TO: ALL HOLDERS OF OUTBOARD LEADING EDGE SLAT DRIVE OFFSET GEARBOX ASSEMBLY
COMPONENT MAINTENANCE MANUAL 27-81-61

REVISION NO. 23 DATED NOV 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 to the Record of Revision Sheet.

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
1016	Deleted 256T2220-12 as a rework assembly; included in IPL as a production top assembly
1017	Updated the effectivity codes
1017	Updated the SB 767-27A0095R3 incorporation
1024	Edited without technical change

BOEING

COMPONENT
MAINTENANCE MANUAL

OUTBOARD LEADING EDGE SLAT DRIVE OFFSET GEARBOX ASSEMBLY

PART NUMBERS 256T2220-3 THRU -8,-10,-12,-13,-14 654T0387-20,-23 THRU -28

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

59191

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.

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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. An asterisked flagnote *[ ] in place of the page number indicates that no special instructions are provided since the function can be performed using standard industry practices.

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:

Testing/TS
Dissassembly
Assembly

OUTBOARD LEADING EDGE SLAT DRIVE OFFSET GEARBOX ASSEMBLY

DESCRIPTION AND OPERATION

1. The outboard leading edge slat drive offset gearbox assembly consists of an input shaft/pinion assembly, reduction gears, and a no-back assembly, all enclosed in a covered aluminum alloy housing. The no-back assembly consists of an output shaft on which are mounted a reaction plate, 3 steel balls, friction plates, a backup plate, and a conical (Belleville) spring.

2. The offset gearbox is installed with its corresponding rotary actuator to provide the torque necessary to actuate the leading edge slats. One gearbox/actuator drive unit is installed at each end of each slat. The gearbox amplifies torque through two-stage reduction gearing and can operate in both directions, but cannot be back-driven.

3. If back-driving torque is applied to the output shaft, the three balls are forced up ramps in the output shaft and reaction plate, forcing them apart. This compresses the brake plates and locks the unit. The gearbox is thus capable of holding the slats in position for an indefinite period should the input be disconnected.

4. Leading Particulars (approximate)

   Length -- 6 inches
   Width -- 6 inches
   Height -- 9 inches
   Weight -- 6 pounds

TESTING AND TROUBLE SHOOTING

1. Test Equipment

   NOTE: Equivalent substitutes may be used.

   A. Output Shaft Spline Adapter -- A27078-5 (part of A27078-7 tool set)

2. Test (IPL Fig. 1)

   A. Check backlash.

      (1) Mount the offset gearbox in an appropriate holding fixture.

      (2) With the input shaft (38 or 55) free, use spline adapter A27078-5 to apply a load of 50 pound-inches to the output shaft (230A), first in one direction, then in the other. Check that rotation of the output shaft between lockup points of the no-back assembly is less than 25 degrees.

   B. Check lockup of no-back assembly.

      (1) Rotate the input shaft two full turns in the clockwise direction then rotate the input shaft 90 degrees in the counterclockwise direction.

      (2) With the input shaft (38 or 55) free, use spline adapter A27078-5 to rapidly apply a clockwise torque (not to exceed 300 lb-in.) to the output shaft (230A). Check that the output shaft does not turn more than 30 degrees.

      (3) Rotate the input shaft two full turns in the counterclockwise direction then rotate the input shaft 90 degrees in the clockwise direction.

(4) With the input shaft (38 or 55) free, use spline adapter A27078-5 to rapidly apply a counterclockwise torque (not to exceed 300 lb-in.) to the output shaft (230A). Check that the output shaft does not turn more than 30 degrees.

C. Check no-load input torque.

(1) Remove all load from the output shaft. Remove cotter pin (5A) if installed.

(2) Using standard 7/16-inch socket on nut (10A), rotate input shaft a minimum of two revolutions in each direction. Check that input torque is in the range 1.0-2.5 pound-inches.

D. Refer to Trouble Shooting Chart, Fig. 101, for probable cause and correction of indicated problems.

TROUBLE	PROBABLE CAUSE	CORRECTION
Backlash greater than 25 degrees	No-back assembly (147) out of adjustment	Disassemble and adjust no-back (par. 3.A.).
Lock-up of no-back greater than 30 degrees	No-back assembly (147) out of adjustment	Disassemble and adjust no-back (par. 3.B).
No-load input torque out of range	No-back assembly (147) out of adjustment	Disassemble and adjust no-back (par. 3.C.).
	Bearings defective	Disassemble. Clean and relubricate bearings or replace

Trouble Shooting Chart
Figure 101

3. Corrective Procedures (IPL Fig. 1)

A. Backlash adjustment

(1) Disassemble parts per DISASSEMBLY, par. 3.A. thru 3.F.

(2) Check gap between shim (215) and lock rings (225) for 0.008-0.012 inch clearance.

(3) If clearance is in range, disassemble further per DISASSEMBLY, par. 3.G. Check spring (160), and condition of balls (150). Check ball grooves and ramps in output shaft (230A) and reaction plate (155A). Replace parts as necessary.

(4) If clearance is greater than 0.012 inch, disassemble further per DISASSEMBLY, par. 3.H. Check condition of facings on stator plates (195A), and replace plate assemblies as required.

(5) Adjust shim (215) thickness to obtain required 0.008-0.012 inch clearance.

(6) Reassemble per ASSEMBLY and re-check backlash per par. 2.A. above.

B. No-back assembly lockup adjustment.

(1) Disassemble parts per DISASSEMBLY, par. 3.A. thru 3.F.

(2) Check that no-back (147) is assembled correctly.

(3) Disassemble no-back per DISASSEMBLY par 3.G. thru 3.H.

(4) Check condition of spring disk (170A), large disk (175A), small disk (190A), stator plates (195A) and backup plate (210A). On assemblies 256T2220-3 thru -8, -10 make sure parts are clean and free of grease. Clean or replace parts as necessary.

(5) Reassemble per ASSEMBLY and re-check lockup of no-back assembly per par 2.B. above.

C. No-load adjustment.

(1) Disassemble parts per DISASSEMBLY, par. 3.A. thru 3.H.

(2) Check condition of facings on stator plate assemblies (195A), and replace the assemblies as required.

(3) Reassemble no-back assembly (147) and check no-load torque per ASSEMBLY, par. 4.B., steps (10) thru (13).

(4) Reassemble per ASSEMBLY and re-check no-load input torque per par. 2.C. above.

DISASSEMBLY

NOTE: See TESTING/TROUBLESHOOTING to establish the condition of the component or most probable cause of its malfunction. This is to determine the extent of disassembly required without completely tearing down and rebuilding the component.

1. Parts Replacement (IPL Fig. 1)

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

   A. Cotter pin (5A)

   B. Spring pin (110)

   C. Thrust washer (120)

   D. Retaining ring (185)

   E. Seal (240A)

   F. Bearing (30, 42, 60, 105, 130, 140, 145).

2. Equipment

   NOTE: Equivalent substitutes may be used.

   A. Bearing Puller Assembly -- A27070-4 (part of A27070-1 Assembly Equipment)

3. Disassembly (IPL Fig. 1)

   A. Remove parts (5A thru 15), then remove input coupling (20 or 22) with associated parts. Remove parts (25 thru 35) from coupling.

   B. On assemblies 256T2220-3, -4, -5, -7, -8 and 654T0387-23, -24, -25, -27, -28, remove shaft/pinion assembly (45A) from housing assembly (250). Remove drive pin (50), then slide parts (52, 57, 60) off input shaft (55). On assemblies 256T2220-6, -10, -12, -13, -14, and 654T0387-20, -26, remove input shaft/pinion (38) with bearing (42) and bearing shield (40A).

   C. Remove parts (80, 85) to release cover (95) from housing. Remove parts (75, 77, 87, 90, 92, 100) from cover.

   D. Remove dead shaft (115) and spring pin (110) and move pinion gear (125) to lower part of housing. Remove packing (112), if installed.

E. Remove second-stage gear (135) from housing assembly and remove bearings (140, 145) from gear. Use bearing puller assembly A27070-4 to remove bearing (105) from gear.

F. Remove no-back assembly (147) and seal (240A) from housing assembly.

CAUTION: HANDLE SMALL DISKS (190A) AND LARGE DISKS (175A) WITH CARE. RADIAL SCRATCHES AND BURRS ON THE SURFACE OF THE DISKS WILL MAKE THEM UNUSABLE.

G. Remove thrust washer (235), retainer (220), lock rings (225), shims (215, 245A), spring (160), backup plate (210A), small disks (190A), stator plate (200), if installed, and four stator plate assemblies (195A) from output shaft (230A).

NOTE: Facing material on stator plate assembly is bonded to plate. Replace assembly as a unit if worn or defective.

H. Remove retaining ring (185), then remove large disks (175A), remaining stator plate assemblies (195A), bias spring disk (170A), shim (167), and wave washer (165A). Remove reaction plate (155) and balls (150) from output shaft (230A).

I. Remove pinion gear (125) and thrust washers (120) from housing assembly. Remove bearings (130) from pinion gear.

NOTE: Do not remove nameplate (270) from housing assembly or disassemble housing assembly unless necessary for repair or replacement.

CLEANING

1. General

   A. This procedure has the data necessary to clean the offset gearbox 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

   C. Clean all parts using standard industry practices and information contained in SOPM 20-30-03, except as noted in par. 2.

   D. Clean bearings (30, 42, 60, 105, 130, 140, 145) per manufacturer's instructions.

CHECK

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

2. Refer to FITS AND CLEARANCES for design dimensions and wear limits.

3. Magnetic particle check the following parts (Ref IPL Fig. 1) per SOPM 20-20-01.

   A. Coupling (20)

   B. Drive pin (50), pinion (52), input shaft (55)

   C. Dead shaft (115), pinion gear (125)

   D. Second stage gear (135)

   E. Plates (155A, 195A, 200, 210A), disks (170A, 175A, 190A), retainer (220), lock ring (225), output shaft (230A)

4. Penetrant check the following parts (Ref IPL Fig. 1) per SOPM 20-20-02.

   A. Cover (95)

   B. Housing (265)

5. Check gear teeth and splines for uneven wear.

6. Deleted

7. Visually check stator plate assemblies (195A) for evidence of separation of facing material from steel backing plate. Replace any assemblies with less than 100 percent bonding of facing to backing plate.

8. Make sure bearings turn freely and smoothly. Replace any that show signs of sticking, roughness or catching.

9. Check reaction plate (155A) for signs of excessive wear, galling or noticeable damage to ball pocket.

10. Check the small disk (190A) and large disk (175A) for wear or damage.

    A. Check the surfaces of small disk (190A) and large disk (175A) for scratches or scoring due to localized wear from the mating surface. Use a profilometer to check the surface finish of the disks at this interface.

        (1) Put the profilometer probe over the disk in the area adjacent to the scratches and/or scoring.

        (2) Move the probe over the scratches and/or scoring in a path that is perpendicular to the direction of the scratches and/or scoring.

        (3) The surface finish (surface roughness average) of the disk must be 20 microinches (Ra) or less.

    B. Check the disks for uneven wear and damaged or excessively worn splines.

    C. Check the small disk (190A) and large disk (175A) for minimum thickness.

        (1) The minimum thickness for a new or inservice disk is 0.038 inch. Undersized disks can be used, as given in the steps that follow.

        (2) The minimum thickness for an undersized disk is 0.036 inch.

            (a) A maximum of two undersized disks can be used in the no-back assembly. A no-back assembly can contain two undersized small disks, or two undersized large disks, or one undersized small disk and one undersized large disk.

(b) Make sure that each side of an undersized disk is flat within 0.002 inch and the two sides of the disk are parallel within 0.0005 inch.

(c) Use a profilometer to check that the wear surfaces of the undersized disks have a surface finish (surface roughness average) of 20 microinches (Ra) or less.

11. Check the bias spring disk (170A) and backup plate (210A) for wear or damage.

A. Check for scratches or scoring due to localized wear from the mating surface. Make sure that the wear at this surface is not more than 0.002 inch deep radially or 0.005 inch deep in a circular direction.

B. Check for uneven wear and damaged or excessively worn splines.

REPAIR - GENERAL

1. Content

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

P/N	NAME	REPAIR
256T2250	HOUSING	1-1
256T2256	SHAFT, OUTPUT	2-1
256T2268 256T2269 256T2288	SHIELD, BEARING	3-1
256T2252 256T2276	SHAFT, INPUT	4-1
256T2251	COVER, HOUSING	5-1
256T2253	GEAR, SECOND STAGE	6-1
256T2254	GEAR, PINION	7-1
256T2255 256T2287	COUPLING, INPUT	8-1
256T2259	SHAFT, DEAD	9-1
256T2258 256T2285	PINION, FIRST STAGE	10-1
256T2217 256T2277	NAMEPLATE	11-1
--	MISC PARTS REFINISH	12-1
256T2286	SHAFT, INPUT PINION	13-1
256T2260	PIN, DRIVE	14-1

2. Standard Practices

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

20-10-02 Machining of Alloy Steel
20-10-04 Grinding of Chrome Plated Parts
20-20-01 Magnetic Particle Inspection
20-20-02 Penetrant Methods of Inspection
20-30-02 Stripping of Protective Finishes
20-30-03 General Cleaning Procedures
20-41-01 Decoding Table for Boeing Finish Codes
20-41-02 Application of Chemical and Solvent Resistant Finishes
20-42-02 Low Hydrogen Embrittlement Cadmium-Titanium Alloy Plating
20-42-03 Hard Chrome Plating
20-42-05 Bright Cadmium Plating
20-43-01 Chromic Acid Anodizing
20-43-03 Chemical Conversion Coatings for Aluminum
20-50-03 Bearing and Bushing Replacement
20-50-10 Application of Stencils, Insignia, Silk Screen, Part Numbering and Identification Markings
20-50-12 Application of Adhesives

3. Materials

NOTE: Equivalent substitutes may be used.

A. Primer -- BMS 10-11, type 1 (Ref 20-60-02)

B. Corrosion Preventive Compound -- MIL-C-11796, class 1 (Ref 20-60-02)

C. Adhesive -- Type 70 (Ref 20-50-12)

4. 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 WHICH 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 B WITHIN 0.002
// | 0.002 | A	PARALLEL TO 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 PLANE A
⌓ | 0.020 | A	SURFACES MUST LIE WITHIN PARALLEL BOUNDARIES 0.02 INCH APART AND EQUALLY DISPOSED ABOUT TRUE PROFILE
◎ ∅ 0.0005 | C	CONCENTRIC TO C WITHIN 0.0005 DIAMETER
≡ | 0.010 | A	SYMMETRICAL WITH A WITHIN 0.010
∠ | 0.005 | A	ANGULAR TOLERANCE 0.005 WITH 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, AND EXTENDING 0.510-INCH ABOVE, DATUM A, MAXIMUM MATERIAL CONDITION
[2.000] OR 2.000 BSC	THEORETICALLY EXACT DIMENSION IS 2.000

NOTE: DATUM MAY APPEAR AT EITHER SIDE OF TOLERANCE FRAME

0.020 | A

A | 0.020

True Position Dimensioning Symbols
Figure 601

HOUSING ASSEMBLY - REPAIR 1-1

256T2250-1, -4, -5, -9, -11, -13

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surfaces which may only require restoration of original finish, refer to Refinish instructions, Fig. 602.

1. Deleted

2. Spline Insert Replacement (IPL Fig. 1) (Fig. 601)

   A. Remove rivets (260) and spline insert (262).

   B. Position replacement spline insert in housing with insert cutout located as shown in Fig. 601. Align thinnest points of insert notches with centerlines of rivet bosses within 0.040 in. FIM. Drill two 0.164-0.167 in. dia holes as shown, using existing holes in housing as a pattern.

   C. Install replacement spline insert with wet primer, BMS 10-11, Type 1 and secure with rivets installed with wet primer.

3. Spline Insert Repair (IPL Fig. 1) (Fig. 603 and 605).

   A. If corrosion is found on OD of spline insert (262), remove rivets (260) and spline insert (262).

   B. Machine OD of spline insert, as required, to remove defects. Keep to the limits and dimensions shown in Fig. 603.

   C. Do a magnetic particle check of machined surface (SOPM 20-20-01).

   D. Cadmium plate per F-15.02.

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

F. Fabricate a repair sleeve from 7075-T73 or 2024-T3 aluminum to dimensions shown in Fig. 605.

G. Finish repair sleeve with alodine per F-17.11.

H. Install repair sleeve over spline insert using shrink-fit method (SOPM 20-50-03) with wet BMS 5-95 sealant flush with slotted face of insert. Remove excess sealant after installation of sleeve.

I. After sealant dries, machine matching face slot and rivet holes in repair sleeve.

J. Touch up alodine per F-17.11.

K. Install repair sleeve/insert assembly into reworked housing bore (see paragraph 4) using shrink-fit method (SOPM 20-50-03) with wet BMS 5-95 sealant. Make sure to bottom sleeve/insert assembly into housing bore. Align anti-rotation rivet holes of sleeve/insert assembly with those in housing during installation. Remove excess sealant.

L. If minor misalignment of rivet holes occurs, ream out rivet holes to allow installation of next larger size rivet (MS90354-0605).

M. Install rivets (260).

4. Housing Bore Repair (IPL Fig. 1) (Fig. 602 and 605)

A. If corrosion is found on ID, remove rivets (260) and spline insert (262).

B. Machine housing bore ID, as required, to remove defects. Keep to the limits and dimensions shown in Fig. 602.

C. Finish bore with alodine per F-17.11.

D. Fabricate repair sleeve from 7075-T73 or 2024-T3 aluminum to dimensions shown in Fig. 605 and install per paragraph 2.H through 2.M.

5. Bearing Seat Repair (Fig. 602 and 604 or 606)

A. Machine bore diameter, as required, to remove defects. Keep to the limits and dimensions shown in Fig. 602.

B. Finish bore with alodine per F-17.11.

C. Fabricate a repair bushing from 7075-T73 or 2024-T3 aluminum to dimensions shown in Fig. 604 or 606.

D. ' Install repair bushing in bolt hole using shrink-fit method (SOPM 20-50-03) with wet BMS 5-95 sealant. Remove excess sealant after installation of sleeve.

E. After sealant dries, ream hole to design limits and apply alodine per F-17.11 to bushing bore.

6. Bolt Hole Repair (Fig. 602 and 607)

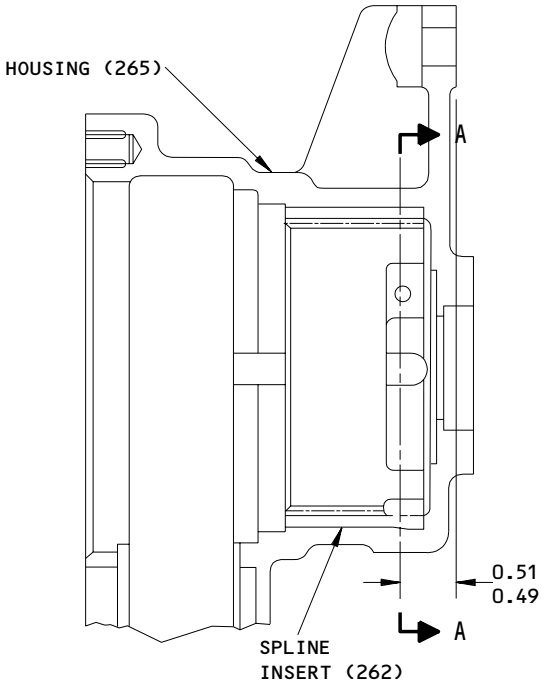
A. Machine bore(s), as necessary, to remove defects. Keep to the limits and dimensions shown in Fig. 602.

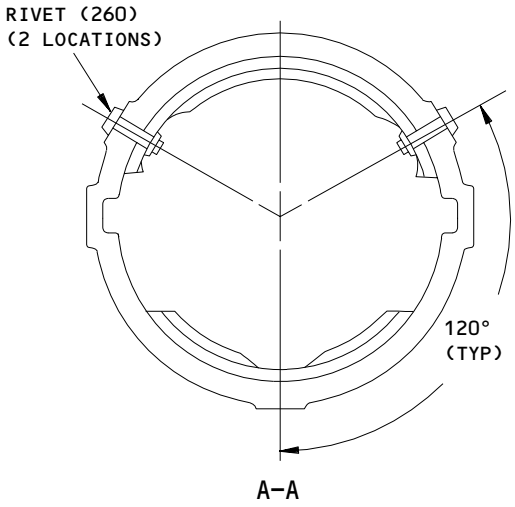
B. Apply alodine per F-17.11 to bore(s).

C. Fabricate a repair bushing from 7075-T73 or 2024-T3 aluminum to dimensions shown in Fig. 607.

D. Install repair bushing in bolt hole using shrink-fit method (SOPM 20-50-03) with wet BMS 5-95 sealant. Remove excess sealant after installation of bushing.

