TO: ALL HOLDERS OF MLG BOGIE COMPONENT ASSY COMPONENT MAINTENANCE MANUAL
32-11-50

REVISION NO. 34 DATED NOV 01/04

HIGHLIGHTS

All that was in 767 CMM 32-11-51 is now included in this CMM 32-11-50.

Pages which have been added or revised are outlined below together with the highlights of the revision. Remove and insert the affected pages as listed and enter Revision No. and date on the Record of Revision Sheet.

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
DESCRIPTION & OPERATION 1 501 REPAIR 4-1 601-602	Added clarifications and updated callouts.
REPAIR 4-1 601-602	Added end face repair of brake sleeve.

MAIN LANDING GEAR BOGIE COMPONENT ASSEMBLY

PART NUMBERS 161T1130-1,-3 THRU -13
015T0819-13

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

REVISION RECORD

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

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

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
		MC B1321-003	OCT 10/84
		PRR B10379	JAN 10/84
32-0021		PRR B11080	JUL 10/84
32-0021,R1			
		PRR B11080-1	OCT 10/84
		PRR C12017	JAN 10/84
32-0023			APR 10/84
51-0007		MC B1031-025K	APR 10/85
		PRR B11667	JAN 01/90
		MC 0310MP6101	JAN 01/93
		PRR B12510	APR 01/93
32-0145		MC 0310MK6101	JUN 01/96
32-0175		MC 0310MK6239	NOV 01/98
32A0196,R2			JUL 01/03

PAGE	DATE	CODE
32-11-50		
TITLE PAGE		
1	JUN 01/96	01.1
2	BLANK	
REVISION RECORD		
1	JUN 01/96	01.1
2	BLANK	
TR & SB RECORD		
1	JUL 01/04	01.1
2	BLANK	
LIST OF EFFECTIVE PAGES		
*1	NOV 01/04	01
THRU LAST PAGE		
CONTENTS		
1	JUL 01/04	01.1
2	BLANK	
INTRODUCTION		
1	JUN 01/96	01.1
2	BLANK	
DESCRIPTION & OPERATION		
*1	NOV 01/04	01.1
2	BLANK	
DISASSEMBLY		
301	MAR 01/01	01.1
302	BLANK	
CHECK		
*501	NOV 01/04	01.1
502	BLANK	
REPAIR-GENERAL		
601	JUL 01/03	01.1
602	NOV 01/01	01.1

PAGE	DATE	CODE
REPAIR 1-1		
601	JUL 01/04	01.1
602	JUN 01/96	01.1
603	MAR 01/04	01.1
604	BLANK	
REPAIR 1-2		
601	JUL 01/04	01.1
602	JUL 01/03	01.1
603	JUN 01/96	01.1
604	JUN 01/96	01.1
605	JUL 01/98	01.1
606	JUN 01/96	01.1
607	JUN 01/96	01.1
608	NOV 01/00	01.1
609	DEC 01/97	01.1
610	JUL 01/99	01.1
611	DEC 01/97	01.1
612	DEC 01/97	01.101
613	DEC 01/97	01.101
614	DEC 01/97	01.101
REPAIR 2-1		
601	NOV 01/01	01.1
602	JUN 01/96	01.1
603	JUN 01/96	01.1
604	BLANK	
REPAIR 2-2		
601	JUL 01/02	01.1
602	JUL 01/02	01.1
603	JUL 01/02	01.1
604	JUL 01/02	01.1
605	JUL 01/02	01.1
606	JUL 01/02	01.101
607	JUL 01/02	01.101
608	NOV 01/03	01.1
609	JUL 01/02	01.101
610	JUL 01/02	01.101

* = REVISED, ADDED OR DELETED

PAGE	DATE	CODE
REPAIR 3-1		
601	NOV 01/01	01.1
602	BLANK	
REPAIR 3-2		
601	NOV 01/01	01.1
602	MAR 01/01	01.1
603	MAR 01/99	01.1
604	MAR 01/99	01.1
605	JUL 01/01	01.1
606	MAR 01/99	01.101
REPAIR 4-1		
*601	NOV 01/04	01.1
*602	NOV 01/04	01.1
REPAIR 5-1		
601	MAR 01/01	01.1
602	MAR 01/01	01.1
603	MAR 01/01	01.1
604	BLANK	
REPAIR 6-1		
601	MAR 01/02	01.1
602	BLANK	
REPAIR 7-1		
601	JUN 01/96	01.1
602	BLANK	
ASSEMBLY		
701	NOV 01/01	01.1
702	JUL 01/04	01.1
703	NOV 01/01	01.1
704	BLANK	
FITS AND CLEARANCES		
801	JUN 01/96	01.1
802	MAR 01/02	01.1
803	MAR 01/04	01.1
804	JUN 01/96	01.1

PAGE	DATE	CODE
SPECIAL TOOLS		
901	NOV 01/99	01.1
902	BLANK	
ILLUSTRATED PARTS LIST		
1001	JUN 01/96	01.1
1002	JUL 01/02	01.1
1003	JUN 01/96	01.1
1004	JUN 01/96	01.1
1005	NOV 01/00	01.1
1006	SEP 01/97	01.1
1007	JUL 01/03	01.1
1008	BLANK	

* = REVISED, ADDED OR DELETED

TABLE OF CONTENTS

*[1] Special instructions are not necessary. Use standard industry practices and the instructions in SOPM 20-30-03.

INTRODUCTION

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

This manual is divided into separate sections:

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

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

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

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

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

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

Verification:

Disassembly -- Nov 12/81
Assembly -- Nov 12/81

MAIN LANDING GEAR BOGIE COMPONENT ASSEMBLY

DESCRIPTION AND OPERATION

1. The bogie component assembly includes a bogie beam with an axle and tow fitting at each end. The axles and beam are made of high strength (275-300 ksi) steel and the tow fittings are made of aluminum alloy. The assembly provides mounting for wheel and brake assemblies and attaches to the main landing gear shock strut at a pivot joint in the center of the beam.

2. Leading Particulars (Approximate)

   A. Length -- 63 inches

   B. Width -- 58 inches (at axles)

   C. Height -- 13 inches

   D. Weight -- 560 pounds

DISASSEMBLY

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

1. Equipment

   NOTE: Equivalent substitutes can be used.

   A. A32083-11 -- Axle Puller

   B. A32079-1 -- Brake Sleeve Puller

2. Parts Replacement

   A. Lockwire is recommended for replacement. Replacement of other parts can be by in-service experience.

3. Disassembly (IPL Fig. 1)

   A. Remove all lockwire.

   B. Remove bolts (5) and bracket (10).

   C. Mount beam in a fixture to let you apply sufficient ram force to remove axles (95).

   CAUTION: AXLE COULD HAVE UNDERSIZE THREADS AND BE MATCHED PARTS WITH AXLE NUT(S).

   D. Remove brake sleeves (90) from axle (95) with brake sleeve puller A32079-1.

   CAUTION: DO NOT MAKE THE BOGIE BEAM HOTTER THAN 300°F, TO PREVENT DAMAGE TO HEAT TREATED PARTS.

   E. To make axle removal easier, fill the axle with dry ice and apply heat to beam assembly (110). With puller A32083-11, or a hydraulic press or something equivalent, remove axle (95) from bogie beam (110).

   F. Remove tow fitting (45) from beam (110).

CHECK

1. Examine all parts for defects by standard industry practices. Refer to FITS AND CLEARANCES for design dimensions and wear limits.

2. Magnetic particle examine (SOPM 20-20-01) -- bolts (5), sleeve (90), axle (105), beam (135).

3. Penetrant examine tow fitting (85) (SOPM 20-20-02).

REPAIR - GENERAL

1. Content

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

P/N	NAME	REPAIR
161T1131	BOGIE BEAM	1-1, 1-2
161T1133	TOW FITTING	2-1, 2-2
161T1138	AXLE	3-1, 3-2
161T1149	BRAKE SLEEVE	4-1
69B04065	BOLT	5-1
- -	MISCELLANEOUS PARTS REFINISH	6-1
- -	BUSHING SEALING	7-1

2. Standard Practices

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

20-00-00 Introduction
20-10-01 Repair and Refinish of High Strength Steel
20-10-03 Shot-Peening
20-10-04 Grinding of Chrome Plated Parts
20-10-09 Machining of Copper Beryllium Alloys
20-30-02 Stripping of Protective Finishes
20-41-01 Decoding Table for Boeing Finish Codes
20-42-01 Low Hydrogen Embrittlement Cadmium Plating
20-42-02 Low Hydrogen Embrittlement Cadmium-Titanium Plating
20-42-03 Hard Chrome Plating
20-42-09 Electrodeposited Nickel Plating
20-43-01 Chromic Acid Anodizing
20-50-03 Bearing and Bushing Replacement
20-60-02 Finishing Materials
20-60-03 Lubricants
20-60-04 Miscellaneous Materials
32-00-02 Landing Gear Attachment Parts Topcoat Application
32-00-03 Landing Gear Parts-Lubrication Fitting Replacement
32-00-05 Repair of High Strength Steel Landing Gear Parts

NOTE: Cadmium plating (SOPM 20-42-01) can be used as an alternative for the preferred cadmium-titanium plating (SOPM 20-42-02).

3. Materials

NOTE: Equivalent substitutes can be used.

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

B. Enamel -- BMS 10-60, gray gloss color 707 (SOPM 20-60-02)

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

D. Grease -- BMS 3-33 or MIL-G-23827 (SOPM 20-60-03)

E. Grease -- Aeroshell No. 5 (SOPM 20-60-03)

F. Grease -- Royco 11MS (SOPM 20-60-03)

G. Corrosion Preventive Compound -- MIL-C-11796, Class 1 (SOPM 20-60-02)

4. Equipment

NOTE: Equivalent substitutes can be used.

A. Bushing puller set, bogie beam - A32067-11 (Replaces A32067-1 or A32067-13).

5. Dimensioning Symbols

A. Standard True Position Dimensioning Symbols used in applicable repair procedures are shown in SOPM 20-00-00.

BEAM ASSEMBLY, BOGIE - REPAIR 1-1

161T1131-1, -5 THRU -9, -11

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

1. Bushing Replacement (Fig. 601)

   A. Remove the old bushings. Puller set A32067-series can be used to remove bushings (125, 130). If this bogie beam has the optional 161T1260-1 Karon-lined bushings (130D) (SB 32A0176), get new oversize 161T1260-1 bushings and adjust their flange and OD dimensions to adjust for material removed from the lug surfaces. Refer to REPAIR 1-2 for details.

   B. If you find defects on lug faces or hole surfaces, refer to REPAIR 1-2 for repair instructions.

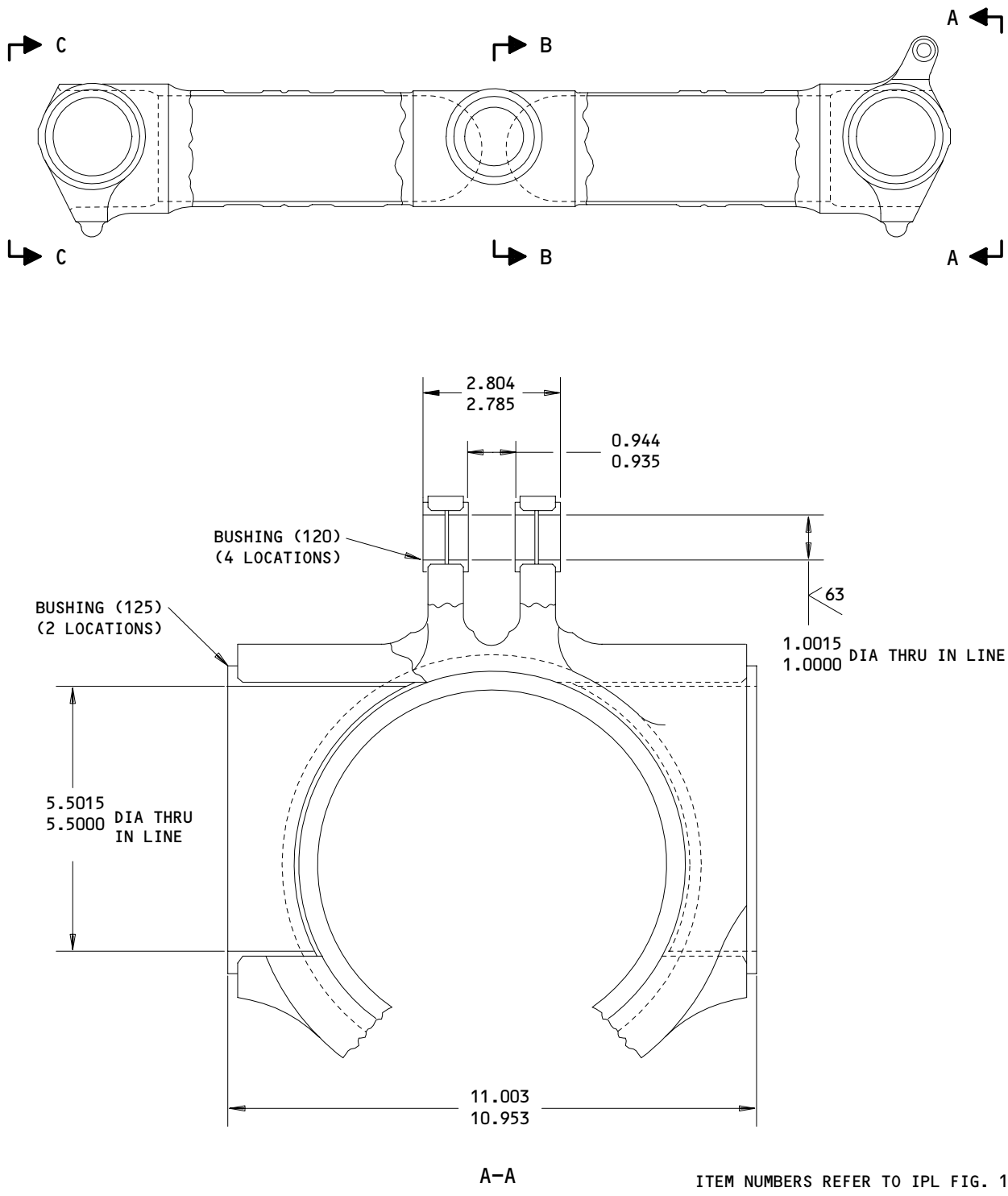
   C. Install replacement bushings by the shrink-fit method. If you apply the corrosion preventive compound to the beam bore after axle installation, do not install mid-pivot bushings (130) until after you apply the corrosion preventive compound. If you apply the corrosion preventive compound before bushing installation, use liquid nitrogen to cool the bushings and do not heat the beam, or the heat could melt the compound. Melted compound could flow away from surfaces and cause a blockage of the drain holes.

   D. Make a check of the dimensions and machine them as necessary to design dimensions and finish shown. But do not machine the bushing (130D) bore, because it is Karon-lined.

   E. Seal the bushings per REPAIR 7-1.

2. Lube Fitting Replacement

   A. Replace lube fittings (115) per CMM 32-00-03.



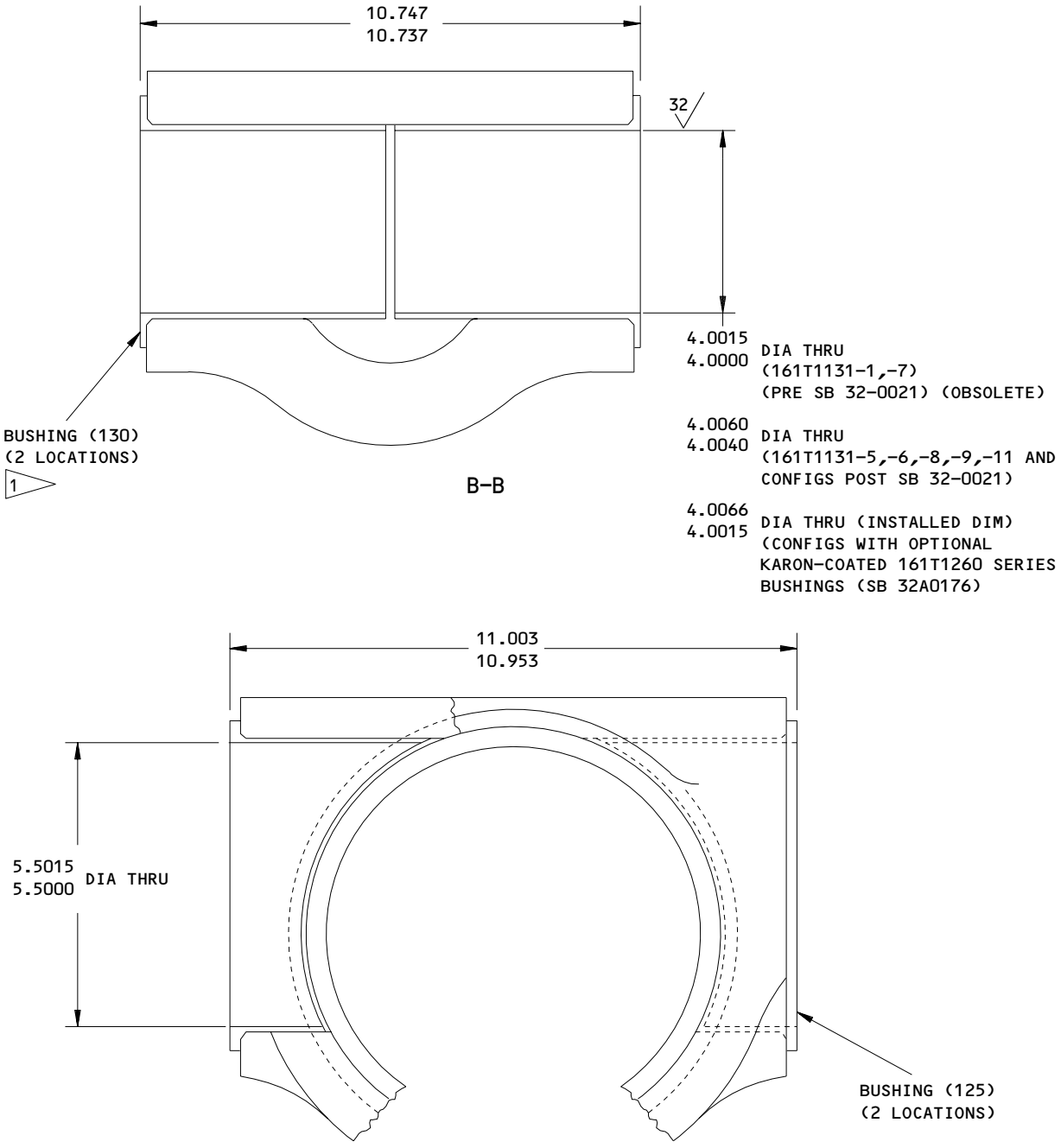
A-A

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

161T1131-1,-5 THRU -9,-11

Beam Bushing Replacement
Figure 601 (Sheet 1)



1 IF YOU APPLY THE CORROSION PREVENTIVE COMPOUND TO THE BEAM BORE AFTER AXLE INSTALLATION, DO NOT INSTALL THE MID-PIVOT BUSHINGS UNTIL AFTER YOU APPLY THE CORROSION PREVENTIVE COMPOUND

ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

161T1131-1,-5 THRU -9,-11

Beam Bushing Replacement
Figure 601 (Sheet 2)

BEAM, BOGIE - REPAIR 1-2

161T1131-2, -4, -10

NOTE: Refer to REPAIR - GENERAL for a 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. Installation of Oversize Bushings

NOTE: Refer to par. C for repair of pivot bore on assemblies reworked per SB 32-21.

