COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

MAIN LANDING GEAR RETRACT ACTUATOR ASSEMBLY

PART NUMBER 273A2101–10, –2, –3, –4, –5, –6, –7, –8, –9

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COMPONENT MAINTENANCE MANUAL

Revision No. 16
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To: All holders of MAIN LANDING GEAR RETRACT ACTUATOR ASSEMBLY 32-32-37.

Attached is the current revision to this COMPONENT MAINTENANCE MANUAL

The COMPONENT MAINTENANCE MANUAL is furnished either as a printed manual, on microfilm, or digital products, or any combination of the three. This revision replaces all previous microfilm cartridges or digital products. All microfilm and digital products are reissued with all obsolete data deleted and all updated pages added.

For printed manuals, changes are indicated on the List of Effective Pages (LEP). The pages which are revised will be identified on the LEP by an R (Revised), A (Added), O (Overflow, i.e. changes to the document structure and/or page layout), or D (Deleted). Each page in the LEP is identified by Chapter-Section-Subject number, page number and page date.

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Location of Change	Description of Change
32-32-37	
REPAIR 2-1	Added clarifications and updated callouts.
REPAIR 2-2	Added details of cylinder 273A2102-8.
	Added repairs for cylinder 273A2102-4. Removed an extra zero from a shot peen callout.
	Changed the data in the References list.
	Added top assemblies -7 thru -10 for a Temporary Revision to incorporate SB 737-32-1369.
	Added clarifications and updated callouts.
	Added finish information.

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A = Added, R = Revised, D = Deleted, O = Overflow

Subject/Page	Date	Subject/Page	Date	Subject/Page	Date
32-32-37 ILLUSTRATED PARTS LIST (cont)					
1002	Nov 01/2007				
1003	Nov 01/2007				
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1006	Mar 01/2009				
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TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
32-1369		PRR 38275-60	MAR 01/04
		PRR 38275-88	MAR 01/07
32-1369 R1	32-28		NOV 01/07

All revisions to this manual will be accompanied by transmittal sheet bearing the revision number. Enter the revision number in numerical order, together with the revision date, the date filed and the initials of the person filing.

Revision		Filed	
Number	Date	Date	Initials

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Temporary Revision		Inserted		Removed	
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Temporary Revision		Inserted		Removed	
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Temporary Revision		Inserted		Removed	
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INTRODUCTION

1. General

A. The instructions in this manual supply the data necessary to do the maintenance functions together with the test, fault isolation, repair, and replacement of the defective parts.

B. This manual is divided into different parts:

(1) Title Page

(2) Transmittal Letter

(3) Highlights

(4) List of Effective Pages

(5) Table of Contents

(6) Temporary Revision & Service Bulletin Record

(7) Record of Revisions

(8) Record of Temporary Revisions

(9) Introduction

(10) Procedures & IPL Sections

C. Components that can be repaired have a different repair number for each specified repair. To find the repair number location of a component, look in the Repair-General procedure at the beginning of the REPAIR section. The Repair-General procedure also has an explanation of the True Position Dimension symbols used.

D. All dimensions, measures, quantities and weights included are in English units. When metric equivalents are given they will be in the parentheses that follow the English units.

E. The introduction to the Illustrated Parts List (IPL) shows how the IPL data is used.

F. Design changes, optional parts, configuration differences and Service Bulletin modifications may cause different part numbers. These part numbers are identified in the IPL with an alphabetical letter which is added to the end of the basic item number. This new item number is referred to as an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless shown differently.

G. The tool reference numbers found in the individual procedures and in the Special Tools, Fixtures, and Equipment section are used to identify if a tool is a standard tool (STD-XXXX), a commercial tool (COM-XXXX), or a Special Tool (SPL-XXXX). This reference number is also used to distinguish between tools with similar names in the same procedure. These reference numbers are for use in the documentation only. They are not to be used for ordering tools.

MAIN LANDING GEAR RETRACT ACTUATOR ASSEMBLY - DESCRIPTION AND OPERATION

1. Description

A. The main landing gear retract actuator assembly has a steel cylinder, a steel piston rod, a rod end, a titanium head end, and a steel rod end.

2. Operation

A. The actuator assembly is used for the extension and the retraction of the main landing gear. When the gear extends, the hydraulic fluid flow out of the end of the actuator is decreased to control the rate of the piston. A snubber installed in the head end assembly controls the rate of the piston at the end of the actuator travel.

3. Leading Particulars (Approximate)

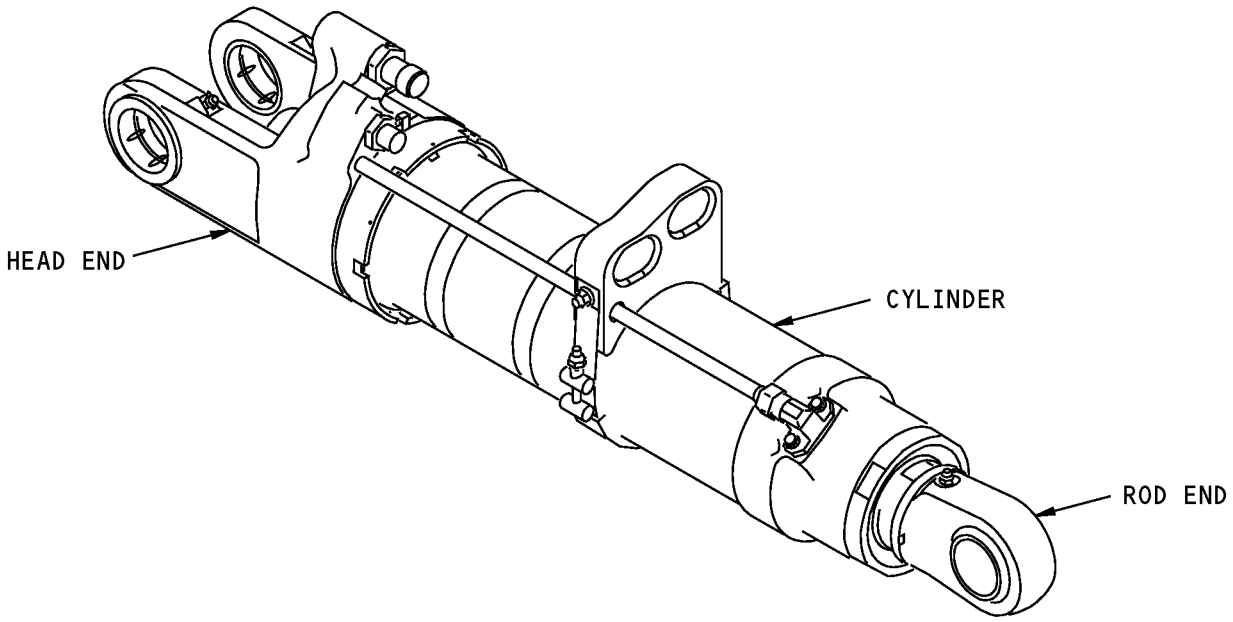
A. Length (bearing to bearing centers) 41.9 inches – min (extended) 27.1 inches – (retracted)

B. Weight (dry) – 41.5 lbs

C. Fluid (operate) – BMS 3-11 Type IV Hydraulic Fluid

D. Pressure (operate) – 3000 psi

E. Pressure (proof) – 4500-4600 psi



Main Landing Gear Retract Actuator Assembly
Figure 1

TESTING AND FAULT ISOLATION

1. General

A. Use this procedure to do a test of the actuator after an overhaul or for fault isolation.

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

C. Refer to IPL Figure 1 for item numbers.

2. Actuator Assembly Test

A. Tools/Equipment

NOTE: Equivalent substitutes may be used.

Reference	Description
SPL-9082	Stand Assemlby (C32038-2 included in C32038-1 Eqpt) (Part #: C32038-2, Supplier: 81205)
SPL-9084	V-Block Assembly (C32038-3 included in C32038-1 Eqpt) (Part #: C32038-3, Supplier: 81205)

B. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00153	Fluid - Hydraulic, Erosion Arresting, Fire Resistant	BMS3-11 Type IV (interchange˜able & intermixable with Type V)
G50347	Lockwire - Nickel-copper, 0.032 inch diameter	NASM20995N˜C32

C. References

Reference	Title
SOPM 20-50-02	INSTALLATION OF SAFETYING DEVICES
SOPM 20-60-03	LUBRICANTS

D. General Conditions

(1) For these tests, hold the actuator assembly in a holding fixture, such as stand assy, SPL-9082.

(2) Ambient conditions

(a) Temperature = 60-100°F

(b) Pressure = 13-17 psi

(c) Relative Humidity = 10-90%

(3) Hydraulic fluid conditions

(a) Use fluid, D00153. The fluid must be continuously filtered through a filter no larger than 15 micron absolute.

(b) Keep the fluid temperature at 60-120°F.

(4) General conditions

(a) Bleed the air from the actuator before each test.

(b) Do not apply compressed air to the ports at any time.

(c) Do not operate the actuator at proof pressure unless indicated in the proof pressure test section.

E. Standard Tools and Equipment

NOTE: Equivalent tool/equipment can be used.

(1) A hydraulic test stand with these requirements.

(a) Can operate with fluid, D00153.

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

F. Prepare for Test

(1) Install the actuator in a fixture such as stand assy, SPL-9082 and V-block, SPL-9084 .

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

(3) Fill the actuator with fluid, D00153.

NOTE: The actuator will be continuously full of fluid, D00153 for each test.

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

(5) Tighten locknut (135).

(a) Hold the piston at mid-stroke.

(b) Apply 3800 psi pressure to the retract port.

(c) Tighten the locknut to 45-55 pound-feet.

(d) Install lockwire, G50347 between the locknut and the head end (SOPM 20-50-02).

G. Procedure

WARNING: DO NOT APPLY AIR PRESSURE TO THE PORTS. THIS CAN CAUSE DAMAGE TO THE UNIT OR INJURY TO YOU.

NOTE: For disassembly, refer to DISASSEMBLY. For assembly, refer to ASSEMBLY. For lubricants, refer to SOPM 20-60-03.

(1) Do a proof pressure test.

CAUTION: DO NOT EXTEND OR RETRACT THE PISTON AT PROOF PRESSURE (4500-4600 PSI).

(a) Retract the actuator fully.

(b) Apply 4500-4600 psi pressure to the retract port for a minimum of 30 seconds.

(c) Make sure there is no sign of external leakage or permanent damage to the actuator.

(d) Remove the pressure from the retract port.

(e) Extend the actuator fully.

(f) Apply 4500-4600 psi pressure to the extend port for a minimum of 30 seconds.

(g) Make sure there is no sign of external leakage or permanent damage to the actuator.

(h) Remove the pressure from the extend port.

(2) Do an external leakage test.

(a) Clean around the dynamic rod seal to permit leak detection.

(b) Operate the actuator for 25 full cycles at a rate of approximately 1 cycle per minute:

CAUTION: DO NOT PERMIT THE PISTON TO APPROACH THE BOTTOM OF THE TRAVEL AT MORE THAN 0.50 INCH PER SECOND.

1) Fully retract the actuator.

2) Apply 500-3100 psi pressure to the extend port.

3) Increase the pressure to 3000-3100 psi when the actuator stops at the end of the piston travel.

4) Remove the pressure from the extend port.

CAUTION: DO NOT PERMIT THE PISTON TO APPROACH THE BOTTOM OF THE TRAVEL AT MORE THAN 0.50 INCH PER SECOND.

5) Change the fluid, D00153 direction.

NOTE: The actuator is in the fully extended position.

6) Apply 500-3100 psi pressure to the retract port.

7) Increase the pressure to 3000-3100 psi when the actuator stops at the end of the piston travel.

8) Remove the pressure from the retract port.

9) Do steps 1-8 for 25 full cycles.

(c) After 25 cycles, do a visual check for leakage.

1) The leakage limit for any dynamic rod seal is 2 drops.

2) The leakage limit for static seals is zero.

(3) Do a friction test.

(a) Retract the actuator fully. Make sure the rod end is free to move. Make sure the retract port is open to the atmosphere.

(b) Increase the pressure to the extend port slowly.

1) The rod must move smoothly and continuously.

2) The actuator must extend fully with a maximum differential pressure of 50 psid.

NOTE: You can increase the pressure at the end of the piston travel to allow for snubber operation.

(c) Remove the pressure applied to the ports.

(d) Make sure the actuator is fully extended.

(e) Increase a pressure to the retract port slowly.

1) The rod must move smoothly and continuously.

2) The rod must retract fully with a maximum differential of 50 psid.

NOTE: You can increase the pressure at the end of the piston travel to allow for snubber operation.

3) Remove the pressure applied to the ports.

(4) Do an internal leakage test.

(a) Fully extend the rod.

(b) Remove the hydraulic line from the retract port.

(c) Apply 3000-3100 psi to the extend port.

(d) Do a visual check for leakage from the open retract port.

1) The leakage limit is 1 cc per minute.

(e) Remove the pressure from the extend port.

(f) Attach the hydraulic line to the retract port.

(g) Fully retract the rod.

(h) Remove the hydraulic line from the extend port.

(i) Apply 3000-3100 psi to the retract port.

(j) Do a visual check for leakage from the open extend port.

1) The leakage limit is 1 cc per minute.

(k) Remove the pressure from the retract port.

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

(5) Do an extend snubber operation test.

(a) Start with the piston fully retracted, and not loaded.

(b) Increase the pressure to the extend port to a differential pressure of 950-1050 psi between the 2 ports to move the actuator.

1) Do a visual check of the motion of the actuator. Make sure the actuator moves smoothly from the fully retracted position to the fully extended position.

2) Also record the time the actuator moves from fully retracted to fully extended. Make sure this time is 7-8 seconds.

(c) Remove the pressure applied to the ports.

(6) Do a retract snubber operation test.

(a) Make sure the actuator is fully extended.

(b) Increase the pressure to the retract port to a differential pressure of 2900-3100 psi between the two ports to move the actuator.

1) Visually check the motion of the actuator. Make sure the actuator moves smoothly from the fully extended position to the fully retracted position.

2) Also record the time the actuator moves from fully extended to fully retracted. Make sure this time is 9.5-10.5 seconds.

(c) Remove the pressure applied to the ports.

(7) Remove the actuator from the stand assy, SPL-9082 and V-block, SPL-9084.

(8) Fill the unit with fluid, D00153 and install the shipping caps.

3. Fault Isolation

A. Refer to TESTING AND FAULT ISOLATION, Table 101 for fault isolation.

Table 101: Trouble Shooting Chart

TROUBLE	PROBABLE CAUSE	CORRECTION
External leakage at head end	Defective seal between head end plug assembly and the barrel.	Disassemble and replace packing (65) and backup rings (50,55) as shown in TESTING AND FAULT ISOLATION, Paragraph 4.C.(1) par. 4.A.
External leakage at rod end	Bearing (340) not tightened correctly.	Tighten bearing (340) to 1200-1400 inch-pounds.
	Defective seal between rod end plug assembly and the barrel.	Disassemble and replace packing and backup rings as shown in TESTING AND FAULT ISOLATION, Paragraph 4.C.(1) par. 4.A.
	Defective seals at rod end.	Disassemble and replace seal parts as necessary. Refer toTESTING AND FAULT ISOLATION, Paragraph 4.C.(1) par. 4.A.
Internal leakage	Defective piston seals.	Disassemble and replace piston seal as shown in TESTING AND FAULT ISOLATION, Paragraph 4.C.(1) par. 4.A.
Snubbing out of limits	Defective snubber assembly.	Disassemble and replace rings as shown in TESTING AND FAULT ISOLATION, Paragraph 4.C.(1) par. 4.A.
	Defects or contamination between piston, barrel, and head end plug.	Disassemble the actuator then clean as necessary and assembly the actuator.

4. Corrective Procedures

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00153	Fluid - Hydraulic, Erosion Arresting, Fire Resistant	BMS3-11 Type IV (interchange˜able & intermixable with Type V)

B. References

Reference	Title
SOPM 20-50-01	BOLT AND NUT INSTALLATION
SOPM 20-60-03	LUBRICANTS

C. Procedure

NOTE: For bolt and nut installation, refer to SOPM 20-50-01. For lubricants, refer to SOPM 20-60-03.

(1) Drain fluid, D00153 from the actuator.

(2) Disassemble the actuator (DISASSEMBLY).

(3) Replace the defective parts.

(4) Assemble the actuator (ASSEMBLY).

(5) Do the test again as shown in TESTING AND FAULT ISOLATION, Paragraph 2.

DISASSEMBLY

1. General

A. This procedure has the data necessary to disassemble the main gear retract actuator assembly.

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

C. Refer to IPL Figure 1 for item numbers.

2. Disassembly

A. General

(1) To disassemble the actuator, it is necessary to hold the actuator in the holding fixture.

B. Special Tools

NOTE: Equivalent tool can be used.

(1) C32038-2 – Stand Assembly

(2) C32038-45 – Retract Rod End Wrench

(3) C32038-37 – Retract Wrench Assembly

(4) C32038-3 – V-Block Assembly

C. Part Replacement

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

(1) Packings, O-rings and seals (20, 25, 50, 55, 60, 65, 145, 215, 220, 225, 230, 345, 350, 360)

NOTE: Do not remove orifice (206, 207) or insert (190, 370) unless it is damaged or to clean the area.

(2) Washer (85, 90, 205, 270, 295, 300)

D. Procedure

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

(2) Install the actuator assembly (1B) on the C32038-2 stand assembly and the C32038-3 V-block assembly.

(3) Remove the lockwire from the nut (135), and the head end assembly (155).

(4) Remove the end assembly (120) and the cup lockwasher (115) from the gland nut bearing (340).

(5) Bend the tab of the lockwasher (115) to release the bearing (340).

(6) Loosen the bearing (340) in the cylinder (365).

(7) Remove the bolts (30), the washers (35), and the fitting (45) from the cylinder (365).

(8) Remove the nut (40) and the transfer tube assembly (70).

(9) Remove the bolt (80), the washers (85, 90), the nut (95), the guide clamp (100), and the hose guide (105).

(10) Remove the nut (135) and the key (140) from the head end assembly (155).

(11) Remove the bearing (340) and the lockwasher (335) from the cylinder (365).

(12) Remove the cylinder (365) from the head end assembly (155).

(13) Remove the piston (320) from the head end assembly (155).

(14) Remove the bolt (265), the washer (270) and the guide assembly (275) from the piston (320).

(15) Remove the seal (315B) from the piston (320).

(16) Remove the snubber stop (310) from the pull tube (235).

(a) Loosen the nut (305).

(b) Remove the nut (305), the washers (295,300), the bolt (290) and the snubber stop (310) from the pull tube (235).

(17) Remove the guide assembly (275) from the pull tube (235).

(18) Remove the bolts (200) and washers (205) from the retainer (210).

(19) Remove the retainer (210), the snubber assembly (245), the spring (240) and the pull tube (235) from the head end assembly (155).

(20) Remove the head end assembly (155) from the C32038-2 stand assembly and the C32038-3 V-block assembly.

(21) Remove the packing (150) and the backup rings (345) from the head end assembly (155).

CLEANING

1. General

A. This procedure has the data necessary to clean the main gear retract actuator assembly.

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

C. Refer to IPL Figure 1 for item numbers.

2. Cleaning

A. References

Reference	Title
SOPM 20-30-01	CLEANING AND RELUBRICATING BEARINGS
SOPM 20-30-03	GENERAL CLEANING PROCEDURES

B. Procedure

(1) Clean bearings (110, 340) by the instructions in SOPM 20-30-01.

(2) Clean all other parts by standard industry procedures and the instructions in SOPM 20-30-03.

CHECK

1. **General**
   A. This procedure tells how to find defects in 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 the SOPM subjects identified in this procedure.
   D. Refer to IPL Figure 1 for item numbers.
2. **Check**
   A. Procedure
      (1) Use standard industry procedures to do a visual check of all the parts for defects.
      (2) Magnetic particle examine (SOPM 20-20-01) these parts.
         (a) Fitting (45)
         (b) Rod end (130)
         (c) Key (140)
         (d) Retainer (210)
         (e) Pull tube (235A)
         (f) Slide-Extend (250)
         (g) Slide-Retract (255)
         (h) Sleeve (260)
         (i) Piston (330)
         (j) Cylinder (375)
      (3) Do a penetrant check (SOPM 20-20-02) of these parts.
         (a) Ball Bearing (110)
         (b) Lockwasher Cup (115)
         (c) Locknut (135)
         (d) Head End (195)
         (e) Spring (240)
         (f) Guide (275A)
         (g) Guide (285)
         (h) Stop (310)
         (i) Lockwasher Cup (335)
         (j) Bearing (340)
      (4) Spring (240) check
         (a) The load must be 15.0-17.0 pounds when the spring is compressed to 2.70 inches.
         (b) The load must be 34.60-36.60 pounds when the spring is compressed to 1.30 inches.
         (c) Approximate free length is 3.84 inches.

REPAIR

1. General

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

Table 601:

PART NUMBER	NAME	REPAIR
—	REFINISH OF OTHER PARTS	1-1
273A2102	CYLINDER	2-1, 2-2
273A2103	HEAD END	3-1, 3-2
273A2104	PISTON	4-1, 4-2
273A2105	ROD END	5-1, 5-2
273T0050	NAMEPLATE AND STRAP INSTALLATION	6-1, 6-2

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 the SOPM subjects identified in this procedure.

C. Refer to IPL Figure 1 for item numbers.

2. Refinish of other parts

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00113	Lubricant - Liquid Dispersed Solid Film Lubricant	BMS3-8, BAC 5811, TYPE VIII

B. References

Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

C. General

(1) Instructions for the repair of these parts are for replacement of the original finish.

D. Procedure

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

(1) Refer to REPAIR 1-1, Table 601 for refinish details.

Table 601: Refinish Details

IPL FIG. & ITEM	MATERIAL	FINISH
IPL FIG. 1		
Fitting (45)	15-5 PH CRES 180-200 ksi	Passivate (F-17.25).
Transfer Tube (70)	21-6-9 CRES Tubing	Thin dense chrome plate (F-15.43) one inch on end opposite the sleeve. Passivate (F-17.25) all other surfaces.
Guide Hose (105A)	Nylon	No finish (F-25.01).
Ball Bearing (110)	AL-NI-Bronze	No finish (F-25.01).
Cup-Lockwasher (115)	301 CRES Sheet	Passivate (F-17.25).