E. After sealant dries, ream hole to design limits and apply alodine per F-17.11 to bushing bore.



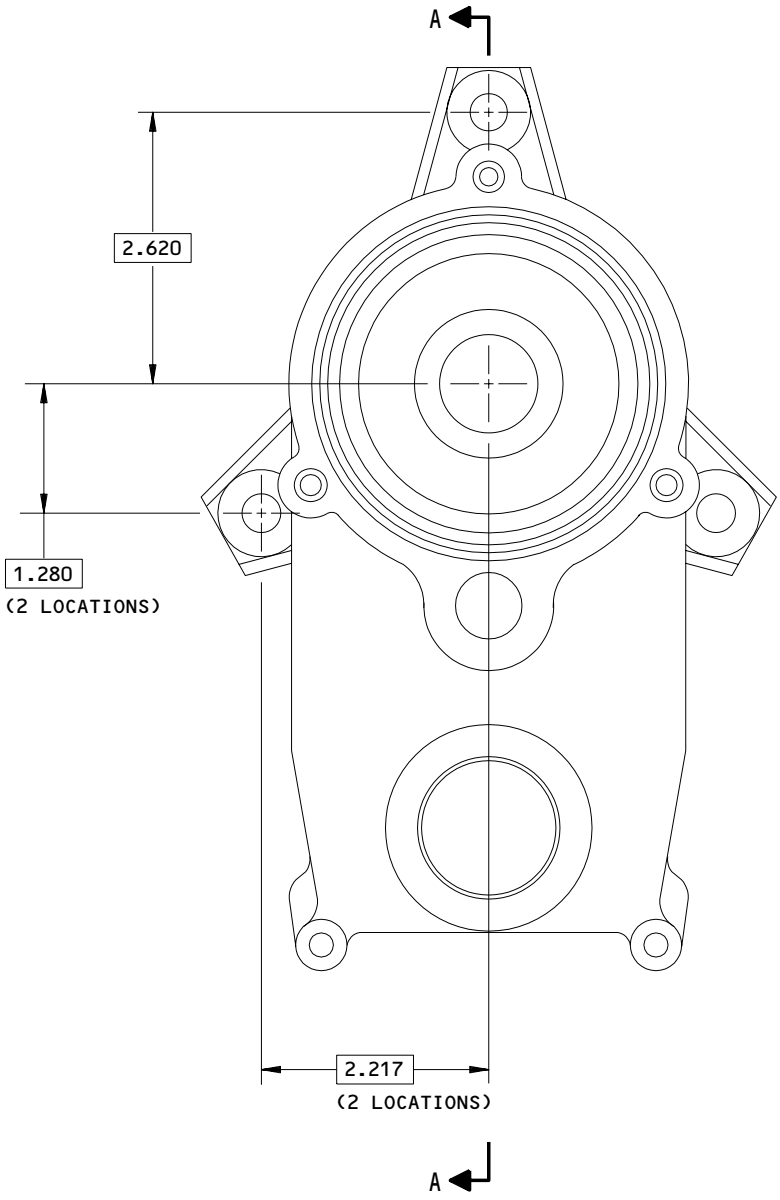


ITEM NUMBERS REFER TO IPL FIG. 1

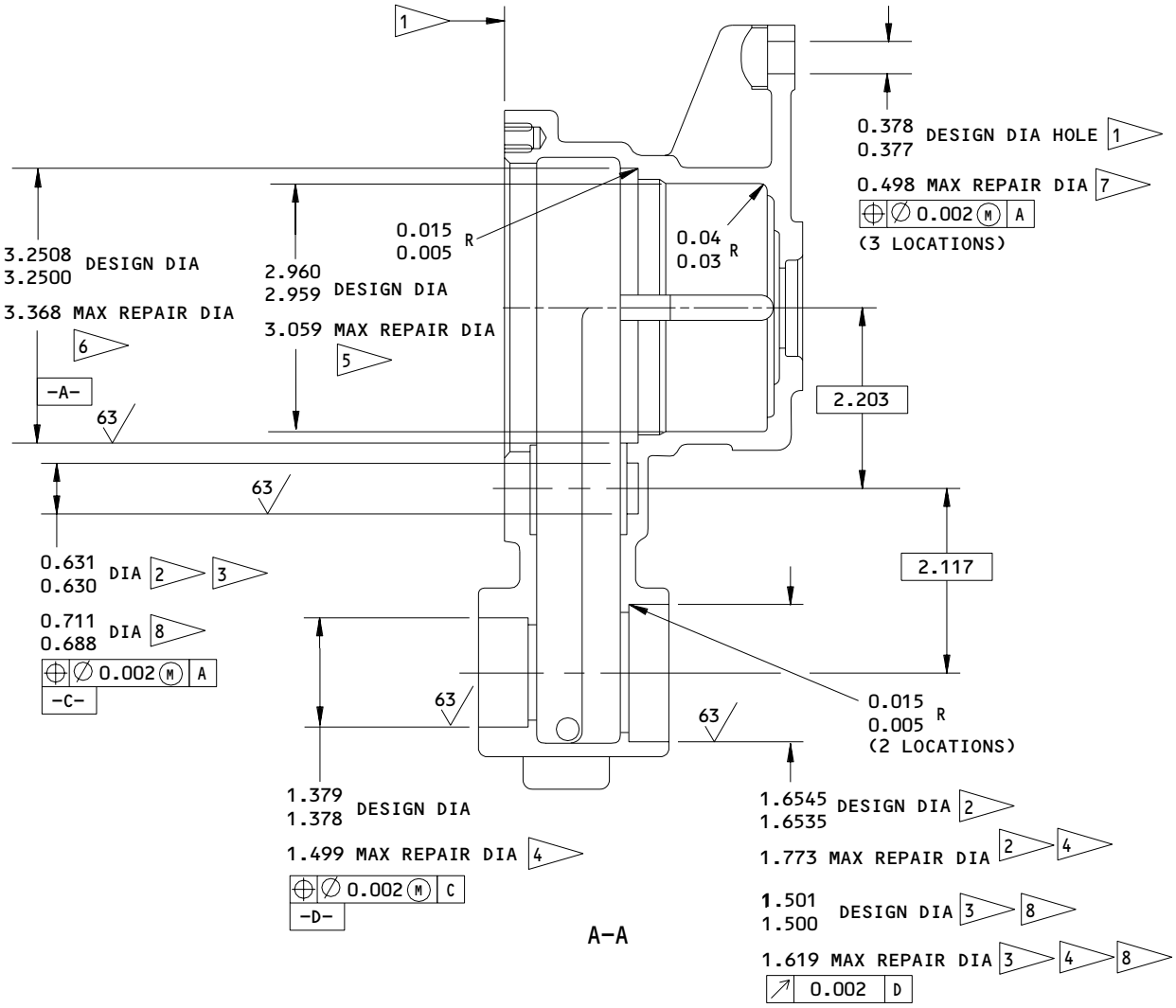
ALL DIMENSIONS ARE IN INCHES

256T2250-1,-4,-5,-9,-11,-13
Housing Assembly - Spline Insert Replacement
Figure 601

59245



256T2250-1,-4,-5,-9,-11,-13
Housing Repair and Refinish
Figure 602 (Sheet 1)



A-A

REFINISH

HOUSING (265) -- CHROMIC ACID ANODIZE (F-17.04) ALL OVER. APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (F-20.02) ON EXTERNAL SURFACES EXCEPT AS NOTED

1. NO PRIMER THIS SURFACE
2. FOR 256T2250-1,-4,-5
3. FOR 256T2250-9,11
4. FABRICATE REPAIR BUSHINGS PER FIG. 604
5. FABRICATE REPAIR SLEEVE PER FIG. 605
6. FABRICATE REPAIR BUSHING PER FIG. 606

REPAIR

REF 4 5 6 7

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

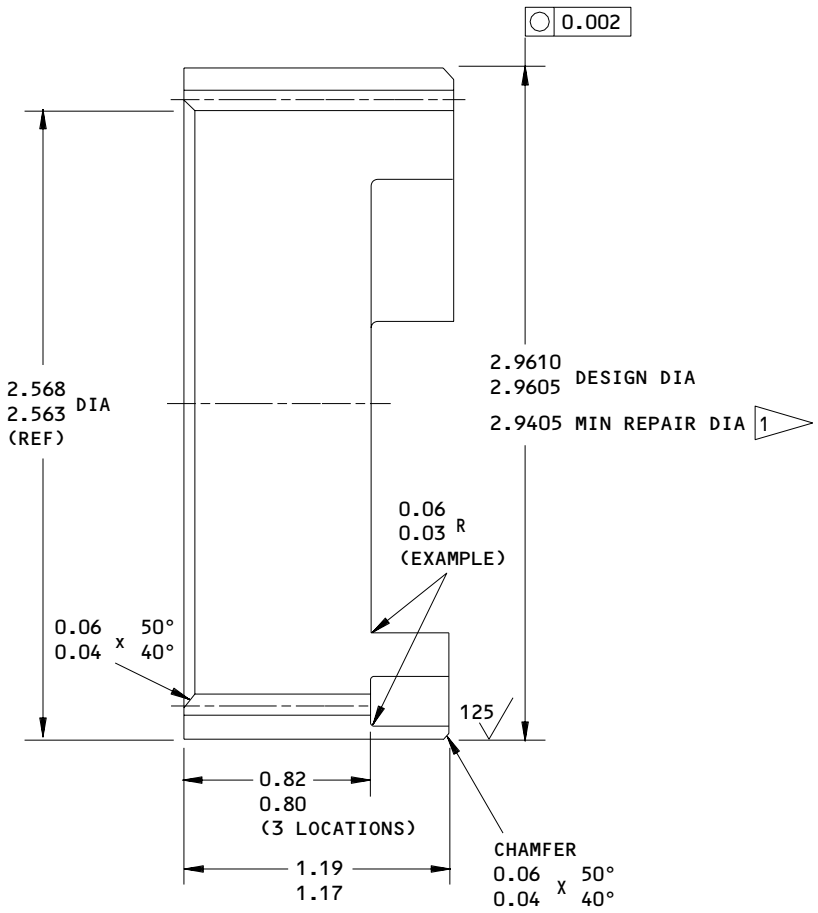
MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

7. FABRICATE REPAIR BUSHING PER FIG. 607
8. FOR 256T2250-13

256T2250-1,-4,-5,-9,-11,-13
Housing Repair and Refinish
Figure 602 (Sheet 2)

59354



REFINISH

CADMIUM PLATE (F-15.02) ALL OVER

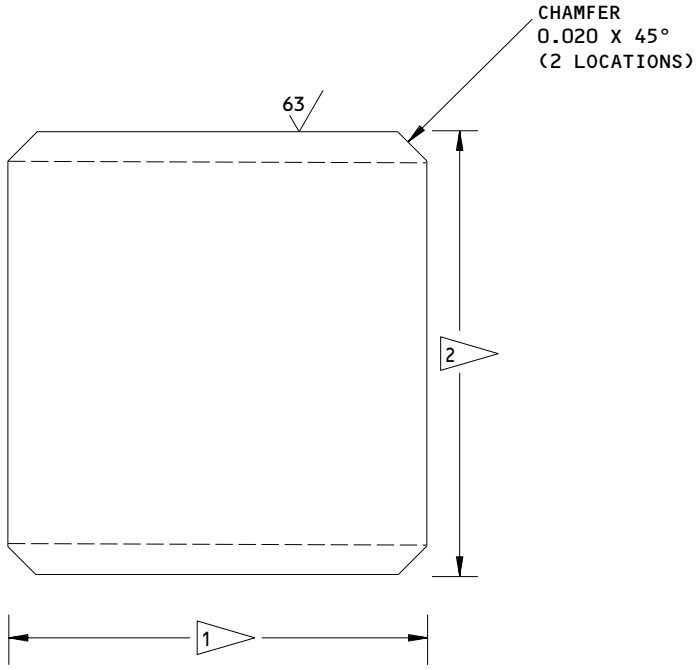
1 FABRICATE REPAIR SLEEVE PER FIG. 605

REPAIR

REF 1

ALL DIMENSIONS ARE IN INCHES

256T2250-1,-4,-5,-9,-11,-13
Housing Assembly - Spline Insert Repair and Refinish
Figure 603



REPAIR BUSHING

REFINISH

CHROMIC ACID ANODIZE (F-17.04) ALL OVER.

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: AL ALLOY 7075-T73 OR 2024-T3

ALL DIMENSIONS ARE IN INCHES

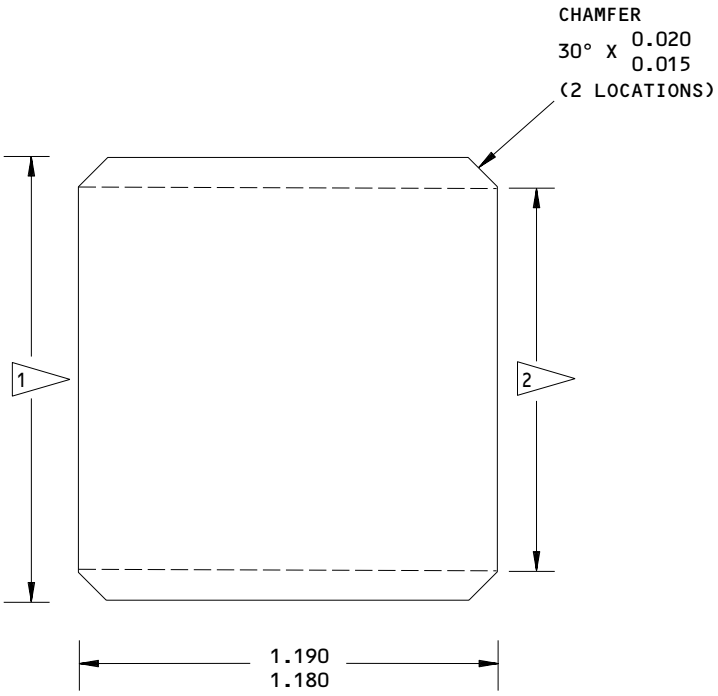
1 BUSHING LENGTH TO BE 0.01 LESS THAN BORE LENGTH

2 FOR 256T2211-1,-4,-5:
BUSHING OUTSIDE DIAMETER = REPAIR DIAMETER OF BORE +0.0011/0.0022 INTERFERENCE FIT

FOR 256T2211-9,-11,-13:
BUSHING OUTSIDE DIAMETER = REPAIR DIAMETER OF BORE +0.0014/0.0022 INTERFERENCE FIT

256T2250-1,-4,-5,-9,-11,-13
Repair Bushing
Figure 604

839673



SPLINE INSERT
REPAIR SLEEVE

REFINISH

CHROMIC ACID ANODIZE (F-17.04) ALL OVER.

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

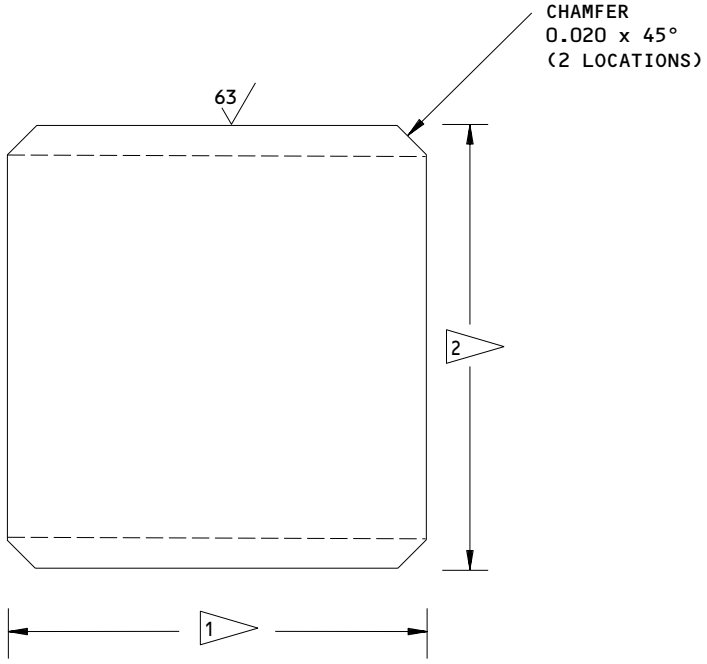
MATERIAL: AL ALLOY 7075-T73 OR 2024-T3

ALL DIMENSIONS ARE IN INCHES

1 REPAIR SLEEVE OUTSIDE DIAMETER = REPAIR DIAMETER OF HOUSING BORE +0.002/0.004 INTERFERENCE FIT

2 REPAIR SLEEVE INSIDE DIAMETER = REPAIR DIAMETER OF SPLINE INSERT -0.0005/0.0020 INTERFERENCE FIT

256T2250-1,-4,-5,-9,-11,-13
Repair Sleeve
Figure 605



REPAIR BUSHING

REFINISH

CHROMIC ACID ANODIZE (F-17.04) ALL OVER.

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: AL ALLOY 7075-T73 OR 2024-T3

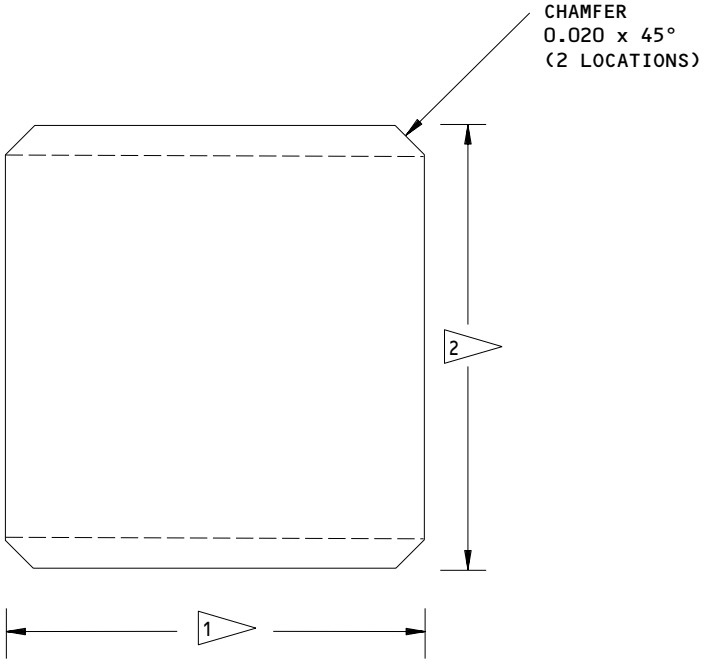
ALL DIMENSIONS ARE IN INCHES

1 BUSHING LENGTH TO BE 0.01 LESS THAN BORE LENGTH

2 BUSHING OUTSIDE DIAMETER = REPAIR DIAMETER OF BORE +0.0025/0.0043 INTERFERENCE FIT

256T2250-1,-4,-5,-9,-11,-13
Repair Bushing
Figure 606

839710



BOLT HOLE
REPAIR BUSHING

REFINISH

CHROMIC ACID ANODIZE (F-17.04) ALL OVER.

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: AL ALLOY 7075-T73 OR 2024-T3

ALL DIMENSIONS ARE IN INCHES

1 BUSHING LENGTH TO BE 0.01 LESS THAN BORE LENGTH

2 BUSHING OUTSIDE DIAMETER = REPAIR DIAMETER OF BORE +0.0004/0.0008 INTERFERENCE FIT

256T2250-1,-4,-5,-9,-11,-13
Repair Bushing
Figure 607

OUTPUT SHAFT - REPAIR 2-1

256T2256-1, -2

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. If only the repair of the initial finish is necessary, refer to Refinish instruction Fig. 601.

1. Seal and Bearing Seat Repair (Fig. 601)

   A. Machine bearing and/or seal seat, as necessary, to remove defects. Keep to the limits and dimensions shown.

   B. Shot peen using shot size, intensity and coverage shown (Ref 20-10-03).

   C. Do a magnetic particle check of machined surface (Ref 20-10-01).

   D. Build up machined surface with chrome plate (0.003-0.010 inch thickness) per F-15.03 (Ref 20-42-03).

   E. Grind chrome plate to design limits shown (Ref 20-10-04).

   F. Do a magnetic particle of machined surface (Ref 20-20-01).

2. Drive Spline Repair

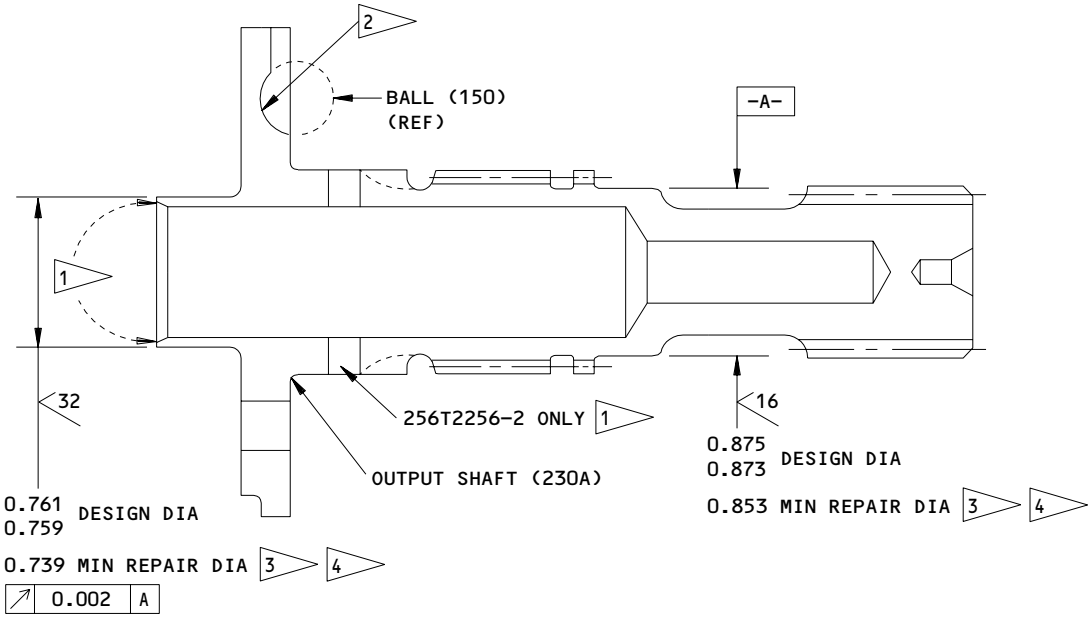
   A. Vapor degrease shaft (Ref 20-30-03).

   B. Remove cadmium-titanium plate, primer, and corrosion preventative compound (Ref 20-30-02).

   C. Dry abrasive blast output drive splines with 170-400 mesh glass beads to remove corrosion (Ref 20-30-03).

D. Check corrosion pitting on splines and discard shaft if pitting is more than 20 percent of the total spline tooth face contact surface area.

E. If inspection limits are not exceeded in step 2.D., refinish shaft per Fig. 601.



256T2256-2 SHOWN
256T2256-1 SIMILAR

REFINISH

CADMIUM-TITANIUM ALLOY PLATE (0.0005-0.0007 THICK) PER SOPM 20-42-02 ALL OVER EXCEPT AS NOTED BY 1 AND 2. MAGNETIC PARTICLE CHECK PER SOPM 20-20-01 AFTER PLATING. APPLY PHOSPHATE COATING (F-16.05) ALL OVER EXCEPT AS NOTED BY 2. APPLY ADDITINAL FINISH IN BORE PER 1.

