TO: ALL HOLDERS OF RUDDER CONTROL PEDAL/CRANK ASSEMBLY COMPONENT MAINTENANCE MANUAL 27-21-45

REVISION NO. 11 DATED MAR 01/00

HIGHLIGHTS

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

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
TITLE PAGE	Added crank assembly P/N 253T3100-19 and -20 with new
1	fastener configuration per PRRB12900-181.
TR & SB RECORD	
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301-302	
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RUDDER CONTROL PEDAL/CRANK ASSEMBLY

PART NUMBER 253T3100-7,-8,-11,-19,-20

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

7574

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 C12224 PRR B11452 PRR B12900-181	APR 10/84 JUL 10/86 MAR 01/00

PAGE	DATE	CODE
27-21-45		
TITLE PAGE		
*1	MAR 01/00	01.1
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1	JUL 10/83	01
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TR & SB RECORD		
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*1	MAR 01/00	01
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1	APR 10/84	01.1
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*301	MAR 01/00	01.1
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ILLUSTRATED PARTS LIST		
1001	JUL 10/83	01
*1002	MAR 01/00	01.1
*1003	MAR 01/00	01.1
*1004	MAR 01/00	01.1
*1005	MAR 01/00	01.1
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*1015	MAR 01/00	01.1
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*1021	MAR 01/00	01.1
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*1025	MAR 01/00	01.1
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TABLE OF CONTENTS

INTRODUCTION

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

This manual is divided into separate sections:

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

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

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

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

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

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

Verification:

Disassembly	JAN 21/83
Assembly	JAN 21/83

RUDDER CONTROL PEDAL/CRANK ASSEMBLY

DESCRIPTION AND OPERATION

1. Description

   A. The rudder control pedal/crank assembly is a component of the nose wheel steering, main gear braking and rudder steering systems. The assembly consists of pedals, rod assemblies, arm assemblies, and bellcrank assemblies.

2. Operation

   A. The rudder control pedal/crank assembly is used to position the rudder to control airplane yaw during flight.

   B. During ground operation, the pedals are used to apply the main landing gear brakes and to steer the nose wheel.

3. Leading Particulars (approximate)

   Length -- 6 inches
   Height -- 40 inches
   Width -- 20 inches
   Weight -- 19 pounds

DISASSEMBLY

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

1. Disassembly

A. For pedal/crank assembly P/N 253T3100-7, -8, -11 (IPL Fig. 1):

(1) Remove bolt (115), washer (120), nut (125) and spacer (155A), bushings (130, 135) and separate two opposite parts.

(2) Remove bolts (5, 75), washers (10, 80), nut (15, 85), bushings (20, 90) and rod assemblies (95).

NOTE: Refer to 27-00-11 for details of disassembly and repair of rod assembly (95).

(3) Remove nuts (25), washers (30), shafts (45) and pedals (65, 70) from arm assemblies (160).

NOTE: Do not remove retaining rings (50), bearings (35, 55) spacers (60), or washers (40) from pedals (65, 70) unless necessary for repair or replacement.

(4) Remove nuts (140) and bellcrank assemblies (215B thru 222) from terminal assemblies (180) of arm assemblies (160).

(5) Remove bearings (145) and spacers (150) from bellcrank assemblies (215B thru 222).

NOTE: Do not remove bearings (225) from bellcranks (230A thru 245) unless necessary for repair or replacement.

Do not disassemble arm assemblies (160) unless necessary for repair or replacement.

(6) Remove fasteners (100, 105, 110) from terminal assemblies (180).

B. For pedal/crank assembly P/N 253T3100-19, -20 (IPL Fig. 2):

(1) Remove bolts (10), washers (15), nut (20), bushings (25) and rod assemblies (90).

NOTE: Refer to 27-00-11 for details of disassembly and repair of rod assembly (80).

(2) Remove nuts (30), washers (35), shafts (50) and pedals (70, 75) from arm assemblies (92).

NOTE: Do not remove retaining rings (55), bearings (40, 60) spacers (65), or washers (45) from pedals (70, 75) unless necessary for repair or replacement.

(3) Remove nuts (85) and bellcrank assemblies (145, 150) from terminal assemblies (110) of arm assemblies (92).

(4) Remove bearings (87) and spacers (90) from bellcrank assemblies (145, 150).

NOTE: Do not remove bearings (155) from bellcranks (160, 165) necessary for repair or replacement.

Do not disassemble arm assemblies (92) unless necessary for repair or replacement.

CLEANING

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

2. Clean all teflon-sealed bearings (35, 55, 145, 165, 190, 225, IPL Fig. 1), (40, 60, 87, 95, 120, 155, IPL Fig. 2) per manufacturer's instructions.

CHECK

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

2. Do a magnetic particle check per SOPM 20-20-01 on these parts:

   A. For IPL Fig. 1:

      (1) Spacer (155A)

3. Do a penetrant check per SOPM 20-20-02 on these parts:

   A. For IPL Fig. 1:

      (1) Shaft (45)

      (2) Pedal (65, 70)

      (3) Spacer (150)

      (4) Terminal (195)

      (5) Fitting (200)

      (6) Tube (210)

      (7) Bellcrank (230B, 235B, 240, 245)

   B. For IPL Fig. 2:

      (1) Shaft (50)

      (2) Pedal (70, 75)

(3) Spacer (90)

(4) Fitting (130)

(5) Terminal (125)

(6) Tube (140)

(7) Bellcrank (160, 165)

REPAIR - GENERAL

1. Content

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

P/N	NAME	REPAIR
253T3111	ARM	1-1
253T3112	TERMINAL	2-1
253T3113	TUBE	3-1
253T3114	BELLCRANK	4-1
65B80361	PEDAL	5-1
69-26660	SHAFT	6-1
251N3065	SHAFT	7-1
- - -	MISC PARTS REFINISH	8-1
253T3120	BELLCRANK	9-1
69-26599	FITTING	10-1

2. Standard Practices

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

20-10-04 Grinding of Chrome Plated Parts
20-30-02 Stripping of Protective Finishes
20-41-01 Decoding Table for Boeing Finish Codes
20-41-02 Application of Chemical and Solvent Resistant Finishes
20-42-03 Hard Chrome Plating
20-42-04 Preparation of Aluminum Alloys for Electroplating
20-43-01 Chromic Acid Anodizing
20-50-03 Bearing Installation and Retention
20-50-12 Application of Adhesives

3. Materials

NOTE: Equivalent substitutes may be used.

A. Adhesive -- type 70 (Ref 20-50-12)

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

C. Paint -- Duranodic No. 313, Heath Tecna Corp, Heath Plating Division, 8202 S. 200th, Kent, WA 98031

—	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

ARM ASSEMBLY - REPAIR 1-1

253T3111-1

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

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

   A. Remove bearing (165) from terminal assembly (180).

      NOTE: Refer to REPAIR 2-1 for replacement of bearing (190).

   B. Remove parts consisting of spacer (170) and centering rings (175) from terminal assembly (180).

      NOTE: Spacer (170) and rings (175) are bonded together.

   C. If the bonds between spacer (170) and rings (175) are broken, cement rings (175) to spacer (170) with type 70 adhesive per 20-50-12.

   D. Install parts consisting of spacer (170) and rings (175) inside terminal assembly (180).

   E. Install new bearing (165) per 20-50-03.

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

   A. Remove bearing (95) from terminal assembly (110).

      NOTE: Refer to REPAIR 2-1 for replacement of bearing (120).

   B. Remove parts consisting of spacer (100) and centering rings (105) from terminal assembly (110).

      NOTE: Spacer (100) and rings (105) are bonded together.

   C. If the bonds between spacer (100) and rings (105) are broken, cement rings (105) to spacer (100) with type 70 adhesive per 20-50-12.

   D. Install parts consisting of spacer (100) and rings (105) inside terminal assembly (110).

   E. Install new bearing (95) per 20-50-03.

3. Terminal Assembly/Fitting Replacement (IPL Fig. 1, Fig. 601)

   A. Remove bolts (185) and rivets (205).

B. Freeze approximate areas where terminal assembly (180) and fitting (200) are bonded to tube (210).

C. Tap lightly to loosen terminal assembly (180) and fitting (200) from tube (210).

D. Clean existing adhesives from all faying surfaces.

E. Apply a coat of type 70 adhesive on all faying surfaces per 20-50-12.

F. Position tube (210), terminal assembly (180) and fitting (200) to dimensions shown (Fig. 601) using existing bolt or rivet holes.

G. If a new part (180, 200, 210) is being installed, position parts (180, 200, 210) and machine to dimensions shown (Fig. 601).

H. Install bolts (185) and rivets (205).

4. Terminal Assembly/Fitting Replacement (IPL Fig. 2, Fig. 601)

A. Remove bolts (115) and rivets (135).

B. Freeze approximate areas where terminal assembly (110) and fitting (130) are bonded to tube (140).

C. Tap lightly to loosen terminal assembly (110) and fitting (130) from tube (140).

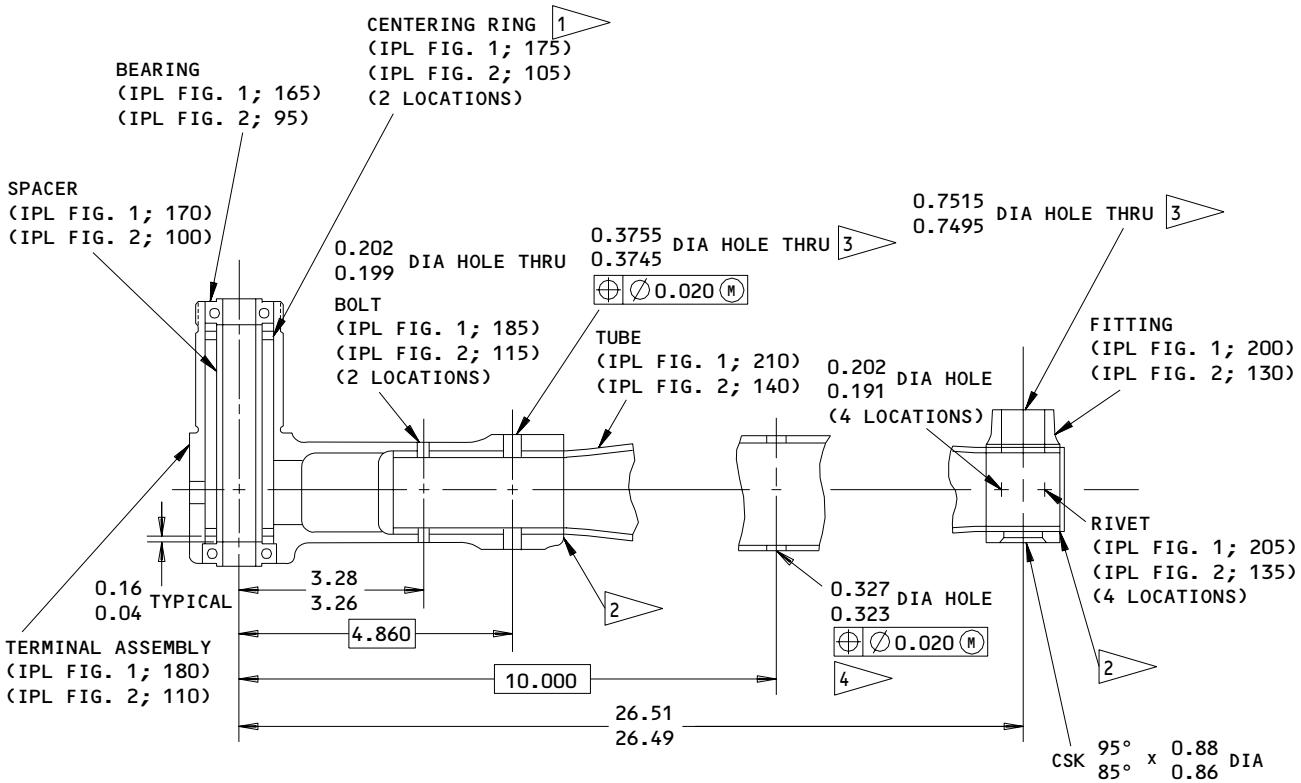
D. Clean existing adhesives from all faying surfaces.

E. Apply a coat of type 70 adhesive on all faying surfaces per 20-50-12.

F. Position tube (140), terminal assembly (110) and fitting (130) to dimensions shown (Fig. 601) using existing bolt or rivet holes.

G. If a new part (110, 130, 140) is being installed, position parts (110, 130, 140) and machine to dimensions shown (Fig. 601).

H. Install bolts (115) and rivets (135).



1 CEMENT RINGS (IPL FIG. 1; 175)(IPL FIG. 2; 105) TO SPACER (IPL FIG. 1; 170)(IPL FIG. 2; 100) WITH TYPE 70 ADHESIVE PER SOPM 20-50-12

2 BOND WITH TYPE 70 ADHESIVE PER SOPM 20-50-12

3 MANUALLY APPLY COLORED CHEMICAL COATING (F-17.10)

4 RIG PIN LOCATION

ALL DIMENSIONS ARE IN INCHES

253T3111-1
Arm Assembly - Replacement Details
Figure 601

13731

TERMINAL ASSEMBLY - REPAIR 2-1

253T3112-1

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

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

   A. Remove bearings (165, 190, IPL Fig. 1), (95, 120, IPL Fig. 2)

   B. Install bearings (165, 190, IPL Fig. 1), (90, 120, IPL Fig. 2) and roller swage groove type 1 per 20-50-03 except use BMS 10-11, type 1 wet primer.

