COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

FUEL SHUTOFF ASSEMBLY

PART NUMBER 315A1060–10, –4, –6, –7, –8, –9

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COMPONENT MAINTENANCE MANUAL

Revision No. 15
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To: All holders of FUEL SHUTOFF ASSEMBLY 76-11-16.

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.

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Location of Change	Description of Change
	NO HIGHLIGHTS

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COMPONENT MAINTENANCE MANUAL

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

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TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL

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

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COMPONENT MAINTENANCE MANUAL

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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.

FUEL SHUTOFF ASSEMBLY - DESCRIPTION AND OPERATION

1. **Description and Operation**

   A. The fuel shutoff assembly has a pulley on a rotating shaft in a bracket. It is located in the strut adjacent to the strut drum control box and guides the start-off cable in the engine start system.

2. **Leading Particulars (Approximate)**

   A. Width – 6 inches

   B. Length – 6 inches

   C. Height – 6 inches (-6, -7, -9, -10), 4 inches (-4, -8)

   D. Weight – 8 pounds

(NOT APPLICABLE)

DISASSEMBLY

1. General

A. This procedure has the data necessary to disassemble the fuel shutoff assembly.

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

C. Refer to IPL Figure 1 for item numbers.

2. Disassembly

A. Remove nut (10), washer (15, 20), and bolt (25, 30).

B. Remove nut (45), washer (50), spacer (55A, 60), and bolt (35, 40).

C. Separate support bracket (270, 275) from support bracket (170, 175) and remove quadrant assembly (130) with attached parts.

D. Remove nut (75), washer (80), spacer (85A, 90A), and bolt (65A, 70) from support bracket (270, 275).

E. Do not remove screws (110), retainer (115), spacers (95, 100, 105, 125), or bearing (120) from quadrant assembly (130) unless repair or replacement is necessary.

F. Do not remove fillers (180, 185, 235), doubler (210), channel (220, 225, 260), nylon block (225), or brackets (245, 280) unless replacement is necessary.

(NOT APPLICABLE)

CHECK

1. General

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

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

C. Refer to IPL Figure 1 for item numbers.

2. Check

A. References

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

B. Procedure

(1) Examine all parts for defects by standard industry practices. Refer to Fits and Clearances for design dimensions and wear limits.

(2) Magnetic particle check (SOPM 20-20-01) – Bolt (25), shaft (30), washer (15), spacer (125).

(3) Penetrant check (SOPM 20-20-02) – Spacer (95, 100, 105), retainer (115), bracket (170, 175, 245), filler (180, 185, 235), channel (200, 220, 255, 260).

REPAIR

1. **Content**

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

Table 601:

P/N	NAME	REPAIR
315A1062	QUADRANT	1-1, 1-2
315A1060	FUEL SHUTOFF	2-1, 2-2
- - -	MISCELLANEOUS PARTS REFINISH	3-1

2. **Standard Practices**

   A. Refer to these standard practices, as applicable, for details of procedures in individual repairs.
   - 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 20-42-05 Bright Cadmium Plating
   - SOPM 20-43-01 Cadmium Plating
   - SOPM 20-43-03 Chemical Conversion Coatings for Aluminum
   - SOPM 20-50-03 Bearing Installation and Retention
   - SOPM 20-50-19 General Sealing
   - SOPM 20-60-02 Finishing Materials
   - SOPM 20-60-03 Lubricants
   - SOPM 20-60-04 Miscellaneous Materials

3. **Materials**

   NOTE: Equivalent substitutes can be used.

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

   B. Sealant – sealant, A00160 BMS 5-63

   C. Grease – grease, D00633 BMS 3-33 or grease, D00015 BMS 3-24

   D. Enamel – coating, C50050 BMS 10-60, color 702

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
TIR	TOTAL INDICATOR READING

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

QUADRANT ASSEMBLY - REPAIR 1-1

315A1062–1, –2

1. General

A. This procedure has the data necessary to repair the quadrant 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 the REPAIR-GENERAL, Figure 601 for the Standard True Position Dimensioning Symbols shown in the repair.

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

2. Bearing Replacement

NOTE: Bearings (120) and spacer (125) are not part of quadrant assembly (130). They are included here for easier replacement.

A. Remove screws (110) and retainer (115).

B. Remove bearings (120) and spacer (125).

C. Install spacer (125) and press in replacement bearings (120), with grease, D00633 as the installation finish (SOPM 20-50-03).

D. Install retainer plate (115) with screws (110).

3. Bushing Replacement (REPAIR 1-1, Figure 601)

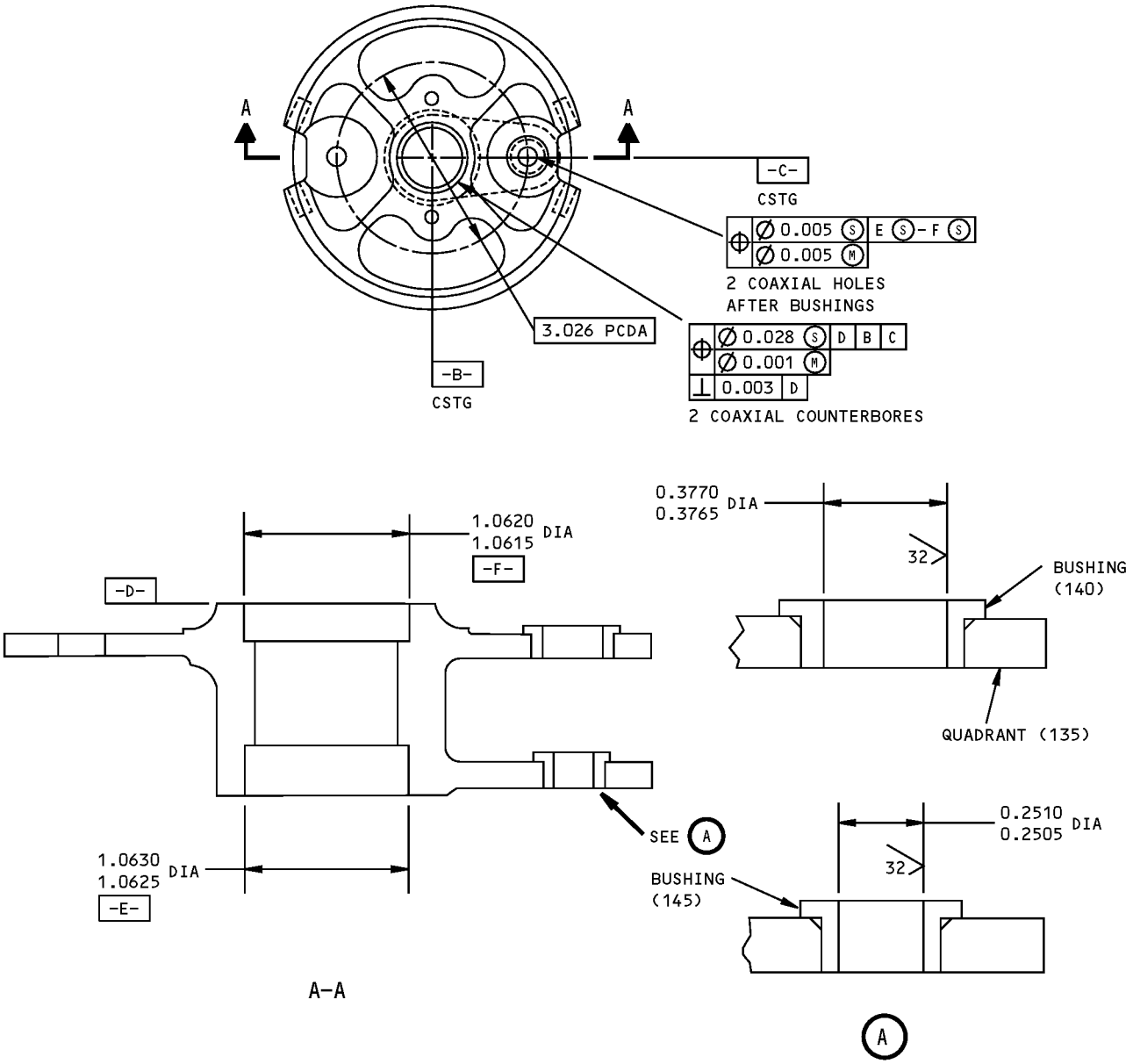
A. Remove the old bushings (140, 145).

B. If you find defects on quadrant surfaces, refer to REPAIR 1-2 for repair instructions.

C. Install replacement bushings by the shrink-fit method (SOPM 20-50-03) with wet sealant, A00160.

D. Machine the bushings to design dimensions.

E. Fillet seal the bushings with sealant, A00160 (SOPM 20-50-19).



ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

315A1062-1,-2 Bushing Replacement
Figure 601

QUADRANT ASSEMBLY - REPAIR 1-2

315A1062–1, –2

1. General

A. This procedure has the data necessary to repair the quadrant 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 the REPAIR-GENERAL, Figure 601 for the Standard True Position Dimensioning Symbols shown in the repair.

