COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

BRAKE FEEL ACTUATOR ASSEMBLY

PART NUMBER 65C26859–1

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COMPONENT MAINTENANCE MANUAL

Revision No. 11
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To: All holders of BRAKE FEEL ACTUATOR ASSEMBLY 32-43-23.

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.

Pages replaced or made obsolete by this revision should be removed and destroyed.

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Location of Change	Description of Change
	NO HIGHLIGHTS

COMPONENT MAINTENANCE MANUAL

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

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COMPONENT MAINTENANCE MANUAL

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
		PRR 33718	SEP 05/85

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		Revision		Filed	
Number	Date	Date	Initials	Number	Date	Date	Initials

Revision		Filed		Revision		Filed	
Number	Date	Date	Initials	Number	Date	Date	Initials

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COMPONENT MAINTENANCE MANUAL

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When the temporary revision is incorporated or cancelled, and the pages are removed, enter the date the pages are removed and the initials of the person who removed the temporary revision.

Temporary Revision		Inserted		Removed	
Number	Date	Date	Initials	Date	Initials

Temporary Revision		Inserted		Removed	
Date	Initials	Number	Date	Date	Initials

Temporary Revision		Inserted		Removed	
Number	Date	Date	Initials	Date	Initials

Temporary Revision		Inserted		Removed	
Date	Initials	Number	Date	Date	Initials

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.

BRAKE FEEL ACTUATOR ASSEMBLY - DESCRIPTION AND OPERATION

1. **Description and Operation**

   A. The brake feel actuator consists of housing and end cap containing piston, sleeve, seals, and tube with a spring loaded plunger. Hydraulic fluid pressure applied at the port in the end cap is transmitted thru piston and spring to plunger, thus converting the pressure to a force, providing feedback feel force to brake system.

2. **Leading Particulars (approximate)**

   A. Length – 6.2 inches

   B. Diameter – 1.5 inches

   C. Weight – 3 pounds

TESTING AND FAULT ISOLATION

1. **General**
   A. This procedure tells how to do a test of the actuator after an overhaul or for fault isolation.
   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. **Test Equipment and Materials**
   A. 0 to 5150 psi (0 to 35508 kPa) hydraulic test stand, STD-3818 – to supply fluid, D50036 at a maximum flow rate of 5 gpm at variable pressure of 0-5000 psi. Fluid to be filtered continuously to 15 microns and kept at 70-110°F.
   B. Test fluid – fluid, D50036
   C. Test fixture to hold the unit, with spring scale or equivalent device to measure the plunger extend force (70 lb. max).
   D. Lockwire – lockwire, G50347. (Optional: lockwire, G50177)
3. **Preparation for Test**

   WARNING: DO NOT APPLY COMPRESSED AIR TO PORT AT ANY TIME. IF COMPRESSED AIR IS APPLIED, THE UNIT CAN OPERATE ACCIDENTALLY. THIS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

   CAUTION: DO NOT CYCLE UNIT AT PROOF PRESSURE.

   A. Put the actuator in the test fixture. Connect the hydraulic lines to the actuator.
   B. Bleed all air from the hydraulic lines.
4. **Proof Pressure Test**
   A. Gradually increase hydraulic pressure to 4400-4600 psi and hold for 2 minutes. There must be no physical failure or external fluid leakage.
   B. Decrease the pressure to zero.
5. **Performance Test**
   A. With zero hydraulic pressure applied to unit, push and hold the plunger 0.03-0.04 inch from the fully extended position. Install a device to measure plunger extend force.
   B. Apply 580-620 psi hydraulic pressure to unit and hold this pressure. The extend force of the plunger must be 45-55 pounds.
   C. Increase the pressure to 3000 psi. The plunger extend force must be 45-55 pounds.
   D. Decrease the hydraulic pressure to zero. The plunger output force must not be more than 8.5 lb.
   E. Disconnect the hydraulic lines from the unit. Drain the hydraulic fluid from the unit. Install caps on the ports.

Table 101: Trouble Shooting Chart

TROUBLE	PROBABLE CAUSE	CORRECTION
External leakage	Defective seal (15) on piston	Replace seal per par. 6.A.
Plunger force out of tolerance	Plunger breakout force	Adjust the quantity of washers (50) per par. 6.B.
	Defective slydrings (65, 80), seal (15), scraper (85)	Replace parts per par. 6.C.
	Defective spring (55)	Replace parts per par. 6.B.
	Defective plunger (60) or housing (90)	Replace parts per par. 6.C.

6. Corrective Procedures

A. Piston seal (15)

(1) Remove end cap (5), piston (10) and the old seal (15).

(2) Replace seal (15) and install the piston and the end cap. Tighten the end cap to 100-150 lb-in.

B. Washers (50), spring (55)

(1) Disassemble the unit (DISASSEMBLY par. 3.A thru 3.D.). Do not disassemble tube (30) at this time.

(2) Make a check of the plunger breakout force. The plunger must lift off the tube seat at 45-50 lb. If the force is in this range, assemble the unit (ASSEMBLY par. 2.C.(3) thru 2.C.(9)).

(3) If the plunger breakout force is not in the specified range, disassemble tube (30) more (DISASSEMBLY par. 3.D.). Increase the washer (50) thickness to increase the breakout force, and decrease the washer (50) thickness to decrease the breakout force. If you cannot adjust the breakout force to be in the specified range, remove and make a check of spring (55). If the spring is not satisfactory, replace it and try again. Then assemble the unit (ASSEMBLY par. 2.C.(3) thru 2.C.(9)).

C. Slydrings (65, 80), scraper (85), plunger (60), housing (90).

(1) Disassemble the unit (DISASSEMBLY) until you can get access to the part to be replaced.

(2) Examine the parts. Replace defective parts.

(3) Assemble the unit (ASSEMBLY) and do the test again.

DISASSEMBLY

1. **General**
   A. This procedure has the data necessary to disassemble the brake feel 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 the SOPM subjects identified in this procedure.
   D. Refer to IPL Figure 1 for item numbers.
2. **Parts Replacement**

   NOTE: The following parts are recommended for replacement. Unless otherwise specified, actual replacement of parts may be based on in-service experience.

   A. Seal (15)
   B. Slydrings (65, 80)
   C. Scraper (85)
3. **Disassembly**
   A. Cut and remove lockwire, G50347.
   B. Grip housing (90). Unscrew end cap (5) and remove from housing. Remove piston (10) and seal (15) from end cap interior.
   C. Remove tube cover (20) with attached nameplate (25). Do not remove nameplate from cover unless necessary for repair or replacement.
   D. Pull tube (30) from housing (90). Disassemble tube as follows:

      CAUTION: SPRING (55) IS COMPRESSED APPROXIMATELY 45 POUNDS. USE CARE TO RESTRAIN SPRING RETAINER TO RELIEVE SPRING FORCE GRADUALLY, OR PERSONNEL INJURY OR PARTS DAMAGE MAY OCCUR.

