TO: ALL HOLDERS OF MAIN GEAR SHOCK STRUT ASSEMBLY OVERHAUL MANUAL, 32-11-11

REVISION NO. 100, DATED JUL 1/09

HIGHLIGHTS

DESCRIPTION OF CHANGE	TOPICS AFFECTED												
	D&O	D/Assy	Cleaning	Insp/Chk	Repair	Assy	F/C	Test	T/Shooting	S/Tools	Storage	IPL	L/Overhaul
Added design details for lower bearing (42) 69-50997-1, -3					X								
Added clarifications to dimension and refinish details on the outer cylinder					X								

MAIN GEAR SHOCK STRUT ASSEMBLY

32-11-11

BOEING P/N 65-46100-5, -6, -9 thru -31, -33 thru -79

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		PRR 30731	Aug 15/68
		PRR 31002	May 15/69
32-1015		PRR 31363	Aug 15/69
		PRR 31556	Aug 15/69
		MC 3452-1K	Jun 10/70
		PRR 31912	Jun 10/70
32-1061		PRR 32061	Jun 10/72
32-1011		PRR 31357	Sep 10/72
32-1045		PRR 31948	Sep 10/72
32-1046			Sep 10/72
32-1054		PRR 32006	Sep 10/72
32-1064		PRR 32152	Sep 10/72
32-1068, Rev.1			Dec 25/73
		PRR 32310	Dec 25/73
32-1081			Dec 25/75
		PRR 32553	Dec 25/75
		PRR 32494-8	Jul 5/76
32-1082		PRR 32568	Jan 5/77
		PRR 32678	Jan 5/77
		PRR 32743	Jul 5/77

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		PRR 32756-1	Jul 5/79
32-1096		PRR 32906	Jan 5/80
		PRR 32917-2	Jul 5/79
		PRR 32936	Jul 5/80
32-1123		PRR 33066	Mar 5/84
		PRR 33096	Jul 5/81
		PRR 33100	Jul 5/81
	32-29		Jan 5/82
		PRR 33265	Jan 5/83
		PRR 33120	Jan 5/83
		PRR 33304	Jul 5/83
		PRR 33180-54	Mar 5/84
32-1123, Rev 1			Dec 5/84
32-1179		MC 3015-60K	Sep 5/87
		MC 0310MK3028	Sep 5/87
	32-10		Dec 5/87
		PRR 33410-94	Jun 5/88
		PRR 34401	Jun 5/88
		PRR 34509-1	Mar 5/89
32-1191			Jun 5/89
32-1235		PRR 34746	Sep 5/90
32-1123, Rev 2			Jun 5/90
		RR 97013-28	Mar 5/91
32-1253		PRR 33890-83	Jun 5/92
		PRR 34939	Sep 5/91
32-1259		MC 0310MK3174	Sep 5/91
32-1258		MC 0310MK3169	Mar 5/92
32-1257			Dec 5/92
		PRR 34984	Mar 5/93
	32-23		Dec 5/93
32-1082, Rev. 2			Mar 1/95
32-1081, Rev. 1			Mar 1/97
		AD 2000-05-13	Jul 1/01
32-1064, Rev. 2			Jul 1/03

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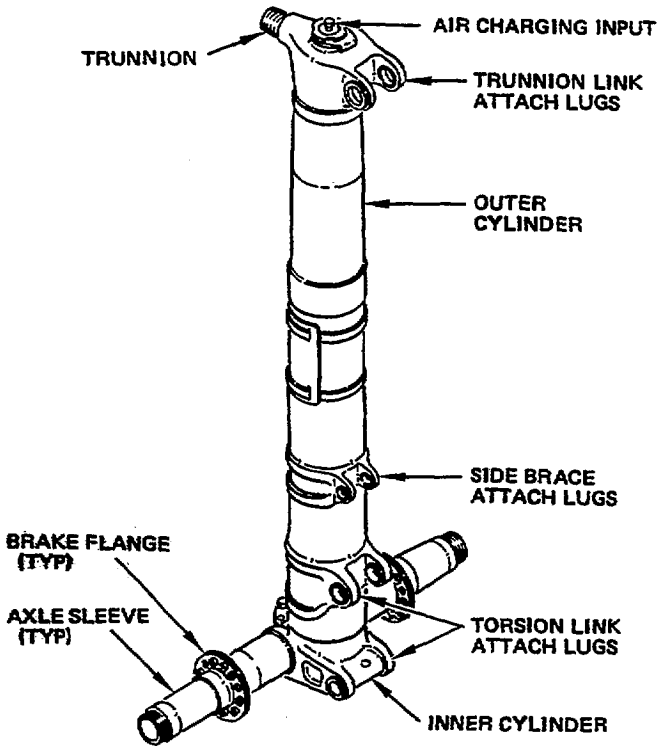
*[1] Special instructions not required. Use standard industry practices and the information contained in 20-30-03.

MAIN GEAR SHOCK STRUT ASSEMBLY



Main Gear Shock Strut Assembly
Figure 1

DESCRIPTION AND OPERATION

1. The main gear shock strut assembly consists of inner and outer cylinders containing orifice support tube, metering pin, drain tube, packings, packing adapter, bearings, charging valve, and orifice plate.

2. Some of the space between the inner and outer cylinder and part of the outer cylinder above the bulkhead is partially filled with hydraulic fluid and held under pneumatic pressure. The air cushion absorbs impact loads and taxi and landing shocks. The hydraulic fluid goes through an orifice plate and snubbing valve to slow down the motion of the inner cylinder.

3. Leading Particulars (dimensions approximate)

Length, fully compressed -- 71 inches
Length, fully extended -- 85 inches
Height (overall) -- 41 inches
Width (overall) -- 41 inches
Weight -- 307 pounds
Hydraulic Fluid
BMS 3-32, Type 1 or 2 (Optional: MIL-H-5606 or MIL-H-6083 hydraulic fluid, plus Lubrizol 1395 antifriction additive)
Fluid Capacity -- 3.4 gallons

DISASSEMBLY

WARNING: DO NOT START DISASSEMBLY OR UNSCREW THE AIR VALVE BODY (FIG. 101) UNTIL ALL AIR PRESSURE IS RELEASED FROM SHOCK STRUT OR INJURY TO PERSONNEL COULD OCCUR FROM SUDDEN EJECTION OF PARTS.

1. Hang the shock strut in an upright position from a hoist in a commercial web belt sling. Carefully release air pressure by removing cap from air valve (10) and backing off swivel nut one or two turns. (Be sure not to loosen the air valve.) After pressure is released, remove all of the valve assembly.

2. Remove all lockwiring. Remove parts (4,5) and drain all hydraulic fluid through the bore of drain tube (50).

3. Lower the shock strut, in a vertical position, into an assembly fixture.

   CAUTION: BEFORE YOU PULL THE OUTER CYLINDER FROM THE INNER CYLINDER, BE SURE GLAND NUT (45) IS FULLY DISENGAGED, WITH PARTS (6 THRU 9) REMOVED, TO PREVENT DAMAGE TO OLEO MECHANISM INSIDE INNER CYLINDER.

   THE GLAND NUT AND OUTER CYLINDER COULD HAVE OVERSIZE THREADS AND BE MATCHED PARTS.

   THE INNER CYLINDER COULD HAVE UNDERSIZE AXLE THREADS WHICH MUST BE USED WITH SPECIAL UNDERSIZE WHEEL RETAINER NUT 69-77566 AND WASHER 69-77694 (REF OHM 32-16-11).

   THE INNER CYLINDER COULD HAVE ONE OR BOTH THREADED ENDS CUT OFF THE AXLE AND A SPECIAL AXLE SLEEVE INSTALLED WHICH INCLUDES AXLE THREADS.

4. Remove parts (6 thru 9). Unscrew gland nut (45) with spanner F80033-1. Pull off outer cylinder (23) from the inner cylinder with a hoist and a commercial web belt sling.

   NOTE: If the packings are tight in the cylinder, you can lightly bump and twist to help remove the outer cylinder.

5. Unscrew retaining nut (11). Remove lockwasher (12). Wrap the threads on orifice tube (21) with mylar tape or equivalent to prevent thread damage when you remove the orifice tube from the outer cylinder.

6. Push orifice tube support assembly (17) out of the outer cylinder. Disassemble parts (13 thru 22). Use spanner F80032-1 to unscrew orifice plate (21).

7. Remove parts (28 thru 32) from the inner cylinder. Keep upper bearing halves (30, 31) together as matched set. Be careful not to damage snubbing valve (32). Ring (28) can be kept to use again, but we recommend you discard it and assemble the unit without it.

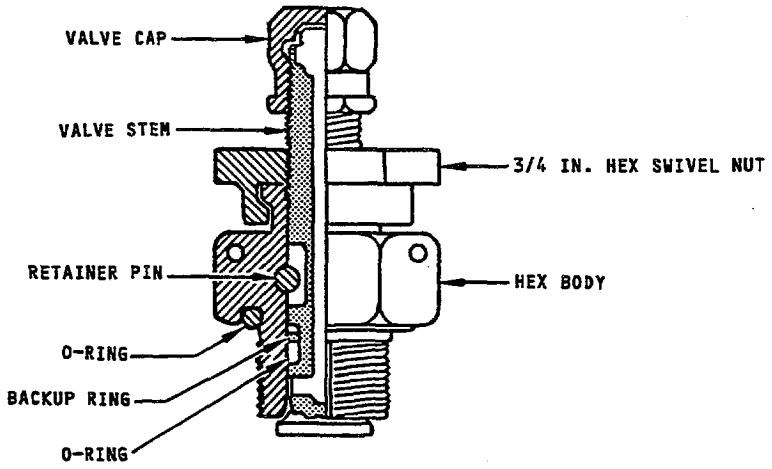
8. Remove parts (33 thru 45) from inner cylinder.

9. Remove parts (46 thru 47C). Pull metering pin (54) with attached parts out of inner cylinder.

10. Unscrew drain tube (50) and remove washers (51, 51A) if used. Disassemble parts (48, 49, 52, 53).

11. Remove parts (56, 57, 58). Protect sleeves (59) and axle threads with axle and thread protectors F72913-10. For sleeve (59) and spacer (60) replacement, refer to REPAIR par. 9.C or 9.D.

12. Remove parts (1 thru 14, Fig. 1102).



AIR VALVE ASSEMBLY (10, FIG. 1101 OR 1102)

Air Valve Details
Figure 101

INSPECTION/CHECK

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

CAUTION: GLAND NUT AND OUTER CYLINDER THREADS COULD BE OVERSIZE. THEN THE GLAND NUT AND OUTER CYLINDER MUST BE IDENTIFIED TO TELL YOU THIS AND KEPT TOGETHER AS A SET.

2. Examine the threads for the gland nut at the lower end of outer cylinder (27) for corrosion. After chasing or blending of defects, threads are acceptable if a minimum of 50% of thread bearing surface remains and defects are not concentrated in any quarter segment across all threads. Refer to Repair for more details.

CAUTION: INNER CYLINDER COULD HAVE UNDERSIZE THREADS THAT MUST BE USED WITH SPECIAL UNDERSIZE WHEEL RETAINER NUT AND WASHER.

3. Examine the inner cylinder axle threads for nicks, burrs, defects and wear. Measure the thread pitch diameter and major diameter and compare them with the thread dimensions given in Fig. 601 (Sheet 4). A PTG threadsnap tool is recommended. Be sure to use the correct tool for the thread size.

   NOTE: A Johnson CHF/PD thread measuring system (or equivalent) can be used as an option to measure the thread pitch diameter, but a separate set of pitch diameter rollers and a master thread plug gage is necessary for each size of thread. The plug gage is used to set the dial indicator of the measuring system before you measure the thread pitch diameter. The thread major diameter can be measured with a micrometer.

4. Magnetic particle examine (SOPM 20-20-01): Lock (9), washer (12), outer cylinder (27), gland nut (45), metering pin (54), sleeve (59), inner cylinder (62). Before you examine the inner cylinder, be sure to remove all Sermetel 249 (BMS 14-4, Type 2) coating per SOPM 20-30-02.

5. Penetrant examine (SOPM 20-20-02): orifice support tube (22) or tube segments (22A, 22B), pin (22C), bearings (42, 42A), adapter (44), tube (50).

6. Examine metering pin (54) for straightness. Examine the pin shaft for flat spots. Make sure the machined surface has a 32 microinch finish or smoother.

7. Examine the brake attachment flange on inner cylinder (62) for signs of cracks. If there are cracks, they will start from the brake mounting holes and could go inwards (toward axle) or outward (toward outer edge of brake flange). No more than four holes can have cracks that go outward. Refer to SB 32-1081 for more data.

8. Examine the lower quadrant of the main gear axle between brake mounting flanges for cracks. If you find cracks, the main gear shock strut is unserviceable.

9. Examine orifice support tube (22) for corrosion in the upper end threads. If you find corrosion, repair per SB 32-1257.

10. Make a check of the mating dimensions between upper bearing inner shell (29), snubbing valve (32) and inner cylinder (62), to be sure these parts will stay in position after assembly.

REPAIR

1. General

   A. Repair small defects by standard industry practices. Refer to Fits and Clearances for design dimensions and wear limits.

   B. Refer to SOPM 20-10-01 and CMM 32-00-05 for repair and refinish of high strength steel parts.

2. Upper Bearing (29) and Lower Bearing (42) (Fig. 402)

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

   B. Finish as noted. Lower bearings 69-55433-1 and 69-86791-2, -4 can be machined oversize for installation of sleeve (42B).

      NOTE: Some operators have had success with sulfamate nickel plate buildup as an alternative to thermal spray buildup. However, there is a risk of galvanic corrosion when nickel touches aluminum.

3. Metering Pin (54) (Fig. 412)

   A. Diameter 2 Surface Repair

      (1) If the O-ring groove surface is rougher than 32 microinches, remove the cadmium-titanium plate from the groove with a grit blast and polish the area to 32 microinches or smoother with 600 grit aluminum oxide abrasive paper.

      (2) Stylus cadmium plate per SOPM 20-42-10.

   B. Diameters 1, 2 General Repairs

      NOTE: The Diameter 1 dimension on the 65-46124-1, -3 pins can be machined down to 1.040-1.036 inch to keep it away from the orifice plate (Fig. 412).

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

      (2) Shot peen as indicated.

      (3) Build up with chrome plate (SOPM 20-42-03) or nickel plate (SOPM 20-42-09) or thermal spray (SOPM 20-10-05), as applicable.

      (4) Grind the chrome plate or thermal spray coating, or machine the nickel plate, to design dimensions and finish.

4. Wheel spacer (60, Fig. 1101) (Fig. 409)

   A. Machine the wheel spacer to the dimensions shown for installation of a repair sleeve.

   B. Anodize the machined surfaces (SOPM 20-43-03) and apply BMS 10-11, Type 1 primer.

   C. Make a repair sleeve as shown in Fig. 409.

D. Apply a thick layer of BMS 3-33 grease to the axle lands and install the repair sleeve by the shrink fit method (SOPM 20-50-03).

E. Make sure the installed sleeve does not decrease the spacer ID smaller than design dimensions. If necessary, machine the spacer ID to design dimensions.

5. Support tube (22, Fig. 1101) (Fig. 411)

A. Upper end O-ring groove

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

(2) Build up the machined area with thermal spray coating as shown.

(3) Machine to design dimensions and finish.

B. Upper end threads

(1) Blend out defects if no more than 40% of the threads will be removed in any one quadrant. Do not remove more than 40% of any one thread from the circumference.

(2) If the defects on the threads make necessary the removal of more thread material than this, repair the support tube (22) per SB 32-1257.

6. Outer Cylinder (27)

NOTE: Unless specified differently, these repairs are applicable to the two cylinders, 65-46110-series and 65-61740-series.

A. Lug Faces and Holes (Fig. 401)

(1) Method 1 -- Installation of oversize bushings

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

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

(c) Make bushings (Fig. 406) with increased flange thickness or OD, as necessary to adjust for the material removed in step (a).

(d) Install the bushings per par. 9.G.

(2) Method 2 -- Chrome plate or thermal spray buildup of lug faces

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

(b) Shot peen as indicated.

(c) Build up with chrome plate (SOPM 20-42-03) or thermal spray coating (SOPM 20-10-05).

(d) Grind the chrome plate or thermal spray coating to design dimensions and finish.

(e) Install standard bushings (per parts list) per par. 9.G.

(3) Method 3 - Installation of back-to-back bushings in the trunnion link attach lugs

(a) Remove material from all of the lug inner faces as necessary to permit flanged repair bushings to fit here. Do not remove more than 0.060 inch from the minimum design dimension. Blend into the radius as shown. As an alternative on the inner lug faces, you can make a spotface up to 0.060 inch deep, as shown.

(b) Chamfer the lug bores at the inner and outer faces as shown.

(c) Shot peen as indicated.

(d) Chrome plate the inner lug faces 0.003-0.005 inch thick (SOPM 20-42-03, class 3), with the chrome plate runout as shown.

NOTE: Chrome plate is recommended to minimize galling damage if the thin bushing flange breaks off. Cadmium-titanium plate with phosphate treatment (F-16.05) can also be used.

(e) Cadmium-titanium plate (SOPM 20-42-02) unless shown differently. Apply BMS 10-11 primer to chamfers.

(f) Make repair bushings (Fig. 405). We recommend you wait until after installation to machine the bushing flange faces, not before, because the bushing flange is thin and could easily break.

(g) Fill all gaps with BMS 5-95 sealant, then install the bushings with wet BMS 5-95 sealant by the shrink fit method (SOPM 20-50-03).

(h) Machine the bushing flange faces as necessary.

(i) Fillet seal around bushing flanges and in the gap between the bushings with BMS 5-95 sealant.

(4) Method 4 - Installation of repair shim on the trunnion link attach lugs

(a) Machine lug inner faces, within repair limits, to remove defects. Blend into the radius as shown.

NOTE: If you must remove more than 0.035 inch from the design dimension, use the Method 3 back-to-back bushing repair.

(b) Shot peen the repaired surfaces as indicated.

(c) Chrome plate the inner lug faces 0.003-0.005 thick (SOPM 20-42-03, class 3), with the chrome plate runout as shown.

(d) Cadmium-titanium plate the other surfaces (SOPM 20-42-02) unless shown differently.

(e) Make a shim (Fig. 405A) and install it with wet BMS 5-95 sealant.

(f) Line ream all bushings and shims to design dimensions and finish.

B. Orifice Support Tube Bore (Fig. 401)

NOTE: Method 1 plating buildup is optional to the Method 2 repair bushing if the material removal is not more than 0.022 inch.

(1) Method 1 -- Sulfamate Nickel plate

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

(b) Shot peen.

(c) Build up the surface with sulfamate nickel plate (SOPM 20-42-09).

(d) Machine the sulfamate nickel plate to design dimension and finish.

(2) Method 2 -- Installation of repair bushing and O-ring

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

(b) Shot peen and cadmium-titanium plate the machined areas (SOPM 20-42-02).

(c) Make a repair bushing with an undercut (Fig. 405).

(d) Chill the bushing for the shrink fit method (SOPM 20-50-03).

(e) Install an MS28778-28 O-ring on the chilled bushing, in the undercut, immediately before you install the bushing (next step).

(f) Install the bushing with wet BMS 5-95 sealant by the shrink fit method (SOPM 20-50-03). Remove unwanted sealant.

(g) Fillet seal the bushing outer flange with BMS 5-95 sealant.

(3) Method 3 -- Installation of repair bushing (optional for 65-61740 only)

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

(b) Shot peen as indicated.

(c) Make a repair bushing (Fig. 405).

(d) Install the repair bushing with BMS 5-95 sealant. Be sure to align the flat of the bushing flange with the flat on the cylinder to permit installation of the tanged lockwasher.

(e) Seal around the bushing flange with BMS 5-95 sealant. Make sure there is no sealant on the other end face of the bushing that could touch mating parts during assembly.

(f) Adjust the bore of the bushing, if necessary.

C. Trunnion Journal and Adjacent Face (Fig. 401)

(1) Method 1 -- Installation of repair shim

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

(b) Use chrome plated steel shim or optional cadmium plated 15-5PH shim. Minimum shim thickness is 0.035 inch.

(2) Method 2 -- Buildup with nickel or chrome plate

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

(b) Shot peen as indicated.

(c) Build up the OD with nickel plating, or nickel plating followed by chrome plating, as applicable.

(d) Machine nickel plate, or grind chrome plate, to design dimensions and finish.

(3) Method 3 -- Installation of repair sleeve

(a) Machine the trunnion OD and the end face as required, within repair limits, to remove defects.

(b) Shot peen as indicated.

(c) Stylus cadmium plate the repaired surfaces per SOPM 20-42-10.

(d) Make a repair sleeve (Fig. 405B) as required to make allowance for the material removed in step (a).

(e) Install the repair sleeve by the shrink fit method per SOPM 20-50-03, with wet sealant BMS 5-95.

(f) Seal around the ends of the sleeve with BMS 5-95 sealant. Remove unwanted sealant.

D. Threads for Gland Nut (Fig. 401)

CAUTION: IF YOU CUT THESE THREADS OVERSIZE, BE SURE TO IDENTIFY THE CYLINDER TO TELL YOU THIS. MAKE SURE YOU USE THE CORRECT OVERSIZE GLAND NUT.

(1) Blend out defects in the threads if the damage is on not more than 50% of the thread bearing surface and if the blends will be on not more than 50% of threads in any 3-inch segment circumferentially. You can do this blend repair on original or oversize threads.

(2) For repair of damage more than these limits, if the threads are not the largest oversize, cut the threads to a larger size (UNJS-3B) as shown. Use special gland nut (45) with threads to agree. Identify the cylinder and the nut as matched parts as shown.

(3) If the threads are at the largest oversize and the damage or necessary repair is more than the limits of step (1), get instructions from Boeing.

CAUTION: KEEP THE MINIMUM BLEND RADIUS SHOWN. DO NOT GRIND TO BLEND OR SMOOTH. DO NOT BURNISH REPAIRED SURFACES.

E. Local Repair of Exterior Surfaces (Fig. 401)

NOTE: These local repair depth limits are measured from the nearest design dimension limit. If earlier repairs to this cylinder increased the ID or decreased the OD beyond design limits, make sure you include all material removals when you calculate actual repair depths for these local repairs. Hand filing is preferred. Power driven rotary files are acceptable if low speeds (100 rpm max) and sharp files are used.

(1) Remove local defects from exterior surfaces, within the depth limits shown, by filing and polishing with 240 grit or finer aluminum oxide or carborundum abrasive cloth.

(2) Shot peen as indicated.

(3) Refinish the repaired surfaces as shown. Stylus cadmium plating (SOPM 20-42-10) can be used to repair plating on local areas.

F. Aft trunnion threads (Fig. 401)

CAUTION: WHEN YOU MACHINE THESE THREADS UNDERSIZE, BE SURE TO IDENTIFY THE CYLINDER AND THE SPECIAL NUT, KEY AND WASHER TO TELL YOU THIS, AND PAINT THESE PARTS WITH YELLOW ENAMEL.

(1) Cut the threads to a smaller size (UNJF-3B) as shown.

(2) Machine the keyway to the new depth for the size of threads you use.

(3) Make these special repair equivalents of the mating nut, key and washer, to fit together as shown in Fig. 406B.

(a) Nut 65-84161-series

1) Make the nut as shown in Fig. 406C.

2) Then install a 65-84161-2 collar on the nut (OHM 32-16-31, par. 14).

(b) Key 69-63574-1 -- See Fig. 406D.

(c) Washer 69-63573-series -- Get a standard 69-63573-series washer and machine its OD undersize (Fig. 406E) to let it fit inside the special repair nut.

(4) Keep these parts together with the outer cylinder, or temporarily install them on the aft trunnion, until you install the landing gear on the airplane.

7. Inner Cylinder (62)

A. Cylinder OD (Fig. 403)

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

(2) Etch examine (SOPM 20-10-02) to look for overtempered martensite (OTM). OTM caused by in-service-related heat damage (but not heat damage caused during repair) can stay without local blendout if there is no untempered martensite or cracks, and the OTM is shot peened. Include the areas of OTM in the analysis as if they were blends 0.010 inch deep.

(3) Shot peen.

(4) Chrome plate and grind to design dimensions and finish. Wipe the chrome plate with primer (F-19.45).

B. Stud and bolt holes in brake flanges (AD 2000-05-13) (Fig. 403)

(1) Stud Holes (Sermetel 249 (BMS 14-4, Type 2) coating applied)

(a) Holes smaller than 0.5656 inch require no repair.

(b) Holes 0.5656-0.5670 inch -- No repair is necessary if you install in them a bolt and nut of the same type used to attach brake to flange and tighten to 1300-1800 lb-in.

(c) Holes larger than 0.5670 inch -- Machine to the dimension and finish noted. Magnetic particle examine to make sure you removed all of the defects. Make repair bushings per Fig. 405. Install these bushings by the shrink-fit method (SOPM 20-50-03) with wet BMS 10-11, Type 1 primer on mating surfaces. Primer is specified here, not sealant, because this area can get very hot during service. Machine the bushing flush with the flange faces, then machine the ID to the dimension noted. Apply protective coating to bushing edges, but not to the bushing ID.

(2) Bolt holes (Sermetel 249 (BMS 14-4, Type 2) coating applied)

(a) Holes 0.5671 inch or less -- No repair is necessary.

(b) Holes larger than 0.5671 inch -- Repair per step (1) above.

(3) Cracks that go from the brake mounting holes out toward the outer edge of the brake flange.

NOTE: After the maximum permitted material removal, no signs of cracks are permitted. No more than four holes can be repaired, and no more than three of the repaired holes can be adjacent. Cracks that go inward are not permitted.

(a) Use the flow chart to make the selection of which repair method to use.

(b) Blend out the crack as indicated.

(c) Shot peen the brake flange machined surfaces and the adjacent axle surfaces as indicated.

(d) Apply protective coating (Sermetel 249) (BMS 14-4, Type 2) to the brake flange machined surfaces and holes, and the adjacent axle surfaces.

C. Brake Flanges and Adjacent Axle Surfaces (Fig. 403)

(1) At each overhaul, shot peen the brake flanges and the adjacent axle surfaces shown to prevent loss of shot peened characteristics caused by in-service brake overheating. Use the same shot size as specified for repair.

CAUTION: THE SUM OF MATERIAL REMOVALS FROM THE TWO FLANGE FACES IS 0.033 INCH MAXIMUM. YOU CAN REMOVE UP TO 0.030 INCH FROM THE INNER FACE OR THE OUTER FACE, BUT IF YOU DO, YOU CAN REMOVE ONLY 0.003 INCH FROM THE OTHER FACE. BECAUSE MOST REPAIRS NECESSARY ARE TO THE OUTER FACE, WE RECOMMEND YOU REPAIR THE INNER FACE ONLY WITH LOCAL BLENDS, TO LET YOU USE THE FULL AMOUNT OF MATERIAL REMOVAL ON THE OUTER FACE.

(2) If you find fretting damage or cracks on the outer face of the brake flange:

(a) Machine the flange face as necessary, within repair limits, to remove defects.

(b) Fill the blends with sulfamate nickel plate (SOPM 20-42-09), 0.004-0.030 inch thick. It is not necessary to completely fill the blends. Let the plating runout end approximately 0.06 inch from the holes in the brake flange. Be sure to break sharp edges with a 0.02-0.03 inch radius unless a chamfer is specified.

(c) Refinish the other areas as indicated. Apply protective coating (Sermetel 249) (BMS 14-4, Type 2) to the brake flange machined surfaces and holes, and the adjacent axle surfaces.

(d) Make a note to tell you not to install studs at the locations adjacent to the blends.

D. Axle Threads (Fig. 403)

(1) Measure the inner cylinder axle thread pitch diameter and major diameter. A PTG threadsnap tool is recommended. Be sure to use the correct tool for the thread size.

NOTE: A Johnson CHF/PD thread measuring system (or equivalent) can be used as an option to measure the thread pitch diameter, but a separate set of pitch diameter rollers and a master thread plug gage is necessary for each size of thread. The plug gage is used to set the dial indicator of the measuring system before you measure the thread pitch diameter. The major diameter can be measured with a micrometer.

(2) If the original threads are worn beyond wear limits, cut the threads to a smaller size as indicated for special matching undersize wheel retainer nut 69-77566-2 and washer 69-77694-2 and shorter transducer bolts 69-44402-3 (OHM 32-16-11 and SB 32-1191). Identify the inner cylinder to tell you this. A recommended procedure is shown in Fig. 410.

(3) If you find a crack in the keyway, machine the keyway to full depth and width with a full end radius from the crack tip to the end of the axle. Break edges, etch examine, magnetic particle examine, shot peen, cadmium titanium plate, and apply primer, BMS 10-11, Type 1. Refer to SB 32-1191 for inspection frequency and other details.

(4) As an alternative to steps (2) or (3), as when the damaged threads are undersize, you can cutoff the bad threads and install a special axle sleeve which includes new threads. Refer to par. 7.G. for details.

E. Torsion Link Attach Lug (Fig. 404)

(1) Repair lug hole and faces by the procedure of par. 6.A. above. Use Method 1 or Method 2 as applicable.

(2) After bushing installation, machine to design dimensions and finish per Fig. 408.

F. Antirotation Bolt Holes (Fig. 404A)

NOTE: Method 1 keeps the holes, to use the antirotation bolts (Pre SB 32A1113). Methods 2, 3 install plugs in these holes when antirotation bolts are deleted (Post SB 32-1123), as an alternative to the sealant specified by SB 32A1113.

(1) Method 1 -- Installation of Repair Bushings

(a) Machine the holes oversize and treat them per par. 6.B.(1)(a),(b) above.

(b) Make repair bushings per Fig. 405.

(c) Install the bushings by the shrink fit method.

(d) Machine the bushing ID to design dimensions shown.

(e) Fillet seal the bushing flanges with BMS 5-95 sealant.

(2) Method 2 -- Installation of Plugs and Lube Fitting (for holes which were not repaired per before by the Method 1 procedure).

NOTE: If these holes were machined oversize before, by the Method 1 procedure, repair the holes per Method 3 below.

(a) Machine holes to repair limit specified for installation of standard plugs per parts list. Restore the chamfers and break the edges as indicated.

(b) Install plugs (67, 68) by the shrink fit method.

(c) Drill a 0.188-0.189 inch diameter hole thru plug (68) and install lube fitting (69) in the hole.

(d) Fillet seal the plug flanges with BMS 5-95 sealant.

(3) Method 3 -- Installation of Oversize Plugs and Lube Fitting (for holes that were repaired before Method 1 procedure).

NOTE: If the holes were not machined oversize per Method 1, repair the holes by the Method 2 procedure.

(a) Remove the repair bushings from the holes.

(b) Machine the holes to the repair limit specified for installation of oversize plugs. Restore the chamfers and break the edges as indicated.

(c) Make oversize plugs per Fig. 406A.

(d) Install the plugs in the holes by the shrink fit method.

(e) Drill a 0.188-0.189 inch diameter hole thru plug (68) and install lube fitting (69).

(f) Fillet seal the plug flanges with BMS 5-95 sealant.

G. Axle Modification (Fig. 403, 410A)

NOTE: This procedure uses axle sleeve rework kit 65C36462-1, which installs a special axle sleeve that includes threads on the end for the wheel nut.

(1) Remove all finishes from the inner cylinder (not only the axle) per SOPM 20-30-02.

(2) Cut off the end of the axle and machine the diameter F as shown per SOPM 20-10-02.

(3) Temporarily install spacer (60) and special repair sleeve (59) on the axle. (This could be an interference fit.) Turn and align the sleeve to make it concentric with the axle within 0.001 inch.

(4) With the holes in the sleeve as a guide, drill seven 0.25-inch diameter pilot holes through the axle. If the holes in the sleeve are larger than 0.25 inch, use a drill bushing to make sure the holes in the axle are concentric with the holes in the sleeve (Fig. 410A).

(5) Remove the spacer and the repair sleeve from the axle.

(6) Chamfer the pilot holes on the axle OD 45 degrees by 0.400-0.410 inch diameter. Break sharp edges.

(7) Ammonium persulfate etch examine and stress relieve per SOPM 20-10-02.

(8) Magnetic particle examine per SOPM 20-20-01, class A critical.

(9) Shot peen as indicated.

(10) Chrome plate the inner cylinder as shown. On the axle OD you decreased in step (2), chrome plate (F-15.34) as shown. Around the chamfered pilot holes, let the plating run out 0.06 inch. Grind the chrome plate to design or after-plating dimensions and finish as shown per SOPM 20-10-04.

(11) Wipe the chrome plated areas with primer (F-19.45).

(12) Apply all other refinishes as indicated.

(13) Stylus cadmium plate the chamfers of the pilot holes per SOPM 20-42-10.

(14) Apply a layer of BMS 3-27 corrosion preventive compound to the axle lands.

(15) Install spacer (60) on the axle.

(16) Install the special repair sleeve (59) on the axle by the shrink fit method per SOPM 20-50-03. You can heat the axle sleeve to 200°F maximum and chill the axle as necessary. Turn the sleeve as necessary to align its holes with the pilot holes you drilled in the axle. Do this quickly, because the sleeve will become tight on the axle in approximately 15 seconds.

(17) With the holes in the repair sleeve as a guide, drill out the pilot holes in the axle to 0.375-0.379 inch diameter.

(18) Stylus cadmium plate the ID of the holes per SOPM 20-42-10.

(19) Install 65C36462-3 retainer pins (66) with MS16633-4037 rings (63A) and MS24665-132 cotter pins (63B) through the seven holes with wet BMS 10-11, Type 1 primer (Fig. 410A).

(20) Be sure to identify the sleeve and the inner cylinder as a matched set.

H. Conduit Attach Hole (Fig. 404B)

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

(2) Shot peen and cadmium-titanium plate the hole surfaces.

(3) Make a repair bushing (Fig. 404C).

(4) Install the bushing by the shrink fit method of SOPM 20-50-03. Be sure to install the bushing with the radius end of its bore at the outer surface of the inner cylinder.

(5) Fillet seal the edges of the bushing with BMS 5-95 sealant.

8. Refinish (Fig. 1101)

NOTE: Refer to SOPM 20-30-02 for stripping of protective finishes and to SOPM 20-41-01 for explanation of S and SRF finish codes. If cadmium-titanium plate is specified, low hydrogen embrittlement cadmium plate (SOPM 20-42-01) can be used as an optional finish.

A. Lockplate (9) -- Cadmium plate (F-1.32). Material: 4340 steel, 150-170 ksi.

B. Nut (11) -- Chromic acid anodize (F-2.20) all over. Material: Al alloy.

C. Lockwasher (12) -- Cadmium plate (F-1.32). Material: 4130 steel, 125-145 ksi.

D. Orifice plate (21) -- No finish (F-1.10). Material: 4340 steel, 180-200 ksi.

E. Support tube (22), tube segments (22A, 22B), pin (22C) -- Fig. 411.

F. Outer cylinder (27) -- Fig. 401.

G. Ring (28) -- No finish (F-25.01). Material: Be-Cu.

H. Shell assemblies (28, 29), bearings (29, 42), housing (42A) -- Fig. 402

I. Snubbing valve (32) -- No finish (F-4.10, F-25.01). Material: Al-Ni-Bronze.

J. Spacers (33, 33B) -- Chromic acid anodize (F-17.04). Material: Al alloy.

K. Adapters (38, 44), tube (50) -- Chromic acid anodize (F-17.04) all over. Material: Al alloy.

L. Washer (39)

(1) 69-62283-1 -- No finish (F-25.01). Material: Al-Ni-Bronze, or brass.

(2) 69-39466-series -- Chromic acid anodize (F-17.04). Material: Al alloy.

M. Gland nut (45 or 45B) -- Cadmium plate (F-15.06), 0.0005-0.0007 inch thick all over, but 0.0002-0.0003 inch thick on threads. Material: 4340 steel, 180-200 ksi.

N. Nut (46) (69-63321-1) -- Cadmium plate (F-15.02). Material: 4130 steel, 150 ksi minimum.

O. Spring (46A) -- Cadmium plate and apply BMS 10-11, Type 1 primer (F-16.03). Material: Music wire QQ-W-470.

P. Washer (47, 47A, 47B) -- Cadmium plate (F-1.32, which replaces F-1.1923). Material: 4340 or 4130 steel, 125-145 ksi.

Q. Metering pin (54) (65-46162-1) -- Cadmium-titanium plate (F-15.01) on lower piston surface only. Material: 4330M steel, 180-200 ksi.

R. Metering pin (54) (65-46124, 65-61794, 65C32950) -- Cadmium plate (F-15.02) on lower piston surface only. After baking, hand polish the plating on 65-61794 and 65C32950 pins to 32-microinch finish. Material: 4330M steel, 180-200 ksi.

S. Stud (58) (69-43954-1) -- Chrome plate (F-15.04) shaft on both sides of flange (0.5635-0.5645 inch OD after plate grinding), with 0.06 chrome plate runout. No chrome in fillet radii. Cadmium-titanium plate (F-1.308, which replaces F-1.181) all other surfaces. Material: 4340M steel, 270-300 ksi.

T. Stud (58) (69-59091-1) -- Chrome plate (F-15.04) shaft on both sides of flange (0.5635-0.5645 inch OD after plate grinding) with 0.06 chrome plate runout. No chrome in fillet radii. Diffused nickel-cadmium plate and chromate treat per AMS 2416 on all other surfaces. Material: Maraging steel, 53-56Rc, AMD-64BR-1, 260 ksi min.

U. Stud (58) (69-62723-2) -- Chrome plate (F-15.34) shaft on both sides of flange (0.5625-0.5639 inch OD after all finishes are applied) with 0.06 chrome plate runout. No chrome in fillet radii. Apply BMS 14-4 Type 1 coating (F-24.04) all over. Material: 4340M steel, 270-300 ksi.

V. Stud (58) (69-78562-series) -- Fig. 414.

W. Axle sleeve (59) (65-46147-1, -2, -3) -- Fig. 402A.

X. Axle sleeve (59) (65C33516-1) -- Fig. 402A.

Y. Axle sleeve (59) (65C36462-2) -- Fig. 402B

Z. Wheel spacer (60) -- Fig. 409.

AA. Inner cylinder (62) -- Fig. 403.

AB. Pin (66) (66-25180-1, 65C36462-3) -- Cadmium plate (F-15.02). Material: 17-4PH or 15-5PH CRES, 180-200 ksi.

9. Replacement

A. Replace all packings, backup rings, wiper (43) and lockwire.

B. Replace all unserviceable or defective parts.

C. Axle sleeves (59) (65-46147-1, -2, -3, 65C33516-1) and spacer (60) (Fig. 410).

NOTE: For replacement of axle sleeve 65C36462-2, refer to step D. below.

(1) Remove ring (63A) or cotter pin (63B) and remove retainer pin (66). Remove sleeves (59) with a standard puller or puller F80126-9. You can heat the axle sleeves up to 200°F and chill the axle as necessary.

(2) Apply a thick layer of BMS 3-33 grease to the axle lands. Then install a new or overhauled spacer (60) and sleeve (59) by the shrink-fit method (SOPM 20-50-03). You can heat the axle sleeves up to 200°F and chill the axle as necessary. Align the holes for pin (66) in the axle and the sleeves.

NOTE: The radial location of 0.75 inch diameter holes in sleeve to other axle features is optional.

(3) Install retainer pin (13A) as follows:

(a) Apply BMS 10-11, Type 1 primer to the hole in the axle.

(b) Press or tap retainer pin (66) into the sleeve, while the primer is wet, until the pin is against the axle surface.

(c) Install ring (63A) or cotter pin (63B) as applicable.

(4) Make sure the sleeve OD dimensions are within the limits shown.

D. Axle sleeve (59) (65C36462-3) and spacer (60) (Fig. 410A)

NOTE: This procedure is for replacement of this axle sleeve. For the procedure that makes the modification and first installs this sleeve, refer to par. 7.G. above.

(1) Remove cotter pins (63B), rings (63A) and pins (66).

(2) Remove sleeve (59), which is a shrink fit on the axle. You can heat the axle sleeves up to 200°F and chill the axle as necessary.

(3) Install a replacement sleeve on the axle per par. 7.G. above.

CAUTION: MAKE SURE STUDS ARE INSTALLED AS SHOWN IN FIG. 403. STUDS INSTALLED IN WRONG LOCATIONS WILL CAUSE INTERFERENCE WITH BRAKE CARRIER AND STRESS IN BRAKE MOUNTING FLANGE WHEN BRAKE MOUNT BOLTS ARE TIGHTENED.

E. Replace studs per OHM 32-16-11 if their shank diameter is 0.5625 inch or less at the surface mating with the axle flange, 0.5605 inch or less at the surface mating with the brake flange, or if the plating is worn and could have corrosion. Install washers (57) and nuts (56). Tighten the nuts to 290-410 lb-in on studs 69-43954-1. Tighten the nuts to 200-300 lb-in on studs 69-59091-1, 69-62723-1. Tighten the nuts to 200-300 lb-in above run-on torque (but not more than 700 lb-in) on studs 69-62723-2, 69-78562-1, -2.

F. Orifice plate (21) -- Screw the replacement plate into orifice tube (22) with spanner tool F80032. Tighten it to 200 lb-ft, loosen the plate, and tighten it again to 200 lb-ft. With the hole in the plate as a pilot, drill a new 0.203-0.207 inch diameter hole in the tube. Make sure you remove sharp edges. The center of the new hole must be a minimum of 1.00 inch from the center of adjacent holes in the tube. If necessary, two new holes can be drilled in the plate, 90 degrees from the old holes, as shown in Fig. 413.

G. Bushings (24, 25, 26, 26A, 61). Remove the old bushings and install replacement bushings by the shrink fit method of SOPM 20-50-03 with wet sealant on mating surfaces. Machine bushings to design dimensions and finish as shown in Fig. 407 and 408.

H. Lube fittings (45A, 69) -- Replace per CMM 32-00-03. Or, to use the gland nut with BMS 3-27 corrosion preventive compound, fill the passages with BMS 5-95 sealant or install plugs (45C) per par. I.

I. Pins (45C) and plugs (45D) -- Replace per SOPM 20-50-04, with BMS 5-95 sealant on the mating surfaces. We recommend you cadmium plate (F-15.06) the replacement plugs. Or fill the lube holes in the gland nut with BMS 5-95 sealant or BMS 3-27 or BMS 3-38 corrosion preventive compound.

10. Materials

NOTE: Equivalent materials can be used.

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

B. Enamel -- BMS 10-11, Type 2 (SOPM 20-60-02)

C. Protective coating -- Sermetel 249, BMS 14-4, Type 2 (SOPM 20-60-02)

D. Grease -- MIL-G-21164 (SOPM 20-60-03)

E. Grease -- BMS 3-24 (Replaces MIL-G-25760) (SOPM 20-60-03)

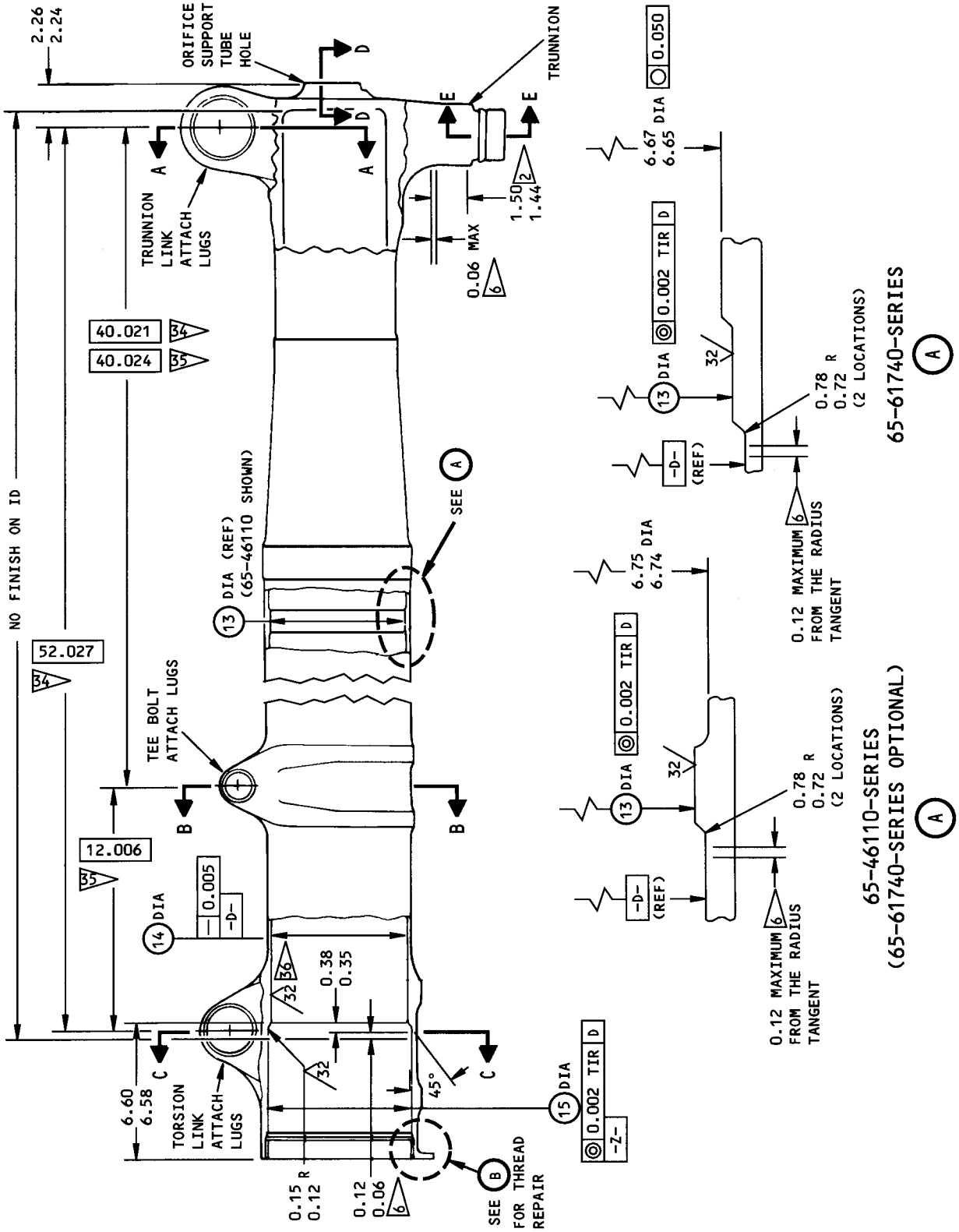
F. Grease -- BMS 3-33 (Replaces BMS 3-24) (SOPM 20-60-03)

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

H. Corrosion preventive compound -- MIL-C-11796, Class 3 (SOPM 20-60-02)

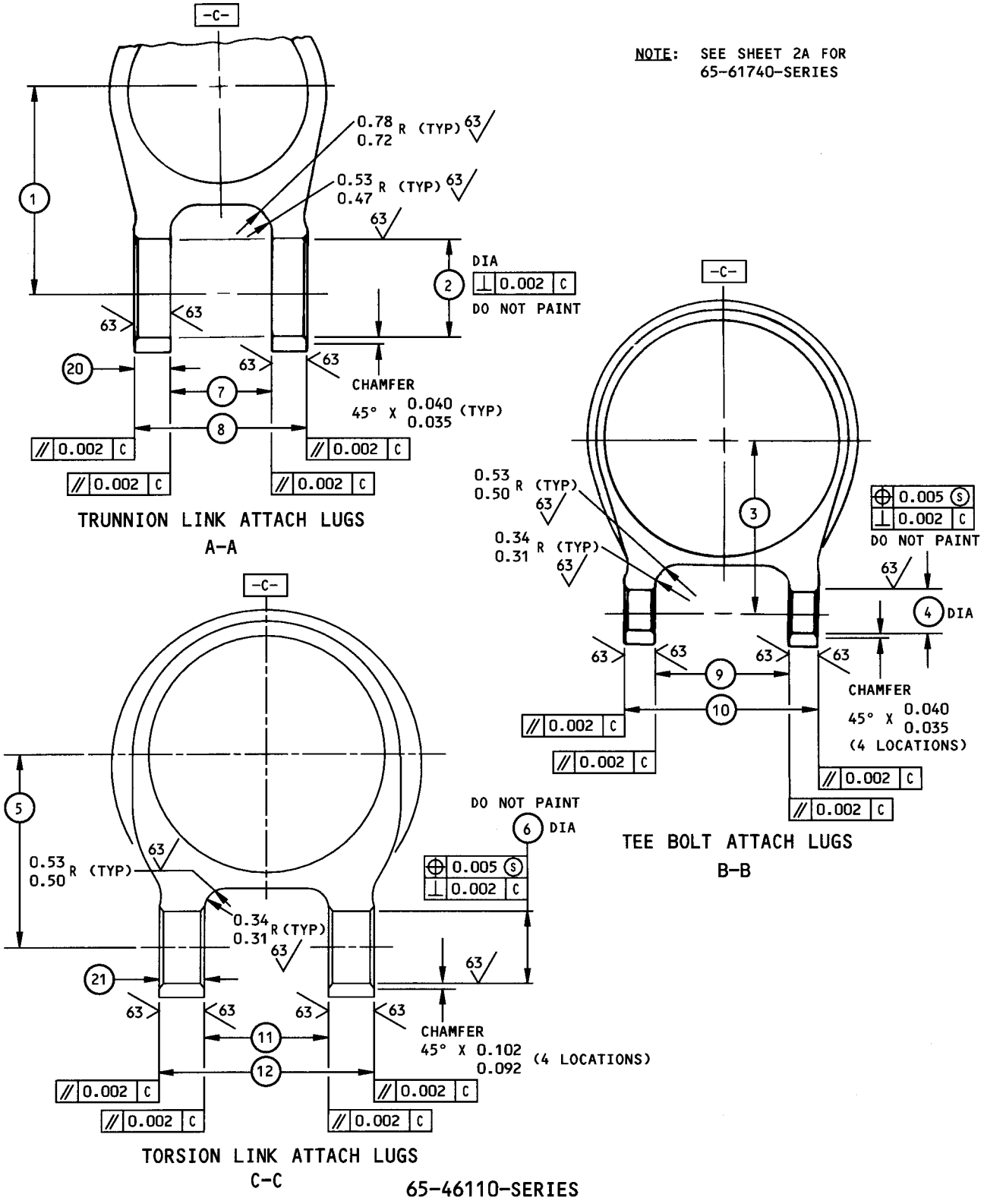
I. Corrosion preventive compound -- BMS 3-27 (SOPM 20-60-02)

J. Corrosion preventive compound -- BMS 3-38 (SOPM 20-60-02)



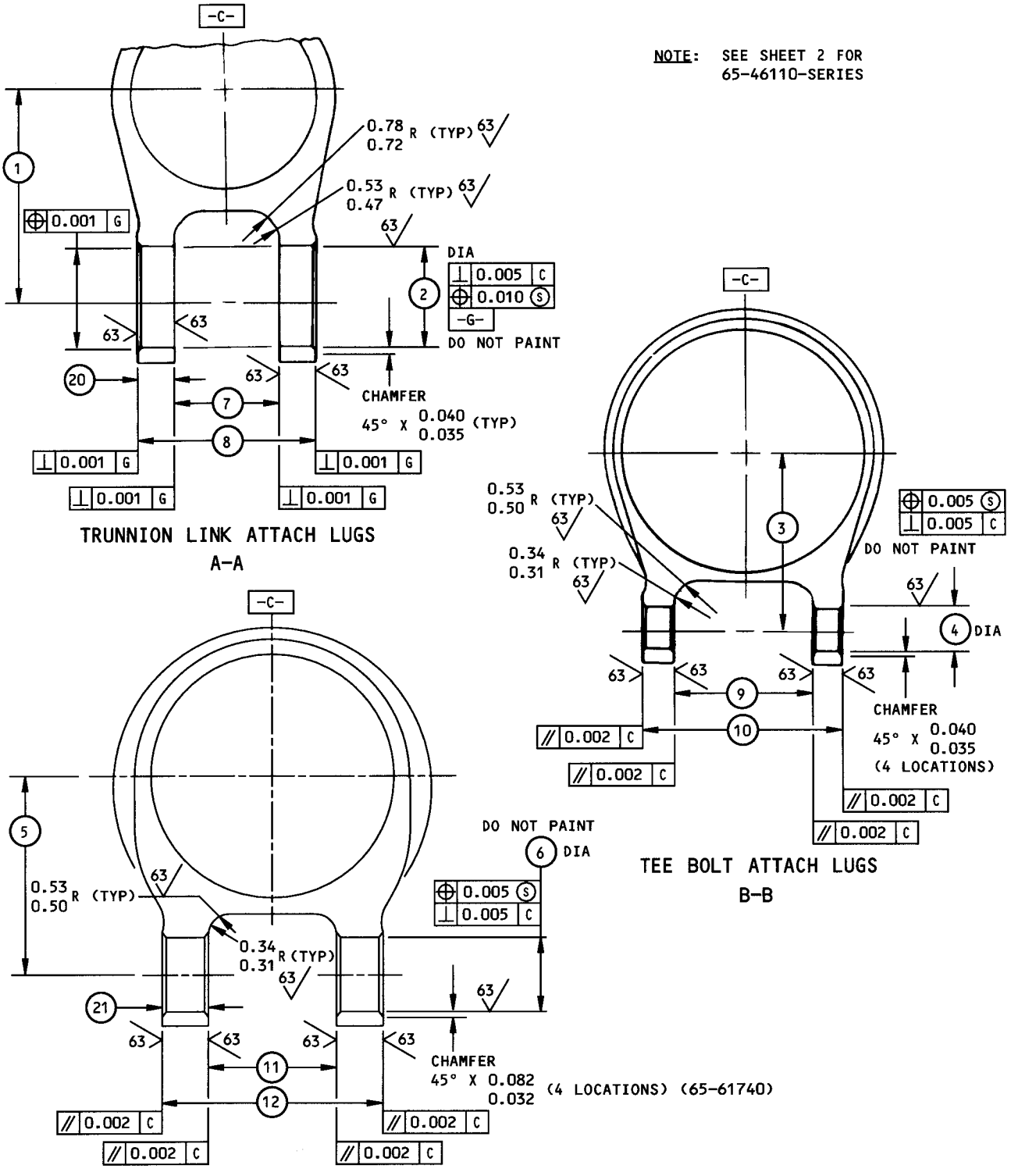
Outer Cylinder Repair and Refinish
Figure 401 (Sheet 1)

F09535



Outer Cylinder Repair and Refinish
Figure 401 (Sheet 2)

