TO: ALL HOLDERS OF MAIN LANDING GEAR DOOR LATCH ACTUATOR ASSEMBLY COMPONENT MAINTENANCE MANUAL 32-32-40

REVISION NO. 2 DATED NOV 01/01

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
101-102	Added clarification and updated callouts.
301	
701	
901	

BOEING

COMPONENT
MAINTENANCE MANUAL

MAIN LANDING GEAR DOOR LATCH ACTUATOR ASSEMBLY

PART NUMBER 273T4591-1

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

K13135

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

K13136

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

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

PAGE	DATE	CODE
32-32-40		
TITLE PAGE		
1	JUL 01/99	01
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REVISION RECORD		
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2	BLANK	
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LIST OF EFFECTIVE PAGES		
*1	NOV 01/01	01
THRU LAST PAGE		
CONTENTS		
1	JUL 01/99	01
2	BLANK	
INTRODUCTION		
1	JUL 01/99	01
2	BLANK	
DESCRIPTION & OPERATION		
1	JUL 01/99	01
2	NOV 01/00	01.1
TESTING & FAULT ISOLATION		
*101	NOV 01/01	01.1
*102	NOV 01/01	01.1
103	NOV 01/00	01.1
104	NOV 01/00	01.1
105	NOV 01/00	01.101
106	NOV 01/00	01.1
107	NOV 01/00	01.1
108	NOV 01/00	01.1
109	NOV 01/00	01.1
110	BLANK	
DISASSEMBLY		
*301	NOV 01/01	01.1
302	NOV 01/00	01.1
303	NOV 01/00	01.1
304	BLANK	
CLEANING		
401	NOV 01/00	01.1
402	BLANK	
CHECK		
501	NOV 01/00	01.1
502	BLANK	
REPAIR-GENERAL		
601	NOV 01/00	01.1
602	BLANK	
REPAIR 1-1		
601	NOV 01/00	01.1
602	BLANK	
REPAIR 2-1		
601	NOV 01/00	01.1
602	BLANK	
REPAIR 2-2		
601	NOV 01/00	01.1
602	NOV 01/00	01.1
603	NOV 01/00	01.1
604	BLANK	
REPAIR 3-1		
601	NOV 01/00	01.1
602	NOV 01/00	01.1
603	NOV 01/00	01.1
604	NOV 01/00	01.1
605	NOV 01/00	01.1
606	BLANK	

* = REVISED, ADDED OR DELETED

PAGE	DATE	CODE
REPAIR 4-1		
601	NOV 01/00	01.1
602	BLANK	
ASSEMBLY		
*701	NOV 01/01	01.1
*702	NOV 01/01	01.101
*703	NOV 01/01	01.101
704	NOV 01/00	01.1
705	JUL 01/99	01
706	BLANK	
FITS AND CLEARANCES		
801	NOV 01/00	01.1
802	NOV 01/00	01.1
803	NOV 01/00	01.1
804	BLANK	
SPECIAL TOOLS		
*901	NOV 01/01	01.1
902	BLANK	
ILLUSTRATED PARTS LIST		
1001	JUL 01/99	01
1002	NOV 01/00	01.1
1003	BLANK	
1004	NOV 01/00	01.101
1005	NOV 01/00	01.101
1006	NOV 01/00	01.101
1007	NOV 01/00	01.101
1008	NOV 01/00	01.101
1009	NOV 01/00	01.1
1010	NOV 01/00	01.1

PAGE	DATE	CODE

* = REVISED, ADDED OR DELETED

TABLE OF CONTENTS

Paragraph Title	Page
Description and Operation	1
Testing and Fault Isolation	101
Disassembly	301
Cleaning	401
Check	501
Repair	601
Assembly	701
Fits and Clearances	801
Special Tools	901
Illustrated Parts List	1001

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:

MAIN LANDING GEAR DOOR LATCH ACTUATOR ASSEMBLY

DESCRIPTION AND OPERATION

1. Description

   A. The main landing gear (MLG) door latch actuator assembly has a housing assembly, a piston, and a valve assembly. There are four hydraulic ports: RESET, UNLATCH, DOOR OPEN, and RETURN.

   B. The MLG door latch actuator assembly is attached to the MLG door uplock mechanism.

2. Operation

   A. The MLG door latch actuator assembly is operated hydraulically. It is a combination of a hydraulic sequence valve and actuator in one unit. It is used together with the MLG door actuator assembly to latch, unlatch, open and close the MLG door.

   B. When hydraulic pressure is applied to the RESET port, the piston moves to the retracted position to allow the MLG door to be closed by the MLG door actuator assembly.

   C. When hydraulic pressure is applied to the UNLATCH port, the piston moves to the extended position to allow the MLG door to unlatch and then be opened by the MLG door actuator assembly.

   D. The DOOR OPEN port supplies hydraulic pressure to the MLG door actuator assembly to open the door fully after the MLG door is unlatched.

3. Leading Particulars (Approximate)

   A. Length -- 10 inches

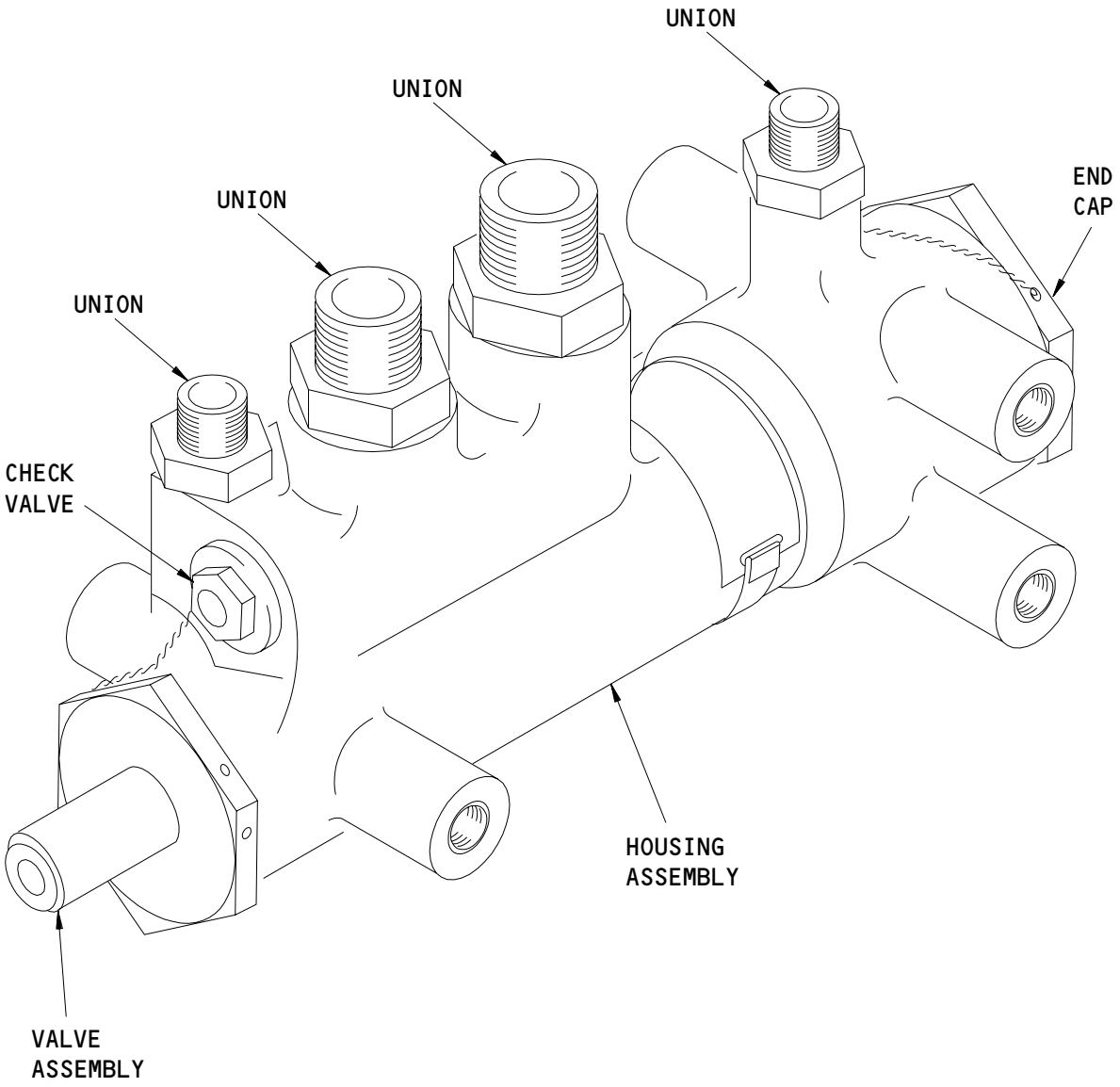
   B. Width -- 4 inches

   C. Height -- 5 inches

   D. Weight -- 7 pounds

   E. Fluid (operate) -- BMS 3-11 Hydraulic Fluid

   F. Pressure (operate) -- 3000-3200 psi



Main Landing Gear Door Latch Actuator Assembly
Figure 1

K13167

TESTING AND FAULT ISOLATION

1. General

   A. This procedure has the data necessary to do a test of the actuator after an overhaul or for fault isolation.

      (1) Proof Pressure

      (2) External Leakage

      (3) Internal Leakage

      (4) Friction

      (5) Extend Rate Control

      (6) Pressure Drop

      (7) Slide Position

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

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

2. MLG Door Latch Actuator Assembly Test

   A. General

      (1) To do these tests, it is necessary to hold the actuator assembly in a holding fixture. You will visually monitor the actuator for leaks and measure the rate of the piston.

      (2) The full stroke length of the piston is 1.1600 - 1.2000 inches.

   B. Special Tools and Equipment

      NOTE: Equivalent tool/equipment can be used.

      (1) Holding Fixture -- A32121-4

C. Standard Tools and Equipment

NOTE: Equivalent substitutes can be used.

