



COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

FLAP ACTUATION HIGH SETTING TORQUE BRAKE ASSEMBLY

**PART NUMBER
256A3151-3, -4, -5, -6, -7, -8**

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COMPONENT MAINTENANCE MANUAL

Revision No. 11
Jul 01/2009

To: All holders of FLAP ACTUATION HIGH SETTING TORQUE BRAKE ASSEMBLY 27-55-84.

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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TRANSMITTAL LETTER

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Location of Change

Description of Change

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COMPONENT MAINTENANCE MANUAL

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.

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INTRODUCTION

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FLAP ACTUATION HIGH SETTING TORQUE BRAKE ASSEMBLY - DESCRIPTION AND OPERATION

1. Description

- A. The torque brake is a sub-assembly of the trailing edge flap transmission assembly. The torque brake assembly includes an input and output cam, an output shaft, and three balls which actuate a spring-loaded torque limiter mechanism. These parts are installed in an aluminum housing.
- B. The torque limiter mechanism on some assemblies has alternating stators and rotors which operate as brake plates. On other assemblies, a stator plate and the input cam have interlocking teeth which lock up the mechanism to limit the torque.
- C. A trip indicator is installed on the housing. On some assemblies, the trip indicator is removed and replaced with a cover plate.

2. Operation

- A. The torque brake assembly is a ball ramp type mechanism that locks up if the flap does not move freely. Thus, it sets a limit to the maximum torque transmitted to the flap transmission ballscrew. The torque brake operates in the flap retract and flap extend directions.
- B. The plunger pin on the trip indicator extends to provide a visual indication if the torque limiter mechanism operates. The plunger pin must be manually set back to the normal retracted position after it operates.

3. Leading Particulars (Approximate)

- A. Length – 4 inches
- B. Width – 4 inches
- C. Height – 6 inches
- D. Weight – 7 pounds

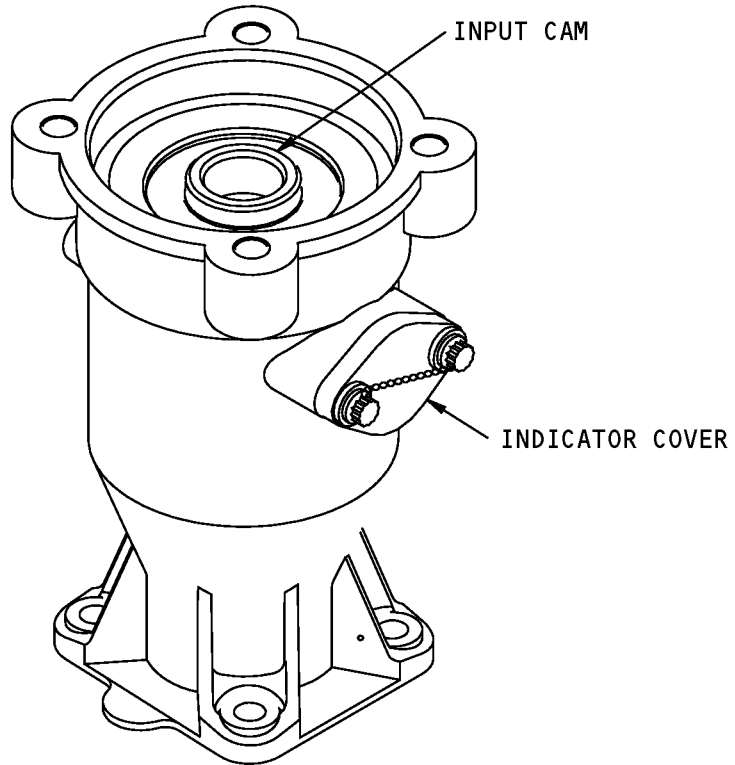
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256A3151-3,-4

Flap Actuation High Setting Torque Brake Assembly
Figure 1 (Sheet 1 of 3)

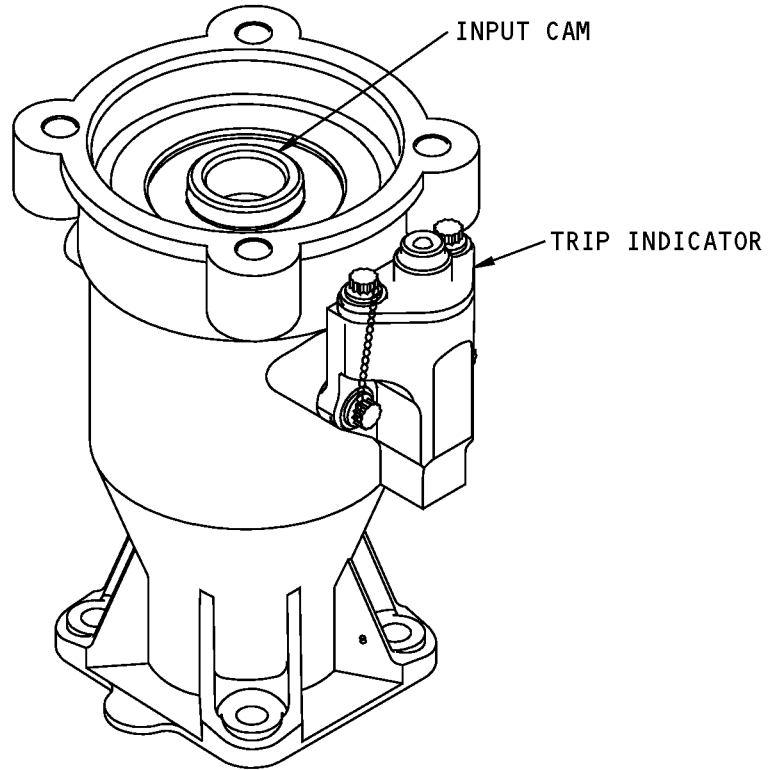
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256A3151-5,-6

Flap Actuation High Setting Torque Brake Assembly
Figure 1 (Sheet 2 of 3)

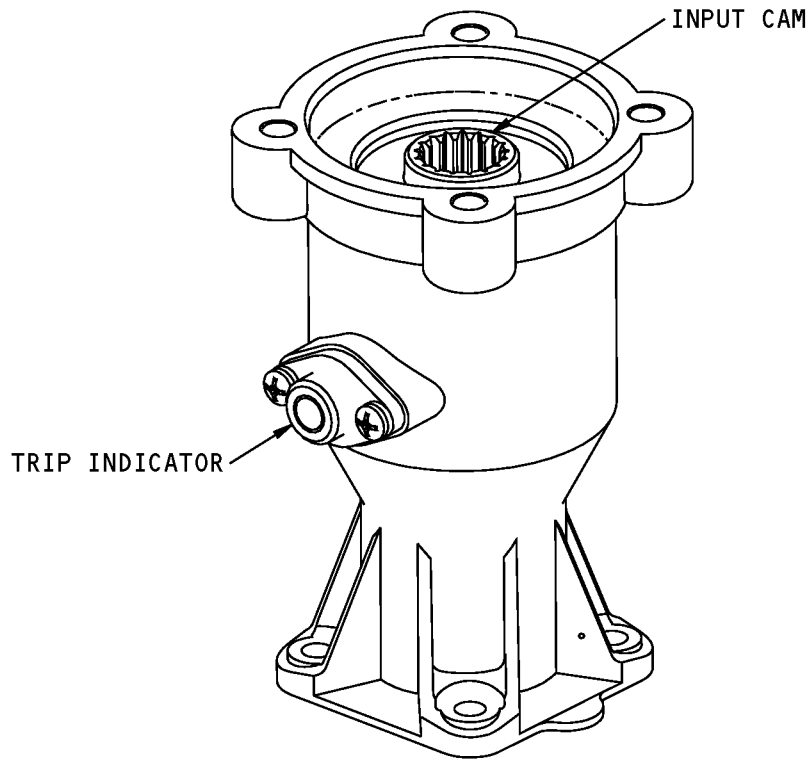
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256A3151-7,-8

Flap Actuation High Setting Torque Brake Assembly
Figure 1 (Sheet 3 of 3)

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TESTING AND FAULT ISOLATION

1. General

- A. This procedure contains the data necessary to do a test of the torque brake after an overhaul or for fault isolation.
- (1) Torque Brake Test (TESTING AND FAULT ISOLATION, Paragraph 2.)
 - (2) Fault Isolation (TESTING AND FAULT ISOLATION, Paragraph 3.)
 - (3) Fault Correction (TESTING AND FAULT ISOLATION, Paragraph 4.)
- B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to IPL Figure 1 or IPL Figure 2, as applicable, for item numbers.

2. Torque Brake Test

- A. Tools/Equipment

NOTE: Equivalent substitutes may be used.

Reference	Description
SPL-5389	Trans, TE Flap Torque Limiter Test Equipment (737/757 mixed Fleet) (Part #: C27067-81, Supplier: 81205)
SPL-5390	Test Equipment - Torque Limiter, Trans, T.E. Flap (Part #: C27067-81, Supplier: 81205) (Part #: C27067-82, Supplier: 81205)

- B. General

(1) To do these tests, it is necessary to set up the torque brake in a test fixture.

- C. Procedure (256A3151-3 thru -6) (IPL Figure 1)

- (1) Install the torque brake assembly in the torque limiter test equipment, SPL-5389 or torque limiter test equipment, SPL-5390.
- (2) Gradually apply an increasing clockwise torque at the input cam (165) internal spline at a rate not more than 150 lb-in./sec, until the torque reaches 132 lb-in.
- (3) Measure the movement of the output cam (175) at the three ball locations at the same time. Make sure that the movement at each location is less than 0.008 in. Decrease the input torque to zero.
- (4) Gradually apply an increasing clockwise torque at the input cam (165), at a rate not more than 150 lb-in./sec. Make sure that the torque at the pressure plate (245) is 172-184 lb-in. when lockup occurs.

NOTE: The input cam (165) will turn approximately 4.8 degrees before lockup occurs.

- (5) Make sure the output torque is less than 184 lb-in. as the input torque is increased from lockup to 267 lb-in.
- (6) Do TESTING AND FAULT ISOLATION, Paragraph 2.C.(2) thru TESTING AND FAULT ISOLATION, Paragraph 2.C.(5) again, but turn the input shaft in the counterclockwise direction.
- (7) Do the lockout tests a minimum of five times in each direction to make sure the results are constant.

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- (8) Remove the torque brake assembly from the torque limiter test equipment, SPL-5389 or torque limiter test equipment, SPL-5390.
 - (9) Complete the assembly of the unit. Refer to ASSEMBLY.
- D. Procedure (256A3151-7, -8) (IPL Figure 2)
- (1) Install the torque brake assembly in the torque limiter test equipment, SPL-5389 or torque limiter test equipment, SPL-5390.
 - (2) Gradually apply an increasing clockwise torque at the input cam (65) at a rate not more than 150 lb-in./sec.
 - (3) Make sure that the torque at the output shaft (155) is 147-162 lb-in. when lockup occurs.
 - (4) Make sure that the output torque is not more than 162 lb-in. as the input torque is increased from lockup to 267 lb-in.
 - (5) Reduce the input torque to zero. Push the plunger (25) to set the trip indicator back to the normal position.
 - (6) Do TESTING AND FAULT ISOLATION, Paragraph 2.D.(2) thru TESTING AND FAULT ISOLATION, Paragraph 2.D.(5) again, but turn the input shaft in the counterclockwise direction.
 - (7) Do the lockout tests a minimum of five times in each direction to make sure the results are constant.
 - (8) Remove the torque brake assembly from the torque limiter test equipment, SPL-5389 or torque limiter test equipment, SPL-5390.
 - (9) Complete the assembly of the unit. Refer to ASSEMBLY.

3. Fault Isolation

- A. Refer to the Fault Isolation Table, TESTING AND FAULT ISOLATION, Table 101 for causes of the problems found and the procedures to correct them.

Table 101: Fault Isolation Table

TROUBLE	PROBABLE CAUSE	CORRECTION
Lockup torque not in correct range (256A3151-3 thru -6)	Incorrect shim (IPL Fig. 1; 230 thru 245) thickness	Disassemble and adjust shim thickness
Lockup torque not in correct range (256A3151-7, -8)	Incorrect nut (IPL Fig. 2; 120) adjustment	Disassemble and adjust nut

4. Fault Correction

- A. Procedure (256A3151-3 thru -6) (IPL Figure 1)
 - (1) If the lockup torque is not in the specified range, disassemble the torque brake assembly sufficiently to get access to the shims (230 thru 245). Refer to DISASSEMBLY.
 - (2) Adjust shim (230 thru 245) thickness to change torque value. Increase the shim thickness to increase torque value and decrease shim thickness to reduce torque value.

NOTE: A change in shim thickness of 0.0032 in. is equal to a change in lockup torque of approximately 1.0 lb-in.

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- (3) Assemble the torque brake assembly. Refer to ASSEMBLY.
 - (4) Repeat the torque brake test (TESTING AND FAULT ISOLATION, Paragraph 2.C.).
- B. Procedure (256A3151-7, -8) (IPL Figure 2)
- (1) If the results are not satisfactory, disassemble the torque brake assembly sufficiently to get access to the nut (120). Refer to DISASSEMBLY.
 - (2) Turn the nut (120) clockwise to increase the lockup torque. Turn the nut counterclockwise to decrease the lockup torque.
- NOTE:** The lockup torque changes by approximately 4.5 lb-in. when you turn the nut 1/4 turn.
- (3) Make sure that the witness cutout on the flange of the lockwasher (115) is aligned with the key slot in the input cam. Replace the lockwasher if the cutout is not aligned with the slot.
 - (4) Assemble the torque brake assembly. ASSEMBLY.
 - (5) Do the functional test again to make sure the results are satisfactory (TESTING AND FAULT ISOLATION, Paragraph 2.D.).

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DISASSEMBLY

1. General

- A. This procedure has the data necessary to disassemble the torque brake 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 or IPL Figure 2, as applicable, for item numbers.

2. Torque Brake Disassembly (256A3151-3 thru -6) (IPL Figure 1)

A. General

- (1) Measure and record the thicknesses of the shim stacks to help during the assembly procedure.

B. 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 (20, 25, 90)
- (2) Nut (270)
- (3) Lockwasher (265)

C. Procedure

- (1) Remove the lockwire from the torque brake assembly.
- (2) Remove the indicator cover (92). (256A3151-3, -4 only)
 - (a) Remove the bolts (80), washers (85), and the indicator cover (92) from the housing assembly (290 or 295).
 - (b) Remove the packing (90) from the indicator cover.
- (3) Remove and disassemble the trip indicator. (256A3151-5, -6 only)
 - (a) Remove the bolts (80) and washers (85) and remove the housing assembly (135) from the housing assembly (290 or 295).
 - (b) Remove the packing (90) from the housing assembly (135).
 - (c) Remove the bolts (10), washers (15), and cover (30A) from the housing assembly (135).

NOTE: Do not remove the inserts (140) from the housing assembly unless replacement is necessary.

- (d) Remove packings (20A, 25) from the cover assembly (30).
- (e) Remove the ring (35), backup ring (40), pin (45A), shims (50 thru 65), seat (70), spring (75), shaft (95), bushing (100A), shims (105 thru 120), lever shaft (125), and lever (130) from the housing assembly (135). Measure and record the shim thickness to help during assembly.
- (4) Remove the torque brake internal components from the housing assembly (290 or 295) and disassemble.

NOTE: Do not remove the inserts (300, 305) unless replacement is necessary.

- (a) Remove the shaft (285) from the pressure plate (250).
- (b) Remove the bearing (280) from the shaft (285).

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- (c) Remove the bearing (275) from the input cam (165).
- (d) Remove the housing (155) from the outer race of the bearing (160).
- (e) Remove the nut (270), lockwasher (265), bushing (260), thrust bearing (255), pressure plate (250), and shims (230 thru 245). Measure and record the shim thickness to help during assembly.
- (f) Remove the bushing (205), springs (200), and the spring seat (180).
- (g) Remove the stators (195), rotors (190), and the stator (185).
- (h) Remove the output cam (175), balls (170), and the bearing (160) from the input cam (165).

3. Torque Brake Disassembly (256A3151-7, -8) (IPL Figure 2)

A. General

- (1) Measure and record the thicknesses of the shim stacks to help during the assembly procedure.

B. 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 (20, 40)
- (2) Nut (120)
- (3) Lockwasher (115)

C. Procedure

- (1) Remove the lockwire from the torque brake assembly.
- (2) Remove and disassemble the trip indicator.
 - (a) Remove the bolts (10) and washers (15), and remove the trip indicator housing (50) from the housing assembly (160 or 165).
 - (b) Remove the plunger (25) and attached parts from the trip indicator housing.
 - (c) Remove the bushing (35), catch ring (45), and spacer (30) from the plunger.
 - (d) Remove the packings (20, 40) from the trip indicator housing.
- (3) Remove the input cam (65) and output shaft (155) with assembled parts from the housing assembly (160 or 165).
- (4) Remove the shims (135 thru 150, as applicable) from the housing assembly (160 or 165).

NOTE: Record the thickness of the shims to help during assembly of the torque brake assembly.

- (5) Remove the stator (85), spring (90), and reaction plate (95) from the housing assembly (160 or 165).

NOTE: Do not remove the inserts (170, 175) from the housing assembly unless replacement is necessary.

- (6) Disassemble the parts on the input cam (65) and output shaft (155).
 - (a) Remove the output shaft from the input cam and the output cam (75).
 - (b) Remove the bearings (125, 130) from the output shaft.
 - (c) Remove the nut (120) and lockwasher (115).

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- (d) Remove the output cam (75), together with the thrust bushing (110), bearing (105), race (100), and the Belleville springs (80), from the input cam. Remove the parts (80, 100 thru 110) from the output cam.
- (e) Remove the balls (70) and the bearing retainer (55) from the input cam.
- (f) Remove the bearing (60) from the input cam.

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CLEANING

1. General

- A. This procedure has the data necessary to clean the special parts.
- B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to IPL Figure 1 or IPL Figure 2, as applicable, 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 sealed bearings (IPL Figure 1; 160, 275, 280), (IPL Figure 2; 60, 125, 130) as specified in manufacturer's instructions (SOPM 20-30-01).
- (2) Clean all the parts other than bearings as specified by standard industry practices (SOPM 20-30-03).

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CLEANING

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CHECK

1. General

- A. This procedure has the data necessary to find defects in the material of the specified parts.
- B. Refer to FITS AND CLEARANCES for the design dimension and wear limits.
- C. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.
- D. Refer to IPL Figure 1 or IPL Figure 2, as applicable, for item numbers.

2. Check

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00467	Fluid - Landing Gear Shock Strut	BMS3-32, Type II

B. References

Reference	Title
SOPM 20-20-01	MAGNETIC PARTICLE INSPECTION
SOPM 20-20-02	PENETRANT METHODS OF INSPECTION
SOPM 20-50-07	LUBRICATION
SOPM 20-60-03	LUBRICANTS

C. Procedure

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

- (1) Use standard industry procedures to do a visual check of all the parts for defects. Do the penetrant or magnetic particle check if the visual check shows possible damage or if you suspect possible damage to parts.
- (2) Do the checks that follow on the parts of the 256A3151-3 thru -6 assemblies (IPL Figure 1).
 - (a) Do a magnetic particle check of these parts. Refer to SOPM 20-20-01.
 - 1) Cover (30A)
 - 2) Rings (35, 40)
 - 3) Pin (45)
 - 4) Seat (70, 180)
 - 5) Spring (75, 200)
 - 6) Shaft (95, 125, 285)
 - 7) Lever (130)
 - 8) Housing (155)
 - 9) Cam (165, 175)
 - 10) Rotor (190)
 - 11) Bushing (205, 260)

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CHECK

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- 12) Plate (250)
- 13) Lockwasher (265)
- (b) Do a penetrant check of these parts. Refer to SOPM 20-20-02.
 - 1) Bushing (100)
 - 2) Housings (150, 310, 315)
 - 3) Stator (185, 195)
- (c) Do a check of the spring (75).
 - 1) Compress the spring to a length of 0.715 inch. Make sure that the load is 1.46-1.72 pounds.
 - 2) Compress the spring to a length of 0.40 inch. Make sure that the load is 2.1-2.5 pounds.
- (d) Do a check of the thickness of the rotors (190). Refer to CHECK, Figure 501.
- (e) Do a check of the thickness of the stators (185, 195). Refer to CHECK, Figure 502.
- (3) Do the checks that follow on the parts of the 256A3151-7, -8 assemblies (IPL Figure 2).
 - (a) Do a magnetic particle check of these parts. Refer to SOPM 20-20-01.
 - 1) Plunger (25)
 - 2) Spacer (30)
 - 3) Bushing (35, 110)
 - 4) Catch ring (45)
 - 5) Cam (65, 75)
 - 6) Belleville spring (80)
 - 7) Stator (85)
 - 8) Spring (90)
 - 9) Reaction plate (95)
 - 10) Lockwasher (115)
 - 11) Output shaft (155)
 - (b) Do a penetrant check of these parts. Refer to SOPM 20-20-02.
 - 1) Housing (50)
 - 2) Bearing retainer (55)
- (4) Do a check of the Belleville springs (IPL Figure 1; 200), (IPL Figure 2; 80).
 - (a) Lubricate the spring with fluid, D00467 (SOPM 20-50-07).
 - (b) Put the spring between two parallel flat plates, with the outer flat surface of the spring on the bottom plate. Compress the spring 25 times, from the no-load position to a flat position.
 - (c) Apply a 347-353 lb load to the spring to compress it flat. Dimension "H" equals zero at this position (CHECK, Figure 503). Remove the load.

NOTE: Measure dimension "H" at other spring deflections by the movement of the top plate from this position.
 - (d) Measure height "A".
 - 1) Apply a 190 lb load to the spring and measure dimension "H". Remove the load.

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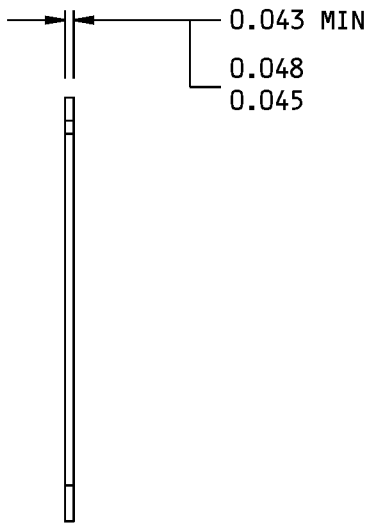
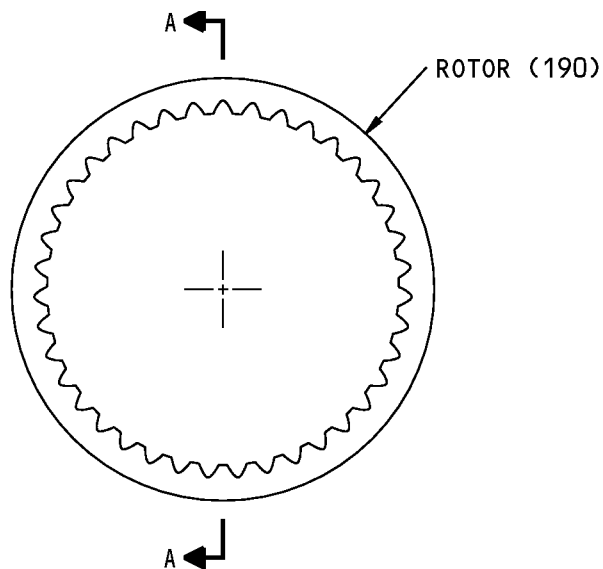
- 2) Apply and remove the load two more times.
 - 3) Height "A" is the average of the three measurements of dimension "H".
- (e) Find load "B".
- 1) Calculate height "B", equal to height "A" plus 0.005 in.
 - 2) Apply a load to compress the spring to height "B". Remove the load.
 - 3) Do step 2) two more times.
 - 4) Load "B" is the average of the three loads applied to compress the spring to height "B".
- (f) Calculate the spring rate as shown in CHECK, Figure 503.
- (g) Make sure that height "A" and the spring rate are as shown in CHECK, Figure 503.