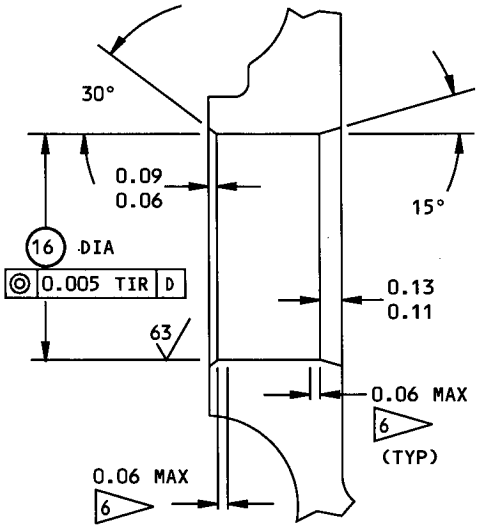
F09554



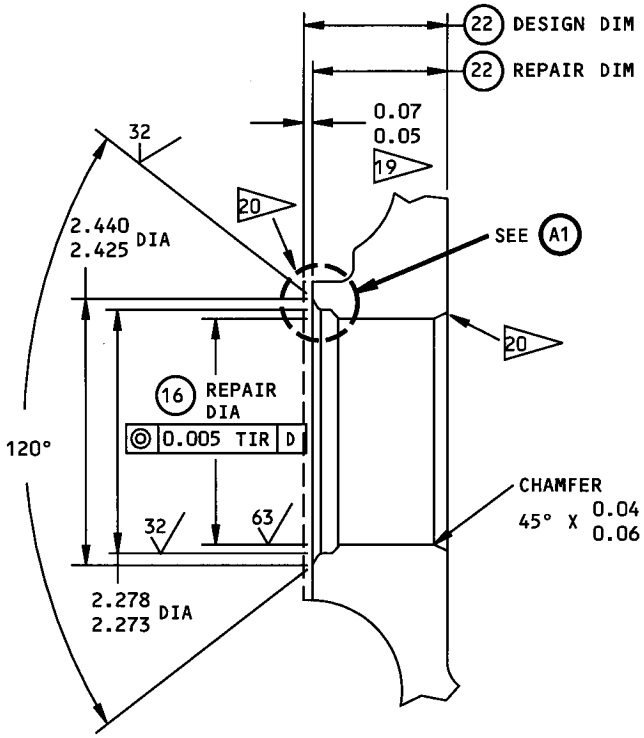
65-61740-SERIES

Outer Cylinder Repair and Refinish
Figure 401 (Sheet 2A)

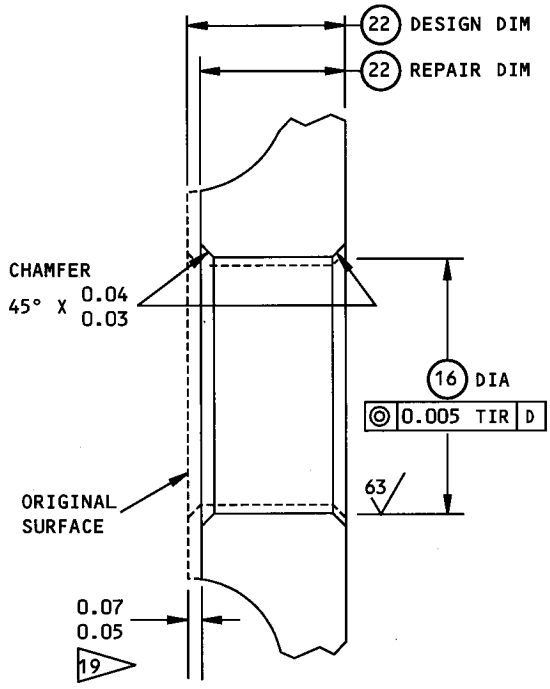
1846432



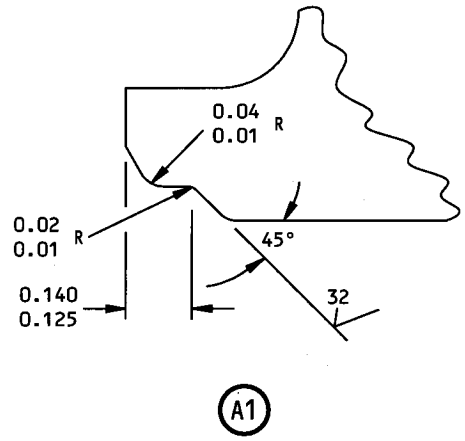
REPAIR WITH PLATING
D-D



REPAIR WITH A BUSHING
AND O-RING (FIG.405)
D-D

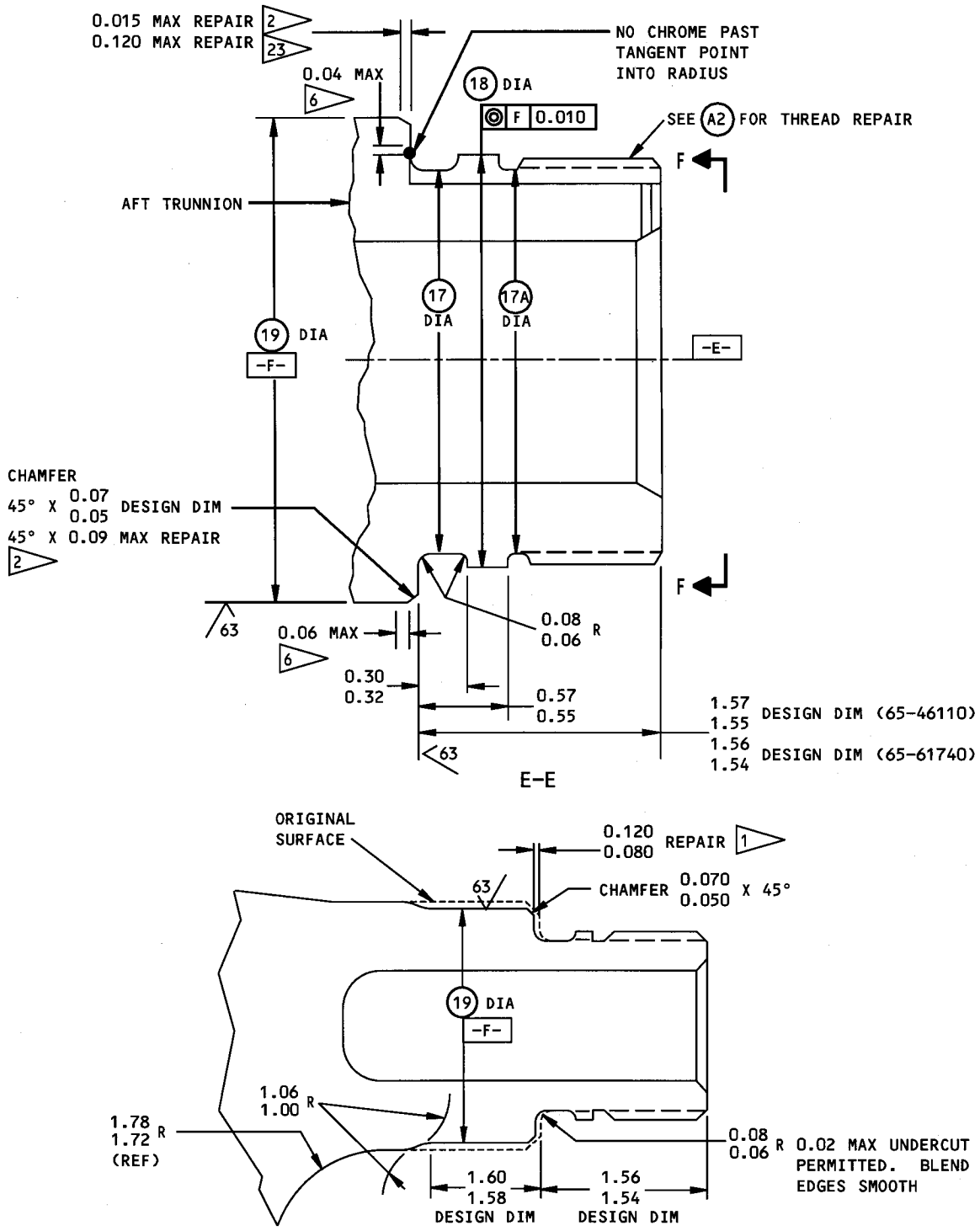


OPTIONAL REPAIR WITH A BUSHING (FIG. 405)
(65-61740-SERIES ONLY)
D-D



Outer Cylinder Repair and Refinish
Figure 401 (Sheet 3)

F09606



OPTIONAL REPAIR WITH A SLEEVE
(65-61740-2,-4,-6,-9,-11,-13)
E-E

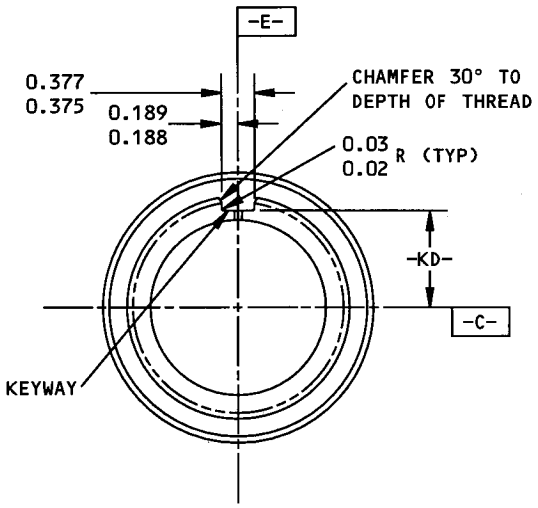
ALL DIMENSIONS ARE IN INCHES

Outer Cylinder Repair and Refinish
Figure 401 (Sheet 4)

FO9667

UNJF-3A THREAD SIZE	2.5000-12 (DESIGN)	2.4375-12 (1/16 UNDERSIZE)	2.3750-12 (1/8 UNDERSIZE)
MAJOR DIA	2.5000 2.4886	2.4375 2.4261	2.3750 2.3636
PITCH DIA	2.4459 2.4413	2.3834 2.3788	2.3209 2.3163
MINOR DIA	2.4038 2.3942	2.3413 2.3317	2.2788 2.2692
ROOT RADIUS	0.0150 0.0125	0.0150 0.0125	0.0150 0.0125
THREAD RELIEF DESIGN DIA	2.3800 2.3700	2.3175 2.3075	2.2550 2.2450
THREAD RELIEF REPAIR LIMIT	2.3300 12	---	---
KEYWAY DEPTH -KD-	1.100 1.095	1.070 1.065	1.037 1.032

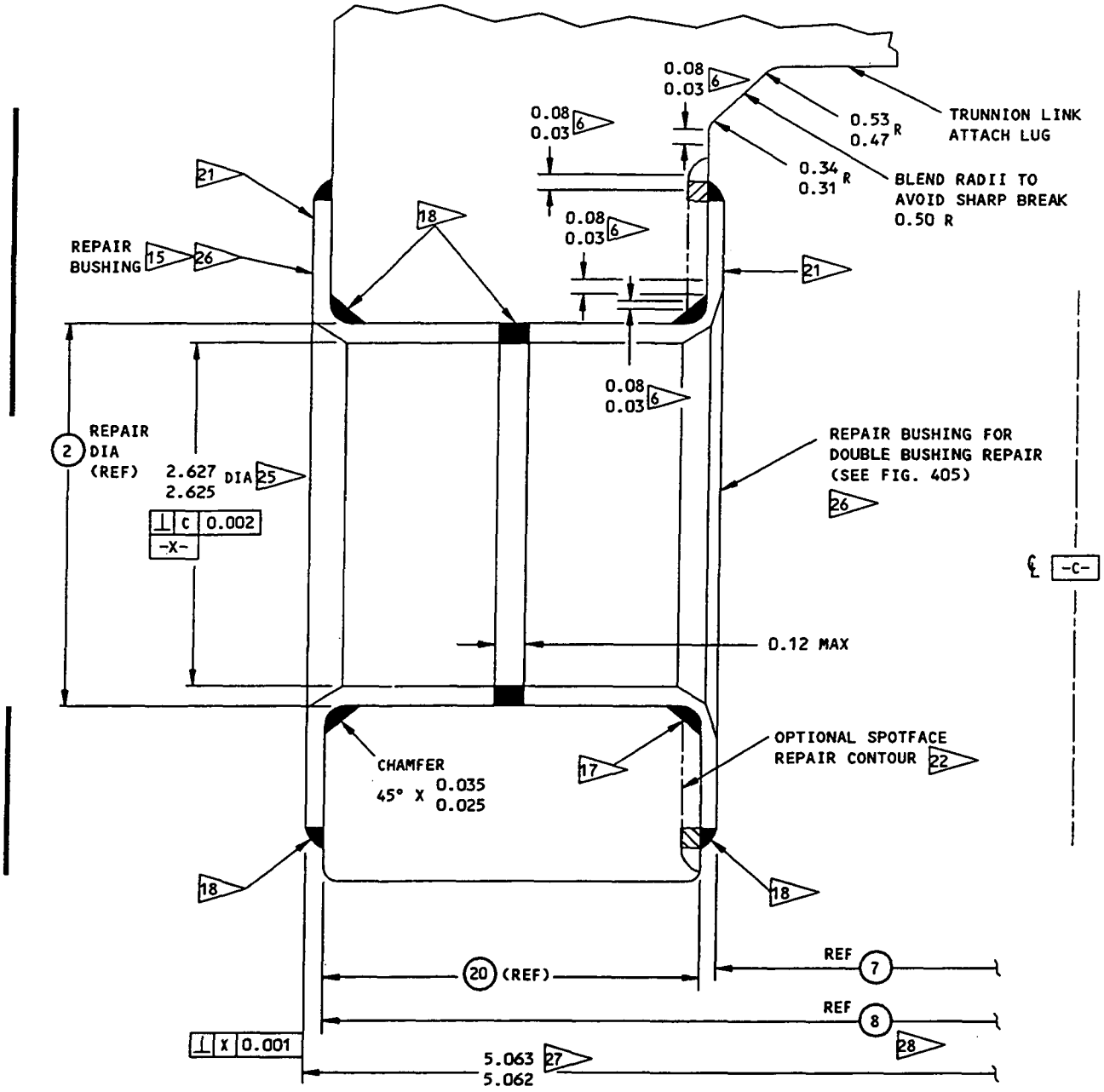
A2



KEYWAY DETAILS
F-F

Outer Cylinder Repair and Refinish
Figure 401 (Sheet 4A)

1613716



125 ALL MACHINED SURFACES

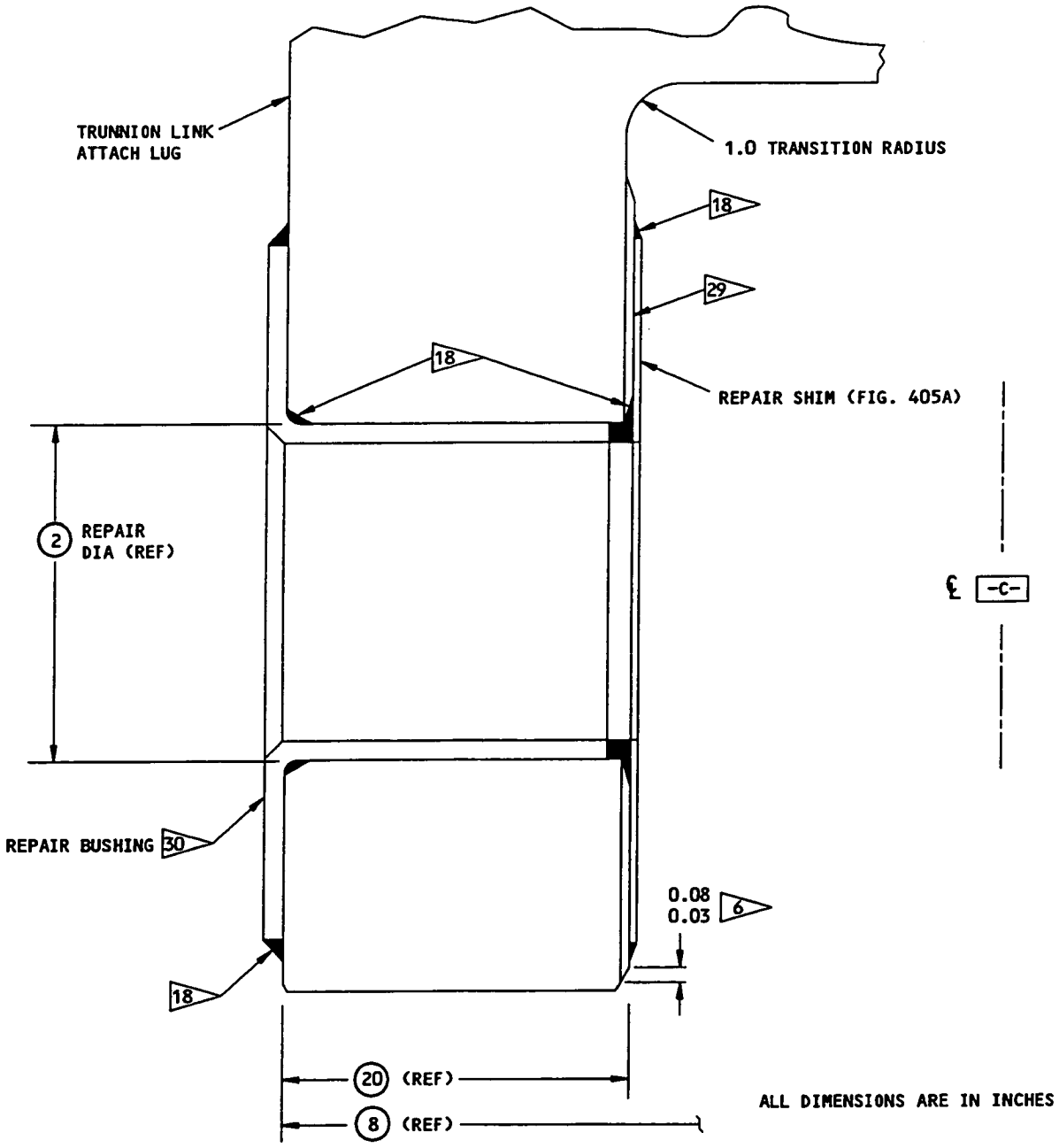
ALL DIMENSIONS AFTER PLATING

BREAK SHARP EDGES 0.01-0.02 R

ALL DIMENSIONS ARE IN INCHES

BACK-TO-BACK BUSHING REPAIR FOR
TRUNNION LINK ATTACH LUGS

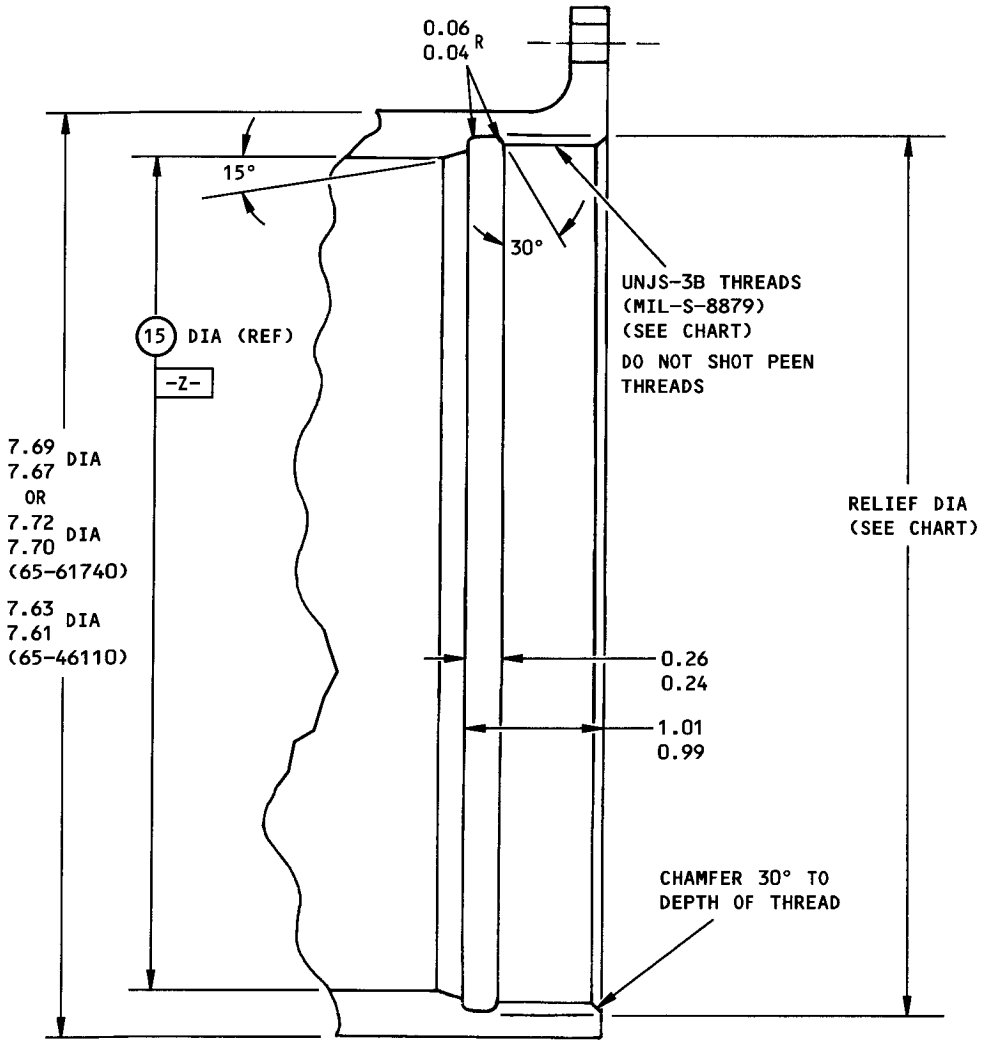
Outer Cylinder Repair and Refinish
Figure 401 (Sheet 5)



SHIM REPAIR FOR TRUNNION LINK ATTACH LUGS

Outer Cylinder Repair and Refinish
Figure 401 (Sheet 6)

A67377



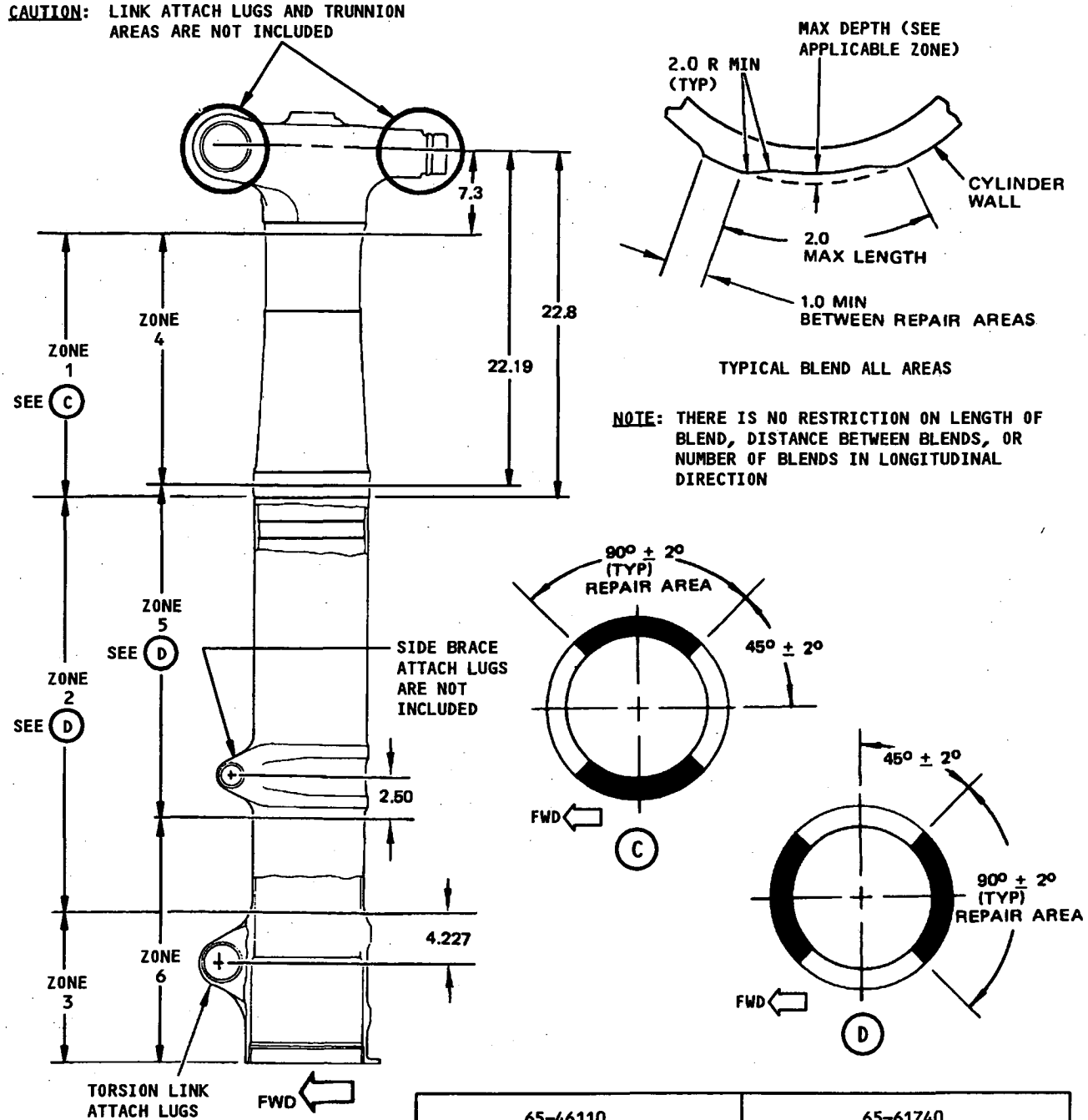
UNJS-3B THREAD SIZE	7.2500-12 (DESIGN) (REF)	7.3125-12 (1/16 OVERSIZE)	7.3750-12 (1/8 OVERSIZE)	7.4375-12 (3/16 OVERSIZE)
BASIC MAJOR DIA	7.2500	7.3125	7.3750	7.4375
PITCH DIA	7.2029 7.1959	7.2654 7.2584	7.3279 7.3209	7.3904 7.3834
MINOR DIA	7.1788 7.1688	7.2413 7.2313	7.3038 7.2938	7.3663 7.3563
RELIEF DESIGN DIA	7.2830 7.2730	7.3455 7.3355	7.4080 7.3980	7.4705 7.4605
RELIEF MAX REPAIR DIA (12)	7.4080	7.4080	---	---
MATING REPAIR GLAND NUT PART NO.		69-39465-2,-12,-18, -26,-27	69-39465-3,-14,-20, -28,-29	69-39465-TBD

OUTER CYLINDER GLAND NUT THREAD REPAIR

(B)

Outer Cylinder Repair and Refinish
Figure 401 (Sheet 7)

F09678



	65-46110			65-61740		
ZONE	1	2	3	4	5	6
MAX REPAIR DEPTH	0.02	0.02	0.02	0.03	0.02	0.02

LOCAL REPAIR OF EXTERIOR SURFACES

Outer Cylinder Repair and Refinish
Figure 401 (Sheet 8)

F09763

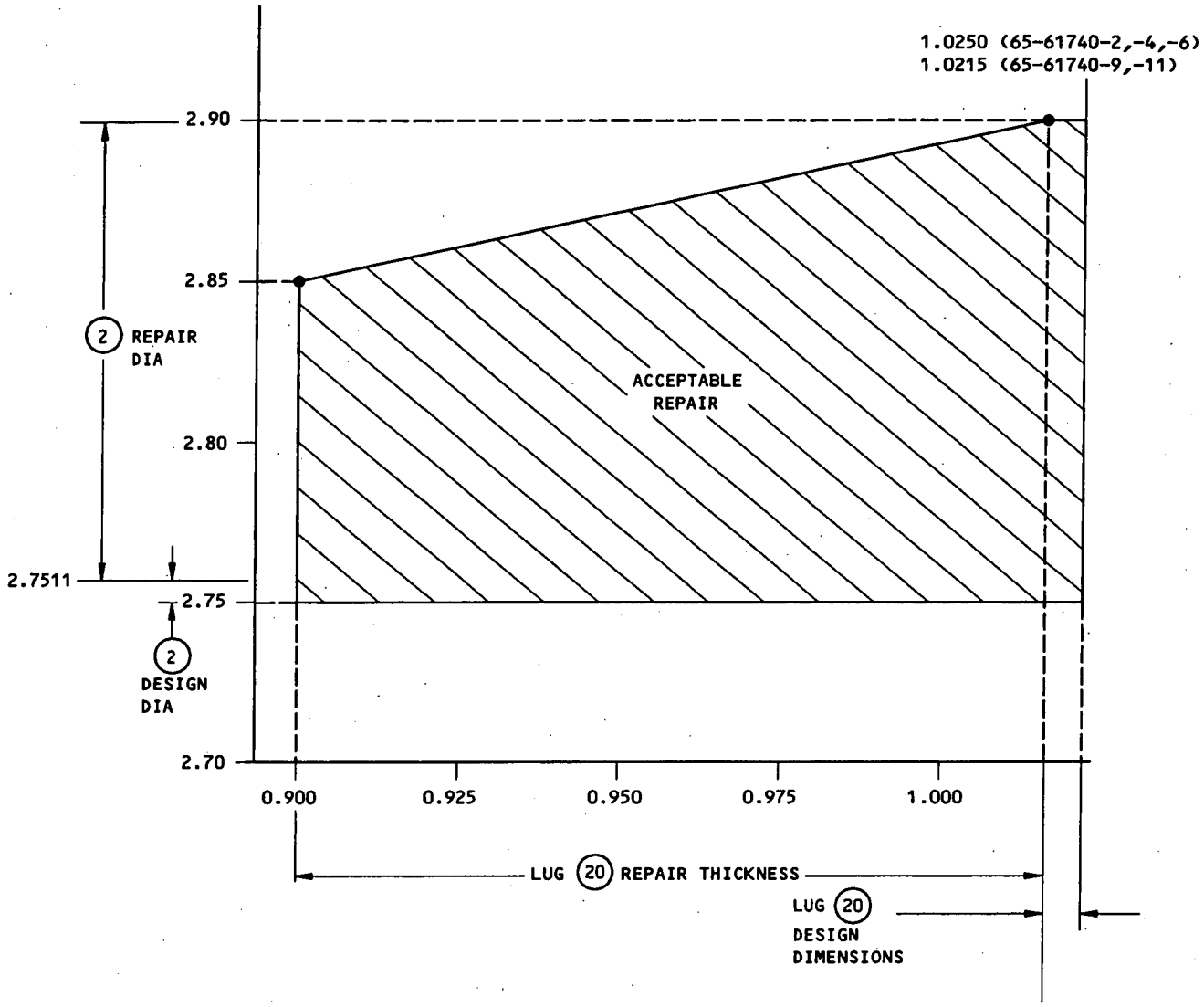
	5.503	(1)	(2)	(3)	(4)	(5)	(6)	(7) 10	(8) 10
65-46110 SERIES	DESIGN DIM	5.503	2.7511 2.7500	4.875	1.3765 1.3750	5.375	1.876 1.875	3.001 3.000	4.945 4.940
	REPAIR LIMIT	---	SEE (G)	---	1.480 8	---	SEE (I)	SEE (G) 3.030 11 3.020 33 3.061 8	SEE (G) 4.910 11
65-61740 SERIES	DESIGN DIM	5.803	2.7511 2.7500 14	5.075	1.501 1.500	5.575	1.896 1.895 16	2.901 2.900	4.950 4.940
	REPAIR LIMIT	---	SEE (E) (F)	---	1.600 8	---	SEE (H)	SEE (E) (F) 2.931 11 33 2.961 8	SEE (E) (F) 4.910 11

		(9) 10	(10) 10	(11) 10	(12) 10	(13)	(14)	(15)	(16)
65-46110 SERIES	DESIGN DIM	3.814 3.810	5.570 5.560	3.755 3.750	6.255 6.250	6.727 6.724	6.756 6.753	6.977 6.974	1.994 1.992
	REPAIR LIMIT	3.897 8 3.844 9	5.477 8 5.530 9	SEE (I) 3.785 11	SEE (I) 6.220 11	6.747 2 7	6.758 12 6.776 2	6.997 13	2.054 7 2.150 4 2.076
65-61740 SERIES	DESIGN DIM	3.814 3.810	5.650 5.640	3.755 3.750	6.255 6.250	6.727 6.724	6.756 6.753	6.977 6.974	1.994 1.992
	REPAIR LIMIT	3.854 8 3.844 9	5.600 8 5.610 9	SEE (H) 3.785 11	SEE (H) 6.220 11	6.747 2 7	6.758 12 6.776 2	6.997 13	2.054 7 2.150 4 2.076

		(17)	(17A)	(18)	(19)	(20)	(21)	(22)
65-46110 SERIES	DESIGN DIM	2.38 2.37	2.38 2.37	2.56 2.55	2.999 2.998	SEE (G)	SEE (I)	1.280 1.220
	REPAIR LIMIT	2.33 12	SEE (A2)	2.52 12	2.968 2	SEE (G)	SEE (I)	1.150 8
65-61740 SERIES	DESIGN DIM	2.38 2.37	2.38 2.37	2.56 2.55	2.999 2.998	SEE (E) (F)	SEE (H)	1.280 1.220
	REPAIR LIMIT	2.33 12	SEE (A2)	2.52 12	2.968 2 2.938 7 2.908 3 2.900 1 32 2.870 1 31	SEE (E) (F)	SEE (H)	1.155 8

Outer Cylinder Repair and Refinish
Figure 401 (Sheet 9)

F09881



TRUNNION LINK ATTACH LUG REPAIRS

NOTE: THESE STEPS OVERRIDE THE GENERAL FLAGNOTES ON SHEETS 14, 15.

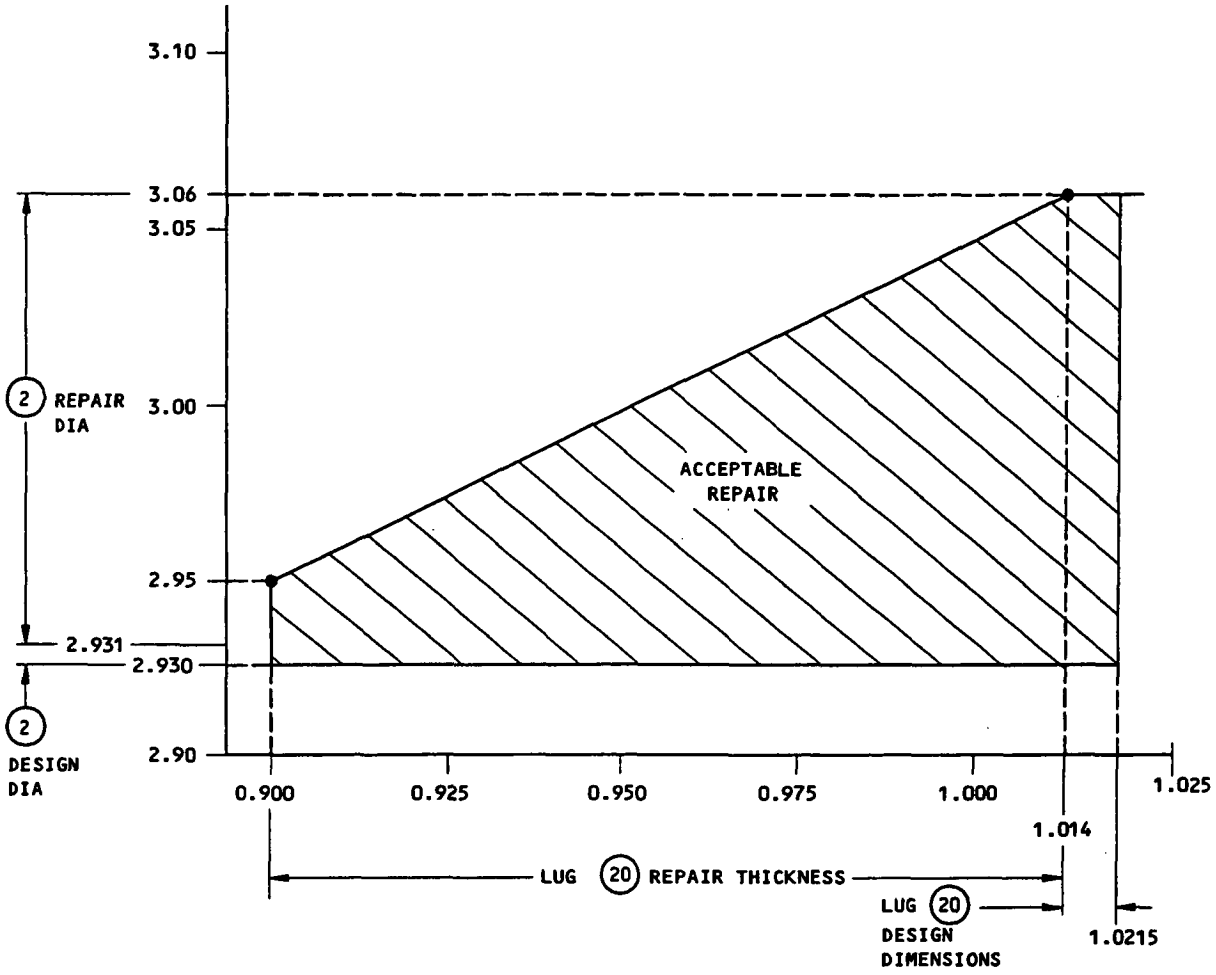
1. DO NOT REMOVE MORE THAN 0.060 FROM THE MIN LUG THICKNESS DESIGN DIMENSION OF EITHER FACE.
2. USE THE BACK-TO-BACK BUSHING REPAIR PROCEDURE IF 0.035 OR MORE IS REMOVED FROM MAX LUG THICKNESS DESIGN DIMENSION OF THE INSIDE FACE (INCLUDING CHROME PLATE REMOVAL)
3. USE THE SHIM REPAIR PROCEDURE IF 0.016-0.035 IS REMOVED FROM MAX LUG THICKNESS DESIGN DIMENSION OF THE INSIDE FACE (INCLUDING CHROME PLATE).
4. USE THE CHROME PLATE REPAIR PROCEDURE IF 0.015 OR LESS IS REMOVED FROM MAX LUG THICKNESS DESIGN DIMENSION OF THE INSIDE FACE (INCLUDING CHROME PLATE). YOU CAN USE THE THERMAL SPRAY PROCEDURE IF 0.010 OR LESS IS REMOVED

65-61740-2,-4,-6,-9,-11

(E)

Outer Cylinder Repair and Refinish
Figure 401 (Sheet 10)

A68614



TRUNNION LINK ATTACH LUG REPAIRS

NOTE: THESE STEPS OVERRIDE THE GENERAL FLAGNOTES ON SHEETS 14, 15.

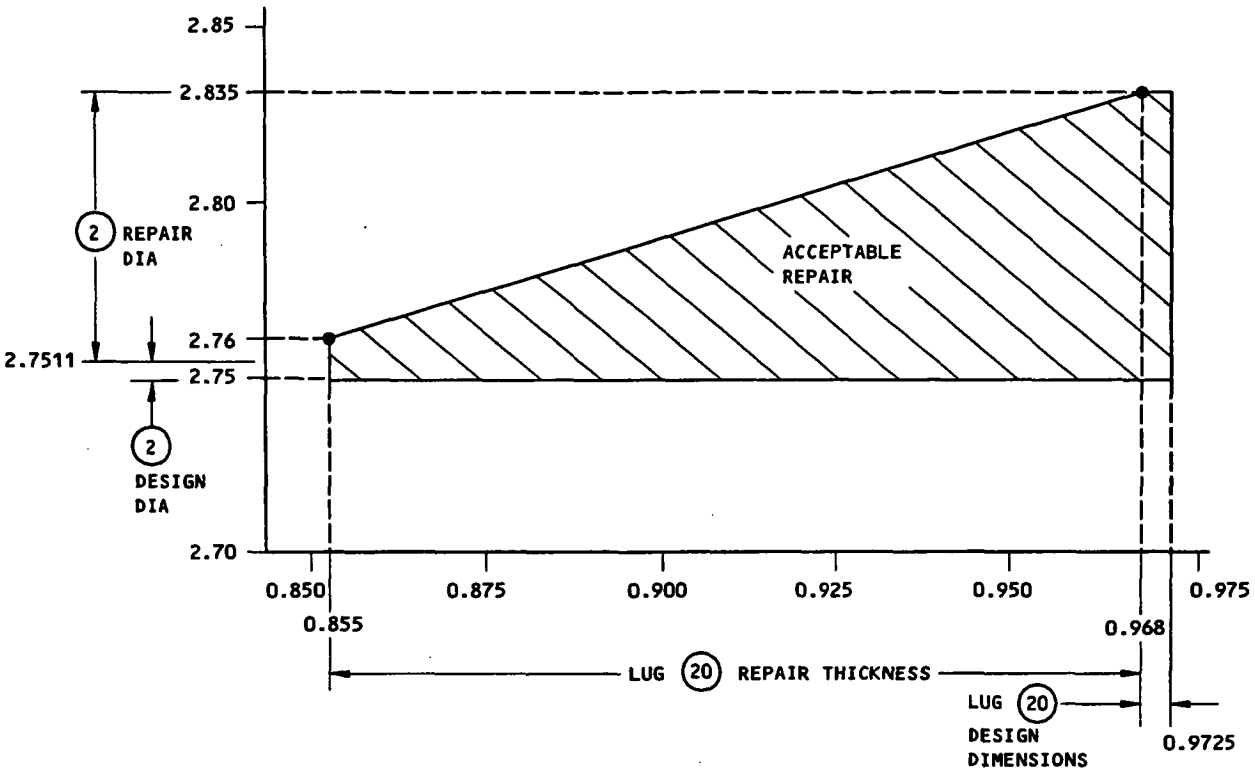
1. DO NOT REMOVE MORE THAN 0.060 FROM THE MIN LUG THICKNESS DESIGN DIMENSION OF EITHER FACE.
2. USE THE BACK-TO-BACK BUSHING REPAIR PROCEDURE IF 0.035 OR MORE IS REMOVED FROM MAX LUG THICKNESS DESIGN DIMENSION OF THE INSIDE FACE (INCLUDING CHROME PLATE REMOVAL)
3. USE THE SHIM REPAIR PROCEDURE IF 0.016-0.035 IS REMOVED FROM MAX LUG THICKNESS DESIGN DIMENSION OF THE INSIDE FACE (INCLUDING CHROME PLATE).
4. USE THE CHROME PLATE REPAIR PROCEDURE IF 0.015 OR LESS IS REMOVED FROM MAX LUG THICKNESS DESIGN DIMENSION OF THE INSIDE FACE (INCLUDING CHROME PLATE). YOU CAN USE THE THERMAL SPRAY PROCEDURE IF 0.010 OR LESS IS REMOVED

65-61740-13

(F)

Outer Cylinder Repair and Refinish
Figure 401 (Sheet 11)

A68618



TRUNNION LINK ATTACH LUG REPAIRS

NOTE: THESE STEPS OVERRIDE THE GENERAL FLAGNOTES ON SHEETS 14, 15.

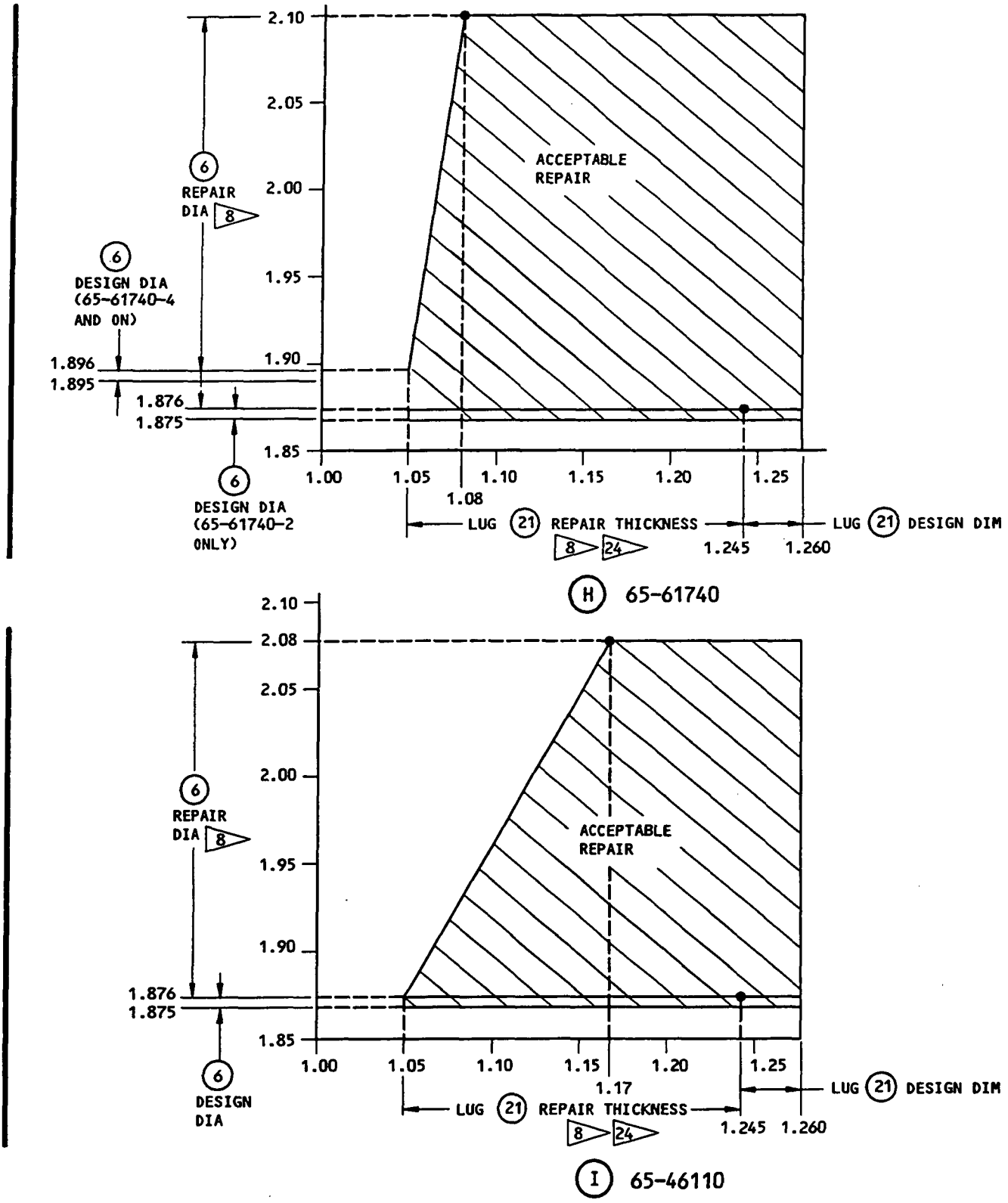
1. DO NOT REMOVE MORE THAN 0.060 FROM THE MIN LUG THICKNESS DESIGN DIMENSION OF EITHER FACE.
2. USE THE BACK-TO-BACK BUSHING REPAIR PROCEDURE IF 0.035 OR MORE IS REMOVED FROM MAX LUG THICKNESS DESIGN DIMENSION OF THE INSIDE FACE (INCLUDING CHROME PLATE REMOVAL)
3. USE THE SHIM REPAIR PROCEDURE IF 0.016-0.035 IS REMOVED FROM MAX LUG THICKNESS DESIGN DIMENSION OF THE INSIDE FACE (INCLUDING CHROME PLATE.
4. USE THE CHROME PLATE REPAIR PROCEDURE IF 0.015 OR LESS IS REMOVED FROM MAX LUG THICKNESS DESIGN DIMENSION OF THE INSIDE FACE (INCLUDING CHROME PLATE). YOU CAN USE THE THERMAL SPRAY PROCEDURE IF 0.010 OR LESS IS REMOVED

65-46110-4

(G)

Outer Cylinder Repair and Refinish
Figure 401 (Sheet 12)

A68762



Outer Cylinder Repair and Refinish
Figure 401 (Sheet 13)

A68519

REFINISH

CHROME PLATE (F-15.04 OR F-15.34) DIAS -F- AND -Z-. WIPE CHROME PLATE WITH PRIMER (F-19.45). CADMIUM-TITANIUM PLATE (F-1.308, WHICH REPLACES F-1.181) 0.0005 MINIMUM THICKNESS ALL OTHER SURFACES UNLESS SHOWN DIFFERENTLY.
APPLY PRIMER AND ENAMEL PER 5 BUT NO ENAMEL ON THREADS, BORES FOR BUSHINGS AND ALL INTERIOR SURFACES.
ON CYLINDER 65-61740-9 AND ON, CHROME PLATE AND APPLY PRIMER TO INSIDE LUG FACES (7) PER 13.

IF THE GLAND NUT THREADS ARE CUT OVERSIZE
1. VIBRO ENGRAVE "SPECIAL GLAND NUT REQUIRED" NEAR THE OUTER CYLINDER PART NUMBER.
2. APPLY A BLACK STENCIL "SPECIAL GLAND NUT P/N _____ REQUIRED" ON A YELLOW BACKGROUND IN A PROMINENT POSITION.
3. APPLY A BLACK STENCIL "CAUTION: SPECIAL GLAND NUT P/N _____ REQUIRED" NEAR THE GLAND NUT THREADS.

1 LIMIT FOR INSTALLATION OF REPAIR SLEEVE (FIG. 405B)

2 LIMIT FOR BUILDUP WITH CHROME PLATE (REF SOPM 20-42-03). GRIND TO DESIGN DIMENSIONS AND FINISH, WITH PLATING RUNOUT AT EDGES, AND RELIEFS AS SHOWN. WIPE CHROME PLATE WITH PRIMER (F-19.45).

3 LIMIT FOR BUILDUP WITH NICKEL PLATE PER 7 FOLLOWED BY 0.015 MAX CHROME PLATE BUILDUP PER 2

4 RANGE FOR INSTALLATION OF REPAIR BUSHING

5 AFTER PLATING, APPLY PRIMER (SRF-12.205) BMS 10-11, TYPE 1, AND ENAMEL (SRF-12.63) BMS 10-11, TYPE 2

6 PLATING RUNOUT

7 LIMIT FOR BUILDUP WITH SULFAMATE NICKEL PLATE (SOPM 20-42-09) AND MACHINE TO TO DESIGN DIM AND FINISH

8 LIMIT FOR INSTL OF OVERSIZE OR REPAIR BUSHINGS

9 LIMIT FOR PLATING BUILDUP PER 2 OR 7 AND INSTL OF BUSHINGS PER PARTS LIST

10 LUG FACE MACHINING REQUIREMENTS:

1. MATERIAL REMOVED FROM ANY FACE MUST NOT BE MORE THAN 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 THRU 4 6 THRU 30 33

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.03 R MAX

SHOT PEEN: (SOPM 20-10-03)
0.016-0.033 SHOT SIZE
0.015 A2 INTENSITY

MATERIAL: 65-46110-SERIES: 4340M STEEL 270-300 KSI
65-61740-2,-4,-6,-9,-11: 4340M STEEL, 270-300 KSI
65-61740-13: 4340M STEEL, 275-300 KSI

ALL DIMENSIONS ARE IN INCHES

11 CHROME PLATE ONLY - DO NOT NICKEL PLATE. WIPE CHROME PLATE WITH PRIMER (F-19.45).

12 RESTORATION TO DESIGN DIM NOT REQUIRED

13 LIMIT FOR BUILDUP WITH NICKEL PLATE (SOPM 20-42-09) PLUS 0.0025-0.0050 THICK LAYER OF CHROME PLATE (SOPM 20-42-03)

14 DESIGN DIM IS 2.930-2.931 (65-61740-13 ONLY)

15 MAKE OVERSIZE VERSION OF BUSHING (24) PER FIG. 406, BUT WITH LENGTH EQUAL TO HALF THE LUG (20) REPAIR THICKNESS MINUS 0.00-0.06

16 DESIGN DIMENSION IS 1.875-1.876 (65-61740-2 ONLY)

17 APPLY BMS 10-11, TYPE 1 PRIMER (F-20.03)

18 BMS 5-95 SEALANT

19 MATERIAL REMOVAL TO PERMIT A FLANGE ON THE REPAIR BUSHING

20 SULFAMATE NICKEL PLATE (SOPM 20-42-09) OR CADMIUM PLATE (SOPM 20-42-01) THE HOLE, THE CHAMFER AND THE MACHINED FACE TO A MINIMUM THICKNESS OF 0.0015

21 OPTIONAL: CHROME PLATE BUSHING FLANGES 0.003-0.005 THICK (SOPM 20-42-03, CLASS 2) OR FLASH CHROME PLATE (SOPM 20-42-03, CLASS 4)

22 OPTIONAL SPOTFACE REPAIR (FOR INNER LUG FACES ONLY): 0.060 MAX DEPTH, 3.625 DIA, 0.093-0.120 FILLET RADIUS. BREAK SHARP EDGES 0.03-0.05 R

23 LIMIT FOR FLASH CHROME PLATE (SOPM 20-42-03, CLASS 4) OR CHROME PLATE PER 29, ON THE FACE, THEN INSTALLATION OF REPAIR SHIM (FIG. 405A). BOND SHIM TO OUTER CYLINDER WITH BMS 5-95 SEALANT.

Outer Cylinder Repair and Refinish
Figure 401 (Sheet 14)

A68391

24> DO NOT REMOVE MORE THAN 0.10 FROM EITHER FACE MIN LUG THICKNESS DESIGN DIMENSION

25> LINE REAM ALL FOUR BUSHINGS TO THIS DIAMETER AFTER THEY ARE INSTALLED IN THE CLEVIS.

26> BE SURE TO MAKE ALL BUSHINGS IN THE CLEVIS OUT OF THE SAME MATERIAL. 17-4PH CRES IS RECOMMENDED TO PREVENT BUSHING DAMAGE DURING INSTALLATION

27> BECAUSE THE FLANGES WILL BE VERY THIN, MACHINE THE FLANGES TO FINAL DIMENSIONS AFTER YOU INSTALL THE BUSHINGS IN THE LUGS.

28> FOR RESTORATION OF DIMENSION (8), MAKE OVERSIZE FLANGE BUSHINGS AS REQUIRED. USE THE SAME LENGTH AND MATERIAL AS USED TO RESTORE DIMENSION (7).

29> CHROME PLATE 0.003-0.005 THICK (SOPM 20-42-03, CLASS 2). WIPE THE CHROME PLATE WITH PRIMER (F-19.45).

30> MAKE AN OVERSIZE EQUIVALENT OF BUSHING (24) (FIG. 406). INSTALL WITH WET BMS 5-95 SEALANT. MACHINE TO DESIGN DIMENSIONS (FIG. 407).

31> 65-61740-2,-4,-9

32> 65-61740-6,-11,-13

33> LIMIT FOR BUILDUP WITH BMS 10-67 TYPE 1 OR 17 CLASS 2, 3, OR 4 THERMAL SPRAY (SOPM 20-10-05), 0.010 MAX THICK. PUT A 0.080 MAX RUNOUT AT EDGES. GRIND TO DESIGN DIMENSIONS AND 8 MICROINCH FINISH. THEN CADMIUM-TITANIUM PLATE (SOPM 20-42-02) THE RUNOUT AREA.

