a magnetic particle check as shown in SOPM 20-20-01.

4) Shot peen the hole as shown in SOPM 20-10-03.

5) Install the oversize bearing KSC145700BZ-10-G-015 or KSC312210BZG-015 as shown in REPAIR 4-1.

(b) For a 0.030 inch diameter oversize hole:

1) Machine the worn or damaged bearing (10) hole to a 0.030 inch oversize diameter hole of 1.3431 inch max.

2) Be sure that the inner diameter has no defects, cracks and/or corrosion.

3) Do a magnetic particle check as shown in SOPM 20-20-01.

4) Shot peen the hole as shown in SOPM 20-10-03.

5) Install the oversize bearing KSC145700BZ-10-G-030 or KSC312210BZG-030 as shown in REPAIR 4-1.

3. Rod End Refinish

A. References

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

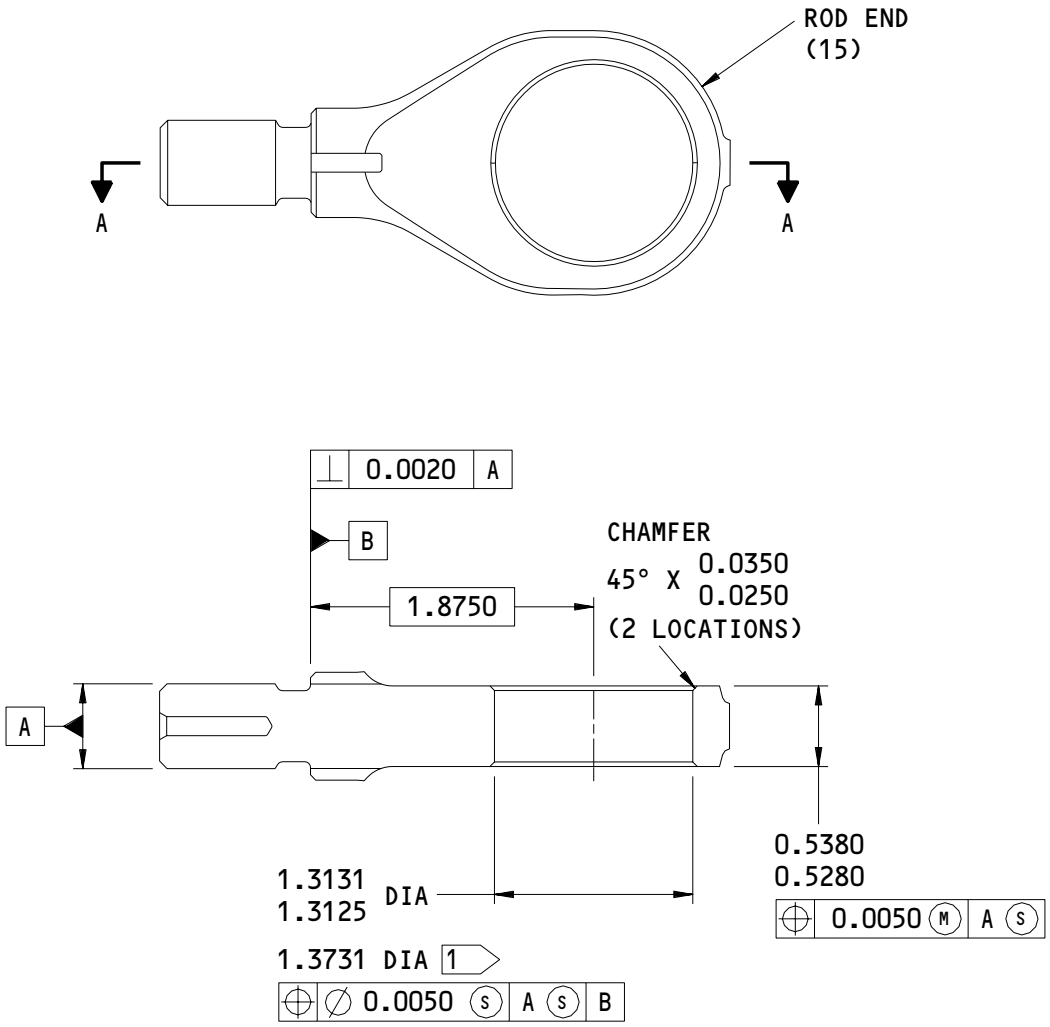
(2) SOPM 20-30-03, General Cleaning Procedures

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

B. Procedure

(1) Put a finish on the rod end (15).

(a) Passivate (F-17.25) all over.



A–A

1 REPAIR LIMIT

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK ALL SHARP EDGES

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

273T4705-2
Rod End Repair
Figure 601

K18109

NAMEPLATE INSTALLATION - REPAIR 5-1

1. General

   A. This repair has instructions for the installation on the nameplate (125) and the strap (100).

   B. Refer to the Standard Overhaul Practices Manual (SOPM) for the standard practices shown in the repair.

   C. Refer to IPL Fig. 1 for item numbers.

2. Nameplate Replacement

   A. General

      (1) Use the strap only one time.