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CHECK
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COMPONENT MAINTENANCE MANUAL



A-A

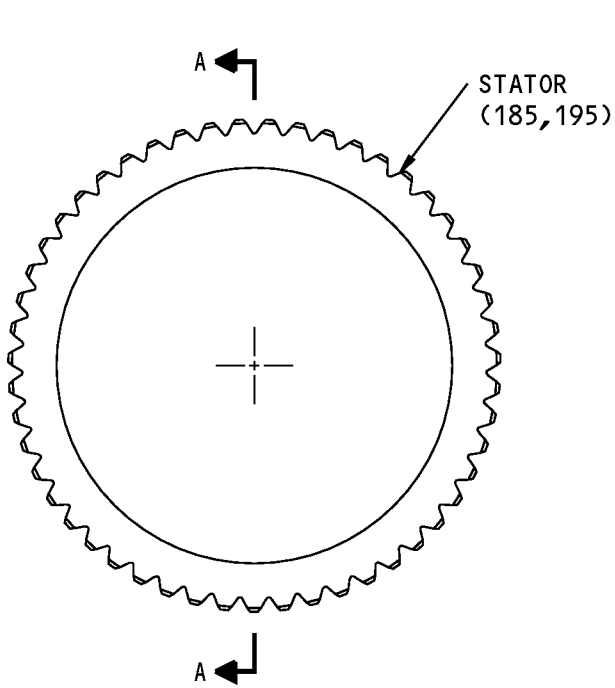
ITEM NUMBERS REFER TO IPL FIG. 1
ALL DIMENSIONS ARE IN INCHES

Rotor Check
Figure 501

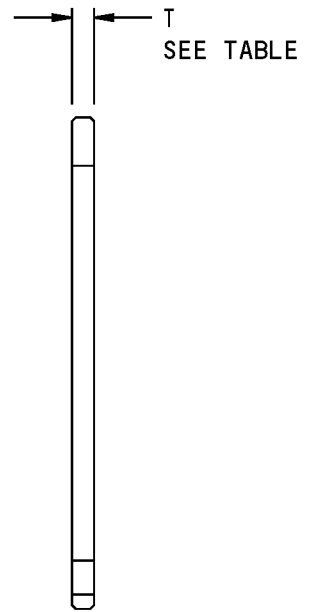
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CHECK
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COMPONENT MAINTENANCE MANUAL



256A3165-1,-2



A-A

DASH NUMBER	T	T MINIMUM
-1	0.120 0.115	0.113
-2	0.080 0.075	0.073

ITEM NUMBERS REFER TO IPL FIG. 1
ALL DIMENSIONS ARE IN INCHES

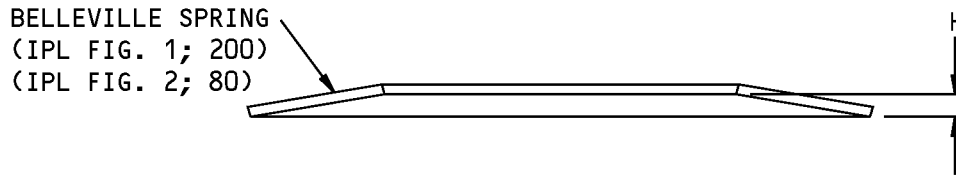
Stator Check
Figure 502

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SPRING DATA	
H AT NO LOAD (REF)	0.039 IN.
HEIGHT A	0.0185 0.0125 IN.
SPRING RATE	4320 2520 LB/IN.

1. HEIGHT A = H AT 133 LB LOAD
2. HEIGHT B = HEIGHT A + 0.005 IN.
3. LOAD B = LOAD AT HEIGHT B
4. SPRING RATE = (133-LOAD B)/0.005

Belleville Spring Check
Figure 503

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CHECK
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COMPONENT MAINTENANCE MANUAL

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
256A3155	HOUSING	2-1
251N4175	OUTPUT CAM	3-1
256A3156	OUTPUT CAM	3-1
256A3157	INPUT CAM	4-1
256A3159	BUSHING	5-1
256A3163	OUTPUT SHAFT	6-1
256A3166	PRESSURE PLATE	7-1
256A3168	STATOR HOUSING	8-1
256A3169	THRUST BUSHING	9-1
256A3153	HOUSING	10-1, 10-2
256W3092		
256A3167	COVER	11-1
256A3189	INDICATOR COVER	12-1

2. Dimensioning Symbols

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

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REPAIR - GENERAL

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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 or IPL Figure 2, as applicable, for item numbers.

2. Refinish of Other Parts

A. References

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

B. General

- (1) Instructions for the repair of the parts listed in REPAIR 1-1, Table 601 is for repair of the initial finish.

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.

- (1) Refer to REPAIR 1-1, Table 601 for the refinish of other parts.

Table 601: Refinish Details

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Ring (35), spring (75)	17-7PH CRES	Passivate (F-17.25).
Backup ring (40), shaft (95), lever shaft (125), lever (130)	15-5PH CRES, 180-200 ksi	Passivate (F-17.25).
Seat (70)	15-5PH CRES, 150-170 ksi	Passivate (F-17.25).
Bushing (100)	Al-Ni-Bronze	Cadmium plate (F-15.06) but not in the bore.
Spring seat (180)	4330M steel, 220-240 ksi	Cadmium-titanium plate (F-15.32).
Rotor (190), spring (200)	17-7PH CRES, TH1050 condition	Passivate (F-17.25).
Lockwasher (265)	17-7PH CRES, 140-160 ksi	Passivate (F-17.25).
Fig. 2		

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REPAIR 1-1

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Table 601: Refinish Details (Continued)

IPL FIG. & ITEM	MATERIAL	FINISH
Plunger (25), spacer (30), stator (85), spring (90), plate (95), shaft (155)	15-5PH CRES, 180-200 ksi	Passivate (F-17.25).
Ring (45), spring (80)	17-7PH CRES	Passivate (F-17.25).
Housing (50)	Al-Ni-Bronze	Cadmium plate (F-15.06) all external surfaces.
Retainer (55)	Aluminum alloy	Boric acid-sulfuric acid anodize or chromic acid anodize (F-17.31).
Lockwasher (115)	17-7PH CRES, 140-160 ksi	Passivate (F-17.25).

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REPAIR 1-1

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COMPONENT MAINTENANCE MANUAL

HOUSING - REPAIR 2-1

256A3155-3, -4, -9, -10

1. General

- A. This procedure has the data necessary to repair and refinish the housing (IPL Figure 1; 310, 315), (IPL Figure 2; 180, 185).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard True Position Dimensioning Symbols shown in the repair.
- D. Refer to IPL Figure 1 or IPL Figure 2, as applicable, for item numbers.
- E. General repair details:
 - (1) Material: Aluminum Alloy

2. Housing Repair (256A3155-3, -4 only)

A. References

Reference	Title
SOPM 20-20-02	PENETRANT METHODS OF INSPECTION
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES

B. 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.

- (1) Machine within repair limits shown to remove defects.
- (2) Break all sharp edges.
- (3) Do a penetrant check of the machined surfaces (SOPM 20-20-02).
- (4) Hard anodize (F-17.06) and grind to design dimensions and finish shown.

3. Housing Refinish

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 20-60-02	FINISHING MATERIALS

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REPAIR 2-1

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COMPONENT MAINTENANCE MANUAL

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) Boric acid-sulfuric acid anodize or chromic acid anodize (F-17.35) all over.
- (2) Apply primer, C00259 (F-20.02) on all external surfaces in the area shown, but not on the hole diameters or on the surfaces noted in REPAIR 2-1, Figure 601.

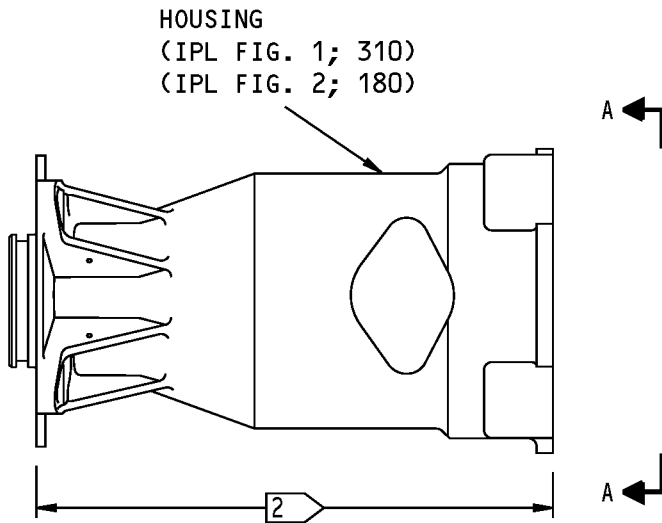
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REPAIR 2-1

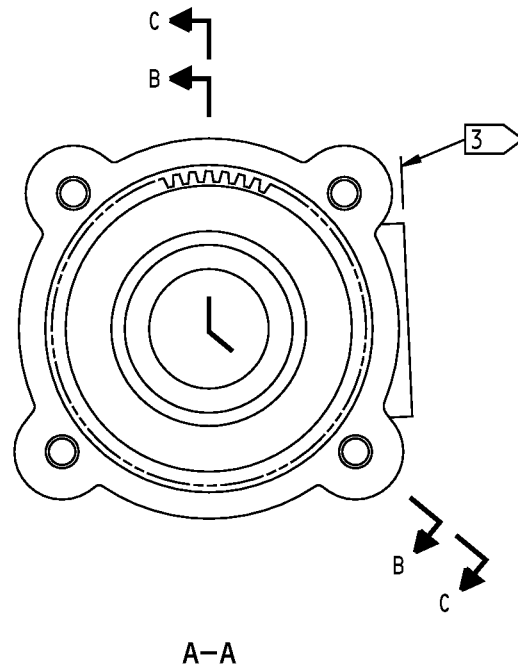
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COMPONENT MAINTENANCE MANUAL



256A3155-3,-9 SHOWN
256A3155-4,-10 OPPOSITE

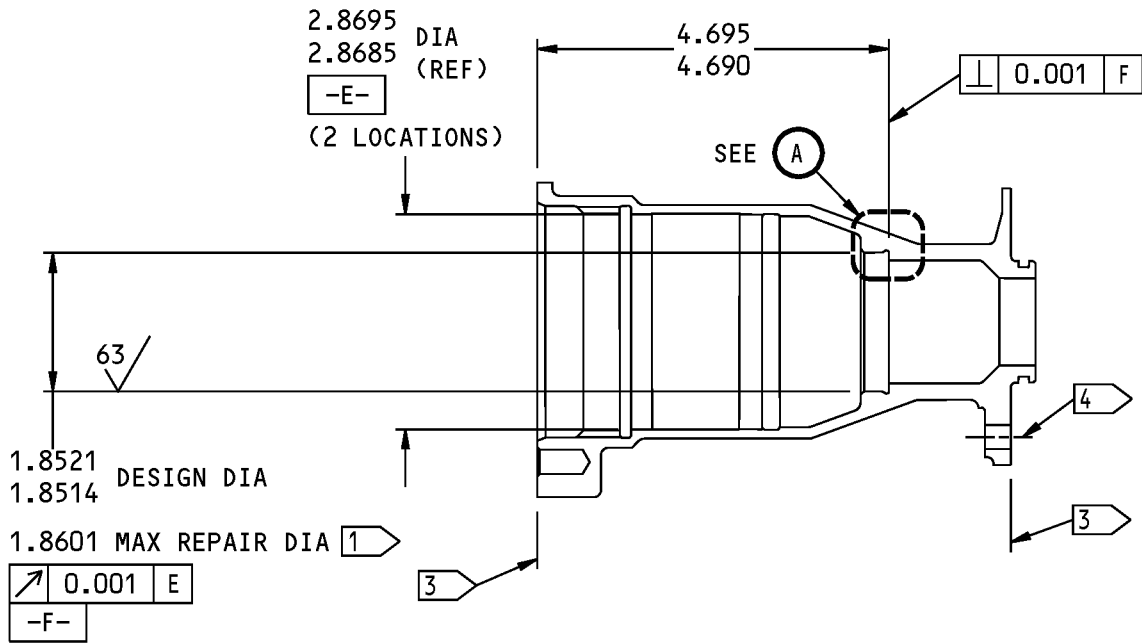


256A3155-3,-4,-9,-10 Housing Repair
Figure 601 (Sheet 1 of 3)

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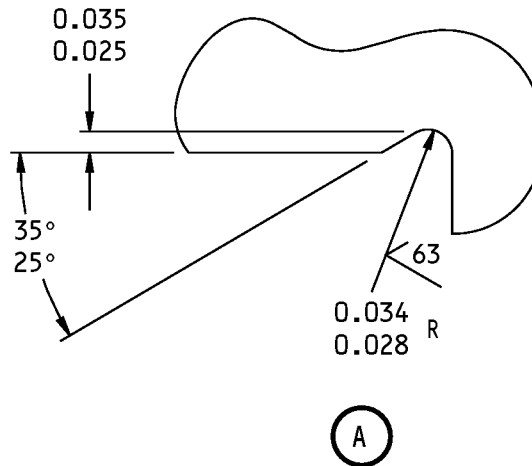
REPAIR 2-1
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COMPONENT MAINTENANCE MANUAL



256A3155-3 SHOWN
256A3155-4 OPPOSITE

B-B

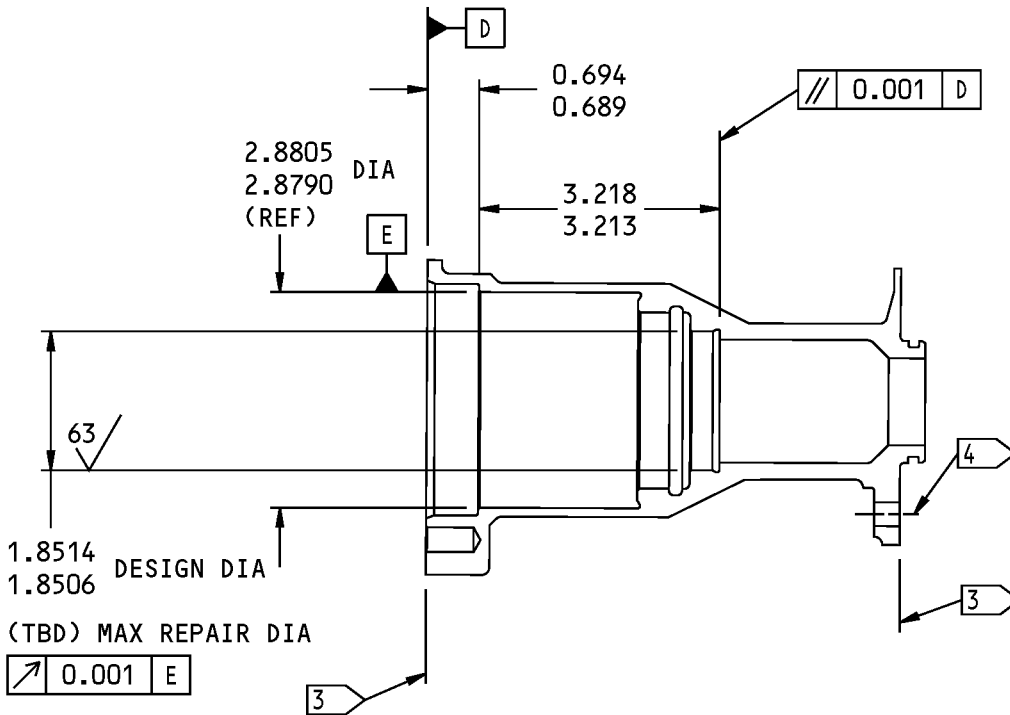


256A3155-3,-4,-9,-10 Housing Repair
Figure 601 (Sheet 2 of 3)

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REPAIR 2-1
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COMPONENT MAINTENANCE MANUAL



256A3155-9 SHOWN
 256A3155-10 OPPOSITE

C-C

- 1 HARD ANODIZE (F-17.06). MAXIMUM ANODIZE THICKNESS 0.004 INCH
- 2 APPLY PRIMER (F-20.02) TO EXTERNAL SURFACES THIS AREA, BUT NOT ON HOLE DIAMETERS OR ON SURFACES SHOWN DIFFERENTLY
- 3 NO PRIMER ON THIS SURFACE
- 4 OVERSPRAY OF PRIMER IS PERMITTED IN THESE HOLES

BREAK ALL SHARP EDGES
 ALL DIMENSIONS ARE IN INCHES

256A3155-3,-4,-9,-10 Housing Repair
 Figure 601 (Sheet 3 of 3)

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REPAIR 2-1
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COMPONENT MAINTENANCE MANUAL

OUTPUT CAM - REPAIR 3-1

251N4175-1, -2, 256A3156-1

1. General

- A. This procedure has the data necessary to repair and refinish the output cam (IPL Figure 1; 175), (IPL Figure 2; 75).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard True Position Dimensioning Symbols shown in the repair.
- D. Refer to IPL Figure 1 or IPL Figure 2, as applicable, for item numbers.
- E. General repair details:
 - (1) Material: 9310 steel, 160-190 ksi

2. Output Cam Refinish

A. References

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

B. Procedure (REPAIR 3-1, Figure 601)

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.

- (1) Cams 251N4175-1, 256A3156-1: Cadmium plate (F-15.23) unless shown differently.
- (2) Cam 251N4175-2: No finish.

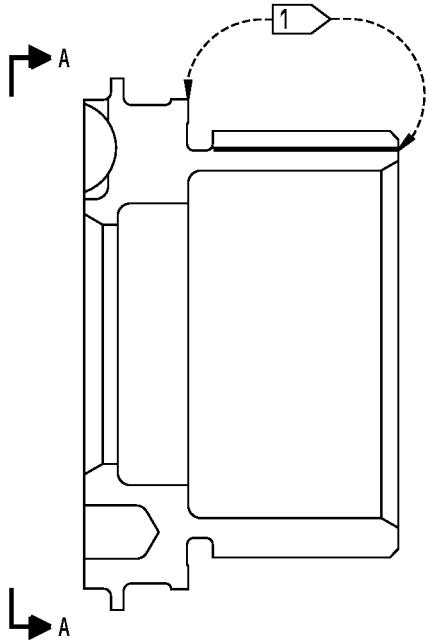
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REPAIR 3-1

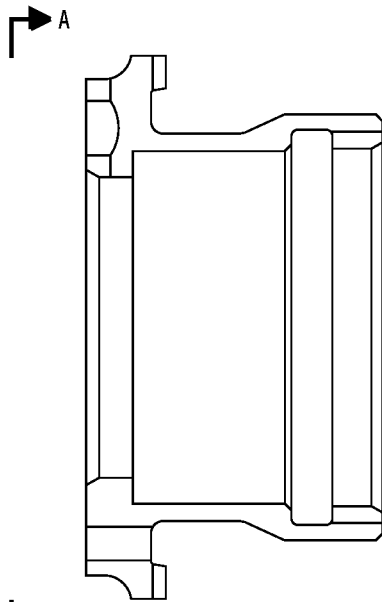
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COMPONENT MAINTENANCE MANUAL

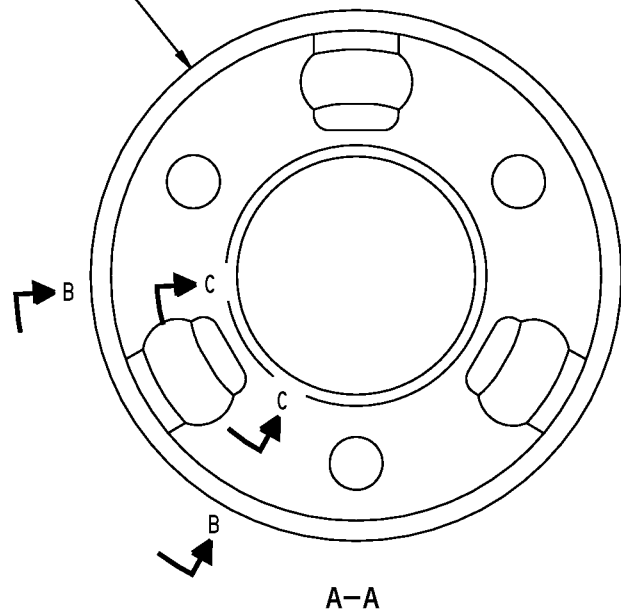


256A3156-1



251N4175-1

OUTPUT CAM
(IPL FIG. 1; 175)
(IPL FIG. 2; 75)



A-A

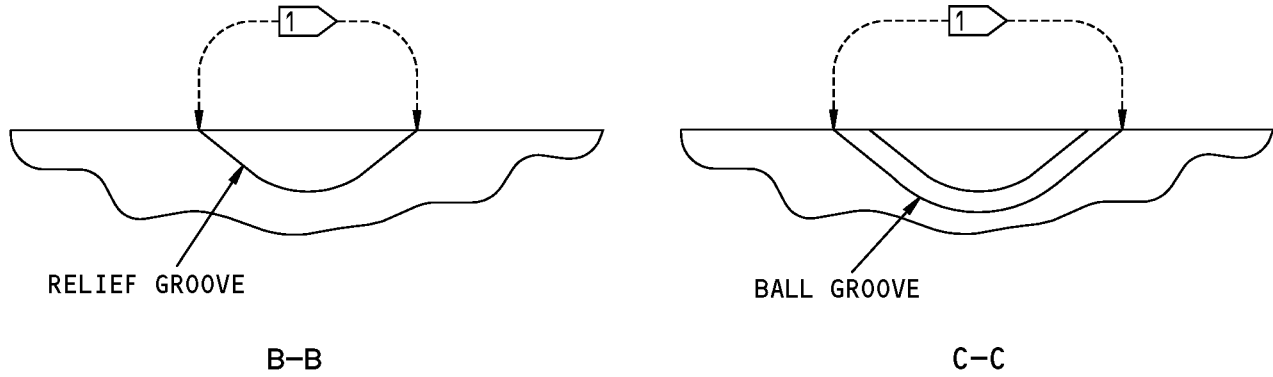
251N4175-1 256A3156-1 Output Cam Refinish
Figure 601 (Sheet 1 of 2)

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REPAIR 3-1

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COMPONENT MAINTENANCE MANUAL


1 NO FINISH OR CADMIUM PLATE RUNOUT ON INDICATED SURFACE. CADMIUM PLATE RUNOUT ON ADJACENT SURFACES SHALL NOT EXCEED 0.030 INCH

ALL DIMENSIONS ARE IN INCHES

251N4175-1 256A3156-1 Output Cam Refinish
Figure 601 (Sheet 2 of 2)

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REPAIR 3-1

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COMPONENT MAINTENANCE MANUAL

INPUT CAM - REPAIR 4-1

256A3157-2, -4

1. General

- A. This procedure has the data necessary to repair and refinish the input cam (IPL Figure 1; 165), (IPL Figure 2; 65).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard True Position Dimensioning Symbols shown in the repair.
- D. Refer to IPL Figure 1 or IPL Figure 2, as applicable, for item numbers.
- E. General repair details:
 - (1) Material: 9310 steel, 160-190 ksi
 - (2) Shot peen: Repaired surfaces
 - (a) Intensity as noted in REPAIR 4-1, Figure 601.
 - (b) Shot size 170-460
 - (c) Coverage 2.0

2. Input Cam Repair (256A3157-2 only)

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

B. Procedure (REPAIR 4-1, Figure 601) and (IPL Figure 1)

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.

- (1) Machine the input cam (165) as necessary to remove defects (SOPM 20-10-01) . Do not machine more than the limit shown.
- (2) Break all sharp edges (SOPM 20-10-02).
- (3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.
- (4) Shot peen the machined area as shown. Refer to SOPM 20-10-03.
- (5) Build up the machined surface with chrome plate (F-15.03). Do not apply chrome plate in the fillet radii or on the edges of the part.

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REPAIR 4-1

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COMPONENT MAINTENANCE MANUAL

- (6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.010 inch thick after you grind the surface.

3. Input Cam Refinish

A. References

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

B. Procedure (REPAIR 4-1, Figure 601)

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.

- (1) Cadmium plate (F-15.23) all surfaces unless shown differently in REPAIR 4-1, Figure 601 or REPAIR 4-1, Figure 602.

