TO: ALL HOLDERS OF NOSE LANDING GEAR DOOR OPERATOR/FORWARD DOOR MECHANISM COMPONENTS COMPONENT MAINTENANCE MANUAL 32-22-63

REVISION NO. 1 DATED APR 01/92

HIGHLIGHTS

All data formerly in manual 32-22-61 is included in this manual 32-22-63.

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
REPAIR 5-1 601-603 REPAIR 5-2 601-604 1013	Added repair for 162T4012-1,-2 bellcrank assembly and 162T4012-3,-4 bellcrank
REPAIR 5-2 605,607	Added flagnote to show assembly used on for 162T4020-1 and 161T1210-51 repair bushings
REPAIR 5-2 608	Edited without technical change

NOSE LANDING GEAR DOOR OPERATOR/ FORWARD DOOR MECHANISM COMPONENTS

PART NUMBERS: 162T4001-9,-10
162T4002-1,-3
162T4004-3
162T4010-1
162T4012-1,-2,-7,-8

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

13682

REVISION RECORD

- Retain this record in front of manual. On receipt of revision, insert revised pages in the manual, and enter revision number, date inserted and initial.

REVISION NUMBER	REVISION DATE	DATE FILED	BY	REVISION NUMBER	REVISION DATE	DATE FILED	BY

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
		PRR B10627	JAN 10/83

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*603	APR 01/92	01.1
*604	APR 01/92	01.1
*605	APR 01/92	01.1
*606	APR 01/92	01.101
*607	APR 01/92	01.1
*608	APR 01/92	01.1

* = REVISED, ADDED OR DELETED

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*1004	APR 01/92	01.1
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*1010	APR 01/92	01.1
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*1012	APR 01/92	01.1
*1013	APR 01/92	01.1
*1014	APR 01/92	01.1
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* = REVISED, ADDED OR DELETED

BOEING
COMPONENT
MAINTENANCE MANUAL

TABLE OF CONTENTS

NOTE: This manual contains overhaul data for various components in the Nose Landing Gear Forward Door Mechanism and Door Operator systems. Overhaul functions which cannot be performed by use of standard industry practices are included in the repair instructions for each component.

INTRODUCTION

The instructions in this manual provide the information necessary to perform maintenance functions ranging from simple checks and replacement to complete shop-type repair.

This manual is divided into separate sections:

1. Title Page
2. Record of Revisions
3. Temporary Revision & Service Bulletin Record
4. List of Effective Pages
5. Table of Contents
6. Introduction
7. Procedures & IPL Sections

Refer to the Table of Contents for the page location of applicable sections. An asterisked flagnote *[ ] in place of the page number indicates that no special instructions are provided since the function can be performed using standard industry practices.

The beginning of the REPAIR section includes a list of the separate repairs, a list of applicable standard Boeing practices, and an explanation of the True Position Dimensioning symbols used.

An explanation of the use of the Illustrated Parts List is provided in the Introduction to that section.

All weights and measurements used in the manual are in English units, unless otherwise stated. When metric equivalents are given they will be in parentheses following the English units.

Design changes, optional parts, configuration differences and Service Bulletin modifications create alternate part numbers. These are identified in the Illustrated Parts List (IPL) by adding an alphabetical character to the basic item number. The resulting item number is called an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless otherwise indicated.

REPAIR - GENERAL

1. Content

   A. Each separate repair, as applicable, includes check, repair, and refinish instructions.

2. Standard Practices

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

      20-20-01 Magnetic Particle Inspection
      20-20-02 Penetrant Methods of Inspection
      20-30-03 General Cleaning Procedures
      20-41-01 Decoding Table for Boeing Finish Codes
      20-41-02 Application of Chemical and Solvent Resistant Finishes
      20-42-05 Bright Cadmium Plating
      20-50-03 Bearing Installation and Retention
      20-50-05 Application of Aluminum Foil and Other Markers
      20-50-08 Application of Dry Lubricant
      32-00-03 Landing Gear Parts Lubrication Fitting Replacement

3. Materials

   NOTE: Equivalent substitutes may be used.

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

   B. Enamel -- BMS 10-60, grey, gloss (Ref 20-60-02)

   C. Sealant -- BMS 5-95 (BMS 5-79 Optional) (Ref 20-60-04)

   D. Dry Film Lubricant -- MIL-L-8937 (Ref 20-60-03)

   E. Protective Finish -- Type 41 (Ref 20-60-02)

4. Dimensioning Symbols

A. Standard True Position Dimensioning Symbols used in applicable repair procedures are shown in Fig. 601.

⏤	STRAIGHTNESS
▱	FLATNESS
⊥	PERPENDICULARITY (OR SQUARENESS)
//	PARALLELISM
○	ROUNDNESS
⌭	CYLINDRICITY
⌒	PROFILE OF A LINE
⌓	PROFILE OF A SURFACE
◎	CONCENTRICITY
⌯	SYMMETRY
∠	ANGULARITY
↗	RUNOUT
⌖	THEORETICAL EXACT POSITION OF A FEATURE (TRUE POSITION)
∅	DIAMETER
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)
Ⓢ	REGARDLESS OF FEATURE SIZE (RFS)
Ⓟ	PROJECTED TOLERANCE ZONE

EXAMPLES

⏤ 0.002	STRAIGHT WITHIN 0.002
⊥ B 0.002	PERPENDICULAR TO B WITHIN 0.002
// A 0.002	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
⌒ A 0.006	EACH LINE ELEMENT OF THE SURFACE AT ANY CROSS SECTION MUST LIE BETWEEN TWO PROFILE BOUNDARIES 0.006 INCH APART IN RELATION TO DATUM PLANE A
⌓ A 0.020	SURFACES MUST LIE WITHIN PARALLEL BOUNDARIES 0.02 INCH APART AND EQUALLY DISPOSED ABOUT TRUE PROFILE
◎ C ∅ 0.0005	CONCENTRIC TO C WITHIN 0.0005 DIAMETER (FULL INDICATOR MOVEMENT)
⌯ A 0.010	SYMMETRICAL WITH A WITHIN 0.010
∠ A 0.005	ANGULAR TOLERANCE 0.005 WITH A
⌖ B ∅ 0.002 Ⓢ	LOCATED AT TRUE POSITION WITHIN 0.002 DIA IN RELATION TO DATUM B, REGARDLESS OF FEATURE SIZE
⊥ A ∅ 0.010 Ⓜ 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	EXACT DIMENSION IS 2.000

True Position Dimensioning Symbols
Figure 601

IDLER ARM ASSEMBLY - REPAIR 1-1

162T4001-9, -10

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. Refer to IPL Fig. 1 for item numbers.

1. Check

   A. Penetrant check arms (55, 60).

2. Repair (Fig. 601)

   A. Bushing Replacement

      (1) Remove bushings.

      (2) Install new bushings using shrink-fit method, with BMS 5-95 sealant.

      (3) Check dimensions and machine as necessary to dimensions and finish shown.

      (4) Seal bushings per REPAIR 6-1, Fig. 601.

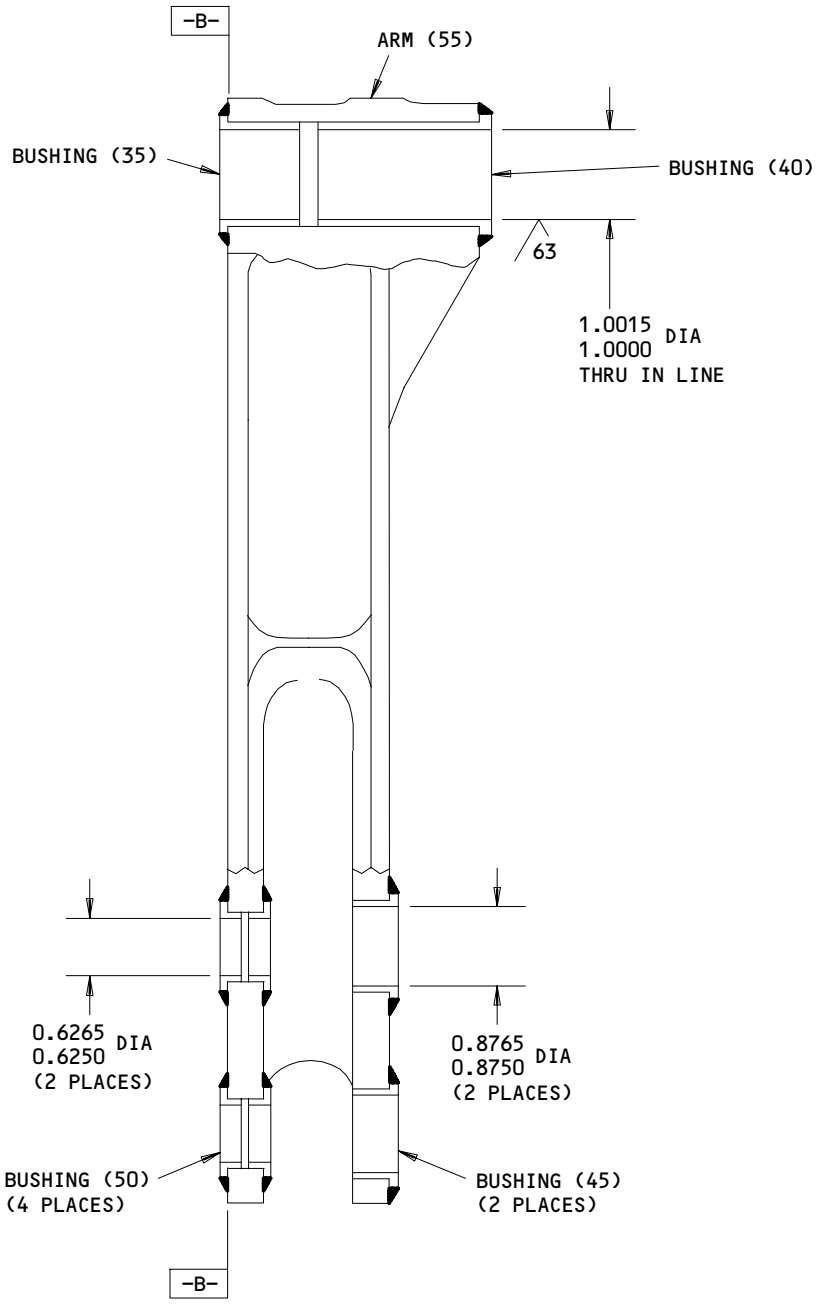
   B. Lube Fitting Replacement

      (1) Replace lube fitting (30) per 32-00-03.

   C. Apply topcoat as indicated.

   D. Refinish

      (1) For repair of surfaces which may require only restoration of original finish, refer to Refinish instructions, REPAIR 1-2.



REFINISH

AFTER BUSHING INSTL, APPLY ENAMEL BMS 10-60 (SRF-14.9813) EXCEPT ON BUSHINGS

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 1

16T4001-9,-10
Bushing Replacement
Figure 601

IDLER ARM - REPAIR 1-2

162T4001-11 THRU -14

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

1. Lug Faces and Holes (Fig. 601)

   A. Method 1 -- Removal of Corrosion in Center of Lug ID

      NOTE: This procedure enables corrosion to be removed without machining the entire bore oversize, if corrosion is localized at the center area which is exposed between two bushings.

      (1) Determine repair diameter and width of groove required to remove corrosion (Fig. 602).

      (2) Machine center area as required.

      (3) Alodize and apply primer, BMS 10-11, type 1.

      (4) Install bushings per REPAIR 1-1.

      (5) Completely fill cavity under and between bushings with grease MIL-G-23827.

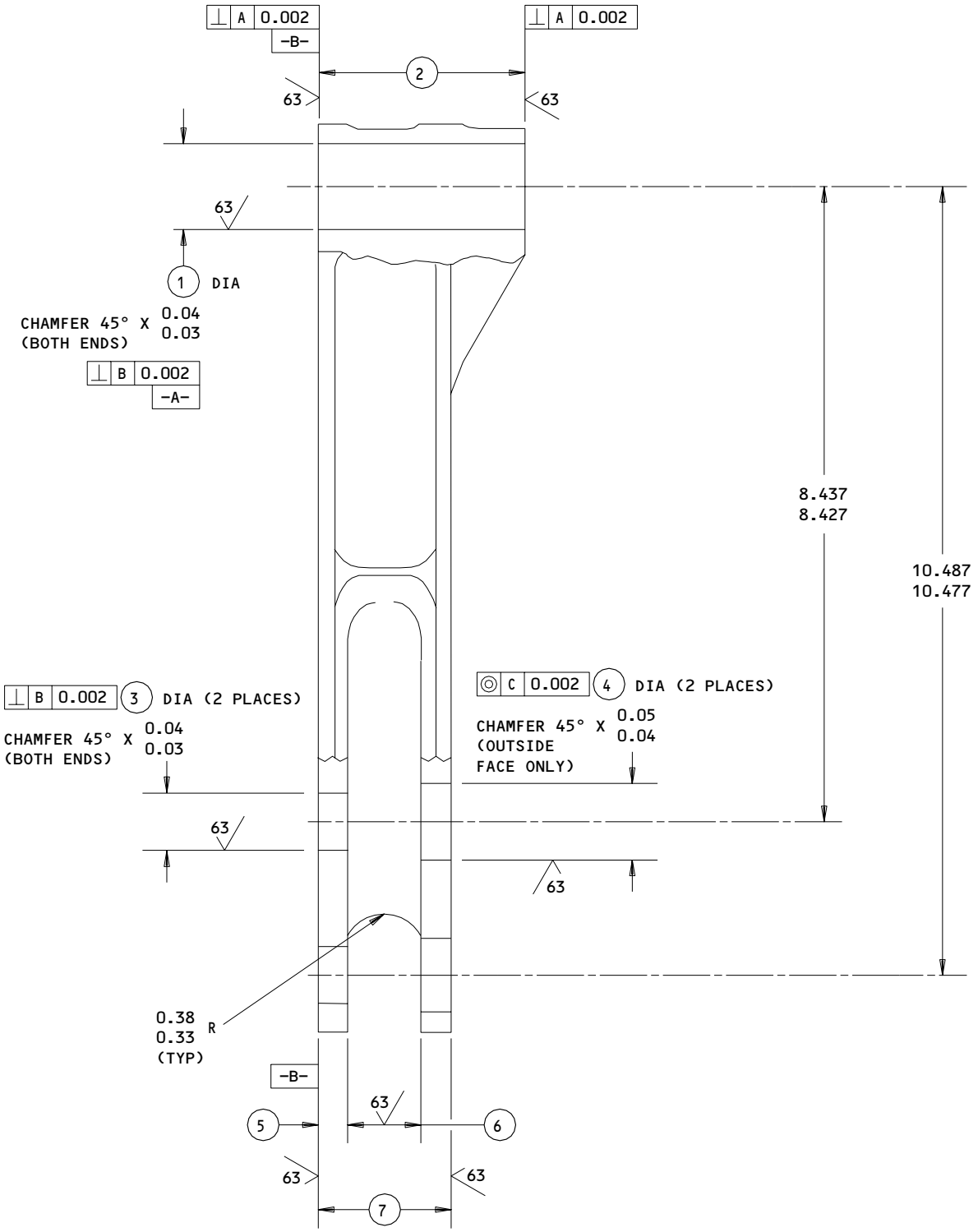
   B. Method 2 -- Installation of Oversize Bushings

      (1) Machine as required, within repair limits, to remove defects.