(1) A hydraulic test stand

(a) Hydraulic pressure range of 0-4700 psi.

(b) Approved for BMS 3-11 type 4 hydraulic fluid.

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

(d) The temperature of the hydraulic fluid must be 60-120 degrees F.

D. Consumable Materials

NOTE: Equivalent substitues can be used.

(1) D00153 Fluid-- BMS 3-11, type 4, Hydraulic (SOPM 20-60-03)

E. References

(1) 32-32-40/301, Disassembly

(2) 32-32-40/701, Assembly

(3) SOPM 20-60-03, Lubricants

F. Preparation for Tests

(1) The ambient conditions during the tests must be:

(a) Temperature: 60-100 degrees F.

(b) Atmospheric pressure: 13-17 psi.

(c) Relative humidity: 10-90%.

(2) Install the door latch actuator assembly in a holding fixture.

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

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

NOTE: The door actuator assembly will be continuously full of hydraulic fluid for each test.

(5) Bleed all the air from the door latch actuator assembly before each test.

G. Procedure

WARNING: DO NOT APPLY AIR PRESSURE TO THE PORTS AT ANY TIME AND DO NOT CYCLE THE UNIT AT PROOF PRESSURE.

(1) Do a Proof Pressure Test

(a) Fully extend the actuator.

(b) Slowly apply 4500-4700 psi hydraulic pressure to the UNLATCH port and the RESET port with the DOOR OPEN port capped, and 0-50 psi hydraulic pressure to the RETURN port.

(c) Hold the pressure for a minimum of 30 seconds.

(d) There must be no external leakage.

(e) Fully retract the actuator.

(f) Apply 3000-3200 psi to the RETURN port, and 0-50 psi to all other ports.

(g) Hold the pressure for a minimum of 30 seconds.

(h) There must be no external leakage.

(2) Do an external leakage test:

(a) Clean these areas to permit leak detection.

1) Areas around the dynamic rod seals.

2) The internal areas of the piston and the valve slide thru the drain hole.

(b) Close the DOOR OPEN port. Use a cap or an equivalent.

(c) Operate the door latch actuator assembly for 25 full cycles at a rate of approximately 5 cycles per minute. Use pressure as necessary. Do not operate more than 0.5 inch per second bottoming velocity:

NOTE: One full cycle is when the piston (100) travels from the fully retracted position to the fully extended position, or vice versa.

1) Put the piston (100) to the fully retracted position.

2) Apply minimum hydraulic pressure to the UNLATCH port to move the piston (100) to the fully extended position.

3) When the piston (100) is at the fully extended position, increase the hydraulic pressure at the UNLATCH port to 3000-3200 psi and apply 0-5- psi hydraulic pressure at the RESET port.

4) Remove the hydraulic pressure from the UNLATCH port and the RESET port.

5) Change the direction of the hydraulic pressure. The door latch actuator assembly is now in the fully extended position.

6) Apply minimum hydraulic pressure to the RESET port to move the piston (100) to the fully retracted position.

7) When the piston (100) is at the fully retracted position, increase the hydraulic pressure at the RESET port to 3000-3200 psi and apply 0-5 psi hydraulic pressure at the UNLATCH port.

8) Remove the hydraulic pressure from the RESET port and the UNLATCH port.

9) Do steps 2 through 8 for 24 more cycles.

(d) After 25 cycles, do a visual check for leakage around the dynamic rod seal:

1) The leakage limit for static rod seals is zero drop.

2) The leakage limit for dynamic rod seals 1 drop per 25 cycles.

(e) Hold the door latch actuator assembly in a vertical position with the piston (100) on the bottom side.

(f) Do a visual check for leakage out of the piston drain hole.

1) The leakage limit for the piston drain hole is zero drop.

(3) Do an internal leakage test:

(a) Put the piston (100) to the fully extended position.

(b) Remove the hydraulic lines from the RESET port and the RETURN port. The RESET port and the RETURN port must be open to the atmosphere.

(c) Close the DOOR OPEN port. Use a cap or an equivalent.

(d) Apply 3000-3200 psi to the UNLATCH port for two minutes.

Do the visual check shown in the next step before the end of two minutes.

(e) Do a visual check for leakage:

1) During the last minute, the leakage limit is 5 cc at the RESET port.

2) During the last minute, the leakage limit is 440 cc at the RETURN port.

(f) Remove the hydraulic pressure from the UNLATCH port.

(g) Put the piston (100) to the fully retracted position.

(h) Make sure the RETURN port is open to the atmosphere and the DOOR OPEN port is still closed.

(i) Apply 3000-3200 psi to the RESET port and the UNLATCH port for two minutes.

Do the visual check shown in the next step before the end of two minutes.

(j) Do a visual check for leakage:

1) During the last minute, the leakage limit is 325 cc at the RETURN port.

(k) Remove the hydraulic pressure from the RESET port and the UNLATCH port.

(l) Attach the hydraulic line to the RETURN port.

(m) Remove the cap from the DOOR OPEN port and attach a hydraulic line to the DOOR OPEN port.

(4) Do a friction test:

(a) Put the door latch actuator assembly in a horizontal position with the piston (100) in the fully retracted position.

(b) Make sure the hydraulic pressure at the UNLATCH port and the RESET port is 0 psi.

(c) Close the DOOR OPEN port and RETURN port. Use caps or the equivalent.

(d) Apply 75-85 psi hydraulic pressure to the UNLATCH port. The piston (100) must have a smooth and continuous movement throughout its range from fully retracted to fully extended positions.

(e) Remove the hydraulic pressure from the UNLATCH port.

(f) Put the piston (100) to the fully extended position.

(g) Make sure the hydraulic pressure at the UNLATCH port and the RESET port is 0 psi.

(h) Apply 75-85 psi hydraulic pressure to the RESET port. The piston (100) must have a smooth and continuous movement throughout its range from fully retracted to fully extended positions.

(i) Remove the hydraulic pressure from the RESET port.

(j) Open the RETURN port and the DOOR OPEN port and attach hydraulic lines to them.

(5) Do an extend rate control test:

(a) Put the door latch actuator assembly in a horizontal position with the piston (100) in the fully retracted position.

(b) Close the DOOR OPEN port and RETURN port. Use caps or the equivalent.

(c) Apply 0-50 psi hydraulic pressure to the RESET port.

(d) Apply 950-1050 psi hydraulic pressure to the UNLATCH port and measure the time for the piston (100) to get to the fully extended position. The piston (100) must get to the fully extended position in 3.6-4.7 seconds.

(e) Remove the hydraulic pressure from the UNLATCH port and the RESET port.

(f) Open the RETURN port and the DOOR OPEN port and attach hydraulic lines to them.

(6) Do a pressure drop test:

(a) Put the door latch actuator assembly in a horizontal position with the piston (100) in the fully extended position.

(b) Connect a flow meter to the DOOR OPEN port.

(c) Apply 0-50 psi hydraulic pressure to the RESET port, RETURN port, and DOOR OPEN port.

(d) Apply hydraulic pressure to the UNLATCH port until you get 12 GPM (gallons per minute) flow thru the DOOR OPEN port.

(e) Record the pressure differential required to get 12 GPM flow. The maximum pressure differential must be 50 psid.

(f) Remove the hydraulic pressure from the RETURN port, UNLATCH port, and the RESET port.

(g) Remove the flow meter from the DOOR OPEN port.

(h) Install the flow meter on the UNLATCH port.

(i) Connect a hydraulic line to the DOOR OPEN port.

(j) Close the RETURN port. Use a cap or an equivalent.

(k) Put the piston (100) in the fully retracted position.

(l) Apply sufficient hydraulic pressure to the RESET port and the DOOR OPEN port until you get a 3.5 GPM flow from the UNLATCH port.

(m) Measure and record the actual pressure at the DOOR OPEN port and the UNLATCH port.

(n) Record the flow rate at the UNLATCH port.

(o) For a flow rate of 3.5 GPM at the UNLATCH port, the hydraulic pressure differential between the DOOR OPEN port and the UNLATCH port must be 20 psid maximum.

(p) Remove the flow meter from the UNLATCH port.

(q) Connect a hydraulic line to the UNLATCH port.

(7) Do a slide position test:

(a) Put the door latch actuator assembly in a horizontal position with the piston (100) in the fully retracted position.

(b) Make sure the RETURN port is capped.

(c) Connect a flow meter to the DOOR OPEN port.

(d) Apply 0-20 psi hydraulic pressure to the RESET port and the DOOR OPEN port. Apply 200-225 psi hydraulic pressure to the UNLATCH port.

(e) As you apply the hydraulic pressure, monitor the piston position and the flow rate at the DOOR OPEN port. When the flow rate at the DOOR OPEN port increases above a leakage flow to a flow rate of approximately 1 GPM, make a note of the position of the piston (100). Measure the distance from the fully retracted position. The distance must be 0.85-0.96 inch

(f) Put the piston (100) in the fully retracted position.

(g) Remove the cap from the RETURN port. Connect a hydraulic line to the RETURN port.

(h) Apply 0-20 psi hydraulic pressure to the RESET port and the DOOR OPEN port. Apply 200-225 psi hydraulic pressure to the UNLATCH port.

(i) As you apply the hydraulic pressure, monitor the piston position and the flow rate at the DOOR OPEN port and the RETURN port. When the piston position is at 0.87-0.97 inch from the fully retracted position, make sure there is a flow from the DOOR OPEN port and the RETURN port simultaneously. The flow must be more than the leakage rate.

(j) Remove all hydraulic pressure, hydraulic lines, and flow meters from all four ports.

DISASSEMBLY

1. General

A. This procedure has the data necessary to disassemble the MLG door latch actuator assembly.

B. Disassemble this component sufficiently to isolate the defects, do the necessary repairs, and put the component back to a serviceable condition.

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

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

2. Disassembly

A. Special Tools

NOTE: Equivalent substitutes can be used.