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

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

(3) Make bushings (Fig. 604, 605, 608), as necessary, to adjust for the amount of material removed in step (1). If this bogie beam had the optional 161T1260-1 Karon-lined repair bushings (130D), (SB 32A0176), get new oversize 161T1260-1 bushings and adjust their OD and flange thickness to agree with the repaired lug surfaces. Use a metal-to-metal interference fit of 0.0045-0.0060 inch with the 161T1260-1 bushings.

(4) Install the bushings per REPAIR 1-1.

B. Removal of Defects in Center of Lug ID

NOTE: This procedure lets you remove defects without machining the entire bore oversize, if the defects are only at the center area which is exposed between two bushings.

(1) Calculate the repair diameter and width of groove necessary to remove defects (Fig. 602).

(2) Machine the center area as necessary.

(3) Cadmium-titanium plate and apply primer, BMS 10-11, type 1.

(4) Install replacement bushings per REPAIR 1-1.

(5) Completely fill the cavity under and between the bushings with grease. At the pivot joint bushings (130), use Royco 11MS grease. Use BMS 3-33 or MIL-G-23827 grease at the other bushings.

C. Bogie Beam Pivot Bore (Fig. 601)

NOTE: These procedures apply only to beams reworked per SB 32-21. For other beams, refer to par. A for repair instructions.

(1) Machine the bore and end faces as necessary, within repair limits, to remove defects.

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

(3) Make oversize bushings (130B) as follows (Fig. 606).

NOTE: Oversize bushing 015T0106-10 is available with thicker flange and larger OD to let you adjust them for the material removed from the bogie beam, and to let you align the OD grease groove with the grease passage of the bogie beam.

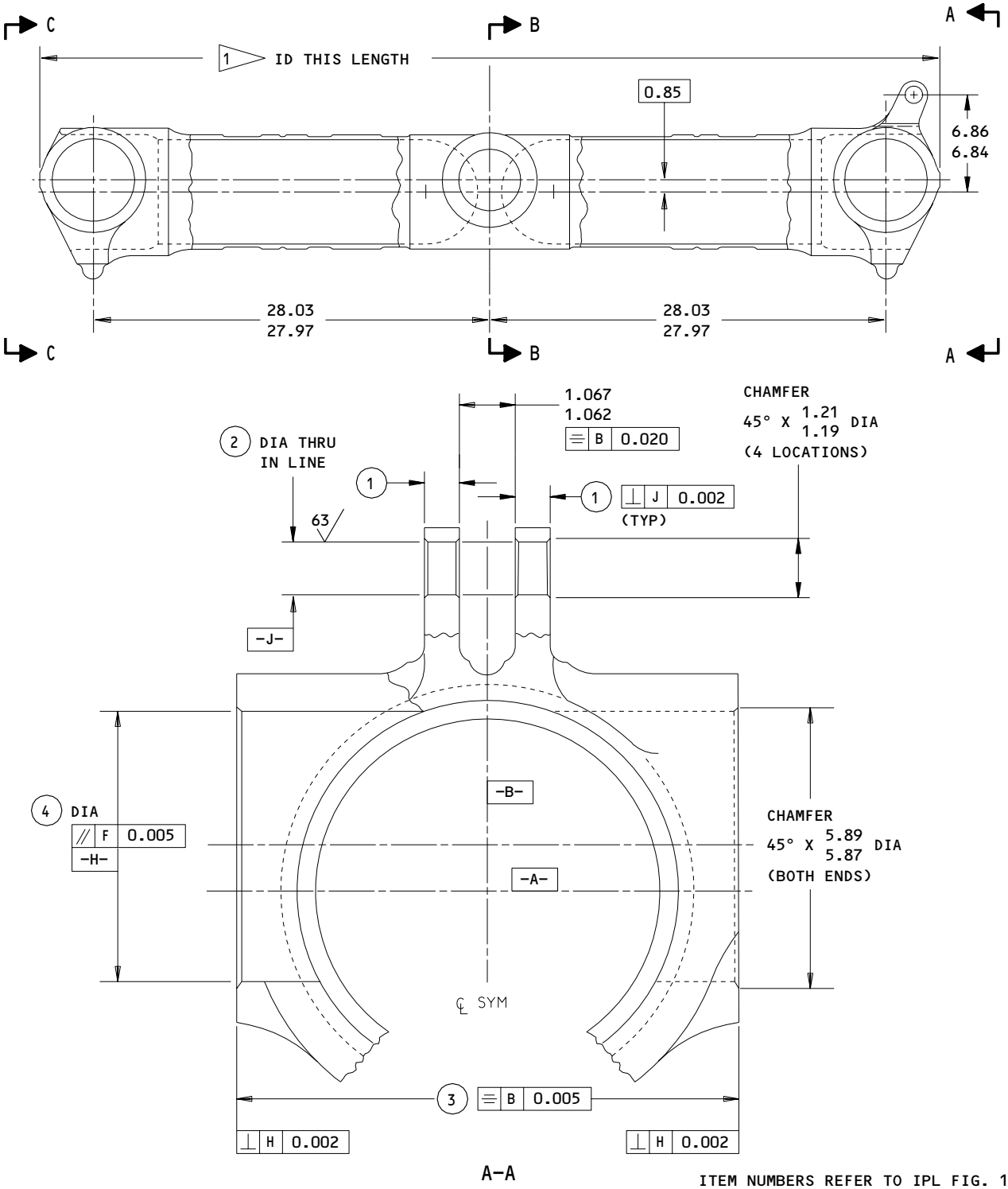
(a) Machine the back of the bushing flange, and cadmium plate it, to get a thickness which will give the design dimensions across the flange faces after the bushings are installed in the bogie beam pivot bore. Do not machine the flange face. (The flange face is chrome-plated and polished.)

(b) Machine and cadmium plate the bushing OD as necessary to get the correct interference fit with the mating bore ID.

(c) Before you cut the grease groove on the bushing OD, calculate its position by the dimensions shown in Fig. 607. The correct groove position depends on target point position (Dimension X). Locate the grease groove to give the overlap shown, and cut the groove to the dimensions shown in Fig. 606, Section A-A.

(d) Drill 0.16-0.19 diameter grease feed hole through bushing wall to let the grease feed from OD grease groove to any ID grease groove (longitudinal or circumferential).

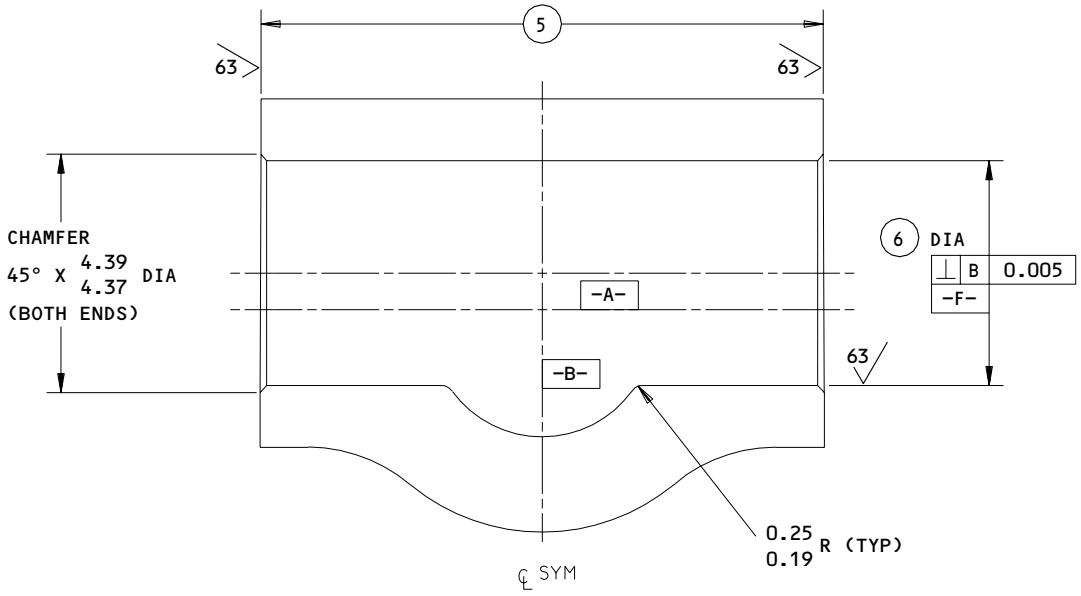
(4) Install replacement bushings per REPAIR 1-1. Apply Royco 11MS grease at the lube fittings to make sure the grease passages are open.



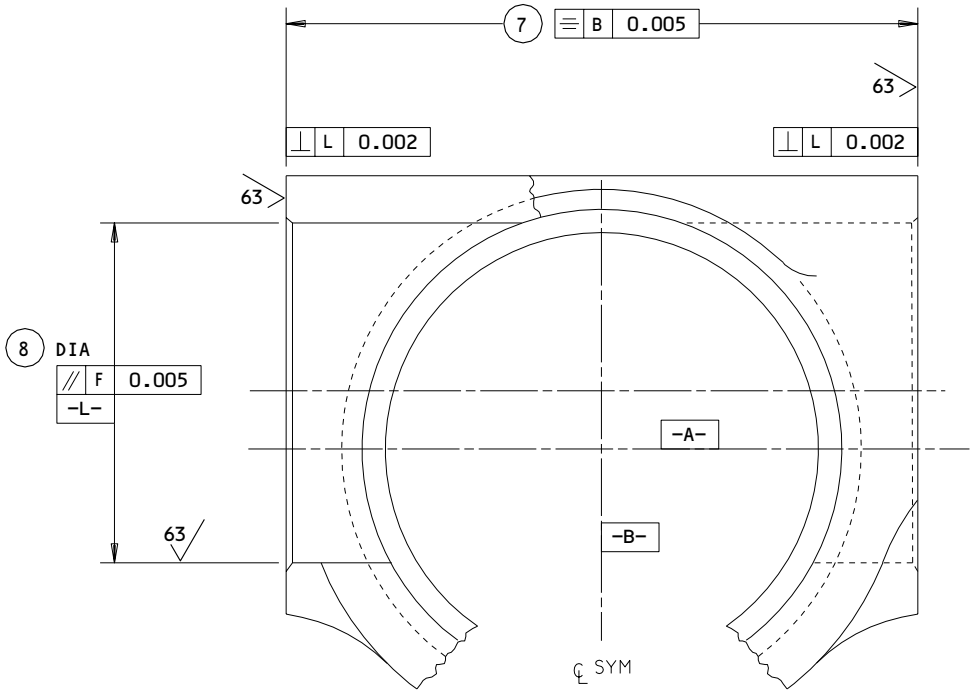
ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

161T1131-2,-4,-10
Beam Repair and Refinish
Figure 601 (Sheet 1)



B-B



C-C

ITEM NUMBERS REFER TO IPL FIG. 1
ALL DIMENSIONS ARE IN INCHES

161T1131-2,-4,-10
Beam Repair and Refinish
Figure 601 (Sheet 2)

	(1) ▷3	(2)	(3) ▷3	(4)	(5) ▷3	(6)	(7) ▷3	(8)
DESIGN DIM	0.805 0.800	1.1265 1.1250	10.76 10.75	5.7415 5.7385	10.5804 10.5754	4.2415 4.2393	10.76 10.75	5.7415 5.7400
REPAIR LIMIT ▷2	0.770	1.1865	10.72	5.8015	10.418	4.3015	10.72	5.8015

REFINISH

CADMIUM-TITANIUM PLATE (F-15.01), 0.0003 MIN, BUT 0.0005-0.0010 THICK IN BUSHING BORES AND APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02) ALL OVER EXCEPT AS NOTED. AFTER BUSHING INSTALLATION, APPLY ENAMEL BMS 10-60 (SRF-14.9813) ALL OVER, BUT NOT ON BUSHINGS OR LUBE FITTINGS.

IN THE INTERIOR, APPLY PRIMER BMS 10-11, TYPE 1 (F-20.03) AND CORROSION PREVENTIVE COMPOUND MIL-C-11796, CLASS 1 (F-19.03), BUT NOT ON THE SURFACES MATING WITH THE TOW FITTING. IF THE AXLES WILL BE INSTALLED IN THE TRUCK BEAM BY A SHRINK FIT METHOD THAT USES THE DRY ICE/ALCOHOL DRY ICE MIXTURE, APPLY THE COMPOUND AFTER THE AXLES ARE INSTALLED.

REPAIR

REF ▷2 ▷3

63 ALL MACHINED SURFACES

BREAK SHARP EDGES 0.16-0.22 R

SHOT PEEN: 0.016-0.033 SHOT SIZE
0.009-0.015 A2 INTENSITY

MATERIAL: 4340M STEEL (275-300 KSI)

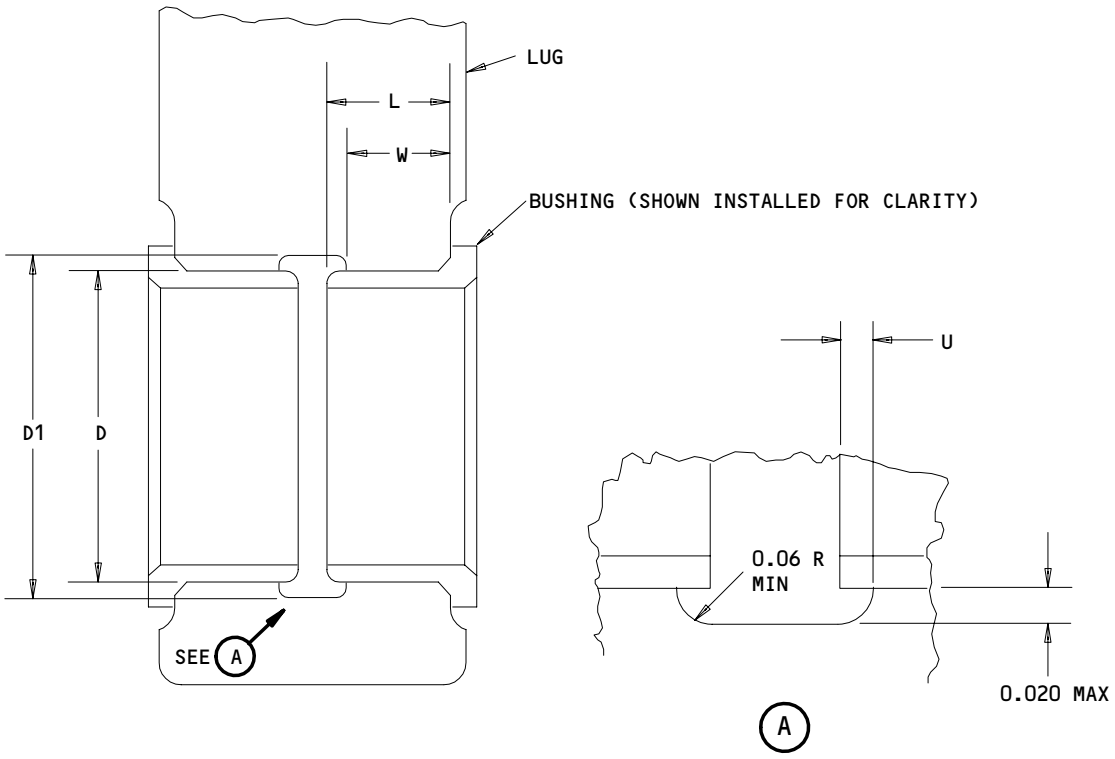
ALL DIMENSIONS ARE IN INCHES

▷1 APPLY BMS 10-11, TYPE 1 PRIMER (F-20.03) ON ID.

▷2 LIMIT FOR INSTALLATION OF OVERSIZE BUSHINGS

▷3 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 0.03-0.07 R.

