COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

ENGINE STRUT INSTALLATION COMPONENTS

PART NUMBER 310A1022–1, –3, –7, 310A1031–1, 311A1090–1, 311A1091–1, 311A1092–1, –2, –3, 311A1093–1, 311A1094–1, 311A1096–1, 311A1213–5, 311A1215–5,

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

PART NUMBER (Cont.)

311A1515
311A1515–3, –5,
311A1555–1, –2,
311A1561–1,
311A1562–1, –2, –5,
311A1710–3, –5, –8,
311A1730–1, –3, –5, –7,
311A1740–11, –5, –7, –9

BOEING®

COMPONENT MAINTENANCE MANUAL

Revision No. 30
Jul 01/2009

To: All holders of ENGINE STRUT INSTALLATION COMPONENTS 54-50-01.

Attached is the current revision to this COMPONENT MAINTENANCE MANUAL

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

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

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

ATTENTION

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

Location of Change	Description of Change
54-50-01	
FRONTMATTER	Changed the part number information on the title page.
	Changed the data in the TEMPORARY REVISION AND SERVICE BULLETIN RECORD list.
	Added coverage of 311A1092-3.
CHECK	Added coverage of 311A1092-3.
	Changed the data in the References list.
REPAIR	Added coverage of 311A1092-3.
REPAIR-GENERAL	Added coverage of 311A1092-3.
ILLUSTRATED PARTS LIST	Changed the data in the NUMERICAL INDEX list.
	Added coverage of 311A1092-3.

BOEING®

COMPONENT MAINTENANCE MANUAL

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

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

TABLE OF CONTENTS

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
		PRR 33636	SEP 05/84
		PRR 33902	DEC 05/86
		PRR 33944	DEC 05/86
		PRR 33944-5	DEC 05/86
737-71-1149			DEC 05/90
737-71-1149R2			JUN 05/91
		PRR 35005-87	JUN 01/95
737-54-1037		PRR 35005-142	MAR 01/99
737-54-1036		PRR 35005-87	NOV 01/02
737-54-1044R1		PRR 35005-273RS	JUL 01/09

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

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

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

BOEING®

COMPONENT MAINTENANCE MANUAL

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

Temporary Revision		Inserted		Removed	
Number	Date	Date	Initials	Date	Initials

Temporary Revision		Inserted		Removed	
Date	Initials	Number	Date	Date	Initials

Temporary Revision		Inserted		Removed	
Number	Date	Date	Initials	Date	Initials

Temporary Revision		Inserted		Removed	
Date	Initials	Number	Date	Date	Initials

INTRODUCTION

1. General

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

B. This manual is divided into different parts:

(1) Title Page

(2) Transmittal Letter

(3) Highlights

(4) List of Effective Pages

(5) Table of Contents

(6) Temporary Revision & Service Bulletin Record

(7) Record of Revisions

(8) Record of Temporary Revisions

(9) Introduction

(10) Procedures & IPL Sections

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

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

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

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

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

ENGINE STRUT INSTALLATION COMPONENTS - DESCRIPTION AND OPERATION

1. DESCRIPTION AND OPERATION

A. This manual describes various components that make up the engine strut installation. None of the parts are operational by themselves.

(NOT APPLICABLE)

DISASSEMBLY

1. **General**
   A. This procedure has the data necessary to disassemble the engine strut installation components.
   B. Disassemble these components only as necessary to complete fault isolation, determine the serviceability of parts, perform required repairs, and restore the units to serviceable condition.
2. **Disassembly**
   A. Procedure
      (1) Use standard industry practices for disassembly of these components.

(NOT APPLICABLE)

CHECK

1. General

A. This procedure has the data necessary to check the engine strut installation components.

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

2. Check

A. References

Reference	Title
SOPM 20-20-01	MAGNETIC PARTICLE INSPECTION
SOPM 20-20-02	PENETRANT METHODS OF INSPECTION
737 SRM 54-50-02	STRUT STRUCTURE - CFM56-3 ENGINE
737 SRM 54-50-90	ENGINE STRUT ATTACHMENT FITTINGS

B. Procedure

(1) Check all parts for obvious defects in accordance with standard industry practices.

(2) Magnetic particle check per SOPM 20-20-01 – Fuse Pin (14A), crossbeam (32, 33, 34, 50, 51, 52), link (105), shear pin (170) and fittings (225, 230) and crosspin (500).

(3) Penetrant check per SOPM 20-20-02 – Fitting-hinge (60, 65), link (85), brace-diagonal (140), bracket (510) and bolt (530).

(4) Check assembly for nicks, scratches and corrosion and refer to 737 SRM 54-50-02 and 737 SRM 54-50-90 for allowable repair limits and data.

(5) Visual checks for upper link (20) – Check for bushing (95) migration by visual check for cracked fillet seal and/or a gap of greater than 0.005 inch between the lug face and the bushing flange.

REPAIR

1. Content

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

Table 601:

P/N	NAME	REPAIR
310A1022-1	CROSSBEAM ASSY-FWD ENG MOUNT	1-1
310A1031	CROSSPIN	2-1
311A1555	FITTING ASSY-FAN T/R COWL HINGE	3-1
311A1561	LINK ASSY-T/R COWL HINGE	4-1
311A1710	LINK ASSY-NAC STRUT, UPPER	5-1, 5-2
311A1730	BRACE ASSY-NAC STRUT, DIAGONAL	6-1
311A1740-5	LINK ASSY-NAC STRUT, SIDE	7-1
311A1090	PIN-UPPER LINK, NAC STRUT	8-1
311A1091	FUSE PIN-UPPER LINK, NAC STRUT	9-1
311A1092	FUSE PIN-MIDSPAR, NAC STRUT	10-1, 10-2
311A1903	FUSE PIN-DIAGONAL BRACE, NAC STRUT	11-1
311A1094	PIN-DIAGONAL BRACE, NAC STRUT	12-1
311A1096	SHOULDER BOLT-SIDE LINK, NAC STRUT	13-1
310A1022-3, -7	CROSS-BEAM ASSY	14-1
311A1740-7	LINK ASSY-NAC STRUT, UPPER	15-1
311A1515	ROD ASSY-FAN COWL STRUC SUPPORT	16-1
311A1213	FITTING ASSY-UPPER FWD ENGINE MOUNT (LH)	17-1
311A1215	FITTING ASSY-UPPER FWD ENGINE MOUNT (RH)	18-1
311A1562-1, -5, -6	CROSSBEAM ASSY- THRUST REV HINGE (STA 224.0)	19-1
311A1562-2	CROSSBEAM ASSY- THRUST REV HINGE (STA 206.5)	20-1
310T1036-21	SHOULDER BOLT	21-1

2. Standard Practices

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

- SOPM 20-10-01 Repair and Refinish of High Strength Steel Parts
- SOPM 20-10-03 Shot Peening
- SOPM 20-10-04 Grinding of Chrome Plated Parts
- SOPM 20-20-01 Magnetic Particle Inspection
- SOPM 20-20-02 Penetrant Methods of Inspection
- SOPM 20-30-02 Stripping of Protective Finishes
- SOPM 20-30-03 General Cleaning Procedures

- SOPM 20-41-01 Decoding Table for Boeing Finish Codes
- SOPM 20-41-02 Application of Chemical and Solvent Resistant Finishes
- SOPM 20-41-03 Application of Corrosion Preventatives to Closed End Tubes
- SOPM 20-42-03 Hard Chrome Plating
- SOPM 20-42-05 Bright Cadmium Plating
- SOPM 20-43-01 Chromic Acid Anodizing
- SOPM 20-43-03 Alodizing
- SOPM 20-50-03 Bearing Installation and Retention
- SOPM 20-50-05 Application of Aluminum Foil and Other Markers

3. Materials

NOTE: Equivalent substitutes may be used.

A. Alodine 1200 (colored film) – Alodine 1200 coating, C50033.

B. Compound, corrosion preventative – compound, C50001 MIL-C-11796, Class I

C. Compound – corrosion preventive compound, C00308 MIL-C-11796

D. Grease – grease, D00015 BMS 3-24

E. Primer – primer, C00259 BMS 10-11, Type 1

F. Sealant

(1) BMS 5-95 sealant, A00247 (Pressue and Environmental-Chromate Type)

(2) BMS 5-63 sealant, A00160 (Firewall, High Temperature, 2 Part, Hydraulic Fluide Resistance)

(3) Dow Corning DC93-006, Silicone sealant

G. Topcoating –coating, B00571 BAC5710, Type 41

H. Cleaning pad – abrasive mat, G00251

4. Dimensioning Symbols

A. Standard True Position Dimensioning Symbols used in 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 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
◎ Ø 0.0005 C	CONCENTRIC TO C WITHIN 0.0005 DIAMETER
≡ 0.010 A	SYMMETRICAL WITH A WITHIN 0.010
∠ 0.005 A	ANGULAR TOLERANCE 0.005 WITH A
⌖ Ø 0.002 Ⓢ B	LOCATED AT TRUE POSITION WITHIN 0.002 DIA RELATIVE TO DATUM B, REGARDLESS OF FEATURE SIZE
⊥ Ø 0.010 Ⓜ A 0.510 Ⓟ	AXIS IS TOTALLY WITHIN A CYLINDER OF 0.010-INCH DIAMETER, PERPENDICULAR TO, AND EXTENDING 0.510-INCH ABOVE, DATUM A, MAXIMUM MATERIAL CONDITION
[2.000] OR 2.000 BSC	THEORETICALLY EXACT DIMENSION IS 2.000

NOTE: DATUM MAY APPEAR AT EITHER SIDE OF TOLERANCE FRAME [0.020 A] [A 0.020]

True Position Dimensioning Symbols
Figure 601

CROSS-BEAM ASSEMBLY - REPAIR 1-1

310A1022–1

1. General

A. This procedure has the data necessary to repair the cross-beam assembly.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Bushing Replacement (40, 45, IPL Figure 1)

A. Remove bushings.

B. Check hole for damage of corrosion and repair if necessary per REPAIR 1-1, Paragraph 3..

C. Install bushings per SOPM 20-50-03 (no installation finish is required).

D. Machine bushings per REPAIR 1-1, Figure 601.

3. Repair

A. Repair hole for bushings (40, 45, IPL Figure 1).

(1) Machine crossbeam (50), as required to remove any discrepancies, per REPAIR 1-1, Figure 601.

(2) Magnetic particle check per SOPM 20-20-01, class A critical.

(3) Shot peen bore per SOPM 20-10-03, Shot No. 170-330, intensity 0.016A and coverage 2.0.

(4) Refinish per REPAIR 1-1, Paragraph 2. Fabricate an oversize 15.5PH CRES bushing per REPAIR 1-1, Figure 602 to replace bushing (40, 45).

(5) Install and machine bushing REPAIR 1-1, Paragraph 2..

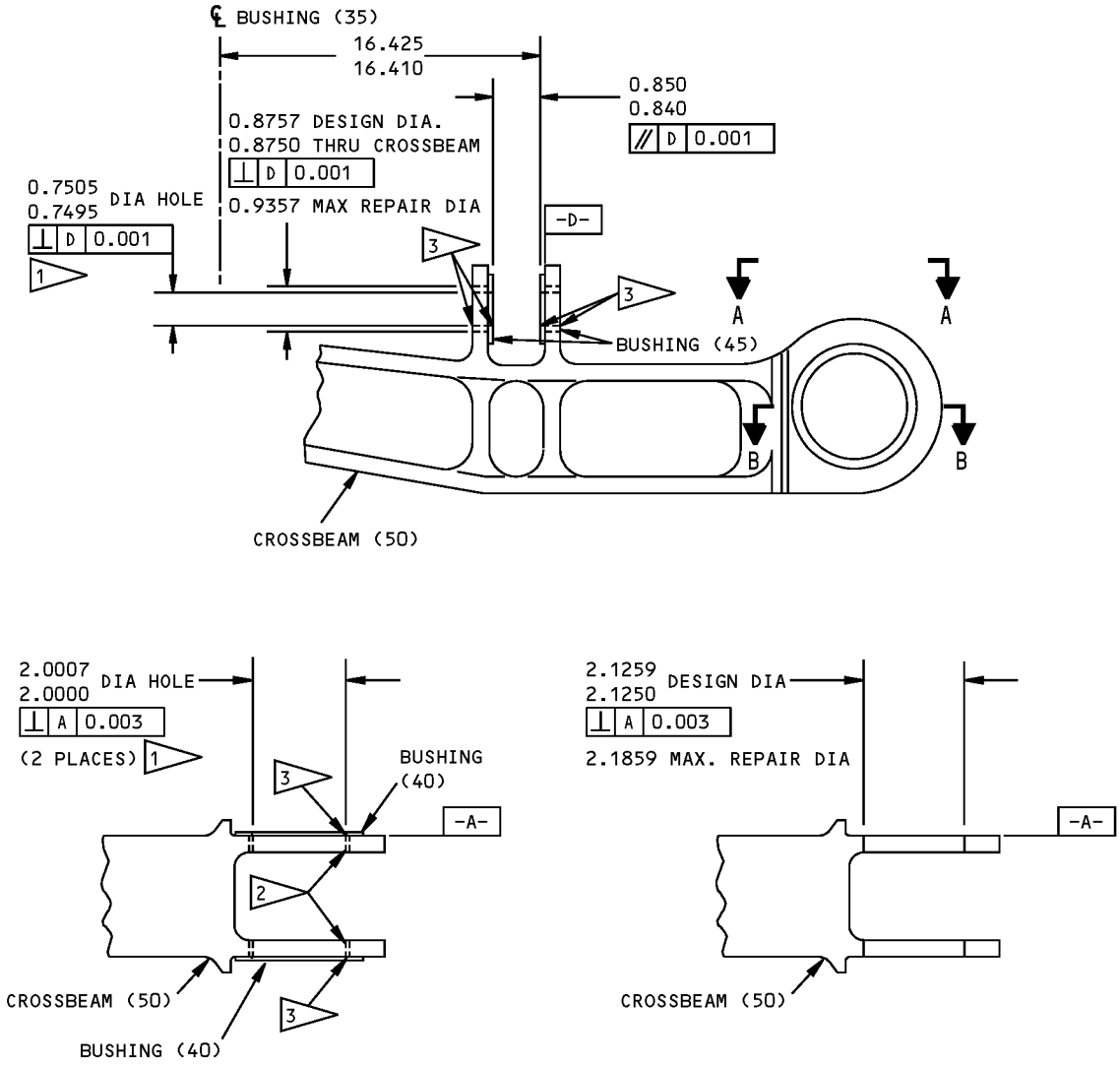
4. Bearing Replacement (35)

A. Remove bearing.

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

5. Refinish

A. Crossbeam (50) – Passivate (F-17.09) Material: 15-5PH CRES, 180-200 ksi.



1 TWO HOLES CONCENTRIC TO COMMON AXIS WITHIN 0.001 FIM

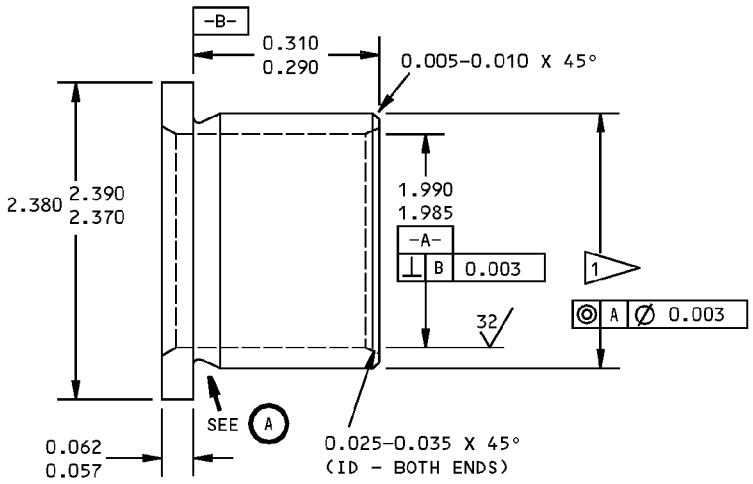
2 BREAK HOLE EDGES 0.005-0.020

3 BREAK HOLE EDGES 0.01-0.03

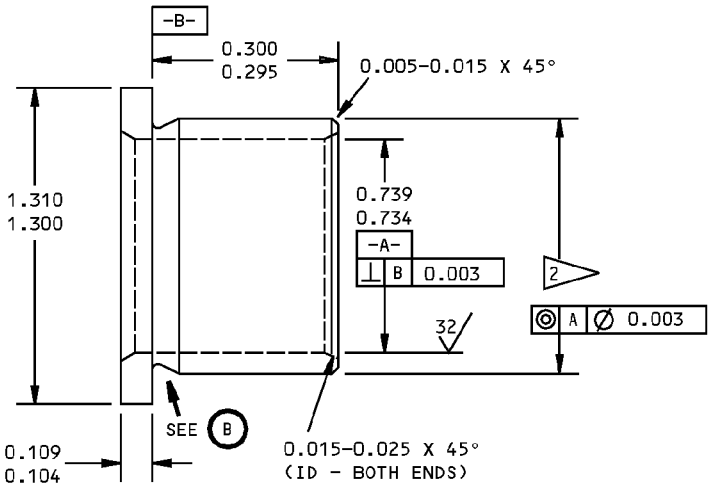
4 CHAMFER 0.03-0.05 X 45° ±1°

ALL DIMENSIONS ARE IN INCHES

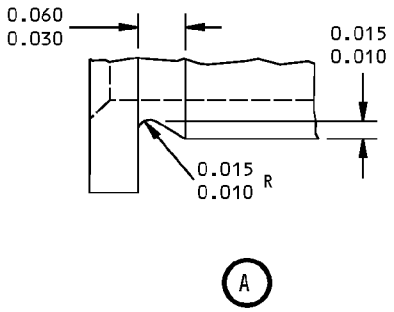
310A1022-1 Cross-Beam Assembly Bushing Replacement
Figure 601

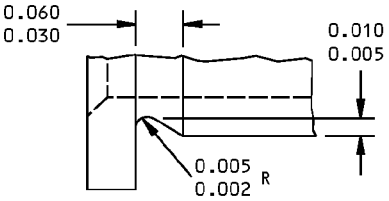


BUSHING (IPL FIG.1; 40)

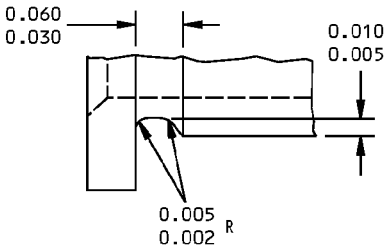


BUSHING (IPL FIG.1; 45)





TYPE 1



TYPE 2

UNDERCUT TYPE 1 OR TYPE 2 OPTIONAL

B

1 FINAL BUSHING OUTSIDE DIAMETER EQUALS REPAIR DIAMETER OF FITTING PLUS 0.0009-0.0027 INCH INTERFERENCE

2 FINAL BUSHING OUTSIDE DIAMETER EQUALS REPAIR DIAMETER OF FITTING PLUS 0.0008-0.0020 INCH INTERFERENCE

63 ALL MACHINED SURFACES, EXCEPT AS NOTED

ANGULAR TOLERANCES: ±0.50 DEG

MATERIAL: 15-5PH CRES PER AMS 5659, 180-200 KSI

FINISH: PASSIVATE (F-17.09).
MAGNETIC PARTICLE CHECK PER 20-20-01, CLASS B

ALL DIMENSIONS ARE IN INCHES

REPLACEMENT BUSHING FOR BUSHINGS (40,45, IPL FIG.1) Oversize Bushing Details
Figure 602

CROSS-PIN - REPAIR 2-1

310A1031–1

1. General

A. This procedure has the data necessary to repair the cross-pin.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Refinish

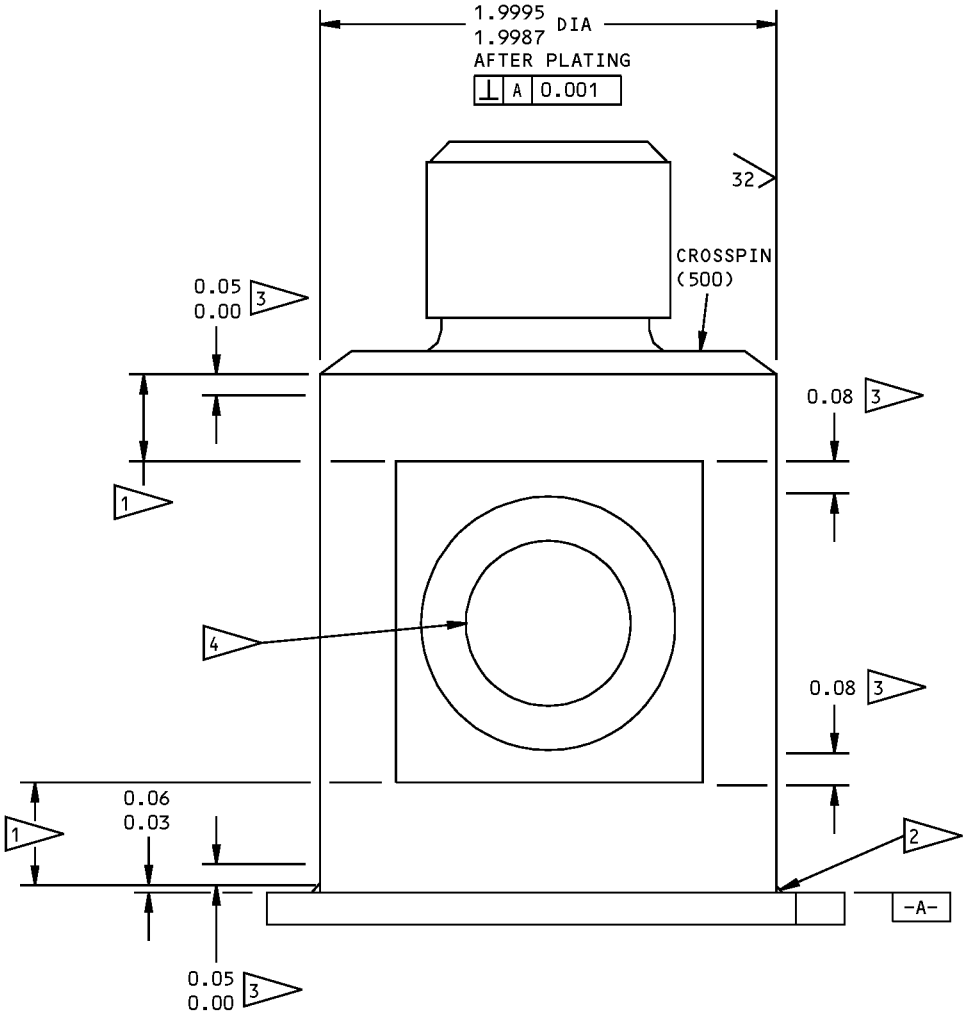
CAUTION: CROSSPINS WITH DAMAGED OR ALTERED BASE METAL, EXCEPT FOR NORMAL WEAR WHICH IS REPAIRABLE AS NOTED BELOW, ARE NOT SERVICEABLE. DAMAGED OR ALTERED BASE METAL DESTROYS CROSSPIN INTEGRITY.