OPTIONAL CADMIUM PLATE (0.0005-0.0007 THICK) PER SOPM 20-42-01 ALL OVER EXCEPT AS NOTED BY 1 AND 2. MAGNETIC PARTICLE CHECK PER SOPM 20-20-01 AFTER PLATING. APPLY PHOSPHATE COATING (F-14.14) ALL OVER EXCEPT AS NOTED BY 2. APPLY ADDITIONAL FINISH IN BORE PER 1.

1 APPLY TWO COATS PRIMER, BMS 10-11, TYPE 1 (F-20.03)

2 NO FINISH (F-25.01) ON BALL GROOVES AND RAMPS

3 BUILD UP WITH CHROME PLATE (REF SOPM 20-42-03). GRIND TO DESIGN DIMENSIONS AND FINISH. PLATING RUNOUT SHOULD BE 0.03-0.06 AT EDGES

4 DO NOT REMOVE MORE THAN 0.010 INCH RADIALLY OR 0.020 ON THE DIAMETER

REPAIR

REF 3 4

SHOT PEEN (SOPM 20-10-03):

SHOT NUMBER 230-780
INTENSITY 0.014A
COVERAGE 2.0

MATERIAL: 4340M STEEL
275-300 KSI

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

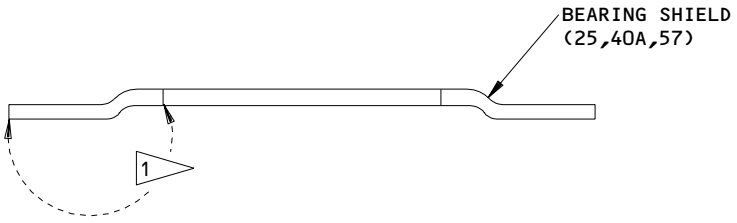
256T2256-1,-2
Output Shaft Repair and Refinish
Figure 601

BEARING SHIELD - REPAIR 3-1

256T2268-1
256T2269-1
256T2288-1

1. Plating Repair

NOTE: Repair consists of stripping and restoration of original finish. Refer to Refinish instruction in Fig. 601 and to REPAIR-GEN for list of applicable standard practices.



REFINISH

CADMIUM PLATE (F-15.06) ALL OVER AND APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (F-20.02) IN AREA NOTED.

1 APPLY PRIMER THESE SURFACES ONLY

MATERIAL: STEEL (C1018-1025,C1010, OR C1075)

ITEM NUMBERS REFER TO IPL FIG. 1

Bearing Shield Refinish
Figure 601

59357

INPUT SHAFT - REPAIR 4-1

256T2276-2
256T2252-7, -8

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. If only the repair of the initial finish is necessary, refer to Refinish instructions, Fig. 601.

1. Repair (Fig. 601)

   A. Machine shaft, as required, to remove defects. Keep to the limits and dimensions shown.

   B. Shot peen using shot size, intensity and coverage shown (Ref 20-10-03).

   C. Do a magnetic particle check of machined surface (Ref 20-20-01).

   D. Build up machined surface with chrome plate (0.003-0.010 inch thickness) per F-15.03 (Ref 20-42-03).

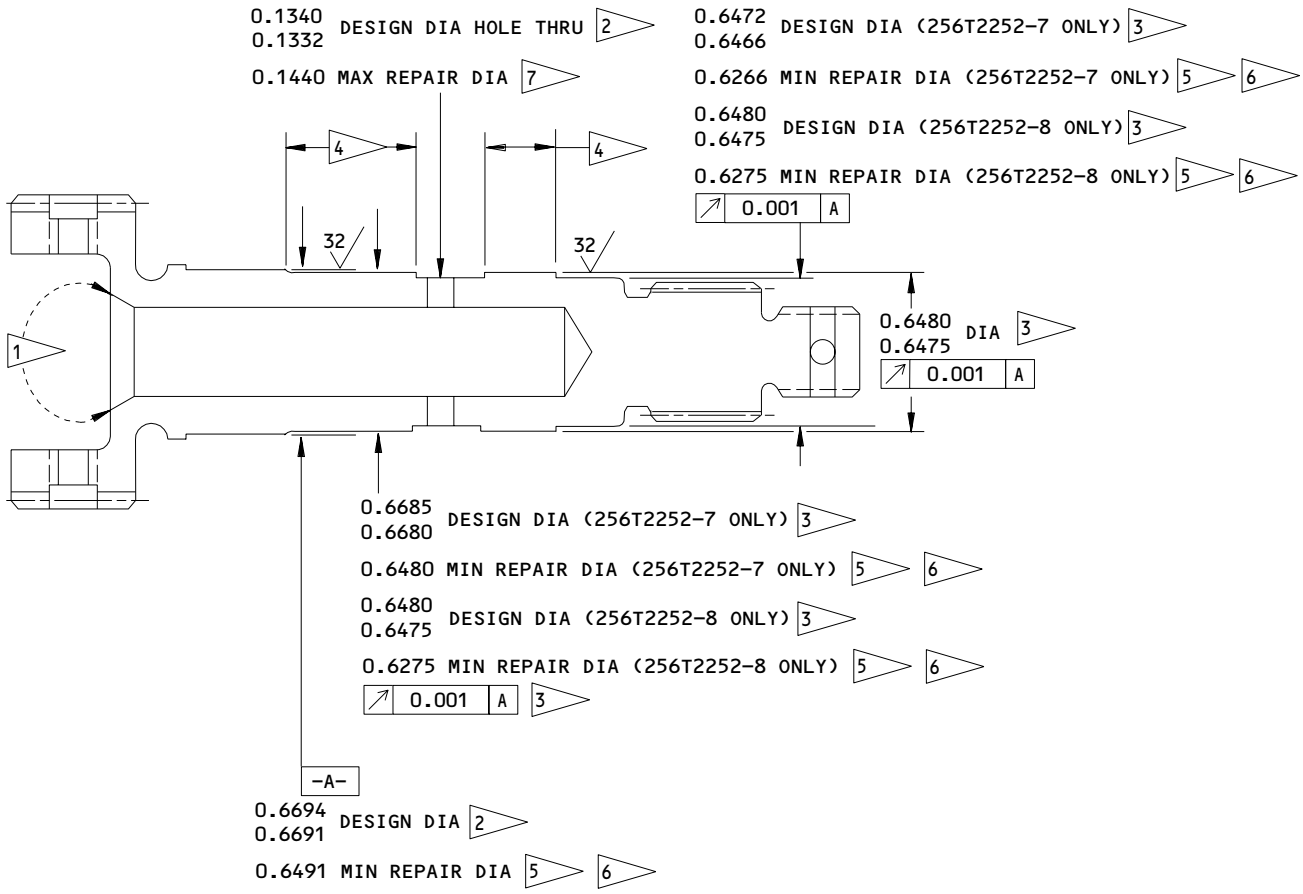
   E. Grind chrome plate to design limits (Ref 20-10-04).

   F. Do a magnetic particle check of shaft (Ref 20-20-01).

2. Drive Pin Hole Repair (Fig.601)

   A. If hole size is more than wear limits, match ream pinion and shaft drive pin hole. Keep to the limits and dimensions shown.

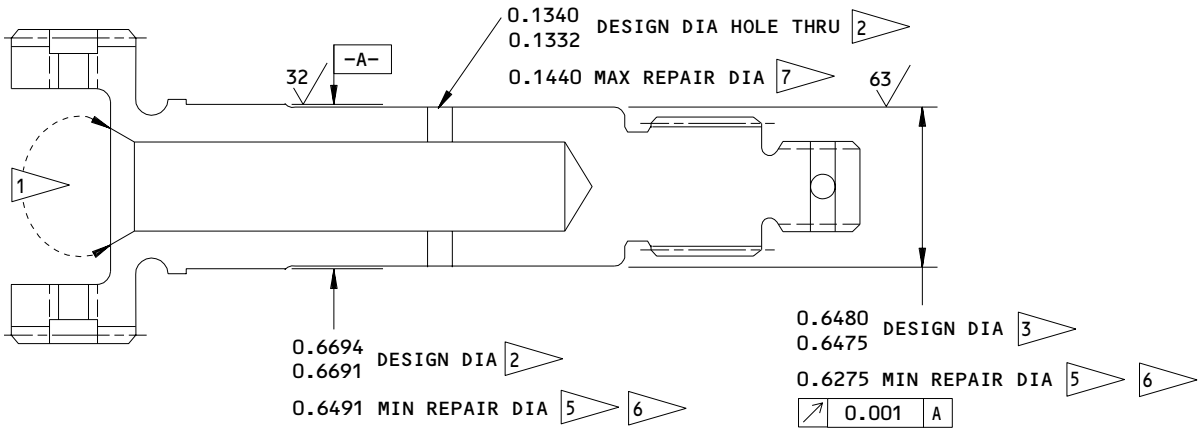
   B. Fabricate and install oversize pin as shown in Repair 14-1.



256T2252-7,-8

256T2252-7,-8
256T2276-2
Input Shaft Repair and Refinish
Figure 601 (Sheet 1)

59359



REFINISH

CADMIUM PLATE (F-15.02) ALL OVER EXCEPT AS NOTED.

1. PLATING OPTIONAL ON SHAFT BORE. PHOSPHATE COAT (F-14.14) AND APPLY TWO COATS PRIMER, BMS 10-11, TYPE 1 (F-20.03)
2. NO FINISH THIS SURFACE (F-25.01)
3. DIMENSIONS APPLY AFTER PLATING
4. CHROMIUM PLATE (F-15.03)
5. BUILD UP WITH CHROME PLATE (SOPM 20-42-03). GRIND TO DESIGN DIMENSIONS AND FINISH. PLATING RUNOUT SHOULD BE 0.03-0.06 AT EDGES.
6. DO NOT REMOVE MORE THAN 0.010 INCH MATERIAL RADIALLY OR 0.020 ON THE DIAMETER.
7. MATCH REPAIR DIAMETER WITH PINION. REFER TO ASSEMBLY, FIG. 701. FABRICATE OVERSIZE DRIVE PIN AS SHOWN IN REPAIR 14-1

REPAIR

REF 5 6

SHOT PEEN (SOPM 20-10-03):
SHOT NUMBER 230-780
INTENSITY 0.014A
COVERAGE 2.0
MATERIAL: 4340 STEEL
180-200 KSI

ALL DIMENSIONS ARE IN INCHES

256T2252-7,-8
256T2276-2
Input Shaft Repair and Refinish
Figure 601 (Sheet 2)

HOUSING COVER ASSEMBLY - REPAIR 5-1

256T2251-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. If only the repair of the initial finish is necessary, refer to Refinish instructions, Fig. 601.

1. Deleted

2. Bolt Hole Repair (Fig. 601 and 602)

   A. Machine bore(s), as necessary, to remove defects. Keep to the limits and dimensions shown in Fig. 601.

   B. Apply alodine per F-17.11 to bore(s).

   C. Fabricate a repair bushing from 7075-T73 or 2024-T3 aluminum to dimensions shown in Fig. 602.

   D. Install repair bushing in bolt hole using shrink-fit method (SOPM 20-50-03) with wet BMS 5-95 sealant. Remove excess sealant after installation of bushing.

   E. After sealant dries, ream hole to design limits and apply alodine per F-17.11 to bushing bore.

3. Bearing Seat Repair (Fig. 601 and 603)

   A. Machine bore diameter, as required, to remove defects. Keep to the limits and dimensions shown in Fig. 601.

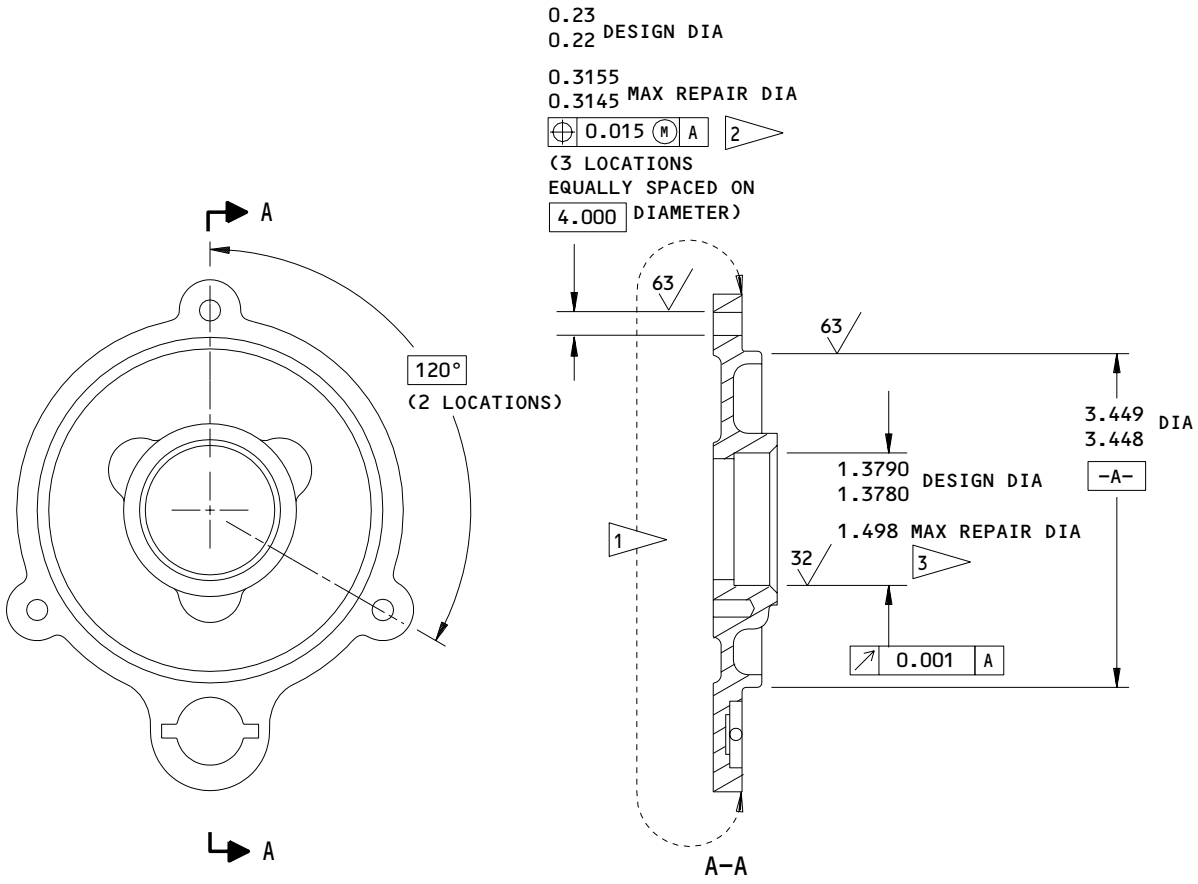
   B. Do a penetrant check of the machined surface (SOPM 20-20-02).

C. Finish bore with alodine per F-17.11.

D. Fabricate a repair bushing from 7075-T73 or 2024-T3 aluminum to dimensions shown in Fig. 603.

E. Install repair bushing in bolt hole using shrink-fit method (SOPM 20-50-03) with wet BMS 5-95 sealant. Remove excess sealant after installation of sleeve.

F. After sealant dries, ream hole to design limits and apply alodine per F-17.11 to bushing bore.



REFINISH

CHROMIC ACID ANODIZE (F-17.04) ALL OVER AND APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (F-20.02) ON SURFACES NOTED

1. APPLY PRIMER THESE SURFACES ONLY
2. SEE FIG. 602 FOR FABRICATION OF REPAIR BUSHING
3. SEE FIG. 603 FOR FABRICATION OF REPAIR BUSHING

REPAIR

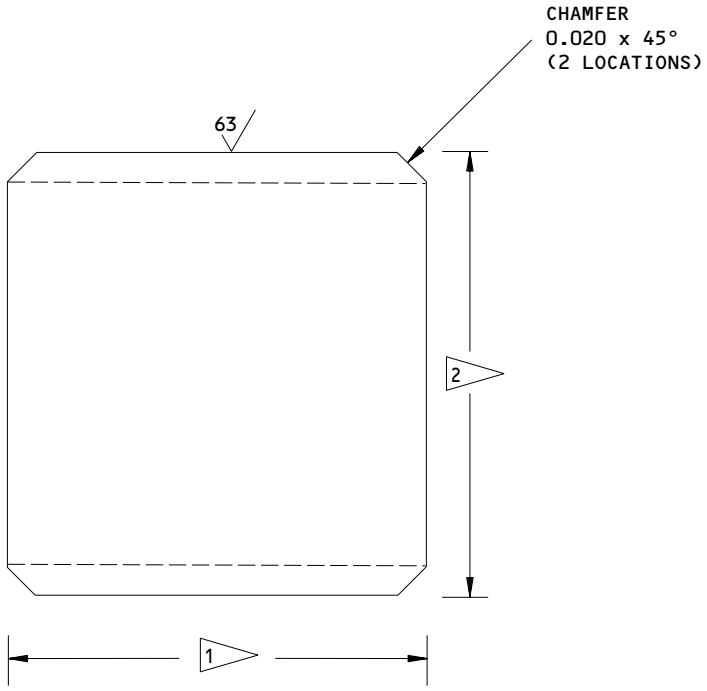
REF 2 3

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

256T2251-1
Housing Cover Repair and Refinish
Figure 601

59361



REPAIR BUSHING

REFINISH

CHROMIC ACID ANODIZE (F-17.04) ALL OVER.

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: AL ALLOY 7075-T73 OR 2024 - T3

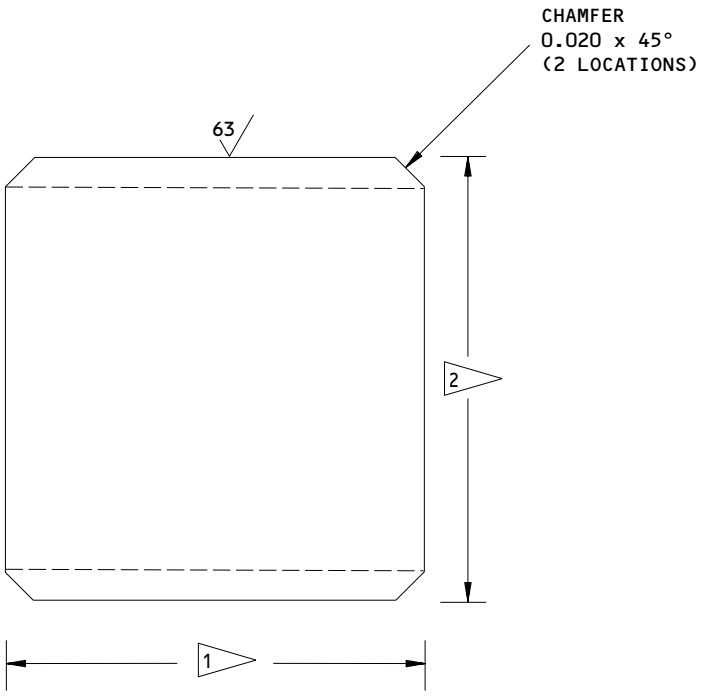
ALL DIMENSIONS ARE IN INCHES

1 BUSHING LENGTH TO BE 0.01 LESS THAN BORE LENGTH

2 BUSHING OUTSIDE DIAMETER = REPAIR DIAMETER OF BORE +0.0002/0.0004 INTERFERENCE FIT

256T2251-1
Repair Bushing
Figure 602

839833



REPAIR BUSHING

REFINISH

CHROMIC ACID ANODIZE (F-17.04) ALL OVER.

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: AL ALLOY 7075-T73 OR 2024-T3

ALL DIMENSIONS ARE IN INCHES

1 BUSHING LENGTH TO BE 0.01 LESS THAN BORE LENGTH

2 BUSHING OUTSIDE DIAMETER = REPAIR DIAMETER OF BORE +0.0010/0.0015 INTERFERENCE FIT

256T2251-1
Repair Bushing
Figure 603

839837

SECOND STAGE GEAR - REPAIR 6-1

256T2253-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. If only the repair of the initial finish is necessary, refer to Refinish instructions, Fig. 601.

1. Bearing Seat Repair (Fig. 601)

A. Machine bearing seat, as necessary, to remove defects. Keep to the limits and dimensions shown.

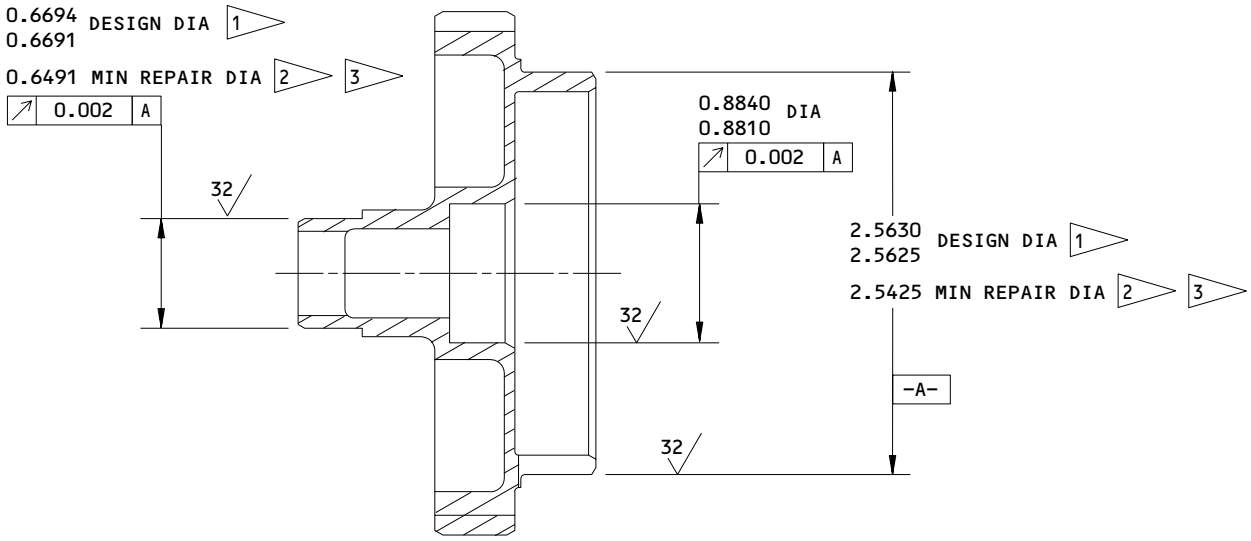
B. Shot peen using shot size, intensity and coverage shown (Ref 20-10-03).