161T1131-2,-4,-10
Beam Repair and Refinish
Figure 601 (Sheet 3)



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

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

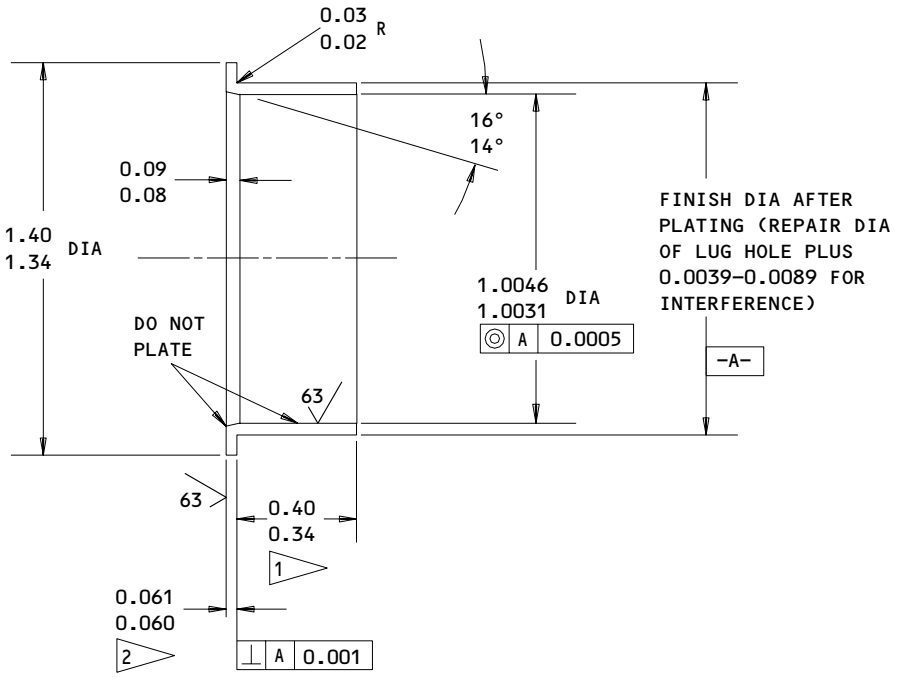
L = LENGTH OF BUSHING (SEE FIG. 602)

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



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 (OPT ON ID AND FLANGE FACE)

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

ALL DIMENSIONS APPLY BEFORE PLATING

ALL DIMENSIONS ARE IN INCHES

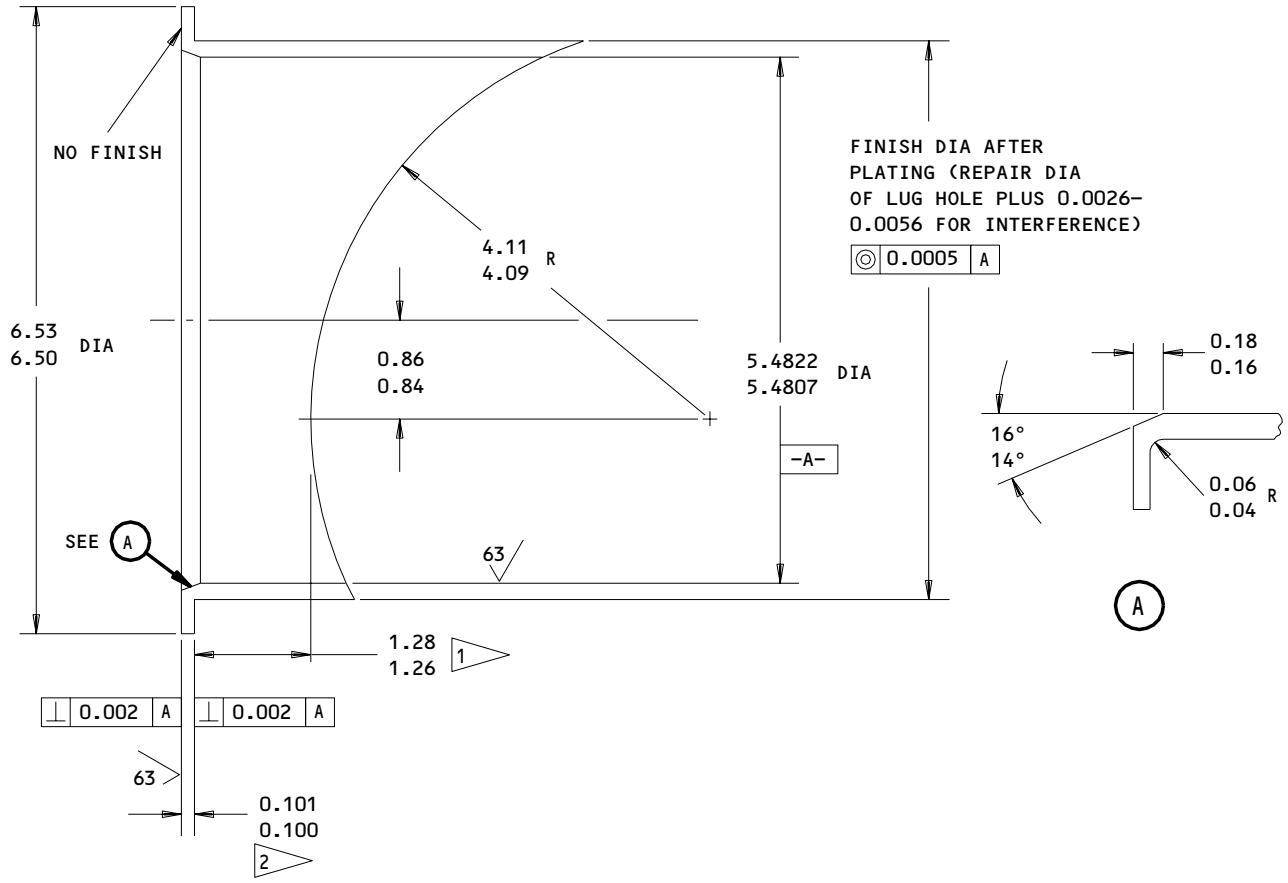
1 MINUS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

HOLE LOCATION (2) FIG. 601 – REPLACES BUSHING (120) 161T1210-21

Oversize Bushing Details
Figure 603

333



125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

CADMIUM PLATE (F-15.06) 0.0003-0.0005 THICK UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.02-0.03 R

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

DIMENSIONS APPLY BEFORE PLATING UNLESS SHOWN DIFFERENTLY

ALL DIMENSIONS ARE IN INCHES

1 MINUS AMOUNT REMOVED FROM LUG FACE

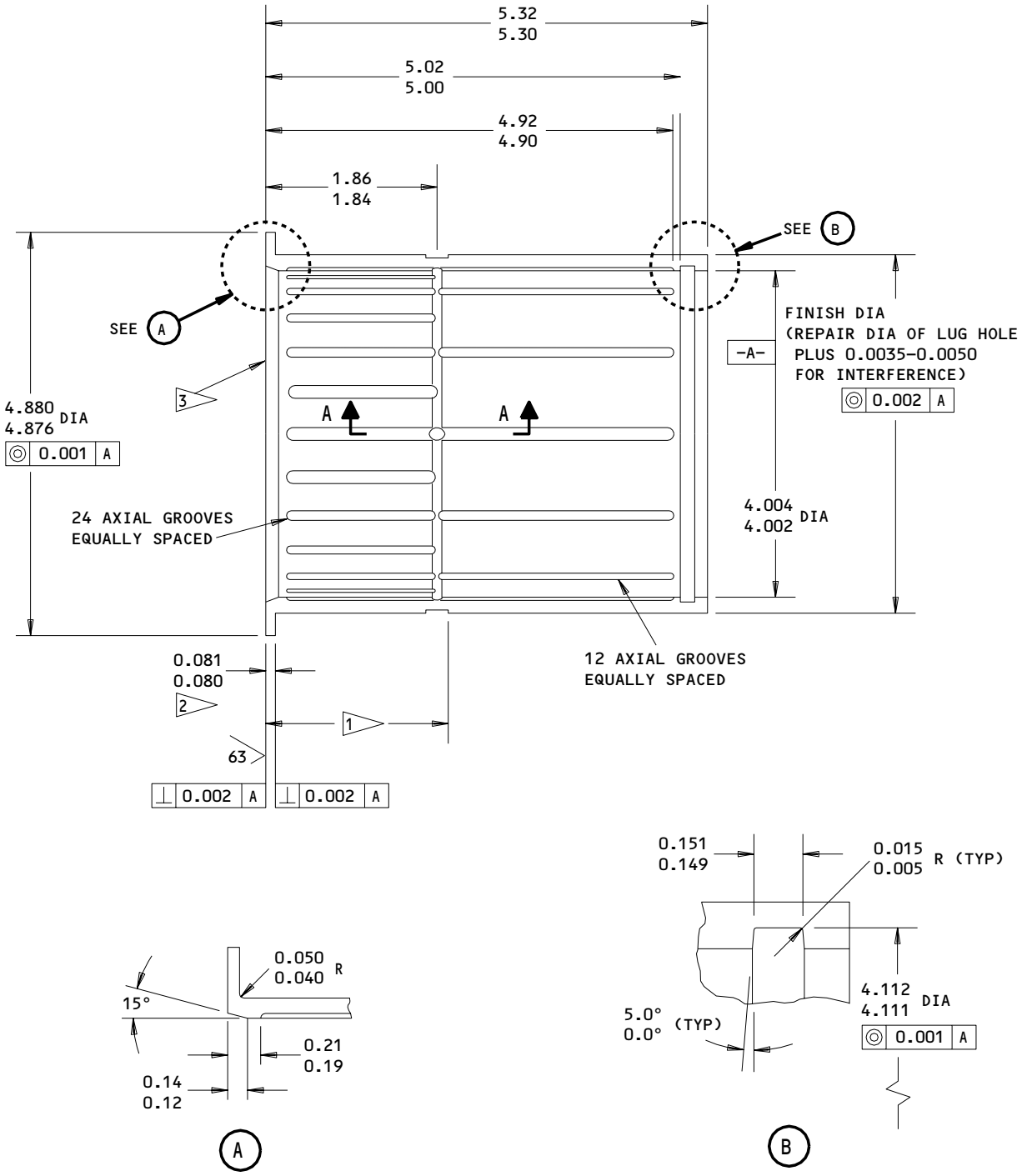
2 PLUS AMOUNT REMOVED FROM LUG FACE

HOLE LOCATIONS (4) (8) FIG. 601 - REPLACES BUSHING (125) 161T1148-1

Oversize Bushing Details
Figure 604

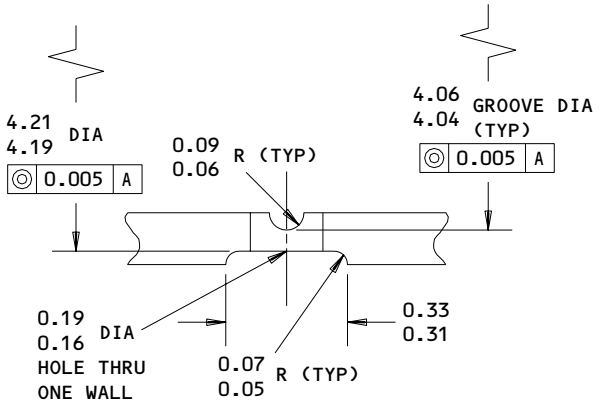
577

Not Used
Figure 605



HOLE LOCATION (6) FIG. 601 - OVERSIZE BUSHING (130B) 015T0106-10
(REPLACES BUSHING (130A) 161T1250-1 AND
BUSHING (130) 161T1147-1)

Oversize Bushing Details
Figure 606 (Sheet 1)



OD GREASE GROOVE DETAILS 1
A-A

1 LOCATE OD GREASE GROOVE PER FIG. 607

2 MACHINE BACK SIDE OF FLANGE TO DIMENSION SHOWN PLUS AMOUNT REMOVED FROM LUG FACE. DO NOT MACHINE CHROME PLATED FRONT FACE OF FLANGE

3 CHROME PLATE, 0.0003-0.0005 THICK PER 20-42-03. AFTER PLATING, BUFF AS REQUIRED TO OBTAIN SURFACE FINISH SHOWN

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

CADMIUM PLATE, EXCEPT AS NOTED, 0.0003-0.0005 THICK (F-15.06)

BREAK SHARP EDGES 0.02-0.03 R

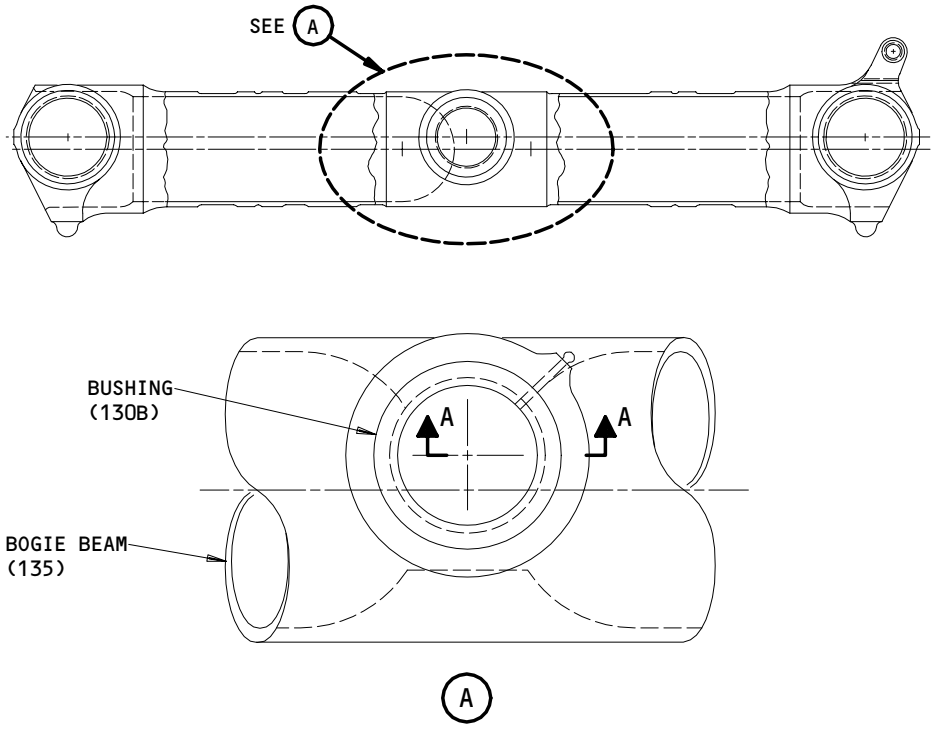
MATERIAL: AL-NI-BRZ PER AMS 4640 OR 4880

DIMENSIONS APPLY BEFORE PLATING EXCEPT AS NOTED

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (6) FIG. 601 - OVERSIZE BUSHING (130B) 015T0106-10
(REPLACES BUSHING (130A) 161T1250-1 AND
BUSHING (130) 161T1147-1)

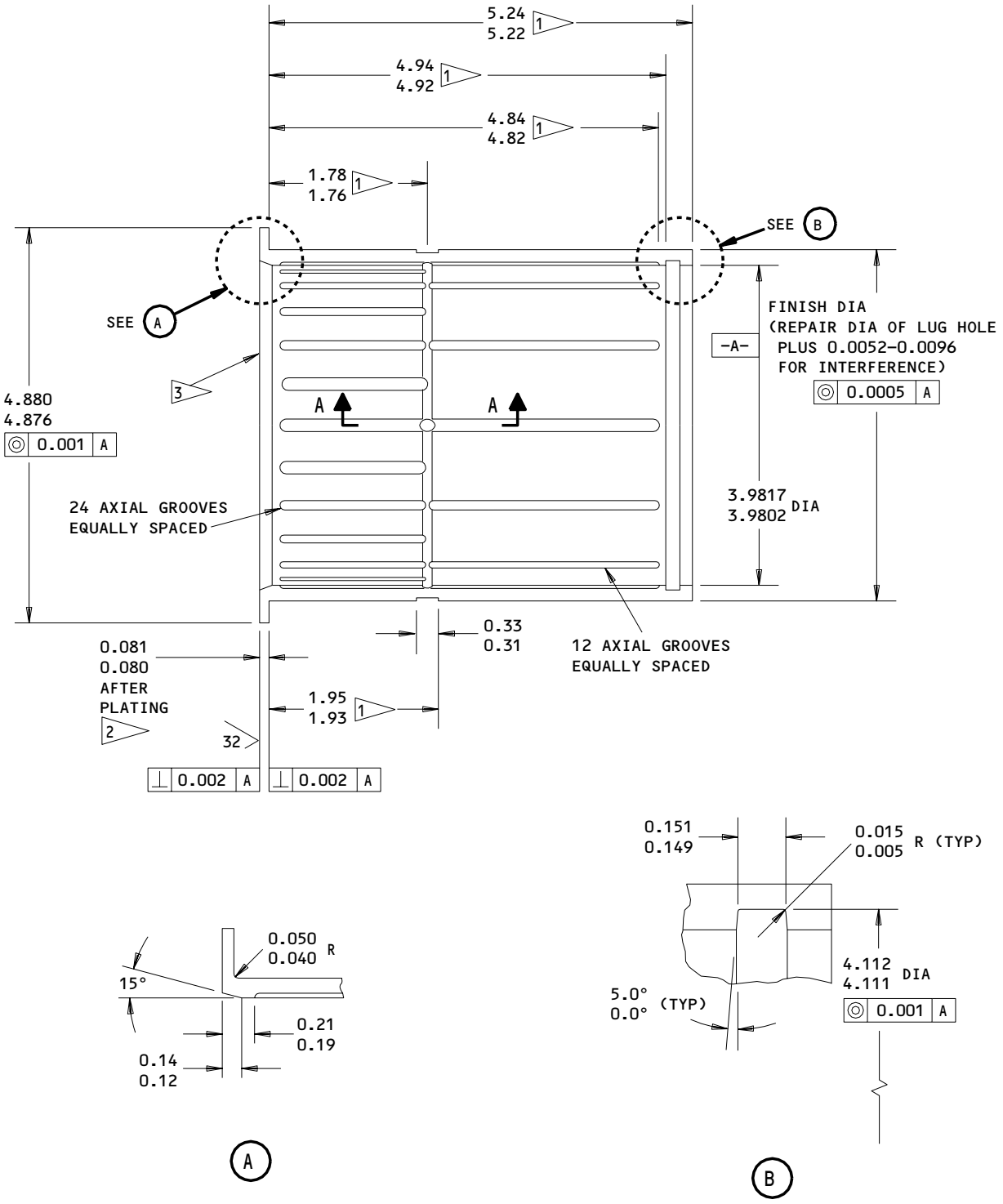
Oversize Bushing Details
Figure 606 (Sheet 2)



A-A

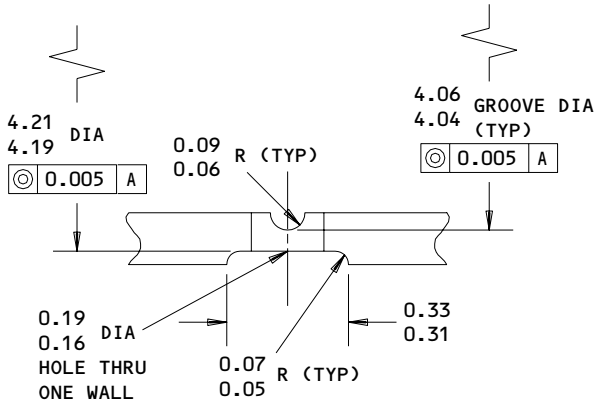
1 SEE FIG. 606 FOR OD GREASE GROOVE AND OTHER BUSHING DETAILS

Pivot Bore Bushing - OD Grease Groove Positioning
Figure 607



HOLE LOCATION (6) FIG. 601 – REPLACES BUSHING (130C) 161T1254-1

Oversize Bushing Details
Figure 608 (Sheet 1)



A-A

1 MINUS AMOUNT REMOVED FROM LUG FACE.

2 PLUS AMOUNT REMOVED FROM LUG FACE.

3 CHROME PLATE, 0.0003-0.0005 THICK AS SHOWN IN CMM 20-42-03. AFTER PLATING, BUFF AS NECESSARY TO GET THE SURFACE FINISH SHOWN.