      (1) Remove pin retainers (35).
      (2) Hold spring retainer (45) inward to remove side force on pin (40). Push out pin, then carefully relieve pressure on spring retainer until spring (55) is relaxed.
      (3) Remove spring retainer (45), washers (50) if used, and spring (55). Retain washers with other parts of unit to aid in reassembly, as washers are used to adjust plunger breakout force.
      (4) Slide plunger (60) out of tube (70). Remove slydring (65) from plunger.
   E. Remove plastic sleeve (75), slydring (80) and scraper (85) from housing (90) interior.

(NOT APPLICABLE)

CHECK

1. General

A. This procedure has the data necessary to clean the brake feel 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. Check

A. References

Reference	Title
SOPM 20-20-01	MAGNETIC PARTICLE INSPECTION
SOPM 20-20-02	PENETRANT METHODS OF INSPECTION

B. Procedure

(1) Check all parts for obvious defects in accordance with standard industry practices.

(2) Magnetic particle check per SOPM 20-20-01:

(a) Housing (90)

(b) end cap (5)

(c) pin retainer (35)

(d) pin (40)

(e) spring retainer (45)

(f) plunger (60)

(g) tube (70)

(3) Penetrant check per SOPM 20-20-02:

(a) Spring (55)

(b) piston (10)

3. Check spring

A. Procedure

(1) Compress spring (55) to 1.94-1.96 inches length. Load shall be 14.4-17.6 pounds. Compress spring to 1.25-1.27 inches. Load shall be 58.5-71.5 pounds. Approximate free length is 2.18 inches.

REPAIR

1. Content

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

Table 601:

P/N	NAME	REPAIR
65C26858	HOUSING	1-1
69-74717	TUBE	2-1
69-74719	PLUNGER	3-1
69-74720	END CAP	4-1
69-74721	PIN	5-1
69-74722	PIN RETAINER	6-1
69B80163	SLEEVE	7-1
69B80164	PISTON	8-1
- - -	MISCELLANEOUS PARTS REFINISH	9-1
BAC27DHY0313	EXTERNAL PARTS REPLACEMENT	10-1

2. Standard Practices

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

- 20-00-00 Introduction
- 20-30-02 Stripping of Protective Finishes
- 20-30-03 General Cleaning Procedures
- 20-41-01 Decoding Table for Boeing Finish Codes
- 20-50-05 Application of Aluminum Foil and Other Markers
- 20-60-02 Finishing Material

3. Materials

NOTE: Equivalent substitutes can be used.

A. Primer – BMS 10-11, Type 1 (Ref SOPM 20-60-02)

B. Enamel – BMS 10-11, Type 2, gloss white color 702 (Ref SOPM 20-60-02)

C. Protective Finish – Type 41 (Ref SOPM 20-60-02)

D. Sealant – BMS 5-95 (Ref SOPM 20-60-04)

4. Dimensioning Symbols

A. Standard True Position Dimensioning Symbols used in applicable repair procedures are shown in REPAIR-GENERAL, Figure 601.

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

EXAMPLES

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

True Position Dimensioning Symbols
Figure 601

HOUSING - REPAIR 1-1

65C26858–1

1. General

A. This procedure has the data necessary to repair the housing.

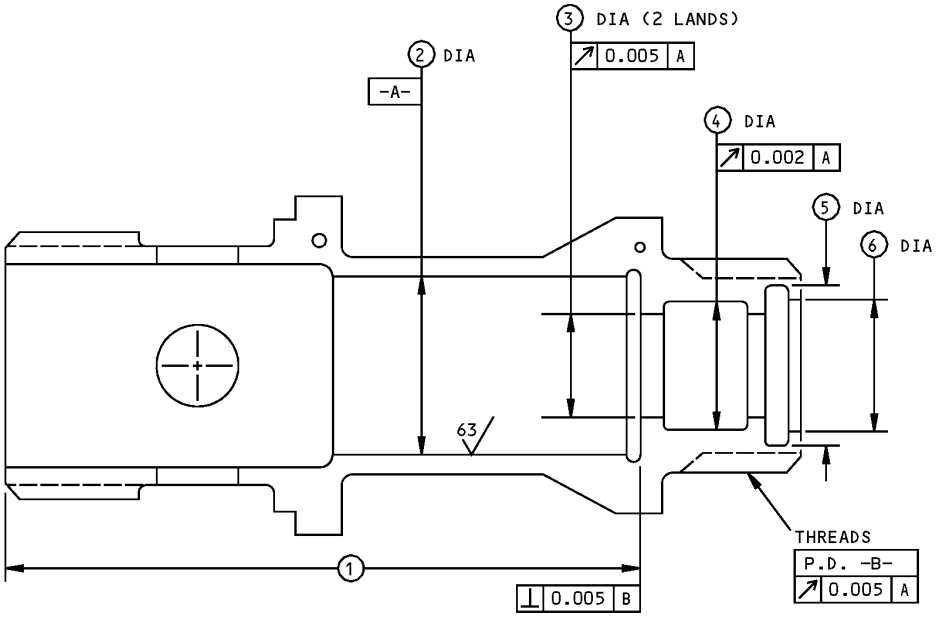
B. Refer to REPAIR-GENERAL for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to the REPAIR-GENERAL, Figure 601 for the Standard True Position Dimensioning Symbols shown in the repair.

D. Refer to IPL Figure 1 for item numbers.

2. Coating Repair

A. Repair is only replacement of the original finish. Refer to REPAIR 1-1, Figure 601 for refinish instructions.



	1	2	3	4	5	6
DESIGN DIM	2.898 2.893	0.8545 0.8538	0.515 0.511	0.625 0.624	0.764 0.760	0.660 0.650

REFINISH

PASSIVATE (F-17.09) ALL OVER

REPAIR

(SAME AS REFINISH)