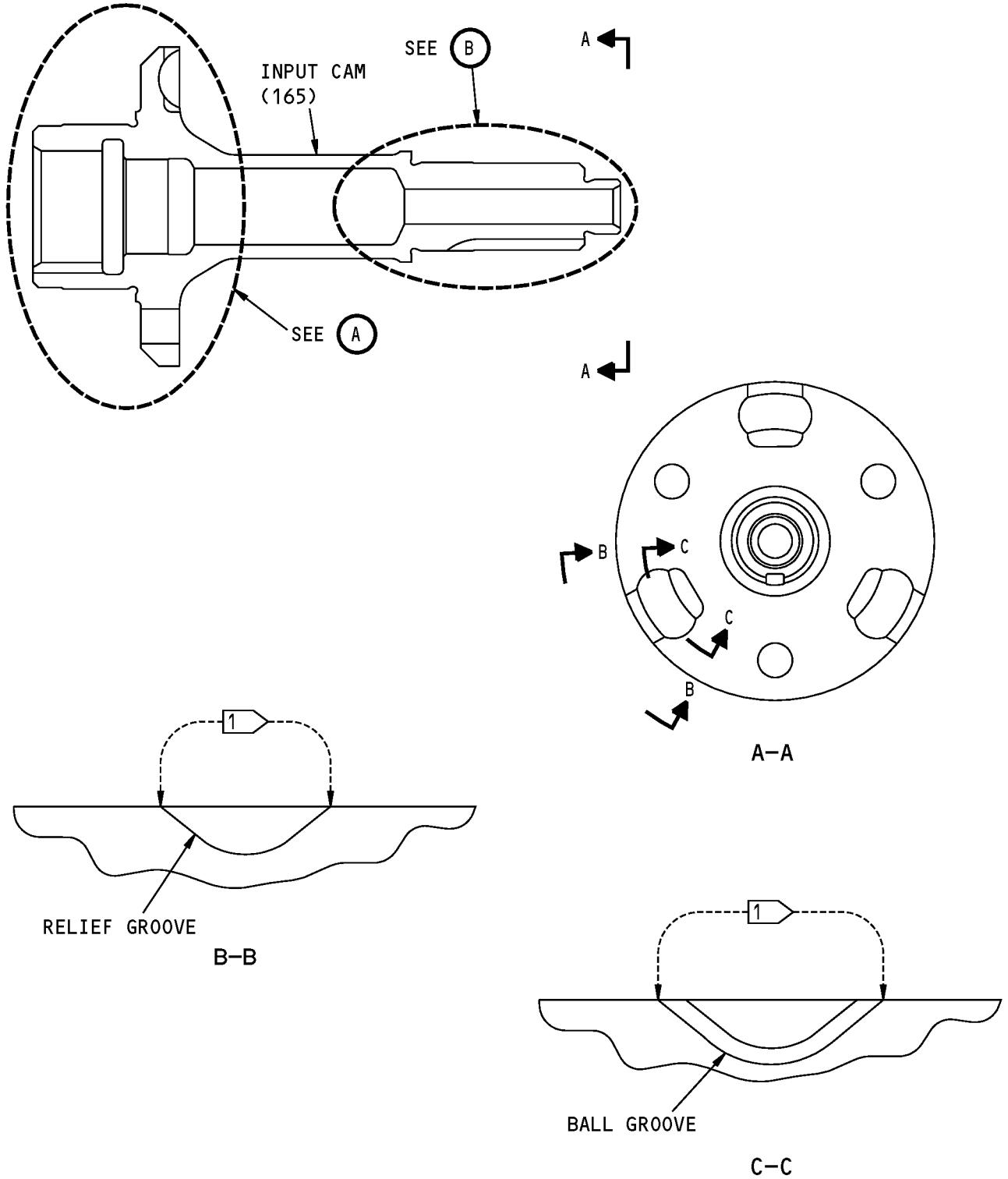
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REPAIR 4-1

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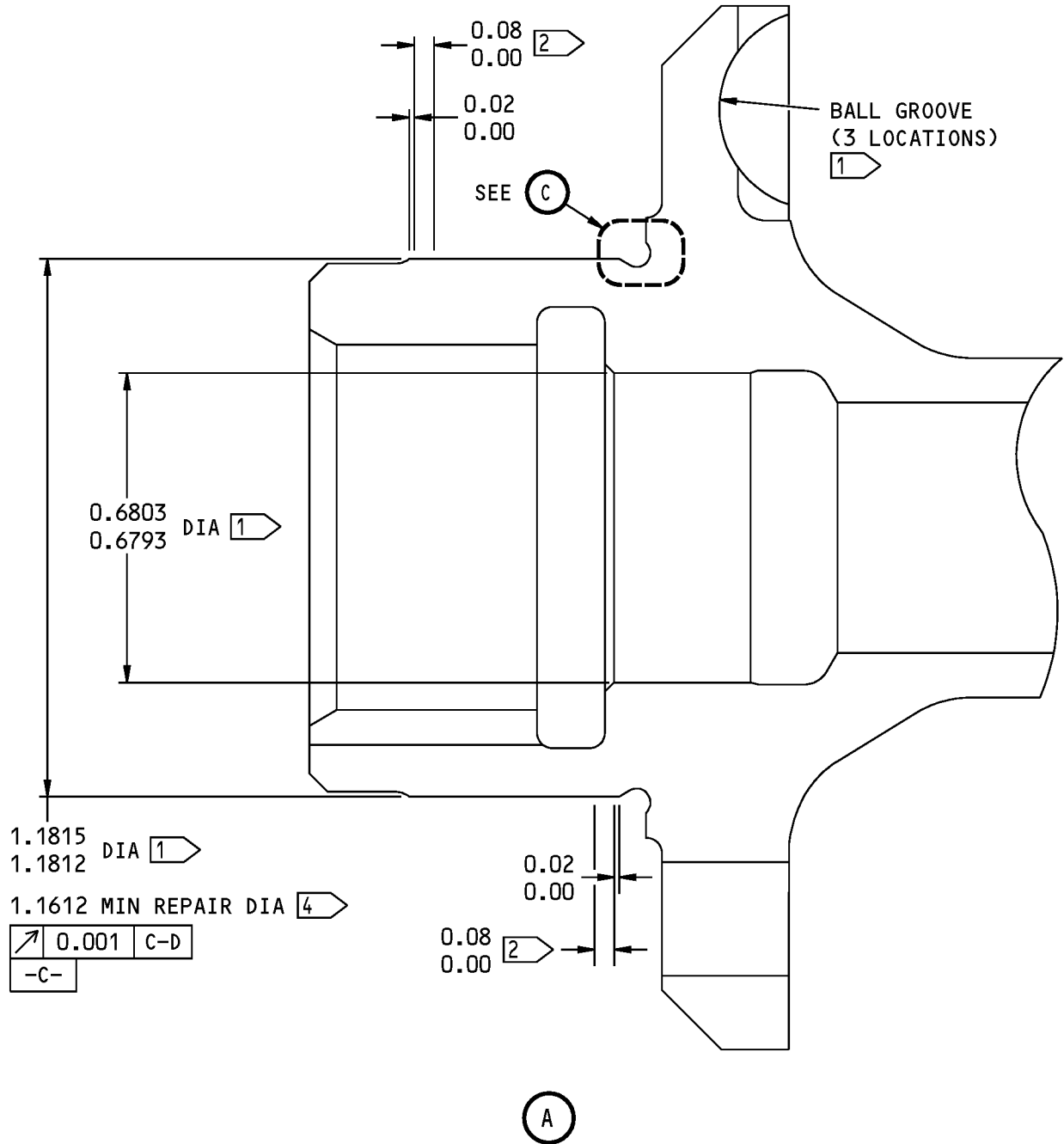


256A3157-2 Input Cam Repair
Figure 601 (Sheet 1 of 3)

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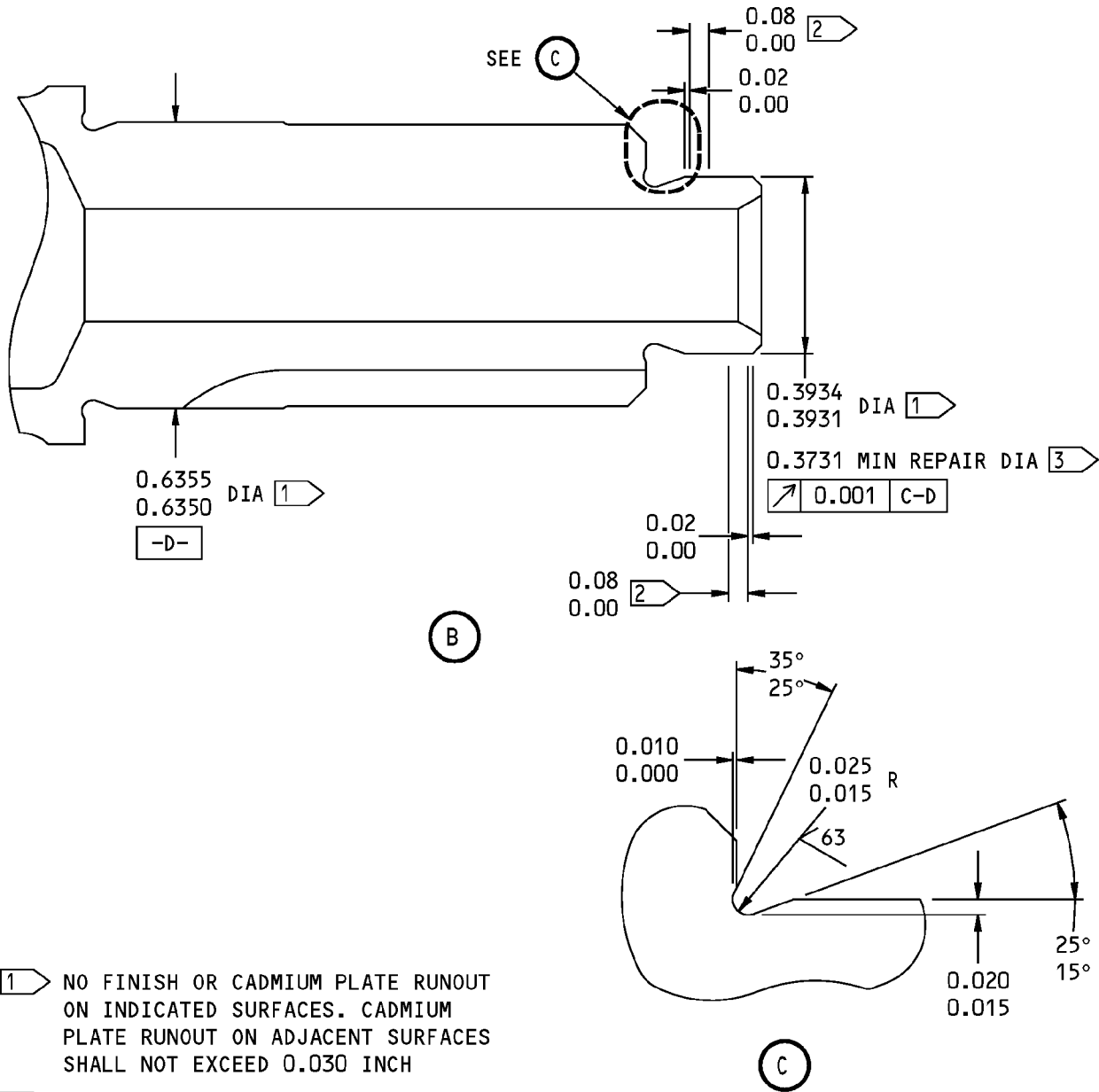


256A3157-2 Input Cam Repair
Figure 601 (Sheet 2 of 3)

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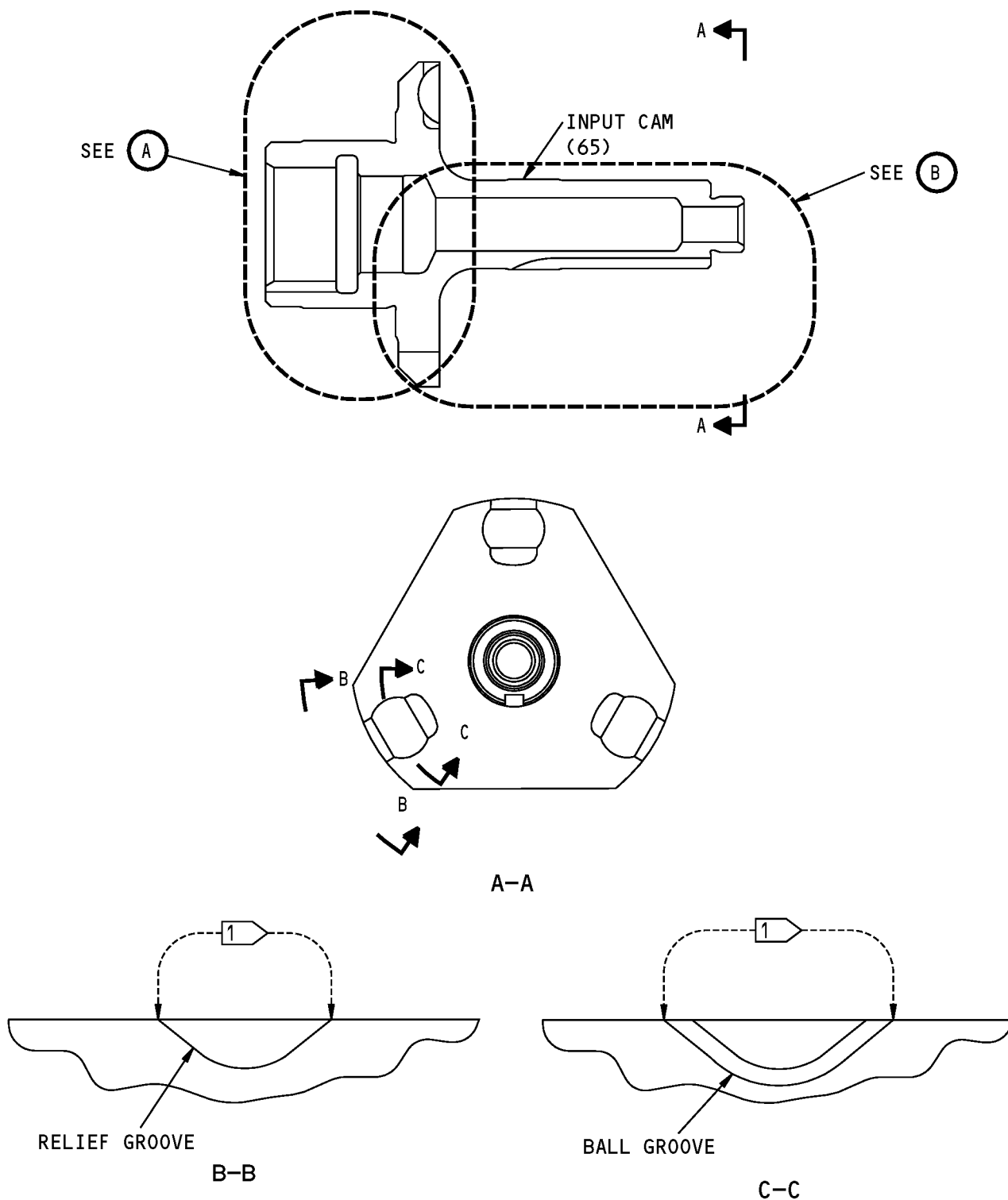
- [1] NO FINISH OR CADMIUM PLATE RUNOUT ON INDICATED SURFACES. CADMIUM PLATE RUNOUT ON ADJACENT SURFACES SHALL NOT EXCEED 0.030 INCH
- [2] CHROME PLATE RUNOUT AREA
- [3] SHOT PEEN INTENSITY 0.008A. CHROME PLATE TO A MAXIMUM THICKNESS OF 0.010 INCH
- [4] SHOT PEEN INTENSITY 0.010A. CHROME PLATE TO A MAXIMUM THICKNESS OF 0.010 INCH

ITEM NUMBERS REFER TO IPL FIG. 1
ALL DIMENSIONS ARE IN INCHES

256A3157-2 Input Cam Repair
Figure 601 (Sheet 3 of 3)

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COMPONENT MAINTENANCE MANUAL

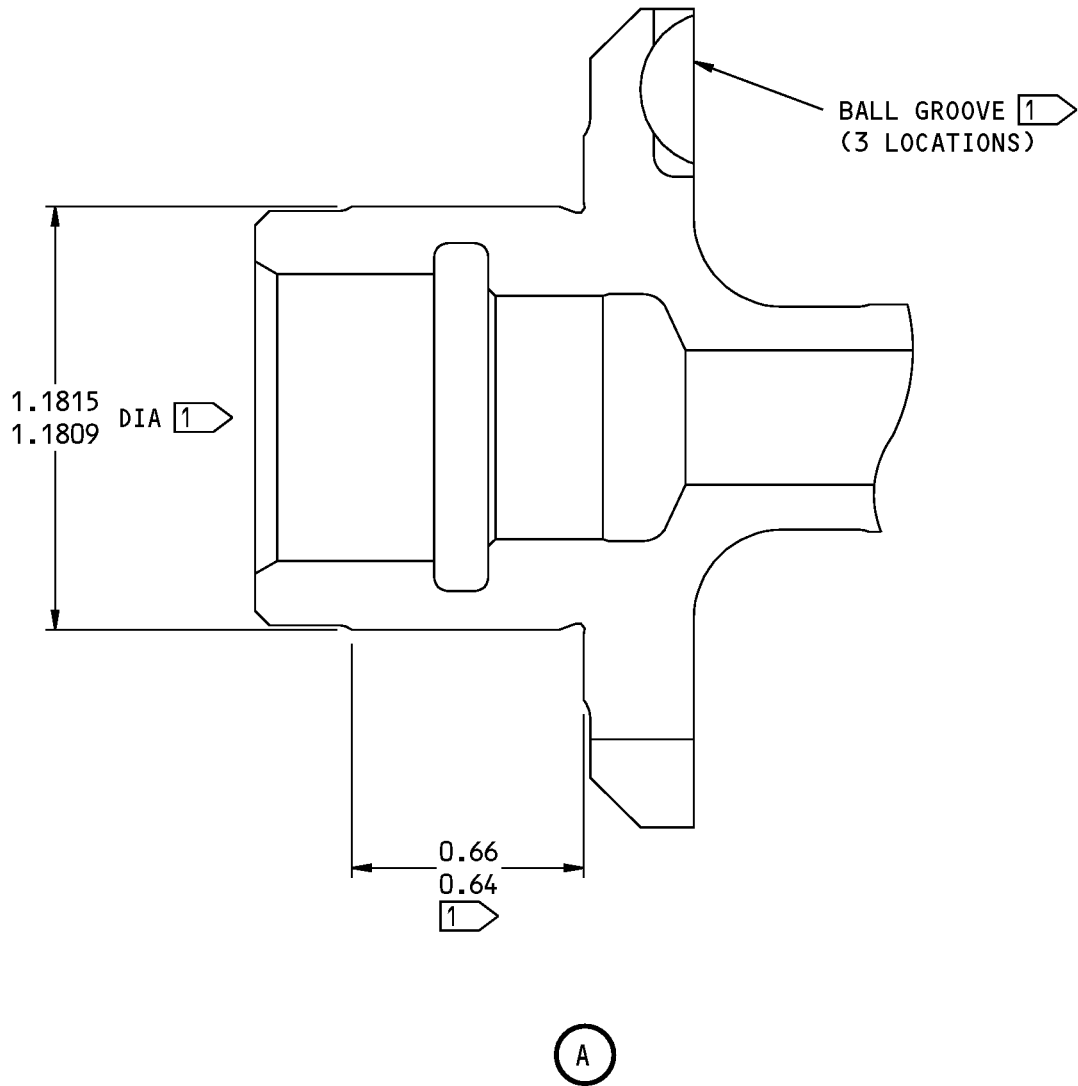


256A3157-4 Input Cam Refinish
Figure 602 (Sheet 1 of 3)

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REPAIR 4-1
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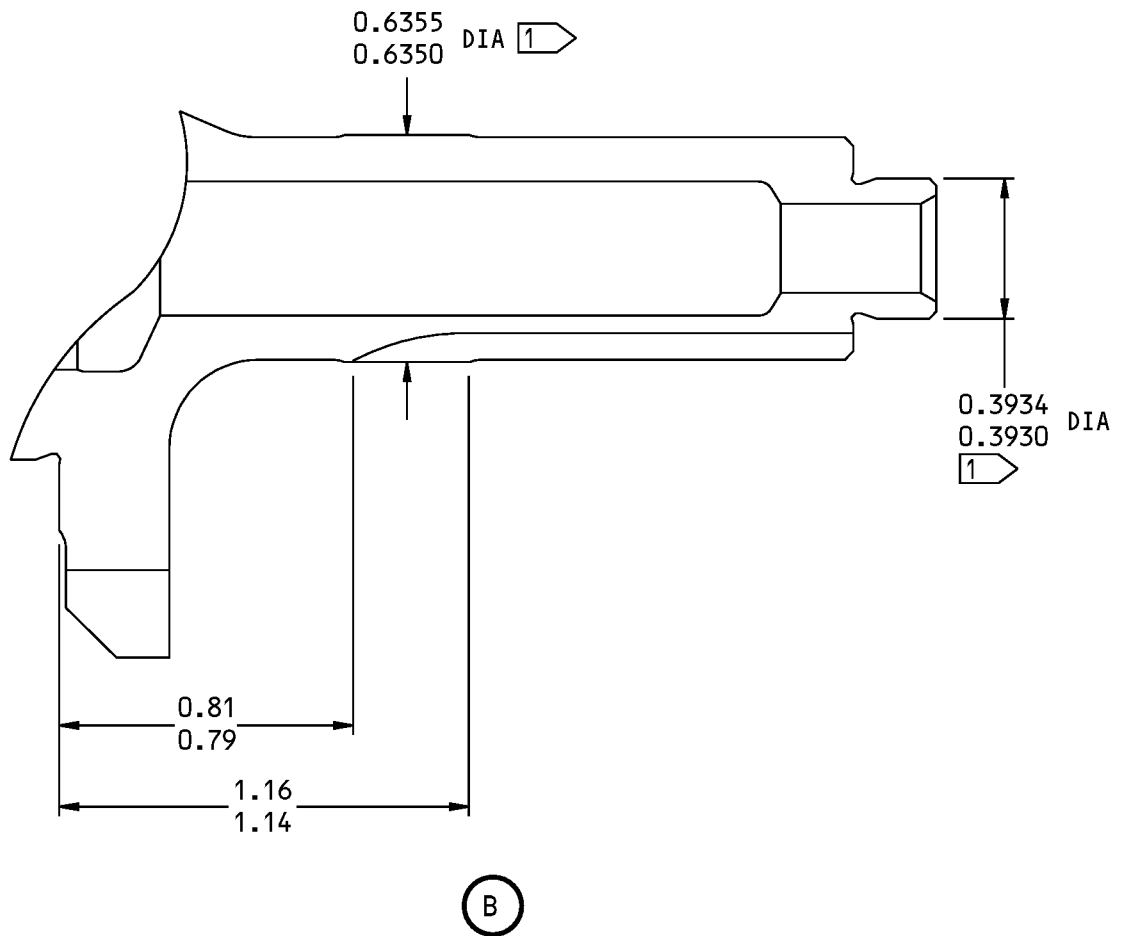


256A3157-4 Input Cam Refinish
Figure 602 (Sheet 2 of 3)

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REPAIR 4-1
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COMPONENT MAINTENANCE MANUAL



1 NO FINISH OR CADMIUM PLATE RUNOUT ON INDICATED SURFACES. CADMIUM PLATE RUNOUT ON ADJACENT SURFACES SHALL NOT EXCEED 0.030 INCH

ITEM NUMBERS REFER TO IPL FIG. 2
ALL DIMENSIONS ARE IN INCHES

256A3157-4 Input Cam Refinish
Figure 602 (Sheet 3 of 3)

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REPAIR 4-1
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COMPONENT MAINTENANCE MANUAL

BUSHING - REPAIR 5-1

256A3159-2

1. General

- A. This procedure has the data necessary to refinish the bushing (205).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to 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: 4330M steel, 220-240 ksi

2. Bushing Refinish

A. References

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

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

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.

- (1) Cadmium-titanium plate (F-15.32) all surfaces unless shown differently in REPAIR 5-1, Figure 601. Uncontrolled plating throw-in is acceptable in the bore.

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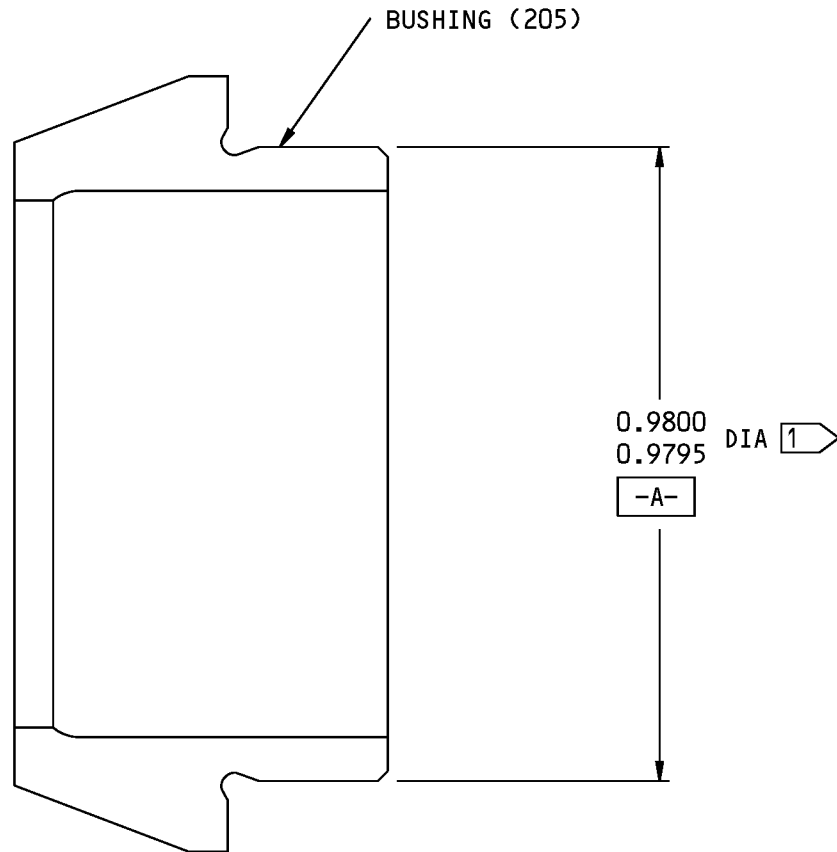
REPAIR 5-1

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1 NO FINISH OR CADMIUM PLATE
RUNOUT ON INDICATED SURFACES.
CADMIUM PLATE RUNOUT ON
ADJACENT SURFACES SHALL NOT
EXCEED 0.03 INCH.

