COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

POSITIONS 2 AND 7 FLAP ACTUATOR TRANSMISSION ASSEMBLY

PART NUMBER 256A3210–3, –4, –5, –6, –7, –8

PUBLISHED BY BOEING COMMERCIAL AIRPLANES GROUP, SEATTLE, WASHINGTON, USA
A DIVISION OF THE BOEING COMPANY
PAGE DATE: Jul 01/2009

COMPONENT MAINTENANCE MANUAL

Revision No. 17
Jul 01/2009

To: All holders of POSITIONS 2 AND 7 FLAP ACTUATOR TRANSMISSION ASSEMBLY 27-55-68.

Attached is the current revision to this COMPONENT MAINTENANCE MANUAL

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Subject/Page	Date	Subject/Page	Date	Subject/Page	Date
27-55-68 ILLUSTRATED PARTS LIST (cont)					
1029	Mar 01/2006				
1030	Mar 01/2006				
1031	Mar 01/2006				
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TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
		PRR 38166	JUL 01/01
		PRR 38407	JUL 01/01

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Temporary Revision		Inserted		Removed	
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INTRODUCTION

1. General

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

B. This manual is divided into different parts:

(1) Title Page

(2) Transmittal Letter

(3) Highlights

(4) List of Effective Pages

(5) Table of Contents

(6) Temporary Revision & Service Bulletin Record

(7) Record of Revisions

(8) Record of Temporary Revisions

(9) Introduction

(10) Procedures & IPL Sections

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

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

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

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

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

TRAILING EDGE FLAP TRANSMISSION ASSEMBLY NO. 2 AND 7 - DESCRIPTION AND OPERATION

1. Description

A. The transmission assembly has two bevel gear sets, two spur gear sets, a torque brake assembly, a no-back brake, a housing assembly, and a universal assembly. The bevel gears, spur gears, torque brake, and no-back brake are steel components. The universal assembly has a CRES yoke assembly and CRES internal shaft members. The transmission assembly has an aluminum alloy housing. The no-back brake has a skewed roller assembly, a ratchet plate, and two pawls. The universal joint assembly has two internal shaft members which attach the output shaft to a ballscrew yoke shaft.

2. Operation

A. The transmission assembly transmits power from the torque tubes to the universal joint and ballscrew of the flap drive to extend and retract the trailing edge flap. The transmission assembly has a no-back mechanism which prevents accidental flap retraction if a drive train failure or a hydraulic failure occurs. The transmission assembly also has a torque brake assembly which limits the maximum torque transmitted to the ballscrew if the flap does not move freely. A trip indicator on the torque brake provides a visual indication if the torque brake operates. The trip indicator is replaced with a cover plate on some assemblies.

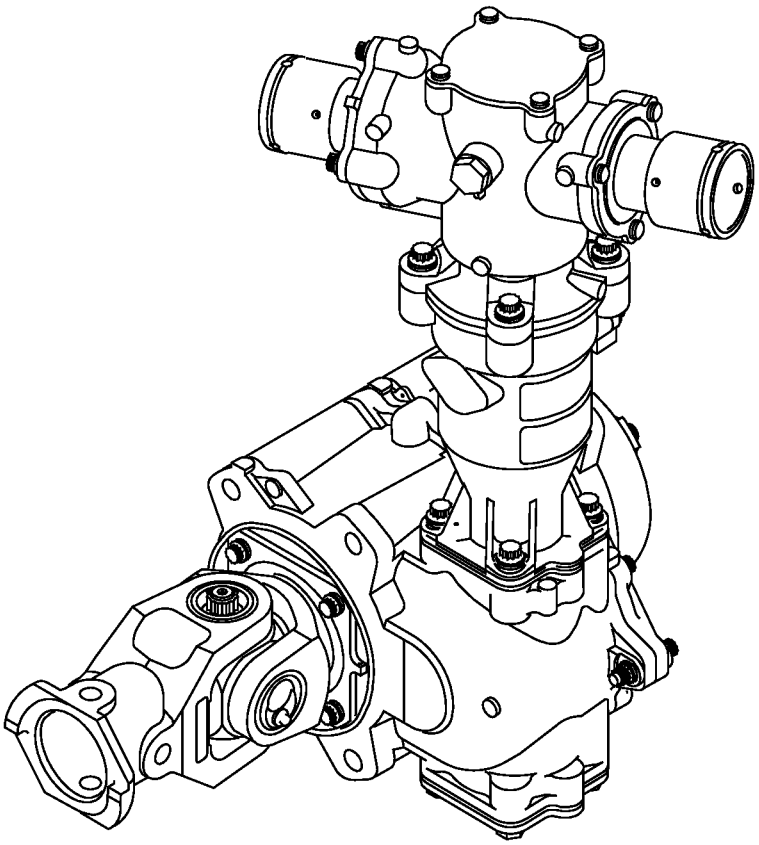
3. Leading Particulars (Approximate)

A. Length – 15.5 inches

B. Width – 14 inches

C. Height – 17 inches

D. Weight – 43 pounds



TRANSMISSION ASSEMBLY NO. 2 SHOWN

Trailing Edge Flap Transmission Assembly No. 2 and 7
Figure 1

TESTING AND FAULT ISOLATION

1. General

A. This procedure contains the data necessary to do a test of the transmission after an overhaul or for fault isolation. There are three parts:

(1) Transmission Assembly Test

(a) Run-In Tests

(b) Pressure Test

(c) Breakaway Torque Test

(d) Backlash Test

(e) Output Torque Test

(f) No-Back Brake Test

(g) Output Shaft End Play Check

(2) Fault Isolation

(3) Fault Correction

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

C. Refer to IPL Figure 1 for item numbers.

2. Transmission Assembly Test

A. Tools/Equipment

NOTE: Equivalent substitutes may be used.

Reference	Description
SPL-4720	Test Equipment - Leakage Test (Part #: J27054-1, Supplier: 81205)
SPL-5391	TE Flap Transmission, AFT U-Joint and BallScrew Test Equipment (Part #: C27072-92, Supplier: 81205) (Part #: C27072-93, Supplier: 81205)

B. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00153	Fluid - Hydraulic, Erosion Arresting, Fire Resistant	BMS3-11 Type IV (interchange~able & intermixable with Type V)
G01048	Lockwire - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~C32

C. References

Reference	Title
SOPM 20-50-02	INSTALLATION OF SAFETYING DEVICES

D. General

(1) To do these tests, it is necessary to set up the transmission assembly in the transmission assembly test equipment, SPL-5391.

(2) Put thetransmission assembly in the position shown in TESTING AND FAULT ISOLATION, Figure 101 when you check the fluid level and do the pressure test. For the other tests, the transmission can be put at an angle of 0-22 degrees, measured as shown in the figure.

(3) Look into the input shaft coupling (outboard direction on the airplane) to get the clockwise and counterclockwise directions when you turn the input shaft. Look into the output shaft (forward direction on the airplane) to get the directions for the output shaft.

E. Procedure

NOTE: Tests are to be performed at room temperature, 50-110°F.

NOTE: The ballscrew and ballnut must be installed on the transmission before it is put in the transmission assembly test equipment, SPL-5391 . Loads are applied to the output shaft through the ballscrew and ballnut.

(1) Install the transmission assembly, with the ballscrew and ballnut, in the test stand C27072-4, a component of the transmission assembly test equipment, SPL-5391.

(2) Make sure that the fluid, D00153 in the the transmission assembly is at the filler hole level (ASSEMBLY) with the transmission installed as shown in TESTING AND FAULT ISOLATION, Figure 101.

(3) Make sure that the correct quantity of grease is added to each universal joint assembly (ASSEMBLY).

(4) Turn the input coupling sleeve (30) in each direction by hand. All components must turn smoothly and freely without unusual noise or resistance.

(5) Do the run-in tests on the transmission assembly.

(a) Do a no-load run-in test.

1) Apply no load to the output shaft. Turn the input shaft of the transmission assembly at 400-700 rpm for 20 seconds, or 20 revolutions, in both the clockwise and counterclockwise directions.

2) Record that the test is completed.

(b) Do a lockout run-in test.

1) Apply no load to the output shaft. Turn the input shaft of the transmission assembly at 60-90 rpm in the clockwise direction.

2) Gradually lock out the hydraulic cylinder on the test fixture until the torque brake locks up and stalls the drive motor.

3) Do the test again in the opposite direction.

4) Do the test in TESTING AND FAULT ISOLATION, Paragraph 2.E.(5)(b)1) thru TESTING AND FAULT ISOLATION, Paragraph 2.E.(5)(b)3) again for a total of 2 clockwise and 2 counterclockwise lockouts.

(6) Do a pressure test of the seals in the transmission assembly.

(a) Remove the lockwire, G01048 and the plug and bleeder (175).

(b) Install the air valve adapter of the test equipment, SPL-4720 in the plug and bleeder hole in the housing assembly (230).

(c) Connect the compressed air supply.

(d) Pressurize the transmission assembly to 24-26 psig, and remove the pressure source.

(e) Monitor the pressure in the transmission for a minimum of 20 minutes. Make sure the pressure does not decrease to less than 22 psig after the first 10 minutes. Record the value.

(f) During the next 10 minutes, make sure that the pressure does not decrease by more than 1.0 psig from the value after the first 10 minutes. Record this value.

(g) Make sure that you cannot hear or see any signs of leakage while the transmission is pressurized.

(h) Make sure that the oil level in the transmission assembly is correct (ASSEMBLY), then install the plug and bleeder (175). Install lockwire, G01048 on the plug and bleeder. Use the double-twist method (SOPM 20-50-02).

(i) Record the results of the test as PASS or FAIL.

CAUTION: MAKE SURE THAT THERE IS NO LEAKAGE OF OIL DURING ANY OF THE TESTS THAT FOLLOW. LEAKAGE CAN CAUSE DAMAGE TO THE ASSEMBLY AND THE TEST MUST BE STOPPED.

(7) Do a no-load friction torque test.

(a) Apply no load to the output shaft. Gradually increase the input shaft torque until the output shaft turns (breakaway). Increase the input shaft torque until the input shaft turns at approximately 60 rpm.

(b) Record the breakaway torque and the maximum running torque. Make sure that the torques are less than 12 lb-in.

(c) Apply the input torque in the opposite direction and repeat the test.

(d) Make sure the gears and the bearings turn smoothly without binding in each direction.

(e) Record the results of the test as PASS or FAIL.

(8) Do a check of the backlash.

(a) Lock the output shaft.

(b) Apply a 23-27 lb-in. torque to the input shaft in the clockwise direction, then decrease the torque to 8-12 lb-in. Do not let the torque go to zero.

(c) Record the position of the input shaft.

(d) Turn the input shaft in the counterclockwise direction and apply a 23-27 lb-in. torque. Decrease the torque to 8-12 lb-in. Do not let the torque go to zero.

(e) Record the position of the input shaft.

(f) Record the difference between the two positions of the input shaft. This is the total input shaft backlash. Make sure that the backlash is 4.1-7.8 degrees.

(9) Do a check of the maximum output torque.

(a) Lock the output shaft.

(b) Manually apply an input torque and gradually increase it until the torque brake locks up and stalls the drive motor.

(c) Continue to increase the input torque until it is 350-450 lb-in. Measure and record the output load at lockout.

(d) Make sure that the torque brake trip indicator operates. (Not applicable on assemblies 256A3210-3, -4)

(e) Decrease the input torque to zero. Set the trip indicator to the retracted position.

(f) Do the test again in the opposite direction.

(g) Do the test in TESTING AND FAULT ISOLATION, Paragraph 2.E.(9)(a) thru TESTING AND FAULT ISOLATION, Paragraph 2.E.(9)(f) two more times for a total of 3 clockwise and 3 counterclockwise lockouts.

(h) Make sure that the output load is TBD lb (assemblies 256A3210-3 thru -6) or TBD lb (assemblies 256A3210-7, 8) at each lockout.

(10) Do a no-back brake test.

(a) Do a check of the no-back brake in the flap retract direction.

1) Apply no axial load to the output shaft. Turn the input shaft so that the ball nut is between the aft stop and the center of the ball screw.

2) Stop the input shaft.

3) Apply a 9900-10100 lb compression load to the output shaft. Align the load to ±0.5 degree of the output shaft centerline.

4) Make sure that the input shaft does not turn.

5) With the compression load on the output shaft, apply a torque to the input shaft in the counterclockwise direction until the no-back brake releases and the input shaft begins to turn. Record the input torque value when the brake releases.

NOTE: It is possible that the input shaft will turn initially at approximately 10 lb-in. when the pawls engage.

6) Make sure that the input torque value is 25-99 lb-in.

(b) Do a check of the no-back brake in the flap extend direction.

1) Apply no axial load to the output shaft. Turn the input shaft at 60-90 rpm in the clockwise direction.

2) Stop the input shaft.

3) Apply a 980-1020 lb tension load to the output shaft. Align the load to ±0.5 degree of the output shaft centerline.

4) Make sure that the input shaft does not turn.

(c) Do a check of the no-back brake ratchet.

1) Apply a 250-500 lb compression load to the output shaft. Align the load to ±0.5 degree of the output shaft centerline.

2) With the compression load on the output shaft, turn the input shaft in the clockwise direction.

3) Listen for the sound of the ratchets.

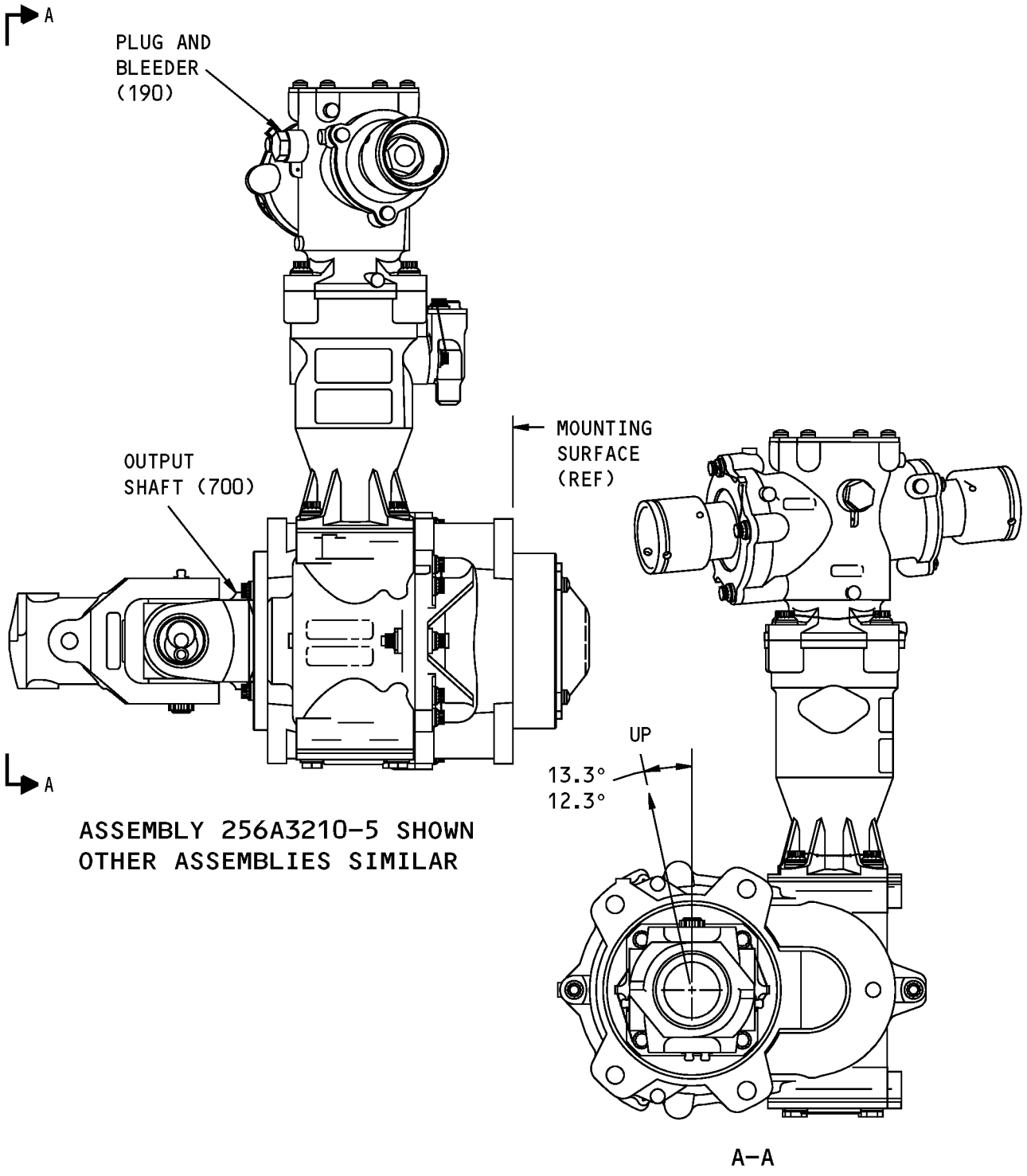
4) Record the result of the test as PASS or FAIL.

(11) Do a check of the end play of the output shaft.

(a) Apply a 40-50 lb compression load to the output shaft, and measure the shaft position.

(b) Apply a 40-50 lb tension load to the output shaft, and measure the shaft position.

(c) Record the total axial movement (end play) of the output shaft. Make sure that the end play is 0.005-0.012 inch.



Transmission Oil Level Verification
Figure 101

3. Fault Isolation

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

Table 101: Fault Isolation Chart

TROUBLE	PROBABLE CAUSE	CORRECTION
Does not turn smoothly	Defective bearings (115, 120,185,295,340,455, 560, 640,675,600), gears (155B,160,345,590,645,650) or torque brake (255A,257A)	Replace parts as required.
	Improper shimming	*[1]
External leakage	Defective packings (25,40, 95,100,195,220,260,315, 415,535,610) or seals (50, 105,615)	Replace parts as required.
Backlash out of range	Improper shimming or worn components	*[1]
Lockout out of range	Defective torque brake assembly (255A,257A)	Repair or replace the torque brake assembly (255A,257A)
No-back brake out of range, or ratchet test failed	Worn roller assy (570) or plates (565,585)	Replace parts as required.
Axial end play out of range	Improper shimming	Replace shims (460 thru 475).
	Worn bearings (455,600) or plates (450,565)	Replace parts as required.

*[1] Do a check of the shims used to adjust the mounting of the gears and make corrections as necessary. If the check of shims shows that they are of the correct thickness, then do a check of the tooth contact patterns for each gear set. If necessary, refer to the gear manufacturing industry standards for the full procedures on how to examine the tooth contact pattern in the bevel gear sets.

4. Fault Correction

A. References

Reference	Title
CMM 27-55-84	FLAP ACTUATION HIGH SETTING TORQUE BRAKE ASSEMBLY

B. Procedure

(1) If the gears (155B, 160, 345, 590, 645, 650) do not move freely or turn smoothly or the breakaway torque is high, adjust the shims (125 thru 140, 165 thru 180, 235 thru 250, 275 thru 290, 320 thru 335, 460 thru 475, 655 thru 670) or replace the bearing(s) (115, 120, 185, 340, 455, 560, 600, 640, 675), gears (155A, 160, 345, 590, 645, 650), or torque brake (255A, 257A) as follows:

(a) Fully disassemble the transmission assembly (DISASSEMBLY).

(b) Replace the defective bearing(s) (115, 120, 185, 295, 340, 455, 560, 600, 640, 675), gears (155A, 160, 345, 590, 645, 650), or torque brake (255A, 257A) if it is necessary.

(c) Assemble the transmission assembly (ASSEMBLY).

NOTE: Shim (125 thru 140, 165 thru 180, 235 thru 250, 275 thru 290, 320 thru 335, 460 thru 475, 655 thru 670) adjustment is performed during the assembly task.

(d) Do a motion test on the transmission assembly.

(2) If air or grease leakage occurs at a seal or any two surfaces that contact, replace the seals (50, 105, 615) or packing (25, 40, 95, 100, 195, 220, 260, 315, 415, 535, 610) as follows:

(a) Disassemble the transmission assembly as necessary (DISASSEMBLY).

(b) Replace the defective seal (50, 105, 615) or packing (25, 40, 95, 100, 195, 220, 260, 315, 415, 535, 610) if it is necessary.

(c) Assemble the transmission assembly as necessary (ASSEMBLY).

(d) Do a pressure test on the transmission assembly.

(3) If the backlash is not 4.1-7.8 degrees, adjust the shims (125 thru 140, 165 thru 180, 235 thru 250, 275 thru 290, 320 thru 335, 460 thru 475, 655 thru 670) or replace the gears (155B, 160, 345, 590, 645, 650) as follows:

(a) Fully disassemble the transmission assembly (DISASSEMBLY).

(b) Replace the defective gears (155B, 160, 345, 590, 645, 650) if it is necessary.

(c) Assemble the transmission assembly (ASSEMBLY).

NOTE: Shim (125 thru 140, 165 thru 180, 235 thru 250, 275 thru 290, 320 thru 335, 460 thru 475, 655 thru 670) adjustment is performed during the assembly task.

(d) Do a backlash test on the transmission assembly.

(4) If the no-back brake operates out of the specified ranges or the ratchet test is failed, replace the roller assembly (570) or the plates (565, 585) as follows:

(a) Disassemble the transmission assembly (DISASSEMBLY) as necessary.

(b) Replace the roller assembly (570) or the plates (565, 585) if it is necessary.

(c) Assemble the transmission assembly (ASSEMBLY).

(d) Do a no-back test on the transmission assembly.

(5) If the torque brake (255A, 257A) does not lock out at the specified ranges, repair the torque brake as follows:

(a) Disassemble the transmission assembly (DISASSEMBLY).

NOTE: Disassemble the torque brake assembly (CMM 27-55-84).

(b) Repair the defective torque brake (CMM 27-55-84) if it is necessary.

(c) Assemble the torque brake assembly(CMM 27-55-84) and the transmission assembly (ASSEMBLY).

(d) Do a brake test on the transmission assembly.

(6) If the axial end play of the output shaft is not 0.005-0.012 inch, adjust the shims (460 thru 475) or replace the bearings (455, 600, 640, 675) or replace the plates (450, 565) as follows:

(a) Fully disassemble the transmission assembly (DISASSEMBLY).

(b) Replace the defective bearings (455, 600, 640, 675) or plates (450, 565) if it is necessary.

(c) Assemble the transmission assembly (ASSEMBLY).

NOTE: Shim (125 thru 140, 165 thru 180, 235 thru 250, 275 thru 290, 320 thru 335, 460 thru 475, 655 thru 670) adjustment is performed during the assembly task.

(d) Do an axial end play test on the transmission assembly.

DISASSEMBLY

1. General

A. This procedure has the data necessary to disassemble the transmission assembly.

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

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

D. Refer to IPL Figure 1 for item numbers.

2. Transmission Disassembly

A. Tools/Equipment

NOTE: Equivalent substitutes may be used.

Reference	Description
SPL-5384	Wrench - Coupling Sleeve Flap Actuation (Part #: C27041-1, Supplier: 81205)
SPL-5391	TE Flap Transmission, AFT U-Joint and BallScrew Test Equipment (Part #: C27072-92, Supplier: 81205) (Part #: C27072-93, Supplier: 81205)

B. References

Reference	Title
CMM 27-55-84	FLAP ACTUATION HIGH SETTING TORQUE BRAKE ASSEMBLY

C. General

(1) To disassemble the transmission, it is necessary to install the transmission in the transmission assembly test equipment, SPL-5391 .

D. 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 (25, 40, 95, 100, 195, 220, 260, 315, 415, 535, 610)

(2) Seals (50, 105, 615)

(3) Lockwashers (425, 685)

E. Procedure

(1) Remove all lockwire, the plugs (190) and the packing (195) from the transmission assembly.

(2) Drain all the fluid from the transmission assembly.

(3) Install the transmission assembly in the transmission assembly test equipment, SPL-5391 .

(4) Remove and disassemble the yoke assembly (395).

(a) Remove the nut (365), adapter (385), shaft (370, 380), spacer (375), and yoke assembly (395).

(5) Remove the bolts (10), washers (15), packing (25), and cap (20) from the housing assembly (200).

(6) Remove the couplings (45) from the pinion assembly (145).

(a) Use the coupling sleeve wrench, SPL-5384 to hold the coupling sleeve (30).

(b) Remove the bolts (35), the packings (40), the couplings (45), the seals (50), the sleeves (30), and the shields (60).

(7) Remove and disassemble the pinion assembly (145).

(a) Remove the bolts (65, 80), the washers (85, 70), packing (95), and retainers (75, 90).

(b) Remove the seal (105), packing (100), ring (55), and bearing (120) from the retainer (75) side of housing (200).

(c) Remove the shaft seal (105), spacer (110), packing (100), ring (55), bearing (115), and shims (125 thru 140) from the retainer (90) side of housing (200). Measure and record the shim thickness to facilitate assembly.

(d) Remove the pinion assembly (150) from the housing (200).

NOTE: Do not remove the inserts (150) from the pinion (155B) unless repair or replacement is necessary.

(8) Remove the housing assembly (200) and the bevel gear (160).

(a) Remove the bevel gear (160), shims (165 thru 180), and bearing (185) from the housing assembly (200). Measure and record the shim thickness to facilitate assembly.

(b) Remove the bolts (225) and washers (230) and separate the housing assembly (200) and packing (220), from the torque brake assembly (255A, 257A).

NOTE: Do not remove the inserts (205, 207, 210) from the housing assembly (200) unless repair or replacement is necessary.

(c) Remove the shims (235 thru 250) from the torque brake assembly (255A, 257A). Measure and record the shim thickness to facilitate assembly.

(9) Remove the torque brake assembly (255A, 257A). See CMM 27-55-84 for the torque brake assembly repair instructions.

(a) Remove the bolts (225) and washers (230) and separate the torque brake assembly (255A, 257A) and packing (260) from the housing assembly (695).

(10) Remove the output shaft assembly (625).

(a) Remove the bolts (406), washers (408), packing (415), and cover (410) from the cover assembly (520).

(b) Remove the nut (420), lockwasher (425), block (430), roller assembly (435), thrust plate (450), bearing (455), and shims (460 thru 475) from the cover assembly (520). Measure and record the shim thickness to facilitate assembly.

(c) Remove the bolts (485, 505), washers (490, 495, 515) and nuts (500) and separate the cover assembly (520) from the housing assembly (695).

NOTE: Do not remove the inserts (525, 700, 705, 710) or dowel pin (527) from the housing and cover assemblies unless repair or replacement is necessary.

(d) Remove the roller assembly (570), plate (585), and gear (590) from the shaft assembly (625).

(e) Remove the output shaft assembly (625) from the housing assembly (695).

(11) Remove the race (595) from the shaft assembly (625).

(12) Remove the bolts (510), washers (515), packing (610), and retainer (620) from the housing assembly (695).

(13) Remove the bearing (600), spacer (605), and shaft seal (615) from the housing assembly (695).

(14) Remove the packing (535), bearing race (480), bearing (560), ratchet plate (565), and bearing (640) from the cover assembly (520).

(15) Remove the pins (540), springs (545), pawls (550), and spacers (555).

(16) Remove the shaft and pinion assembly (345) from the housing (695).

(a) Remove the bolts (300), washers (305), packing (260) and cap (310).

(b) Remove the bolts (265), retainers (270), shims (275 thru 290, 320 thru 335), bearings (295, 340) packings (315), and the shaft and pinion assembly (345) from the housing (695). Measure and record the shim thickness to facilitate assembly.

(17) Remove the pinion (645), gear (650), shims (655 thru 670), bearing (675), spacer (680), lockwasher (685), and nut (690).

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 for item numbers.

2. Cleaning

A. References

Reference	Title
SOPM 20-30-03	GENERAL CLEANING PROCEDURES

B. Procedure

(1) Clean sealed bearings as specified in manufacturer's instructions.

(2) Clean all the parts other than bearings as specified by standard industry practices (SOPM 20-30-03).

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 for item numbers.

2. Check

A. References

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

B. Procedure

(1) 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) Examine the gear teeth for pit marks or irregular worn areas.

(3) Measure the wear pattern on the gear is in the center of the area of the pitch diameter.

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

(a) Coupling assemblies: sleeves (30), coupling half (45)

(b) Bolt (35)

(c) Shield (60)

(d) Ring (55)

(e) Pinion (155B)

(f) Gears (160, 590, 645, 650)

(g) Shaft and pinion assembly: pin (350), pinion (355), shaft (360)

(h) Universal joint assembly: shaft (370), internal shaft adapter (385), yoke (405), internal shaft (380), spacer (375)

(i) Lockwasher (425, 685)

(j) Block (430)

(k) Thrust plate (450)

(l) Pawl assembly: pin (540), spring (545), pawls (550)

(m) Bearing race (480)

(n) Plates (565, 585)

(o) Race (595)

(p) Spacers (555, 680)

(q) Shaft (635)

(5) Do a penetrant check (SOPM 20-20-02) on these parts:

(a) Caps (20, 310)

(b) Retainers (75, 90, 270, 445, 580, 620)

(c) Housings (215, 530, 715)

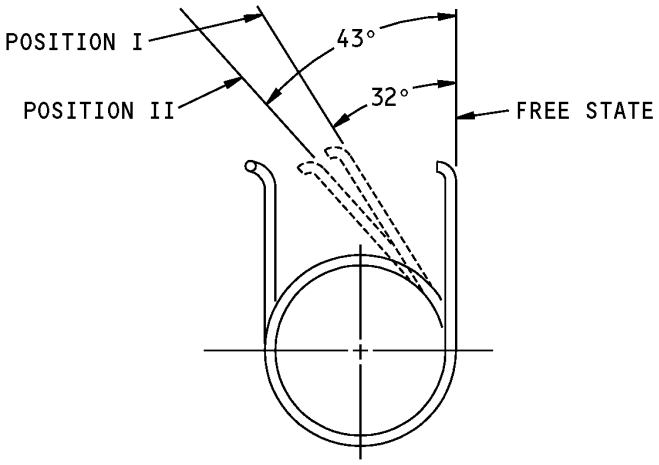
(d) Covers (410)

(e) Bearing (630)

(f) Spacer (605)

(6) Do a spring check.

(a) Spring (545) – CHECK, Figure 501



TEST POSITION (DEGREES DEFLECTION)	MOMENT (LB-INS)	
	SINGLE SPRING	BOTH SPRINGS
I (32°)	0.235-0.287	0.469-0.573
II (43°)	0.315-0.385	0.630-0.770

Spring (545) Check Data
Figure 501

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
251N4103	U-JOINT SPACER	2-1
251N4135	U-JOINT SHAFT	3-1
251N4149	INTERNAL SHAFT	4-1
251N4150	INTERNAL SHAFT ADAPTER	5-1
256A3133	SEAL RETAINER	6-1
256A3135	CAP	7-1
256A3136	OUTPUT SHAFT ASSEMBLY	8-1,8-2,8-3
256A3137	GEAR	9-1
256A3138	SPUR PINION	10-1
256A3139	GEAR	11-1
256A3143	SHAFT AND PINION ASSEMBLY	12-1,12-2,12-3,12-4
256A3144	RACE	13-1
256A3145	PLATE	14-1
256A3171	COVER	15-1
256A3172	BLOCK	16-1
256A3176	BEARING RACE	17-1
256A3179	THRUST PLATE	18-1
256A3187	HOUSING	19-1
256A3188	HOUSING	20-1
256A3192	YOKE ASSEMBLY	21-1,21-2,21-3
256A3221	HOUSING	22-1
256A3223	PINION	23-1
256A3224	BEVEL GEAR	24-1
256A3225	RETAINIER	25-1
256A3281	CAP	26-1
256A3741	COUPLING HALF	27-1
256W3244	SEAL RETAINER	28-1

2. Dimensioning Symbols

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

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

EXAMPLES

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

True Position Dimensioning Symbols
Figure 601

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 Practice Manual (SOPM) for the SOPM subjects identified in this procedure.

C. Refer to IPL Figure 1 for item numbers.

2. Refinish of Other Parts

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
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.

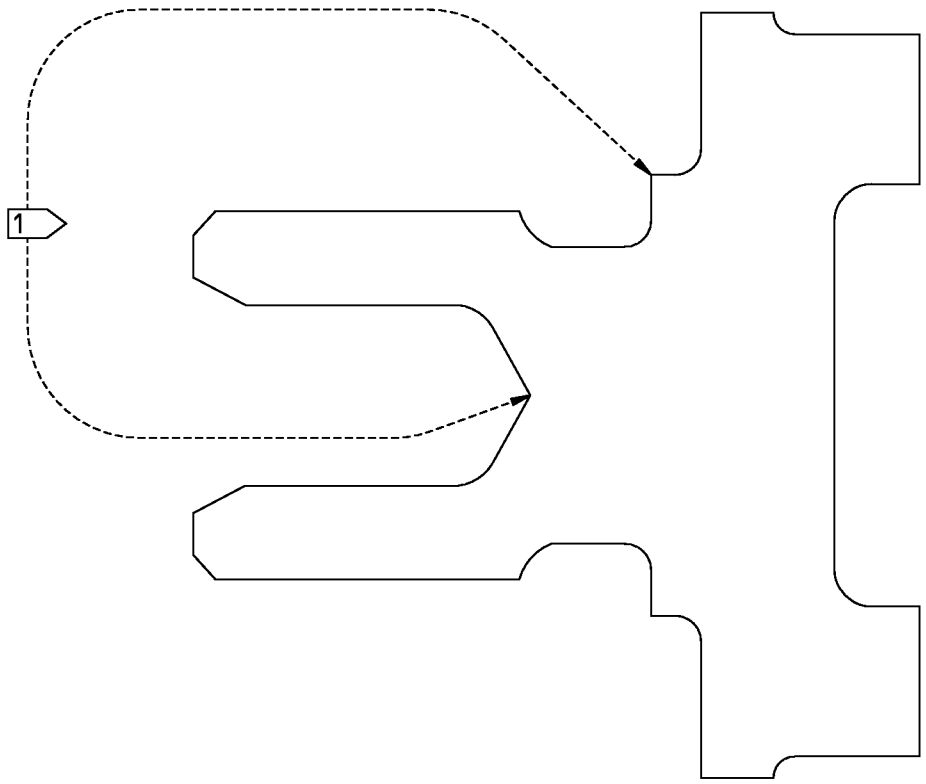
(1) Instructions for the repair of the parts listed in REPAIR 1-1, Table 601 is for repair of the initial finish.

Table 601: Refinish Details

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Coupling sleeve (30)	4140 steel, 150-170 ksi	Cadmium plate (0.0003-0.0005 inch thick type 2 (F-15.36) and bake at 375°F ±25°F for 3 hours after plating. Apply primer, C00259 (F-20.02) on all surfaces except spline teeth. primer, C00259 is optional on inside surface of curl. Do not allow primer to plug 0.04-0.05 diameter holes.
Bolt (35)	15-5PH CRES, 180-200 ksi	Cadmium plate (F-16.06) per REPAIR 1-1, Figure 601.
Shield (60)	15-5PH CRES, 180-200 ksi	Passivate (F-17.25).
Ring (55)	15.2CR-1.0M0- 0.40N (0.28-0.34C) steel	Passivate (F-17.25).

Table 601: Refinish Details (Continued)

IPL FIG. & ITEM	MATERIAL	FINISH
Spacer (110,605)	Al alloy	Boric acid-sulfuric acid anodize or chromic acid anodize (F-17.31).
Bearing retainer (270)	Al alloy	Boric acid-sulfuric acid anodize or chromic acid anodize (F-17.35), and apply primer, C00259 (F-20.02) on edge of flange.
Lockwasher (425, 685)	17-7PH CRES, 140-160 ksi	Passivate (F-17.25).
Spring (545)	17-7PH CRES	Passivate (F-17.09) all over.
Pawl (550)	17-4PH CRES, 275-300 ksi	Passivate (F-17.09) all over.
Spacer (555)	15-5PH CRES, 155-193 ksi	Passivate (F-17.09) all over.
Spacer (680)	15-5PH CRES, 150-170 ksi	Passivate (F-17.25).



1 CADMIUM PLATE PER F-16.06, EXCEPT FOR THIS AREA

256A3744-1 Bolt Refinish
Figure 601

U-JOINT SPACER - REPAIR 2-1

251N4103–1

1. General

A. This procedure has the data necessary to refinish the U-joint spacer (375).

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

C. Refer to REPAIR-GENERAL, Figure 601 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, BMS 7-240, 180-200 ksi

2. U-Joint Spacer Refinish

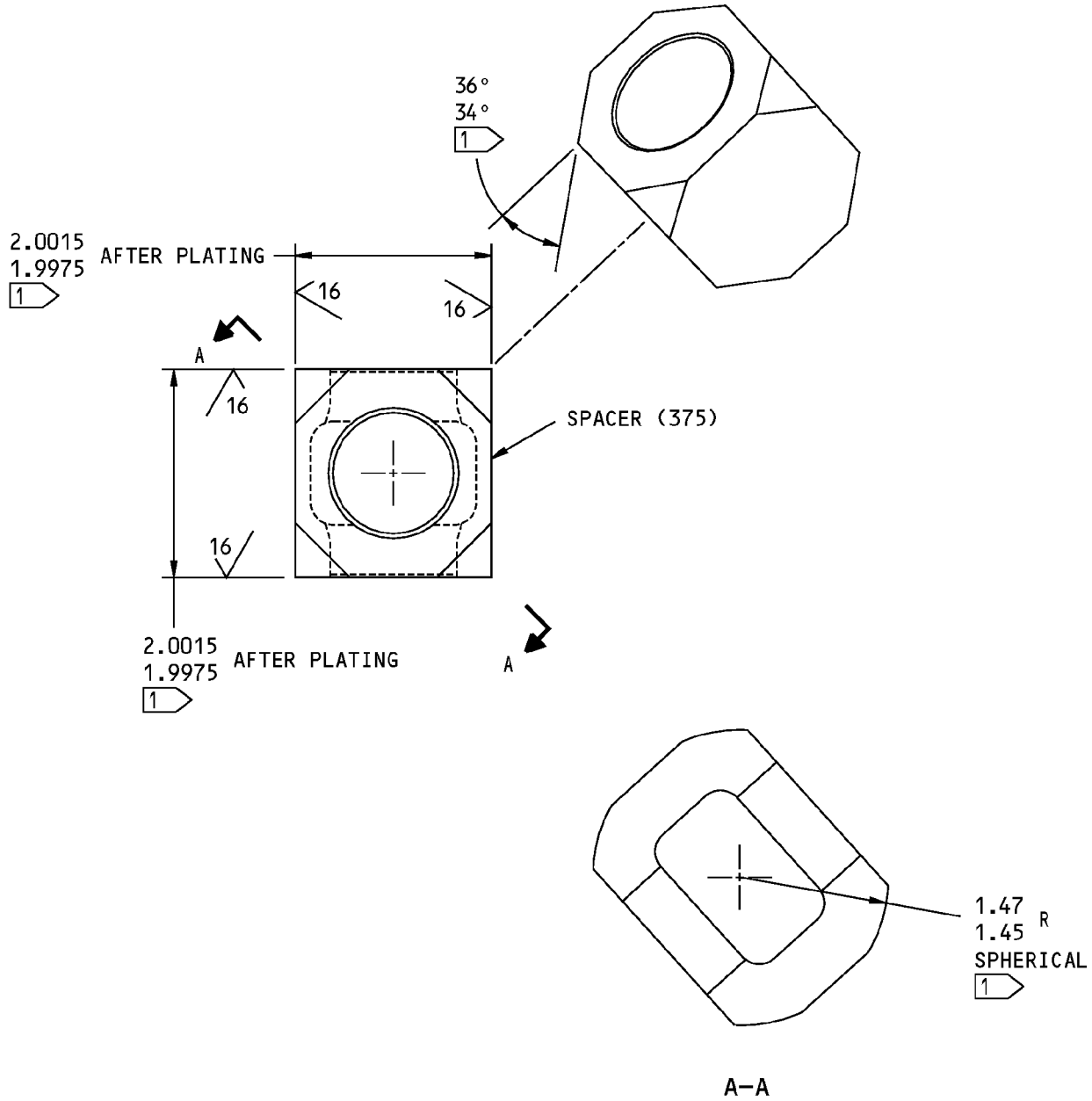
A. References

Reference	Title
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES

B. Procedure

NOTE: For decoding table for Boeing finish codes, refer to SOPM 20-41-01.

