COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

TE FLAP DRIVE, NO. 1 AND 8 TRANSMISSION ASSEMBLY

PART NUMBER 65C27501–1, –2, –3, 65C27508–1, –2, –3

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COMPONENT MAINTENANCE MANUAL

Revision No. 23
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To: All holders of TE FLAP DRIVE, NO. 1 AND 8 TRANSMISSION ASSEMBLY 27-55-59.

Attached is the current revision to this COMPONENT MAINTENANCE MANUAL

The COMPONENT MAINTENANCE MANUAL is furnished either as a printed manual, on microfilm, or digital products, or any combination of the three. This revision replaces all previous microfilm cartridges or digital products. All microfilm and digital products are reissued with all obsolete data deleted and all updated pages added.

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ATTENTION

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Location of Change	Description of Change
27-55-59	
REPAIR 8-1	Added bolt hole dimension to illustration.
SPECIAL TOOLS FIXTURES AND EQUIPMENT	Changed the data in the Tool Supplier Information table.
	Added the Commercial Tools table.
	Added the Special Tools table.
	Added the Tool Supplier Information table.

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COMPONENT MAINTENANCE MANUAL

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
		PRR 33310-4	JUN 05/84
		PRR 33451	JUN 05/84
		PRR 34103-1	SEP 05/87

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Revision		Filed	
Number	Date	Date	Initials

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INTRODUCTION

1. General

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

B. This manual is divided into different parts:

(1) Title Page

(2) Transmittal Letter

(3) Highlights

(4) List of Effective Pages

(5) Table of Contents

(6) Temporary Revision & Service Bulletin Record

(7) Record of Revisions

(8) Record of Temporary Revisions

(9) Introduction

(10) Procedures & IPL Sections

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

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

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

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

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

TRAILING EDGE FLAP DRIVE SYSTEM NO. 1 AND 8 TRANSMISSION ASSEMBLIES - DESCRIPTION AND OPERATION

1. Description and Operation

A. The trailing edge flap drive system No. 1 and 8 transmission assemblies each consist of four bevel gears, a torque brake assembly, and an output shaft enclosed in a sealed, lubricant-filled housing. A splined coupling connects to the flap drive torque tube system. A universal joint assembly at the end of the output shaft attaches to the flap ballscrew actuator.

B. Each transmission assembly transmits flap drive torque to a ballscrew and nut assembly. The torque brake limits the torque applied to the ballscrew. The assemblies are located at the outboard ends of the outboard flaps.

2. Leading Particulars (Approximate)

A. Length – 20 inches

B. Width – 8 inches

C. Height – 12 inches

D. Weight – 30 pounds

TESTING AND FAULT ISOLATION

1. General

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

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

C. Refer to IPL Figure 1 for item numbers.

2. Preparation for Test

A. Ensure that test unit has been serviced with hydraulic fluid per ASSEMBLY, Paragraph 2.E.(10).

3. Functional Test

A. Tools/Equipment

NOTE: Equivalent substitutes may be used.

Reference	Description
SPL-5349	X-Y Recorder/Plotter (Part #: 925E, Supplier: 60795)
SPL-5446	X-Y recorder (Part #: RW20IT, Supplier: 31991) (Opt Part #: 7046A, Supplier: 28480) (Opt Part #: 7090A, Supplier: 28480)
SPL-5448	Strain gage conditioner (Part #: 3170, Supplier: 02654)
SPL-5449	Strain gage conditioner (Part #: 3270, Supplier: 02654)
SPL-5464	Transmission tester (Part #: ST6396, Supplier: 71791)

B. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
G01912	Lockwire - Monel (0.032 In. Dia.)	NASM20995N˜ C32 (QQ-N-281)

C. References

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

D. Procedure (IPL Figure 1)

NOTE: Conduct tests at room temperature.

(1) Rotate coupling (240) in each direction by hand. Check that gears and bearings are free running with no evidence of binding at any position.

(2) Remove plug (395) and install air valve adapter in upper filler port. Connect air supply, controllable at 0-15 psi, and pressurize at 14.5-15.5 psi for minimum of 3 minutes (non-operating). Check that there is no evidence of leakage.

(3) Remove adapter and install plug with new packing (400). Lockwire plug with lockwire, G01912 per SOPM 20-50-02, double-twist method.

(4) Rotate input shaft (285) 10 revolutions in each direction. Allow unit to stand for 8 hours. Check that there is no evidence of leakage.

(5) With output shaft (110) free to rotate, check that torque required to rotate input shaft does not exceed 12 lb-in. in either direction.

(6) Lock output shaft. Apply 45-55 lb-in. clockwise torque to input shaft and mark shaft position. Apply equivalent counterclockwise torque and check that input backlash does not exceed 20 degrees.

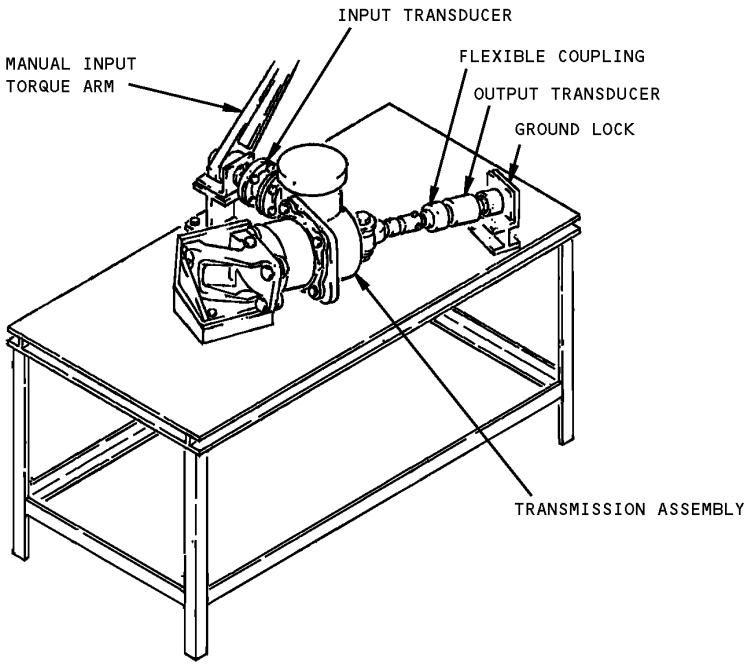
(7) Mount assembly in test fixture transmission tester, SPL-5464 (TESTING AND FAULT ISOLATION, Figure 101). Connect input and output torque transducers with Strain gage conditioner, SPL-5448 or Strain gage conditioner, SPL-5449 to X-Y recorder, SPL-5446 or X-Y recorder/plotter, SPL-5349 and zero recorder.

CAUTION: DO NOT EXCEED 1825 LB-IN. INPUT TORQUE OR DAMAGE TO UNIT MAY OCCUR.

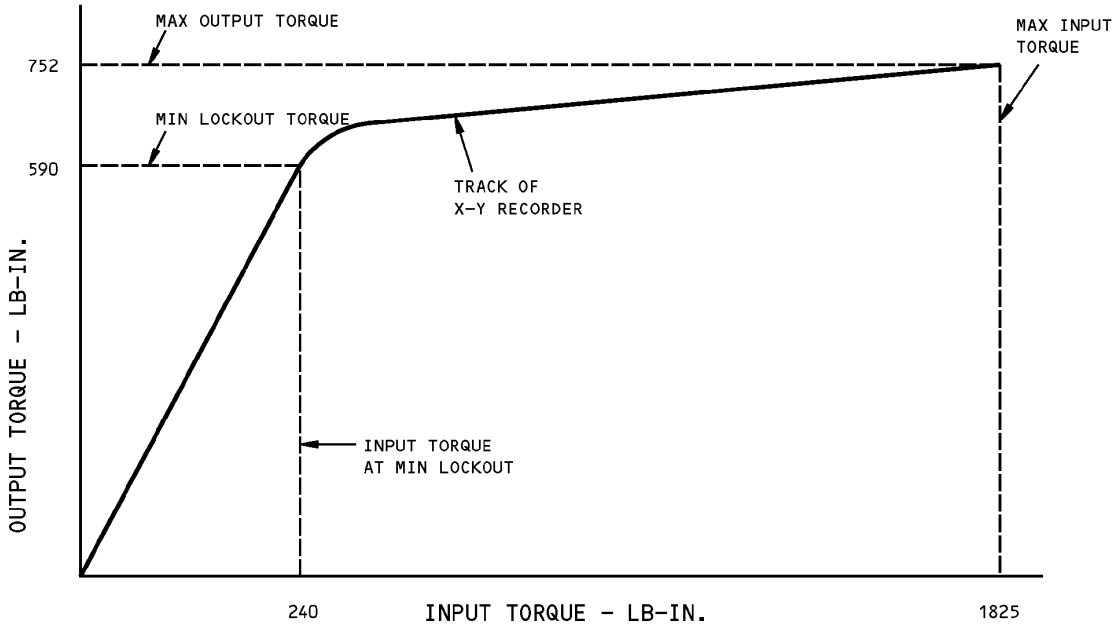
(8) Install manual input torque arm (TESTING AND FAULT ISOLATION, Figure 101) and apply slowly increasing clockwise torque to unit. Check that output torque at minimum lockout is not less than 590 lb-in. for input torque of 240 lb-in. Check that output torque does not exceed 752 lb-in. at 1825 lb-in. input torque (TESTING AND FAULT ISOLATION, Figure 102).

(9) Repeat TESTING AND FAULT ISOLATION, Paragraph 3.D.(8) except in counterclockwise direction.

(10) Remove unit from test fixture transmission tester, SPL-5464 and ink stamp "FT" followed by date of test completion on gear housing (405, 410) adjacent to identification nameplate (430).



Functional Test Set-up
Figure 101



Torque Brake Lockout Limits
Figure 102

4. **Troubleshooting**

   A. Refer to TESTING AND FAULT ISOLATION, Table 101 for probable cause of indicated problems and corrective procedures.

Table 101: Trouble shooting Chart

TROUBLE	PROBABLE CAUSE	CORRECTION
Binding or roughness	Defective bearings (70,215, 220,275,280,315,335,385), gears (285,320,340), or torque brake (135)	Replace parts as required.
	Improper shimming	Correct shimming per ASSEMBLY.
External leakage	Defective packings (40,195, 200,265,305,370,390) or seals (260,375)	Replace parts as required.
Backlash out of range	Improper shimming or worn components	Correct shimming per ASSEMBLY or replace gears.
Lockout out of range	Defective torque brake assembly (135)	Repair or replace torque brake.

DISASSEMBLY

1. **General**

   A. Refer to TESTING AND FAULT ISOLATION 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.

2. **Parts Replacement (IPL Figure 1)**

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

   A. Packings (40, 195, 200, 265, 305, 370, 380, 390, 400)

   B. Washer (55)

   C. Retaining ring (210)

   D. Seals (260, 375)

3. **Disassembly**

   A. Tools/Equipment

   NOTE: Equivalent substitutes may be used.

Reference	Description
SPL-5415	Splined Coupling Spanner Wrench (Part #: F71228-500, Supplier: 81205)
SPL-5461	Adapter - Torque Wrench (Part #: ST6105-1, Supplier: 71791)
SPL-5463	Spring Expansion Fixture (Part #: ST6107, Supplier: 71791)

   B. Procedure

      (1) Remove all lockwire.

      (2) Remove plugs (395) and packings (400). Drain hydraulic fluid from assembly.

      (3) Remove parts (10 thru 25) and separate forward housing (30 or 35) from rest of assembly. Remove packing (40) from housing. Remove shim (45) and note thickness to facilitate reassembly.

      (4) Remove and disassemble universal-joint assembly (75).

         (a) Straighten tangs of washer (55). Use torque wrench adapter, SPL-5461 to loosen nut (50), then remove parts (50 thru 65) from end of output shaft (110).

         (b) Tap end of output shaft and remove universal-joint assembly from housing assembly (420 or 425).

         (c) Remove parts (80 thru 90) from universal-joint assembly, then separate yoke (95), pin (100), cross (105) and output shaft (110).

            NOTE: Do not remove bushings (115) from yoke or shaft unless necessary for repair or replacement.

      (5) Remove and disassemble torque brake assembly (135).

(a) Remove parts (120 thru 130) and separate torque brake assembly and housing assembly (405 or 410).

(b) Remove support (140) from torque brake housing (185), then remove adapter (65), bearing (70), and packing (195) from support.

(c) Remove support (145) from housing (185), then remove packings (195, 200) from support. Remove shim (205) and note thickness to facilitate reassembly.

(d) Support torque brake housing while providing clearance for internal parts. Apply pressure on sleeve (170) to press out spring pack assembly (150) from housing. Remove rings (155). Remove shims (160), if installed. Note number, thickness, and location of shims to facilitate reassembly.

NOTE: Up to two shims may be installed at each end of spring pack assembly.

(e) Disassemble spring pack assembly (150) .

1) Install spring pack assembly in the ST6107 Spring Expansion Fixture, SPL-5463.

2) Align spring turns with fixture spring stops, tapping with a soft drift, as required. Move stops inward to position them for spring engagement and lock in place.

3) Rotate drive shaft until stops contact ends of spring set (180). Continue to wind springs until adapter (165) is free. Remove adapter and sleeves (170, 175) from spring set.

CAUTION: SPRING SET (180) IS A MATCHED ASSEMBLY. DO NOT REPLACE OR REWORK SPRINGS INDIVIDUALLY OR UNIT MAY NOT FUNCTION PROPERLY.

4) Rotate drive shaft in reverse to unwind spring until fixture stops are free of spring ends. Loosen all four spring stops and move outward then remove spring set from the Spring Expansion Fixture, SPL-5463. Tag springs to identify as a matched pair.

(6) Remove bevel gear (225) with attached parts from housing assembly (405 or 410). Remove retaining ring (210) to separate coupling (190) from bevel gear. Remove bearings (215, 220).

NOTE: Coupling (190) is part of torque brake assembly (135).

(7) Remove bevel gear (285).

(a) Hold coupling (240) with F71228-500 Splined Coupling Spanner Wrench, SPL-5415 and loosen nut (230). Remove parts (230 thru 240).

(b) Remove parts (245, 250) and retainer (255) from housing assembly. Remove seal (260) and packing (265) from retainer.

(c) Remove shim (270) and note thickness to facilitate reassembly.

(d) Remove bevel gear (285), then remove bearings (275, 280) from gear shaft.

(8) Remove bevel gears (320, 340).

(a) Remove parts (290, 295) and cover (300) from housing assembly. Remove packing (305) from cover.

(b) Remove shim (310) and note thickness to facilitate reassembly.

(c) Remove bevel gears (320, 340) with attached parts from housing assembly and separate parts (320 thru 340). Note thickness of shim (325) to facilitate reassembly.

(9) Remove parts (345 thru 355) to release retainer (360), support (365), and associated parts from housing assembly (405 or 410). Separate parts (360 thru 385).

NOTE: Do not remove nameplate (430) or inserts (415) from housing assembly unless necessary for repair or replacement.

CLEANING

1. Cleaning

A. References

Reference	Title
SOPM 20-30-03	GENERAL CLEANING PROCEDURES

B. Procedure

(1) Clean all parts except bearings using standard industry practices (SOPM 20-30-03).

(2) Clean teflon sealed bearings (70, 215, 220, 275, 280, 315, 335, 385, IPL Figure 1) per manufacturer's instructions.

CHECK

1. General

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

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

2. Check

A. References

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

B. Procedure

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

(a) Universal joint assembly: bolt (85), spacer (90), yoke (95), pin (100), cross (105), shaft (110)

(b) Nut (50), adapter (65)

(c) Torque brake assembly: ring (155), adapter (165), sleeve (170, 175), spring set (180), housing (185), coupling (190)

(d) Gear (225, 285, 320, 340)

(e) Coupling (240)

(f) Support (365, 365B)

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

(a) Housing (30, 35, 420, 425)

(b) Support (140, 145, 365A)

(c) Retainer (255, 360)

(d) Cover (300)

(3) Check gear teeth and splines for uneven wear.

REPAIR

1. Content

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

Table 601:

P/N	NAME	REPAIR
65-50273	HOUSING, GEAR	1-1
65-80941 69-52400	SHAFT, OUTPUT	2-1
65-76602	UNIVERSAL JOINT	3-1
65-76606	BOLT	4-1
69-37668 69-52734	SUPPORT	5-1
69-37696	RETAINER	6-1
69-52404	GEAR, BEVEL	7-1
69-52414	YOKE	8-1
69-60052	SPACER	9-1
69-60056	PIN, CROSS	10-1
69-60058	CROSS, TRUNNION	11-1
69-62735	RETAINER	12-1
69-52461	NAMEPLATE	13-1
176665	BRAKE, TORQUE	14-1
- -	MISC PARTS REFINISH	15-1

2. Standard Practices

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

- SOPM 20-10-01 Repair and Refinish of High Strength Steel Parts
- SOPM 20-10-02 Machining of Alloy Steel
- SOPM 20-10-03 Shot Peening
- SOPM 20-10-04 Grinding of Chrome Plated Parts
- SOPM 20-20-01 Magnetic Particle Inspection
- SOPM 20-30-02 Stripping of Protective Finishes
- SOPM 20-30-03 General Cleaning Procedures
- SOPM 20-41-01 Decoding Table for Boeing Finish Codes
- SOPM 20-41-02 Application of Chemical and Solvent Resistant Finishes
- SOPM 20-42-01 Low Hydrogen Embrittlement Cadmium Plating
- SOPM 20-42-02 Low Hydrogen Embrittlement Cadmium-Titanium Alloy Plating
- SOPM 20-42-03 Hard Chrome Plating

- SOPM 20-42-09 Electrodeposited Nickel Plating
- SOPM 20-43-01 Chromic Acid Anodizing
- SOPM 20-44-01 Application of Special Purpose Coatings and Finishes
- SOPM 20-50-03 Bearing Installation and Retention
- SOPM 20-50-05 Application of Aluminum Foil and Other Markers
- SOPM 20-50-12 Application of Adhesives

3. Materials

NOTE: Equivalent substitutes may be used.

