COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

RUDDER CONTROL JACK SHAFT ASSEMBLY

PART NUMBER 251A3145–1, –2, –5, –6

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COMPONENT MAINTENANCE MANUAL

Revision No. 9
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To: All holders of RUDDER CONTROL JACK SHAFT ASSEMBLY 27-24-05.

Attached is the current revision to this COMPONENT MAINTENANCE MANUAL

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

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TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
		PRR 38065	DEC 01/97

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

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

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INTRODUCTION

1. General

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

B. This manual is divided into different parts:

(1) Title Page

(2) Transmittal Letter

(3) Highlights

(4) List of Effective Pages

(5) Table of Contents

(6) Temporary Revision & Service Bulletin Record

(7) Record of Revisions

(8) Record of Temporary Revisions

(9) Introduction

(10) Procedures & IPL Sections

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

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

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

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

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

JACKSHAFT ASSEMBLY, RUDDER CONTROL - DESCRIPTION AND OPERATION

1. Description

A. The jackshaft assembly consists of a quadrant, shaft assembly, yoke and screw assembly. These parts are made of aluminum.

2. Operation

A. Input to the rudder pedals moves pushrods which moves the yoke. The shaft assembly and quadrant rotate and transmit motion through cables to control the rudder. When the screw assembly rotates, the yoke is positioned for rudder pedal adjustment.

3. Leading Particulars (Approximate)

A. Length – 14.0 inches

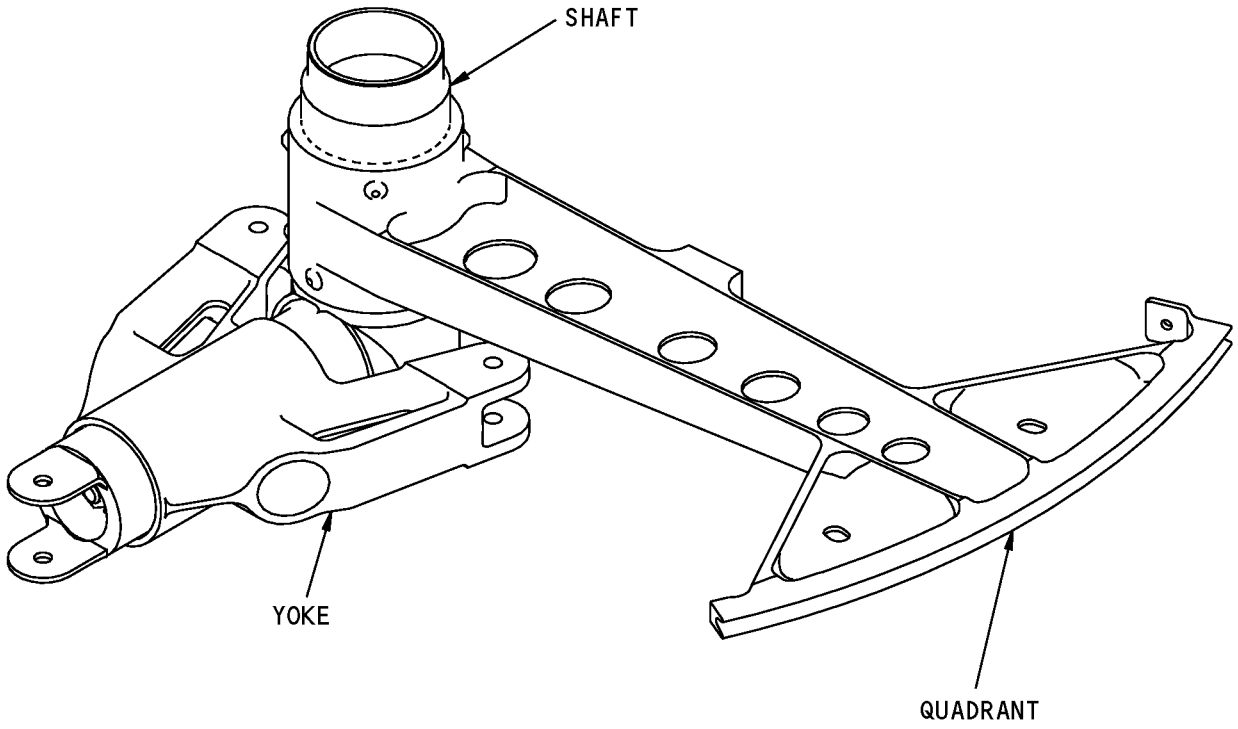
B. Width – 8.0 inches

C. Height – 19.0 inches

D. Weight

(1) 251A3145-1 – 6.54 pounds

(2) 251A3145-2 – 6.53 pounds



Rudder Control Jackshaft Assembly
Figure 1

(NOT APPLICABLE)

DISASSEMBLY

1. **General**
   A. This procedure has the data necessary to disassemble the jackshaft assembly.
   B. Disassemble this component sufficiently to isolate the defects, do the necessary repairs, and put the component back to a serviceable condition.
   C. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.
   D. Refer to IPL Figure 1and IPL Figure 2 for item numbers.
2. **Disassembly**
   A. Procedure
      (1) Use standard industry procedures to disassemble this component.

CLEANING

1. General

A. This procedure has the data necessary to clean the jackshaft assembly.

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

C. Refer to IPL Figure 1 and IPL Figure 2 for item numbers.

2. Cleaning

A. References

Reference	Title
SOPM 20-30-03	GENERAL CLEANING PROCEDURES

B. Procedure

(1) Clean bearings as specified in the manufacturer's instructions.

(2) Use standard industry procedures and refer to SOPM 20-30-03 to clean other parts.

CHECK

1. General

A. This procedure has the data necessary to find defects in the material of the specified parts.

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

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

D. Refer to IPL Figure 1 and IPL Figure 2 for item numbers.

2. Check

A. References

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

B. Procedure

(1) Use standard industry procedures to do a visual check of all the parts for defects. Do the penetrant or magnetic particle check if the visual check shows possible damage or if you suspect possible damage on the parts listed below:

(2) Do a magnetic particle check (SOPM 20-20-01) of this part.

(a) Screw (80)

(3) Do a penetrant check (SOPM 20-20-02) of these parts:

(a) Shaft (105)

(b) Yoke (35)

(c) Quadrant (85, 90)

REPAIR

1. General

A. Instructions for repair, refinish, and replacement of the specified subassembly parts are included in each REPAIR when applicable:

Table 601:

PART NUMBER	NAME	REPAIR
—	REFINISH OF OTHER PARTS	1-1
50-6393	SHAFT	2-1
6-58994	SCREW ASSEMBLY	3-1
6-58995	NUT	4-1
65-7208	YOKE	5-1

2. Dimensioning Symbols

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

—	STRAIGHTNESS
▱	FLATNESS
⊥	PERPENDICULARITY (OR SQUARENESS)
//	PARALLELISM
○	ROUNDNESS
⌭	CYLINDRICITY
⌒	PROFILE OF A LINE
⌓	PROFILE OF A SURFACE
◎	CONCENTRICITY
⌯	SYMMETRY
∠	ANGULARITY
↗	RUNOUT
↗↗	TOTAL RUNOUT
⌴	COUNTERBORE OR SPOTFACE
∨	COUNTERSINK
⌖	THEORETICAL EXACT POSITION OF A FEATURE (TRUE POSITION)
Ø	DIAMETER
S Ø	SPHERICAL DIAMETER
R	RADIUS
SR	SPHERICAL RADIUS
()	REFERENCE
BASIC (BSC) OR [DIM]	A THEORETICALLY EXACT DIMENSION USED TO DESCRIBE SIZE, SHAPE OR LOCATION OF A FEATURE. FROM THIS FEATURE 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 DATUM B WITHIN 0.002
// | 0.002 | A	PARALLEL TO DATUM 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 A
⌓ | 0.020 | A	SURFACES MUST LIE WITHIN PARALLEL BOUNDARIES 0.020 INCH APART AND EQUALLY DISPOSED ABOUT TRUE PROFILE
◎ | Ø 0.0005 | C	CONCENTRIC TO DATUM C WITHIN 0.0005 DIAMETER
⌯ | 0.010 | A	SYMMETRICAL WITH DATUM A WITHIN 0.010
∠ | 0.005 | A	ANGULAR TOLERANCE 0.005 WITH DATUM A
⌖ | Ø 0.002 Ⓢ | B	LOCATED AT TRUE POSITION WITHIN 0.002 DIA RELATIVE TO DATUM B, REGARDLESS OF FEATURE SIZE
⊥ | Ø 0.010 Ⓜ | A 0.510 Ⓟ	AXIS IS TOTALLY WITHIN A CYLINDER OF 0.010 INCH DIAMETER, PERPENDICULAR TO DATUM A, AND EXTENDING 0.510 INCH ABOVE DATUM A, MAXIMUM MATERIAL CONDITION
[2.000] OR 2.000 BSC	THEORETICALLY EXACT DIMENSION IS 2.000

True Position Dimensioning Symbols
Figure 601

REFINISH OF OTHER PARTS - REPAIR 1-1

1. General

A. This procedure has the data necessary to refinish the parts which are not given in the specified repairs.

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

C. Refer to IPL Figure 1 and IPL Figure 2 for item numbers.

2. Refinish of Other Parts

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
C00259	Primer - Chemical And Solvent Resistant Finish, Epoxy Resin	BMS10-11, Type I

B. References

Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

C. General

(1) Instructions for the repair of the parts listed in REPAIR 1-1, Table 601 are for repair of the initial finish.