(1) Holding Fixture -- A32121-4

(2) Torque Adapter Set -- A32120-13

B. Part Replacement

NOTE: The parts shown below are recommended for replacement. Unless a procedure tells you to replace a part, replacement is optional.

(1) Lockwire and locknuts.

(2) Packings and seals (10, 15, 20, 25, 30, 35, 65, 70, 75, 80, 110, 115, 120, 130, 140, 150)

(3) Locking ring (60)

C. Procedure

(1) Use standard industry procedures and the steps shown below to disassemble this component.

(2) Install the door latch actuator assembly in the holding fixture.

(3) Remove the unions (125, 135, 145) and packings (130, 140, 150) from the housing assembly (155).

(4) Remove all lockwire.

(5) Remove the check valve (105) from the housing assembly (155).

(6) Remove the packings (110, 115) and backup rings (120) from the check valve (105).

(7) Remove the end cap (95) from the housing assembly (155):

(a) Remove the end cap (95) from the housing assembly (155).

(b) Remove the packing (75) and backup rings (80) from the head end (95).

(c) Remove the scraper (90) from inside the end cap (95).

(d) Remove the seal (85) from inside the end cap (95).

(8) Remove the end cap (5) from the housing assembly (155):

(a) Remove the end cap (5) from the housing assembly (155).

(b) Remove the packing (10) and backup rings (80) from the head end (5).

(c) Remove the scraper (20) from inside the end cap (5).

(d) Remove the seal (25) from inside the end cap (5).

(9) Remove the valve slide (50), retaining nut (55), locking ring (60), and piston (100) from the housing assembly (155):

(a) Pull the piston (100) out of the housing assembly (155). The valve slide (50), retaining nut (55), and locking ring (60) will come out together with the piston (100). Be careful when you pull, not to damage the finish of the slide valve (50).

(b) Bend up the edges of locking ring (60) from the four holes of piston (100).

(c) Use a wrench to hold the piston (100) and use another wrench to loosen the retaining nut (55).

(d) Remove the retaining nut (55) from the slide valve (50).

(e) Remove the locking ring (60).

(f) Remove the piston (100) from the valve slide (50).

(g) Remove the seal (70) from the piston (100).

(h) Remove the seal (65) from inside the piston (100).

(10) Remove the valve sleeve (45) from the inside of the housing assembly (155). The valve sleeve (45) will slide out of the housing assembly (155) and the valve slide (50).

(11) Remove the packings (30) and backup rings (35) from the valve sleeve (45).

CLEANING

1. General

   A. This procedure has the data necessary to clean the MLG door latch actuator assembly.

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

2. Cleaning

   A. References

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

   B. Procedure

      (1) Use standard industry procedures and refer to SOPM 20-30-03 to clean all parts.

CHECK

1. General

   A. This procedure has the data necessary to find defects in the material of the 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 details of the SOPM subjects 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. Do the penetrant or magnetic particle check if the visual check shows possible damage or if you suspect possible damage on the parts listed below:

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

         (a) Valve sleeve (45)

         (b) Valve slide (50)

         (c) Piston rod (100)

         (d) Housing (170)

      (3) Do a penetrant check (SOPM 20-20-02) of these parts:

         (a) End cap (5, 95)

         (b) Retaining nut (55)

         (c) Locking ring (60)

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
---	REFINISH OF OTHER PARTS	1-1
273T0200	HOUSING ASSEMBLY	2-1, 2-2
273T0210	PISTON	3-1
BAC27TLG21	MARKER	4-1

2. Dimensioning Symbols

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

REFINISH OF OTHER PARTS - REPAIR 1-1

1. General

   A. This procedure has the data necessary to refinish the parts which are not given in the specified repairs.

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

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

2. Refinish of Other Parts

   A. General

      (1) Instructions for the repair of the parts listed in Table 601 are for repair of the initial finish.

   B. 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

   C. Procedure

IPL FIG. & ITEM	MATERIAL	FINISH
IPL Fig. 1		
Locking ring (60)	304 CRES	Passivate (F-17.25).

Refinish Details
Table 601

HOUSING ASSEMBLY - REPAIR 2-1

273T0200-1

1. General

   A. This procedure has the data necessary to replace parts in the housing assembly (155).

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

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

2. Insert Replacement

   A. Consumable Materials

      NOTE: Equivalent material can be used.

      (1) C00432 Primer -- BMS 10-11, Type 1 (SOPM 20-60-02)

   B. References

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

   C. Procedure

      (1) Remove the bad insert (165) from the housing (170).

      (2) Install a replacement insert (165) with BMS 10-11, type 1 primer on the mating surfaces.

3. Lee Jet Replacement

   A. Reference

      (1) SOPM 20-50-04, Installation of Permanent Pins and Plugs In Drill Passages

   B. Procedure

      (1) Remove the defective jet (160) from the housing (165).

      (2) Install a replacement jet (160) per SOPM 20-50-04.

HOUSING - REPAIR 2-2

273T0200-2

1. General

A. This procedure has the data necessary to repair and refinish the housing (170).

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

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

D. General repair details:

(1) Material: 15-5PH CRES
Heat treat 150-170 ksi

(2) Shot Peen: Intensity 0.007A2

2. Barrel Repair

A. References

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

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

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

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

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

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

B. Procedure (Fig. 601)

(1) Machine (SOPM 20-10-02) the surface as necessary to remove defects within repair limits shown.

(2) Break all sharp edges.

(3) Do a magnetic particle check (SOPM 20-20-01, class B).

(4) Shot peen the machined area (SOPM 20-10-03).

(5) Build up the surface with chrome plate (SOPM 20-42-03). The finish thickness of the chrome plate is 0.010 inch maximum after grinding. If material removal is more than this, nickel plate (SOPM 20-42-09) the surface before you chrome plate. Make sure the thickness of the chrome plate is 0.0030 - 0.0050 inch on top of the nickel plate after grinding.

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

3. Barrel Refinish

A. References

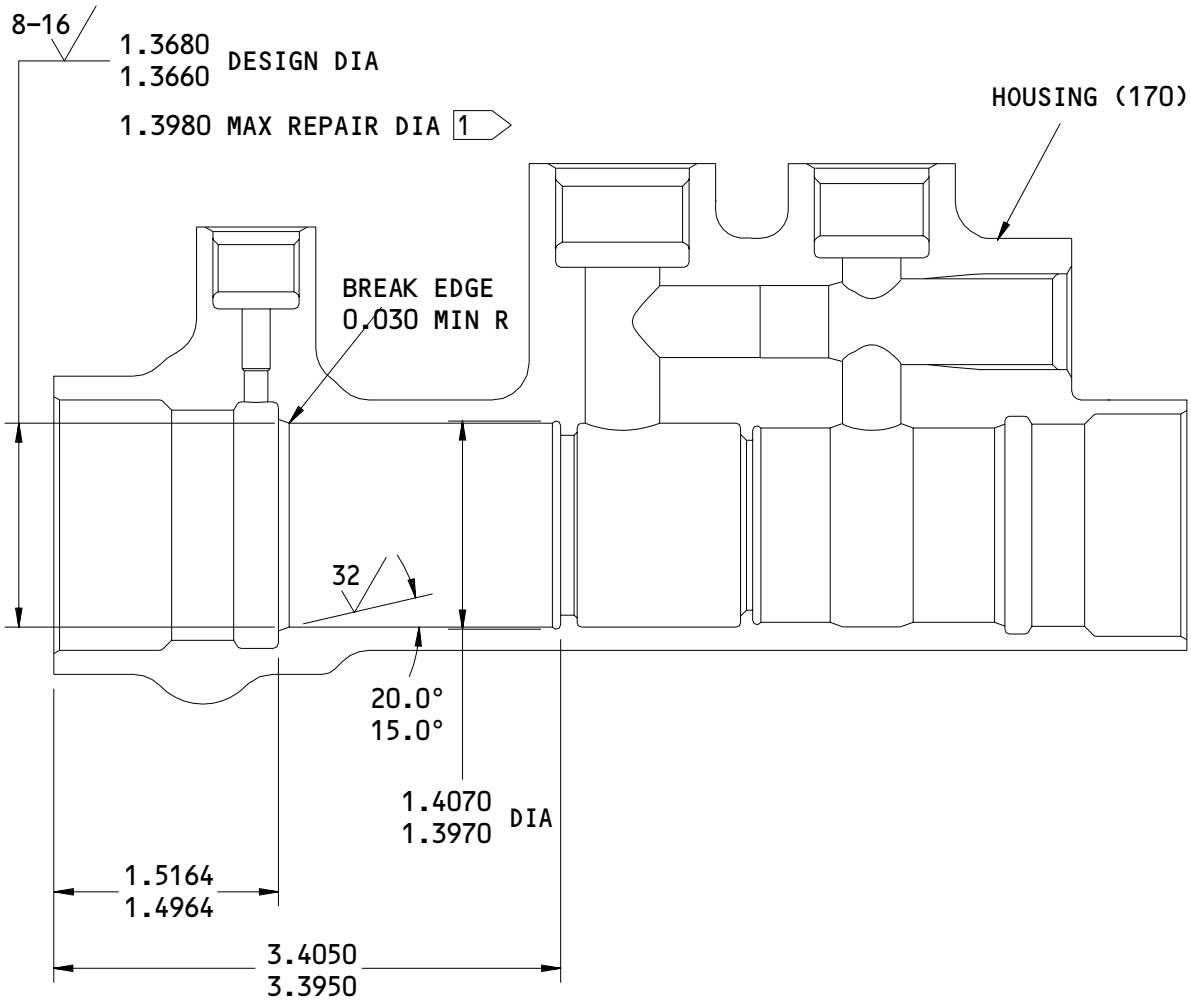
(1) SOPM 20-30-02, Stripping of Protective Finishes

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

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

B. Procedure

(1) Passivate (F-17.25).