C. Do a magnetic particle check of machined surface (Ref 20-20-01).

D. Build up machined surface with chrome plate (0.003-0.010 inch thickness) per F-15.03 (Ref 20-42-03).

E. Grind chrome plate to design limits shown (Ref 20-10-04).

F. Do a magnetic particle check of machined surface (Ref 20-20-01).



REFINISH

CADMIUM-TITANIUM ALLOY PLATE (F-15.32)
EXCEPT AS NOTED

1 NO PLATING THIS SURFACE (F-25.01)

2 BUILD UP WITH CHROME PLATE (SOPM 20-42-03). GRIND TO DESIGN DIMENSIONS AND FINISH. PLATING RUNOUT SHOULD BE 0.03-0.06 AT EDGES.

3 DO NOT REMOVE MORE THAN 0.010 INCH MATERIAL RADIALLY OR 0.020 ON THE DIAMETER.

REPAIR

REF 2 3

SHOT PEEN (SOPM 20-10-03):
SHOT NUMBER 230-780
INTENSITY 0.014A
COVERAGE 2.0

MATERIAL: 4340M STEEL
275-300 KSI

ALL DIMENSIONS ARE IN INCHES

256T2253-1
Second Stage Gear Repair and Refinish
Figure 601

59363

PINION GEAR - REPAIR 7-1

256T2254-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. If only the repair of the initial finish is necessary, refer to Refinish instructions, Fig. 601.

1. Bore Repair (Fig. 601)

A. Grind bore, as necessary, to remove defects. Keep to the limits and dimensions shown.

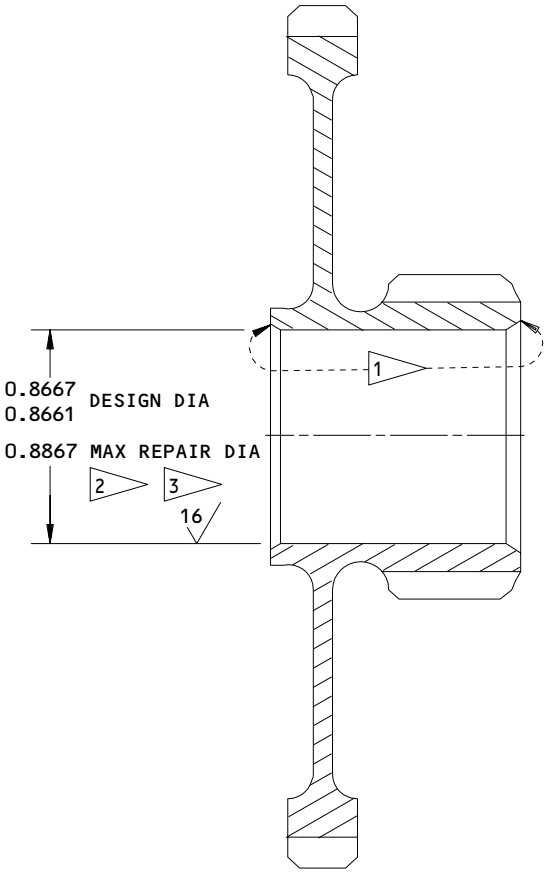
B. Shot peen using shot size, intensity and coverage shown (Ref 20-10-03).

C. Do a magnetic particle check of machined surface (Ref 20-20-01).

D. Build up machined surface with chrome plate (0.003-0.010 inch thickness) per F-15.03 (Ref 20-42-03).

E. Grind chrome plate to design limits shown (Ref 20-10-04).

F. Do a magnetic particle check of machined surface (Ref 20-20-01).



REFINISH

CADMIUM-TITANIUM ALLOY PLATE (F-15.32)
EXCEPT AS NOTED

1 NO FINISH THESE SURFACES (F-25.01)

2 BUILD UP WITH CHROME PLATE (SOPM 20-42-03). GRIND TO DESIGN DIMENSIONS AND FINISH. PLATING RUNOUT SHOULD BE 0.03-0.06 AT EDGES.

3 DO NOT REMOVE MORE THAN 0.010 INCH MATERIAL RADIALLY OR 0.020 ON THE DIAMETER.

REPAIR

REF 2 3

SHOT PEEN (SOPM 20-10-03):
SHOT NUMBER 230-780
INTENSITY 0.014A
COVERAGE 2.0

MATERIAL: 4340M STEEL
275-300 KSI

ALL DIMENSIONS ARE IN INCHES

256T2254-1
Pinion Gear Repair and Refinish
Figure 601

59366

INPUT COUPLING - REPAIR 8-1

256T2255-1
256T2287-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. If only the repair of the initial finish is necessary, refer to Refinish instructions, Fig. 601.

1. Bore Repair (Fig. 601) (256T2255-1)

   A. If dimensions on inside bore are more than wear limits, machine relief flush with end of splines 0.03 wide x 0.03 deep with a full radius bottom.

   B. Grind ID surface between end of bore and relief, as necessary, to remove defects. Keep to the limits and dimensions shown.

   C. Shot peen using shot size, intensity and coverage shown (Ref 20-10-03).

   D. Do a magnetic particle check of machined surface (Ref 20-20-01).

   E. Build up machined surface with chrome plate (0.003-0.010 inch thickness) per F-15.03 (Ref 20-42-03).

   F. Grind chrome plate to design limits shown (Ref 20-10-04).

   G. Do a magnetic particle check (Ref 20-20-01).

2. Bearing Seat Repair (Fig. 601)

   A. Machine bearing seat, as necessary, to remove defects. Keep to the limits and dimensions shown.

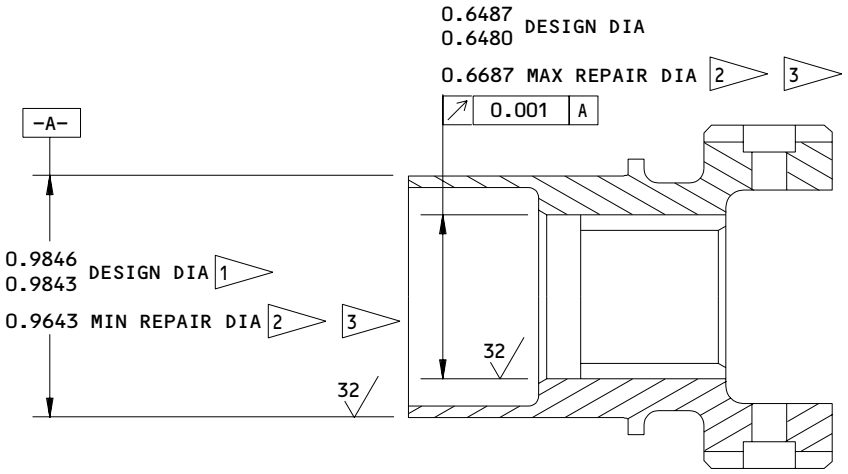
B. Shot peen using shot size, intensity and coverage shown (Ref 20-10-03).

C. Do a magnetic particle check of machined surface (Ref 20-20-01).

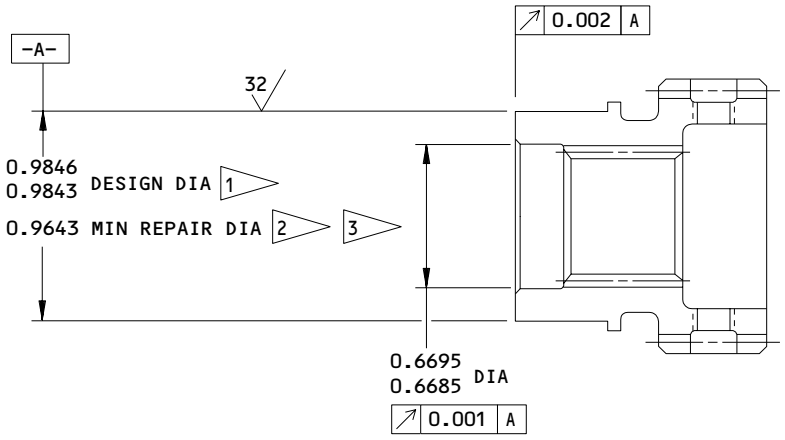
D. Build up machined surface with chrome plate (0.003-0.010 inch thickness) per F-15.03 (Ref 20-42-03).

E. Grind chrome palte to design limits shown (Ref 20-10-04).

F. Do a magnetic particle check (Ref 20-20-01).



256T2255-1



256T2287-1

256T2255-1
256T2287-1
Input Coupling Repair and Refinish
Figure 601 (Sheet 1)

REFINISH

CADMIUM PLATE (F-15.02) ALL OVER EXCEPT AS NOTED.

1 NO FINISH EXCEPT TEMPORARY COATING (F-25-01)

2 BUILD UP WITH CHROME PLATE (SOPM 20-42-03). GRIND TO DESIGN DIMENSIONS AND FINISH. PLATING RUNOUT SHOULD BE 0.03-0.06 AT EDGES

3 DO NOT REMOVE MORE THAN 0.010 INCH MATERIAL RADIALLY OR 0.020 ON THE DIAMETER

REPAIR

REF

125 2 3 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN (SOPM 20-10-03):
SHOT NUMBER 230-780
INTENSITY 0.014A
COVERAGE 2.0

MATERIAL: 4340 STEEL
180-200 KSI

ALL DIMENSIONS ARE IN INCHES

256T2255-1
256T2287-1
Input Coupling Repair and Refinish
Figure 601 (Sheet 2)

839952

DEAD SHAFT - REPAIR 9-1

256T2259-1, -2

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. If only the repair of the initial finish is necessary, refer to Refinish instructions, Fig. 601.

1. Bearing Seat Repair (Fig. 601)

A. Machine bearing seat, as necessary, to remove defects. Keep to the limits and dimensions shown.

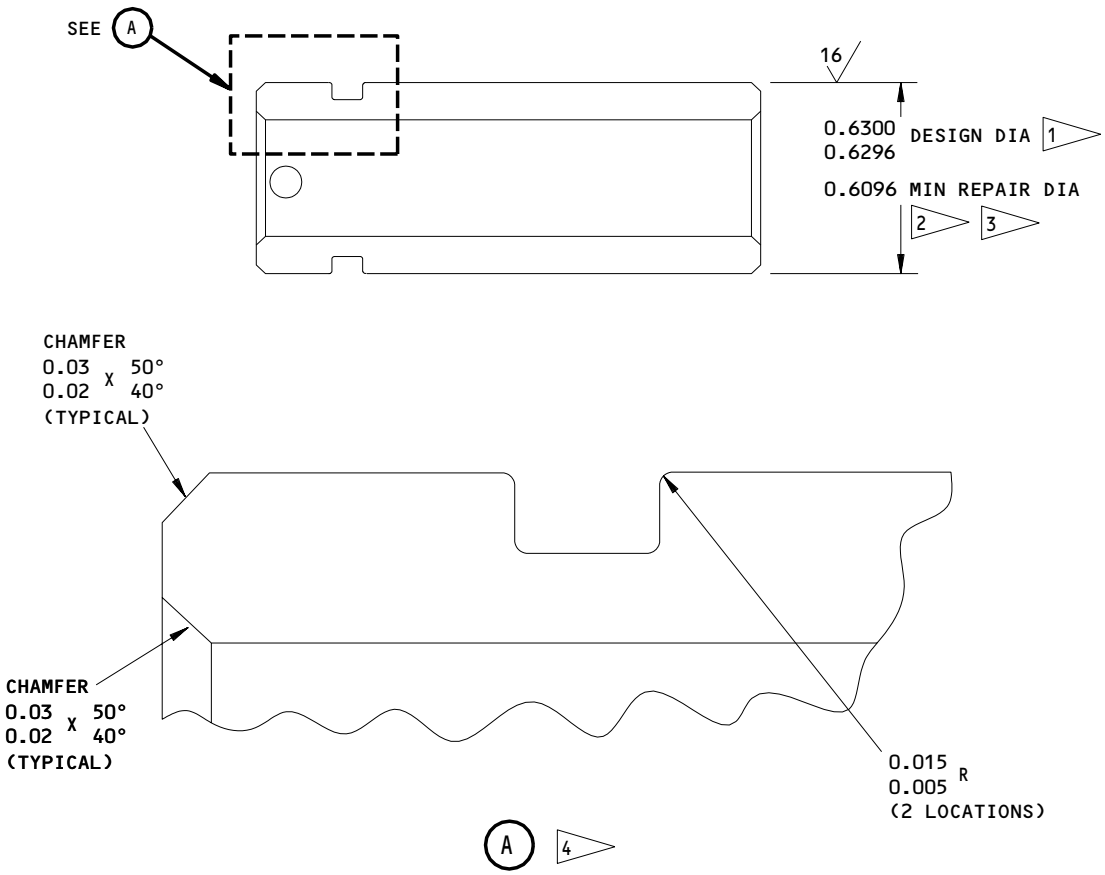
B. Shot peen using shot size, intensity and coverage shown (SOPM 20-10-03).

C. Do a magnetic particle check of machined surface (SOPM 20-20-01).

D. Build up machined surface with chrome plate (0.003-0.010 inch thickness) per F-15.03.3).

E. Grind chrome plate to design limits shown (SOPM 20-10-04).

F. Do a magnetic particle check of machined surface (SOPM 20-20-01).



REFINISH

ALL SURFACES EXCEPT OD: PHOSPHATE COAT (F-18.02) EXCEPT DELETE FOLLOW-UP OIL TREATMENT. APPLY BMS 10-11, TYPE 1 PRIMER (F-20.03), AND APPLY MIL-C-11796 CORROSION PREVENTIVE COMPOUND (F-19.03).

1 NO FINISH ON OUTSIDE DIAMETER APPLY LIGHT COAT OF GREASE, MIL-G-23827 FOR STORAGE AND TRANSPORTATION

2 BUILD UP WITH CHROME PLATE (SOPM 20-42-03). GRIND TO DESIGN DIMENSIONS AND FINISH. PLATING RUNOUT SHOULD BE 0.03-0.06 AT EDGES

3 DO NOT REMOVE MORE THAN 0.010 INCH MATERIAL RADIALLY OR 0.020 ON THE DIAMETER

3 FOR 256T2259-2 ONLY

REPAIR

REF 2 3

SHOT PEEN (SOPM 20-10-03):
SHOT NUMBER 230-780
INTENSITY 0.014A
COVERAGE 2.0

MATERIAL: 9310 STEEL, CARBURIZED
150-190 KSI CORE STRENGTH

ALL DIMENSIONS ARE IN INCHES

256T2259-1,-2
Dead Shaft Repair and Refinish
Figure 601

59369

FIRST STAGE PINION - REPAIR 10-1

256T2285-2, -3
256T2258-3, -4

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. If only the repair of the initial finish is necessary, refer to Refinish instructions, Fig. 601.

1. Bore Repair (Fig. 601)

   A. Grind bore, as necessary, to remove defects. Keep to the limits an dimensions shown.

   B. Shot peen using shot size, intensity and coverage shown (SOPM 20-10-03).

   C. Do a magnetic particle check of machined surface (SOPM 20-20-01).

   D. Build up machined surface with chrome plate per F-15.03.

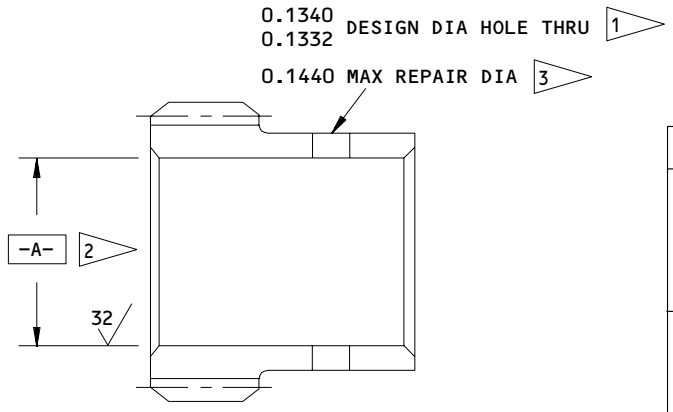
   E. Grind chrome plate to design limits shown (SOPM 20-10-04).

   F. Do a magnetic particle check of machined surface (SOPM 20-20-01).

2. Drive Pin Hole Repair (Fig. 601)

   A. If hole size is more than wear limits, match ream pinion and shaft drive pin hole. Keep to the limits and dimensions shown.

   B. Fabricate and install oversized pin as shown in Repair 14-1.



PART NUMBER	DIA -A-
256T2285-2 256T2285-3	0.6486 0.6481 DESIGN DIA 0.6686 MAX REPAIR DESIGN 4 5
256T2258-3	0.6691 0.6688 DESIGN DIA 0.6891 MAX REPAIR DIA 4 5
256T2258-4	0.6486 0.6483 DESIGN DIA 0.6686 MAX REPAIR DESIGN 4 5

REFINISH

256T2258-3,-4 -- CADMIUM-TITANIUM PLATE (F-15.32).

256T2285-2,-3 -- CADMIUM PLATE (F-15.23) EXCEPT AS NOTED.

1 DO NOT PLATE HOLES

2 DIMENSIONS APPLY AFTER PLATING

3 MATCH REPAIR DIAMETER WITH INPUT SHAFT. (REFER TO ASSEMBLY, FIG. 701) FABRICATE OVERSIZE DRIVE PIN AS SHOWN IN REPAIR 14-1

4 BUILD UP WITH CHROME PLATE (SOPM 20-42-03). GRIND TO DESIGN DIMENSIONS AND FINISH. PLATING RUNOUT SHOULD BE 0.03-0.06 AT EDGES

5 DO NOT REMOVE MORE THAN 0.010 INCH MATERIAL RADIALLY OR 0.020 ON THE DIAMETER

6 ON 256T2285-2 ONLY, COPPER PLATE (0.0005-0.0010 THICK) THIS SURFACE PER MIL-C-14550

REPAIR

REF 3 4 5

SHOT PEEN (SOPM 20-10-03):
SHOT NUMBER 230-780
INTENSITY 0.014A
COVERAGE 2.0

MATERIAL: 256T2258-3,-4 --
4340M STEEL
275-300 KSI
256T2285-2,-3 --
9310 STEEL, CARBURIZED
150-190 KSI CORE STRENGTH

ALL DIMENSIONS ARE IN INCHES

256T2258-3,-4
256T2285-2,-3
First Stage Pinion Repair and Refinish
Figure 601

59370

NAMEPLATE - REPAIR 11-1

256T2217-3
256T2277-1, -2

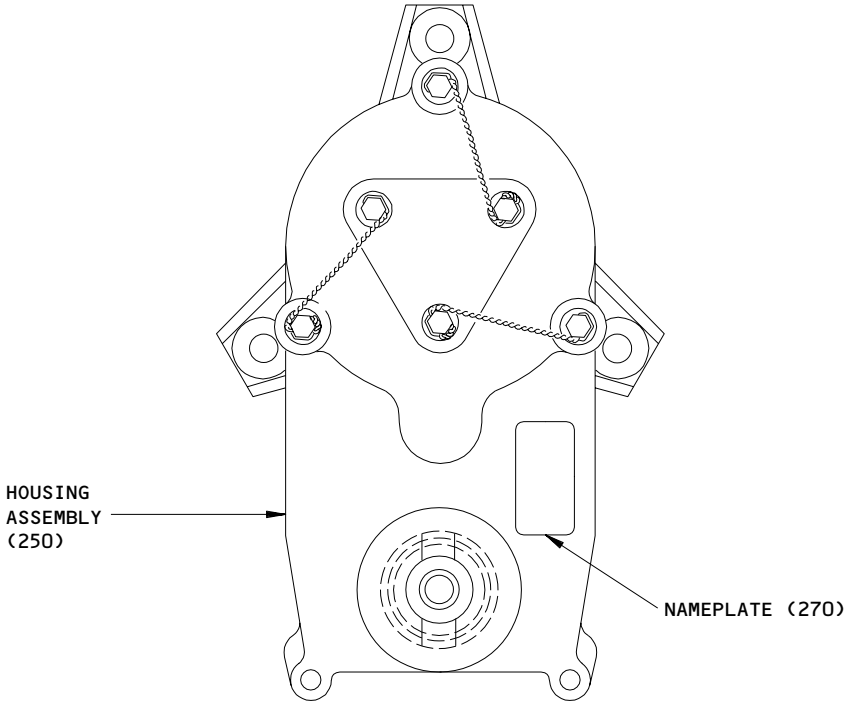
NOTE: Refer to REPAIR-GEN for a list of applicable standard practices.

1. Nameplate Replacement

   A. Remove damaged or defective nameplate (270, IPL Fig. 1).

   B. Steel stamp serial number and assembly part number per SOPM 20-50-10.

   C. Bond nameplate in approximate location shown in Fig. 601 per SOPM 20-50-12, Type 70.



ITEM NUMBERS REFER TO IPL FIG. 1

256T2217-3
256T2217-1,-2
Nameplate Replacement
Figure 601

59371

MISCELLANEOUS PARTS REFINISH - REPAIR 12-1

1. Repair of parts listed in Fig. 601 consists of restoration of the original finish.

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Drive pin (50)	4340 M Steel 275-300 ksi	Cadmium-titanium alloy plate and apply chromate post-plate treatment (F-15.01). Grind to 0.1328-0.1335 in. dia and 32 microinch finish per SOPM 20-10-02.
Access panel (90)	Al alloy	Chromic acid anodize (F-17.05) and apply one coat primer, BMS 10-11, Type 1 (F-20.02) all over.
Reaction plate (155A)	4340 M Steel 275-300 ksi	Cadmium-titanium alloy plate and apply chromate post-plate treatment (F-15.32) all over except no finish on ball grooves and ramps.
Shim (167)	301 or 302 stainless steel, 1/2H or full hard	Passivate (F-17.09).
Bias spring disk (170A), backup plate (210A)	15-5PH CRES 158-200 ksi	Passivate (F-17.09). Required surface finish: 12 microinches on large flat face.
Large disk (175A), small disk (190A)	17-7PH CRES 158-200 ksi	Passivate (F-17.09). Required surface finish: 12 microinches on flat faces.
Stator plate (195A,200)	17-7PH CRES 158-200 ksi	Passivate (F-17.09).
Retainer (220), lock ring (225)	4130 Steel 150-170 ksi	Cadmium plate (F-15.06).
Spline insert (262)	4340 Steel 150-170 ksi	Cadmium plate (F-15.02).