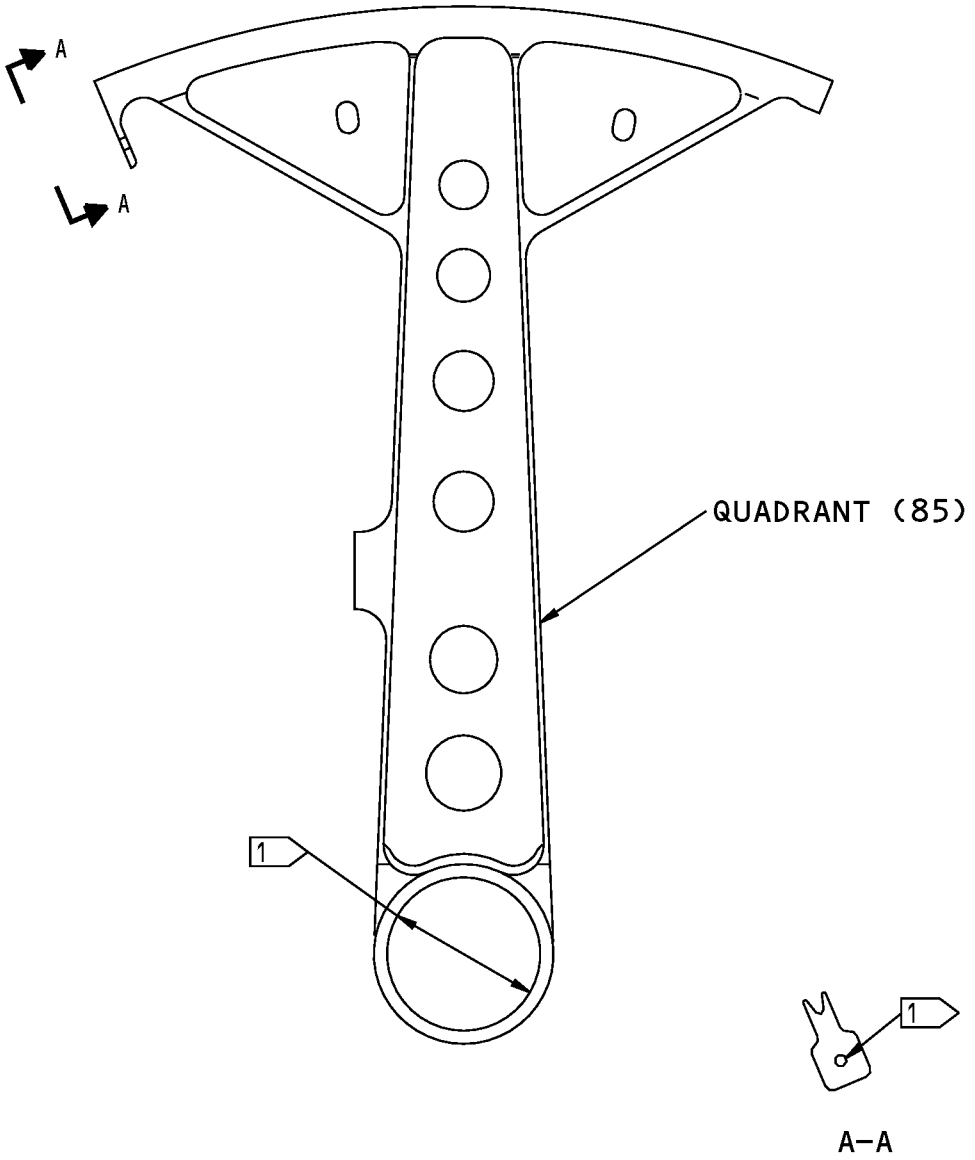
D. Procedure

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

(1) Refer to REPAIR 1-1, Table 601 for refinish details.

Table 601: Refinish Details

IPL FIG. & ITEM	MATERIAL	FINISH
IPL Fig. 1		
Quadrant (85,90)	Aluminum alloy	Boric acid-sulfuric acid anodize (F-17.35) and apply primer, C00259 (F-20.03). Obey flagnote 1 in REPAIR 1-1, Figure 601.
IPL Fig. 2		
Doubler (15)		Boric acid-sulfuric acid anodize, class 1 or 5, or chromic acid anodize at 22v, class 3 or 5 (F-17.31) and apply primer, C00259 (F-20.03).



251A3146-1 SHOWN
251A3146-2 OPPOSITE

1 DO NOT APPLY PRIMER TO THIS SURFACE

ITEM NUMBERS REFER TO IPL FIG. 1

251A3146-1,-2 Quadrant Refinish
Figure 601

SHAFT - REPAIR 2-1

50-6393–2

1. General

A. This procedure has the data necessary to repair and refinish the shaft (105).

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

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

D. Refer to IPL Figure 1 for item numbers.

E. General repair details:

(1) Material: Aluminum Alloy

2. Shaft Refinish

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
C00259	Primer - Chemical And Solvent Resistant Finish, Epoxy Resin	BMS10-11, Type I
D00113	Lubricant - Liquid Dispersed Solid Film Lubricant	BMS3-8, BAC 5811, TYPE VIII

B. References

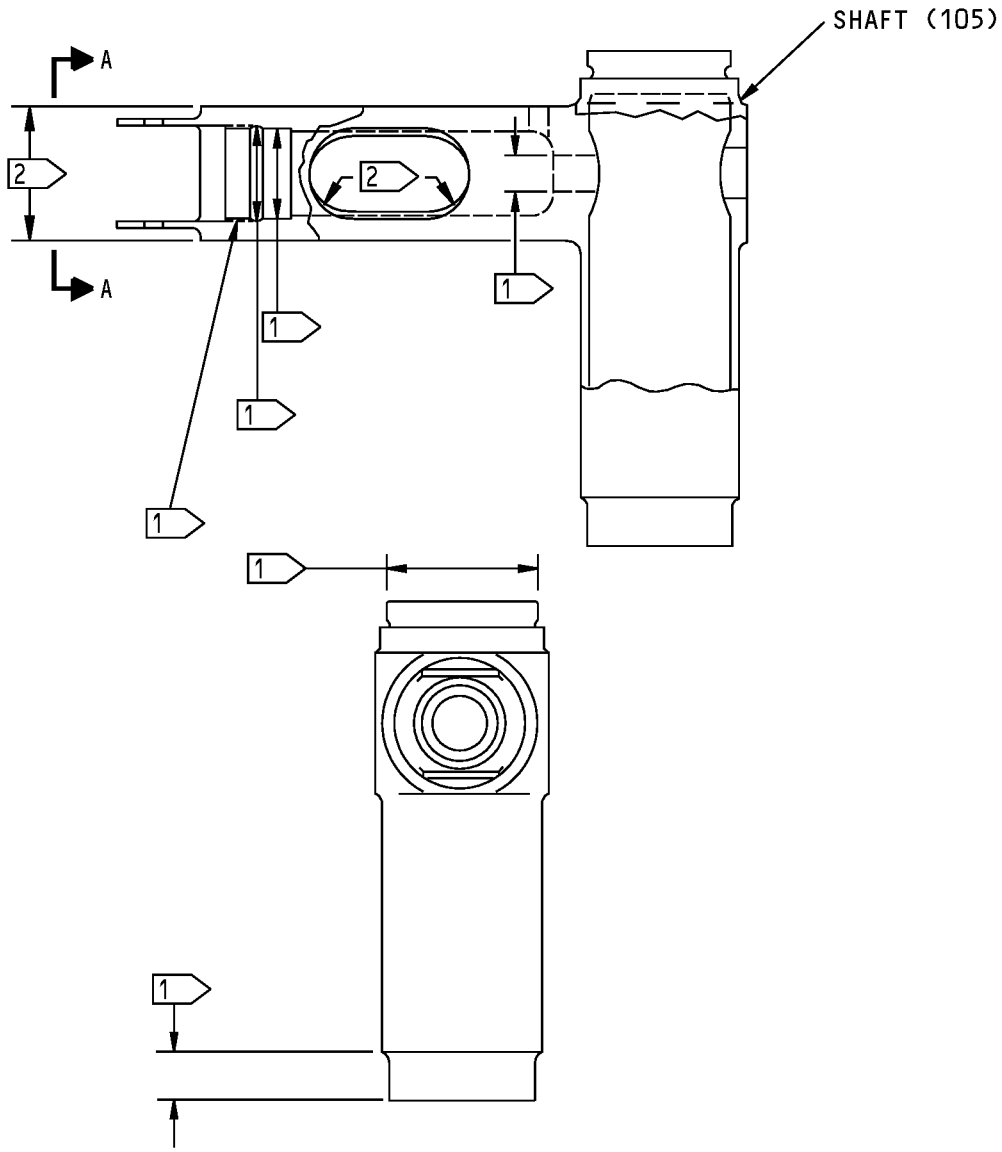
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-50-08	APPLICATION OF BONDED SOLID FILM LUBRICANTS
SOPM 20-60-02	FINISHING MATERIALS
SOPM 20-60-03	LUBRICANTS