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

2. Holes for Bushings REPAIR 1-2, Figure 601

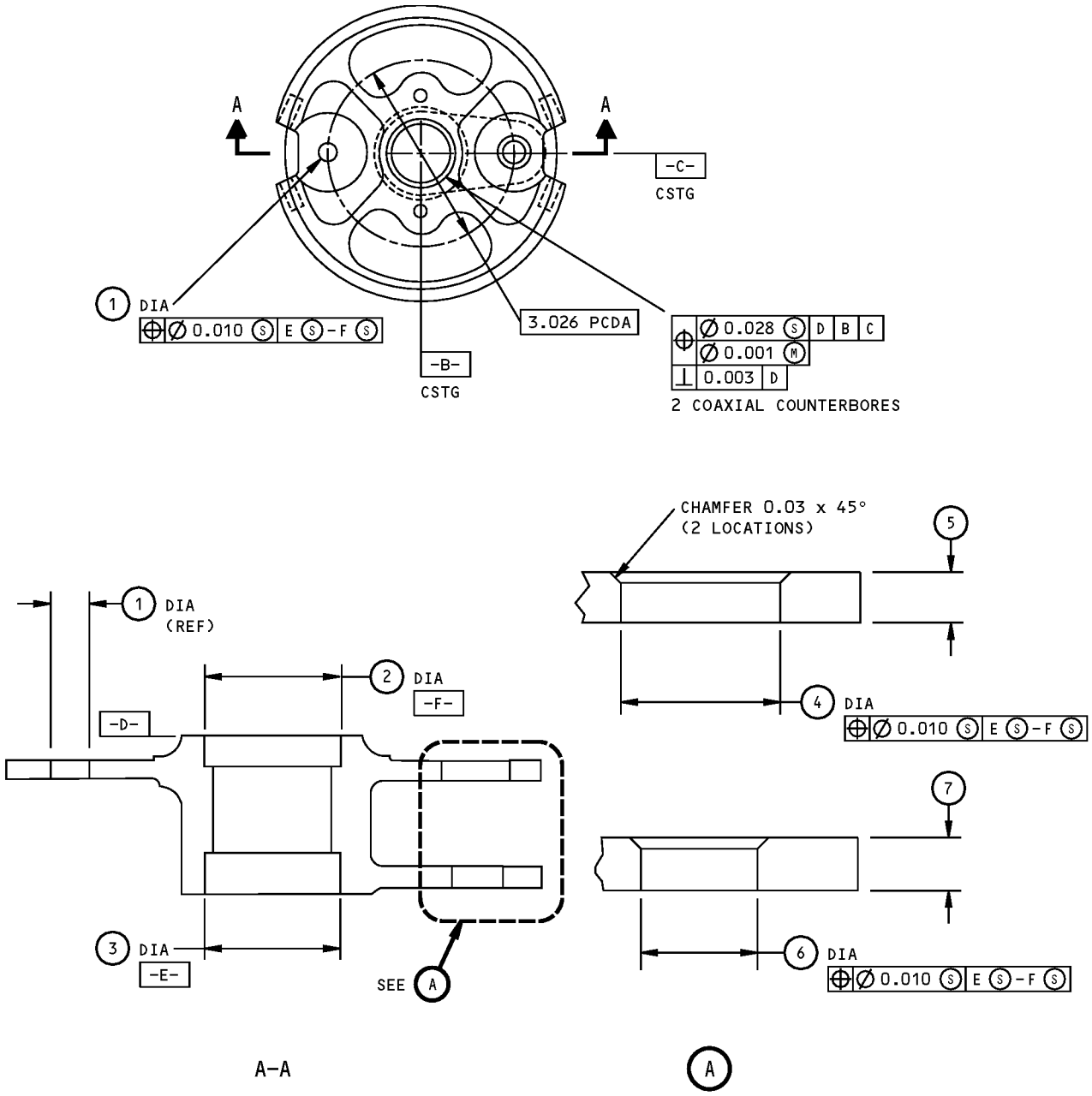
A. Machine as necessary, within repair limits, to remove defects.

B. Make oversize bushings REPAIR 1-2, Figure 602 to adjust for the material removed.

C. Install the bushings as specified in REPAIR 1-1.

3. Refinish

A. For repair of surfaces which is only replacement of the original finish, refer to Refinish instructions, REPAIR 1-2, Figure 601.



QUADRANT (135,135A)
MADE FROM 315A1059-1

Quadrant Hole Repair and Refinish
Figure 601 (Sheet 1 of 2)

REFERENCE NUMBER	(1)	(2)	(3)	(4)	(5) ▷2	(5) ▷3	(6)	(7)
DESIGN DIMENSION	0.261 0.257	1.0620 1.0615	1.0630 1.0625	0.5006 0.5000	0.170 0.150	0.110 0.090	0.3756 0.3750	0.170 0.150
REPAIR LIMIT	—	—	—	0.5606 ▷1	—	—	0.4356 ▷1	—

REFINISH

CHROMIC ACID ANODIZE (F-17.-04). APPLY BMS 10-11 TYPE 1 PRIMER (F-20.03) BUT NO PRIMER IN BORES FOR BUSHINGS OR BEARINGS.

REPAIR

REF ▷1

125 √ ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

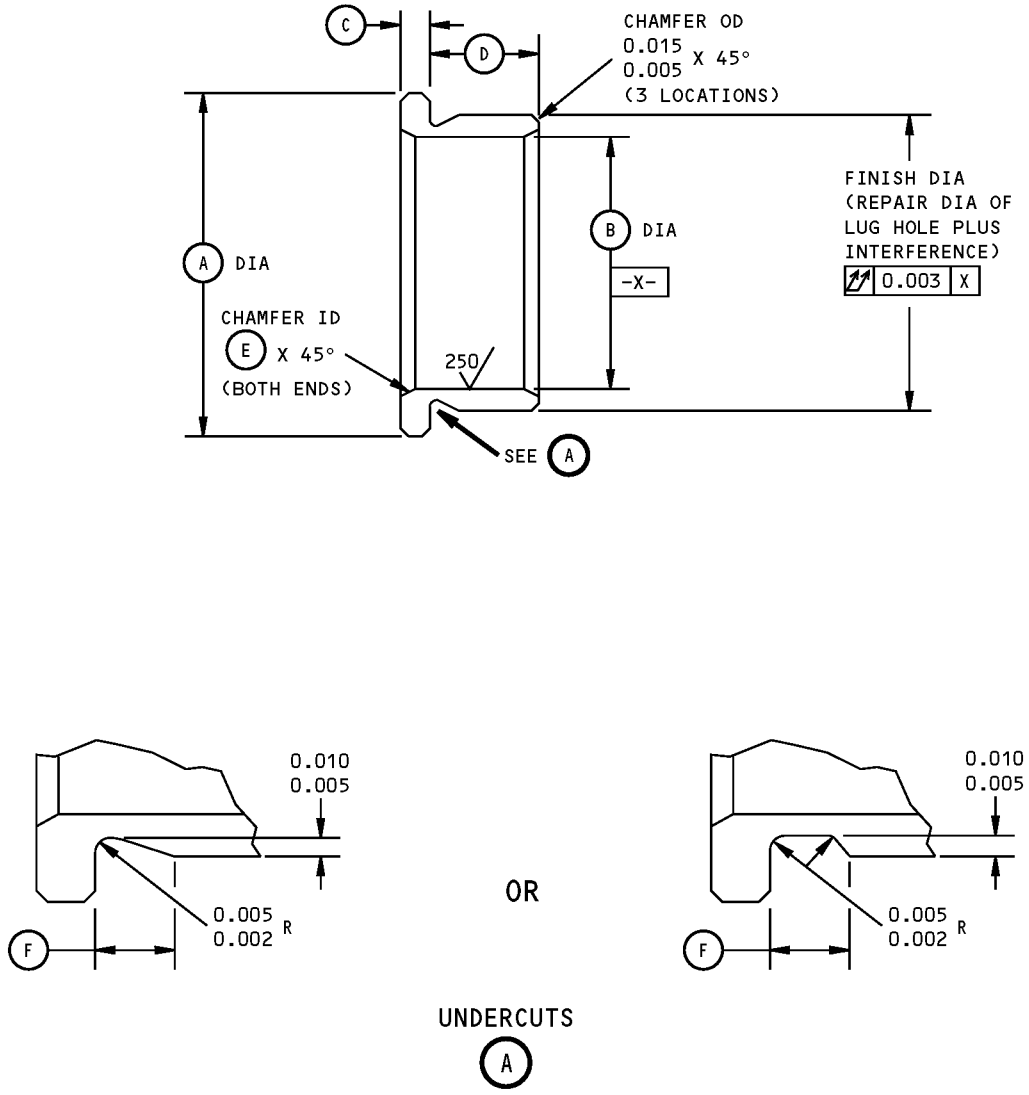
▷1 REPAIR LIMIT FOR INSTALLATION OF OVERSIZE BUSHINGS

▷2 315A1062-1 CONFIG

▷3 315A1062-2 CONFIG

QUADRANT (135,135A)
MADE FROM 315A1059-1

Quadrant Hole Repair and Refinish
Figure 601 (Sheet 2 of 2)