   B. Consumable materials

      (1) A00323 Adhesive -- Type 54 (SOPM 20-60-04)

   C. References

      (1) SOPM 20-60-04, Miscellaneous Materials

   D. Procedure

      (1) Prepare the nameplate:

         (a) Make sure the serial number and the part number are steel stamped on the nameplate.

         (b) Make the nameplate in a shape smaller than the barrel radius.

         (c) Make a small bend in the nameplate corners to the mounting surface.

      (2) Attach the nameplate to the barrel:

         (a) Install the strap through End 1 of the nameplate.

         (b) Bend the strap 0.25-0.30 around the End 1 of the nameplate as shown in Fig. 601.

(c) Bond the strap (100) and the nameplate (125) to the barrel assembly (105) with Type 54 adhesive.

1) Apply a layer of Type 54 adhesive to the bottom of the strap and the nameplate.

2) Hold the nameplate on the barrel.

3) Install the strap through End 2 of the nameplate.

4) Pull the strap tight.

NOTE: Make sure the strap and the nameplate are tight against the barrel.

5) Bend the strap down around the End 2 of the nameplate.

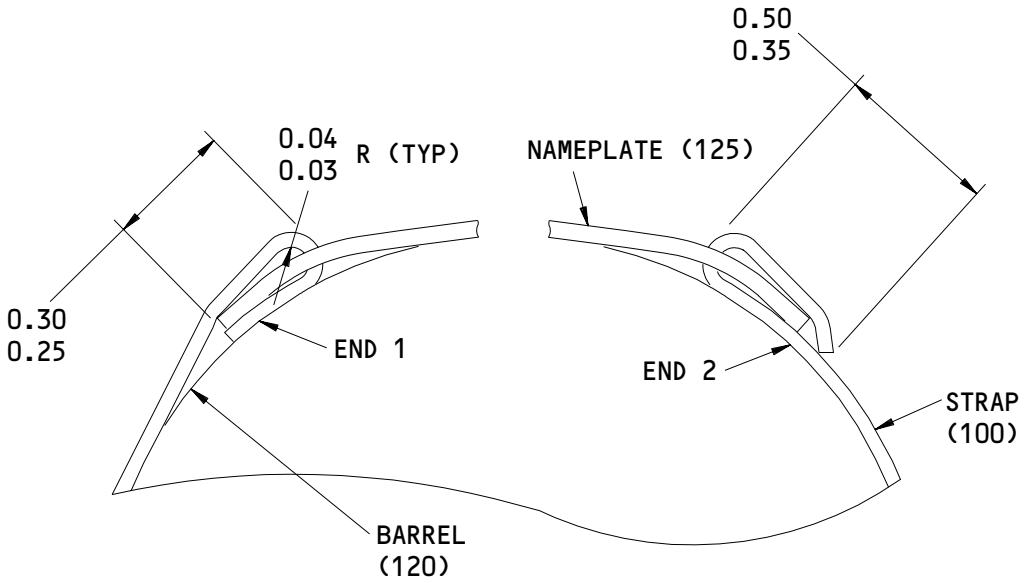
NOTE: Keep the strap tight.

6) Fill all of the areas between the strap and the barrel with the Type 54 adhesive.

(d) Cut the strap 0.35-0.50 inch from the nameplate slot.

(e) Bend the strap end down with a soft nosed hammer.

(3) Seal the edges of the nameplate and strap with Type 54 adhesive.



ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

Nameplate Installation
Figure 601

K17200

ASSEMBLY

1. General

   A. This procedure contains the data necessary to assemble the actuator assembly.

      (1) Actuator Assembly

      (2) Actuator Storage

   B. Refer to the Standard Overhaul Practices Manual (SOPM) to find the details of the procedure.

   C. Refer to IPL Fig. 1 for item numbers.

2. Actuator Assembly

   A. Consumable Materials

      NOTE: Equivalent materials can be used.

      (1) A00436 Sealant -- BMS 5-26 (SOPM 20-60-04)

      (2) C00032 Enamel -- BMS 10-60, Type 1 (SOPM 20-60-02)

      (3) D00208 Fluid, Hydraulic -- BMS 3-11, Type 4 (SOPM 20-60-03)

      (4) G01912 Lockwire -- MS20995NC32 (SOPM 20-50-02)

   B. References

      (1) 32-71-12/601, REPAIR 5-1, Nameplate Installation

      (2) SOPM 20-50-02, Installation of Safetying Devices

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

      (4) SOPM 20-60-03, Lubricants

      (5) SOPM 20-60-04, Miscellaneous Materials

C. Procedure

(1) Install the piston seal (65) and backup rings (70) onto the piston rod (72).

(a) Lubricate the piston seal (65) and the backup rings (70) with BMS 3-11, type 4 hydraulic fluid.

(b) Install the piston seal (65) and the backup rings (70) as shown in Fig. 701.

(2) Install the rod seal-gland (60) onto the piston rod (72).

(a) Lightly lubricate the rod seal (40), the packing (45), the backup rings (50) and the packing (55) with BMS 3-11, type 4 hydraulic fluid.

