TO: ALL HOLDERS OF TRAILING EDGE FLAP ACTUATION 10.6 DIAMETER ROTARY ACTUATOR ASSEMBLY COMPONENT MAINTENANCE MANUAL 27-51-48

REVISION NO. 4 DATED MAR 01/04

HIGHLIGHTS

Pages which have been added or revised are outlined below together with the highlights of the revision. Remove and insert the affected pages as listed and enter Revision No. and date on the Record of Revision Sheet.

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
TITLE PAGE 1 TR & SB RECORD 1 305 504 REPAIR 1-1 603-604 REPAIR 8-1 601-602 REPAIR 23-1 601,603 703,707-709, 712-713,715,720, 723-725,729, 732-733 801,807,809, 811-812 1003-1007,1022-1030	Added 256T6110-3 rotary actuator assembly with changed no-back assembly, per PRR B12900-229 and SB 767-27-0188.
105,107	Changed the limits for the no-load friction torque test
301-302 505	Updated the item numbers

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
503 1009	Edited without technical change
REPAIR 22-2 601,603 1027-1028	Added optional pinions
702	Added CAUTION note to not mix BMS 3-33 and Mobil 28 greases
720-722	Added use of BMS 3-27 compound for installation of the input end cover on the housing
731-733	Deleted sealing of the rotary actuator with BMS 3-26 sealant
812	Updated the Vendors List

BOEING

COMPONENT
MAINTENANCE MANUAL

TRAILING EDGE FLAP ACTUATION
10.6 DIAMETER ROTARY ACTUATOR ASSEMBLY

PART NUMBERS 256T6310-2,-3

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

K37890

REVISION RECORD

- Retain this record in front of manual. On receipt of revision, insert revised pages in the manual, and enter revision number, date inserted and initial.

REVISION NUMBER	REVISION DATE	DATE FILED	BY	REVISION NUMBER	REVISION DATE	DATE FILED	BY

K37888

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
767-27-0188		PRR B13274 PRR B12900-229	NOV 01/00 MAR 01/04

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TABLE OF CONTENTS

INTRODUCTION

The instructions in this manual provide the information necessary to perform maintenance functions ranging from simple checks and replacement to complete shop-type repair.

This manual is divided into separate sections:

1. Title Page
2. Record of Revisions
3. Temporary Revision & Service Bulletin Record
4. List of Effective Pages
5. Table of Contents
6. Introduction
7. Procedures & IPL Sections

Refer to the Table of Contents for the page location of applicable sections.

The beginning of the REPAIR section includes a list of the separate repairs, a list of applicable standard Boeing practices, and an explanation of the True Position Dimensioning symbols used.

An explanation of the use of the Illustrated Parts List is provided in the Introduction to that section.

All weights and measurements used in the manual are in English units, unless otherwise stated. When metric equivalents are given they will be in parentheses following the English units.

Design changes, optional parts, configuration differences and Service Bulletin modifications create alternate part numbers. These are identified in the Illustrated Parts List (IPL) by adding an alphabetical character to the basic item number. The resulting item number is called an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless otherwise indicated.

Verification:

TRAILING EDGE FLAP ACTUATION
10.6 DIAMETER ROTARY ACTUATOR ASSEMBLY

DESCRIPTION AND OPERATION

1. Description

   A. The trailing-edge-flap-actuation 10.6 diameter rotary actuator assembly has an input shaft, an output shaft, a gearbox, a brake assembly, and an indicator assembly, all mounted in a housing.

   B. The trailing edge flap drive system supplies power to the rotary actuator input shaft. The rotary actuator output shaft supplies the power to the flap linkages to move the flaps.

   C. Two rotary actuators operate each of the two trailing edge flaps on the 767 airplane. The 10.6 diameter rotary actuator is installed at the outboard ends of the inboard flaps. The 9.5 diameter rotary actuator is installed at the other locations.

2. Operation

   A. The gearbox uses a sun gear and planet gears to multiply the input torque to the quantity necessary to operate the flaps.

   B. The brake assembly prevents back-driven movement of the flaps if the flap drive is mechanically disconnected or if hydraulic power decreases.

   C. The brake assembly also has a torque limiter which grounds the input to airplane structure if there is a jammed flap. The trip indicator assembly gives an indication if the torque limiter operates.

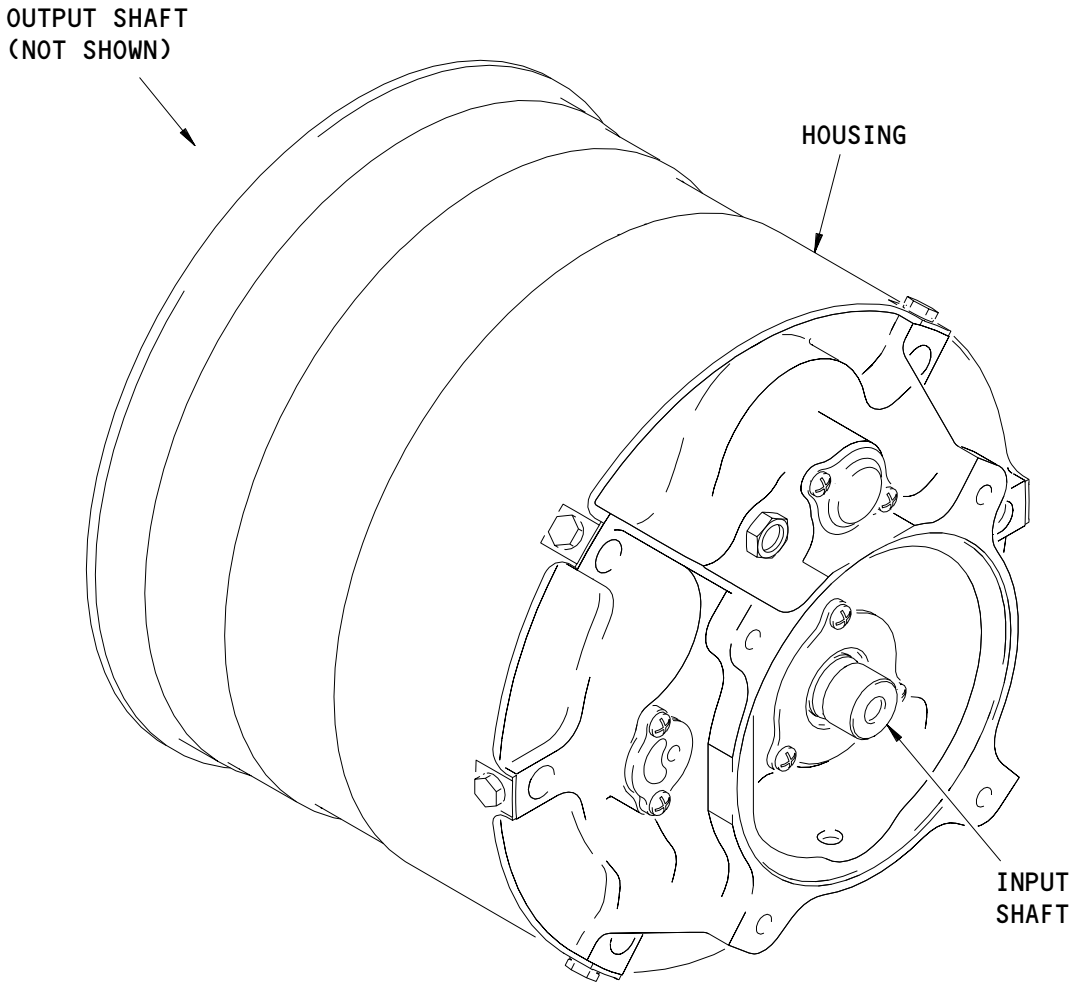
3. Leading Particulars (Approximate)

   A. Length -- 12 inches

   B. Diameter -- 12 inches

   C. Weight -- 97 pounds

   D. Gear Ratio -- (-)1402.456 to 1



Trailing Edge Flap Actuation
10.6 Diameter Rotary Actuator Assembly
Figure 1

TESTING AND FAULT ISOLATION

1. General

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

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

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

2. Testing and Fault Isolation

   A. Special Tools and Equipment

      NOTE: Equivalent tool/equipment can be used.

      (1) A27071-123 -- Test Equipment, Rotary Actuator (supersedes A27071-90, which must be used with A27071-84)

      (2) A27081-1, -2 -- Test Set, Rotary Actuator

   B. References

      (1) 27-51-48/301, Disassembly

      (2) 27-51-48/701, Assembly

   C. Pre-test Procedures

      (1) Make sure that the rotary actuator is filled with the correct quantity (267-287 cu in.) of BMS 3-32 fluid.

      (2) Install the rotary actuator in the test fixture and connect the test set.

      (3) Turn the input shaft (155) by hand in both directions. Make sure that the rotary actuator assembly turns freely and smoothly without unusual noise or binding.

D. Procedures

NOTE: The clockwise (CW) and counterclockwise (CCW) directions are specified from the input shaft end of the rotary actuator.

(1) Do the run-in test.

(a) Turn the input shaft at 600-700 rpm in the CW direction. Apply an opposing torque (CW when you look from the input shaft end) to the output shaft (105), as shown in Fig. 101. Continue the operation until the output shaft turns 180-190 degrees.

(b) Do step (a) again, but in the CCW direction, with a CCW opposing torque applied to the output shaft. This completes one opposing load run-in cycle

(c) Operate the rotary actuator for one more opposing load run-in cycle, for a total of two cycles. If new gears are installed, operate the rotary actuator for a total of 5 cycles.

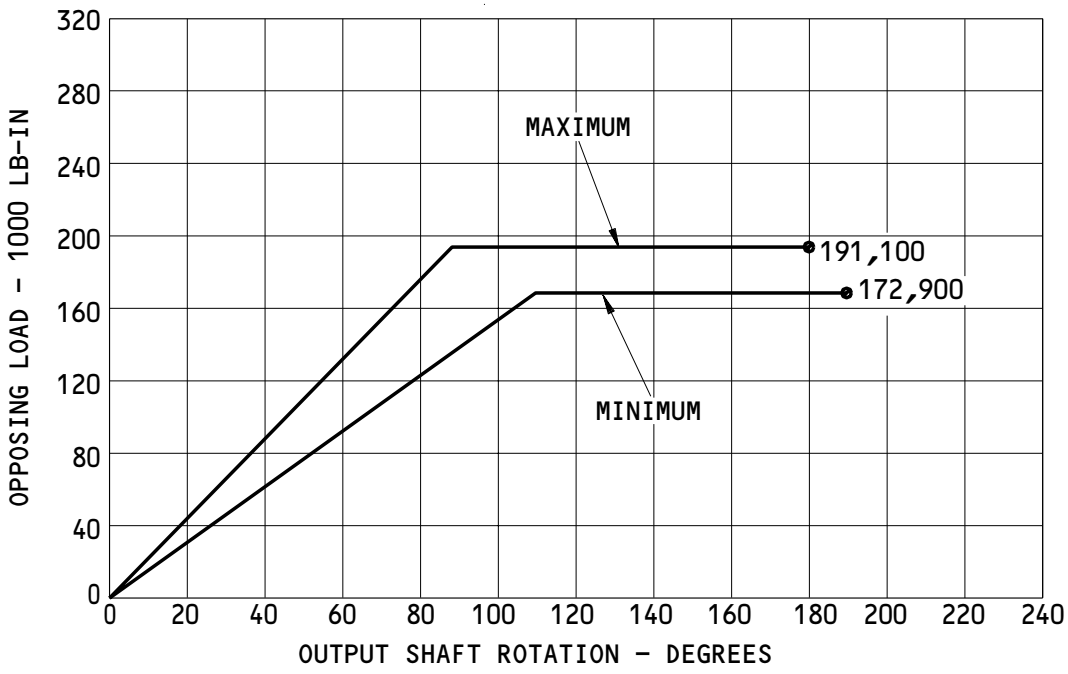
(d) Let the temperature of the housing decrease to ambient air temperature plus 20 degrees F, or less. You can use a fan to decrease the temperature more quickly.

(e) Turn the input shaft at 600-700 rpm in the CW direction. Apply an aiding torque (CCW when you look from the input shaft end) to the output shaft, as shown in Fig. 102. Continue the operation until the output shaft turns 70-85 degrees.

(f) Do step (e) again, but in the CCW direction, with a CW aiding torque applied to the output shaft. This completes one aiding load run-in cycle.

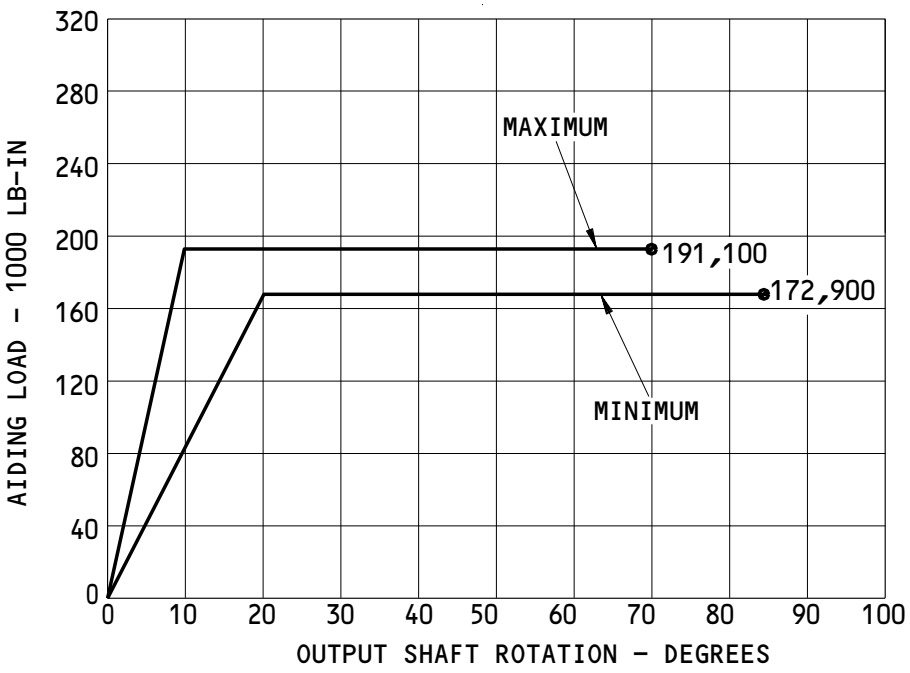
(g) Operate the rotary actuator for one more aiding load run-in cycle, for a total of two cycles. If new gears are installed, operate the rotary actuator for a total of 5 cycles.

(h) Let the temperature of the housing decrease to ambient air temperature plus 20 degrees F, or less. You can use a fan to decrease the temperature more quickly.



Opposing Load Run-in Cycle
Figure 101

K52779



Aiding Load Run-in Cycle
Figure 102

K52782

(2) Do the no-load friction torque test.

(a) Turn the input shaft at 600-700 rpm in the CW direction. Start the rotary actuator at zero rpm and increase the speed at a rate not more than 700 rpm per second. Apply no torque to the output shaft. Make a record of the breakaway torque and the running torque at the input shaft for 10 seconds.

(b) Make sure that the friction torque is 24-64 lb-in., and the peak-to-peak difference is not more than 14 lb-in. Make sure the running torque stays in a 19 lb-in. range during the test. Refer to Fig. 103.

(c) Do steps (a) and (b) again, but in the CCW direction.

(3) Do a test of the torque limiter.

(a) Install the rotary actuator in the test fixture.

(b) Set the trip indicator (215) flush with the input end cover (245).

(c) Turn the input shaft CW while the output shaft is held by the test fixture. Make a record of the input and output torque as shown in Fig. 104.

(d) Make sure that the input torque is 4000-5700 lb-in. for a minimum of 5 seconds. Make sure that the output torque at lockout is 260,857-348,510 lb-in.

(e) Make sure that the trip indicator (215) operates during the lockout.

(f) Decrease the input torque to zero, then apply torque in the opposite direction to release the torque limiter. Make a record of the input torque.

(g) Make sure that the input torque to start and continue operation of the rotary actuator is not more than 240 lb-in.

(h) Do steps (b) thru (g) two more times, and make sure that the results are the same.

(i) Do steps (b) thru (h) again, but turn the input shaft in the CCW direction.

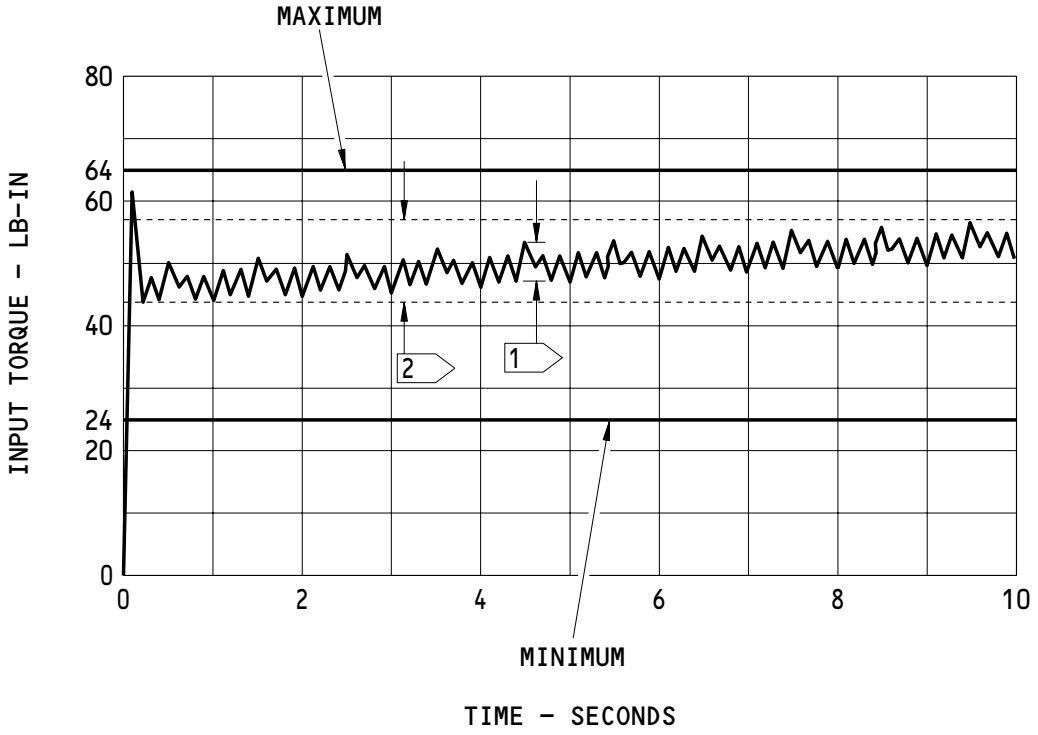
(j) If the output torque is not in the specified range, remove the brake assembly (465A) from the rotary actuator assembly (27-51-48/301, DISASSEMBLY).

(k) Disassemble the brake assembly as necessary to remove and replace the shim (510). Change the shim thickness to change the output torque at lockout.

NOTE: An increase of 0.01 inch in shim thickness will increase the output torque by approximately 2.2 percent.

(l) Assemble the brake assembly with a new lockwasher (475), then assemble the brake assembly into the rotary actuator assembly (27-51-48/701, ASSEMBLY).

(m) After assembly, do the complete test of the rotary actuator assembly again.

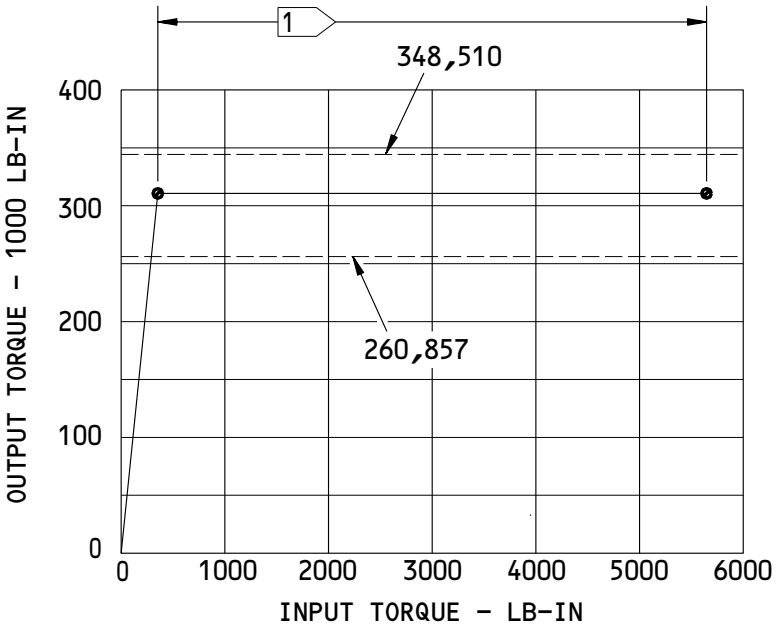


1 14 LB-IN MAXIMUM PEAK-TO-PEAK DIFFERENCE

2 19 LB-IN MAXIMUM DIFFERENCE IN RUNNING TORQUE

No-load Friction Torque
Figure 103

K52820



1 OUTPUT TORQUE BETWEEN THESE POINTS MUST BE IN THE RANGE SHOWN

Torque Lockout Properties
Figure 104

K52828

(4) Do a static hold test of the no-back brake.

(a) Let the input shaft turn freely.

(b) Apply a 182,000-188,000 lb-in. CW torque to the output shaft for a minimum of 10 seconds.

(c) Make sure that the input shaft does not turn more than 15 degrees.

(d) Decrease the output shaft torque to zero and apply a CCW torque to the input shaft to release the no-back brake.

(e) Make sure that the no-back brake releases when the input torque is applied.

(f) Do steps (a) thru (e) again, but with the torque applied to the output shaft in the CCW direction, and the input torque applied in the CW direction.

(5) Do the in-situ test of the no-back brake.

(a) Let the input and output shafts turn freely.

(b) Remove the fasteners (175, 180) and the cover (185) to the test port.

(c) Apply a 130-150 lb-in. CCW torque to the pinion gear (275) with a 1/4-inch hex drive fitting.

(d) Make sure that the input shaft does not turn more than 90 degrees. Make a record of the angular position of the torque wrench.

(e) Apply a 130-150 lb-in. CW torque to the pinion gear (275). Make a record of the angular position of the torque wrench.

(f) Make sure that the change in angular position of the torque wrench is not more than 180 degrees.

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

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

(g) Apply a thin layer of BMS 3-27 compound to the flange of the cover (185), between the outer profile and the fillet radius. Apply BMS 3-27 compound to the shank and threads of the screws (175). Install the cover and the packing (190) on the input end cover assembly (245) with the screws and the washers (180).

(h) Remove the rotary actuator from the test fixture.

(6) Do a check of the seals.

(a) Drain the BMS 3-32 fluid from the rotary actuator.

(b) Fill the rotary actuator with 267-287 cu in. of BMS 3-32 fluid.

(c) Make sure the temperature of the rotary actuator is at ambient and is stable for a minimum of 20 minutes.

(d) Remove an oil plug (195) and pressurize the rotary actuator to 14-16 psig with clean, dry air.

(e) Isolate the rotary actuator from the air supply and monitor the pressure for a minimum of 30 minutes. Make sure that the pressure does not decrease to less than 12 psig during the first 10 minutes. During the remaining 20 minutes, make sure that the pressure does not continue to decrease by more than 1.0 psig

(f) Make sure that there is no seal leakage that you can see or hear while the unit is pressurized.

(g) Make sure that there is no leakage of BMS 3-32 fluid at any time during the test.

(h) Decrease the pressurization to zero and disconnect the air supply. Install the oil plug (195).

DISASSEMBLY

1. General

   A. This procedure has the data necessary to disassemble the 10.6 diameter rotary actuator assembly.

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

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

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

   E. Put a tag on all shims removed during disassembly to identify their location and to help during assembly.

2. Disassembly

   A. Special Tools

      NOTE: Equivalent tools can be used.

      (1) A27120-2, -7 -- Socket

      (2) A27120-3, -4 -- Assembly Fixture, Planet Gear

   B. References

      (1) SOPM 20-50-03, Bearing and Bushing Replacement

   C. Parts Replacement (Ref IPL Fig. 1)

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

      (1) Packing (30, 100, 125A, 145, 190, 200, 210, 225, 265)

      (2) Lockwasher (370, 475)

      (3) Shaft seal (80, 130).

          NOTE: Replace the shaft seal if you remove it from its housing.

(4) Bearing (35, 50, 150, 285, 300B, 335, 340, 520)

NOTE: Replace the bearing if you push on the outer race during removal.

D. Procedure

(1) Remove the output shaft cover assembly (25).

(a) Remove the screws (5), washers (10), and retainer plate (20).

(b) Remove the output shaft cover assembly (25) and bearing (50). Remove the packing (30) from the output shaft cover assembly.

NOTE: Do not remove the inserts (27) from the output shaft cover assembly unless necessary for repair or replacement.

(2) Remove the no-back input shaft (45) and the shim (40).

(3) Remove the output cover assembly (85).

(a) Remove the screws (70), cover retainers (75), and the output cover assembly (85). Remove the packing (100) from the output cover assembly.

(b) Remove the screws (60), seal retainer (65), and the shaft seal (80) from the output cover assembly (85).

NOTE: Do not remove the inserts (90) from the output cover assembly unless necessary for repair or replacement.

(4) Remove the input end cover assembly (245) and the input shaft (155) from the rotary actuator assembly.

(a) Remove the fasteners (160 thru 170), then remove the input end cover assembly (245) and the input shaft (155) from the housing (625). Remove the packing (265) from the input cover assembly.

(b) Remove the screws (110), washers (115), seal retainer (120), and retainer plate (140) from the input end cover assembly (245). Remove the packing (125A) from the seal retainer.

(c) Remove the shaft seal (130) from the seal retainer (120).

(d) Increase the temperature of the seal ring (135) to 250-300 degrees F, then remove the seal ring from the input shaft (155).

(e) Remove the input shaft (155) from the input end cover assembly (245).

(f) Remove the bearing (150) from the input end cover assembly (245).

(g) Remove the screws (175), washers (180) and the cover (185). Remove the packing (190).

(h) Use the A27120-7 socket to remove the nut (270), then remove the pinion gear (275), bearings (285), and spacer (280).

(i) Remove the oil plugs (195). Remove the packings (200).

(j) Remove the screws (175), washers (180) and the indicator assembly (215) from the input end cover assembly (245). Remove the packing (210) from the indicator assembly.

NOTE: Do not remove the inserts (250, 255) from the input end cover assembly unless necessary for repair or replacement.

(5) Disassemble the indicator assembly (215).

(a) Remove parts (220 thru 235) from the indicator housing (240).

(6) Remove the retaining ring (290) and the bull gear (295) from the sun gear assembly (440).

(7) Remove the retainer ring (305) and shim (310).

(8) Remove the spring retainer (315), springs (320), indicator plate (325), and plungers (330) from the bearing retainer (380).

(9) Remove the bolts (365), lockwashers (370), bushings (375), and the bearing retainer (380).

(10) Remove the bearings (300B, 335, 340), shim (302), if installed, and the cluster gear assemblies (345) from the bearing retainer (380).

NOTE: Do not disassemble the cluster gear assemblies unless necessary for repair or replacement.

(11) Remove the sun gear assembly (440), bushing 455), and the quill shaft (460).

(12) Remove the bearing (300B) from the sun gear assembly (440).

NOTE: Do not remove the bushing (445) from the sun gear assembly unless necessary for repair or replacement.

(13) Remove the output shaft (105) and shim (415) from the splined shaft assembly (400). Put a tag on the shim and identify it as shim B.

(14) Remove the brake assembly (465A) and the sleeve (615) from the output shaft (105).

CAUTION: THE SPLINED SHAFT ASSEMBLY (400) IS MADE FROM A MATCHED SET OF SPLINED SHAFTS (405, 410). KEEP THE PARTS TOGETHER SO THE ROTARY ACTUATOR ASSEMBLY CAN BE ASSEMBLED CORRECTLY.

(15) Remove the splined shaft (405) and shim (415) from the planet gears (420, 425, 430). Put a tag on the shim and identify it as shim A.

(16) Put the remaining assembly on the assembly fixture and remove the splined shaft (410), prestage ring gear (390), and the output sun gear (395).

(17) Remove the ring gears (620) from the splined shafts (405, 410). Put supports under the outer diameter of the splined shafts to prevent damage when you push on the ring gears.

(18) Remove the housing (625) from the planet gears (420, 425, 430).

(19) Remove the planet gears (420, 425, 430) from the assembly fixture to remove the spreader rings.

(20) Disassemble the brake assembly (465A).

(a) Use the A27120-2 socket to remove the nut (470).

(b) Remove the lockwasher (475), input cam (480), balls (485).

(c) Remove the output cam (490), Belleville springs (495), thrust washer (500), and bearing (505).

(d) Remove the shim (510), stator plate (515) and bearing (520).

(e) Remove the torque brake shaft (525) from the no-back shaft (610).

(f) Remove the shim (530), thrust stop (535), and Belleville spring (540A).

(g) Remove the main brake rotor disks (545), spacer (550 or 551), drag brake rotor disks (555, 556), and lined disc assemblies (560, 571) from the no-back shaft (610).

NOTE: Do not disassemble the lined disc assemblies. Replace each assembly as a unit.

(h) Remove the pressure plate (575), springs (580), spacers (582), if installed, reaction plate (595), and balls (600) from the no-back shaft (610).

(i) Remove the ball ramp (605) from the no-back shaft (610).

CLEANING

1. General

   A. This procedure has the data necessary to clean the 10.6 diameter rotary actuator assembly.

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

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

2. Cleaning

   A. References

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

   B. Procedure

      (1) Refer to the manufacturer's instructions to clean the bearings (35, 50, 150, 285, 300B, 335, 340, 505, 520), or refer to SOPM 20-30-01.

      (2) Use standard industry procedures and refer to SOPM 20-30-03 to clean the other parts.

CHECK

1. General

   A. This procedure has the data necessary to find defects in the material of the specified parts.

   B. Refer to FITS AND CLEARANCES for the design dimension and wear limits.

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

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

2. Check

   A. References

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

      (2) SOPM 20-20-02, Penetrant Methods of Inspection

   B. Procedure

      (1) Use standard industry procedures to do a visual check of all the parts for defects. Do the penetrant or magnetic particle check if the visual check shows possible damage or if you suspect possible damage on the parts listed in steps (7) and (8) below.

      (2) Do a check of the gear teeth on the parts that follow. Make sure that the center of the contact pattern on the gear teeth is approximately at the pitch diameter. If you see signs of too much wear, or pits or other damage on the gear teeth, replace the part.

         (a) Pinion gear (275)

         (b) Bull gear (295)

         (c) Pinion (355)

         (d) Gear (360)

         (e) Ring gear (390, 620)

         (f) Sun gear (395, 450)

(g) Splined shaft (405, 410)

(h) Planet gear (420, 425, 430)

(i) Housing (625)

(3) Do a check of the splines on the parts that follow. If you see signs of too much wear, or pits or other damage on the splines, replace the part. On the parts indicated, use pins to measure the wear. Refer to 27-51-48/801, Fits and Clearances, for the details.

(a) No-back input shaft (45) - measure between pins

(b) Output cover (95) - measure over pins

(c) Output shaft (105) - measure over pins

(d) Input shaft (155) - measure over pins

(e) Bull gear (295) - measure between pins

(f) Splined shaft (405, 410) - measure between pins

(g) Sun gear (450)

(h) Quill shaft (460)

(i) Input cam (480)

(j) Output cam (490)

(k) Torque brake stator plate (515)

(l) Torque brake shaft (525)

(m) Rotor disk (545, 555)

(n) Friction disc (565)

(o) Stator disc (570)

(p) No-back pressure plate (575)

(q) No-back reaction plate (595)

(r) Housing (625) - measure between pins

(4) Do a check of the retainer grooves on the output shaft (105), the bearing retainer (380), and the no-back reaction plate (595). If you can see wear on the groove surfaces, or if the edge radii are more than 0.01 inch, replace the part.

(5) Do a check of the mating teeth on the output cam (490) and the torque brake stator plate (515). If you see signs of too much wear on the sides or the tops of the teeth, or if the edge radii on the top lands of the teeth are more that 0.008 inch, replace the part.

(6) Do a check of the balls (485, 600), and the ball pockets in the parts that follow. If you can see wear, or if there are cracks, pits, or signs of brinelling, replace the part.

(a) Input cam (480), output cam (490)

(b) No-back reaction plate (595)

(c) No-back ball ramp (605)

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

(a) No-back input shaft (45)

(b) Cover retainer (75)

(c) Output shaft (105)

(d) Seal ring (135)

(e) Retainer plate (140)

(f) Input shaft (155)

(g) Plunger (220)

(h) Housing (240)

(i) Pinion gear (275)

(j) Bull gear (295)

(k) Pinion (355)

(l) Gear (360)

(m) Ring gear (390, 620)

(n) Sun gear (395, 450)

(o) Splined shaft (405, 410)

(p) Planet gear (420, 425, 430)

(q) Spreader ring (435)

(r) Bushing (455)

(s) Quill shaft (460)

(t) Input cam (480), output cam (490)

(u) Torque brake stator plate (515), shaft (525), Belleville spring (540A), rotor disk (545, 555, 556), stator disc (570)

(v) No-back pressure plate (575), reaction plate (595), ball ramp (605), shaft (610)

(w) Housing (625)

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

(a) Retainer ring (15, 305)

(b) Spring retainer (315)

(c) Indicator plate (325)

(d) Plunger (330)

(e) Pin (350)

(f) Washer (370)

(g) Bearing retainer (380)

(h) Plate retainer (385)

(i) Lockwasher (475)

(j) Belleville spring (495)

(k) Thrust stop (535)

(l) Seal retainer (20, 120)

(m) Output shaft cover (28)

(n) Output cover (95)

(o) Cover (185)

(p) Oil plug (195)

(q) Indicator shim (205)

(r) Input end cover (260)

(s) Spacer (280)

(9) Do a check of the bearings (35, 50, 150, 285, 300B, 335, 340, 520).

(a) Hold the inner race of the bearing and turn the outer race. Make sure that the bearing turns freely and smoothly.

(b) Do a check of the surfaces of the inner and outer races. If you see damage or wear, replace the bearing.

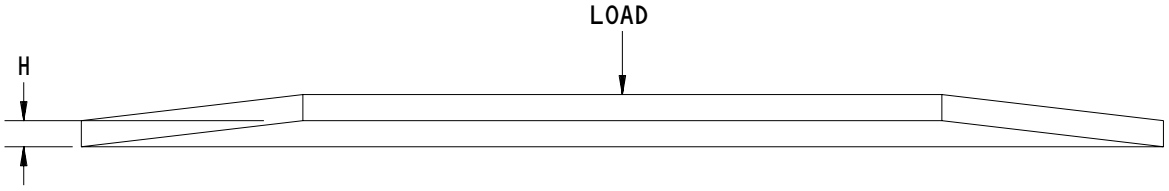
(c) Do a check of the internal radial play in the bearings (35, 50, 150, 285, 335, 340, 520). If the play is more than 0.0008 inch, replace the bearing.

(d) Do a check of the internal radial play in the bearings (300B). If the play is more than 0.0020 inch, replace the bearing.

(10) Do a check of the needle rollers of the bearing (505), and the mating surfaces on the thrust washers (500). If you can see wear, or if there are cracks, pits, or signs of fretting or brinelling, replace the part.

(11) Do a visual check of the shaft seals (80, 130). Make sure that there is no damage or abrasive wear to the lips of the seals.

(12) Do a load check of the Belleville springs (495, 540A) as shown in Fig. 501.



ITEM NO. IPL FIG. 1	H (INCH)	LOAD (POUNDS)
495	0.054 0.025	0.0 237-262
540A	0.034 0.008	0.0 61-75

Spring Check
Figure 501

K54909

REPAIR - GENERAL

1. General

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

PART NUMBER	NAME	REPAIR
---	REFINISH OF OTHER PARTS	1-1
256T6124	COVER	2-1
256T6130	GEAR, BULL	3-1
256T6132	RETAINER, SEAL	4-1
256T6154	HOUSING, INDICATOR	5-1
256T6171	SHAFT, NO-BACK	6-1
256T6172	RAMP, NO-BACK BALL	7-1
256T6173	PLATE, NO-BACK REACTION	8-1
256T6160	BUSHING	9-1
256T6182	PLATE, TORQUE BRAKE STATOR	10-1
256T6183	SHAFT, TORQUE BRAKE	11-1
256T6320	HOUSING	12-1
256T6321	COVER, INPUT END	13-1
256T6322	COVER, OUTPUT	14-1
256T6323	COVER, OUTPUT SHAFT	15-1
256T6329	GEAR, SUN	16-1, 16-2
256T6331	GEAR, PINION	17-1
256T6335	SHAFT, INPUT	18-1
256T6337	SHAFT, NO-BACK INPUT	19-1

PART NUMBER	NAME	REPAIR
256T6338	SHAFT, SPLINED	20-1
256T6340	SHAFT, OUTPUT	21-1
256T6369	GEAR, CLUSTER	22-1, 22-2
256T5124	MARKER	23-1

2. Dimensioning Symbols

   A. Standard True Position Dimensioning Symbols used in the applicable repair procedures are shown in Fig. 601.

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

EXAMPLES

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

True Position Dimensioning Symbols
Figure 601

K37886

REFINISH OF OTHER PARTS - REPAIR 1-1

1. General

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

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

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

2. Refinish of Other Parts

   A. General

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

   B. Consumable Materials

      NOTE: Equivalent material can be used.

      (1) C00259 Primer - BMS 10-11, Type 1 (SOPM 20-60-02)

   C. References

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

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

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

      (4) SOPM 20-41-02, Application of Chemical and Solvent Resistant Finishes

      (5) SOPM 20-42-05, Bright Cadmium Plating

      (6) SOPM 20-43-01, Chromic Acid Anodizing

      (7) SOPM 20-43-03, Chemical Conversion Coatings for Aluminum

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

   D. Procedures

IPL FIG. & ITEM	MATERIAL	FINISH
IPL Fig. 1		
Retainer ring (15)	15-5PH/17-7PH CRES, 150-170 ksi	Cadmium plate (F-15.36).
Retainer plate (20)	Aluminum alloy	Boric acid-sulfuric acid anodize or chromic acid anodize (F-17.35) all over. Apply BMS 10-11, type 1 primer (F-20.03) on the inner diameter and on the large (3.26 inch diameter) face.
Shim (40,55,310, 415,510,530,590)	17-7PH CRES, 150-170 ksi, or 15-5PH CRES, H1025 condition	Passivate (F-17.25).
Seal retainer (65)	Aluminum alloy	Boric acid-sulfuric acid anodize or chromic acid anodize (F-17.31) and apply BMS 10-11, type 1 primer (F-20.03).
Cover retainer (75)	15-5PH CRES, 150-170 ksi	Cadmium plate (F-15.36).
Seal ring (135)	PH13-8MO CRES, 200-220 ksi	Passivate (F-17.25).
Retainer plate (140),spacer (280), retainer ring (305)	15-5PH CRES, 150-170 ksi	Passivate (F-17.25).

Refinish Details
Table 601 (Sheet 1)

IPL FIG. & ITEM	MATERIAL	FINISH
IPL Fig. 1		
Oil plug (195), rotor disk (545, 555,556)	15-5PH CRES, H1025 condition	Passivate (F-17.25).
Indicator shim (205)	17-7PH CRES, 150-170 ksi, or 15-5PH CRES, H1025 condition	Cadmium plate (F-15.06).
Plunger (220), quill shaft (460), thrust stop (535), no-back pressure plate (575)	15-5PH CRES, 180-200 ksi	Passivate (F-17.25).
Spring retainer (315), indicator plate (325), bearing retainer (380)	Aluminum alloy	Boric acid-sulfuric acid anodize or chromic acid anodize (F-17.35).
Lockwasher (370)	17-7PH CRES, 150-170 ksi	Passivate (F-17.25).
Retainer plate (385)	4330M steel, 180-200 ksi	Cadmium plate (F-15.36).
Ring gear (390)	9310 steel, 150-190 ksi	Cadmium plate (F-15.41).
Output sun gear (395)	Nitralloy 135M, 150-200 ksi	Cadmium plate (F-15.36).
Lockwasher (475)	15-5PH CRES, 140-160 ksi	Passivate (F-17.25).

Refinish Details
Table 601 (Sheet 2)

IPL FIG. & ITEM	MATERIAL	FINISH
IPL Fig. 1		
Input cam (480)	9310 steel, 150-190 ksi	Cadmium plate (F-15.41) the spline teeth, and cadmium plate (F-15.42) the remaining surfaces, but do not plate the ball pockets.
Output cam (490)	9310 steel, 160-190 ksi	Cadmium plate (F-15.42), but do not plate the spline teeth or the ball pockets.
Belleville spring (495,540A)	17-7PH CRES, TH1050 condition	Passivate (F-17.25).
Spacer (550,551)	Aluminum alloy	Chemical treat (F-17.26).
Stator disk (570)	17-7PH/AMS 5528 CRES, 150-170 ksi	Passivate (F-17.25).
Spacer (582)	15-5PH/17-7PH CRES, H1025 condition	Passivate (F-17.25)
Ring gear (620)	9310 steel, 150-190 ksi	Cadmium plate all over. Refer to QQ-P-416, type 2, class 2. Bake 5-8 hours at 250-300 degrees F.

Refinish Details
Table 601 (Sheet 3)

COVER - REPAIR 2-1

256T6124-1

1. General

A. This procedure has the data necessary to refinish the cover (185).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: Aluminum alloy

2. Cover Refinish

A. Consumable Materials

NOTE: Equivalent materials can be used.

(1) C00259 Primer -- BMS 10-11, Type 1 (SOPM 20-60-02)

B. References

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

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

(3) SOPM 20-41-02, Application of Chemical and Solvent Resistant Finishes

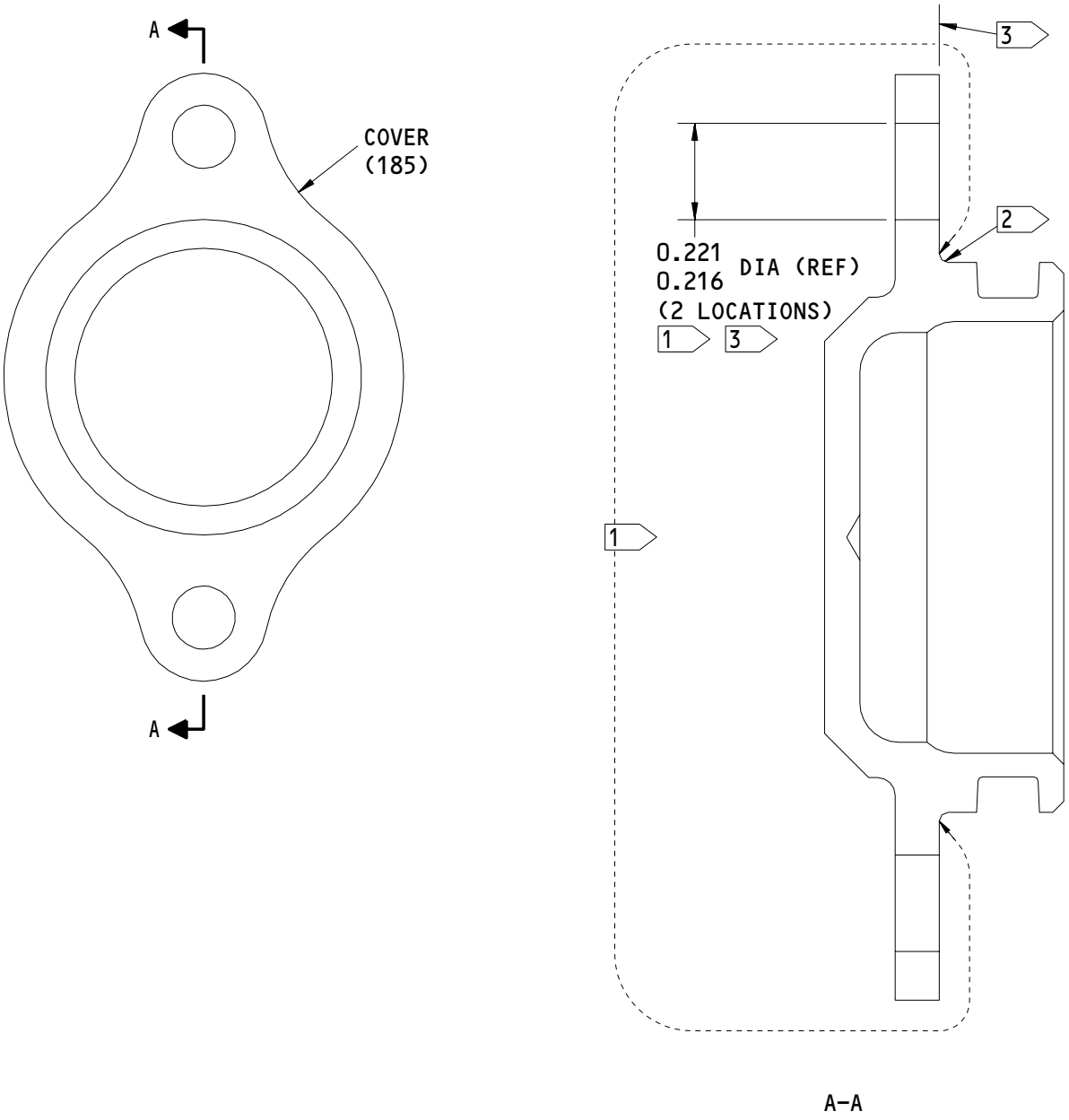
(4) SOPM 20-43-01, Chromic Acid Anodizing

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

C. Procedures (Fig. 601)

(1) Boric acid-sulfuric acid anodize or chromic acid anodize (F-17.31) all over.

(2) Apply BMS 10-11, type 1 primer (F-20.03) on the surfaces shown.



A-A

1 APPLY PRIMER ON THESE SURFACES

2 OVERSPRAY OF PRIMER IS PERMITTED ON THIS RADIUS

3 WHEN DRY, THE PRIMER MUST BE SMOOTH ON THIS SURFACE. NO RUNS, BEADS, OR SAGS ARE PERMITTED

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T6124-1
Cover Refinish
Figure 601

BULL GEAR - REPAIR 3-1

256T6130-1

1. General

A. This procedure has the data necessary to repair and refinish the bull gear (295).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: 15-5PH CRES, 180-200 ksi

(2) Shot peen: All repaired surfaces, with CRES cut wire shot
Shot size: Refer to SOPM 20-10-03
Intensity: 0.006A
Coverage: 2.0

2. Bull Gear Repair

A. References

(1) SOPM 20-10-01, Repair and Refinish of High Strength Steel Parts

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

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

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

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

(6) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

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

B. Procedures (Fig. 601)

(1) Machine the bull gear (295) as necessary to remove damage or defects. Do not machine more than the limit shown.

