TO: ALL HOLDERS OF RUDDER CONTROL YAW DAMPER SUMMING ASSEMBLY AND SERVO SUMMING ASSEMBLY COMPONENT MAINTENANCE MANUAL 27-21-52

REVISION NO. 9 DATED JUL 01/04

HIGHLIGHTS

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

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
REPAIR-GEN 601 REPAIR 1-1 604	Edited without technical change
REPAIR-GEN 602-603	Updated the True Position Dimensioning symbols
REPAIR 1-1 601-602	Added procedures for the replacement of the shearout link
REPAIR 1-1 602-603,605-607 REPAIR 1-2 601-602,605	Added repair procedures for the shearout rivet holes in the link and the torque tube crank
REPAIR 2-1 602	Specified the refinish on additional summing levers
REPAIR 4-1 601	Updated the data for the repair of the cam
1002-1003	Updated the Vendors list
1005-1009,1013-1023	Updated the standard parts used on the assembly

BOEING

COMPONENT
MAINTENANCE MANUAL

RUDDER CONTROL YAW DAMPER SUMMING ASSEMBLY AND SERVO SUMMING ASSEMBLY

PART NUMBERS 251T3700-2,-4,-11

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

4296

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
		PRR B10683	APR 10/83

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TITLE PAGE		
1	JUL 01/93	01.1
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1	OCT 01/90	01.1
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*601	JUL 01/04	01.1
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REPAIR 1-1		
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801	OCT 10/83	01.1
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1001	JUL 10/83	01
*1002	JUL 01/04	01.1
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*1010	JUL 01/04	01.1
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*1012	JUL 01/04	01.1

PAGE	DATE	CODE
ILLUSTRATED PARTS LIST		CONT.
*1013	JUL 01/04	01.1
*1014	JUL 01/04	01.1
*1015	JUL 01/04	01.1
*1016	JUL 01/04	01.1
*1017	JUL 01/04	01.1
*1018	JUL 01/04	01.1
*1019	JUL 01/04	01.1
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INTRODUCTION

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

This manual is divided into separate sections:

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

Refer to the Table of Contents for the page location of applicable sections. An asterisked flagnote *[ ] in place of the page number indicates that no special instructions are provided since the function can be performed using standard industry practices.

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

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

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

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

Verification:

Disassembly
Assembly

RUDDER CONTROL YAW DAMPER SUMMING ASSEMBLY AND SERVO SUMMING ASSEMBLY

DESCRIPTION AND OPERATION

1. The rudder control yaw damper installation consists of a summing assembly, servo summing assembly, and two yaw dampers. In this manual, only the summing and servo summing assemblies are presented.

2. The summing assembly consists of a torque tube assembly, summing lever assembly, and summing/cam assembly. The primary input, directed to the summing/cam assembly, is from the ratio changer via the load limiter. The secondary input directed to the summing/cam assembly is also from the ratio changer via a rod assembly. The secondary input takes over the primary input function when excessive loads compress the crushable honeycomb of the load limiter.

3. The servo summing assembly consists of three link assemblies. These assemblies are connectors in between the summing assembly and two yaw dampers.

4. Leading Particulars (Approximate)

   Width -- 12 inches
   Depth -- 10 inches
   Length -- 11 inches
   Weight -- 6 pounds

DISASSEMBLY

NOTE: Disassemble this component only as necessary to complete fault isolation determine serviceability of parts, perform required repairs and restore the unit to serviceable condition.

1. 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. Rivets (200, 210A)

   B. Bolts (170)

   C. Collars (175)

2. Disassembly of 251T3700-2, -11 (IPL Fig. 1)

   A. Remove bolts (10, 15), washers (20), and nuts (25). Remove summing/cam assembly (70) and summing lever assembly (40) from torque tube assembly (195).

   B. Remove bearing (35) from summing lever assembly (40). Remove bushings (30) from torque tube assembly (195).

      NOTE: Do not remove bearings (55, 60), sleeve (50), or bushing (45) from summing lever (65) unless necessary for repair or replacement.

      Do not disassemble torque tube (195) unless necessary for repair or replacement.

   WARNING: USE EXTREME CARE WHEN REMOVING SPRING (75) FROM SUMMING/CAM ASSEMBLY (70). SPRING IS HEAVILY LOADED (MAXIMUM LOAD IS 165 LBS).

   C. Remove spring (75) from summing/cam assembly (70).

   D. Remove bolt (80A), washer (85), and nut (105). Remove cam roller arm (190) from summing lever assembly (145).

   E. Remove bearing (130) and plain bushing (90) from summing lever assembly (145).

      NOTE: Do not remove bearings (150, 155) or bushing (157) from summing lever (160) unless necessary for repair or replacement.

   F. Remove bolt (95) and nut (105) from cam roller arm (190). Remove track roller bearing (135) and bushing (100) from cam roller arm (190).

G. Remove bolt (110) and nut (125). Remove bearing (140), spacer (120), and bushing (115). Remove lever and cam assembly (165) from summing lever (160).

H. Remove bolts (170) and collars (175) from lever and cam assembly (165). Separate cam (180) from output lever (185).

I. Deleted

3. Disassembly of 251T3700-4 (IPL Fig. 1)

A. Remove bolt (245), washer (250), and nut (255). Remove summing link assembly (300) from link assembly (265).

NOTE: Do not remove bearing (270) from link (275) unless necessary for repair or replacement.

B. Remove bushing (260) from link (275).

C. Remove bolt (245), washer (250), and nut (255). Remove link assembly (280) from summing link assembly (300).

D. Remove bushing (260) from link (315).

NOTE: Do not remove bearings (305, 310) from link (315) unless necessary for repair or replacement.

Do not remove bearings (285, 290) from link (295) unless necessary for repair or replacement.

CLEANING

1. Clean all parts except teflon-sealed bearings using standard industry practices and information contained in 20-30-03.

2. Clean teflon-sealed bearings (35, IPL Fig. 1, 55, 60, 130, 135, 140, 150, 155, 230, 270, 285, 290, 305, 310, 340) 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 -- Cam spacer (120, IPL Fig. 1) and cam (180).

3. Penetrant check per 20-20-02 -- Summing lever (65), summing lever (160), cam roller arm (190), shearout link (205), offset torque tube (225A), inner torque tube (235), link (275, 295, 315).

4. Check spring (75).

   A. Extend spring to 2.900-2.920 inches and check that load is 57-63 lbs.

   B. Extend spring to 3.365-3.385 inches and check that load is 140.9-165.9 lbs.

REPAIR - GENERAL

1. Content

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

P/N	NAME	REPAIR
251T3710	TUBE, ASSY-TORQUE	1-1, 1-2
251T3715	LEVER, SUMMING	2-1
251T3716	LEVER, SUMMING	3-1
251T3717	CAM, SUMMING LINK	4-1
251T3720	LINK	5-1
251T3721	LINK, SUMMING	6-1
251T3722	LINK	7-1
- -	MISC PARTS REFINISH	8-1

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
20-30-02 Stripping of Protective Finishes
20-30-03 General Cleaning Procedures
20-41-01 Decoding Table for Boeing Finish Codes
20-42-01 Low Hydrogen Embrittlement Cadmium Plating
20-42-05 Bright Cadmium Plating
20-43-01 Chromic Acid Anodizing
20-50-03 Bearing and Bushing Replacement

3. Materials

NOTE: Equivalent substitutes may be used.

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

B. Grease -- BMS 3-24 (Ref 20-60-03)

C. Sealant -- BMS 5-95 (Ref 20-60-04)

D. Protective Finish -- Base: Finch 683-3-2; Catalyst: X310A (Ref 20-60-02)

4. Dimensioning Symbols

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

—	STRAIGHTNESS
▱	FLATNESS
⊥	PERPENDICULARITY (OR SQUARENESS)
//	PARALLELISM
○	ROUNDNESS
⌭	CYLINDRICITY
⌒	PROFILE OF A LINE
⌓	PROFILE OF A SURFACE
◎	CONCENTRICITY
≡	SYMMETRY
∠	ANGULARITY
↗	RUNOUT
↗↗	TOTAL RUNOUT
⌴	COUNTERBORE OR SPOTFACE
∨	COUNTERSINK

⌖	THEORETICAL EXACT POSITION OF A FEATURE (TRUE POSITION)
∅	DIAMETER
S ∅	SPHERICAL DIAMETER
R	RADIUS
SR	SPHERICAL RADIUS
()	REFERENCE
BASIC (BSC) OR [DIM]	A THEORETICALLY EXACT DIMENSION USED TO DESCRIBE SIZE, SHAPE OR LOCATION OF A FEATURE FROM WHICH PERMISSIBLE VARIATIONS ARE ESTABLISHED BY TOLERANCES ON OTHER DIMENSIONS OR NOTES.
[-A-]	DATUM
Ⓜ	MAXIMUM MATERIAL CONDITION (MMC)
Ⓛ	LEAST MATERIAL CONDITION (LMC)
Ⓢ	REGARDLESS OF FEATURE SIZE (RFS)
Ⓟ	PROJECTED TOLERANCE ZONE
FIM	FULL INDICATOR MOVEMENT

EXAMPLES

— | 0.002	STRAIGHT WITHIN 0.002
⊥ | 0.002 | B	PERPENDICULAR TO B WITHIN 0.002
// | 0.002 | A	PARALLEL TO A WITHIN 0.002
○ | 0.002	ROUND WITHIN 0.002
⌭ | 0.010	CYLINDRICAL SURFACE MUST LIE BETWEEN TWO CONCENTRIC CYLINDERS, ONE OF WHICH HAS A RADIUS 0.010 INCH GREATER THAN THE OTHER
⌒ | 0.006 | A	EACH LINE ELEMENT OF THE SURFACE AT ANY CROSS SECTION MUST LIE BETWEEN TWO PROFILE BOUNDARIES 0.006 INCH APART RELATIVE TO DATUM PLANE A
⌓ | 0.020 | A	SURFACES MUST LIE WITHIN PARALLEL BOUNDARIES 0.02 INCH APART AND EQUALLY DISPOSED ABOUT TRUE PROFILE
◎ | ∅ 0.0005 | C	CONCENTRIC TO C WITHIN 0.0005 DIAMETER
≡ | 0.010 | A	SYMMETRICAL WITH A WITHIN 0.010
∠ | 0.005 | A	ANGULAR TOLERANCE 0.005 WITH A
⌖ | ∅ 0.002 Ⓢ | B	LOCATED AT TRUE POSITION WITHIN 0.002 DIA RELATIVE TO DATUM B, REGARDLESS OF FEATURE SIZE
⊥ | ∅ 0.010 Ⓜ | A 0.510 Ⓟ	AXIS IS TOTALLY WITHIN A CYLINDER OF 0.010-INCH DIAMETER, PERPENDICULAR TO, AND EXTENDING 0.510-INCH ABOVE, DATUM A, MAXIMUM MATERIAL CONDITION
[2.000] OR 2.000 BSC	THEORETICALLY EXACT DIMENSION IS 2.000

NOTE: DATUM MAY APPEAR AT EITHER SIDE OF TOLERANCE FRAME

0.020 | A	
A | 0.020	

True Position Dimensioning Symbols
Figure 601

4299

TORQUE TUBE ASSEMBLY - REPAIR 1-1

251T3710-1, -2

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

1. Bearing Replacement (Fig. 601, IPL Fig. 1)

   A. Remove bearing (230).

   B. Install new bearing with BMS 3-24 grease per 20-50-03.

   C. Roller swage housing over bearing per 20-50-03.

2. Bushing Replacement (Fig. 601, IPL Fig. 1)

   A. Remove bushings (215, 220).

   B. Install new bushings with wet sealant, BMS 5-95, per 20-50-03.

   C. Machine bushing (220) to dimension shown.

   D. Fillet seal flanges of bushings with wet sealant, BMS 5-95.

3. Shearout Link Replacement (Fig. 601, IPL Fig. 1)

   NOTE: The new shearout link will not have pre-drilled holes. The new holes in the shearout link must align with the existing holes in the torque tube crank. If this cannot be done easily, use the procedure of Repair 1-2 to install bushings in the torque tube bolt holes, then machine through both parts.

   A. Remove the rivets (210A) and the shearout link (205) from the crank on the torque tube (225A).

   B. Put the new shearout link (205) in the correct location on the torque tube (225A) crank, as shown in Fig. 601, and apply a temporary clamp to hold the parts in place.

C. Machine two 0.159-0.166 inch holes thru the shearout link as shown in Fig. 602. Make sure that the holes align with the holes in the torque tube crank. Machine the 0.2500-0.2505 inch diameter hole at the opposite end of the shearout link. Remove the shearout link from the torque tube.

CAUTION: DO NOT BREAK THE SHARP EDGES ON THE RIVET HOLES OR THERE CAN BE AN INCORRECT SHEAROUT.

D. De-burr the machined holes in the shearout link, but do not break the sharp edges on the two rivet holes.

CAUTION: THIS IS A CONTROLLED SHEAROUT. APPLY ONLY BMS 3-24 GREASE TO THE FAYING SURFACES. DO NOT USE BMS 5-95 WET SEALANT. INSTALL ONLY THE SPECIFIED RIVETS. DO NOT INSTALL OVERSIZE RIVETS. INSTALL THE RIVETS WITH BMS 3-24 GREASE.

E. Apply BMS 3-24 grease to the faying surfaces of the shearout link and the torque tube crank, and to the rivets (210A). Install the shearout link on the torque tube crank with the rivets.

4. Repair of Shearout Rivet Holes (Fig. 602, IPL Fig. 1)

NOTE: If the rivet holes in the shearout link must be repaired, repair the holes in the torque tube crank at the same time, to make sure that the rivet holes will be aligned. If only the holes in the torque tube crank need repair, see Repair 1-2.

A. Put the shearout link (205) in the correct location on the torque tube (225A) crank, as shown in Fig. 601, and apply a temporary clamp to hold the parts in place.

B. Machine the two rivet holes in the shearout link and the torque tube to 0.240-0.253 inch diameter to remove damage or wear, as shown in Fig. 602. Remove the shearout link from the torque tube.

C. Chemical treat (F-17.10) the reworked surfaces of the torque tube and the shearout link.

D. Make three repair bushings for the torque tube and shearout link at each rivet location, as shown in Fig. 603. Also make two repair washers (213) for each rivet location as shown in Fig. 603.

E. Install the repair bushings in the torque tube and shearout link with BMS 5-95 sealant. Use the shrink fit procedure as shown in SOPM 20-50-03. Make sure that the ends of the repair bushings are 0.000-0.001 below the adjacent surfaces.

F. Put the shearout link in the correct location on the torque tube crank, as was done in step (A), and again apply the temporary clamp to hold the parts in place.

G. Machine two 0.159-0.166 inch holes thru the shearout link and the repair plugs in the torque tube crank as shown in Fig. 602. Machine the 0.2500-0.2505 inch diameter hole at the opposite end of the shearout link. Remove the shearout link from the torque tube.

CAUTION: DO NOT BREAK THE SHARP EDGES ON THE RIVET HOLES OR THERE CAN BE AN INCORRECT SHEAROUT.

H. De-burr the machined holes in the torque tube and shearout link, but do not break the sharp edges on the two rivet holes.

CAUTION: THIS IS A CONTROLLED SHEAROUT. APPLY ONLY BMS 3-24 GREASE TO THE FAYING SURFACES. DO NOT USE BMS 5-95 WET SEALANT. INSTALL ONLY THE SPECIFIED RIVETS. DO NOT INSTALL OVERSIZE RIVETS. INSTALL THE RIVETS WITH BMS 3-24 GREASE.