(1) Apply chrome plate 0.0003-0.0005 inch thick as shown in REPAIR 2-1, Figure 601 and bake (F-15.04).



A–A

1 CHROMIUM PLATE 0.0003–0.0005 THICK ON NOTED SURFACES AND BAKE (F-15.04).

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

251N4103-1 U-Joint Spacer Refinish
Figure 601

U-JOINT SHAFT - REPAIR 3-1

251N4135–1

1. General

A. This procedure has the data necessary to repair and refinish the U-joint shaft (370).

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

C. Refer to REPAIR-GENERAL, Figure 601 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, BMS 7-240, 180-200 ksi

(2) Shot peen:

(a) Intensity 0.014A-0.018A

(b) Coverage 2.0

2. U-Joint Shaft Repair

A. References

Reference	Title
SOPM 20-10-03	SHOT PEENING
SOPM 20-20-01	MAGNETIC PARTICLE INSPECTION

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

(1) Machine within repair limits shown to remove defects.

(2) Break all sharp edges (SOPM 20-10-03).

(3) Shot peen as indicated in REPAIR 3-1, Figure 601.

(4) Do a magnetic particle check (SOPM 20-20-01).

(5) Refinish per refinish instructions.

(6) Do a magnetic particle check (SOPM 20-20-01).

(7) Machine to design dimensions and finish shown.

3. U-Joint Shaft Refinish

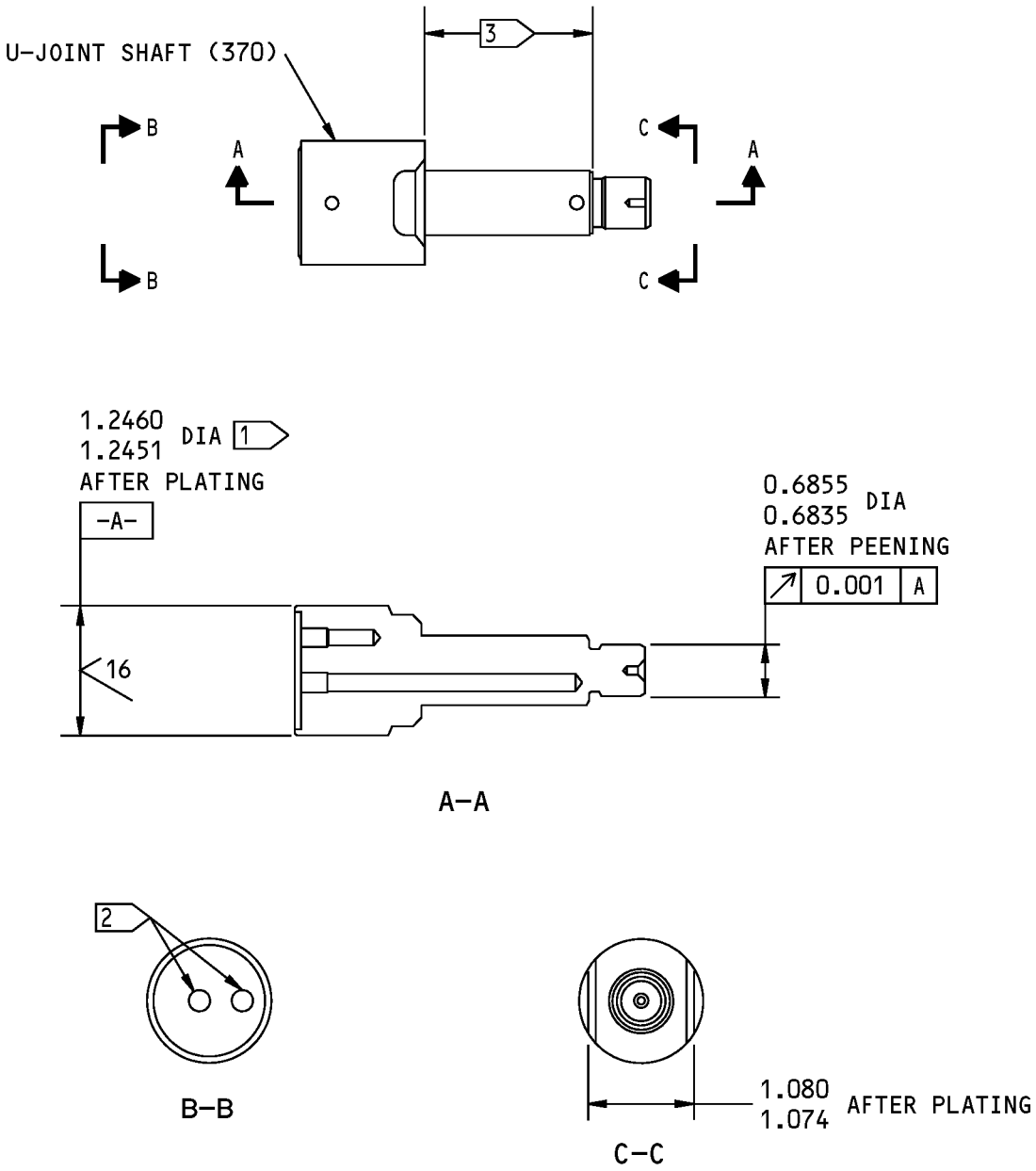
A. References

Reference	Title
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES

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

NOTE: For decoding table for Boeing Finish Codes, refer to SOPM 20-41-01

(1) Apply chrome plate 0.0003-0.0005 inch thick (F-15.04) as shown in REPAIR 3-1, Figure 601.



1 CHROMEPLATE 0.0003-0.0005 THICK AND BAKE (F-15.04)

2 NO PLATING ON THESE SURFACES.

3 SHOT PEEN AREA, INCLUDING FILLET RADIUS.

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

251N4135-1 U-Joint Shaft Repair
Figure 601

INTERNAL SHAFT - REPAIR 4-1

251N4149–1

1. General

A. This procedure has the data necessary to refinish the internal shaft (380).

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

C. Refer to REPAIR-GENERAL, Figure 601 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, BMS 7-240, 180-200 ksi

2. Internal Shaft Refinish

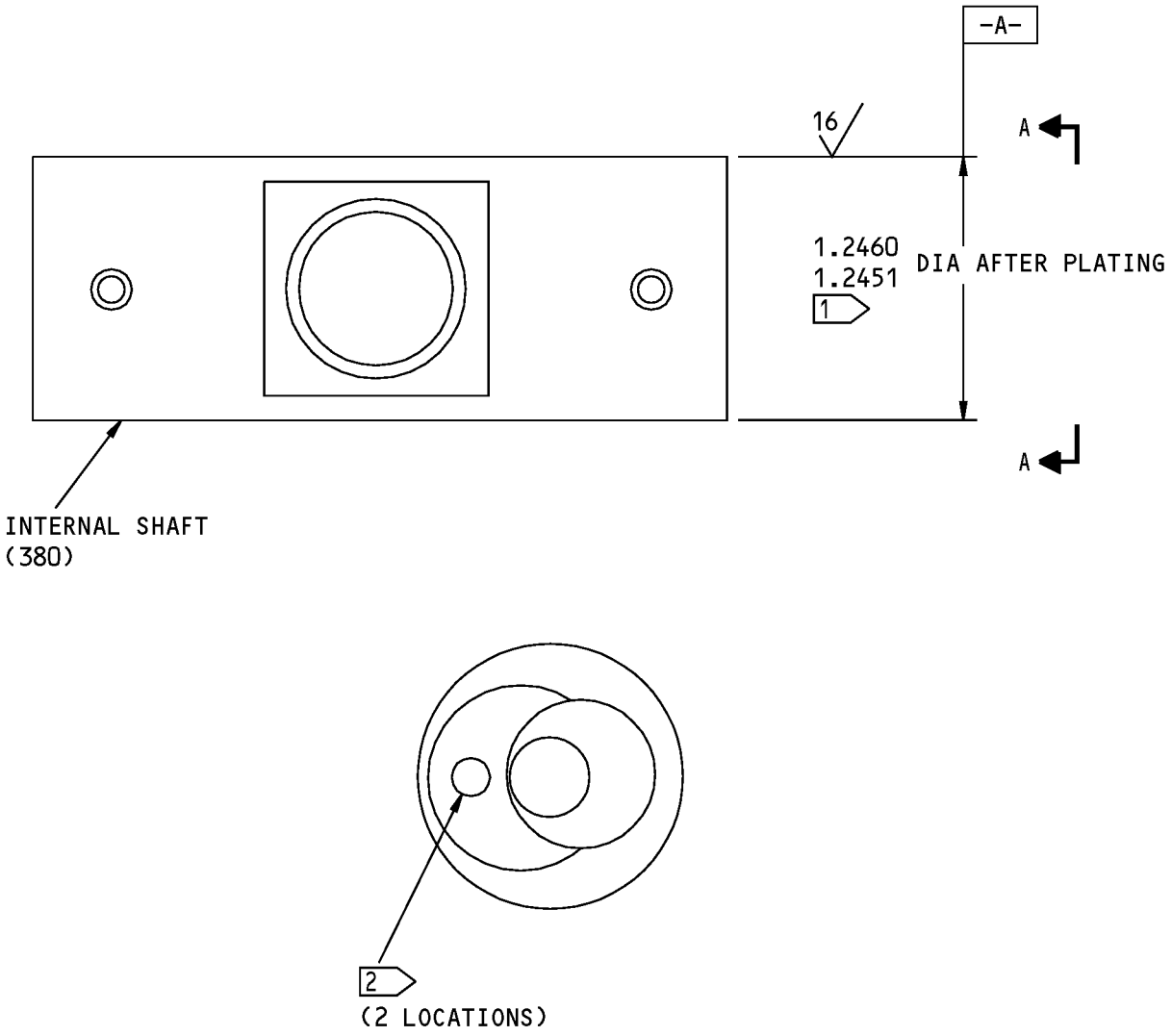
A. References

Reference	Title
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES

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

NOTE: For decoding table for Boeing finish codes, refer to SOPM 20-41-01.

(1) Apply chrome plate 0.0003-0.0005 inch thick (F-15.04) as shown in REPAIR 4-1, Figure 601.



A–A

1 CHROME PLATE 0.0003–0.0005 THICK ON NOTED SURFACES AND BAKE (F-15.04).

2 NO PLATE ON THIS SURFACE.

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

251N4149-1 Internal Shaft Refinish
Figure 601

INTERNAL SHAFT ADAPTER - REPAIR 5-1

251N4150–1

1. General

A. This procedure has the data necessary to refinish the internal shaft adapter (385).

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

C. Refer to REPAIR-GENERAL, Figure 601 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, BMS 7-240, 180-200 ksi

2. Internal Shaft Adapter Refinish

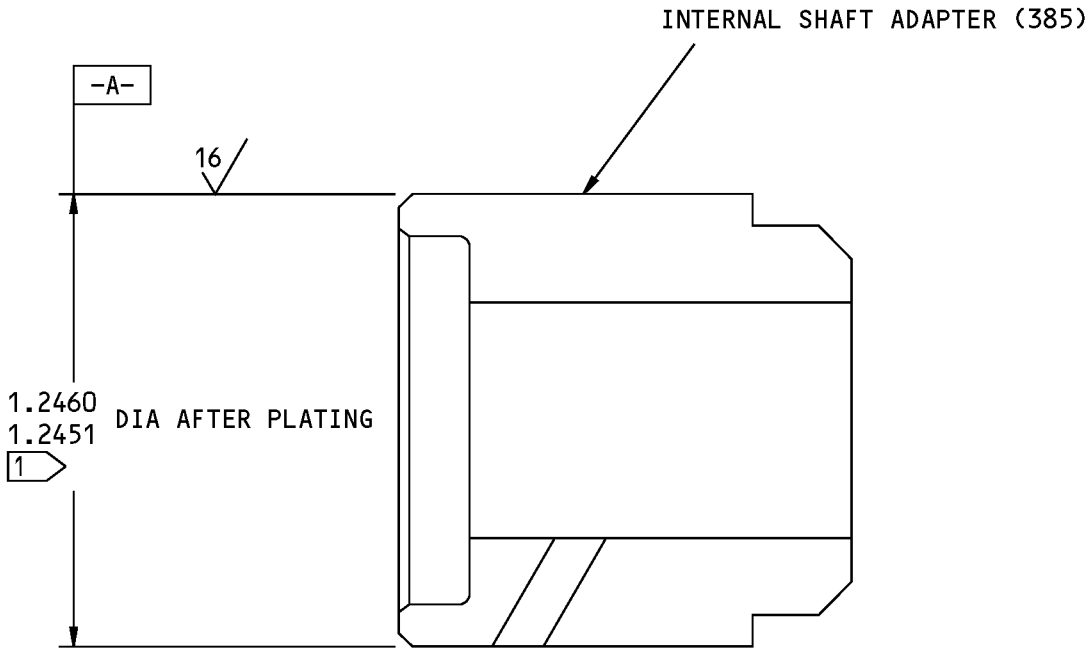
A. References

Reference	Title
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES

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

NOTE: For decoding table for Boeing finish codes, refer to SOPM 20-41-01.

(1) Apply chrome plate 0.0003-0.0005 inch thick (F-15.04) as shown in REPAIR 5-1, Figure 601.



1 CHROME PLATE 0.0003-0.0005 THICK ON NOTED SURFACES AND BAKE (F-15.04).

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

251N4150-1 Internal Shaft Adapter Refinish
Figure 601

SEAL RETAINER - REPAIR 6-1

256A3133–1, –2

1. General

A. This procedure has the data necessary to refinish the seal retainer (620).

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

C. Refer to REPAIR-GENERAL, Figure 601 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. Seal Retainer 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

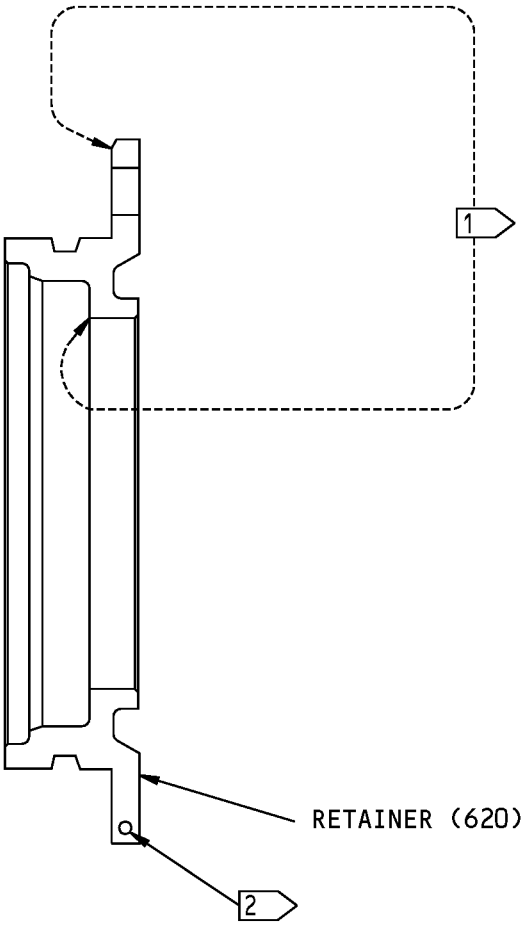
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

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

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

(1) Boric acid-sulfuric acid anodize or chromic acid anodize (F-17.35) all over.

(2) Apply primer, C00259 (F-20.02) to all the indicated surfaces shown in REPAIR 6-1, Figure 601. Overspray allowed in holes except as noted.



1 APPLY PRIMER TO INDICATED SURFACES (F-20.02). OVERSPRAY ALLOWED IN HOLES EXCEPT AS NOTED BY FLAGNOTE 2

2 NO OVERSPRAY ALLOWED IN HOLES

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3133-1,-2 Seal Retainer Refinish
Figure 601

CAP - REPAIR 7-1

256A3135–1

1. General

A. This procedure has the data necessary to refinish the cap (310).

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

C. Refer to REPAIR-GENERAL, Figure 601 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. Cap 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

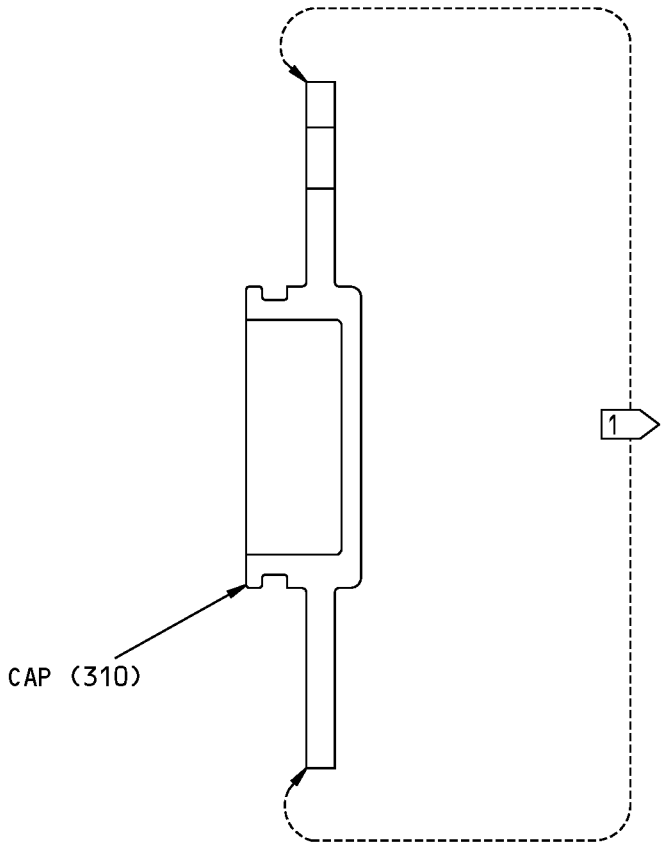
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

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

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

(1) Boric acid-sulfuric and anodize or chromic acid anodize (F-17.35) all over.

(2) Apply primer, C00259 (F-20.02) to all the indicated surfaces shown in REPAIR 7-1, Figure 601. Overspray allowed in holes except as noted.



1 APPLY PRIMER TO INDICATED SURFACES (F-20.02). OVERSPRAY ALLOWED IN HOLES.

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3135-1 Cap Refinish
Figure 601

OUTPUT SHAFT ASSEMBLY - REPAIR 8-1

256A3136–1, –4

1. General

A. This procedure has the data necessary to repair the output shaft assembly (625).

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

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

D. Refer to IPL Figure 1 for item numbers.

2. Bearing Replacement

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

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

B. References

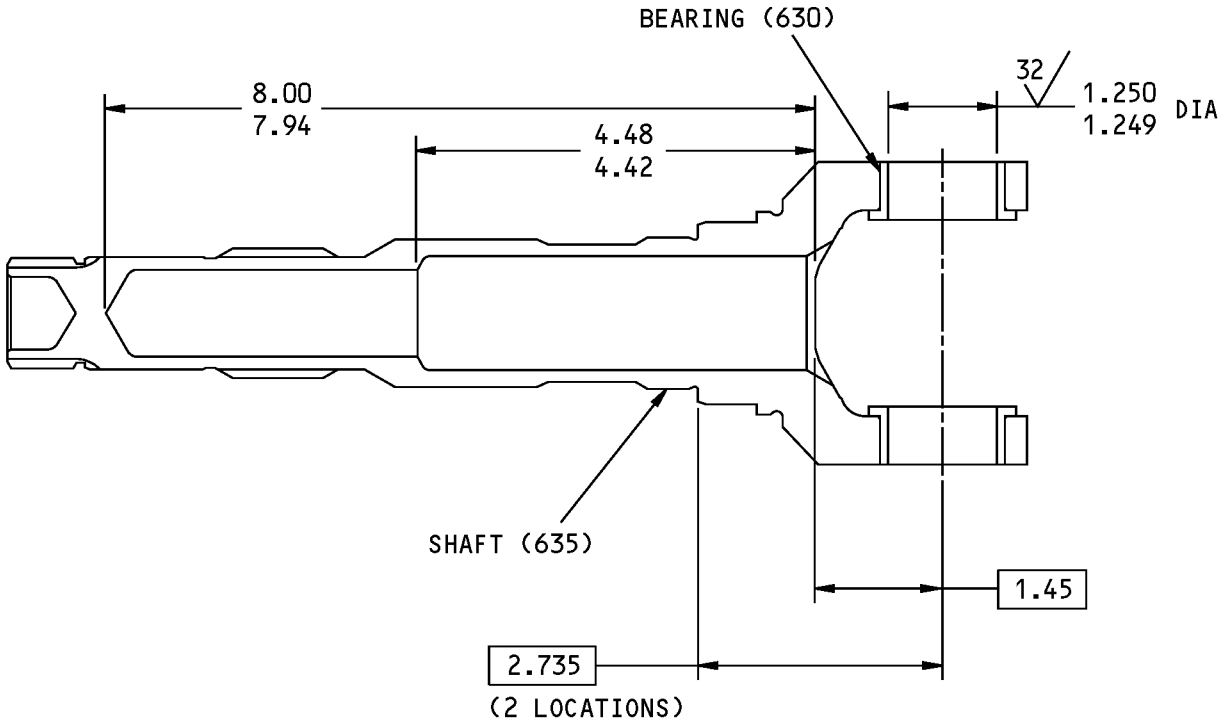
Reference	Title
SOPM 20-50-03	BEARING AND BUSHING REPLACEMENT
SOPM 20-60-04	MISCELLANEOUS MATERIALS

C. Procedure

NOTE: For miscellaneous materials, refer to SOPM 20-60-04

(1) Remove the bearing (630) from the shaft (635).

(2) Install replacement bearings with sealant, A00247 using the shrink-fit method (SOPM 20-50-03). Make sure bearing flange contacts lug.



BREAK ALL SHARP EDGES

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3136-1,-4 Output Shaft Assembly Bearing Replacement
Figure 601

OUTPUT SHAFT - REPAIR 8-2

256A3136–2, –5

1. General

A. This procedure has the data necessary to repair and refinish the output shaft (635).

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

C. Refer to REPAIR-GENERAL, Figure 601 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: PH13-8MO CRES, 200-220 ksi

(2) Shot peen: All surfaces, except in holes less than 0.90 diameter, keyways, spline, thread, and thread relief.

(a) Intensity 0.008A-0.013A

(b) Coverage 2.0

(3) Glass bead peen:

(a) Holes less than 0.90 diameter, keyways, spline, thread and thread relief.

(b) Intensity 0.008A-0.013A

(c) Coverage 2.0

2. Output Shaft Repair

A. References

Reference	Title
SOPM 20-10-03	SHOT PEENING

B. Procedure (REPAIR 8-2, Figure 601)

(1) Machine within repair limits shown to remove defects.

(2) Break all sharp edges (SOPM 20-10-03).

(3) Shot peen the shaft (635) and plunge grind surfaces as indicated in REPAIR 8-2, Figure 601.

(4) Refinish per refinish instructions.

3. Output Shaft Refinish

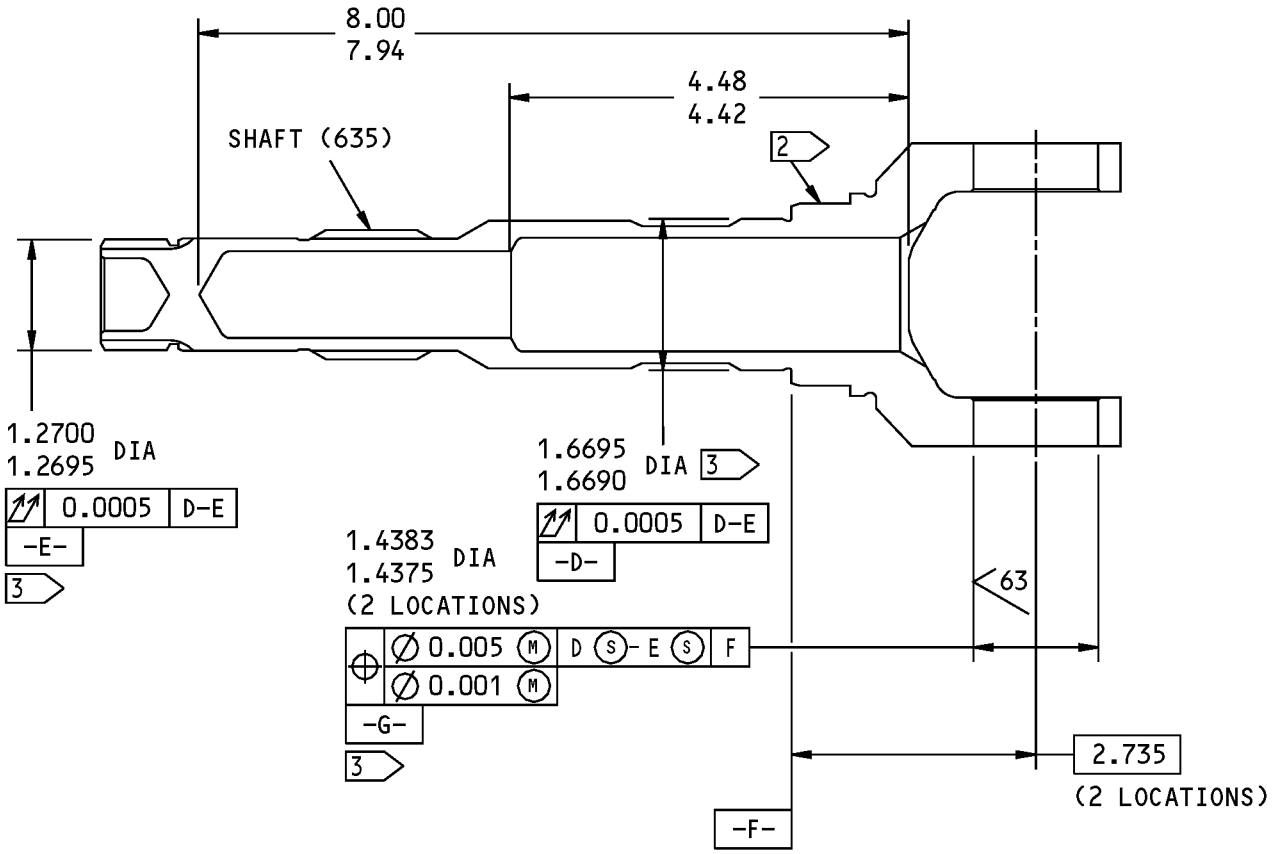
A. References

Reference	Title
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES

B. Procedure

NOTE: For decoding table for Boeing finish codes, refer to SOPM 20-41-01.

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



1 DELETED

2 PLUNGE GRIND THIS SURFACE AFTER PEENING

3 INDICATED TOLERANCE OR SURFACE FINISH APPLIES AFTER PEENING

BREAK ALL SHARP EDGES

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3136-2,-5 Output Shaft Repair and Refinish
Figure 601

BEARING - REPAIR 8-3

251N4105–1

1. General

A. This procedure has the data necessary to refinish the bearing (630).

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

C. Refer to REPAIR-GENERAL, Figure 601 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 nickel bronze

2. Bearing 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) Apply cadmium plate, Type 2, Class 2 (F-15.06) all over, except bearing bore.

GEAR - REPAIR 9-1

256A3137–1

1. General

A. This procedure has the data necessary to refinish the gear (590).

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

C. Refer to REPAIR-GENERAL, Figure 601 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, 160-190 ksi

2. Gear Refinish

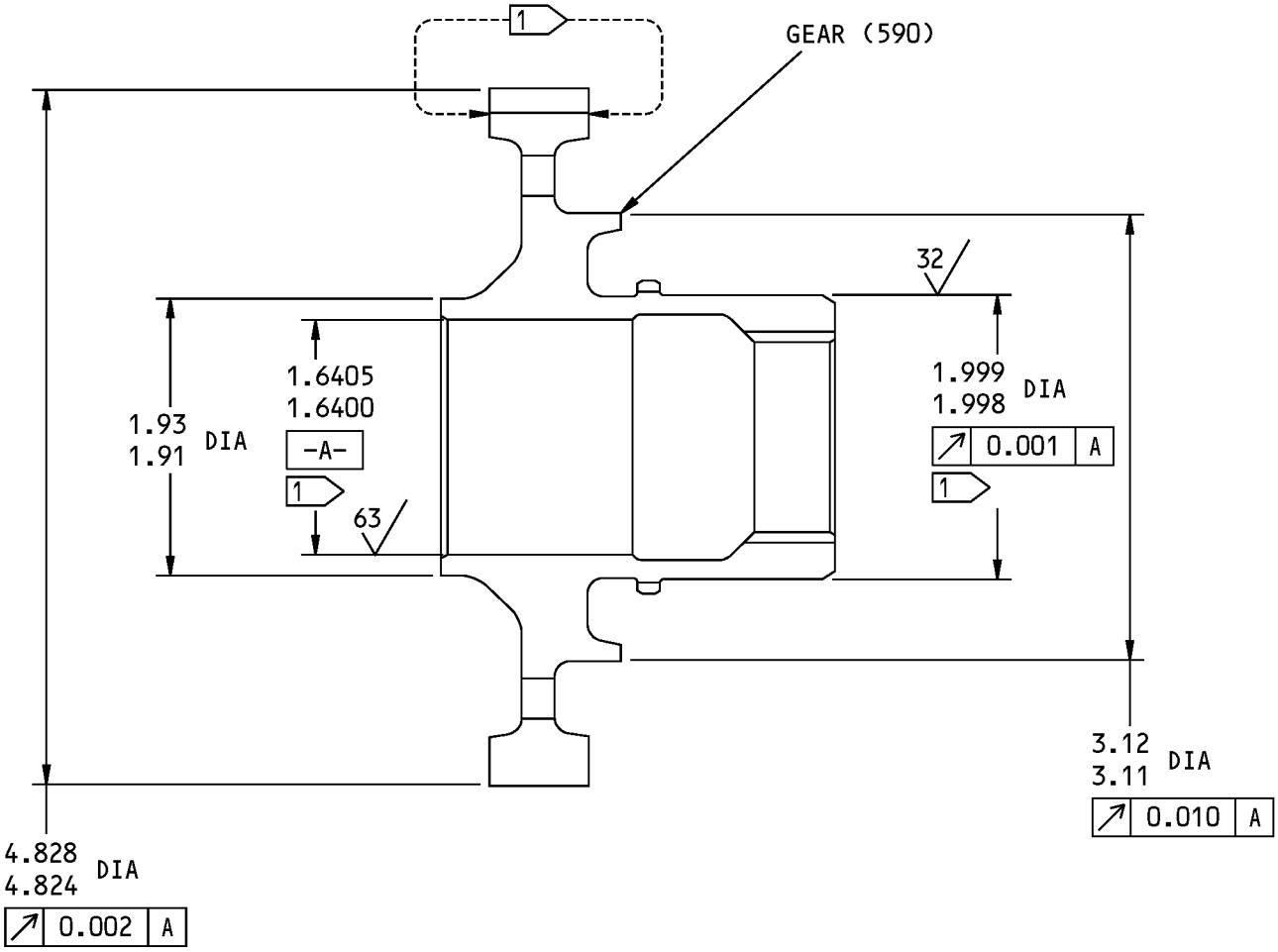
A. References

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) Apply cadmium plate (F-15.23) all over unless shown differently on REPAIR 9-1, Figure 601.



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

256A3137-1 Gear Refinish
Figure 601

SPUR PINION - REPAIR 10-1

256A3138–1, –2

1. General

A. This procedure has the data necessary to refinish the spur pinion (645).

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

C. Refer to REPAIR-GENERAL, Figure 601 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, 160-190 ksi

2. Spur Pinion Refinish

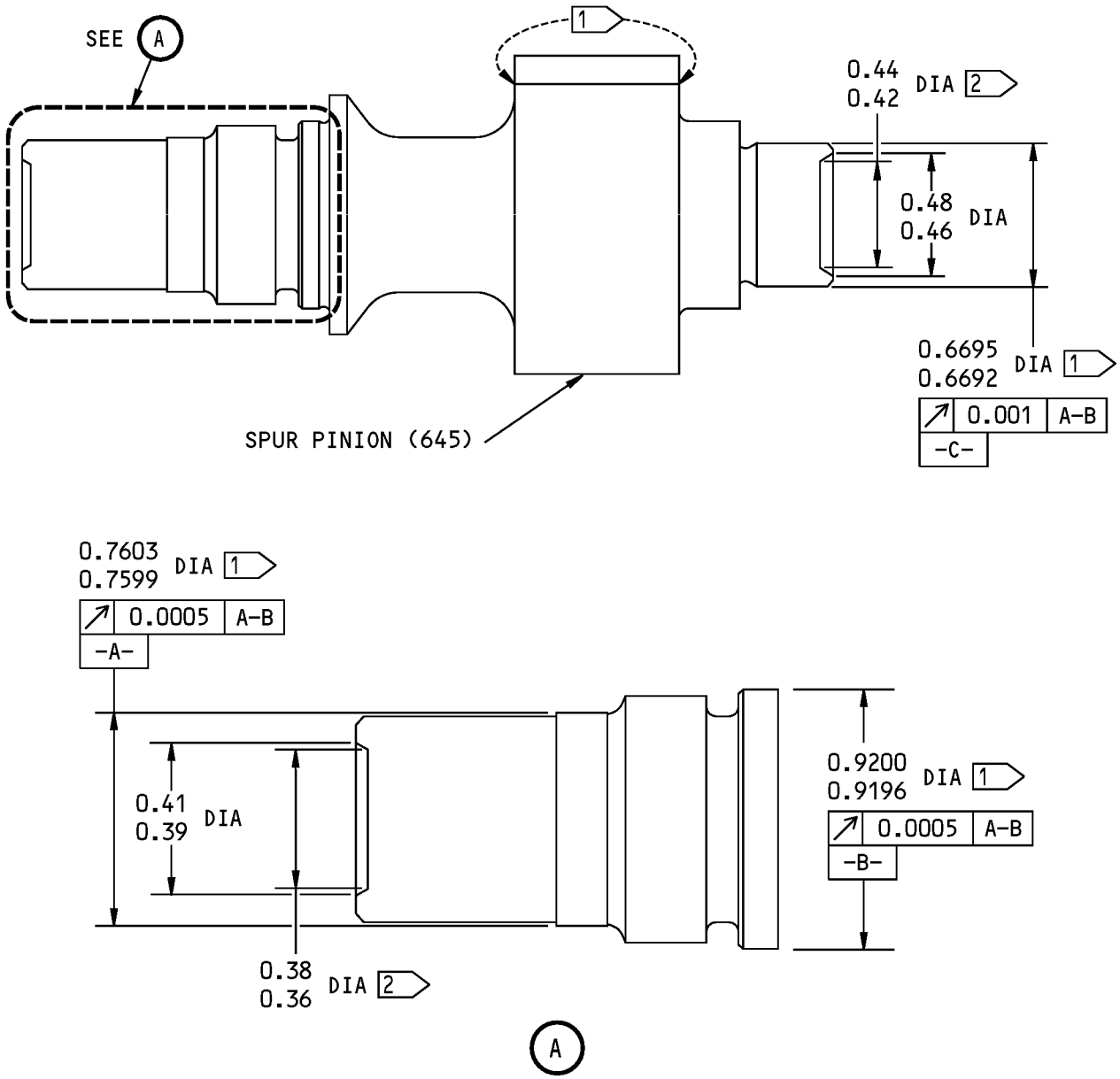
A. References

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-15.23) all over unless shown differently on REPAIR 10-1, Figure 601.