Table 601: Refinish Details (Continued)

IPL FIG. & ITEM	MATERIAL	FINISH
Locknut (135)	15-5 PH CRES 180-200 ksi	Passivate (F-17.25) and apply solid film lubricant, D00113 (F-19.10).
	TI-6AL-4V	Apply MIL-L-46010, Type 2 or 3 (F-19.82), MIL-L-23398 (F-19.90), or solid film lubricant, D00113 (F-19.10).
Key (140)	15-5 PH CRES 150-170 ksi	Passivate (F-17.25).
Bushing (160)	AL-NI-Bronze	No finish (F-25.01).
Retainer (210)	15-5PH CRES 180-200 ksi	Passivate (F-17.25).
Tube-Pull (235A)	15-5 PH CRES 150-170 ksi	Passivate (F-17.25).
Spring (240)	TI-3AL-8V-6CR-4MO-4ZR	No finish (F-25.01).
Slide-Extend (250)	440C CRES, Rc 57-60	Passivate (F-17.25).
Slide-Retract (255)	440C CRES, Rc 57-60	Passivate (F-17.25).
Sleeve (260)	440C CRES, Rc 57-60	Passivate (F-17.25).
Guide (275A)	Aluminum alloy	Boric acid-sulfuric acid anodize or chromic acid anodize (F-17.35).
Guide (285)	Aluminum alloy	Boric acid-sulfuric acid anodize or chromic acid anodize (F-17.35).
Stop (310)	Aluminum alloy	Anodize (F-17.35).
Cup- Lockwasher (335)	301 CRES 1/4 Hard	Passivate (F-17.25).
Bearing (340)	CU-BE	No finish (F-25.01).

CYLINDER ASSEMBLY - REPAIR 2-1

273A2102–1, –3, –5, –7

1. General

A. Use this procedure to replace the inserts of cylinder assembly (365).

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

C. Refer to IPL Figure 1 for item numbers.

2. Insert Replacement

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
C00259	Primer - Chemical And Solvent Resistant Finish, Epoxy Resin	BMS10-11, Type I

B. References

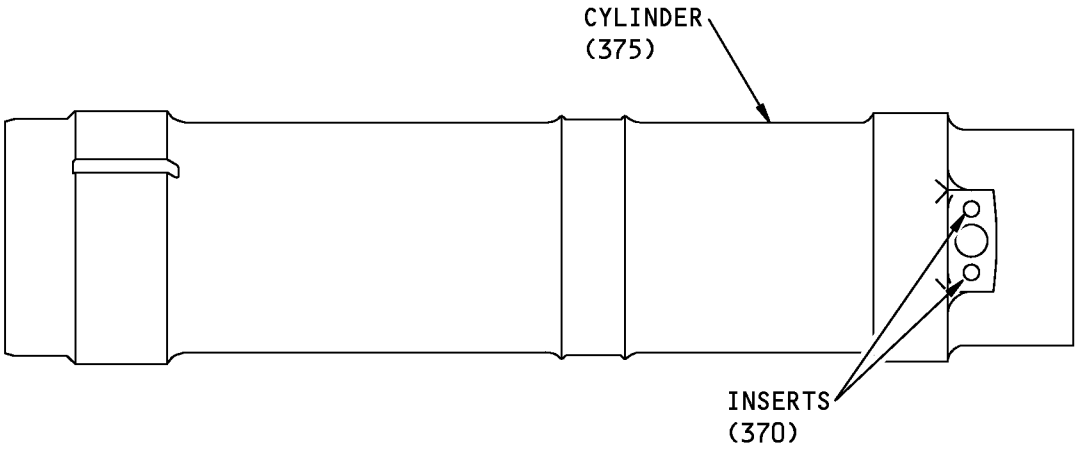
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-50-22	HOW TO INSTALL THREADED INSERTS
SOPM 20-60-02	FINISHING MATERIALS

C. Procedure

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

(1) Remove the old inserts (370) from the cylinder (375).

(2) Install replacement inserts (370) with wet primer, C00259 (F-20.20) (SOPM 20-50-22).



ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

F98765 S0004998966_V2

273A2102-1,-3, -5, -7 Cylinder Assembly Repair
Figure 601

CYLINDER - REPAIR 2-2

273A2102–2, –4, –6, –8

1. General

A. Use this procedure to repair and refinish cylinder (375).

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

C. Refer to the REPAIR-GENERAL, Paragraph 2. for the Standard True Position Dimensioning Symbols shown in the repair.

D. Refer to IPL Figure 1 for item numbers.

E. General repair details:

(1) Material: 15-5PH CRES

(a) Heat treat: As shown in REPAIR 2-2, Figure 601, REPAIR 2-2, Figure 602, and REPAIR 2-2, Figure 603.

(b) Shot peen: As shown in REPAIR 2-2, Figure 601, REPAIR 2-2, Figure 602, and REPAIR 2-2, Figure 603.

2. Repair (Cylinders 273A2102-2, -4 only)

A. References

Reference	Title
SOPM 20-10-02	MACHINING OF ALLOY STEEL
SOPM 20-10-03	SHOT PEENING
SOPM 20-10-04	GRINDING OF CHROME PLATED PARTS
SOPM 20-20-01	MAGNETIC PARTICLE INSPECTION
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-42-03	HARD CHROME PLATING
SOPM 20-42-09	ELECTRODEPOSITED NICKEL PLATING
SOPM 20-60-02	FINISHING MATERIALS

B. Procedure (REPAIR 2-2, Figure 601 and REPAIR 2-2, Figure 602)

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

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

(2) Blend diameter transitions between the zones to 20 to 1 ratio.

(3) Magnetic particle examine (SOPM 20-20-01).

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

(5) Fill blends with nickel plate (SOPM 20-42-09). Machine the nickel plate flush to 0.002 inch above the cylindrical surface.

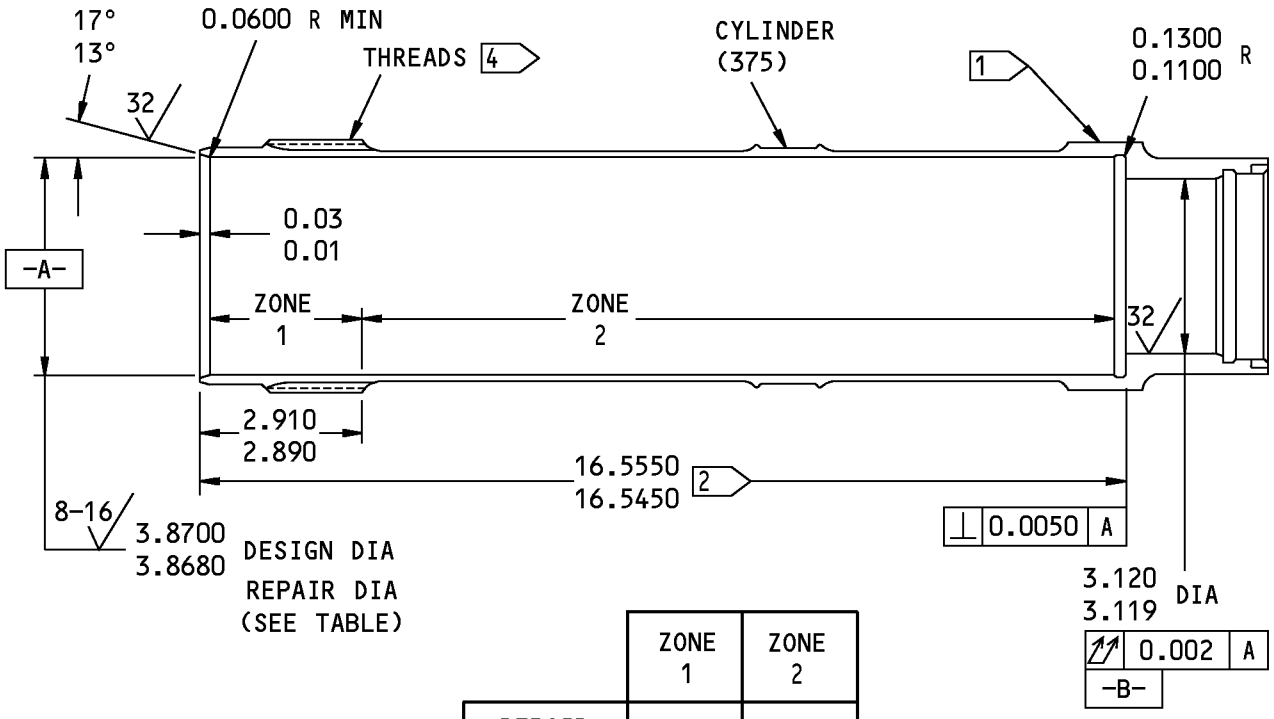
(6) Build up the cylindrical surface with chrome plate (SOPM 20-42-03).

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

(8) If necessary, change the cylinder part number from 273A2102-2 to 273A2102-8, to identify it as a repaired version of the 273A2102-2 cylinder.

3. Refinish

A. See REPAIR 2-2, Figure 601 or REPAIR 2-2, Figure 602, or REPAIR 2-2, Figure 603, as applicable.



	ZONE 1	ZONE 2
REPAIR LIMIT 5	3.9100	3.8970

REFINISH

CHROME PLATE DIA -A- AS SHOWN BY 3. PASSIVATE (F-17.25) OTHER SURFACES. APPLY SOLID FILM LUBRICANT AS SHOWN BY 4.

1. PART NUMBER LOCATION
2. SHOT PEEN ONLY IF CHROME PLATE WILL BE APPLIED
3. CHROME PLATE (F-15.34)
4. APPLY TYPE 6 SOLID FILM LUBRICANT (F-19.10)
5. LIMIT FOR CHROME PLATE BUILDUP AND GRIND TO DESIGN DIMENSIONS AND FINISH (MAKES A 273A2102-8 CYLINDER)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK ALL SHARP EDGES

SHOT PEEN (SOPM 20-10-03)
0.017-0.046 SHOT SIZE
0.005-0.010A2 INTENSITY

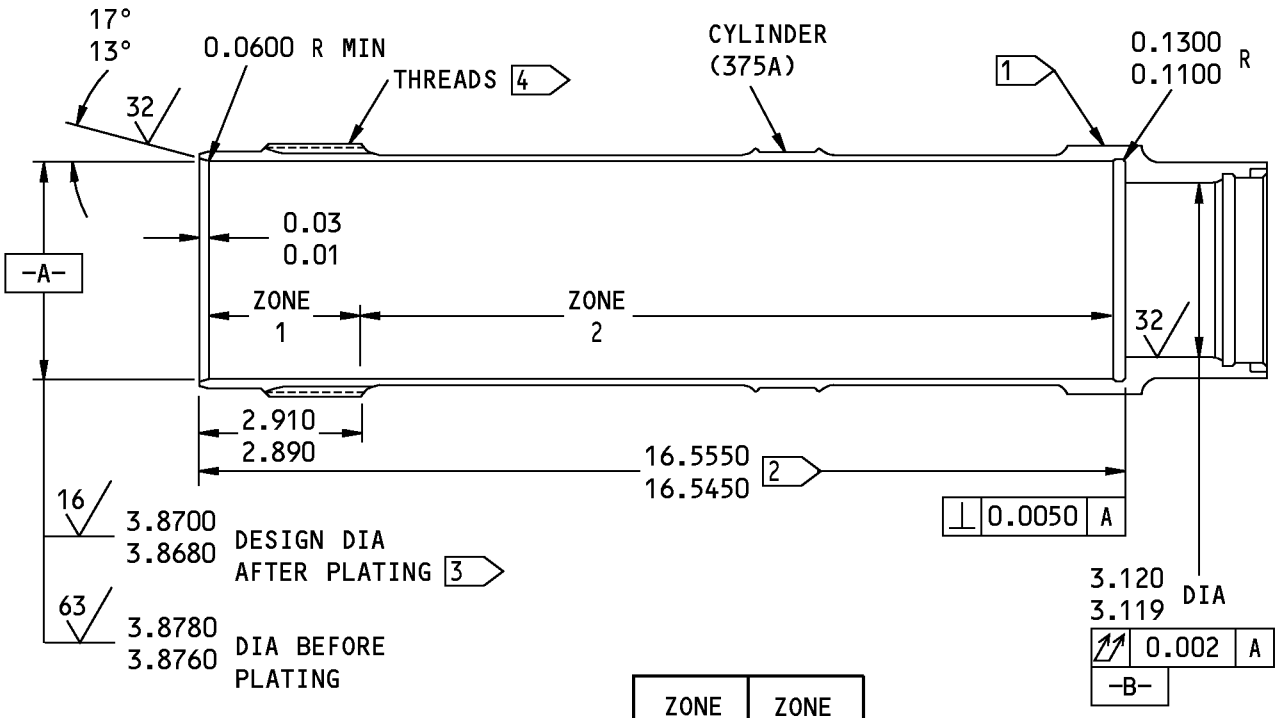
MATERIAL: 15-5PH CRES,
180-200 KSI

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

F98764 S0004998969_V2

273A2102-2, -8 Cylinder Repair and Refinish
Figure 601



	ZONE 1	ZONE 2
REPAIR LIMIT 5	3.9100	3.8970

REFINISH

CHROME PLATE DIA -A- AS SHOWN BY 3. PASSIVATE (F-17.25) OTHER SURFACES. APPLY SOLID FILM LUBRICANT AS SHOWN BY 4.

1. PART NUMBER LOCATION
2. SHOT PEEN BEFORE CHROME PLATE
3. CHROME PLATE (F-15.34)
4. APPLY TYPE 6 SOLID FILM LUBRICANT (F-19.10)
5. LIMIT FOR CHROME PLATE BUILDUP AND GRIND TO DESIGN DIMENSIONS AND FINISH

REPAIR

REF 5

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK ALL SHARP EDGES

SHOT PEEN (SOPM 20-10-03)
0.017-0.046 SHOT SIZE
0.010-0.015A2 INTENSITY

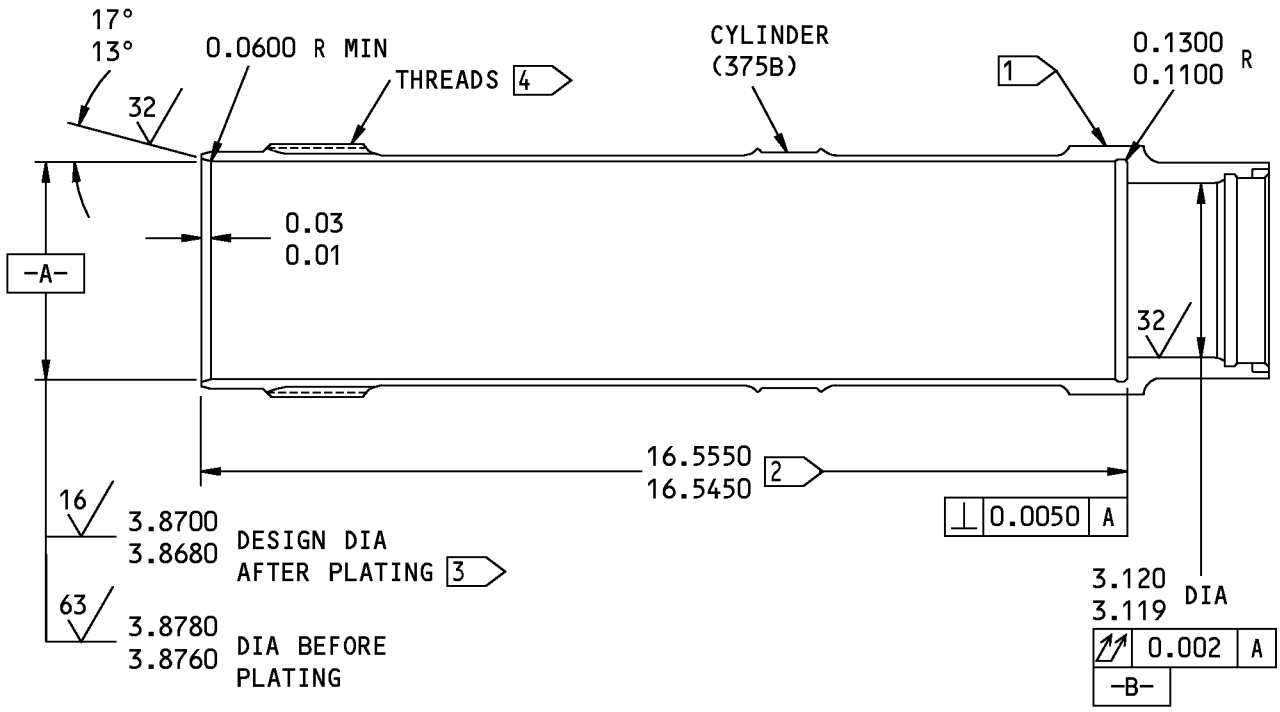
MATERIAL: 15-5PH CRES,
180-200 KSI

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

W79072 S0004998970_V2

273A2102-4 Cylinder Refinish
Figure 602



REFINISH

CHROME PLATE DIA -A- AS SHOWN BY 3. PASSIVATE (F-17.25) OTHER SURFACES. APPLY SOLID FILM LUBRICANT AS SHOWN BY 4.

1. PART NUMBER LOCATION
2. SHOT PEEN BEFORE CHROME PLATE
3. CHROME PLATE (F-15.34)
4. APPLY TYPE 6 SOLID FILM LUBRICANT (F-19.10)

REPAIR

(SAME AS REFINISH)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK ALL SHARP EDGES

SHOT PEEN (SOPM 20-10-03)
0.017-0.046 SHOT SIZE
0.005-0.010 A2 INTENSITY

MATERIAL: 15-5PH CRES,
150-170 KSI

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

1454625 S0000254838_V2

273A2102-6 Cylinder Refinish
Figure 603

HEAD END ASSEMBLY - REPAIR 3-1

273A2103–1

1. General

A. This procedure tells how to replace the parts of head end assembly (155).

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

C. Refer to IPL Figure 1 for item numbers.

2. Plug, Fitting, Pin, Orifice, Insert Replacement

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS 5-95

B. References

Reference	Title
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-50-04	INSTALLATION OF PERMANENT PINS AND PLUGS IN DRILL PASSAGES
SOPM 20-60-02	FINISHING MATERIALS
SOPM 20-60-04	MISCELLANEOUS MATERIALS

C. Procedure

NOTE: For decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02. For miscellaneous materials, refer to SOPM 20-60-04

(1) Remove the plugs (175, 180), pins (165, 170), orifices (192, 193), insert (190) and fitting (185) from the head end assy (155).

(2) Install replacement plugs (175, 180), pins (165, 170), orifices (206, 207), insert (190), and fittings (185) as shown in REPAIR 3-1, Figure 601.

(a) Apply sealant, A00247 to the surfaces noted by flagnote 8.

(b) Install the orifices (192, 193) and plugs (175, 180) as shown in flagnote 1 and SOPM 20-50-04.

(c) Install the insert (190) as shown in SOPM 20-50-04. Do not apply primer on the surface. Obey flagnote 2.

(d) Apply 20-25 inch-pounds torque to the part noted by flagnote 9.

(e) Obey all other flagnotes in REPAIR 3-1, Figure 601.

3. Bushing Replacement

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
A00551	Sealant - Fuel Tank	BAC5010, Type 44 (BMS5-44, BMS5-45)

B. References

Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-50-03	BEARING AND BUSHING REPLACEMENT
SOPM 20-60-02	FINISHING MATERIALS
SOPM 20-60-04	MISCELLANEOUS MATERIALS

C. Procedure

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02For decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02. For miscellaneous materials, refer to SOPM 20-60-04

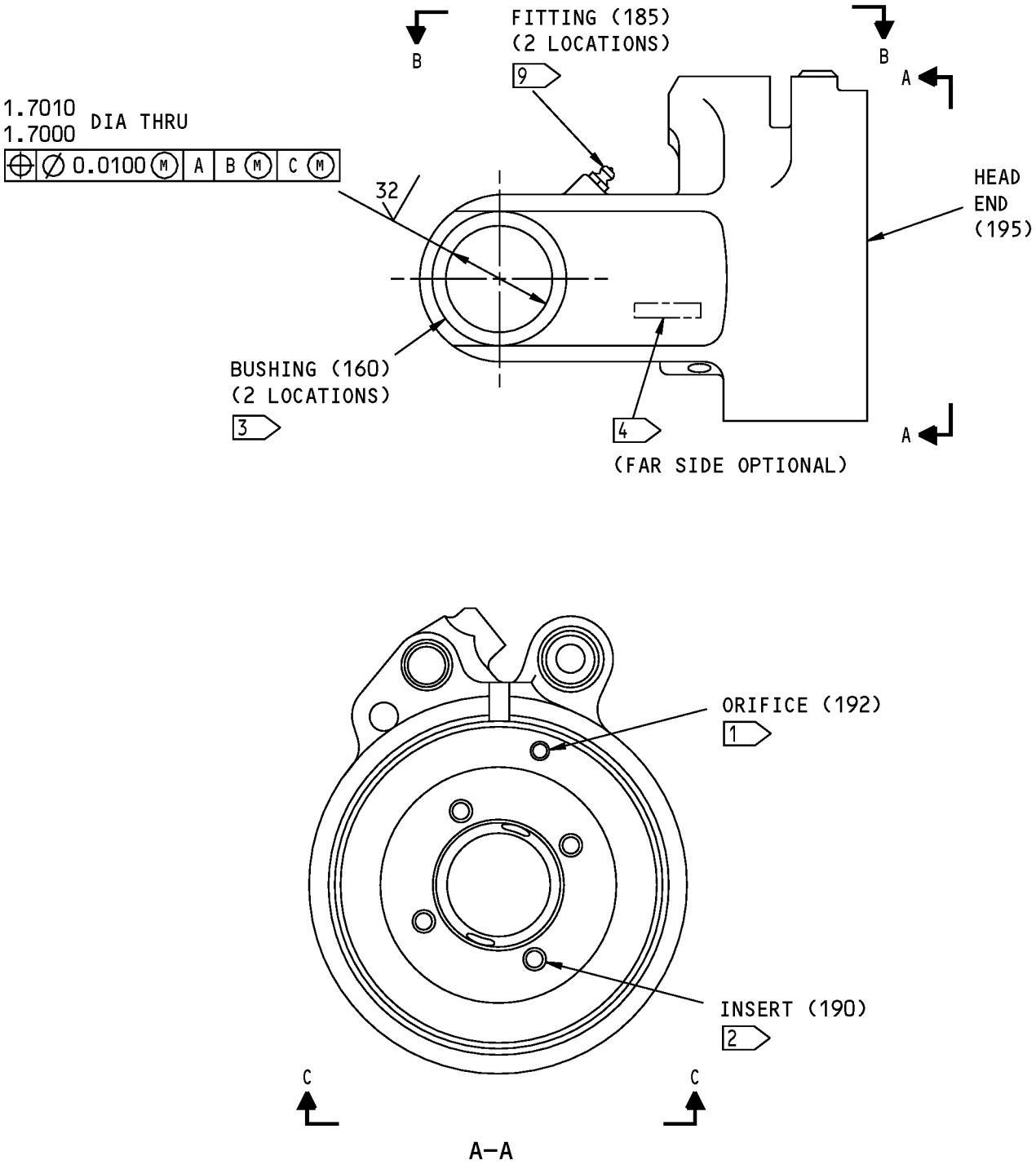
(1) Remove the old bushings (160) from the head end assembly (155).

