1. General

The following maintenance to brake assemblies and wheel assemblies is intended to be performed while these assemblies are off the aircraft.

2. Brake Assembly Maintenance

This section provides complete repair and refinishing instructions for the brake assembly. When servicing the brake assembly, careful handling of the brake components will assure optimum service life and trouble free operation.

CAUTION: A PRESSURE TEST [PARAGRAPH 2.D. (5)] IS REQUIRED WHENEVER THE FOLLOWING OCCURS:

- ANY REPAIR TO THE CYLINDER PRESSURE CHAMBER OR PISTON.
- ANY TIME A PISTON OR O-RING IS REMOVED WHICH CAN CAUSE DAMAGE TO THE O-RING; OR A NEW O-RING IS INSTALLED WHICH MAY UNKNOWINGLY BE DEFECTIVE.

THE BRAKE CYLINDER AND TORQUE PLATE SHOULD BE PROPERLY MAINTAINED TO PROTECT THE PAINT AND SURFACE FINISHES; EXPOSED ALUMINUM OR MAGNESIUM IS SUSCEPTIBLE TO CORROSION. NICKS, SCRATCHES, AND OTHER DAMAGE CAUSED BY IMPROPER HANDLING OF BRAKE PARTS DURING MAINTENANCE INVITE CORROSION, WHICH IF UNATTENDED, COULD LEAD TO FATIGUE CRACKS AND BRAKE FAILURE.

A. Removal From Aircraft

NOTE: Wheel removal is not necessary unless brake torque plate is to be removed.

The following procedure describes how to remove the brake assembly from the main wheel.

WARNING: INSURE PARKING BRAKE IS IN OFF POSITION AND WHEELS ARE BLOCKED.

(1) Remove and cap hydraulic line attached to brake. Cap brake inlet fitting.

(2) Remove back plate tie bolts and washers, and remove back plate.

(3) Carefully slide brake cylinder out of torque plate.

(4) If torque plate removal is required, remove wheel/tire per wheel removal instructions in paragraph 3. Wheel Assembly Maintenance.

SAFETY WARNING : DEFLATE TIRE IMMEDIATELY AFTER JACKING AIRCRAFT AND BEFORE AXLE NUT IS LOOSENED. FAILURE TO DEFLATE TIRE BEFORE WHEEL REMOVAL COULD RESULT IN SEVERE PERSONAL INJURY

(5) Remove torque plate attachment bolts, nuts, and washers. Note the torque plate mounting rotational orientation for reinstallation.

(6) Remove torque plate.

B. Brake Disassembly

(1) Disassembly Procedures

The following disassembly procedures for the removed brake assembly also apply to dual-caliper brakes. Disassembly should be performed only to the level required to effect necessary repairs. Refer to Figure 2, DESCRIPTION AND OPERATION section for a general illustration, or to the Product Catalog for the specific illustration of the unit being disassembled.

CAUTION: DISASSEMBLE BRAKE ON A CLEAN, CUSHIONED, FLAT SURFACE, BEING CAREFUL NOT TO NICK, SCRATCH, OR GOUGE BRAKE PARTS.

NOTE: Inspect parts in the dirty condition, as removed, for sources of leakage, damage, corrosion, and moisture in brake fluid.

(a) Separate assembled cylinder (1) and torque plate (16). Brake assemblies that use metallic lining will also incorporate a thermal insulator shim (18) located between the back plate (4) and cylinder (1), and piston insulator (17), pressed into piston pocket, isolating piston (7), and pressure plate (5).

(b) Remove back plate attachment bolts (2) and washers (3). Separate cylinder (1) and back plate (4).

(c) Remove pressure plate (5) by sliding over anchor pins (14).

(d) Remove inlet fitting.

(e) On brakes so equipped, remove external retract mechanism from back of caliper. Note position of components for reassembly purposes.

SAFETY WARNING : USE CAUTION IN BLOWING PISTONS OUT OF CYLINDER WITH AIR, AS PISTONS COULD FLY OUT AT HIGH VELOCITY. IT IS SUGGESTED THAT THE CYLINDER BE TURNED OVER SO THAT PISTONS FACE WORKING SURFACE. USE A RAG TO CUSHION PISTON CONTACT WITH SURFACE TO PREVENT PISTON DAMAGE. SAFETY GLASSES SHOULD BE WORN TO PROTECT EYES AND PREVENT DIRT OR BRAKE FLUID FROM ENTERING EYES.

DEATH OR SERIOUS INJURY COULD OCCUR IF COMPRESSED AIR IS DIRECTED AGAINST THE SKIN. MAXIMUM PRESSURE SHALL NOT EXCEED 20 PSI (138 kPa). WHEN WORKING WITH COMPRESSED AIR ALWAYS USE CHIP GUARDS, EYE PROTECTION, AND OTHER PERSONAL PROTECTIVE EQUIPMENT.

(f) Remove pistons (7) by injecting air into the ports (15 to 20 psi) [103 to 138 kPa] maximum pressure.

NOTE: Some pistons are equipped with a friction spring (drag ring) on the piston tail. It is recommended that this ring not be removed unless it is damaged or corroded. Ref. Figure 301.

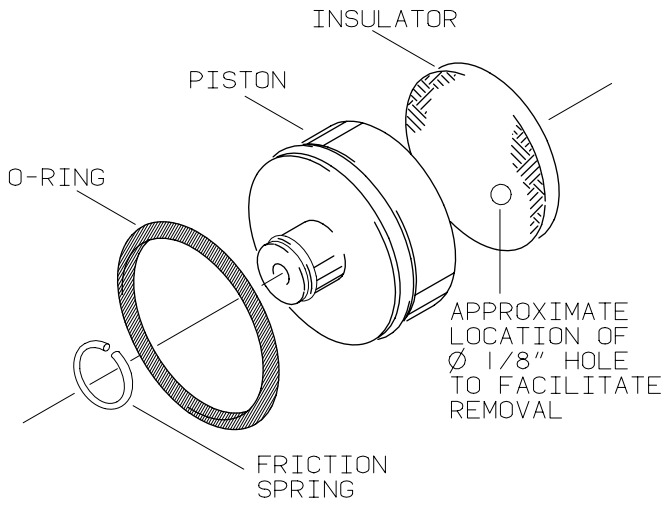

Figure 301 - External Piston Guide

(g) Remove o-rings (8) from either pistons or cylinder. It is recommended that o-rings be replaced at reassembly. However, if necessary, o-rings may be reused if not damaged, cut, or deteriorated.

CAUTION: CARE SHOULD BE USED IN HANDLING O-RINGS TO PREVENT DAMAGE.

(h) If possible, it is always best to remove o-rings without the use of tools. This may be accomplished as follows:

Securely holding piston in one hand, using opposite hand, form a “V” with thumb and index finger and push directly against o-ring to extrude it away from the piston groove on opposite side of piston. Push until outside diameter of the piston matches the natural radius on your hand between the index finger and thumb. Piston should now be held firmly in place with this hand. Grip extruded o-ring on opposite side and remove from piston.

If this method is unsuccessful use Cleveland’s O-ring Extractor Kit, P/N 199-18, for o-ring removal.

(i) A piston to pressure plate insulator disc is used on brake assemblies with metallic linings. Constant heat and pressure will compress the insulator over time. Replace the insulator when it is flush with the head of the piston. Drill 1/8” diameter hole directly into insulator approximately .10 inches deep, slightly off center, but not close to outside diameter of piston. Use small screwdriver working through the 1/8” diameter hole, lift and pry off insulator disc.

(j) Remove bleeder fitting (9), rubber caps, and o-rings from cylinder.

NOTE: Some designs have an internal piston guide (inside of the piston) attached to the cylinder by a bolt, washer, and Stat-O-Seal. It is recommended that this unit not be removed unless it is damaged or corroded. Ref. Figure 302. If Stat-O-Seal is removed, replace it. Do not reuse as it will not re-seal properly.

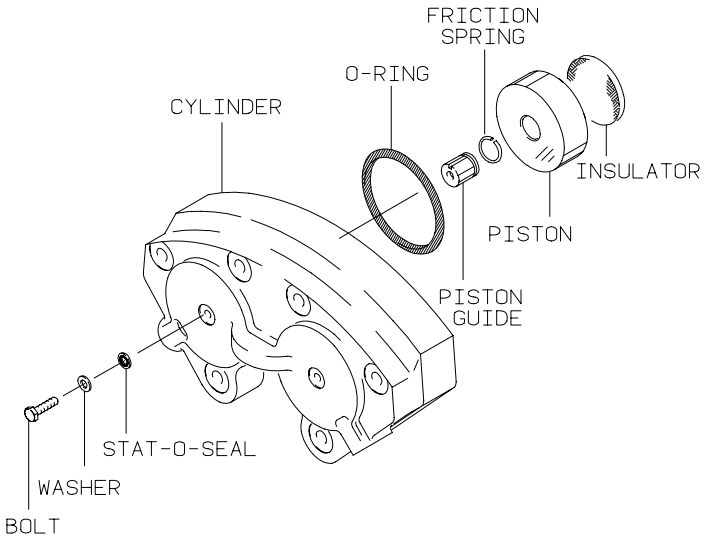

Figure 302 - Internal Piston Guide

(2) Lining Removal

Removal of the linings is unique for both metallic and organic linings. The following text explains how to identify whether a lining is metallic or organic and gives step-by-step removal procedures. The minimum wear thickness on metallic and organic linings is 0.100 inch (2.54 mm) thickness. Ref. Appendix A, Figure A1. A brake assembly / lining cross-reference list is located in Appendix C.

