TO: ALL HOLDERS OF MAIN LANDING GEAR OPERATED SEQUENCE VALVE AND CAM BOX ASSEMBLY COMPONENT MAINTENANCE MANUAL 32-32-43

REVISION NO. 5 DATED JUL 01/99

HIGHLIGHTS

All data that was in CMM 32-32-41 is now included in this manual, 32-32-43. 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 valve assemblies 273T1400-9, -10 with cam boxes
1	273T1401-5, -6 with covers and brackets for a better
REPAIR 2-1	fit.
601	
1002,1004-1007,	
1009-1011,1013-1019	
REPAIR-GEN	Added clarifications and updated callouts.
601-602	
REPAIR 1-1	
601	
REPAIR 2-1	
601	
REPAIR 3-1	
601	
REPAIR 4-1	
601	
REPAIR 5-1	
601	
REPAIR 6-1	
601	
REPAIR 7-1	
601	
REPAIR 8-1	
601	

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
REPAIR 9-1	HIGHLIGHT CONTINUED FROM PREVIOUS PAGE
601	
REPAIR 10-1	
601	
1013-1014	

MAIN LANDING GEAR OPERATED SEQUENCE VALVE ASSEMBLY CAM BOX ASSEMBLY

PART NUMBERS 273T1400-3,-4,-7 THRU -10 273T1401-1 THRU -6

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

43932

COMPONENT
MAINTENANCE MANUAL

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

BOEING
COMPONENT
MAINTENANCE MANUAL

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
767-32-11		PRR B11061	JAN 10/84

PAGE	DATE	CODE
32-32-43		
TITLE PAGE		
*1	JUL 01/99	01.1
2	BLANK	
REVISION RECORD		
1	JUL 10/83	01.1
2	BLANK	
TR & SB RECORD		
1	JAN 10/84	01.1
2	BLANK	
LIST OF EFFECTIVE PAGES		
*1	JUL 01/99	01
THRU LAST PAGE		
CONTENTS		
1	JUL 10/83	01.1
2	BLANK	
INTRODUCTION		
1	JAN 10/84	01.1
2	BLANK	
DESCRIPTION & OPERATION		
1	JUL 10/83	01.1
2	BLANK	
DISASSEMBLY		
301	JUL 10/83	01.1
302	JUL 10/83	01.1
CLEANING		
401	JAN 10/84	01.1
402	BLANK	
CHECK		
501	JAN 10/84	01.1
502	BLANK	

PAGE	DATE	CODE
REPAIR-GENERAL		
*601	JUL 01/99	01.1
*602	JUL 01/99	01.1
REPAIR 1-1		
*601	JUL 01/99	01.1
602	JAN 10/84	01.1
REPAIR 2-1		
*601	JUL 01/99	01.1
602	BLANK	
REPAIR 3-1		
*601	JUL 01/99	01.1
602	JAN 10/84	01.1
REPAIR 4-1		
*601	JUL 01/99	01.1
602	JAN 10/84	01.1
REPAIR 5-1		
*601	JUL 01/99	01.1
602	JAN 10/84	01.1
REPAIR 6-1		
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REPAIR 7-1		
*601	JUL 01/99	01.1
602	BLANK	
REPAIR 8-1		
*601	JUL 01/99	01.1
602	BLANK	
REPAIR 9-1		
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602	BLANK	

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PAGE	DATE	CODE
REPAIR 10-1		
*601	JUL 01/99	01.1
602	BLANK	
ASSEMBLY		
701	OCT 01/91	01.1
702	OCT 01/91	01.101
703	OCT 01/91	01.1
704	JUL 10/83	01.1
705	JUL 10/83	01.1
706	BLANK	
FITS AND CLEARANCES		
801	JAN 10/84	01.1
802	JAN 10/85	01.1
803	JAN 10/84	01.1
804	BLANK	
ILLUSTRATED PARTS LIST		
1001	JUL 10/83	01.1
*1002	JUL 01/99	01.1
*1003	JUL 01/99	01.1
*1004	JUL 01/99	01.1
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*1019	JUL 01/99	01.1
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PAGE	DATE	CODE

* = REVISED, ADDED OR DELETED

BOEING
COMPONENT
MAINTENANCE MANUAL

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 Positioning 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: Verified 04-21-83
Assembly: Verified 04-21-83

MLG OPERATED SEQUENCE VALVE ASSEMBLY

DESCRIPTION AND OPERATION

1. The sequence valve assy consists of a valve, a crank assy, a turnbuckle assy and a cam box assy which comprises a 3-stage profile cam and an arm assy. When an input rotates the cam, the arm assy sends one of three outputs to the valve. The valve supplies hydraulic fluid pressure to the gear door actuator.

2. Leading Particulars (approximate)

   Length -- 22 inches
   Width -- 8 inches
   Height -- 11 inches
   Weight -- 8.7 dry
             8.9 wet

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. Parts Replacement

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

   A. Packings (85, 95, IPL FIg. 1)

2. Disassembly

   A. Remove bolt (10, IPL Fig. 1), washers (20), nut (25), bushing (30) and turnbuckle assy (35) from crank assy (60).

      NOTE: Do not disassemble turnbuckle assy (35) unless necessary for repair or replacement.

   B. Remove bolt (15), washer (20), nut (25) and crank assy (60) from cam box assy (140 or 145).

      NOTE: Do not remove bushings (65, 70) from crank assy (60) unless necessary for repair or replacement.

   C. Remove attaching parts (15 thru 25 IPL Fig. 2), and lube cover (10) from cam box assy.

   D. Remove nut (105, IPL Fig. 2), washers (100), bolt (95) and bushing (140) from link assy (120).

   E. Remove lockwires from bolts (100, IPL Fig. 1). Remove bolts (100), washers (105) and separate valve (110) from cam box assy (140).

   F. Loosen nut (90, IPL Fig. 2) and remove bearing (110) from valve (110, IPL Fig. 1).

   G. Remove unions (80, IPL Fig. 1), reducers (90) and packings (85, 95) from valve (110). Refer to manufacturer's instruction for detail of overhaul procedures of valve.

   H. Remove bolts (120, IPL Fig. 1), washers (125) and brackets (135) from cam box assy (140).

I. Remove attaching parts (40 thru 60, IPL Fig. 2) and cover assy (30 or 35) from housing assy (205 or 210).

NOTE: Do not remove inserts (65) or bushings (70, 75) from cover assy (30 or 35) unless necessary for repair or replacement.

J. Remove parts consisting of link asy (120), arm assy (165 or 170) and cam (195) from housing assy (205 or 210, IPL Fig. 2).

NOTE: Do not remove dowel pins (215), inserts (220, 225), bushing (230, 235 or 240), rivets (250) or drain covers (245) from housing (255 or 260) unless necessary for repair or replacement.

K. Remove bolt (95, IPL Fig. 2), washers (100), nut (105), bushing (140) and separate link assy (120) from arm assy (165).

NOTE: Do not remove bushings (125, 130) from link assy (120) unless necessary for repair or replacement.

L. Remove nuts (150, IPL Fig. 2), washers (145) and separate cam followers (155) from arm assy (165).

NOTE: Do not remove bearing (175) or bushing (180) from arm assy (165) unless necessary for repair or replacement.

CLEANING

1. Clean all parts, except valve (110A or 110B, IPL Fig. 1) using standard industry practices (Ref 20-30-03).

2. Clean valve (110A or 110B, IPL Fig. 1) in accordance with manufacturer's instructions.

CHECK

1. Check all parts for obvious defects in accordance with standrad industry practices.

2. Refer to FITS AND CLEARANCES (Fig. 801) for design and wear limits.

3. Magnetic particle check per 20-20-01 -- Turnbuckle (50, IPL Fig. 1), crank (75), cam (195, 200, IPL Fig. 2), and arm (185, 190).

4. Penetrant check per 20-20-02 -- Cover (80, 85, IPL Fig. 2), link (135), cover (245), housing (255, 260) and cover (80, 85, IPL Fig. 1).

REPAIR - GENERAL

1. Content

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

P/N	NAME	REPAIR
273T1402	HOUSING	1-1
273T1403	COVER	2-1
273T1404	ARM	3-1
273T1406	CAM	4-1
273T1408	LINK	5-1
273T1409	CRANK	6-1
273T1410	TURNBUCKLE	7-1
65B81978	COVER, DRAIN	8-1
BAC27THY38	NAMEPLATE	9-1
- - -	MISCELLANEOUS PARTS REFINISH	10-1

2. Standard Practices

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

20-20-20 Introduction
20-20-01 Magnetic Particle Inspection
20-20-02 Penetrant Inspection
20-30-02 Stripping of Protective Finishes
20-30-03 General Cleaning Procedures
20-41-01 Decoding Table for Boeing Finish Codes
20-42-05 Bright Cadmium Plating
20-43-01 Chromic Acid Anodizing
20-50-01 Bolt and Nut Installation
20-50-02 Installation of Safetying Devices
20-50-03 Bearing and Bushing Replacement
20-50-07 Lubrication
20-50-12 Application of Adhesives
20-50-19 General Sealing
20-60-01 Cleaning Materials
20-60-02 Finishing Materials
20-60-04 Miscellaneous Materials

3. Materials

NOTE: Equivalent substitutes can be used.

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

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

C. Enamel -- BMS 10-60, Boeing Color 707 Gray Gloss (Ref SOPM 20-60-02)

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

E. Solvent -- P-D-680 (Ref SOPM 20-60-01)

4. Dimensioning Symbols

A. Standard True Position Dimensioning Symbols used in applicable repair procedures are shown in SOPM 20-00-00.

HOUSING ASSEMBLY - REPAIR 1-1

273T1402-1, -2

NOTE: Refer to REPAIR-GEN for a list of applicable standard practices. Refer to IPL Fig. 2 for item numbers. For repair of surfaces which is only replacement of the original finish, refer to Refinish instructions, Fig. 601.