C. Procedure (REPAIR 2-1, Figure 601)

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For decoding table of Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02. For lubricants, refer to SOPM 20-60-03.

(1) Anodize (SRF 2.19) and apply primer, C00259. Do not put primer on surfaces shown by flagnote 1.

(2) Apply solid film lubricant, D00113 as shown by flagnote 2 (SOPM 20-50-08).



A–A

1 DO NOT APPLY PRIMER ON THIS SURFACE

2 APPLY SOLID FILM LUBRICANT BMS 3-8, AS SHOWN IN SOPM 20-50-08

ITEM NUMBERS REFER TO IPL FIG. 1

50-6393-2 Shaft Refinish
Figure 601

SCREW - REPAIR 3-1

6-58994–2

1. General

A. This procedure has the data necessary to repair and refinish the screw (80).

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

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

D. Refer to IPL Figure 1 for item numbers.

E. General repair details:

(1) Material: 4330M Steel

180-200 ksi

2. Screw Refinish

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00113	Lubricant - Liquid Dispersed Solid Film Lubricant	BMS3-8, BAC 5811, TYPE VIII

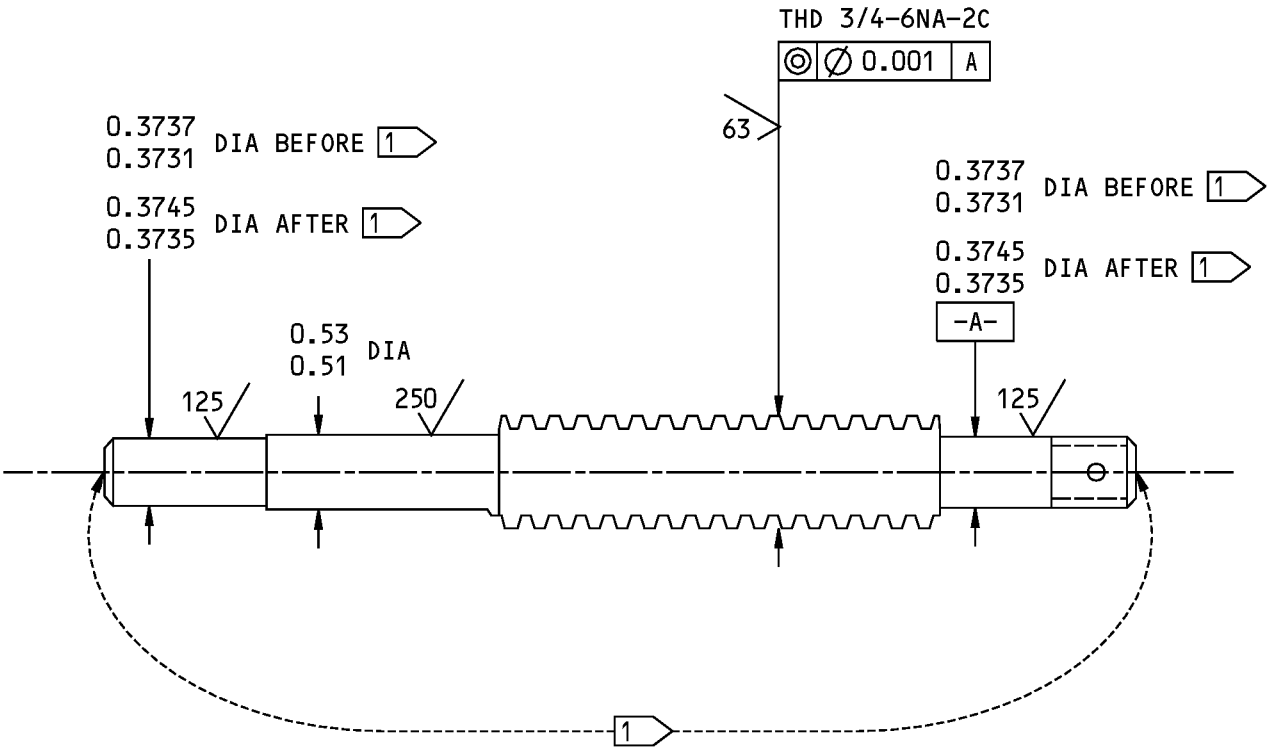
B. References

Reference	Title
SOPM 20-50-08	APPLICATION OF BONDED SOLID FILM LUBRICANTS
SOPM 20-60-03	LUBRICANTS

C. Procedure (REPAIR 3-1, Figure 601)

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

(1) Apply lubricant, D00113 as shown by flagnote 1 (SOPM 20-50-08).



1 APPLY SOLID FILM LUBRICANT BMS 3-8, AS SHOWN IN SOPM 20-50-08

ALL DIMENSIONS ARE IN INCHES

6-58994-2 Screw - Plating Repair
Figure 601

NUT - REPAIR 4-1

6–58995

1. General

A. This procedure has the data necessary to repair and refinish the nut (30).

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

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

D. Refer to IPL Figure 1 for item numbers.

E. General repair details:

(1) Material: 4340 Steel

150-170 ksi

2. Nut Refinish

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00113	Lubricant - Liquid Dispersed Solid Film Lubricant	BMS3-8, BAC 5811, TYPE VIII

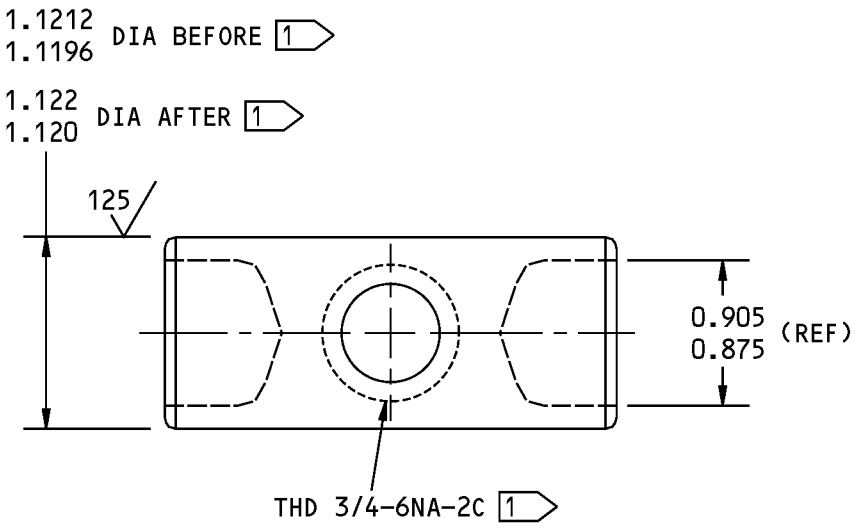
B. References

Reference	Title
SOPM 20-50-08	APPLICATION OF BONDED SOLID FILM LUBRICANTS
SOPM 20-60-03	LUBRICANTS

C. Procedure (REPAIR 4-1, Figure 601)

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

(1) Apply lubricant, D00113 as shown by flagnote 1 (SOPM 20-50-08).



