TO: ALL HOLDERS OF FORWARD AND AFT ENGINE MOUNT ASSEMBLIES (JT9D) COMPONENT MAINTENANCE MANUAL 71-21-01

REVISION NO. 33 DATED MAR 01/05

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
REPAIR 4-1 602	Clarified orientation of engine mount collar in accordance with engineering drawing.

FORWARD AND AFT ENGINE MOUNT ASSEMBLIES (JT9D)

PART NUMBER 310T3020-2,-3,-4,-6,-7,-8,-10

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

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
767-71-0030		PRR B11455	APR 10/87
	71-4		APR 10/87
767-71-0038			APR 10/87
		PRR B11480-36	JUL 01/88
	71-7		JAN 01/90
767-71-0073			DEC 01/94
767-71A0087			JUN 01/97

PAGE	DATE	CODE
71-21-01		
TITLE PAGE		
1	APR 01/89	01.1
2	BLANK	
REVISION RECORD		
1	JUL 10/83	01
2	BLANK	
TR & SB RECORD		
1	JUN 01/97	01.1
2	BLANK	
LIST OF EFFECTIVE PAGES		
*1	MAR 01/05	01
THRU LAST PAGE		
CONTENTS		
1	JUL 10/83	01
2	BLANK	
INTRODUCTION		
1	JUL 10/83	01
2	BLANK	
DESCRIPTION & OPERATION		
1	JUL 10/83	01
2	BLANK	
DISASSEMBLY		
301	JUL 10/86	01.1
302	BLANK	
CHECK		
501	MAR 01/99	01.1
502	NOV 01/00	01.1
503	JUN 01/96	01.1
504	JUN 01/96	01.1

PAGE	DATE	CODE
REPAIR-GENERAL		
601	JUL 01/88	01.1
602	APR 10/87	01.101
603	JUN 01/95	01.1
604	JUN 01/95	01.1
REPAIR 1-1		
601	MAR 01/98	01.1
602	BLANK	
REPAIR 1-2		
601	OCT 01/93	01.1
602	JAN 01/91	01.1
603	APR 01/92	01.1
604	APR 10/87	01.1
REPAIR 2-1		
601	JUN 01/94	01.1
602	APR 10/87	01.1
REPAIR 2-2		
601	JUL 10/86	01.1
602	JUL 10/86	01.1
603	JUL 10/86	01.1
604	APR 10/87	01.1
REPAIR 3-1		
601	JUN 01/94	01.1
602	APR 01/89	01.1
REPAIR 3-2		
601	JAN 01/90	02.1
602	JAN 01/90	01.1
603	JUN 01/97	01.1
604	APR 10/87	01.1
605	JUN 01/97	01.1
606	BLANK	
REPAIR 4-1		
*601	MAR 01/05	01.101
*602	MAR 01/05	01.1

* = REVISED, ADDED OR DELETED

PAGE	DATE	CODE
REPAIR 5-1		
601	NOV 01/00	01.1
602	APR 10/87	01.1
REPAIR 5-2		
601	NOV 01/00	01.1
602	JUN 01/96	01.1
603	NOV 01/00	01.1
604	NOV 01/00	01.101
605	APR 10/87	01.1
606	BLANK	
REPAIR 6-1		
601	MAR 01/02	01.1
602	MAR 01/02	01.1
REPAIR 7-1		
601	MAR 01/02	01.1
602	MAR 01/02	01.101
REPAIR 8-1		
601	OCT 10/85	01.1
602	JUL 01/88	01.1
REPAIR 9-1		
601	APR 01/89	01.1
602	BLANK	
REPAIR 10-1		
601	OCT 01/93	01.1
602	OCT 01/93	01.1
603	OCT 01/93	01.1
604	BLANK	
REPAIR 11-1		
601	MAR 01/98	01.1
602	BLANK	
REPAIR 12-1		
601	JUL 10/86	01.1
602	APR 01/89	01.1
REPAIR 13-1		
601	JUL 10/86	01.1
602	APR 01/89	01.1
REPAIR 14-1		
601	JAN 01/90	02.1
602	APR 10/87	01.1
603	APR 10/87	01.1
604	JAN 01/90	01.1
ASSEMBLY		
701	NOV 01/00	01.1
702	NOV 01/98	01.1
FITS AND CLEARANCES		
801	APR 01/91	01.1
802	APR 01/89	01.1
803	JUL 01/88	01.1
804	APR 01/91	01.1
805	MAR 01/02	01.1
806	MAR 01/02	01.1
807	MAR 01/98	01.1
808	BLANK	
ILLUSTRATED PARTS LIST		
1001	JUL 10/83	01
1002	JUN 01/95	01.1
1003	JUN 01/95	01.1
1004	JUN 01/97	01.1
1005	SEP 01/95	01.101
1006	MAR 01/98	01.1
1007	JUN 01/97	01.1
1008	MAR 01/98	01.1
1009	JUN 01/95	01.1
1010	JUN 01/95	01.1
1011	MAR 01/98	01.1
1012	JUN 01/97	01.101
1013	JUN 01/95	01.1
1014	SEP 01/95	01.1
1015	JUN 01/96	01.1
1016	JUN 01/95	01.1
1017	JUN 01/95	01.1
1018	JUN 01/95	01.1

* = REVISED, ADDED OR DELETED

PAGE	DATE	CODE
ILLUSTRATED PARTS LIST		CONT.
1019	JUN 01/95	01.1
1020	SEP 01/95	01.1
1021	JUN 01/95	01.1
1022	JUN 01/95	01.1
1023	JUN 01/95	01.1
1024	JUN 01/96	01.1
1025	JUN 01/95	01.1
1026	JUN 01/95	01.1
1027	JUN 01/95	01.1
1028	BLANK	

PAGE	DATE	CODE

* = REVISED, ADDED OR DELETED

COMPONENT
MAINTENANCE MANUAL

TABLE OF CONTENTS

*[1] Special instructions not required. Use standard industry practices.

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:

Assembly

JT9D-7R4 ENGINE MOUNT ASSEMBLY

DESCRIPTION AND OPERATION

1. The forward and aft engine mount assemblies consist of various hangers, links and parts required to attach JT9D-7R engine to the strut.

DISASSEMBLY

1. Parts Replacement

   NOTE: The following parts are recommended for replacement. Actual replacement may be based on in-service experience.

   A. All Cotter pins.

2. Disassemble the forward (1, IPL Fig. 1) and aft (1, IPL Fig. 2) engine mount assemblies using standard industry practices and the following procedures.

3. Do not remove bearings (155, IPL Fig. 1) from evener bar (160) and bearing (35) from link (45). Inner ball of bearing may be replaced, if necessary.

4. Do not remove bearings or bushings unless repair or replacement is necessary.

CHECK

1. Check all parts for obvious defects in accordance with standard industry practices. Refer to FITS AND CLEARANCES for design dimensions and wear limits.

2. Magnetic particle check per 20-20-01 the following parts:

   A. Forward engine mount assembly (IPL Fig. 1) -- Fitting (140), evener bar (160), link (45), collar (80), end cap (65, 66), shear pins (130).

   B. Aft engine mount assembly (IPL Fig. 2) -- Hanger (155), shear pins (140).

3. Penetrant check per 20-20-02 the following parts:

   A. Forward engine mount assembly (IPL Fig. 1) -- Washers (25, 105, 290), bolts (15, 17, 95, 250, 255, 275).

   B. Aft engine mount assembly (IPL Fig. 2) -- Links (60, 120), pins (30, 95, 290), washers (35, 100, 295), bolt retainers (22, 85).

4. Check run-on torque while installing nut on bolt. Observe torque required to turn nut until minimum of two complete threads extend beyond end of nut. Torque shall be within min and max value listed in following table:

NUT (IPL Fig. 1)	BOLT (IPL Fig. 1)	RUN-ON TORQUE (LB-IN) (NO AXIAL LOAD)
30	17A,17C	50-400
30	15,15A	90-400
32	17,17B	50-400
110	95,95B	135-600
110	95A,95C	70-600
280	275	90-400
280	275B	50-400

NUT (IPL Fig. 2)	BOLT (IPL Fig. 2)	RUN-ON TORQUE (LB-IN) (NO AXIAL LOAD)
*[1]	250	50 (minimum)

*[1] Barrel Nut, Part Number SL4075C12-1 installed on the aft engine mount bulkhead fitting assembly, Part Number 311T3261.

5. Do a check for scratches and gouges on the engine mount components listed in Fig. 501. Repair damage within allowable depths per applicable repair section.

6. Do a visual check of shoulder bolts (15, 17, 95, 275, IPL Fig. 1) and link pivot pins (30, 95, 290, IPL Fig. 2). If defects are found during the visual check, remove the chrome plate and perform a penetrant inspection.

NOMENCLATURE	PART NUMBER	MAXIMUM REPAIRABLE GOUGE DEPTH (INCHES)	
		GENERAL 2	RESTRICTED 3
FITTING ASSEMBLY – FORWARD	310T3021	0.05	0.005
EVENER BAR ASSEMBLY – FORWARD	310T3022	0.05	--
THRUST LINK ASSEMBLY – FORWARD	310T3023	0.05	--
HANGER ASSEMBLY – AFT	310T3031-1,-3,-5	0.03	0.010
LINK ASSEMBLY – TANGENTIAL	310T3032-1,-3	0.03	0.005
LINK ASSEMBLY – CENTER	310T3033-1,-3	0.03	--

NOTE: SEE APPLICABLE REPAIR SECTION FOR REPAIR PROCEDURE.

1 RESTRICTED AREA.
SEE CHART FOR MAXIMUM REPAIRABLE GOUGE DEPTH.

2 MAXIMUM REPAIRABLE GOUGE DEPTH ALL OVER EXCEPT IN RESTRICTED AREAS SHOWN.

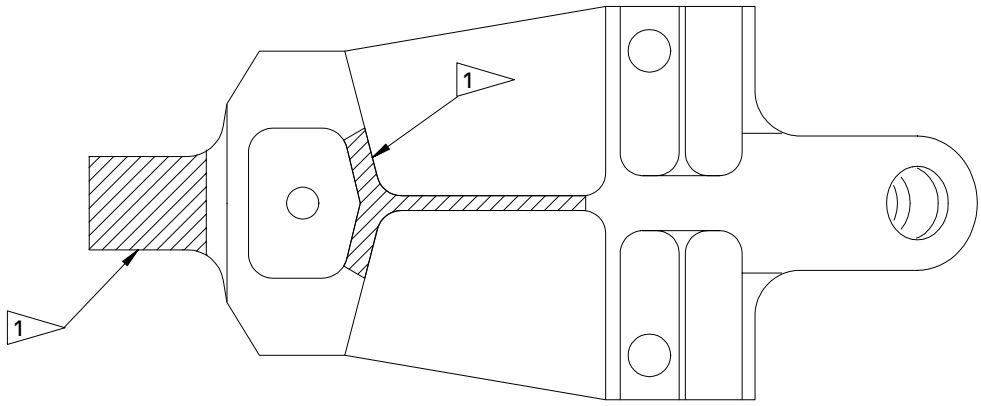
3 MAXIMUM REPAIRABLE GOUGE DEPTH IN RESTRICTED AREAS SHOWN.

4 t_{NOM} = 0.410 – 0.430 = DESIGN DIMENSION OF LUG THICKNESS.

5 t_{MIN} = 0.400 = MINIMUM LUG THICKNESS (TYP) AFTER BLEND REPAIR.

6 t_{NOM} = 0.490 – 0.510 = DESIGN DIMENSION OF LUG THICKNESS.

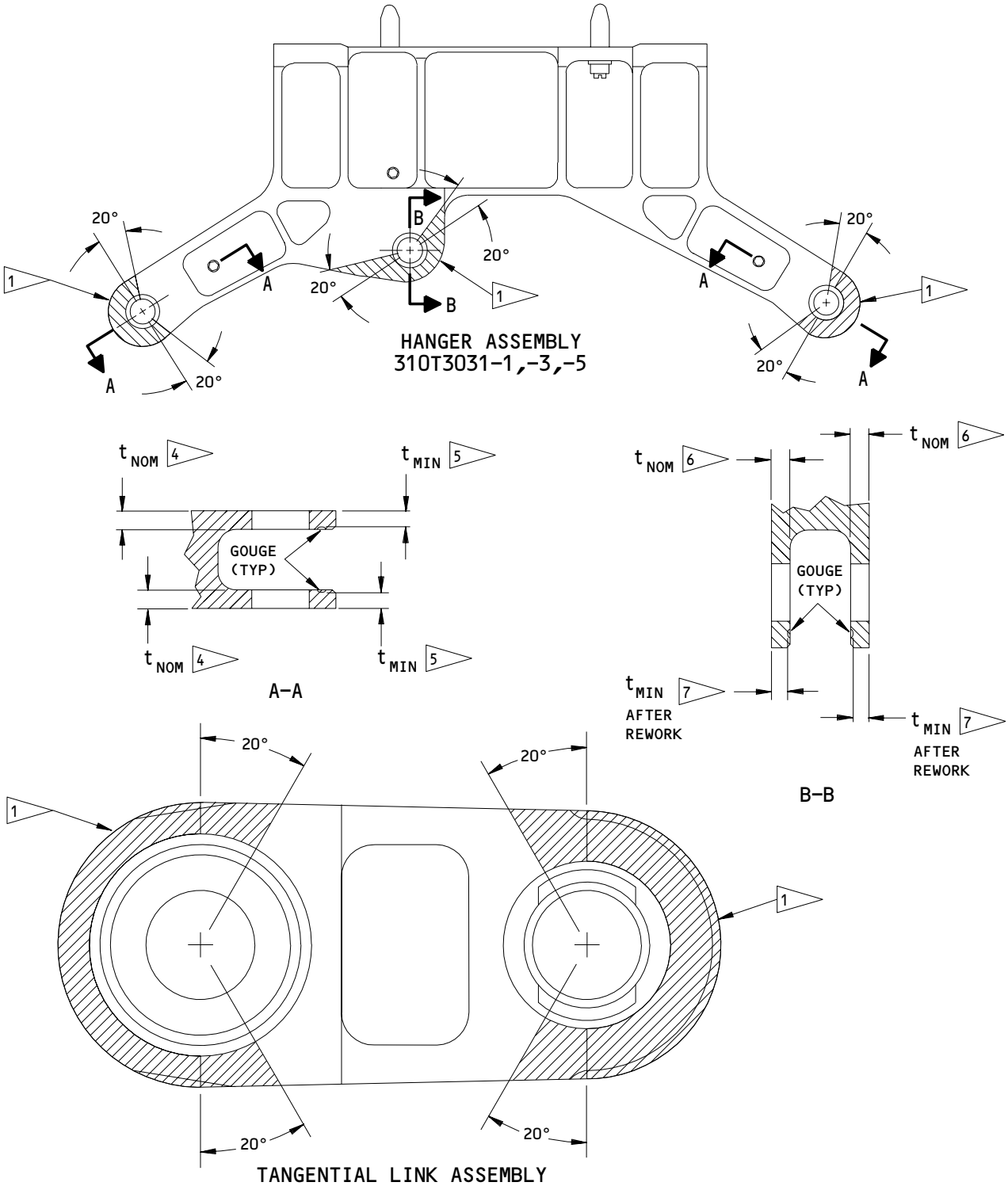
7 t_{MIN} = 0.450 = MINIMUM LUG THICKNESS (TYP) AFTER BLEND REPAIR.



FITTING ASSEMBLY
310T3021-1

Scratch and Gouge Check
Figure 501 (Sheet 1)

D20552



Scratch and Gouge Check
Figure 501 (Sheet 2)

REPAIR - GENERAL

1. Content

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

P/N	NAME	REPAIR
310T3021	FITTING	1-1, 1-2
310T3022	EVENER BAR	2-1, 2-2
310T3023	THRUST LINK	3-1, 3-2
310T3025	COLLAR	4-1
310T3031	HANGER	5-1, 5-2
310T3032	TANGENTIAL LINK	6-1
310T3033	CENTER LINK	7-1
310T3036	FITTING	8-1
310T3150	PIN	9-1
310T3152	BOLT, SHOULDER	10-1
- - -	MISC PARTS REFINISH	11-1
310T3037	SHEAR PIN	12-1
310T3038	SHEAR PIN	13-1
310T3011 BACB30PN12 BACB30PN20	BOLT	14-1

2. Standard Practices

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

20-10-01 Repair and Refinish of High Strength Steel Parts
20-10-02 Machining of Alloy Steel
20-10-03 Shot Peening
20-10-04 Grinding of Chrome Plated Parts
20-20-01 Magnetic Partical Inspect
20-20-02 Penetrant Methods of Inspection
20-30-02 Stripping of Protective Finishes
20-41-01 Decoding Table for Boeing Finish Codes
20-42-03 Hard Chrome Plating
20-50-03 Bearing Installation and Retention
20-50-13 Application of Protective Coating

3. Material

NOTE: Equivalent substitutes may be used.

A. Protective Coating -- BMS 14-4, Type 1 (Ref 20-60-02)

B. Protective Coating -- BMS 14-4, Type 2 (Ref 20-60-02)

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

D. Methyl Ethyl Ketone (Ref 20-60-01)

4. Dimensioning Symbols

A. Standard True Positioning Dimensioning Symbols used in applicable Repair procedures are shown in Fig. 601.

—	STRAIGHTNESS
▱	FLATNESS
⊥	PERPENDICULARITY (OR SQUARENESS)
//	PARALLELISM
○	ROUNDNESS
⌭	CYLINDRICITY
⌒	PROFILE OF A LINE
⌓	PROFILE OF A SURFACE
◎	CONCENTRICITY
≡	SYMMETRY
∠	ANGULARITY
↗	RUNOUT
↗↗	TOTAL RUNOUT
⌴	COUNTERBORE OR SPOTFACE
∨	COUNTERSINK
⌖	THEORETICAL EXACT POSITION OF A FEATURE (TRUE POSITION)
∅	DIAMETER
S ∅	SPHERICAL DIAMETER
R	RADIUS
SR	SPHERICAL RADIUS
()	REFERENCE
BASIC (BSC) OR [DIM]	A THEORETICALLY EXACT DIMENSION USED TO DESCRIBE SIZE, SHAPE OR LOCATION OF A FEATURE FROM WHICH PERMISSIBLE VARIATIONS ARE ESTABLISHED BY TOLERANCES ON OTHER DIMENSIONS OR NOTES.
[-A-]	DATUM
Ⓜ	MAXIMUM MATERIAL CONDITION (MMC)
Ⓛ	LEAST MATERIAL CONDITION (LMC)
Ⓢ	REGARDLESS OF FEATURE SIZE (RFS)
Ⓟ	PROJECTED TOLERANCE ZONE
FIM	FULL INDICATOR MOVEMENT

EXAMPLES

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

NOTE: DATUM MAY APPEAR AT EITHER SIDE OF TOLERANCE FRAME

0.020 | A

A | 0.020

True Position Dimensioning Symbols
Figure 601

B21557

FITTING ASSEMBLY - REPAIR 1-1

310T3021-1

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

1. Bushing Replacement (Fig. 601)

   A. Press out old bushings and install new bushings using shrink fit method.

   B. Machine ID of bushings to dimension and finish shown.

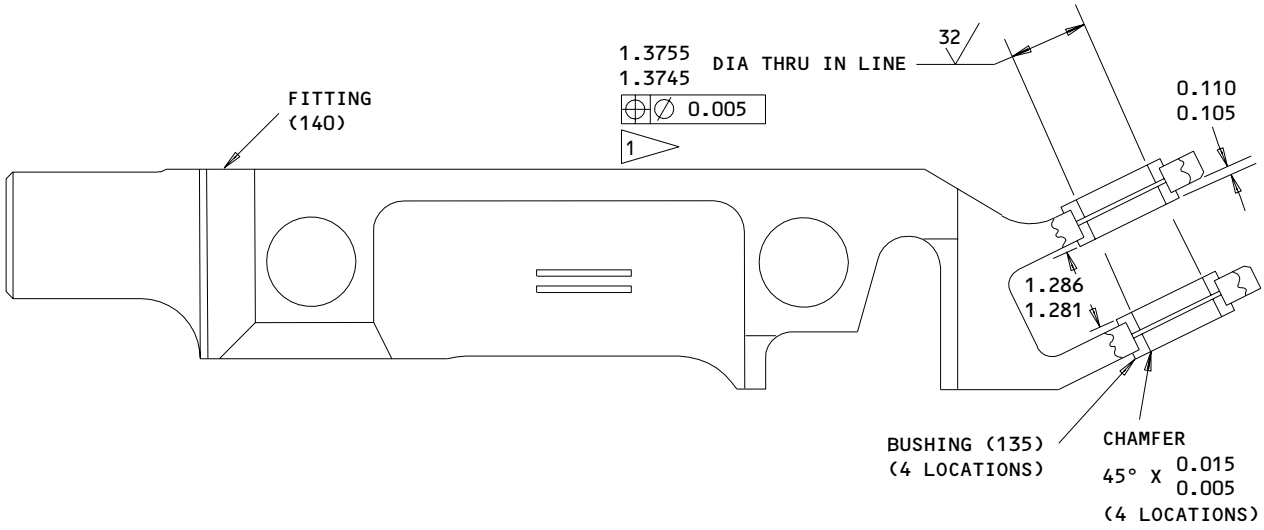
2. Scratch and Gouge Repair

   NOTE: See Fig. 501 for maximum repairable gouge depth all over and in restricted areas.