Oversize Bushing Details
Figure 602 (Sheet 1 of 2)

HOLE LOCATION (FIG. 601)	REPLACES BUSHING (IPL FIG. 1)	(A)	(B)	(C)	(D)	(E)	(F)	INTER-FERENCE	MATERIAL
(4)	(140) BACB28AT06B015C	0.630 0.620	0.366 0.359	0.065 0.060	0.150 0.145	0.025 0.015	0.030 0.015	0.0016 0.0004	1
(4)	(140A) BACB28AT06B009C	0.630 0.620	0.366 0.359	0.065 0.060	0.090 0.085	0.025 0.015	—	0.0016 0.0004	1
(6)	(145) BACB28AP04P015	0.540 0.530	0.241 0.234	0.065 0.060	0.150 0.145	0.025 0.015	0.030 0.015	0.0015 0.0003	2
(6)	(145A) BACB28AP04P009	0.540 0.530	0.241 0.234	0.065 0.060	0.090 0.085	0.025 0.015	—	0.0015 0.0003	2

1 AL-NI-BRZ (AMS 4640)

2 15-5PH OR 17-4PH CRES, 180-200 KSI

63 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES

FINISH: CADMIUM PLATE (F-15.06) OR ZINC-NICKEL PLATE (F-15.40), ALL SURFACES (OPT IN BORE)

MATERIAL: AS NOTED

ALL DIMENSIONS ARE IN INCHES

Oversize Bushing Details
Figure 602 (Sheet 2 of 2)

FUEL SHUTOFF ASSEMBLY - REPAIR 2-1

315A1060–4, –6, –7, –8, –9, –10

1. General

A. This procedure has the data necessary to repair the fuel shutoff 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 REPAIR-GENERAL, Figure 601 for the Standard True Position Dimensioning Symbols shown in the repair.

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

2. Bushing Replacement (REPAIR 2-1, Figure 601)

A. Remove the old bushings (155, 160, 165).

B. If you find defects on hole surfaces, refer to REPAIR 2-2 for repair instructions.

C. Install replacement bushings by the shrink-fit method (SOPM 20-50-03) with wet sealant, A00160.

D. Machine the bushings to design dimensions and finish.

3. Bracket Replacement (IPL Figure 1)

A. Bracket (275):

(1) Remove fillers (180), doubler (210), channel (220), and nylon block (225) from bracket (275).

(2) Replace parts as necessary.

(3) Install fillers (180), doubler (210), channel (220), and nylon block (225) at locations shown in REPAIR 2-1, Figure 602.

(4) Assemble fuel shutoff assembly and locate mounting holes as shown in REPAIR 2-1, Figure 602.

B. Bracket (175):

(1) Remove channels (200, 280) and fillers (185), if used, from bracket (175).

(2) Replace parts as necessary.

(3) Install fillers (185), if used, and channels (200, 280) at locations shown in REPAIR 2-1, Figure 602.

(4) Assemble fuel shutoff assembly and locate mounting holes as shown in REPAIR 2-1, Figure 602.

C. Bracket (270):

(1) Remove doubler (210), channel (255, 260), and fillers (235A) from bracket (270).

(2) Replace parts as necessary.

(3) Install doubler (210), channel (255, 260), and fillers (235A) as shown in REPAIR 2-1, Figure 603.

(4) Assemble fuel shutoff assembly and locate mounting holes as shown in REPAIR 2-1, Figure 603.

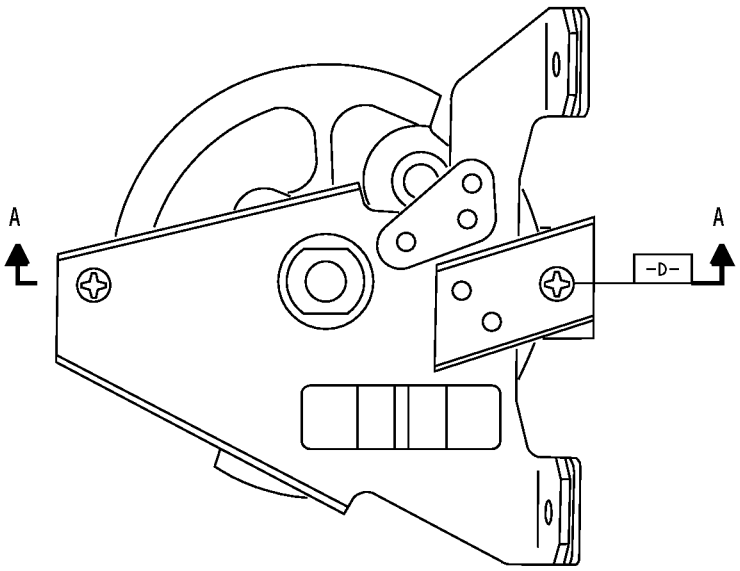
D. Bracket (170):

(1) Remove bracket (245) and fillers (235A) from bracket (170).

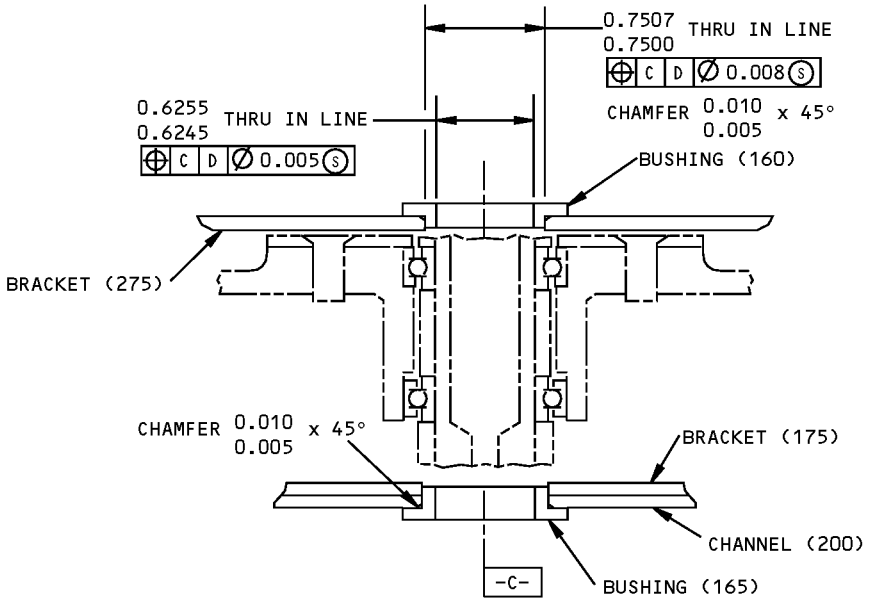
(2) Replace parts as necessary.

(3) Install a replacement bracket (245) and fillers (235A) on bracket (170).

(4) Assemble fuel shutoff assembly and locate mounting holes as shown in REPAIR 2-1, Figure 603.