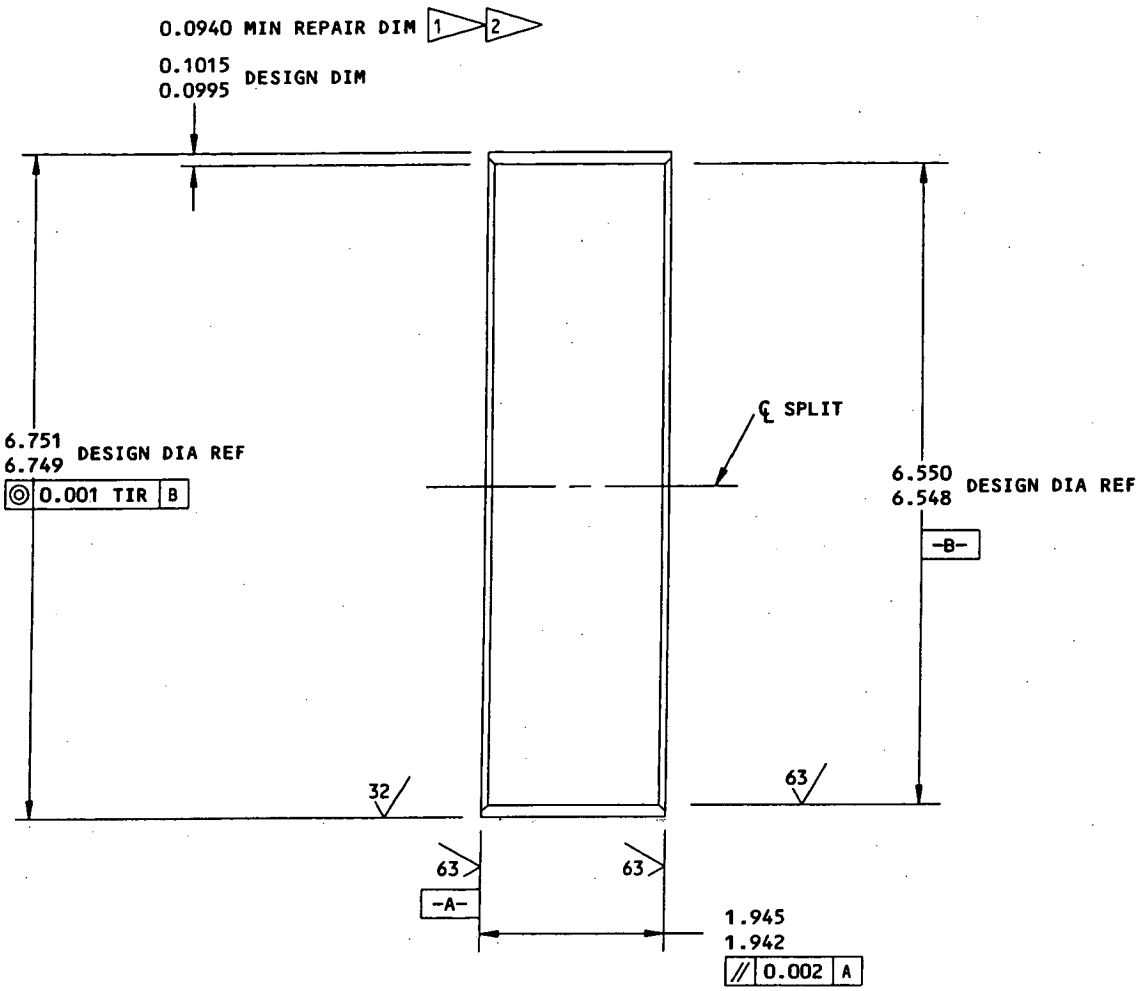
34> 65-46110-SERIES

35> 65-61740-SERIES

36> SURFACE FINISH APPLIES AFTER SHOT PEEN

Outer Cylinder Repair and Refinish
Figure 401 (Sheet 15)

A68719



THIS ASSEMBLY IS A MATCHED SET OF HALVES (28A, 28B)

REFINISH

NO FINISH

REPAIR

REF 1 2

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.005-0.015R

MATERIAL: AL-NI-BRONZE

ITEM NUMBERS REFER TO FIG. 1101

ALL DIMENSIONS ARE IN INCHES

UPPER BEARING OUTER SHELL ASSEMBLY (28)
69-65397-1

Bearing and Sleeve - Repair and Refinish
Figure 402 (Sheet 1)

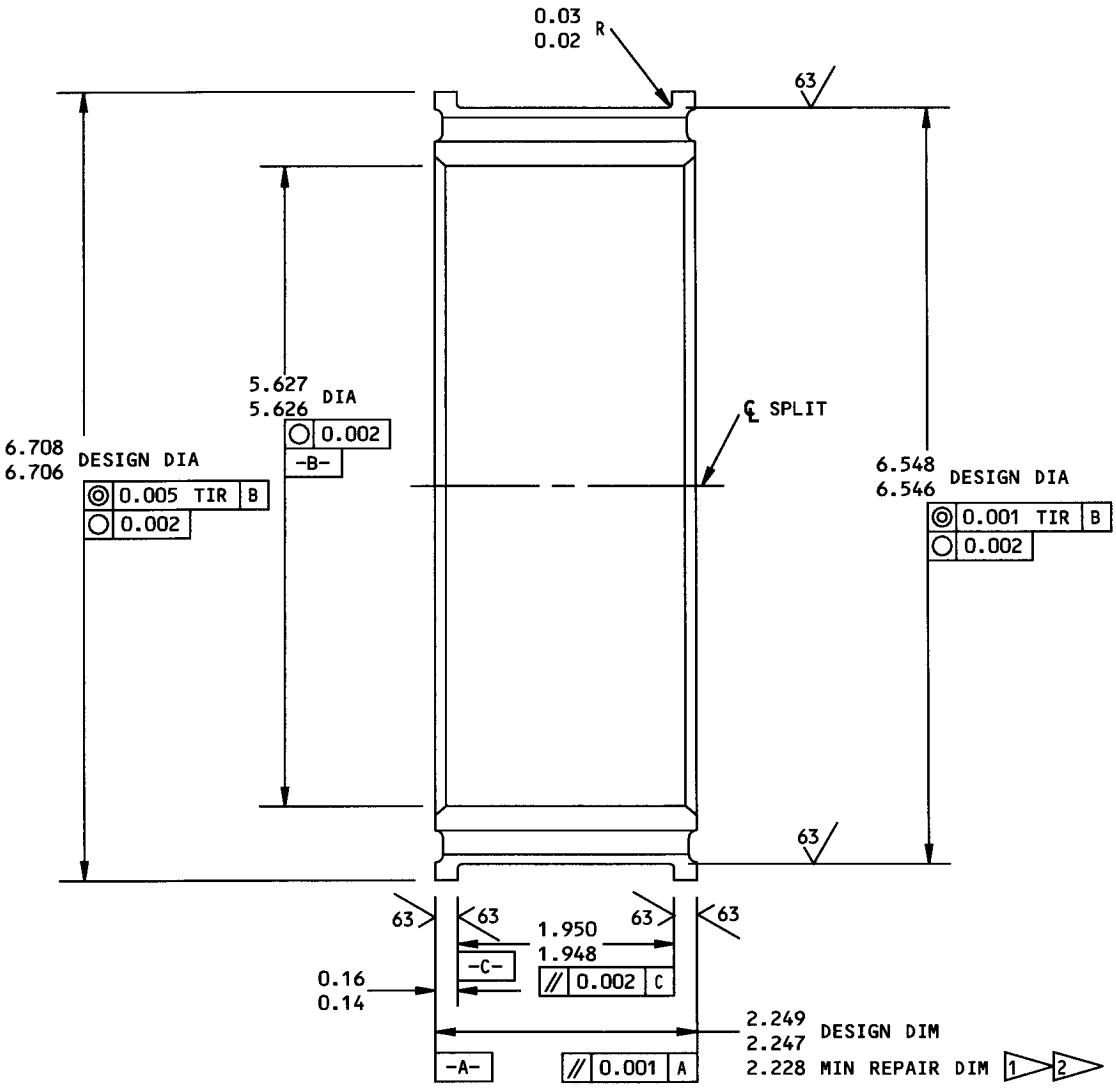
W75210

UPPER BEARING ASSEMBLY (29)
(69-38985-2, 69-55432-1)

REMOVE FROM SERVICE IF BEYOND
DESIGN DIMENSIONS

Bearing and Sleeve - Repair and Refinish
Figure 402 (Sheet 2)

W75226



THIS ASSEMBLY IS A MATCHED SET OF HALVES (30, 31)

REFINISH

CHROMIC ACID
ANODIZE (F-17.02)

REPAIR

REF 1 2

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.005-0.015 R

MATERIAL: AL ALLOY

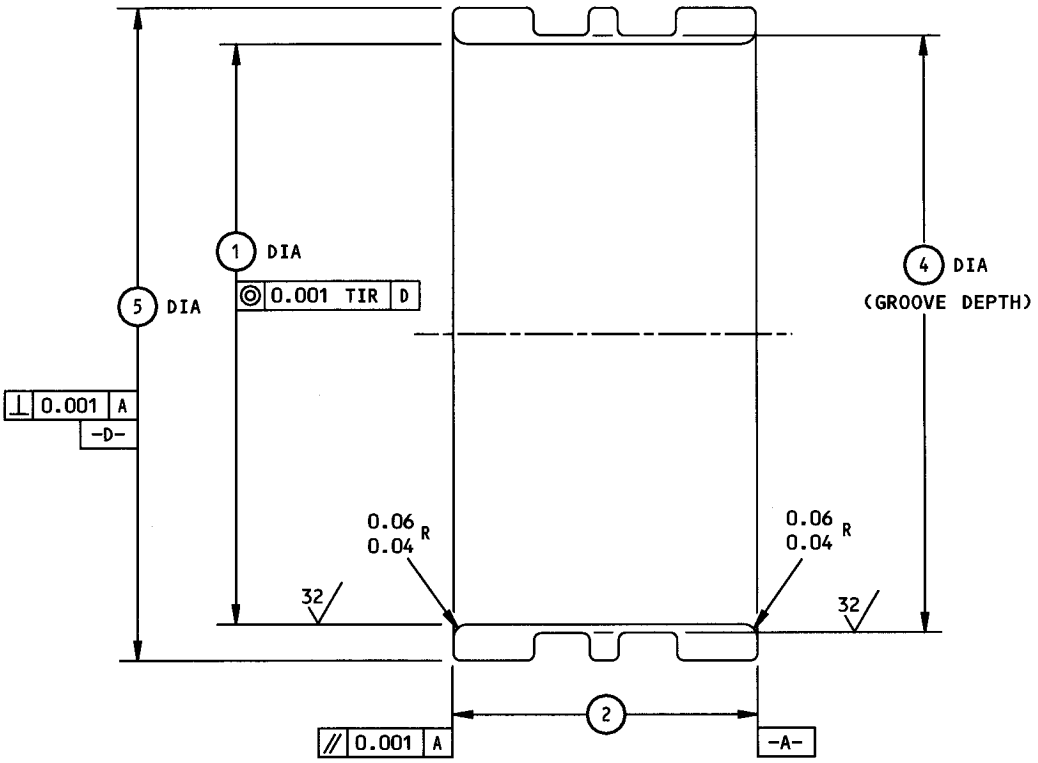
ITEM NUMBERS REFER TO FIG. 1101

ALL DIMENSIONS ARE IN INCHES

UPPER BEARING INNER SHELL ASSEMBLY (29)
69-65396-1

Bearing and Sleeve - Repair and Refinish
Figure 402 (Sheet 3)

H96993



REFINISH

NO FINISH (F-25.01)

REPAIR

(SAME AS REFINISH)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL:
69-50997-1: AL-BRONZE
69-50997-3: AL-NI-BRONZE

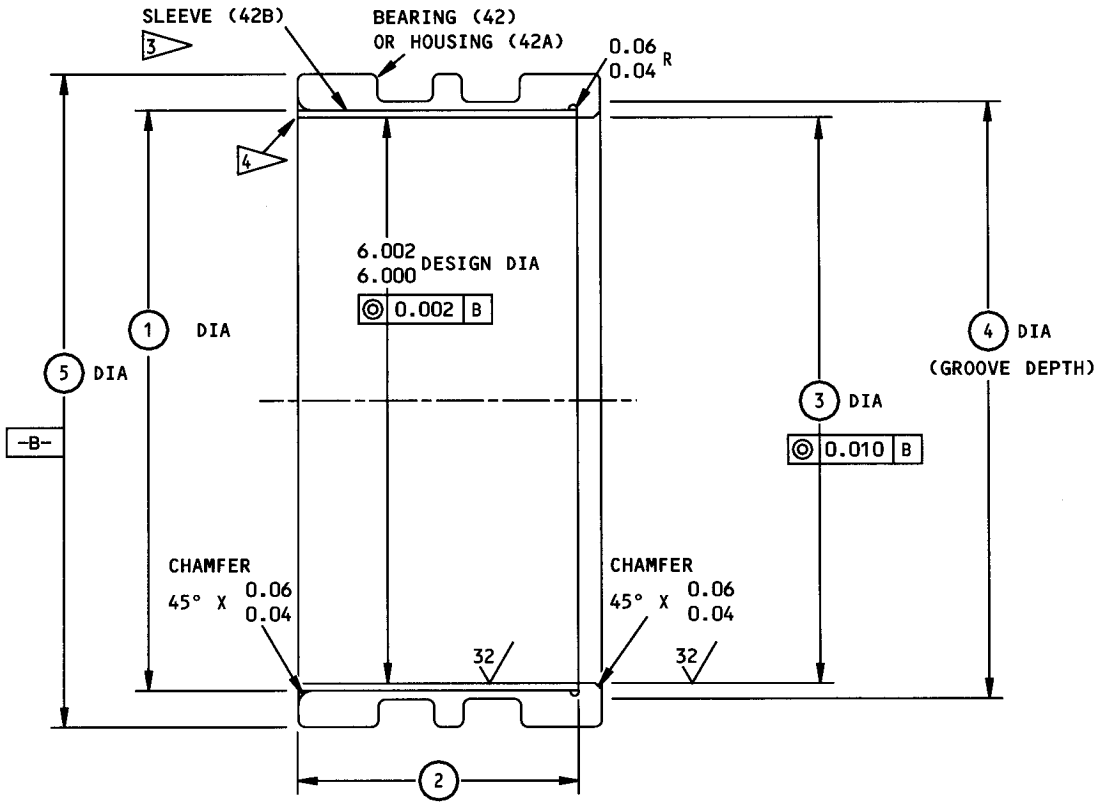
ALL DIMENSIONS ARE IN INCHES

	(1)	(2)	(4)	(5)
DESIGN DIM	6.002 6.000	3.250 3.245	6.38 6.37	6.972 6.971
REPAIR LIMIT	---	---	---	---

LOWER BEARING (42)
(69-50997-1,-3)

Bearing and Sleeve - Repair and Refinish
Figure 402 (Sheet 4)

1846576



REFINISH

AFTER MACHINING, AND BEFORE INSTALLING SLEEVE, CHROMIC ACID ANODIZE (F-17.02) HOUSING AND APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02) ALL OVER BUT NO PRIMER ON ID

REPAIR

REF 3 THRU 6

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: AL ALLOY

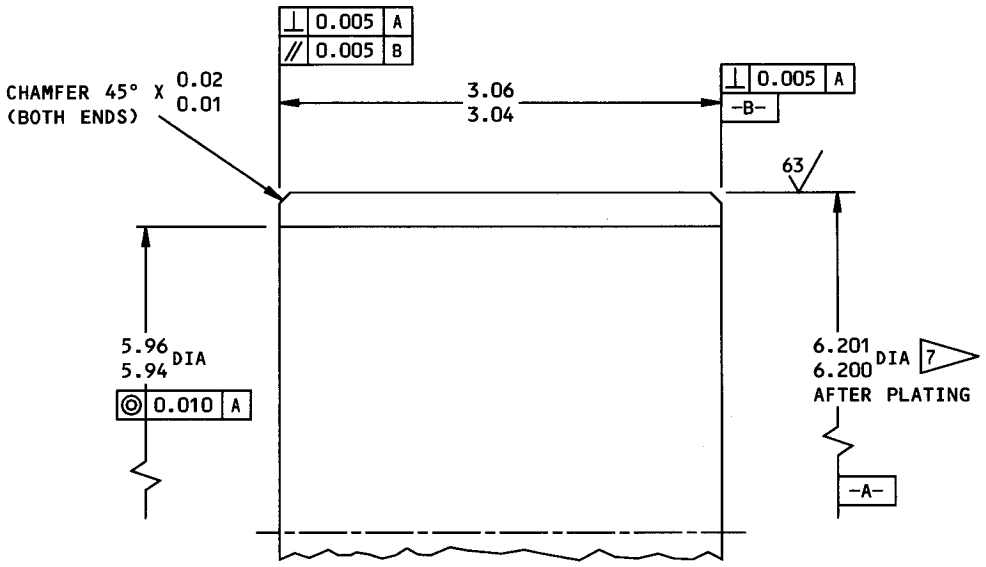
ALL DIMENSIONS ARE IN INCHES

		1	2	3	4	5
69-55433-1 (42)	DESIGN DIM	6.002 6.000	---	---	---	6.972 6.971
	REPAIR LIMIT 5	6.199 6.197	3.08 3.06	6.04 6.02	6.31 6.29	---
	REPAIR LIMIT 6	6.210	3.08 3.06	6.08	6.321	---
65-86791 -2,-4 (42A)	DESIGN DIM	6.199 6.197	3.08 3.06	6.04 6.02	6.31 6.29	6.973 6.969
	REPAIR LIMIT 6	6.230	---	6.08	6.321	---

SLEEVE REPAIR
LOWER BEARING (42)
(65-86791, 69-55433)

Bearing and Sleeve - Repair and Refinish
Figure 402 (Sheet 5)

W75339



REFINISH

CADMIUM PLATE (F-15.02) ALL OVER (OPTIONAL ON ID). APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02) ON DIA -A-

REPAIR

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.01-0.02 R

MATERIAL: AL-NI-BRZ (AMS 4640)

ALL DIMENSIONS ARE IN INCHES

SLEEVE (42B) DETAILS

Bearing and Sleeve - Repair and Refinish
Figure 402 (Sheet 6)

W75498

1> RESTORATION TO DESIGN DIM NOT REQUIRED

2> IF MORE MATERIAL REMOVAL THAN THIS IS NECESSARY, THE PART MUST BE SCRAPPED

3> INSTALL SLEEVE BY THE SHRINK FIT METHOD (SOPM 20-50-03)

4> END OF SLEEVE MUST NOT BE OUT FROM END OF HOUSING OR BEARING

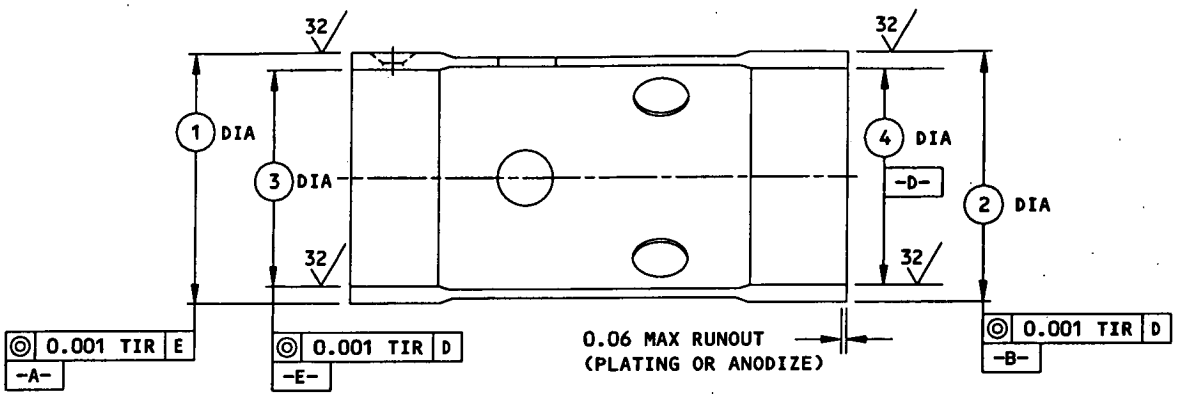
5> MACHINE BEARING FOR INSTALLATION OF SLEEVE (42B) 69-65398-1. THIS MAKES A CONFIGURATION EQUIVALENT TO THE 65-86791-1,-3 ASSEMBLY. MORE MATERIAL REMOVAL IS PERMITTED PER 6>

6> MACHINE BEARING OR HOUSING FOR INSTALLATION OF OVERSIZE SLEEVE (REFER TO SHEET 6)

7> IF ID OF MATING HOUSING IS 6.199-6.230, MAKE AN OVERSIZE EQUIVALENT OF THIS SLEEVE WITH DIA -A- EQUAL TO REPAIR DIA OF HOUSING PLUS 0.0010-0.0040 INTERFERENCE

Bearing and Sleeve - Repair and Refinish
Figure 402 (Sheet 7)

W75523



(65-46147-1,-2 SHOWN)

DIAMETER AND CONCENTRICITY REQUIREMENTS WERE MET BEFORE THE SLOTS AND HOLES WERE CUT.

		1	2	3	4
65-46147-1,-2 65C33516-1	DESIGN DIM	3.2783 3.2773 ▷3	3.372 3.371	2.999 2.998	3.186 3.185
	REPAIR LIMIT	3.2483 ▷1 3.2583 ▷4	3.342 ▷1 3.352 ▷4	3.009 ▷5 3.009 ▷4	3.196 ▷5 3.196 ▷4
65-46147-3	DESIGN DIM	3.2783 3.2773	3.3720 3.3710	2.999 2.998	3.1860 3.1850
	REPAIR LIMIT ▷2	3.2751	3.3688	3.0016	3.1886

REFINISH

65-46147-1,-2:
PASSIVATE (F-8.07). CHROME PLATE (F-15.04) DIA -A-, -B-, WITH 0.06 MAX PLATING RUNOUT AT EDGES AND HOLES

65-46147-3:
HARD ANODIZE (F-17.06) ON DIA -A-, -B-, -D-, -E-, 0.002-0.003 THICK, WITH 0.06 MAX ANODIZE RUNOUT AT EDGES. FLASH HARD ANODIZE (F-17.06) ALL OTHER AREAS, 0.0002-0.0006 THICK

65C33516-1:
PASSIVATE (F-17.25, WHICH REPLACES F-17.09). CHROME PLATE (F-15.03) DIA -A-, -B- WITH 0.06 MAX PLATING RUNOUT AT EDGES AND HOLES. WIPE CHROME PLATE WITH PRIMER (F-19.45)

▷1 LIMIT FOR CHROME PLATE BUILDUP (SOPM 20-42-03) AND GRIND TO DESIGN DIMENSIONS AND FINISH. PUT A 0.06 MAX PLATING RUNOUT AT EDGES AND HOLES

▷2 LIMIT FOR HARD ANODIZE BUILDUP TO DESIGN DIMENSIONS AND FINISH. PUT A 0.06 MAX ANODIZE RUNOUT AT EDGES

▷3 ON 65C33516-1, DESIGN DIA IS 3.277-3.278

▷4 LIMIT FOR BUILDUP WITH BMS 10-67 TYPE 1 OR 17 CLASS 2, 3, OR 4 THERMAL SPRAY (SOPM 20-10-05), 0.010 MAX THICK. PUT A 0.080 MAX RUNOUT AT EDGES. GRIND TO DESIGN DIMENSIONS AND 8 MICROINCH FINISH. THEN CADMIUM-TITANIUM PLATE (SOPM 20-42-02) THE RUNOUT AREA.

REPAIR

REF ▷1 THRU ▷5

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.02-0.03 R

SHOT PEEN (SOPM 20-10-03)

65-46147-1,-2, 65C33516-1:
0.016-0.033 SHOT SIZE
0.009-0.015 A2 INTENSITY

65-46147-3:
0.023-0.028 SHOT SIZE
0.008-0.011 A2 INTENSITY

MATERIAL:

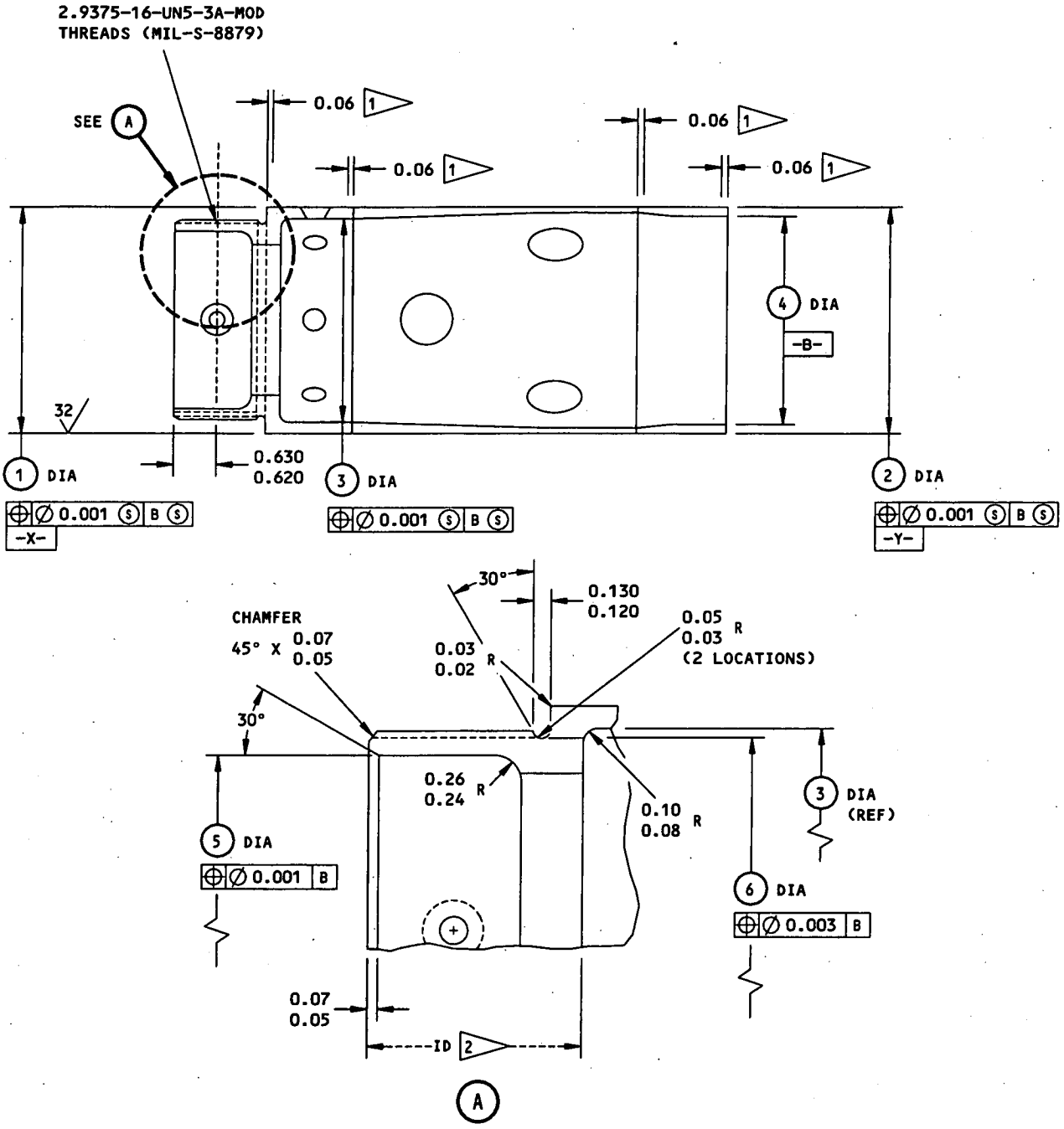
65-46147-1,-2, 65C33516-1:
17-4PH CRES, 180-200 KSI

65-46147-3: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

▷5 LIMIT FOR SULFAMATE NICKEL PLATE BUILDUP (SOPM 20-42-09) AND MACHINE TO DESIGN DIMENSIONS AND FINISH

AXLE SLEEVE (59)
65-46147-1,-2,-3, 65C33516-1
Axle Sleeve Repair and Refinish
Figure 402A



AXLE SLEEVE (59)
65C36462-2

Axle Sleeve Repair and Refinish
Figure 402B (Sheet 1)

M20333

	①	②	③	④	⑤	⑥
DESIGN DIM	3.278 3.277	3.3720 3.3710	2.898 2.897	3.1860 3.1850	2.601 2.600	2.840 2.830
REPAIR LIMIT	3.266 ▷3◁	3.3616 ▷3◁	—	3.1883 ▷4◁	—	—

REFINISH

CHROME PLATE (F-15.34) DIAS -X- AND -Y-, WITH PLATING RUNOUT AS SHOWN BY ▷1◁. ON OTHER SURFACES, CADMIUM-TITANIUM PLATE (F-15.01) AND APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02) BUT NO PRIMER IN ID AREAS SHOWN BY ▷2◁. WIPE THREADS AND CHROME PLATE WITH PRIMER (F-19.45).

▷1◁ CHROME PLATE RUNOUT AREA.

▷2◁ NO PRIMER

▷3◁ LIMIT FOR CHROME PLATE BUILDUP (SOPM 20-42-03) AND GRIND TO DESIGN DIMENSIONS AND FINISH. PUT A PLATING RUNOUT AS SHOWN BY ▷1◁.

▷4◁ RESTORATION TO DESIGN DIMENSIONS NOT REQUIRED.

REPAIR

REF ▷3◁ ▷4◁

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES

SHOT PEEN (SOPM 20-10-03):
0.017-0.046 SHOT SIZE
0.010-0.016 A2 INTENSITY
DO NOT SHOT PEEN THREADS

MATERIAL: 4340M STEEL, 275-300 KSI

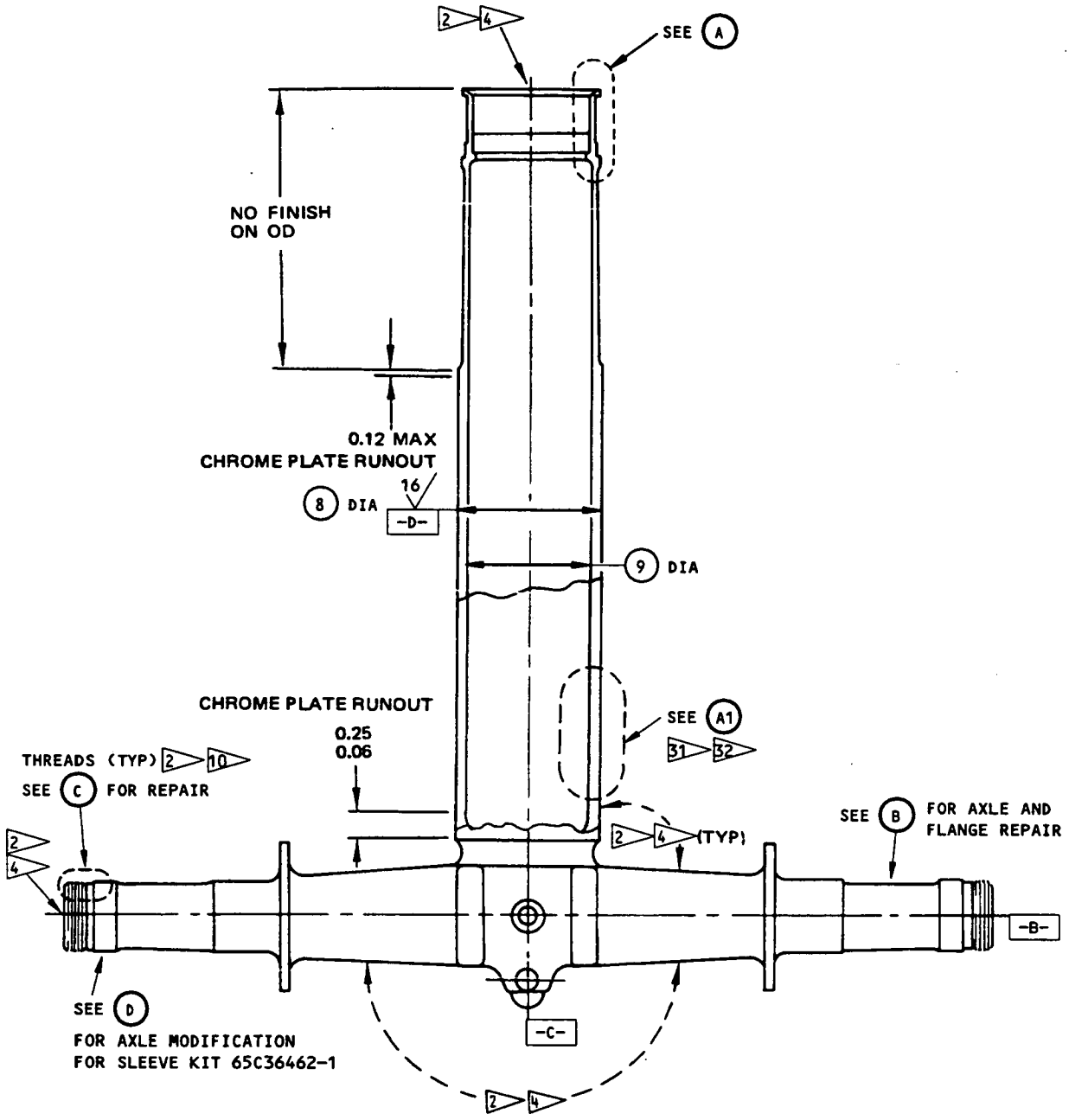
DIMENSIONS ARE AFTER PLATING

ALL DIMENSIONS ARE IN INCHES

AXLE SLEEVE (59)
65C36462-2

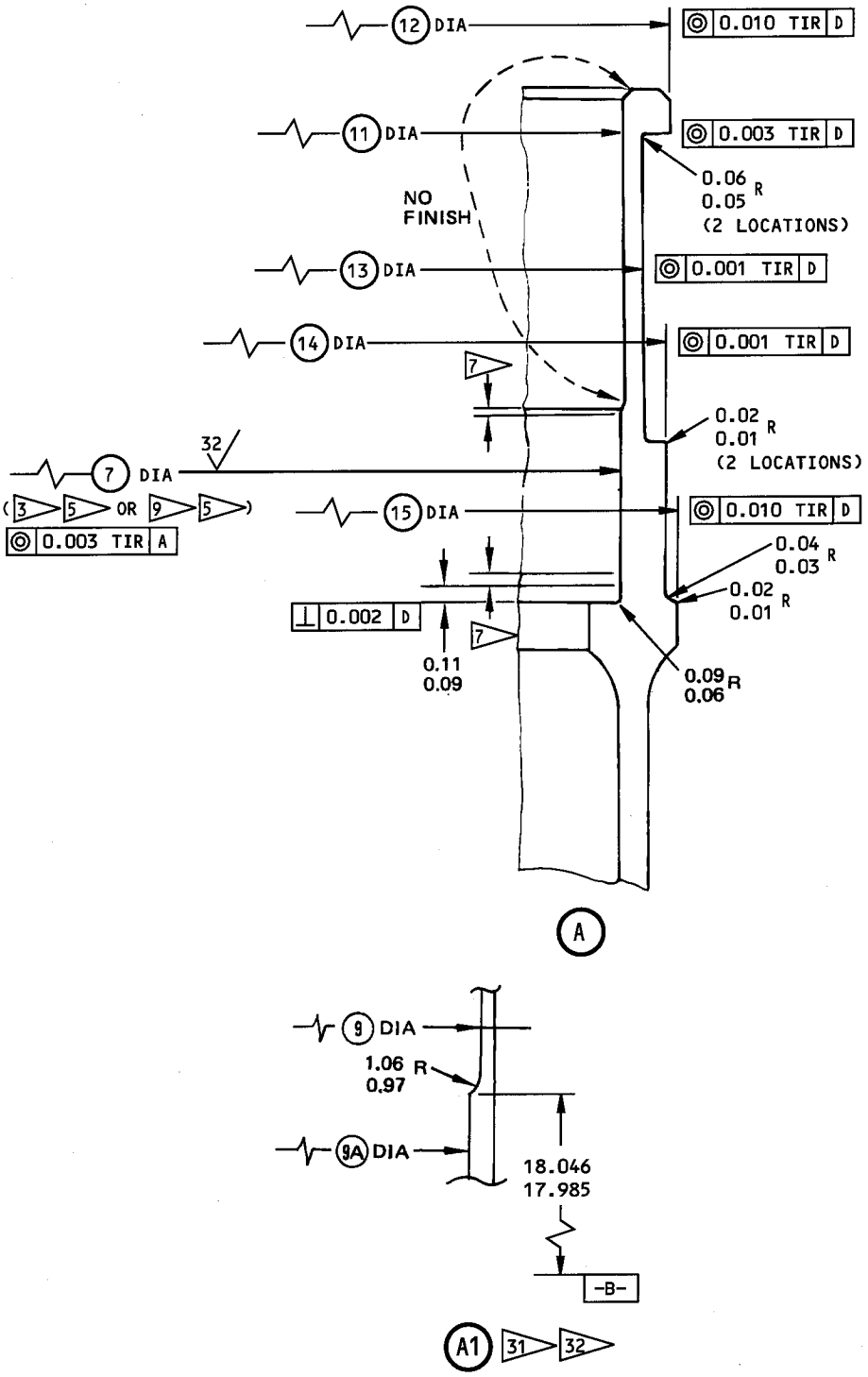
Axle Sleeve Repair and Refinish
Figure 402B (Sheet 2)

M21234



INNER CYLINDER (62)

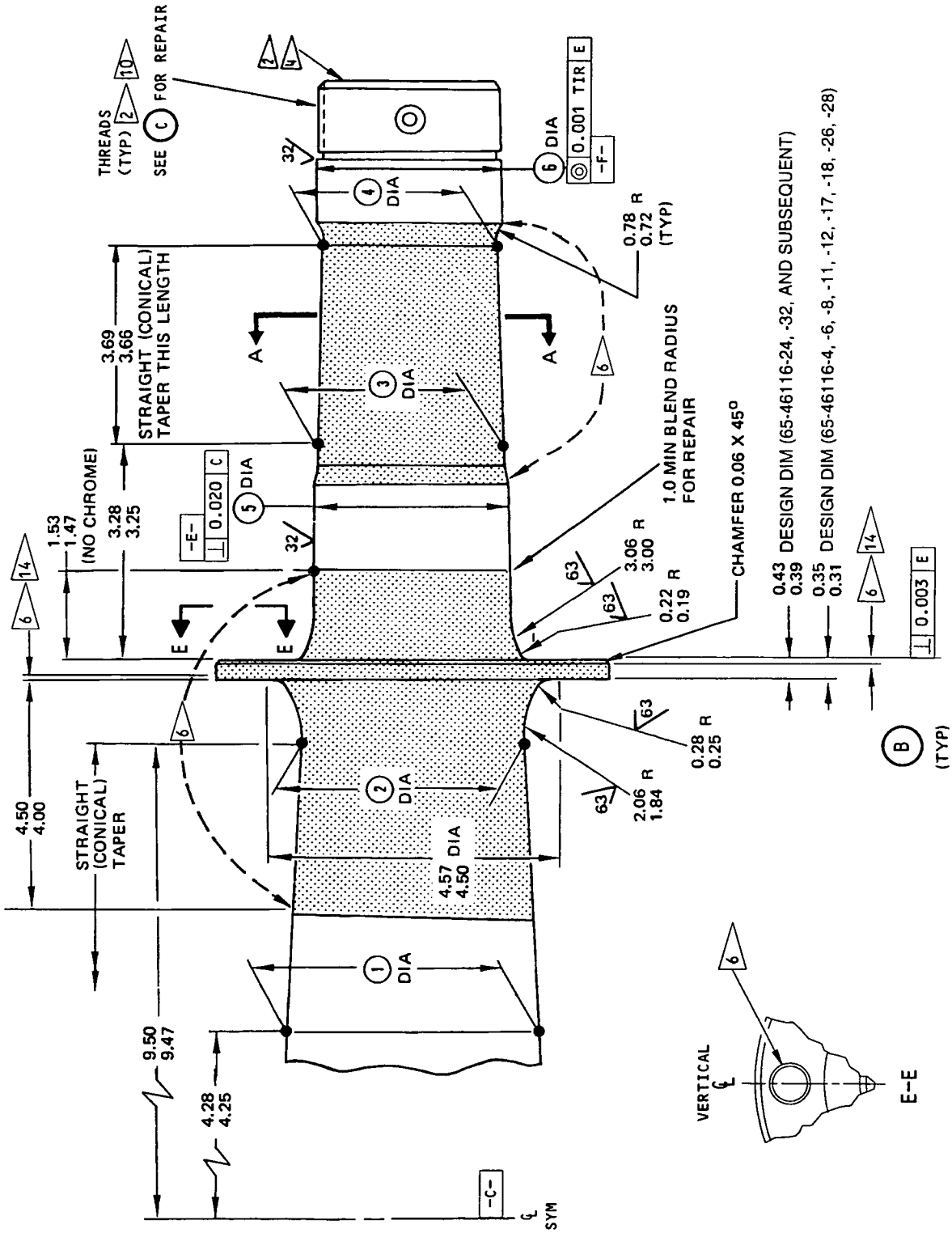
Inner Cylinder Repair and Refinish
Figure 403 (Sheet 1)



INNER CYLINDER (62)

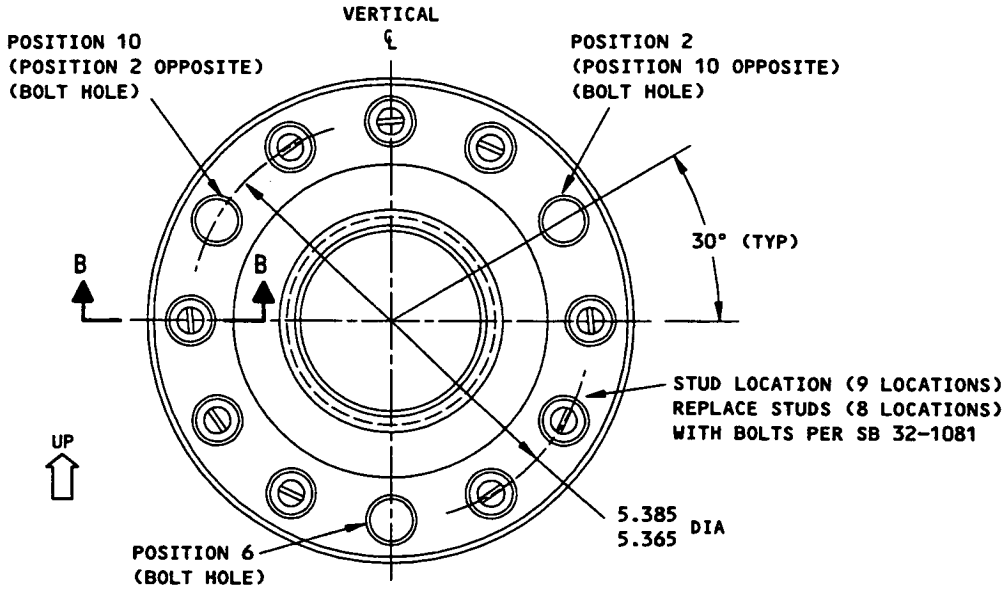
Inner Cylinder Repair and Refinish
Figure 403 (Sheet 2)

H74142

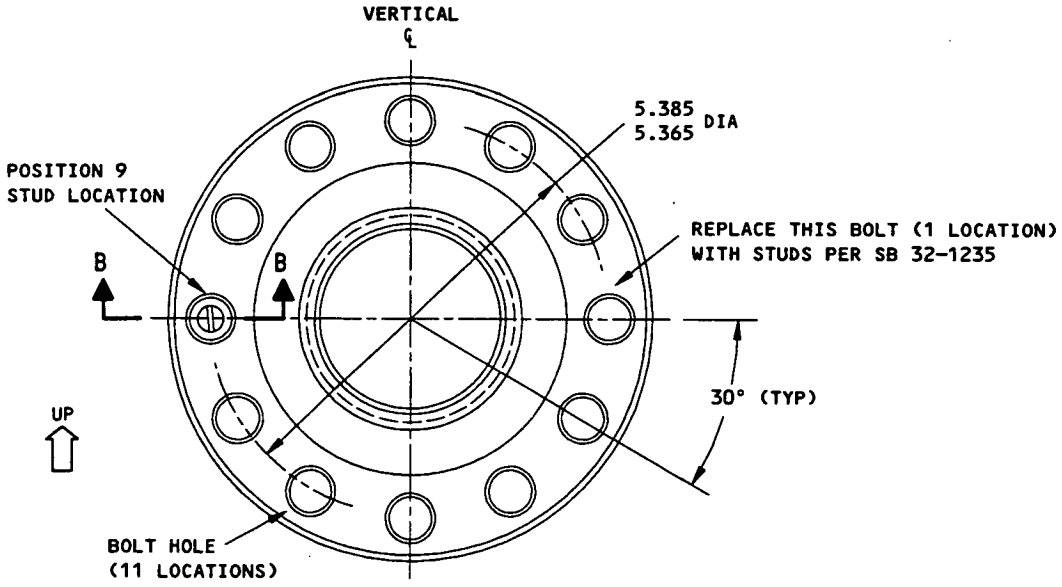


INNER CYLINDER (62)

Inner Cylinder Repair and Refinish
Figure 403 (Sheet 3)



INACTIVE PER AD 2000-05-13
REF ONLY
A-A

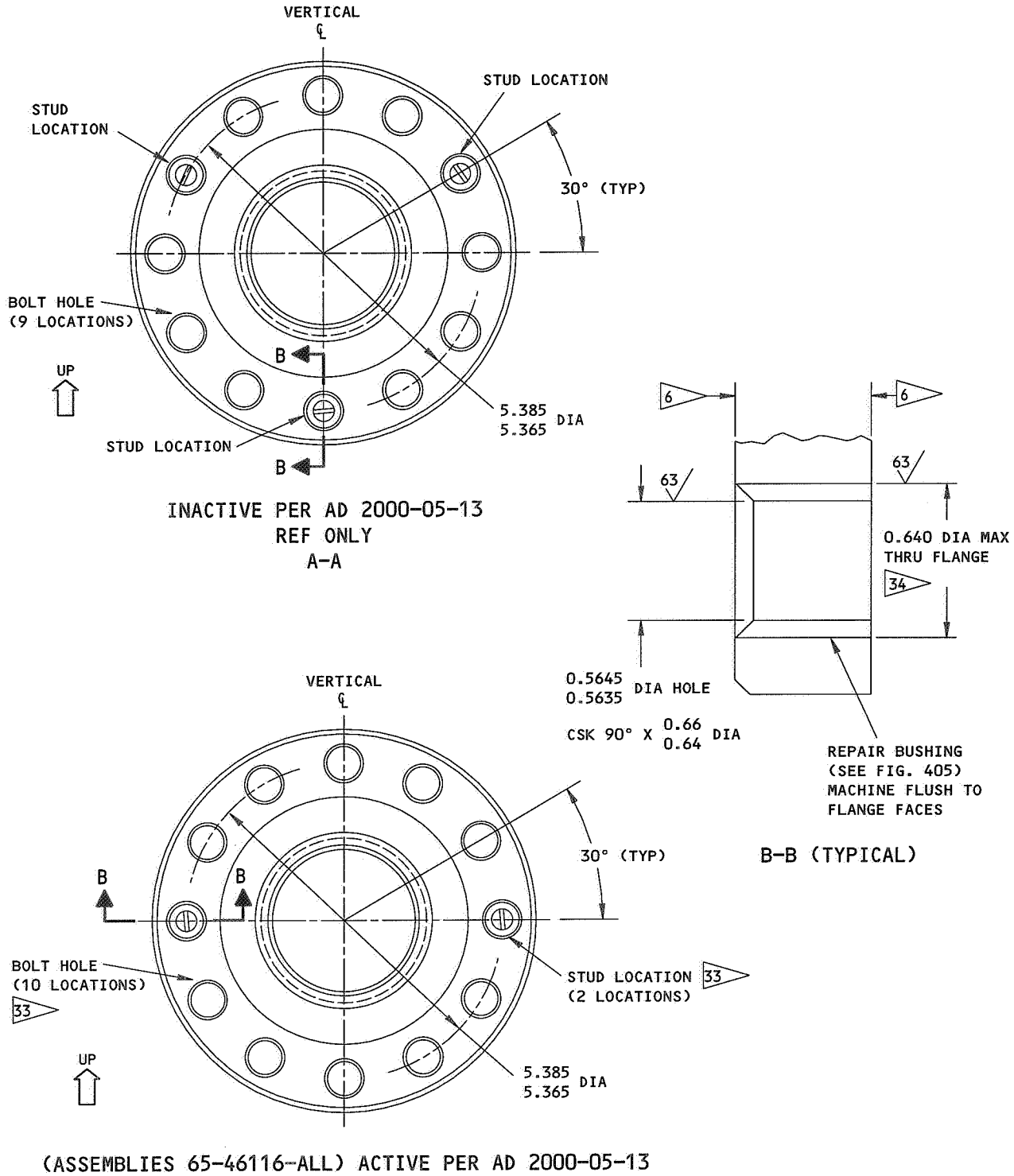


INACTIVE PER AD 2000-05-13
REF ONLY
A-A

LEFT SIDE VIEW SHOWN (RIGHT SIDE VIEW OPPOSITE)

SHEAR STUD AND BOLT LOCATIONS 13

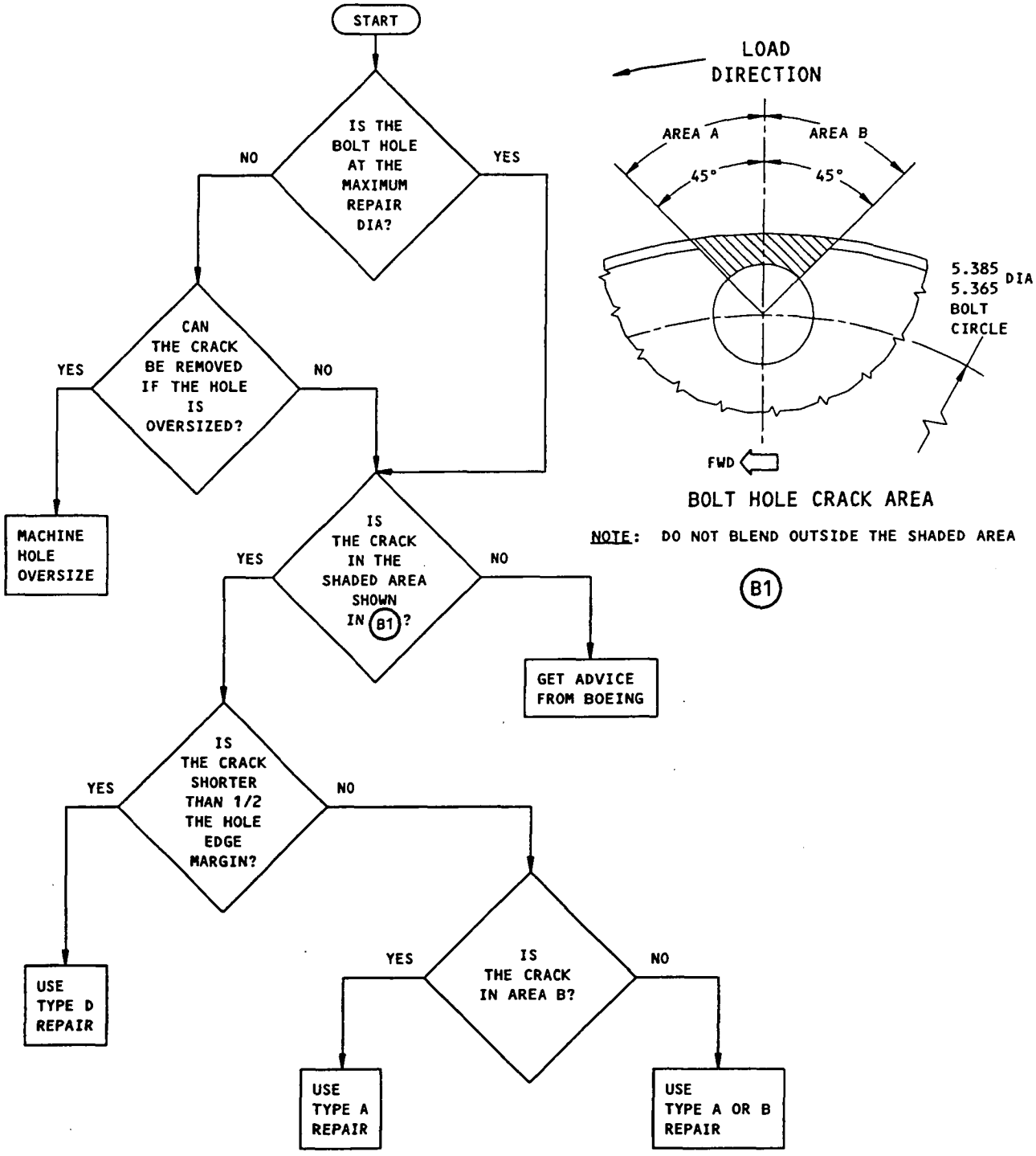
Inner Cylinder Repair and Refinish
Figure 403 (Sheet 4)



SHEAR STUD AND BOLT LOCATIONS 13

Inner Cylinder Repair and Refinish
Figure 403 (Sheet 5)

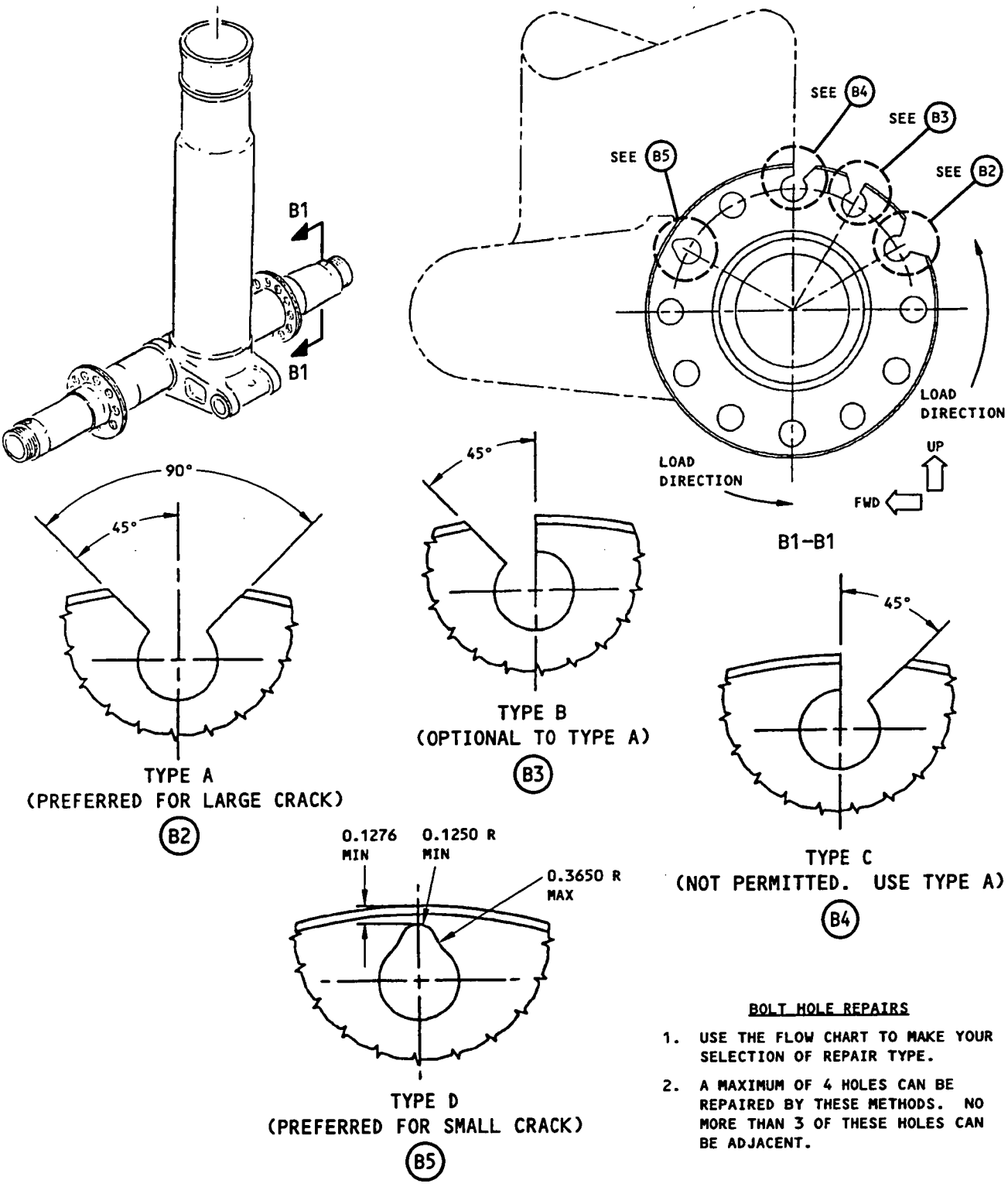
857066



CRACK REMOVAL REPAIR SELECTION

INNER CYLINDER (62)

Inner Cylinder Repair and Refinish
Figure 403 (Sheet 6)

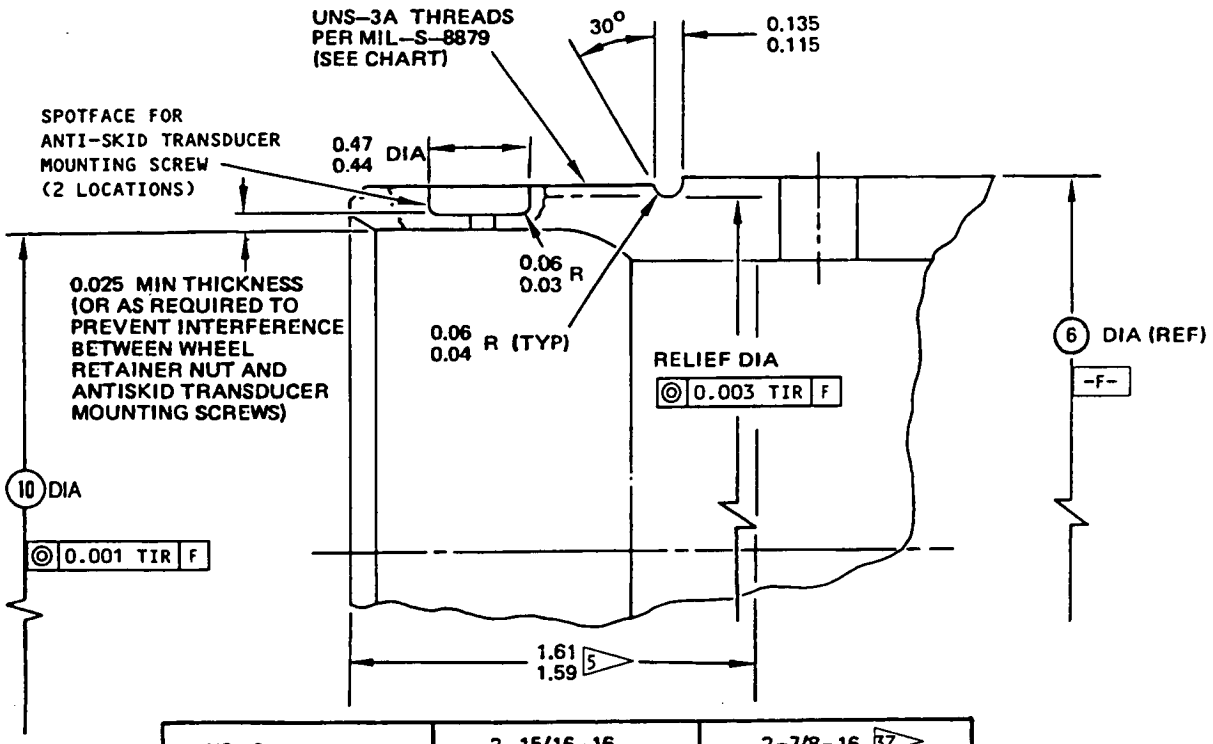


BOLT HOLE REPAIRS

1. USE THE FLOW CHART TO MAKE YOUR SELECTION OF REPAIR TYPE.
2. A MAXIMUM OF 4 HOLES CAN BE REPAIRED BY THESE METHODS. NO MORE THAN 3 OF THESE HOLES CAN BE ADJACENT.