      (2) Shot peen, alodize and apply primer, BMS 10-11 type 1.

      (3) Manufacture bushings (Fig. 603 and on), as required, to compensate for amount of material removed in step (1).

      (4) Install bushings per REPAIR 1-1.



16T4001-11 THRU -14
Arm Repair and Refinish
Figure 601 (Sheet 1)

182231

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
DESIGN DIM	1.1265 1.1250	2.750 2.745	0.7515 0.7500	1.0015 1.0000	0.410 0.390	0.980 0.960	1.780 1.760
REPAIR LIMIT 1	1.1865	2.715	0.8115	1.0615	0.360	1.010	1.730

REFINISH

161T4001-11,-12: CHROMIC ACID ANODIZE AND APPLY PRIMER, BMS 10-11, TYPE 1 (F-18.13), EXCEPT OMIT PRIMER IN HOLES

161T4001-13,-14: CHEMICAL TREAT AND APPLY PRIMER, BMS 10-11, TYPE 1 (F-18.03), EXCEPT OMIT PRIMER IN HOLES

FOR APPLICATION OF TOPCOAT REFER TO REPAIR 1-1

1 LIMIT FOR INSTL OF OVERSIZE BUSHINGS

2 LUG FACE MACHINING REQUIREMENTS:

1. MATERIAL REMOVED FROM ANY FACE MUST NOT EXCEED HALF THE DIFFERENCE BE-TWEEN THE DESIGN DIM AND REPAIR LIMIT

2. FLAT SURFACE MUST BE MINIMUM OF 0.02 LARGER THAN FLANGE DIA OF BUSHING TO BE INSTALLED

3. BLEND MISMATCH STEPS TO 0.18-0.26 RADIUS, OR IF WITHIN 0.10 OF LUG FILLET RADIUS USE SAME RADIUS AS LUG FILLET. BREAK SHARP EDGES 0.03-0.07R

REPAIR

REF 1 2

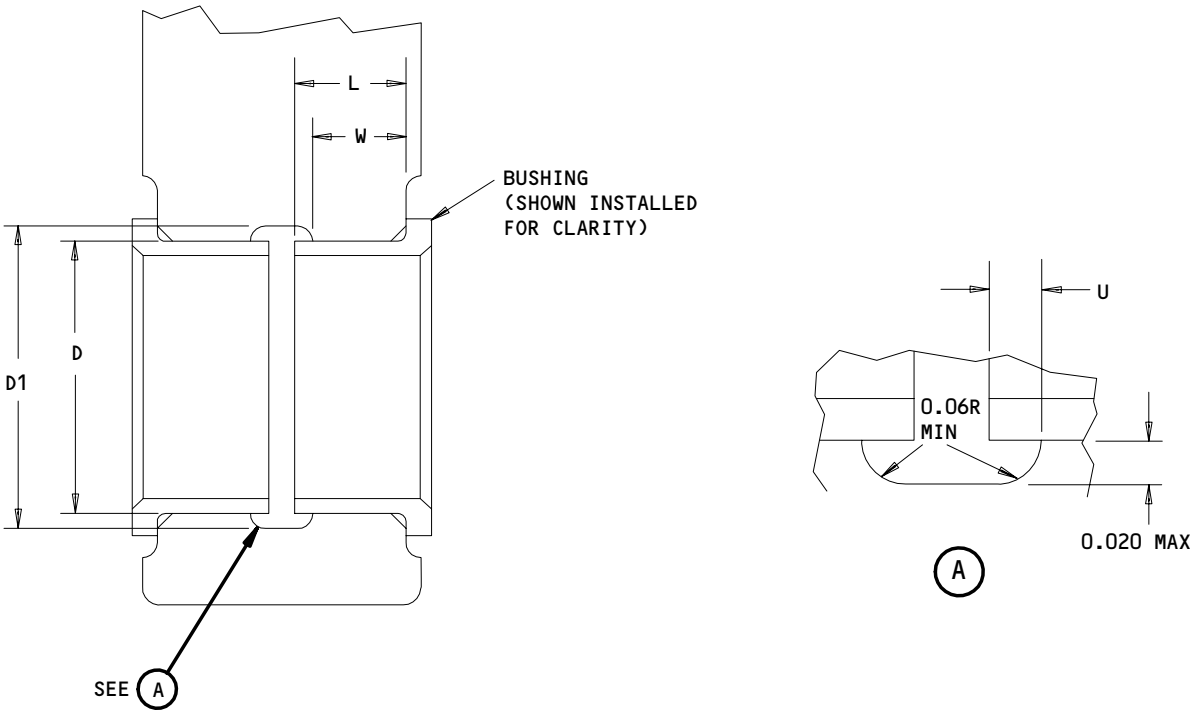
125 MACHINE FINISH EXCEPT AS NOTED

SHOT PEEN: 0.023-0.055 SHOT SIZE
0.006 A2 INTENSITY

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

162T4001-11 THRU -14
Arm Repair and Refinish
Figure 601 (Sheet 2)



D = MAX REPAIR DIA OF HOLE (SEE FIG. 601)

D1 = MAX REPAIR DIA OF GROOVE = (D + 0.040)

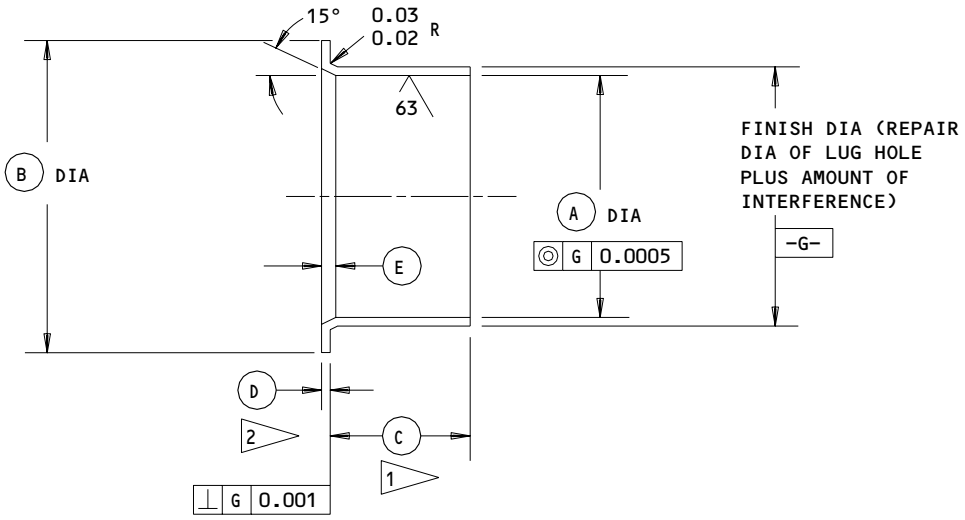
L = LENGTH OF BUSHING (SEE FIG. 603)

U = UNDERCUT = (L X 0.1) (0.06 MAX)

W = LUG DIM TO EDGE OF GROOVE = (L – U)

ALL DIMENSIONS ARE IN INCHES

Lug Hole Diameter – Corrosion Removal from Area Between Bushings
Figure 602



HOLE LOCATION (FIG. 601)	REPLACES BUSHING (IPL FIG. 1)	A	B	C 1	D 2	E	INTERFERENCE
1	(35) (SHORT) 161T1210-49	1.0041 1.0026	1.43 1.37	0.790 0.770	0.061 0.060	0.080 0.060	0.0050 0.0016
1	(40) (LONG) 161T1210-50	1.0041 1.0026	1.43 1.37	1.79 1.73	0.061 0.060	0.080 0.060	0.0050 0.0016
3	(50) 161T1210-53	0.6283 0.6274	1.03 0.97	0.180 0.160	0.061 0.060	0.080 0.060	0.0048 0.0014
4	(45) 161T1210-46	0.8790 0.8775	1.28 1.22	0.410 0.390	0.061 0.060	0.080 0.060	0.0049 0.0015

1 MINUS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

125 MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.01-0.02 R

CADMIUM PLATE (0.0003-0.0005 THICK, F-15.06)
ALL OVER EXCEPT ON ID AND FLANGE FACE

MATERIAL: AL-NI-BRZ PER AMS 4640 OR 4880

ALL DIMENSIONS APPLY BEFORE PLATING

ALL DIMENSIONS ARE IN INCHES

Oversize Bushing Details
Figure 603

UNIVERSAL ASSEMBLY - REPAIR 2-1

162T4002-1, -3

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. Refer to IPL Fig. 2 for item numbers.

1. Check

   A. Magnetic particle check universal (20).

2. Repair

   A. Bushing Replacement (Fig. 601)

      (1) Remove bushings.

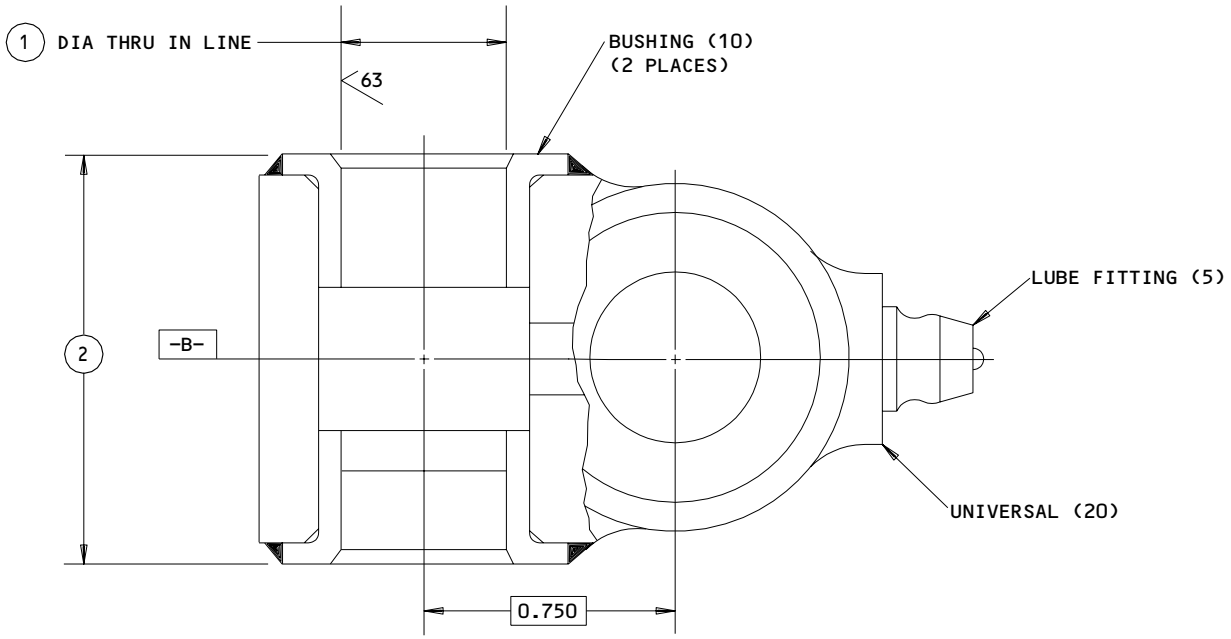
      (2) Install new bushings using shrink-fit, with BMS 5-95 sealant.

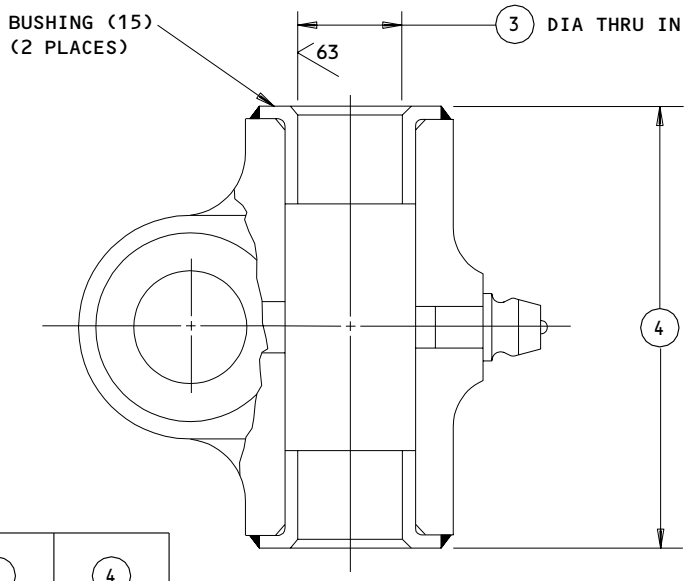
      (3) Check dimensions and machine as necessary to dimensions and finish shown.

      (4) Seal bushing per REPAIR 6-1, Fig. 601.

   B. Lube Fitting Replacement

      (1) Replace lube fitting (5) per 32-00-03.





A-A

	1	2	3	4
DESIGN DIM	0.5015 0.5000	1.307 1.300	0.6265 0.6250	1.882 1.875

ITEM NUMBERS REFER TO IPL FIG. 2

ALL DIMENSIONS ARE IN INCHES

162T4002-1,-3
Bushing Replacement
Figure 601

UNIVERSAL - REPAIR 2-2

162T4002-2

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

1. Lug Faces and Holes (Fig. 601)

A. Method 1 -- Removal of Corrosion in Center of Lug ID

NOTE: This procedure enables corrosion to be removed without machining the entire bore oversize, if corrosion is localized at the center area which is exposed between two bushings.

(1) Determine repair diameter and width of groove required to remove corrosion (Fig. 602).

(2) Machine center area as required.

(3) Passivate.

(4) Install bushings per REPAIR 2-1.

(5) Completely fill cavity under and between bushings with grease MIL-G-23827.