A. Adhesive – adhesive, A00441 BMS 5-126

B. Enamel –

(1) coating, C00260 BMS 10-11, Type 2, BAC707 gray gloss

(2) coating, C00700 BMS 10-60, BAC707 gray gloss

(3) coating, C00032 BMS 10-60, Type 1, black

C. Primer – primer, C00259 BMS 10-11, Type I

D. Topcoating – coating, B00571 Clear Skydrol-resistant, Type 41

4. Dimensioning Symbols

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

—	STRAIGHTNESS
▱	FLATNESS
⊥	PERPENDICULARITY (OR SQUARENESS)
//	PARALLELISM
○	ROUNDNESS
⌭	CYLINDRICITY
⌒	PROFILE OF A LINE
⌓	PROFILE OF A SURFACE
◎	CONCENTRICITY
⌯	SYMMETRY
∠	ANGULARITY
↗	RUNOUT
↗↗	TOTAL RUNOUT
⌴	COUNTERBORE OR SPOTFACE
⌵	COUNTERSINK
⌖	THEORETICAL EXACT POSITION OF A FEATURE (TRUE POSITION)
Ø	DIAMETER
S Ø	SPHERICAL DIAMETER
R	RADIUS
SR	SPHERICAL RADIUS
()	REFERENCE
BASIC (BSC) OR [DIM]	A THEORETICALLY EXACT DIMENSION USED TO DESCRIBE SIZE, SHAPE OR LOCATION OF A FEATURE FROM 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
TIR	TOTAL INDICATOR READING

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
[◎ Ø 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
[⌖ Ø 0.002 Ⓢ | B]	LOCATED AT TRUE POSITION WITHIN 0.002 DIA RELATIVE TO DATUM B, REGARDLESS OF FEATURE SIZE
[⊥ Ø 0.010 Ⓜ | A] [0.510 Ⓟ]	AXIS IS TOTALLY WITHIN A CYLINDER OF 0.010-INCH DIAMETER, PERPENDICULAR TO, 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

GEAR HOUSING ASSEMBLY - REPAIR 1-1

65-50273–3, –4

1. General

A. This procedure has the data necessary to refinish the gear housing assembly (IPL Figure 1, 405, 410).

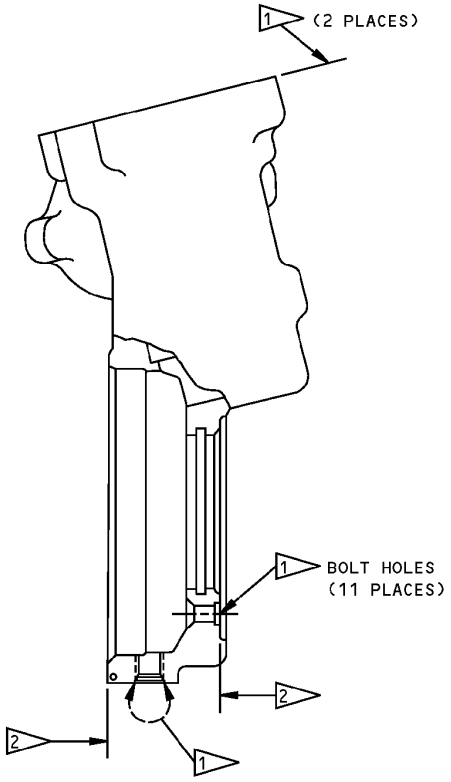
B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for item numbers.

2. Plating Repair

A. Repair consists of stripping and restoration of original finish. Refer to Refinish instruction in REPAIR 1-1, Figure 601.



REFINISH

SULFURIC ACID ANODIZE (F-17.03) OR CHROMIC ACID ANODIZE (F-17.02) ALL OVER. APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (SRF-12.205) PLUS ONE COAT ENAMEL, BMS 10-60 (SRF-14.9813) OR BMS 10-11, TYPE 2 (SRF-12.63) ON EXTERIOR SURFACES EXCEPT AS NOTED

MATERIAL: AL ALLOY

1 OMIT PRIMER AND ENAMEL THESE SURFACES

2 OMIT ENAMEL THESE SURFACES

Gear Housing Refinish
Figure 601

OUTPUT SHAFT - REPAIR 2-1

65-80941–1, –3, 69-52400–2

1. General

A. This procedure has the data necessary to repair and refinish the output shaft (IPL Figure 1, 110).

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

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

E. Refer tolPL Figure 1 for item numbers.

2. Bearing Surface Repair REPAIR 2-1, Figure 601

A. Machine diameter as required per SOPM 20-10-02, within repair limit shown, to remove defects.

B. Stress relieve by heating to 900-950°F for 4 hours (69-52400-2), or to 500-550°F for 4 hours (65-80941-1, -3) or to 525°F for 8 hours (when P/N 65-80941-1,-3 or 69-52400-2 can not be determined), then air-cooling at 65-75°F. Magnetic particle check per SOPM 20-20-01.

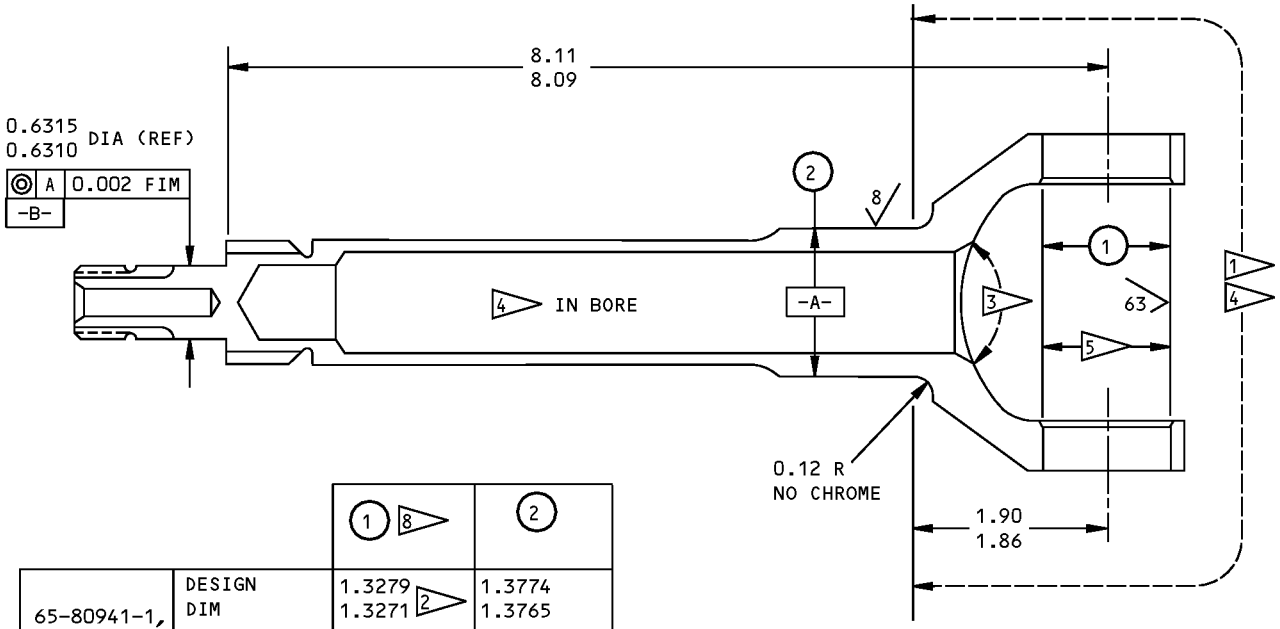
C. Shot peen as indicated (SOPM 20-10-03).

D. Build up repaired area with chrome plate (SOPM 20-42-03) and grind to design dimensions and finish shown (SOPM 20-10-04).

E. Magnetic particle check per SOPM 20-20-01.

3. Refinish

A. For repair of surfaces which may only require stripping and restoration of original finish, refer to REFINISH instruction, REPAIR 2-1, Figure 601.



		1 8	2
65-80941-1, -3	DESIGN DIM	1.3279 1.3271 2	1.3774 1.3765
	REPAIR LIMIT 6	1.3501	1.3465
69-52400-2	DESIGN DIM	1.3279 1.3271 2	1.3774 1.3765 7
	REPAIR LIMIT 6	1.3501	1.3465

REFINISH

CADMIUM-TITANIUM ALLOY PLATE (F-15.01) AS INDICATED. APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (F-20.02) AS INDICATED

1. CADMIUM-TITANIUM PLATE THESE SURFACES
2. DIMENSIONS SHOWN ARE BEFORE PLATING. PLATE PER F-15.01, 0.0003-0.0005 THICK
3. PLATING OPTIONAL TO PRIMER PLUS ENAMEL
4. APPLY PRIMER THESE SURFACES
5. OMIT PRIMER
6. BUILD UP WITH CHROME PLATE AND GRIND TO DESIGN DIMENSIONS AND SURFACE ROUGHNESS SHOWN. DO NOT APPLY CADMIUM-TITANIUM PLATING OR PRIMER ON REPAIRED SURFACES THAT HAVE BEEN CHROME PLATED.
7. DIMENSIONS SHOWN ARE BEFORE PLATING. PLATE PER F-15.01, 0.0005-0.0007 THICK
8. THRU IN-LINE PERPENDICULAR TO DIA -A- WITHIN 0.001

REPAIR

REF 6

BREAK SHARP EDGES 0.003-0.020 R

SHOT PEEN: 0.017-0.039 SHOT SIZE
0.016 A2 INTENSITY

MATERIAL: (65-80941-1,-3) 4340M STEEL
275-300 KSI
(69-52400-2) MOD H-11 STEEL
RC 54-56

ALL DIMENSIONS ARE IN INCHES

65-80941-1,-3 69-52400-2 Output Shaft Repair
Figure 601

UNIVERSAL JOINT ASSEMBLY - REPAIR 3-1

65-76602–11

1. General

A. This procedure has the data necessary to repair the universal joint assembly (IPL Figure 1, 75).

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer tolPL Figure 1 for item numbers.

2. Bushing Replacement

NOTE: For repair of assembly detail parts, refer to REPAIR 4-1, REPAIR 8-1, REPAIR 9-1, REPAIR 10-1, and REPAIR 11-1.

A. If installed bushings (115, IPL Figure 1) meet CHECK requirements and are not worn beyond service limits specified in FITS AND CLEARANCES, bushing need not be replaced. Remove bushings, rotate 180 degrees, and reinstall per SOPM 20-50-03, using wet primer, C00259.

B. If bushings are damaged or worn beyond service wear limits, install new bushings in yoke (95) or output shaft (110) per SOPM 20-50-03, using wet primer, C00259.

NOTE: Replace bushings in pairs.

UNIVERSAL JOINT BOLT - REPAIR 4-1

65-76606–1

1. General

A. This procedure has the data necessary to repair and refinish the universal joint bolt (IPL Figure 1, 85).

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

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

E. Refer tolPL Figure 1 for item numbers.

2. Bearing Surface Repair REPAIR 4-1, Figure 601

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

B. Stress relieve by heating to 500-550°F for 4 hours, then air-cooling at 65-75°F. Magnetic particle check per SOPM 20-20-01.

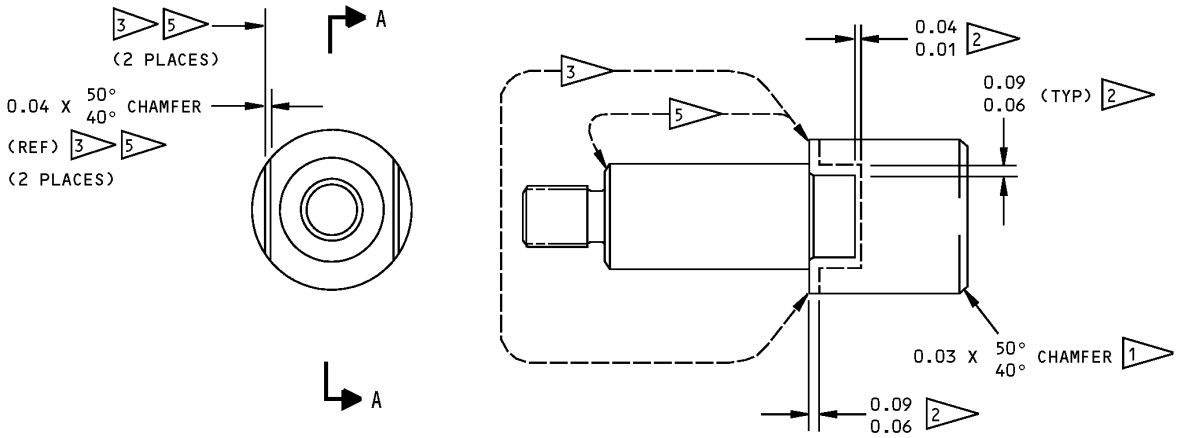
C. Shot peen as indicated (SOPM 20-10-03).

D. Build up repaired area with chrome plate per SOPM 20-42-03and grind to design dimensions and finish shown (SOPM 20-10-04).

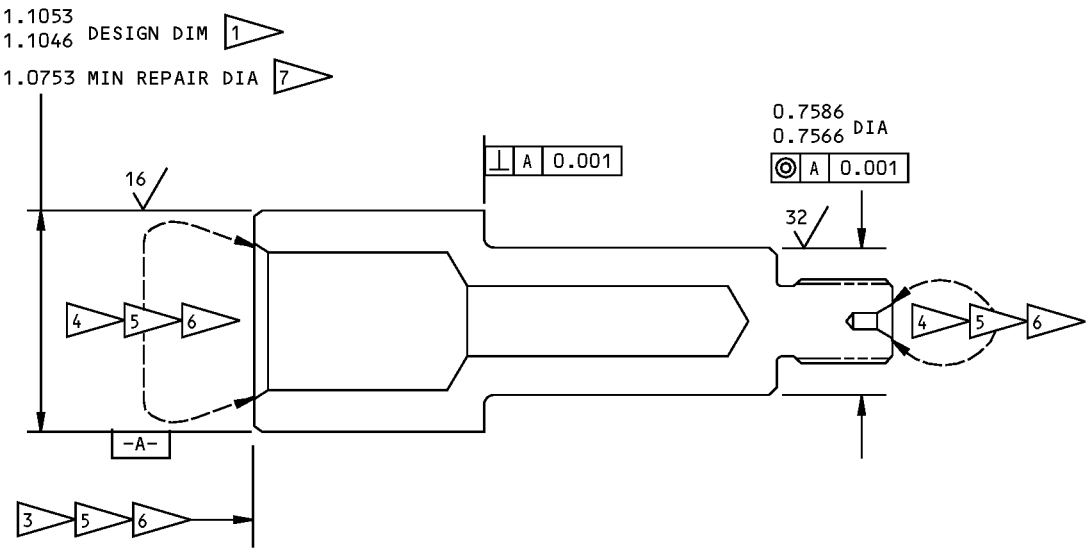
E. Magnetic particle check per SOPM 20-20-01.

3. Refinish

A. For repair of surfaces which may only require stripping and restoration of original finish, refer to REFINISH instruction, REPAIR 4-1, Figure 601.



Universal Joint Bolt Repair
Figure 601 (Sheet 1 of 2)



A-A

REFINISH

CHROME PLATE PER 1 2 . CADMIUM-TITANIUM PLATE ALL OTHER SURFACES PER 3 4 . APPLY ONE COAT PRIMER PER 5 AND ONE COAT ENAMEL PER 6

1 CHROME PLATE (F-15.04) 0.003-0.005 THICK

2 CHROME PLATE RUNOUT. AREA NOT CHROME PLATED MUST BE PLATED AND PRIMED PER 3 AND 5

3 CADMIUM-TITANIUM ALLOY PLATE (F-1.18) 0.0003-0.0005 THICK

4 CADMIUM-TITANIUM PLATE THROW-IN PREFERRED

5 APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (SRF-12.205)

6 APPLY ONE COAT ENAMEL, BMS 10-11, TYPE 2 (SRF-12.63)

7 BUILD UP WITH CHROME PLATE AND GRIND TO DESIGN DIMENSIONS AND FINISH SHOWN. OBSERVE PLATING RUNOUT AS NOTED

REPAIR

REF 7

125 ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.010-0.030R

SHOT PEEN: 0.017-0.033 SHOT SIZE
0.015 A2 INTENSITY

MATERIAL: 4340M STEEL (275-300 KSI)

ALL DIMENSIONS ARE IN INCHES

65-76606-1

Universal Joint Bolt Repair
Figure 601 (Sheet 2 of 2)

BEARING SUPPORT - REPAIR 5-1

69-37668–6, 69-62734–2, –3

1. General

A. This procedure has the data necessary to repair and refinish the bearing support (IPL Figure 1, 365).

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

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

E. Refer tolPL Figure 1 for item numbers.

2. Sealing Surface Repair (REPAIR 5-1, Figure 601)

A. Machine OD of 69-37668-6 or 69-62734-3 as required, within repair limit shown, to remove defects.

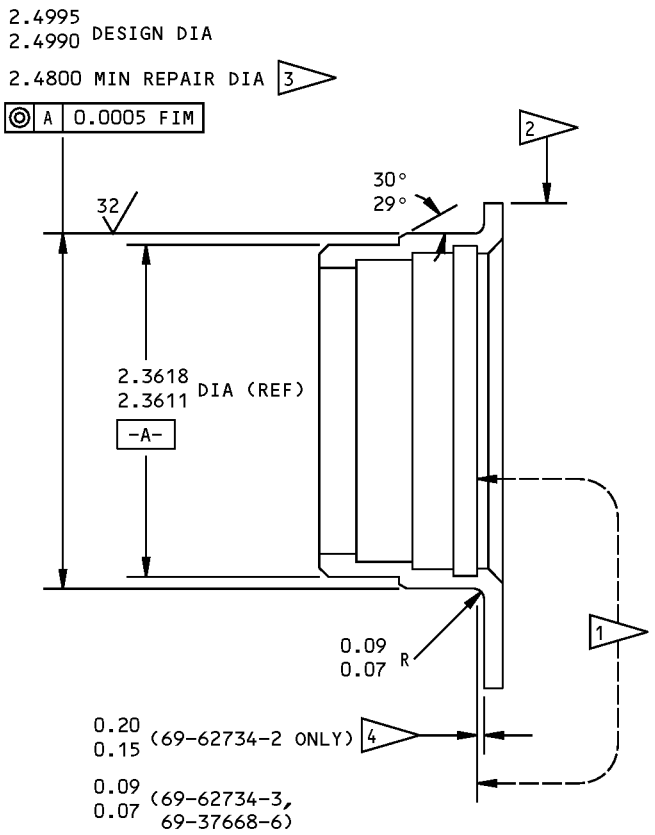
B. Stress relieve by heating to 900-950°F for 2 hours (69-37668-6) or to 500-550°F for 4 hours (69-62734-3) then air-cooling at 65-75°F. Magnetic particle check per SOPM 20-20-01.

C. Shot peen as indicated (69-37668-6, 69-62734-3 only) (SOPM 20-10-03).

D. Build up repaired area with chrome plate (SOPM 20-42-03) and grind to design dimensions and finish shown (69-37668-6, 69-62734-3 only) (SOPM 20-10-04).

3. Refinish

A. For repair of surfaces which may only require stripping and restoration of original finish, refer to REFINISH instruction, REPAIR 5-1, Figure 601.