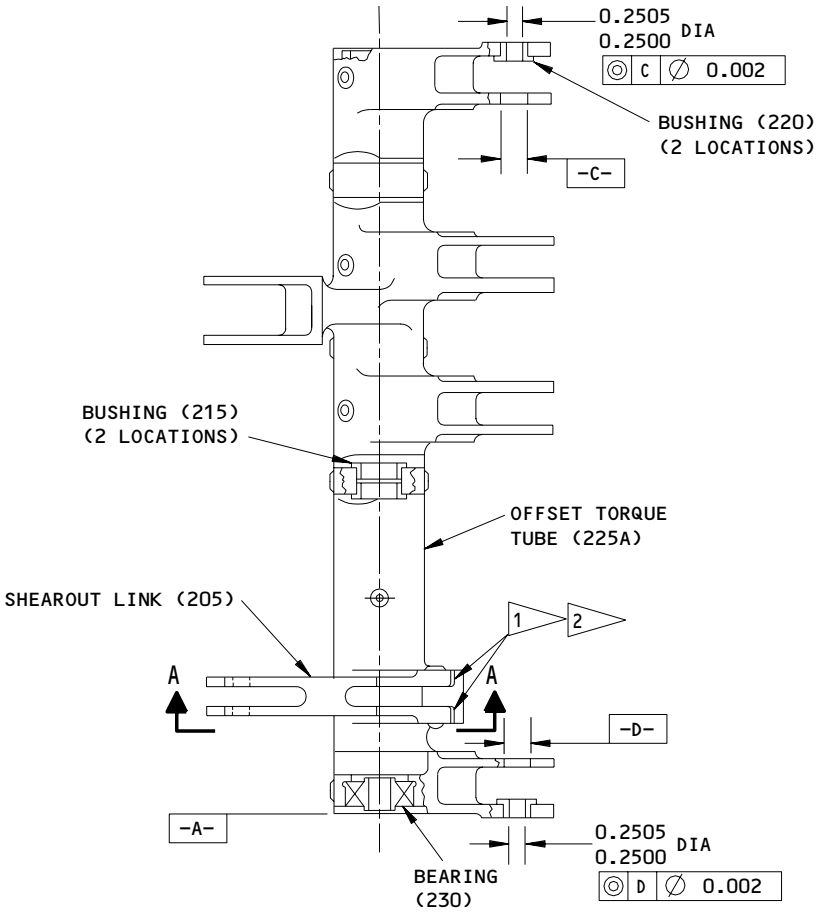
I. Apply BMS 3-24 grease to the faying surfaces of the shearout link and the torque tube crank, and to the rivets (212), as shown in Fig. 601. Install the shearout link on the torque tube crank with the rivets. Install the washers on each side as shown.

NOTE: The rework rivets (212) are longer than the original rivets (210A) because of the washers installed on each side of the shearout link to hold the repair bushings in position.

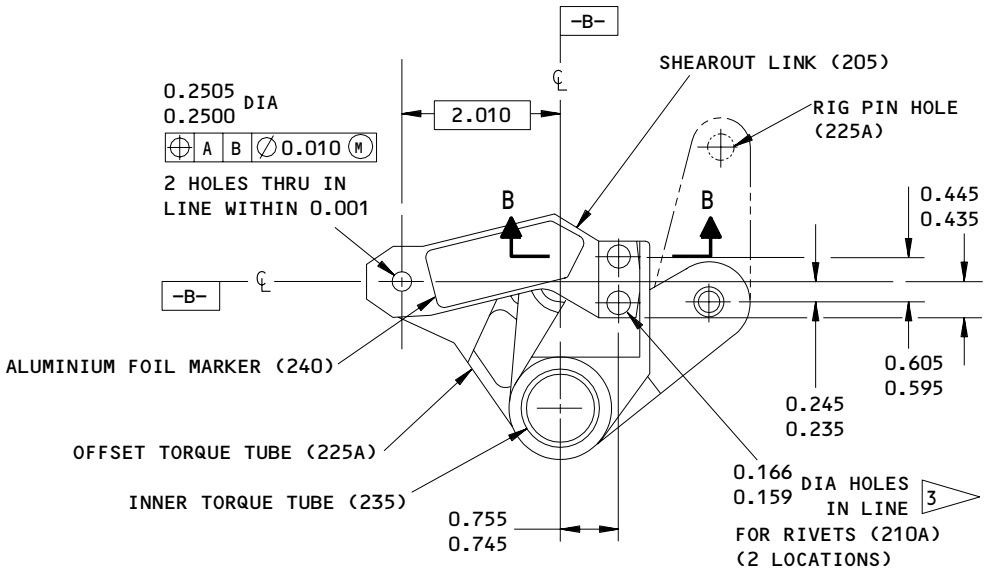
5. Aluminum Foil Marker Replacement (Fig. 601, IPL Fig. 1)

A. Install marker (240) on shearout link (205) per 20-50-05.

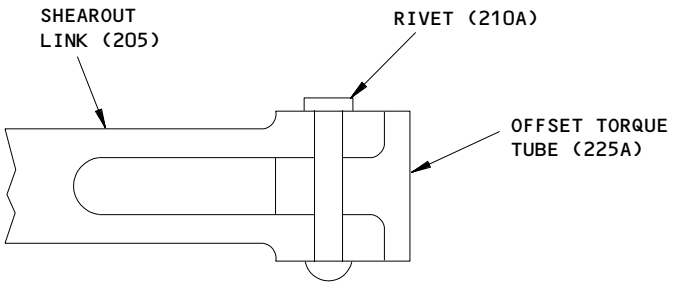
B. Edge seal with protective finish, per 20-60-02 Type 41, or equivalent.



251T3710-1,-2
Offset Torque Tube Assembly - Replacement Details
Figure 601 (Sheet 1)



A-A



B-B
(TYPICAL)

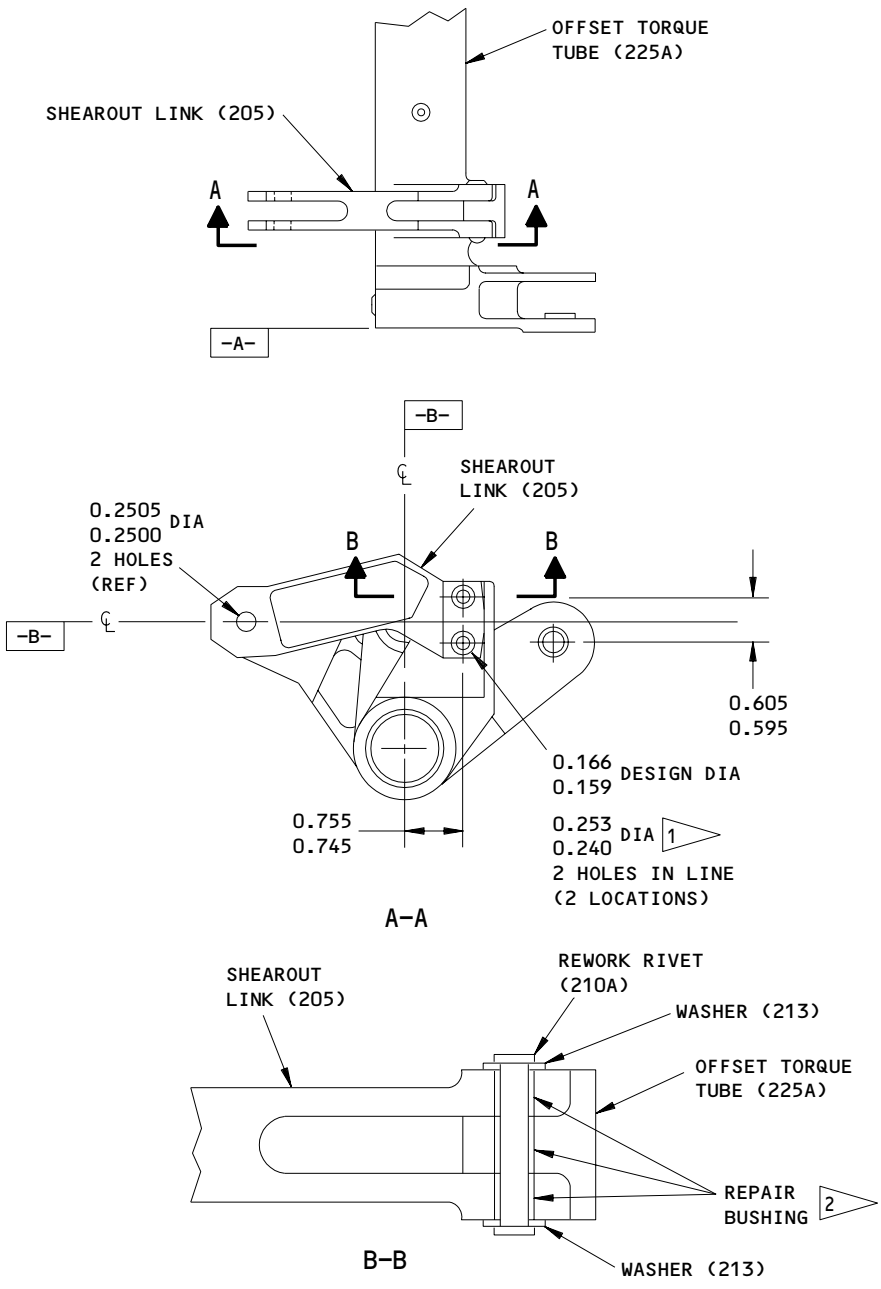
1. SHEAROUT LINK (205) TO BE POSITIONED TO OBTAIN LINE CONTACT AT ONE OF THESE LOCATIONS
2. COAT FAYING SURFACES WITH BMS 3-24 GREASE ONLY. DO NOT USE BMS 5-95 WET SEALANT.
3. INSTALL ONLY SPECIFIED RIVETS WITH BMS 3-24 GREASE. DO NOT INSTALL OVERSIZE RIVETS

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

251T3710-1,-2
Offset Torque Tube Assembly - Replacement Details
Figure 601 (Sheet 2)



1 REPAIR LIMIT

2 BOTH ENDS OF ALL BUSHINGS MUST BE 0.000–0.001 BELOW ADJACENT SURFACES

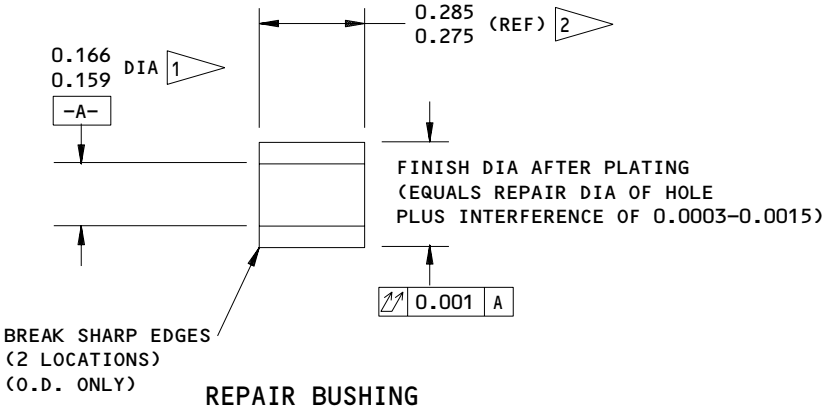
125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

251T3710-1,-2
Shearout Repair Bushing and Washer
Figure 602

403040



REPAIR BUSHING

FINISH: CADMIUM PLATE (F-15.06)

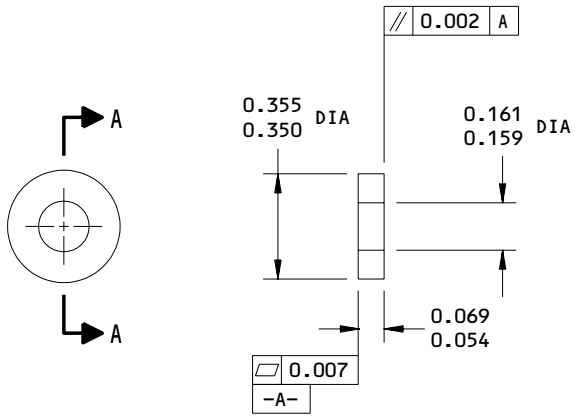
1 I.D. AFTER INSTALLATION AND FINAL MACHINING ON TORQUE TUBE

2 LENGTH EQUALS THICKNESS OF LINK OR CRANK MINUS 0.000-0.002

63 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: AL-NI-BRONZE PER AMS 4640

ALL DIMENSIONS ARE IN INCHES



REPAIR WASHER

FINISH: SULFURIC ACID ANODIZE (F-17.03)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: 2024-T3 ALUMINUM ALLOY

ALL DIMENSIONS ARE IN INCHES

251T3710-1,-2
Shearout Repair Bushing and Washer
Figure 603

403096

TORQUE TUBE ASSEMBLY - REPAIR 1-2

251T3710-1, -2

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

1. Tube Replacement (Fig. 601, IPL Fig. 1)

   A. Remove rivets (200) and inner torque tube (235).

   B. If a new inner torque tube (235) is being replaced, position tubes (225A, 235) as shown, Fig. 601 and drill 0.160-0.164 inch rivet holes on inner torque tube (235) using existing holes of offset torque tube (225A). Separate tubes (225A, 235) at this time.

   C. If a new offset torque tube (225A) is being replaced, position tubes (225A, 235) as shown, Fig. 601, rotate inner torque tube (235) 45 degrees either direction from original rivet locations and drill 0.160-0.164 inch rivet holes thru both tubes (225A, 235). Separate tubes (225A, 235) at this time.

   D. Apply sealant on all faying surfaces of tubes (225A, 235) and position tubes (225A, 235) as shown, Fig. 601.

   E. Install rivets (200) with wet sealant BMS 5-95.

2. Repair of Shearout Rivet Holes in the Torque Tube (Fig. 602, IPL Fig. 1)

   NOTE: If the matching rivet holes in the shearout link must also be repaired, use the procedure in Repair 1-1 instead, to make sure that the rivet holes will be aligned.

   A. Machine the two rivet holes in the torque tube (225A) crank to 0.240-0.253 inch diameter to remove damage or wear, as shown in Fig. 602.

B. Chemical treat (F-17.10) the reworked surfaces of the torque tube.

C. Make two repair bushings for the torque tube crank, as shown in Repair 1-1.

D. Install the repair bushings in the torque tube with BMS 5-95 sealant. Use the shrink-fit procedure as shown in SOPM 20-50-03. Make sure that the ends of the repair bushings are 0.000-0.001 below the adjacent surfaces.

