COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

RUDDER CONTROL CENTERING UNIT ASSEMBLY

PART NUMBER 65C25410–1, –2, –4, –5, –6, –7

PUBLISHED BY BOEING COMMERCIAL AIRPLANES GROUP, SEATTLE, WASHINGTON, USA
A DIVISION OF THE BOEING COMPANY
PAGE DATE: Jul 01/2009

COMPONENT MAINTENANCE MANUAL

Revision No. 17
Jul 01/2009

To: All holders of RUDDER CONTROL CENTERING UNIT ASSEMBLY 27-21-85.

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.

For printed manuals, changes are indicated on the List of Effective Pages (LEP). The pages which are revised will be identified on the LEP by an R (Revised), A (Added), O (Overflow, i.e. changes to the document structure and/or page layout), or D (Deleted). Each page in the LEP is identified by Chapter-Section-Subject number, page number and page date.

Pages replaced or made obsolete by this revision should be removed and destroyed.

ATTENTION

IF YOU RECEIVE PRINTED REVISIONS, PLEASE VERIFY THAT YOU HAVE RECEIVED AND FILED THE PREVIOUS REVISION. BOEING MUST BE NOTIFIED WITHIN 30 DAYS IF YOU HAVE NOT RECEIVED THE PREVIOUS REVISION. REQUESTS FOR REVISIONS OTHER THAN THE PREVIOUS REVISION WILL REQUIRE A COMPLETE MANUAL REPRINT SUBJECT TO REPRINT CHARGES SHOWN IN THE DATA AND SERVICES CATALOG.

Location of Change	Description of Change
	NO HIGHLIGHTS

COMPONENT MAINTENANCE MANUAL

A = Added, R = Revised, D = Deleted, O = Overflow

TABLE OF CONTENTS

BOEING®

COMPONENT MAINTENANCE MANUAL

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

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

BOEING

COMPONENT MAINTENANCE MANUAL

All revisions to this manual will be accompanied by transmittal sheet bearing the revision number. Enter the revision number in numerical order, together with the revision date, the date filed and the initials of the person filing.

Revision		Filed		Revision		Filed	
Number	Date	Date	Initials	Number	Date	Date	Initials

Revision		Filed		Revision		Filed	
Number	Date	Date	Initials	Number	Date	Date	Initials

BOEING®

COMPONENT MAINTENANCE MANUAL

All temporary revisions to this manual will be accompanied by a cover sheet bearing the temporary revision number. Enter the temporary revision number in numerical order, together with the temporary revision date, the date the temporary revision is inserted and the initials of the person filing.
When the temporary revision is incorporated or cancelled, and the pages are removed, enter the date the pages are removed and the initials of the person who removed the temporary revision.

Temporary Revision		Inserted		Removed	
Number	Date	Date	Initials	Date	Initials

Temporary Revision		Inserted		Removed	
Date	Initials	Number	Date	Date	Initials

Temporary Revision		Inserted		Removed		Temporary Revision		Inserted		Removed	
Number	Date	Date	Initials	Date	Initials	Date	Initials	Number	Date	Date	Initials

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.

RUDDER CONTROLS CENTERING UNIT ASSEMBLY - DESCRIPTION AND OPERATION

1. Description

A. The Rudder Controls Centering Unit Assembly consists of crank and cam assemblies attached rigidly to a shaft. The shaft is supported at its ends by a pair of bearing housing assemblies which provide mounting points to airplane structure. A frame assembly, also mounted on the shaft, is attached through a fitting to the rudder trim actuator. A frame-mounted arm assembly provides a spring load on the cam.

2. Operation

A. Centering force is tranferred back to the rudder pedals through linkages connected to the crank assembly. Operation of the rudder trim actuator causes the entire unit to rotate, leading to activation of the rudder power control unit.

3. Leading Particulars (Approximate)

A. Length – 10 in.

B. Height – 11 in.

C. Width – 9 in.

D. Weight – 7 lb

TESTING AND FAULT ISOLATION

1. General

A. This procedure has the data necessary to do a test of the rudder controls centering unit assembly after an overhaul or for fault isolation.

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

C. Refer to IPL Figure 1 for item numbers.

2. Testing

A. Tools/Equipment

NOTE: Equivalent substitutes may be used.

Reference	Description
SPL-5432	Elevator and Rudder Centering Valve Test Fixture (Part #: F80120-1, Supplier: 81205)

B. Preparation for Test

(1) Install unit in rudder centering F80120-1Test Fixture, SPL-5432.

(2) Connect 6-volt battery to wiring on fixture.

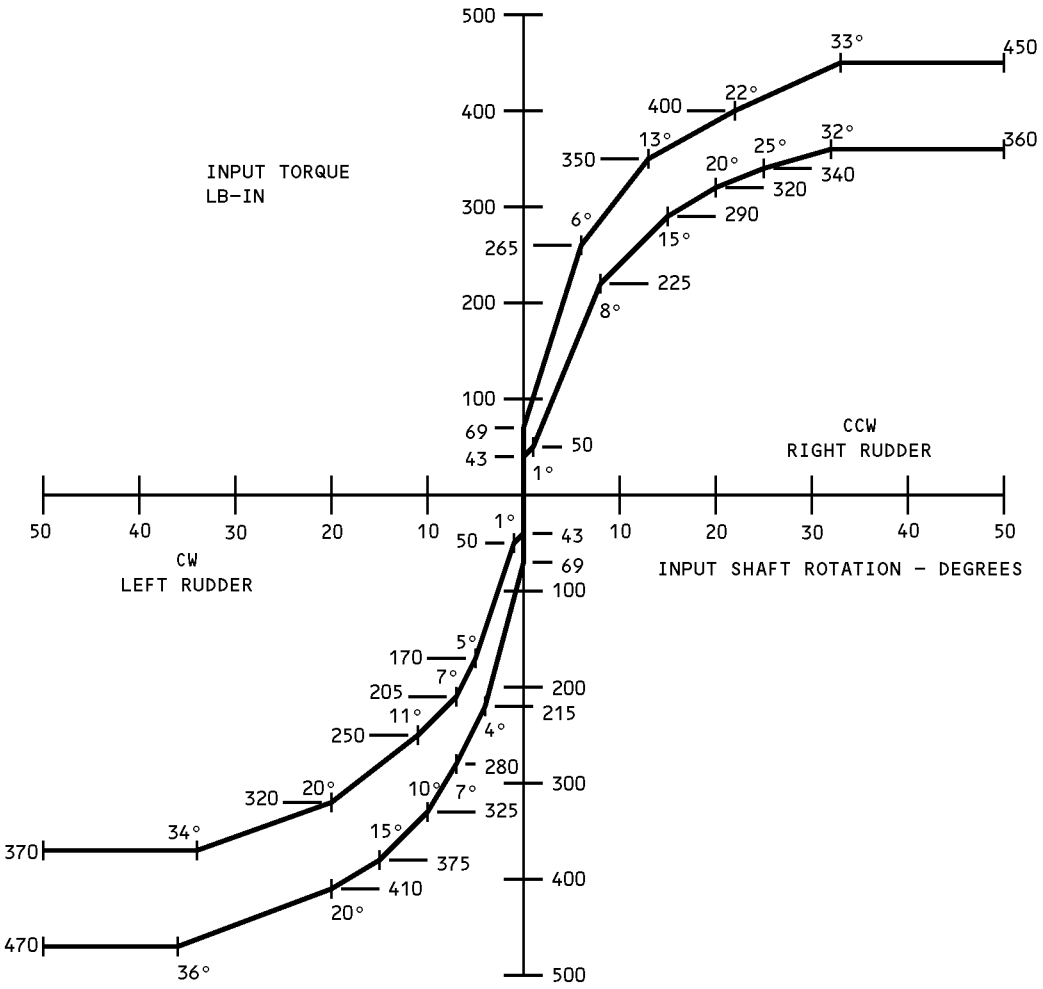
3. Functional Test (IPL Figure 1)

A. Rotate crank (325) in both directions. Record break-out torque. Break-out torque shall be 54-64 lb-in. in either direction.

B. Rotate crank through one complete cycle, starting from zero in counterclockwise direction. Rotate crank a minimum of 44 degrees in each direction. Rate of rotation shall be approximately 20 degrees per second.

C. Plot input torque versus shaft rotation. Resultant curve shall be continuous, smooth and fall entirely within boundaries specified in TESTING AND FAULT ISOLATION, Figure 101.

NOTE: Use spacers (585) if required (maximum of three) to maintain functional test requirements.



Input Torque Versus Shaft Rotation
Figure 101

4. **Troubleshooting (IPL Figure 1)**

A. Refer to TESTING AND FAULT ISOLATION, Table 101 to do fault isolation with the test results.

Table 101: Trouble Shooting Chart

TROUBLE	PROBABLE CAUSE	CORRECTION
Input torque outside accept- able range	Incorrect spring load	Add or remove spacers (585) (maximum of 3 allowed). Replace springs (85, 90) or spring assy (30). Replace cam (355)
Input torque curve discontin- uous and/or irregular	Worn or defective bearing(s)	Replace bearing(s) (200, 275, 315, 460)

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. Bearings (50, 200, 460)

   B. Bearing (70)

3. **Disassembly (IPL Figure 1)**

   A. Remove spring assembly (30).

      (1) Compress spring assembly sufficiently to release load on arm assembly (155).

      (2) Remove parts (5 thru 25), then remove spring assembly from frame assembly (420).

      NOTE: Do not disassemble spring assembly unless necessary for repair or replacement.

   B. Remove parts (120 thru 140) and remove arm assembly (155) from frame assembly. Remove bearings (145) and spacer (150) from arm assembly.

      NOTE: Do not disassemble arm assembly unless necessary for repair or replacement.

   C. Remove nuts (210), washers (215), and bolts (220), then separate all remaining subassemblies.

      NOTE: Do not disassemble bearing housing assemblies (235, 290), crank assembly (325), bearing seat assembly (380), or frame assembly (420) unless necessary for repair or replacement. Do not separate cam assembly (355) from hubs (350) unless necessary for repair or replacement.

(NOT APPLICABLE)

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 per SOPM 20-20-01 (IPL Figure 1).

         (a) Seats (80A, 105A)

         (b) Springs (85, 90)

         (c) Nuts (120, 125)

         (d) Shaft assembly (135)

         (e) Bolt assembly (180)

         (f) Cam assembly (355)

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

         (a) Bearing (70) and seats (75, 80, 105, 110)

         (b) Shafts (225, 285)

         (c) Plate assemblies (280, 320) and bonded assemblies (340)

         (d) Hubs (350)

         (e) Retainer (390) and seat (395)

      (3) Check springs for load limits per CHECK, Table 501. Check the maximum load first followed by the minimum load.