Refinish Details
Figure 601

INPUT PINION SHAFT - REPAIR 13-1

256T2286-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. If only the repair of the initial finish is necessary, refer to Refinish instructions, Fig. 601.

1. Bearing Seat Repair (Fig. 601)

A. Machine bearing seat, as necessary, to remove defects. Keep to the limits and dimensions shown.

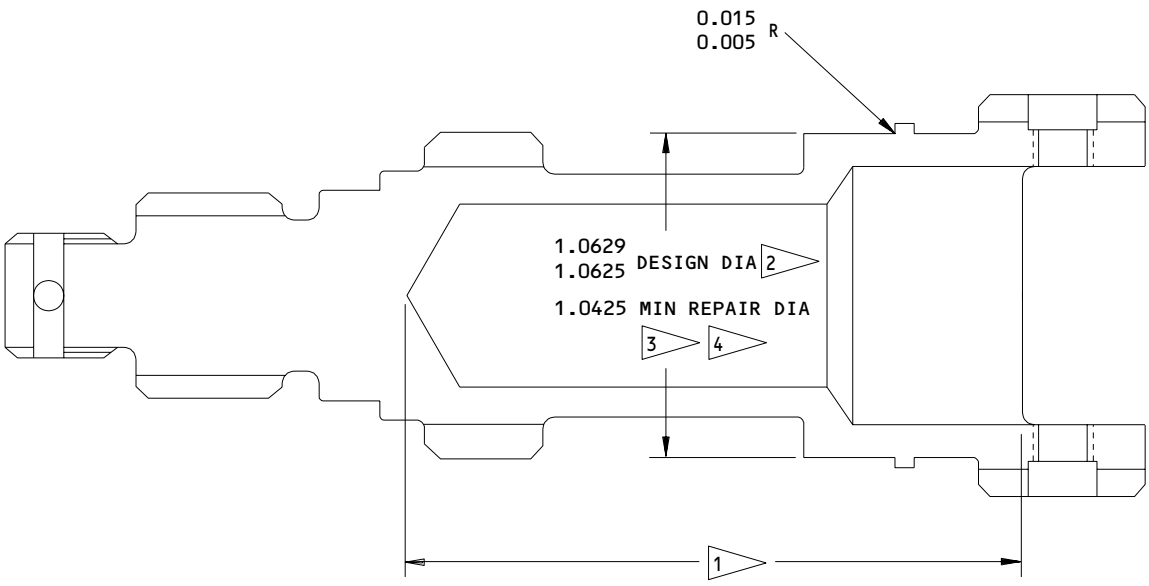
B. Shot peen using shot size, intensity and coverage shown (Ref 20-10-03).

C. Do a magnetic particle check of machined surface (Ref 20-20-01).

D. Build up machined surface with chrome plate (0.003-0.010 inch thickness) per F-15.03 (Ref 20-42-03).

E. Grind chrome plate to design limits shown (Ref 20-10-04).

F. Do a magnetic particle check of machined surface (Ref 20-20-01).



REFINISH

CADMIUM-TITANIUM PLATE (0.0005-0.0007 INCH) ALL OVER EXCEPT AS NOTED BY 2 (PLATING ON BORE OPTIONAL) PLUS PHOSPHATE TREATMENT(F-16.05) ALL OVER EXCEPT AS NOTED BY 2.

1. APPLY TWO COATS BMS 10-11, TYPE 1 PRIMER (F-20.03) PLUS CORROSION PREVENTATIVE COMPOUND (F-19.03)
2. APPLY NO FINISH (F-25.01)
3. BUILD UP WITH CHROME PLATE (SOPM 20-42-03). GRIND TO DESIGN DIMENSIONS AND FINISH. PLATING RUNOUT SHOULD BE 0.03-0.06 AT EDGES
4. DO NOT REMOVE MORE THAN 0.010 INCH MATERIAL RADIALLY OR 0.020 ON THE DIAMETER

REPAIR

REF 3 4

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN (SOPM 20-10-03):
SHOT NUMBER 230-780
INTENSITY 0.014A
COVERAGE 2.0

MATERIAL: 4340M STEEL
275-300 KSI

ALL DIMENSIONS ARE IN INCHES

256T2286-1
Input Pinion Shaft Repair and Refinish
Figure 601

840204

DRIVE PIN - REPAIR 14-1

256T2260-2

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. If only the repair of the initial finish is necessary, refer to Refinish instructions, Fig. 601.

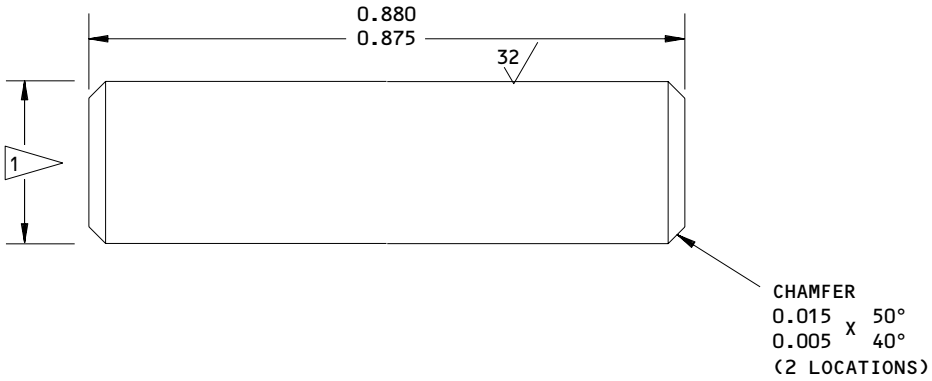
1. Repair (Fig. 601)

   A. Fabricate oversize pin as shown in Fig. 601. Keep to the dimensions and limits shown.

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

   C. Grind to dimensions and finish shown.

   D. Apply Cadmium-Titanium plate per F-15.01.



REFINISH

CADMIUM-TITANIUM ALLOY PLATE (0.0004-0.0006 THICKNESS) PER F-15.01.

1 FABRICATE PIN OUTSIDE DIAMETER TO CREATE A -0.0003/0.0012 FIT WITH REPAIR DIAMETER OF INPUT SHAFT (REF REPAIR 4-1) AND PINION (REF REPAIR 10-1)

REPAIR

REF 1

MATERIAL: 4340M STEEL
275-300 KSI

ALL DIMENSIONS ARE IN INCHES

256T2260-2
Oversize Drive Pin Fabrication
Figure 601

ASSEMBLY

1. Materials

NOTE: Equivalent substitutes may be used.

A. Grease -- MIL-G-23827 (SOPM 20-60-03)

B. Grease -- Aeroshell 22 (SOPM 20-60-03)

C. Sealant -- BMS 5-26 or MIL-S-8802 (SOPM 20-60-04)

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

E. Corrosion Preventive Compound -- MIL-C-11796, Class 1 (SOPM 20-60-02)

F. Lockwire -- MS20995C32

G. Oil -- Mobil SHF-62 (Mobil SHF-61, Chevron Synfluid 6, Albemarle Durasyn 166 are optional) (SOPM 20-60-03)

2. Equipment

NOTE: Equivalent substitutes may be used.

A. Output shaft spline adapter -- A27078-5 (part of A27078-1 tool set)

3. Lubrication (IPL Fig. 1)

A. Use MIL-G-23827 grease on assemblies 256T2220-3 thru -8, -10.

CAUTION: NO SUBSTITUTE GREASE IS ALLOWED FOR ASSEMBLIES WHERE USE OF AEROSHELL 22 GREASE IS SPECIFIED.

B. Use Aeroshell 22 grease on assemblies 256T2220-12, -13, -14 and 654T0387-20, -23 thru -28.

C. On assemblies 256T2220-3 thru -8, -10, apply grease to pinions and gears with a brush to form a uniform film of grease on the gear teeth. Apply 0.4 to 0.5 cc of grease to input pinion (38) or first-stage pinion (52). Apply 0.8 to 1.0 cc of grease to pinion gear (125). Apply 0.8 to 1.0 cc of grease to second-stage gear (135).

D. On assemblies 256T2220-12, -13, -14, and 654T0387-20, -23 thru -28, apply grease to pinions and gears with a brush to form a uniform film of grease on the gear teeth. Apply large quantities of grease to input pinions (38), pinion gear (125), second-stage gear (135).

E. Make sure that bearings (105, 130) are correctly lubricated prior to assembly.

F. On assemblies 256T2220-3 thru -8, -10, apply a light film of grease to flanged bearing (140) and thrust washers (120). Wipe parts with a clean, lint-free tissue to leave a thin film of grease. On assemblies 256T2220-12, -13, -14, and 654T0387-20, -23 thru -28, apply film of grease to flanged bearing (140) and thrust washer (120).

G. On assemblies 256T2220-3 thru -8, -10, make sure that bias spring disk (170A), large disk (175A), small disk (190A), stator plates (195A) and backup plate (210A) are clean and free of grease.

H. On assemblies 256T2220-3 thru -8, -10, apply a thin film of grease to detail parts of the no-back assembly (147) (except for parts listed in par. 3.F.). Wipe parts with a clean, lint-free tissue to leave a thin film of grease.

I. Do not lubricate the inside of the housing assembly (250) prior to assembly.

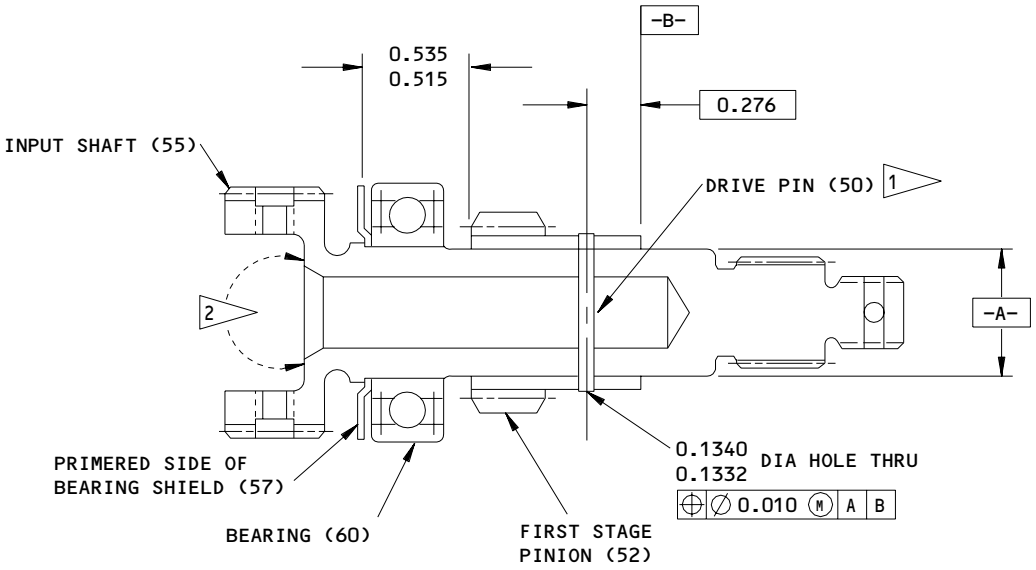
4. Assembly (IPL Fig. 1)

A. Assemble shaft/pinion assembly (45A) (Fig. 701)

(1) Slide bearing shield (57) and bearing (60) onto input shaft (55). Ensure that primered side of shield is facing outward. Fill cavity between shield and bearing with grease.

(2) Install first stage pinion (52) on input shaft. If pinion or input shaft has been replaced, drill holes for drive pin as shown in Fig. 701. Install drive pin (50) with wet sealant, BMS 5-26, to secure assembly.

(3) Apply corrosion preventive compound to shaft bore and to pin in bore.



1 INSTALL WITH WET SEALANT BMS 5-26

2 APPLY CORROSION PREVENTIVE COMPOUND, MIL-C-11796, CLASS I, TO SHAFT BORE AND PIN IN BORE

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

Shaft/Pinion Assembly Details
Figure 701

CAUTION: ON ASSEMBLIES 256T2220-3 THRU -8, -10, MAKE SURE THAT BIAS SPRING DISK (170A), LARGE DISK (175A), SMALL DISK (190A), STATOR PLATES (195A) AND BACKUP PLATE (210A) ARE CLEAN AND FREE OF GREASE CONTAMINATION. GREASE CONTAMINATION WILL RENDER THE NO-BACK ASSEMBLY INOPERATIVE.

ON ASSEMBLIES 256T2220-12, -13, -14, AND 654T0387-20, -23 THRU -28, DO NOT APPLY GREASE DIRECTLY TO THE FACES OF THE BIAS SPRING DISK (170A), LARGE DISK (175A), SMALL DISK (190A), STATOR PLATES (195A, 200) AND BACKUP PLATE (210A). GREASE APPLIED TO THESE FACES WILL MAKE THE NO-BACK ASSEMBLY INOPERATIVE.

B. Assemble no-back assembly (147) (Fig. 702).

(1) Position reaction plate (155A) in vertical position with spline end upward. Install wave washer (165A), shims (167) (thickness as measured during disassembly), and bias spring disk (170A) on reaction plate.

CAUTION: USE ONLY MOBIL SHF-62, MOBIL SHF-61, CHEVRON SYNFLUID 6, OR ALBEMARLE DURASYN 166 OIL TO SOAK THE 256T2272-1 STATOR PLATES, OR THE ASSEMBLY WILL NOT OPERATE CORRECTLY.

(2) For 256T2272-6 stator plates (195C) only, put the plates fully into SHF-62 oil, or the appropriate substitutes shown, for a minimum of 5 minutes before assembly. Keep the stator surfaces separated so that the fiber material on the stators is filled with oil. Remove from oil just before assembly.

(3) Install three stator plate assemblies (195A), alternating with three large disks (175A) on reaction plate, and secure with retaining ring (185).

(4) Position output shaft (230A) in vertical position with spline end upward. On assemblies 256T2220-3 thru -8, -10, apply a light film of grease to balls (150) and ball grooves in output shaft and reaction plate (155A). On assemblies 256T2220-12, -13, -14, and 654T0387-20, -23 thru -28, apply a film of grease to balls (150), and apply a large quantity of grease to ball grooves in output shaft and reaction plate (155A). Place one ball in each ball groove and install reaction plate and associated parts on output shaft.

(5) Install one stator plate assembly (195A) and the stator plate (200), if applicable, on the output shaft, then install three more stator plate assemblies (195A) alternating with two small disks (190A) (Fig. 702).

NOTE: If the stator plate (200) is installed, it must have a stator plate assembly on each side.

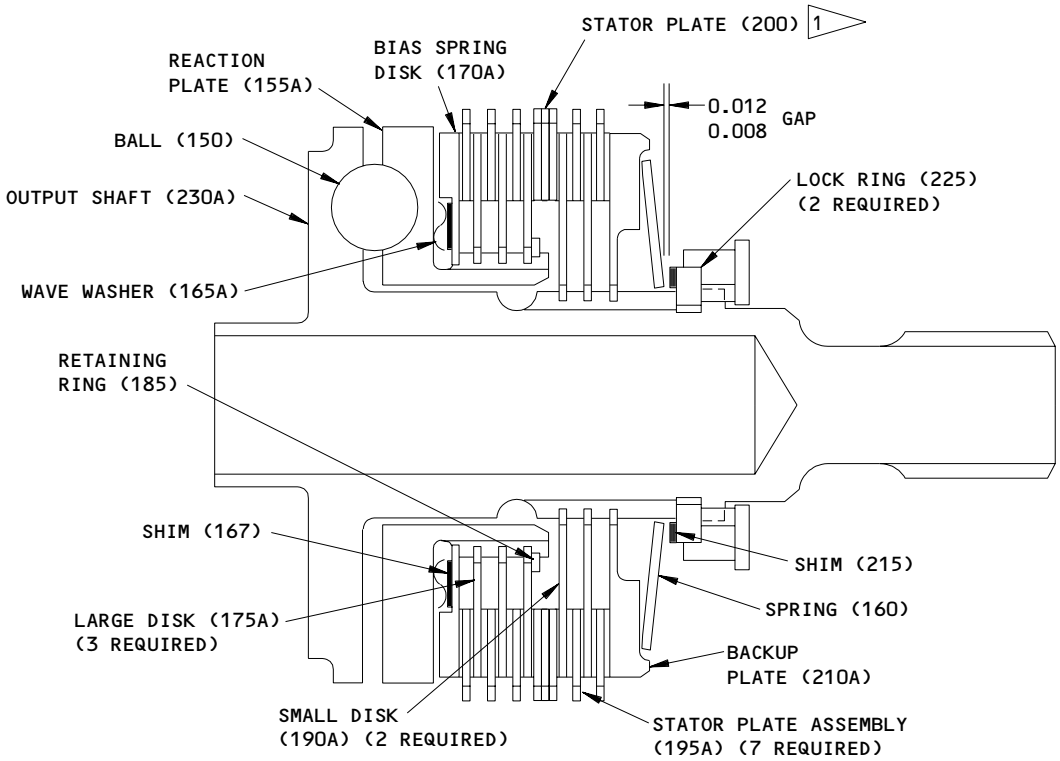
(6) Install backup plate (210A) and spring (160), then install two lock rings (225) in output shaft groove as shown.

(7) Measure clearance between spring and lock rings. Delaminate shim (215) as required to obtain 0.008-0.012 in. gap and install on shaft.

(8) Install lock ring retainer (220) and thrust washer (235).

(9) Mount no-back assembly in housing assembly (250) and install second stage gear (135) and bearings (140, 145). Check that tangs on output shaft and reaction plate engage slots in gear.

NOTE: These parts are being installed temporarily to permit the following tests to be carried out.



1 NO-BACK ASSEMBLY 256T2275-11 ONLY

No-Back Assembly Details
Figure 702

59375

(10) Using a 3/8-in. square drive on the second stage gear, apply torque in both clockwise and counterclockwise directions. Check that maximum breakout torque in either direction does not exceed 20 in-lb. Check that the no-load running torque is 10-20 in-lb.

(11) If no-load torque is out of range, remove no-back assembly from housing and adjust shim (167) thickness as required. If torque is below minimum, add shims. If torque is above maximum, reduce number of shims.

(12) Repeat steps (10) and (11) as required.

(13) Remove 3/8-in. square drive and attach spline adapter A27078-5 to output shaft.

NOTE: No-back assembly should be mounted in housing per step (9).

(14) Using a torque wrench, apply an increasing clockwise torque to the output shaft. Check that no-back locks up at 25 in-lb or less. Check that the second stage gear does not creep or slip as torque is increased from 25 in-lb to 300 in-lb.

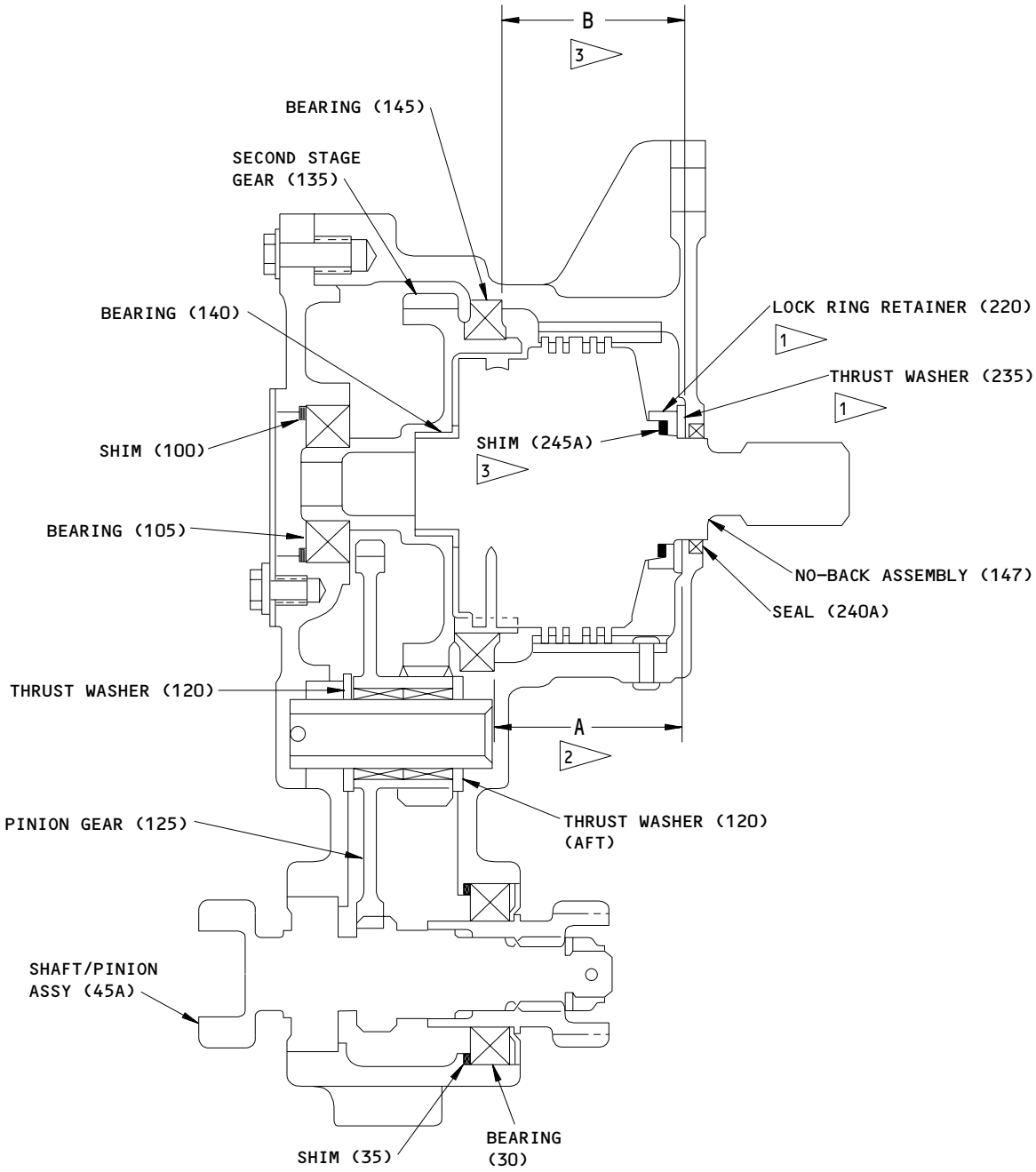
(15) Repeat step (14) in counterclockwise direction.