ITEM NUMBERS REFER TO IPL FIG. 1
ALL DIMENSIONS ARE IN INCHES

256A3159-2 Bushing Refinish
Figure 601

27-55-84

REPAIR 5-1
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COMPONENT MAINTENANCE MANUAL

OUTPUT SHAFT - REPAIR 6-1

256A3163-1

1. General

- A. This procedure has the data necessary to repair and refinish the output shaft (285).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to 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: 4330M steel, 180-200 ksi
 - (2) Shot peen: Repaired surfaces
 - (a) Shot size: 170-460
 - (b) Intensity 0.008A
 - (c) Coverage 2.0

2. Shaft 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

B. Procedure (REPAIR 6-1, Figure 601)

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.

- (1) Machine the output shaft (285) as necessary to remove defects (SOPM 20-10-01). Do not machine more than the limit shown.
- (2) Break all sharp edges (SOPM 20-10-02).
- (3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.
- (4) Shot peen the machined area as shown. Refer to SOPM 20-10-03.
- (5) Build up the machined surface with chrome plate (F-15.03). Do not apply chrome plate in the fillet radii or on the edges of the part.
- (6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.010 inch thick after you grind the surface.

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REPAIR 6-1

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3. Shaft Refinish

A. References

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

B. Procedure (REPAIR 6-1, Figure 601)

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.

- (1) Cadmium plate (F-15.36) all surfaces unless shown differently in REPAIR 6-1, Figure 601. Uncontrolled plating throw-in is acceptable in the bore.

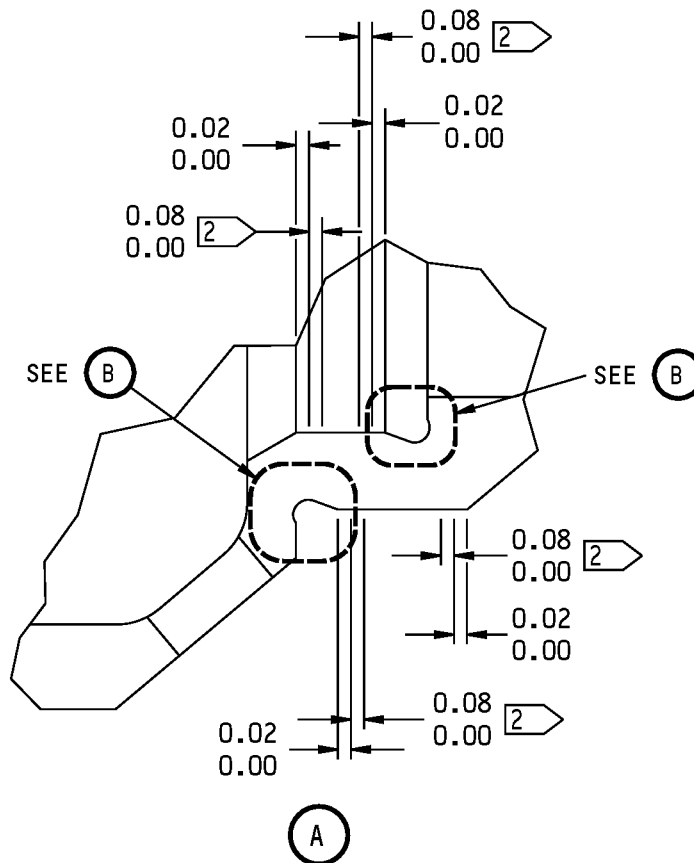
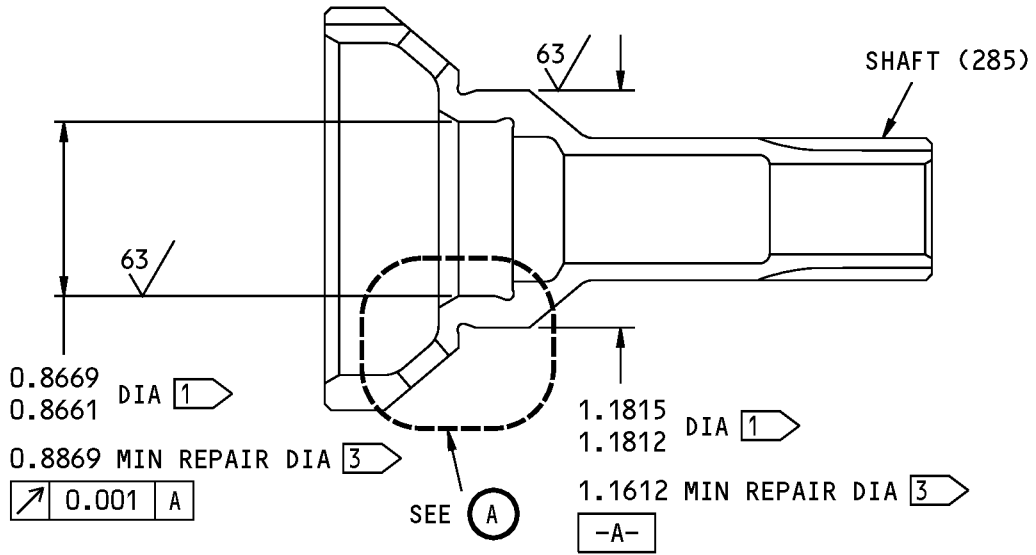
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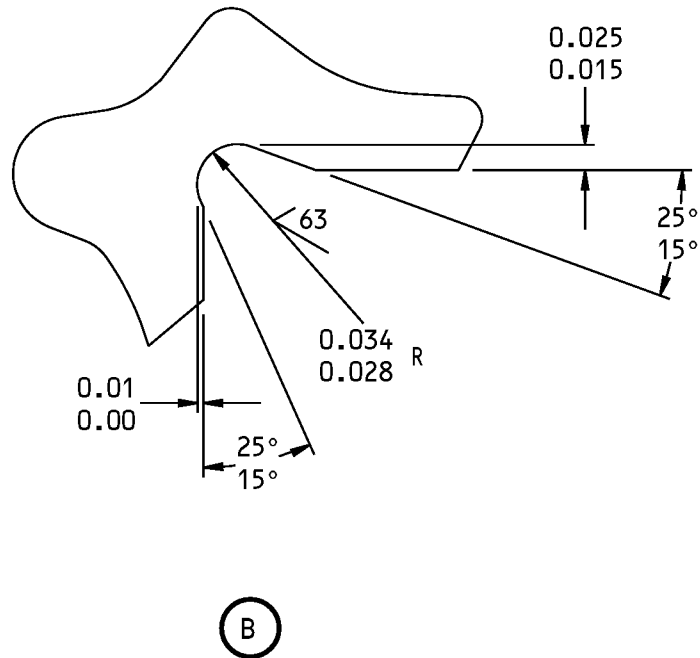
256A3163-1 Output Shaft Repair
Figure 601 (Sheet 1 of 2)

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REPAIR 6-1
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- 1 NO FINISH OR CADMIUM PLATE RUNOUT ON INDICATED SURFACES. CADMIUM PLATE RUNOUT ON ADJACENT SURFACES SHALL NOT EXCEED 0.03 INCH
- 2 CHROME PLATE RUNOUT AREA
- 3 AFTER SHOT PEENING, CHROME PLATE TO A MAXIMUM THICKNESS OF 0.010 INCH

ITEM NUMBERS REFER TO IPL FIG. 1
ALL DIMENSIONS ARE IN INCHES

256A3163-1 Output Shaft Repair
Figure 601 (Sheet 2 of 2)

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REPAIR 6-1
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COMPONENT MAINTENANCE MANUAL

PRESSURE PLATE - REPAIR 7-1

256A3166-1

1. General

- A. This procedure has the data necessary to refinish the pressure plate (250).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to 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: 9310 steel, 150-190 ksi

2. Plate Refinish

A. References

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

B. Procedure (REPAIR 7-1, Figure 601)

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.

- (1) Cadmium plate (F-15.23) all surfaces unless shown differently in REPAIR 7-1, Figure 601.

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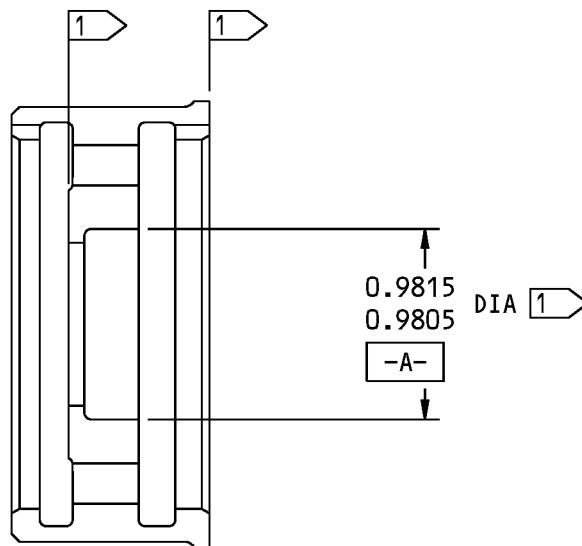
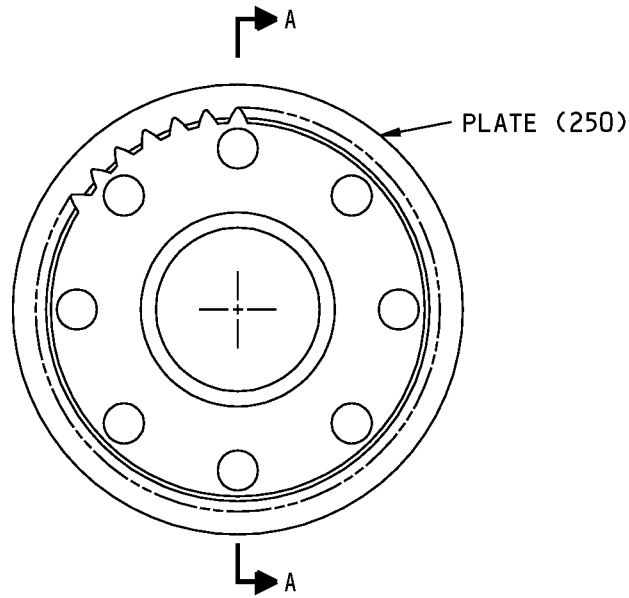
REPAIR 7-1

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COMPONENT MAINTENANCE MANUAL



A-A

1 NO FINISH OR CADMIUM PLATE RUNOUT ON INDICATED SURFACES. CADMIUM PLATE RUNOUT ON ADJACENT SURFACES SHALL NOT EXCEED 0.03 INCH

ITEM NUMBERS REFER TO IPL FIG. 1
ALL DIMENSIONS ARE IN INCHES

256A3166-1 Plate Refinish
Figure 601

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REPAIR 7-1
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COMPONENT MAINTENANCE MANUAL

STATOR HOUSING - REPAIR 8-1

256A3168-1

1. General

- A. This procedure has the data necessary to repair and refinish the stator housing (155).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to 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: 4330M steel, 180-200 ksi
 - (2) Shot peen: Repaired surfaces
 - (a) Shot Size 170-460
 - (b) Intensity 0.010A
 - (c) Coverage 2.0

2. Housing 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

B. Procedure (REPAIR 8-1, Figure 601)

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.

- (1) Machine the stator housing (155) as necessary to remove defects (SOPM 20-10-01). Do not machine more than the limit shown.
- (2) Break all sharp edges (SOPM 20-10-02).
- (3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.
- (4) Shot peen the machined area as shown. Refer to SOPM 20-10-03.
- (5) Build up the machined surface with chrome plate (F-15.03). Do not apply chrome plate in the fillet radii or on the edges of the part.
- (6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.010 inch thick after you grind the surface.

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3. Housing Refinish

A. References

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

B. Procedure (REPAIR 8-1, Figure 601)

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.

- (1) Cadmium plate (F-15.36) all surfaces unless shown differently in REPAIR 8-1, Figure 601. Uncontrolled plating throw-in is acceptable in the bore.

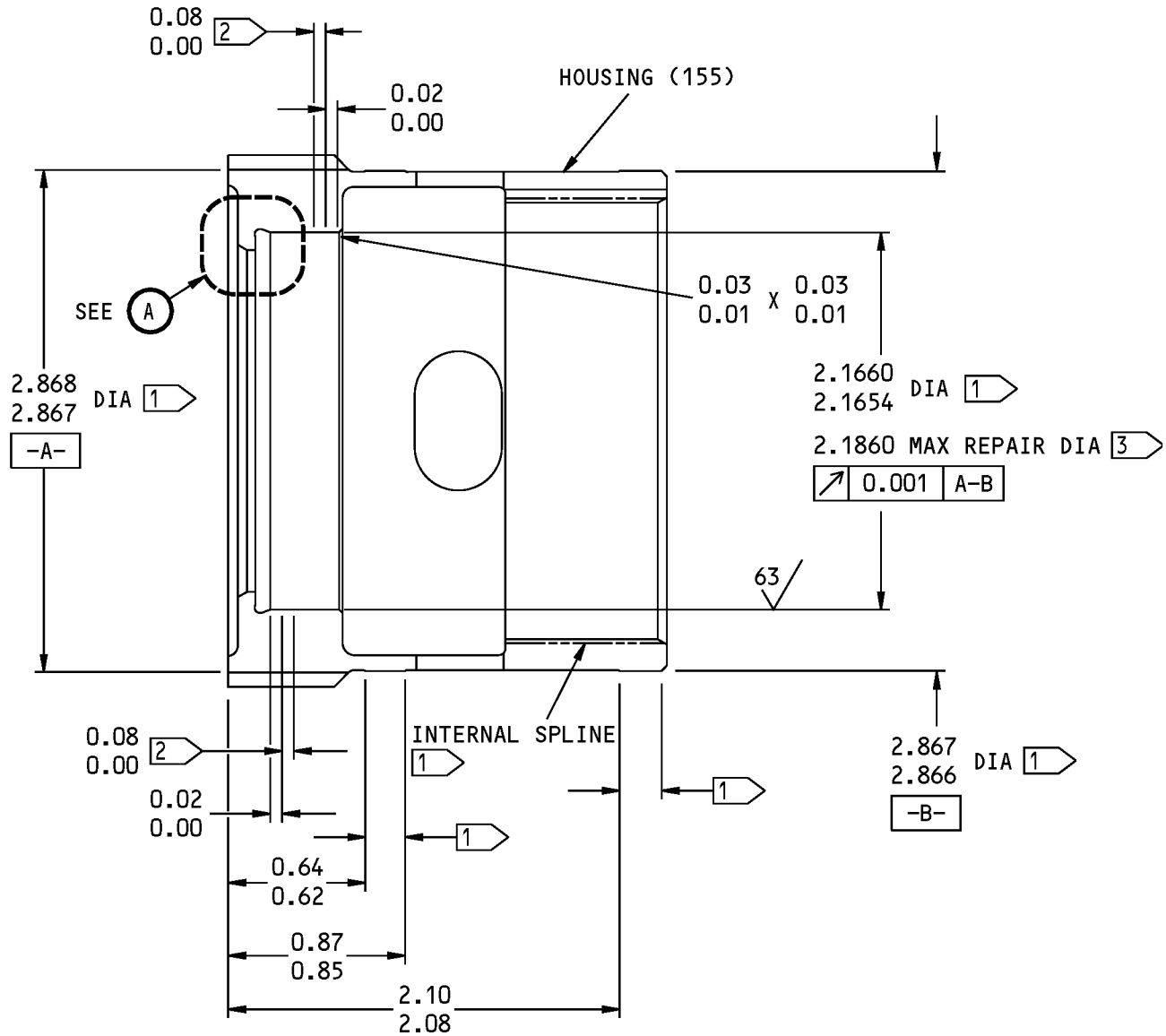
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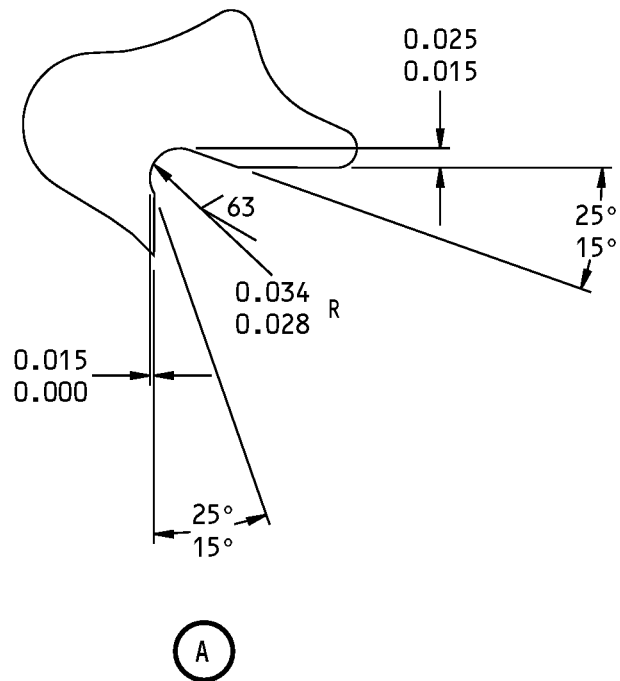
256A3168-1 Housing Repair
Figure 601 (Sheet 1 of 2)

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1 NO FINISH OR CADMIUM PLATE RUNOUT ON INDICATED SURFACES. CADMIUM PLATE RUNOUT ON ADJACENT SURFACES SHALL NOT EXCEED 0.03 INCH

2 CHROME PLATE RUNOUT AREA

3 AFTER SHOT PEENING, CHROME PLATE TO A MAXIMUM THICKNESS OF 0.010 INCH

BREAK ALL SHARP EDGES

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3168-1 Housing Repair
Figure 601 (Sheet 2 of 2)

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REPAIR 8-1

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THRUST BUSHING - REPAIR 9-1

256A3169-1

1. General

- A. This procedure has the data necessary to refinish the thrust bushing (IPL Figure 1; 260), (IPL Figure 2; 110).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard True Position Dimensioning Symbols shown in the repair.
- D. Refer to IPL Figure 1 or IPL Figure 2, as applicable, for item numbers.
- E. General repair details:
 - (1) Material: 9310 steel, 150-190 ksi

2. Bushing Refinish

A. References

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

B. Procedure (REPAIR 9-1, Figure 601)

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.

- (1) Cadmium plate (F-15.23) all surfaces unless shown differently in REPAIR 9-1, Figure 601.

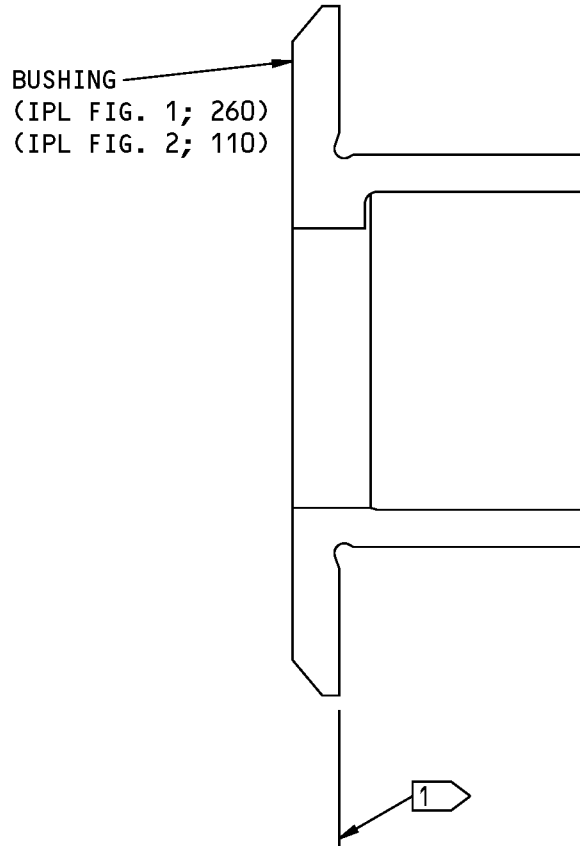
27-55-84

REPAIR 9-1

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COMPONENT MAINTENANCE MANUAL



1 NO FINISH OR CADMIUM PLATE
RUNOUT ON INDICATED SURFACES.
CADMIUM PLATE RUNOUT ON
ADJACENT SURFACES SHALL NOT
EXCEED 0.03 INCH

ALL DIMENSIONS ARE IN INCHES

256A3169-1 Thrust Bushing Refinish
Figure 601

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REPAIR 9-1
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COMPONENT MAINTENANCE MANUAL

HOUSING ASSEMBLY - REPAIR 10-1

256W3092-1

1. General

- A. This procedure has the data necessary to repair the housing assembly (135).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard True Position Dimensioning Symbols shown in the repair.
- D. Refer to IPL Figure 1 for item numbers.

2. Bushing Replacement

- A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00070	Fluid - Hydraulic, Petroleum Base	MIL-PRF-5606 (Replaces MIL-H-5606)

- B. References

Reference	Title
SOPM 20-50-03	BEARING AND BUSHING REPLACEMENT
SOPM 20-60-03	LUBRICANTS

- C. Procedure

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

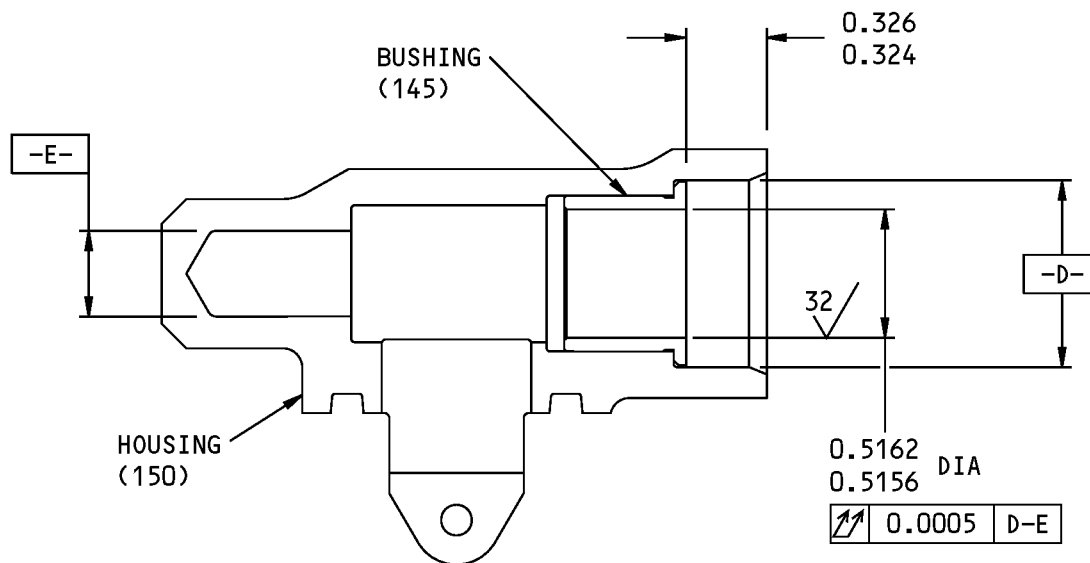
- (1) Remove the bushing (145) from the housing (150).
- (2) Install the replacement bushing with hydraulic fluid, D00070 (SOPM 20-50-03). Apply an axial force of 750 lb or more to make sure that the bushing flange contacts the housing shoulder as shown.
- (3) Machine the bushing bore to the design dimension and finish shown.

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ITEM NUMBERS REFER TO IPL FIG. 1
ALL DIMENSIONS ARE IN INCHES

256W3092-1 Housing Assembly Bushing Replacement
Figure 601

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REPAIR 10-1
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HOUSING - REPAIR 10-2

256A3153-2, 256W3092-2

1. General

- A. This procedure has the data necessary to refinish the housing (150).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to 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: Aluminum Alloy

2. Housing Refinish

- 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 20-60-02	FINISHING MATERIALS

- C. Procedure

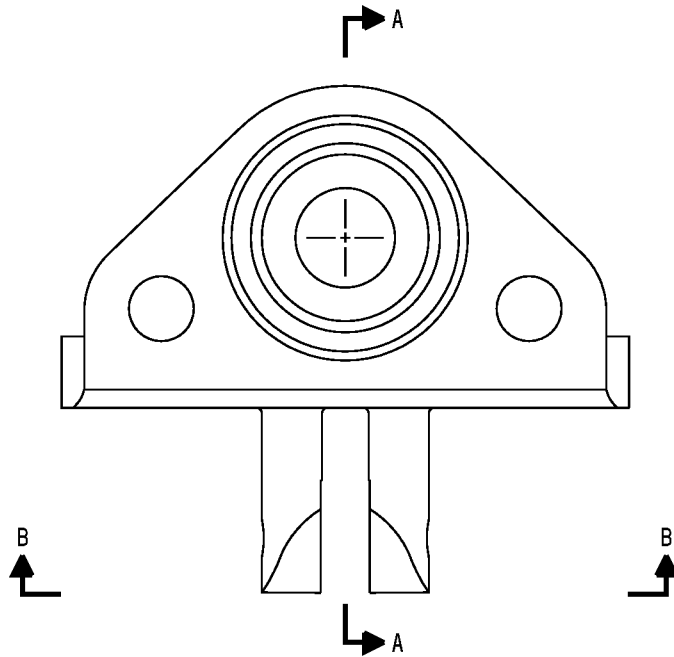
NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02

- (1) Boric acid-sulfuric acid anodize or chromic acid anodize (F-17.31) all over.
- (2) Apply primer, C00259 (F-20.02) on all external surfaces, unless shown differently in REPAIR 10-2, Figure 601.