125 MACHINE FINISH EXCEPT AS NOTED

MATERIAL: 15-5PH, 150-170 KSI

ALL DIMENSIONS ARE IN INCHES

65C26858-1 Housing Details
Figure 601

TUBE - REPAIR 2-1

69-74717–1

1. General

A. This procedure has the data necessary to repair the tube.

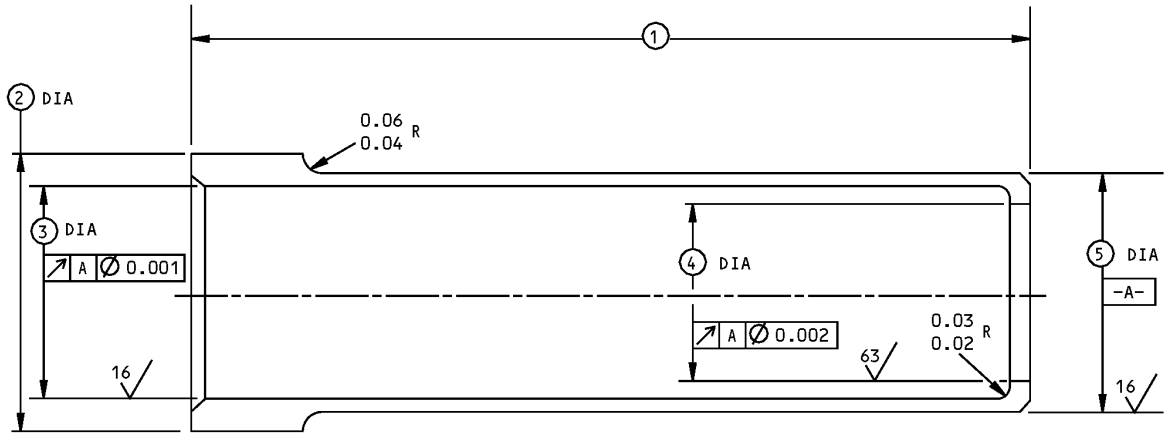
B. Refer to REPAIR-GENERAL for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to the REPAIR-GENERAL, Figure 601 for the Standard True Position Dimensioning Symbols shown in the repair.

D. Refer to IPL Figure 1 for item numbers.

2. Coating Repair

A. Repair consists of restoration of original finish. Refer to REPAIR 2-1, Figure 601 for refinish instructions



	1	2	3	4	5
DESIGN DIM	2.716 2.711	0.88 0.86	0.677 0.675	0.509 0.504	0.745 0.743

REFINISH

PASSIVATE (F-17.09) ALL OVER.

REPAIR

(SAME AS REFINISH)

125 MACHINE FINISH EXCEPT AS NOTED

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

ALL DIMENSIONS ARE IN INCHES

69-74717-1 Tube Details
Figure 601

PLUNGER - REPAIR 3-1

69-74719–1

1. General

A. This procedure has the data necessary to repair the plunger.

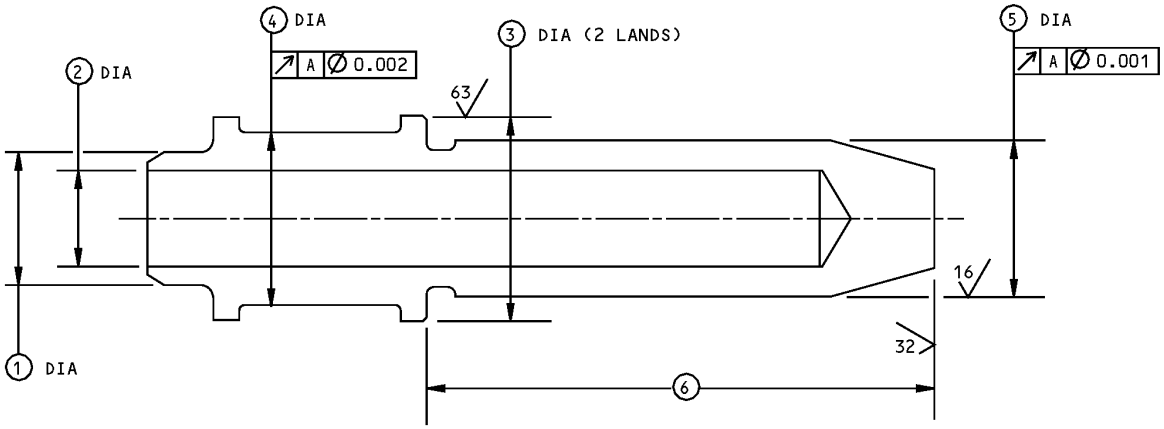
B. Refer to REPAIR-GENERAL for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to the REPAIR-GENERAL, Figure 601 for the Standard True Position Dimensioning Symbols shown in the repair.

D. Refer to IPL Figure 1 for item numbers.

2. Coating Repair

A. Repair consists of restoration of original finish. Refer to REPAIR 3-1, Figure 601 for refinish instructions.



	1	2	3	4	5	6
DESIGN DIM	0.390 0.380	0.316 0.312	0.662 0.661	0.549 0.548	0.498 0.496	1.600 1.596

REFINISH

PASSIVATE (F-17.09) ALL OVER.

REPAIR

(SAME AS REFINISH)

125 MACHINE FINISH EXCEPT AS NOTED

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

ALL DIMENSIONS ARE IN INCHES

69-74719-1 Plunger Details
Figure 601

END CAP - REPAIR 4-1

69-74720–1

1. General

A. This procedure has the data necessary to repair the end cap.

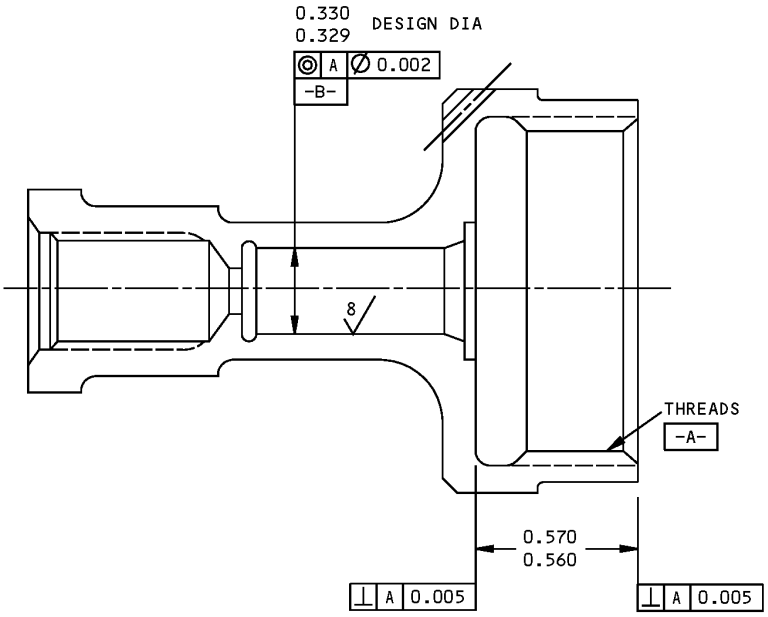
B. Refer to REPAIR-GENERAL for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to the REPAIR-GENERAL, Figure 601 for the Standard True Position Dimensioning Symbols shown in the repair.

D. Refer to IPL Figure 1 for item numbers.

2. Coating Repair

A. Repair consists of restoration of original finish. Refer to REPAIR 4-1, Figure 601 for refinish instructions.



REFINISH

PASSIVATE (F-17.09) ALL OVER.