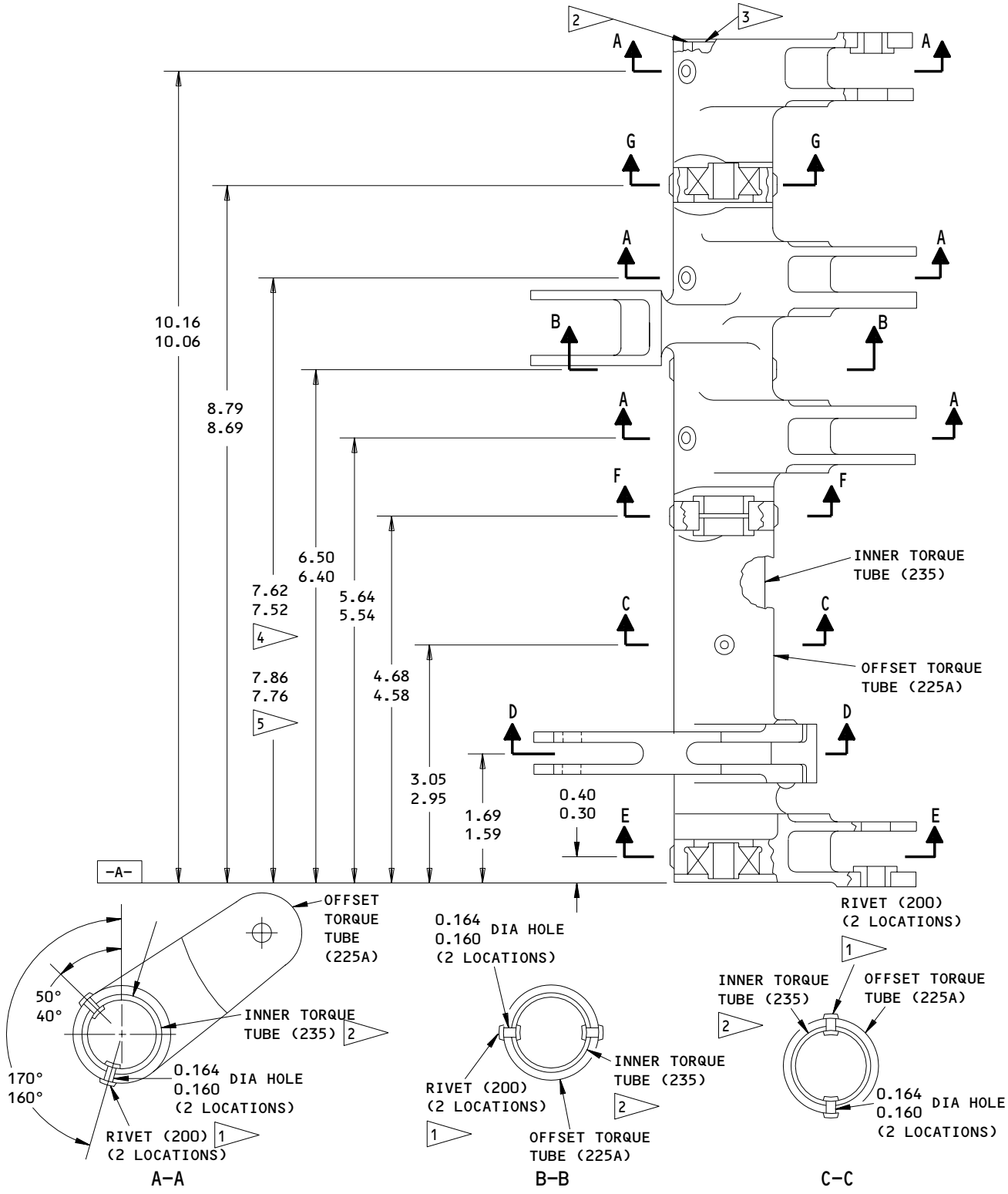
E. Put the shearout link in the correct location on the torque tube (225A) crank, as shown in Repair 1-1, and apply a temporary clamp to hold the parts in place.

F. Use the rivet holes in the shearout link as a pattern and machine the two 0.159-0.166 inch diameter holes in the torque tube crank. Remove the shearout link from the torque tube.

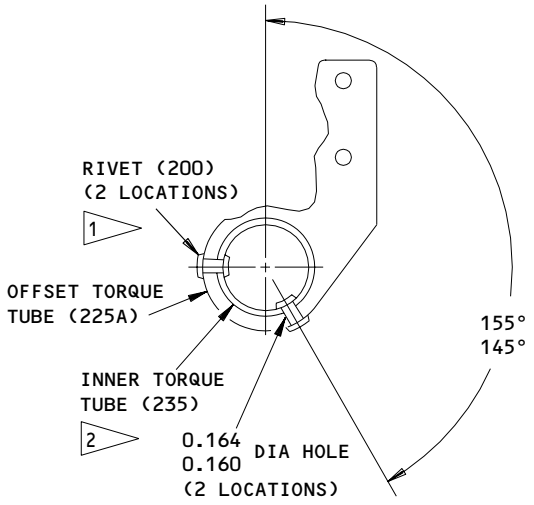
CAUTION: DO NOT BREAK THE SHARP EDGES ON THE RIVET HOLES OR THERE CAN BE AN INCORRECT SHEAROUT.

G. De-burr the machined holes in the torque tube, but do not break the sharp edges on the two rivet holes.

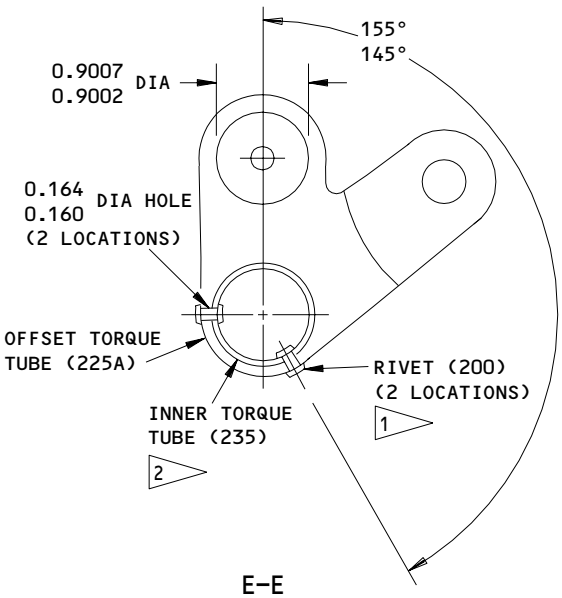
H. Install the shearout link on the torque tube crank with the rivets, as shown in Repair 1-1.



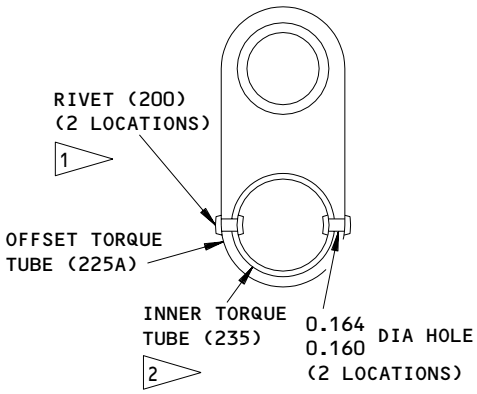
251T3710-1,-2
Torque Tube Assembly - Tube Replacement
Figure 601 (Sheet 1)



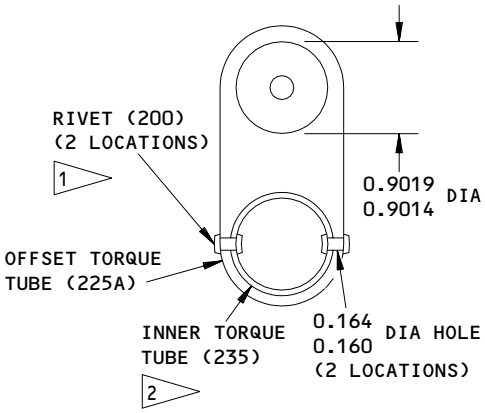
D-D



E-E



F-F



G-G

1 INSTALL RIVETS WITH BMS 5-95 SEALANT ON 0.160-0.164 INCH DIAMETER HOLE.

2 FAY SEAL WITH WET SEALANT, BMS 5-95.

3 INNER TORQUE TUBE (235) FLUSH TO 0.02 BELOW OFFSET TORQUE TUBE (225A) THIS END.

4 251T3710-1

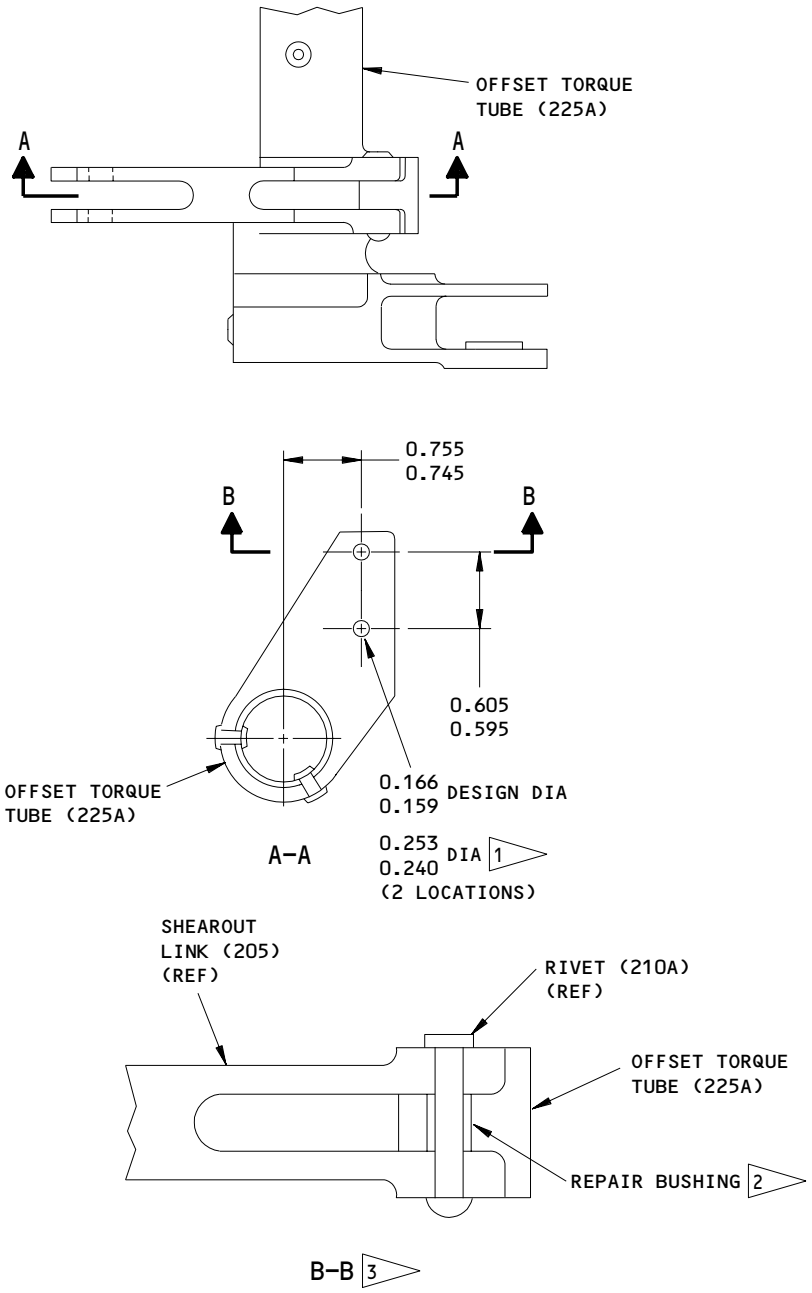
5 251T3710-2

REPAIR

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

251T3710-1,-2
Torque Tube Assembly - Tube Replacement
Figure 601 (Sheet 2)



1 REPAIR LIMIT

2 BOTH ENDS OF THE BUSHING MUST BE 0.000-0.001 BELOW ADJACENT SURFACES

3 SEE REPAIR 1-1 FOR MORE DETAILS

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

251T3711-1,-2
Torque Tube Shearout Hole Repair
Figure 602

403149

SUMMING LEVER ASSEMBLY - REPAIR 2-1

251T3715-1, -5

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

1. Bearing Replacement (Fig. 601, IPL Fig. 1)

   NOTE: Sleeve (50) must be replaced with bearing (55).

   A. Remove bearing (55) and sleeve (50).

   B. Install new sleeve and bearing.

   C. Roller swage sleeve (50) over housing and bearing (55) per 20-50-03.

   D. Fill gap with sealant, BMS 5-95.

2. Bearing Replacement (Fig. 601, IPL Fig. 1)

   A. Remove bearing (60).

   B. Install new bearing.

   C. Roller swage housing over bearing per 20-50-03.

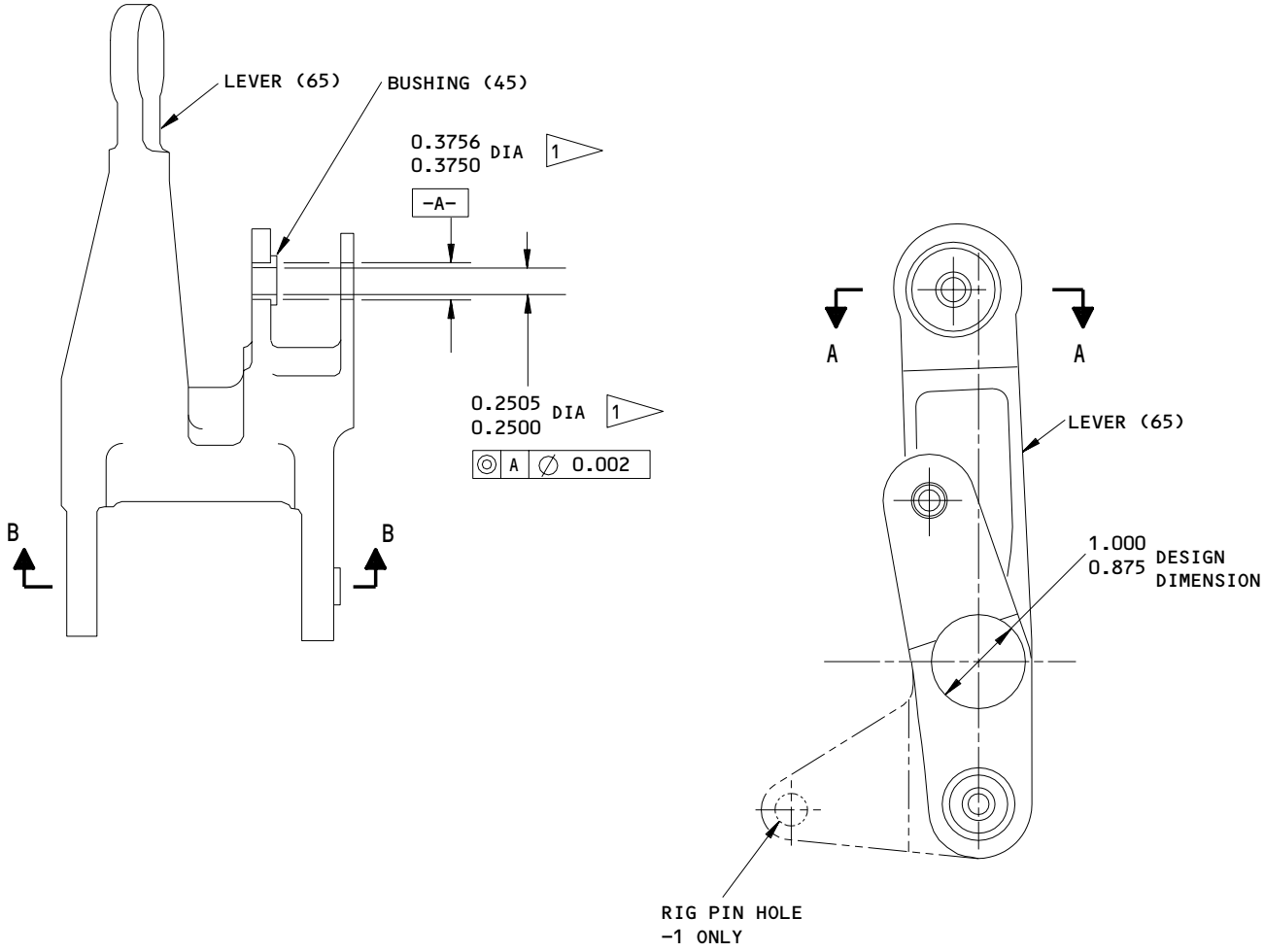
3. Bushing Replacement (Fig. 601. IPL Fig. 1)

   A. Remove bushing (45).

   B. Install new bushing with wet sealant per 20-50-03.

   C. Machine bushing (45) to dimension shown.

   D. Fillet seal bushing flange with sealant, BMS 5-95.



REFINISH

LEVER (65,65B,65C) -- ANODIZE (F-17.05) AND APPLY BMS 10-11, TYPE 1, PRIMER (F-20.03) EXCEPT AS NOTED.

LEVER (65A) -- CHROMIC ACID ANODIZE (F-17.04) AND APPLY BMS 10-11, TYPE 1, PRIMER (F-20.03) EXCEPT AS NOTED.