   A. Blend out scratches and gouges to 1.00-inch minimum radius.

   B. Shot peen blended area per 20-10-03.

   C. Refinish per Repair 1-2, Fig. 601.



1 TWO HOLES CONCENTRIC TO COMMON AXIS WITHIN 0.001 FIM AND CONCENTRIC TO HOLE IN FITTING 0.005 FIM

125 ALL MACHINED SURFACES EXCEPT AS NOTED

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 1

310T3021-1
Bushing Replacement
Figure 601

FORWARD FITTING - REPAIR 1-2

310T3021-2

NOTE: Refer to REPAIR-GEN for list of applicable standard practices, and to IPL Fig. 1 for item numbers. For repair of surfaces which may require only restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Lug Hole Repair (Fig. 601, IPL Fig. 1)

   A. Machine holes as required to remove defects.

   B. Shot peen.

   C. Manufacture bushing (Fig. 602) as required to compensate for material removed in step A.

   D. Install bushing per REPAIR 1-1.

2. Journal Repair (Fig. 601, IPL Fig. 1)

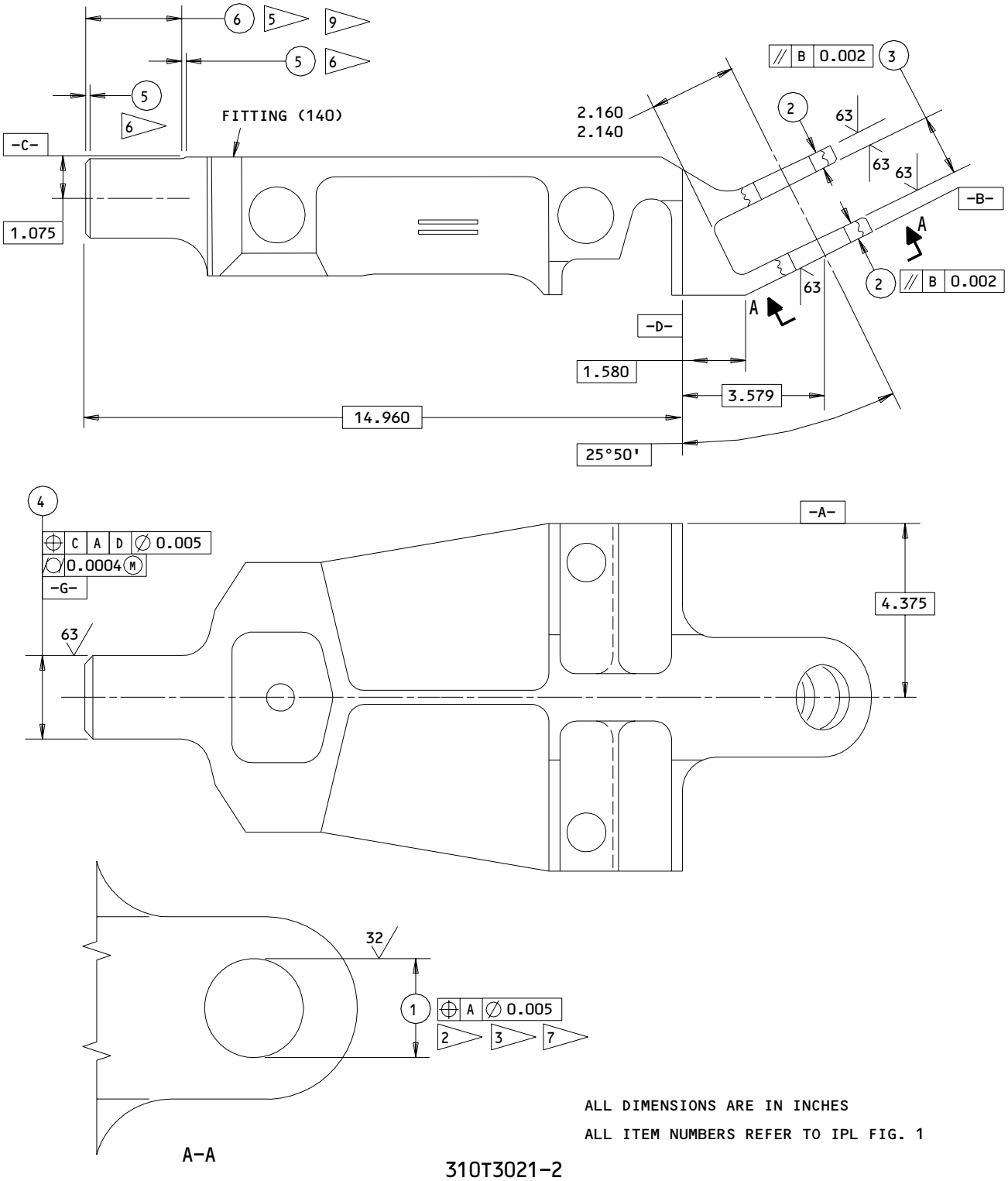
   A. Remove existing thin dense chrome plating per 20-30-02.

   B. Machine fitting per 20-10-01 and 20-10-02 to remove possible corrosion pitting and to restore the worn journal to 0.0004 inch cylindricity, and 0.005 inch diameter true position location per drawing 310T3021.

   C. Shot peen surfaces per drawing 310T3021 and 20-10-03.

   D. If fitting does not require machining to restore cylindricity and true positioning, replate with thin dense chrome plate (F-14.892) per 20-42-03. Thin dense chrome plate allowable thickness is 0.0002-0.0007 inch. Thin dense chrome plate must achieve dimensions without grinding.

   E. If material removed in step 2.B. exceeds the thickness of the thin dense chrome plate, apply hard chrome plate (F-15.03) per 20-42-03 to achieve design dimension after plating and grinding. Allow 0.080-inch chrome plate runout. Hard chrome plate allowable thickness is 0.003-0.012 inch. Grind hard chrome plate per 20-10-04.



310T3021-2

Lug Hole and Journal Repair
Figure 601 (Sheet 1)

223159

	(1)	(2)	(3)	(4)	(5)	(6)
DESIGN DIM	1.5633 1.5625	0.5200 0.5100	1.4960 1.4860	1.9973 1.9967 ▷8	0.0800 0.0000	2.240 2.220
REPAIR LIMIT	1.6233 ▷1			1.9713 ▷4		

REFINISH

PASSIVATE (F-17.09) ALL OVER EXCEPT DIA (5)

DIA (5) CHROME PLATE (F-14.892) REF ▷5 ▷6

▷1 LIMIT FOR INSTALLATION OF OVERSIZED BUSHINGS

▷2 SHOT PEEN: 170-330, INTENSITY 0.016A, COVERAGE 2.0

▷3 DIA AFTER SHOT PEENING

▷4 REPAIR LIMIT FOR REPAIR BY THICK CHROME PLATE BUILDUP.

▷5 THIN DENSE CHROME PLATING (F-14.892) ALLOWABLE THICKNESS IS 0.0020 INCH MINIMUM AND 0.0007 INCH MAXIMUM DIA TO SIZE. DO NOT GRIND AFTER PLATING.

▷6 CHROME PLATE RUNOUT AREA

▷7 TWO HOLES CONCENTRIC TO A COMMON AXIS WITHIN 0.001 FIM

▷8 DIA AFTER PLATING PER ▷5 ▷6 ▷9

▷9 THICK CHROME PLATING (F-15.03) ALLOWABLE THICKNESS IS 0.0030 INCH MINIMUM AND 0.0120 INCH MAXIMUM AFTER GRINDING.

REPAIR

REF ▷1 ▷2

MATERIAL: 15-5PH CRES, 180-200 KSI

125 ALL MACHINED SURFACES EXCEPT AS NOTED

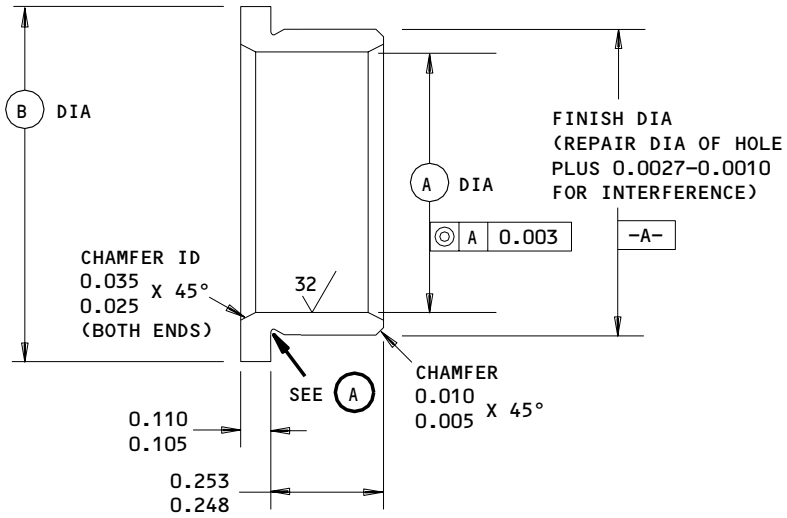
BREAK SHARP EDGES 0.03-0.04 R
BREAK HOLE EDGES 0.02-0.03 R AT 32

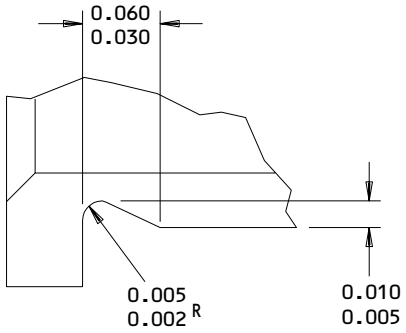
ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 1

310T3021-2

Lug Hole and Journal Repair
Figure 601 (Sheet 2)





A

HOLE LOCATION (FIG. 601)	A	B
1	1.3755 1.3745	1.850 1.830

63 MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES

PASSIVATE (F-17.09) ALL OVER EXCEPT IN BORE

MATERIAL: 15-5PH CRES (180-200 KSI)

MAGNETIC PARTICLE CHECK

ALL DIMENSIONS ARE IN INCHES

310T3021-2
Oversize Bushing Detail
Figure 602

221707

EVENER BAR ASSEMBLY - REPAIR 2-1

310T3022-1

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

1. Bushing Replacement (Fig. 601)

   A. Remove old bushings and install new bushings using shrink-fit method.

   B. Machine ID and flange face of bushings to dimension and finish shown.

2. Bearing Replacement (Fig. 601)

   A. Install outer race of bearing per 20-50-03, use shrink-fit method if necessary. Position slot in race as shown.

   B. Roller swage per 20-50-03.

   C. Install balls and hold in place with aluminum wire until unit is installed.

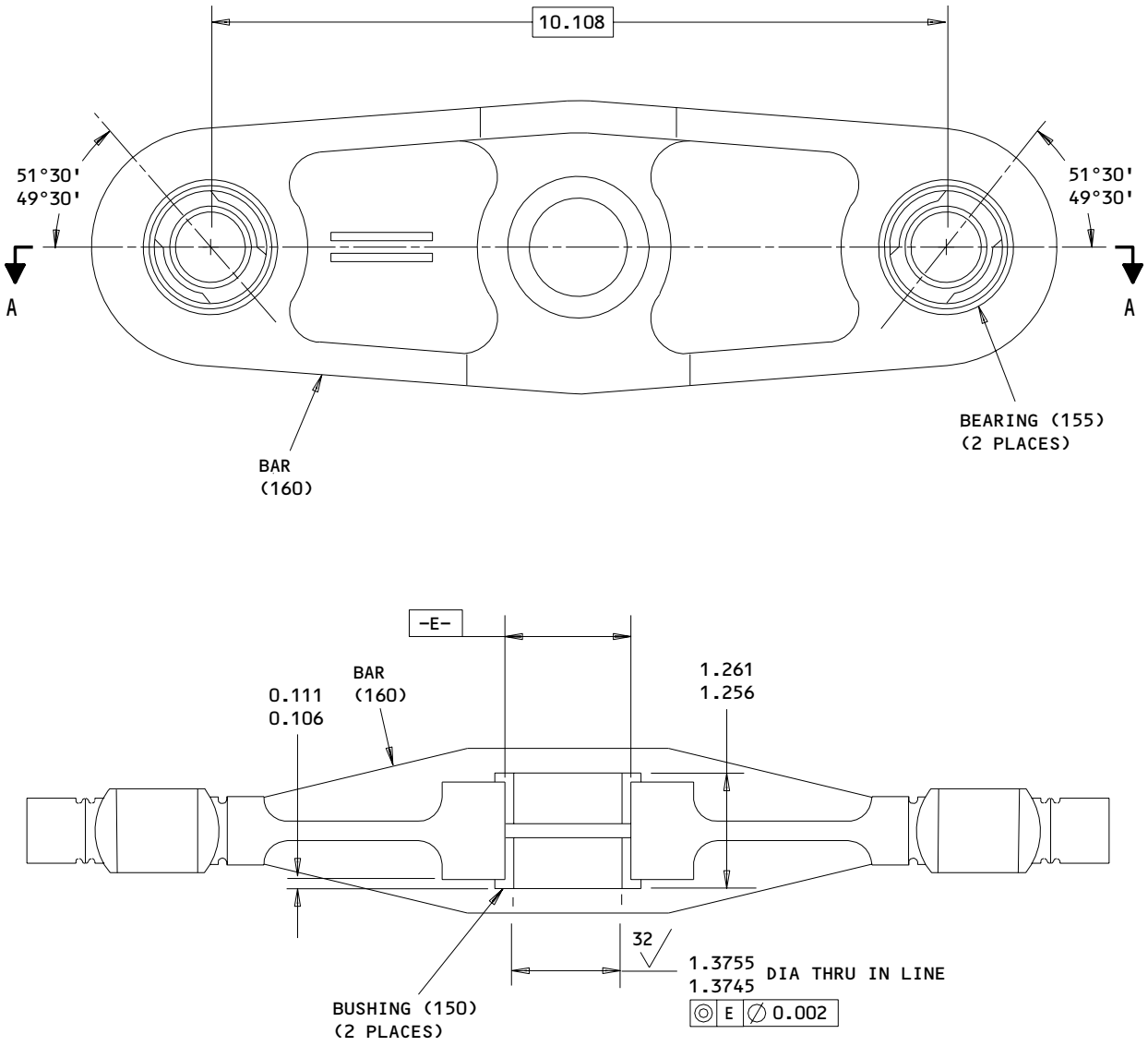
3. Scratch and Gouge Repair

   NOTE: See Fig. 501 for maximum repairable gouge depth all over and in restricted areas.

   A. Blend out scratches and gouges to 1.00-inch minimum radius.

   B. Shot peen blended area per 20-10-03.

   C. Refinish per Repair 2-2, Fig. 601.



A-A

125 ALL MACHINED SURFACES EXCEPT AS NOTED

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 1

310T3022-1
Parts Replacement and Bar Refinish
Figure 601

8233

EVENER BAR ASSEMBLY - REPAIR 2-2

310T3022-2

NOTE: Refer to REPAIR-GEN for list of applicable standard practices, and to IPL Fig. 1 for item numbers. For repair of surfaces which may require only restoration of original finish, refer to Refinish instructions, Fig. 601.

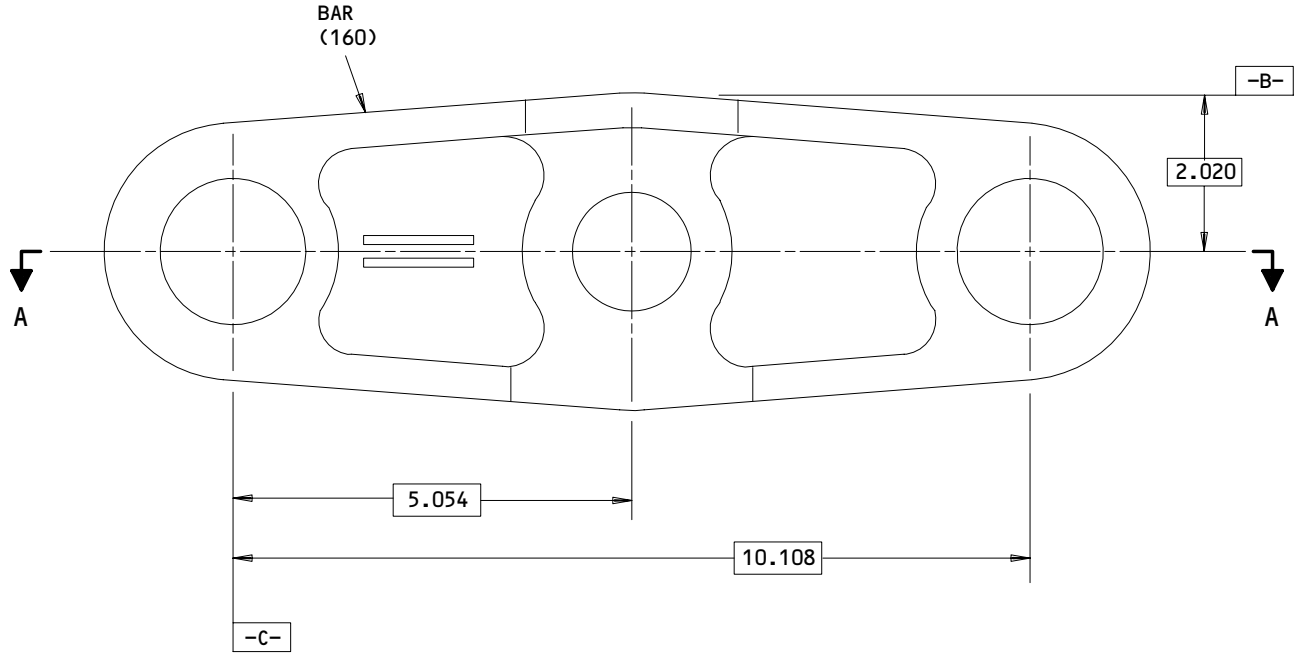
1. Bushed Hole Repair (Fig. 601, IPL Fig. 1)

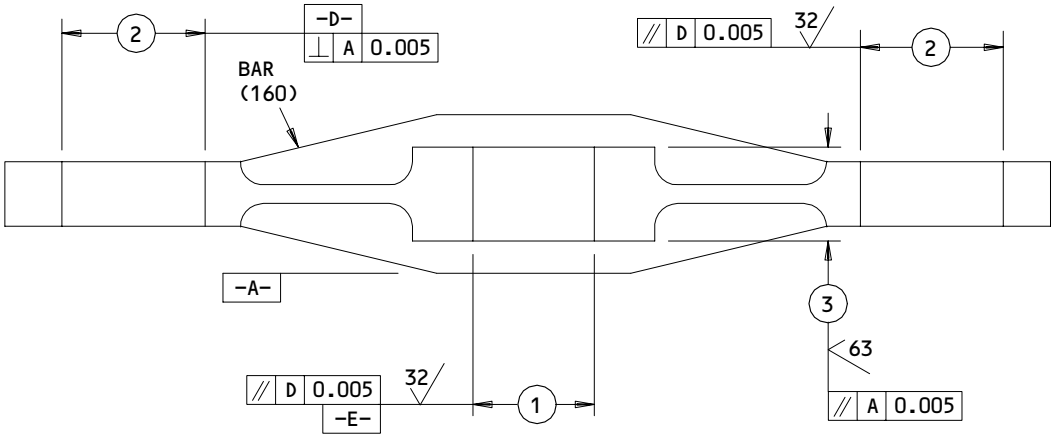
A. Machine hole as required to remove defects.

B. Shot peen and passivate.

C. Manufacture bushing (Fig. 602) as required to compensate for material removed in step A.

D. Install bushings per REPAIR 2-1.





A-A

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 1

310T3022-2

Bushed Hole Repair
Figure 601 (Sheet 1)

221618

	(1)	(2)	(3)
DESIGN DIM	1.5633 1.5623	1.7510 1.7500	1.055 1.045
REPAIR LIMIT	1.6233 1		

REFINISH

PASSIVATE (F-17.09)

1 LIMIT FOR INSTALLATION OF OVERSIZED BUSHINGS

REPAIR

REF 1

SHOT PEEN: 0.017O-0.033O SHOT SIZE 0.016 A2 INTENSITY

MATERIAL: 15-5PH, 180-200 KSI

125 ALL MACHINED SURFACES EXCEPT AS NOTED

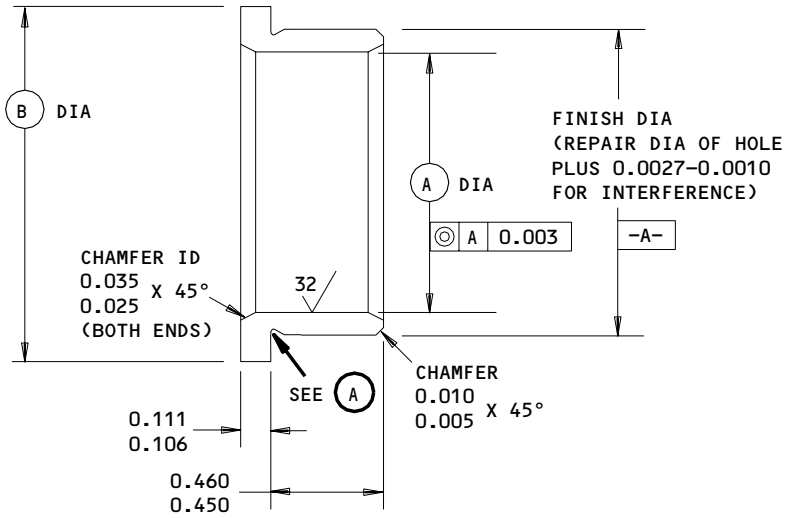
BREAK SHARP EDGES 0.03-0.04 R

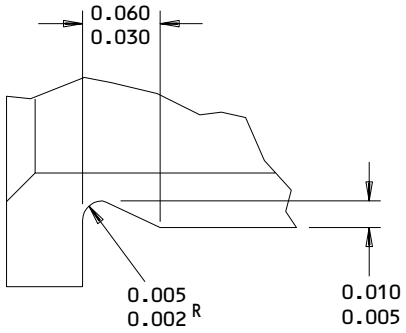
ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 1

310T3022-2

Bushed Hole Repair
Figure 601 (Sheet 2)





A

HOLE LOCATION (FIG. 601)	A	B
1	1.3755 1.3745	1.850 1.830

63 MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES

PASSIVATE (F-17.09) ALL OVER EXCEPT IN BORE

MATERIAL: 15-5PH CRES (180-200 KSI)

MAGNETIC PARTICLE CHECK

ALL DIMENSIONS ARE IN INCHES

310T3022-2
Oversize Bushing Detail
Figure 602

221708

THRUST LINK ASSEMBLY - REPAIR 3-1

310T3023-1

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

1. Bushing (40) Replacement (Fig. 601)

   A. Remove old bushings and install new bushings with wet sealant using shrink fit method.

   B. Machine ID of bushings to dimension and finish shown.

2. Bearing (35A) Replacement (Fig. 601)

   A. Install outer race of bearing with wet sealant per 20-50-03, use shrink fit method if necessary. Position slot in race as shown.