1 APPLY SOLID FILM LUBRICANT
BMS 3-8, AS SHOWN IN
SOPM 27-50-08

ALL DIMENSIONS ARE IN INCHES

6-58995 Nut - Plating Repair
Figure 601

YOKE - REPAIR 5-1

65-7208

1. General

A. This procedure has the data necessary to repair and refinish the yoke (30).

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

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

D. Refer to IPL Figure 1 for item numbers.

E. General repair details:

(1) Material: Aluminum Alloy

(2) Shot Peen: Surfaces as shown in REPAIR 5-1, Figure 601

(a) Shot Size = 0.023 - 0.028

(b) Intensity = 0.12A2

(c) Coverage = 2.0

2. Yoke Repair

A. References

Reference	Title
SOPM 20-10-03	SHOT PEENING
SOPM 20-10-04	GRINDING OF CHROME PLATED PARTS
SOPM 20-20-02	PENETRANT METHODS OF INSPECTION
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES

B. Procedure (REPAIR 5-1, Figure 601)

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For decoding table for Boeing finish codes, refer to SOPM 20-41-01.

(1) Machine the yoke (30) to the repair dimension shown in REPAIR 5-1, Figure 601 to remove defects.

(2) Break all sharp edges.

(3) Do a penetrant check of the machined area (SOPM 20-20-02).

(4) Shot peen the machined area (SOPM 20-10-03).

(5) Apply chrome plate to the area shown in REPAIR 5-1, Figure 601 (F-15.03).

(6) Grind the chrome plate to the design dimension shown in REPAIR 5-1, Figure 601 (SOPM 20-10-04).

3. Yoke Refinish

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
C00259	Primer - Chemical And Solvent Resistant Finish, Epoxy Resin	BMS10-11, Type I
D00113	Lubricant - Liquid Dispersed Solid Film Lubricant	BMS3-8, BAC 5811, TYPE VIII

B. References

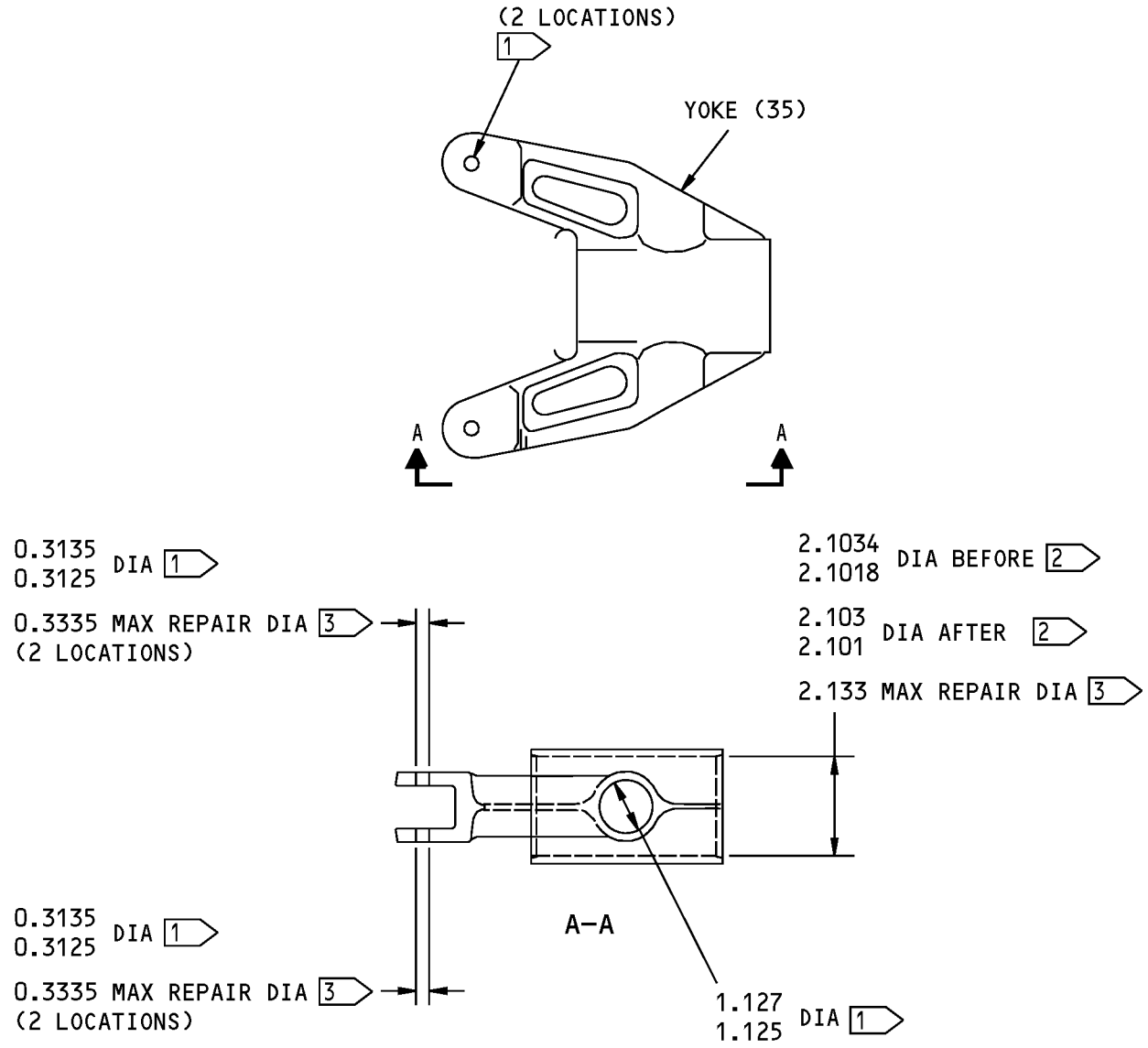
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-50-08	APPLICATION OF BONDED SOLID FILM LUBRICANTS
SOPM 20-60-02	FINISHING MATERIALS
SOPM 20-60-03	LUBRICANTS

C. Procedure (REPAIR 5-1, Figure 601)

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02. For lubricants, refer to SOPM 20-60-03.

(1) Anodize and apply primer, C00259 (SRF 2.19). Do not put primer on surfaces shown by flagnote 1.

(2) Apply lubricant, D00113 as shown by flagnote 2 (SOPM 20-50-08).



1 DO NOT APPLY PRIMER

2 APPLY SOLID FILM LUBRICANT
BMS 3-8, AS SHOWN IN SOPM 20-50-08

3 CHROME PLATE BUILDUP AND GRIND
TO DIMENSION AND FINISH SHOWN.
CHROME PLATE RUNOUT 0.00-0.08.
STOP CHROME PLATE 0.00-0.02 FROM
FILLET RADIUS OR EDGE.

ALL DIMENSIONS ARE IN INCHES

65-7208 Yoke Refinish
Figure 601

ASSEMBLY

1. General

A. This procedure has the data necessary to assemble the jackshaft assembly.

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

C. Refer to IPL Figure 1 and IPL Figure 2 for item numbers.

2. Assembly

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
A00028	Adhesive - Modified Epoxy For Rigid PVC, Foam Cored Sandwiches	BAC5010, Type 70 (BMS5-92, Type 1)
C00259	Primer - Chemical And Solvent Resistant Finish, Epoxy Resin	BMS10-11, Type I
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)
D50102	Lubricating Oil - General Purpose, Low Temperature	MIL-L-7870

B. References

Reference	Title
SOPM 20-50-01	BOLT AND NUT INSTALLATION
SOPM 20-50-02	INSTALLATION OF SAFETYING DEVICES
SOPM 20-50-07	LUBRICATION
SOPM 20-50-12	APPLICATION OF ADHESIVES
SOPM 20-60-02	FINISHING MATERIALS
SOPM 20-60-03	LUBRICANTS

C. Procedure

NOTE: For bolt and nut installation, refer to SOPM 20-50-01. For finishing materials, refer to SOPM 20-60-02. For lubricants, refer to SOPM 20-60-03.

(1) Assemble 251A3145-1, -2 using standard industry procedures and the steps shown below. Refer to IPL Figure 1 for item numbers. Obey the flagnotes as shown in ASSEMBLY, Figure 701.

(a) Apply MIL-L-7870 oil, D50102 to the threads of the screw (80) and nut (30) as noted by flagnote 1 (SOPM 20-50-07).

(b) Fill the joint (75) with grease, D00013 (F-19.08) as noted by flagnote 2.

(c) Install the bearing (25) wet with primer, C00259 as noted by flagnote 3.

(d) Slide yoke (35) over shaft assembly (95). Install nut (30) through yoke (35), and shaft assembly (95).

(e) Install screw assembly (55) in the shaft assembly (95).

(f) Install bearing retainer (20) and nut (15) on screw assembly (55).

(g) Bond the bolt (40) with the bushing (45) into the shaft at the hole location shown on the 251A3145-1, -5 assembly only, using adhesive, A00028 as noted by flagnote 4 (SOPM 20-50-12).

