TO: ALL HOLDERS OF INBOARD/OUTBOARD LEADING EDGE SLAT DRIVE ANGLE GEARBOX ASSEMBLY COMPONENT MAINTENANCE MANUAL 27-81-25

REVISION NO. 6 DATED OCT 10/85

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
REPAIR-GEN	Added service wear limits, and repair.
601	
REPAIR 3-1	
602-603	
REPAIR 5-1	
601	
REPAIR 6-1	
601	
802	

INBOARD/OUTBOARD LEADING EDGE SLAT DRIVE ANGLE GEARBOX ASSEMBLY

PART NUMBER 256T2310-1

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

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

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL

PAGE	DATE	CODE
27-81-25		
TITLE PAGE		
1	JUL 10/83	01
2	BLANK	
REVISION RECORD		
1	JUL 10/83	01
2	BLANK	
TR & SB RECORD		
1	JUL 10/83	01
2	BLANK	
LIST OF EFFECTIVE PAGES		
*1	OCT 10/85	01
THRU LAST PAGE		
CONTENTS		
1	JUL 10/83	01
2	BLANK	
INTRODUCTION		
1	JUL 10/83	01
2	BLANK	
DESCRIPTION & OPERATION		
1	JUL 10/83	01.1
2	BLANK	
TESTING & TROUBLE SHOOTING		
101	JUL 10/83	01.1
102	JUL 10/83	01.1
DISASSEMBLY		
301	JUL 10/83	01
302	BLANK	
CLEANING		
401	JUL 10/83	01
402	BLANK	

PAGE	DATE	CODE
CHECK		
501	JUL 10/83	01
502	BLANK	
REPAIR-GENERAL		
*601	OCT 10/85	01.1
602	JUL 10/83	01
603	JUL 10/83	01.1
604	BLANK	
REPAIR 1-1		
601	JUL 10/83	01
602	JUL 10/83	01
REPAIR 2-1		
601	JUL 10/83	01
602	JUL 10/83	01
REPAIR 3-1		
601	JUL 10/83	01
*602	OCT 10/85	01.1
*603	OCT 10/85	01.1
*604	BLANK	
REPAIR 4-1		
601	JUL 10/83	01
602	BLANK	
REPAIR 5-1		
*601	OCT 10/85	01.1
602	BLANK	
REPAIR 6-1		
*601	OCT 10/85	01.1
*602	BLANK	
ASSEMBLY		
701	JUL 10/83	01.1
702	JUL 10/83	01
703	JUL 10/83	01.1
704	JUL 10/83	01.1

* = REVISED, ADDED OR DELETED

PAGE	DATE	CODE
FITS AND CLEARANCES		
801	JUL 10/83	01
*802	OCT 10/85	01.1
803	JUL 10/83	01
804	BLANK	
SPECIAL TOOLS		
901	JUL 10/83	01.1
902	BLANK	
ILLUSTRATED PARTS LIST		
1001	JUL 10/83	01
1002	JUL 10/83	01.1
1003	JUL 10/83	01.1
1004	JUL 10/83	01.1
1005	JUL 10/83	01.1
1006	JUL 10/83	01.1

PAGE	DATE	CODE

* = REVISED, ADDED OR DELETED

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. 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	OCT 13/81
Disassembly	OCT 13/81
Assembly	OCT 13/81

INBOARD/OUTBOARD LEADING EDGE SLAT DRIVE ANGLE GEARBOX ASSEMBLY

DESCRIPTION AND OPERATION

1. The inboard/outboard leading edge slat drive angle gearbox assembly consists of two ball bearing mounted bevel gears enclosed in an aluminum housing. The external ends of the gear shafts are attached to splined couplings. Gear ratio is one to one. The gearbox transmits rotary motion from the power drive unit to the rotary actuator through the slat drive torque tubes.

2. Leading Particulars (Approximate)

Length -- 7 inches (18 centimeters)
Width -- 4 inches (11 centimeters)
Height -- 5 inches (13 centimeter)
Drive Angle -- 213°18'
Weight -- 4 lbs (2 kg)

TESTING/TROUBLE SHOOTING

1. Equipment and Materials

NOTE: Equivalent substitutes may be used.

A. Backlash Check Fixture -- A27049-1

B. Weight Assembly -- A27046-60 *[1] (2 required)

C. Tower Assembly -- A27046-53 *[1] (2 required)

D. Hand Knob -- 17501 *[1] (4 required)

E. Dial Indicator

F. Sealant -- BMS 5-26 (Ref 20-60-04)

*[1] Part of Test Equipment A27046-8

2. Visually check unit in accordance with standard industry practices. Rotate shafts in both directions and check for evidence of binding and roughness.

A. If no corrective action is required, proceed with backlash check (par. 3), otherwise, replace parts per step B.

B. If roughness or binding exists, replace bearings (45, 50, IPL Fig. 1) as follows:

(1) Completely disassemble unit per DISASSEMBLY and remove gears and bearings.

(2) Replace gears and bearings and assemble parts per ASSEMBLY steps 4.A. thru 4.I.

3. Backlash Check

A. Remove inspection hole cover (60), bolts (65), and washers (70).

B. Mount unit in check fixture A27049-1. Apply 25-35 lb (11.3-15.9 kgf) axial force outward on one shaft using weight assembly A27046-60, or equivalent, then clamp that shaft in fixed position. Apply an equivalent outward axial load to the opposite shaft. Using socket adapter on nut (25), apply torque of 5-10 lb-in. (5.8-11.5 kgf-cm) to the shaft in both directions (clockwise and counterclockwise). Using dial indicator, check that total travel (backlash) measured at gear pitch diameter is 0.003-0.007 inch (0.076-0.178 mm). Take measurement through inspection hole and repeat check at three places approximately 120 degrees apart.

C. If no corrective procedures are required, check lubrication per step 4. To correct backlash, adjust shim thickness as follows:

(1) Disassemble unit per DISASSEMBLY step 3.A. thru 3.E.

(2) Adjust thickness of shims (40) as required to increase or decrease backlash and assemble parts per ASSEMBLY steps 4.B. thru 4.H.

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

(3) Repeat backlash check.

4. Check that splines and gear teeth are filled with grease. Lubricate as necessary.

CAUTION: DO NOT FILL HOUSING WITH GREASE OR OPERATION OF GEARBOX MAY BE ADVERSELY AFFECTED.

A. Fill gear teeth with grease.

B. Install cover (60) and secure with parts (65, 70). Install bolts (65) with wet primer and tighten to 22-28 lb-in. (25-32 kgf-cm).

5. Seal and lockwire per ASSEMBLY steps 4.J. thru 4.L.

DISASSEMBLY

NOTE: Refer to TESTING/TROUBLE SHOOTING to establish condition or probable cause of any malfunction and to determine extent of disassembly and repair.

1. Equipment

   NOTE: Equivalent substitutes may be used.