(b) Install the backup rings (50) and the packing (55) onto the gland rod seal-gland (60), as shown in Fig. 701.

(c) Lightly lubricate the shaft of the piston rod (72) with BMS 3-11, type 4 hydraulic fluid before installing the rod seal-gland (60) onto the piston rod.

(d) Install the rod seal-gland (60), rod seal (40), and packing (45) onto the piston rod (72) as shown in Fig. 701. Move the rod seal-gland (60) with rod-seal (40), and packing (45) along the shaft of the piston rod in preparation of the installation of the gland nut (20) onto the piston rod.

(3) Install the gland nut (20) onto the piston rod (72).

(a) Lightly lubricate the rod scrapper (30) and the packing (35) with BMS 3-11, type 4 hydraulic fluid.

(b) Install the rod scrapper (30) and the packing (35) into the gland nut (20), as shown in Fig. 701.

(c) Lightly lubricate the shaft of the piston rod (72) with BMS 3-11, type 4 hydraulic fluid.

(d) Install the gland nut (20) onto the piston rod (72) as shown in Fig. 701. Make sure that the rod scrapper (30) and the packing (35) remain in position on the gland nut. Move the gland nut along the shaft of the piston rod in preparation of the installation of the rod end assembly (5) onto the piston rod.

(4) Installation of rod end assembly (5) onto the piston rod (72).

(a) Install the lockwasher (25) onto the rod end assembly (5) as shown in Fig. 701.

(b) Install the rod end assembly (5) onto the piston rod (72) as shown in Fig. 701.

1) Torque the rod end (150-180) inch-pounds.

NOTE: The slots at the end of piston are for the tool to hold the piston in the position while torquing the rod end.

2) After torquing the rod end, use a punch or swaging tool to locally break the flange of cuplock washer (25) into the slots on the rod end. Assure that breaks are complete (Fig. 702).

(5) Install the piston rod (72), rod seal-gland (60), gland nut (20) and rod end assembly (5) assembly into the barrel assembly (105).

(a) Lubricate the piston seal (65) and the backup rings (70) with BMS 3-11, type 4 hydraulic fluid before installing the above assembly into the barrel (105).

CAUTION: MAKE SURE THE PISTON SEAL (65) AND THE BACKUP RINGS (70) ARE NOT DAMAGED DURING THIS INSTALLATION.

(b) Install the above assembly into the barrel assembly (105), see Fig. 701, about half way. Then move the rod seal-gland (60) along the shaft of the piston rod (72) until it seats into the barrel as shown in Fig. 701.

(c) Lightly lubricate the threads of the gland nut (20) with BMS 3-11, type 4 hydraulic fluid.

(6) Move the gland nut (20) along the shaft of the piston rod (72) until it engages the threads on the barrel (120). Torque the gland nut (20) 400-500 inch-pounds.

NOTE: Hold the barrel just forward of bearing during installtion of the gland nut.

(a) Lockwire the gland nut (20) to the barrel (120) using the double-twist method and as shown in Fig. 701 and in the SOPM 20-50-02.

(7) Install the unions (75, 85), and packings (80, 90) onto the barrel assembly (105).

(8) Install the solenoid (95), and packing (97) onto the barrel assembly (105).

(a) Torque the solenoid (95) 25-30 ft-pounds.

(b) Fillet seal, at locations shown in Fig. 701, using BMS 5-26 sealant.

(c) Apply a top coat of BMS 10-60, type 1, class A enamel to the fillet seal.

(9) Installation of nameplate (125) and strap (100), refer to Repair 5-1.

3. Actuator Storage

A. Consumable Materials

NOTE: Equivalent materials can be used.

(1) D00208 Fluid, Hydraulic -- BMS 3-11, Type 4 (SOPM 20-60-03)

B. References

(1) SOPM 20-60-03, Lubricants

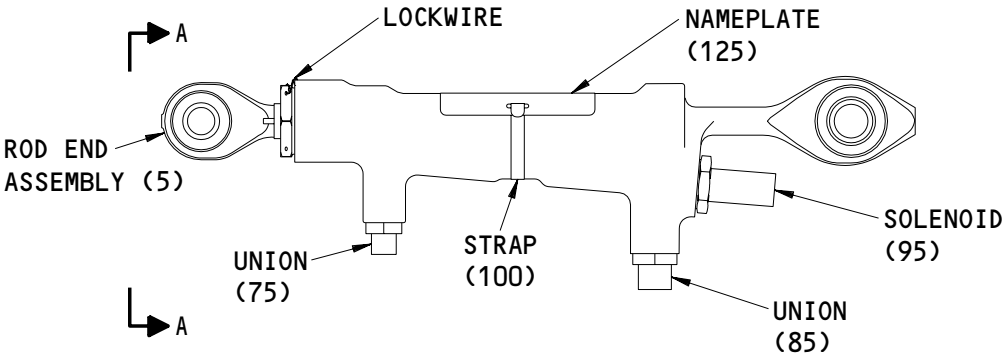
(2) SOPM 20-44-02, Temporary Protective Coatings

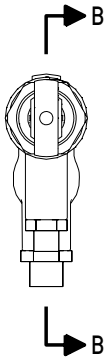
C. Procedure

(1) Add approximately 1 fluid oz of BMS 3-11, type 4 hydraulic fluid through the pressure (PRESS) port.