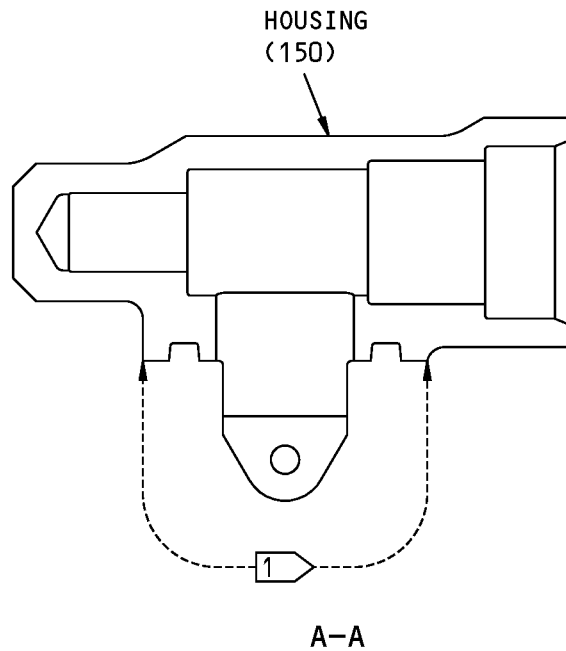
27-55-84

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256W3092-2 SHOWN
256A3153-2 SIMILAR



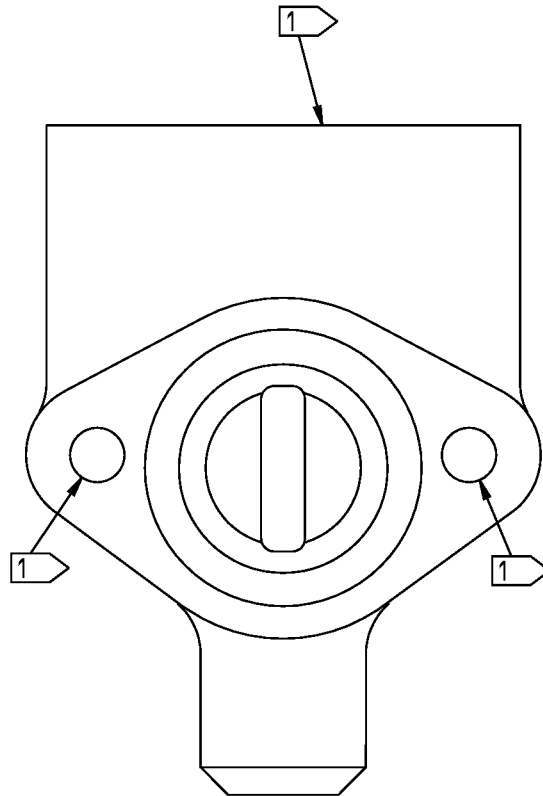
256A3153-2 256W3092-2 Housing Refinish
Figure 601 (Sheet 1 of 2)

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REPAIR 10-2
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B-B

 NO PRIMER ON THESE SURFACES

ITEM NUMBERS REFER TO IPL FIG. 1

256A3153-2 256W3092-2 Housing Refinish
Figure 601 (Sheet 2 of 2)

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REPAIR 10-2

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COVER - REPAIR 11-1

256A3167-1

1. General

- A. This procedure has the data necessary to refinish the cover (30A).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to 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, 180-200 ksi

2. Cover Refinish

A. References

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

B. 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.

- (1) Cadmium plate (F-16.06) as shown in REPAIR 11-1, Figure 601.

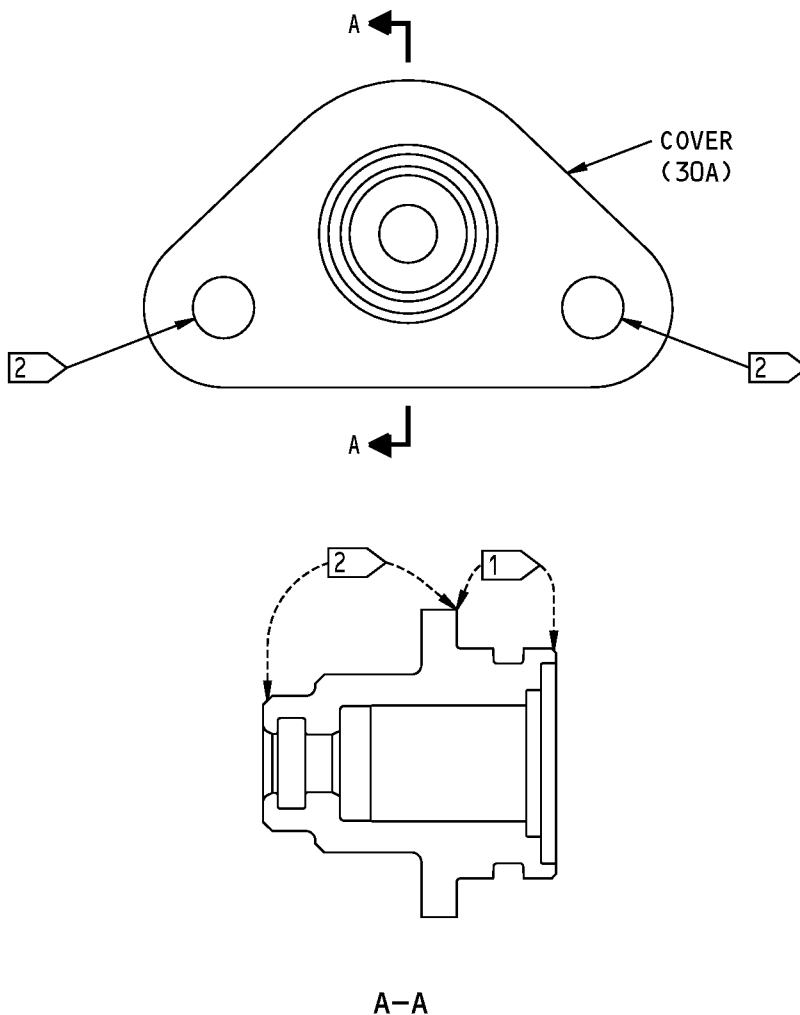
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REPAIR 11-1

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- 1 CADMIUM PLATE THESE SURFACES
- 2 PLATING OPTIONAL ON THESE SURFACES

ITEM NUMBERS REFER TO IPL FIG. 1
ALL DIMENSIONS ARE IN INCHES

256A3167-1 Cover Refinish
Figure 601

27-55-84

REPAIR 11-1
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COMPONENT MAINTENANCE MANUAL

INDICATOR COVER - REPAIR 12-1

256A3189-1

1. General

- A. This procedure has the data necessary to refinish the indicator cover (92).
- B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to 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: Aluminum Alloy

2. Cover Refinish

- 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 20-60-02	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) Boric acid-sulfuric acid anodize or chromic acid anodize (F-17.35) all over.
- (2) Apply primer, C00259 (F-20.02) on external surfaces in the area shown in REPAIR 12-1, Figure 601.

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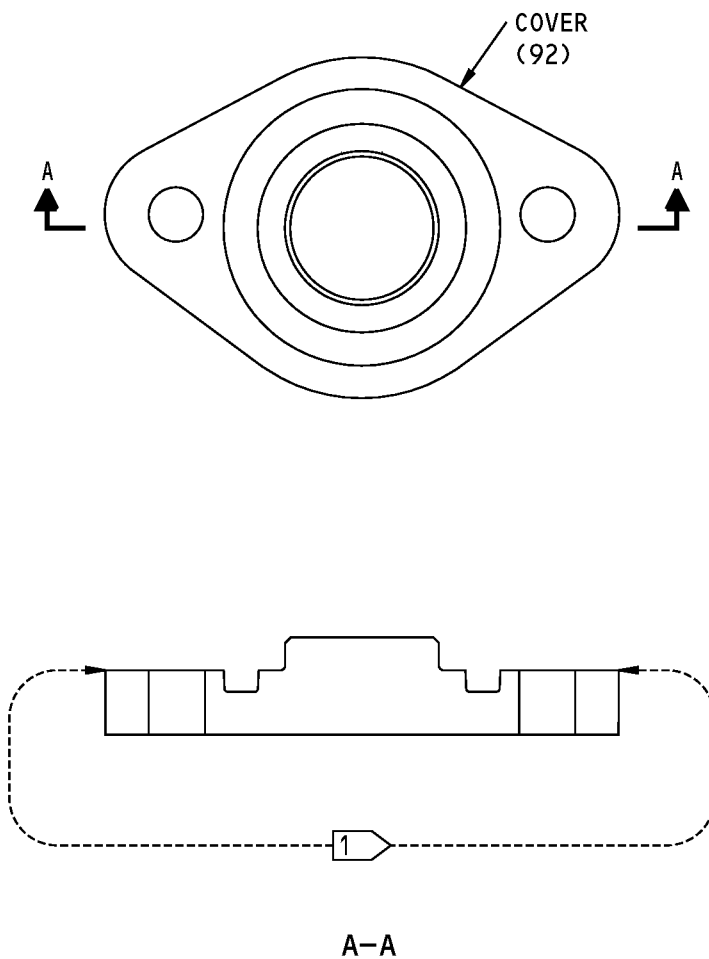
REPAIR 12-1

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1 APPLY PRIMER ON THESE SURFACES.
OVERSPRAY IS PERMITTED IN HOLES

ITEM NUMBERS REFER TO IPL FIG. 1

256A3189-1 Indicator Cover Refinish
Figure 601

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REPAIR 12-1
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ASSEMBLY

1. General

- A. This procedure contains the data necessary to assemble the torque brake assembly. There are two parts:
- (1) Assembly
 - (2) Storage
- B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.
- C. Refer to IPL Figure 1 or IPL Figure 2, as applicable, for item numbers.

2. Assembly

A. Tools/Equipment

NOTE: Equivalent substitutes may be used.

Reference	Description
SPL-5386	Torque Brake Tool - Flap Actuation, Axial Load Equipment (Part #: C27058-1, Supplier: 81205)
SPL-5389	Trans, TE Flap Torque Limiter Test Equipment (737/757 mixed Fleet) (Part #: C27067-81, Supplier: 81205)
SPL-5390	Test Equipment - Torque Limiter, Trans, T.E. Flap (Part #: C27067-81, Supplier: 81205) (Part #: C27067-82, Supplier: 81205)
SPL-5393	TE Flap Transmission Spring Stack Overhaul Equipment (Part #: C27074-1, Supplier: 81205)

B. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
C00913	Compound - Corrosion Inhibiting Material, Nondrying Resin Mix	BMS 3-27
D00467	Fluid - Landing Gear Shock Strut	BMS3-32, Type II
D00590	Fluid - Flap Drive System - Brayco 795	
D00633	Grease - Aircraft General Purpose	BMS3-33
G01912	Lockwire - Monel (0.032 In. Dia.)	NASM20995N~ C32 (QQ-N-281)

C. References

Reference	Title
SOPM 20-50-01	BOLT AND NUT INSTALLATION
SOPM 20-50-02	INSTALLATION OF SAFETYING DEVICES
SOPM 20-50-03	BEARING AND BUSHING REPLACEMENT

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ASSEMBLY

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Reference	Title
SOPM 20-50-06	INSTALLATION OF O-RINGS AND TEFLON SEALS
SOPM 20-50-07	LUBRICATION
SOPM 20-60-02	FINISHING MATERIALS
SOPM 20-60-03	LUBRICANTS
SOPM 20-60-04	MISCELLANEOUS MATERIALS

D. Procedure (256A3151-3 thru -6 only) (IPL Figure 1)

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) Install the bearing (160) on the input cam (165).
 - (2) Invert the input cam (165) and support the cam vertically using the outer race of the bearing (160).
 - (3) Place the balls (170) into ball pockets in the input cam (165).
 - (4) Install the output cam (175) with ball pockets aligned with the balls (170).
 - (5) Install the stator (185) followed by the rotors (190) and the stators (195) in alternating position as shown in ASSEMBLY, Figure 701.
 - (6) Apply a 15-25 lb axial load on the stator-rotor stack using the torque brake tool, SPL-5386, torque limiter test equipment, SPL-5389 or torque limiter test equipment, SPL-5390 and then release the load.
 - (7) Install the spring seat (180) in the output cam (175) as shown in ASSEMBLY, Figure 701.
- NOTE:** The spring seat face with the chamfer must be toward the fillet on the output cam.
- (8) Install the Belleville springs (200) in the output cam.
 - (a) Put the springs in a stack as shown in ASSEMBLY, Figure 701, then put the stack in the spring stack overhaul equipment, SPL-5393.
 - (b) Compress the springs a minimum of six times with a 340-360 lb load.
 - (c) Remove the springs from the spring stack overhaul equipment, SPL-5393 and install them in the output cam (175).
 - (9) Install the bushing (205), shims (230 thru 245), and pressure plate (250). Use the thickness of the shims that was recorded during disassembly, or use an initial value of 0.181-0.191 in.
 - (10) Apply a 189-191 lb axial load to the upper surface of the pressure plate (250) using the torque brake tool, SPL-5386, torque limiter test equipment, SPL-5389 or torque limiter test equipment, SPL-5390 and record the distance between the top stator (195) and the pressure plate.
 - (11) Remove the axial load and remove the pressure plate (250).
 - (12) Decrease the shim (230 thru 245) stack thickness by the amount measured in step (9), ± 0.002 inch.

NOTE: The shim thickness will be 0.000-0.191 in. Use the minimum number of shims necessary to get the correct thickness. It is not necessary to use all the shims.

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ASSEMBLY

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- (13) Install the shims (210 thru 225), pressure plate (250), thrust bearing (255), and thrust bushing (260). Adjust the shim thickness to get the clearance shown in ASSEMBLY, Figure 701.

NOTE: Use the minimum number of shims necessary to get the correct thickness. It is not necessary to use all the shims.

- (14) Install the lockwasher (265) so that the witness cutout on the lockwasher flange is aligned with the key slot in the input cam (165). Replace the lockwasher if the witness cutout is not aligned with the input cam key slot.
- (15) Install the nut (270) and tighten to 550-650 lb-in. above the run-on torque.
- (16) Test and adjust the unit. Refer to TESTING AND FAULT ISOLATION.
- (17) Lock the nut (270) by locally deforming the lockwasher (265) flange into two slots of the nut, 180 degrees apart.
- (18) Install the housing (155) so that it engages the splines of the stators (195) and fits over the outer race of bearing (160).
- (19) Install the bearing (275) on the input cam (165).
- (20) Install the bearing (280) on the shaft (285) and insert the shaft in the pressure plate (250).
- (21) Install the torque brake internal components into the housing assembly (290 or 295). Make sure that one slot in the housing (155) aligns with the trip indicator hole in the housing assembly.
- (22) On assemblies 256A3151-3, -4 only, install the cover (92) on the housing assembly (290 or 295).
- (a) Install the packing (90) on the cover (92) with fluid, D00467. Refer to SOPM 20-50-06.

WARNING: BMS 3-27 CORROSION INHIBITING COMPOUND CONTAINS SOLVENTS, CHROMATES, AND A SMALL AMOUNT OF BOUND ASBESTOS. CONSULT THE APPLICABLE SAFETY STANDARDS FOR APPROVED HANDLING PROCEDURES.

CAUTION: BMS 3-27 COMPOUND IS USED ONLY IN STATIC JOINTS WHERE GREASE CANNOT BE APPLIED. BMS 3-27 COMPOUND IN DYNAMIC JOINTS WILL NOT LET THEM MOVE FREELY.

- (b) Apply a thin layer of corrosion inhibiting compound, C00913 to the faying surface of the cover (92), from the outer edge to approximately 0.05 in. from the O-ring groove.
- (c) Install the cover (92) on the housing assembly (290 or 295).
- (d) Apply wet corrosion inhibiting compound, C00913 to the shank and threads of the bolts (80), then install the bolts and washers (85) to attach the cover to the housing assembly (290 or 295).
- (e) Remove unwanted corrosion inhibiting compound, C00913 from the outside surfaces of the housing assembly (290 or 295) and cover (92) after assembly.
- (f) Install lockwire, G01912 on the bolts (80). Use the double-twist method (SOPM 20-50-02) as shown in ASSEMBLY, Figure 701.
- (23) On assemblies 256A3151-5, -6 only, install the trip indicator.
- (a) Apply a 25-35 lb axial load between the housing (155) and the housing assembly (290 or 295) using the torque brake tool, SPL-5386, torque limiter test equipment, SPL-5389 or torque limiter test equipment, SPL-5390 as shown in ASSEMBLY, Figure 701.

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- (b) Measure the distance from the edge of the hole in the housing assembly (290 or 295) to the lower surface of the flange on the output cam (175), as shown in ASSEMBLY, Figure 701. This is dimension "X".

NOTE: This dimension must be measured to the nearest 0.001 inch.

- (c) Remove the 25-35 lb axial load between the housing (155) and the housing assembly (290 or 295).
- (d) Install the shims (105 thru 120), bushing (100A), shaft (95), lever shaft (125), and lever (130) in the housing assembly (135).
- (e) Deleted.
- (f) Apply a 2-5 lb axial load to the end of the shaft (95) using the torque brake tool, SPL-5386, torque limiter test equipment, SPL-5389 or torque limiter test equipment, SPL-5390. Measure the distance from the face of the lever (130) to the top face of the housing assembly (135) as shown in ASSEMBLY, Figure 701. This is dimension "Z".
- (g) Adjust the shim (105 thru 120) thickness as necessary so that dimension "Z" is equal to dimension "X" plus 0.978-0.982 inch.

NOTE: A change in the shim stack thickness of 0.003 in. will change dimension "Z" by approximately 0.001 in. Use the minimum number of shims necessary to get the correct thickness. It is not necessary to use all the shims.

- (h) Install the spring (75), seat (70), shims (50 thru 65), pin (45A), backup ring (40), and ring (35) in the housing assembly (135).
- (i) Apply a 2-5 lb axial load to the end of the pin (45A) using the torque brake tool, SPL-5386, torque limiter test equipment, SPL-5389 or torque limiter test equipment, SPL-5390. Measure the actual distance from the top face of the housing assembly (135) to the end face of the pin as shown in ASSEMBLY, Figure 701. This is dimension "Y".
- (j) Adjust the shim (50 thru 65) thickness as necessary so that dimension "Y" is 0.627-0.631 inch.

NOTE: Use the minimum number of shims necessary to get the correct thickness. It is not necessary to use all the shims.

- (k) Install the packings (20, 25) in the cover (30A) with fluid, D00467(SOPM 20-50-06).
- (l) Install the cover (30A) on the housing (135) with the bolts (10) and washers (15).
- (m) Do a check of the operation of the trip indicator. Make sure that:
- 1) The pin (45A) trip force is 20-35 lb at the input end of the lever (130).
 - 2) The pin extension is 0.18 in. or more.
 - 3) The reset force is 3.5-12.0 lb.
- (n) Remove the bolts (10), washers (15), and the cover (30A) from the housing assembly (135).
- (o) Install the cover (30A) on the housing assembly (135) with corrosion inhibiting compound, C00913.

WARNING: BMS 3-27 CORROSION INHIBITING COMPOUND CONTAINS SOLVENTS, CHROMATES, AND A SMALL AMOUNT OF BOUND ASBESTOS. CONSULT THE APPLICABLE SAFETY STANDARDS FOR APPROVED HANDLING PROCEDURES.

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(WARNING PRECEDES)

CAUTION: BMS 3-27 COMPOUND IS USED ONLY IN STATIC JOINTS WHERE GREASE CANNOT BE APPLIED. BMS 3-27 COMPOUND IN DYNAMIC JOINTS WILL NOT LET THEM MOVE FREELY.

- 1) Apply a thin layer of corrosion inhibiting compound, C00913 to the faying surface of the cover (30A) flange, from the outer profile to approximately 0.05 inch from the fillet radius.
 - 2) Install the cover on the housing assembly (135).
 - 3) Apply wet corrosion inhibiting compound, C00913 to the shank and threads of the bolts (10), then install the bolts and washers (15) to attach the cover to the housing (135).
 - 4) Remove unwanted corrosion inhibiting compound, C00913 from the outside surfaces of the housing and cover after assembly.
- (p) Lubricate the trip indicator (SOPM 20-50-07).
- 1) Move the indicator to the tripped position.
 - 2) Apply grease, D00633 to the space between the pin (45A) and the trip indicator cover (30A).
 - 3) Push the pin up and down a minimum of 5 times to apply the grease, D00633 evenly over the pin. Do not push the pin down to where the catch ring (35) will latch the pin.
 - 4) Push the pin down until the catch ring latches the pin and sets the trip indicator.
 - 5) Apply a thin layer of grease, D00633 to the top of the pin (45A) and the trip indicator cover (30A).
- (q) Install the trip indicator on the housing assembly (290 or 295).
- 1) Install the packing (90) on the housing assembly (135) with fluid, D00467(SOPM 20-50-06).

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CAUTION: BMS 3-27 COMPOUND IS USED ONLY IN STATIC JOINTS WHERE GREASE CANNOT BE APPLIED. BMS 3-27 COMPOUND IN DYNAMIC JOINTS WILL NOT LET THEM MOVE FREELY.

- 2) Apply a thin layer of corrosion inhibiting compound, C00913 to the mounting surface of the trip indicator, from the outer profile to approximately 0.05 inch from the packing (90) groove.
- 3) Install the trip indicator on the housing assembly (290 or 295).
- 4) Apply wet corrosion inhibiting compound, C00913 to the shank and threads of the bolts (80), then install the bolts and washers (85) to attach the trip indicator to the housing assembly (290 or 295).
- 5) Remove unwanted corrosion inhibiting compound, C00913 from the outside surfaces of the housing and trip indicator after assembly.

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- (r) Install lockwire, G01912 on the bolts (10, 80). Use the double-twist method (SOPM 20-50-02) as shown in ASSEMBLY, Figure 701.

E. Procedure (256A3151-7, -8 only) (IPL Figure 2)

NOTE: Lubricate all parts with Brayco 795 fluid, D00590 before assembly (SOPM 20-50-07), unless the instructions tell you differently.

- (1) Install the bearing (60) on the input cam (65). Refer to SOPM 20-50-03.
- (2) Hold the input cam vertically on the outer race of the bearing (60).
- (3) Put the balls (70) in the ball pockets of the input cam.
- (4) Install the output cam (75) over the balls on the input cam. Make sure that the ball pockets of the output cam are aligned with the balls.
- (5) Install the bearing retainer (55) over the bearing (60).
- (6) Install the Belleville springs (80) in the output cam.
 - (a) Put the springs in a stack as shown in ASSEMBLY, Figure 702.
 - (b) Put the springs in the spring stack overhaul equipment, SPL-5393.
 - (c) Compress the springs a minimum of six times with a 340-360 lb load.
 - (d) Remove the springs from the spring stack overhaul equipment, SPL-5393 and install them in the output cam (75).
 - (e) Make sure that the springs are centered in the output cam. Put 0.004 in. shim stock at four or more locations, at equal distances around the circumference, to hold the springs until the nut (120) is installed.
- (7) Install the race (100), bearing (105), thrust bushing (110), lockwasher (115), and nut (120) on the input cam. Tighten the nut sufficiently to hold the Belleville springs in position, and remove the shim stock, if installed.
- (8) Tighten the nut (120) until the dimension "X" shown in ASSEMBLY, Figure 702 is equal to the value recorded during disassembly.

NOTE: If the output cam (75), or any of the parts installed in the output cam, was replaced, use 0.03 inch as the initial value for "X."

- (9) Make sure that the witness cutout on the flange of the lockwasher (115) is aligned with the key slot in the input cam. Replace the lockwasher if the cutout is not aligned with the slot.
- (10) Install the bearings (125, 130) on the output shaft (155). Refer to SOPM 20-50-03.
- (11) Install the input cam (65) with assembled parts in the output shaft. Be careful when you align the spline teeth on the input cam and the output shaft, and the input cam with the bearing (130).
- (12) Install the shims (135 thru 150) in the housing (160 or 165). (ASSEMBLY, Figure 702)
 - (a) Use a support to hold the assembled parts by the outer race of the bearing (125). Apply a 25-35 lb axial load on the bearing retainer (55) using the torque brake tool, SPL-5386, torque limiter test equipment, SPL-5389 or torque limiter test equipment, SPL-5390. Measure and record the dimension "Y" as shown. Remove the axial load.
 - (b) Measure and record the dimension "Z" for the housing (160 or 165).

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- (c) Calculate the shim thickness "S1" as shown. Make a selection from the shims (135 thru 150) to get a thickness equal to "S1" +/- 0.001 in.

NOTE: Use the minimum number of shims necessary to get the correct thickness. It is not necessary to use all the shims.