REFINISH

CHROMIC ACID ANODIZE OR CHEMICAL TREAT (F-17.01) ALL OVER (69-62734-2 ONLY)

CADMIUM-TITANIUM PLATE (F-15.01) ALL OVER (69-62734-3 ONLY)

APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (F-20.02) AS NOTED, PLUS ONE COAT ENAMEL, BMS 10-60, COLOR BAC707 GRAY GLOSS (SRF-14.9813) ON EDGE OF FLANGE AS SHOWN

1. APPLY PRIMER THESE SURFACES ONLY
2. APPLY ENAMEL THIS SURFACE ONLY (69-37668-6 ONLY)
3. BUILD UP WITH CHROME PLATE AND GRIND TO DESIGN DIMENSIONS AND FINISH SHOWN. OBSERVE MINIMUM PLATING RUNOUT AT FILLET (69-37668-6,69-62734-3 ONLY)
4. NO CHROME THIS AREA

REPAIR

REF 3 4

125 ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.003-0.020 R

SHOT PEEN: (69-62734-3,69-37668-6 ONLY)
0.017-0.039 SHOT SIZE
0.010 A2 INTENSITY

MATERIAL: (69-62734-2) AL ALLOY
(69-62734-3) 4340M STEEL (270-300 KSI)
(69-37668-6) MOD H-11 STEEL (RC 54-56)

ALL DIMENSIONS ARE IN INCHES

69-37668-6, 69-62734-2,-3 Bearing Support Repair
Figure 601

RETAINER - REPAIR 6-1

69-37696–4

1. General

A. This procedure has the data necessary to refinish the retainer (IPL Figure 1, 255).

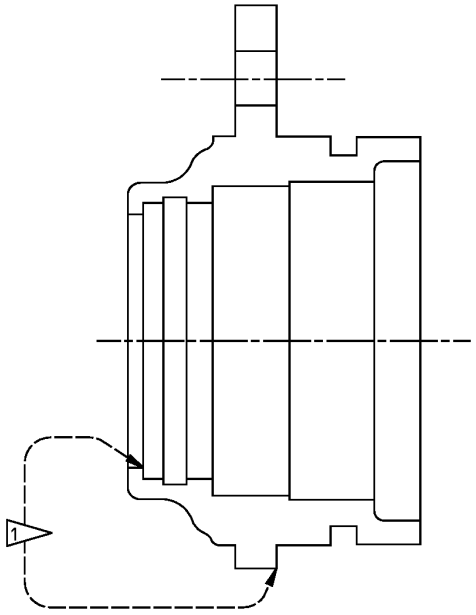
B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer tolPL Figure 1 for item numbers.

2. Plating Repair

A. Repair consists of stripping and restoration of original finish. Refer to Refinish instruction in REPAIR 6-1, Figure 601.



REFINISH

CHROMIC ACID OR SULFURIC ACID ANODIZE (F-17.05) ALL OVER. APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (F-20.02) ON AREA SHOWN

MATERIAL: AL ALLOY

1 APPLY PRIMER THESE SURFACES ONLY

Retainer Refinish
Figure 601

BEVEL GEAR - REPAIR 7-1

69-52404–1, –2

1. General

A. This procedure has the data necessary to repair and refinish the bevel gear (IPL Figure 1, 285).

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

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

E. Refer toIPL Figure 1 for item numbers.

2. Sealing Surface Repair (REPAIR 7-1, Figure 601)

A. Magnetic particle examine per SOPM 20-20-01.

B. Machine gear OD as required, within repair limit, to remove defects. Finish should be 8 microinches or better. No step or mismatch is allowed.

C. Shot peen machined area (including fillet radius) using size and intensity specified (SOPM 20-10-03).

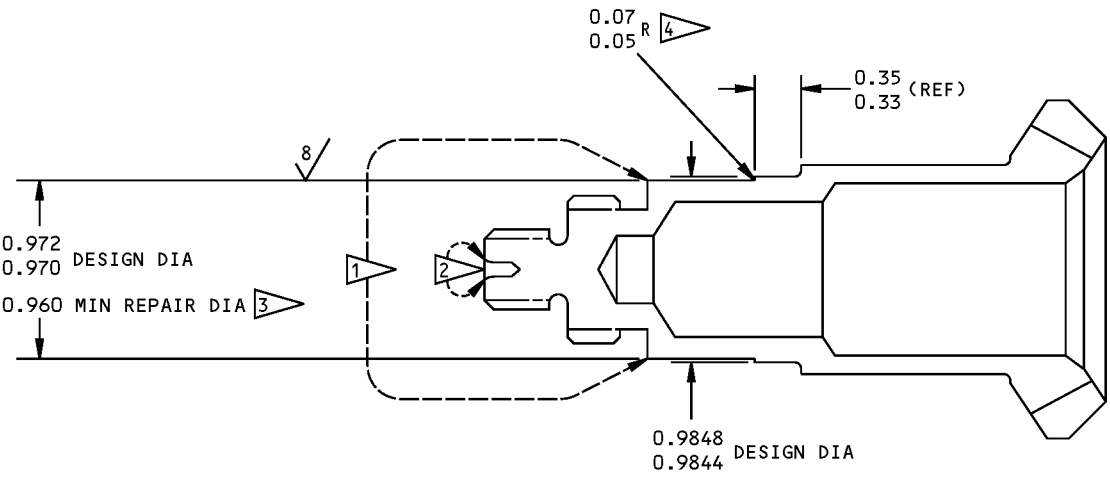
D. Build up OD with chrome plate per SOPM 20-42-03.

E. Grind OD to design diameter and finish noted (SOPM 20-10-04).

F. Magnetic particle examine per SOPM 20-20-01.

3. Refinish

A. For repair of surfaces which may only require stripping and restoration of original finish, refer to REFINISH instruction, REPAIR 7-1, Figure 601.



REFINISH

CADMIUM-TITANIUM ALLOY PLATE AS NOTED. APPLY PRIMER TO DRILL CENTER AS NOTED

1 CADMIUM-TITANIUM ALLOY PLATE (F-1.181) 0.0005-0.0007 THICK THIS AREA

2 PLATING OPTIONAL THIS AREA. APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (SRF-12.205)

3 BUILD UP WITH HARD CHROME PLATE (REF 20-42-03) AND GRIND TO FINISH AND DIMENSIONS SHOWN. STOP CHROME PLATE 0.03 MINIMUM BEFORE FILLET RADIUS

4 MAINTAIN RADIUS IN TRANSITION BETWEEN DIAMETERS

REPAIR

REF 3 4

BREAK SHARP EDGES 0.003-0.020

SHOT PEEN (REF 20-10-03)
0.017-0.033 SIZE
0.014 A2 INTENSITY
2.0 COVERAGE

MATERIAL: (69-52404-1) MOD H-11 STEEL (RC 54-56)
(69-52404-2) 4340M STEEL (270-300 KSI)

ALL DIMENSIONS ARE IN INCHES

69-52404-1,-2 Bevel Gear Repair
Figure 601

YOKE - REPAIR 8-1

69-52414–4, –6, –8, –9

1. General

A. This procedure has the data necessary to repair and refinish the yoke (IPL Figure 1, 95).

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

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

E. Refer tolPL Figure 1 for item numbers.

2. Bolt Hole Rework

A. Machine attachment bolt holes to 0.3432-0.3442 inch diameter per SOPM 20-10-02. Break sharp edges of reworked holes 0.003-0.020.

B. Attach tag to reworked yoke, stating "Bolt holes are oversize. Use oversize bolts, NAS3005E23 or equivalent, to attach ballscrew. Bolt holes in ballscrew must be 0.3432-0.3442 in. dia to match."

3. Yoke ID Corrosion Removal (REPAIR 8-1, Figure 601)

A. Machine per SOPM 20-10-02 the yoke ID as required, within repair limit, to remove defects. Finish should be 32 microinches or better. No step or mismatch is allowed. Break sharp edges.

B. Surface temper etch with ammonium persulphate per SOPM 20-10-02.

C. Stress relieve per SOPM 20-10-02.

D. Magnetic particle check per SOPM 20-20-01, class B.

E. Shot peen machined area per SOPM 20-10-03. Observe material heat treat criteria specified.

F. Check if mating part (jackscrew) has been chrome plated. Use optional repair method for yoke if mating part has been chrome plated.

(1) Build up ID with chrome plate per SOPM 20-42-03. Chrome plate runout 0.01-0.03 inch around edges of ID and all holes.

(2) OPTIONAL REPAIR: Build up ID using electrodeposited nickel plate per SOPM 20-42-09, type 3. Nickel plate runout 0.01-0.03 inch around edges of ID and all holes.

G. Stress relieve within 10 hours of plating. Stress relieve chrome plated parts. Bake at 350-400°F for 12 hours per SOPM 20-42-03. Stress relief bake nickel plated parts per SOPM 20-42-09.

H. Grind yoke ID per SOPM 20-10-04 to design diameter shown. Surface finish to be 63 microinches or better.

I. Magnetic particle check per SOPM 20-20-01, class B.

J. Low hydrogen embrittlement stylus cad plate per SOPM 20-42-10 any unplated areas created due to chrome or nickel plate stops. Observe post plate bake requirements in SOPM 20-42-03 for chrome plated parts, and SOPM 20-42-09 for nickel plated parts.

4. Trunnion Hole Corrosion Removal (REPAIR 8-1, Figure 601)

A. Machine per SOPM 20-10-02 the trunnion hole as required to remove corrosion within maximum repair limit shown. Finish to 32 microinches. Break sharp edges.

NOTE: Remove only enough material that is necessary to remove corrosion.

B. Surface temper etch the machined area with ammonium persulphate per SOPM 20-10-02.

C. Stress relieve per SOPM 20-10-02.

D. Magnetic particle check the machined area per SOPM 20-20-01, class B.

E. Shot peen the area shown using size, intensity and coverage specified per SOPM 20-10-03. Observe material heat treat criteria specified.

F. Build up the hole diameter with chrome plate per SOPM 20-42-03. Chrome plate runout 0.01-0.02 inch around edges of hole. Do not chrome plate chamferred area.

G. Stress relieve within 10 hours of plating. Stress relieve bake at 350-400°F for 12 hours per SOPM 20-42-03.

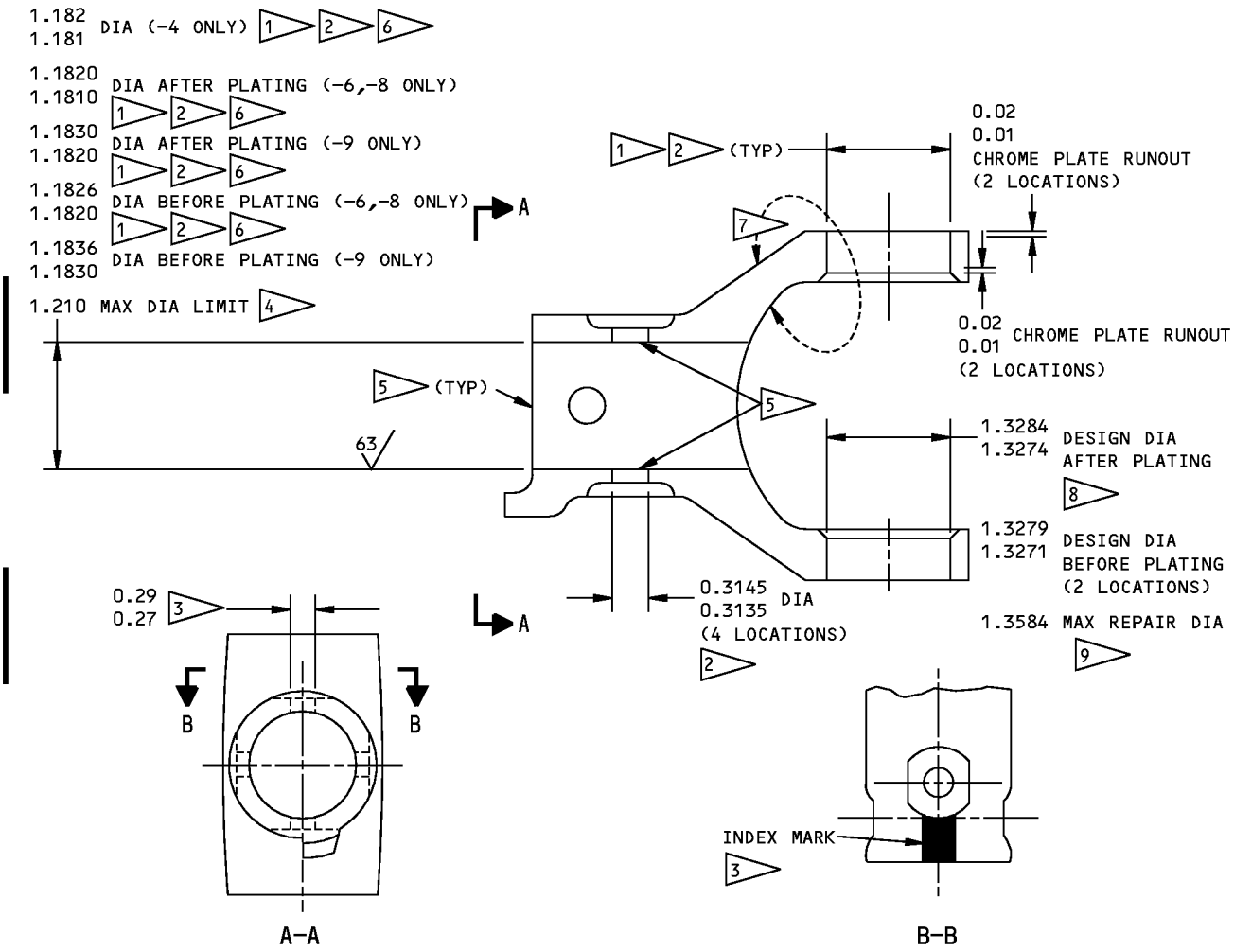
H. Grind hole ID per SOPM 20-10-04 to the after plating design diameter shown. Surface finish to be 63 microinches or better.

I. Magnetic particle check per SOPM 20-20-01, class B.

J. Low hydrogen embrittlement stylus cad plate per SOPM 20-42-10 any unplated areas created due to chrome plate stops. Observe post plate brake requirements in SOPM 20-42-03.

5. Refinish

A. For repair of surfaces which may only require stripping and restoration of original finish, refer to REFINISH instruction, REPAIR 8-1, Figure 601.



REFINISH

CADMIUM-TITANIUM ALLOY PLATE (F-15.01) ALL OVER EXCEPT AS NOTED. APPLY TWO COATS PRIMER, BMS 10-11, TYPE 1 (F-20.03) EXCEPT AS NOTED

1. CADMIUM-TITANIUM PLATE 0.0003-0.0005 THICK
2. NO PRIMER OR SHOT PEEN THIS SURFACE
3. APPLY INDEX MARK PER SOPM 20-50-05 USING BMS 10-60, TYPE 1 BLACK ENAMEL, THEN APPLY TOP COATING OVER INDEX MARK PER SOPM 20-44-01, TYPE 41
4. BUILD UP WITH HARD CHROME PLATE (SOPM 20-42-03) (OPTIONAL: ELECTRODEPOSITED NICKEL PLATE (SOPM 20-42-09)) AND GRIND TO FINISH AND DIMENSIONS SHOWN
5. PLATING RUNOUT IS 0.01-0.03 INCH AROUND EDGES OF ID AND ALL HOLES
6. OMIT CADMIUM-TITANIUM PLATING IF THIS SURFACE IS REPAIRED

REPAIR

REF 4 THRU 9

SHOT PEEN (SOPM 20-10-03)

MATERIAL: (69-52414-4) MOD H-11 STEEL (RC 54-56)
(69-52414-6,-8,-9) 4340M STEEL (270-300 KSI)

ALL DIMENSIONS ARE IN INCHES

7. SHOT PEEN AREA SHOWN ALL AROUND CIRCUMFERENCE OF HOLE (2 LOCATIONS)
8. NO CADMIUM-TITANIUM PLATING OR PRIMER IF THIS SURFACE IS REPAIRED
9. BUILD UP WITH HARD CHROME PLATE (SOPM 20-42-03)

126739 S0004993239_V3

69-52414-4,-6,-8,-9 Yoke
Figure 601

UNIVERSAL JOINT SPACER - REPAIR 9-1

69-60052–1, –2

1. General

A. This procedure has the data necessary to repair and refinish the universal joint spacer (IPL Figure 1, 90).

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

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

E. Refer to IPL Figure 1 for item numbers.

2. Bearing Surface Repair (REPAIR 9-1, Figure 601)

A. Machine diameter as required per SOPM 20-10-02, within repair limit shown, to remove defects.

B. Stress relieve (SOPM 20-10-02) by heating to 900-950°F for 4 hours (69-60052-1), or to 500-550°F (69-60052-2) for 4 hours, then air-cooling at 65-75°F. Magnetic particle check per SOPM 20-20-01.

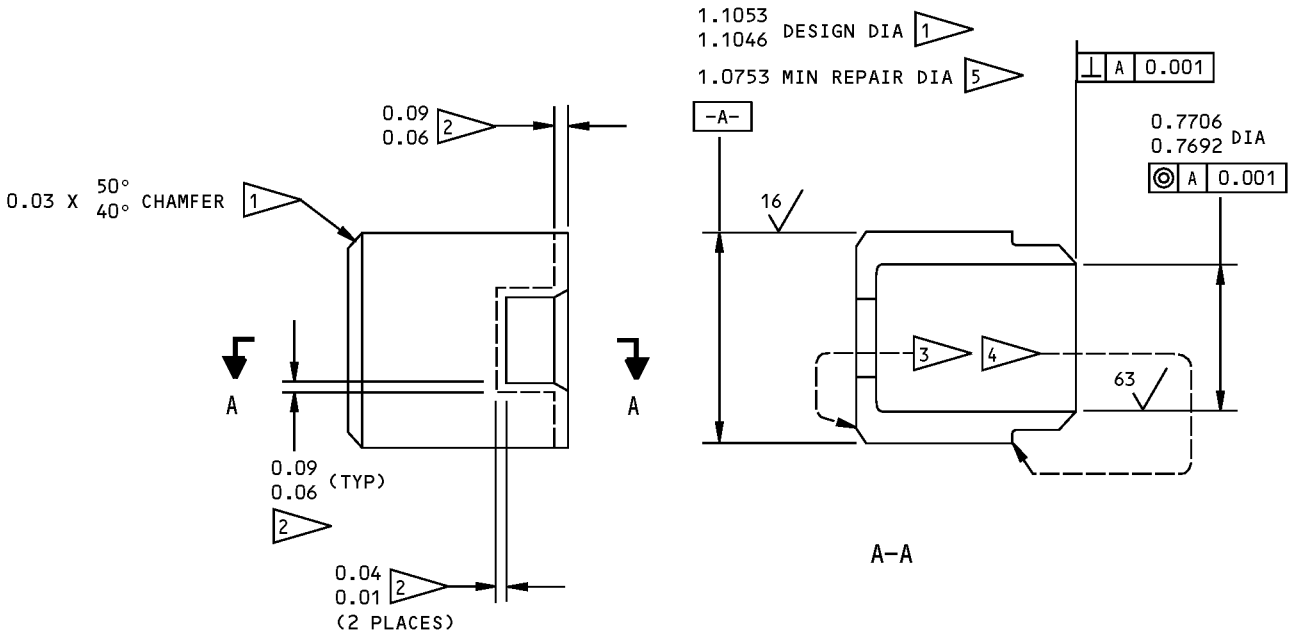
C. Shot peen as indicated (SOPM 20-10-03).

D. Build up repaired area with chrome plate per SOPM 20-42-03 and grind to design dimensions and finish shown (SOPM 20-10-04).

E. Magnetic particle check per SOPM 20-20-01.

3. Refinish

A. For repair of surfaces which may only require stripping and restoration of original finish, refer to REFINISH instruction, REPAIR 9-1, Figure 601.



REFINISH

CHROME PLATE PER 1 2 .