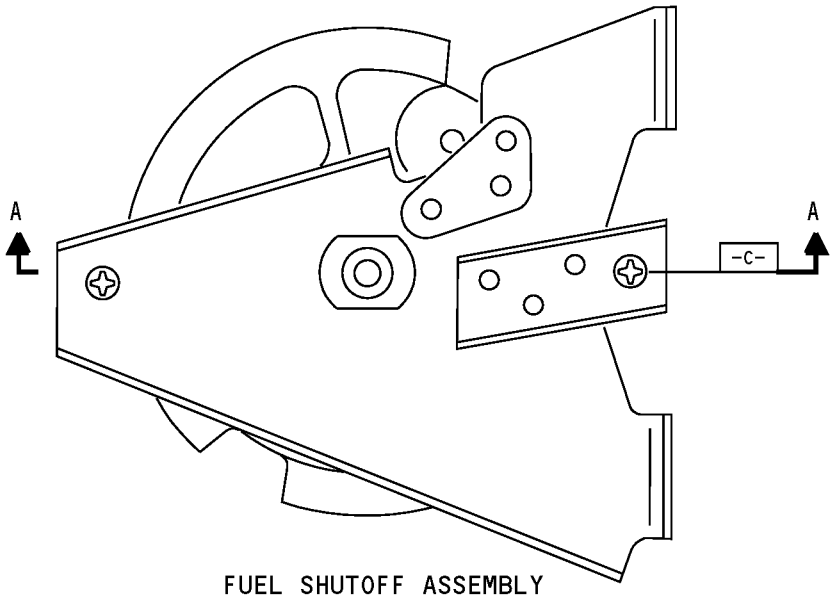


FUEL SHUTOFF ASSEMBLY
315A1060-6,-7

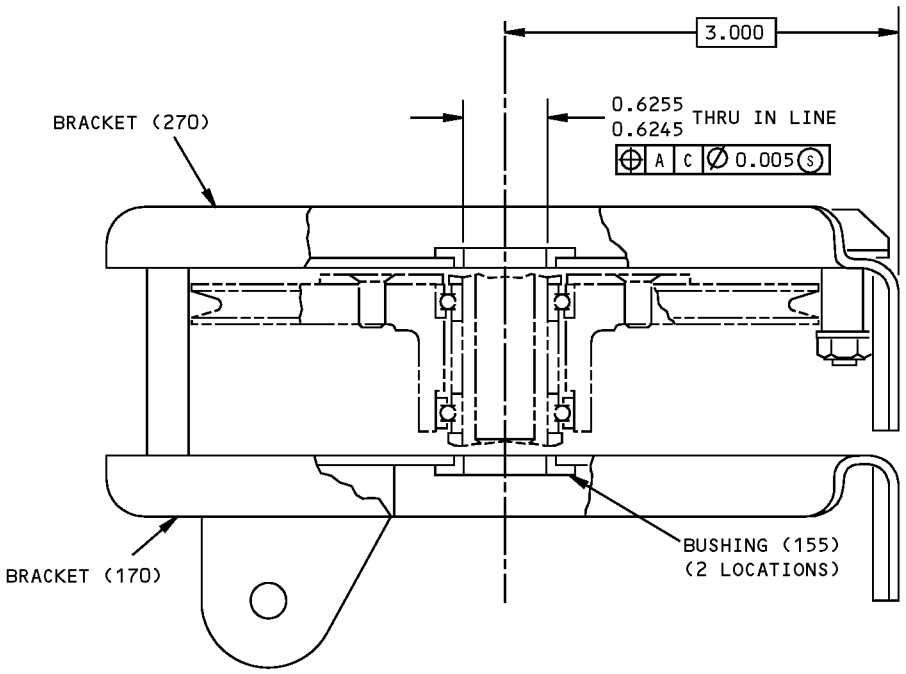


315A1060-6,-7
A-A

Fuel Shutoff Assembly Bushing Replacement
Figure 601 (Sheet 1 of 2)



FUEL SHUTOFF ASSEMBLY
315A1060-4,-8

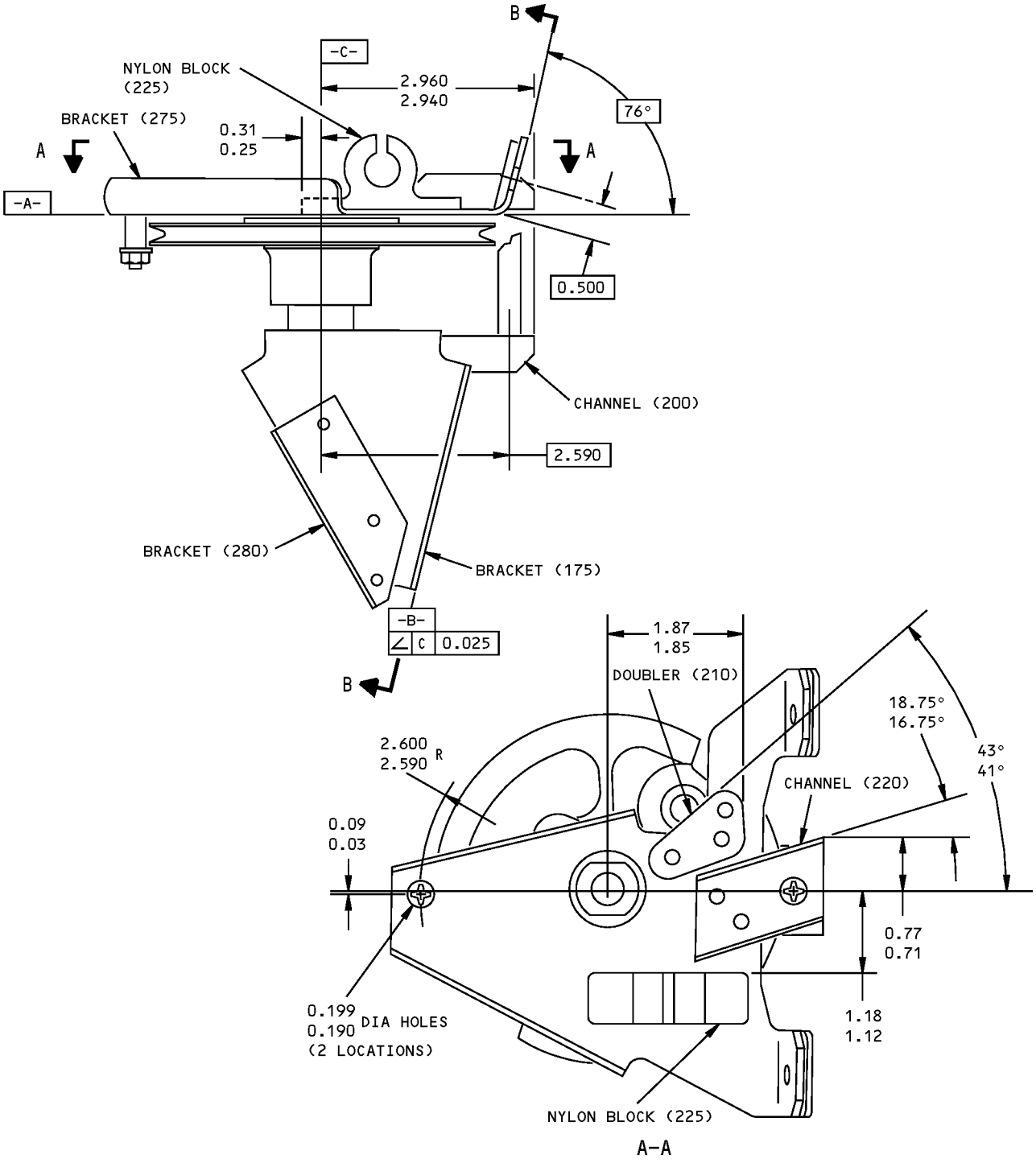


315A1060-4,-8
A-A

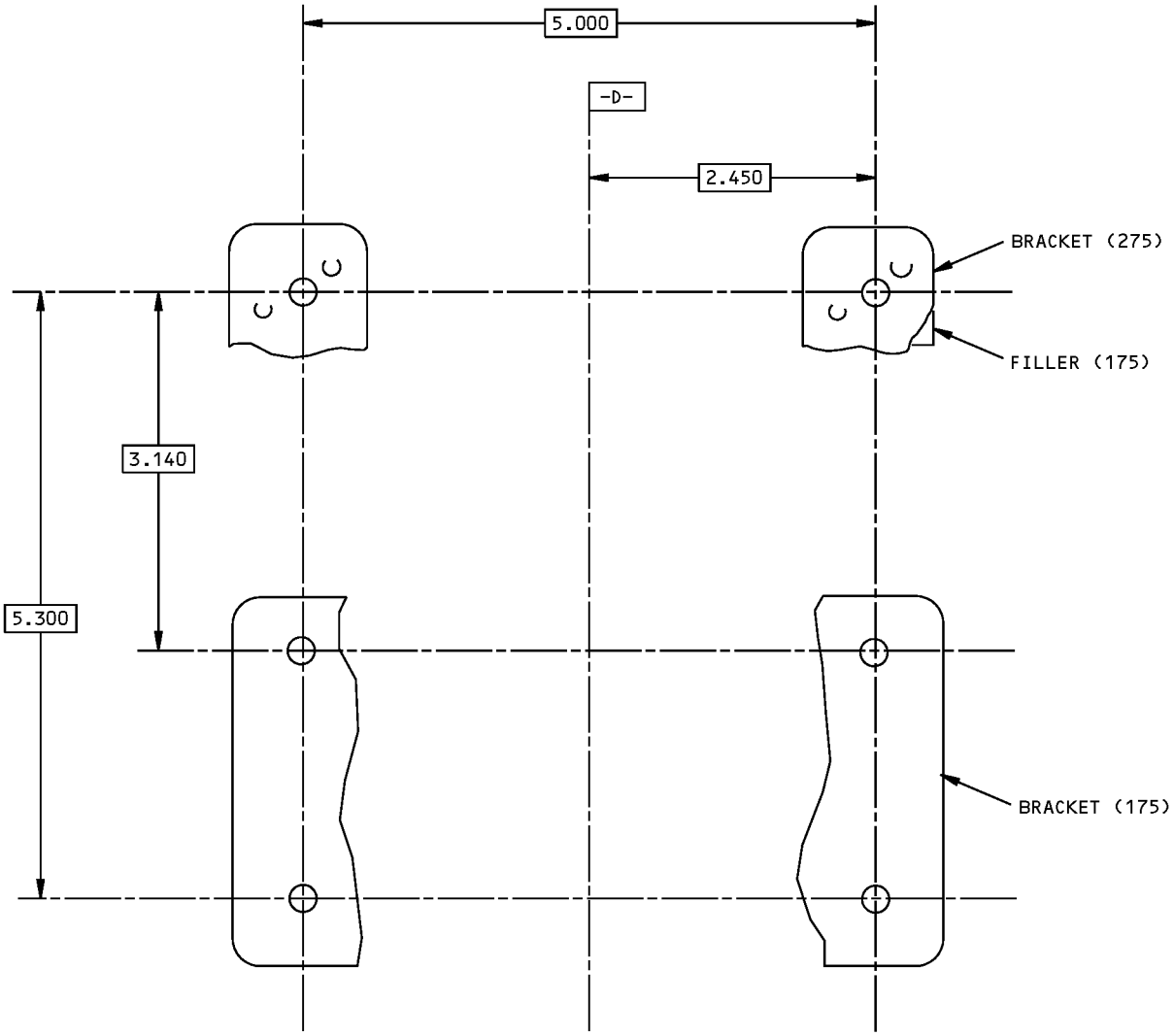
ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