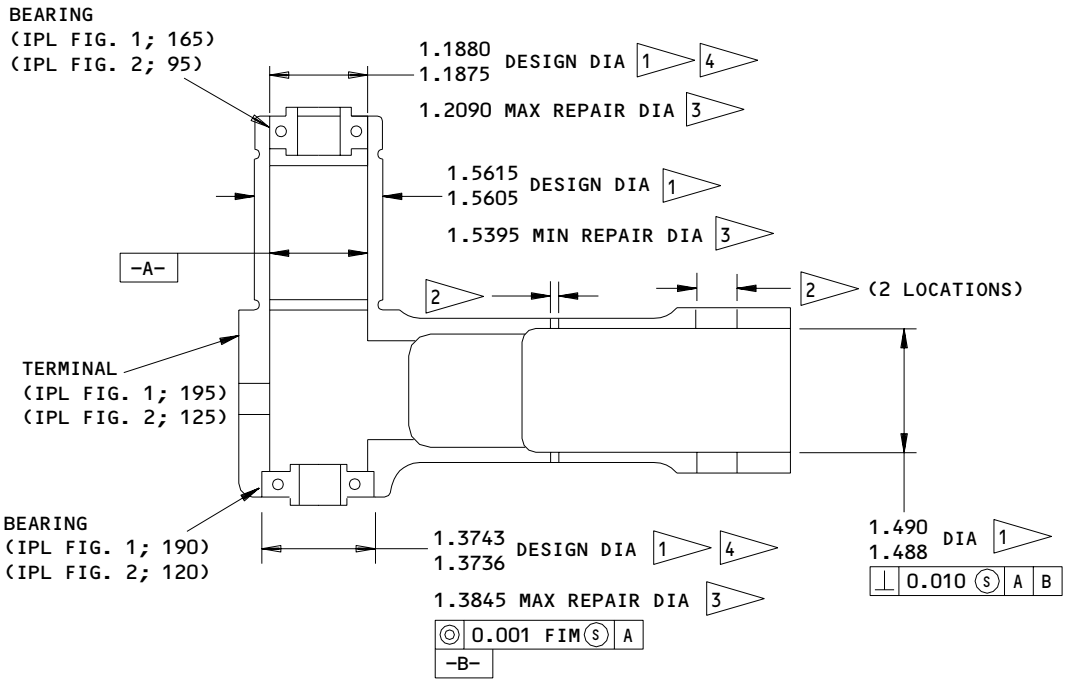
2. Bearing Seat Repair (IPL Fig. 1, IPL Fig. 2, Fig. 601)

   A. Remove bearings (165, 190, IPL Fig. 1), (95, 120, IPL Fig. 2)

   B. Machine bearing seat as required, within repair limit shown, to remove defects.

   C. Build up repaired area with chrome plate and grind to design dimensions and finish shown. Chrome plate must not exceed 0.005 inch after grinding for bearing (190, IPL Fig. 1), (120, IPL Fig. 2) seat and 0.010 inch after grinding for bearing (165, IPL Fig. 1), (95, IPL Fig. 2) seat.

   D. Install bearings (165, 190, IPL Fig. 1), (95, 120, IPL Fig. 2) and roller swage groove type 1 per 20-50-03 except use BMS 10-11, type 1 wet primer.



REFINISH

TERMINAL (IPL FIG. 1; 195)(IPL FIG. 2; 125) -- CHROMIC ACID ANODIZE (F-17.04). APPLY ONE COAT BMS 10-11, TYPE 1 PRIMER (F-20.02) ALL OVER EXCEPT AS NOTED.

1. NO PRIMER ON THIS SURFACE
2. REFER TO REPAIR 1-1 FOR REFINISH OF HOLE
3. BUILD UP WITH CHROME PLATE (F-15.03) AND GRIND TO DESIGN DIMENSIONS AND FINISH SHOWN.
4. INSIDE DIAMETER OF TERMINAL (IPL FIG. 1; 195) (IPL FIG. 2; 125)

REPAIR

REF 3

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.01-0.02 R

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

253T3112-1
Bearing Replacement and Terminal Repair
Figure 601

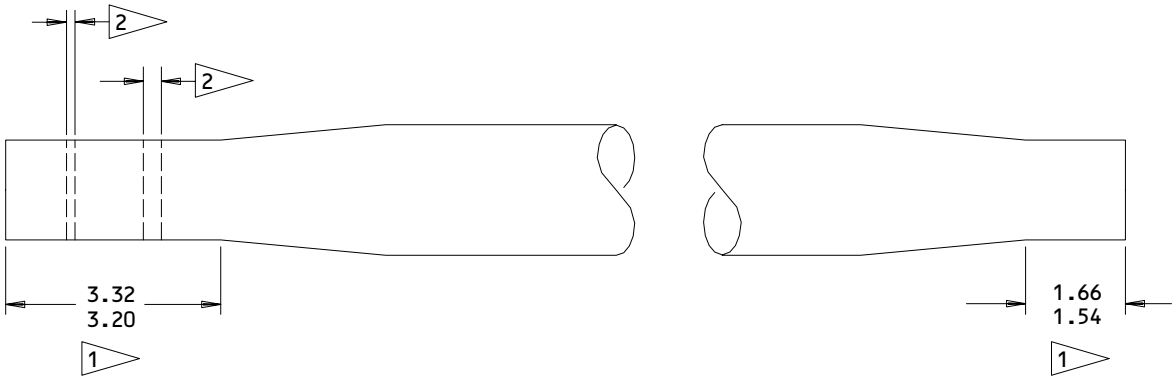
7842

TUBE - REPAIR 3-1

253T3113-1

1. Plating Repair

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



REFINISH

CHEMICAL TREAT AND APPLY
1 COAT BMS 10-11, TYPE 1
PRIMER (F-18.07) EXCEPT
AS NOTED.

1 OMIT PRIMER THIS SURFACE

2 REFER TO REPAIR 1-1 FOR REFINISH OF HOLE

MATERIAL: AL ALLOY

ALL DIMENSIONS IN INCHES

Tube Repair
Figure 601

7844

BELLCRANK ASSEMBLY - REPAIR 4-1

253T3114-11, -12

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

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

   A. Remove bearing (225).

   B. Install bearing (225) and roller swage groove type 1 per 20-50-03 except use BMS 10-11, type 1 wet primer.

2. Bearing Seat Repair (IPL Fig. 1, Fig. 601)

   A. Remove bearing (225).

   B. Machine bearing seat as required, within repair limit shown, to remove defects.

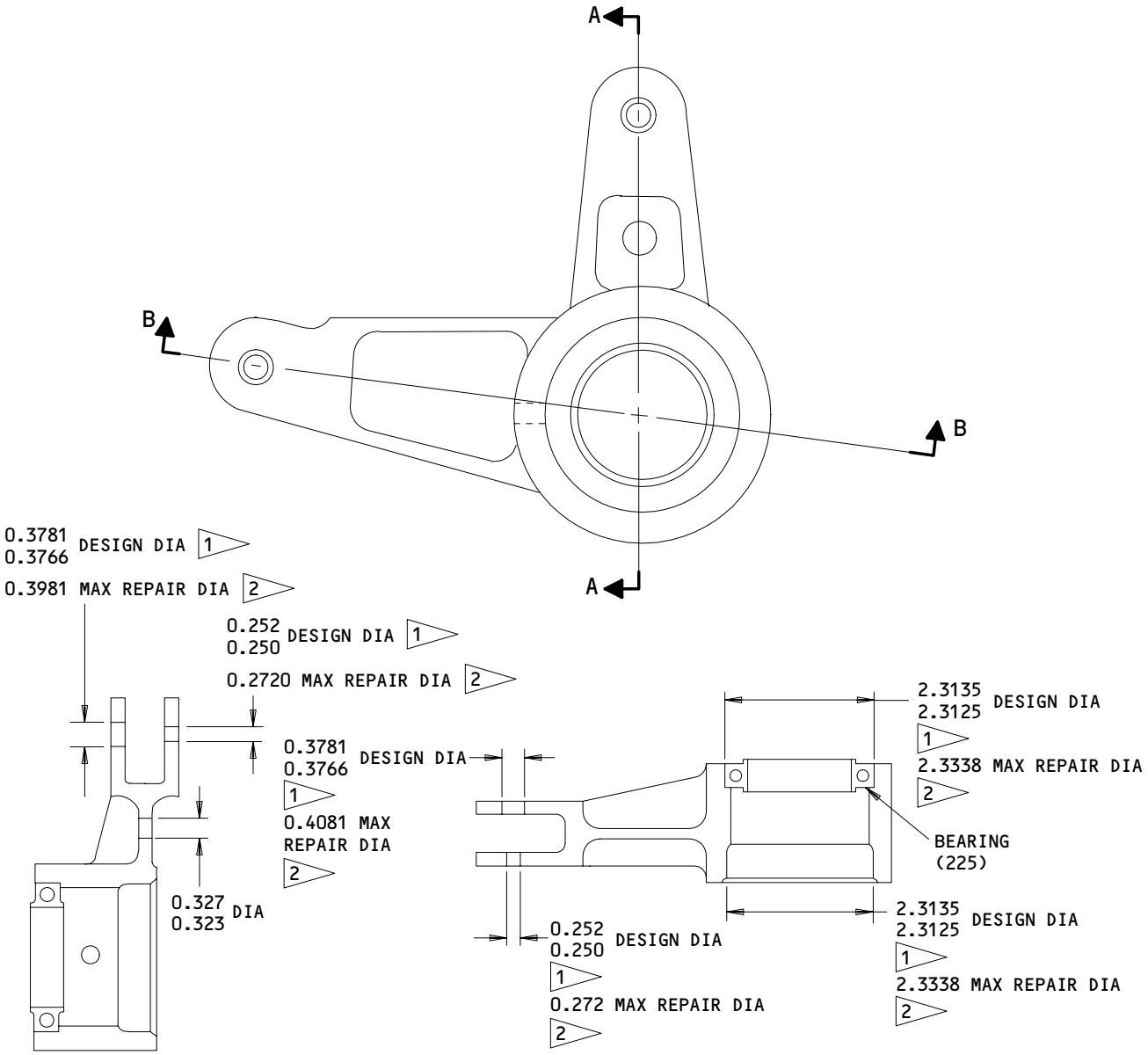
   C. Build up repaired area with chrome plate and grind to dimensions and finish shown. Chrome plate must not exceed 0.010 inch after grinding.

   D. Install bearing (225) and roller swage groove type 1 per 20-50-03 except use BMS 10-11, type 1 wet primer.

3. Bolt/Bushing Hole Repair (IPL Fig. 1, Fig. 601)

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

   B. Build up repaired area with chrome plate, and grind to dimensions and finish shown. Chrome plate must not exceed 0.015 inch after grinding for stop assembly 65B83674-1 installation, and 0.010 inch after grinding for bolt BACB30NF4-16/bushing BACB28Y4C025 installation.



REFINISH

BELLCRANK (230B,235B) -- CHROMIC ACID OR SULFURIC ACID ANODIZE (F-17.05) FOLLOWED BY ONE COAT OF BMS 10-11, TYPE 1 PRIMER (F-20.02) EXCEPT AS NOTED.

1 NO PRIMER ON THIS SURFACE

2 BUILD UP WITH CHROME PLATE (F-15.03) AND GRIND TO DESIGN DIMENSIONS AND FINISH SHOWN.

REPAIR

REF 2

125 ALL MACHINEED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.001-0.02 R

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 1

253T3114-11,-12
Bearing Replacement and Bellcrank Repair
Figure 601

PEDAL - REPAIR 5-1

65B80361-5, -6

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

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

   A. Remove ring (50, IPL Fig. 1), (55, IPL Fig. 2), bearings (35, 55, IPL Fig. 1), (40, 60, IPL Fig. 2), washer (40, IPL Fig. 1), (45, IPL Fig. 2)) and spacer (60, IPL Fig. 1), (65, IPL Fig. 2).

   B. Position spacer (60, IPL Fig. 1), (65, IPL Fig. 2) and washer (40, IPL Fig. 1), (45, IPL Fig. 2) inside pedal (65 or 70, IPL Fig. 1), (70 or 75, IPL Fig. 2).

   C. Install new bearings per 20-50-03.

   D. Install ring (50, IPL Fig. 1), (55, IPL Fig. 2).

2. Bearing Seat Repair (IPL Fig. 1, IPL Fig. 2, Fig. 601)

   A. Remove ring (50, IPL Fig. 1), (55, IPL Fig. 2), bearings (35, 55, IPL Fig. 1), (40, 60, IPL Fig. 2) washer (40, IPL Fig. 1), (45, IPL Fig. 2) and spacer (60, IPL Fig. 1), (65, IPL Fig. 2).