CADMIUM-TITANIUM PLATE ALL OTHER SURFACES PER 3 . APPLY ONE COAT PRIMER PER 4

1 CHROME PLATE (F-15.04) 0.003-0.005 THICK

2 CHROME PLATE RUNOUT. AREA NOT CHROME PLATED MUST BE PLATED AND PRIMED PER 3 AND 4

3 CADMIUM-TITANIUM ALLOY PLATE (F-1.18) 0.0003-0.0005 THICK

4 APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (SRF-12.205)

5 BUILD UP WITH CHROME PLATE AND GRIND TO DESIGN DIMENSIONS AND FINISH SHOWN. OBSERVE PLATING RUNOUT AS NOTED

REPAIR

REF 5

125 ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.005-0.015R

SHOT PEEN: 0.017-0.033 SHOT SIZE
0.015 A2 INTENSITY

MATERIAL: (69-60052-1) MOD H-11 STEEL
(RC 54-56)
(69-60052-2) 4340M STEEL
(270-300 KSI)

ALL DIMENSIONS ARE IN INCHES

69-60052-1,-2 Universal Joint Spacer Repair
Figure 601

CROSS PIN - REPAIR 10-1

69-60056–1, –2

1. General

A. This procedure has the data necessary to repair and refinish the cross pin (IPL Figure 1, 100).

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

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

E. Refer to IPL Figure 1 for item numbers.

2. Bearing Surface Repair (REPAIR 10-1, Figure 601)

A. Machine diameter as required per SOPM 20-10-02, within repair limit shown, to remove defects.

B. Stress relieve (SOPM 20-10-02) by heating to 900-950°F for 4 hours (69-60056-1), or to 500-550°F for 4 hours (69-60056-2), then air-cooling at 65-75°F. Magnetic particle check per SOPM 20-20-01.

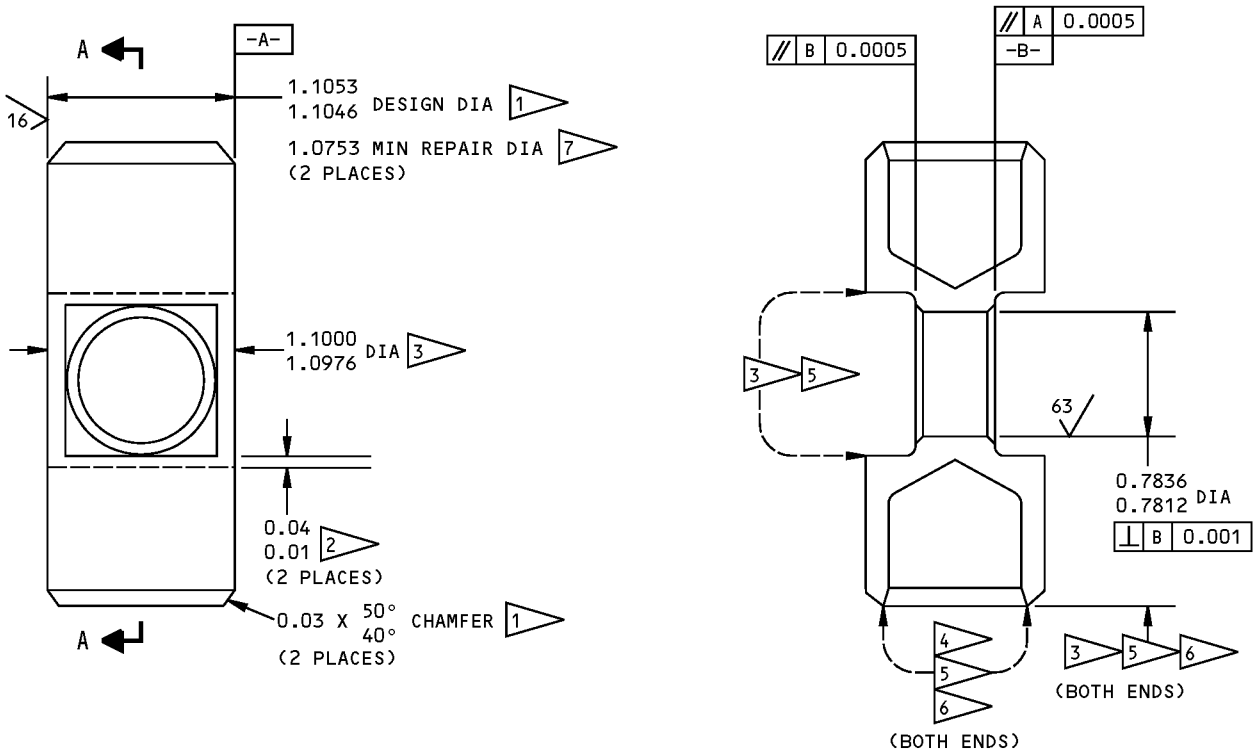
C. Shot peen as indicated (SOPM 20-10-03).

D. Build up repaired area with chrome plate per SOPM 20-42-03 and grind to design dimensions and finish shown (SOPM 20-10-04).

E. Magnetic particle check per SOPM 20-20-01.

3. Refinish

A. For repair of surfaces which may only require stripping and restoration of original finish, refer to REFINISH instruction, REPAIR 10-1, Figure 601.



A-A

REFINISH

CHROME PLATE PER 1 2. CADMIUM-TITANIUM PLATE ALL OTHER SURFACES PER 3 4. APPLY ONE COAT PRIMER PER 5 AND ONE COAT ENAMEL PER 6

1 CHROME PLATE (F-15.04) 0.003-0.005 THICK

2 CHROME PLATE RUNOUT. AREA NOT CHROME PLATED MUST BE PLATED AND PRIMED PER 3 AND 5

3 CADMIUM-TITANIUM ALLOY PLATE (F-1.181) 0.0005-0.0007 THICK

4 CADMIUM-TITANIUM PLATE THROW-IN PREFERRED

5 APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (SRF-12.205)

6 APPLY ONE COAT ENAMEL, BMS 10-11, TYPE 2 (SRF-12.63)

7 BUILD UP WITH CHROME PLATE AND GRIND TO DESIGN DIMENSIONS AND FINISH SHOWN. OBSERVE PLATING RUNOUT AS NOTED

REPAIR

REF 7

125 ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.010-0.030R

SHOT PEEN: 0.017-0.033 SHOT SIZE
0.015 A2 INTENSITY

MATERIAL: (69-60056-1) MOD H-11 STEEL (RC 54-56)
(69-60056-2) 4340M STEEL (270-300 KSI)

ALL DIMENSIONS ARE IN INCHES

69-60056-1,-2 Cross Pin Repair
Figure 601

TRUNNION CROSS - REPAIR 11-1

69-60058–1

1. General

A. This procedure has the data necessary to repair and refinish the trunnion cross (IPL Figure 1, 105).

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

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

E. Refer to IPL Figure 1 for item numbers.

2. Exterior Face Repair (REPAIR 11-1, Figure 601)

A. Machine faces as required, within repair limits shown, to remove defects. Magnetic particle check per SOPM 20-20-01.

B. Shot peen as indicated (SOPM 20-10-03).

C. Build up repaired area with chrome plate per SOPM 20-42-03 and grind to design dimensions and finish shown (SOPM 20-10-04).

D. Magnetic particle check per SOPM 20-20-01.

3. Bore Repair (REPAIR 11-1, Figure 601)

A. Machine bore as required, within repair limits shown, to remove defects. Magnetic particle check per SOPM 20-20-01.

B. Shot peen as indicated (SOPM 20-10-03).

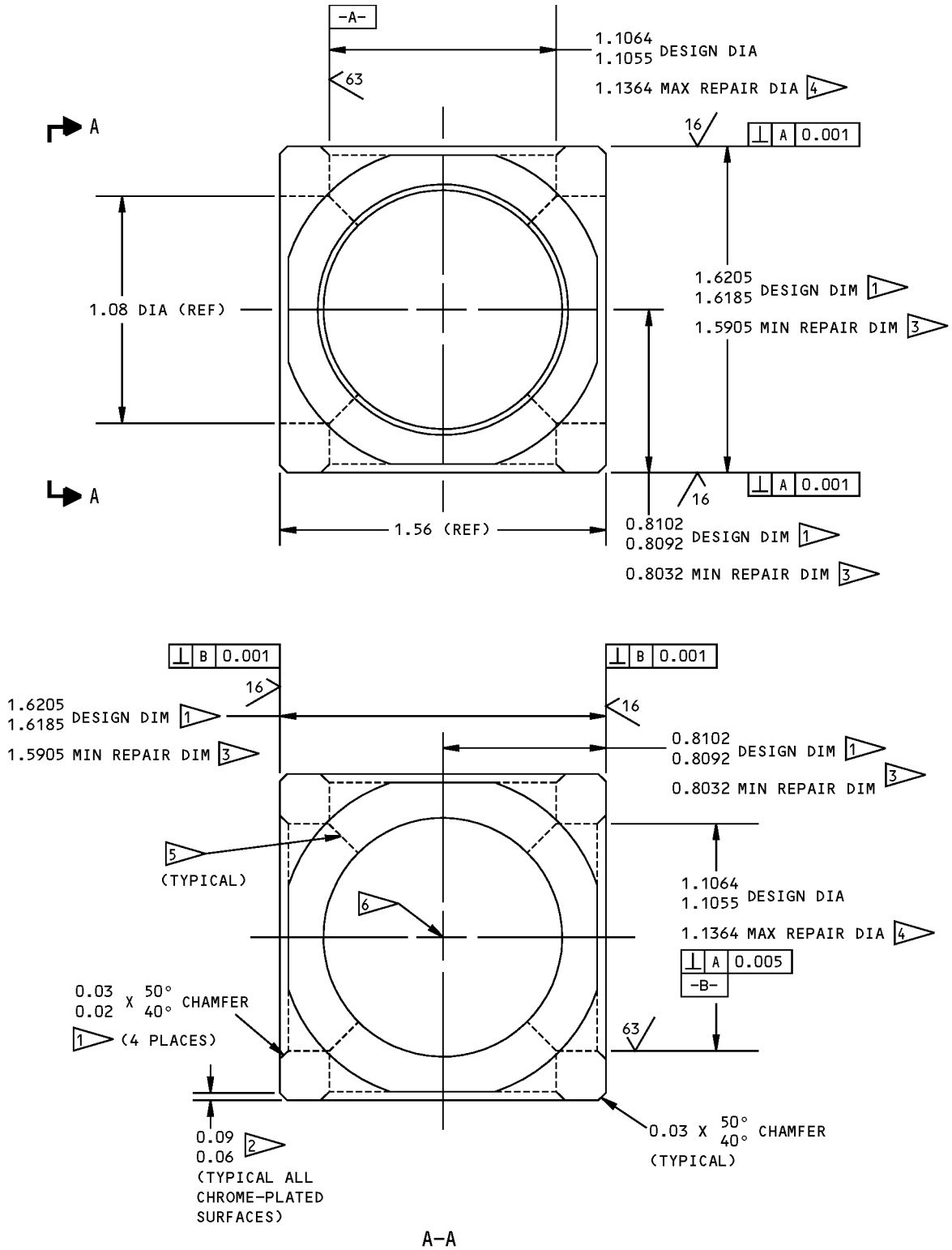
C. Build up repaired surface with nickel plate to 0.004-0.006 inch single plate thickness per SOPM 20-42-09.

D. Complete buildup with chrome plate per SOPM 20-42-03 and grind to design dimensions and finish shown (SOPM 20-10-04). Total plating thickness (nickel plus chrome) after machining to be 0.015 inch maximum.

E. Magnetic particle check per SOPM 20-20-01.

4. Refinish

A. For repair of surfaces which may only require stripping and restoration of original finish, refer to REFINISH instruction, REPAIR 11-1, Figure 601.



69-60058-1 Trunnion Cross Repair
Figure 601 (Sheet 1 of 2)

REFINISH

PASSIVATE (F-17.09) ALL OVER. CHROME PLATE EXTERNAL FACES PER 1 2

1 CHROME PLATE (F-15.04) 0.003-0.005 THICK

2 CHROME PLATE RUNOUT

3 BUILD UP WITH CHROME PLATE AND GRIND TO DESIGN DIMENSIONS AND FINISH SHOWN. OBSERVE PLATING RUNOUT AS NOTED

4 BUILD UP WITH NICKEL PLATE (0.004-0.006 THICK) AND CHROME PLATE. GRIND TO DESIGN DIMENSIONS AND FINISH SHOWN. TOTAL PLATING THICKNESS AFTER MACHINING NOT TO EXCEED 0.015

5 BREAK SHARP EDGES AT INTERSECTION OF HOLES 0.003-0.020

6 CENTERLINES OF -A- AND -B- MUST INTERSECT WITHIN 0.002

REPAIR

REF 3 4

125 ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.010-0.030R EXCEPT AS INDICATED

SHOT PEEN: 0.017-0.033 SHOT SIZE
0.012 A2 INTENSITY

MATERIAL: 15-5PH CRES (150-170 KSI)

ALL DIMENSIONS ARE IN INCHES

69-60058-1 Trunnion Cross Repair
Figure 601 (Sheet 2 of 2)

RETAINER - REPAIR 12-1

69-62735–2

1. General

A. This procedure has the data necessary to refinish the retainer (IPL Figure 1, 360).

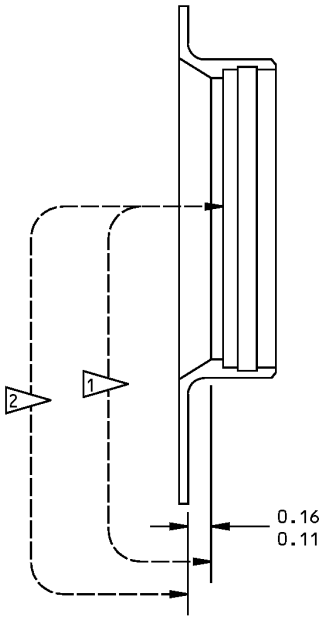
B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for item numbers.

2. Plating Repair

A. Repair consists of stripping and restoration of original finish. Refer to Refinish instruction in REPAIR 12-1, Figure 601.



REFINISH

ALODIZE OR CHROMIC ACID ANODIZE (F-2.22) ALL OVER. APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (SRF-12.205) PLUS ONE COAT ENAMEL, BMS 10-60 (SRF-14.9813) OR BMS 10-11, TYPE 2 (SRF-12.63) AS NOTED

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

1 APPLY PRIMER THESE SURFACES

2 APPLY ENAMEL THESE SURFACES

Retainer Refinish
Figure 601

NAMEPLATE - REPAIR 13-1

69-52461–1

1. General

A. This procedure has the data necessary to replacement of the nameplate (IPL Figure 1, 430).

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for item numbers.

2. Nameplate Replacement (IPL Figure 1)

A. Remove damaged or defective nameplate (430).

B. Clean and prepare gear housing (405, 410) mounting surface per SOPM 20-50-12.

C. Stamp new nameplate with part no. and serial no. and bend to contour of housing.

D. Bond nameplate to housing with adhesive, A00441.

TORQUE BRAKE ASSEMBLY - REPAIR 14-1

176665–2

1. General

A. This procedure has the data necessary to repair and refinish the torque brake assembly (IPL Figure 1, 135).

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

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

E. Refer to IPL Figure 1 for item numbers.

2. Torque Brake Rework (IPL Figure 1)

CAUTION: REWORK PER FOLLOWING PROCEDURES MAY AFFECT INTERCHANGEABILITY IN ANY FUTURE OVERHAUL OR REPLACEMENT.

A. To shift torque lockout level to a higher value, machine housing (185) ID as shown in REPAIR 14-1, Figure 601.

B. To shift torque lockout level to a lower value, proceed as follows:

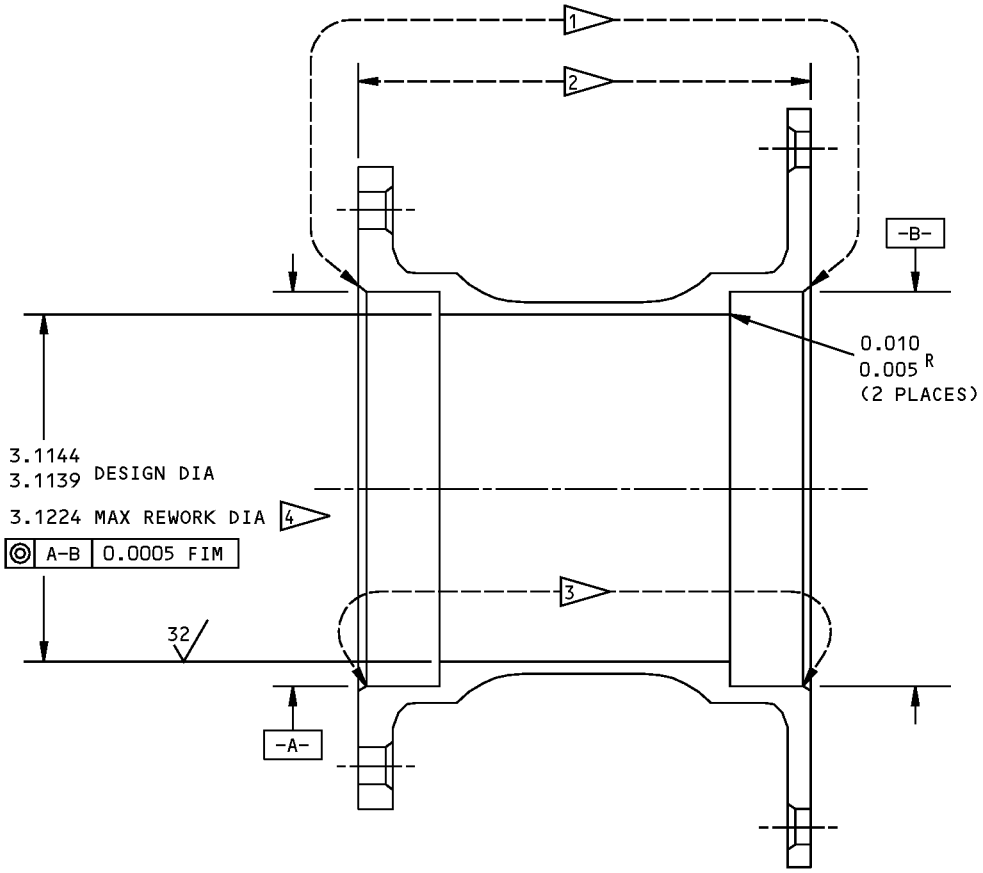
(1) Machine spring set (180) and stress relieve per REPAIR 14-1, Figure 602. Note amount of material removed.

(2) Build up OD of sleeves (170, 175) with chrome plate per SOPM 20-42-03 and grind to required dimensions and finish SOPM 20-10-04. Finished diameter is to be equal to original OD plus amount of increase in spring set ID +0.0000/-0.0005 inch.

NOTE: A shift in torque lockout level changes maximum and minimum lockout levels corresponding amounts.

3. Refinish

A. For repair of surfaces which may only require stripping and restoration of original finish, refer to REFINISH instructions, REPAIR 14-1, Figure 601 and REPAIR 15-1.