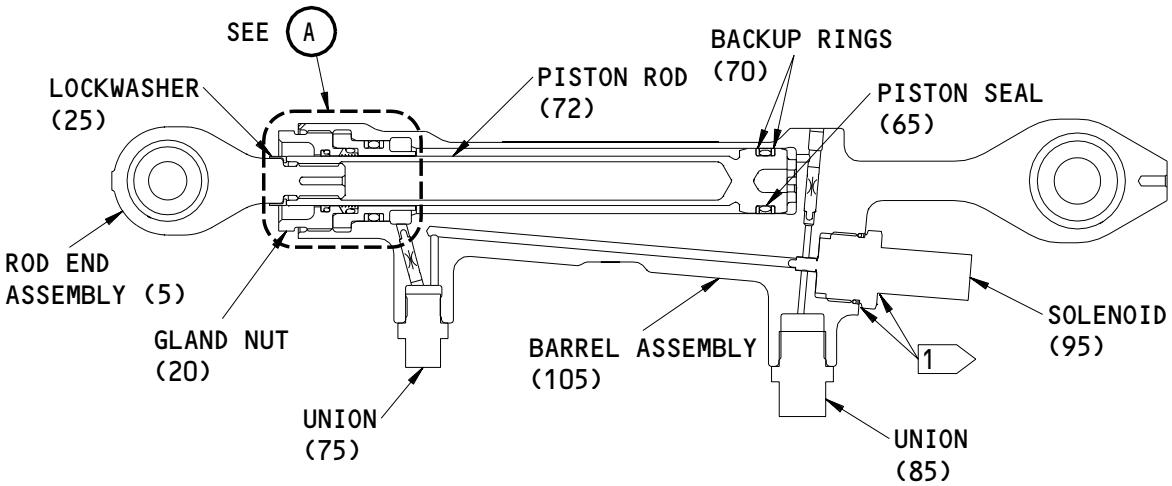
(2) Seal the parts with BMS 3-11 hydraulic resistant shipping caps.

(3) Put the actuator assembly away with protection by standard industry practices and the data contained in the SOPM 20-44-02.





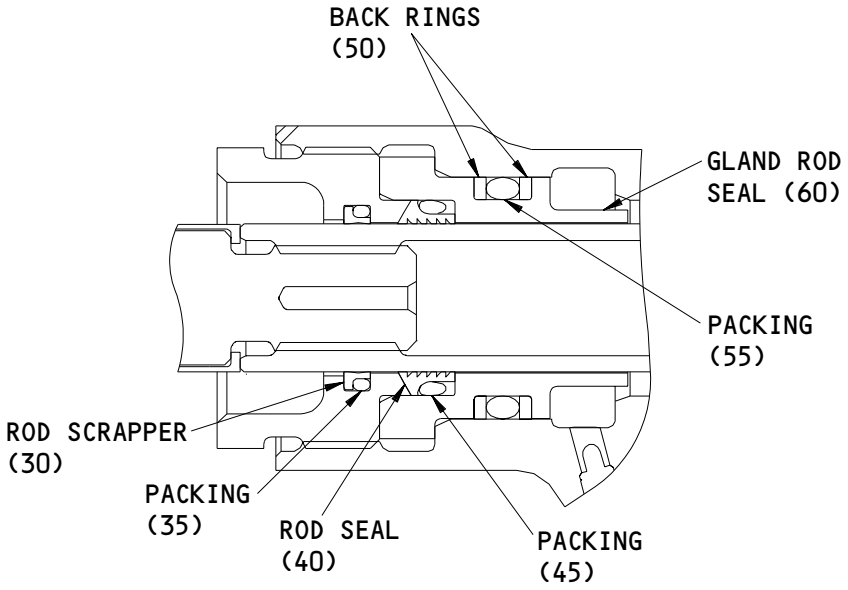
A–A



B–B

Tailskid Actuator Assembly
Figure 701 (Sheet 1)