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

2 PLATING THROW-IN IS ACCEPTABLE IN INDICATED BORE

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3138-1,-2 Spur Pinion Repair
Figure 601

GEAR - REPAIR 11-1

256A3139–1

1. General

A. This procedure has the data necessary to refinish the gear (650).

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

C. Refer to REPAIR-GENERAL, Figure 601 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, 160-190 ksi

2. Gear Refinish

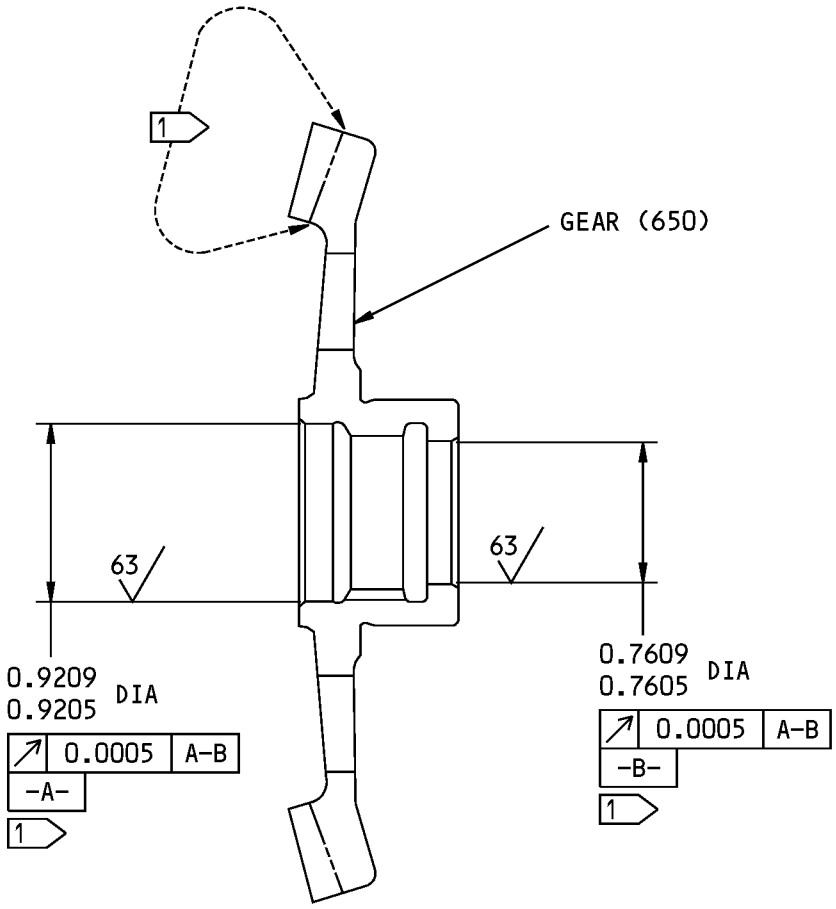
A. References

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) Apply cadmium plate (F-15.23) all over unless shown differently on REPAIR 11-1, Figure 601.



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

256A3139-1 Gear Refinish
Figure 601

SHAFT AND PINION - REPAIR 12-1

256A3143–1

1. General

A. This procedure has the data necessary to repair the shaft and pinion assembly (345).

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

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

D. Refer to IPL Figure 1 for item numbers.

2. Shaft and Pinion Assembly Repair

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00467	Fluid - Landing Gear Shock Strut	BMS3-32, Type II
D00590	Fluid - Flap Drive System - Brayco 795	

B. References

Reference	Title
SOPM 20-60-03	LUBRICANTS

C. Procedure

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

(1) Remove the pin (350) from the pinion (355) and the shaft (360).

(2) Remove the pinion (355) from the shaft (360).

(3) Refinish as necessary.

(4) Install the pinion (355) with fluid, D00467 or Brayco 795 fluid, D00590 on the shaft (360). Make sure the pinion contacts the shaft shoulder.

(5) Install the pin (350) with fluid, D00467 or Brayco 795 fluid, D00590 through the pinion (355) and the shaft (360). Make sure that the pin does not extend past the diameter of the pinion.

PINION - REPAIR 12-2

256A3141–1

1. General

A. This procedure has the data necessary to refinish the pinion (355).

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

C. Refer to REPAIR-GENERAL, Figure 601 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, 160-190 ksi

2. Pinion Refinish

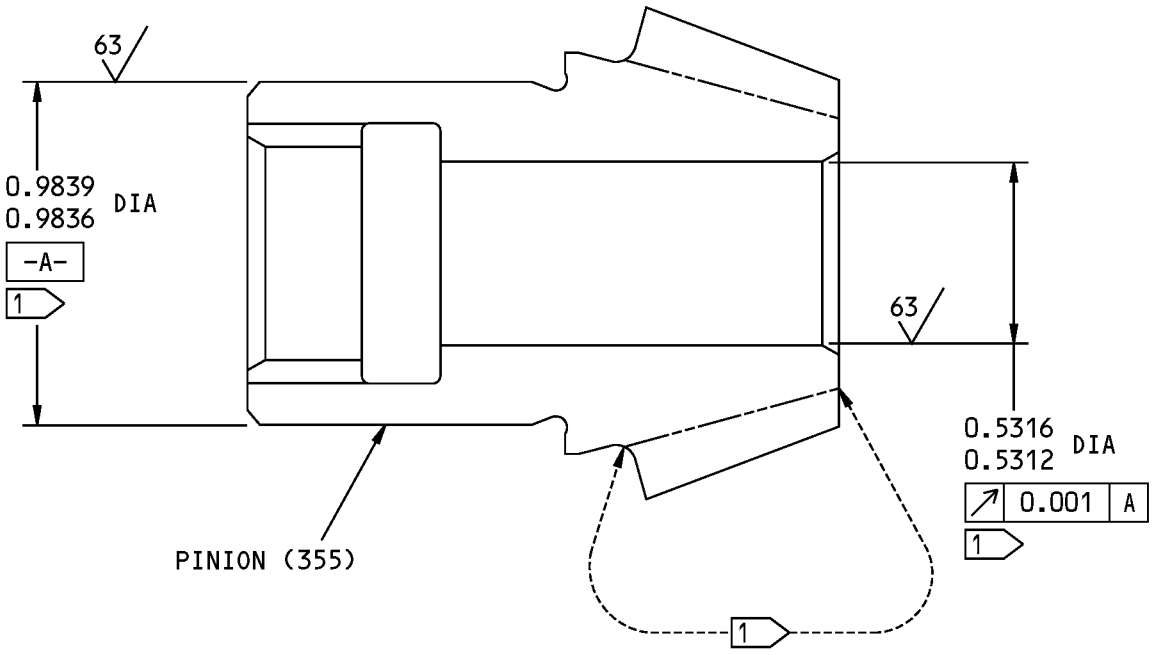
A. References

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) Apply cadmium plate (F-15.23) all over unless shown differently on REPAIR 12-2, Figure 601.



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

256A3141-1 Pinion Refinish
Figure 601

SHAFT - REPAIR 12-3

256A3142–1

1. General

A. This procedure has the data necessary to refinish the shaft (360).

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

C. Refer to REPAIR-GENERAL, Figure 601 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: 4330 steel, 180-200 ksi

2. Shaft Refinish

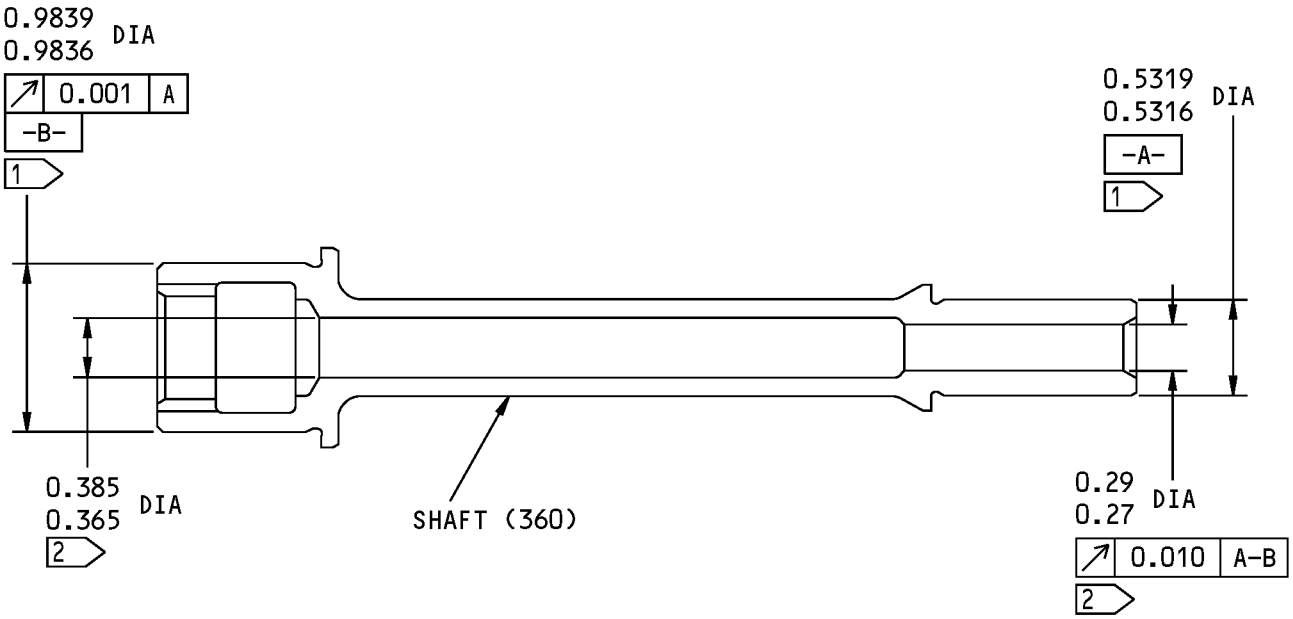
A. References

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

B. Procedure

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) Apply cadmium plate, type 2, class 2 (F-15.06) all over unless shown differently on REPAIR 12-3, Figure 601.



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

2 PLATING THROW-IN IS ACCEPTABLE IN INDICATED BORE.

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3142-1 Shaft Refinish
Figure 601

PIN - REPAIR 12-4

256A3149–1

1. General

A. This procedure has the data necessary to refinish the pin (350).

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

C. Refer to REPAIR-GENERAL, Figure 601 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: PH13-8MO CRES, 200-220 ksi

2. Pin 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) Passivate per method 2 (F-17.25) all over.

RACE - REPAIR 13-1

256A3144–1

1. General

A. This procedure has the data necessary to refinish the race (595).

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

C. Refer to REPAIR-GENERAL, Figure 601 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: 52100 steel, 60-65 HRC

2. Race Refinish

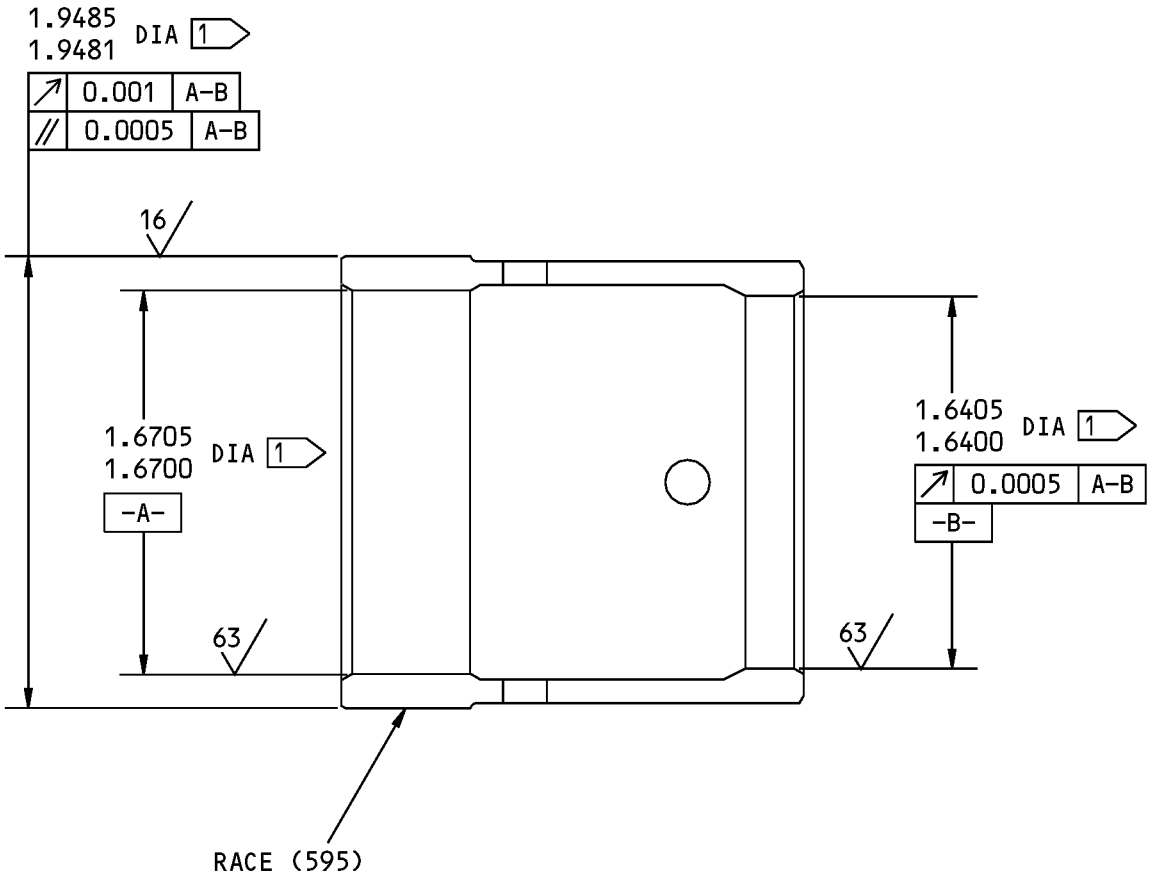
A. References

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

B. Procedure (REPAIR 13-1, 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) Apply cadmium-titanium plate, bake 12 hours minimum at 350-400°F, and apply chromate post-plate treatment (F-15.01) on all surfaces except as noted in REPAIR 13-1, Figure 601.



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

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3144-1 Race Refinish
Figure 601

PLATE - REPAIR 14-1

256A3145–1

1. General

A. This procedure has the data necessary to refinish the plate (585).

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

C. Refer to REPAIR-GENERAL, Figure 601 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, 160-190 ksi

2. Plate Refinish

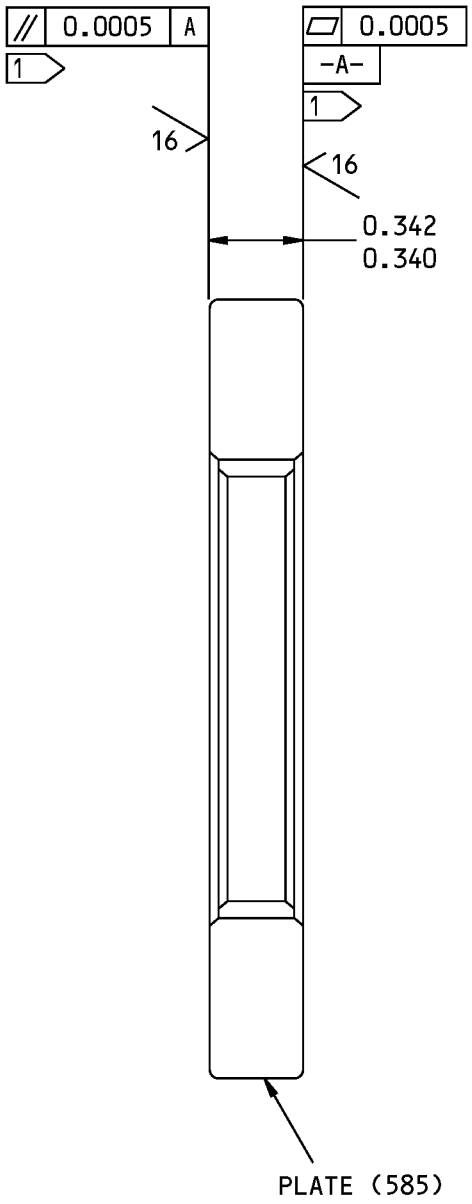
A. References

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

B. Procedure (REPAIR 14-1, 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) Apply cadmium plate (F-15.23) all over except as indicated in REPAIR 14-1, Figure 601.



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

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3145-1 Race Refinish
Figure 601

COVER - REPAIR 15-1

256A3171–1

1. General

A. This procedure has the data necessary to refinish the cover (410).

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

C. Refer to REPAIR-GENERAL, Figure 601 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

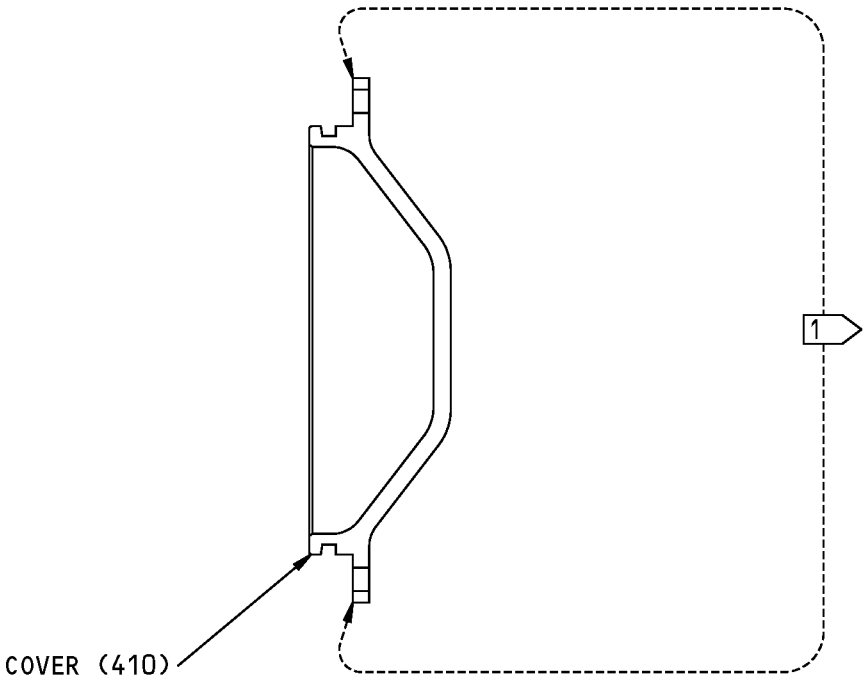
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

C. Procedure (REPAIR 15-1, 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. 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) to all indicated surfaces shown in REPAIR 15-1, Figure 601. Overspray is allowed in holes.



1 APPLY PRIMER TO INDICATED SURFACES (F-20.02). OVERSPRAY IS ALLOWED IN HOLES.

ITEM NUMBERS REFER TO IPL FIG. 1

256A3171-1 Cover Refinish
Figure 601

BLOCK - REPAIR 16-1

256A3172–1

1. General

A. This procedure has the data necessary to refinish the block (430).

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

C. Refer to REPAIR-GENERAL, Figure 601 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, 160-190 ksi

2. Block Refinish

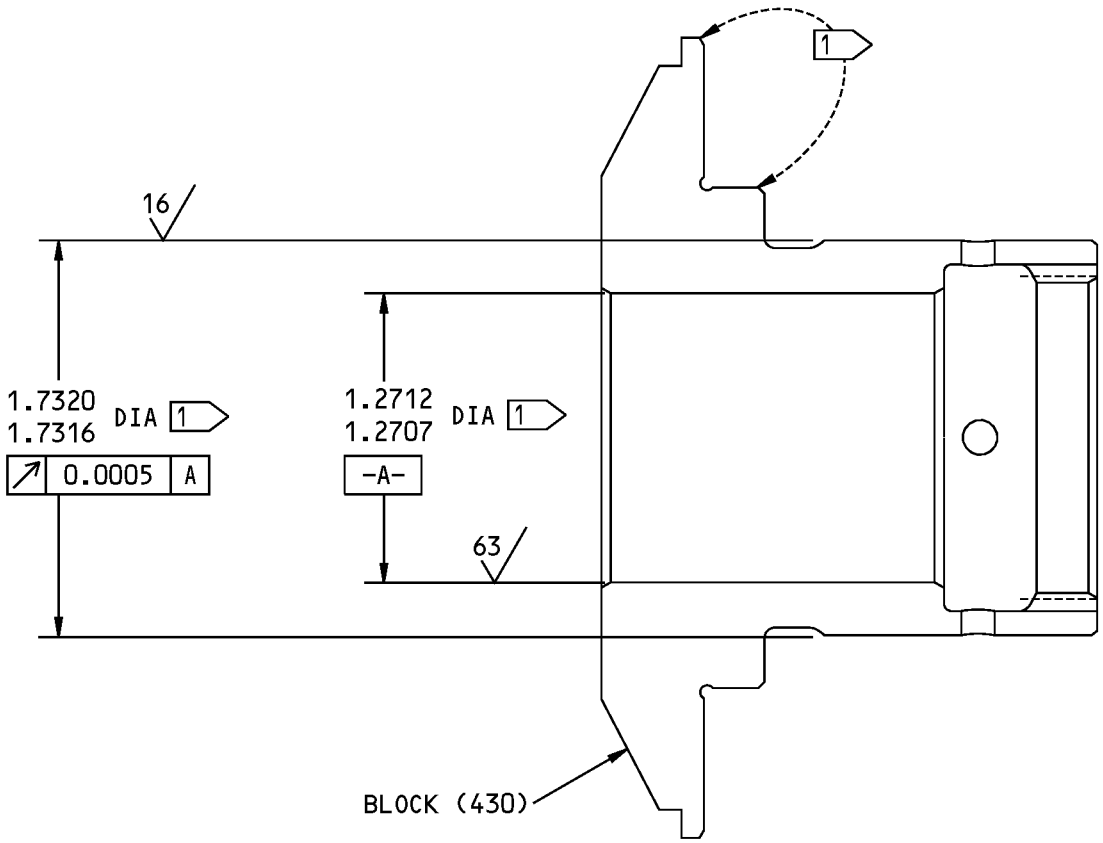
A. References

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

B. Procedure (REPAIR 16-1, 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) Apply cadmium plate (F-15.23) all over except as indicated in REPAIR 16-1, Figure 601.



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

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3172-1 Block Refinish
Figure 601

BEARING RACE - REPAIR 17-1

256A3176–1

1. General

A. This procedure has the data necessary to refinish the bearing race (480).

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

C. Refer to REPAIR-GENERAL, Figure 601 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: 52100 steel, 60-65 HRC

2. Bearing Race Refinish

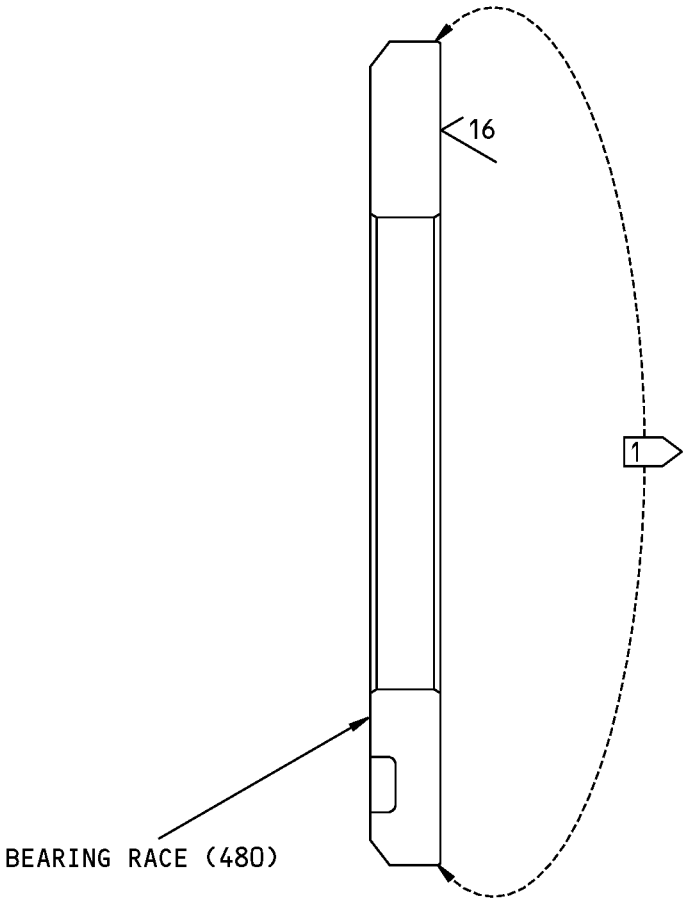
A. References

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

B. Procedure (REPAIR 17-1, 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) Apply cadmium-titanium plate, bake 12 hours minimum at 350-400°F, and apply chromate postplate treatment (F-15.01) on all surfaces except as noted in REPAIR 17-1, Figure 601.



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

ITEM NUMBERS REFER TO IPL FIG. 1

256A3176-1 Bearing Race Refinish
Figure 601

THRUST PLATE - REPAIR 18-1

256A3179–1

1. General

A. This procedure has the data necessary to refinish the thrust plate (450).

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

C. Refer to REPAIR-GENERAL, Figure 601 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, 160-190 ksi

2. Thrust Plate Refinish

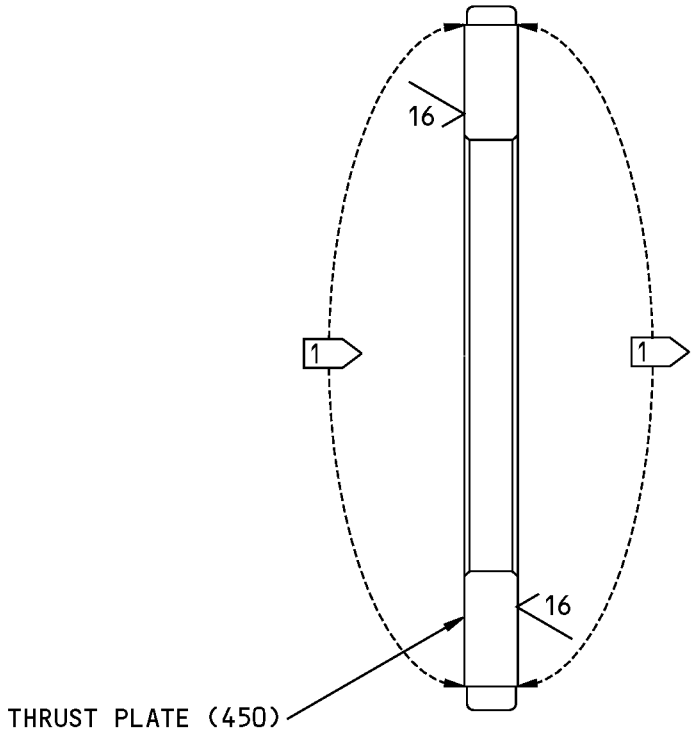
A. References

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

B. Procedure (REPAIR 18-1, 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) Apply cadmium plate (F-15.23) all over except as indicated in REPAIR 18-1, Figure 601.



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

ITEM NUMBERS REFER TO IPL FIG. 1

256A3179-1 Thrust Plate Refinish
Figure 601

HOUSING - REPAIR 19-1

256A3187–2

1. General

A. This procedure has the data necessary to refinish the housing (715).

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

C. Refer to REPAIR-GENERAL, Figure 601 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

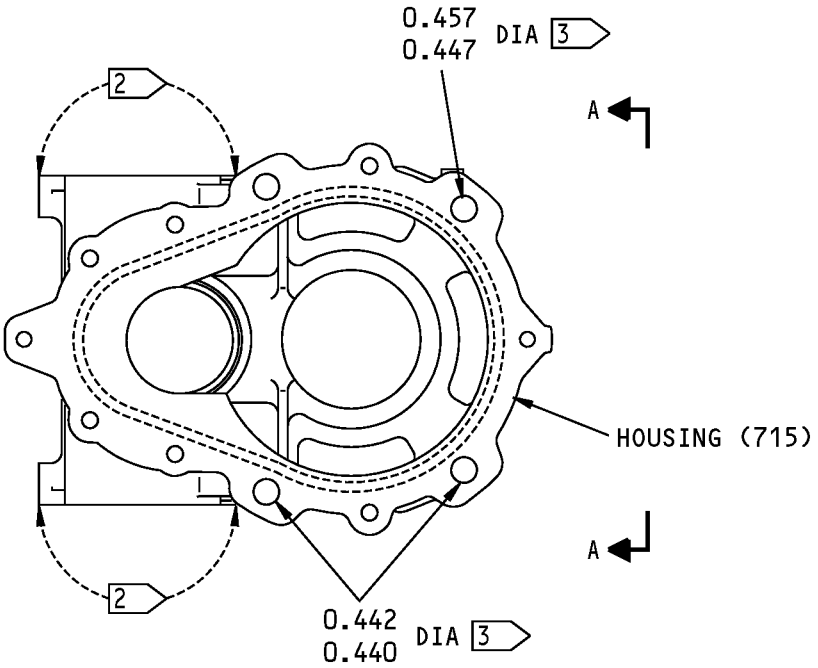
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

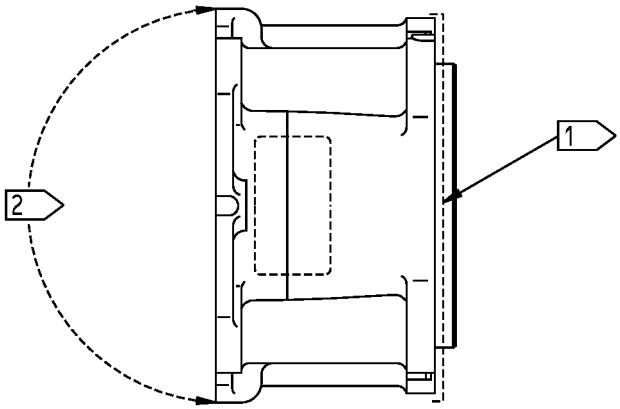
C. Procedure (REPAIR 19-1, Figure 601)

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. 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) to all external surfaces and as noted in REPAIR 19-1, Figure 601.





A–A

1 APPLY PRIMER TO INDICATED SURFACES (F-20.02). NO RUNS, BEADS, OR SAGS ARE PERMITTED.

2 NO PRIMER ON INDICATED SURFACE.

3 APPLY PRIMER (F-20.02) TO HOLE OR COUNTERBORE USING THE FILL AND DRAIN METHOD.

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3187-2 Housing Refinish
Figure 601

HOUSING - REPAIR 20-1

256A3188–2, –4, –6, –8

1. General

A. This procedure has the data necessary to refinish the housing (530).

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

C. Refer to REPAIR-GENERAL, Figure 601 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

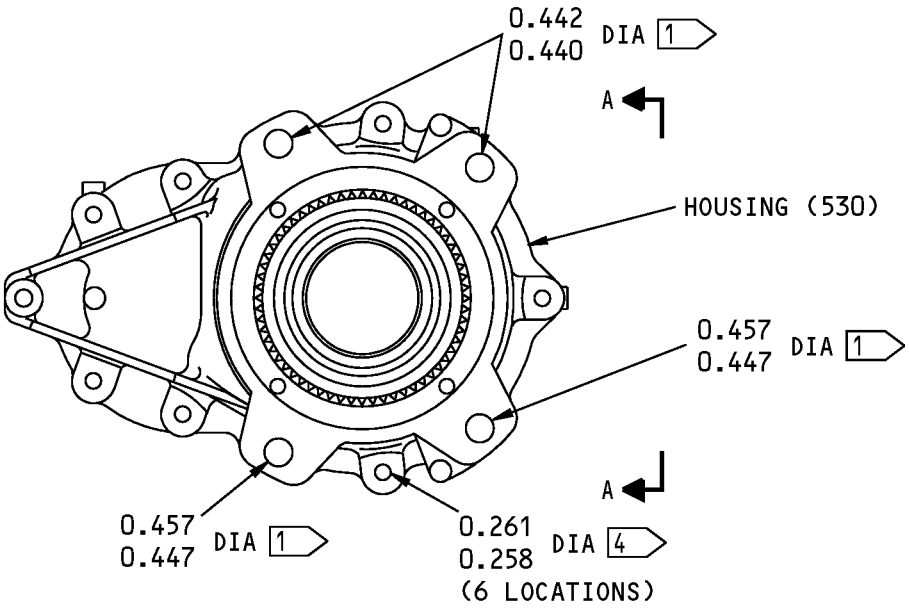
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

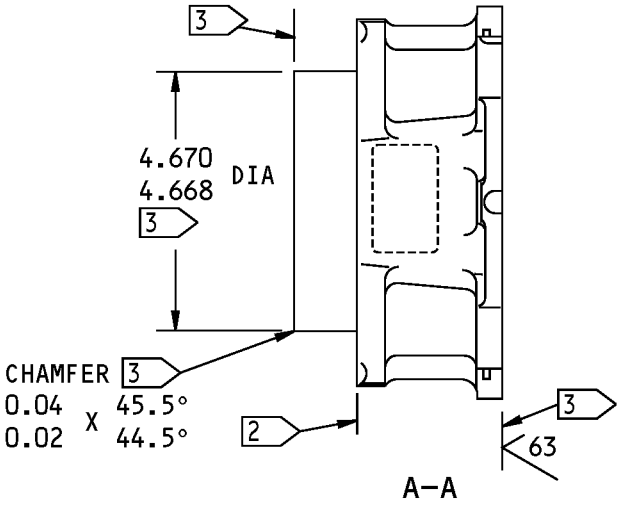
C. Procedure (REPAIR 20-1, Figure 601)

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. 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) to all external surfaces and as noted in REPAIR 20-1, Figure 601.





1 APPLY PRIMER (F-20.02) TO INDICATED COUNTERBORE USING THE FILL AND DRAIN METHOD

2 APPLY PRIMER (F-20.02) TO INDICATED SURFACES. NO RUNS, BEADS, OR SAGS ARE PERMITTED

3 NO PRIMER ON INDICATED SURFACE

4 OVERSPRAY ALLOWED IN INDICATED HOLES

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3188-2,-4,-6,-8 Housing Refinish
Figure 601

YOKE ASSEMBLY - REPAIR 21-1

256A3192–1, –4

1. General

A. This procedure has the data necessary to repair the yoke assembly (395).

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

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

D. Refer to IPL Figure 1 for item numbers.

2. Bearing Replacement

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

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

B. References

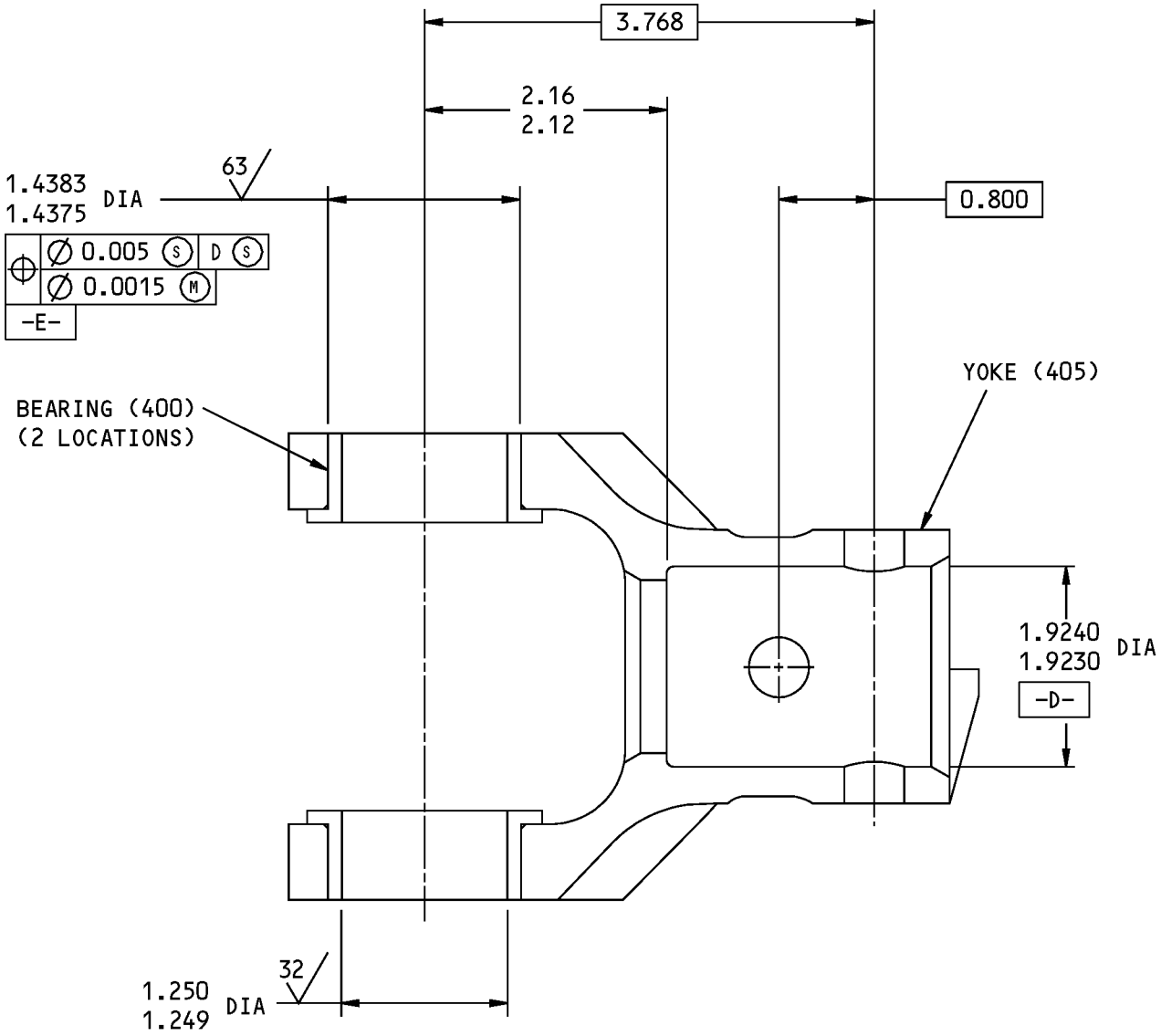
Reference	Title
SOPM 20-50-03	BEARING AND BUSHING REPLACEMENT
SOPM 20-60-04	MISCELLANEOUS MATERIALS

C. Procedure

NOTE: For miscellaneous materials, refer to SOPM 20-60-04.

(1) Remove the bearing (400) from the yoke (405).

(2) Install the replacement bearings with sealant, A00247 using the shrink-fit method (SOPM 20-50-03). Make sure the bearing flange contacts the lug.



ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3192-1,-4 Yoke Assembly Bearing Replacement
Figure 601

YOKE - REPAIR 21-2

256A3192–2, –5

1. General

A. This procedure has the data necessary to repair and refinish the yoke (405).

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

C. Refer to REPAIR-GENERAL, Figure 601 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: PH13-8MO CRES, 200-220 ksi

(2) Shot peen: All surfaces, with hard shot (RC55-65) except mask holes less than 0.50 diameter.

(a) Intensity 0.012A-0.017A

(b) Coverage 2.0

2. Yoke Repair

A. References

Reference	Title
SOPM 20-10-03	SHOT PEENING
SOPM 20-20-01	MAGNETIC PARTICLE INSPECTION
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES

B. Procedure (REPAIR 21-2, 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 within repair limits shown to remove defects.

(2) Break all sharp edges (SOPM 20-10-03).

(3) Shot peen all surfaces (SOPM 20-10-03).

(4) Do a magnetic particle check (SOPM 20-20-01).