Table 501: Spring Check Data

ITEM NO. IPL FIG. 1	TEST LENGTH (INCHES)	ALLOWABLE LOAD LIMIT (POUNDS)
85	4.49 1.79	18.3 - 19.1 129.1 - 143.1
90	4.49 1.79	13.1 - 13.9 93.6 - 103.6

REPAIR

1. Content

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

Table 601:

P/N	NAME	REPAIR
65-51251	ARM	1-1
65-70975	CRANK	2-1
65C25414	FRAME	3-1
69-37283	HOUSING	4-1
69-57900	SPRING	5-1
- - - -	MISC PARTS REFINISH	6-1

2. Standard Practices

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

- SOPM 20-30-02 Stripping of Protective Finishes
- SOPM 20-30-03 General Cleaning Procedure
- SOPM 20-41-01 Decoding Table for Boeing Finish Codes
- SOPM 20-41-02 Application of Chemical and Solvent Resistant Finishes
- SOPM 20-43-01 Chromic Acid Anodizing
- SOPM 20-50-03 Bearing Installation and Retention

3. Materials

NOTE: Equivalent substitutes may be used.

A. BMS 10-11, Type 1 – primer, C00259

B. MIL-C-11796, Class 3 Corrosion Preventive – compound, C00528

C. BMS 3-33 – grease, D00633

D. MIL-PRF-23827 – grease, D00013

4. Dimensioning Symbols

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

—	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

ARM ASSEMBLY - REPAIR 1-1

65-51251–5

1. General

A. This procedure has the data necessary to repair and refinish the arm assembly (155).

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. Bearing Replacement (IPL Figure 1)

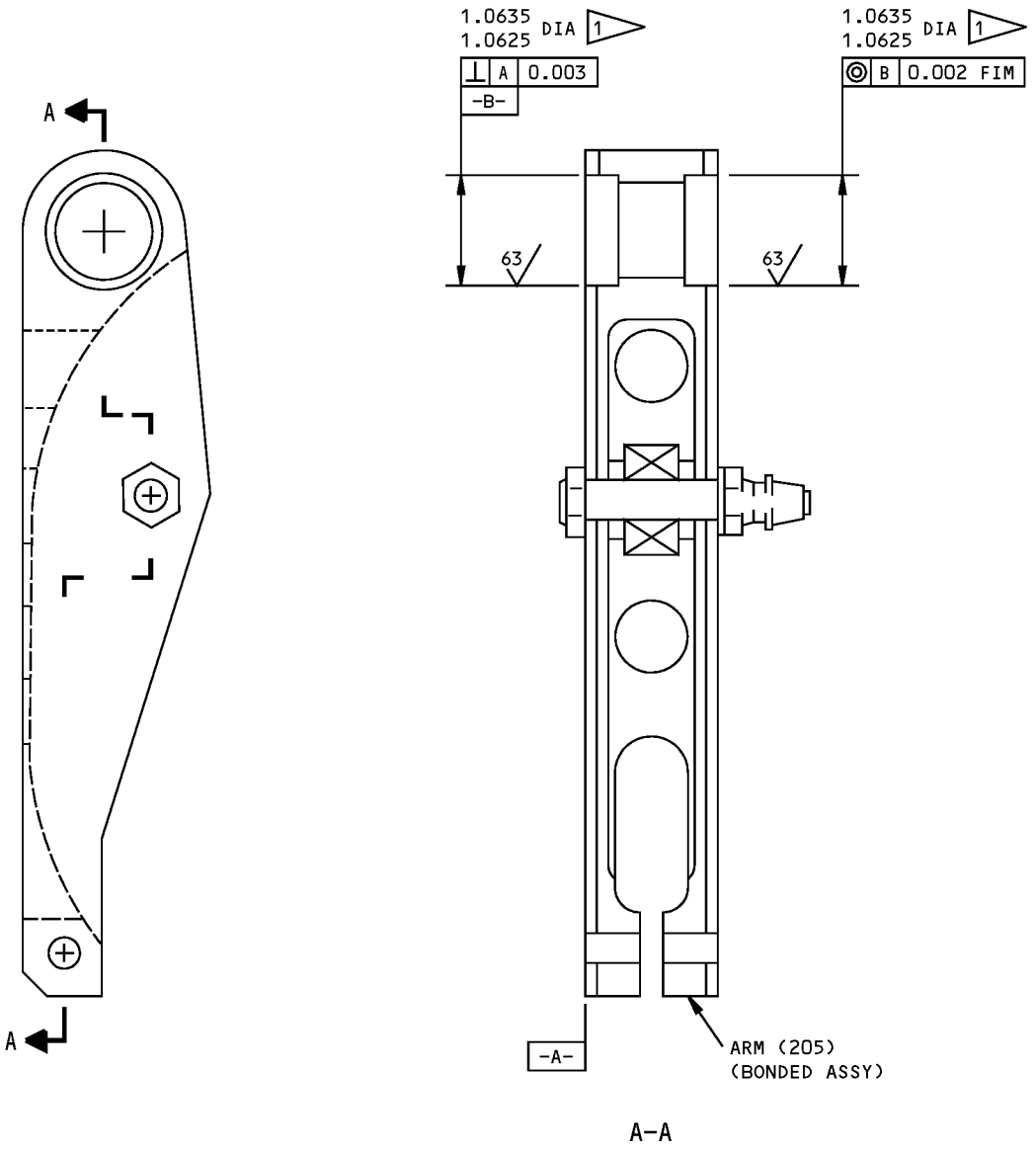
A. Remove parts (160 thru 190) and remove spacers (195) and bearing (200) from arm (205).

B. Position spacers and new bearing in arm and install new bolt assembly (180). Install washer (175) and nut (170). Tighten nut to 60-80 lb-in.

C. Install washer (165) and collar (160) to secure assembly.

3. Refinish

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



A-A

REFINISH

ARM (205) -- CHEMICAL TREAT OR CHROMIC ACID ANODIZE AND APPLY ONE COAT PRIMER BMS 10-11, TYPE 1 (SRF-2.30) EXCEPT AS NOTED

1 NO PRIMER THIS SURFACE

MATERIAL: ARM (205) -- AL ALLOY

ALL DIMENSIONS ARE IN INCHES

65-51251-5 Arm Assembly Repair
Figure 601

CRANK ASSEMBLY - REPAIR 2-1

65-70975–3

1. General

A. This procedure has the data necessary to repair and refinish the crank assembly (325).

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. Bearing Replacement (IPL Figure 1)

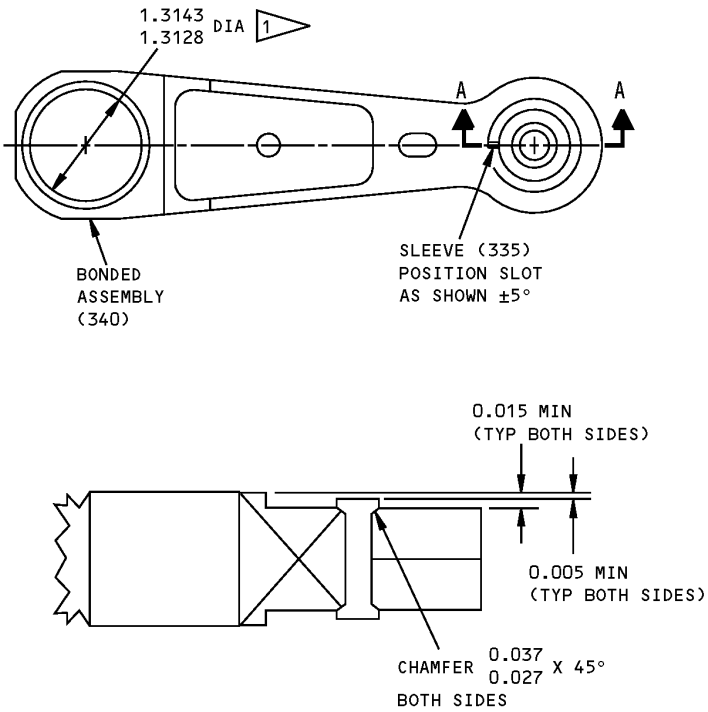
A. Remove bearing (330) and sleeve (335) from bonded assembly (340).

B. Install replacement bearing with new sleeve positioned as shown in REPAIR 2-1, Figure 601.

C. Roller swage sleeve per SOPM 20-50-03.

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.



REFINISH

BONDED ASSEMBLY (340) -- CHEMICAL TREAT AND APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (SRF-2.30) EXCEPT AS NOTED

1 OMIT PRIMER THIS SURFACE

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

65-70975-3 Crank Assembly Repair
Figure 601

FRAME ASSEMBLY - REPAIR 3-1

65C25414–4, –5, –6

1. General

A. This procedure has the data necessary to repair and refinish the frame assembly (420, 420A, 420B).

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. Bearing Replacement (IPL Figure 1)

A. Remove fasteners (425 thru 440) and separate one side of frame assembly (420) from remaining parts. Remove parts (510 thru 525) if necessary to remove attach fitting assembly (550).