(a) Removal of Metallic Linings

The metallic lining is a hard composition and is attached by pins which press fit into the back surface (steel carrier plate) of the lining. Ref. Figure 202. The holes for the pins are not visible on the lining surface unless the lining is worn beyond its wear limit. Remove as follows:

NOTE: On some designs with a wide face lining, a rivet is also used for retention.

1 Pry lining off pressure plate/back plate with a thin screwdriver.

2 Damaged attachment pins may be removed by carefully drilling out the pin.

(b) Removal of Organic Linings

The organic brake lining is identified by its semi hard composition and rivets used to attach the lining to the pressure plate. The rivet holes are visible on the lining. Remove as follows:

1 Being careful not to enlarge holes in pressure plate/back plate, drill out rivets attaching lining with a 1/8-inch diameter drill.

2 Separate lining from pressure plate/back plate.

(3) Anchor Bolt Removal

(a) Remove anchor bolt attachment nuts (12) and washers (13). The anchor bolts should be removed by using an arbor press. Ref. Figure 303.

(b) Place on a clean, flat surface to prevent damage and nicks to soft cylinder material.

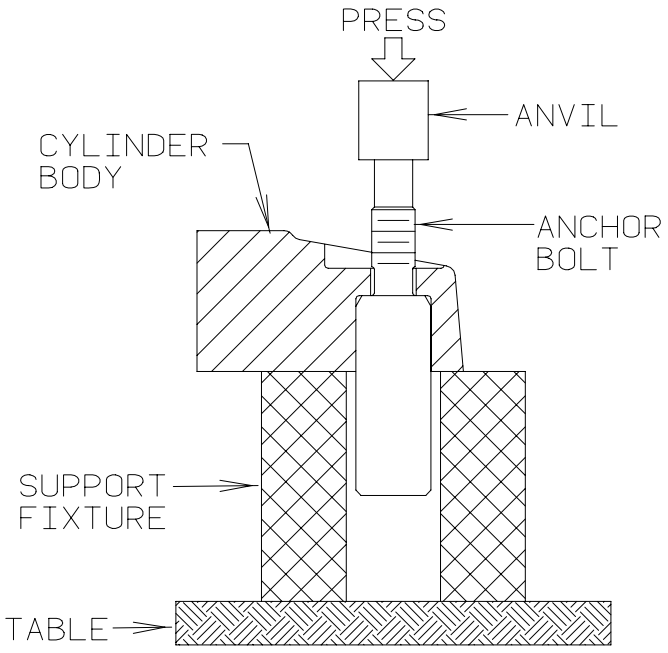

Figure 303 - Anchor Bolt Removal

C. Inspection

NOTE: Parts of the inspection procedure require removal of paint. Refer to Section 4 for information concerning paint removal and refinishing of these parts.

(1) Visually inspect cylinder for cracks, nicks, corrosion, or other damage. Cracks in the lug area around the anchor bolts or the port bosses are cause for replacement of the cylinder. Check for dimpled areas around back plate bolt holes. Maximum allowable depression is 0.005 inch (0.127 mm). Ref. Figure 304.

(2) Inspect the fitting ports and piston bores for contamination. Light scratches or nicks in the piston bores, pilot bores, or on the chamfered surfaces within these bores may be hand polished with 600 grit emery. Power tools are not recommended as they may remove excessive amounts of material. Thoroughly clean part.

NOTE: Heavy scratches, nicks and burrs in the pilot bore area can prevent the pistons from properly retracting, resulting in brake drag.

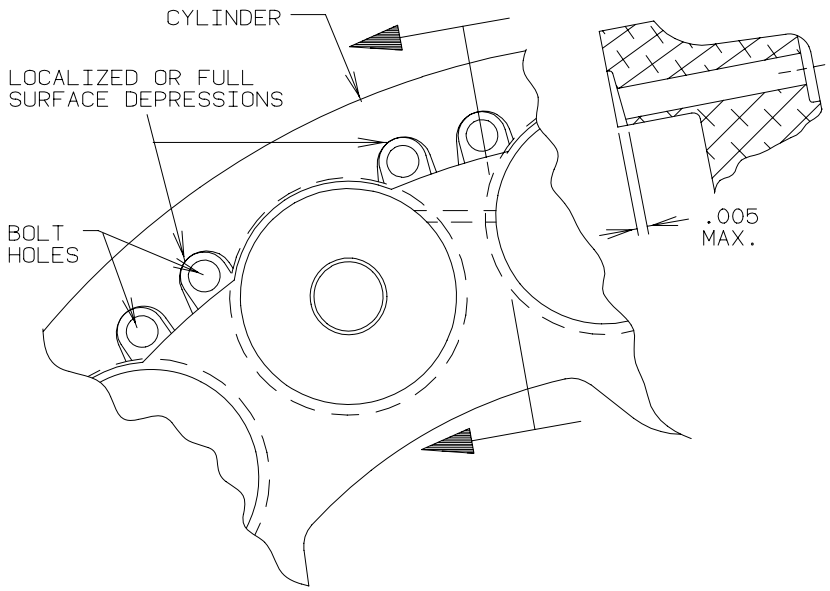

Figure 304 -Cylinder To Back Plate Surface Inspection

(3) Replace o-rings with o-rings of corresponding part numbers. If necessary, o-rings may be reused in the same position from which they were removed if not damaged. Inspect o-rings for cuts, nicks, distortion, or excessive wear. Check to be sure o-ring has not become brittle. Refer to o-ring removal procedure in paragraph 2B (1)(h).

(4) Inspect pistons for nicks or burrs. Check the piston tail for damage, and replace piston if damaged beyond repair. Remove nicks or burrs by hand polishing with 600 grit emery paper. Thoroughly clean part.

(5) Inspect brake lining for edge chipping and surface deterioration. Normal use will result in some edge chipping. A maximum of 10 percent surface loss is acceptable. Minor accumulation of metal chips in lining is normal and not detrimental. Elongated rivet or pin holes is cause for replacement. Smearing of lining material on the brake disc which exceeds 30 percent of the surface is cause for replacement.

NOTE: Any fluid contamination of organic brake lining is cause for replacement.

(6) Inspect back plates and pressure plate for cracks, nicks, rust, warping, stripped threads, elongated holes, or other damage. Small nicks and light corrosion may be hand finished using emery of 600 grit sandpaper. Any area from which the protective coating is removed should be thoroughly cleaned and treated per instructions in Chapter 4 of this section.

NOTE: Slightly warped pressure plates can be cold straightened, Ref. Figure 201. When laid on a flat surface, flatness should be within 0.010 inch (0.254 mm). Warped pressure plates can cause brake drag.

(7) Inspect anchor bolt bushings in torque plate for internal corrosion or contamination. If present, clean with emery and apply a light coat of dry film lubricant, (Silicone-Spray). **DO NOT USE GREASE OR OIL.** Exercise care in removing corrosion from torque plate bushings to prevent material removal.

NOTE: Cast torque plates have bushings press fit into the casting. The unit must be replaced as an assembly. Individual components are not available.

(8) Check for steps in bushing holes, which indicate severe cocking of the cylinder anchor bolts in the torque plate. Bushing damage is cause for torque plate replacement.

NOTE: Bushings installed in cast torque plates must have the lip of the bushing seated flat against the machined torque plate surface.

(9) Check the anchor bolt bushings and mounting bolt hole areas for elongation or cracks. Badly elongated holes or cracked torque plates should be replaced with a new torque plate of corresponding part number. Minor corrosion on the torque plates should be removed with 600 grit emery.

(10) Inspect bolts for cracks, bending, thread damage, or excessive corrosion. Bolts with evidence of any of these should be replaced with bolts of corresponding part numbers, as specified in the Cleveland parts list or catalog. Two different types of back plate tie bolts are used. The patch lock bolt (nylon material embedded in threaded end) will require replacement after 6 to 8 installations or whenever the bolts can be run in past the locking feature by use of fingers only. Bolts with drilled heads require safety wire after torquing.

D. Brake Reassembly

CAUTION: ASSEMBLE BRAKE ON A CLEAN FLAT SURFACE, BEING CAREFUL NOT TO NICK, SCRATCH, OR DAMAGE PROTECTIVE FINISH OF BRAKE PARTS.

(1) Reassembly Procedures

(a) Thoroughly clean parts before assembling.

(b) If anchor bolts were removed, install anchor bolts using an arbor press and a holding fixture. Refer to Figure 305. Insure that bolt is **perpendicular** to the cylinder and **parallel** to one another. Install washers and nuts. Dry torque nuts to 90 inch-pounds (7.9 N·m). The torque to overcome the locking feature of the nut must be added to the above torque level to obtain the true torque.

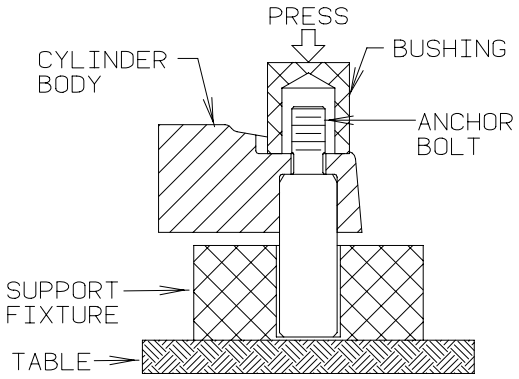

Figure 305 - Anchor Bolt Installation

(c) Use an arbor press and install new piston insulator disc (puck) into piston pocket. Examine outside diameter lip of piston and replace if cracked or if O.D. is excessively enlarged and interferes with installation.