   A. Wrench -- A27051-10

2. Parts Replacement

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

   A. Lockwire, cotter pins

3. Disassembly (IPL Fig. 1)

   A. Remove lockwire and sealant using dull knife or equivalent.

   B. Deleted.

   C. Remove cotter pins (20). Use wrench A27051-10 to hold couplings (35), then remove nuts (25), washers (30) and couplings.

   D. Remove bolts (10) and washers (15) and separate cover (5) from housing assembly (75).

   E. Remove gears (55) with bearings (45, 50) and shims (40) from cover (5) and housing assembly (75).

      NOTE: Note thickness and location of shims to facilitate assembly. Do not remove bearings (45, 50) from gears (55) unless repair or replacement is necessary.

      NOTE: Do not remove nameplate (105) unless repair or replacement is necessary.

   F. Remove parts (65, 70) and remove cover (60).

      NOTE: Do not disassemble housing assembly (75) unless repair or replacement is necessary.

CLEANING

1. Clean all parts except bearings (45, 50, IPL Fig. 1) using standard industry practices and information contained in 20-30-03.

2. Clean teflon-sealed bearings (45, 50) per manufacturer's instructions.

CHECK

1. Check all parts for obvious defects in accordance with standard industry practices. Refer to FITS AND CLEARANCES for design dimensions and wear limits.

2. Magnetic particle check per 20-20-01 -- Washers (30, IPL Fig. 1), gear (55), coupling (35).

3. Penetrant check per 20-20-02 -- Housing (100), cover (5).

4. Check gear teeth and splines for excessive or uneven wear.

REPAIR - GENERAL

1. Content

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

P/N	NAME	REPAIR
256T2301	HOUSING	1-1
256T2302	COVER	2-1
256T2306	GEAR	3-1
256T2314	NAMEPLATE	4-1
- -	MISC PARTS REFINISH	5-1
256T2309	COUPLING	6-1

2. Standard Practices

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

20-10-01 Repair and Refinish of High Strength Steel Parts
20-10-03 Shot Peening
20-10-04 Grinding of Chrome Plated Parts
20-10-05 Application and Finishing of Plasma Flame Sprayed Coatings
20-30-02 Stripping of Protective Finishes
20-41-01 Decoding Table for Boeing Finish Codes
20-42-03 Hard Chrome Plating
20-42-05 Bright Cadmium Plating
20-43-01 Chromic Acid Anodizing
20-50-05 Application of Aluminum Foil and Other Markers
20-50-10 Application of Stencils, Insignia, Silk Screen, Part Numbering and Identification Markings

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 (Ref 20-60-02)

C. Plasma Flame Spray Powder -- BMS 10-67, type 10

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

4. Dimensioning Symbols

A. Standard True Position Dimensioning Symbols used in 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
⌖	THEORETICAL EXACT POSITION OF A FEATURE (TRUE POSITION)
∅	DIAMETER
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)
Ⓢ	REGARDLESS OF FEATURE SIZE (RFS)
Ⓟ	PROJECTED TOLERANCE ZONE

EXAMPLES

[— | 0.002]	STRAIGHT WITHIN 0.002
[⊥ | B | 0.002]	PERPENDICULAR TO B WITHIN 0.002
[// | A | 0.002]	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
[⌒ | A | 0.006]	EACH LINE ELEMENT OF THE SURFACE AT ANY CROSS SECTION MUST LIE BETWEEN TWO PROFILE BOUNDARIES 0.006 INCH APART IN RELATION TO DATUM PLANE A
[⌓ | A | 0.020]	SURFACES MUST LIE WITHIN PARALLEL BOUNDARIES 0.02 INCH APART AND EQUALLY DISPOSED ABOUT TRUE PROFILE
[◎ | C | ∅ 0.0005]	CONCENTRIC TO C WITHIN 0.0005 DIAMETER (FULL INDICATOR MOVEMENT)
[⌯ | A | 0.010]	SYMMETRICAL WITH A WITHIN 0.010
[∠ | A | 0.005]	ANGULAR TOLERANCE 0.005 WITH A
[⌖ | B | ∅ 0.002 Ⓢ]	LOCATED AT TRUE POSITION WITHIN 0.002 DIA IN RELATION TO DATUM B, REGARDLESS OF FEATURE SIZE
[⊥ | A | ∅ 0.010 Ⓜ] [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	EXACT DIMENSION IS 2.000

True Position Dimensioning Symbols
Figure 601

3863

HOUSING ASSEMBLY - REPAIR 1-1

256T2301-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of housing surfaces which may only require stripping and restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Bearing Bores (Fig. 601)

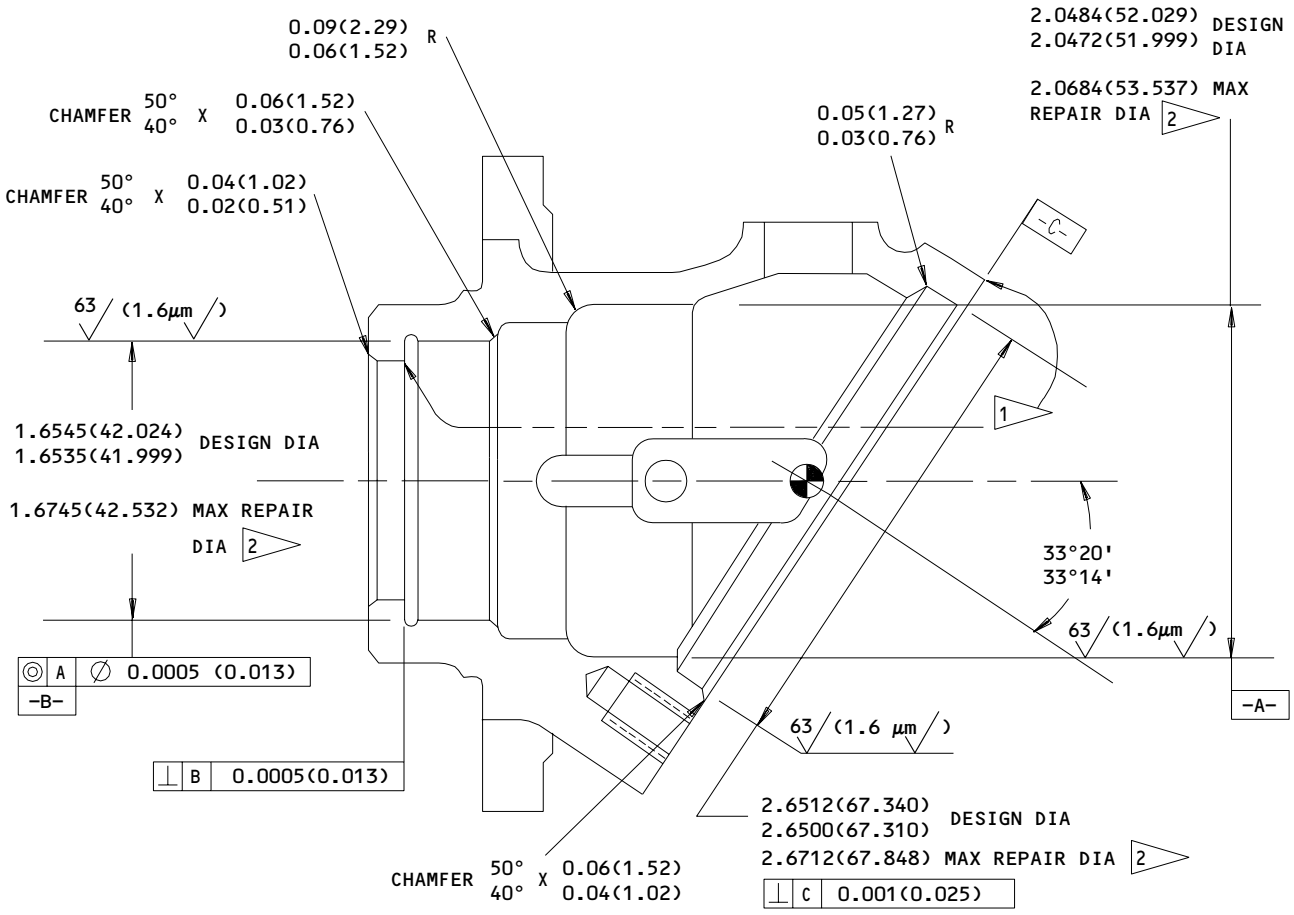
   A. Machine holes, as required, within repair limits shown to remove defects.