REPAIR

(SAME AS REFINISH)

125 MACHINE FINISH EXCEPT AS NOTED

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

ALL DIMENSIONS ARE IN INCHES

69-74720-1 End Cap Details
Figure 601

PIN - REPAIR 5-1

69-74721–1

1. General

A. This procedure has the data necessary to repair the pin.

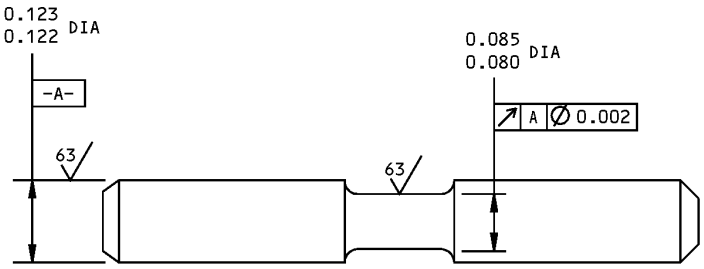
B. Refer to REPAIR-GENERAL for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to the REPAIR-GENERAL, Figure 601 for the Standard True Position Dimensioning Symbols shown in the repair.

D. Refer to IPL Figure 1 for item numbers.

2. Coating Repair

A. Repair consists of restoration of original finish. Refer to REPAIR 5-1, Figure 601 for refinish instructions.



REFINISH

PASSIVATE (F-17.09) ALL OVER.

REPAIR

(SAME AS REFINISH)

125 MACHINE FINISH EXCEPT AS NOTED.

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

ALL DIMENSIONS ARE IN INCHES

69-74721-1

Pin Details
Figure 601

PIN RETAINER - REPAIR 6-1

69-74722–1

1. General

A. This procedure has the data necessary to repair the pin retainer.

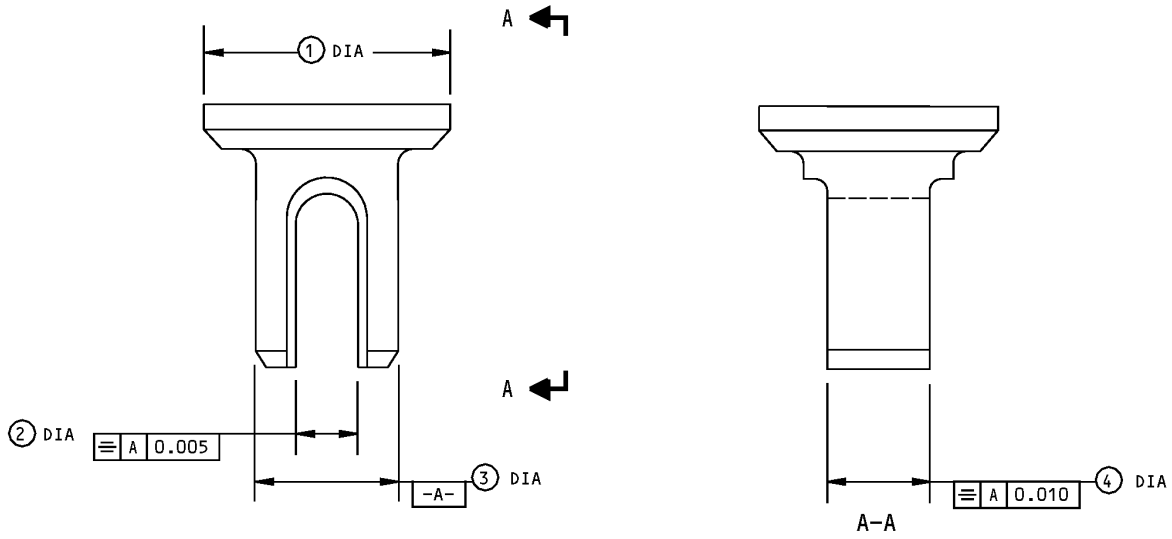
B. Refer to REPAIR-GENERAL for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to the REPAIR-GENERAL, Figure 601 for the Standard True Position Dimensioning Symbols shown in the repair.

D. Refer to IPL Figure 1 for item numbers.

2. Coating Repair

A. Repair consists of restoration of original finish. Refer to REPAIR 6-1, Figure 601 for refinish instructions.



	1	2	3	4
DESIGN DIM	0.365 0.360	0.095 0.090	0.217 0.216	0.150 0.140

REFINISH

PASSIVATE (F-17.09) ALL OVER.

REPAIR

(SAME AS REFINISH)

125 MACHINE FINISH

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

ALL DIMENSIONS ARE IN INCHES

69-74722-1 Pin Retainer Details
Figure 601

SLEEVE - REPAIR 7-1

69B80163–1

1. General

A. This procedure has the data necessary to repair the sleeve.

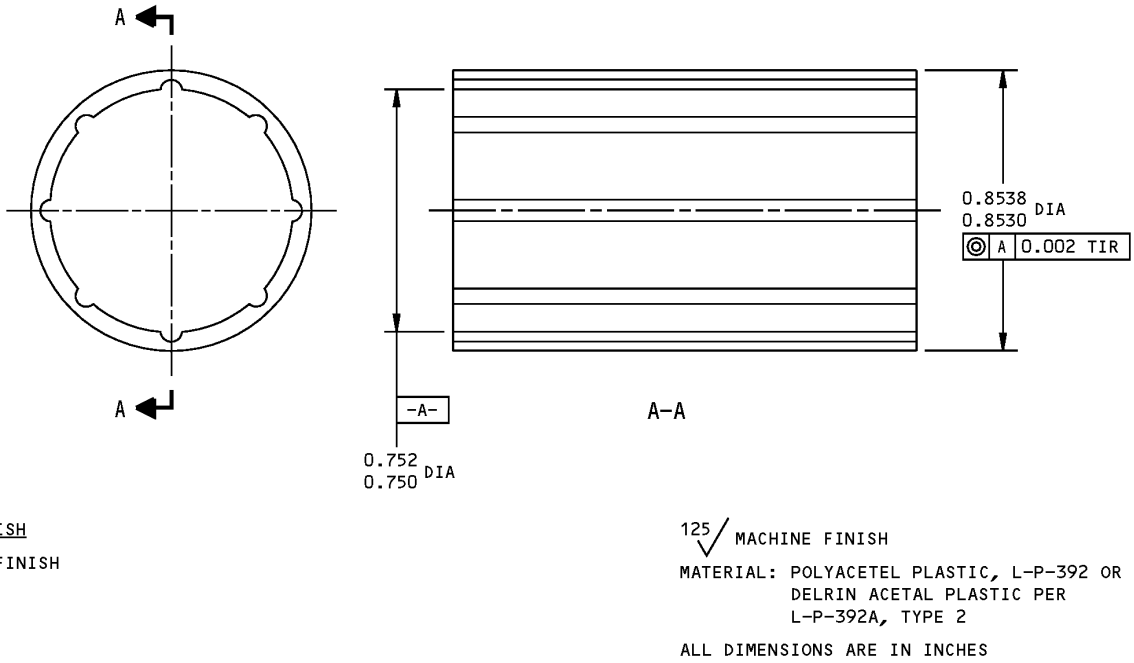
B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to the REPAIR-GENERAL, Figure 601 for the Standard True Position Dimensioning Symbols shown in the repair.