REPAIR

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

CADMIUM PLATE (F-15.06) EXCEPT AS NOTED, 0.0003-0.0005 THICK

BREAK SHARP EDGES 0.02-0.03 R

MATERIAL: CU-BE-ALLOY PER QQ-C-530, CONDITION AT

DIMENSIONS APPLY BEFORE PLATING UNLESS SHOWN DIFFERENTLY

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (6) FIG. 601 - REPLACES BUSHING (130C) 161T1254-1

Oversize Bushing Details
Figure 608 (Sheet 2)

TOW FITTING ASSY - REPAIR 2-1

161T1133-1

1. Bushing Replacement (Fig. 601)

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

   A. Remove the old busings.

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

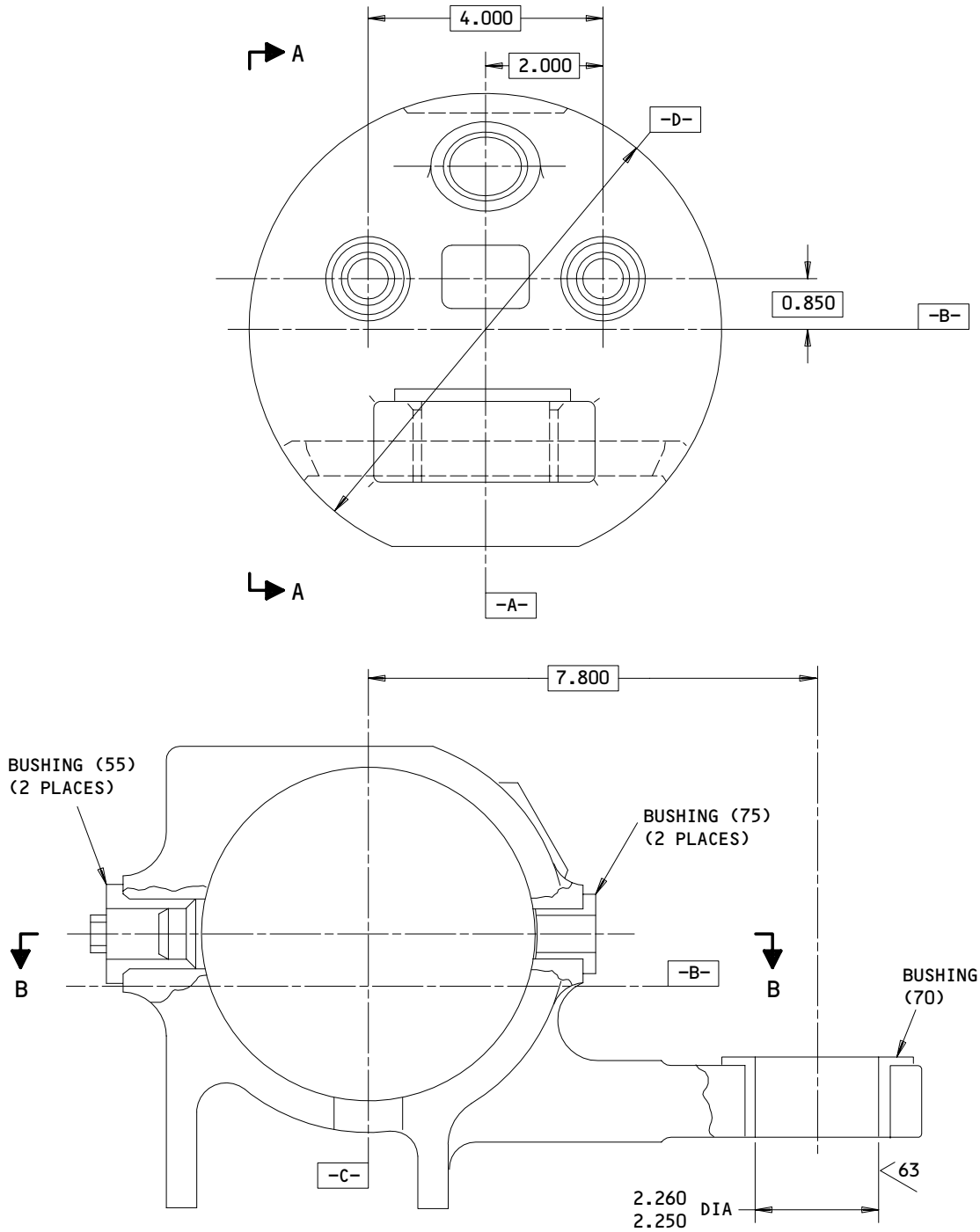
   C. Install replacement bushings by the shrink-fit method.

   D. Make a check of the dimensions and machine them as necessary.

   E. Attach bushings (55) with bolts (50). Lockwire the bolts to each other.

      NOTE: Machining of bushings after installation is not usually necessary because bushings and lug faces are premachined to give the dimensions shown.

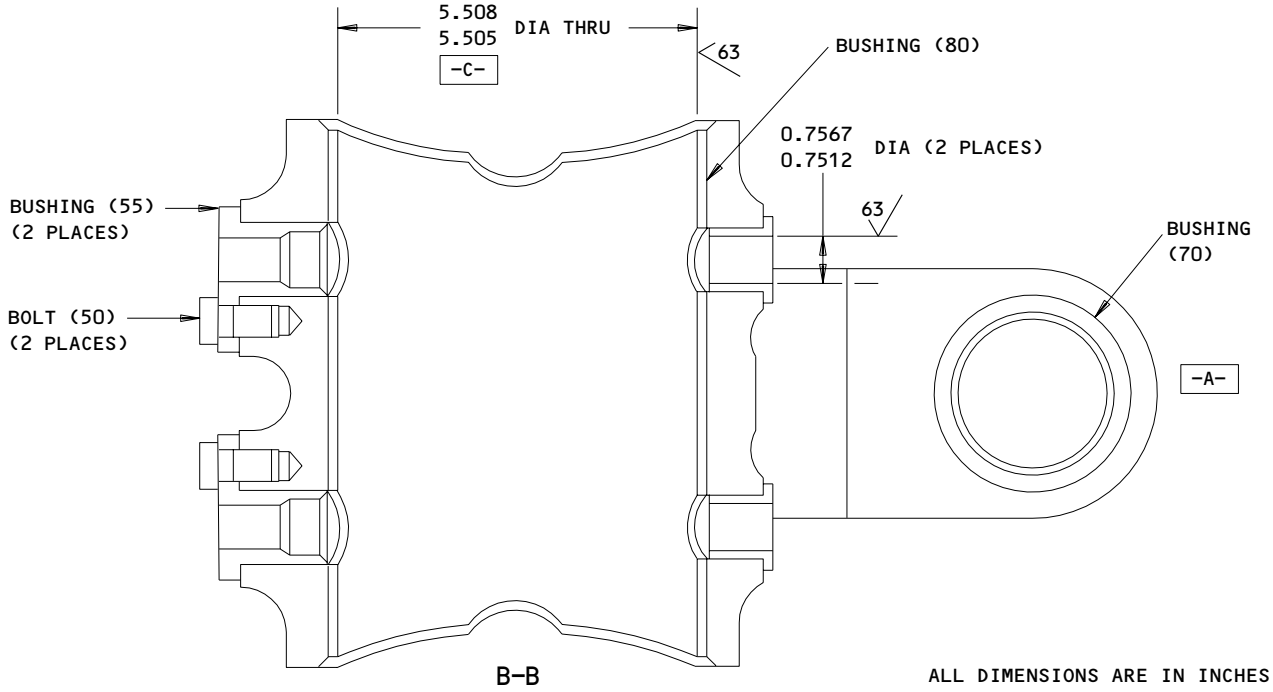
   F. Seal the bushings per REPAIR 7-1.



A-A

ALL DIMENSIONS ARE IN INCHES

161T1133-1
Tow Fitting - Bushing Replacement
Figure 601 (Sheet 1)



161T1133-1
Tow Fitting - Bushing Replacement
Figure 601 (Sheet 2)

375

FITTING, TOW - REPAIR 2-2

161T1133-3

NOTE: Refer to REPAIR-GEN for a list of applicable standard practices. For repair of surfaces which is only replacement of the original finish, refer to Refinish instructions, Fig. 601.

1. Lug Faces and Holes (Fig. 601)

   A. Installation of Oversize Bushings

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

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

      (3) Make bushings (Fig. 602), as required, to adjust for the amount of material removed in step (1).

      (4) Install the bushings per REPAIR 2-1.

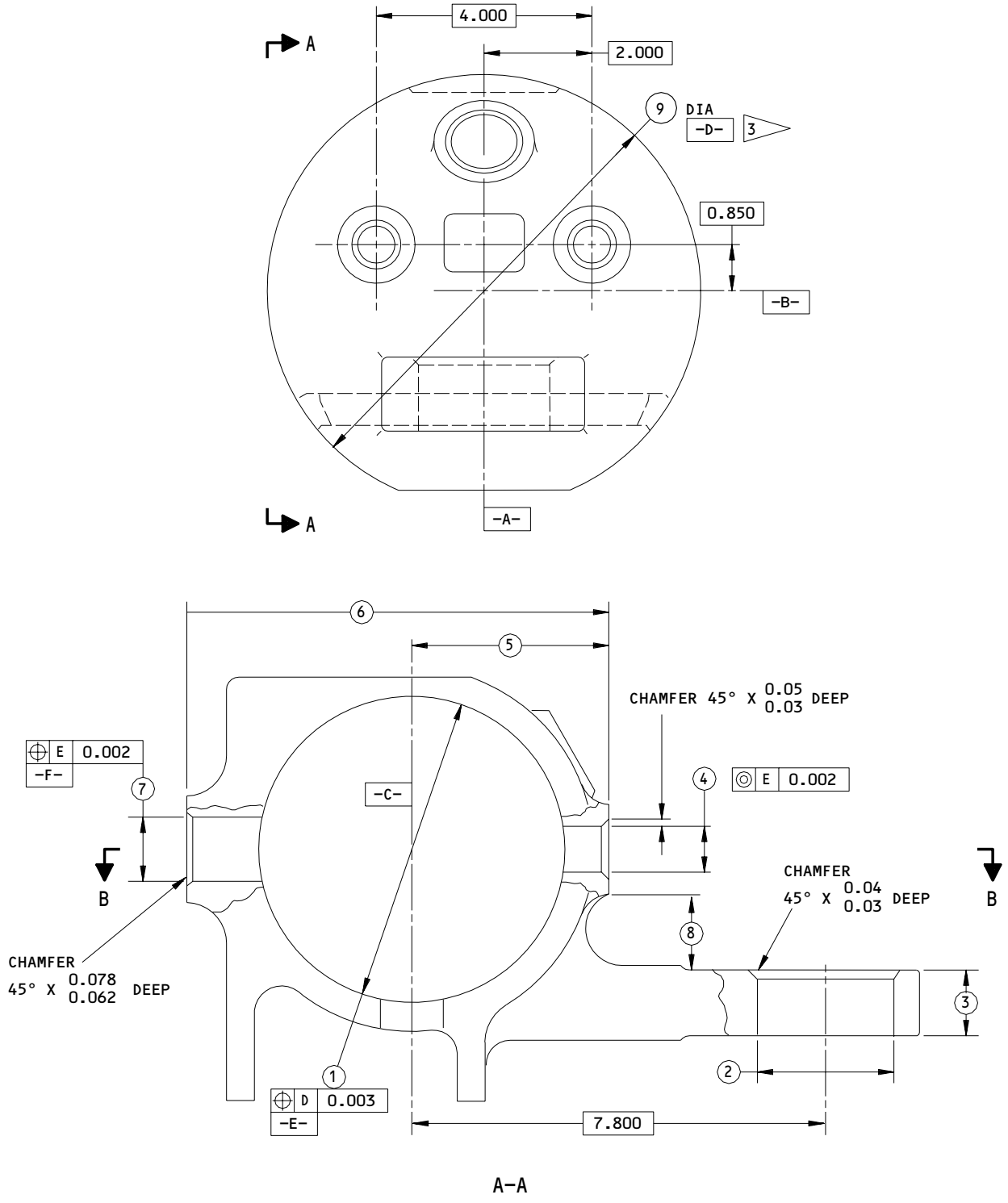
2. Diameter D (Fig. 601)

   A. Machine as required, within repair limits, to remove defects. Local blends are permitted if the Karon coating over them will be 0.100 inch maximum thick over a maximum of 1.00 square inch. Local blends on chamfers are permitted up to 0.150 inch X 45°. Do not apply Karon coating to the chamfer blends.

   B. Shot peen. Chemical treat.

   C. Send the tow fitting to Kamatics Corp (V50632) for buildup with Karon B coating to design dimensions.

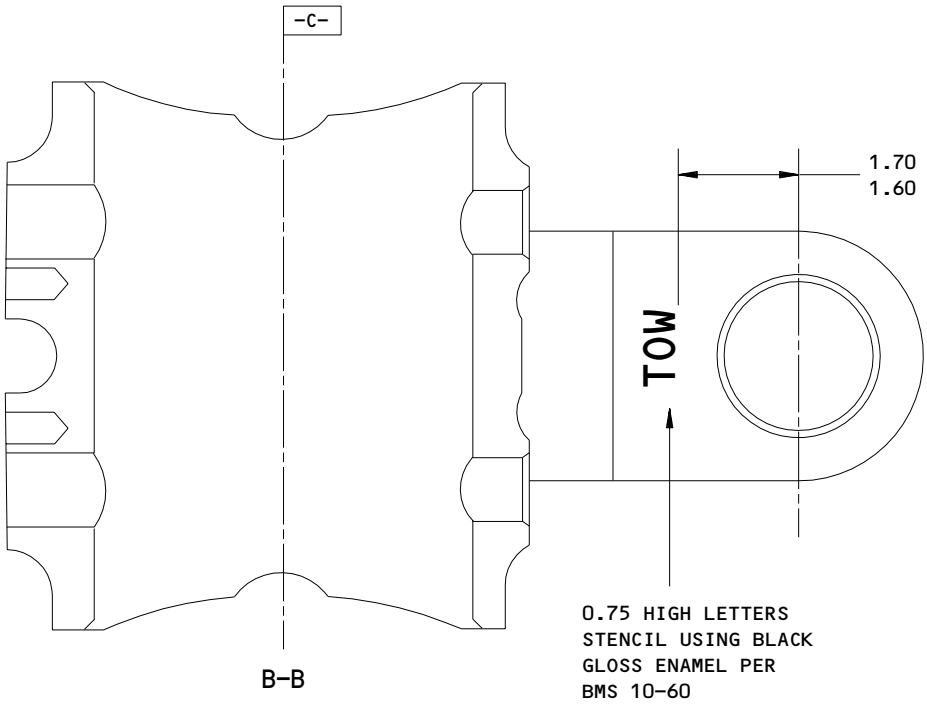
D. Repair surfaces damaged during the coating process with chemical treatment (F-17.10) followed by primer and enamel as indicated.



A-A

ALL DIMENSIONS ARE IN INCHES

161T1133-3
Tow Fitting Repair and Refinish
Figure 601 (Sheet 1)



	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
DESIGN DIM	5.7475 5.7460	2.4115 2.4100	1.26 1.24	0.876 0.875	3.75 3.73	8.01 7.99	1.126 1.125	1.39 1.37	8.106 8.104
REPAIR LIMIT ▷1	5.8075	2.4715	1.21 ▷2	0.936	3.715 ▷2	7.975 ▷2	1.186	1.46	7.984 ▷4

ALL DIMENSIONS ARE IN INCHES

161T1133-3
Tow Fitting Repair and Refinish
Figure 601 (Sheet 2)

REFINISH

CHROMIC ACID ANODIZE (F-17.04) ALL OVER. APPLY BMS 10-11 TYPE 1 PRIMER (F-20.02) AND BMS 10-60 ENAMEL (SRF-14.9813) ALL OVER UNLESS SHOWN BY 3

1 LIMIT FOR INSTALLATION OF OVERSIZE BUSHING

2 LUG FACE MACHINING REQUIREMENTS:

1. MATERIAL REMOVED FROM ANY FACE MUST NOT BE MORE THAN HALF THE DIFFERENCE BETWEEN THE DESIGN DIMENSION 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 0.03-0.07 R.

3 DO NOT APPLY ENAMEL

4 LIMIT FOR APPLICATION OF KARON B COATING BY KAMATICS CORP. (V50632). COATING CAN END ON CORNER RADIUS. BREAK COATING SHARP EDGES EQUIVILENT TO 0.005-0.030 RADIUS. LOCAL BLENDS ARE PERMITTED. SEE TEXT FOR DETAILS.

REPAIR

REF 1 2 4

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

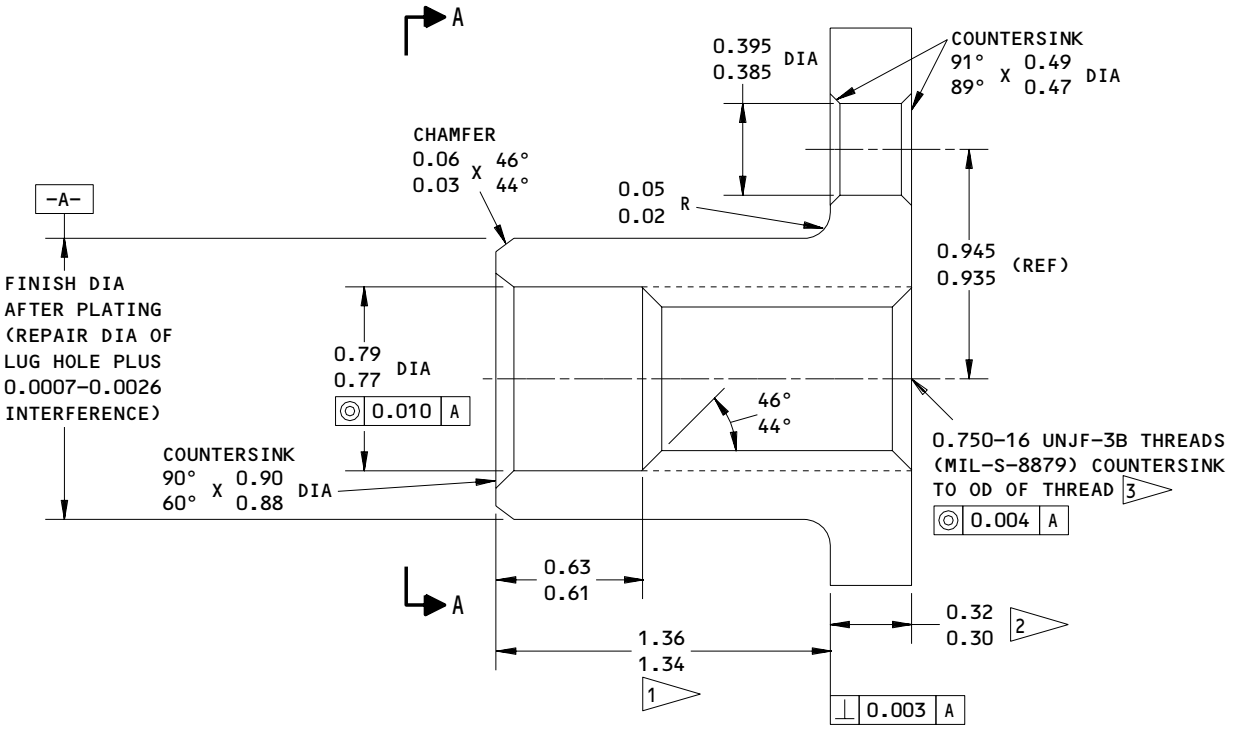
BREAK SHARP EDGES 0.03-0.09 R

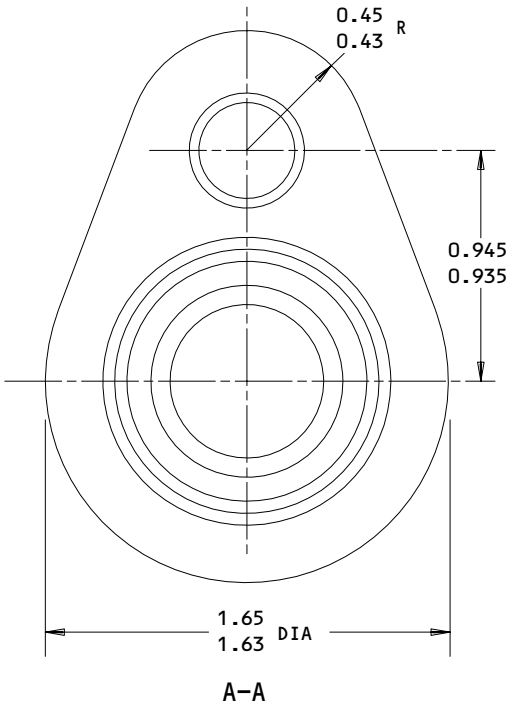
SHOT PEEN: 0.023-0.028 SHOT SIZE
0.014-0.018 A2 INTENSITY