   B. Machine bearing seats as required, within repair limit shown, to remove defects.

   C. Build up repaired area with chrome plate, and grind to dimensions and finish shown. Chrome plate must not exceed 0.010 inch after grinding.

   D. Position spacer (60, IPL Fig. 1), (65, IPL Fig. 2) and washer (40 , IPL Fig. 1), (45, IPL Fig. 2) inside pedal (65 or 70, IPL Fig. 1) , (70 or 75, IPL Fig. 2).

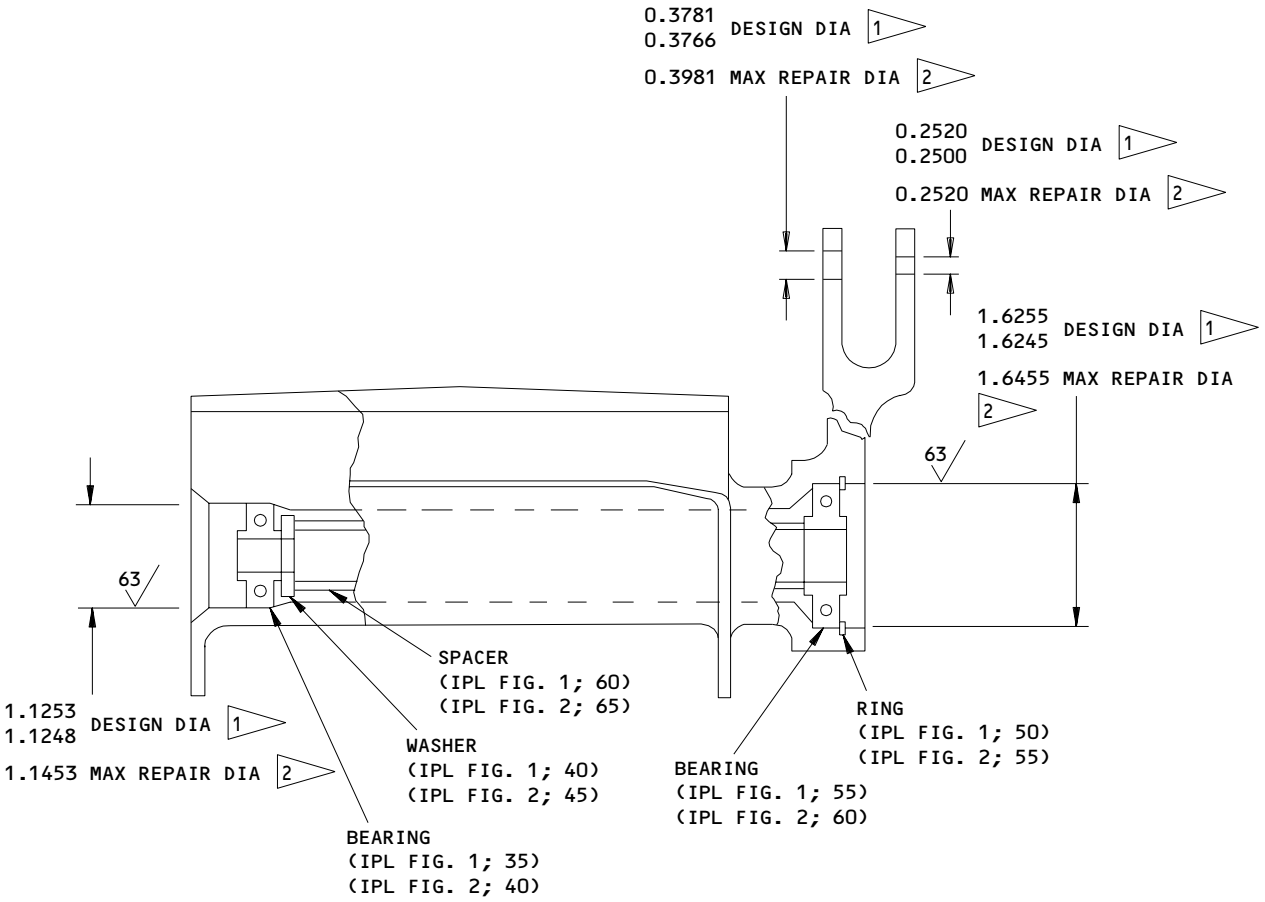
   E. Install bearings per 20-50-03.

   F. Install ring (50, IPL Fig. 1), (55, IPL Fig. 2).

3. Bolt/Bushing Hole Repair (IPL Fig. 1, IPL Fig. 2, Fig. 601)

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

B. Build up repaired area with chrome plate, and grind to dimensions and finish shown. Chrome plate must not exceed 0.010 inch after grinding.



NOTE: BEARINGS (IPL FIG. 1; 35,55) (IPL FIG. 2; 40,60) WASHER (IPL FIG. 1; 40) (IPL FIG. 2; 45) RING (IPL FIG. 1; 50) (IPL FIG. 2; 55) AND SPACER (IPL FIG. 1; 60) (IPL FIG. 2; 65) ARE NOT PART OF PEDAL (IPL FIG. 1; 65 OR 70) (IPL FIG. 2; 70 OR 75) REPLACEMENT OF PARTS (IPL FIG. 1; 35,40,50,55,60) (IPL FIG. 2; 40,45,55,60,65) SHOWN HERE TO FACILITATE REPAIR

REFINISH

PEDAL (IPL FIG. 1; 65,70) (IPL FIG. 2; 70,75) -- APPLY PAINT (DURANODIC NO. 313) ALL OVER UNLESS SHOWN DIFFERENTLY

1 NO PAINT ON THIS SURFACE

2 BUILD UP WITH CHROME PLATE (F-15.03) AND GRIND TO DESIGN DIMENSIONS AND FINISH SHOWN

REPAIR

REF 2

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

65B80361-5,-6
Pedal - Bearing Replacement and Repair
Figure 601

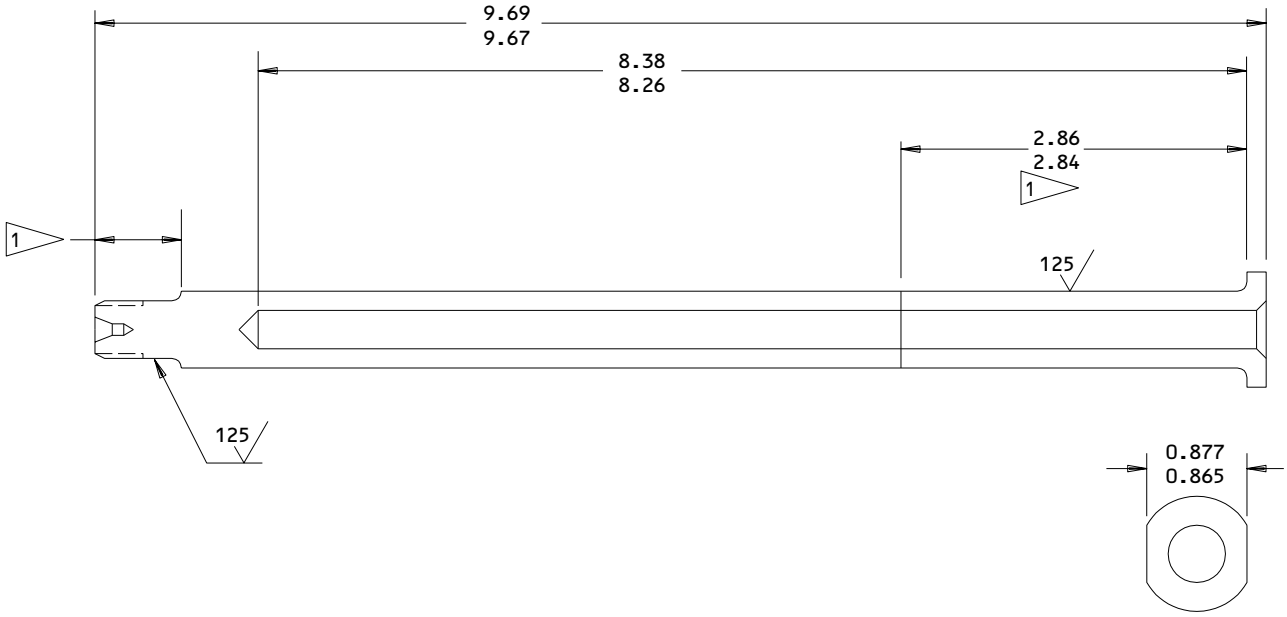
7836

SHAFT - REPAIR 6-1

69-26660-1

1. Plating Repair

NOTE: Repair consists of restoration of original finish. Refer to refinish instruction, Fig. 601 and to REPAIR-GENERAL for list of applicable standard practices.



REFINISH

CHROMIC ACID ANODIZE AND APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1 (SRF-2.19) ON EXTERIOR SURFACE ONLY EXCEPT AS NOTED. APPLY TWO COATS BMS 10-11, TYPE 1, PRIMER (SRF-12.206) ON INTERIOR SURFACE ONLY

1 NO PRIMER ON THIS SURFACE

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

69-26660-1
Shaft Repair
Figure 601

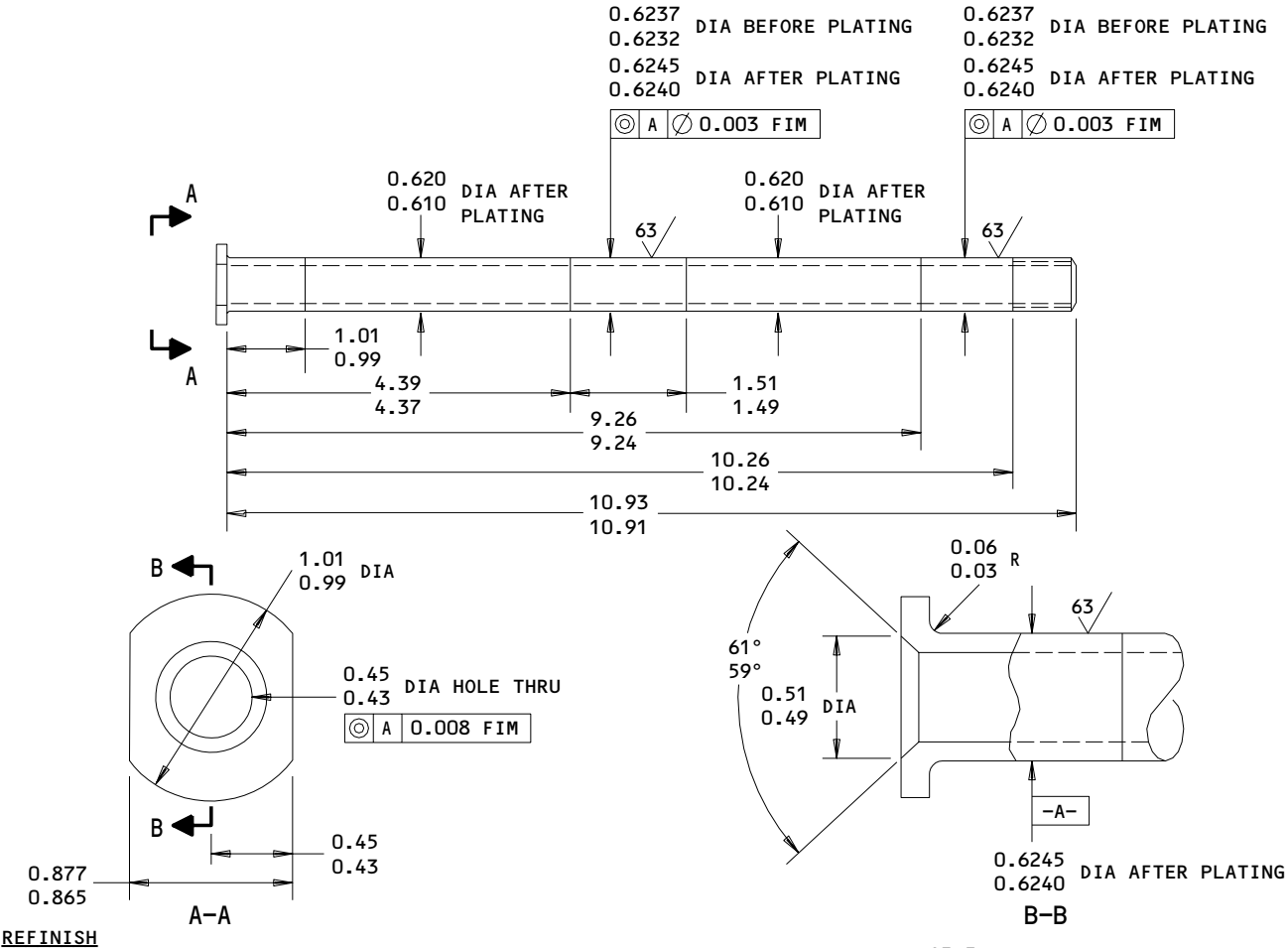
7838

SHAFT - REPAIR 7-1

251N3065-1

1. Plating Repair

NOTE: Repair consists of restoration of original finish. Refer to refinish instruction, Fig. 601 and to REPAIR-GENERAL for list of applicable standard practices.