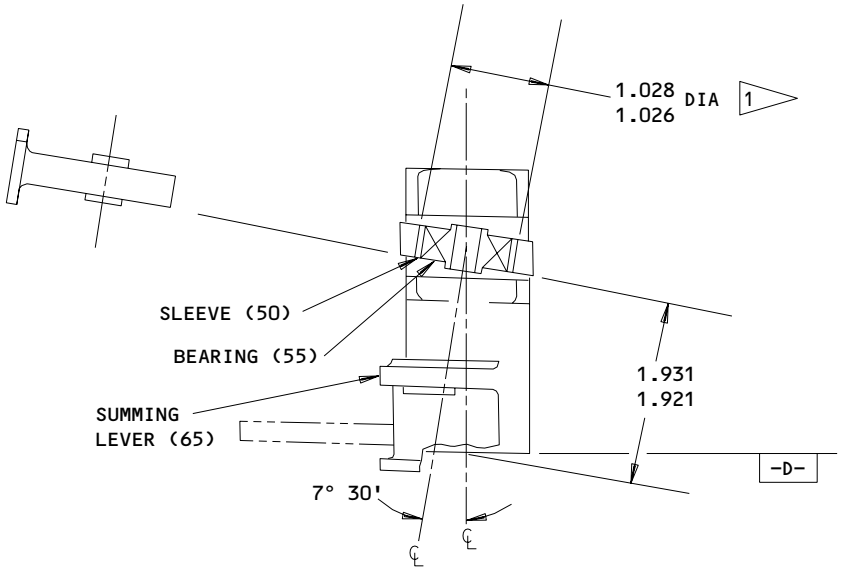
1 OMIT PRIMER

MATERIAL: AL ALLOY

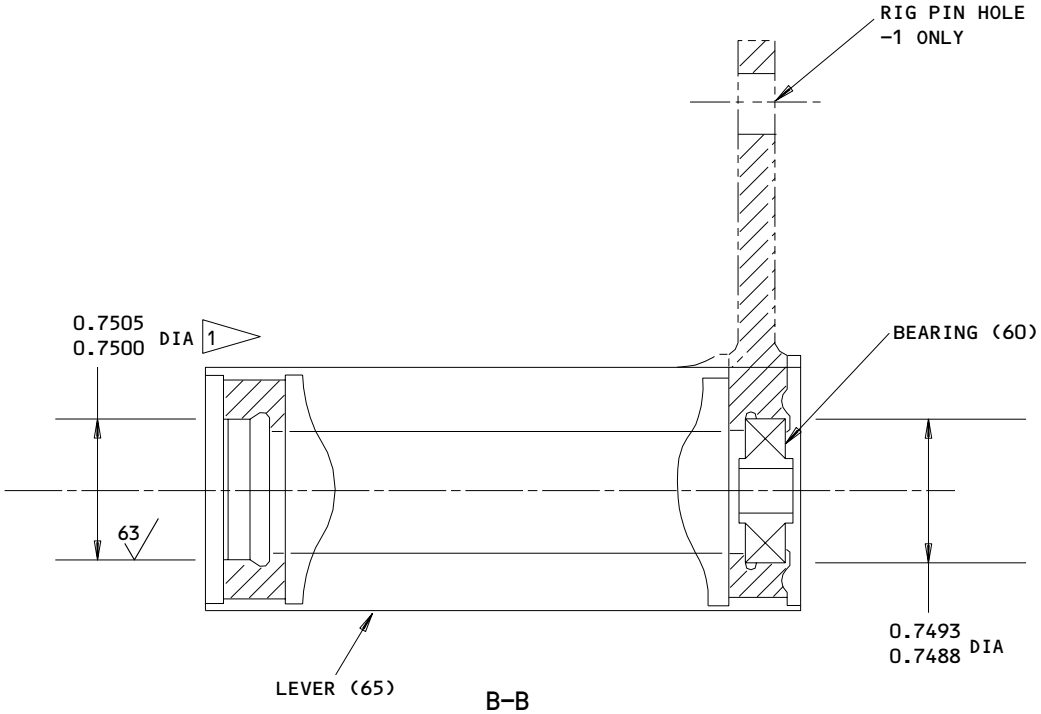
ALL DIMENSIONS ARE IN INCHES

251T3715-1,-5
Summing Lever Assembly - Replacement Details
Figure 601 (Sheet 1)

4338



A-A



B-B

ALL DIMENSIONS ARE IN INCHES

251T3715-1,-5
Summing Lever Assembly - Replacement Details
Figure 601 (Sheet 2)

SUMMING LEVER ASSEMBLY - REPAIR 3-1

251T3716-4

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

1. Bearing Replacement (Fig. 601, IPL Fig. 1)

   A. Remove bearing (150, 155).

   B. Install new bearing.

   C. Roller swage housing over bearing (150, 155) per 20-50-03.

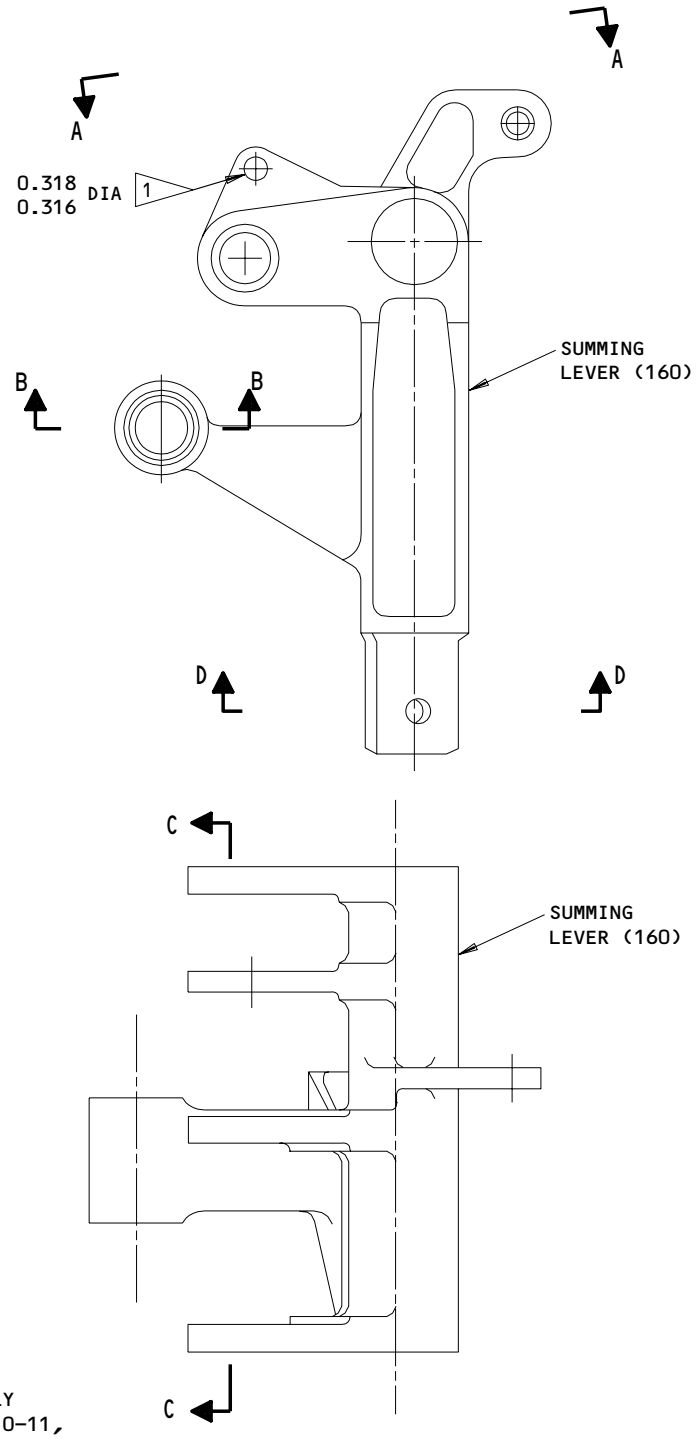
2. Bushing Replacement (Fig. 601, IPL Fig. 1)

   A. Remove bushing (157).

   B. Install new bushing with BMS 5-95 wet sealant per 20-50-03.

   C. Machine bushing to dimension.

   D. Fillet seal bushing flange with BMS 5-95 sealant.



ROTATED 7° CLOCKWISE
A-A

REFINISH

ANODIZE (F-17.05) AND APPLY TWO COATS OF PRIMER, BMS 10-11, TYPE 1 (F-20.03) EXCEPT OMIT PRIMER AS NOTED

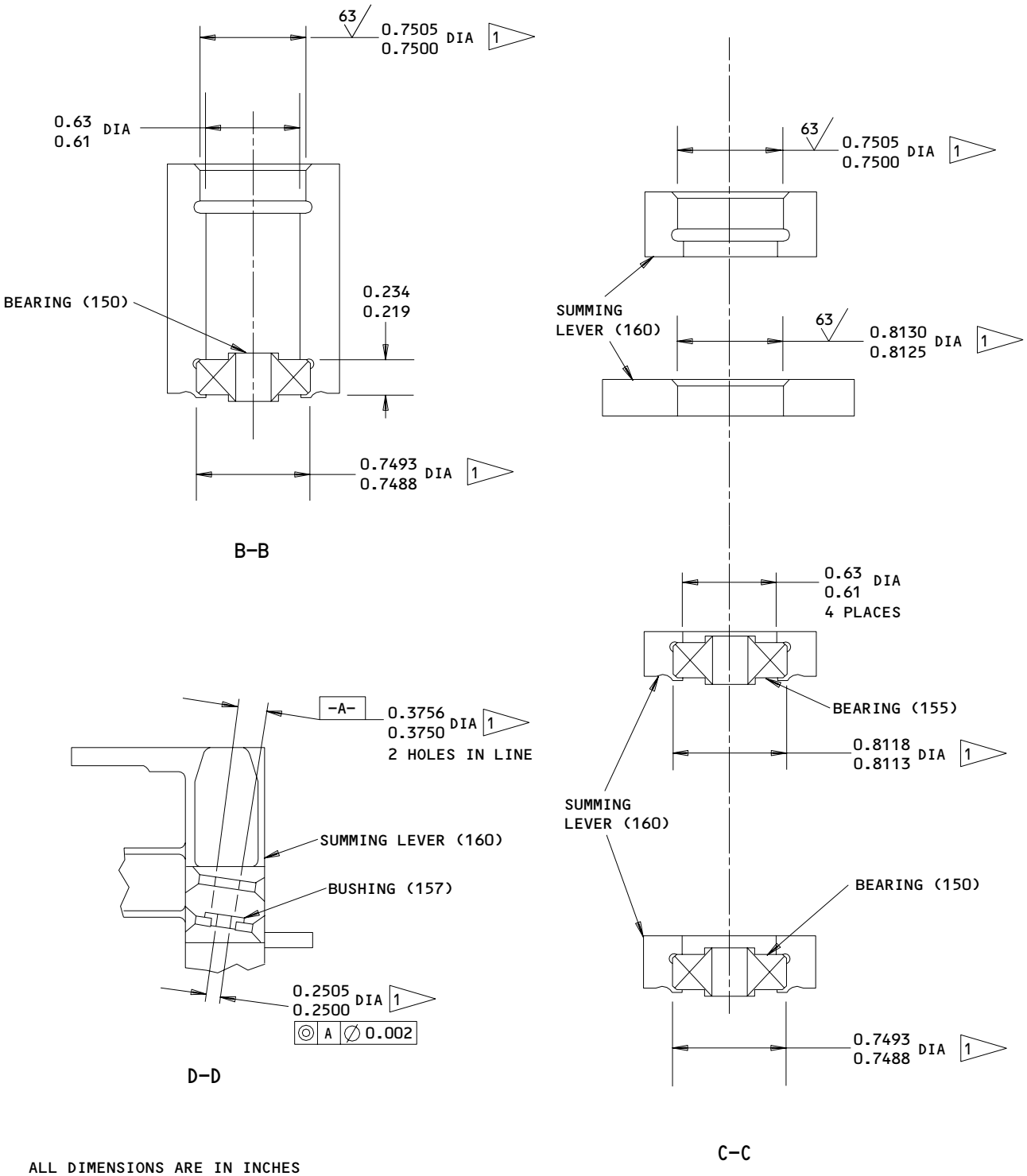
1 OMIT PRIMER

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

251T3716-4
Summing Lever Assembly - Replacement Details
Figure 601 (Sheet 1)

4353



ALL DIMENSIONS ARE IN INCHES

251T3716-4
Summing Lever Assembly - Replacement Details
Figure 601 (Sheet 2)

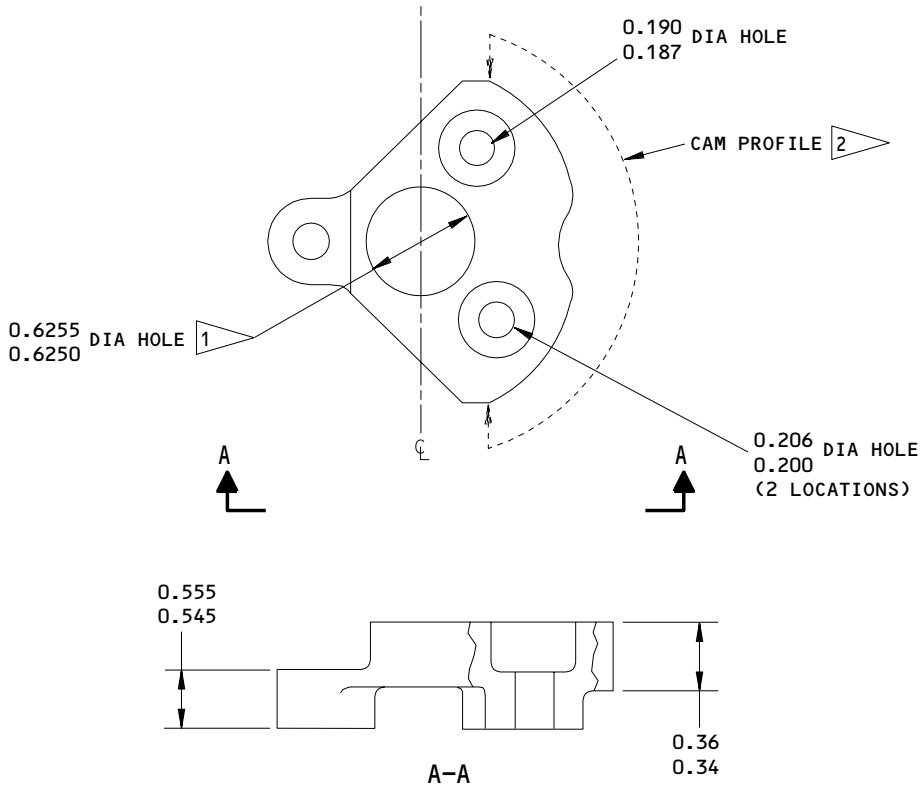
4374

SUMMING LINK CAM - REPAIR 4-1

251T3717-1

1. Plating Repair (Fig. 601, IPL Fig. 1)

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



REFINISH

CADMIUM PLATE AND APPLY BMS 10-11, TYPE 1 PRIMER (F-16.01) EXCEPT AS NOTED 1 2

1 OMIT PRIMER

2 OMIT FINISH

MATERIAL: CAM (180) -- 17-4PH CRES, 180 KSI MINIMUM

CAM (180A) -- 15-5PH CRES, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

Cam - Plating Repair
Figure 601

LINK ASSEMBLY - REPAIR 5-1

251T3720-1, -5

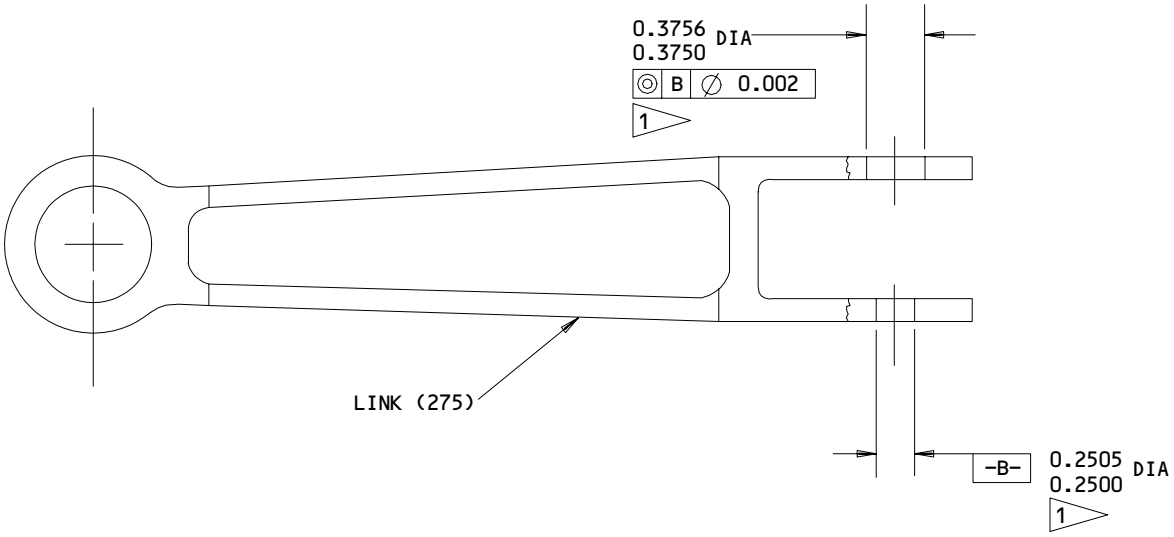
NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surface which may only require restoration of original finish, refer to Refinish instructions, Fig. 601.