REFINISH

CADMIUM-PLATE (F-15.23) AS NOTED. APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (SRF-12.205) PLUS ONE COAT ENAMEL, BMS 10-11, TYPE 2, COLOR BAC 707 GRAY GLOSS (SRF-12.63) ON EXTERNAL SURFACES EXCEPT BOLT HOLES AND COUNTERSINKS

1 CADMIUM PLATE THESE SURFACES

2 APPLY PRIMER PLUS ENAMEL

3 CARBURIZE, 0.025-0.035 DEEP

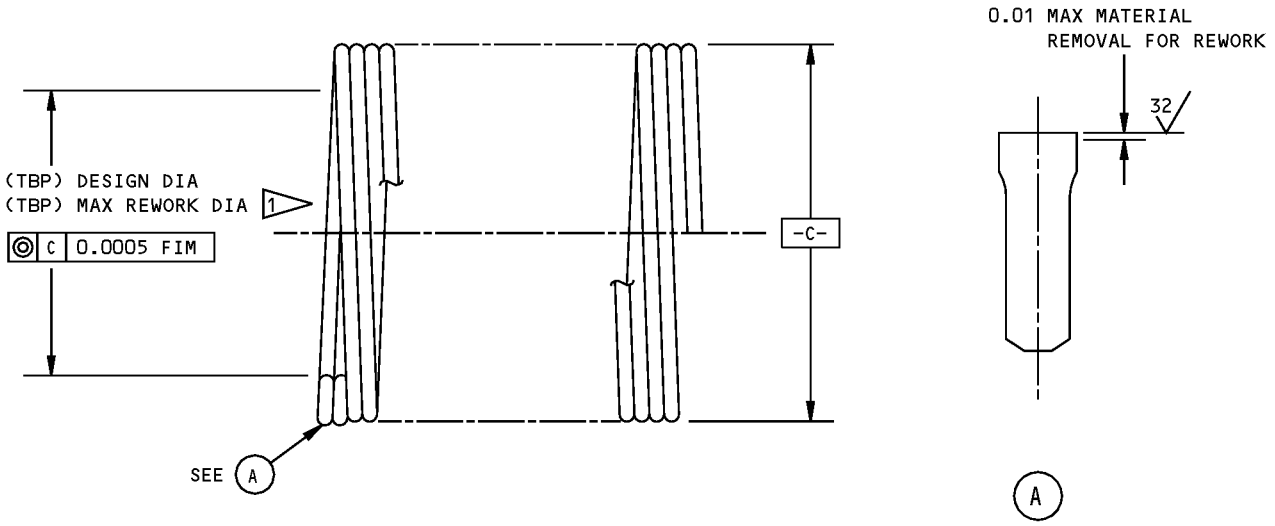
REWORK

4 MACHINE ID AS REQUIRED TO CHANGE TORQUE SETTING. TORQUE SETTING INCREASES (TBP) LB-IN. FOR EACH 0.001 INCREASE IN ID

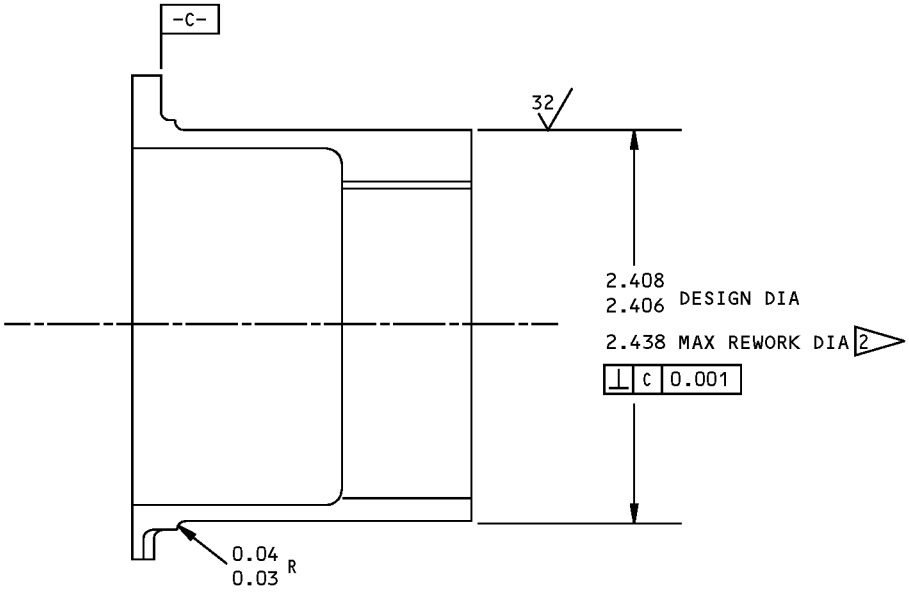
MATERIAL: STEEL PER AMS 6265
RC 32-43 CORE HARDNESS
CARBURIZED, RC 60 MIN AS NOTED

ALL DIMENSIONS ARE IN INCHES

176665-2 Housing Rework and Refinish
Figure 601

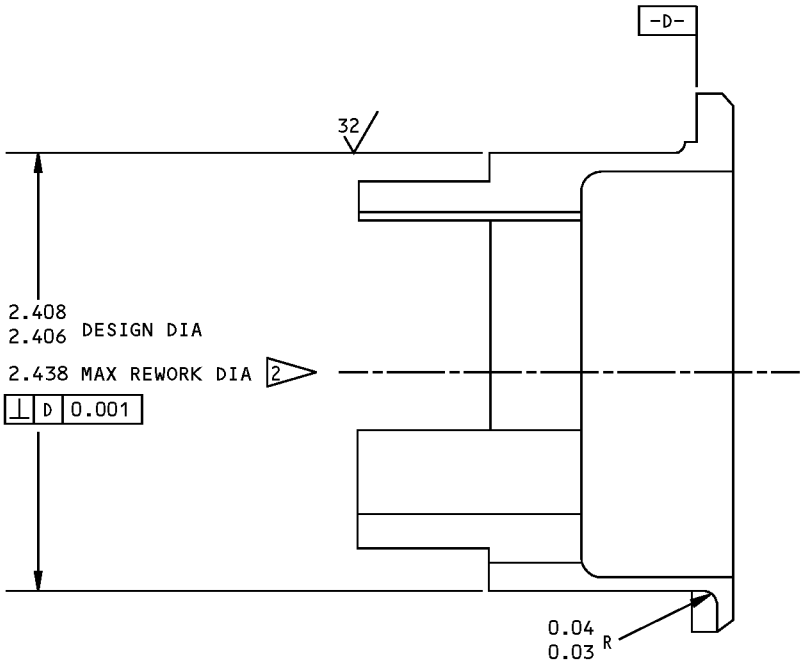


SPRING SET (180)



SLEEVE (170)

Spring Set and Sleeve Rework
Figure 602 (Sheet 1 of 2)



SLEEVE (175)

REWORK

1 MACHINE SPRING SET (180) ID AS REQUIRED TO CHANGE TORQUE SETTING. TORQUE SETTING DECREASES (TBP) LB-IN. FOR EACH 0.001 INCREASE IN ID. NOTE AMOUNT OF INCREASE

STRESS RELIEVE AS FOLLOWS:
1. 320-330°F FOR 1 HOUR
2. 625-675°F FOR 1 HOUR
3. 920-930°F FOR 2 HOURS
4. AIR-COOL AT 65-75°F

2 BUILD UP SLEEVE (170,175) OD WITH HARD CHROME PLATE PER 20-42-02. GRIND TO FINISHED DIA EQUAL TO ORIGINAL OD PLUS INCREASE IN SPRING SET ID +0.0000/-0.0005

MATERIAL: STEEL, 290-300 KSI

SHOT PEEN (SLEEVES): 0.010-0.019 SHOT SIZE
0.012-0.015 A2 INTENSITY

BREAK SHARP EDGES 0.005-0.015R

ALL DIMENSIONS ARE IN INCHES

176665-2

Spring Set and Sleeve Rework
Figure 602 (Sheet 2 of 2)

MISCELLANEOUS PARTS REFINISH - REPAIR 15-1

1. General

A. This procedure has the data necessary to refinish the parts listed in REPAIR 15-1, Table 601.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for item numbers.

2. Procedure

A. Repair of parts listed in REPAIR 15-1, Table 601 consists or restoration of the original finish.

Table 601: Refinish Details

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Housing (30,35)	Al alloy	Sulfuric acid or chromic acid anodize (F-17.05) all over. Apply primer, C00259 (F-20.02) on exterior surfaces, except omit primer on bolt holes and torque brake mating surfaces.
Retainer (60), washer (235)	4130 Steel 120-150 ksi	Cadmium-titanium alloy plate (F-1.18) all over.
Support (140, 145)	Al alloy	Sulfuric acid anodize (F-17.03) all over. Apply primer, C00259 (F-20.02) plus apply enamelcoating, C00260 (F-21.02) to edge of flange only.
Coupling (240)	4340 Steel 150-180 ksi	Cadmium-titanium alloy plate (F-15.01) all over, except plating optional on bolt holes.
Cover (300)	Al alloy	Sulfuric acid anodize (F-17.03) all over and apply primer, C00259 (F-20.02) on exterior surfaces.
Spacer (330)	Al alloy	Sulfuric acid anodize (F-17.03) all over.

ASSEMBLY

1. General

A. This procedure has the data necessary to assemble the trailing edge flap drive system, No.1 and 8 transmission assemblies.

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

C. Refer to IPL Figure 1 for item numbers.

2. Procedure

A. Tools/Equipment

NOTE: Equivalent substitutes may be used.

Reference	Description
SPL-5415	Splined Coupling Spanner Wrench (Part #: F71228-500, Supplier: 81205)
SPL-5461	Adapter - Torque Wrench (Part #: ST6105-1, Supplier: 71791)
SPL-5463	Spring Expansion Fixture (Part #: ST6107, Supplier: 71791)

B. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS 5-95
C00259	Primer - Chemical And Solvent Resistant Finish, Epoxy Resin	BMS10-11, Type I
C50001	Compound - Corrosion Preventive, Petroleum Hot Application (Hard Film)	MIL-C-11796, Class I
D00070	Fluid - Hydraulic, Petroleum Base	MIL-PRF-5606 (Replaces MIL-H-5606)
G01505	Lockwire - Safety And Lock	NASM20995
G01912	Lockwire - Monel (0.032 In. Dia.)	NASM20995N˜ C32 (QQ-N-281)

C. References

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

D. Lubrication

(1) Install all packings and seals with hydraulic fluid, D00070.

(2) Immerse internal parts in hydraulic fluid, D00070 and assemble while wet.

E. Assembly (IPL Figure 1)

(1) Determine shim (310, 325, 270) thicknesses (ASSEMBLY, Figure 701).

NOTE: If bearings (315, 335, 280), gears (320, 340, 285), spacer (330), housing (405 or 410), cover (300), or retainer (255) have not been replaced, shims removed during disassembly may be reinstalled.

(a) Install bearing (315) on gear (320), then install parts in cover (300). Determine shim (310) thickness X1 as shown, then install shim in cover.

(b) Install bearing (335) on gear (340), then assemble with spacer (330) on gear (320). Determine shim (325) thickness X2 as shown in figure.

(c) Install bearings (275, 280) on gear (285), then position parts on retainer (255). Determine shim (270) thickness X3 as shown in figure.

(2) Assemble parts in gear housing.

(a) Install parts (315 thru 340) in gear housing assembly (405 or 410).

(b) Position shim (310) in cover, then install cover and secure with parts (290, 295). Tighten bolts (290) to 45-65 lb-in.

NOTE: Parts are being installed temporarily, to check backlash. Packing (305) is not installed at this time.

(c) Install parts (275 thru 285) in housing.

(d) Install shim (270) on retainer (255), then install retainer and secure with parts (245, 250). Tighten bolts (245) to 45-65 lb-in.

NOTE: Parts are being installed temporarily, to check backlash. Seal (260) and packing (265) are not installed at this time.

(e) Check that backlash at input gear mesh is 0.002-0.008 inch. Adjust thickness of shims (270, 310, 325) as required to obtain proper backlash.

(f) Remove parts (290 thru 300). Install packing (305) on cover (300), then reinstall cover. Install bolts (290) and washers (295) and tighten bolts to 80-100 lb-in.

(g) Remove parts (245 thru 255, 270). Fill groove in ID of retainer (255) with sealant, A00247. Install seal (260) in retainer and remove excess sealant.

(h) Install packing (265) on retainer (255), then reinstall retainer with shim (270) and seal (260). Install bolts (245) and washers (250) and tighten bolts to 80-100 lb-in.

(i) Install coupling (240) on gear (285) and secure with washer (235) and nut (230). Hold coupling with F71228-500 Splined Coupling Spanner Wrench, SPL-5415 and tighten nut to 160-190 lb-in.

(j) Fill groove in ID of retainer (360) with sealant, A00247. Install seal (375) in retainer and remove excess sealant.

(k) Install bearing (385) and packing (380) in support (365), then install retainer with seal. Install packings (370, 390) in housing, then install support (365) with associated parts and secure with parts (345 thru 355). Tighten nuts (345) to 50-70 lb-in.

(3) Determine shim (205) thickness (ASSEMBLY, Figure 701).

NOTE: If bearing (215), gear (225), housing (405 and 410), or torque brake support (145) have not been replaced, shim removed during disassembly may be reinstalled.

(a) Install bearing (215) on gear (225), then position parts on support (145). Determine shim thickness X4 as shown in figure.

(4) Install and adjust gear (225).

(a) Install bearings (215, 220) on gear (225), then install gear with shim (205) in support (145).

(b) Install support with associated parts in housing (405 or 410) and secure with temporary fasteners.

NOTE: Fasteners (120 thru 130) may be used if temporary spacers, of same thickness as torque brake housing (185) mounting lugs, are used to fill out bolt grip lengths. Alternatively, use shorter bolts. Parts are being installed temporarily, to check backlash. Packing (200) is not installed at this time.

(c) Check that backlash between gear (225) and gear (340) is 0.002-0.008 in. Adjust thickness of shim (205) as required to obtain proper backlash.

(d) Remove temporary fasteners and support (145) with gear (225) and associated parts.

(e) Insert short splined end of torque brake coupling (190) into internally splined end of gear (225) and secure parts with ring (210).

(5) Assemble torque brake assembly (ASSEMBLY, Figure 702).

NOTE: Coat all surfaces of torque brake components with hydraulic fluid as parts are assembled.

(a) Position ends of springs in spring set (180) approximately 180 degrees apart.

NOTE: Spring set (180) consists of two matched springs coiled together.

(b) Place spring set in the Spring Expansion Fixture, SPL-5463. Move fixture spring stops inward so as to contact spring ends when springs are wound. Tighten all four stops sufficiently to hold, yet permit movement when tapped with an aluminum drift.

(c) Wind spring by rotating fixture drive shaft with socket wrench until spring set OD is snug against fixture sleeve. Lock drive shaft in position with lockscrew.

(d) Using an aluminum drift, tap all four spring ends axially to snug spring coils together.

(e) Use aluminum drift to tap spring stops outward on one side of fixture, just far enough to clear flange of sleeve (170). Insert sleeve into spring set until flange is firmly seated.

(f) Use aluminum drift to tap spring stops outward on opposite side of fixture, just far enough to clear flange of sleeve (175). Insert sleeve into spring set so internal lugs align with sleeve (170). Ensure that both sleeves (170, 175) are properly seated.

(g) Insert adapter (165) into sleeve (170) with ears of adapter partially engaging sleeve lands, and splined end of adapter protruding approximately one inch from sleeve flange. Support adapter (165) and unlock fixture drive shaft. Unwind spring set by rotating drive shaft.

NOTE: Spring friction will retain sleeves and adapter.

CAUTION: USE CARE TO AVOID DROPPING SPRING PACK, OR REASSEMBLY MAY BE NECESSARY.

(h) Loosen spring stops on both sides of fixture and move stops outward to clear spring pack. Remove spring pack from fixture by tapping with aluminum drift.

(i) Place assembled parts in arbor press. Protect end faces of sleeves (170, 175) and apply 300-500 pound end load to stack springs tight. Install end rings (155) over spring set and press down to remove clearance and end play.

(j) Measure stacked height of assembled parts. Select shims (160) as required to obtain 3.394-3.406 inch dimension. Remove end rings and install shims as shown in ASSEMBLY, Figure 703. Use identical shims at 2 places 180 degrees apart on same end of assembly. Use minimum number of shims by selecting larger sizes. When more than one shim is required, use same thickness, within 0.01 inch, at each end.

NOTE: Required dimension may be obtained in some cases without shims, or with shims at one end only. Two shims may be stacked together to increase range. Maximum thickness allowed is 0.09 inch at each end (one 0.04-inch shim plus one 0.05-inch shim).

(k) Trim shims, as necessary, so ends do not protrude beyond spring set OD.

(l) If assembled spring pack assembly (150) is to be stored as a spare, install both end rings and secure assembly with lockwire, G01505 (size optional).

(m) For current installation of spring pack, install one end ring (155) on sleeve (170) end. Insert opposite end of spring pack into housing (185), then press remaining end ring into housing and over spring set.

(6) Install gear (225) and torque brake assembly (135).

(a) Position gear (225) with attached coupling (190) in gear housing assembly (405 or 410).

(b) Install shim (205) and packings (195, 200) on support (145).

(c) Attach torque brake assembly and support (145) to gear housing assembly with parts (120 thru 130). Tighten nuts (120) to 180-250 lb-in.

(7) Assemble universal joint assembly (75).

(a) Position trunnion cross (105) in yoke (95) and insert cross pin (100) through yoke and cross.

CAUTION: KEEP BEARING SURFACES OF BOLT (85) FREE OF CORROSION PREVENTIVE COMPOUND OR ASSEMBLY MAY BIND OR EXPERIENCE EXCESSIVE WEAR.

(b) Coat shank and threads of bolt (85) with corrosion preventive compound, C50001, per ASSEMBLY, Figure 704. Position output shaft (110) on cross and install bolt, spacer (90), and nut (80). Ensure that self-locking mechanism of nut develops torque of 25-100 lb-in. with no axial load on nut and thread fully engaged. Tighten nut to 170-200 lb-in. Check that full chamfer of bolt thread protrudes beyond locking mechanism of nut.

(8) Install universal joint assembly and forward housing.

(a) Determine shim (45) thickness X5 per ASSEMBLY, Figure 701.

NOTE: If bearing (70), support (140), or forward housing (30 or 35) have not been replaced, shim removed during disassembly may be reinstalled.

(b) Insert output shaft (110) through gear housing and torque brake assembly.

(c) Install packing (195) on support (140) and packing (40) in forward housing.

CAUTION: DO NOT USE PREVIOUSLY INSTALLED WASHER (55), OR FAILURE OF TANGS AND LOSS OF NUT RETENTION MAY OCCUR.

(d) Install bearing (70) and adapter (65) in support (140), then install parts on output shaft with retainer (60), washer (55), and nut (50). Tighten nut to 200-240 lb-in. using torque wrench adapter, SPL-5461. Bend tangs of washer to secure nut.

(e) Install shim (45) on support (140), then install forward housing. Secure with parts (10 thru 25) and tighten nuts (10) to 300-500 lb-in.

(9) Install drain plug (395) with new packing (400) in bottom of gear housing. Lockwire plug to housing using lockwire, G01912 per SOPM 20-50-02, double-twist method.