1. Bushing Replacement (Fig. 601)

   A. Remove the old bushings.

   B. Install replacement bushings by the press-fit method of SOPM 20-50-03 with wet sealant, BMS 5-95.

   C. Fillet seal the bushing flanges with BMS 5-95 sealant.

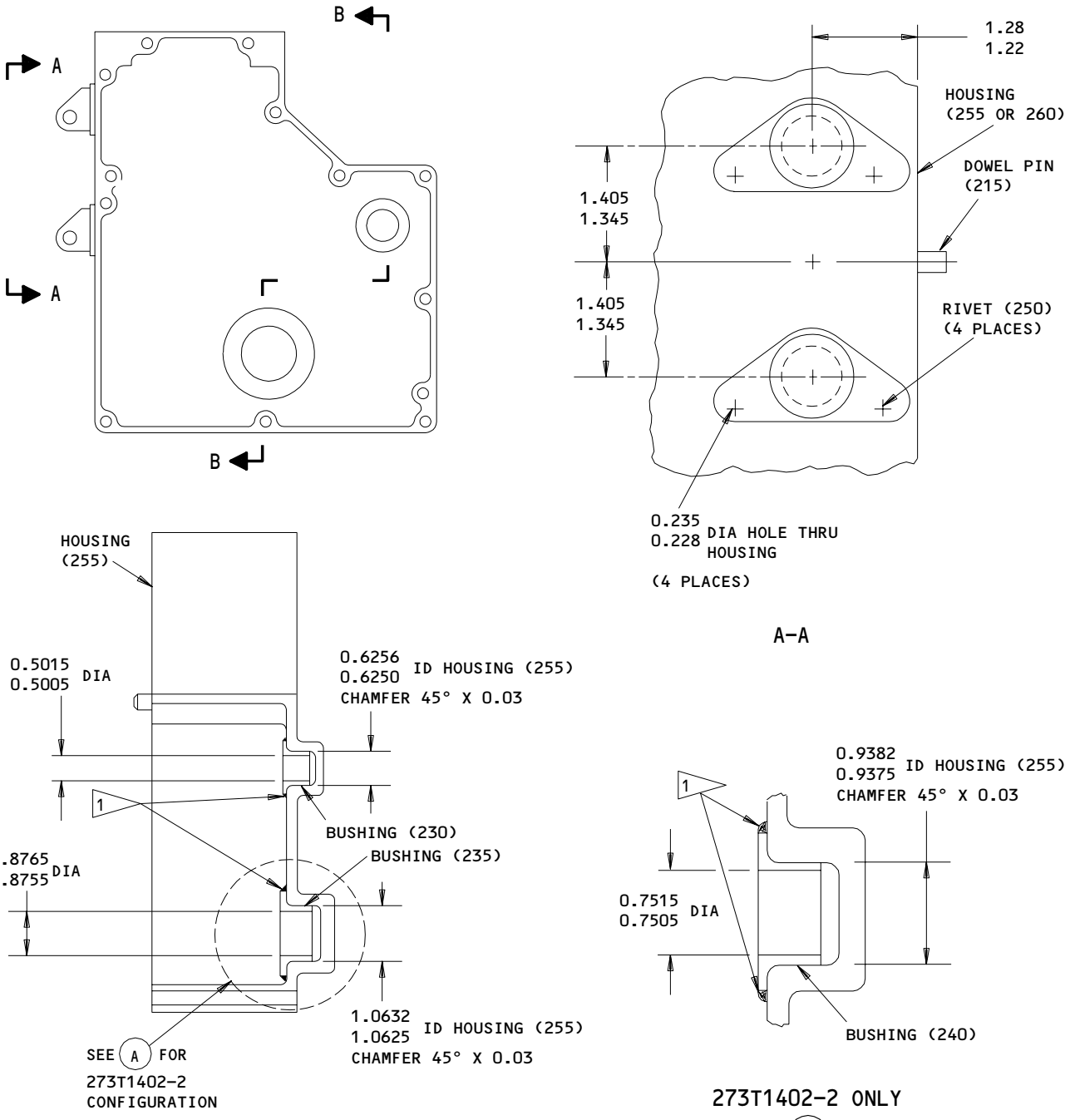
2. Drain Cover Replacement (Fig. 601)

   A. Remove rivets (250) and drain covers (245).

   B. Install replacement drain covers on the housing.

   C. If the replacement housing does not have holes for the rivets, drill 0.228-0.235 inch diameter rivet holes through the housing with the rivet holes in the drain covers as a guide.

   D. Install new rivets (250).



REFINISH

HOUSING (255 OR 260) -- ANODIZE (F-17.05)

1 FILLET SEAL WITH BMS 5-95

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

273T1402-1,-2
Housing Assembly - Parts Replacement
Figure 601

44039

COVER ASSY - REPAIR 2-1

273T1403-1, -2, -7, -8

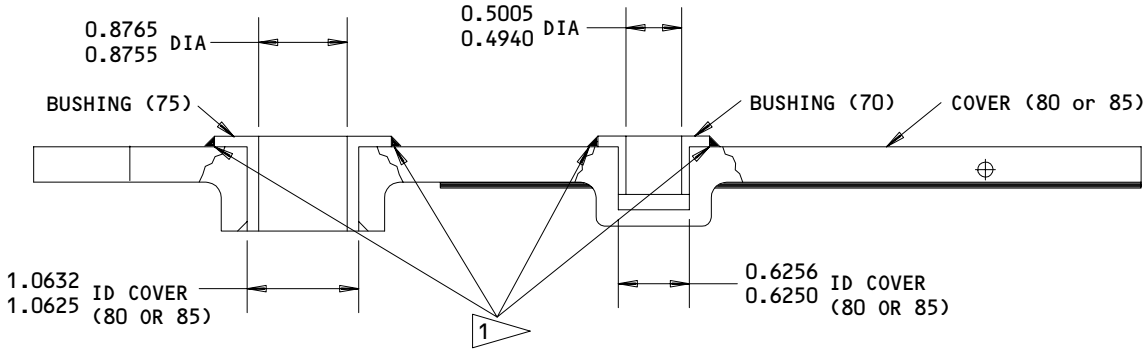
NOTE: Refer to REPAIR-GEN for a list of applicable standard practices. Refer to IPL Fig. 2 for item numbers. For repair of surfaces which is only replacement of the original finish, refer to Refinish instructions, Fig. 601.

1. Bushing Replacement (Fig. 601)

   A. Remove the old bushings.

   B. Install replacement bushings by the press-fit method of SOPM 20-50-03 with wet sealant, BMS 5-95.

   C. Fillet seal the bushing flanges with BMS 5-95 sealant.



REFINISH

COVER (80 or 85) -- ANODIZE (F-17.05)

1 FILLET SEAL WITH BMS 5-95 SEALANT

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

Cover Assembly - Bushing Replacement
Figure 601

44040

ARM ASSEMBLY - REPAIR 3-1

273T1404-1, -2

NOTE: Refer to REPAIR-GEN for a list of applicable standard practices. Refer to IPL Fig. 2 for item numbers. For repair of surfaces which is only replacement of the original finish, refer to Refinish instructions, Fig. 601.

1. Bushing Replacement (Fig. 601)

   A. Remove the old bushings.

   B. Install replacement bushings by the press-fit method of SOPM 20-50-03 with wet sealant, BMS 5-95.

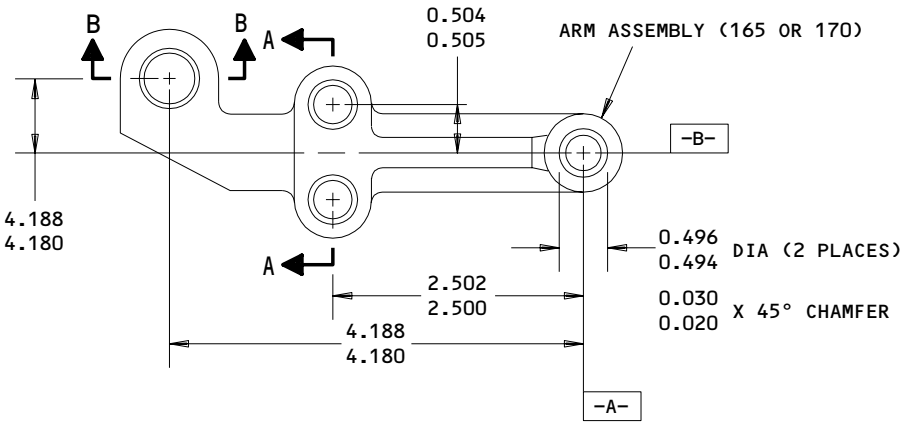
   C. Machine the bushings to design dimensions and finish.

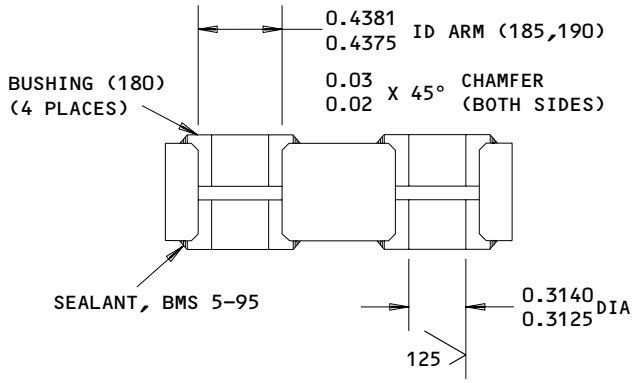
   D. Fillet seal the edges of the bushings with BMS 5-95 sealant.

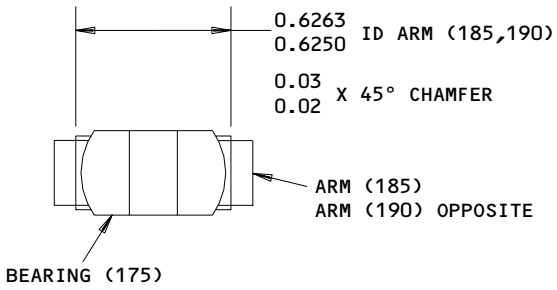
2. Bearing Replacement (Fig. 601)