   B. Shot peen as indicated.

   C. Build up repaired surfaces with aluminum plasma flame spray coating, BMS 10-67, type 10 (Ref 20-10-05).

   D. Machine to finish and dimensions shown.

   E. Alodize repaired surfaces.



REFINISH

ANODIZE (F-17.05) ALL OVER AND APPLY 1 COAT OF BMS 10-11, TYPE 1 PRIMER (F-20.02) ON ALL EXTERNAL SURFACES EXCEPT AS NOTED

1 NO PRIMER THIS SURFACE

2 BUILD UP WITH AL PLASMA FLAME SPRAY, BMS 10-67, TYPE 10, AND MACHINE TO FINISH AND DIMENSIONS SHOWN

REPAIR

REF 2

MATERIAL: AL ALLOY

SHOT PEEN (REF 20-10-03)

BREAK SHARP EDGES 0.008 (0.20)R

125 (3.2µm) MACHINED SURFACES

EXCEPT AS NOTED

ALL DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS IN ( ) ARE IN MILLIMETERS

256T2301-1
Housing Repair and Refinish
Figure 601

3881

COVER - REPAIR 2-1

256T2302-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair which may only require stripping and restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Bearing Bores and External Surfaces (Fig. 601)

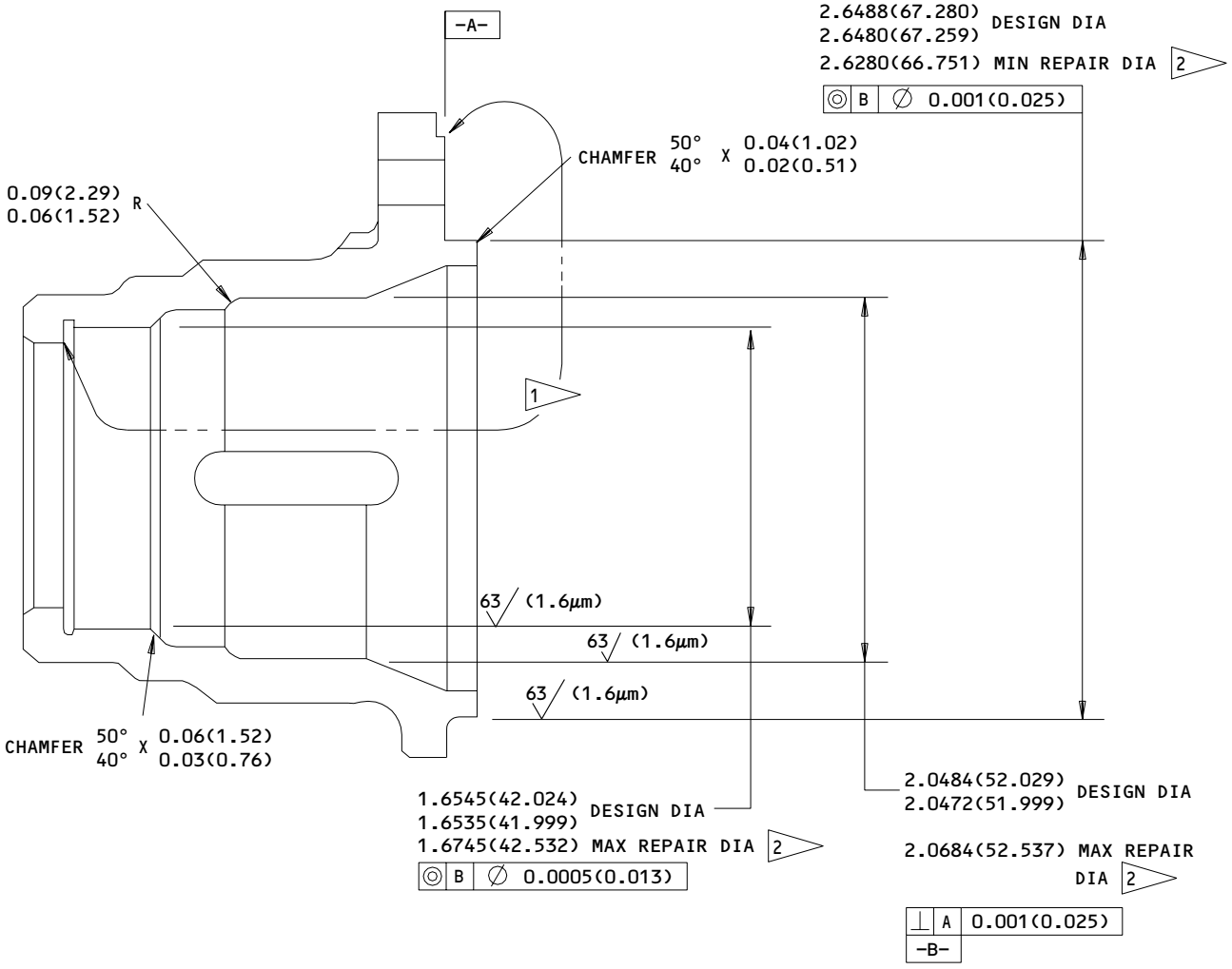
   A. Machine holes, as required, within repair limits shown to remove defects.