(16) Repeat steps (14) and (15) at least four more cycles in each direction to verify repeatability of locking.

(17) Remove second stage gear and no-back assembly from housing assembly.

C. Assemble offset gearbox assembly (Fig. 703).

(1) Install aft thrust washer (120) in place in housing assembly (250).



1 PART OF NO-BACK ASSEMBLY (147)

2 MEASURE DIMENSION IN HOUSING ASSEMBLY (250)

3 MEASURE BEFORE INSTALLING SHIM (245A)

ITEM NUMBERS REFER TO IPL FIG. 1

Offset Gearbox Assembly Details
Figure 703

59379

(2) Install bearings (130) in pinion gear (125), then insert pinion gear into lower part of housing.

NOTE: Pinion gear is not positioned in final installed location at this time.

NOTE: Steps (3) thru (8) provide instructions to determine shim (100, 245A) thicknesses. Optional method to determine shim (100, 245A) thicknesses are provided in steps (9) thru (15).

(3) Assemble second-stage gear (135), bearings (105, 140, 145) and no-back assembly (147) in a vertical stack with splined end of output shaft (230A) pointing upward. Measure dimension "B" from upper face of outer race of bearing (145) to upper face of thrust washer (235).

(4) Measure dimension "A" in housing from bearing (145) seat to thrust washer (235) seat.

(5) Add 0.007 inch to dimension "B", then subtract this sum from dimension "A" to determine required thickness of shim (245A). Install shim in no-back assembly between lock rings (225) and lock ring retainer (220).

(6) Install assembled parts (105, 135 thru 147, 245A) into housing. Check that endplay of output shaft is 0.005-0.009 inch.

(7) On assemblies 256T2220-3 thru -8, -10 and 654T0387-20, -23 thru -28, raise pinion gear (125) from lower part of housing into proper position. Install forward thrust washer (120). Insert spring pin (110) in dead shaft (115), then install dead shaft to fix pinion gear in place. Position shaft with spring pin horizontal to match recess in cover (95).

(8) Install housing cover (95) and measure clearance between outer race of bearing (105) and bearing seat in cover. Remove cover and delaminate and install shim (100) as required to provide 0.002-0.005 inch clearance.

NOTE: Optional method to determine shim (100, 245) thicknesses is provided in steps (9) thru (15).

(9) Put the gearbox housing assembly (250) in a holding fixture with the output shaft (230A) vertical and facing down. Attach housing cover (98) and leave access panel (90) off.

(10) Apply a downward hand pressure to the second-stage gear (135) through the access hole. Make sure the pressure is sufficient to seat bearing (145) against the housing (265). The no-back assembly (147) must move up and down freely.

(11) Measure the gap between the bearing (145) and the housing cover (98). Subtract the required 0.002- to 0.005-inch clearance from the gap measurement. This value determines the shim (100) thickness.

(12) Measure the output shaft (230A) free play to determine the shim (245A) thickness as follows:

(a) Apply upward pressure to the second-stage gear (135) though the access hole and hold it there.

(b) Put a dial indicator needle on the upper face of the output shaft (230A). This will let you measure the vertical travel of the no-back assembly (147).

(c) With continuous pressure on the second-stage gear (135), set the dial indicator to zero.

(d) Pull the output shaft upward with your hand. Write down the measurement on the dial indicator.

(e) Subtract the permitted free play of 0.005 to 0.009 inch from measurement found in (12)(d) to determine the required shim (245A) thickness.

(13) Remove the no-back assembly (147) from the housing (265).

(14) Delaminate shims (100, 245A) to get necessary thicknesses and install shims.

(15) Place the no-back assembly (147) in the housing (265). Make sure the gap between the shim (100) and the housing cover (95) is between 0.002 and 0.005 inch and the output shaft (230A) free play is between 0.005 and 0.009 inch.

(16) On assemblies 256T2220-3 thru -8, and -10, reinstall cover and secure with parts (80, 85). Install access panel (90) and secure with parts (75, 77). Tighten bolts (75, 80) to 20-30 in-lb. Install seal (240A) in housing assembly (250).

(17) On assemblies 256T2220-12, -13, -14, and 654T0387-20, -23 thru -28, remove the second-stage gear (135), bearings (105, 140, 145) and no-back assembly (147) from housing assembly (250). Install seal (240A) in housing (250).

(18) On assemblies 256T2220-12, -13, -14, and 654T0387-20, -23 thru -28, remove washer (235) from no-back assembly and install in housing assembly. Remove retainer (220) from no-back assembly and apply a bead of grease to inside diameter of retainer where it contacts lockring (225). Install retainer onto no-back assembly. (Grease is applied to prevent retainer from slipping off no-back assembly when the no-back assembly is reinstalled into housing assembly.)

(19) On assemblies 256T2220-12, -13, -14, and 654T0387-20, -23 thru -28, apply 2.0 to 2.5 ounces of grease on the inside of the housing assembly (250) around the output shaft opening. Insert the no-back assembly (147) into the housing assembly and apply pressure by hand to seat the no-back assembly against washer (235). Use a 0.35-inch plastic scraper to smooth out the grease that is extruded by the no-back assembly being inserted into the housing assembly. Smooth out the grease so that it is even with upper edge of the disk (170A). This will encase the no-back assembly friction disk stack-up in grease. Install the second-stage gear (135) and bearings (105, 140, 145) into the housing assembly.

(20) On assemblies 256T2220-12, -13, -14, and 654T0387-20, -23 thru -28, raise pinion gear (125) from lower part of housing into proper position. Install forward thrust washer (120). On assembly 256T2220-14, install packing (112) on dead shaft (115A). Insert spring pin (110) in dead shaft (115), then install dead shaft to fix pinion gear in place. Position shaft with spring pin horizontal to match recess in cover (95).

(21) Install the cover assembly (95) and the access panel (90).

(a) On assemblies 256T2210-3 thru -8, -10, -12, -13, and 654T0387-20, 23 thru -28, install the cover assembly on the housing assembly (250) with parts (80, 85). Install the access panel (90) with parts (75, 77). Tighten bolts (75, 80) to 20-30 lb-in.

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

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

(b) On assembly 256T2220-14, apply a thin layer of BMS 3-27 compound to the faying surface between the housing assembly (250) and the cover assembly (95), in the area between the packing (92) chamfer and the outer edge.

NOTE: You can apply the BMS 3-27 to the housing or the cover, but make sure that the compound does not go on the packing chamfer.

(c) Apply BMS 3-27 compound to the shank and under the heads of the bolts (80). Install the cover assembly and packing (92) on the housing assembly with the bolts and washers (85). Remove the unwanted compound from the assembly.

(d) Apply BMS 3-27 compound to the shank and under the heads of the bolts (75). Install the access panel (90) and the gasket (87) on the cover assembly with the bolts and washers (77).

(22) On assemblies 256T2220-3, -4, -5, -7, -8 and 654T0387-23, -24, -25, -27, -28, install shaft/pinion assembly (45A) in housing. On assemblies 256T2220-6, -10, -12, -13, -14, and 654T0387-20, -26 only, first install bearing shield (40A) and bearing (42) on input shaft/pinion (38), then install parts in housing.

(23) Install bearing shield (25) and bearing (30) on input coupling (20 or 22) with primered side of shield facing outward, then install assembly in housing. Secure temporarily with washer (15) and nut (10A).

(24) Determine clearance between bearing (30) and bearing seat in housing by measuring endplay of input coupling and shaft/pinion. Remove parts (10A thru 30). Delaminate and install shim (35) as required to obtain 0.002-0.015-inch end play. Reinstall parts (10A thru 30), with splined tangs of input coupling (20 or 22) oriented at approximately 45 degrees to cotter pin holes in input shaft. Tighten nut (10A) to 95-160 pound-inches. Do not exceed 160 pound-inches torque when aligning holes for cotter pin.

(25) Test unit per TESTING AND TROUBLE SHOOTING.

(26) Install cotter pin (5A) per 20-50-02.

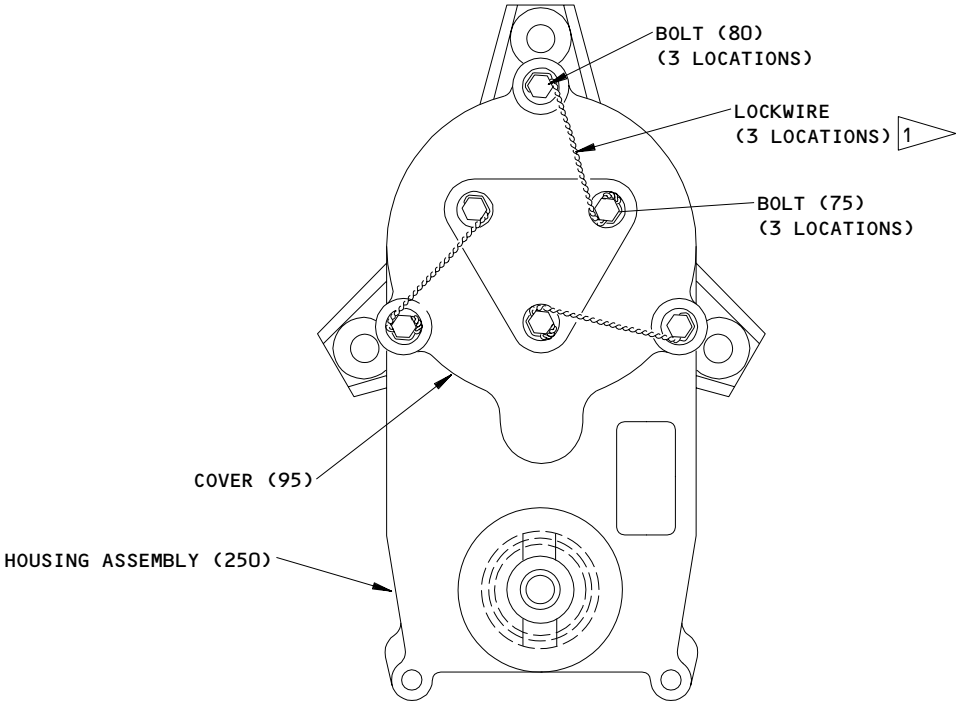
(27) Install lockwire per 20-50-02, double-twist method, as shown in Fig. 704.

(28) Seal cover-to-housing seam and access panel-to-cover seam with a bead of sealant.

(29) On assemblies 256T2210-3 thru -8, -10, -12, -13, and 654T0387-20, -23 thru -28, apply a bead of sealant to seal the seam between the cover assembly (95) and housing assembly (250), and the seam between the access panel (90) and the cover assembly.

5. Storage

A. Use standard industry practices and information contained in 20-44-02 to store this component.

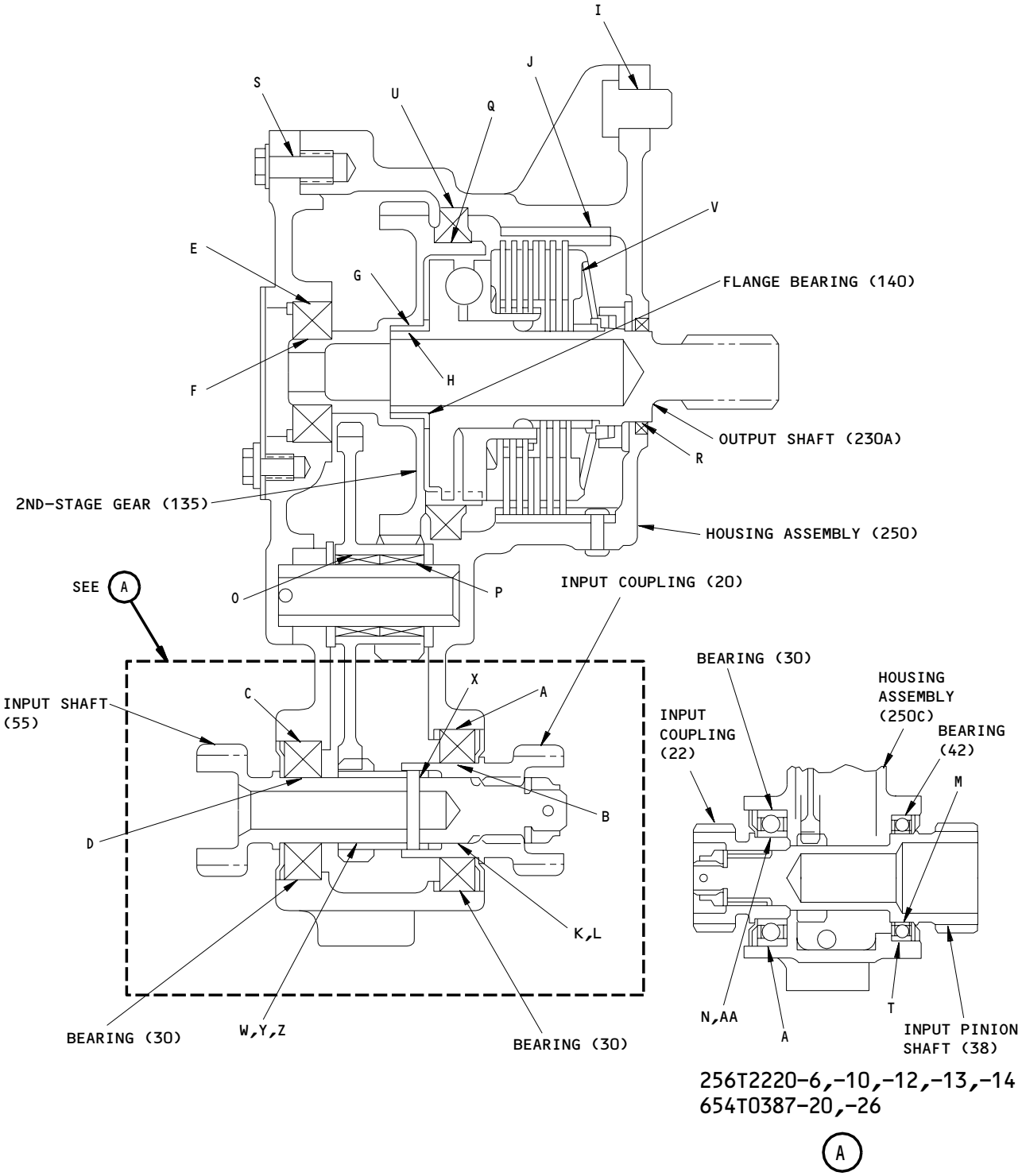


1 MS20995C32 LOCKWIRE
DOUBLE-TWIST METHOD

ITEM NUMBERS REFER TO IPL FIG. 1

Lockwiring Diagram
Figure 704

59519



Fits and Clearances
Figure 801 (Sheet 1)

Ref Letter Fig. 801	Mating Item No. IPL Fig. 1	Design Dimensions				Service Wear Limits		
		Dimensions		Assembly Clearance 1		Dimensions		Maximum Clearance
		Min	Max	Min	Max	Min	Max	
A	ID 250	1.6535	1.6545	0.0000	0.0015		1.6555	
	OD 30	1.6530	1.6535			1.6525		
B	ID 30	0.9839	0.9843	−0.0007	0.0000			
	OD 20	0.9843	0.9846					
C	ID 250	1.378	1.379	0.0000	0.0015		1.3800	0.0030
	OD 60	1.3775	1.3780			1.3770		
D	ID 60	0.6690	0.6693	−0.0004	0.0002			
	OD 55	0.6691	0.6694					
E	ID 95	1.3780	1.3790	0.0000	0.0015		1.3800	0.0030
	OD 105	1.3775	1.3780			1.3770		
F	ID 105	0.6690	0.6693	−0.0004	0.0002			
	OD 135	0.6691	0.6694					
G	ID 135	0.8810	0.8840	−0.0050	−0.0000			
	OD 140	0.8840	0.8860					
H	ID 140	0.765	0.767	0.004	0.008			
	OD 230A	0.759	0.761				0.763	
I	ID 250	0.377	0.378	0.0025	0.0045		0.379	0.0065
	OD 2	0.3735	0.3745			0.3725		
J	ID 265	2.959	2.960	−0.0020	−0.0005			
	OD 262	2.9605	2.9610					
K	ID 20	0.6480	0.6487	0.0008	0.0021		0.6494	0.0034
	OD 55A	0.6466	0.6472			0.6460		
L	ID 20	0.6480	0.6487	0.0000	0.0012		0.6494	0.0024
	OD 55,55B	0.6475	0.6480			0.6470		
M	ID 42	1.0623	1.0627	−0.0006	0.0002			
	OD 38	1.0625	1.0629					
N	ID 30A	0.9838	0.9842	−0.0008	−0.0001			
	OD 22	0.9843	0.9846					

Fits and Clearances
Figure 801 (Sheet 2)

59197

Ref Letter Fig. 801	Mating Item No. IPL Fig. 1	Design Dimensions				Service Wear Limits		
		Dimensions		Assembly Clearance 1		Dimensions		Maximum Clearance
		Min	Max	Min	Max	Min	Max	
O	ID 125 OD 130	0.8661	0.8667				0.8673	
P	ID 130 OD 115	0.6296	0.6300			0.6292		
Q	ID 145 OD 135	2.5621 2.5625	2.5627 2.5630	-0.0009	0.0002			
R	ID 240A OD 230A	0.873	0.875				0.877	
S	ID 95 OD 80	0.22 0.1890	0.23 0.1895	0.0305	0.0410	0.188	0.24	0.052
T	ID 250C OD 42	1.5000 1.4995	1.5010 1.5000	0.0000	0.0015	1.4990	1.5020	0.0030
U	ID 250 OD 145	3.2500 3.2492	3.2508 3.2500	0.0000	0.0016	3.2484	3.2516	0.0032
V	ID 210A OD 160A	2.26 2.25	2.28 2.27	-0.01	0.03	2.24	2.29	0.05
W	ID 52A OD 55A	0.6688 0.6680	0.6691 0.6685	0.0003	0.0011	0.6675	0.6694	0.0019
X	ID 52,55 OD 50	0.1332 0.1328	0.1340 0.1335	-0.0003	0.0012	0.1321	0.1348	0.0027
Y	ID 52B OD 55B	0.6483 0.6475	0.6486 0.6480	0.0003	0.0011	0.6470	0.6489	0.0019
Z	ID 52,52C OD 55,55B	0.6481 0.6475	0.6486 0.6480	0.0001	0.0011	0.6470	0.6491	0.0021
AA	ID 30 OD 22	0.9839 0.9843	0.9843 0.9846	-0.0007	0.0000			

1 NEGATIVE VALUES DENOTE INTERFERENCE FIT

2 BOLT BACB30LT6 - USED ON INSTALLATION

ALL DIMENSIONS ARE IN INCHES

Fits and Clearances
Figure 801 (Sheet 3)

FOR TORQUE VALUES OF STANDARD FASTENERS, REFER TO 20-50-01			
ITEM NO. IPL FIG. 1	NAME	TORQUE	
		POUND-INCHES	POUND-FEET
10A	NUT	95-160 ▷1◁	
75,80	BOLT	20-30	

▷1◁ 160 LB-IN. MAXIMUM TORQUE TO ALIGN HOLE FOR COTTER PIN

Torque Table
Figure 802

59198

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

NOTE: Equivalent substitutes may be used.