   B. Roller swage per 20-50-03.

   C. Install ball and hold in place with aluminum wire until unit is installed.

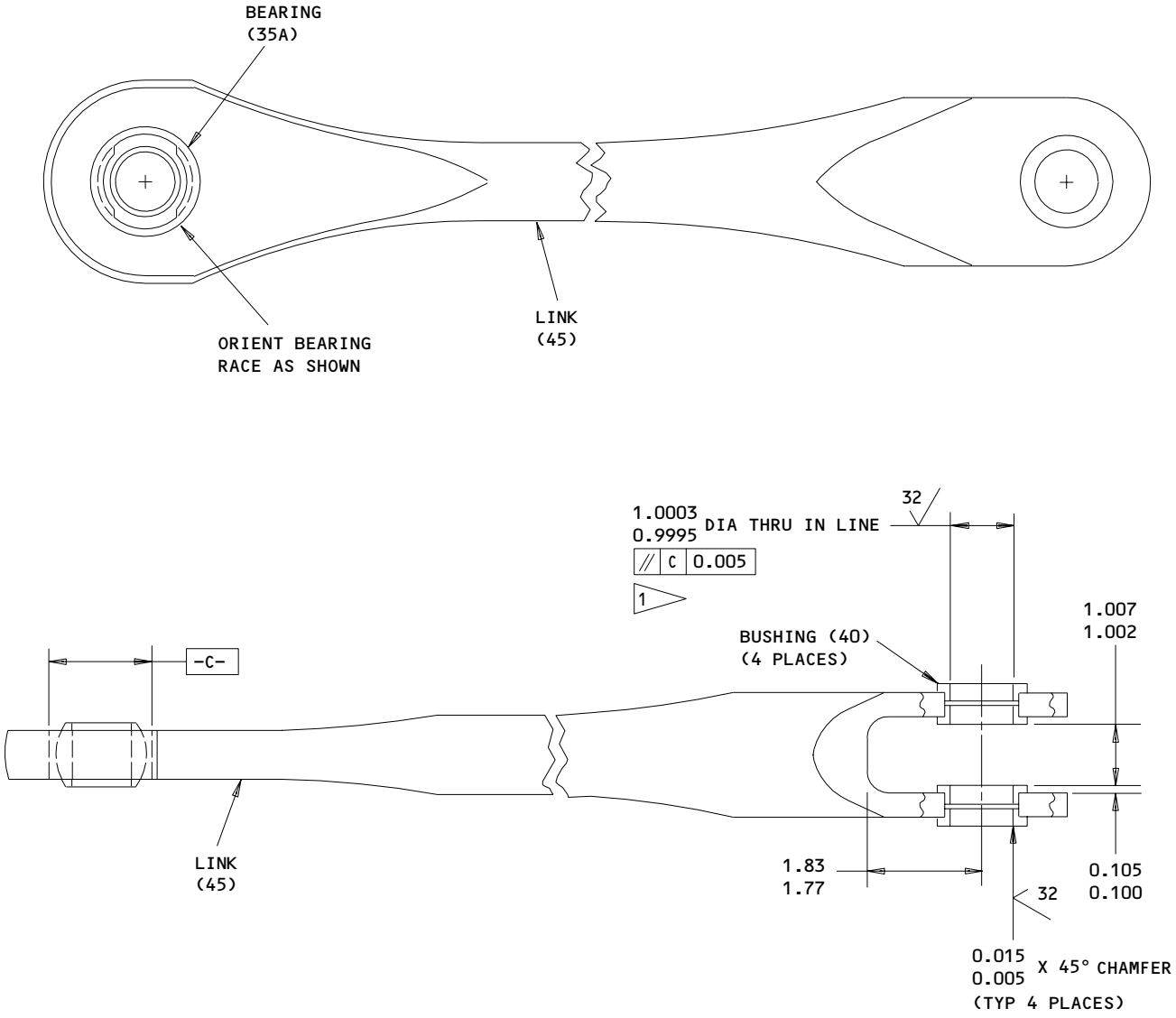
3. Scratch and Gouge Repair

   NOTE: See Fig. 501 for maximum repairable gouge depth all over and in restricted areas.

   A. Blend out scratches and gouges to 1.00-inch minimum radius.

   B. Shot peen blended area per 20-10-03.

   C. Refinish per Repair 3-2, Fig. 601.



125 ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.03-0.04 R

BREAK HOLE EDGES 0.02-0.03 R AT 32

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 1

1 TWO HOLES CONCENTRIC TO COMMON AXIS WITHIN 0.001 FIM AND CONCENTRIC TO HOLE IN FITTING WITHIN 0.005 FIM

310T3023-1
Bushing and Bearing Replacement
Figure 601

8247

THRUST LINK - REPAIR 3-2

310T3023-2

NOTE: Refer to REPAIR-GEN for list of applicable standard practices, and to IPL Fig. 1 for item numbers. For repair of surfaces which may require only restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Bushed Hole Repair (Fig. 601, IPL Fig. 1)

   A. Machine hole as required to remove defects.

   B. Shot peen and passivate.

   C. Manufacture bushing (Fig. 602) as required to compensate for material removed in Step A.

   D. Install bushings per REPAIR 3-1.

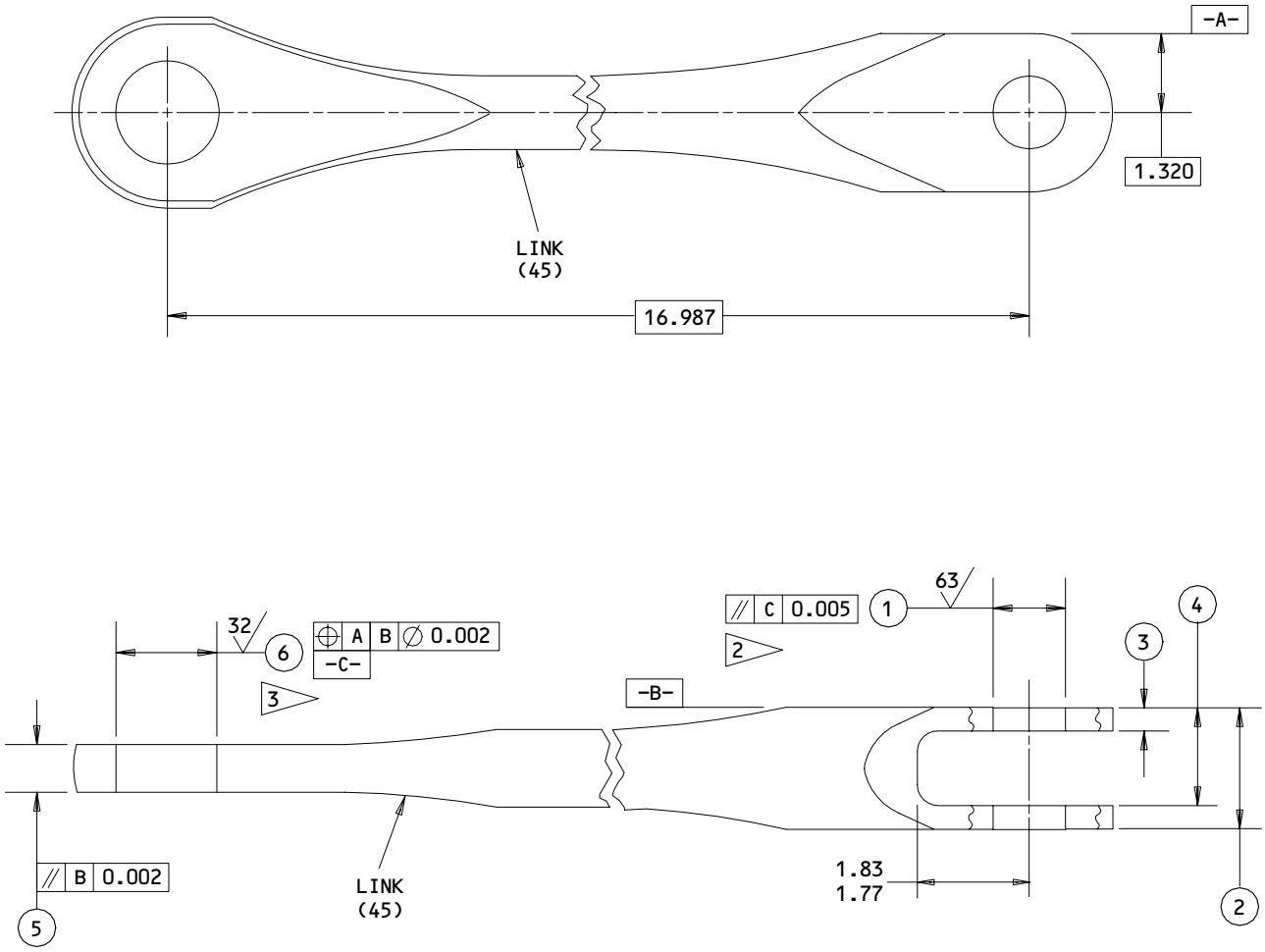
2. Bearing Hole Repair (Fig. 601, IPL Fig. 1)

   A. Remove defects by machining to repair limits as shown in Fig. 603.

   B. Shot peen bearing hole before installation of oversize bearing.

   C. Select appropriate oversize bearing from Fig. 603.

   D. Install bearing per Repair 3-1.



ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 1

310T3023-2

Link Repair
Figure 601 (Sheet 1)

	(1)	(2)	(3)	(4)	(5)	(6)
DESIGN DIM	1.1882 1.1875	2.0450 2.0350	0.4200 0.4000	1.2170 1.2070	0.7920 0.7820	1.7510 1.7500
REPAIR LIMIT	1.2482 1					3

REFINISH

PASSIVATE (F-17.09)

1 LIMIT FOR INSTALLATION OF OVERSIZED BUSHINGS

2 TWO HOLES CONCENTRIC TO A COMMON AXIS WITHIN 0.001 FIM

3 SEE FIG. 603 FOR LINK HOLE LIMIT FOR THE SELECTED OVERSIZE BEARING

REPAIR

REF 1

MATERIAL: 15-5PH CRES, 180-200 KSI

125 ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.03-0.04 R

BREAK HOLE EDGES 0.02-0.03 R AT 32

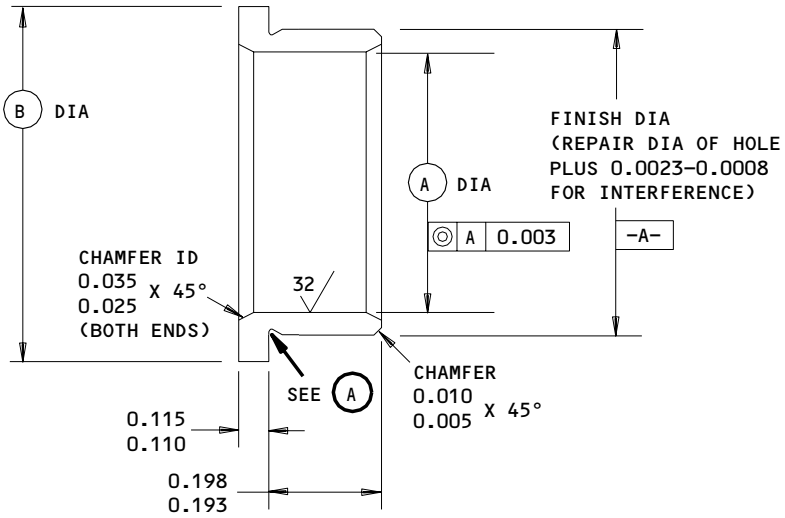
SHOT PEEN: 0.0170-0.0330 SHOT SIZE
0.016 A2 INTENSITY

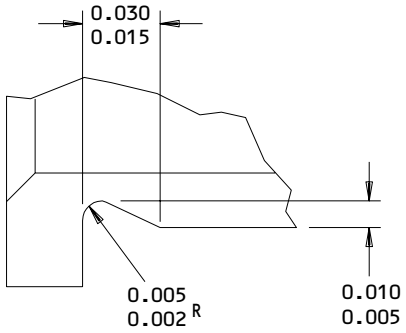
ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 1

310T3023-2

Link Repair
Figure 601 (Sheet 2)





A

HOLE LOCATION (FIG. 601)	A	B
1	1.0003 0.9995	1.410 1.390

63 MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES

PASSIVATE (F-17.09) ALL OVER EXCEPT IN BORE

MATERIAL: 15-5PH CRES (180-200 KSI)

MAGNETIC PARTICLE CHECK

ALL DIMENSIONS ARE IN INCHES

310T3023-2
Oversize Bushing Detail
Figure 602

BEARING PART NUMBER			BEARING RACE OD		310T3023-2 LINK HOLE ID REPAIR 1 (AFTER SHOT PEEN)	
BOEING SPEC	VALLEY-TODECO	PSI BEARINGS	MIN	MAX	MIN	MAX
S302T001-200	VTB04260	P20540	1.7495	1.7500	1.7500	1.7510
S302T001-200P05	VTB04260P05	P20540P05	1.7545	1.7550	1.7550	1.7560
S302T001-200P10	VTB04260P10	P20540P10	1.7595	1.7600	1.7600	1.7610
S302T001-200P20	VTB04260P20	P20540P20	1.7695	1.7700	1.7700	1.7710
S302T001-200P30	VTB04260P30	P20540P30	1.7795	1.7800	1.7800	1.7810
S302T001-200P60	VTB04260P60	P20540P60	1.8095	1.8100	1.8100	1.8110

OVERSIZE BEARING DETAILS FOR BEARING (35A)

1 A MAXIMUM OF 0.002 MAY BE REMOVED FROM SHOT PEEN SURFACES BY LIGHT HONING OR LAPPING TO ACCOMPLISH FINISH DIMENSIONS.

310T3023-1
Oversize Bearing Detail
Figure 603

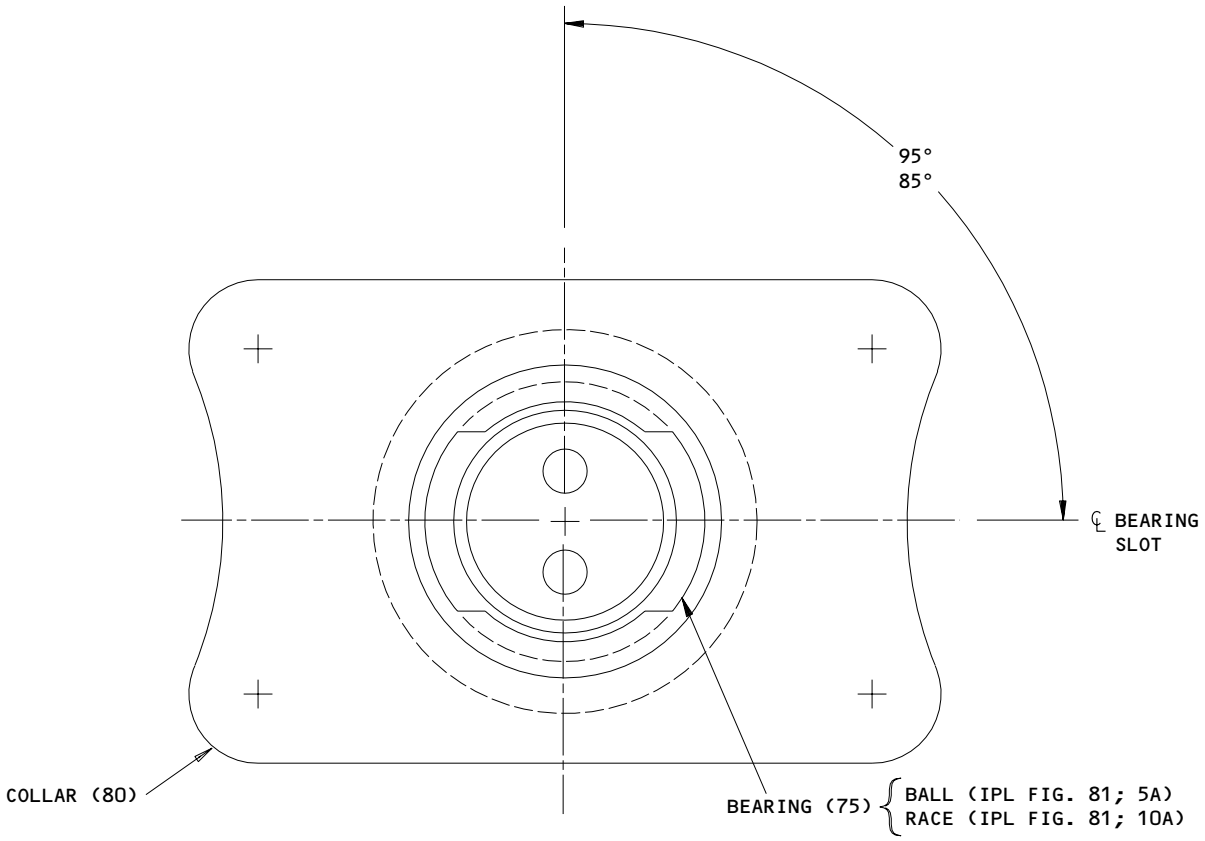
COLLAR - REPAIR 4-1

310T3025-2, -3, -4

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

NOTE: Bearing replacement is not recommended because the removal of the bearing will cause damage to the race (10A, Fig. 81) and the collar (80, Fig. 1).



310T3025-2,-3,-4

REFINISH

PASSIVATE (F-17.09)

MATERIAL: 15-5PH CRES

ITEM NUMBERS REFER TO IPL FIG. 1, UNLESS SHOWN DIFFERENTLY

Bearing Replacement
Figure 601

8248

HANGER ASSEMBLY - REPAIR 5-1

310T3031-1, -3, -5

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

1. Bushing Replacement (Fig. 601)

   A. Remove old bushings.

   B. Install bushings per 20-50-03 using shrink fit method and wet BMS 14-4 type 1 protective coating. Do not fillet seal bushings.

      NOTE: Do not bake after installation.

   C. Bushings (145, 150 IPL Fig. 2): Machine ID of bushings to dimensions and finish shown.

      Bushings (145A, 150A IPL Fig. 2) Machine flange face and ID of bushings to dimensions and finish shown. Chamfers affected by machining of flange face or reaming of bore must be re-machined to original dimensions (Repair 5-2 Fig. 603).