(d) Check friction spring for sharp edges. Carefully square off edges by light filing or sanding.

(e) Install o-rings on pistons or in cylinder. O-rings and cylinder bores should be lubricated with brake fluid or a silicone-based O-ring grease per MIL-G-4343 or Dow Corning 55 O-Ring Lubricant.

(2) Installation of Pistons

Installation of pistons with an internal guide is the same as for other pistons. Care must be taken to insure that no damage to parts occurs during installation. If considerable effort is required, remove piston and inspect bore and pilot bore area for damage. If bore is damaged, check the corresponding area of piston for damage.

(a) Place piston in bore and rotate to seat friction spring (if applicable), and insure that piston and o-ring are in proper alignment. Press piston into bore by hand. Tap the piston squarely with a wooden or plastic mallet (if required) while rotating piston.

(3) Lining Installation

Refer to ON-AIRCRAFT MAINTENANCE section for instructions.

(4) Further Reassembly of Brake Components

The remaining components of the dissembled brake unit shall be reassembled as follows:

(a) Install inlet fitting, bleeder fitting, rubber caps, and O-rings, if applicable. A majority of the inlet fittings used on Cleveland brakes are pipe threads. Care should be exercised to prevent over tightening which could result in cracking of the cylinder casting. Install pipe thread fittings as follows.

CAUTION: NEVER BACK OFF (LOOSEN) PIPE THREADED FITTINGS TO ACHIEVE ALIGNMENT.

1 Inspect and clean each fitting to remove any oil or surface contamination prior to assembly.

CAUTION: AVOID COATING THE FIRST THREAD TO AVOID SYSTEM CONTAMINATION.

2 Apply a light coat of a thread lubricant (Lubon #404) to the threads of the fitting.

3 Screw the fitting into the port to the finger tight position.

4 Wrench tighten the fitting 1 to 1-1/2 turns from finger tight. Fittings that require a specific orientation to receive the incoming tube or hose assembly may be adjusted from 1 to 2 turns, beyond finger tight to achieve the desired location.

Straight thread inlet fittings and bleeder adapter fittings with o-rings are to be torqued 65-70 in-lb. Bleeder seats are to be tightened snug to preclude leakage.

NOTE: Cap fittings if brake is not being immediately installed on the aircraft.

(b) Install pressure plate lining facing away from pistons by sliding over anchor bolts. Pressure plate should slide freely over anchor bolts.

(c) Install back plates with attachment bolts and washers. Install metal or insulating shim, if applicable. Do not tighten bolts if brake is to be installed on aircraft or put into storage. Insulating (fiber) shims are used on brakes with metallic linings.

(d) Install cylinder assembly in torque plate by sliding anchor bolts into bushings. Dry film lubricants such as silicone spray should be applied to anchor bolts and torque plate bushings to assist sliding motion. Exercise care to insure that linings do not become contaminated with fluid or lubricant. For best service life, **cylinders must slide freely in torque plate**.

(5) After installation on the aircraft, pressure test the brake assembly at 600 psi and check for leakage.

E. Storage

Brake assemblies which are not to be immediately installed on the aircraft must be properly stored. Acceptable storage conditions are listed below.

CAUTION: BRAKES STORED IN CARDBOARD BOXES, WHICH HAVE BECOME WET OR HAVE BEEN EXPOSED TO HIGH HUMIDITY, CAN BECOME CORRODED.

(1) The length of time that a brake assembly can be stored is governed by the storage life of its rubber components. Basically, rubber components are considered to have a storage life of up to ten years from the date of cure. The storage life may be shortened by exposure to sunlight, extreme temperatures, humidity, ozone, contamination of fluids, severe operating conditions, etc.

(2) Normal storage environmental temperatures of 50° to 77°F (10° to 25°C) are desired. If this temperature range cannot be maintained, temperatures as high as 125°F (51.7°C) and as low as -20°F (-28.9°C) can be tolerated for shorter periods. Total time above 100°F (37.8°C) shall not exceed three months.

3. Wheel Assembly Maintenance

This section covers the removal, disassembly, inspection, reassembly, and installation of the main, nose, and tail wheel assemblies. When conducting wheel maintenance, observe the following general cautions:

- Careful handling of the wheel components will assure a long service life and trouble free operation.
- Strictly observe the tire deflation and inflation procedures, and the torque values specified. Wheel nut torque values are shown on the nameplate or on the outboard wheel half. Do not overtighten any bolt, nut, or fitting. Do not employ impact or power wrenches to remove or tighten any threaded parts.
- Handle the wheel bearing cones with extreme care. Many bearing failures can be traced to dropping or mishandling the cones during maintenance. Bearing cups and cones should be used as a matched set to provide maximum service life. Do not drive bearing cones onto the aircraft axle, and never overtighten the axle nut. For more information, refer to Timken Bearing Company's catalog, "How to Recognize and Prevent Tapered Roller Bearing Damage."

- The wheel halves should be properly maintained to protect the paint and surface finishes; exposed aluminum/magnesium is susceptible to corrosion. Nicks, scratches, and other damage caused by improper handling of the wheel halves during maintenance invite corrosion which, if unattended, could lead eventually to fatigue cracks and wheel failure.

A. Bearing Grease

CAUTION: DO NOT MIX AVIATION WHEEL BEARING GREASES WITH EACH OTHER. IF USING OTHER APPROVED GREASE, COMPLETE REMOVAL OF CONTAINED GREASE AND BEARING CLEANING IS REQUIRED. REPLACEMENT OF PREVIOUSLY LUBRICATED FELT GREASE SEALS IS ALSO REQUIRED.

CAUTION: THE FOLLOWING GREASE CHANGE DOES NOT APPLY TO AMPHIBIOUS APPLICATIONS NOTED IN TABLE A4.

Beginning March, 2007 all active wheel assemblies listed in Table A4, except those noted for amphibious application, will be shipped from the Cleveland Wheels & Brakes facility with the bearings packed with Mobil Aviation Grease SHC 100, the approved preferred grease for all Parker Hannifin wheel assemblies.

NOTE: If your non-amphibious wheel assembly was shipped prior to March 2007 it may contain other approved bearing grease. To change to the Mobil Aviation Grease SHC 100, you must completely remove the contained grease and clean the bearings. You must also replace any felt grease seals which were previously lubricated with other approved grease. Refer to paragraph 3.E. (5) (a) for grease packing instructions.

B. Removal From Aircraft

Separate removal procedures are given for the main, nose, and tail wheels.

(1) Removal of Main Wheel

SAFETY WARNING : INSURE AIRCRAFT IS SECURE AND STABLE BEFORE BEGINNING ANY WORK. WORKING UNDER AN IMPROPERLY STABILIZED AIRCRAFT COULD CAUSE INJURY OR DEATH.

NOTE: Brake back plates must be removed for wheel removal. Refer to paragraph 2.A of this section. Hydraulic line need not be disconnected for wheel removal.

(a) Remove wheel pants/fairings if aircraft is so equipped.

(b) Properly raise the aircraft off the ground following the aircraft manufacturer's instructions.

(c) Remove hubcap/wheel cover, if applicable.

SAFETY WARNING : DEFLATE TIRE IMMEDIATELY AFTER JACKING AIRCRAFT AND BEFORE AXLE NUT IS LOOSENED. FAILURE TO DEFLATE TIRE BEFORE WHEEL REMOVAL COULD RESULT IN SEVERE PERSONAL INJURY.

(d) Remove air from tire by depressing the valve stem plunger until air can no longer be heard escaping from the tire.

SAFETY WARNING : DO NOT ATTEMPT TO REMOVE VALVE CORE UNTIL TIRE HAS BEEN COMPLETELY DEFLATED. VALVE CORES WILL BE EJECTED AT HIGH VELOCITIES IF UNSCREWED BEFORE AIR PRESSURE HAS BEEN RELEASED.

(e) Remove valve core.

(f) Remove cotter pin from axle and remove axle nut.

(g) Rock wheel/tire slightly to unseat the outboard bearing.

(h) Carefully remove and store the bearing. Label the bearing for reinstallation into position from which it was removed.

(i) Remove wheel/tire.

(j) Carefully remove and store inboard bearing.

(2) Removal of Nose Wheel

SAFETY WARNING : INSURE AIRCRAFT IS SECURE AND STABLE BEFORE BEGINNING ANY WORK. WORKING UNDER AN IMPROPERLY STABILIZED AIRCRAFT COULD CAUSE INJURY OR DEATH.

(a) Remove wheel pants/fairings if aircraft is so equipped.

(b) Properly raise the aircraft off the ground following the aircraft manufacturer's instructions.

SAFETY WARNING : DEFLATE TIRE IMMEDIATELY AFTER JACKING AIRCRAFT AND BEFORE AXLE NUT IS LOOSENED. FAILURE TO DEFLATE TIRE BEFORE WHEEL REMOVAL COULD RESULT IN SEVERE PERSONAL INJURY.