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

3. Yoke Refinish

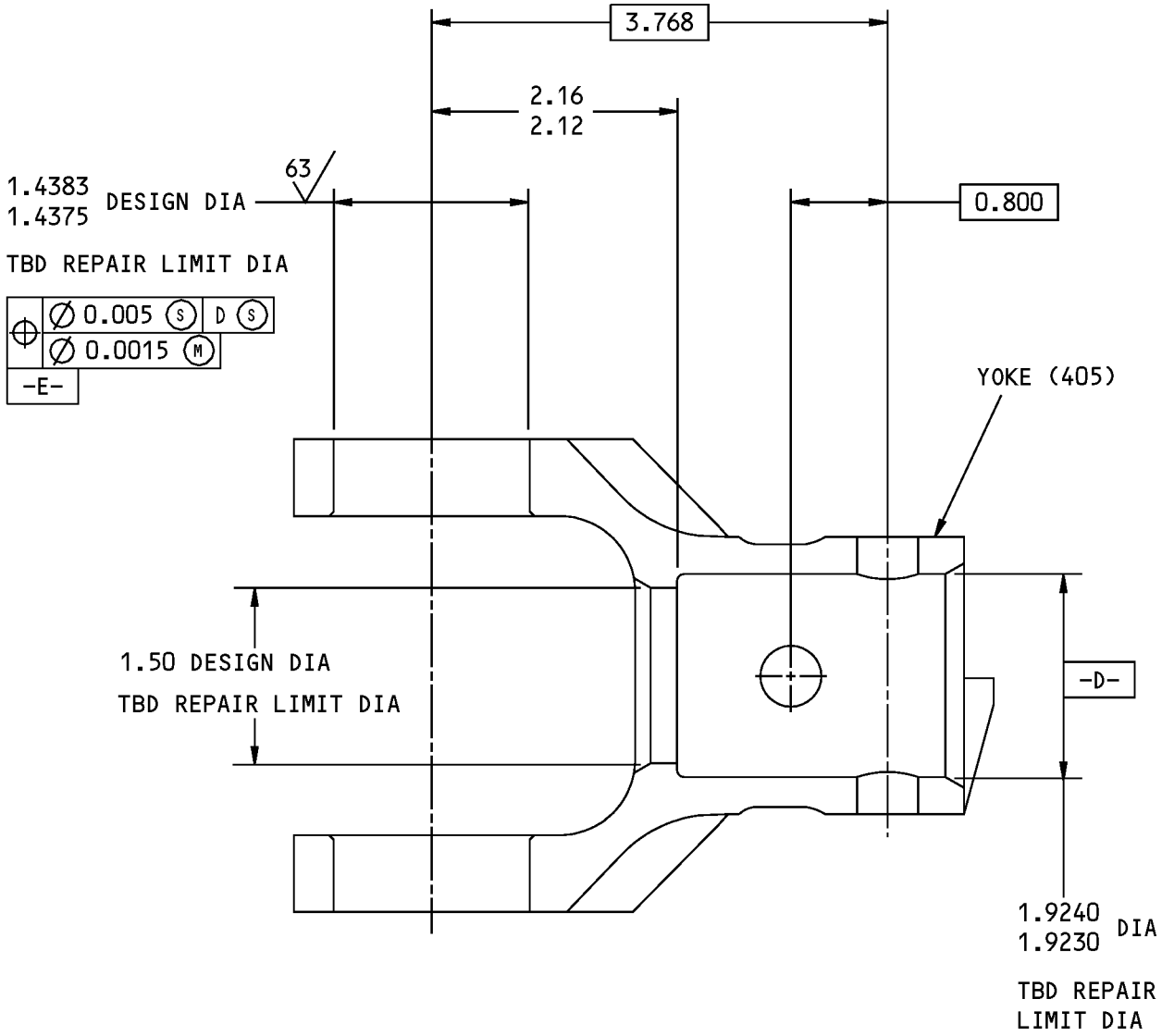
A. References

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

B. Procedure (REPAIR 21-2, 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) Passivate all over (F-17.25).



ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3192-2,-5 Yoke Repair
Figure 601

BEARING - REPAIR 21-3

251N4105–1

1. General

A. This procedure has the data necessary to refinish the bearing (400).

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

C. Refer to REPAIR-GENERAL, Figure 601 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 nickel bronze

2. Bearing 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) Apply cadmium plate, type 2, class 2 (F-15.06) all over, except bearing bore.

HOUSING - REPAIR 22-1

256A3221–3

1. General

A. This procedure has the data necessary to refinish the housing (215).

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

C. Refer to REPAIR-GENERAL, Figure 601 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

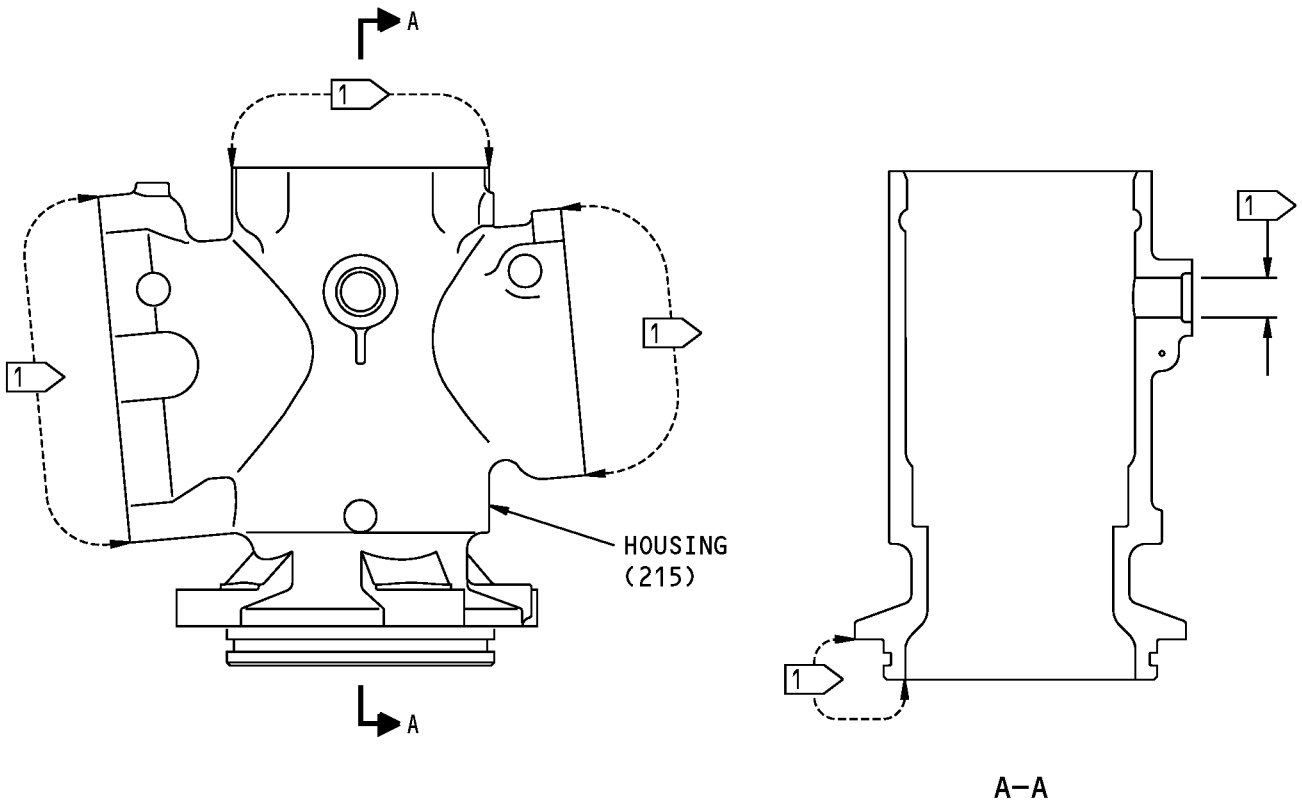
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

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-17.35) all over.

(2) Apply primer, C00259 (F-20.02) on all surfaces except holes and as noted in REPAIR 22-1, Figure 601.



1 NO PRIMER ON INDICATED SURFACES

ITEM NUMBERS REFER TO IPL FIG. 1

256A3221-3 Housing Refinish
Figure 601

PINION - REPAIR 23-1

256A3223–2

1. General

A. This procedure has the data necessary to refinish the pinion (155B).

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

C. Refer to REPAIR-GENERAL, Figure 601 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, 160-190 Ksi

2. Pinion 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

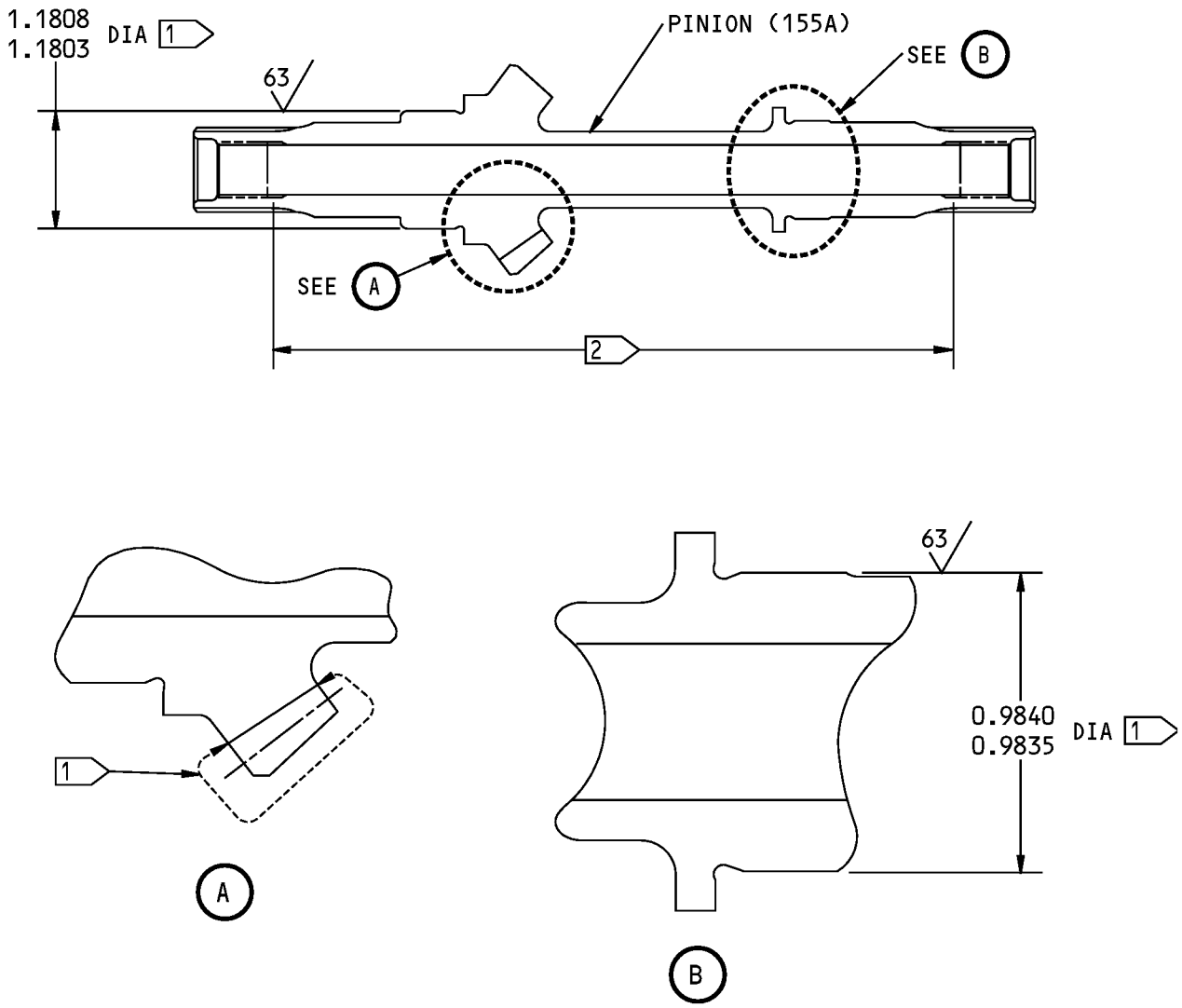
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

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) Apply cadmium plate (F-15.23) on all surfaces except as noted in REPAIR 23-1, Figure 601. Uncontrolled plating thickness is permitted in the bores.

(2) Apply primer, C00259 (F-20.02) as noted in REPAIR 23-1, Figure 601.



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

2 APPLY PRIMER (F-20.02) ON INTERNAL SURFACES, USING FILL AND DRAIN METHOD.

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES.

256A3223-2 Pinion Refinish
Figure 601

BEVEL GEAR - REPAIR 24-1

256A3324–1

1. General

A. This procedure has the data necessary to refinish the bevel gear (160).

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

C. Refer to REPAIR-GENERAL, Figure 601 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, 160-190 Ksi

2. Bevel Gear Refinish

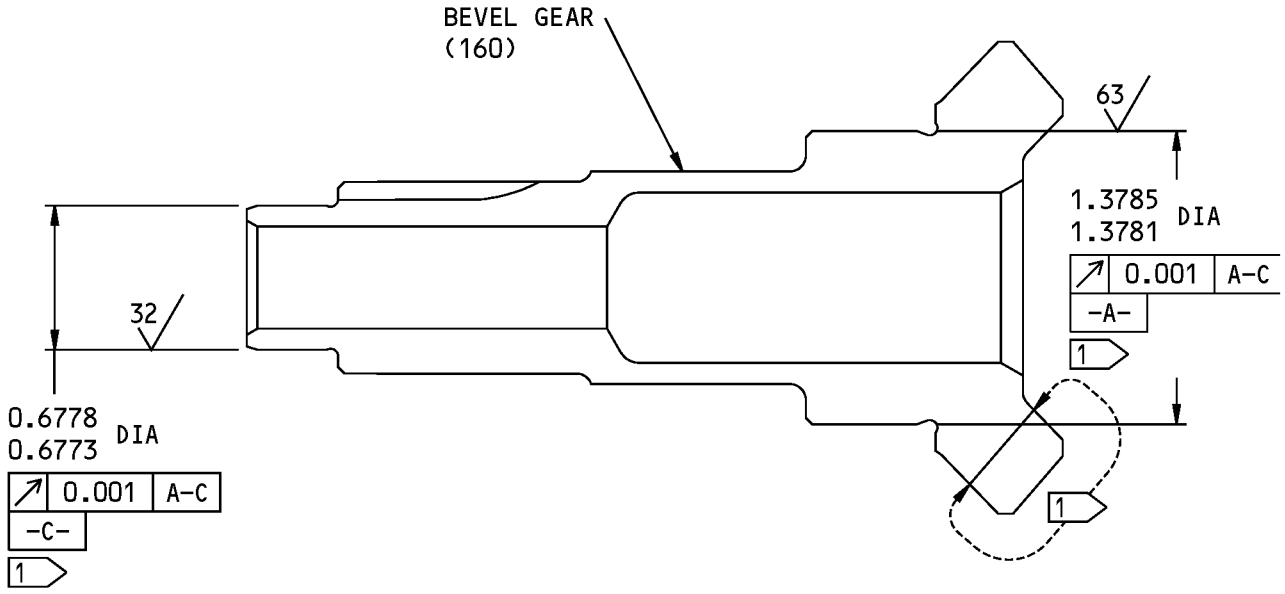
A. References

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 decoding table for Boeing finish codes, refer to SOPM 20-41-01.

(1) Apply cadmium plate (F-15.23) on all exterior surfaces except as noted in REPAIR 24-1, Figure 601. Uncontrolled plating thickness is permitted in the bores.



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

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256A3224-1 Bevel Gear Refinish
Figure 601

RETAINER - REPAIR 25-1

256A3225–1

1. General

A. This procedure has the data necessary to refinish the retainier (90).

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

C. Refer to REPAIR-GENERAL, Figure 601 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. Retainier 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

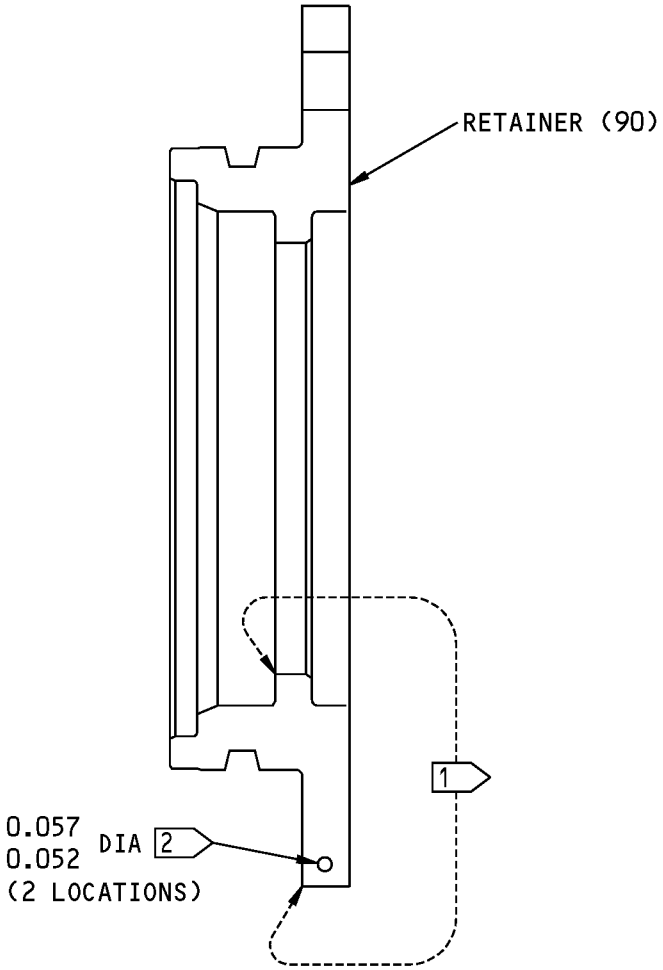
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

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). Overspray is allowed in holes except as noted in REPAIR 25-1, Figure 601



1 APPLY PRIMER (F-20.02) AS INDICATED. OVERSPRAY ALLOWED IN HOLES EXCEPT AS NOTED BY FLAGNOTE 2.

2 NO OVERSPRAY IN INDICATED HOLES

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES.

256A3225-1 Retainer Refinish
Figure 601

CAP - REPAIR 26-1

256A3281–1

1. General

A. This procedure has the data necessary to refinish the cap (20).

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

C. Refer to REPAIR-GENERAL, Figure 601 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. Cap 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

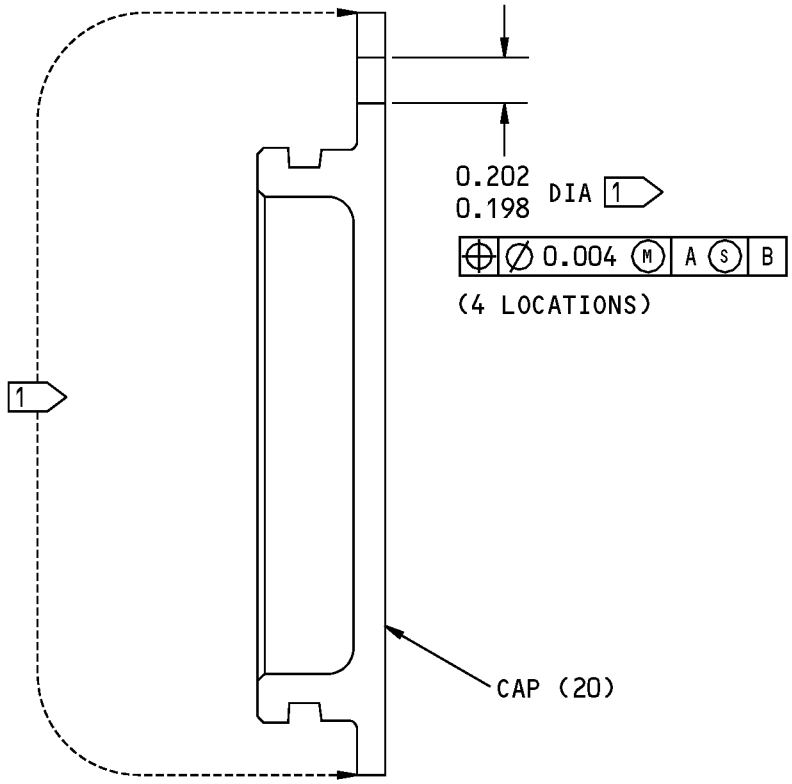
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

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) as noted in REPAIR 26-1, Figure 601.



1 NO PRIMER IN INDICATED AREAS

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES.

256A3281-1 Cap Refinish
Figure 601

COUPLING HALF - REPAIR 27-1

256A3741–1

1. General

A. This procedure has the data necessary to refinish the coupling half (45).

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

C. Refer to REPAIR-GENERAL, Figure 601 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. Coupling Half 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

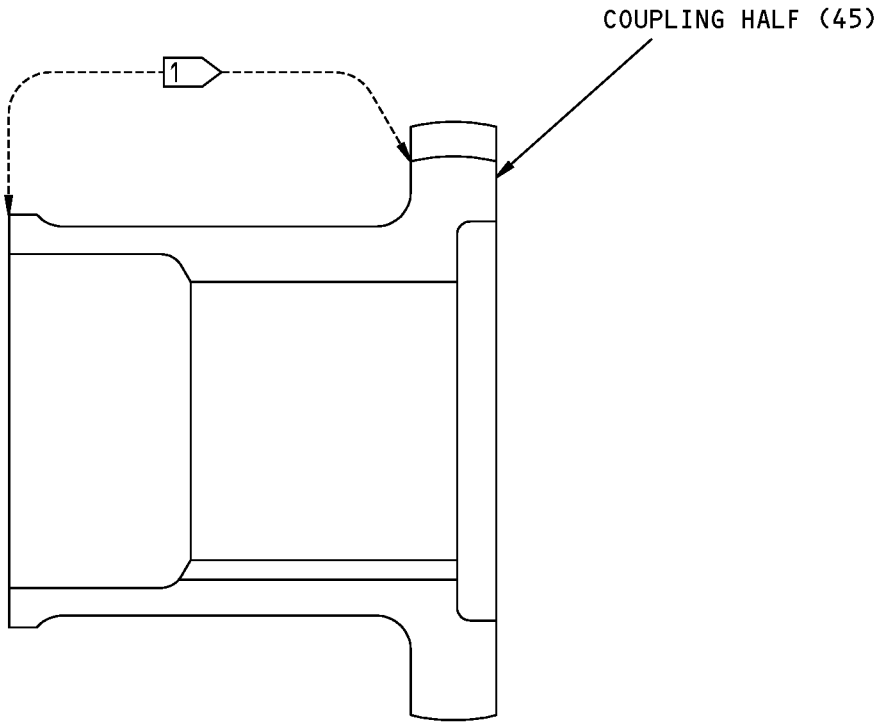
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

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) Apply cadmium plate 0.0003-0.0005 inch thick, type 2, class 2 (F-15.36) on all surfaces.

(2) Apply primer, C00259 (F-20.02) as noted in REPAIR 27-1, Figure 601.



1 APPLY PRIMER (F-20.02) TO THIS SURFACE.

ITEM NUMBERS REFER TO IPL FIG. 1

256A3741-1 Coupling Half Refinish
Figure 601

SEAL RETAINER - REPAIR 28-1

256W3244–1

1. General

A. This procedure has the data necessary to refinish the seal retainer (75).

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

C. Refer to REPAIR-GENERAL, Figure 601 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. Seal Retainer 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

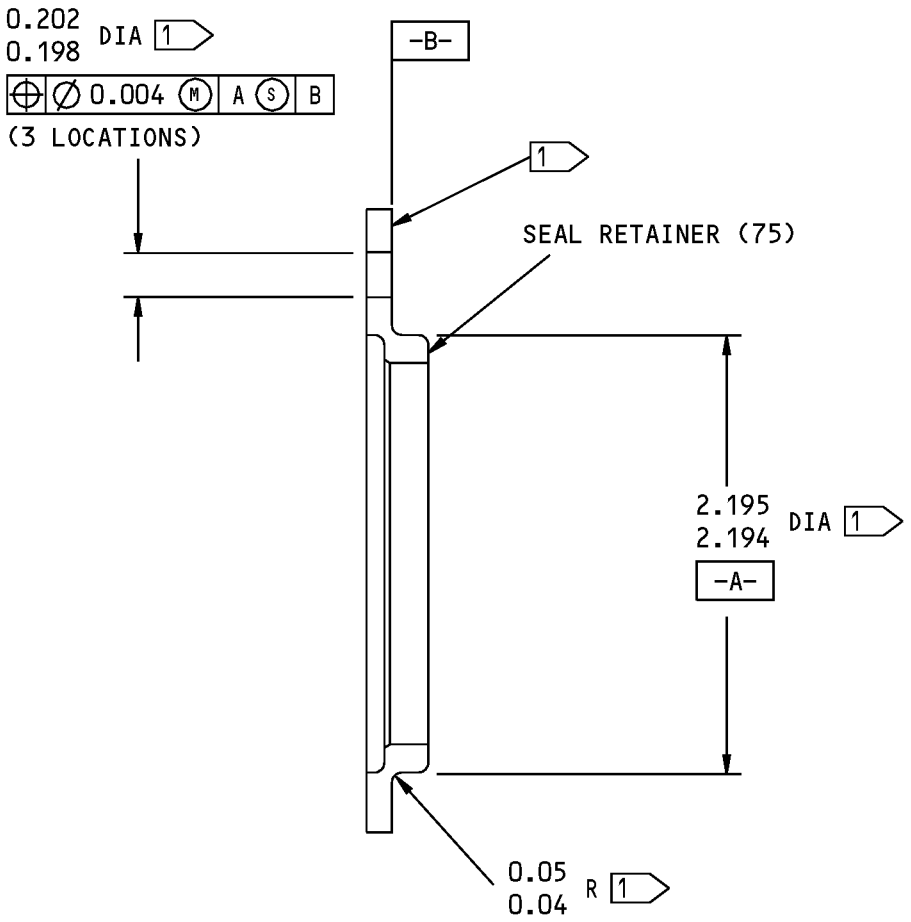
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

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) except as noted in REPAIR 28-1, Figure 601.



1 NO PRIMER ON INDICATED SURFACES.

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256W3244-1 Seal Retainer Refinish
Figure 601

ASSEMBLY

1. General

A. This procedure contains the data necessary to assemble the transmission assembly. There are two parts:

(1) Transmission 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 for item numbers.

2. Transmission Assembly

A. Tools/Equipment

NOTE: Equivalent substitutes may be used.

Reference	Description
SPL-5384	Wrench - Coupling Sleeve Flap Actuation (Part #: C27041-1, Supplier: 81205)
SPL-5385	Seal Installation Equipment, TE Flap Drive (Part #: C27043-16, Supplier: 81205)
SPL-5391	TE Flap Transmission, AFT U-Joint and BallScrew Test Equipment (Part #: C27072-92, Supplier: 81205) (Part #: C27072-93, Supplier: 81205)
SPL-5447	Bearing Width Measurement Equipment (Part #: J27057-22, Supplier: 81205)

B. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
A00028	Adhesive - Modified Epoxy For Rigid PVC, Foam Cored Sandwiches	BAC5010, Type 70 (BMS5-92, Type 1)
A50055	Adhesive - Two-Part, RT Cure, Urethane	BAC5010, Type 89 (BMS5-105)
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
G50347	Lockwire - Nickel-copper, 0.032 inch diameter	NASM20995N˜ C32

C. References

Reference	Title
CMM 27-55-84	FLAP ACTUATION HIGH SETTING TORQUE BRAKE ASSEMBLY
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-41-02	APPLICATION OF CHEMICAL AND SOLVENT RESISTANT FINISHES
SOPM 20-50-01	BOLT AND NUT INSTALLATION
SOPM 20-50-02	INSTALLATION OF SAFETYING DEVICES
SOPM 20-50-03	BEARING AND BUSHING REPLACEMENT
SOPM 20-50-06	INSTALLATION OF O-RINGS AND TEFLON SEALS
SOPM 20-50-07	LUBRICATION
SOPM 20-50-12	APPLICATION OF ADHESIVES
SOPM 20-60-02	FINISHING MATERIALS
SOPM 20-60-03	LUBRICANTS

D. General

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

(1) To assemble the transmission, it is necessary to check the backlash in a test fixture.

(2) Lubricate bearings, and other parts as indicated, with fluid, D00467 or Brayco 795 fluid, D00590, unless shown differently. Brayco 795 fluid, D00590 is preferred for future use.

(3) Install all bearings per SOPM 20-50-03.

E. Procedure

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

(1) Calculate the shim (655 thru 670) thickness S1 as shown in ASSEMBLY, Figure 701, with the bearing (675), gear (650), and housing assembly (695) measurements as follows:

NOTE: Use the minimum number of shims necessary. Actual shim thickness is to the nearest 0.0015 inch.

(a) Measure the bearing (675) width, using the bearing width Measurement Equipment, SPL-5447, from the inner race shoulder on one side to the outer race shoulder on the opposite side, with the end play removed. Remove the end play by applying a 5-15 pound axial load across the bearing. This is dimension W1.

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

(b) Measure the width of the gear (650) as shown in ASSEMBLY, Figure 701. This is dimension E.

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

(c) Record the dimension C of the housing assembly (695) as shown in ASSEMBLY, Figure 701.

(2) Lubricate the pinion (645), gear (650), spacer (680), lockwasher (685), and nut (690) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

(3) Install the nut (690), lockwasher (685), spacer (680), bearing (675), shims (655 thru 670), gear (650), and pinion (645) in the housing assembly (695).

(4) Tighten the nut (690) to 310-370 lb-in. above run-on torque.

NOTE: Do not crimp the lockwasher (685) until all assembly checks are completed.

(5) After tightening the nut (690), make sure the witness mark on the lockwasher (685) flange is aligned with the key slot in the pinion (645). If not aligned, replace the lockwasher.

(6) Calculate the shim (275 thru 290, 320 thru 335) thickness S2 and S3 as shown in ASSEMBLY, Figure 701, with the bearing (295, 340) retainer (270), and housing assembly (695) measurements as follows:

NOTE: S2 and S3 shim dimensions are measured at different locations for the Position No. 2 and Position No. 7 assemblies.

Use the minimum number of shims necessary. Actual shim thickness is to the nearest 0.0015 inch.

(a) For Position No. 2 assemblies (256A3210-X, where X is an odd number): measure the bearing (340) width, using the bearing width Measurement Equipment, SPL-5447, from the inner race shoulder on one side to the outer race shoulder on the opposite side. Measure the width to the nearest 0.001 inch with the end play removed. Remove the end play by applying a 5-15 pound axial load across the bearing. This is dimension W2.

(b) For Position No. 7 assemblies (256A3210-Y, where Y is an even number): Measure the bearing (295) width, using the bearing width Measurement Equipment, SPL-5447, from the inner race shoulder on one side to the outer race shoulder on the opposite side. Measure the width to the nearest 0.001 inch with the end play removed. Remove the end play by applying a 5-15 pound axial load across the bearing. This is dimension W2.

(c) Measure the shim (275 thru 290, 320 thru 335) thickness S3 as required to obtain 0.003-0.005 axial backlash of pinion assembly (345) with a ± 40-50 pound axial load.

(d) Measure the distance from the retainer (270) flange to the shoulder. This is dimension F.

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

(e) Record the dimension D of the housing assembly (695) as shown in ASSEMBLY, Figure 701.

(7) Install the shaft and pinion assembly (345) in the housing assembly (695).

(a) Install the pinion assembly (345), bearings (295, 340) shims (275 thru 290, 320 thru 335), retainers (270), and bolts (265) in the housing assembly (695).

NOTE: Do not apply compound, C00913 to bolts (265) or faying surfaces of retainers (270) until all assembly checks and adjustments have been completed.

(8) Measure the backlash and verify tooth contact pattern of the assembled gears.

NOTE: Tooth contact pattern can be verified using marking compound and by refering to the gear manufacturing industry standards.

(a) Install the housing assembly (695) in the transmission assembly test equipment, SPL-5391 which will support the pinion (645) on center for the backlash test.

NOTE: The backlash is the total clearance from one gear position to a different position. A torque is applied to the gear in one direction. This is the first position of the gear. The torque is then applied in the opposite direction. This is the second position of the gear.

(b) Apply a 5-15 pound axial load to the pinion (645), and a 25-35 pound load to the pinion assembly (345) in the direction shown in ASSEMBLY, Figure 701, with the transmission assembly test equipment, SPL-5391 .

NOTE: Back up the retainer (270) with the torque brake (255) and cap (310) or with a tool that provides equivalent stiffness.

(c) Apply a torque wrench to prevent movement of the pinion (645) and pinion assembly (345).

(d) Apply a torque of 10-15 lb-in. to the gear (650).

(e) Measure the backlash of the gear (650) at three locations approximately 120 degrees apart at the gear pitch diameter, and verify tooth contact pattern.

NOTE: The backlash must be 0.004-0.006 inch at the gear pitch diameter.

(f) If backlash is not 0.004-0.006 inch, and tooth contact pattern is not acceptable, adjust the shim thickness S1 and/or S2.

NOTE: To decrease the backlash, increase the shim thickness S1 and/or S2. To increase the backlash, decrease the shim thickness S1 and/or S2.

(g) Measure the backlash and verify tooth contact pattern again.

(h) Adjust the shim thickness S1 and/or S2 again as necessary.

(i) After final shimming, remove the pinion assembly (345) and pinion (645) from the housing assembly (695). Remove any marking compound from the gears using a rag and solvent and install the pinion assembly (345) and pinion (645) back in the housing assembly (695).

(9) Crimp the lockwasher (685) into the nut (690).

(a) Make sure the witness mark on the lockwasher (685) flange is aligned with the key slot in the pinion (645). If not aligned, replace the lockwasher.

(b) Crimp the lockwasher (685) to deform it into the two slots of the nut (690) 180 degrees apart.

(10) Reinstall retainers (270) in the housing assembly (695).

(a) Install the packing (315) in the housing assembly (695) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

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(b) Apply a thin film of compound, C00913 to the faying surface of the retainer (270) flange between outer profile and approximately 0.05 inch from fillet radius.

(c) Coat entire shank and threads of the bolts (265) with compound, C00913 except bolt tips.

(d) Install retainers (270) in the housing assembly (695) with the bolts (265). Remove excess compound, C00913 after assembly.

(11) Lubricate the pawls (550), spacers (555), springs (545), and pins (540) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable, and install in the housing assembly (695).

(12) Lubricate the packing (535), bearing race (480), and ratchet plate (565) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable, and install with bearing (560) and bearing (640) in the cover assembly (520). Make sure the ratchet plate (565) has adequate support to maintain engagement with the pawls (550), and bearing race (480) engages the pin in the cover assembly (520).

(13) Install the packing (610) in the retainer (620) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

(14) Install the seal (615) and spacer (605) in the retainer (620).

(a) Lubricate the retainer (620) bore with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

(b) Install the seal (615) in the retainer (620). Use the Seal Installation Tool, SPL-5385 to apply even pressure over the full circumference of the seal rim, as near to the seal outside diameter as possible. Make sure the seal is installed flush to 0.01 inch above seal cavity.

NOTE: Make sure to protect the seal lips during assembly.

(c) Apply a large quantity of fluid, D00467 or Brayco 795 fluid, D00590 (Assemblies 256A3210-3 thru -6) or grease, D00633 (Assemblies 256A3210-7, -8) to the seal (615) lips.

(d) Install the spacer (605) in the retainer (620).

(15) Install the retainer (620) in the housing assembly (695).

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(a) Apply a thin film of compound, C00913 to the faying surface of the retainer (620) flange between outer profile and approximately 0.05 inch from the fillet radius.

(b) Coat entire shank and threads of the bolts (510) with compound, C00913 except bolt tips.

(c) Apply fluid, D00467 or Brayco 795 fluid, D00590, as applicable, to the housing assembly (695) bore.

(d) Install the bearing (600), retainer (620), washers (515), and bolts (510) in the housing assembly (695).

(e) Remove excess compound, C00913 after assembly.

(16) Lubricate the race (595) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable, and install on the shaft assembly (625).

(17) Put grease, D00633 in the space between the seal (615) and retainer (620) as shown in ASSEMBLY, Figure 701.

(18) Install the shaft assembly (625) into the housing assembly (695). Temporarily support the shaft assembly to maintain a 0.16 inch minimum gap between the outer face of the retainer (620) and the shoulder of the shaft assembly (625).

(19) Lubricate the gear (590), plate (585), and roller assembly (570) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable, and install on the shaft assembly (625). Make sure the roller assembly (570) is oriented as shown in ASSEMBLY, Figure 701.

(20) Install threaded end of the shaft assembly (625) in the cover assembly (520).

(21) Assemble the cover assembly (520) and the housing assembly (695) together.

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(a) Apply a thin film of compound, C00913 to faying surfaces of the cover assembly (520) and housing assembly (695) between outer profiles and approximately 0.05 inch from the packing (535) groove in the cover assembly (520).

(b) Coat entire shank and threads of the bolts (485, 505) with compound, C00913 except bolt tips.

(c) Mate the cover assembly (520) and housing assembly (695) together and install the bolts (485, 505), washers (490, 495, 515), and nuts (500).

(d) Remove excess compound, C00913 after assembly.

(22) Calculate the shim (460 thru 475) thickness S4 as shown in ASSEMBLY, Figure 701.

NOTE: Use the minimum number of shims necessary. Initial S4 shim thickness should be 0.061 inch.

(a) Measure the shim (460 thru 475) thickness S4 as required to obtain 0.005-0.012 axial backlash of the shaft assembly (625) with a ± 40-50 pound axial load.

(23) Lubricate the thrust plate (450), roller assembly (435), block (430), lockwasher (425), and nut (420) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable, and install with the shims (460 thru 475), and bearing (455), in the housing assembly (520). Make sure the roller assembly (435) is oriented as shown in ASSEMBLY, Figure 701.

(24) Remove temporary support from the shaft assembly (625).

(25) Tighten the nut (420) to 1600-1900 lb-in. above run-on torque.

NOTE: Do not crimp the lockwasher (425) until all assembly checks are completed.

(26) After tightening the nut (420), make sure the witness mark on the lockwasher (425) flange is aligned with the key slot in the shaft assembly (625). If not aligned, replace the lockwasher.

(27) Measure the axial backlash of the shaft assembly (625).

NOTE: The axial backlash is the distance between the axial position of a shaft when a force is applied in one direction to the axial position of the same shaft when the same force is applied in the opposite direction.

(a) Apply an axial load of 40-50 pounds to the shaft assembly (625) in each direction.

(b) Measure the axial movement of the shaft assembly (625) after application of the axial loads.