(2) Break all sharp edges.

(3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.

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

(5) Build up the machined surface with chrome plate (F-15.03). Chrome plate is not permitted in the fillet radii or on the edges of the part.

(6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.015 inch thick after you grind the surface. The chrome plate runout is 0.015-0.030 inch, and must stop at the edge of the repaired surface.

(7) Do a magnetic particle check of the repaired surface. Refer to SOPM 20-20-01.

3. Bull Gear Refinish

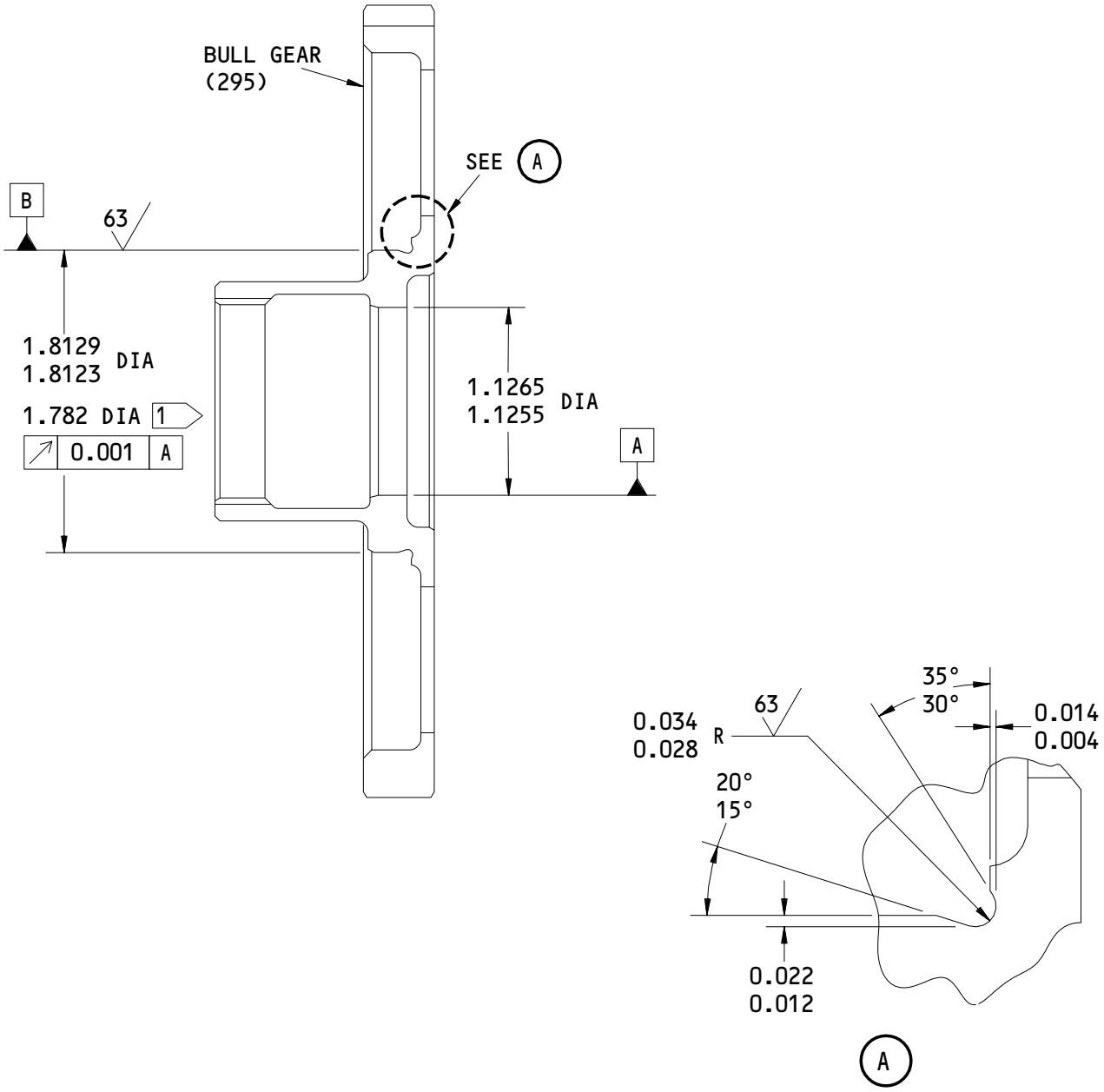
A. References

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

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

B. Procedures (Fig. 601)

(1) Passivate (F-17.25).



125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

1 REPAIR LIMIT

ALL DIMENSIONS ARE IN INCHES

256T6130-1
Bull Gear Repair
Figure 601

SEAL RETAINER - REPAIR 4-1

256T6132-1

1. General

A. This procedure has the data necessary to refinish the seal retainer (120).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: Aluminum alloy

2. Seal Retainer Refinish

A. Consumable Materials

NOTE: Equivalent materials can be used.

(1) C00259 Primer -- BMS 10-11, Type 1 (SOPM 20-60-02)

B. References

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

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

(3) SOPM 20-41-02, Application of Chemical and Solvent Resistant Finishes

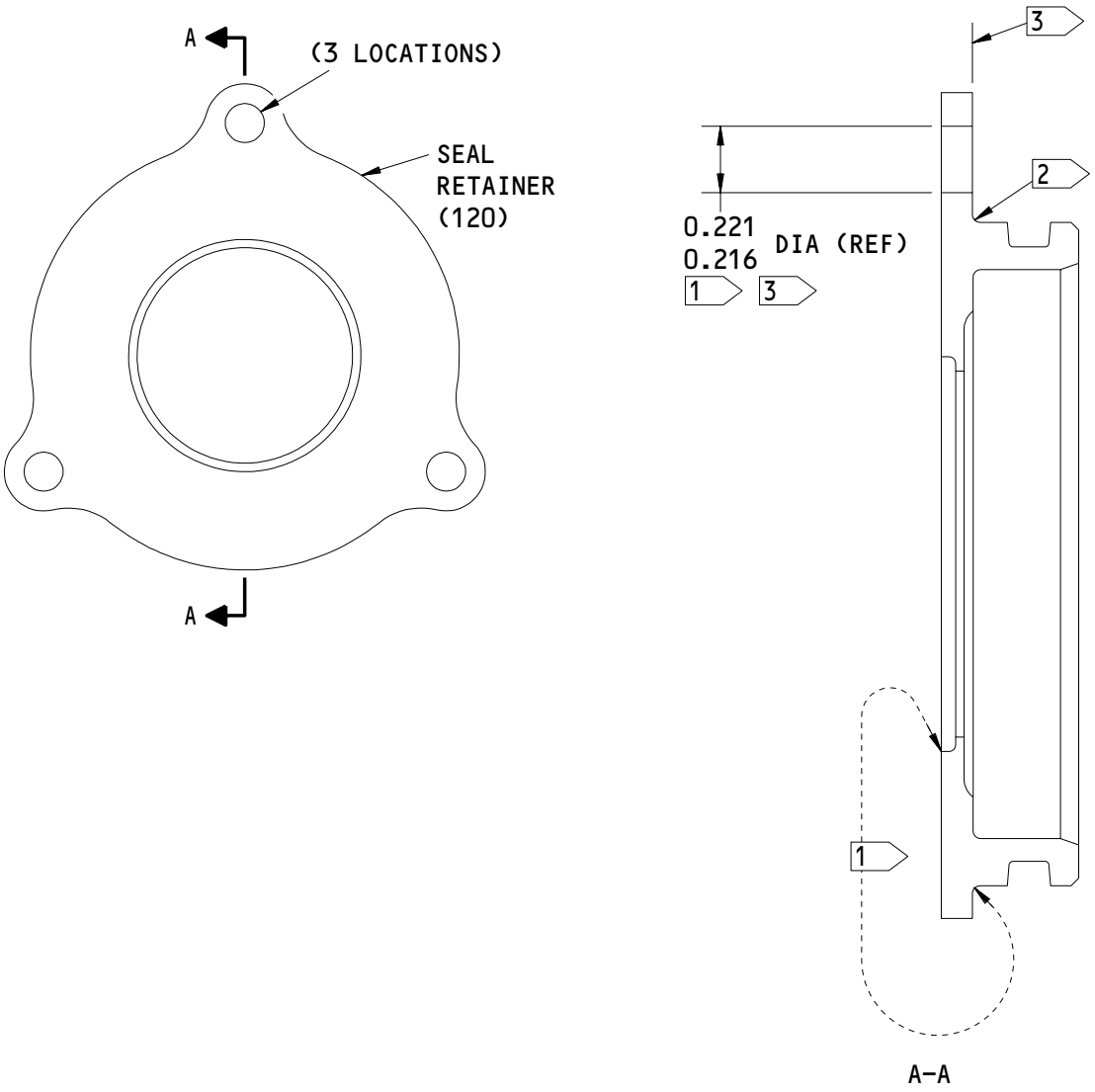
(4) SOPM 20-43-01, Chromic Acid Anodizing

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

C. Procedures (Fig. 601)

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

(2) Apply BMS 10-11, type 1 primer (F-20.03) on the surfaces shown.



1 APPLY PRIMER ON THESE SURFACES

2 OVERSPRAY OF PRIMER IS PERMITTED ON THIS RADIUS

3 WHEN DRY, THE PRIMER MUST BE SMOOTH ON THIS SURFACE. NO RUNS, BEADS, OR SAGS ARE PERMITTED

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T6132-1
Seal Retainer Refinish
Figure 601

K40865

INDICATOR HOUSING - REPAIR 5-1

256T6154-1, -2

1. General

A. This procedure has the data necessary to refinish the indicator housing (240).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

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

2. Indicator Housing Refinish

A. Consumable Materials

NOTE: Equivalent materials can be used.

(1) C00259 Primer -- BMS 10-11, Type 1 (SOPM 20-60-02)

B. References

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

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

(3) SOPM 20-41-02, Application of Chemical and Solvent Resistant Finishes

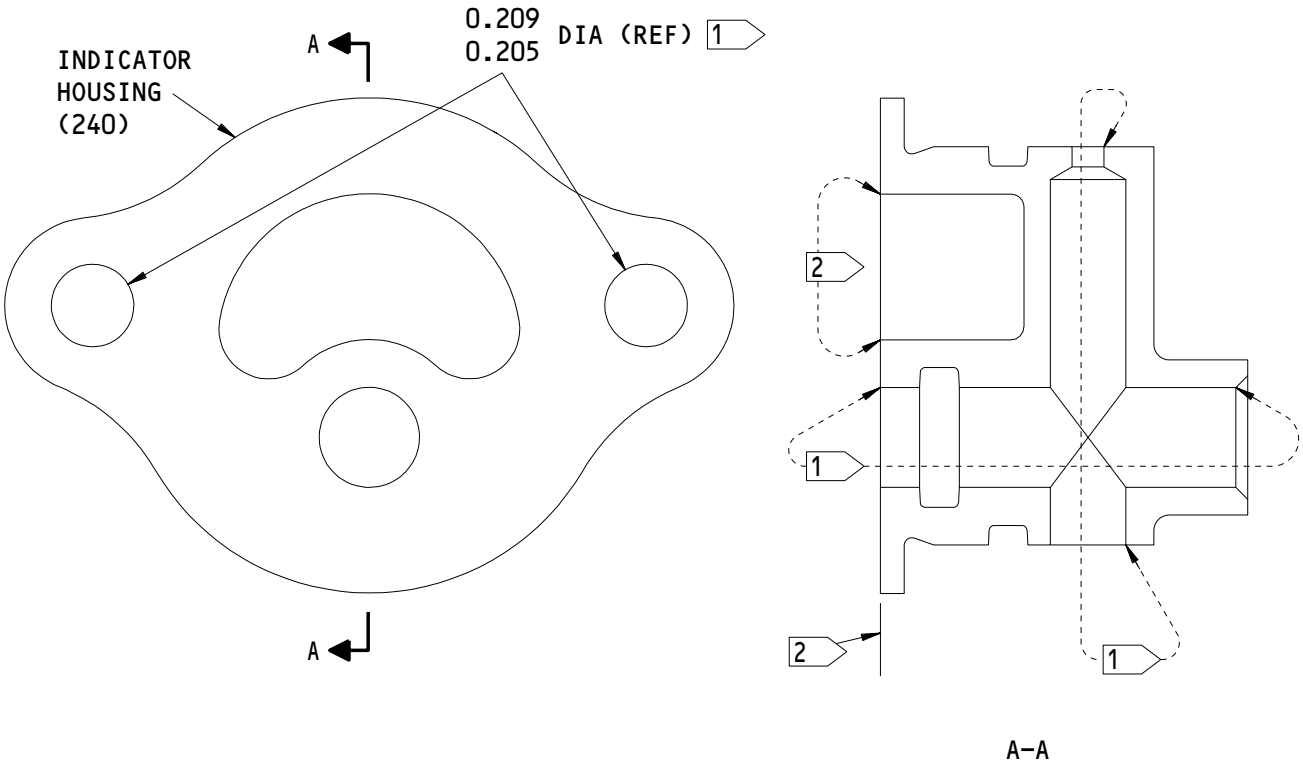
(4) SOPM 20-42-05, Bright Cadmium Plating

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

C. Procedures (Fig. 601)

(1) Cadmium plate (F-15.36) all over, unless shown differently.

(2) Apply BMS 10-11, type 1 primer (F-20.02) on the surfaces shown.



1 APPLY NO FINISH ON THESE SURFACES

2 APPLY PRIMER ON THESE SURFACES

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T6154-1,-2
Indicator Housing Refinish
Figure 601

NO-BACK SHAFT - REPAIR 6-1

256T6171-1

1. General

A. This procedure has the data necessary to repair and refinish the no-back shaft (610).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: 4330M steel, 180-200 ksi

(2) Shot peen: All repaired surfaces
Shot size: Refer to SOPM 20-10-03
Intensity: 0.006A
Coverage: 2.0

2. No-Back Shaft Repair

A. References

(1) SOPM 20-10-01, Repair and Refinish of High Strength Steel Parts

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

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

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

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

(6) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

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

B. Procedures (Fig. 601)

(1) Machine the no-back shaft (610) as necessary to remove damage or defects. Do not machine more than the limit shown.

(2) Break all sharp edges.

(3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.

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

(5) Build up the machined surface with chrome plate (F-15.03). Chrome plate is not permitted in the fillet radii or on the edges of the part.

(6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.015 inch thick after you grind the surface. The chrome plate runout is 0.015-0.030 inch, and must stop at the edge of the repaired surface.

(7) Do a magnetic particle check of the repaired surface. Refer to SOPM 20-20-01.

3. No-Back Shaft Refinish

A. References

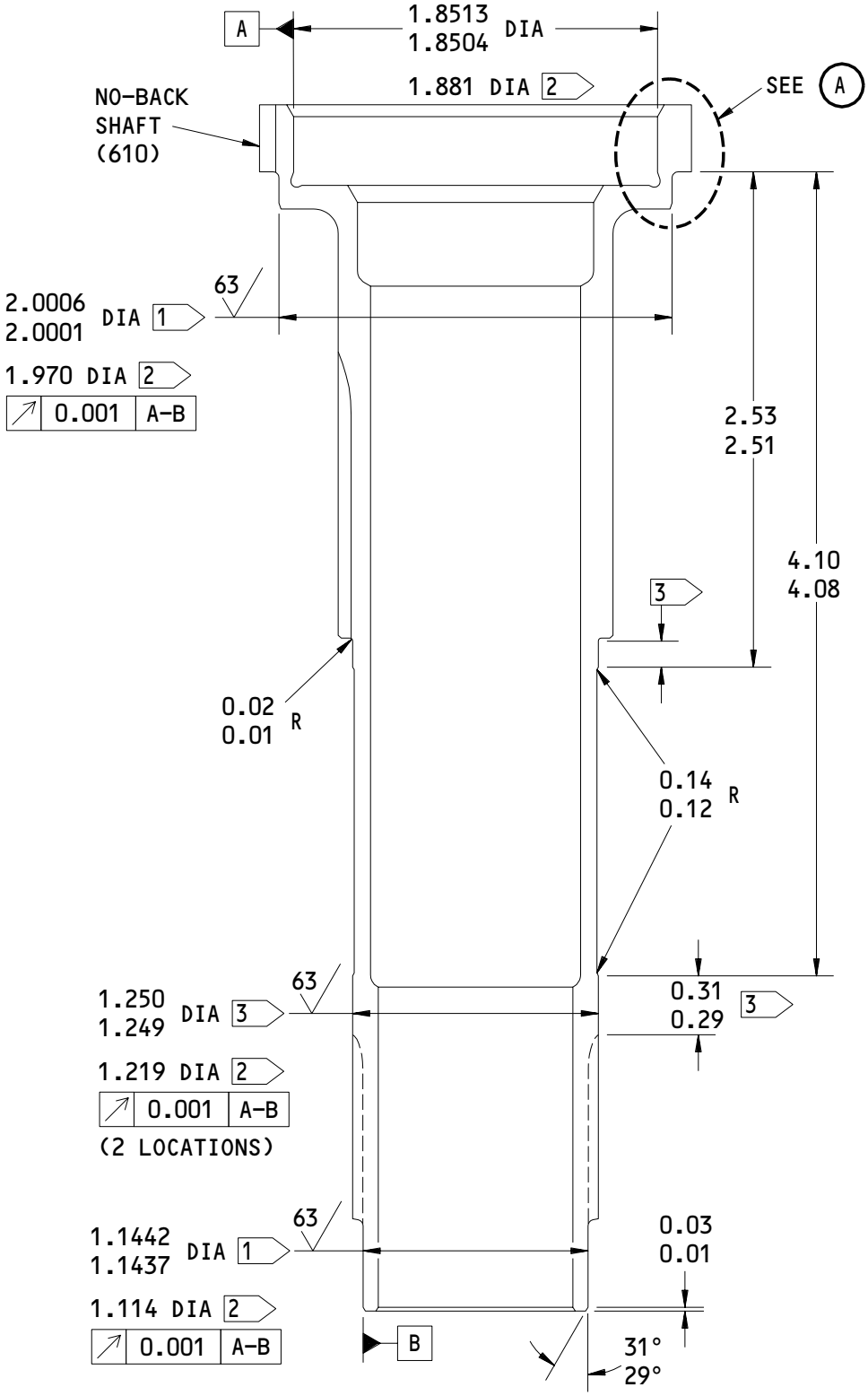
(1) SOPM 20-41-01, Decoding Table For Boeing Finish Codes

(2) SOPM 20-42-05, Bright Cadmium Plating

B. Procedures (Fig. 601)

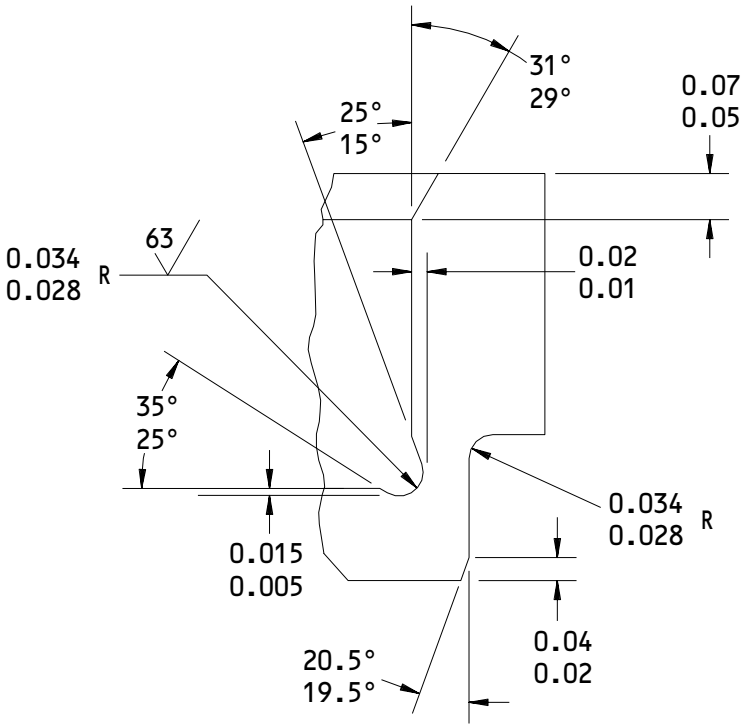
(1) Cadmium plate (F-15.36) the spline teeth.

(2) Cadmium plate (F-15.06) the remaining external surfaces, unless shown differently. Plating throw-in is permitted in the bore.



256T6171-1
No-Back Shaft Repair and Refinish
Figure 601 (Sheet 1)

K40879



1 NO CADMIUM PLATE ON THIS SURFACE

2 REPAIR LIMIT

3 DIAMETER APPLIES OVER THIS AXIAL DISTANCE

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T6171-1
No-Back Shaft Repair and Refinish
Figure 601 (Sheet 2)

NO-BACK BALL RAMP - REPAIR 7-1

256T6172-1

1. General

A. This procedure has the data necessary to repair and refinish the no-back ball ramp (605).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: 9310 steel, 150-190 ksi core strength

(2) Shot peen: All repaired surfaces
Shot size: Refer to SOPM 20-10-03
Intensity: 0.006A
Coverage: 2.0

2. Ball Ramp Repair

A. References

(1) SOPM 20-10-01, Repair and Refinish of High Strength Steel Parts

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

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

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

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

(6) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

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

B. Procedures (Fig. 601)

(1) Machine the ball ramp (605) as necessary to remove damage or defects. Do not machine more than the limit shown.

(2) Break all sharp edges.

(3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.

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

(5) Build up the machined surface with chrome plate (F-15.03). Chrome plate is not permitted in the fillet radii or on the edges of the part.

(6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.015 inch thick after you grind the surface. The chrome plate runout is 0.015-0.030 inch, and must stop at the edge of the repaired surface.

(7) Do a magnetic particle check of the repaired surface. Refer to SOPM 20-20-01.

3. Ball Ramp Refinish

A. References

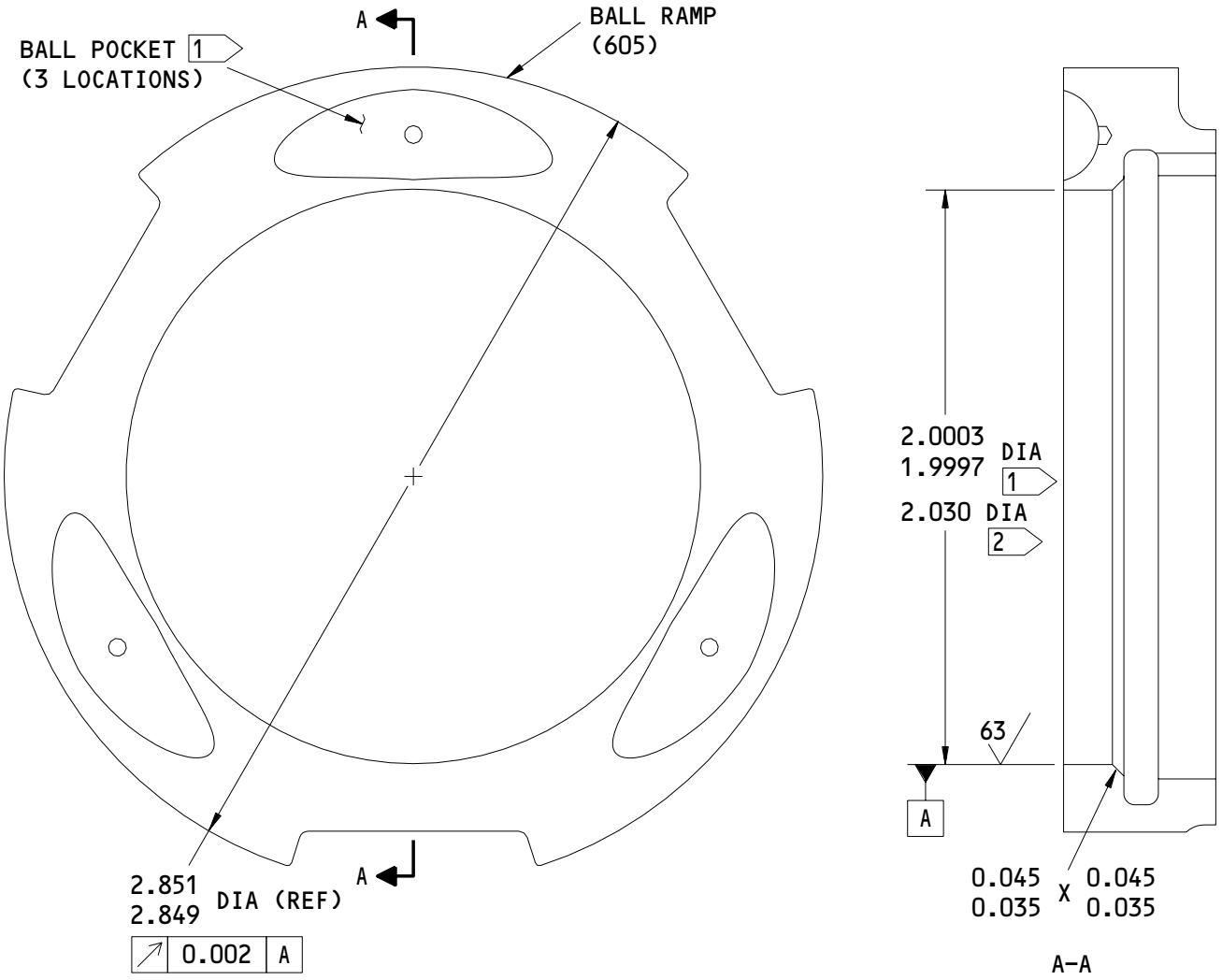
(1) SOPM 20-41-01, Decoding Table For Boeing Finish Codes

(2) SOPM 20-42-05, Bright Cadmium Plating

B. Procedures (Fig. 601)

(1) Cadmium plate (F-15.41) the spline teeth.

(2) Cadmium plate (F-15.42) the remaining surfaces, unless shown differently.



125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

1 NO CADMIUM PLATE ON THIS SURFACE

2 REPAIR LIMIT

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T6172-1
No-Back Ball Ramp Repair and Refinish
Figure 601

K40889

NO-BACK REACTION PLATE - REPAIR 8-1

256T6173-1, -2

1. General

   A. This procedure has the data necessary to refinish the no-back reaction plate (595).

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

   C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

   E. General repair details:

      (1) Material: 9310 steel, 150-190 ksi core strength

2. Reaction Plate Refinish

   A. References

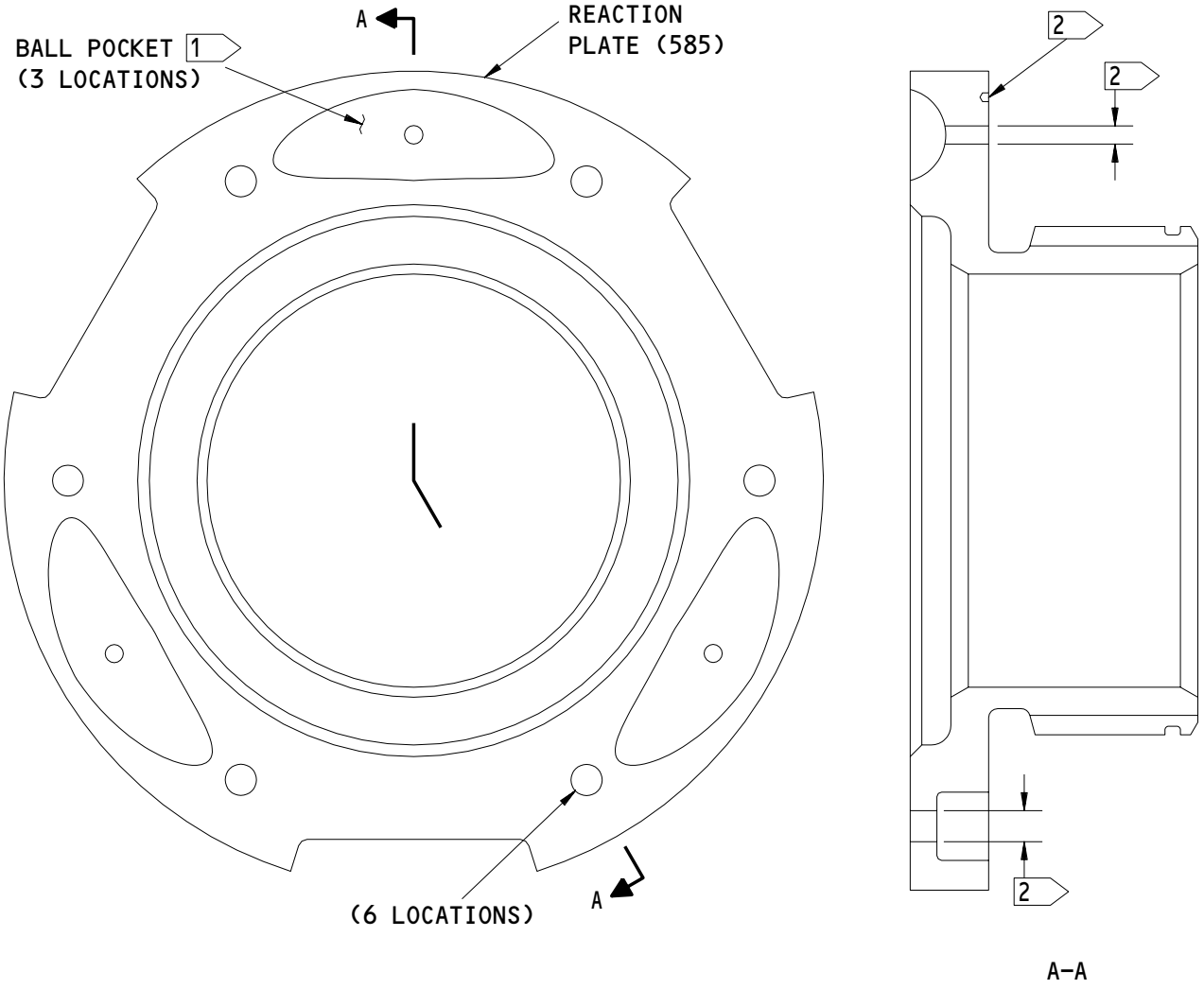
      (1) SOPM 20-41-01, Decoding Table For Boeing Finish Codes

      (2) SOPM 20-42-05, Bright Cadmium Plating

   B. Procedures (Fig. 601)

      (1) Cadmium plate (F-15.41) the spline teeth.

      (2) Cadmium plate (F-15.42) the remaining surfaces, unless shown differently.



1 NO CADMIUM PLATE ON THIS SURFACE

2 CADMIUM PLATE OPTIONAL OR NOT CONTROLLED ON THIS SURFACE

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T6173-1,-2
No-Back Reaction Plate Refinish
Figure 601

K40893

BUSHING - REPAIR 9-1

256T6160-1

1. General

A. This procedure has the data necessary to repair and refinish the bushing (455).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: 15-5PH CRES, 180-200 ksi

(2) Shot peen: All repaired surfaces, with CRES cut wire shot
Shot size: Refer to SOPM 20-10-03
Intensity: 0.006A
Coverage: 2.0

2. Bushing Repair

A. References

(1) SOPM 20-10-01, Repair and Refinish of High Strength Steel Parts

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

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

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

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

(6) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

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

B. Procedures (Fig. 601)

(1) Machine the bushing (455) as necessary to remove damage or defects. Do not machine more than the limit shown.

(2) Break all sharp edges.

(3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.

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

(5) Build up the machined surface with chrome plate (F-15.03). Chrome plate is not permitted in the fillet radii or on the edges of the part.

(6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.015 inch thick after you grind the surface. The chrome plate runout is 0.015-0.030 inch, and must stop at the edge of the repaired surface.

(7) Do a magnetic particle check of the repaired surface. Refer to SOPM 20-20-01.

3. Bushing Refinish

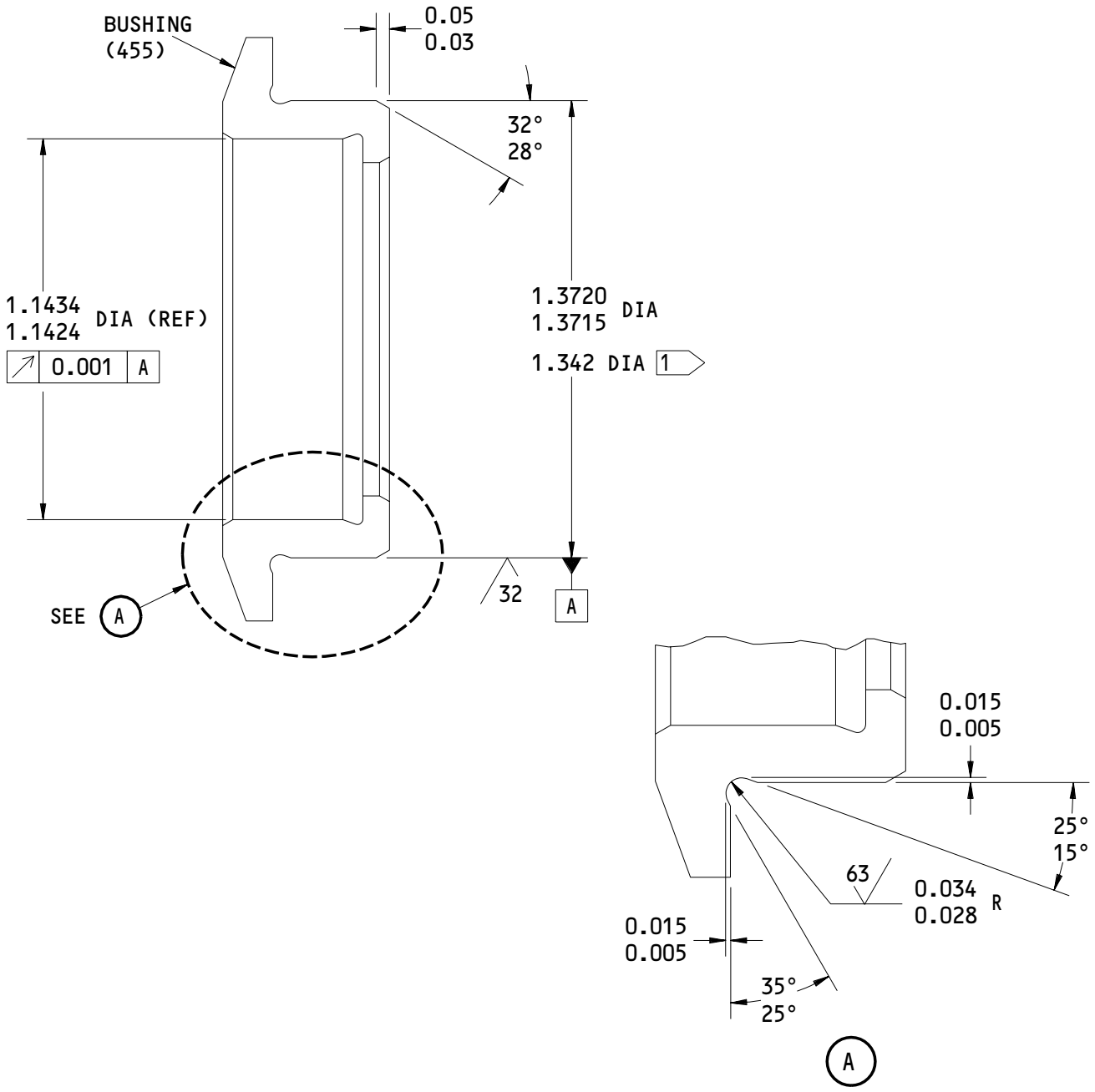
A. References

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

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

B. Procedures

(1) Passivate (F-17.25).



125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

1 REPAIR LIMIT

ALL DIMENSIONS ARE IN INCHES

256T6160-1
Bushing Repair
Figure 601

K40897

TORQUE BRAKE STATOR PLATE - REPAIR 10-1

256T6182-1

1. General

A. This procedure has the data necessary to repair and refinish the torque brake stator plate (515).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: 15-5PH CRES, 180-200 ksi

(2) Shot peen: All repaired surfaces, with CRES cut wire shot
Shot size: Refer to SOPM 20-10-03
Intensity: 0.006A
Coverage: 2.0

2. Stator Plate Repair

A. References

(1) SOPM 20-10-01, Repair and Refinish of High Strength Steel Parts

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

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

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

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

(6) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

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

B. Procedures (Fig. 601)

(1) Machine the stator plate (515) as necessary to remove damage or defects. Do not machine more than the limit shown.

(2) Break all sharp edges.

(3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.

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

(5) Build up the machined surface with chrome plate (F-15.03). Chrome plate is not permitted in the fillet radii or on the edges of the part.

(6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.015 inch thick after you grind the surface. The chrome plate runout is 0.015-0.030 inch, and must stop at the edge of the repaired surface.

(7) Do a magnetic particle check of the repaired surface. Refer to SOPM 20-20-01.

3. Stator Plate Refinish

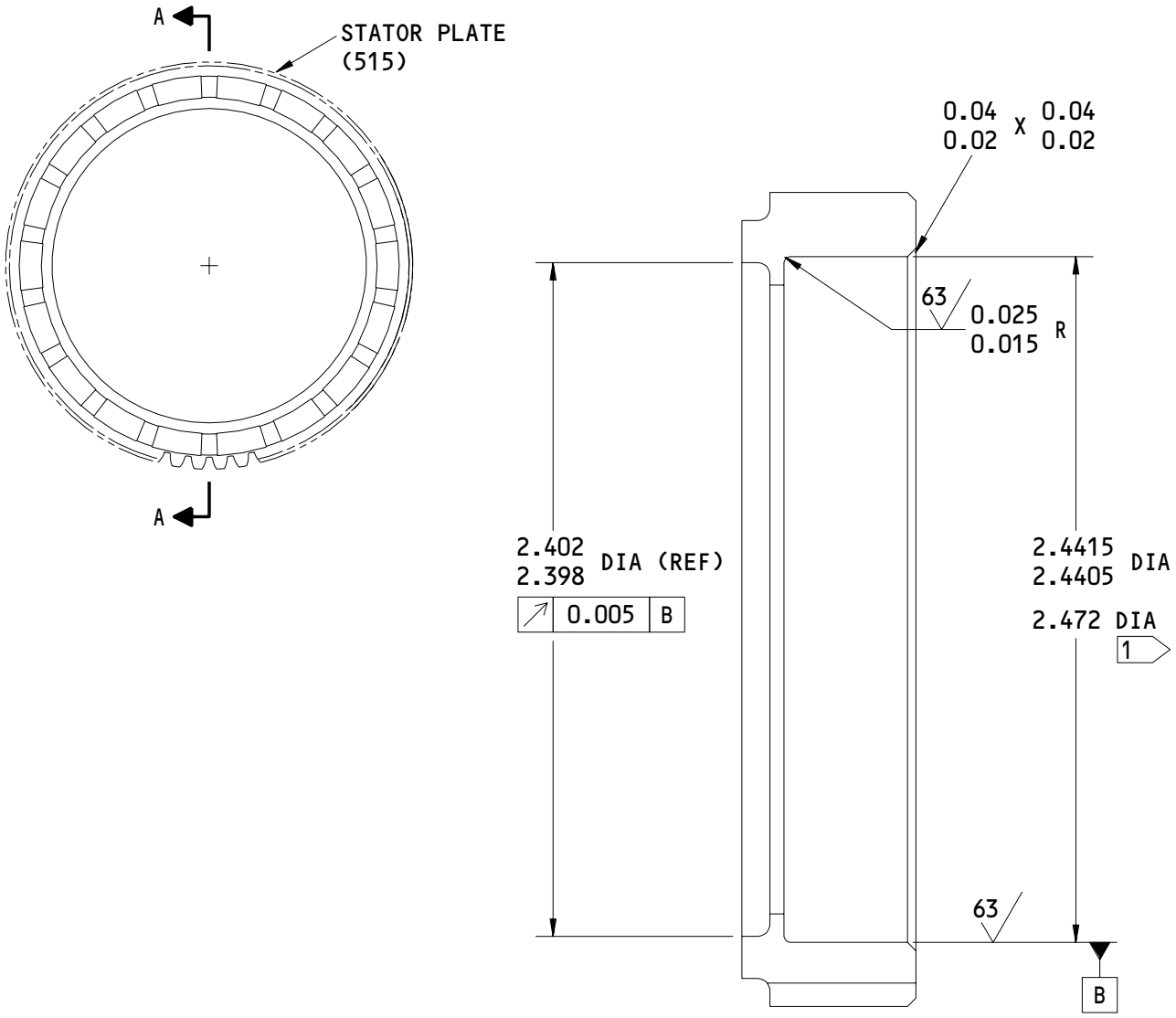
A. References

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

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

B. Procedures

(1) Passivate (F-17.25).



125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

1 REPAIR LIMIT

ALL DIMENSIONS ARE IN INCHES

256T6182-1
Torque Brake Stator Plate Repair
Figure 601

TORQUE BRAKE SHAFT - REPAIR 11-1

256T6183-1

1. General

A. This procedure has the data necessary to repair and refinish the torque brake shaft (525).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: 15-5PH CRES, 180-200 ksi

(2) Shot peen: All repaired surfaces, with CRES cut wire shot
Shot size: Refer to SOPM 20-10-03
Intensity: 0.006A
Coverage: 2.0

2. Torque Brake Shaft Repair

A. References

(1) SOPM 20-10-01, Repair and Refinish of High Strength Steel Parts

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

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

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

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

(6) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

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

B. Procedures (Fig. 601)

(1) Machine the torque brake shaft (525) as necessary to remove damage or defects. Do not machine more than the limit shown.

(2) Break all sharp edges.

(3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.

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

(5) Build up the machined surface with chrome plate (F-15.03). Chrome plate is not permitted in the fillet radii or on the edges of the part.

(6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.015 inch thick after you grind the surface. The chrome plate runout is 0.015-0.030 inch, and must stop at the edge of the repaired surface.

(7) Do a magnetic particle check of the repaired surface. Refer to SOPM 20-20-01.

3. Torque Brake Shaft Refinish

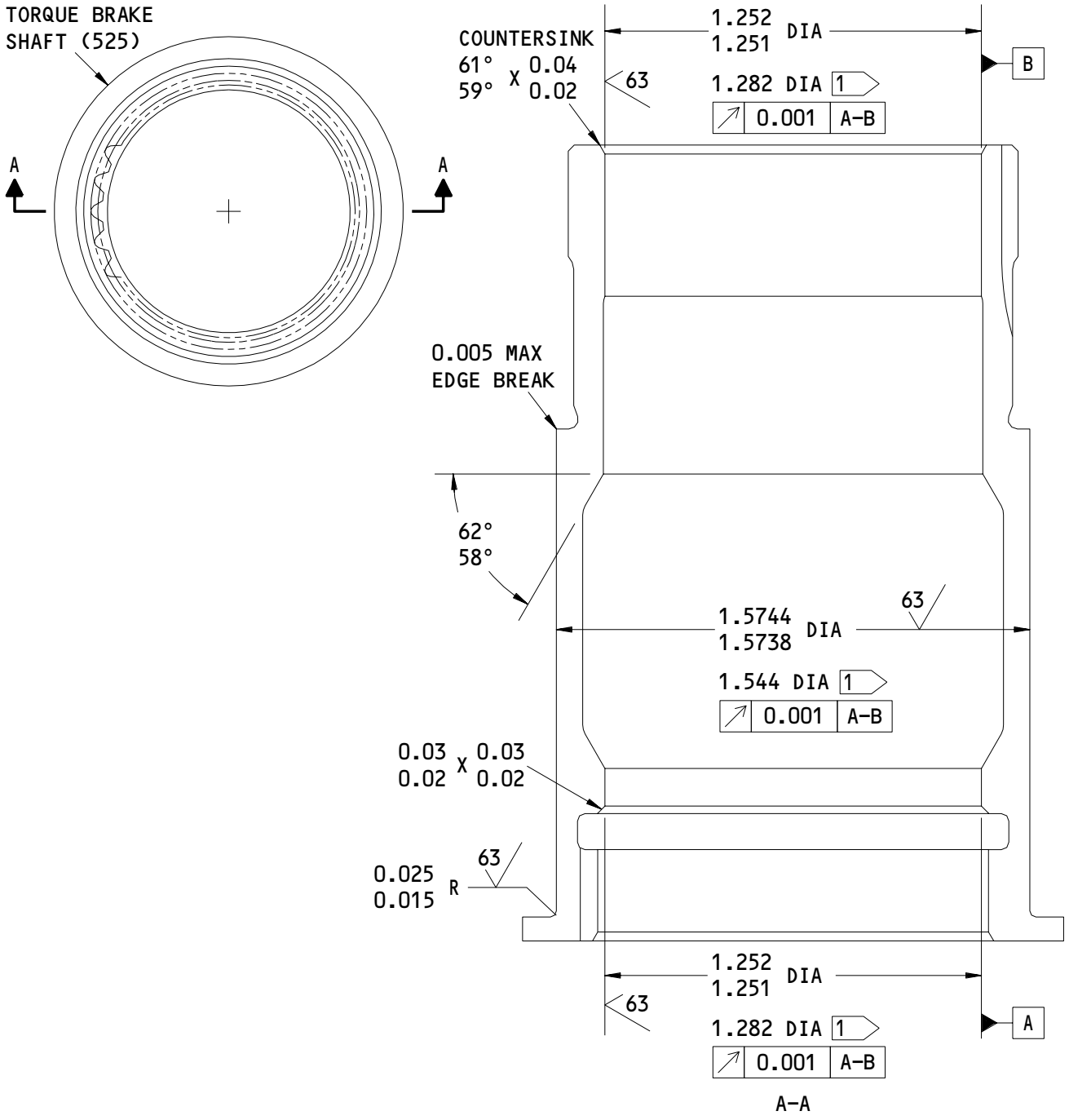
A. References

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

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

B. Procedures

(1) Passivate (F-17.25).



125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

1 REPAIR LIMIT

ALL DIMENSIONS ARE IN INCHES

256T6183-1
Torque Brake Shaft Repair
Figure 601

HOUSING - REPAIR 12-1

256T6320-1

1. General

   A. This procedure has the data necessary to refinish the housing (625).

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

   C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

   E. General repair details:

      (1) Material: 9310 steel, 150-190 ksi core strength

2. Housing Refinish

   A. Consumable Materials

      NOTE: Equivalent materials can be used.