   A. Remove the old bearing (175).

   B. Install a replacement bearing and roller swage it per SOPM 20-50-03.







(ROTATED 90 DEGREES CLOCKWISE)
A-A

B-B

REFINISH
PASSIVATE (F-17.09) ALL OVER

MATERIAL: 17-4PH, 180-220 KSI

ALL DIMENSIONS ARE IN INCHES

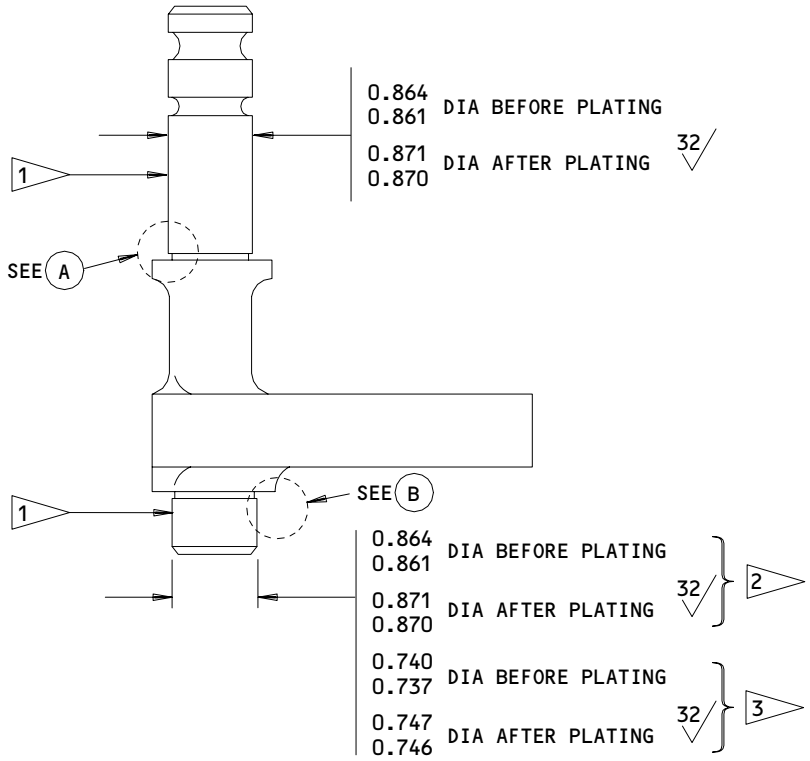
273T1404-1,-2
Arm Assembly - Bushing/Bearing Replacement and Refinish
Figure 601

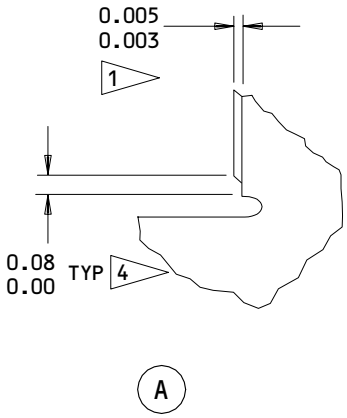
CAM - REPAIR 4-1

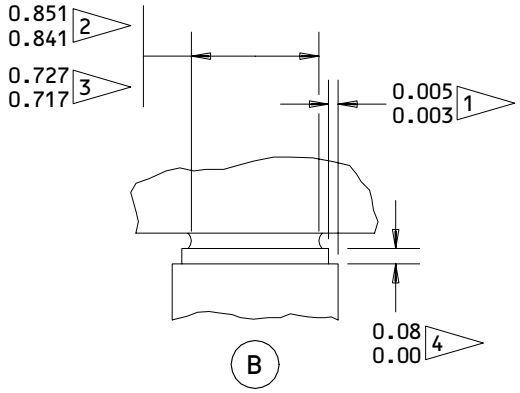
273T1406-1, -2, -3, -4

1. Plating Repair

A. Repair is only replacement of the original finish. Refer to Refinish instructions, Fig. 601. Refer to REPAIR-GEN for a list of applicable standard practices.







REFINISH

CADMIUM PLATE (F-15.23) EXCEPT TO SURFACES NOTED 1

1 CHROME PLATE (F-15.03) (0.003-0.005 INCH THICK)

2 273T1406-1,-3

3 273T1406-2,-4

4 CHROME PLATE RUNOUT

MATERIAL: 17-4 PH CRES (180-220 KSI)

ALL DIMENSIONS ARE IN INCHES

Cam-Plating Repair
Figure 601

LINK ASSY - REPAIR 5-1

273T1408-1

NOTE: Refer to REPAIR-GEN for a list of applicable standard practices. Refer to IPL Fig. 2 for item numbers. For repair of surfaces which is only replacement of the of original finish, refer to Refinish instructions, Fig. 601.

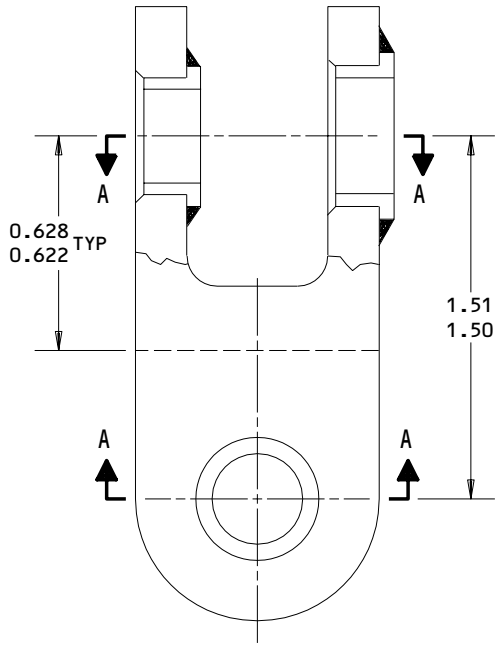
1. Bushing Replacement (Fig. 601)

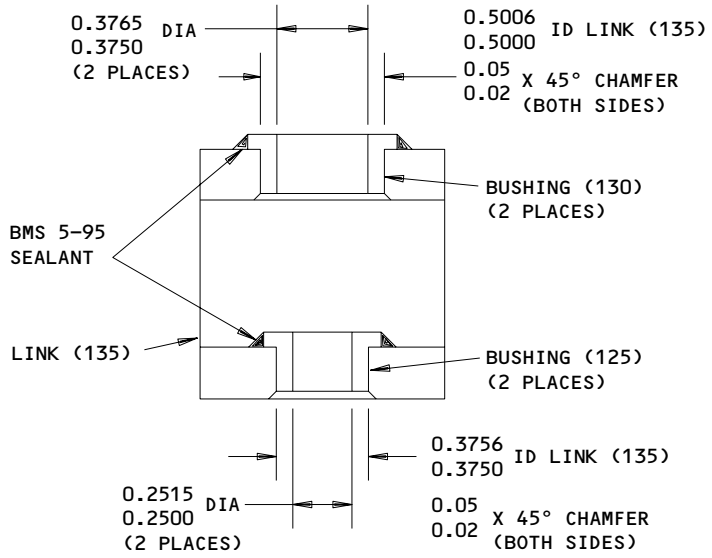
A. Remove the old bushings.

B. Install replacement bushings by the press-fit method of SOPM 20-50-03 with wet sealant, BMS 5-95.

C. Machine the bushings to design dimensions and finish.

D. Fillet seal the bushing flanges with BMS 5-95 sealant.





A-A

REFINISH

LINK (135) -- ANODIZE (F-17.05)

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

273T1408-1
Link Assembly - Bushing Replacement and Refinish
Figure 601

44043

CRANK ASSY - REPAIR 6-1

273T1409-1

NOTE: Refer to REPAIR-GEN for a list of applicable standard practices. Refer to IPL Fig. 1 for item numbers. For repair of surfaces which is only replacement of the original finish, refer to Refinish instructions, Fig. 601.

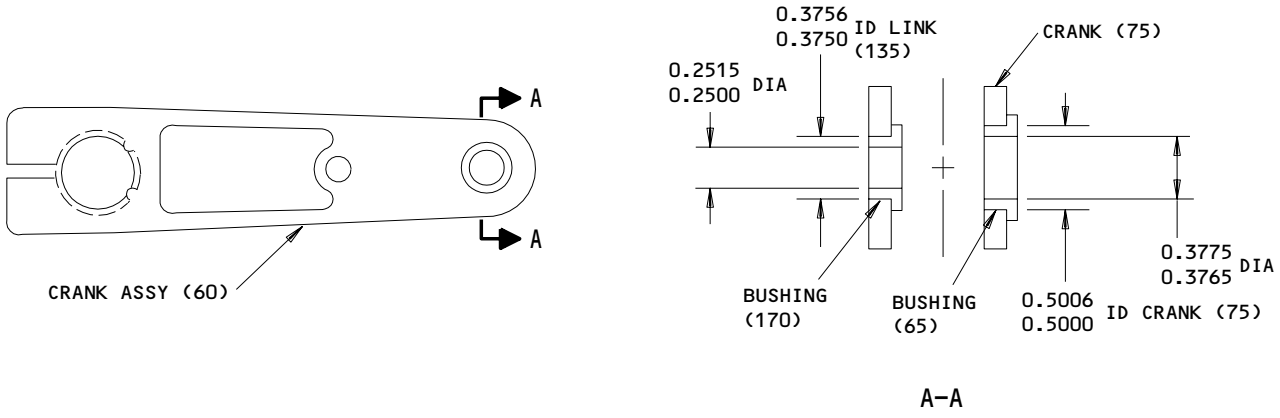
1. Bushing Replacement (Fig. 601)

   A. Remove the old bushings.

   B. Install replacement bushings by the press-fit method of SOPM 20-50-03 with wet sealant, BMS 5-95.

   C. Machine the bushings to design dimensions and finish.

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



A-A

REFINISH

CRANK (75) -- PASSIVATE (F-17.09) ALL OVER.

MATERIAL: 17-4PH CRES
180-200 KSI

ALL DIMENSIONS ARE IN INCHES

Crank Assembly - Bushing Replacement
Figure 601

43946

TURNBUCKLE ASSEMBLY - REPAIR 7-1

273T1410-1

NOTE: Refer to REPAIR-GEN for a list of applicable standard practices. Refer to IPL Fig. 1 for item numbers. For repair of surfaces which is only replacement of the original finish, refer to Refinish instructions, Fig. 601.

1. Bearing Replacement (Fig. 601)

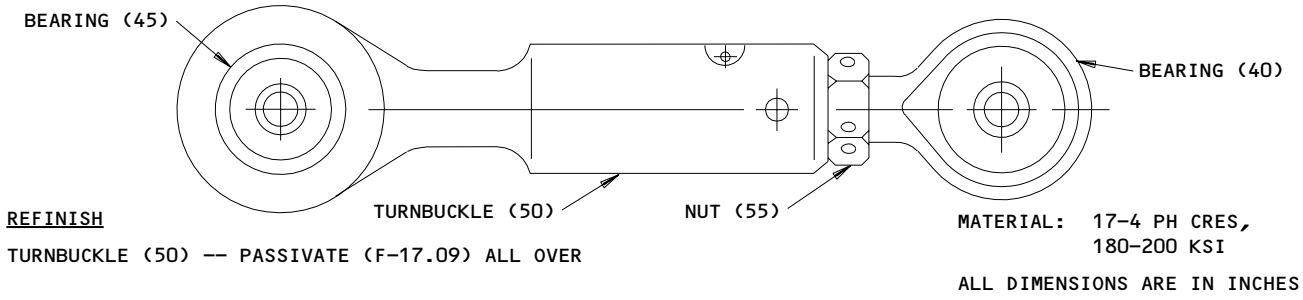
   A. Remove the old bearing (45).