REFINISH

CADMIUM PLATE OUTSIDE SURFACE TO MEET REQUIREMENTS QQ-P-416, TYPE 2, CLASS 2 PER SOPM 20-42-05

PASSIVATE INSIDE SURFACE PER SOPM 20-30-03 METHOD 2

MATERIAL: 15-5PH CRES
HT TR 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

251N3065-1
Shaft - Repair
Figure 601

119482

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
IPL Fig. 1		
Spacer (150)	Al alloy	Chemical treat and apply one coat BMS 10-11, type 1 primer (F-18.07) all over.
Spacer (155A)	Steel	Cadmium plate and apply one coat primer BMS 10-11, type 1 (F-16.01) all over except omit primer from bore. Dimensions after plating are 0.175-0.180 inch thickness and 0.625-0.630 inch diameter bore.
IPL Fig. 2		
Spacer (90)	Al alloy	Chemical treat and apply one coat BMS 10-11, type 1 primer (F-18.07) all over.

Refinish Details
Figure 601

BELLCRANK ASSEMBLY - REPAIR 9-1

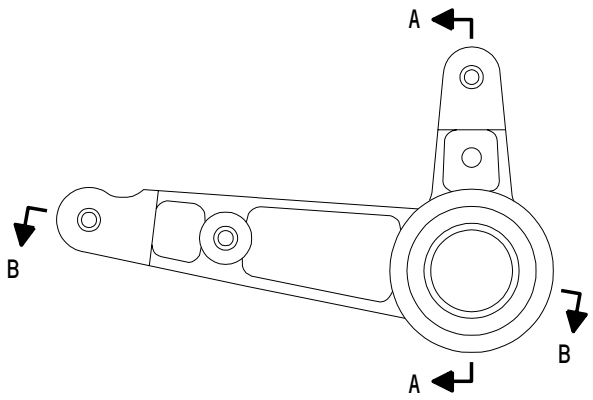
253T3120-1, -2

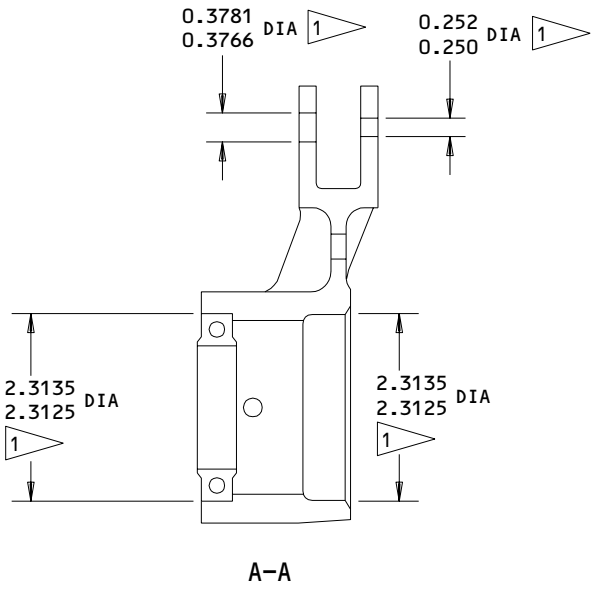
NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surfaces which may only require stripping and restoration of original finish, refer to Refinish instruction, Fig. 601.

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

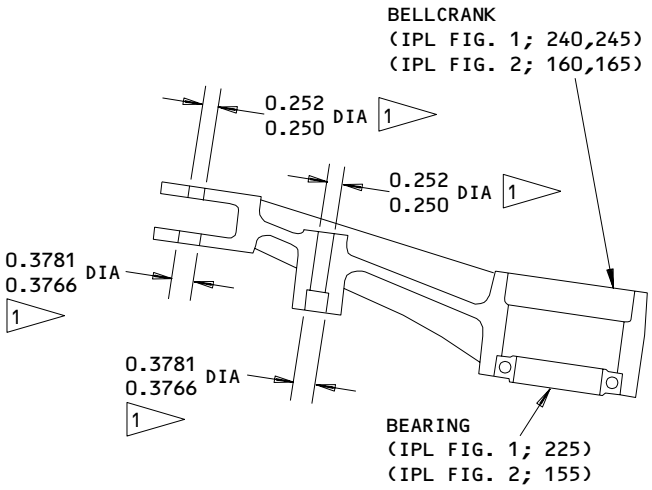
A. Remove bearing (225, IPL Fig. 1), (155, IPL Fig. 2).

B. Install bearing (225, IPL Fig. 1), (155, IPL Fig. 2)) and roller swage groove type 1 per 20-50-03 except use BMS 10-11, type 1 wet primer.





A–A



B–B

REFINISH

BELLCRANK (IPL FIG. 1; 240,245)
(IPL FIG. 2; 160,165) -- CHROMIC ACID OR
SULFURIC ACID ANODIZE (F-17.05) FOLLOWED
BY ONE COAT BMS 10-11, TYPE 1 PRIMER
(F-20.02) UNLESS SHOWN DIFFERENTLY

1 OMIT PRIMER THIS SURFACE

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

253T3120-1,-2
Bearing Replacement and Bellcrank Refinish
Figure 601

FITTING - REPAIR 10-1

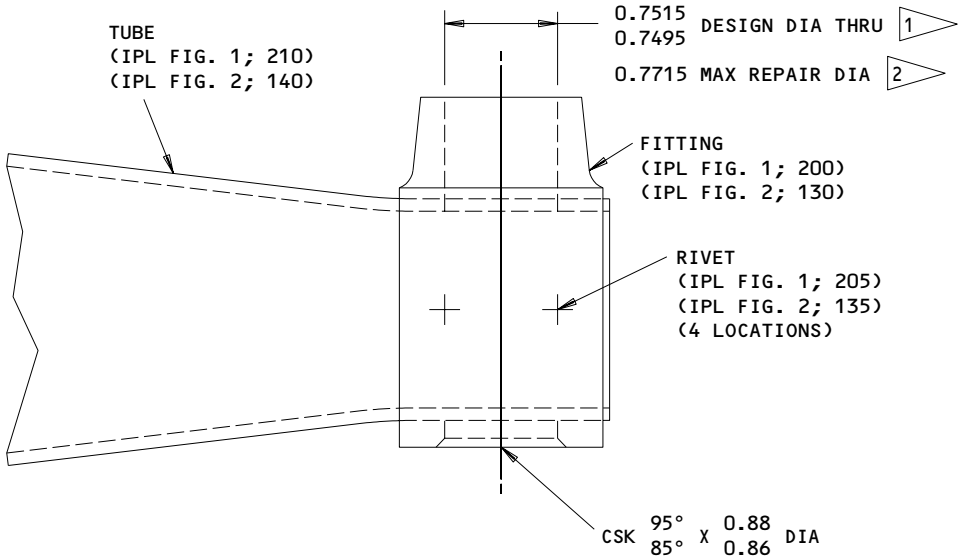
69-26599-1

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

1. Shaft Hole Repair (IPL Fig. 1, IPL Fig. 2, Fig. 601)

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

   B. Build up repaired area with chrome plate and grind to dimensions and finish shown. Chrome plate must not exceed 0.010 inch thickness after grinding.



REFINISH

FITTING (IPL FIG. 1; 200) (IPL FIG. 2; 130) -- CHROMIC ACID ANODIZE AND APPLY ONE COAT BMS 10-11, TYPE 1 PRIMER (SRF-2.19) ALL OVER EXCEPT OMIT PRIMER FROM 1.488 INCH DIAMETER HOLE

1 NO PRIMER ON THIS SURFACE

2 BUILD UP WITH CHROME PLATE (F-15.03) AND GRIND TO DESIGN DIMENSIONS AND FINISH SHOWN

REPAIR

REF 2

125 ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.01-0.02 R

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

69-26599-1
Fitting Refinish and Repair
Figure 601

794601

ASSEMBLY

1. Materials

NOTE: Equivalent substitutes may be used.

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

B. Sealing Compound -- BMS 5-16 (Ref 20-60-04)

2. Assembly

A. For pedal/crank assembly P/N 253T3100-7, -8, -11 (IPL Fig. 1):

(1) Install units consisting of pedals (65, 70), bearings (35, 55), washers (40), spacers (60) and rings (50) on fittings (200) of arm assemblies (160) with shafts (45), washers (30), and nuts (25). Tighten nuts (25) to 20-50 lb-in. in excess of nuts self-locking friction torque.

(2) Install plug of BMS 5-16 hole filling compound on ends of shafts (45).

(3) Install spacers (150) and bearings (145) per 20-50-03 inside bellcrank assemblies (215 thru 222).

(4) Install parts assembled in paragraph 2.A.3 and nuts (140) to terminal assemblies (180) of arm assemblies (160). Tighten nuts (140) to 200 lb-in. in excess of nut self-locking friction torque.

(5) Install bolt (115), bushings (130, 135), spacer (155A), washers (120) and nut (125) to arm assemblies (160). Do not tighten nut.

NOTE: Fasteners (115, 120, 125) will be removed for installation in next higher assembly.

(6) Install rod assemblies (95) between pedals (65, 70) and bellcrank assemblies (215B, 220B) with bolts (5, 75), bushings (20, 90), washers (10, 80) and nuts (15, 85).

(7) Install fasteners (100, 105, 110) to terminal assemblies (180). Do not tighten nuts.

NOTE: Fasteners (100, 105, 110) will be used on next higher assembly.

(8) Prepare and store component in accordance with standard industry practices.

B. For pedal/crank assembly P/N 253T3100-19, 20 (IPL Fig. 2):

(1) Install units consisting of pedals (70, 75), bearings (40, 60), washers (45), spacers (65) and rings (55) on fittings (130) of arm assemblies (92) with shafts (50), washers (35), and nuts (35). Tighten nuts (35) to 20-50 lb-in. in excess of nuts self-locking friction torque.

(2) Install plug of BMS 5-16 hole filling compound on ends of shafts (50).

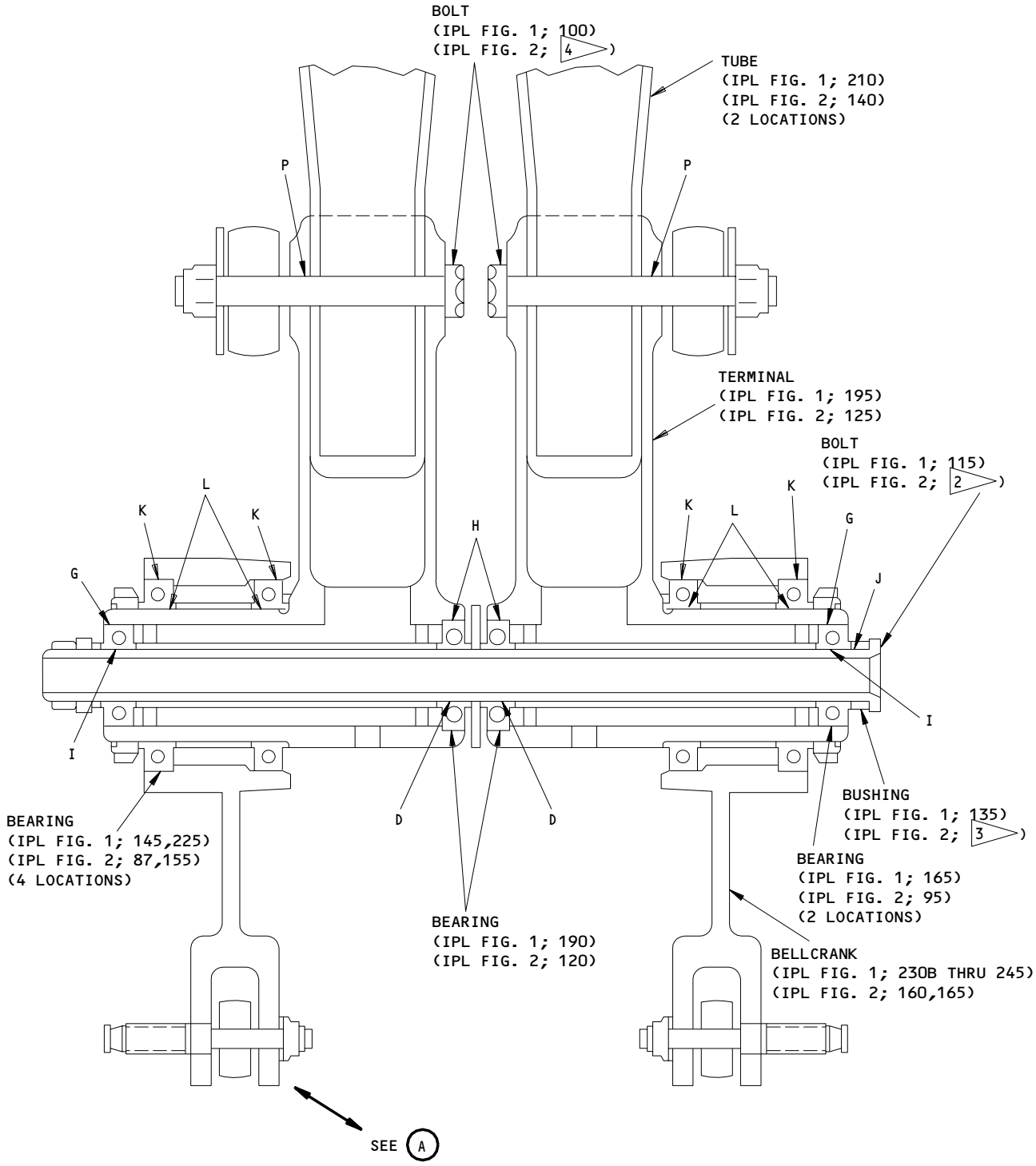
(3) Install spacers (90) and bearings (87) per 20-50-03 inside bellcrank assemblies (145, 150).