B. Remove bearing (460, 560) and sleeve (465, 555) from sections of frame assembly or attach fitting assembly.

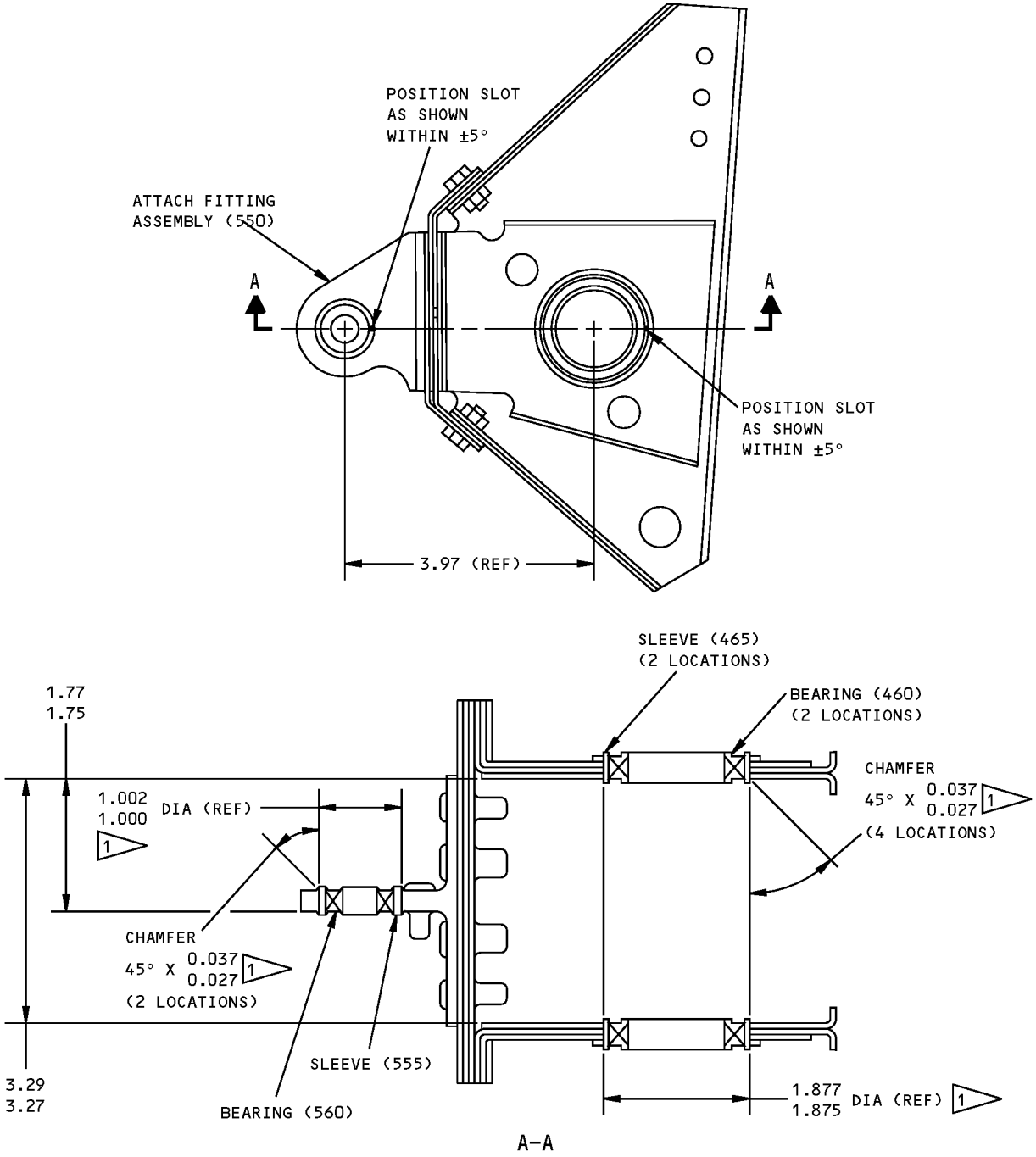
C. Install replacement bearing with new sleeve positioned as shown in REPAIR 3-1, Figure 601.

D. Roller swage sleeve per SOPM 20-50-03.

E. Reassemble frame assembly and secure sections with fasteners (425 thru 440). Install attach fitting assembly with parts (510 thru 525).

3. Refinish

A. For repair of surfaces which may only require stripping and restoration of original finish, refer to REFINISH instruction, REPAIR 3-1, Figure 601.



REFINISH

CHEMICAL TREAT OR CHROMIC ACID ANODIZE AND APPLY ONE COAT PRIMER BMS 10-11, TYPE 1 (F-18.06 OR F-18.13) EXCEPT AS NOTED

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

1 OMIT PRIMER THIS SURFACE

65C25414-4,-5,-6 Frame Assembly Repair
Figure 601

BEARING HOUSING ASSEMBLY - REPAIR 4-1

69-37283–3, –4

1. General

A. This procedure has the data necessary to repair and refinish the bearing housing assembly (235, 290).

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. Bearing Replacement (IPL Figure 1)

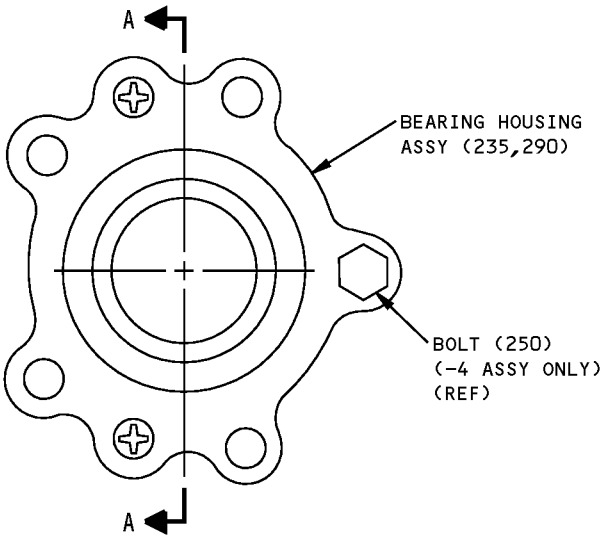
A. Remove fasteners (240 thru 265 or 295 thru 305) and plate (270 or 310), then remove bearing (275 or 315).

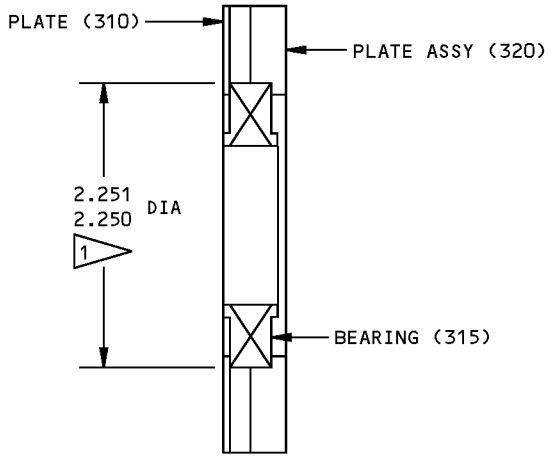
B. Install replacement bearing in plate assembly (280 or 320) per SOPM 20-50-03 except install with corrosion preventive compound compound, C00528 applied to mating surfaces.

C. Reinstall plate (270 or 310) and secure with parts (240 thru 265 or 295 thru 305).

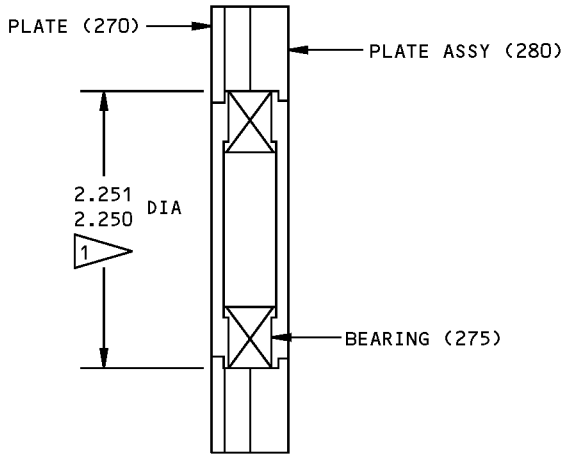
3. Refinish

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





A-A
(69-37283-3)



A-A
(69-37283-4)

REFINISH

PLATES (270,310), PLATE ASSYS (280,320) -- CHEMICAL TREAT OR CHROMIC ACID ANODIZE AND APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (SRF-2.30) EXCEPT AS NOTED

1 OMIT PRIMER THIS SURFACE

MATERIAL: PLATES, PLATE ASSYS -- AL ALLOY

ALL DIMENSIONS ARE IN INCHES

69-37283-3,-4 Bearing Housing Assembly Repair
Figure 601

SPRING ASSEMBLY - REPAIR 5-1

69-57900–3, –5, –6

1. General

A. This procedure has the data necessary to repair and refinish the spring assembly (30,30A,30B).

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. Parts Replacement (IPL Figure 1)

WARNING: USE CARE WHEN REMOVING FASTENERS TO AVOID INJURY TO PERSONNEL. SPRINGS ARE UNDER APPROXIMATELY 30 POUNDS PRELOAD.

A. Compress springs (85, 90) slightly to remove load on rod end assembly (45).

B. Remove collars (35) and bolts (40), then remove sleeve (65) and rod end assembly (45).

NOTE: Do not disassemble rod end assembly (45) unless necessary for repair or replacement. See REPAIR 5-1, Paragraph 3. for bearing replacement.

C. Slowly release constraint on springs and separate parts (70 thru 95).

NOTE: Do not disassemble rod assembly (95). Replace as a unit.

D. Assemble spring assembly with replacement parts as required.

(1) Fill cavity on the inside diameter of bearing (70) with grease, D00013 or grease, D00633. Apply a light film of grease, D00013 or grease, D00633 on spherical end of bearing (70) and on rod assy (95), as shown in REPAIR 5-1, Figure 601.

(2) Install springs (85, 90), seats (75, 80), and bearing (70) on rod assembly (95).

(3) If sleeve (65), rod assembly (95), or rod end assembly (45) have been replaced, locate and drill 0.164-0.165 in. dia. bolt holes in new parts indicated.

(4) Reassemble parts and secure assembly with bolts (40) and collars (35) installed with wet primer, C00259.