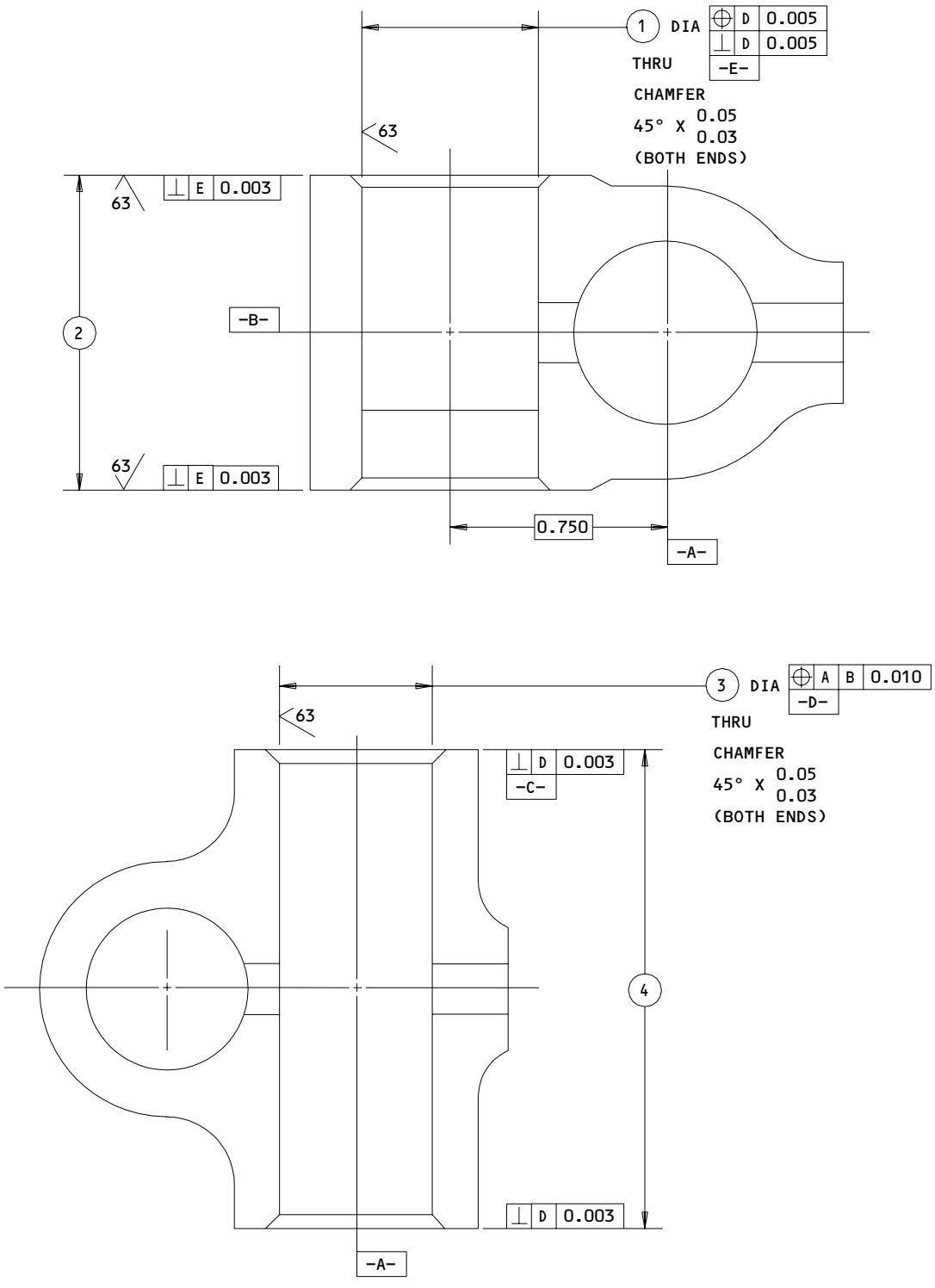
B. Method 2 -- Installation of Oversize Bushings

(1) Machine as required, within repair limits, to remove defects.

(2) Shot peen, and passivate.

(3) Manufacture bushings (Fig. 603 and on), as required, to compensate for amount of material removed in step (1).

(4) Install bushings per REPAIR 2-1.



162T4002-2

Universal Repair and Refinish
Figure 601 (Sheet 1)

181828

	(1)	(2)	(3)	(4)
DESIGN DIM	0.6265 0.6250	1.185 1.180	0.7515 0.7500	1.760 1.755
REPAIR LIMIT 1	0.6865	1.150	0.8115	1.725

REFINISH

PASSIVATE (F-17.09) ALL OVER

1 LIMIT FOR INSTALLATION OF OVERSIZE BUSHINGS

2 LUG FACE MACHINING REQUIREMENTS:

1. MATERIAL REMOVED FROM ANY FACE MUST NOT EXCEED HALF THE DIFFERENCE BETWEEN THE DESIGN DIM AND REPAIR LIMIT
2. FLAT SURFACE MUST BE MINIMUM OF 0.02 LARGER THAN FLANGE DIA OF BUSHING TO BE INSTALLED
3. BLEND MISMATCH STEPS TO 0.18-0.26 RADIUS, OR IF WITHIN 0.10 OF LUG FILLET RADIUS USE SAME RADIUS AS LUG FILLET. BREAK SHARP EDGES 0.03-0.07R

REPAIR

REF 1 2

125 MACHINE FINISH EXCEPT AS NOTED

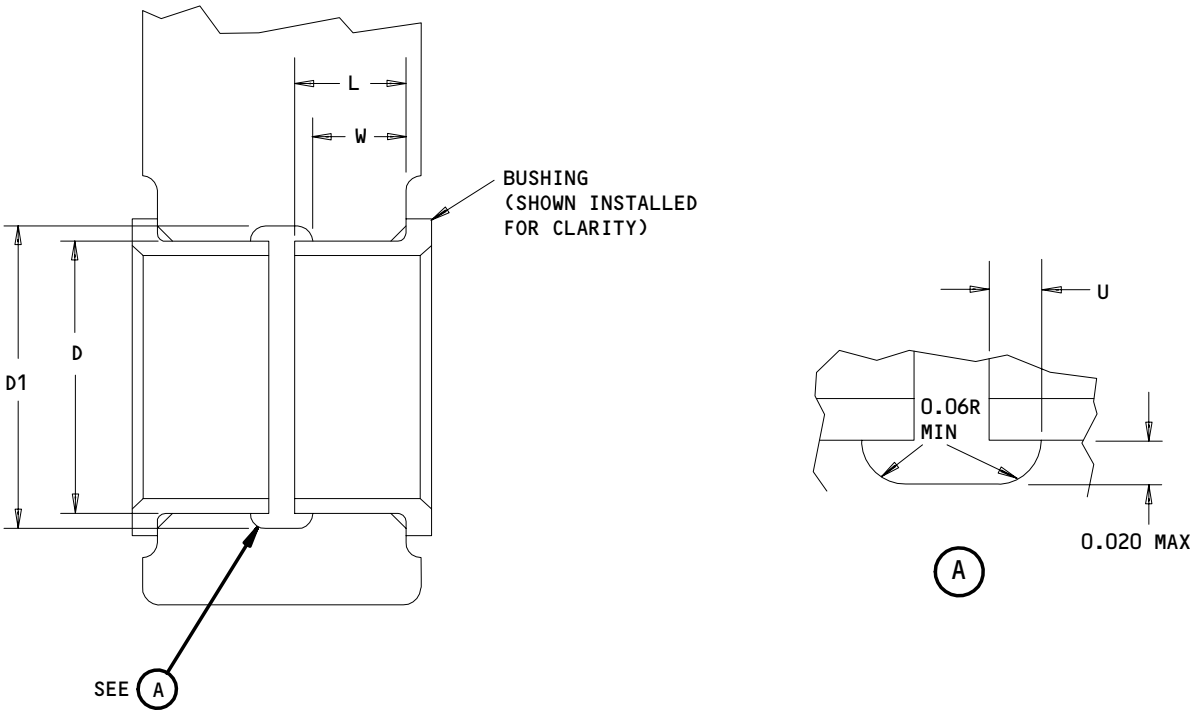
SHOT PEEN: 0.017-0.046 SHOT SIZE
0.012 A2 INTENSITY

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

ALL DIMENSIONS ARE IN INCHES

162T4002-2,-4
Universal Repair and Refinish
Figure 601 (Sheet 2)

181771



D = MAX REPAIR DIA OF HOLE (SEE FIG. 601)

D1 = MAX REPAIR DIA OF GROOVE = (D + 0.040)

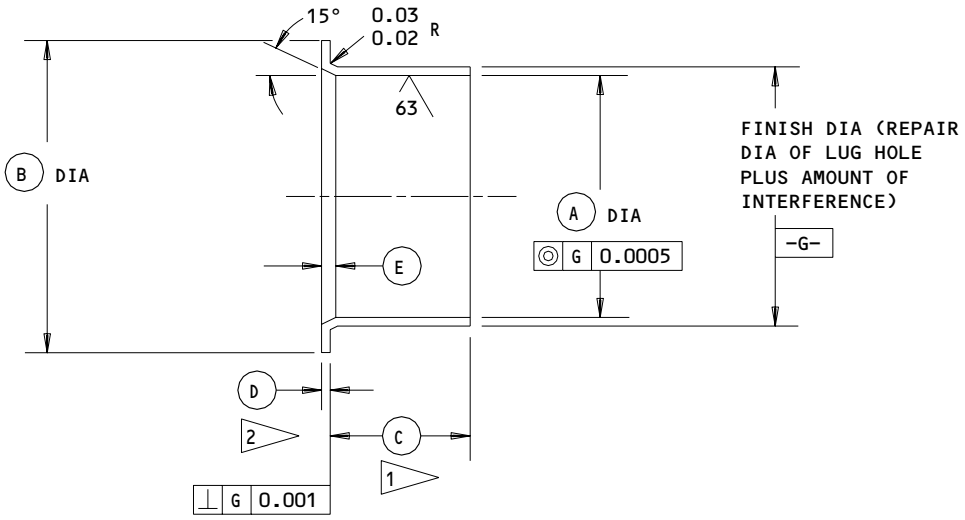
L = LENGTH OF BUSHING (SEE FIG. 603)

U = UNDERCUT = (L X 0.1) (0.06 MAX)

W = LUG DIM TO EDGE OF GROOVE = (L – U)

ALL DIMENSIONS ARE IN INCHES

Lug Hole Diameter – Corrosion Removal from Area Between Bushings
Figure 602



HOLE LOCATION (FIG. 601)	REPLACES BUSHING (IPL FIG. 2)	A	B	C 1	D 2	E	INTERFERENCE
1	(10) 161T1210-47	0.5019 0.5004	0.98 0.92	0.330 0.310	0.061 0.060	0.080 0.060	0.0045 0.0011
3	(15) 161T1210-48	0.6269 0.6254	1.03 0.97	0.410 0.390	0.061 0.060	0.080 0.060	0.0045 0.0011

1 MINUS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

125 MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.01-0.02 R

CADMIUM PLATE (0.0003-0.0005 THICK, F-15.06) ALL OVER EXCEPT ON ID AND FLANGE FACE

MATERIAL: AL-NI-BRZ PER AMS 4640 OR 4880

ALL DIMENSIONS APPLY BEFORE PLATING

ALL DIMENSIONS ARE IN INCHES

Oversize Bushing Details
Figure 603

181761

ADJUSTER BARREL ASSY - REPAIR 3-1

162T4004-3

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. Refer to IPL Fig. 5 for item numbers.

1. Check

   A. Magnetic particle check barrel (10).

2. Repair

   A. Bushing Replacement (Fig. 601)

      (1) Remove bushings.

      (2) Install new bushings using shrink-fit method, with BMS 5-95 sealant.

      (3) Check dimensions and machine as necessary to dimensions and finish shown.

   B. Lug Faces and Bores (Fig. 601)

      (1) Installation of Oversize Bushings

         (a) Machine as required, within repair limits, to remove defects.

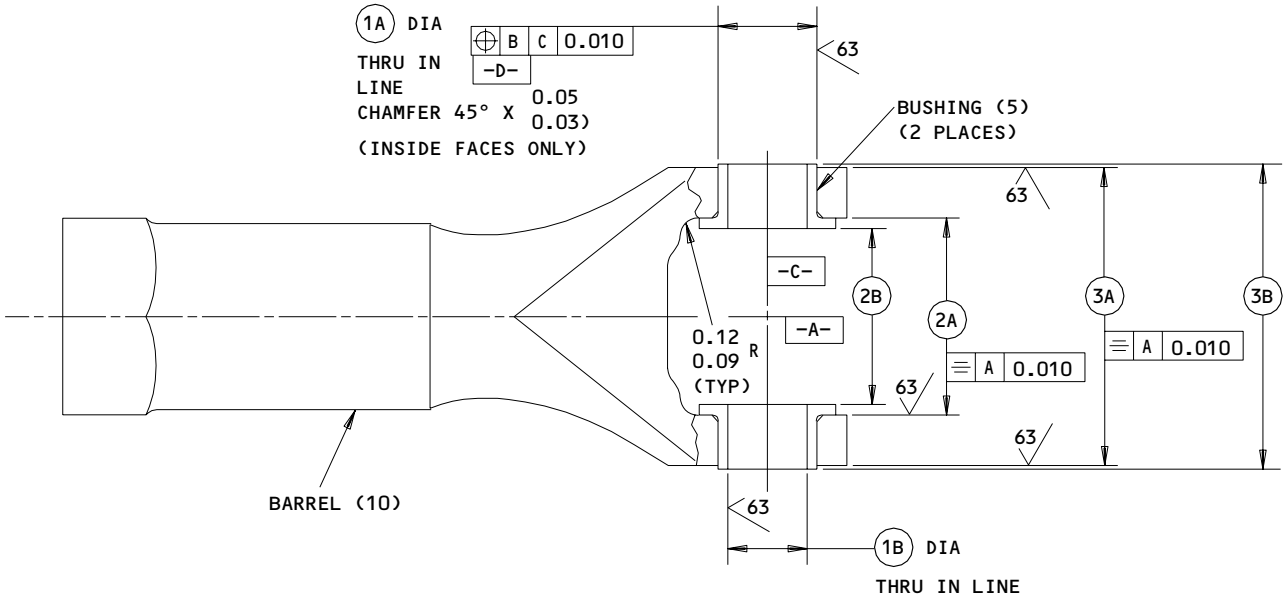
         (b) Shot peen and passivate.

         (c) Manufacture bushings (Fig. 602), as required, to compensate for amount of material removed in step (a).

         (d) Install bushings per par. A.

   C. Refinish

      (1) For repair of surfaces which may require only restoration of original finish, refer to Refinish instructions, Fig. 601.