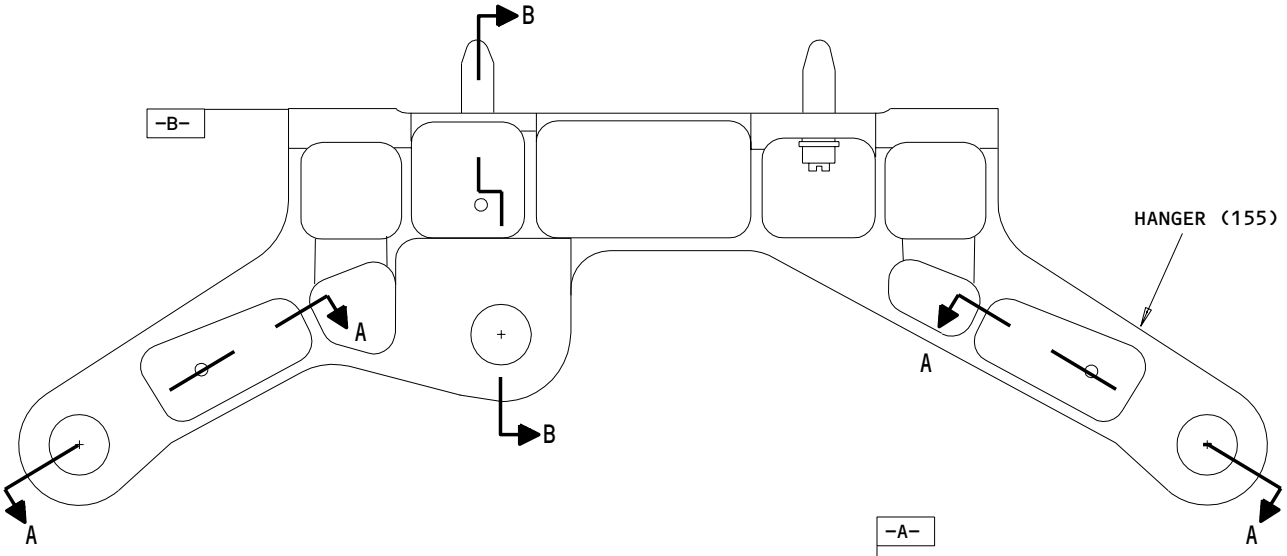
2. Scratch and Gouge Repair

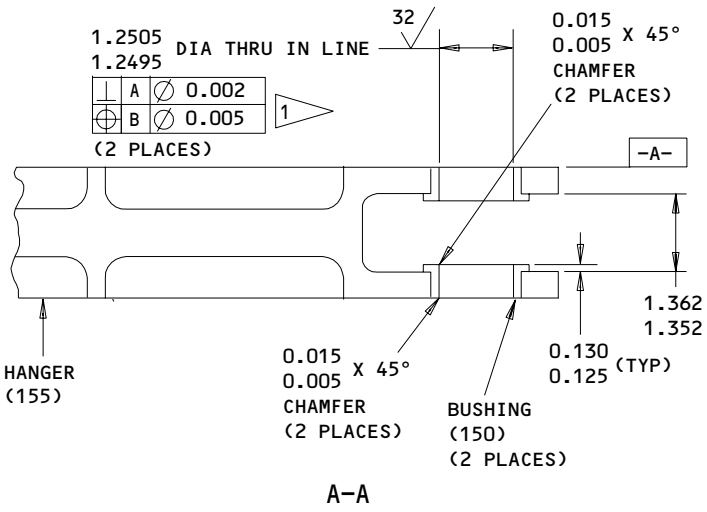
   NOTE: See Fig. 501 for maximum repairable gouge depth all over and in restricted areas.

   A. Blend out scratches and gouges to 1.00-inch minimum radius.

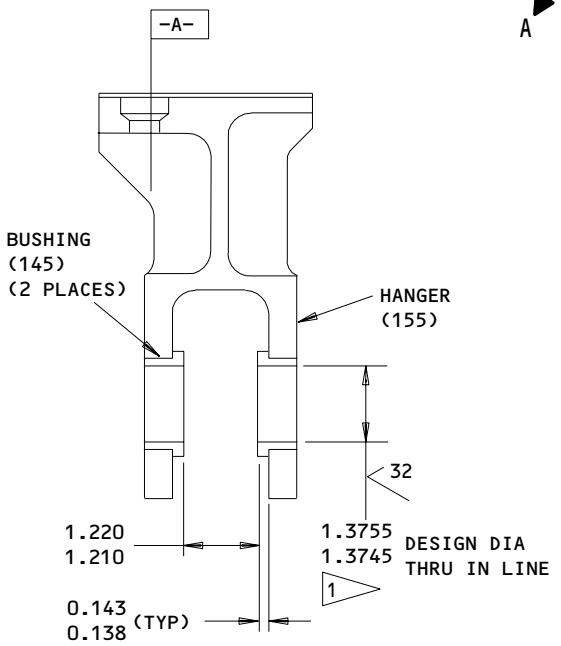
   B. Refinish per Repair 5-2, Fig. 601.

   C. Deleted





A-A



B-B

1 TWO HOLES CONCENTRIC TO COMMON AXIS WITHIN 0.001 FIM AND CONCENTRIC TO HOLE IN HANGER WITHIN 0.005 FIM

125 ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.03-0.04 R
BREAK HOLE EDGES 0.01-0.02 R AT 32

ITEM NUMBERS REFERS TO IPL FIG. 2

ALL DIMENSIONS ARE IN INCHES

310T3031-1,-3,-5
Bushing Replacement
Figure 601

8258

HANGER - REPAIR 5-2

310T3031-2, -4

NOTE: Refer to REPAIR-GEN for list of applicable standard practices, and to IPL Fig. 1 for item numbers. For repair of surfaces which may require only restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Bushing Hole Repair (Fig. 601 IPL Fig. 2)

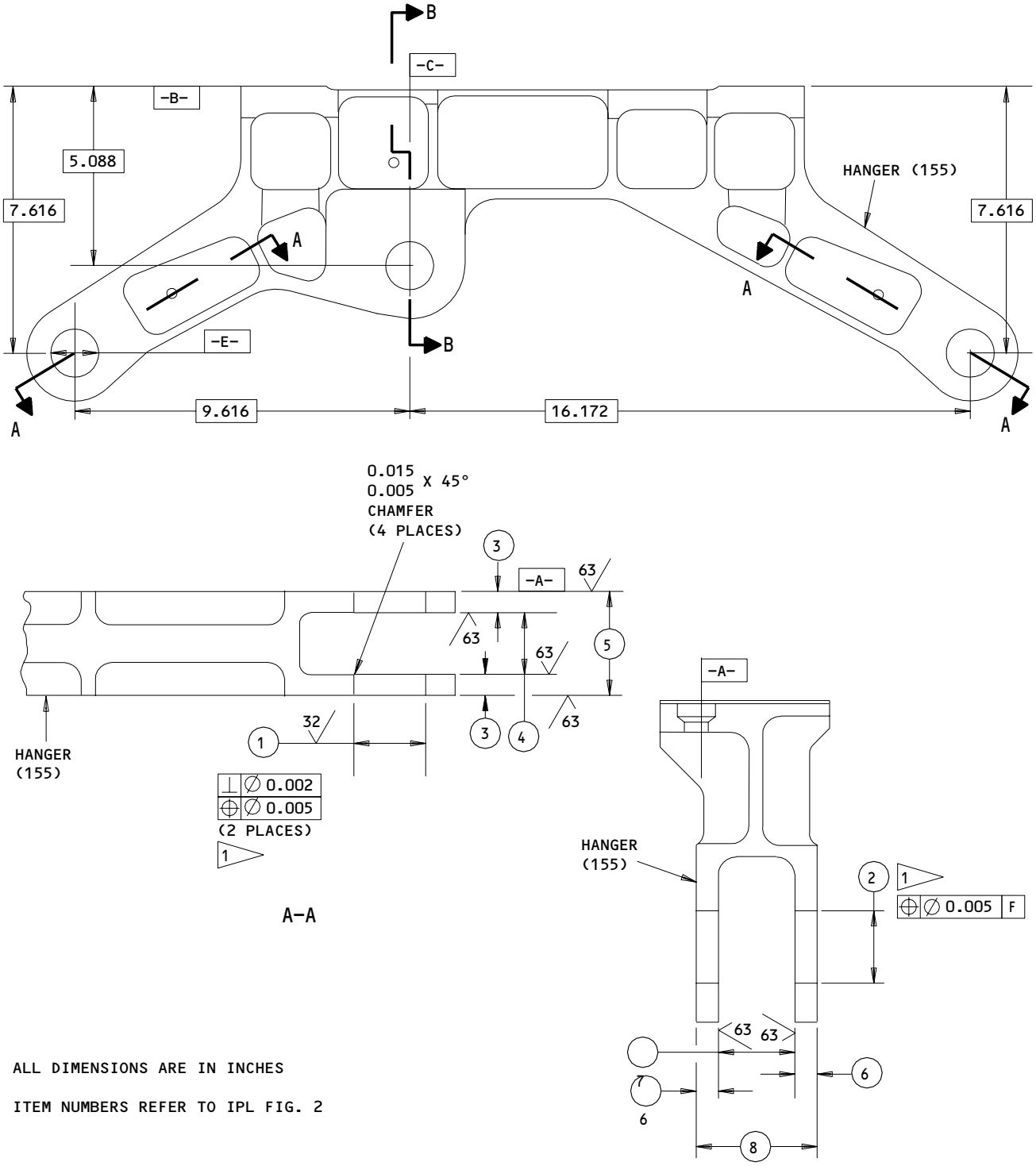
   A. Machine hole as required to remove defects.

   B. Deleted

   C. Apply BMS 14-4, Type 1 protective coating - except coating thickness in bore must be 0.0008-0.0015 per surface. A minimum of 70% of circumferential length of bore I.D. must be covered by protective coating after boring.

   D. Manufacture bushing (Fig. 602 or Fig. 603) as required to compensate for material removed in Step A.

   E. Install bushings per REPAIR 5-1.



Hanger Repair
Figure 601 (Sheet 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DESIGN DIM	1.4383 1.4375	1.5633 1.5625	0.430 0.410	1.362 1.352	2.210 2.190	0.510 0.490	1.496 1.486	2.505 2.485
REPAIR LIMIT	1.4983 ▷2	1.6233 ▷2	0.400 ▷3			0.450 ▷3		

REFINISH

FOR HANGER 310T3031-4 ONLY:
DRY ABRASIVE BLAST CLEAN AND APPLY ION VAPOR DEPOSITED ALUMINUM COATING WITH COLORED CHEMICAL SURFACE TREATMENT PER MIL-C-83488, TYPE 2, CLASS 1 (F-24.06). OMIT FROM BUSHING HOLES

FOR HANGER 310T3031-2 ONLY:
APPLY BMS 14-4, TYPE 1 PROTECTIVE COATING (SOPM 20-50-13) ALL OVER EXCEPT COATING THICKNESS IN BORE MUST BE 0.0008-0.0015 PER SURFACE. A MINIMUM OF 70 PERCENT OF CIRCUMFERENTIAL LENGTH OF BORE ID MUST BE COVERED BY PROTECTIVE COATING AFTER BORING

▷1 2 HOLES CONCENTRIC TO COMMON AXIS WITHIN 0.001 FIM

▷2 MAXIMUM DIMENSION FOR INSTALLATION OF OVERSIZED BUSHING

▷3 MINIMUM REPAIR THICKNESS

REPAIR

REF ▷1 ▷2 ▷3

MATERIAL: 9NI-4CO-.3C STEEL, 220 KSI MINIMUM

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

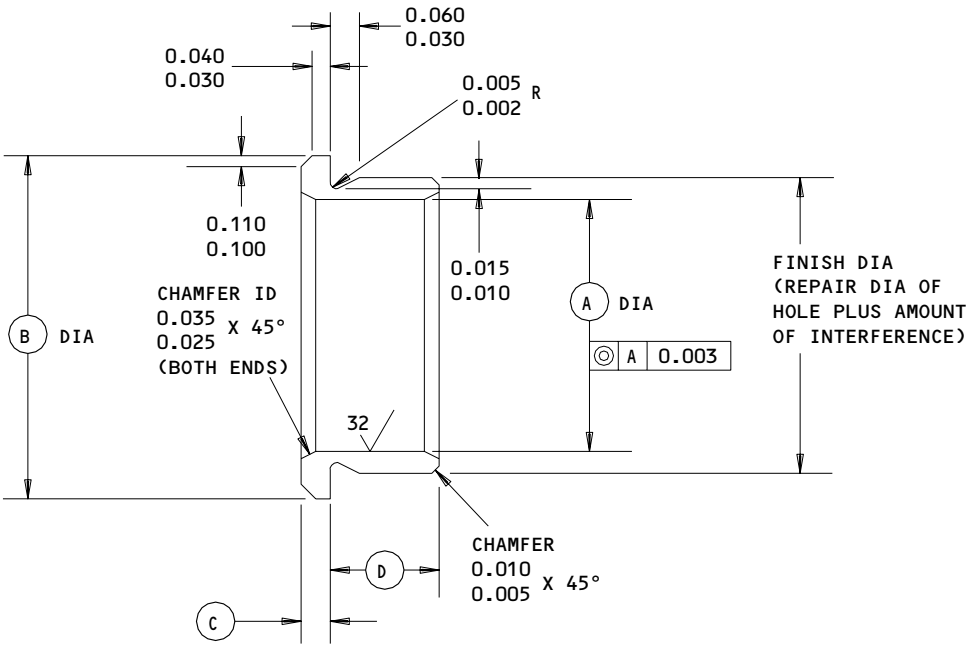
BREAK SHARP EDGES 0.03-0.04 R
BREAK HOLE EDGES 0.01-0.02R AT 32

ITEM NUMBERS REFERS TO IPL FIG. 2

ALL DIMENSIONS ARE IN INCHES

310T3031-2,-4

Hanger Repair
Figure 601 (Sheet 2)



HOLE LOCATION (FIG. 601)	A	B	C	D	INTERFERENCE
1	1.2505 1.2495	1.697 1.677	0.130 0.125	0.407 0.397	0.0026 0.0009
2	1.3755 1.3745	1.850 1.830	0.143 0.138	0.478 0.468	0.0027 0.0010

63 MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES

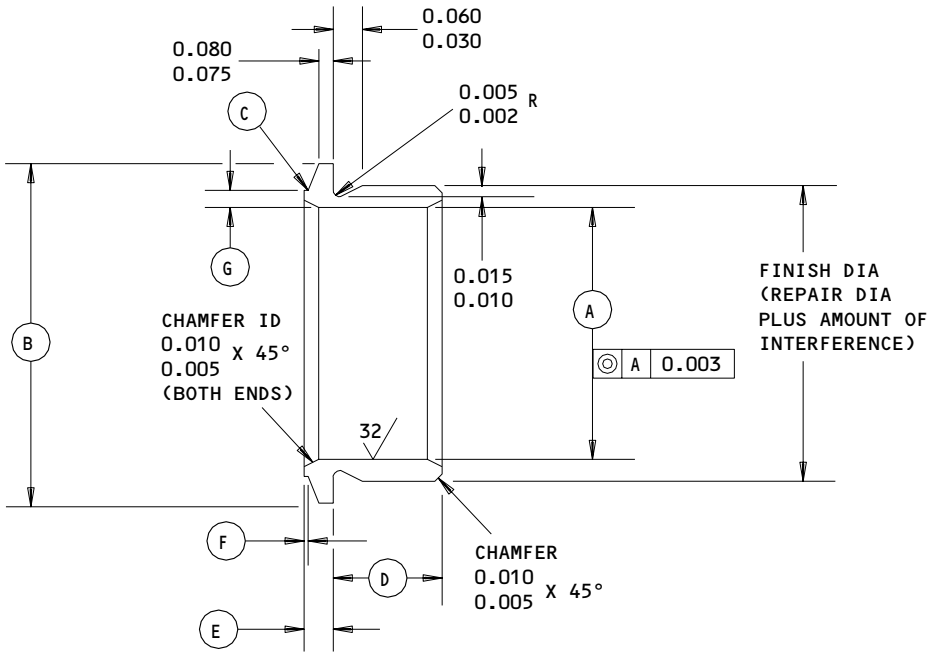
MATERIAL: INCONEL 718

HEAT TREAT CONDITION II

PENETRANT CHECK

ALL DIMENSIONS ARE IN INCHES

310T3031-1,-3
Oversize Bushing Detail
Figure 602



HOLE LOCATION (FIG. 601)	A	B	C	D	E	F	G	INTERFERENCE
1	1.240 1.235	1.697 1.677	0.015 R	0.407 0.397	0.130 0.125 1	0.010 0.005	0.070 0.065	0.0026 0.0009
2	1.365 1.360	1.850 1.830	0.020 R	0.478 0.468	0.143 0.138 1	0.040 0.035	0.080 0.075	0.0027 0.0010

1 THIS DIMENSION IS NET – ALLOW 0.01–0.015 INCH EXCESS FOR MACHINING OF FLANGE FACE AFTER INSTALLATION OF BUSHING

63 MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES

MATERIAL: INCONEL 718

HEAT TREAT CONDITION II

PENETRANT CHECK

ALL DIMENSIONS ARE IN INCHES

310T3031-5
Oversize Bushing Detail
Figure 603

TANGENTIAL LINK ASSEMBLY - REPAIR 6-1

310T3032-1, -3

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

1. Bearing (55, IPL Fig. 2) Replacement

A. Remove old bearing per 20-50-03.

B. Install outer race of bearing (55) by the shrink-fit method per 20-50-03. Align slot as shown in Fig. 601.

(1) An optional method to install the outer race of the bearing is as follows:

(a) Clean hole with a double application of methyl ethyl ketone.

(b) Apply wet BMS 14-4, type 1 or 2, protective coating to the hole and immediately install the outer race of the bearing. Use shrink-fit method if necessary.

(c) Align slot as shown in Fig. 601.

(d) Wipe off excess protective coating immediately after installation.

NOTE: Do not apply catalyst. Do not bake after installation.

C. Roller swage outer race of bearing per 20-50-03.

D. Do a pushout load test per 20-50-03. The pushout load shall be 4670 pounds.

E. Install ball and retain with aluminum wire for storage and shipping.

2. Bearing (50) Replacement

A. Press out old bearing and install new bearing. Before swaging bearing, check that maximum breakaway torque does not exceed 500 pound-inches.

B. Roller swage outer race of bearing per 20-50-03.

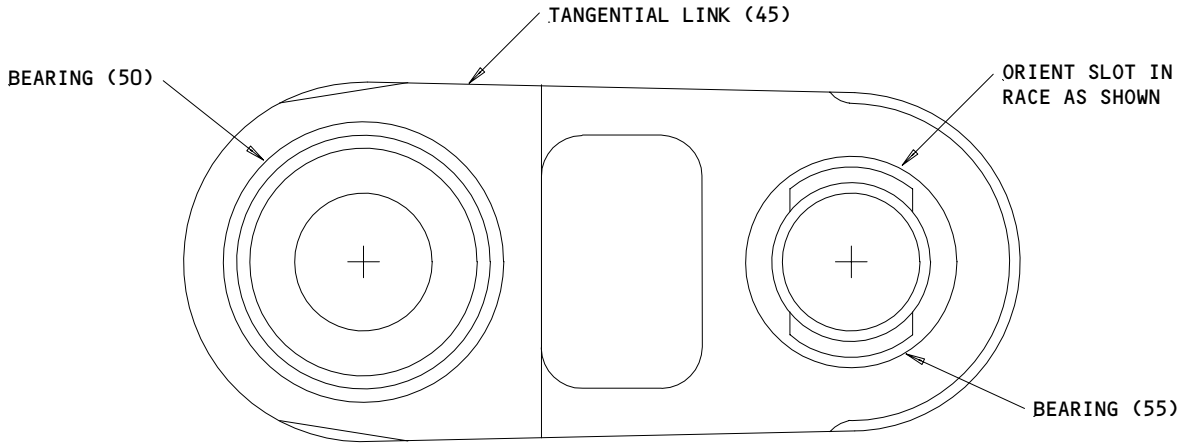
C. Do a pushout load test per 20-50-03. The pushout load shall be 5838 pounds.

3. Scratch and Gouge Repair

NOTE: See Fig. 501 for maximum repairable gouge depth all over and in restricted areas.

A. Blend out scratches and gouges to 1.00-inch minimum radius.

B. Deleted



FINISH

NO FINISH

MATERIAL: INCONEL 718

ITEM NUMBERS REFERS TO IPL FIG. 2

310T3032-1,-3
Bearing Replacement
Figure 601

8259

CENTER LINK ASSEMBLY - REPAIR 7-1

310T3033-1, -3

1. Bearing Replacement (Fig. 601)

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

A. Reove old bearing (115, IPL Fig. 2) per 20-50-03.

B. Install outer race of bearing per 20-50-03, use shrink-fit method if necessary. Align slot as shown in Fig. 601.

(1) An optional method to install the outer race of the bearing is as follows:

(a) Clean hole with a double application of methyl ethyl ketone.

(b) Apply wet BMS 14-4, type 1 or 2, protective coating to the hole and immediately install the outer race of the bearing. Use shrink-fit method if necessary.

(c) Align slot as shown in Fig. 601.

(d) Wipe off excess protective coating immediately after installation.

NOTE: Do not apply catalyst. Do not bake after installation.

C. Roller swage outer race of bearing per 20-50-03.

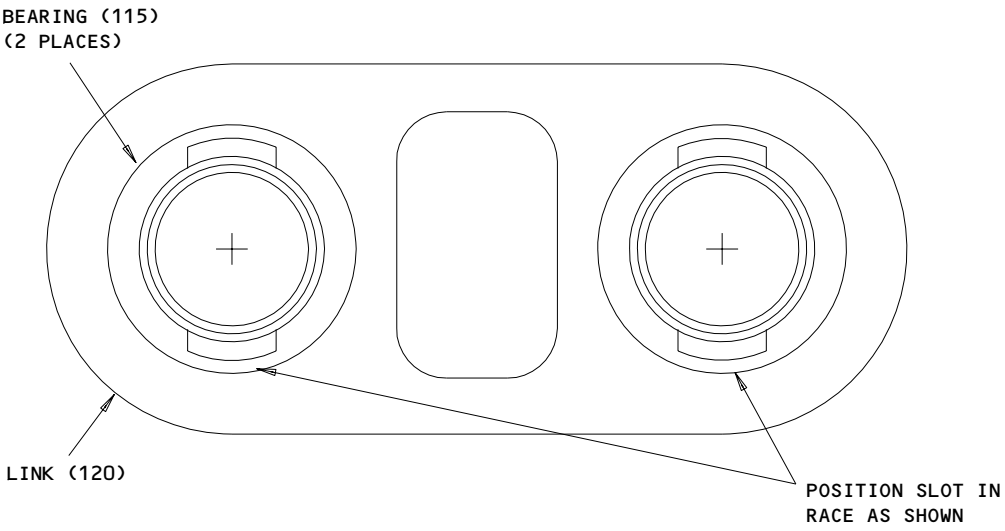
D. Do a pushout load test per 20-50-03. The pushout load shall be 5,254 pounds.