1. A27078-5 -- Output Shaft Spline Adapter *[1]

2. Deleted

3. A27070-4 -- Bearing Puller Assembly *[2]

*[1] Part of A27078-7 LE Slats Rotary Actuator and Gearbox Spline Adapters tool set

*[2] Part of A27070-1 LE Slat Drive Rotary Actuator/Offset Gearbox Assembly Equipment

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

S5211 NIPPON THOMPSON CO LTD IKO BEARINGS
19-19 TAKANAWA 2 CHOME MINATO-KU
TOKYO, 108 JAPAN

02697 PARKER-HANNIFIN CORP SEAL GROUP O-RING DIV
2360 PALUMBO DRIVE PO BOX 11751
LEXINGTON, KENTUCKY 40509
FORMERLY V17506 IN CLEVELAND, OHIO
FORMERLY PARKER SEAL CO OF PARKER-HANNIFIN CORP O-RING DIV

0993B SUPERIOR SPRING
2447 MERCED
SOUTH EL MONTE, CALIFORNIA 91733

21335 TORRINGTON CO FAFNIR BEARING DIV
59 FIELD STREET
TORRINGTON, CONNECTICUT 06790-1008
FORMERLY FAFNIR BRG AND TEXTRON INC FAFNIR DIV IN
NEW BRITAIN, CONNECTICUT

21760 SCHATZ MANUFACTURING CO
FAIRVIEW AVENUE PO BOX 1191
POUGHKEEPSIE, NEW YORK 12601
FORMERLY FEDERAL BRG CO AND SCHATZ MFG CO V53268
FORMERLY SCHATZ MFG CO

27737 INA BEARING COMPANY INC
1 INA DRIVE
CHERAW, SOUTH CAROLINA 29520
FORMERLY FAFNIR INA NEEDLE ROLLER BEARING CO.

29337 HOOVER GROUP INC BALL AND ROLLER DIV
2220 PENDLEY ROAD PO BOX 899
CUMMING, GEORGIA 30130-8671
FORMERLY IN ERWIN, INDIANA, HOOVER UNIVERSAL CO

38443 MRC BEARINGS
402 CHANDLER STREET
JAMESTOWN, NEW YORK 14701-3802
FORMERLY MARLIN-ROCKWELL CORP DIV TRW AND TRW INC

40920 MPB MINIATURE PRECISION BEARING DIV
PRECISION PARK PO BOX 547
KEENE, NEW HAMPSHIRE 03431
FORMERLY MPB CORP AND MINIATURE BRG DIV MPB CORP

VENDORS

43334 GENERAL MOTORS CORP DELCO MORAINE DIV
2509 HAYES AVENUE
SANDUSKY, OHIO 44870-5359
FORMERLY IN BRISTOL, CONNECTICUT
FORMERLY NEW DEPARTURE-HYATT BRG DIV GEN MOTORS CORP

43991 FAG BEARING INCORPORATED
118 HAMILTON AVENUE
STAMFORD, CONNECTICUT 06904
FORMERLY NORMA-HOFFMAN BEARING CORPORATION
FORMERLY NORMA FAG BEARINGS CORPORATION

51829 CR INDUSTRIES, CHICAGO RAWHIDE MFG CO
MACON COUNTY, INDUSTRIAL PARK HWY 64 W BYP
FRANKLIN, NORTH CAROLINA 28734

52676 SKF INDUSTRIES INC
1100 FIRST AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406-1312
FORMERLY ATLAS BALL DIV OF SKF IND V70648 AND VB0017
FORMERLY SKF INDUSTRIES INC FRANDFORD PLANT
FORMERLY IN PHILADELPHIA, PENNSYLVANIA

60380 TORRINGTON CO BEARINGS DIV SUBSIDIARY OF INGERSOLL-RAND CORP
59 FIELD STREET PO BOX 1008
TORRINGTON, CONNECTICUT 06790-1008
FORMERLY TORRINGTON BEARING COMPANY

70472 BARNES GROUP INC
123 MAIN STREET
BRISTOL, CONNECTICUT 06010-6307
FORMERLY ASSOCIATED SPRING CORP

78118 SPLIT BALL BEARING DIV OF MPB CORP
HIGHWAY 4
LEBANON, NEW HAMPSHIRE 03766-7301

80756 SPIROLOX DIV OF KAYDON CORP
29 CASSENS COURT
FENTON, MISSOURI 63026-2543
FORMERLY RAMSEY CORP, TRW INC RAMSEY CORP IN MANCHESTER MO.

82402 ROLLS-ROYCE GEAR SYSTEMS INC
6125 SILVER CREEK DR PO BOX 680910
PARK CITY, UTAH 84068
FORMERLY LUCAS WESTERN; FORMERLY GEAR SYSTEMS

VENDORS

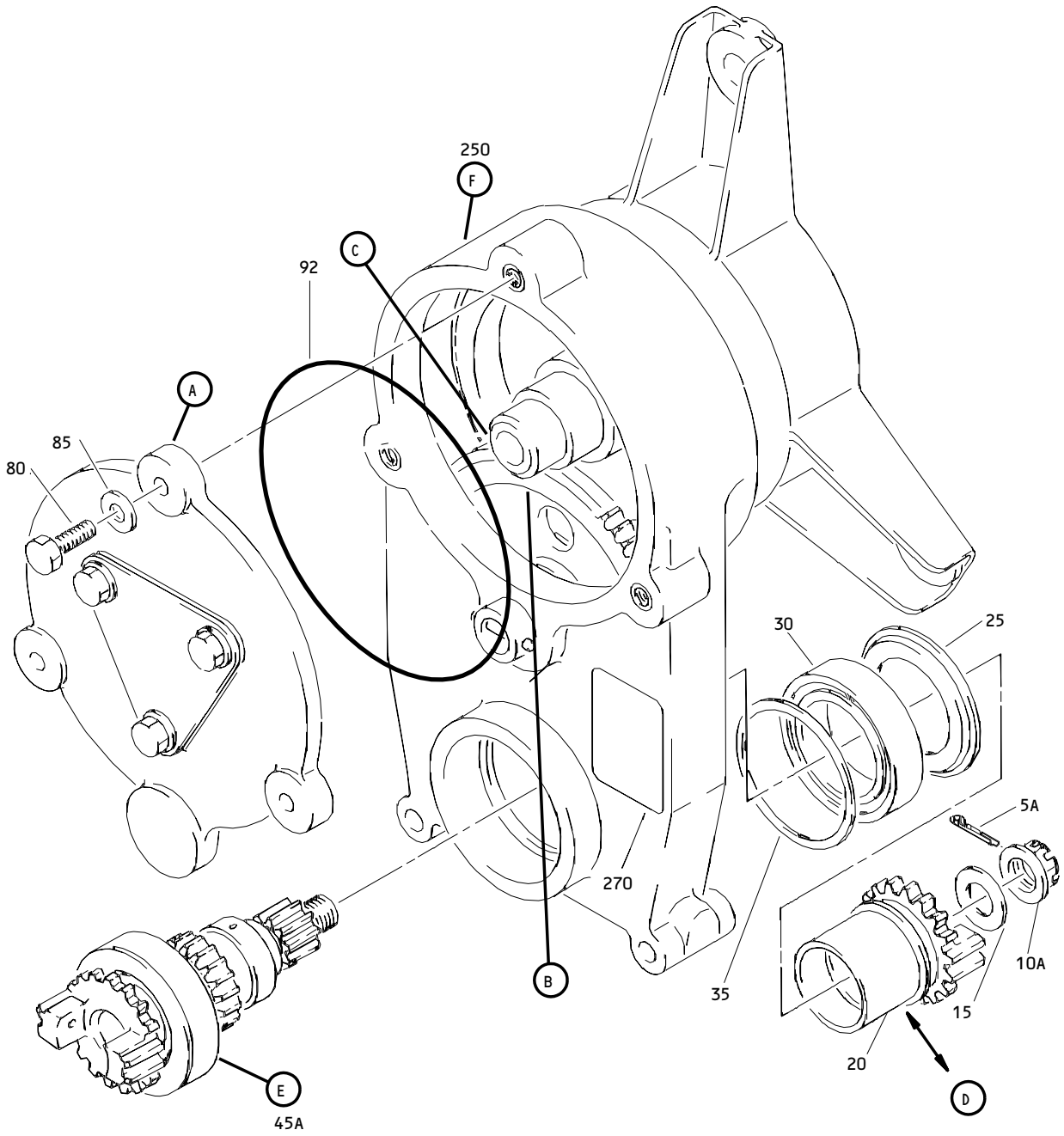
97820 BUSAK AND SHAMBAN INC BEARING DIV
711 MITCHELL ROAD PO BOX 665
NEWBURY PARK, CALIFORNIA 91320-2214
FORMERLY IN CULVER CITY, CALIF; FORMERLY SHAMBAN W S & CO

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
AN960-616		1	15	1
AN960D10		1	77	3
		1	85	3
BACB10BA17		1	105	1
BACB10BA17PP		1	60	1
BACB10BB25PP		1	30	1
BACB10T2-24A		1	150	3
BCREF106931		1	42E	1
BCREF111424		1	42F	1
BCREF5730		1	145	1
BCREF7727		1	42	1
B2250-073		1	160	1
C005RRPP1P28LY1		1	30	1
C005RRP0ZZ		1	30	1
C103RRP0		1	105	1
C103RRP0ZZ		1	60	1
C103RRP1P17LY19		1	60	1
C103RR1P17LY331		1	105	1
FWJ162212		1	130B	2
KT162212EGB2		1	130C	2
KZK16X22X12		1	130	2
KZK16X22X12AG		1	130A	2
LL103KS		1	60	1
LL103KSG20		1	60	1
MS14145-6		1	10A	1
MS14145L6		1	10B	1
MS171501		1	110A	1
MS21209F1-10		1	97	3
MS21209F1-15		1	255	3
MS24665-283		1	5A	1
MS90354-0505		1	260	2
MS9048-074		1	110	1
NAS6703H2		1	75	3
NAS6703H5		1	80	3
PKTLL005P1		1	30	1
PKTLL103P1		1	60	1
PKT103P1		1	105	1
RS137C		1	185	1
R9103KA4298		1	105	1
R9103PPA4298		1	60	1
R9305NPPFS464		1	30A	1
R9305PPA4298		1	30	1
S1724MCZZ3P5-11		1	42E	1
TWL41-52S12-20L		1	145	1
T087-1A		1	235	1

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
103KS		1	105	1
1905LLT1C1-01		1	30	1
2-014N756-75		1	112	1
2-042N756-75		1	92	1
256T2210-9		1	145A	1
256T2217-3		1	270B	1
256T2220-10		1	1G	RF
256T2220-12		1	1J	RF
256T2220-13		1	1T	RF
256T2220-14		1	1U	RF
256T2220-3		1	1A	RF
256T2220-4		1	1B	RF
256T2220-5		1	1C	RF
256T2220-6		1	1D	RF
256T2220-7		1	1E	RF
256T2220-8		1	1F	RF
256T2220-9		1	145C	1
256T2250-1		1	250	1
256T2250-10		1	265C	1
256T2250-11		1	250D	1
256T2250-12		1	265D	1
256T2250-13		1	250E	1
256T2250-14		1	265E	1
256T2250-2		1	265	1
256T2250-4		1	250A	1
256T2250-5		1	250B	1
256T2250-6		1	265A	1
256T2250-8		1	265B	1
256T2250-9		1	250C	1
256T2251-1		1	95	1
256T2251-3		1	98	1
256T2252-5		1	45B	1
256T2252-6		1	45C	1
256T2252-7		1	55A	1
256T2252-8		1	55B	1
256T2253-1		1	135	1
256T2254-1		1	125	1
256T2255-1		1	20	1
256T2256-1		1	230A	1
256T2256-2		1	230B	1
256T2258-3		1	52A	1
256T2258-4		1	52B	1
256T2259-1		1	115	1
256T2259-2		1	115A	1
256T2260-2		1	50	1

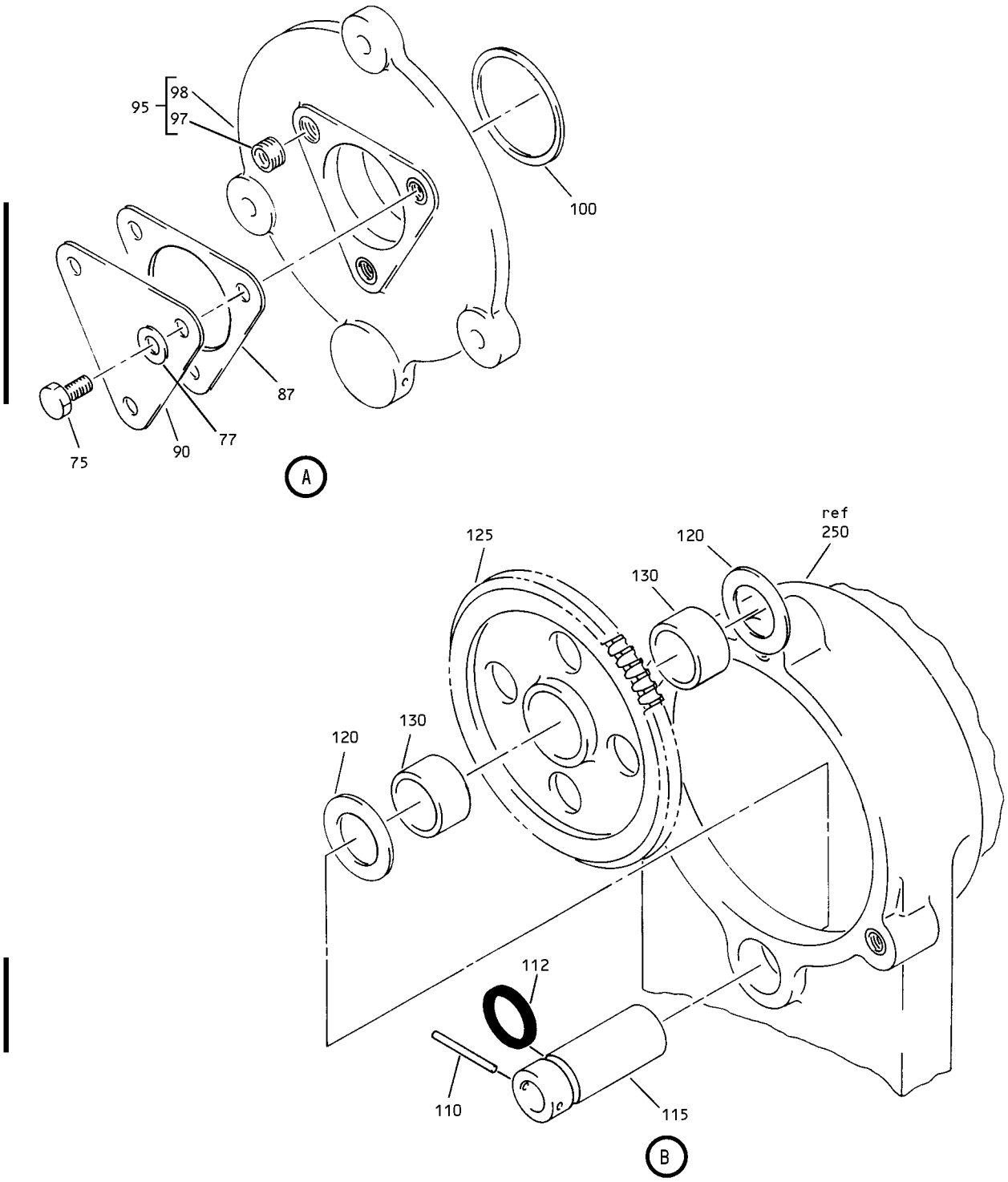
PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
256T2262-2		1	175A	3
256T2263-2		1	190A	2
256T2264-2		1	170A	1
256T2265-4		1	195A	7
256T2266-1		1	225	2
256T2267-1		1	262	1
256T2268-1		1	57	1
256T2269-1		1	25	1
256T2270-1		1	220	1
256T2272-2		1	195E	7
256T2272-6		1	195C	7
256T2273-1		1	155A	1
256T2274-1		1	167	1
256T2275-1		1	147	1
256T2275-11		1	147E	1
256T2275-3		1	147A	1
256T2275-5		1	147B	1
256T2275-9		1	147D	1
256T2276-1		1	45A	1
256T2276-2		1	55	1
256T2277-1		1	270	1
256T2277-2		1	270C	1
256T2278-1		1	120	2
256T2279-1		1	140	1
256T2281-1		1	90	1
256T2282-2		1	210A	1
256T2282-3		1	210B	1
256T2284-2		1	45D	1
256T2285-2		1	52C	1
256T2285-3		1	52	1
256T2286-1		1	38	1
256T2287-1		1	22	1
256T2288-1		1	40A	1
256T2289-1		1	160A	1
256T2290-1		1	215B	1
		1	245E	1

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
256T2290-2		1	35A	1
256T2290-3		1	100A	1
256T2291-1		1	165B	1
256T2293-1		1	87	1
3L03		1	105	1
3TKRZZ17-24SLY1		1	42	1
42356-116		1	165A	1
49001-41		1	215C	1
		1	245B	1
49001C42		1	215	1
		1	245A	1
49001C48		1	100	1
49001C60		1	35	1
6003		1	105	1
6003J		1	105	1
6003TT		1	60	1
654T0387-20		1	1R	RF
654T0387-23		1	1K	RF
654T0387-24		1	1L	RF
654T0387-25		1	1M	RF
654T0387-26		1	1N	RF
654T0387-27		1	1P	RF
654T0387-28		1	1Q	RF
8620		1	240A	1
9103-1B1-01		1	105	1
9103K		1	105	1
9103LLT1C1-01		1	60	1
9103NPPFS428		1	60	1
9305PPFS428		1	30	1
993L03		1	60	1



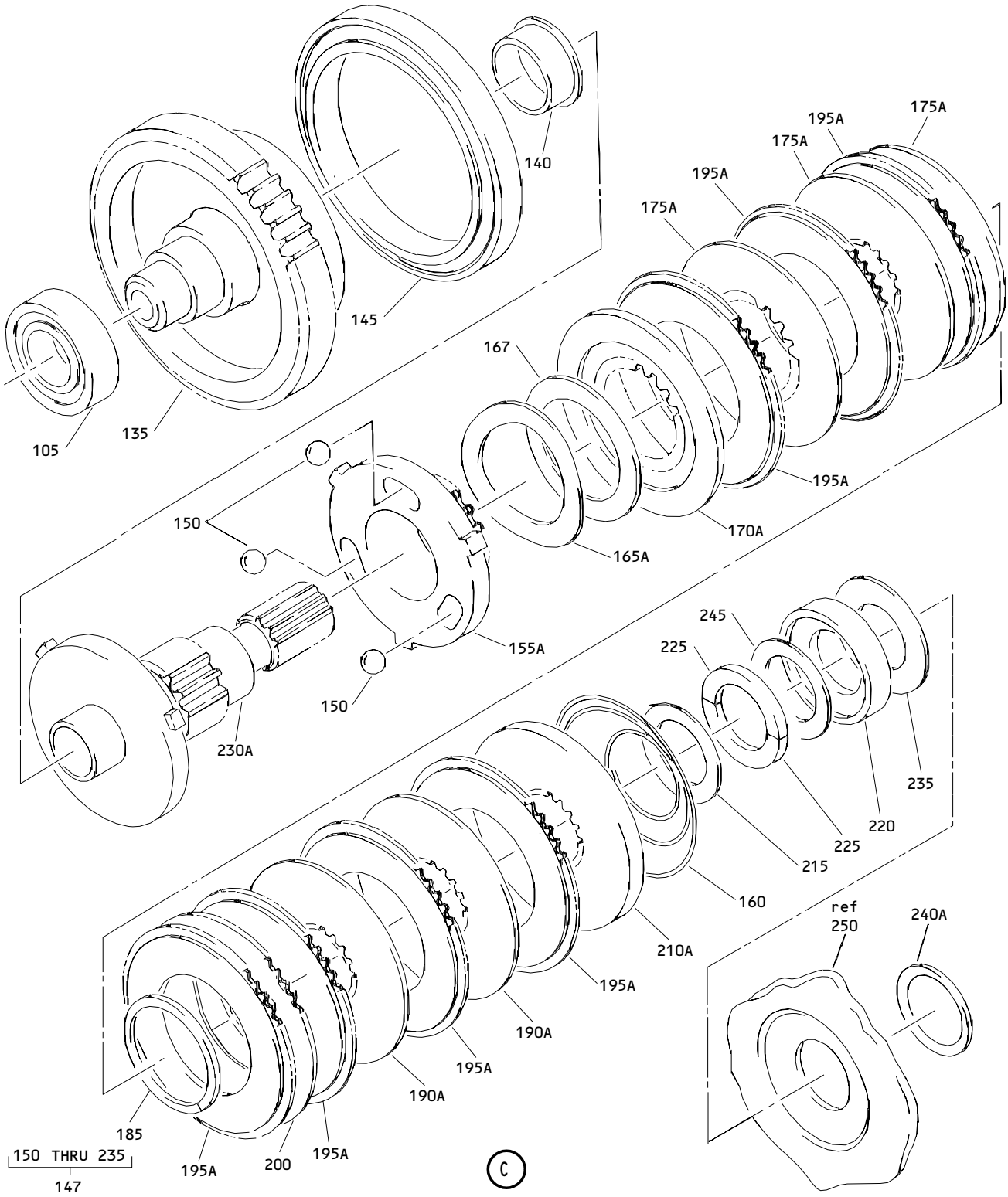
Outboard Leading Edge Slat Drive Offset Gearbox Assembly
Figure 1 (Sheet 1)

T64754



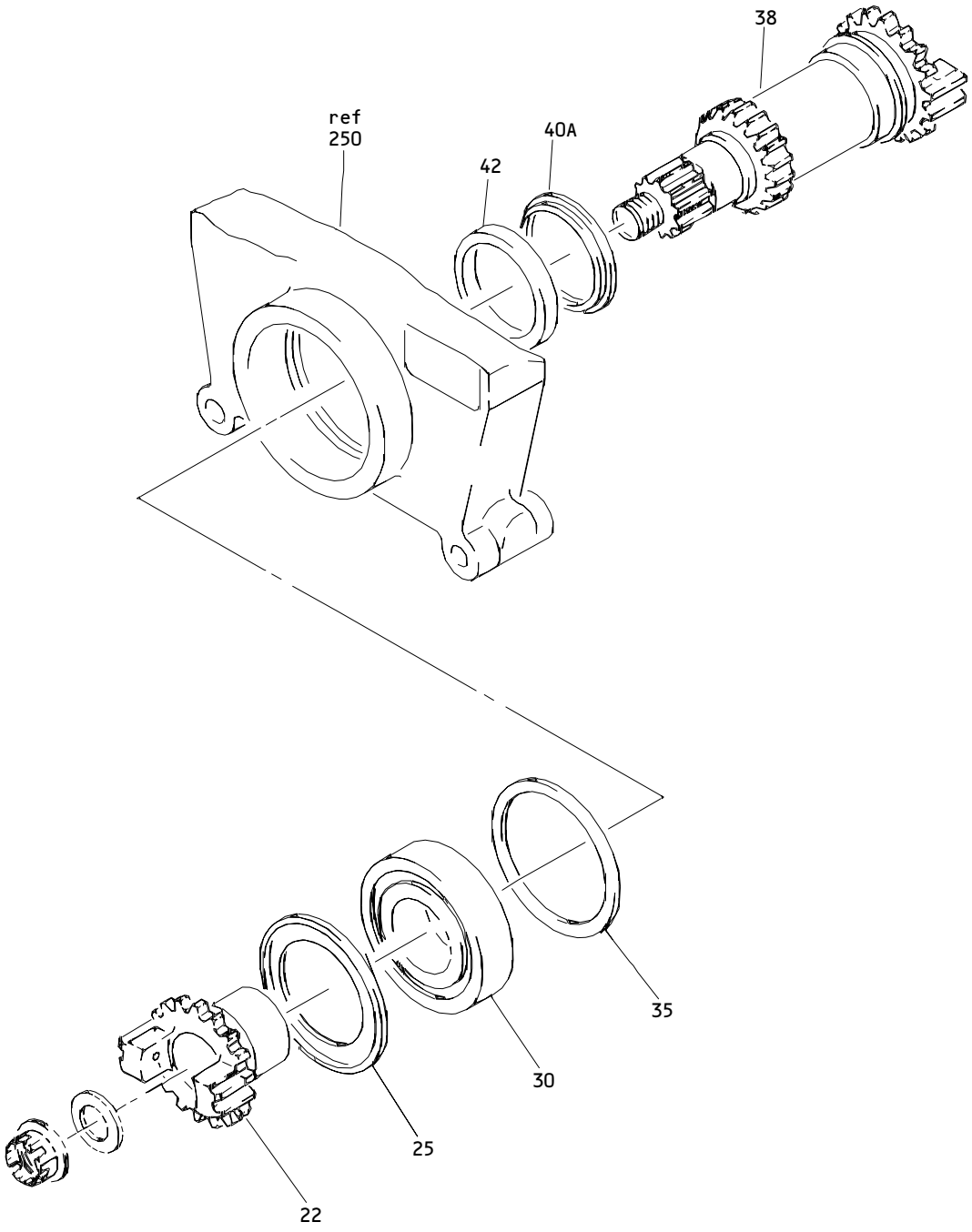
Outboard Leading Edge Slat Drive Offset Gearbox Assembly
Figure 1 (Sheet 2)