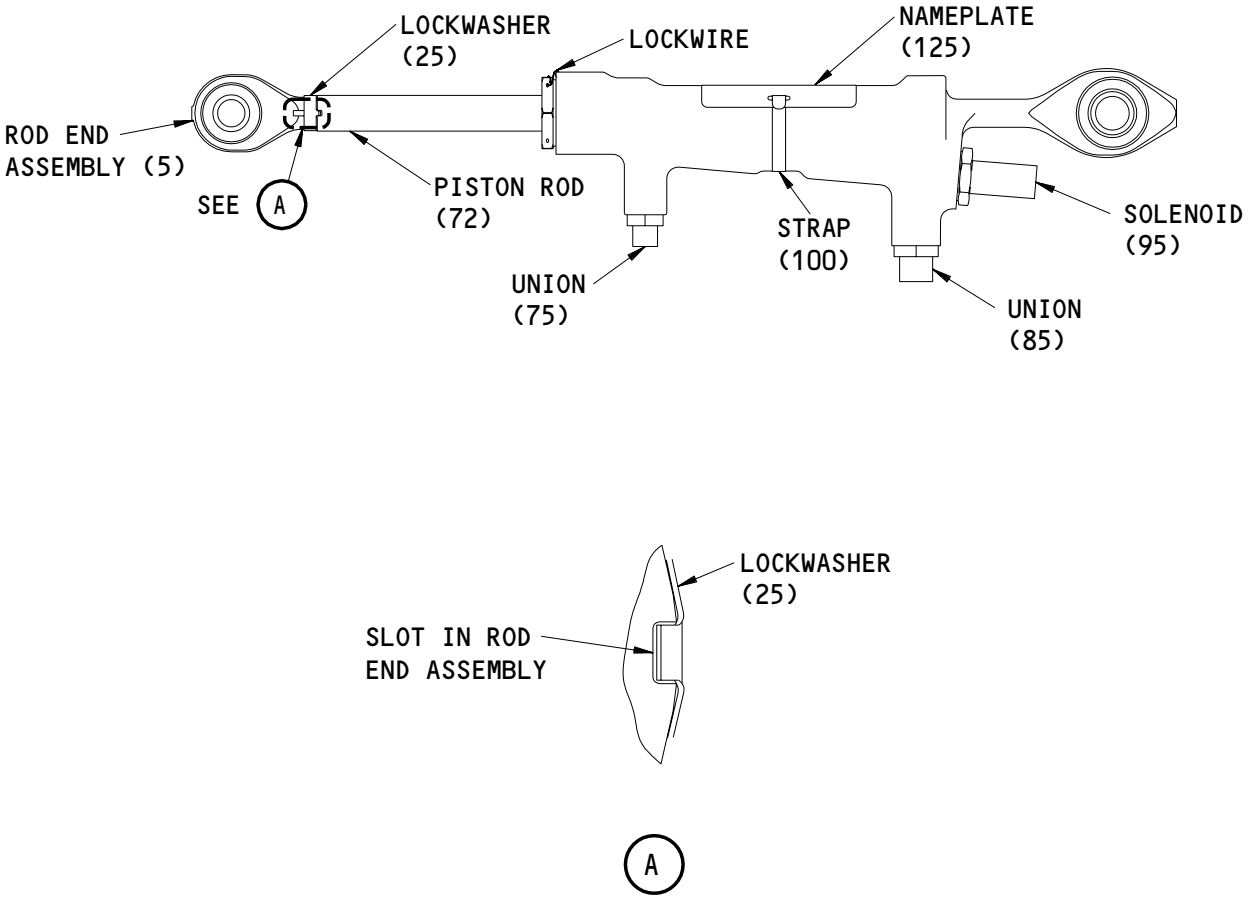
K18187



1 FILLET SEAL USING BMS 5-26
SEALANT

Tailskid Actuator Assembly
Figure 701 (Sheet 2)

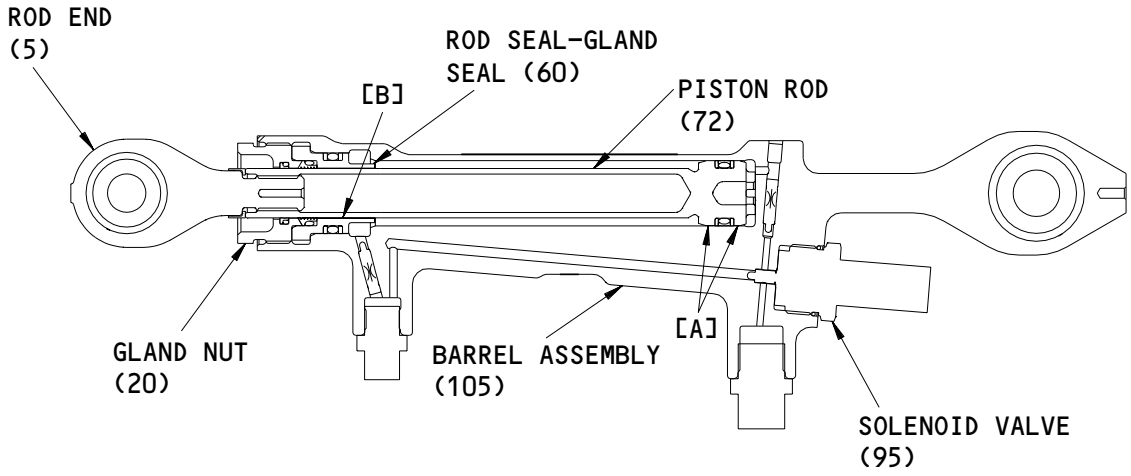
K18213



Tailskid Actuator Assembly
Figure 702

K18239

FITS AND CLEARANCES



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]	ID	105	1.0530	1.0550	0.0020	0.0050		1.0580	
	OD	72	1.0500	1.0510			1.0490		
[B]	ID	60	0.8120	0.8130	0.0020	0.0050		0.8160	
	OD	72	0.8080	0.8100			0.8070		