(4) Install parts assembled in paragraph 2.B.3 and nuts (85) to terminal assemblies (110) of arm assemblies (92). Tighten nuts (85) to 200 pound-inches in excess of nut self-locking friction torque.

(5) Install rod assemblies (80) between pedals (70, 75) and bellcrank asemblies (145, 150) with bolts (10), bushings (25), washers (15) and nuts (20).

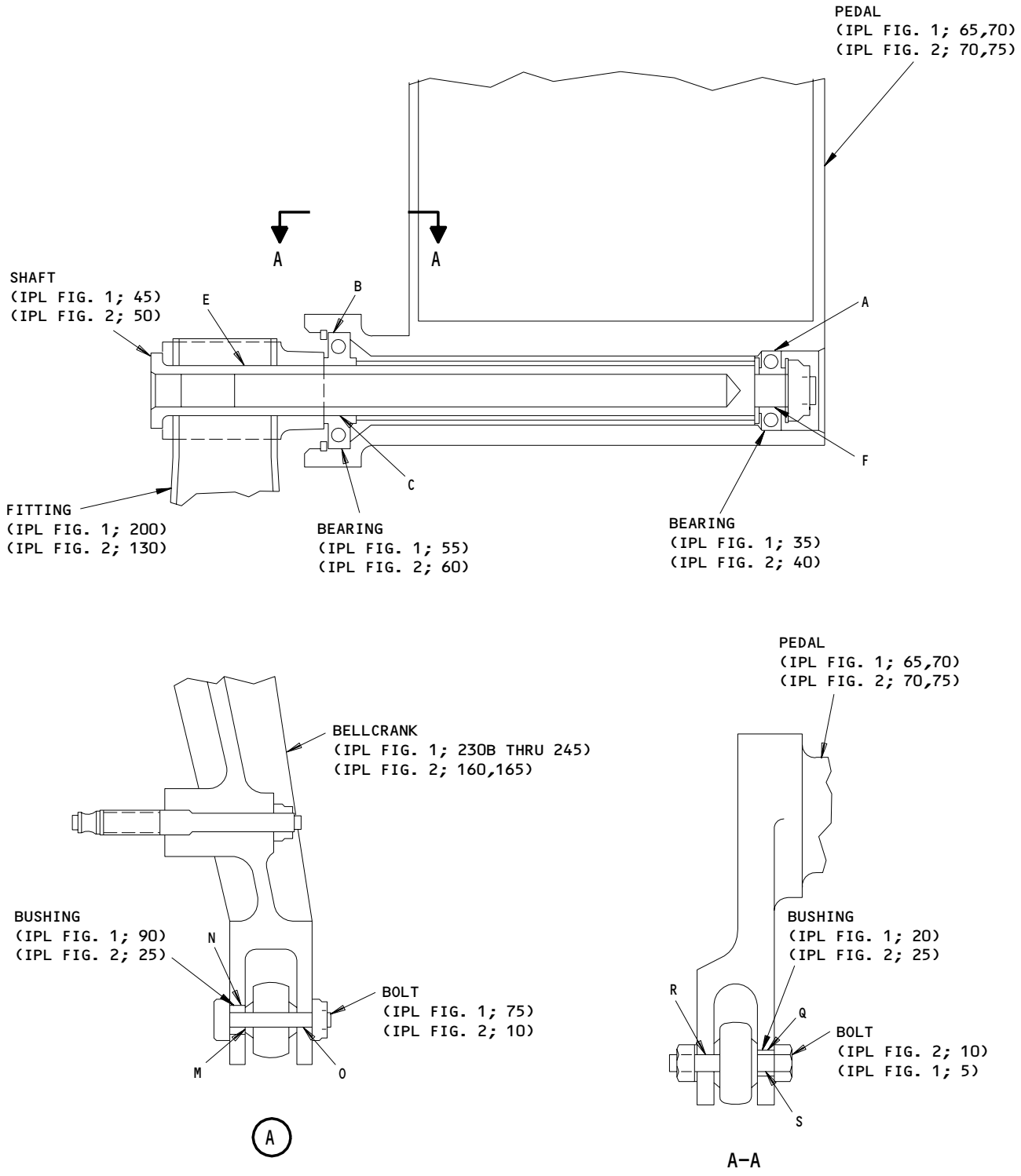
(6) Prepare and store component in accordance with standard industry practices.

FITS AND CLEARANCES



Fits and Clearances
Figure 801 (Sheet 1)

13718



Fits and Clearances
Figure 801 (Sheet 2)

737274

Ref Letter Fig.801	Mating Item No. IPL Fig.1	Design Dimension				Service Wear Limit		
		Dimension		Assembly Clearance 1		Dimension		Maximum Clearance
		Min	Max	Min	Max	Min	Max	
A	ID 65,70 OD 35	1.1248 1.1245	1.1253 1.1250	-0.0002	0.0008	1.1225	1.1283	0.0058
B	ID 65,70 OD 55	1.6248 1.6245	1.6253 1.6250	-0.0002	0.0008	1.6225	1.6283	0.0058
C	ID 55 OD 45	0.7495 0.7490	0.7500 0.7495	0.0000	0.0010	0.7460	0.7520	0.0060
D	ID 190 OD 115	0.6245 0.6230	0.6250 0.6240	0.0005	0.0020	0.6220	0.6280	0.0060
E	ID 200 OD 45	0.7495 0.7490	0.7515 0.7495	0.0000	0.0025	0.7470	0.7530	0.0060
F	ID 35 OD 45	0.4995 0.4990	0.5000 0.4995	0.0000	0.0010	0.4960	0.5020	0.0060
G	ID 195 OD 165	1.1875 1.1870	1.1880 1.1875	0.0000	0.0010	1.1860	1.8900	0.0040
H	ID 195 OD 190	1.3736 1.3745	1.3743 1.3750	-0.0014	-0.0002	1.3745	1.3745	0.0000
I	ID 165 OD 115	0.6245 0.6230	0.6250 0.6240	0.0005	0.0020	0.6220	0.6280	0.0060
J	ID 135 OD 115	0.6250 0.6230	0.6265 0.6240	0.0010	0.0035	0.6220	0.6275	0.0055
K	ID 230B,235B, 240,245 OD 145,225	2.3125 2.3115	2.3135 2.3125	0.0000	0.0020	2.3110	2.3150	0.0040
L	ID 145,225 OD 195	1.5620 1.5605	1.5630 1.5615	0.0005	0.0025	1.5595	1.5635	0.0040
M	ID 90 OD 75	0.2500 0.2485	0.2515 0.2495	0.0005	0.0030	0.2475	0.2525	0.0050

Fits and Clearances
Figure 801 (Sheet 3)

738761

Ref Letter Fig.801	Mating Item No. IPL Fig.1	Design Dimension				Service Wear Limit		
		Dimension		Assembly Clearance 1		Dimension		Maximum Clearance
		Min	Max	Min	Max	Min	Max	
N	ID 230B,235B, 240,245	0.3766	0.3781	0.0005	0.0025		0.3790	0.004
	OD 90	0.3756	0.3761			0.3750		
O	ID 230B,235B, 240,245	0.2500	0.2520	0.0005	0.0035		0.2535	0.0060
	OD 75	0.2485	0.2495			0.2475		
P	ID 195	0.3745	0.3755	0.0000	0.0020		0.3795	0.0080
	OD 100	0.3735	0.3745			0.3715		
Q	ID 65,70	0.3766	0.3781	0.0005	0.0025		0.3806	0.0060
	OD 20	0.3756	0.3761			0.3746		
R	ID 65,70	0.2500	0.2520	0.0005	0.0035		0.2535	0.0060
	OD 5	0.2485	0.2495			0.2475		
S	ID 20	0.2500	0.2515	0.0005	0.0030		0.2530	0.0060
	OD 5	0.2485	0.2495			0.2470		

Fits and Clearances
Figure 801 (Sheet 4)

Ref Letter Fig.801	Mating Item No. IPL Fig.2	Design Dimension				Service Wear Limit		
		Dimension		Assembly Clearance 1		Dimension		Maximum Clearance
		Min	Max	Min	Max	Min	Max	
A	ID 70,75 OD 40	1.1248 1.1245	1.1253 1.1250	-0.0002	0.0008	1.1225	1.1283	0.0058
B	ID 70,75 OD 60	1.6248 1.6245	1.6253 1.6250	-0.0002	0.0008	1.6225	1.6283	0.0058
C	ID 60 OD 50	0.7495 0.7490	0.7500 0.7495	0.0000	0.0010	0.7460	0.7520	0.0060
D	ID 120 OD 2	0.6245 0.6230	0.6250 0.6240	0.0005	0.0020	0.6220	0.6280	0.0060
E	ID 130 OD 50	0.7495 0.7490	0.7515 0.7495	0.0000	0.0025	0.7470	0.7530	0.0060
F	ID 40 OD 50	0.4995 0.4990	0.5000 0.4995	0.0000	0.0010	0.4960	0.5020	0.0060
G	ID 125 OD 95	1.1875 1.1870	1.1880 1.1875	0.0000	0.0010	1.1860	1.8900	0.0040
H	ID 125 OD 120	1.3736 1.3745	1.3743 1.3750	-0.0014	-0.0002	1.3745	1.3745	0.0000
I	ID 95 OD 2	0.6245 0.6230	0.6250 0.6240	0.0005	0.0020	0.6220	0.6280	0.0060
J	ID 3 OD 2	0.6250 0.6230	0.6265 0.6240	0.0010	0.0035	0.6220	0.6275	0.0055
K	ID 160,165 OD 155	2.3125 2.3115	2.3135 2.3125	0.0000	0.0020	2.3110	2.3150	0.0040
L	ID 87 OD 125	1.5620 1.5605	1.5630 1.5615	0.0005	0.0025	1.5595	1.5635	0.0040
M	ID 25 OD 10	0.2500 0.2485	0.2515 0.2495	0.0005	0.0030	0.2475	0.2525	0.0050

Fits and Clearances
Figure 801 (Sheet 5)

K83713

Ref Letter Fig.801	Mating Item No. IPL Fig.2	Design Dimension				Service Wear Limit		
		Dimension		Assembly Clearance 1		Dimension		Maximum Clearance
		Min	Max	Min	Max	Min	Max	
N	ID 160,165	0.3766	0.3781	0.0005	0.0025		0.3790	0.004
	OD 25	0.3756	0.3761			0.3750		
O	ID 160,165	0.2500	0.2520	0.0005	0.0035		0.2535	0.0060
	OD 10	0.2485	0.2495			0.2475		
P	ID 125	0.3745	0.3755	0.0000	0.0020		0.3795	0.0080
	OD 4	0.3735	0.3745			0.3715		
Q	ID 70,75	0.3766	0.3781	0.0005	0.0025		0.3806	0.0060
	OD 25	0.3756	0.3761			0.3746		
R	ID 70,75	0.2500	0.2520	0.0005	0.0035		0.2535	0.0060
	OD 10	0.2485	0.2495			0.2475		
S	ID 25	0.2500	0.2515	0.0005	0.0030		0.2530	0.0060
	OD 10	0.2485	0.2495			0.2470		

1 NEGATIVE VALUES DENOTE INTERFERENCE FIT

2 BOLT P/N 251N3065-1 IS USED ON PEDAL INSTALLATION P/N 253T3100-17,-18

3 BUSHING P/N BACB28Y10CO26 IS USED ON PEDAL INSTALLATION P/N 253T3100-17,-18

4 BOLT P/N BACB30NM6DK47 IS USED ON PEDAL INSTALLATION P/N 253T3100-17,-18

ALL DIMENSIONS ARE IN INCHES

Fits and Clearances
Figure 801 (Sheet 6)

K83798

REF IPL		NAME	TORQUE*	
FIG. NO.	ITEM NO.		POUND-INCHES	POUND-FEET
1	25	NUT	25-50 IN EXCESS OF SELF-LOCKING FRICTION TORQUE	
1	140	NUT	200 IN EXCESS OF SELF-LOCKING FRICTION TORQUE	
2	30	NUT	25-50 IN EXCESS OF SELF-LOCKING FRICTION TORQUE	
2	85	NUT	200 IN EXCESS OF SELF-LOCKING FRICTION TORQUE	