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

161T1133-3
Tow Fitting Repair and Refinish
Figure 601 (Sheet 3)





A-A

125 ALL MACHINED SURFACES

BREAK SHARP EDGES 0.01-0.02 R

CADMIUM PLATE 0.0003-0.0005 THICK (F-15.06) EXCEPT ON THREADS

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

DIMENSIONS APPLY BEFORE PLATING UNLESS SHOWN DIFFERENTLY

ALL DIMENSIONS ARE IN INCHES

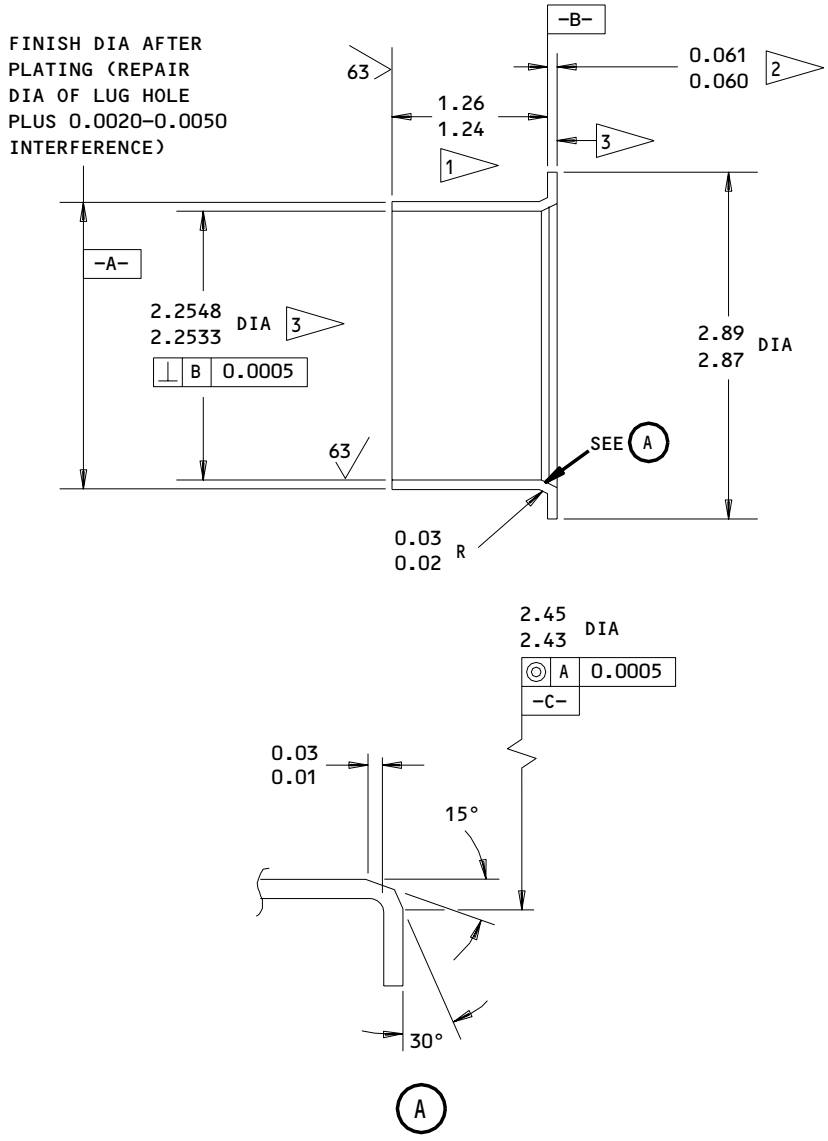
1 MINUS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

3 DO NOT PLATE

HOLE LOCATION (7) FIG. 601 - REPLACES BUSHING (55) 69B00271-1

Oversize Bushing Details
Figure 602



1 MINUS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

3 DO NOT PLATE

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.01–0.02 R

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

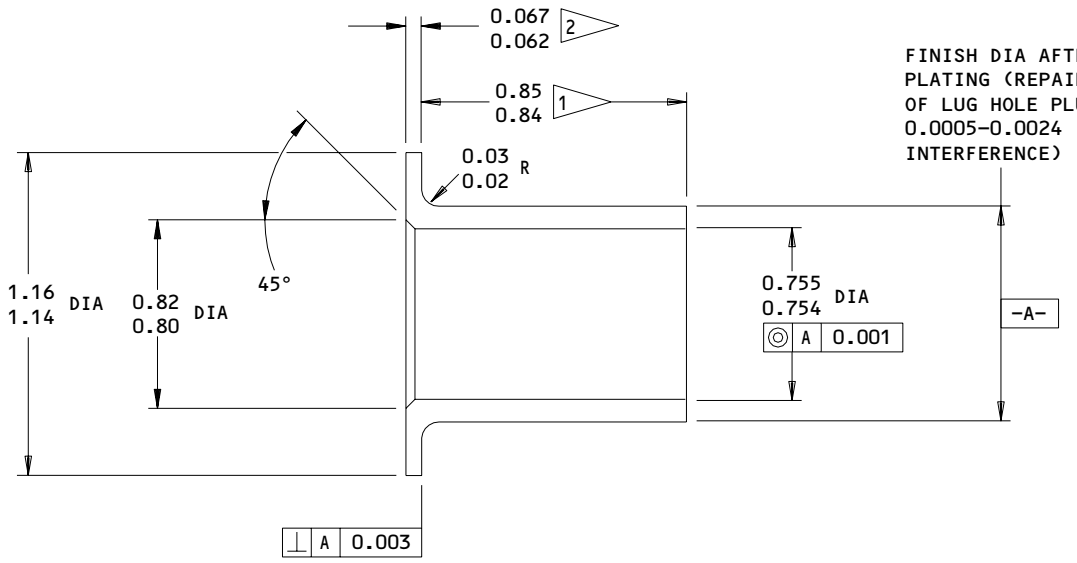
CADMIUM PLATE 0.0003–0.0005 THICK (F–15.06) EXCEPT AS NOTED

DIMENSIONS APPLY BEFORE PLATING UNLESS SHOWN DIFFERENTLY

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (2) FIG. 601 – REPLACES BUSHING (70) 161T1135–1

Oversize Bushing Details
Figure 603



1 MINUS AMOUNT REMOVED FROM LUG FACE

2 PLUS AMOUNT REMOVED FROM LUG FACE

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.01-0.02 R

FINISH: CADMIUM PLATE 0.0003-0.0005 THICK (F-15.06) (OPT IN ID)

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

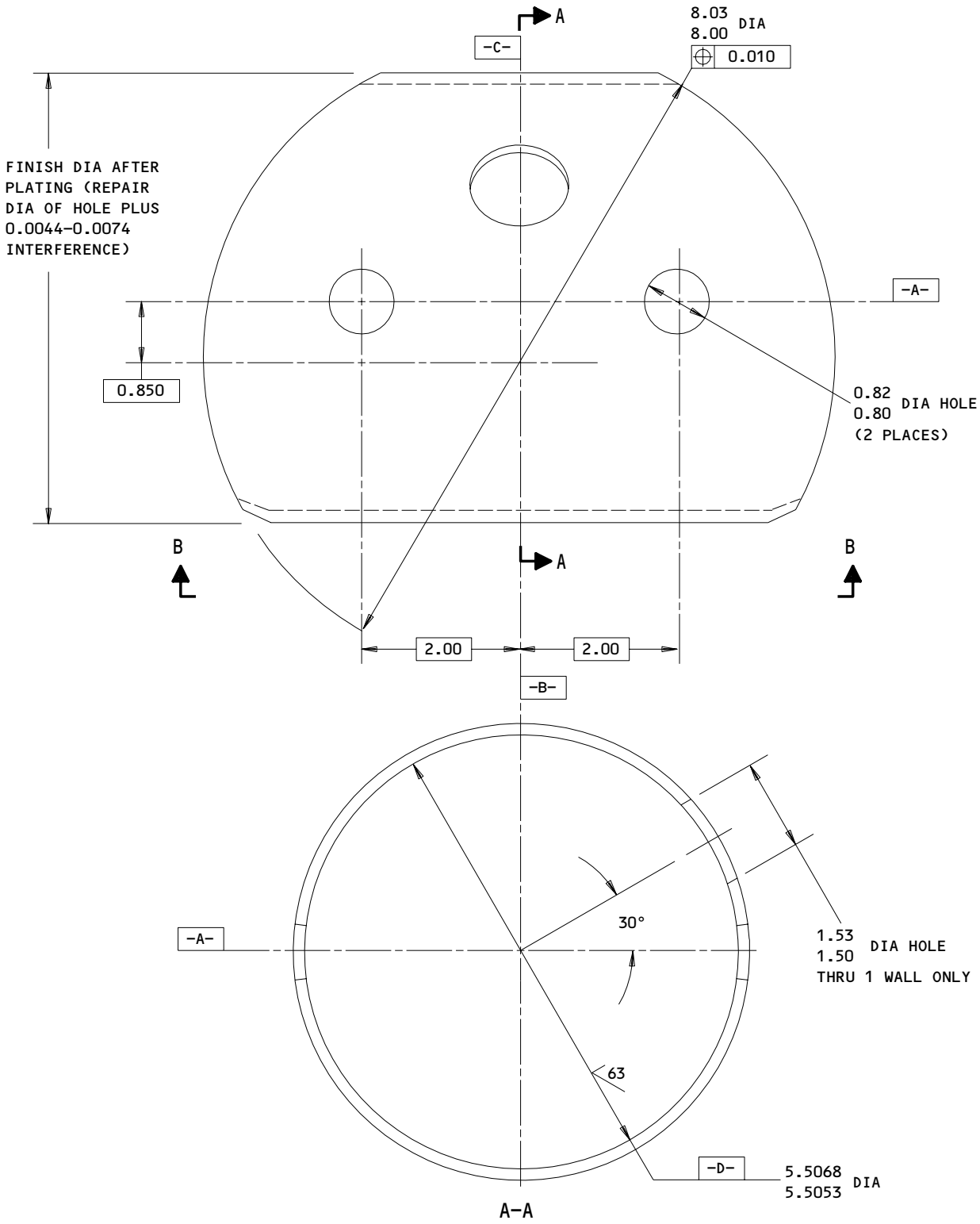
DIMENSIONS APPLY BEFORE PLATING UNLESS SHOWN DIFFERENTLY

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (4) FIG. 601 - REPLACES BUSHING (75) 69B00270-1

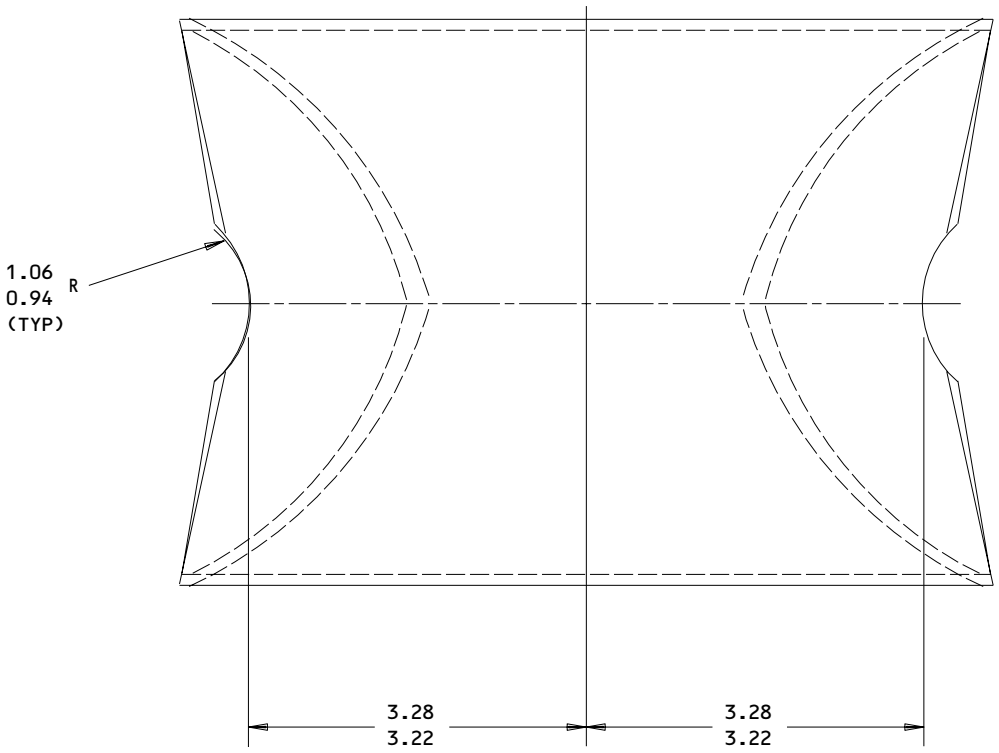
Oversize Bushing Details
Figure 604

109099



HOLE LOCATION (1) FIG. 601 - REPLACES BUSHING (80) 161T1134-1

Oversize Bushing Details
Figure 605 (Sheet 1)



B–B

HOLE LOCATION (1) FIG. 601 – REPLACES BUSHING (80) 161T1134-1

125 MACHINED SURFACES EXCEPT AS NOTED

CADMIUM PLATE, 0.0003–0.0005 THICK
(F–15.06) EXCEPT ON ID

BREAK SHARP EDGES 0.02–0.03 R

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

DIMENSIONS APPLY BEFORE PLATING

ALL DIMENSIONS ARE IN INCHES

Oversize Bushing Details
Figure 605 (Sheet 2)

AXLE ASSEMBLY - REPAIR 3-1

161T1138-1, -3, -5, -7, -9, -11

1. Bushing Replacement (Fig. 601)

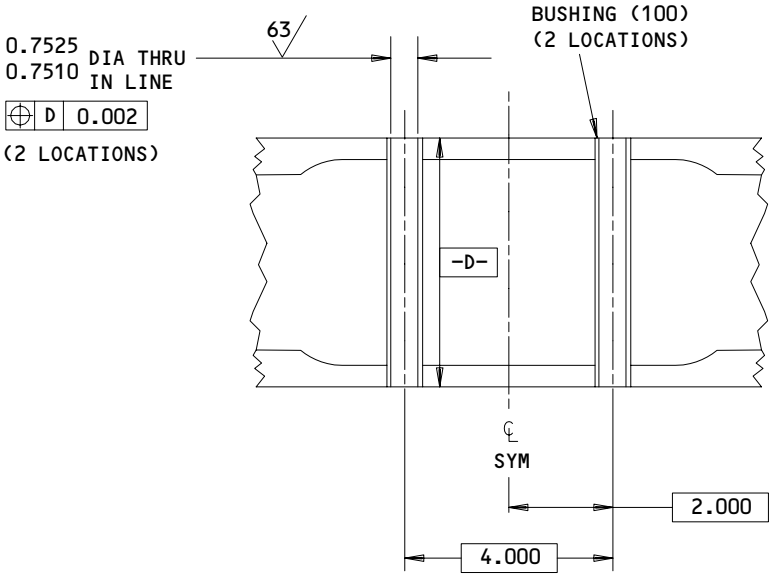
NOTE: Refer to REPAIR-GENERAL for a list of applicable standard practices.

A. Remove bushings.

B. If you find corrosion or damage on lug faces or hole surfaces, refer to REPAIR 3-2 for repair instructions.

C. Install replacement bushings by the shrink-fit method.

D. Make a check of the dimensions and machine them as necessary to design dimensions and finish.



ITEM NUMBERS REFER TO IPL FIG. 1
ALL DIMENSIONS ARE IN INCHES

161T1138-1,-3,-5,-7,-9,-11

Axle Bushing Replacement
Figure 601

31

AXLE - REPAIR 3-2

161T1138-2, -4, -6, -8, -10, -12

NOTE: Refer to REPAIR - GENERAL for a list of applicable standard practices. For repair of surfaces which is only restoration of the original finish, refer to Refinish instructions, Fig. 601.

1. Diameters D, F, X, Y and Z (Fig. 601)

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

   B. Shot peen. Build up with chrome plate or thermal spray. Grind to design dimensions and indicated finish. Chrome plate or thermal spray thickness must not be more than 0.015 inch thick after grinding.

2. Relief Grooves (Fig. 601)

   A. Machine as required, within repair limits, to remove defects. If necessary to adjust grip length, machine shoulder at thread relief.

   B. Shot peen and apply cadmium-titanium plate followed by primer.

3. Lubrication and Pin Retention Holes (Fig. 601)

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

   B. Cadmium-titanium plate. Apply primer in retention holes only.

4. Bushing Holes (Fig. 601)

   A. Installation of oversize bushings

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

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

      (3) Make oversize bushings (Fig. 602), as required, to adjust for the material removed in step (1).

      (4) Install the bushings by the shrink-fit method of SOPM 20-50-03. Make sure that the bushing does not go above the outside surface of the axle.