* ALL DIMENSIONS ARE IN INCHES

Fits and Clearances
Figure 801

K18256

REF IPL		NAME	TORQUE*	
FIG. NO.	ITEM NO.		POUND-INCHES	POUND-FEET
1	5	ROD END	150-180	
1	20	Gland Nut	400-500	
1	95	Solenoid		25-30

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

Torque Table
Figure 802

K18261

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

1. General

A. This is a list of the special tools, fixtures, and equipment used in this manual.

B. Equivalent substitutes can be used.

(1) A32121-1 -- Holding Fixture Equipment

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 FLOUROCARBON CO OHIO DIV
DOVER, OHIO 44622
CANCELLED NO REPLACEMENT

07128 TETRAFLUOR INC
2051 EAST MAPLE AVENUE
EL SEGUNDO, CALIFORNIA 90245-5009

26303 GREENE TWEED IND INC ADVANTEC DIV
7101 PATTERSON DRIVE PO BOX 5037
GARDEN GROVE, CALIFORNIA 92645-5037

26879 CORONADO MFG INC
11069 PENROSE AVENUE
SUN VALLEY, CALIFORNIA 90352-2722

50632 KAMATICS CORP SUB OF KAMAN CORP
1335 BLUE HILLS ROAD
BLOOMFIELD, CONNECTICUT 06002-1304

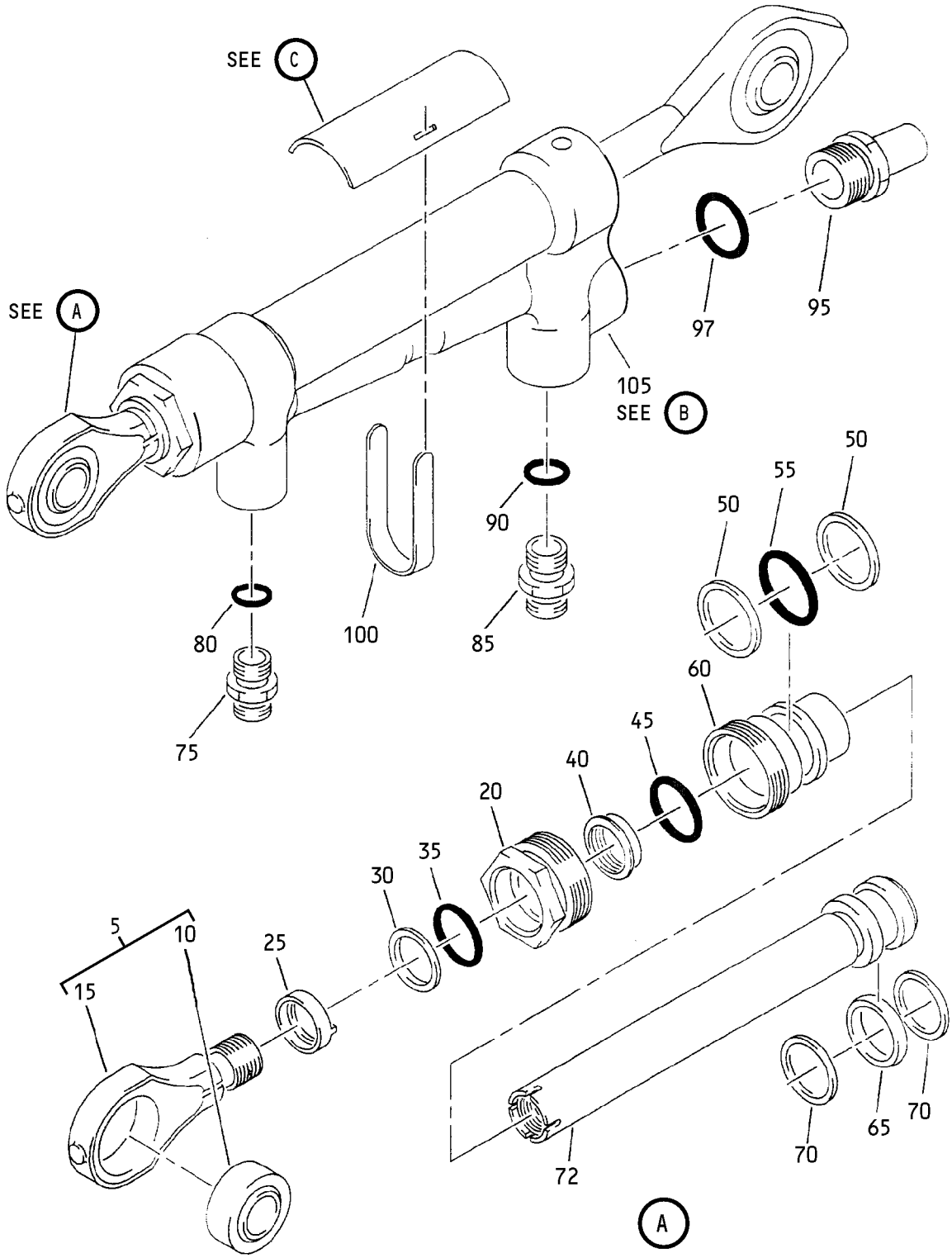
92555 LEE COMPANY
2 PETTIPAUG ROAD PO BOX 424
WESTBROOK, CONNECTICUT 06498-1543