3. Bearing Replacement (IPL Figure 1)

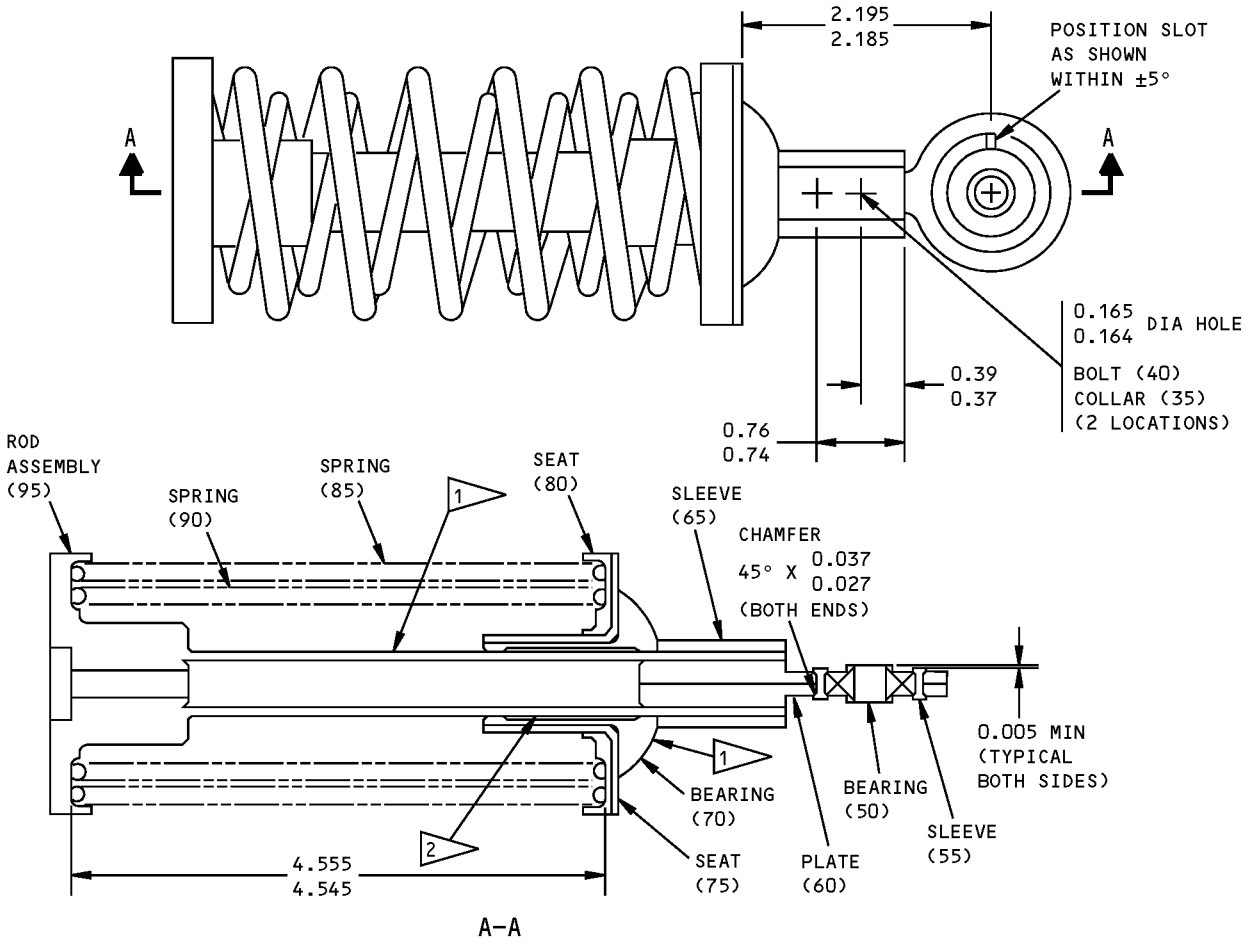
A. Remove sleeve (55) and bearing (50) from plates (60).

B. Install replacement bearing with new sleeve positioned as shown in REPAIR 5-1, Figure 601.

C. Roller swage sleeve per SOPM 20-50-03.

4. 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.



A-A

REFINISH

ROD END ASSEMBLY (45) -- CHEMICAL TREAT (F-2.94) AND APPLY BMS 10-11, TYPE 1 PRIMER (SRF-12.205)

SLEEVE (55) -- CHEMICAL TREAT (F-2.10)

PLATE (60) -- CHEMICAL TREAT OR CHROMIC ACID ANODIZE AND APPLY BMS 10-11, TYPE 1 PRIMER (SRF-2.30)

SLEEVE (65), SEAT (75,80,105,110) -- CHEMICAL TREAT OR CHROMIC ACID ANODIZE AND APPLY BMS 10-11, TYPE 1 PRIMER (F-18.05)

SEAT (80A,105A) -- CADIMIUM PLATE (F-15.06) AND APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02)

SPRING (85,85A,85A,90A,90B) -- CADMIUM PLATE AND APPLY BMS 10-11, TYPE 1 PRIMER (F-16.03)

SPRING (85C,90C) -- PASSIVATE (F-17.25)

1 APPLY A LIGHT FILM OF GREASE TO THESE SURFACES DURING ASSEMBLY

2 FILL CAVITY OF BEARING (70) WITH GREASE BEFORE ASSEMBLY

MATERIAL: AL ALLOY (EXCEPT SPRINGS AND SEATS 80A,105A)

SEAT (80A,105A) -- 15.5 PH CRES (125-145 KSI)

SPRING (85,90) -- CHROME SILICON ALLOY STEEL WIRE

SPRING (85A,85B,85C,90A,90B,90C) -- 17.7 CRES WIRE

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

69-57900-3,-5,-6 Spring Assembly Repair
Figure 601

MISCELLANEOUS PARTS REFINISH - REPAIR 6-1

1. General

A. This repair gives the data that is necessary to refinish parts not given in the specified repairs.

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 6-1, Table 601 consists of restoration of the original finish.

Table 601: Refinish Details

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Nut (120, 125)	4340 Steel 180-200 ksi	Cadmium plate (F-15.02)
Shaft assy (135)	4340 Steel 180-200 ksi	Cadmium plate (F-1.1926) all over. Apply primer, C00259 (SRF 12.205) on ID. Surface finish 63 micro-inches on 0.6230-0.6240 in. OD after plating.
Shaft (225)	Al alloy	Chemical treat and apply primer, C00259 (SRF 2.30), except omit primer on 1.118-1.119 in. OD.
Shaft (285)	Al alloy	Chemical treat and apply primer, C00259 (SRF 2.30), except omit primer on ID and 1.3108- 1.3118 in. OD.
Spacer (230, 360, 585)	Al alloy	Chemical treat and apply primer, C00259(SRF 2.30).
Hub (350)	Al alloy	Chemical treat and apply primer, C00259 (SRF 2.30), except omit primer on 1.3128-1.3143 in. dia bore.
Cam assy (355)	17-7PH CRES 180-200 ksi	Passivate (F-8.07).
Bearing seat assy (380)	Al alloy	Chemical treat and apply primer, C00259 (SRF 2.30), except omit primer on 0.995-1.005 in. dia spherical radius of bearing seat. Surface finish 16 micro-inches on spherical radius.

ASSEMBLY

1. General

A. This procedure has the data necessary to assemble the rudder conrol centering unit assembly.

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. Assembly (IPL Figure 1)

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)
D00633	Grease - Aircraft General Purpose	BMS3-33
G01912	Lockwire - Monel (0.032 In. Dia.)	NASM20995N˜ C32 (QQ-N-281)

B. References

Reference	Title
SOPM 20-50-02	INSTALLATION OF SAFETYING DEVICES
SOPM 20-50-03	BEARING AND BUSHING REPLACEMENT
SOPM 20-60-03	LUBRICANTS
SOPM 20-60-04	MISCELLANEOUS MATERIALS

C. Procedure

NOTE: For lubricants, refer to SOPM 20-60-03. For miscellaneous materials, refer to SOPM 20-60-04.

(1) Assemble parts on shafts (225, 285).

(a) Remove parts (425 thru 440) and separate one side of frame assembly (420) from remaining parts.

(b) If hubs or cam assembly have been replaced, drill rivet holes in new part using mating part as a guide. Secure hubs to cam with rivets (345).

(c) Install following parts, in order, on outer shaft (285) per ASSEMBLY, Figure 701: bearing housing assembly (290), crank assembly (325), side of frame assembly previously removed, spacer (360), hubs (350) with cam assembly (355), remainder of frame assembly, spacer (230), and bearing housing assembly (235).

(d) Align sections of frame assembly and secure loosely with fasteners (425 thru 440).

(e) Install inner shaft (225). Rotate shafts (225, 285), crank assembly (325), hubs (350), and cam assembly (355) to line up bolt holes. If bolt holes must be drilled in replacement parts (hubs, shafts, or crank assembly) align parts per ASSEMBLY, Figure 701, then machine as indicated. Secure parts with bolts (220), washers (215), and nuts (210). Ensure that bolts are oriented as shown.

(f) Maintain gaps of 0.015-0.025 in. as shown in ASSEMBLY, Figure 701 while tightening fasteners (425 thru 440) securely.

(2) Install bearing seat assembly (380) in frame assembly and secure with parts (365 thru 375). Ensure that bolts (375) are oriented as shown.

(3) Install arm assembly (155).

(a) Install bearings (145) and spacer (150) in arm assembly. Install bearings per SOPM 20-50-03.

(b) Install shaft assembly (135) through frame assembly (420), spacers (140), and arm assembly (155).

CAUTION: DO NOT RETIGHTEN NUT (125) AFTER TIGHTENING NUT (120).

(c) Install washer (130) and nut (125). Tighten nut to 30-40 lb-in. Install nut (120) and tighten to 20-30 lb-in.

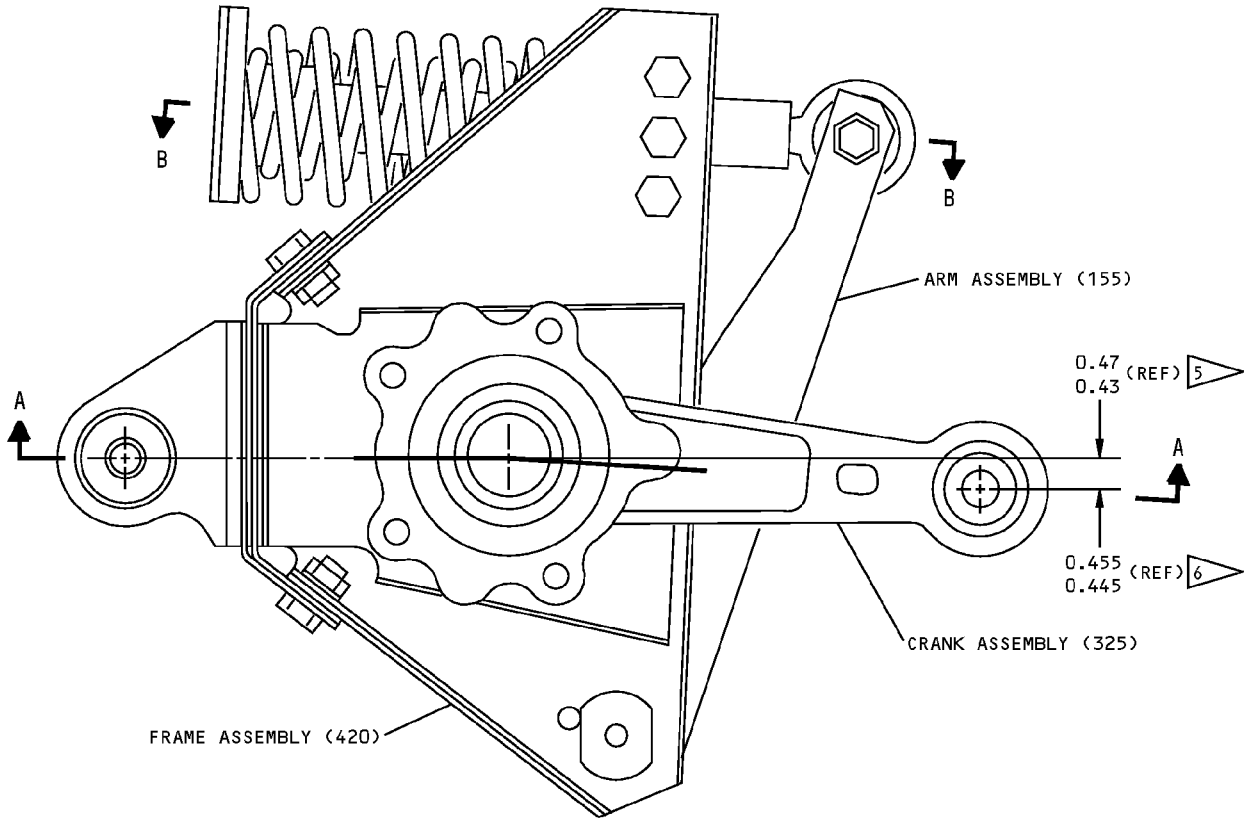
(d) Install lockwire, G01912 on nuts (120, 125) per SOPM 20-50-02, double-twist method per ASSEMBLY, Figure 702.