   B. Shot peen as indicated.

   C. Build up repaired surfaces with aluminum plasma flame spray coating, BMS 10-67, type 10 (Ref 20-10-05).

   D. Machine to finish and dimensions shown.

   E. Alodize repaired surfaces.



REFINISH

ANODIZE (F-17.05) ALL OVER AND APPLY 1 COAT OF BMS 10-11, TYPE 1 PRIMER ON EXTERNAL SURFACES EXCEPT AS NOTED IN 1

1 NO PRIMER THIS SURFACE

2 BUILD UP WITH AL PLASMA FLAME SPRAY BMS 10-67, TYPE 10 AND MACHINE TO DIMENSIONS AND FINISH SHOWN

REPAIR

REF 2

SHOT PEEN (REF 20-10-03)

125 (3.2µm) MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.008 (0.20)R

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS IN ( ) ARE IN MILLIMETERS

256T2302-1
Cover Repair and Refinish
Figure 601

GEAR, BEVEL - REPAIR 3-1

256T2306-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of gear surfaces which may only require stripping and restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Shank Repair - Diameter A and B (Fig. 601)

   A. Machine, as required, within repair limits shown to remove defects.

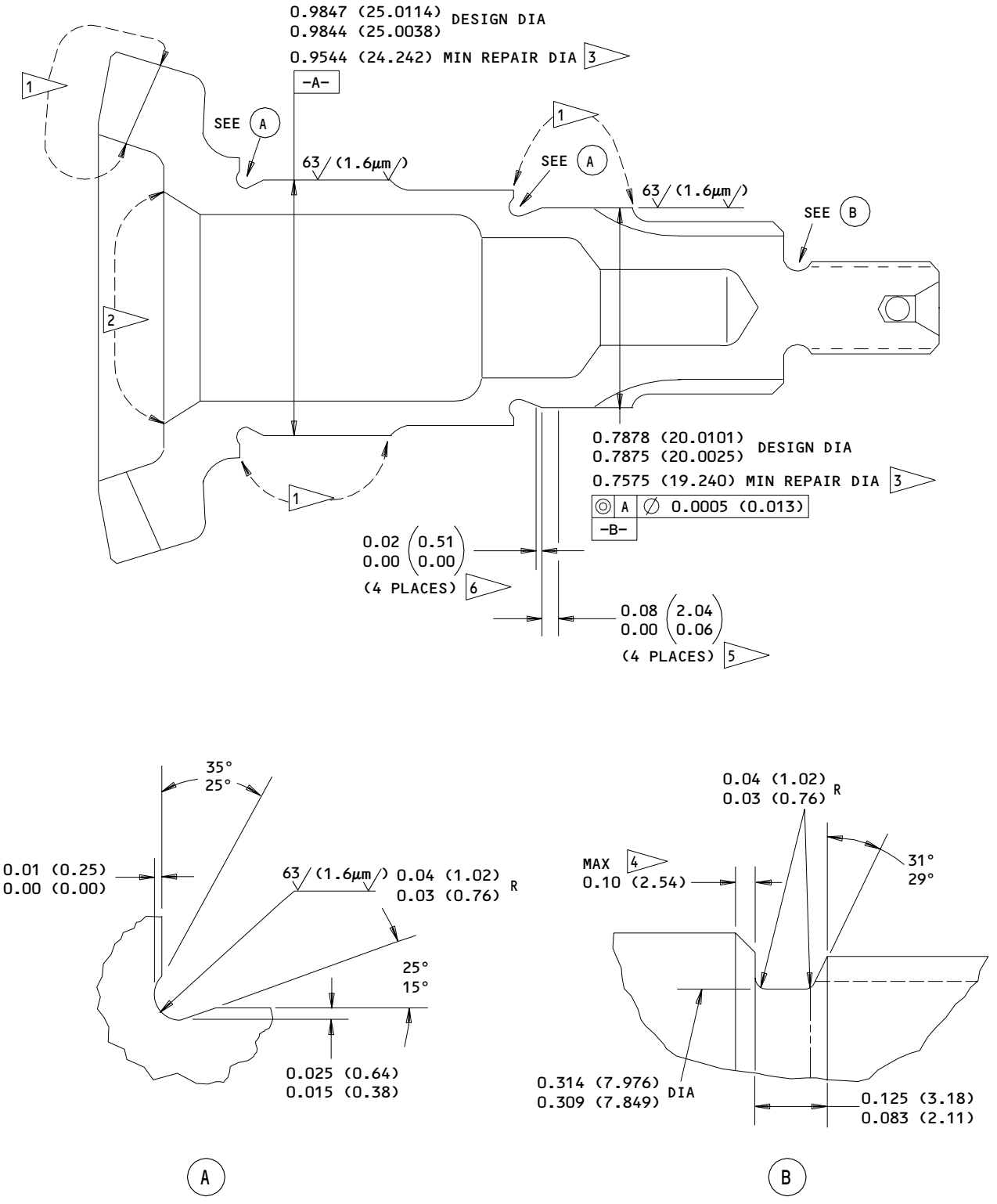
   B. Shot peen as indicated.

   C. Chrome plate build up repaired area and grind to design dimensions and finishes shown. Chrome plate not to exceed 0.015 inch (0.381 mm) after grinding.

2. Relief Grooves

   A. Machine, as required, within repair limits to remove defects. Do not machine bearing shoulder surface.

   B. Shot peen as indicated and cadmium plate.



256T2306-1
Gear Repair and Refinish
Figure 601 (Sheet 1)

REFINISH

CADMIUM PLATE (F-15.23) ALL OVER EXCEPT AS NOTED BY 1 AND 2. FINISH INTERNAL BORE PER 2.

1 DO NOT CADMIUM PLATE

2 PHOSPHATE COAT (F-18.02) EXCEPT DELETE FOLLOWUP OIL TREATMENT AND APPLY 2 COATS OF BMS 10-11, TYPE 1 PRIMER (F-20.03). COAT INTERIOR SURFACE WITH CORROSION PREVENTIVE COMPOUND, MIL-C-11796 (F-19.03).

3 CHROME PLATE BUILDUP AND GRIND TO DESIGN DIMENSIONS AND FINISH SHOWN.

4 RESTORATION TO DESIGN DIMENSION NOT REQUIRED

5 PLATING RUNOUT

6 END OF PLATING

REPAIR

REF 3 4 5 6

SHOTPEEN: (REF 20-10-03)
SHOT NO. 170-460
INTENSITY 0.006A
COVERAGE 2.0

125 (3.2μm) ALL MACHINED SURFACES EXCEPT AS NOTED

DIMENSIONS APPLY BEFORE PLATING

BREAK SHARP EDGES 0.008 (0.20)R

MATERIAL: 9310 STEEL (CARBURIZED-CORE STRENGTH 150-190 KSI)

ALL DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS IN ( ) ARE IN MILLIMETERS

256T2306-1
Gear Repair and Refinish
Figure 601 (Sheet 2)

190901

NAMEPLATE - REPAIR 4-1

256T2314-1

1. Nameplate Replacement

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

A. Steel stamp part number and serial number on nameplate per 20-50-10.

B. Install nameplate (105) on housing assembly (75) per 20-50-05 using adhesive indicated in 20-50-12, type 70.

MISCELLANEOUS PARTS REFINISH - REPAIR 5-1

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

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Washer (30)	4130 Steel, 125-145 ksi	Cadmium plate (F-15.02) all over.
Cover (60)	Al alloy	Chromic acid anodize (F-17.04) and apply 1 coat of BMS 10-11, type 1 primer (F-20.02) all over except optional primer in bolt holes.