A. Crosspin

(1) Grind pin diameter as required to achieve proper chrome thickness. Do not grind pin diameter below 1.9782 inches. Grinding is permitted on pin flange, however, constant flange thickness of 0.12 inch must be maintained after grinding. Chrome plate per SOPM 20-42-03 to a maximum thickness of 0.01 inch. Post plate grind to obtain surface finish requirements and after plating dimensions shown. Minimum chrome plate thickness after grinding is 0.003 inch.

NOTE: Re-establish radius and blend mismatches resulting from pin grinding. Chrome plate to dimensions and areas shown in REPAIR 2-1, Figure 601.

(2) Passivate (F-17.09) remaining areas. Material: 15-5PH CRES, 180-200 ksi.



1. CHROME PLATE THIS AREA THICKNESS PER 20-42-03
2. CHROME PLATE NOT ALLOWED ON FILLET RADIUS
3. CHROME PLATE TO RUNOUT IN THIS AREA
4. SHOT PEENING IN HOLE OPTIONAL

RADIUS SHARP EDGES 0.01-0.02 EXCEPT AS NOTED

SHOT PEEN: 0.170-0.390 SHOT SIZE
0.016A INTENSITY
2.0 COVERAGE

ALL DIMENSIONS ARE IN INCHES

310A1031-1 Refinish of Cross-Pin
Figure 601

FITTING ASSEMBLY-HINGE - REPAIR 3-1

311A1555–1, –2

1. General

A. This procedure has the data necessary to repair the fitting assembly.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Bushing Replacement (55, IPL Figure 1)

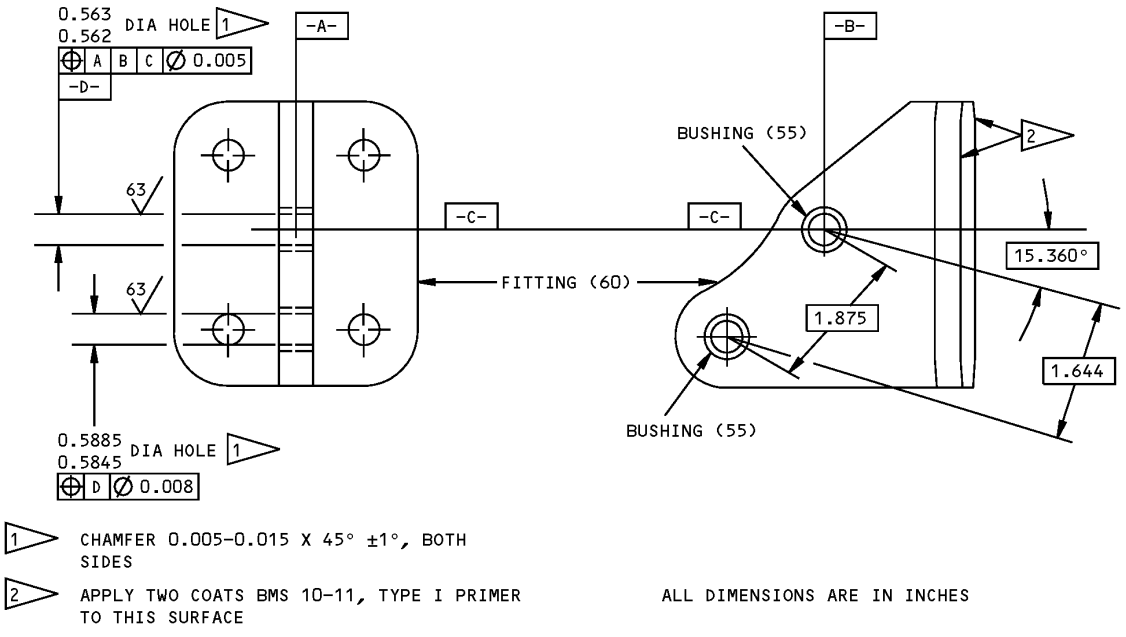
A. Remove bushing

B. Install bushings per SOPM 20-50-03, except install with grease, D00015 (BMS 3-24).

C. Machine bushings per REPAIR 3-1, Figure 601.

3. Refinish

A. Fitting-hinge (60, 65) – Apply primer, C00259 (F-20.03) per REPAIR 3-1, Figure 601. Material: Titanium alloy



311A1555-1,-2 Hinge Fitting Assembly Bushing Replacement
Figure 601

LINK ASSEMBLY - REPAIR 4-1

311A1561–1

1. General

A. This procedure has the data necessary to repair the link assembly.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Bearing Replacement (70, IPL Figure 1)

A. Remove bearing.

B. Install bearing per SOPM 20-50-03, except install with grease, D00015 (BMS 3-24). Slot orientation on bearing must be within ±5° as shown in REPAIR 4-1, Figure 601.

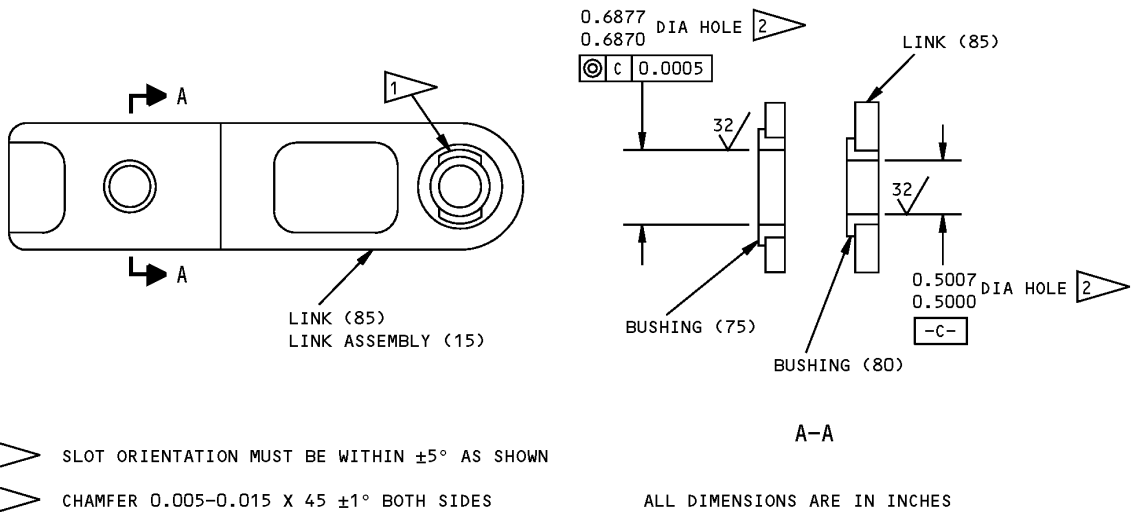
C. Roller swage per SOPM 20-50-03.

3. Bushing Replacement (75, 80, IPL Figure 1)

A. Remove bushings.

B. Install bushings per SOPM 20-50-03, except install with grease, D00015 (BMS 3-24).

C. Machine bushings per REPAIR 4-1, Figure 601. Material: Titanium alloy



311A1561-1 Link Assembly Repair
Figure 601

LINK ASSEMBLY - REPAIR 5-1

311A1710–3, –5, –8

1. General

A. This procedure has the data necessary to repair the link assembly.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Bearing Replacement (90, IPL Figure 1)

A. Remove bearing.

B. Verify bearing bore diameter is 3.0005 to 3.0012 inches.

C. Install bearing per SOPM 20-50-03 except install with grease, D00015 (BMS 3-24).

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

3. Bushing Replacement (95, IPL Figure 1)

A. Remove all bushings from the fitting. Bushings removed cannot be reused per SOPM 20-50-03.

B. Perform visual check and magnetic particle check lug bore per SOPM 20-10-01 to determine if bore is damaged with scratches, surface defects, cracks or corrosion.

C. If no damage is found on the initial check, machine insurance cut in link (105) and replace bushing (95) using REPAIR 5-2.

D. If damage is found, repair link (105) using REPAIR 5-2.

E. Install the replacement bushings per SOPM 20-50-03 (shrink fit method) using liquid nitrogen. Press fit method is not acceptable, except to complete a shrink fit. Do not use sealant or grease on bushing installation.

F. Ream the inner diameter of the bushing to 1.8015-1.8030 inches per REPAIR 5-1, Figure 601. Surface finish to be 32 micro-inches.

G. Machine installed bushing flanges as required per REPAIR 5-1, Figure 601.

4. Marker Replacement (100, IPL Figure 1)

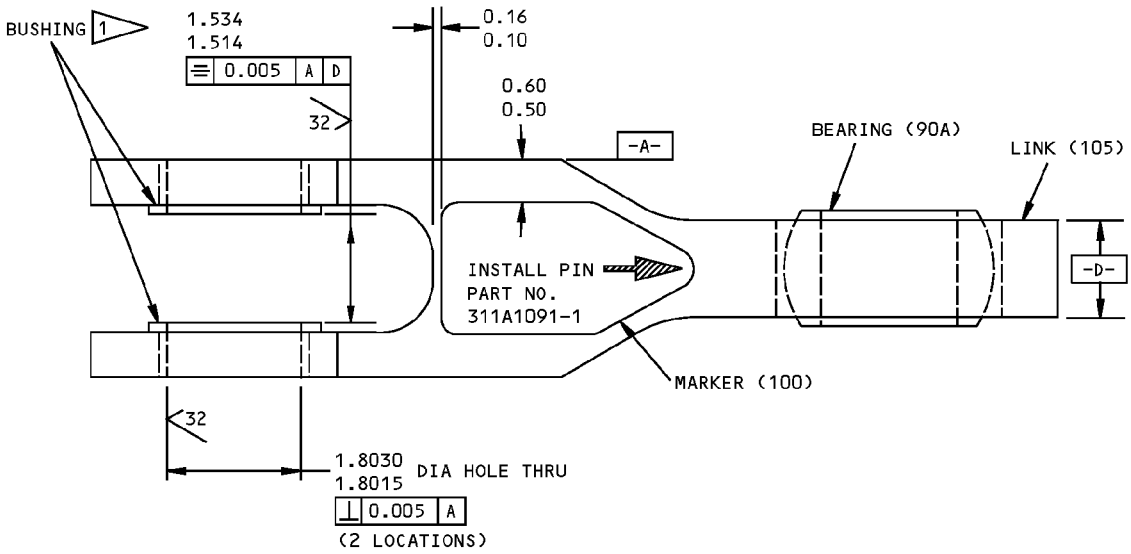
A. Remove Marker.

B. Install marker per SOPM 20-50-05 as shown in REPAIR 5-1, Figure 601

C. Edge seal marker by overcoating with coating, B00571.

5. Refinish

A. Link (105) – Passivate (F-17.09) Material: 15-5PH CRES, 180-200 ksi.



ITEM NUMBERS REFER TO IPL FIG. 1

1 REPLACEMENT BUSHING

ALL DIMENSIONS ARE IN INCHES

311A1710-3,-5,-8 Link Assembly Repair
Figure 601

LINK ASSEMBLY - REPAIR 5-2

311A1710–4, –6

1. General

A. This procedure has the data necessary to repair the link assembly.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Bushing Lug Bores Repair

A. Machine bore as necessary to remove damage or corrosion.

B. Perform visual check and magnetic particle check lug bore per SOPM 20-10-01 to determine if bore is no longer damaged with scratches, surface defects, cracks or corrosion.

C. Machine insurance cut of 0.010 inch on diameter of the lug bore. If the lug bore diameter after insurance cut exceeds maximum repair limit 1.9900 inches, contact Boeing for an alternate repair.

NOTE: Insurance cut removes damage not detected by visual or non-destructive checks.

D. Chamfer the lug bore edges 0.020-0.030 inch by 45 degrees on both sides of lug.

E. Hone the machined surfaces to remove all machine tears and burrs.

F. Shot peen or flap peen the reworked lug bores per SOPM 20-10-03.

G. Hone the lug bore to final diameter and surface finish of 32 micro-inches. Material removal from lug bore is allowed to achieve the required surface. Maximum material removal from the lug radius is 0.002 inches.

H. Measure the lug bore diameter. If the lug bore diameter after machining exceeds maximum repair limit 1.9900 inches, contact Boeing for an alternate repair.

I. Passivate (F-17.25) the lug. An option to passivate is to wipe clean with Scotch-Brite and solvent wipe.

3. Bushing Installation

A. For links that had lug bores machined and insurance cut, oversize bushings must be manufactured per REPAIR 5-2, Figure 602. If the lug inner diameter is:

(1) Less than or equal to 1.9534 inches, install purchased bushings (95) or install bushings manufactured per REPAIR 5-2, Figure 602.

(2) More than 1.9534 inches but less than or equal to 1.9900 inches, bushings to be installed must be manufactured per REPAIR 5-2, Figure 602.

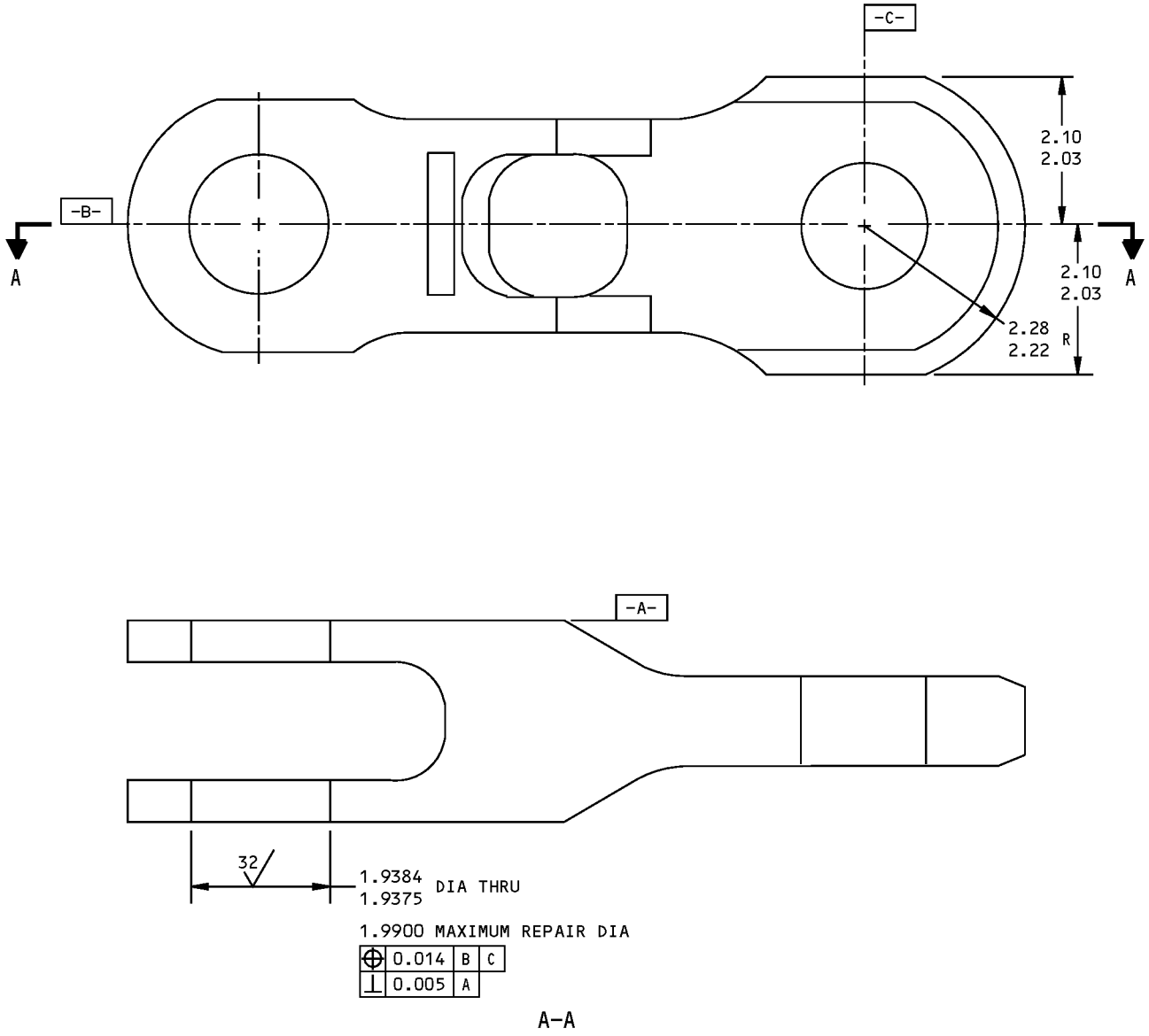
(3) More than 1.9900 inches, replace link assembly or contact Boeing.

B. Install the bushings per SOPM 20-50-03 (shrink fit method) using liquid nitrogen. Press fit method is not acceptable, except to complete a shrink fit. Do not use sealant or grease on bushing installation.