- (13) Install the reaction plate (95) in the housing (160 or 165). Align the missing spline tooth in the reaction plate with the missing spline space in the housing.
- (14) Install the spring (90) on the reaction plate. Make sure that the space in the spring is aligned with the key on the reaction plate.
- (15) Install the stator (85) on the spring (90). Make sure that the key on the stator is aligned with the space in the spring.
- (16) Install the output shaft with assembled parts in the housing (160 or 165).
- (17) Install the trip indicator.
- (a) Install the packings (20, 40) in the trip indicator housing (50). Refer to SOPM 20-50-06.
- (b) Install the plunger (25) in the housing.
- (c) Install the spacer (30), catch ring (45), and bushing (35) on the plunger and into the housing.
- (d) Push the plunger out to the tripped position. Apply grease, D00633 in the clearance between the plunger and the housing.
- (e) Push the plunger back to the normal position. Apply a thin layer of grease, D00633 to the top of the plunger and the housing.

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CAUTION: BMS 3-27 COMPOUND IS USED ONLY IN STATIC JOINTS WHERE GREASE CANNOT BE APPLIED. BMS 3-27 COMPOUND IN DYNAMIC JOINTS WILL NOT LET THEM MOVE FREELY.

- (f) Apply a thin layer of corrosion inhibiting compound, C00913 to the faying surfaces of the housing, from the mounting flange to approximately 0.05 in. from the O-ring groove.
- (g) Install the trip indicator assembly on the housing (160 or 165). Make sure that the plunger goes into the V-shaped notch in the stator (85).
- (h) Apply wet corrosion inhibiting compound, C00913 to the shank and threads of the bolts (10), then install the bolts and washers (15) to attach the trip indicator to the housing (160 or 165).
- (i) Remove unwanted corrosion inhibiting compound, C00913 from the outside surfaces of the housings after assembly.
- (18) Do the functional test of the torque brake assembly. Refer to TESTING AND FAULT ISOLATION.
- (19) After the functional test is completed, disassemble the torque brake assembly sufficiently to get access to the nut (120) and lockwasher (115). Refer to DISASSEMBLY.
- (20) Make sure that the witness cutout on the flange of the lockwasher (115) is aligned with the key slot in the input cam. Replace the lockwasher if the cutout is not aligned with the slot.
- (21) Bend the flange of the lockwasher into two slots of the nut, 180 degrees apart, as shown.
- (22) Do the functional test of the torque brake assembly again. Refer to TESTING AND FAULT ISOLATION.

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(23) Complete the assembly of the torque brake assembly as necessary

3. Storage

A. References

Reference	Title
SOPM 20-44-02	TEMPORARY PROTECTIVE COATINGS

B. Procedure

- (1) Use standard industry practices, and the information in SOPM 20-44-02 and the steps that follow, to store the torque brake assembly.
- (2) Cover the top of the torque brake assembly with masking tape after assembly to prevent introduction of solvents, contaminants, or dust in the unit.
- (3) Put the assembly in a clean moisture-proof bag
- (4) Store the assembly in a vertical position.

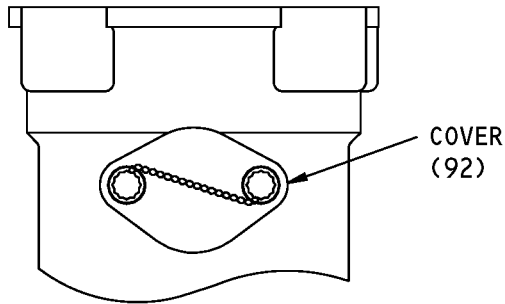
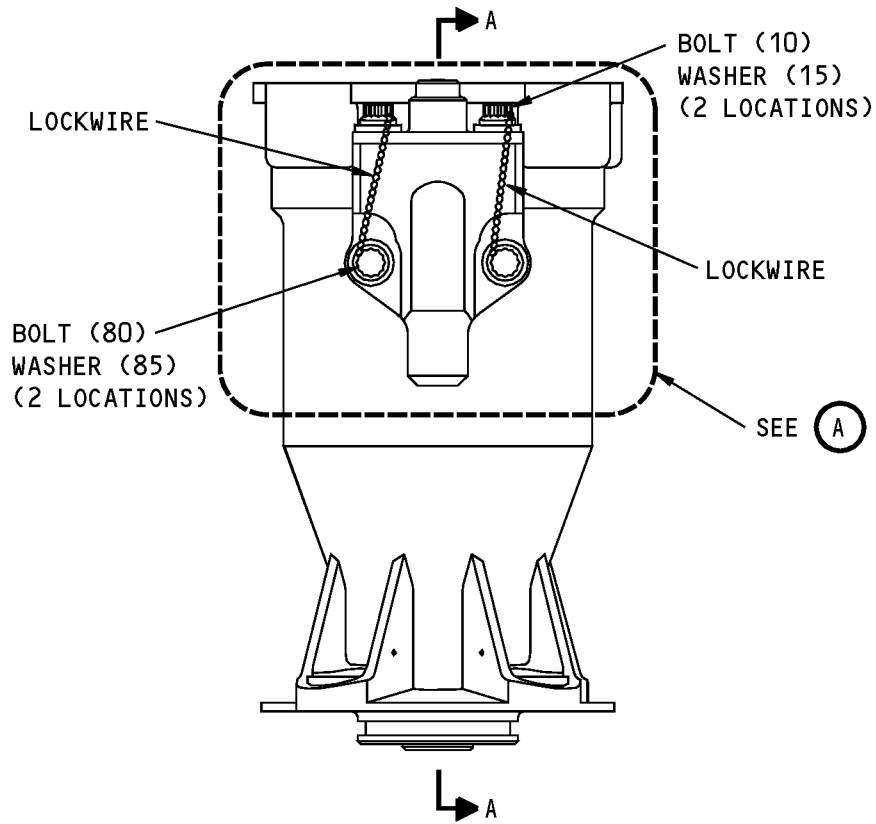
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256A3151-3,-4 ONLY

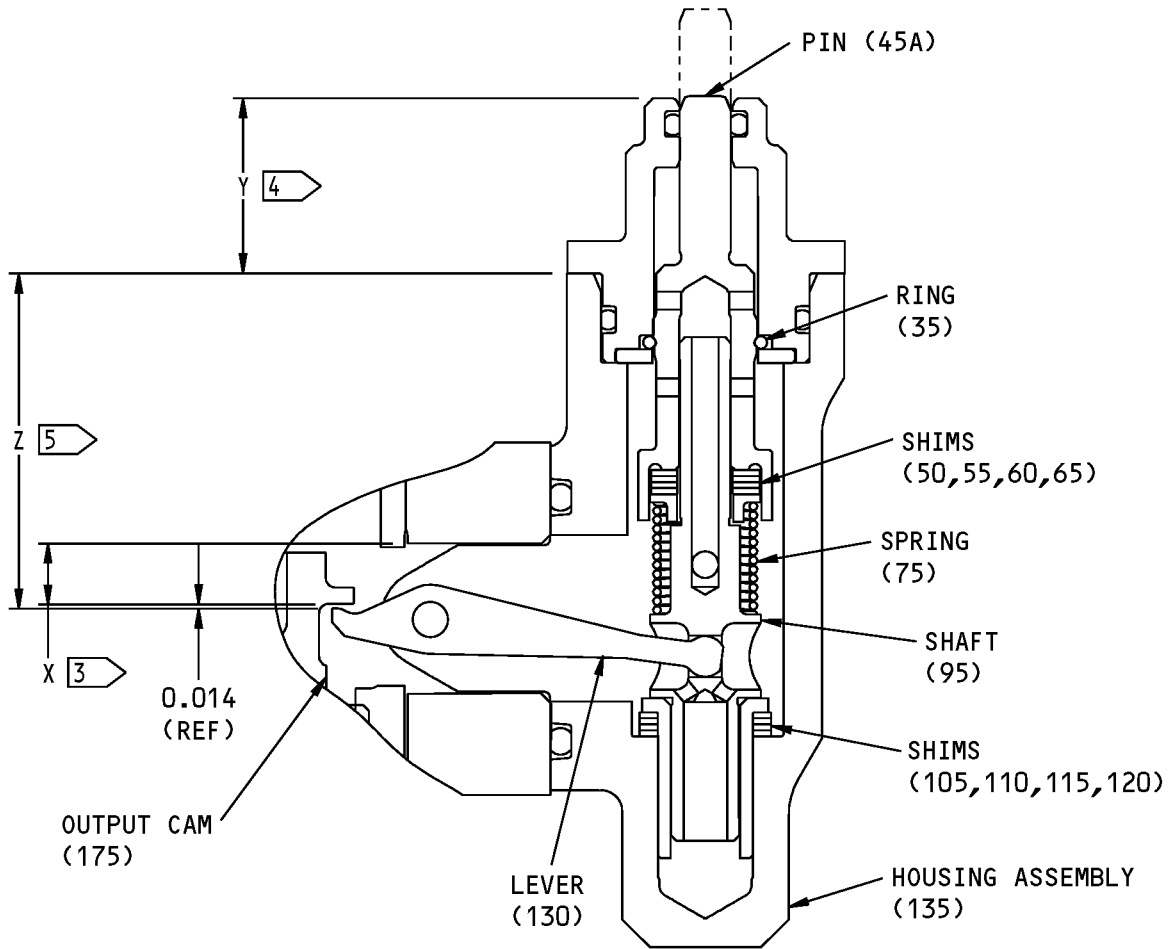
(A)

256A3151-1,-2 Assembly Details
Figure 701 (Sheet 1 of 4)

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256A3151-5,-6 ONLY

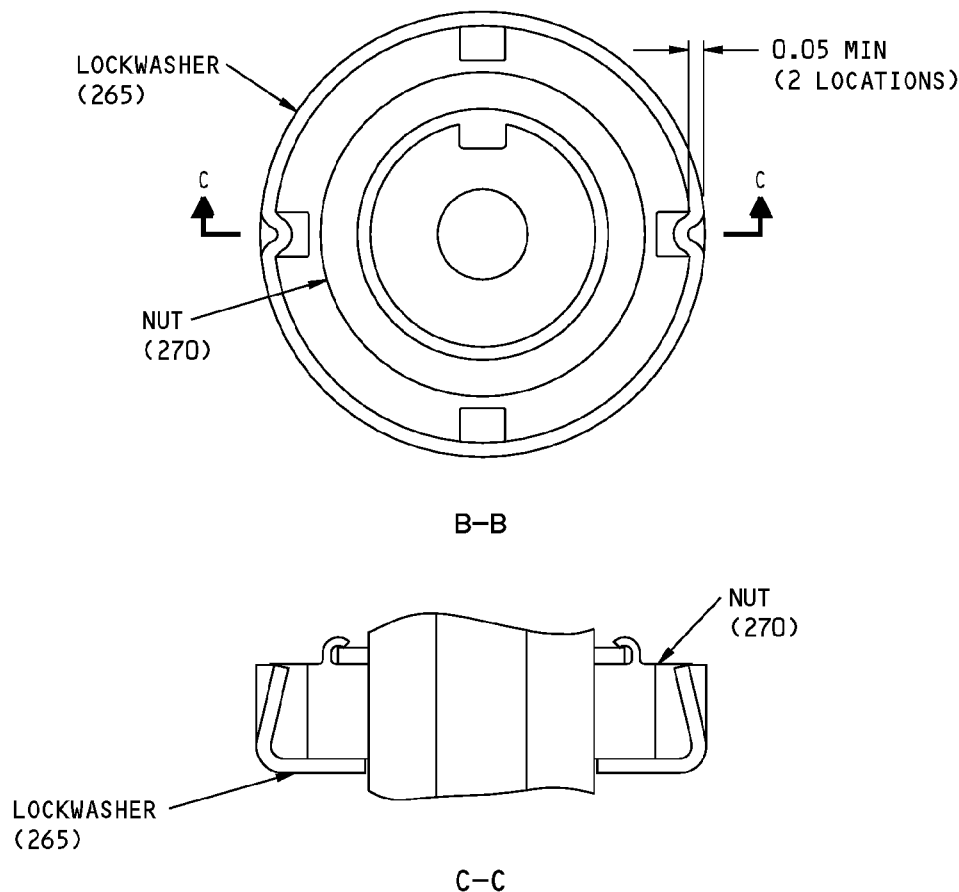


256A3151-1,-2 Assembly Details
Figure 701 (Sheet 3 of 4)

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- 1 ADJUST SHIMS (210 THRU 225) TO OBTAIN GAP SHOWN
- 2 APPLY 25-35 LB AXIAL LOAD TO INDICATED SURFACES TO DETERMINE DIMENSION X
- 3 DIMENSION X IS THE DISTANCE FROM THE EDGE OF THE HOLE IN THE HOUSING ASSEMBLY (290,295) TO THE PRESSURE PLATE (250) FLANGE TO THE NEAREST 0.001 INCH

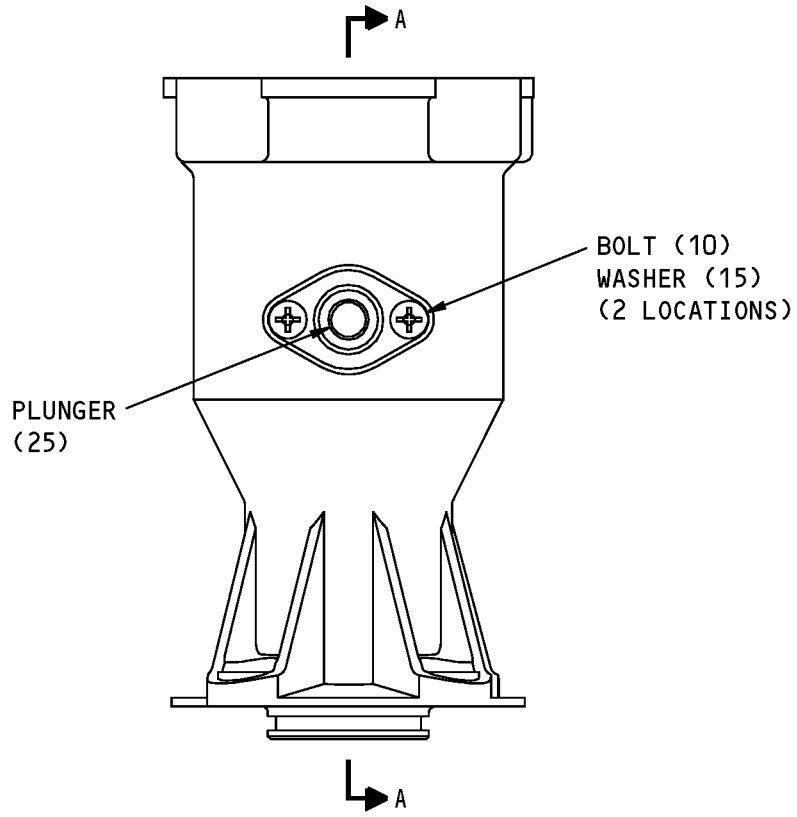
- 4 DIMENSION Y IS THE DISTANCE FROM THE HOUSING ASSEMBLY (135) FACE TO THE END FACE OF PIN (45A). THIS DISTANCE MUST BE 0.627-0.631 INCH WITH A 2-5 LB AXIAL LOAD APPLIED TO THE END OF PIN (45A)
- 5 DIMENSION Z IS THE DISTANCE FROM THE LEVER (130) FACE TO THE HOUSING ASSEMBLY (135) FACE TO THE NEAREST 0.001 INCH. THIS DISTANCE MUST BE 0.978-0.982 INCH WITH A 2-5 LB AXIAL LOAD APPLIED TO THE END OF SHAFT (95). (CHANGING THE SHIM (105 THRU 120) STACK THICKNESS BY 0.003 CHANGES DIMENSION Z BY 0.001)

256A3151-1,-2 Assembly Details
Figure 701 (Sheet 4 of 4)

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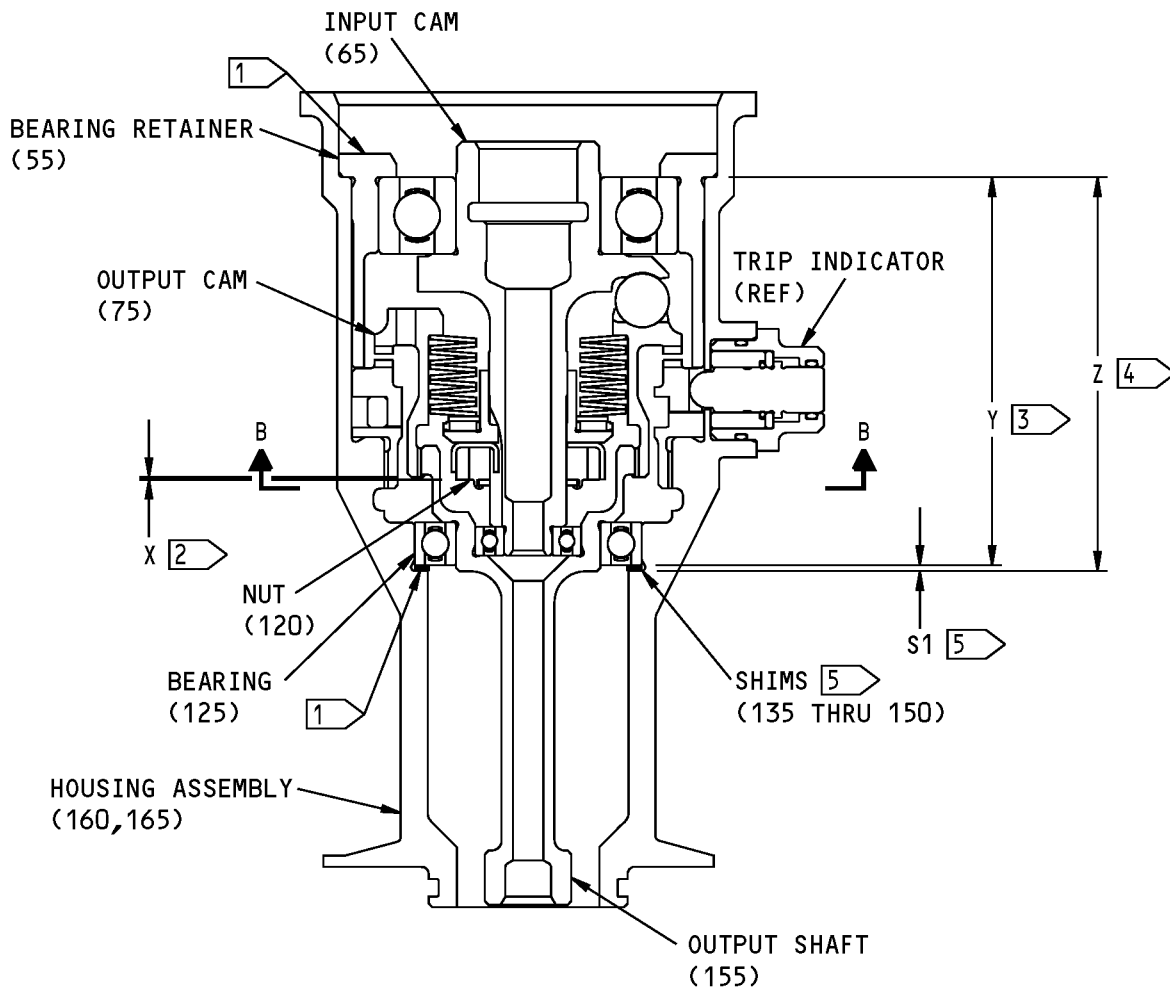


256A3151-7,-8 Assembly Details
Figure 702 (Sheet 1 of 4)

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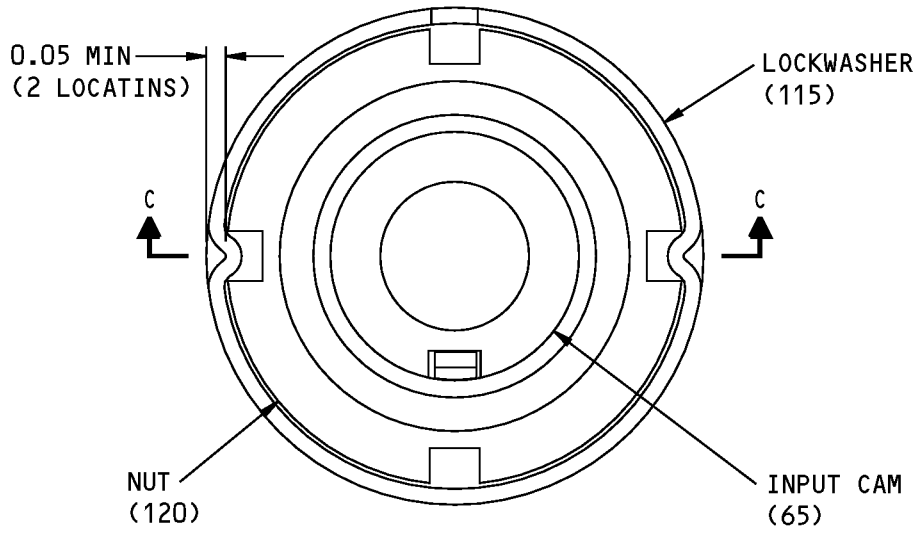
A-A

256A3151-7,-8 Assembly Details
Figure 702 (Sheet 2 of 4)

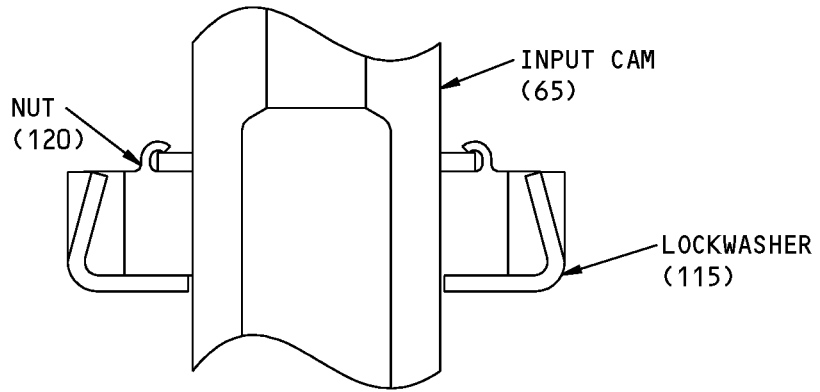
27-55-84

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B-B
(TURNED 90° CCW)



C-C

256A3151-7,-8 Assembly Details
Figure 702 (Sheet 3 of 4)

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- 1 APPLY A 25-35 LB AXIAL COMPRESSION LOAD EQUALLY ON THESE SURFACES TO FIND DIMENSION Y
- 2 DIMENSION X IS THE DISTANCE FROM THE BOTTOM EDGE OF THE OUTPUT CAM (75) TO THE BOTTOM FACE OF THE NUT (120)
- 3 DIMENSION Y IS THE DISTANCE FROM THE BEARING RETAINER (55) FLANGE TO THE OUTER RACE OF THE BEARING (125), WITH THE AXIAL COMPRESSION LOAD APPLIED
- 4 DIMENSION Z IS THE DISTANCE BETWEEN THE SHOULDER FOR THE BEARING RETAINER (155) AND THE SHOULDER FOR THE BEARING (125) IN THE HOUSING ASSEMBLY (160,165)
- 5 MAKE THE SELECTION OF SHIMS (135 THRU 150) TO GET THICKNESS S1, WHERE $S1=Z-Y$

ITEM NUMBERS REFER TO IPL FIG. 2

256A3151-7,-8 Assembly Details
Figure 702 (Sheet 4 of 4)