   B. Install a replacement bearing and roller swage it per SOPM 20-50-03.

2. Rod End Replacement (Fig. 601)

   A. Loosen nut (55). Remove the old rod end (40) from turnbuckle (50).

   B. Install the nut with a replacement rod end (40).



Turnbuckle Assy - Bearing/Rod End Replacement
Figure 601

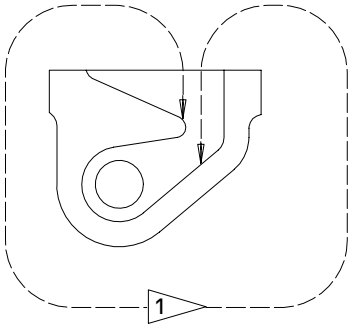
43948

COVER, DRAIN - REPAIR 8-1

65B81978-3

1. Plating Repair

A. NOTE: Repair is only replacement of the original finish. Refer to Refinish instructions, Fig. 601. Refer to REPAIR-GEN for a list of applicable standard practices.



REFINISH

CHROMIC ACID ANODIZE (F-17.02) ALL OVER
AND APPLY ONE COAT OF BMS 10-11, TYPE 1 PRIMER
(F-20.02) TO SURFACES INDICATED BY 1

MATERIAL: AL ALLOY

Drain Cover Repair
Figure 601

44044

NAMEPLATE - REPAIR 9-1

BAC27THY38

1. Nameplate Replacement

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

A. Steel stamp the serial number and assembly number on the replacement nameplate (265, IPL Fig. 2).

B. Clean the painted surface of the cover with solvent.

C. Bond the nameplate in position with type 70 adhesive per SOPM 20-50-12.

MISCELLANEOUS PARTS REFINISH - REPAIR 10-1

1. Repair of these parts is only replacement of the original finish. Refer to REPAIR - GENERAL for a list of applicable standard practices.

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 2		
Cam box assy (1,5)	Al alloy	Apply BMS 10-11, type 1 primer (F-20.02) and BMS 10-60, BAC707 gray gloss enamel (SRF-14.9813) but not on the shank of cam (195 or 200, IPL Fig. 2).
Lube cover (10)	Al alloy	Anodize (F-17.05).

Refinish Details
Figure 601

ASSEMBLY

1. Material and Equipment

NOTE: Equivalent substitutes may be used.

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

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

C. Lockwire -- MS33540

D. Rig Pin -- MS20392-4C88

E. Grease -- MIL-G-23827

2. Assembly (Fig. 701)

A. Install cam followers (155, IPL Fig. 2) through bushings (180) in arm assy (165 or 170) from the flush end (non-ribbed) and install washers (145) and nuts (150). Tighten nut to 100-150 lb-in. Pack with grease through lube fittings in threaded end of cam follower (155).

B. Attach other end of link assy (120, IPL Fig. 2) to arm assy (165, 170) using bolt (95), washers (100), bushings (140) and nut (105). Tighten nut (105) to 50-80 lb-in.

C. Insert short shank of cam (195 or 200 IPL Fig. 2) into bushing (235 or 240) in housing assy (205 or 210).

D. Lubricate the surfaces on the cam (195 or 200, IPL Fig. 2) that contact the cam followers (155) with grease (MIL-G-23827).

E. Place cam followers (155, IPL Fig. 2) on cam (195 or 200) and insert, simultaneously, shank of arm assy (165 or 170) into bushing (230) in housing assy (205 or 210).

F. Align shanks of arm assy (165 or 170, IPL Fig. 2) and cam (195 or 200) with bushings (70, 75) in cover assy (30 or 35) and install cover assy on housing assy (205 or 210) using dowel pins (215) in housing assy. Install attaching parts (40 thru 60). Tighten nuts (60) to 50-80 lb-in.

G. Install rod end bearing (110, IPL Fig. 2) to link assy (120) with bolt (95), bushings (140), washers (100) and nut (105). Tighten nut (105). Install lockwasher (115, IPL Fig. 1) and nut (90, IPL Fig. 2) in rod end bearing (110, IPL Fig. 2).

H. Screw valve slide of valve (110A, IPL Fig. 1) to rod end bearing (110, IPL Fig. 2) until the valve (110A, IPL Fig. 1) surface contact with cam box assy (140, IPL Fig. 1). Install washers (115), bolts (100) with wet sealant. The cam (195 or 200, IPL Fig. 2) should not be in contact with cam followers (155) until rotated fully up or down. Tighten bolts (100) to 50-80 lb-in. Lockwire bolts (100) using double twist method.

I. Rotate valve spool so that closest slot on valve slide lines up with lockwasher tooth. Tighten nut (90, IPL Fig. 2) and install lockwire using double twist method.

J. Measure the length of valve slide of valve (110A, IPL Fig. 1) at midstroke position (cam rotated halfway).

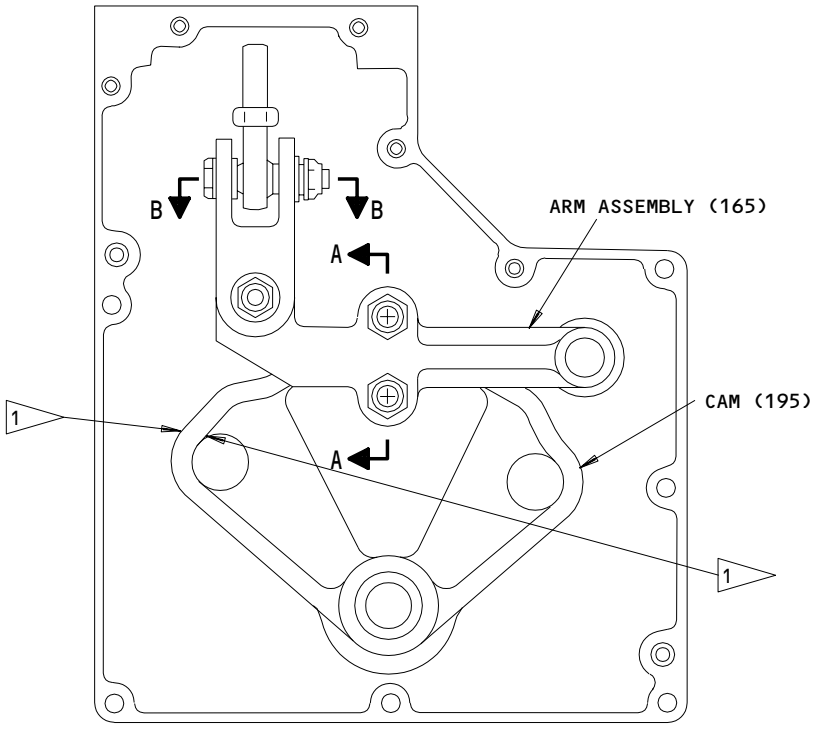
K. Rotate crank assy (60, IPL Fig. 1) counterclockwise until rig pin fits between crank and short slotted rig pin hole. Check that valve slide moves into valve (110A) 0.28-0.38 inch.

L. Rotate crank assy (60, IPL Fig. 1) clockwise until rig pin fits between crank and long slotted hole. Check that valve slide moves outward 0.56-0.76 inch from previous rig position.

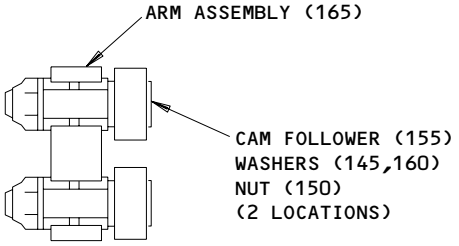
M. Move crank assy (60) to mid position. Install lube cover (10, IPL Fig. 2) with screws (15, 20) and washers (25). Tighten screws to 15-20 lb-in.

N. Install bracket (135, IPL Fig. 1) on cam box assy (140 or 145) with bolt (120), washers (125) and nut (130).

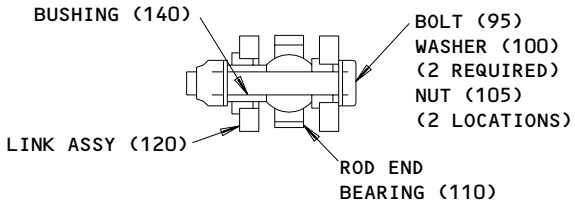
O. Install turnbuckle assy (35) on crank assy (60) with bolt (10), washers (20), bushing (30) and nut (25).