(4) Install spring assembly (30).

(a) Fill cavity on inside diameter of bearing (70) with grease, D00013 or grease, D00633. Apply a film of grease (100 percent coverage required) on the spherical end of bearing (70) and on rod (115) as shown in ASSEMBLY, Figure 701.

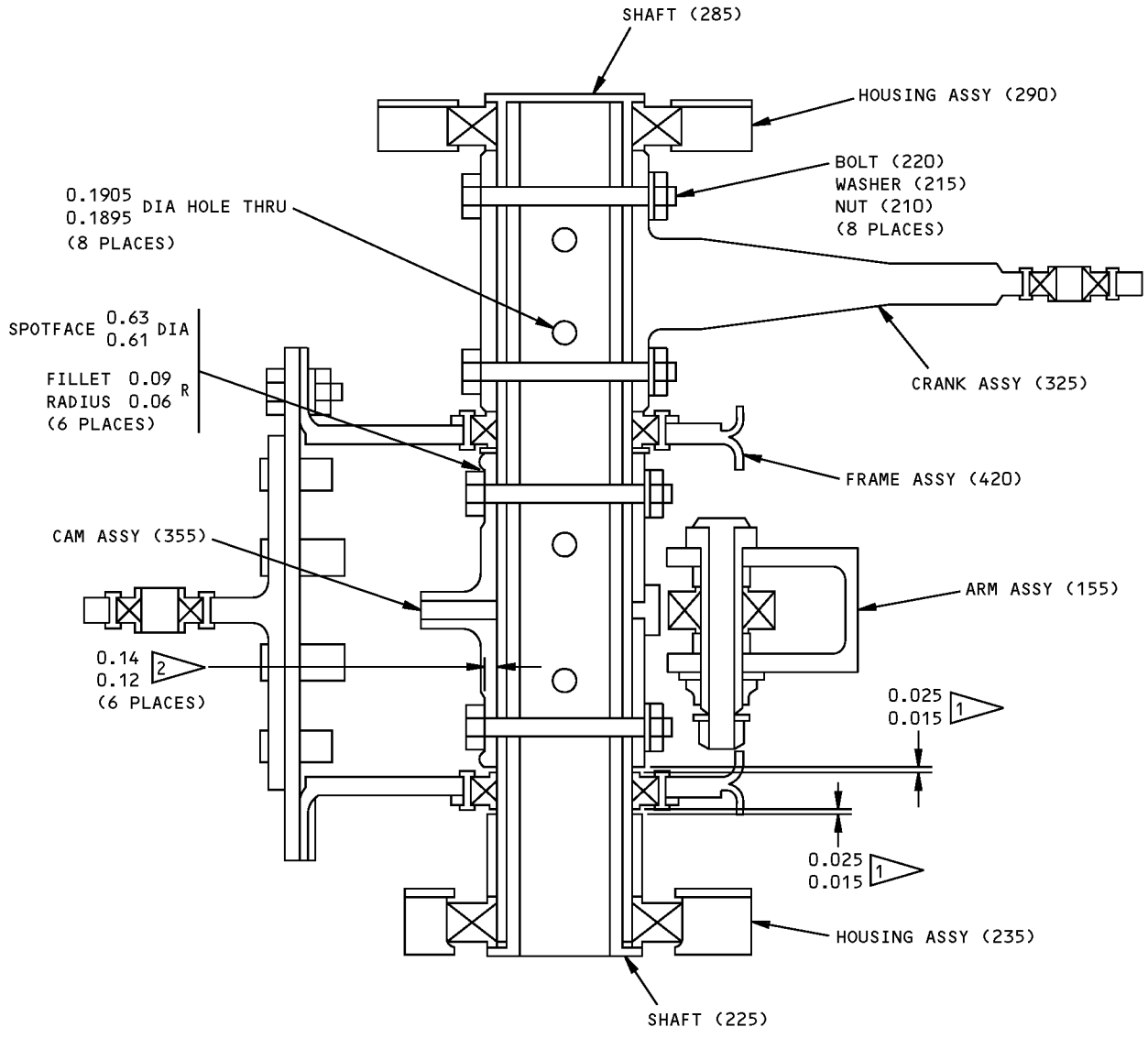
CAUTION: DO NOT RETIGHTEN NUT (15) AFTER TIGHTENING NUT (5).

(b) Insert spring assembly through bearing seat assembly (380) and attach rod end assembly (45) to arm assembly (155) with bolt assembly (25). Install washer (20) and nut (15). Tighten nut to 50-60 lb-in. Install washer (10) and nut (5). Tighten nut (5) to 12-15 lb-in.



5 65C25410-1
6 65C25410-2,-4,-5,-6,-7

Assembly Details
Figure 701 (Sheet 1 of 3)

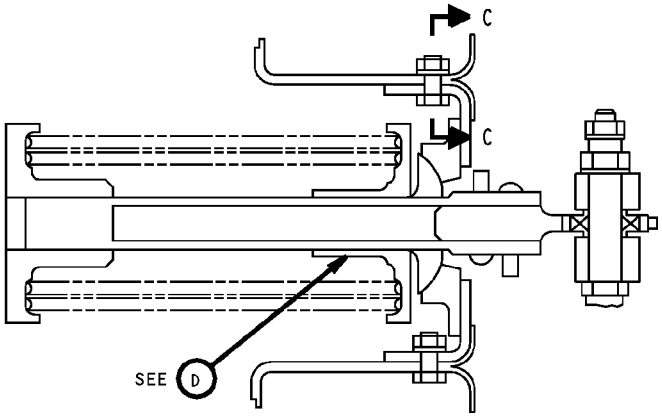


A-A

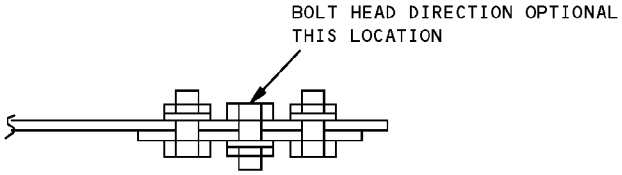
1 MAINTAIN DIMENSIONS WHILE DRILLING BOLT HOLES

2 MATERIAL THICKNESS UNDER SPOTFACE

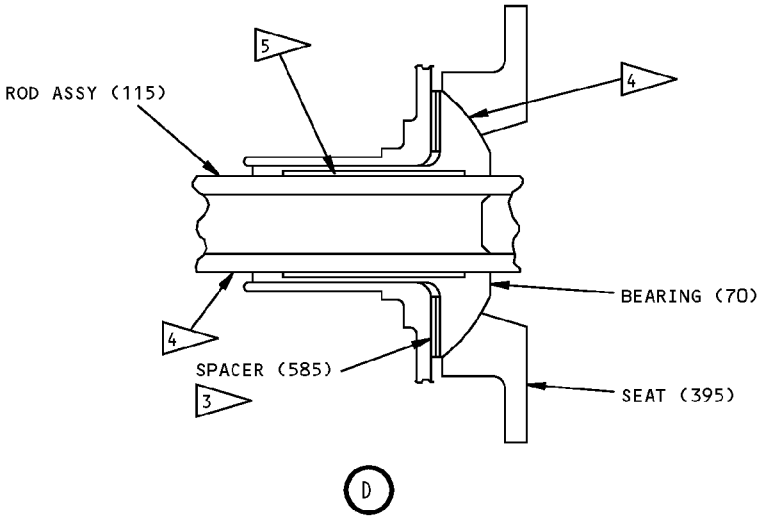
Assembly Details
Figure 701 (Sheet 2 of 3)



B–B



C–C

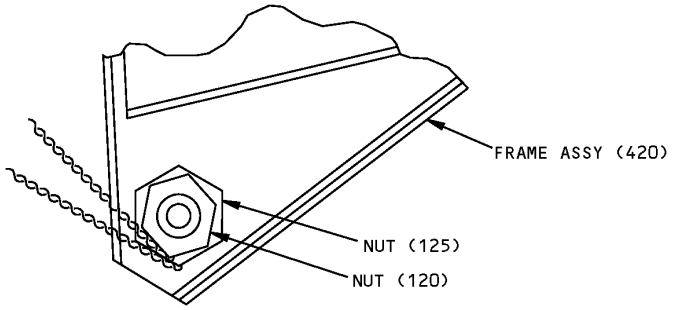


3 INSTALL SPACERS (585) AS REQUIRED (3 MAX.) TO SATISFY FUNCTIONAL TEST REQUIREMENTS

4 APPLY LIGHT FILM OF GREASE TO THESE SURFACES ON ASSEMBLY

5 FILL CAVITY OF BEARING (70) WITH GREASE

Assembly Details
Figure 701 (Sheet 3 of 3)



Lockwiring Details
Figure 702

3. Functional Test

A. Test assembled unit per TESTING AND FAULT ISOLATION.

4. Storage

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

FITS AND CLEARANCES

REF IPL		NAME	TORQUE*	
FIG. NO.	ITEM NO.		POUND-INCHES	POUND-FEET
1	5	Nut	12-15	
1	15	Nut	50-60	
1	120	Nut	20-30	
1	125	Nut	30-40	
1	170	Nut	60-80	

* REFER TO SOPM 20-50-01 FOR TORQUE VALUES OF STANDARD FASTENERS.

Torque Table
Figure 801

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-5432	Elevator and Rudder Centering Valve Test Fixture	F80120-1	81205

Tool Supplier Information

CAGE Code	Supplier Name	Supplier Address
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.