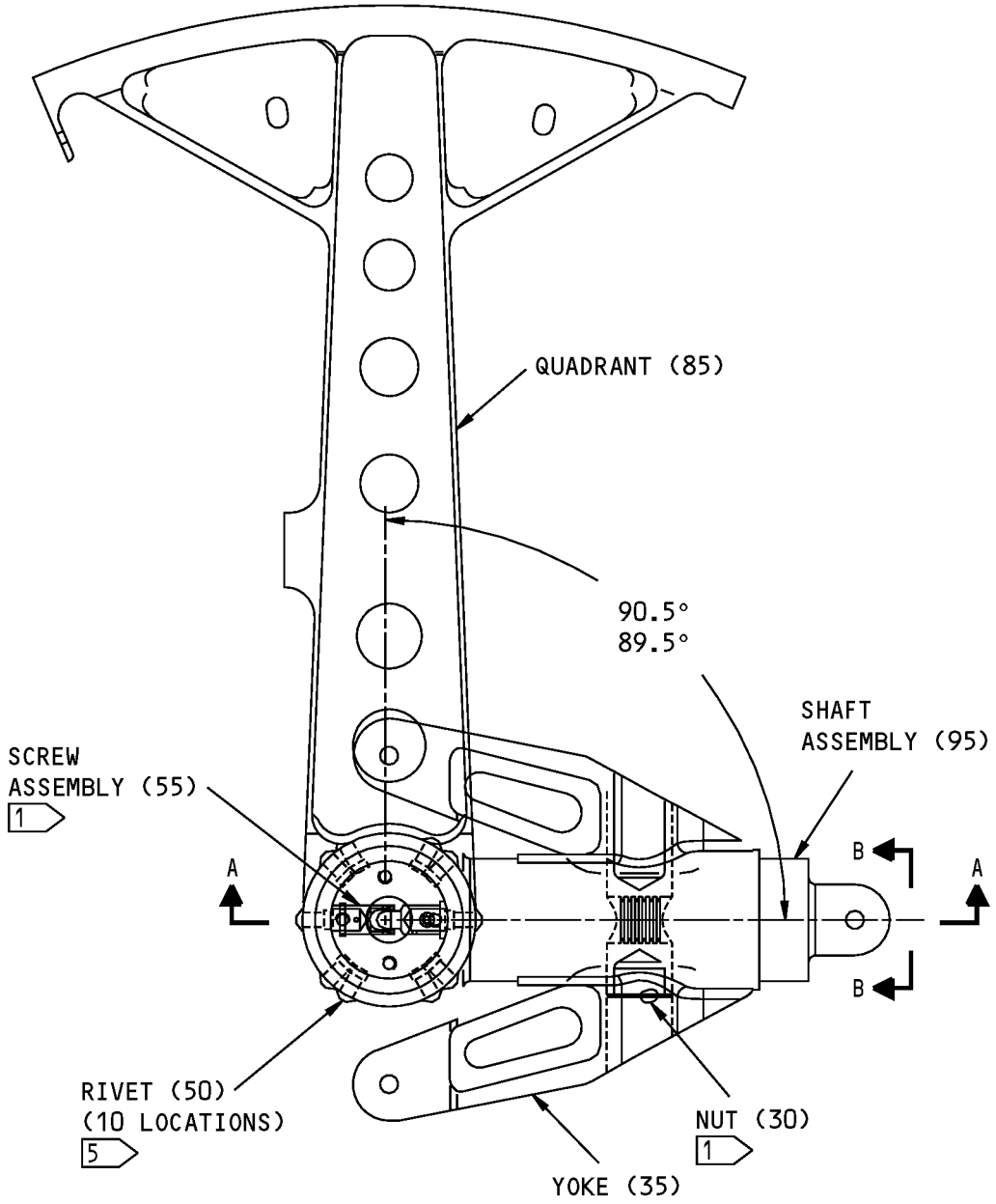
(h) Locate the rivet (50) from the pilot holes in the quadrant as noted by flagnote 5.

(i) Install all cotter pins as shown in SOPM 20-50-02.

(2) Assemble 251A3145-5, -6 using standard industry procedures and the steps shown below. Refer to IPL Figure 2 for item numbers.

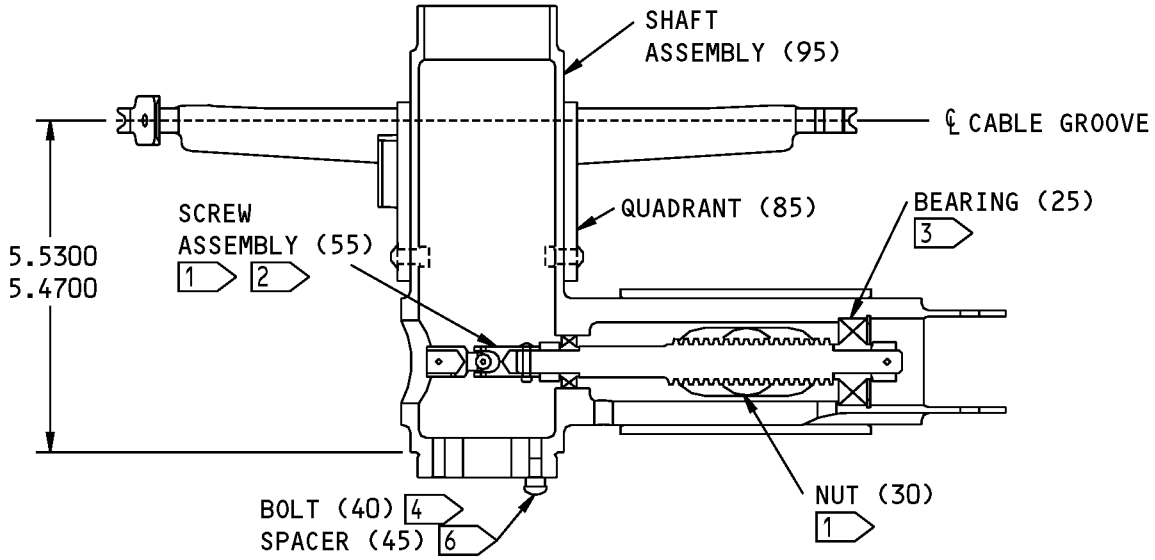
(a) For 251A3145-5 and -6, install the doubler (15) onto the jackshaft assembly (30 or 35) with the rivets (10).

(b) For 251A3145-5, install the bolt (20) and spacer (25) onto the jackshaft assembly (30).

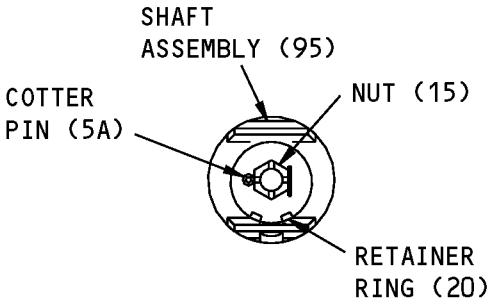


251A3136-1 SHOWN
251A3146-2 OPPOSITE

251A3145-1,-2 Jackshaft Assembly
Figure 701 (Sheet 1 of 2)



A–A



B–B

1 APPLY A THIN LAYER OF MIL-L-7870 LUBRICANT TO THE THREADS OF SCREW (80) AND NUT (30)

2 FILL THE UNIVERSAL JOINT WITH MIL-G-23827 GREASE (F-19.08) AS SHOWN IN SOPM 20-50-07

3 INSTALL THE BEARING WET WITH BMS 10-11 PRIMER

4 BOND THE BOLT WITH THE BUSHING INTO THE SHAFT AT THE HOLE LOCATION SHOWN ON THE 251A3145-1,-5 ASSEMBLY ONLY. BOND AS SHOWN IN SOPM 20-50-12, TYPE 70 OR 71