E. Install ball and retain with aluminum wire for storage and shipping.

2. Scratch and Gouge Repair

NOTE: See Fig. 501 for maximum repairable gouge depth.

A. Blend out scratches and gouges to a 1.00-inch minimum radius.



FINISH

NO FINISH

MATERIAL: INCONEL 718

ITEM NUMBERS REFERS TO IPL FIG. 2

310T3033-1,-3
Bearing Replacement
Figure 601

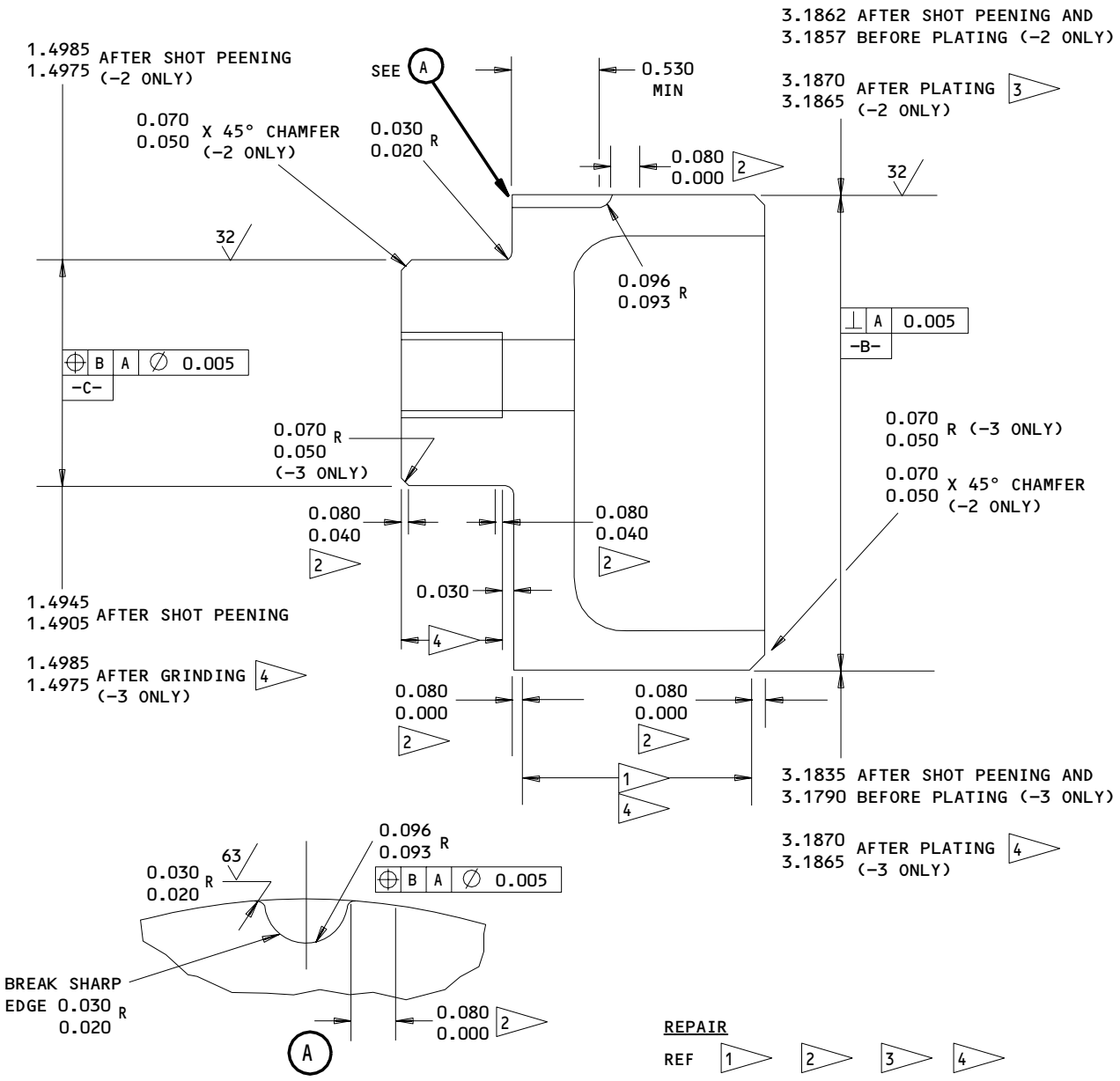
8260

FITTING - REPAIR 8-1

310T3036-2, -3

1. Plating Repair

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



REFINISH

PASSIVATE (F-17.09) ALL OVER

1 APPLY THIN DENSE CHROME PLATING (F-14.891) WITH MINIMUM THICKNESS OF 0.0002 (-2 ONLY)

2 CHROME PLATE RUN OUT

3 PLATE DIA TO SIZE. DO NOT GRIND AFTER PLATING. DO NOT PLATE GROOVE.

4 CHROME PLATE (F-15.03) AND GRIND TO DIMENSION INDICATED. DO NOT PLATE GROOVE.

REPAIR

REF 1 2 3 4

125 ALL MACHINED SURFACES EXCEPT AS NOTED

SHOT PEEN ALL OVER, 0.017-0.033 SHOT SIZE INTENSITY 0.014A2, COVERAGE 2.0

BREAK ALL SHARP EDGES 0.030 TO 0.040R EXCEPT AS NOTED

BREAK ALL HOLE EDGES 0.020 TO 0.030R AT 32 EXCEPT AS NOTED

MATERIAL: 15-5PH CRES, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

310T3036-2,-3
Fitting Repair
Figure 601

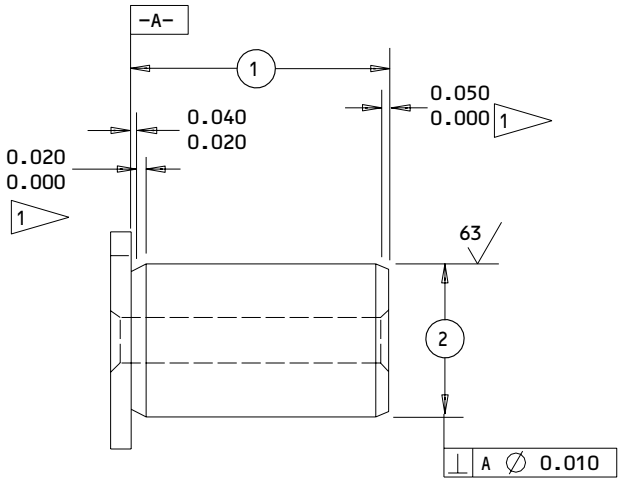
13673

PIN, LINK PIVOT - REPAIR 9-1

310T3150-1, -2, -3

1. Plating Repair

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



		1	2
PIN 95, 290, IPL FIG. 2	DESIGN DIM	2.550 2.530	1.3740 1.3730
	REPAIR LIMIT		1.3530 2
PIN 30, IPL FIG. 2	DESIGN DIM	2.255 2.235	1.2490 1.2480
	REPAIR LIMIT		1.2280 2

REFINISH

NO FINISH EXCEPT CHROME PLATE (F-15.03) DIA (2) 0.0004-0.0007 INCH THICK (REF 20-42-03). DIMENSIONS APPLY AFTER PLATING

1 CHROME PLATE RUNOUT

2 LIMIT FOR CHROME PLATE (F-15.03) BUILDUP AND GRINDING TO DESIGN DIMENSIONS AND FINISH SINGLE PLATE THICKNESS 0.0030 MIN AFTER GRINDING

REPAIR

1 2

MATERIAL: INCONEL 718

125 ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.03-0.04 R

310T3150-1,-2,-3
Pin Repair
Figure 601

8261

BOLT, SHOULDER - REPAIR 10-1

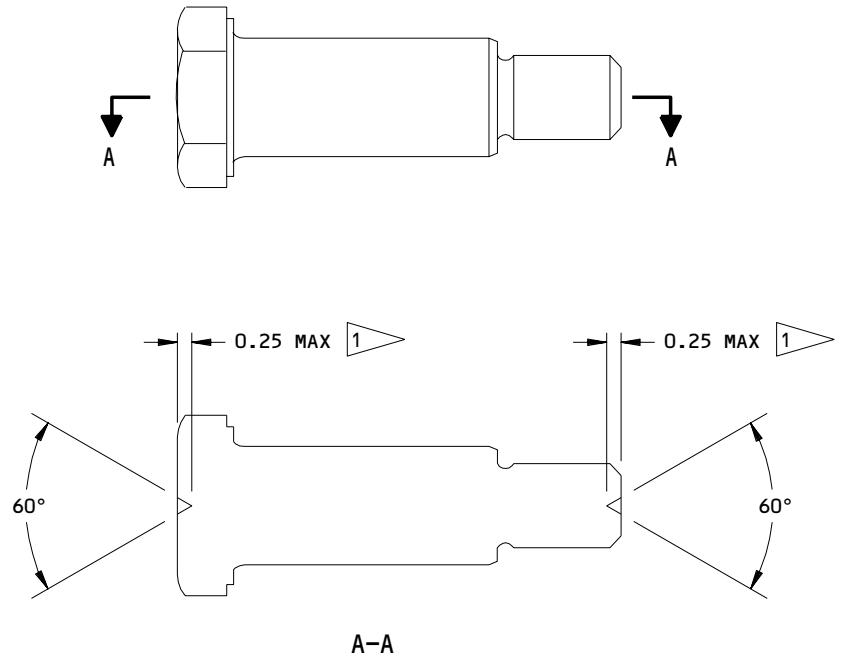
310T3152-1, -2, -5, -6, -7, -11, -12, -15, -16, -17

1. Plating Repair

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

2. Shank and Thread Repair (Fig. 601, 602)

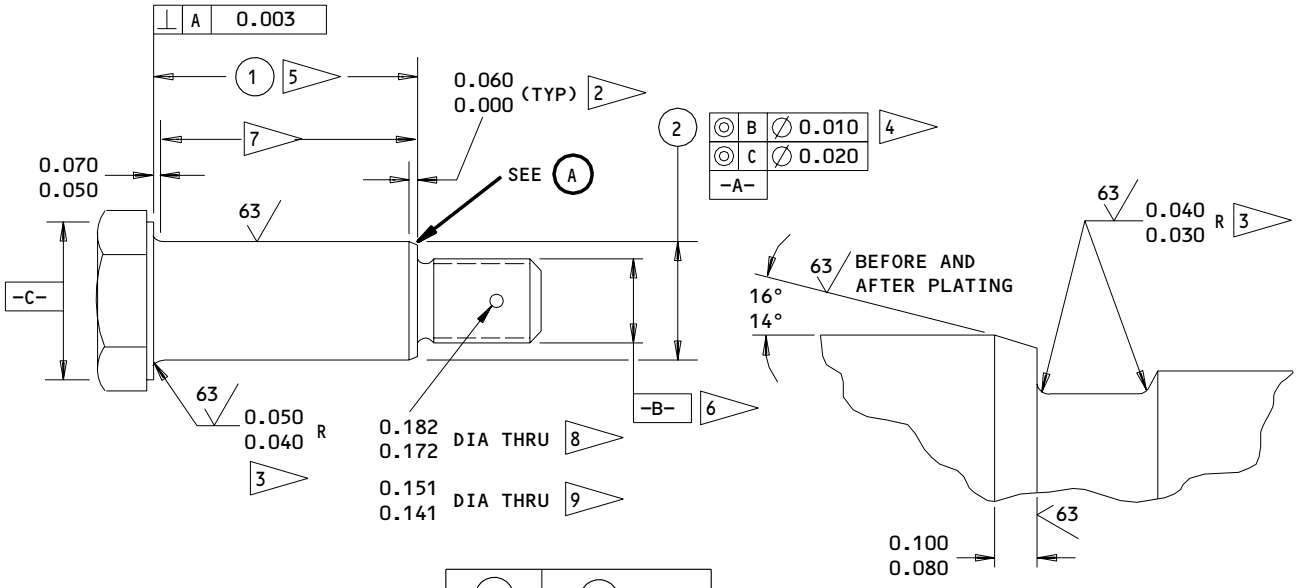
(1) Machine as required to remove defects, but do not exceed the limit shown in Fig. 602. Tool centers may be used in the head and shank as shown in Fig. 601. If tool centers are used, repart mark on bolt head as shown in SOPM 20-50-10.



1 MAXIMUM ALLOWED DEPTH OF COUNTERSINK FOR USE AS TOOL CENTER IN BOLT REPAIR.

310T3152-1,-2,-5,-6,-7,-11,-12,-15,-16,-17
Tool Centers for Bolt Repair
Figure 601

C76565



		1	2
IPL FIG. 1; BOLT 95, 95A, 95B, 95C	DESIGN DIM	2.920 2.900	1.3740 1.3725
	REPAIR LIMIT		1.3525 1
IPL FIG. 1; BOLT 15, 15A, 17, 17A, 17B, 17C	DESIGN DIM	2.410 2.390	0.9990 0.9980
	REPAIR LIMIT		0.9780 1

REFINISH

NO FINISH EXCEPT CHROME PLATE (F-15.03)

DIA (2) 0.0004-0.0007 INCH THICK

1 LIMIT FOR CHROME PLATE (F-15.03) BUILDUP AND GRINDING TO DESIGN DIMENSIONS AND FINISH. SINGLE PLATE THICKNESS 0.0030 MIN AFTER GRINDING

2 CHROME PLATE RUNOUT

3 PROTECT FILLET RADIUS FROM CHROME DEPOSIT DURING CHROME PLATING

4 TOLERANCE APPLIES AS FOLLOWS:

A. HOLD BOLT ON PITCH DIAMETER OF COMPLETE THREADS NEAREST SHANK

B. MEASURE A DISTANCE FROM THE THREAD RUNOUT TO THE SHANK EQUAL TO THE SHANK DIAMETER

C. CHECK CONCENTRICITY ON SHANK WITHIN DISTANCE DETERMINED IN B ABOVE

REPAIR

REF 1 2 3 7

MATERIAL: INCONEL 718

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

5 SHANK STRAIGHT WITHIN 0.002 FIM PER INCH OF LENGTH

6 DATUM -B- IS PITCH DIAMETER

7 CHROME PLATE

8 BOLTS 310T3152-6,-7,-16,-17

9 BOLTS 310T3152-5,-15

310T3152-1,-2,-5,-6,-7,-11,-12,-15,-16,-17
Bolt Repair
Figure 602

8262

MISCELLANEOUS PARTS REFINISH - REPAIR 11-1

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

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Washers (25,105, 290)	A286 CRES	Passivate (F-17.09).
Radius Filler (68)	15-5PH CRES 150-170 ksi	Passivate (F-17.25).
Cap (65)	15-5PH CRES 180-200 ksi	Passivate (F-17.09).
Cap (66)	15-5PH CRES 180-200 ksi	Passivate (F-17.25).
Fig. 2		
Washers (35,100, 295)	A286	Passivate (F-17.09).
Retainer (22,85, 300)	INCONEL 625	Passivate (F-17.09).

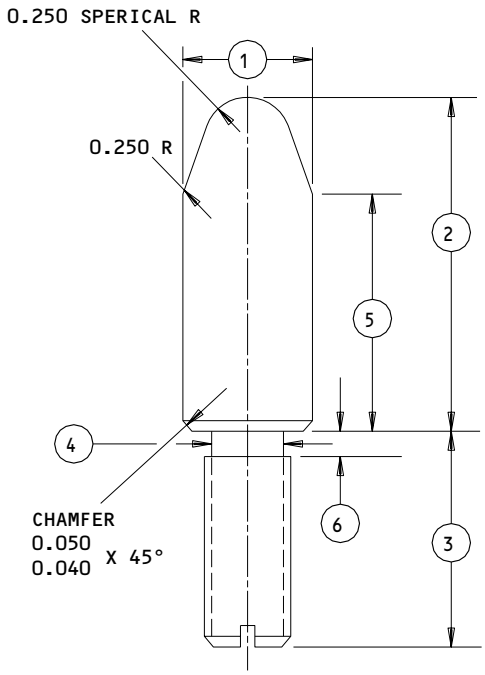
Refinish Details
Figure 601

SHEAR PIN - REPAIR 12-1

310T3037-1, -4

1. Plating Repair (Fig. 601)

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



		1	2	3	4	5	6
SHEAR PIN 140, IPL FIG. 2	DESIGN DIM	0.7460 0.7455	1.880 1.850	1.230 1.210	0.428 0.421	1.350 1.330	0.160 0.140
	REPAIR LIMIT	0.7255 ▷1					

		1	2	3	4	5	6
SHEAR PIN 140A, 140B, IPL FIG. 2	DESIGN DIM	0.7460 0.7455	1.880 1.850	1.230 1.210	0.428 0.421	0.930 0.910	0.160 0.140
	REPAIR LIMIT	0.7255 ▷1					

FINISH

PASSIVATE (F-17.09)

PLATING REPAIR

REF ▷1

CHROME PLATE (F-15.03) DIA (1), SINGLE PLATE THICKNESS 0.0030 MIN AFTER GRINDING

MATERIAL: 15-5PH CRES, 180-200 KSI

125 ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK ALL SHARP EDGES 0.030-0.060

ALL DIMENSIONS ARE IN INCHES

▷1 LIMIT FOR CHROME PLATE BUILDUP AND GRINDING TO DESIGN DIMENSION

310T3037-1,-4
Shear Pin Repair
Figure 601

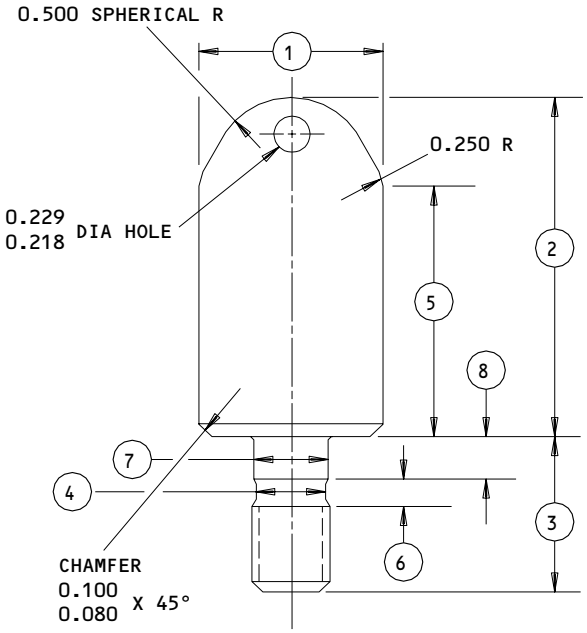
220523

SHEAR PIN - REPAIR 13-1

310T3038-1, -2

1. Plating Repair (Fig. 601)

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



		1	2	3	4	5	6	7	8
SHEAR PIN 130, IPL FIG. 1	DESIGN DIM	1.2485 1.2480	2.2300 2.2100	1.0100 0.9900	0.4280 0.4210	1.6590 1.6190	0.1600 0.1400	0.5000 0.4980	0.2900 0.2700
	REPAIR LIMIT	1.2280 ▷1							

		1	2	3	4	5	6	7	8
SHEAR PIN 130A, IPL FIG. 1	DESIGN DIM	1.2485 1.2480	2.230 2.210	1.0100 1.9900	0.4280 0.4210	1.323 1.283	0.1600 0.1400	0.5000 0.4980	0.2900 0.2700
	REPAIR LIMIT	1.2280 ▷1							

FINISH

PASSIVATE (F-17.09)

PLATING REPAIR

REF ▷1

CHROME PLATE (F-15.03) DIA (1), SINGLE PLATE THICKNESS 0.0030 MIN AFTER GRINDING

MATERIAL: 15-5PH CRES

125/ ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK ALL SHARP EDGES 0.005-0.015

ALL DIMENSIONS ARE IN INCHES

▷1 LIMIT FOR CHROME PLATE BUILDUP AND GRINDING TO DESIGN DIMENSION

310T3038-1,-2
Shear Pin Repair
Figure 601

220530

BOLT - REPAIR 14-1

310T3011-1, -2 BACB30PN12-34

1. Minor Shank Repair

CAUTION: NO REPAIR OF THE SHOULDER FILLET, SHOULDER BEARING SURFACE, OR HEAD-TO-SHANK FILLET IS PERMITTED.

A. Blend out damage or wear, do not exceed a depth of 0.002 inches, by grinding, honing or machining. Do not rework head-to-shank relief area or within 0.100 inches of head bearing surface. Maintain surface finish of 32 micro inches.

B. Visually check repaired area for cracks, nicks, or damage.

2. Major Shank Repair (Fig. 601, 602)

CAUTION: REPAIR OF TENSION BOLT IS LIMITED TO MACHINING OF DEFECT TO MINIMUM REPAIR DIAMETER. SHOT PEENING AND PLATING ARE NOT PERMITTED.

A. Machine as required to remove defects, but do not exceed dimension shown in Fig. 602. Tool centers may be used in head and shank and per Fig. 601. Machining is limited to repair area 0.100 inch beyond head bearing surface.

B. Penetrant check.

3. Thread Repair

CAUTION: NO REPAIR PERMITTED BELOW MINIMUM PITCH DIAMETER OF THREADS. NO REPAIR PERMITTED IN THREAD RELIEF OR RUNOUT AREA.

A. Repair damage in the region between minimum pitch diameter and major diameter by using thread chasers conforming to the following:

(1) Capable of cutting UNJF-3A or UNF-3A threads.