1 LIMIT FOR CHROME PLATE BUILDUP

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK ALL SHARP EDGES

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

273T0200-2
Housing Repair
Figure 601

K26220

PISTON - REPAIR 3-1

273T0210-1

A. This procedure has the data necessary to repair and refinish the piston (100).

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

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

D. General repair details:

(1) Material: 15-5PH CRES
Heat treat 150-170 ksi

(2) Shot Peen: Intensity 0.007A2

1. Piston Repair

A. References

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

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

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

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

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

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

B. Procedure (Fig. 601)

(1) Diameters A and B

(a) Machine (SOPM 20-10-02) the surface as necessary to remove defects within repair limits shown.

(b) Break all sharp edges.

(c) Do a magnetic particle check (SOPM 20-20-01, class B).

(d) Shot peen the machined area as specified in SOPM 20-10-03.

(e) Build up the surface with chrome plate (SOPM 20-42-03). The finish thickness of the chrome plate is 0.0030 - 0.0100 inch after grinding. If material removal is more than this, nickel plate (SOPM 20-42-09) the surface before you chrome plate. Make sure the thickness of the chrome plate is 0.0030 - 0.0050 inch on top of the nickel plate after grinding.

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

2. Piston Refinish

A. References

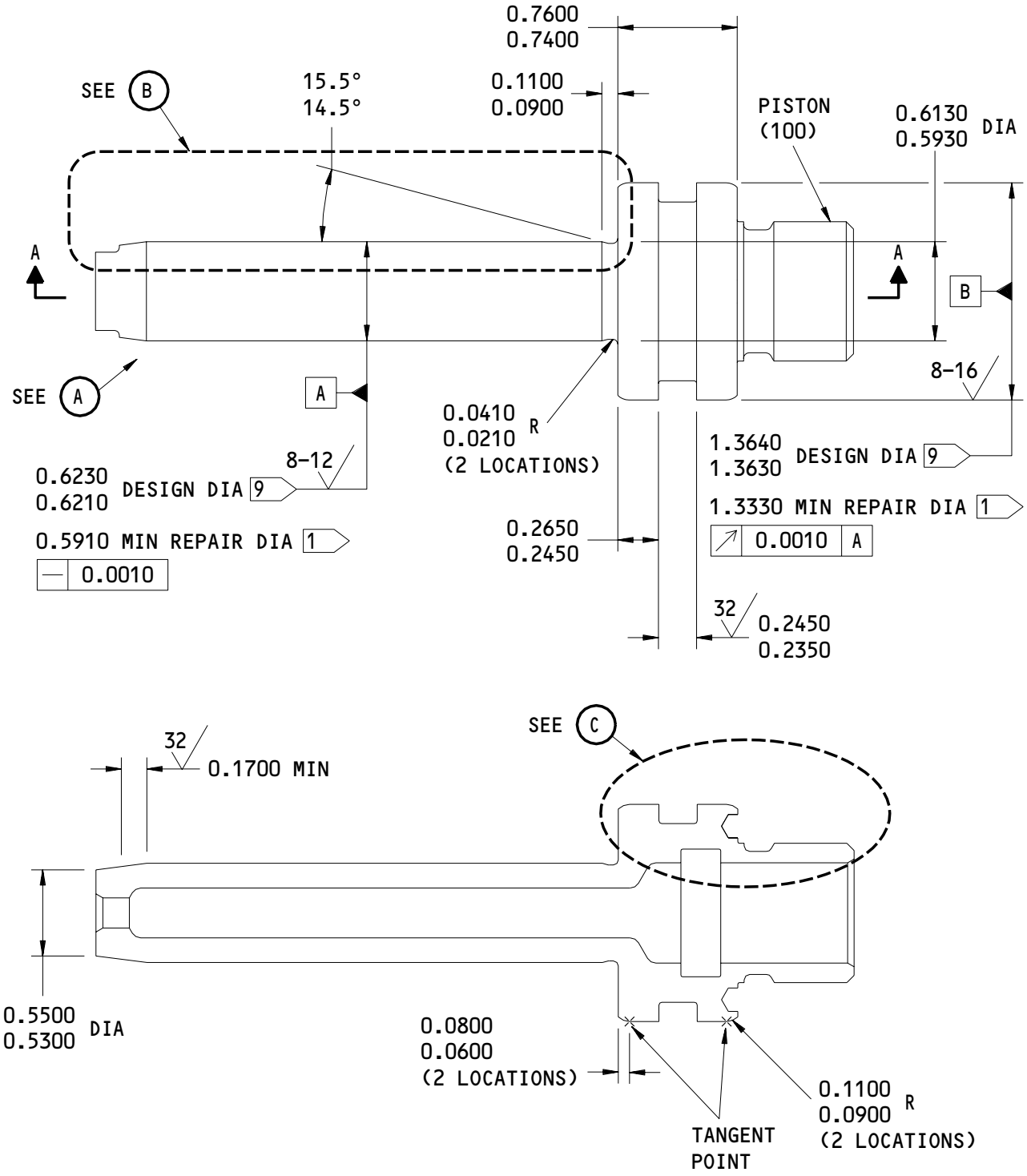
(1) SOPM 20-30-02, Stripping of Protective Finishes

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

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

B. Procedure (Fig. 601)

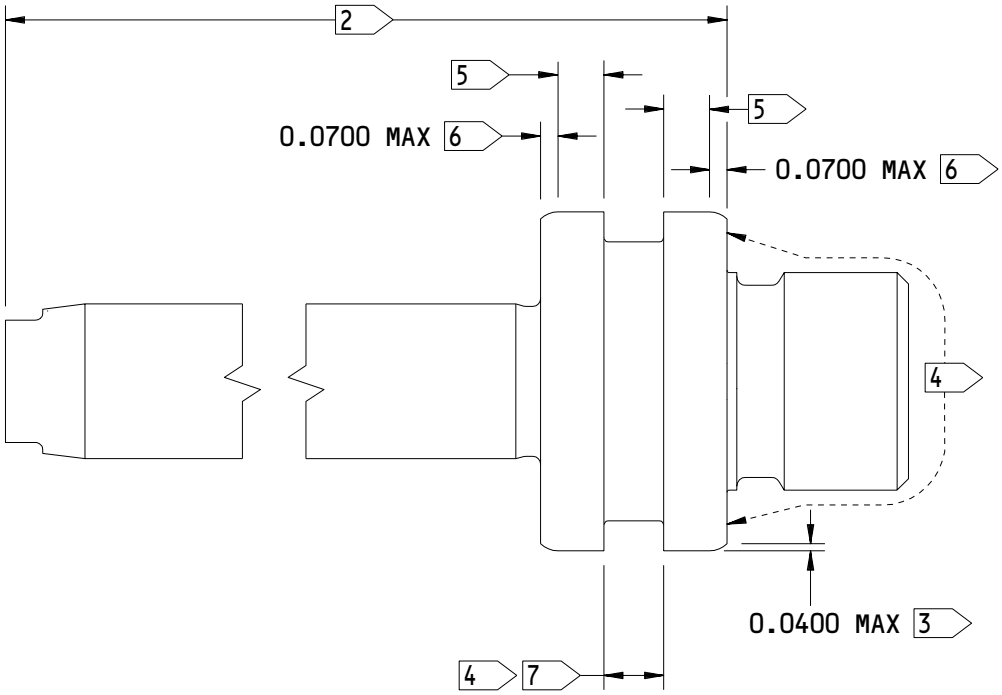
(1) Passivate (F-17.25).



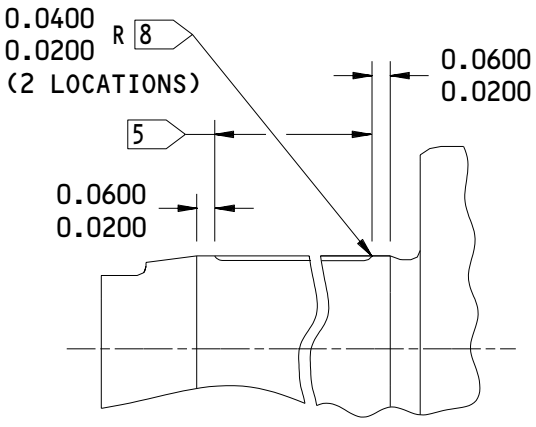
A-A

273T0210-1
Piston Repair
Figure 601 (Sheet 1)

K26227



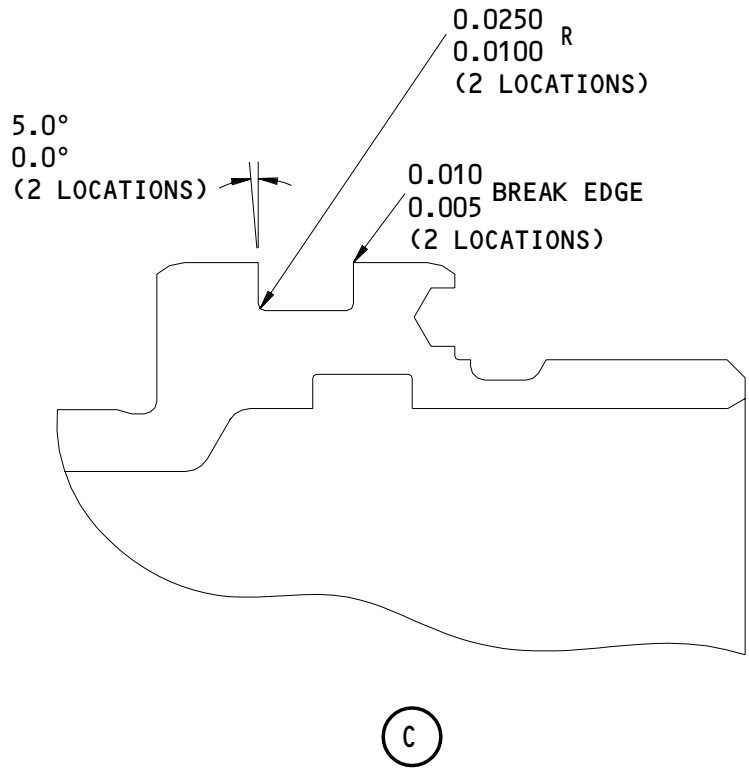
A



B

273T0210-1
Piston Repair
Figure 601 (Sheet 2)

K26230



1 LIMIT FOR CHROME PLATE BUILDUP

2 SHOT PEEN

3 SHOT PEEN OVERSPRAY

4 NO SHOT PEEN

5 CHROME PLATE

6 CHROME PLATE RUNOUT

7 NO CHROME PLATE

8 DIMENSION BEFORE PLATING AND GRINDING

9 DIMENSION AFTER PLATING AND GRINDING

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

273T0210-1
Piston Repair
Figure 601 (Sheet 3)

MARKER - REPAIR 4-1

BAC27TLG21

1. General

A. This procedure has the data necessary to replace the strap (175) and the marker (180).

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

2. Marker Replacement

A. Consumable Materials

NOTE: Equivalent substitutes can be used.