C. Ream the inner diameter of the bushing to 1.8015-1.8030 inches. Surface finish to be 32 mico-inches.

4. Link Refinish

A. Passivate (F-17.25) the link per SOPM 20-30-03.

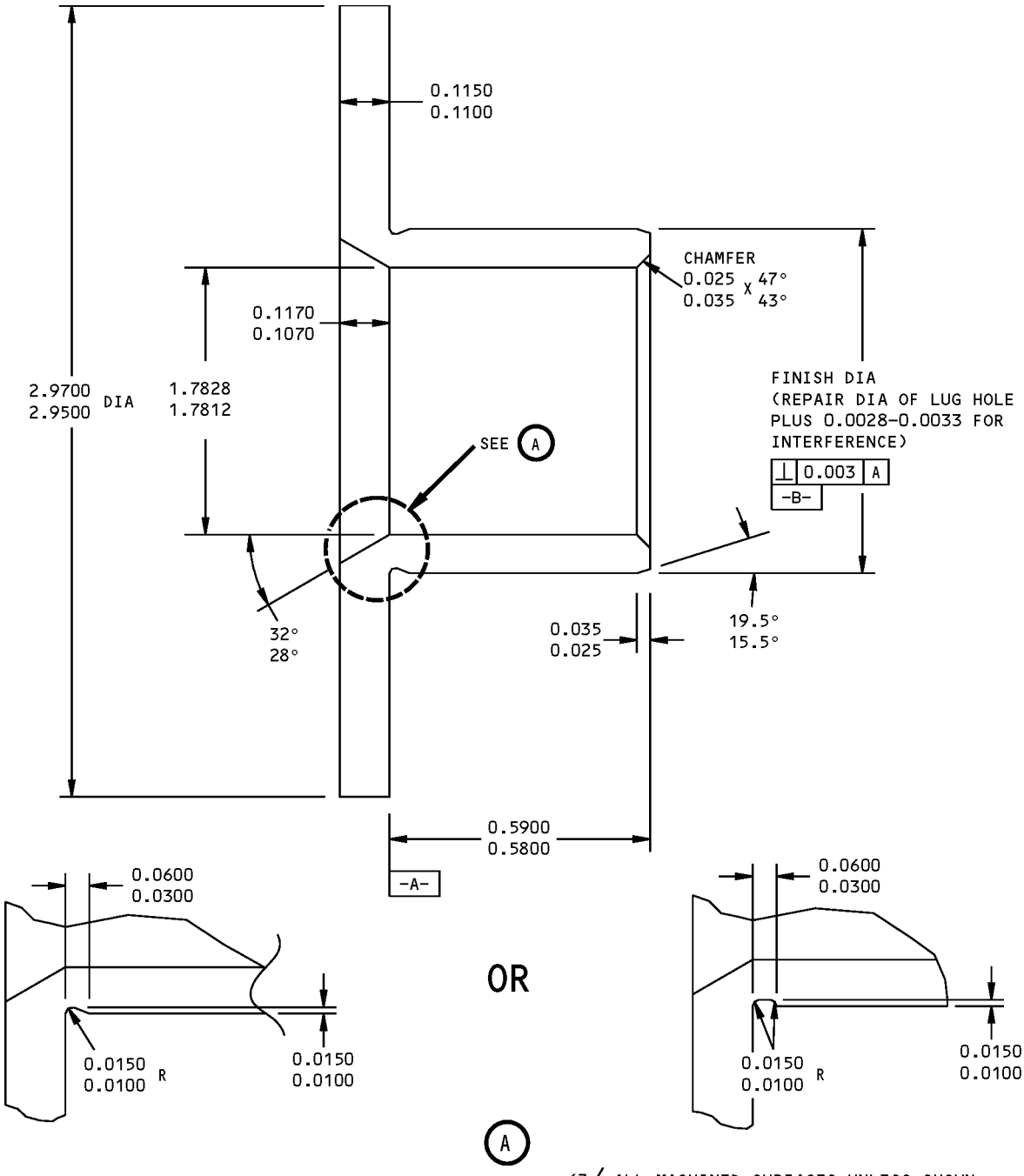


MATERIAL: 15-5PH, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

311A1710-4,-6

Link Assembly Repair
Figure 601



FINISH: PASSIVATE (F-17.25)

63 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES

MATERIAL: 15-5PH CRES PER AMS 5659
(180-200 KSI)
STOCK 3.00 DIA BY 0.75 LONG

REPLACES BUSHING (95)

Replacement Bushing Details
Figure 602

BRACE ASSEMBLY - REPAIR 6-1

311A1730–1, –3, –5, –7

1. General

A. This procedure has the data necessary to repair the brace assembly.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Bushing Replacement (110, 115, 120, 125, IPL Figure 1)

A. Remove bushings.

B. Install bushings (110, 125) per SOPM 20-50-03, except install with wet sealant, A00247 (BMS 5-95).

C. Machine bushing (110, 125) bores per REPAIR 6-1, Figure 601.

D. Fillet seal bushing (110, 125) flanges and peripheries with sealant, A00247 (BMS 5-95).

E. Install bushings (115, 120) per SOPM 20-50-03, except install with wet sealant, A00247 (BMS 5-95).

F. Machine bushing (115, 120) bores per REPAIR 6-1, Figure 601.

G. Machine bushing flanges per REPAIR 6-1, Figure 601.

H. Fillet seal bushing (115, 120) flanges and peripheries with sealant, A00247 (BMS 5-95).

3. Marker Replacement (130, 135, IPL Figure 1)

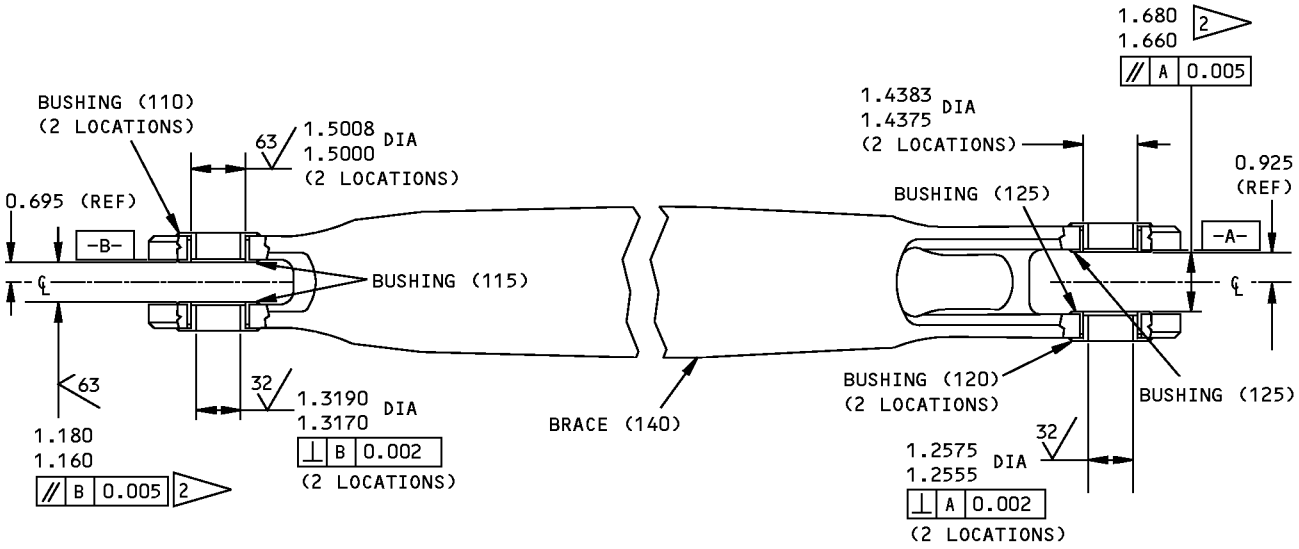
A. Remove Marker.

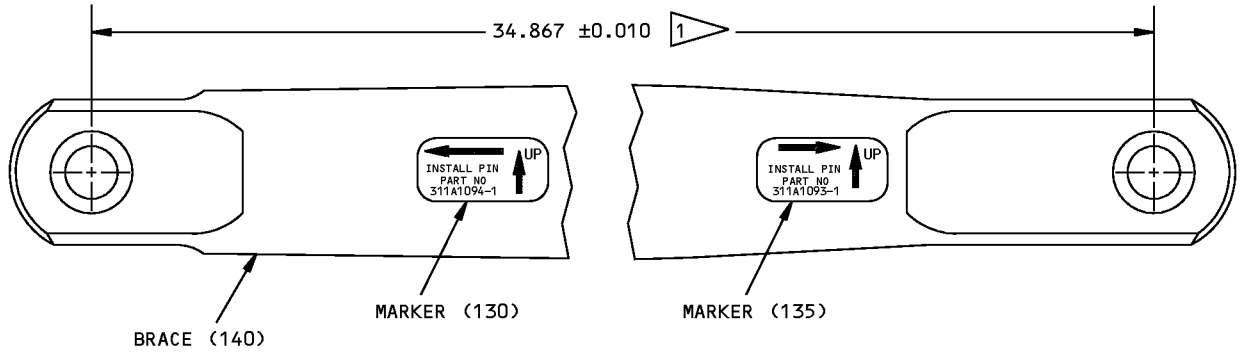
B. Install marker per SOPM 20-50-05 as shown in REPAIR 6-1, Figure 601.

C. Edge seal marker by overcoating with coating, B00571.

4. Refinish

A. Brace (140) – Apply alodine 1200 (colored film) (F-17.08) and apply primer, C00259 (F-20.03); omit primer from bushing bores. Material: Aluminum alloy.





1 DIMENSION ESTABLISHED FOR 72°F. REPAIRS MADE AT ANY OTHER TEMPERATURE MUST BE ADJUSTED FOR THERMAL EXPANSION

2 MACHINE FLANGES SYMMETRIC ABOUT CENTER-LINE

REPAIR

SHOT PEEN BRACE ASSEMBLIES 311A1730-3 AND -5 ONLY:
SHOT PEEN: SHOT PEEN ALL EXTERIOR SURFACES INCLUDING LUG HOLES INTERIOR AND INSIDE FACE OF LUGS
SOPM 20-10-03.
230-550 SHOT NO.
0.014A INTENSITY
2.0 COVERAGE

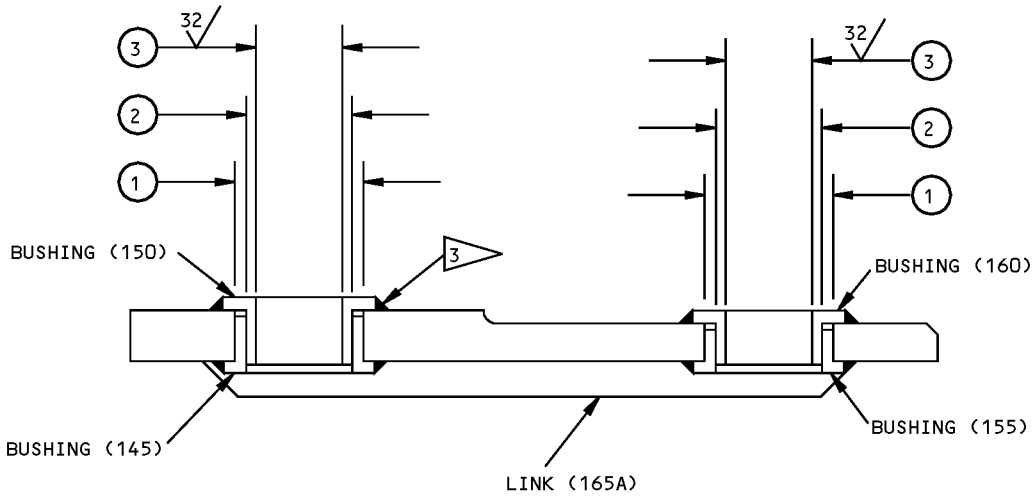
ALL DIMENSIONS ARE IN INCHES

311A1730-1, -3, -5, -7 Brace Assembly Repair
Figure 601

LINK ASSEMBLY - REPAIR 7-1

311A1740–5

1. **General**
   A. This procedure has the data necessary to repair the link assembly.
   B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.
   C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.
   D. Refer to IPL Figure 1 for the item numbers.
2. **Bushing Replacement (145, 150, 155, 160, IPL Figure 1)**
   A. Remove bushings.
   B. Install bushings (145, 155) per SOPM 20-50-03, except install with wet sealant, A00247 (BMS 5-95).
   C. Machine bushings (145, 155) per REPAIR 7-1, Figure 601.
   D. Fillet seal bushing (145, 155) flanges and peripheries with sealant, A00247 (BMS 5-95).
   E. Install bushings (150, 160) per SOPM 20-50-03, except install with wet sealant, A00247 (BMS 5-95).
   F. Machine bushings (150, 160) per REPAIR 7-1, Figure 601.
   G. Fillet seal bushing (150, 160) flanges and peripheries with sealant, A00247 (BMS 5-95).
3. **REPAIR (REPAIR 7-1, Figure 601, REPAIR 7-1, Figure 602)**
   A. Machine bushing (145, 155) hole, as required, not to exceed maximum diameter per REPAIR 7-1, Figure 601.
   B. Penetrant check machined surfaces per SOPM 20-20-02.
   C. Shot peen per REPAIR 7-1, Figure 601 after penetrant check, but prior to refinishing.
   D. Chromic acid anodize machined surfaces per SOPM 20-43-01.
   E. Fabricate oversized bushing per REPAIR 7-1, Figure 602.
4. **Refinish**
   A. Link (165A) – Chromic acid anodize, type 1 (F-17.04) and apply primer, C00259 (F-20.03); omit primer, C00259 from bushing holes. Material: Aluminum alloy.



	(1)	(2)	(3)
DESIGN DIAMETER	ID 165A 1.0007 / 1.0000	ID 145 / 155 0.8757 / 0.8750	ID 150 / 160 0.7505 / 0.7500
	OD 145 / 155 1.0014 / 1.0021	OD 150 / 160 0.8770 / 0.8763	OD (1) 0.7495 / 0.7490
SERVICE (WEAR) LIMITS	ID 165A 1.0014	ID 145 / 155 0.8763	ID 150 / 160 0.7522 (6)
	OD 145 / 155 1.0007	OD 150 / 160 0.8757	OD (1) 0.7473 (6)
REPAIR (REWORK) LIMITS	ID 165A 1.0607 (4)	ID 145 / 155 (5)	ID 150 / 160 (5)
	OD 145 / 155 REPLACE WITH O/S BUSHING (4)	OD 150 / 160 (5)	OD (1) (2)

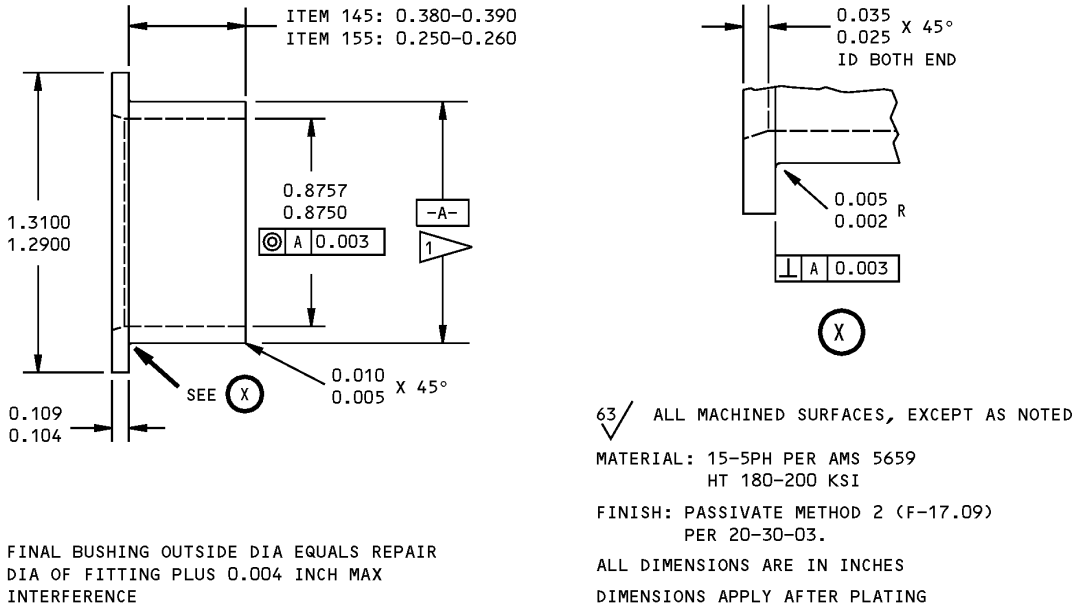
1. 311A1096-1 - BOLT
2. STRIP, CHROME PLATE (F-15.03) PER 20-42-03, POST PLATE GRIND PER 20-10-04 TO DESIGN DIAMETER. SINGLE PLATE THICKNESS OF 0.003 MIN REQUIRED AFTER POST PLATE GRINDING
3. FILLET SEAL PERIPHERY WITH BMS 5-95 SEALANT
4. SEE FIGURE 602 FOR OVERSIZE BUSHING FABRICATION INSTRUCTIONS
5. REMOVE AND REPLACE IF SERVICE WEAR LIMITS ARE EXCEEDED
6. MAX CLEARANCE BETWEEN BOLT AND BUSHING IS 0.0032 INCH

63 FINISH, EXCEPT AS NOTED

SHOT PEEN: 230-550 SHOT NO.
0.014 A2 INTENSITY
2.0 COVERAGE

ALL DIMENSIONS ARE IN INCHES

311A1740-5 Bushing Replacement
Figure 601



REPLACEMENT BUSHING FOR BUSHINGS (145,155; IPL FIG. 1)

Oversize Bushing Details
Figure 602

PIN - UPPER LINK, NAC STRUT - REPAIR 8-1

311A1090–1

1. General

A. This procedure has the data necessary to repair the pin - upper link.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Refinish

CAUTION: CROSSPINS WITH DAMAGED OR ALTERED BASE METAL, EXCEPT FOR NORMAL WEAR WHICH IS REPAIRABLE AS NOTED BELOW, ARE NOT SERVICEABLE. DAMAGED OR ALTERED BASE METAL DESTROYS CROSSPIN INTEGRITY.

A. Outside diameter – Outside diameter before plating is 1.7915-1.7925 inches. Chrome plate per SOPM 20-42-03 (F-15.03), chrome plate to runout on chamfer (0.08 inch x 15 degrees) each end. Magnetic particle check per SOPM 20-20-01 after plating. Grind chrome plate per SOPM 20-10-04 to a 1.7995 - 1.8000 inch diameter and 32 AA surface finish.

B. Interior and ends – Passivate (F-17.09). Material: 15-5PH CRES, 150-170 ksi

FUSE PIN - UPPER-LINK, NAC STRUT - REPAIR 9-1

311A1091–1

1. General

A. This procedure has the data necessary to repair the fuse pin-upper link.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Refinish

CAUTION: FUSE PINS WITH DAMAGED OR ALTERED BASE METAL ARE NOT SERVICEABLE. DAMAGED OR ALTERED BASE METAL DESTROYS FUSE PIN INTEGRITY.

A. Outside diameter – Outside diameter before plating is 1.7915-1.7925 inches. Chrome plate per SOPM 20-42-03 (F-15.03), single plate thickness; chrome plate to runout on chamfer (0.08 inch x 15 degrees) each end. Magnetic particle check per SOPM 20-20-01 after plating. Grind chrome plate per SOPM 20-10-04 to 1 1.7995-1.8000 inch diameter and 32 AA surface finish. Apply wipe on primer, C00259 (F-19.45) to chromed areas.

B. Inside diameter and ends – Cadmium plate (0.0002 inch - 0.0004 inch) per SOPM 20-42-05 type 2 class 3 (F-15.02). Apply primer, C00259 (F-20.03). Apply corrosion preventive compound, C00308 per SOPM 20-41-03 to a minimum thickness of 0.05 inch (F-19.03) to bore. Material: 4330M Steel, Rc 32-37

FUSE PIN - MID-SPAR, NAC STRUT - REPAIR 10-1

311A1092–1, –2

1. General

A. This procedure has the data necessary to repair the fuse pin mid-spar.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Head to Shank Corrosion Repair

A. Use a abrasive mat, G00251 pad to remove corrosion located within the head to shank radius.

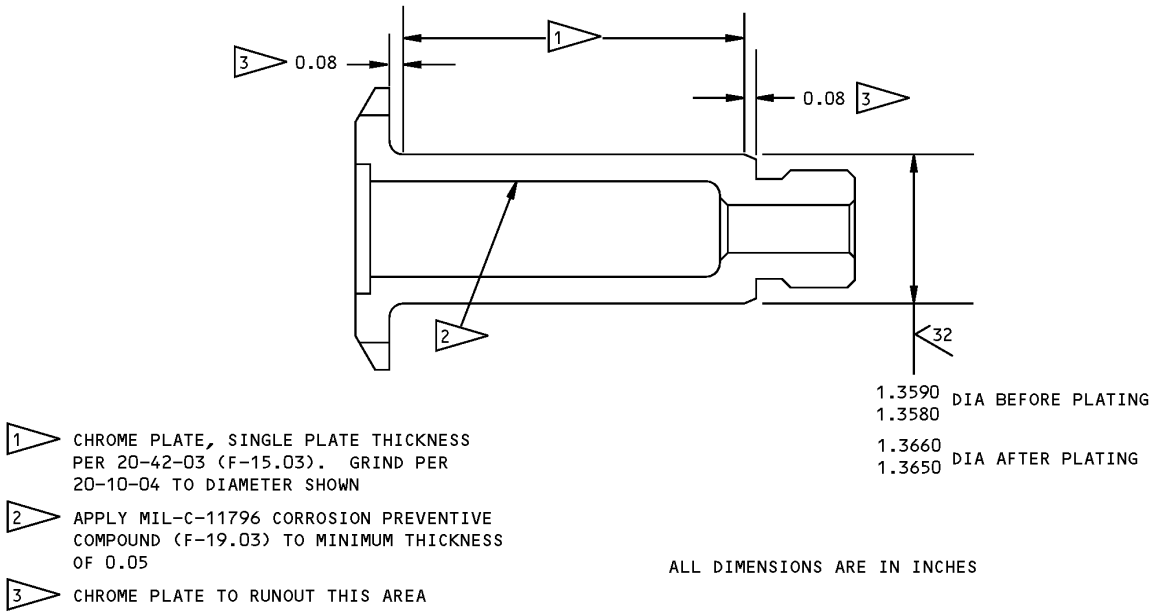
NOTE: Pins are not serviceable if corrosion cannot be removed using a scotchbrite pad.

B. Cadmium plate (0.0002-0.0004 inch) per SOPM 20-42-05, type 2, class 3 (F-15.02) on head to shank radius. Apply primer, C00259 (F-20.03) on head to shank radius.

3. Refinish

A. Chrome plate per SOPM 20-42-03 (F-15.03), single plate thickness per REPAIR 10-1, Figure 601. Magnetic particle check per SOPM 20-20-01 after plating. Grind chrome plate per SOPM 20-10-04 to diameter shown in REPAIR 10-1, Figure 601.

B. Cadmium plate (0.0002-0.0004 inch) per SOPM 20-42-05 type 2, class 3 (F-15.02) to all surfaces, except chromed areas. Apply primer, C00259 (F-20.03) to all surfaces except chromed areas and threads. Apply corrosion preventive compound, C00308 per SOPM 20-41-03 (F-19.03) to a minimum thickness of 0.05 inch to bore. Material: 4330M steel or 4340 steel, RC 32-37.