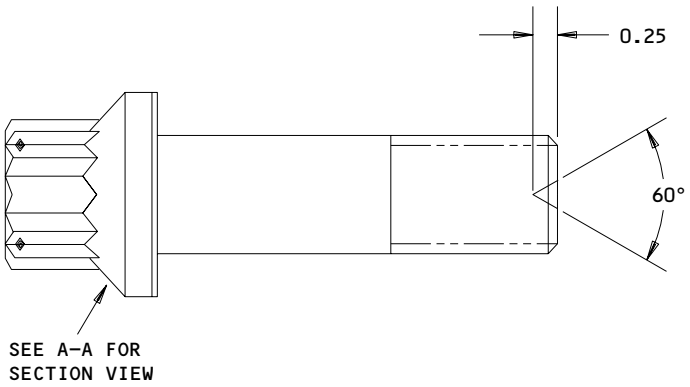
(2) Modified to preclude cutting threads below the following minimum pitch dimaters:

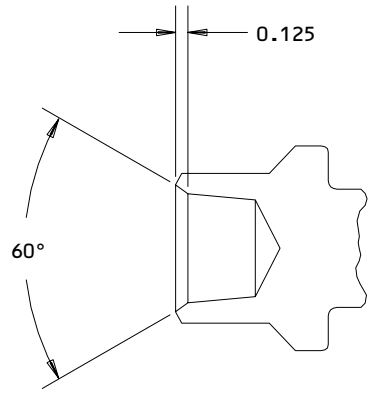
Part Number	Thread Size	Minimum Pitch Dia. (inches)
310T3011-1, -2	0.875-14 UNJF-3A	0.8245
BACB30PN12-34	0.750-16 UNJF-3A	0.7056

B. Rework of threads shall be uniform along entire thread length except for runout. After rework, major diameters of threads shall not be less than the following:

Part Number	Thread Size	Major Dia. (inches)
310T3011-1, -2	0.875-14 UNJF-3A	0.8634
BACB30PN12-34	0.750-16 UNJF-3A	0.7393

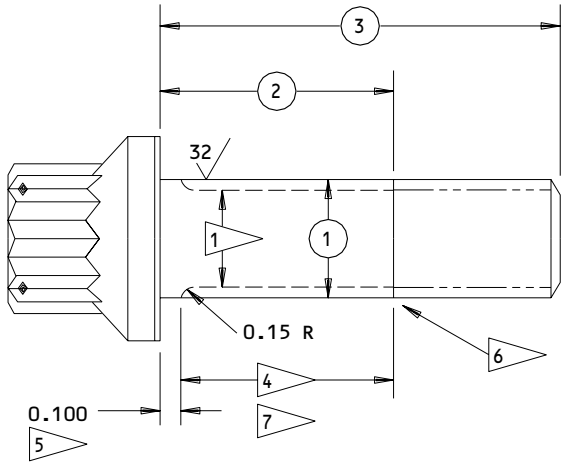
Maintain surface finish of 32 micro inches on flats of major diameter and or thread flanks.





A–A

Tool Centers for Bolt Repair
Figure 601



		1	2	3
BOLT BACB30PN12-34 (250, IPL FIG. 2)	DESIGN DIM	0.7490 0.7485	2.1350 2.1150	3.2910 3.2610
	REPAIR LIMIT	0.7445 1		
BOLT 310T3011-1 *[1] (250, IPL FIG. 1)	DESIGN DIM	0.8740 0.8735	4.1350 4.1150	5.4300 5.4100
	REPAIR LIMIT	0.8695 1		
BOLT 310T3011-2 *[2] (255, IPL FIG. 1)	DESIGN DIM	0.8740 0.8735	1.7600 1.7400	2.9270 2.9070
	REPAIR LIMIT	0.8695 1		

*[1] MADE FROM BACB30PN14-66
*[2] MADE FROM BACB30PN14-28

REFINISH

NO FINISH

REPAIR

1 2 3 4 5 6 7

1 REPAIR LIMIT FOR MACHINING OF DEFECTS

2 REPAIR IS LIMITED TO MACHINING OF DEFECTS

3 SHANK TO BE STRAIGHT TO WITHIN 0.003 TIR PER INCH OF LENGTH

4 SHANK REPAIR IN THIS AREA ONLY

5 NO REPAIR ALLOWED IN THIS AREA

6 NO REWORK ALLOWED ON THREADS OR THREAD RUNOUT

7 AXIAL LENGTH OF REPAIR MUST NOT EXCEED 10% OF GRIP LENGTH

MATERIAL: INCONEL 718

ALL DIMENSIONS ARE IN INCHES

BACB30PN12-34
310T3011-1,-2
Bolt Repair
Figure 602

253352

ASSEMBLY

1. Materials

   A. Sealant -- BMS 5-79 Class B (Ref 20-60-04)

   B. Lockwire -- MS20995NC32

   C. Antiseize Compound - Never-Seez Pure Nickel Special Grade (Ref 20-60-03)

2. Assemble Forward Engine Mount (IPL Fig. 1)

   A. Install shear pins (130) on fitting (140) with washers (125) and nuts (120). Tighten nuts (120) to 630-950 pound-inches.

   B. Install barrel nuts (90) and retaining clips (85) on fitting (140).

   C. Install collar (80) with attached bearing (75) on fitting (140).

   CAUTION: INSTALL END CAP SO THAT THE BOLT HEADS ARE WITHIN THE END CAP COUNTERBORE.

   D. Apply antiseize compound to threads and shank of bolts (55, 58). Install end cap (65, 65A, 66) on fitting (140) and secure with bolts (55, 58), washers (60) or radius filler (68). Tighten bolts (55) to 650-900 pound-inches or bolts (58) to 1400-1500 pound-inches. Lockwire bolts using double twist method.

      NOTE: Refer to SB 767-71A0087.

   E. Install shear pin fitting (70) and pin (50) on fitting (140).

   F. Install evener bar assembly (145) on fitting (140) and secure with bolt (95) (bolthead upward), washer (100) (under bolthead), washer (105) (under nut) and nut (110). Check run-on torque of nut (110) per CHECK par. 4. Tighten nut (110) to 750-900 pound-inches.

      If applicable, install cotter pin (93) with BMS 5-26, Type 2, Class B1/2 sealant to both ends of cotter pin to prevent cotter pin movement.

   G. Install thrust link assembly (34) on evener bar (145) and secure with bolt (15, 17,) (bolthead upward), washer (20) (under bolthead), washer (25) (under nut) and nut (30, 32). Tighten nut (30, 32) as follows:

      (1) If bolt (15,15A) and nut (30) are used, check run-on torque per CHECK par. 4. Tighten nut (30) to 650-750 pound-inches.

(2) If bolt (17,17B) and nut (32) are used, tighten nut to 150-1000 pound-inches. Ensure that washer (20) is securely seated on bolt (17) and nut (32) is securely seated on washer (25). If cotter pin (7) cannot be inserted, back off nut (32) the minimum amount needed to install cotter pin (7). Install cotter pin (7) with BMS 5-26, Type 2, class B1/2 sealant to both ends of cotter pin to prevent cotter pin movement.

(3) If bolt (17A,17C) and nut (30) are used, check run-on torque per CHECK par. 4. Tighten nut (30) to 650-750 pound-inches. Install cotter pin (7) with BMS 5-26, Type 2, Class B1/2 sealant to both ends of cotter pin to prevent cotter pin movement.

3. Assemble Aft Engine Mount (IPL Fig. 2)

A. Install shear pins (140) on hanger (155) and secure with washer (135), nuts (130). Tighten nuts (130) to 290-410 pound-inches.

CAUTION: HEAD OF BOLTS (25) MUST BE ON THE AFT SIDE OF HANGER (125) WHEN INSTALLED TO PREVENT BINDING.

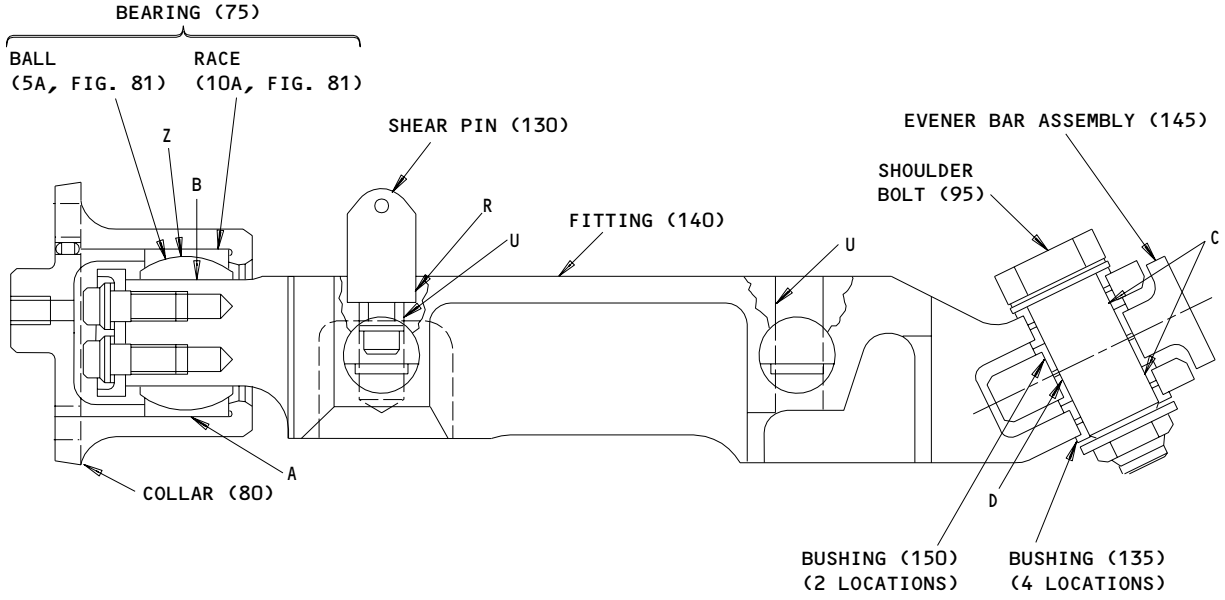
B. Apply antiseize compound to threads and shanks of bolts (5, 25) and install tangential links (45), pins (30) and washers (35, 37) on hanger (125) and secure with bolts (25) and nuts (40). Washer (37) is installed under nut (40). Tighten nuts (40) to 220-410 pound-inches. Install retainers (12) and secure with bolts (5), washers (10) (under bolthead), washers (15) (under nut) and nuts (20).

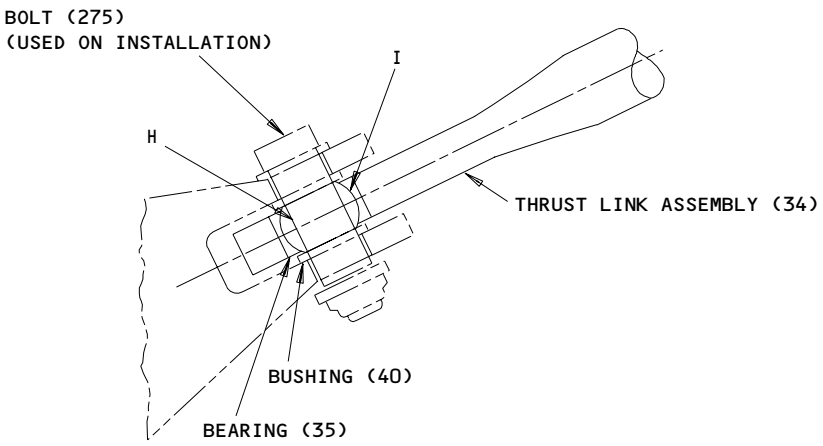
CAUTION: HEAD OF BOLTS (90) MUST BE ON THE AFT SIDE OF HANGER (125) WHEN INSTALLED TO PREVENT BINDING.

C. Apply antiseize compound to threads and shanks of bolts (65, 90) and install center link (110), pin (85) and washer (100) on hanger (125) and secure with bolt (90) and nut (105). Tighten nut to 220-410 pound-inches. Install retainer (85) and secure with bolt (65), washer (70) (under bolthead), washer (75) (under nut) and nut (80).

4. Store these components using standard industry practices and information contained in 20-44-02.

FITS AND CLEARANCES

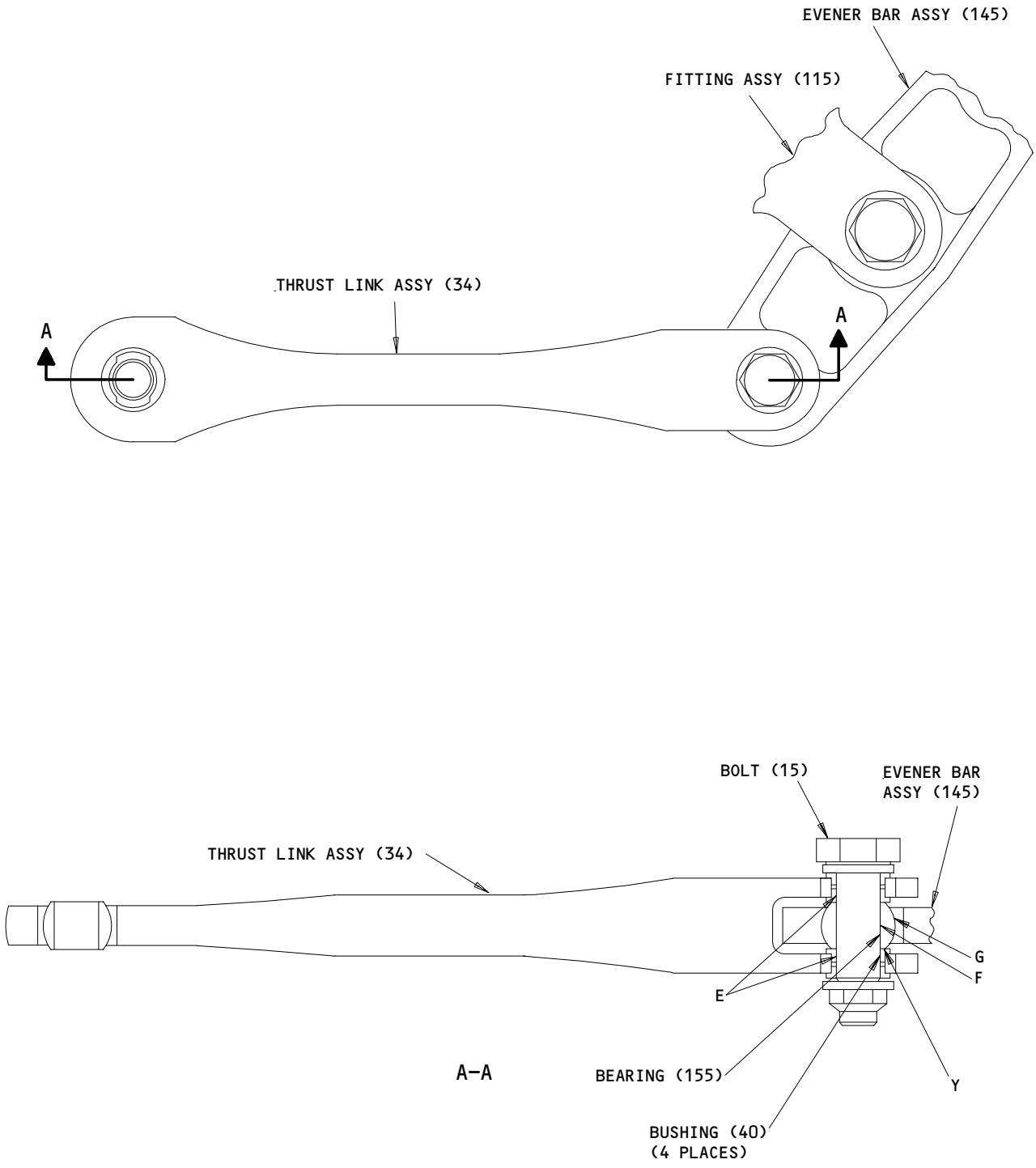




ITEM NUMBERS REFER TO IPL FIG. 1,
EXCEPT AS NOTED

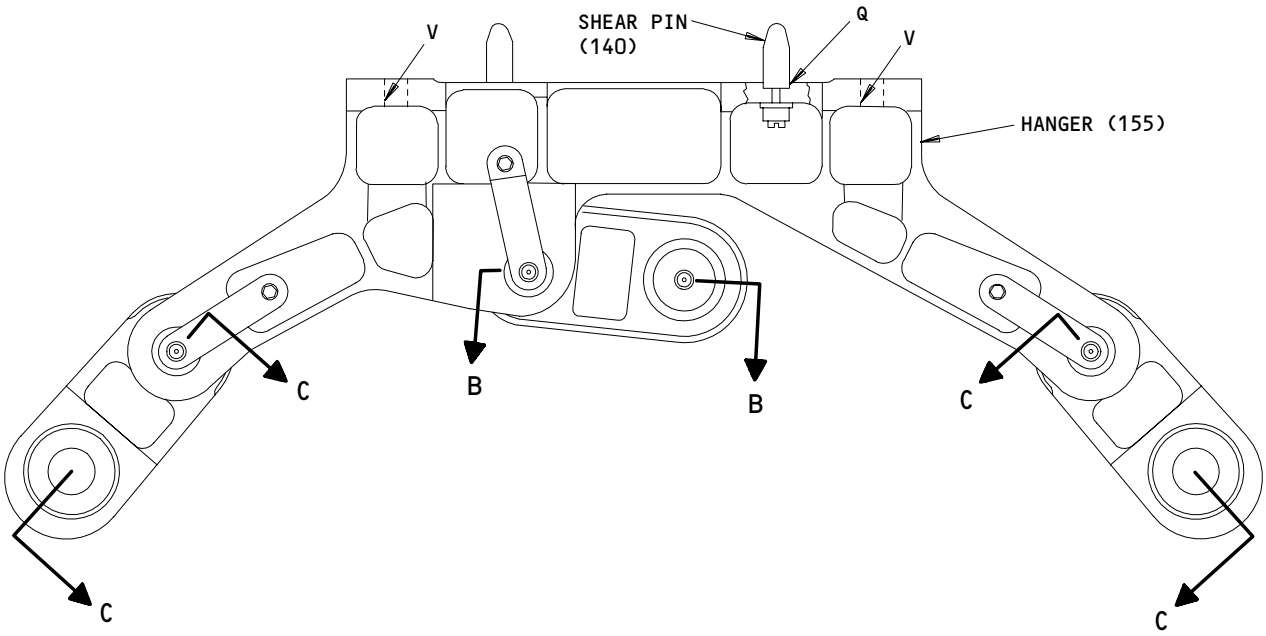
Fits and Clearances
Figure 801 (Sheet 1)

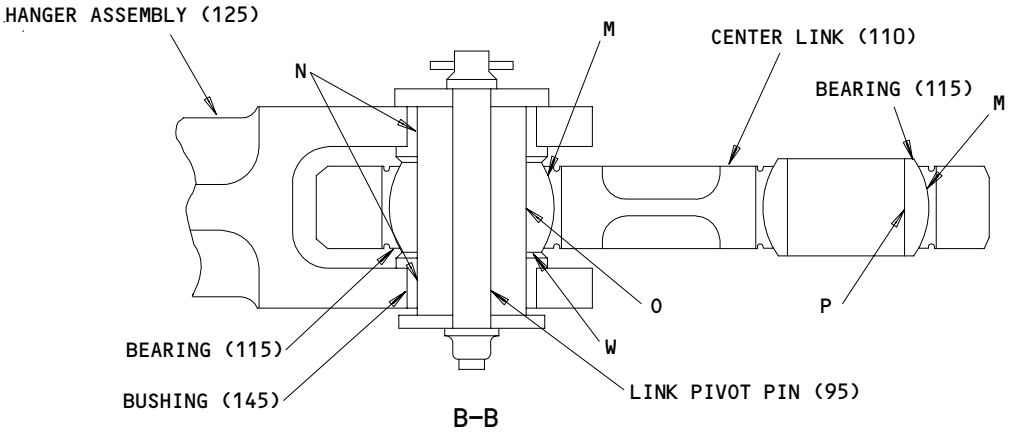
8264



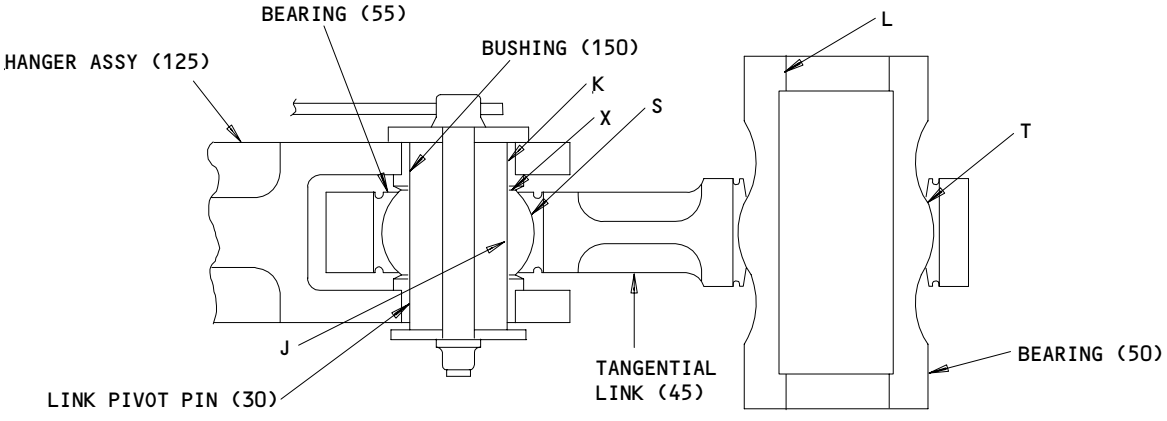
ITEM NUMBERS REFER TO IPL FIG. 1

Fits and Clearances
Figure 801 (Sheet 2)