(2) If you find defects on the head end surfaces, refer to REPAIR 3-2 for repair instructions.

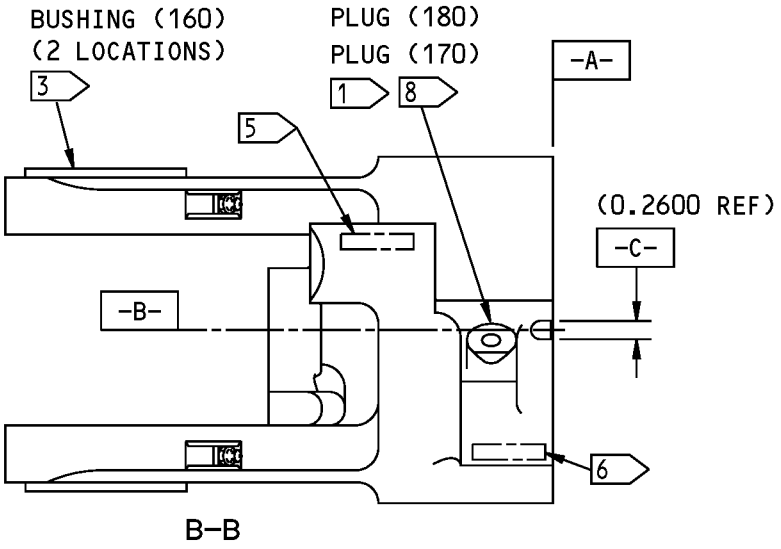
(3) Install replacement bushings by the shrink-fit procedure (SOPM 20-50-03).

(4) Machine the bushings to the design dimensions and finish shown on REPAIR 3-1, Figure 601, (Sheet 1).

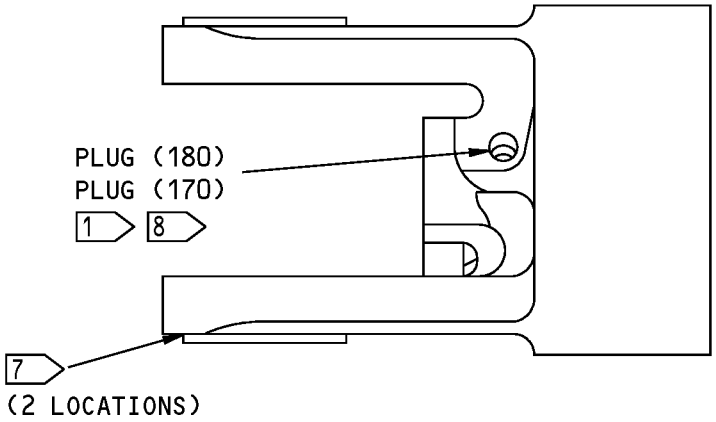
(5) Apply fillet sealant, A00551 to the surfaces noted by flagnote 7.



273A2103-1 Head End Assembly Repair
Figure 601 (Sheet 1 of 2)



B–B



C–C

1. INSTALL AS SHOWN IN SOPM 20-50-04
2. INSTALL AS SHOWN IN SOPM 20-50-04. DO NOT APPLY PRIMER ON THIS SURFACE
3. USE THE SHRINK-FIT PROCEDURE TO INSTALL THE BUSHING AS SHOWN IN SOPM 20-50-03
4. THE PART NUMBER IS FOUND HERE.
5. EXTEND (EXT) PORT IDENTIFICATION
6. RETRACT (RET) PORT IDENTIFICATION
7. APPLY BMS 5-26 FILLET SEAL
8. FILL THE ENTIRE CAVITY WITH BMS 5-26 SEALANT
9. APPLY 20-25 POUND-INCHES TORQUE

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

273A2103-1 Head End Assembly Repair
Figure 601 (Sheet 2 of 2)

HEAD END - REPAIR 3-2

273A2103–2

1. General

A. This procedure has the data necessary to repair the head end (195).

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

C. Refer to the REPAIR-GENERAL, Paragraph 2. for the Standard True Position Dimensioning Symbols shown in the repair.

D. Refer to IPL Figure 1 for item numbers.

E. General repair details:

(1) Material: Titanium alloy, Ti-6Al-4V

2. Head End Repair

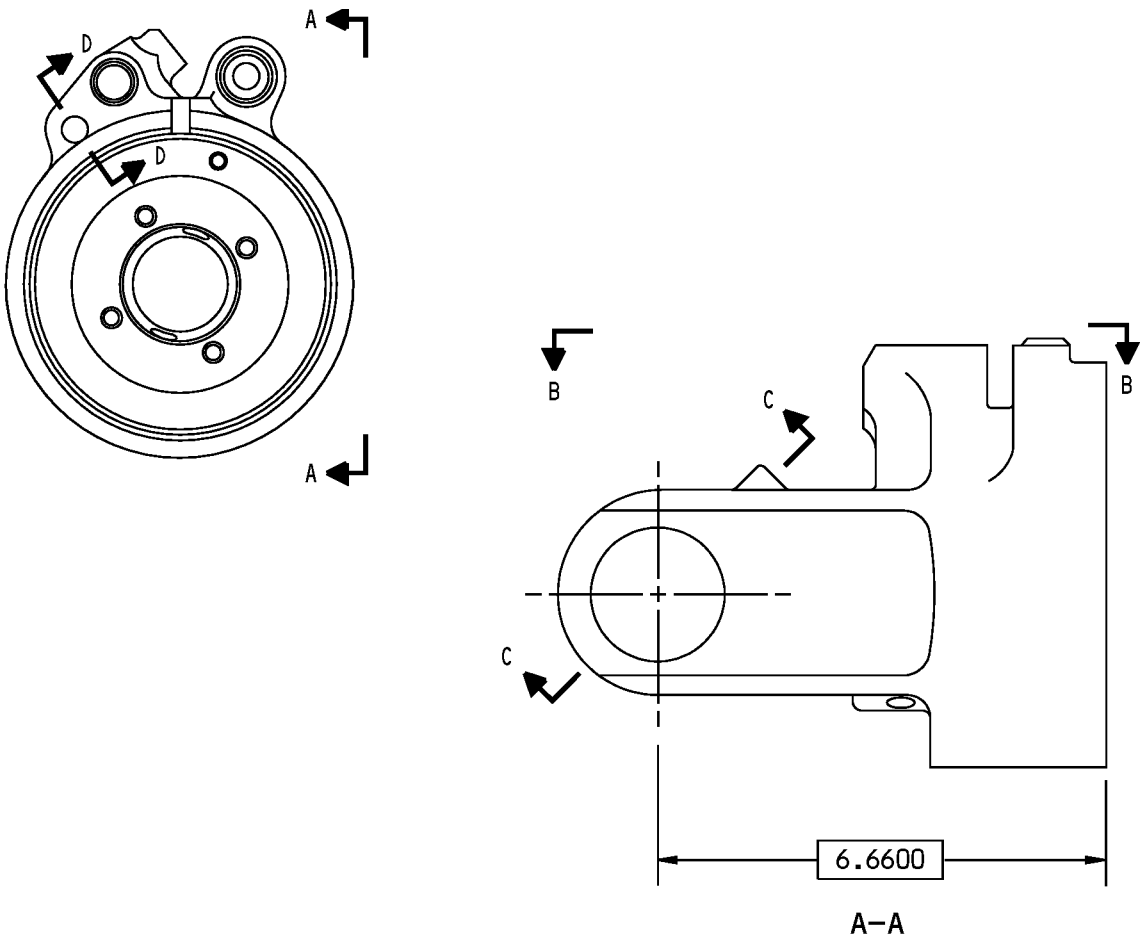
A. Procedure (REPAIR 3-2, Figure 601)

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

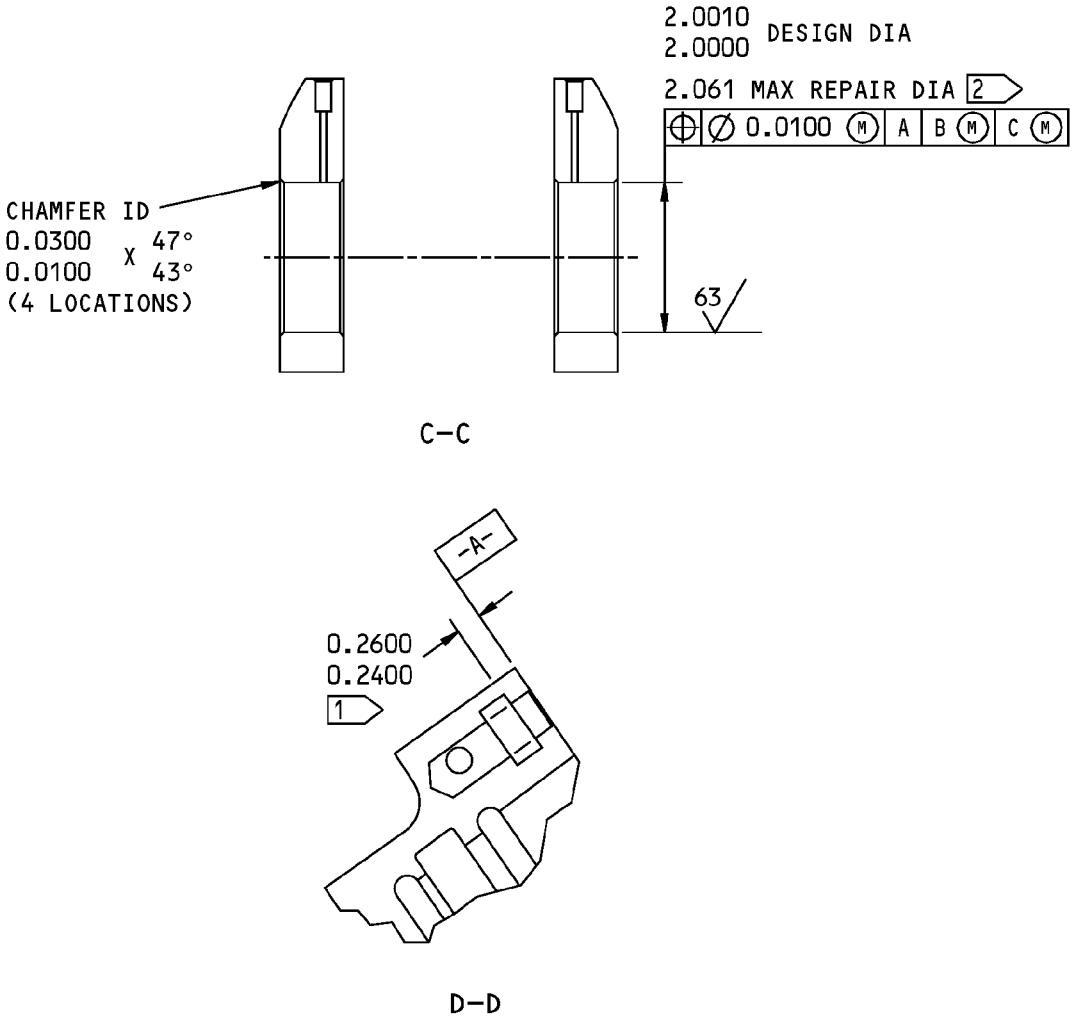
(1) Machine as required, within repair limits, to remove defects (SOPM 20-10-07).

(2) Make oversize bushings (REPAIR 3-2, Figure 602), as necessary to adjust for the material removed.

(3) Install the bushings as shown in REPAIR 3-1.



273A2103-2 Head End Repair
Figure 601 (Sheet 1 of 2)



1 APPLY PHOSPHATE-FLUORIDE LAYER HERE. DO NOT APPLY A FINISH TO THE O-RING GROOVE.

2 REPAIR DIAMETER FOR OVERSIZED BUSHING INSTALLATION.

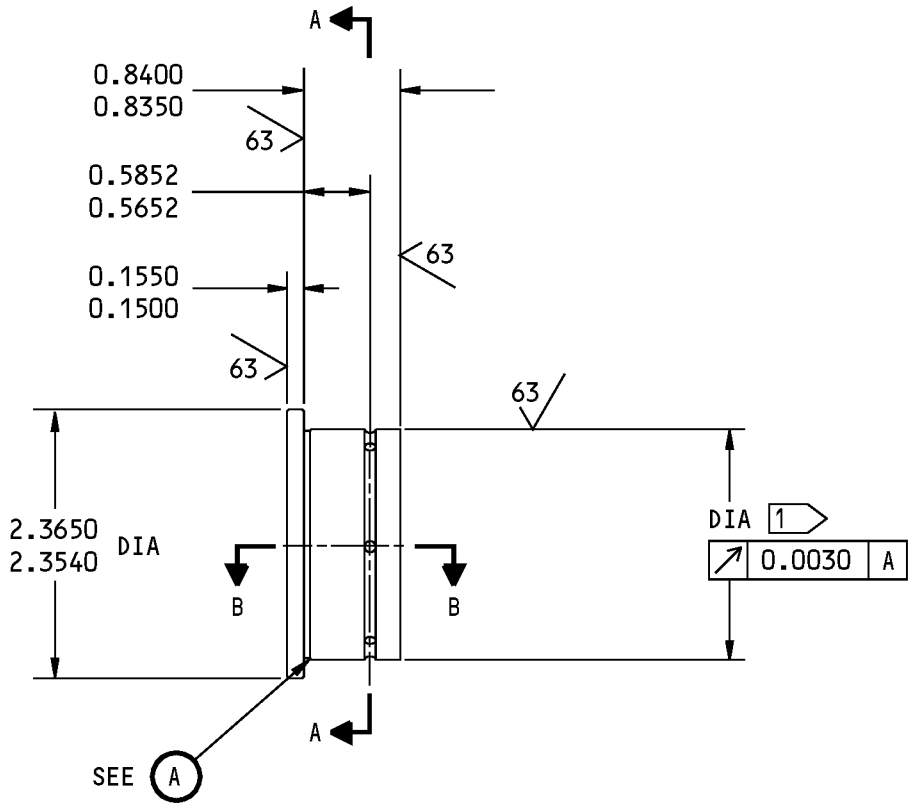
125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK ALL SHARP EDGES

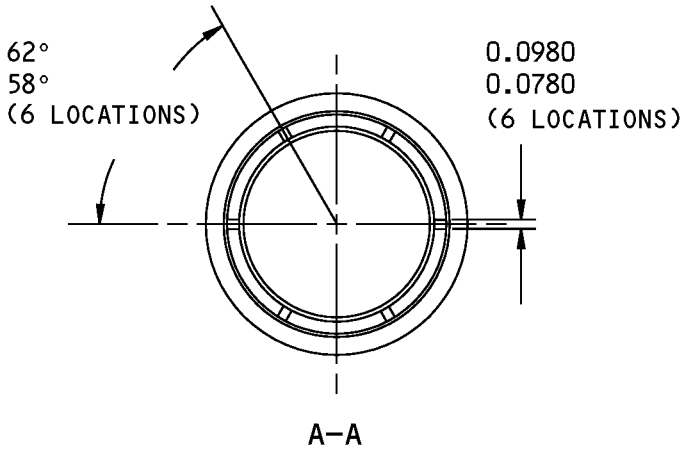
ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

273A2103-2 Head End Repair
Figure 601 (Sheet 2 of 2)

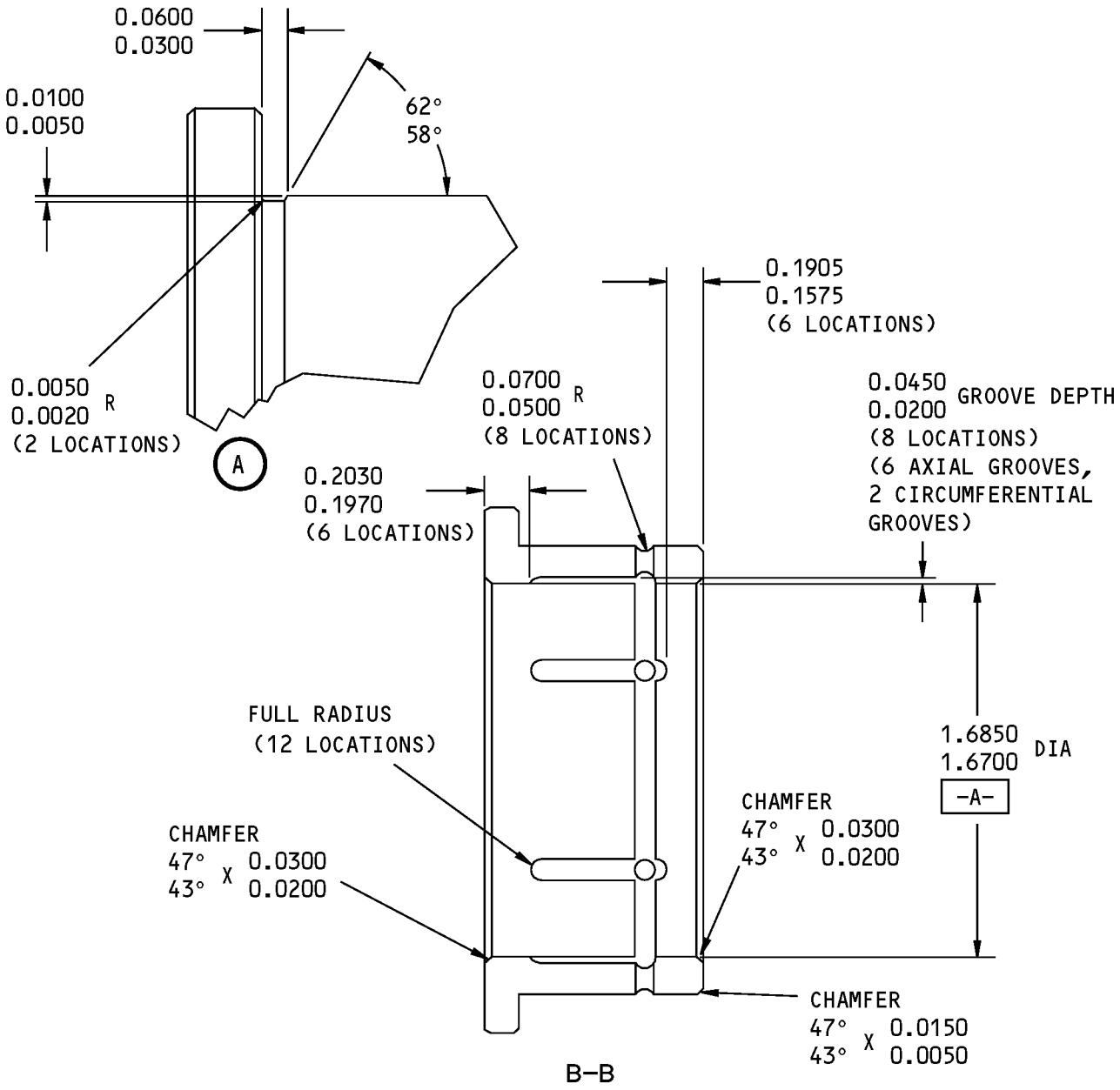


REPLACES 273A2123-1
BUSHING (160)



A-A

273A2123-1 Oversized Bushing Details
Figure 602 (Sheet 1 of 2)



1 REPAIR DIAMETER OF LUG HOLE (FIG. 601) PLUS INTERFERENCE 0.0031 - 0.0020 INCHES.

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: AL-NI BRONZE PER AMS 4640

BREAK ALL SHARP EDGES

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

273A2123-1 Oversized Bushing Details
Figure 602 (Sheet 2 of 2)

PISTON ASSEMBLY - REPAIR 4-1

273A2104–1, –3

1. General

A. This procedure has the data necessary to replace the inserts (325) of the piston assy (320).

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

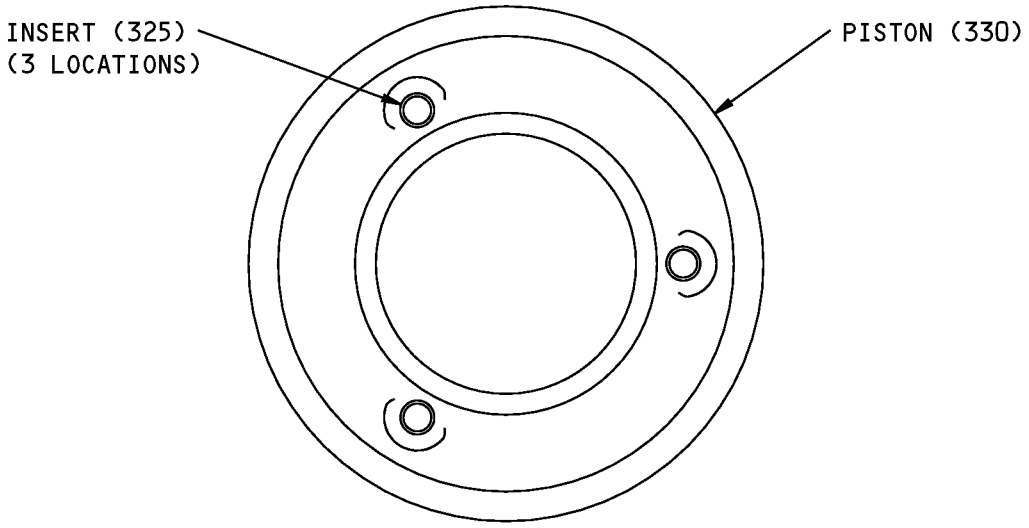
C. Refer to IPL Figure 1 for item numbers.

2. Insert Replacement

A. Procedure

(1) Remove the old inserts (325) from the piston assembly (320).

(2) Install replacement inserts (325) (SOPM 20-50-22).



ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

273A2104-1,-3 Piston Assembly Repair
Figure 601

PISTON - REPAIR 4-2

273A2104–2, –4

1. General

A. This procedure has the data necessary to repair the piston (330).

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

C. Refer to the REPAIR-GENERAL, Paragraph 2. for the Standard True Position Dimensioning Symbols shown in the repair.

D. Refer to IPL Figure 1 for item numbers.

E. General repair details:

(1) Material: 15-5PH CRES

(2) Shot peen: Intensity 0.005-0.010A2

(a) Coverage 2.0

(b) Shot Size 0.017-0.046

2. Piston Repair

A. References

Reference	Title
SOPM 20-10-01	REPAIR AND REFINISH OF HIGH STRENGTH STEEL PARTS
SOPM 20-10-02	MACHINING OF ALLOY STEEL
SOPM 20-10-03	SHOT PEENING
SOPM 20-10-04	GRINDING OF CHROME PLATED PARTS
SOPM 20-20-01	MAGNETIC PARTICLE INSPECTION
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-42-03	HARD CHROME PLATING
SOPM 20-42-09	ELECTRODEPOSITED NICKEL PLATING
SOPM 20-60-02	FINISHING MATERIALS

B. Procedure (REPAIR 4-2, Figure 601, REPAIR 4-2, Figure 602)

NOTE: For repair and refinish of high strength steel parts, refer to SOPM 20-10-01. For stripping of protective finishes, refer to SOPM 20-30-02. For decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

(1) Machine as required, within repair limits, to remove defects (SOPM 20-10-02).