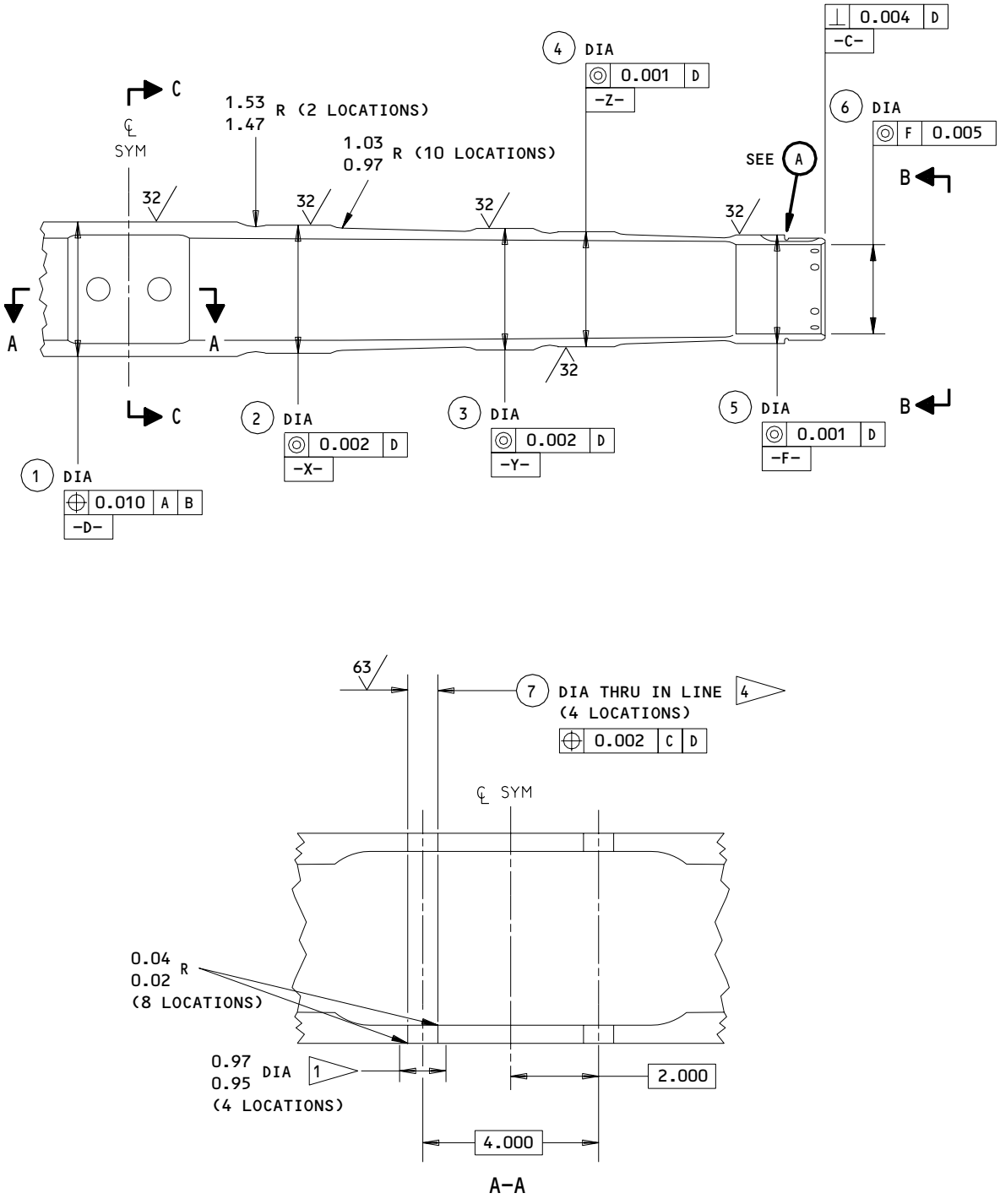
5. Threads (Fig. 601)

A. Cut the threads to a smaller size, as shown.

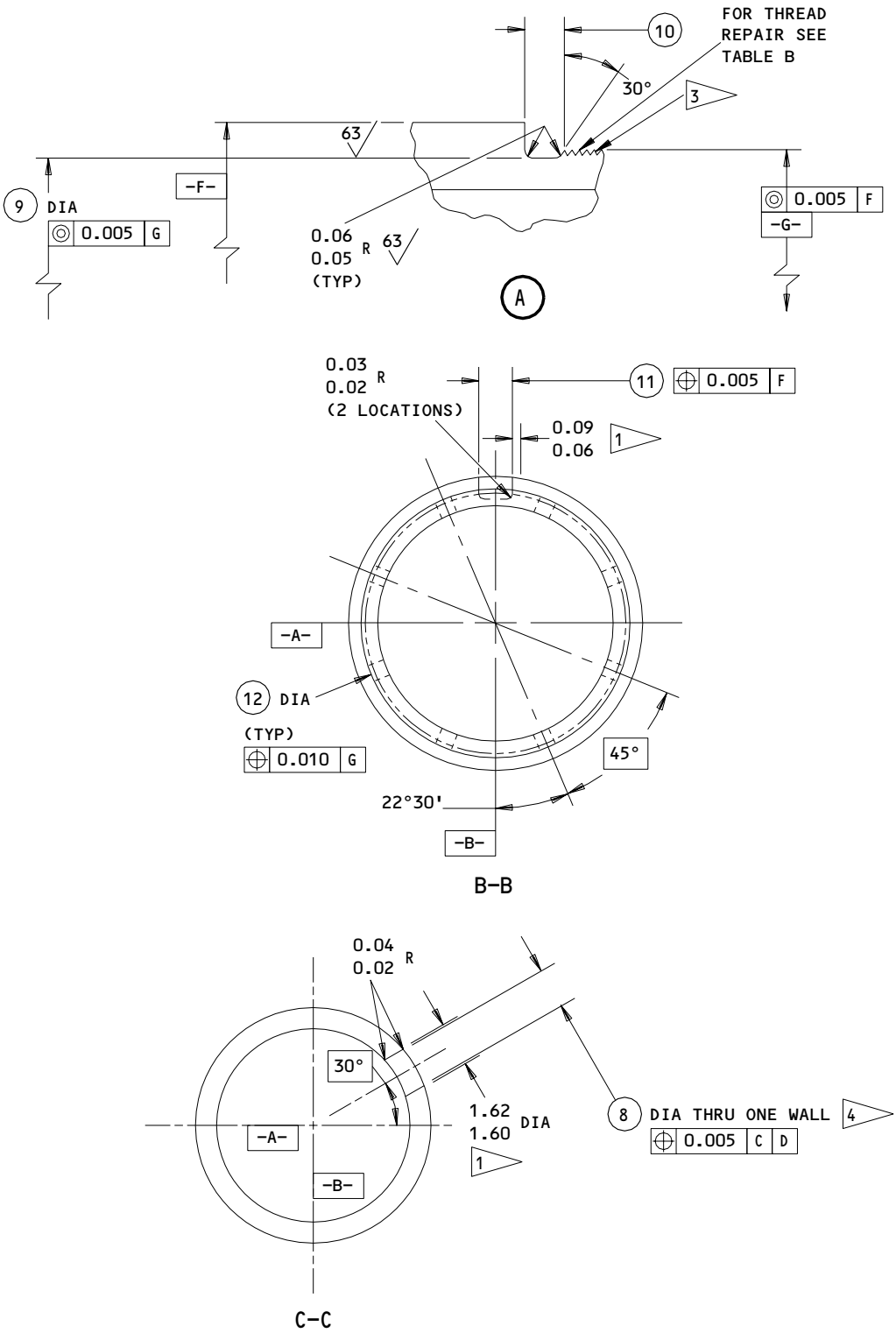
B. Cadmium-titanium plate the threads. Apply primer per CMM 32-00-02.

C. Make a undersize nut. Refer to CMM 32-11-19 REPAIR 30-1 or CMM 32-11-20 REPAIR 32-1. Also, decrease the OD of the 161T1206-series transducer support to 3.750-3.760 inches diameter, to let you remove and install the nut with the support installed in the axle.

D. Be sure to identify the axle, the nut, and the support as matched parts. We recommend that you vibro-engrave "MATCHED SET-DO NOT SEPARATE" on the axle, the nut, and the support, and paint these parts with yellow BMS 10-60 enamel.



161T1138-2,-4,-6,-8,-10,-12
Axle Repair and Refinish
Figure 601 (Sheet 1)



161T1138-2,-4,-6,-8,-10,-12
Axle Repair and Refinish
Figure 601 (Sheet 2)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
DESIGN DIM	5.505 5.504	5.2500 5.2475	4.999 4.997	4.7490 4.7475	4.3290 4.3275	3.500 3.497	0.8765 0.8750	1.51 1.49	3.88 3.87	0.20 0.18	0.45 0.43	0.270 0.266
REPAIR LIMIT	5.474 5 8	5.2175 5 8	4.967 5 8	4.7175 5 8	4.2975 5 8	---	0.9365 6	1.53 7	SEE TABLE B	0.22 7	0.47 7	0.300 7

TABLE A

UNJ-3A THREAD SIZE	4.000-12 (DESIGN)	3.875-12 (1/8 UNDERSIZE)
MAJOR DIA	4.0000 3.9886	3.8750 3.8636
PITCH DIA	3.9459 3.9410	3.8209 3.8160
MINOR DIA	3.9038 3.8938	3.7788 3.7688
ROOT RADIUS	0.0150 0.0125	0.0150 0.0125
THREAD RELIEF DESIGN DIA	3.880 3.870	3.755 3.745
THREAD RELIEF REPAIR LIMIT	3.750 7	---

TABLE B

REFINISH

CHROME PLATE (F-15.34), 0.003 MIN THICK ON DIA -D-,-F,-X-,-Y-, AND -Z-. WIPE CHROME PLATE WITH PRIMER (F-19.45). CADMIUM-TITANIUM PLATE (F-15.01), 0.0005 MIN AND APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02) ALL OTHER SURFACES UNLESS SHOWN. ON INTERIOR, APPLY PRIMER, BMS 10-11, TYPE 1 (F-20.03). AFTER BUSHING INSTALLATION, APPLY ENAMEL BMS 10-86, COLOR GRAY (F-14.9625, WHICH REPLACES SRF-14.9625) BUT NOT ON BUSHING SURFACES, THREADS, THREAD RELIEFS OR CHROME PLATED AREAS

1 NO CHROME PLATE

2 DO NOT APPLY PRIMER OR ENAMEL

3 WIPE WITH PRIMER (F-19.45)

4 CADMIUM-TITANIUM PLATE (F-15.01) 0.0005-0.0010 THICK AND APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02)

5 LIMIT FOR CHROME PLATE BUILD UP AND GRINDING TO DESIGN DIMENSION AND FINISH, WITH 0.08 MAXIMUM PLATING RUNOUT AT EDGES AND RELIEFS. DO NOT PLATE RELIEF RADII

REPAIR

REF 5 THRU 8

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.06 R

SHOT PEEN: 0.016-0.033 SHOT SIZE
0.014-0.016 A2 INTENSITY

MATERIAL: 4340M STEEL, 275-300 KSI

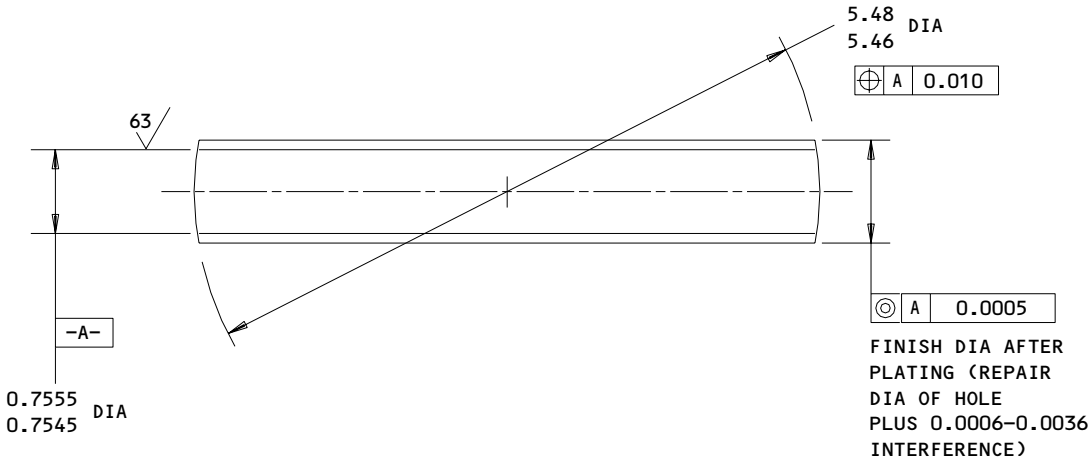
ALL DIMENSIONS ARE IN INCHES

6 LIMIT FOR INSTL OF OVERSIZED BUSHINGS

7 RESTORATION TO DESIGN DIM NOT REQUIRED

8 (OPTIONAL TO CHROME PLATE BUILDUP) LIMIT FOR BUILDUP WITH BMS 10-67 TYPE 1 OR TYPE 17 TUNGSTEN-CARBIDE THERMAL SPRAY (SOPM 20-10-05) AND GRIND TO DESIGN DIMENSIONS AND 8 MICROINCH FINISH OR SMOOTHER

161T1138-2,-4,-6,-8,-10,-12
Axle Repair and Refinish
Figure 601 (Sheet 3)



125 MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES 0.01-0.02 R

CADMIUM PLATE, EXCEPT IN ID, 0.0003-0.0006 THICK

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

ALL DIMENSIONS APPLY BEFORE PLATING

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (7) FIG. 601 - REPLACES BUSHING (100) 161T1146-1

Oversize Bushing Details
Figure 602

SLEEVE, BRAKE - REPAIR 4-1

161T1149-1

NOTE: Refer to REPAIR-GEN for a list of applicable standard practices. For repair of surfaces which is only replacement of the original finish, refer to Refinish instructions, Fig. 601.

1. ID Diameters 1, 2 (Fig. 601)

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

   B. Refinish as indicated.

2. ID Diameters 3, 6 (Fig. 601)

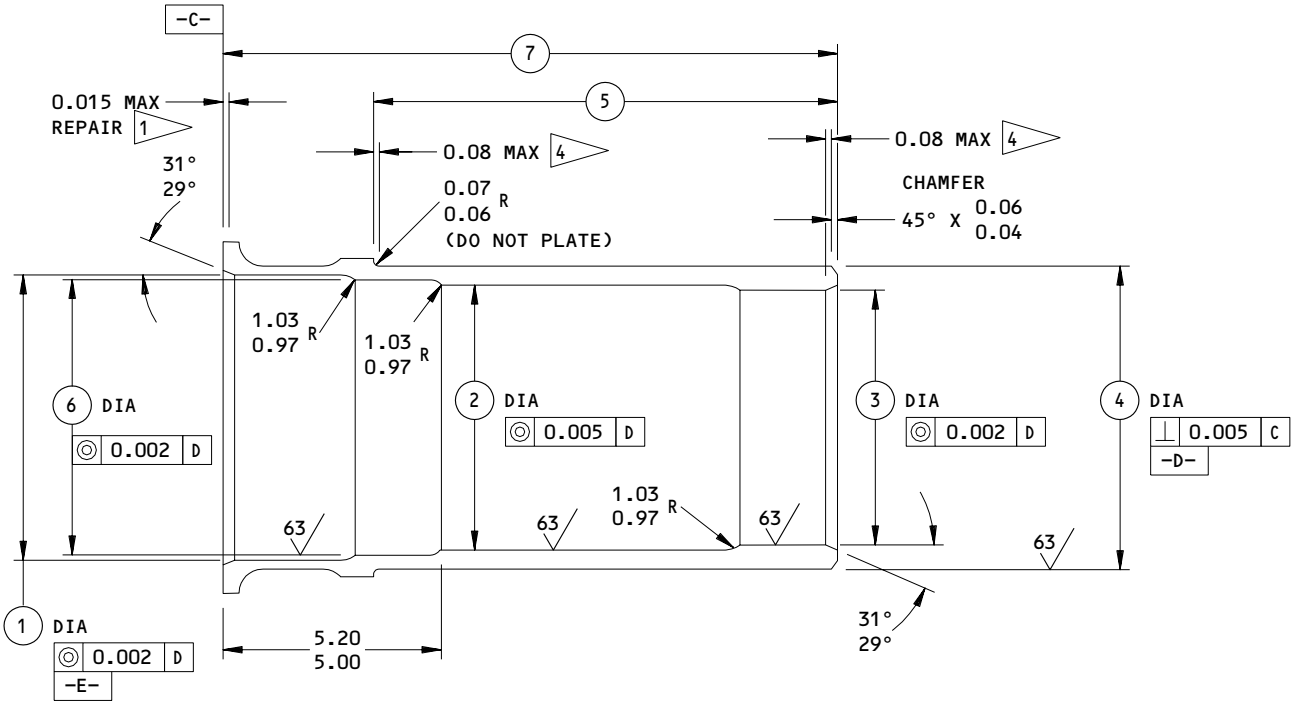
   A. Machine as required, within repair limits, to remove defects.

   B. Nickel plate and machine to design dimensions and finish.

3. OD Diameter 4 and end face C (Fig. 601)

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

   B. Chrome plate and grind to design dimensions and finish. Chrome plate thickness must not be more than 0.015 inch after grinding.



	1	2	3	4	5	6	7
DESIGN DIM	5.52 5.51	5.248 5.240	4.998 4.997	5.499 5.498	9.525 9.520	5.248 5.247	11.530 11.510
REPAIR LIMIT	5.53 ▷3	5.258 ▷3	5.018 ▷2	5.468 ▷1	—	5.268 ▷2	11.495 ▷1

REFINISH

CHROME PLATE (F-15.03) DIA -D-, 0.0003-0.0005 THICK. PASSIVATE (F-17.25, WHICH REPLACES F-17.09) OTHER SURFACES

▷1 LIMIT FOR CHROME PLATE BUILDUP (SOPM 20-42-03) AND GRIND TO DESIGN DIMENSIONS AND FINISH (SOPM 20-10-04)

▷2 LIMIT FOR NICKEL PLATE BUILDUP (SOPM 20-42-09) AND MACHINE TO DESIGN DIMENSIONS AND FINISH

▷3 RESTORATION TO DESIGN DIMENSIONS NOT REQUIRED

▷4 CHROME PLATE RUNOUT

REPAIR

REF ▷1 ▷2

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY ▷3

BREAK ALL SHARP EDGES 0.02-0.04 R

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

ALL DIMENSIONS ARE IN INCHES

161T1149-1
Brake Sleeve Repair and Refinish
Figure 601

BOLT - REPAIR 5-1

69B04065-2

NOTE: Refer to REPAIR - GENERAL for a list of applicable standard practices. For repair of surfaces which is only replacement of the original finish, refer to Refinish instructions, Fig. 601.

1. Shank - Diameter C (Fig. 601)

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

   B. Shot peen, chrome plate and grind to design dimensions and finish. Chrome plate thickness must not be more than 0.015 inch after grinding.

2. Head Face (Fig. 601)

   A. Machine as required, within repair limits, to remove defects. Blend into the relief groove if necessary.

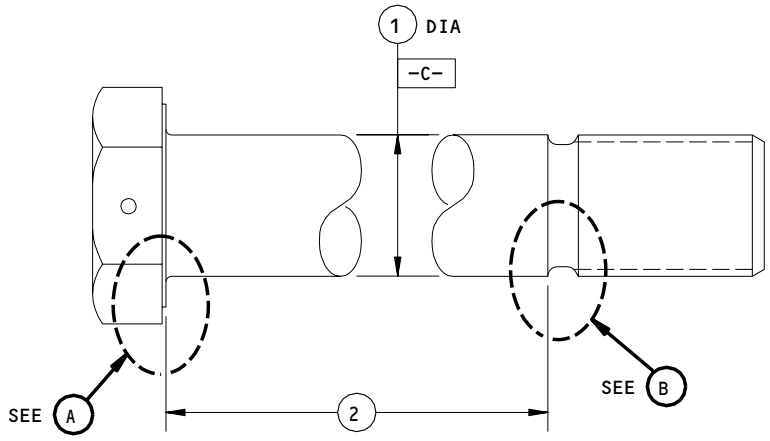
   B. Shot peen, chrome plate and grind to restore grip length. Do not chrome plate the relief groove.