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

Torque Table
Figure 802

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

K8455 RHP BEARINGS PLC RHP AEROSPACE
OLDENDS LANE
STONEHOUSE GL10 3RM UK

08524 DEUTSCH FASTENER CORP SEE CODE V97928

15653 KAYNAR TECHNOLOGY KAYNAR DIV
800 SOUTH STATE COLLEGE BLVD PO BOX 3001
FULLERTON, CALIFORNIA 92634-3001

21335 TORRINGTON CO FAFNIR BEARING DIV
59 FIELD STREET
TORRINGTON, CONNECTICUT 06790-4942

21760 SCHATZ MANUFACTURING CO
FAIRVIEW AVENUE PO BOX 1191
POUGHKEEPSIE, NEW YORK 12601

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

40920 MPB MINIATURE PRECISION BEARING DIV
PRECISION PARK PO BOX 547
KEENE, NEW HAMPSHIRE 03431

43991 FAG BEARING INCORPORATED
118 HAMILTON AVENUE
STAMFORD, CONNECTICUT 06904

56878 SPS TECHNOLOGIES INC AEROSPACE AND INDUSTRIAL PRODUCTS DIV
HIGHLAND AVENUE
JENKINTOWN, PENNSYLVANIA 19046

VENDORS

72962 HARVARD INDUSTRIES INC
3 WERNER WAY SUITE 210
LEBANON, NEW JERSEY 08833

83086 NEW HAMPSHIRE BALL BEARINGS, INCORPORATED
ROUTE 202
PETERBOROUGH, NEW HAMPSHIRE 03458

85495 BRILES MFG CO SEE OMARK INDUSTRIES
PRECISION FASTENING SUB OF OMARK IND INC SEE DEUTSCH
FASTENER CORP V08524

97928 DEUTSCH FASTENER CORP
3969 PARAMONT BOULEVARD
LAKEWOOD, CALIFORNIA 90712-4193

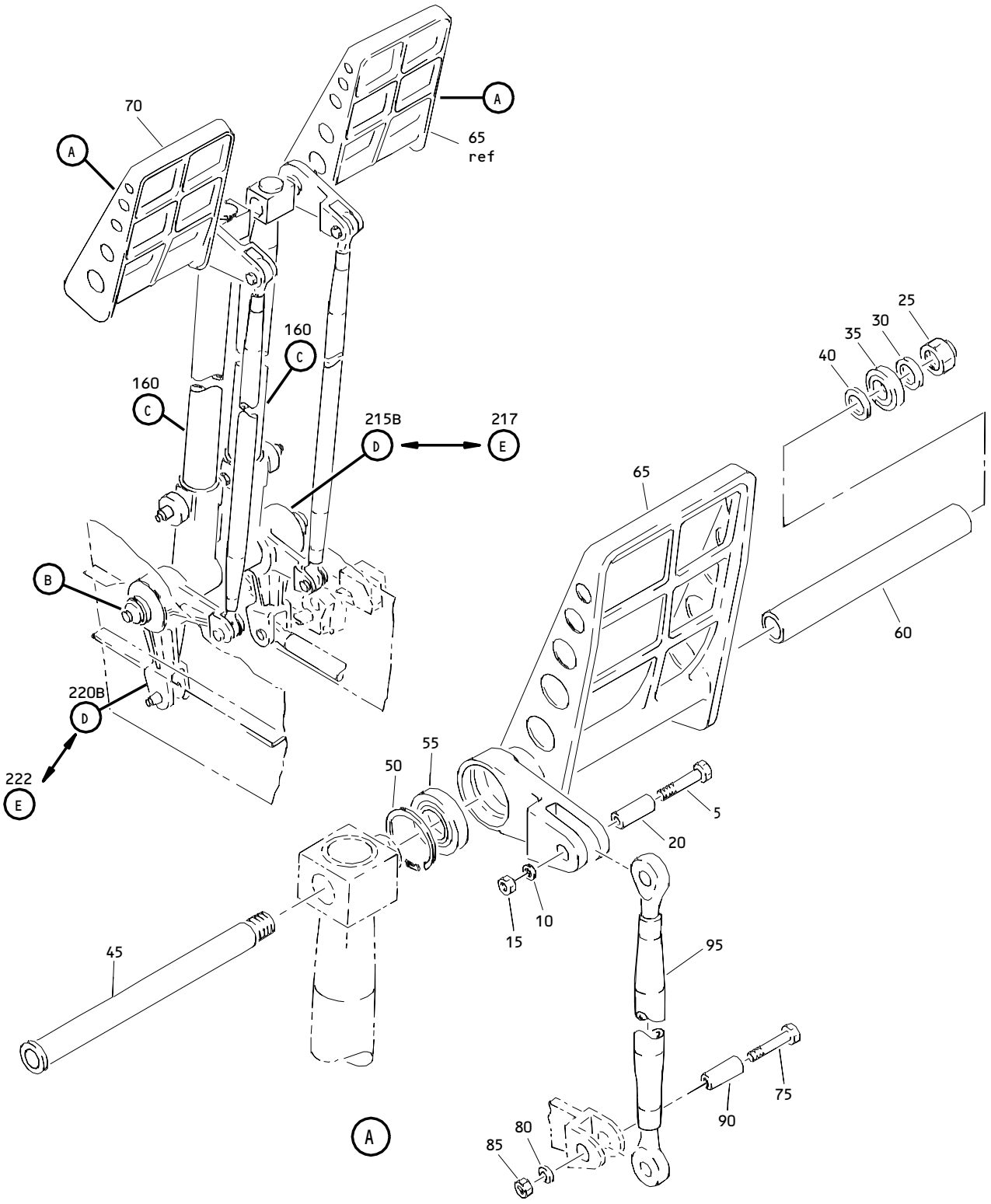
PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
AN960-816		1	40	2
		2	45	1
AN960-816L		1	30	2
		2	35	1
AN960PD416		1	10	2
		2	15	2
AN960PD416L		1	80	2
AN960XC1016L		1	120	1
AN970-6		1	105A	2
BACB10BG5S		1	165	2
		2	95	1
BACB10BW25		1	145	2
		1	225	2
		2	87	1
		2	155	1
BACB10BX10		1	190	2
		2	120	1
BACB10BX12		1	55	2
		2	60	1
BACB10BX8		1	35	2
		2	40	1
BACB28Y10C011		1	130	1
BACB28Y10C026		1	135	1
BACB28Y4C025		1	90	2
BACB28Y4C028		1	20	2
		2	25	2
BACB30LB6		1	185	4
		2	115	2
BACB30NF10-164		1	115	1
BACB30NF4-16		1	75	2
BACB30NR4K17		1	5	2
		1	75A	2
		2	10	2

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
BACB30NR6K47		1	100	2
BACN10GR19		1	140	2
		2	85	1
BACN10GR19P		1	140A	2
		2	85A	1
BACN10JC10		1	125	1
BACN10JC4		1	15	2
		1	85	2
BACN10JC6		1	110	2
BACN10JC8		1	25	2
BACN10JC8		2	30	1
BACN10RF25		1	140B	2
		2	85B	1
BACR15BB6D		1	205	8
		2	135	4
BMN4122AD3-10		1	125	1
BMN4122AD3-8		1	25	2
		2	30	1
BMN4122A8		2	30	1
CE310E		1	165	2
		2	95	1
CS208E		2	40	1
CS210E		1	190	2
		2	120	1
CS212E		1	55	2
		2	60	1
H10-10BAC		1	125	1
H10-8BAC		1	25	2
		2	30	1
KF12ALY196		1	55	2
		2	60	1
KP10A		1	190	2
		2	120	1
KP10AFS428		1	190	2
		2	120	1
KP10AG27		1	190	2
		2	120	1
KP10ALY196		1	190	2
		2	120	1
KP10ASD610		1	190	2
		2	120	1
KP10A2TS		1	190	2
		2	120	1

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
KP12A		1	55	2
		2	60	1
KP12AFS428		1	55	2
		2	60	1
KP12AG27		1	55	2
		2	60	1
KP12ASD610		1	55	2
		2	60	1
KP12A2TS		1	55	2
		2	60	1
KP25B		1	145	2
KP25B		1	225	2
		2	87	1
		2	155	1
KP25BFS428		1	145	2
		1	225	2
		2	87	1
		2	155	1
KP25BG27		1	145	2
		1	225	2
		2	87	1
		2	155	1
KP25BLY196		1	145	2
		1	225	2
		2	87	1
		2	155	1
KP25BSD610		1	145	2
		1	225	2
		2	87	1
		2	155	1
KP25B2TS		1	145	2
		1	225	2
		2	87	1
		2	155	1
KP8A		1	35	2
		2	40	1
KP8AFS428		1	35	2
		2	40	1
KP8AG27		1	35	2
		2	40	1
KP8A2TS		1	35	2
		2	40	1
KP8BLY196		1	35	2
		2	40	1
LLKP10A		1	190	2
		2	120	1

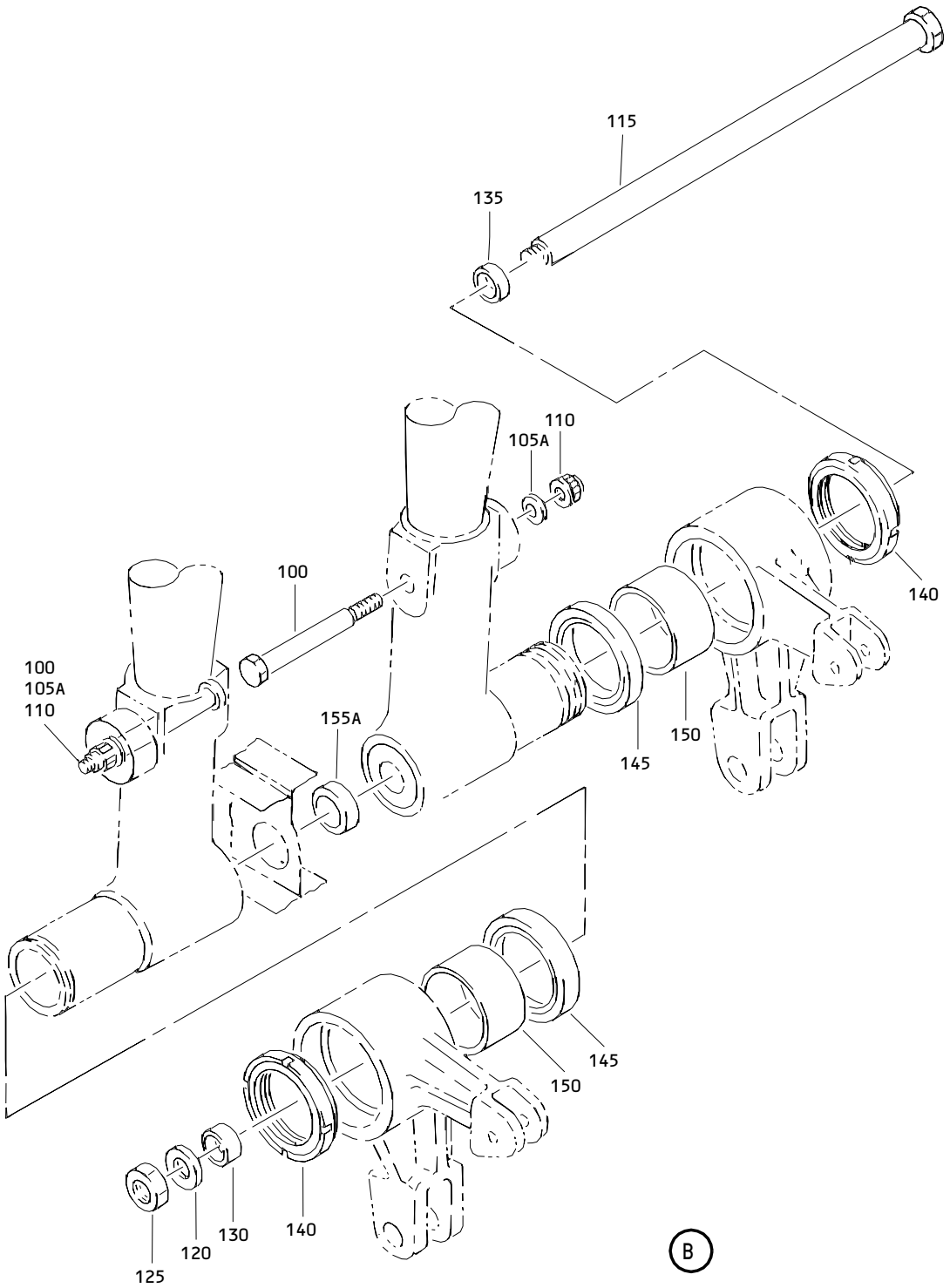
PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
LLKP12A		1	55	2
		2	60	1
LLKP25B		1	145	2
		1	225	2
		2	87	1
		2	155	1
LLKP8A		1	35	2
		2	40	1
LLP10K		1	165	2
LLP10K		2	95	1
MS16625-1162		1	50	2
		2	55	1
MS21042L4		1	15A	2
		1	85A	2
		2	20	2
MS21042L6		1	110A	2
NAS43DD12-376		1	60	2
		2	65	1
NAS43HT10-254		1	170	2
		2	100	1
P10K		1	165	2
		2	95	1
P10KE6531		1	165	2
		2	95	1
P10KFS428		1	165	2
		2	95	1
P10KG20		1	165	2
		2	95	1
P10KSD610		1	165	2
		2	95	1
P10KT1C1-01		1	165	2
		2	95	1
RMLH9074-10		1	125	1
RMLH9074-8		1	25	2
		2	30	1
251N3065-1		1	115A	1
251T0100-133		1	95	2
		2	80	1
253T1132-7		1	155A	1
253T3100-11		1	1F	RF
253T3100-19		1	1G	RF
		2	1A	RF
253T3100-20		1	3	RF
		2	5	RF
253T3100-7		1	1D	RF