(10) Raise forward housing (30 or 35), tilting assembly until output shaft is at 3 degrees with respect to horizontal. Fill assembly through upper filler port with hydraulic fluid, until fluid reaches port level. Capacity range is 18-19 ounces. Install plug (395) with new packing (400).

(11) Lockwire filler plug (395) to two of the bolts (290) holding cover (300). Lockwire other pair of bolts (290) together. Lockwire bolts (245) in pairs. Use lockwire, G01912 and the double-twist method per SOPM 20-50-02.

(12) Functionally test unit per TESTING AND FAULT ISOLATION.

(13) Apply Glyptal (General Electric Co., Insulating Materials Dept., Downey, CA) across exposed bolt threads and nuts, and to lockwire ends, fasteners, and plugs, as applicable using lockwire, G01912 and the double-twist method per SOPM 20-50-02.

(14) Repair or touch up any surfaces with damaged or omitted finishes. Note areas especially susceptible to corrosion as follows, checking to ensure complete coverage with primer, C00259.

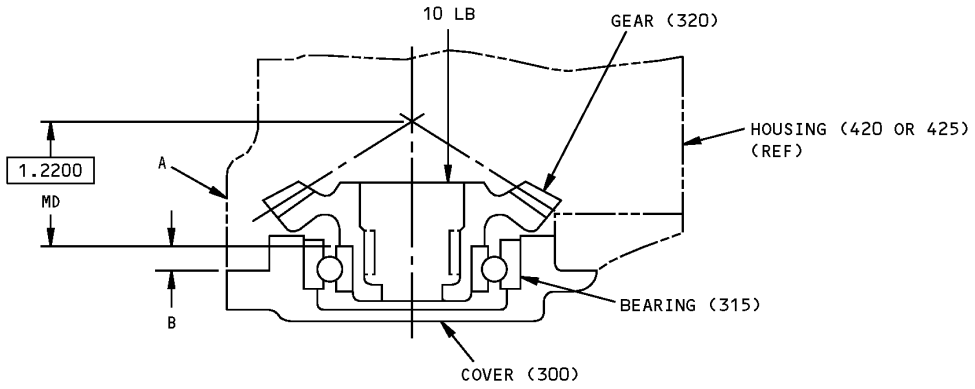
(a) Joint between support (140) and housings (185, 30 or 35)

(b) Joint between support (145) and housings (185, 405 or 410)

(c) Joint between support (365) and housing (405 or 410)

(d) Joint between cover (300) and housing (405 or 410)

(e) Joint between retainer (255) and housing (405 or 410)



SHIMMING CALCULATION

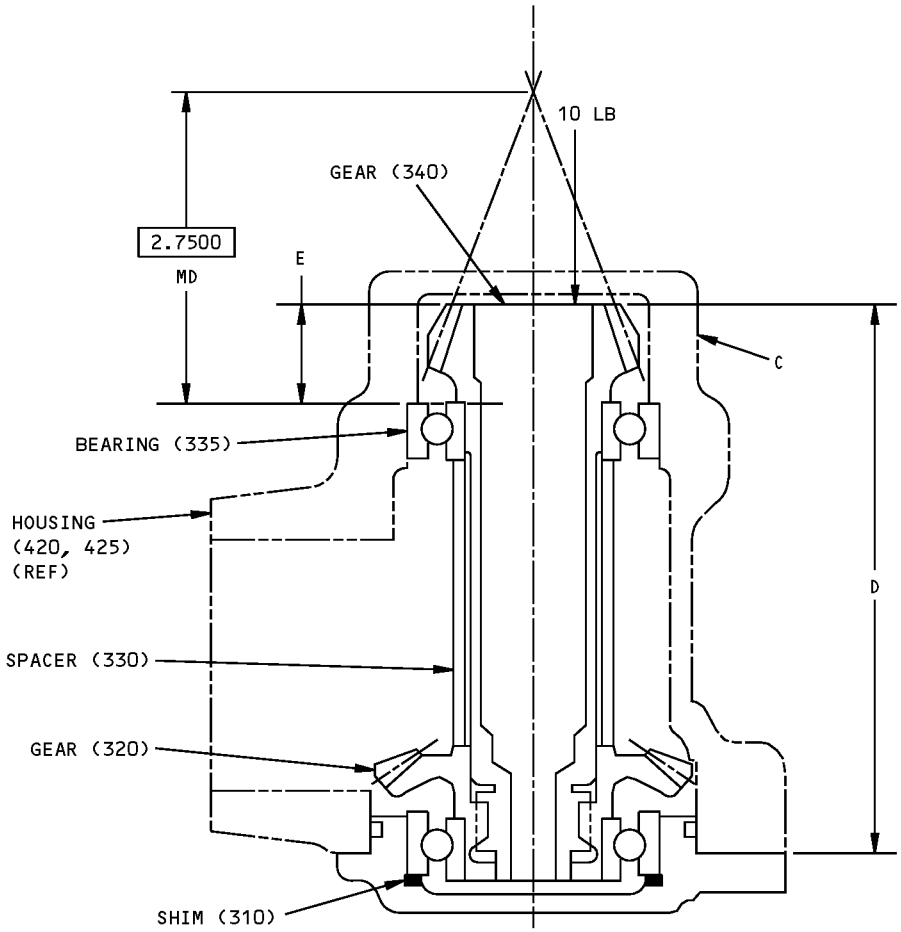
ALL DIMENSIONS ARE IN INCHES

$X_1 = A - B - MD + TOL$

WHERE: A = DIMENSION ENGRAVED ON HOUSING
B = MEASUREMENT WITH BEARING UNDER LOAD
MD = GEAR MOUNTING DISTANCE (BASIC)
TOL = +0.000/-0.003

SHIM (310) THICKNESS X_1

Shimming Diagrams
Figure 701 (Sheet 1 of 4)



SHIMMING CALCULATION

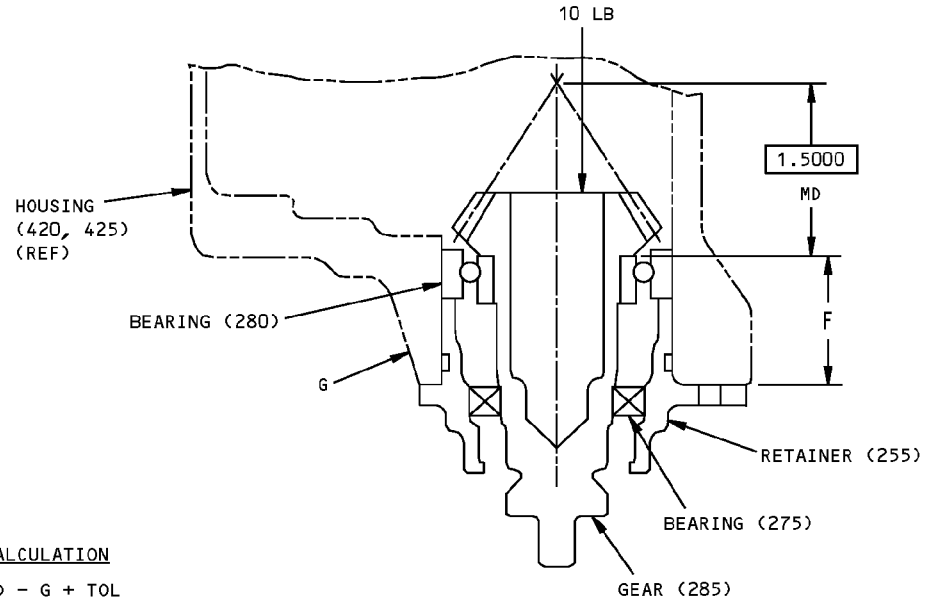
$X_2 = C - D + E - MD + TOL$

WHERE: C = DIMENSION ENGRAVED ON HOUSING
D = MEASUREMENT WITH STACKED PARTS UNDER LOAD
E = MEASUREMENT ON GEAR (340)
MD = GEAR (340) MOUNTING DISTANCE (BASIC)
TOL = +0.000/-0.003

ALL DIMENSIONS ARE IN INCHES

SHIM (325) THICKNESS X_2

Shimming Diagrams
Figure 701 (Sheet 2 of 4)



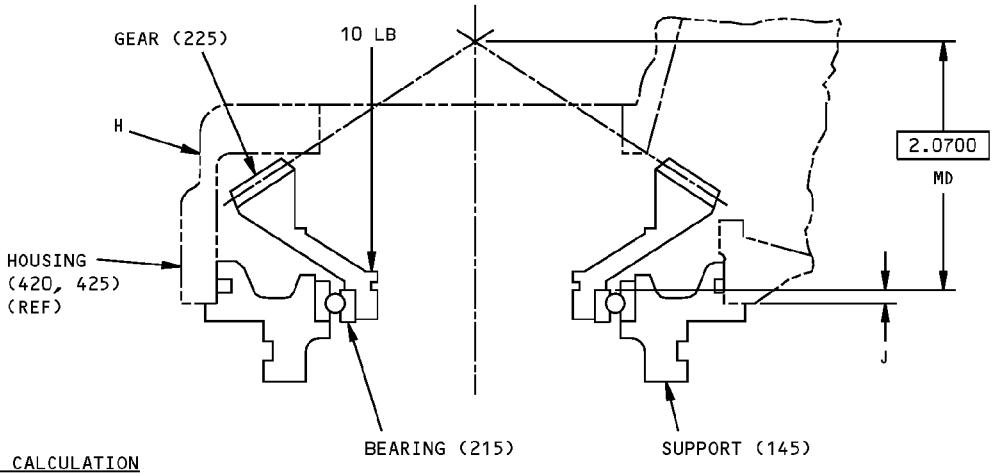
SHIMMING CALCULATION

$X_3 = F + MD - G + TOL$

WHERE: F = MEASUREMENT WITH BEARING UNDER LOAD
G = DIMENSION ENGRAVED ON HOUSING
MD = GEAR MOUNTING DISTANCE (BASIC)
TOL = +0.003/-0.000

ALL DIMENSIONS ARE IN INCHES

SHIM (270) THICKNESS X_3



SHIMMING CALCULATION

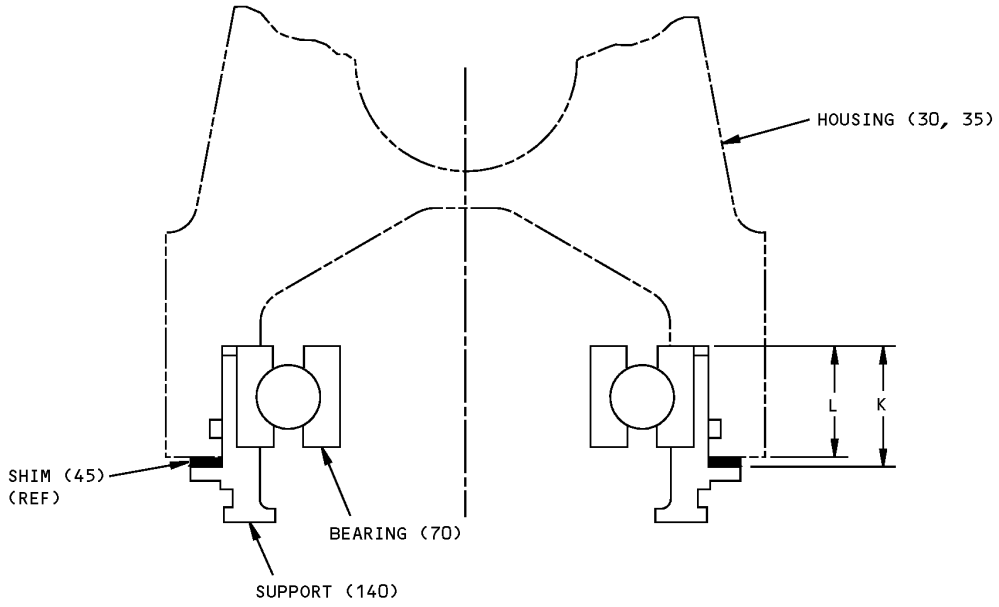
$X_4 = H - J - MD + TOL$

WHERE: H = DIMENSION ENGRAVED ON HOUSING
J = MEASUREMENT WITH BEARING UNDER LOAD
MD = GEAR MOUNTING DISTANCE (BASIC)
TOL = +0.000/-0.003

ALL DIMENSIONS ARE IN INCHES

SHIM (205) THICKNESS X_4

Shimming Diagrams
Figure 701 (Sheet 3 of 4)



SHIMMING CALCULATION

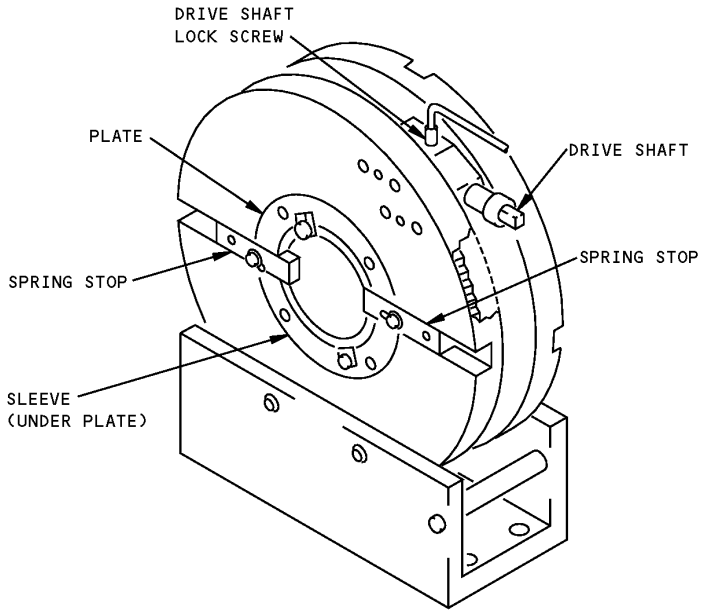
X_5 = K − L − INTERFERENCE

WHERE: K = MEASUREMENT WITH BEARING FIRMLY SEATED ON SUPPORT
L = MEASUREMENT ON HOUSING
INTERFERENCE = 0.001–0.003

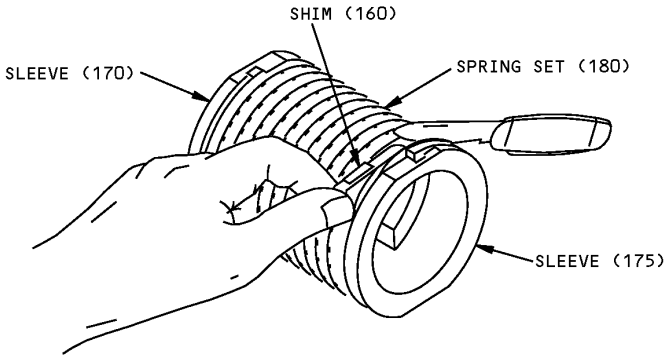
ALL DIMENSIONS ARE IN INCHES

SHIM (45) THICKNESS X_5

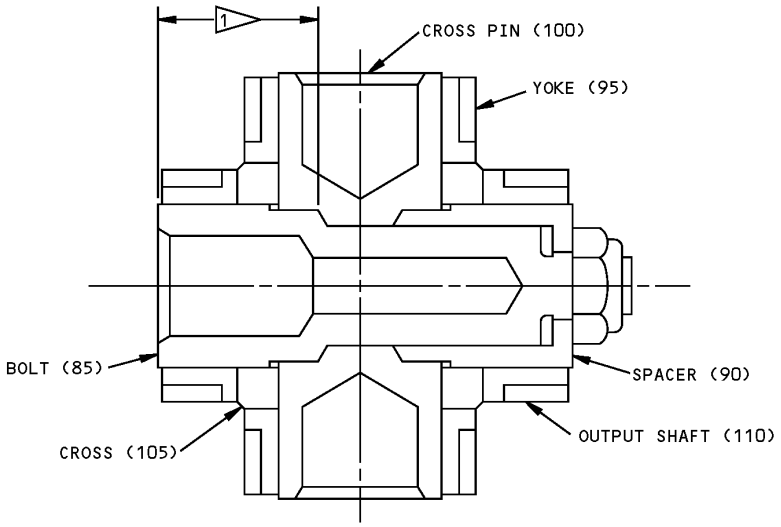
Shimming Diagrams
Figure 701 (Sheet 4 of 4)



Spring Expansion Fixture, ST6107
Figure 702



Spring Pack Shim Installation
Figure 703



1 KEEP BOLT SURFACES FREE OF CORROSION PREVENTIVE COMPOUND MIL-C-11796

ITEM NUMBERS REFER TO IPL FIG. 1

Universal Joint Assembly
Figure 704

3. Storage

A. References

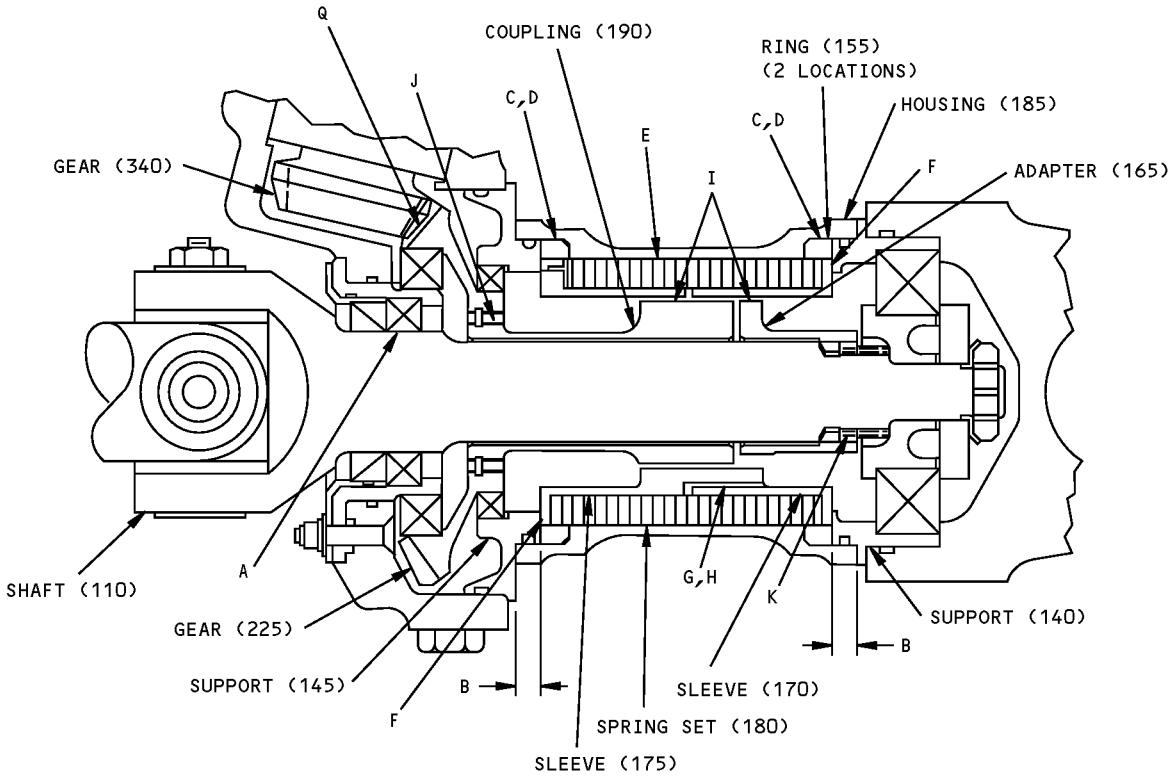
Reference	Title
SOPM 20-44-02	TEMPORARY PROTECTIVE COATINGS

B. Procedure

(1) Check that unit is filled to proper level with hydraulic fluid.