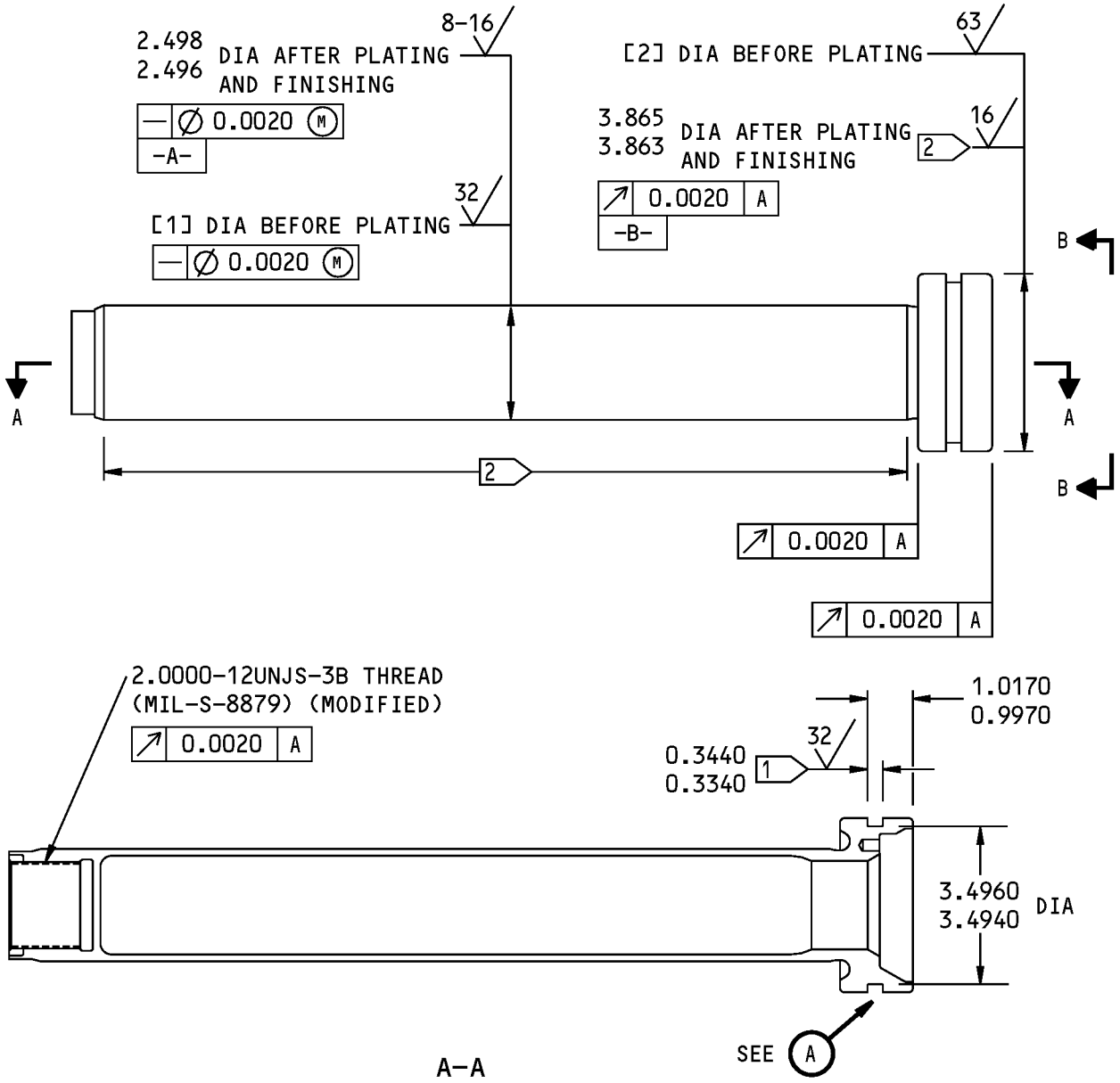
(2) Magnetic particle examine the machined surface (SOPM 20-20-01).

(3) Shot peen the machined surface (SOPM 20-10-03).

(4) Build up with chrome plate (SOPM 20-42-03). If the buildup will be thicker than 0.010 inch, build up with nickel plate (SOPM 20-42-09) before chrome plate. The final plating thickness must be 0.015 inch maximum, where 0.010 inch is chrome plate and the remaining thickness is nickel.

(5) Magnetic particle examine the surface (SOPM 20-20-01).

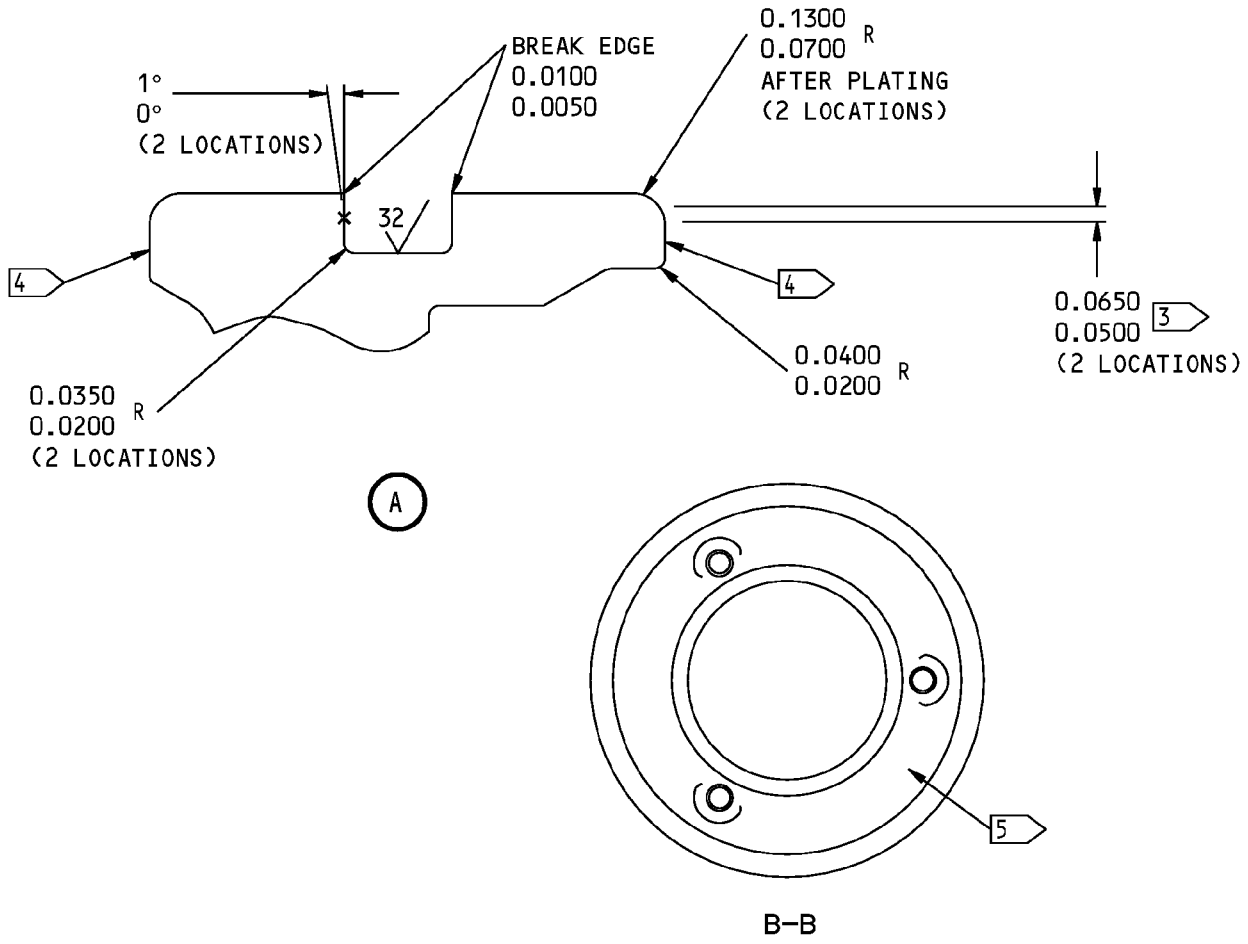
(6) Grind to design dimensions and finish (SOPM 20-10-04).



A-A

REFERENCE NUMBER	[1]	[2]
DESIGN DIMENSION	2.490 2.488	3.857 3.855
REPAIR LIMIT 6	2.466	3.833

273A2104-2 Piston Repair and Refinish
Figure 601 (Sheet 1 of 2)



1 DO NOT SHOT PEEN

2 AFTER SHOT PEEN, CHROME PLATE (F-15.34)

3 CHROME PLATE RUNOUT AREA

4 DO NOT APPLY CHROME PLATE ON THIS SURFACE

5 PART NUMBER LOCATION

6 LIMIT FOR CHROME/NICKEL BUILDUP (SEE TEXT)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

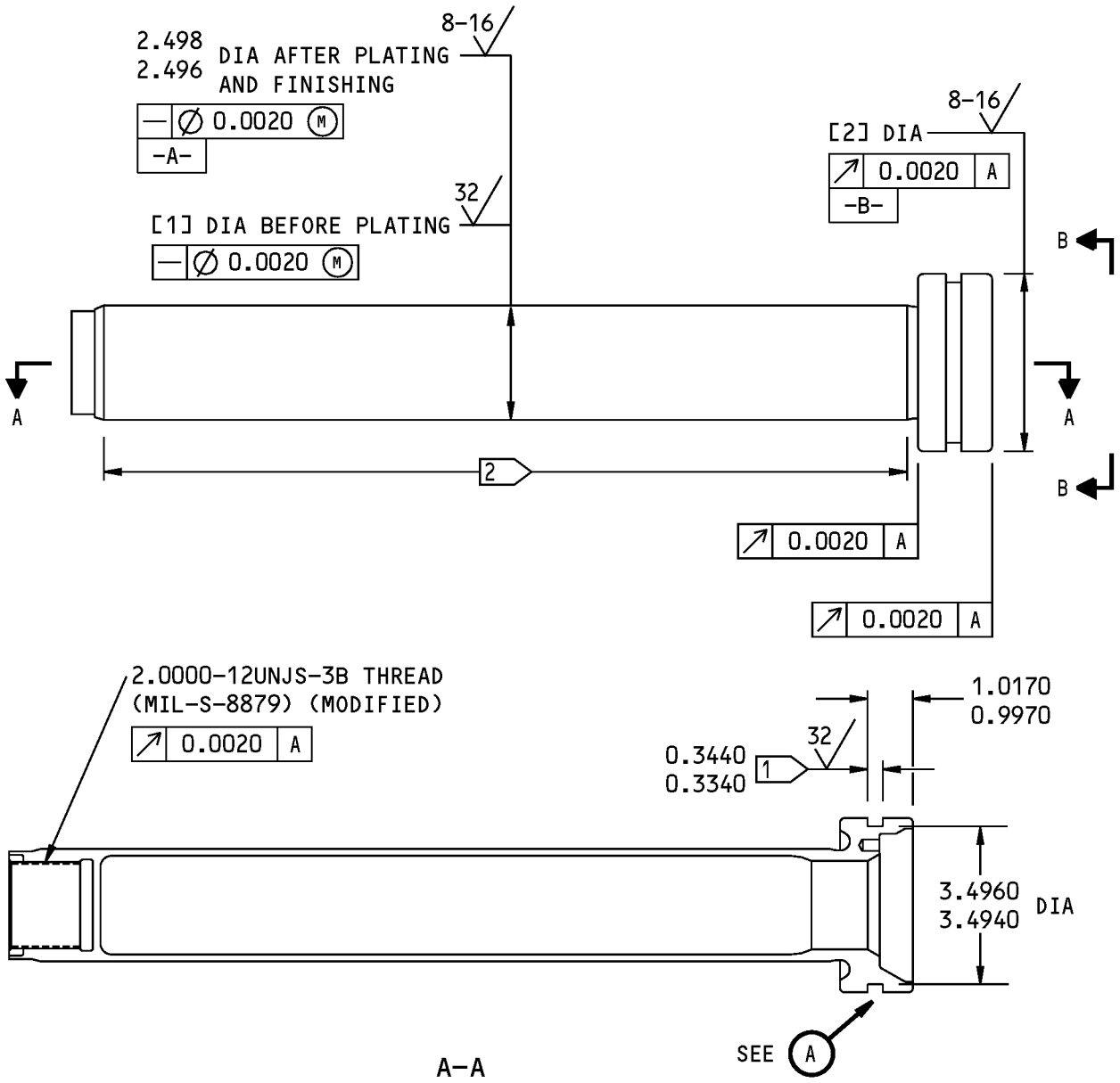
BREAK ALL SHARP EDGES

ITEM NUMBERS REFER TO IPL FIG. 1

DIMENSIONS ARE AFTER GRINDING AND PLATING UNLESS SHOWN DIFFERENTLY

ALL DIMENSIONS ARE IN INCHES

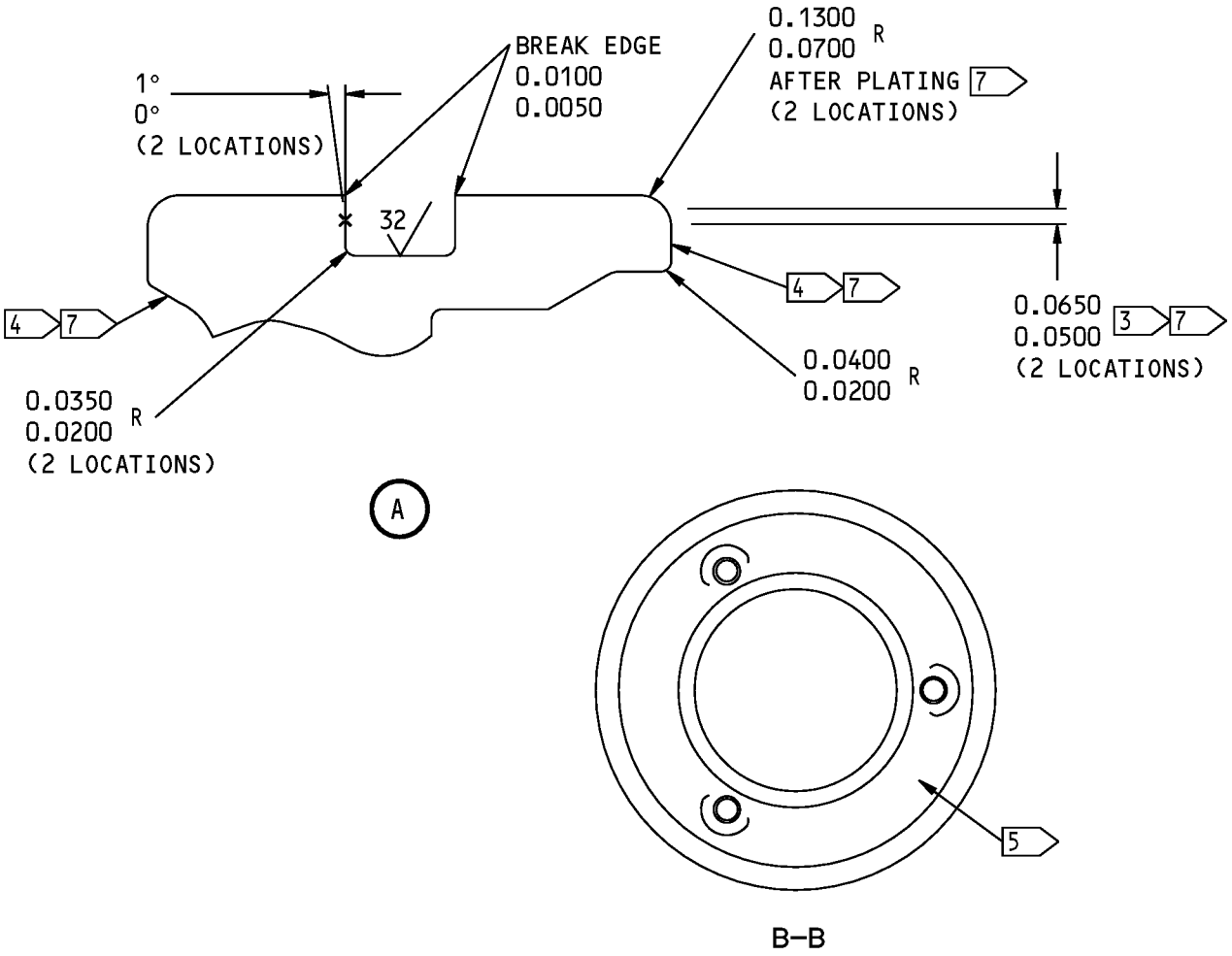
273A2104-2 Piston Repair and Refinish
Figure 601 (Sheet 2 of 2)



A-A

REFERENCE NUMBER	[1]	[2]
DESIGN DIMENSION	2.490 2.488	3.865 3.863
REPAIR LIMIT 6	2.466	3.833

273A2104-4 Piston Repair and Refinish
Figure 602 (Sheet 1 of 2)



1. DO NOT SHOT PEEN
2. AFTER SHOT PEEN, CHROME PLATE (F-15.34)
3. CHROME PLATE RUNOUT AREA
4. DO NOT APPLY CHROME PLATE ON THIS SURFACE
5. PART NUMBER LOCATION
6. LIMIT FOR CHROME/NICKEL BUILDUP (SEE TEXT)
7. PLATING REFERS TO REPAIR PER 6

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK ALL SHARP EDGES

ITEM NUMBERS REFER TO IPL FIG. 1

DIMENSIONS ARE AFTER GRINDING AND PLATING UNLESS SHOWN DIFFERENTLY

ALL DIMENSIONS ARE IN INCHES

273A2104-4 Piston Repair and Refinish
Figure 602 (Sheet 2 of 2)

ROD END ASSEMBLY - REPAIR 5-1

273A2105–1

1. General

A. This procedure has the data necessary to replace the lube fittings (125) in the rod end assembly (120).

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

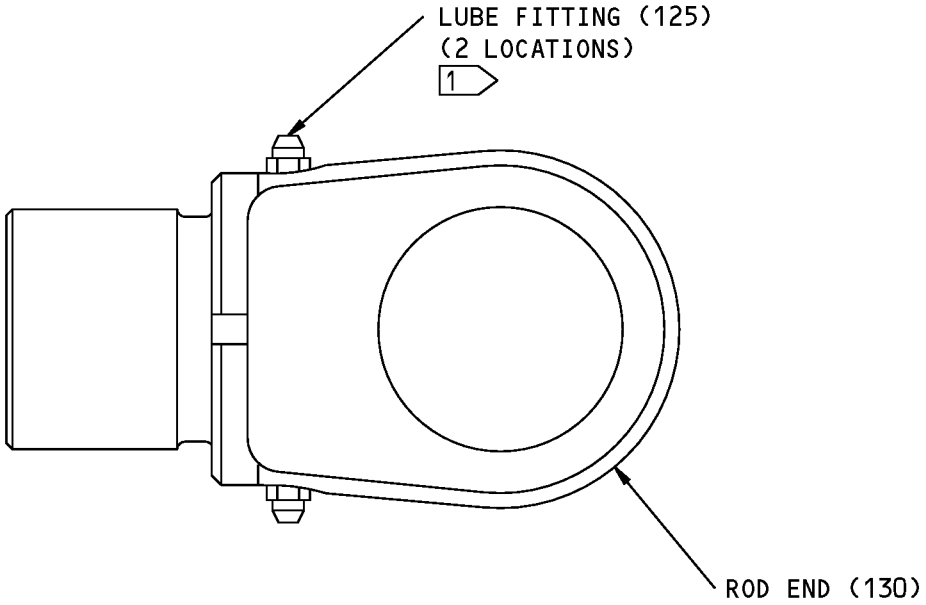
C. Refer to IPL Figure 1 for item numbers.

2. Lube Fitting Replacement

A. Procedure (REPAIR 5-1, Figure 601)

(1) Remove the old lube fittings (125) from the rod end assy (120).

(2) Install replacement lube fittings and tighten them to 25-30 pound-inches.



1 APPLY 25-30 POUND-INCHES OF TORQUE

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

273A2105-1 Rod End Assembly Repair
Figure 601

ROD END - REPAIR 5-2

273A2105–2

1. General

A. This procedure has the data necessary to repair rod end (130).

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

C. Refer to the REPAIR-GENERAL, Paragraph 2. for the Standard True Position Dimensioning Symbols shown in the repair.

D. Refer to IPL Figure 1 for item numbers.

E. General repair details:

(1) Material: 15-5PH CRES

(a) HT TR: 180-200 ksi

2. Rod End Repair

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00113	Lubricant - Liquid Dispersed Solid Film Lubricant	BMS3-8, BAC 5811, TYPE VIII

B. References

Reference	Title
SOPM 20-10-02	MACHINING OF ALLOY STEEL
SOPM 20-10-03	SHOT PEENING
SOPM 20-20-01	MAGNETIC PARTICLE INSPECTION
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-42-03	HARD CHROME PLATING
SOPM 20-42-09	ELECTRODEPOSITED NICKEL PLATING
SOPM 20-50-08	APPLICATION OF BONDED SOLID FILM LUBRICANTS
SOPM 20-60-02	FINISHING MATERIALS

C. Procedure (REPAIR 5-2, Figure 601)

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

(1) Machine as required, within repair limits, to remove defects (SOPM 20-10-02).

(2) Magnetic particle examine the machined surface (SOPM 20-20-01).