(1) A00589 Sealant -- BMS 5-26 (SOPM 20-60-04)

B. References

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

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

C. Procedure

(1) Install a replacement marker with new straps and BMS 5-26 sealant as shown in SOPM 20-50-21.

ASSEMBLY

1. General

   A. This procedure has the data necessary to assemble the MLG door latch actuator assembly.

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

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

2. Assembly

   A. Special Tools

      NOTE: Equivalent substitutes can be used.

      (1) Holding Fixture -- A32121-4

      (2) Torque Adapter -- A32120-13

   B. Consumable Materials

      NOTE: Equivalent substitutes can be used.

      (1) AOO359 Sealant -- BMS 5-95 (SOPM 20-60-04)

      (2) AOO589 Sealant -- BMS 5-26 (SOPM 20-60-04)

      (3) DOOO54 Lubricant -- MCS352, Assembly (SOPM 20-60-04)

      (4) DOO153 Fluid-- BMS3-11, type 4, Hydraulic (SOPM 20-60-03)

      (5) GO1041 Lockwire -- MS20995NC32 (SOPM 20-60-04)

   C. References

      (1) SOPM 20-50-01, Bolt and Nut Installation

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

      (3) SOPM 20-50-19, General Sealing

      (4) SOPM 20-60-03, Lubricants

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

D. Procedure

(1) Use standard industry procedures and the steps shown below to assemble this component.

(2) During assembly, lubricate the seals and threads with hydraulic fluid or assembly lube.

(3) Install the check valve (105) on the housing assembly (155):

(a) Install the packing (115) and two backup rings (120) on the check valve (105).

(b) Install the check valve (105) in the housing assembly (155) with packing (110).

(c) Fill the hole on the check valve (105) with BMS 5-26 sealant or BMS 5-95 sealant per SOPM 20-50-19.

(4) Install the valve sleeve (45) in the housing assembly (155):

(a) Lubricate seals (3) and backup rings (35) and install them on sleeve (45).

(b) Lubricate the inside of the valve sleeve (45) with BMS 3-11 hydraulic fluid, or MCS 352 assembly lubricant.

(c) Install the valve sleeve (45) on the valve slide (50) and push the valve sleeve (45) into the housing assembly (155). The valve sleeve (45) must move freely into the housing assembly (155).

(5) Install the valve slide (50), retaining nut (55), locking ring (60), and piston (100) in the housing assembly (155):

(a) Install the seal (65) on the inside of the piston (100).

(b) Install the seal (70) on the piston (100).

(c) Insert the valve slide (50) into the piston (100).

(d) Put the retaining nut (55) and the locking ring (60) on the valve slide (50) and slide the retaining nut (55) until the locking ring (60) touches the piston (100).

(e) Attach the locking ring (60) on the retaining nut (55) on the piston (100). Make sure the tabs on the locking ring (60) are in the slots on the retaining nut (55).

(f) Tighten the retaining nut (55) to 15-17 pound-inches above running torque. Use a wrench to hold the piston.

(g) Use a punch tool with a round tip to deform the locking ring (60) into the four holes on the piston (100). The deformed areas of the locking ring (60) must contact the edges of the holes on the piston (100).

(h) Lubricate the shaft of the valve slide (50), piston seal (70), and piston (100) with BMS 3-11 hydraulic fluid, or MCS 352 assembly lubricant.

(i) Put the valve slide unit into the housing assembly (155) thru the RESET port side.

(6) Install the end cap (95) on the housing assembly (155):

(a) Install the packing (75) and two backup rings (80) on the end cap (95).

(b) Install the seal (85) inside of the end cap (95).

(c) Install the scraper (90) inside of the end cap (95).

(d) Install the end cap (95) on the housing assembly (155).

(e) Torque the end cap (95) to 30-32 pound-feet.

(f) Install the lockwire on the hole of end cap (95) and around the RESET port on the housing assembly (155). Use the double-twist method (SOPM 20-50-02).

(7) Install the end cap (5) on the housing assembly (155):

(a) Install the packing (10) and two backup rings (15) on the end cap (5).

(b) Install the seal (25) inside of the end cap (5).

(c) Install the scraper (20) inside of the end cap (5).

(d) Install the end cap (5) on the housing assembly (155).

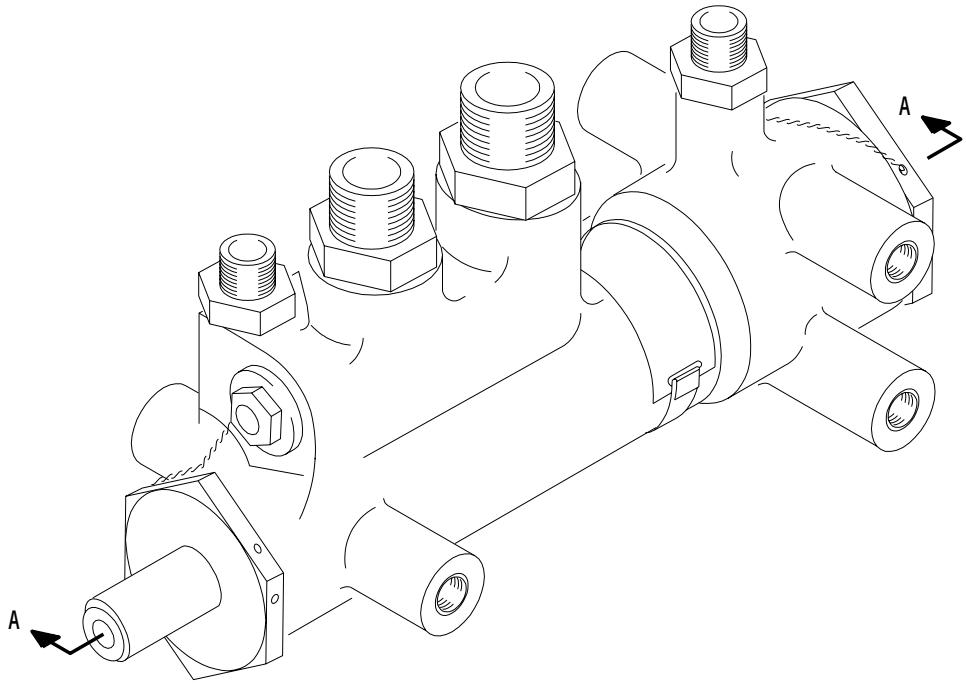
(e) Torque the end cap (5) to 26-28 pound-feet.

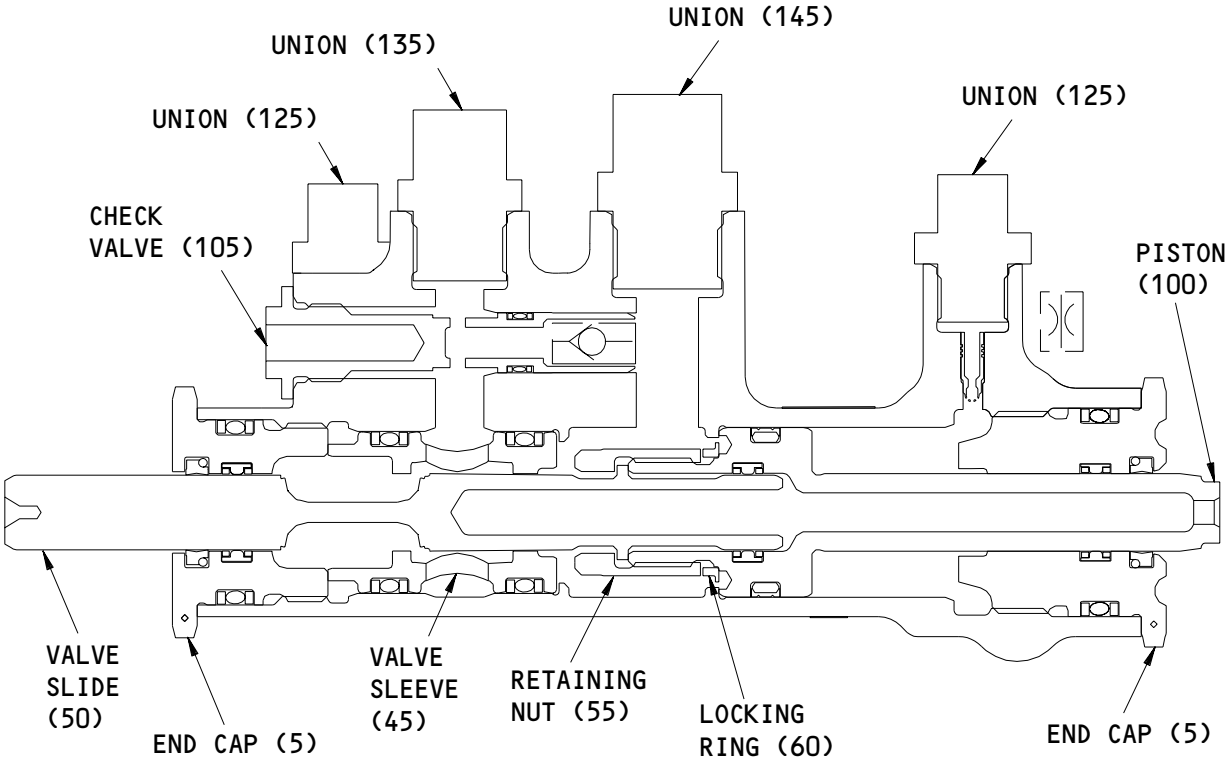
(f) Install the lockwire through the hole of end cap (5) and the hole of the check valve (105). Use the double-twist method (SOPM 20-50-02).