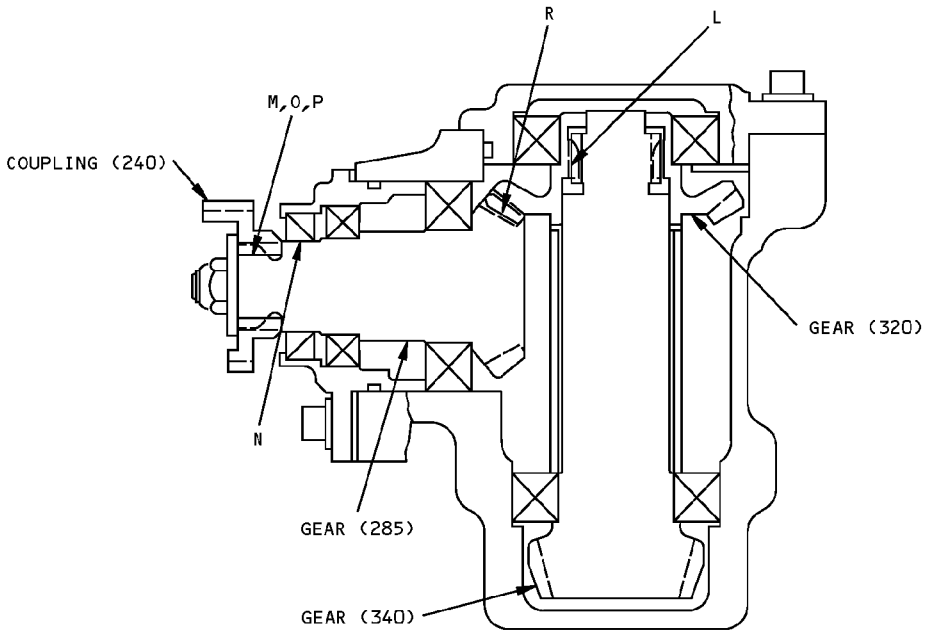
(2) Use standard industry practices and information in SOPM 20-44-02to store this component.

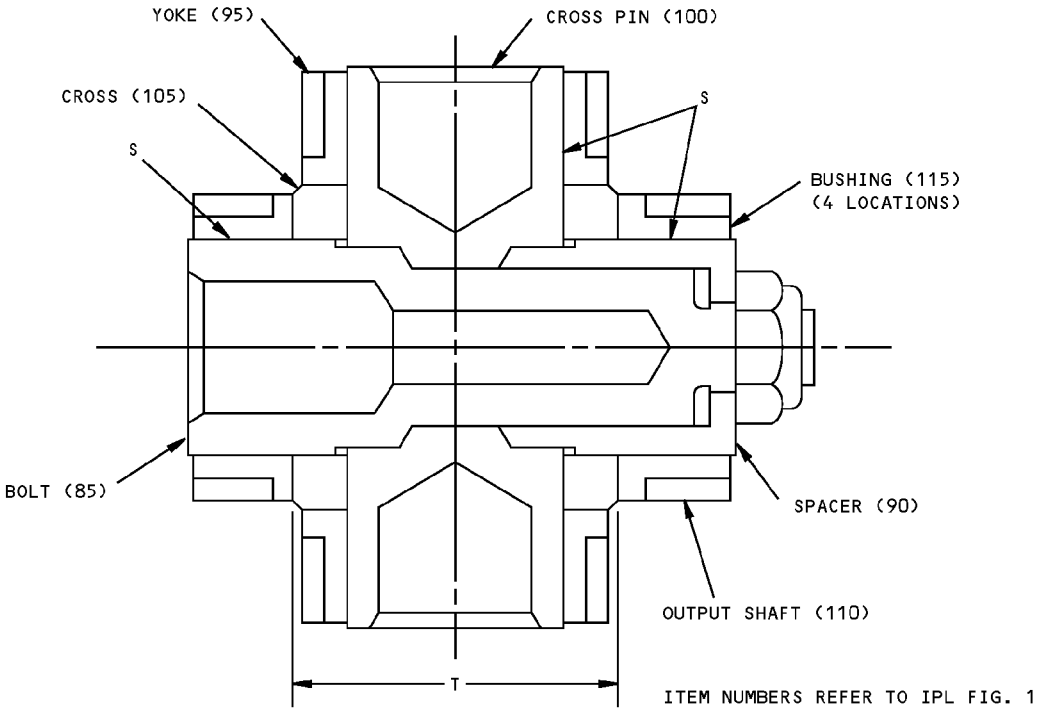
FITS AND CLEARANCES



ITEM NUMBERS REFER TO IPL FIG. 1

Fits and Clearances
Figure 801 (Sheet 1 of 4)





Fits and Clearances
Figure 801 (Sheet 2 of 4)

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	OD 110	1.3765	1.3774			1.3765		
B	1 140, 145	0.290	0.292			0.285		
C	ID 185 OD 155	3.524 3.517	3.525 3.518	0.006	0.008	3.516	3.526	0.010
D	1 155	0.374	0.375			0.372		
E	ID 185 OD 180	3.1139 3.0076	3.1144 3.0086				3.1149	
F	2 170, 175	0.241	0.246			0.239		
G	3 170	0.598	0.602			0.590		
H	3 175	0.883	0.887			0.875		
I	4 165, 190	0.645	0.649			0.637		
J	5 190, 225			0.0015	0.0073			0.0090
K	6 110, 165			0.0015	0.0069			0.0090
L	7 320, 340			0.0000	0.0167			0.0278
M	8 240, 285			0.0000	0.0052			0.0090

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Fits and Clearances
Figure 801 (Sheet 3 of 4)

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	
N	OD 285	0.970	0.972			0.966		
O	9 285, 320,340, 225			0.0019	0.0150			0.0234
P	10 285, 320,340			0.0008	0.0105			0.0169
Q	11 340, 225			0.0013	0.0054			0.0081
R	12 320, 285			0.0009	0.0036			0.0054
S	ID 115 OD 85, 90,100	1.1073 1.1046	1.1093 1.1053	0.0020	0.0047	 1.1036	1.1156	0.0120
T	1 105	1.6185	1.6205			1.6160		

ALL DIMENSIONS ARE IN INCHES

1 WIDTH

2 FLANGE THICKNESS

3 CIRCULAR TOOTH THICKNESS MEASURED AT 1.9375 PITCH DIA. DISCARD PART IF WEAR IS VISIBLE

4 CHORDAL TOOTH THICKNESS MEASURED AT 1.9375 PITCH DIA

5 SPLINE BACKLASH MEASURED AT 1.6875 PITCH DIA ON GEAR (225) WITH COUPLING (190) FIXED

6 SPLINE BACKLASH MEASURED AT 1.000 PITCH DIA ON SHAFT (110) WITH ADAPTER (165) FIXED

7 SPLINE BACKLASH MEASURED AT 2.7000 PITCH DIA ON GEAR (320) WITH GEAR (340) FIXED

8 SPLINE BACKLASH MEASURED AT 1.6875 PITCH DIA ON COUPLING (240) WITH GEAR (285) FIXED

9 TOTAL BACKLASH OF GEAR TRAIN MEASURED AT 0.8125 SPLINE PITCH DIA ON GEAR (285) WITH GEAR (225) FIXED

10 COMPOUND BACKLASH OF GEARS (285,320,340) MEASURED AT 0.8125 SPLINE PITCH DIA ON GEAR (285) WITH GEAR (340) FIXED

11 GEAR BACKLASH OBTAINED BY SUBTRACTING COMPOUND BACKLASH P FROM TOTAL BACKLASH O

12 GEAR BACKLASH OBTAINED BY MULTIPLYING SPLINE BACKLASH L BY 0.30 AND SUBTRACTING FROM COMPOUND BACKLASH P

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Fits and Clearances
Figure 801 (Sheet 4 of 4)

FOR TORQUE VALUES OF STANDARD FASTENERS, REFER TO 20-50-01			
ITEM NO. IPL FIG. 1	NAME	TORQUE	
		POUND-INCHES	POUND-FEET
10	NUT	300-500	
50	NUT	200-240	
80	NUT	170-200	
120	NUT	180-250	
230	NUT	160-190	
245,290	BOLT	80-100	
345	NUT	50-70	

Torque Table
Figure 802

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

1. General

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

NOTE: Equivalent substitutes may be used.

Special Tools

Reference	Description	Part Number	Supplier
SPL-5349	X-Y Recorder/Plotter	925E	60795
SPL-5415	Splined Coupling Spanner Wrench	F71228-500	81205
SPL-5446	X-Y recorder	RW20IT Opt: 7046A Opt: 7090A	31991 28480 28480
SPL-5448	Strain gage conditioner	3170	02654
SPL-5449	Strain gage conditioner	3270	02654
SPL-5461	Adapter - Torque Wrench	ST6105-1	71791
SPL-5463	Spring Expansion Fixture	ST6107	71791
SPL-5464	Transmission tester	ST6396	71791

Tool Supplier Information

CAGE Code	Supplier Name	Supplier Address
02654	DAYTRONIC CORP.	2589 CORPORATE PL. MIAMISBURG, OH 45342-3655 Telephone: (513) 866-3300 Facsimile: (813) 866-3327
28480	HEWLETT-PACKARD COMPANY	1421 S. MANHATTAN AVE. FULLERTON, CA 92831 Telephone: 714-758-5805 Facsimile: 714-758-7537
31991	SOLTEC CORP	12977 ARROYO ST SAN FERNANDO, CA 91340-1597 Telephone: (818) 365-0800 Facsimile: (818) 365-7839

Tool Supplier Information (Continued)

CAGE Code	Supplier Name	Supplier Address
60795	ALLEN DATAGRAPH INC.	2 INDUSTRIAL WAY SALEM, NH 03079-2837 Telephone: (603) 893-1983 Facsimile: (603) 893-9042
71791	CURTISS-WRIGHT CONTROLS INC.	A5800 JOHN J. DELANEY DRIVE GASTONIA, NC 28277 Telephone: 704-869-4600 Facsimile: 704-869-4601 www.cwcontrols.com
81205	THE BOEING COMPANY	17930 INTERNATIONAL BLVD. SOUTH SEATAC, WA 98188-4321 Telephone: 206-662-6650 Facsimile: 206-662-7145

ILLUSTRATED PARTS LIST

1. Introduction

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

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

1 2 3 4 5 6 7

. Assembly

. Attaching parts for assembly

. . Detail parts for assembly

. . Subassembly

. . Attaching parts for subassembly

. . . Detail parts for subassembly

. . . Sub-subassembly

. . . Attaching parts for subassembly

. . . . . Details parts for sub-subassembly

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

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

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

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

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

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

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

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

H. Interchangeable Parts

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

VENDOR CODES

Code	Name
02758	NETWORKS ELECTRONIC CORP U S BEARING DIV 9750 DE SOTO AVENUE CHATSWORTH, CALIFORNIA 91311-4409 FORMERLY U S BEARING DIV NETWORKS ELEC CORP
15860	NEW HAMPSHIRE BALL BEARINGS, INC ASTRO DIVISION 155 LEXINGTON AVENUE LACONIA, NEW HAMPSHIRE 03246-2937 FORMERLY ASTRO BEARING CORP, LOS ANGELES, CALIF.
21335	TIMKEN US CORPORATION DIV FAFNIR 336 MECHANIC STREET LEBANON, NH 03766-0267 FORMERLY FAFNIR BRG AND TEXTRON INC FAFNIR DIV IN NEW BRITAIN, CONNECTICUT ; FORMERLY TORRINGTON CO THE SPECIAL PRODUCTS DIV SUB OF THE INGERSOLL-RAND CO V8D210 FORMERLY TORRINGTON CO FAFNIR BEARING DIV IN TORRINGTON, CT
38443	MRC BEARINGS 402 CHANDLER STREET JAMESTOWN, NEW YORK 14701-3802 FORMERLY MARLIN-ROCKWELL CORP DIV TRW AND TRW INC
50294	NEW HAMPSHIRE BALL BEARINGS, INC PRECISION DIVISION 9700 INDEPENDENCE AVENUE CHATSWORTH, CALIFORNIA 91311 FORMERLY NIPPON MINATURE BEARING CORP V23589 AND NMB AMERICA INC AND NMB INC

Code	Name
71791	CURTISS WRIGHT FLIGHT SYSTEMS INC 300 FAIRFIELD ROAD FAIRFIELD, NEW JERSEY 07006-1932 FORMERLY CURTISS-WRIGHT CORP CURTISS DIV IN CALDWELL N.J.
73680	GARLOCK INC MECHANICAL PACKING DIV SUB OF COLT IND 1666 DIVISION STREET PALMYRA, NEW YORK 14522-9343
80756	SPIROLOX DIV OF KAYDON CORP 29 CASSENS COURT FENTON, MISSOURI 63026-2543 FORMERLY RAMSEY CORP, TRW INC RAMSEY CORP IN MANCHESTER MO.
83259	PARKER-HANNIFIN CORP O-SEAL DIV 10567 JEFFERSON BLVD CULVER CITY, CALIFORNIA 90232-3513 FORMERLY PARKER SEAL CO DIV OF PARKER-HANNIFIN CORP

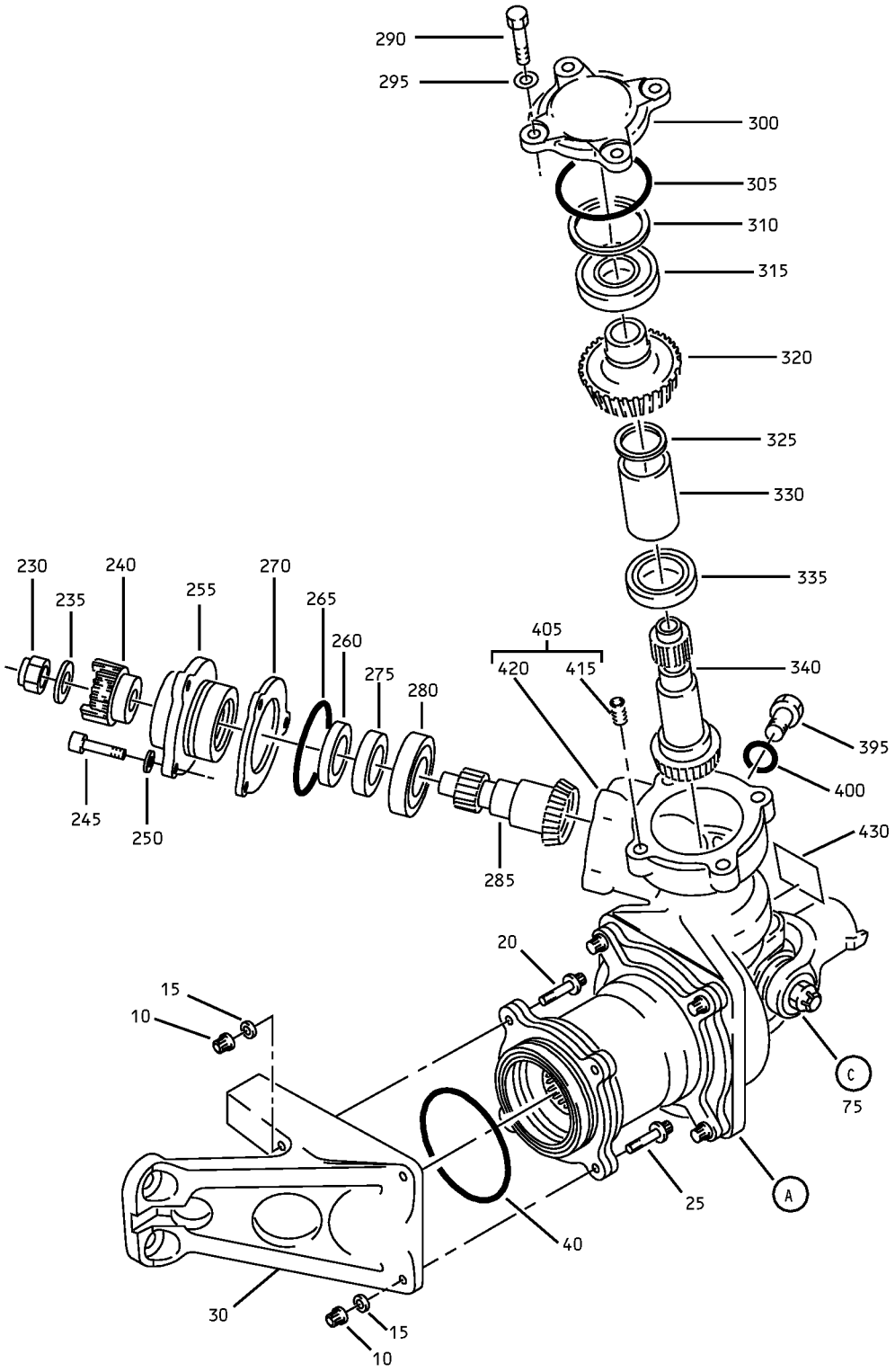
NUMERICAL INDEX

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
10-61899-14		1	115	4
111GE		1	215	1
175841		1	165	1
175843		1	190	1
175843-1		1	190A	1
176278X		1	160	AR
176569		1	140	1
176570		1	145	1
176628		1	185	1
176628-1		1	185A	1
176634		1	170	1
176635		1	175	1
176643-1		1	155	2
176665-2		1	135	1
182620		1	180	1
182621-1		1	150	1
182691-1		1	180A	1
2-152N304-75		1	195	2
2-153N304-75		1	40	1
2-156N304-75		1	200	1
21959-0269		1	260A	1
21959-0535		1	375A	1
65–76606–2		1	85A	1
65-50261-1		1	420A	1
65-50261-2		1	425A	1
65-50261-3		1	420	1
65-50261-4		1	425	1
65-50273-3		1	405	1
65-50273-4		1	410	1
65-76602-11		1	75	1
65-76606-1		1	85	1
65-80941-1		1	110A	1
65-80941-3		1	110	1
65C25525-1		1	30	1