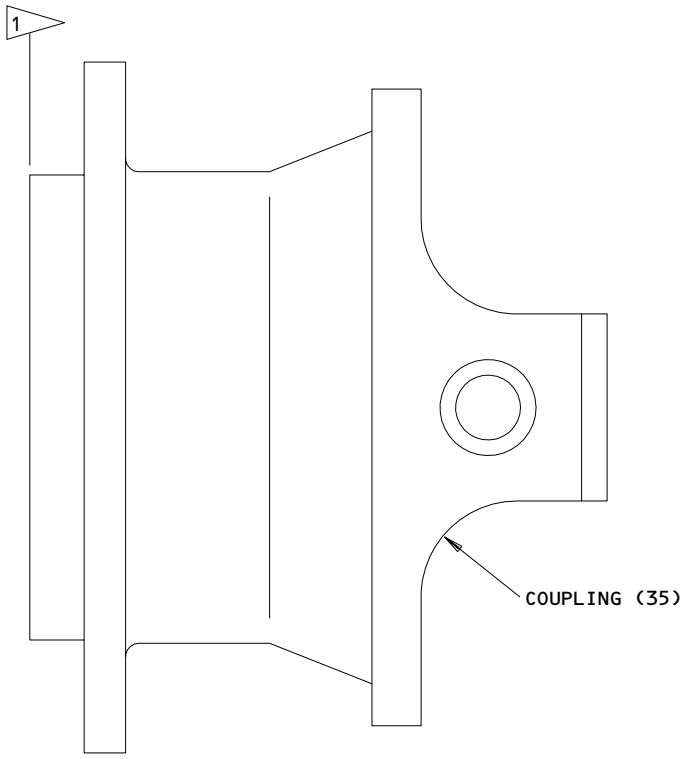
Refinish Details
Figure 601

COUPLING - REPAIR 6-1

256T2309-1

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-15.02) AND APPLY 1 COAT OF BMS 10-11, TYPE 1 PRIMER (F-20.02) ALL OVER EXCEPT OMIT PRIMER ON SPLINED AND NOTED SURFACES

1 NO PRIMER ON THIS SURFACE

MATERIAL: 4340 STEEL, 150-170 KSI.

256T2309-1
Coupling Refinish
Figure 601

ASSEMBLY

1. Materials

NOTE: Equivalent substitutes may be used.

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

B. Sealant -- BMS 5-26 (Ref 20-60-04)

C. Lockwire -- MS20995C32

2. Equipment

NOTE: Equivalent substitutes may be used.

A. Wrench -- A27051-10

3. Lubrication

A. Apply light coating of grease to splines, faying surfaces, and bearings at assembly.

CAUTION: APPLY GREASE TO GEAR TEETH ONLY. DO NOT FILL HOUSING WITH GREASE OR OPERATION OF GEARBOX MAY BE ADVERSELY AFFECTED.

B. Fill gear teeth and pockets with grease (Ref Fig. 701).

4. Assembly (IPL Fig. 1)

A. Install bearings (45, 50) on gear shafts (55).

B. Determine shims (40) thickness as shown in Fig. 701.

C. Deleted.

D. Place shims (40) in bottom of bearing recess in cover (5) and housing assembly (75) and install gears (55) in housing and cover.

E. Slide coupling (35) on gear (55) in housing assembly (75) and fill pocket area between coupling flange and bearing (45) with grease (Fig. 701). Install washer (30) and nut (25). Use wrench A27051-10 to hold coupling (35) and tighten nut to 160-240 lb-in. (185-275 kgf-cm). Install cotter pin (20).

SHIM THICKNESS CALCULATION

SHIM = A-[B+C]

OR SHIM = A MINUS SUM OF B PLUS C

WHERE A = DIMENSION ENGRAVED ON COVER AND HOUSING
B = MEASURED BEARING WIDTH
C = GIVEN DIMENSION FOR HOUSING
C = 1.830 (46.482)
FOR COVER
C = 1.630 (41.402)

SHIM OR SHIM SET	NOMINAL THICKNESS	
256T2312-1	0.010	(0.254)
256T2312-2	0.012	(0.305)
256T2312-3	0.015	(0.381)
256T2312-4	0.018	(0.457)
256T2312-5	0.020	(0.508)
256T2312-6	0.025	(0.635)
256T2312-1 & -2	0.022	(0.559)
256T2312-2 & -2	0.024	(0.610)
256T2312-2 & -3	0.027	(0.686)
256T2312-1 & -4	0.028	(0.711)
256T2312-1 & -5	0.030	(0.762)
256T2312-2 & -5	0.032	(0.813)
256T2312-3 & -4	0.033	(0.838)
256T2312-3 & -5	0.035	(0.889)

EXAMPLE

HOUSING

A = 2.327 (59.106)
B = 0.4720 (11.989)
C = 1.830 (46.482)

SHIM = 2.327(59.106)-[0.4720(11.989)+1.830(46.482)]
= 2.327(59.106)-2.3020(58.471)
= 0.0250(0.635)

USE SHIM 256T2312-6

COVER

A = 2.1292(54.082)
B = 0.4722(11.994)
C = 1.630(41.402)

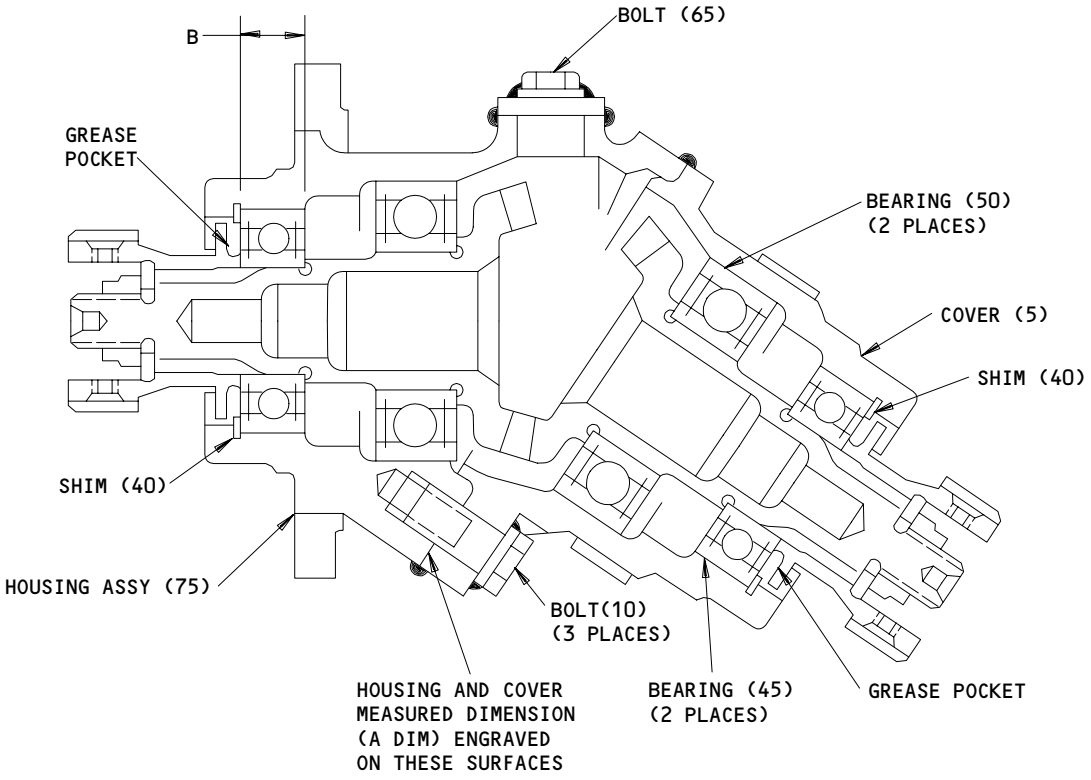
SHIM = 2.1292(54.082)-[0.4722 (11.994)+1.630(41.402)]
= 2.1292(54.082)-2.1022 (53.296)
= 0.0270(0.686)