	1A	1B	2A	2B	3A	3B
DESIGN DIM	0.6265 0.6250	0.5015 0.5000	1.434 1.429	1.314 1.307	2.035 2.015	2.070 2.050
REPAIR LIMIT 1	0.6865	---	1.399	---	---	---

REFINISH

PASSIVATE (F-17.09) ALL OVER

1 LIMIT FOR INSTALLATION OF OVERSIZE BUSHINGS

2 LUG FACE MACHINING REQUIREMENTS:

1. MATERIAL REMOVED FROM ANY FACE MUST NOT EXCEED HALF THE DIFFERENCE BETWEEN THE DESIGN DIA AND REPAIR LIMIT
2. FLAT SURFACE MUST BE MINIMUM OF 0.02 LARGER THAN FLANGE DIA OF BUSHING TO BE INSTALLED
3. BLEND MISMATCH STEPS TO 0.18-0.26 RADIUS, OR IF WITHIN 0.10 OF LUG FILLET RADIUS USE SAME RADIUS AS LUG FILLET. BREAK SHARP EDGES 0.03-0.07R

REPAIR

REF 1 2

125 MACHINE FINISH EXCEPT AS NOTED

SHOT PEEN: 0.017-0.046 SHOT SIZE
0.012 A2 INTENSITY

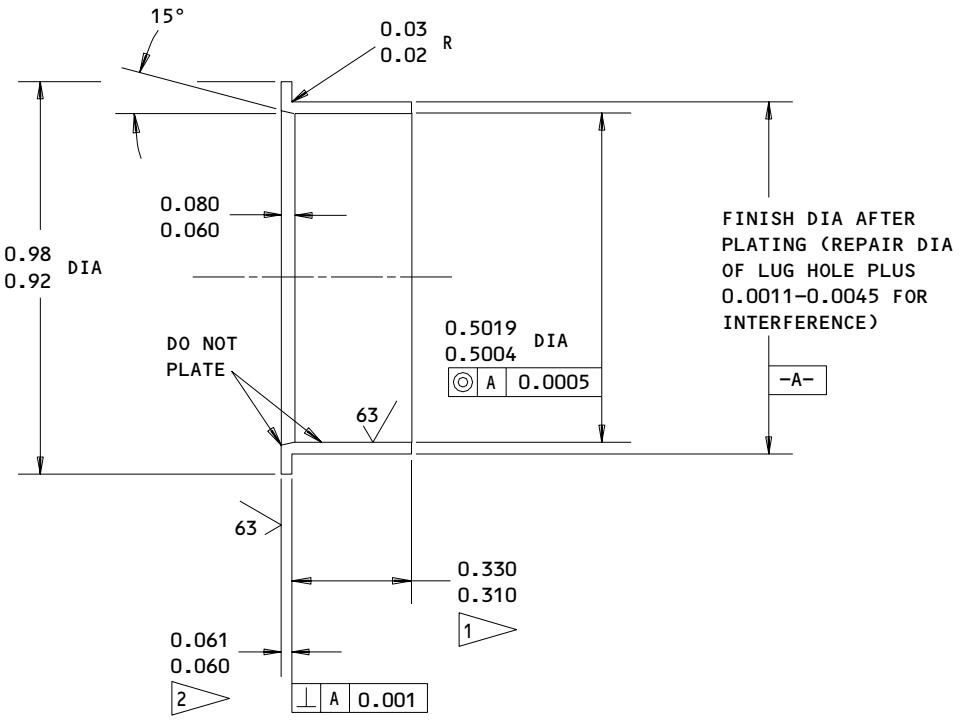
MATERIAL: 15-5PH CRES, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 5

162T4004-3
Adjuster Barrel Repair and Refinish
Figure 601

72347



125 MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.01–0.02 R

CADMIUM PLATE (0.0003–0.0005 THICK, F-15.06) ALL OVER EXCEPT ON ID AND FLANGE FACE

MATERIAL: AL-NI-BRZ PER AMS 4640 OR 4880

1 MINUS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

ALL DIMENSIONS APPLY BEFORE PLATING

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (1A) FIG. 601 – REPLACES BUSHING (5, IPL FIG. 5) 161T1210-47

Oversize Bushing Details
Figure 602

CLEVIS ASSEMBLY - REPAIR 4-1

162T4010-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. Refer to IPL Fig. 3 for item numbers.

1. Check

   A. Magnetic particle check clevis (15).

2. Repair

   A. Bushing Replacement (Fig. 601)

      (1) Remove bushings.

      (2) Install new bushings using shrink-fit method, with BMS 5-95 sealant.

      (3) Check dimensions and machine as necessary to dimensions and finish shown.

      (4) Seal bushings per REPAIR 6-1, Fig. 602.

   B. Lock Faces and Bores (Fig. 601)

      (1) Installation of Oversize Bushings

         (a) Machine as required, within repair limits, to remove defects.

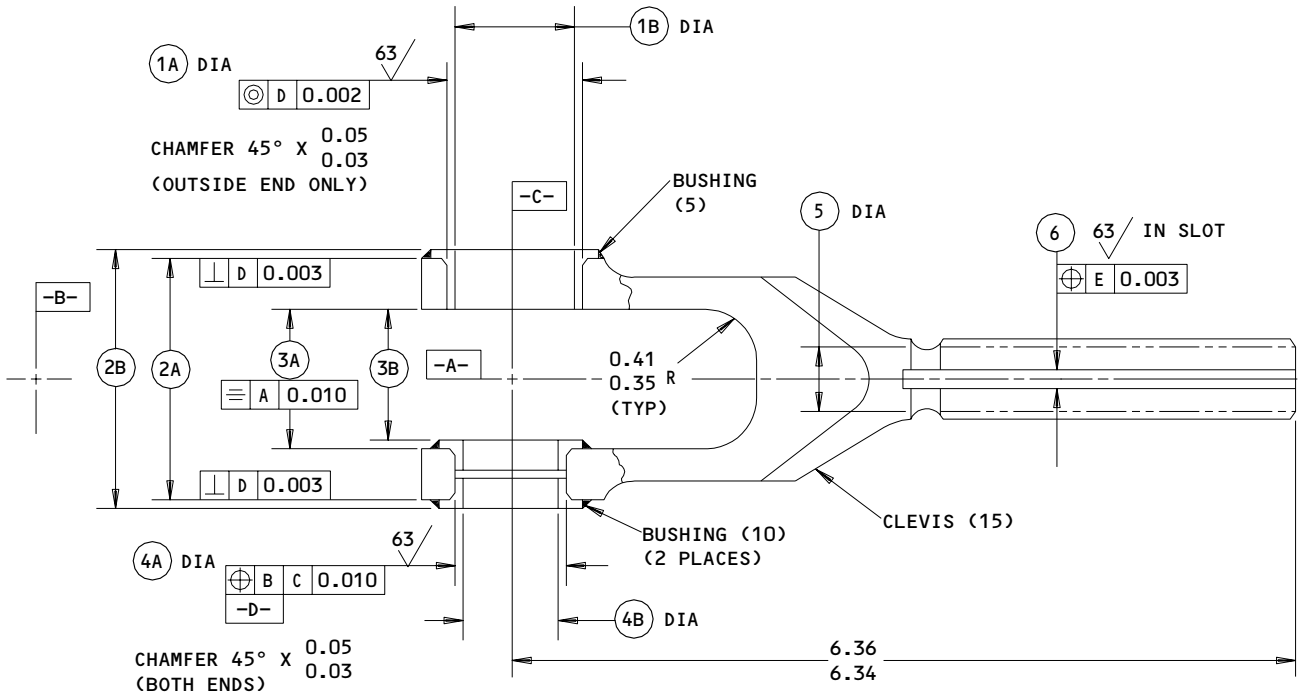
         (b) Shot peen and passivate.

         (c) Manufacture bushings (Fig. 602 and on), as required, to compensate for amount of material removed in step (a).

         (d) Install bushings per par. A.

   C. Refinish

      (1) For repair of surfaces which may require only restoration of original finish, refer to Refinish instructions, Fig. 601.



	1A	1B	2A	2B	3A	3B	4A	4B	5	6
DESIGN DIM	1.1265 1.1250	1.0015 1.0000	1.929 1.924	2.051 2.044	1.1286 1.1236	1.0086 1.0016	0.8765 0.8750	0.7515 0.7500	0.544 0.536	0.130 0.125
REPAIR LIMIT 1	1.1865	---	1.894	---	1.1586	---	0.9365	---	---	---

REFINISH

162T4010-2: PASSIVATE (F-17.09); EXCEPT CADMIUM PLATE (F-15.06) THREADS, FOLLOWED BY DRY FILM LUBE TYPE 6 CLASS 1

1 LIMIT FOR INSTALLATION OF OVERSIZE BUSHINGS

2 LUG FACE MACHINING REQUIREMENTS:

1. MATERIAL REMOVED FROM ANY FACE MUST NOT EXCEED HALF THE DIFFERENCE BETWEEN THE DESIGN DIM AND REPAIR LIMIT
2. FLAT SURFACE MUST BE MINIMUM OF 0.02 LARGER THAN FLANGE DIA OF BUSHING TO BE INSTALLED
3. BLEND MISMATCH STEPS TO 0.18-0.26 RADUS, OR IF WITHIN 0.10 OF LUG FILLET RADIUS USE SAME RADIUS AS LUG FILLET. BREAK SHARP EDGES 0.03-0.07R

REPAIR

REF 1 2

125 MACHINE FINISH EXCEPT AS NOTED

SHOT PEEN: (EXCEPT ON THREADS)
0.017-0.046 SHOT SIZE
0.012 A2 INTENSITY

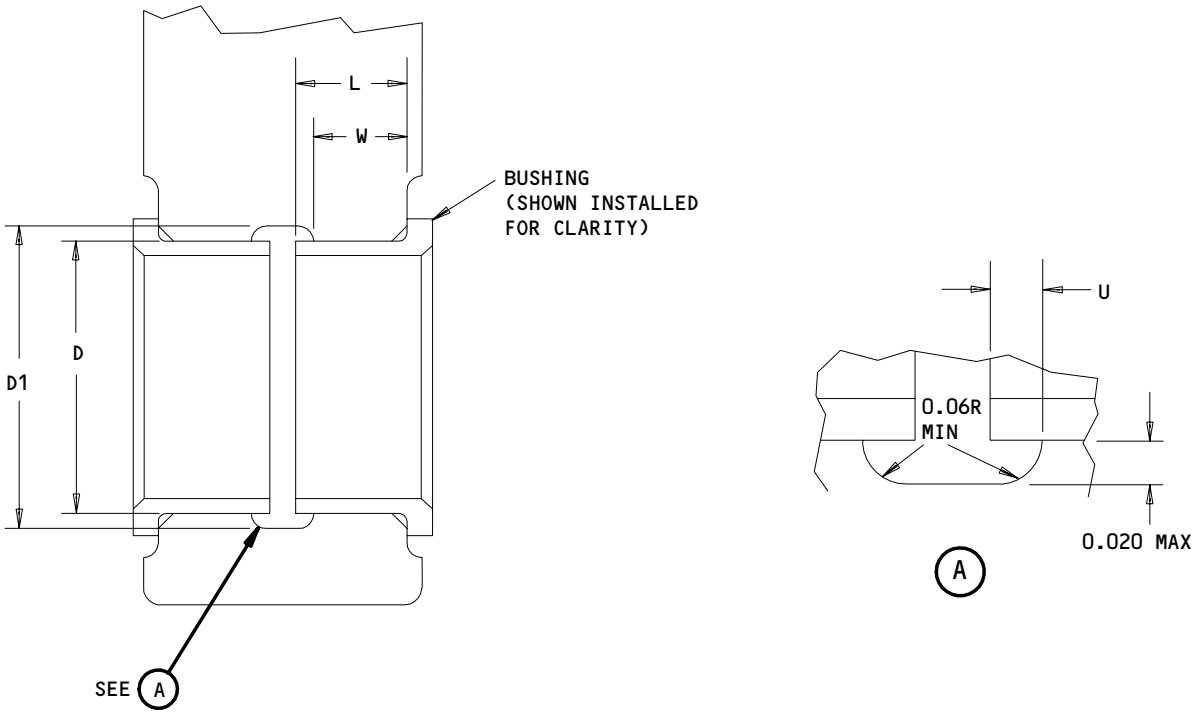
MATERIAL: 15-5PH CRES, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 3

162T4010-1
Clevis Repair and Refinish
Figure 601

181814



D = MAX REPAIR DIA OF HOLE (SEE FIG. 601)

D1 = MAX REPAIR DIA OF GROOVE = (D + 0.040)

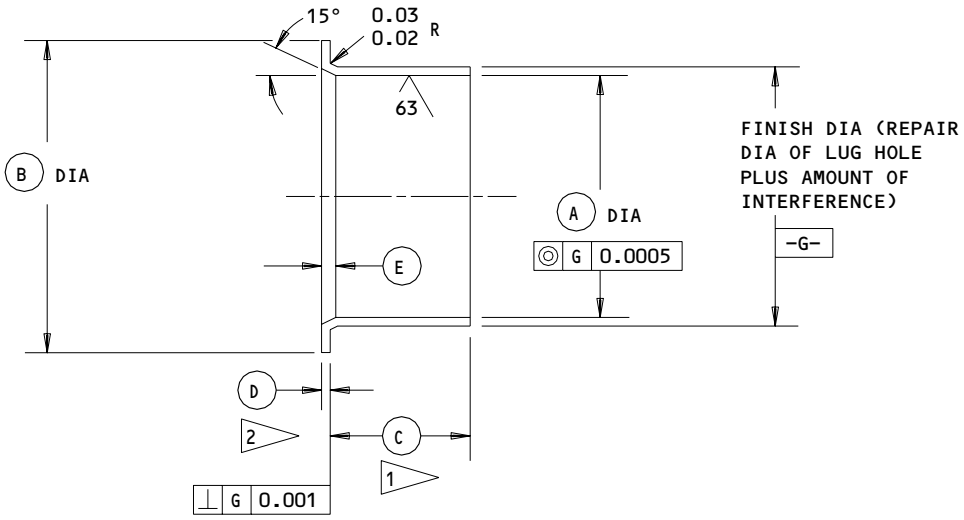
L = LENGTH OF BUSHING (SEE FIG. 603)

U = UNDERCUT = (L X 0.1) (0.06 MAX)

W = LUG DIM TO EDGE OF GROOVE = (L – U)

ALL DIMENSIONS ARE IN INCHES

Lug Hole Diameter – Corrosion Removal from Area Between Bushings
Figure 602



HOLE LOCATION (FIG. 601)	REPLACES BUSHING (IPL FIG. 3)	A	B	C 1	D 2	E	INTERFERENCE
1A	(5) 161T1210-34	1.0020 1.0005	1.43 1.37	0.43 0.37	0.061 0.060	0.080 0.060	0.0047 0.0013
4A	(10) 161T1210-54	0.7520 0.7505	1.21 1.15	0.180 0.160	0.061 0.060	0.080 0.060	0.0046 0.0012

1 MINUS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

125 MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.01-0.02 R

CADMIUM PLATE (0.0003-0.0005 THICK, F-15.06) ALL OVER EXCEPT ON ID AND FLANGE FACE

MATERIAL: AL-NI-BRZ PER AMS 4640 OR 4880

ALL DIMENSIONS APPLY BEFORE PLATING

ALL DIMENSIONS ARE IN INCHES

Oversize Bushing Details
Figure 603

181762

BELLCRANK ASSEMBLY - REPAIR 5-1

162T4012-1,-2,-7,-8

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. Refer to IPL Fig. 4 for item numbers.