(c) Adjust the shim(s) (460 thru 475) thickness S4 to obtain an axial backlash of 0.005-0.012 inch.

(d) Verify the shaft assembly (625) rotates freely.

(e) If backlash is not 0.005-0.012 inch, adjust the shim thickness S4.

(f) Measure the backlash again.

(g) Adjust the shim thickness S4 again as necessary.

(28) Crimp the lockwasher (425) into the nut (420).

(a) Make sure the witness mark on the lockwasher (425) flange is still aligned with the key slot in the shaft assembly (625). If not aligned, replace the lockwasher.

(b) Crimp the lockwasher (425) to deform it into two slots of the nut (420) 180 degrees apart.

(29) Install the cover (410) on the cover assembly (520).

(a) Install the packing (415) on the cover (410) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

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(b) Apply a thin film of compound, C00913 to the faying surface of the cover (410) flange between outer profile and approximately 0.05 inch from fillet radius.

(c) Coat entire shank and threads of the bolts (406) with compound, C00913, except bolt tips.

(d) Lubricate the cover assembly (520) bore with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

(e) Mate the cover (410) with the cover assembly (520) and install the bolts (406) and washers (408).

(f) Remove excess compound, C00913 after assembly.

(30) Install the cap (310) on the housing assembly (695).

(a) Install the packing (260) in the cap (310) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

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(b) Apply a thin film of compound, C00913 to the faying surface of the cap (310) flange between outer profile and approximately 0.05 inch from fillet radius.

(c) Coat entire shank and threads of the bolts (300) with compound, C00913, except bolt tips.

(d) Lubricate the retainer (270) bore with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

(e) Install the cap (310) on the housing assembly (695) with the bolts (300) and washers (305).

(f) Remove excess compound, C00913 after assembly.

(31) Install the torque brake assembly (255) on the housing assembly (695).

NOTE: Refer to CMM 27-55-84 for torque brake assembly instructions.

(a) Install the packing (260) in the torque brake assembly (255) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

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(b) Apply a thin film of compound, C00913 to the faying surface of the torque brake assembly (255) housing flange between outer profile and approximately 0.05 inch from fillet radius.

(c) Coat entire shank and threads of the bolts (225) with compound, C00913, except bolt tips.

(d) Lubricate the retainer (270) bore with fluid, D00467 or Brayco 795 fluid, D00590, as applicable,

(e) Attach the torque brake assembly (255) to the housing assembly (695) with the bolts (225) and washers (230).

(f) Remove excess compound, C00913 after assembly.

(32) Calculate the shim (235 thru 250) thickness S5 as shown in ASSEMBLY, Figure 701, with the torque brake assembly (255) and the housing assembly (200) measurements as follows:

NOTE: Use the minimum number of shims necessary. Actual shim thickness is to the nearest 0.0015 inch.

(a) Measure the actual distance from the torque brake assembly (255) housing flange to the 256A3168 stator housing (ref CMM 27-55-84, item 155). This distance is measured with a 25-36 pound load applied to the stator housing in the direction shown. This is dimension W3.

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

(b) Measure the distance from the housing assembly (200) flange to the flange shoulder. This is dimension G.

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

(33) Install the housing assembly (200) on the torque brake assembly (255).

(a) Install the shims (235 thru 250) in the torque brake assembly (255) bore and install the packing (220) in the housing assembly (200) base with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

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(WARNING PRECEDES)

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(b) Apply a thin film of compound, C00913 to the faying surface of the housing assembly (200) flange between outer profile and approximately 0.05 inch from the fillet radius.

(c) Coat entire shank and threads of the bolts (225) with compound, C00913, except bolt tips.

(d) Lubricate the housing assembly (200) bore with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

(e) Attach the housing assembly (200) to the torque brake assembly (255) with the bolts (225) and washers (230).

(f) Remove excess compound, C00913 after assembly.

(34) Calculate the shim (165 thru 180) thickness S6 as shown in ASSEMBLY, Figure 701, with the bearing (185) measurements as follows:

(a) Measure the bearing (185) width, using the bearing width Measurement Equipment, SPL-5447, from the inner race shoulder on one side to the outer race shoulder on the opposite side with the end play removed. Remove end play by applying a 5-15 pound axial load across the bearing. This is dimension W4.

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

(b) Record the dimension A on the housing assembly (200) as shown in ASSEMBLY, Figure 701.

(35) Lubricate the bevel gear (160) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable, and install with the bearing (185), and shims (165 thru 180) in the housing assembly (200).

(36) Install the packing (95), seal (105), and spacer (110) in the retainer (90).

(a) Install the packing (95) in the retainer (90) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

(b) Lubricate the retainer (90) bore with fluid, D00467 or Brayco 795 fluid, D00590 as applicable.

(c) Install the seal (105) in the retainer (90). Use the Seal Installation Tool, SPL-5385 to apply even pressure over the full circumference of the seal rim, as near to the seal outside diameter as possible. Make sure the seal is installed flush to 0.01 inch above seal cavity.

NOTE: Make sure to protect the seal lips during assembly.

(d) Apply a large quantity of fluid, D00467 or Brayco 795 fluid, D00590 (Assemblies 256A3210-3 thru -6) or grease, D00633 (Assemblies 256A3210-7, -8) to the seal (105) lips.

(e) Install the spacer (110) in the retainer (90).

(37) Calculate the shim (125 thru 140) thickness S7 as shown in ASSEMBLY, Figure 701, with the retainer (90), spacer (110), bearing (115), and housing assembly (200), measurements as follows:

(a) Measure the bearing (115) width, using the bearing width Measurement Equipment, SPL-5447, from the inner race shoulder on one side to the outer race shoulder on the opposite side with the end play removed. Remove end play by applying a 5-15 pound axial load across the bearing. This is dimension W5.

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

(b) Record the dimension B on the housing assembly (200) as shown in ASSEMBLY, Figure 701.

(c) Measure the dimension H of the retainer (90) and the spacer (110) as shown in ASSEMBLY, Figure 701.

(38) Install the packings (100) in rings (55) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

(39) Lubricate the pinion assembly (145) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable, and install in the housing assembly (200) with shims (125 thru 140), bearings (115, 120), and rings (55).

(40) Lubricate the housing assembly (200) bore with fluid, D00467 or Brayco 795 fluid, D00590, as applicable, and install the retainer (90) in the housing assembly (200) with the bolts (80) and washers (85).

NOTE: Do not apply compound, C00913 to bolts (80) or faying surfaces of retainer (90) until all assembly checks and adjustments have been completed.

(41) Lubricate the sleeve (30) and coupling (45) with grease, D00633 (SOPM 20-50-07) and install with the seal (50) and shield (60) on the pinion assembly (145).

(42) Install the packing (40) on the bolt (35) with grease, D00633 (SOPM 20-50-06).

(43) Install the bolt (35) in the pinion assembly (145). Apply the coupling sleeve wrench, SPL-5384 to hold the coupling sleeve (30) and tighten the bolt to 600-720 lb-in. above the run-on torque.

(44) Measure the backlash and verify tooth contact pattern of the bevel gear (160) and pinion assembly (145).

NOTE: Tooth contact pattern can be verified using marking compound and by refering to the gear manufacturing industry standards.

NOTE: The backlash is the total clearance from one gear position to a different position. A torque is applied to the gear in one direction. This is the first position of the gear. The torque is then applied in the opposite direction. This is the second position of the gear.

(a) Apply a 5-15 pound axial load to the bevel gear (160) in the direction shown in ASSEMBLY, Figure 701, with transmission assembly test equipment, SPL-5391.

(b) Apply a torque wrench to prevent movement of the gear (160).

(c) Apply a torque of 10-15 lb-in. to the pinion assembly (145).

(d) Measure the backlash of the pinion assembly (145) at three locations approximately 120 degrees apart at the gear pitch diameter, and make sure of tooth contact pattern.

NOTE: The backlash must be 0.004-0.006 inch at the gear pitch diameter.

(e) If backlash is not 0.004-0.006 inch, and tooth contact pattern is not acceptable, adjust shim thickness S6 and/or S7.

NOTE: To decrease the backlash, increase the shim thickness. To increase backlash, decrease the shim thickness.

(f) Measure the backlash again and verify tooth contact pattern.

(g) Adjust the shim thickness S6 and/or S7 as necessary.

(45) Prepare the retainer (90) for final installation in the housing assembly (200).

(a) Remove the bolt (35), coupling (45), sleeve (30), seal (50), and shield (60) from the pinion assembly (145).

(b) Remove the bolts (80), washers (85), and retainer (90) from the housing assembly (200).

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(c) Apply a thin film of compound, C00913 to the faying surface of the retainer (90) flange between the outer profile and approximately 0.05 inch from the fillet radius.

(d) Coat the entire shank and threads of the bolts (80) with compound, C00913, except bolt tips.

(e) Attach the retainer (90) to the housing assembly (200) with the bolts (80) and washers (85).

(f) Remove excess compound, C00913 after assembly.

(46) Put grease, D00633 in the space above the seal (105) and between the seal ring (55) and retainer (90) as shown in ASSEMBLY, Figure 701.

(47) Reinstall the shield (60), seal (50), sleeve (30), and coupling (45) on the pinion assembly (145).

(48) Apply grease, D00633 to faying surface of the bolt (35) and install in the pinion assembly (145). Apply the coupling sleeve wrench, SPL-5384 to hold the coupling sleeve (30) and tighten the bolt to 600-720 lb-in. above the run-on torque.

(49) Install the seal (105) in the housing assembly (200).

(a) Lubricate the housing assembly (200) bore with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

(b) Install the seal (105) in the housing assembly (200). Use the Seal Installation Tool, SPL-5385 to apply even pressure over the full circumference of the seal rim, as near to the seal outside diameter as possible. Make sure the seal is installed to a depth of 0.17-0.18 inch.

NOTE: Make sure to protect the seal lips during assembly.

(c) Apply a large quantity of fluid, D00467 or Brayco 795 fluid, D00590 (Assemblies 256A3210-3 thru -6) or grease, D00633 (Assemblies 256A3210-7, -8) to the seal (105) lips.

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(50) Coat the entire shank and threads of the bolts (65) with compound, C00913, except bolt tips.

(51) Apply a thin film of compound, C00913 to the faying surface of the retainer (75) flange between the outer profile and approximately 0.05 inch from the fillet radius. Attach the retainer (75) to the housing assembly (200) with the bolts (65) and washers (70).

(52) Put grease, D00633 in the space above the seal (105) and between the seal ring (55) and retainer (75) as shown in ASSEMBLY, Figure 701.

(53) Lubricate the sleeve (30) and coupling (45) with grease, D00633 (SOPM 20-50-07) and install with the seal (50) and shield (60) on the pinion assembly (145).

(54) Install the packing (40) on the bolt (35) with grease, D00633 (SOPM 20-50-06).

(55) Apply grease, D00633 to faying surface of the bolt (35) and install in the pinion assembly (145). Apply the coupling sleeve wrench, SPL-5384 to hold the coupling sleeve (30) and tighten the bolt to 600-720 lb-in. above run-on torque.

(56) Install the cap (20) on the housing assembly (200).

(a) Install the packing (25) on the cap (20) with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

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(b) Coat entire shank and threads of the bolts (10) with compound, C00913, except bolt tips.

(c) Lubricate the housing assembly (200) bore with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

(d) Apply a thin film of compound, C00913 to the faying surface of the cap (20) flange between the outer profile and approximately 0.05 inch from the fillet radius. Attach the cap (20) to the housing assembly (200) with the bolts (10) and washers (15).

(57) Install the yoke assembly (395).

(a) Install the spacer (375) and the shaft (380) in the lug end of the shaft assembly (625).

(b) Lubricate the nut (365) with grease, D00633.

(c) Install the yoke assembly (395) with the shaft (370), adapter (385) and nut (365).

(d) Tighten the nut (365) to 440-550 lb-in. above run-on torque.

(e) Secure the U-joint assembly in foam packing or equivalent to prevent damage during shipment and storage.

(58) Fill the transmission assembly with fluid, D00467 or Brayco 795 fluid, D00590.

(a) Put the transmission in the position shown in ASSEMBLY, Figure 702, and fill the unit with fluid, D00467 or Brayco 795 fluid, D00590 to the filler hole.

(b) Install the plug and bleeder (190).

(c) Set the transmission so that the output shaft points up.

(d) Turn the output shaft to remove air caught by the fluid, D00467 or Brayco 795 fluid, D00590. Operate the trip indicator plunger, if installed.

(e) Put the transmission back in the initial position. Remove the plug and bleeder, and fill the unit with fluid, D00467 or Brayco 795 fluid, D00590 to the filler hole.

(59) Install the plug and bleeder (190) in the housing assembly (200).

(a) Install the packing (195) on the plug and bleeder with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

(b) Install the plug and bleeder in the housing assembly (200) and tighten to 110-130 lb-in. above run-on torque.

(60) Repair damaged surfaces as necessary on the caps (20, 310), housings (200, 695), retainers (90, 270, 620), covers (410, 520), and torque brake (255) and apply one coat of Brayco 795 fluid, D00590 (SOPM 20-41-02) to bare surfaces except as noted in ASSEMBLY, Figure 701.

(61) Install the markers (720A, 722A, 725, 730) with urethane adhesive, A50055 or adhesive, A00028 (SOPM 20-50-12). Make sure that all of the marker faying surface has adhesive coverage.

(62) Install the lockwire, G50347 using the double-twist method (SOPM 20-50-02) as shown in ASSEMBLY, Figure 701, for the bolts (80, 225, 300, 505, 510) and plugs (190).

(63) Lubricate the fittings (390) in the shafts (370, 380) with grease, D00633 (SOPM 20-50-07).

(64) Do a test of the unit as specified in the transmission assembly test procedures (TESTING AND FAULT ISOLATION)).

3. Storage

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00467	Fluid - Landing Gear Shock Strut	BMS3-32, Type II
D00590	Fluid - Flap Drive System - Brayco 795	

B. References

Reference	Title
SOPM 20-60-03	LUBRICANTS

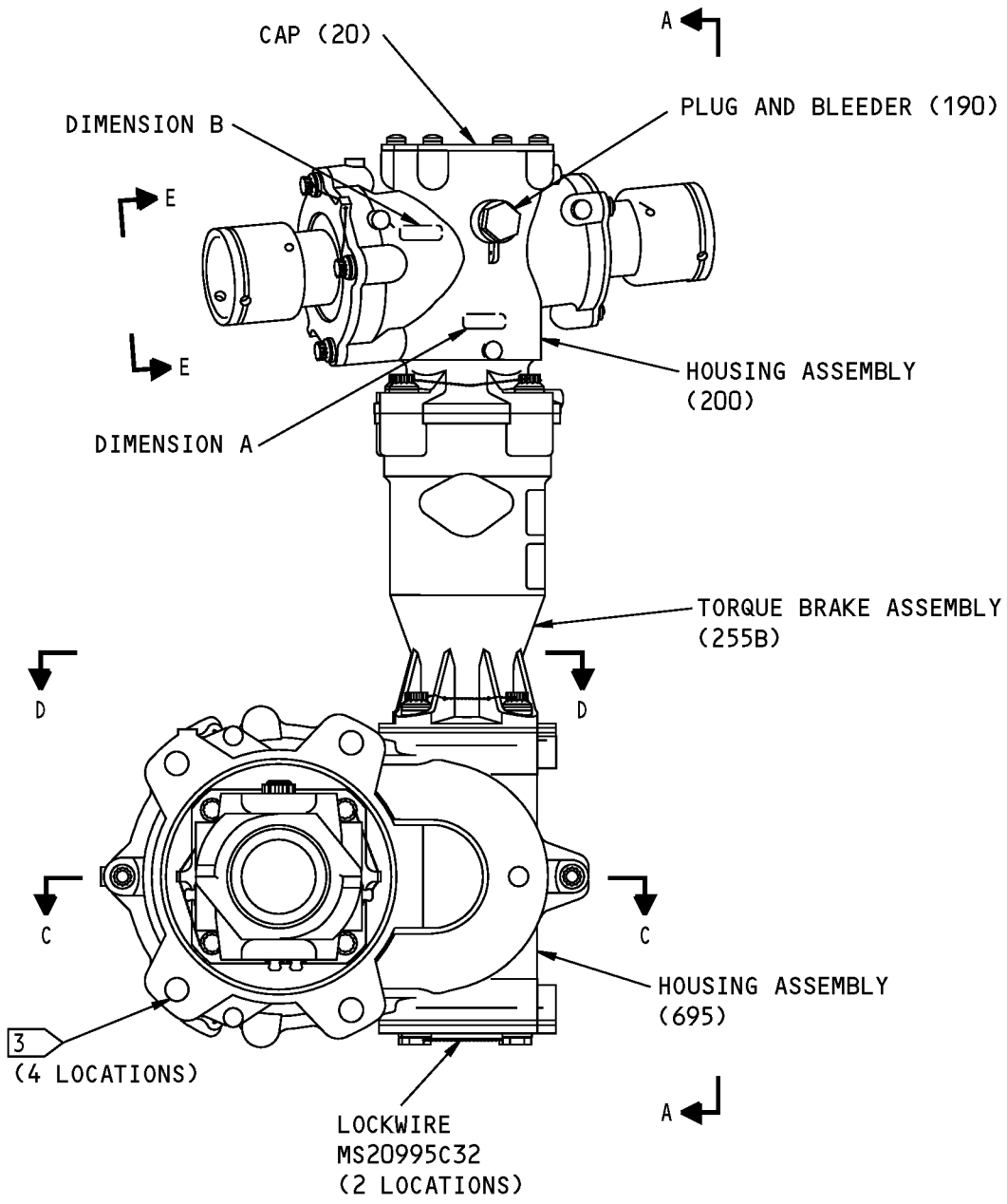
C. Procedure

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

(1) Make sure the unit is filled to the correct level with fluid, D00467 or Brayco 795 fluid, D00590, as applicable.

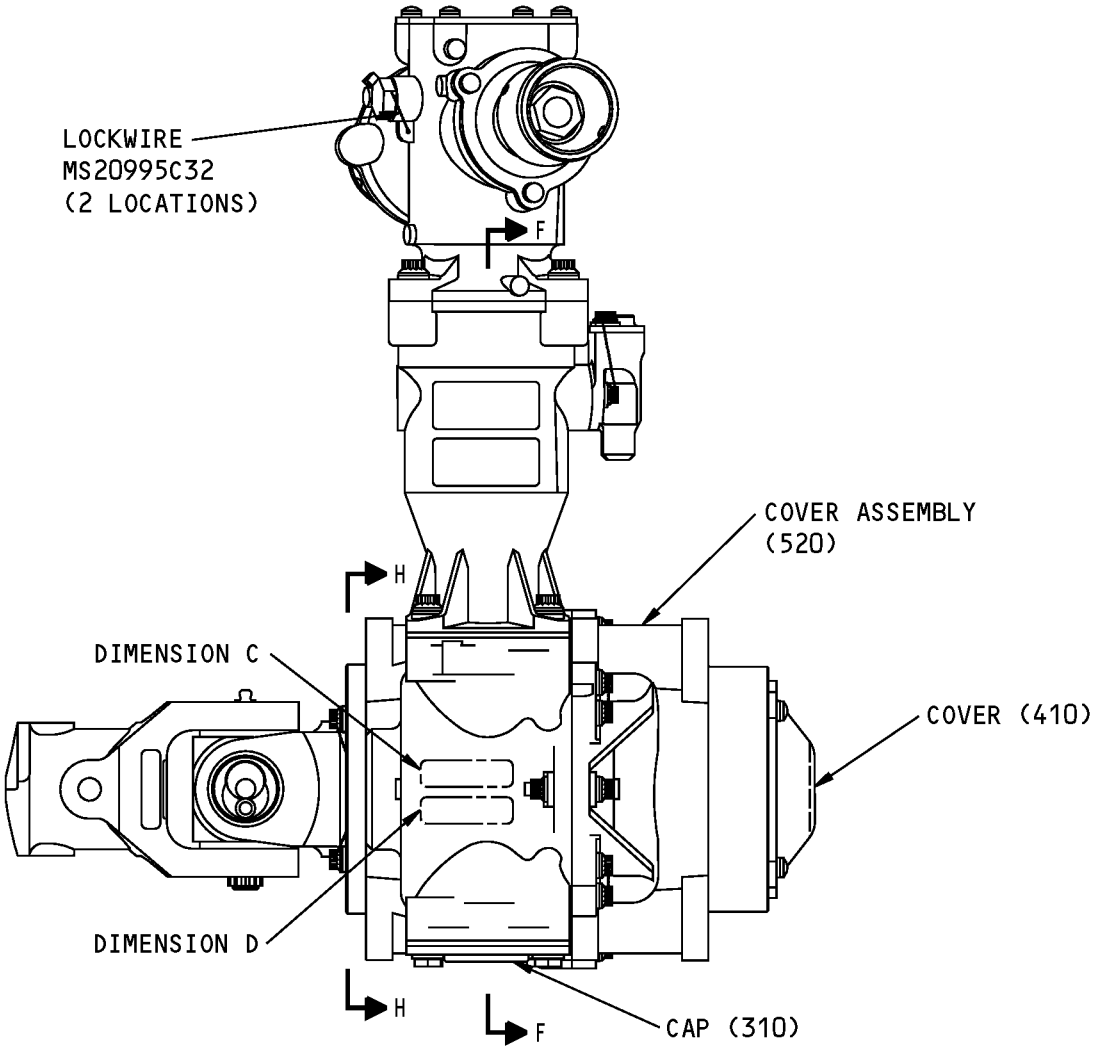
(2) Cover the top vent of the transmission assembly with masking tape after assembly to prevent introduction of solvents, contaminants, or dust in the unit.

(3) Use standard industry practices and information contained in to store the transmission assembly.



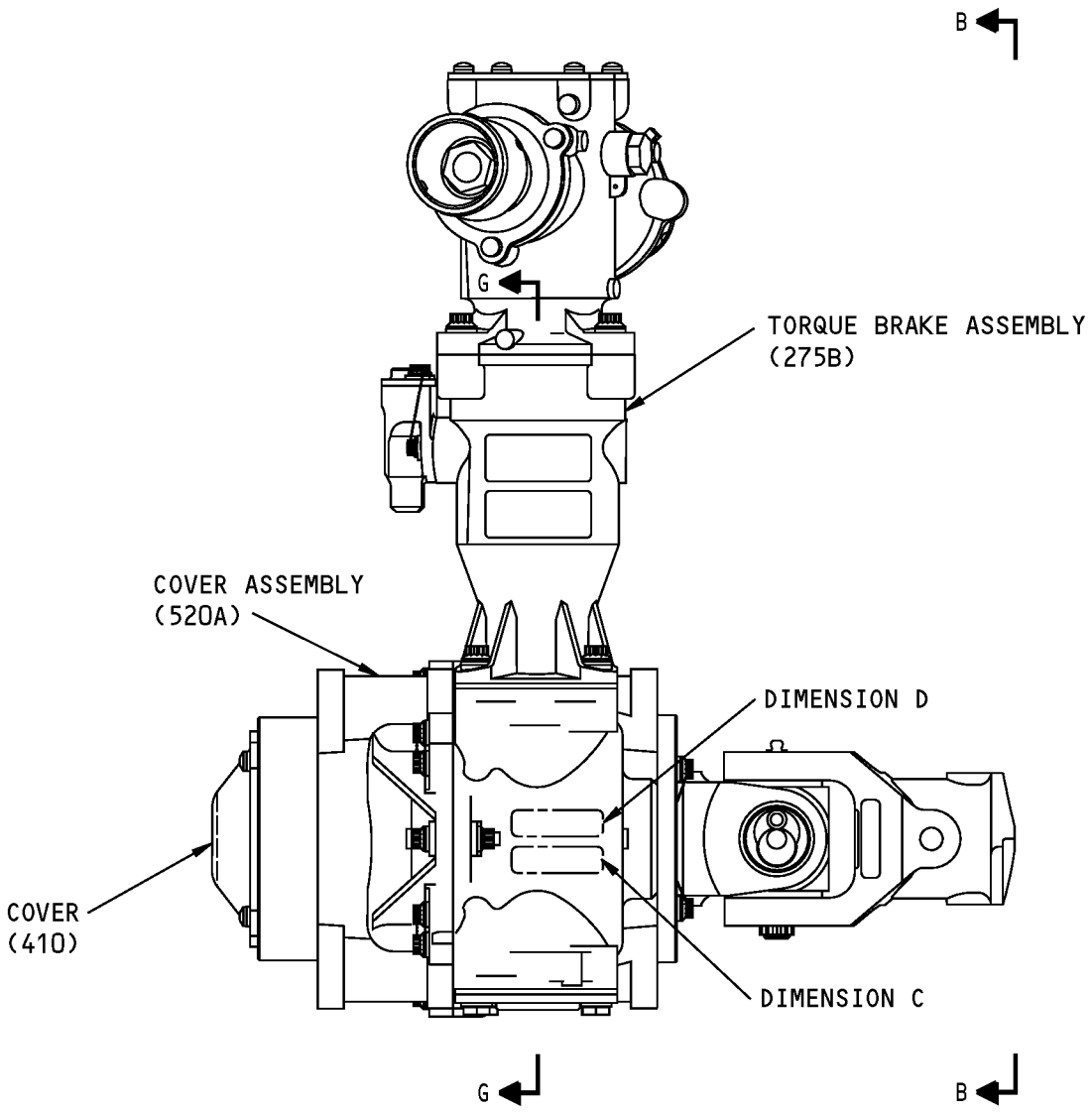
TRANSMISSION ASSEMBLY NO. 2
256A3210-5 SHOWN
256A3210-3,-7 SIMILAR

Assembly Details
Figure 701 (Sheet 1 of 12)



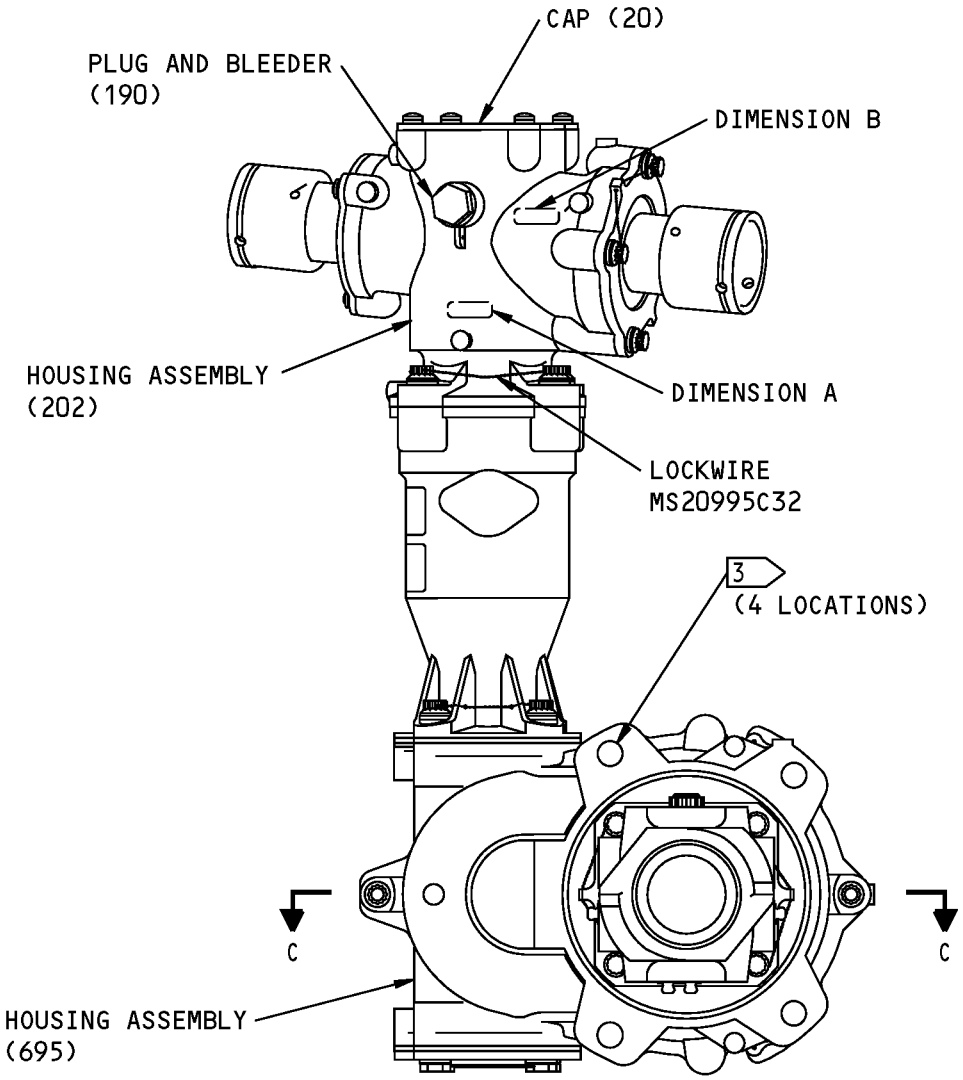
A–A

Assembly Details
Figure 701 (Sheet 2 of 12)



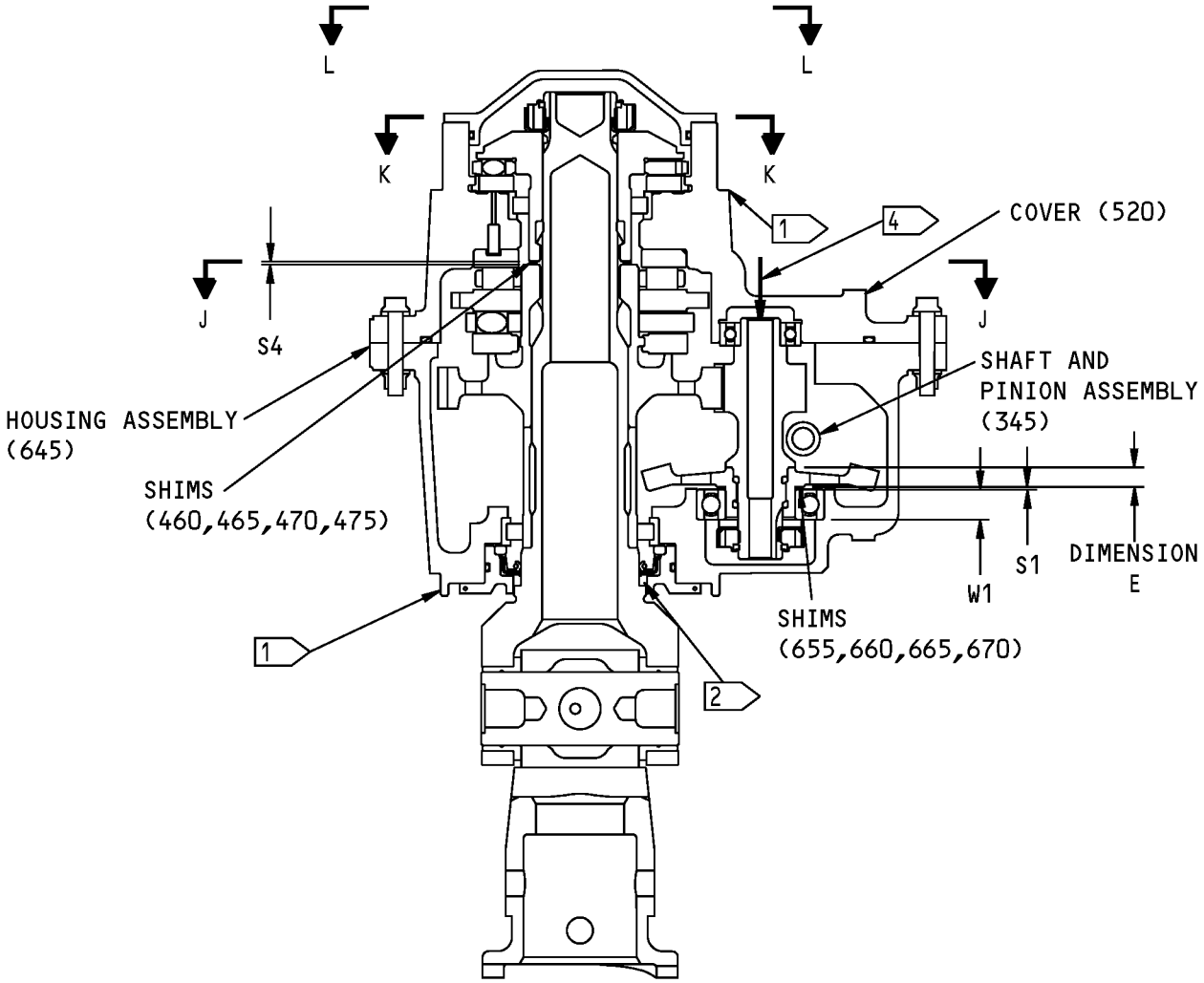
TRANSMISSION ASSEMBLY NO. 7
256A3210-6 SHOWN
256A3210-4,-8 SIMILAR

Assembly Details
Figure 701 (Sheet 3 of 12)



B–B

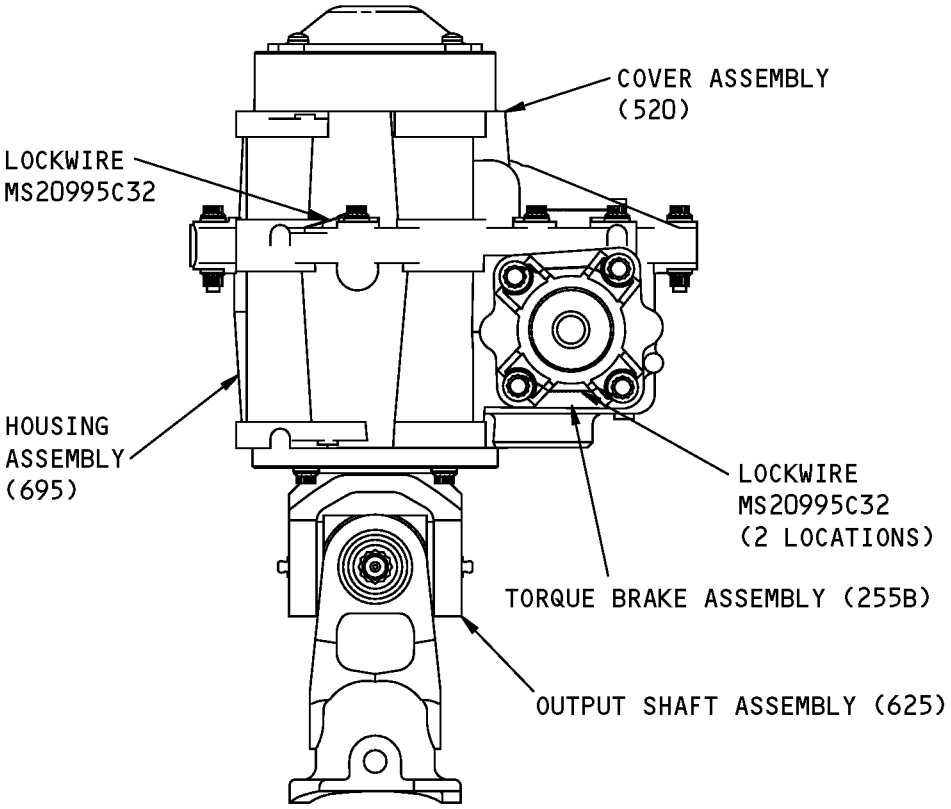
Assembly Details
Figure 701 (Sheet 4 of 12)



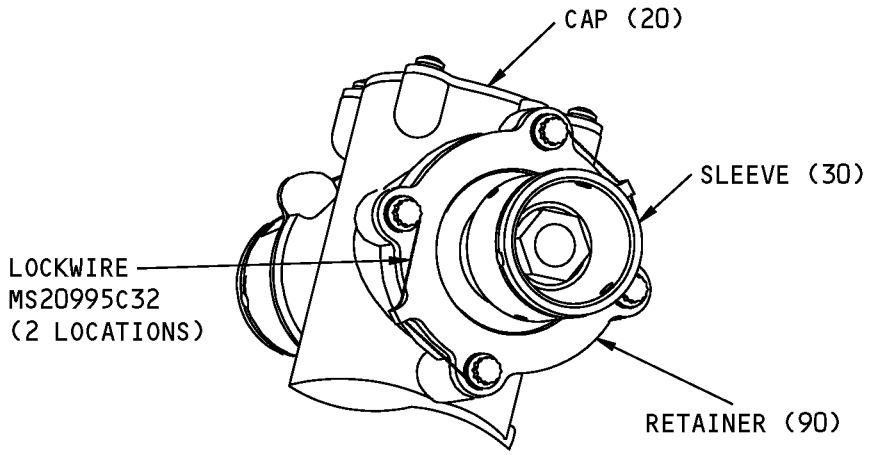
C–C

256A3210–3

Assembly Details
Figure 701 (Sheet 5 of 12)