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
253T3111-1		1	160	2
		2	92	1
253T3112-1		1	180	2
		2	110	1
253T3112-2		1	195	2
		2	125	1
253T3113-1		1	210	2
		2	140	1
253T3114-11		1	215B	1
253T3114-12		1	220B	1
253T3114-13		1	230B	1
253T3114-14		1	235B	1
253T3117-1		1	150	2
		2	90	1
253T3120-1		1	217	1
		2	145	1
253T3120-2		1	222	1
		2	150	1
253T3120-3		1	240	1
		2	160	1
253T3120-4		1	245	1
		2	165	1
3-84406-1		1	175	4
		2	105	2
48FT1018		1	125	1
48FT820		2	30	1
65B80361-5		1	65	1
		2	70	1
65B80361-6		1	70	1
		2	75	1
69-26599-1		1	200	2
		2	130	1
69-26660-1		1	45	2
		2	50	1



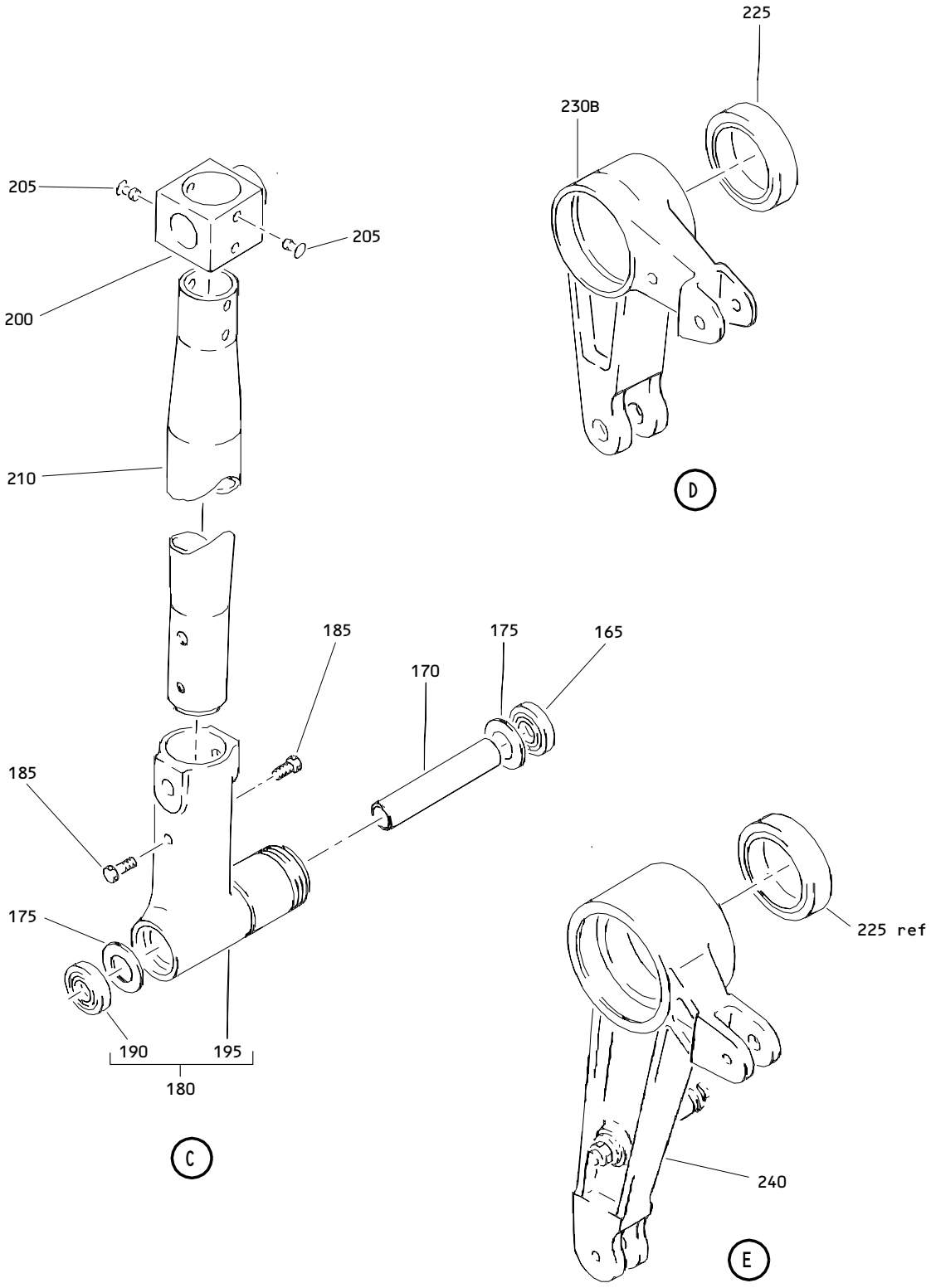
Rudder Control Pedal/Crank Assembly
Figure 1 (Sheet 1)

T54991



Rudder Control Pedal/Crank Assembly
Figure 1 (Sheet 2)

T54992



Rudder Control Pedal/Crank Assembly
Figure 1 (Sheet 3)

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-1	253T3100-3		DELETED		
-1A	253T3100-4		DELETED		
-1B	253T3100-5		DELETED		
-1C	253T3100-6		DELETED		
-1D	253T3100-7		CRANK ASSY-RUD CONT PEDAL	A	RF
-1E	253T3100-8		CRANK ASSY-RUD CONT PEDAL	B	RF
-1F	253T3100-11		CRANK ASSY-RUD CONT PEDAL	C	RF
-1G	253T3100-19		CRANK ASSY-RUD CONT PEDAL (FOR DETAILS SEE FIG. 2)	D	RF
-3	253T3100-20		CRANK ASSY-RUD CONT PEDAL (FOR DETAILS SEE FIG. 2)	E	RF
5	BACB30NR4K17		.BOLT	A-C	2
-5A	BACB30LJ4-17		.BOLTS (REPL BY ITEM 5)	AB	2
10	AN960PD416		.WASHER	A-C	2
15	BACN10JC4		.NUT	A,B	2
-15A	MS21042L4		.NUT	C	2
20	BACB28Y4C028		.BUSHING	A-C	2
25	H10-8BAC		.NUT- (V15653) (SPEC BACN10JC8) (OPT RMLH9074-8 (V72962)) (OPT BMN4122AD3-8 (V08524)) (OPT RMLH9074-8 (V72962)) (OPT BMN4122AD3-8 (V97928))	A-C	2
30	AN960-816L		.WASHER	A-C	2
35	KP8AFS428		.BEARING- (V21335) (SPEC BACB10BX8) (OPT KP8A2TS (V43991)) (OPT LLKP8A (V38443)) (OPT KP8AG27 (V30163)) (OPT KP8A (V38443)) (OPT KP8BLY196 (V40920)) (OPT KP8BSD610 (V83086))	A-C	2

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
40	AN960-816		.WASHER	A-C	2
45	69-26660-1		.SHAFT	A-C	2
50	MS16625-1162		.RING	A-C	2
55	KP12AFS428		.BEARING- (V21335) (SPEC BACB10BX12) (OPT KP12A2TS (V43991)) (OPT LLKP12A (V38443)) (OPT KP12AG27 (V30163)) (OPT KP12A (V38443)) (OPT KF12ALY196 (V40920)) (OPT KP12ASD610 (V83086)) (OPT CS212E (VK8455))	A-C	2
60	NAS43DD12-376		.SPACER	A-C	2
65	65B80361-5		.PEDAL	A-C	1
70	65B80361-6		.PEDAL	A-C	1
75	BACB30NF4-16		.BOLT	A,B	2
-75A	BACB30NR4K17		.BOLT	C	2
80	AN960PD416L		.WASHER	A-C	2
85	BACN10JC4		.NUT	A,B	2
-85A	MS21042L4		.NUT	C	2
90	BACB28Y4C025		.BUSHING	AB	2
-90A	BACB28Y4C028		.BUSHING	C	2
95	251T0100-133		.ROD ASSY- (REF CMM 27-00-11)	A-C	2

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	100	BACB30NR6K47		.BOLT	A-C	2
	105	AN960PD616		DELETED		
	105A	AN970-6		.WASHER	A-C	2
	110	BACN10JC6		.NUT	A,B	2
	-110A	MS21042L6		.NUT	C	2
	115	BACB30NF10-164		.BOLT- (OPT ITEM 115A)	A	1
	-115A	251N3065-1		.SHAFT-SPRT (OPT ITEM 115)	A	1
	-115B	BACB30NF10-164		DELETED		
	-115C	251N3065-1		.SHAFT-SPRT	B,C	1
	120	AN960XC1016L		.WASHER	A-C	1
R	125	BMN4122AD3-10		.NUT- (V97928) (SPEC BACN10JC10) (OPT H10-10BAC (V15653)) (OPT RMLH9074-10 (V72962)) (OPT 48FT1018 (V56878)) (OPT RMLH9074-10 (V72962))	A-C	1
	130	BACB28Y10C011		.BUSHING	A-C	1
	135	BACB28Y10C026		.BUSHING	A-C	1
	140	BACN10GR19		.NUT- (V72962) (SPEC BACN10GR19) (OPT ITEMS 140A, 140B)	A-C	2

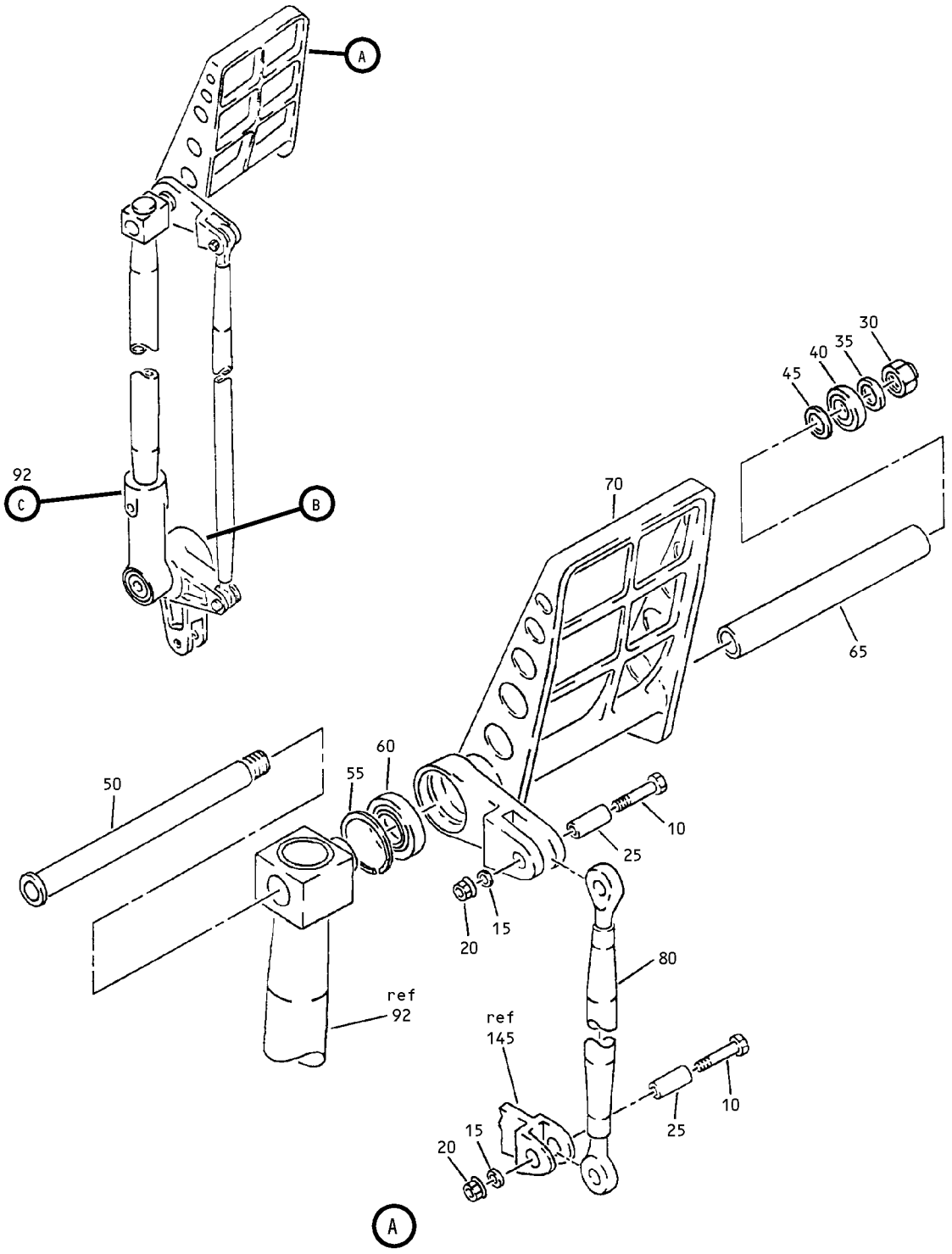
FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-140A	BACN10GR19P		.NUT- (OPT ITEMS 140, 140B)	A-C	2
-140B	BACN10RF25		.NUT- (OPT ITEMS 140, 140A)	A-C	2
145	KP25B		.BEARING- (V38443) (SPEC BACB10BW25) (OPT KP25B2TS (V43991)) (OPT LLKP25B (V38443)) (OPT KP25BG27 (V30163)) (OPT KP25BFS428 (V21335)) (OPT KP25BLY196 (V40920)) (OPT KP25BSD610 (V83086))	A-C	2
150	253T3117-1		.SPACER- (MFD FROM TUBING AL 2024-T3 PER W-W-T-700/3 F-18.07 1.75 IN. OD .093 IN. 1.04 IN. LG)	A-C	2
155	BACB28Y10C018		DELETED		
155A	253T1132-7		.SPACER	A-C	1
160	253T3111-1		.ARM ASSY	A-C	2