5 LOCATE THE RIVET FROM THE PILOT HOLES IN THE QUADRANT

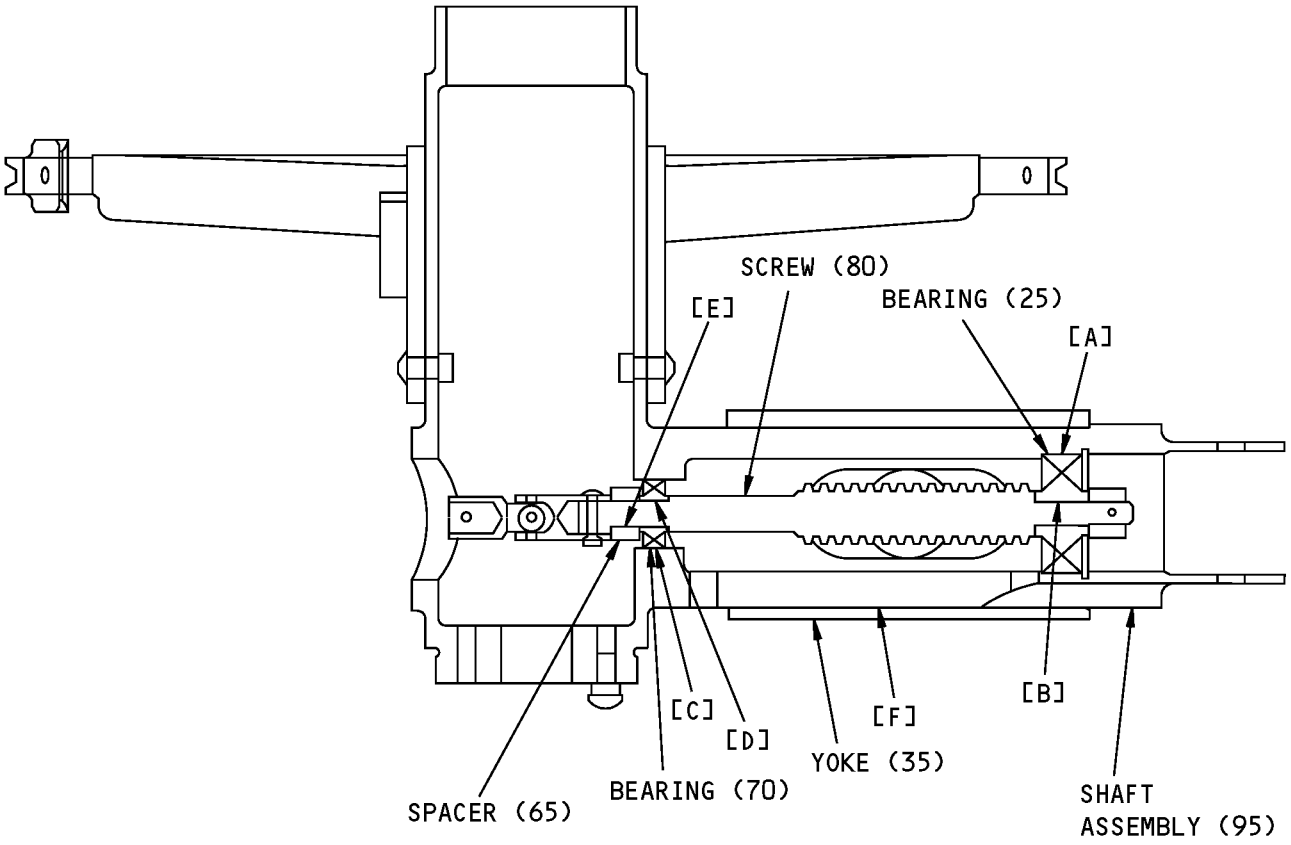
6 INSTALL THE SPACER ON THE 251A3145-1,-5

INSTALL COTTER PINS AS SHOWN IN SOPM 20-50-02

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

251A3145-1,-2 Jackshaft Assembly
Figure 701 (Sheet 2 of 2)



Fits and Clearances
Figure 801 (Sheet 1 of 2)

REF LETTER	REF IPL FIG. 1, MATING ITEM NO.	DESIGN DIMENSION*				SERVICE WEAR LIMIT*		
		DIMENSION		ASSEMBLY CLEARANCE 1		DIMENSION		MAXIMUM CLEARANCE
		MIN	MAX	MIN	MAX	MIN	MAX	
[A]	ID 95	1.4363	1.4368	-0.0012	-0.0002			
	OD 25	1.4370	1.4375					
[B]	ID 25	0.3745	0.3750	0.0000	0.0015			
	OD 80	0.3735	0.3745					
[C]	ID 95	0.8750	0.8755	0.0000	0.0010			
	OD 70	0.8745	0.8750					
[D]	ID 70	0.3745	0.3750	0.0000	0.0015			
	OD 80	0.3735	0.3745					
[E]	ID 65	0.3760	0.3830	0.0015	0.0095			
	OD 80	0.3735	0.3745					
[F]	ID 35	2.1010	2.1030	0.0010	0.0050			
	OD 95	2.0980	2.1000					

* ALL DIMENSIONS ARE IN INCHES

1 NEGATIVE VALVES DENOTE INTERFERENCE FIT

Fits and Clearances
Figure 801 (Sheet 2 of 2)

(NOT APPLICABLE)

ILLUSTRATED PARTS LIST

1. Introduction

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

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

1 2 3 4 5 6 7

. Assembly

. Attaching parts for assembly

. . Detail parts for assembly

. . Subassembly

. . Attaching parts for subassembly

. . . Detail parts for subassembly

. . . Sub-subassembly

. . . Attaching parts for subassembly

. . . . . Details parts for sub-subassembly

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

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

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

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

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

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

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

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

H. Interchangeable Parts

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

VENDOR CODES

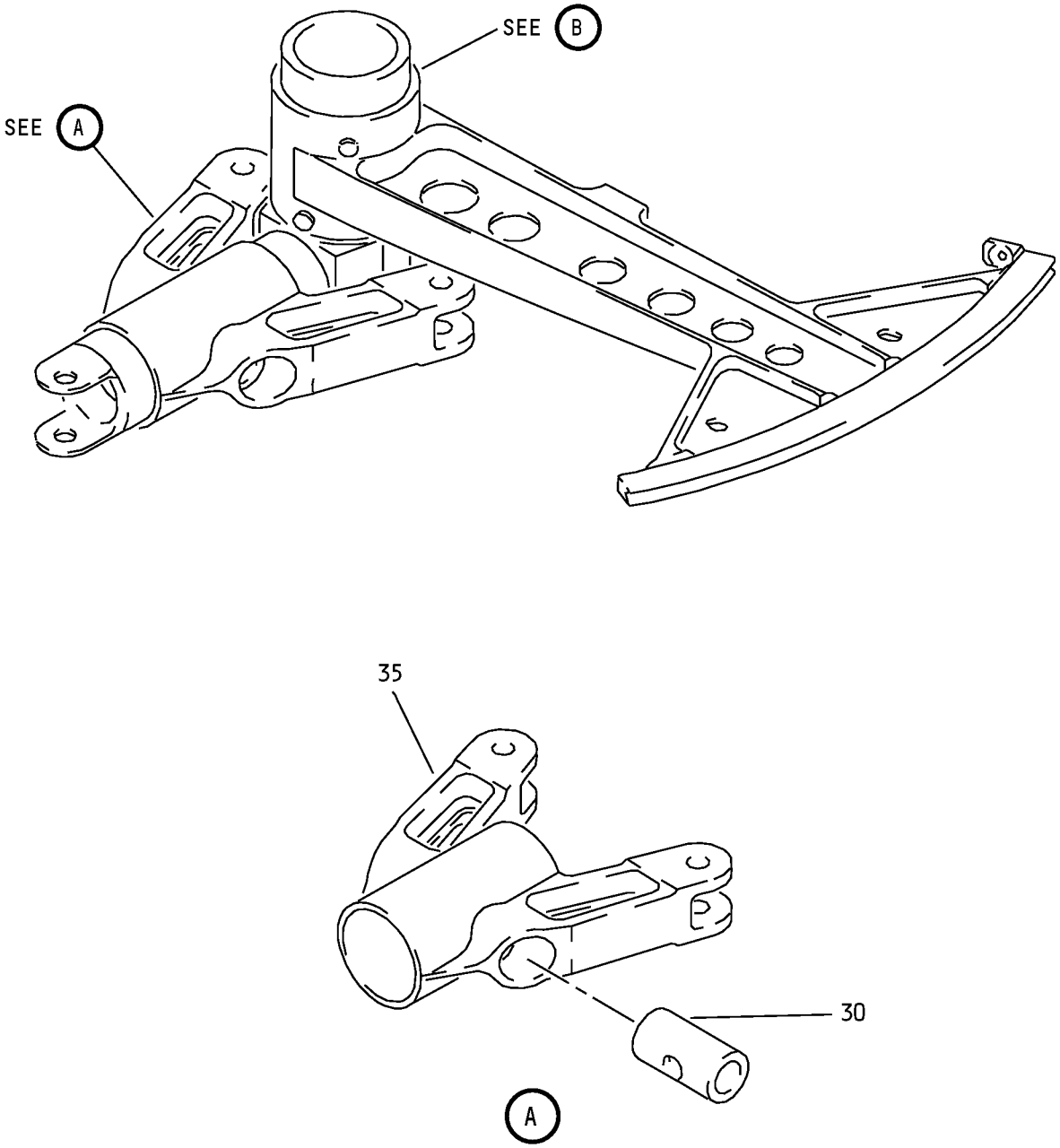
Code	Name
21335	TIMKEN US CORPORATION DIV FAFNIR 336 MECHANIC STREET LEBANON, NH 03766-0267 FORMERLY FAFNIR BRG AND TEXTRON INC FAFNIR DIV IN NEW BRITAIN, CONNECTICUT ; FORMERLY TORRINGTON CO THE SPECIAL PRODUCTS DIV SUB OF THE INGERSOLL-RAND CO V8D210 FORMERLY TORRINGTON CO FAFNIR BEARING DIV IN TORRINGTON, CT
30163	VALENTEC DAYRON INC 333 MAGUIRE BLVD PO BOX 140394 ORLANDO, FLORIDA 32814-0394
38443	MRC BEARINGS 402 CHANDLER STREET JAMESTOWN, NEW YORK 14701-3802 FORMERLY MARLIN-ROCKWELL CORP DIV TRW AND TRW INC
40920	MPB MINIATURE PRECISION BEARING DIV PRECISION PARK PO BOX 547 KEENE, NEW HAMPSHIRE 03431 FORMERLY MPB CORP AND MINIATURE BRG DIV MPB CORP
43991	FAG BEARING INCORPORATED 118 HAMILTON AVENUE STAMFORD, CONNECTICUT 06904 FORMERLY NORMA-HOFFMAN BEARING CORPORATION FORMERLY NORMA FAG BEARINGS CORPORATION
83086	NEW HAMPSHIRE BALL BEARING, INC HITECH DIVISION 172 JAFFREY ROAD PETERBOROUGH, NEW HAMPSHIRE 03458