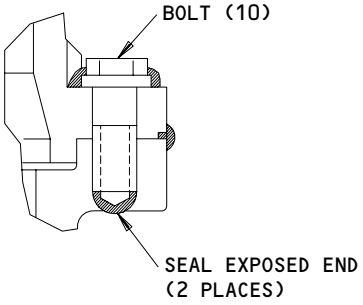
USE SHIMS 256T2312-2 & 3

ALL DIMENSIONS ARE IN INCHES EXCEPT
DIMENSIONS IN ( ) ARE IN MILLIMETERS

Assembly Details and Shim Adjustment
Figure 701 (Sheet 1)

3954





Assembly Details and Shim Adjustment
Figure 701 (Sheet 2)

F. Mate cover (5) with housing assembly (75) and install washers (15) and bolts (10). Install bolts (10) with wet primer. Tighten bolts to 65-80 lb-in. (75-92 kgf-cm).

G. Slide coupling (35) on gear (55) in cover (5) and fill pocket area between coupling flange and bearing (45) with grease (Fig. 701). Install washer (30) and nut (25). Use wrench A27051-10 to hold coupling (35) and tighten nut to 160-240 lb-in. (185-275 kgf-cm). Install cotter pin (20).

H. Install cover (60) and secure with washers (70) and bolts (65). Install bolts with wet primer. Tighten bolts to 22-28 lb-in. (25-32 kgf-cm).

I. Test unit per TESTING/TROUBLE SHOOTING.

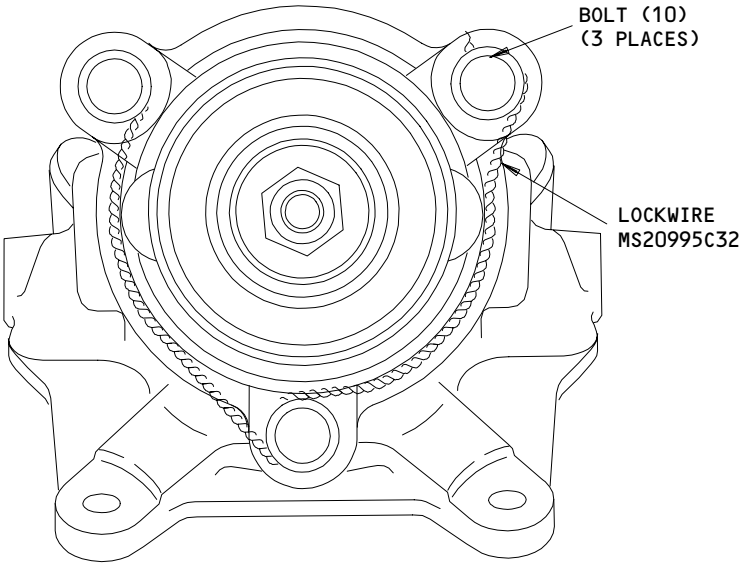
J. Fillet seal heads of bolts (10, 65) and cover ends of bolts (10) with sealant.

K. Fillet seal contact areas between housing assembly (75) and covers (5, 60) with sealant (Fig. 701).

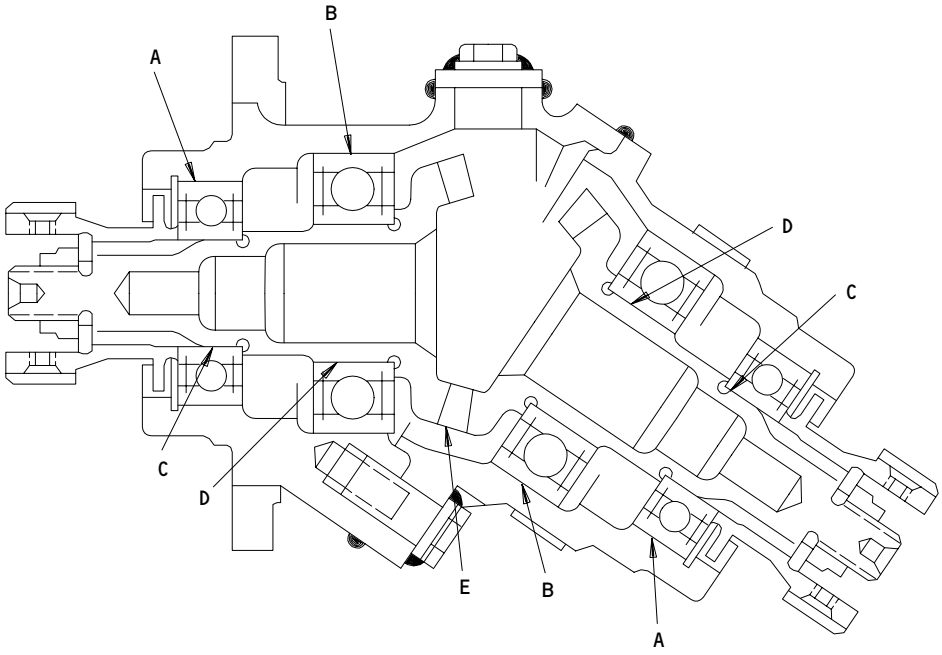
L. Install lockwire using double-twist method per 20-50-02 per Fig. 702.