D. Refer to IPL Figure 1 for item numbers.

2. Repair details

A. Repair consists of replacement of defective sleeve. Refer to REPAIR 7-1, Figure 601 for details of replacement sleeve.



Sleeve Details, 69B80163-1
Figure 601

PISTON - REPAIR 8-1

69B80164–1

1. General

A. This procedure has the data necessary to repair the piston.

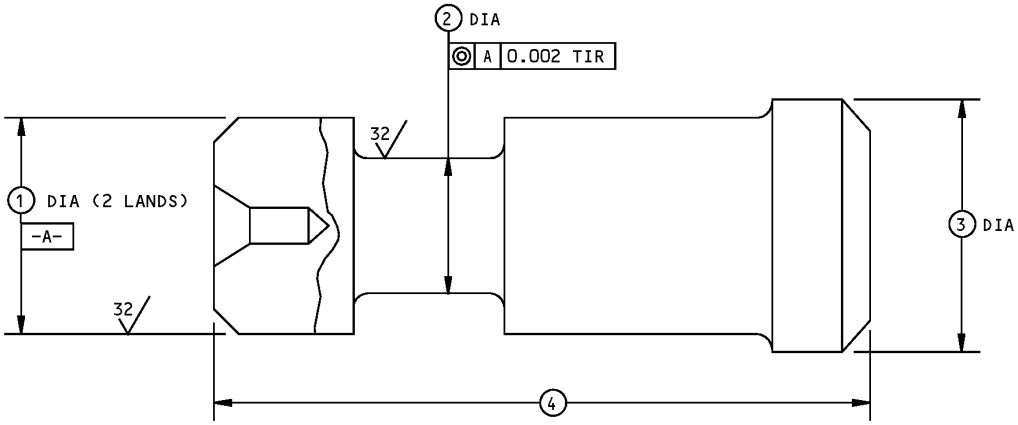
B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to the REPAIR-GENERAL, Figure 601 for the Standard True Position Dimensioning Symbols shown in the repair.

D. Refer to IPL Figure 1 for item numbers.

2. Repair details

A. Repair consists of replacement of defective piston. Refer to REPAIR 7-1, Figure 601, (Sheet 1) for details of replacement piston.



	1	2	3	4
DESIGN DIM	0.326 0.325	0.217 0.216	0.3750 0.3745	0.975 0.965

125 MACHINE FINISH EXCEPT AS NOTED

MATERIAL: AISI 302 CRES PER QQ-S-763, CLASS 302, COND A

REFINISH

NO FINISH

ALL DIMENSIONS ARE IN INCHES

Piston Details, 69B80164-1
Figure 601

MISCELLANEOUS PARTS REFINISH - REPAIR 9-1

1. General

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

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

C. Refer to IPL Figure 1 for item numbers.

2. Refinish details

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For general cleaning procedures, refer to SOPM 20-30-03. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

A. Repair of parts listed in REPAIR 9-1, Table 601 consists of restoration of the original finish.

Table 601: Refinish Details

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Spring (55)	Ti-13V-11G-3Al wire per AMS 4959	No finish
Spring retainer (45)	15-5PH CRES, 150-170 ksi	Passivate (F-17.09)
Tube cover (20)	Al alloy	Chemical treat and apply primer, C00259 (F-18.07) followed by enamel coating, C50069 (F-21.03).

EXTERNAL PARTS REPLACEMENT - REPAIR 10-1

BAC27DHY0313

1. General

A. This procedure has the data necessary to replace the external parts.

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

C. Refer to IPL Figure 1 for item numbers.

2. Nameplate Replacement

A. Remove defective nameplate (25) from tube cover (20). Clean or refinish tube cover as necessary.

B. Steel stamp dash number and serial number on new nameplate.

C. Install nameplate on tube cover. Fay seal with sealant, A00247.

D. Overcoat exposed sealant, A00247 with clear protective coating, B00571.

ASSEMBLY

1. General

A. This procedure has the data necessary to assemble the brake feel actuator asembly.

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

C. Refer to IPL Figure 1 for item numbers.

2. Assembly (ASSEMBLY, Figure 701)

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
B50080	Compound - Corrosion Preventive, Solvent Cutback, Cold-Application (Grade 2 - Soft Film)	MIL-PRF-16173, Grade 2 (Supersedes MIL-C-16173, Grade 2)
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D50036	Fluid - Hydraulic, Erosion Arresting, Fire Resistant (use at -65 to 275 Degree F)	BMS3-11, Type V (interchgable & intermixable with Type IV)
G50347	Lockwire - Nickel-copper, 0.032 inch diameter	NASM20995N˜ C32

B. References

Reference	Title
SOPM 20-44-02	TEMPORARY PROTECTIVE COATINGS
SOPM 20-50-02	INSTALLATION OF SAFETYING DEVICES
SOPM 20-60-02	FINISHING MATERIALS
SOPM 20-60-03	LUBRICANTS
SOPM 20-70-01	PROTECTION, STORAGE AND HANDLING OF AIRPLANE COMPONENTS

C. Procedure

NOTE: For finishing materials, refer to SOPM 20-60-02. For lubricants, refer to SOPM 20-60-03.

(1) Install scraper (85), slydring (80) and sleeve (75) in housing (90).

(2) Tube (30, ASSEMBLY, Figure 702)

NOTE: If spring retainer (45) or tube (70) is replaced, drill hole for pin (40) in replaced part per ASSEMBLY, Figure 701.

(a) Install slydring (65) on plunger (60).

(b) Slide plunger (60) into tube (70), long tapered end first. Bottom plunger in tube with tapered end protruding.

(c) Insert spring (55) into tube (70) against short end of plunger, then insert washers (50, 50A), as applicable, over end of spring.

(d) Insert spring retainer (45) in end of tube. Rotate retainer as necessary to position hole for pin (40) in retainer (45) parallel with mating holes in tube (70), then depress retainer into tube, against spring pressure, until pin holes align.

(e) Install pin (40) thru tube and spring retainer.

(f) Install pin retainer (35).

(3) Install tube (30) in housing (90).

(4) Lightly lubricate seal (15) with fluid, D50036 or MCS 352B fluid, D00054, then install on piston (10).