Fuel Shutoff Assembly Bushing Replacement
Figure 601 (Sheet 2 of 2)



315A1060-6,-7,-9,-10 Fuel Shutoff Assembly Bracket Replacement
Figure 602 (Sheet 1 of 2)



ATTACH POINTS ONLY SHOWN
B-B

REFINISH

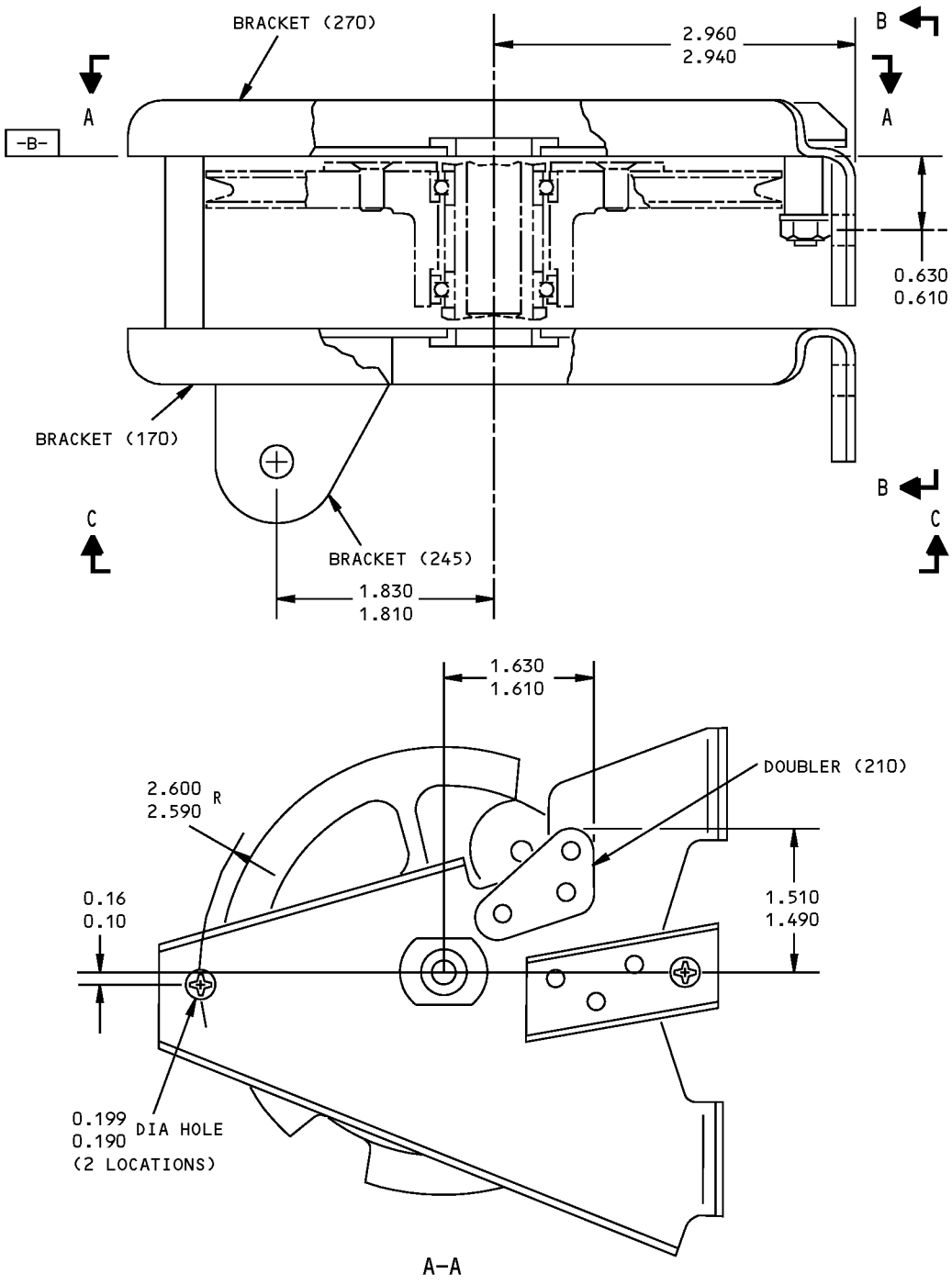
BRACKET (175, 275): CHROMIC ACID ANODIZE AND APPLY BMS 10-11, TYPE 1 PRIMER (F-18.13)

MATERIAL: BRACKETS - AL ALLOY

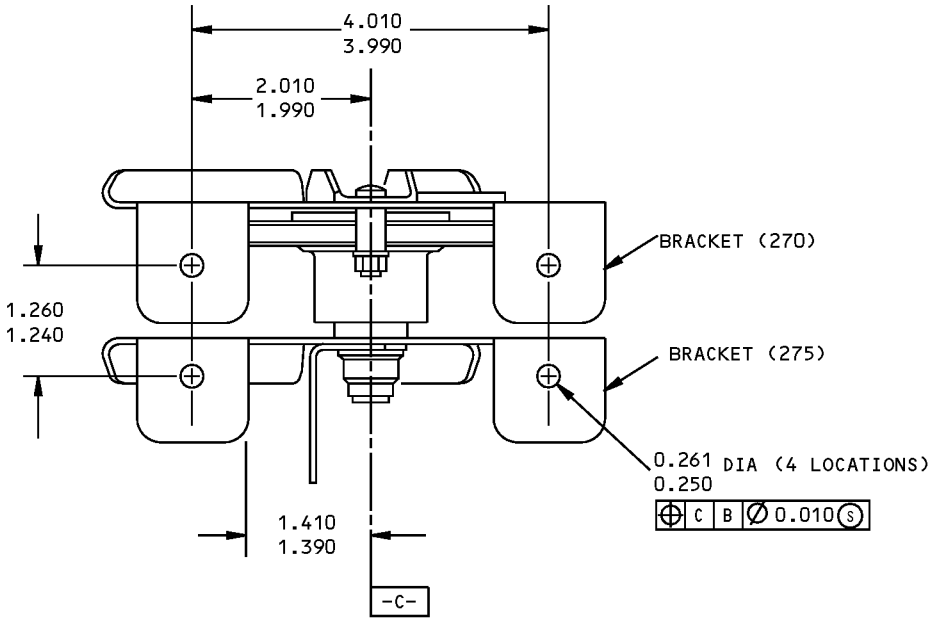
ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

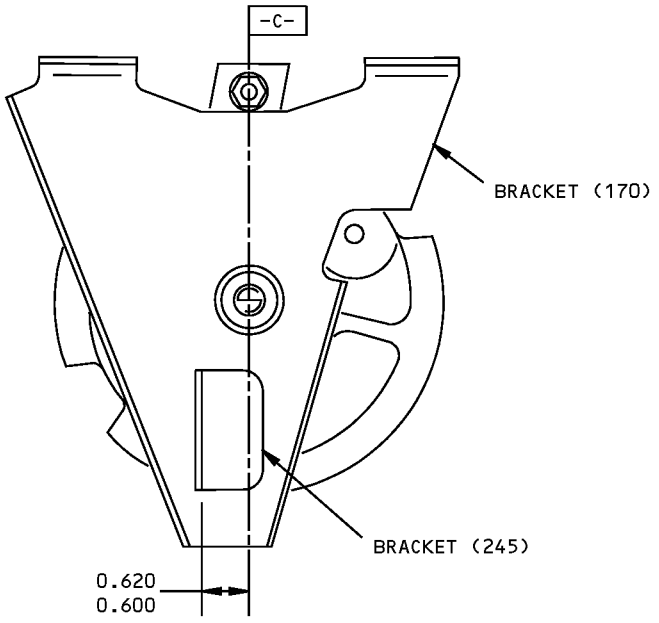
315A1060-6,-7,-9,-10 Fuel Shutoff Assembly Bracket Replacement
Figure 602 (Sheet 2 of 2)



315A1060-4,-8 Fuel Shutoff Assembly Bracket Replacement
Figure 603 (Sheet 1 of 2)



B–B



C–C

REFINISH

BRACKET (170, 270): CHROMIC ACID ANODIZE AND APPLY BMS 10-11, TYPE 1 PRIMER (F-18.13)

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

315A1060-4,-8 Fuel Shutoff Assembly Bracket Replacement
Figure 603 (Sheet 2 of 2)

FUEL SHUTOFF ASSEMBLY - REPAIR 2-2

315A1060–4, –8

1. General

A. This procedure has the data necessary to repair the fuel shutoff 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 the REPAIR-GENERAL, Figure 601 for the Standard True Position Dimensioning Symbols shown in the repair.