311A1092-1,-2 Refinish of Fuse Pin
Figure 601

FUSE PIN - MID-SPAR, NAC STRUT - REPAIR 10-2

311A1092–3

1. General

A. This procedure has the data necessary to repair the fuse pin mid-spar (14A).

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

E. General Repair Details:

(1) Shot Peen: Intensity - 0.012A - 0.017A, Coverage - 2.0

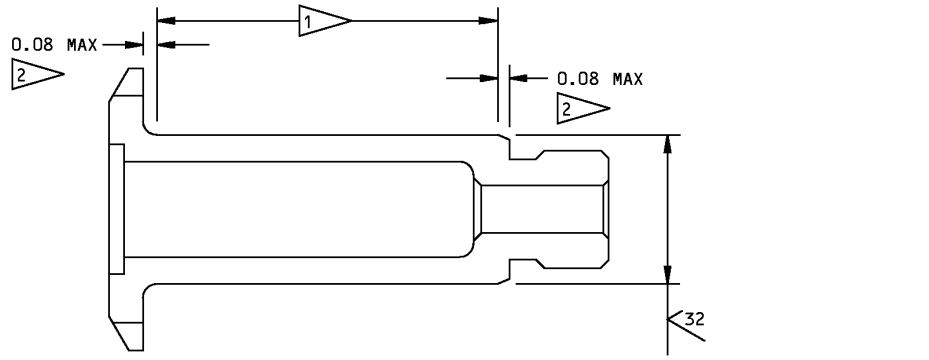
(2) Material: 15-5PH CRES, 146 - 161 KSI

2. Refinish

NOTE: Do a magnetic particle inspection per SOPM 20-20-01. The inspection is required as the last operation before shot peening and the first operation after the final post chrome plate grinding.

A. Chrome plate (F-15.34). Post plate grind per SOPM 20-10-04 to achieve after plating dimension and surface roughness. Apply finish to surface indicated be REPAIR 10-2, Figure 601, Flagnote 1, after shot peen. Chrome plate to run out 0.0000 to 0.0800 max in surface indicated by REPAIR 10-2, Figure 601, Flagnote 2.

B. Passivate (F-17.25).



311A1092-3 Fuse Pin Refinish
Figure 601

FUSE PIN-DIAGONAL BRACE, NAC STRUT - REPAIR 11-1

311A1093–1

1. General

A. This procedure has the data necessary to repair the fuse pin-diagonal brace.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Refinish

CAUTION: FUSE PINS WITH DAMAGED OR ALTERED BASE METAL ARE NOT SERVICEABLE. DAMAGED OR ALTERED BASE METAL DESTROYS FUSE PIN INTEGRITY.

A. Outside diameter – Outside diameter before plating is 1.2455-1.2465 inches. Chrome plate per SOPM 20-42-03 (F-15.03), single plate thickness; chrome plate to runout on chamfer (0.08 inch x 15 degrees) each end. Magnetic particle check per SOPM 20-42-03 after plating. Grind chrome plate per SOPM 20-10-04 to a 1.2535-1.2540 inch diameter and 32 AA surface finish. Apply wipe-on primer, C00259 (F-19.45) to chromed areas.

B. Inside diameter and ends – Cadmium plate (0.0002 inch - 0.0004 inch) per SOPM 20-42-05 type 2 class 3 (F-15.02). Apply primer, C00259 (F-20.03). Apply corrosion preventive compound, C00308 per SOPM 20-41-03 to a minimum thickness of 0.05 inch (F-19.03) to bore. Material: 4330M steel, Rc 32-37

PIN - DIAGONAL BRAKE, NAC STRUT - REPAIR 12-1

311A1094–1

1. General

A. This procedure has the data necessary to repair the fuse pin-diagonal brace.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Refinish

CAUTION: CROSSPINS WITH DAMAGED OR ALTERED BASE METAL, EXCEPT FOR NORMAL WEAR WHICH IS REPAIRABLE AS NOTED BELOW, ARE NOT SERVICEABLE. DAMAGED OR ALTERED BASE METAL DESTROYS CROSSPIN INTEGRITY.

A. Outside diameter – Outside diameter before plating is 1.3075-1.3085 inches. Chrome plate per SOPM 20-42-03 (F-15.03), chrome plate to runout on chamfer (0.08 inch x 15 degrees) each end. Magnetic particle check per SOPM 20-20-01 after plating. Grind chrome plate per SOPM 20-10-04 to a 1.3155 1.3160 inch diameter and 32 AA surface finish.

B. Interior and ends – Passivate (F-17.09). Material: 15-5PH CRES, 150-170 ksi

SHOULDER BOLT-SIDE LINK, NAC STRUT - REPAIR 13-1

311A1096–1

1. General

A. This procedure has the data necessary to repair the shoulder bolt-side link.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

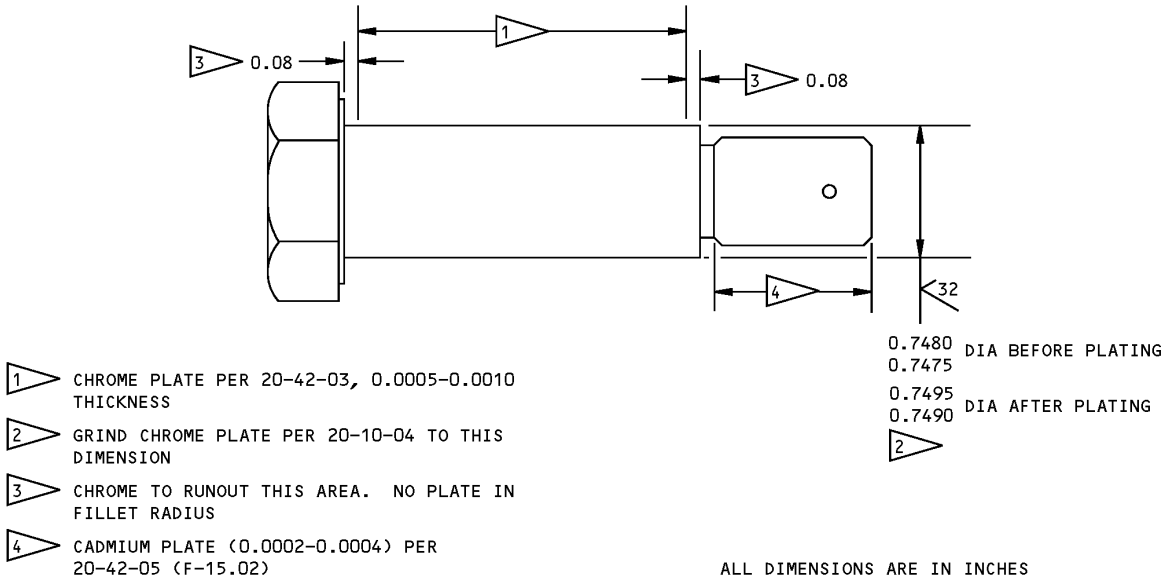
D. Refer to IPL Figure 1 for the item numbers.

2. Refinish

CAUTION: SHOULDER BOLTS WITH DAMAGE OR ALTERED BASE METAL ARE NOT SERVICEABLE. DAMAGE OR ALTERED BASE METAL DESTROYS SHOULDER BOLT INTEGRITY.

A. Chrome plate per SOPM 20-42-03 (F-15.03), single plate thickness of 0.0005-0.0010 inch, per REPAIR 13-1, Figure 601. Magnetic particle check per SOPM 20-20-01 after plating. Grind chrome plate per SOPM 20-10-04 to dimensions shown REPAIR 13-1, Figure 601.

B. Cadmium plate (0.0002-0.0004 inch) per SOPM 20-42-05 (F-15.02) threaded portion of shoulder bolt. Material: 15-5PH CRES, 180-200 ksi.



311A1096-1 Refinish of Shoulder Bolt
Figure 601

CROSS-BEAM ASSEMBLY - REPAIR 14-1

310A1022–3, –7

1. General

A. This procedure has the data necessary to repair the cross-beam assembly.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Bushing Replacement (45, IPL Figure 1)

A. Remove bushings.

B. Check hole for damage of corrosion and repair if necessary per REPAIR 14-1, Paragraph 3..

C. Install bushings per SOPM 20-50-03 (no installation finish is required).

D. Machine bushings per REPAIR 14-1, Figure 601.

3. Oversize Bushing Repair

A. Repair hole for bushings (45, IPL Figure 1).

(1) Machine the hole for bushing of crossbeam (51, 52), as required to remove any discrepancies up to the repair limit as shown in REPAIR 14-1, Figure 601.

(2) Magnetic particle check per SOPM 20-20-01, Class A critical.

(3) Shot peen bore per SOPM 20-10-03, Shot No. 170-330, intensity 0.016A and coverage 2.0.

(4) Refinish per REPAIR 14-1, Paragraph 5..

(5) Fabricate an oversize 15.5PH CRES bushing per REPAIR 14-1, Figure 602 to replace bushing (45).

(6) Install and machine the repair bushing as shown in REPAIR 14-1, Paragraph 2..

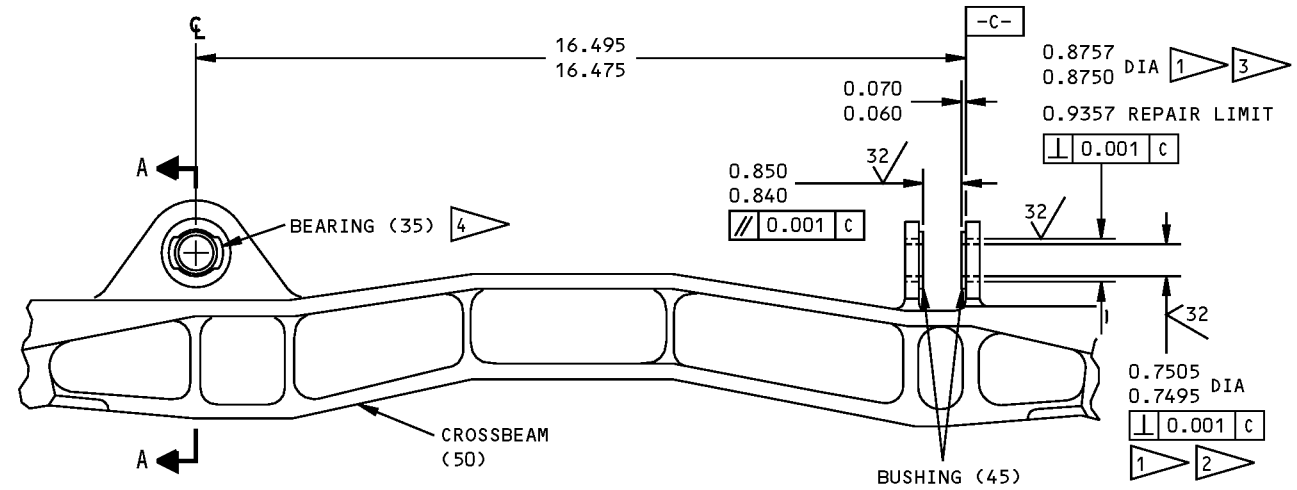
4. Bearing Replacement (IPL Figure 1)

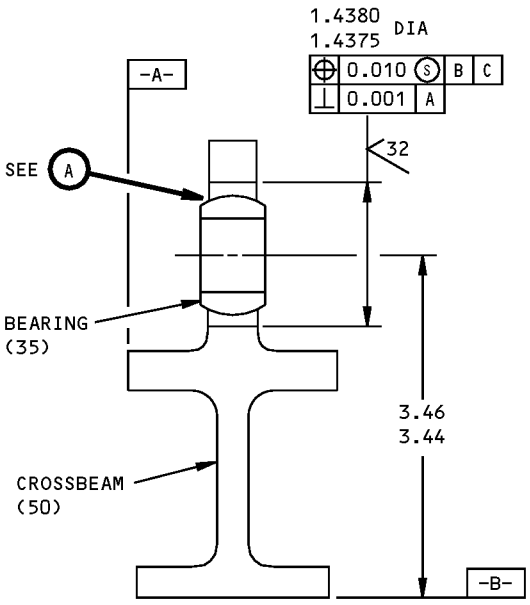
A. Remove bearing.

B. Install and roller swage bearing per SOPM 20-50-03 and REPAIR 14-1, Figure 601. Slot orientation on bearing must be horizontal within $\pm 5^{\circ}$ as shown in REPAIR 14-1, Figure 601.

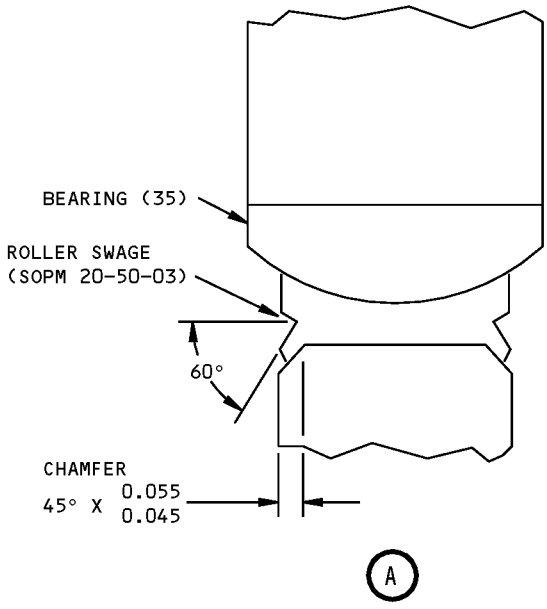
5. Refinish

A. Cross-beam (51, 52) – Passivate (F-17.09) Material: 15-5PH CRES, 180-200 ksi.





A-A

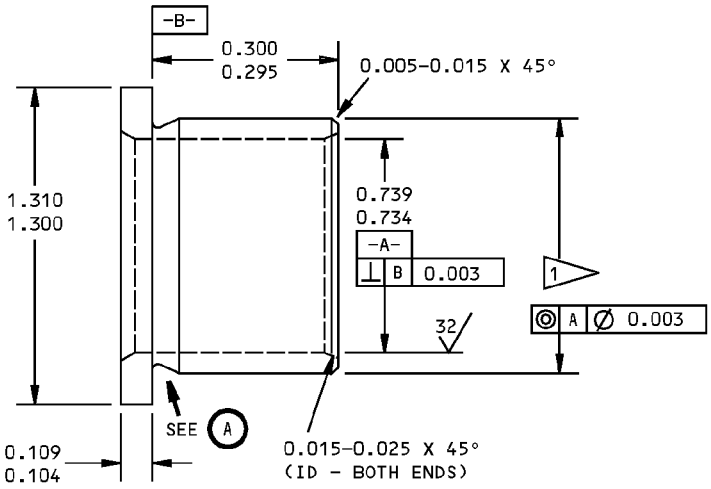


1. TWO HOLES CONCENTRIC TO COMMON AXIS WITHIN 0.001 FIM
2. BREAK BUSHING BORE INSIDE EDGES 0.01-0.03 INCH (2 LOCATIONS)
3. BREAK EDGES OF HOLE ID 0.005-0.020 INCH (2 LOCATIONS)
4. SLOT ORIENTATION MUST BE HORIZONTAL AS SHOWN WITHIN ±5°

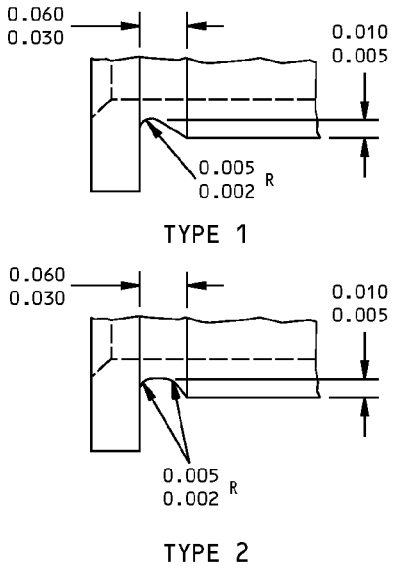
ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

310A1022-3,-7 Bushing Replacement
Figure 601



BUSHING (45, IPL FIG.1)



UNDERCUT TYPE 1 OR TYPE 2 OPTIONAL

A

1 FINAL BUSHING OUTSIDE DIAMETER EQUALS REPAIR DIAMETER OF FITTING PLUS 0.0008-0.0020 INCH INTERFERENCE

63 ALL MACHINED SURFACES, EXCEPT AS NOTED

ANGULAR TOLERANCES: ±0.50 DEG

MATERIAL: 15-5PH CRES PER AMS 5659, 180-200 KSI

FINISH: PASSIVATE (F-17.09).
MAGNETIC PARTICLE CHECK PER
20-20-01, CLASS B

ALL DIMENSIONS ARE IN INCHES

REPLACEMENT BUSHING FOR BUSHING (45, IPL FIG.1) Oversize Bushing Details
Figure 602

LINK ASSEMBLY - REPAIR 15-1

311A1740–7, –9, –11

1. General

A. This procedure has the data necessary to repair the link assembly.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Bushing Replacement (145, 155, 160, IPL Figure 1)

A. Remove bushings.

B. Install bushings (145, 155) per SOPM 20-50-03, except install with wet sealant, A00247 (BMS 5-95).

C. Machine bushings (145, 155) per REPAIR 15-1, Figure 601.

D. Fillet seal bushing (145, 155) flange periphery with sealant, A00247 (BMS 5-95).

E. Install bushing (160) per SOPM 20-50-03, except install with wet sealant, A00247 (BMS 5-95).

F. Machine bushings (160) per REPAIR 15-1, Figure 601.

G. Fillet seal bushing (160) flange periphery with sealant, A00247 (BMS 5-95).

3. REPAIR (REPAIR 15-1, Figure 601, REPAIR 15-1, Figure 602)

A. Machine bushing (145, 155) hole, as required, not to exceed maximum diameter per REPAIR 15-1, Figure 601.

B. Penetrant check machined surfaces per SOPM 20-20-02.

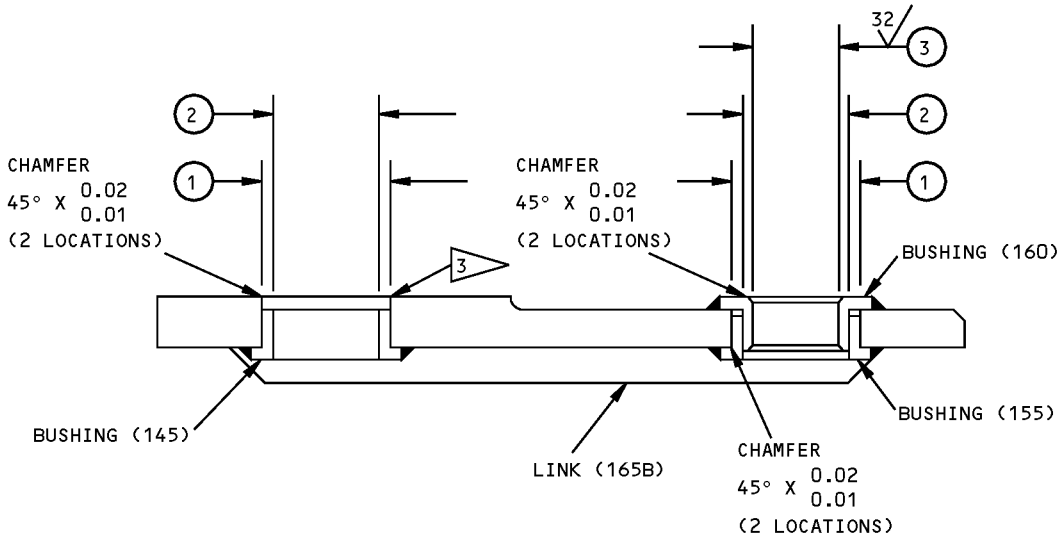
C. Shot peen per REPAIR 15-1, Figure 601 after penetrant check, but prior to refinishing.

D. Chromic acid anodize machined surfaces per SOPM 20-43-01.

E. Fabricate oversized bushing per REPAIR 15-1, Figure 602.

4. Refinish

A. Link (165B) – Chromic acid anodize, type 1 (F-17.04) and apply primer, C00259 (F-20.03); omit primer, C00259 from bushing holes. Material: Aluminum alloy.