INNER CYLINDER (62)

Inner Cylinder Repair and Refinish
Figure 403 (Sheet 7)



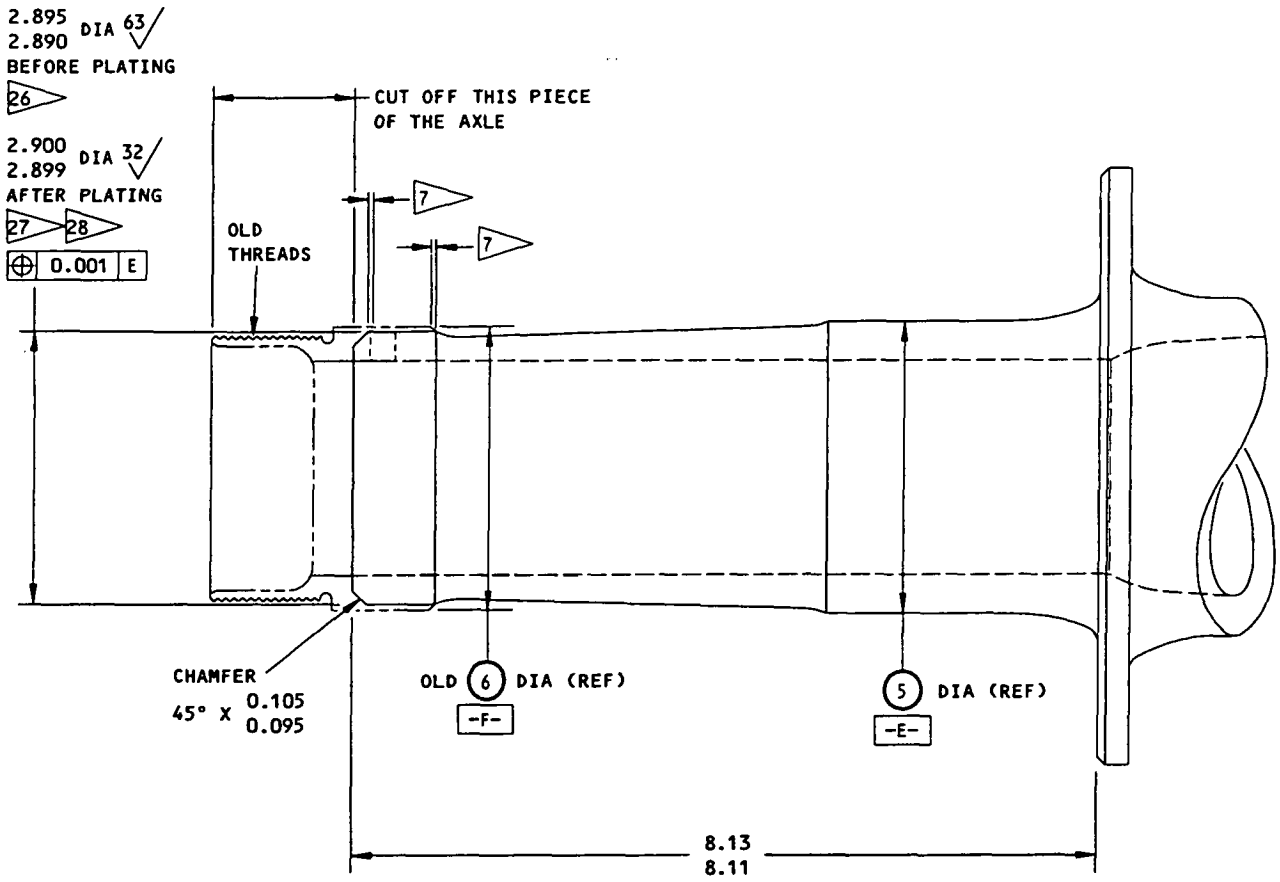
UNS -3A THREAD SIZE	2-15/16-16 (DESIGN)	2-7/8-16 37 (1/16 UNDERSIZE)
MAJOR DIA 11	2.9281 2.9187	2.8690 2.8660 (MODIFIED)
PITCH DIA 11	2.8969 2.8925	2.8344 2.8314 (MODIFIED)
MAJOR DIA 12	2.9281 2.9251	2.8690 2.8660 (MODIFIED)
PITCH DIA 12	2.8969 2.8939	2.8344 2.8314 (MODIFIED)
MINOR DIA	2.8514 NOMINAL	2.8028 2.7948
RELIEF DIA	2.84 2.83	2.78 2.77
MATING REPAIR WHEEL RETAINER NUT (REF OHM 32-16-11)		69-77566-1
MATING TANG WASHER (REF OHM 32-16-11)		69-77694-1

AXLE THREAD REPAIR

(C)

INNER CYLINDER (62)

Inner Cylinder Repair and Refinish
Figure 403 (Sheet 8)



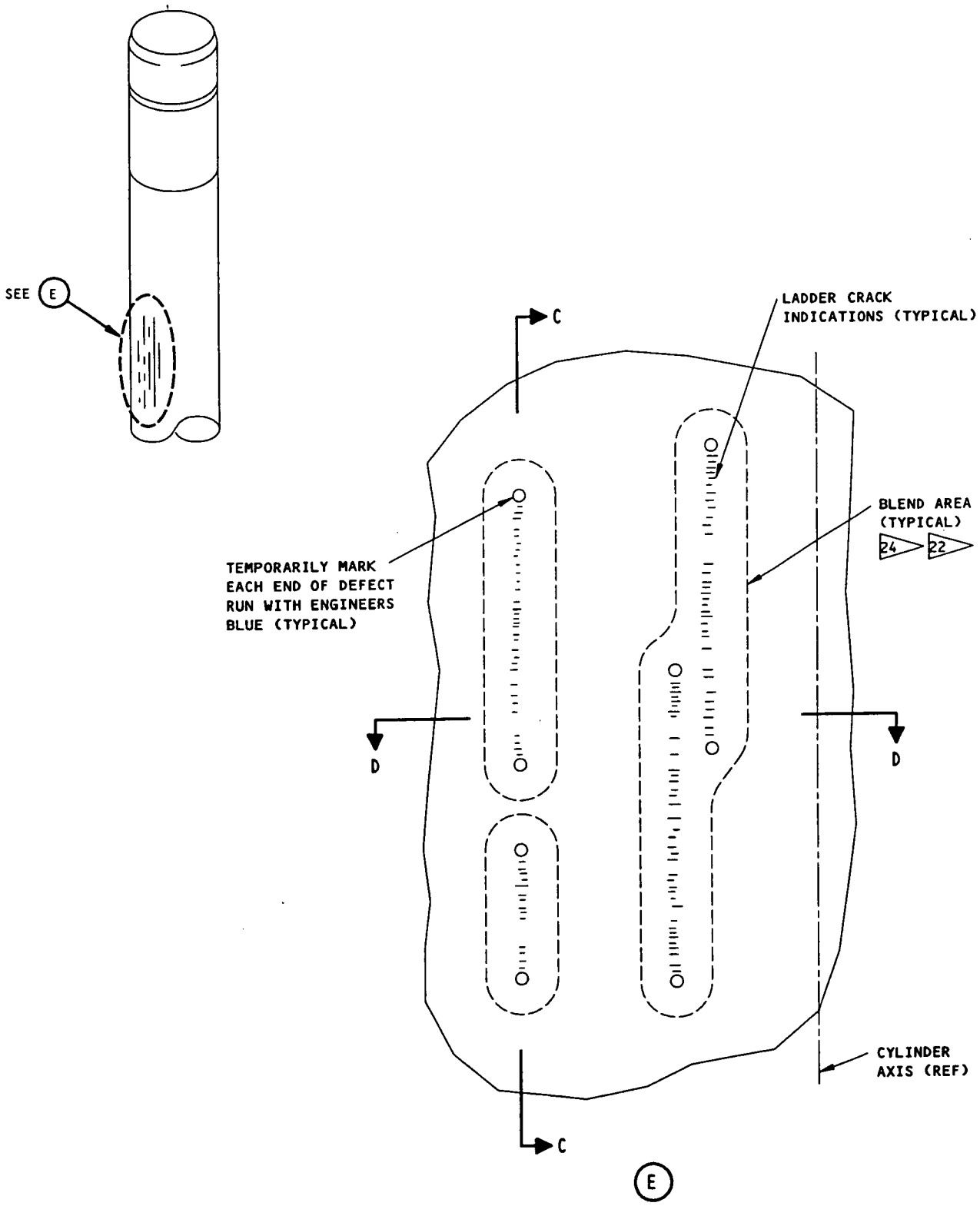
AXLE MODIFICATION FOR INSTALLATION OF SLEEVE KIT 65C36462-1

(D)

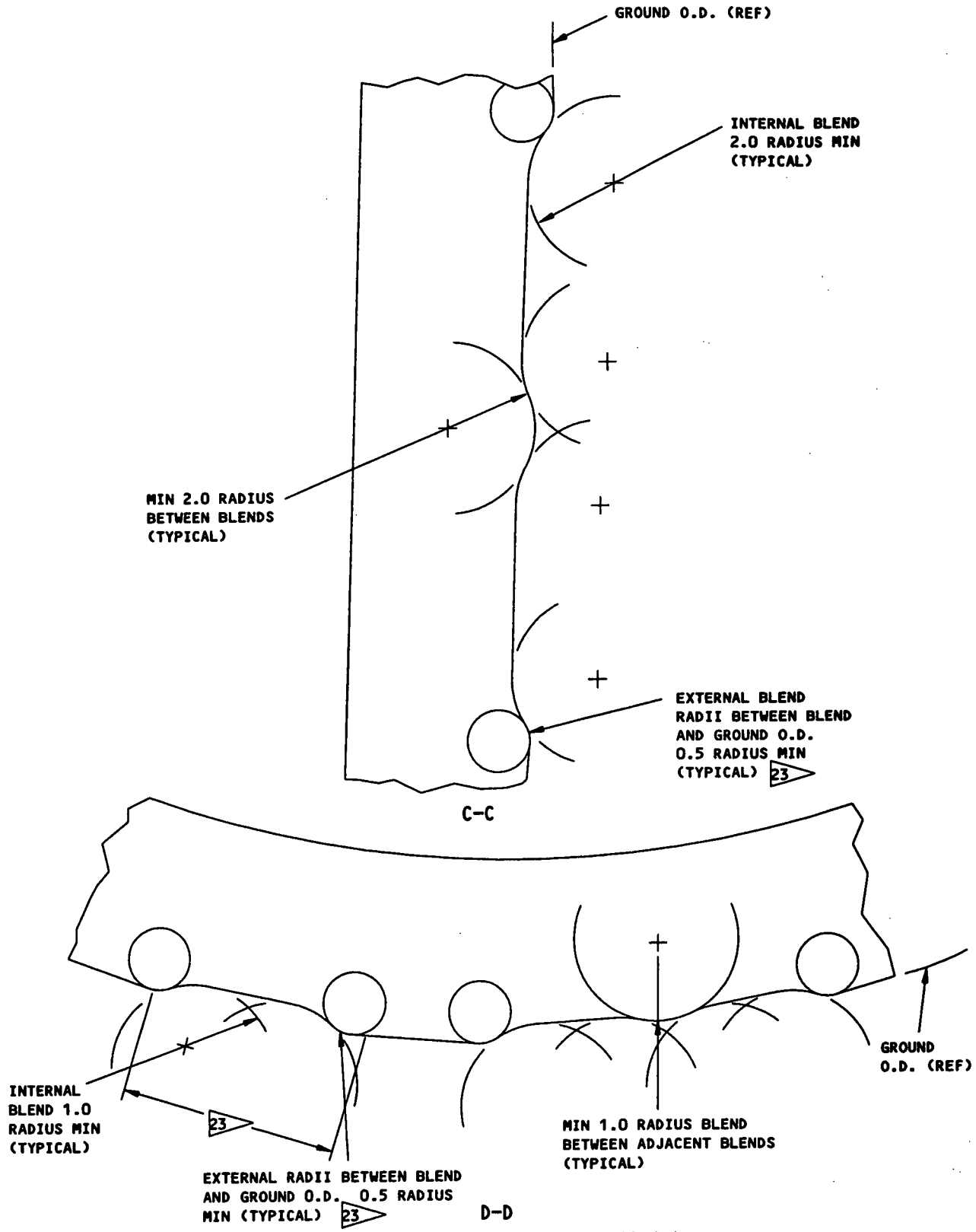
INNER CYLINDER (62)

Inner Cylinder Repair and Refinish
Figure 403 (Sheet 9)

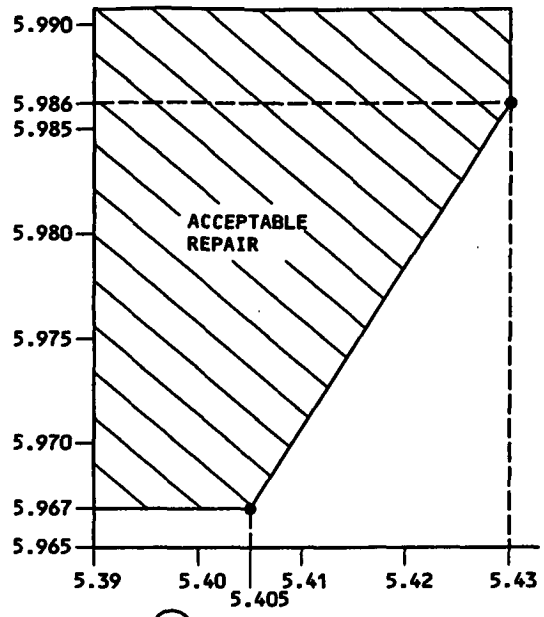
A68731



Inner Cylinder Repair and Refinish
Figure 403 (Sheet 10)



Inner Cylinder Repair and Refinish
Figure 403 (Sheet 11)

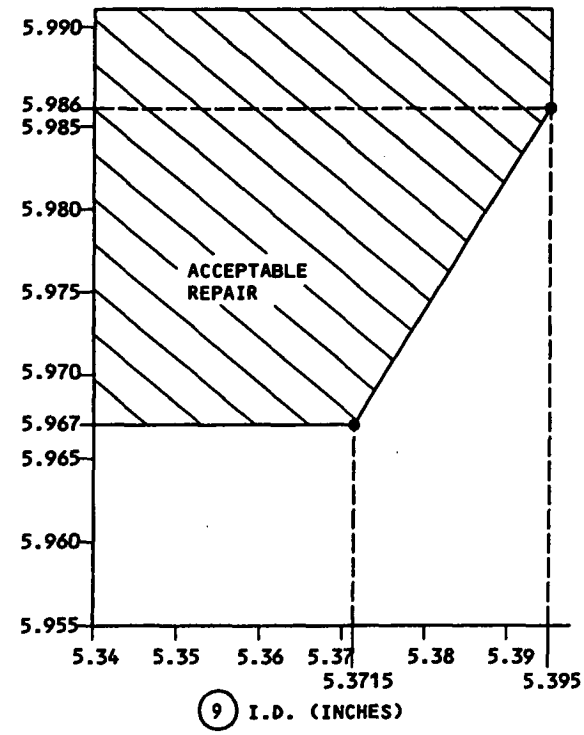


NOTE: LOCAL BLENDOUTS 21 OUTSIDE THE CHART LIMITS ARE PERMITTED IF I.D. ≤ 5.40 AND MINIMUM BLENDOUT WALL THICKNESS ≥ 0.282.

FILL OUTER SURFACE BLENDOUTS WITH SULFAMATE NICKEL PLATE. 20

65-46116-4,-6,-11,-17

F



NOTE: LOCAL BLENDOUTS 21 OUTSIDE THE CHART LIMITS ARE PERMITTED IF I.D. ≤ 5.37 AND MINIMUM BLENDOUT WALL THICKNESS ≥ 0.298.

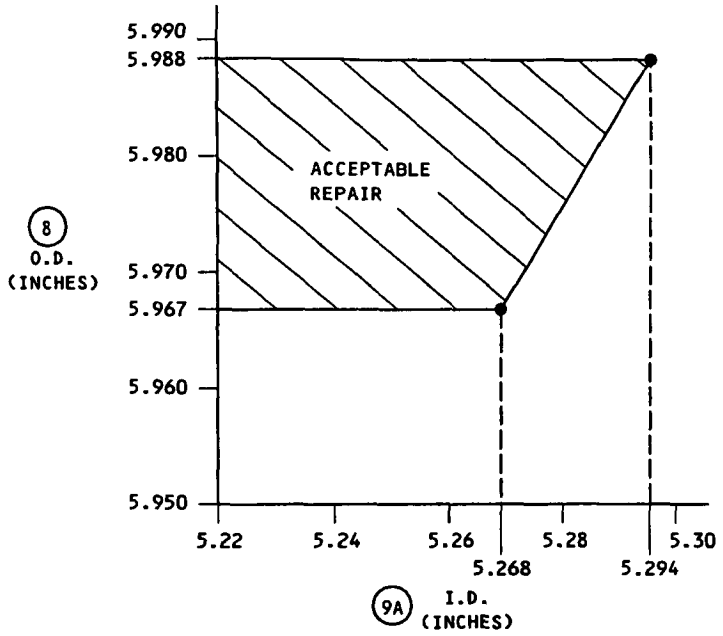
FILL OUTER SURFACE BLENDOUTS WITH SULFAMATE NICKEL PLATE. 20

65-46116-8,-12,-18,-26,-28

G

Inner Cylinder Repair and Refinish
Figure 403 (Sheet 12)

A68675

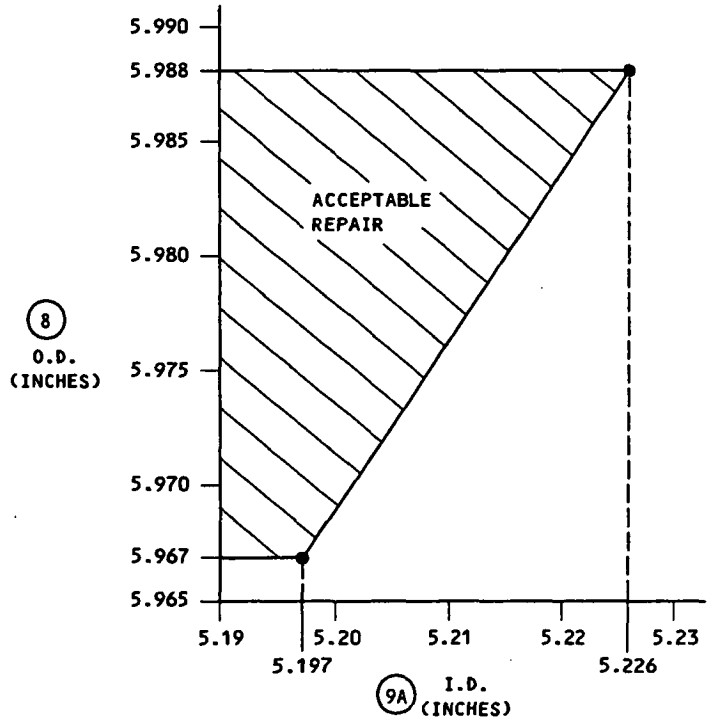


NOTE: LOCAL BLENDOUTS 21 OUTSIDE THE CHART LIMITS ARE PERMITTED IF I.D. ≤ 5.26 AND MINIMUM BLENDOUT WALL THICKNESS ≥ 0.35.

FILL OUTER SURFACE BLENDOUTS WITH SULFAMATE NICKEL PLATE. 20

65-46116-24,-32,-34,-44,-46

(H)



NOTE: LOCAL BLENDOUTS 21 OUTSIDE THE CHART LIMITS ARE PERMITTED IF I.D. ≤ 5.195 AND MINIMUM BLENDOUT WALL THICKNESS ≥ 0.298.

FILL OUTER SURFACE BLENDOUTS WITH SULFAMATE NICKEL PLATE. 20

65-46116-52,-54

(I)

Inner Cylinder Repair and Refinish
Figure 403 (Sheet 13)

A68654

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DESIGN DIM	4.22 4.20	3.65 3.62	3.07 3.04	2.87 2.84	3.188 3.187	3.001 3.000	5.352 5.349	5.997 5.994
REPAIR LIMIT	4.194 8	3.614 8	3.034 8	2.834 8	3.157 1 3.168 38	2.970 1 2.981 38	5.375 1 28 OR 30 5.372 38	SEE (F) (G) (H) (I) 1 38

	(9) 15	(9) 16	(9) 17	(9) 31	(9) 32	(9A) 18	(9A) 19	(10)
DESIGN DIM	5.43 5.41	5.41 5.39	5.36 5.34	5.34 5.32	5.40 5.38	5.24 5.22	5.21 5.19	2.6010 2.6000
REPAIR LIMIT	SEE (F) 29	SEE (F) 29	SEE (G) 29	—	---	SEE (H) 29	SEE (I) 29	2.6260 20 37

	(11)	(12) 35	(12) 36	(12) 18 19	(13)	(14) 15 16 17	(14) 18 19	(15)
DESIGN DIM	5.41 5.39	5.95 5.94	5.870 5.865	5.915 5.865	5.625 5.623	5.875 5.874	5.875 5.873	5.99 5.98
REPAIR LIMIT	---	—	---	—	5.613 1 38	---	---	---

REFINISH

CHROME PLATE (F-15.04 OR F-15.34) DIA -D-, -E-, AND -F-. PUT A 0.06 MAX PLATING RUNOUT AT EDGES. PLATE DIA -H- PER 3 OR 9 AS APPLICABLE. CADMIUM-TITANIUM PLATE PER 2 OTHER SURFACES UNLESS SHOWN DIFFERENTLY. AFTER PLATING APPLY PRIMER AND ENAMEL PER 4 10 EXCEPT OMIT ENAMEL FROM ALL THREADS, HOLES AND AS NOTED BY 5. APPLY TWO LAYERS OF PRIMER TO BORES FOR BUSHINGS. APPLY PROTECTIVE COATING 6 TO AREA NOTED.

REPAIR

REF 1 8 14 20 THRU 24 26 29 30 37 38

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN: (SOPM 20-10-03)
0.016-0.033 SHOT SIZE
0.009-0.015 A2 INTENSITY

MATERIAL: 4340M STEEL (270-300 KSI)

ALL DIMENSIONS ARE IN INCHES

INNER CYLINDER (62)

Inner Cylinder Repair and Refinish
Figure 403 (Sheet 14)

A68352

1> LIMIT FOR CHROME PLATE BUILDUP (SOPM 20-42-03) AND GRIND TO DESIGN DIMENSIONS AND FINISH. PUT A PLATING RUNOUT AS SHOWN BY 7> 25>

2> CADMIUM-TITANIUM PLATE (F-15.01) 0.0005 MIN THICK

3> CADMIUM-TITANIUM PLATE (F-15.01) 0.0002-0.0004 THICK (65-46116-3 THRU -44)

4> APPLY BMS 10-11 TYPE 1 PRIMER (SRF-12.205 OR F-20.02) AND BMS 10-11, TYPE 2 ENAMEL (SRF-12.63 OR SRF-14.904-707 OR F-21.02 OR F-21.27-707). OVERLAP COATING APPLIED PER 6> 0.05-0.15

5> NO PRIMER OR ENAMEL

6> NO CADMIUM-TITANIUM PLATING, PRIMER OR ENAMEL. APPLY SERMETEL 249 (BMS 14-4, TYPE 2) PROTECTIVE COATING (REF SOPM 20-50-13)

7> 0.06 MAX CHROME PLATE RUNOUT AT EDGES

8> REPAIR/REFINISH FOR CONFIGURATIONS ORIGINALLY CAD-TI PLATED AND PAINTED WITH PRIMER AND ENAMEL. SAND OFF THE OLD PLATING, ENAMEL AND PRIMER (SOPM 20-30-03) AND, IF NECESSARY, MACHINE WITHIN REPAIR LIMITS NOTED. APPLY PROTECTIVE COATING TO SURFACES PER 6>

9> CHROME PLATE (F-15.03), 0.0004-0.0006 THICK, AND WIPE WITH PRIMER (F-19.45). (65-46116-46,-52,-54)

10> WIPE THREADS WITH PRIMER (F-19.45)

11> 65-46116-3,-5,-7,-9,-10,-15,-16,-19,-20, -25,-27

12> 65-46116-23,-30,-31,-33,-35,-36,-38,-41, -42,-43,-47,-48,-49,-50,-53,-55 AND ON

13> REFER TO OHM 32-16-11 FOR SHEAR STUD AND BOLT LOCATIONS FOR 65-46116-59,-60,-61

14> THE SUM OF MATERIAL REMOVALS FROM THE TWO FLANGE FACES IS 0.033 MAXIMUM. YOU CAN REMOVE UP TO 0.030 FROM THE INNER FACE OR THE OUTER FACE, BUT IF YOU DO, YOU CAN REMOVE ONLY 0.003 FROM THE OTHER FACE. BECAUSE MOST REPAIRS NECESSARY ARE TO THE OUTER FACE, WE RECOMMEND YOU REPAIR THE INNER FACE ONLY WITH LOCAL BLENDS, TO LET YOU USE THE FULL AMOUNT OF PERMITTED MATERIAL REMOVAL ON THE OUTER FACE.

15> 65-46116-4

16> 65-46116-6,-11,-17

17> 65-46116-8,-12,-18,-26,-28

18> 65-46116-24,-32,-34,-44,-46

19> 65-46116-52,-54

20> LIMIT FOR NICKEL PLATE BUILDUP (SOPM 20-42-09)

21> INDIVIDUAL BLENDOUTS IN THIS ZONE MUST NOT BE MORE THAN 1.0 INCH IN THE CIRCUMFERENTIAL DIRECTION

22> ALL TRANSITIONS BETWEEN BLENDS TO BE SMOOTH

23> THE "GROUND O.D." TO "BLEND" RADII MUST NOT BE MUCH MORE THAN THE MIN GIVEN TO AVOID EXCESSIVELY FEATHERING THE NICKEL IN FILLS

24> ALL BLENDS TO BE 32/ MIN

25> CHROME PLATE TO RUN-OUT IN THIS AREA

26> SHOT PEEN REPAIRED AREAS: (SOPM 20-10-03) 0.017-0.046 SHOT SIZE 0.010-0.016 A2 INTENSITY

27> CHROME PLATE (F-15.34)

28> WIPE THE CHROME PLATED AREAS WITH PRIMER (F-19.45)

29> RESTORATION TO DESIGN DIMENSION NOT REQUIRED

30> (PREF) LIMIT FOR NICKEL PLATE BUILDUP (SOPM 20-42-09)

31> 65-46116-24,-32,-34

32> 65-46116-44,-46,-52,-54

33> RECOMMENDED, PREFERRED CONFIGURATION OF BOLTS AND STUDS. USED WITH THE METAL 69-78307-1 BRAKE GASKET (OHM 32-16-11, FIG. 1102, ITEM 30A). (SB 32-1253)

34> APPLY BMS 10-11, TYPE 1 PRIMER (F-20.02) TO HOLE SURFACES IMMEDIATELY BEFORE BUSHING INSTALLATION

35> 65-46116-4,-6,-8,-11,-12,-17,-18,-26

36> 65-46116-28

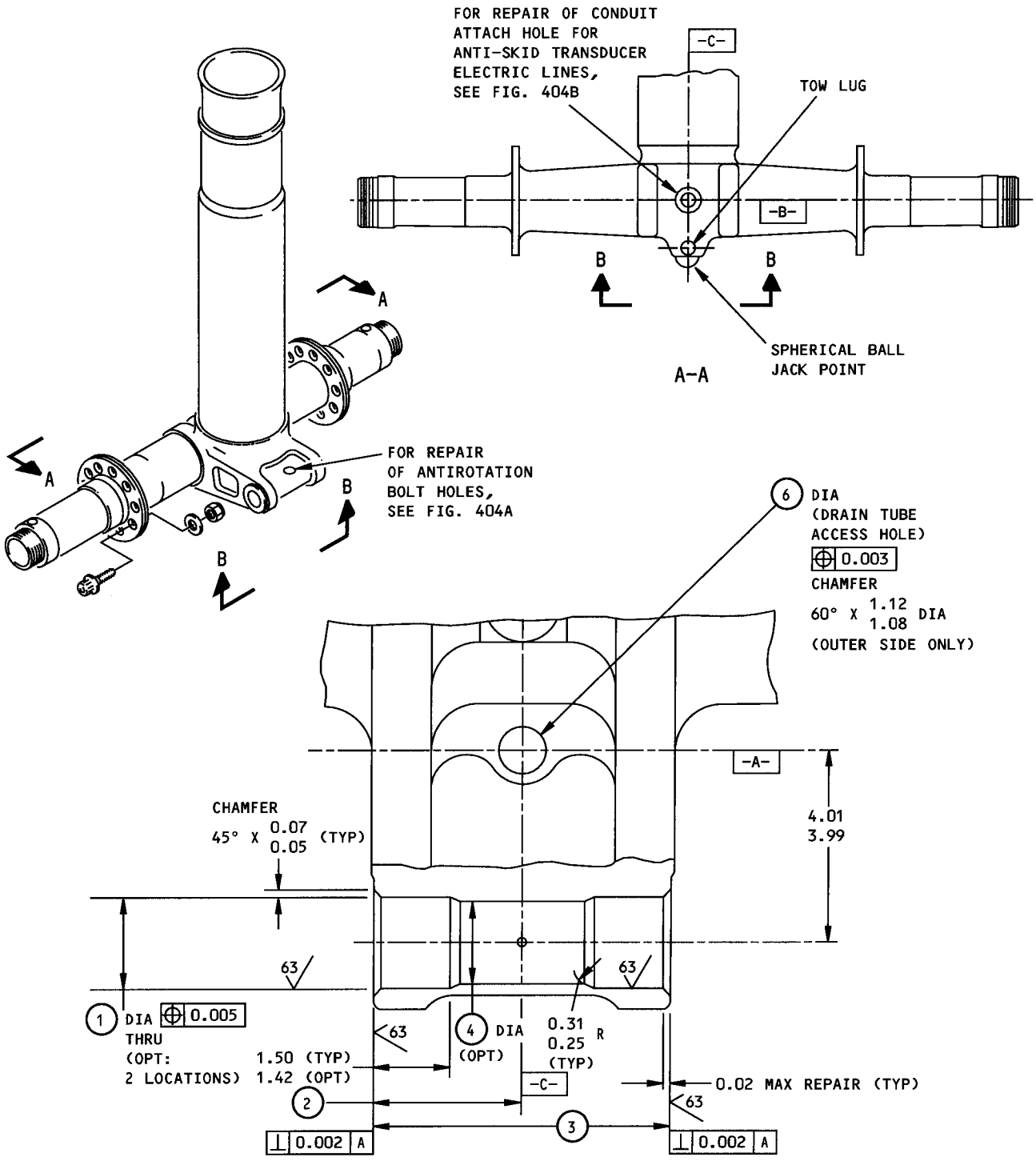
37> AT EACH AXLE END, YOU CAN REPAIR EITHER BORE (10) OR UNDERSIZE THE THREADS, BUT NOT BOTH

38> LIMIT FOR BUILDUP WITH BMS 10-67 TYPE 1 OR 17 CLASS 2, 3, OR 4 THERMAL SPRAY (SOPM 20-10-05), 0.010 MAX THICK. PUT A 0.080 MAX RUNOUT AT EDGES. GRIND TO DESIGN DIMENSIONS AND 8 MICROINCH FINISH. THEN CADMIUM-TITANIUM PLATE (SOPM 20-42-02) THE RUNOUT AREA.

INNER CYLINDER (62)

Inner Cylinder Repair and Refinish
Figure 403 (Sheet 15)

A68375

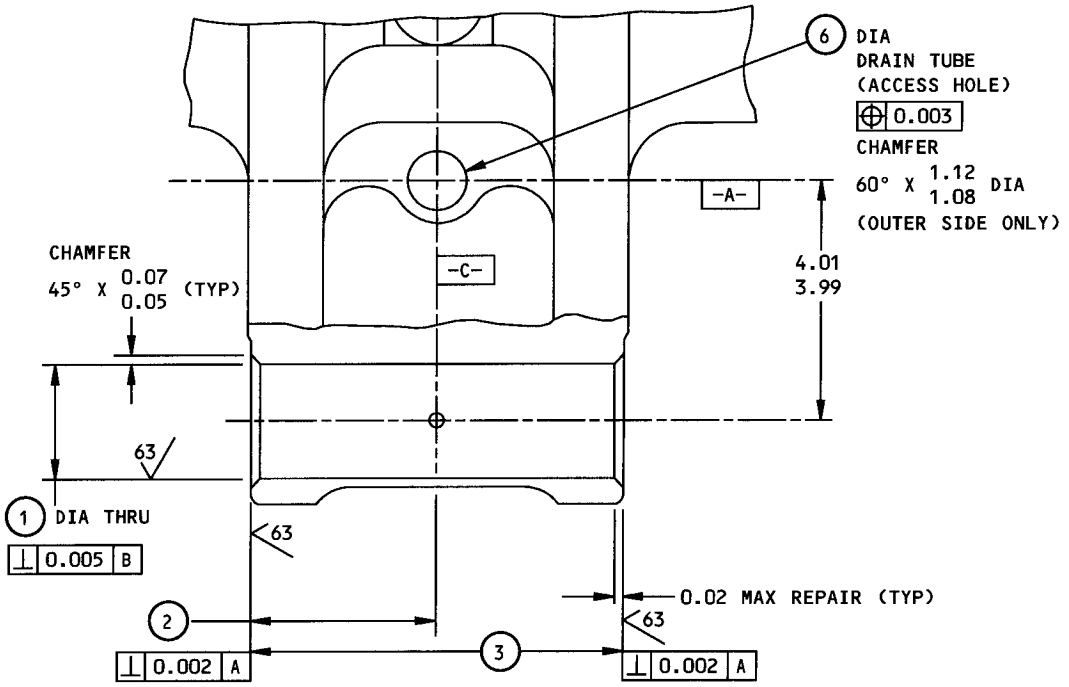


65-46116-4, -6, -11, -17
B-B

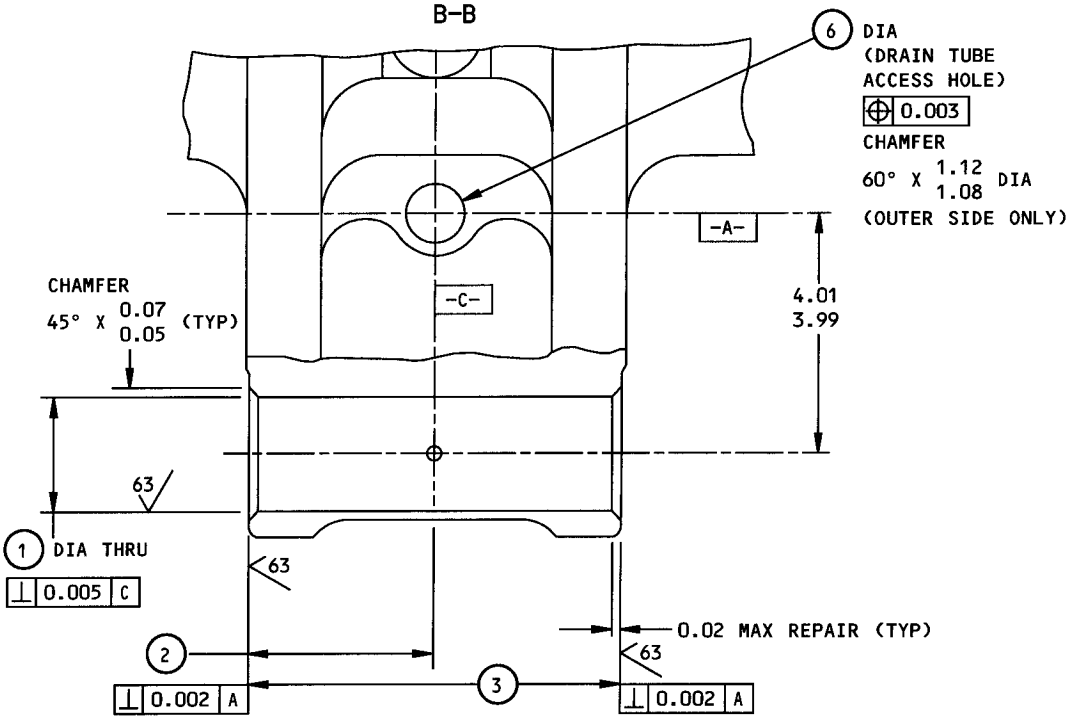
INNER CYLINDER (62)

Inner Cylinder Lug Face and Hole Repair
Figure 404 (Sheet 1)

F94067

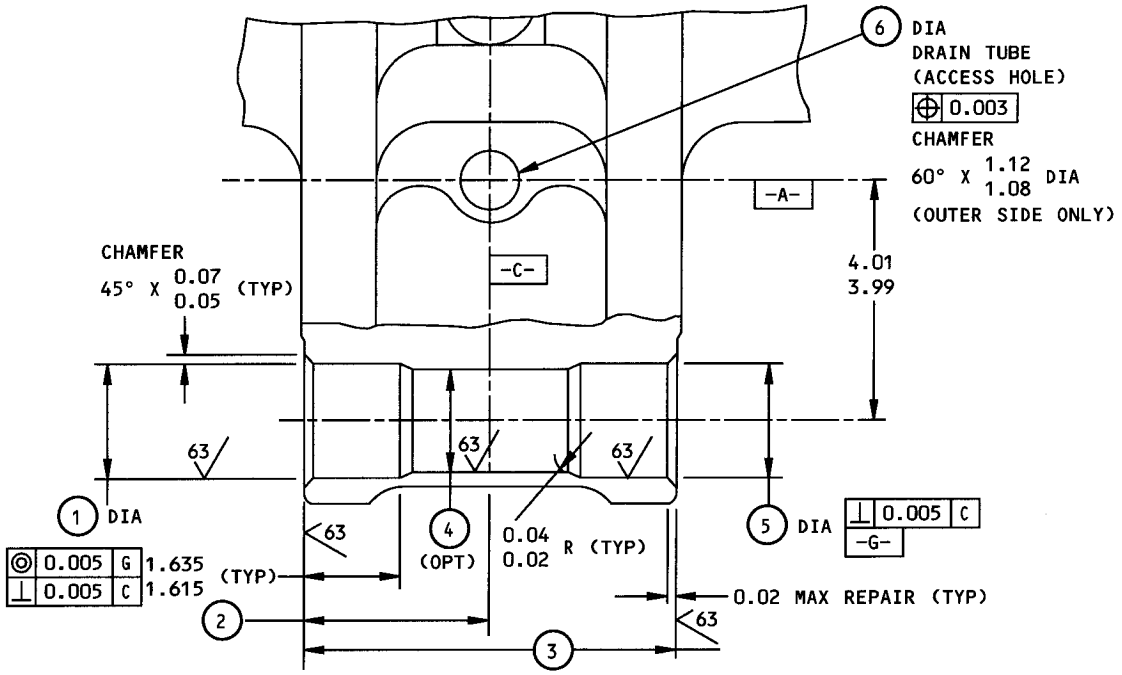


65-46116-8,-12,-18,-26,-28
B-B



65-46116-24,-32,-34,-44,-52,-54
B-B
INNER CYLINDER (62)
Inner Cylinder Lug Face and Hole Repair
Figure 404 (Sheet 2)

F93954



OPTIONAL CONFIG 65-46116-44,-46,-52,-54
B-B

	1 ▷3	1 ▷4	2	3	4 ▷5	4 ▷6	5 ▷6	6
DESIGN DIM	1.876 1.875	1.896 1.895	3.127 3.122	6.255 6.245	1.880 1.875	1.880 1.875	1.896 1.895	1.005 1.000
REPAIR LIMIT	1.975 ▷2 ▷7	2.000 ▷2 ▷7	--	6.215 ▷1 6.205 ▷2	1.975 ▷8	2.000 ▷8	2.000 ▷2 ▷7	1.180 ▷2 ▷9

▷1 LIMIT FOR BUILDUP WITH CHROME PLATE (SOPM 20-42-03) OR NICKEL PLATE (SOPM 20-42-09) AND INSTALLATION OF BUSHINGS PER PARTS LIST. GRIND CHROME PLATE OR MACHINE NICKEL PLATE TO DESIGN DIMENSIONS AND FINISH. PUT A 0.06 PLATING RUNOUT AT EDGES. DO NOT PLATE RADII.

▷2 LIMIT FOR INSTL OF OVERSIZE BUSHINGS OR REPAIR SLEEVES

▷3 65-46116-4,-6,-8,-11,-12,-17,-18, -24,-26,-28,-32

▷4 65-46116-34,-44,-46,-52,-54

▷5 OPT CONFIG ON 65-46116-4,-6,-11,-17

▷6 OPT CONFIG ON 65-46116-44,-46,-52,-54

▷7 BORE CAN BE MACHINED THRU. (▷8)

REPAIR

REF ▷1 ▷2 ▷7 ▷8 ▷9

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.03R

SHOT PEEN: (SOPM 20-10-03)
0.016-0.033 SHOT SIZE
0.015 A2 INTENSITY

MATERIAL: 434OM STEEL, 270-300 KSI

ALL DIMENSIONS ARE IN INCHES

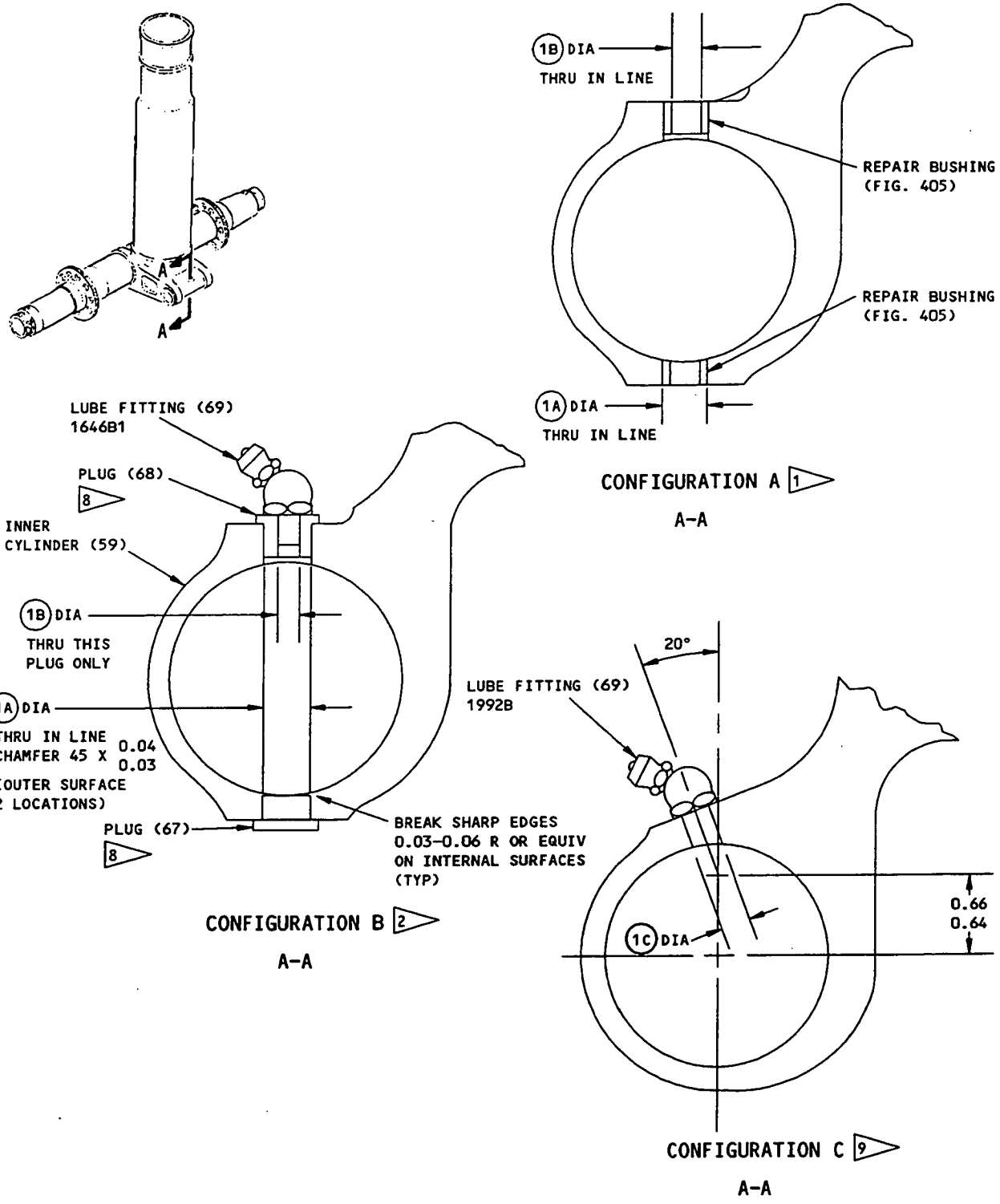
▷8 RESTORATION TO DESIGN DIMENSIONS NOT REQUIRED

▷9 IF REPAIR MORE THAN THIS LIMIT IS NECESSARY, THE CYLINDER MUST BE DISCARDED

INNER CYLINDER (62)

Inner Cylinder Lug Face and Hole Repair
Figure 404 (Sheet 3)

F93613



INNER CYLINDER (62)

Inner Cylinder Antirotation Bolt Hole Repair
Figure 404A (Sheet 1)

	(1A) 1	(1A) 2	(1B) 1	(1B) 2	(1C) 9
DESIGN DIM	0.379 0.376 6	0.3795 0.3790	0.379 0.376 7	0.189 0.188	0.186 0.185
REPAIR LIMIT 3	0.3795 0.3790	—	—	—	—
REPAIR LIMIT 4	0.500	0.500	—	—	—
REPAIR LIMIT 5	0.500 0.438	—	—	—	—

1 CONFIG WITH ANTIROTATION BOLTS (ASSEMBLIES 65-46116-3 THRU -33) (PRE SB 32A1113, PRE SB 32-1123)

2 CONFIG WITH PLUGS AND LUBE FITTING (ANTIROTATION BOLTS DELETED) (ASSEMBLIES 65-46116-3 THRU -33 POST SB 32A1113, 32-1123; AND OPTIONAL CONFIG FOR ASSEMBLIES 65-46116-35 AND ON)

3 LIMIT FOR INSTL OF PLUGS (67,68) PER PARTS LIST. (MAKES CONFIG B)

4 LIMIT FOR INSTL OF OVERSIZE PLUGS PER FIG. 406A (FOR REPAIR OF CONFIG A OR B; MAKES CONFIG B)

5 LIMIT FOR INSTL OF REPAIR BUSHINGS PER FIG. 405 (FOR REPAIR OF CONFIG A; KEEPS IT AS CONFIG A)

6 ORIGINAL DESIGN DIA, BEFORE REPAIR PER 3 OR 4 OR 5

7 FINISH DIA OF REPAIR BUSHING, AFTER REPAIR PER 5

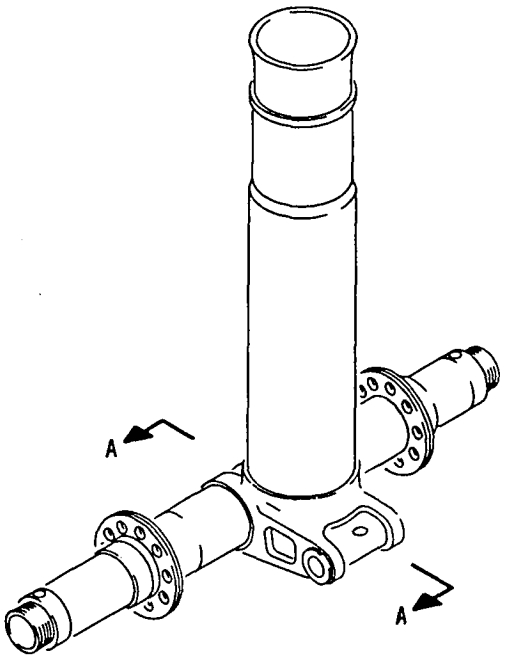
8 INSTALL PLUGS BY SHRINK FIT METHOD, WITH WET BMS 5-95 SEALANT ON FAYING SURFACES. AFTER INSTL, DRILL HOLE FOR LUBE FITTING THRU UPPER PLUG. FILLET SEAL PLUG FLANGES WITH BMS 5-95 SEALANT.