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

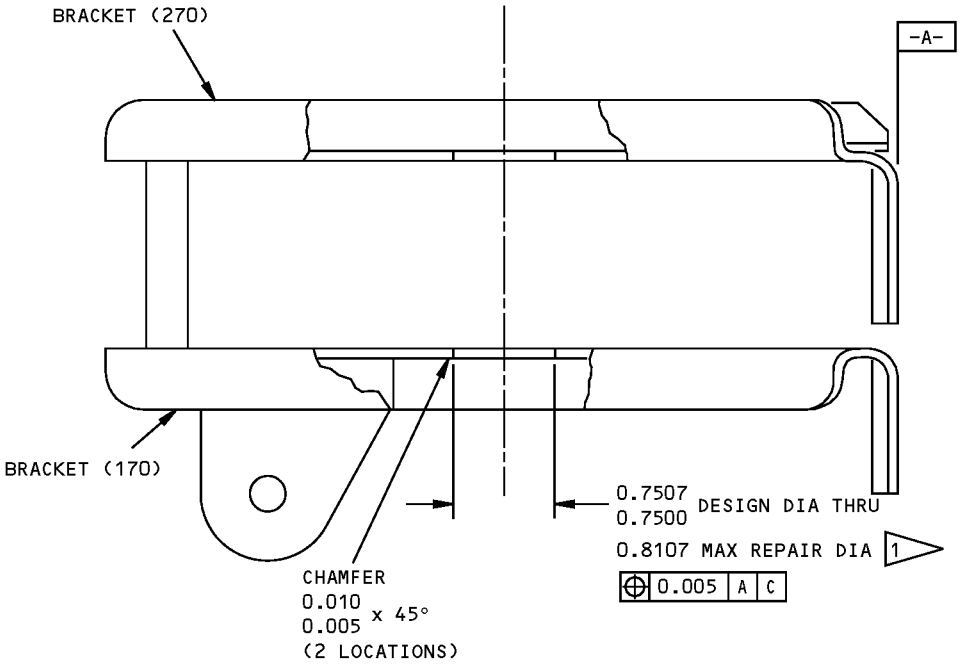
2. Holes for Bushings (REPAIR 2-2, Figure 601)

NOTE: For repair of surfaces which is only replacement of the original finish, refer to Refinish instructions, REPAIR 3-1.

A. Machine as necessary, within repair limits, to remove defects.

B. Make oversize bushings (REPAIR 2-2, Figure 602) to adjust for the material removed.

C. Install the bushings as specified in REPAIR 2-1.



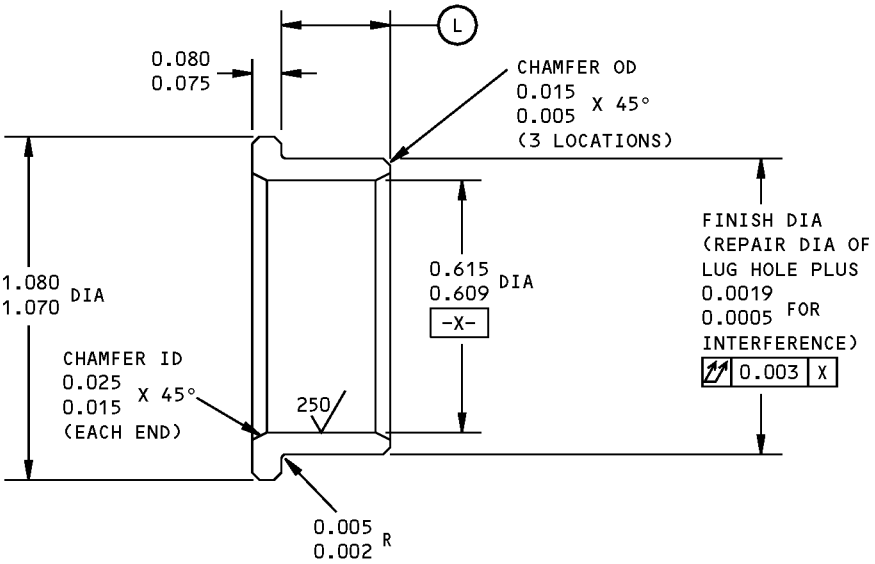
1 LIMIT FOR INSTALLATION OF OVERSIZE BUSHING

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

315A1060-4,-8 Fuel Shutoff Assembly Bushing Hole Repair
Figure 601



REPLACES BUSHING (IPL FIG. 1)	L
(155,160) BACB28AP10P007	0.070 0.065
(165) BACB28AP10P014	0.140 0.135

63 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES

FINISH: CADMIUM PLATE (F-15.06) OR ZINC-NICKEL PLATE (F-15.40) ALL SURFACES (OPT IN BORE)

MATERIAL: 15-5PH OR 17-4PH CRES 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

Oversize Bushing Details
Figure 602

MISCELLANEOUS PARTS REFINISH - REPAIR 3-1

1. General

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

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 and IPL Figure 1 for the item numbers.

2. Refinish details

A. Repair of these parts is only replacement of the original finish. Refer to REPAIR 3-1, Table 601 for refinish details.

Table 601: Refinish Details

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Washer (15)	15-5PH CRES 125-145 ksi	Cadmium plate and apply primer, C00259 (F-16.01).
Bolt (25), Shaft (30), Spacer (125)	15-5PH CRES 125-145 ksi	Passivate (F-17.25, which replaces F-17.09).
Spacer (95,100, 105), Doubler (210), Brackets (245), Channels (170,175,176,200, 220,255,260,270, 275)	Al alloy	Chromic acid anodize and apply primer, C00259 (F-18.13).
Retainer (115)	Al alloy	Chemical treat and apply primer, C00259 (F-18.06).
Filler (180,185, 235A)	Al alloy	Chromic acid anodize (F-17.04). Apply primer, C00259 (F-20.03).
Bracket (280)	Al alloy	Chromic acid anodize and apply primer, C00259 (F-18.13) and enamel coating, C50050 (F-14.9812).

ASSEMBLY

1. General

A. This procedure has the necessary data to assemble the fuel shutoff assembly.

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

C. Refer to IPL Figure 1 for item numbers.

2. Assembly

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00015	Grease - Aircraft Bearing (Use BMS 3-24 until existing stocks are depleted, BMS 3-33 supersedes BMS 3-24)	BMS3-24 (Superseded by BMS 3-33)
D00633	Grease - Aircraft General Purpose	BMS3-33