	1	2	3
DESIGN DIAMETER	ID 165B 1.0007 1.0000	ID 145 155 0.8757 0.8750	ID 160 0.7505 0.7500
	OD 145 155 1.0014 1.0021	OD 160 0.8770 0.8763	OD ▷1 0.7495 0.7490
SERVICE (WEAR) LIMITS ▷7	ID 165B 1.0014	ID 145 155 0.8763	ID 160 0.7522 ▷6
	OD 145 155 1.0007	OD 160 0.8757	OD ▷1 0.7473 ▷6
REPAIR (REWORK) LIMITS ▷7	ID 165B 1.0607 ▷4	ID 145 155 ▷5	ID 160 ▷5
	OD 145 155 REPLACE WITH O/S BUSHING ▷4	OD 160 ▷5	OD ▷1 ▷2

▷1 311A1096-1 - BOLT, USED ONE LOCATION

▷2 STRIP, CHROME PLATE (F-15.03) PER 20-42-03, POST PLATE GRIND PER 20-10-04 TO DESIGN DIAMETER. SINGLE PLATE THICKNESS OF 0.003 MIN REQUIRED AFTER POST PLATE GRINDING

▷3 FILLET SEAL PERIPHERY WITH BMS 5-95 SEALANT

▷4 SEE FIGURE 602 FOR OVERSIZE BUSHING FABRICATION INSTRUCTIONS

▷5 REMOVE AND REPLACE IF SERVICE WEAR LIMITS ARE EXCEEDED

▷6 MAX CLEARANCE BETWEEN BOLT AND BUSHING IS 0.0032 INCH

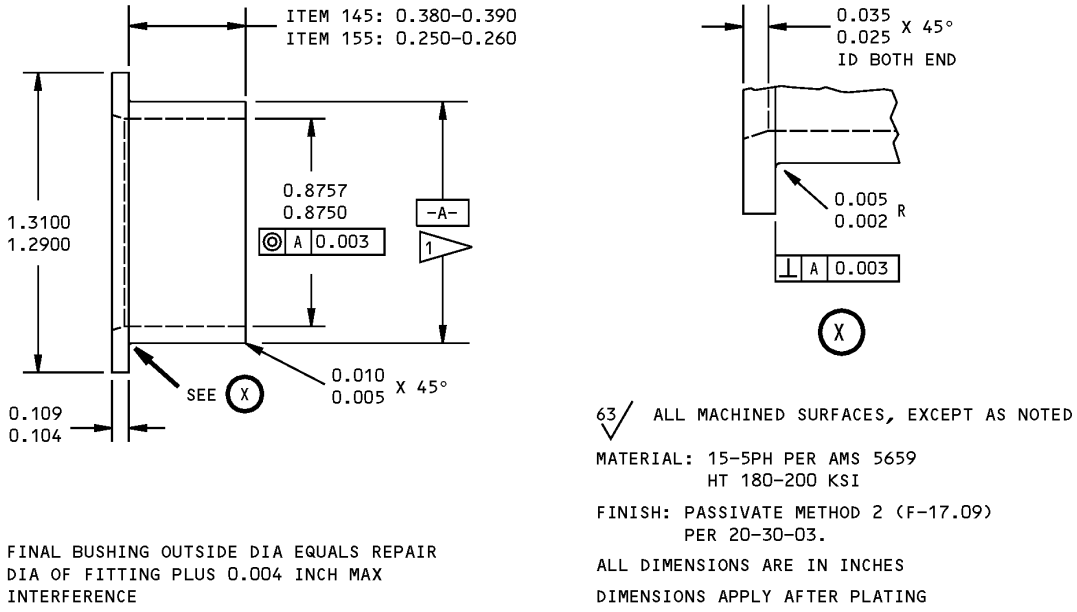
▷7 311A1740-7 ONLY

63 FINISH, EXCEPT AS NOTED

SHOT PEEN: 230-550 SHOT NO.
0.014 A2 INTENSITY
2.0 COVERAGE

ALL DIMENSIONS ARE IN INCHES

311A1740-7,-9,-11 Bushing Replacement
Figure 601



1 FINAL BUSHING OUTSIDE DIA EQUALS REPAIR DIA OF FITTING PLUS 0.004 INCH MAX INTERFERENCE

63 ALL MACHINED SURFACES, EXCEPT AS NOTED

MATERIAL: 15-5PH PER AMS 5659
HT 180-200 KSI

FINISH: PASSIVATE METHOD 2 (F-17.09)
PER 20-30-03.

ALL DIMENSIONS ARE IN INCHES

DIMENSIONS APPLY AFTER PLATING

REPLACEMENT BUSHING FOR BUSHINGS (145,155; IPL FIG. 1)

Oversize Bushing Details
Figure 602

FAN COWL STRUCTURE SUPPORT ROD ASSEMBLY - REPAIR 16-1

311A1515–3, –5

1. General

A. This procedure has the data necessary to repair the fan cowl structure support rod assembly.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Bushing Replacement (205, 210, IPL Figure 1)

A. Remove bushings.

B. Install bushings per SOPM 20-50-03, except install with wet sealant, A00247 (BMS 5-95).

C. Machine bushing bores per REPAIR 16-1, Figure 601.

D. Fillet seal bushing flanges and peripheries with sealant, A00247 (BMS 5-95).

3. Repair of Surface Defects

A. Repair limits - This repair can be used for damage up to 0.020 inch deep that extends over an area 0.60 inch by 0.30 inch. See REPAIR 16-1, Figure 601 for repair area for surface defects.

B. Blend out chaffed area at a 10:1 ratio. 125 micro-inch surface finish maximum.

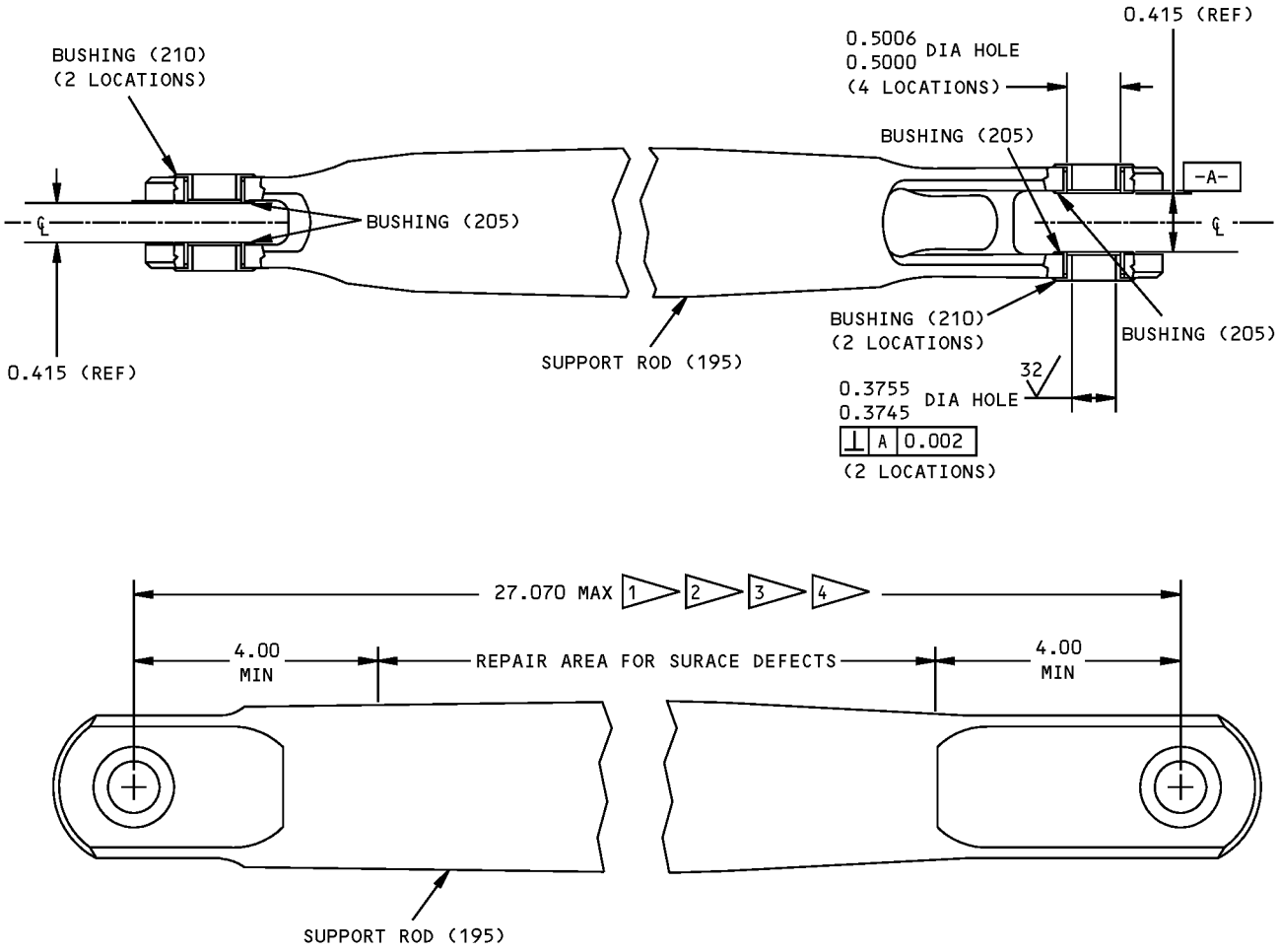
C. Penetrant inspect the reworked area per SOPM 20-20-02.

D. Shot peen the blended area per SOPM 20-10-03. Shot size 230-550. Intensity 0.006A. Coverage 2.0.

E. Refinish per Refinish REPAIR 16-1, Paragraph 4.A..

4. Refinish

A. Support rod (195, 200) – Chemical treat (F17.08) and apply primer, C00259 (F-20.03); omit primer, C00259 from bushing bores. Material: Aluminum alloy.



1. DIMENSION ESTABLISHED FOR 72°F. REPAIRS MADE AT ANY OTHER TEMPERATURE MUST BE ADJUSTED FOR THERMAL EXPANSION
2. DIMENSION BETWEEN HOLE CENTERS IS TO BE DETERMINED UPON INSTALLATION BY MEASURING BETWEEN ROD ENDS
3. MANUFACTURING -9XX NUMBERS THAT MAY BE ON THE SUPPORT ROD CORRESPOND TO CENTER-TO-CENTER DISTANCES IN TABLE
4. 315A1515-908 ORIGINALLY UNDRILLED AT ONE END.
FINAL CONFIGURATION DETERMINED UPON INSTALLATION

ALL DIMENSIONS ARE IN INCHES

311A1515-3,-5 Fan Cowl Structure Support Rod Assembly Repair
Figure 601 (Sheet 1 of 2)

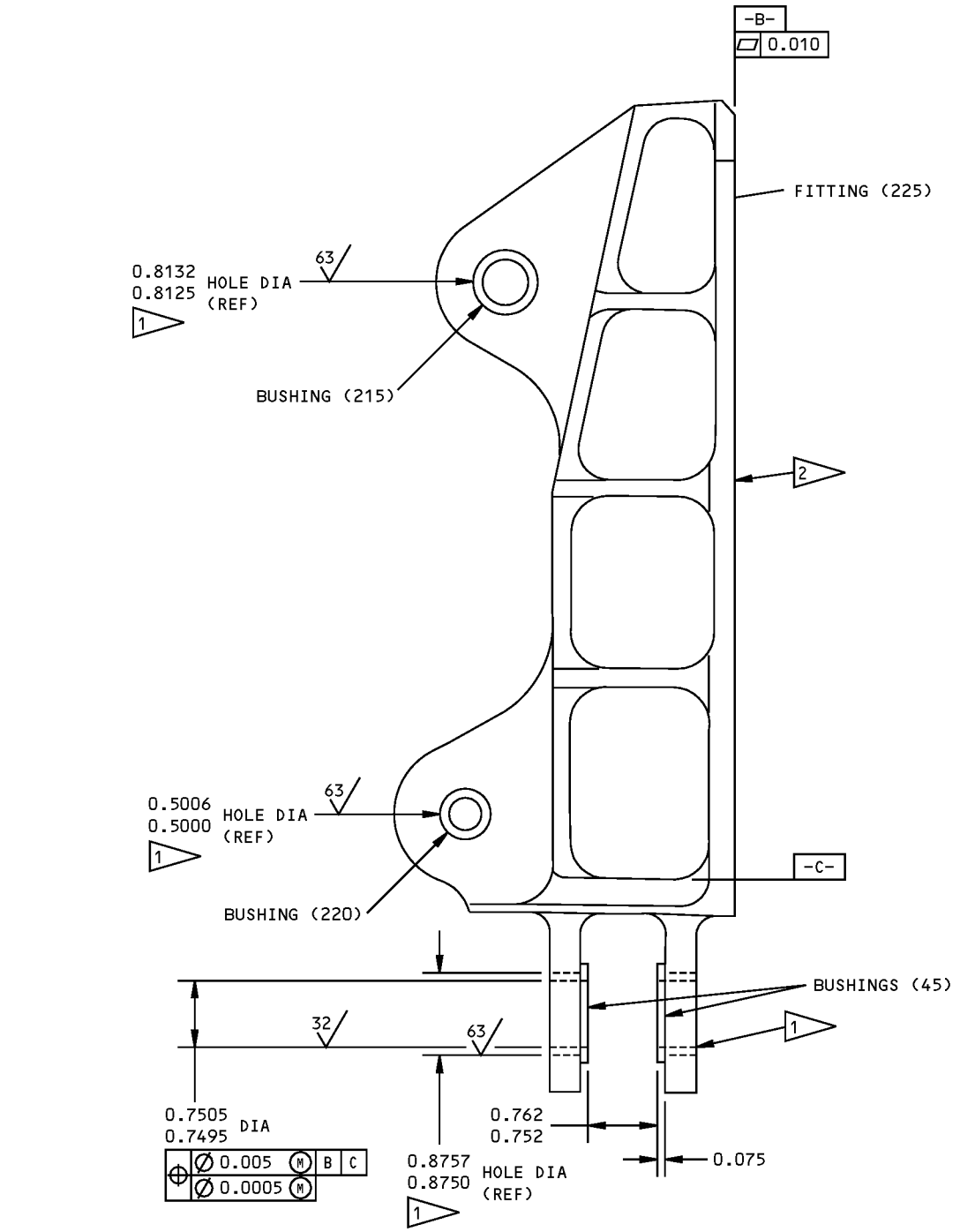
315A1515-9XX 3	CENTER-TO-CENTER DISTANCE (INCHES) 2	
311A1515-9XX	MINIMUM	MAXIMUM
311A1515-908 4	26.920	26.990
311A1515-910	26.991	26.995
311A1515-911	26.996	27.000
311A1515-912	27.001	27.005
311A1515-913	27.006	27.010
311A1515-914	27.011	27.015
311A1515-915	27.016	27.020
311A1515-916	27.021	27.025
311A1515-917	27.026	27.030
311A1515-918	27.031	27.035
311A1515-908 4	27.036	27.070

311A1515-3,-5 Fan Cowl Structure Support Rod Assembly Repair
Figure 601 (Sheet 2 of 2)

FITTING ASSEMBLY (LH) - UPPER FWD ENGINE MOUNT - REPAIR 17-1

311A1213–5

1. **General**
   A. This procedure has the data necessary to repair the fitting assembly (LH) upper FWD engine mount.
   B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.
   C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.
   D. Refer to IPL Figure 1 for the item numbers.
2. **Bushing Replacement (45, 215, 220, IPL Figure 1)**
   A. Remove bushings.
   B. Install bushings (45, 215, 220) per SOPM 20-50-03, except install with wet sealant, A00160 (BMS 5-63) or silicone sealant DC93-006.
   C. Machine bushing (45) per REPAIR 17-1, Figure 601.
3. **Refinish**
   A. Fitting (225) — Passivate per F-17.09, method 2. Material: 15-5 CRES.



1 BREAK HOLE EDGES 0.01-0.03

2 APPLY 2 COATS BMS 10-11, TYPE 1 PRIMER (F-20.03) TO THIS SURFACE.

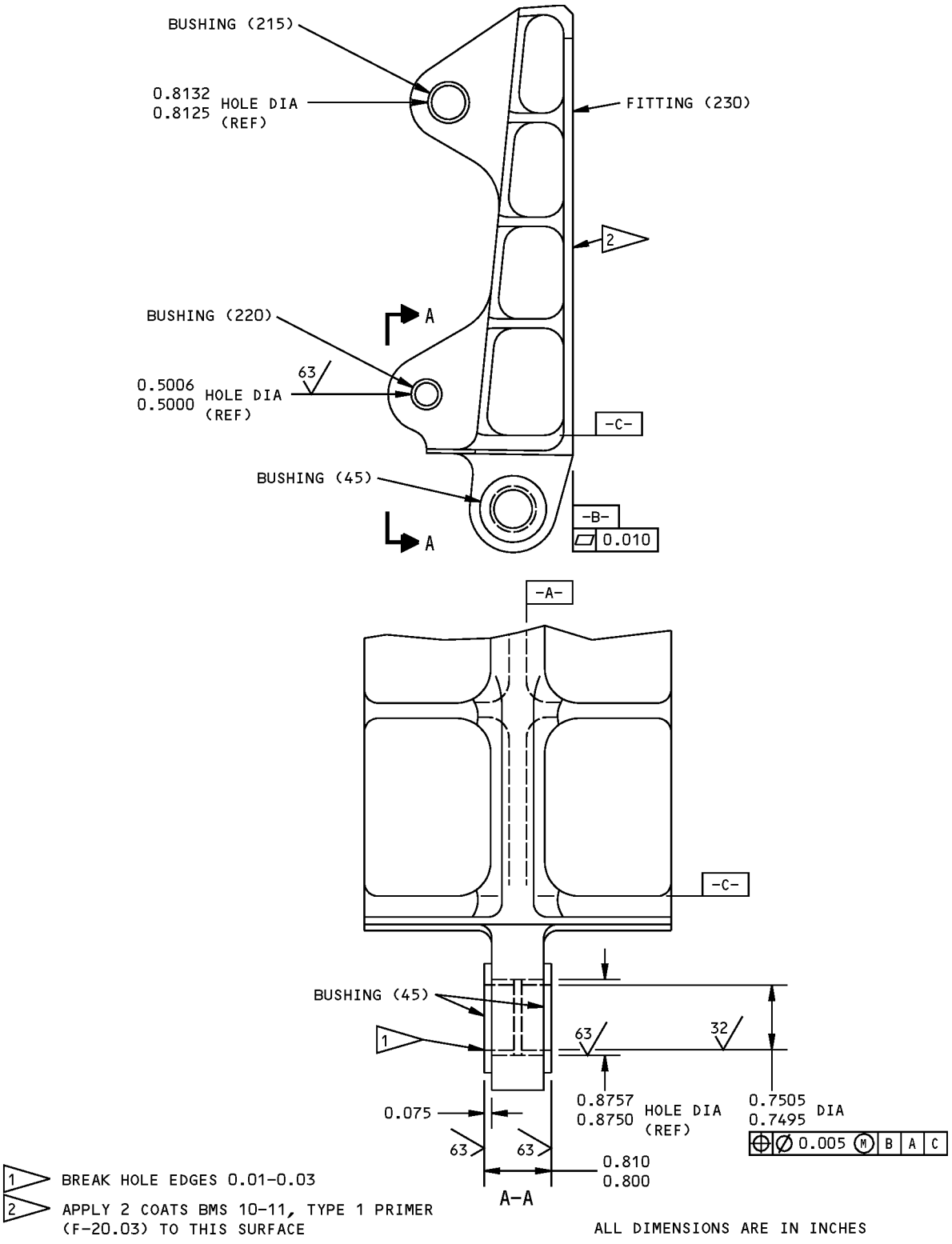
ALL DIMENSIONS ARE IN INCHES

311A1213-5 Fitting Assembly Bushing Replacement
Figure 601

FITTING ASSEMBLY (RH) - UPPER FWD ENGINE MOUNT - REPAIR 18-1

311A1215–5

1. **General**
   A. This procedure has the data necessary to repair the fitting assembly (RH) upper FWD engine mount.
   B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.
   C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.
   D. Refer to IPL Figure 1 for the item numbers.
2. **Bushing Replacement (45, 215, 220 IPL Figure 1)**
   A. Remove bushings.
   B. Install bushings (45, 215, 220) per SOPM 20-50-03, except install with wet sealant, A00160 (BMS 5-63) or silicone sealant DC93-006.
   C. Machine bushing (45) per REPAIR 18-1, Figure 601.
3. **Refinish**
   A. Fitting (225) – Passivate per F-17.09, method 2. Material: 15-5 CRES.



311A1215-5 Fitting Assembly Bushing Replacement
Figure 601

CROSS-BEAM ASSEMBLY - THRUST REVERSER HINGES - STA 224.00 - REPAIR 19-1

311A1562–1, –5, –6

1. General

A. This procedure has the data necessary to repair the cross-beam assembly - trust reverser hinges.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

2. Bushing Replacement (240, 240A, 245, IPL Figure 1)

A. Remove bushings.

B. Install bushings by shrink-fit method per SOPM 20-50-03 except do not use grease as an installation aid.

CAUTION: DO NOT MACHINE THE FLANGE OF BUSHING (240A). THE BUSHIING (240A) HAS A SPECIAL WEAR-RESISTANT COATING APPLIED TO THE OUTER SURFACE OF THE FLANGE. MACHINING THIS SURFACE WILL DAMAGE THE WEAR-RESISTANT COATING.