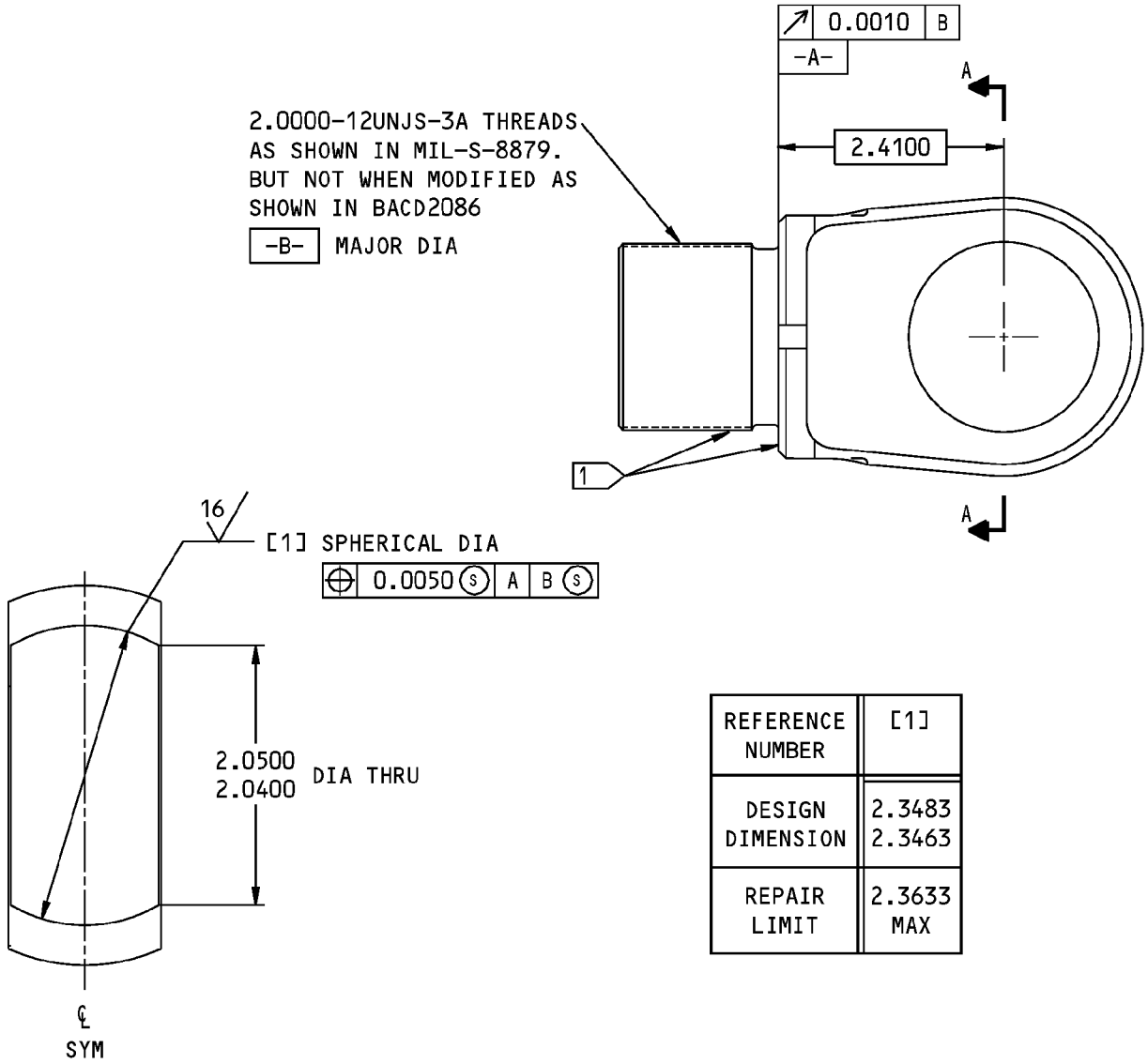
(3) Shot peen the machined surface (SOPM 20-10-03).

(4) Build up with chrome plate (SOPM 20-42-03). If the buildup will be thicker than 0.010 inch, build up with nickel plate (SOPM 20-42-09) before chrome plate. The final plating thickness must be 0.015 inch maximum, where 0.010 inch is chrome plate and the remaining thickness is nickel.

(5) Magnetic particle examine the surface (SOPM 20-20-01).

(6) Grind to design dimensions and finish.

(7) Apply lubricant, D00113 (F-19.10) as shown by flagnote 1 (SOPM 20-50-08).



REFERENCE NUMBER	[1]
DESIGN DIMENSION	2.3483 2.3463
REPAIR LIMIT	2.3633 MAX

1 APPLY BMS 3-8, TYPE 8 SOLID FILM LUBRICANT (F-19.10) AT THIS AREA AS SHOWN IN SOPM 20-50-08.

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK ALL SHARP EDGES

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

273A2105-2 Rod End Repair
Figure 601

NAMEPLATE AND STRAP INSTALLATION - REPAIR 6-1

273T0050–8, 273A2508–5, –6, –11

1. General

A. This procedure has the data necessary to install the nameplate (400, 405) and strap (5) onto the retract actuator assembly (1A).

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

C. Refer to IPL Figure 1 for item numbers.

2. Strap Installation

A. References

Reference	Title
SOPM 20-50-21	HOW TO INSTALL NAMEPLATE STRAPS AND SEALS

B. Procedure

(1) Install a replacement nameplate with new straps (SOPM 20-50-21).

ASSEMBLY

1. General

A. Use this procedure to assemble the main landing gear retract actuator assembly.

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

C. Refer to IPL Figure 1 for item numbers.

2. Actuator Assembly

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D00153	Fluid - Hydraulic, Erosion Arresting, Fire Resistant	BMS3-11 Type IV (interchange˜able & intermixable with Type V)
D00571	Grease - Polyalkylene Glycol, Lithium - Batco X8401-2	
D00633	Grease - Aircraft General Purpose	BMS3-33

B. References

Reference	Title
SOPM 20-50-01	BOLT AND NUT INSTALLATION
SOPM 20-50-06	INSTALLATION OF O-RINGS AND TEFLON SEALS
SOPM 20-60-02	FINISHING MATERIALS
SOPM 20-60-03	LUBRICANTS
SOPM 20-60-04	MISCELLANEOUS MATERIALS

C. Local Tools and Equipment

NOTE: Equivalent equipment can be used.

(1) C32038-2 – Stand Assembly

(2) C32038-3 – V-Block Assembly

(3) C32038-45 – Retract Rod End Wrench

(4) C32038-37 – Retract Wrench Assembly

(5) C32038-39 – Retract Spanner Assembly

D. Procedure (ASSEMBLY, Figure 701)

NOTE: For bolt and nut installation, refer to SOPM 20-50-01. For finishing materials, refer to SOPM 20-60-02. For lubricants, refer to SOPM 20-60-03. For miscellaneous materials, refer to SOPM 20-60-04.

(1) Use standard industry practices and these steps.

(2) Install head end assembly (155) on the stand assembly in V-blocks.

(3) Install restrictor (10C) with packing (25) in head end assembly (155) (SOPM 20-50-06).

(a) Lubricate packing (25) with fluid, D00153 or MCS 352B fluid, D00054.

(b) Install packing (25) on restrictor (10C).

(c) Install restrictor (10C) in head end assembly (155).

(4) Install packing (150) and rings (145) in head end assembly (155) (SOPM 20-50-06).

(a) Lubricate packing (150) with fluid, D00153 or MCS 352B fluid, D00054.

(b) Install packing (150) and rings (145) in the head end assembly (155).

(5) Install packings (230) and rings (225) on snubber assembly (245) (SOPM 20-50-06).

(a) Lubricate packings (230) with fluid, D00153 or MCS 352B fluid, D00054.

(b) Install packings (230) and rings (225) on snubber assembly (245).

(6) Install snubber assembly (245) in head end assembly (155).

(a) Remove extend slide (250) from snubber assembly (245).

(b) Install spring (240) on extend slide (250).

(7) Install retainer (210) in head end assembly (155) (SOPM 20-50-06).

(a) Lubricate packing (220) with fluid, D00153 or MCS 352B fluid, D00054.

(b) Install packing (220) and rings (215) on retainer (210).

(c) Install retainer (210) with bolts (200) and washers (205) in head end assembly (155).

(d) Tighten bolts (30) as shown by flagnote 13.

(8) Install guide assembly (275) on pull tube (235).

(a) Move the jamnut and the lockwasher along pull tube (235) to put them on top of retainer (210).

(b) Install guide assembly (275) on pull tube (235).

(9) Install snubber stop (310) on pull tube (235).

(a) Install snubber stop (310) with bolt (290), washers (295, 300) and nut (305) on pull tube (235).

(b) Tighten nut (305) to 30-40 pound-inches.

(10) Install piston (320) on guide assembly (275) (SOPM 20-50-06).

(a) Lubricate seal (315B) with fluid, D00153 or MCS 352B fluid, D00054.

(b) Install seal (315B) on piston (320).

(c) Install guide assembly (275) on piston (320) with bolts (265) and washers (270).

(d) Tighten bolts (265) to 30-40 pound-inches.

(11) Install cylinder assembly (365) in head end assembly (155).

(a) Apply Batco X8401-2 grease, D00571 to the external threads of cylinder assembly (365).

(b) Turn locknut (135) on cylinder assembly (365) until it starts to come off the threads at the far end.

(c) Turn cylinder assembly (365) into head end assembly (155) until it stops.

(d) Turn cylinder assembly (365) back, less than one revolution, to align the key slots on cylinder assembly (365) and head end assembly (155).

(12) Install key (140) in the key slot of cylinder assembly (365).

(13) Tighten locknut (135) in head end assembly (155) by hand, only to keep key (140) in position. Use the retract spanner wrench to install the locknut (135), but do not tighten the locknut to the final torque at this time. The locknut will be tightened to the final torque with pressure applied at the start of the test procedure.

(14) Install rings (345), packing (350), seal (355, 360A) in bearing (340) (SOPM 20-50-06).

(a) Lubricate packing (350) and seals (355, 360A) with fluid, D00153 or MCS 352B fluid, D00054.

(b) Install rings (345), packing (350), seals (355, 360A) in bearing (340).

(15) Install bearing (340), lockwasher (115) and rod end assembly (120) in cylinder assembly (365). Move piston assembly (320) in and out by hand to make sure it moves freely.

(16) Tighten bearing (340) as shown by flagnote 5.

(17) Use the retract rod end wrench to install rod end assembly (120) in cylinder assembly (365).

(18) Install all other fittings, packings, rings, washers and bolts as shown in ASSEMBLY, Figure 701 and by standard industry practices.

(a) Install fitting (45) and bracket assembly on cylinder assembly (140) with bolts (30) and washers (35).

(b) Tighten bolts (30) to 30-40 pound-inches.

(19) Install nameplate (400A, 405), if necessary (REPAIR 6-1).

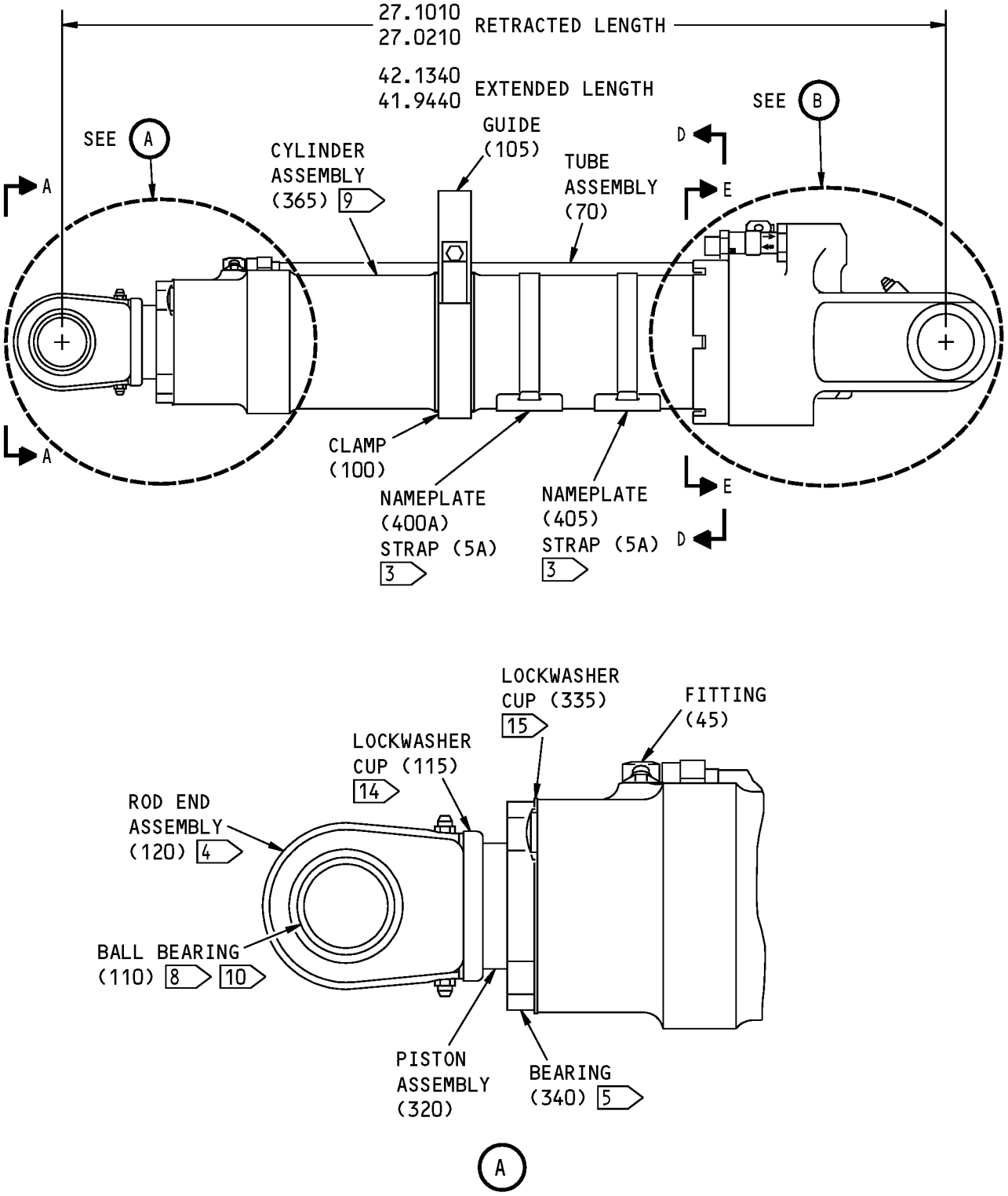
(20) Install bearing (110) in rod end assembly (120).

(a) Apply grease, D00633 to the bore of rod end (120).

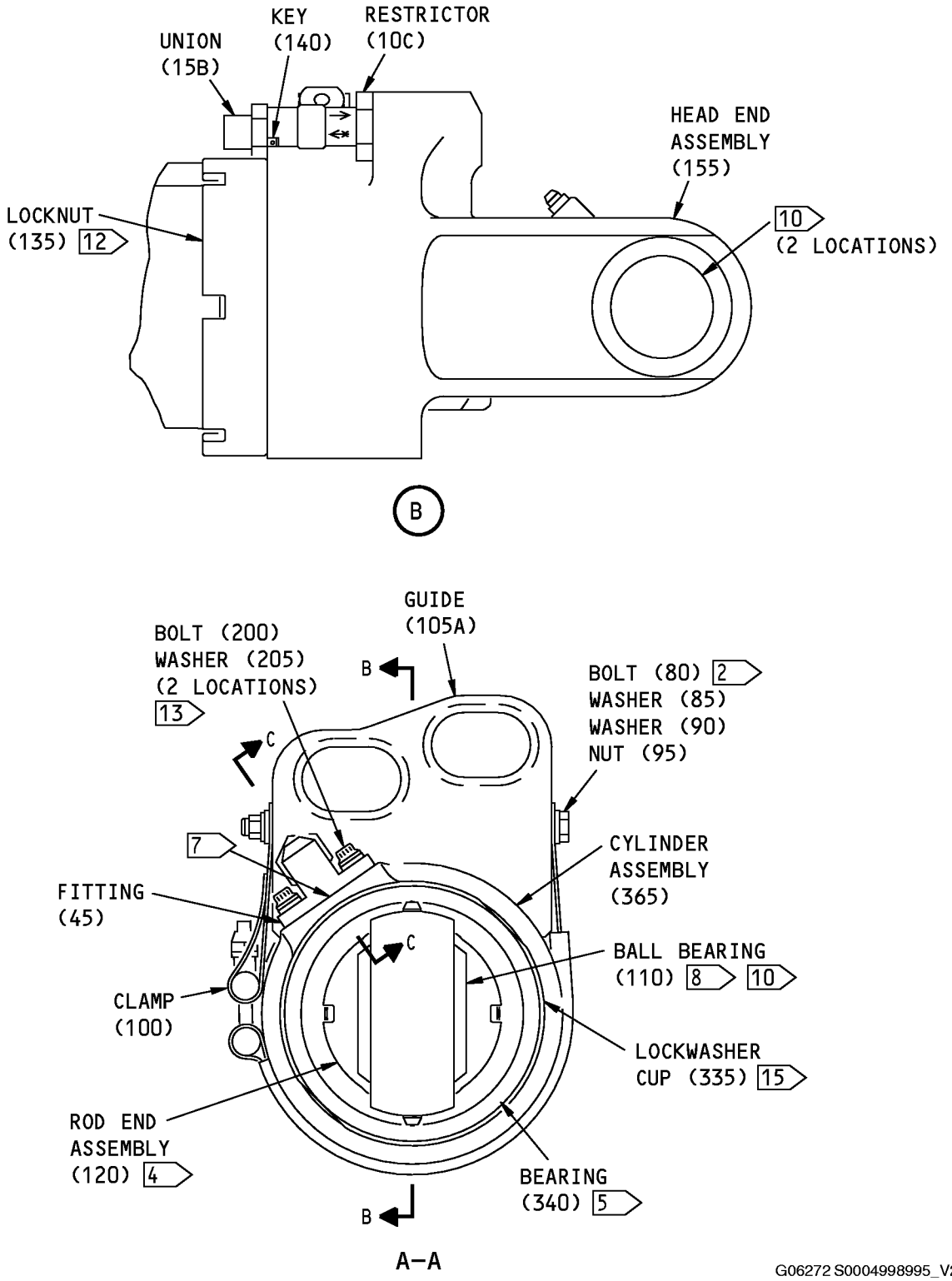
(b) Install bearing (110) in bearing bore.

(c) Use something to keep the bearing in position for shipment.

(21) Do the test of the actuator as specified in TESTING AND FAULT ISOLATION.

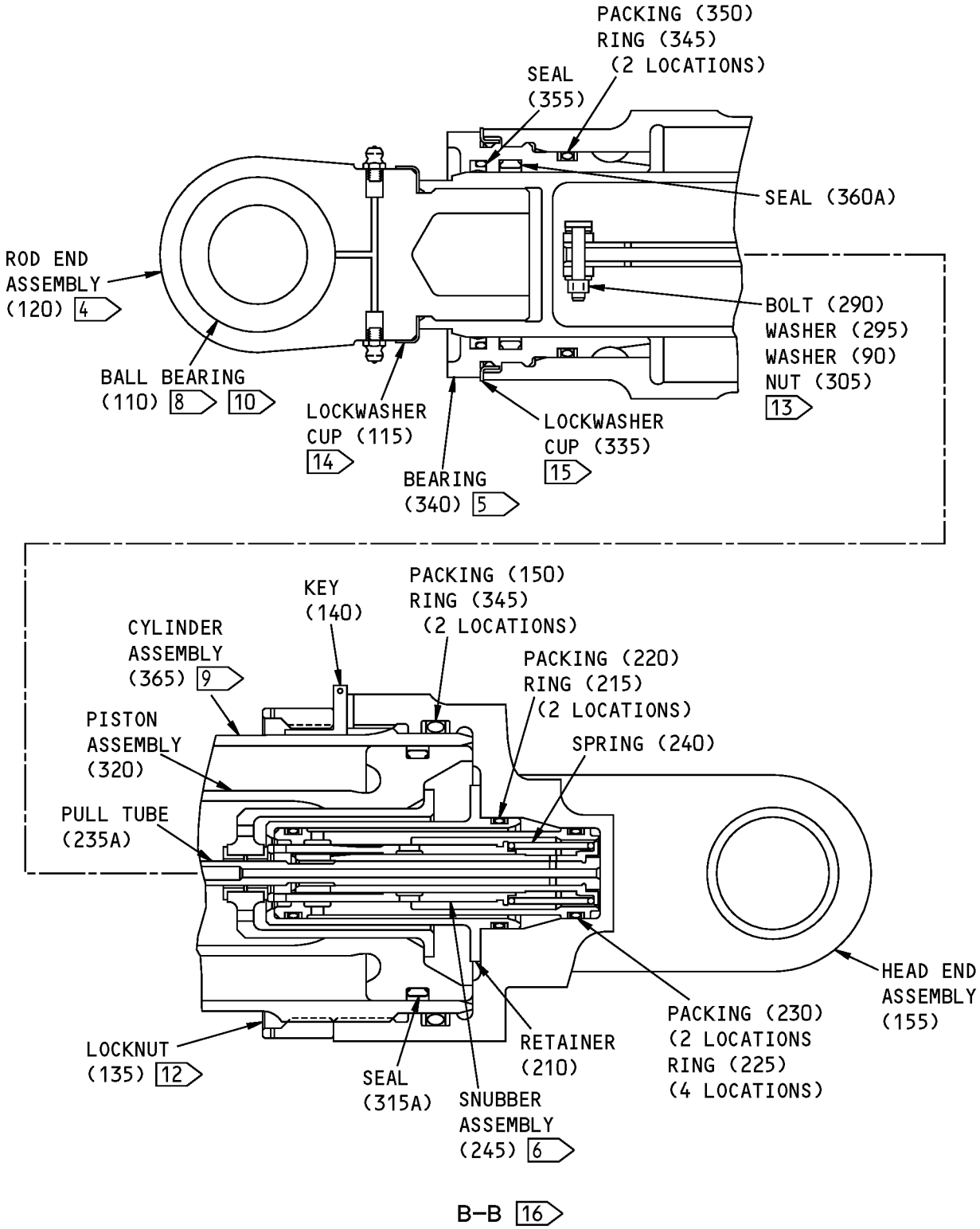


273A2101 Main Gear Retract Actuator Assembly
Figure 701 (Sheet 1 of 6)