(c) Remove air from tire by depressing the valve stem plunger until air can no longer be heard escaping from the tire.

SAFETY WARNING : DO NOT ATTEMPT TO REMOVE VALVE CORE UNTIL TIRE HAS BEEN COMPLETELY DEFLATED. VALVE CORES WILL BE EJECTED AT HIGH VELOCITIES IF UNSCREWED BEFORE AIR PRESSURE HAS BEEN RELEASED.

(d) Remove valve core.

(e) Support wheel/tire and remove axle attachment bolts, nuts, and washers. In some cases, the nose wheel will be attached with an axle nut, similar to the main gear, which must be removed.

(f) Remove wheel/tire, axle spacers, and shims.

(g) Separate wheel/tire from axle, axle spacers, and shims. Carefully remove and store bearings. Label bearings for reinstallation into positions from which removed.

(3) Removal of Tail Wheel

SAFETY WARNING : INSURE AIRCRAFT IS SECURE AND STABLE BEFORE BEGINNING ANY WORK. WORKING UNDER AN IMPROPERLY STABILIZED AIRCRAFT COULD CAUSE INJURY OR DEATH.

(a) Properly raise the aircraft off the ground following the aircraft manufacturer's instructions.

SAFETY WARNING : DEFLATE TIRE IMMEDIATELY AFTER JACKING AIRCRAFT AND BEFORE AXLE NUT IS LOOSENED. FAILURE TO DEFLATE TIRE BEFORE WHEEL REMOVAL COULD RESULT IN SEVERE PERSONAL INJURY.

(b) Remove air from tire by depressing the valve stem plunger until air can no longer be heard escaping from the tire.

SAFETY WARNING : DO NOT ATTEMPT TO REMOVE VALVE CORE UNTIL TIRE HAS BEEN COMPLETELY DEFLATED. VALVE CORES WILL BE EJECTED AT HIGH VELOCITIES IF UNSCREWED BEFORE AIR PRESSURE HAS BEEN RELEASED.

(c) Remove valve core.

(d) Support wheel/tire and remove axle attachment bolts, nuts, and washers.

(e) Remove wheel/tire, axle spacers, and shims.

(f) Carefully remove and store bearings. Label bearings for reinstallation into positions from which removed.

C. Wheel Disassembly

The step-by-step disassembly procedure given below is common to the main, nose, and tail wheels. Disassembly should be performed only to the level required to effect necessary repairs. When doing any wheel maintenance, the technician shall first refer to the aircraft manufacturer's maintenance manual for guidance. In the absence of detailed information from the aircraft manufacturer the technician may use the information in this publication by referring to Figure 3 or 4, Typical Wheel Assemblies, or to the Product Catalog for the specific unit being disassembled.

Cleveland products of identical part number are used on a variety of different aircraft. The combined effects of negligent service, environmental conditions and the application itself may affect the service life of the product. Therefore, a very thorough inspection of the wheel and its components is recommended whenever the tire is changed or whenever the technician determines that it is warranted.

Organizations that routinely perform their own maintenance may want to use their experiential observations to develop their own unique inspection procedures. Some organizations will perform the more thorough dye penetrant inspection after a predetermined number of tire changes with newly introduced wheel assemblies typically permitting the largest number of tire changes. The tire change to dye penetrant inspection interval will be progressively reduced as the time in service of the product increases. This type of program will eventually result in a more thorough dye penetrant detailed inspection at each tire change.

SAFETY WARNING : DO NOT ATTEMPT TO DISASSEMBLE WHEEL UNTIL TIRE HAS BEEN COMPLETELY DEFLATED. SERIOUS INJURY TO PERSONNEL OR EQUIPMENT DAMAGE CAN RESULT IF THESE PRECAUTIONARY MEASURES ARE IGNORED.

DO NOT ATTEMPT TO REMOVE VALVE CORE UNTIL TIRE HAS BEEN COMPLETELY DEFLATED. VALVE CORES WILL BE EJECTED AT HIGH VELOCITIES IF UNSCREWED BEFORE AIR PRESSURE HAS BEEN RELEASED.

CAUTION: DISASSEMBLE WHEEL ON A CLEAN FLAT SURFACE, BEING CAREFUL NOT TO NICK, SCRATCH, OR GOUGE WHEEL HALVES.

(1) Tire Removal

(a) Remove valve cap and deflate tire completely.

CAUTION: DO NOT PRY BETWEEN WHEEL FLANGE AND TIRE BEADS, AS THIS COULD CAUSE DAMAGE TO WHEEL AND TIRE.

(b) Separate tire beads from wheel halves, using a bead breaker or by applying pressure in even increments around the entire sidewall of the tire as close to the tire beads as possible. Suggestion: Fabricate two each rings from a substantially thick piece of plywood. The inside diameter should be slightly larger than the wheel rim outside diameter. Sandwich the wheel/tire between the two rings and apply pressure to the top ring. The tube well area of the wheel is tapered and once the bead is broken the tire should slide progressively easier. Ref. Figure 306.

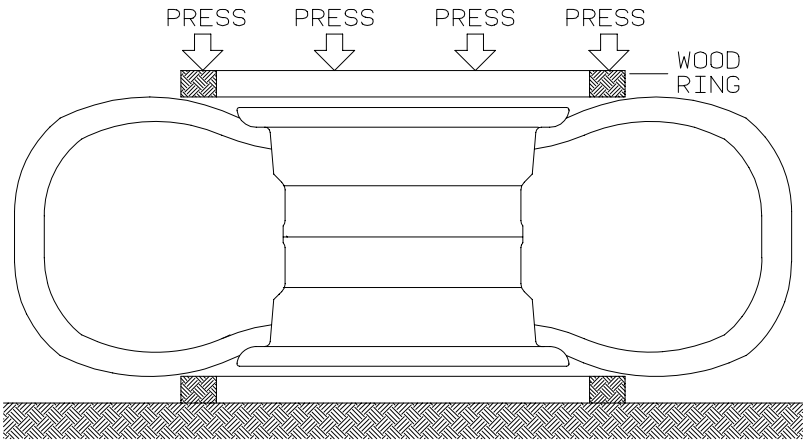

Figure 306 - Tire Removal

(c) Remove nuts (5), washers (6), and bolts (7) holding wheel halves together. If brake disc bolts are separate from wheel tie bolts, remove them and separate brake disc (11) from wheel.

(d) Separate inner wheel half (10), outer wheel half (8), and brake disc (11), and remove tire. Mark wheel halves to note relationship to each other for reassembly.

(2) Bearing Cone Removal

Remove hubcap/wheel cover, grease seals, and bearing cones. Use caution in handling bearing cones to prevent damage or contamination.

CAUTION: USE CARE IN REMOVING OUTBOARD WHEEL HALF TO PREVENT DAMAGE TO INFLATION VALVE STEM.

(3) Inflation Valve Removal

Remove o-ring (9) and inflation valve if wheel is designed for use with a tubeless tire. Mark o-ring with respect to wheel half for reassembly. Retaining o-ring position will aid in minimizing leakage at reassembly. It is recommended that the o-ring be replaced at reassembly.

(4) Bearing Cup Removal

The bearing cup is a shrink fit into the wheel half and should not be removed, unless replacement is necessary due to scratches, nicks, pitting, corrosion, or evidence of overheating.

<u>WARNING</u>: USE PROTECTIVE GLOVES WHEN HANDLING HEATED PARTS.

(a) If replacement is necessary, place wheel half in an oven not exceeding 212°F (100°C) for 15 minutes.

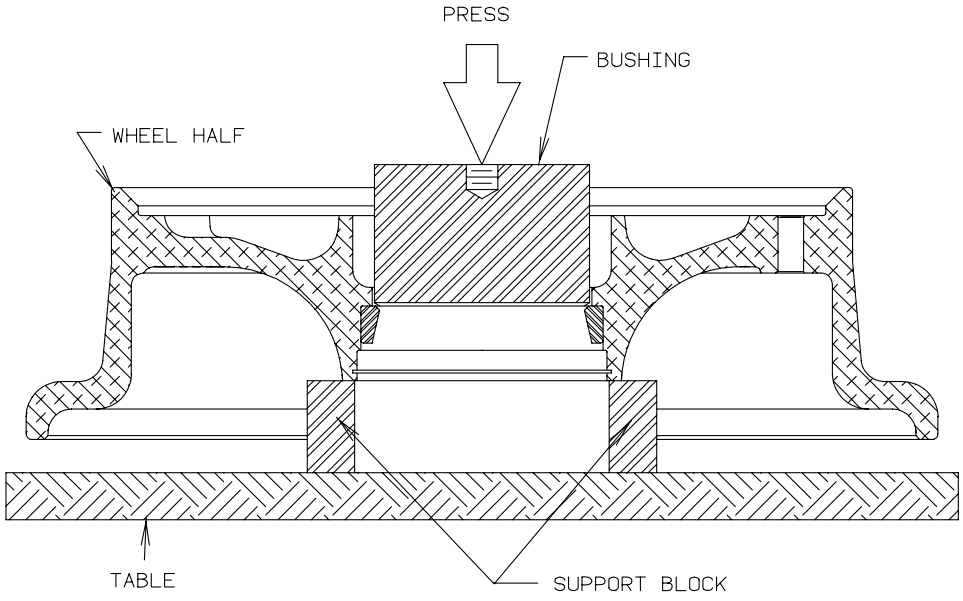

Figure 307 - Bearing Cup Removal

(b) Remove wheel half from heat source and immediately remove bearing cup. If bearing cup does not fall out, tap it evenly with a fiber drift pin or use a suitable arbor press.