NUMERICAL INDEX

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
65-51251-5		1	155	1
65-51251-6		1	205	1
65-70975-2		1	340A	1
65-70975-3		1	325	1
65-73697-1		1	355	1
65C25410-1		1	1	RF
65C25410-2		1	1A	RF
65C25410-4		1	1B	RF
65C25410-5		1	1C	RF
65C25410-6		1	1D	RF
65C25410-7		1	1E	RF
65C25414-2		1	450	1
65C25414-3		1	455	2
65C25414-4		1	420	1
65C25414-5		1	420A	1
65C25419-6		1	420B	1
66-24903-5		1	230	1
69-27158-3		1	180	1
69-27163-4		1	190	1
69-27229-13		1	25	1
69-37283-3		1	290	1
69-37283-4		1	235	1
69-37284-8		1	320	1
69-37284-9		1	280	1
69-38294-2		1	270	1
		1	310	1
69-38919-17		1	55	1
69-38919-31		1	335	1
69-38919-33		1	555	1
69-38919-5		1	465	2
69-43930-1		1	195	2
69-57900-3		1	30	1
69-57900-4		1	95	1
69-57900-5		1	30A	1

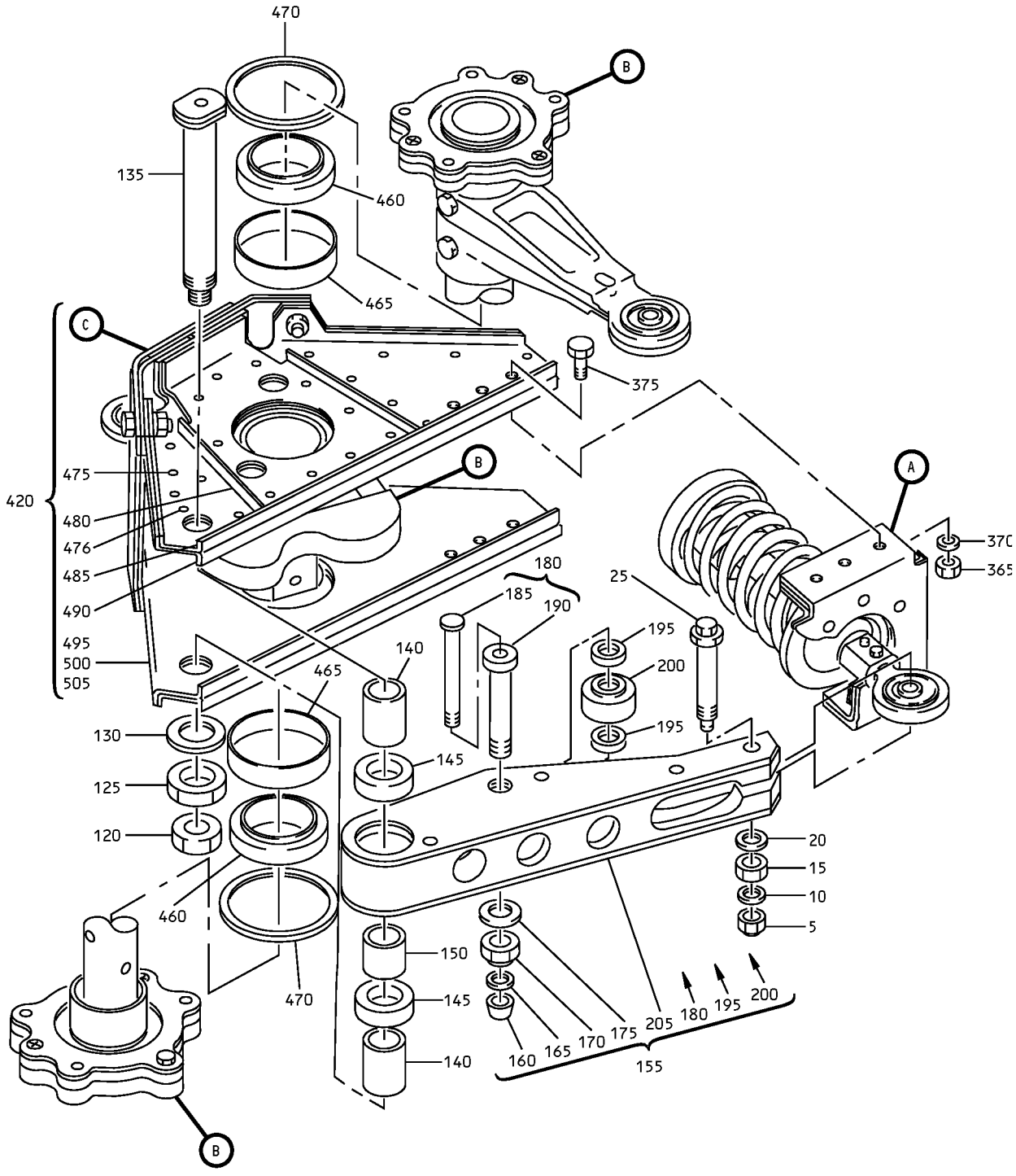
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
69-57900-6		1	30B	1
69-57900-7		1	95A	1
69-57901-1		1	380	1
69-57902-1		1	395	1
69-57903-1		1	390	1
69-57904-1		1	225	1
69-57905-1		1	285	1
69-57906-1		1	85	1
69-57906-2		1	85A	1
		1	85B	1
69-57906-3		1	85C	1
69-57907-1		1	90	1
69-57907-2		1	90A	1
		1	90B	1
69-57907-3		1	90C	1
69-57908-1		1	45	1
69-57908-2		1	60	2
69-57909-2		1	117	1
69-57909-4		1	115	1
69-57909-5		1	118	1
69-57910-2		1	70	1
69-57911-2		1	75	1
69-57912-1		1	80	1
69-57912-2		1	80A	1
69-57913-1		1	105	1
69-57913-2		1	105A	1
69-57914-1		1	110	1
69-57915-1		1	350	2
69-57916-2		1	65	1
69-57917-1		1	405	1
69-57917-2		1	410	1
69-57919-1		1	135	1
69-57922-1		1	119	1
69-57924-1		1	470	2
69-57925-1		1	125	1

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
		1	125B	1
69-57926-1		1	120	1
		1	120B	1
69-61340-1		1	360	1
69-61378-1		1	585	AR
69-73220-1		1	550	1
69-73220-2		1	575	1
69-73220-3		1	580	1
69-73225-10		1	535	1
69-73225-11		1	530	1
69-73225-3		1	540	1
69-73225-4		1	545	1
69-73226-3		1	495A	1
69-73226-4		1	480A	1
69-73226-5		1	495	1
69-73226-6		1	480	1
69-73227-1		1	505	1
69-73227-3		1	500	1
69-73227-4		1	505A	1
69-73228-1		1	490	1
69-73228-2		1	485	1
69-73228-3		1	490A	1
69-73228-4		1	485A	1
AN960-416		1	165	1
AN960PD10		1	10	1
		1	215	8
AN960PD1016L		1	130	1
AN960PD416		1	245	1
		1	370	6
		1	430	4
AN960PD516		1	20	1
AN960PD616		1	175	1
AN960PD8L		1	260	2
		1	300	3
BACB10A828		1	275	1

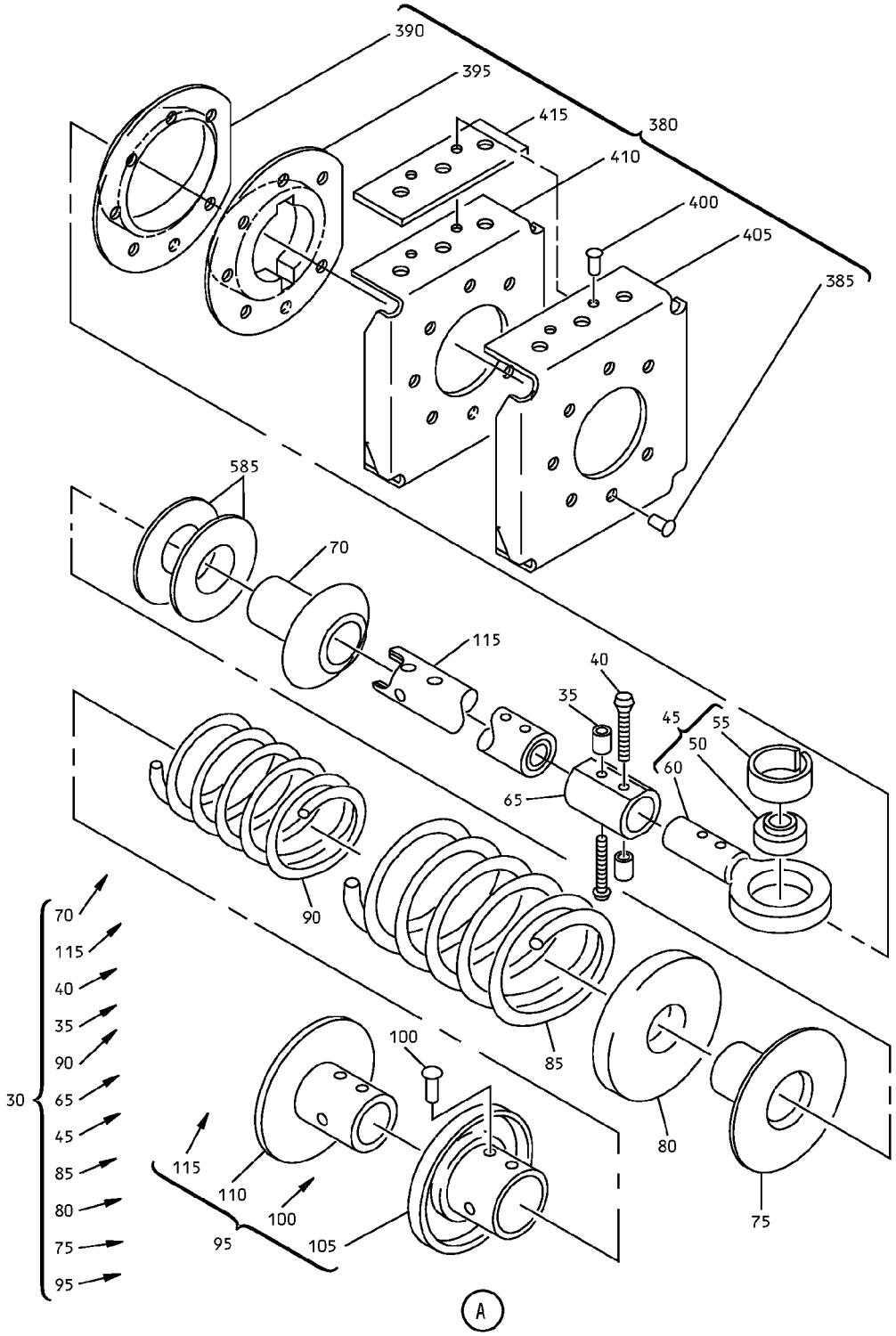
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
		1	315	1
BACB10AC5A		1	50	1
		1	330	1
BACB10AC6A		1	560	1
BACB10AS10		1	145	2
BACB10AS21		1	460	2
BACB10BN06P		1	200	1
BACB30GP5-12		1	40	2
BACB30GW6-4		1	570	2
BACB30GW6-6		1	515	4
BACB30GW8-31		1	185	1
BACB30GW8-6		1	525	4
BACB30LJ4-4		1	375A	6
BACB30LM3-26		1	220A	8
BACB30LU2-7		1	305	3
BACB30LU2-9		1	265	2
BACB30MB5		1	443	2
		1	445	4
BACB30MB6		1	447	1
BACB30NF4-10		1	250	1
BACB30NF4-3		1	435	2
BACB30NF4-4		1	375	6
		1	440	2
BACC30K6		1	510	4
		1	565	2
BACC30K8		1	160	1
		1	520	4
BACC30X5		1	444A	2
		1	446	4
BACC30X6		1	448	1
BACN10JC08		1	255A	2
		1	295A	3
BACN10JC3		1	5A	1
		1	210A	8
BACN10JC3CD		1	210B	8