(5) Insert piston (10) in end cap (5), seal end first.

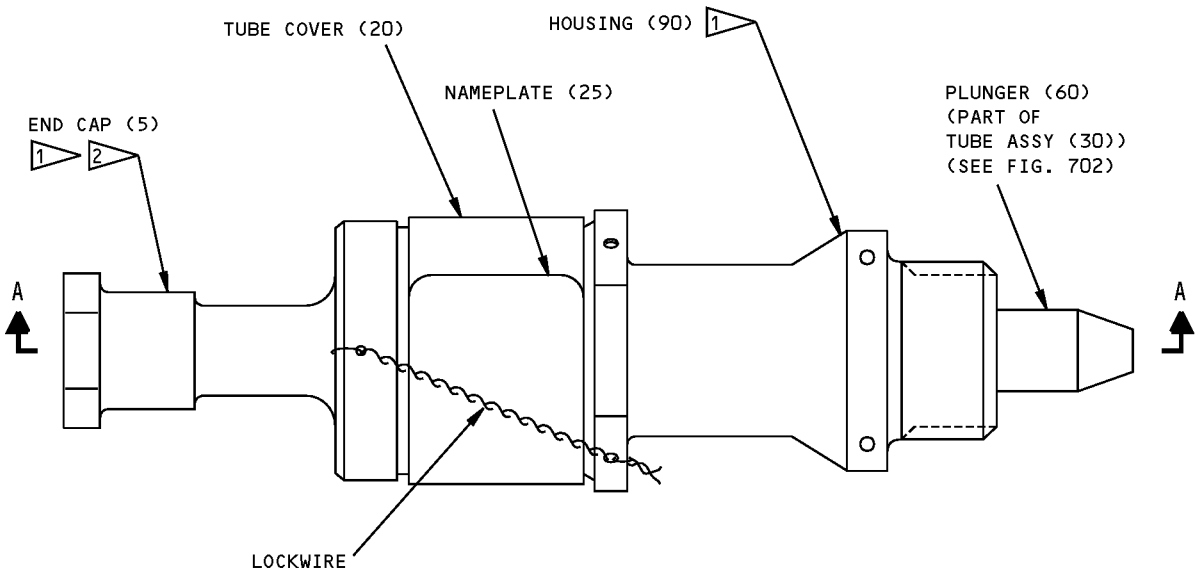
(6) Coat threads of end cap (5) and housing (90) with compound, B50080.

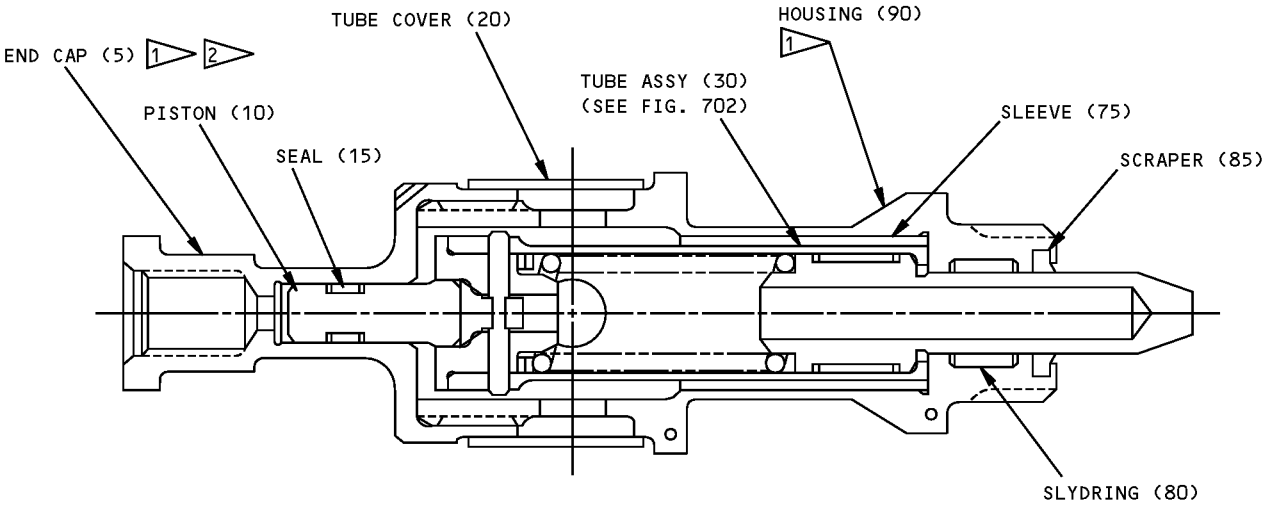
(7) Slip tube cover (20), with attached nameplate (25), over housing (90), then thread end cap onto housing and under tube cover. Tighten end cap to 100-150 lb-in.

(8) Perform functional test (Ref TESTING AND FAULT ISOLATION).

(9) Install lockwire, G50347 through end cap to housing using double twist method SOPM 20-50-02.

(10) Protect and store unit in accordance with standard industry practices and the information contained in SOPM 20-44-02 and SOPM 20-70-01.