D. Inspection

(1) Visually inspect wheel halves for cracks, nicks, corrosion, or other damage. Any cracks in the wheel half are cause for replacement of wheel half. The tire bead seat area of a wheel (Fig 308) is typically an area of stress concentration and possibly subjected to trauma from tire beads and tools used to remove tires. These combined effects warrant that this area receive special attention when inspecting for defects. All defect indications must be thoroughly investigated to determine part airworthiness. Dye penetrant inspection and visual examination is an effective method to evaluate a defect indication. To facilitate the inspection process it is recommended that the paint be stripped in the area being evaluated.

The use of alternate inspection methods such as eddy current can also be very effective when performed by an experienced NDT Technician. Cleveland has not developed the acceptance standards or tooling for eddy current inspection techniques. Maintenance facilities that want to use this method will have to locally develop tooling and acceptance standards that adequately identify defects.

Replace any cracked or excessively corroded parts. Small nicks, scratches, or pits may be blended out and polished with fine sandpaper. Treat and repaint per paragraph 4. Brake and Wheel Refinishing.

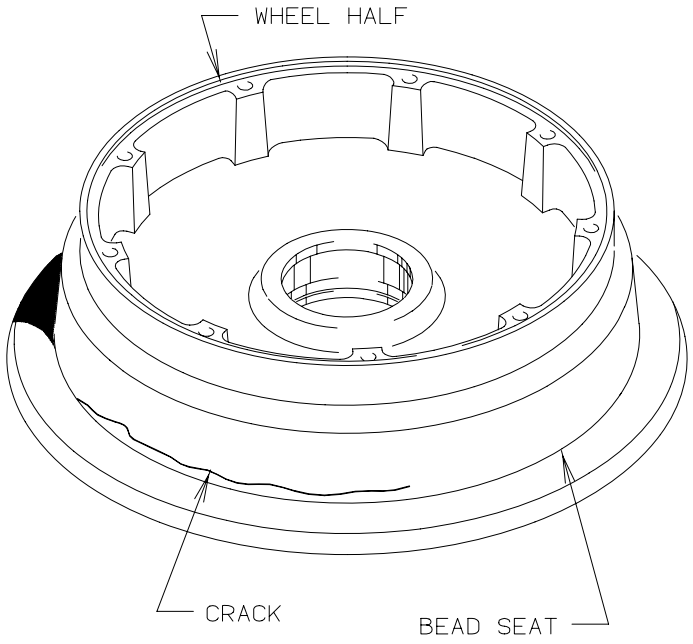

Figure 308 - Bead Seat Inspection

(2) Inspect wheel bearing grease for contamination and solidification at each periodic inspection. Repack bearings with fresh grease – Refer to paragraph 3.A. Bearing Grease.

NOTE: Do not exceed 500 wheel miles (804.5 km) or on annual inspection whichever comes first between repacking intervals.

(3) Inspect wheel half bearing cup bore for burrs, primer residue, or foreign matter. Make sure surface is clean.

(4) Inspect snap rings and grease seals for distortion or wear. Replace grease seal felts if they are hard or contaminated. Lightly coat all surfaces of the new felt with the wheel bearing grease (refer to paragraph 3.A. Bearing Grease). Molded rubber grease seals should be replaced if cracked, dried out or distorted.

(5) Wheel tie bolts by nature of their application are subjected to fatigue type loads. It is best to replace these fasteners at overhaul. If bolts are to be reused they must be inspected for cracks, bending, thread damage, or excessive corrosion. Bolts with evidence of any of these should be replaced with bolts of corresponding part numbers, as specified in the Cleveland Parts List or Catalog. Magnetic particle inspection is the recommended procedure for bolt inspection. Alternate nondestructive inspection techniques, such as ultrasonic inspection, can demonstrate determination of non-airworthy ferromagnetic products consistent with the fluorescent magnetic particle methods. Cleveland typically uses AN, MS, and NAS bolts which, as part of the procurement specification, employ the fluorescent magnetic particle inspection as one of the recognized standards in determining acceptance of product. Therefore, the acceptance standards and methodologies for the ultrasonic inspection techniques have not been specifically developed at Cleveland. Use of the ultrasonic method or any other inspection techniques is the responsibility of the agency determining airworthiness of the product.

NOTE: Inspect self-locking nuts for damage. If nut can be turned onto bolt by hand, past the nut's self-locking section, it should be replaced with nuts of corresponding part numbers.

(6) Replace o-rings with o-rings of corresponding part numbers. If necessary, o-rings may be reused. Inspect o-rings for cuts, nicks, distortion, or excessive wear. Check to be sure o-ring has not become brittle or hard.

NOTE: Brake disc cracks are not allowed unless covered by a PRM (Product Reference Memo) or SB (Service Bulletin) issued specifically for a brake disc.

(7) Inspect brake disc for cracks, excessive wear, or scoring, mounting hole elongation, corrosion, and warpage. Remove corrosion and blend out small nicks using fine (400 grit) sandpaper. Replace brake disc if worn below wear limits detailed in Appendix A. Coning of disc in excess of 0.015 inch (0.381 mm) is cause for replacement. Ref. Figure 309.

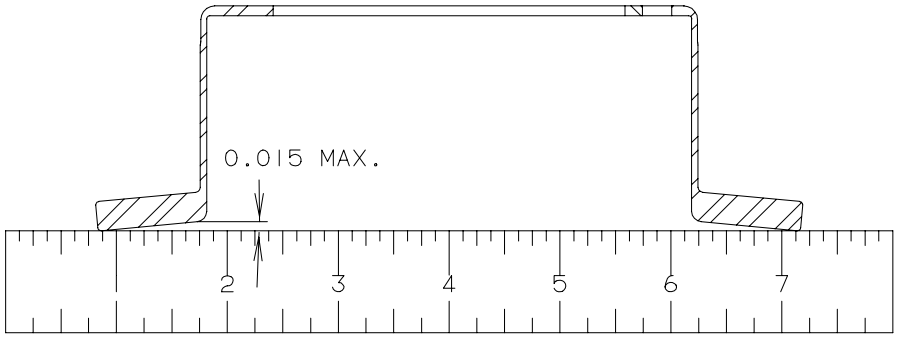

Figure 309 - Disc Coning Limits

(8) Welded brake discs will have a slight gap on the side opposite the weld at the cup interface. This is normal. Ref. Figure 310.

(9) Heat created during braking promotes the development of corrosion and pitting at the flange to cup area. Annually, or on condition, sandblast these areas or use a wire wheel to remove corrosion and pitting. Treat affected areas with zinc chromate primer and a coat of heat resistant spray paint. Heat resistant paints may be locally procured from auto parts supply.

NOTE: Corrosion, if left unattended will result in decreased service life of the part.

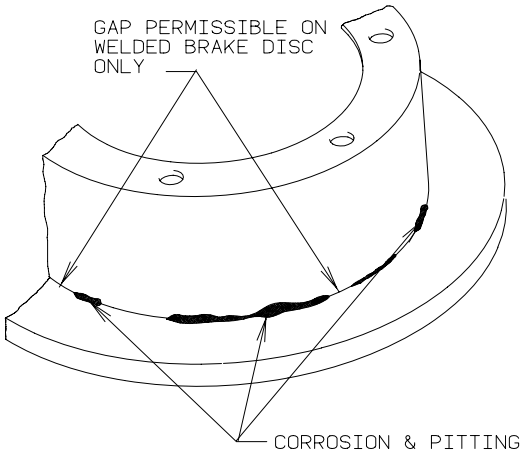

Figure 310 - Disc Inspection

E. Wheel Reassembly

Reassembly of the wheel assembly is essentially the reverse of the disassembly procedures detailed in paragraph 3B of this section. Assemble the wheel on a clean, flat surface, being careful not to nick, scratch, or damage protective finish or wheel halves.

NOTE: If bearing cup was removed, use the following procedure for installation of a new bearing cup.

(1) Bearing Cup Installation

WARNING: USE PROTECTIVE GLOVES WHEN WORKING WITH DRY ICE OR HANDLING HEATED PARTS.

(a) Place wheel half in an oven not exceeding 212°F (100°C) for 15 minutes. Chill new bearing cup in an atmosphere of -25°F to -65°F for no less than 4 hours. Chilling may also be accomplished by placing the bearing cup in dry ice for a minimum of 15 minutes.

(b) To install a new bearing cup, apply one coat of zinc chromate to cup bore.

(c) Remove wheel half from heat source and remove bearing cup from cold source. Dry cup thoroughly.

(d) Install the chilled bearing cup into bearing bore of heated wheel half. Tap gently into place with a fiber drift making sure cup is evenly seated against shoulder of wheel half. Ref. Figure 311. Avoid cocking bearing cup during installation. If bearing cup will not seat properly in wheel half, repeat above procedure or replace wheel half assembly.