COVER ASSEMBLY (30) REMOVED FOR CLARITY



A-A

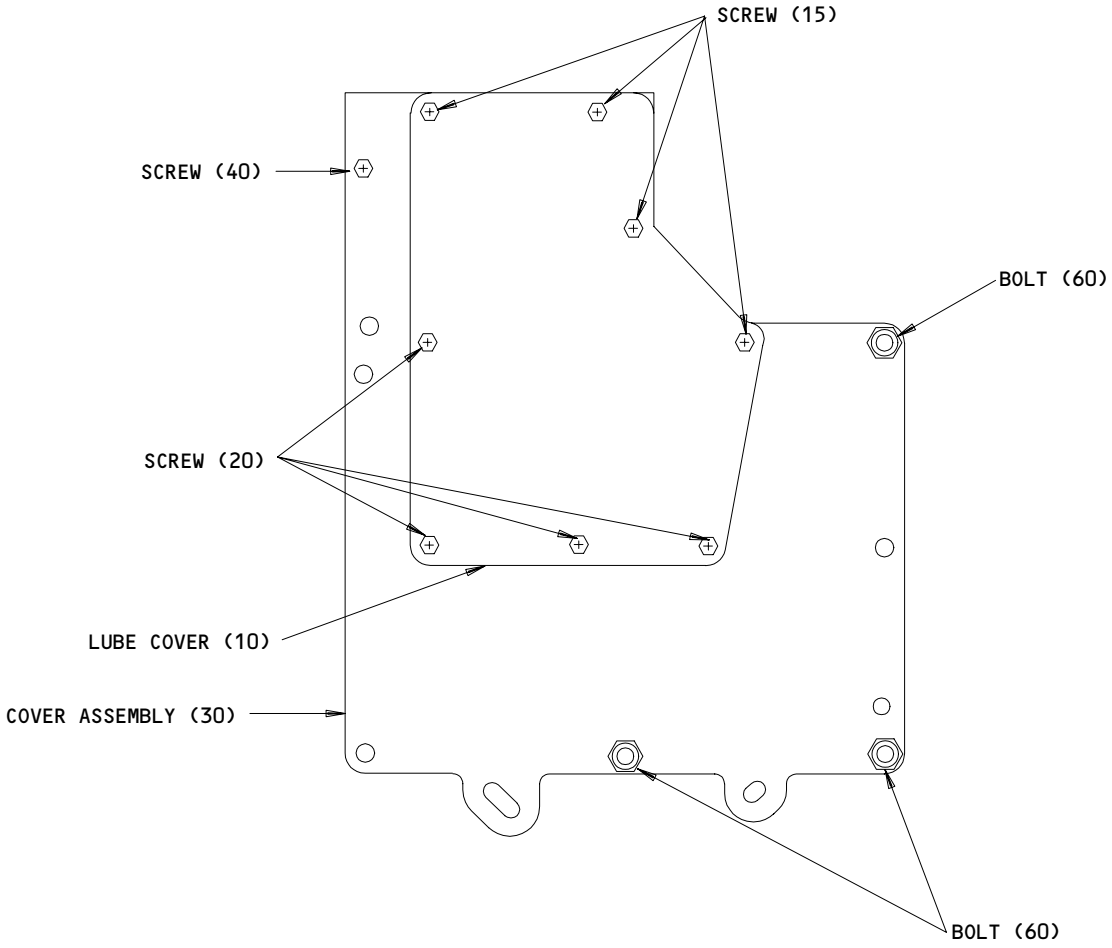


B-B

NOTE: REFER TO IPL FIG. 2 FOR ITEM NUMBERS

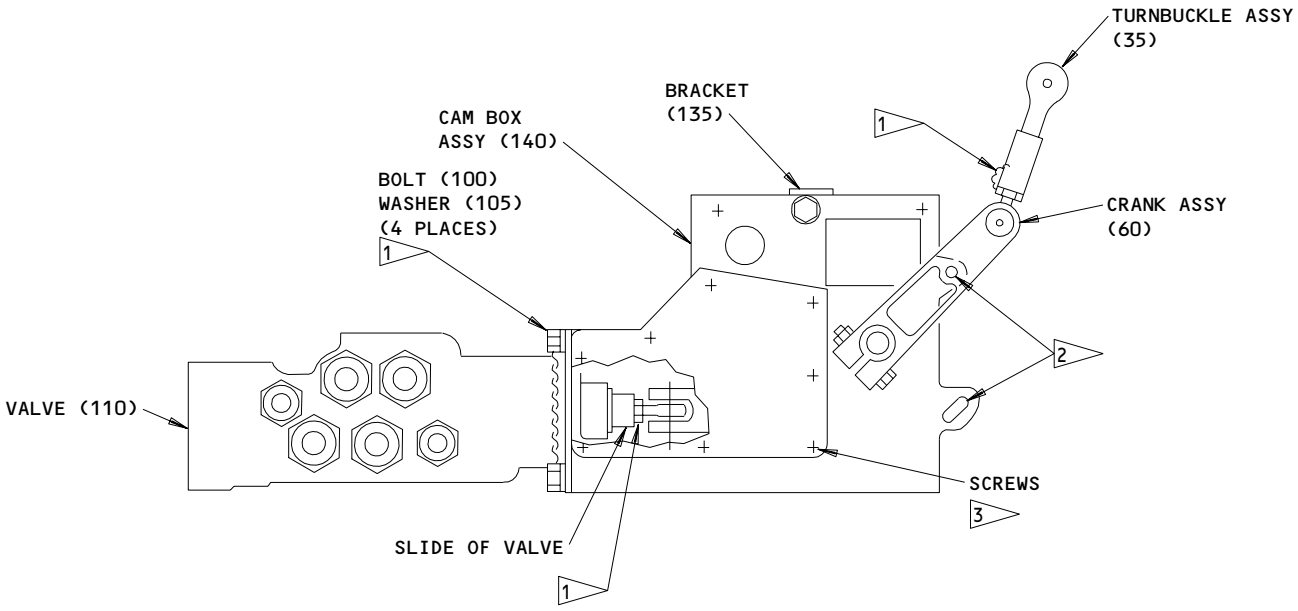
1 LUBRICATE WITH GREASE (MIL-G-23827)

Cam Box Assembly
Figure 701 (Sheet 1)



NOTE: REFER TO IPL FIG. 2 FOR ITEM NUMBERS

Cam Box Assembly
Figure 701 (Sheet 2)



1 LOCKWIRE PER 20-50-02 USING DOUBLE TWIST METHOD

2 RIGGING HOLE

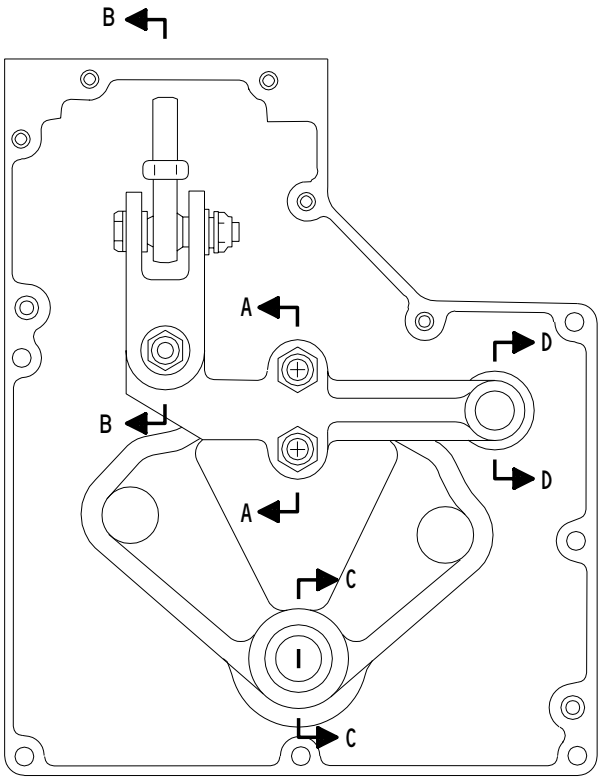
3 TIGHTEN SCREWS TO 15-20 LB-IN

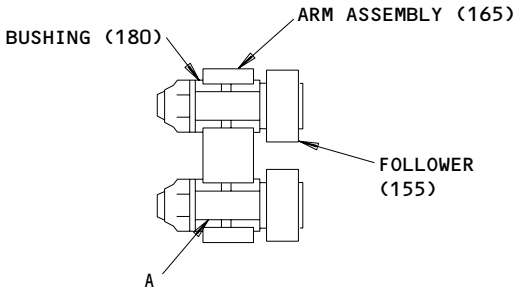
NOTE: REFER TO IPL FIG. 1 FOR ITEM NUMBERS

Sequence Valve Assembly
Figure 702

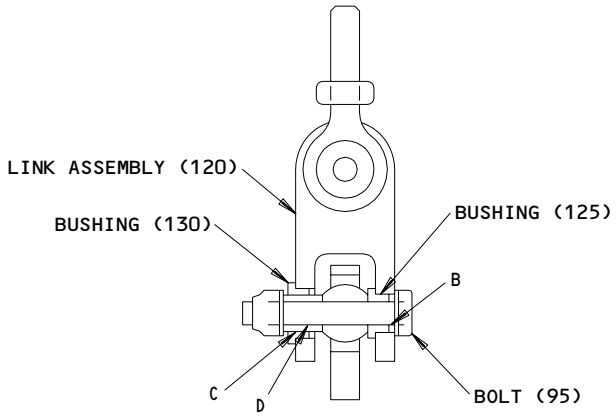
44052

FITS AND CLEARANCES





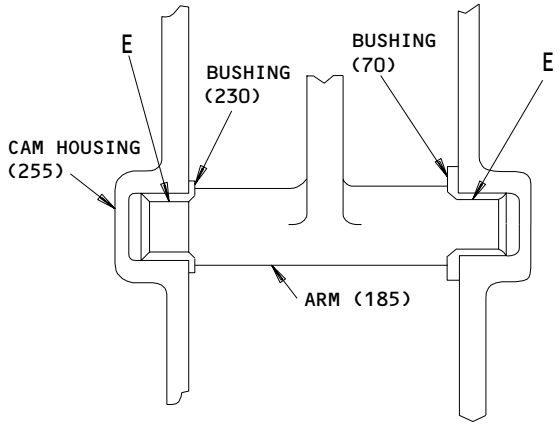
A–A



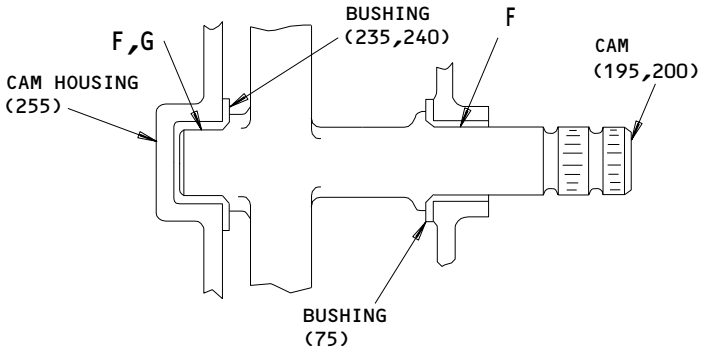
B–B

Fits and Clearances
Figure 801 (Sheet 1)

44054



C-C



D-D

Ref Letter Fig.801	Mating Item No. (IPL Fig. 2)	Design Dimensions				Service Wear Limits		
		Dimensions		Assembly Clearance		Dimension Limits		Maximum Allowable Clearance
		Min	Max	Min	Max	Min	Max	
A	ID 180 OD 155	0.3121 0.3105	0.3131 0.3120	0.0001	0.0026	0.3094	0.3157	0.0037
B	ID 125 OD 95	0.2496 0.2485	0.2506 0.2495	0.0001	0.0021	0.2475	0.2526	0.0031
C	ID 130 OD 140	0.3746 0.3740	0.3756 0.3745	0.0001	0.0016	0.3728	0.3773	0.0028
D	ID 140 OD 95	0.2500 0.2485	0.2505 0.2495	0.0005	0.0020	0.2475	0.2525	0.0030
E	ID 70,230 OD 185	0.5005 0.4940	0.5015 0.4960	0.0045	0.0075	0.4926	0.5049	0.0089
F	ID 235,75 OD 195	0.8755 0.870	0.8765 0.871	0.0045	0.0065	0.8681	0.8794	0.0084
G	ID 240 OD 200	0.7505 0.746	0.7515 0.747	0.0035	0.0055	0.7443	0.7542	0.0072

ALL DIMENSIONS ARE IN INCHES

Fits and Clearances
Figure 801 (Sheet 2)

FOR TORQUE VALUES OF STANDARD FASTENERS, REFER TO 20-50-01		
ITEM NO. IPL FIG. 2	NAME	TORQUE
		POUND-INCHES
15,20	SCREW	15-20
60,105	NUT	50-80
150	NUT	100-150

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 repalces and is interchangeable with, or is an alternate to, the original part.