94878 RAYBESTOS-MANHATTAN INC PACIFIC COAST DIV
FULLERTON, CALIFORNIA 92631
BUSINESS DISCONTINUED

97820 BUSAK AND SHAMBAN INC BEARING DIV
711 MITCHELL ROAD PO BOX 665
NEWBURY PARK, CALIFORNIA 91320-2214

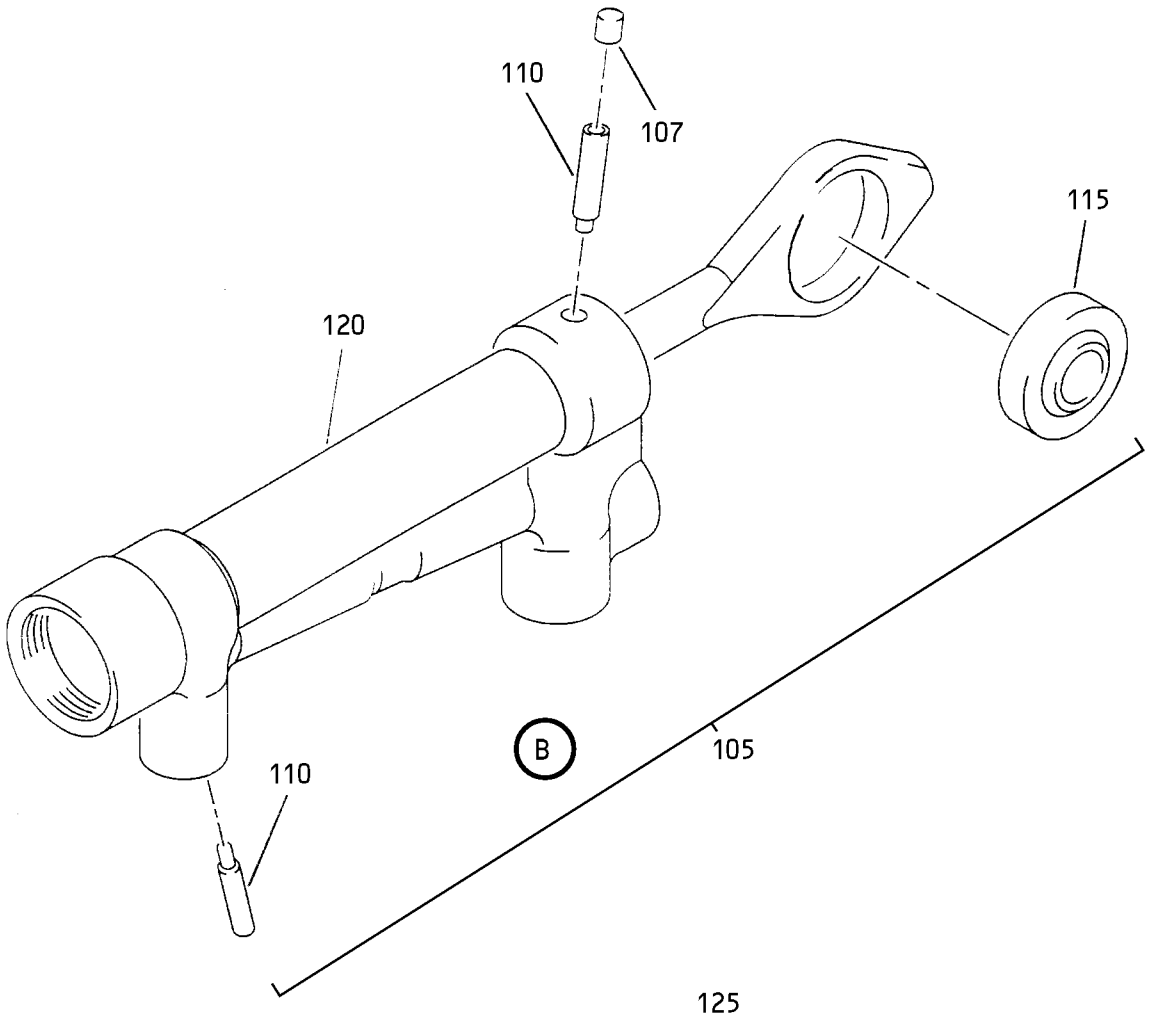
PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
BACP20AX18		1	107	1
BACR12BM215		1	50	2
BAC27TLG23		1	125	1
BUS70M211AT99		1	70	2
C11236-215B		1	50	2
JEVA1840808D		1	110	2
JEVA1845808D		1	110A	2
KSC145700BZ10G		1	10	1
KSC147500BZ12G		1	115	1
KSC312210BZG		1	10A	1
KSC312312BZG		1	115A	1
MS21902-6T		1	75	1
MS21902-8T		1	85	1
NAS1611-020A		1	35	1
NAS1611-022A		1	97	1
NAS1611-211A		1	45	1
NAS1611-215A		1	55	1
NAS1612-6A		1	80	1
NAS1612-8A		1	90	1
PLGA2187020		1	107	1
PP50WM211AT99EP		1	65	1
RF210B211AT99		1	40	1
RMR12BM215		1	50	2
SDBX0506250B		1	95	1
STF800-215		1	50	2
S30294-215-1		1	50	2
S33121-211-99		1	40A	1
S33157-211-99		1	70A	2
S34750-211H99		1	65A	1
TF450-215A		1	50	2
WE250B506AT99		1	30	1
2100-215		1	50	2
273T0050-4		1	100	1
273T4702-1		1	1A	RF
273T4703-1		1	105	1
273T4703-2		1	120	1
273T4704-1		1	72	1
273T4705-1		1	5	1
273T4705-2		1	15	1
273T4706-1		1	60	1