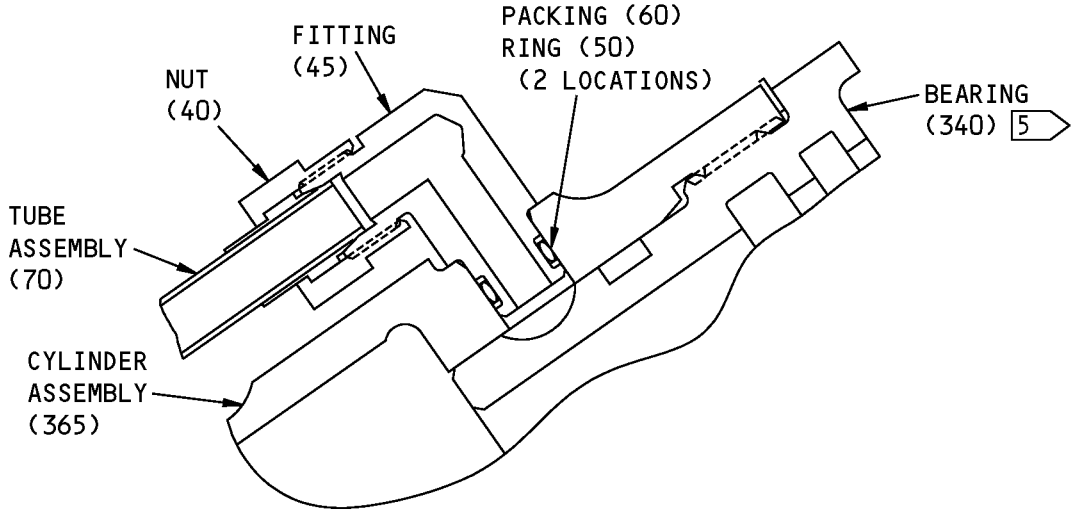


G06272 S0004998995_V2

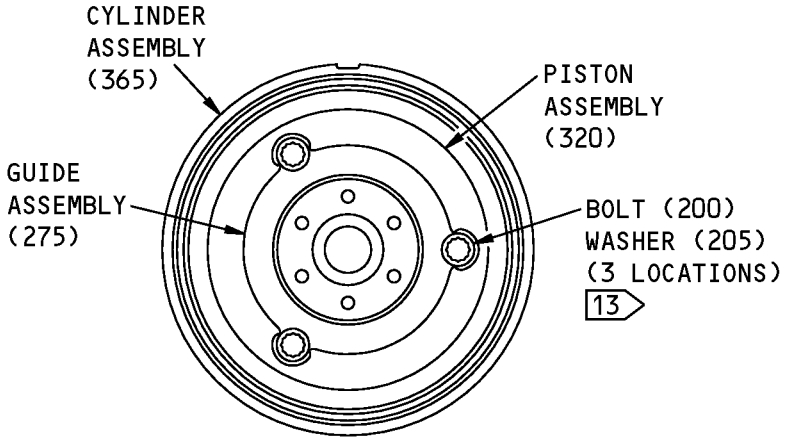
273A2101 Main Gear Retract Actuator Assembly
Figure 701 (Sheet 2 of 6)



273A2101 Main Gear Retract Actuator Assembly
Figure 701 (Sheet 3 of 6)

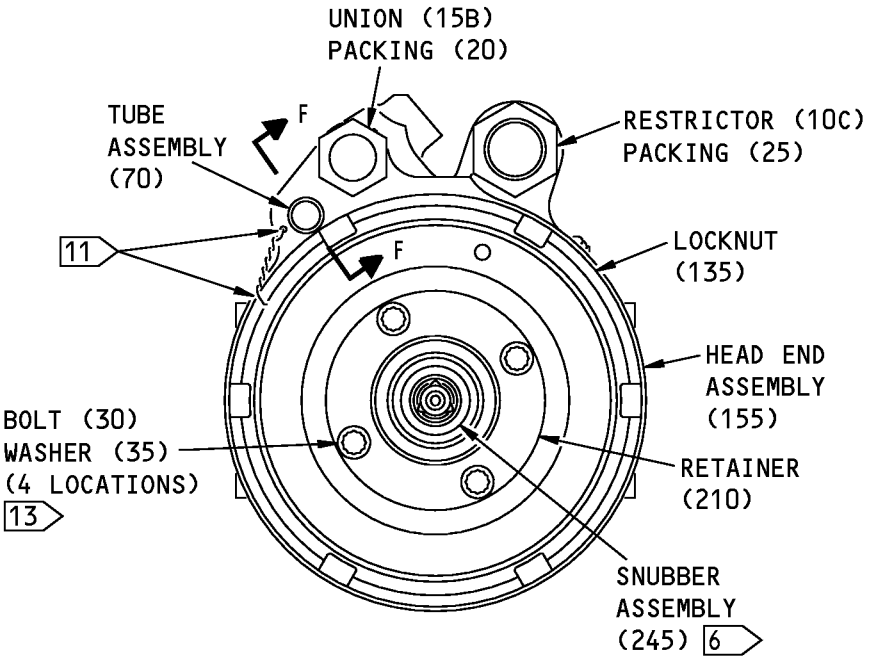


C–C

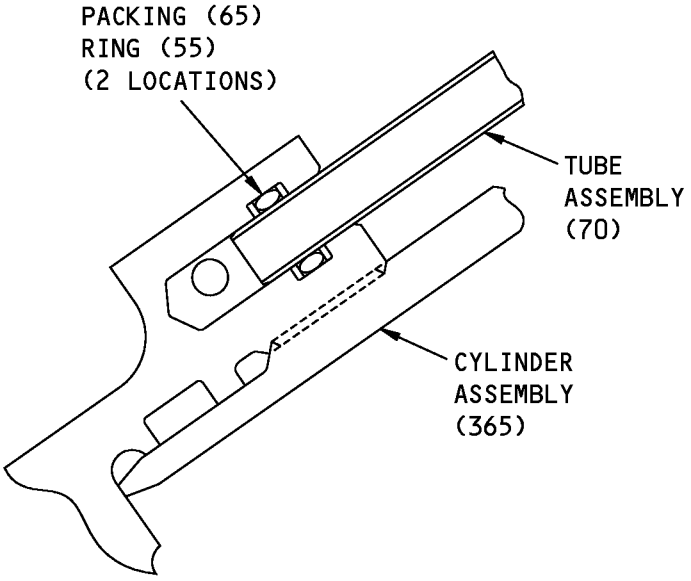


D–D 17

273A2101 Main Gear Retract Actuator Assembly
Figure 701 (Sheet 4 of 6)



E-E



F-F

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273A2101 Main Gear Retract Actuator Assembly
Figure 701 (Sheet 5 of 6)

1> AT ASSEMBLY, APPLY BATCO 8401 GREASE TO THE THREADS OUTSIDE THE PRESSURE VESSEL. DO NOT APPLY GREASE TO SURFACES WITH SEALANT ON THEM

2> TIGHTEN THE NUT TO 50-80 POUND-INCHES

3> INSTALL THE STRAP AND NAMEPLATE WITH BMS 5-45 SEALANT

4> TIGHTEN THE ROD END TO 185 POUND-FEET

5> TIGHTEN THE BEARING TO 1200-1400 POUND-INCHES

6> THIS IS A MATCHED SET. KEEP THE PARTS TOGETHER

7> DELETED

8> TIE THE BEARING IN POSITION FOR SHIPMENT

9> INSTALL THE CYLINDER INTO THE HEAD END UNTIL THE CYLINDER TOUCHES THE BOTTOM. LOOSEN UNTIL THE KEY CAN BE INSTALLED, NO MORE THAN ONE REVOLUTION

10> APPLY A THIN LAYER OF BMS 3-33 GREASE TO THE BEARING HOLES BEFORE SHIPMENT

11> INSTALL LOCKWIRE BY THE DOUBLE TWIST PROCEDURE (SOPM 20-50-02)

12> HOLD THE PISTON AT MID-STROKE. APPLY 3800 PSI TO THE RETRACT PORT. TIGHTEN THE LOCKNUT TO 45-55 POUND-FEET

13> TIGHTEN THE BOLTS TO 30-40 POUND-INCHES

14> AFTER YOU TIGHTEN THE ROD END, STAKE THE UPLOCK WASHER INTO BOTH SLOTS ON THE ROD END. THE DEFORMED PORTION OF THE UPLOCK WASHER MUST TOUCH BOTH CORNERS OF EACH SLOT IN THE ROD END

15> BREAK THE LOCKWASHER OVER TWO OPPOSING FLATS OF THE GLAND NUT BEARING. MAKE THE DEFORMED PORTION OF THE LOCKWASHER HAVE THE MAXIMUM POSSIBLE CONTACT WITH THE FLATS ON THE GLAND NUT BEARING

16> THE GUIDE, NAMEPLATE, AND STRAP ARE NOT SHOWN FOR CLARITY

17> THE GUIDE AND PISTON ARE NOT SHOWN FOR CLARITY

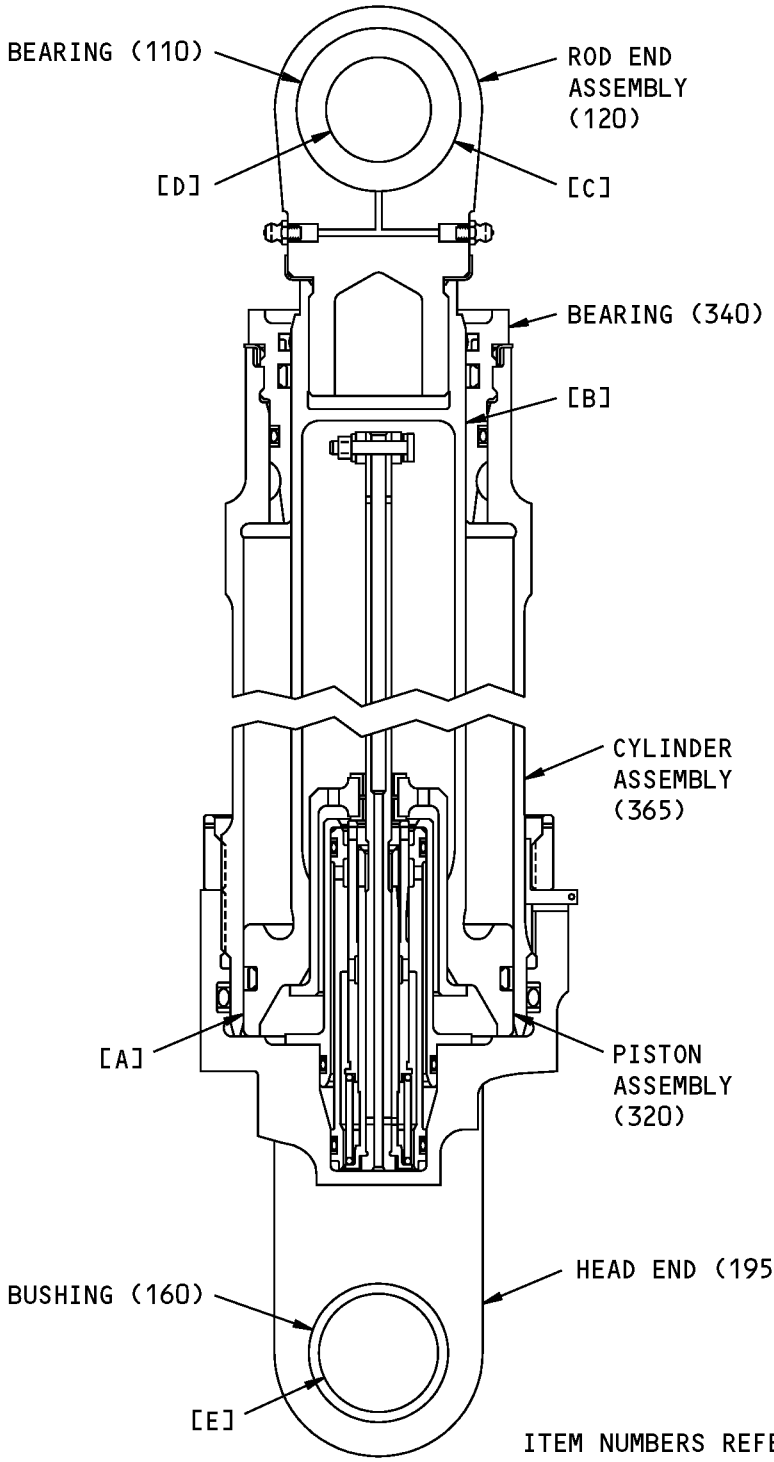
AT ASSEMBLY, APPLY A THIN LAYER OF BMS 3-11 HYDRAULIC FLUID OR MCS352 ASSEMBLY LUBRICANT TO THE SEALS AND THREADS INSIDE THE CYLINDER.

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

G05581 S0004998999_V2

273A2101 Main Gear Retract Actuator Assembly
Figure 701 (Sheet 6 of 6)



Fits and Clearances
Figure 801 (Sheet 1 of 2)

REF LETTER	REF IPL FIG. 1, MATING ITEM NO.	DESIGN DIMENSION*				SERVICE WEAR LIMIT*		
		DIMENSION		ASSEMBLY CLEARANCE 1		DIMENSION		MAXIMUM CLEARANCE
		MIN	MAX	MIN	MAX	MIN	MAX	
[A]	ID 365	3.868	3.870	0.003	0.007		3.872	0.009
	OD 320	3.863	3.865			3.861		
[B]	ID 340	2.501	2.503	0.003	0.007		2.505	0.009
	OD 320	2.496	2.498			2.495		
[C]	ID 120	2.3468	2.3483	0.0030	0.0050		2.3500	0.0090
	OD 110	2.3433	2.3438			2.3410		
[D]	ID 110	1.4995	1.5000	0.0005	0.0020		1.5020	0.0040
	OD 2	1.4980	1.4990			1.4970		
[E]	ID 160	1.7000	1.7010	0.0010	0.0030		1.7030	0.0060
	OD 3	1.6980	1.6990			1.6970		

* ALL DIMENSIONS ARE IN INCHES

1 NEGATIVE VALUES ARE AN INTERFERENCE FIT

2 PIN 161A7302-1 (INSTALLATION PART)

3 PIN 161A7118-1 (INSTALLATION PART)

Fits and Clearances
Figure 801 (Sheet 2 of 2)

REF IPL		NAME	TORQUE*	
FIG. NO.	ITEM NO.		POUND-INCHES	POUND-FEET
1	95	Nut	50-80	
1	120	Rod End Assembly		185 minimum
1	340	Gland Nut Bearing	1200-1400	
1	135	Locknut		45-55 1
1	30,200, 265,290	Bolt	30-40	

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

1 WITH PISTON HELD AT THE MID-STROKE AND 3800 PSI PRESSURE APPLIED TO THE RETRACT PORT (SEE TEST PROCEDURE)

F97719 S0004999003_V2

Torque Table
Figure 802

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

1. General

A. This section lists the special tools, fixtures, and equipment necessary for maintenance.

NOTE: Equivalent substitutes may be used.

Special Tools

Reference	Description	Part Number	Supplier
SPL-9082	Stand Assemlby (C32038-2 included in C32038-1 Eqpt)	C32038-2	81205
SPL-9084	V-Block Assembly (C32038-3 included in C32038-1 Eqpt)	C32038-3	81205

Tool Supplier Information

CAGE Code	Supplier Name	Supplier Address
81205	THE BOEING COMPANY	17930 INTERNATIONAL BLVD. SOUTH SEATAC, WA 98188-4321 Telephone: 206-662-6650 Facsimile: 206-662-7145

BOEING®

COMPONENT MAINTENANCE MANUAL

ILLUSTRATED PARTS LIST

1. Introduction

A. The Illustrated Parts List (IPL) contains an illustration and a list of component parts you can repair or replace. The Illustrated Parts Catalog (IPC) shows how to use the Boeing part number system.

B. This shows how parts are related: The relation of each item to its next higher assembly (NHA) is shown in the NOMENCLATURE column. Use the indenture system that follows:

1 2 3 4 5 6 7

. Assembly

. Attaching parts for assembly

. . Detail parts for assembly

. . Subassembly

. . Attaching parts for subassembly

. . . Detail parts for subassembly

. . . Sub-subassembly

. . . Attaching parts for subassembly

. . . . . Details parts for sub-subassembly

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

C. Each top assembly is given one use code letter (A, B, C, etc.) in the USAGE CODE column. All subsequent component parts in the list can have one or more of the use code letters to show effectivity to top assemblies. A component part without a use code applies to all top assemblies.

D. An alphabetical letter is added after the item number for optional parts, parts changed by a Service Bulletin, configuration differences (except left-handed and right-handed parts), last engineering releases, and parts added between item numbers in a sequence. The alphabetical letter will not be shown on the illustration for equivalent parts of the same part number.

E. Color-coded parts are identified with a single digit alpha following the dash number or with ''SP'' suffix. If the ''SP'' suffix is used, it represents consolidation of all color codes applicable for a given usage which are not separately listed. Orders for color-coded parts should include the registry number of the airplane for which the parts are ordered.

F. If a part number is 15 characters long but will not fit in the part number column, the part number will be displayed with a ''~'' at the end of the line and will be continued on the next line. The ''~'' denotes that the part number continues on the next line.

G. Parts changed by a Service Bulletin are shown by PRE SB XXXX and POST SB XXXX added to the NOMENCLATURE column.

(1) When a new top assembly is added by a Service Bulletin, PRE SB XXXX and POST SB XXXX will be added at the top assembly level only. The configuration differences at the detail part level are shown by use code letters.

(2) When the top assembly part number is not changed by the Service Bulletin, PRE SB XXXX and POST SB XXXX will be added at the detail level.

H. Interchangeable Parts

Optional (OPT)	The part is optional to and interchangeable with other parts that have the same item number.
Replaces, Replaced by and not interchangeable with (REPLACES, REPLACED BY AND NOT INTCHG/W)	The part replaces and is not interchangeable with the initial part.
Replaces, Replaced by (REPLACES, REPLACED BY)	The part replaces and is interchangeable with, or is an alternative to, the initial part.

VENDOR CODES

Code	Name
01673	AIRDROME PRECISION COMPONENTS 3251 E AIRPORT WAY LONG BEACH, CALIFORNIA 90806-2407 FORMERLY AIRDROME PARTS CO
02107	FLOUROCARBON CO OHIO DIV DOVER, OHIO 44622 CANCELLED NO REPLACEMENT FORMERLY SPARTA MANUFACTURING CO
02697	PARKER-HANNIFIN CORP SEAL GROUP O-RING DIV 2360 PALUMBO DRIVE PO BOX 11751 LEXINGTON, KENTUCKY 40509 FORMERLY V17506 IN CLEVELAND, OHIO FORMERLY PARKER SEALS V4J413
07128	TETRAFLUOR INC 2051 EAST MAPLE AVENUE EL SEGUNDO, CALIFORNIA 90245-5009 FORMERLY ROYAL IND TETRAFLUOR DIV V0667B ENGLEWOOD CALIF
08199	SIERRACIN CORPORATION DBA HARRISON 3020 EMPIRE AVENUE BURBANK, CALIFORNIA 91504-3109 FORMERLY TECHNICAL IND INC OR HARRISON MFG CO DIV AXIAL CORP

Code	Name
11328	Replaced: [V11328] AEROQUIP SEE EATON AEROQUIP V00624 LINAIR ENG A TELEDYNE CO SEE TELEDYNE LINAIR ENGINEERING TELEDYNE INC SEE LINAIR ENGINEERING TELEDYNE LINAIR ENG SEE AEROQUIP CORP LINAIR DIV by Code: Name and Address below 00624: EATON AEROQUIP INC ENGINEERED SYSTEMS DIV 300 S EAST AVE JACKSON, MICHIGAN 49203-1972 FORMERLY AEROQUIP ELBEE PLANT V99879 OR WESTERN PLANT V70128; FORMERLY AEROQUIP AEROSP DIV JACKSON PLANT; FORMERLY V11328 AEROQUIP LINAIR DIV
14798	DEUTSCH CO METAL COMPONENTS DIV 14800 SOUTH FIGUEROA STREET GARDEN, CALIFORNIA 90248-1795 FORMERLY WEATHERHEAD V79470 FOR AEROSPACE PROD V 61498 DEUSCH CO THE DEUTSCH AEROSPACE FITTINGS CO DIV
15653	ALCOA GLOBAL FASTENERS INC DIV KAYNAR PRODUCTS 800 S STATE COLLEGE BLVD FULLERTON, CALIFORNIA 92831-3001 FORMERLY VK6405 MICRODOT AEROSP LTD; FORMERLY KAYNAR TECH FORMERLY FAIRCHILD FASTENERS KAYNAR DIV
26303	GREENE TWEED IND INC ADVANTEC DIV 7101 PATTERSON DRIVE PO BOX 5037 GARDEN GROVE, CALIFORNIA 92645-5037 FORMERLY OHIO AIRCRAFT SUPPLIES INC IN INGLEWOOD, CALIFORNIA FORMERLY ADVANTEC DIV OF IFP INC, LOS ANGELES, CA V5P801
26879	CORONADO MFG INC 11069 PENROSE AVENUE SUN VALLEY, CALIFORNIA 90352-2722 FORMERLY CORONADO PLASTICS INC IN BURBANK, CALIFORNIA
30974	AEROFIT PRODUCTS INC 6460 DALE STREET BUENA PARK, CALIFORNIA 90621-3115

Code	Name
5F573	GREENE TWEED AND CO ILP DBA GREENE TWEED AND CO 2075 DETWILER RD KULPSVILLE, PENNSYLVANIA 19443-0305
62554	SIMMONDS MECAERO FASTENERS INC 1734 SEQUOIA AVENUE ORANGE, CALIFORNIA 92668
92555	LEE COMPANY 2 PETTIPAUG ROAD PO BOX 424 WESTBROOK, CONNECTICUT 06498-1543
94581	NATIONAL UTILITIES CORP/NUCO 1700 HICKORY DRIVE PO BOX 14639 FORT WORTH, TEXAS 76117-6020 FORMERLY IN MONROVIA, CALIFORNIA; FORMERLY V2D588
94878	RAYBESTOS-MANHATTAN INC PACIFIC COAST DIV FULLERTON, CALIFORNIA 92631 BUSINESS DISCONTINUED
95272	STILLMAN SEL CORP 6020 AVENIDA ENCINAS CARLSBAD, CALIFORNIA 92009-1001 FORMERLY SARGENT IND
97820	BUSAK AND SHAMBAN INC BEARING DIV 711 MITCHELL ROAD PO BOX 665 NEWBURY PARK, CALIFORNIA 91320-2214 FORMERLY IN CULVER CITY, CALIF; FORMERLY SHAMBAN W S & CO
99240	CRISSAIR, INCORPORATED 38905 10TH STREET EAST PALMDALE, CALIFORNIA 93550-4000 FORMERLY IN EL SEGUNDO, CALIFORNIA

NUMERICAL INDEX

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
2-02903-06H		1	75	1
2100-012		1	50	2
2100-110		1	55	2
2100-123		1	225	4
2100-128		1	215	2
2100-233		1	345	2
2100-347		1	145	2
2400-233-044		1	345A	2
2400-347-044		1	145A	2
270T0002-42		1	110	1
273A1115-2		1	210	1
273A2101-10		1	1K	RF
273A2101-2		1	1B	RF
273A2101-3		1	1C	RF
273A2101-4		1	1D	RF
273A2101-5		1	1E	RF
273A2101-6		1	1F	RF
273A2101-7		1	1G	RF
273A2101-8		1	1H	RF
273A2101-9		1	1J	RF
273A2102-1		1	365	1
273A2102-2		1	375	1
273A2102-3		1	365A	1
		1	365D	1
273A2102-4		1	375A	1
273A2102-5		1	365B	1
273A2102-6		1	375B	1
273A2102-7		1	365C	1
273A2102-8		1	375C	1
273A2103-1		1	155	1
273A2103-2		1	195	1
273A2104-1		1	320	1
273A2104-2		1	330	1
273A2104-3		1	320A	1