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
165	P10K		..BEARING- (V38443) (SPEC BACB10BG5S) (OPT P10KG20 (V38443)) (OPT P10KE6531 (V21335)) (OPT P10KFS428 (V21335)) (OPT P10KTT (V43991)) (OPT P10KT1C1-01 (V21760)) (OPT LLP10K (V38443)) (OPT CE310E (VK8455)) (OPT P10KSD610 (V83086))	A-C	1
170	NAS43HT10-254		..SPACER	A-C	1
175	3-84406-1		..RING-CENTERING	A-C	2
180	253T3112-1		..TERMINAL ASSY ATTACHING PARTS	A-C	1
185	BACB30LB6		..BOLT- (SIZE DETERMINE ON INST) -------*-------	A-C	2
190	KP10AFS428		...BEARING- (V21335) (SPEC BACB10BX10) (OPT KP10A2TS (V43991)) (OPT LLKP10A (V38443)) (OPT KP10AG27 (V30163)) (OPT KP10A (V38443)) (OPT KP10ALY196 (V40920)) (OPT KP10ASD610 (V83086)) (OPT CS210E (VK8455))	A-C	1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
195	253T3112-2		...TERMINAL	A-C	1
200	69-26599-1		..FITTING	A-C	1
			ATTACHING PARTS		
205	BACR15BB6D		..RIVET-	A-C	4
			(SIZE DETERMINE ON INST)		
			-------*-------		
210	253T3113-1		..TUBE	A-C	1
215	253T3114-1		DELETED		
215A	253T3114-7		DELETED		
215B	253T3114-11		.BELLCRANK ASSY	A,B	1
217	253T3120-1		.BELLCRANK ASSY	C	1
220	253T3114-2		DELETED		
220A	253T3114-8		DELETED		
220B	253T3114-12		.BELLCRANK ASSY	A,B	1
222	253T3120-2		.BELLCRANK ASSY	C	1
225	KP25B		..BEARING-	A-C	1
			(V38443)		
			(SPEC BACB10BW25)		
			(OPT KP25B2TS		
			(V43991))		
			(OPT LLKP25B		
			(V38443))		
			(OPT KP25BG27		
			(V30163))		
			(OPT KP25BFS428		
			(V21335))		
			(OPT KP25BLY196		
			(V40920))		
			(OPT KP25BSD610		
			(V83086))		

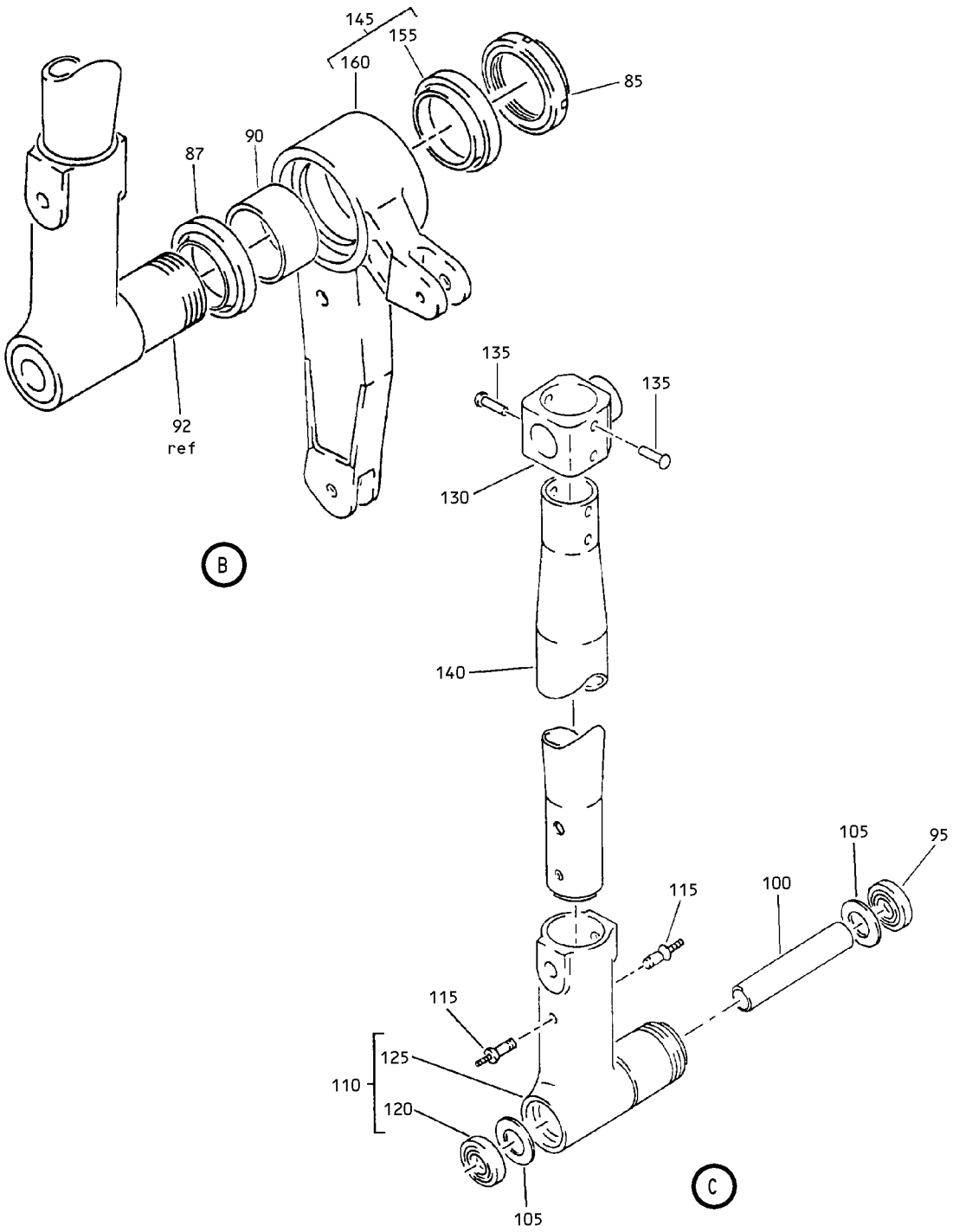
FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
230	253T3114-3		DELETED		
230A	253T3114-9		DELETED		
230B	253T3114-13		..BELLCRANK- (USED ON ITEM 215B)	A,B	1
-235	253T3114-4		DELETED		
-235A	253T3114-10		DELETED		
-235B	253T3114-14		..BELLCRANK- (USED ON ITEM 220B)	A,B	1
240	253T3120-3		..BELLCRANK- (USED ON ITEM 217)	C	1
-245	253T3120-4		..BELLCRANK- (USED ON ITEM 222)	C	1

- Item Not Illustrated



Rudder Control Pedal/Crank Assembly
Figure 2 (Sheet 1)

K84053



Rudder Control Pedal/Crank Assembly
Figure 2 (Sheet 2)

K84359

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
02-					
-1A	253T3100-19		CRANK ASSY-RUD CONT PEDAL	D	RF
-5	253T3100-20		CRANK ASSY-RUD CONT PEDAL	E	RF
10	BACB30NR4K17		.BOLT	D,E	2
15	AN960PD416		.WASHER	D,E	2
20	MS21042L4		.NUT	D,E	2
25	BACB28Y4C028		.BUSHING	D,E	2
30	H10-8BAC		.NUT-	D,E	1
			(V15653)		
			(SPEC BACN10JC8)		
			(OPT BMN4122A8		
			(V85495))		
			(OPT RMLH9074-8		
			(V72962))		
			(OPT 48FT820		
			(V56878))		
			(OPT BMN4122AD3-8		
			(V97928))		
35	AN960-816L		.WASHER	D,E	1
40	KP8AFS428		.BEARING-	D,E	1
			(V21335)		
			(SPEC BACB10BX8)		
			(OPT KP8A2TS		
			(V43991))		
			(OPT LLKP8A		
			(V38443))		
			(OPT KP8AG27		
			(V30163))		
			(OPT KP8A		
			(V38443))		
			(OPT KP8BSD610		
			(V83086))		
			(OPT CS208E		
			(VK8455))		

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
02-					
45	AN960-816		.WASHER	D,E	1
50	69-26660-1		.SHAFT	D,E	1
55	MS16625-1162		.RING	D,E	1
60	KP12AFS428		.BEARING- (V21335) (SPEC BACB10BX12) (OPT KP12A2TS (V43991)) (OPT LLKP12A (V38443)) (OPT KP12AG27 (V30163)) (OPT KP12A (V38443)) (OPT KF12ALY196 (V40920)) (OPT KP12ASD610 (V83086)) (OPT CS212E (VK8455))	D,E	1
65	NAS43DD12-376		.SPACER	D,E	1
70	65B80361-5		.PEDAL	D	1
-75	65B80361-6		.PEDAL	E	1
80	251T0100-133		.ROD ASSY- (REF CMM 27-00-11)	D,E	1
85	BACN10GR19		.NUT- (V72962) (SPEC BACN10GR19) (OPT ITEMS 85A, 85B)	D,E	1
-85A	BACN10GR19P		.NUT- (OPT ITEMS 85, 85B)	D,E	1
-85B	BACN10RF25		.NUT- (OPT ITEMS 85, 85A)		1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
02-					
87	KP25B		.BEARING- (V38443) (SPEC BACB10BW25) (OPT KP25B2TS (V43991)) (OPT LLKP25B (V38443)) (OPT KP25BG27 (V30163)) (OPT KP25BFS428 (V21335)) (OPT KP25BLY196 (V40920)) (OPT KP25BSD610 (V83086))	D,E	1
90	253T3117-1		.SPACER- (MFD FROM TUBING AL 2024-T3 PER W-W-T-700/3 F-18.07 1.75 IN. OD .093 IN. 1.04 IN. LG)	D,E	1
92	253T3111-1		.ARM ASSY	D,E	1
95	P10K		..BEARING- (V38443) (SPEC BACB10BG5S) (OPT P10KE6531 (V21335)) (OPT P10KFS428 (V21335)) (OPT P10KTT (V43991)) (OPT P10KT1C1-01 (V21760)) (OPT P10KG20 (V38443)) (OPT LLP10K (V38443)) (OPT CE310E (VK8455))	D,E	1
100	NAS43HT10-254		..SPACER	D,E	1
105	3-84406-1		..RING-CENTERING	D,E	2
110	253T3112-1		..TERMINAL ASSY ATTACHING PARTS	D,E	1
115	BACB30LB6		..BOLT- (SIZE DETERMINE ON INST) -------*-------	D,E	2

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
02-					
120	KP10AFS428		...BEARING- (V21335) (SPEC BACB10BX10) (OPT KP10A2TS (V43991)) (OPT LLKP10A (V38443)) (OPT KP10AG27 (V30163)) (OPT KP10A (V38443)) (OPT KP10ALY196 (V40920)) (OPT KP10ASD610 (V83086)) (OPT CS210E (VK8455))	D,E	1
125	253T3112-2		...TERMINAL	D,E	1
130	69-26599-1		..FITTING ATTACHING PARTS	D,E	1
135	BACR15BB6D		..RIVET- (SIZE DETERMINE ON INST) -------*-------	D,E	4
140	253T3113-1		..TUBE	D,E	1
145	253T3120-1		.BELLCRANK ASSY	D	1
-150	253T3120-2		.BELLCRANK ASSY	E	1
155	KP25B		..BEARING- (V38443) (SPEC BACB10BW25) (OPT KP25B2TS (V43991)) (OPT LLKP25B (V38443)) (OPT KP25BG27 (V30163)) (OPT KP25BFS428 (V21335)) (OPT KP25BLY196 (V40920)) (OPT KP25BSD610 (V83086))	D,E	1
160	253T3120-3		..BELLCRANK	D	1
-165	253T3120-4		..BELLCRANK	E	1

- Item Not Illustrated