      (1) C00259 Primer -- BMS 10-11, Type 1 (SOPM 20-60-02)

   B. References

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

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

      (3) SOPM 20-41-02, Application of Chemical and Solvent Resistant Finishes

      (4) SOPM 20-42-05, Bright Cadmium Plating

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

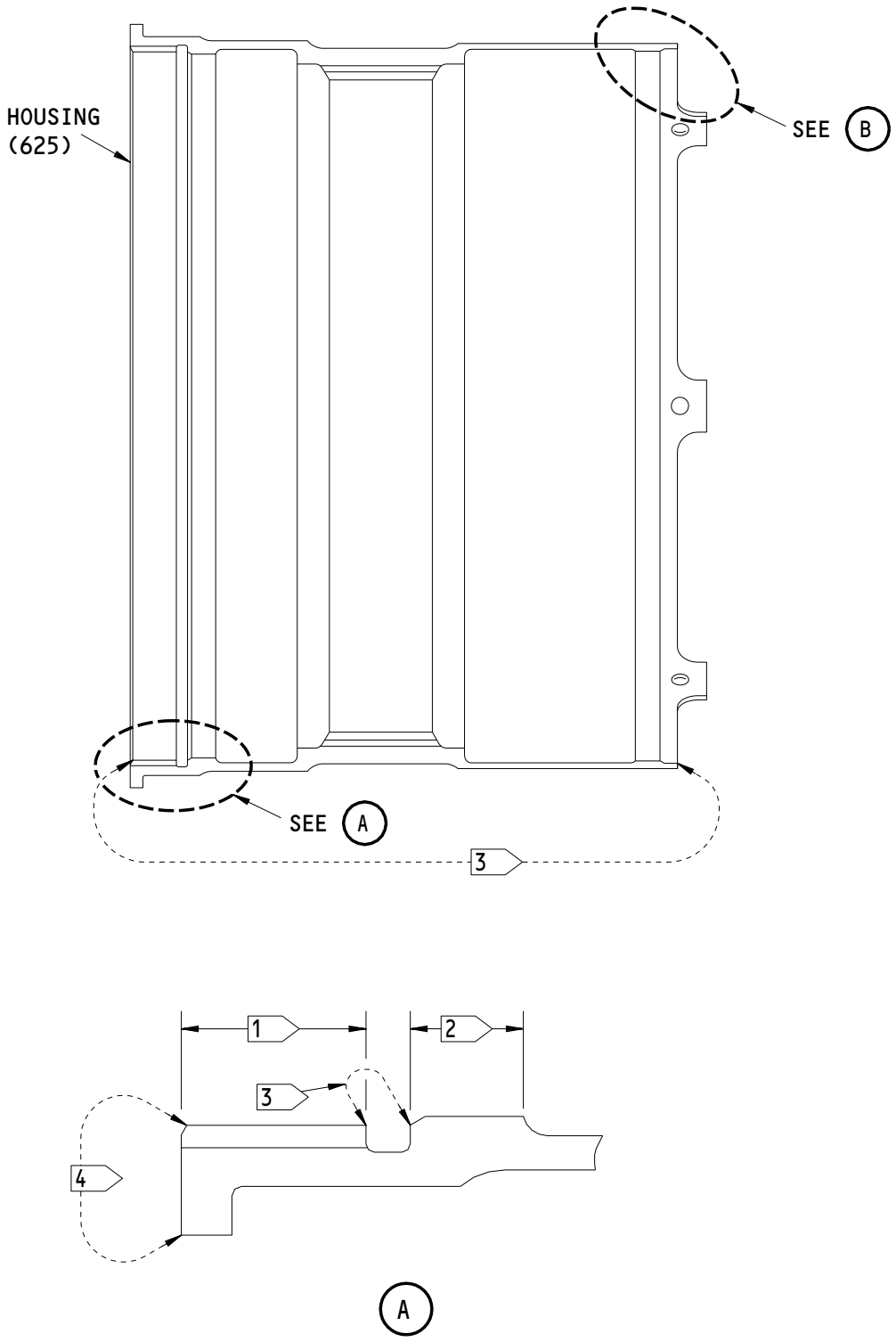
   C. Procedures (Fig. 601)

      (1) Cadmium plate all over, unless shown differently. Refer to QQ-P-416, type 2, class 2.

(2) Bake 5-8 hours at 250-300 degrees F.

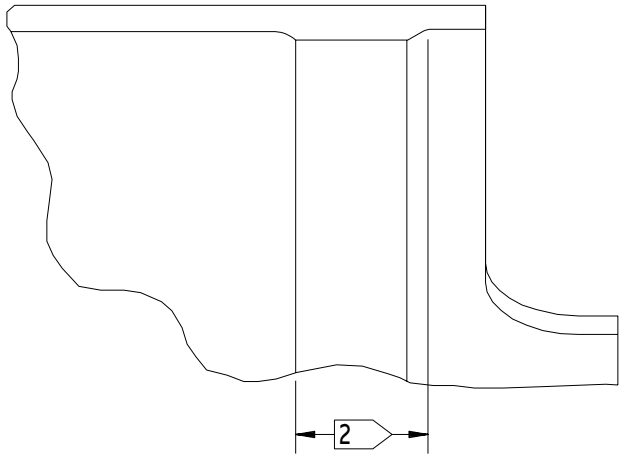
(3) Wipe the plating with primer (F-19.45) on the splines as shown.

(4) Apply BMS 10-11, type 1 primer (F-20.03) on the external surfaces in the area shown. Do not apply primer in the holes.



256T6320-1
Housing Refinish
Figure 601 (Sheet 1)

K44599



1 CADMIUM PLATE (F-15.41) AND WIPE THE PLATING WITH PRIMER (F-19.45) ON THE SPLINES

2 NO CADMIUM PLATE ON THIS SURFACE

3 APPLY PRIMER ON THESE SURFACES, BUT NOT IN THE HOLES

4 WHEN DRY, THE PRIMER MUST BE SMOOTH IN THIS AREA. RUNS, BEADS, OR SAGS ARE NOT PERMITTED

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T6320-1
Housing Refinish
Figure 601 (Sheet 2)

INPUT END COVER ASSEMBLY - REPAIR 13-1

256T6321-1

1. General

   A. This procedure has the data necessary to refinish the input end cover (260).

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

   C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

   E. General repair details:

      (1) Material: Aluminum alloy

2. Input End Cover Refinish

   A. Consumable Materials

      NOTE: Equivalent materials can be used.

      (1) C00259 Primer -- BMS 10-11, Type 1 (SOPM 20-60-02)

   B. References

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

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

      (3) SOPM 20-41-02, Application of Chemical and Solvent Resistant Finishes

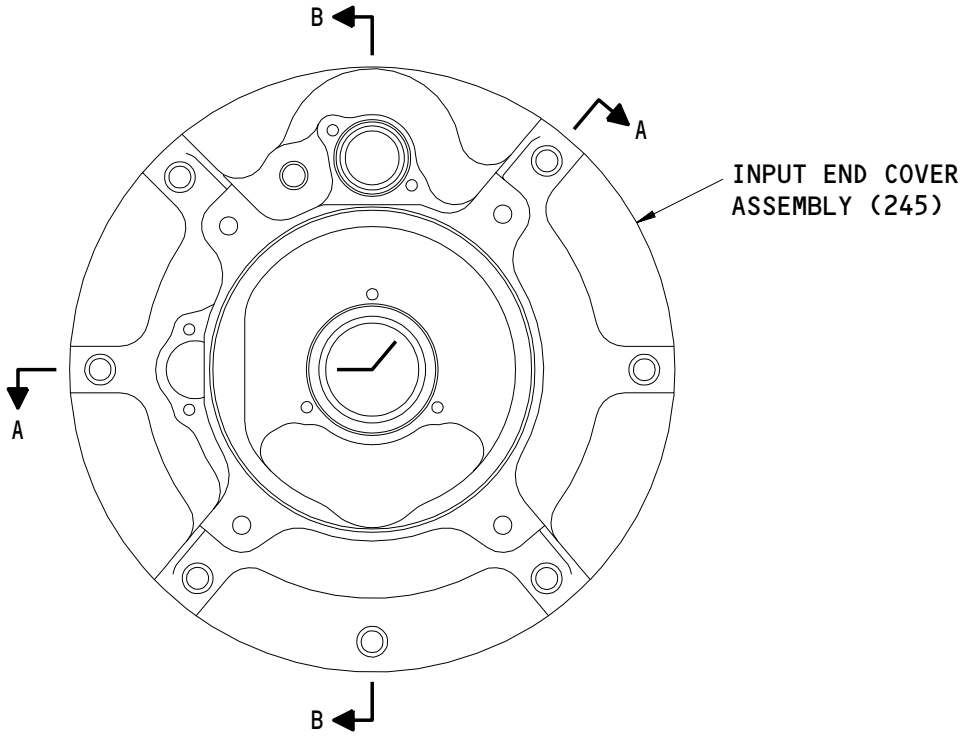
      (4) SOPM 20-43-01, Chromic Acid Anodizing

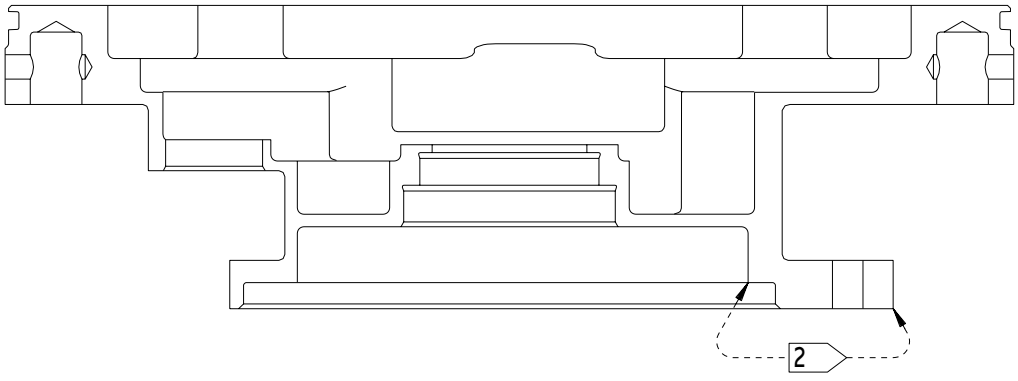
      (5) SOPM 20-60-02, Finishing Materials

   C. Procedures (Fig. 601)

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

(2) Apply BMS 10-11, type 1 primer (F-20.03) on the external surfaces in the area shown. Do not apply primer in the holes.

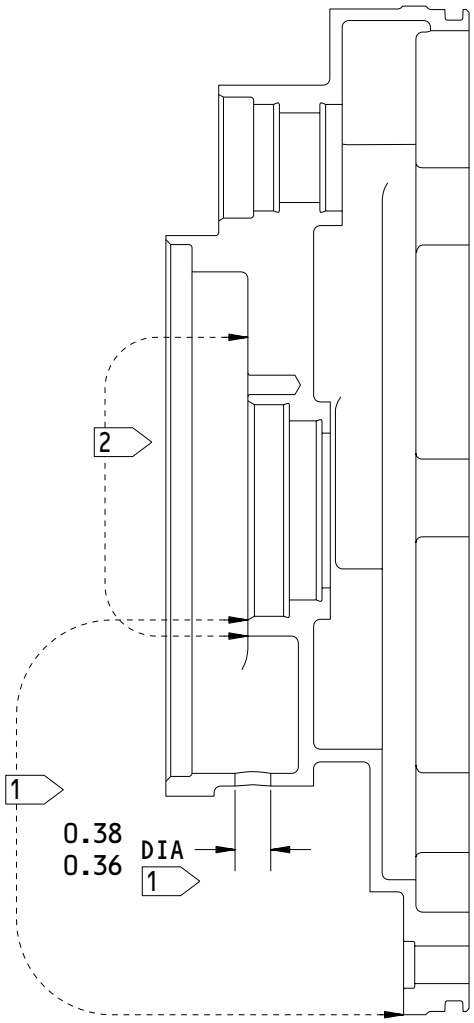




A–A

256T6321-1
Input End Cover Assembly Refinish
Figure 601 (Sheet 1)

K46493



B–B

1 APPLY PRIMER ON THESE SURFACES, BUT NOT IN THE HOLES

2 WHEN DRY, THE PRIMER MUST BE SMOOTH IN THIS AREA. RUNS, BEADS, OR SAGS ARE NOT PERMITTED

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T6321-1
Input End Cover Assembly Refinish
Figure 601 (Sheet 2)

K46495

OUTPUT COVER ASSEMBLY - REPAIR 14-1

256T6322-1

1. General

A. This procedure has the data necessary to refinish the output cover (95).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: Aluminum alloy

2. Output Cover Refinish

A. Consumable Materials

NOTE: Equivalent materials can be used.

(1) C00259 Primer -- BMS 10-11, Type 1 (SOPM 20-60-02)

B. References

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

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

(3) SOPM 20-41-02, Application of Chemical and Solvent Resistant Finishes

(4) SOPM 20-43-01, Chromic Acid Anodizing

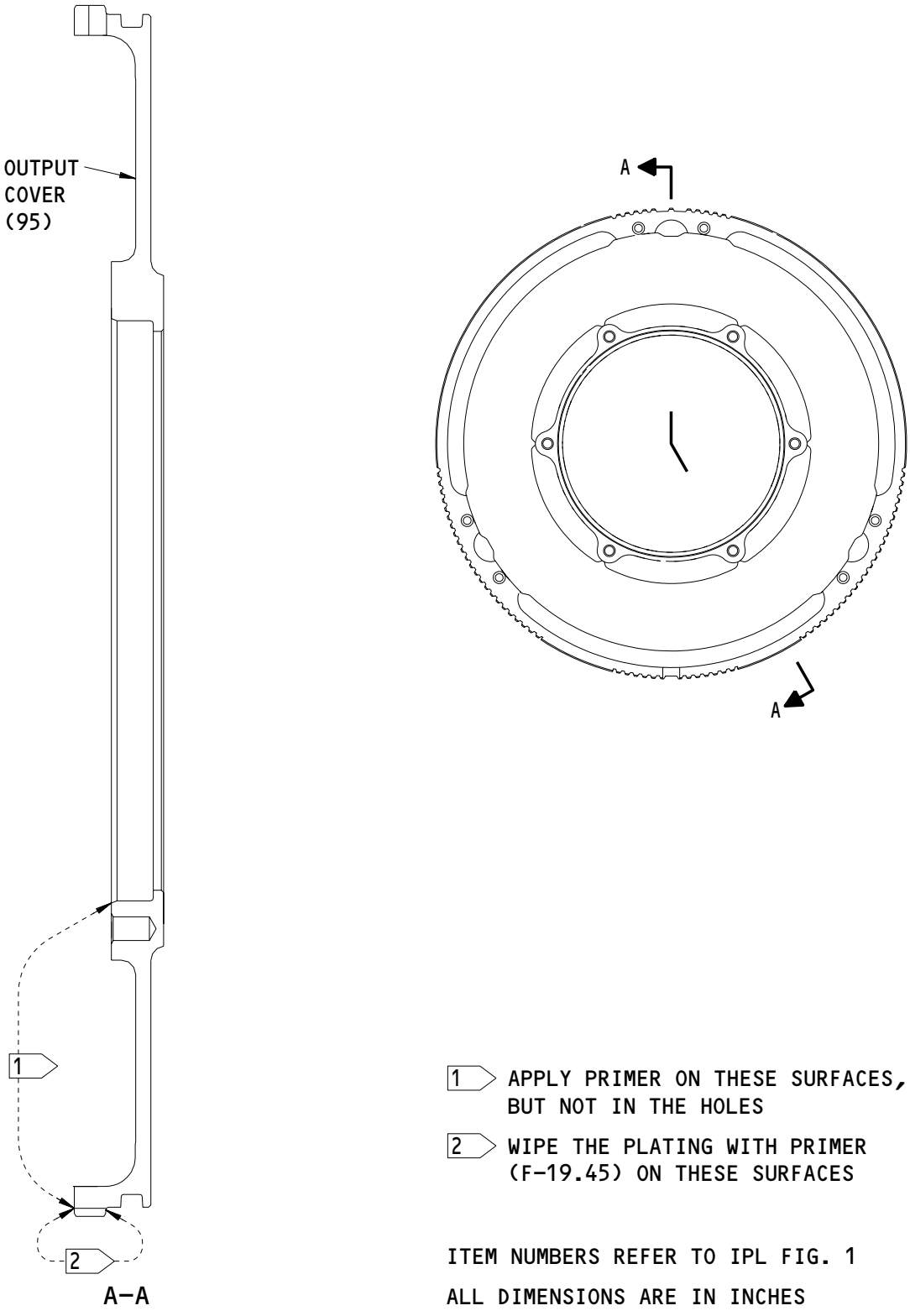
(5) SOPM 20-60-02, Finishing Materials

C. Procedures (Fig. 601)

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

(2) Apply BMS 10-11, type 1 primer (F-20.03) on the external surfaces in the area shown. Do not apply primer in the holes.

(3) Wipe the spline teeth with primer (F-19.45) as shown.



1 APPLY PRIMER ON THESE SURFACES, BUT NOT IN THE HOLES

2 WIPE THE PLATING WITH PRIMER (F-19.45) ON THESE SURFACES

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T6322-1
Output Cover Refinish
Figure 601

OUTPUT SHAFT COVER ASSEMBLY - REPAIR 15-1

256T6323-1

1. General

   A. This procedure has the data necessary to refinish the output shaft cover (28).

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

   C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

   E. General repair details:

      (1) Material: Aluminum alloy

2. Output Shaft Cover Refinish

   A. Consumable Materials

      NOTE: Equivalent materials can be used.

      (1) C00259 Primer -- BMS 10-11, Type 1 (SOPM 20-60-02)

   B. References

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

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

      (3) SOPM 20-41-02, Application of Chemical and Solvent Resistant Finishes

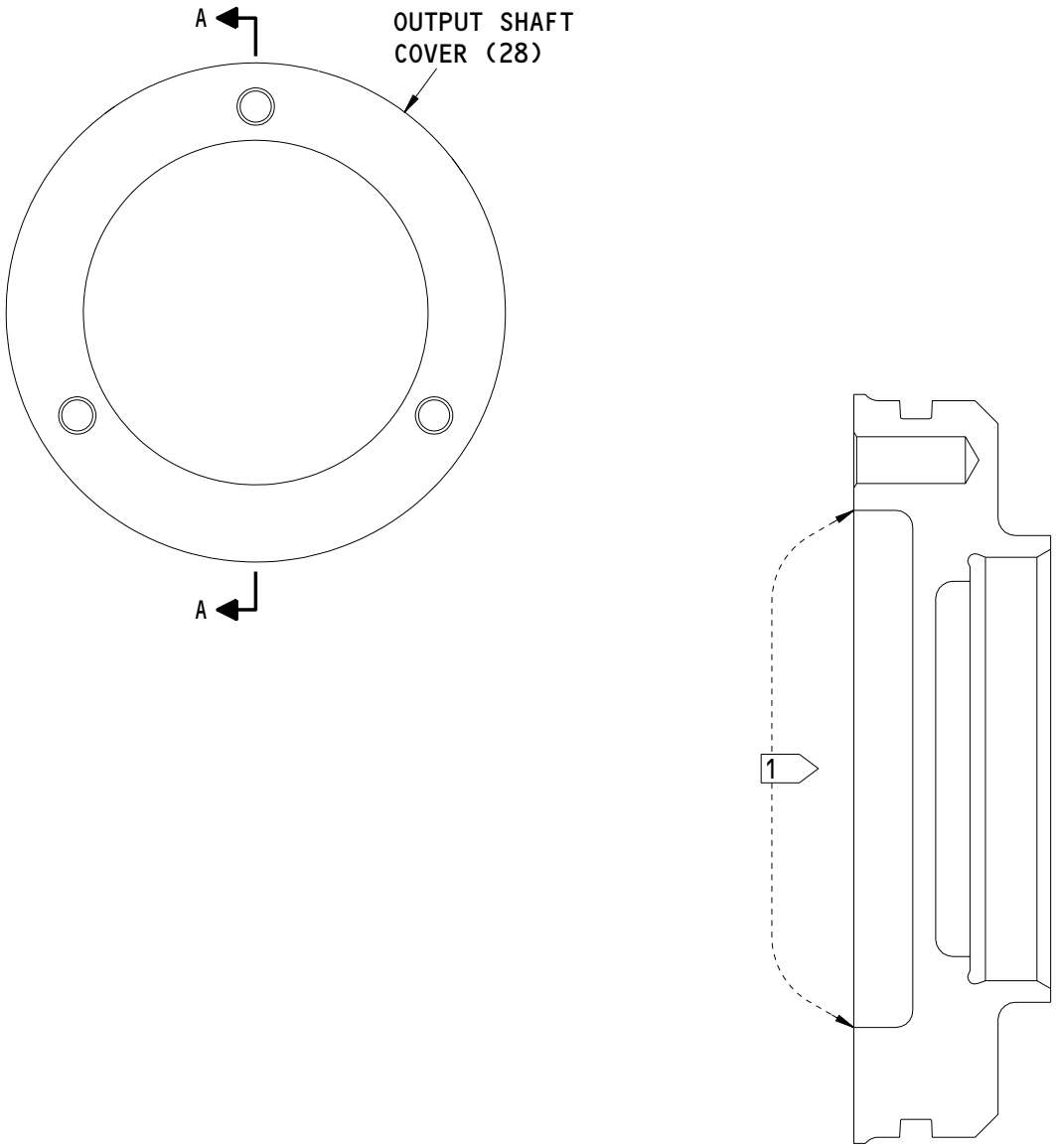
      (4) SOPM 20-43-01, Chromic Acid Anodizing

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

   C. Procedures (Fig. 601)

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

(2) Apply BMS 10-11, type 1 primer (F-20.03) on the surfaces shown.



ITEM NUMBERS REFER TO IPL FIG. 1

1 APPLY PRIMER ON THESE SURFACES

ALL DIMENSIONS ARE IN INCHES

256T6323-1
Output Shaft Cover Refinish
Figure 601

K46587

SUN GEAR ASSEMBLY - REPAIR 16-1

256T6329-1

1. General

   A. This procedure has the data necessary to replace parts on the sun gear assembly (440).

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

   C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

2. Bushing Replacement

   A. Consumable Materials

      NOTE: Equivalent materials can be used.

      (1) D00465 Fluid -- Landing Gear Shock Strut, BMS 3-32, Type 2 (SOPM 20-60-03)

   B. References

      (1) SOPM 20-50-03, Bearing and Bushing Replacement

      (2) SOPM 20-60-03, Lubricants

   C. Procedure (Fig. 601)

      (1) Remove the existing bushing (445).

      (2) Install the replacement bushing with BMS 3-32, type 2 fluid. Refer to SOPM 20-50-03.

SUN GEAR - REPAIR 16-2

256T6329-2

1. General

A. This procedure has the data necessary to repair and refinish the sun gear (450).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: Nitralloy 135M steel, 180-200 ksi core strength

(2) Shot peen: All repaired surfaces
Shot size: Refer to SOPM 20-10-03
Intensity: 0.006A
Coverage: 2.0

2. Sun Gear Repair

A. References

(1) SOPM 20-10-01, Repair and Refinish of High Strength Steel Parts

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

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

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

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

(6) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

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

B. Procedures (Fig. 601)

(1) Machine the sun gear (450) as necessary to remove damage or defects. Do not machine more than the limit shown.

(2) Break all sharp edges.

(3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.

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

(5) Build up the machined surface with chrome plate (F-15.03). Chrome plate is not permitted in the fillet radii or on the edges of the part.

(6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.015 inch thick after you grind the surface. The chrome plate runout is 0.015-0.030 inch, and must stop at the edge of the repaired surface.

(7) Do a magnetic particle check of the repaired surface. Refer to SOPM 20-20-01.

3. Sun Gear Refinish

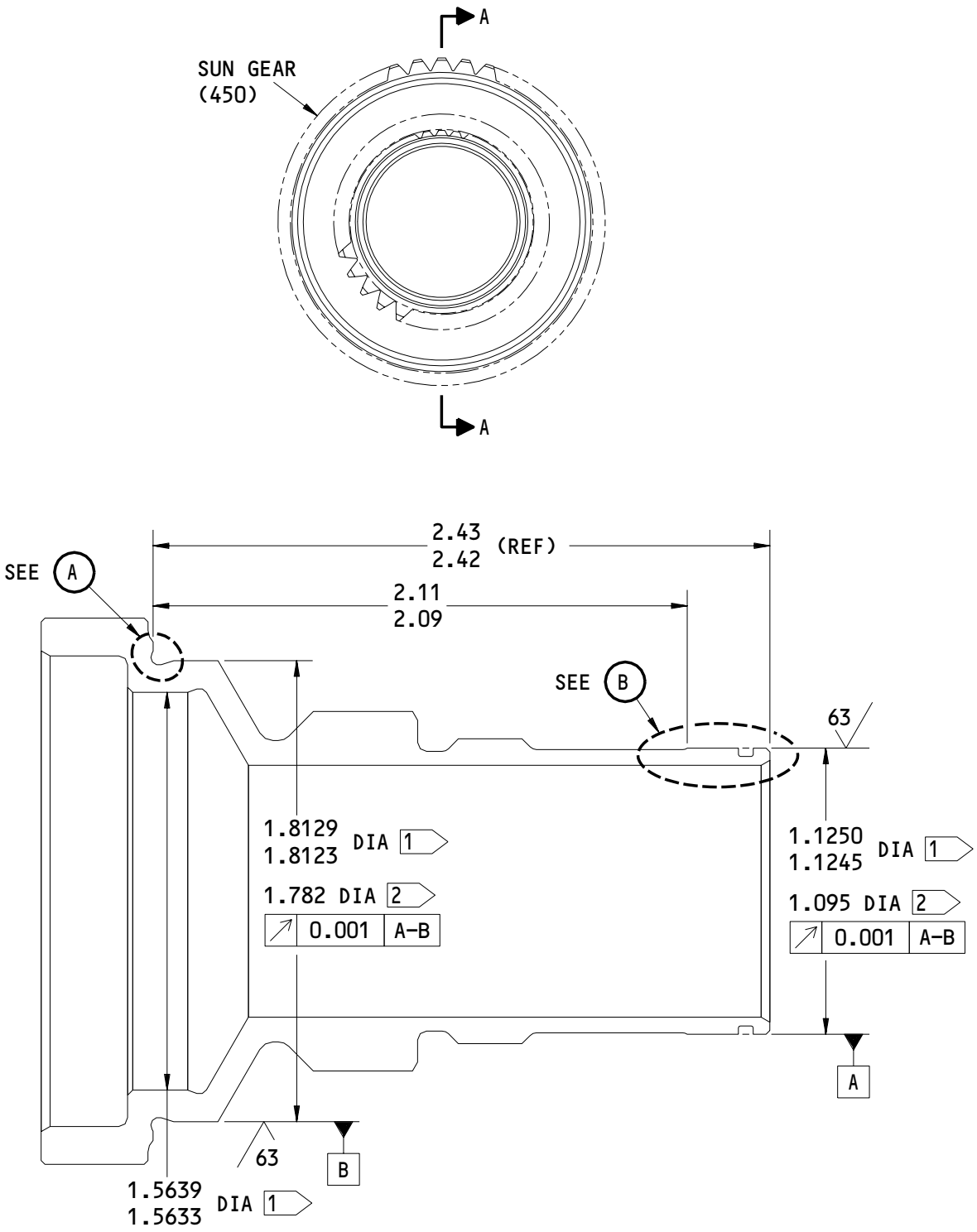
A. References

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

(2) SOPM 20-42-05, Bright Cadmium Plating

B. Procedures (Fig. 601)

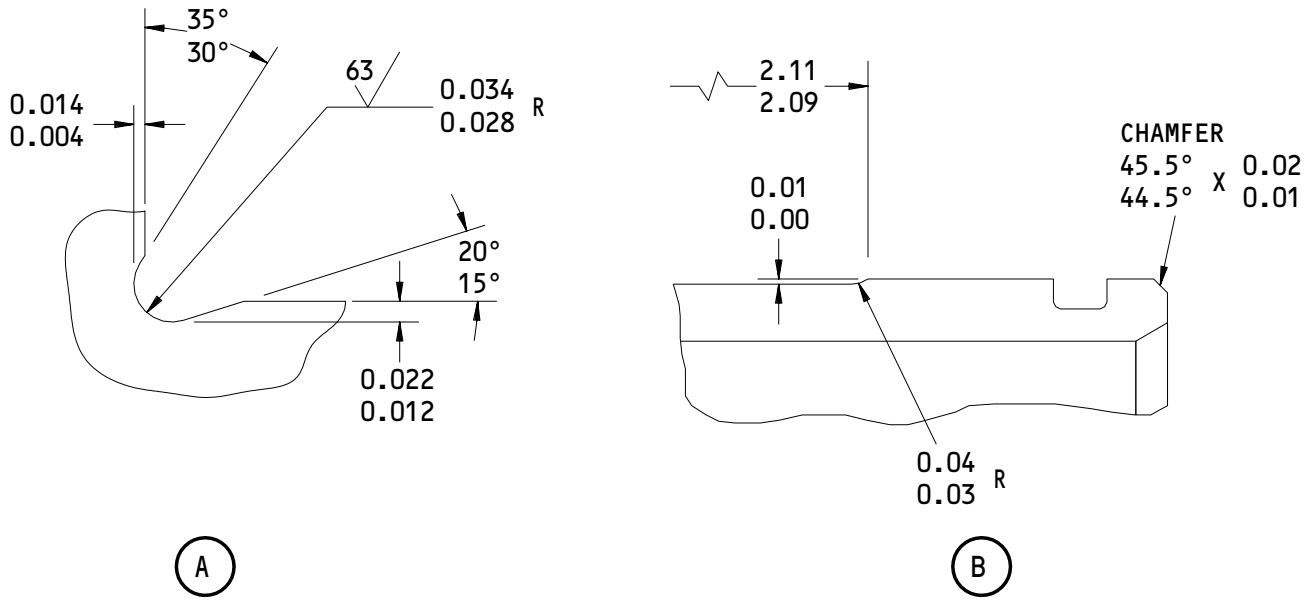
(1) Cadmium plate (F-15.36) all over, unless shown differently.



A–A

256T6329-2
Sun Gear Repair and Refinish
Figure 601 (Sheet 1)

K46893



125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

1 NO CADMIUM PLATE ON THIS SURFACE

2 REPAIR LIMIT

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T6329-2
Sun Gear Repair and Refinish
Figure 601 (Sheet 2)

K46894

PINION GEAR - REPAIR 17-1

256T6331-1

1. General

A. This procedure has the data necessary to repair and refinish the pinion gear (275).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: 15-5PH CRES, 180-200 ksi

(2) Shot peen: All repaired surfaces, with CRES cut wire shot
Shot size: Refer to SOPM 20-10-03
Intensity: 0.006A
Coverage: 2.0

2. Pinion Gear Repair

A. References

(1) SOPM 20-10-01, Repair and Refinish of High Strength Steel Parts

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

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

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

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

(6) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

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

B. Procedures (Fig. 601)

(1) Machine the pinion gear (275) as necessary to remove damage or defects. Do not machine more than the limit shown.

(2) Break all sharp edges.

(3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.

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

(5) Build up the machined surface with chrome plate (F-15.03). Chrome plate is not permitted in the fillet radii or on the edges of the part.

(6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.015 inch thick after you grind the surface. The chrome plate runout is 0.015-0.030 inch, and must stop at the edge of the repaired surface.

(7) Do a magnetic particle check of the repaired surface. Refer to SOPM 20-20-01.

3. Pinion Gear Refinish

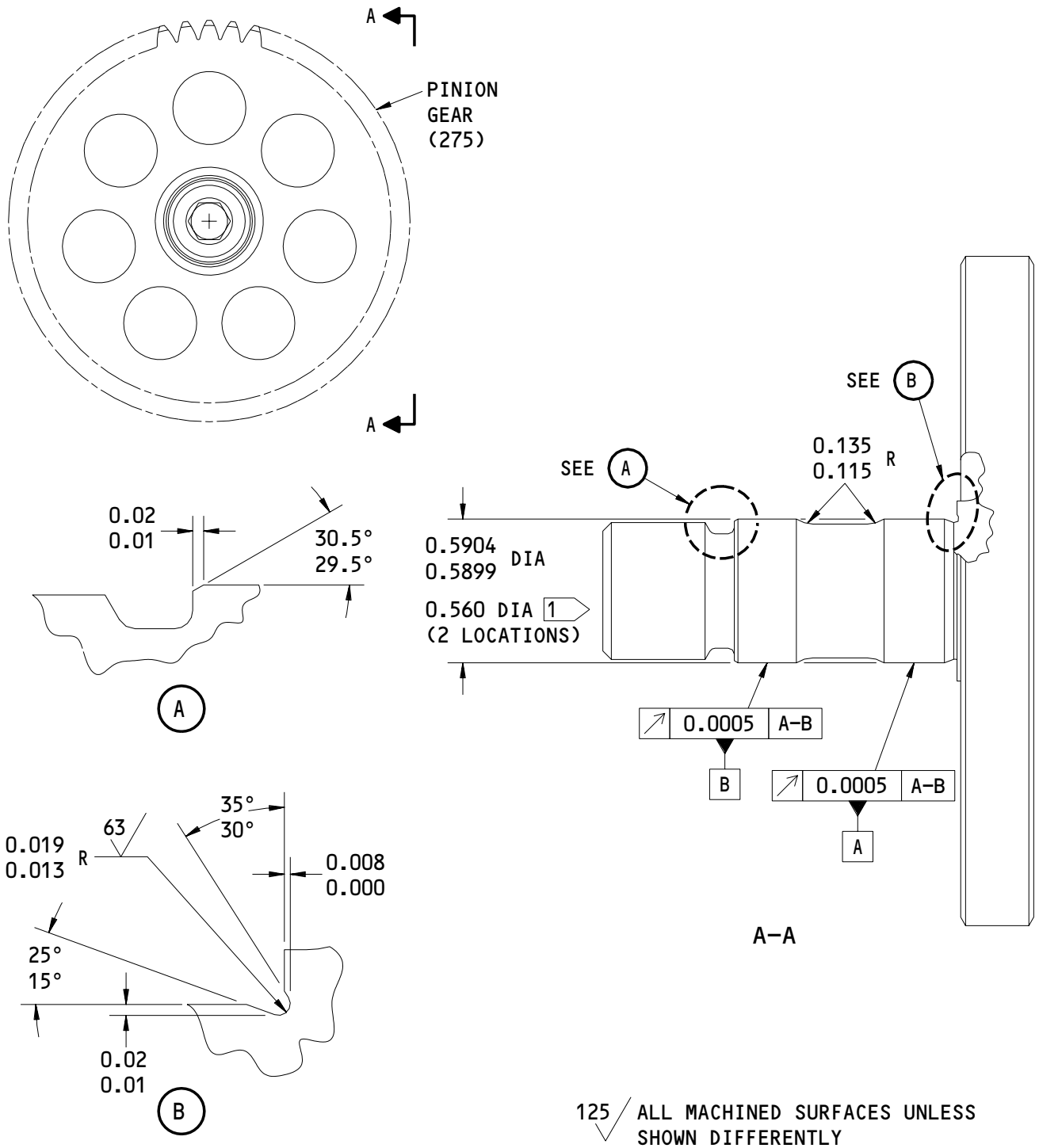
A. References

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

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

B. Procedures

(1) Passivate (F-17.25).



A–A

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

1 REPAIR LIMIT

ALL DIMENSIONS ARE IN INCHES

256T6331-1
Pinion Gear Repair
Figure 601

K47674

INPUT SHAFT - REPAIR 18-1

256T6335-1

1. General

A. This procedure has the data necessary to repair and refinish the input shaft (155).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: 4330M steel, 220-240 ksi

(2) Shot peen: All repaired surfaces, with hard shot (Rc 55-65) or CRES cut wire shot, as shown in Fig. 601
Shot size: Refer to SOPM 20-10-03
Intensity: 0.014A (hard shot) or 0.006A (cut wire)
Coverage: 2.0

2. Input Shaft Repair

A. References

(1) SOPM 20-10-01, Repair and Refinish of High Strength Steel Parts

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

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

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

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

(6) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

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

B. Procedures (Fig. 601)

(1) Machine the input shaft (155) as necessary to remove damage or defects. Do not machine more than the limit shown.

(2) Break all sharp edges.

(3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.

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

(5) Build up the machined surface with chrome plate (F-15.03). Chrome plate is not permitted in the fillet radii or on the edges of the part.

(6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.015 inch thick after you grind the surface. The chrome plate runout is 0.015-0.030 inch, and must stop at the edge of the repaired surface.

(7) Do a magnetic particle check of the repaired surface. Refer to SOPM 20-20-01.

3. Input Shaft Refinish

A. Consumable Materials

NOTE: Equivalent materials can be used.

(1) C00259 Primer -- BMS 10-11, Type 1 (SOPM 20-60-02)

B. References

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

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

(3) SOPM 20-41-02, Application of Chemical and Solvent Resistant Finishes

(4) SOPM 20-42-02, Low Hydrogen Embrittlement Cadmium-Titanium Alloy Plating

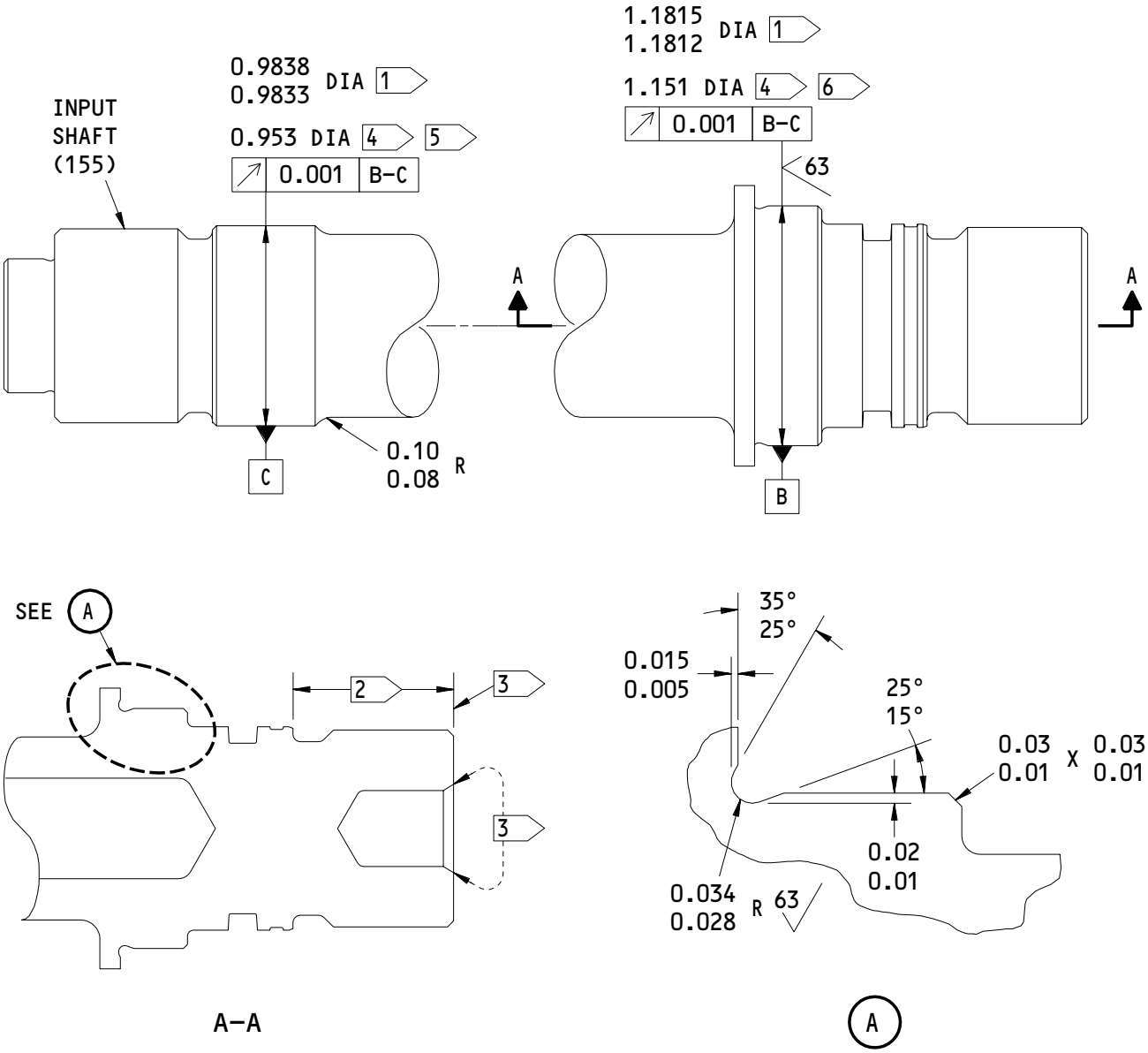
(5) SOPM 20-60-02, Finishing Materials

C. Procedures (Fig. 601)

(1) Cadmium-titanium plate (F-15.32) all over, unless shown differently. Plating throw-in is permitted in the bore.

(2) Wipe the plating with primer (F-19.45) in the area shown.

(3) Apply BMS 10-11, type 1 primer (F-20.03) on the surfaces shown.



1 NO CADMIUM-TITANIUM PLATE ON THIS SURFACE

2 WIPE THE PLATING WITH PRIMER (F-19.45) ON THESE SURFACES

3 APPLY PRIMER ON THESE SURFACES

4 REPAIR LIMIT

5 SHOT PEEN WITH CUT WIRE SHOT

6 SHOT PEEN WITH HARD SHOT

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T6335-1
Input Shaft Repair and Refinish
Figure 601

K48577

NO-BACK INPUT SHAFT - REPAIR 19-1

256T6337-1

1. General

A. This procedure has the data necessary to repair and refinish the no-back input shaft (45).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: 15-5PH CRES, 180-200 ksi

(2) Shot peen: All repaired surfaces, with CRES cut wire shot
Shot size: Refer to SOPM 20-10-03
Intensity: 0.006A
Coverage: 2.0

2. No-Back Input Shaft Repair

A. References

(1) SOPM 20-10-01, Repair and Refinish of High Strength Steel Parts

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

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

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

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

(6) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

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

B. Procedures (Fig. 601)

(1) Machine the no-back input shaft (45) as necessary to remove damage or defects. Do not machine more than the limit shown.

(2) Break all sharp edges.

(3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.

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

(5) Build up the machined surface with chrome plate (F-15.03). Chrome plate is not permitted in the fillet radii or on the edges of the part.

(6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.015 inch thick after you grind the surface. The chrome plate runout is 0.015-0.030 inch, and must stop at the edge of the repaired surface.

(7) Do a magnetic particle check of the repaired surface. Refer to SOPM 20-20-01.

3. No-Back Input Shaft Refinish

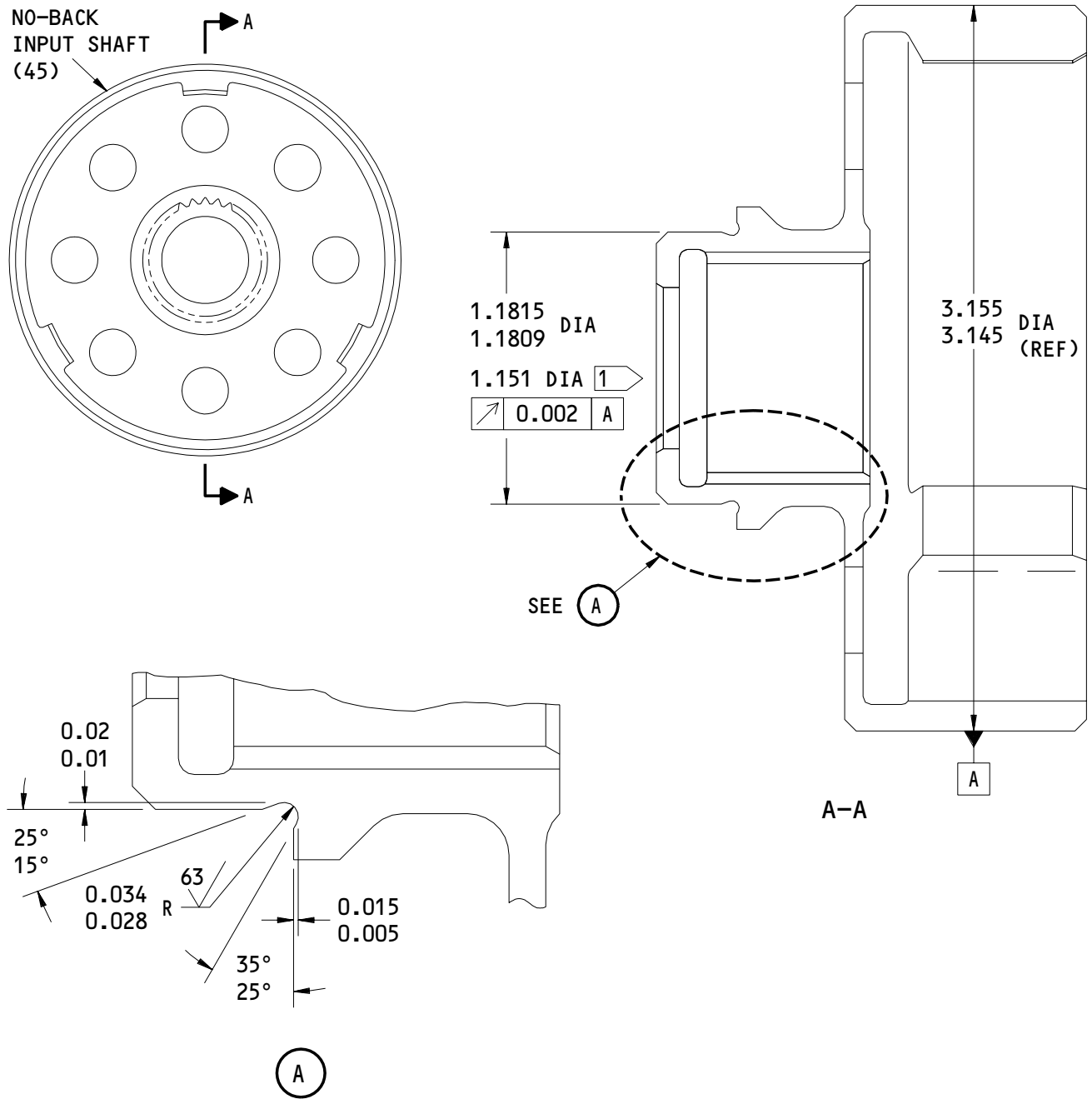
A. References

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

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

B. Procedures

(1) Passivate (F-17.25).