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

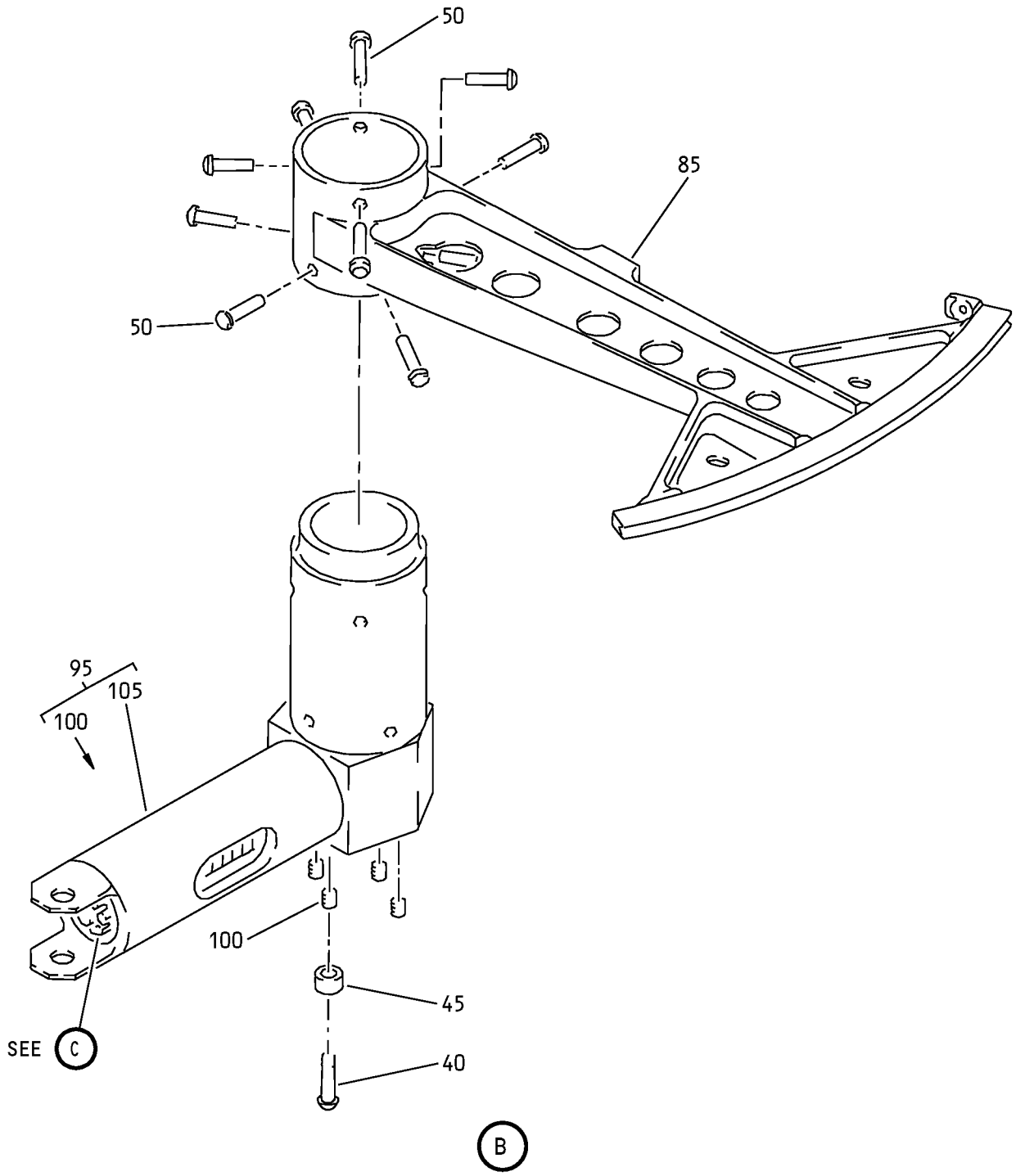
NUMERICAL INDEX

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
251A3145-1		1	1A	RF
251A3145-2		1	5A	RF
251A3145-3		1	55	1
251A3145-4		2	15	1
251A3145-5		1	1B	RF
		2	1	RF
251A3145-6		1	5B	RF
		2	5	RF
251A3146-1		1	85	1
251A3146-2		1	90	1
5-63067-2		1	95	1
5-97613-3019		2	30	1
5-97613-3020		2	35	1
50-6393-2		1	105	1
6-58994-2		1	80	1
6-58995		1	30	1
65-7208		1	35	1
BACB10BX6		1	70	1
BACB10BY6		1	25	1
BACB30LK3-2		1	40	1
		2	20	1
BACN10JD6		1	15	1
BACP18BC03C06P		1	10	1
BACR15FT8AD16		1	50	10
BACS13P3CN4		1	100	4
CS206E		1	70	1
JKP6P310		1	25	1
KP6A		1	70	1
KP6A2TS		1	70	1
KP6AFS428		1	70	1
KP6AG27		1	70	1
KP6BLY196		1	70	1
KP6BSD610		1	70	1
KP6G27		1	25	1

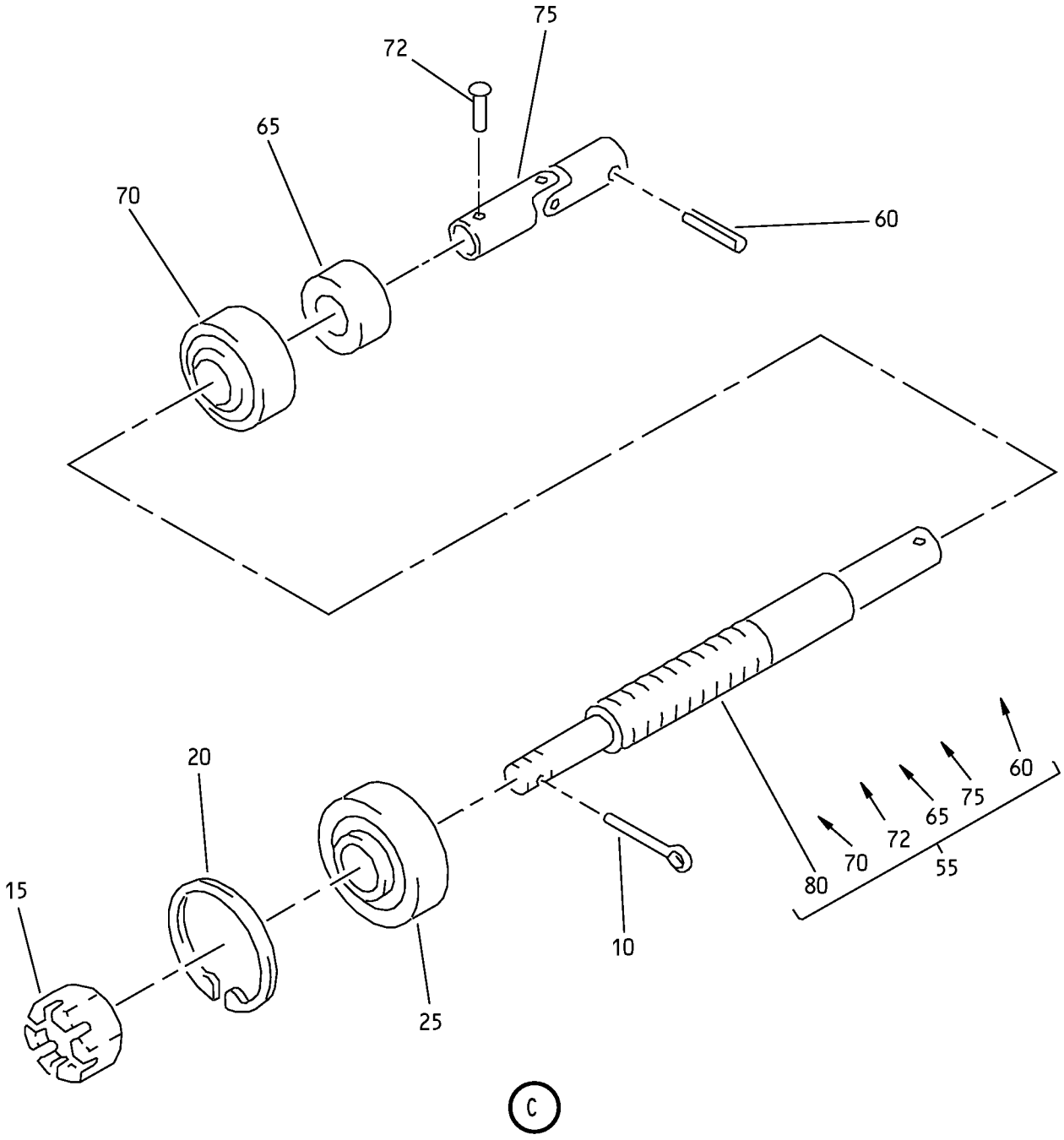
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
LLKP6A		1	70	1
MS16562-26		1	60	1
MS16625-2143		1	20	1
MS20270B8		1	75	1
MS20615-4M11		1	72	1
NAS1398MW5A4		2	10	3
NAS42HT12-21		1	65	1
NAS43DD3-10FC		1	45	1
		2	25	1