9 CONFIG WITHOUT PLUGS (67, 68) (ASSEMBLIES 65-46116-35 AND ON)

INNER CYLINDER (62)

Inner Cylinder Antirotation Bolt Hole Repair
Figure 404A (Sheet 2)

E76951



	(1)	(2)
DESIGN DIM	0.885 0.875	0.56 0.54
REPAIR LIMIT	1.046 0.935 (1)	---

REPAIR

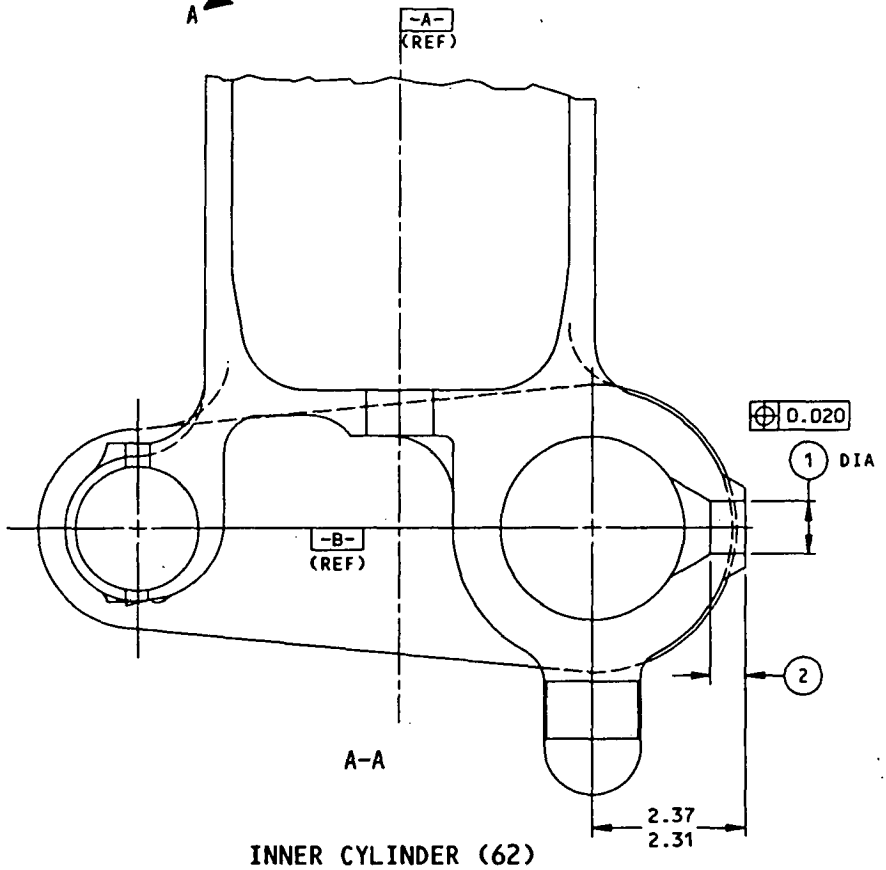
REF (1)

63 ALL MACHINED SURFACES

SHOT PEEN:
0.016-0.033 SHOT SIZE
0.015 A2 INTENSITY

MATERIAL: 4340M STEEL, 270-300 KSI

ALL DIMENSIONS ARE IN INCHES

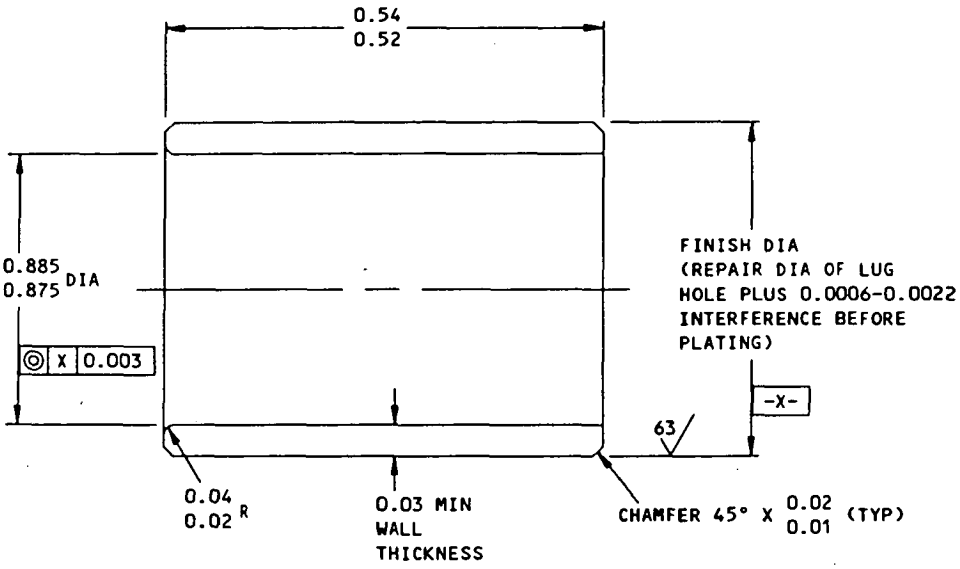


INNER CYLINDER (62)

(1) RANGE FOR INSTALLATION OF REPAIR BUSHINGS (FIG. 404C)

Inner Cylinder Electrical Conduit Attach Hole Repair
Figure 404B

G91984



125 MACHINE FINISH EXCEPT AS NOTED

BREAK SHARP EDGES 0.01-0.02R

MATERIAL: 17-4PH CRES PER AMS 5643, 180-200 KSI
OR AL-NI-BRONZE PER AMS 4640

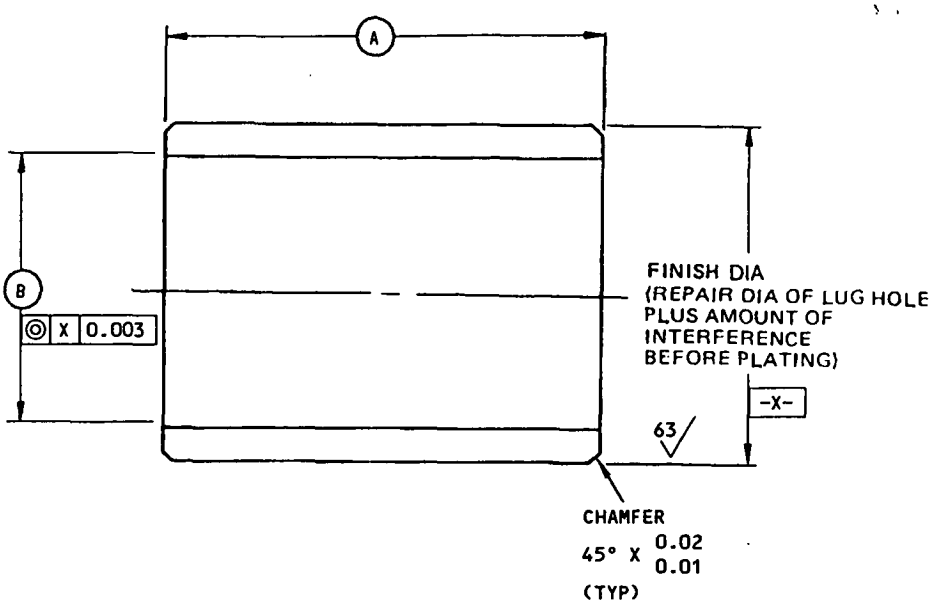
FINISH: CADMIUM PLATE PER SOPM 20-42-01 (OPT IN ID)

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (1) FIG. 404B

Repair Bushing Details
Figure 404C

G92334



APPLICATION	A	B	INTER-FERENCE	MATERIAL	FINISH
1	0.37 0.35	0.530 MAX	0.0022 0.0006	16	5
2	0.45 0.43	0.530 MAX	0.0022 0.0006	16	5
3	0.33 0.31	0.374 0.372	0.0013 0.0003	16	6
4	0.21 0.19	0.374 0.372	0.0013 0.0003	16	6
15	0.75 0.69	1.005 1.000	0.0022 0.0006	17	6

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

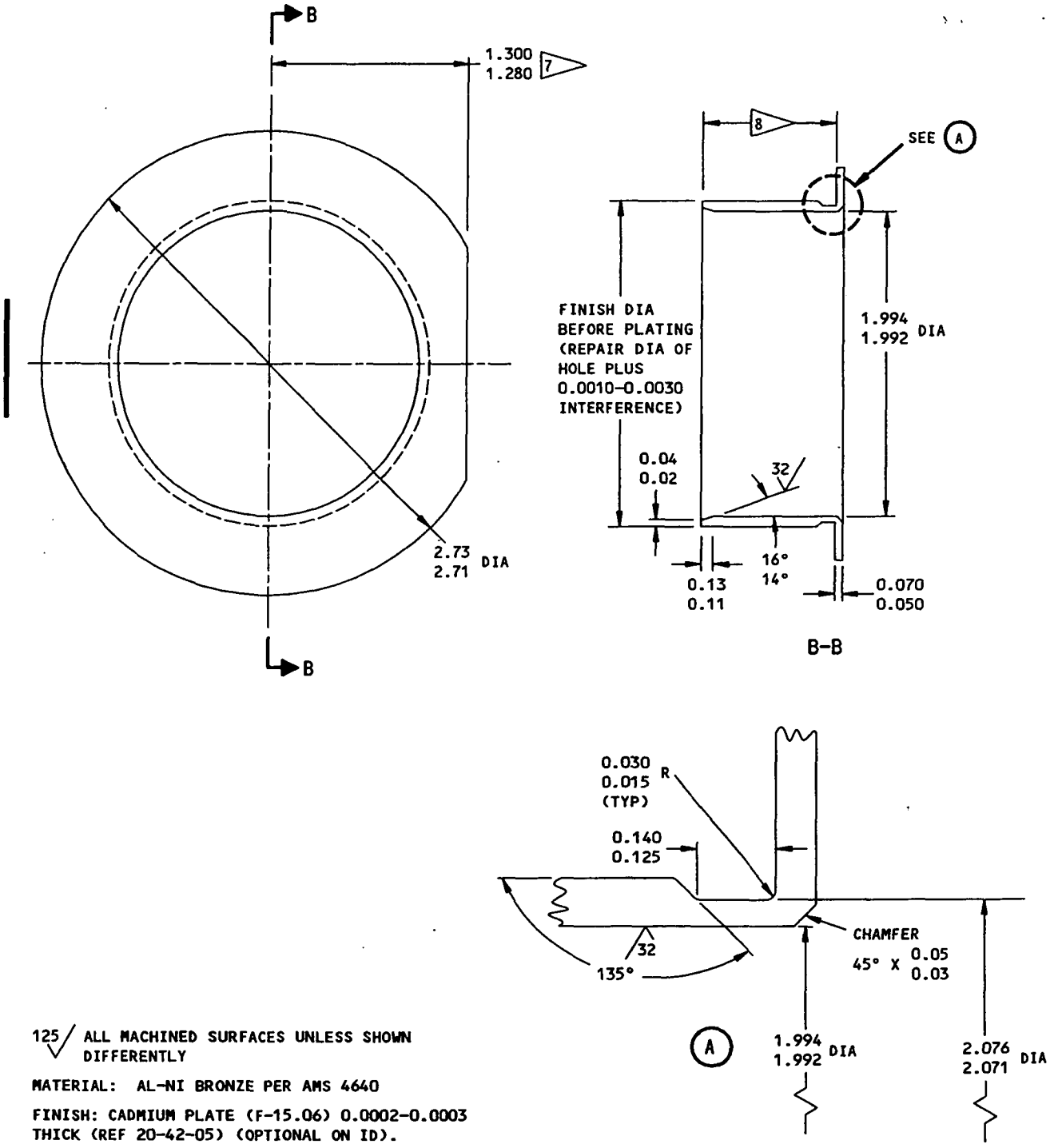
BREAK SHARP EDGES 0.01-0.02R

MATERIAL: AS NOTED

FINISH: AS NOTED

ALL DIMENSIONS ARE IN INCHES

Repair Bushing Details
Figure 405 (Sheet 1)



125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

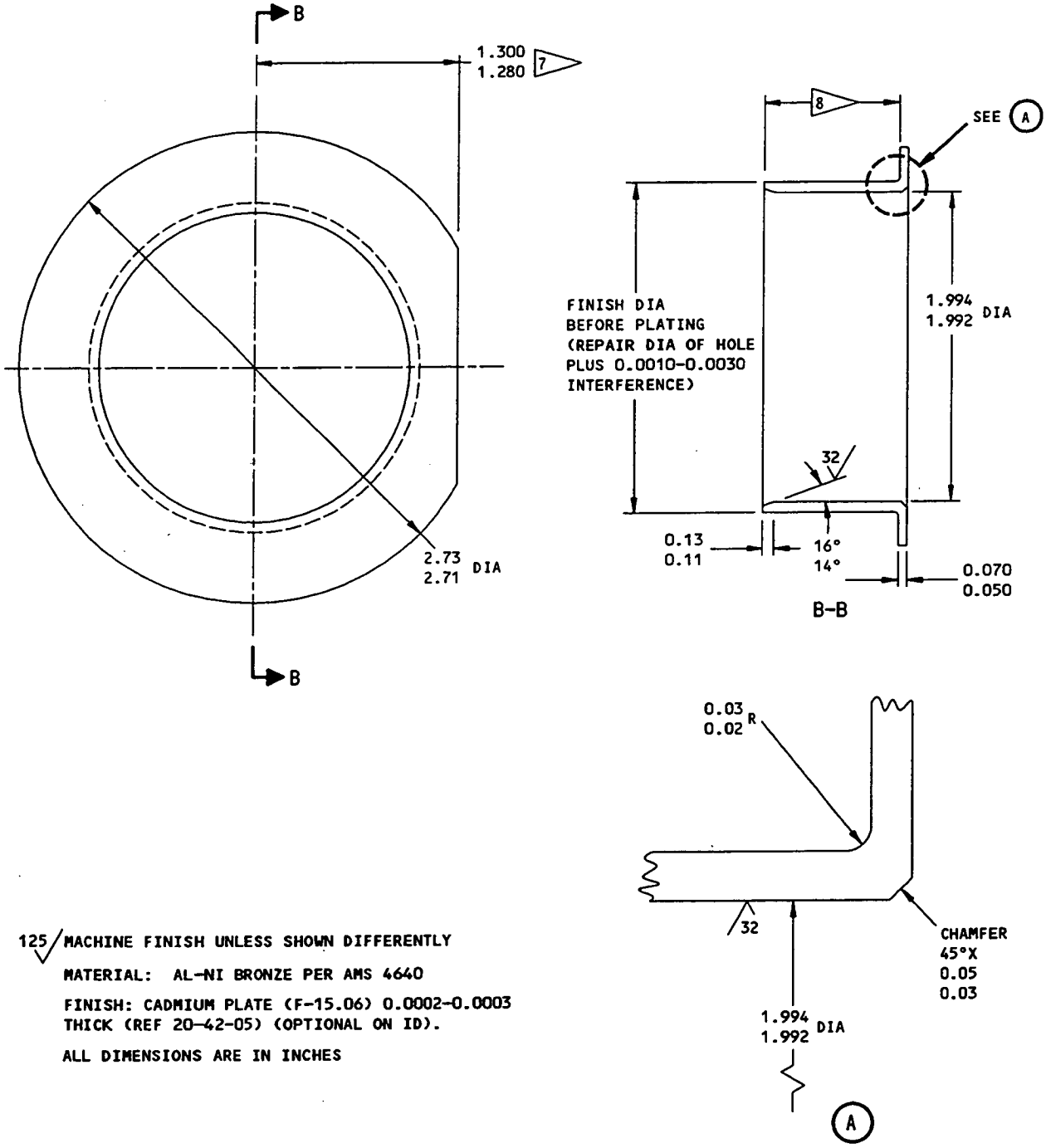
MATERIAL: AL-NI BRONZE PER AMS 4640

FINISH: CADMIUM PLATE (F-15.06) 0.0002-0.0003 THICK (REF 20-42-05) (OPTIONAL ON ID).

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (16) FIG. 401 - BUSHING WITH UNDERCUT FOR O-RING

Repair Bushing Details
Figure 405 (Sheet 2)



125 MACHINE FINISH UNLESS SHOWN DIFFERENTLY

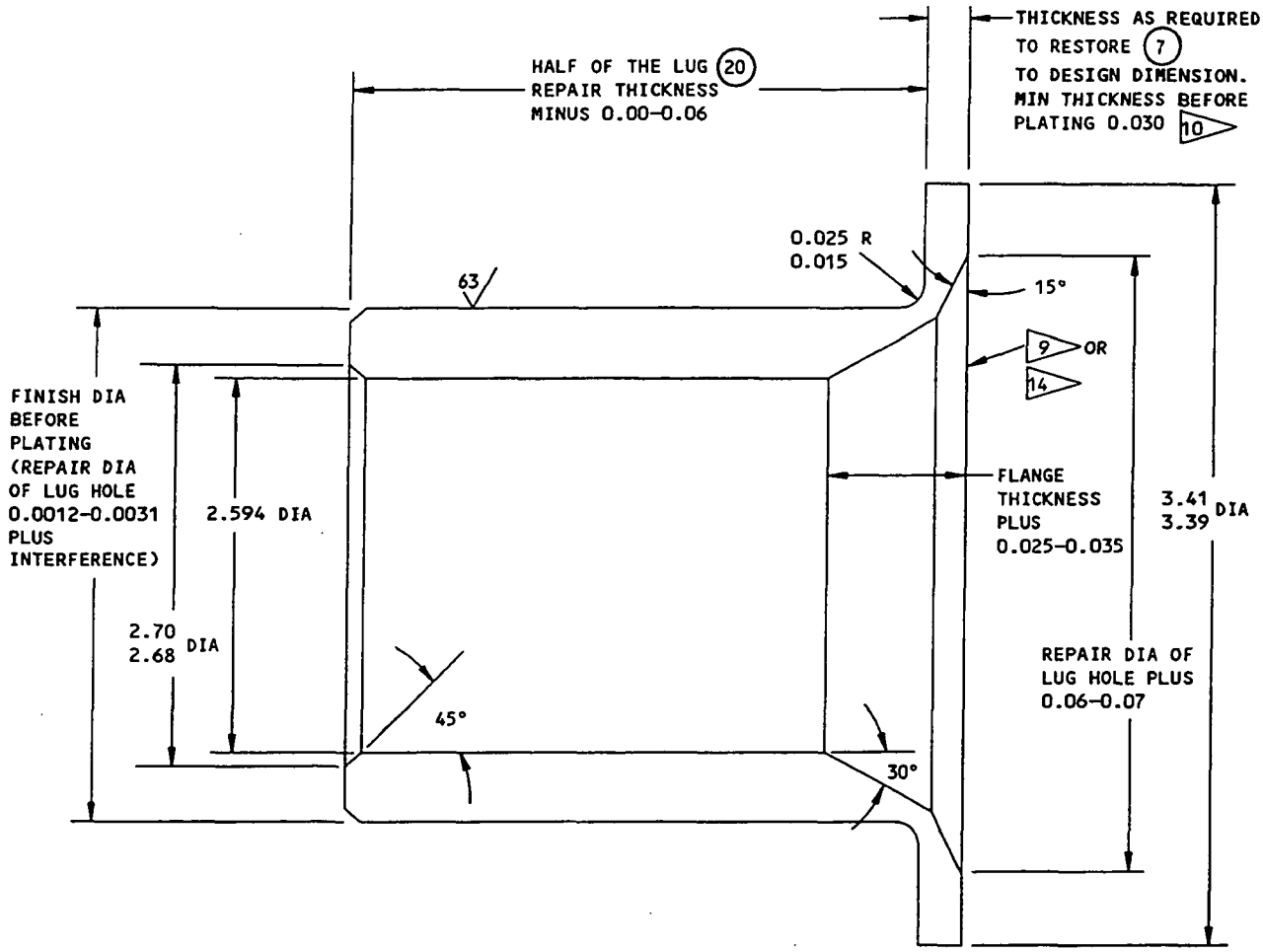
MATERIAL: AL-NI BRONZE PER AMS 4640

FINISH: CADMIUM PLATE (F-15.06) 0.0002-0.0003 THICK (REF 20-42-05) (OPTIONAL ON ID).

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (16) FIG. 401 - FOR OPTIONAL REPAIR ON 65-61740 SERIES

Repair Bushing Details
Figure 405 (Sheet 3)



FINISH

CADMIUM PLATE (F-15.06) OD AND UNDER FLANGE SURFACE; OPT IN ID

125 MACHINE FINISH EXCEPT AS NOTED
BREAK SHARP EDGES 0.01-0.002R

MATERIAL: 15-5PH OR 17-4PH CRES 11, 180-200 KSI

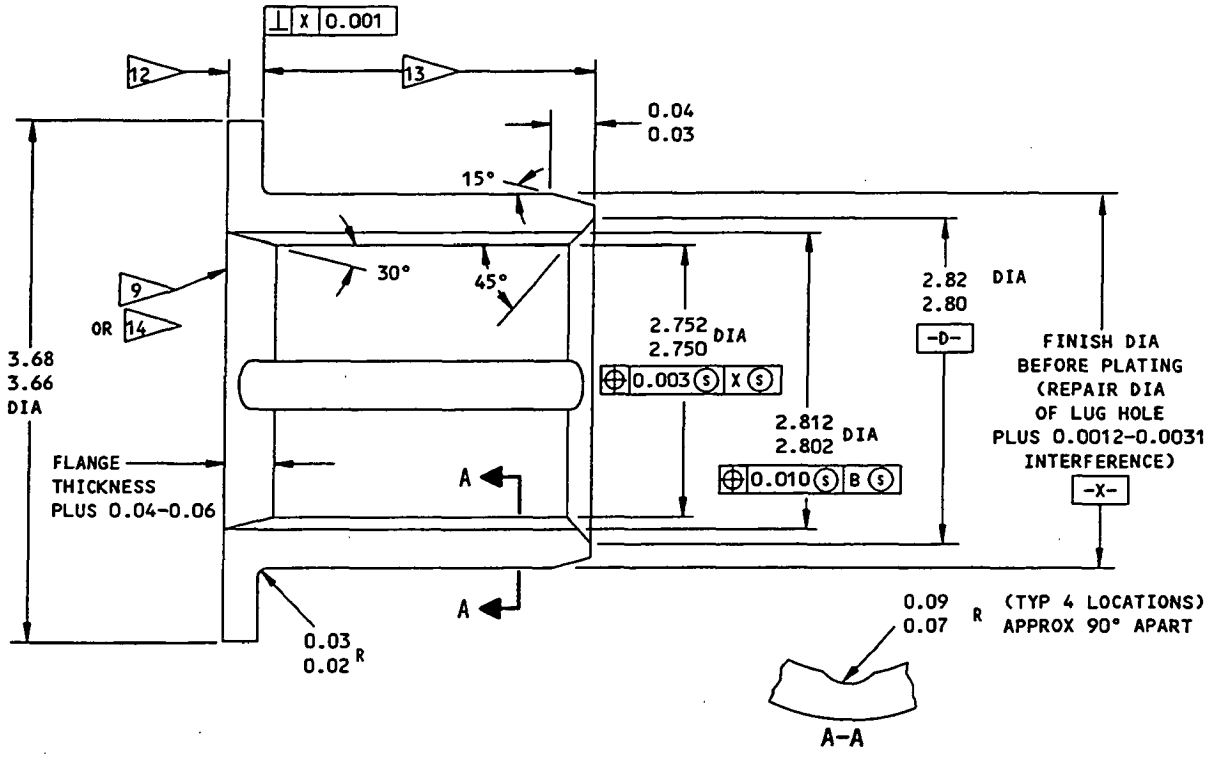
ALL DIMENSIONS ARE IN INCHES

DIMENSIONS APPLY AFTER PLATING UNLESS SHOWN DIFFERENTLY

HOLE LOCATION (2) FIG. 401 - REPAIR BUSHING FOR BACK-TO-BACK BUSHING REPAIR ON 65-46110-SERIES AND 65-61740-2,-4,-6,-9,-11

Repair Bushing Details
Figure 405 (Sheet 4)

A67351



FINISH

CADMIUM PLATE (F-15.06) OD AND UNDER FLANGE SURFACE; OPT IN ID

125 MACHINE FINISH EXCEPT AS NOTED
BREAK SHARP EDGES 0.01-0.002R

MATERIAL: 15-5PH OR 17-4PH CRES 11, 180-200 KSI

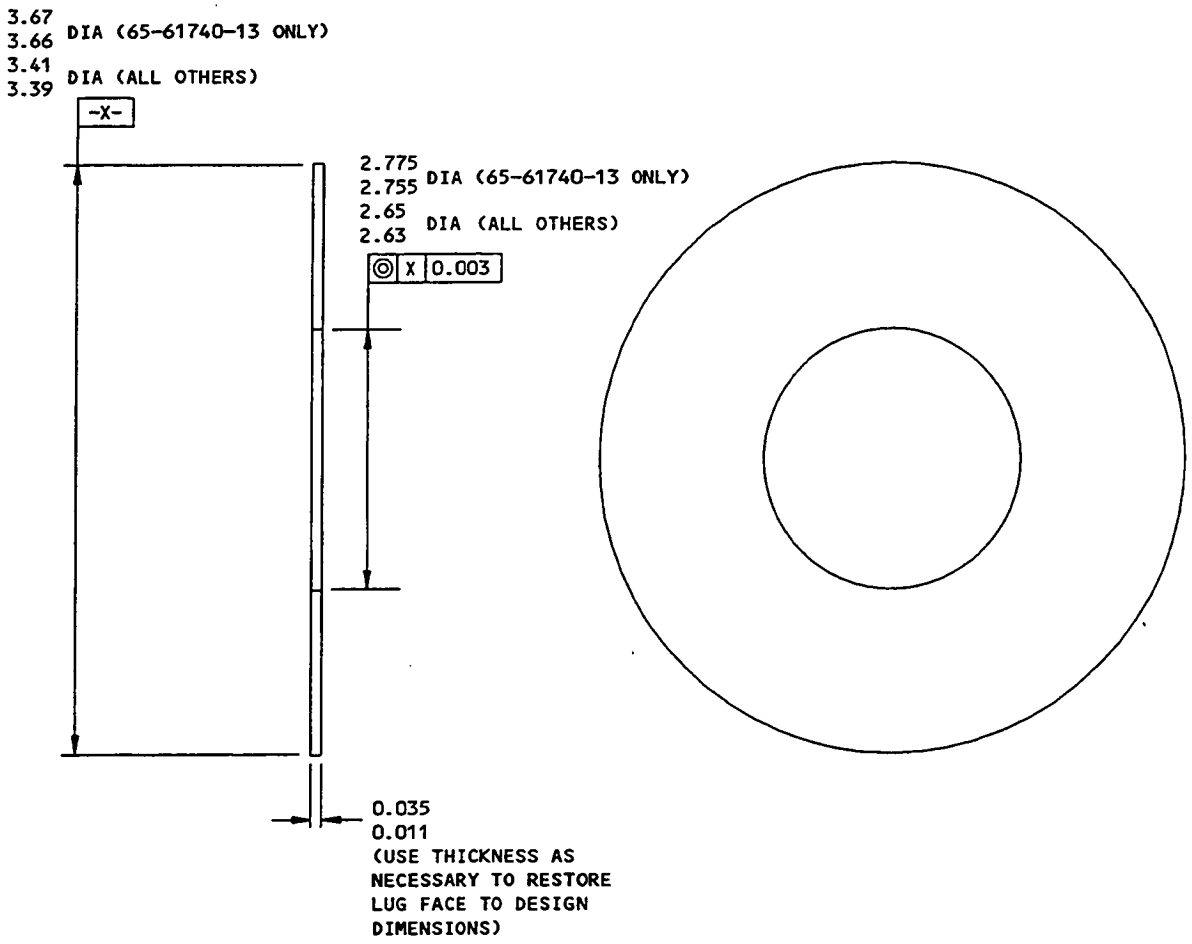
ALL DIMENSIONS ARE IN INCHES

DIMENSIONS APPLY AFTER PLATING UNLESS SHOWN DIFFERENTLY

HOLE LOCATION (2) FIG. 401 - REPAIR BUSHING FOR BACK-TO-BACK BUSHING REPAIR ON 65-61740-13
Repair Bushing Details
Figure 405 (Sheet 5)

1. REPAIR BUSHING FOR BRAKE FLANGE STUD AND BOLT HOLES ON INNER CYLINDERS 65-46116-4, -6,-8,-11,-12,-17,-18,-26,-28 (FIG. 403)
2. REPAIR BUSHING FOR BRAKE FLANGE STUD AND BOLT HOLES ON INNER CYLINDERS 65-46116-24, -32 AND SUBSEQUENT (FIG. 403)
3. REPAIR BUSHING FOR UPPER ANTI-ROTATION BOLT HOLE ON THE INNER CYLINDER (FIG. 404A)
4. REPAIR BUSHING FOR LOWER ANTI-ROTATION BOLT HOLE ON THE INNER CYLINDER (FIG. 404A)
5. NO FINISH BEFORE INSTALLATION
6. CADMIUM PLATE PER SOPM 20-42-01 (OPTIONAL ON ID)
7. MACHINE FLANGE TO PERMIT SEATING OF TANGED LOCK WASHER (12)
8. BUSHING LENGTH TO BE 0.01-0.03 SHORTER THAN THE REMAINING THICKNESS (22) OF THE OUTER CYLINDER
9. OPTIONAL: CHROME PLATE BUSHING FLANGE 0.003-0.005 THICK (SOPM 20-42-03, CLASS 2) OR FLASH CHROME PLATE (SOPM 20-42-03, CLASS 4)
10. BECAUSE THE FLANGES WILL BE VERY THIN, DO NOT MACHINE THE FLANGES TO FINAL DIMENSIONS UNTIL YOU INSTALL THE BUSHINGS IN THE LUGS
11. ALL BUSHINGS IN THIS CLEVIS TO BE THE SAME MATERIAL. 17-4PH CRES RECOMMENDED TO PREVENT BUSHING DAMAGE DURING INSTALLATION
12. THICKNESS AS REQUIRED TO RESTORE (7) TO DESIGN DIMENSION. MIN THICKNESS BEFORE PLATING 0.30 10
13. HALF OF THE LUG (20) REPAIR THICKNESS MINUS 0.00-0.06
14. OPTIONAL: APPLY BMS 10-67, TYPE 17 TUNGSTEN CARBIDE-COBALT-CHROME THERMAL SPRAY COATING PER SOPM 20-10-05, CLASS 2, 3 OR 4
15. REPAIR BUSHING FOR DRAIN TUBE ACCESS HOLE (6) DIA ON INNER CYLINDER (FIG. 404A)
16. 17-4PH CRES PER AMS 5643, 180-200 KSI
17. AL-NI-BRONZE PER AMS 4640

Repair Bushing Details
Figure 405 (Sheet 6)



FINISH

CADMIUM PLATE (REF 20-42-05) CRES SHIMS
CHROME PLATE (REF 20-42-03) STEEL SHIMS

125 ALL MACHINED SURFACES

MATERIAL: 15-5PH OR 17-4PH CRES, 180-200 KSI
OPTIONAL: STEEL 1, 180-200 KSI

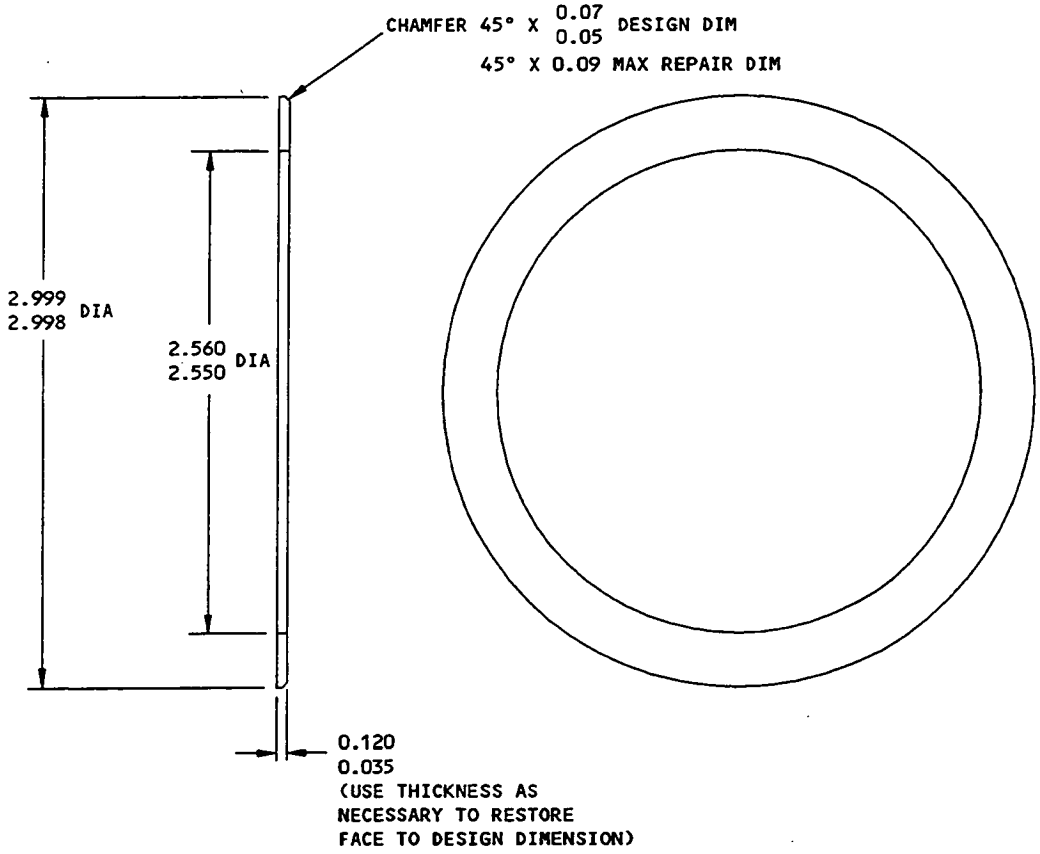
BREAK ALL SHARP EDGES 0.01-0.02 R

DIMENSIONS APPLY AFTER PLATING

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (2) FIG. 401

Repair Shim Details
Figure 405A (Sheet 1)



FINISH

CADMIUM PLATE (REF 20-42-05) CRES SHIMS
CHROME PLATE (REF 20-42-03) STEEL SHIMS

[1] ANY STEEL WHICH IS GALVANICALLY COMPATIBLE WITH THE OUTER CYLINDER

125 ALL MACHINED SURFACES

MATERIAL: 17-4PH OR 15-5PH CRES, 180-200 KSI
OPTIONAL: STEEL [1], 180-200 KSI

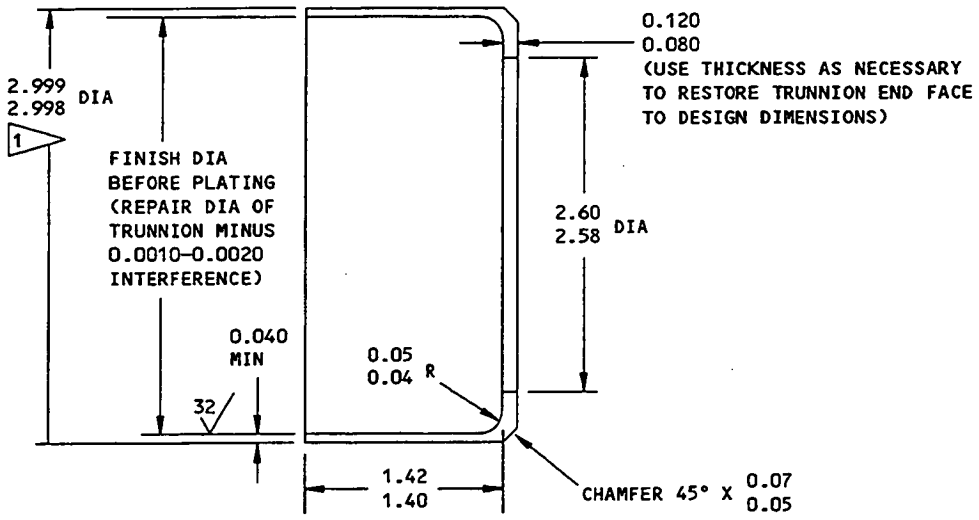
BREAK ALL SHARP EDGES 0.01-0.02 R

DIMENSIONS APPLY AFTER PLATING

ALL DIMENSIONS ARE IN INCHES

REPAIR SHIM FOR TRUNNION SPUD FACE

Repair Shim Details
Figure 405A (Sheet 2)



FINISH: CADMIUM PLATE (SOPM 20-42-05)

1 FINAL DIA AFTER INSTALLATION ON THE TRUNNION

125 MACHINE FINISH UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.01-0.02 R

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

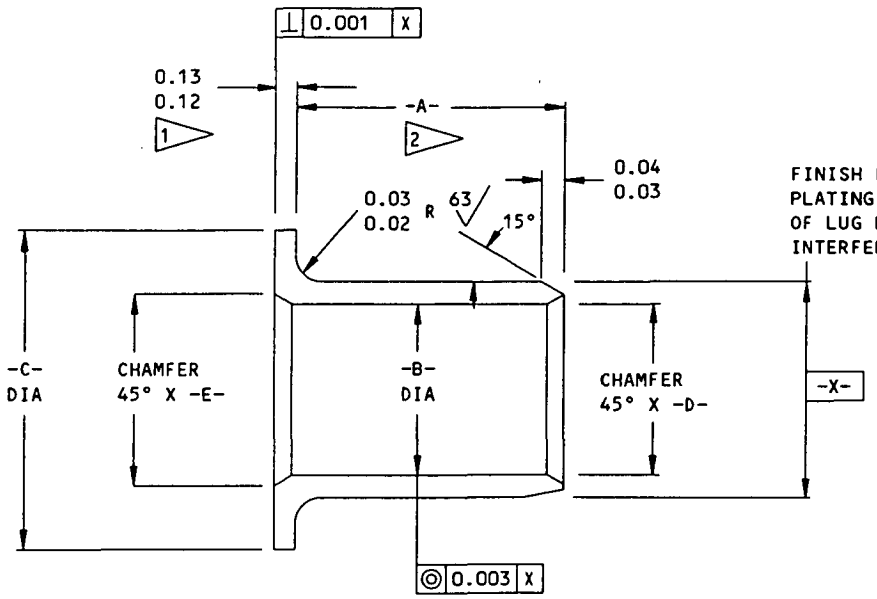
DIMENSIONS APPLY AFTER PLATING UNLESS SHOWN DIFFERENTLY

ALL DIMENSIONS ARE IN INCHES

OD LOCATION (19) FIG. 401

Repair Sleeve Details
Figure 405B

F10194



FINISH: CADMIUM PLATE (REF SOPM 20-42-05) PLATING IS OPTIONAL ON ID

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.01-0.02

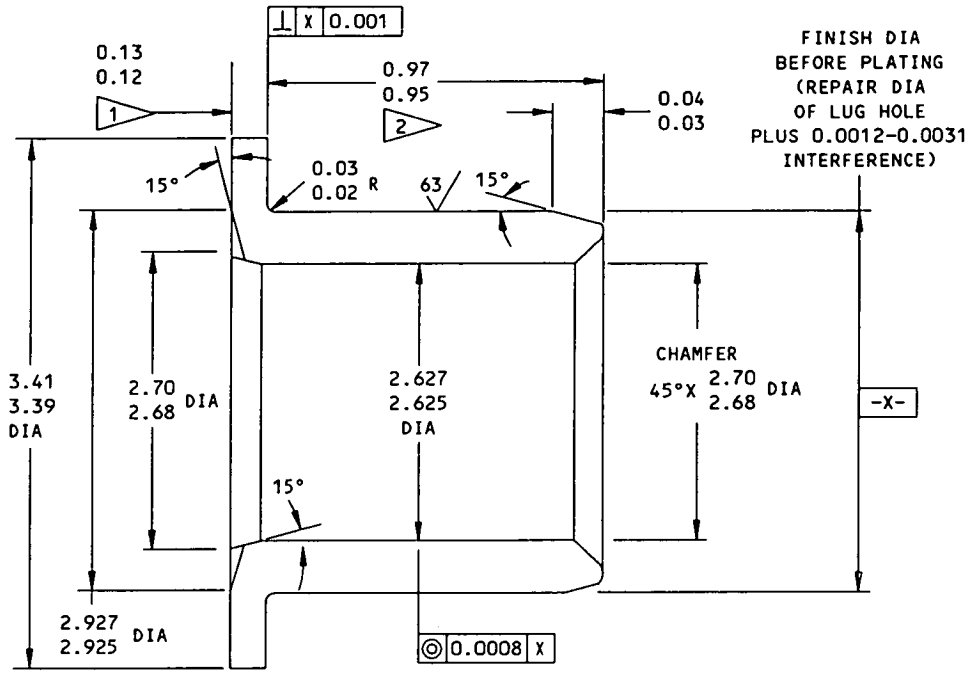
MATERIAL: AS NOTED

DIMENSIONS ARE BEFORE PLATING

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION	REPAIR FIGURE	REPLACES BUSHING (FIG. 1101)	-A-	-B- MAX	-C-	-D-	-E-	INTER-FERENCE	MATERIAL
(4)	401	25 65-46150-12	0.42 0.40 (6)	1.219	1.71 1.69	1.32 1.30	1.52 1.50	0.0022 0.0006	(5) (3 OR 4 OPTIONAL)
(4)	401	25 65-46150-54	0.46 0.44 (6)	1.345	1.86 1.84	1.44 1.42	1.65 1.63	0.0025 0.0008	
(6)	401	26, 26A 65-46150-13	0.60 0.58	1.719	2.41 2.39	1.82 1.80	1.98 1.96	0.0025 0.0008	
(6)	401	26, 26A 65-46150-72	0.60 0.58	1.719	2.51 2.49	1.82 1.80	1.98 1.96	0.0025 0.0008	
(1)	404	61 65-46150-7	1.41 1.39	1.719	2.31 2.29	1.82 1.80	1.98 1.96	0.0025 0.0008	
(1)	404	61 65-46150-71	1.41 1.39	1.719	2.51 2.49	1.82 1.80	1.98 1.96	0.0025 0.0008	

Oversize Bushing Details
Figure 406 (Sheet 1)



FINISH

CADMIUM PLATE (F-4.201)
(OPT ON ID)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.01-0.02R

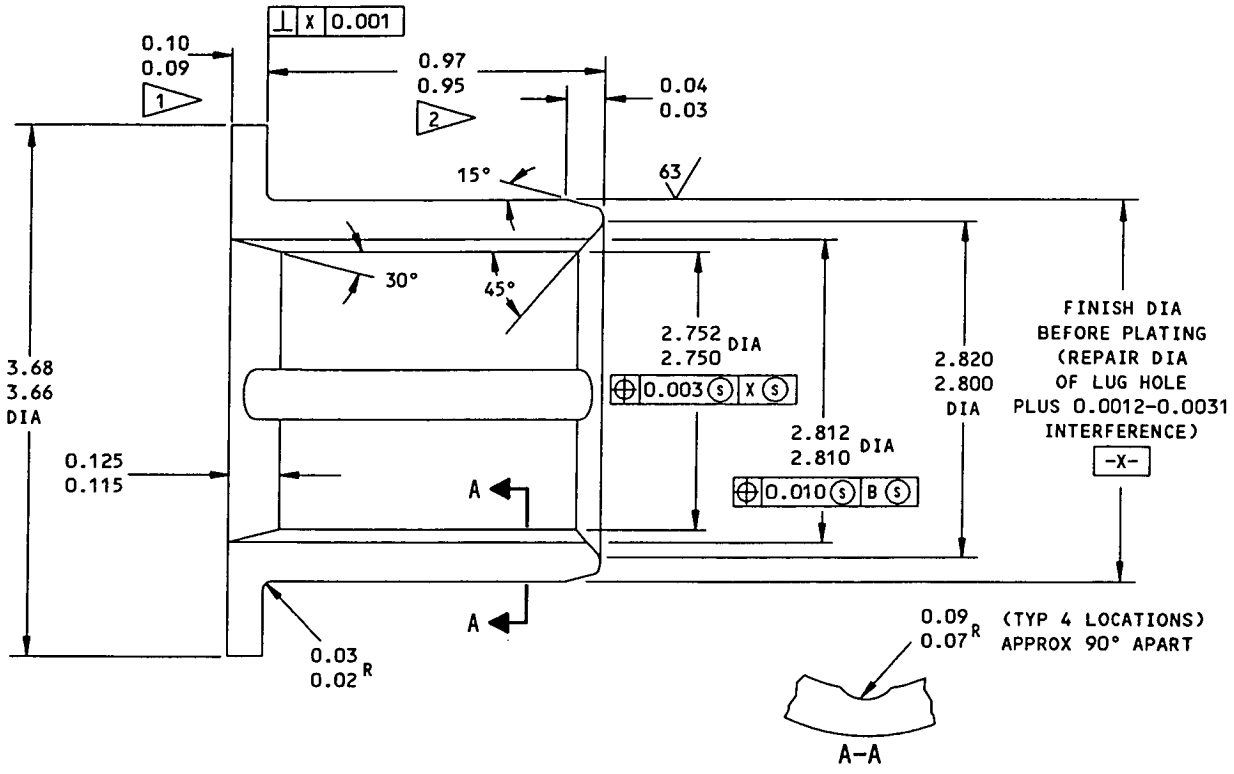
MATERIAL: AL-NI-BRONZE PER AMS 4640

DIMENSIONS ARE BEFORE PLATING

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (2) FIG. 401 - REPLACES BUSHING (24) 65-46150-51

Oversize Bushing Details
Figure 406 (Sheet 2)



FINISH

CADMIUM PLATE (F-15.06)
(OPTIONAL ON INTERIOR SURFACES)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.01-0.02R

MATERIAL: AL-NI-BRONZE PER AMS 4640

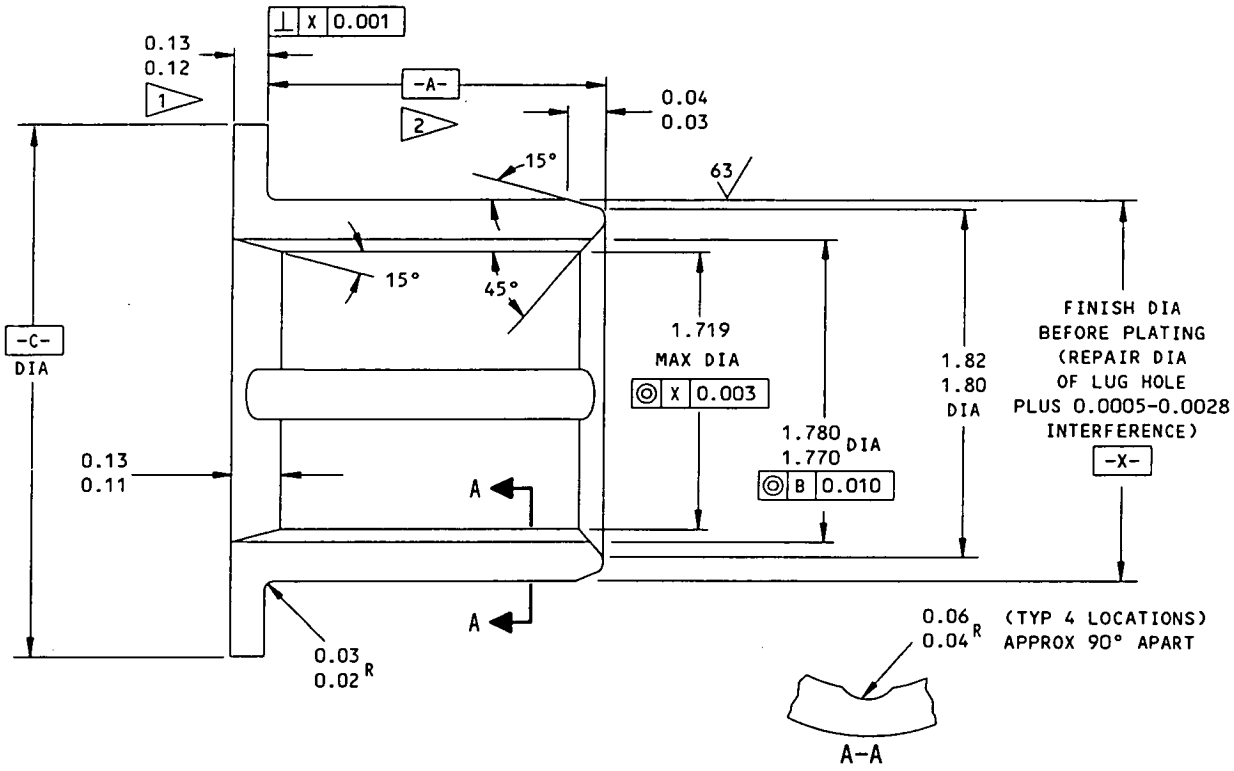
DIMENSIONS APPLY AFTER PLATING UNLESS SHOWN DIFFERENTLY

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (2) FIG. 401 - REPLACES BUSHING (24) 65-46150-101

Oversize Bushing Details
Figure 406 (Sheet 3)

G49236



HOLE LOCATION	REPAIR FIGURE	REPLACES BUSHING (FIG. 1101)	-A-	-C-
(1)	404	(61) 65-46150-88	1.41 1.39	2.51 2.49
(6)	401	(26,26A) 65-46150-89	0.60 0.58	2.51 2.49
(6)	401	(26,26A) 65-46150-99	0.60 0.58	2.41 2.39

1. PLUS AMOUNT REMOVED FROM LUG FACE
2. LESS AMOUNT REMOVED FROM LUG FACE
3. 15-5 PH CRES, 180-200 KSI
4. AL-NI-BRONZE PER AMS 4640
5. 17-4PH CRES, 180-200 KSI
6. LENGTH CAN BE DECREASED BY 0.03 MAXIMUM TO GET A 0.010 MINIMUM GAP BETWEEN INSTALLED BUSING PAIRS

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.01-0.02R

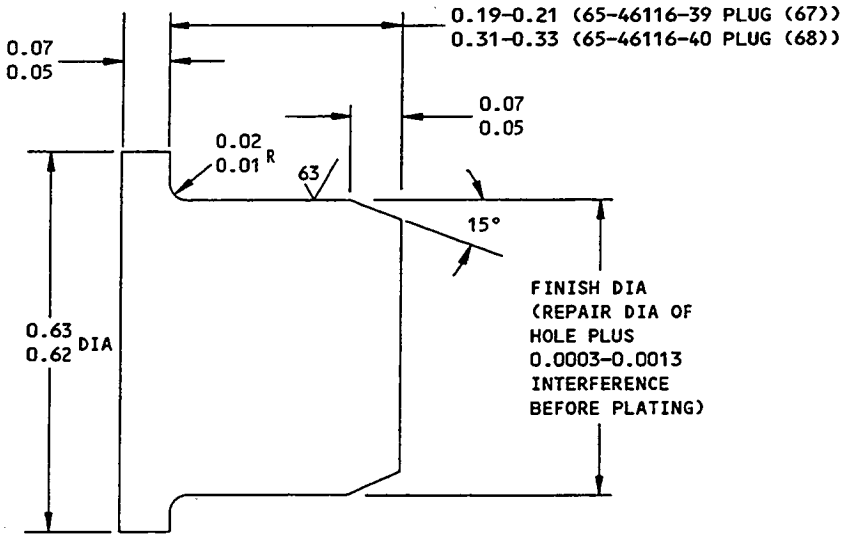
MATERIAL: 17-4PH CRES, 180-200 KSI

CADMIUM PLATE (F-15.06) (OPTIONAL ON INTERIOR SURFACES)

DIMENSIONS APPLY BEFORE PLATING

ALL DIMENSIONS ARE IN INCHES

Oversize Bushing Details
Figure 406 (Sheet 4)



125 MACHINE FINISH EXCEPT AS NOTED

BREAK SHARP EDGES 0.01-0.02R

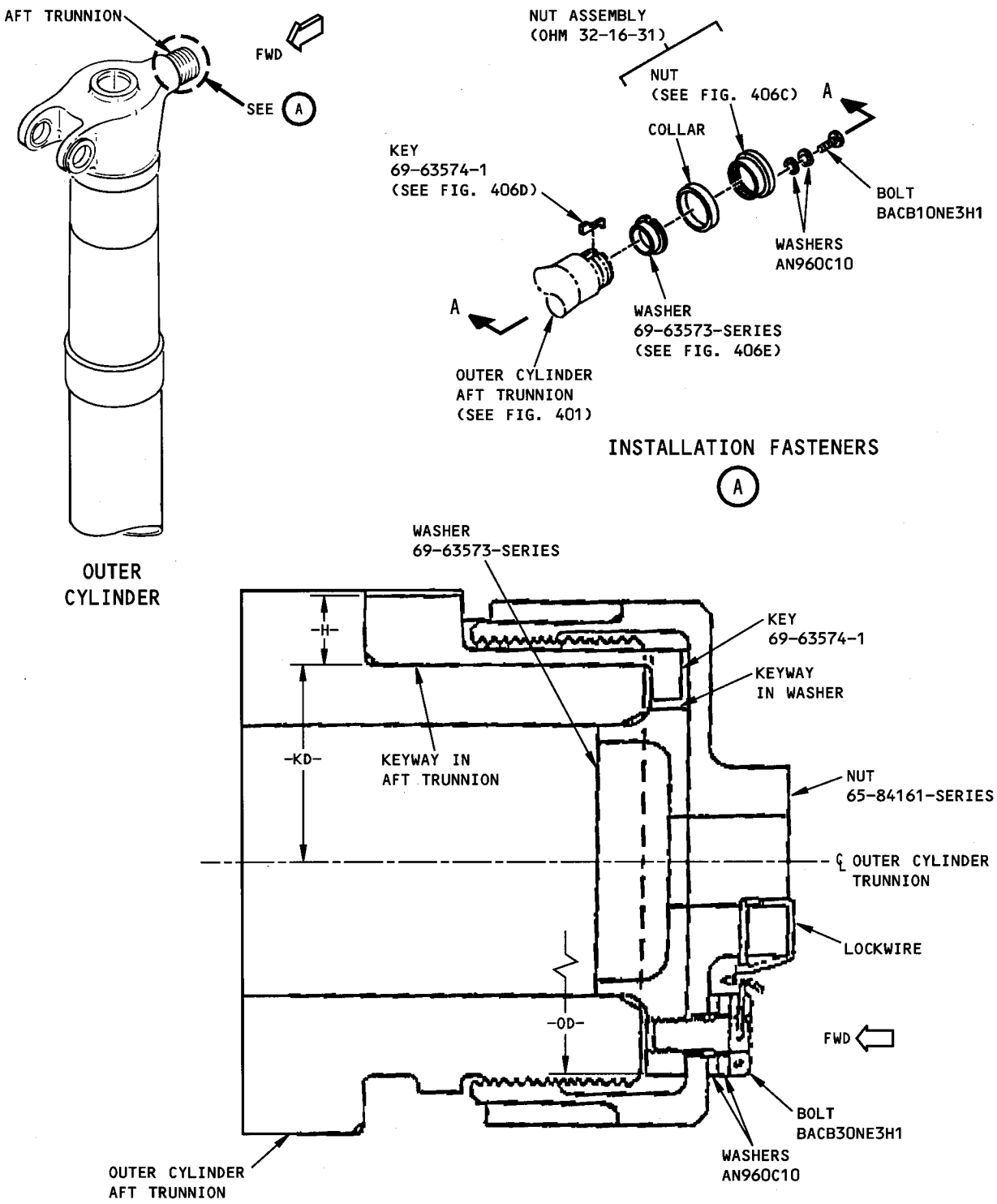
PASSIVATE (F-17.09) ALL OVER

MATERIAL: 17-4PH CRES, 170-190 KSI

ALL DIMENSIONS ARE IN INCHES

HOLE LOCATION (1A) FIG. 404A - REPLACES PLUGS (67,68) 65-46116-39,-40

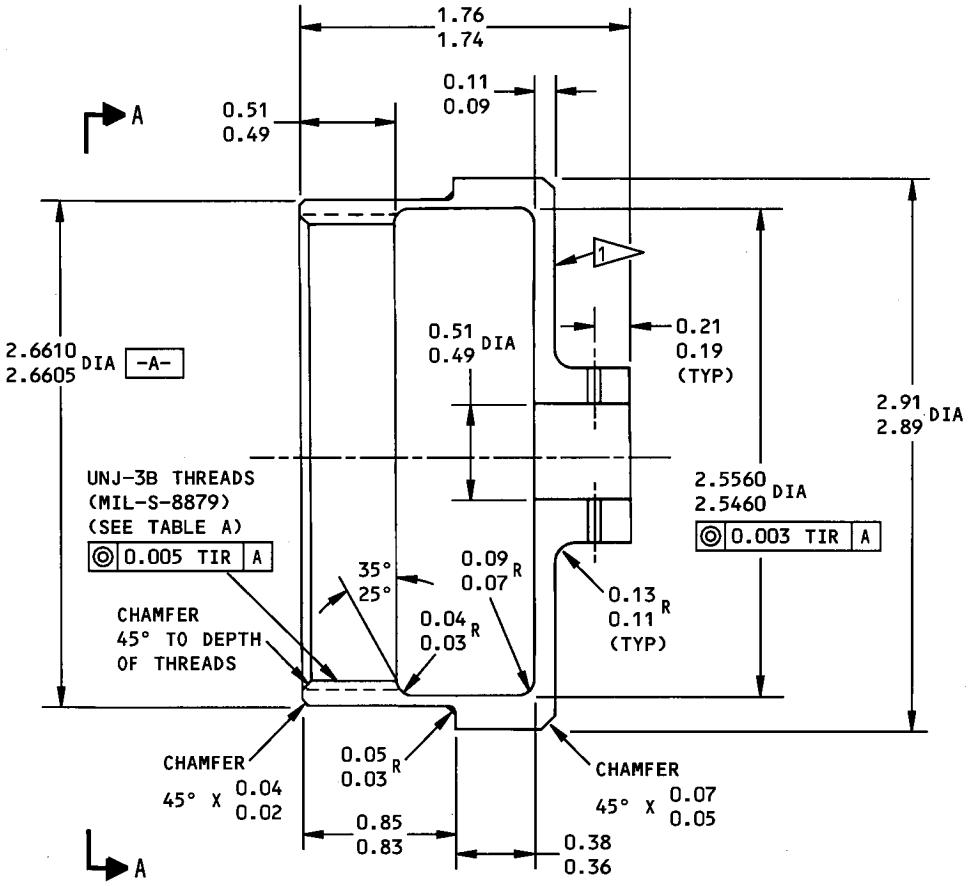
Oversize Plug Details
Figure 406A



AFT TRUNNION PARTS INSTALLED
A-A

Outer Cylinder Aft Trunnion Repair Parts Locator
Figure 406B

1631528



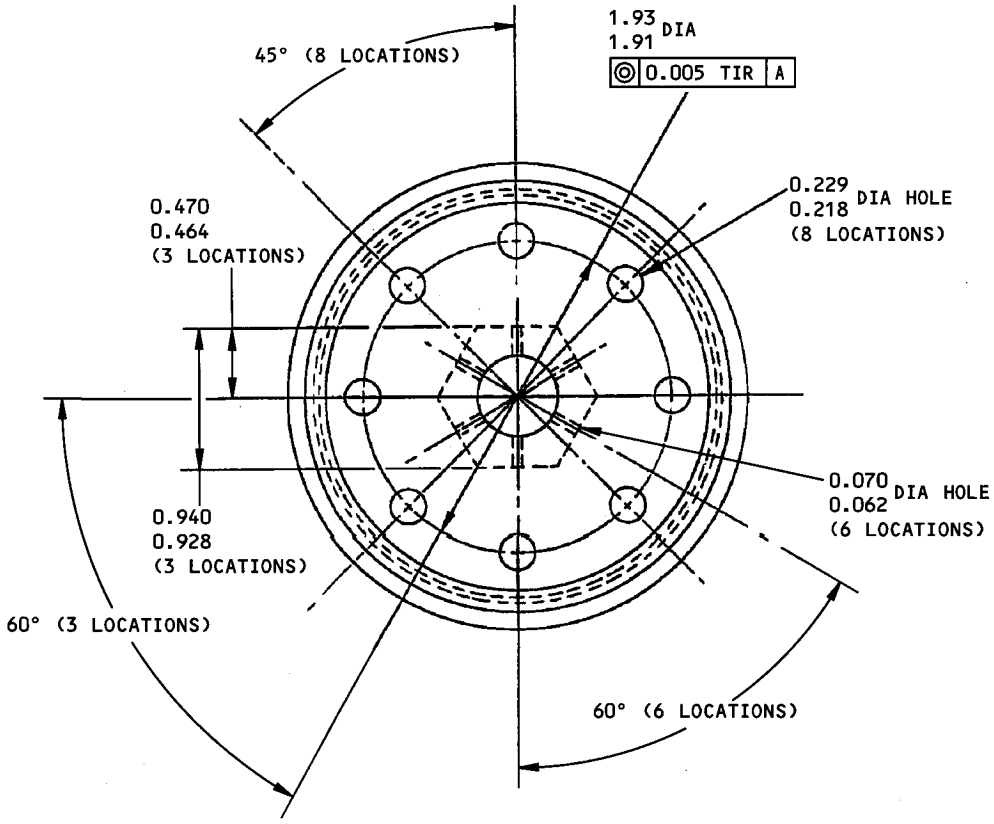
UNJ-3B THREAD SIZE	2.5000-12 (DESIGN) (REF)	2.4375-12 (1/16 UNDERSIZE)	2.3750-12 (1/8 UNDERSIZE)
MAJOR DIA (MIN)	2.5000	2.4375	2.3750
PITCH DIA	2.4519 2.4459	2.3894 2.3834	2.3269 2.3209
MINOR DIA	2.4289 2.4189	2.3664 2.3564	2.3039 2.2939