125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

1 REPAIR LIMIT

ALL DIMENSIONS ARE IN INCHES

256T6337-1
No-Back Input Shaft Repair
Figure 601

K49705

SPLINED SHAFT ASSEMBLY - REPAIR 20-1

256T6338-1

CAUTION: THE SPLINED SHAFT ASSEMBLY (400) IS MADE FROM A MATCHED SET OF SPLINED SHAFTS (405, 410). KEEP THE TWO PARTS TOGETHER. IF REPLACEMENT IS NECESSARY, REPLACE WITH A NEW MATCHED SET, TO MAKE SURE THAT THE PARTS CAN BE ASSEMBLED CORRECTLY.

1. General

A. This procedure has the data necessary to repair and refinish the splined shaft assembly (400).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: 4330M steel, 180-200 ksi

(2) Shot peen: All repaired surfaces
Shot size: Refer to SOPM 20-10-03
Intensity: 0.006A
Coverage: 2.0

2. Splined Shaft Repair

A. References

(1) SOPM 20-10-01, Repair and Refinish of High Strength Steel Parts

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

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

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

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

(6) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

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

B. Procedures (Fig. 601)

(1) Machine the splined shaft (405, 410) as necessary to remove damage or defects. Do not machine more than the limit shown.

(2) Break all sharp edges.

(3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.

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

(5) Build up the machined surface with chrome plate (F-15.03). Chrome plate is not permitted in the fillet radii or on the edges of the part.

(6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.015 inch thick after you grind the surface. The chrome plate runout is 0.015-0.030 inch, and must stop at the edge of the repaired surface.

(7) Do a magnetic particle check of the repaired surface. Refer to SOPM 20-20-01.

3. Splined Shaft (405, 410) Refinish

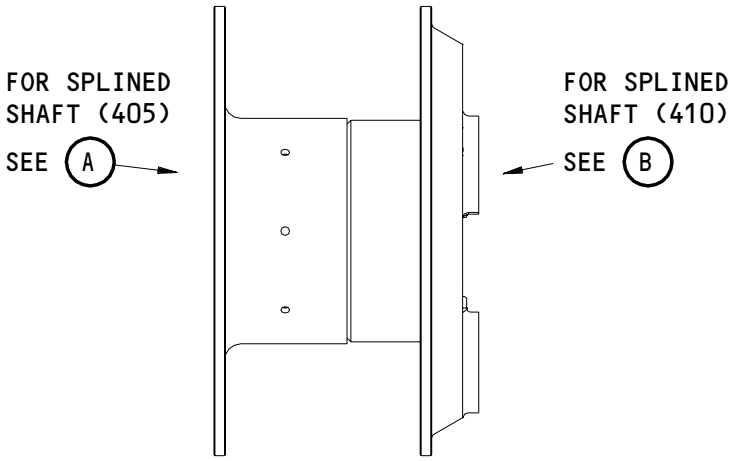
A. References

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

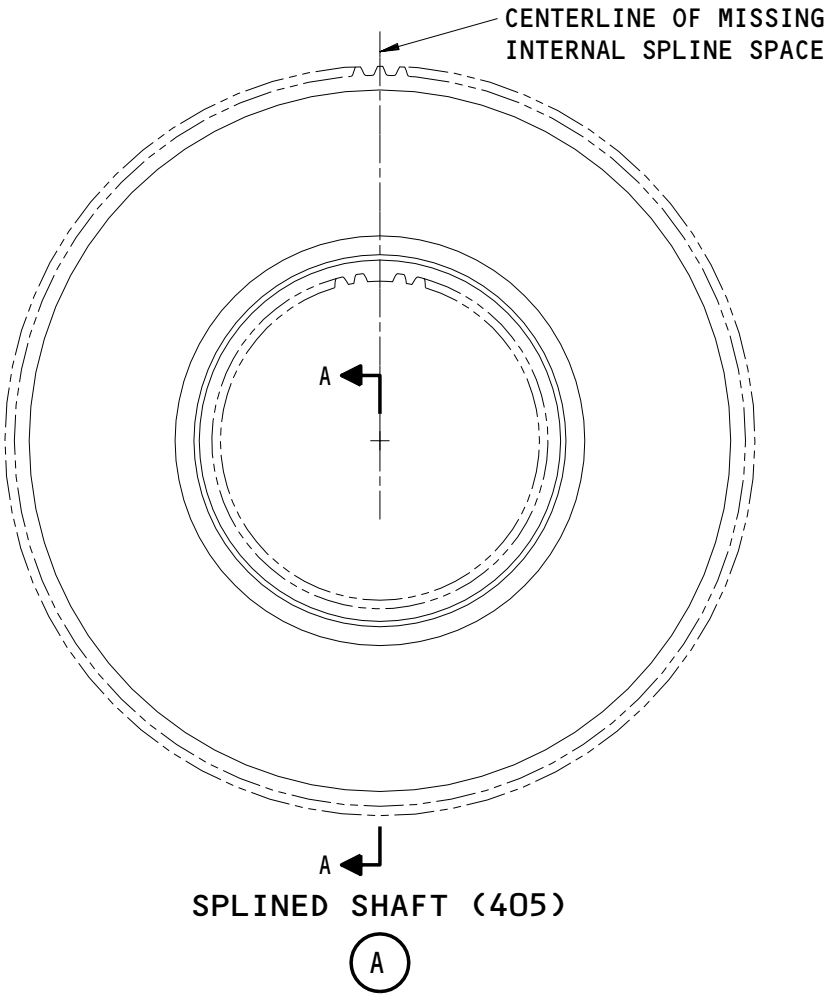
(2) SOPM 20-42-05, Bright Cadmium Plating

B. Procedures (Fig. 601)

(1) Cadmium plate (F-15.36) all over unless shown differently.



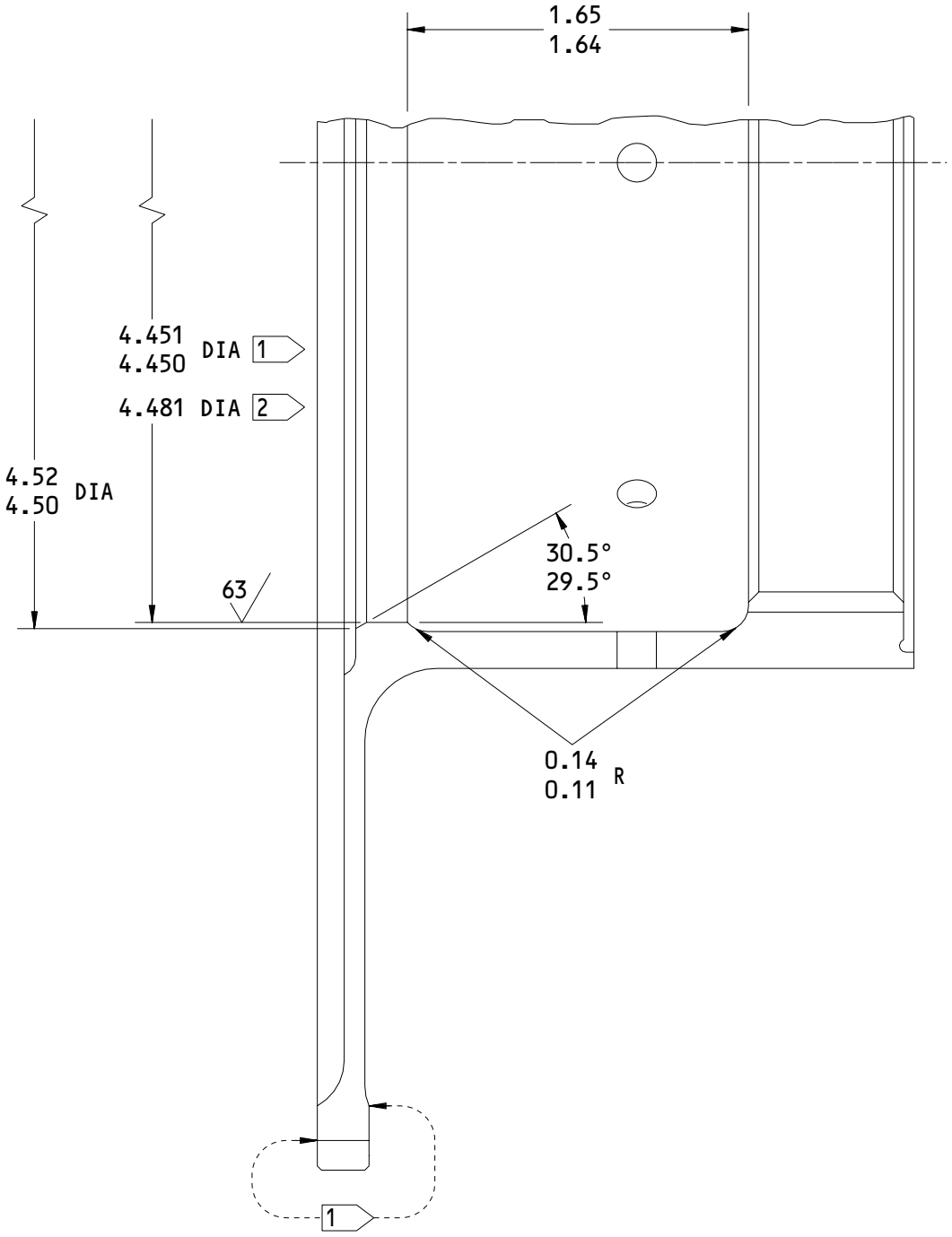
SPLINED SHAFT ASSEMBLY (400)



SPLINED SHAFT (405)

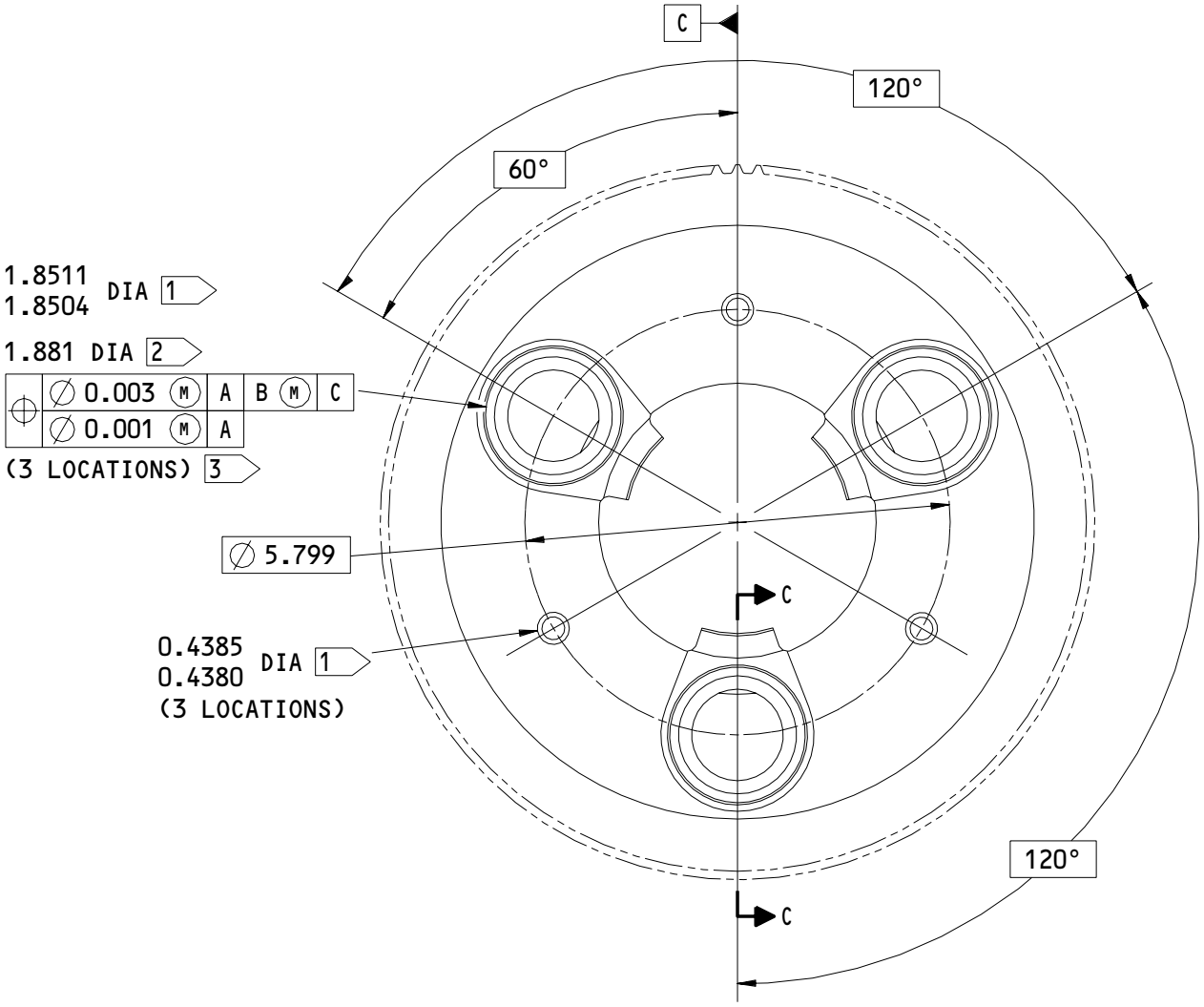
A

256T6338-1
Splined Shaft Assembly Repair and Refinish
Figure 601 (Sheet 1)



256T6338-1
Splined Shaft Assembly Repair and Refinish
Figure 601 (Sheet 2)

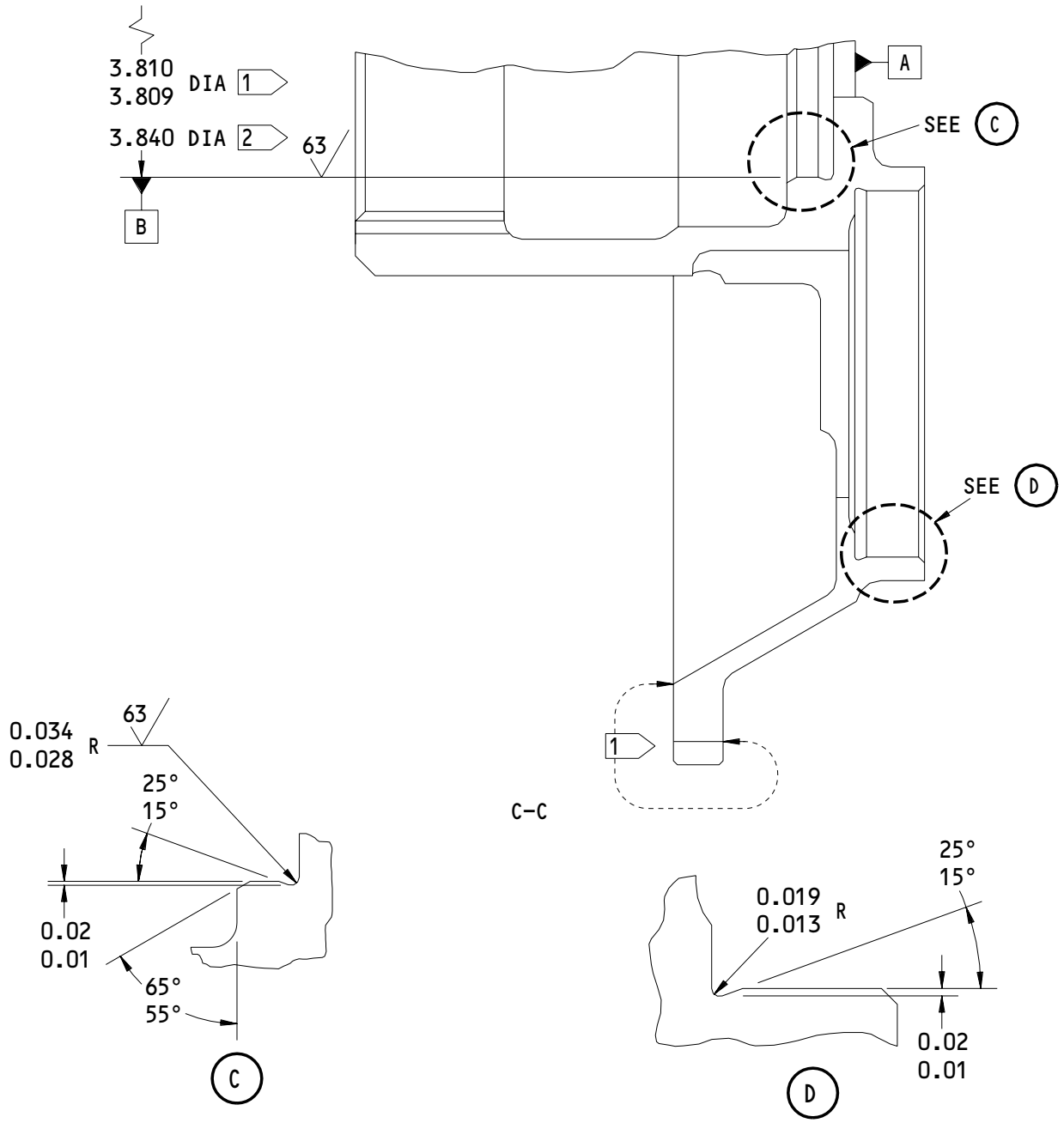
K52359



SPLINED SHAFT (410)

B

256T6338-1
Splined Shaft Assembly Repair and Refinish
Figure 601 (Sheet 3)



1 NO CADMIUM PLATE ON THESE SURFACES

2 REPAIR LIMIT

3 TOLERANCE CONDITIONS ARE APPLICABLE AT THE SAME TIME FOR ALL HOLES

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T6338-1
Splined Shaft Assembly Repair and Refinish
Figure 601 (Sheet 4)

K52361

OUTPUT SHAFT - REPAIR 21-1

256T6340-1

1. General

A. This procedure has the data necessary to repair and refinish the output shaft (105).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: 4330M steel, 220-240 ksi

(2) Shot peen: All repaired surfaces, with hard shot (Rc 55-65)
Shot size: Refer to SOPM 20-10-03
Intensity: 0.014A
Coverage: 2.0

2. Output Shaft Repair

A. References

(1) SOPM 20-10-01, Repair and Refinish of High Strength Steel Parts

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

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

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

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

(6) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

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

B. Procedures (Fig. 601)

(1) Machine the output shaft (105) as necessary to remove damage or defects. Do not machine more than the limit shown.

(2) Break all sharp edges.

(3) Do a magnetic particle check of the machined area. Refer to SOPM 20-20-01.

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

(5) Build up the machined surface with chrome plate (F-15.03). Chrome plate is not permitted in the fillet radii or on the edges of the part.

(6) Grind the chrome plate to the design dimensions and finish shown. Refer to SOPM 20-10-04. Make sure that the chrome plate is not more than 0.015 inch thick after you grind the surface. The chrome plate runout is 0.015-0.030 inch, and must stop at the edge of the repaired surface.

NOTE: On the 4.25-inch diameter surface, use the plunge grind procedure to prevent a grinding lead. Apply a cover or other temporary protection to prevent damage to this surface after you grind it.

(7) Do a magnetic particle check of the repaired surface. Refer to SOPM 20-20-01.

3. Output Shaft Refinish

A. Consumable Materials

NOTE: Equivalent materials can be used.

(1) C00259 Primer -- BMS 10-11, Type 1 (SOPM 20-60-02)

B. References

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

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

(3) SOPM 20-41-02, Application of Chemical and Solvent Resistant Finishes

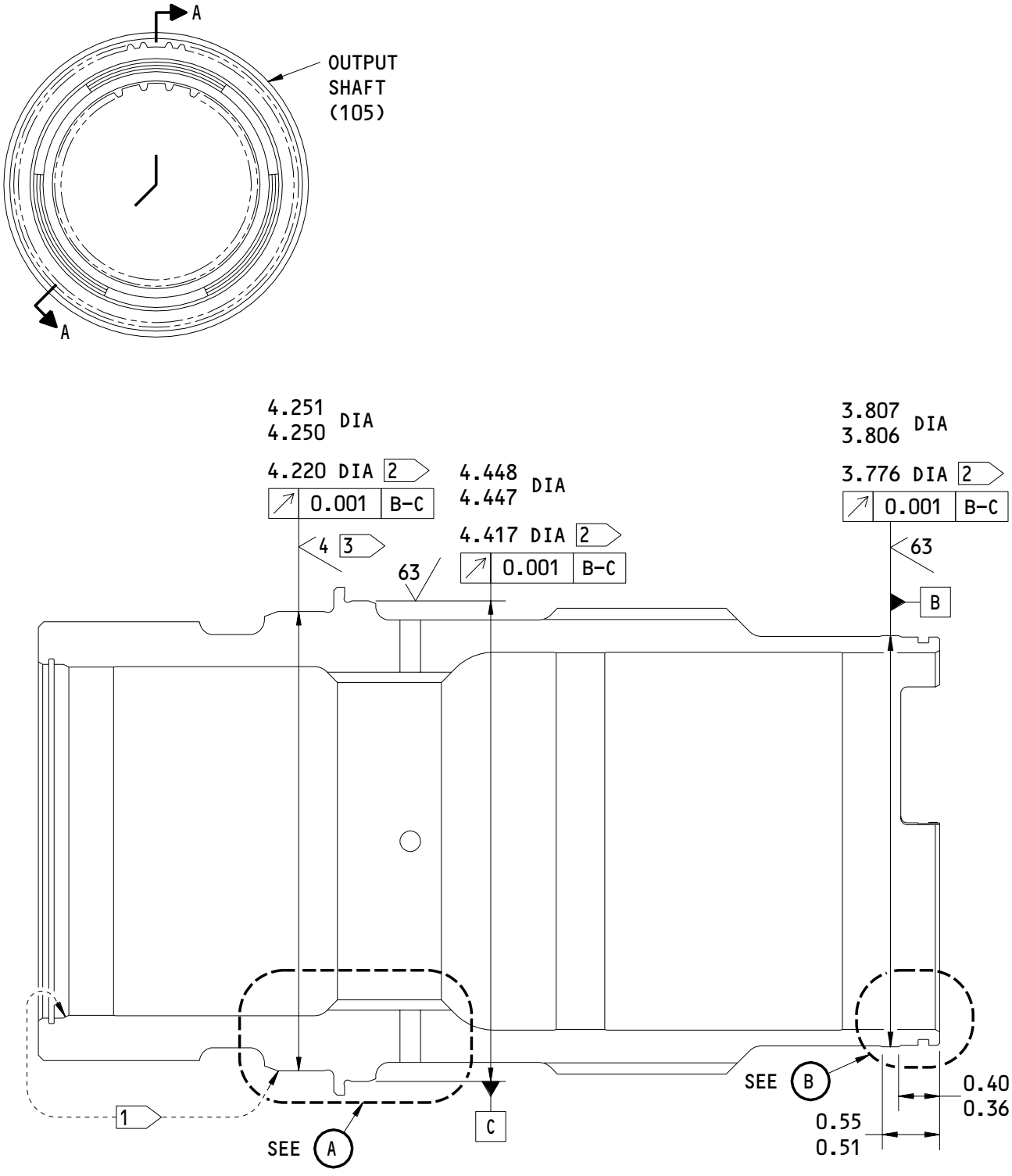
(4) SOPM 20-42-02, Low Hydrogen Embrittlement Cadmium-Titanium Alloy Plating

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

C. Procedures (Fig. 601)

(1) Cadmium-titanium plate (F-15.32) the external surfaces shown.

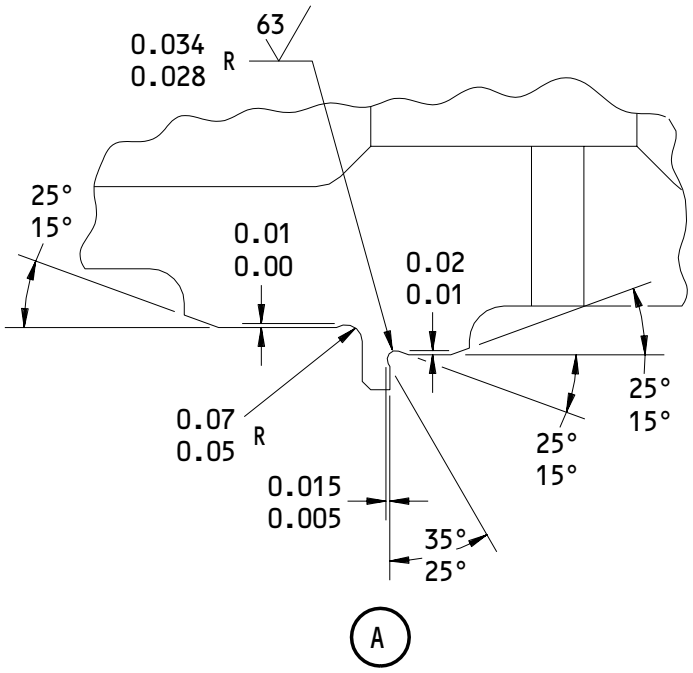
(2) Wipe the plating with primer (F-19.45).

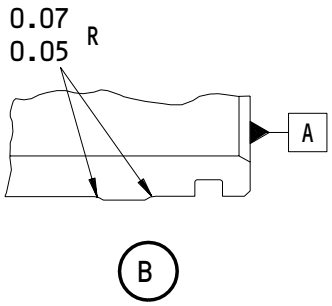


A-A

256T6340-1
Output Shaft Repair and Refinish
Figure 601 (Sheet 1)

K52629





1 CADMIUM-TITANIUM PLATE (F-15.32) AND WIPE THE PLATING WITH PRIMER (F-19.45) ON THESE SURFACES

2 REPAIR LIMIT

3 SURFACE FINISH CAN BE 4 TO 16 MICROINCHES

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T6340-1
Output Shaft Repair and Refinish
Figure 601 (Sheet 2)

CLUSTER GEAR ASSEMBLY - REPAIR 22-1

256T6369-1

1. General

A. This procedure has the data necessary to replace parts on the cluster gear assembly (345).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material:
- Pinion (355) -- 9310 steel, 150-190 ksi core strength
- Gear (360) -- Nitralloy 135M steel, 150-200 ksi core strength

2. Parts Replacement

A. References

(1) SOPM 20-10-01, Repair and Refinish of High Strength Steel Parts

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

B. Procedures (Fig. 601)

(1) Remove the pin (350) from the cluster gear assembly (345).

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

(3) Repair or replace parts as necessary.

NOTE: If replacement of the gear is necessary, we recommend that you replace the cluster gear assembly. This is to make sure that the holes for the pin will be aligned after they are machined.

(4) Install the gear on the pinion. Make sure that the holes for the pin are aligned. If a new pinion is installed, machine the hole for the pin as follows.

(a) Align the gear on the pinion as shown. Use the timing mark on the gear as a reference.

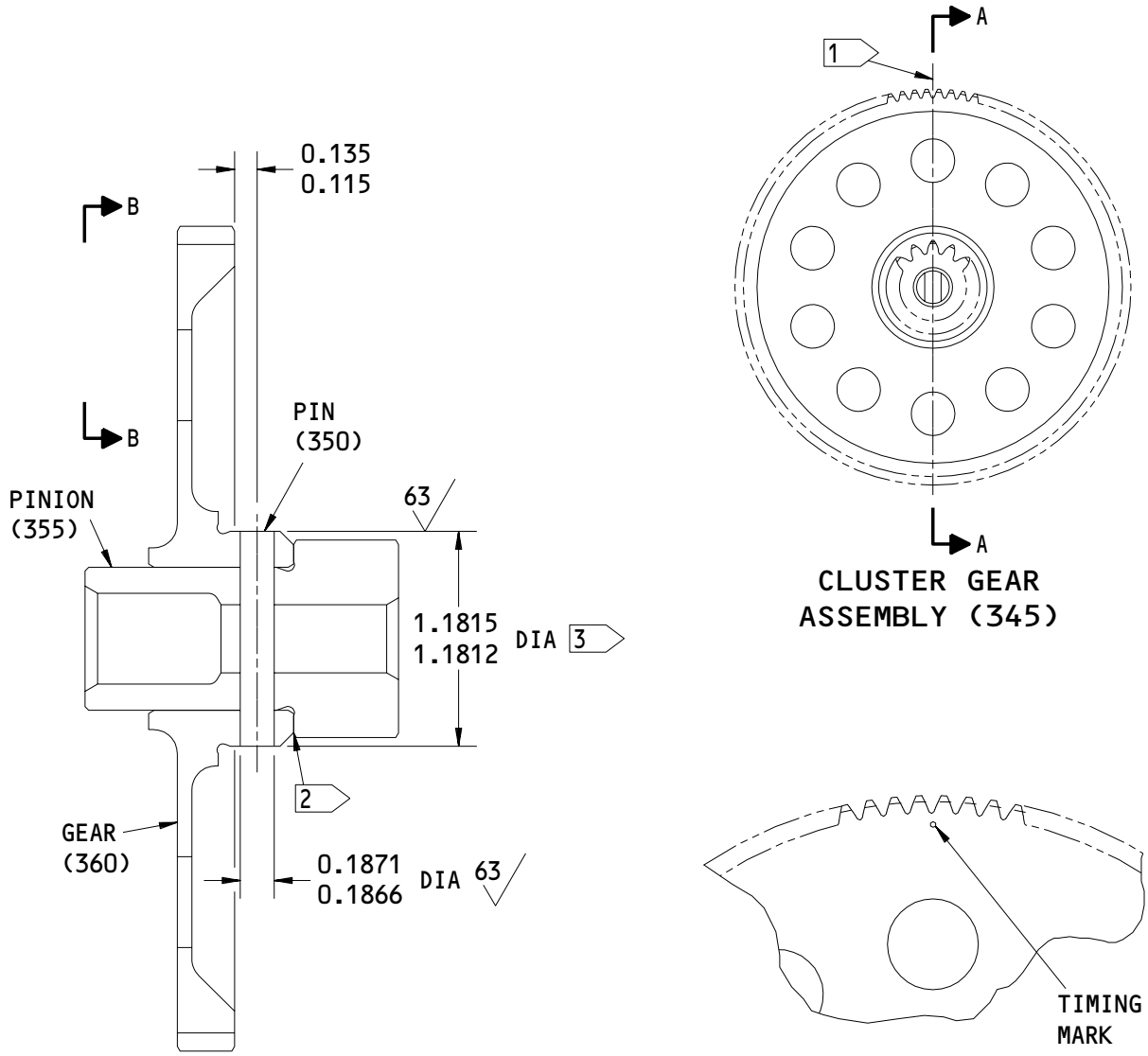
(b) Push and hold the gear so it touches at least one tooth on the pinion. The clearance between the end of the gear and the pinion gear teeth must not be more than 0.0025 inch at any other location.

(c) Machine the hole in the pinion as shown. Use the hole in the gear as a pattern.

(d) Install a new pin through the holes in the gear and the pinion. Make sure that the chamfer on the pin shows fully above the bearing surface of the gear.

(e) Grind the pin so that it is flush with the surface of the gear.

NOTE: There must not be a mismatch or step between the gear and the pin. The chamfer on the pin must be removed fully so there is no space around the end of the pin.



1 ALIGN THE CENTERLINE OF THE TOOTH SPACE ON THE GEAR WITH THE CENTERLINE OF A TOOTH ON THE PINION

2 GEAR MUST TOUCH AT LEAST ONE TOOTH ON THE PINION

3 GRIND PIN FLUSH TO THIS SURFACE

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T6369-1
Cluster Gear Assembly Parts Replacement
Figure 601

CLUSTER GEAR AND PINION - REPAIR 22-2

256T6369-2 THRU -5

1. General

A. This procedure has the data necessary to refinish the parts of the cluster gear assembly (345). Refer to REPAIR 23-1 for the procedures to disassemble and assemble the cluster gear assembly.

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

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

E. General repair details:

(1) Material: Pinion (355) -- 9310 steel, 150-190 ksi core strength
Gear (360) -- Nitralloy 135M steel, 150-200 ksi core strength

2. Pinion (355) Refinish

A. References

(1) SOPM 20-41-01, Decoding Table for Boeing Finish Codes

(2) SOPM 20-42-05, Bright Cadmium Plating

B. Procedures (Fig. 601)

(1) Cadmium plate (F-15.42) all over, unless shown differently. Plating throw-in is permitted in the bore.

3. Gear (360) Refinish

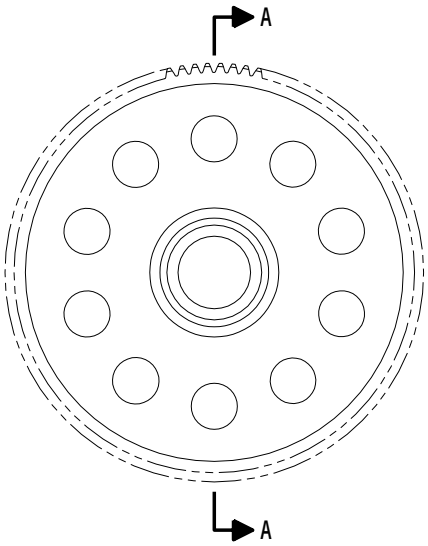
A. References

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

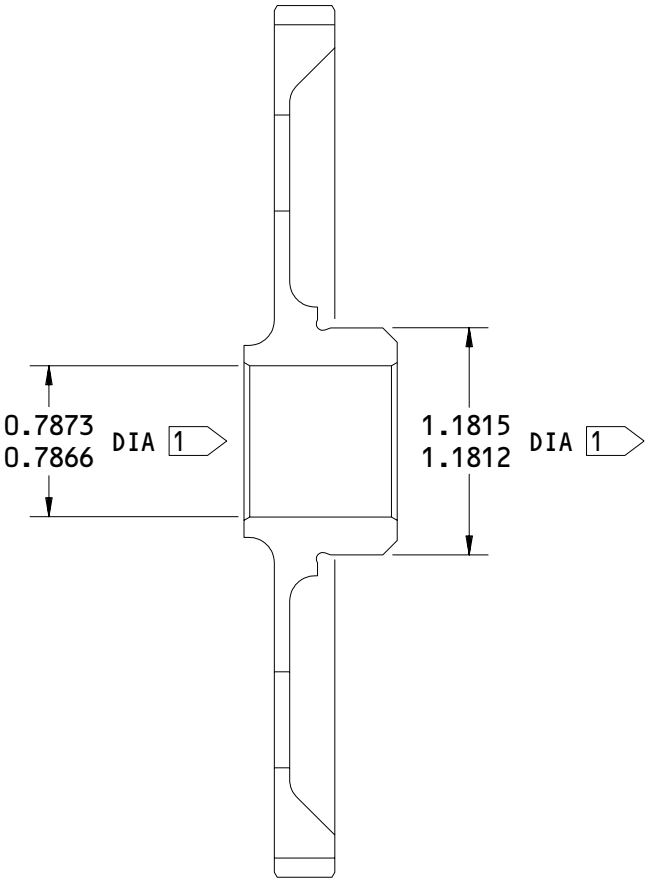
(2) SOPM 20-42-05, Bright Cadmium Plating

B. Procedures (Fig. 601)

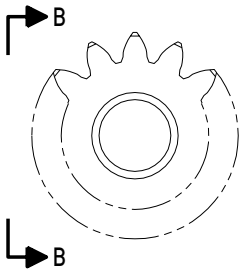
(1) Cadmium plate (F-15.36) all over, unless shown differently.



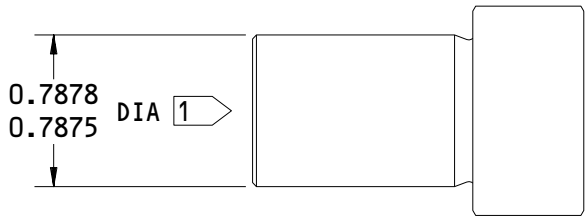
GEAR (360)



A–A



PINION (355)



B–B

ITEM NUMBERS REFER TO IPL FIG. 1

1 NO CADMIUM PLATE ON THIS SURFACE

ALL DIMENSIONS ARE IN INCHES

256T6369-2 Thru -5
Cluster Gear and Pinion Refinish
Figure 601

MARKER - REPAIR 23-1

256T5124-10, -20, -27

1. General

A. This procedure has the data necessary to replace the markers (630, 635A).

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

C. Refer to the REPAIR - GENERAL (27-51-48/601, REPAIR - GENERAL) for the Standard True Position Dimensioning Symbols shown in the repair.

2. Marker Replacement

A. Consumable Materials

NOTE: Equivalent material can be used.

(1) A00292 Adhesive -- Type 89 (BMS 5-105) (SOPM 20-50-12)

(2) A00554 Adhesive -- Type 70 (BMS 5-92) (SOPM 20-60-04)

B. References

(1) SOPM 20-50-12, Application of Adhesives

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

C. Procedure

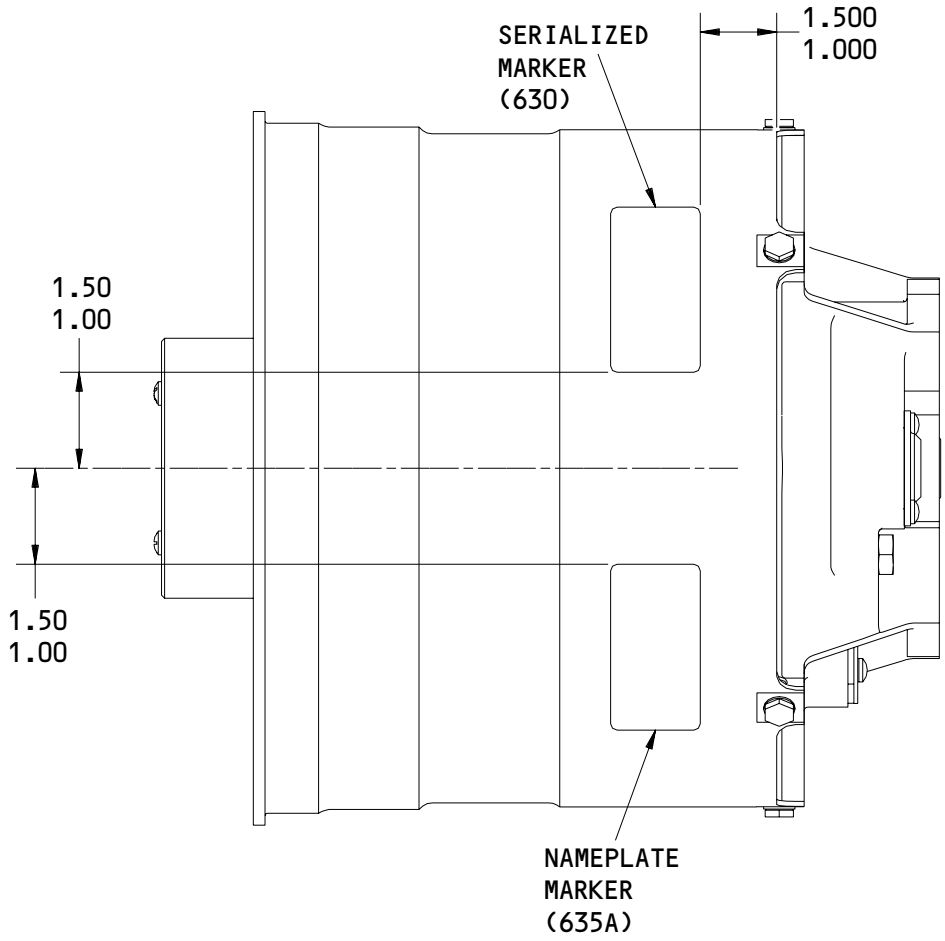
(1) Record the serial number from the installed serialized marker (630).

(2) Remove the marker (630, 635A).

(3) Deleted.

(4) Bend the marker (630, 635A) to the contour of the housing (625).

(5) Bond the marker (630, 635A) to the housing (625) with Type 89 or Type 70 adhesive, as shown in Fig. 601. Make sure that the adhesive is applied to 100 percent of the faying surface. Refer to SOPM 20-50-12.



ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

256T5124-10,-20,-27
Marker Replacement
Figure 601

K54955

ASSEMBLY

1. General

   A. This procedure has the data necessary to assemble the 10.6 diameter rotary actuator assembly.

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

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

2. Assembly

   A. Consumable Materials

      NOTE: Equivalent materials can be used.

      (1) A00395 Sealant -- BMS 5-26 or MIL-S-8802 (SOPM 20-60-04)

      (2) C00259 Primer -- BMS 10-11, Type 1 (SOPM 20-60-02)

      (3) C00913 Compound -- Corrosion Inhibiting, BMS 3-27 (SOPM 20-60-02)

      (4) D00306 Grease - Mobil 28 (SOPM 20-60-03)

      (5) D00465 Fluid - Landing Gear Shock Strut, BMS 3-32, type 2 (SOPM 20-60-03)

      (6) D00633 Grease -- BMS 3-33 (SOPM 20-60-03)

   B. References

      (1) SOPM 20-30-01, Cleaning and Relubricating Antifriction Bearings

      (2) SOPM 20-50-03, Bearing and Bushing Replacement

      (3) SOPM 20-50-06, Installation of O-Rings and Teflon Seals

      (4) SOPM 20-50-07, Lubrication

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

      (6) SOPM 20-60-03, Lubricants

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

C. Special Tools

NOTE: Equivalent tools can be used.

(1) Deleted.

(2) A27120-44, -45 -- Load Tool, Brake

(3) A27120-5, -6 -- Compression Fixture, Belleville Spring

(4) A27120-14, -15 -- Assembly Fixture, Planet Gear

(5) A27120-2, -7 -- Socket

(6) A27120-16 -- Guide Pin (quantity 3)

(7) A27121-1 -- Installation Tool Set, Shaft Seal

D. Lubrication

(1) Remove the grease from the bearings. Refer to SOPM 20-30-01.

(2) Put the bearings fully in BMS 3-32 fluid to lubricate them. Refer to SOPM 20-50-07.

CAUTION: DO NOT MIX GREASE TYPES OR THERE CAN BE AN EFFECT ON THE LUBRICATION.

(3) Assemble the parts with BMS 3-33 or Mobil 28 grease, or BMS 3-32 fluid, as specified in the procedures that follow.

E. Procedure

(1) Assemble the brake assembly (465A). (Fig. 701)

(a) Lubricate all of the parts of the brake assembly (465A) with BMS 3-32 fluid before you start the assembly.

(b) Install the ball ramp (605) on the no-back shaft (610).

(c) Put the no-back shaft (610) in a vertical position and put three balls (600) in the ball pockets of the ball ramp (605).

(d) Install the spacers (582), if applicable, in the spring pockets of the reaction plate (595), then install the springs (580).

(e) Install the pressure plate (575) on the reaction plate (595). Make sure that the index marks on the pressure plate and the reaction plate are aligned.

NOTE: The index marks must be aligned to make sure that the spring pockets will be aligned as shown in Fig. 701.

(f) Install one lined disc assembly (560) and one rotor disk (555) on the reaction plate (595). On brake assemblies 256T6170-2 and -3 only, install one more lined disc assembly (571) and rotor disk (556) on the reaction plate.

(g) Install a shim (590) of the correct thickness, as follows.

1) Use the brake load tool to apply a load equally on the outer face of the rotor disk (555 or 556). Increase the load until the gap between the pressure plate (575) and the reaction plate (595) is 0.010-0.015 inch, as shown in Fig. 701.

2) Measure the distance X from the outer face of the rotor disk (555 or 556) to the groove for the retainer ring (585).

3) Make a selection from the available shims (590) to get a shim with a thickness equal to X.

4) Install the shim (590) on the reaction plate (595).

(h) Install the retainer ring (585) on the reaction plate (595) to hold the reaction plate and other parts (555 thru 580, 590) together as a sub-assembly. Make sure the gap is 0.010-0.015 inch.

(i) Install the reaction plate sub-assembly (555 thru 595) on the no-back shaft (610). Make sure that the three balls (600) on the ball ramp (605) engage the ball pockets on the reaction plate (595).

(j) Install the spacer (550 or 551), the four remaining lined disc assemblies (560), three rotor disks (545), the Belleville spring (540A), and the thrust stop (535) on the no-back shaft (610).

(k) Install a shim (530) of the correct thickness, as follows.

1) Temporarily install the torque brake shaft (525) on the no-back shaft (610).

2) Push the thrust stop (535) axially to remove the spaces between the parts installed on the no-back shaft (610).

3) Measure the distance Y between the end of the torque brake shaft (525) and the thrust stop, as shown in Fig. 701.

4) Make a selection from the available shims (530) to get a shim with a thickness equal to dimension Y minus 0.010-0.015 inch.

5) Remove the torque brake shaft (525) from the no-back shaft (610).

6) Install the shim (530) on the no-back shaft (610).

(l) Install the torque brake shaft (525) on the no-back shaft (610).

(m) Install the bearing (520) in the stator plate (515). Refer to SOPM 20-50-03.

(n) Install the stator plate (515) with the bearing (520) on the no-back shaft (610).

(o) Install the shim (510) on the torque brake shaft (525). Use a shim of the same thickness as the shim that was removed during disassembly, or use an initial thickness of 0.113 inch.

NOTE: The torque limiter test (27-51-48/101, TESTING AND FAULT ISOLATION) will give the final shim thickness to get the correct torque brake setting.

(p) Install two thrust washers (500) and the bearing (505) on the torque brake shaft (525).

(q) Assemble the stack of ten Belleville springs (495) in the compression fixture. Compress the stack a minimum of six times with a load of 340-360 pounds. Remove the springs from the compression fixture.

(r) Install the Belleville springs (495) in the output cam (490) as shown, then install the output cam on the torque brake shaft (525).

(s) Put the no-back shaft (610) in a vertical position and put three balls (485) in the ball pockets of the output cam (490).