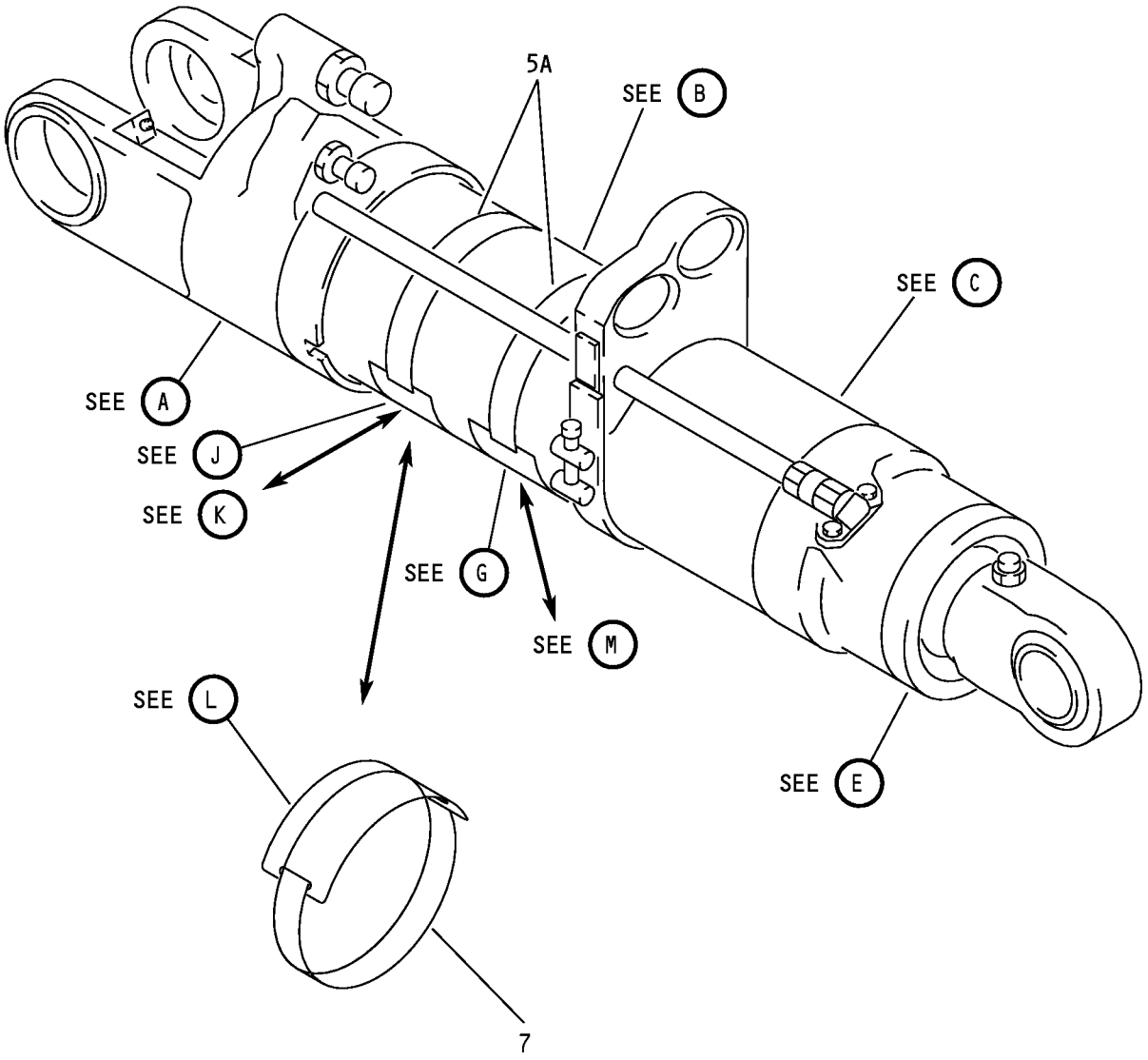
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
273A2104-4		1	330A	1
273A2105-1		1	120	1
273A2105-2		1	130	1
273A2106-1		1	245	1
273A2107-1		1	260	1
273A2108-1		1	255	1
273A2109-1		1	250	1
273A2110-1		1	235A	1
273A2110-3		1	235B	1
273A2111-1		1	310	1
273A2112-1		1	275	1
273A2112-2		1	285	1
273A2112-3		1	275A	1
273A2117-1		1	240	1
273A2118-1		1	135	1
273A2119-1		1	140	1
273A2120-1		1	335	1
273A2121-1		1	45	1
273A2122-1		1	70	1
273A2122-3		1	77	1
273A2123-1		1	160	2
273A2124-1		1	340	1
273A2125-1		1	105A	1
273A2125-2		1	105B	1
273A2508-11		1	400A	1
273A2508-15		1	410	1
273A2508-16		1	415	1
273A2508-17		1	410A	1
273A2508-6		1	405	1
273T0050-12		1	5A	2
		1	7	1
35235V06		1	75	1
4075KP		1	100	1
4150-23300-00952		1	350D	1
		1	350H	1

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
4150-34700-00952		1	150D	1
		1	150H	1
69-77076-1		1	115	1
6F3820		1	193	1
6F3976		1	10C	1
72180-012		1	60C	1
72180-110		1	65C	1
72180-123		1	230C	2
72180-128		1	220C	1
72180-233		1	350C	1
72180-347		1	150C	1
AFP175V06		1	75	1
AP2097-06H		1	75	1
BAC27DLG172		1	420	1
BACB28AU07B025A		1	280	2
BACB30LE3U3		1	30	2
		1	200	4
		1	265	3
BACB30LJ4K68		1	80A	1
BACB30LM3U12		1	290A	1
		1	290C	1
BACB30NR4K68		1	80	1
BACI12AEF1-15L		1	325A	3
		1	370A	2
BACN10YA6		1	40A	1
		1	40C	1
BACN10YA6N		1	40	1
		1	40B	1
BACN10YR4CM		1	95	1
BACN11Z3CK		1	305A	1
		1	305C	1
BACP20AX21		1	175	1
BACP20AX21P		1	165	1
BACP20AX37		1	180	1
BACP20AX37P		1	170	1

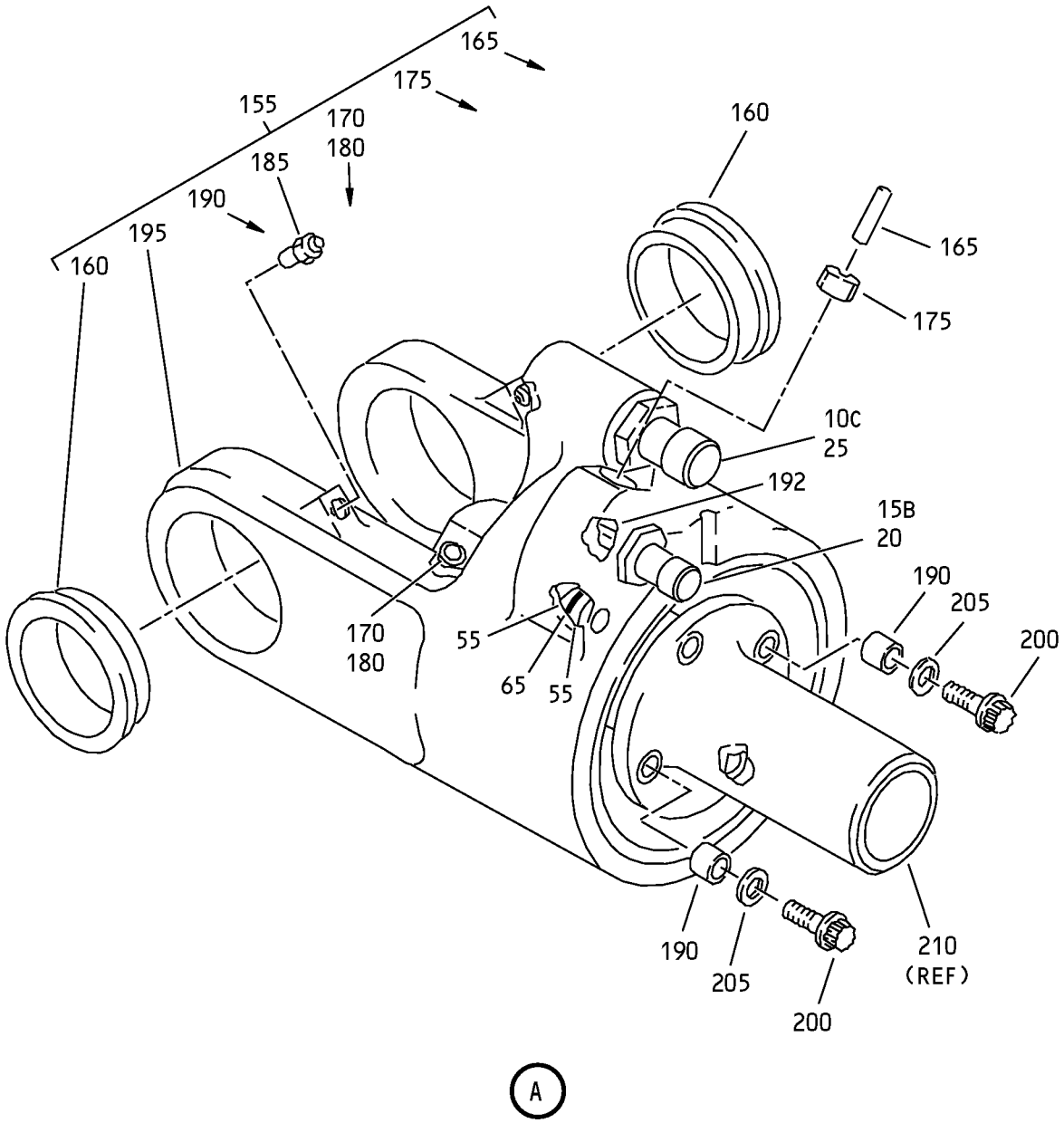
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
BACR12BM012		1	50	2
BACR12BM110		1	55	2
BACR12BM123		1	225	4
BACR12BM128		1	215	2
BACR12BM233		1	345	2
BACR12BM347		1	145	2
BACS13BX06H		1	75	1
BACW10BP3ACU		1	35	2
		1	205	4
		1	270	3
		1	295	1
BACW10BP3APU		1	300	1
BACW10BP4ACU		1	85	1
BACW10BP4APU		1	90	1
BCREF49199		1	60B	1
BCREF49200		1	65B	1
BCREF49201		1	230B	2
BCREF49202		1	220B	1
BCREF49203		1	350B	1
BCREF49204		1	150B	1
BCREF50627		1	350D	1
		1	350H	1
BCREF50628		1	150D	1
		1	150H	1
C11236-012B		1	50	2
C11236-110B		1	55	2
C11236-123B		1	225	4
C11236-128B		1	215	2
C11236-233B		1	345	2
C11236-347B		1	145	2
DB0S13BX06H		1	75	1
E0515-2-012-1W2YB0		1	60B	1
E0515-2-110-1W2YB0		1	65B	1
E0515-2-123-1W2YB0		1	230B	2
E0515-2-128-1W2YB0		1	220B	1

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
E0515-2-233-1W2YB0		1	350B	1
E0515-2-347-1W2YB0		1	150B	1
H52732-4CM		1	95	1
JEHA1875375L		1	192	1
MS15004-1		1	125	2
		1	185	2
MS21209F1-15L		1	190	4
		1	325	3
		1	370	2
MS21902-6T		1	15B	1
NAS1611-012		1	60	1
NAS1611-012A		1	60A	1
		1	60D	1
NAS1611-110		1	65	1
NAS1611-110A		1	65A	1
		1	65D	1
NAS1611-123		1	230	2
NAS1611-123A		1	230A	2
		1	230D	2
NAS1611-128		1	220	1
NAS1611-128A		1	220A	1
		1	220D	1
NAS1611-233		1	350	1
NAS1611-233A		1	350A	1
NAS1611-347		1	150	1
NAS1611-347A		1	150A	1
NAS1612-6		1	20	1
NAS1612-6A		1	20A	1
NAS1612-8		1	25	1
NAS1612-8A		1	25A	1
NAS1805-3		1	305	1
		1	305B	1
NAS6304A68		1	80B	1
NAS6703U12		1	290	1
		1	290B	1

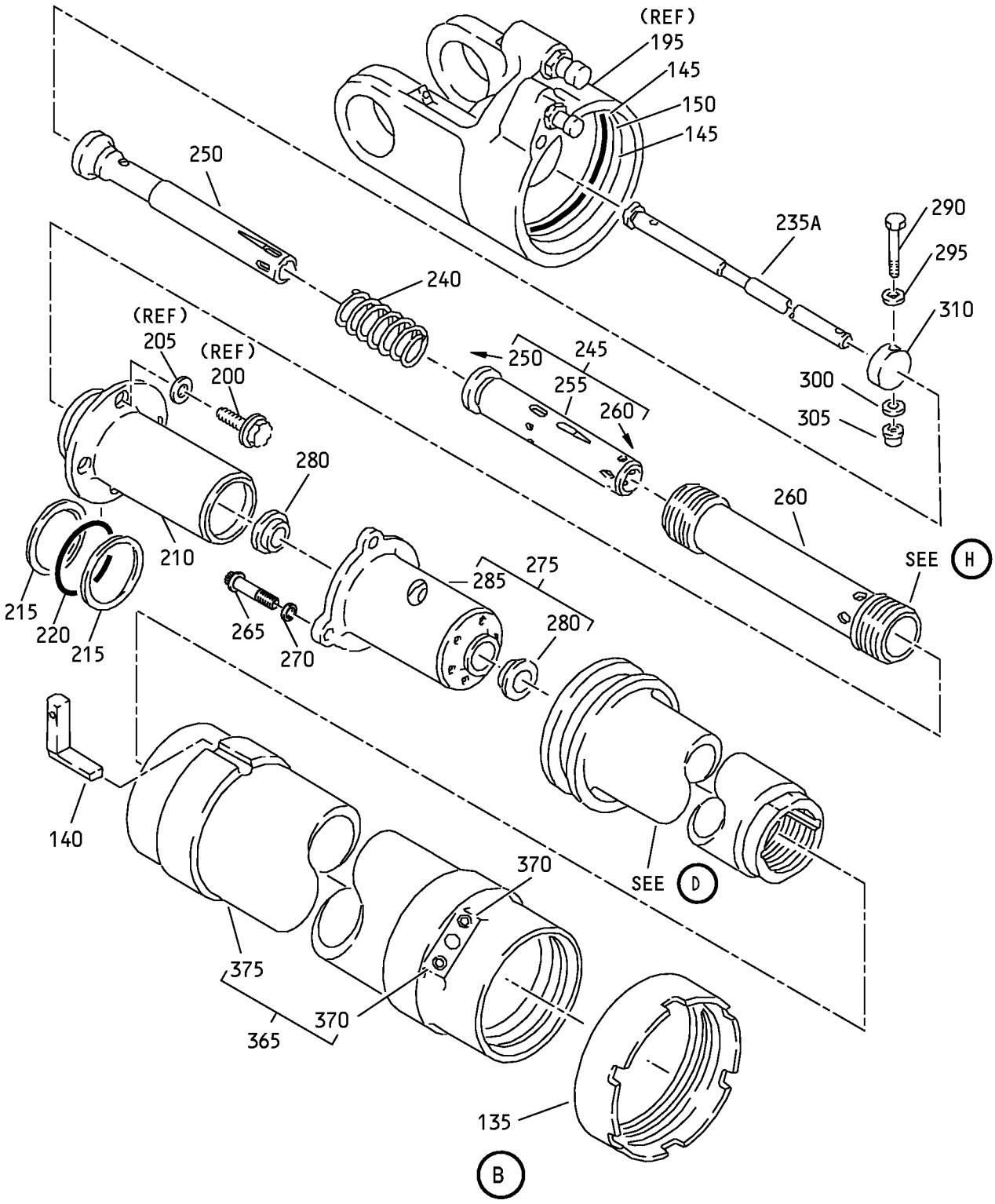
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
PLH54CM		1	95	1
RMR12BM012		1	50	2
RMR12BM110		1	55	2
RMR12BM123		1	225	4
RMR12BM128		1	215	2
RMR12BM233		1	345	2
RMR12BM347		1	145	2
S30294-012-1		1	50	2
S30294-110-1		1	55	2
S30294-123-1		1	225	4
S30294-128-1		1	215	2
S30294-233-1		1	345	2
S30294-347-1		1	145	2
S32925-725H99		1	355	1
S34711-333H99		1	360A	1
S34721-341H99N		1	315B	1
STF800-012		1	50	2
STF800-110		1	55	2
STF800-123		1	225	4
STF800-128		1	215	2
STF800-233		1	345	2
STF800-347		1	145	2
TF450-012A		1	50	2
TF450-110A		1	55	2
TF450-123A		1	225	4
TF450-128A		1	215	2
TF450-233A		1	345	2
TF450-347		1	145	2



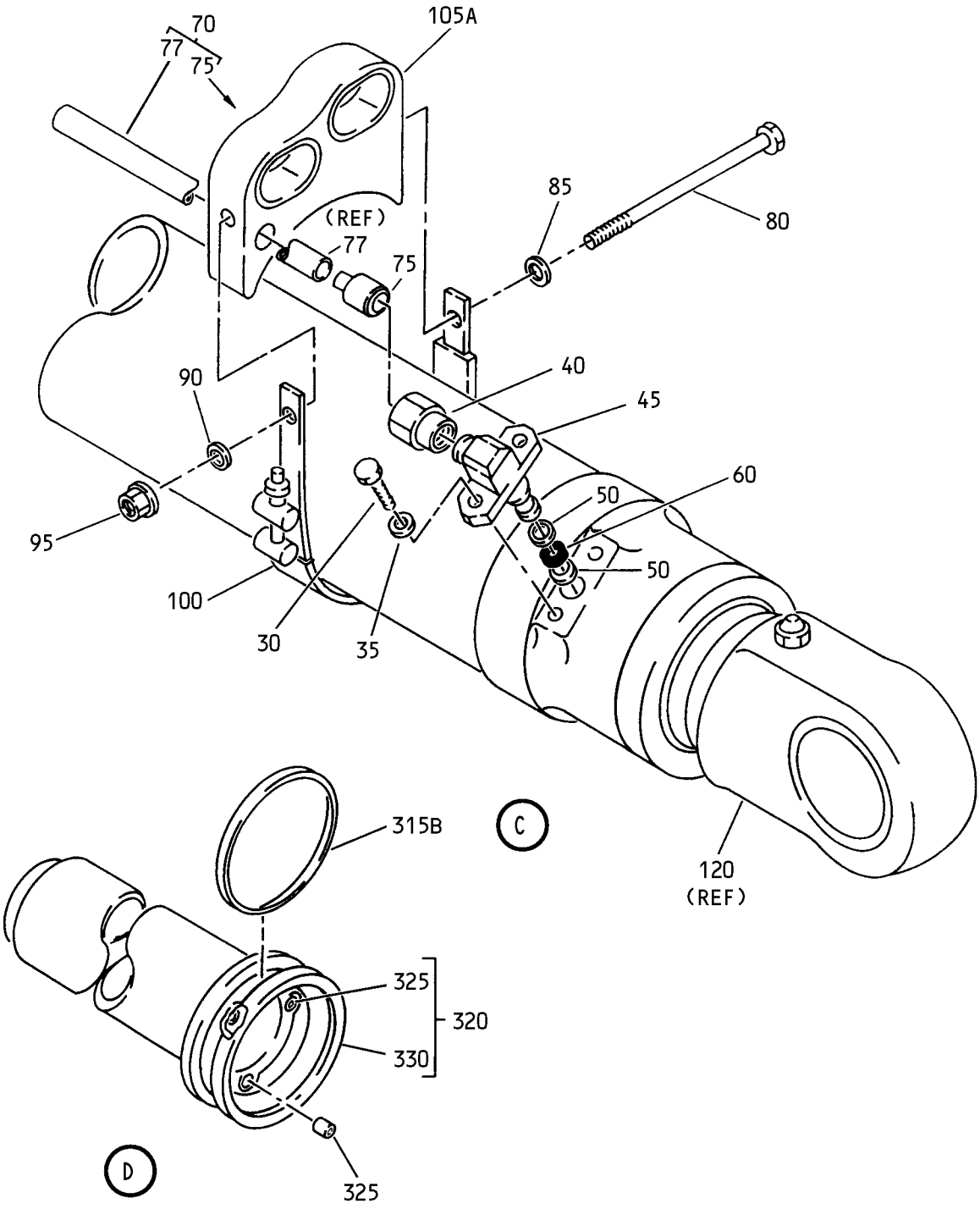
Main Landing Gear Retract Actuator Assembly
IPL Figure 1 (Sheet 1 of 7)