5. Storage

A. Store this assembly using standard industry practices.



Lockwiring Diagram
Figure 702



Fits and Clearances
Figure 801 (Sheet 1)

Ref Letter Fig.801	Mating Item No. IPL Fig.1	Design Dimension				Service Wear Limit		
		Dimension		Assembly Clearance		Dimension		Maximum Clearance
		Min	Max	Min	Max	Min	Max	
A	ID 5,75 OD 45	1.6535 (41.999) 1.6530 (41.986)	1.6545 (42.024) 1.6535 (41.999)	0.0000 (0.000)	0.0015 (0.038)	1.6500 (41.910)	1.6570 (42.309)	0.0030 (0.076)
B	ID 5,75 OD 50	2.0472 (51.999) 2.0467 (51.986)	2.0484 (52.029) 2.0472 (51.999)	0.0000 (0.000)	0.0017 (0.043)	2.0437 (51.910)	2.0514 (52.106)	0.0030 (0.076)
C	ID 45 OD 55	0.7870 (19.990) 0.7875 (20.0025)	0.7874 (20.000) 0.7878 (20.0101)	-0.0008 (-0.0203) *[1]	-0.0001 (-0.0025) *[1]	0.7854 (19.949)	0.7881 (20.018)	0.0000 (0.000)
D	ID 50 OD 55	0.9839 (24.991) 0.9844 (25.0038)	0.9843 (25.001) 0.9847 (25.0114)	-0.0008 (-0.0203) *[1]	-0.0001 (-0.0025) *[1]	0.9843 (25.001)	0.9850 (25.019)	0.0000 (0.000)
E	55 *[2]			0.003 (.076)	0.007 (0.178)			0.007 (0.178)

*[1] INTERFERENCE FIT

*[2] BACKLASH BETWEEN INSTALLED GEARS

ALL DIMENSIONS ARE IN INCHES EXCEPT DIMENSIONS IN ( ) ARE IN MILLIMETERS

Fits and Clearances
Figure 801 (Sheet 2)

FOR TORQUE VALUE OF STANDARD FASTENERS, REFER TO 20-50-01			
ITEM NO. IPL FIG. 1	NAME	TORQUE	
		POUND-INCHES (kg-cm)	POUND-FEET (kg-m)
10	BOLT	65-80 (75-92)	
25	NUT	160-240 (185-275)	
65	BOLT	22-28 (25-32)	

Torque Table
Figure 802

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

NOTE: Equivalent substitutes may be used.

1. A27049-1 -- Backlash Check Fixture

2. A27051-10 -- Wrench

3. A27046-53 -- Tower Assembly *[1]

4. A27046-60 -- Weight Assembly *[1]

5. 17501 -- Hand Knob *[1]