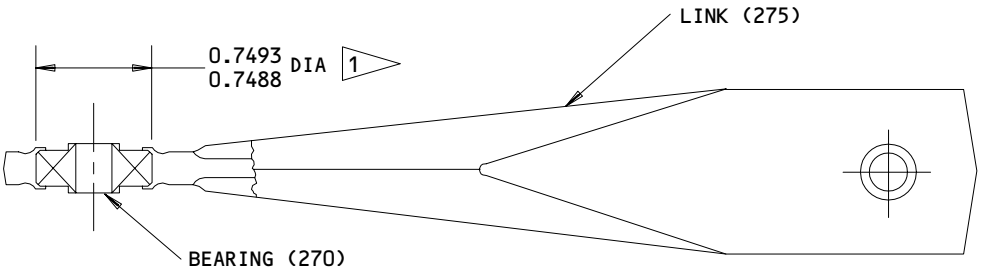
1. Bearing Replacement (Fig. 601, IPL Fig. 1)

   A. Remove bearing (270).

   B. Install new bearing.

   C. Roller swage housing over bearing per 20-50-03.





REFINISH

CHROMIC ACID ANODIZE (F-17.04) AND
APPLY TWO COATS OF PRIMER, BMS 10-11,
TYPE 1 (F-20.03) ON LINK (275)
EXCEPT OMIT PRIMER AS NOTED

1 OMIT PRIMER

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

251T3720-1, -5
Link Assembly - Bearing Replacement and Refinish
Figure 601

4379

SUMMING LINK ASSEMBLY - REPAIR 6-1

251T3721-1, -5

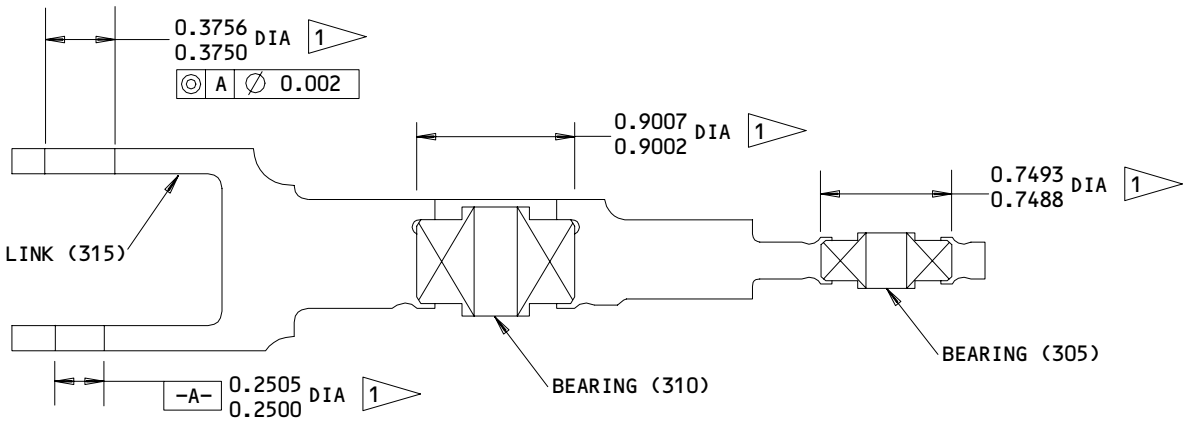
NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surface which may only require restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Bearing Replacement (Fig. 601, IPL Fig. 1)

   A. Remove bearing (305, 310).

   B. Install new bearing.

   C. Roller swage housing over bearing per 20-50-03.



REFINISH

CHROMIC ACID ANODIZE (F-17.04) AND APPLY TWO COATS OF PRIMER, BMS 10-11, TYPE 1 (F-20.03) ON LINK (315) EXCEPT OMIT PRIMER AS NOTED

1 OMIT PRIMER

MATERIAL: AL ALLOY

ALL DIMISIONS ARE IN INCHES

Summing Link Assembly - Bearing Replacement
Figure 601

4381

LINK ASSEMBLY - REPAIR 7-1

251T3722-1

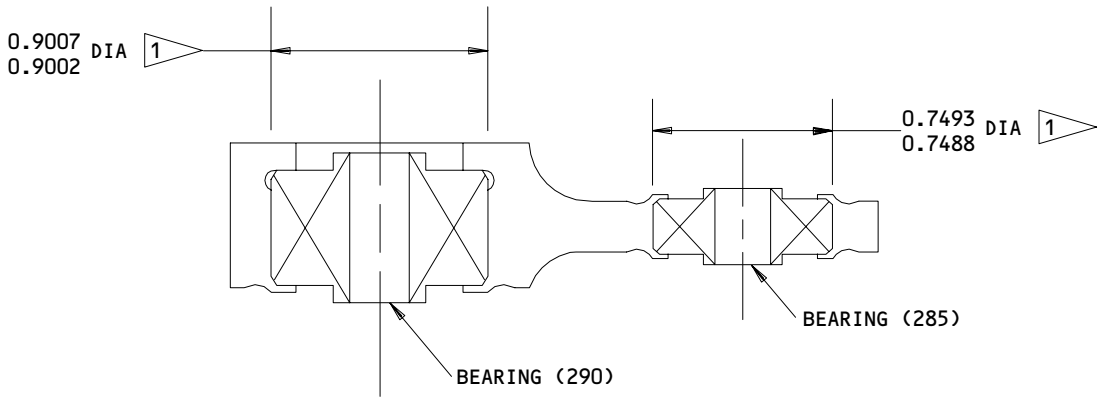
NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surface which may only require restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Bearing Replacement (Fig. 601, IPL Fig. 1)

   A. Remove bearing (285, 290).

   B. Install new bearing.

   C. Roller swage housing over bearing per 20-50-03.



REFINISH

CHROMIC ACID ANODIZE (F-17.04) AND APPLY TWO COATS OF PRIMER, BMS 10-11, TYPE 1 (F-20.03) ON LINK (295) EXCEPT OMIT PRIMER AS NOTED

1 OMIT PRIMER

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

Link Assembly - Bearing Replacement and Refinish
Figure 601

4382

MISC PARTS REFINISH - REPAIR 8-1

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

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Spacer, cam (120)	15-5PH CRES, 180-200 KSI	Cadmium plate and apply one coat of primer, BMS 10-11, type 1 (F-16.01) except omit primer on ID of 0.3130-inch dia hole and OD of 0.6240-inch dia shank.
Lever, output (185)	Al alloy	Anodize (F-17.05) and apply two coats of primer, BMS 10-11, type 1 (F-20.03) except omit primer on ID of 0.2500, 0.3125, and 0.3750-inch dia holes.
Arm, cam roller (190)	Al alloy	Anodize (F-17.05) and apply two coats of primer, BMS 10-11, type 1 (F-20.03) except omit primer on ID of 0.2495, 0.2500, and 0.3750-inch dia holes.
Link, shearout (205)	Al alloy	Chromic acid anodize (F-17.04) and apply two coats of primer, BMS 10-11, type 1 (F-20.03) all over.
Tube, offset torque (225A)	Al alloy	Anodize (F-17.05) and apply two coats of primer, BMS 10-11, type 1 (F-20.03) except omit primer on ID of 0.250, 0.312, 0.375, 0.6250, 0.9004, and 0.9014-inch dia holes.
Tube, inner torque (235)	Al alloy	Treat surface and apply two coats of primer, BMS 10-11, type 1 (F-18.03).

Refinish Details
Figure 601

ASSEMBLY

1. Materials

NOTE: Equivalent substitutes may be used.

A. Grease -- BMS 3-24 (Ref 20-60-03)

B. Sealant -- BMS 5-95 (Ref 20-60-04)

2. Assemble Rudder Control Yaw Damper Summing Assembly (IPL Fig. 1, Fig. 701 thru 702)

A. Assemble Output Lever and Cam Assembly (165, IPL Fig. 1, Fig. 701)

(1) Apply sealant on three-hole side faying surface of output lever (185).

(2) Secure cam (180) and output lever (185) with lockbolts (170) and collars (175), with sealant.

NOTE: Collars (175) should sit on counterbore side of cam (180).

B. Assemble Summing/Cam Assembly (70, IPL Fig. 1, Fg. 701)

(1) Install bearing (140) on secondary summing lever assembly (145) with grease per 20-50-03 as shown.

(2) Install spacer (120) on output lever and cam assembly (165) with grease.

(3) Position parts assembled in paragraph 2.B.(2) and bushing (115) on summing lever assembly (145).

(4) Slowly insert bolt (110) thru countersink hole of output lever (185), bearings (140, 155), bushings (115), and spacer (120) in lever assembly (145).

(5) Install nut (125) on bolt (110).

(6) Position bearing (135) on arm (190).

(7) Install bushing (100), with grease, against bearing (135) on arm (190).

(8) Secure bearing (135) and bushing (100) with bolt (95) and nut (105).

(9) Install bushing (90) and bearing (130) with grease inside the cylinder arm of summing lever assembly (145). Secure cam roller arm (190), summing lever assembly (145), bushing (90) and bearing (130) with bolt (80A), washer (85) and nut (105).

CAUTION: USE EXTREME CARE WHEN INSTALLING SPRING (75). SPRING IS HEAVILY LOADED.

(10) Install spring (75) between arms of summing lever (160) and arm (190).

(11) Summing/Cam Assembly (70) Functional Test (Fig. 701)

(a) Support unit at points 'A' and 'B'.

(b) With point 'C' held, apply a force to point 'D' in directions shown.

(c) Breakout force shall be 11.00-16.50 lbs.

C. Install bearing (35) with grease per 20-50-03 on summing/cam assembly (70) (Fig. 702). Install bushings (30) with grease on torque tube assembly (195). Install summing/cam assembly (70) on torque tube assembly (195) and secure with bolts (10, 15), washer (20) and nuts (25) as shown.

D. Install bearing (35) with grease per 20-50-03 on summing/cam assembly (40). Install bushings (30) with grease on torque tube assembly (195). Install summing lever assembly (40) on torque tube assembly (195) and secure with bolts (10), washers (20) and nuts (25) as shown.

E. Install bearing (340) with grease into torque tube assembly (195).

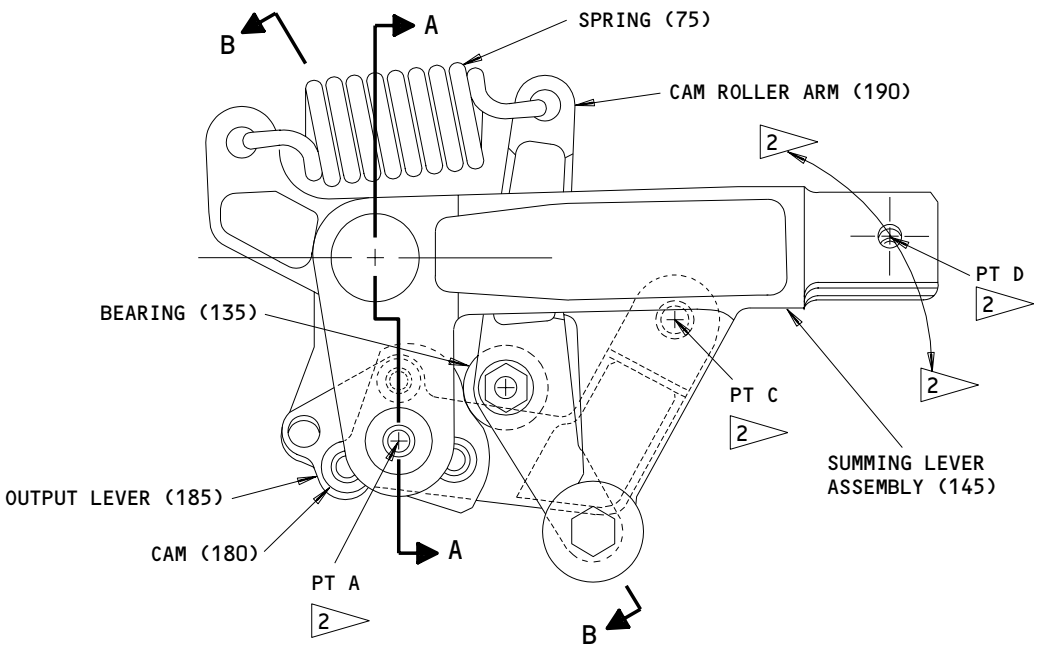
3. Prepare and store component in accordance with standard industry practices.

4. Assemble Rudder Control Yaw Damper Servo Summing Assembly (IPL Fig. 1, Fig. 703)

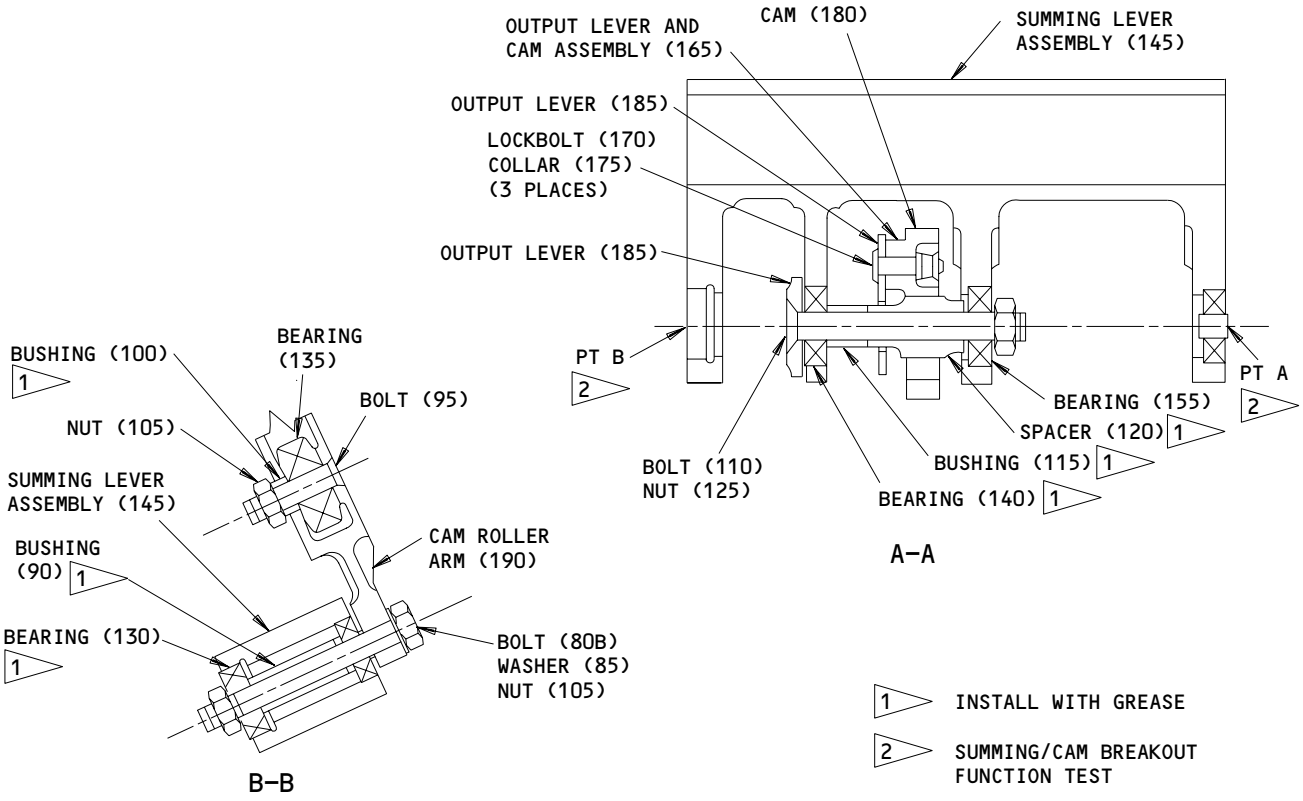
A. Install bushing (260) with grease on summing link assembly (300). Install link assembly (280) on summing link assembly (300) and secure with bolt (245), washer (250) and nut (255) as shown.