C. Machine inside diameter of bushings (245, IPL Figure 1) to the dimensions shown in REPAIR 19-1, Figure 601.

D. Machine bushing flanges (240, 245, IPL Figure 1) as shown in REPAIR 19-1, Figure 601.

3. Bearing Replacement (235, IPL Figure 1)

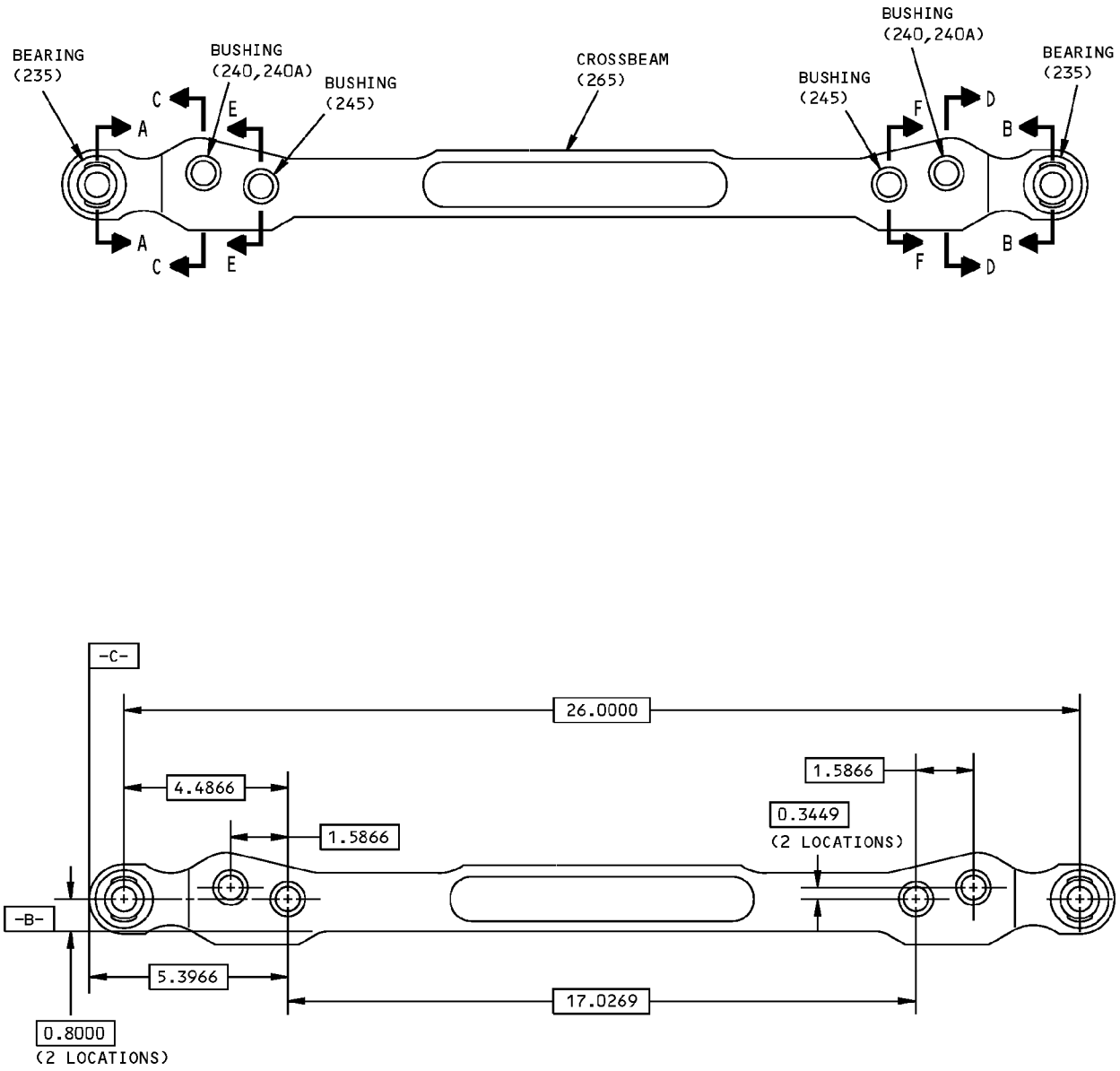
A. Remove bearing.

B. Install per SOPM 20-50-03 except use grease, D00015 (BMS 3-24) to retain ball until hinge bolt is installed.

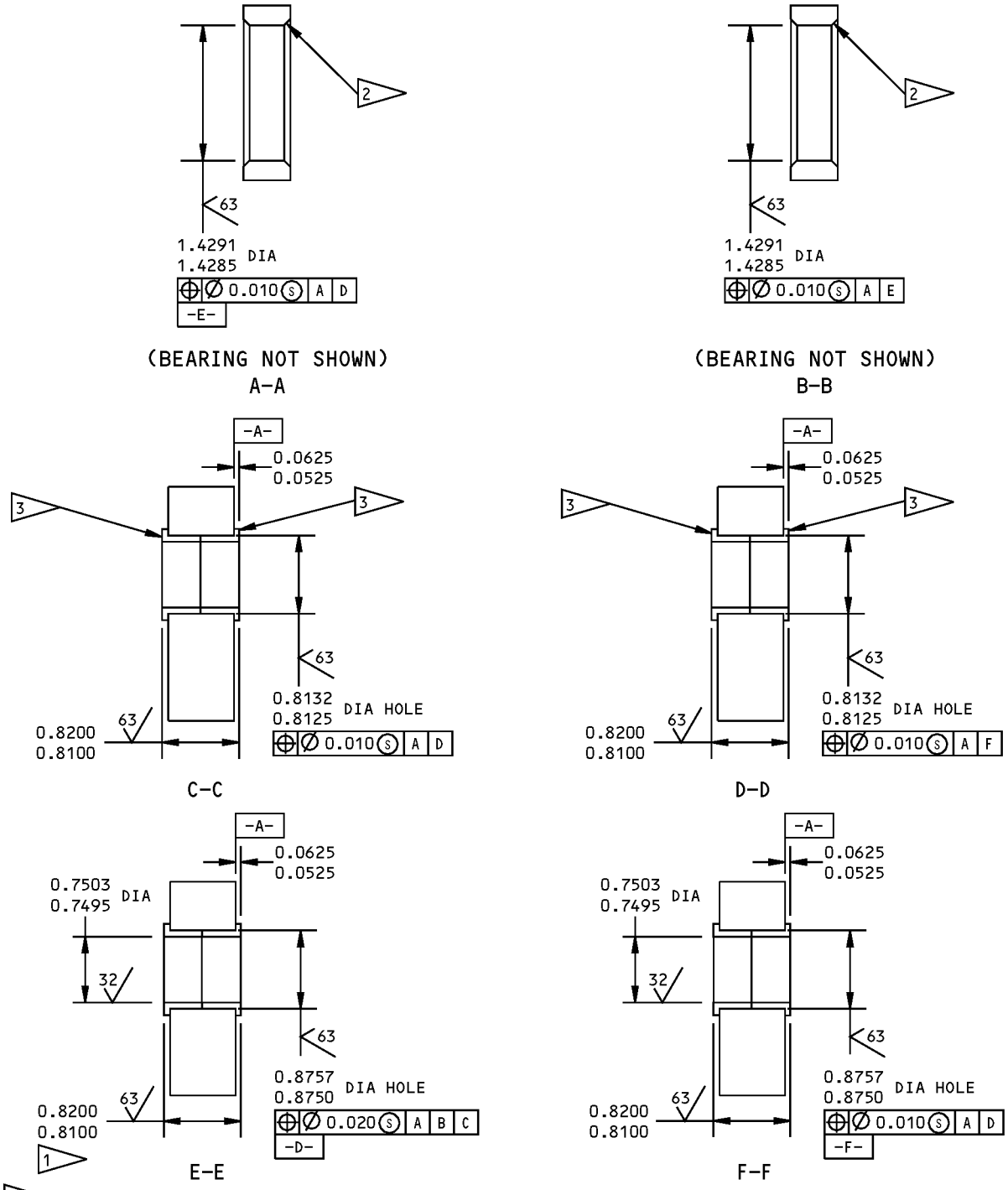
C. Tighten the retainer ring to 120-140 pound-inches with use of a Spanner Wrench, SPL-5460

4. Refinish

A. Cross-beam (265, IPL Figure 1) – Passivate (F-17.25), Material: 15-5PH CRES, 180-200 ksi.



311A1562-1,-5,-6 Cross-Beam Assembly - Thrust Reverser Hinges Repair (Sta 224.00)
Figure 601 (Sheet 1 of 2)



1. 311A1562-5
2. CHAMFER 0.0599-0.0449 X 45° ±2° BOTH SIDES
3. DO NOT MACHINE BUSHING (240A) FLANGE AFTER INSTALLATION

ITEM NUMBERS REFER TO IPL FIG. 1

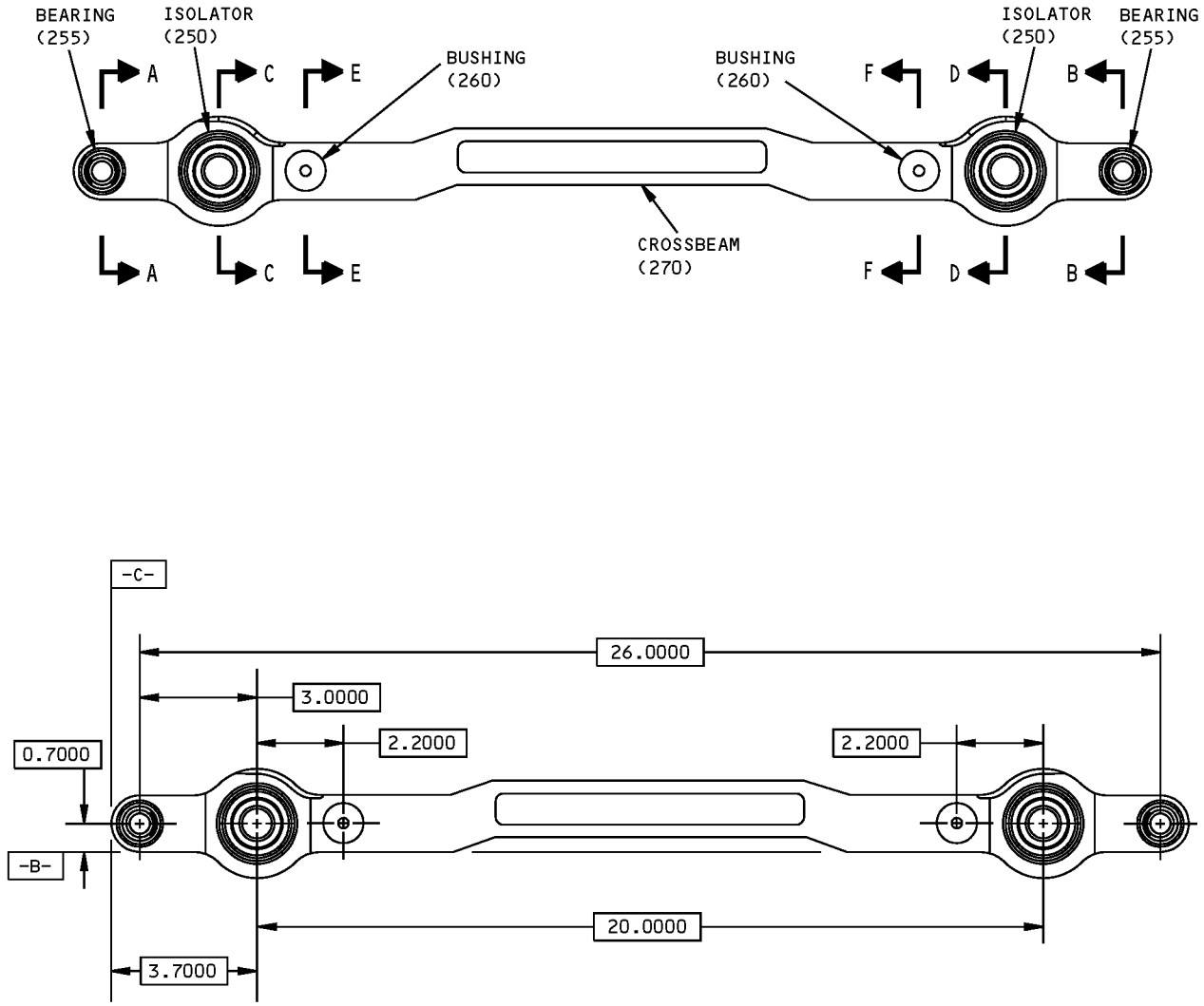
ALL DIMENSIONS ARE IN INCHES

311A1562-1,-5,-6 Cross-Beam Assembly - Thrust Reverser Hinges Repair (Sta 224.00)
Figure 601 (Sheet 2 of 2)

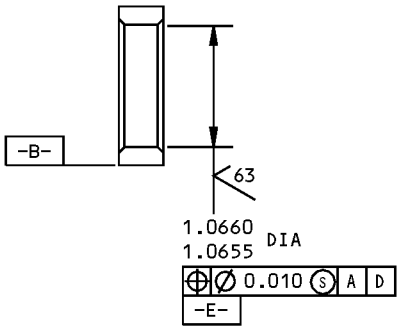
CROSS-BEAM ASSEMBLY - THRUST REVERSER HINGES - STA 206.50 - REPAIR 20-1

311A1562–2

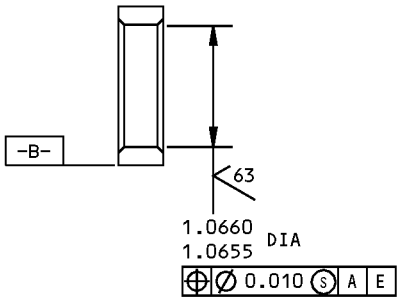
1. **General**
   A. This procedure has the data necessary to repair the cross-beam assembly - trust reverser hinges.
   B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.
   C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.
   D. Refer to IPL Figure 1 for the item numbers.
2. **Bushing Replacement (260, IPL Figure 1)**
   A. Remove bushings:
   B. Install bushings by shrink fit method per SOPM 20-50-03 except do not use grease, D00015 (BMS 3-24) as an installation aid.
   C. Machine bushing flanges per REPAIR 20-1, Figure 601.
3. **Bearing replacement (255, IPL Figure 1)**
   A. Remove bearing.
   B. Install and roller swage per SOPM 20-50-03, except use grease, D00015 (BMS 3-24) to retain ball until hinge bolt is installed.
4. **Isolator Replacement (250, IPL Figure 1)**
   A. Remove isolator.
   B. Install isolator using press fit at room temperature. Swage per SOPM 20-50-03. Do not use liquid nitrogen or methanol for isolator installation. Do not push on inner race or rubber for swage proof test. Only push on outer race.
5. **Refinish**
   A. Cross-beam (270, IPL Figure 1) – Passivate (F-17.25), Material: 15-5PH CRES, 180-200 ksi.



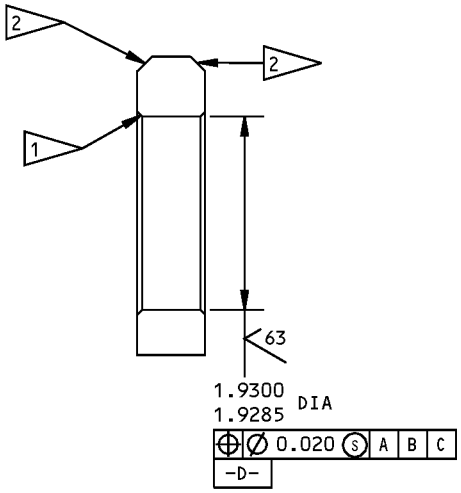
311A1562-2 Cross-Beam Assembly - Thrust Reverser Hinges Repair (Sta 206.50)
Figure 601 (Sheet 1 of 2)



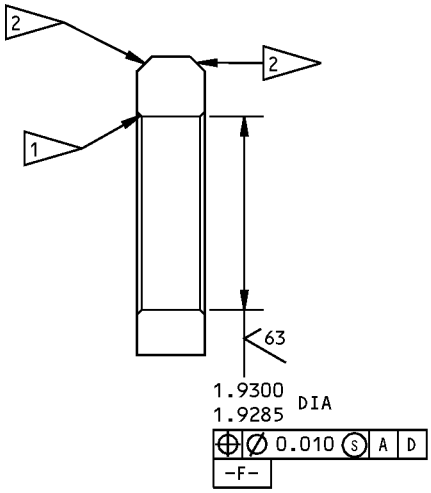
(BEARING NOT SHOWN)
A-A



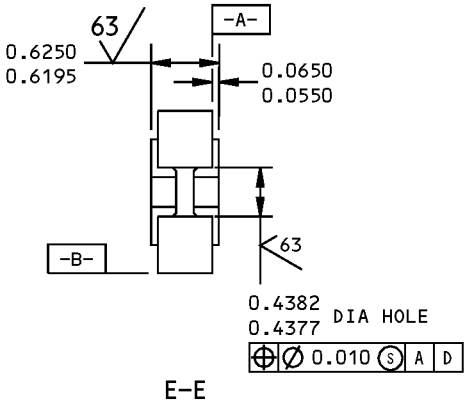
(BEARING NOT SHOWN)
B-B



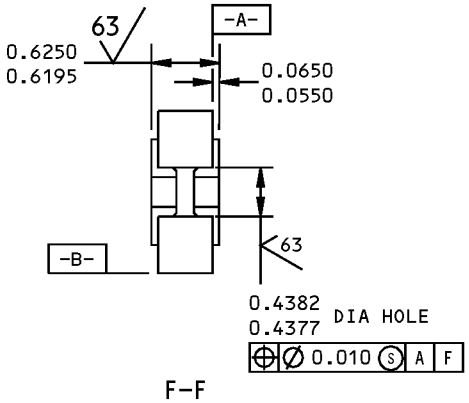
(ISOLATOR NOT SHOWN)
C-C



(ISOLATOR NOT SHOWN)
D-D



E-E



F-F

1 CHAMFER 0.045D-0.055D X 45° ±2°, BOTH SIDES

2 CHAMFER 0.185D-0.165D X 34.9998 ±2°,
BOTH SIDES TOP ONLY.

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

311A1562-2 Cross-Beam Assembly - Thrust Reverser Hinges Repair (Sta 206.50)
Figure 601 (Sheet 2 of 2)

SHOULDER BOLT - REPAIR 21-1

310T1036–21

1. General

A. This procedure has the data necessary to repair the shoulder bolt.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the consumable codes identified in this procedure.

D. Refer to IPL Figure 1 for the item numbers.

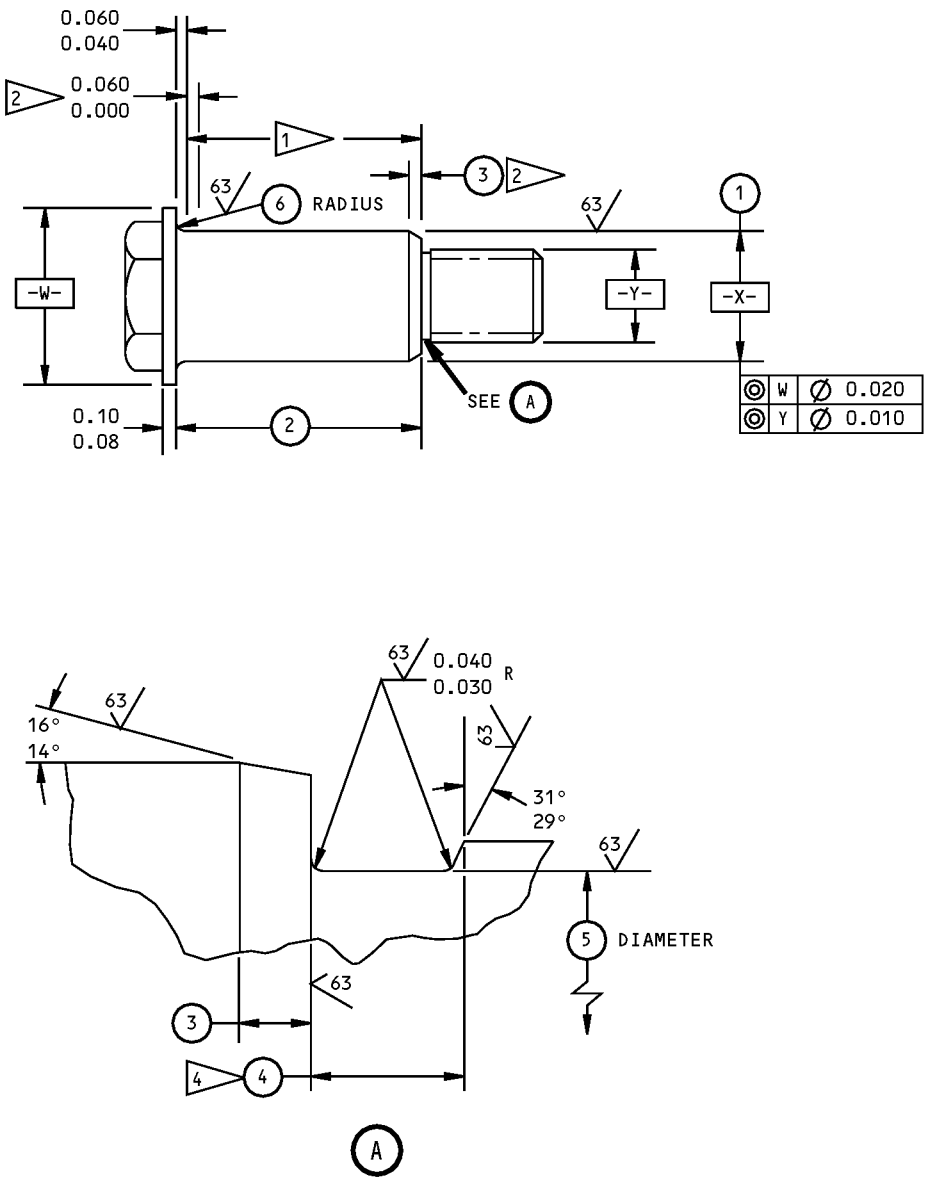
2. Plating Repair

A. Repair by plating as shown in REPAIR 21-1, Figure 601 Finish Notes.

3. Shank Repair (REPAIR 21-1, Figure 601)

A. Machine as required, within repair limits, to remove defects. Do not exceed limit.

B. Chrome plate and grind to design dimension. Chrome plate thickness minimum 0.003 and maximum 0.010 inch.



310T1036-21 Bolt Repair
Figure 601 (Sheet 1 of 2)

		(1) AFTER PLATING	(2)	(3)	(4)	(5)	(6)
310T1036-21	DESIGN DIM 1	0.7490 0.7480	1.752 1.732	0.060 0.000	0.110 0.090	0.428 0.421	0.045 0.030
	REPAIR LIMIT	0.7280 3					

REFINISH

CHROME PLATE AREA NOTED BY 1. NO FINISH
ALL OTHER SURFACES

1. CHROME PLATE (F-15.03) 0.0004-0.0007 THICK.
2. CHROME PLATE RUNOUT.
3. MACHINE TO REMOVING DEFECTS. CHROME PLATE (F-15.03) AND GRIND TO DESIGN DIMENSIONS 0.010 MAX PLATE THICKNESS. NO CHROME PLATE PERMITTED IN FILLET AREAS.
4. NO CHROME PLATE ALLOWED ON THREAD RELIEF AREA.