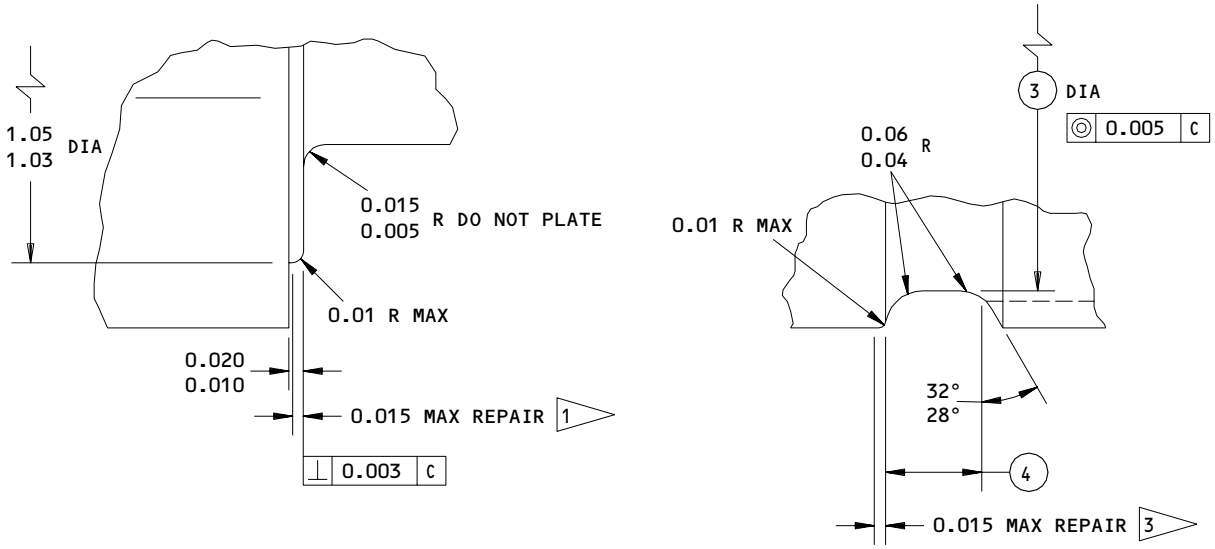
      NOTE: As an alternative to this chrome plate buildup, machine the shoulder face at the thread end to adjust the grip length.

3. Relief Grooves (Fig. 601)

   A. Machine as required, within repair limits, to remove defects. To adjust the grip length, machine the shoulder at the thread relief.

   B. Shot peen. Cadmium-titanium plate. Apply primer.





69B04065-2
Bolt Repair and Refinish
Figure 601 (Sheet 1)

REFERENCE NUMBER	(1)	(2)	(3)	(4)
DESIGN DIMENSION	0.747 0.745	7.19 7.17	0.659 0.649	0.140 0.120
REPAIR LIMIT	0.715 ▷1	---	0.629 ▷2	0.155 ▷3

REFINISH

CADMIUM PLATE (F-15.02) ALL OVER.

APPLY PRIMER AND ENAMEL AS SHOWN IN CMM 32-00-02.

REPAIR

REF ▷1 ▷2 ▷3

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN: 0.016-0.033 SHOT SIZE
0.007-0.015 A2 INTENSITY

MATERIAL: 4340 STEEL (180-200 KSI)

ALL DIMENSIONS ARE IN INCHES

▷1 LIMIT FOR CHROME PLATE BUILDUP AND GRIND TO DESIGN DIMENSIONS AND FINISH, WITH 0.06 PLATING RUNOUT AT EDGES, AND RELIEFS.

▷2 RESTORATION TO DESIGN DIM NOT REQUIRED.

▷3 LIMIT FOR RESTORING GRIP LENGTH WHEN HEAD FACE IS MACHINED BUT NOT RESTORED TO DESIGN DIM BY CHROME PLATE BUILDUP. (RESTORATION OF GROOVE WIDTH TO DESIGN DIM IS NOT REQUIRED.)

69B04065-2
Bolt Repair and Refinish
Figure 601 (Sheet 2)

MISCELLANEOUS PARTS REFINISH - REPAIR 6-1

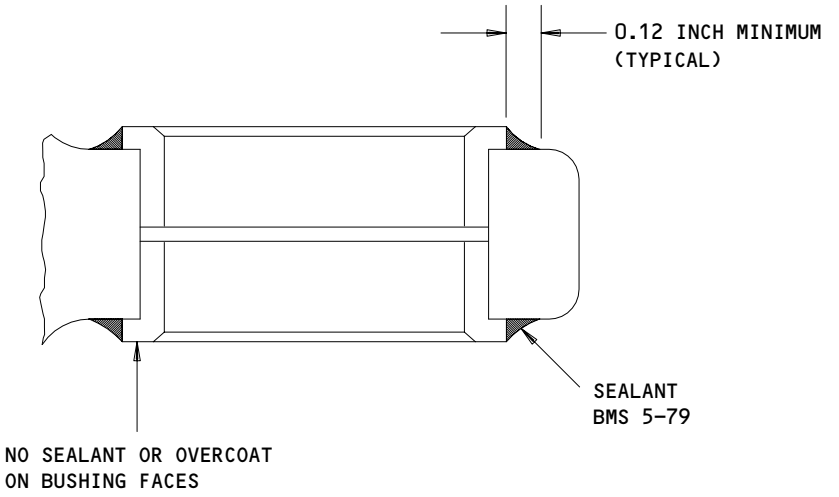
1. Repair of these parts is only replacement of the original finish. Refer to REPAIR-GENERAL for a list of applicable standard practices.

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Bracket assembly (10)	- -	Apply BMS 10-11, Type 1 primer (F-20.02) and BMS 10-60 enamel (F-14.9813, which replaces (SRF-14.9813), but not on threads, adjacent face of clip (35A), or around 0.778-0.797 holes on clip side of bracket (40A).
Clip (35A), bracket (40A)	321, 347 or 304 CRES	Passivate (F-17.25, which replaces F-17.09).

Refinish Details
Figure 601

BUSHING SEALING - REPAIR 7-1

1. Seal all flanged bushings after installation per Fig. 601.



1. CLEAN AREAS OF SEALANT APPLICATION WITH SOLVENT.
2. APPLY FILLET OF SEALANT TO EDGES OF BUSHINGS AS SHOWN.
3. APPLY COATING OF GRAY GLOSS ENAMEL, BMS 10-60 OVER SEALANT AND AREAS AROUND SEALANT.

Bushing Sealant Application
Figure 601

120

ASSEMBLY

1. Materials

NOTE: Equivalent substitutes can be used.

A. Grease -- BMS 3-33 or BMS 3-24 (SOPM 20-60-03)

B. Grease -- Aeroshell 5 (SOPM 20-60-03)

C. Corrosion Preventive Compound -- BMS 3-27 (SOPM 20-60-02)

D. Corrosion Preventive Compound -- MIL-C-11796, Class 1 (SOPM 20-60-02)

E. Tamperproof Putty -- BMS 8-45 (SOPM 20-60-04)

2. Equipment

NOTE: Equivalent substitutes can be used.

A. Alignment pin -- A32054-1

3. Assembly (IPL Fig. 1)

CAUTION: AXLE COULD HAVE UNDERSIZE THREADS AND BE MATCHED PARTS WITH MATING AXLE NUT(S).

A. Apply a layer of BMS 3-33 or BMS 3-24 grease to the mating surfaces of bogie beam (135) axle housing and tow fitting (45).

B. Install tow fitting (45) in beam (110) with the tow lug down and the bolt holes parallel to the centerline of axle (95).

CAUTION: DO NOT MAKE THE BOGIE BEAM HOTTER THAN 300°F, TO PREVENT DAMAGE TO HEAT TREATED PARTS.

C. Prepare to install bogie beam (110) and axle (95) by the shrink-fit method (SOPM 20-50-03). You can use the procedure of step (1) or (2). The axle temperature is usually sufficiently cold when alcohol stops boiling around the axle.

(1) Make the axle cold with liquid nitrogen (-320°F). It is not necessary to heat the bogie beam.

(2) Make the axle cold with a mixture of alcohol and dry ice (-120°F). Heat the bogie beam in an oven, but not more than 300°F. If you applied the corrosion preventive compound to the bogie beam bore during bogie beam refinish, use the procedure of step (1). Heat applied to the bogie beam could melt the compound. Melted compound could flow away from surfaces and cause a blockage of drain holes.

D. To make alignment easier, put temporary hole alignment marks on bogie beam bushings and on axle (extended outward). You will have approximately 6 seconds after you put in the cold chilled axle to get the parts in alignment, because the temperature differential changes that quickly.

E. Quickly install axle (95) (with keyways at top center), and align the holes for bolts (5) with alignment pin A32054-1.

F. Remove the alignment pin. Apply BMS 3-27 corrosion preventive compound to the shank and threads of bolts (5). Install bolts finger-tight.

G. Do steps C. thru F. again for the other axle assembly.

H. Apply a thin layer of Aeroshell 5 grease to all of the ID of the axles.

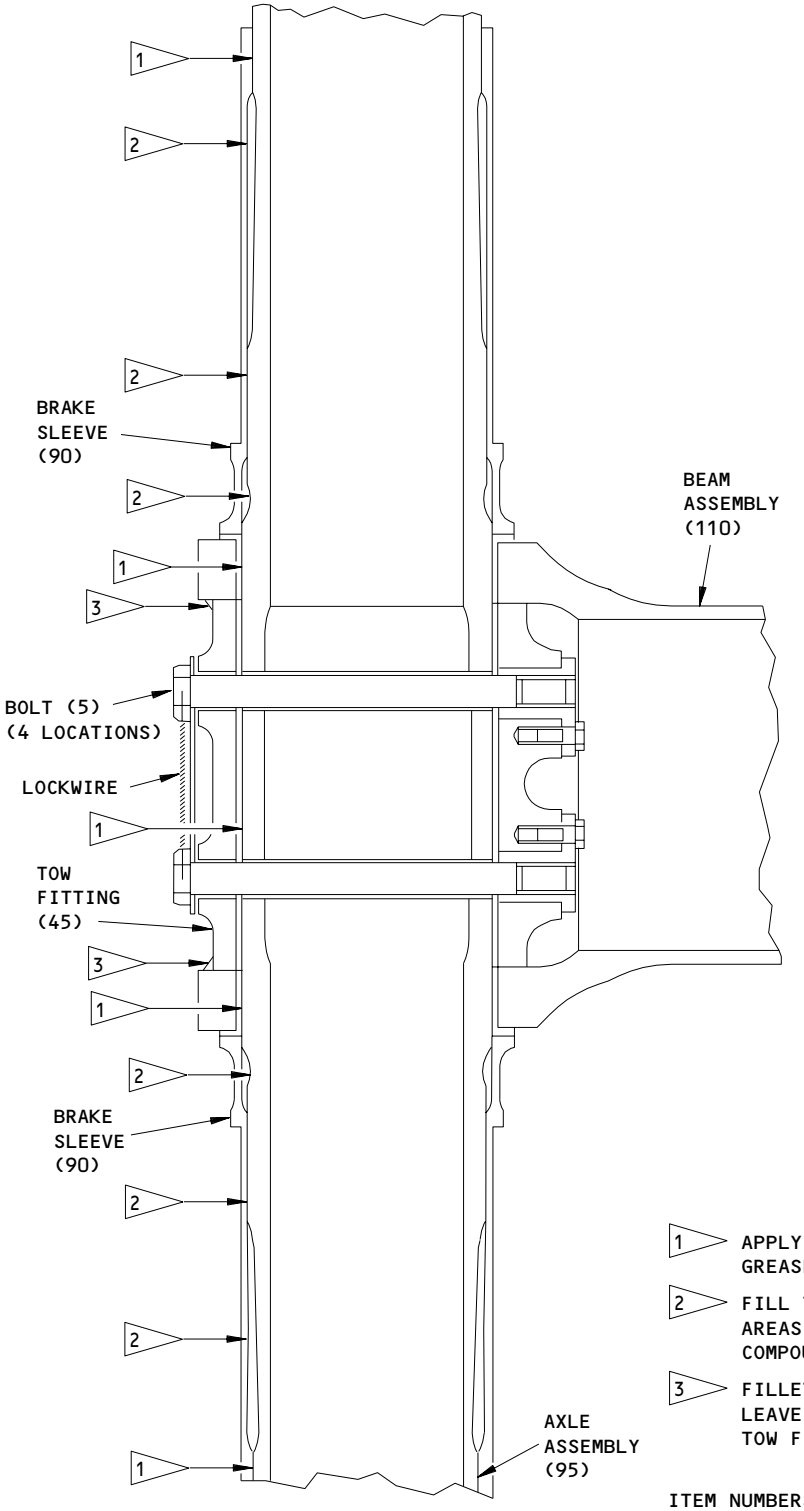
I. Apply MIL-C-11796, Class 1 corrosion preventive compound to the bogie beam bore if you did not apply it during bogie beam refinish (Ref REPAIR 1-2) and install bushings (130) per REPAIR 1-1.

J. Apply BMS 3-27 corrosion preventive compound and BMS 3-24 grease to the mating surfaces of brake sleeves (90) and axle (95) as shown in Fig. 701.

K. Install brake sleeves (90) on axles (95) by the shrink-fit method (SOPM 20-50-03).

L. Remove bolts (5). Install brackets (10) with bolts (5). Tighten the bolts to 500-1000 lb-in. Lockwire bolts to each other by the double-twist method. Apply tamperproof putty to the bolts so the putty will break if the boltheads are turned.

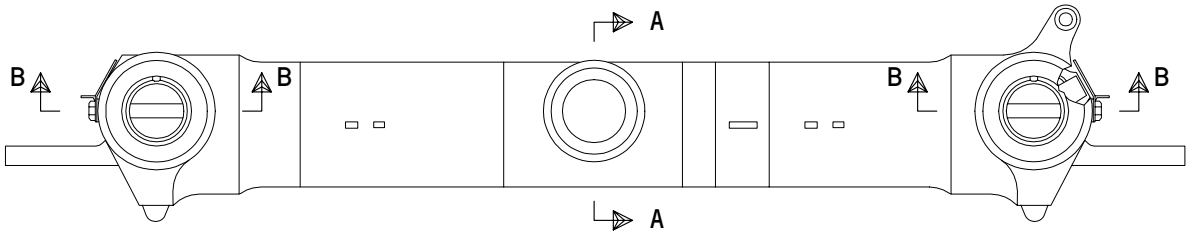
M. Apply a fillet of BMS 5-95 sealant between the tow fitting and the truck beam, as indicated in Fig. 701. The bottom flat area of the tow fitting must stay open as a drain path.

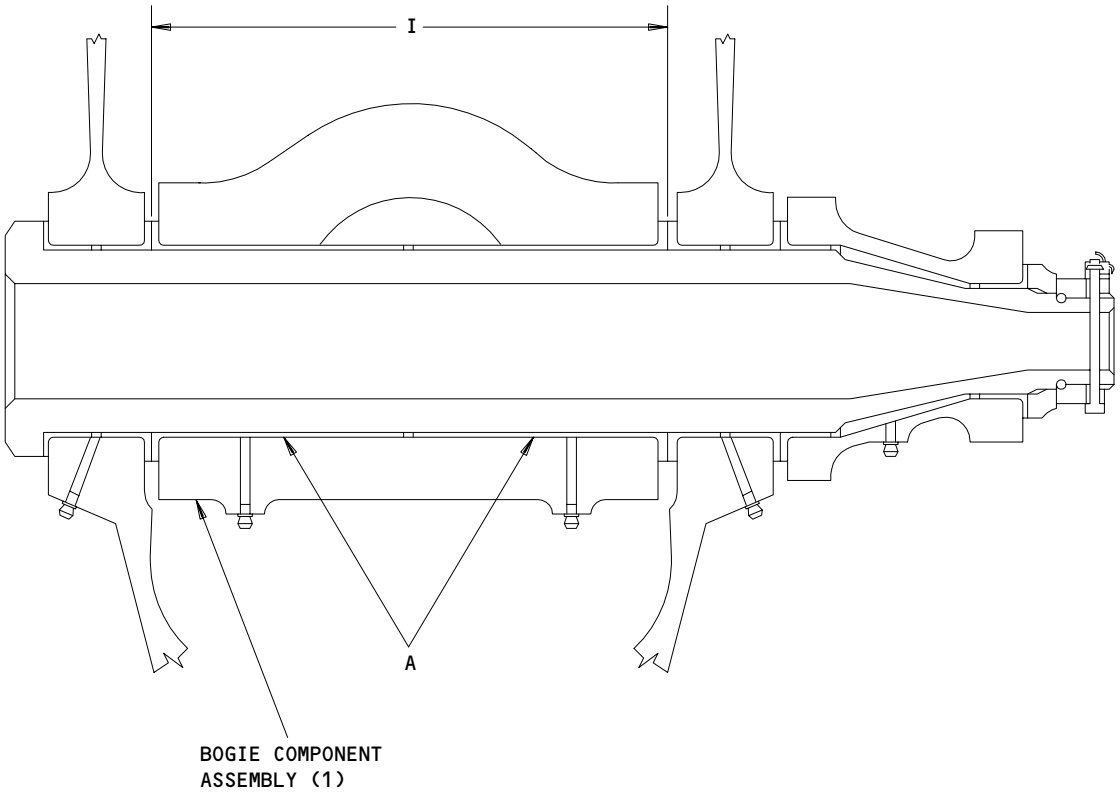


Assembly Details
Figure 701

E35074

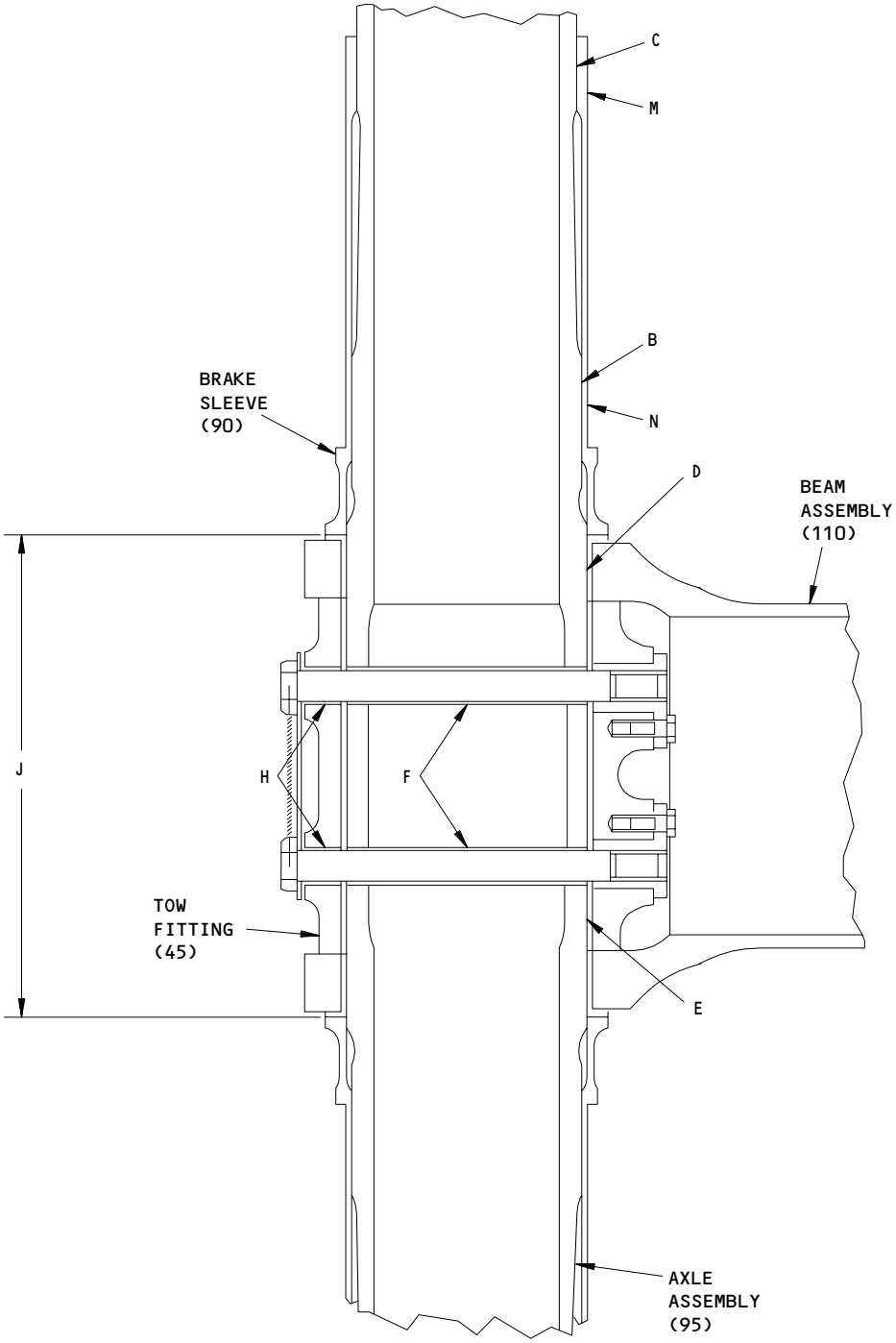
FITS AND CLEARANCES





A–A

Fits and Clearances
Figure 801 (Sheet 1)