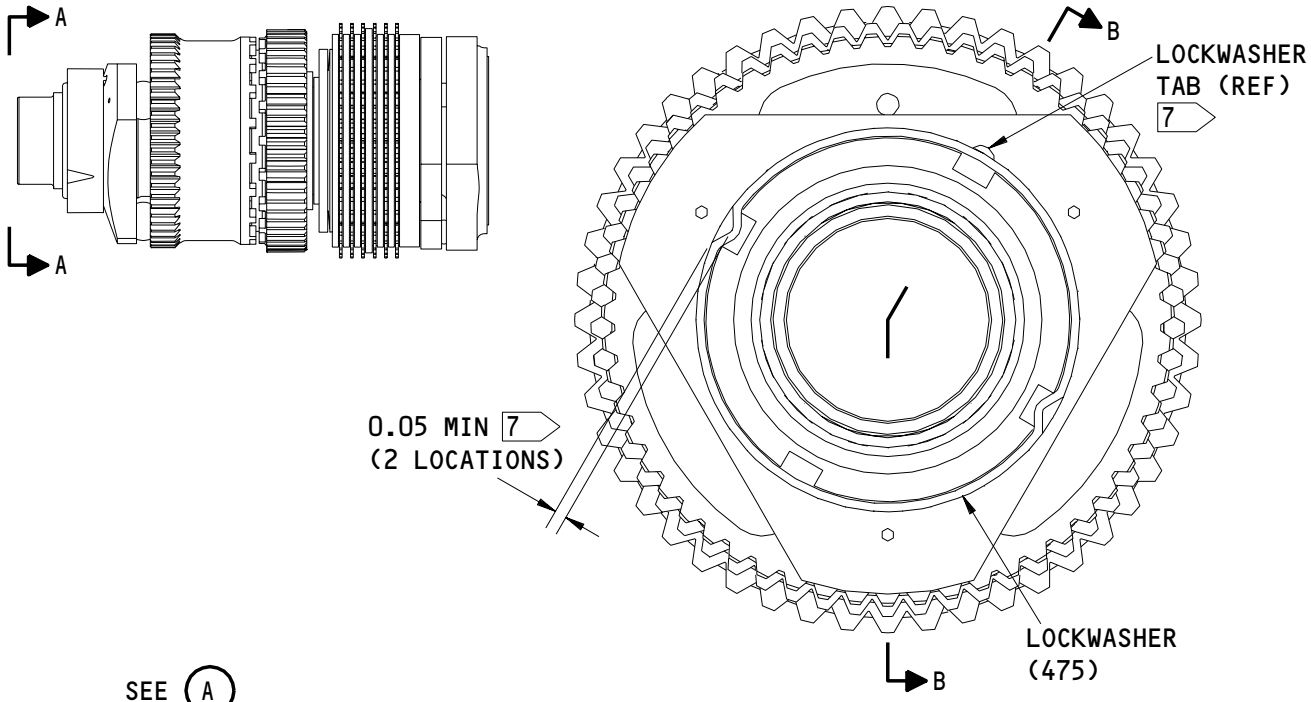
(t) Install the input cam (480) on the torque brake shaft (525). Make sure that the three balls (485) on the output cam (490) engage the ball pockets on the input cam.

(u) Install the lockwasher (475) on the no-back shaft (610). Make sure that the tab on the lockwasher engages the hole in the input cam (480).

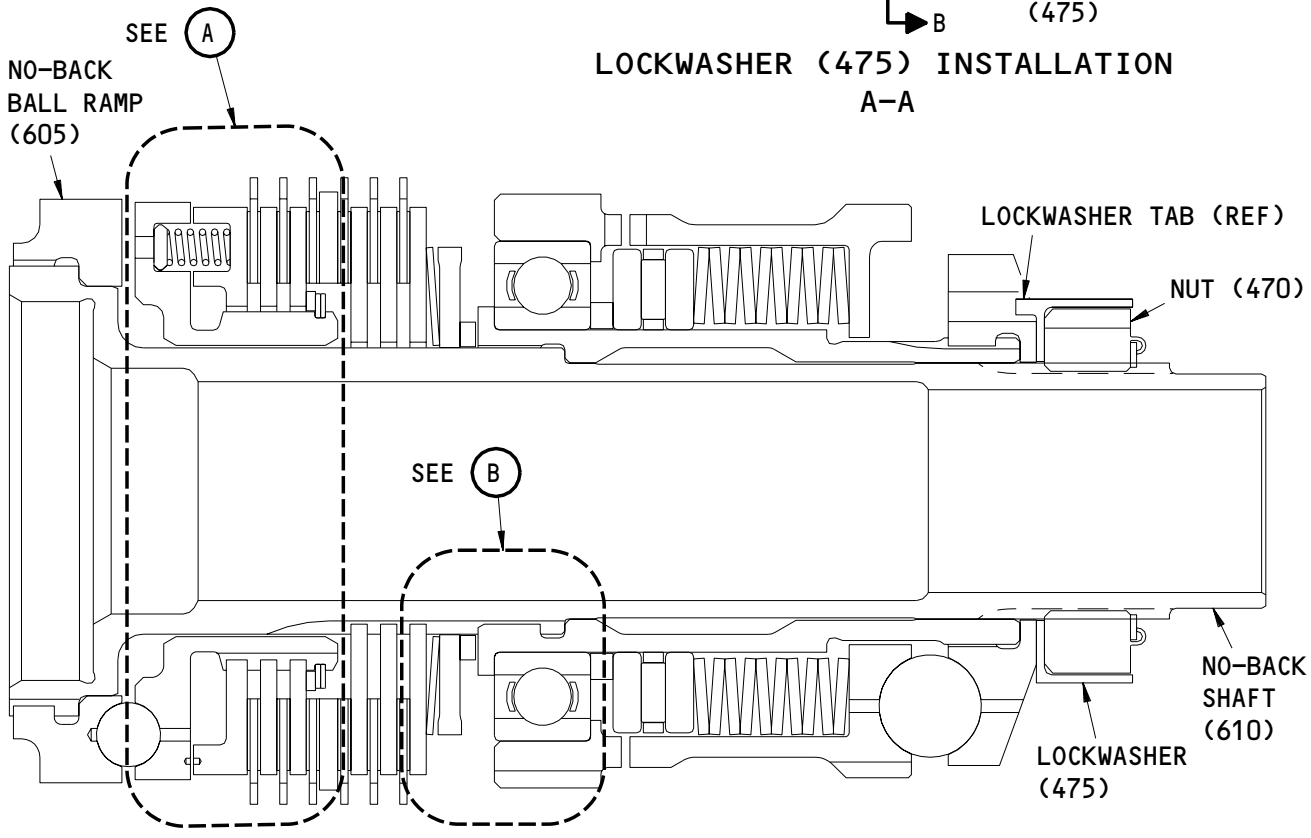
(v) Lubricate the threads of the nut (470) with BMS 3-32 fluid. Install the nut and use the A27120-2 socket to tighten it to 270-330 pound-inches more than the run-on torque.

(w) Use a punch to bend the flange of the lockwasher (475) into two slots of the nut (470), 180 degrees apart as shown in Fig. 701. Do not use the slot that is nearest to the lockwasher tab that engages the hole in the input cam (480).

(2) Deleted.



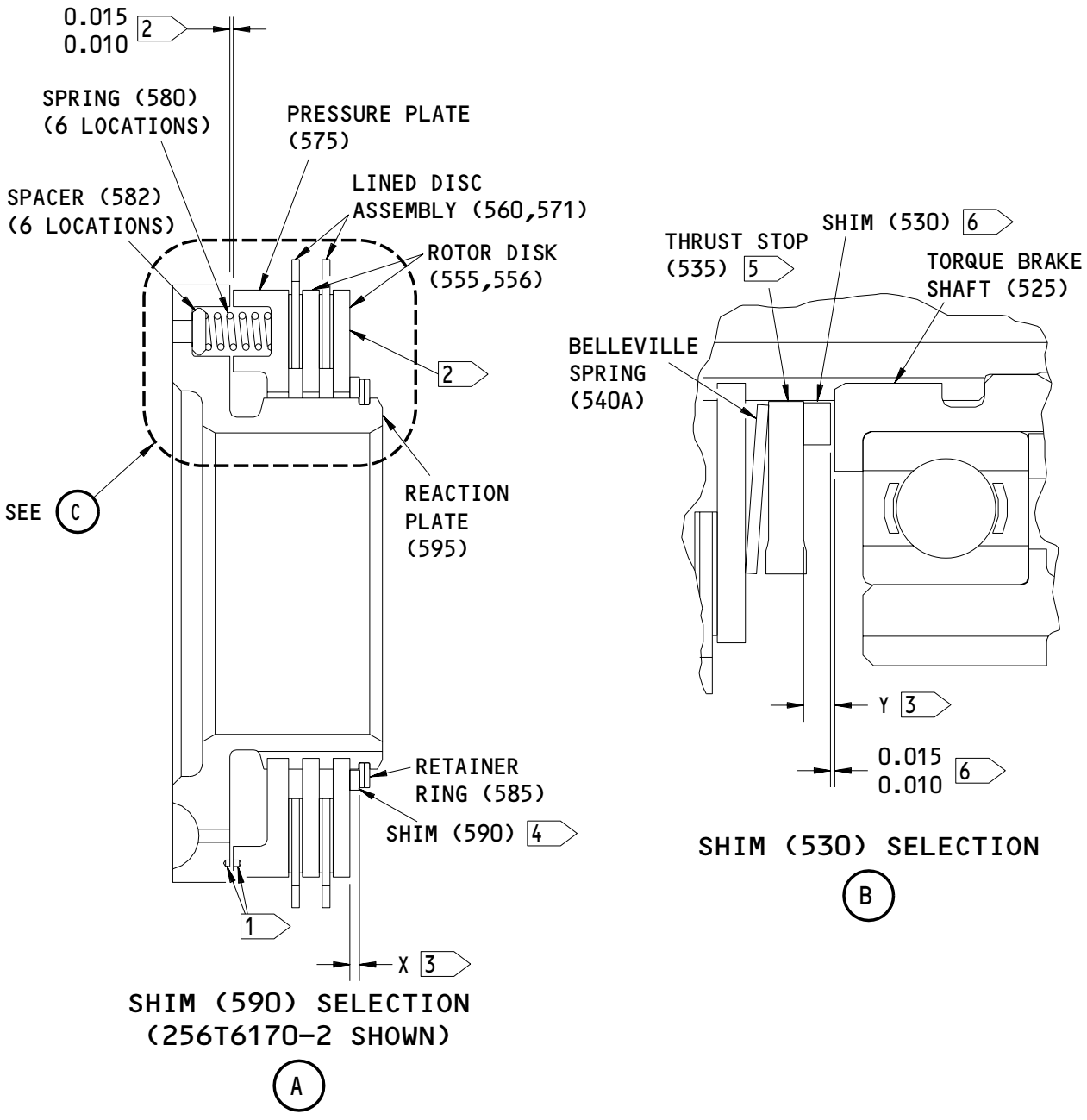
LOCKWASHER (475) INSTALLATION
A–A



B–B

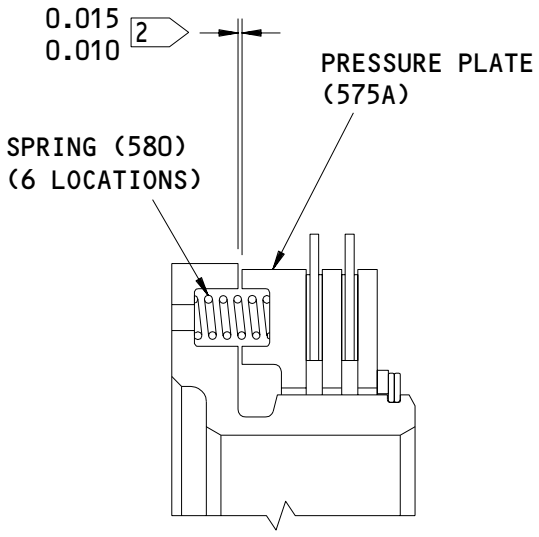
Brake Assembly Details
Figure 701 (Sheet 1)

K55366

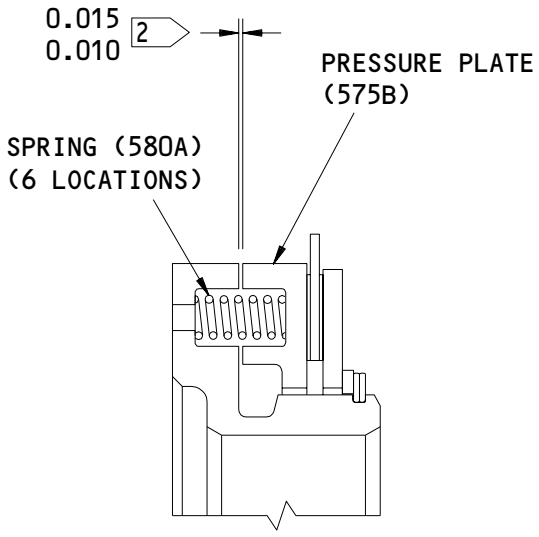


Brake Assembly Details
Figure 701 (Sheet 2)

K55367



PREFERRED CONFIGURATION
256T6170-3
C



256T6170-4
C

1 ALIGN INDEX MARKS

2 APPLY LOAD TO GET THE GAP SHOWN

3 MEASURE DIMENSION WITH THE LOAD APPLIED

4 SHIM THICKNESS = X

5 PUSH IN THE DIRECTION OF THE BALL RAMP (595) TO REMOVE SPACES

6 SHIM THICKNESS = Y MINUS 0.010-0.015

7 DO NOT USE SLOT NEAREST TAB

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

Brake Assembly Details
Figure 701 (Sheet 3)

CAUTION: THE SPLINED SHAFT ASSEMBLY (400) IS MADE FROM A MATCHED SET OF SPLINED SHAFTS (405, 410). KEEP THE PARTS TOGETHER OR THE ASSEMBLY CAN OPERATE INCORRECTLY.

(3) Assemble the planet gears (420, 425, 430) in the splined shaft assembly (400).

(a) Apply grease to the external splines of the splined shafts (405, 410). Put supports under the splined shafts as shown in Fig. 702, and install the ring gears (620) on the splined shafts. Remove the unwanted grease from the splines.

(b) Calculate the thicknesses L1 and L2 for the shims (415), as shown in Fig. 702. Make a selection from the available shims to get a shim with thickness equal to L1 +/- 0.0015 inch. Identify the shim as shim A. Get a shim with thickness equal to L2 +/- 0.001 inch. Identify the shim as shim B.

CAUTION: MAKE SURE THAT THE TIMING MARKS ARE IN THE LOCATIONS SHOWN. ALSO MAKE SURE THAT YOU CAN SEE THE ORIENTATION MARKS ON THE APPLICABLE PLANET GEARS. IF NOT, THE ASSEMBLY CAN OPERATE INCORRECTLY.

(c) Put the planet gears (420, 425, 430) around the spreader rings (435). Use the planet gear assembly tool to hold the parts and align them correctly, as shown in Fig. 703.

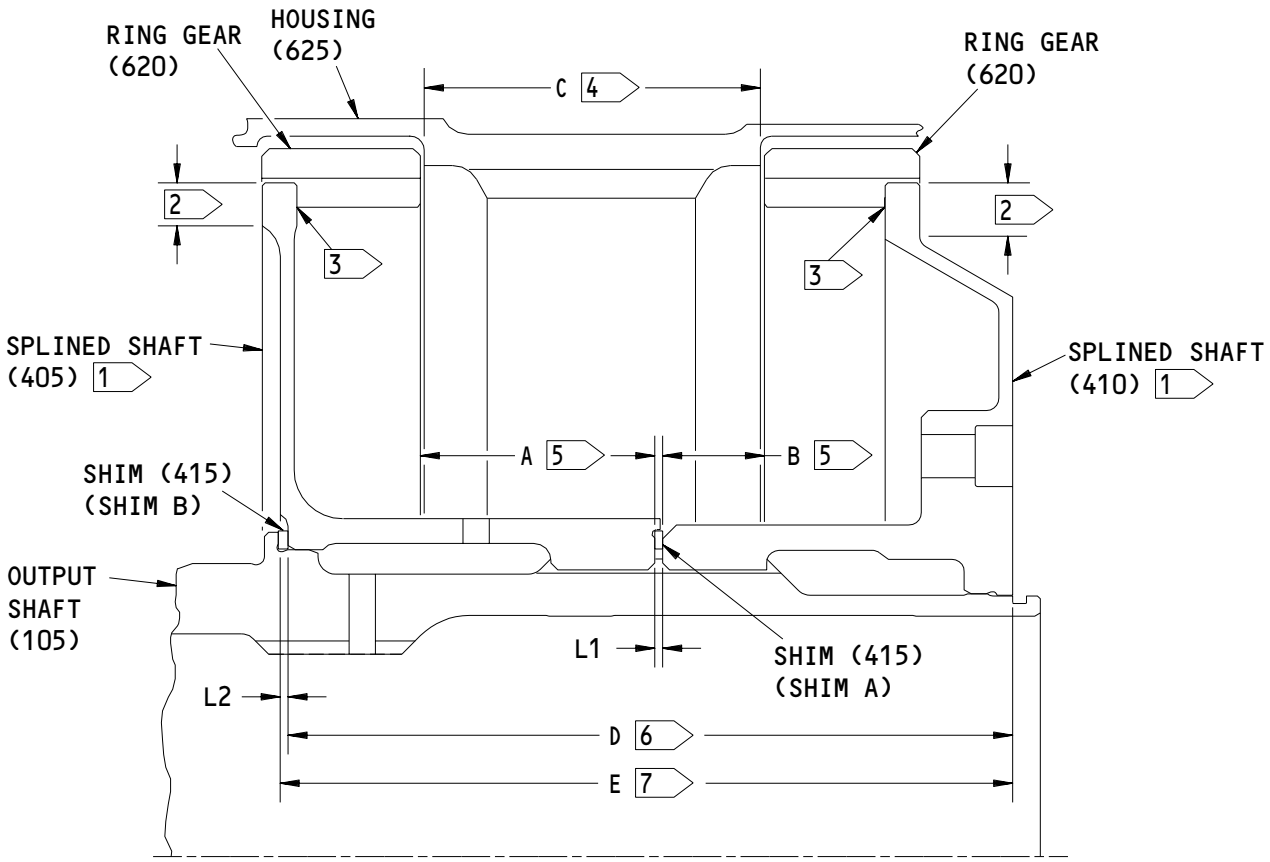
NOTE: The timing marks are on each end of the planet gears. The orientation marks are only on one end, to indicate left or right planet gear installation.

(d) Install the housing (625) on the planet gears (420, 425, 430).

(e) Install the output sun gear (395), prestage ring gear (390), and the splined shaft (410) with ring gear (620) on the planet gears (420, 425, 430).

(f) Install shim A (415) and the splined shaft (405) with ring gear (620) on the planet gears (420, 425, 430). Make sure that you align the missing spline spaces on the splined shafts (405, 410).

(4) Install the sleeve (615) in the output shaft (105), and install shim B (415) on the output shaft.



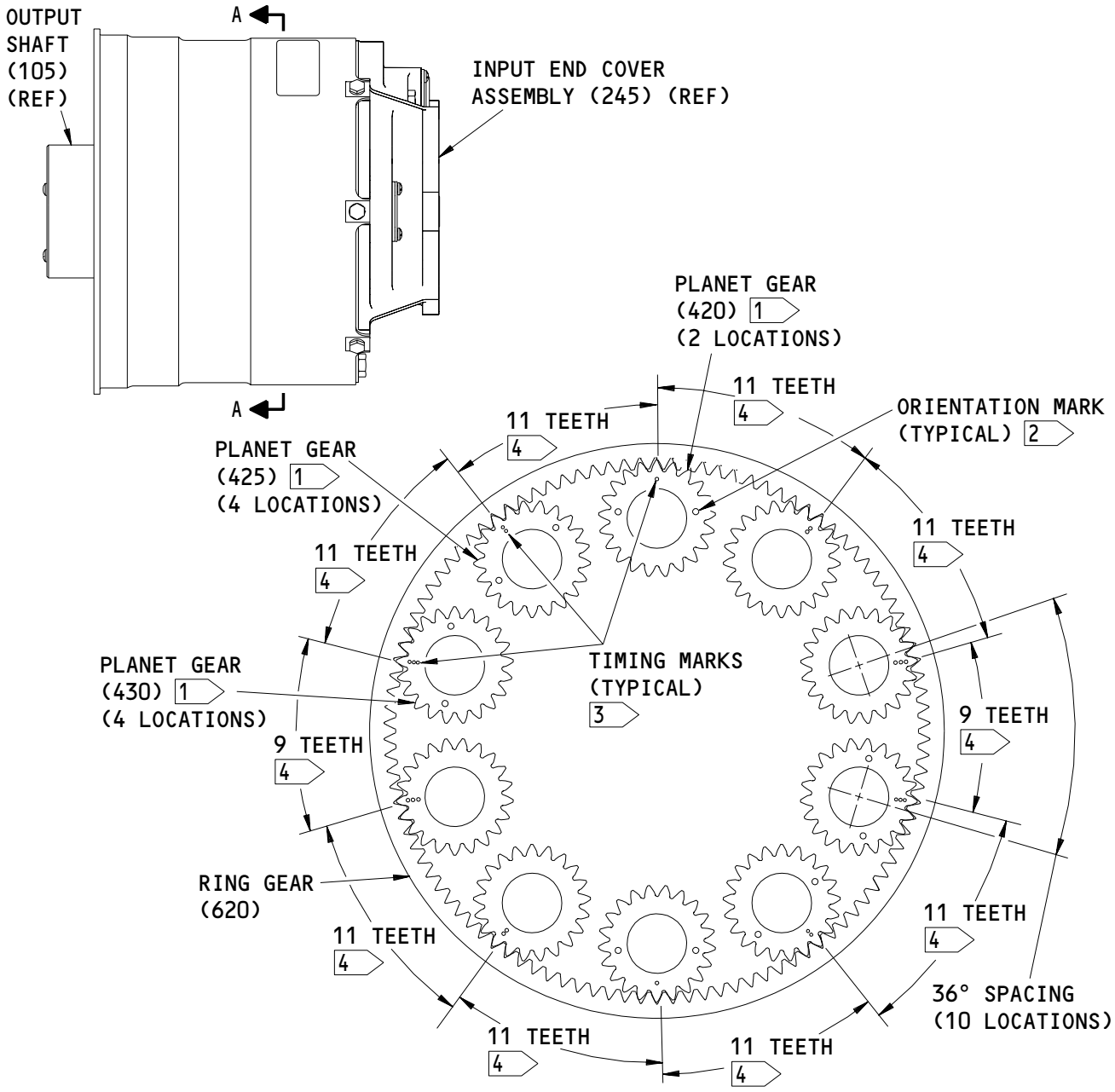
$$L1 = C-A-B+0.006$$
$$L2 = E-D-0.001$$

1. PART OF MATCHED SET TO MAKE SPLINED SHAFT ASSEMBLY (400)
2. USE THIS SURFACE AS SUPPORT WHEN YOU INSTALL THE RING GEAR
3. NO SPACE AT THIS SURFACE
4. MEASURE DIMENSION ON HOUSING
5. MEASURE DIMENSION FROM RING GEAR TO SPLINED SHAFT
6. MEASURE DIMENSION ON SPLINED SHAFT ASSEMBLY WITH SHIM A INSTALLED
7. MEASURE DIMENSION ON OUTPUT SHAFT

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

Shim Selection for Installation of Splined Shaft Assembly
Figure 702



A–A

1 REFER TO THE TIMING MARKS TO IDENTIFY THE PLANET GEARS

2 POINT THE PLANET GEARS SO YOU CAN SEE THE ORIENTATION MARKS ONLY ON THE APPLICABLE PLANET GEARS

3 ALIGN TIMING MARKS AS SHOWN

4 NUMBER OF TEETH ON THE RING GEAR BETWEEN THE TIMING MARKS ON THE PLANET GEARS

ITEM NUMBERS REFER TO IPL FIG. 1

Installation of Planet Gears
Figure 703

(5) Apply grease to the external splines that are near the middle of the output shaft (105). Install the output shaft in the splined shaft assembly (400). Remove the unwanted grease from the splines.

(6) Install the packing (100) on the output cover assembly (85) with BMS 3-32 fluid or grease. Refer to SOPM 20-50-06.

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

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

(7) Apply a thick layer of BMS 3-27 compound on the mating spline surfaces of the housing (625) and the output cover assembly (85). Install the output cover assembly with the packing (100) in the housing.

(8) Apply a thick layer of BMS 3-27 compound on all surfaces of the cover retainers (75). Install the cover retainers with the screws (70).

(9) Install the brake assembly (465A) in the output shaft (105).

(10) Install the bearing (35) on the brake assembly (465A) with BMS 3-32 fluid or grease. Refer to SOPM 20-50-03.

(11) Install the bearing (50) on the no-back input shaft (45) with BMS 3-32 fluid or grease. Refer to SOPM 20-50-03.

(12) Install the no-back input shaft (45) in the output shaft (105).

(13) Install the output shaft cover assembly (25) in the output shaft (105). Install the retainer rings (15) and the retainer plate (20) with the screws (5) and washers (10).

NOTE: Do not install the packing (30) or the shims (40, 55) at this time.

CAUTION: THE BEARING (300B) MUST POINT IN THE CORRECT DIRECTION OR IT CAN WEAR QUICKLY.

(14) Install the bearing (300B) on the sun gear assembly (440) with BMS 3-32 fluid or grease. Make sure that the bearing is installed as shown in Fig. 707. Refer to SOPM 20-50-03.

(15) Install the quill shaft (460), bushing (455), and the sun gear assembly (440) with bearing (300B) on the brake assembly (465A).

(16) Put the retainer plates (385) on the splined shaft assembly (400) and hold the parts temporarily with three threaded guide pins.

(17) Install the cluster gear assemblies (345).

(a) Install the bearings (335, 340) on the cluster gear assemblies (345) with BMS 3-32 fluid or grease. Refer to SOPM 20-50-03.

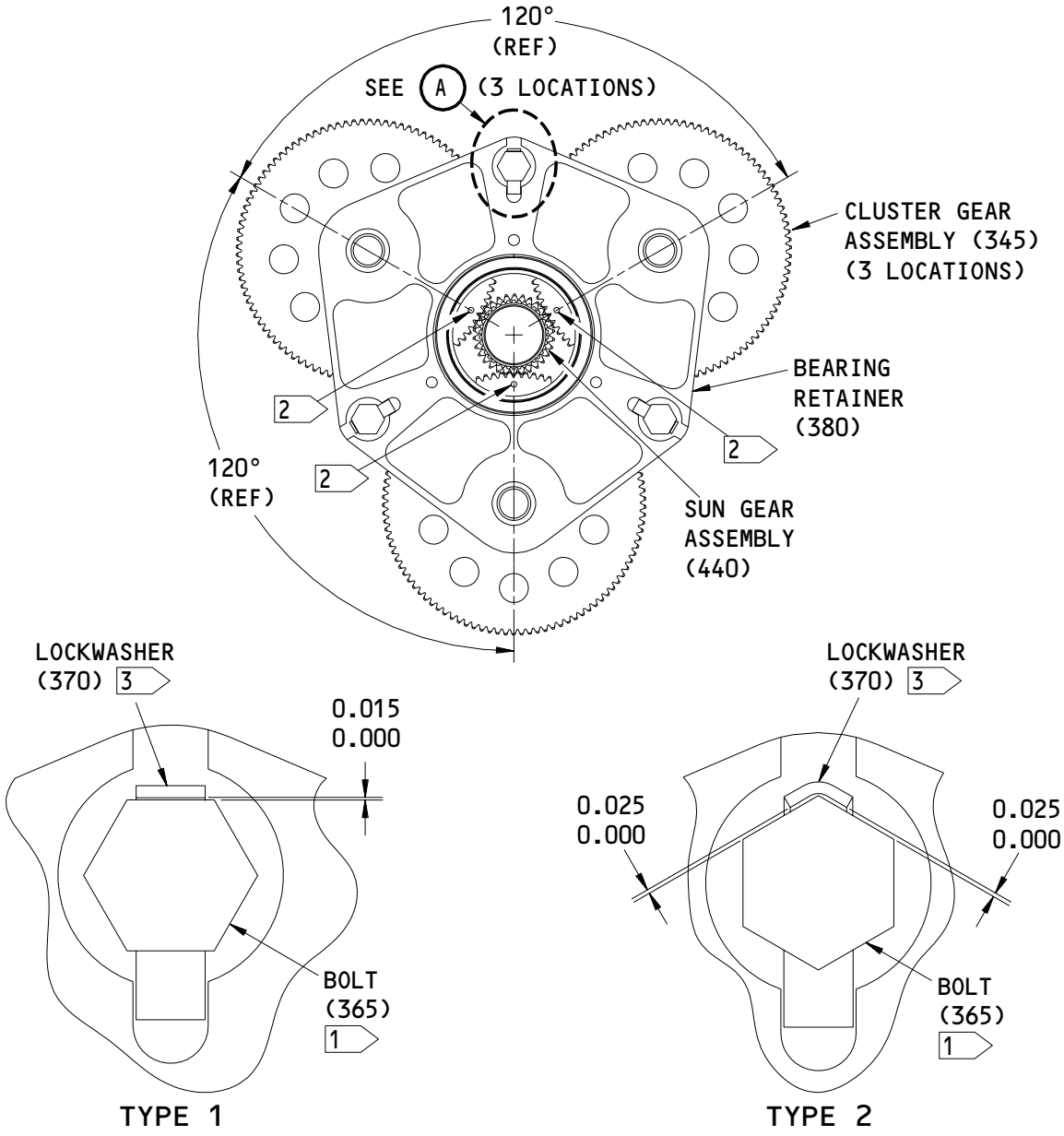
(b) Install the cluster gear assemblies (345) with bearings (335, 340) on the bearing retainer (380).

(c) Install the bearing retainer (380) over the guide pins. Make sure that the cluster gear assemblies (345) engage the sun gear assembly (440) with the timing marks aligned as shown in Fig. 704.

(d) Remove one guide pin, and install one bushing (375) in its place, with BMS 3-32 fluid or grease. Refer to SOPM 20-50-03. Make sure that the bushing is seated fully. Install one bolt (365) through a lockwasher (370) and the bushing. Tighten the bolt to 90-125 pound-inches. Repeat the procedure for the other two locations of the guide pins. After all of the bolts are installed, make sure that the cluster gears can turn freely without binding.

(e) Bend the outer tab on each lockwasher (370) against the heads of the bolts (365), as shown in Fig. 704.

(18) Apply a 100-150 pound axial load to the output shaft (105) in each direction. Make sure that the end play of the output shaft is 0.003-0.009 inch.



OPTIONAL CONFIGURATIONS

A

1 TEMPORARIILY INSTALL TOOLING PIN AT THIS LOCATION DURING ASSEMBLY

2 ALIGN TIMING MARK WITH TOOTH ON THE SUN GEAR

3 BEND ONE TAB OF THE LOCKWASHER AGAINST THE HEAD OF THE BOLT

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

Installation of Cluster Gear Assemblies
Figure 704

(19) Install the shim (55).

(a) Remove parts (5 thru 50) from the output shaft (105).

(b) Calculate the thickness L3 for the shim (55), as shown in Fig. 705. Make a selection from the available shims to get a shim with thickness equal to L3 +/- 0.002 inch.

(c) Install the shim (55) on the brake assembly (465A).

(d) Install parts (5 thru 25, 35, 45, 50) in the output shaft (105).

NOTE: Do not install the packing (30) or the shim (40) at this time.

(20) Install the three plungers (330) in the bearing retainer (380), then install the indicator plate (325).

(21) Install the spring retainer (315) with the springs (320) on the bearing retainer (380).

(22) Install the shim (310) and the retainer rings (305) to hold the spring retainer (315). Adjust the thickness of the shim to get a distance of 0.155-0.159 inch between the indicator plate (325) and the spring retainer, as shown in Fig. 706.

CAUTION: THE BEARING (300B) MUST POINT IN THE CORRECT DIRECTION OR IT CAN WEAR QUICKLY.

(23) Install the bearing (300B) on the bull gear (295) with BMS 3-32 fluid or grease. Make sure that the bearing is installed as shown in Fig. 707. Refer to SOPM 20-50-03.

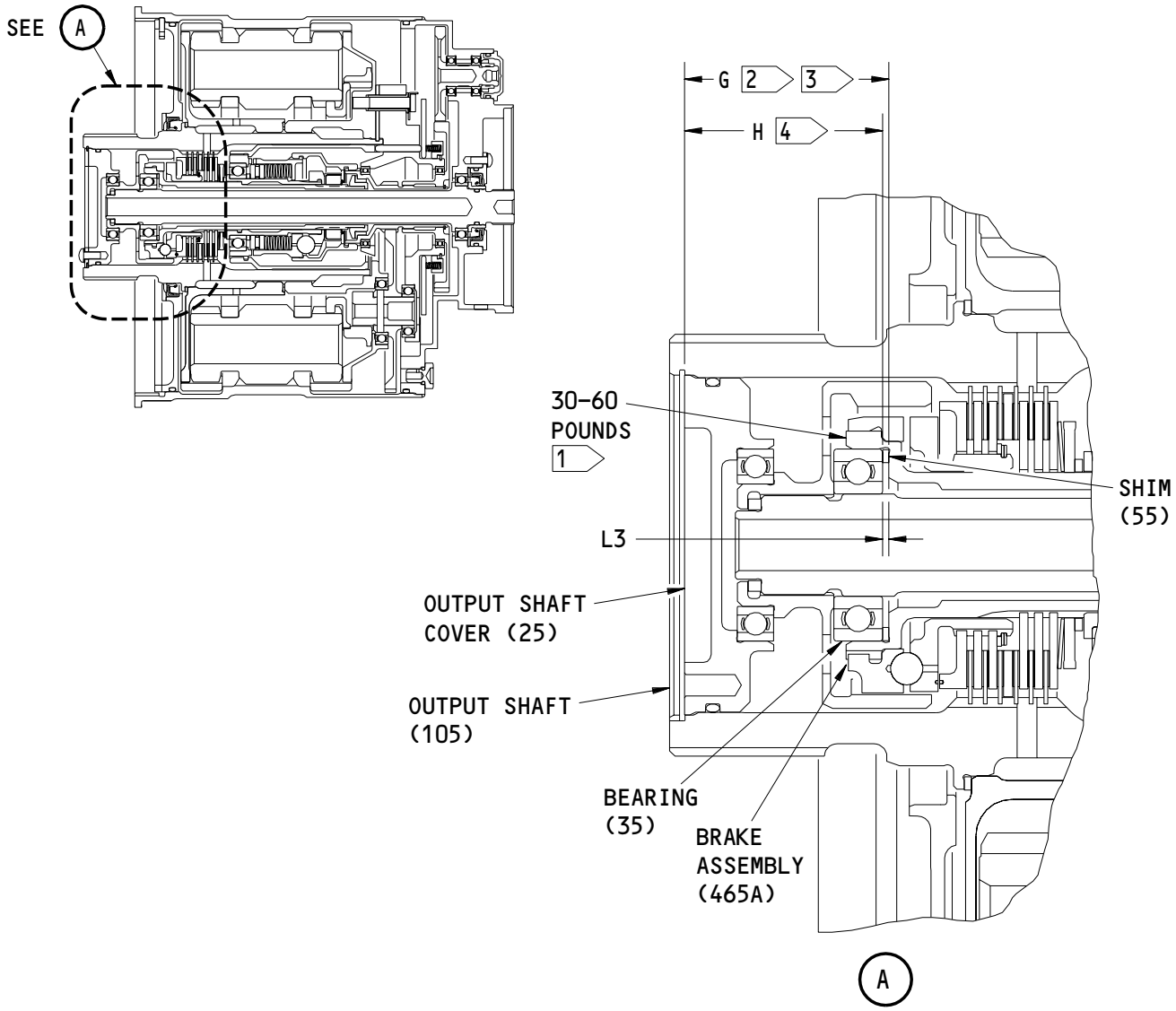
(24) Install the bull gear (295) with the bearing (300B) on the sun gear assembly (440), and hold the parts together with the retaining ring (290).

(25) Apply a 30 pound axial load to the bull gear (295) in each direction as shown in Fig. 707. Measure the total axial play X of the bull gear.

(26) Select a shim (302) of thickness T, where T equals X minus 0.001-0.004 inch. If T is less than 0.005 inch, the shim is not necessary, and you can ignore the next two steps.

(27) Remove the retaining ring (290), bull gear (295), and bearing (300B) from the sun gear assembly (440).

(28) Install the shim (302) in the sun gear assembly (440), then install the bearing (300B), bull gear (295), and the retaining ring (290). Make sure that the axial play of the bull gear is 0.001-0.004 inch.



L3 = G–H–0.004

1 > APPLY THE LOAD EQUALLY ON THE BRAKE ASSEMBLY

2 > MEASURE DIMENSION WITH THE LOAD APPLIED

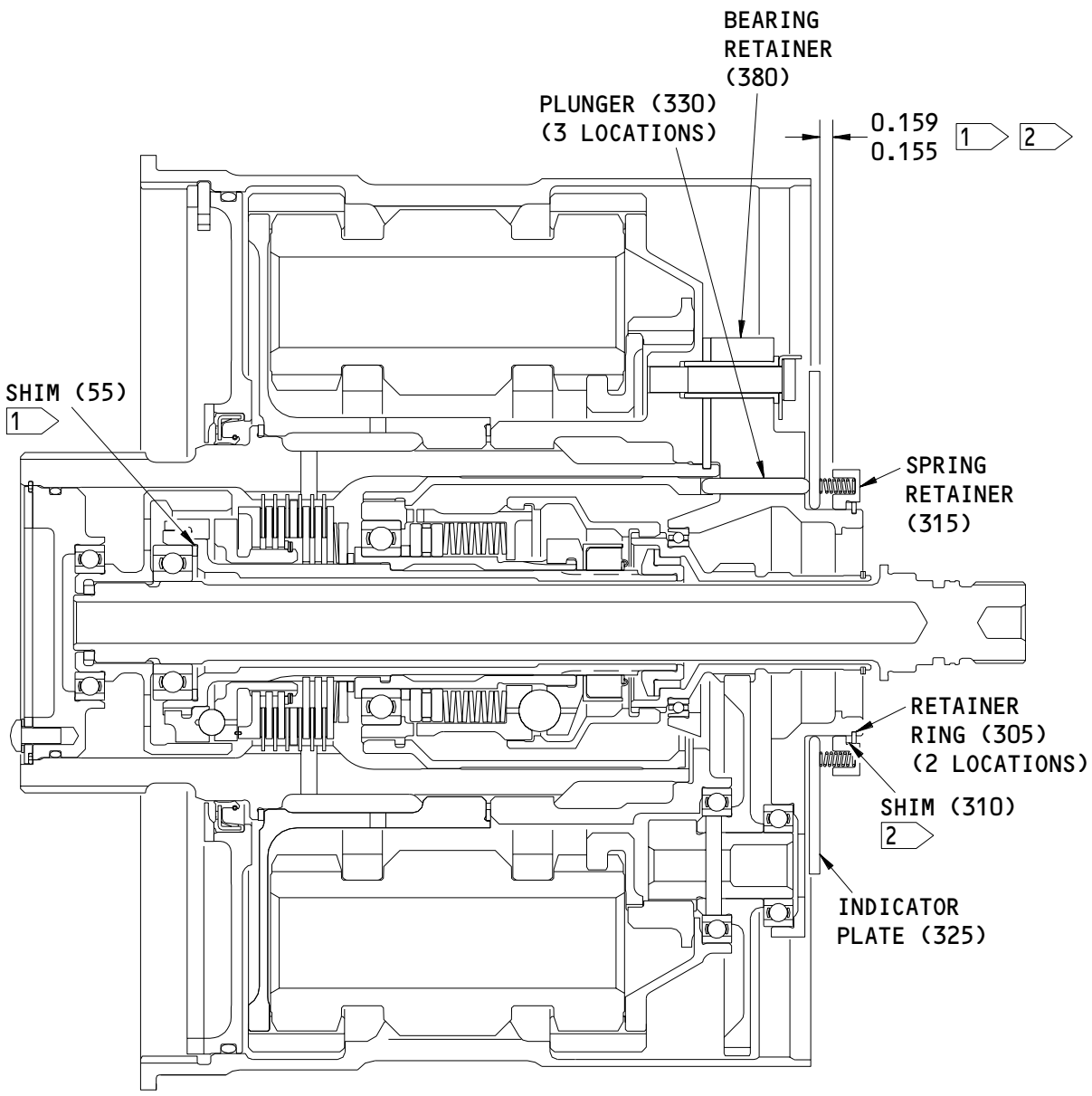
3 > MEASURE DIMENSION FROM THE RETAINER RING GROOVE IN OUTPUT SHAFT TO THE SHOULDER OF BRAKE ASSEMBLY

4 > MEASURE DIMENSION FROM THE OUTPUT SHAFT COVER TO THE OUTER RACE OF THE BEARING. REMOVE ALL SPACES BETWEEN PARTS

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

Shim Selection for Installation of Brake Assembly
Figure 705



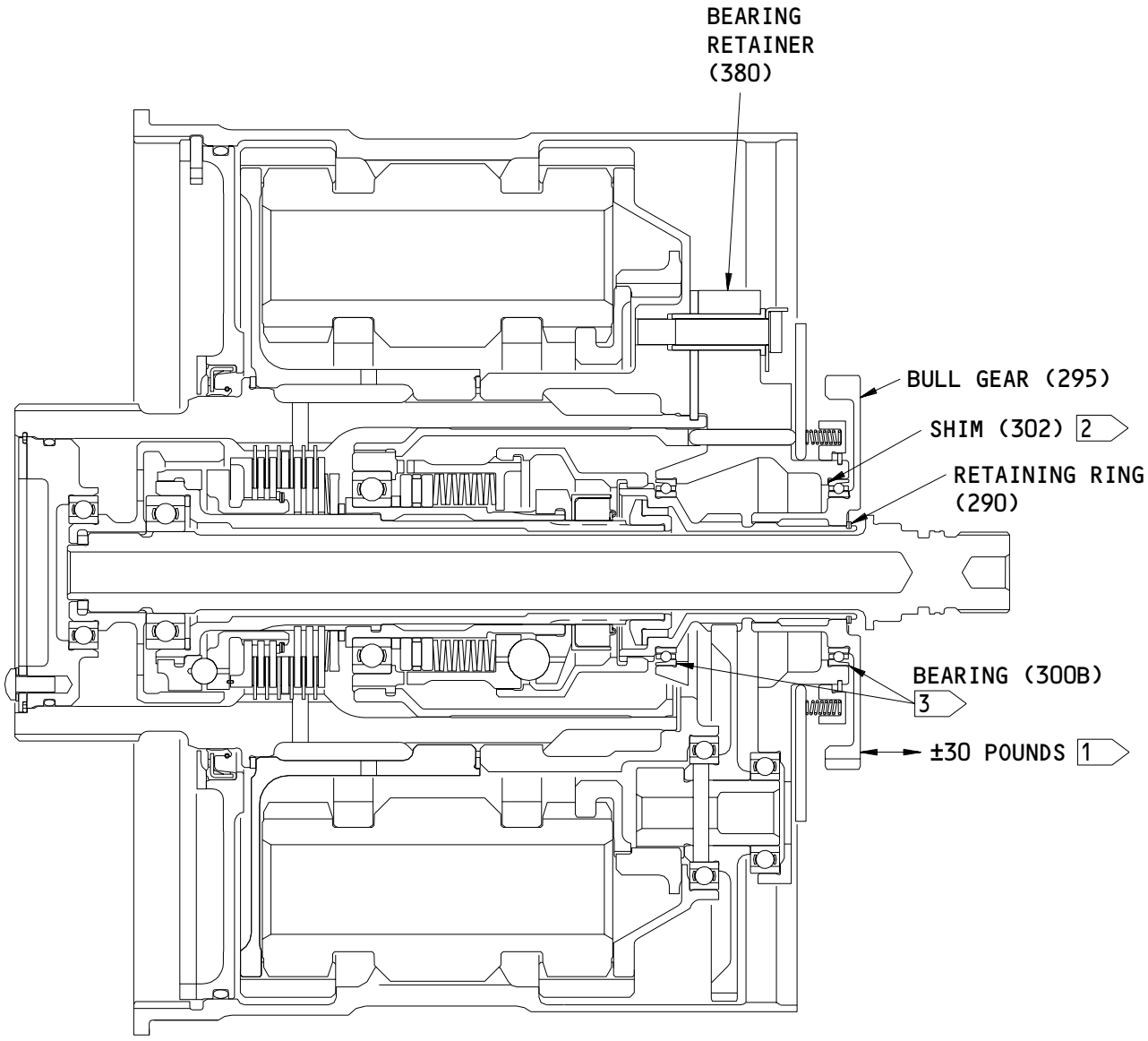
1 INSTALL THE SHIM (55) BEFORE YOU MEASURE THE CLEARANCE

2 USE SHIM (310) TO GET THE CLEARANCE SHOWN

ITEM NUMBERS REFER TO IPL FIG. 1

Shim Selection for Spring Retainer
Figure 706

K55554



1 APPLY THE LOAD EQUALLY ON THE BULL GEAR

2 USE SHIM TO GET 0.001-0.004 INCH AXIAL PLAY ON BULL GEAR. OMIT SHIM IF THICKNESS IS LESS THAN 0.005 INCH

3 INSTALL BEARINGS AS SHOWN

ITEM NUMBERS REFER TO IPL FIG. 1

Bearing And Shim Installation On Bearing Retainer
Figure 707

(29) Install the input end cover assembly (245) and attached parts.

(a) Install the pinion gear (275) with the spacer (280) and bearings (285) in the input end cover assembly (245). Install the nut (270) and use the A27120-7 socket to tighten it to 270-330 pound-inches more than the run-on torque.

(b) Install the packing (190) on the cover (185) with BMS 3-32 fluid or grease. Refer to SOPM 20-50-06.

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

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

(c) Apply a thin layer of BMS 3-27 compound to the flange of the cover (185), between the outer profile and the fillet radius. Apply BMS 3-27 compound to the shank and threads of the screws (175). Install the cover and the packing (190) on the input end cover assembly (245) with the screws and the washers (180).