*[1] Part of Test Equipment A27046-8

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

15653 KAYNAR MFG COMPANY INC KAYLOCK DIV
PO BOX 3001 800 SOUTH STATE COLLEGE BLVD
FULLERTON, CALIFORNIA 92634

21335 TEXTRON INC FAFNIR BEARING DIVISION
37 BOOTH STREET
NEW BRITAIN, CONNECTICUT 06050

21760 SCHATZ FEDERAL BEARINGS CO INC
FAIRVIEW AVENUE
POUGHKEEPSIE, NEW YORK 12602

29337 HOOVER UNIVERSAL INC BALL AND ROLLER DIV
ERWIN, TENNESSEE 37650

38443 TRW INC BEARING DIV
402 CHANDLER STREET
JAMESTOWN, NEW YORK 14701

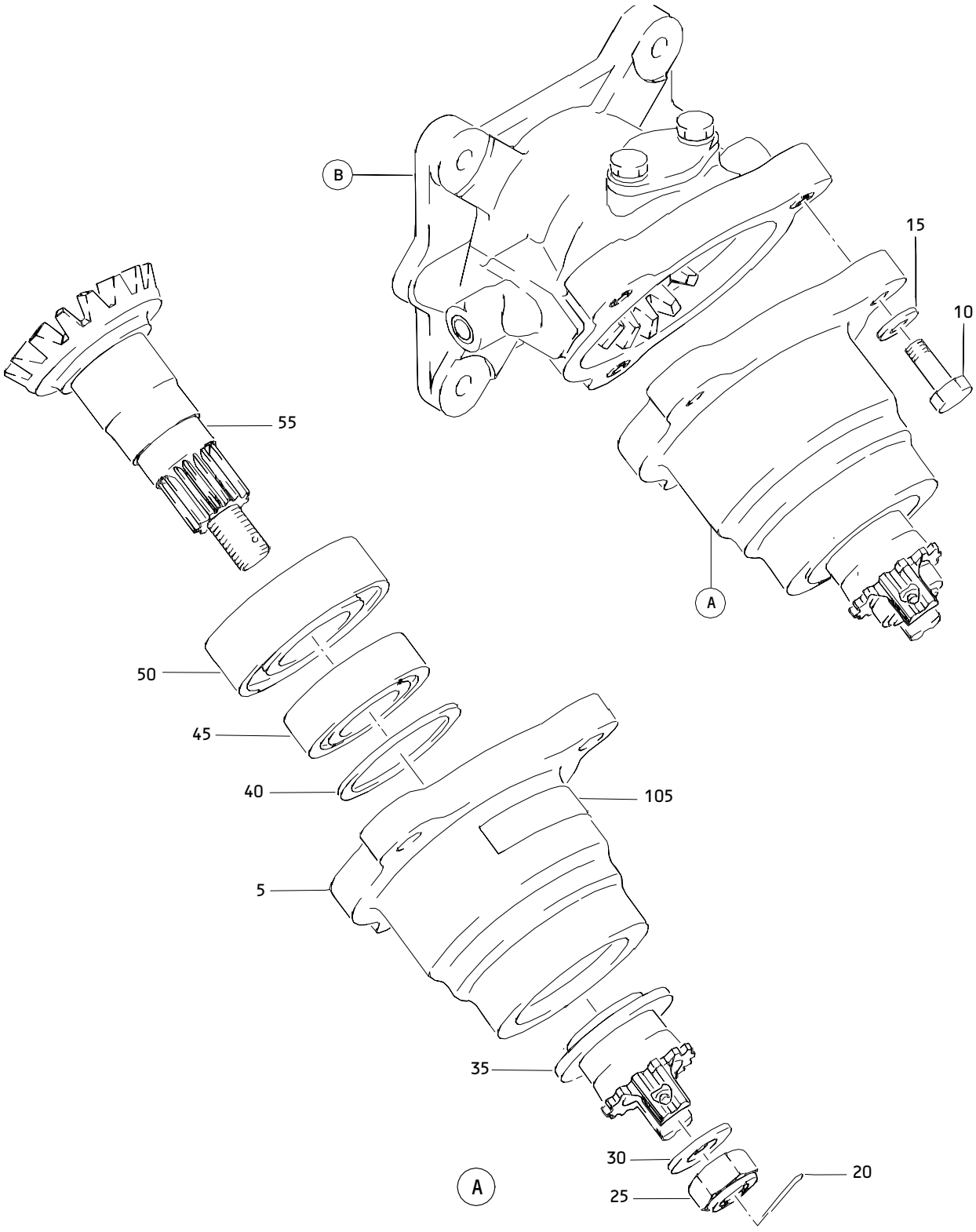
43991 FAG BEARING INCORPORATED
HAMILTON AVENUE
STAMFORD, CONNECTICUT 06904

52828 REPUBLIC FASTENER MFG CORP
1300 RANCHO CONEJO BLVD
NEWBURY PARK, CALIFORNIA 91320

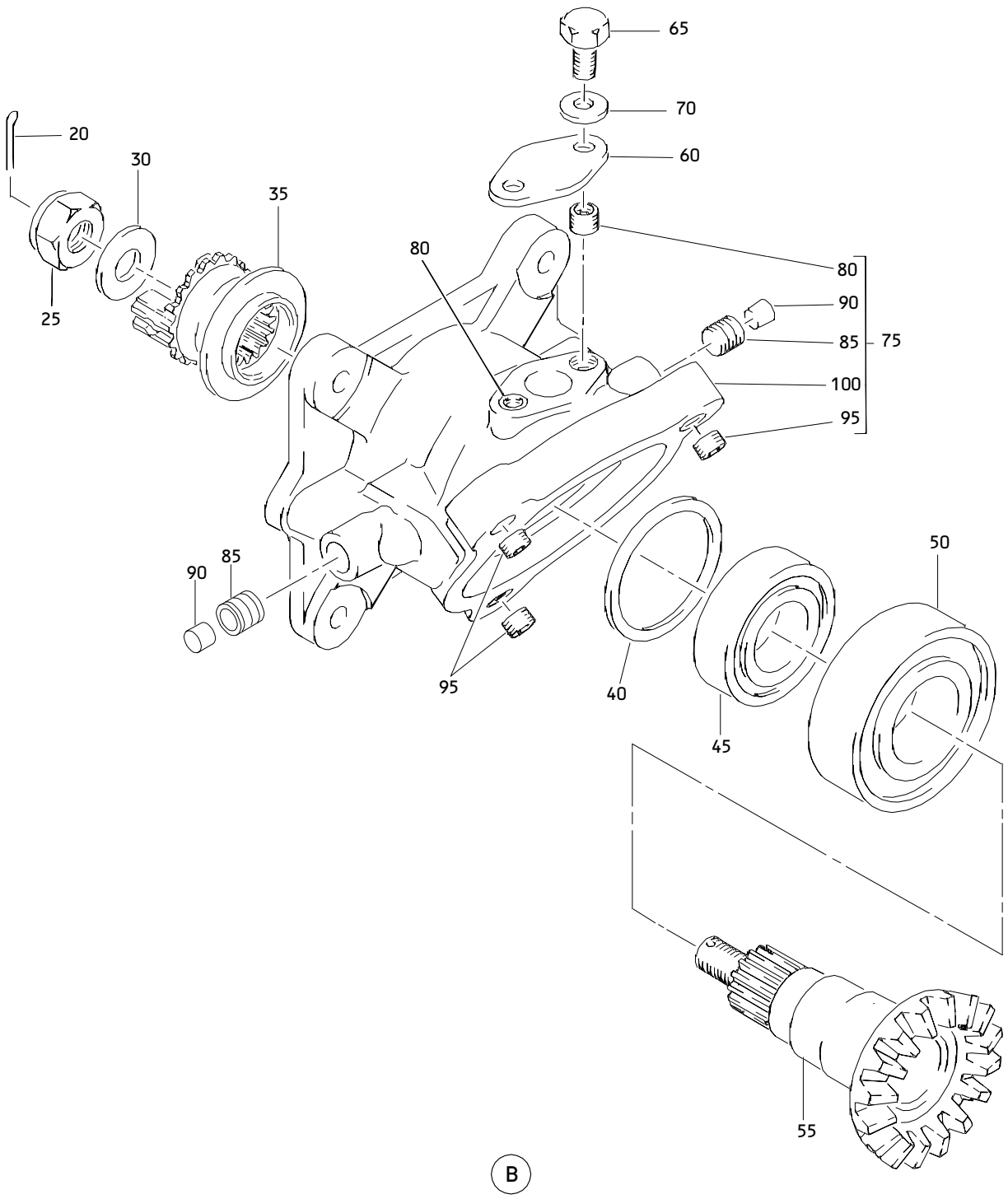
72962 ESNA DIV OF AMERACE CORP
2330 VAUXHALL ROAD
UNION, NEW JERSEY 07083

80539 SPS TECHNOLOGIES INC AEROSPACE PRODUCTS DIV
2701 SOUTH HARBOR BOULEVARD
SANTA ANA, CALIFORNIA 92702

92555 LEE COMPANY
2 PETTIPAUG ROAD
WESTBROOK, CONNECTICUT 06498



Inboard/Outboard Leading Edge Slat Drive Angle Gearbox Assembly
Figure 1 (Sheet 1)



Inboard/Outboard Leading Edge Slat Drive Angle Gearbox Assembly
Figure 1 (Sheet 2)

T40516

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-1	256T2310-1		GEARBOX ASSY-INBD/OUTBD LE SLAT DRIVE ANGLE		RF
5	256T2302-1		.COVER		1
			ATTACHING PARTS		
10	NAS6604H6		.BOLT		3
15	AN960PD416		.WASHER		3
			-------*-------		
20	MS24665-283		.PIN-COTTER		2
25	BRH10-6		.NUT-		2
			(V52828)		
			(SPEC BACN10JC6)		
			(OPT H10-6BAC (V15653))		
			(OPT RMLH9075-6 (V72962))		
			(OPT 96-064 (V80539))		
30	256T2311-1		.WASHER		2
35	256T2309-1		.COUPLING		2
40	256T2312-1		.SHIM		AR
-40A	256T2312-2		.SHIM		AR
-40B	256T2312-3		.SHIM		AR
-40C	256T2312-4		.SHIM		AR
-40D	256T2312-5		.SHIM		AR
-40E	256T2312-6		.SHIM		AR
45	LL104KS		.BEARING-		2
			(V38443)		
			(SPEC BACB10BA20PP)		
			(OPT 6004FTT (V43991))		
			(OPT 9104LLT1C1-01 (V21760))		
			(OPT 9104NPPFS428 (V21335))		
			(OPT 993L04 (V29337))		

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
50	1205LLT1C1-01		.BEARING- (V21760) (SPEC BACB10AZ25PP) (OPT 205NPPFS428 (V21335)) (OPT 205TT (V43991)) (OPT 99205 (V29337))		2
55	256T2306-1		.GEAR-BEVEL		2
60	256T2313-1		.COVER-INSPECTION HOLE ATTACHING PARTS		1
65	NAS6603-2		.BOLT		2
70	AN960PD10		.WASHER -------*-------		2
75	256T2301-1		.HOUSING ASSY		1
80	MS21209F1-15		..INSERT		2
85	281001		..PLUG- (V92555) (SPEC BACP20AX25DA)		2
90	281001P		..PIN- (V92555) (SPEC BACP20AX25DAP)		2
95	MS21209F4-15		..INSERT		3
100	256T2301-2		..HOUSING		1
105	256T2314-1		.NAMEPLATE		1