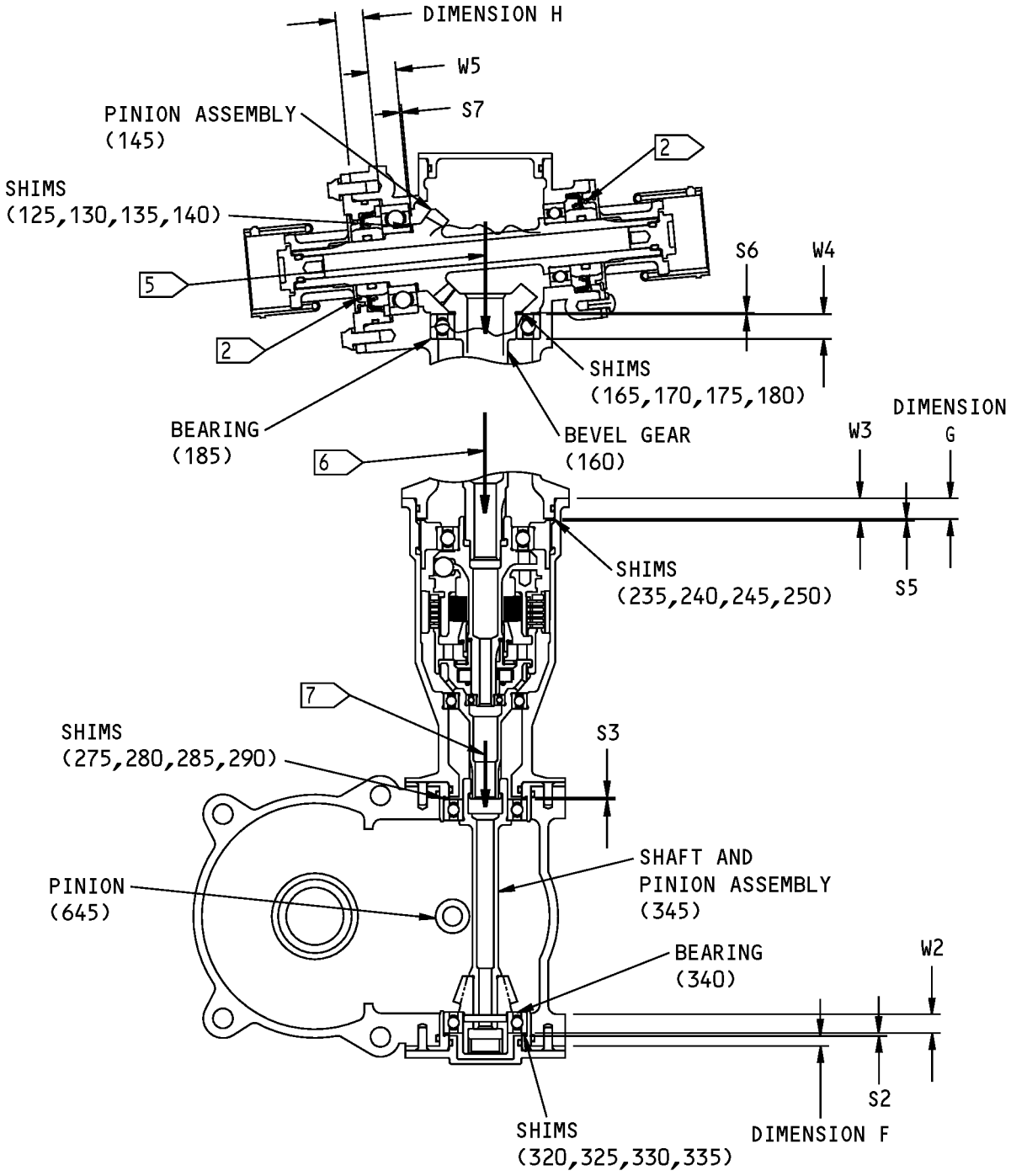


D–D



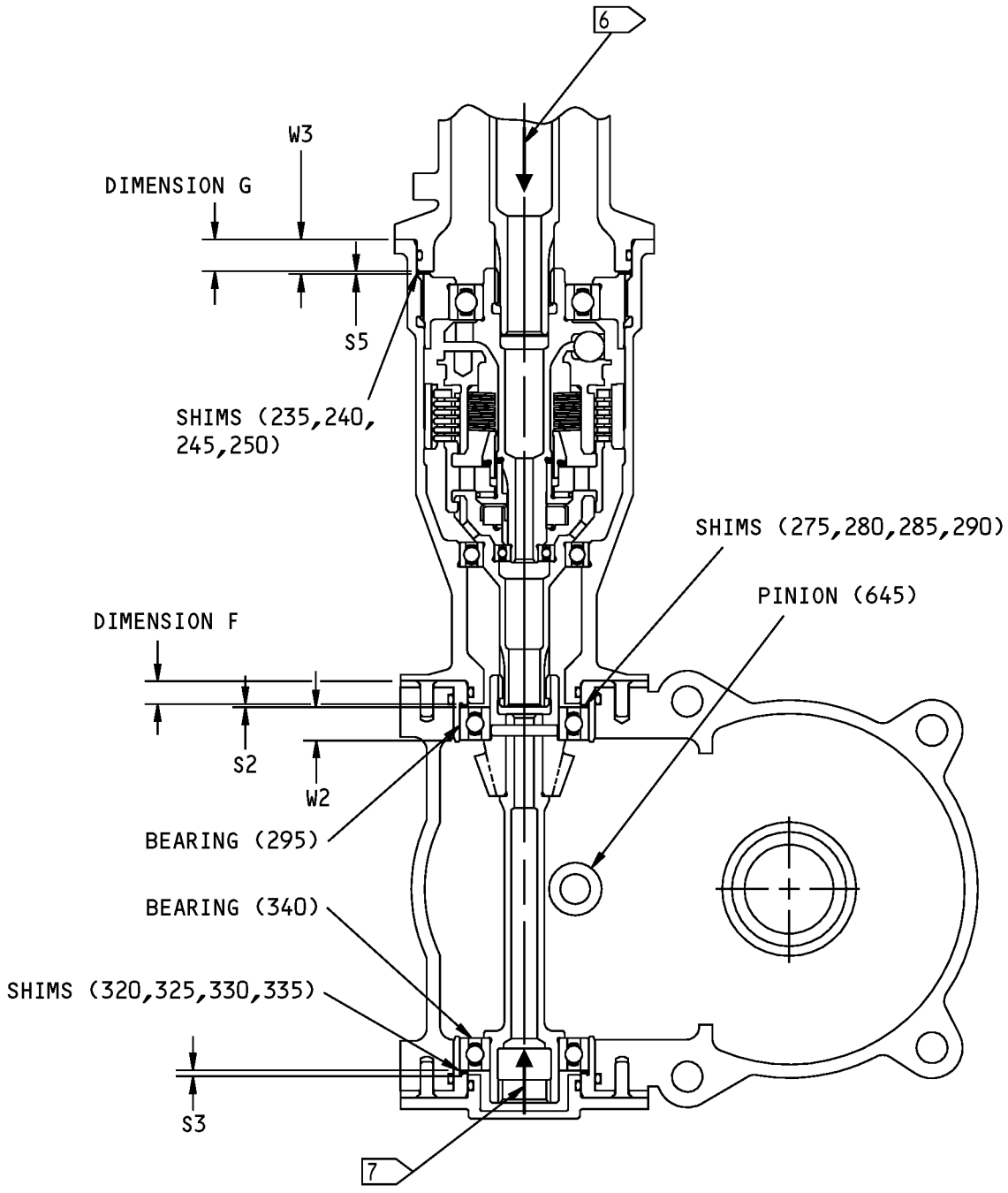
E–E

Assembly Details
Figure 701 (Sheet 6 of 12)



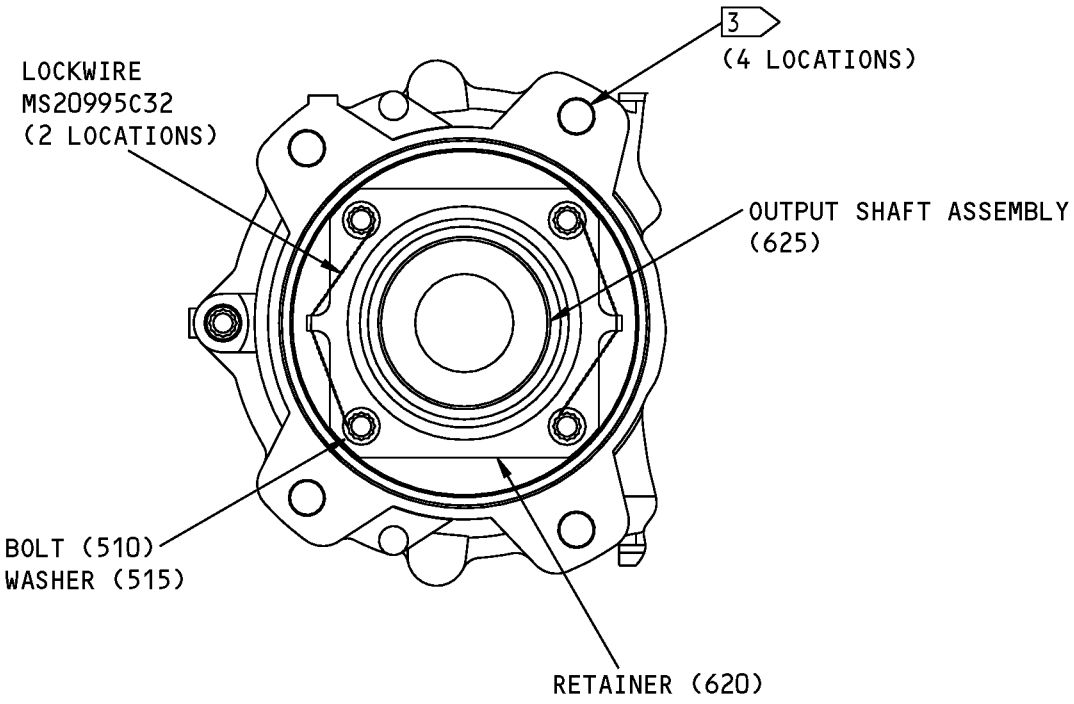
F–F

Assembly Details
Figure 701 (Sheet 7 of 12)

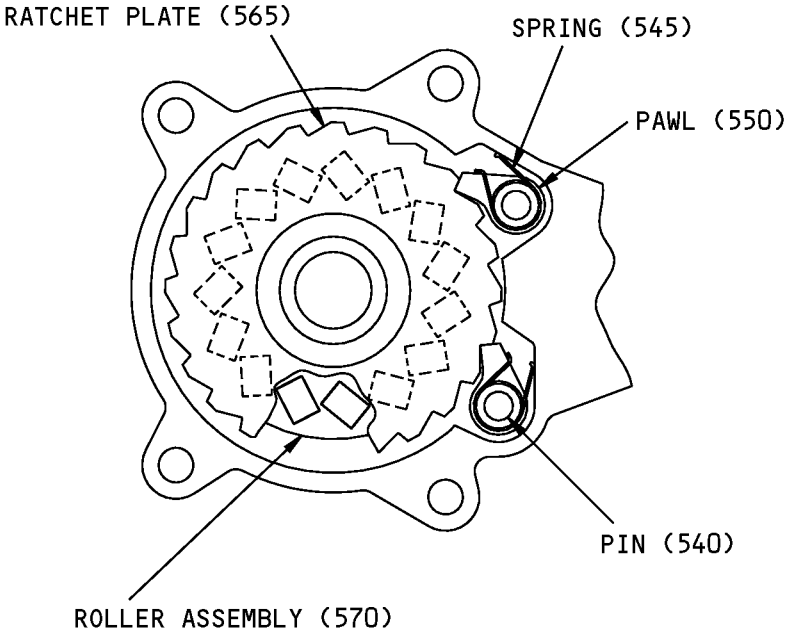


G–G

Assembly Details
Figure 701 (Sheet 8 of 12)

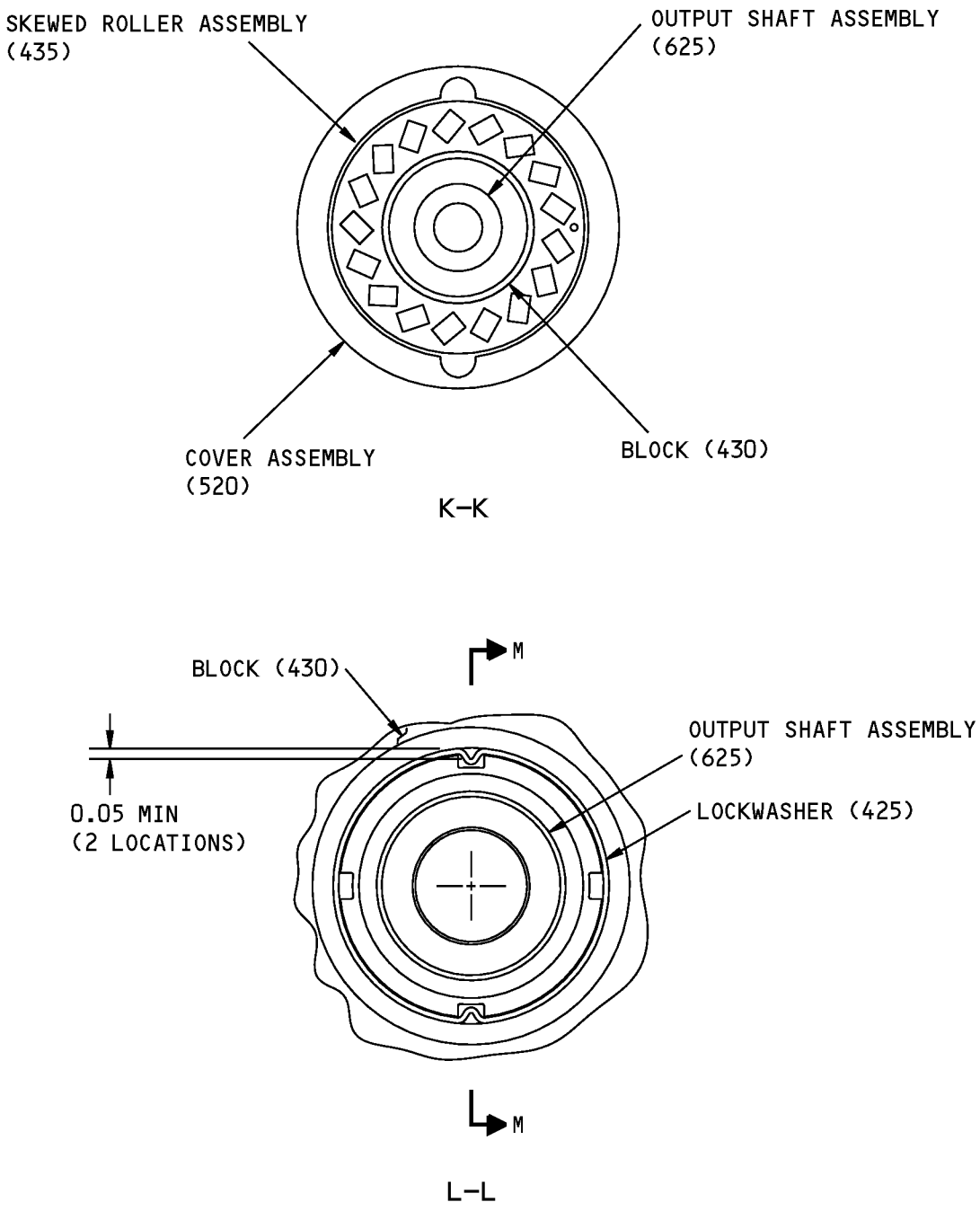


H–H

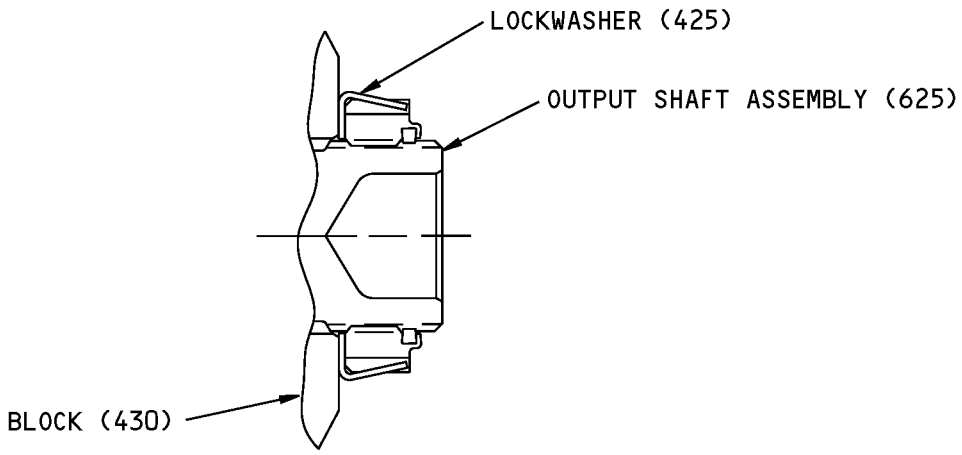


J–J

Assembly Details
Figure 701 (Sheet 9 of 12)



Assembly Details
Figure 701 (Sheet 10 of 12)



M–M

1 OMIT PRIMER FROM THIS SURFACE

2 FILL CAVITY WITH BMS 3–33 SEALANT

3 OMIT PRIMER FROM HOLE THROUGH HOUSING ASSEMBLY (695) AND COVER ASSEMBLY (520)

4 DIRECTION OF AXIAL LOAD APPLIED TO PINION (645) FOR HYPOID/PINION BACKLASH TEST

5 DIRECTION OF AXIAL LOAD APPLIED TO BEVEL GEAR (160) FOR BEVEL GEAR BACKLASH TEST

6 DIRECTION OF LOAD APPLIED TO 256A3168 STATOR HOUSING TO DETERMINE DIMENSION W3.

7 DIRECTION OF AXIAL LOAD APPLIED TO SHAFT AND PINION ASSEMBLY (345) FOR HYPOID/PINION BACKLASH TEST

Assembly Details
Figure 701 (Sheet 11 of 12)

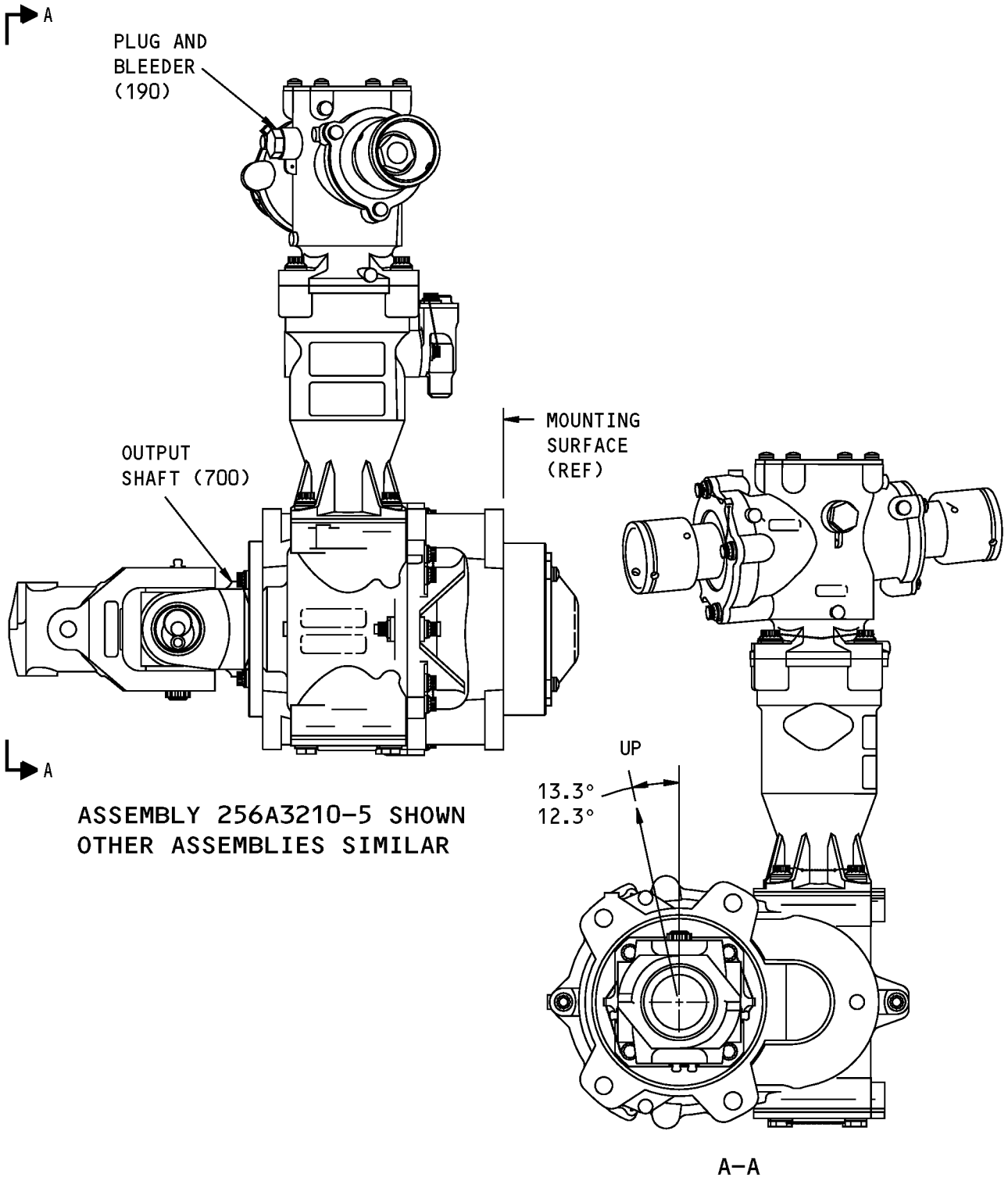
SHIM THICKNESS CALCULATION

SHIM THICKNESS S1* = C - W1 - 0.491 - E
SHIM THICKNESS S2* = D - F - W2 - 2.135
SHIM THICKNESS S3 = AS REQUIRED TO OBTAIN 0.003-0.005 AXIAL BACKLASH OF SHAFT (345) WITH A 5-15 LB AXIAL LOAD.
SHIM THICKNESS S4 = AS REQUIRED TO OBTAIN 0.005-0.012 AXIAL BACKLASH OF SHAFT ASSEMBLY (625) WITH A 40-50 LB AXIAL LOAD.
SHIM THICKNESS S5* = W3 - G - 0.005
SHIM THICKNESS S6* = A - W4 - 1.350
SHIM THICKNESS S7* = B - H - W5 - 1.567

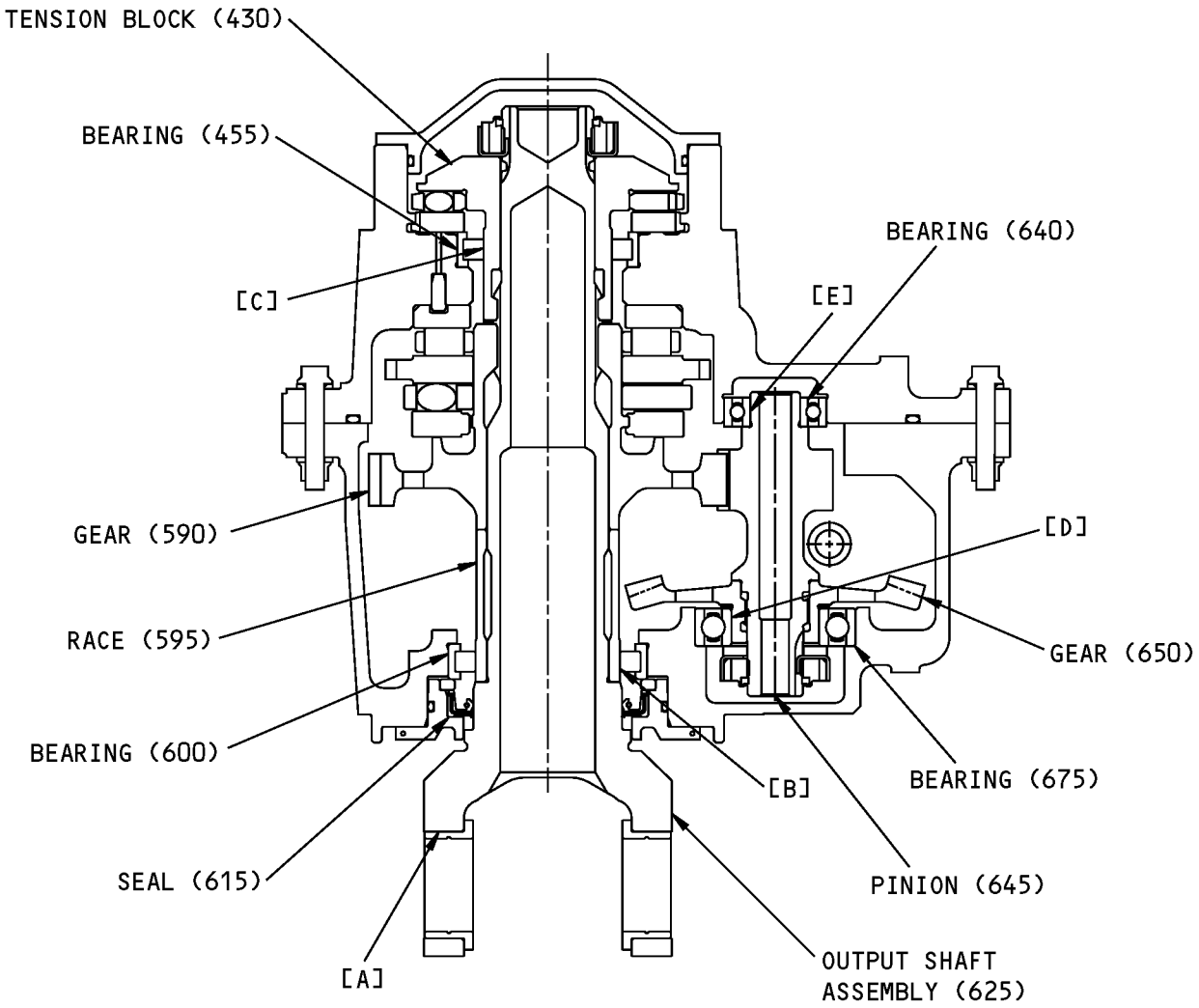
WHERE: A = DIMENSION A ENGRAVED ON THE HOUSING ASSEMBLY (200)
B = DIMENSION B ENGRAVED ON THE HOUSING ASSEMBLY (200)
C** = DIMENSION C MARKED ON THE HOUSING ASSEMBLY (695)
D** = DIMENSION D MARKED ON THE HOUSING ASSEMBLY (695)
E = DIMENSION E IS THE WIDTH OF THE GEAR (650)
F** = DIMENSION F IS THE DISTANCE FROM FLANGE TO THE SHOULDER ON THE RETAINER (270) TO THE NEAREST 0.001
G = DIMENSION G IS THE DISTANCE FROM FLANGE TO THE SHOULDER ON THE HOUSING ASSEMBLY (200) TO THE NEAREST 0.001
H = DIMENSION H IS THE DISTANCE FROM THE FLANGE ON THE RETAINER (90) TO THE SPACER (110) TO THE NEAREST 0.001 INCH
W1** = DIMENSION W1 IS THE BEARING (675) WIDTH INNER RACE TO OUTER RACE
W2** = DIMENSION W2 IS THE BEARING (295) WIDTH INNER RACE TO OUTER RACE
W3 = DIMENSION W3 IS THE ACTUAL DISTANCE FROM THE TORQUE BRAKE HOUSING FLANGE TO THE 256A3168 STATOR HOUSING (CMM 27-55-84, ITEM 155) MEASURED TO THE NEAREST 0.001 INCH. THIS DISTANCE IS MEASURED WITH A 25-35 LB LOAD APPLIED TO THE 256A3168 STATOR HOUSING IN THE DIRECTION SHOWN IN FIGURE 701.
W4 = DIMENSION W4 IS THE BEARING (185) WIDTH INNER RACE TO OUTER RACE
W5 = DIMENSION W5 IS THE BEARING (115) WIDTH INNER RACE TO OUTER RACE

* SHIM THICKNESS TO BE WITHIN ±0.0015 OF CALCULATED VALUE
** DIMENSIONS MEASURED AT DIFFERENT LOCATIONS FOR 256A3210-1 AND -2 ASSEMBLIES

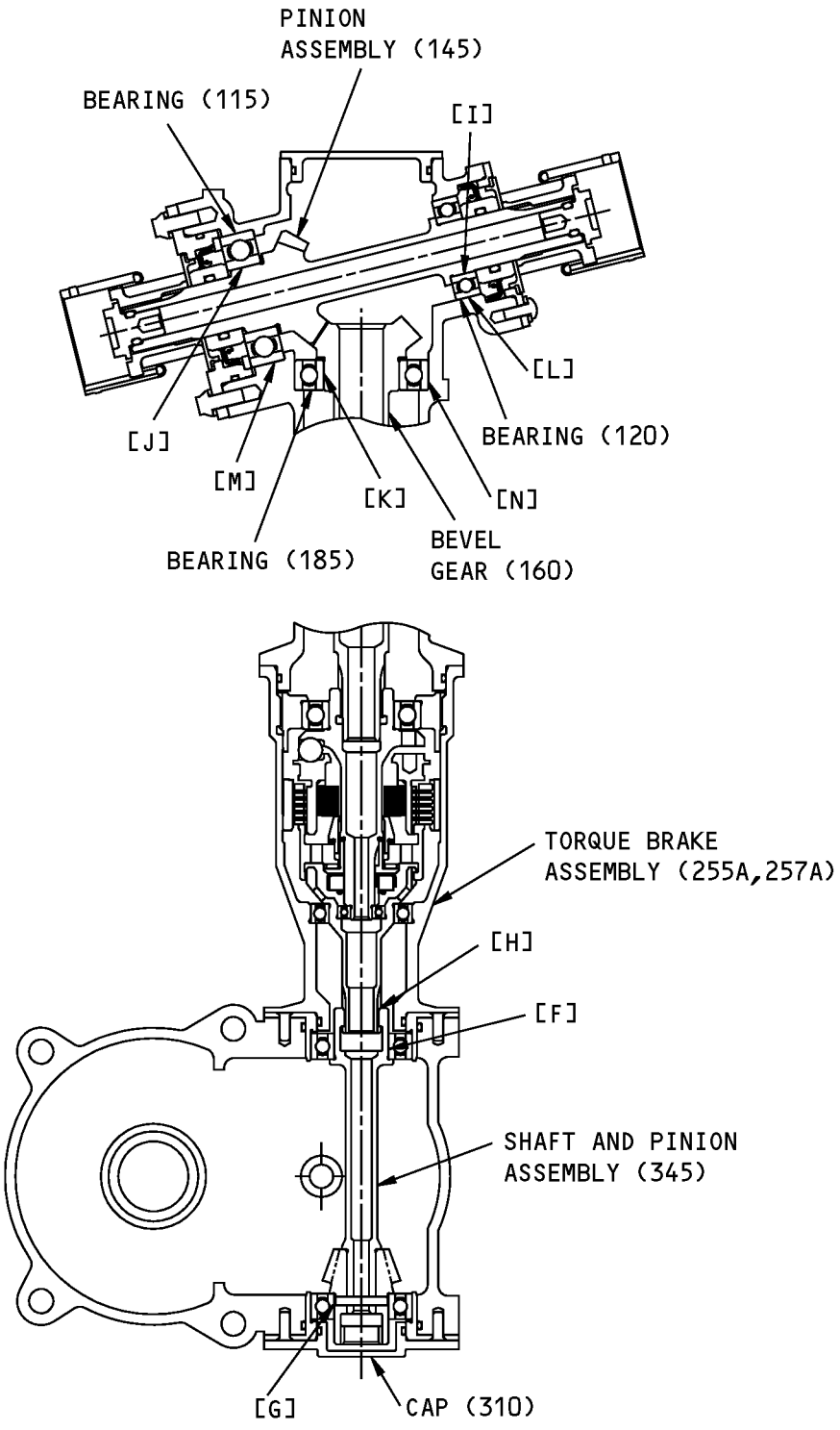
Assembly Details
Figure 701 (Sheet 12 of 12)



Transmission Oil Fill Procedure
Figure 702



Fits and Clearances
Figure 801 (Sheet 1 of 4)



Fits and Clearances
Figure 801 (Sheet 2 of 4)

REF LETTER	REF IPL FIG. 1, MATING ITEM NO.	DESIGN DIMENSION*				SERVICE WEAR LIMIT*		
		DIMENSION		ASSEMBLY CLEARANCE 1		DIMENSION		MAXIMUM CLEARANCE
		MIN	MAX	MIN	MAX	MIN	MAX	
[A]	ID 635 OD 630	1.4375 1.4384	1.4383 1.4389	 -0.0014	 -0.0001			
[B]	ID 600 OD 595	TBD 1.9487	TBD 1.9485	TBD	TBD			
[C]	ID 455 OD 430	TBD 1.7316	TBD 1.7320	TBD	TBD			
[D]	ID 675 OD 650	1.1807 1.1700	1.1811 1.1900	-0.0093	0.0111			
[E]	ID 640 OD 645	0.6690 0.6692	0.6693 0.6695	-0.0005	0.0001			
[F]	ID 295 OD 360	0.9839 0.9836	0.9843 0.9839	-0.0000	0.0007			
[G]	ID 295 OD 355	0.9839 0.9836	0.9843 0.9839	0.0000	0.0007			
[H]	ID 345 3 OD 255A,257A 2 4	0.7836	0.5563					
[I]	ID 120 OD 145	0.9839 0.9835	0.9843 0.9840	-0.0001	0.0008			
[J]	ID 115 OD 145	1.1807 1.1803	1.1811 1.1808	-0.0001	0.0008			
[K]	ID 185 OD 160	1.3775 1.3781	1.3780 1.3785	0.0010	-0.0001			

* ALL DIMENSIONS ARE IN INCHES

Fits and Clearances
Figure 801 (Sheet 3 of 4)

REF LETTER	REF IPL FIG. 1, MATING ITEM NO.	DESIGN DIMENSION*				SERVICE WEAR LIMIT*		
		DIMENSION		ASSEMBLY CLEARANCE 1		DIMENSION		MAXIMUM CLEARANCE
		MIN	MAX	MIN	MAX	MIN	MAX	
[L]	ID 215	1.8506	1.8513	-0.0002	0.0014			
	OD 120	1.8499	1.8504					
[M]	ID 215	2.4411	2.4419	0.0002	0.0015			
	OD 115	2.4404	2.4409					
[N]	ID 215	2.4411	2.4419	0.0002	0.0015			
	OD 185	2.4404	2.4409					

* ALL DIMENSIONS ARE IN INCHES

1 NEGATIVE NUMBERS SHOW INTERFERENCE FIT

2 OUTPUT SHAFT OF TORQUE BRAKE ASSEMBLY

3 MEASUREMENT BETWEEN TWO 0.0720 DIAMETER PINS

4 MEASUREMENT OVER TWO 0.0800 DIAMETER PINS

5 DELETED

6 DELETED

Fits and Clearances
Figure 801 (Sheet 4 of 4)

REF IPL		NAME	TORQUE*	
FIG. NO.	ITEM NO.		POUND-INCHES	POUND-FEET
1	35	Bolt	600-720	
1	190	Plug and Bleeder	110-130	
1	365	Nut	440-550	
1	420	Nut	1600-1900	
1	690,690A	Nut	310-370	
1	690B	Nut	800-950	

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

Torque Table
Figure 802

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

1. General

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

NOTE: Equivalent substitutes may be used.