B–B



C–C

ITEM NUMBERS REFER TO FIG. 2

Fits and Clearances
Figure 801 (Sheet 3)

Ref Letter Fig. 801	Mating Item No.	IPL Fig. No.	Design Dimension				Service Wear Limit		
			Dimension		Assembly Clearance		Dimension Limits		Maximum Allowable Clearance
			Min	Max	Min	Max	Min	Max	
A	ID 80,80A,80B OD 10A,FIG.81	1,81	3.1875 3.1890	3.1885 3.1900	 -0.0025	 0.005			0.0020
A	ID 80C OD 10A,FIG.81	1,81	3.1885 3.1890	3.1895 3.1900	 -0.0005	 0.0015			0.0020
B	ID 75 OD 140	1	1.9992 1.9967	2.0000 1.9973	0.0019	0.0033	1.9939	2.0028	0.0050
C	ID 135 OD 95	1	1.3745 1.3725	1.3755 1.3740	0.0005	0.0030	1.3702	1.3778	0.0053
D	ID 150 OD 95	1	1.3745 1.3725	1.3755 1.3740	0.0005	0.0030	1.3702	1.3778	0.0053
E	ID 40 OD 15,17,17A	1	0.9995 0.9980	1.0003 0.9990	0.0005	0.0023	0.9960	1.0023	0.0043
F	ID 155 BALL OD 15,17,17A	1	0.9995 0.9980	1.0000 0.9990	0.0005	0.0020	0.9960	1.0020	4 10
G	ID 155 RACE OD 155 BALL	1	1.5010 1.4995	1.5015 1.5000	0.0010	0.0020	1.4970	1.5040	15
H	ID 35 BALL OD 275	1	0.9995 0.9980	1.0000 0.9990	0.0005	0.0020	0.9960	1.0020	4 10
I	ID 35 RACE OD 35 BALL	1	1.5010 1.4995	1.5015 1.5000	0.0010	0.0020	1.4970	1.5040	15
J	ID 55 BALL OD 30	2	1.2495 1.2480	1.2500 1.2490	0.0005	0.0020	1.2458	1.2522	4 12

ALL DIMENSIONS ARE IN INCHES

Fits and Clearances
Figure 801 (Sheet 4)

4217

Ref Letter Fig.801	Mating Item No.	IPL Fig. No.	Design Dimension				Service Wear Limit		
			Dimension		Assembly Clearance		Dimension Limits		Maximum Allowable Clearance
			Min	Max	Min	Max	Min	Max	
K	ID 150 OD 30	2	1.2495 1.2480	1.2500 1.2490	0.0005	0.0020	1.2445	1.2540	0.0060
L	ID 50 OD 260	2	1.2495 1.2480	1.2500 1.2490	0.0005	0.0020	1.2458	1.2522	4 12
M	ID 115 RACE OD 115 BALL	2	2.0010 1.9995	2.0015 2.0000	0.0010	0.0020	1.9967	2.0043	13
N	ID 145 OD 95	2	1.3745 1.3730	1.3755 1.3740	0.0005	0.0025	1.3695	1.3790	0.0060
O	ID 115 BALL OD 95	2	1.3745 1.3730	1.3750 1.3740	0.0005	0.0020	1.3707	1.3773	4 5
P	ID 115 BALL OD 290	2	1.3745 1.3730	1.3750 1.3740	0.0005	0.0020	1.3707	1.3773	4 5
Q	ID 155 OD 140	2	0.7495 0.7455	0.7505 0.7460	0.0035	0.0050	0.7438	0.7522	0.0067
R	ID 140 OD 130	1	1.2495 1.2480	1.2505 1.2485	0.0010	0.0025	1.2458	1.2527	0.0047
S	ID 55 RACE OD 55 BALL	2	1.7820 1.7805	1.7825 1.7810	0.0010	0.0020	1.7778	1.7855	15
T	ID 50 RACE OD 50 BALL	2	20						16
U	ID 140 OD 17	1	0.9030 0.8735	0.9220 0.8740	0.0290	0.0485	0.8735	0.9220	0.0485

Fits and Clearances
Figure 801 (Sheet 5)

4218

Ref Letter Fig. 801	Mating Item No.	IPL Fig. No.	Design Dimension				Service Wear Limit		
			Dimension		Assembly Clearance		Dimension Limits		Maximum Allowable Clearance
			Min	Max	Min	Max	Min	Max	
V	ID 155 OD 18	2	0.7950 0.7485	0.8050 0.7490	0.0460	0.0565	0.7485	0.8050	0.0565
W	ID 145 OD 115	2	1.210 1.196	1.220 1.200	0.010 19	0.024 19			
X	ID 150 OD 55	2	1.095 1.088	1.105 1.093	0.002 19	0.017 19			
Y	ID 40 OD 155	1	1.002 0.998	1.007 1.000	0.002 19	0.009 19			
Z	ID 10A OD 5A	80	2.8765 2.8735	2.8775 2.8745	0.0020	0.0040		2.8805	7

ALL DIMENSIONS ARE IN INCHES

1. INTERFERENCE FIT
2. 310T3152-2 OR 310T3152-5 BOLT (USED ON INSTALLATION)
3. BACB30PN20-93 BOLT (USED ON INSTALLATION)
4. PIN OR BOLT TO BALL AND BALL TO RACE COMBINED MAXIMUM = 0.006 RADIAL PLUS 0.008 AXIAL
5. PIN TO BALL 0.0043 RADIAL
6. 310T3150-1, OR -2 BOLT USED ON INSTALLATION
7. BALL TO RACE COMBINED MAX CLEARANCE = 0.006 (RADIAL) PLUS 0.008 (AXIAL)
10. PIN OR BOLT TO BALL 0.0040 RADIAL
12. PIN OR BOLT TO BALL 0.0042 RADIAL
13. BOLT TO BALL AND BALL TO RACE COMBINED MAX CLEARANCE = 0.006 (RADIAL) PLUS 0.008 (AXIAL)
15. BALL TO RACE 0.0084 RADIAL AND 0.032 AXIAL
16. 0.0050 RADIAL, 0.0350 AXIAL
17. 310T3011-1, OR -2 BOLT USED ON INSTALLATION
18. BACB30PN12-34 USED ON INSTALLATION
19. TOTAL CLEARANCE BETWEEN BEARING AND TWO ADJACENT BUSHINGS
20. BALL AND RACE CANNOT BE DISASSEMBLED

Fits and Clearances
Figure 801 (Sheet 6)

FOR TORQUE VALUE OF STANDARD FASTENERS, REFER TO 20-50-01			
ITEM NO. IPL FIG.	NAME	TORQUE	
		POUND-INCHES	POUND-FEET
FIG. 1			
55	BOLT	650-900	
58	BOLT	1400-1500	
110	NUT	750-900	
30	NUT	1	
32	NUT	150-1000	
120	NUT	630-950	
FIG. 2			
40, 105	NUT	220-410	
130	NUT	290-410	

1 IF BOLT (15) AND NUT (30) ARE USED, TIGHTEN NUT TO 1300-1500 POUND-INCHES.
IF BOLT (17A) AND NUT (30) ARE USED, TIGHTEN NUT TO 650-750 POUND-INCHES.

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

06710 LAMSON AND SESSIONS CO THE VALLEY-TODECO
12975 BRADLEY AVENUE
SYLMAR, CALIFORNIA 91342-3830

08524 DEUTSCH FASTENER CORP SEE CODE V97928

09455 BFM TRANSPORT DYNAMICS CORP
3131 WEST SEGERSTROM AVENUE PO BOX 1953
SANTA ANA, CALIFORNIA 92702-1953

10630 ANILLO INDUSTRIES, INCORPORATED
2090 NORTH GLASSELL
ORANGE, CALIFORNIA 92667

15653 MICRODOT INC AEROSPACE FASTENING SYS KAYNAR MFG DIV
800 SOUTH STATE COLLEGE BLVD PO BOX 3001
FULLERTON, CALIFORNIA 92634-3001

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

16746 SPECLINE INCORPORATED
11185 TUXFORD STREET
SUN VALLEY, CALIFORNIA 91352-2632

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

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

57606 PSI BEARINGS INC
2175 UNION PLACE
SIMI VALLEY, CALIFORNIA 93065

72962 ELASTIC STOP NUT A DIV OF HARTFORD INDUSTRIES INC
2330 VAUXHALL ROAD
UNION, NEW JERSEY 07083-5038

73134 IMO INDUSTRIES INC HEIM BEARINGS DIV
60 ROUND HILL ROAD PO BOX 430
FAIRFIELD, CONNECTICUT 06430

VENDORS

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

97613 SARGENT TECHNOLOGIES
1851 SOUTH PANTANO ROAD
TUCSON, ARIZONA 85710

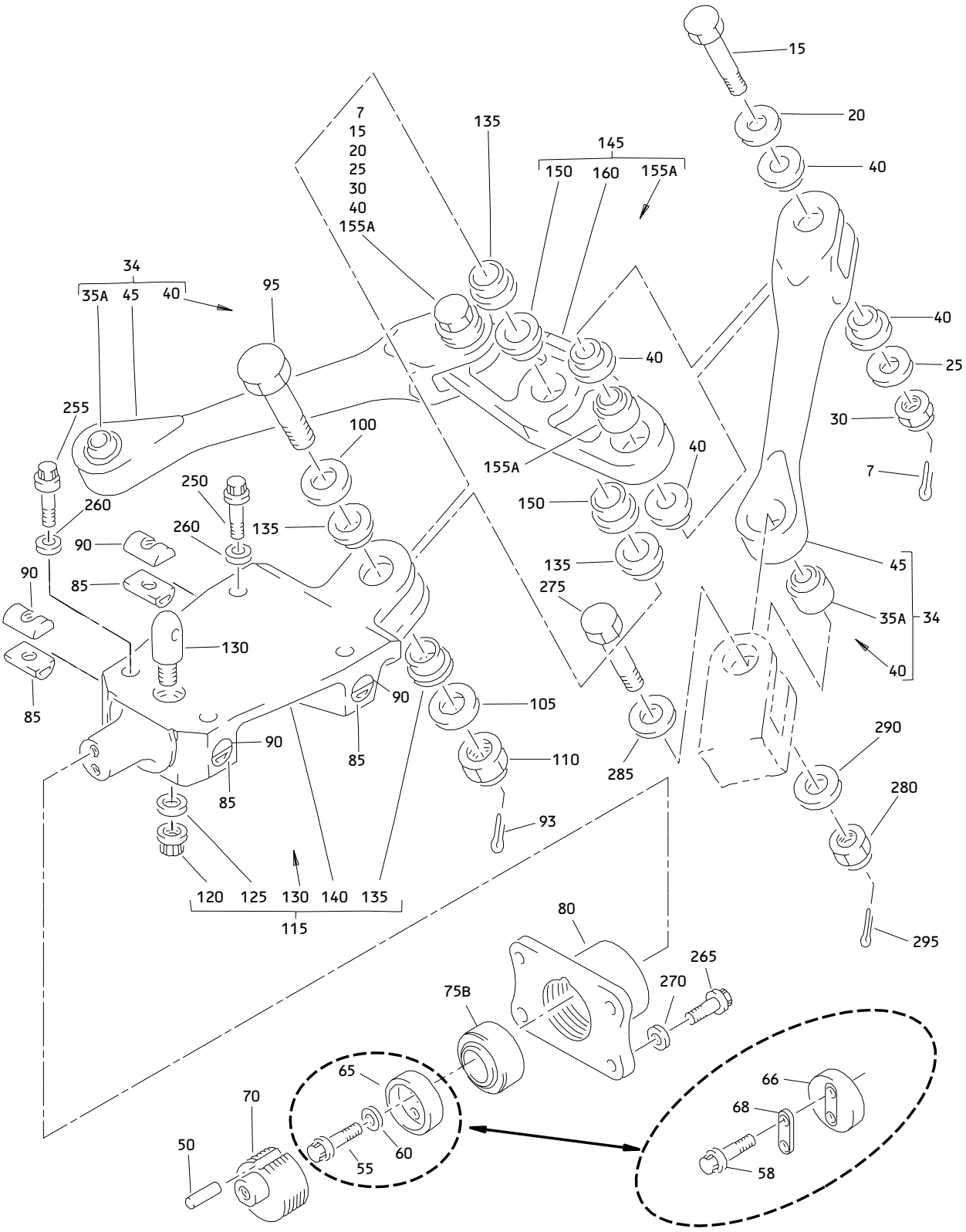
97928 DEUTSCH FASTENER CORP
3969 PARAMONT BOULEVARD
LAKEWOOD, CALIFORNIA 90712-4193

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
ABY20-101		2	50F	2
ABY20V103		2	50E	2
AMB32-100		1	75B	1
ASBY20V11		2	50F	2
ASBY20V16		2	50E	2
BACB30LE10HU17		1	265	4
BACB30LE6U39		2	25A	2
BACB30LE6U43		2	90	1
BACB30LE6U49		2	280	1
BACB30LE9HU4		1	55	2
BACB30LJ4U16		2	5	2
BACB30LJ4U8		2	65	1
BACB30PN20-93		2	260	2
BACB30PN12-34		2	250	4
BACB30PN14-26		1	255	2
BACB30PN14-66		1	250	2
BACB30US9-4H		1	58	2
BACB30US9K4H		1	58A	2
BACN10GW8A		2	130	2
BACN10GW8AS		1	120	1
BACN10JC12CM		1	30	2
		1	280	2
BACN10JC14CM		1	110	1
BACN10JD112CD		1	32	2
		1	280A	2
BACW10BN6UP		2	37	2
BACW10BP10ACU		1	270	4
BACW10BP12ACU		2	255	4
BACW10BP14ACU		1	260	4
BACW10BP16ACU		1	20	2
		1	285	2
BACW10BP16APU		1	20A	2
		2	277	2
BACW10BP20ACU		2	270	2
BACW10BP20APU		2	275	2
BACW10BP22ACU		1	100	1
BACW10BP22APU		1	100A	1
BACW10BP4ACU		2	10	2
		2	70	1
BACW10BP4APU		2	15	2
		2	75	1
BACW10BP8APU		1	125	1
		2	135	2
BACW10BP9ACU		1	60	2
BDS20S302		2	50F	2
BDS20S305		2	50E	2

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
BMN4122C1D2-12		1	30	2
		1	280	2
BMN4122C1D2-14		1	110	1
H01-12BAC		1	30	2
		1	280	2
H01-14BAC		1	110	1
H95-8		1	120	1
KSSB20-33		2	50F	2
LHSSTM16BAC		1	35A	2
		1	155A	2
		80	1	RF
LHSSTM32BAC		1	75B	1
LH9155-14		1	90	4
MS16562-234		1	50	1
MS24665-376		1	7	2
		1	295	2
MS24665-443		1	7A	2
		1	93	1
		1	295A	2
NAS1805-16P		2	265A	2
NAS1805-4P		2	20	2
		2	80	1
NAS1805-6P		2	40	2
		2	105	1
		2	285	1
P20540		1	35A	2
		1	155A	2
		80	1	RF
P20640		1	75B	1
P22960		2	55A	2
P22970		2	115B	2
S302T001-200		1	35A	2
		1	155A	2
		80	1	RF
S302T001-204		1	75B	1
VTB01130REVD		2	55	2
		82	1	RF
VTB01131		82	5	1
VTB01132		82	10	1
VTB01140		2	115A	2
VTB04260		1	155A	2
		80	1	RF
VTB04420		1	75B	1
109LH8574-8		1	120	1

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
109LH9074-12		1	30	2
		1	280	2
302T0200-1		1	40	8
302T0200-126		2	150A	4
302T0200-127		2	145A	2
302T0200-13		1	150	2
302T0200-2		1	135	4
302T0200-4		2	150	4
302T0200-5		2	145	2
310T3011-1		1	250	2
310T3011-2		1	255	2
310T3020-10		1	1D	RF
310T3020-2		1	1	RF
310T3020-3		1	5	RF
		2	1	RF
310T3020-4		1	1A	RF
310T3020-7		1	5A	RF
		2	1A	RF
310T3020-8		1	1C	RF
310T3021-1		1	115	1
310T3021-2		1	140	1
310T3022-1		1	145	1
310T3022-2		1	160	1
310T3023-1		1	34	2
310T3023-2		1	45	2
310T3025-2		1	80A	1
310T3025-3		1	80	1
310T3025-4		1	80C	1
310T3026-1		1	65	1
310T3026-2		1	66	1
310T3031-1		2	125	1
310T3031-2		2	155	1
310T3031-3		2	125A	1
310T3031-4		2	155A	1
310T3031-5		2	125B	1
310T3032-1		2	45	2
310T3032-2		2	60	2
310T3032-3		2	45A	2
310T3032-4		2	60A	2
310T3033-1		2	110	1
310T3033-2		2	120	1
310T3033-3		2	110A	1
310T3033-4		2	120A	1
310T3036-2		1	70	1
310T3036-3		1	70A	1
310T3037-1		2	140	2

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
310T3037-4		2	140A	2
310T3038-1		1	130	1
310T3038-2		1	130A	1
310T3039-1		2	22	2
310T3039-2		2	85	1
310T3150-1		2	95	1
310T3150-2		2	290	1
310T3150-3		2	30	2
310T3151-1		2	100	1
310T3151-1		2	295	1
310T3151-2		2	35	2
310T3151-3		1	105	1
310T3151-4		1	25	2
		1	290	2
310T3152-1		1	95	1
310T3152-12		1	15A	2
310T3152-15		1	17B	2
310T3152-16		1	17C	2
310T3152-17		1	95C	1
310T3152-2		1	15	2
		1	275	2
310T3152-5		1	17	2
		1	275A	2
310T3152-6		1	17A	2
		1	275B	2
310T3152-7		1	95A	1
310T3210-1		1	68	1
55490		2	50F	2
56137		2	50E	2
60B00180-302		2	50F	2
60B00180-305		2	50E	2
66796B820		1	120	1
69235-1216CM		1	30	2
		1	280	2
69235-1414CM		1	110	1
70331-1414		1	90A	4
8106809		80	5	1
8116742		80	10	1
9155-14RET		1	85	4
93042-20-1		2	260A	2



Forward Engine Mount Assembly
Figure 1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-1	310T3020-2		MOUNT ASSY-ENG FWD	A	RF
-1A	310T3020-4		MOUNT ASSY-ENG FWD	C	RF
-1B	310T3020-6		MOUNT ASSY-ENG FWD	D	RF
-1C	310T3020-8		MOUNT ASSY-ENG FWD	F	RF
-1D	310T3020-10		MOUNT ASSY-ENG FWD	G	RF
-5	310T3020-3		MOUNT ASSY-ENG AFT (FOR DETAILS SEE FIG. 2)	B	RF
-5A	310T3020-7		MOUNT ASSY-ENG AFT (FOR DETAILS SEE FIG. 2)	E	RF
7	MS24665-376		.PIN-COTTER	D	2
-7A	MS24665-443		.PIN-COTTER	F,G	2
10	310T3023-1		DELETED		
15	310T3152-2		.BOLT-SHOULDER (OPT ITEM 15A)	A,C	2
-15A	310T3152-12		.BOLT-SHOULDER (OPT ITEM 15)	A,C	2
-17	310T3152-5		.BOLT-SHOULDER (OPT ITEM 17B)	D	2
-17A	310T3152-6		.BOLT-SHOULDER (OPT ITEM 17C)	F,G	2
-17B	310T3152-15		.BOLT-SHOULDER (OPT ITEM 17)	D	2
-17C	310T3152-16		.BOLT-SHOULDER (OPT ITEM 17A)	F,G	2
20	BACW10BP16ACU		.WASHER- (V10630) (SPEC BACW10BP16ACU) (FOR ITEM 15A ONLY, ITEM 20 OPT TO ITEM 20A) (FOR ITEM 17A ONLY, ITEM 20 OPT TO ITEM 20A)	A,C,D,F,G	2
-20A	BACW10BP16APU		.WASHER- (V10630) (SPEC BACW10BP16APU) (FOR ITEM 15A ONLY, ITEM 20 OPT TO ITEM 20A) (FOR ITEM 17A ONLY, ITEM 20 OPT TO ITEM 20A)	A,C,D,F,G	2