TABLE A

REPLACES 65-84161-1,-4

Special Aft Trunnion Fuse Nut Details
Figure 406C (Sheet 1)

1632239



A-A

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.02-0.03 R

MATERIAL: 4340 STEEL, 125-145 KSI

FINISH: CADMIUM PLATE (F-1.1926) ALL OVER

DIMENSION ARE AFTER PLATING

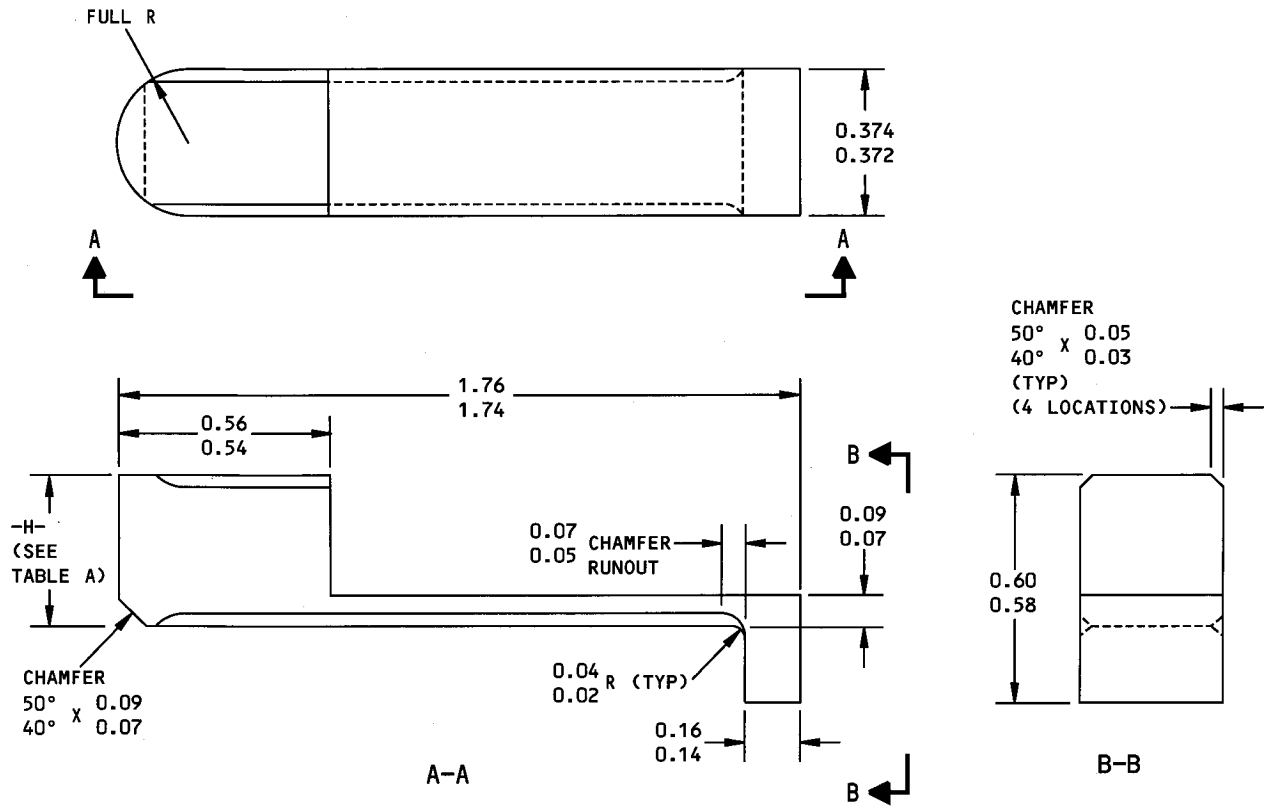
ALL DIMENSIONS ARE IN INCHES

1 VIBRO ENGRAVE OR CHEMICALLY ETCH THE PART NUMBER, SERIAL NUMBER AND VENDOR NUMBER HERE.

REPLACES 65-84161-1,-4

Special Aft Trunnion Fuse Nut Details
Figure 406C (Sheet 2)

1631800



OUTER CYLINDER AFT TRUNNION THREAD SIZE (FIG. 401)	-H-
DESIGN	0.380 0.370
1/16 UNDERSIZE	0.411 0.401
1/8 UNDERSIZE	0.442 0.432

TABLE A

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.01-0.03
UNLESS SHOWN DIFFERENTLY

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

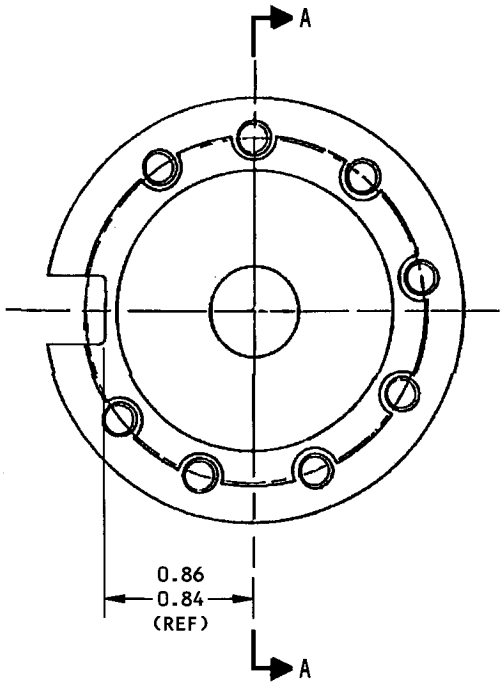
FINISH: PASSIVATE (F-17.25, WHICH REPLACES F-17.09)

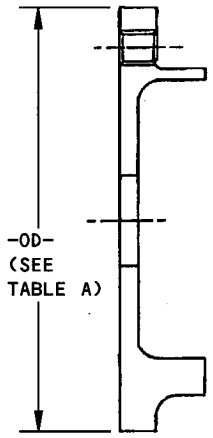
ALL DIMENSIONS ARE IN INCHES

REPLACES 69-63574-1

Special Aft Trunnion Key Details
Figure 406D

1632614





A-A

OUTER CYLINDER AFT TRUNNION THREAD SIZE (FIG. 401)	-OD-
DESIGN	2.3700 2.3500
1/16 UNDERSIZE	2.3075 2.2875
1/8 UNDERSIZE	2.2450 2.2250

TABLE A

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.02-0.04 UNLESS SHOWN DIFFERENTLY

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

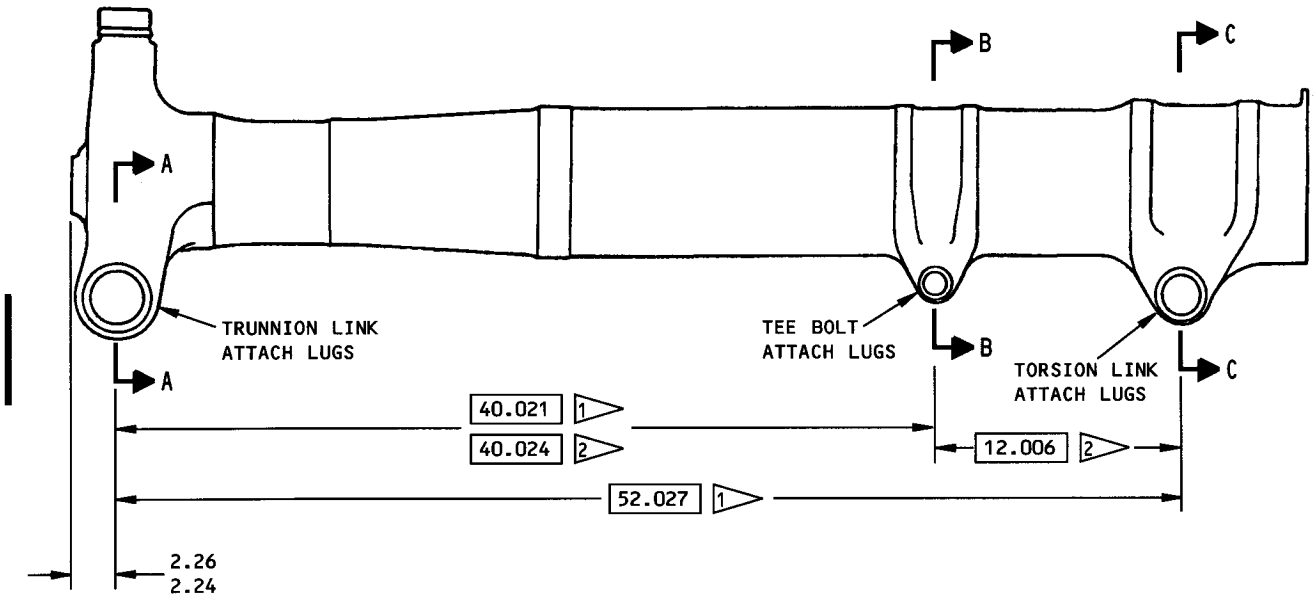
FINISH: PASSIVATE (F-17.25, WHICH REPLACES F-17.09)

ALL DIMENSIONS ARE IN INCHES

REPLACES 69-63573-SERIES

Aft Trunnion Washer Modification
Figure 406E

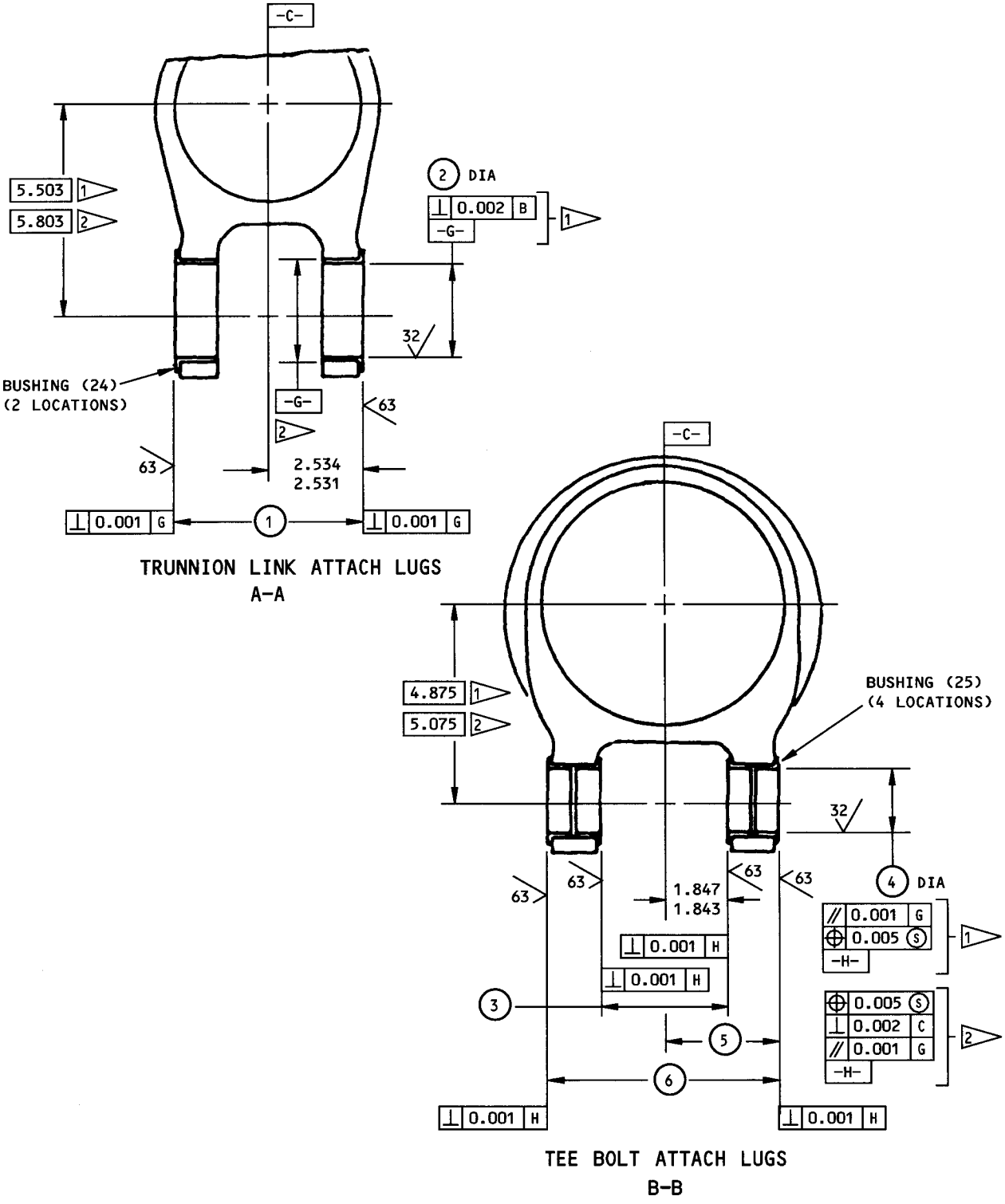
1632762



OUTER CYLINDER ASSEMBLY (23)

Outer Cylinder Assembly Bushing Replacement
Figure 407 (Sheet 1)

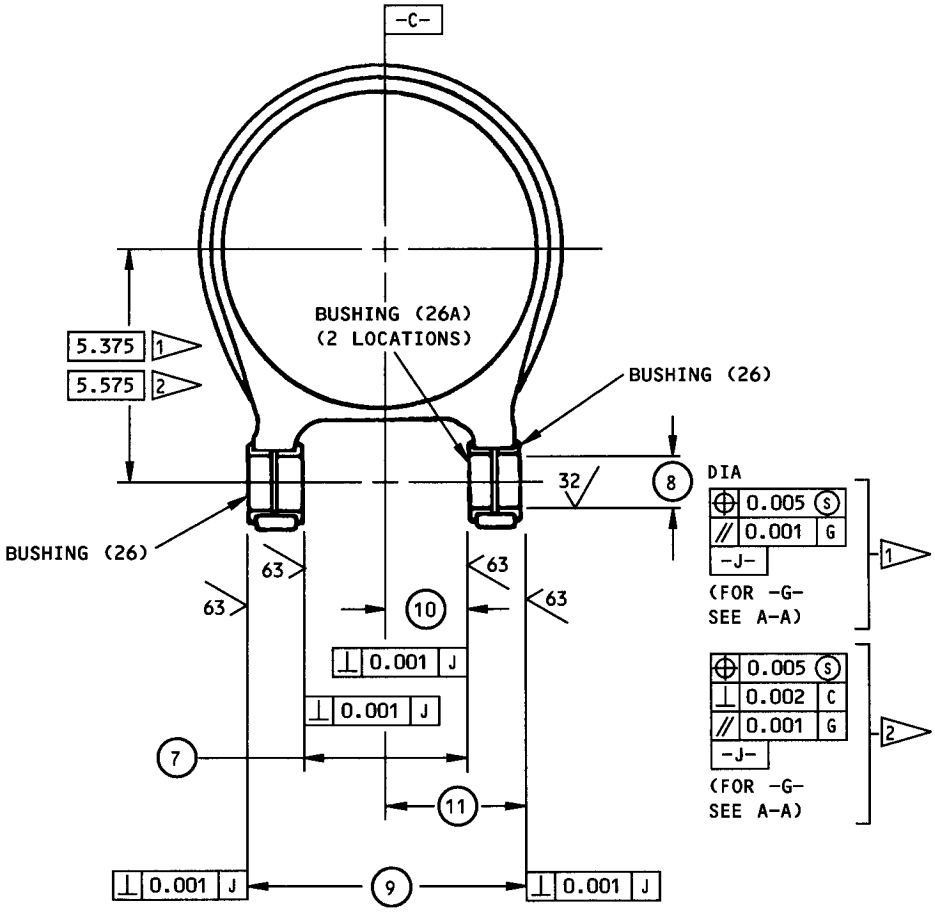
H03722



OUTER CYLINDER ASSEMBLY (23)

Outer Cylinder Assembly Bushing Replacement
Figure 407 (Sheet 2)

H03787



TORSION LINK ATTACH LUGS
C-C

	1	2	3	4	5	6	7	8	9	10	11
65-46110 SERIES	5.064 5.062	2.627 2.625	3.688 3.686	1.251 1.250	2.855 2.835	5.700 5.680	3.627 3.625	1.7520 1.7505	6.376 6.374	1.814 1.811	3.189 3.186
65-61740 SERIES	5.063 5.062	2.627 2.625 3	3.688 3.687	1.376 1.375	2.895 2.875	5.780 5.760	3.627 3.625	1.7515 1.7505	6.376 6.375	1.813 1.812	3.188 3.187

1 65-46110
2 65-61740
3 2.750-2.752 DIA (FOR 65-61740-12 ONLY)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

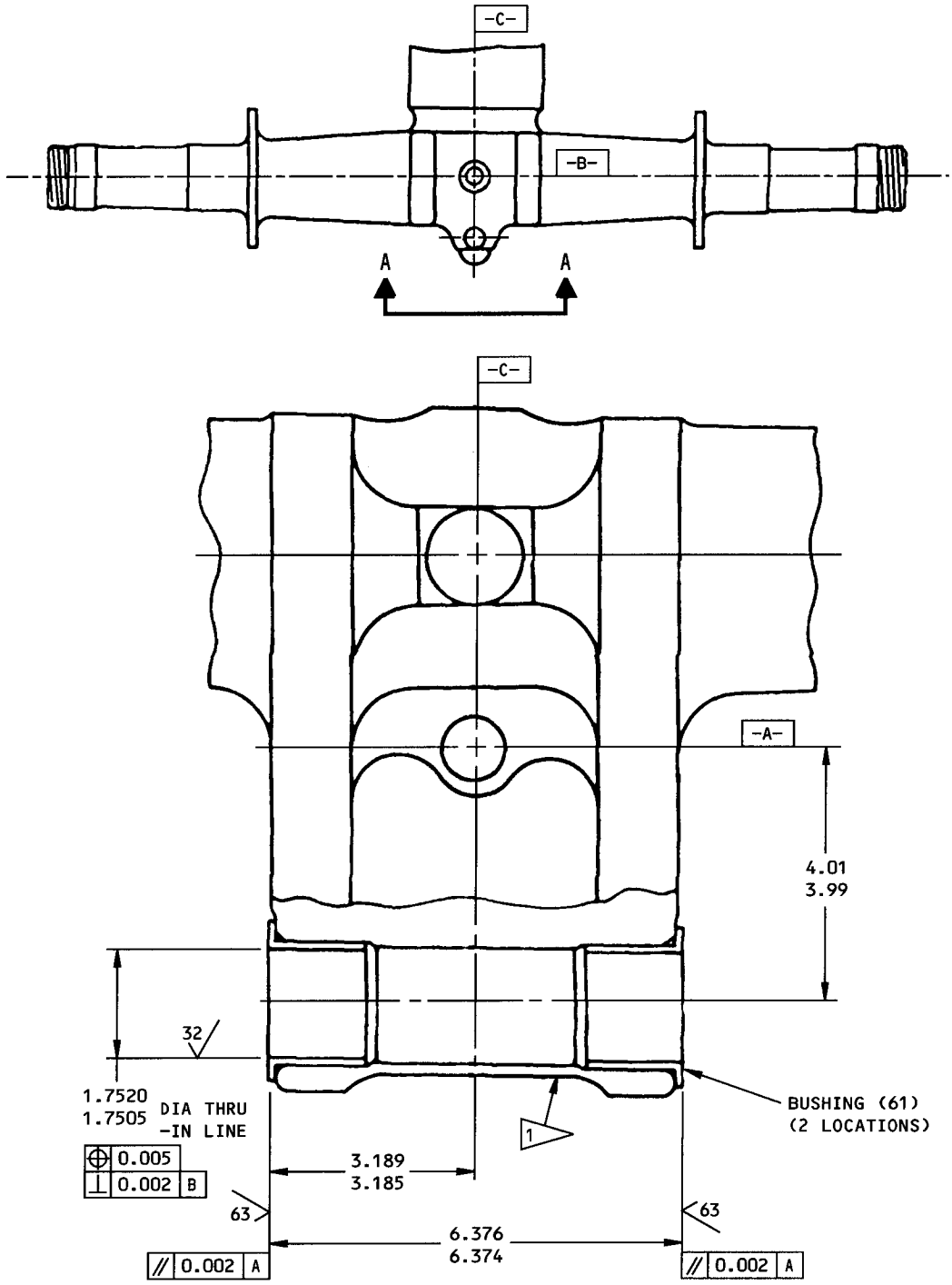
ITEM NUMBERS REFER TO FIG. 1101

ALL DIMENSIONS ARE IN INCHES

OUTER CYLINDER ASSEMBLY (23)

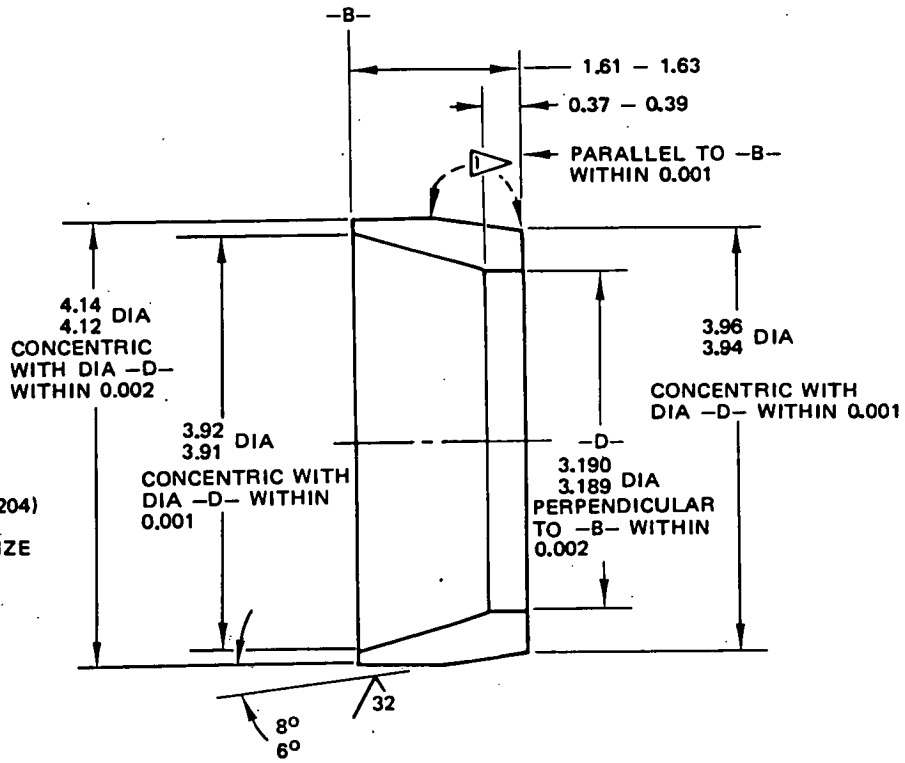
Outer Cylinder Assembly Bushing Replacement
Figure 407 (Sheet 3)

HO3816



Inner Cylinder Bushing Replacement
Figure 408

HD3907



REFINISH

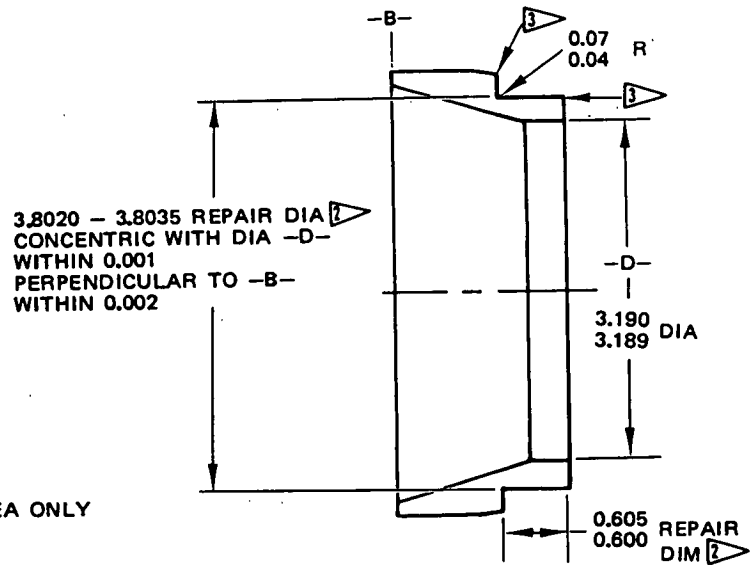
HARD ANODIZE (F-2.204) SURFACE NOTED 1 CHROMIC ACID ANODIZE (F-2.20) ALL OTHER SURFACES

REPAIR

REF 2

125 ALL MACHINED SURFACES EXCEPT AS NOTED

MATERIAL: 7075 - T6 AL ALLOY



1 HARD ANODIZE (F-2.204) THIS AREA ONLY

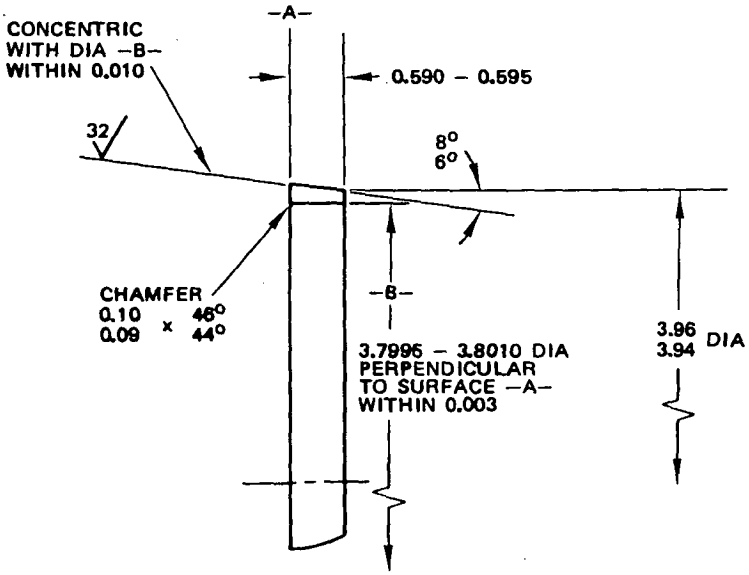
2 REWORK SPACER FOR INSTL OF REPAIR SLEEVE AS FOLLOWS:

1. MACHINE SPACER TO DIMENSIONS SHOWN.
2. CHROMIC ACID ANODIZE (F-2.20) MACHINED SURFACES AND APPLY PRIMER (F-20.02) BMS 10-11, TYPE 1.
3. MANUFACTURE REPAIR SLEEVE AND INSTALL USING SHRINK FIT METHOD PER 20-50-03.
4. IF REQUIRED, MACHINE SPACER ID TO RESTORE DESIGN DIMENSIONS.

3 BREAK CORNERS EQUIVALENT TO 0.03R

SPACER (60) 69-39469-1

Wheel Spacer - Repair and Refinish
Figure 409 (Sheet 1)

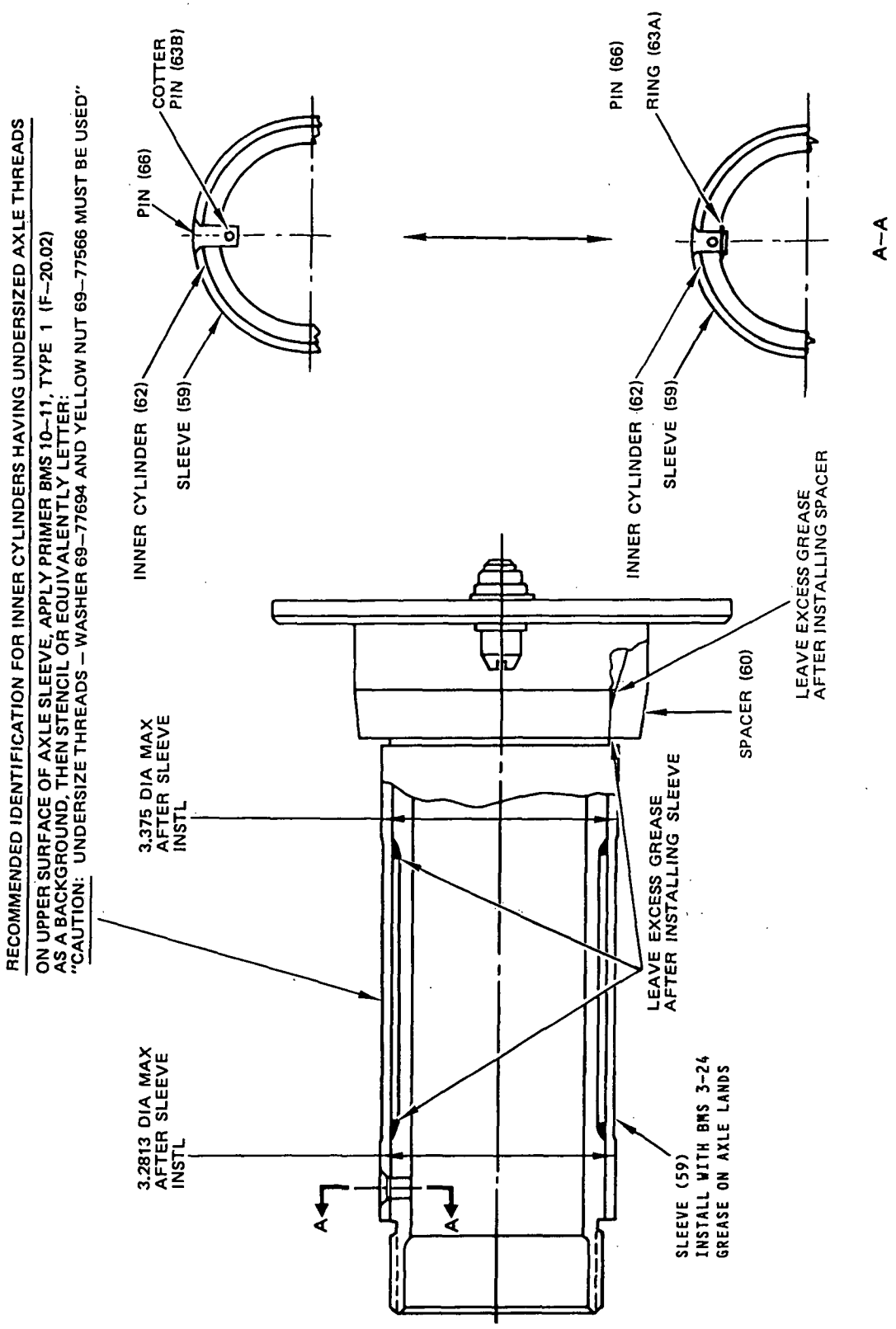


125
ALL MACHINED SURFACES EXCEPT AS NOTED BREAK CORNERS EQUIVALENT TO 0.02R EXCEPT AS NOTED.

MATERIAL: 17-4PH CRES PER AMS 5643

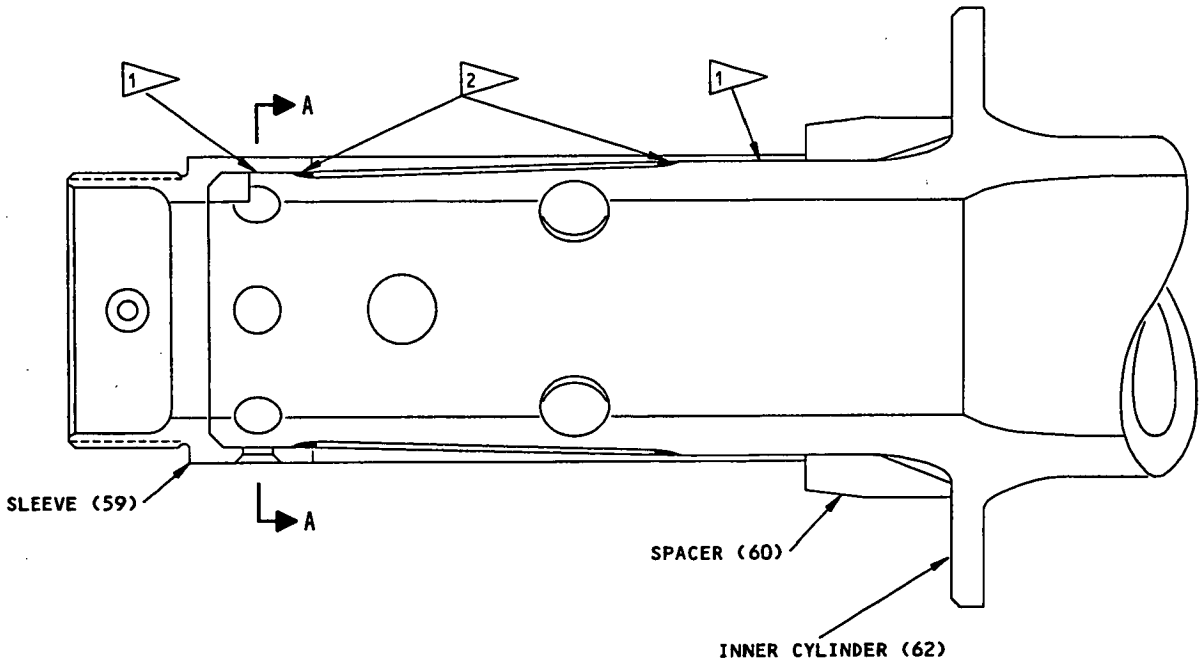
FINISH: PASSIVATE (F-17.09)

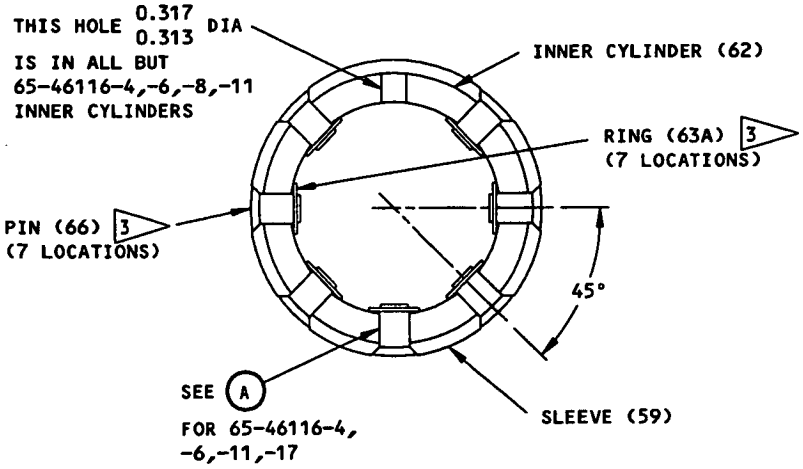
REPAIR SLEEVE DETAILS



65-46147-1,-2,-3
65C33516-1

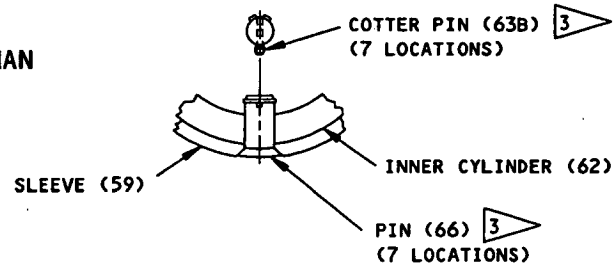
Axle Sleeve Replacement
Figure 410





INNER CYLINDERS OTHER THAN
65-46116-4,-6,-11,-17

A-A



INNER CYLINDERS
65-46116-4,-6,-11,-17

A

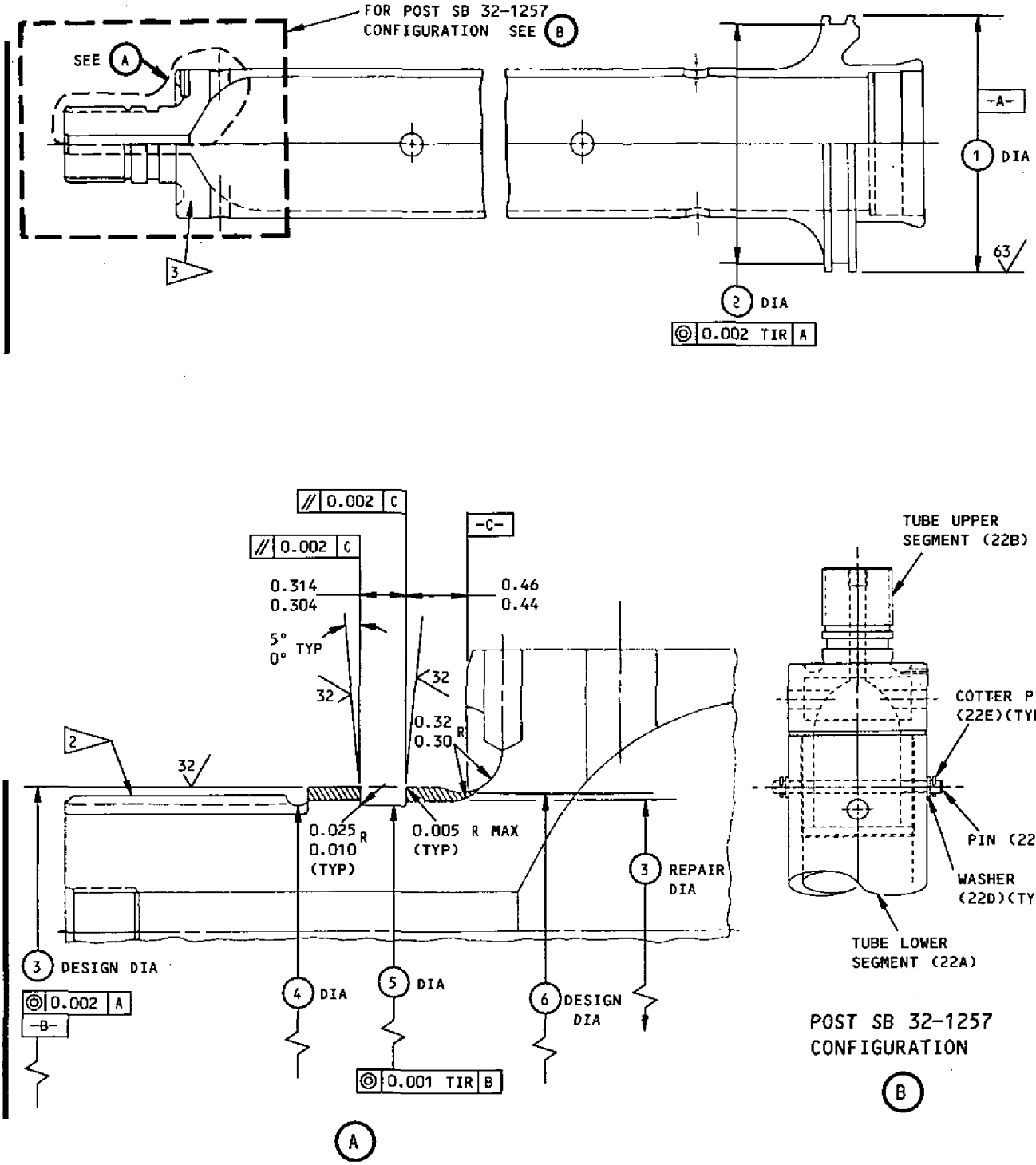
1 APPLY A LARGE QUANTITY OF BMS 3-27 COMPOUND TO THE AXLE LANDS BEFORE YOU INSTALL THE SLEEVE

2 LET THE BMS 3-27 COMPOUND STAY IN THIS AREA

3 ASSEMBLE WITH WET BMS 10-11, TYPE 1 PRIMER

65C36462-1

Axle Sleeve Replacement
Figure 410A



SUPPORT TUBE (22)
Support Tube Repair and Refinish
Figure 411 (Sheet 1)

F10316

	①	②	③	④	⑤	⑥
DESIGN DIM	6.720 6.717	6.247 6.244	1.991 1.989	1.822 1.817	1.750 1.748	1.950 1.940
REPAIR LIMIT	6.657 ▷1	6.184 ▷1	1.929 ▷1	---	---	---

REFINISH

TUBE (22), LOWER SEGMENT (22A):
CHROMIC ACID ANODIZE (F-2.20 OR F-17.04) ALL OVER
UPPER SEGMENT (22B), PIN (22C):
CADMIUM PLATE (F-15.06)

▷1 LIMIT FOR THERMAL SPRAY BUILDUP, BMS 10-67 TYPE 10 CLASS 1, 2, 3, OR 4 (SOPM 20-10-05) AND MACHINE TO DESIGN DIMENSIONS AND FINISH. (FOR ALUMINUM TUBES ONLY. NOT FOR 65C36351-SERIES CRES TUBES.)

NOTE: SOME OPERATORS HAVE HAD SUCCESS WITH SULFAMATE NICKEL PLATE BUILDUP AS AN ALTERNATE TO PLASMA FLAME SPRAY. HOWEVER, THERE IS A RISK OF GALVANIC CORROSION WHEN NICKEL IS IN CONTACT WITH ALUMINUM.

▷2 IF YOU FIND DEFECTS ON THE THREADS, BLEND THEM OUT PER REPAIR PAR.5.B(1), OR REWORK THE SUPPORT TUBE (22) PER SB 32-1257

▷3 VIBRO ENGRAVE PART NUMBER, SERIAL NUMBER AND VENDOR NUMBER THIS AREA

REPAIR

REF ▷1 ▷2

125√ ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK ALL SHARP EDGES 0.01R OR EQUIV.

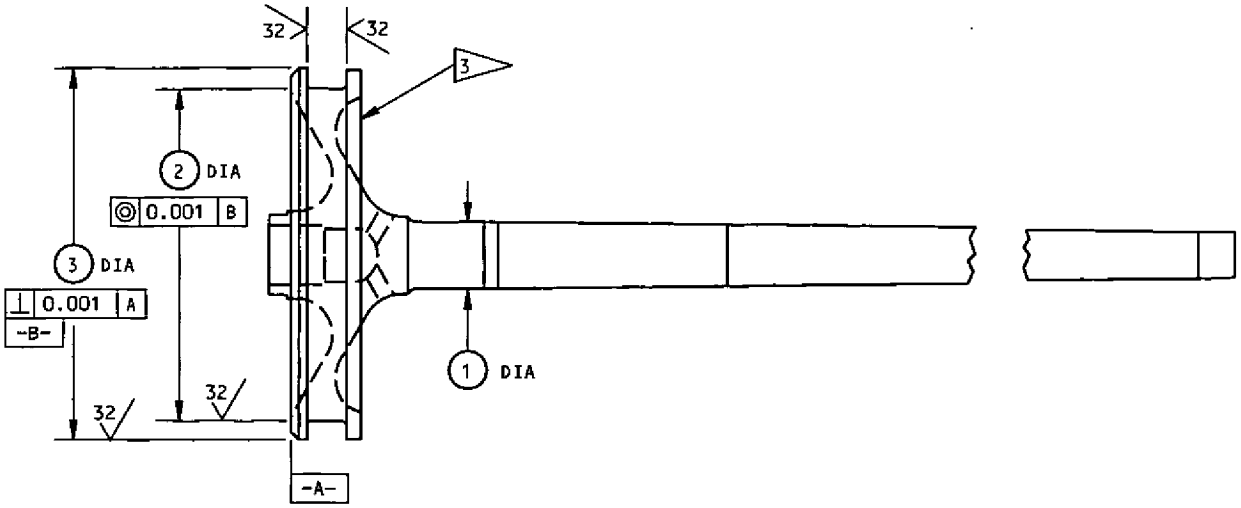
MATERIAL:
TUBE (22) AND LOWER SEGMENT (22A):
7075-T73 AL ALLOY (65-46160-6 THRU -11, 65C36351-2,-4,-6,-8,-10,-12)
TUBE UPPER SEGMENT (22B):
15-5PH CRES, 150-170 KSI
PIN (22C): 15-5PH CRES, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 1101

SUPPORT TUBE (22)
Support Tube Repair and Refinish
Figure 411 (Sheet 2)

1502650



	(1) 1	(1) 2	(1) 6	(1) 7	(2)	(3)
DESIGN DIM	1.072 1.068	1.040 1.036	1.072 1.068	1.039 1.037	4.872 4.869	5.348 5.345
REPAIR LIMIT	1.048 4 1.052 9 1.040 1.036 10	1.016 4 5 1.020 9	1.048 4 1.052 9	—	4.850 8 4.852 9	—

1. 65-46124-1,-3,-6 (ORIGINAL CONFIG)
2. 65-46124-1,-3,-6 (REWORKED CONFIG), 65-46124-5
3. VIBRO ENGRAVE PART NUMBER, SERIAL NUMBER AND VENDOR NUMBER IN THIS AREA.
4. LIMIT FOR CHROME PLATE BUILDUP (SOPM 20-42-03) AND GRIND TO DESIGN DIMENSIONS, WITH 0.06 MAX PLATING RUNOUT AT EDGES. WIPE CHROME PLATE WITH PRIMER (F-19.45).
5. PREFERRED LIMITS FOR 65-46124-3.
6. 65-46162-1, 65-61794-1
7. 65C32950-1, -2, -3
8. LIMIT FOR SULFAMATE NICKEL PLATE BUILDUP (SOPM 20-42-09) AND MACHINE TO DESIGN DIMENSIONS. PUT A PLATING RUNOUT AT EDGES.
9. LIMIT FOR BUILDUP WITH BMS 10-67 TYPE 1 OR 17 CLASS 2, 3, OR 4 THERMAL SPRAY (SOPM 20-10-05), 0.010 MAX THICK. PUT A 0.080 MAX RUNOUT AT EDGES. GRIND TO DESIGN DIMENSIONS AND 4 MICROINCH FINISH. THEN CADMIUM-TITANIUM PLATE (SOPM 20-42-02) THE RUNOUT AREA
10. RANGE FOR BETTER FIT WITH MATING ORIFICE PLATE.

REPAIR

REF 4 5 8 9 10

125 MACHINE FINISH UNLESS SHOWN DIFFERENTLY

SHOT PEEN (SOPM 20-10-03)
0.017-0.046 SHOT SIZE
0.014-0.019 A2 INTENSITY

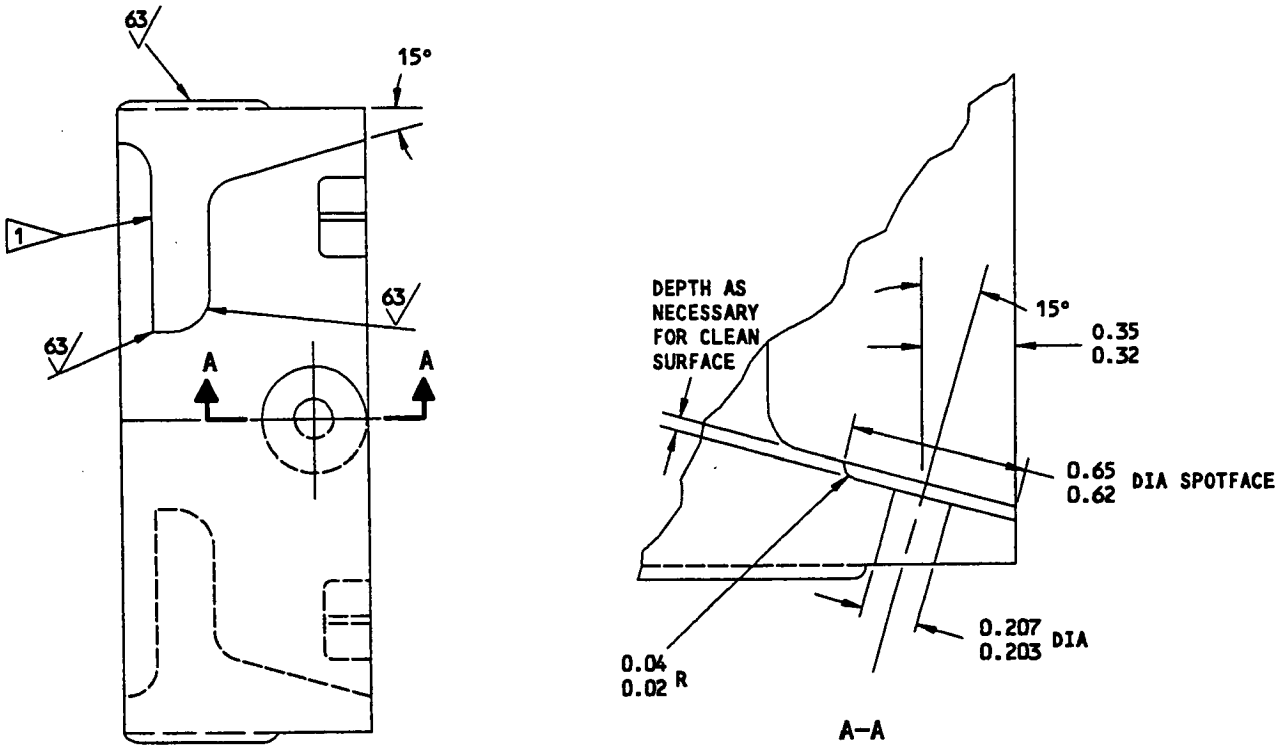
MATERIAL: 4330M STEEL, 180-200 KSI

ALL DIMENSIONS ARE IN INCHES

65-46124-1, -3, -5, -6
65-46162-1
65-61794-1
65C32950-1, -2, -3

Metering Pin Repair Details
Figure 412

962455



REFINISH

NO REFINISH

REPAIR

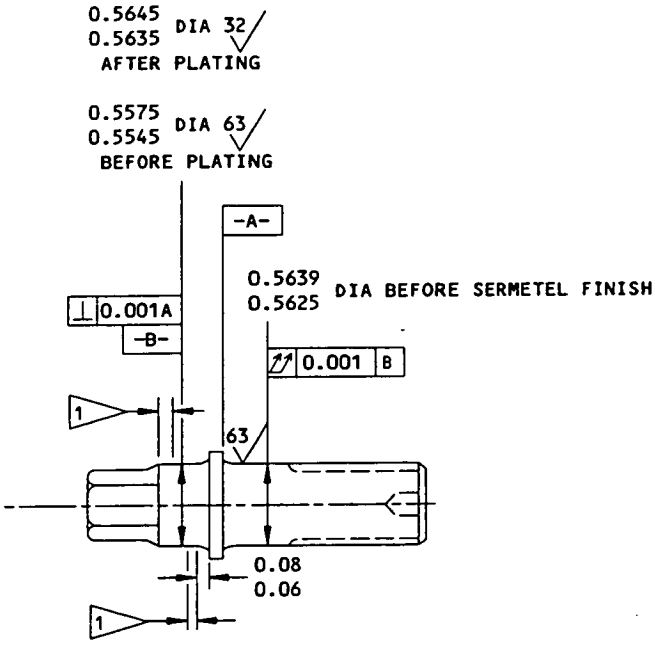
125 MACHINE FINISH EXCEPT AS NOTED

MATERIAL: 4340 STEEL, 180- 200 KSI

ALL DIMENSIONS ARE IN INCHES

1 ELECTRICAL CHEMICAL ETCH OR VIBRO-ENGRAVE PART NUMBER AND SERIAL NUMBER HERE

Orifice Plate Repair
Figure 413



REFINISH

CHROME PLATE (F-15.34) DIA -B-, 0.003 MIN THICK AFTER GRIND TO DIMENSIONS SHOWN. WIPE CHROME PLATE WITH PRIMER (F-19.45).

THEN APPLY BMS 14-4 COATING (F-24.04) ALL OVER, 0.0003-0.0005 THICK

1 0.06 MAX CHROME PLATE RUNOUT

REPAIR

(SAME AS REFINISH)

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

SHOT PEEN (NOT ON THREADS)
0.017-0.046 SHOT SIZE
0.010-0.016 A2 INTENSITY

MATERIAL: 4340M STEEL, 270-300 KSI

ALL DIMENSIONS ARE IN INCHES

STUD (58)
69-78562-1, -2

Stud Repair and Refinish
Figure 414

ASSEMBLY

1. Materials and Equipment

NOTE: Equivalent substitutes can be used.