(8) Fill the hole on the valve slide (50) and the hole in the check valve (105) with BMS 5-26 sealant or BMS 5-95 sealant per SOPM 20-50-19.

(9) Install the unions (125, 135, 145) with seals (130, 140, 150) on the housing assembly (155).

(10) If necessary, install a replacement marker (180) and the strap (175) on the housing assembly (155) (REPAIR 4-1).

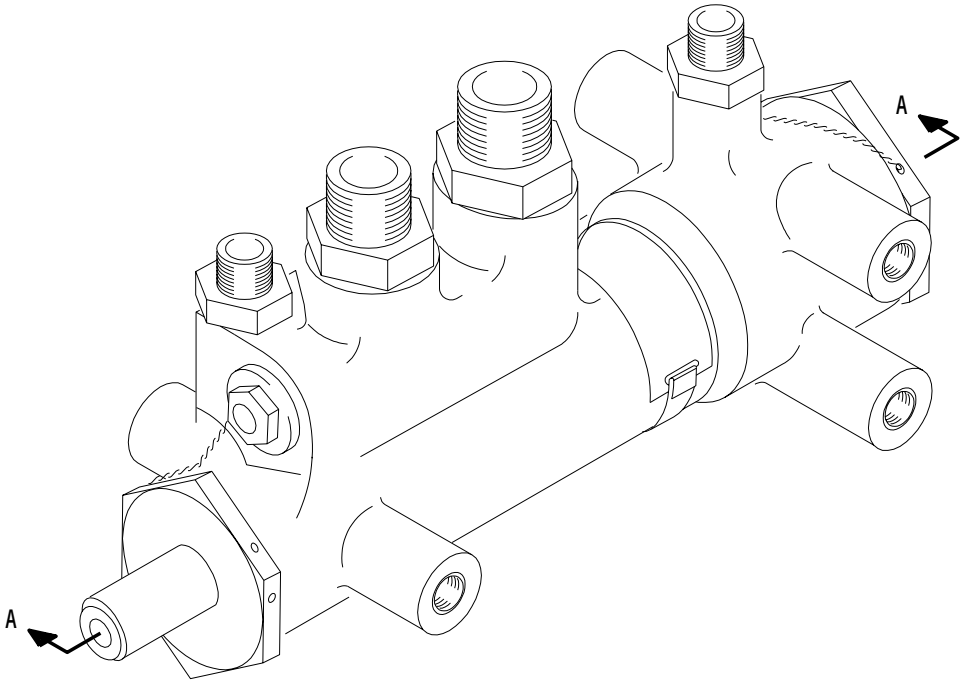


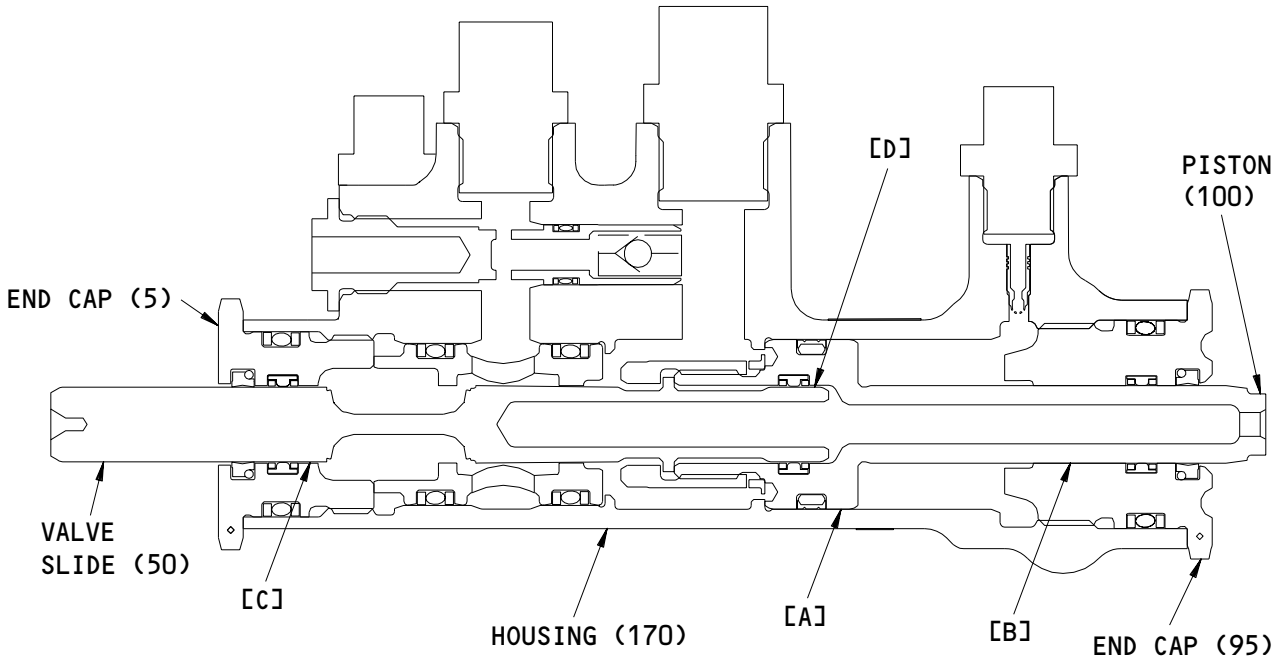


A–A

Main Landing Gear Door Latch Actuator Assembly Details
Figure 701

K25057





A–A

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]	ID 170	1.3660	1.3680	0.0020	0.0050		1.3694	0.0073
	OD 100	1.3630	1.3640			1.3621		
[B]	ID 95	0.6250	0.6260	0.0020	0.0050		0.6270	0.0066
	OD 100	0.6210	0.6230			0.6204		
[C]	ID 5	0.6250	0.6260				0.6270	
	OD							
[D]	ID 100	0.6300	0.6310				0.6330 <1>	
	OD							

* ALL DIMENSIONS ARE IN INCHES

<1> SERVICE WEAR LIMIT APPLIES WITHIN 0.13 INCH ON EITHER SIDE OF THE INERNAL GROOVE FOR SEAL (65)

Fits and Clearances
Figure 801 (Sheet 2)

K25065

REF IPL		NAME	TORQUE*	
FIG. NO.	ITEM NO.		POUND-INCHES	POUND-FEET
1	5	End Cap		26-28
1	55	Retaining Nut		15-17
1	95	End Cap		30-32
1	105	Check Valve	300-350	
1	125	Union	256-284	
1	135	Union	475-525	
1	145	Union	665-735	

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

Torque Table
Figure 802

K25067

SPECIAL TOOLS, FIXTURES AND EQUIPMENT

NOTE: Equivalent substitutes can be used.

1. A32120-13 -- Torque Adapter

2. A32121-4 -- Holding Fixture

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.