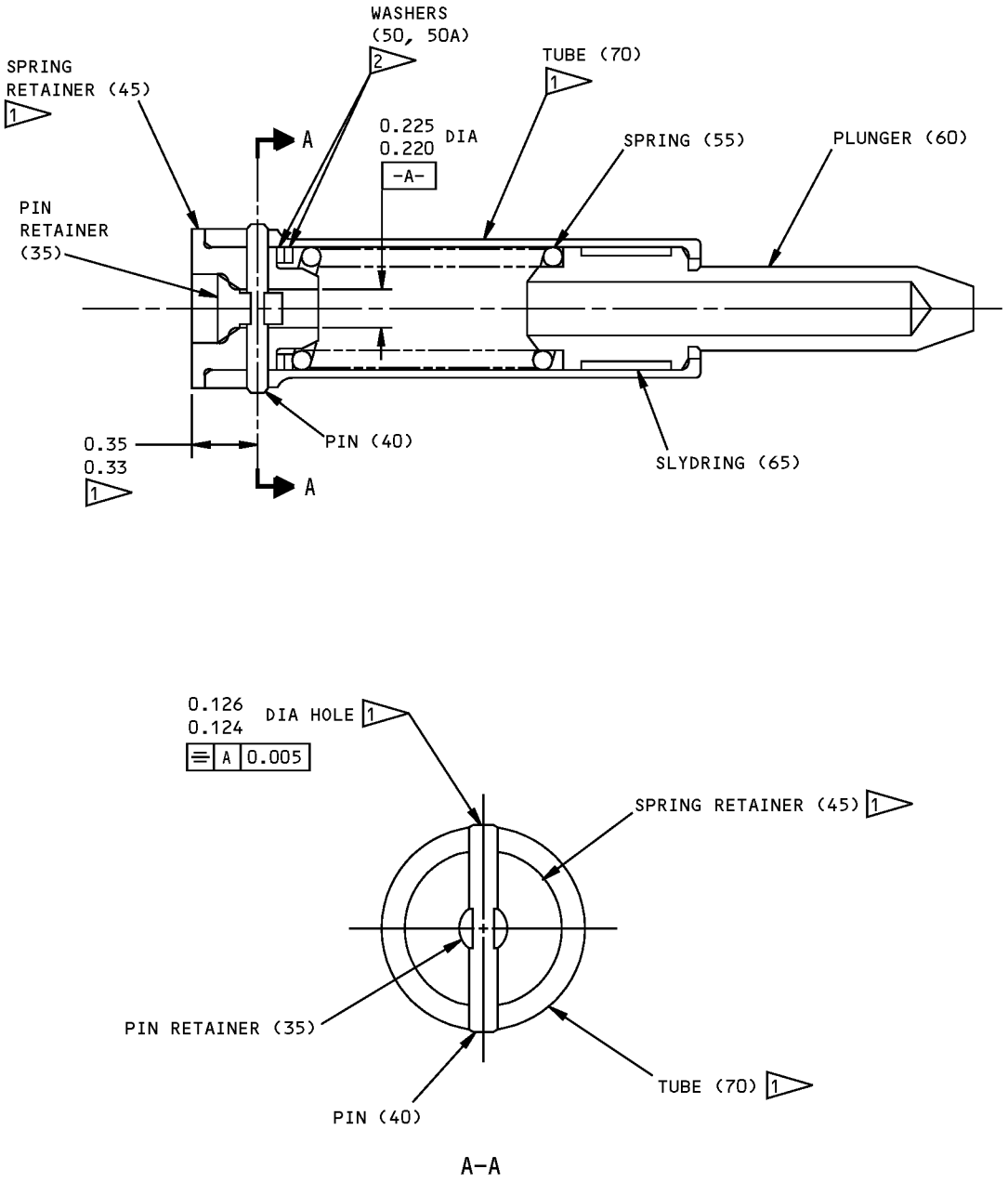


A-A

1 COAT MATING THREADS OF END CAP AND HOUSING WITH CORROSION PREVENTIVE COMPOUND

2 TIGHTEN TO 100-150 LB-IN.

Assembly Details
Figure 701

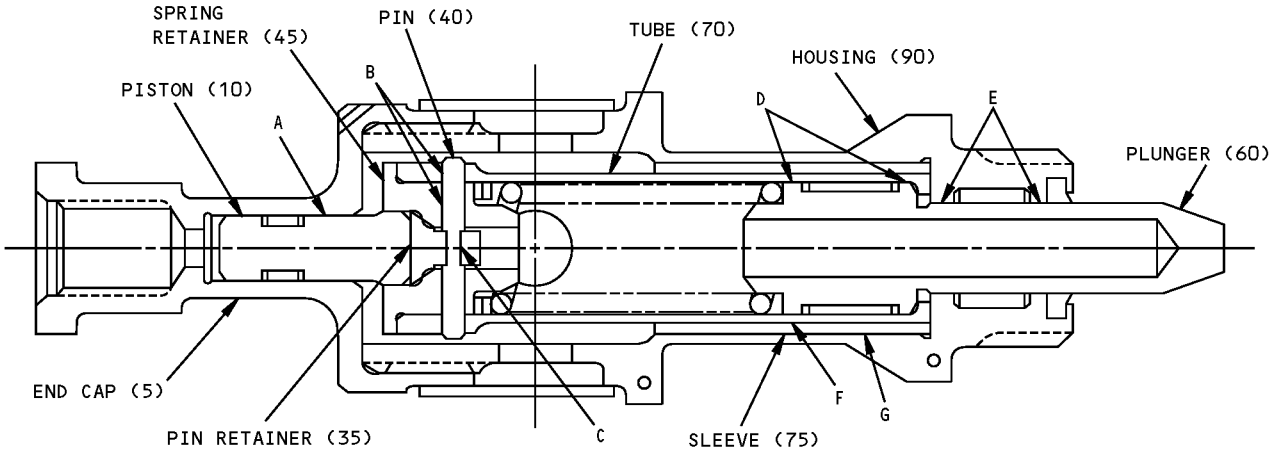


1 IF TUBE (70) OR SPRING RETAINER (45) IS REPLACED, BOTTOM SHOULDER OF RETAINER ON TUBE AND DRILL HOLE AS SHOWN.

2 CHECK BREAKOUT FORCE OF PLUNGER. PLUNGER SHALL LIFT OFF TUBE (70) SEAT AT 45-50 LB. ADD OR REMOVE WASHERS (50,50A) AS REQUIRED TO ADJUST FORCE.

Tube Details
Figure 702

FITS AND CLEARANCES



REF LETTER	REF IPL FIG. 1, MATING ITEM NO.	DESIGN DIMENSION*				SERVICE WEAR LIMIT*		
		DIMENSION		ASSEMBLY CLEARANCE		DIMENSION		MAXIMUM CLEARANCE
		MIN	MAX	MIN	MAX	MIN	MAX	
[A]	ID 5	0.329	0.330	0.003	0.005		0.331	0.007
	OD 10	0.325	0.326			0.324		
[B]	ID 45,70	0.124	0.126	0.001	0.004		0.127	0.006
	OD 40	0.122	0.123			0.121		
[C]	ID 35	0.090	0.095	0.005	0.015		0.097	0.019
	OD 40	0.080	0.085			0.078		
[D]	ID 70	0.675	0.677	0.013	0.016		0.677	0.016
	OD 60	0.661	0.662			0.661		
[E]	ID 90	0.511	0.515	0.013	0.019		0.517	0.023
	OD 60	0.496	0.498			0.494		
[F]	ID 75	0.750	0.752	0.005	0.009		0.755	0.012
	OD 70	0.743	0.745			0.743		
[G]	ID 90	0.8538	0.8545	0.0000	0.0015		0.8545	0.0025
	OD 75	0.8530	0.8538			0.8520		

* ALL DIMENSIONS ARE IN INCHES

Fits and Clearances
Figure 801

FOR TORQUE VALUES OF STANDARD FASTENERS, REFER TO 20-50-01			
ITEM NO. IPL FIG. 1	NAME	TORQUE	
		POUND-INCHES	POUND-FEET
5	END CAP	100-150	

Torque Table
Figure 802

(NOT APPLICABLE)