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
25	310T3151-4		.WASHER-SPECIAL	A,C,D,F,G	2
30	BMN4122C1D2-12		.NUT- (V08524) (SPEC BACN10JC12CM) (OPT 69235-1216CM (V56878)) (OPT H01-12BAC (V15653)) (OPT 109LH9074-12 (V72962)) (OPT 69235-1216CM (V56878))	A,C,F,G	2
-32	BACN10JD112CD		.NUT- (V15653) (SPEC BACN10JD112CD) (OPT BACN10JD112CD (V56878)) (OPT BACN10JD112CD (V72962)) (OPT BACN10JD112CD (V92592))	D	2
34	310T3023-1		.LINK ASSY-THRUST	A,C,D,F,G	2
35	S302T001-200		DELETED		
35A	LHSSTM16BAC		..BEARING ASSY- (V73134) (SPEC S302T001-200) (OPT P20540 (V57606)) (OPT VTB04260 (V06710)) (FOR DETAILS SEE FIG. 80)	A,C,D,F,G	1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
35B	P20541		DELETED		
40	302T0200-1		..BUSHING	A,C,D ,F,G	4
45	310T3023-2		..LINK	A,C,D ,F,G	1
50	MS16562-234		.PIN-SPR	A,C,D ,F,G	1
55	BACB30LE9HU4		.BOLT (PRE SB 767-71A0087)	A,C,D ,F,G	2
58	BACB30US9-4H		.BOLT (POST SB767-71A0087) (OPT ITEM 58A)	A,C,D ,F,G	2
58A	BACB30US9K4H		.BOLT (OPT ITEM 58)	A,C,D ,F,G	2
60	BACW10BP9ACU		.WASHER- (V10630) (SPEC BACW10BP9ACU) (PRE SB 767-71A0087)	A,C,D ,F,G	2
65	310T3026-1		.CAP-END (PRE SB 767-71A0087)	A,C,D ,F,G	1
66	310T3026-2		.CAP-END (POST SB767-71A0087)	A,C,D ,F,G	1
68	310T3210-1		.RADIUS FILLER (POST SB767-71A0087)	A,C,D ,F,G	1
70	310T3036-2		.FITTING-SHEAR PIN (OPT ITEM 70A)	A,C,D ,F,G	1
-70A	310T3036-3		.FITTING-SHEAR PIN (OPT ITEM 70)	A,C,D ,F,G	1
75	S302T001-204		DELETED		
75A	LHSSTM32BAC		DELETED		
75B	VTB04420		.BEARING ASSY-PLAIN SPHER (V06710) (SPEC S302T001-204) (OPT AMB32-100 (V50294)) (OPT P20640 (V57606)) (OPT LHSSTM32BAC (V73134))	A,C,D ,F,G	1

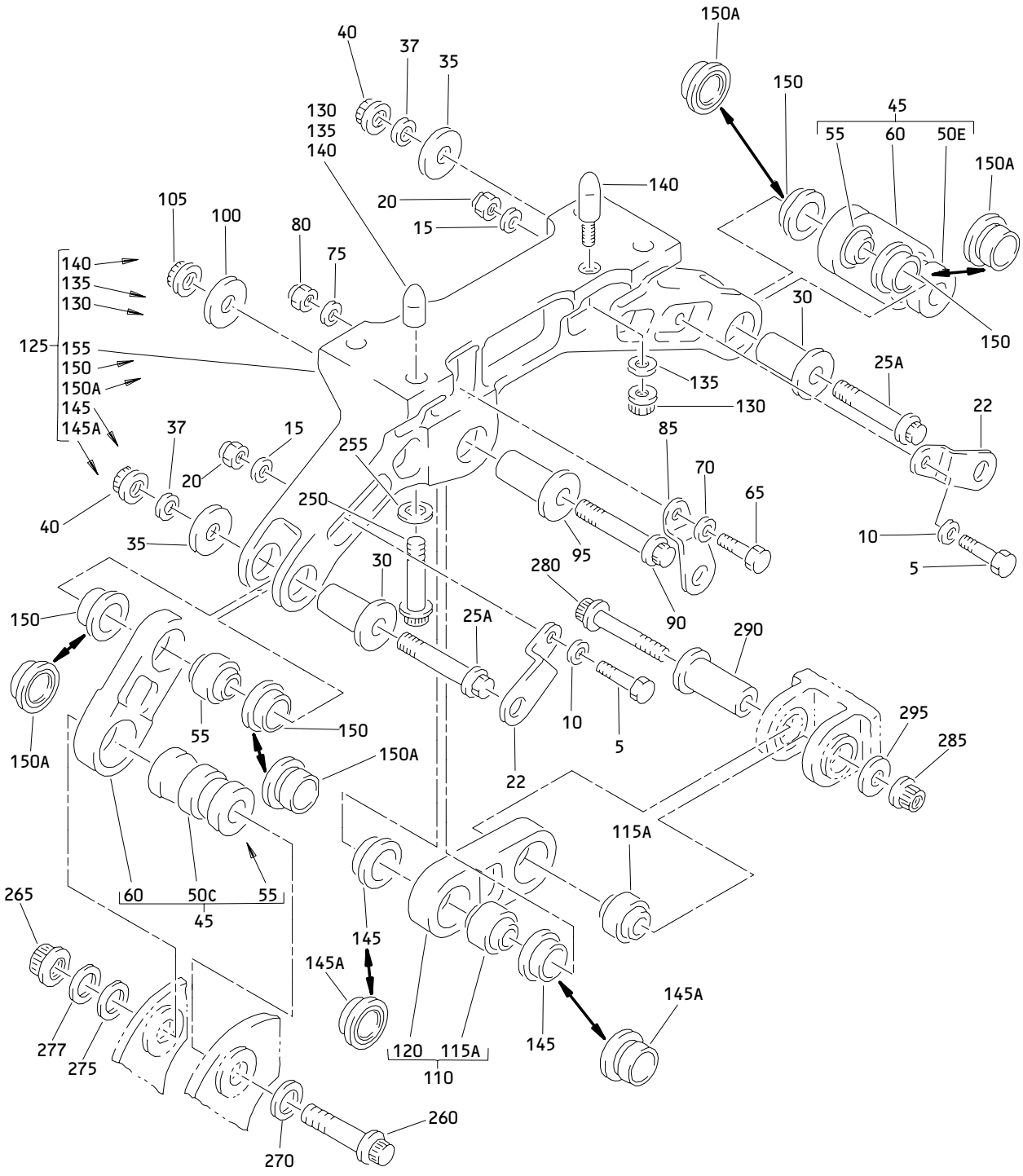
FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
80	310T3025-3		.COLLAR- (OPT ITEM 80A)*[1]	A	1
-80A	310T3025-2		.COLLAR- (OPT ITEM 80)*[1]	A	1
-80B	310T3025-3		.COLLAR*[1]	C,D,F	1
-80C	310T3025-4		.COLLAR (OPT ITEM 80D)*[1]	G	1
-80D	310T3025-5		.COLLAR (OPT ITEM 80C)*[1]	A G	1 1
85	9155-14RET		.CLIP-NUT RETAINING (V72962)	A,C,D ,F,G	4
90	LH9155-14		.NUT-BARREL (V72962) (OPT ITEM 90A)	A,C,D ,F,G	4
-90A	70331-1414		.NUT-BARREL (V56878) (OPT ITEM 90)	A,C,D ,F,G	4
93	MS24665-443		.PIN-COTTER	F,G	1
95	310T3152-1		.BOLT-SHOULDER (OPT ITEM 95B)	A,C,D	1
-95A	310T3152-7		.BOLT-SHOULDER (OPT ITEM 95C)	F,G	1
-95B	310T3152-11		.BOLT-SHOULDER (OPT ITEM 95)	A,C,D	1
-95C	310T3152-17		.BOLT-SHOULDER (OPT ITEM 95A)	F,G	1
100	BACW10BP22ACU		.WASHER- (V10630) (SPEC BACW10BP22ACU) (FOR ITEM 95B ONLY, ITEM 100 OPT TO ITEM 100A) (FOR ITEM 95C ONLY, ITEM 100 OPT TO ITEM 100A)	A,C,D ,F,G	1
-100A	BACW10BP22APU		.WASHER- (V10630) (SPEC BACW10BP22APU) (FOR ITEM 95B ONLY, ITEM 100 OPT TO ITEM 100A) (FOR ITEM 95C ONLY, ITEM 100 OPT TO ITEM 100A)	A,C,D ,F,G	1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
105	310T3151-3		.WASHER-SPECIAL	A,C,D ,F,G	1
110	H01-14BAC		.NUT- (V15653) (SPEC BACN10JC14CM) (OPT BMN4122C1D2-14 (V85495)) (OPT BMN4122C1D2-14 (V08524)) (OPT 69235-1414CM (V56878)) (OPT BMN4122C1D2-14 (V08524)) (OPT BMN4122C1D2-14 (V97928))	A,C,D ,F,G	1
115	310T3021-1		.FITTING ASSY	A,C,D ,F,G	1
120	BACN10GW8AS		..NUT-	A,C,D ,F,G	1
125	BACW10BP8APU		..WASHER- (V10630) (SPEC BACW10BP8APU)	A,C,D ,F,G	1
130	310T3038-1		..PIN-SHEAR (OPT ITEM 130A)	A,C,D ,F,G	1
-130A	310T3038-2		..PIN-SHEAR (OPT ITEM 130)	A,C,D ,F,G	1
135	302T0200-2		..BUSHING	A,C,D ,F,G	4
140	310T3021-2		..FITTING	A,C,D ,F,G	1
145	310T3022-1		.BAR ASSY-EVENER	A,C,D ,F,G	1
150	302T0200-13		..BUSHING	A,C,D ,F,G	2

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
155	S302T001-200		DELETED		
155A	LHSSTM16BAC		..BEARING ASSY- (V73134) (SPEC S302T001-200) (OPT P20540 (V57606)) (OPT VTB04260 (V06710)) (FOR DETAILS SEE FIG. 80)	A,C,D ,F,G	2
160	310T3022-2		..BAR	A,C,D ,F,G	1
			INSTALLATION PARTS		
250	310T3011-1		BOLT	A,C,D ,F,G	2
250A	BACB30PN14-66		BOLT (OPT)(PREFFERED)	A,C,D ,F,G	2
255	310T3011-2		BOLT	A,C,D ,F,G	2
255A	BACB30PN14-26		BOLT (OPT)(PREFFERED)	A,C,D ,F,G	2
260	BACW10BP14ACU		WASHER- (V10630) (SPEC BACW10BP14ACU)	A,C,D ,F,G	4
265	BACB30LE10HU17		BOLT	A,C,D ,F,G	4
270	BACW10BP10ACU		WASHER- (V10630) (SPEC BACW10BP10ACU)	A,C,D ,F,G	4
275	310T3152-2		BOLT-SHOULDER	A,C	2
-275A	310T3152-5		BOLT-SHOULDER	D	2
-275B	310T3152-6		BOLT-SHOULDER	F,G	2
280	BMN4122C1D2-12		NUT- (V08524) (SPEC BACN10JC12CM) (OPT H01-12BAC (V15653)) (OPT 109LH9074-12 (V72962)) (OPT 69235-1216CM (V56878)) (OPT BMN4122C1D2-12 (V97928))	A,C,F ,G	2

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01- -280A	BACN10JD112CD		NUT- (V15653) (SPEC BACN10JD112CD) (OPT BACN10JD112CD (V56878)) (OPT BACN10JD112CD (V72962)) (OPT BACN10JD112CD (V92592))	D	2
285	BACW10BP16ACU		WASHER- (V10630) (SPEC BACW10BP16ACU)	A,C,D,F,G	2
290	310T3151-4		WASHER	A,C,D,F,G	2
295	MS24665-376		PIN-COTTER	D	2
-295A	MS24665-443		PIN-COTTER	F,G	2

*[1] Collars, P/N 310T3025-4,-5 are an one way option to collars, P/N 310T3025-2,-3.



Aft Engine Mount Assembly
Figure 2

J00639

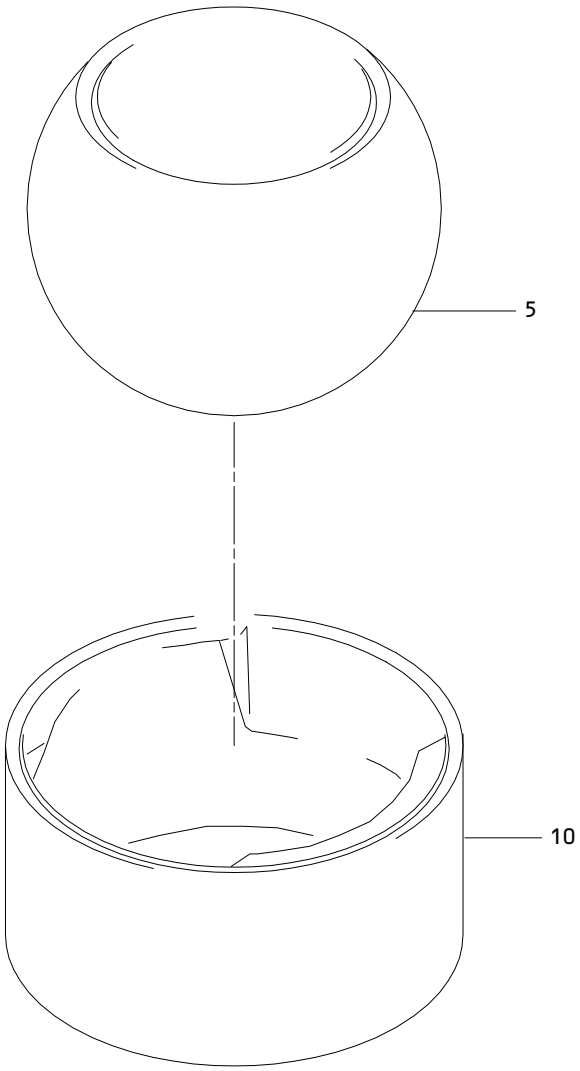
FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
02-					
-1	310T3020-3		MOUNT ASSY-ENG AFT	B	RF
-1A	310T3020-7		MOUNT ASSY-ENG AFT	E	RF
5	BACB30LJ4U16		.BOLT	B,E	2
10	BACW10BP4ACU		.WASHER- (V10630) (SPEC BACW10BP4ACU)	B,E	2
15	BACW10BP4APU		.WASHER- (V10630) (SPEC BACW10BP4APU)	B,E	2
20	NAS1805-4P		.NUT	B,E	2
22	310T3039-1		.RETAINER-BOLT	B,E	2
25	BACB30LE6U40		DELETED		
25A	BACB30LE6U39		.BOLT	B,E	2
30	310T3150-3		.PIN-LINK PIVOT	B,E	2
35	310T3151-2		.WASHER-SPECIAL	B,E	2
37	BACW10BN6UP		.WASHER	E	2
40	NAS1805-6P		.NUT	B,E	2
45	310T3032-1		.LINK ASSY-TANGENTIAL (REPLS ITEM 45A)	B	2
-45A	310T3032-3		.LINK ASSY-TANGENTIAL (REPLD BY ITEM 45)	B	2
-45B	310T3032-1		.LINK ASSY-TANGENTIAL (OPT ITEM 45C)	E	2
-45C	310T3032-3		.LINK ASSY-TANGENTIAL (OPT ITEM 45B)	E	2
50	55490		DELETED		
-50A	KSSB20-33		DELETED		
-50B	ABY20-101		DELETED		
50C	ABY20V103		DELETED		
-50D	60B00180-302		DELETED		
50E	BDS20S305		..BEARING- (V16746) (SPEC 60B00180-305) (OPT 56137 (V09455)) (OPT ABY20V103 (V15860)) (OPT ASBY20V16 (V15860)) (OPT ITEM 50F)	B,E	1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
02-					
-50F	ASBY20V11		..BEARING- (V15860) (SPEC 60B00180-302) (OPT 55490 (V09455)) (OPT ABY20-101 (V50294)) (OPT KSSB20-33 (V97613)) (OPT BDS20S302 (V16746)) (OPT ITEM 50E)	B,E	1
55	VTB01130REVD		..BEARING ASSY- (V06710) (OPT ITEM 55A) (FOR DETAILS SEE FIG. 82)	B,E	1
-55A	P22960		..BEARING- (V57606) (OPT ITEM 55)	B,E	1
60	310T3032-2		..LINK- (USED ON ITEMS 45, 45B)	B,E	1
-60A	310T3032-4		..LINK- (USED ON ITEMS 45A, 45C)	B,E	1
65	BACB30LJ4U8		.BOLT	B,E	1
70	BACW10BP4ACU		.WASHER- (V10630) (SPEC BACW10BP4ACU)	B,E	1
75	BACW10BP4APU		.WASHER- (V10630) (SPEC BACW10BP4APU)	B,E	1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
02-					
80	NAS1805-4P		.NUT	B,E	1
85	310T3039-2		.RETAINER-BOLT	B,E	1
90	BACB30LE6U43		.BOLT	B,E	1
95	310T3150-1		.PIN-LINK PIVOT	B,E	1
100	310T3151-1		.WASHER-SPECIAL	B,E	1
105	NAS1805-6P		.NUT	B,E	1
110	310T3033-1		.LINK ASSY-CTR (REPLS ITEM 110A)	B	1
-110A	310T3033-3		.LINK ASSY-CTR (REPLD BY ITEM 110)	B	1
-110B	310T3033-1		.LINK ASSY-CTR (OPT ITEM 110C)	E	1
-110C	310T3033-3		.LINK ASSY-CTR (OPT ITEM 110B)	E	1
115	VTB01140REVB		DELETED		
115A	VTB01140		..BEARING- (V06710) (OPT ITEM 115B)	B,E	2
-115B	P22970		..BEARING- (V57606) (OPT ITEM 115A)	B,E	2
120	310T3033-2		..LINK- (USED ON ITEMS 110, 110B)	B,E	1
-120A	310T3033-4		..LINK- (USED ON ITEMS 110A, 110C)	B,E	1
125	310T3031-1		.HANGER ASSY- (OPT ITEM 125A)	B	1
-125A	310T3031-3		.HANGER ASSY- (OPT ITEM 125)	B	1
-125B	310T3031-5		.HANGER ASSY	E	1
130	BACN10GW8A		..NUT-	B,E	2
135	BACW10BP8APU		..WASHER- (V10630) (SPEC BACW10BP8APU)	B,E	2
140	310T3037-1		..PIN-SHEAR (OPT ITEM 140A)	B	2
-140A	310T3037-4		..PIN-SHEAR (OPT ITEM 140)	B	2
-140B	310T3037-4		..PIN-SHEAR	E	2
145	302T0200-5		..BUSHING	B	2
145A	302T0200-127		..BUSHING	E	2

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
02-					
150	302T0200-4		..BUSHING	B	4
150A	302T0200-126		..BUSHING	E	4
155	310T3031-2		..HANGER-	B	1
			(USED ON ITEM 125)		
-155A	310T3031-4		..HANGER-	B,E	1
			(USED ON ITEM 125A)		
			INSTALLATION PARTS		
250	BACB30PN12-34		BOLT	B,E	4
255	BACW10BP12ACU		WASHER-	B,E	4
			(V10630)		
			(SPEC BACW10BP12ACU)		
260	BACB30PN20-93		BOLT-	B,E	2
			(V06710)		
			(SPEC BACB30PN20-93)		
			(OPT BACB30PN20-93 (V56878))		
			(PRE SB 767-71-0073)		
-260A	93042-20-1		BOLT-	B,E	2
			(POST SB 767-71-0073)		
265	NAS1805-20P		NUT-	B,E	2
			(PRE SB 767-71-0073)		
-265A	NAS1805-16P		NUT-	B,E	2
			(POST SB 767-71-0073)		
270	BACW10BP20ACU		WASHER-	B,E	2
			(V10630)		
			(SPEC BACW10BP20ACU)		
275	BACW10BP20APU		WASHER-	B,E	2
			(V10630)		
			(SPEC BACW10BP20APU)		
277	BACW10BP16APU		WASHER-	B,E	2
			(V10630)		
			(SPEC BACW10BP16APU)		
			(POST SB 767-71-0073)		

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
02-					
280	BACB30LE6U49		BOLT	B,E	1
285	NAS1805-6P		NUT	B,E	1
290	310T3150-2		PIN-LINK PIVOT	B,E	1
295	310T3151-1		WASHER	B,E	1

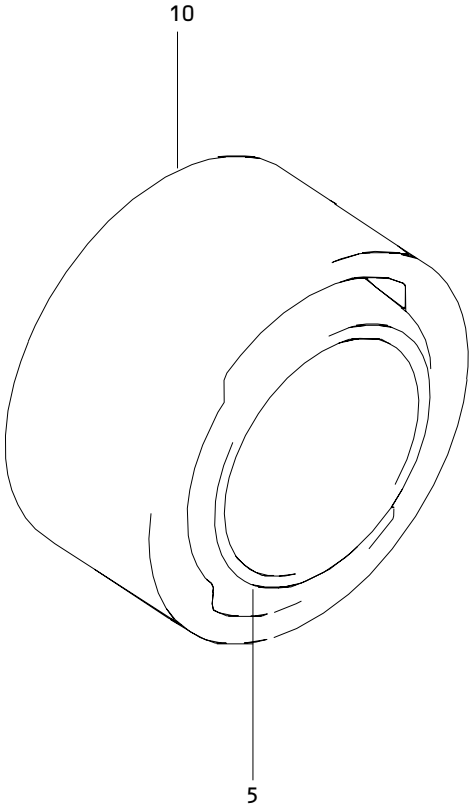


Bearing Assembly
Figure 80

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
80-					
-1	LHSSTM16BAC		BEARING ASSY- (V73134) (SPEC S302T001-200) (OPT P20540 (V57606)) (OPT VTB04260 (V06710))	A,C,D ,F,G	RF
-1A	P20541		DELETED		
5	8106809		.BALL- (V73134)	A,C,D ,F,G	1
10	8116742		.RACE- (V73134)	A,C,D ,F,G	1

Not Used
Figure 81

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
81-					
-1	LHSSTM32BAC		DELETED		
5	8106812		DELETED		
5A	LHSSTM32BACFB		DELETED		
10	8116736		DELETED		
10A	LHSSTM32BACOR		DELETED		



Bearing Assembly
Figure 82

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
82-					
-1	VTB01130REVD		BEARING ASSY- (V06710)	B,E	RF
5	VTB01131		.BALL- (V06710)	B,E	1
10	VTB01132		.RACE- (V06710)	B,E	1