Special Tools

Reference	Description	Part Number	Supplier
SPL-4720	Test Equipment - Leakage Test	J27054-1	81205
SPL-5384	Wrench - Coupling Sleeve Flap Actuation	C27041-1	81205
SPL-5385	Seal Installation Equipment, TE Flap Drive	C27043-16	81205
SPL-5391	TE Flap Transmission, AFT U-Joint and BallScrew Test Equipment	C27072-92 C27072-93	81205 81205
SPL-5447	Bearing Width Measurement Equipment	J27057-22	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

ILLUSTRATED PARTS LIST

1. Introduction

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

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

1 2 3 4 5 6 7

. Assembly

. Attaching parts for assembly

. . Detail parts for assembly

. . Subassembly

. . Attaching parts for subassembly

. . . Detail parts for subassembly

. . . Sub-subassembly

. . . Attaching parts for subassembly

. . . . . Details parts for sub-subassembly

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

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

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

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

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

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

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

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

H. Interchangeable Parts

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

VENDOR CODES

Code	Name
0FKM1	ALEMITE CORP 167 ROWLAND DR JOHNSON CITY, TENNESSEE 37601
15653	ALCOA GLOBAL FASTENERS INC DIV KAYNAR PRODUCTS 800 S STATE COLLEGE BLVD FULLERTON, CALIFORNIA 92831-3001 FORMERLY VK6405 MICRODOT AEROSP LTD; FORMERLY KAYNAR TECH FORMERLY FAIRCHILD FASTENERS KAYNAR DIV
21335	TIMKEN US CORPORATION DIV FAFNIR 336 MECHANIC STREET LEBANON, NH 03766-0267 FORMERLY FAFNIR BRG AND TEXTRON INC FAFNIR DIV IN NEW BRITAIN, CONNECTICUT ; FORMERLY TORRINGTON CO THE SPECIAL PRODUCTS DIV SUB OF THE INGERSOLL-RAND CO V8D210 FORMERLY TORRINGTON CO FAFNIR BEARING DIV IN TORRINGTON, CT
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

Code	Name
72962	HARVARD INDUSTRIES INC 3 WERNER WAY SUITE 210 LEBANON, NEW JERSEY 08833 FORMERLY ESNA V7A079 FORMERLY ELASTIC STOP NUT IN UNION, NJ
78118	SPLIT BALL BEARING DIV OF MPB CORP HIGHWAY 4 LEBANON, NEW HAMPSHIRE 03766-7301
80648	Replaced: [V80648] TORRINGTON CO SEE V80657 Replaced: [V80657] TORRINGTON CO THE BEARINGS DIV SEE V60380 by Code: Name and Address below 60380: TORRINGTON CO BEARINGS DIV SUBSIDIARY OF INGERSOLL-RAND CORP 59 FIELD STREET PO BOX 1008 TORRINGTON, CONNECTICUT 06790-1008 FORMERLY TORRINGTON BEARING COMPANY
83086	NEW HAMPSHIRE BALL BEARING, INC HITECH DIVISION 172 JAFFREY ROAD PETERBOROUGH, NEW HAMPSHIRE 03458
91251	FREUDENBERG-NOK GENERAL PARTNERSHIP PLEASANT STREET PO BOX B BRISTOL, NEW HAMPSHIRE 03222-0501
92215	FAIRCHILD IND INC FAIRCHILD AEROSPACE FASTENER DIV 3010 W LOMITA BLVD TORRANCE, CALIFORNIA 90505-5102 FORMERLY VOI-SHAN IN CULVER CITY, CALIF
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

Code	Name
97928	Replaced: [V97928] SEE V17446 HUCK INTL by Code: Name and Address below 17446: HUCK INTL INC AEROSPACE FASTENER DIV 900 WATSON CENTER ROAD CARSON, CALIFORNIA 90745-4201 FORMERLY V32134 REXNORD INC; FORMERLY V97928 HUCK INTL
U1068	DOWTY SEALS LTD ASHCHURCH, TEWKESBURY GLOS GL20 8JS ENGLAND

NUMERICAL INDEX

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
1002423607100		1	105	2
		1	105A	2
1002423615800		1	615	1
		1	615A	1
102LH9074-12		1	690B	1
1728B		1	390	4
251N4103-1		1	375	1
251N4105-1		1	400	2
		1	630	2
251N4117-1		1	550	2
251N4117-3		1	550A	2
251N4119-1		1	545	2
251N4120-1		1	565	1
251N4135-1		1	370	1
251N4146-1		1	555	4
251N4147-1		1	570	1
251N4149-1		1	380	1
251N4150-1		1	385	1
251N4151-1		1	580	1
256A3133-1		1	620	1
256A3133-2		1	620A	1
256A3134-1		1	270	2
256A3135-1		1	310	1
256A3136-1		1	625	1
		1	625B	1
256A3136-2		1	635	1
256A3136-4		1	625A	1
256A3136-5		1	635A	1
256A3137-1		1	590	1
256A3138-1		1	645	1
256A3138-2		1	645A	1
256A3139-1		1	650	1
256A3141-1		1	355	1
256A3142-1		1	360	1

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
256A3143-1		1	345	1
256A3144-1		1	595	1
256A3145-1		1	585	1
256A3147-1		1	540	2
256A3148-1		1	460	AR
256A3148-10		1	280	AR
		1	325	AR
256A3148-11		1	285	AR
		1	330	AR
256A3148-12		1	290	AR
		1	335	AR
256A3148-13		1	235	AR
256A3148-14		1	240	AR
256A3148-15		1	245	AR
256A3148-16		1	250	AR
256A3148-2		1	465	AR
256A3148-25		1	125	AR
		1	655	AR
256A3148-26		1	130	AR
		1	660	AR
256A3148-27		1	135	AR
		1	665	AR
256A3148-28		1	140	AR
		1	670	AR
256A3148-29		1	165	AR
256A3148-3		1	470	AR
256A3148-30		1	170	AR
256A3148-31		1	175	AR
256A3148-32		1	180	AR
256A3148-4		1	475	AR
256A3148-9		1	275	AR
		1	320	AR
256A3149-1		1	350	1
256A3151-3		1	255A	1
256A3151-4		1	257A	1

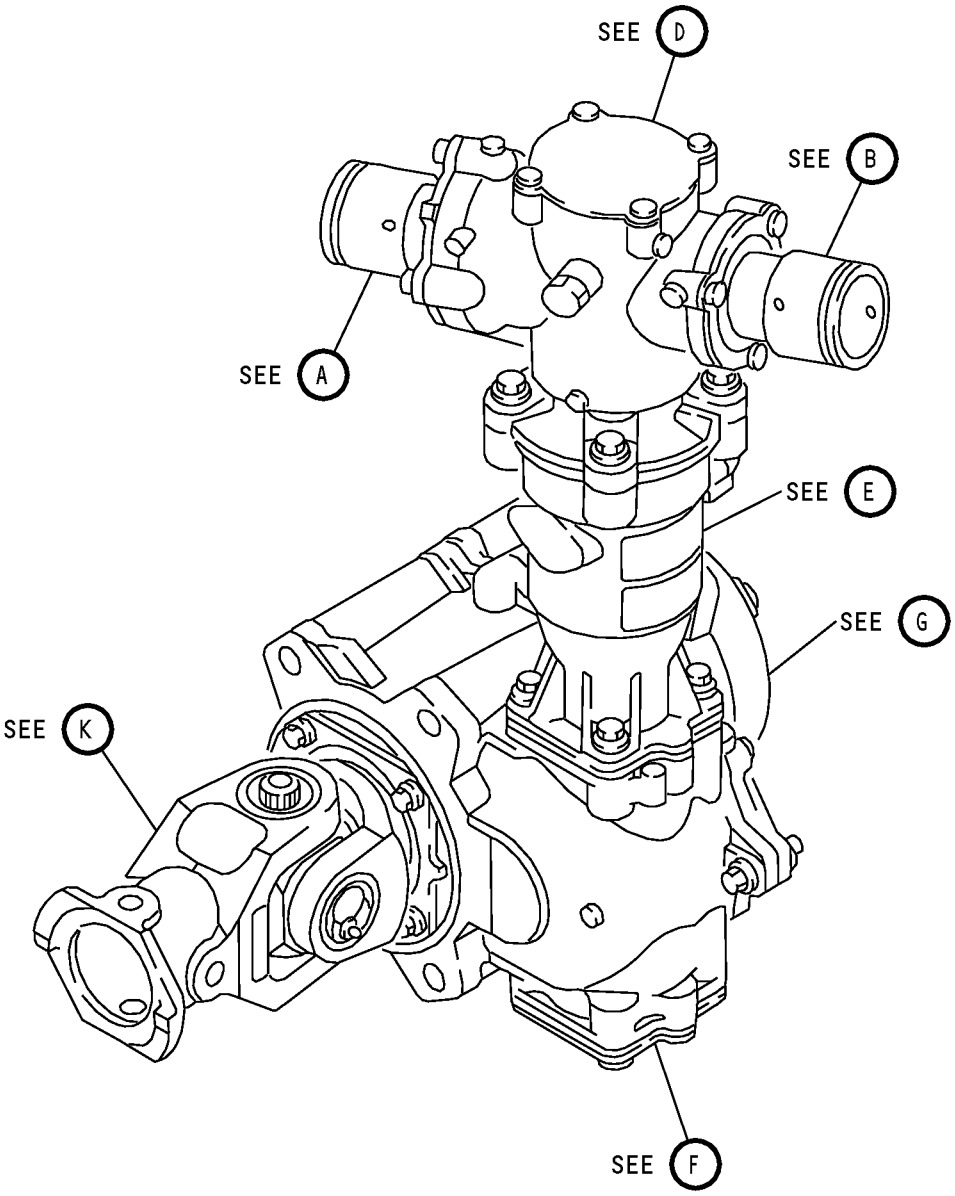
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
256A3151-5		1	255B	1
256A3151-6		1	257B	1
256A3151-7		1	255C	1
256A3151-8		1	257C	1
256A3171-1		1	410	1
256A3172-1		1	430	1
256A3173-1		1	435	1
256A3173-2		1	445	1
256A3175-1		1	425	1
256A3176-1		1	480	1
256A3179-1		1	450	1
256A3182-1		1	60	2
256A3183-1		1	55	2
		1	55B	2
256A3183-10		1	55A	2
256A3185-2		1	110	1
256A3185-4		1	680	1
256A3187-1		1	695	1
256A3187-2		1	715	1
256A3188-1		1	520	1
256A3188-2		1	530	1
256A3188-3		1	520A	1
256A3188-4		1	530A	1
256A3188-5		1	520B	1
256A3188-6		1	530B	1
256A3188-7		1	520C	1
256A3188-8		1	530C	1
256A3192-1		1	395	1
		1	395B	1
256A3192-2		1	405	1
256A3192-4		1	395A	1
256A3192-5		1	405A	1
256A3195-10		1	725	1
256A3195-13		1	730	1
256A3195-33		1	720A	1

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
256A3195-34		1	722A	1
256A3195-41		1	720B	1
256A3195-42		1	722B	1
256A3195-51		1	720C	1
256A3195-52		1	722C	1
256A3210-3		1	1B	RF
256A3210-4		1	5A	RF
256A3210-5		1	1C	RF
256A3210-6		1	5B	RF
256A3210-7		1	1D	RF
256A3210-8		1	5C	RF
256A3221-1		1	200	1
256A3221-2		1	202	1
256A3221-3		1	215	1
256A3221-4		1	217	1
256A3223-1		1	145	1
256A3223-2		1	155B	1
256A3224-1		1	160	1
256A3225-1		1	90	1
256A3225-2		1	90A	1
256A3281-1		1	20	1
256A3741-1		1	45	2
256A3743-1		1	50	2
256A3744-1		1	35	2
256A3745-1		1	30	2
256W3051-12		1	605	1
256W3052-2		1	685	1
256W3054-1		1	527	1
256W3244-1		1	75	1
		1	75A	1
256W3244-2		1	75B	1
52BA029565		1	440A	17
69233SB8D		1	365	1
69235-1216CD		1	690B	1
700-857-2272-99		1	105	2

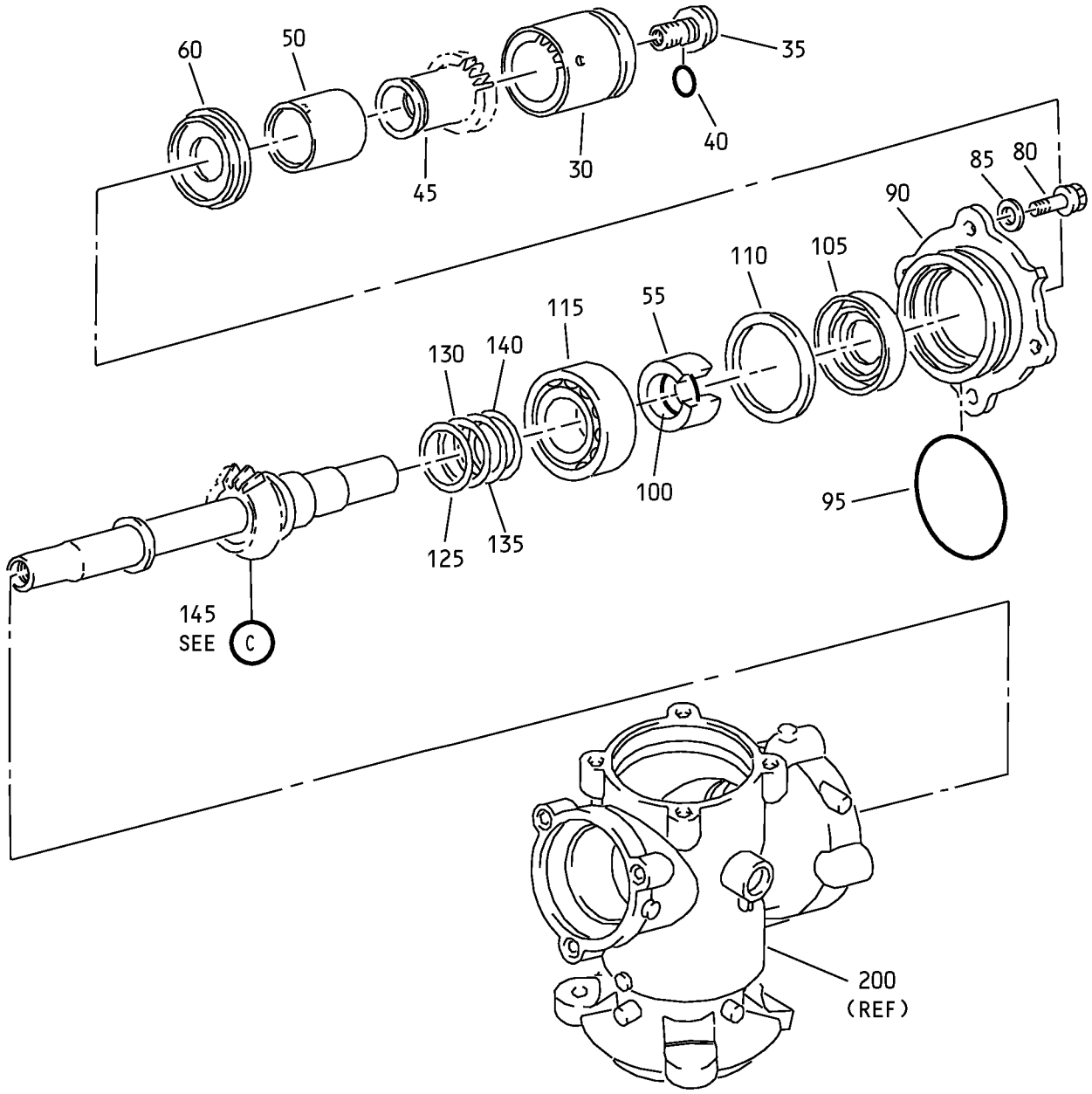
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
		1	105A	2
700-868-8862-99		1	615	1
		1	615A	1
82631-1216		1	690A	1
82631-2012		1	420A	1
AN814-4DL		1	190	1
BACB10AZ30C		1	115	1
BACB10BA17C		1	640	1
BACB10BA25C		1	120	1
		1	295	1
		1	340	1
BACB10BA30C		1	675	1
BACB10BA35C		1	185	1
BACB30LE5HK6		1	225	8
BACB30LE5K6		1	225A	8
BACB30MR4HK3		1	80	4
		1	510	4
BACB30MR4HK8		1	505	6
BACB30MR4K16		1	485	2
BACB30MR4K3		1	80A	4
		1	510A	4
BACB30MR4K8		1	505A	6
BACB30NM5HK4		1	300	4
BACB30NM5K4		1	300A	4
BACB30NT3K2		1	10	4
		1	65	3
		1	407	4
BACB30VF3K1		1	265	4
BACN10HY8M		1	365	1
BACN10JC12CD		1	690B	1
BACN10RF12		1	690A	1
BACN10RF12C		1	690	1
BACN10RF20		1	420A	1
BACN10RF20C		1	420	1
BACW10BN4AC		1	85	4

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
		1	490	2
		1	515	10
BACW10BN4AP		1	495	2
BACW10BP3CD		1	15	4
		1	70	3
		1	408	4
BACW10BP5CD		1	230	8
		1	305	4
BMN4122CPD8-12		1	690B	1
BR9080-12		1	690A	1
BR9080-20		1	420A	1
H51650-12BAC		1	690B	1
HW29872-8		1	365	1
M25988-1-110		1	195	1
M25988-1-127		1	260	2
M25988-1-136		1	315	2
M25988-1-142		1	25	1
M25988-1-145		1	95	1
M25988-1-150		1	220	1
M25988-1-151		1	610	1
M25988-1-153		1	415	1
M25988-1-204		1	40	2
M25988-1-213		1	100	2
M25988-1-259		1	535	1
MS21209F1-15P		1	205	7
		1	525	4
		1	700	4
MS21209F4-15P		1	207	4
		1	705	10
MS21209F5-15P		1	710	8
MS21209F7-10P		1	210	1
MS21209F8-10P		1	150	2
NAS1805-4L		1	500	2
NTH3258		1	560	1
QBR62813		1	575	15

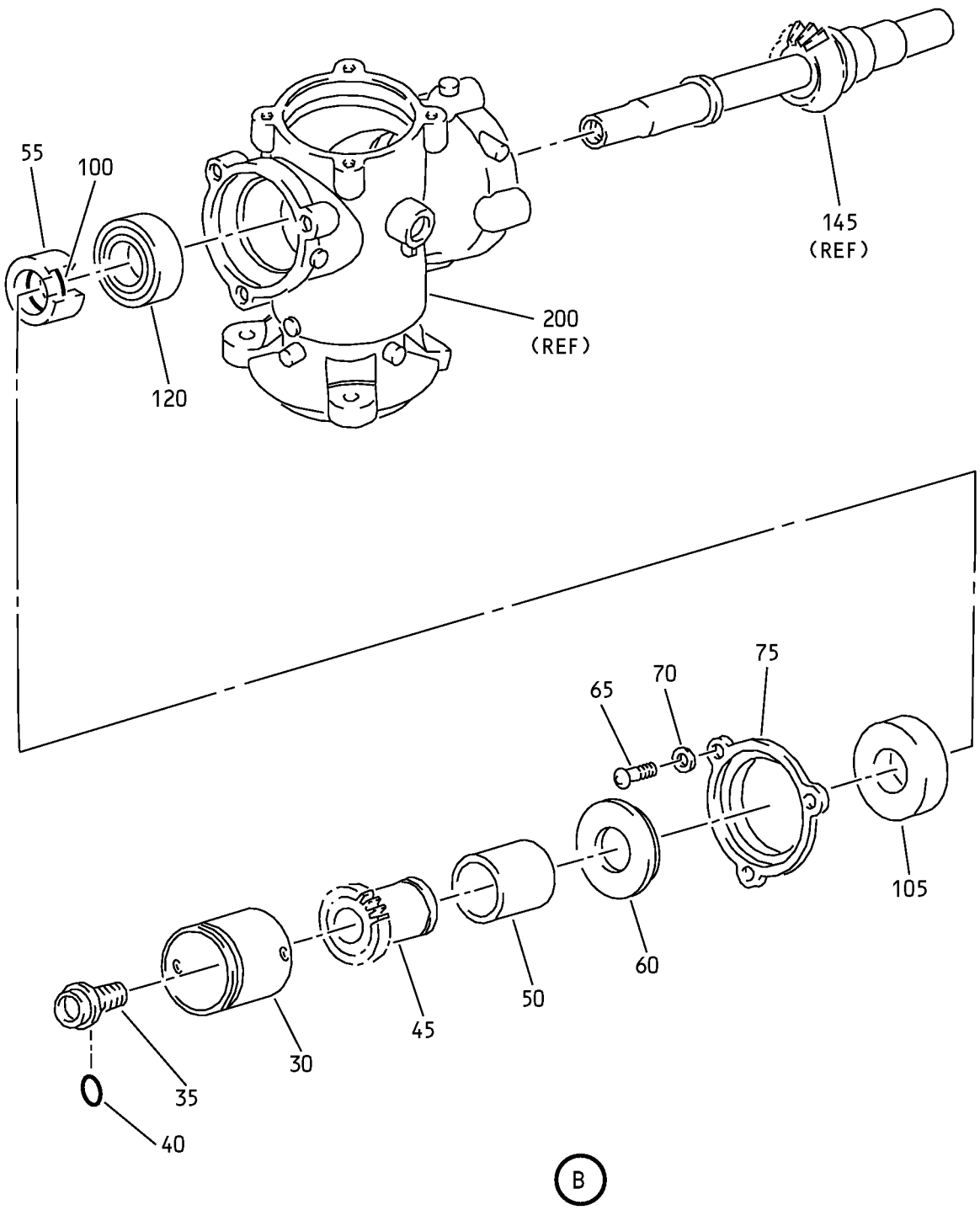
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
RM7X10C1		1	440	17
RMLH9073-8		1	365	1
RUSZ008-174		1	455	1
RUSZ009-119		1	600	1
S256W410-11		1	105	2
		1	105A	2
S256W410-20		1	615	1
		1	615A	1
SL2822-12		1	690A	1
SL2822-12C		1	690	1
SL2822-20		1	420A	1
SL2822-20C		1	420	1
TLN1001W38		1	365	1
		1	365	1
TLN1001WD38		1	365	1
		1	365	1
TPUB1908-10		1	455A	1
TPUB1909-8		1	600A	1
TRJD3258		1	480A	1



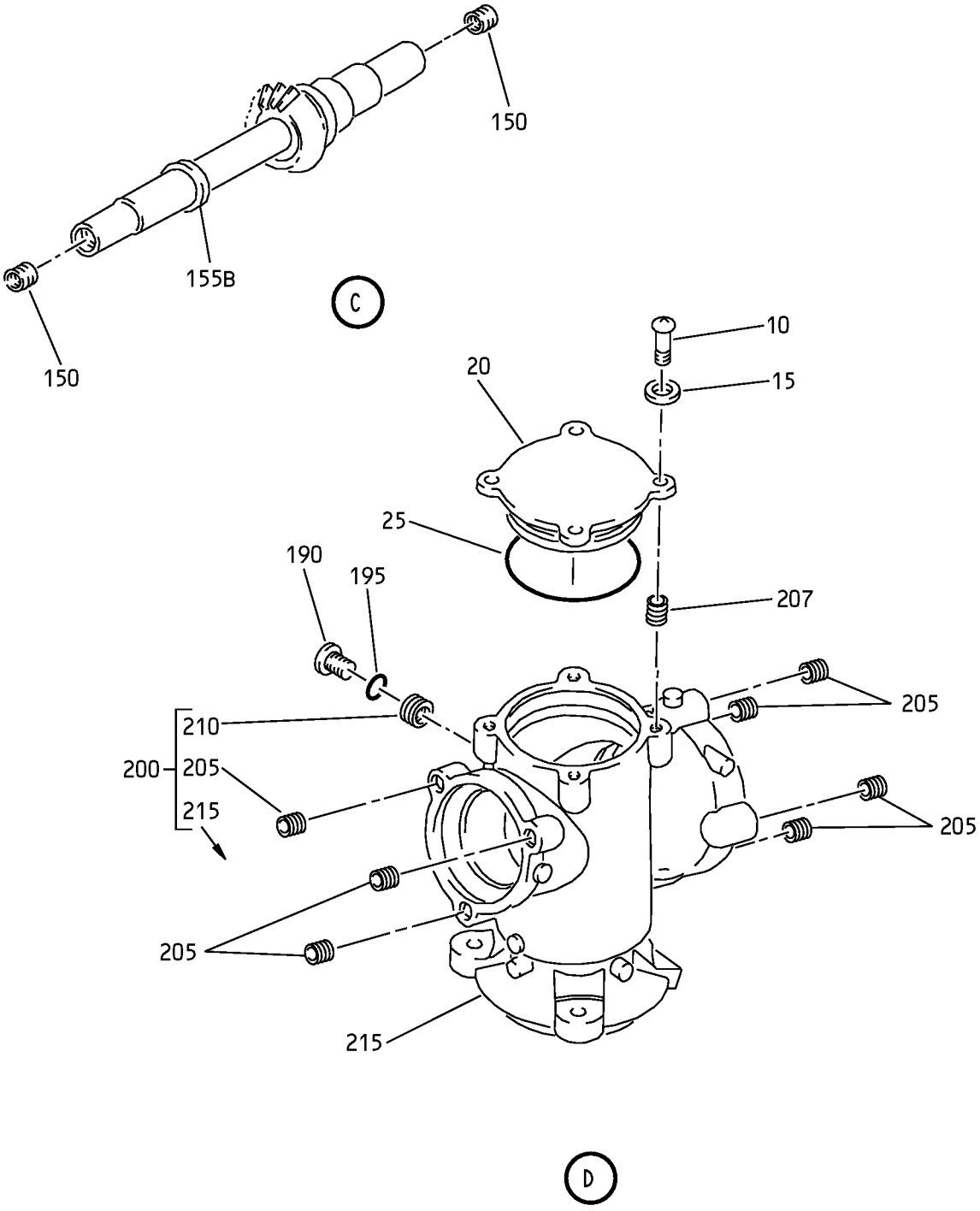
Trailing Edge Flap Transmission Assembly No. 2 and 7
IPL Figure 1 (Sheet 1 of 13)



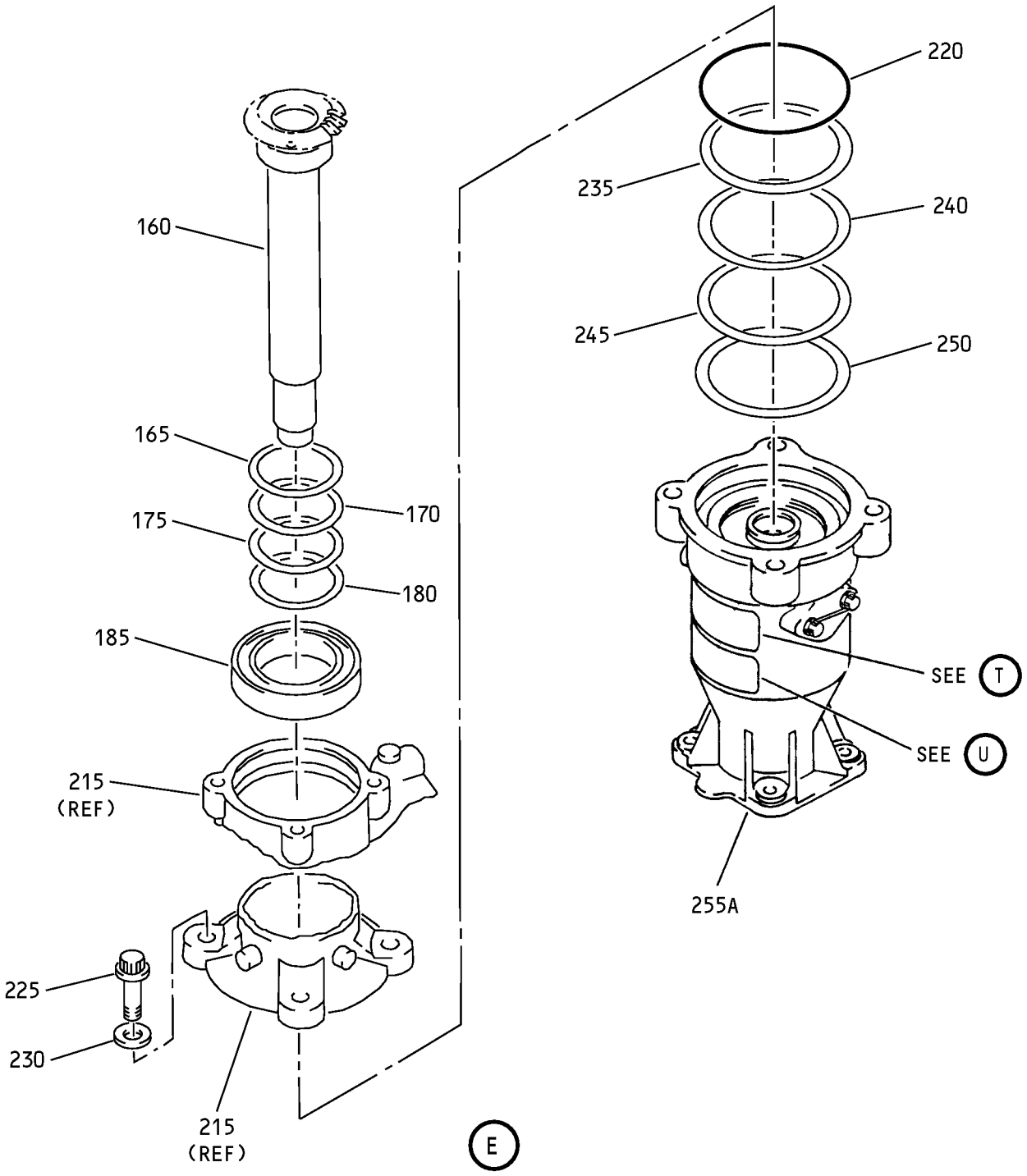
Trailing Edge Flap Transmission Assembly No. 2 and 7
IPL Figure 1 (Sheet 2 of 13)



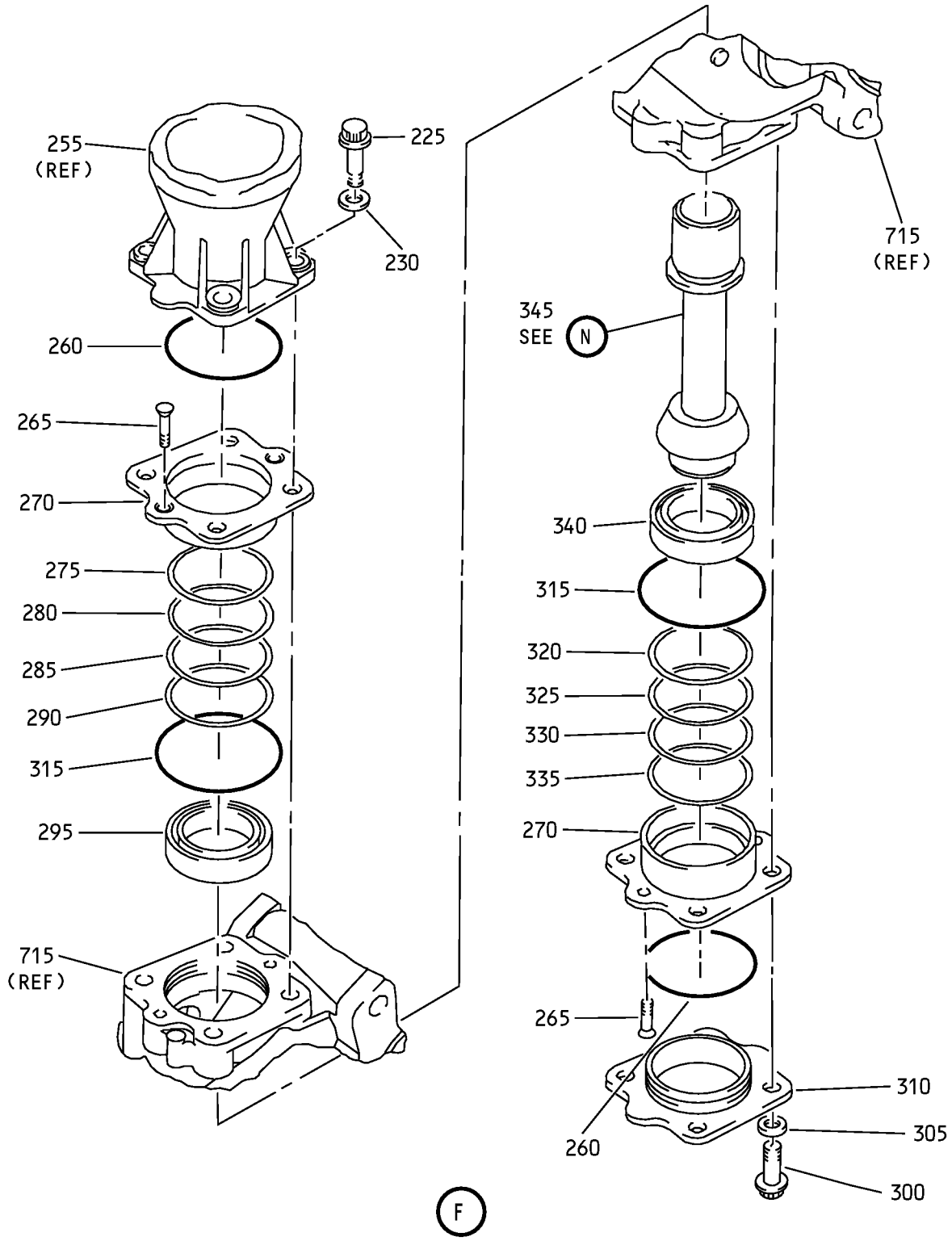
Trailing Edge Flap Transmission Assembly No. 2 and 7
IPL Figure 1 (Sheet 3 of 13)



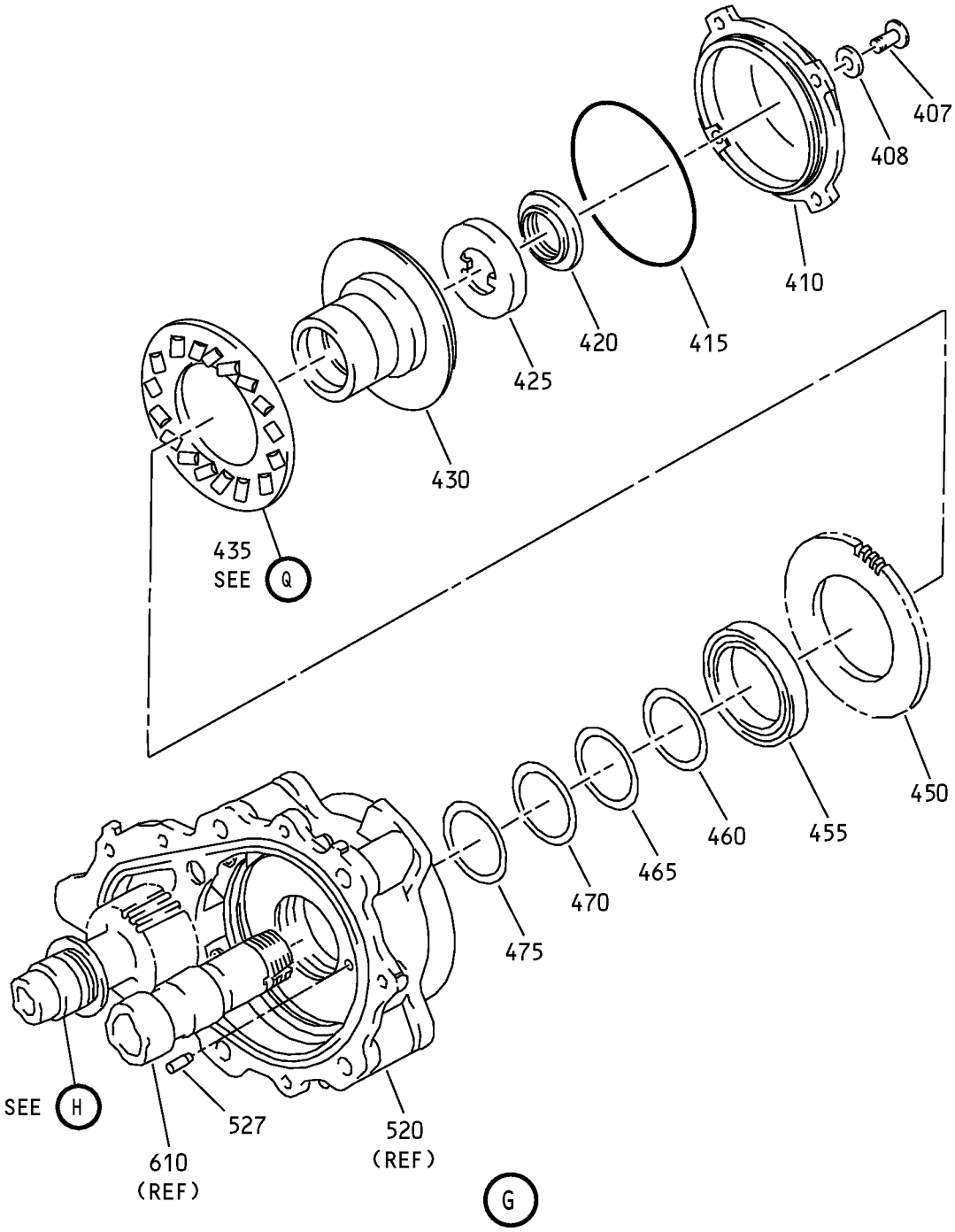
Trailing Edge Flap Transmission Assembly No. 2 and 7
IPL Figure 1 (Sheet 4 of 13)



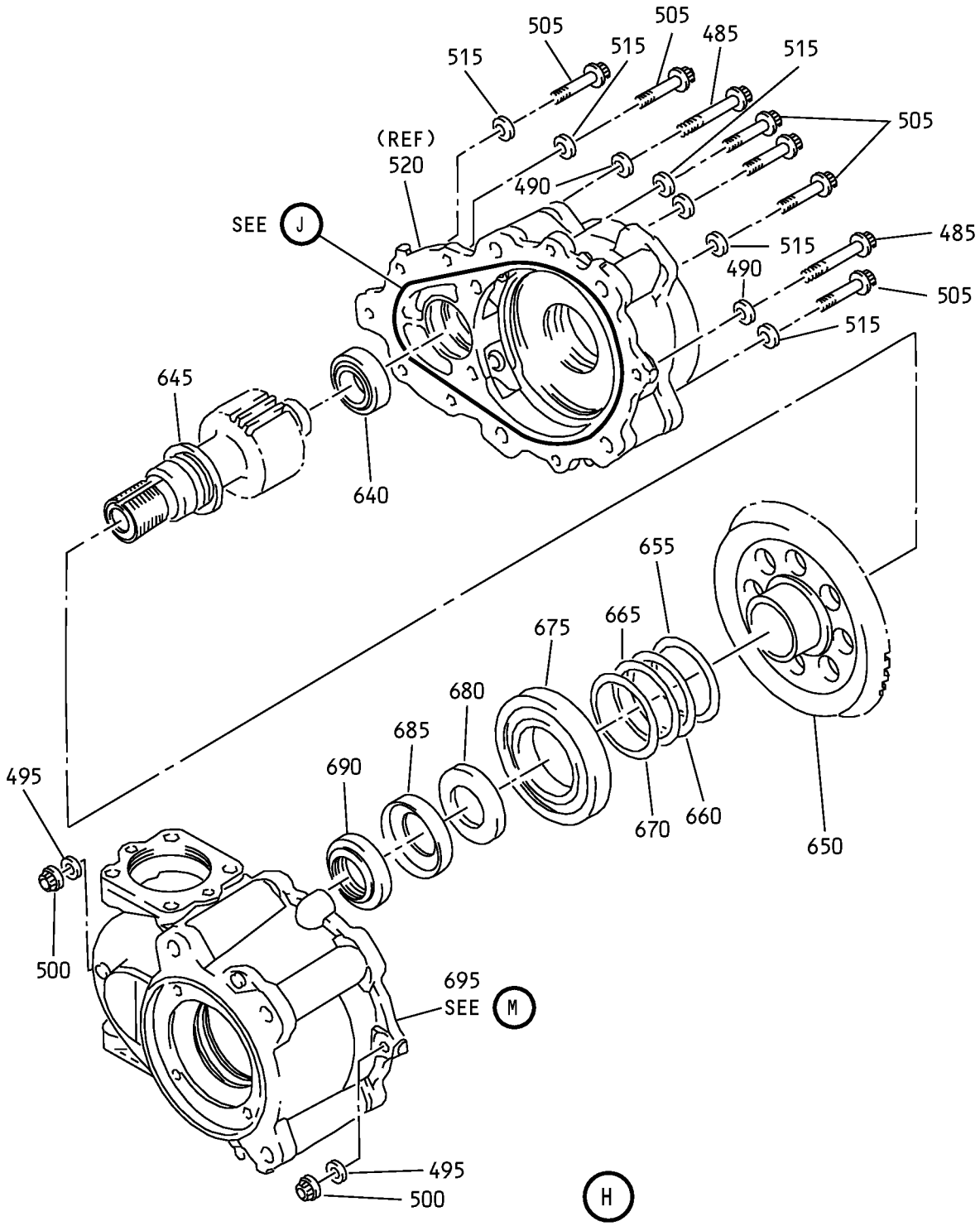
Trailing Edge Flap Transmission Assembly No. 2 and 7
IPL Figure 1 (Sheet 5 of 13)