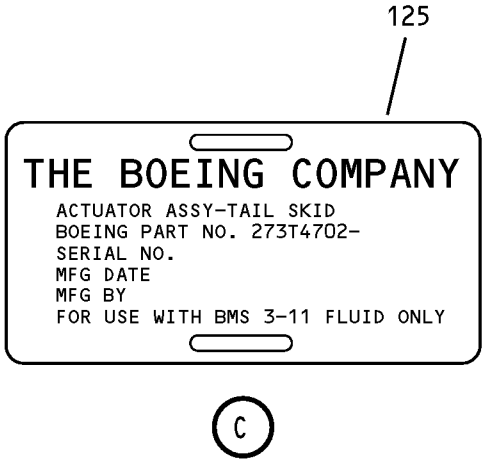
PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
273T4707-1		1	20	1
273T4708-1		1	25	1



Tailskid Actuator Assembly
Figure 1 (Sheet 1)

K25012





Tailskid Actuator Assembly
Figure 1 (Sheet 2)

K25014

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-1A	273T4702-1		ACTUATOR ASSY-TAILSKID		RF
5	273T4705-1		.ROD END ASSY		1
10	KSC14570OBZ10G		..BEARING-SPHERICAL (V50632) (OPT ITEM 10A)		1
-10A	KSC312210BZG		..BEARING-SPHERICAL (V50632) (OPT ITEM 10)		1
15	273T4705-2		..ROD END		1
20	273T4707-1		.NUT-GLAND		1
25	273T4708-1		.WASHER-LOCK		1
30	WE250B506AT99		.SCRAPPER-ROD (V97820)		1
35	NAS1611-020A		.PACKING		1
40	RF210B211AT99		.SEAL-ROD (V97820) (OPT ITEM 40A)		1
-40A	S33121-211-99		.SEAL-ROD (V97820) (OPT ITEM 40)		1
45	NAS1611-211A		.PACKING		1
50	C11236-215B		.RING-BACK-UP (V26879) (SPEC BACR12BM215) (OPT RMR12BM215 (V94878)) (OPT STF800-215 (V02107)) (OPT S30294-215-1 (V97820)) (OPT TF450-215A (V07128)) (OPT 2100-215 (V26303))		2
55	NAS1611-215A		.PACKING		1
60	273T4706-1		.ROD SEAL-GLAND		1
65	PP50WM211AT99EP		.SEAL-PISTON (V97820) (OPT ITEM 65A)		1
65A	PP50WM211ATR 99EH		.SEAL-PISTON (V97820) (OPT ITEM 65)		1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-65A	S34750-211H99		.SEAL-PISTON (V97820) (OPT ITEM 65)		1
70	BUS70M211AT99		.RING-BACK-UP (V97820) (OPT ITEM 70A)		2
-70A	S33157-211-99		.RING-BACK-UP (V97820) (OPT ITEM 70)		2
72	273T4704-1		.ROD-PISTON		1
75	MS21902-6T		.UNION		1
80	NAS1612-6A		.PACKING		1
85	MS21902-8T		.UNION		1
90	NAS1612-8A		.PACKING		1
95	SDBX0506250B		.VALUE-SOLENOID		1
97	NAS1611-022A		.PACKING		1
100	273T0050-4		.STRAP-NAMELATE		1
105	273T4703-1		.BARREL ASSY		1
107	PLGA2187020		..PLUG- (V92555) (SPEC BACP20AX18)		1
110	JEVA1840808D		..RESTRICTOR- (V92555) (OPT ITEM 110A)		2
-110A	JEVA1845808D		..RESTRICTOR- (V92555) (OPT ITEM 110)		2
115	KSC14750OBZ12G		..BEARING-SPHERICAL (V50632) (OPT ITEM 115A)		1
-115A	KSC312312BZG		..BEARING-SPHERICAL (V50632) (OPT ITEM 115)		1
120	273T4703-2		..BARREL		1
125	BAC27TLG23		.NAMEPLATE		1

- Item Not Illustrated