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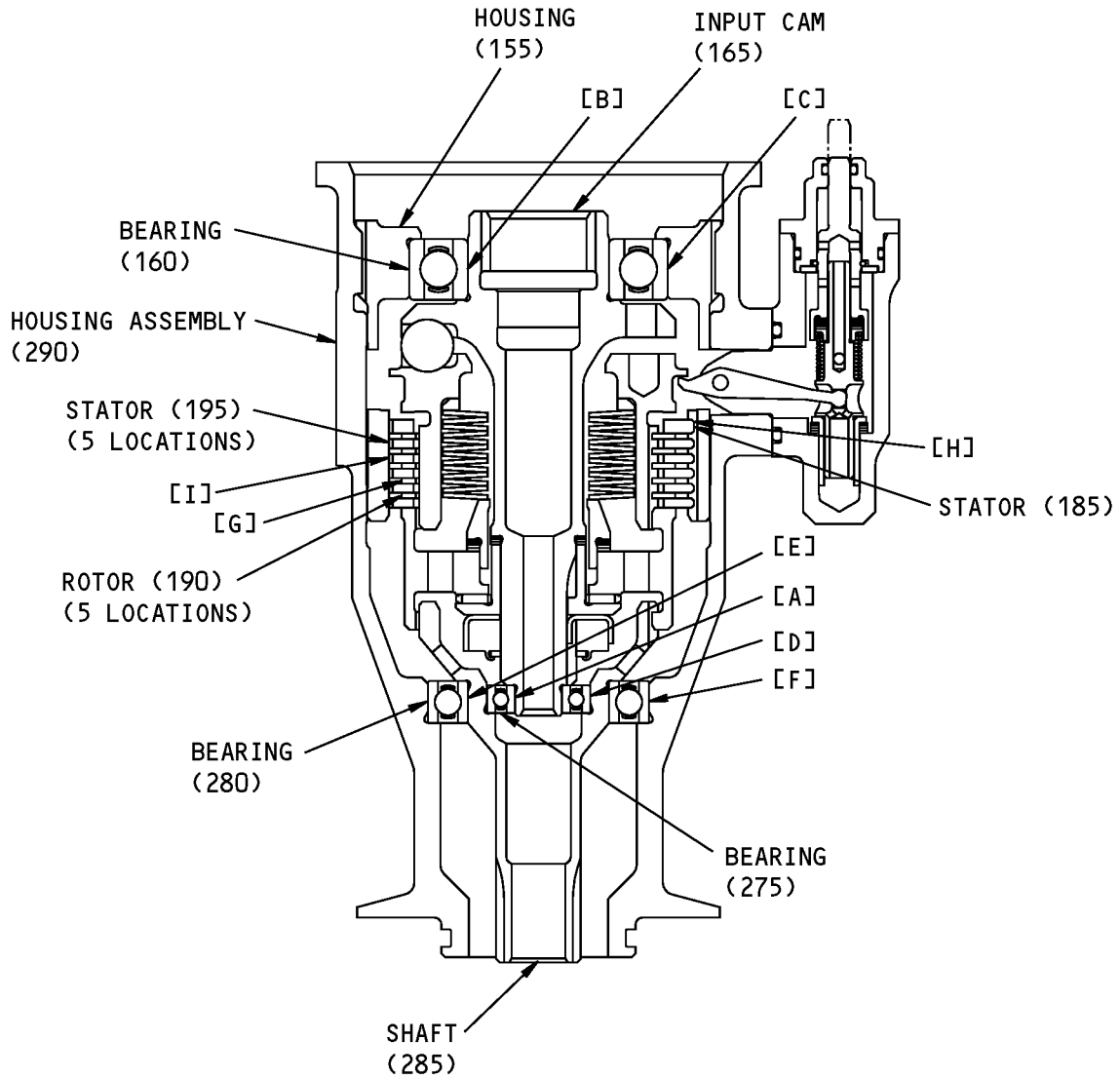
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FITS AND CLEARANCES



Fits and Clearances
Figure 801 (Sheet 1 of 2)

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REF LETTER	REF IPL	DESIGN DIMENSION*				SERVICE WEAR LIMIT*		
	FIG. 1, MATING ITEM NO.	DIMENSION		ASSEMBLY CLEARANCE		DIMENSION		MAXIMUM CLEARANCE
		MIN	MAX	MIN	MAX	MIN	MAX	
[A]	ID 275	0.3934	0.3937	0.0000	0.0006	0.3929	0.3939	0.0010
	OD 165	0.3931	0.3934					
[B]	ID 160	1.1807	1.1811	-0.0008	-0.0001	1.1810	1.1814	0.0004
	OD 165	1.1812	1.1815					
[C]	ID 155	2.1654	2.1660	0.0000	0.0011	2.1647	2.1664	0.0017
	OD 160	2.1649	2.1654					
[D]	ID 285	0.8661	0.8669	0.0000	0.0012	0.8655	0.8672	0.0017
	OD 275	0.8657	0.8661					
[E]	ID 280	1.1807	1.1811	-0.0008	-0.0001	1.1810	1.1814	0.0004
	OD 285	1.1812	1.1815					
[F]	ID 290	1.8514	1.8521	0.0010	0.0022	1.8497	1.8524	0.0027
	OD 280	1.8499	1.8504					
[G]	190	0.045	0.048			0.043		
[H]	185	0.115	0.120			0.113		
[I]	195	0.075	0.080			0.073		

* ALL DIMENSIONS ARE IN INCHES

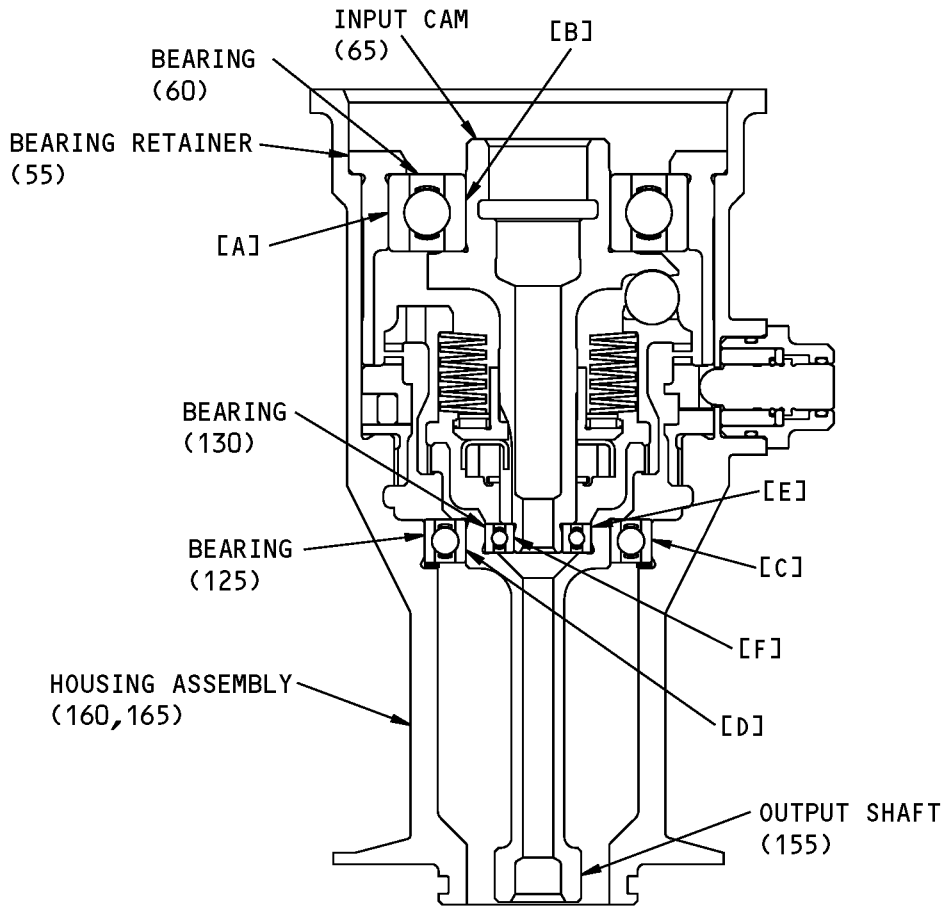
NEGATIVE NUMBERS DENOTE INTERFERENCE FIT

THICKNESS

Fits and Clearances
Figure 801 (Sheet 2 of 2)

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COMPONENT MAINTENANCE MANUAL



Fits and Clearances
Figure 802 (Sheet 1 of 2)



COMPONENT MAINTENANCE MANUAL

REF LETTER	REF IPL	DESIGN DIMENSION*				SERVICE WEAR LIMIT*		
	FIG. 2, MATING ITEM NO.	DIMENSION		ASSEMBLY CLEARANCE		DIMENSION		MAXIMUM CLEARANCE
		MIN	MAX	MIN	MAX	MIN	MAX	
[A]	ID 55	2.4409	2.4415	0.0000	0.0011			
	OD 60	2.4404	2.4409					
[B]	ID 60	1.1807	1.1811	-0.0008	0.0002			
	OD 65	1.1809	1.1815					
[C]	ID 160,165	1.8506	1.8514	0.0002	0.0015			
	OD 125	1.8499	1.8504					
[D]	ID 125	1.1807	1.1811	-0.0008	0.0002			
	OD 155	1.1809	1.1815					
[E]	ID 155	0.8661	0.8666	0.0000	0.0009			
	OD 130	0.8657	0.8661					
[F]	ID 130	0.3934	0.3937	0.0000	0.0007			
	OD 65	0.3930	0.3934					

* ALL DIMENSIONS ARE IN INCHES

NEGATIVE NUMBERS DENOTE
INTERFERENCE FIT

Fits and Clearances
Figure 802 (Sheet 2 of 2)

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REF IPL		NAME	TORQUE*	
FIG. NO.	ITEM NO.		POUND-INCHES	POUND-FEET
1	270	Nut	550-650 1	

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

1 ABOVE RUN-ON TORQUE

Torque Table
Figure 803

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FITS AND CLEARANCES
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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-5386	Torque Brake Tool - Flap Actuation, Axial Load Equipment	C27058-1	81205
SPL-5389	Trans, TE Flap Torque Limiter Test Equipment (737/757 mixed Fleet)	C27067-81	81205
SPL-5390	Test Equipment - Torque Limiter, Trans, T.E. Flap	C27067-81	81205
		C27067-82	81205
SPL-5393	TE Flap Transmission Spring Stack Overhaul Equipment	C27074-1	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

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SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

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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

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ILLUSTRATED PARTS LIST

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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
0AJV0	INA BEARING COMPANY INC 308 SPRINGHILL FARM ROAD FORT MILL, SOUTH CAROLINA 28715-9981
56878	SPS TECHNOLOGIES INC AEROSPACE AND INDUSTRIAL PRODUCTS DIV 301 HIGHLAND AVE JENKINTOWN, PENNSYLVANIA 19046 FORMERLY STANDARD PRESSED STEEL FORMERLY IN SALT LAKE, UTAH
60380	TORRINGTON CO BEARINGS DIV SUBSIDIARY OF INGERSOLL-RAND CORP 59 FIELD STREET PO BOX 1008 TORRINGTON, CONNECTICUT 06790-1008 FORMERLY TORRINGTON BEARING COMPANY
72962	HARVARD INDUSTRIES INC 3 WERNER WAY SUITE 210 LEBANON, NEW JERSEY 08833 FORMERLY ESNA V7A079 FORMERLY ELASTIC STOP NUT IN UNION, NJ
97393	SHUR-LOK CORPORATION 2541 WHITE ROAD PO BOX 19584 IRVINE, CALIFORNIA 92623-9584 FORMERLY SHUR LOK CORP VB0060 FORMERLY IN SANTA ANA, CALIFORNIA 92714

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NUMERICAL INDEX

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
251A4175-2		2	75A	1
251N4175-1		2	75	1
251N4176-1		2	50	1
251N4177-1		2	25	1
251N4178-1		2	30	1
251N4179-1		2	35	1
251N4180-1		2	90	1
251N4181-1		2	95	1
251N4185-1		2	85	1
256A3148-10		2	140	AR
256A3148-11		2	145	AR
256A3148-12		2	150	AR
256A3148-17		1	210	AR
256A3148-18		1	215	AR
256A3148-19		1	220	AR
256A3148-20		1	225	AR
256A3148-21		1	230	AR
256A3148-22		1	235	AR
256A3148-23		1	240	AR
256A3148-24		1	245	AR
256A3148-9		2	135	AR
256A3151-3		1	1B	RF
256A3151-4		1	5A	RF
256A3151-5		1	1C	RF
256A3151-6		1	5B	RF
256A3151-7		1	1D	RF
		2	1A	RF
256A3151-8		1	5C	RF
		2	5	RF
256A3153-2		1	150A	1
256A3154-1		1	45A	1
256A3155-1		1	290	1
256A3155-10		2	185	1
256A3155-2		1	295	1

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PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
256A3155-3		1	310	1
256A3155-4		1	315	1
256A3155-7		2	160	1
256A3155-8		2	165	1
256A3155-9		2	180	1
256A3156-1		1	175	1
256A3157-2		1	165	1
256A3157-4		2	65	1
256A3158-1		1	180	1
256A3159-2		1	205	1
256A3162-1		1	200	13
		2	80	11
256A3163-1		1	285	1
256A3163-2		2	155	1
256A3164-1		1	190	5
256A3165-1		1	185	1
256A3165-2		1	195	5
256A3166-1		1	250	1
256A3167-1		1	30A	1
256A3168-1		1	155	1
256A3169-1		1	260	1
		2	110	1
256A3170-1		2	55	1
256A3175-2		1	265	1
		2	115	1
256A3189-1		1	92	1
256W3050-41		1	50	AR
256W3050-42		1	55	AR
256W3050-43		1	60	AR
256W3050-44		1	65	AR
256W3050-45		1	105	AR
256W3050-46		1	110	AR
256W3050-47		1	115	AR
256W3050-48		1	120	AR
256W3088-1		1	145	1

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PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
256W3088-2		1	100	1
256W3089-1		1	70	1
256W3092-1		1	135	1
256W3092-2		1	150	1
256W3093-1		1	75	1
256W3094-1		1	35	1
		2	45	1
256W3096-1		1	40	1
256W3097-1		1	130	1
256W3098-1		1	125	1
256W3099-1		1	95	1
256W3153-1		1	135A	1
82631-1018		1	270	1
		2	120	1
AS2035		2	100A	1
AXK2035		2	105A	1
BACB10AZ30C		2	60	1
BACB10BA30C		1	160	1
BACB10BB10C		1	275	1
		2	130	1
BACB10BB30C		1	280	1
		2	125	1
BACB10T1-28A		1	170	3
		2	70	3
BACB30MR3HK2		1	10	2
BACB30MR3HK4		1	80	2
BACB30NT3K2		2	10	2
BACN10RF10		1	270	1
		2	120	1
BACW10BP3CD		1	15	2
		1	85	2
		2	15	2
BR9080-10		1	270	1
		2	120	1
FNTA2035		1	255	1

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PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
FTNA2035		2	105	1
FTRA2035		2	100	1
M25988-1-008		1	20A	1
M25988-1-012		2	20	1
M25988-1-016		1	25	1
M25988-1-017		2	40	1
M25988-1-117		1	90	1
MS21209F1-15P		1	140	2
		1	300	2
		2	170	2
MS21209F5-15P		1	305	4
		2	175	4
SL2822-10		1	270	1
		2	120	1

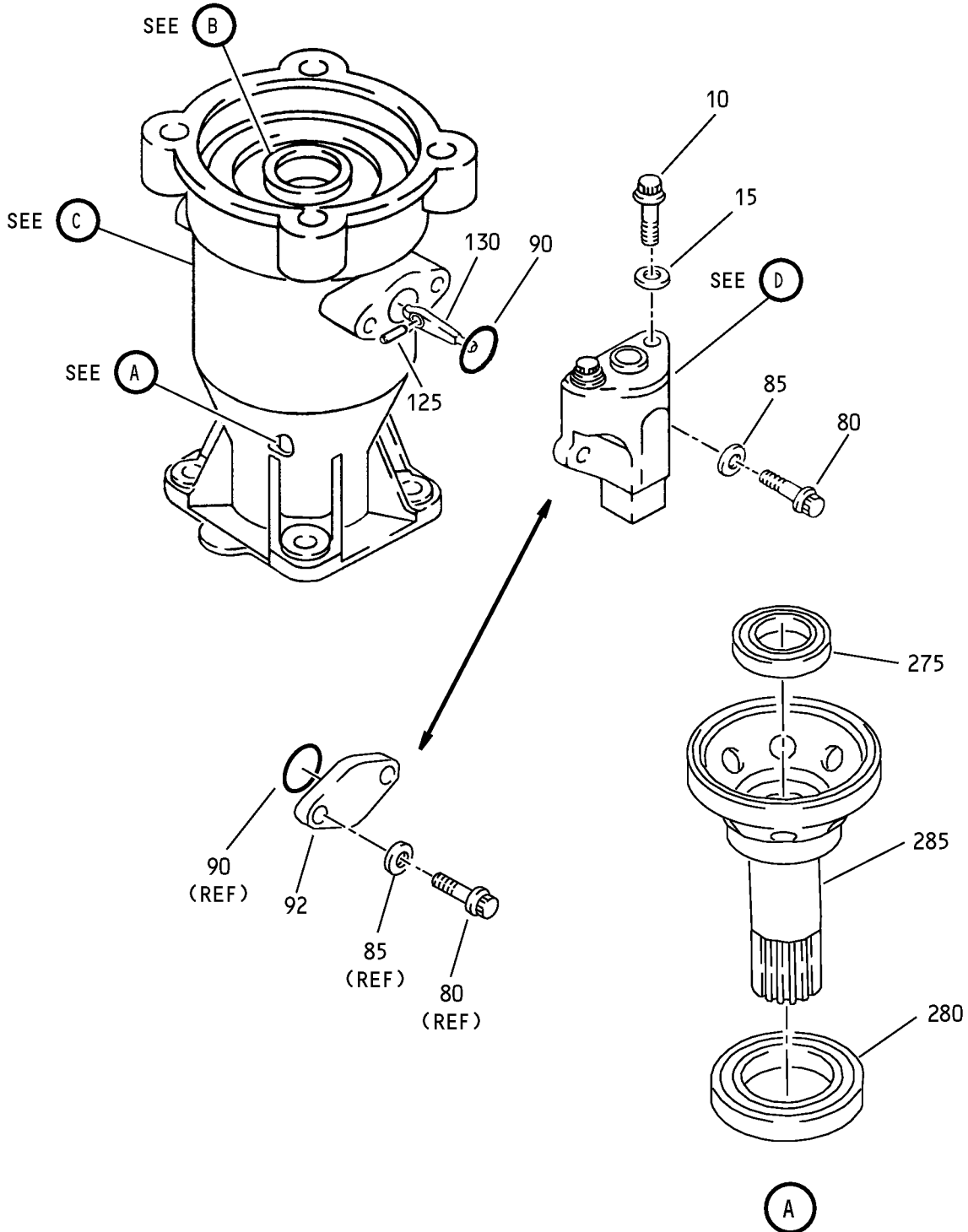
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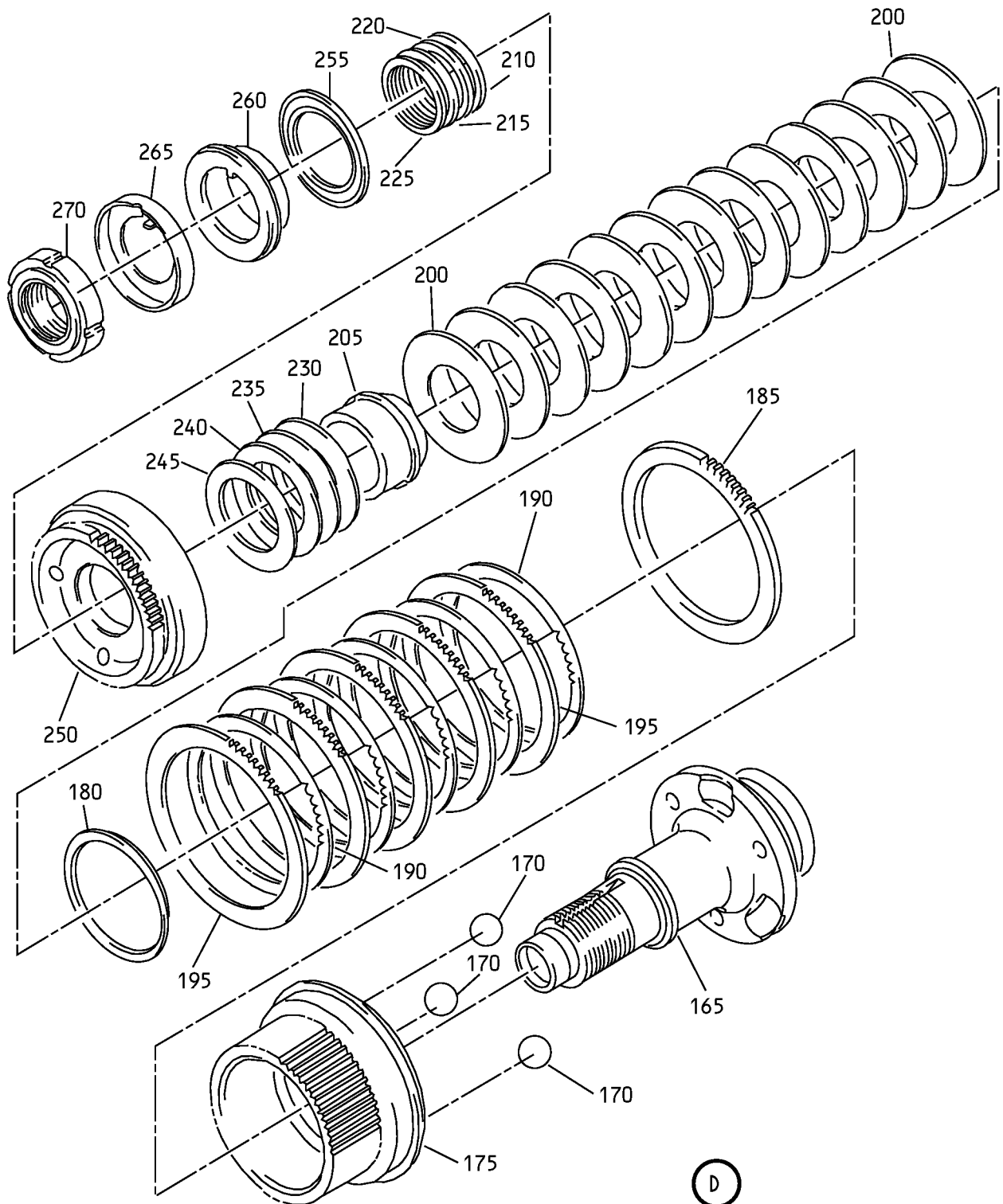
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Flap Actuation High Setting Torque Brake Assembly
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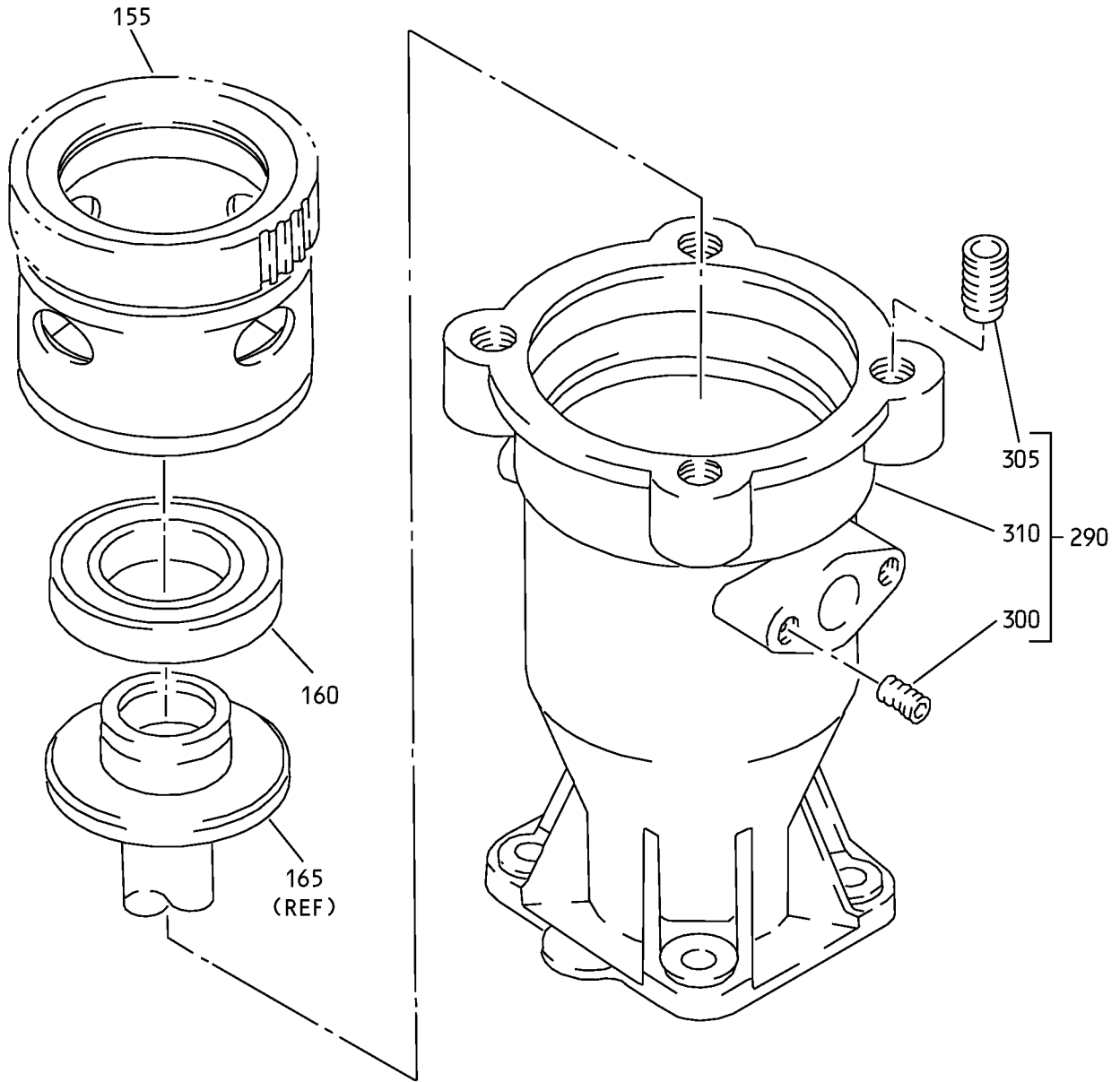
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Flap Actuation High Setting Torque Brake Assembly
IPL Figure 1 (Sheet 3 of 4)