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

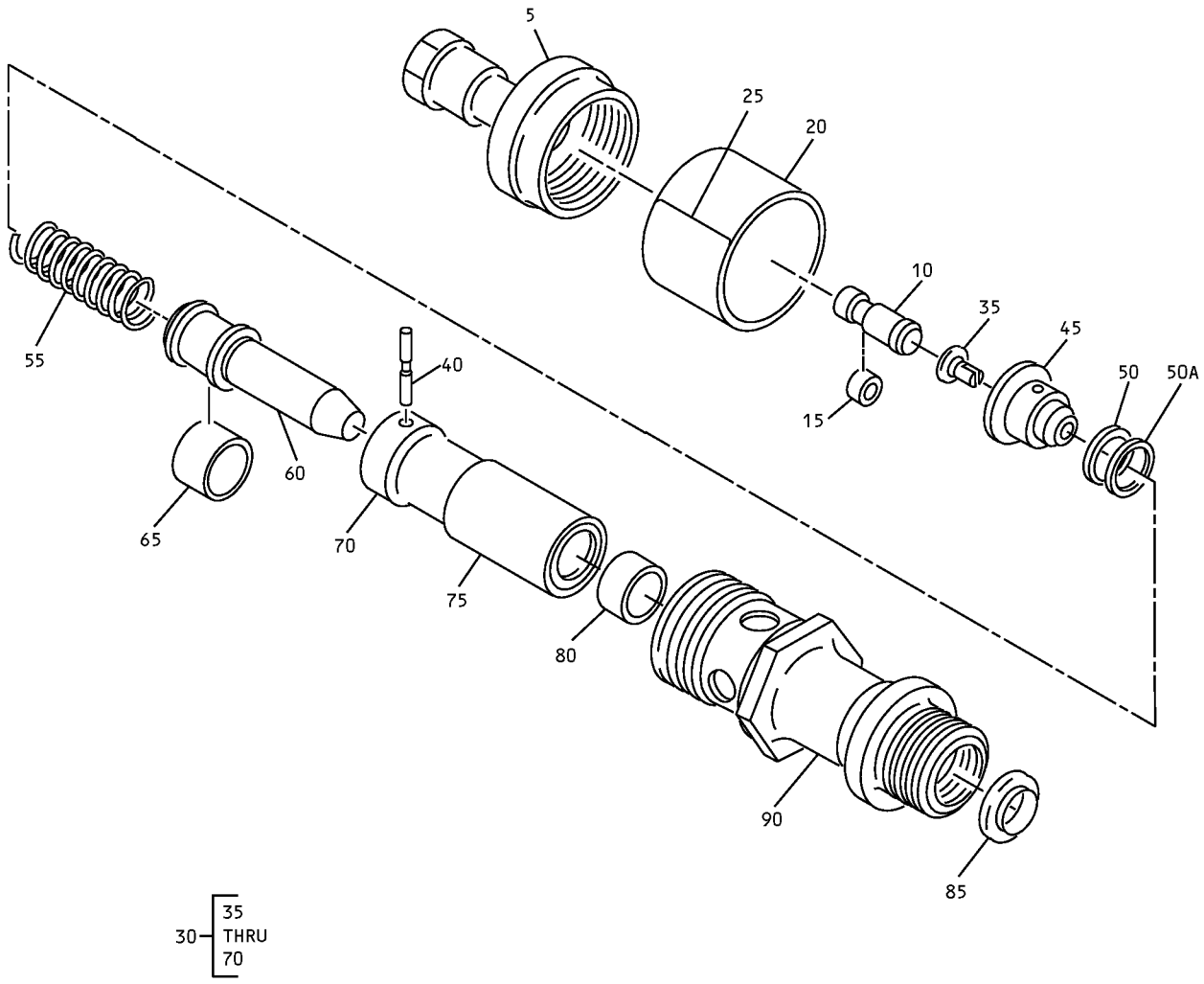
Optional (OPT)	The part is optional to and interchangeable with other parts that have the same item number.
Replaces, Replaced by and not interchangeable with (REPLACES, REPLACED BY AND NOT INTCHG/W)	The part replaces and is not interchangeable with the initial part.
Replaces, Replaced by (REPLACES,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

VENDOR CODES

Code	Name
09257	BUSAK AND SHAMBAN INC SEALS DIV 2531 BREMER DR PO BOX 176 FORT WAYNE, INDIANA 46801 FORMERLY SHAMBAN, W S AND CO
72902	Replaced: [V72902] PALMETTO INC SEE GREEN TWEED & CO V5F573 by Code: Name and Address below 5F573: GREENE TWEED AND CO INC 2075 DETWILER RD P.O. BOX 305 KULPSVILLE, PENNSYLVANIA 19443-0305

NUMERICAL INDEX

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
65C26858-1		1	90	1
65C26859-1		1	1	RF
69-54540-009		1	15B	1
69-74715-1		1	55	1
69-74716-1		1	45	1
69-74717-1		1	70	1
69-74719-1		1	60	1
69-74720-1		1	5	1
69-74721-1		1	40	1
69-74722-1		1	35	1
69-74723-1		1	30	1
69-74724-1		1	20	1
69B80163-1		1	75	1
69B80164-1		1	10	1
AN960C616		1	50	AR
AN960PD616		1	50A	AR
BAC27DHY0313		1	25	1
BACS34A1A		1	85	1
BCREF7950		1	15	1
NAS1611-009		1	15A	1
S34546-112-08-8		1	65	1
S34549-112-06-8		1	80	1



Brake Feel Actuator Assembly
IPL Figure 1

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–1	65C26859-1		ACTUATOR ASSY, BRAKE FEEL		RF
5	69-74720-1		. END CAP		1
10	69B80164-1		. PISTON		1
15	BCREF7950		. SEAL ASSY (V72902) (OPT ITEM 15A, 15B)		1
15A	NAS1611-009		. O-RING (OPT ITEM 15, 15B)		1
15B	69-54540-009		. SEAL, CHANNEL (OPT ITEM 15, 15A)		1
20	69-74724-1		. COVER, TUBE		1
25	BAC27DHY0313		. NAMEPLATE		1
30	69-74723-1		. TUBE ASSY		1
35	69-74722-1		. . . RETAINER, PIN		1
40	69-74721-1		. . . PIN		1
45	69-74716-1		. . . RETAINER, SPRING		1
50	AN960C616		. . . WASHER (OPT ITEM 50A)		AR
50A	AN960PD616		. . . WASHER (OPT ITEM 50)		AR
55	69-74715-1		. . . SPRING		1
60	69-74719-1		. . . PLUNGER		1
65	S34546-112-08-8		. . . SLYDRING (V09257)		1
70	69-74717-1		. . . TUBE		1
75	69B80163-1		. SLEEVE		1
80	S34549-112-06-8		. SLYDRING (V09257)		1
85	BACS34A1A		. SCRAPER		1
90	65C26858-1		. HOUSING		1

–Item not Illustrated