Rudder Control Jackshaft Assembly
IPL Figure 1 (Sheet 1 of 3)



Rudder Control Jackshaft Assembly
IPL Figure 1 (Sheet 2 of 3)



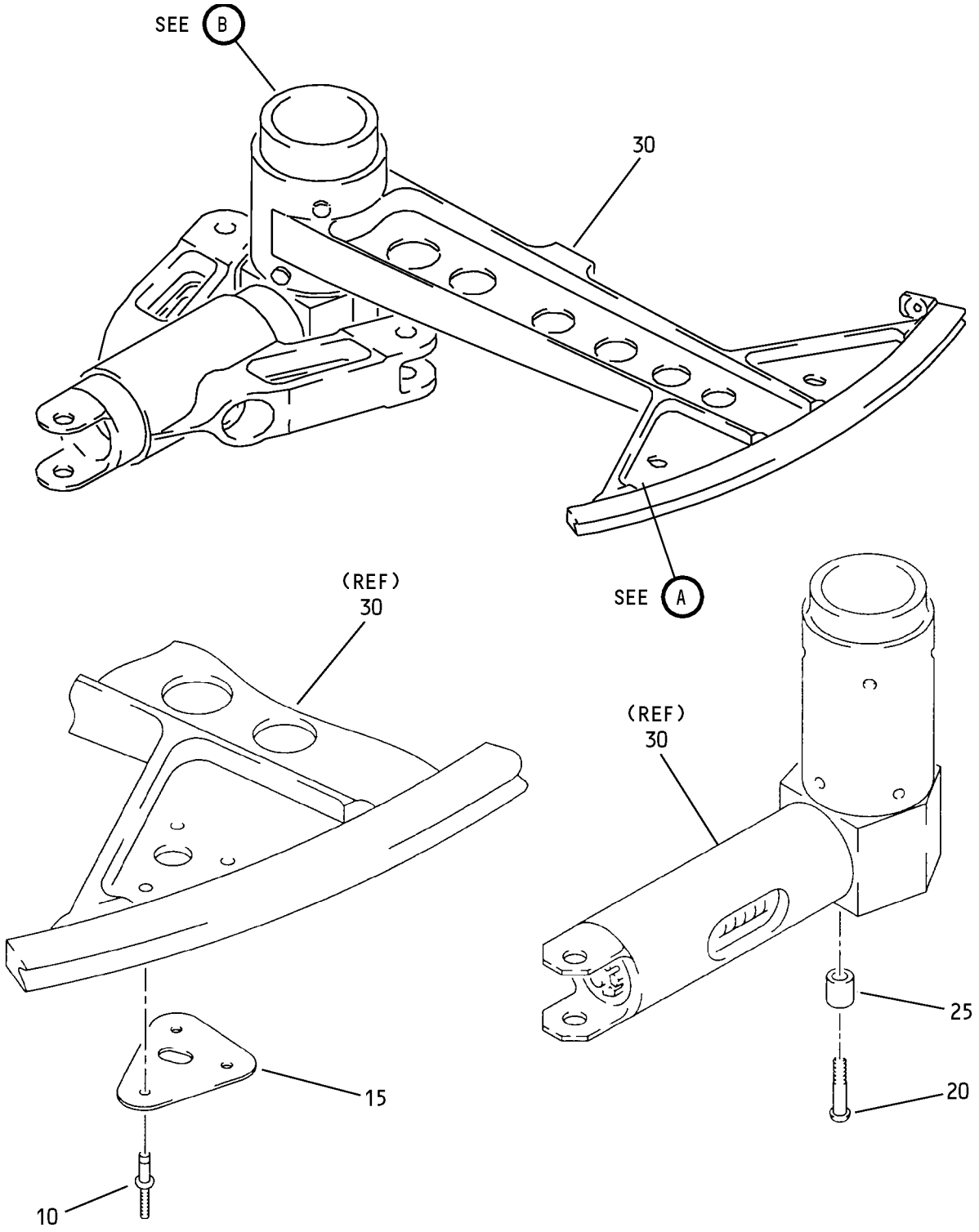
Rudder Control Jackshaft Assembly
IPL Figure 1 (Sheet 3 of 3)

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–1A	251A3145-1		JACKSHAFT ASSY-RUDDER CONT	A	RF
–1B	251A3145-5		JACKSHAFT ASSY-RUDDER CONT (FOR DETAILS SEE FIG. 2)	C	RF
–5A	251A3145-2		JACKSHAFT ASSY-RUDDER CONT (FOR DETAILS SEE FIG. 2)	B	RF
–5B	251A3145-6		JACKSHAFT ASSY-RUDDER CONT	D	RF
10	BACP18BC03C06P		. PIN-COTTER		1
15	BACN10JD6		. NUT		1
20	MS16625-2143		. RING-RTNR		1
25	JKP6P310		. BEARING (V40920) (SPEC BACB10BY6) (OPT KP6G27 (V30163))		1
30	6-58995		. NUT		1
35	65-7208		. YOKE		1
40	BACB30LK3-2		. BOLT	A	1
45	NAS43DD3-10FC		. SPACER	A	1
50	BACR15FT8AD16		. RIVET	A	10
55	251A3145-3		. SCREW ASSY		1
60	MS16562-26		. . PIN-SPR		1
65	NAS42HT12-21		. . SPACER		1
70	KP6AFS428		. . BEARING (V21335) (SPEC BACB10BX6) (OPT KP6A2TS (V43991)) (OPT LLKP6A (V38443)) (OPT KP6AG27 (V30163)) (OPT KP6A (V38443)) (OPT KP6BLY196 (V40920)) (OPT KP6BSD610 (V83086)) (OPT CS206E (VK8455))		1
72	MS20615-4M11		. . RIVET		1
75	MS20270B8		. . JOINT		1
80	6-58994-2		. . SCREW		1
85	251A3146-1		. QUADRANT	A	1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–90	251A3146-2		. QUADRANT	B	1
95	5-63067-2		. SHAFT ASSY		1
100	BACS13P3CN4		. . SLEEVE		4
105	50-6393-2		. . SHAFT		1

–Item not Illustrated



Rudder Control Jackshaft Assembly
IPL Figure 2

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
2–					
–1	251A3145-5		JACKSHAFT ASSY-RUDDER	A	RF
–5	251A3145-6		JACKSHAFT ASSY-RUDDER	B	RF
10	NAS1398MW5A4		. RIVET	C, D	3
15	251A3145-4		. DOUBLER	C, D	1
20	BACB30LK3-2		. BOLT	C	1
25	NAS43DD3-10FC		. SPACER	C	1
30	5-97613-3019		. JACKSHAFT ASSY (REFER TO OHM 27-24-02)	C	1
–35	5-97613-3020		. JACKSHAFT ASSY (REFER TO OHM 27-24-02)	D	1

–Item not Illustrated