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
BACN10JC4		1	240A	1
		1	365A	6
		1	425A	4
BACN10JC4CD		1	365B	6
		1	425B	4
BACN10JC5		1	15A	1
BACN10JC6		1	170A	1
BACN11U10CD2		1	125C	1
BACN11U7CD2		1	120C	1
BACR15FT4D		1	476	2
BACR15FT5		1	475	44
BACR15FT5D		1	345	7
		1	443A	2
BACS40C12A37		1	415	1
MS20426D4		1	400	2
MS20470D5		1	100	3
		1	385	7
MS21042L08		1	255	2
		1	295	3
MS21042L3		1	5	1
		1	210	8
MS21042L4		1	240	1
		1	365	6
		1	425	4
MS21042L5		1	15	1
MS21042L6		1	170	1
MS21438-106G		1	200A	1
NAS1080D5		1	35	2
NAS1149D0363J		1	10A	1
		1	215A	8
NAS1149D0463J		1	370A	6
		1	430A	4
NAS1149D0563J		1	20A	1
NAS1149D1016J		1	130A	1
NAS1423-10		1	125A	1

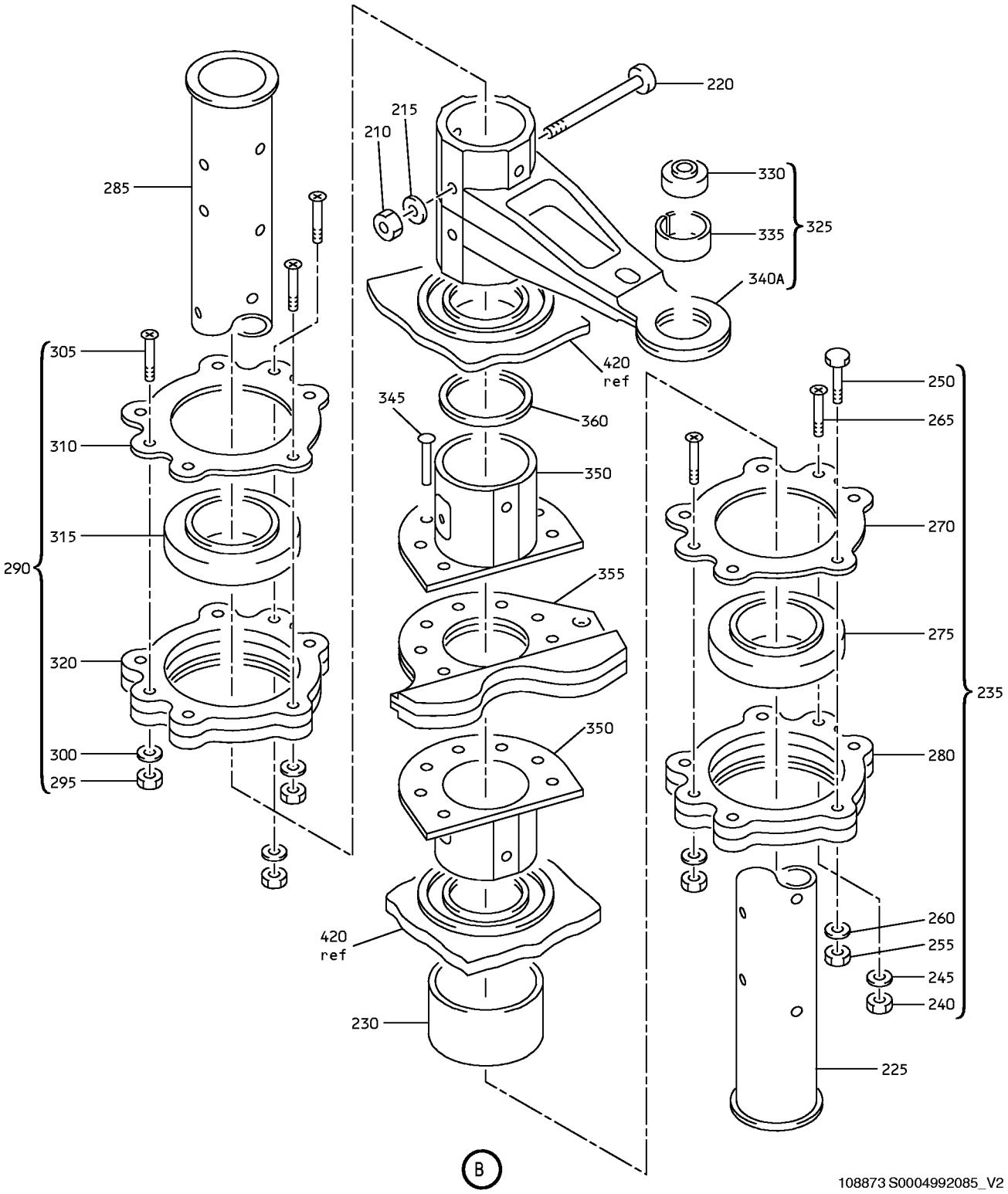
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
NAS1423-7		1	120A	1
NAS43DD10-50		1	150	1
NAS43DD10-50FC		1	150A	1
NAS43DD10-62		1	140	2
NAS6603-26		1	220	8



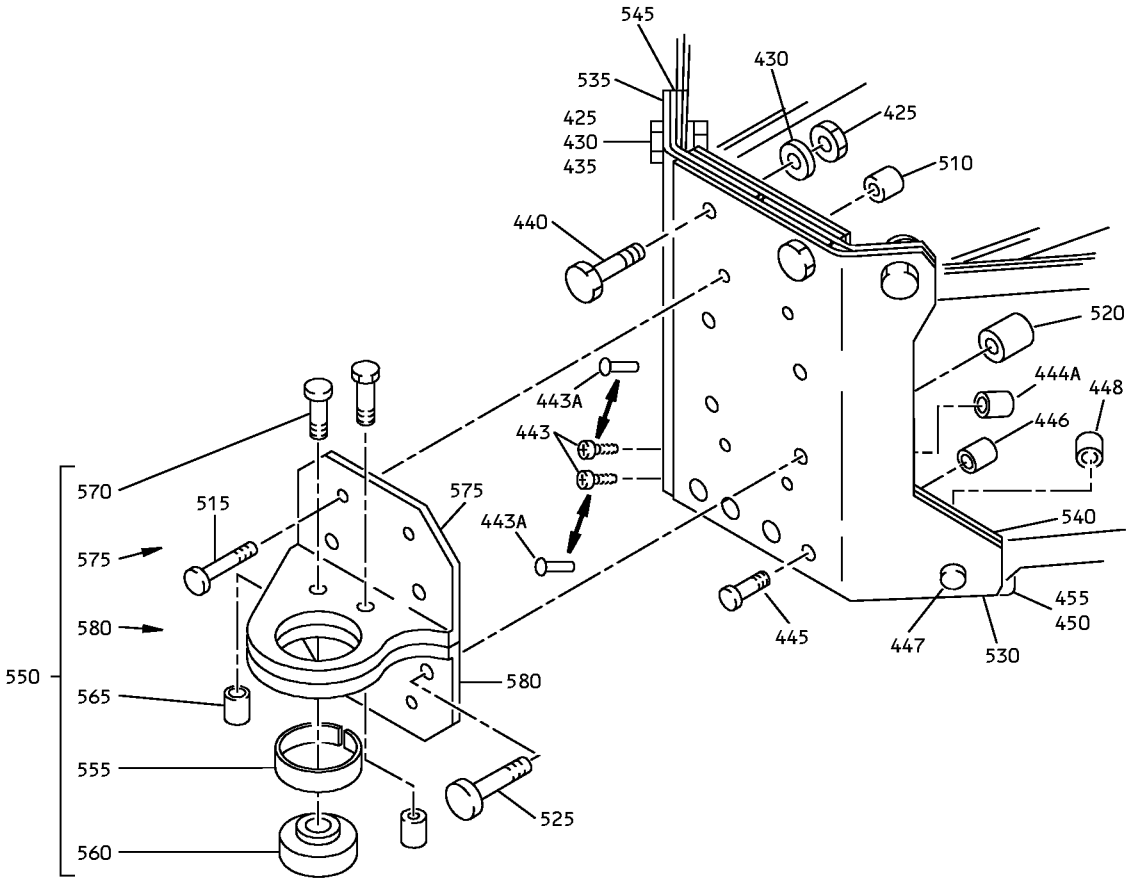
Rudder Controls Centering Unit Assembly
IPL Figure 1 (Sheet 1 of 4)



Rudder Controls Centering Unit Assembly
IPL Figure 1 (Sheet 2 of 4)



Rudder Controls Centering Unit Assembly
IPL Figure 1 (Sheet 3 of 4)



108397 S0004992086_V2

Rudder Controls Centering Unit Assembly
IPL Figure 1 (Sheet 4 of 4)