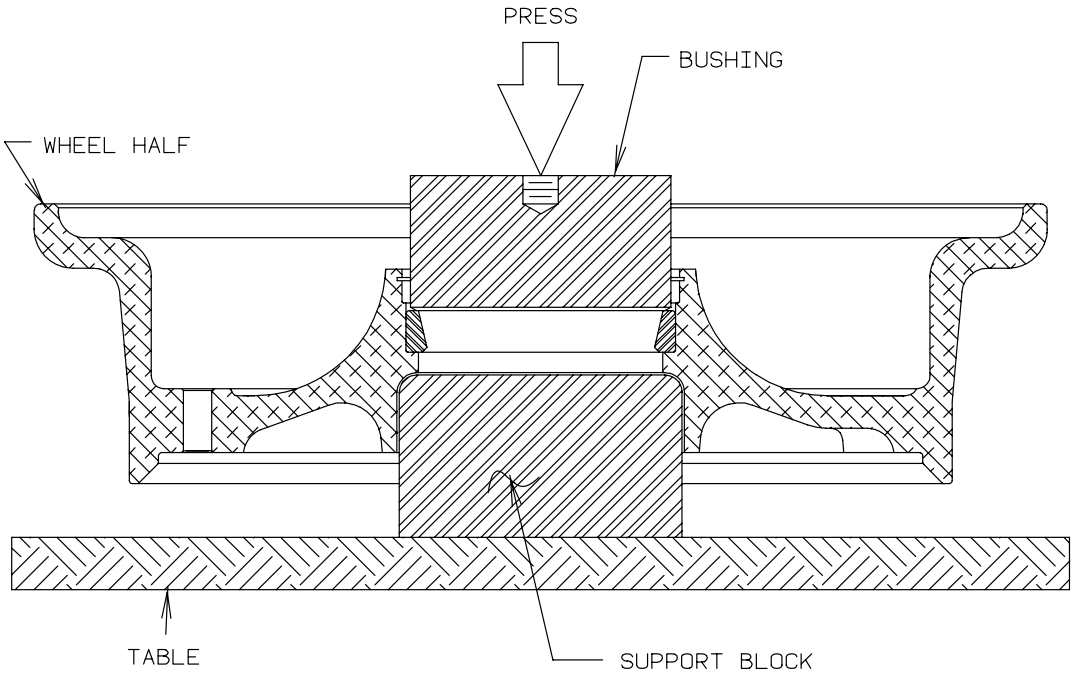

Figure 311 - Bearing Cup Installation

(2) Tire Mounting

NOTE: Prior to mounting, make sure tire is clean. Inspect bead area and wipe it clean with denatured alcohol, followed by soap and water, then thoroughly dry the bead area prior to mounting. A dry lube (talc only) can be used between the mating surfaces of wheel halves to aid in the assembly and disassembly process.

(a) Tubeless Tires

1 Check for the word TUBELESS on sidewall. Make sure tire is clean inside. Inspect bead area and wipe it clean with denatured alcohol, followed by soap and water. Dry thoroughly and use only dry talc to aid installation.

2 Wipe the bead seat and o-ring seal area of wheel halves with an alcohol dampened cloth. Lubricate o-ring seal with a light coat of grease MIL-G-4343 (Dow Corning 55 O-Ring compound) or equivalent and place it carefully in its groove without stretching or twisting.

3 Place the tire on the inboard wheel half being careful not to disturb the o-ring. Position the red (light spot) balancing dot on the tire adjacent to the wheel valve.

4 Place outboard wheel half inside the tire. Align marks made at disassembly with those on inboard half.

(b) Tube-Type Tires

NOTE: Tire slippage may occur with new, unused tires, tubes, and wheel. Wiping the tire and tube with denatured alcohol, followed by soap and water.

1 Make sure the inside of the tire is clean and dry. Inspect bead area and wipe it clean with denatured alcohol, followed by soap and water, then dry thoroughly.

2 Inflate the inner tube just enough to round it out.

3 Install the inner tube with the yellow strip (or equivalent heavy spot marking) adjacent to the red (light spot) balance dot on the tire. If the tube has no balance mark, place valve adjacent to tie balance dot.

4 Install the tire and inner tube on the outer wheel half, inserting the valve stem through the valve hole in the wheel. Place the inner wheel half inside the tire. Align the marks made at disassembly with those on the outer wheel half.

(3) Disc Installation

Disc installation applies only to the main wheel. Brake discs may be attached to the wheel in either of the two ways detailed below.

NOTE: Replace discs only with factory authorized replacement discs to obtain full warranty protection.

(a) Brake Disc Attached with Wheel Tie Bolts

NOTE: Observe the torque required to turn the nut (free running torque). This value must be added to the value stated on the casting/nameplate to obtain a true torque value.

WARNING: FAILURE TO PROPERLY TORQUE THE WHEEL ASSEMBLY TIE BOLTS MAY RESULT IN PREMATURE FAILURE OF THE MATING COMPONENTS OR HARDWARE.

1 Install disc in inner wheel half and align bolt holes with wheel half.

NOTE: All Torque values listed on Cleveland Products are considered to be “DRY TORQUE” values unless “LUBTORK” is specified. “LUBTORK” requires the application of an antiseize compound conforming to MIL-T-5444 or MIL-T-83483 to all friction surfaces as shown in Figure 312. Only use the antiseize specified for your wheel assembly.

CAUTION: Torquing a fastener to a dry torque value with antiseize applied can result in an over torqued condition for the fasteners or assembly.

NOTE: Product received from Cleveland with antiseize applied is correct for that particular product and will be so designated on service publications. **When in doubt - call Cleveland.**

2 Install bolts through brake disc and wheel halves. Both plain and countersunk washers may be used. Some designs use bolts that have a radius between the head and shank, which requires the countersunk washers. Inspect bolts and washers prior to assembly. (Ref. Figure 312). Properly oriented washers with countersunk surfaces to sit flush against the bolt head. Install washers and nuts on bolts (bolt heads are to be on brake disc side of wheel). Torque nuts to value specified on wheel casting or nameplate, using a crisscross pattern until all nuts are properly torqued. Do not use power tools for the installation of nuts and bolts.

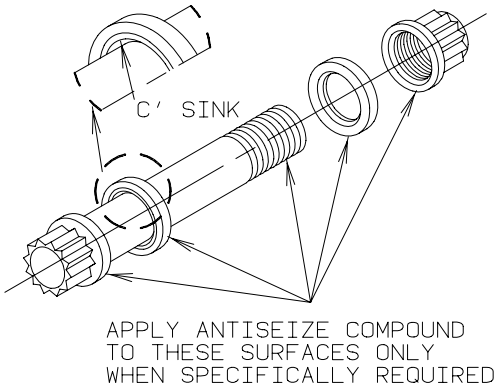

Figure 312 - Wheel Tie Bolts

(b) Brake Disc Not Attached With Wheel Tie Bolts

1 Install brake disc in inner wheel half and align bolt holes with wheel half inserts.

2 Install bolts through brake disc, thread into each insert, and torque to 150 in-lbs (1034 kPa).

3 Install wheel bolts, washers, and nuts.

(4) Inflation Valve Installation

Two configurations of inflation valve stems, grommet and the o-ring types, are used for tubeless tire applications. Both types should have either the rubber bushing (grommet) or the o-ring coated with Dow Corning 55 O-Ring Lubricant prior to installation. Torque to all the appropriate values as listed in the Appendix A4 and A5.

(5) Bearing Installation

CAUTION: DO NOT MIX AVIATION WHEEL BEARING GREASES WITH EACH OTHER. REFER TO PARAGRAPH 3.A. BEARING GREASE.

CAUTION: HANDLE BEARING CONES WITH EXTREME CARE TO PREVENT CONTAMINATION OR DAMAGE.

(a) Pack the bearing cones as follows.

The correct application of grease to the tapered roller bearing will reduce friction, dissipate heat and maintain a rust and corrosion proof coating on the operating surfaces of the roller bearings.

NOTE: Pack the bearing cones just before installation to prevent contamination.

NOTE: Bearing cones can be packed by hand or by using a mechanical bearing greaser. The mechanical bearing greaser will do a more thorough job of packing the grease.

1 Clean the bearing cones. Refer to paragraph 4.A. Degreasing.

2 Push and force the grease up and out between the rollers, cone and cage.

3 The bearing is properly greased when no voids or daylight can be observed between the rollers and inner and outer races.

4 Disperse excess grease around each end and the tapered sides of each cone.

NOTE: Shaded area shows the recommended quantity of grease.

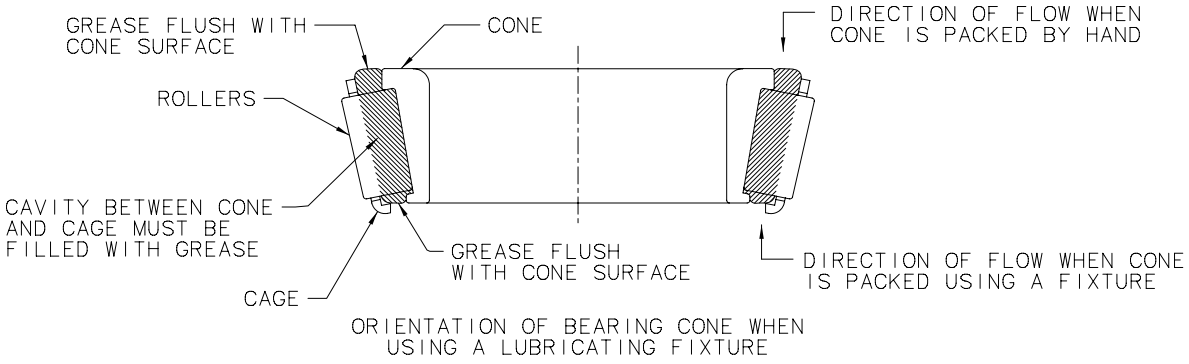

Figure 313 Packing Bearing Cones

(b) Liberally swab the bearing cup, bearing bore hub and grease seal/snap ring areas with bearing grease.