B. Install bushing (260) with grease on link assembly (265). Install summing link assembly (300) on link assembly (265) and secure with bolt (245), washer (250) and nut (255).

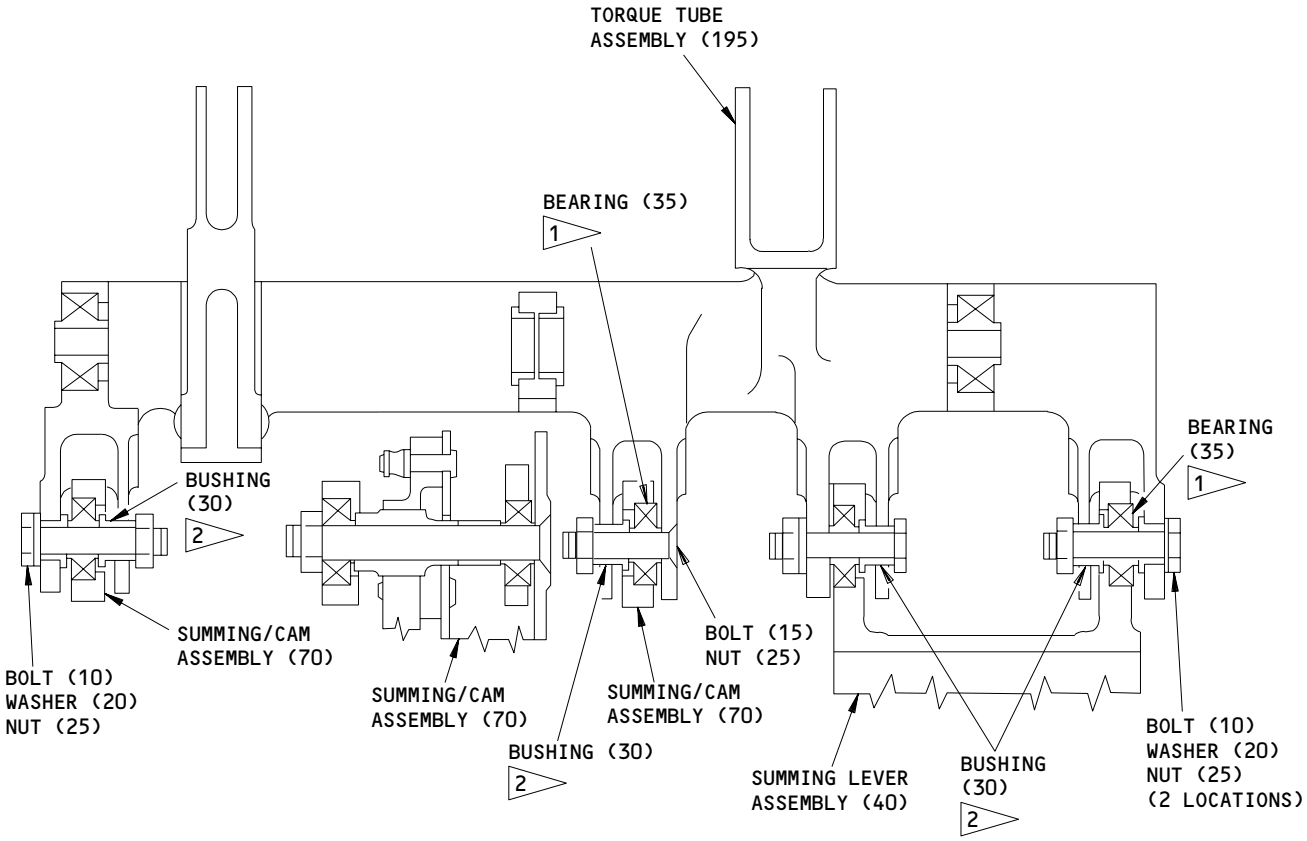
5. Prepare and store component in accordance with standard industry practices.



SUMMING/CAM ASSEMBLY (70)



Summing/Cam Assembly
Figure 701



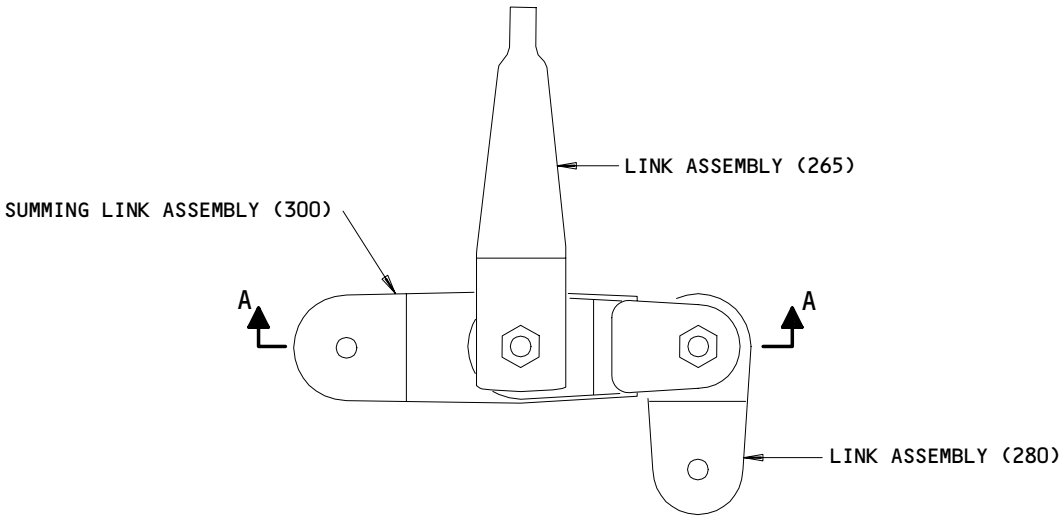
SUMMING ASSEMBLY

1 INSTALL BEARING WITH GREASE, BMS 3-24 PER 20-50-03.

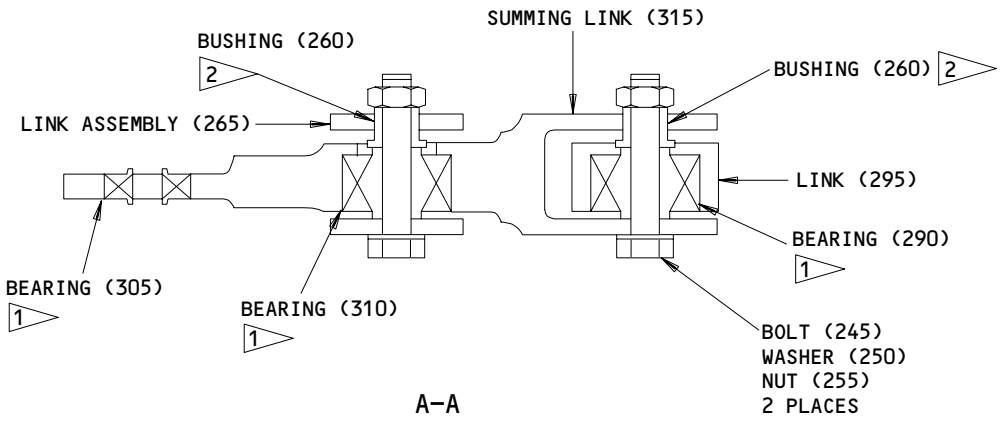
2 INSTALL BUSHING WITH GREASE, BMS 3-24 ON ALL SURFACES.

Summing Assembly
Figure 702

4394



SERVO SUMMING ASSEMBLY



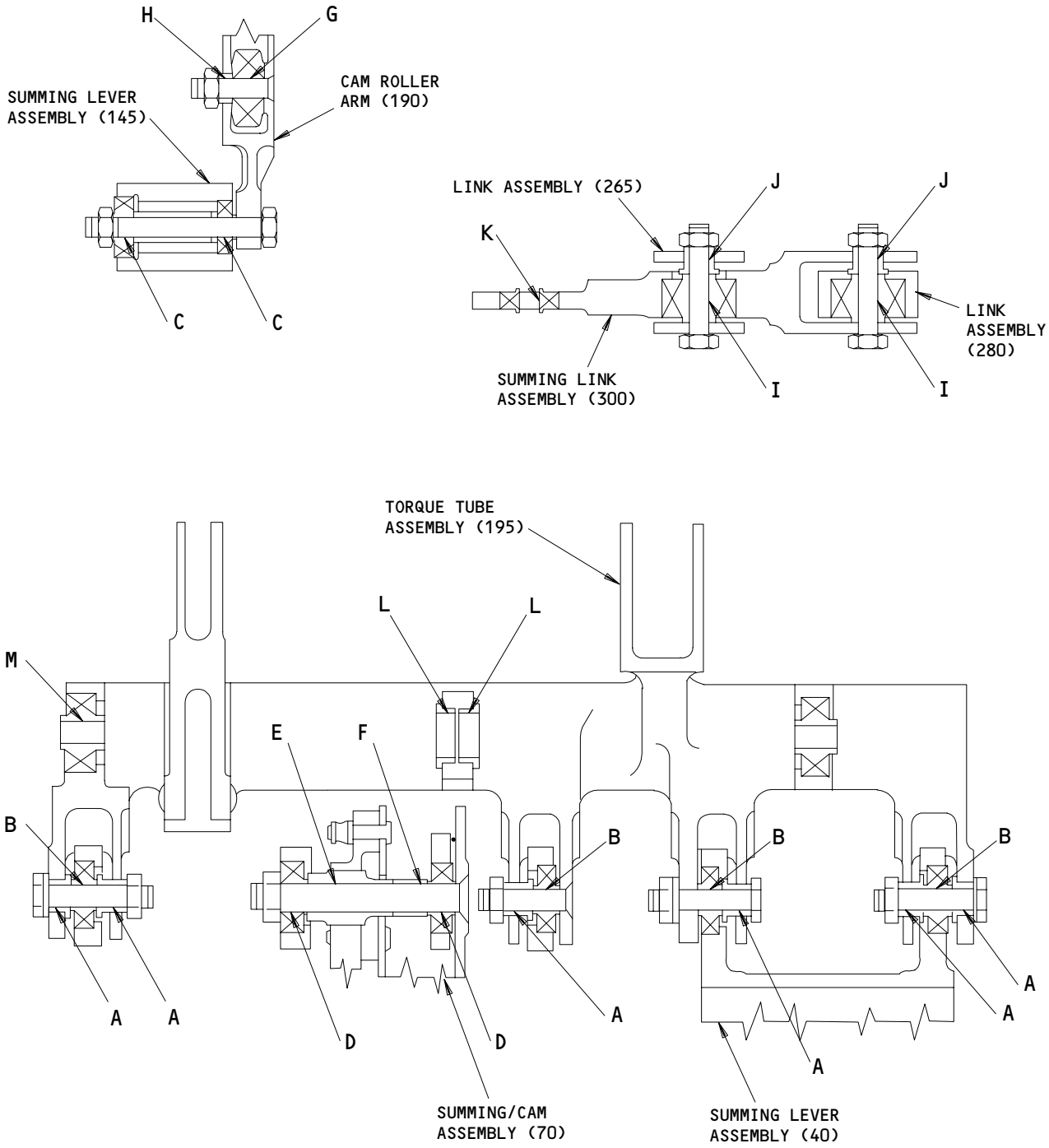
A-A

1 INSTALL BEARING WITH GREASE, BMS 3-24 PER 20-50-03

2 INSTALL BUSHING WITH GREASE, BMS 3-24 ON ALL SURFACES

Servo Summing Assembly
Figure 703

FITS AND CLEARANCES



Fits and Clearances
Figure 801 (Sheet 1)

4396

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 30,220 OD 10,15	0.2500 0.2485	0.2505 0.2495	0.0005	0.0020			
B	ID 35,60, 150 OD 10,15	0.2495 0.2485	0.2500 0.2495	0.0000	0.0015			
C	ID 35,60 130,190 OD 10,15 80	0.2495 0.2485	0.2500 0.2495	0.0000	0.0015			
D	ID 155,140 OD 110	0.3120 0.3110	0.3125 0.3120	0.0000	0.0015			
E	ID 120 OD 110	0.3130 0.3110	0.3135 0.3120	0.0010	0.0025			
F	ID 115 OD 110	0.3125 0.3110	0.3130 0.3120	0.0005	0.0020			
G	ID 135 OD 95	0.2493 0.2485	0.2500 0.2495	-0.0002 *[1]	0.0015			

*[1] NEGATIVE SIGN DENOTES INTERFERENCE FIT
ALL DIMENSIONS ARE IN INCHES

Fits and Clearances
Figure 801 (Sheet 2)

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	
H	ID 100 OD 95	0.2500 0.2485	0.2505 0.2495	0.0005	0.0020			
I	ID 290,310 OD 245	0.2495 0.2485	0.2500 0.2495	0.0000	0.0015			
J	ID 260 OD 245	0.2500 0.2485	0.2505 0.2495	0.0005	0.0020			
K	ID 285,305 OD	0.2495	0.2500					
L	ID 215 OD	0.5000	0.5015					
M	ID 230 OD	0.2495	0.2500					

ALL DIMENSIONS ARE IN INCHES

Fits and Clearances
Figure 801 (Sheet 3)

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

06725 AIR INDUSTRIES CORPORATION
12570 KNOTT STREET
GARDEN GROVE, CALIFORNIA 92641-3932
FORMERLY AIR INDUSTRIES OF CALIF IN GARDENA, CALIF.