1. Check

   A. Magnetic particle check bellcranks (30, 35).

2. Repair

   A. Bushing Replacement (Fig. 601,602)

      (1) Remove bushings.

      (2) Install new bushings using shrink-fit method, with BMS 5-95 sealant.

      (3) Check dimensions and machine as necessary to dimensions and finish shown.

      (4) Seal bushings per REPAIR 6-1, Fig. 601.

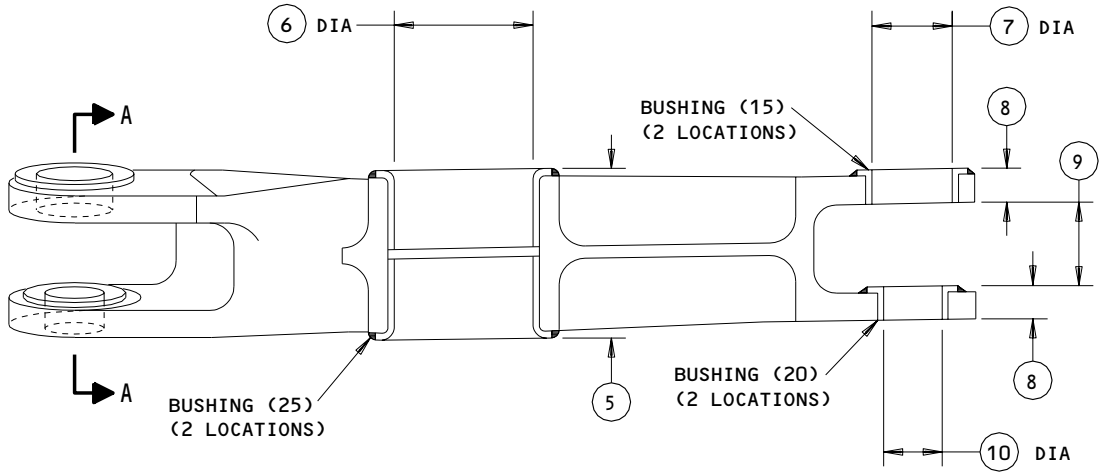
   B. Lube Fitting Requirement

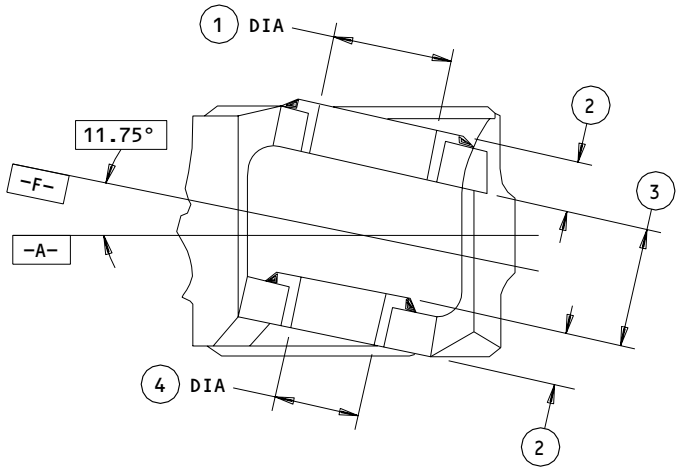
      (1) Replace lube fitting (10) per 32-00-03.

   C. Apply topcoat as indicated.

   D. Refinish

      (1) For repair of surfaces which may require only restoration of original finish, refer to Refinish instructions, REPAIR 5-2.





A-A

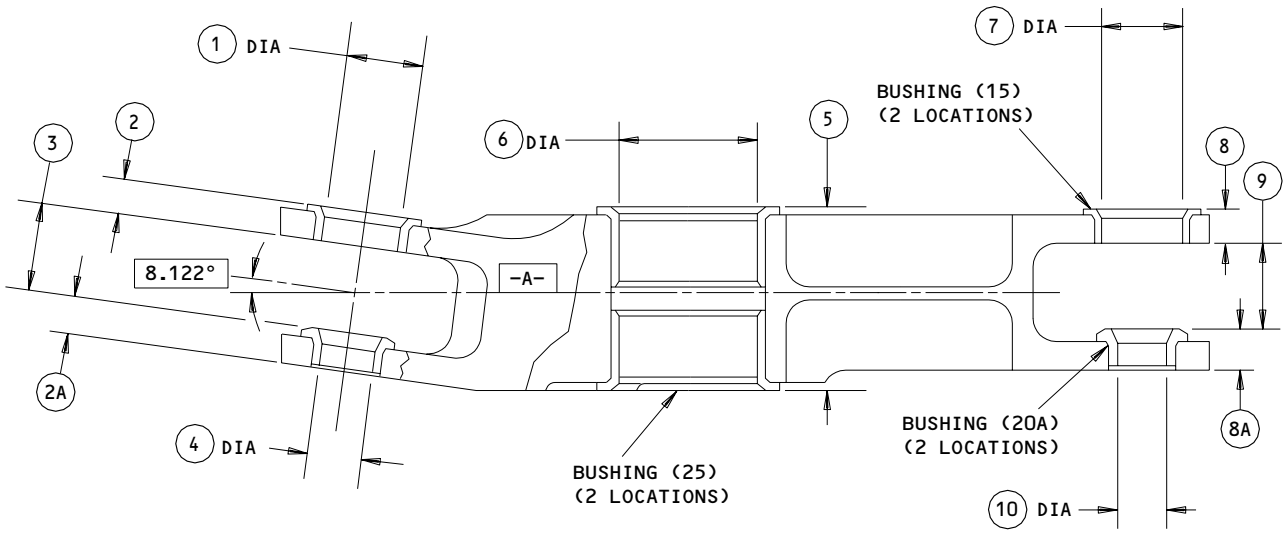
	1	2	3	4	5	6	7	8	9	10
DESIGN DIM	0.8765 0.8750	0.371 0.360	0.920 0.899	0.6265 0.6250	1.810 1.798	1.5015 1.5000	0.8765 0.8750	0.371 0.360	0.920 0.899	0.6265 0.6250

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 4

162T4012-1,-2
Bushing Replacement
Figure 601

A10777



	1	2	2A	3	4	5	6	7	8	8A
DESIGN DIM	0.8765 0.8750	0.371 0.360	0.429 0.418	0.952 0.931	0.6265 0.6250	1.935 1.923	1.5015 1.5000	0.8765 0.8750	0.371 0.360	0.429 0.418

	9	10
DESIGN DIM	0.952 0.931	0.6265 0.6250

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 4

162T4012-7,-8
Bushing Replacement
Figure 602

72355

BELLCRANK - REPAIR 5-2

162T4012-3, -4, -9, -10

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

1. Lug Faces and Holes (Fig. 601,602)

A. Method 1 -- Removal of Corrosion in Center of Lug ID

NOTE: This procedure enables corrosion to be removed without machining the entire bore oversize, if corrosion is localized at the center area which is exposed between two bushings.

(1) Determine repair diameter and width of groove required to remove corrosion (Fig. 602).

(2) Machine center area as required.

(3) Passivate.

(4) Install bushings per REPAIR 5-1.

(5) Completely fill cavity under and between bushings with grease MIL-G-23827.

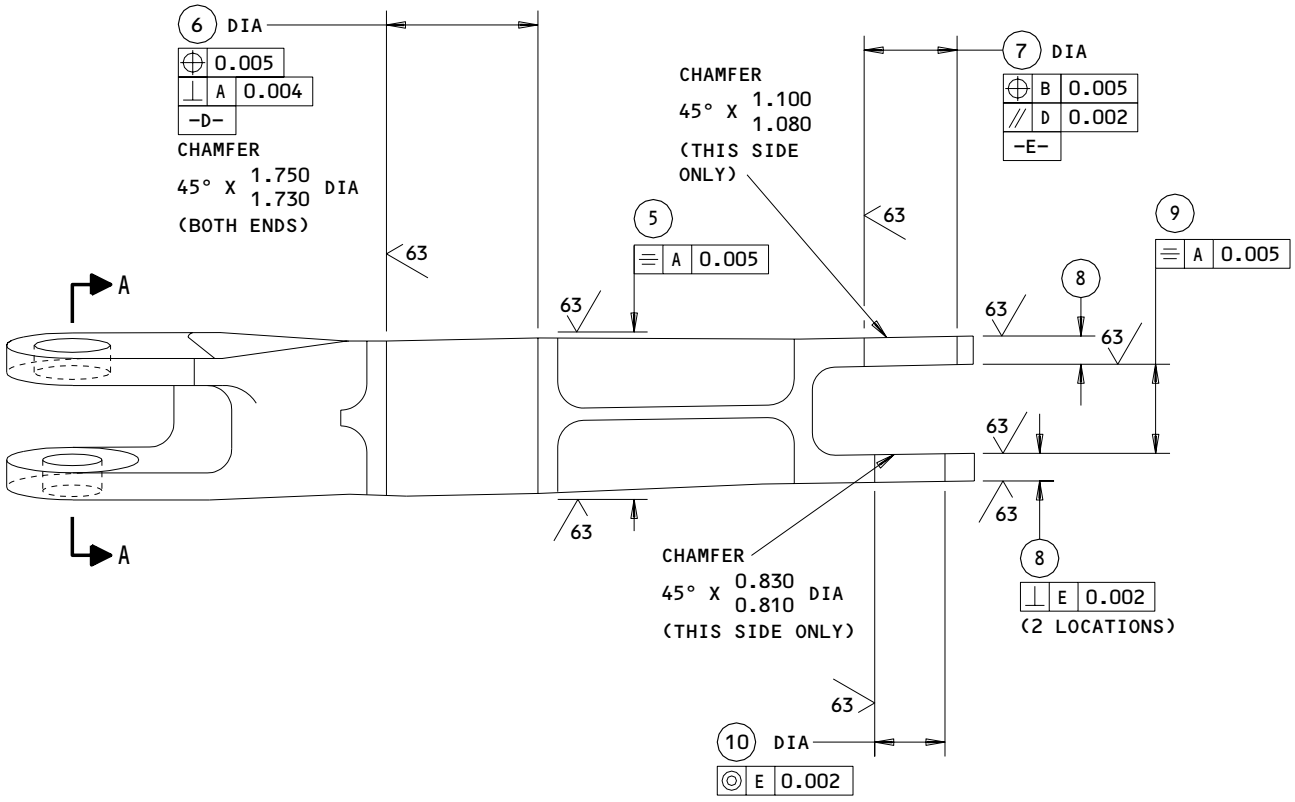
B. Method 2 -- Installation of Oversize Bushings

(1) Machine as required, within repair limits, to remove defects.

(2) Shot peen, and passivate.

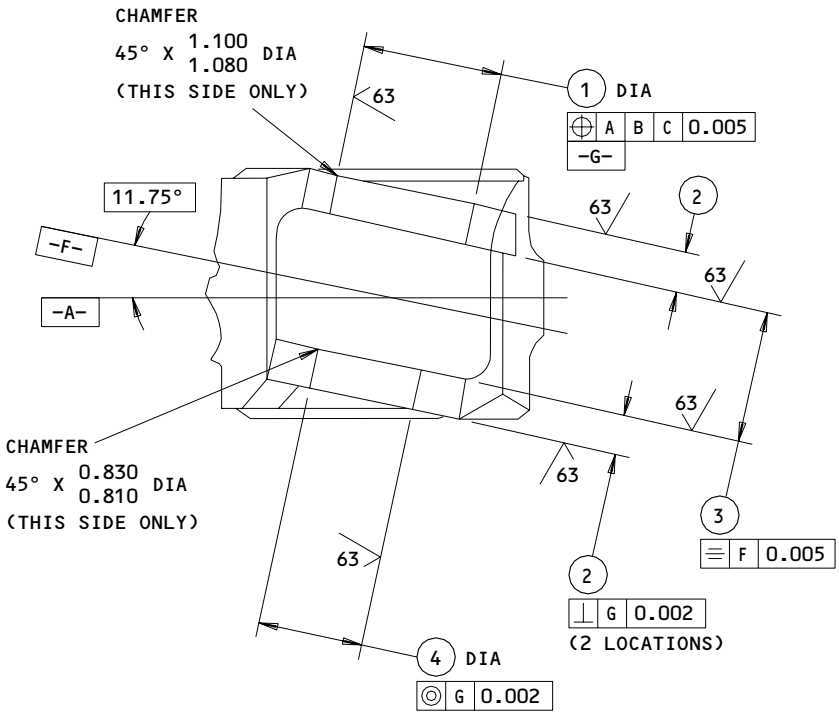
(3) Manufacture bushings (Fig. 603 and on), as required, to compensate for amount of material removed in step (1).

(4) Install bushings per REPAIR 5-1.



162T4012-3,-4
Bellcrank Repair and Refinish
Figure 601 (Sheet 1)

A11249



A-A

	1	2	3	4	5	6	7	8	9	10
DESIGN DIM	1.0015 1.0000	0.31 0.30	0.980 0.960	0.7515 0.7500	1.688 1.678	1.6615 1.6600	1.0015 1.0000	0.31 0.30	0.980 0.960	0.7515 0.7500
REPAIR LIMIT 1	1.0615	0.285	-----	0.8115	-----	1.7215	1.0615	0.285	-----	0.8115

REFINISH

PASSIVATE (F-17.09) ALL OVER.