B. References

Reference	Title
SOPM 20-50-01	BOLT AND NUT INSTALLATION
SOPM 20-60-03	LUBRICANTS

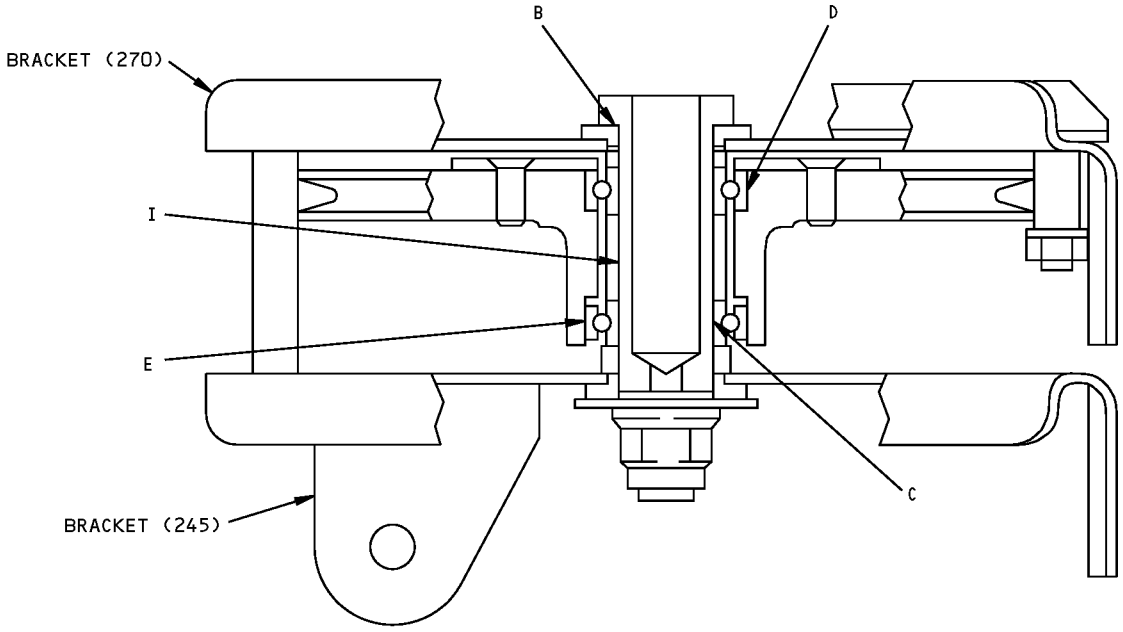
C. Procedure

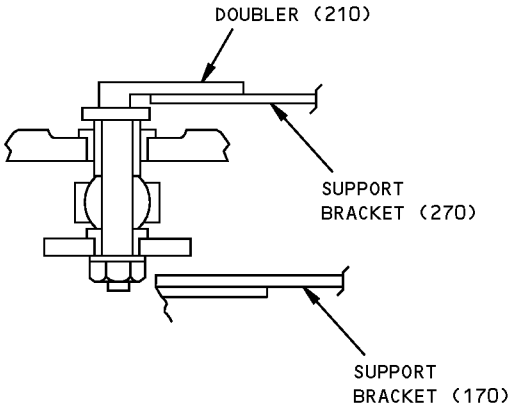
NOTE: For bolt and nut installation, refer to SOPM 20-50-01. For lubricants, refer to SOPM 20-60-03.

(1) Attach bolt (65A, 70), spacer (85, 90A), washer (80), and nut (75) to support bracket (270, 275).

(2) Install bolt (25, 30) through support brackets (170, 175, 270, 275) and quadrant assembly (130). Attach with washer (15, 20) and nut (10). Install the bolt with grease, D00633 or grease, D00015 on the shank, but do not apply grease to threads. Tighten the nut to 250-300 lb-in.

(3) Install bolt (35, 40), spacer (55A, 60), washer (50), and nut (45).





Fits and Clearances
Figure 801 (Sheet 1 of 2)

Ref Letter Fig.801	Mating Item No. IPL Fig.1	Design Dimension				Service Wear Limit		
		Dimension		Assembly Clearance		Dimension		Maximum Clearance
		Min	Max	Min	Max	Min	Max	
B	ID 155 OD 25	0.6245 0.6235	0.6255 0.6240	0.0005	0.0020	0.6219	0.6276	0.0036
C	ID 120 OD 25	0.6243 0.6235	0.6257 0.6240	0.0003	0.0022	0.6219	0.6278	0.0038
D	ID 130 OD 120	1.0615 1.0615	1.0620 1.0625	0.0005	-0.001 <1>	1.0594	1.0651	0.0026
E	ID 130 OD 120	1.0625 1.0615	1.0630 1.0625	0.0000	0.0015	1.0594	1.0661	0.0036
I	ID 125 OD 25	0.639 0.6235	0.649 0.6240	0.0150	0.0255	0.6219	0.6511	0.0271

ALL DIMENSIONS ARE IN INCHES

<1> NEGATIVE VALUES ARE AN INTERFERENCE FIT

Fits and Clearances
Figure 801 (Sheet 2 of 2)

FOR TORQUE VALUES OF STANDARD FASTENERS, REFER TO SOPM 20-50-01			
ITEM NO. IPL FIG. 1	NAME	TORQUE	
		POUND-INCHES	POUND-FEET
10	NUT	250-300	

Torque Table
Figure 802

(NOT APPLICABLE)

ILLUSTRATED PARTS LIST

1. Introduction

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

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

1 2 3 4 5 6 7

. Assembly

. Attaching parts for assembly

. . Detail parts for assembly

. . Subassembly

. . Attaching parts for subassembly

. . . Detail parts for subassembly

. . . Sub-subassembly

. . . Attaching parts for subassembly

. . . . . Details parts for sub-subassembly

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

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

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

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

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

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

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

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

H. Interchangeable Parts

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

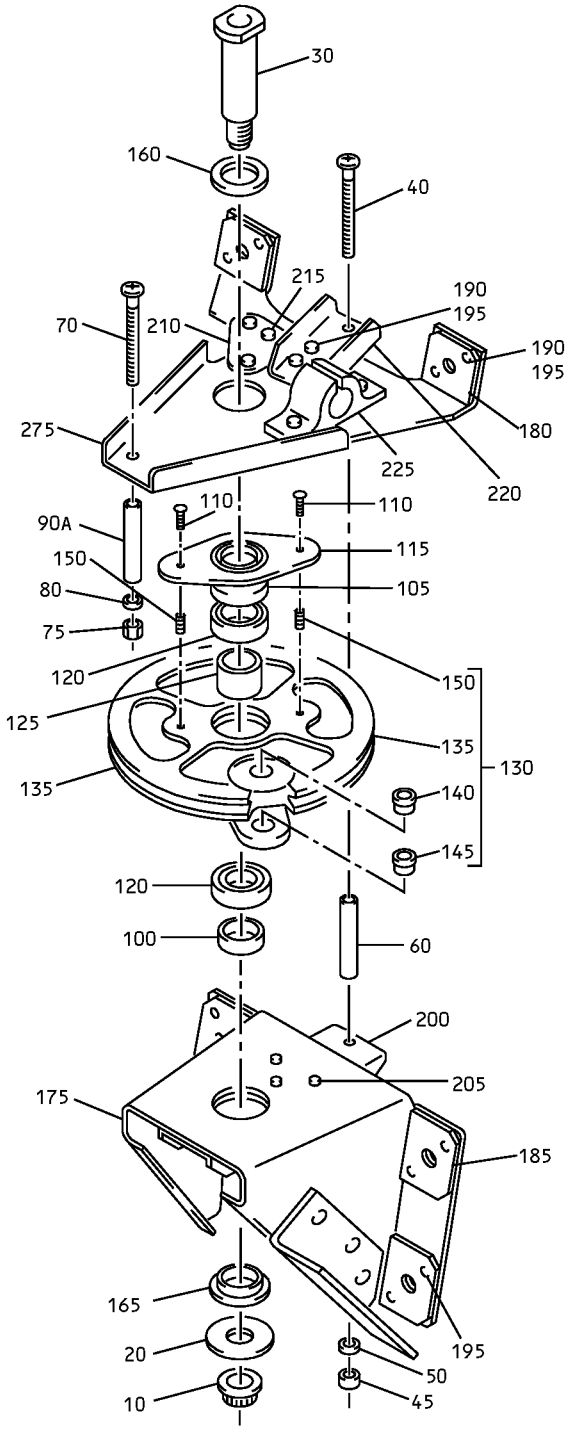
VENDOR CODES

Code	Name
21335	TIMKEN US CORPORATION DIV FAFNIR 336 MECHANIC STREET LEBANON, NH 03766-0267 FORMERLY FAFNIR BRG AND TEXTRON INC FAFNIR DIV IN NEW BRITAIN, CONNECTICUT ; FORMERLY TORRINGTON CO THE SPECIAL PRODUCTS DIV SUB OF THE INGERSOLL-RAND CO V8D210 FORMERLY TORRINGTON CO FAFNIR BEARING DIV IN TORRINGTON, CT