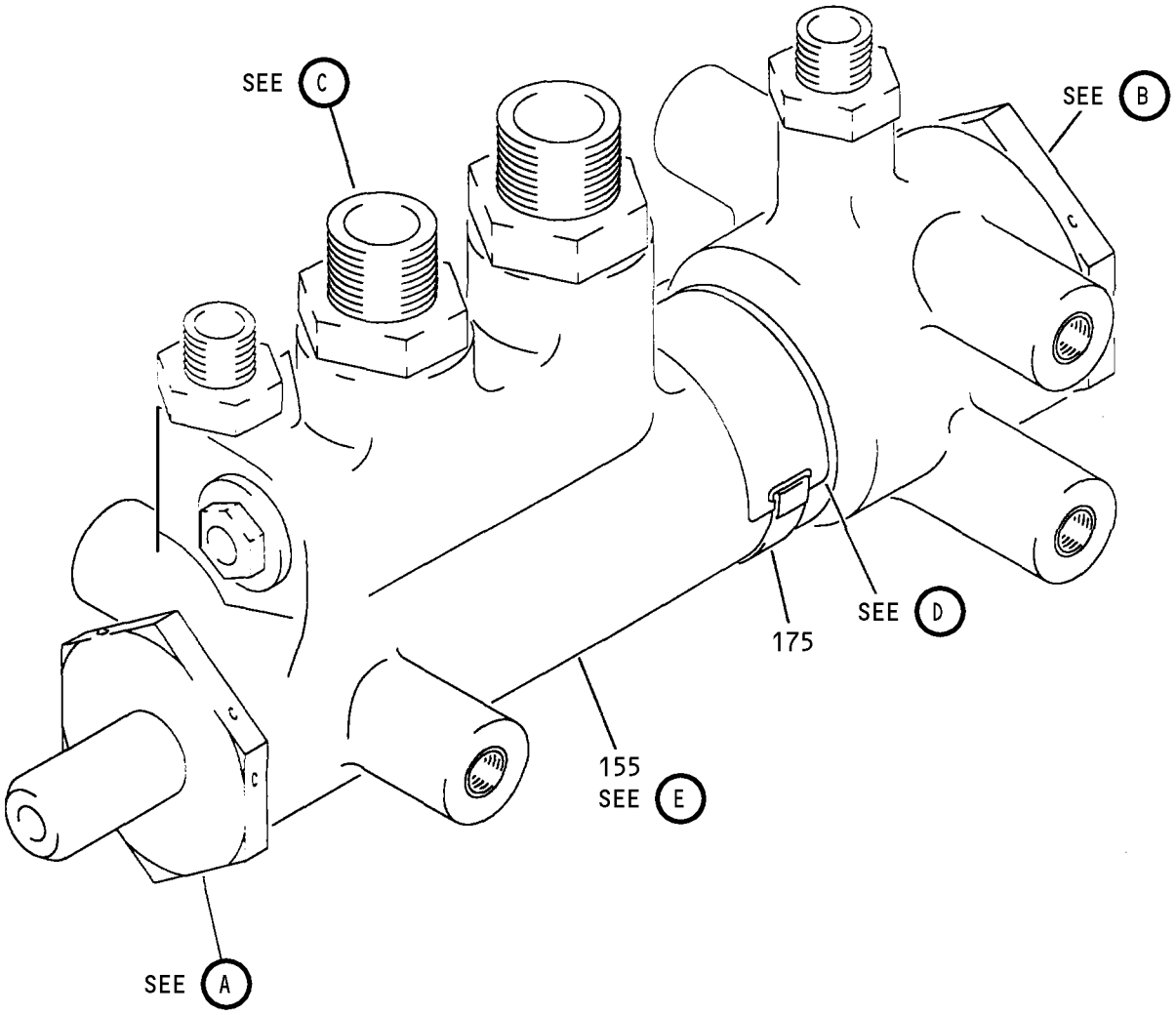
VENDORS

83259 PARKER-HANNIFIN CORP O-SEAL DIV
10567 JEFFERSON BLVD
CULVER CITY, CALIFORNIA 90232-3513

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

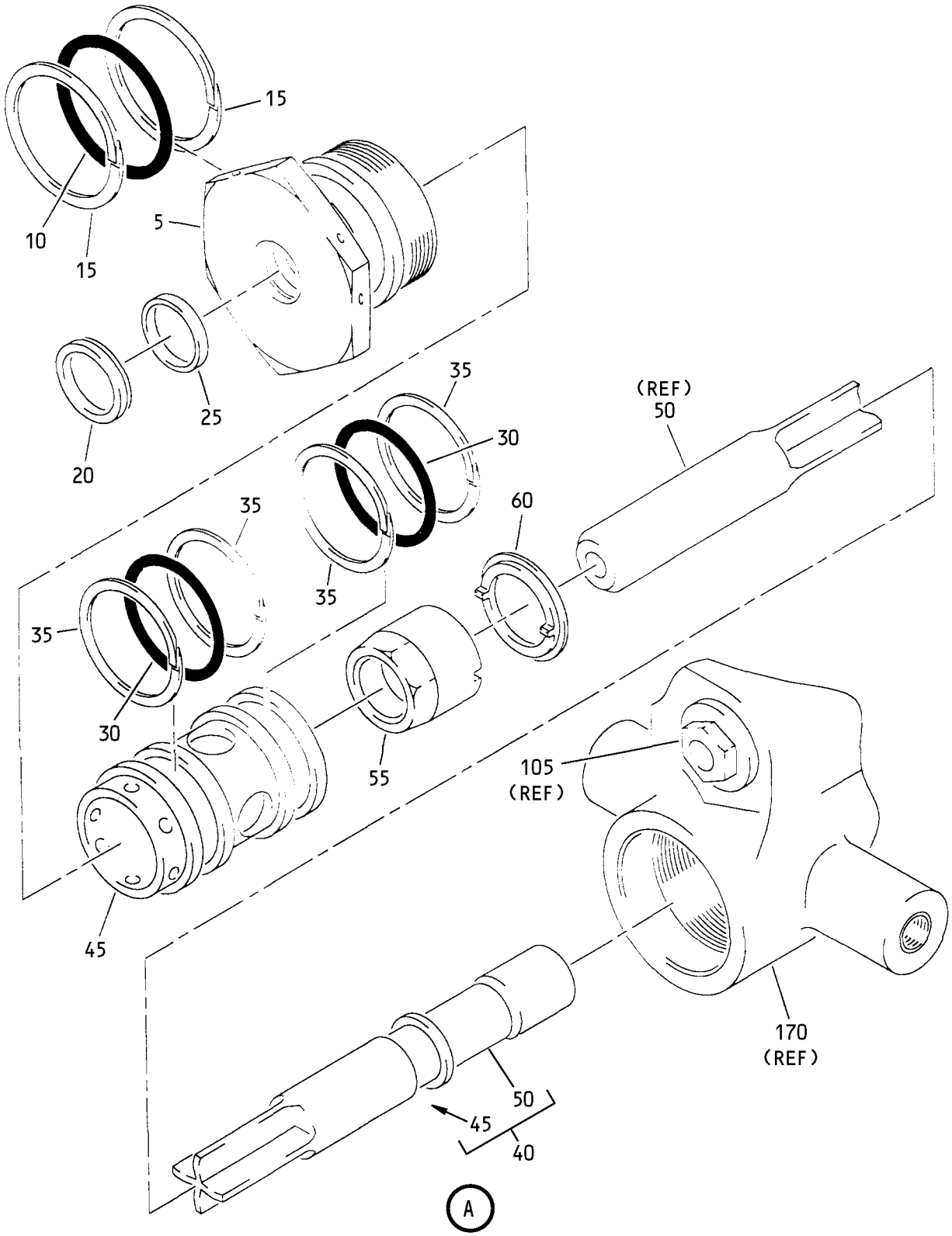
97820 BUSAK AND SHAMBAN INC BEARING DIV
711 MITCHELL ROAD PO BOX 665
NEWBURY PARK, CALIFORNIA 91320-2214

99240 CRISSAIR, INCORPORATED
38905 10TH STREET EAST
PALMDALE, CALIFORNIA 93550-3415



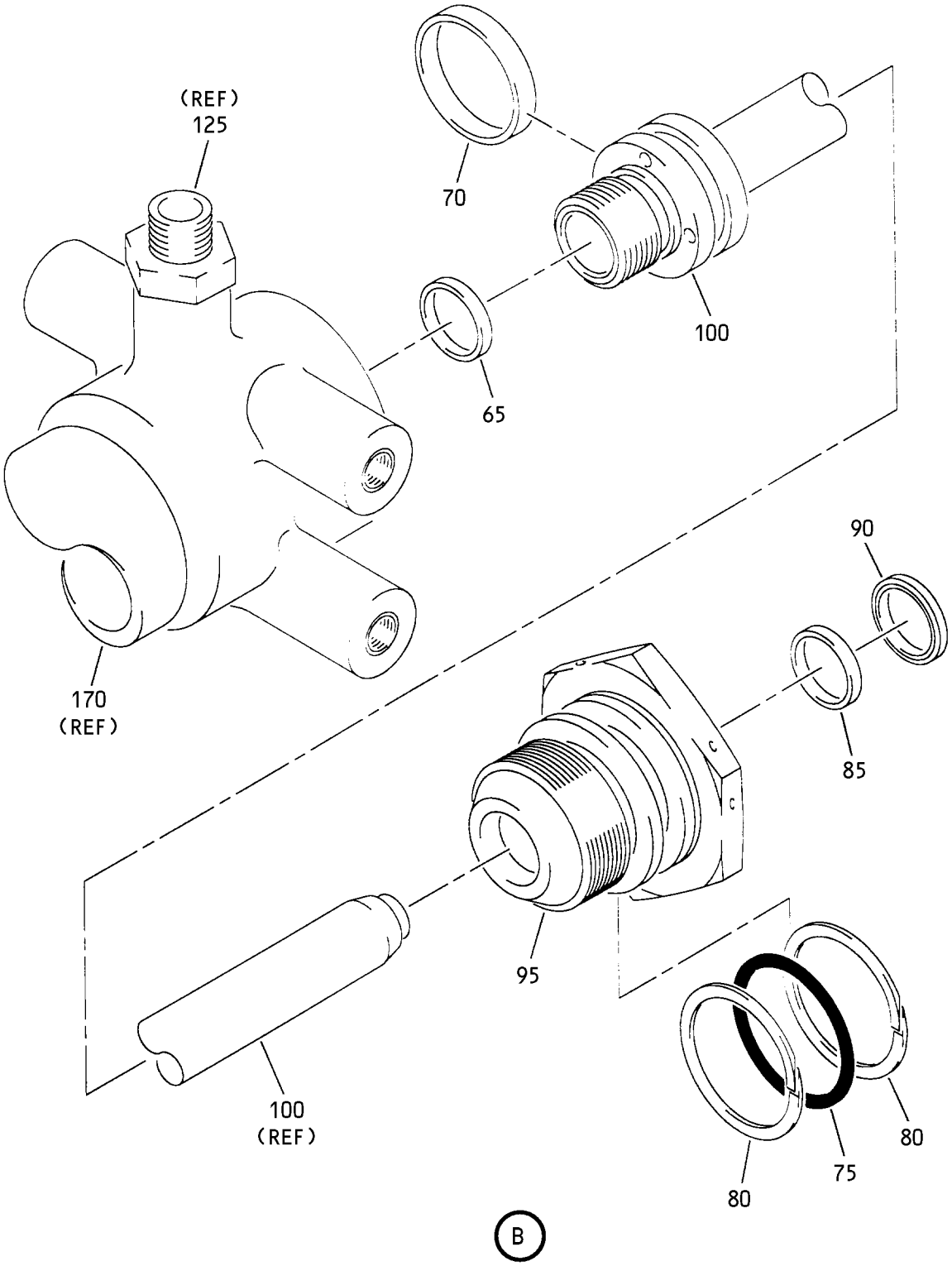
Actuator Assembly
Figure 1 (Sheet 1)