T64755



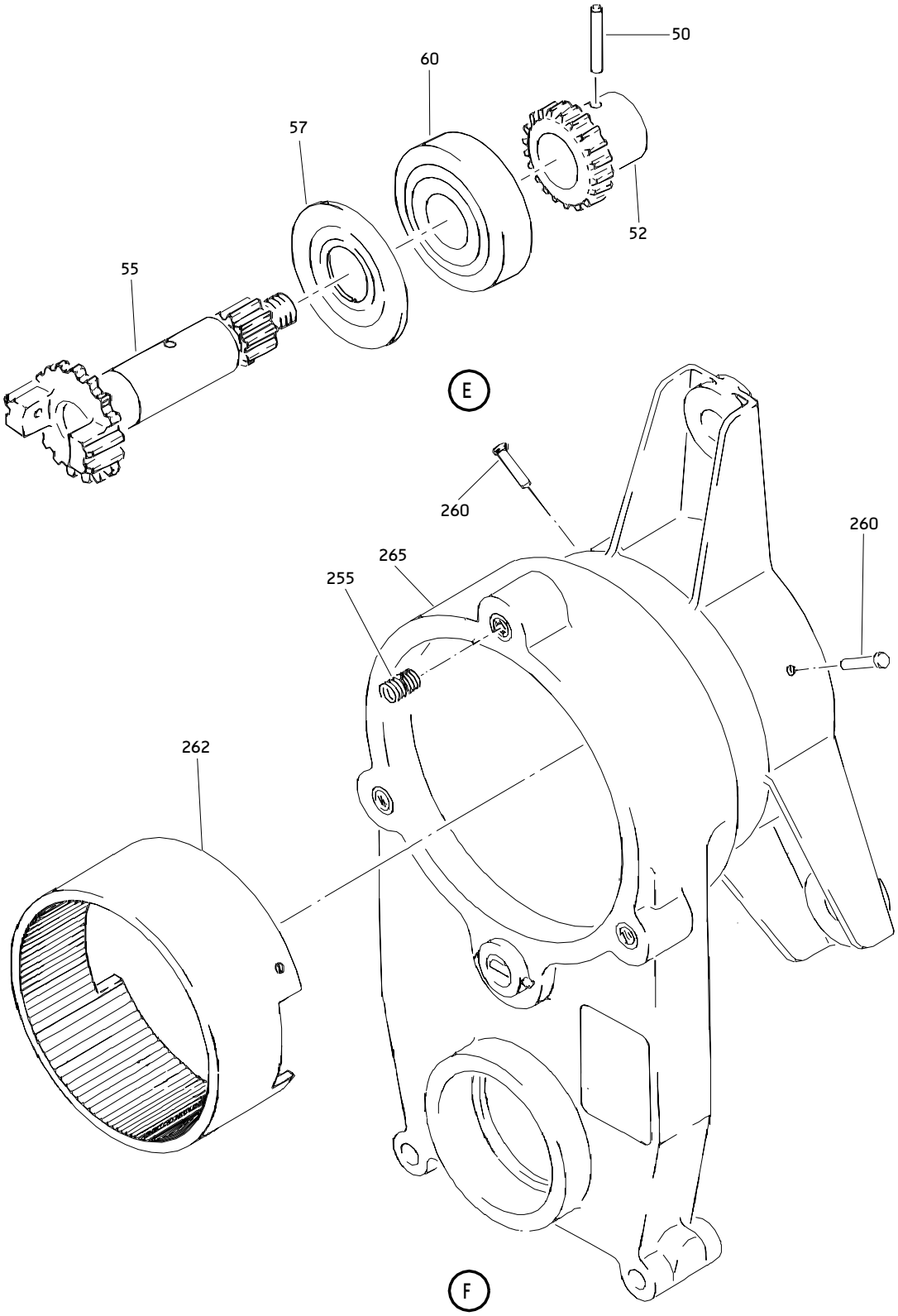
Outboard Leading Edge Slat Drive Offset Gearbox Assembly
Figure 1 (Sheet 3)

T64756



Outboard Leading Edge Slat Drive Offset Gearbox Assembly
Figure 1 (Sheet 4)

T96077



Outboard Leading Edge Slat Drive Offset Gearbox Assembly
Figure 1 (Sheet 5)

U10982

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-1	256T2220-1		DELETED		
-1A	256T2220-3		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (PRE SB 767-27-16) (PRE SB-767-27A0095R3)	A	RF
-1B	256T2220-4		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (POST SB 767-27-16) (PRE SB-767-27A0095R3)	B	RF
-1C	256T2220-5		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (PRE SB-767-27A0095R3)	C	RF
-1D	256T2220-6		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (PRE SB 767-27A0095R1) (PRE SB-767-27A0095R3)	D	RF
-1E	256T2220-7		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (PRE SB-767-27A0095R3)	E	RF
-1F	256T2220-8		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (PRE SB-767-27A0095R3)	F	RF
-1G	256T2220-10		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (POST SB 767-27A0095R1) (PRE SB-767-27A0095R3)	G	RF
-1H	256T2220-11		DELETED		
-1J	256T2220-12		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (POST SB 767-27A0095R3)	J	RF
-1K	654T0387-23		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (POST SB-767-27A0095R3)	K	RF
-1L	654T0387-24		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (POST SB-767-27A0095R3)	L	RF
-1M	654T0387-25		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (POST SB-767-27A0095R3)	M	RF
-1N	654T0387-26		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (POST SB-767-27A0095R3)	N	RF
-1P	654T0387-27		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (POST SB-767-27A0095R3)	P	RF

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	-1Q	654T0387-28		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (POST SB-767-27A0095R3)	Q	RF
	-1R	654T0387-20		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET (POST SB-767-27A0095R3)	R	RF
	-1S	256T2220-12		DELETED		
R	-1T	256T2220-13		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET	S	RF
R	-1U	256T2220-14		GEARBOX ASSY-OUTBD LE SLAT DRIVE OFFSET	T	RF
	5	MS24665-132		DELETED		
	5A	MS24665-283		.PIN-COTTER		1
	10	BRH10-6		DELETED		
	10A	MS14145-6		.NUT- (OPT ITEM 10B)		1
	-10B	MS14145L6		.NUT- (OPT ITEM 10A)		1
	15	AN960-616		.WASHER		1
	20	256T2255-1		.COUPLING-INPUT	A-C,E,F,K-M,P,Q	1
	22	256T2287-1		.COUPLING-INPUT	D,G,J,N,R-T	1
	25	256T2269-1		.SHIELD-BRG		1
	30	R9305PPA4298		.BEARING- (V21335) (SPEC BACB10BB25PP) (OPT 9305PPFS428 (V21335)) (OPT PKTLL005P1 (V78118)) (OPT C005RRP0ZZ (V40920)) (OPT C005RRPP1P28LY196 (V40920)) (OPT R9305PPA4298 (V9V013)) (OPT 1905LLT1C1-01 (V21760))	A-G	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	-30A	R9305NPPFS464		.BEARING- (V60380)	J,S,T	1
R	-30B	R9305NPPFS464		.BEARING- (V60380) (POST SB 767-27A0095R3)	K-R	1
	35	49001C60		.SHIM- (V82402)	A-C, K-M	AR
	-35A	256T2290-2		.SHIM- (OPT ITEM 35B)	D-G,J ,N-T	AR
	-35B	49001C60		.SHIM- (V82402) (OPT ITEM 035A)	D-G,J ,N-T	AR
	38	256T2286-1		.SHAFT-INPUT PINION	D,G,J ,N,R- T	1
	40	256T2271-1		DELETED		
	40A	256T2288-1		.SHIELD-BEARING	D,G,J ,N,R- T	1
	42	BCREF7727		.BEARING- (V40920) (3TKRZZ17-24SLY167) (OPT ITEM 42E) (PRE SB 767-27A0095R3)	D,G	1
	-42A	BCREFA1383		DELETED		
	-42B	BCREF7727		DELETED		
	-42C	BCREFA2672		DELETED		
	-42D	BCREFA3137		DELETED		
R	-42E	BCREF106931		.BEARING- (V40920) (S1724MCZZ3P5-11LY167) (OPT ITEM 42) (PRE SB 767-27A0095R3)	D,G	1
R	-42F	BCREF111424		.BEARING- (V40920) (S1724MCZZ3P5-11LY231)	J,S,T	1
R	-42G	BCREF111424		.BEARING- (V40920) (S1724MCZZ3P5-11LY231) (POST SB 767-27A0095)	N,R	1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
45	256T2252-1		DELETED		
45A	256T2276-1		.SHAFT ASSY-PINION (OPT ITEMS 45B, 45C, 45D)	A-C,E ,F,K-M,P,Q	1
-45B	256T2252-5		.SHAFT ASSY-PINION (OPT ITEMS 45A, 45C 45D)	A-C,E ,F,K-M,P,Q	1
-45C	256T2252-6		.SHAFT ASSY-PINION (OPT ITEMS 45A, 45B, 45D)	A-C,E ,F,K-M,P,Q	1
-45D	256T2284-2		.SHAFT ASSY-PINION (OPT ITEMS 45A, 45B 45C)	A-C,E ,F,K-M,P,Q	1
50	256T2260-2		..PIN-DRIVE	A-C,E ,F,K-M,P,Q	1
52	256T2285-3		..PINION-FIRST STAGE (USED ON ITEM 45A)	A-C,E ,F,K-M,P,Q	1
-52A	256T2258-3		..PINION-FIRST STAGE (USED ON ITEM 45B)	A-C,E ,F,K-M,P,Q	1
-52B	256T2258-4		..PINION-FIRST STAGE (USED ON ITEM 45C)	A-C,E ,F,K-M,P,Q	1
-52C	256T2285-2		..PINION-FIRST STAGE (OPT ITEM 52D) (USED ON ITEM 45D)	A-C,E ,F,K-M,P,Q	1
-52D	256T2285-3		..PINION-FIRST STAGE (OPT ITEM 52C) (USED ON ITEM 45D)	A-C,E ,F,K-M,P,Q	1
55	256T2276-2		..SHAFT-INPUT (USED ON ITEM 45A)	A-C,E ,F,K-M,P,Q	1
-55A	256T2252-7		..SHAFT-INPUT (USED ON ITEM 45B)	A-C,E ,F,K-M,P,Q	1
-55B	256T2252-8		..SHAFT-INPUT (USED ON ITEMS 45C, 45D)	A-C,E ,F,K-M,P,Q	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	57	256T2268-1		..SHIELD-BRG	A-C,E,F,K-M,P,Q	1
	60	R9103PPA4298		..BEARING- (V21335) (SPEC BACB10BA17PP) (OPT LL103KSG20 (V38443)) (OPT LL103KS (V38443)) (OPT 6003TT (V43991)) (OPT 9103LLT1C1-01 (V21760)) (OPT 9103NPPFS428 (V21335)) (OPT 993L03 (V29337)) (OPT PKTLL103P1 (V78118)) (OPT C103RRP0ZZ (V40920)) (OPT C103RRP1P17LY19 (V40920)) (OPT R9103PPA4298 (V9V013))	A-C,E,F	1
	-60A	R9103PPFS464		..BEARING- (V60380) (POST SB 767-27A0095R3)	K-M,P,Q	1
	65	256T2268-1		DELETED		
	70	LL103KS		DELETED		
	75	NAS6703H2		.BOLT		3
	77	AN960D10		.WASHER		3
	80	NAS6703H5		.BOLT		3
	85	AN960D10		.WASHER		3
R	87	256T2293-1		.GASKET	T	1
	90	256T2281-1		.PANEL-ACCESS		1
R	92	2-042N756-75		.PACKING- (V02697)	T	1
	95	256T2251-1		.COVER ASSY-HSG		1
	97	MS21209F1-10		..INSERT		3
	98	256T2251-3		..COVER		1
	100	49001C48		.SHIM- (V82402)	A-C,K-M	AR

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	-100A	256T2290-3		.SHIM-	D-G,J	AR
				(OPT ITEM 100B)	,N-T	
	-100B	49001C48		.SHIM-	D-G,J	AR
				(V82402)	,N-T	
				(OPT ITEM 100A)		
	105	R9103KA4298		.BEARING-BALL		1
				(V21335)		
				(SPEC BACB10BA17)		
				(OPT 3L03		
				(V29337))		
				(OPT 3L03		
				(V43334))		
				(OPT 6003		
				(V43991))		
				(OPT 6003J		
				(V52676))		
				(OPT 9103-1B1-01		
				(V21760))		
				(OPT 9103K		
				(V21335))		
				(OPT C103RRP0		
				(V40920))		
				(OPT PKT103P1		
				(V78118))		
				(OPT C103RR1P17LY331		
				(V40920))		
				(OPT C103RRP0		
				(V40920))		
				(OPT 103KS		
				(V38443))		
	110	MS9048-074		.PIN-SPR	A-G,K	1
					-R	
	-110A	MS171501		.PIN-SPR	J,S,T	1
R	112	2-014N756-75		.PACKING-	T	1
				(V02697)		
	115	256T2259-1		.SHAFT-DEAD	A-G,	1
					J-S	
R	-115A	256T2259-2		.SHAFT-DEAD	T	1
	120	256T2278-1		.WASHER-THRUST		2
	125	256T2254-1		.GEAR-PINION		1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	130	KZK16X22X12		.BEARING- (V27737) (OPT ITEM 130A, 130B, 130C)		2
	-130A	KZK16X22X12AG		.BEARING- (V27737) (OPT ITEM 130, 130B, 130C)		2
	-130B	FWJ162212		.BEARING- (V60380) (OPT ITEM 130, 130A, 130C)		2
	-130C	KT162212EGB2		.BEARING- (VS5211) (OPT ITEM 130, 130A, 130B)		2
	135	256T2253-1		.GEAR-2ND STAGE		1
	140	256T2279-1		.BEARING-FLANGE		1
	145	BCREF5730		.BEARING- (V40920) (TWL41-52S12-20LYF167) (OPT ITEM 145A)	D-G	1
	-145A	256T2210-9		.BEARING- (OPT ITEM 145)	D-G	1
	-145B	BCREF5730		.BEARING- (V40920) (TWL41-52S12-20LYF167) (PRE SB-767-27A0095R3)	A-C	1
	-145C	256T2220-9		.BEARING	J-T	1
	-145D	256T2220-9		.BEARING- (POST SB-767-27A0095R3)	K-R	1
	147	256T2275-1		.NO BACK ASSY-OUTBD	A-C	1
	-147A	256T2275-3		.NO BACK ASSY-OUTBD	D-F	1
	-147B	256T2275-5		.NO BACK ASSY-OUTBD	G	1
	-147C	256T2275-7		DELETED		
	-147D	256T2275-9		.NO BACK ASSY-OUTBD	J,S	1
R	-147E	256T2275-11		.NO BACK ASSY-OUTBD	T	1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-147F	256T2275-1		.NO BACK ASSY-OUTBD (REWORKED BY SB-767-27A0095R3) (POST SB-767-27A0095R3)	K-M	1
-147G	256T2275-3		.NO BACK ASSY-OUTBD (REWORKED BY SB-767-27A0095R3) (POST SB-767-27A0095R3)	N-Q	1
-147H	256T2275-5		.NO BACK ASSY-OUTBD (REWORKED BY SB-767-27A0095R3) (POST SB-767-27A0095R3)	R	1
150	BACB10T2-24A		..BALL		3
155	256T2257-1		DELETED		
155A	256T2273-1		..PLATE-REACTION		1
160	B2250-073		..SPRING- (V70472)	A-C,K-M	1
-160A	256T2289-1		..SPRING	D-G,J,N-T	1
165	W1819-020		DELETED		
165A	42356-116		..WASHER-WAVE (V0993B) (OPT ITEM 165B)	D-G,J,N-T	1
-165B	256T2291-1		..WASHER-WAVE (OPT ITEM 165A)	D-G,J,N-T	1
-165C	42356-116		..WASHER-WAVE (V0993B)	A-C,K-M	1
167	256T2274-1		..SHIM		AR
170	256T2264-1		DELETED		
170A	256T2264-2		..DISK-BIAS SPR		1
175	256T2262-1		DELETED		
175A	256T2262-2		..DISK-LARGE		3

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	180	256T2261-1		DELETED		
	185	RS137C		..RING-RETAINING (V80756)		1
	190	256T2263-1		DELETED		
	190A	256T2263-2		..DISK-SMALL		2
	195	256T2265-1		DELETED		
	195A	256T2265-4		..PLATE ASSY-STATOR (PRE SB-767-27A0095R3)	A-G	7
	-195B	256T2272-1		DELETED		
	-195C	256T2272-6		..PLATE ASSY-STATOR	J,S,T	7
	-195D	256T2272-6		..PLATE ASSY-STATOR (POST SB-767-27A0095R3)	K-R	7
R	195E	256T2272-2		DELETED		
R	200	256T2272-2		..PLATE-STATOR	T	1
	210	256T2282-1		DELETED		
	210A	256T2282-2		..PLATE-BACKUP	A-G, J-S	1
R	-210B	256T2282-3		..PLATE-BACKUP	T	1
	215	49001C42		..SHIM- (V82402) (OPT ITEMS 215B, 215C)	D-G,J,N-T	AR
	-215A	4900-41		DELETED		
	-215B	256T2290-1		..SHIM- (OPT ITEMS 215, 215C)	D-G,J,N-T	AR
	-215C	49001-41		..SHIM- (V82402) (OPT ITEMS 215, 215B)	D-G,J,N-T	AR
	-215D	49001C42		..SHIM- (V82402) (OPT ITEM 215E)	A-C,K-M	AR
	-215E	49001-41		..SHIM- (V82402) (OPT ITEM 215D)	A-C,K-M	AR

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	220	256T2270-1		..RETAINER-LOCK RING		1
	225	256T2266-1		..RING-LOCK		2
	230	49001C42		DELETED		
	230A	256T2256-1		..SHAFT-OUTPUT	A-G,K-R	1
	-230B	256T2256-2		..SHAFT-OUTPUT	J,S,T	1
	235	T087-1A		..WASHER-THRUST (V97820)		1
	240	8620CR		DELETED		
	240A	8620		.SEAL- (V51829)		1
	245	256T2256-1		DELETED		
	245A	49001C42		.SHIM- (V82402) (OPT ITEM 245B)	A-C,K-M	AR
	-245B	49001-41		.SHIM- (V82402) (OPT ITEM 245A)	A-C,K-M	AR
	-245C	49001C42		.SHIM- (V82402) (OPT ITEMS 245D, 245E)	D-G,J,N-T	AR
	-245D	49001-41		.SHIM- (V82402) (OPT ITEMS 245C, 245E)	D-G,J,N-T	AR
	-245E	256T2290-1		.SHIM- (OPT ITEMS 245C, 245D)	D-G,J,N-T	AR
|	250	256T2250-1		.HOUSING ASSY	A,K	1
	-250A	256T2250-4		.HOUSING ASSY	B,E,L,P	1
	-250B	256T2250-5		.HOUSING ASSY	C,F,M,Q	1
	-250C	256T2250-9		.HOUSING ASSY	D,G,J,N,R	1
R	-250D	256T2250-11		.HOUSING ASSY	S	1
R	-250E	256T2250-13		.HOUSING ASSY	T	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	-252	256T2250-4		DELETED		
	-254	256T2250-5		DELETED		
	255	MS21209F1-15		..INSERT		3
	260	MS90354-0505		..RIVET		2
	262	256T2267-1		..INSERT-SPLINE		1
	265	256T2250-2		..HOUSING	A,K	1
	-265A	256T2250-6		..HOUSING	C,F,M ,Q	1
	-265B	256T2250-8		..HOUSING	B,E,L ,P	1
	-265C	256T2250-10		..HOUSING	D,G,J ,N,R	1
R	-265D	256T2250-12		..HOUSING	S	1
R	-265E	256T2250-14		..HOUSING	T	1
	270	256T2277-1		.NAMEPLATE- (OPT ITEM 270C)	A-G,K -R	1
	270A	256T2277-3		DELETED		
	-270B	256T2217-3		.NAMEPLATE	J,S,T	1
R	-270C	256T2277-2		.NAMEPLATE- (OPT ITEM 270)	A-G,K -R	1

- Item Not Illustrated