1 LIMIT FOR INSTALLATION OF OVERSIZE BUSHINGS

2 LUG FACE MACHINING REQUIREMENTS:

1. MATERIAL REMOVED FROM ANY FACE MUST NOT EXCEED HALF THE DIFFERENCE BETWEEN THE DESIGN DIM AND REPAIR LIMIT
2. FLAT SURFACE MUST BE MINIMUM OF 0.02 LARGER THAN FLANGE DIA OF BUSHING TO BE INSTALLED
3. BLEND MISMATCH STEPS TO 0.18-0.26 RADUS, OR IF WITHIN 0.10 OF LUG FILLET RADIUS USE SAME RADIUS AS LUG FILLET. BREAK SHARP EDGES 0.03-0.07 R

REPAIR

REF 1 2

125 MACHINE FINISH EXCEPT AS NOTED

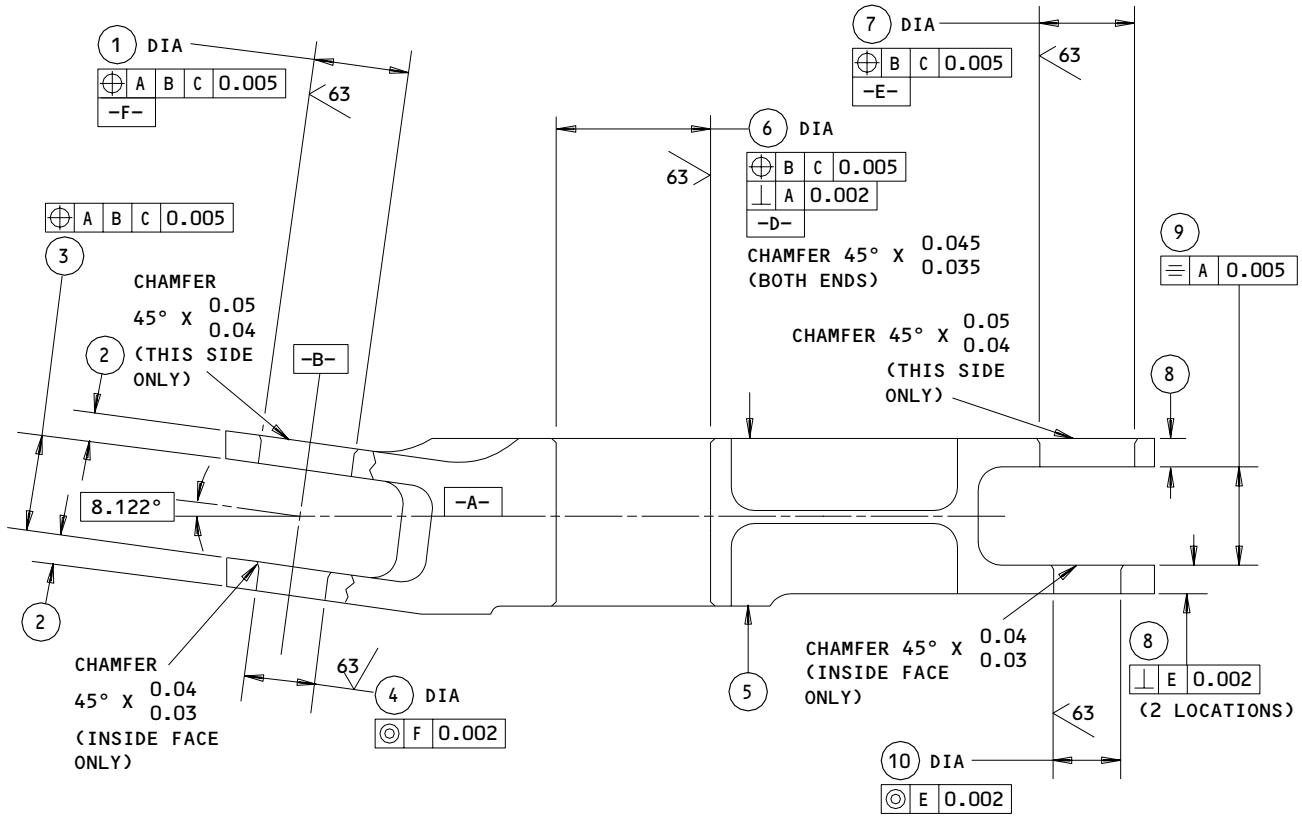
MATERIAL: 15-5PH CRES, 180-200 KSI

SHOT PEEN: 0.017-0.046 SHOT SIZE
0.012 A2 INTENSITY

ALL DIMENSIONS ARE IN INCHES

162T4012-3,-4
Bellcrank Repair and Refinish
Figure 601 (Sheet 2)

A11399



	1	2	3	4	5	6	7	8	9	10
DESIGN DIM	1.0015 1.0000	0.31 0.30	1.070 1.050	0.7515 0.7500	1.813 1.803	1.6615 1.6600	1.0015 1.0000	0.31 0.30	1.070 1.050	0.7515 0.7500
REPAIR LIMIT 1	1.0615	0.285	1.035	0.8115	1.773	1.7215	1.0615	0.285	1.035	0.8115

REFINISH

PASSIVATE (F-17.09) ALL OVER.

1 LIMIT FOR INSTALLATION OF OVERSIZE BUSHINGS

2 LUG FACE MACHINING REQUIREMENTS:

1. MATERIAL REMOVED FROM ANY FACE MUST NOT EXCEED HALF THE DIFFERENCE BETWEEN THE DESIGN DIM AND REPAIR LIMIT
2. FLAT SURFACE MUST BE MINIMUM OF 0.02 LARGER THAN FLANGE DIA OF BUSHING TO BE INSTALLED
3. BLEND MISMATCH STEPS TO 0.18-0.26 RADUS, OR IF WITHIN 0.10 OF LUG FILLET RADIUS USE SAME RADIUS AS LUG FILLET. BREAK SHARP EDGES 0.03-0.07 R

REPAIR

REF 1 2

125 MACHINE FINISH EXCEPT AS NOTED

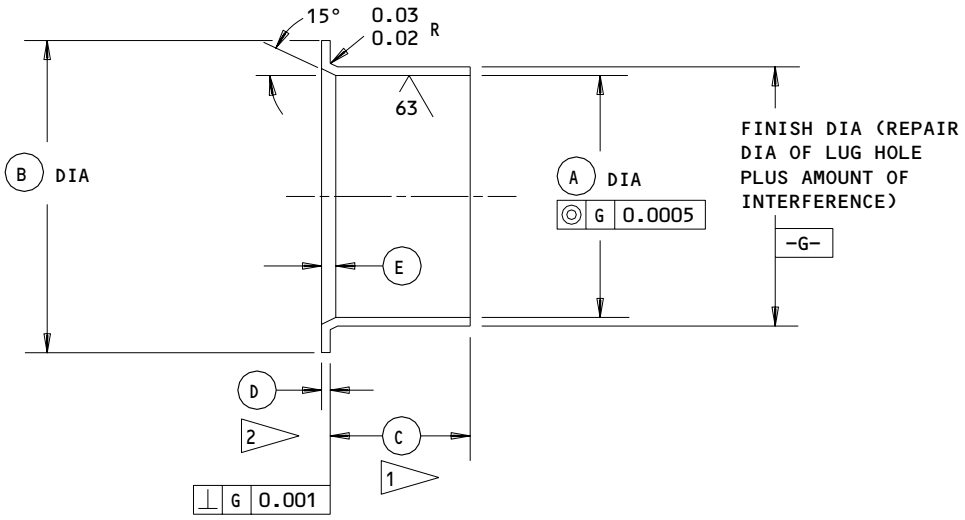
MATERIAL: 15-5PH CRES, 180-200 KSI

SHOT PEEN: 0.017-0.046 SHOT SIZE
0.012 A2 INTENSITY

ALL DIMENSIONS ARE IN INCHES

162T4012-9,-10
Bellcrank Repair and Refinish
Figure 602

181798



HOLE LOCATION (FIG. 601)	REPLACES BUSHING (IPL FIG. 4)	A	B	C 1	D 2	E	INTERFERENCE
1 7	(15) 161T1210-52	0.8770 0.8755	1.28 1.22	0.310 0.290	0.061 0.060	0.080 0.060	0.0046 0.0012
4 10 3	(20) 161T1210-51	0.6295 0.6280	1.03 0.97	0.290 0.270	0.061 0.060	0.080 0.060	0.0045 0.0011

1 MINUS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

3 USED ON 162T4012-1,-2 ONLY

125 MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.01-0.02 R

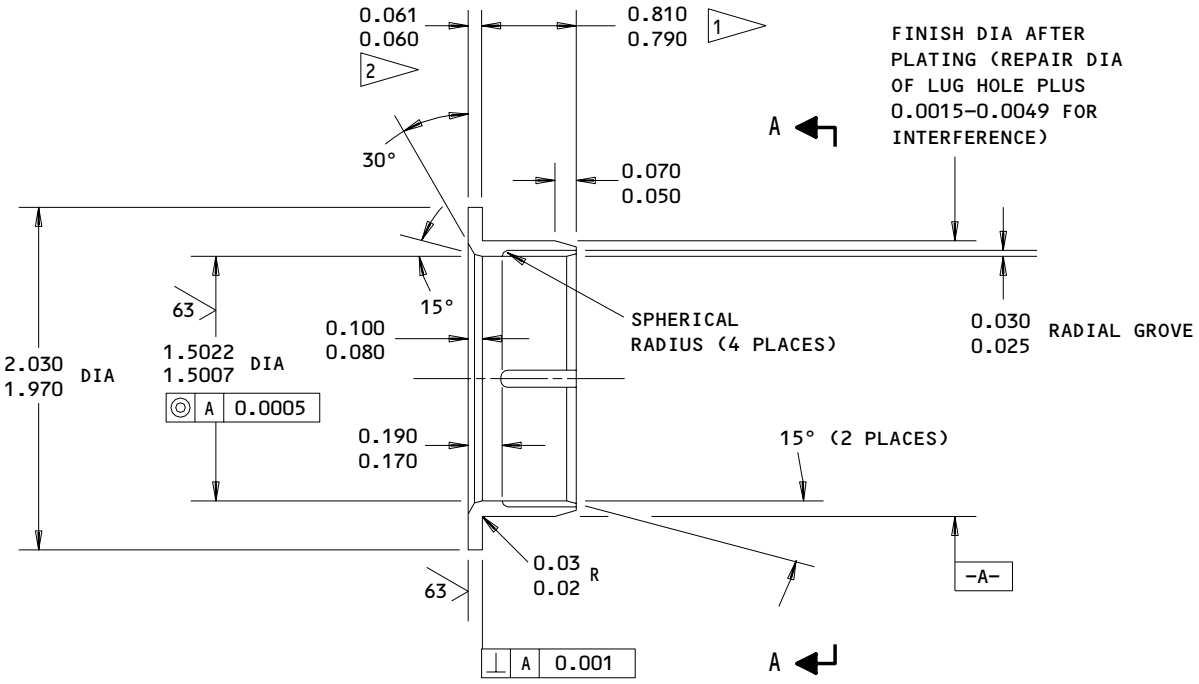
CADMIUM PLATE (0.0003-0.0005 THICK, F-15.06) ALL OVER EXCEPT ON ID AND FLANGE FACE

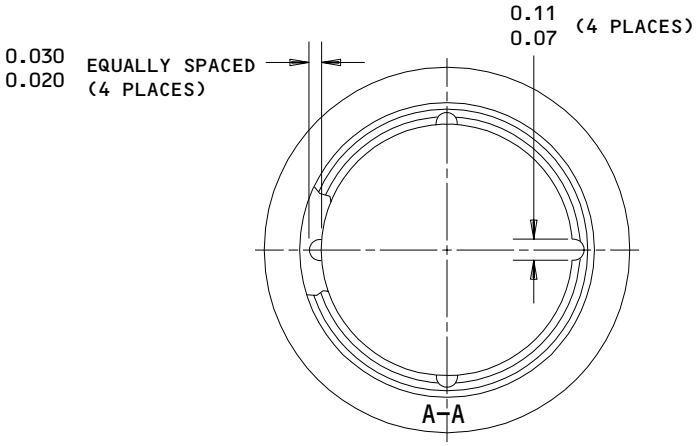
MATERIAL: AL-NI-BRZ PER AMS 4640 OR 4880

ALL DIMENSIONS APPLY BEFORE PLATING

ALL DIMENSIONS ARE IN INCHES

Oversize Bushing Details
Figure 603





1 MINUS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

125 ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.01–0.02 R

CADMIUM PLATE (F–15.06, 0.0003–0.0005) ALL OVER EXCEPT ON ID AND FLANGE FACE

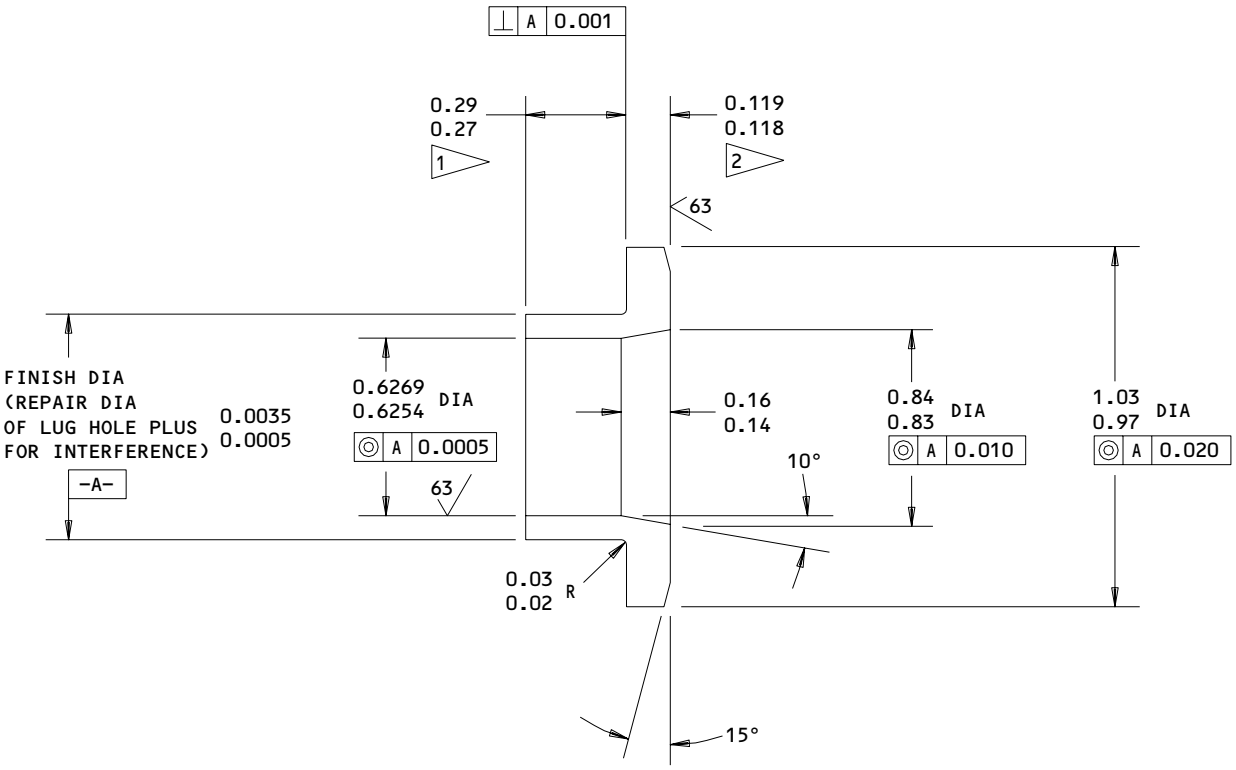
MATERIAL: AL–NI–BRZ PER AMS 4640 OR 4880