KD6958



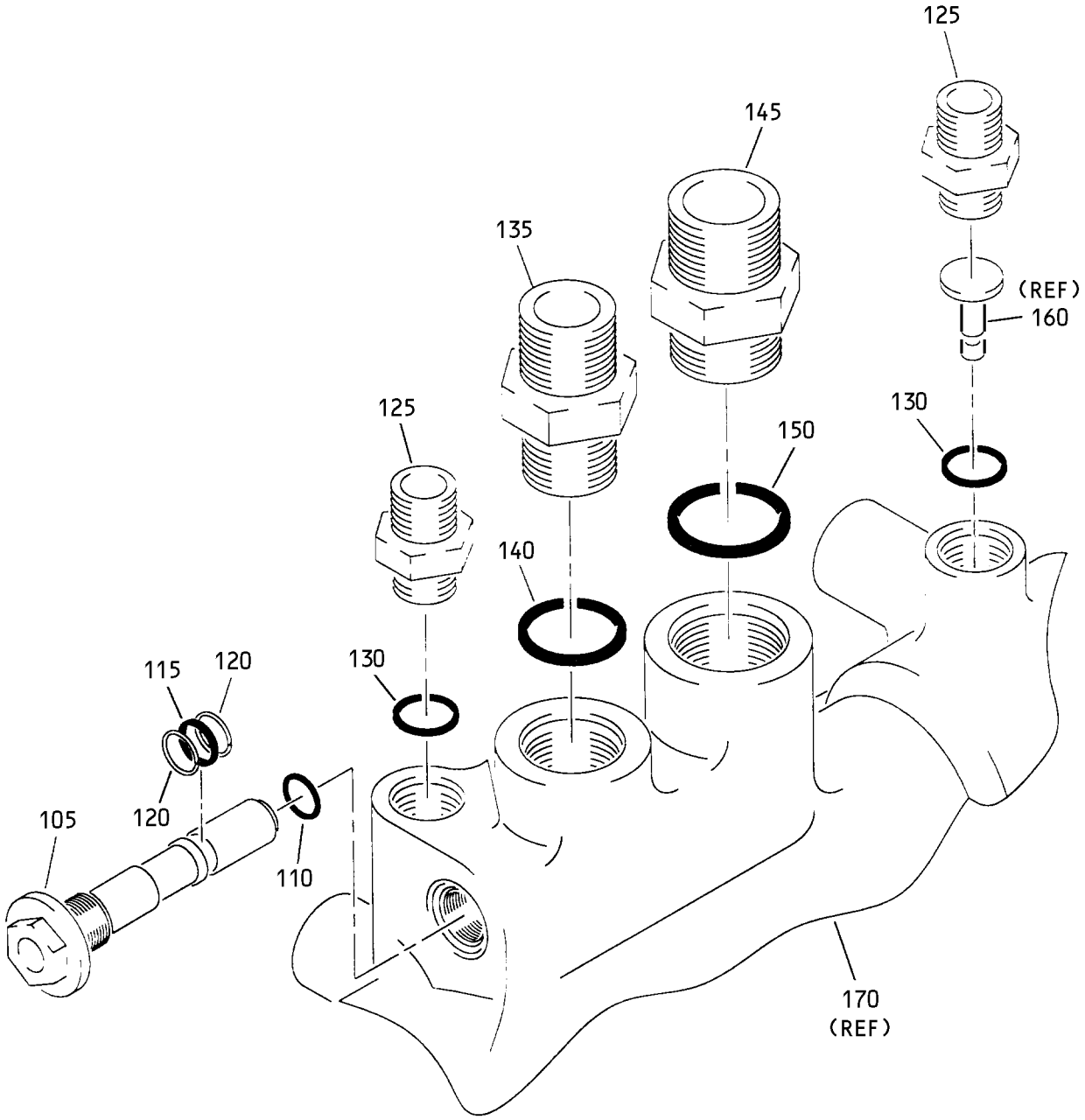
Actuator Assembly
Figure 1 (Sheet 2)

KD8695

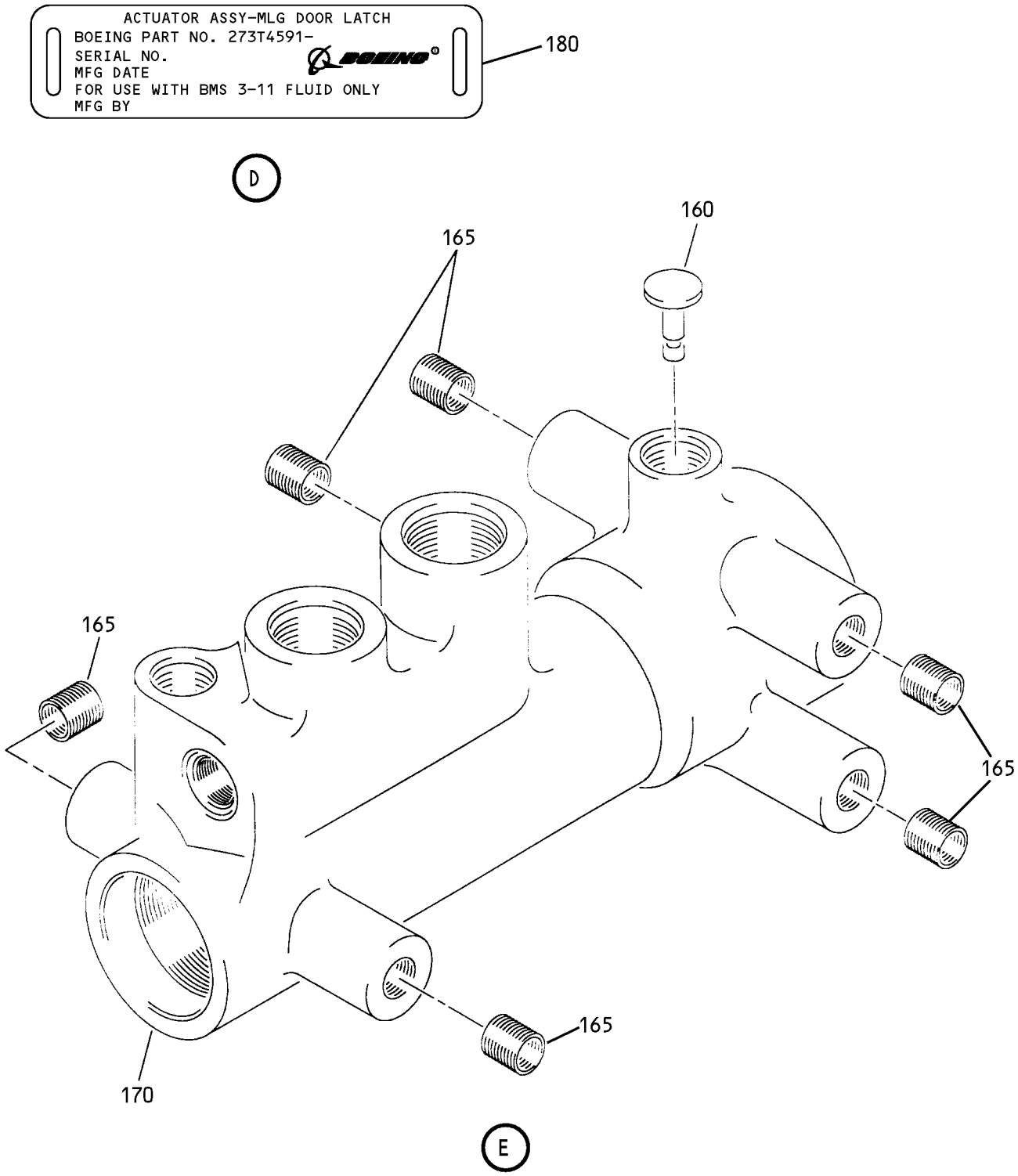


Actuator Assembly
Figure 1 (Sheet 3)

KD8705



Actuator Assembly
Figure 1 (Sheet 4)



Actuator Assembly
Figure 1 (Sheet 5)

KD8739

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-1A	273T4591-1		ACTUATOR ASSY-MLG DOOR LATCH		RF
5	273T0201-2		.END CAP		1
10	NAS1611-218		.PACKING		1
15	BACR12BM218		.RING-BACKUP		2
20	S32925-3H99N		.SCRAPPER- (V97820)		1
25	S38412-114H29		.SEAL- (V97820)		1
30	NAS1611-215		.PACKING		2
35	BACR12BM215		.RING-BACK UP		4
40	273T0203-1		.VALVE ASSY		1
45	273T0214-1		..SLEEVE-VALVE		1
50	273T0211-1		..SLIDE-VALVE		1
55	273T0212-1		.NUT-RETAINING		1
60	273T0213-1		.RING-LOCKING		1
65	S38412-114H29		.SEAL- (V97820)		1
70	S34721-216H99N		.SEAL- (V97820)		1
75	NAS1611-221		.PACKING		1
80	BACR12BM221		.RING-BACK UP		2
85	S38412-114H29		.SEAL- (V97820)		1
90	S32925-3H99		.SCRAPER- (V97820)		1
95	273T0201-1		.END CAP		1
100	273T0210-1		.PISTON		1
105	1C4080		.VALVE-CHECK (V99240)		1
110	3-907E515-80		.PACKING- (V83259)		1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
115	NAS1611-012		.PACKING		1
120	BACR12BM012		.RING-BACKUP		2
125	MS21902-6T		.UNION		2
130	NAS1612-6		.PACKING		2
135	MS21902-8T		.UNION		1
140	NAS1612-8		.PACKING		1
145	MS21902-10T		.UNION		1
150	NAS1612-10		.PACKING		1
155	273T0200-1		.HOUSING ASSY		1
160	JETA1875700D		..JET-LEE (V92555)		1
165	MS219209F5-15L		..INSERT-HELICAL COIL		6
170	273T0200-2		..HOUSING		1
175	273T0050-7		.STRAP		1
180	BAC27TLG21		.MARKER-STAINLESS STEEL		1

- Item Not Illustrated