07484 ACCURATE BUSHING CO INC
443 NORTH AVENUE
GARWOOD, NEW JERSEY 07027-1014
FORMERLY V83132 SMITH BRG DIV OF ACCURATE BUSHING CO

11815 CHERRY AEROSPACE FASTENERS DIV OF TEXTRON
1224 EAST WARNER AVENUE PO BOX 2157
SANTA ANA, CALIFORNIA 92707-0157
FORMERLY IN LOS ANGELES, CALIF , FORMERLY CHERRY FASTENERS
TOWNSEND DIV OF TEXTRON INC V71087

15653 ALOCA GLOBAL FASTEMERS INC DIV KAYNARE PRODUCTS
800 S STATE COLLEGE BLVD
FULLERTON, CALIFORNIA 92831-3001
FORMERLY VK6405 MICRODOT AEROSP LTD; FORMERLY KAYNAR TECH
FORMERLY FAIRCHILD FASTENERS KAYNAR DIV

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

30163 VALENTEC DAYRON INC
333 MAGUIRE BLVD PO BOX 140394
ORLANDO, FLORIDA 32814-0394

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

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

5M902 FAIRCHILD IND INC FAIRCHILD AEROSPACE FASTENER DIV
3016 W LOMITA BLVD
TORRANCE, CALIFORNIA 90505-5103
FMLY IN REDONDO BEACH, CALIF

VENDORS

52828 REPUBLIC FASTENER MFG CORP
1300 RANCHO CONEJO BLVD
NEWBURY PARK, CALIFORNIA 91320-1405
FORMERLY IN SYLMAR, CALIFORNIA

56878 SPS TECHNOLOGIES INC AEROSPACE AND INDUSTRIAL PRODUCTS DIV
301 HIGHLAND AVE
JENKINTOWN, PENNSYLVANIA 19046
FORMERLY STANDARD PRESSED STEEL

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

60516 WEST COAST AEROSPACE INC
812 MIRAFLORES STREET
SAN PEDRO, CALIFORNIA 90731-1439

62554 SIMMONDS MECAERO FASTENERS INC
1734 SEQUOIA AVENUE
ORANGE, CALIFORNIA 92668

72962 HARVARD INDUSTRIES INC
3 WERNER WAY SUITE 210
LEBANON, NEW JERSEY 08833
FORMERLY AMERACE CORP ESNA DIV
FORMERLY ELASTIC STOP NUT IN UNION, NJ

73197 HI-SHEAR TECHNOLOGY CORP
2600 SKYPARK DRIVE
TORRANCE, CALIFORNIA 90509

80539 SPS TECHNOLOGIES INC DIV AERPSOACE - SANTA ANA
2701 SOUTH HARBOR BOULEVARD
SANTA ANA, CALIFORNIA 92704-5803
FORMERLY NUTT-SHEL DIV OF SPC WESTERN CO V80539
AND STANDARD PRESSED STEEL WESTERN DIV V17279

83086 NEW HAMPSHIRE BALL BEARING, INC HITECH DIVISION
172 JAFFREY ROAD
PETERBOROUGH, NEW HAMPSHIRE 03458

92215 FAIRCHILD IND INC FAIRCHILD AEROSPACE FASTENER DIV
3010 W LOMITA BLVD
TORRANCE, CALIFORNIA 90505-5102
FORMERLY VOI-SHAN IN CULVER CITY, CALIF

VENDORS

92563 MCGILL MFG CO INC BEARINGS DIV
909 LAFAYETTE STREET
VALPARAISO, INDIANA 46383-4210

97928 HUCK INTL SEE V17446 HUCK INTL
SEE V17446 HUCK INTL
SEE V17446 HUCK INTL

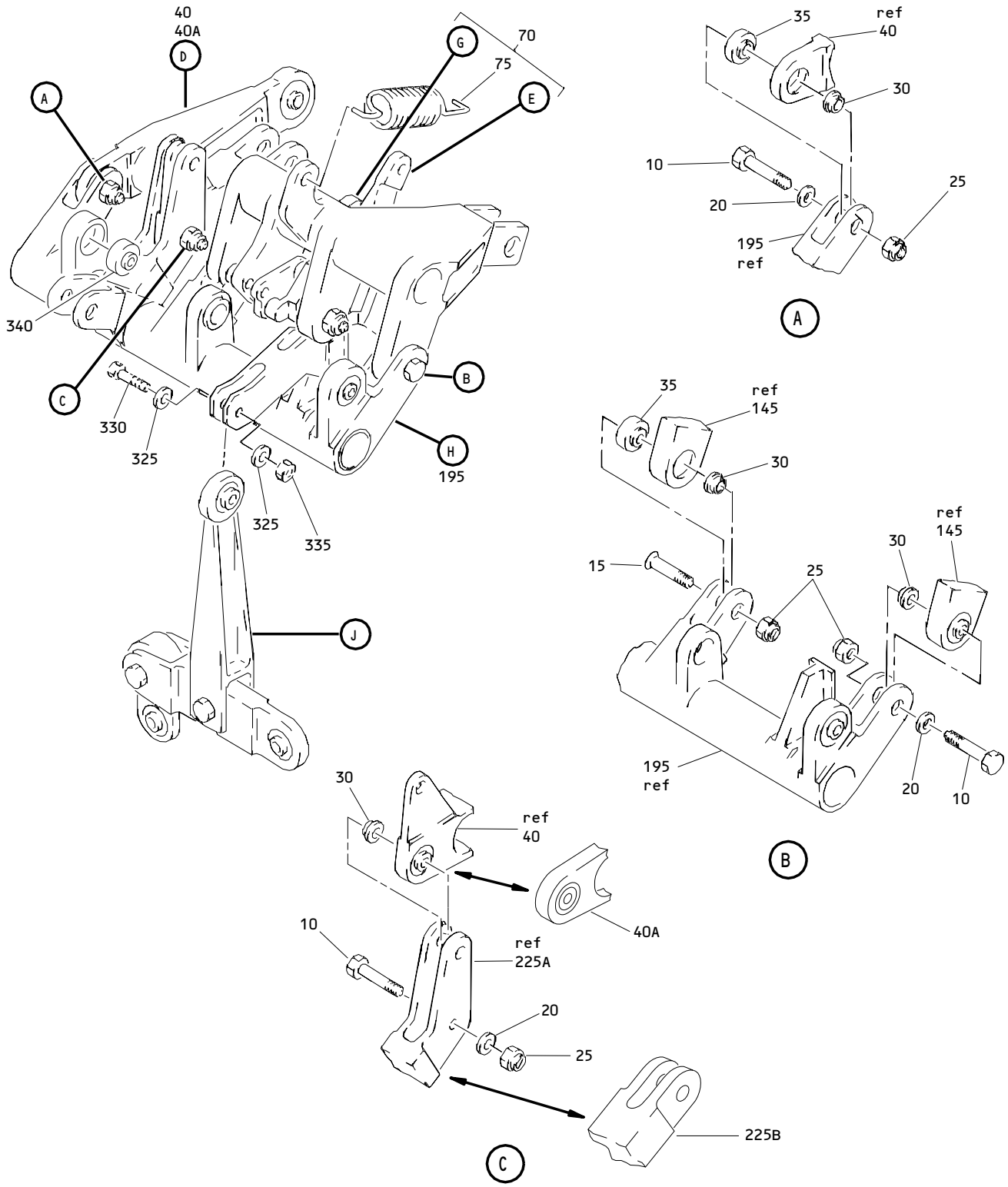
PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
AN960PD416		1	325	2
AN960PD416L		1	85	1
ATF4		1	135	1
BACB10AC4		1	55	1
		1	230	1
		1	340	1
BACB10AC4A		1	35	1
		1	60	1
		1	150	2
		1	270	1
		1	285	1
		1	305	1
BACB10AC5A		1	155	1
BACB10CB4		1	290A	1
		1	310A	1
BACB10ET04		1	135	1
BACB10FG4		1	290	1
		1	310	1
BACB10FP4G		1	35A	1
		1	55A	1
		1	230A	1
		1	340A	1
BACB28AK05-040		1	115	1
BACB28AP04-019		1	45	1
BACB28AP04P012		1	157	1
BACB28AP04P019		1	220	2
BACB28X8D017		1	215	2
BACB28Z4-098		1	90	1
BACB30FM6A6		1	170	3
BACB30LL4-10		1	95	1
BACB30LP5K33		1	110A	1
BACB30NF4-10		1	330	1
BACB30NF4-17		1	245	2
BACB30NR4K14		1	10A	3
BACB30NR4K17		1	245A	2
BACB30VF4K12		1	15A	1
BACC30M6		1	175	3
BACN10JC4		1	105	2
		1	335	1
BACN10JC5		1	125	1
BACN10YR4CD		1	25A	4
		1	255A	2
BACR15FT5AD16		1	210A	2
BAC27TCT0003		1	240	1

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
BRH10A4		1	105	2
BRH10A4		1	335	1
BRH10A5		1	125	1
DPP4		1	290A	1
		1	310A	1
DPP4FS428		1	290A	1
		1	310A	1
DPP4SD610		1	290A	1
		1	310A	1
DPP4WFS428		1	290	1
		1	310	1
HHKSP4		1	55	1
		1	230	1
		1	340	1
HHKSP4A		1	35	1
		1	60	1
		1	150	2
		1	270	1
		1	285	1
		1	305	1
HHKSP5A		1	155	1
HL440UC6-6		1	170	3
HL441UC6-6		1	170	3
HL79-6		1	175	3
H10-4BAC		1	105	2
		1	335	1
H10-5BAC		1	125	1
H52732-4CD		1	25A	4
		1	255A	2
KSP4-2TS		1	55	1
		1	230	1
		1	340	1

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
KSP4AE9440A		1	35	1
		1	60	1
		1	150	2
		1	270	1
		1	285	1
		1	305	1
KSP4AFS428		1	35	1
KSP4AFS428		1	60	1
		1	150	2
		1	270	1
		1	285	1
		1	305	1
KSP4AG27		1	35	1
		1	60	1
		1	150	2
		1	270	1
		1	285	1
		1	305	1
KSP4A2TS		1	35	1
		1	60	1
		1	150	2
		1	270	1
		1	285	1
		1	305	1
KSP4E9440A		1	55	1
		1	230	1
		1	340	1
KSP4FS428		1	55	1
		1	230	1
		1	340	1
KSP4G27		1	55	1
		1	230	1
		1	340	1
KSP4SD610		1	55	1
		1	230	1
		1	340	1

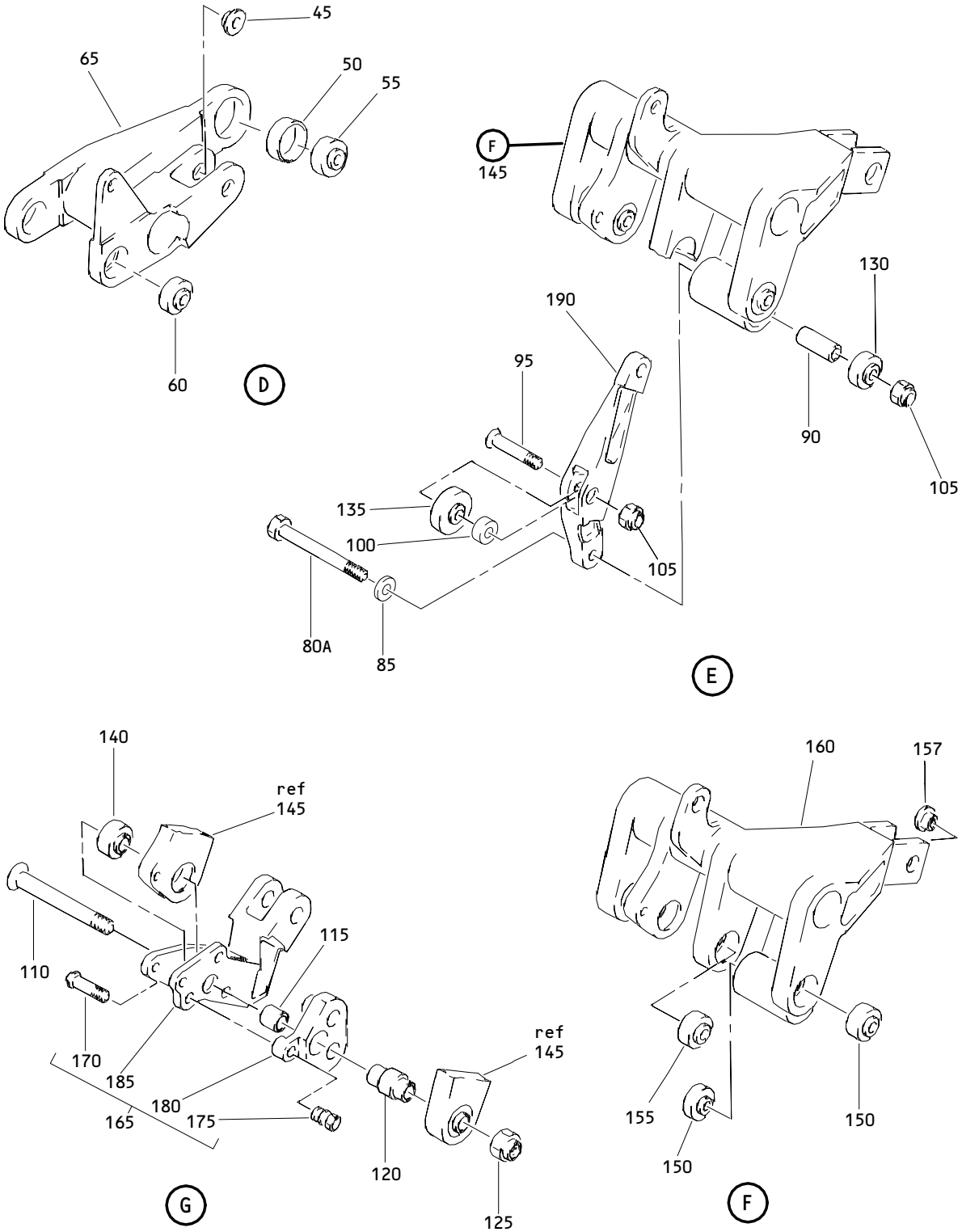
PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
KSP5AE9440A		1	155	1
LLDPP4		1	290A	1
		1	310A	1
L8056A6		1	170	3
NAS1149D0416J		1	250A	2
NAS1149D0463J		1	20A	3
NAS1398D5A4		1	200	18
NAS6604-29		1	80A	1
NS202101-048		1	105	2
		1	335	1
PLH54CD		1	25A	4
		1	255A	2
RMLH9075-4W		1	105	2
		1	335	1
RMLH9075-5W		1	125	1
SSMKSP4GSD705		1	35A	1
		1	55A	1
		1	230A	1
		1	340A	1
T6S428J		1	105	2
		1	335	1
T6S524J		1	125	1
VN303A048		1	105	2
		1	335	1
WC130-6-6		1	170	3
YAF04B		1	135	1
251T3700-11		1	1B	RF
251T3700-2		1	1	RF
251T3700-3		1	70	1
251T3700-4		1	5	RF
251T3710-1		1	195	1
251T3710-2		1	195A	1
251T3710-3		1	223	1
251T3711-3		1	225A	1
251T3711-4		1	225C	1
251T3711-6		1	225B	1

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
251T3712-1		1	235	1
251T3715-1		1	40	1
251T3715-2		1	65	1
251T3715-4		1	65A	1
251T3715-5		1	40A	1
251T3715-6		1	65B	1
251T3715-8		1	65C	1
251T3716-4		1	145	1
251T3716-5		1	160	1
251T3717-1		1	180	1
251T3717-3		1	180A	1
251T3718-1		1	190	1
251T3718-3		1	190A	1
251T3719-1		1	75	1
251T3720-1		1	265	1
251T3720-2		1	275	1
251T3720-4		1	275A	1
251T3720-5		1	265A	1
251T3721-1		1	300	1
251T3721-2		1	315	1
251T3721-4		1	315A	1
251T3721-5		1	300A	1
251T3722-1		1	280	1
251T3722-2		1	295	1
251T3723-1		1	165	1
251T3733-1		1	205	1
251T3738-1		1	120	1
251T3739-1		1	185	1
251T3739-3		1	185A	1
251T3741-2		1	100	1
251T3742-1		1	30	4
251T3742-3		1	260	2
4AFC614		1	135	1
66014-6		1	175	3
67067-6A6		1	170	3
69-38919-20		1	50	1
96-048		1	105	2
		1	335	1
96-054		1	125	1