NUMERICAL INDEX

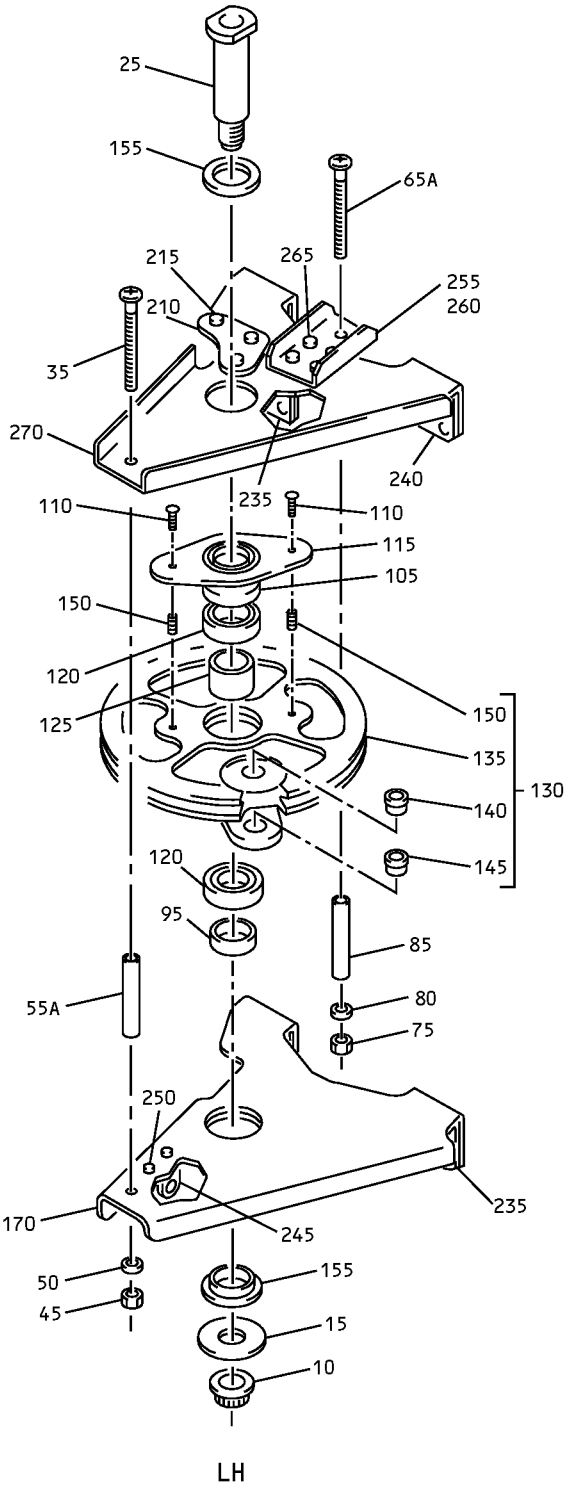
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
315A1052-1		1	15	1
315A1060-10		1	5C	RF
315A1060-4		1	1	RF
315A1060-6		1	5	RF
315A1060-7		1	5A	RF
315A1060-8		1	1A	RF
315A1060-9		1	5B	RF
315A1062-1		1	130	1
315A1062-2		1	130B	1
315A1065-4		1	25	1
315A1065-5		1	30	1
315A1072-1		1	125	1
315A1073-1		1	115	1
315A1078-1		1	270	1
315A1078-19		1	225	1
315A1078-2		1	170	1
315A1078-3		1	245	1
315A1078-30		1	275	1
315A1078-31		1	210	1
315A1078-32		1	220	1
315A1078-35		1	255	1
315A1078-37		1	200	1
315A1078-41		1	175	1
315A1078-42		1	225A	1
315A1078-43		1	260	1
315A1078-45		1	176	1
315A1081-4		1	180	2
315A1081-5		1	235A	4
315A1081-6		1	185	4
315A1095-1		1	95	1
315A1095-2		1	105	1
315A1095-4		1	100	1
65C26842-45		1	280	1
AN960-10L		1	50	1

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
		1	80	1
AN960-716		1	20	1
B538DDA3257		1	120	2
BACB10FU10		1	120A	2
BACB20AP10P014		1	165	1
BACB28AP04P009		1	145A	1
BACB28AP04P015		1	145	1
BACB28AP10P007		1	155	2
		1	160	1
BACB28AT06B009C		1	140A	1
BACB28AT06B015C		1	140	1
BACR15BA15AD		1	240	8
BACR15BA5AD		1	190	6
		1	195	14
		1	265	3
BACR15BA5DD		1	230	2
BACR15BB5AD		1	205	3
		1	250	2
BACR15BB6D		1	285	3
MS20427M5		1	215	3
MS21042L3		1	45	1
		1	75	1
MS21209F1-10P		1	150	2
MS24693C271		1	110	2
NAS1805-7		1	10	1
NAS43DD3-117		1	60	1
NAS43DD3-36		1	85A	1
		1	90A	1
NAS43DD3-92		1	55A	1
NAS603-16		1	70	1
NAS603-16P		1	65A	1
NAS603-32		1	35	1
NAS603-35P		1	40	1
QUADRANT 1		1	135	1
QUADRANT 2		1	135A	1



RH

Fuel Shutoff Assembly
IPL Figure 1 (Sheet 1 of 2)



Fuel Shutoff Assembly
IPL Figure 1 (Sheet 2 of 2)

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–1	315A1060-4		FUEL SHUTOFF ASSY-LH	A	RF
–1A	315A1060-8		FUEL SHUTOFF ASSY-LH	D	RF
–5	315A1060-6		FUEL SHUTOFF ASSY-RH	B	RF
–5A	315A1060-7		FUEL SHUTOFF ASSY-RH	C	RF
–5B	315A1060-9		FUEL SHUTOFF ASSY-RH	E	RF
–5C	315A1060-10		FUEL SHUTOFF ASSY-RH	F	RF
10	NAS1805-7		. NUT		1
15	315A1052-1		. WASHER	A, D	1
20	AN960-716		. WASHER	B, C, E, F	1
25	315A1065-4		. BOLT	A, D	1
30	315A1065-5		. SHAFT	B, C, E, F	1
35	NAS603-32		. SCREW	A, D	1
40	NAS603-35P		. SCREW		1
45	MS21042L3		. NUT	B, C, E, F	1
50	AN960-10L		. WASHER		1
55	NAS43DD3-98		DELETED		
55A	NAS43DD3-92		. SPACER	A, D	1
60	NAS43DD3-117		. SPACER	B, C, E, F	1
65	NAS603-14P		DELETED		
65A	NAS603-16P		. SCREW		1
70	NAS603-16		. SCREW	B, C, E, F	1
75	MS21042L3		. NUT	B, C, E, F	1
80	AN960-10L		. WASHER		1
85	NAS43DD32		DELETED		
85A	NAS43DD3-36		. SPACER	A, D	1
90	NAS43DD36		DELETED		
90A	NAS43DD3-36		. SPACER	B, C, E, F	1
95	315A1095-1		. SPACER	A, D	1
100	315A1095-4		. SPACER	B, C, E, F	1
105	315A1095-2		. SPACER		1
110	MS24693C271		. SCREW	B, C, E, F	2

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
115	315A1073-1		. RETAINER PLATE		1
120	B538DDA3257		. BEARING (V21335) (OPT ITEM 120A)		2
–120A	BACB10FU10		. BEARING (PREFERRED) (OPT ITEM 120)	D, F	2
125	315A1072-1		. SPACER		1
130	315A1062-1		. QUADRANT ASSY (OPT ITEM 130A)		1
–130A	315A1062-1		DELETED		
–130B	315A1062-2		. QUADRANT ASSY (PREFERRED)		1
–130C	315A1062-2		DELETED		
135	QUADRANT 1		. . QUADRANT (MAKE FROM 315A1059-1 CASTING) (USED ON ITEM 130)		1
–135A	QUADRANT 2		. . QUADRANT (MAKE FROM 315A1059-1 CASTING) (USED ON ITEM 130B)		1
140	BACB28AT06B015C		. . BUSHING (USED ON ITEM 130)		1
–140A	BACB28AT06B009C		. . BUSHING (USED ON ITEM 130B)		1
145	BACB28AP04P015		. . BUSHING (USED ON ITEM 130)		1
–145A	BACB28AP04P009		. . BUSHING (USED ON ITEM 130B)		1
150	MS21209F1-10P		. . INSERT		2
155	BACB28AP10P007		. BUSHING	A, D	2
160	BACB28AP10P007		. BUSHING	B, C, E, F	1
165	BACB20AP10P014		. BUSHING	B, C, E, F	1
170	315A1078-2		. SUPPORT BRACKET	A, D	1
175	315A1078-41		. SUPPORT BRACKET	B, C, E	1
–176	315A1078-45		. SUPPORT BRACKET	F	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–					
180	315A1081-4		. FILLER		2
185	315A1081-6		. FILLER	C, E, F	4
190	BACR15BA5AD		. RIVET	B	6
195	BACR15BA5AD		. RIVET	C, E, F	14
200	315A1078-37		. CHANNEL	B, C, E, F	1
205	BACR15BB5AD		. RIVET	B, C, E, F	3
210	315A1078-31		. DOUBLER		1
215	MS20427M5		. RIVET		3
220	315A1078-32		. CHANNEL	B, C, E, F	1
225	315A1078-19		. NYLON BLOCK (OPT ITEM 225A)	B, C, E, F	1
225A	315A1078-42		. NYLON BLOCK (OPT ITEM 225)	B, C, E, F	1
230	BACR15BA5DD		. RIVET	B, C, E, F	2
235	315A1081-4		DELETED		
235A	315A1081-5		. FILLER	A, D	4
240	BACR15BA15AD		. RIVET	A, D	8
245	315A1078-3		. BRACKET	A, D	1
250	BACR15BB5AD		. RIVET	A, D	2
255	315A1078-35		. CHANNEL	A	1
260	315A1078-43		. CHANNEL	D	1
265	BACR15BA5AD		. RIVET	A, D	3
270	315A1078-1		. SUPPORT BRACKET	A, D	1
275	315A1078-30		. SUPPORT BRACKET	B, C, E, F	1
280	65C26842-45		. SUPPORT BRACKET-HYD TUBING	E, F	1
285	BACR15BB6D		. RIVET	E, F	3

–Item not Illustrated