ALL DIMENSIONS APPLY BEFORE PLATING

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (6) FIG. 601 – REPLACES BUSHING (25, IPL FIG. 5) 162T4006-1

Oversize Bushing Details
Figure 604



1 MINUS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

3 USED ON 162T4012-7,-8 ONLY

125 MACHINED FINISH EXCEPT AS NOTED

BREAK SHARP EDGES 0.01-0.02 R

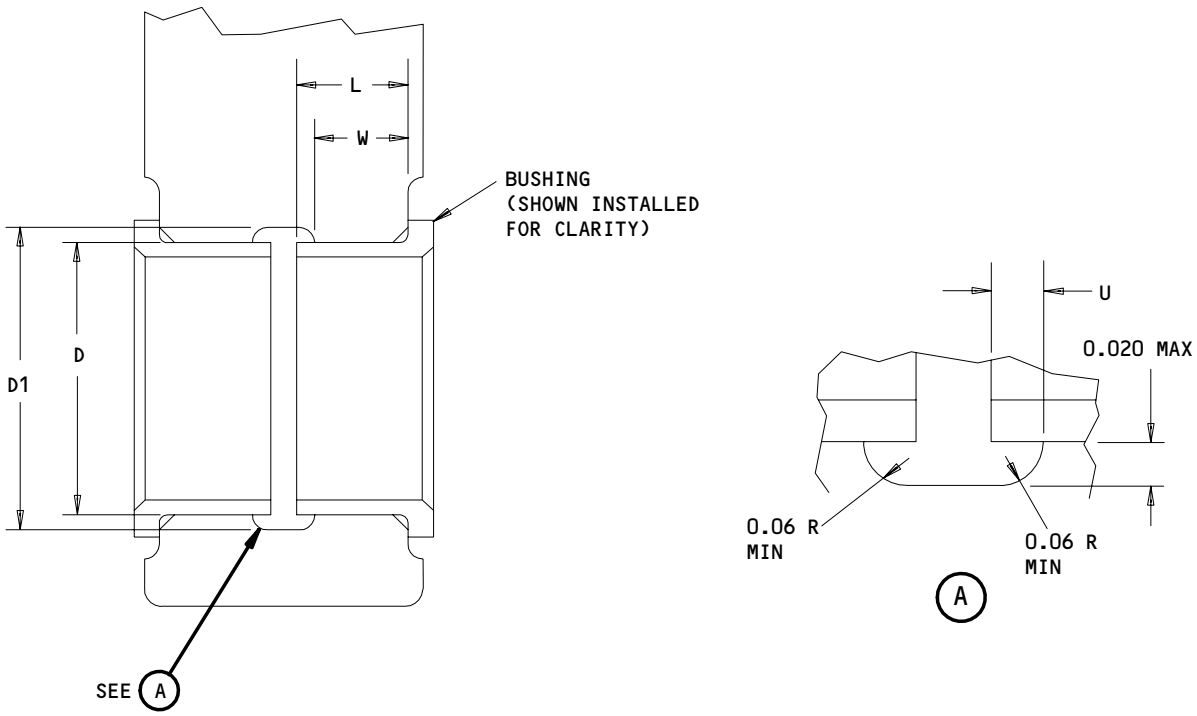
NO FINISH

MATERIAL: AL-NI-BRZ PER AMS 4640 OR 4880

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (4) (10) FIG. 601 - REPLACES BUSHING (20A, IPL FIG. 4) 162T4020-1

Oversize Bushing Details
Figure 605



D = MAX REPAIR DIA OF HOLE (SEE FIG. 601)

D1 = MAX REPAIR DIA OF GROOVE = (D + 0.040)

L = LENGTH OF BUSHING (SEE FIG. 603)

U = UNDERCUT = (L X 0.1) (0.06 MAX)

W = LUG DIM TO EDGE OF GROOVE = (L – U)

ALL DIMENSIONS ARE IN INCHES

Lug Hole Diameter – Corrosion Removal from Area Between Bushings
Figure 606

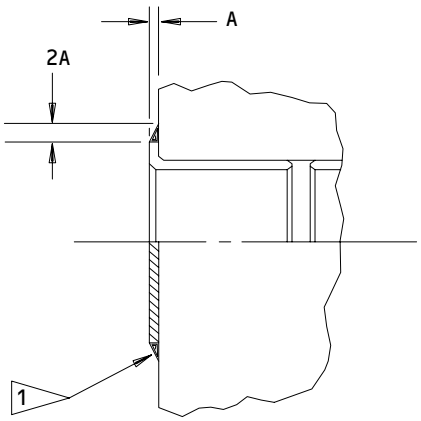
BUSHING SEALING - REPAIR 6-1

1. All paint applications must be completed including final gray topcoat prior to sealant application.

2. Solvent clean area to be sealed and surrounding area per 20-30-03.

3. Apply fillet of BMS 5-95 sealant (BMS 5-79 optional) as shown in applicable figure.

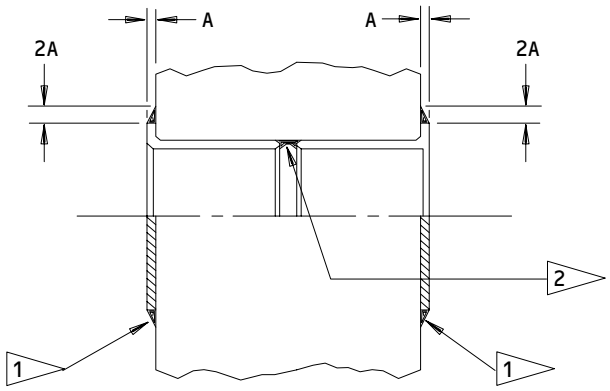
4. Apply BMS 10-60 gray gloss enamel (SRF-14.9813) over sealant and areas around sealant. Apply protective finish per 20-50-05. Use care not to apply overcoat to bushing faces.



1 FILLET SHALL EXTEND TO TOP OF BUSHING FLANGE EDGE AND BE PROPORTIONED AS SHOWN DO NOT APPLY SEALANT TO BUSHING FACE.

Bushing Sealing Details
Figure 601

73196



1 FILLET SHALL EXTEND TO TOP OF BUSHING FLANGE EDGE AND BE PROPORTIONED AS SHOWN. DO NOT APPLY SEALANT TO BUSHING FACE.

2 FILL CAVITY BETWEEN BUSHINGS AS SHOWN. SEALANT SHALL NOT EXTEND PAST BORE DIAMETER OF BUSHINGS. OMIT PAINT FROM THIS SEALANT.

Bushing Sealing Details
Figure 602

13681

ILLUSTRATED PARTS LIST

1. This section lists and illustrates replaceable or repairable component parts. The Illustrated Parts Catalog contains a complete explanation of the Boeing part numbering system.

2. Indentures show parts relationships as follows:

   Assembly
     Detail Parts for Assembly
     Subassembly
     Attaching Parts for Subassembly
       Detail Parts for Subassembly

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

3. One use code letter (A, B, C, etc.) is assigned in the EFF CODE column for each variation of top assembly. All listed parts are used on all top assemblies except when limitations are shown by use code letter opposite individual part entries.

4. Letter suffixes (alpha-variants) are added to item numbers for optional parts, Service Bulletin modification parts, configuration differences (except left- and right-hand parts), product improvement parts, and parts added between two sequential item numbers. The alpha-variant is not shown on illustrations when appearance and location of all variants of the part is the same.

5. Service Bulletin modifications are shown by the notations PRE SB XXXX and POST SB XXXX.

   A. When a new top assembly part number is assigned by Service Bulletin, the notations appear at the top assembly level only. The configuration differences at detail part level are then shown by use code letter.

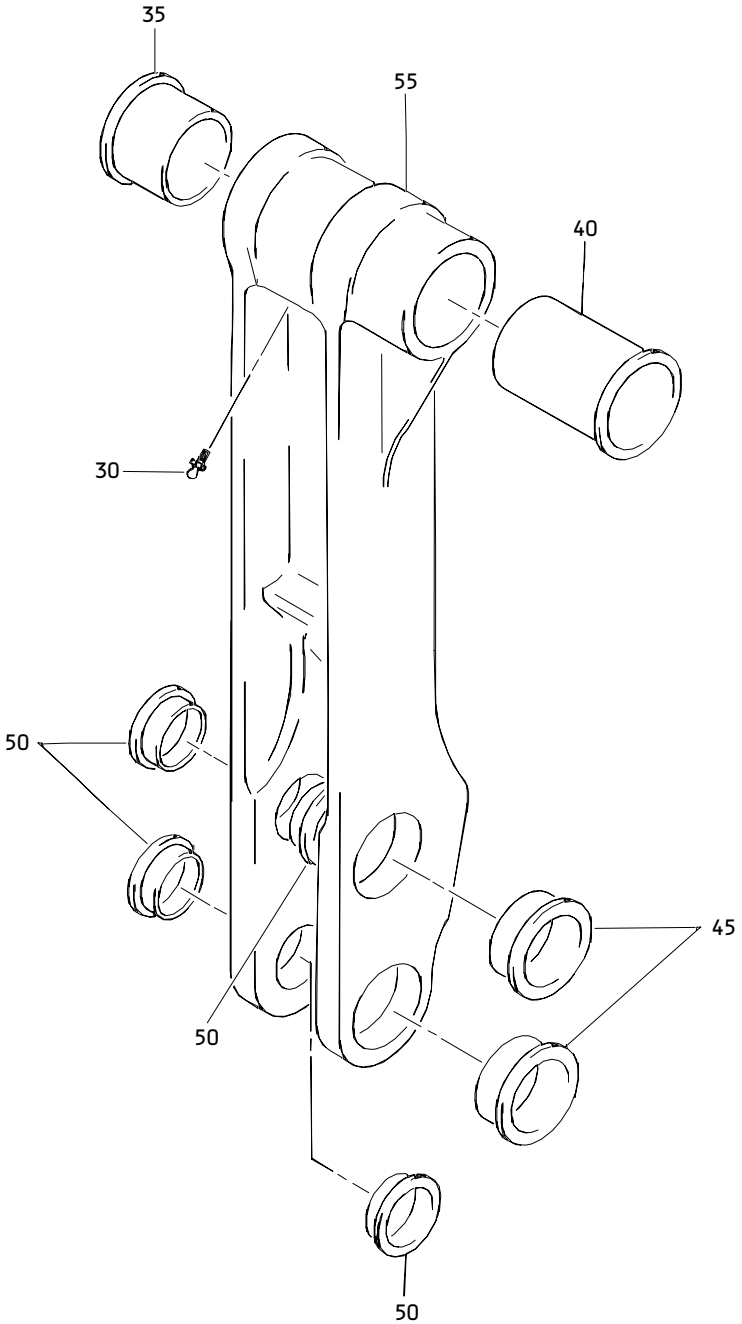
   B. When the top assembly part number is not changed by the Service Bulletin, the notations appear at the detail part level.

6. Parts Interchangeability

Optional (OPT)	The parts are optional to and interchangeable with other parts having the same item number.
Supersedes, Superseded By (SUPSDS, SUPSD BY)	The part supersedes and is not interchangeable with the original part.
Replaces, Replaced By (REPLS, REPLD BY)	The part replaces and is interchangeable with, or is an alternate to, the original part.