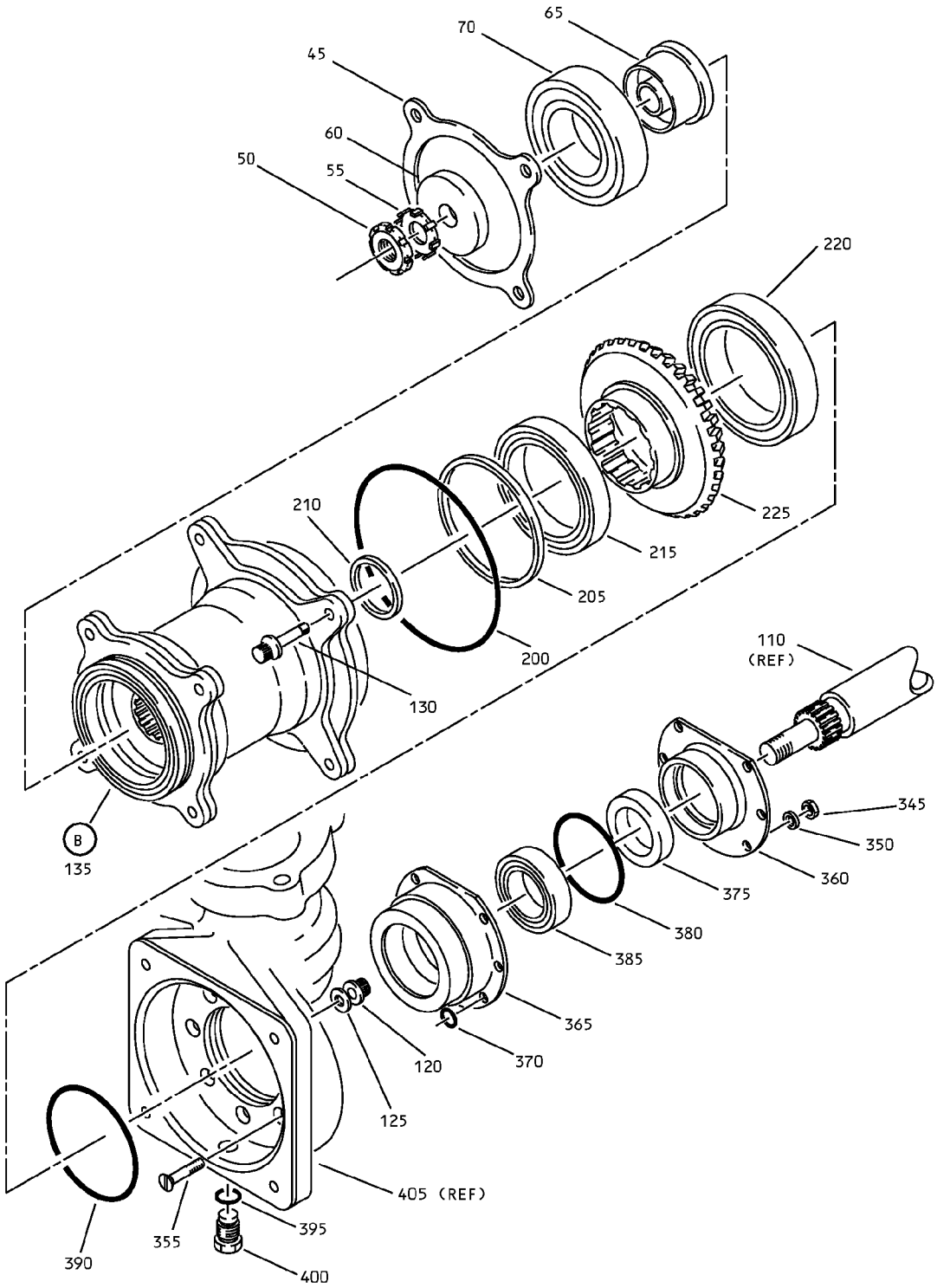
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
65C25525-2		1	35	1
65C25532-1		1	240	1
65C27501-1		1	1	RF
65C27501-2		1	1A	RF
65C27501-3		1	1B	RF
65C27508-1		1	5	RF
65C27508-2		1	5A	RF
65C27508-3		1	5B	RF
66-23917-2		1	330	1
66-23919-1		1	60B	1
66-24700-1		1	325	1
66-24715-1		1	235	1
66-25105-2		1	310	1
69-37612-2		1	320A	1
69-37612-3		1	320	1
69-37613-1		1	340A	1
69-37613-2		1	340	1
69-37633-3		1	300A	1
69-37633-5		1	300	1
		1	300B	1
69-37639-1		1	65A	1
69-37639-2		1	65	1
69-37668-6		1	365B	1
69-37683-1		1	50	1
69-37696-4		1	255	1
69-52400-2		1	110B	1
69-52404-1		1	285A	1
69-52404-2		1	285	1
69-52414-4		1	95B	1
69-52414-6		1	95A	1
69-52414-8		1	95	1
69-52414-9		1	95C	1
69-52421-1		1	225B	1
69-52421-2		1	225A	1
69-52421-3		1	225	1

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
69-52425-1		1	270	1
69-52428-1		1	60A	1
69-52428-2		1	60	1
69-52450-1		1	205	1
69-52451-1		1	45	1
69-52461-1		1	430	1
69-60052-1		1	90A	1
69-60052-2		1	90	1
69-60056-1		1	100A	1
69-60056-2		1	100	1
69-60058-1		1	105	1
69-62734-2		1	365A	1
69-62734-3		1	365	1
69-62735-2		1	360	1
69-73393-2		1	260	1
69-73393-4		1	375	1
69-87878-1		1	84	1
9209H		1	70	1
AFDU17-3-14		1	115	4
AJF18A106DU		1	115	4
AN960-416		1	250	3
		1	295	4
		1	350	7
AN960-516		1	125	4
BACB10BA30		1	280	1
		1	315	1
		1	335	1
BACB10BB25		1	275	1
BACB10BB60		1	220	1
BACB30JC8-12		1	355	7
BACB30LE5-12		1	130A	4
BACB30LE6-14		1	25A	2
BACB30LE6-32		1	20A	2
BACB30MT5T12		1	130	4
BACB30MT6T14		1	25	2

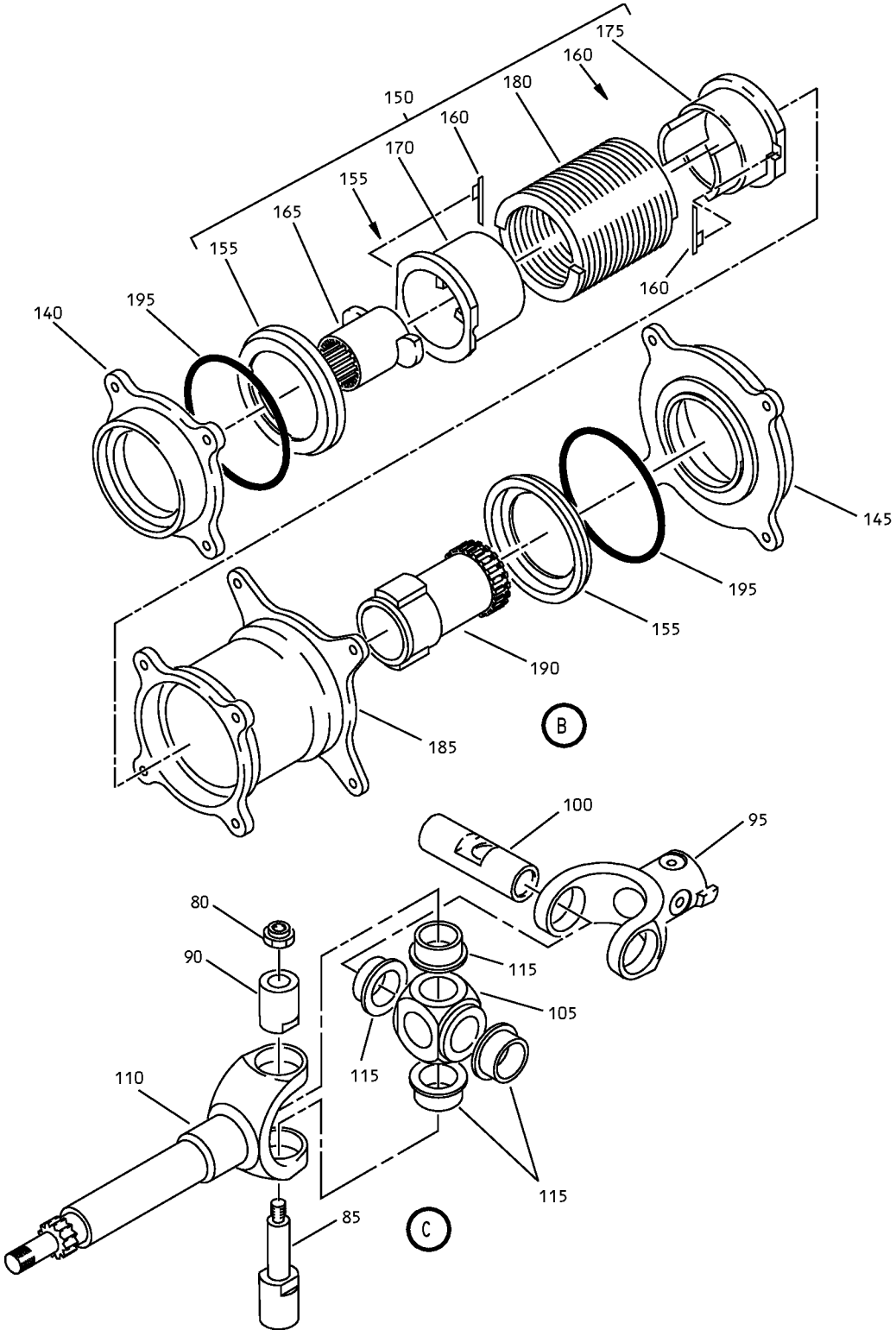
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
BACB30MT6T32		1	20	2
BACN10HR5		1	120	4
BACN10HR6		1	10	4
BACN10JC7		1	80	1
BACN11N107CD		1	80A	1
BACP18BBC03A10P		1	81	1
BACW10BN6P		1	15	4
HDF007P3		1	385	1
HDFZZ007-9		1	385A	1
HJF18DU103		1	115	4
MS124696		1	415A	7
MS172273		1	55	1
MS21042L4		1	345	7
MS21042L6		1	230	1
MS21208F4-15		1	415	7
MS24391D4L		1	395	2
MS28775-010		1	370	7
MS28775-135		1	265	1
MS28775-139		1	380	1
MS28775-144		1	390	1
MS28775-146		1	305	1
MS28778-4		1	400	2
NAS1149E0732P		1	88	1
NAS1149E0763P		1	87	1
NAS1351-4H12P		1	245	3
		1	290	4
RR168		1	210	1



Trailing Edge Flap Drive System No. 1 and 8 Transmission Assemblies
IPL Figure 1 (Sheet 1 of 3)



Trailing Edge Flap Drive System No. 1 and 8 Transmission Assemblies
IPL Figure 1 (Sheet 2 of 3)



Trailing Edge Flap Drive System No. 1 and 8 Transmission Assemblies
IPL Figure 1 (Sheet 3 of 3)

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–1	65C27501-1		TRANSMISSION ASSY-TRAILING EDGE FLAP DRIVE SYSTEM NO. 1	A	RF
–1A	65C27501-2		TRANSMISSION ASSY-TRAILING EDGE FLAP DRIVE SYSTEM NO. 1	B	RF
–1B	65C27501-3		TRANSMISSION ASSY-TRAILING EDGE FLAP DRIVE SYSTEM NO. 1	E	RF
–5	65C27508-1		TRANSMISSION ASSY-TRAILING EDGE FLAP DRIVE SYSTEM NO. 8	C	RF
–5A	65C27508-2		TRANSMISSION ASSY-TRAILING EDGE FLAP DRIVE SYSTEM NO. 8	D	RF
–5B	65C27508-3		TRANSMISSION ASSY-TRAILING EDGE FLAP DRIVE SYSTEM NO. 8	F	RF
10	BACN10HR6		. NUT		4
15	BACW10BN6P		. WASHER		4
20	BACB30MT6T32		. BOLT	A-D	2
–20A	BACB30LE6-32		. BOLT	E, F	2
25	BACB30MT6T14		. BOLT	A-D	2
–25A	BACB30LE6-14		. BOLT	E, F	2
30	65C25525-1		. HOUSING	A, B, E	1
–35	65C25525-2		. HOUSING	C, D, F	1
40	2-153N304-75		. PACKING		1
45	69-52451-1		. SHIM		1
50	69-37683-1		. NUT		1
55	MS172273		. WASHER		1
60	69-52428-2		. RETAINER (OPT ITEM 60A, 60B)		1
–60A	69-52428-1		. RETAINER (OPT ITEM 60, 60B)		1
–60B	66-23919-1		. RETAINER (OPT ITEM 60, 60A)		1
65	69-37639-2		. ADAPTER (OPT ITEM 65A)		1
–65A	69-37639-1		. ADAPTER (OPT ITEM 65)		1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
70	9209H		. BEARING (V38443)		1
75	65-76602-11		. UNIVERSAL JOINT ASSY		1
80	BACN10JC7		. . NUT (PRE SB 737-27-1265)		1
80A	BACN11N107CD		. . CASTELLATED NUT (POST SB 737-27-1265)		1
81	BACP18BB˜ C03A10P		. . COTTER PIN (POST SB 737-27-1265)		1
84	69-87878-1		. . SHIM (POST SB 737-27-1265)		1
85	65-76606-1		. . BOLT (PRE SB 737-27-1265)		1
85A	65–76606–2		. . BOLT (POST SB 737-27-1265)		
87	NAS1149E0763P		. . WASHER (POST SB 737-27-1265)		1
88	NAS1149E0732P		. . WASHER (POST SB 737-27-1265)		1
90	69-60052-2		. . SPACER (POST SB 737-27-1265)		1
–90A	69-60052-1		. . SPACER (PRE SB 737-27-1265)		1
95	69-52414-8		. . YOKE (OPT ITEM 95A, 95B, 95C)		1
–95A	69-52414-6		. . YOKE (OPT ITEM 95, 95B, 95C)		1
–95B	69-52414-4		. . YOKE (OPT ITEM 95, 95A, 95C)		1
–95C	69-52414-9		. . YOKE (OPT ITEM 95, 95A, 95B)		1
100	69-60056-2		. . PIN-CROSS (OPT ITEM 100A)		1
–100A	69-60056-1		. . PIN-CROSS (OPT ITEM 100)		1
105	69-60058-1		. . CROSS-TRUNNION		1
110	65-80941-3		. . SHAFT-OUTPUT (OPT ITEM 110A, 110B)		1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–110A	65-80941-1		. . SHAFT-OUTPUT (OPT ITEM 110, 110B)		1
–110B	69-52400-2		. . SHAFT-OUTPUT (OPT ITEM 110, 110A)		1
115	AFDU17-3-14		. . BUSHING (V15860) (SPEC 10-61899-14) (OPT AJF18A106DU (V50294)) (OPT HJF18DU103 (V02758))		4
120	BACN10HR5		. NUT		4
125	AN960-516		. WASHER		4
130	BACB30MT5T12		. BOLT	A-D	4
–130A	BACB30LE5-12		. BOLT	E, F	4
135	176665-2		. BRAKE ASSY-TORQUE (V71791)		1
140	176569		. . SUPPORT		1
145	176570		. . SUPPORT		1
150	182621-1		. . PACK ASSY-SPRING		1
155	176643-1		. . . RING		2
160	176278X		. . . SHIM		AR
165	175841		. . . ADAPTER		1
170	176634		. . . SLEEVE		1
175	176635		. . . SLEEVE		1
180	182620		. . . SET-SPRING		1
–180A	182691-1		. . . SET-SPRING		1
185	176628		. . HOUSING		1
–185A	176628-1		. . HOUSING		1
190	175843		. . COUPLING		1
–190A	175843-1		. . COUPLING		1
195	2-152N304-75		. . PACKING (V83259)		2
200	2-156N304-75		. . PACKING (V83259)		1
205	69-52450-1		. SHIM		1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
210	RR168		. RING (V80756)		1
215	111GE		. BEARING (V21335)		1
220	BACB10BB60		. BEARING		1
225	69-52421-3		. GEAR (OPT ITEM 225A, 225B)		1
–225A	69-52421-2		. GEAR (OPT ITEM 225, 225B)		1
–225B	69-52421-1		. GEAR (OPT ITEM 225, 225A)		1
230	MS21042L6		. NUT		1
235	66-24715-1		. WASHER		1
240	65C25532-1		. COUPLING		1
245	NAS1351-4H12P		. BOLT		3
250	AN960-416		. WASHER		3
255	69-37696-4		. RETAINER		1
260	69-73393-2		. SEAL		1
–260A	21959-0269		. SEAL (V73680) (REPLACED BY ITEM 260)	A, C	1
265	MS28775-135		. PACKING		1
270	69-52425-1		. SHIM		1
275	BACB10BB25		. BEARING		1
280	BACB10BA30		. BEARING		1
285	69-52404-2		. GEAR-BEVEL (OPT ITEM 285A)		1
–285A	69-52404-1		. GEAR-BEVEL (OPT ITEM 285)		1
290	NAS1351-4H12P		. BOLT		4
295	AN960-416		. WASHER		4
300	69-37633-5		. COVER	A, C	1
–300A	69-37633-3		. COVER (OPT ITEM 300B)	B, D, E, F	1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–300B	69-37633-5		. COVER (OPT ITEM 300A)	B, D, E, F	1
305	MS28775-146		. PACKING		1
310	66-25105-2		. SHIM		1
315	BACB10BA30		. BEARING		1
320	69-37612-3		. GEAR (OPT ITEM 320A)		1
–320A	69-37612-2		. GEAR (OPT ITEM 320)		1
325	66-24700-1		. SHIM		1
330	66-23917-2		. SPACER		1
335	BACB10BA30		. BEARING		1
340	69-37613-2		. GEAR (OPT ITEM 340A)		1
–340A	69-37613-1		. GEAR (OPT ITEM 340)		1
345	MS21042L4		. NUT		7
350	AN960-416		. WASHER		7
355	BACB30JC8-12		. BOLT		7
360	69-62735-2		. RETAINER		1
365	69-62734-3		. SUPPORT-BEARING (OPT ITEM 365A, 365B)		1
–365A	69-62734-2		. SUPPORT-BEARING (OPT ITEM 365, 365B)		1
–365B	69-37668-6		. SUPPORT-BEARING (OPT ITEM 365, 365A)		1
370	MS28775-010		. PACKING		7
375	69-73393-4		. SEAL		1
–375A	21959-0535		. SEAL (V73680) (REPLACED BY ITEM 375)	A, C	1
380	MS28775-139		. PACKING		1
385	HDF007P3		. BEARING (OPT ITEM 385A WITH SEALS REMOVED)		1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–385A	HDFZZ007-9		. BEARING (WITH SEALS REMOVED, OPT ITEM 385)		1
390	MS28775-144		. PACKING		1
395	MS24391D4L		. PLUG		2
400	MS28778-4		. PACKING		2
405	65-50273-3		. HOUSING ASSY	A, B, E	1
–410	65-50273-4		. HOUSING ASSY	C, D, F	1
415	MS21208F4-15		. . INSERT (OPT ITEM 415A)		7
–415A	MS124696		. . INSERT (OPT ITEM 415)		7
420	65-50261-3		. . HOUSING (OPT ITEM 420A)	A, B, E	1
–420A	65-50261-1		. . HOUSING (OPT ITEM 420)	A, B, E	1
–425	65-50261-4		. . HOUSING (OPT ITEM 425A)	C, D, F	1
–425A	65-50261-2		. . HOUSING (OPT ITEM 425)	C, D, F	1
430	69-52461-1		. NAMEPLATE		1