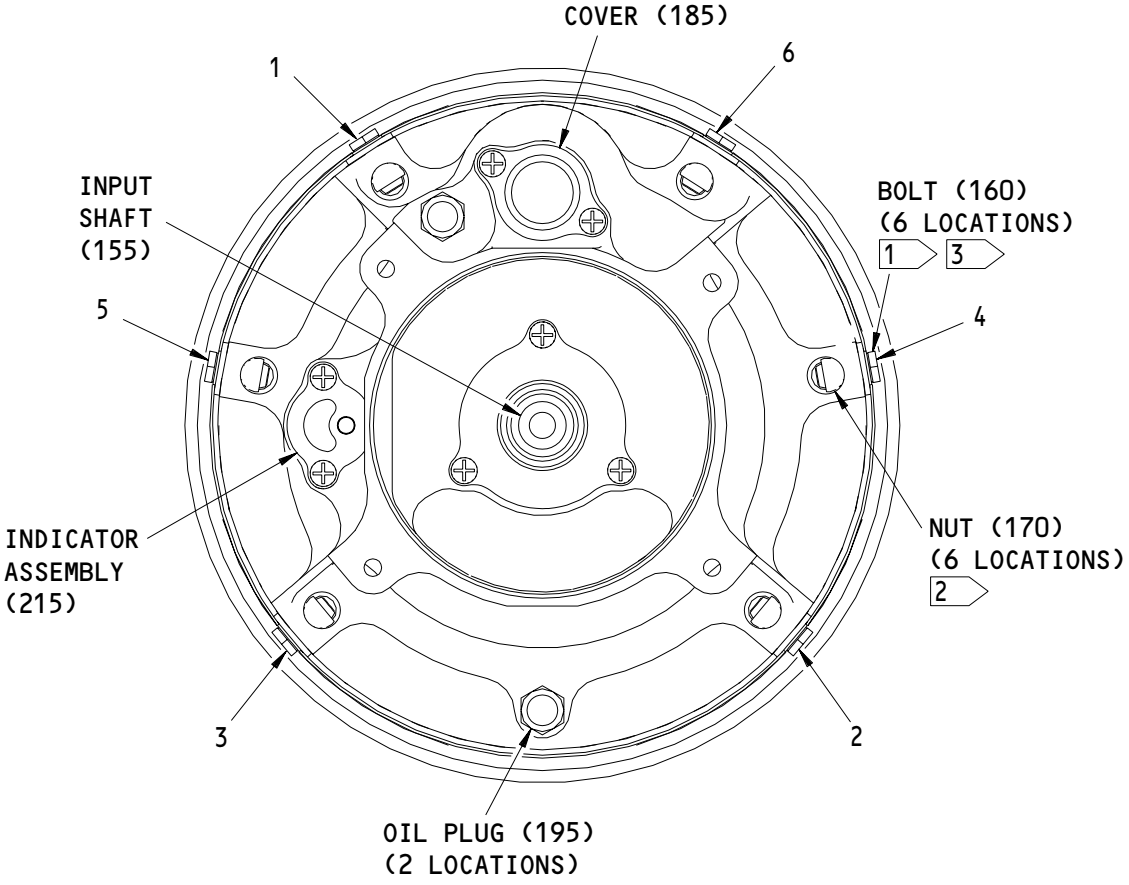
(d) Install the packing (265) on the input end cover assembly (245) with BMS 3-32 fluid or grease. Refer to SOPM 20-50-06.

(e) Apply BMS 3-27 compound to the outer diameter of the input end cover assembly (245), between the packing (265) groove and the profile of the outer edge of the housing (625).

(f) Apply BMS 3-27 compound to the shank and threads of the bolts (160), and to all surfaces of the nuts (170).

(g) Install the input end cover assembly (245) on the housing (625) with parts (160 thru 170). Tighten the bolts in the sequence shown in Fig. 708 to a torque of 50-75 pound-inches. Tighten the bolts in increments of approximately 20 pound-inches.

(h) Remove unwanted BMS 3-27 compound from the joint between the housing (625) and the input end cover assembly (245).



1 APPLY BMS 3-27 COMPOUND TO SHANK AND THREADS BEFORE INSTALLATION

2 APPLY BMS 3-27 COMPOUND TO ALL SURFACES BEFORE INSTALLATION

3 TIGHTEN BOLTS IN THE SEQUENCE SHOWN

ITEM NUMBERS REFER TO IPL FIG. 1

Installation of Input End Cover
Figure 708

K55668

(30) Install the input shaft (155).

(a) Install the bearing (150) on the input shaft (155) with BMS 3-32 fluid or grease. Refer to SOPM 20-50-03.

(b) Install the packing (145) on the input shaft (155) with BMS 3-32 fluid or grease. Refer to SOPM 20-50-06.

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

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

(c) Increase the temperature of the seal ring (135) to 250-300 degrees F. Install the seal ring on the input shaft (155) with BMS 3-27 compound. Refer to SOPM 20-50-03.

(d) Install the input shaft (155) with the attached parts into the rotary actuator.

(31) Install the retainer plate (140) in the input end cover assembly (245).

CAUTION: BE CAREFUL WHEN YOU TOUCH THE SEAL (130) TO PREVENT DAMAGE TO THE SEAL LIP.

(32) Install the seal (130) and seal retainer (120).

(a) Prepare the seal (130) for installation. Refer to SOPM 20-50-06.

(b) Lubricate the bore in the seal retainer (120) with BMS 3-32 fluid.

(c) Install the seal (130) in the seal retainer (120) so the open side points to the inner side of the rotary actuator. Use the installation tool or a similar tool that applies equal pressure over the full circumference of the seal at the outer diameter.

(d) Install the seal (130) so it is flush with, to not more than 0.01 inch above, the surface of the seal retainer (120).

(e) Apply a thick layer of grease to the lips of the seal (130).

(f) Install the packing (125) on the seal retainer (120) with BMS 3-32 fluid or grease. Refer to SOPM 20-50-06.

(g) Fill the space between the seal (130) and the seal retainer (120) with grease.

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

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

(h) Apply a thin layer of BMS 3-27 compound to the flange of the seal retainer (120), between the outer profile and the fillet radius. Apply BMS 3-27 compound to the shank and threads of the screws (110). Install the seal retainer on the input end cover assembly (245) with the screws and washers (115).

(33) Install the shim (40).

(a) Remove parts (5 thru 25, 45, 50) from the output shaft (105).

(b) Calculate the thickness L5 for the shim (40), as shown in Fig. 709. Make a selection from the available shims to get a shim with thickness equal to L5 +/- 0.002 inch.

(c) Install the shim (40) in the no-back input shaft (45).

(d) Install the packing (30) on the output shaft cover assembly (25) with BMS 3-32 fluid or grease. Refer to SOPM 20-50-06.

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

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

(e) Apply a thin layer of BMS 3-27 compound to the outer diameter of the output shaft cover assembly (25). Apply the compound from the edge of the outer face to the packing groove.

(f) Install parts (5 thru 30, 40 thru 50) in the output shaft (105).

CAUTION: BE CAREFUL WHEN YOU TOUCH THE SEAL (130) TO PREVENT DAMAGE TO THE SEAL LIP.

(34) Install the seal (80) and the seal retainer (65).

(a) Prepare the seal (80) for installation. Refer to SOPM 20-50-06

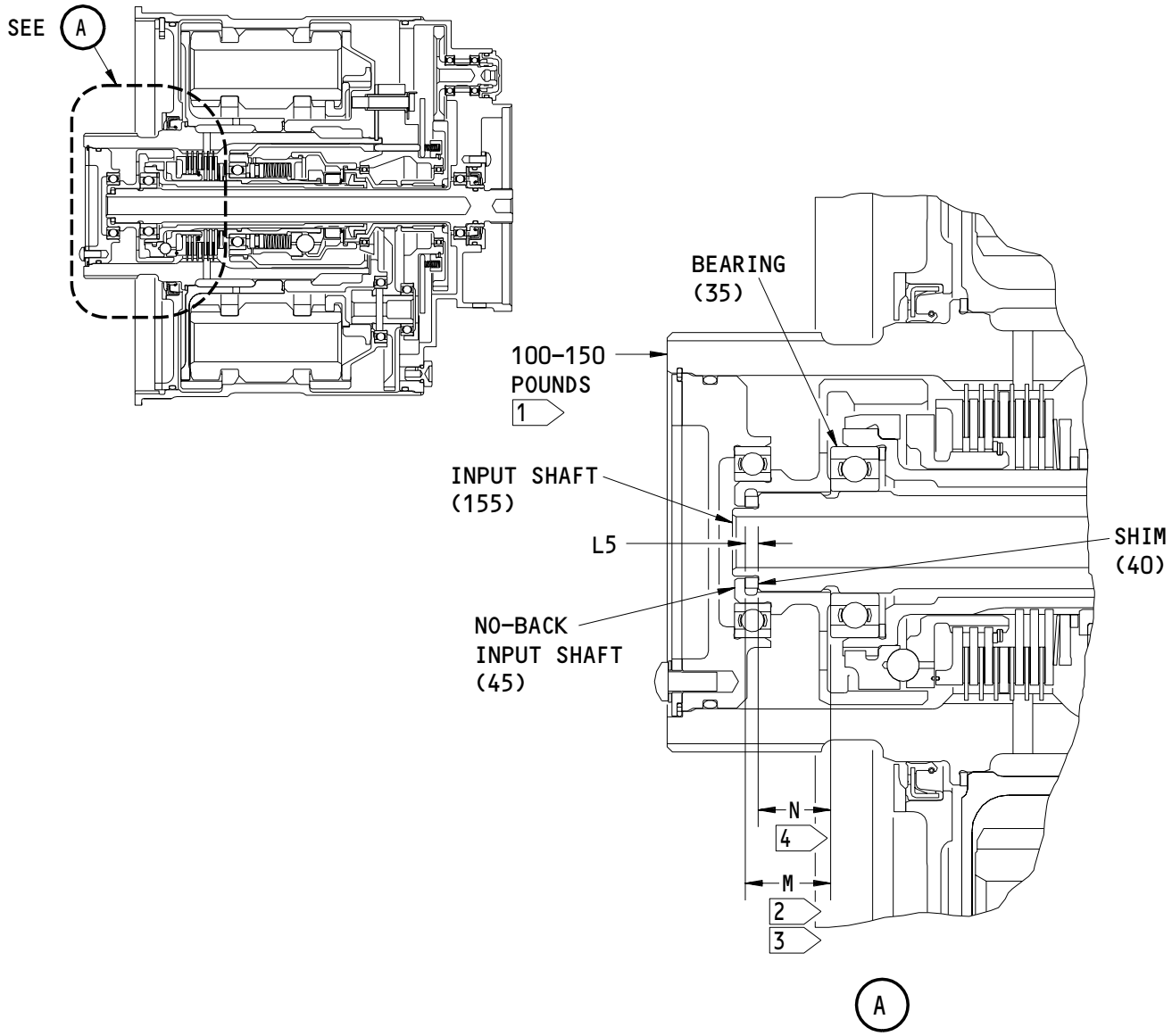
(b) Lubricate the bore in the output cover assembly (85) with BMS 3-32 fluid.

(c) Install the seal (80) in the output cover assembly (85) so the open side points to the inner side of the rotary actuator. Use the installation tool or a similar tool that applies equal pressure over the full circumference of the seal at the outer diameter.

(d) Install the seal (80) so it is flush with, to not more than 0.01 inch above, the surface of the output cover.

(e) Apply a thick layer of grease to the lips of the seal (80).

(f) Fill the space between the seal (80) and the output cover assembly (85) with grease.



L5 = M-N-0.010

1 APPLY THE LOAD EQUALLY ON THE OUTPUT SHAFT

2 MEASURE DIMENSION WITH THE LOAD APPLIED

3 MEASURE DIMENSION ON THE NO-BACK INPUT SHAFT

4 MEASURE DIMENSION FROM THE INNER RACE OF THE BEARING TO THE INPUT SHAFT. REMOVE ALL SPACES BETWEEN THE PARTS

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

Shim Selection for Input Shaft
Figure 709

K55675

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

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

(g) Apply BMS 3-27 compound to the shank and threads of the screws (60). Install the seal retainer (65) on the output cover assembly (85) with the screws.

(35) Assemble the indicator assembly (215). (Fig. 710)

(a) Lubricate the parts (220 thru 240) with BMS 3-32 fluid before you start to assemble the indicator assembly.

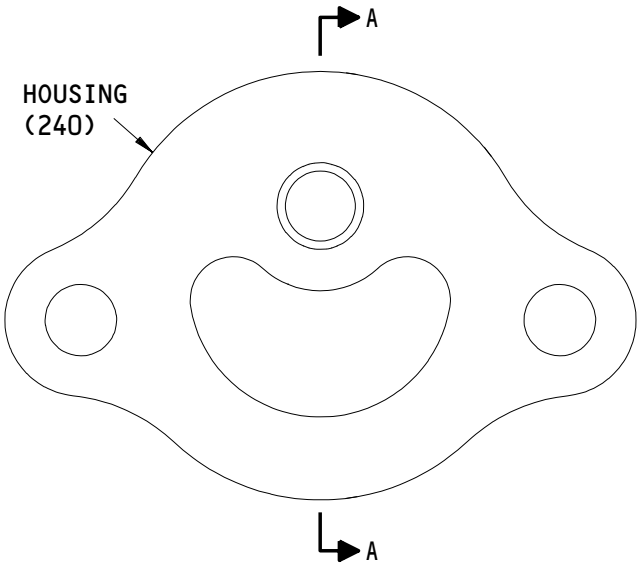
(b) Install the packing (225) in the housing (240). Refer to SOPM 20-50-06.

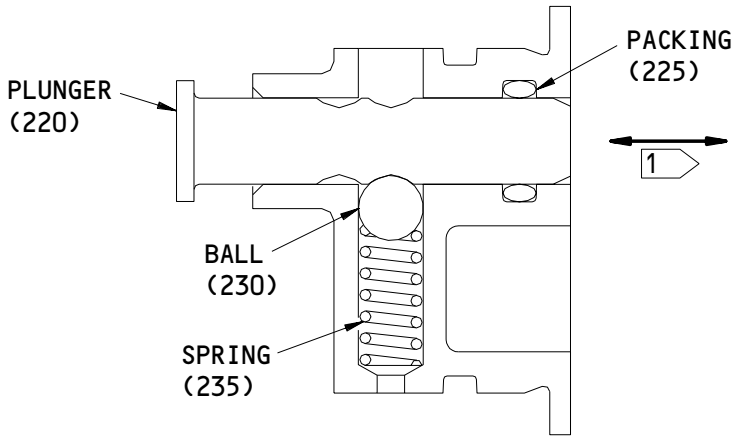
(c) Install the spring (235) and the ball (230) into the housing (240).

(d) Use a wood or plastic rod to push the ball (230) against the spring (235). Compress the spring approximately 0.10 inch.

(e) Install the plunger (220) in the housing (240). Remove the rod as the plunger passes over the ball. Push the plunger in until the ball engages the first detent as shown in Fig. 710.

(f) Move the plunger (220) in the housing (240). Make sure that the plunger can move freely between the two detent positions.





A–A

1 PLUNGER MUST MOVE FREELY BETWEEN DETENTS

ITEM NUMBERS REFER TO IPL FIG. 1

Indicator Assembly Details
Figure 710

(36) Install the indicator assembly (215).

(a) Calculate the thickness L4 for the shim (205), as shown in Fig. 711. Make a selection from the available shims to get a shim with thickness equal to L4 +/- 0.002 inch.

(b) Install the packing (210) on the indicator assembly (215) with BMS 3-32 fluid or grease. Refer to SOPM 20-50-06.

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

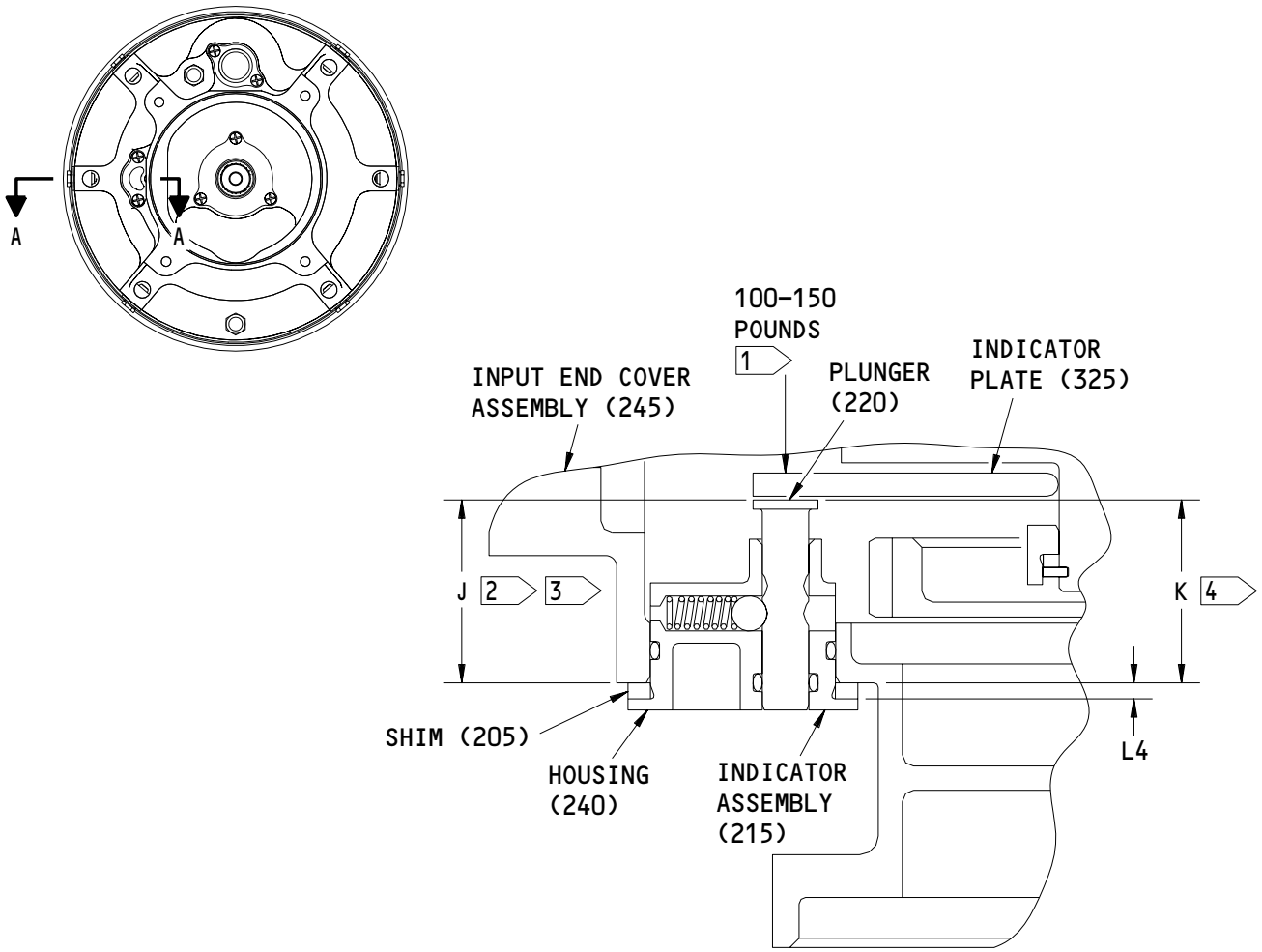
CAUTION: BMS 3-27 COMPOUND IS USED ONLY IN STATIC JOINTS WHERE GREASE CANNOT BE APPLIED. BMS 3-27 COMPOUND IN DYNAMIC JOINTS WILL NOT LET THEM MOVE FREELY.

(c) Apply a thin layer of BMS 3-27 compound to the flange of the indicator assembly (215), between the outer profile and the fillet radius. Apply BMS 3-27 compound to all surfaces of the shim (205). Apply BMS 3-27 compound to the shank and threads of the screws (175). Install the indicator assembly, packing (210), and shim on the input end cover assembly (245) with the screws and washers (180).

(37) Fill the rotary actuator assembly with 267-287 cubic inches of BMS 3-32 fluid.

(38) Lubricate the threads of the oil plugs (195), the packings (200), and the seats for the packings in the input end cover assembly (245) with BMS 3-32 fluid. Install the oil plugs and the packings on the input end cover assembly.

(39) Do the functional test on the assembly (27-51-48/101, TESTING AND FAULT ISOLATION).



A-A

$$L4 = K-J+0.012$$

1 APPLY THE LOAD EQUALLY ON THE OUTPUT SHAFT

2 MEASURE DIMENSION WITH THE LOAD APPLIED

3 MEASURE DIMENSION FROM THE SURFACE OF THE INPUT END COVER ASSEMBLY TO THE FACE OF THE INDICATOR PLATE

4 MEASURE DIMENSION FROM THE FLANGE OF THE INDICATOR HOUSING TO THE FACE OF THE INDICATOR PLUNGER

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

Shim Selection for Indicator Assembly
Figure 711

(40) Touch up the bare surfaces with BMS 10-11 type 1 primer (F-20.02) in the areas shown in Fig. 712. Do not apply primer on the bolts, screws, washers, or other areas shown in the figure.

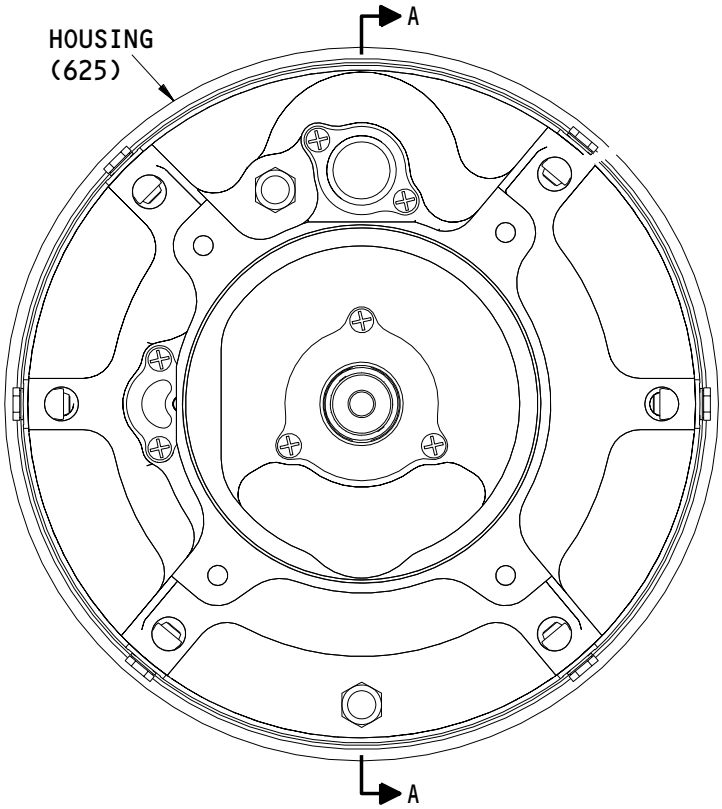
(41) Deleted.

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

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

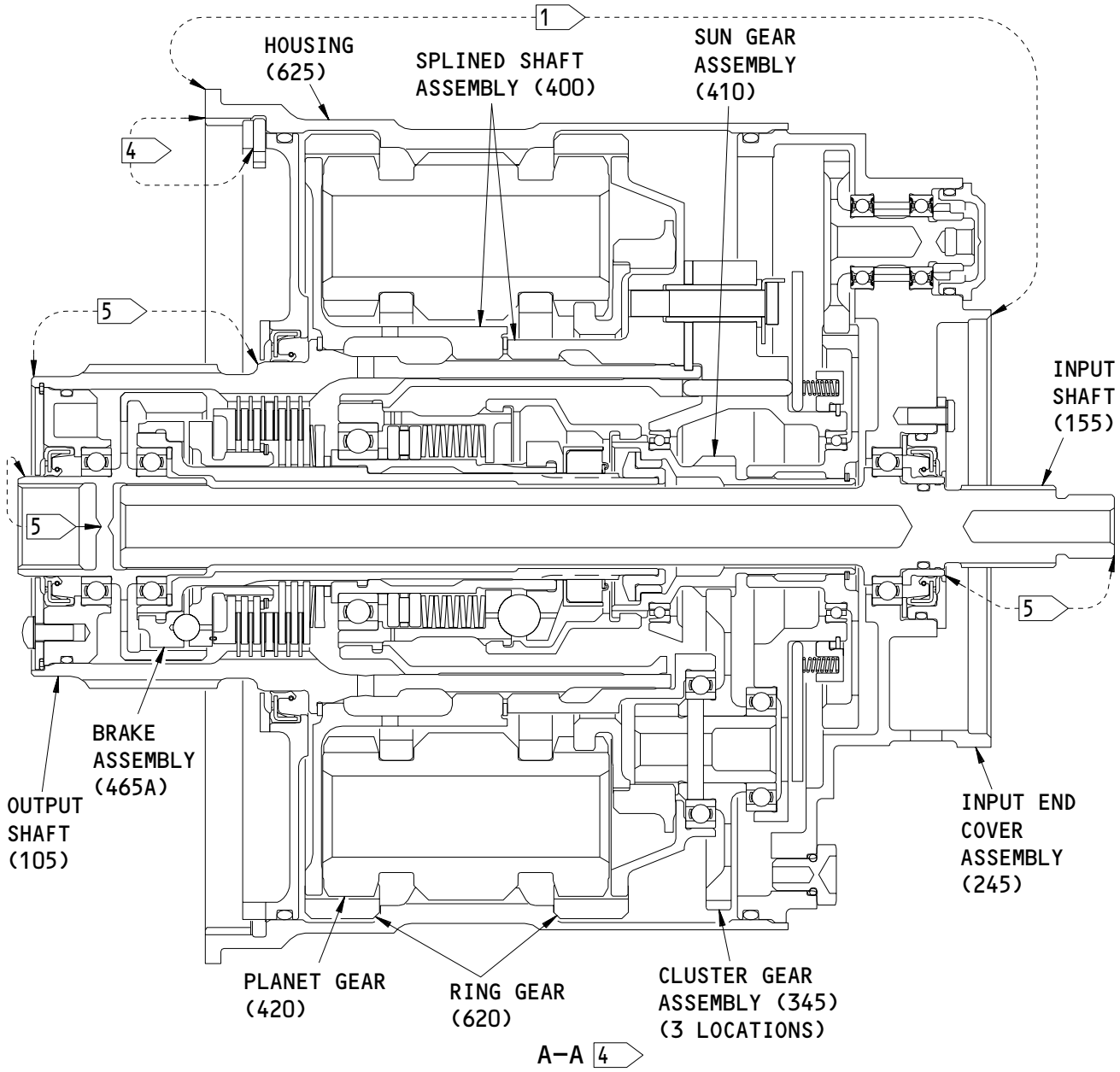
(42) Apply a thin layer of BMS 3-27 compound to the internal splines of the housing (625), near the output cover assembly (85).

(43) Apply a thick layer of BMS 3-33 grease to the ends of the input shaft (155) and output shaft (105), as shown in Fig. 712.



Rotary Actuator Assembly Details
Figure 712 (Sheet 1)

K55507



1 TOUCH UP WITH PRIMER ON THESE SURFACES, BUT NOT ON BOLTS, SCREWS, WASHERS, OR END OF PLUNGER (210)

2 APPLY A THIN LAYER OF BMS 3-27 COMPOUND TO THE SPLINES

3 APPLY A THICK LAYER OF BMS 3-33 GREASE TO THESE SURFACES

4 256T6310-2 SHOWN, 256T6310-3 SIMILAR

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

Rotary Actuator Assembly Details
Figure 712 (Sheet 2)

K55513

3. Storage

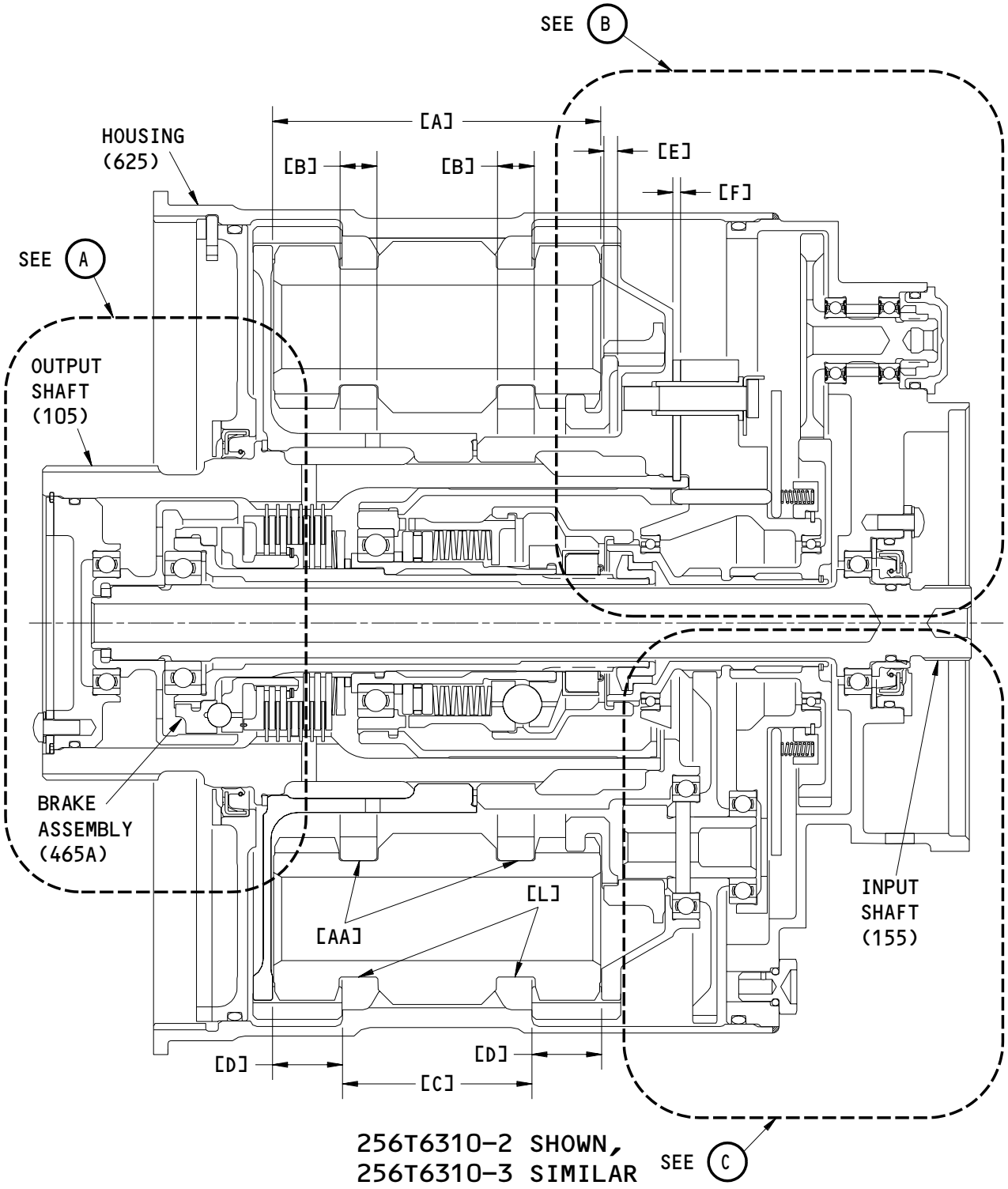
A. Reference

(1) SOPM 20-44-02, Temporary Protective Coatings

B. Procedure

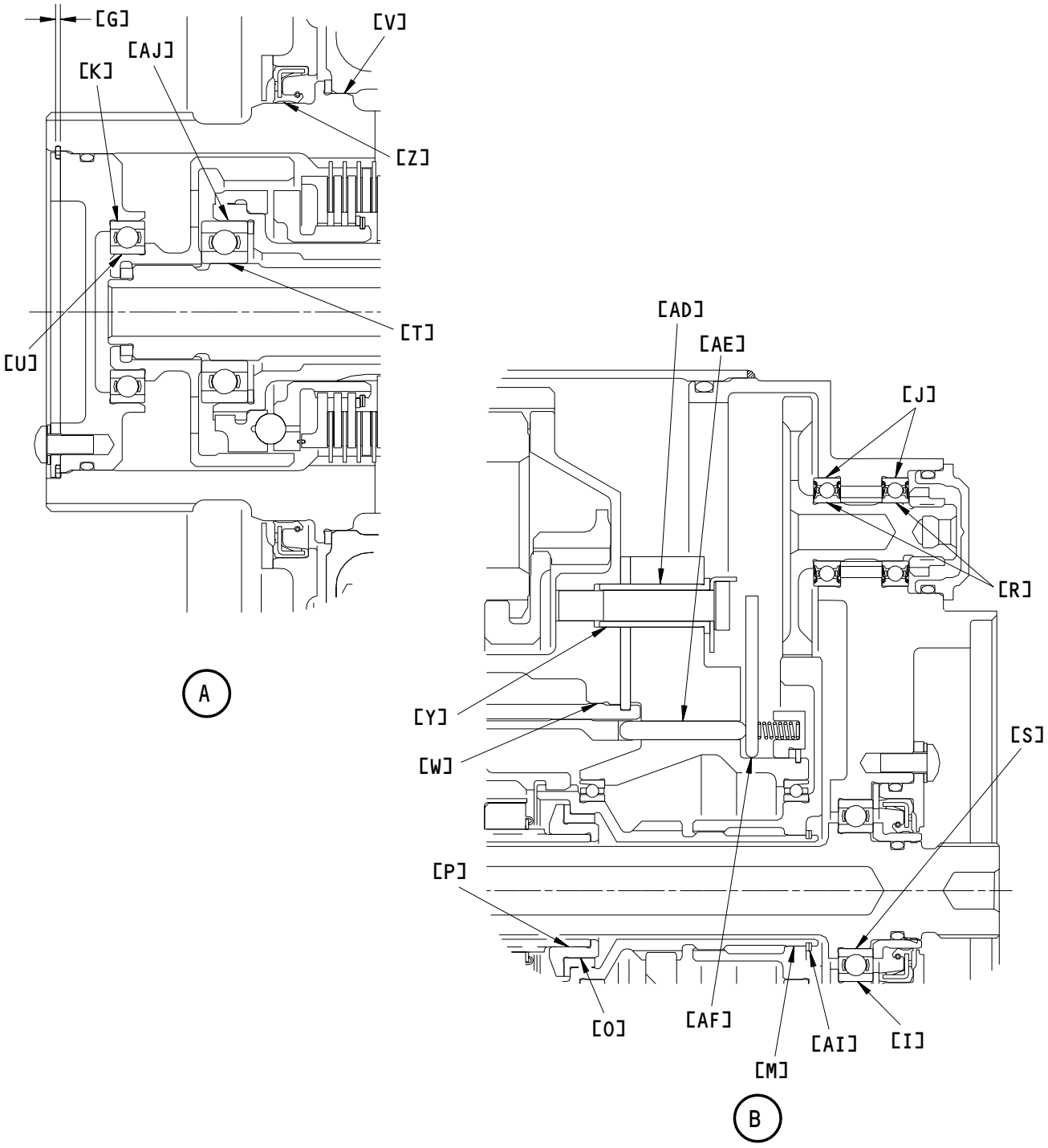
(1) Use standard industry procedures and the information in SOPM 20-44-02 to store this component.

FITS AND CLEARANCES



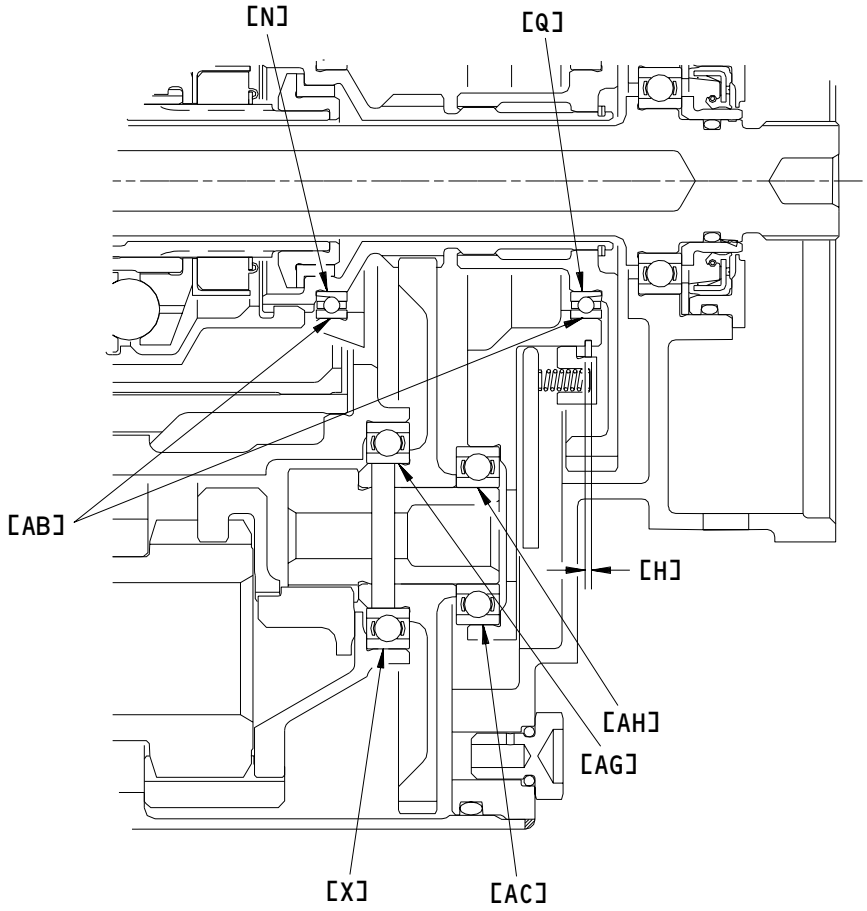
Fits and Clearances
Figure 801 (Sheet 1)

K57542



Fits and Clearances
Figure 801 (Sheet 2)

K57544



Fits and Clearances
Figure 801 (Sheet 3)

K57557

REF LETTER	REF IPL FIG. 1, MATING ITEM NO.	DESIGN DIMENSION* DIMENSION MIN	DESIGN DIMENSION* DIMENSION MAX	DESIGN DIMENSION* ASSEMBLY CLEARANCE 1 MIN	DESIGN DIMENSION* ASSEMBLY CLEARANCE 1 MAX	SERVICE WEAR LIMIT* DIMENSION MIN	SERVICE WEAR LIMIT* DIMENSION MAX	SERVICE WEAR LIMIT* MAXIMUM CLEARANCE
[A]	420,425,430 2	4.225	4.230			4.222		
[B]	435 2	0.470	0.480			0.465		
[C]	625 2	2.440	2.450			2.435		
[D]	620 2	0.895	0.900			0.893		
[E]	395 2	0.205	0.210			0.202		
[F]	105 3 385 4	0.1000 0.0990	0.1010 0.1000	0.0000	0.0020		0.1020	0.0030
[G]	105 3 15 4	0.0500 0.0475	0.0510 0.0485	0.0015	0.0035		0.0520	0.0045
[H]	380 3 305 4	0.0490 0.0470	0.0510 0.0490	0.0000	0.0040		0.0520	0.0050
[I]	ID 260 OD 150	1.8514 1.8499	1.8519 1.8504	0.0010	0.0020	1.8496	1.8522	0.0026
[J]	ID 260 OD 285	1.1032 1.1020	1.1040 1.1024	0.0008	0.0020	1.1018	1.1044	0.0026
[K]	ID 25 OD 50	1.8512 1.8499	1.8520 1.8504	0.0008	0.0021	1.8496	1.8524	0.0028
[L]	OD 420,425,430	1.4990	1.5000			1.4985		
[M]	ID 295 OD 450	1.1255 1.1245	1.1265 1.1250	0.0005	0.0020	1.1242	1.1270	0.0028
[N]	ID 300B OD 450	1.8122 1.8123	1.8128 1.8129	-0.0007	0.0005	1.8118	1.8131	0.0013
[O]	ID 445 OD 455	1.3750 1.3715	1.3765 1.3720	0.0030	0.0050	1.3712	1.3773	0.0061

Fits and Clearances
Figure 801 (Sheet 4)

K57561

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	
[P]	ID 455	1.1424	1.1434	-0.0018	-0.0003		1.1439	0.0005
	OD 465A	1.1437	1.1442			1.1434		
[Q]	ID 300B	1.8122	1.8128	-0.0007	0.0005		1.8131	0.0013
	OD 295	1.8123	1.8129			1.8118		
[R]	ID 285	0.5903	0.5906	-0.0001	0.0007		0.5908	0.0012
	OD 275	0.5899	0.5904			0.5896		
[S]	ID 150	1.1807	1.1811	-0.0008	-0.0001		1.1813	-0.0001
	OD 155	1.1812	1.1815			1.1810		
[T]	ID 35	0.9839	0.9843	0.0001	0.0010		0.9845	0.0012
	OD 155	0.9833	0.9838			0.9830		
[U]	ID 50	1.1807	1.1811	-0.0008	0.0002		1.1813	0.0005
	OD 45	1.1809	1.1815			1.1805		
[V]	ID 405	4.4500	4.4510	0.0020	0.0040		4.4520	0.0060
	OD 105	4.4470	4.4480			4.4460		
[W]	ID 410	3.8090	3.8100	0.0020	0.0040		3.8110	0.0060
	OD 105	3.8060	3.8070			3.8050		
[X]	ID 410	1.8504	1.8511	0.0000	0.0012		1.8515	0.0012
	OD 340	1.8499	1.8504			1.8496		
[Y]	ID 410	0.4380	0.4385	-0.0006	0.0004		0.4388	0.0007
	OD 375	0.4381	0.4386			0.4378		
[Z]	OD 105	4.2500	4.2510			4.2490		
[AA]	OD 435	6.1471	6.1476			6.1468		
[AB]	ID 380	2.2510	2.2522	0.0010	0.0028		2.2528	0.0037
	OD 300B	2.2494	2.2500			2.2491		

Fits and Clearances
Figure 801 (Sheet 5)

K57563

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	
[AC]	ID 380	1.4569	1.4575	0.0002	0.0013		1.4577	0.0013
	OD 335	1.4562	1.4567			1.4559		
[AD]	ID 380	0.4375	0.4380	-0.0011	-0.0001		0.4382	0.0002
	OD 375	0.4381	0.4386			0.4378		
[AE]	ID 380	0.1880	0.1890	0.0005	0.0020		0.1895	0.0028
	OD 330	0.1870	0.1875			0.1867		
[AF]	ID 325	2.705	2.710	0.005	0.011		2.713	0.015
	OD 380	2.699	2.700			2.698		
[AG]	ID 340	1.1807	1.1811	-0.0008	-0.0001		1.1813	-0.0001
	OD 360	1.1812	1.1815			1.1810		
[AH]	ID 335	0.7870	0.7874	-0.0008	-0.0001		0.7876	-0.0001
	OD 355	0.7875	0.7878			0.7873		
[AI]	450 3	0.056	0.060				0.062	
[AJ]	ID 465A	1.8504	1.8513	0.0000	0.0014		1.8518	0.0018
	OD 35	1.8499	1.8504			1.8496		

* ALL DIMENSIONS ARE IN INCHES

1 NEGATIVE VALUE IS FOR AN INTERFERENCE FIT

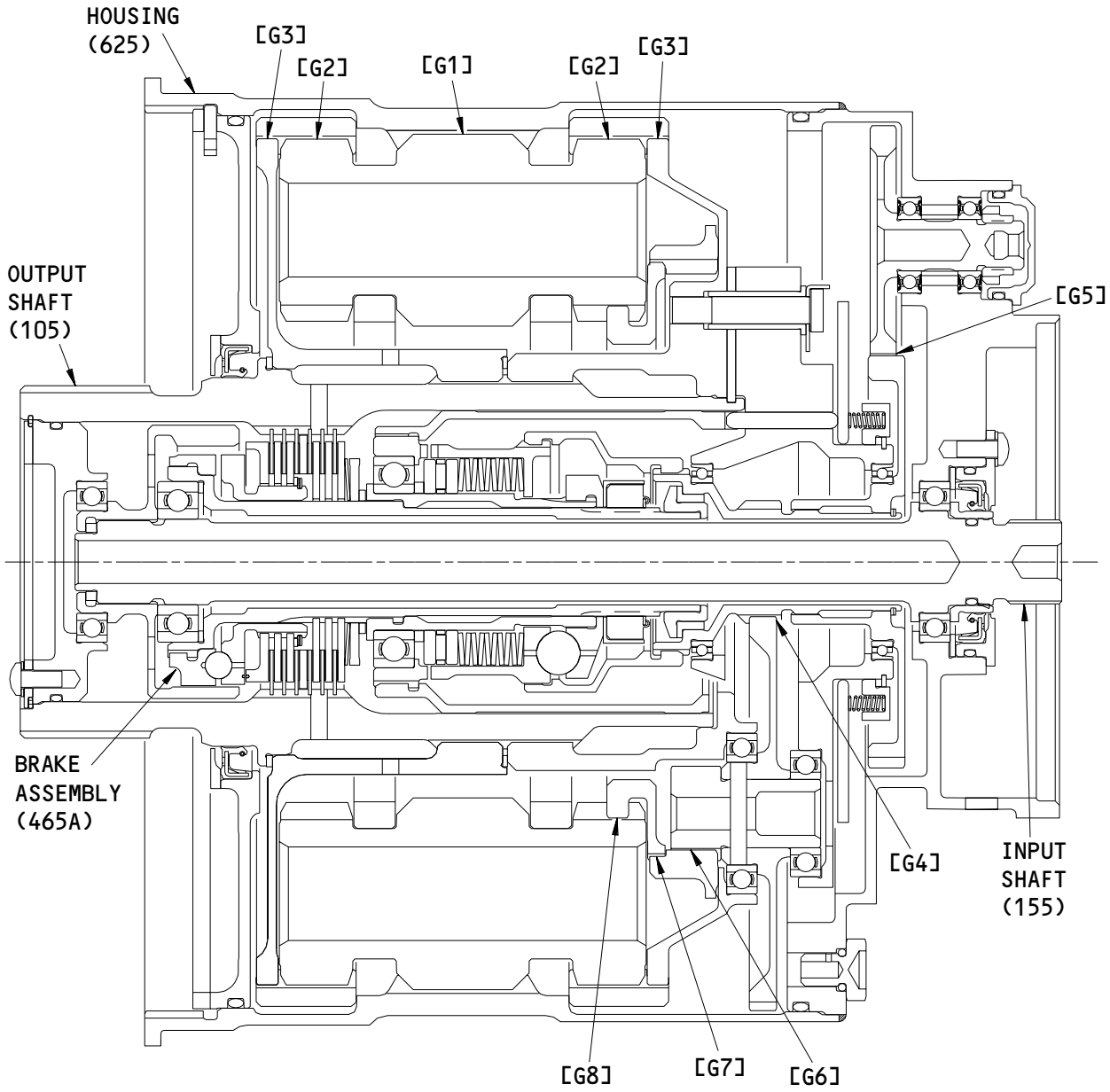
2 MEASURE THE DIMENSION AS SHOWN

3 WIDTH OF GROOVE

4 THICKNESS

Fits and Clearances
Figure 801 (Sheet 6)