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–1	65C25410-1		UNIT ASSY-RUDDER CONTROLS CENTERING	A	RF
–1A	65C25410-2		UNIT ASSY-RUDDER CONTROLS CENTERING	B	RF
–1B	65C25410-4		UNIT ASSY-RUDDER CONTROLS CENTERING	C	RF
–1C	65C25410-5		UNIT ASSY-RUDDER CONTROLS CENTERING	D	RF
–1D	65C25410-6		UNIT ASSY-RUDDER CONTROLS CENTERING	E	RF
–1E	65C25410-7		UNIT ASSY-RUDDER CONTROLS CENTERING	F	RF
5	MS21042L3		. NUT (REPLACED BY ITEM 5A)		1
–5A	BACN10JC3		. NUT (REPLACES ITEM 5)		1
10	AN960PD10		. WASHER	A-E	1
–10A	NAS1149D0363J		. WASHER	F	1
15	MS21042L5		. NUT (REPLACED BY ITEM 15A)		1
–15A	BACN10JC5		. NUT (REPLACES ITEM 15)		1
20	AN960PD516		. WASHER	A-E	1
–20A	NAS1149D0563J		. WASHER	F	1
25	69-27229-13		. BOLT ASSY		1
30	69-57900-3		. SPRING ASSY	A-D	1
–30A	69-57900-5		. SPRING ASSY	E	1
–30B	69-57900-6		. SPRING ASSY	F	1
35	NAS1080D5		. . COLLAR		2
40	BACB30GP5-12		. . BOLT		2
45	69-57908-1		. . ROD END ASSY		1
50	BACB10AC5A		. . . BEARING		1
55	69-38919-17		. . . SLEEVE		1
60	69-57908-2		. . . PLATE		2

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
65	69-57916-2		. . SLEEVE		1
70	69-57910-2		. . BEARING		1
75	69-57911-2		. . SEAT		1
80	69-57912-1		. . SEAT	A-E	1
–80A	69-57912-2		. . SEAT	F	1
85	69-57906-1		. . SPRING (OPT ITEM 85A)	A-D	1
–85A	69-57906-2		. . SPRING (OPT ITEM 85)	A-D	1
–85B	69-57906-2		. . SPRING	E	1
–85C	69-57906-3		. . SPRING	F	1
90	69-57907-1		. . SPRING (OPT ITEM 90A)	A-D	1
–90A	69-57907-2		. . SPRING (OPT ITEM 90)	A-D	1
–90B	69-57907-2		. . SPRING	E	1
–90C	69-57907-3		. . SPRING	F	1
95	69-57900-4		. . ROD ASSY	A-E	1
–95A	69-57900-7		. . ROD ASSY	F	1
100	MS20470D5		. . . RIVET		3
105	69-57913-1		. . . SEAT	A-E	1
–105A	69-57913-2		. . . SEAT	F	1
110	69-57914-1		. . . SEAT		1
115	69-57909-4		. . . ROD ASSY		1
–117	69-57909-2		. . . . ROD		1
–118	69-57909-5		. . . . ROD		1
–119	69-57922-1		. . . . PLUG		1
120	69-57926-1		. NUT (OPT ITEM 120A)	A-E	1
–120A	NAS1423-7		. NUT (OPT ITEM 120)	A-E	1
–120B	69-57926-1		. NUT (OPT ITEM 120C)	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–					
–120C	BACN11U7CD2		. NUT (OPT ITEM 120B)	F	1
125	69-57925-1		. NUT (OPT ITEM 125A)	A-E	1
–125A	NAS1423-10		. NUT (OPT ITEM 125)	A-E	1
–125B	69-57925-1		. NUT (OPT ITEM 125C)	F	1
–125C	BACN11U10CD2		. NUT (OPT ITEM 125B)	F	1
130	AN960PD1016L		. WASHER	A-E	1
–130A	NAS1149D1016J		. WASHER	F	1
135	69-57919-1		. SHAFT ASSY		1
140	NAS43DD10-62		. SPACER		2
145	BACB10AS10		. BEARING		2
150	NAS43DD10-50		. SPACER	A-E	1
–150A	NAS43DD10-50FC		. SPACER	F	1
155	65-51251-5		. ARM ASSY		1
160	BACC30K8		. . COLLAR		1
165	AN960-416		. . WASHER		1
170	MS21042L6		. . NUT (REPLACED BY ITEM 170A)		1
–170A	BACN10JC6		. . NUT (REPLACES ITEM 170)		1
175	AN960PD616		. . WASHER		1
180	69-27158-3		. . BOLT ASSY		1
185	BACB30GW8-31		. . . BOLT		1
190	69-27163-4		. . . BOLT		1
195	69-43930-1		. . SPACER		2
200	BACB10BN06P		. . BEARING (REPLACED BY ITEM 200A)		1
–200A	MS21438-106G		. . BEARING (REPLACES ITEM 200)		1
205	65-51251-6		. . ARM		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	MS21042L3		. NUT (REPLACED BY ITEM 210A)	A-E	8
–210A	BACN10JC3		. NUT (REPLACES ITEM 210)	A-E	8
–210B	BACN10JC3CD		. NUT	F	8
215	AN960PD10		. WASHER	A-E	8
–215A	NAS1149D0363J		. WASHER	F	8
220	NAS6603-26		. BOLT	A-E	8
–220A	BACB30LM3-26		. BOLT	F	8
225	69-57904-1		. SHAFT		1
230	66-24903-5		. SPACER		1
235	69-37283-4		. HOUSING ASSY-BEARING		1
240	MS21042L4		. . NUT (REPLACED BY ITEM 240A)		1
240A	BACN10JC4		. . NUT (REPLACES ITEM 240)		1
245	AN960PD416		. . WASHER		1
250	BACB30NF4-10		. . BOLT		1
255	MS21042L08		. . NUT (REPLACED BY ITEM 255A)		2
255A	BACN10JC08		. . NUT (REPLACES ITEM 255)		2
260	AN960PD8L		. . WASHER		2
265	BACB30LU2-9		. . BOLT		2
270	69-38294-2		. . PLATE		1
275	BACB10A828		. . BEARING		1
280	69-37284-9		. . PLATE ASSY		1
285	69-57905-1		. SHAFT		1
290	69-37283-3		. HOUSING ASSY-BEARING		1
295	MS21042L08		. . NUT (REPLACED BY ITEM 295A)		3
295A	BACN10JC08		. . NUT (REPLACES ITEM 295)		3
300	AN960PD8L		. . WASHER		3

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
305	BACB30LU2-7		. . BOLT		3
310	69-38294-2		. . PLATE		1
315	BACB10A828		. . BEARING		1
320	69-37284-8		. . PLATE ASSY		1
325	65-70975-3		. CRANK ASSY		1
330	BACB10AC5A		. . BEARING		1
335	69-38919-31		. . SLEEVE		1
340	69-70975-2		DELETED		
340A	65-70975-2		. . BONDED ASSY		1
345	BACR15FT5D		. RIVET		7
350	69-57915-1		. HUB		2
355	65-73697-1		. CAM ASSY		1
360	69-61340-1		. SPACER		1
365	MS21042L4		. NUT (REPLACED BY ITEM 365A)	A-E	6
–365A	BACN10JC4		. NUT (REPLACES ITEM 365)	A-E	6
–365B	BACN10JC4CD		. NUT	F	6
370	AN960PD416		. WASHER	A-E	6
–370A	NAS1149D0463J		. WASHER	F	6
375	BACB30NF4-4		. BOLT	A-E	6
–375A	BACB30LJ4-4		. BOLT	F	6
380	69-57901-1		. SEAT ASSY-BEARING		1
385	MS20470D5		. . RIVET		7
390	69-57903-1		. . RETAINER		1
395	69-57902-1		. . SEAT		1
400	MS20426D4		. . RIVET		2
405	69-57917-1		. . BRACKET		1
410	69-57917-2		. . BRACKET		1
415	BACS40C12A37		. . SHIM		1
420	65C25414-4		. FRAME ASSY	A, B	1
–420A	65C25414-5		. FRAME ASSY	C-E	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–					
–420B	65C25419-6		. FRAME ASSY	F	1
425	MS21042L4		. . NUT (REPLACED BY ITEM 425A)	A-E	4
–425A	BACN10JC4		. . NUT (REPLACES ITEM 425)	A-E	4
–425B	BACN10JC4CD		. . NUT	F	4
430	AN960PD416		. . WASHER	A-E	4
–430A	NAS1149D0463J		. . WASHER	F	4
435	BACB30NF4-3		. . BOLT		2
440	BACB30NF4-4		. . BOLT		2
443	BACB30MB5		. . BOLT	A-E	2
443A	BACR15FT5D		. . RIVET	F	2
444	BACB30X5		DELETED		
444A	BACC30X5		. . COLLAR	A-E	2
445	BACB30MB5		. . BOLT		4
446	BACC30X5		. . COLLAR		4
447	BACB30MB6		. . BOLT		1
448	BACC30X6		. . COLLAR		1
450	65C25414-2		. . FILLER-RADIUS		1
455	65C25414-3		. . FILLER-RADIUS		2
460	BACB10AS21		. . BEARING		2
465	69-38919-5		. . SLEEVE		2
470	69-57924-1		. . SPACER		2
475	BACR15FT5		. . RIVET		44
476	BACR15FT4D		. . RIVET	C-F	2
480	69-73226-6		. . BRACKET (OPT ITEM 480A)		1
–480A	69-73226-4		. . BRACKET (OPT ITEM 480)		1
485	69-73228-2		. . FRAME	A, B	1
–485A	69-73228-4		. . FRAME	C-F	1
490	69-73228-1		. . FRAME	A, B	1
–490A	69-73228-3		. . FRAME	C-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–					
495	69-73226-5		. . BRACKET (OPT ITEM 495A)		1
–495A	69-73226-3		. . BRACKET (OPT ITEM 495)		1
500	69-73227-3		. . FRAME		1
505	69-73227-1		. . FRAME	A-E	1
–505A	69-73227-4		. . FRAME	F	1
510	BACC30K6		. . COLLAR		4
515	BACB30GW6-6		. . BOLT		4
520	BACC30K8		. . COLLAR		4
525	BACB30GW8-6		. . BOLT		4
530	69-73225-11		. . BRACKET		1
535	69-73225-10		. . BRACKET		1
540	69-73225-3		. . BRACKET		1
545	69-73225-4		. . BRACKET		1
550	69-73220-1		. . FITTING ASSY-ATTACH		1
555	69-38919-33		. . . SLEEVE		1
560	BACB10AC6A		. . . BEARING		1
565	BACC30K6		. . . COLLAR		2
570	BACB30GW6-4		. . . BOLT		2
575	69-73220-2		. . . FITTING-ATTACH		1
580	69-73220-3		. . . FITTING-ATTACH		1
585	69-61378-1		. SPACER		AR

–Item not Illustrated