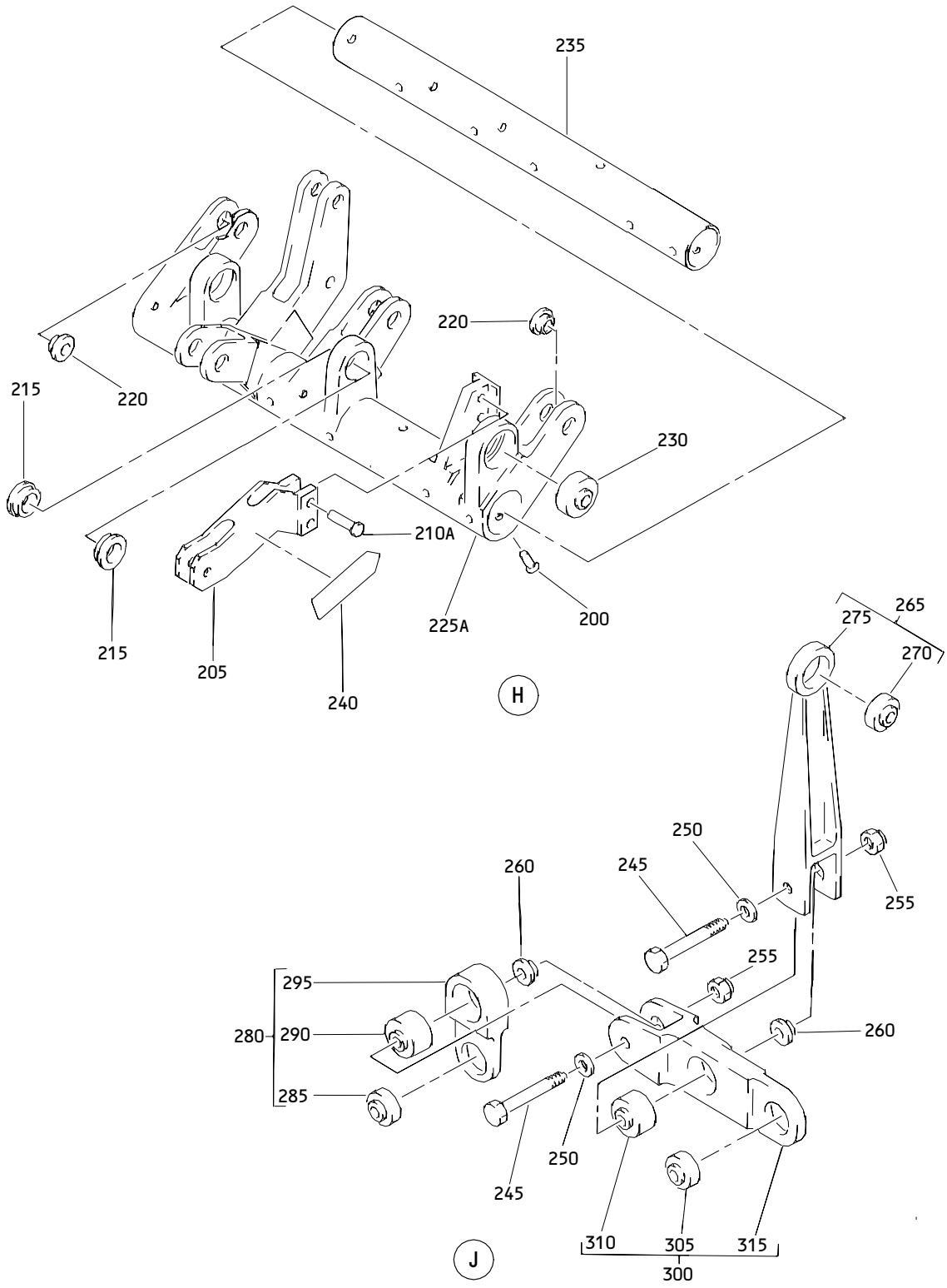
Rudder Control Yaw Damper Summing Assembly
Figure 1 (Sheet 1)

T55947



Rudder Control Yaw Damper Summing Assembly
Figure 1 (Sheet 2)

T55948



Rudder Control Yaw Damper Summing Assembly
Figure 1 (Sheet 3)

T55949

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	-1	251T3700-2		SUMMING ASSY-RUD CONT YAW DAMPER	A	RF
R	-1B	251T3700-11		SUMMING ASSY-RUD CONT YAW DAMPER SERVO	C	RF
R	-5	251T3700-4		SUMMING ASSY-RUD CONT YAW DAMPER SERVO	B	RF
	10	BACB30NF4-14		DELETED		
R	10A	BACB30NR4K14		.BOLT	A,C	3
	15	BACB30LL4-12		DELETED		
R	15A	BACB30VF4K12		.BOLT	A,C	1
	20	AN960PD416		DELETED		
R	20A	NAS1149D0463J		.WASHER	A,C	3
	25	BACN10JC4		DELETED		
R	25A	H52732-4CD		.NUT- (V15653) (SPEC BACN10YR4CD) (OPT PLH54CD (V62554))	A,C	4
R	30	251T3742-1		.BUSHING-FLANGED	A,C	4
R	35	KSP4AFS428		.BEARING- (V21335) (SPEC BACB10AC4A) (OPT HHKSP4A (V38443)) (OPT KSP4AE944OA (V21335)) (OPT KSP4A2TS (V43991)) (OPT KSP4AG27 (V30163))	A,C	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
R	01- -35A	SSMKSP4GSD705		.BEARING- (V83086) (SPEC BACB10FP4G)	A	1
R	40	251T3715-1		.LEVER ASSY- (OPT ITEM 40A)	A,C	1
R	-40A	251T3715-5		.LEVER ASSY- (OPT ITEM 40)	A,C	1
R	45	BACB28AP04-019		..BUSHING	A,C	1
R	50	69-38919-20		..SLEEVE- (MFD FROM SH AL QQ-A-250/11 OR 6061-0 TUBING WW-T-700-6 OPTL MATL 6061-T6 ROD QQ-A-225/8 F25.01 .062 IN .490 IN 3.14 IN)	A,C	1
R	55	KSP4FS428		..BEARING- (V21335) (SPEC BACB10AC4) (OPT KSP4SD610 (V83086)) (OPT HHKSP4 (V38443)) (OPT KSP4-2TS (V43991)) (OPT KSP4E9440A (V21335)) (OPT KSP4G27 (V30163)) (OPT ITEM 55A)	A,C	1
R	-55A	SSMKSP4GSD705		..BEARING- (V83086) (SPEC BACB10FP4G) (OPT ITEM 55)	A,C	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	60	KSP4AFS428		..BEARING- (V21335) (SPEC BACB10AC4A) (OPT HHKSP4A (V38443)) (OPT KSP4AE944OA (V21335)) (OPT KSP4A2TS (V43991)) (OPT KSP4AG27 (V30163))	A,C	1
R	65	251T3715-2		..LEVER- (OPT ITEM 65A) (USED ON ITEM 40)	A,C	1
R	-65A	251T3715-4		..LEVER- (OPT ITEM 65) (USED ON ITEM 40)	A,C	1
R	-65B	251T3715-6		..LEVER- (OPT ITEM 65C) (USED ON ITEM 40A)	A,C	1
R	-65C	251T3715-8		..LEVER- (OPT ITEM 65B) (USED ON ITEM 40A)	A,C	1
R	70	251T3700-3		.SUMMING AND CAM ASSY	A,C	1
R	75	251T3719-1		..SPRING-TNSN	A,C	1
	80	BACB30NE4-29		DELETED		
R	80A	NAS6604-29		..BOLT	A,C	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	85	AN960PD416L		..WASHER	A,C	1
R	90	BACB28Z4-098		..BUSHING	A,C	1
R	95	BACB30LL4-10		..BOLT	A,C	1
R	100	251T3741-2		..BUSHING	A,C	1
R	105	BRH10A4		..NUT-	A,C	2
				(V52828)		
				(SPEC BACN10JC4)		
				(OPT T6S428J		
				(V11815))		
				(OPT 96-048		
				(V80539))		
				(OPT VN303A048		
				(V92215))		
				(OPT RMLH9075-4W		
				(V72962))		
				(OPT NS202101-048		
				(V80539))		
				(OPT H10-4BAC		
				(V15653))		
	110	BACB30LP5-33		DELETED		
R	110A	BACB30LP5K33		..BOLT	A,C	1
R	115	BACB28AK05-040		..BUSHING	A,C	1
R	120	251T3738-1		..SPACER-CAM	A,C	1
R	125	BRH10A5		..NUT-	A,C	1
				(V52828)		
				(SPEC BACN10JC5)		
				(OPT T6S524J		
				(V11815))		
				(OPT 96-054		
				(V80539))		
				(OPT RMLH9075-5W		
				(V72962))		
				(OPT H10-5BAC		
				(V15653))		
	130	KSP4A		DELETED		
R	135	ATF4		..BEARING-	A,C	1
				(V60380)		
				(SPEC BACB10ET04)		
				(OPT 4AFC614		
				(V92563))		
				(OPT YAF04B		
				(V07484))		
	140	KSP5A		DELETED		
R	145	251T3716-4		..LEVER ASSY-SECONDARY SUMMING	A,C	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	150	KSP4AFS428		...BEARING- (V21335) (SPEC BACB10AC4A) (OPT HHKSP4A (V38443)) (OPT KSP4AE944OA (V21335)) (OPT KSP4A2TS (V43991)) (OPT KSP4AG27 (V30163))	A,C	2
R	155	KSP5AFS428		...BEARING- (V21335) (SPEC BACB10AC5A) (OPT HHKSP5A (V38443)) (OPT KSP5AE944OA (V21335)) (OPT KSP5A2TS (V43991)) (OPT KSP5AG27 (V30163)) (OPT KSP5ASD61O (V83086))	A,C	1
R	157	BACB28AP04P012		...BUSHING	A,C	1
R	160	251T3716-5		...LEVER	A,C	1
R	165	251T3723-1		..LEVER AND CAM ASSY-OUTPUT	A,C	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
R	01-170	HL441UC6-6		...BOLT- (V60516) (SPEC BACB30FM6A6) (OPT HL440UC6-6 (V73197)) (OPT HL440UC6-6 (V92215)) (OPT HL440UC6-6 (V97928)) (OPT HL440UC6-6 (V80539)) (OPT WC130-6-6 (V60516)) (OPT 67067-6A6 (V56878)) (OPT L80056A6 (V06725)) (OPT HL440UC6-6 (V56878))	A,C	3
R	175	HL79-6		...COLLAR- (V5M902) (SPEC BACC30M6) (OPT HL79-6 (V73197)) (OPT HL79-6 (V92215)) (OPT 66014-6 (V56878)) (OPT HL79-6 (V56878))	A,C	3

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	180	251T3717-1		...CAM- (OPT ITEM 180A)	A,C	1
R	-180A	251T3717-3		...CAM- (OPT ITEM 180)	A,C	1
R	185	251T3739-1		...LEVER- (OPT ITEM 185A)	A,C	1
R	-185A	251T3739-3		...LEVER- (OPT ITEM 185)	A,C	1
R	190	251T3718-1		..ARM-CAM ROLLER (OPT ITEM 190A)	A,C	1
R	-190A	251T3718-3		..ARM-CAM ROLLER (OPT ITEM 190)	A,C	1
R	195	251T3710-1		.TUBE ASSY-OFFSET TORQUE	A	1
	-195A	251T3710-2		.TUBE ASSY-OFFSET TORQUE	C	1
R	200	NAS1398D5A4		..RIVET	A,C	18
R	205	251T3733-1		..LINK-SHEAROUT	A,C	1
	210	BACR15FT5AD7		DELETED		
R	210A	BACR15FT5AD16		..RIVET -------*-------	A,C	2
R	215	BACB28X8D017		..BUSHING	A,C	2
R	220	BACB28AP04P019		..BUSHING	A,C	2
R	-223	251T3710-3		..KIT ASSY-SUBSTITUTE (OPT ITEM 225C)		1
	225	251T3711-1		DELETED		
R	-225A	251T3711-3		...TUBE	A,C	1
R	-225B	251T3711-6		...TUBE	A,C	1
R	225C	251T3711-4		..TUBE- (OPT ITEM 223)	A,C	1
R	230	KSP4FS428		..BEARING- (V21335) (SPEC BACB10AC4) (OPT KSP4SD610 (V83086)) (OPT HHKSP4 (V38443)) (OPT KSP4-2TS (V43991)) (OPT KSP4E9440A (V21335)) (OPT KSP4G27 (V30163)) (OPT ITEM 230A)	A,C	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	-230A	SSMKSP4GSD705		..BEARING- (V83086) (SPEC BACB10FP4G) (OPT ITEM 230)	A,C	1
R	235	251T3712-1		..TUBE-INNER	A,C	1
R	240	BAC27TCT0003		..MARKER-CONTROLLED	A,C	1
	243	BAC27CT0296		DELETED		
R	245	BACB30NF4-17		.BOLT	B	2
R	245A	BACB30NR4K17		.BOLT	B	2
	250	AN960PD416L		DELETED		
R	250A	NAS1149D0416J		.WASHER	B	2
	255	BACN10JC4		DELETED		
R	255A	H52732-4CD		.NUT- (V15653) (SPEC BACN10YR4CD) (OPT PLH54CD (V62554))	B	2
R	260	251T3742-3		.BUSHING-FLANGED	B	2
R	265	251T3720-1		.LINK ASSY- (OPT ITEM 265A)	B	1
R	-265A	251T3720-5		.LINK ASSY- (OPT ITEM 265)	B	1
R	270	KSP4AFS428		..BEARING- (V21335) (SPEC BACB10AC4A) (OPT HHKSP4A (V38443)) (OPT KSP4AE9440A (V21335)) (OPT KSP4A2TS (V43991)) (OPT KSP4AG27 (V30163))	B	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	275	251T3720-2		..LINK- (USED ON ITEM 265)	B	1
R	-275A	251T3720-4		..LINK- (USED ON ITEM 265A)	B	1
R	280	251T3722-1		.LINK ASSY	B	1
R	285	KSP4AFS428		..BEARING- (V21335) (SPEC BACB10AC4A) (OPT HHKSP4A (V38443)) (OPT KSP4AE9440A (V21335)) (OPT KSP4A2TS (V43991)) (OPT KSP4AG27 (V30163))	B	1
R	290	DPP4WFS428		..BEARING- (V21335) (SPEC BACB10FG4) (OPT ITEM 290A)	B	1
	-290A	DPP4SD610		..BEARING- (V83086) (SPEC BACB10CB4) (OPT DPP4 (V38443)) (OPT DPP4FS428 (V21335)) (OPT LLDPP4 (V38443)) (OPT ITEM 290)	B	1
R	295	251T3722-2		..LINK	B	1
R	300	251T3721-1		.LINK ASSY- (OPT ITEM 300A)	B	1
R	-300A	251T3721-5		.LINK ASSY- (OPT ITEM 300)	B	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	305	KSP4AFS428		..BEARING- (V21335) (SPEC BACB10AC4A) (OPT HHKSP4A (V38443)) (OPT KSP4AE944OA (V21335)) (OPT KSP4A2TS (V43991)) (OPT KSP4AG27 (V30163))	B	1
R	310	DPP4WFS428		..BEARING- (V21335) (SPEC BACB10FG4) (OPT ITEM 310A)	B	1
	-310A	DPP4SD610		..BEARING- (V83086) (SPEC BACB10CB4) (OPT DPP4 (V38443)) (OPT DPP4FS428 (V21335)) (OPT LLDPP4 (V38443)) (OPT ITEM 310)	B	1
R	315	251T3721-2		..LINK- (USED ON ITEM 300)	B	1
R	-315A	251T3721-4		..LINK- (USED ON ITEM 300A)	B	1
	320	BAC27CT0296		DELETED INSTALLATION PARTS		

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	325	AN960PD416		WASHER		2
	330	BACB30NF4-10		BOLT		1
	335	BRH10A4		NUT-		1
				(V52828)		
				(SPEC BACN10JC4)		
				(OPT T6S428J		
				(V11815))		
				(OPT 96-048		
				(V80539))		
				(OPT VN303A048		
				(V92215))		
				(OPT RMLH9075-4W		
				(V72962))		
				(OPT NS202101-048		
				(V80539))		
				(OPT H10-4BAC		
				(V15653))		
R	340	KSP4FS428		BEARING-		1
				(V21335)		
				(SPEC BACB10AC4)		
				(OPT KSP4SD610		
				(V83086))		
				(OPT HHKSP4		
				(V38443))		
				(OPT KSP4-2TS		
				(V43991))		
				(OPT KSP4E9440A		
				(V21335))		
				(OPT KSP4G27		
				(V30163))		
				(OPT ITEM 340A)***		
R	-340A	SSMKSP4GSD705		BEARING-		1
				(V83086)		
				(SPEC BACB10FP4G)		
				(OPT ITEM 340)***		

- Item Not Illustrated