A. Hydraulic Fluid -- BMS 3-32, Type 1 or 2 (Optional: MIL-H-5606 or MIL-H-6083) (Ref SOPM 20-60-03)

B. Petrolatum -- VV-P-236 (SOPM 20-60-03)

C. Grease -- MIL-G-21164 (SOPM 20-60-03)

D. Compound -- EC1252 or BMS 8-45 (SOPM 20-60-04)

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

F. Corrosion Inhibiting Compound -- BMS 3-23, Type 2 (SOPM 20-60-02)

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

H. Corrosion Preventive Compound -- MIL-C-11796, Class 3 (SOPM 20-60-02)

I. Solvent -- Aliphatic Naphtha TT-N-95 (Replaces BMS 3-2, Type 1) (SOPM 20-60-01)

J. Enamel -- BMS 10-60, Color 707 (SOPM 20-60-02)

K. Tape -- Scotch 5421, Y-8412 or 8412 (Replaces Mystik 7355) (SOPM 20-60-04)

L. Protective Finish - Type 41 (SOPM 20-60-02)

M. Seal Protection Guide Equipment – C32018

N. Spanner Tool, Orifice Plate -- F80032-1

O. Spanner Tool, Gland Nut -- F80033-1

P. Sling -- CWEE1-63 or other commercial web belt sling

Q. Stretcher Tool -- B2AO, V6F140

R. Crimping Tool, ½ inch -- ASR12, V6F140 (Replaces C2A4)

2. Lubrication

NOTE: BMS 3-32 Type 1 hydraulic fluid is the preferred fluid for initial buildup of the shock strut assembly.

A. Put packings and backup rings in hydraulic fluid. Apply a thin film of petrolatum on packings and backup rings as you put the parts together. Wipe with hydraulic fluid the shock strut surfaces which will rub against packings.

B. Lubricate washers, threads of bolts and nuts with grease before installation.

CAUTION: BE VERY CAREFUL TO KEEP OUT DIRT AND UNWANTED MATTER DURING ASSEMBLY OF SHOCK STRUT.

3. If axle sleeve (59) or axle spacer (60) was removed, replace it per par. 9.C. or 9.D. of REPAIR.

4. Install parts (53, 52) on metering pin (54) and parts (49, 48) on drain tube (50). Slide washers (51A, 51) on drain tube. Screw drain tube into metering pin and tighten to 20-30 lb-ft. Bend one or more tangs of washer (51) over drain tube and metering pin.

5. Install bushing (47C) in the bottom of the inner cylinder. Put preassembled parts (54, 50) into inner cylinder (55), through bushing (47C). Install with parts (46 thru 47C). Tighten NAS509-12 nut (46) to 20-30 lb-ft. Tighten 69-63321-1 nut (46) finger-tight until the nut touches the shoulder of drain tube (50).

CAUTION: THE CYLINDER COULD HAVE OVERSIZE GLAND NUT THREADS WHICH MUST BE USED WITH SPECIAL OVERSIZE GLAND NUT.

6. Slide gland nut (45), scraper adapter (44), and wiper (43) on inner cylinder. Recess of scraper adapter must face upwards. The wiper inside diameter is tapered. Install the wiper with the smallest inside diameter down, towards the axle.

7. Assemble spare packings (41, 40) on lower bearing (42), and parts (37 thru 34) on seal adapter (38). See Fig. 501 for correct installation of rings (36, 40).

CAUTION: THE THICKER END OF SPACER (33) MUST BE DOWN. THE FLANGE OF SNUBBING VALVE (32) MUST BE UP. THE INSIDE GROOVE OF SEAL ADAPTER (38) MUST BE DOWN. THE END OF LOWER BEARING (42) WITH THE BRONZE SLEEVE MUST BE UP.

8. Slide parts (42, 39, 38, 33, 32) on the inner cylinder.

9. Install bearing or inner shell halves (31, 30) in the inner cylinder groove. On assemblies 65-46100-24, -25 install shell halves (28B, 28A) on shell halves (31, 30).

10. Preassemble parts (21 thru 18, 16 thru 13) on orifice tube (22). See Fig. 501 for installation of rings, packings and T-seals (15, 16). Use spanner tool F80032-1 to screw orifice plate (21) into orifice tube.

11. Slide orifice support tube assembly (17) with attached parts into outer cylinder (27). Install parts (12, 11). Tighten retaining nut (11) to 150-300 lb-ft. Apply BMS 3-27 corrosion preventive compound to the joint between tube (17) and nut (11). Be careful not to get the compound on the O-rings. Install air valve (10) in nut (11).

CAUTION: THE OUTER CYLINDER COULD HAVE OVERSIZE THREADS. THE INNER CYLINDER COULD HAVE UNDERSIZE AXLE THREADS FOR USE WITH SPECIAL UNDERSIZE WHEEL RETAINER NUT AND WASHER. BE SURE THAT REWORKED PARTS ARE MATCHED AND IDENTIFIED, AND THAT SPECIAL PARTS ARE NOT USED WITH STANDARD PARTS.

12. Lower outer cylinder assembly (23) over inner cylinder with a hoist and a commercial web belt sling. Use C32018 tools or a packing guide sleeve to prevent damage to the backup rings and packings.

    NOTE: If the packings are tight in the cylinder, you can lightly bump and twist to help get the inner cylinder into the outer cylinder.

13. Install gland nut

    A. If the gland nut has plugs or nothing in it, apply BMS 3-27 corrosion preventive compound to threads of gland nut (45) and outer cylinder. If the gland nut has lube fittings in it, apply MIL-C-11796, Class 3 corrosion preventive compound to the threads of the nut and the cylinder, but we recommend the BMS 3-27 compound, which gives better corrosion resistance. Screw gland nut (45) into outer cylinder with spanner tool F80033. Tighten to 50 lb-ft. Then tighten the nut more as necessary to align slot for lockplate (9). Do not use a slot which contains a lube fitting. Do not tighten more than 400 lb-ft. Install parts (9 thru 6).

    B. Manually compress then extend the inner cylinder and measure the full stroke of the inner cylinder. Compare with the values shown in Fig. 504. If your value does not agree, disassemble the shock strut and look for missing or incorrectly-installed parts.

14. Nameplate

    A. Put seals (2) 180 degrees from nameplate (3). Apply one wrap of tape to the surface that will be under each strap (1). Make the ends of the tape overlap approximately 1 inch.

    B. Install nameplate (3) with sealant BMS 5-95 and straps (1) and seals (2) as shown in Fig. 503.

       WARNING: WHEN YOU INSTALL THE CHECK VALVE, MAKE SURE ITS ARROW POINTS INTO THE SHOCK STRUT, OR INJURY WILL OCCUR IF CAP IS REMOVED WITH SHOCK STRUT PRESSURIZED.

15. Lubricate the threads of the check valve (4) with hydraulic fluid. Install gasket (5) and check valve (4) in drain tube (50). Make sure the arrow on the check valve points into the shock strut. Turn valve (4) until it touches the bottom of the tube; then tighten the valve to 8-10 lb-ft.

16. Apply BMS 3-23, Type 2 corrosion inhibiting compound to the bore of lower torsion link attach lug, but not on the bearing surfaces of the bushings.

17. Weight and Balance Transducer (Fig. 1102)

    A. Solvent clean surface of shock strut where cradle (15) will be applied. Install one wrap of tape at cradle clamp locations. Edge seal tape with type 41 protective finish.

    B. Install transducer (14) on cradle (15). Secure with clamps (13) and nuts (12). Tighten nuts fingertight.

    C. Install cradle on shock strut with parts (1 thru 11). Tighten nuts (12).

    D. Solvent clean shock strut surface where marker (16) will be applied. Install marker and edge seal with type 41 protective finish.

18. Lockwiring (Fig. 1101)

    A. Install by the double-twist method per 20-50-02.

    B. Lockwire retaining nut (11) to lockwasher (12).

    C. Lockwire plug (4), nut (46) and lockwasher (47) together or, if applicable, lockwire cap of valve (4) to valve and lockwire valve (4), nut (46) and lockwasher (47) together.

    D. Lockwire hex body of valve (10, Fig. 1102) to tee block (11, Fig. 1102) and tee block block to cradle (15, Fig. 1102).

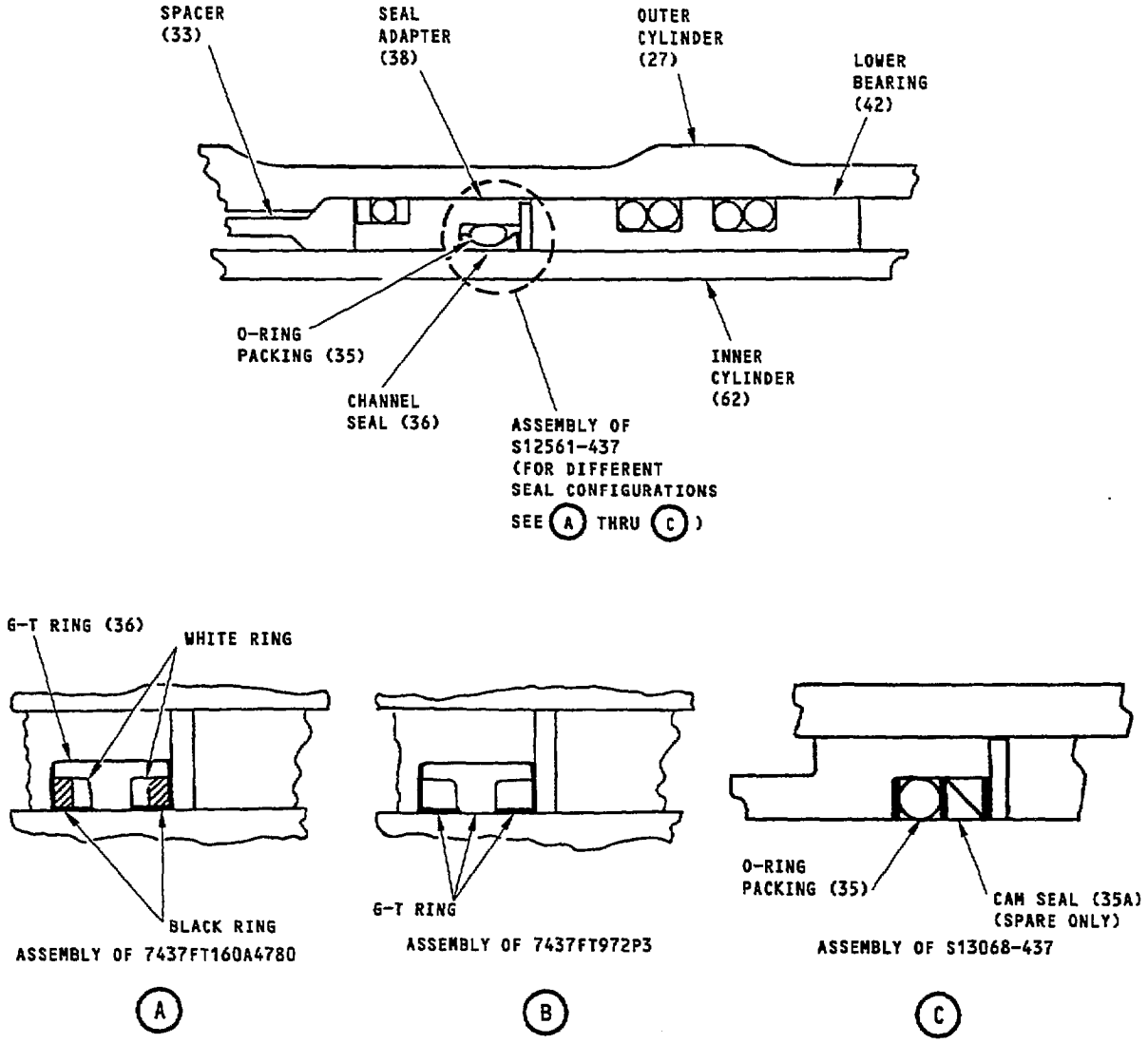
19. With compound EC 1252 or BMS 8-45, stamp and seal the following parts in such a manner that external adjustment will cause seal to break.

    A. Nut (11), lockwasher (12) to outer cylinder (27).

    B. Nut (46) to drain tube (50).

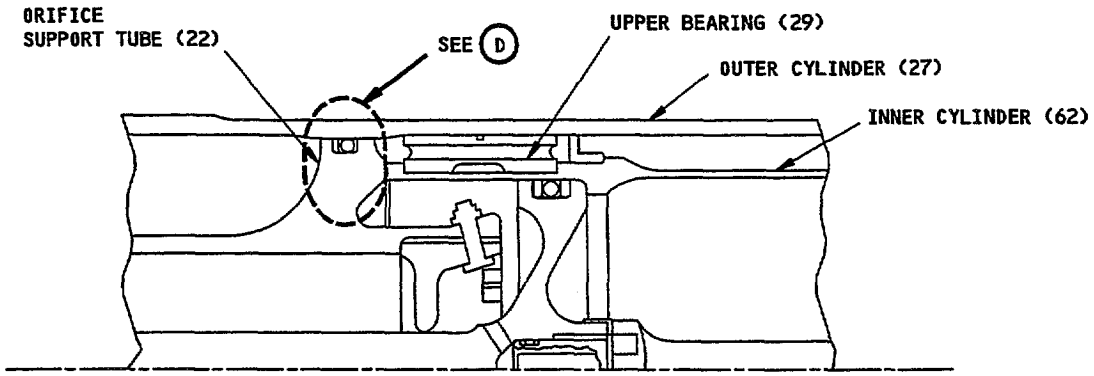
    C. Nuts (6) and end of bolts (8) to lockplate (9).

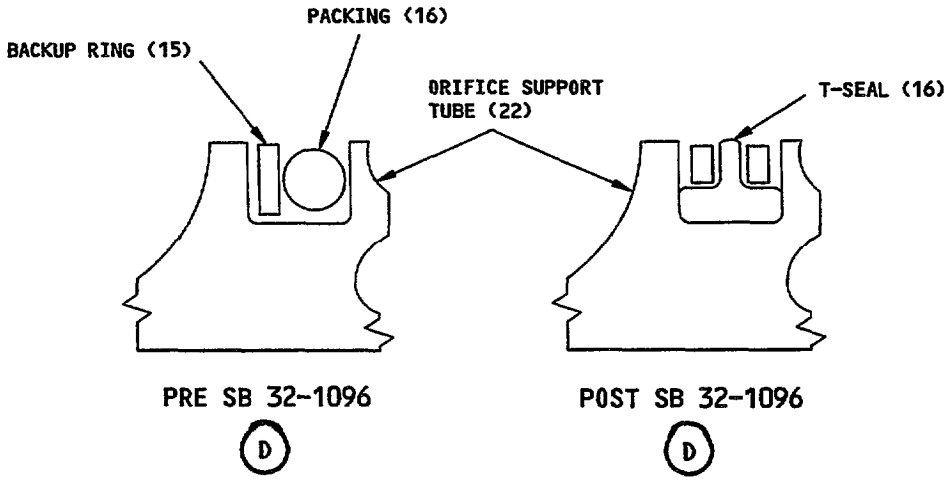
20. Seal splitlines between nut (11), lockwasher (12) and orifice tube (17) per Fig. 502 (Optional requirement).



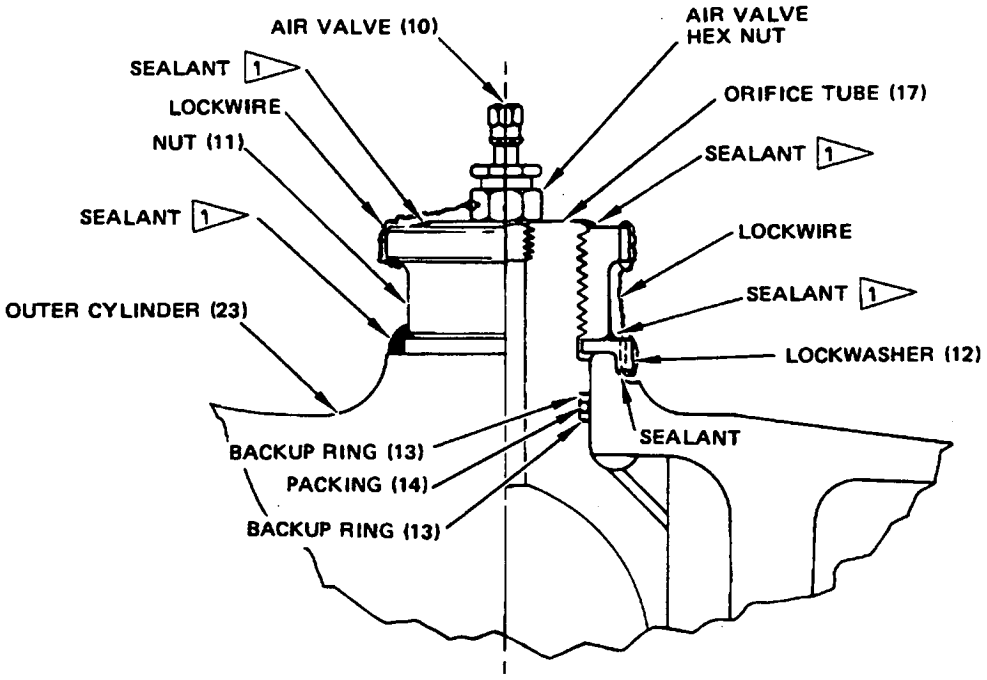
f10323

Sealing Details
Figure 501 (Sheet 1)





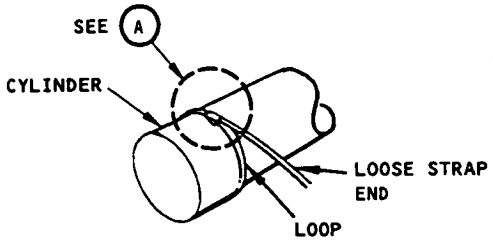
Sealing Details
Figure 501 (Sheet 2)



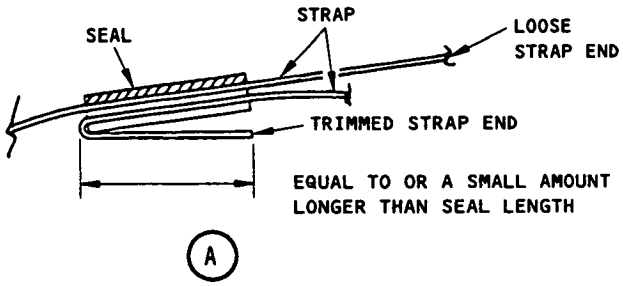
1 APPLY BMS 5-95 SEALANT TO THESE AREAS AS FOLLOWS

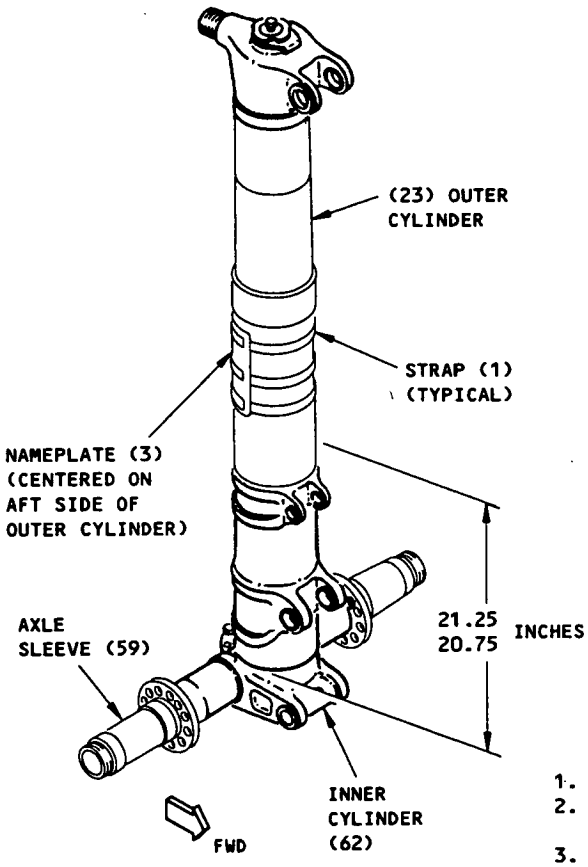
1. SOLVENT CLEAN THE AREA WITH ALIPHATIC NAPHTHA
2. APPLY BMS 5-95 SEALANT AS SHOWN
3. APPLY ENAMEL BMS 10-60 COLOR 707 ON THE SEALANT AND THE ADJACENT AREA. DO NOT APPLY ENAMEL ON BUSHINGS, BOLTHEADS OR NUTS.

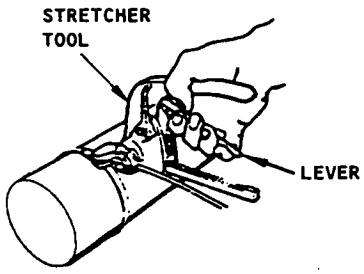
Sealing Details
Figure 502



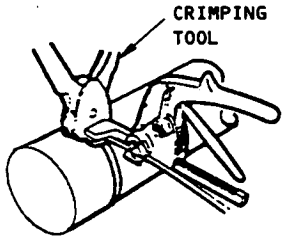
STEPS 1 THRU 6



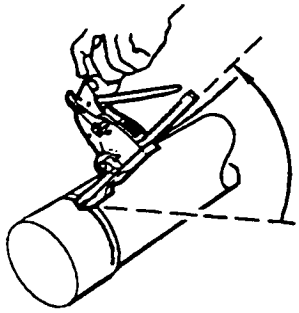




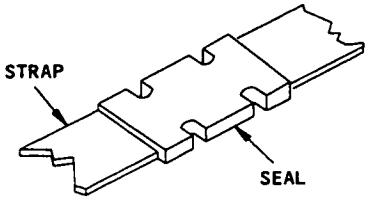
STEPS 7,8,9



STEPS 10,11,12



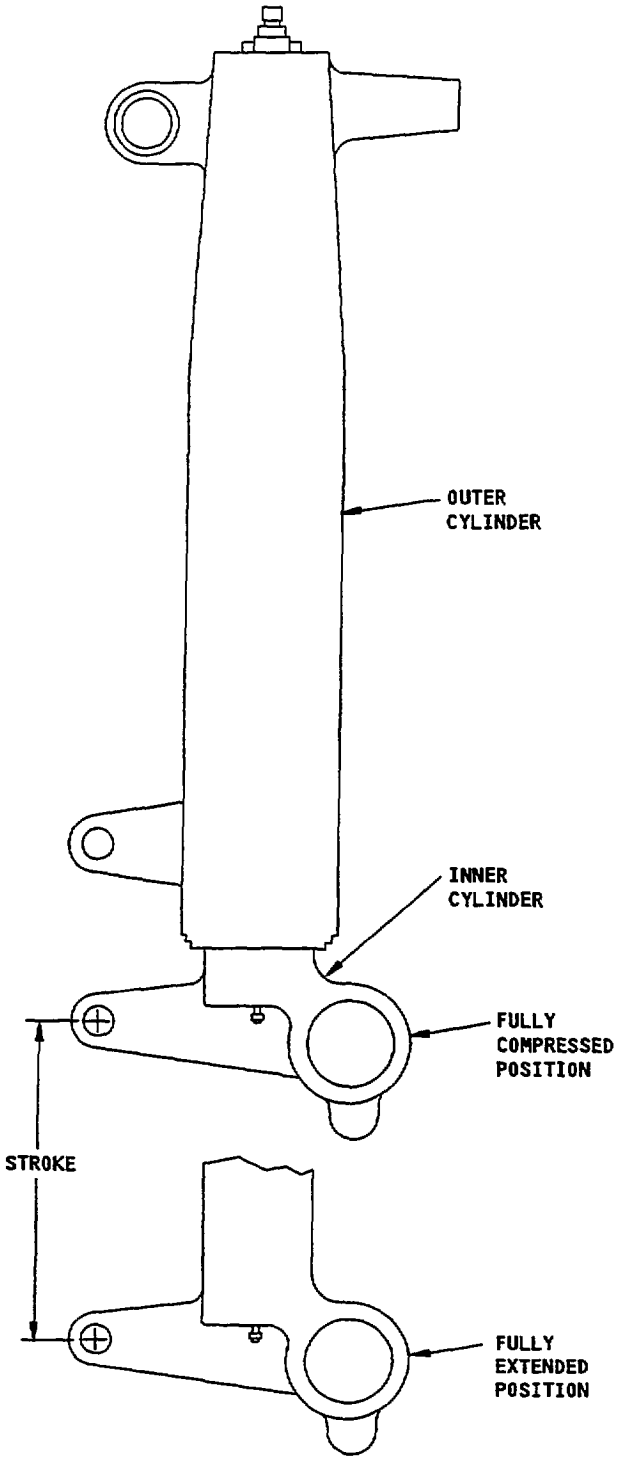
STEP 13



TYPICAL CRIMPED SEAL

1. CUT OFF THE END OF THE STRAP IF IT HAS BURRS.
2. THREAD THE STRAP THROUGH THE SEAL (SLOTTED SIDE OF THE SEAL DOWN).
3. WRAP THE STRAP AROUND THE OUTER CYLINDER.
4. THREAD THE STRAP THROUGH THE SEAL AGAIN UNDER THE FIRST SECTION OF THE STRAP.
5. BEND THE CUT END OF THE STRAP UNDER THE SEAL.
6. REMOVE THE SLACK FROM THE LOOP AROUND THE CYLINDER.
7. ALIGN THE STRAP TO 88-92° WITH THE AXIS OF THE CYLINDER.
8. PUSH STRETCHER TOOL B2A0 ONTO STRAP THROUGH SLOT IN TOOL AND UNDER GRIPPING DOG.
9. OPERATE THE STRETCHER LEVER UP AND DOWN TO PUT TENSION ON THE STRAP.
10. PUT CRIMPING TOOL ASR12 OR C2A4 ON THE SEAL.
11. CLOSE THE CRIMPING TOOL HANDLES TO THEIR STOPS.
12. OPEN THE CRIMPING TOOL HANDLES TO RELEASE THE TOOL.
13. TILT THE STRETCHER TOOL FORWARD TO BREAK OFF THE STRAP AT THE SEAL.

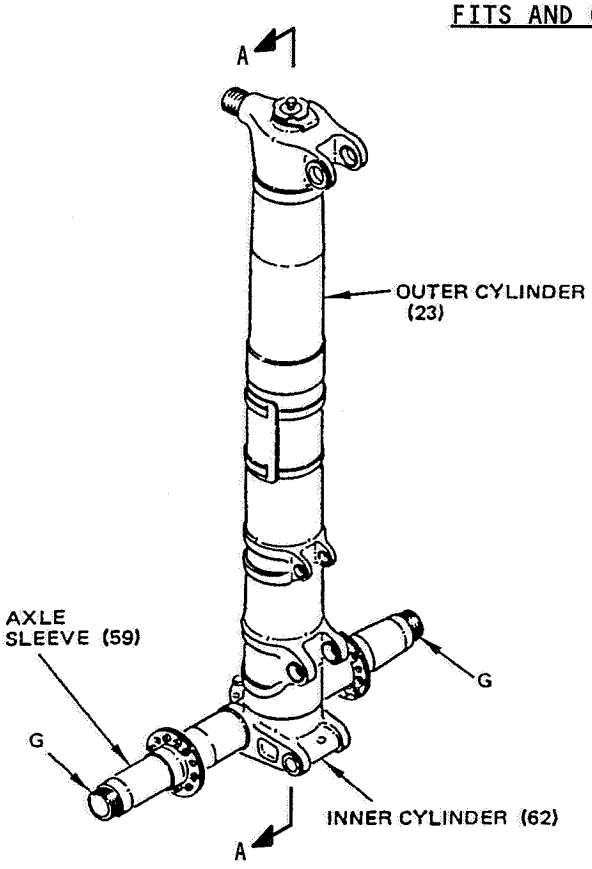
Nameplate, Seal and Strap Installation
Figure 503

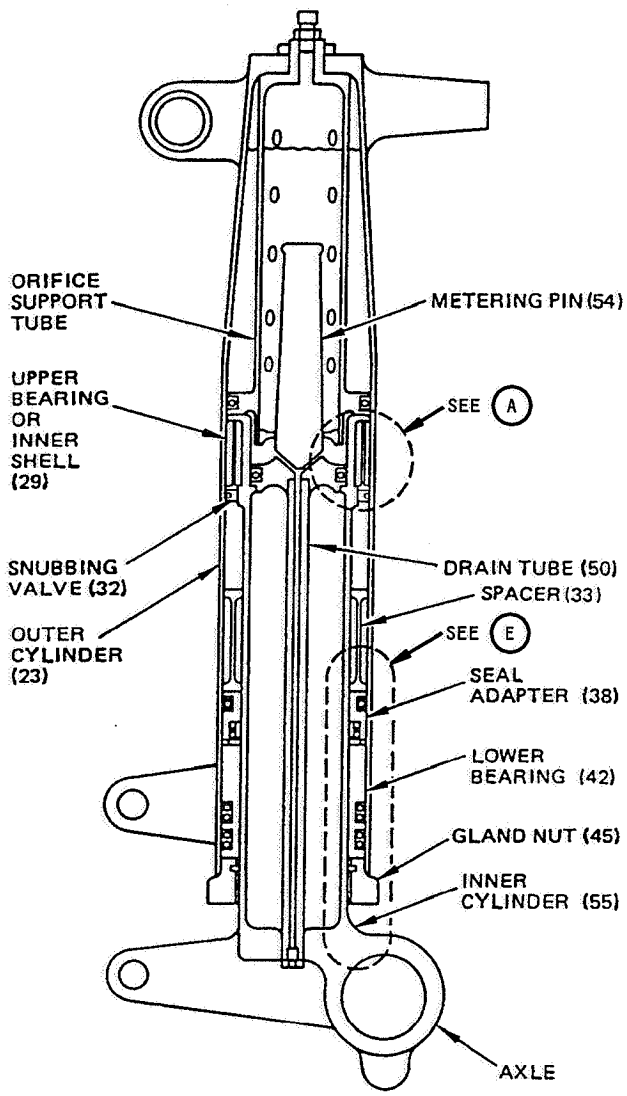


SHOCK STRUT PART NUMBER	STROKE, INCHES
65-46100-5,-6, -9 THRU -31, -33 THRU -57, -60 THRU -63, -65,-66,-68,-69 -72,-73,-74,-76 -77,-79	13.983 13.856
65-46100-58,-59, -64,-67,-70, -71,-75,-78	14.983 14.856

Shock Strut Assembly Stroke Check
Figure 504

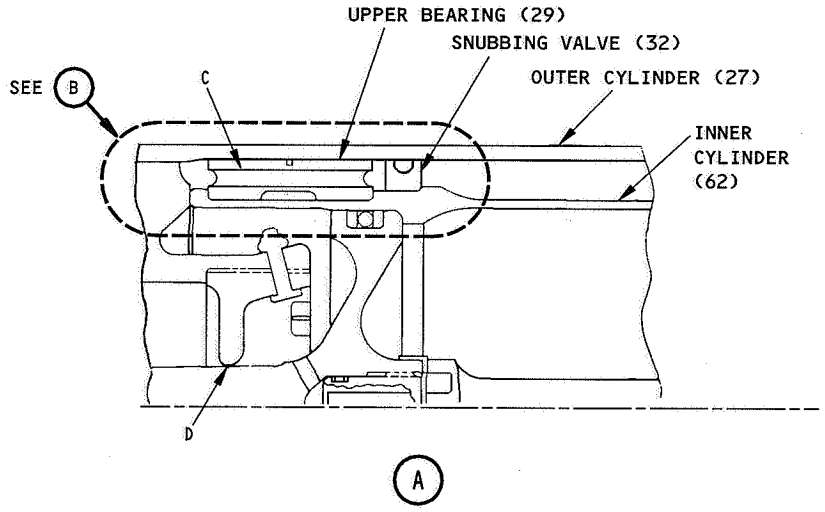
FITS AND CLEARANCES



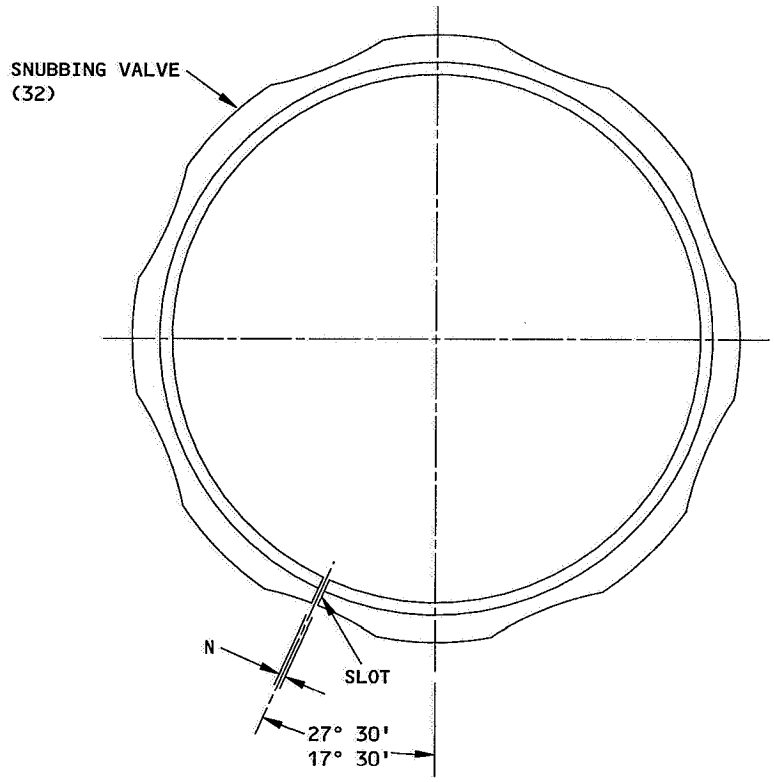


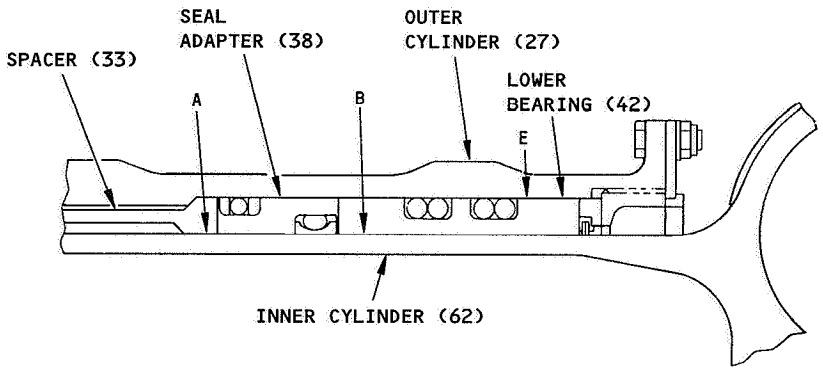
A-A

Fits and Clearances
Figure 601 (Sheet 1)



Fits and Clearances
Figure 601 (Sheet 2)





Fits and Clearances
Figure 601 (Sheet 3)

Ref Letter Fig. 601	Mating Item No. Fig. 1101	Design Dimensions				Service Wear Limits		
		Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inch)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
A	ID 33 *[1] OD 62	6.001 5.994	6.004 5.997	0.004	0.010	 5.992	6.017	0.015
A	ID 33 *[2] OD 62	6.023 5.994	6.038 5.997	0.026	0.044	 5.992		
B	ID 42 OD 62	6.000 5.994	6.002 5.997	0.003	0.008	 5.992	6.005	0.010
C	ID 27 OD 29 *[3]	6.753 6.746	6.756 6.748	0.005	0.010	 6.743	6.758	0.015
D	ID 21	1.075	1.080				1.090	
E	ID 27 OD 42	6.974 6.971	6.977 6.972	0.002	0.006			
F	*[11] 62 *[11] 29 *[4]	2.250 2.247	2.253 2.249	0.001	0.006	 2.228	2.259	0.024
G (Orig) *[5] *[7]	OD 62 (Major Dia.)	2.9187	2.9281			2.9137 *[9]		
	OD 62 (Pitch Dia.)	2.8925	2.8969			2.8825 *[9]		
G (Orig) *[6] *[7]	OD 62 (Major Dia.)	2.9251	2.9281			2.9137 *[9]		
	OD 62 (Pitch Dia.)	2.8939	2.8969			2.8825 *[9]		
G (Under size) *[8]	OD 62 (Major Dia.)	2.8660	2.8690			2.8610 *[10]		
	OD 62 (Pitch Dia.)	2.8314	2.8344			2.8214 *[10]		

Fits and Clearances
Figure 601 (Sheet 4)

Ref Letter Fig. 601	Mating Item No. Fig. 1101	Design Dimensions				Service Wear Limits		
		Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inch)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
H	*[12] 28 *[13]	0.0995	0.1015			0.0940		
I	ID 27 OD 32	6.753 6.735	6.756 6.740	0.013	0.021			
J	*[14] 32 *[15] 62	0.03 0.03	0.04 0.04					
K	ID 32 OD 62	5.877 5.873	5.878 5.875	0.002	0.005			
L	OD 62	5.980	5.990					
M	*[14] 62	0.01	0.02					
N	*[16] 32	0.025	0.035					

*[1] 65-46158-1
*[2] 65-46158-2, 65-46158-3, 65-46158-4, 69-68752-1
*[3] 69-38985-2, 69-55432-1
*[4] 69-65396-1
*[5] 65-46116-3, -5, -7, -9, -10, -15, -16, -19, -20, -25, -27
*[6] 65-46116-23, -30, -31, -33, -35, -36, -37, -38, -41, -42, -43, -45, -47, -48, -49, -50, -51, -53, -55 AND ON
*[7] 2.9375-16 UNS 3A MODIFIED THREAD (ORIGINAL CONFIGURATION)
*[8] 2.8750-16 UNS 3A MODIFIED THREAD (UNDERSIZE CONFIGURATION)
*[9] CUT THE AXLE THREADS TO A SMALLER SIZE PER THE REPAIR PROCEDURES FOR THE INNER CYLINDER, REPAIR PAR. 7.D.(2), IF THE DIMENSION IS BELOW THIS VALUE.
*[10] CUT OFF THE AXLE AND INSTALL AN AXLE SLEEVE REWORK KIT PER REPAIR PAR. 7.D., IF THE DIMENSION IS BELOW THIS VALUE.
*[11] LENGTH
*[12] WALL THICKNESS
*[13] 69-65397-1
*[14] CORNER RADIUS (OUTSIDE)
*[15] FILLET RADIUS (INSIDE)
*[16] SPLIT DIMENSION (SLOT WIDTH)

Fits and Clearances
Figure 601 (Sheet 5)

TESTING

1. Test Equipment (Fig. 701)

   A. Standard Pressure Leakage Test

      (1) Source of nitrogen gas, pressurized to 100 psi minimum

      (2) Check valve, gage valve, and connections

      (3) Pressure gage, 0 - 100 psi minimum

   B. High Pressure Leakage Test

      (1) Source of nitrogen gas, pressurized to 1300 psi minimum

      (2) Check valve, gage valve, and connections

      (3) Pressure gage, 0-1300 psi minimum

      (4) Graduated glass beaker

      (5) Glass tube, 4-inch diameter approximate

      (6) Test set F80235-1, or test fixture F80174-1 or -100

   C. BMS 3-32, Type 1 or 2 (Optional: MIL-H-5606 or MIL-H-6083 or hydraulic fluid, plus 11 fluid ounces of Lubrizol 1395 or 22 fluid ounces of Royco SSF concentrate) (SOPM 20-60-03)

2. Preparation for Tests (Fig. 1101)

   CAUTION: BE VERY CAREFUL NOT TO DAMAGE THE STRUT BY THE LIFTING DEVICE.

   A. Put the shock strut in a vertical position, with the inner cylinder fully extended and the air valve open.

   B. Get the applicable hydraulic fluid

      (1) Preferred: BMS 3-32, Type 1 (with corrosion inhibitor) or Type 2 (without corrosion inhibitor). Use Type 1 fluid to fill a strut for the first time after overhaul. For refills, use Type 1 or Type 2 fluids.

      (2) Optional: As a substitute for BMS 3-32, Type 1, mix MIL-H-6083 fluid with 2.4% by volume Lubrizol 1395 additive. As a substitute for BMS 3-32 Type 2, mix MIL-H-5606 fluid with 2.4% by volume Lubrizol 1395 additive.

      (3) If you use the optional hydraulic fluid, be sure to mix the Lubrizol additive with the fluid before you put the fluid in the strut. Do not add pure Lubrizol additive to the strut because it is thick and if not mixed will go to the bottom of the strut and stay there. If you must add Lubrizol additive to the strut, be sure to first mix it with 10 parts of hydraulic fluid.

C. Fill the shock strut with the hydraulic fluid until the fluid comes out at the air valve.

D. Extend and compress the inner cylinder until you are sure no air is caught inside the shock strut.

E. Fully compress the shock strut and fill it with hydraulic fluid, if necessary.

3. Standard Pressure Leakage Test

A. Install air valve (10, Fig. 1101 or 1102). Tighten the hex body to 100-110 lb-in. Remove the valve cap and loosen the hex swivel nut counterclockwise one to two turns.

B. Connect the air valve with the nitrogen pressure source. With the inner cylinder fully extended, inflate strut to 95-100 psi. Tighten the hex swivel nut to 50-70 lb-in. Let the system become stable for 30 mintes, then hold pressure for 1 hour minimum. There must be no sign of fluid or nitrogen leakage. A wet surface is acceptable if a drop of fluid does not occur.

WARNING: DO NOT LOOSEN OR UNSCREW THE AIR VALVE HEX BODY UNTIL ALL PRESSURE IS RELEASED FROM THE UNIT, OR INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT COULD OCCUR.

NOTE: See Fig. 101 for parts of the air valve.

C. Release the nitrogen gas pressure from the shock strut. To do this, turn the hex swivel nut counterclockwise. Be careful not to loosen the air valve body until the pressure is released.

4. High Pressure Leakage Test (Fig. 702)

A. Do this test if the standard pressure leakage test does not find the source of a nitrogen leak. But the high pressure test is not necessary if no leaks occur during the standard pressure test.

B. Install straps F80235-3 and pins F80235-2 between inner and outer cylinder torsion link attach lugs, or install the shock strut in the F80174 fixture.

C. Install the pressure gage and charging line as shown in Fig. 701.

D. Before you open the air valve on the shock strut, pressurize the gage line to 1250 psi with nitrogen.

E. Open the air valve on the shock strut. Slowly charge the strut with nitrogen to approximately 1250 psi. Then close the air valve and the gage valve. Make a note of the time and the pressure.

F. Four hours after the step E time, open the air valve and measure the pressure. Make a note of this pressure value. The pressure decrease from the step E value must not be more than 100 psi. Close the air valve.

G. Twelve hours minimum after the step E time, open the air valve and measure the pressure. The pressure decrease from the step F value must not be more than 20 psi. Close the air valve. Remove the gage line and install the dust cap on the air valve.

H. Install a water dam and collector beaker as shown in Fig. 702. Fill with water above the top of the air valve. Collect any air bubbles that leak from the strut into the air valve for 30 minutes. Air leakage must not be more than 7.5 cc.

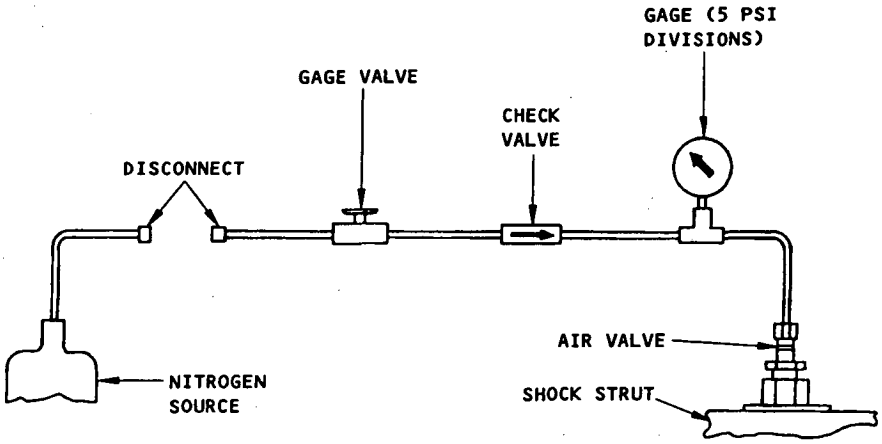
I. As an alternative to step H, apply a soap-water solution to the area around the air valve and look for bubbles.

J. Make sure there are no leaks at the hydraulic fluid seals.

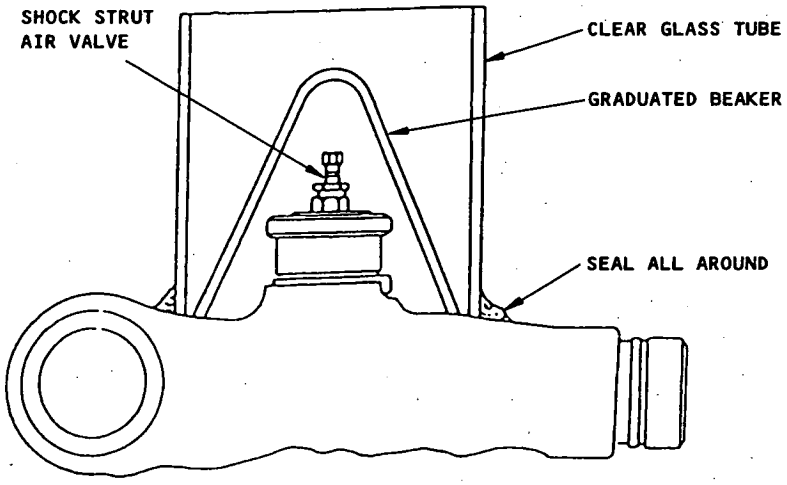
CAUTION: DO NOT LOOSEN OR UNSCREW THE AIR VALVE HEX BODY UNTIL ALL PRESSURE IS RELEASED FROM THE UNIT, OR INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT COULD OCCUR.

NOTE: See Fig. 101 for parts of the air valve.

K. Release the nitrogen gas pressure from the shock strut. To do this, turn the hex swivel nut counterclockwise. Be careful not to loosen the air valve body until the pressure is released.



Test Setup for Standard or High Pressure Leakage Tests
Figure 701



High Pressure Leakage Test Setup
Figure 702

W75884

TROUBLE SHOOTING

1. Trouble during test after overhaul.

	Trouble	Possible Cause	Correction
A.	Air leak at air valve (10)	Defective air valve packing	Replace packing
B.	Air leak at retaining nut (11)	Defective packing (14)	Replace packing
C.	Fluid leak at lower end of inner cylinder OD	Defective packing (35 or 37) or channel seal (36)	Replace defective part
D.	Fluid leak at bottom of inner cylinder around drain tube (50)	Defective packing (49 or 53)	Replace defective packing
E.	Inner cylinder sticks or binds	Unwanted matter between sliding surfaces. Scored cylinder surfaces	Disassemble and examine parts. Repair or replace as necessary
F.	Nitrogen leak not found by standard pressure leakage test	Components at upper end of shock strut	Do high-pressure leakage test to find leak

STORAGE INSTRUCTIONS

1. Give protection to the shock strut and put it away by standard industry practices, the instructions in SOPM 20-44-02 and 20-70-01, and these special steps.

2. Do not inflate the unit with compressed air. Drain the unit and flush it with preservative hydraulic fluid BMS 3-32, Type 1 or MIL-H-6083. Do not drain. Tag it with the test date and a note that the unit contains preservative hydraulic fluid.

3. Seal all openings with MIL-C-5501 closures.

4. Compress the unit and apply a layer of MIL-C-11796 or MIL-C-16173 corrosion prevention compound to the bare exposed portion of the inner cylinder.

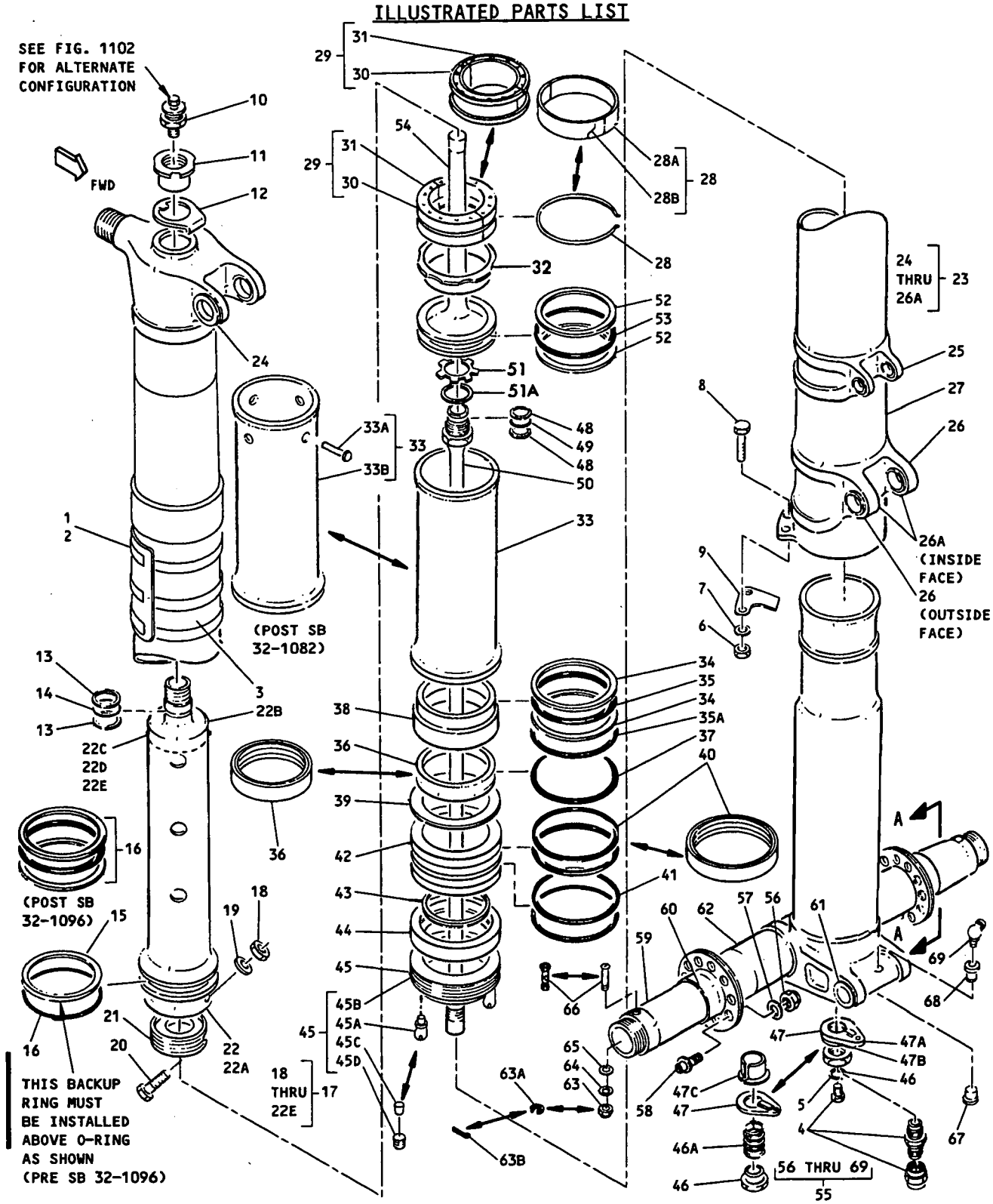
5. Always store the unit in the vertical position, to keep hydraulic fluid on the packings.

SPECIAL TOOLS, FIXTURES AND EQUIPMENT

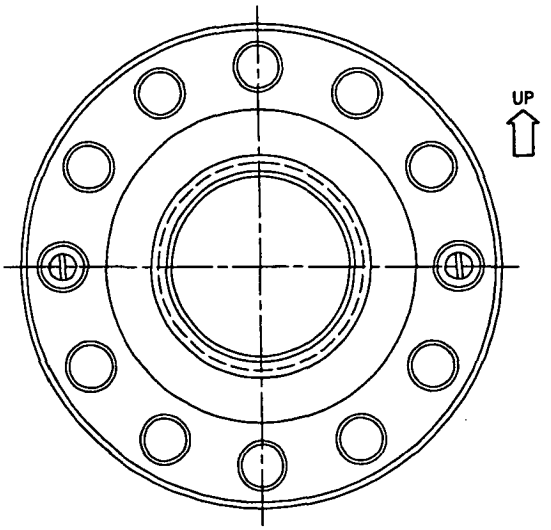
NOTE: Equivalent substitutes can be used. The vendor is Boeing if the vendor is not specified.

1. F80032-1 -- Orifice plate spanner wrench adapter
2. F80033-1 -- Gland nut spanner
3. CWEE1-63 - Web Belt Sling, 12 ft long, Cambridge Wire Cloth Co. (V10380) (Replaces ME65-73761-1)
4. F80007-1 -- Axle protection sleeve (Replaced by F72913-7)
5. F72913-10 -- Axle and thread protection set (Replaces F72913-7, F80007-1)
6. F80126-9 -- Axle/brake sleeve puller
7. CHF/PD -- Axle external thread gage tool, Johnson Gage Co. (V74979)
8. NG 2.8750-16 PTG Threadsnap -- Axle thread gage tool (for undersize threads), Precise Tool & Gage Co., Inc. (V5N084)
9. NG 2.9375-16 PTG Threadsnap -- Axle thread gage tool (for standard threads), Precise Tool & Gage Co., Inc. (V5N084)
10. B2A0 -- Stretcher tool, Acme Steel Co. (V6F140)
11. ASR12 -- Crimping tool, ½ inch, Acme Steel Co. (V6F140) (Replaces C2A4)
12. C32018 -- Seal protection guide equipment
13. F80174-1,-100 -- Test Fixture (Replaced by F80235-1)

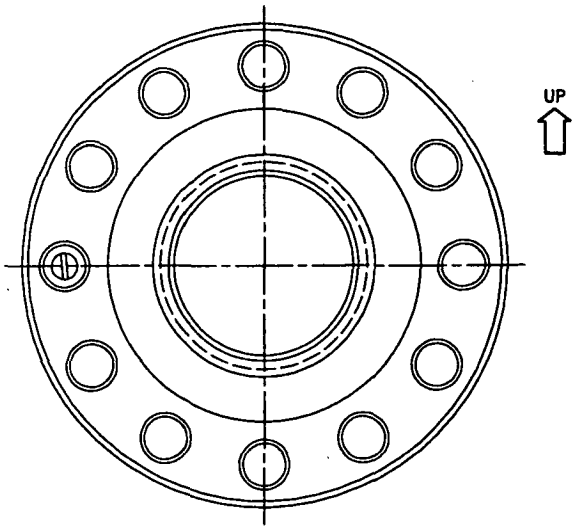
ILLUSTRATED PARTS LIST



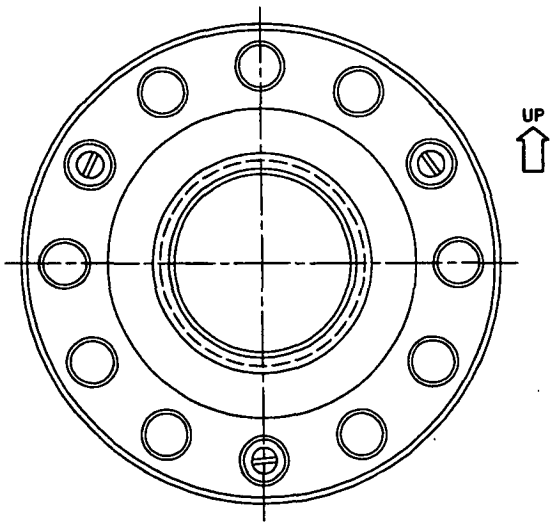
Main Gear Shock Strut Assembly
Figure 1101 (Sheet 1)



TWO STUDS
(65-46116-ALL)
ACTIVE PER AD 2000-05-13



ONE STUD
INACTIVE PER AD 2000-05-13
REF ONLY



THREE STUDS
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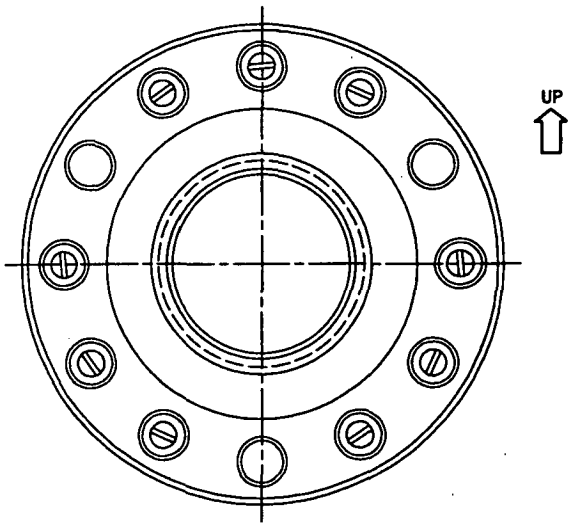
REF ONLY



NINE STUDS
INACTIVE PER AD 2000-05-13
REF ONLY

NOTE: IT IS RECOMMENDED THAT STUDS BE INSTALLED AS SHOWN. BUT DO NOT INSTALL STUDS IN HOLES REPAIRED BY THE TYPE A, B, OR D METHODS (FIG. 403, SHEET 7)

REFER TO CMM 32-16-11 FOR STUD LOCATION ON ASSEMBLIES 65-46116-59,-60,-61.