K57566



256T6310-2 SHOWN,
256T6310-3 SIMILAR

Fits and Clearances - Gear Data
Figure 802 (Sheet 1)

K57722

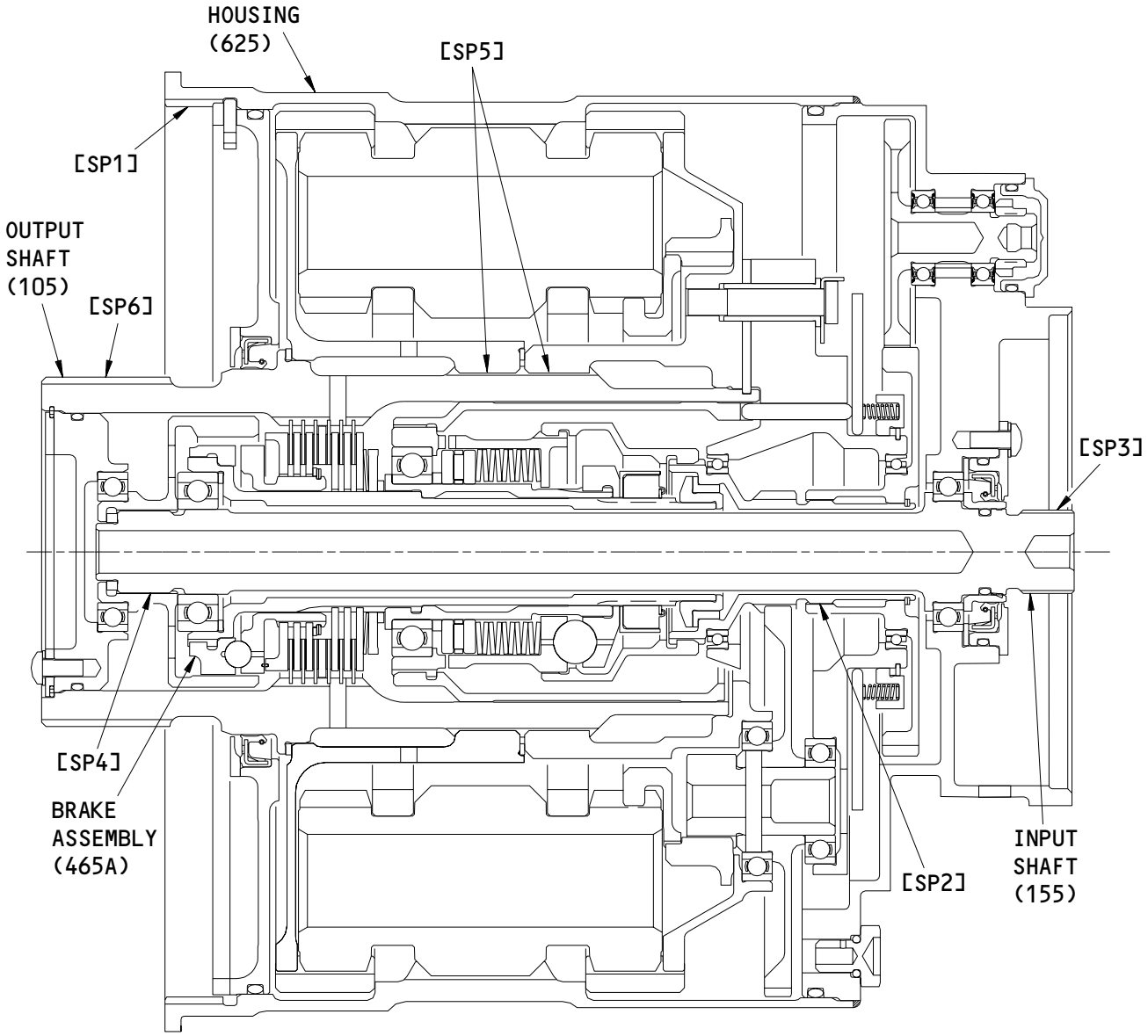
REF LETTER	REF IPL FIG. 1, MATING ITEM NO. 1	DESIGN DIMENSION* DIMENSION MIN	DESIGN DIMENSION* DIMENSION MAX	SERVICE WEAR LIMIT* DIMENSION MIN	SERVICE WEAR LIMIT* DIMENSION MAX	PIN DIAMETER 1
[G1]	MBP 625	9.4679	9.4702		9.4720	0.1600
	MOP 420,425,430	2.3043	2.3062	2.3035		0.1728
[G2]	MBP 620	9.3316	9.3340		9.3355	0.1600
	MOP 420,425,430	2.1723	2.1742	2.1713		0.1728
[G3]	MBP 620	9.3316	9.3340		9.3355	0.1600
	MOP 405,410	9.9760	9.9781	9.9750		0.2160
[G4]	MOP 450	1.4474	1.4493	1.4465		0.0800
	MOP 360	4.5796	4.5818	4.5785		0.0800
[G5]	MOP 295	4.7596	4.7623	4.7580		0.0864
	MOP 275	2.7578	2.7604	2.7555		0.0864
[G6]	MBP 390	6.6123	6.6148		6.6160	0.1080
	MOP 355	1.1977	1.1991	1.1970		0.1440
[G7]	MBP 390	6.6123	6.6148		6.6160	0.1080
	MOP 395	7.0328	7.0347	7.0320		0.1440
[G8]	MOP 395	5.9541	5.9564	5.9530		0.1600
	MOP 420,425,430	2.1723	2.1742	2.1713		0.1728

* ALL DIMENSIONS ARE IN INCHES

1 MBP = MEASURE BETWEEN PINS
MOP = MEASURE OVER PINS

Fits and Clearances - Gear Data
Figure 802 (Sheet 2)

K57723



256T6310-2 SHOWN,
256T6310-3 SIMILAR

Fits and Clearances - Spline Data
Figure 803 (Sheet 1)

K57785

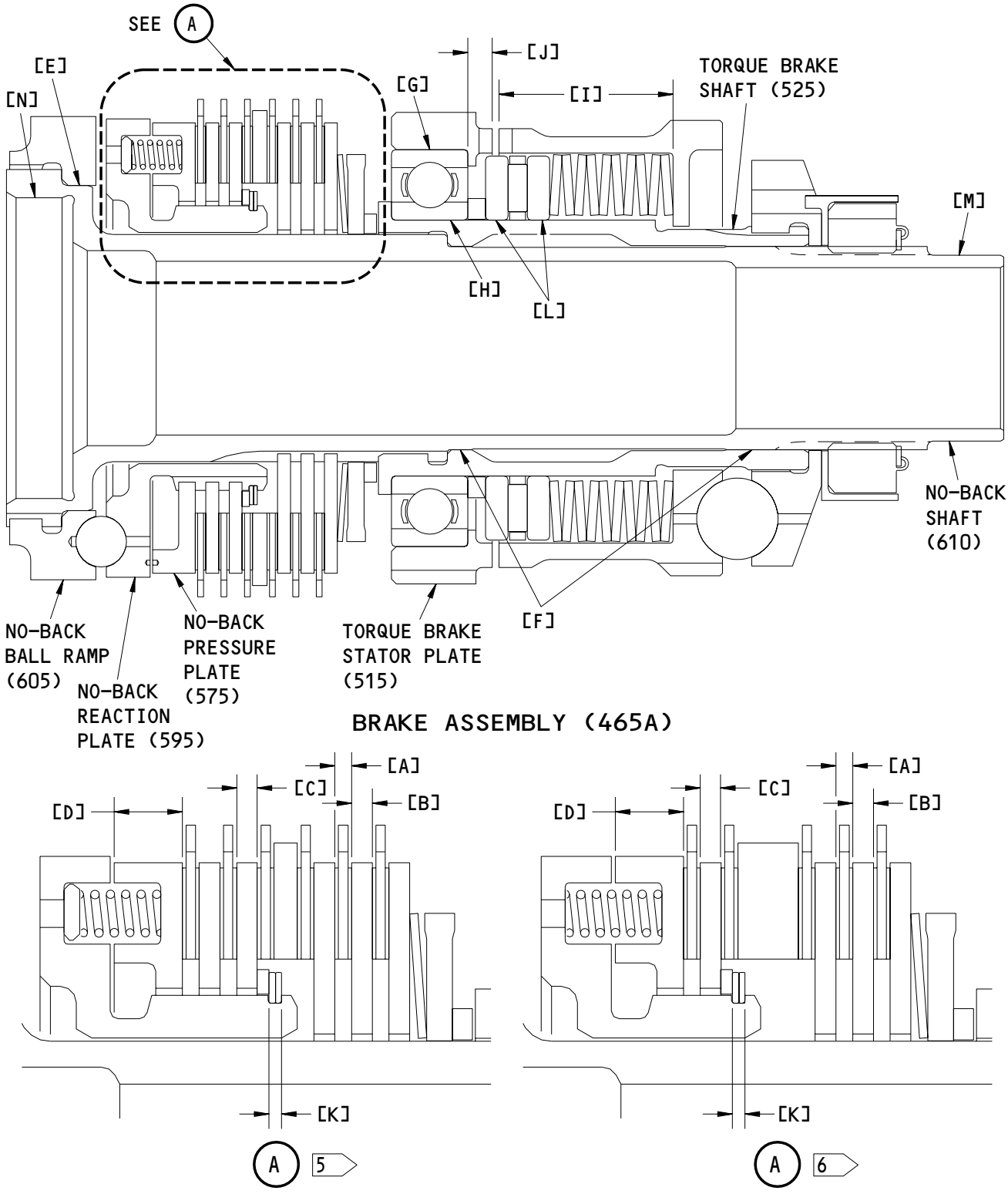
REF LETTER	REF IPL FIG. 1, MATING ITEM NO. 1	DESIGN DIMENSION* DIMENSION MIN	DESIGN DIMENSION* DIMENSION MAX	SERVICE WEAR LIMIT* DIMENSION MIN	SERVICE WEAR LIMIT* DIMENSION MAX	PIN DIAMETER 1
[SP1]	MBP 625	10.2356	10.2397		10.2420	0.1050
	MOP 95	10.5454	10.5531	10.5420		0.1200
[SP2]	MBP 295	1.1126	1.1151		1.1170	0.0540
	MOP 95	1.2765	1.2787	1.2750		0.0600
[SP3]	MOP 155	1.0264	1.0285	1.0250		0.0600
[SP4]	MBP 45	0.8624	0.8648		0.8670	0.0540
	MOP 155	1.0264	1.0285	1.0250		0.0600
[SP5]	MBP 405,410	4.0980	4.1000		4.1006	0.1080
	MOP 105	4.4391	4.4409	4.4380		0.1200
[SP6]	MOP 105	4.1823	4.1848	4.1810		0.1200

* ALL DIMENSIONS ARE IN INCHES

1 MBP = MEASURE BETWEEN PINS
MOP = MEASURE OVER PINS

Fits and Clearances - Spline Data
Figure 803 (Sheet 2)

K57786



Fits and Clearances – Brake Assembly
Figure 804 (Sheet 1)

K57878

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]	560,571 2	0.062	0.068			0.060		
[B]	545 2	0.078	0.080			0.077		
[C]	555,556 2	0.078	0.080			0.077		
[D]	575 2	0.260	0.264			0.258		
[E]	ID 605 OD 610	1.9997 2.0001	2.0003 2.0006	-0.0009	0.0002	1.9999	2.0006	0.0007
[F]	ID 525 OD 610	1.2510 1.2490	1.2520 1.2500	0.0010	0.0030	1.2485	1.2530	0.0045
[G]	ID 515 OD 520	2.4405 2.4404	2.4415 2.4409	-0.0004	0.0011		2.4420	0.0016
[H]	ID 520 OD 525	1.5743 1.5738	1.5748 1.5744	-0.0001	0.0010	1.5735		0.0013
[I]	490 3	1.0680	1.0720			1.0660		
[J]	515 3	0.1490	0.1510			0.1480		
[K]	595 4	0.052	0.054				0.055	
[L]	ID 500 OD 525	1.5743 1.5738	1.5748 1.5744	-0.0001	0.0010	1.5735	1.5751	0.0016
[M]	OD 610	1.1437	1.1442			1.1434		
[N]	ID 610	1.8504	1.8513			1.8518		

* ALL DIMENSIONS ARE IN INCHES

1 > NEGATIVE VALUE IS FOR AN INTERFERENCE FIT

2 > THICKNESS

3 > MEASURE THE DIMENSION AS SHOWN

4 > WIDTH OF GROOVE

5 > 256T6170-2 SHOWN,
256T6170-3 SIMILAR

6 > 256T6170-4

Fits and Clearances - Brake Assembly
Figure 804 (Sheet 2)

K57901

REF IPL		NAME	TORQUE*	
FIG. NO.	ITEM NO.		POUND-INCHES	POUND-FEET
1	160	BOLT	50-75	
1	270	NUT	270-330 1	
1	365	BOLT	90-125	
1	470	NUT	270-330 1	

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

1 PLUS THE RUN-ON TORQUE

Torque Table
Figure 805

K57909

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

NOTE: Equivalent substitutes may be used.

1. Deleted.

2. A27071-123 -- Test Equipment, Rotary Actuator (supersedes A27071-90, which must be used with A27071-84)

3. A27081-1, -2 -- Test Set, Rotary Actuator

4. A27120-44, -45 -- Load Tool, Brake

5. A27120-5, -6 -- Compression Fixture, Belleville Spring

6. A27120-14, -15 -- Assembly Fixture, Planet Gear

7. A27120-2, -7 -- Socket

8. A27120-16 -- Guide Pin (quantity 3)

9. A27121-1 -- Installation Tool Set, Shaft Seal

ILLUSTRATED PARTS LIST

1. This section lists and illustrates replaceable or repairable component parts. The Illustrated Parts Catalog contains a complete explanation of the Boeing part numbering system.

2. Indentures show parts relationships as follows:

    Assembly
      Detail Parts for Assembly
      Subassembly
      Attaching Parts for Subassembly
        Detail Parts for Subassembly

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

3. One use code letter (A, B, C, etc.) is assigned in the EFF CODE column for each variation of top assembly. All listed parts are used on all top assemblies except when limitations are shown by use code letter opposite individual part entries.

4. Letter suffixes (alpha-variants) are added to item numbers for optional parts, Service Bulletin modification parts, configuration differences (Except left- and right-hand parts), product improvement parts, and parts added between two sequential item numbers. The alpha-variant is not shown on illustrations when appearance and location of all variants of the part is the same.

5. Service Bulletin modifications are shown by the notations PRE SB XXXX and POST SB XXXX.

    A. When a new top assembly part number is assigned by Service Bulletin, the notations appear at the top assembly level only. The configuration differences at detail part level are then shown by use code letter.

    B. When the top assembly part number is not changed by the Service Bulletin, the notations appear at the detail part level.

6. Parts Interchangeability

Optional (OPT)	The parts are optional to and interchangeable with other parts having the same item number.
Supersedes, Superseded By (SUPSDS, SUPSD BY)	The part supersedes and is not interchangeable with the original part.
Replaces, Replaced By (REPLS, REPLD BY)	The part replaces and is interchangeable with, or is an alternate to, the original part.

VENDORS

U1068 DOWTY SEALS LTD
ASHCHURCH, TEWKESBURY GLOS GL20 8JS ENGLAND

00141 PRECISION INDUSTRIAL COMPONENTS CORP
PO BOX 1004 BENSON ROAD
MIDDLEBURY, CONNECTICUT 06762
FORMERLY PIC DESIGN CORP

43991 FAG BEARING INCORPORATED
118 HAMILTON AVENUE
STAMFORD, CONNECTICUT 06904
FORMERLY NORMA-HOFFMAN BEARING CORPORATION
FORMERLY NORMA FAG BEARINGS CORPORATION

56878 SPS TECHNOLOGIES INC AEROSPACE AND INDUSTRIAL PRODUCTS DIV
301 HIGHLAND AVE
JENKINTOWN, PENNSYLVANIA 19046
FORMERLY STANDARD PRESSED STEEL

72962 HARVARD INDUSTRIES INC
3 WERNER WAY SUITE 210
LEBANON, NEW JERSEY 08833
FORMERLY AMERACE CORP ESNA DIV
FORMERLY ELASTIC STOP NUT IN UNION, NJ

80756 SPIROLOX DIV OF KAYDON CORP
29 CASSENS COURT
FENTON, MISSOURI 63026-2543
FORMERLY RAMSEY CORP, TRW INC RAMSEY CORP IN MANCHESTER MO.

91251 FREUDENBERG-NOK GENERAL PARTNERSHIP
PLEASANT STREET PO BOX B
BRISTOL, NEW HAMPSHIRE 03222-0501

97393 SHUR-LOK CORPORATION
2541 WHITE ROAD PO BOX 19584
IRVINE, CALIFORNIA 92713
FORMERLY SHUR LOK CORP VB0060
FORMERLY IN SANTA ANA, CALIFORNIA 92714

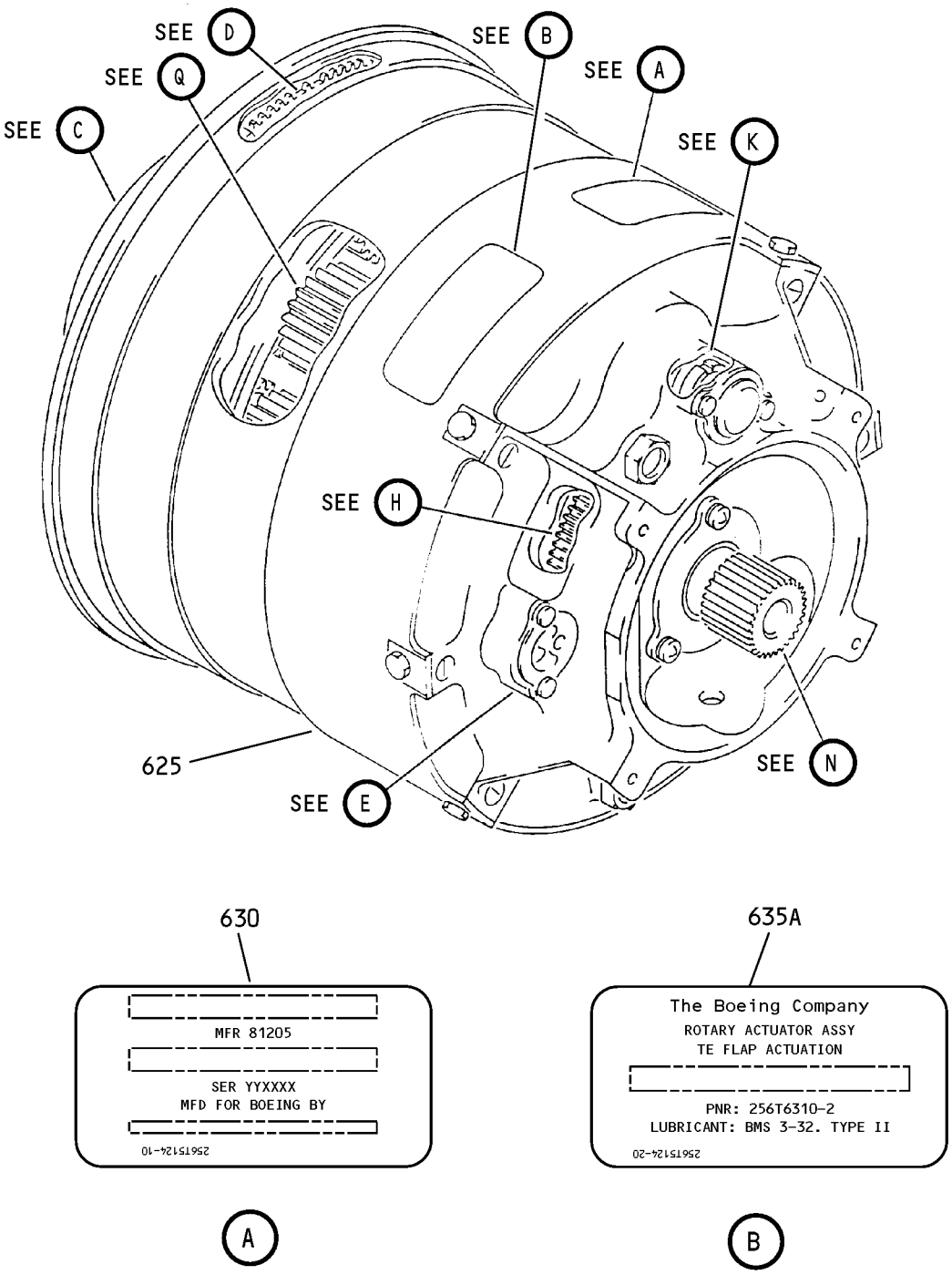
PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
AXK4060		1	505	1
BACB10BB15CPP		1	285	2
BACB10BB20C		1	335	3
BACB10BB25C		1	35	1
BACB10BB30C		1	50	1
		1	150	1
		1	340	3
BACB10BB40C		1	520	1
BACB10TCP20A		1	600	3
BACB10TCP32A		1	485	3
BACB10T2-12A		1	230	1
BACB28X22M025		1	445	1
BACB30LM4-7		1	160A	6
BACB30LM5U18		1	365A	3
BACB30ZE2-1		1	70A	6
BACN10RF20		1	470	1
BACN10ZC4CD		1	170A	6
BACS12ER3K6		1	60	6
BACS12HJ3K8		1	5A	3
		1	110A	3
		1	175A	4
BACW10DS4S		1	165	6
BR9080-20		1	470	1
MS21209F1-10P		1	90	6
MS21209F1-15P		1	27	3
		1	250	7
MS21209F6-10P		1	255	2
MS24585C127		1	580A	6
MS24585C70		1	235	1
		1	320	6
		1	580	6
MS28775-109		1	200	2

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
M25988-1-010		1	225	1
M25988-1-020		1	210	1
M25988-1-117		1	145	1
M25988-1-121		1	190	1
M25988-1-136		1	125A	1
M25988-1-151		1	30	1
M25988-1-274		1	100	1
		1	265	1
NAS1149D0316J		1	10	3
		1	115	3
		1	180	4
NAS577B4A		1	170	6
NAS6704-7		1	160	6
NAS6705U18		1	365	3
NAS8203A8		1	5	3
		1	110	3
		1	175	4
NAS8702-1		1	70	6
RSN112SP		1	290	1
RS175SP		1	585	1
SL2822-20		1	470	1
SL4113-4CDBAC		1	170A	6
S256W410-23		1	80A	1
S256W410-7		1	130	1
S2936MT5P515LD		1	300B	2
WS81108		1	500	2
1002423606700		1	130	1
1002423880900		1	80	1
1002423880901		1	80A	1
102B13171-4		1	170A	6
256T5124-10		1	630	1
256T5124-20		1	635A	1
256T5124-27		1	635B	1

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
256T6112-1		1	215	1
256T6124-1		1	185	1
256T6130-1		1	295	1
256T6132-1		1	120	1
256T6139-1		1	135	1
256T6144-1		1	615	1
256T6145-1		1	330	3
256T6146-1		1	325	1
256T6147-1		1	55	1
		1	510	1
256T6147-10		1	302	1
256T6147-2		1	590	1
256T6147-3		1	530	1
256T6147-6		1	310	1
256T6147-7		1	40	1
256T6147-9		1	415	2
256T6148-1		1	315	1
256T6149-1		1	305	2
256T6150-1		1	460	1
256T6151-1		1	350	3
256T6152-1		1	15	2
256T6153-1		1	280	1
256T6154-1		1	240	1
256T6154-2		1	240A	1
256T6155-1		1	205	1
256T6156-1		1	220	1
256T6157-1		1	75	3
256T6160-1		1	455	1
256T6161-1		1	140	1
256T6162-1		1	270	1
256T6163-1		1	370	3
256T6165-1		1	375	3
256T6170-2		1	465A	1
256T6170-3		1	465B	1
256T6170-4		1	465C	1
256T6171-1		1	610	1
256T6172-1		1	605	1
256T6173-1		1	595	1
256T6173-2		1	595A	1
256T6174-1		1	575	1

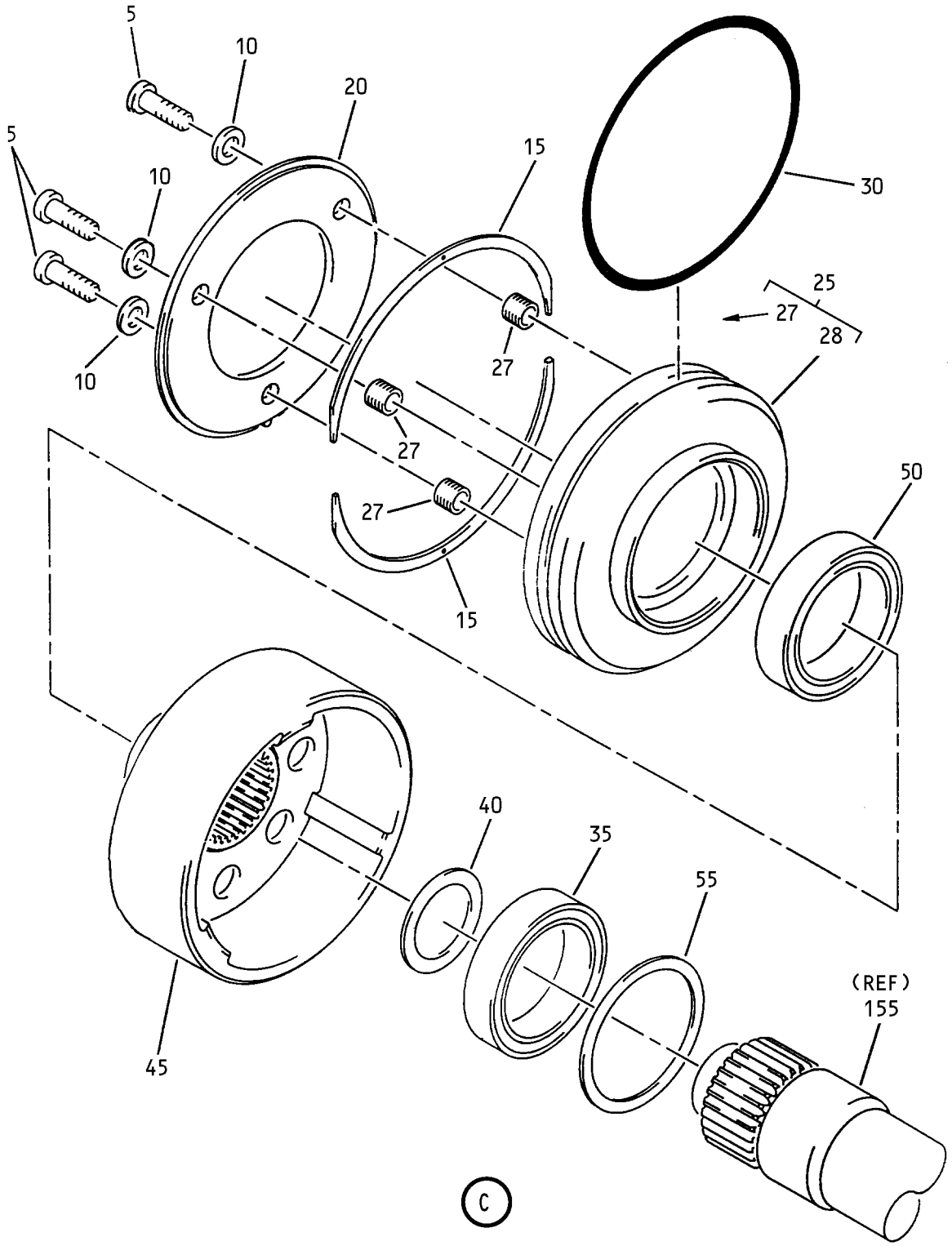
PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
256T6174-2		1	575A	1
256T6174-3		1	575B	1
256T6175-1		1	475	1
256T6176-1		1	551	1
256T6177-2		1	540A	1
256T6178-1		1	545	3
256T6178-2		1	555	1
		1	556	1
256T6180-1		1	480	1
256T6181-1		1	490	1
256T6182-1		1	515	1
256T6183-1		1	525	1
256T6184-1		1	495	10
256T6186-1		1	535	1
256T6187-1		1	582	6
256T6310-2		1	1B	RF
256T6310-3		1	1C	RF
256T6320-1		1	625	1
256T6321-1		1	245	1
256T6321-2		1	260	1
256T6322-1		1	85	1
256T6322-2		1	95	1
256T6323-1		1	25	1
256T6323-2		1	28	1
256T6325-1		1	620	2
256T6326-1		1	420	2
256T6326-2		1	425	4
256T6326-3		1	430	4
256T6329-1		1	440	1
256T6329-2		1	450	1
256T6331-1		1	275	1
256T6333-1		1	20	1
256T6334-1		1	65	1
256T6335-1		1	155	1
256T6337-1		1	45	1
256T6338-1		1	400	1
256T6338-2		1	405	1
256T6338-3		1	410	1
256T6340-1		1	105	1
256T6341-1		1	435	2
256T6342-1		1	380	1
256T6343-1		1	385	3
256T6367-1		1	390	1
256T6368-1		1	395	1
256T6369-1		1	345	3

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
256T6369-2		1	360	3
256T6369-3		1	355	3
256T6369-4		1	355A	3
256T6369-5		1	355B	3
256W2168-1		1	550	1
256W2170-1		1	560	5
		1	571	1
256W2171-1		1	565	10
		1	572	2
256W2172-1		1	570	5
		1	573	1
256W2197-1		1	195	2
700-852-8862-99		1	130A	1
700-862-8862-99		1	80B	1
82631-2012		1	470	1
92834-428CD		1	170A	6



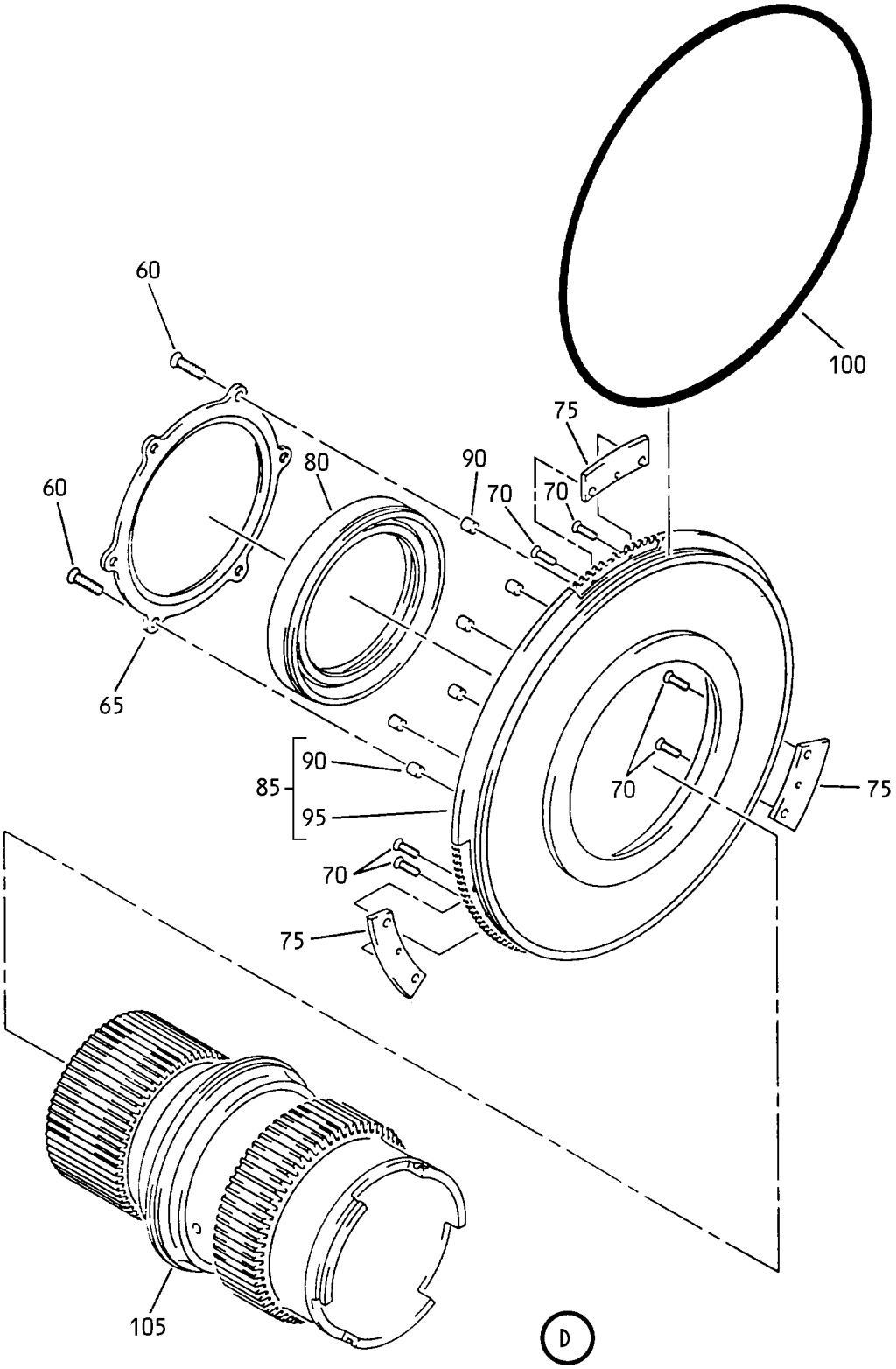
Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 1)

K41934



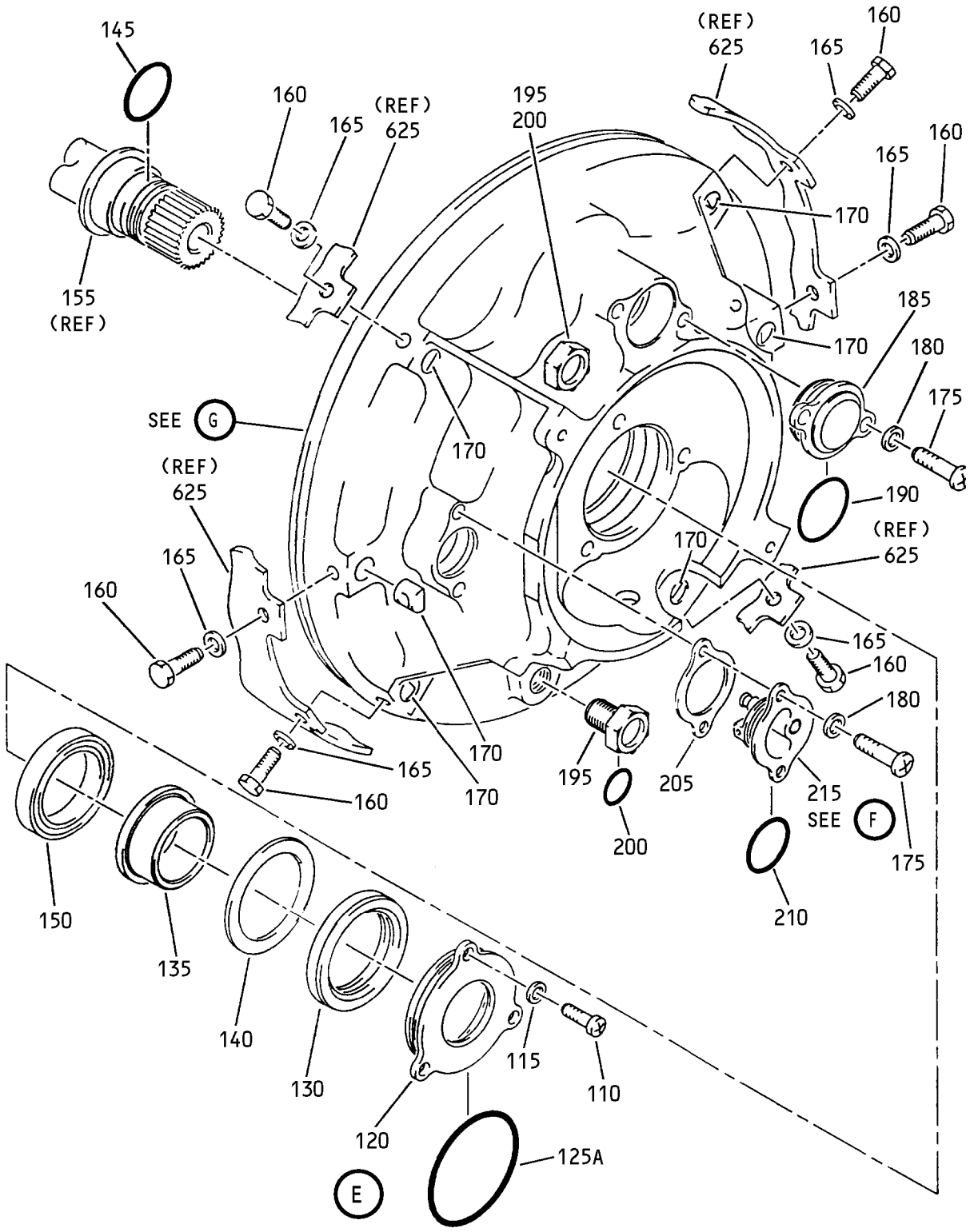
Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 2)

K41954



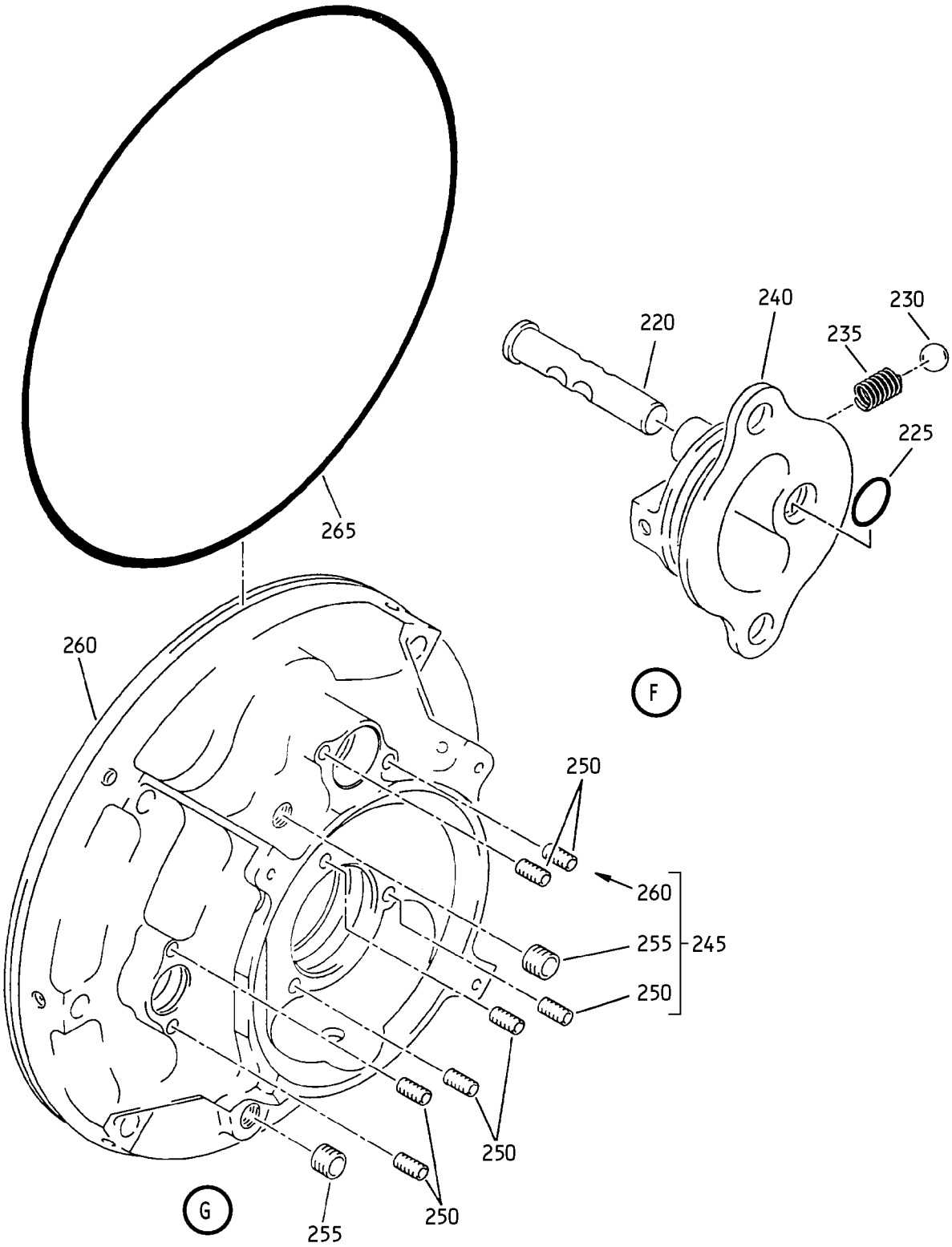
Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 3)

K41965



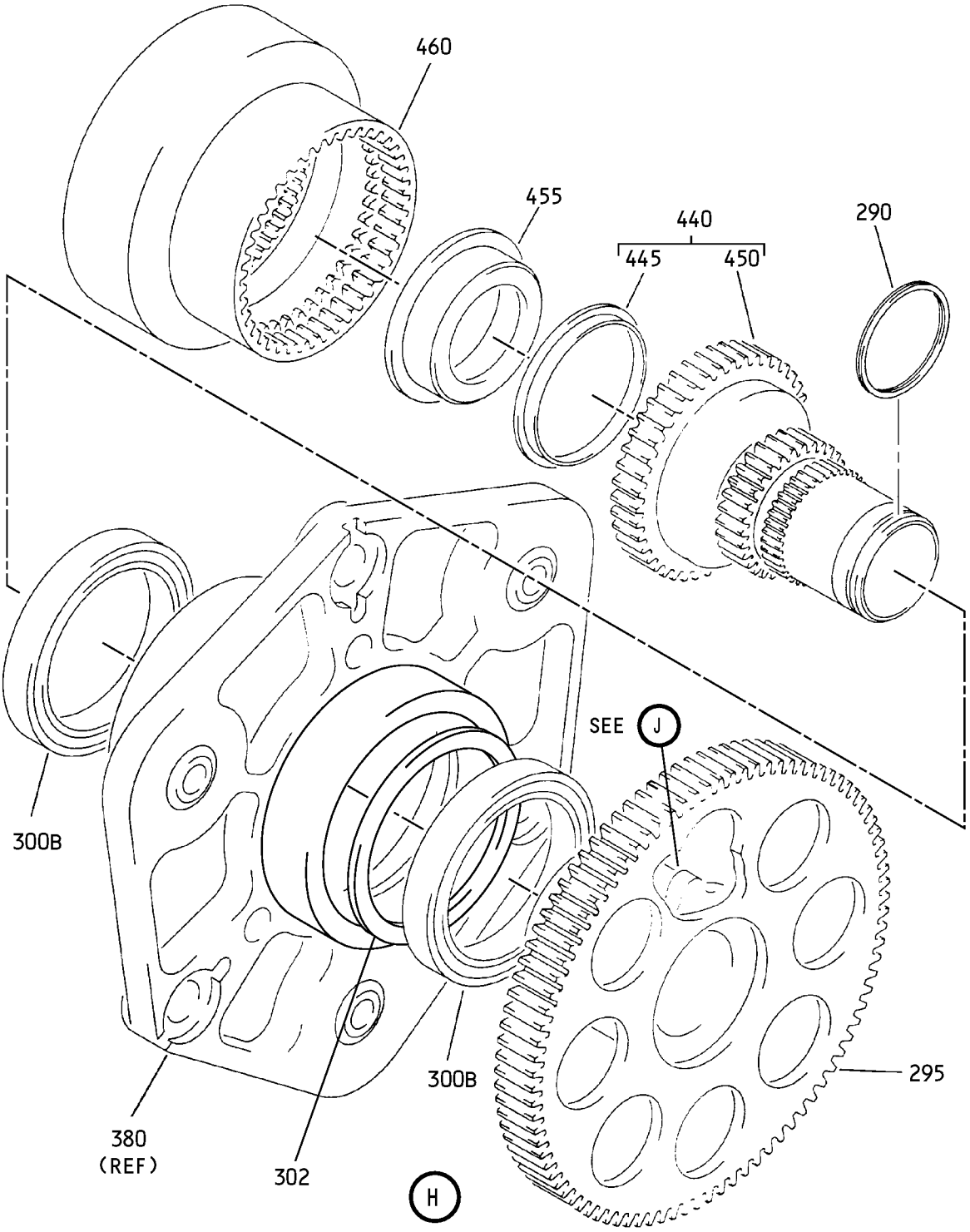
Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 4)