REPAIR

MATERIAL: INCONEL 718 PER AMS 5662 HEAT TREAT PER BAC 5616 COND II

ALL DIMENSIONS ARE IN INCHES

310T1036-21 Bolt Repair
Figure 601 (Sheet 2 of 2)

ASSEMBLY

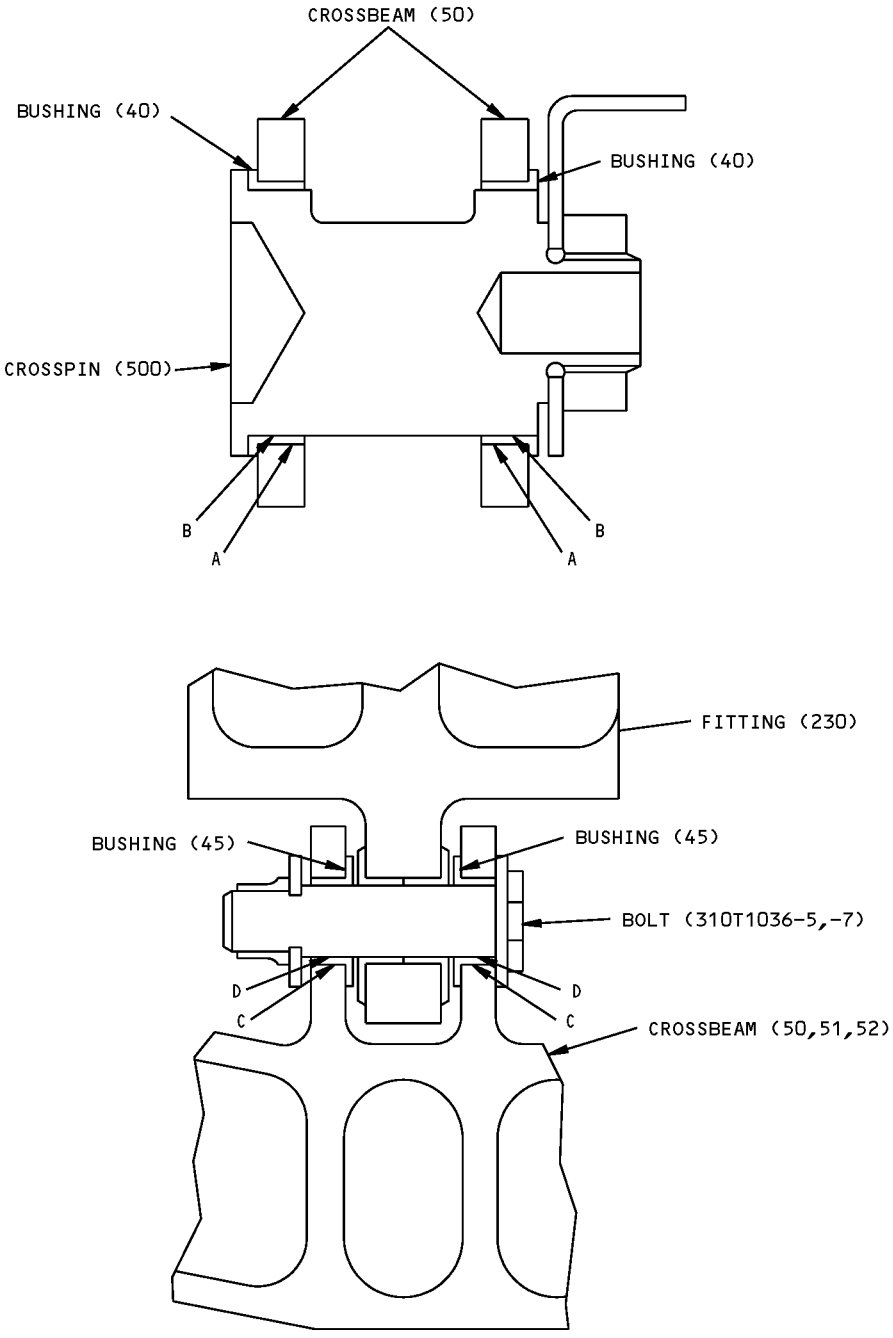
1. **General**

   A. This procedure has the data necessary to assemble the engine strut installation components.

2. **Assembly**

   A. Use standard industry practices for assembly of these components.

FITS AND CLEARANCES



ITEM NUMBERS REFER TO IPL FIG. 1

Fits and Clearances
Figure 801 (Sheet 1 of 2)

Ref Letter Fig.801	Mating Item No. IPL Fig.1	Design Dimensions				Service Wear Limits		
		Dimensions		Assembly Clearance		Dimensions		Maximum Clearance
		Min	Max	Min	Max	Min	Max	
A	ID 50	2.1250	2.1259	-0.0027	-0.0009		2.1268	
	OD 40	2.1268	2.1277			2.1259		-0.0000
B	ID 40	2.0000	2.0007	0.0005	0.0020		2.0035	
	OD 500	1.9987	1.9995			1.9959		0.0048
C	ID 50,51, 52	0.8750	0.8757	-0.0020	-0.0008		0.8763	
	OD 45	0.8765	0.8770			0.8757		-0.0000
D	ID 45	0.7495	0.7505	0.0005	0.0025		0.7522	
	OD 1	0.7480	0.7490			0.7463		0.0042

NEGATIVE VALUES DENOTE INTERFERENCE FIT

ALL DIMENSIONS ARE IN INCHES

1 BOLT 310T1036-5 (USED ON INSTALLATION)

Fits and Clearances
Figure 801 (Sheet 2 of 2)

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

1. General

A. This section lists the special tools, fixtures, and equipment necessary for maintenance.

NOTE: Equivalent substitutes may be used.

Special Tools

Reference	Description	Part Number	Supplier
SPL-5460	Spanner Wrench	ST2580-286-3A	81205

Tool Supplier Information

CAGE Code	Supplier Name	Supplier Address
81205	THE BOEING COMPANY	17930 INTERNATIONAL BLVD. SOUTH SEATAC, WA 98188-4321 Telephone: 206-662-6650 Facsimile: 206-662-7145

ILLUSTRATED PARTS LIST

1. Introduction

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

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

1 2 3 4 5 6 7

. Assembly

. Attaching parts for assembly

. . Detail parts for assembly

. . Subassembly

. . Attaching parts for subassembly

. . . Detail parts for subassembly

. . . Sub-subassembly

. . . Attaching parts for subassembly

. . . . . Details parts for sub-subassembly

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

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

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

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

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

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

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

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

H. Interchangeable Parts

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

VENDOR CODES

Code	Name
06710	LAMSON AND SESSIONS CO THE VALLEY-TODECO 12975 BRADLEY AVENUE SYLMAR, CALIFORNIA 91342-3830 FORMERLY VALLEY BOLT CORP VB0097 IN NORTH HOLLYWOOD, CA
50632	KAMATICS CORP SUB OF KAMAN CORP 1335 BLUE HILLS ROAD BLOOMFIELD, CONNECTICUT 06002-1304
57606	REXNORD CORP PSI BEARINGS DIV 2175 UNION PL SIMI VALLEY, CALIFORNIA 93065-1661 FORMERLY PSI BEARINGS
76005	LORD CORP AEROSPACE PRODUCTS DIV 1635 WEST 12TH STREET, PO BOX 10039 ERIE, PENNSYLVANIA 16514 FORMERLY LORD MANUFACTURING COMPANY FORMERLY LORD CORP LORD KINEMATICS

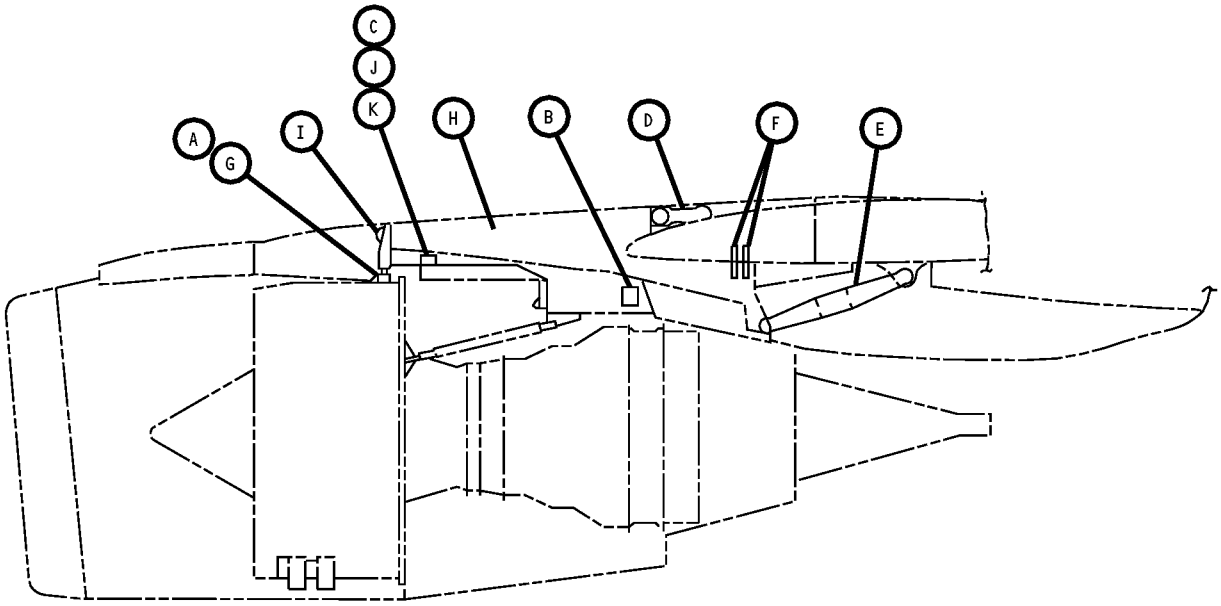
NUMERICAL INDEX

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
		1		1
		1		1
302T0200-148		1	145A	1
302T0200-149		1	155A	1
302T0200-54		1	40	2
302T0200-62		1	205	4
302T0200-65		1	110	2
302T0200-66		1	115	2
302T0200-67		1	120	2
302T0200-68		1	125	2
302T0200-69		1	95	2
		1	95D	2
302T0200-70		1	150	1
302T0200-71		1	145	1
302T0200-72		1	160	1
302T0200-73		1	155	1
302T0200-81		1	95E	2
310A1022-1		1	1	RF
310A1022-2		1	50	1
310A1022-3		1	1A	RF
310A1022-4		1	51	1
310A1022-6		1	52	1
310A1022-7		1	1B	RF
310A1031-1		1	500	1
310A1035-1		1	170	4
310A1042-12		1	510	1
310A1042-7		1	505	1
310T1036-21		1	530	1
311A1090-1		1	11	RF
311A1091-1		1	12	RF
311A1092-1		1	13	RF
311A1092-2		1	14	RF
311A1092-3		1	14A	RF
311A1093-1		1	16	RF

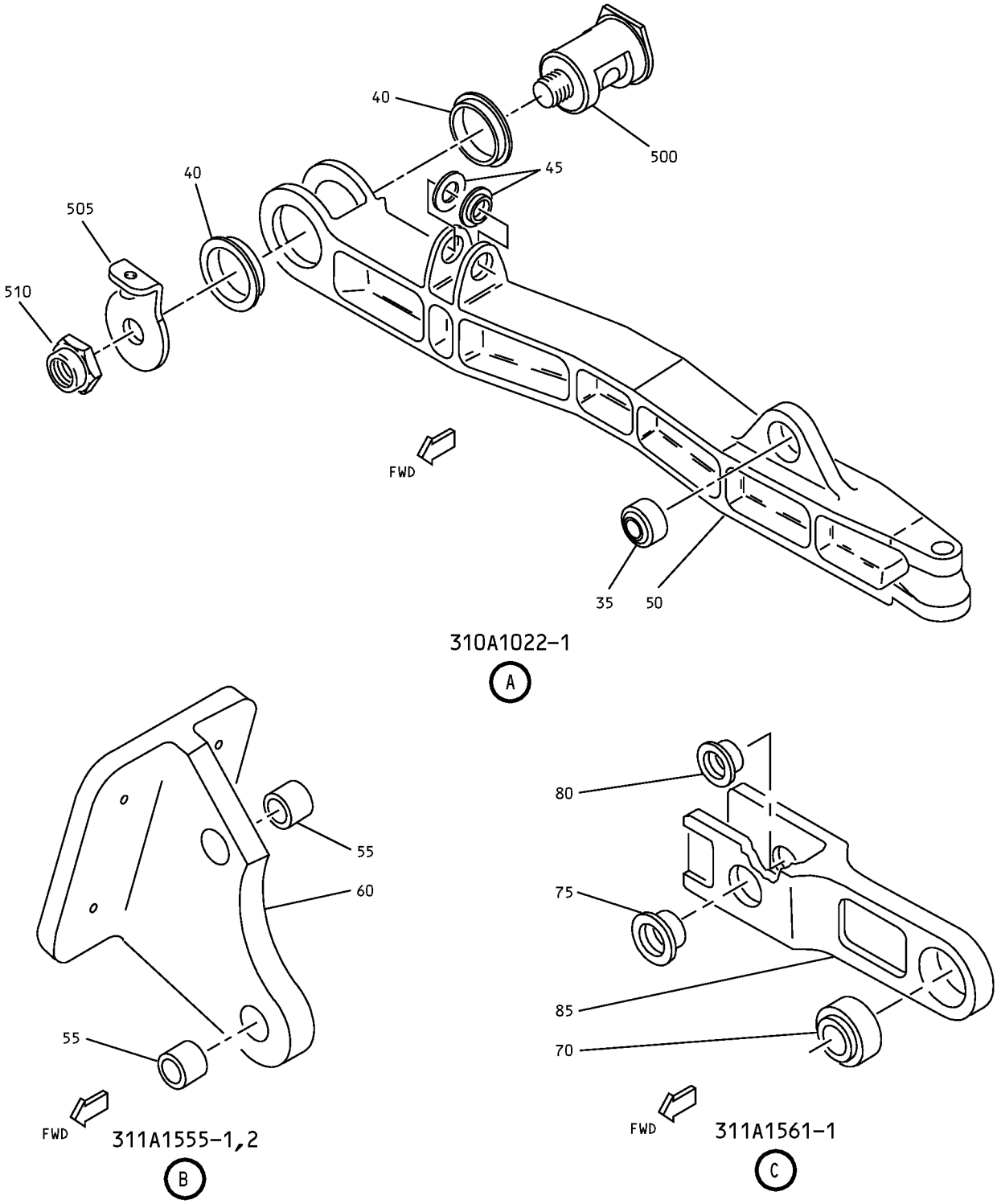
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
311A1094-1		1	17	RF
311A1096-1		1	18	RF
311A1213-5		1	3	1
311A1213-6		1	225	1
311A1215-5		1	4	1
311A1215-6		1	230	1
311A1515-3		1	31	RF
311A1515-4		1	195	1
311A1515-5		1	31A	RF
311A1515-6		1	200	1
311A1555-1		1	5	RF
311A1555-2		1	10	RF
311A1555-3		1	60	1
311A1555-4		1	65	1
311A1561-1		1	15	RF
311A1561-2		1	85	1
311A1562-1		1	32	RF
311A1562-2		1	33	RF
311A1562-3		1	265	1
311A1562-4		1	270	1
311A1562-5		1	34	RF
311A1562-6		1	34A	RF
311A1563-6		1	260	4
311A1710-3		1	20	RF
311A1710-4		1	105	1
311A1710-5		1	20A	RF
311A1710-6		1	105A	1
311A1710-8		1	20B	RF
311A1710-9		1	95A	2
311A1730-1		1	25	RF
311A1730-2		1	140	1
311A1730-3		1	25A	RF
311A1730-4		1	140A	1
311A1730-5		1	25B	RF
311A1730-6		1	140B	1

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
311A1730-7		1	25C	RF
311A1730-8		1	140C	1
311A1740-10		1	165C	1
311A1740-11		1	30D	RF
311A1740-12		1	165D	1
311A1740-5		1	30A	RF
311A1740-6		1	165A	1
311A1740-7		1	30B	RF
311A1740-8		1	165B	1
311A1740-9		1	30C	RF
806844		1	250	2
BAC27DPP0081		1	100	1
BAC27DPP0082		1	130	1
BAC27DPP0083		1	135	1
BACB28AM11B020		1	75	1
BACB28AP08-020		1	80	1
BACB28AP12-030		1	45	2
BACB28AP8P020		1	210	4
BACB28AT11B034A		1	240	4
BACB28AT12B034A		1	245	4
BACB28U9E044		1	55	2
BACB28Y10M035		1	215	1
BACB28Y6E035		1	220	1
BACN10HC4		1	175	4
BACN10HC5		1	180	8
BACN10JC16		1	525	1
BACN10JP4ACM		1	515	1
BACR10V4		1	185	4
BACR10V5		1	190	8
KJB903211V		1	240A	4
LM433-40		1	250	2
MS20427M		1	520	2
P21260		1	90A	1
P21610		1	35A	1
P24350		1	235	2

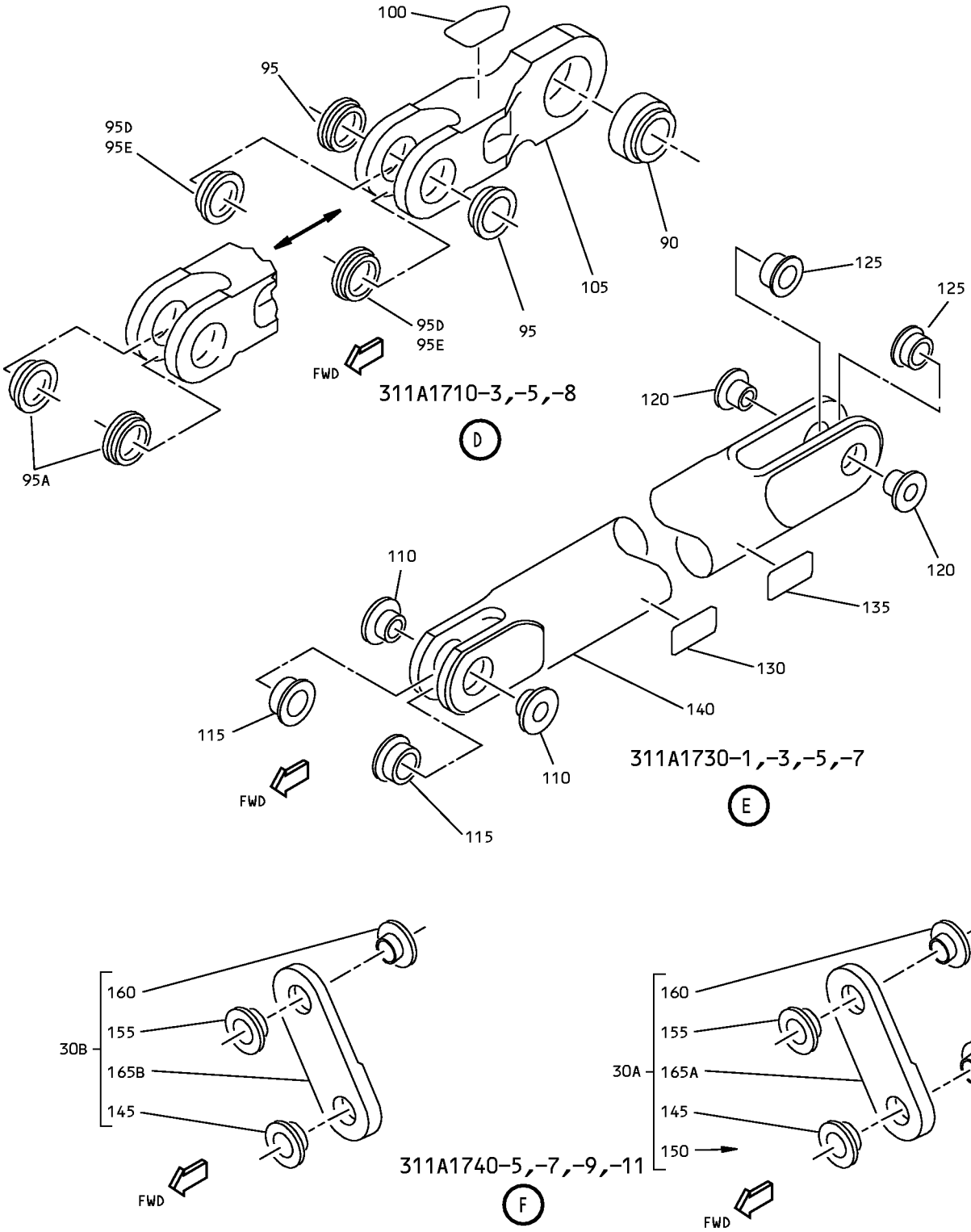
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
P24360		1	255	2
S302T001-209		1	35A	1
S302T001-215		1	70	1
S302T001-219		1	90A	1
VTB 04560		1	35A	1
VTB 07290		1	235	2
VTB 07300		1	255	2
VTB 808730		1	90A	1