VENDORS

S0352 NIPPON MINIATURE BEARING CO LTD
TOKYO, JAPAN

S5007 MITSUBISHI HEAVY IND LTD NAGOYA ACFT WORKS DAIKO PLANT 1-1
DAIKO-CHO HIGASHI-KU
NAGOYA, JAPAN

01673 AIRDROME PARTS CO
3251 AIRPORT WAY PO BOX 1867
LONG BEACH, CALIFORNIA 90801

07484 ACCURATE BUSHING CO INC
443 NORTH AVENUE
GARWOOD, NEW JERSEY 07027-1014

11328 AEROQUIP CORP LINAIR DIV
651 WEST KNOX STREET
GARDENA, CALIFORNIA 90248-4409

14397 FABER ENTERPRISES, INCORPORATED
6606 VARIEL AVE
CANOGA PARK, CALIFORNIA 91303-2808

14798 DEUTSCH CO METAL COMPONENTS DIV
14800 SOUTH FIGUEROA STREET
GARDENA, CALIFORNIA 90248-1719

15860 NEW HAMPSHIRE BALL BEARINGS, INCORPORATED ASTRO DIVISION
155 LEXINGTON AVENUE
LACONIA, NEW HAMPSHIRE 03246-2937

30974 AEROFIT PRODUCTS INC
8531 WHITAKER STREET
BUENA PARK, CALIFORNIA 90621-3129

50294 NEW HAMPSHIRE BALL BEARINGS INC
9730 INDEPENDENCE AVENUE PO BOX 2515
CHATSWORTH, CALIFORNIA 91311-4323

50632 KAMATICS CORP SUB OF KAMAN CORP
1335 BLUE HILLS ROAD
BLOOMFIELD, CONNECTICUT 06002-1304

50808 UNITED SUPPLY CO INC
3676 S BROADWAY PLACE
LOS ANGELES, CALIFORNIA 90007-4432

VENDORS

50948 PARKER-HANNIFIN CORP HUNTSVILLE AIRCRAFT FACILITY
9400 SOUTH MEMORIAL PARKWAY
HUNTSVILLE, ALABAMA 35802

60380 TORRINGTON CO BEARINGS DIV SUBSIDIARY OF INGERSOLL-RAND CORP
59 FIELD STREET PO BOX 1008
TORRINGTON, CONNECTICUT 06790-4942

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

83132 ACCURATE BUSHING CO SMITH BRG DIV SEE V07484

88334 WEATHERHEAD GLENDALE,CALIF SEE WEATHERHEAD CLEVELAND V79470

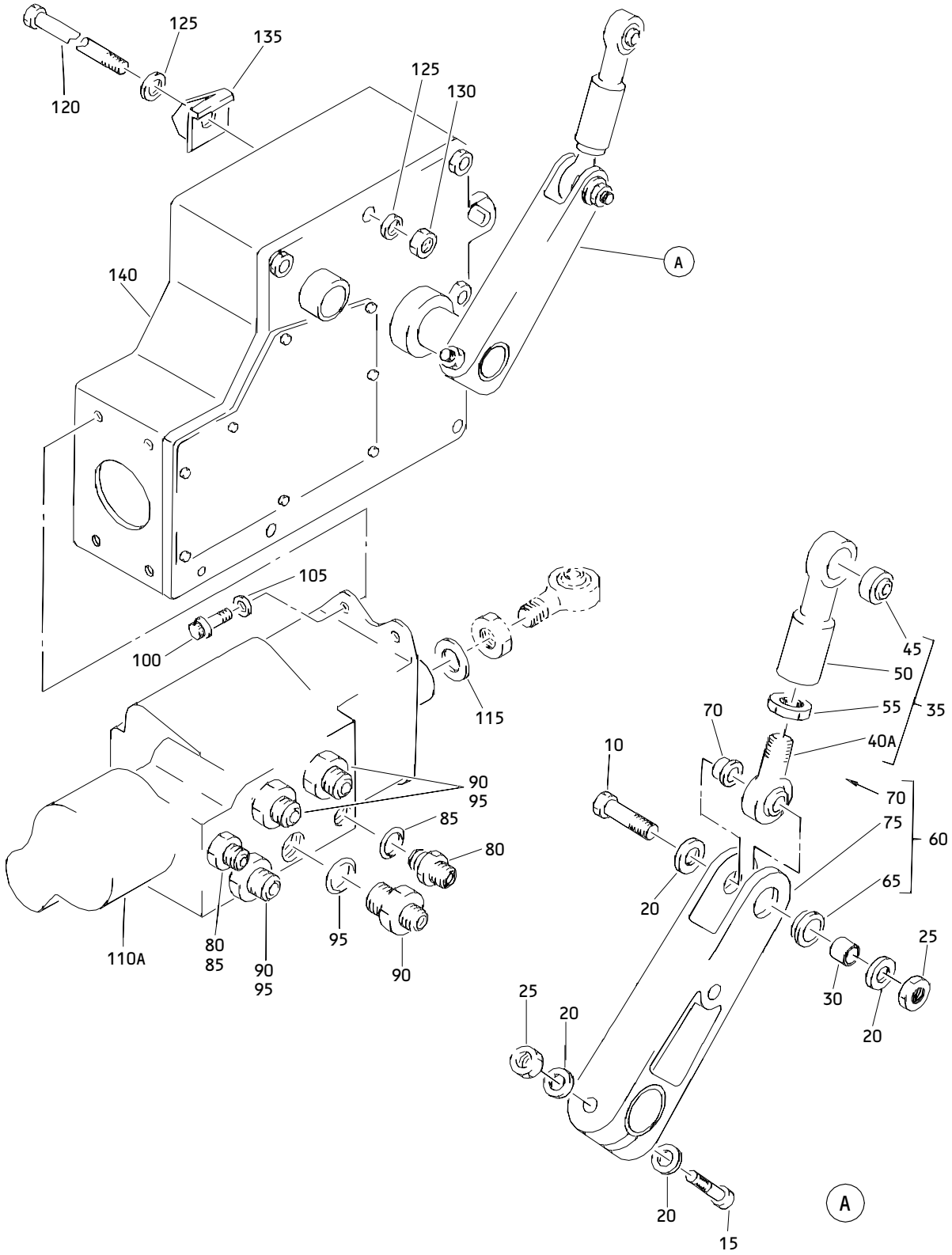
92563 MCGILL MFG CO INC BEARINGS DIV
909 LAFAYETTE STREET
VALPARAISO, INDIANA 46383-4210

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
ADW4VNC		1	45	1
		1	45	1
		2	175	1
AFP23210-6		1	90	4
AN960C416		1	20	4
		1	125	2
AN960C416L		2	55	6
		2	100	4
AN960C516		2	159	2
		2	160	2
AN960C516L		2	145	2
AN960C8		2	25	8
		2	45	1
AP102710-6		1	90	4
BACB10AF5K10HS		2	155A	2
BACB10AF5K11HS		2	155B	2
		2	158	2
BACB10AF5T09HS		2	155	2
BACB10FE04C		1	45	1
		2	175	1
BACB28AK04-040		2	140	2
BACB28Y4C032		1	30	1
BACB30LJ4DSU18		2	95	2
BACB30LJ4DSU48		2	50	3
BACB30US4K4		1	100A	4
BACN10JC4		1	25	2
		1	130	1
BACN10JC4C		2	60	3
		2	105	2
BACN10JC4CD		1	25A	2
		1	130A	1
BACN10JC5C		2	150	2
BACR15FT7AD		2	250	4
BACR17E10-6		1	90	4
BACU24K6		1	80	2
BACW10BN4C		1	105	4
BAC27THY38		2	265	1
BC916T10-6		1	90	4
DBOR17E10-6		1	90	4
ER21916T10-6		1	90	4
ER31916-10-6		1	90	4
F23-10-6		1	90	4

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
HRS3CTKR10		2	155A	2
HRS3CTKR11		2	155B	2
		2	158	2
HRS3CTR09		2	155	2
KR4CWGBZC		1	45	1
		2	175	1
MS16556-647		2	215	2
MS21209C0815P		2	65A	4
MS21209C0820		2	220	5
MS21209F4-20		2	225	4
MS21902-6T		1	80A	2
M81934-2-08A014		2	70A	1
		2	230A	1
M81934-2-12A016		2	240A	1
M81934-2-14A016		2	235A	1
M81934-2-14A024		2	75A	1
M81935-1-4		1	40A	1
M81935-1-4K		2	110A	1
NAS1149C0463R		1	20A	4
		1	125A	2
NAS1612-10		1	95	4
NAS1612-6		1	85	2
NAS1612-6A		1	85A	2
NAS1801-08-08		2	20A	4
NAS1801-08-12		2	15A	4
		2	40A	1
NAS509-5C		1	55	1
		2	90	1
NAS6604-17		1	10	1
NAS6604-21		1	15	1
NAS6604-51		1	120	1
NAS77A4-12P		1	70	1
NAS77A4-18P		2	125	2
NAS77A5-20P		2	180	4
NAS77A6-12P		1	65	1
NAS77A6-18P		2	130	2
S273T401-1		1	110A	1
US2114-10-6		1	90	4
WHT04VSBC		1	45	1
		2	175	1
2-01075T10-6		1	90	4
273T1400-10		1	5B	RF
273T1400-3		1	1	RF
273T1400-4		1	5	RF
273T1400-7		1	1A	RF
273T1400-8		1	5A	RF