K41990



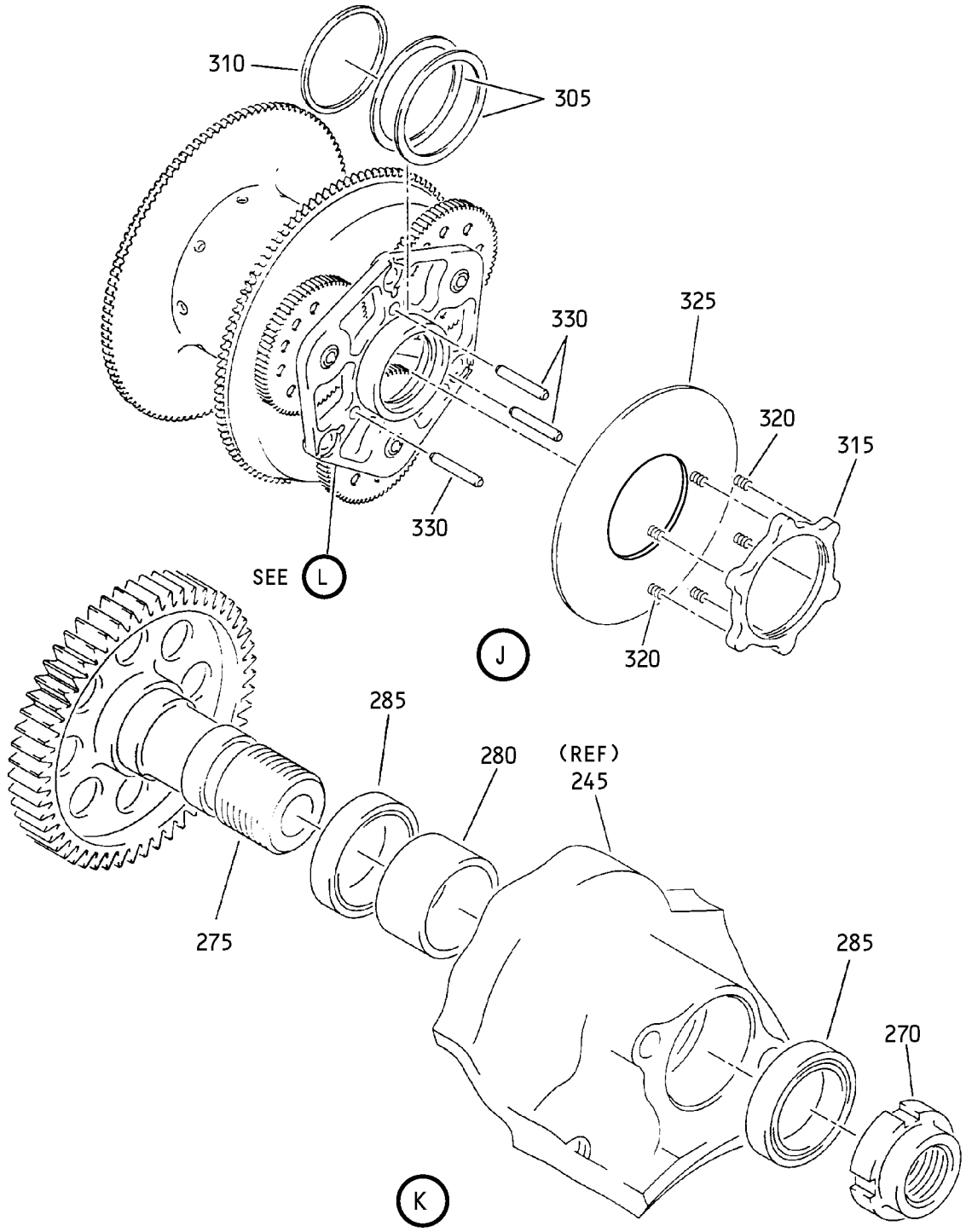
Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 5)

K42015



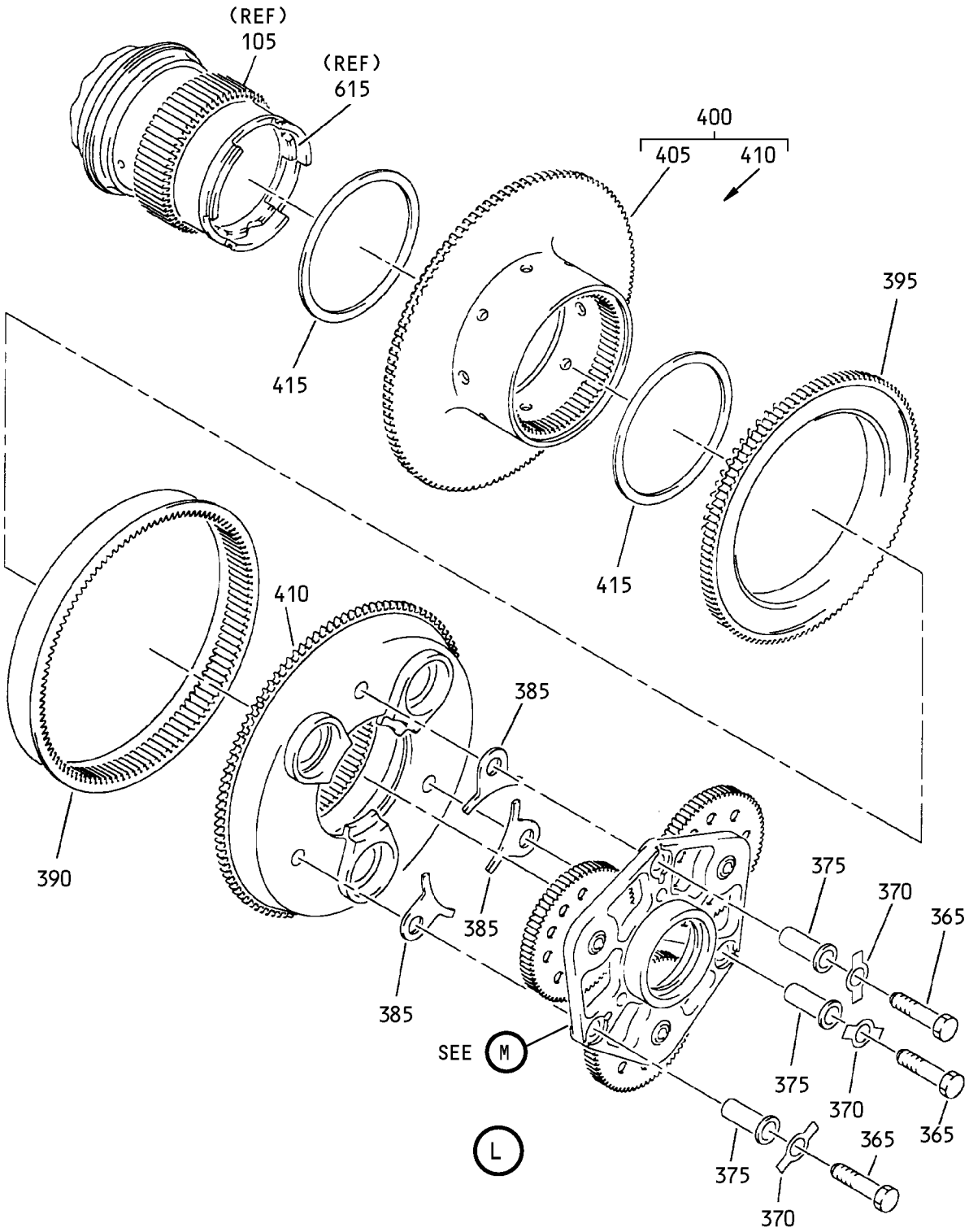
Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 6)

K42028



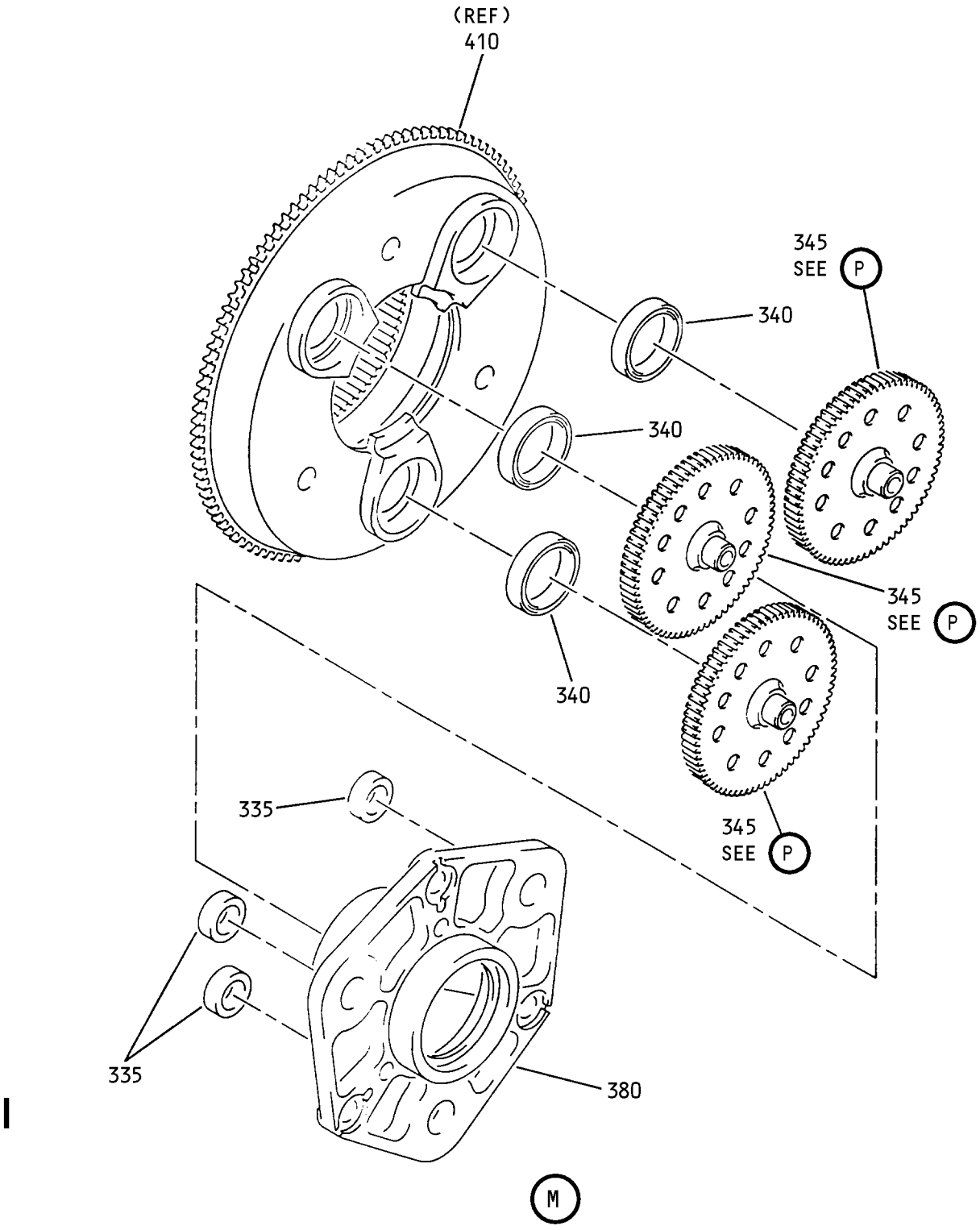
Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 7)

K42042



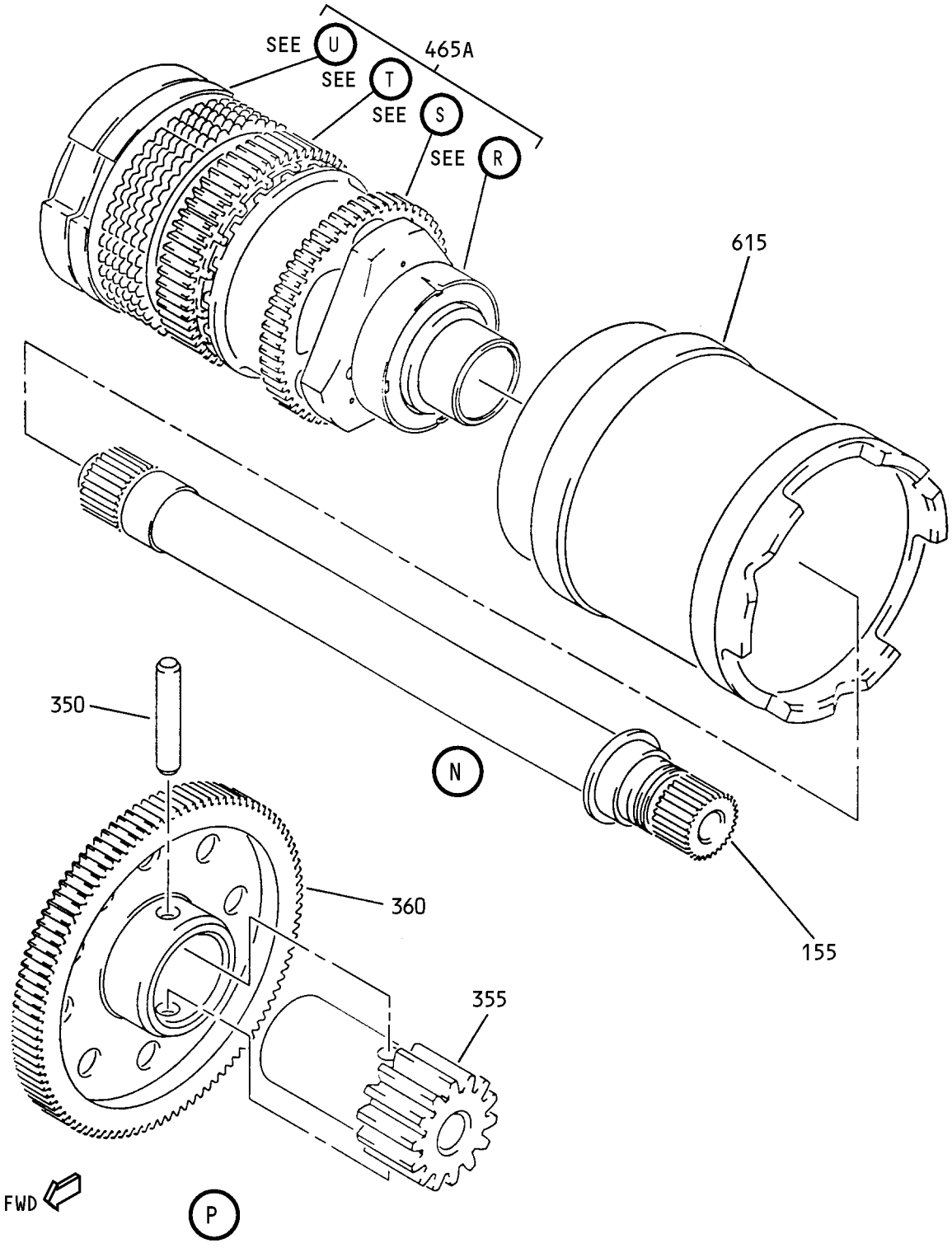
Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 8)

K42048



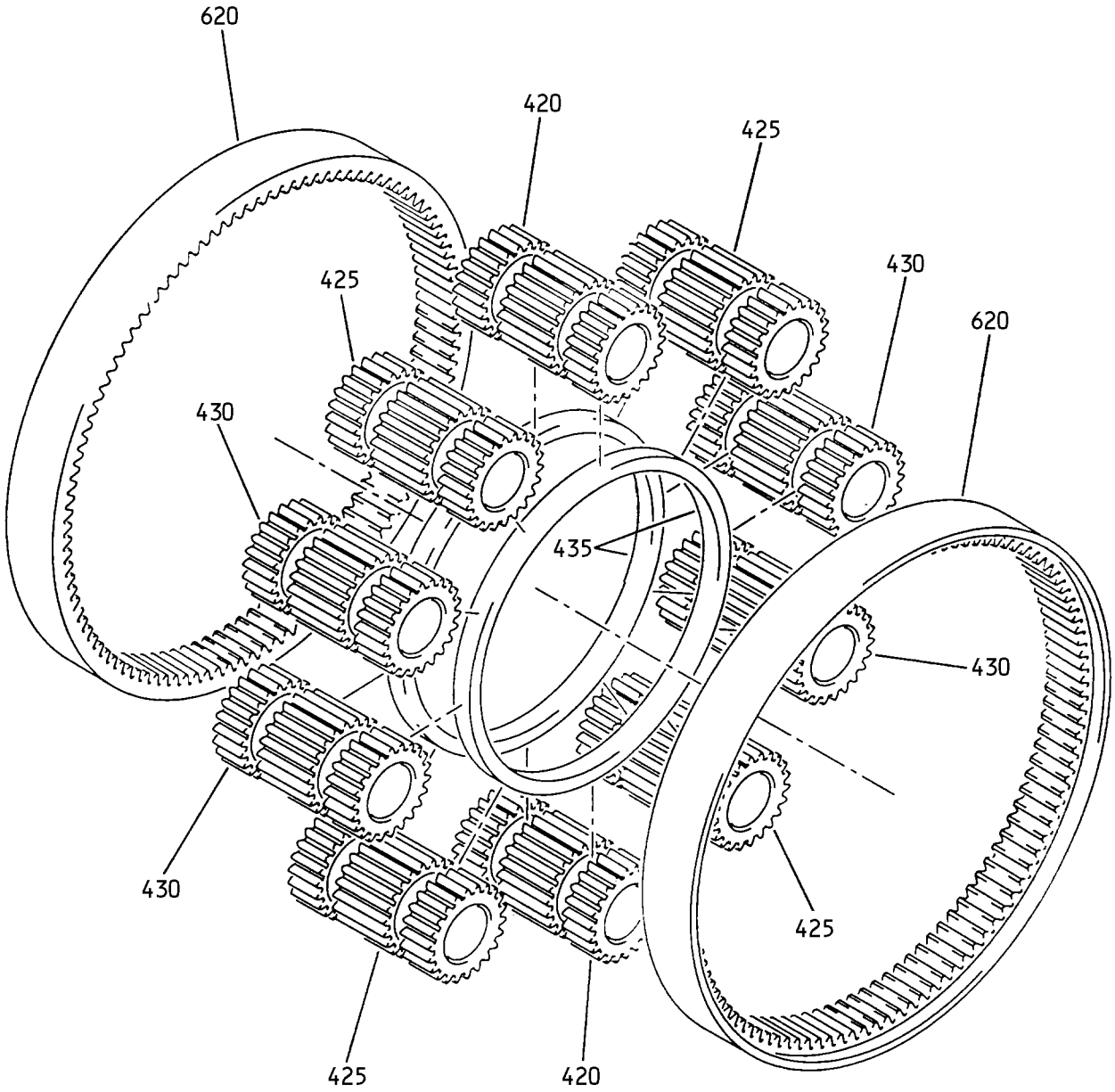
Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 9)

K42060



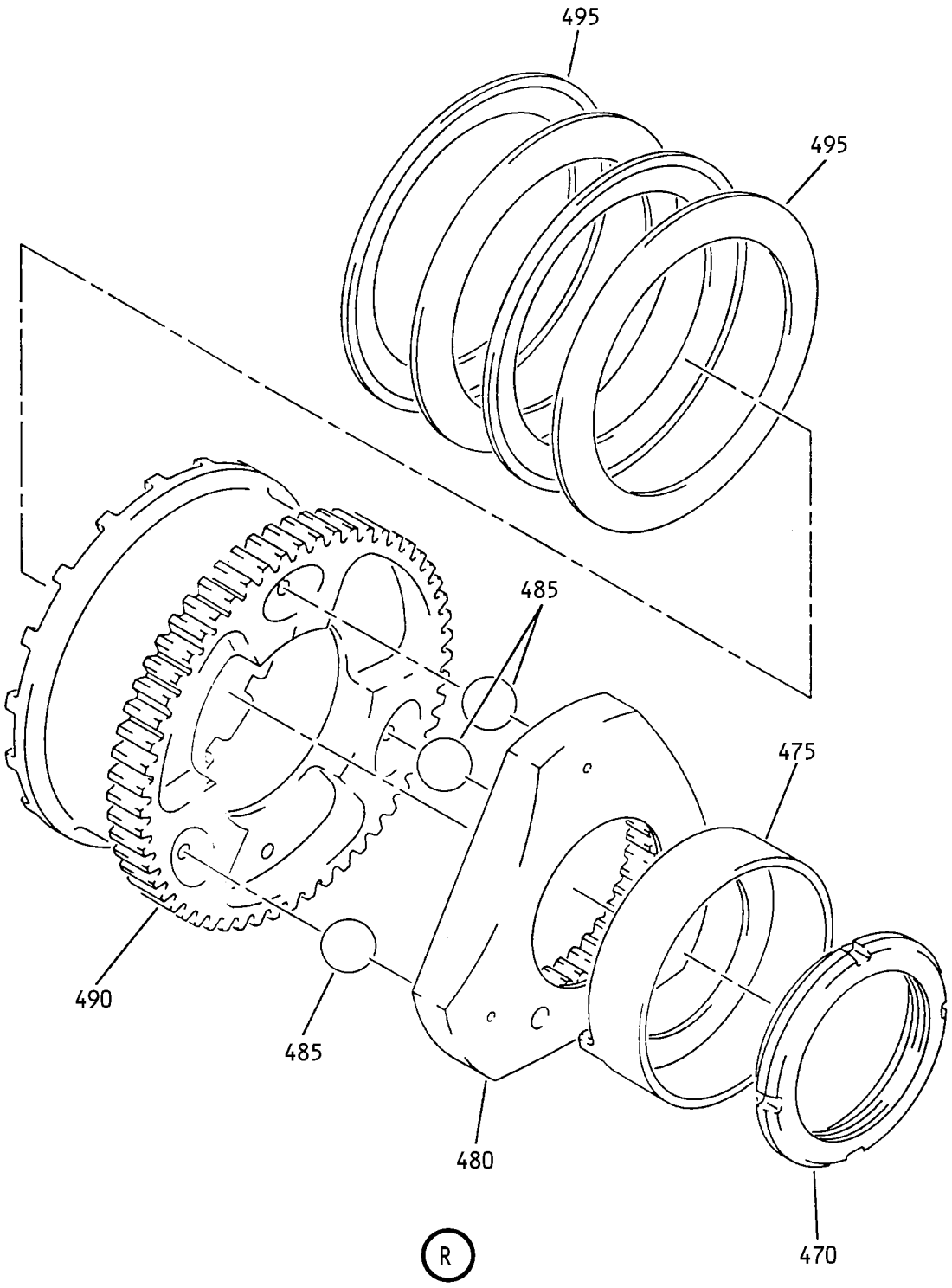
Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 10)

K42073



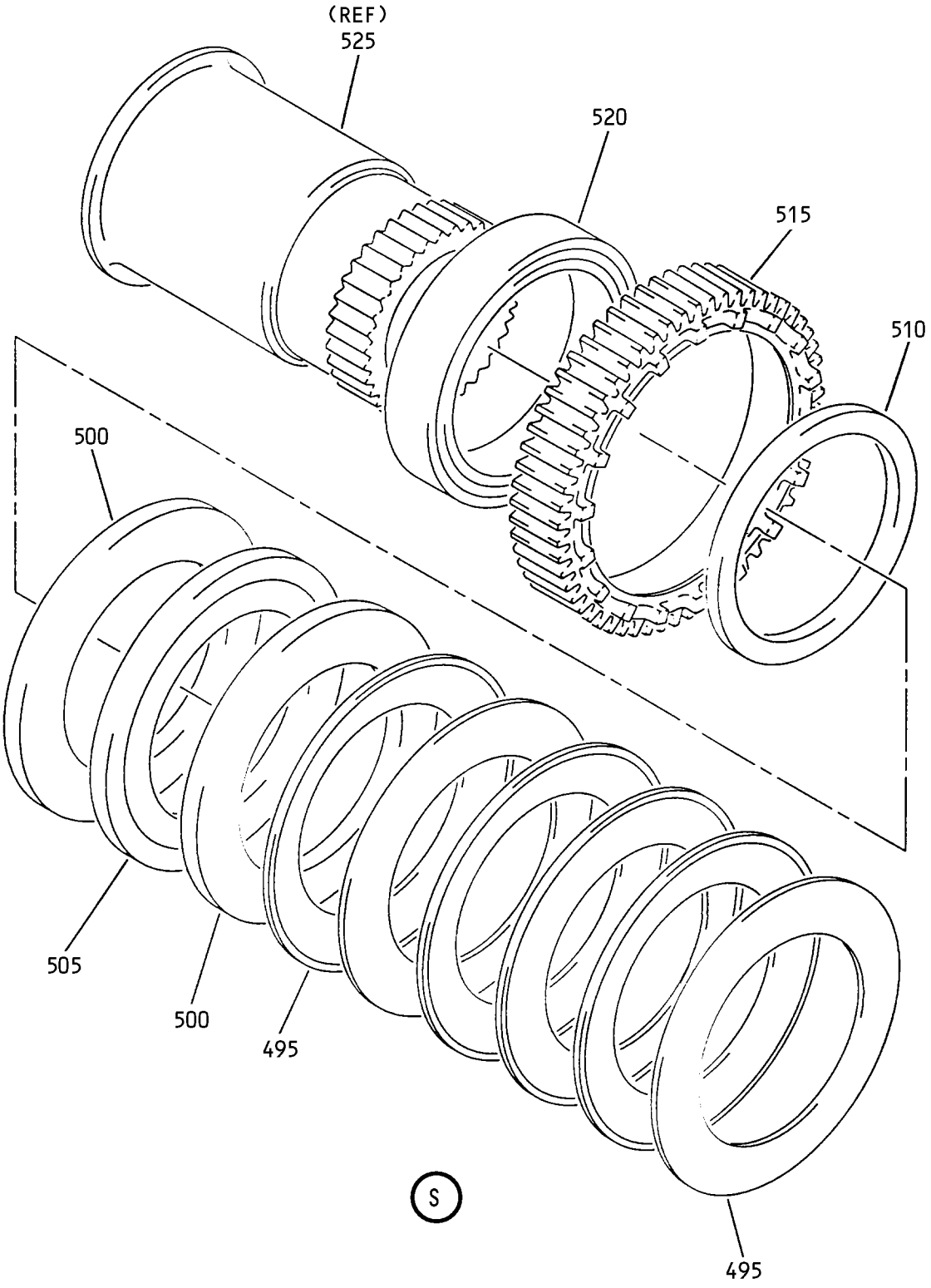
Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 11)

K42077



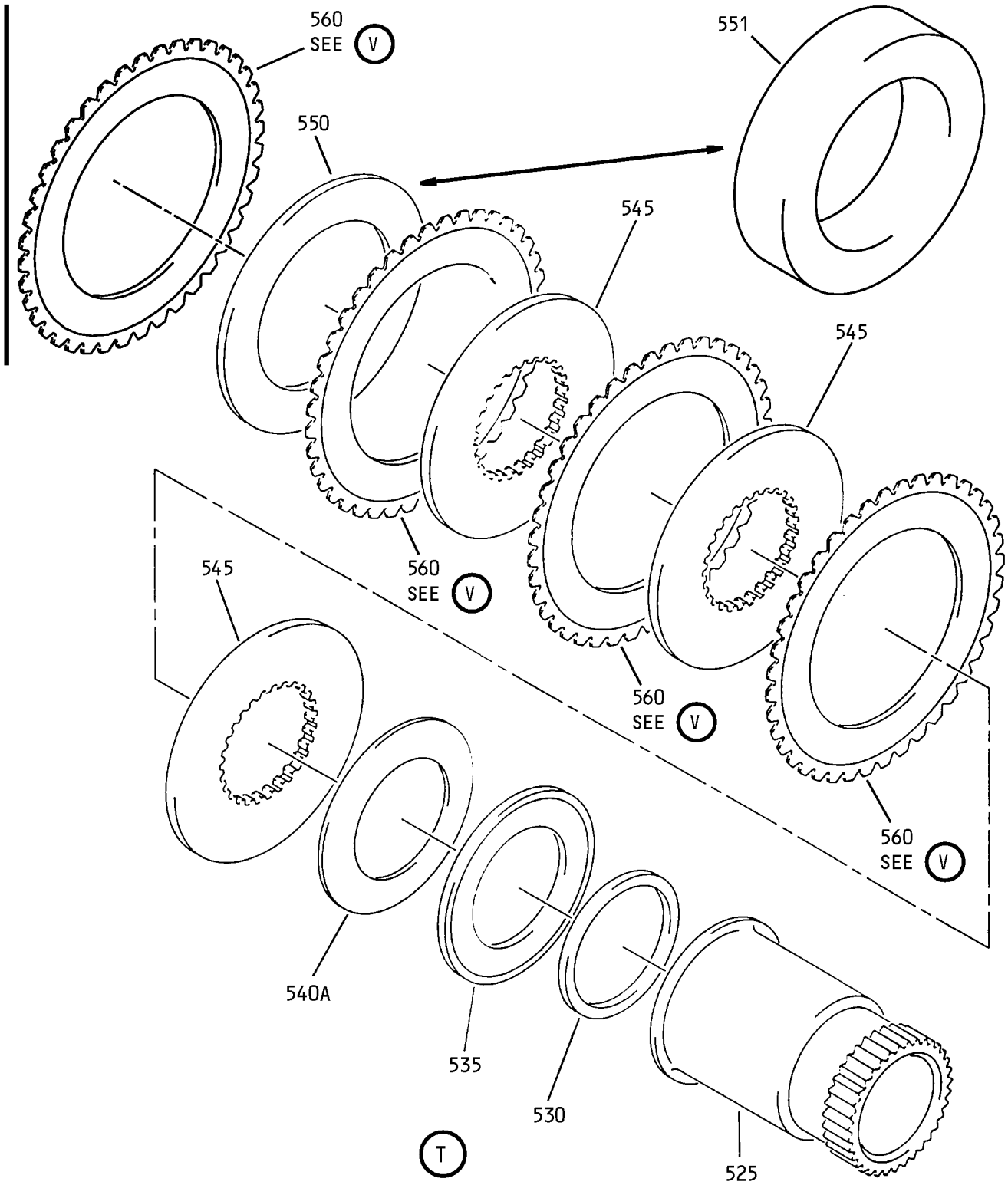
Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 12)

K42082



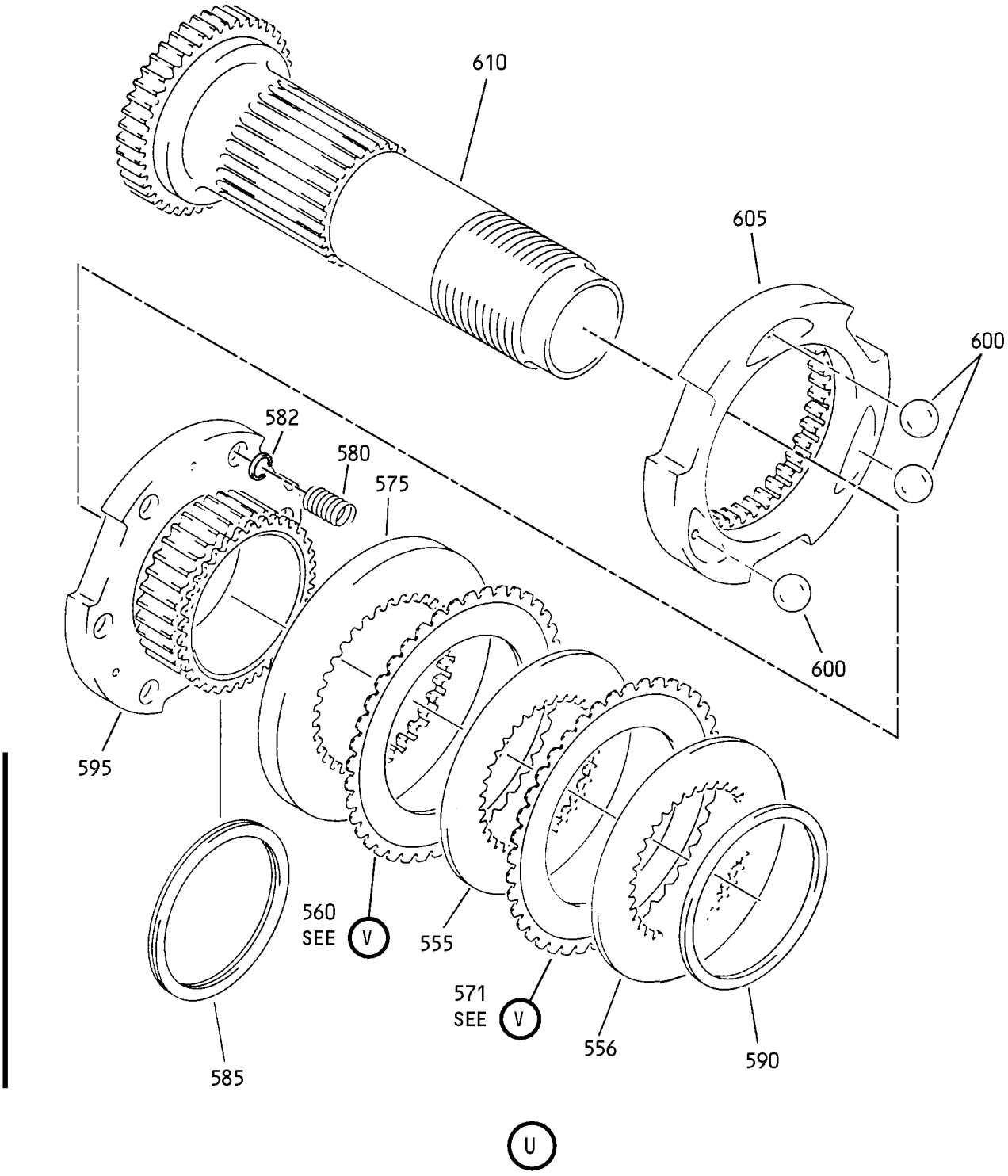
Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 13)

K42090



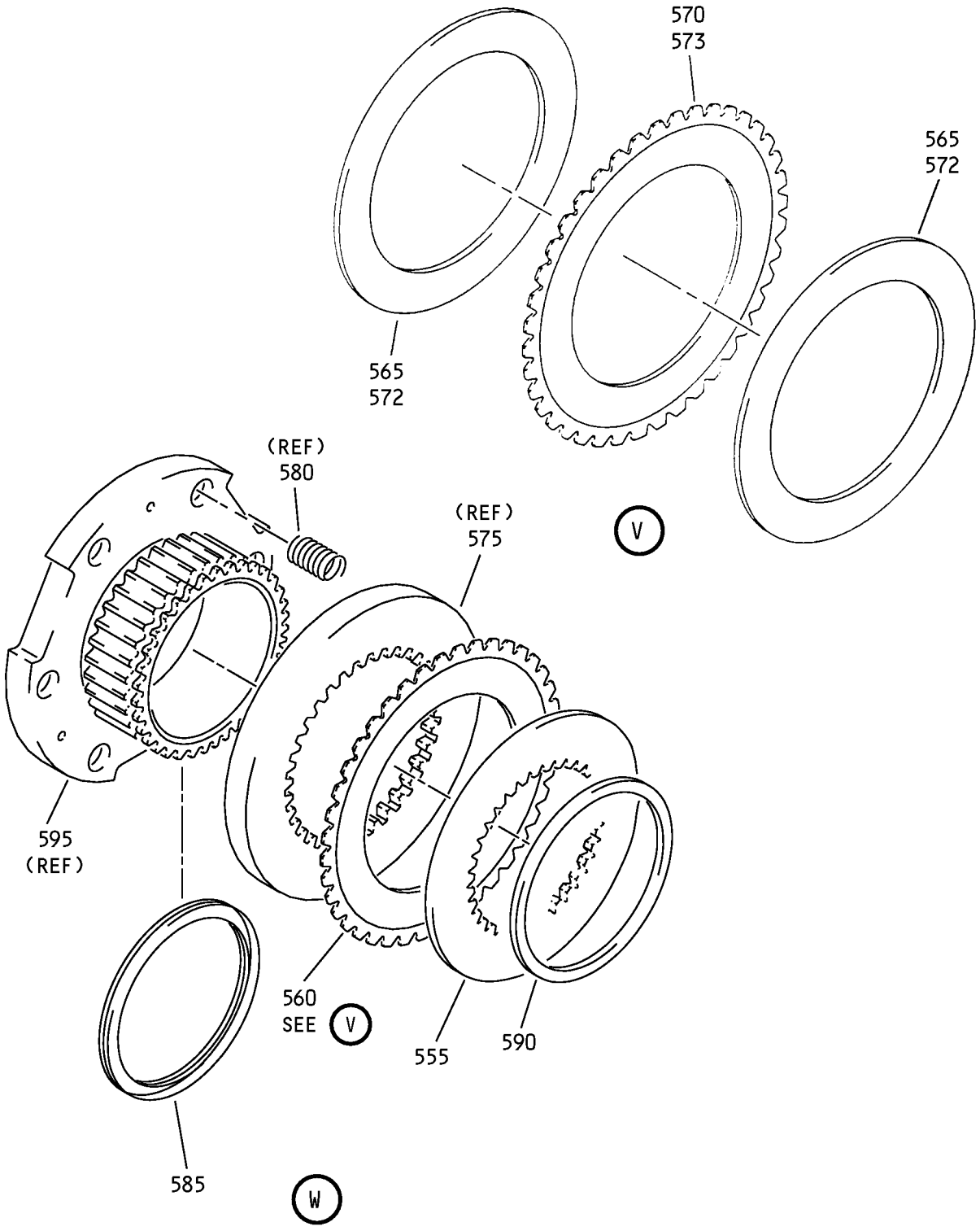
Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 14)

K42095



Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 15)

K42104



Trailing Edge Flap Actuation 10.6 Diameter Rotary Actuator Assembly
Figure 1 (Sheet 16)

K42111

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	-1A	256T6310-1		DELETED		
R	-1B	256T6310-2		ACTUATOR ASSY-TE FLAP ACTUATION 10.6 DIA ROTARY (PRE SB 767-27-0188)	A	RF
R	-1C	256T6310-3		ACTUATOR ASSY-TE FLAP ACTUATION 10.6 DIA ROTARY (POST SB 767-27-0188)	B	RF
	5	NAS8203A8		.SCREW	A	3
R	-5A	BACS12HJ3K8		.SCREW	B	3
	10	NAS1149D0316J		.WASHER		3
R	15	256T6152-1		.RING-RETAINER		2
R	20	256T6333-1		.PLATE-RETAINER		1
R	25	256T6323-1		.COVER ASSY-OUTPUT SHAFT		1
R	27	MS21209F1-15P		..INSERT		3
R	28	256T6323-2		..COVER		1
	30	M25988-1-151		.PACKING		1
	35	BACB10BB25C		.BEARING		1
R	40	256T6147-7		.SHIM		1
R	45	256T6337-1		.SHAFT-INPUT,NO-BACK		1
	50	BACB10BB30C		.BEARING		1
	55	256T6147-1		.SHIM		1
	60	BACS12ER3K6		.SCREW		6
	65	256T6334-1		.RETAINER-SEAL		1
	70	NAS8702-1		.SCREW	A	6
R	-70A	BACB30ZE2-1		.BOLT	B	6
R	75	256T6157-1		.RETAINER-COVER		3
R	80	1002423880900		.SEAL-SHAFT (V91251) (OPT ITEMS 80A, 80B)		1
R	80A	1002423880901		.SEAL-SHAFT (V91251) (SPEC S256W410-23) (OPT ITEMS 80, 80B)		1
R	-80B	700-862-8862-99		.SEAL-SHAFT (VU1068) (OPT ITEMS 80, 80A)		1
R	85	256T6322-1		.COVER ASSY-OUTPUT		1
	90	MS21209F1-10P		..INSERT		6
	95	256T6322-2		..COVER		1
	100	M25988-1-274		.PACKING		1
R	105	256T6340-1		.SHAFT-OUTPUT		1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	110	NAS8203A8		.SCREW	A	3
R	-110A	BACS12HJ3K8		.SCREW	B	3
	115	NAS1149D0316J		.WASHER		3
	120	256T6132-1		.RETAINER-SEAL		1
	125	M254988-1-136		DELETED		
R	125A	M25988-1-136		.PACKING		1
R	130	1002423606700		.SEAL-SHAFT (V91251) (SPEC S256W410-7) (OPT 700-852-8862-99 (VU1068)) (OPT ITEM 130A)		1
R	-130A	700-852-8862-99		.SEAL-SHAFT (VU1068) (SPEC S256W410-7) (OPT 1002423606700 (V91251)) (OPT ITEM 130)		1
	135	256T6139-1		.RING-SEAL		1
	140	256T6161-1		.PLATE-RTNR		1
	145	M25988-1-117		.PACKING		1
	150	BACB10BB30C		.BEARING		1
	155	256T6335-1		.SHAFT-INPUT		1
	160	NAS6704-7		.BOLT	A	6
R	-160A	BACB30LM4-7		.BOLT	B	6
	165	BACW10DS4S		.WASHER		6
	170	NAS577B4A		.NUT	A	6
R	-170A	SL4113-4CDBAC		.NUT- (V97393) (SPEC BACN10ZC4CD) (OPT 102B13171-4 (V72962)) (OPT 92834-428CD (V56878))	B	6
	175	NAS8203A8		.SCREW	A	4
R	-175A	BACS12HJ3K8		.SCREW	B	4
	180	NAS1149D0316J		.WASHER		4
	185	256T6124-1		.COVER		1
	190	M25988-1-121		.PACKING		1
R	195	256W2197-1		.PLUG-OIL		2
	200	MS28775-109		.PACKING		2
	205	256T6155-1		.SHIM-IND		1
	210	M25988-1-020		.PACKING		1
	215	256T6112-1		.INDICATOR ASSY		1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	220	256T6156-1		..PLUNGER		1
	225	M25988-1-010		..PACKING		1
	230	BACB10T2-12A		..BALL		1
	235	MS24585C70		..SPRING		1
	240	256T6154-1		..HOUSING- (OPT ITEM 240A)		1
	-240A	256T6154-2		..HOUSING- (OPT ITEM 240)		1
R	245	256T6321-1		.COVER ASSY-INPUT END		1
	250	MS21209F1-15P		..INSERT		7
	255	MS21209F6-10P		..INSERT		2
	260	256T6321-2		..COVER		1
	265	M25988-1-274		.PACKING		1
	270	256T6162-1		.NUT		1
	275	256T6331-1		.GEAR-PINION		1
	280	256T6153-1		.SPACER		1
	285	BACB10BB15CPP		.BEARING		2
	290	RSN112SP		.RING-RETAINING (V80756)		1
R	295	256T6130-1		.GEAR-BULL		1
	300	S2936MC3P515LD		DELETED		
R	300B	S2936MT5P515LD		.BEARING- (V00141)		2
R	302	256T6147-10		.SHIM		1
R	305	256T6149-1		.RING-RETAINER		2
	310	256T6147-6		.SHIM		1
R	315	256T6148-1		.RETAINER-SPR		1
	320	MS24585C70		.SPRING		6
	325	256T6146-1		.PLATE-IND		1
	330	256T6145-1		.PLUNGER		3
	335	BACB10BB20C		.BEARING		3
	340	BACB10BB30C		.BEARING		3
	345	256T6369-1		.GEAR ASSY-CLUSTER		3
	350	256T6151-1		..PIN		1
R	355	256T6369-3		..PINION- (OPT ITEMS 355A,355B)		1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	-355A	256T6369-4		..PINION- (OPT ITEMS 355,355B)		1
R	-355B	256T6369-5		..PINION- (OPT ITEMS 355,355A)		1
	360	256T6369-2		..GEAR		1
R	365	NAS6705U18		.BOLT	A	3
R	-365A	BACB30LM5U18		.BOLT	B	3
	370	256T6163-1		.LOCKWASHER		3
	375	256T6165-1		.BUSHING		3
R	380	256T6342-1		.RETAINER-BRG		1
R	385	256T6343-1		.PLATE-RETAINER		3
R	390	256T6367-1		.GEAR-PRESTAGE RING		1
	395	256T6368-1		.GEAR-OUTPUT SUN		1
	400	256T6338-1		.SHAFT ASSY-SPLINED		1
	405	256T6338-2		..SHAFT-SPLINED (MATCHED SET)		1
	410	256T6338-3		..SHAFT-SPLINED (MATCHED SET)		1
	415	256T6147-9		.SHIM		2
	420	256T6326-1		.GEAR-PLANET		2
	425	256T6326-2		.GEAR-PLANET		4
	430	256T6326-3		.GEAR-PLANET		4
	435	256T6341-1		.RING-SPREADER		2
	440	256T6329-1		.GEAR ASSY-SUN		1
	445	BACB28X22M025		..BUSHING		1
	450	256T6329-2		..GEAR		1
	455	256T6160-1		.BUSHING		1
R	460	256T6150-1		.SHAFT-QUILL		1
	465	256T6170-1		DELETED		
R	465A	256T6170-2		.BRAKE ASSY (OPT ITEM 465B)	A	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	-465B	256T6170-3		.BRAKE ASSY (OPT ITEM 465A)	A	1
R	-465C	256T6170-4		.BRAKE ASSY	B	1
	470	SL2822-20		..NUT- (V97393) (SPEC BACN10RF20) (OPT 82631-2012 (V56878)) (OPT BR9080-20 (V72962))		1
R	475	256T6175-1		..LOCKWASHER		1
	480	256T6180-1		..CAM-INPUT		1
	485	BACB10TCP32A		..BALL		3
	490	256T6181-1		..CAM-OUTPUT		1
	495	256T6184-1		..SPRING-BELLEVILLE		10
	500	WS81108		..WASHER-THRUST (V43991)		2
	505	AXK4060		..BEARING- (V43991)		1
	510	256T6147-1		..SHIM		AR
R	515	256T6182-1		..PLATE-STATOR,TORQUE BRAKE		1
	520	BACB10BB40C		..BEARING		1
R	525	256T6183-1		..SHAFT-TORQUE BRAKE		1
	530	256T6147-3		..SHIM		AR
	535	256T6186-1		..STOP-THRUST		1
	540	256T6177-1		DELETED		
R	540A	256T6177-2		..SPRING-BELLEVILLE		1
R	545	256T6178-1		..DISK-ROTOR, MAIN BRAKE		3
	550	256W2168-1		..SPACER	A	1
R	551	256T6176-1		..SPACER	B	1
R	555	256T6178-2		..DISK-ROTOR, DRAG BRAKE		1
R	556	256T6178-2		..DISK-ROTOR, DRAG BRAKE	A	1
R	560	256W2170-1		..DISC ASSY-LINED		5
R	565	256W2171-1		...DISC-FRICTION		2
R	570	256W2172-1		...DISC-STATOR		1
R	571	256W2170-1		..DISC ASSY-LINED	A	1
R	572	256W2171-1		...DISC-FRICTION	A	2
R	573	256W2172-1		...DISC-STATOR	A	1
R	575	256T6174-1		..PLATE-PRESSURE,NO-BACK (USED ON ITEM 465A)	A	1
R	-575A	256T6174-2		..PLATE-PRESSURE,NO-BACK (USED ON ITEM 465B)	A	1
R	575B	256T6174-3		..PLATE-PRESSURE,NO-BACK	B	1
	580	MS24585C70		..SPRING	A	6
R	580A	MS24585C127		..SPRING	B	6

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	582	256T6187-1		..SPACER- (USED ON ITEM 465A)		6
	585	RS175SP		..RING-RTNR (V80756)		1
	590	256T6147-2		..SHIM		AR
R	595	256T6173-1		..PLATE-REACTION,NO-BACK	A	1
R	595A	256T6173-2		..PLATE-REACTION,NO-BACK	B	1
	600	BACB10TCP20A		..BALL		3
R	605	256T6172-1		..RAMP-BALL,NO-BACK		1
R	610	256T6171-1		..SHAFT-NO-BACK		1
	615	256T6144-1		.SLEEVE		1
	620	256T6325-1		.GEAR-RING		2
	625	256T6320-1		.HOUSING		1
R	630	256T5124-10		.MARKER		1
	635	256T5124-9		DELETED		
R	635A	256T5124-20		.MARKER	A	1
R	-635B	256T5124-27		.MARKER	B	1

- Item Not Illustrated