(c) If felt seals are used, lightly coat all surfaces of the felt with the wheel bearing grease (refer to paragraph 3.A. Bearing Grease). If rubber lip seals are used, lightly coat the rubber surfaces with bearing grease.

(d) Install the bearing cones, grease seals (felts and rings or rubber lip seals) and snap rings.

1 Excess grease will squeeze out. Remove the excess grease with an inward rotating movement against the bearing cone ID. Disperse any small amounts of grease on the exterior surface of the grease seal and snap ring and remove any grease from the hub outside surface.

(e) Install hubcap/wheel cover if part of wheel assembly. Use care that bearing grease does not become contaminated.

(6) Tire Inflation

SAFETY WARNING : PLACE THE WHEEL/TIRE IN AN INFLATION CAGE FOR INITIAL INFLATION, TO PREVENT INJURY TO PERSONNEL FROM POSSIBLE EXPLOSION.

(a) Inflate tire to tire manufacturer's specifications to seat beads on wheel. Deflate tire to 10 psi (68.9 kPa) for storage.

(b) Place protective cover over bearing hubs to prevent contamination of grease or bearing damage during storage of wheel.

F. Storage

Wheel storage procedures differ depending on whether the wheels are stored with or without tires installed.

CAUTION: WHEELS STORED IN CARDBOARD BOXES, WHICH HAVE BECOME WET OR HAVE BEEN EXPOSED TO HIGH HUMIDITY, CAN BECOME CORRODED.

(1) Wheels Stored With Tires Installed

(a) The length of time that a wheel assembly can be stored is governed by the storage life of its rubber components. Basically, rubber components are considered to have a usable life of up to ten years from the date of cure. The usable life may be shortened by exposure to sunlight, extreme temperatures, and low humidity; contamination by fluids; severe operating conditions, etc.

(b) The wheel assembly should be stored in a clean, dry storeroom. The desirable storeroom temperature range is from 50°to 77°F (10° to 25°C). If this temperature range cannot be maintained, temperatures as high as 125°F (51.7°C) and as low as -20°F (-28.9°C) can be tolerated for shorter periods. Total time above 100°F (37.8°C) shall not exceed three months. The recommended storage pressure for tires is 10 psi (68.9 kPa).

(2) Wheels Stored Without Tires Installed

(a) Short-term storage of tubeless wheel assemblies may be stored with the wheel o-ring packing installed between the two halves.

(b) Storage of components containing rubber longer that two years should be assembled without the o-ring packing. O-rings to be placed in an ultraviolet protective package.

(c) Wheels stored without rubber components installed have an indefinite storage life.

4. Brake and Wheel Refinishing

Complete procedure necessary to remove existing paint from brake and wheel components and then to repaint them is described in the following paragraphs.

A. Degreasing

SAFETY WARNING : CLEANING SOLVENTS CAN BE TOXIC AND VOLATILE. USE ONLY IN WELL VENTILATED AREAS. AVOID PHYSICAL CONTACT WITH SOLVENT AND DO NOT INHALE VAPORS. KEEP SOLVENT CONTAINERS COVERED WHEN NOT IN USE.

(1) Clean all metal parts by immersing in a clean degreasing solution. An alkaline based solution is recommended for aluminum and magnesium parts.

(2) Hardened dirt or grease may be removed with a soft bristle brush, or by soaking in cleaning solution.

(3) Clean - carefully in a separate container of mineral spirits.

CAUTION: DO NOT SPIN BEARING CONES WITH COMPRESSED AIR.

(4) After cleaning, thoroughly dry all metal parts with filtered dry compressed air.

(5) It is recommended that all o-rings, back-up rings and wipers be replaced at each overhaul. However, if necessary, o-rings may be reused but should be put back into position from which removed.

(6) Wipe down o-rings, back-up rings, wipers, or other rubber parts with a clean dry cloth. Lubricate with a suitable o-ring lubricant prior to installation.

B. Paint Removal

Disassemble brake and wheel components to the level required for repainting, then proceed as follows:

(1) Degrease part per paragraph 4.A.

(2) Cleveland recommends the use of plastic media stripping techniques to be performed per equipment manufacturer's recommended instructions.

NOTE: Chemical stripping agents are commercially available for removing topcoat and primer, and may be used if plastic media stripping equipment is not available. Follow manufacturer's recommendations for use and disposal of stripping solutions. If chemical stripping is used, the Bearing Cup must be removed from the wheel half assembly prior to proceeding.

SAFETY WARNING : CHEMICAL STRIPPING AGENT SOLVENTS CAN BE TOXIC AND VOLATILE. USE ONLY IN WELL VENTILATED AREAS. AVOID PHYSICAL CONTACT WITH SOLVENT AND DO NOT INHALE VAPORS. KEEP STRIPPING AGENT SOLVENT CONTAINERS COVERED WHEN NOT IN USE.

WARNING: DO NOT SANDBLAST. Sandblasting is too abrasive and will damage smooth piston bore or o-ring Seal areas.

(3) Rinse part thoroughly with water heated to 160° to 180°F (71° to 82°C). If used, flush chemical stripping agent solvent from all cavities and threaded holes where entrapment might occur.

(4) Thoroughly dry part with filtered, dry compressed air.

(5) Refer to inspection procedures in paragraph 2C for specific parts to locate possible defects.

NOTE: Refinishing should be completed as soon as possible; unprotected parts will begin to corrode.

C. Surface Pretreatment

All cast products are to be surface pretreated after any nicks, dings, corrosion, or other discontinuities have been mechanically removed. It is necessary to know the cast alloy material such that the proper treatment can be performed. Both aluminum and magnesium alloy casting are used in products at Cleveland. Refer to A3. Brake Assembly Back Plate Tie Bolt Torque and A4. Wheel Assembly Torque Values table for material identification.

(1) Aluminum parts should have a protective barrier between the topcoat and base material. It is recommended they be treated with conversion coating per MIL-C-5541, Class 1A (Alodine).

NOTE: Alodine is ineffective on magnesium.

(a) Apply solution liberally and evenly. Allow it to set from 1 to 5 minutes. The solution must completely wet the surface and overlap onto the adjoining anodize.

(b) Remove excess coating by flushing with clean water.

SAFETY WARNING: RUBBER GLOVES AND EYE PROTECTION SHOULD BE WORN WHEN MIXING AND APPLYING THIS SOLUTION. CARE SHOULD BE EXERCISED TO PREVENT SKIN CONTACT. WASH EXPOSED AREAS IMMEDIATELY WITH COLD WATER AND SOAP.

(2) Magnesium parts may be treated with surface pretreatment per MIL-M-3171, Type VI, Chromic Acid.

NOTE: MIL-M-3171 Type VI is ineffective on aluminum.

(a) Apply mixed solution liberally at room temperature and allow to dry. Parts may be dipped for 1/2 to 2 minutes in solution at room temperature.

(b) Remove excess coating by flushing with clean, cold water.

(c) Dry in oven or hot air. Never rinse in hot water.

SAFETY WARNING: EXPOSURE TO CADMIUM DUST IN UNVENTILATED GRINDING ACTIVITIES AND WORKING WITH CADMIUM AND ITS COMPOUNDS CAN BE A POTENTIAL HEALTH HAZARD.

(3) Stripping and re-cadmium plating steel parts is generally cost prohibitive in small lot sizes. Therefore, steel parts that have been cadmium plated may be protected with an application of zinc rich cold galvanizing compound or zinc chromate. Finish with an application of a good quality topcoat.

D. Repainting

Refer to Figures 314, 315, 316 to identify surfaces of brake and wheel components that require paint. Proceed as follows:

(1) Parts to be repainted should be cleaned and stripped per instructions in degreasing and paint removal paragraphs 4.A. and 4.B.

(2) Pretreat surface using appropriate materials per paragraph 4.C.

(3) Coat parts with one thin coat of zinc chromate primer or equivalent. Allow to dry thoroughly.

NOTE: Prior to prime and paint, mask any areas which had not previously been coated. This includes Cylinder piston bores, all internal threads and ports, Wheel Half seal and bearing bores (to be primered only), and Bearing Cups.

(4) Paint parts with one coat of locally obtained, finish enamel, polyurethane, epoxy or lacquer to match original color. Allow to dry thoroughly before reassembly.