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
273T1400-9		1	1B	RF
273T1401-1		1	140	1
		2	1	RF
273T1401-2		1	145	1
		2	5	RF
273T1401-3		1	140A	1
		2	1A	RF
273T1401-4		1	145A	1
		2	5A	RF
273T1401-5		1	140B	1
		2	1B	RF
273T1401-6		1	145B	1
		2	5B	RF
273T1401-7		2	157	1
273T1402-1		2	205	1
273T1402-2		2	210	1
273T1402-3		2	255	1
273T1402-4		2	260	1
273T1403-1		2	30	1
273T1403-10		2	85A	1
273T1403-2		2	35	1
273T1403-3		2	80	1
273T1403-4		2	85	1
273T1403-7		2	30A	1
273T1403-8		2	35A	1
273T1403-9		2	80A	1
273T1404-1		2	165	1
273T1404-2		2	170	1
273T1404-3		2	185	1
273T1404-4		2	190	1
273T1405-1		2	10	1
273T1406-1		2	195	1
273T1406-2		2	200	1
273T1406-3		2	195A	1
273T1406-4		2	200A	1
273T1408-1		2	120	1
273T1408-2		2	135	1
273T1409-1		1	60	1
273T1409-2		1	75	1
273T1410-1		1	35	1
273T1410-2		1	50	1
273T1413-1		1	135	1
273T1413-2		1	137	1
273T1413-3		1	135A	1
273T1413-4		1	137A	1
273T1415-1		1	115	1

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
31778-10-6		1	90	4
65B81978-3		2	245	2
65B81978-4		2	245A	2
99C51330-1		1	110A	1
99C51330-3		1	110B	1
99C51330-5		1	110C	1
99C51330-7		1	110D	1



Main Landing Gear Operated Sequence Valve Assembly
Figure 1

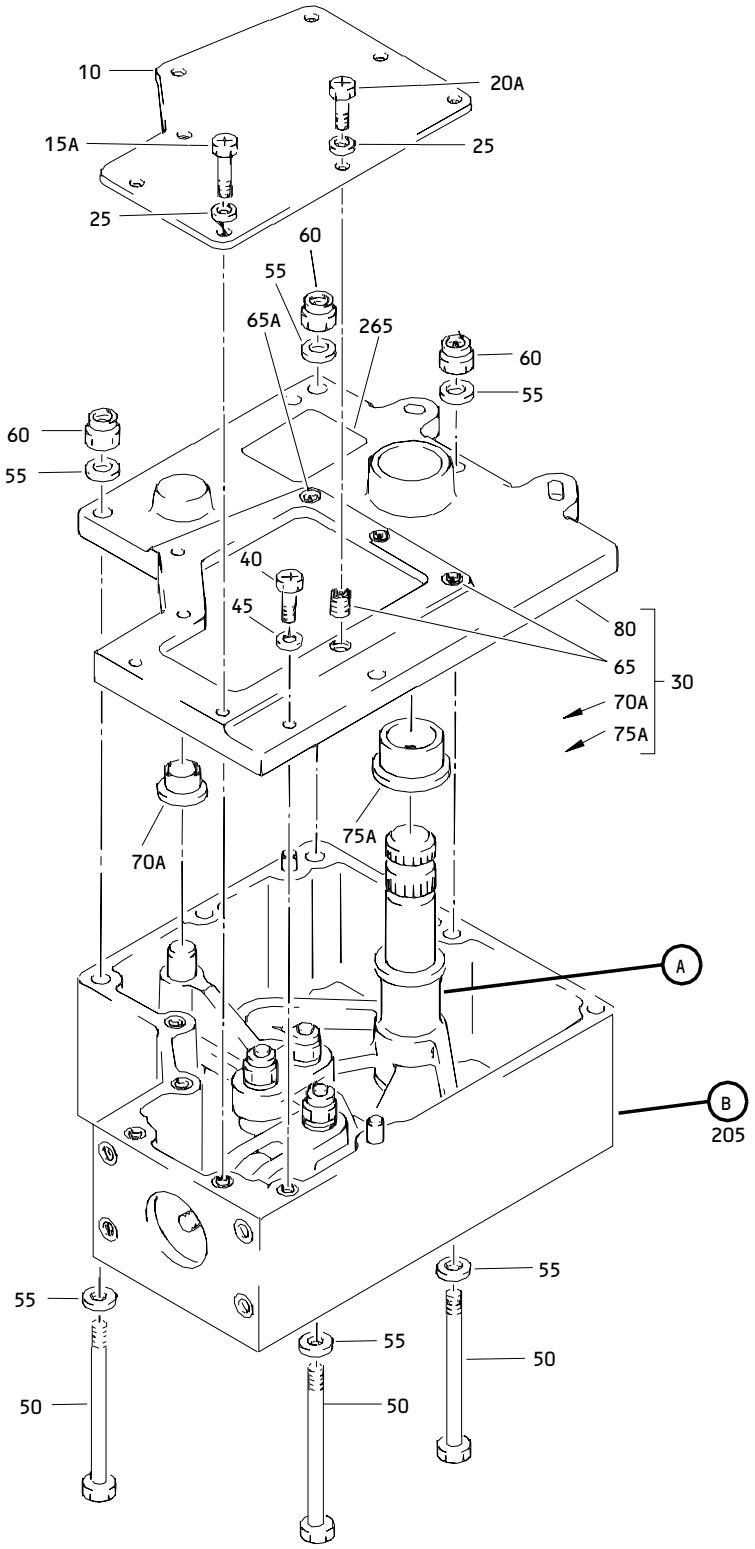
T60304

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	-1	273T1400-3		VALVE ASSY-MLG OPERATED SEQ (LH)	A	RF
R	-1A	273T1400-7		VALVE ASSY-MLG OPERATED SEQ (LH)	C	RF
R	-1B	273T1400-9		VALVE ASSY-MLG OPERATED SEQ (LH)	E	RF
R	-5	273T1400-4		VALVE ASSY-MLG OPERATED SEQ (RH)	B	RF
R	-5A	273T1400-8		VALVE ASSY-MLG OPERATED SEQ (RH)	D	RF
R	-5B	273T1400-10		VALVE ASSY-MLG OPERATED SEQ (RH)	F	RF
R	10	NAS6604-17		.BOLT		1
R	15	NAS6604-21		.BOLT		1
R	20	AN960C416		.WASHER	A-D	4
R	-20A	NAS1149C0463R		.WASHER	E,F	4
R	25	BACN10JC4		.NUT	A-D	2
R	-25A	BACN10JC4CD		.NUT	E,F	2
R	30	BACB28Y4C032		.BUSHING		1
R	35	273T1410-1		.TURNBUCKLE ASSY		1
	40	MILB81935-1-4		DELETED		
R	40A	M81935-1-4		..ROD END		1
R	45	WHT04VSBC		..BEARING- (V50294) (SPEC BACB10FE04C) (OPT ADW4VNC (V15860)) (OPT KR4CWGBZC (V50632)) (OPT ADW4VNC (V15860)) (OPT KR4CWGBZC (V50632)) (OPT WHT04VSBC (VS0352))		1
R	50	273T1410-2		..TURNBUCKLE		1
R	55	NAS509-5C		..NUT-DRILLED JAM		1
R	60	273T1409-1		.CRANK ASSY		1
R	65	NAS77A6-12P		..BUSHING		1
R	70	NAS77A4-12P		..BUSHING		1
R	75	273T1409-2		..CRANK		1
R	80	BACU24K6		.UNION	A-D	2
R	-80A	MS21902-6T		.UNION	E,F	2
R	85	NAS1612-6		.PACKING	A-D	2
R	-85A	NAS1612-6A		.PACKING	E,F	2

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	90	AFP23210-6		.REDUCER- (V30974) (SPEC BACR17E10-6) (OPT AP102710-6 (V01673)) (OPT BC916T10-6 (V50948)) (OPT DB0R17E10-6 (V14798)) (OPT ER21916T10-6 (V88334)) (OPT ER31916-10-6 (V88334)) (OPT F23-10-6 (V73197)) (OPT 2-01075T10-6 (V11328)) (OPT 31778-10-6 (V14397)) (OPT US2114-10-6 (V50808))		4
R	95	NAS1612-10		.PACKING	A-D	4
R	-95A	NAS1612-10A		.PACKING	E,F	4
	100	BACB30MT4HT4		DELETED		
R	100A	BACB30US4K4		.BOLT		4
R	105	BACW10BN4C		.WASHER		4
	110	S273T401-1		DELETED		
R	110A	99C51330-1		.VALVE- (VS5007) (SPEC S273T401-1) (OPT 99C51330-3 (VS5007)) (OPT 99C51330-5 (VS5007)) (OPT 99C51330-7 (VS5007))		1
R	-110B	99C51330-3		.VALVE- (VS5007) (SPEC S273T401-1) (OPT 99C51330-1 (VS5007)) (OPT 99C51330-5 (VS5007)) (OPT 99C51330-7 (VS5007))		1