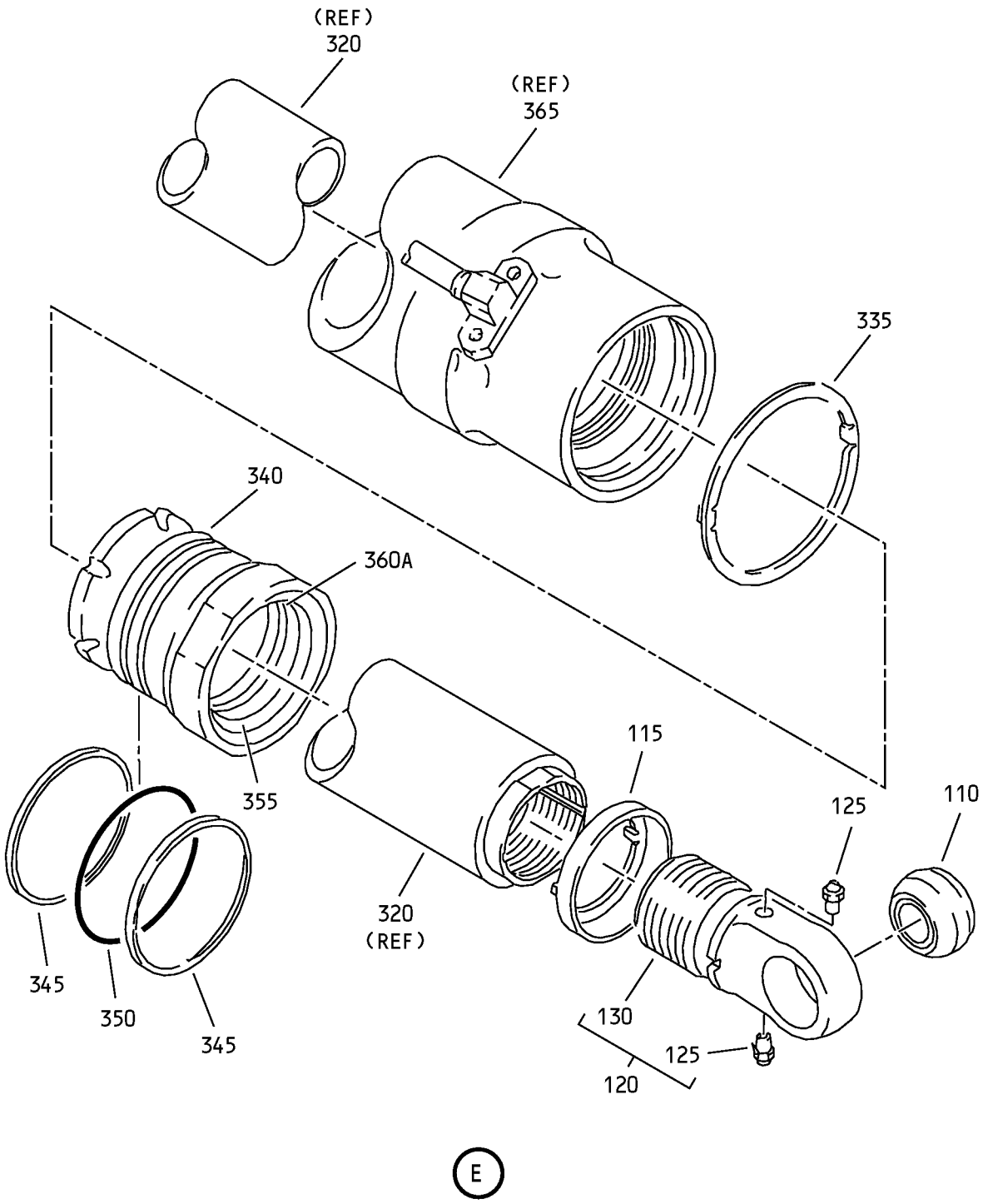
Main Landing Gear Retract Actuator Assembly
IPL Figure 1 (Sheet 2 of 7)



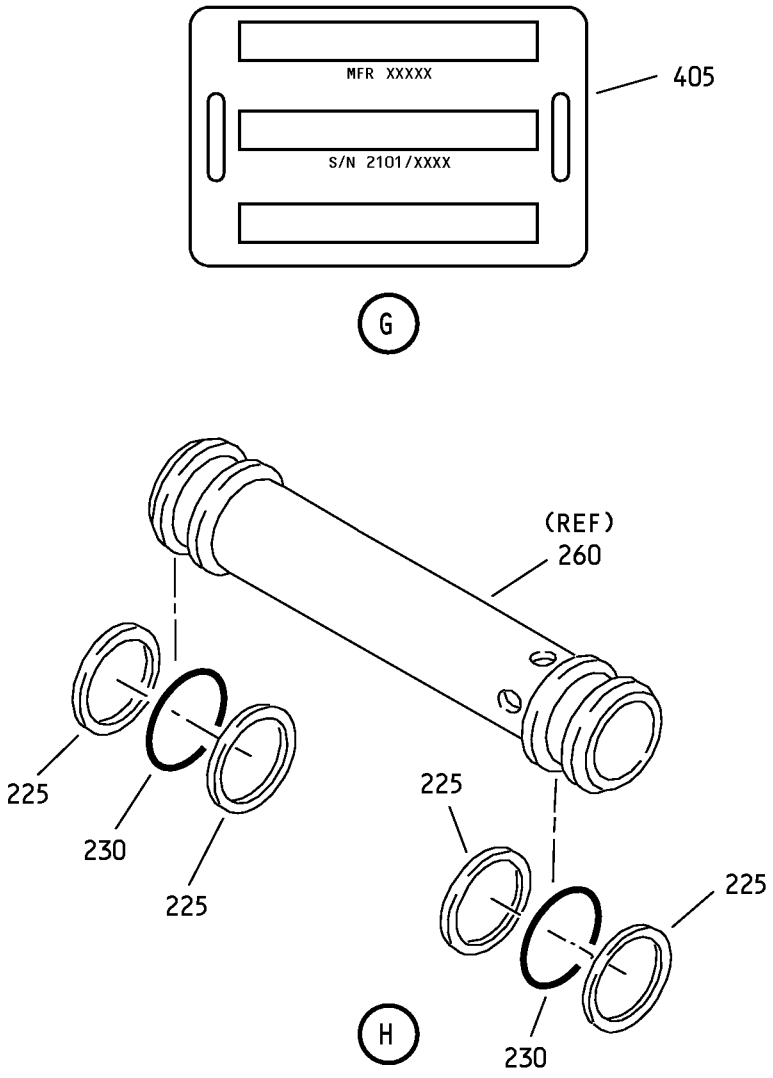
Main Landing Gear Retract Actuator Assembly
IPL Figure 1 (Sheet 3 of 7)



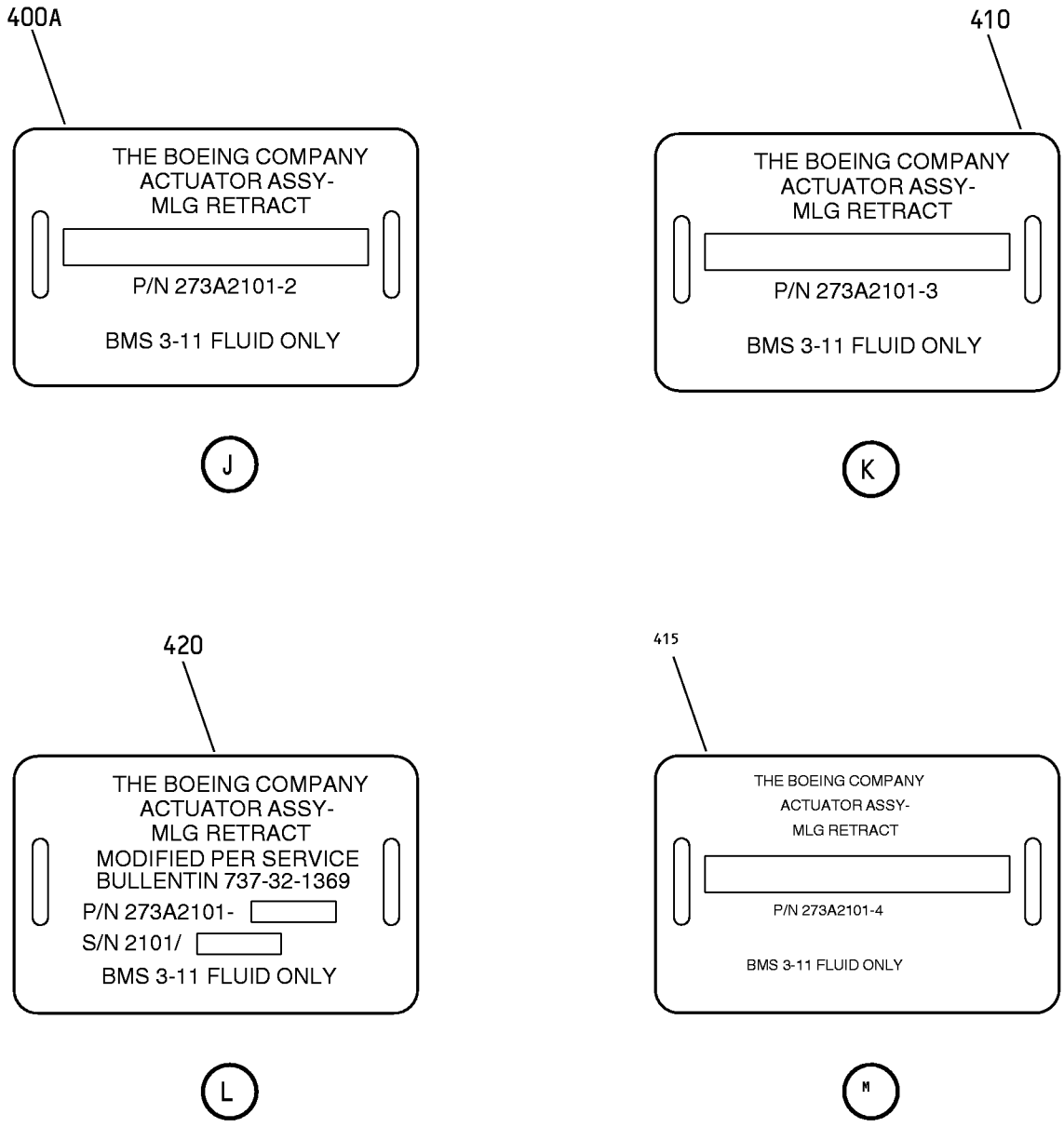
Main Landing Gear Retract Actuator Assembly
IPL Figure 1 (Sheet 4 of 7)



Main Landing Gear Retract Actuator Assembly
IPL Figure 1 (Sheet 5 of 7)



Main Landing Gear Retract Actuator Assembly
IPL Figure 1 (Sheet 6 of 7)



Main Landing Gear Retract Actuator Assembly
IPL Figure 1 (Sheet 7 of 7)

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–1A	273A2101-1		DELETED		
–1B	273A2101-2		ACTUATOR ASSY-MAIN GEAR RETRACT (PRE SB 737-32-1369) (PRE SB 737-32-1369R1)	B	RF
–1C	273A2101-3		ACTUATOR ASSY-MAIN GEAR RETRACT (PRE SB 737-32-1369R1)	C	RF
–1D	273A2101-4		ACTUATOR ASSY-MAIN GEAR RETRACT (POST SB 737-32-1369) (PRE SB 737-32-1369R1)	A	RF
–1E	273A2101-5		ACTUATOR ASSY-MAIN GEAR RETRACT (POST SB 737-32-1369R1)	D	RF
–1F	273A2101-6		ACTUATOR ASSY-MAIN GEAR RETRACT, RETROFIT (POST SB 737-32-1369R1)	E	RF
–1G	273A2101-7		ACTUATOR ASSY-MAIN GEAR RETRACT, RETROFIT (POST SB 737-32-1369R1)	F	RF
–1H	273A2101-8		ACTUATOR ASSY-MAIN GEAR RETRACT, RETROFIT (POST SB 737-32-1369R1)	G	RF
–1J	273A2101-9		ACTUATOR ASSY-MAIN GEAR RETRACT, RETROFIT (POST SB 737-32-1369R1)	H	RF
–1K	273A2101-10		ACTUATOR ASSY-MAIN GEAR RETRACT, RETROFIT (POST SB 737-32-1369R1)	J	RF
–5	273T0050-8		DELETED		
5A	273T0050-12		. STRAP	A-D	2
7	273T0050-12		. STRAP	E-J	1
–10	6F3808		DELETED		
–10A	FCLX0516600B		DELETED		
–10B	6F3932		DELETED		
10C	6F3976		. RESTRICTOR-CHECK (V99240)		1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–15	6F3806		DELETED		
–15A	FCLX0516700B		DELETED		
15B	MS21902-6T		. UNION		1
20	NAS1612-6		. PACKING	B	1
–20A	NAS1612-6A		. PACKING	A, C-J	1
25	NAS1612-8		. PACKING	B	1
–25A	NAS1612-8A		. PACKING	A, C-J	1
30	BACB30LE3U3		. BOLT		2
35	BACW10BP3ACU		. WASHER		2
40	BACN10YA6N		. NUT	B	1
–40A	BACN10YA6		. NUT	A, C, D, H, J	1
–40B	BACN10YA6N		. NUT (OPT ITEM 40C)	E-G	1
–40C	BACN10YA6		. NUT (OPT ITEM 40B)	E-G	1
45	273A2121-1		. FITTING		1
50	C11236-012B		. RING (V26879) (SPEC BACR12BM012) (OPT RMR12BM012 (V94878)) (OPT STF800-012 (V02107)) (OPT S30294-012-1 (V97820)) (OPT TF450-012A (V07128)) (OPT 2100-012 (V26303))		2
55	C11236-110B		. RING (V26879) (SPEC BACR12BM110) (OPT RMR12BM110 (V94878)) (OPT STF800-110 (V02107)) (OPT S30294-110-1 (V97820)) (OPT TF450-110A (V07128)) (OPT 2100-110 (V26303))		2
60	NAS1611-012		. PACKING	B	1
–60A	NAS1611-012A		. PACKING (OPT ITEM 60B, 60C)	A, C-E, H	1

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–60B	BCREF49199		. PACKING (V02697) (E0515-2-012-1W2YB0) (OPT ITEM 60A, 60C)	A, C-E, H	1
–60C	72180-012		. PACKING (V95272) (OPT ITEM 60A, 60B)	A, C-E, H	1
–60D	NAS1611-012A		. PACKING	F, G, J	1
65	NAS1611-110		. PACKING	B	1
–65A	NAS1611-110A		. PACKING (OPT ITEM 65B, 65C)	A, C-E, H	1
–65B	BCREF49200		. PACKING (V02697) (E0515-2-110-1W2YB0) (OPT ITEM 65A, 65C)	A, C-E, H	1
–65C	72180-110		. PACKING (V95272) (OPT ITEM 65A, 65B)	A, C-E, H	1
–65D	NAS1611-110A		. PACKING	F, G, J	1
70	273A2122-1		. TUBE ASSY		1
75	DB0S13BX06H		. . SLEEVE (V14798) (SPEC BACS13BX06H) (OPT 2-02903-06H (V11328)) (OPT 35235V06 (V08199)) (OPT AP2097-06H (V01673)) (OPT AFP175V06 (V30974))		1
77	273A2122-3		. . TUBE-TRANSFER		1
80	BACB30NR4K68		. BOLT (OPT ITEM 80A, 80B)		1
–80A	BACB30LJ4K68		. BOLT (OPT ITEM 80, 80B)		1
–80B	NAS6304A68		. BOLT (OPT ITEM 80, 80A)		1
85	BACW10BP4ACU		. WASHER		1
90	BACW10BP4APU		. WASHER		1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
95	H52732-4CM		. NUT (V15653) (SPEC BACN10YR4CM) (OPT PLH54CM (V62554))		1
100	4075KP		. CLAMP-HOSE GUIDE (V94581)		1
–105	273A2125-1		DELETED		
105A	273A2125-1		. GUIDE-HOSE (OPT ITEM 150B)		1
–105B	273A2125-2		. GUIDE-HOSE (OPT ITEM 150A)		1
110	270T0002-42		. BEARING-BALL		1
115	69-77076-1		. CUP-LOCKWASHER		1
120	273A2105-1		. END ASSY-ROD		1
125	MS15004-1		. . FITTING		2
130	273A2105-2		. . END		1
135	273A2118-1		. LOCKNUT		1
140	273A2119-1		. KEY		1
145	2100-347		. RING (V26303) (SPEC BACR12BM347) (OPT TF450-347 (V07128)) (OPT S30294-347-1 (V97820)) (OPT STF800-347 (V02107)) (OPT RMR12BM347 (V94878)) (OPT C11236-347B (V26879))	B, C	2
–145A	2400-347-044		. RING-BACK UP (V5F573)	D-J	2
150	NAS1611-347		. PACKING	B	1
–150A	NAS1611-347A		. PACKING (OPT ITEM 150B, 150C)	A, C	1
–150B	BCREF49204		. PACKING (V02697) (E0515-2-347-1W2YB0) (OPT ITEM 150A, 150C)	A, C	1
–150C	72180-347		. PACKING (V95272) (OPT ITEM 150A, 150B)	A, C	1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–150D	BCREF50628		. PACKING (V5F573) (4150-34700-00952)	D, E	1
–150E	NAS1611-347A		DELETED		
–150F	BCREF49204		DELETED		
–150G	72180-347		DELETED		
–150H	BCREF50628		. PACKING (V5F573) (4150-34700-00952)	F-J	1
155	273A2103-1		. END ASSY-HEAD		1
160	273A2123-1		. . BUSHING		2
165	BACP20AX21P		. . PIN		1
170	BACP20AX37P		. . PIN		1
175	BACP20AX21		. . PLUG		1
180	BACP20AX37		. . PLUG		1
185	MS15004-1		. . FITTING		2
190	MS21209F1-15L		. . INSERT		4
192	JEHA1875375L		. . ORIFICE (V92555)		1
193	6F3820		. ORIFICE (V99240)		1
195	273A2103-2		. . END		1
200	BACB30LE3U3		. BOLT		4
205	BACW10BP3ACU		. WASHER		4
210	273A1115-2		. RETAINER-MLG		1
215	C11236-128B		. RING (V26879) (SPEC BACR12BM128) (OPT RMR12BM128 (V94878)) (OPT STF800-128 (V02107)) (OPT S30294-128-1 (V97820)) (OPT TF450-128A (V07128)) (OPT 2100-128 (V26303))		2
220	NAS1611-128		. PACKING	B	1
–220A	NAS1611-128A		. PACKING (OPT ITEM 220B, 220C)	A, C-E, H	1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–220B	BCREF49202		. PACKING (V02697) (E0515-2-128-1W2YB0) (OPT ITEM 220A, 220C)	A, C-E, H	1
–220C	72180-128		. PACKING (V95272) (OPT ITEM 220A, 220B)	A, C-E, H	1
–220D	NAS1611-128A		. PACKING	F, G, J	1
225	C11236-123B		. RING (V26879) (SPEC BACR12BM123) (OPT RMR12BM123 (V94878)) (OPT STF800-123 (V02107)) (OPT S30294-123-1 (V97820)) (OPT TF450-123A (V07128)) (OPT 2100-123 (V26303))		4
230	NAS1611-123		. PACKING	B	2
–230A	NAS1611-123A		. PACKING (OPT ITEM 230B, 230C)	A, C-E, H	2
–230B	BCREF49201		. PACKING (V02697) (E0515-2-123-1W2YB0) (OPT ITEM 230A, 230C)	A, C-E, H	2
–230C	72180-123		. PACKING (V95272) (OPT ITEM 230A, 230B)	A, C-E, H	2
–230D	NAS1611-123A		. PACKING	F, G, J	2
–235	273A2110-1		DELETED		
235A	273A2110-1		. TUBE-PULL (OPT ITEM 235B)		1
–235B	273A2110-3		. TUBE-PULL (OPT ITEM 235A)		1
240	273A2117-1		. SPRING		1
245	273A2106-1		. SNUBBER ASSY		1
250	273A2109-1		. . SLIDE-EXTEND		1
255	273A2108-1		. . SLIDE-RETRACT		1
260	273A2107-1		. . SLEEVE		1
265	BACB30LE3U3		. BOLT		3

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
270	BACW10BP3ACU		. WASHER		3
275	273A2112-1		. GUIDE ASSY (OPT ITEM 275A)		1
–275A	273A2112-3		. GUIDE ASSY (OPT ITEM 275)		1
280	BACB28AU07B025A		. . BUSHING		2
285	273A2112-2		. . GUIDE		1
290	NAS6703U12		. BOLT	B	1
–290A	BACB30LM3U12		. BOLT	A, C, D, H, J	1
–290B	NAS6703U12		. BOLT (OPT ITEM 290C)	E, F, G	1
–290C	BACB30LM3U12		. BOLT (OPT ITEM 290B)	E, F, G	1
295	BACW10BP3ACU		. WASHER		1
300	BACW10BP3APU		. WASHER		1
305	NAS1805-3		. NUT	B	1
–305A	BACN11Z3CK		. NUT	A, C, D, H, J	1
–305B	NAS1805-3		. NUT (OPT ITEM 305C)	E, F, G	1
–305C	BACN11Z3CK		. NUT (OPT ITEM 305B)	E, F, G	1
310	273A2111-1		. STOP-SNUBBER		1
–315	S34581-341H99		DELETED		
–315A	S34721-341H99		DELETED		
315B	S34721-341H99N		. SEAL (V97820)		1
320	273A2104-1		. PISTON ASSY	A, B, E, F, J	1
–320A	273A2104-3		. PISTON ASSY	C, D, G, H	1
325	MS21209F1-15L		. . INSERT	A, B, E, F, J	3
–325A	BACI12AEF1-15L		. . INSERT	C, D, G, H	3

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
330	273A2104-2		. . PISTON	A, B, E, F, J	1
–330A	273A2104-4		. . PISTON	C, D, G, H	1
335	273A2120-1		. CUP-LOCKWASHER		1
340	273A2124-1		. BEARING		1
345	C11236-233B		. RING (V26879) (SPEC BACR12BM233) (OPT RMR12BM233 (V94878)) (OPT STF800-233 (V02107)) (OPT S30294-233-1 (V97820)) (OPT TF450-233A (V07128)) (OPT 2100-233 (V26303))	A-C	2
–345A	2400-233-044		. RING-BACK UP (V5F573)	D-J	2
350	NAS1611-233		. PACKING	B	1
–350A	NAS1611-233A		. PACKING (OPT ITEM 350B, 350C)	A, C	1
–350B	BCREF49203		. PACKING (V02697) (E0515-2-233-1W2YB0) (OPT ITEM 350A, 350C)	A, C	1
–350C	72180-233		. PACKING (V95272) (OPT ITEM 350A, 350B)	A, C	1
–350D	BCREF50627		. PACKING (V5F573) (4150-23300-00952)	D, E	1
–350E	NAS1611-233A		DELETED		
–350F	BCREF49203		DELETED		
–350G	72180-233		DELETED		
–350H	BCREF50627		. PACKING (V5F573) (4150-23300-00952)	F-J	1
355	S32925-725H99		. SEAL (V97820)		1
–360	S34571-333H99		DELETED		

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
360A	S34711-333H99		. SEAL (V97820)		1
365	273A2102-1		. CYLINDER ASSY (PRE SB 737-32-1369) (PRE SB 737-32-1369R1)	B	1
–365A	273A2102-3		. CYLINDER ASSY	C, H, J	1
–365B	273A2102-5		. CYLINDER ASSY	D, F	1
–365C	273A2102-7		. CYLINDER ASSY (POST SB 737-32-1369R1)	E, G	1
–365D	273A2102-3		. CYLINDER ASSY (POST SB 737-32-1369)	A	1
370	MS21209F1-15L		. . INSERT	B	2
–370A	BACI12AEF1-15L		. . INSERT	A, C-J	2
375	273A2102-2		. . CYLINDER	B	1
–375A	273A2102-4		. . CYLINDER	A, C, H, J	1
–375B	273A2102-6		. . CYLINDER	D, F	1
–375C	273A2102-8		. . CYLINDER	E, G	1
–400	273A2508-5		DELETED		
400A	273A2508-11		. NAMEPLATE	B	1
405	273A2508-6		. NAMEPLATE	A-D	1
410	273A2508-15		. NAMEPLATE	C	1
–410A	273A2508-17		. NAMEPLATE	D	1
415	273A2508-16		. NAMEPLATE	A	1
420	BAC27DLG172		. MARKER	E-J	1
			DELETED		

–Item not Illustrated