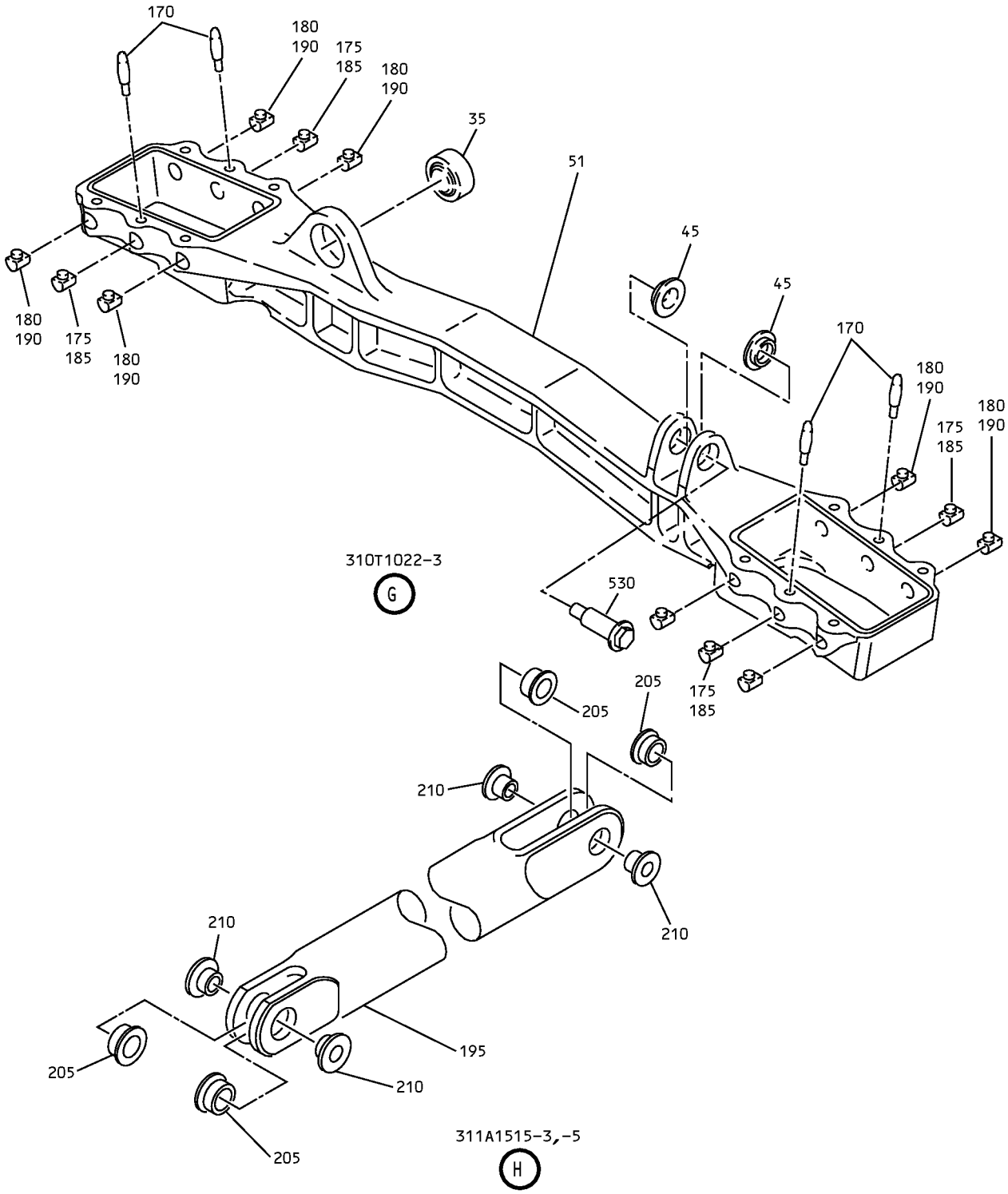
Engine Strut Installation Components
IPL Figure 1 (Sheet 1 of 6)



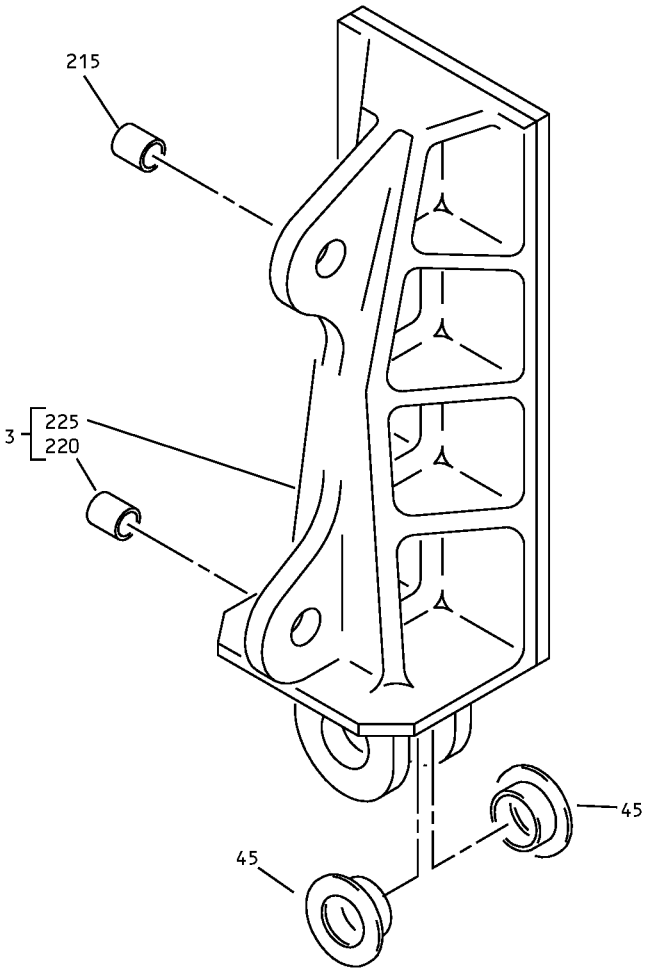
Engine Strut Installation Components
IPL Figure 1 (Sheet 2 of 6)

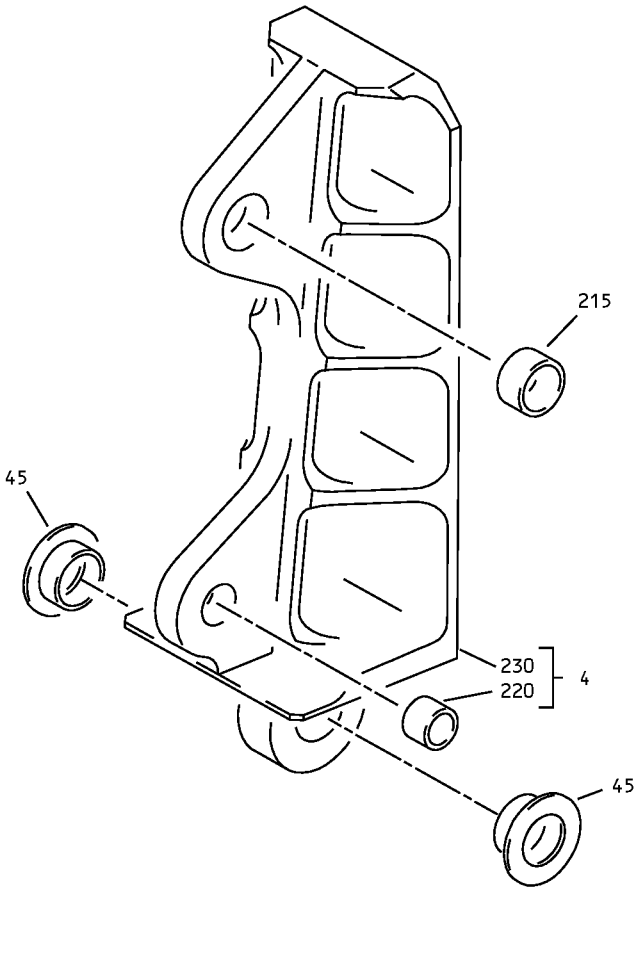


Engine Strut Installation Components
IPL Figure 1 (Sheet 3 of 6)

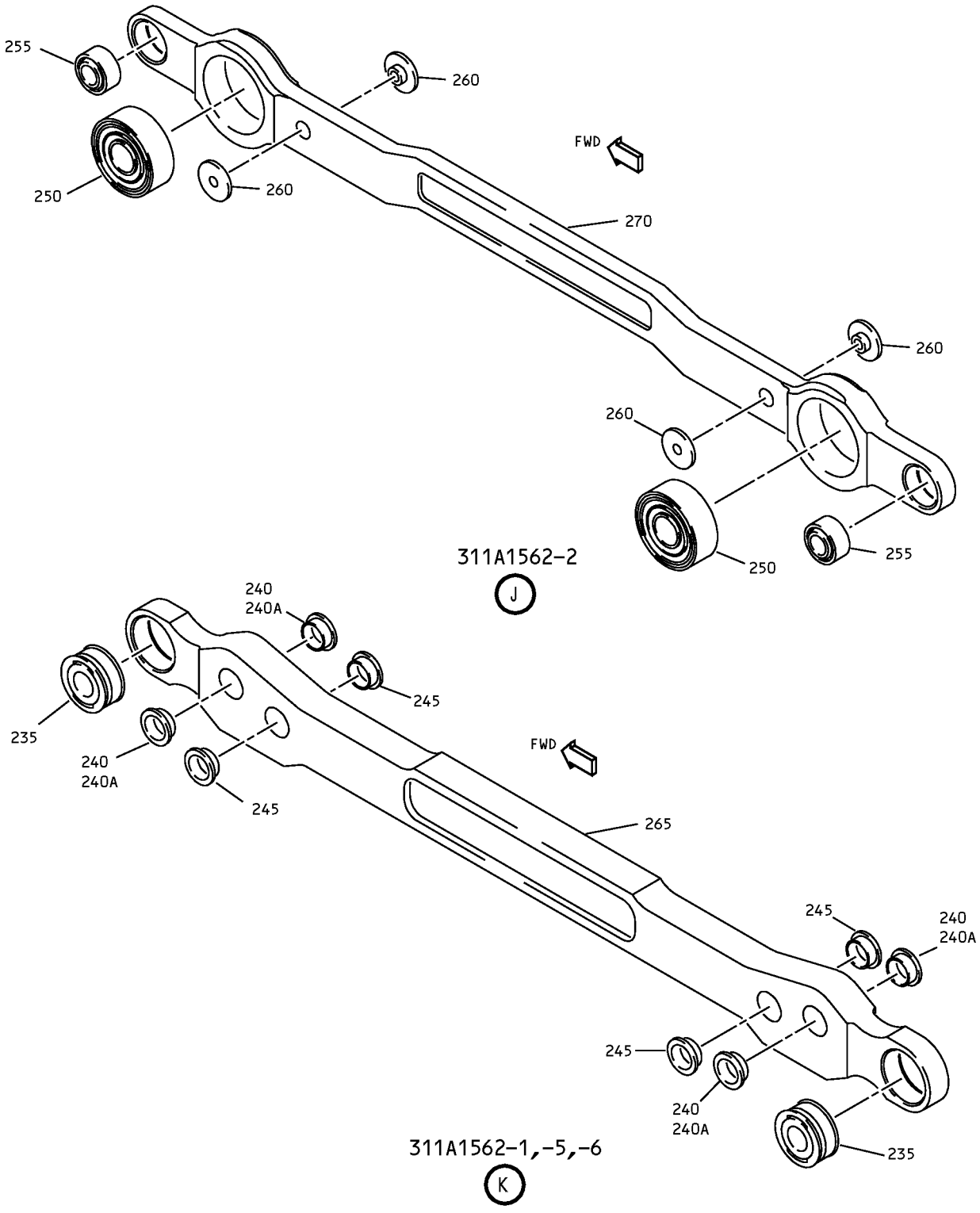


Engine Strut Installation Components
IPL Figure 1 (Sheet 4 of 6)





Engine Strut Installation Components
IPL Figure 1 (Sheet 5 of 6)



Engine Strut Installation Components
IPL Figure 1 (Sheet 6 of 6)

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–			ENGINE STRUT INSTALLATION COMPONENTS		
1	310A1022-1		CROSSBEAM ASSY-FWD ENGINE MOUNT (PRE SB 737-71-1149R2)	A	RF
1A	310A1022-3		CROSSBEAM ASSY-FWD ENGINE MOUNT	H	RF
–1B	310A1022-7		CROSSBEAM ASSY-FWD ENGINE MOUNT (POST SB 737-71-1149R2)	I	RF
–2	310A1031-1		DELETED		
3	311A1213-5		FITTING ASSY-UPR FWD ENGINE MOUNT (LH)	M	1
4	311A1215-5		FITTING ASSY-UPR FWD ENGINE MOUNT (RH)	N	1
5	311A1555-1		FITTING ASSY-FAN T/R COWL HINGE	B	RF
–10	311A1555-2		FITTING ASSY-FAN T/R COWL HINGE	C	RF
–11	311A1090-1		PIN-UPPER LINK, NAC STRUT	P	RF
–12	311A1091-1		FUSE PIN-UPPER LINK, NAC STRUT	Q	RF
–13	311A1092-1		FUSE PIN-MID SPAR, NAC STRUT	R	RF
–14	311A1092-2		FUSE PIN-MID SPAR, NAC STRUT	S	RF
–14A	311A1092-3		FUSE PIN-MID SPAR, NAC STRUT	HA	RF
15	311A1561-1		LINK ASSY-T/R COWL HINGE	D	RF
–16	311A1093-1		FUSE PIN-DIAGONAL BRACE, NAC STRUT	T	RF
–17	311A1094-1		PIN-DIAGONAL BRACE, NAC STRUT	U	RF
–18	311A1096-1		SHOULDER BOLT-SIDE LINK, NAC STRUT	V	RF
20	311A1710-3		LINK ASSY-NAC STRUT, UPPER	E	RF
20A	311A1710-5		LINK ASSY-NAC STRUT, UPPER (PRE SB 737-54-1037)	DA	RF
20B	311A1710-8		LINK ASSY-NAC STRUT, UPPER (POST SB 737-54-1037)	EA	RF

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
25	311A1730-1		BRACE ASSY-NAC STRUT DIAGONAL	F	RF
25A	311A1730-3		BRACE ASSY-NAC STRUT DIAGONAL	W	RF
25B	311A1730-5		BRACE ASSY-NAC STRUT DIAGONAL	X	RF
25C	311A1730-7		BRACE ASSY-NAC STRUT DIAGONAL	FA	RF
–30	311A1740-3		DELETED		
30A	311A1740-5		LINK ASSY-NAC STRUT, SIDE	G	RF
–30B	311A1740-7		LINK ASSY-NAC STRUT, SIDE	J	RF
–30C	311A1740-9		LINK ASSY-NAC STRUT, SIDE	Y	RF
–30D	311A1740-11		LINK ASSY-NAC STRUT, SIDE	Z	RF
31	311A1515-3		FAN COWL STRUC SUPT ROD ASSY	K	RF
–31A	311A1515-5		FAN COWL STRUC SUPT ROD ASSY	L	RF
32	311A1562-1		CROSSBEAM ASSY-THRUST REV HINGES-STA 224.00	AA	RF
33	311A1562-2		CROSSBEAM ASSY-THRUST REV HINGES-STA 206.50	BA	RF
–34	311A1562-5		CROSSBEAM ASSY-THRUST REV HINGES-STA 224.00 (PRE SB 54-1036)	CA	RF
–34A	311A1562-6		CROSSBEAM ASSY-THRUST REV HINGES-STA 224.00 (POST SB 54-1036)	GA	RF
35	S302T001-209		DELETED		
35A	P21610		. BEARING, SPHERICAL (V57606) (SPEC S302T001-209) (OPT VTB 04560 (V06710))	A, H, I	1
35B	P20631		DELETED		
40	302T0200-54		. BUSHING	A	2
45	BACB28AP12-030		. BUSHING	A, H, I, M, N	2
50	310A1022-2		. CROSSBEAM	A	1
51	310A1022-4		. CROSSBEAM	H	1
–52	310A1022-6		. CROSSBEAM	I	1
55	BACB28U9E044		. BUSHING	B, C	2
60	311A1555-3		. FITTING-HINGE	B	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–					
65	311A1555-4		. FITTING-HINGE	C	1
70	S302T001-215		. BEARING, SPHERICAL	D	1
75	BACB28AM11B020		. BUSHING	D	1
80	BACB28AP08-020		. BUSHING	D	1
85	311A1561-2		. LINK-T/R COWL HINGE	D	1
90	S302T001-219		DELETED		
90A	P21260		. BEARING-SPHERICAL (V57606) (SPEC S302T001-219) (OPT VTB 808730 (V06710))	E, DA, EA	1
95	302T0200-69		. BUSHING	E, DA	2
95A	311A1710-9		. BUSHING	EA	2
95B	311A1710-11		DELETED		
95C	311A1710-12		DELETED		
95D	302T0200-69		. BUSHING	E	2
95E	302T0200-81		. BUSHING (PRE SB 737-54-1037)	DA	2
100	BAC27DPP0081		. MARKER-ALUMINUM FOIL	E, DA	1
105	311A1710-4		. LINK-NAC STRUT, UPR	E	1
105A	311A1710-6		. LINK-NAC STRUT, UPR	DA, EA	1
110	302T0200-65		. BUSHING	F, W, X, FA	2
115	302T0200-66		. BUSHING	F, W, X, FA	2
120	302T0200-67		. BUSHING	F, W, X, FA	2
125	302T0200-68		. BUSHING	F, W, X, FA	2
130	BAC27DPP0082		. MARKER-ALUMINUM FOIL	F, W, X, FA	1
135	BAC27DPP0083		. MARKER-ALUMINUM FOIL	F, W, X, FA	1
140	311A1730-2		. BRACE-DIAGONAL	F	1
140A	311A1730-4		. BRACE-DIAGONAL	W	1
140B	311A1730-6		. BRACE-DIAGONAL	X	1

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
140C	311A1730-8		. BRACE-DIAGONAL	FA	1
145	302T0200-71		. BUSHING	G, J, Y, Z	1
–145A	302T0200-148		. BUSHING (OPT ITEM 145)	G, J	1
150	302T0200-70		. BUSHING	G	1
155	302T0200-73		. BUSHING	G, J, Y, Z	1
–155A	302T0200-149		. BUSHING (OPT ITEM 155)	G, J	1
160	302T0200-72		. BUSHING	G, J, Y, Z	1
–165	311A1740-4		DELETED		
165A	311A1740-6		. LINK-NAC STRUT, SIDE	G	1
–165B	311A1740-8		. LINK-NAC STRUT, SIDE	J	1
–165C	311A1740-10		. LINK-NAC STRUT, SIDE	Y	1
–165D	311A1740-12		. LINK-NAC STRUT, SIDE	Z	1
170	310A1035-1		. SHEAR PIN	H, I	4
175	BACN10HC4		. NUT-CYLINDRICAL	H, I	4
180	BACN10HC5		. NUT-CYLINDRICAL	H, I	8
185	BACR10V4		. RETAINER	H, I	4
190	BACR10V5		. RETAINER	H, I	8
195	311A1515-4		. SUPPORT ROD	K	1
200	311A1515-6		. SUPPORT ROD	L	1
205	302T0200-62		. BUSHING	K, L	4
210	BACB28AP8P020		. BUSHING	K, L	4
215	BACB28Y10M035		. BUSHING	M, N	1
220	BACB28Y6E035		. BUSHING	M, N	1
225	311A1213-6		. FITTING	M	1
230	311A1215-6		. FITTING	N	1
235	P24350		. BEARING (V57606) (SPEC S302T001-226) (OPT VTB 07290 (V06710))	AA, CA	2
240	BACB28AT11B034A		. BUSHING (USED ON ITEMS 32,34)	AA, CA	4

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
240A	KJB903211V		. BUSHING (USED ON ITEM 34A) (V50632)	GA	4
245	BACB28AT12B034A		. BUSHING	AA, CA	4
250	LM433-40		. ISOLATOR (V76005) (SPEC S302A006-3) (OPT 806844 (V06710))	BA	2
255	P24360		. BEARING (V57606) (SPEC S302T001-227) (OPT VTB 07300 (V06710))	AA, CA	2
260	311A1563-6		. BUSHING	BA	4
265	311A1562-3		. CROSSBEAM	AA, CA	1
270	311A1562-4		. CROSSBEAM	BA	1
			INSTALLATION PARTS		
500	310A1031-1		CROSSPIN (PRE SB 737-71-1149R2)	A	1
505	310A1042-7		BRACKET ASSY	A	1
510	310A1042-12		. BRACKET	A	1
515	BACN10JP4ACM		. NUTPLATE	A	1
520	MS20427M		. RIVET	A	2
525	BACN10JC16		NUT	A	1
530	310T1036-21		BOLT-SHOULDER		1

–Item not Illustrated