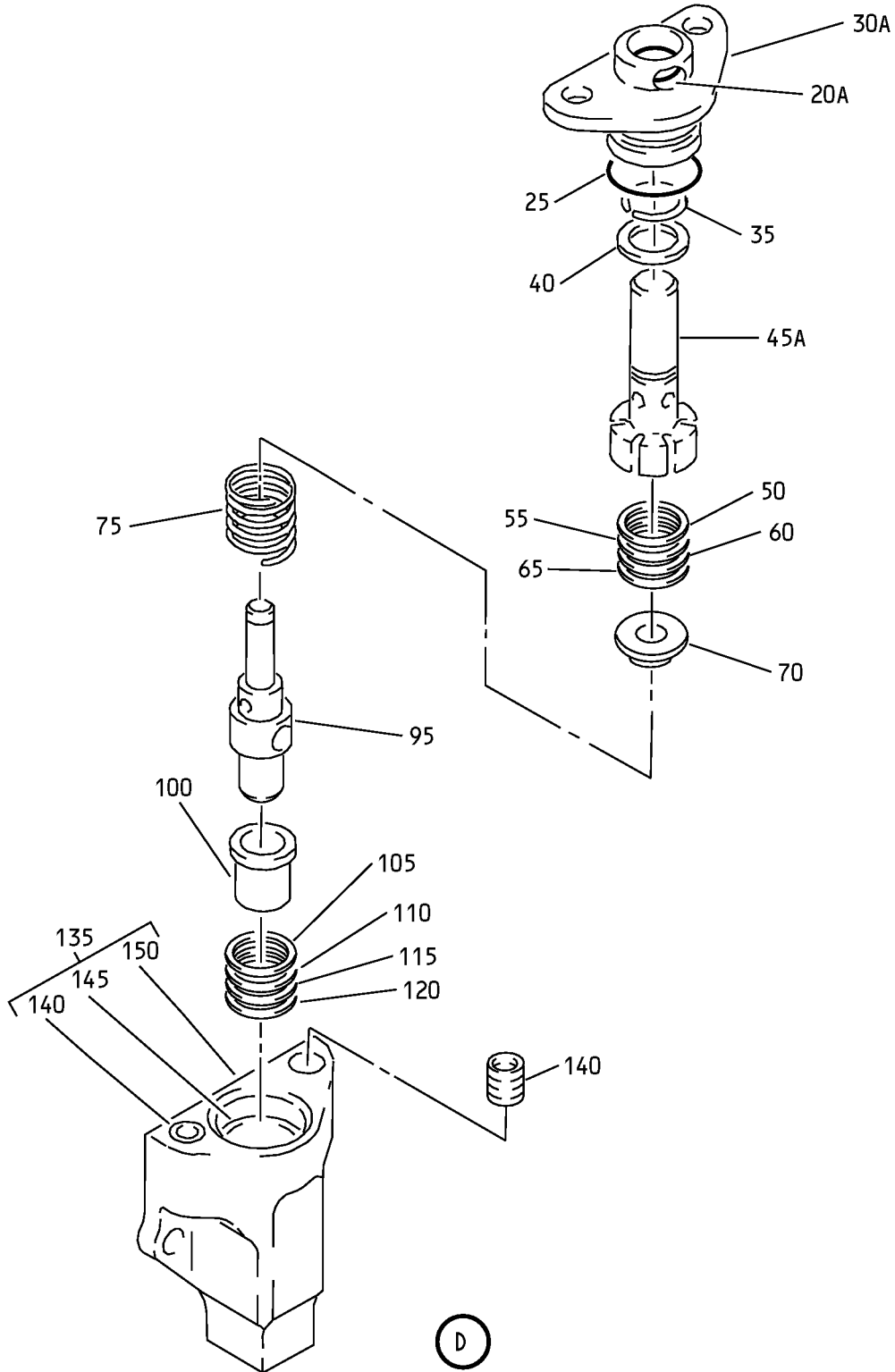
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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
1-											
-1A	256A3151-1										
-1B	256A3151-3									A	RF
-1C	256A3151-5									C	RF
-1D	256A3151-7									E	RF
-5	256A3151-2										
-5A	256A3151-4									B	RF
-5B	256A3151-6									D	RF
-5C	256A3151-8									F	RF
10	BACB30MR3HK2									C, D	2
15	BACW10BP3CD									C, D	2
20	M25988-1-012										
20A	M25988-1-008									C, D	1
25	M25988-1-016									C, D	1
30	256W3095-1										
30A	256A3167-1									C, D	1
35	256W3094-1									C, D	1
40	256W3096-1									C, D	1
45	256W3091-1										
45A	256A3154-1									C, D	1
50	256W3050-41									C, D	AR
55	256W3050-42									C, D	AR
60	256W3050-43									C, D	AR
65	256W3050-44									C, D	AR
70	256W3089-1									C, D	1
75	256W3093-1									C, D	1
80	BACB30MR3HK4									A-D	2
85	BACW10BP3CD									A-D	2
90	M25988-1-117									A-D	1
92	256A3189-1									A, B	1

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
1-											
95	256W3099-1		.	SHAFT						C, D	1
100	256W3088-2		.	BUSHING						C, D	1
105	256W3050-45		.	SHIM						C, D	AR
110	256W3050-46		.	SHIM						C, D	AR
115	256W3050-47		.	SHIM						C, D	AR
120	256W3050-48		.	SHIM						C, D	AR
125	256W3098-1		.	SHAFT-LEVER						C, D	1
130	256W3097-1		.	LEVER						C, D	1
-135	256W3092-1		.	HOUSING ASSY (OPT ITEM 135A)						C, D	1
135A	256W3153-1		.	HOUSING (OPT ITEM 135)						C, D	1
140	MS21209F1-15P		. .	INSERT						C, D	2
145	256W3088-1		. .	BUSHING (USED ON ITEM 135)						C, D	1
-150	256W3092-2		. .	HOUSING (USED ON ITEM 135)						C, D	1
150A	256A3153-2		. .	HOUSING (USED ON ITEM 135A)						C, D	1
155	256A3168-1		.	HOUSING						A-D	1
160	BACB10BA30C		.	BEARING						A-D	1
165	256A3157-2		.	CAM-INPUT						A-D	1
170	BACB10T1-28A		.	BALL						A-D	3
175	256A3156-1		.	CAM-OUTPUT						A-D	1
180	256A3158-1		.	SEAT-SPR						A-D	1
185	256A3165-1		.	STATOR						A-D	1
190	256A3164-1		.	ROTOR						A-D	5
195	256A3165-2		.	STATOR						A-D	5
200	256A3162-1		.	SPRING						A-D	13
205	256A3159-2		.	BUSHING						A-D	1
210	256A3148-17		.	SHIM						A-D	AR
215	256A3148-18		.	SHIM						A-D	AR
220	256A3148-19		.	SHIM						A-D	AR

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
1-											
225	256A3148-20		.	SHIM						A-D	AR
230	256A3148-21		.	SHIM						A-D	AR
235	256A3148-22		.	SHIM						A-D	AR
240	256A3148-23		.	SHIM						A-D	AR
245	256A3148-24		.	SHIM						A-D	AR
250	256A3166-1		.	PLATE						A-D	1
255	FNTA2035		.	BEARING-THRUST (V60380)						A-D	1
260	256A3169-1		.	BUSHING						A-D	1
265	256A3175-2		.	LOCKWASHER						A-D	1
270	SL2822-10		.	NUT (V97393) (SPEC BACN10RF10) (OPT 82631-1018 (V56878)) (OPT BR9080-10 (V72962))						A-D	1
275	BACB10BB10C		.	BEARING						A-D	1
280	BACB10BB30C		.	BEARING						A-D	1
285	256A3163-1		.	SHAFT						A-D	1
290	256A3155-1		.	HOUSING ASSY						A, C	1
-295	256A3155-2		.	HOUSING ASSY						B, D	1
300	MS21209F1-15P		. .	INSERT						A-D	2
305	MS21209F5-15P		. .	INSERT						A-D	4
310	256A3155-3		. .	HOUSING						A, C	1
-315	256A3155-4		. .	HOUSING						B, D	1

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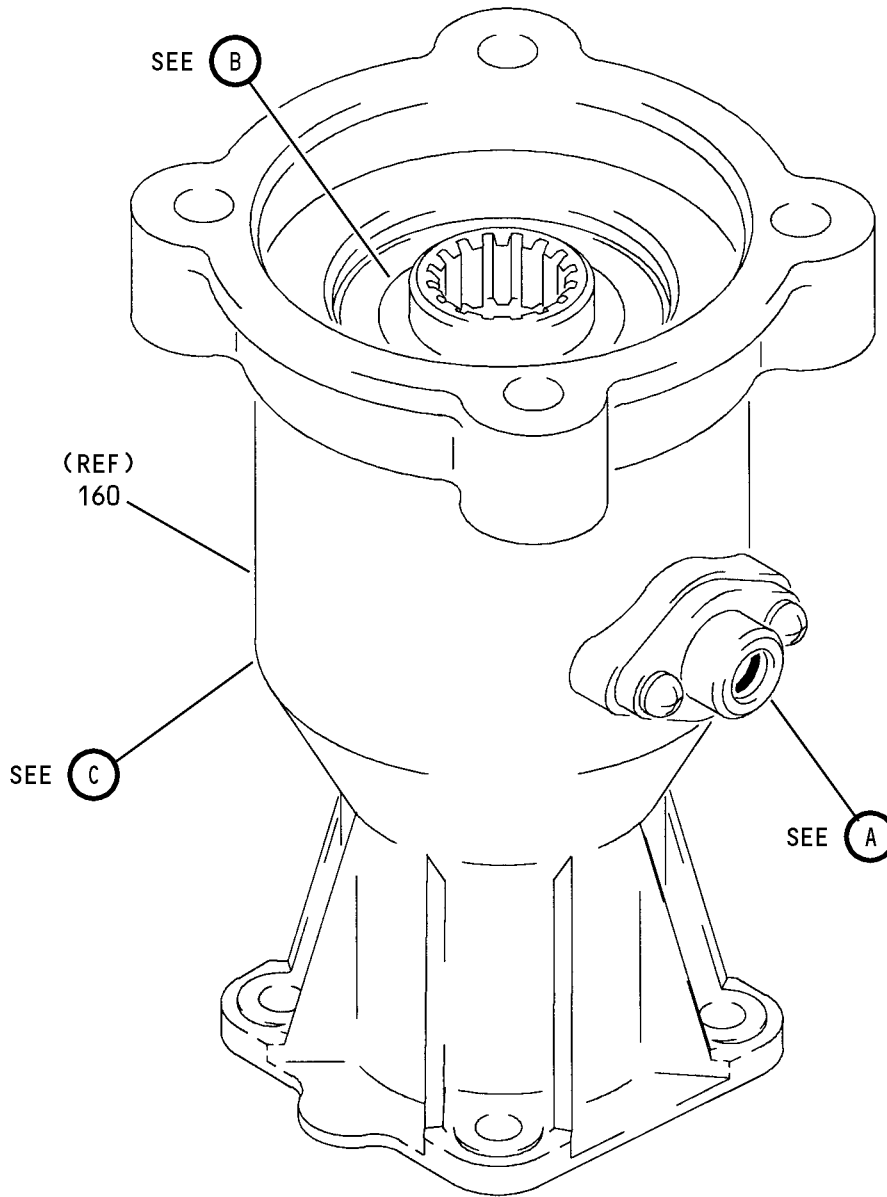
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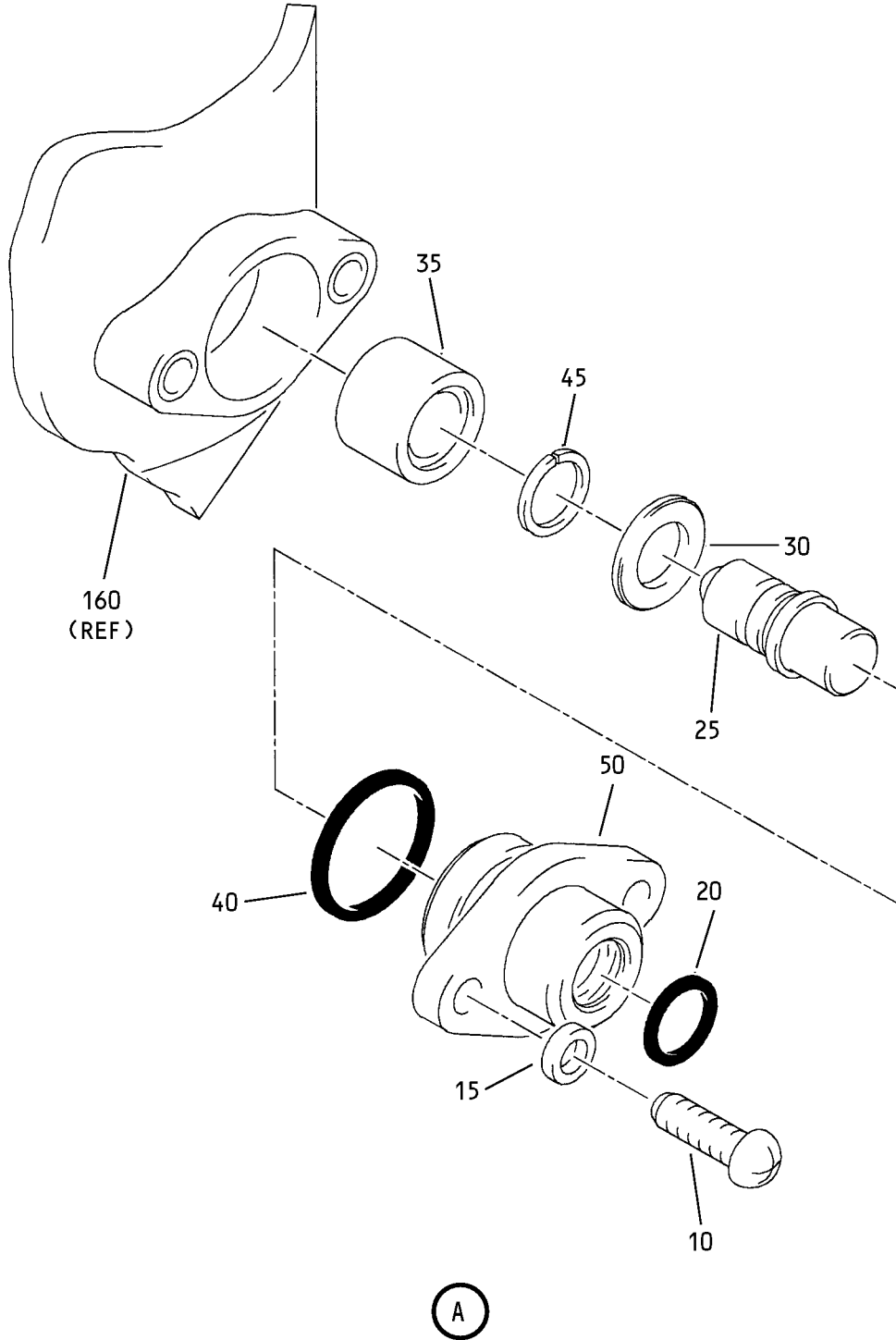
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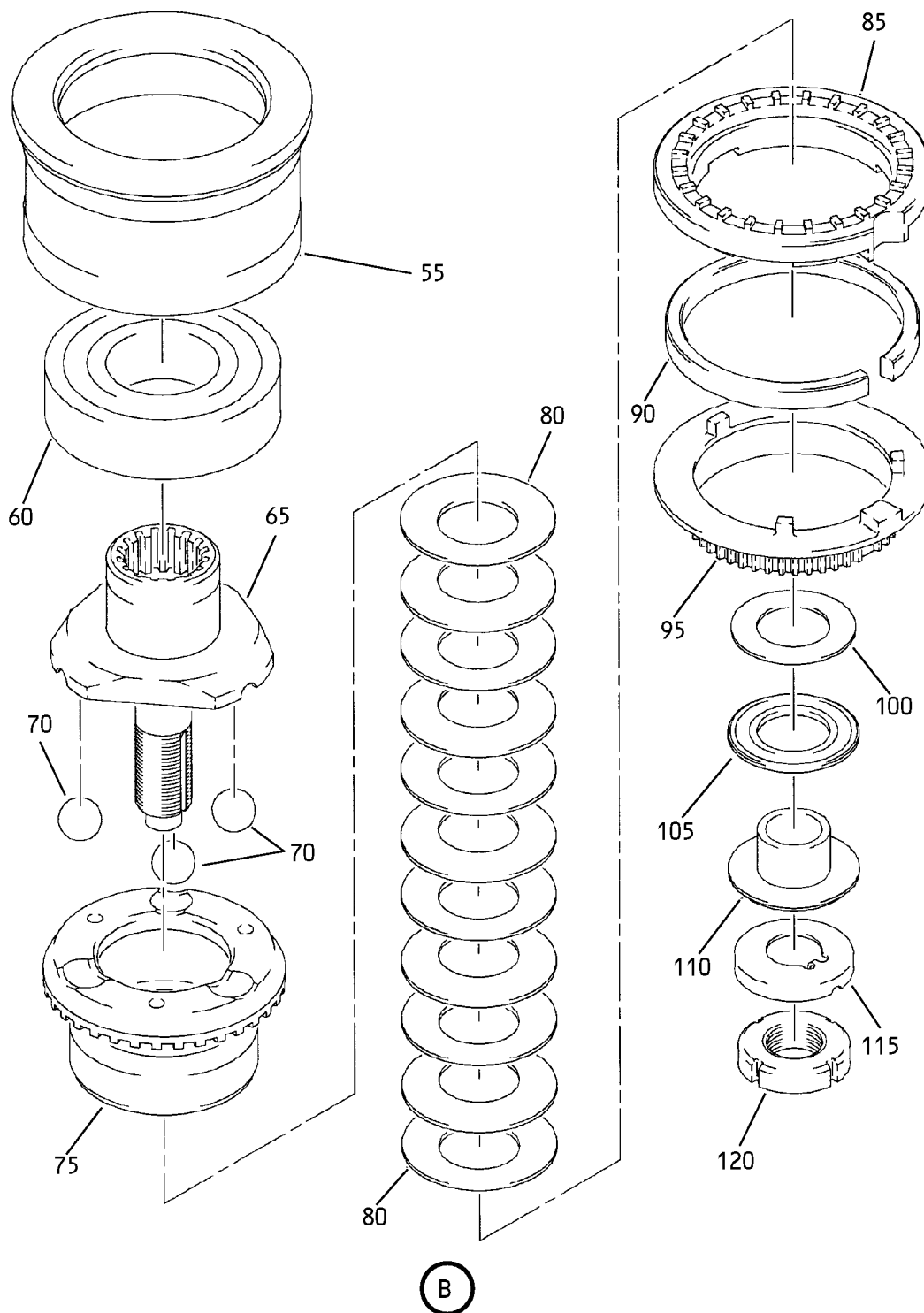
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IPL Figure 2 (Sheet 3 of 4)

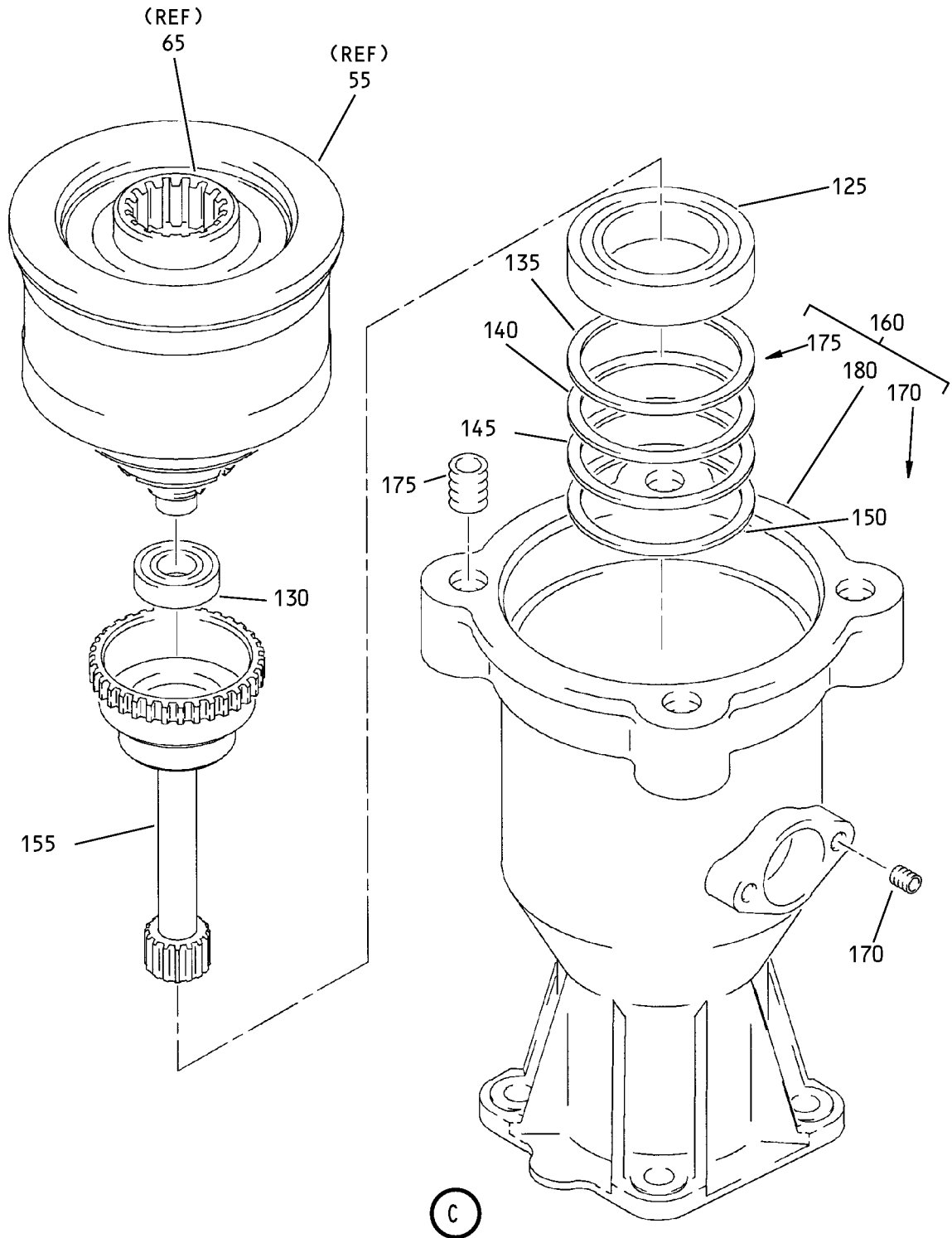
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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
2-											
-1A	256A3151-7									E	RF
-5	256A3151-8									F	RF
10	BACB30NT3K2									E, F	2
15	BACW10BP3CD									E, F	2
20	M25988-1-012									E, F	1
25	251N4177-1									E, F	1
30	251N4178-1									E, F	1
35	251N4179-1									E, F	1
40	M25988-1-017									E, F	1
45	256W3094-1									E, F	1
50	251N4176-1									E, F	1
55	256A3170-1									E, F	1
60	BACB10AZ30C									E, F	1
65	256A3157-4									E, F	1
70	BACB10T1-28A									E, F	3
75	251N4175-1									E, F	1
75A	251A4175-2									E, F	1
80	256A3162-1									E, F	11
85	251N4185-1									E, F	1
90	251N4180-1									E, F	1
95	251N4181-1									E, F	1
100	FTRA2035									E, F	1
-100A	AS2035									E, F	1
105	FTNA2035									E, F	1

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE							USAGE CODE	UNITS PER ASSY
			1	2	3	4	5	6	7		
2- -105A	AXK2035		.	BEARING (V0AJV0) (OPT ITEM 105)						E, F	1
110	256A3169-1		.	BUSHING-THRUST						E, F	1
115	256A3175-2		.	LOCKWASHER-CUP						E, F	1
120	SL2822-10		.	NUT (V97393) (SPEC BACN10RF10) (OPT 82631-1018 (V56878)) (OPT BR9080-10 (V72962))						E, F	1
125	BACB10BB30C		.	BEARING						E, F	1
130	BACB10BB10C		.	BEARING						E, F	1
135	256A3148-9		.	SHIM						E, F	AR
140	256A3148-10		.	SHIM						E, F	AR
145	256A3148-11		.	SHIM						E, F	AR
150	256A3148-12		.	SHIM						E, F	AR
155	256A3163-2		.	SHAFT-OUTPUT						E, F	1
160	256A3155-7		.	HOUSING ASSY						E	1
-165	256A3155-8		.	HOUSING ASSY						F	1
170	MS21209F1-15P		. .	INSERT						E, F	2
175	MS21209F5-15P		. .	INSERT						E, F	4
180	256A3155-9		. .	HOUSING						E	1
-185	256A3155-10		. .	HOUSING						F	1

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