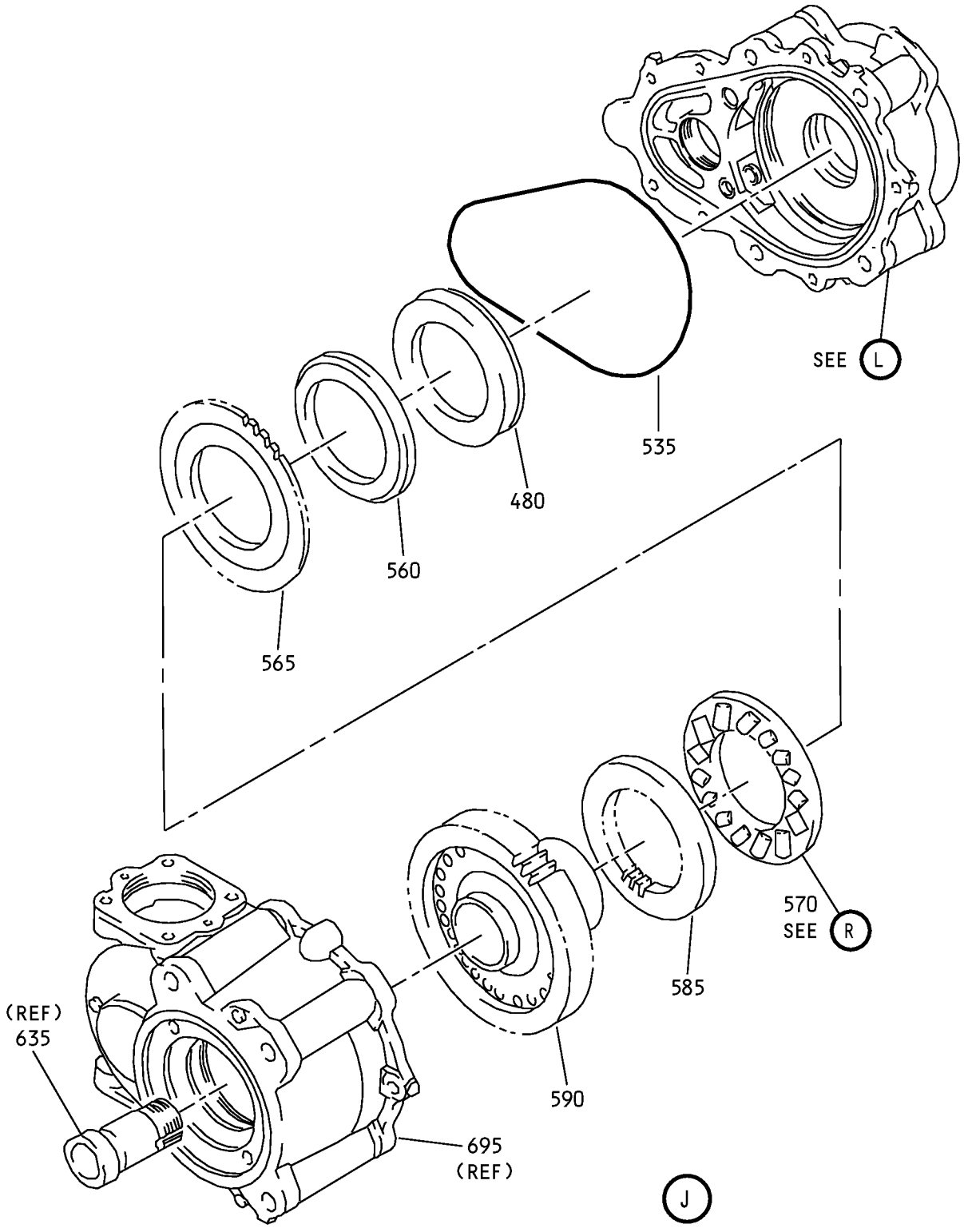
Trailing Edge Flap Transmission Assembly No. 2 and 7
IPL Figure 1 (Sheet 6 of 13)



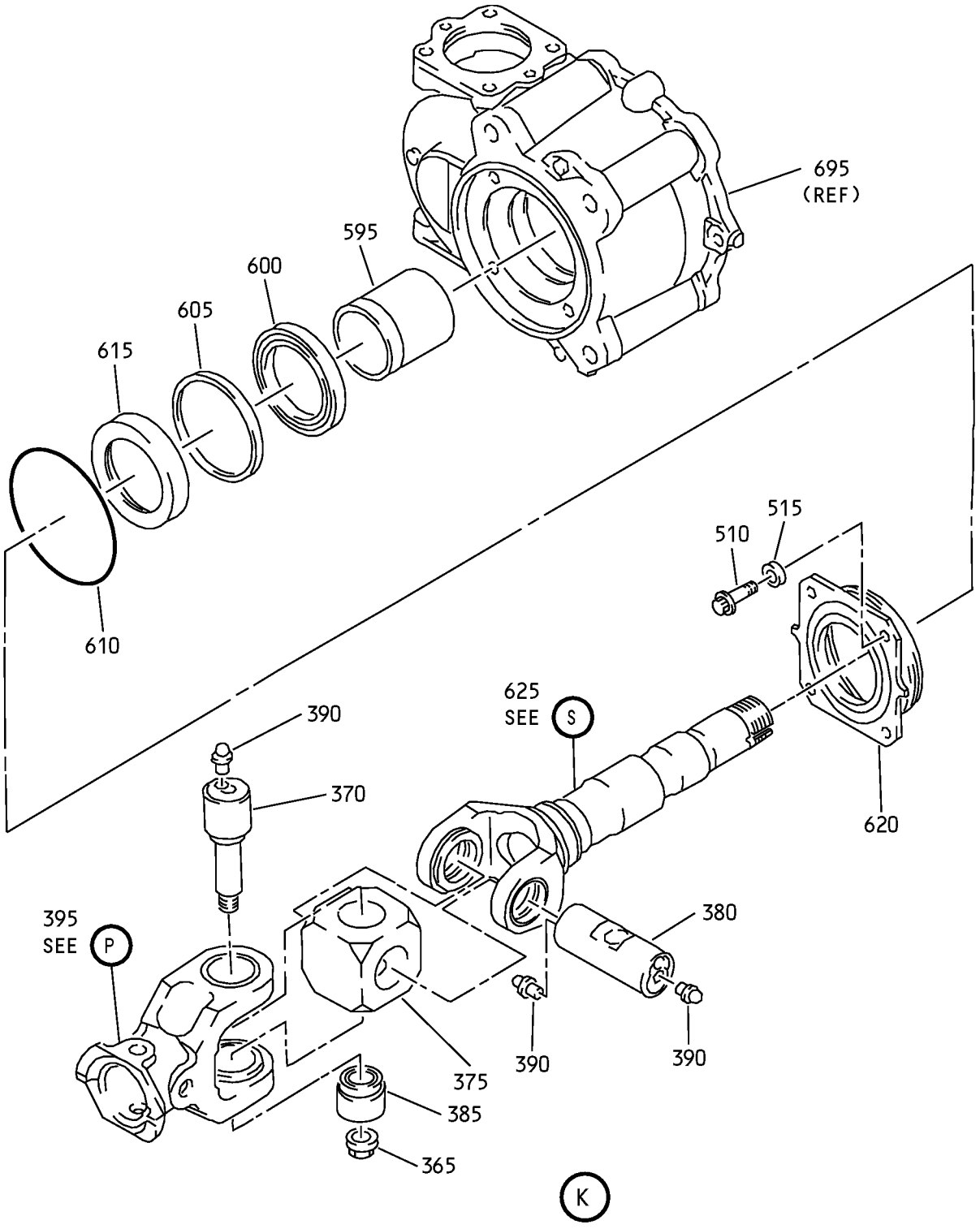
Trailing Edge Flap Transmission Assembly No. 2 and 7
IPL Figure 1 (Sheet 7 of 13)



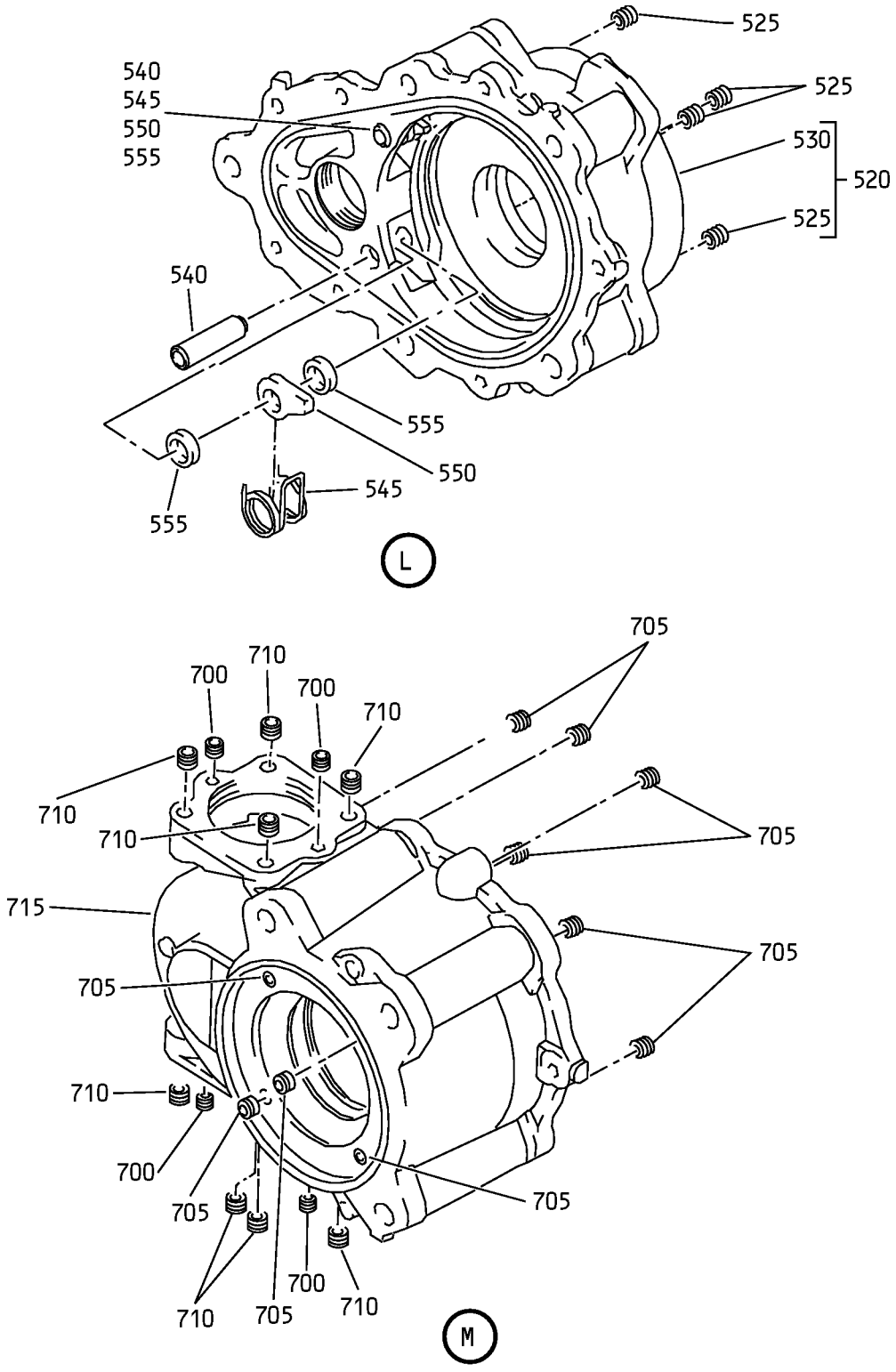
Trailing Edge Flap Transmission Assembly No. 2 and 7
IPL Figure 1 (Sheet 8 of 13)



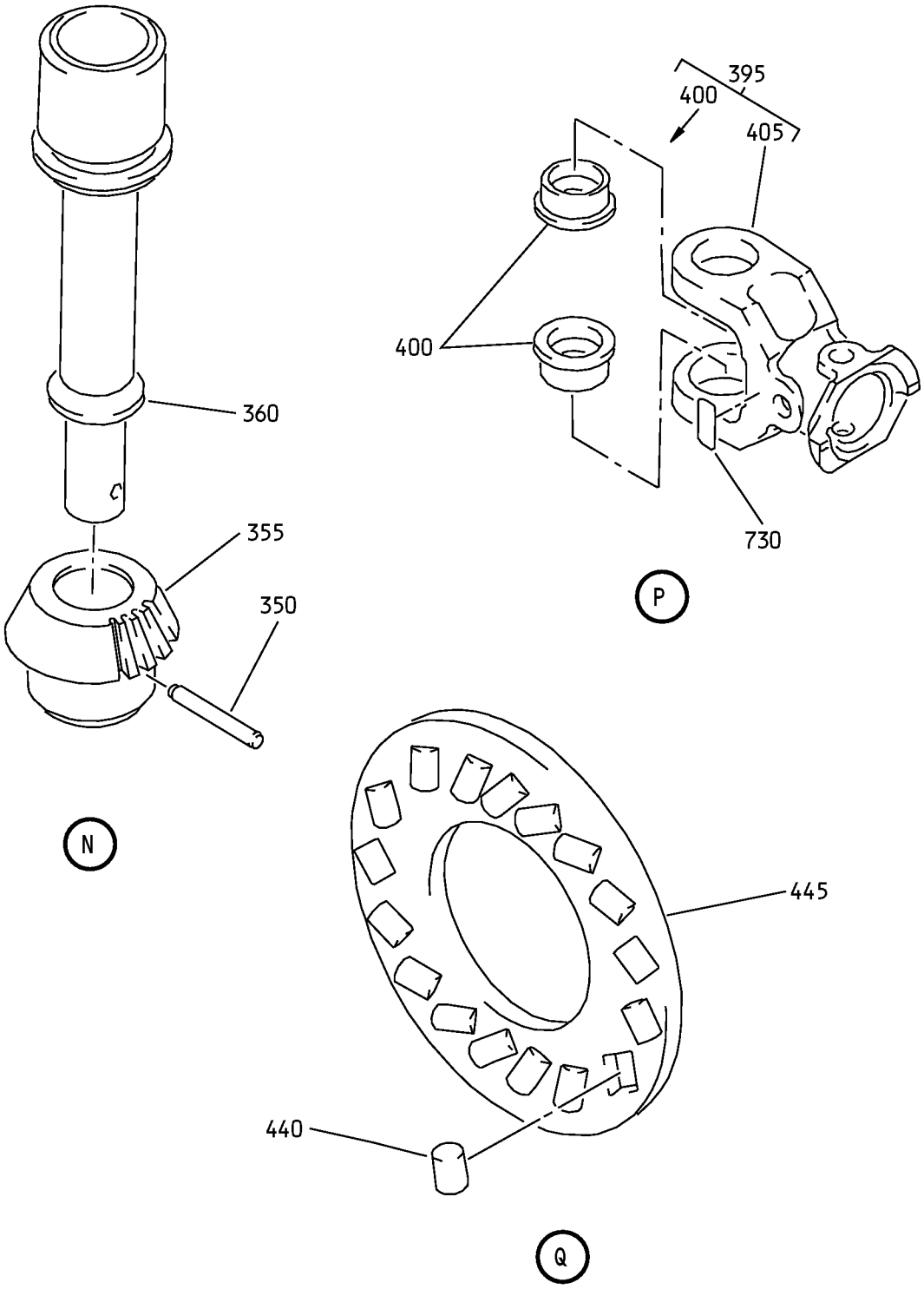
Trailing Edge Flap Transmission Assembly No. 2 and 7
IPL Figure 1 (Sheet 9 of 13)



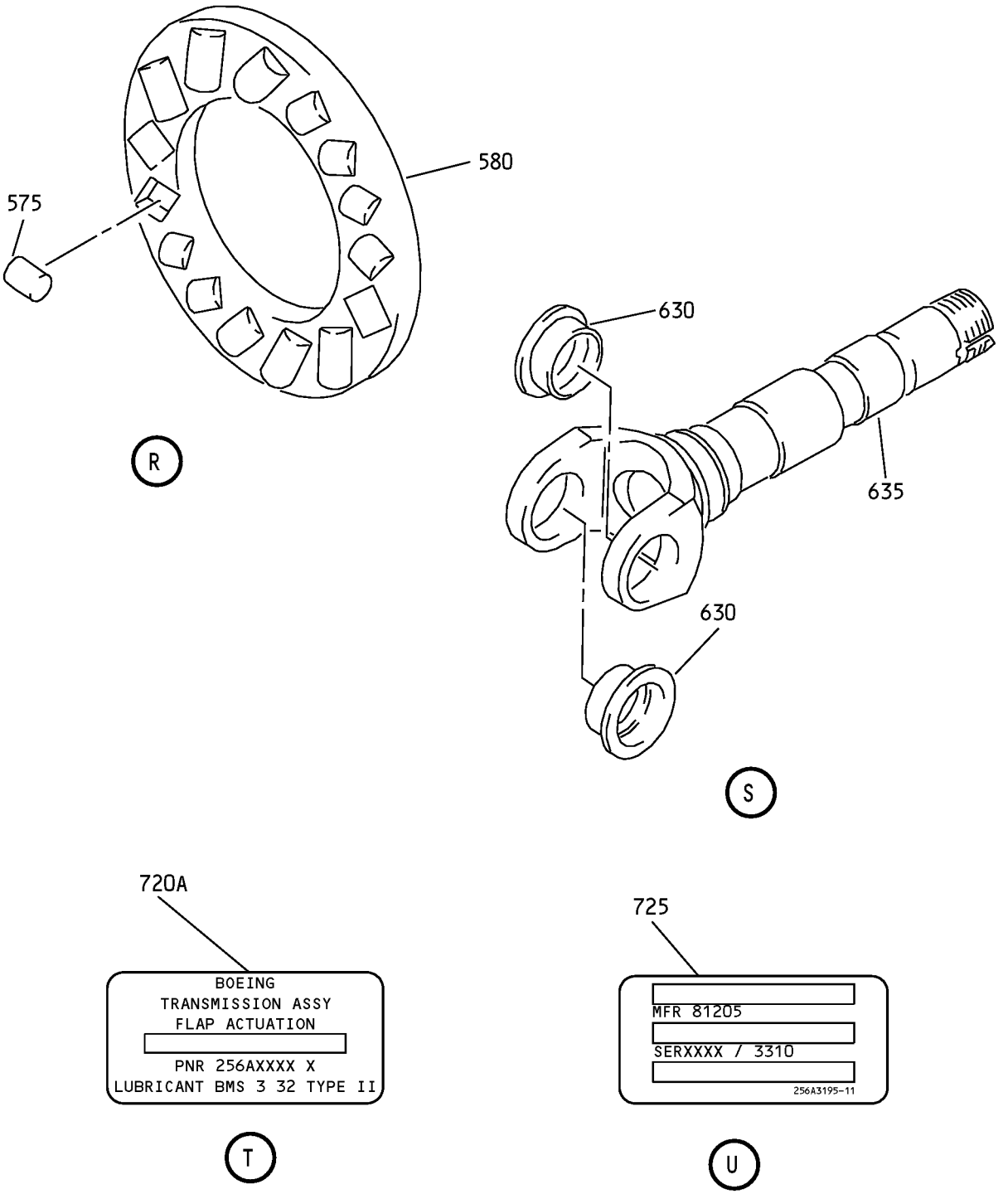
Trailing Edge Flap Transmission Assembly No. 2 and 7
IPL Figure 1 (Sheet 10 of 13)



Trailing Edge Flap Transmission Assembly No. 2 and 7
IPL Figure 1 (Sheet 11 of 13)



Trailing Edge Flap Transmission Assembly No. 2 and 7
IPL Figure 1 (Sheet 12 of 13)



Trailing Edge Flap Transmission Assembly No. 2 and 7
IPL Figure 1 (Sheet 13 of 13)

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–1A	256A3210-1		DELETED		
–1B	256A3210-3		TRANSMISSION ASSY-POSITION 2 AND 7 FLAP ACTUATION	A	RF
–1C	256A3210-5		TRANSMISSION ASSY-POSITION 2 AND 7 FLAP ACTUATION	C	RF
–1D	256A3210-7		TRANSMISSION ASSY-POSITION 2 AND 7 FLAP ACTUATION	E	RF
–5	256A3210-2		DELETED		
–5A	256A3210-4		TRANSMISSION ASSY-POSITION 2 AND 7 FLAP ACTUATION	B	RF
–5B	256A3210-6		TRANSMISSION ASSY-POSITION 2 AND 7 FLAP ACTUATION	D	RF
–5C	256A3210-8		TRANSMISSION ASSY-POSITION 2 AND 7 FLAP ACTUATION	F	RF
10	BACB30NT3K2		. BOLT		4
15	BACW10BP3CD		. WASHER		4
20	256A3281-1		. CAP		1
25	M25988-1-142		. PACKING		1
30	256A3745-1		. SLEEVE		2
35	256A3744-1		. BOLT-COUPLING		2
40	M25988-1-204		. PACKING		2
45	256A3741-1		. COUPLING HALF		2
50	256A3743-1		. SEAL		2
55	256A3183-1		. RING-SEAL	A-D	2
–55A	256A3183-10		. RING-SEAL (OPT ITEM 55B)	E, F	2
–55B	256A3183-1		. RING-SEAL (OPT ITEM 55A)	E, F	2
60	256A3182-1		. SHIELD-SEAL		2
65	BACB30NT3K2		. BOLT		3
70	BACW10BP3CD		. WASHER		3
75	256W3244-1		. RETAINER-SEAL	A-D	1
–75A	256W3244-1		. RETAINER-SEAL (OPT ITEM 75B)	E, F	1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–75B	256W3244-2		. RETAINER-SEAL (OPT ITEM 75A)	E, F	1
80	BACB30MR4HK3		. BOLT	A-D	4
–80A	BACB30MR4K3		. BOLT	E, F	4
85	BACW10BN4AC		. WASHER		4
90	256A3225-1		. RETAINER-BEARING	A-D	1
–90A	256A3225-2		. RETAINER-BEARING	E, F	1
95	M25988-1-145		. PACKING		1
100	M25988-1-213		. PACKING		2
105	1002423607100		. SEAL-SHAFT (V91251) (SPEC S256W410-11) (OPT 700-857-2272-99 (VU1068))		2
–105A	700-857-2272-99		. SEAL-SHAFT (VU1068) (SPEC S256W410-11) (OPT 1002423607100 (V91251))		2
110	256A3185-2		. SPACER		1
115	BACB10AZ30C		. BEARING		1
120	BACB10BA25C		. BEARING		1
125	256A3148-25		. SHIM		AR
130	256A3148-26		. SHIM		AR
135	256A3148-27		. SHIM		AR
140	256A3148-28		. SHIM		AR
145	256A3223-1		. PINION ASSY-BEVEL		1
150	MS21209F8-10P		. . INSERT		2
155	256A3223-2		DELETED		
155A	256A3223-2		DELETED		
155B	256A3223-2		. . PINION		1
160	256A3224-1		. GEAR-BEVEL		1
165	256A3148-29		. SHIM		AR
170	256A3148-30		. SHIM		AR
175	256A3148-31		. SHIM		AR
180	256A3148-32		. SHIM		AR

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
185	BACB10BA35C		. BEARING		1
190	AN814-4DL		. PLUG AND BLEEDER		1
195	M25988-1-110		. PACKING		1
200	256A3221-1		. HOUSING ASSY	A, C, E	1
–202	256A3221-2		. HOUSING ASSY	B, D, F	1
205	MS21209F1-15P		. . INSERT		7
207	MS21209F4-15P		. . INSERT		4
210	MS21209F7-10P		. . INSERT		1
215	256A3221-3		. . HOUSING	A	1
–217	256A3221-4		. . HOUSING	B	1
220	M25988-1-150		. PACKING		1
225	BACB30LE5HK6		. BOLT	A-D	8
–225A	BACB30LE5K6		. BOLT	E, F	8
230	BACW10BP5CD		. WASHER		8
235	256A3148-13		. SHIM		AR
240	256A3148-14		. SHIM		AR
245	256A3148-15		. SHIM		AR
250	256A3148-16		. SHIM		AR
255	256A3151-1		DELETED		
255A	256A3151-3		. BRAKE ASSY-TORQUE (REFER TO CMM 27-55-84)	A	1
–255B	256A3151-5		. BRAKE ASSY-TORQUE (REFER TO CMM 27-55-84)	C	1
–255C	256A3151-7		. BRAKE ASSY-TORQUE (REFER TO CMM 27-55-84)	E	1
–257	256A3151-2		DELETED		
–257A	256A3151-4		. BRAKE ASSY-TORQUE (REFER TO CMM 27-55-84)	B	1
–257B	256A3151-6		. BRAKE ASSY-TORQUE (REFER TO CMM 27-55-84)	D	1
–257C	256A3151-8		. BRAKE ASSY-TORQUE (REFER TO CMM 27-55-84)	F	1
260	M25988-1-127		. PACKING		2

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
265	BACB30VF3K1		. BOLT		4
270	256A3134-1		. RETAINER-BEARING		2
275	256A3148-9		. SHIM		AR
280	256A3148-10		. SHIM		AR
285	256A3148-11		. SHIM		AR
290	256A3148-12		. SHIM		AR
295	BACB10BA25C		. BEARING		1
–295B	256A3192-1		DELETED		
300	BACB30NM5HK4		. BOLT	A-D	4
–300A	BACB30NM5K4		. BOLT	E, F	4
305	BACW10BP5CD		. WASHER		4
310	256A3135-1		. CAP		1
315	M25988-1-136		. PACKING		2
320	256A3148-9		. SHIM		AR
325	256A3148-10		. SHIM		AR
330	256A3148-11		. SHIM		AR
335	256A3148-12		. SHIM		AR
340	BACB10BA25C		. BEARING		1
345	256A3143-1		. SHAFT AND PINION ASSY		1
350	256A3149-1		. . PIN		1
355	256A3141-1		. . PINION		1
360	256A3142-1		. . SHAFT		1
365	HW29872-8		. NUT (V15653) (SPEC BACN10HY8M) (OPT RMLH9073-8 (V72962)) (OPT TLN1001W38 (V97928)) (OPT TLN1001WD38 (V92215)) (OPT 69233SB8D (V56878)) (OPT TLN1001WD38 (V97928)) (OPT TLN1001W38 (V92215))		1
370	251N4135-1		. SHAFT-U JOINT		1
375	251N4103-1		. SPACER-U JOINT		1
380	251N4149-1		. SHAFT-INT U JOINT		1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
385	251N4150-1		. ADAPTER-U JOINT		1
390	1728B		. FITTING-LUBE (V0FKM1)		4
395	256A3192-1		. YOKE ASSY	A-D	1
–395A	256A3192-4		. YOKE ASSY (OPT ITEM 395B)	E, F	1
–395B	256A3192-1		. YOKE ASSY (OPT ITEM 395A)	E, F	1
400	251N4105-1		. . BEARING		2
405	256A3192-2		. . YOKE (USED ON ITEMS 395, 395B)		1
–405A	256A3192-5		. . YOKE (USED ON ITEM 395A)	E, F	1
407	BACB30NT3K2		. BOLT		4
408	BACW10BP3CD		. WASHER		4
410	256A3171-1		. COVER		1
415	M25988-1-153		. PACKING		1
420	SL2822-20C		. NUT (V97393) (SPEC BACN10RF20C) (OPT ITEM 420A)		1
–420A	SL2822-20		. NUT (V97393) (SPEC BACN10RF20) (OPT 82631-2012 (V56878)) (OPT BR9080-20 (V72962)) (OPT ITEM 420)		1
425	256A3175-1		. LOCKWASHER-CUP		1
430	256A3172-1		. BLOCK-TENSION		1
435	256A3173-1		. ROLLER ASSY-SKEWED		1
440	RM7X10C1		. . ROLLER (V78118) (OPT ITEM 440A)		17
–440A	52BA029565		. . ROLLER (V21335) (OPT ITEM 440)		17
445	256A3173-2		. . RETAINER		1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
450	256A3179-1		. PLATE-THRUST		1
455	RUSZ008-174		. BEARING-ROLLER (V78118) (OPT ITEM 455A)		1
–455A	TPUB1908-10		. BEARING-ROLLER (V83086) (OPT ITEM 455)		1
460	256A3148-1		. SHIM		AR
465	256A3148-2		. SHIM		AR
470	256A3148-3		. SHIM		AR
475	256A3148-4		. SHIM		AR
480	256A3176-1		. RACE-THRUST	A-D	1
–480A	TRJD3258		. BEARING-THRUST	E, F	1
485	BACB30MR4K16		. BOLT		2
490	BACW10BN4AC		. WASHER		2
495	BACW10BN4AP		. WASHER		2
500	NAS1805-4L		. NUT		2
505	BACB30MR4HK8		. BOLT	A-D	6
–505A	BACB30MR4K8		. BOLT	E, F	6
510	BACB30MR4HK3		. BOLT	A-D	4
–510A	BACB30MR4K3		. BOLT	E, F	4
515	BACW10BN4AC		. WASHER		10
520	256A3188-1		. COVER ASSY (OPT ITEM 520A)	A-D	1
–520A	256A3188-3		. COVER ASSY (OPT ITEM 520)	A-D	1
–520B	256A3188-5		. COVER ASSY (OPT ITEM 520C)	E, F	1
–520C	256A3188-7		. COVER ASSY (OPT ITEM 520B)	E, F	1
525	MS21209F1-15P		. . INSERT		4
527	256W3054-1		. . PIN-DOWEL		1
530	256A3188-2		. . HOUSING (USED ON ITEM 520)	A-D	1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–530A	256A3188-4		. . HOUSING (USED ON ITEM 520A)	A-D	1
–530B	256A3188-6		. . HOUSING (USED ON ITEM 520B)	E, F	1
–530C	256A3188-8		. . HOUSING (USED ON ITEM 520C)	E, F	1
535	M25988-1-259		. PACKING		1
540	256A3147-1		. PIN-PAWL		2
545	251N4119-1		. SPRING-PAWL		2
550	251N4117-1		. PAWL	A-D	2
–550A	251N4117-3		. PAWL	E, F	2
555	251N4146-1		. SPACER-PAWL		4
560	NTH3258		. BEARING (V80648)		1
565	251N4120-1		. PLATE-RATCHET		1
570	251N4147-1		. ROLLER ASSY		1
575	QBR62813		. . ROLLER (V60380)		15
580	251N4151-1		. . RETAINER		1
585	256A3145-1		. PLATE-THRUST		1
590	256A3137-1		. GEAR-SPUR		1
595	256A3144-1		. RACE-BEARING		1
600	RUSZ009-119		. BEARING (V78118) (OPT ITEM 600A)		1
–600A	TPUB1909-8		. BEARING (V83086) (OPT ITEM 600)		1
605	256W3051-12		. SPACER		1
610	M25988-1-151		. PACKING		1
615	1002423615800		. SEAL-SHAFT (V91251) (SPEC S256W410-20) (OPT 700-868-8862-99 (VU1068))		1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–615A	700-868-8862-99		. SEAL-SHAFT (VU1068) (SPEC S256W410-20) (OPT 1002423615800 (V91251))		1
620	256A3133-1		. RETAINER-SEAL	A-D	1
–620A	256A3133-2		. RETAINER-SEAL	E, F	1
625	256A3136-1		. SHAFT ASSY-OUTPUT	A-D	1
–625A	256A3136-4		. SHAFT ASSY-OUTPUT (OPT ITEM 625B)	E, F	1
–625B	256A3136-1		. SHAFT ASSY-OUTPUT (OPT ITEM 625A)	E, F	1
630	251N4105-1		. . BEARING		2
635	256A3136-2		. . SHAFT (USED ON ITEMS 625, 625B)		1
–635A	256A3136-5		. . SHAFT (USED ON ITEM 625A)	E, F	1
640	BACB10BA17C		. BEARING		1
645	256A3138-1		. PINION-SPUR	A-D	1
–645A	256A3138-2		. PINION-SPUR	E, F	1
650	256A3139-1		. GEAR-HYPOID		1
655	256A3148-25		. SHIM		AR
660	256A3148-26		. SHIM		AR
665	256A3148-27		. SHIM		AR
670	256A3148-28		. SHIM		AR
675	BACB10BA30C		. BEARING		1
680	256A3185-4		. SPACER		1
685	256W3052-2		. LOCKWASHER-CUP		1
690	SL2822-12C		. NUT (V97393) (SPEC BACN10RF12C) (OPT ITEM 690A)	A-D	1

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–690A	SL2822-12		. NUT (V97393) (SPEC BACN10RF12) (OPT BR9080-12 (V72962)) (OPT 82631-1216 (V56878)) (OPT ITEM 690)	A-D	1
–690B	H51650-12BAC		. NUT (V15653) (SPEC BACN10JC12CD) (OPT 102LH9074-12 (V72962)) (OPT 69235-1216CD (V92215)) (OPT BMN4122CPD8-12 (V97928))	E, F	1
695	256A3187-1		. HOUSING ASSY		1
700	MS21209F1-15P		. . INSERT		4
705	MS21209F4-15P		. . INSERT		10
710	MS21209F5-15P		. . INSERT		8
715	256A3187-2		. . HOUSING		1
720	256A3195-3		DELETED		
720A	256A3195-33		. MARKER-NAMEPLATE	A	1
–720B	256A3195-41		. MARKER-NAMEPLATE	C	1
–720C	256A3195-51		. MARKER-NAMEPLATE	E	1
–722	256A3195-4		DELETED		
–722A	256A3195-34		. MARKER-NAMEPLATE	B	1
–722B	256A3195-42		. MARKER-NAMEPLATE	D	1
–722C	256A3195-52		. MARKER-NAMEPLATE	F	1
725	256A3195-10		. MARKER-SERIAL NO.		1
730	256A3195-13		. MARKER-LUBRICATE WITH BMS 3-33 OPT: MIL-G-23827		1

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FIGURE DELETED

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IPL Figure 2

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
2–					
–1A	256A3210-2		DELETED		
5	BACB30NT3K2		DELETED		
10	BACW10BP3CD		DELETED		
15	256A3281-1		DELETED		
20	M25988-1-142		DELETED		
25	256A3745-1		DELETED		
30	256A3744-1		DELETED		
35	M25988-1-204		DELETED		
40	256A3741-1		DELETED		
45	256A3743-1		DELETED		
50	256A3183-1		DELETED		
55	256A3182-1		DELETED		
60	BACB30NT3K2		DELETED		
65	BACW10BP3CD		DELETED		
70	256W3244-1		DELETED		
75	BACB30MR4HK3		DELETED		
80	BACW10BN4AC		DELETED		
85	256A3225-2		DELETED		
85A	256A3225-1		DELETED		
90	M25988-1-145		DELETED		
95	M25988-1-213		DELETED		
100	1002423607100		DELETED		
105	256A3185-2		DELETED		
110	BACB10AZZ30C		DELETED		
110A	BACB10AZ30C		DELETED		
115	BACB10BA25C		DELETED		
120	256A3148-25		DELETED		
125	256A3148-26		DELETED		
130	256A3148-27		DELETED		
135	256A3148-28		DELETED		
140	256A3223-1		DELETED		

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
2–					
145	MS21209F8-10P		DELETED		
150	256A3123-2		DELETED		
155	256A3224-1		DELETED		
160	256A3148-29		DELETED		
165	256A3148-30		DELETED		
170	256A3148-31		DELETED		
175	256A3148-32		DELETED		
180	BACB10BA35C		DELETED		
185	AN814-4DL		DELETED		
190	M25988-1-110		DELETED		
195	256A3221-2		DELETED		
200	MS21209F1-15P		DELETED		
202	MS21209F4-15P		DELETED		
205	MS21209F7-10P		DELETED		
210	256A3221-4		DELETED		
215	M25988-1-150		DELETED		
220	BACB30LE5HK6		DELETED		
225	BACW10BP5CD		DELETED		
230	256A3148-13		DELETED		
235	256A3148-14		DELETED		
240	256A3148-15		DELETED		
245	256A3148-16		DELETED		
250	256A3151-2		DELETED		
255	M25988-1-127		DELETED		
260	BACB30VF3K1		DELETED		
265	256A3134-1		DELETED		
270	256A3148-9		DELETED		
275	256A3148-10		DELETED		
280	256A3148-11		DELETED		
285	256A3148-12		DELETED		
290	BACB10BA25C		DELETED		

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
2–					
295	BACB30NM5HK4		DELETED		
300	BACW10BP5CD		DELETED		
305	256A3135-1		DELETED		
310	M25988-1-136		DELETED		
315	256A3148-9		DELETED		
320	256A3148-10		DELETED		
325	256A3148-11		DELETED		
330	256A3148-12		DELETED		
335	BACB10BA25C		DELETED		
340	256A3143-1		DELETED		
345	256A3149-1		DELETED		
350	256A3141-1		DELETED		
355	256A3142-1		DELETED		
360	HW29872-8		DELETED		
365	251N4135-1		DELETED		
370	251N4103-1		DELETED		
375	251N4149-1		DELETED		
380	251N4150-1		DELETED		
385	1728B		DELETED		
390	256A3192-1		DELETED		
395	251N4105-1		DELETED		
400	256A3192-2		DELETED		
402	BACB30NT3K2		DELETED		
404	BACW10BP3CD		DELETED		
405	256A3171-1		DELETED		
410	M25988-1-153		DELETED		
415	BACN10RF20C		DELETED		
420	256A3175-1		DELETED		
425	256A3172-1		DELETED		
430	256A3173-1		DELETED		
435	RM7X10C1		DELETED		

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
2–					
440	256A3173-2		DELETED		
445	256A3179-1		DELETED		
450	RUSZ008-174		DELETED		
–450A	TPUB1908-10		DELETED		
455	256A3148-1		DELETED		
460	256A3148-2		DELETED		
465	256A3148-3		DELETED		
470	256A3148-4		DELETED		
475	256A3176-1		DELETED		
480	BACB30MR4K16		DELETED		
485	BACW10BN4AC		DELETED		
490	BACW10BN4AP		DELETED		
495	NAS1805-4L		DELETED		
500	BACB30MR4HK8		DELETED		
505	BACB30MR4HK3		DELETED		
510	BACW10BN4AC		DELETED		
515	256A3188-1		DELETED		
520	MS21209F1-15P		DELETED		
525	256A3188-2		DELETED		
530	M25988-1-259		DELETED		
535	256A3147-1		DELETED		
540	251N4119-1		DELETED		
545	251N4117-1		DELETED		
550	251N4146-1		DELETED		
555	NTH3258		DELETED		
560	251N4120-1		DELETED		
565	251N4147-1		DELETED		
570	QBR62813		DELETED		
575	251N4151-1		DELETED		
580	256A3145-1		DELETED		
585	256A3137-1		DELETED		

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FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
2–					
590	256A3144-1		DELETED		
595	RUSZ009-119		DELETED		
–595A	TPUB1909-8		DELETED		
600	256W3051-12		DELETED		
605	M25988-1-151		DELETED		
610	1002423615800		DELETED		
615	256A3133-1		DELETED		
620	256A3136-1		DELETED		
625	251N4105-1		DELETED		
630	256A3136-2		DELETED		
635	BACB10BA17C		DELETED		
640	256A3138-1		DELETED		
645	256A3139-1		DELETED		
650	256A3148-25		DELETED		
655	256A3148-26		DELETED		
660	256A3148-27		DELETED		
665	256A3148-28		DELETED		
670	BACB10BA30C		DELETED		
675	256A3185-4		DELETED		
680	256W3052-2		DELETED		
685	BACN10RF12C		DELETED		
690	256A3187-1		DELETED		
695	MS21209F1-15P		DELETED		
700	MS21209F4-15P		DELETED		
705	MS21209F5-15P		DELETED		
710	256A3187-2		DELETED		
715	256A3195-4		DELETED		
720	256A3195-10		DELETED		
725	256A3195-13		DELETED		

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