Main Gear Shock Strut Assembly
Figure 1101 (Sheet 2)

831488

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
	65-46100-5		STRUT ASSY, MAIN GEAR SHOCK *[4]	A	RF
	65-46100-6		STRUT ASSY, MAIN GEAR SHOCK *[4]	B	RF
	65-46100-9		STRUT ASSY, MAIN GEAR SHOCK *[4]	C	RF
	65-46100-10		STRUT ASSY, MAIN GEAR SHOCK *[4]	D	RF
	65-46100-11		STRUT ASSY, MAIN GEAR SHOCK *[4]	E	RF
	65-46100-12		STRUT ASSY, MAIN GEAR SHOCK *[4]	F	RF
	65-46100-13		STRUT ASSY, MAIN GEAR SHOCK *[4]	G	RF
	65-46100-14		STRUT ASSY, MAIN GEAR SHOCK *[4]	H	RF
	65-46100-15		STRUT ASSY, MAIN GEAR SHOCK *[4]	I	RF
	65-46100-16		STRUT ASSY, MAIN GEAR SHOCK *[4]	J	RF
	65-46100-17		STRUT ASSY, MAIN GEAR SHOCK *[4]	K	RF
	65-46100-18		STRUT ASSY, MAIN GEAR SHOCK *[4]	L	RF
	65-46100-19		STRUT ASSY, MAIN GEAR SHOCK *[4]	M	RF
	65-46100-20		STRUT ASSY, MAIN GEAR SHOCK *[4]	N	RF
	65-46100-21		STRUT ASSY, MAIN GEAR SHOCK *[4]	O	RF
	65-46100-22		STRUT ASSY, MAIN GEAR SHOCK *[4]	P	RF
	65-46100-23		STRUT ASSY, MAIN GEAR SHOCK *[4]	Q	RF
	65-46100-24		STRUT ASSY, MAIN GEAR SHOCK *[4]	R	RF
	65-46100-25		STRUT ASSY, MAIN GEAR SHOCK *[4]	S	RF
	65-46100-26		STRUT ASSY, MAIN GEAR SHOCK *[4]	T	RF
	65-46100-27		STRUT ASSY, MAIN GEAR SHOCK *[4]	U	RF
	65-46100-28		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	V	RF
	65-46100-29		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	W	RF
	65-46100-30		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	X	RF
	65-46100-31		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	Y	RF
	65-46100-33		STRUT ASSY, MAIN GEAR SHOCK *[4]	Z	RF
	65-46100-34		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	BA	RF
	65-46100-35		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	CA	RF
	65-46100-36		STRUT ASSY, MAIN GEAR SHOCK *[4]	DA	RF
	65-46100-37		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	EA	RF
	65-46100-38		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	FA	RF
	65-46100-39		STRUT ASSY, MAIN GEAR SHOCK *[4]	GA	RF
	65-46100-40		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	HA	RF
	65-46100-41		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	IA	RF
	65-46100-42		STRUT ASSY, MAIN GEAR SHOCK *[4]	JA	RF

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
	65-46100-43		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	KA	RF
	65-46100-44		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	LA	RF
	65-46100-45		STRUT ASSY, MAIN GEAR SHOCK *[4]	MA	RF
	65-46100-46		STRUT ASSY, MAIN GEAR SHOCK *[4]	NA	RF
	65-46100-47		STRUT ASSY, MAIN GEAR SHOCK *[4]	OA	RF
	65-46100-48		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	PA	RF
	65-46100-49		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	QA	RF
	65-46100-50		STRUT ASSY, MAIN GEAR SHOCK *[4]	RA	RF
	65-46100-51		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	SA	RF
	65-46100-52		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	TA	RF
	65-46100-53		STRUT ASSY, MAIN GEAR SHOCK *[4]	UA	RF
	65-46100-54		STRUT ASSY, MAIN GEAR SHOCK *[4]	VA	RF
	65-46100-55		STRUT ASSY, MAIN GEAR SHOCK *[4]	WA	RF
	65-46100-56		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	XA	RF
	65-46100-57		STRUT ASSY, MAIN GEAR SHOCK *[4]*[7] (PRE SB 32-1235) *[8]	YA	RF
	65-46100-58		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	ZA	RF
	65-46100-59		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	CB	RF
	65-46100-60		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	DB	RF
	65-46100-61		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	EB	RF
	65-46100-62		STRUT ASSY, MAIN GEAR SHOCK *[4]	FB	RF
	65-46100-63		STRUT ASSY, MAIN GEAR SHOCK *[4]	GB	RF
	65-46100-64		STRUT ASSY, MAIN GEAR SHOCK *[4]	HB	RF
	65-46100-65		STRUT ASSY, MAIN GEAR SHOCK *[4]	IB	RF
	65-46100-66		STRUT ASSY, MAIN GEAR SHOCK *[4]	JB	RF
	65-46100-67		STRUT ASSY, MAIN GEAR SHOCK *[4] (PRE SB 32-1235) *[8]	KB	RF
	65-46100-68		STRUT ASSY, MAIN GEAR SHOCK *[4]	LB	RF
	65-46100-69		STRUT ASSY, MAIN GEAR SHOCK *[4]	MB	RF
	65-46100-70		STRUT ASSY, MAIN GEAR SHOCK *[4]	NB	RF
	65-46100-71		STRUT ASSY, MAIN GEAR SHOCK *[4]	OB	RF
	65-46100-72		STRUT ASSY, MAIN GEAR SHOCK *[4]	PB	RF
	65-46100-73		STRUT ASSY, MAIN GEAR SHOCK *[4]	QB	RF
	65-46100-74		STRUT ASSY, MAIN GEAR SHOCK *[4]	RB	RF

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
	65-46100-75		STRUT ASSY, MAIN GEAR SHOCK *[4] *[9]	SB	RF
	65-46100-76		STRUT ASSY, MAIN GEAR SHOCK *[4] *[9]	TB	RF
	65-46100-77		STRUT ASSY, MAIN GEAR SHOCK *[4] *[9]	UB	RF
	65-46100-78		STRUT ASSY, MAIN GEAR SHOCK *[4] *[9]	VB	RF
	65-46100-79		STRUT ASSY, MAIN GEAR SHOCK *[4] *[9]	WB	RF
1	65-46100-7		. STRAP (USED WITH 69-59023-1, 69-74535-1)	A-UB	3
1	65-46100-7		. STRAP (USED WITH 69-39152-1)	CDE	2
1	65-46100-7		. STRAP (OPT)	VB WB	3
1	BACS38E8-25		. STRAP (OPT)	ABF-WB	3
1	BACS38E8-25		. STRAP (OPT)	CDE	2
1	BACS38E8-25		. STRAP	VB WB	3
1	65-73761-69		DELETED		
1	65-46100-7		. STRAP	CDE	2
2	65-46100-8		. SEAL	A-UB	3
2	65-73761-70		DELETED		
2	BACS11AK1		. SEAL		2
2	65-46100-8		. SEAL (OPT)	VA WB	3
2	BACS11AK2		. SEAL	VB WB	3
3	69-59023-1		. NAMEPLATE (PREF)	ABF-WB	1
3	69-59023-1		. NAMEPLATE (POST SB 32-1015)	CDE	1
3	69-39152-1		. NAMEPLATE (OPT) (PRE SB 32-1015)	CDE	1
3	69-74535-1		. NAMEPLATE (LIMITED)	TA	1
3	BAC27DLG0138		DELETED		
3	BAC27DLG0157		DELETED		
4	AN814-4L		. PLUG (PRE SB 32-1045)	A-G	1
4	2C9516		. VALVE ASSY, CHECK, V99240 (POST SB 32-1045)	A-G	1
4	2C9516		. VALVE ASSY, CHECK, V99240	H-WB	1
5	MS28778-4		. GASKET		1
6	BACN10JC4		. NUT (REPLS NAS679A4W)		2
7	AN960-416		. WASHER		2
8	BACB30NE4-7		. BOLT (REPLS AN4-7A)		2
9	66-24441-1		. LOCKPLATE		1
10	MS28889-1		. VALVE, AIR		1
11	66-13205-1		. NUT, RETAINING		1
12	69-39467-1		. WASHER, LOCK		1
13	MS28783-2		. RING, BACKUP		2
14	MS28775-224		. PACKING, O-RING		1
15	MS28774-438		. RING, BACKUP (PRE SB 32-1096)	A-DA	1
16	MS28775-438		. PACKING, O-RING (PRE SB 32-1096)	A-DA	1
16	600PS438-04242		. T-SEAL, V30781 (OPT) (POST SB 32-1096) *[10]	A-DA	1
16	600PS438-04242		. T-SEAL, V30781 (OPT) *[10]	EA-XA ZA-WB	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
16	600PS438-04182		. T-SEAL, V30781 (POST SB 32-1096) (OPT) *[10]	A-DA	1
16	600PS438-04182		. T-SEAL, V30781 (OPT) *[10]	EA-XA ZA-WB	1
16	7438MS160T		. T-SEAL, V5F573 (POST SB 32-1096)(OPT) *[10]	A-DA	1
16	7438MS160T		. T-SEAL, V5F573 (OPT) *[10]	EA-XA ZA-DB	1
16	7438MS160T		. T-SEAL, V5F573 (OPT) *[10]	YA EB-WB	1
16	4242P95T7679A		. T-SEAL, V30781 (PREF) *[10] (REPLS 600PS43804242)		1
16	743B8MS160T		. T-SEAL, V5F573 (PREF) *[10] (REPLS 7438MS160T)		1
17	65-46159-6		. TUBE ASSY - ORIFICE SUPPORT (REPLS 65-46159-4, -5)	ABD-U W-Z CA	1
17	65-46159-4		. TUBE ASSY - ORIFICE SUPPORT (REPLD BY 65-46153-6, -7)	BCDF	1
17	65-46159-5		. TUBE ASSY - ORIFICE SUPPORT (REPLD BY 65-46159-6, -7)	CBDF	1
17	65-46159-7		. TUBE ASSY - ORIFICE SUPPORT (REPLS 65-46159-6)	A-YA DB-GB IB JB PB QB RB TB	1
17	65-46159-7		. TUBE ASSY - ORIFICE SUPPORT (OPT)	UB	1
17	65-46159-8		. TUBE ASSY - ORIFICE SUPPORT	ZA CB HB KB-OB SB	1
17	65-46159-9		. TUBE ASSY - ORIFICE SUPPORT (SERIALIZED)	WB	1
17	65-46159-9		. TUBE ASSY - ORIFICE SUPPORT (OPT) (SERIALIZED)	UB	1
17	65-46159-10		. TUBE ASSY - ORIFICE SUPPORT (SERIALIZED)	VB	1
18	BACN10JC3		. . NUT (REPLS NAS679A3W)		1
19	AN960D10L		. . WASHER		1
20	NAS1103-10		. . BOLT		1
21	69-38980-1		. . PLATE, ORIFICE (USED ON 65-46159-4, -5, -6, -7, -8)		1
21	69-38980-2		. . PLATE, ORIFICE (USED ON ITEM 65-46159-9, -10) (SERIALIZED)		1
22	65-46160-5		. . TUBE (USED ON 65-46159-4)		1
22	65-46160-6		. . TUBE (USED ON 65-46159-5) (PRE SB 32-1257)		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-22	65-46160-7		. . TUBE (USED ON 65-46159-6) (PRE SB 32-1257)		1
22	65-46160-8		. . TUBE (USED ON 65-46159-7) (PRE SB 32-1257)		1
22	65-46160-9		. . TUBE (USED ON 65-46159-8) (SERIALIZED) (PRE SB 32-1257)		1
22	65-46160-10		. . TUBE (USED ON 65-46159-9) (SERIALIZED) (PRE SB 32-1257)		1
22	65-46160-11		. . TUBE (USED ON 65-46159-10) (PRE SB 32-1257)		1
22	65C36351-1		. . TUBE ASSY (POST SB 32-1257) (REWORKED FROM 65-46160-6)		1
22	65C36351-3		. . TUBE ASSY (POST SB 32-1257) (REWORKED FROM 65-46160-7)		1
22	65C36351-5		. . TUBE ASSY (POST SB 32-1257) (REWORKED FROM 65-46160-8)		1
22	65C36351-7		. . TUBE ASSY (POST SB 32-1257) (REWORKED FROM 65-46160-9)		1
22	65C36351-9		. . TUBE ASSY (POST SB 32-1257) (REWORKED FROM 65-46160-10)		1
22	65C36351-11		. . TUBE ASSY (POST SB 32-1257) (REWORKED FROM 65-46160-11)		1
22A	65C36351-2		. . . TUBE SEGMENT, LOWER (USED ON 65C36351-1)		1
22A	65C36351-4		. . . TUBE SEGMENT, LOWER (USED ON 65C36351-3)		1
22A	65C36351-6		. . . TUBE SEGMENT, LOWER (USED ON 65C36351-5)		1
22A	65C36351-8		. . . TUBE SEGMENT, LOWER (USED ON 65C36351-7)		1
22A	65C36351-10		. . . TUBE SEGMENT, LOWER (USED ON 65C36351-9)		1
22A	65C36351-12		. . . TUBE SEGMENT, LOWER (USED ON 65C36351-11)		1
22B	65C36351-13		. . . TUBE SEGMENT, UPPER (USED ON 65C36351-1,-3)		1
22B	65C36351-14		. . . TUBE SEGMENT, UPPER (USED ON 65C36351-5, -7, -9, -11)		1
22C	65C36351-15		. . . PIN		1
22D	AN960KD616		. . . WASHER		2
22E	MS24665-151		. . . PIN, COTTER		2
23	65-46110-1		. CYLINDER ASSY, OUTER (PRE SB 32-1123)	B	1
23	65-46110-3		. CYLINDER ASSY, OUTER (PRE SB 32-1123)	CDFHK	1
23	65-46110-6		. CYLINDER ASSY, OUTER (PRE SB 32-1123)	NQRU	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
23	65-61740-1		. CYLINDER ASSY, OUTER (PRE SB 32-1123)	AEGIJLM	1
23	65-61740-3		. CYLINDER ASSY, OUTER (PRE SB 32-1123)	OPST V-JA NA	1
23	65-61740-5		. CYLINDER ASSY, OUTER (POST SB 32-1123)	KA-MA OA TA WA	1
23	65-61740-7		. CYLINDER ASSY, OUTER	XA	1
23	65-61740-8		. CYLINDER ASSY, OUTER	SA-VA	1
23	65-61740-10		. CYLINDER ASSY, OUTER (OPT)	TA	1
23	65-61740-10		. CYLINDER ASSY, OUTER	SA-VA XA YA DB-GB IB JB PB QB RB TB UB WB	1
23	65-61740-12		. CYLINDER ASSY, OUTER	ZA CB HB KB-OB SB VB	1
24	65-46150-51		. . BUSHING, TRUNNION LINK (USED ON 65-46110-1,-3,-6; 65-61740-1, -3,-5,-7,-8,-10)		2
24	65-46150-101		. . BUSHING, TRUNNION LINK (USED ON 65-61740-12)		2
25	65-46150-12		. . BUSHING, DRAG STRUT (USED ON 65-46110-1,-3,-6)		4
25	65-46150-54		. . BUSHING, DRAG STRUT (USED ON 65-61740-1,-3,-5,-7,-8,-10,-12)		4
26	65-46150-72		. . BUSHING, TORSION LINK (REPLS 65-46150-13, SB 32-1064) (USED ON 65-46110-1,-3) (PRE SB 32-1123)		2
26	65-46150-13		. . BUSHING, TORSION LINK (USED ON 65-46110-1,-3, 65-61740-1) (PRE SB 32-1123)		2
26	65-46150-72		. . BUSHING (USED ON 65-46110-6; 65-61740-3) (PRE SB 32-1132)		2
26	65-46150-89		. . BUSHING, TORSION LINK (USED ON 65-61740-5,-7,-8,-10,-12) (POST SB 32-1123)		2
26	65-46150-89		. . BUSHING, TORSION LINK (USED ON 65-61740-1,-3) (POST SB 32-1123)		2
26	65-46150-99		. . BUSHING, TORSION LINK (USED ON 65-46110-1,-3,-6) (POST SB 32-1123)		2

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-26A	65-46150-13		. . BUSHING, TORSION LINK (USED ON 65-61740-1,65-46110-1, -3, -6) (PRE SB 32-1123)		2
26A	65-46150-72		. . BUSHING, TORSION LINK (USED ON 65-61740-3) (PRE SB 32-1123)		2
26A	65-46150-89		. . BUSHING, TORSION LINK (USED ON 65-61740-5, -7, -8, -10, -12)		2
26A	65-46150-89		. . BUSHING, TORSION LINK (USED ON 65-61740-1, -3) (POST SB 32-1123)		2
26A	65-46150-99		. . BUSHING, TORSION LINK (USED ON 65-46110-1, -3, -6) (POST SB 32-1123)		2
27	65-46110-2		. . CYLINDER, OUTER (USED ON 65-46110-1)		1
27	65-46110-4		. . CYLINDER, OUTER (USED ON 65-46110-3, -6)		1
27	65-61740-2		. . CYLINDER, OUTER (USED ON 65-61740-1, -3)		1
27	65-61740-4		. . CYLINDER, OUTER (USED ON 65-61740-5)		1
27	65-61740-6		. . CYLINDER, OUTER (USED ON 65-61740-7)		1
27	65-61740-9		. . CYLINDER, OUTER (USED ON 65-61740-8)		1
27	65-61740-11		. . CYLINDER, OUTER (USED ON 65-61740-10)		1
27	65-61740-13		. . CYLINDER, OUTER (USED ON 65-61740-12)		1
28	69-39468-1		. RING, UPR BEARING RETAINER *[1]	A-E	1
28	69-65397-1		. SHELL ASSY, OUTER *[5]	D-Q	1
28	69-65397-1		. SHELL ASSY, OUTER	OR-WB	1
28A	69-65397-2		. . SHELL HALF		1
28B	69-65397-3		. . SHELL HALF		1
29	69-38985-2		. BEARING ASSY, UPR (MATCHED SET)	ABCOS	1
29	69-55432-1		. BEARING ASSY, UPR (MATCHED SET)*[5]	D-Q	1
29	69-65396-1		. SHELL ASSY, INNER (MATCHED SET)*[5]	D-Q	1
29	69-65396-1		. SHELL ASSY, INNER (MATCHED SET)	OR-WB	1
30	69-38985-3		. . BEARING HALF (USED ON 69-38985-2)		1
30	69-55432-2		. . BEARING HALF (USED ON 69-55432-1)		1
30	69-65396-3		. . SHELL HALF (USED ON 69-65396-1)		1
31	69-38985-4		. . BEARING HALF (USED ON 69-38985-2)		1
31	69-55432-3		. . BEARING HALF (USED ON 69-55432-1)		1
31	69-65396-2		. . SHELL HALF (USED ON 69-65396-1)		1
32	69-38982-1		. VALVE, SNUBBING (PRE SB 32-1082)	A-UWX	1
32	69-68730-2		. VALVE, SNUBBING (POST SB 32-1082)	A-UWX	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
32	69-68730-2		. VALVE, SNUBBING	VY-WB	1
32	69-68790-1		DELETED		
33	65-46158-4		. SPACER	VY-WB	1
33	65-46158-3		. SPACER (PRE SB 32-1082)	N-UWX	1
33	65-46158-2		. SPACER (OPT) (PRE SB 32-1082)	N-UWX	1
33	65-46158-2		. SPACER (PRE SB 32-1082)	A-M	1
33	65-46158-1		. SPACER (OPT) (PRE 32-1082)	A-G	1
33	69-68752-1		. SPACER ASSY (POST SB 32-1082) (USED WITH 69-68730-2)	A-WUX	1
33A	MS20470DD6-4		. . RIVET (USED ON 69-68752-1)		4
33B	SPACERMOD		. . SPACER (MADE FROM 65-46158-1, -2, -3)		1
34	MS28774-439		. RING, BACKUP		2
35	MS28775-439		. PACKING, O-RING		1
35A	S13068-437		. SEAL, CAM, V09257 (SPARE ONLY)	A-M	1
36	S12561-437		. SEAL, CHANNEL, V09257 *[2]	A-M	1
36	7437FT160A4780		. G-T RING, V5F573 *[2] *[6]	F-NA WA	1
36	7437FT972P3		. G-T RING, V5F573 *[6]	F-NA WA	1
36	7437FT972P3		. G-T RING, V5F573	OA-VA XA-WB	1
36	S34692-437GLF17		. T-SEAL, V09257 (OPT TO 7437FT972P3)		1
37	MS28775-437		. PACKING, O-RING *[2]	A-M	1
38	65-46165-3		. ADAPTER, SEAL (REPLS 65-46165-1, -2)		1
38	65-46165-2		. ADAPTER, SEAL (REPLD BY 65-46165-3)	A-UWX	1
38	65-46165-1		. ADAPTER, SEAL (REPLD BY 65-46165-2)	A-G	1
39	69-62283-1		. WASHER (REPLS 69-39466-1, -2)		1
39	69-39466-2		. WASHER (REPLD BY 69-62283-1)	A-G	1
39	69-39466-1		. WASHER (REPLD BY 69-39466-2)	A-G	1
40	MS28775-437		. PACKING, O-RING (SPARE) *[2]	A-E	2
40	7437FT160A4780		. G-T RING, V5F573 (SPARE) *[2]	F-NA WA	1
40	7437FT972P3		. G-T RING, V5F573 (SPARE)	OA-VA XA-WB	1
40	S34692-437GLF17		. T-SEAL, V09257 (SPARE) (OPT TO 7437FT972P3)		1
40	MS28775-437		. PACKING, O-RING (OPT, SPARE)	F-M	1
41	MS28775-439		. PACKING, O-RING (SPARE)		2
42	69-50997-1		. BEARING, LWR	ABC	1
42	69-55433-1		. BEARING, LWR	D-Q	1
42	65-86791-1		. BEARING ASSY, LWR	R-EB KB LB NB-QB	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-42	65-86791-3		. BEARING ASSY, LWR (65-86791-1 OPT)	V BA DA-GB KB LB NB-QB	1
42	69-50997-3		. BEARING, LWR	HB IB MB RB-WB	1
42A	65-86791-2		. . HOUSING (USED ON 65-86791-1)		1
42A	65-86791-4		. . HOUSING (USED ON 65-86791-3)		1
42B	69-65398-1		. . SLEEVE		1
43	S11065-3011		. SCRAPER, V09257 *[4]	F-CB EB FB GB NB PB	1
43	4186A53G0411		. SCRAPER, V5F573 *[4]	DB HB IB KB-MB OB QB-WB	1
43	753000A		. WIPER, V05695 (OPT TO S11065-3011)	F-M	1
43	753000A		. WIPER, V05695	A-E	1
44	69-38981-1		. ADAPTER, SCRAPER		1
45	69-39465-1		. NUT, GLAND	A-RA WA	1
45	69-39465-2		. NUT, GLAND (1/16 OVERSIZE) (REPAIR PART)	A-RA WA	1
45	69-39465-3		. NUT, GLAND (1/8 OVERSIZE) (REPAIR PART)	A-RA WA	1
45	69-39465-10		. NUT ASSY, GLAND (REPLS 69-39465-1)	A-RA WA	1
45	69-39465-10		. NUT ASSY, GLAND	SA-VA XA YA DB-GB IB PB-RB TB UB	1
45	69-39465-10		. NUT ASSY, GLAND (OPT)	UB	1
45	69-39465-12		. NUT ASSY, GLAND (1/16 OVERSIZE) (REPAIR PART) (REPLS 69-39465-2)	A-RA WA	1
45	69-39465-12		. NUT ASSY, GLAND (1/16 OVERSIZE) (REPAIR PART)	SA-VA XA YA DB-GB IB PB RB TB UB	1
45	69-39465-14		. NUT ASSY, GLAND (1/8 OVERSIZE) (REPAIR PART) (REPLS 69-39465-3)	A-RA WA	1
45	69-39465-14		. NUT ASSY, GLAND (1/8 OVERSIZE) (REPAIR PART)	SA-VA XA YA DB-GB IB PB-RB TB UB	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
45	69-39465-16		. NUT ASSY, GLAND	ZA CB HB KB-OB SB	1
45	69-39465-18		. NUT ASSY, GLAND (1/16 OVERSIZE) (REPAIR PART)	ZA CB HB KB-OB SB UB VB WB	1
45	69-39465-20		. NUT ASSY, GLAND (1/8 OVERSIZE) (REPAIR PART)	ZA CB HB KB-OB SB UB VB WB	1
45	69-39465-22		. NUT ASSY, GLAND (OPT) (SERIALIZED)	SB UB	1
45	69-39465-22		. NUT ASSY, GLAND (SERIALIZED)	VB WB	1
45	69-39465-24		. NUT, GLAND		1
45	69-39465-25		. NUT, GLAND		1
45	69-39465-26		. NUT, GLAND (1/16 OVERSIZE) (REPAIR PART)		1
45	69-39465-27		. NUT, GLAND (1/16 OVERSIZE) (REPAIR PART)		1
45	69-39465-28		. NUT, GLAND (1/8 OVERSIZE) (REPAIR PART)		1
45	69-39465-29		. NUT, GLAND (1/8 OVERSIZE) (REPAIR PART)		1
45	69-39465-TBD		. NUT, GLAND (3/16 OVERSIZE) (REPAIR PART)		1
45A	1728B		. . FITTING, LUBE, V95879 (USED ON 69-39465-10,-12,-14,-16,-18,-20,-22)		4
45B	69-39465-11		. . NUT (USED ON 69-39465-10)		1
45B	69-39465-13		. . NUT (USED ON 69-39465-12)		1
45B	69-39465-15		. . NUT (USED ON 69-39465-14)		1
45B	69-39465-17		. . NUT (USED ON 69-39465-16)		1
45B	69-39465-19		. . NUT (USED ON 69-39465-18)		1
45B	69-39465-21		. . NUT (USED ON 69-39465-20)		1
45B	69-39465-23		. . NUT (USED ON 69-39465-22) (SERIALIZED)		1
45C	BACP20AX15AP		. . PIN (REPAIR PART)		4
45D	BACP20AX15A		. . PLUG (REPAIR PART)		4
46	69-63321-1		. NUT (REPLS NAS509-12) (SB 32-1061)	A-J	1
46	NAS509-12		. NUT (REPLD BY 69-63321-1) (SB 32-1061)	A-J	1
46	69-63321-1		. NUT	K-WB	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
46A	69-63318-1		. SPRING (POST SB 32-1061)	A-J	1
46A	69-63318-1		. SPRING	K-WB	1
47	69-63320-1		. WASHER (REPLS 69-41622-2, -4) (SB 32-1061)	A-J	1
47	69-63320-1		. WASHER	K-WB	1
47	69-41622-2		. WASHER, LOCK (REPLD BY 69-63320-1) (SB 32-1061)	A-J	1
47	69-41622-4		. WASHER ASSY (OPT TO 69-41622-2) (REPLD BY 69-63320-1) (SB 32-1061)	A-J	1
47A	69-41622-1		. . WASHER (USED ON 69-41622-4)		1
47B	69-41622-3		. . WASHER (USED ON 69-41622-4)		1
47C	69-63319-1		. BUSHING (POST SB 32-1061)	A-J	1
47C	69-63319-1		. BUSHING	K-WB	1
48	MS28774-017		. RING, BACKUP		2
49	MS28775-017		. PACKING, O-RING		1
50	65-46156-1		. TUBE, DRAIN	A-YA FB PB	1
50	65-46156-2		. TUBE, DRAIN	ZA CB HB KB-OB SB	1
50	65-46156-3		. TUBE, DRAIN	DB EB GB IB QB-RB TB	1
50	65-46156-3		. TUBE, DRAIN (OPT)	UB	
50	65-46156-4		. TUBE, DRAIN (SERIALIZED)	SB VB	
50	65-46156-5		. TUBE, DRAIN (SERIALIZED)	WB	
50	65-46156-5		. TUBE, DRAIN (OPT)	UB	
51	69-38989-1		. WASHER		1
51A	NAS1057T16-010		. WASHER		1
52	MS28774-428		. RING, BACKUP		2
52	BACR12BM428		. RING, BACKUP (PREF)	HB IB PB-WB	2
53	MS28775-428		. PACKING, O-RING		1
54	65-46162-1		. PIN, METERING	B	1
54	65-61794-1		. PIN, METERING	AC-GJM PQTUX Z-EA GA HA JA KA MA-PA RA SA UA-WA	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
54	65-61794-1		. PIN, METERING (PRE SB 32-1179)	JA MA	1
54	65-46124-1		. PIN, METERING	HIKLNO RSVWY FA IA LA QA TA	1
54	65-46124-1		. PIN, METERING (POST SB 32-1179)	JA MA	1
54	65-46124-3		. PIN, METERING	XA YA DB-GB IB PB-RB TB	1
54	65-46124-3		. PIN, METERING (OPT)	UB	1
54	65-46124-5		. PIN, METERING (SERIALIZED)	WB	1
54	65-46124-5		. PIN, METERING (OPT) (SERIALIZED)	UB	1
54	65-46124-6		. PIN, METERING (SERIALIZED)	HIKLNO RSVWY FA IA-MA QA TA	1
54	65C32950-1		. PIN, METERING	ZA CB HB KB-OB	1
54	65C32950-2		. PIN, METERING (SERIALIZED)	SB VB	1
54	65C32950-3		. PIN, METERING PIN (OPT) (SERIALIZED)	ZA CB HB KB-OB SB-VB	1
55	65-46116-3		. CYLINDER ASSY, INNER (SB 32-1081) (PRE SB 32-1123)	B	1
55	65-46116-5		. CYLINDER ASSY, INNER (SB 32-1081) (PRE SB 32-1123)	CD	1
55	65-46116-7		. CYLINDER ASSY, INNER (SB 32-1081)	AE	1
55	65-46116-9		. CYLINDER ASSY, INNER (SB 32-1081) (PRE SB 32-1123)	F	1
55	65-46116-10		. CYLINDER ASSY, INNER (SB 32-1081) (PRE SB 32-1123)	G	1
55	65-46116-15		. CYLINDER ASSY, INNER (SB 32-1081) (PRE SB 32-1123)	HK	1
55	65-46116-16		. CYLINDER ASSY, INNER (SB 32-1081) (PRE SB 32-1123)	IJLM	1
55	65-46116-19		. CYLINDER ASSY, INNER (SB 32-1081) (PRE SB 32-1123)	NQRU	1
55	65-46116-20		. CYLINDER ASSY, INNER (SB 32-1081) (PRE SB 32-1123)	OPST	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
55	65-46116-23		. CYLINDER ASSY, INNER (SB 32-1081) (PRE SB 32-1123)	V BA EA FA	1
55	65-46116-25		. CYLINDER ASSY, INNER (PRE SB 32-1123)	WX	1
55	65-46116-27		. CYLINDER ASSY, INNER (PRE SB 32-1123)	Y CA	1
55	65-46116-29		. CYLINDER ASSY, INNER (PRE SB 32-1123)	Z	1
55	65-46116-30		. CYLINDER ASSY, INNER (PRE SB 32-1123)	DA GA	1
55	65-46116-31		. CYLINDER ASSY, INNER (PRE SB 32-1123)	HA IA	1
55	65-46116-33		. CYLINDER ASSY, INNER (PRE SB 32-1123)	JA	1
55	65-46116-35		. CYLINDER ASSY, INNER (POST SB 32-1123)	KA LA PA QA SA TA	1
55	65-46116-36		. CYLINDER ASSY, INNER (POST SB 32-1123)	MA RA UA	1
55	65-46116-37		. CYLINDER ASSY, INNER (PRE SB 32-1123)	NA	1
55	65-46116-38		. CYLINDER ASSY, INNER (POST SB 32-1123)	OA VA WA	1
55	65-46116-41		. CYLINDER ASSY, INNER	SA TA XA YA	1
55	65-46116-42		. CYLINDER ASSY, INNER	UA	1
55	65-46116-43		. CYLINDER ASSY, INNER	VA	1
55	65-46116-45		. CYLINDER ASSY, INNER	TA	1
55	65-46116-47		. CYLINDER ASSY, INNER	SA TA XA YA DB EB	1
55	65-46116-48		. CYLINDER ASSY, INNER	UA FB GB	1
55	65-46116-49		. CYLINDER ASSY, INNER	VA	1
55	65-46116-50		. CYLINDER ASSY, INNER	TA	1
55	65-46116-51		. CYLINDER ASSY, INNER	ZA	1
55	65-46116-53		. CYLINDER ASSY, INNER	CB KB	1
55	65-46116-55		. CYLINDER ASSY, INNER	LB MB	1
55	65-46116-56		. CYLINDER ASSY, INNER	IB PB QB	1
55	65-46116-57		. CYLINDER ASSY, INNER	HB NB OB	1
55	65-46116-58		. CYLINDER ASSY, INNER	RB	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
55	65-46116-59		. CYLINDER ASSY, INNER	SB VB	1
55	65-46116-60		. CYLINDER ASSY, INNER	TB	1
55	65-46116-61		. CYLINDER ASSY, INNER	UB WB	1
56	BACN10JC8		. . NUT (REPLS BACN10BY58) (USED ON 65-46116-3, -5, -7)		18
56	BACN10HR8C		. . NUT (REPLS BACN10BY58 OR BACN10JC8) (SB 32-1011) (USED ON 65-46116-3, -5, -7) (PRE SB 32-1253)		18
56	BACN10BY58		. . NUT (REPLD BY BACN10HR8C) (SB 32-1011) (USED ON 65-46116-3, -5, -7) (PRE SB 32-1253)		18
56	BACN10HR9C		. . NUT (REPLS BACN10HR8C) (SB 32-1054) (USED ON 65-46116-9, -10) (POST SB 32-1253)		18
56	BACN10HR8C		. . NUT (REPLD BY BACN10HR9C) (SB 32-1054) (USED ON 65-46116-9, -10) (PRE SB 32-1253)		18
56	BACN10HR9C		. . NUT (USED ON 65-46116-15, -16, -19, -20, -29, -30, -33, -36, -42, -48, -55) (POST SB 32-1253)		18
56	BACN10HR9C		. . NUT (USED ON 65-46116-23, -25, -27, -31, -35, -41, -45, -47, -50, -51, -53) (POST SB 32-1253)		2
56	BACN10HR9C		. . NUT (USED ON 65-46116-37, -38, -43, -49) (POST SB 32-1253)		6
56	BACN10HR9C		. . NUT (USED ON 65-46116-56, -57, -58) (POST SB 32-1253)		4
I 56	SPS42FLW-918		. . NUT (LOW PROFILE), V80539 (USED ON 65-46116-57) (LIMITED)		4
57	69-60078-1		. . WASHER (REPLS AN960-816) (SB 32-1011) (USED ON 65-46116-3, -5, -7) (PRE SB 32-1253)		18
57	69-60078-3		. . WASHER (REPLS AN960-816 OR 69-60078-1) (SB 32-1054) (USED ON 65-46116-5) (PRE SB 32-1253)		18
57	69-60078-1		. . WASHER (USED ON 65-46116-9, -10) (PRE SB 32-1253)		18
57	69-60078-3		. . WASHER (USED ON 65-46116-15, -16, -19, -20, -29, -30, -33, -36, -42, -48,-55) (PRE SB 32-1253)		18
57	69-60078-3		. . WASHER (USED ON 65-46116-23, -25, -27, -31, -35, -41, -45, -47, -50, -51, -53) (PRE SB 32-1253)		2

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-57	69-60078-3		. . WASHER (USED ON 65-46116-37, -38, -43, -49) (PRE SB 32-1253)		6
57	69-60078-3		. . WASHER (USED ON 65-46116-56, -57, -58) (PRE SB 32-1253)		4
57	AN960-816		. . WASHER (REPLD BY 69-60078-1) (SB 32-1011) (USED ON 65-46116-3, -5, -7) (PRE SB 32-1253)		18
57	AN960-816		. . WASHER (REPLD BY 69-60078-3) (SB 32-1054) (USED ON 65-46116-5) (PRE SB 32-1253)		18
57	BACW10P-325 SA		. . WASHER (USED ON 65-46116-3, -5, -7,-9, -10, -15, -16, -19, -20, -29, -30, -33, -36, -42, -48, -55) (POST SB 32-1253)		18
57	BACW10P-325 SA		. . WASHER (USED ON 65-46116-37, -38, -43, -49) (POST SB 32-1253)		6
57	BACW10P-325 SA		. . WASHER (USED ON 65-46116-56, -57, -58) (POST SB 32-1253)		4
57	BACW10P-325 SA		. . WASHER (USED ON 65-46116-23, -25, -27, -31, -35, -41, -45, -47, -50, -51, -53) (POST SB 32-1253)		2
58	69-59091-1		. . STUD (REPLS 69-43954-1) (POST SB 32-1011) (USED ON 65-46116-3, -5, -7) (PRE SB 32-1253)		18
58	69-43954-1		. . STUD (REPLD BY 69-59091-1) (PRE SB 32-1011, 32-1253) (USED ON 65-46116-3, -5, -7)		18
58	69-59091-1		. . STUD (PRE SB 32-1253) (USED ON 65-46116-9, -10)		18
58	69-62723-1		. . STUD (USED ON 65-46116-15, -16, -19, -20, -29) (PRE SB 32-1253)		18
58	69-62723-1		. . STUD (REPLS 69-43954-1 OR 69-59091-1) (POST SB 32-1054) (PRE SB 32-1253) (USED ON 65-46116-5, -9, -10)		18
58	69-78562-2		. . STUD (USED ON 65-46116-3, -5, -7, -9, -10, -15, -16, -19, -20, -29)		18
58	69-62723-1		. . STUD (USED ON 65-46116-25, -27) (PRE SB 32-1253)		2
58	69-78562-2		. . STUD (USED ON 65-46116-25, -27) (POST SB 32-1253)		2
58	69-62723-2		. . STUD (USED ON 65-46116-23, -31, -35, -41, -45, -47, -50, -51, -53) (PRE SB 32-1253)		2

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
58	69-62723-2		. . STUD (USED ON 65-46116-30, -33, -36, -42, -48, -55) (PRE SB 32-1253)		18
58	69-62723-2		. . STUD (USED ON 65-46116-37, -38, -43, -49) (PRE SB 32-1253)		6
58	69-62723-2		. . STUD (USED ON 65-46116-56, -57, -58) (PRE SB 32-1253)		4
58	69-78562-1		. . STUD (USED ON 65-46116-23, -31, -35, -41, -45, -47, -50, -51, -53) (POST SB 32-1253)		2
58	69-78562-1		. . STUD (USED ON 65-46116-30, -33, -36, -42, -48, -55) (POST SB 32-1253)		18
58	69-78562-1		. . STUD (USED ON 65-46116-37, -38, -43, -49) (POST SB 32-1253)		6
58	69-78562-1		. . STUD (USED ON 65-46116-56, -57, -8)(POST SB 32-1253)		4
59	65-46147-1		. . SLEEVE (PRE SB 32-1046) (USED ON 65-46116-3, -5, -7, -9, -10)		2
59	65-46147-2		. . SLEEVE (POST SB32-1046) (USED ON 65-46116-3, -5, -7, -9, -10)		2
59	65-46147-2		. . SLEEVE (USED ON 65-46116-15 THRU -38, -45, -50, -51)		2
59	65-46147-3		. . SLEEVE (USED ON 65-46116-41, -42, -43, -47, -48, -49, -56, -60)		2
59	65C33516-1		. . SLEEVE (USED ON 65-46116-53, -55, -57, -58, -59, -60, -61)		2
59	65C36462-2		. . SLEEVE (COMPONENT OF REWORK KIT 65C36462-1) (POST SB 32-1191)		1
60	69-39469-1		. . SPACER		2
61	65-46150-7		. . BUSHING (PRE SB32-1064) (USED ON 65-46116-3 THRU -16) (PRE SB 32-1123)		2
61	65-46150-71		. . BUSHING (POST SB 32-1064) (USED ON 65-46116-3 THRU -16)		2
61	65-46150-71		. . BUSHING (PRE SB 32-1123) (USED ON 65-46116- 9, -20, -23, -25, -27, -29, -20, -31, -33, -37)		2
61	65-46150-88		. . BUSHING (POST SB 32-1123) (USED ON 65-46116-19, -20, -23, -25, -27, -20, -31, -33, -37)		2
61	65-46150-88		. . BUSHING (USED ON 65-46116-35, -36, -38, -41, -42, -43, -45, -47 THRU -51, -53 -55, -56, -57, -58, -59, -60, -61) (POST SB 32-1123)		2

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
62	65-46116-4		. . CYLINDER, INNER (USED ON 65-46116-3)		1
62	65-46116-6		. . CYLINDER, INNER (USED ON 65-46116-5)		1
62	65-46116-8		. . CYLINDER, INNER (USED ON 65-46116-7)		1
62	65-46116-11		. . CYLINDER, INNER (PRE SB 32-1046) (USED ON 65-46116-9) (REPLD BY 65-46116-17)		1
62	65-46116-17		. . CYLINDER, INNER (POST SB 32-1046) (USED ON 65-46116-9) (REPLS 65-46116-11)		1
62	65-46116-17		. . CYLINDER, INNER (USED ON 65-46116 -15, -19)		1
62	65-46116-12		. . CYLINDER, INNER (PRE SB 32-1046) (USED ON 65-46116-10) (REPLD BY 65-46116-18)		1
62	65-46116-18		. . CYLINDER, INNER (POST SB 32-1046 (USED ON 65-46116-10) (REPLS 65-46116-12)		1
62	65-46116-18		. . CYLINDER, INNER (USED ON 65-46116-16, -20)		1
62	65-46116-24		. . CYLINDER, INNER (USED ON 65-46116-23, -30)		1
62	65-46116-26		. . CYLINDER, INNER (USED ON 65-46116-25)		1
62	65-46116-28		. . CYLINDER, INNER (USED ON 65-46116-27, -29)		1
62	65-46116-32		. . CYLINDER, INNER (USED ON 65-46116-31, -33, -37)		1
62	65-46116-34		. . CYLINDER, INNER (USED ON 65-46116-35, -36, -38)		1
62	65-46116-44		. . CYLINDER, INNER (USED ON 65-46116-41, -42, -43, -45)		1
62	65-46116-44		. . CYLINDER, INNER (USED ON 65-46116-35, -36, -38) (OPT)		1
62	65-46116-46		. . CYLINDER, INNER (USED ON 65-46116-47 THRU -50, -56, -58, -60, -61)		1
62	65-46116-52		. . CYLINDER, INNER (USED ON 65-46116-51)		1
62	65-46116-54		. . CYLINDER, INNER (USED ON 65-46116-53, -55, -57, -59)		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
63	BACN10JC5		. . NUT, SELF-LOCKING *[3] (USED ON 65-46116-15, -16)		2
63A	MS16633-4031		. . RING (POST SB 32-1046) (USED ON 65-46116-7, -10)		2
63A	MS16633-4031		. . RING *[3] (USED ON 65-46116-16)		2
63A	MS16633-4031		. . RING (USED ON 65-46116-19 AND ON)		2
63A	MS16633-4037		. . RING, RETAINER (COMPONENT OF REWORK KIT 65C36462-1)		7
63B	MS24665-132		. . PIN, COTTER (POST SB 32-1046) (USED ON 65-46116-3, -5, -9)		2
63B	MS24665-132		. . PIN, COTTER *[3] (USED ON 65-46116-15)		2
63B	MS24665-132		. . PIN, COTTER (USED ON 65-46116-19)		2
63B	MS24665-132		. . PIN, COTTER (COMPONENT OF REWORK KIT 65C36462-1)		7
64	AN960-516L		. . WASHER (USED ON 65-46116-16, -20, -23, -25, -27, -30, -31, -33, -35 THRU-38)		2
65	BACW10CA5CVS		. . WASHER, CONVEX *[3] (USED ON 65-46116-15, -16)		2
66	66-25180		. . PIN (USED ON 65-46116-15, -16)		2
66	66-25180-1		. . PIN (POST SB 32-1046) (USED ON 65-46116-3, -5, -7, -9, -10)		2
66	66-25180-1		. . PIN *[3] (USED ON 65-46116-15, -16)		2
66	66-25180-1		. . PIN (USED ON 65-46116-19 AND ON)		2
66	65C36462-3		. . PIN, RETAINER (COMPONENT OF REWORK KIT 65C36462-1)		7
66	BACB30EL5-10		. . BOLT, 100° REDUCED HEAD *[3] (USED ON 65-46116-15, -16)		2
67	65-46116-39		. . PLUG (POST SB 32-1123)		1
67	65-46116-39		. . PLUG (USED ON 65-46116-35, -36, -38, -41, -42, -43, -45, -47 THRU -50, -56, -58) (OPT)		1
68	65-46116-40		. . PLUG (POST SB 32-1123)		1
68	65-46116-40		. . PLUG (USED ON 65-46116-35, -36 -38, -41, -42, -43, -45, -47 THRU -50, -56, -58) (OPT)		1
69	1646B1		. . FITTING, LUBE, V95879 (USED ON 65-46116-35, -36, -38, -41, -42, -43, -45, -47 THRU -50) (OPT) (USED WITH ITEMS 67, 68)		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-69	1646B1		. . FITTING, LUBE, V95879 (POST SB 32-1123)		1
69	1992B		. . FITTING, LUBE, V95879 (USED ON 65-46116-35, -36, -38 AND ON)		1
	65C15616		INSTALLATION PART TRANSDUCER INSTL, WEIGHT AND BALANCE (FIG. 1102)		RF

*[1] OPTIONAL PART. DELETION IS PREFERRED.

*[2] S12561-437 PLUS MS28775-437 OPTIONAL TO 7437FT160A4780 ON SHOCK STRUTS 65-46100-12 THRU -19.

*[3] 66-25180-1 AND MS16633-4031 OR MS24665-132 REPLACE BACB30EL5-10, BACW10CA5CVS AND BACN10JC5.

*[4] REFER TO SERVICE LETTER 737-SL-32-18 FOR DATA ABOUT INTERCHANGEABILITY OF PARTS THAT MAKE UP THESE COMPONENTS AS THEY ARE USED ON AIRPLANES WITH DIFFERENT MAX GROSS WEIGHTS. THIS SERVICE LETTER NOW INCLUDES LIFE LIMIT DATA.

*[5] 69-65396-1 TOGETHER WITH 69-65397-1 CAN REPLACE 69-55432-1.

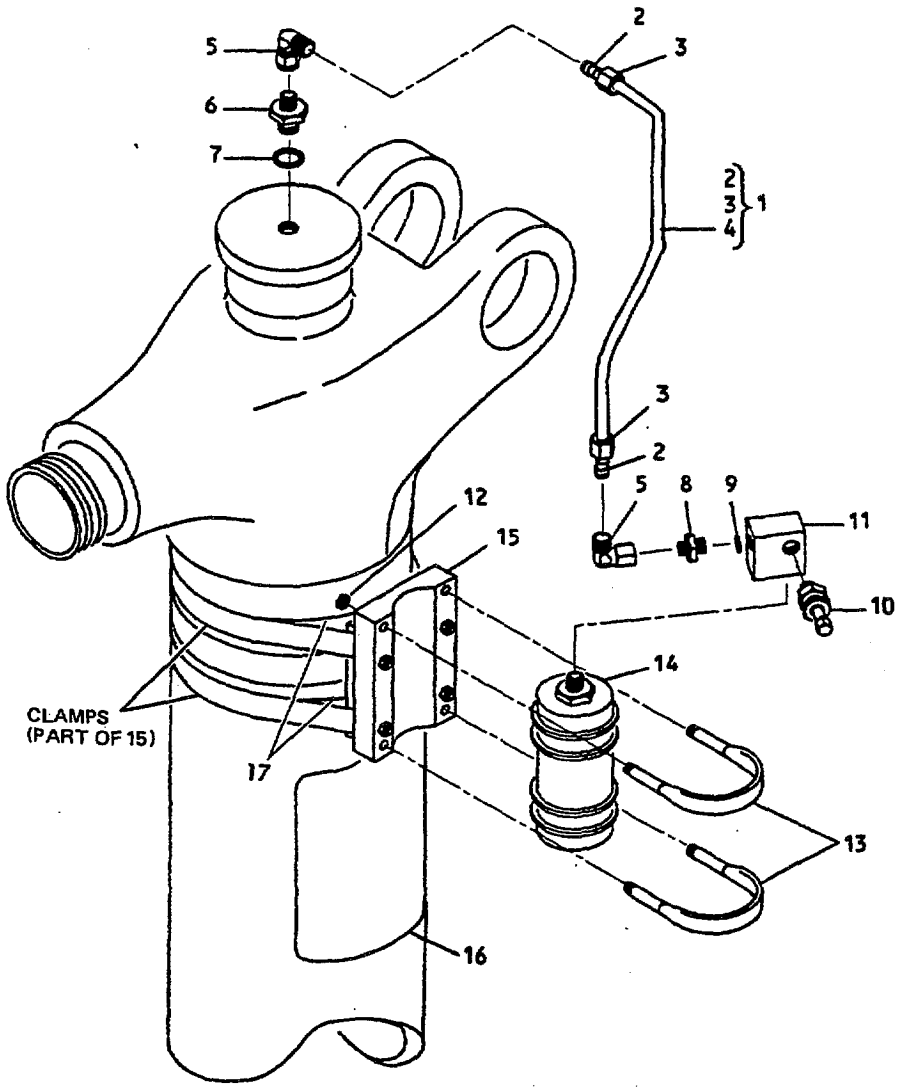
*[6] 7437FT972P3 CAN REPLACE 7437FT160A4780 (REF SERVICE LETTER 737-SL-32-26).

*[7] 65-46100-56 AND 65-46100-57 SHOCK STRUTS HAVE THE SAME PARTS, BUT THE 65-46100-57 STRUT MUST USE ONLY A 743B8MS160T OR 7438MS160T SEAL (16).

*[8] PARTS MODIFIED BY SB 32-1235 DO NOT HAVE CHANGED PART NUMBERS.

*[9] THE BRAKE MOUNTING NUTS, WASHERS AND STUDS (ITEM 56, 57, 58) ARE PART OF THE WHEEL AND BRAKE INSTALLATION (OHM 32-16-11) INSTEAD OF THE SHOCK STRUT (OHM 32-11-11) FOR STRUT ASSY 65-46100-75 AND ON (PRR 33890-83) (SB 32-1253).

*[10] T-SEAL KIT CONTAINS TWO BACKUP RINGS.



Weight and Balance Transducer Installation
Figure 1102

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1102-					
	65C15616-1		TRANSDUCER INSTL, WEIGHT AND BALANCE	A	RF
	65C15616-2		TRANSDUCER INSTL, WEIGHT AND BALANCE	B	RF
1	65C15616-5		. TUBE ASSY	A	1
1	65C15616-6		. TUBE ASSY	B	1
2	BACS13BD4HP		. . SLEEVE		2
3	MS21921-4		. . NUT		2
4			. . TUBE, 1/4 OD X 0.016 WALL, COLD DRAWN STEEL		AR
5	BACE21AW0404		. ELBOW		2
6	69-68800-1		. REDUCER		1
7	MS28775-015		. PACKING		1
8	MS21916-5-4		. REDUCER		1
9	MS28778-5		. O-RING		1
10	MS28889-1		. VALVE, AIR		1
11	968-98-1		. BLOCK, TEE, V06141	A	1
11	968-98-2		. BLOCK, TEE, V06141	B	1
12	BACN10JC3		. NUT		4
13	BACC10Y32-10C		. CLAMP		2
14	968-6000-1		. TRANSDUCER, PRESSURE, V06141		1
15	65C15616-8		DELETED		
15	21229-1		. CRADLE ASSY, V94581		1
15	BC1155		. CRADLE ASSY, V14242 (OPT)		1
16	B968-572		. MARKER, V06141		1
17	65C15616-9		. TAPE		1

VENDORS

V05695	MASTER PNEUMATIC-DETROIT INC., 6701 18-MILE ROAD, STERLING HEIGHTS, MICHIGAN 48314-4263
V06141	L-3 COMMUNICATIONS CORP., AVIATION RECORDERS, 6000 E. FRUITVILLE RD., SARASOTA, FLORIDA 34232-6414
V09257	TRELLEBORG SEALING SOLUTIONS, 2531 BREMER RD., FORT WAYNE, INDIANA 46803-3014
V10380	CAMBRIDGE WIRE CLOTH CO., 105 GOODWILL RD., P.O. BOX 399, CAMBRIDGE, MARYLAND 21613-2980
V14242	VOSS INDUSTRIES, 2168 WEST 25TH ST., CLEVELAND, OHIO 44113-4115
V30781	PARKER-HANNIFIN CORP., ENGINEERED POLYMER SYSTEMS, 2220 SOUTH, 3600 WEST, P.O. BOX 30505, SALT LAKE CITY, UTAH 84119-1124
V5F573	GREENE TWEED & CO., INC., 2075 DETWILER RD., KULPSVILLE, PENNSYLVANIA 19443
V5N084	PRECISE TOOL AND GAGE CO., INC., 30540 S.E. 84TH ST., UNIT 2, PRESTON, WASHINGTON 98050
V6F140	COMPONENT PRODUCTS CORP., 11623 CYRUS WAY, MUKILTEO, WASHINGTON 98275-5405
V74979	THE JOHNSON GAGE COMPANY, 534 COTTAGE GROVE ROAD, BLOOMFIELD, CONNECTICUT 06002-3093
V76381	3M COMPANY, 3M CENTER BLDG.-220 11W-02, ST. PAUL, MINNESOTA 55144-1001
V80539	SPS TECHNOLOGIES DBA AEROSPACE FASTENERS GROUP, 2701 SOUTH HARBOR BLVD., SANTA ANA, CALIFORNIA 92704-5803
V94581	NATIONAL UTILITIES CORP. (NUCO), DIV. OF VIJ CORP., 1700 HICKORY DR., FORT WORTH, TEXAS 76117-6020
V95879	ALEMITE DIVISION OF STEWART WARNER CORP., 1826 DIVERSEY PARKWAY, CHICAGO, ILLINOIS 60614-1540
V99240	CRISSAIR, INC., 38905 TENTH ST. E., PALMDALE, CALIFORNIA 93550-3415