VENDORS

95879 ALEMITE DIVISION OF STEWART WARNER CORP
1826 DIVERSEY PARKWAY
CHICAGO, ILLINOIS 60614

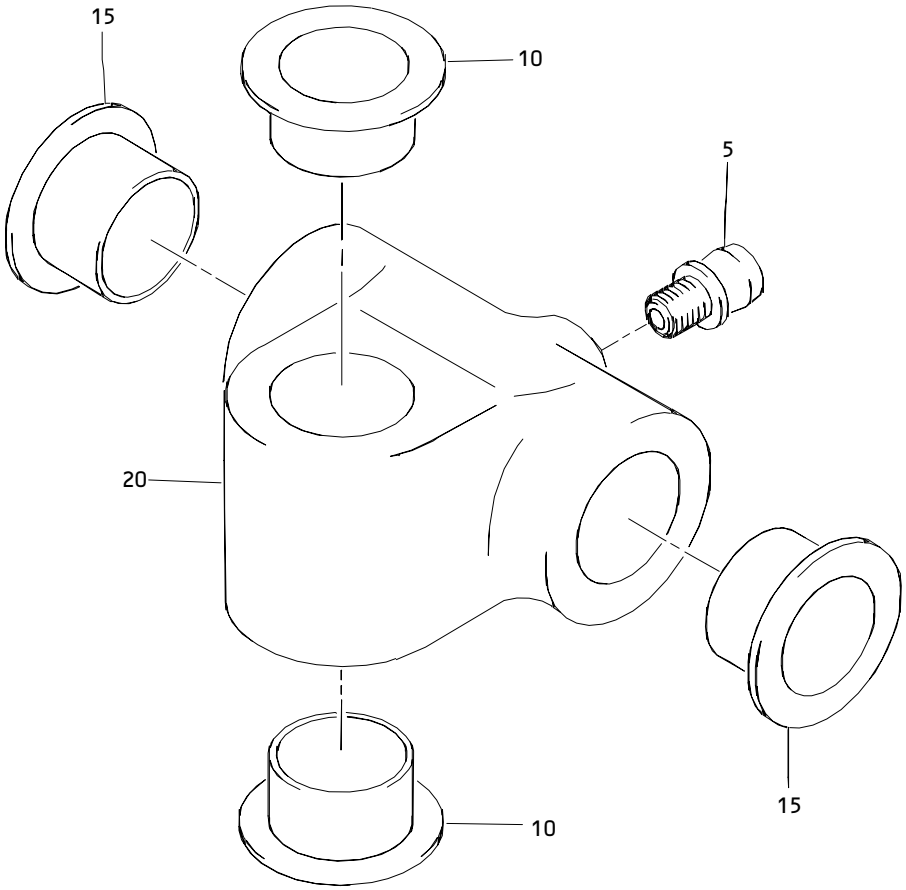


Forward Door Mechanism Idler Arm Assembly
Figure 1

T55335

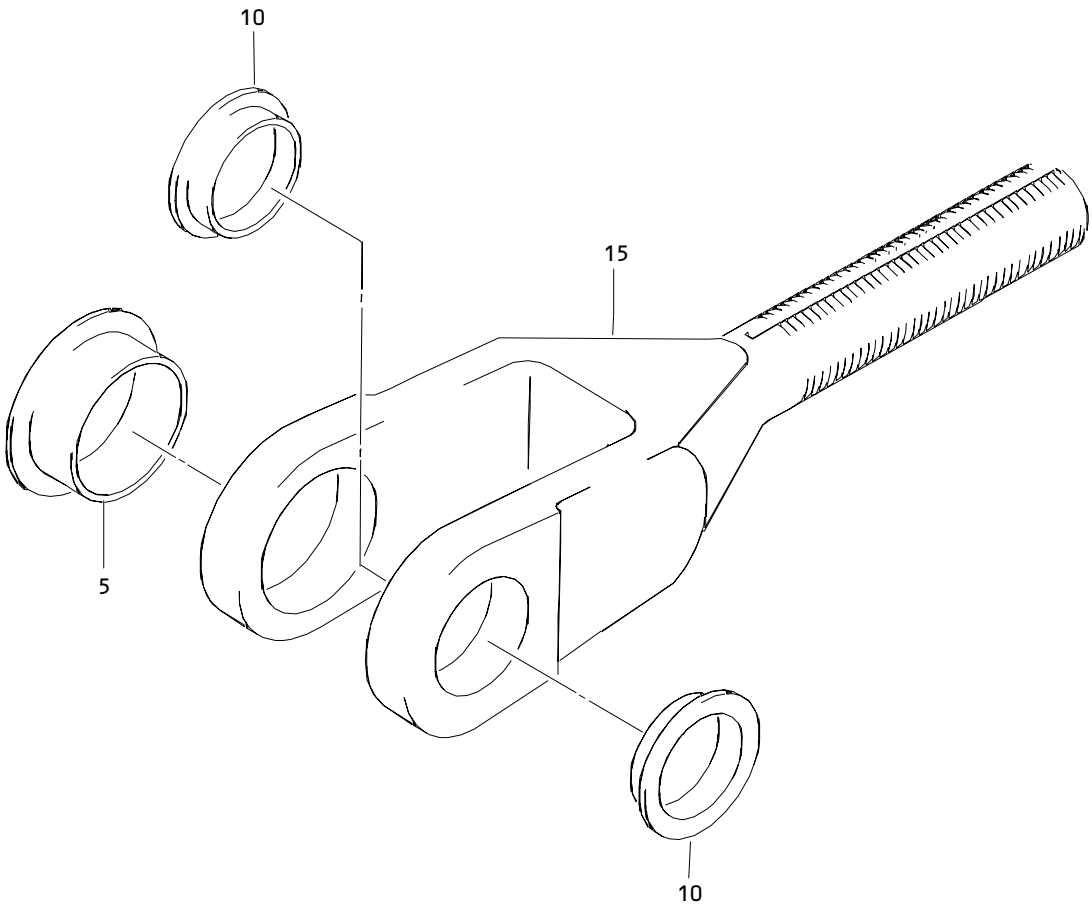
FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 12345657	EFF CODE	QTY PER ASSY
01-					
-1	162T4001-1		DELETED		
-1A	162T4001-9		ARM ASSY, FWD DOOR MECH IDLER (LH)	A	RF
-5	162T4001-2		DELETED		
-5A	162T4001-10		ARM ASSY, FWD DOOR MECH IDLER (RH)	B	RF
-10	162T4002-1		UNIVERSAL ASSY, DOOR OPERATOR (FOR DETAILS SEE FIG. 2)	C	RF
-12	162T4002-3		UNIVERSAL ASSY, DOOR OPERATOR (FOR DETAILS SEE FIG. 2)	D	RF
-15	162T4010-1		CLEVIS ASSY, DOOR OPERATOR (FOR DETAILS SEE FIG. 3)	E	RF
-20	162T4012-1		BELLCRANK ASSY, DOOR OPERATOR MECH (LH) (FOR DETAILS SEE FIG. 4)	F	RF
-20A	162T4012-7		BELLCRANK ASSY, DOOR OPERATOR MECH (LH) (FOR DETAILS SEE FIG. 4)	H	RF
-25	162T4012-2		BELLCRANK ASSY, DOOR OPERATOR MECH (RH) (FOR DETAILS SEE FIG. 4)	G	RF
-25A	162T4012-8		BELLCRANK ASSY, DOOR OPERATOR MECH (RH) (FOR DETAILS SEE FIG. 4)	I	RF
-27	162T4004-3		BARREL ASSY, DOOR OPERATOR ADJUSTER (FOR DETAILS SEE FIG. 5)	J	RF RF
30	1728B		.FITTING-LUBE (V95879)	AB	1
35	161T1210-49		.BUSHING	AB	1
40	161T1210-50		.BUSHING	AB	1
45	161T1210-46		.BUSHING	AB	2
50	161T1210-53		.BUSHING	AB	4
55	162T4001-3		DELETED		
-55A	162T4001-5		DELETED		
55B	162T4001-11		.ARM- (OPT ITEM 55C)	A	1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 12345657	EFF CODE	QTY PER ASSY
01-					
-55C	162T4001-13		.ARM- (OPT ITEM 55B)	A	1
-60	162T4001-4		DELETED		
-60A	162T4001-6		DELETED		
-60B	162T4001-12		.ARM- (OPT ITEM 60C)	B	1
-60C	162T4001-14		.ARM- (OPT ITEM 60B)	B	1



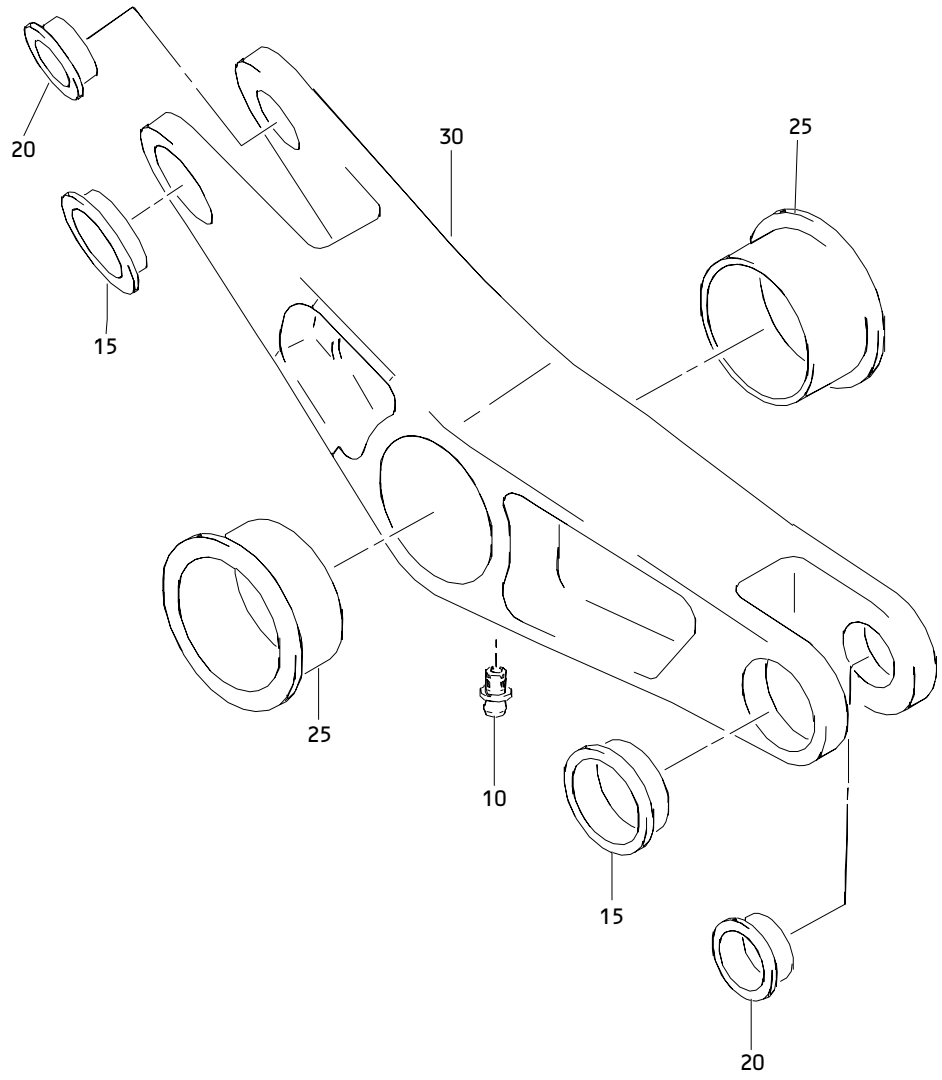
Door Operator Universal Assembly
Figure 2

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 12345657	EFF CODE	QTY PER ASSY
02-					
-1	162T4002-1		UNIVERSAL ASSY, DOOR OPERATOR	A	RF
-1A	162T4002-3		UNIVERSAL ASSY, DOOR OPERATOR	B	RF
5	1728B		.FITTING-LUBE (V95879)	A	1
-5A	3036		.FITTING-LUBE	B	1
10	161T1210-47		.BUSHING		2
15	161T1210-48		.BUSHING		2
20	162T4002-2		.UNIVERSAL		1



Door Operator Clevis Assembly
Figure 3

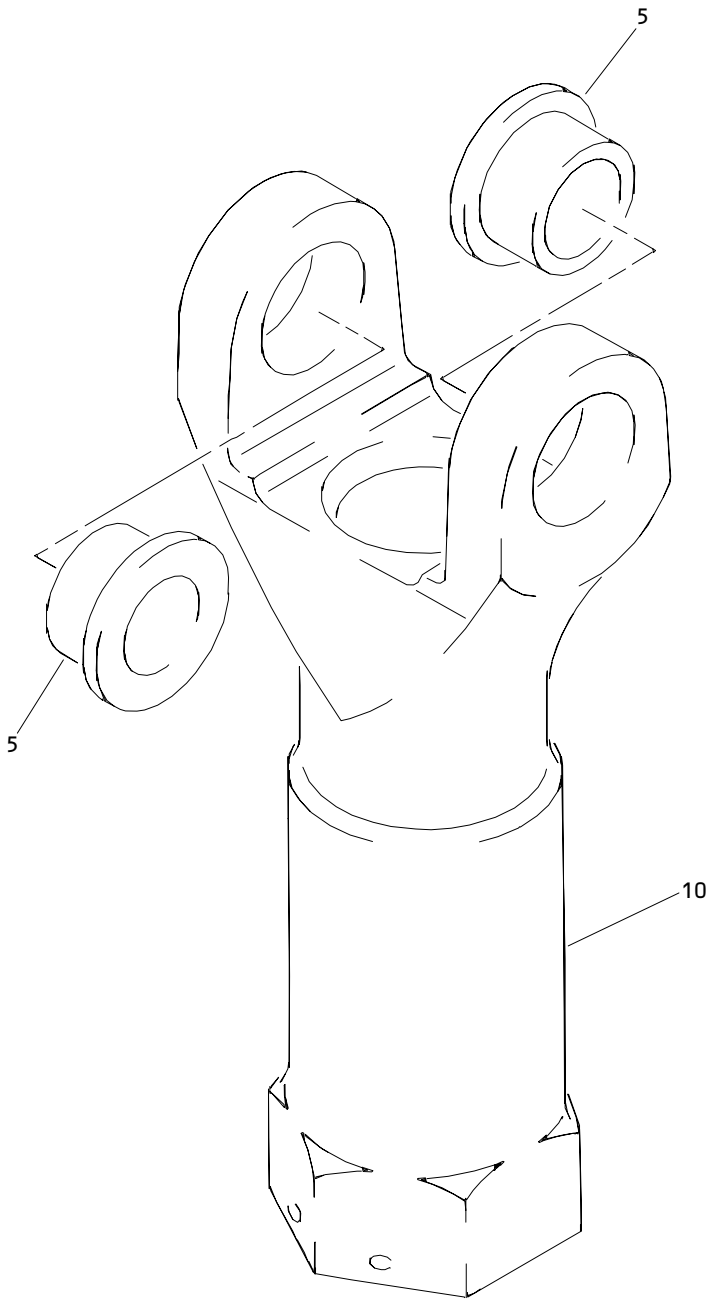
FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 12345657	EFF CODE	QTY PER ASSY
03-					
-1	162T4010-1		CLEVIS ASSY, DOOR OPERATOR		RF
5	161T1210-34		.BUSHING		1
10	161T1210-54		.BUSHING		2
15	162T4010-2		.CLEVIS		1



Door Operator Mechanism Bellcrank Assembly
Figure 4

T55338

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 12345657	EFF CODE	QTY PER ASSY
04-					
-1	162T4012-1		BELLCRANK ASSY, DOOR OPERATOR MECH (LH)	A	RF
-1A	162T4012-7		BELLCRANK ASSY, DOOR OPERATOR MECH (LH)	C	RF
-5	162T4012-2		BELLCRANK ASSY, DOOR OPERATOR MECH (RH)	B	RF
-5A	162T4012-8		BELLCRANK ASSY-NLG DOOR OPERATION MECH (RH)	D	RF
10	1728B		.FITTING-LUBE (V95879)		1
15	161T1210-52		.BUSHING		2
20	161T1210-51		.BUSHING	AB	2
-20A	162T4020-1		.BUSHING	CD	2
25	162T4006-1		.BUSHING		2
30	162T4012-3		.BELLCRANK	A	1
-30A	162T4012-9		.BELLCRANK	C	1
-35	162T4012-4		.BELLCRANK	B	1
-35A	162T4012-10		.BELLCRANK	D	1



Door Operator Adjuster Barrel Assembly
Figure 5

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
05-					
-1	162T4004-3		BARREL ASSY, DOOR OPERATOR ADJUSTER		RF
5	161T1210-47		.BUSHING		
10	162T4004-2		.BARREL		