B-B

Fits and Clearances
Figure 801 (Sheet 2)

REF LETTER	REF IPL FIG. 1, MATING ITEM NO.	DESIGN DIMENSION*				SERVICE WEAR LIMIT*		
		DIMENSION		ASSEMBLY CLEARANCE		DIMENSION		MAXIMUM CLEARANCE
		MIN	MAX	MIN	MAX	MIN	MAX	
A	ID 130 ▷4	4.0000	4.0015				4.0110	
A	ID 130 ▷5	4.0040	4.0060				4.0110	
A	ID 130 ▷6	4.0015	4.0066				4.0110	
B	ID 90 OD 105	5.2470 5.2475	5.2480 5.2500	−0.0030 ▷1	0.0005			
C	ID 90 OD 105	4.997 4.997	4.998 4.999	−0.002 ▷1	0.001			
D	ID 125 OD 105	5.5000 5.5040	5.5015 5.5050	−0.0050 ▷1	−0.0025 ▷1			
E	ID 80 OD 105	5.5050 5.5040	5.5080 5.5050	0.0000	0.0040	 5.4993	5.5137	0.0087
F	ID 100 OD 5	0.7510 0.7450	0.7525 0.7470	0.0040	0.0075	 0.7433	0.7562	0.0092
G	ID 120	1.0000	1.0015					
H	ID 75 OD 5	0.7512 0.7450	0.7567 0.7470	0.0042	0.0117	 0.7433	0.7604	0.0134
I	▷2 130	10.737	10.747			10.717		
J	▷2 125	10.953	11.003					
K	▷2 120	2.785	2.804					
L	▷3 120	0.935	0.944					
M	OD 90	5.4980	5.5010			5.4933		
N	OD 90	5.4985	5.5010			5.4933		

* ALL DIMENSIONS ARE IN INCHES

1 ▷ INTERFERENCE FIT

2 ▷ DISTANCE OVER BUSHING FLANGES

3 ▷ DISTANCE BETWEEN BUSHING FLANGES

4 ▷ BOGIE COMPONENT 161T1130-1,-3,-4,-5 (PRE SB 32-21 CONFIGURATIONS) (OBSOLETE)

5 ▷ BOGIE COMPONENT 161T1130-6 AND ON, AND 015T0819-13 (POST SB 32-21 CONFIGURATIONS AND ON)

6 ▷ CONFIGURATION WITH OPTIONAL KARON-COATED BUSHINGS 161T3260-SERIES (SB 32A0176)

Fits and Clearances
Figure 801 (Sheet 3)

FOR TORQUE VALUE OF STANDARD FASTENERS, REFER TO 20-50-01			
ITEM NO. IPL FIG. 1	NAME	TORQUE	
		POUND-INCHES	POUND-FEET
5	BOLT	500-1000	

Torque Table
Figure 802

SPECIAL TOOLS, FIXTURES AND EQUIPMENT

NOTE: Equivalent substitutes can be used.

1. A32054-1 -- Alignment Pin, Truck Axle Beam
2. A32067-11 -- Bushing Puller Set (Replaces A32067-1 or A32067-13)
3. A32083-12 -- Axle Puller
4. A32079-1 -- Brake Sleeve Puller

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

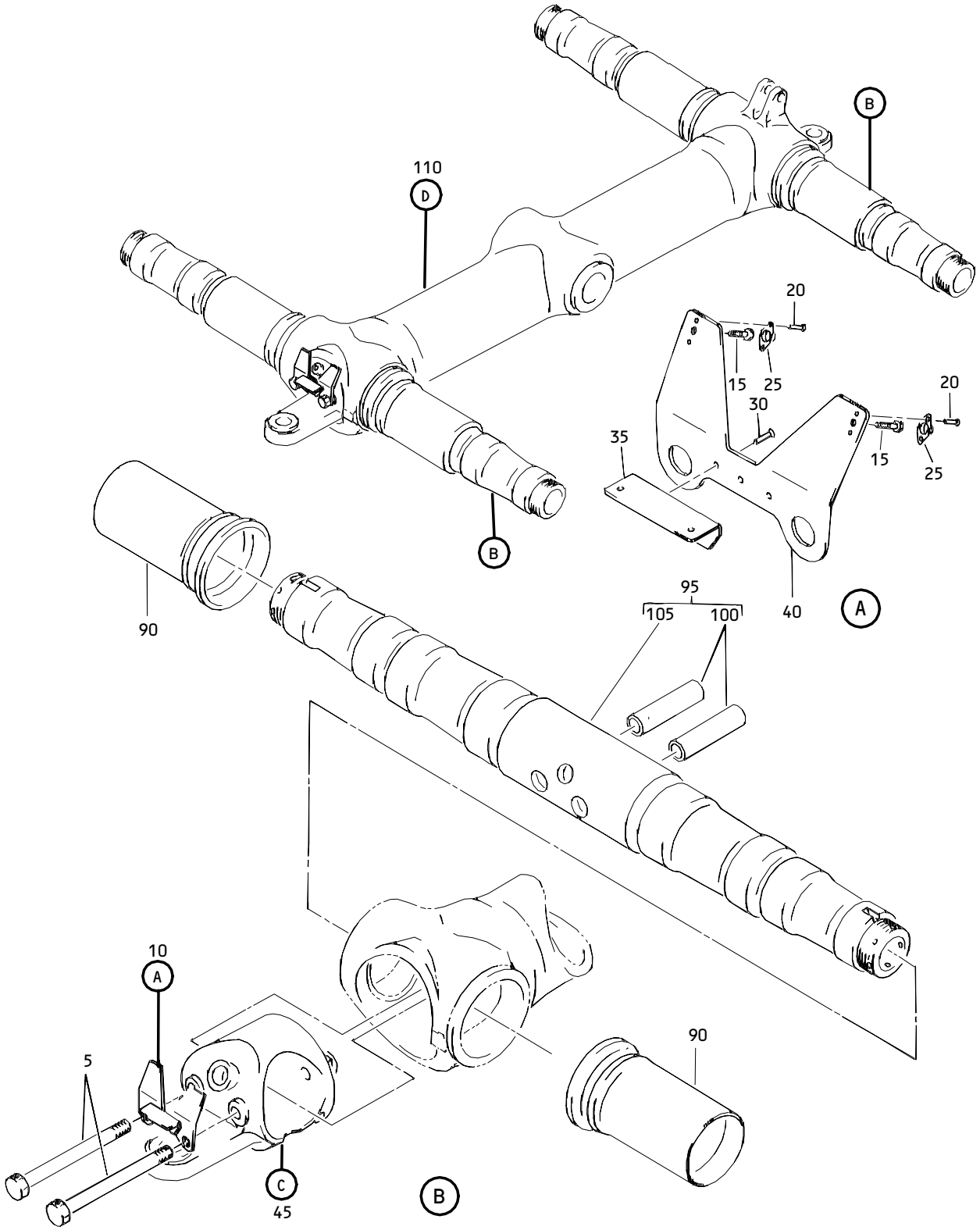
Optional (OPT)	The parts are optional to and interchangeable with other parts having the same item number.
Supersedes, Superseded By (SUPSDS, SUPSD BY)	The part supersedes and is not interchangeable with the original part.
Replaces, Replaced By (REPLS, REPLD BY)	The part replaces and is interchangeable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

VENDORS

50632 KAMATICS INCORPORATION SUB OF KAMAN CORP .
1330 BLUE HILLS AVENUE
BLOOMFIELD, CONNECTICUT 06002

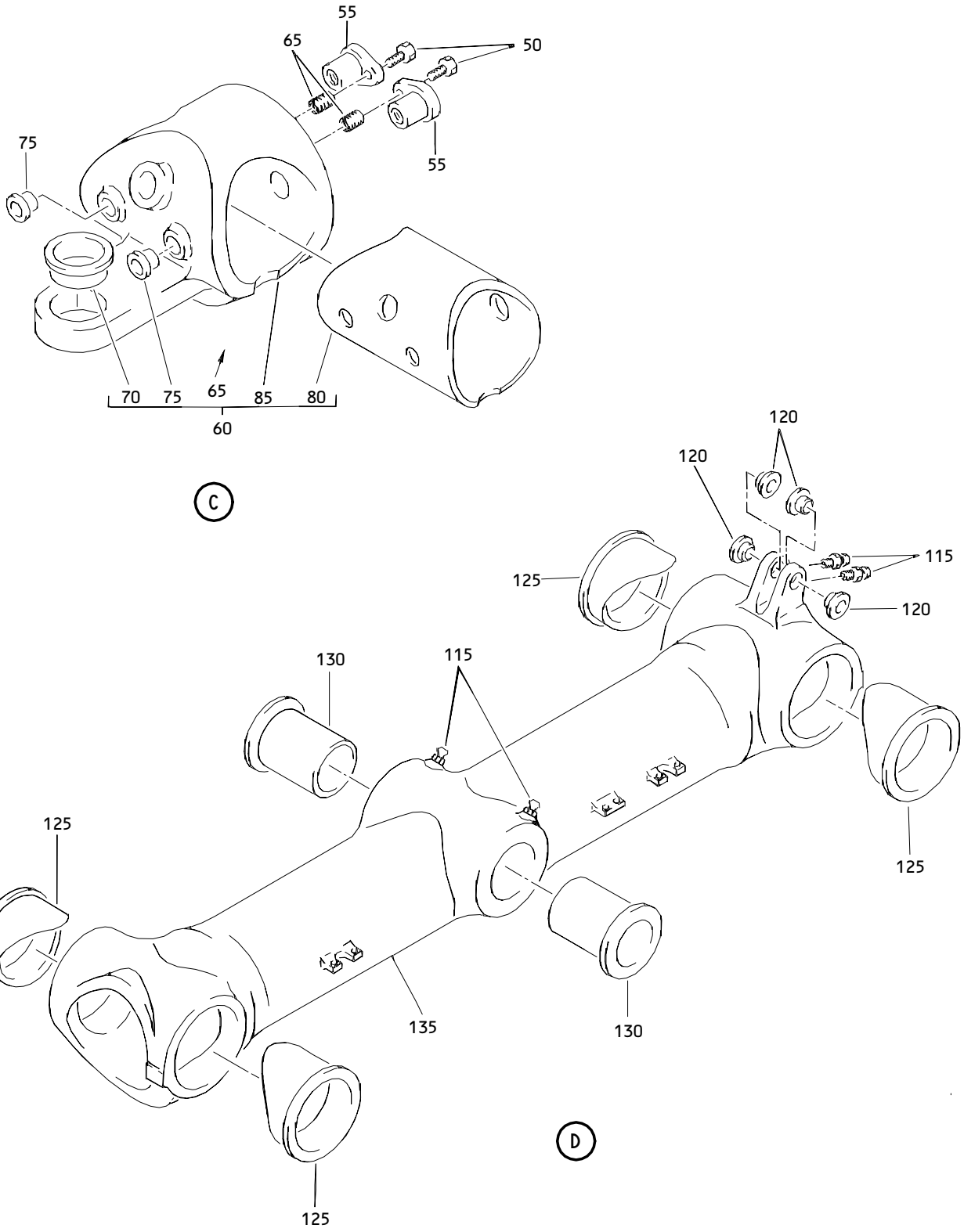
80539 SPS TECHNOLOGIES, INC. AEROSPACE PRODUCTS DIV.
2701 SOUTH HARBOR BOULEVARD
SANTA ANA, CALIFORNIA 92702

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



Main Landing Gear Bogie Component Assembly
Figure 1 (Sheet 1)

T55242



Main Landing Gear Bogie Component Assembly
Figure 1 (Sheet 2)

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-1	161T1130-1		COMPONENT ASSY-MLG BOGIE (PRE SB 51-7)	A	RF
-1A	161T1130-2		DELETED		
-1B	161T1130-3		COMPONENT ASSY-MLG BOGIE	B	RF
-1C	161T1130-4		COMPONENT ASSY-MLG BOGIE	C	RF
-1D	161T1130-5		COMPONENT ASSY-MLG BOGIE	D	RF
-1E	161T1130-6		COMPONENT ASSY-MLG BOGIE (POST SB 51-7)	E	RF
-1F	161T1130-7		COMPONENT ASSY-MLG BOGIE	F	RF
-1G	161T1130-8		COMPONENT ASSY-MLG BOGIE (PRE SB 32-0145,32-0175)	G	RF
-1H	161T1130-9		COMPONENT ASSY-MLG BOGIE (PRE SB 32-0175)	H	RF
-1J	161T1130-10		COMPONENT ASSY-MLG BOGIE	I	RF
-1K	161T1130-11		COMPONENT ASSY-MLG BOGIE (POST SB 32-0145, 32-0175)	J	RF
-1L	161T1130-12		COMPONENT ASSY-MLG BOGIE (POST SB 32-0175)	K	RF
-1M	161T1130-13		COMPONENT ASSY-MLG BOGIE	L	RF
-1N	015T0819-13		COMPONENT ASSY-MLG BOGIE (POST SB 32-0145)	M	RF
5	69B04065-2		.BOLT		4
10	287T6102-1		DELETED		
10A	287T6102-7		.BRACKET ASSY		2
15	NAS6703-3		..BOLT		2
20	MS20427M3		..RIVET		4
25	6800S02		..RETAINER-BOLT (V80539) (SPEC BACR10G32)		2
30	MS20427M5		..RIVET		3
35	287T6102-3		DELETED		
35A	287T6102-9		..CLIP		1
40	287T6102-2		DELETED		
40A	287T6102-8		..BRACKET		1
45	161T1133-1		.FITTING ASSY-TOW		2
50	BACB30NE6H4		..BOLT		2
55	69B00271-1		..BUSHING-THREADED		2
60	161T1133-2		..FITTING ASSY		1
65	MS21209F6-15		...INSERT		2
70	161T1135-1		...BUSHING		1
75	69B00270-1		...BUSHING		2
80	161T1134-1		...BUSHING		1
85	161T1133-3		...FITTING		1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
90	161T1149-1		.SLEEVE-BRAKE		4
95	161T1138-1		.AXLE ASSY	ABD	2
-95A	161T1138-3		.AXLE ASSY	CE	2
-95B	161T1138-5		.AXLE ASSY	FH	2
-95C	161T1138-7		.AXLE ASSY	GI	2
-95D	161T1138-9		.AXLE ASSY	JK	2
-95E	161T1138-11		.AXLE ASSY	LM	2
100	161T1146-1		..BUSHING		2
105	161T1138-2		..AXLE (USED ON ITEM 95)		1
-105A	161T1138-4		..AXLE- (USED ON ITEM 95A)		1
-105B	161T1138-6		..AXLE- (USED ON ITEM 95B)		1
-105C	161T1138-8		..AXLE- (USED ON ITEM 95C)		1
-105D	161T1138-10		..AXLE- (USED ON ITEM 95D)		1
-105E	161T1138-12		..AXLE- (USED ON ITEM 95E)		1
110	161T1131-1		.BEAM ASSY	A	1
-110A	161T1131-3		DELETED		
-110B	161T1131-5		.BEAM ASSY	B	1
-110C	161T1131-6		.BEAM ASSY	C	1
-110D	161T1131-7		.BEAM ASSY (REWORK)	D	1
-110E	161T1131-8		.BEAM ASSY	EFGJM	1
-110F	161T1131-9		.BEAM ASSY	HIK	1
-110G	161T1131-11		.BEAM ASSY	L	1
115	1728B		..FITTING-LUBE (V95879)		4
120	161T1210-21		..BUSHING		4
125	161T1148-1		..BUSHING		4
130	161T1147-1		..BUSHING (USED ON ITEM 110) (PRE SB 32-21)		2
130	161T1147-1		..BUSHING (REWORKED BY SB 32-21) (USED ON ITEM 110D)		2

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
130A	161T1250-1		..BUSHING (USED ON ITEMS 110B, 110C, 110E, 110G)		2
130A	161T1250-1		..BUSHING (USED ON ITEM 110) (POST SB 32-21)		2
130B	015T0106-10		..BUSHING, OVERSIZE (POST SB 32-21)		2
130C	161T1254-1		..BUSHING- (USED ON ITEM 110F)		2
-130D	161T1260-1		..BUSHING-OVERSIZE (POST SB 32A0176)		2
135	161T1131-2		..BEAM (USED ON ITEMS 110, 110B, 110D)		1
-135A	161T1131-4		..BEAM- (USED ON ITEMS 110C, 110E, 110F)		1
-135B	161T1131-10		..BEAM- (USED ON ITEM 110G)		1