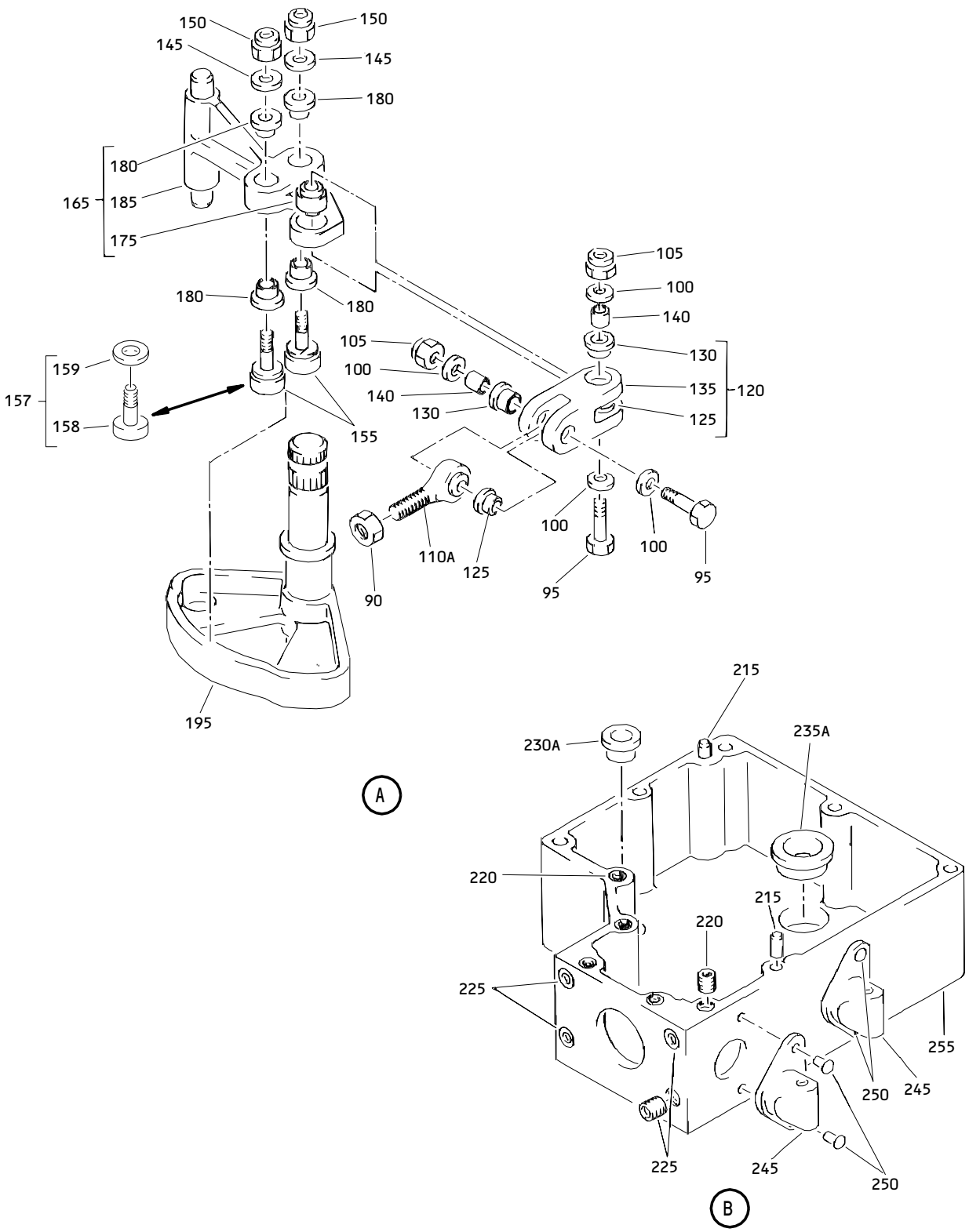
	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	-110C	99C51330-5		.VALVE- (VS5007) (SPEC S273T401-1) (OPT 99C51330-1 (VS5007)) (OPT 99C51330-3 (VS5007)) (OPT 99C51330-7 (VS5007))		1
R	-110D	99C51330-7		.VALVE- (VS5007) (SPEC S273T401-1) (OPT 99C51330-1 (VS5007)) (OPT 99C51330-3 (VS5007)) (OPT 99C51330-5 (VS5007))		1
R	115	273T1415-1		.WASHER		1
R	120	NAS6604-51		.BOLT		1
R	125	AN960C416		.WASHER	A-D	2
R	-125A	NAS1149C0463R		.WASHER	E,F	2
R	130	BACN10JC4		.NUT	A-D	1
R	-130A	BACN10JC4CD		.NUT	E,F	1
R	135	273T1413-1		.BRACKET	A,C	1
R	-135A	273T1413-3		.BRACKET	E	1
R	-137	273T1413-2		.BRACKET	B,D	1
R	-137A	273T1413-4		.BRACKET	F	1
R	140	273T1401-1		.BOX ASSY-CAM (FOR DETAILS SEE FIG. 2)	A	1
R	-140A	273T1401-3		.BOX ASSY-CAM (FOR DETAILS SEE FIG. 2)	C	1
R	-140B	273T1401-5		.BOX ASSY-CAM (FOR DETAILS SEE FIG. 2)	E	1
R	-145	273T1401-2		.BOX ASSY-CAM (FOR DETAILS SEE FIG. 2)	B	1
R	-145A	273T1401-4		.BOX ASSY-CAM (FOR DETAILS SEE FIG. 2)	D	1
R	-145B	273T1401-6		.BOX ASSY-CAM (FOR DETAILS SEE FIG. 2)	F	1

- Item Not Illustrated



Main Landing Gear Operated Sequence Valve Cam Box Assembly
Figure 2 (Sheet 1)

T60303



Main Landing Gear Operated Sequence Valve Cam Box Assembly
Figure 2 (Sheet 2)

T63964

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	02-					
R	-1	273T1401-1		BOX ASSY-MLG OPERATED SEQUENCE VALVE CAM (LH)	A	RF
R	-1A	273T1401-3		BOX ASSY-MLG OPERATED SEQUENCE VALVE CAM (LH)	C	RF
R	-1B	273T1401-5		BOX ASSY-MLG OPERATED SEQUENCE VALVE CAM (LH)	E	RF
R	-5	273T1401-2		BOX ASSY-MLG OPERATED SEQUENCE VALVE CAM (RH)	B	RF
R	-5A	273T1401-4		BOX ASSY-MLG OPERATED SEQUENCE VALVE CAM (RH)	D	RF
R	-5B	273T1401-6		BOX ASSY-MLG OPERATED SEQUENCE VALVE CAM (RH)	F	RF
R	10	273T1405-1		.COVER-LUBE		1
				ATTACHING PARTS		
	15	NAS1802-08-12		DELETED		
R	15A	NAS1801-08-12		.SCREW		4
	20	NAS1802-08-08		DELETED		
R	20A	NAS1801-08-08		.SCREW		4
R	25	AN960C8		.WASHER		8
				-------*-------		
R	30	273T1403-1		.COVER ASSY-HSG	A,C	1
R	-30A	273T1403-7		.COVER ASSY-HSG	E	1
R	-35	273T1403-2		.COVER ASSY-HSG	B,D	1
R	-35A	273T1403-8		.COVER ASSY-HSG	F	1
				ATTACHING PARTS		
	40	NAS1802-08-12		DELETED		
R	40A	NAS1801-08-12		.SCREW		1
R	45	AN960C8		.WASHER		1
R	50	BACB30LJ4DSU48		.BOLT		3
R	55	AN960C416L		.WASHER		6
R	60	BACN10JC4C		.NUT		3
				-------*-------		

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	02-					
	65	MS21209C0815		DELETED		
R	65A	MS21209C0815P		..INSERT		4
	70	BCREF5413		DELETED		
R	70A	M81934-2-08A014		..BUSHING		1
	75	BCREF5416		DELETED		
R	75A	M81934-2-14A024		..BUSHING		1
R	80	273T1403-3		..COVER	A,C	1
R	-80A	273T1403-9		..COVER	E	1
R	-85	273T1403-4		..COVER	B,D	1
R	-85A	273T1403-10		..COVER	F	1
R	90	NAS509-5C		.NUT		1
R	95	BACB30LJ4DSU18		.BOLT		2
R	100	AN960C416L		.WASHER		4
R	105	BACN10JC4C		.NUT		2
	110	MILB81935-1-4K		DELETED		
R	110A	M81935-1-4K		.BEARING		1
	-115	ARB4E60MW		DELETED		
R	120	273T1408-1		.LINK ASSY		1
R	125	NAS77A4-18P		..BUSHING		2
R	130	NAS77A6-18P		..BUSHING		2
R	135	273T1408-2		..LINK		1
R	140	BACB28AK04-040		.BUSHING		2
R	145	AN960C516L		.WASHER		2
R	150	BACN10JC5C		.NUT		2
R	155	HRS3CTR09		.CAM FOLLOWER- (V92563) (SPEC BACB10AF5T09HS) (OPT HRS3CTR09 (V07484)) (OPT HRS3CTR09 (V60380)) (OPT HRS3CTR9 (V60380)) (OPT HRS3CTR9 (V90563)) (OPT ITEM 155A) (OPT ITEM 155B USED WITH ITEM 160)	A-D	2

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
R	02- -155A	HRS3CTKR10		.CAM FOLLOWER- (V60380) (SPEC BACB10AF5K10HS) (OPT HRS3CTKR10 (V83132)) (OPT HRS3CTKR10 (V92563)) (OPT ITEM 155)	A-D	2
R	-155B	HRS3CTKR11		.CAM FOLLOWER- (V60380) (SPEC BACB10AF5K11HS) (OPT HRS3CTKR11 (V92563)) (OPT HRS3CTKR11 (V83132)) (OPT ITEM 155) (USED WITH ITEM 160)	A-D	2
R	-155C	HRS3CTR09		.CAM FOLLOWER- (V92563) (SPEC BACB10AF5T09HS) (OPT HRS3CTR09 (V07484)) (OPT HRS3CTR09 (V60380)) (OPT HRS3CTR9 (V60380)) (OPT HRS3CTR9 (V90563)) (OPT ITEM 157)	E,F	2

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	02-					
R	157	273T1401-7		.KIT ASSY- (OPT ITEM 155C)	E,F	1
R	158	HRS3CTKR11		..CAM FOLLOWER- (V60380) (SPEC BACB10AF5K11HS) (OPT HRS3CTKR11 (V92563)) (OPT HRS3CTKR11 (V83132))	E,F	1
R	159	AN960C516		..WASHER	E,F	1
R	-160	AN960C516		.WASHER- (USED WITH ITEM 155B)	A-D	2
R	165	273T1404-1		.ARM ASSY	A,C,E	1
R	-170	273T1404-2		.ARM ASSY	B,D,F	1
R	175	WHT04VSBC		..BEARING- (V50294) (SPEC BACB10FE04C) (OPT ADW4VNC (V15860)) (OPT KR4CWGBZC (V50632)) (OPT ADW4VNC (V15860)) (OPT KR4CWGBZC (V50632)) (OPT WHT04VSBC (VS0352))		1
R	180	NAS77A5-20P		..BUSHING		4
R	185	273T1404-3		..ARM	A,C,E	1
R	-190	273T1404-4		..ARM	B,D,F	1
R	195	273T1406-1		.CAM	A	1
R	-195A	273T1406-3		.CAM	C,E	1
R	-200	273T1406-2		.CAM	B	1
R	-200A	273T1406-4		.CAM	D,F	1
R	205	273T1402-1		.HOUSING ASSY	A,C,E	1
R	-210	273T1402-2		.HOUSING ASSY	B,D,F	1
R	215	MS16556-647		..PIN-DOWEL		2
R	220	MS21209C0820		..INSERT		5
R	225	MS21209F4-20		..INSERT		4
	230	BCREF5413		DELETED		
R	230A	M81934-2-08A014		..BUSHING		1
	235	BCREF5415		DELETED		
R	235A	M81934-2-14A016		..BUSHING	A,C,E	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	02-					
	-240	BCREF5414		DELETED		
R	-240A	M81934-2-12A016		..BUSHING	B,D,F	1
R	245	65B81978-3		..COVER-DRAIN (OPT ITEM 245A)		2
R	-245A	65B81978-4		..COVER-DRAIN (OPT ITEM 245)		2
R	250	BACR15FT7AD		..RIVET- (SIZE DETERMINE ON INST)		4
R	255	273T1402-3		..HOUSING-CAM	A,C,E	1
R	-260	273T1402-4		..HOUSING-CAM	B,D,F	1
R	265	BAC27THY38		.NAMEPLATE		1

- Item Not Illustrated