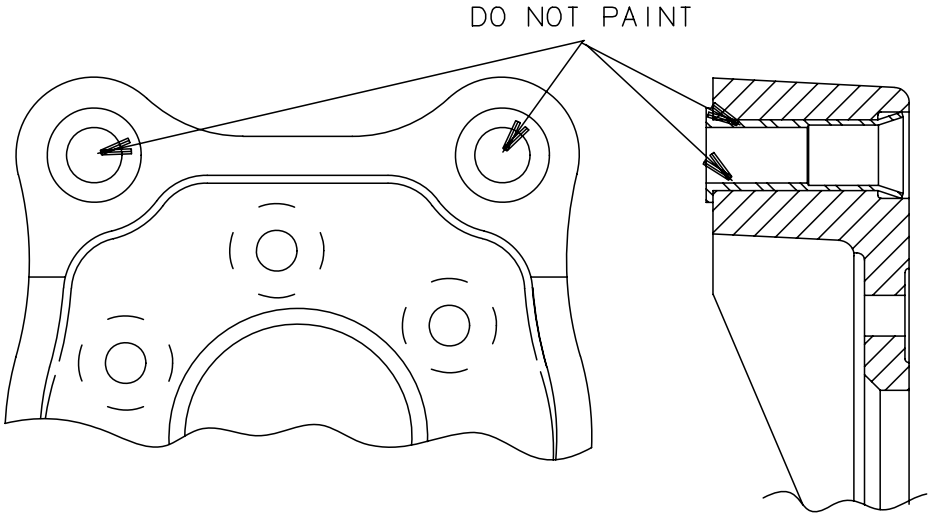

Figure 314 - Typical Torque Plate (Cast), Painted Surfaces

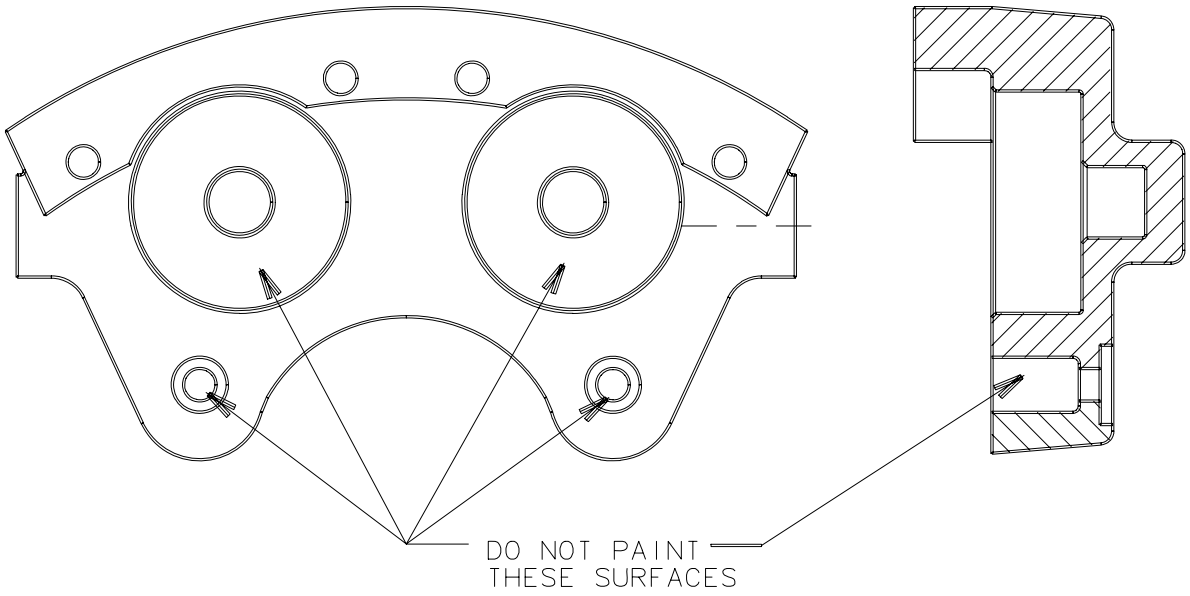

Figure 315 - Typical Brake Cylinder, Painted Surfaces

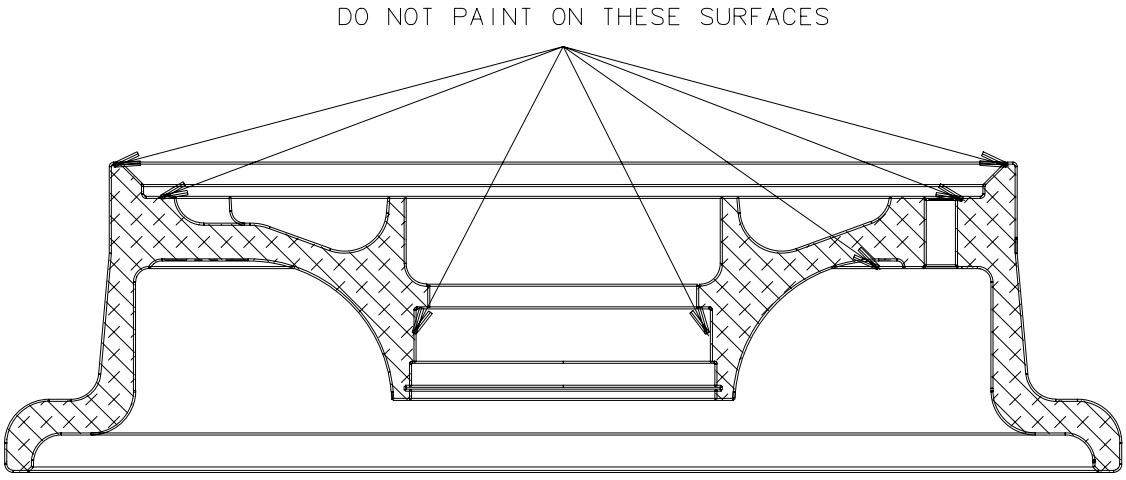

Figure 316 - Typical Wheel Half, Painted Surfaces

5. Installation of Brake and Wheel Assemblies Onto Aircraft

A. Brake Installation

(1) If torque plate was removed, install it in the same rotational orientation as when removed. Install torque plate on axle flange with attachment bolts, nuts, and washers. Torque nuts to level specified in aircraft manual.

(2) If wheel had been removed, install wheel per instructions in paragraph 5.B. of this section prior to installing brake cylinder assembly.

(3) Remove back plate attachment bolts, washers, and back plates.

(4) Install cylinder in torque plate by sliding (do not force) anchor bolts into torque plate bushings. A dry film lubricant, such as Dri-Slide (molybdenum disulfide) or silicone spray, may be applied to anchor bolts and torque plate bushings to provide ease of installation and operation. Reapply dry film lubricant periodically as required to maintain friction free operation.

NOTE: A liquid type lubricant should not be used as it will attract dirt and moisture, thereby enhancing the possibility of corrosion, binding, and wear.

(5) Install back plates, shims, or insulators, if applicable, and back plate attachment bolts and washers. Torque attachment bolts to level specified in Bolt Torque Values listed in Appendix A.

(6) Uncap and attach hydraulic line to cylinder inlet fitting.

(7) Bleed the system in accordance with the aircraft service manual.

NOTE: Using the A.W.B. Bleeder Adaptor, P/N 087-00500, will simplify this operation.

(8) After accomplishing system bleeding, depress and release toe pedal several times, checking for brake drag by rotating the wheel by hand. A slight amount of drag is normal; however, a tightly bound wheel should be investigated and corrected prior to aircraft release to service.

(9) Condition linings in accordance with PRM13A for organic materials and PRM14A for Metallic materials.

B. Wheel Installation

Separate installation procedures for the main, nose, and tail wheels are given in the following paragraphs.

(1) Main Wheel

SAFETY WARNING : INSURE AIRCRAFT IS SECURE AND STABLE BEFORE BEGINNING ANY WORK. WORKING UNDER AN IMPROPERLY STABILIZED AIRCRAFT COULD CAUSE INJURY OR DEATH.

(a) Properly raise the aircraft off the ground following the manufacturer's instructions.

(b) If Brake is installed, remove back plate attachment bolts, washers, and back plates.

CAUTION: INFLATION OF TIRE CAN BE EXTREMELY DANGEROUS AND IT IS RECOMMENDED THAT INFLATION BE PERFORMED IN AN INFLATION CAGE, PRIOR TO INSTALLATION ON AIRCRAFT.

(c) Check tire inflation pressure. Carefully inflate if not to specified level.

(d) Check to be sure that the wheel bearings are installed and lubricated, and that the felt grease seal surfaces were lightly coated with the wheel bearing grease (refer to paragraph 3.A. Bearing Grease).

(e) Carefully slide wheel/tire onto axle making sure inboard bearing is seated.

(f) Install axle nut.

NOTE: Axle nut torquing procedures vary considerably. The following procedure is based on the best available service information.

(g) Torque axle nut using value specified in aircraft manual or the following:

1 Rotate the wheel/tire while tightening axle nut to 150 to 200 inch-pounds (16.9 to 22.6 N•m) to seat the bearing.

2 Back off axle nut to zero torque.

3 Tighten axle nut to 30-40 inch-pounds (3.4 to 4.5 N•m) while rotating wheel/tire.

4 Rotate axle nut (clockwise or counterclockwise) to nearest slot and cotter pin hole, and insert cotter pin. Bend ends of cotter pin around axle nut. Note: Wheel must rotate freely without perceptible play.

(h) Carefully lower aircraft to ground following manufacturer's instructions.

(i) Replace wheel pants, if applicable.

(j) Recheck tire inflation pressure.

(2) Nose Wheel

SAFETY WARNING : INSURE AIRCRAFT IS SECURE AND STABLE BEFORE BEGINNING ANY WORK. WORKING UNDER AN IMPROPERLY STABILIZED AIRCRAFT COULD CAUSE INJURY OR DEATH.

(a) Properly raise the aircraft off the ground following the manufacturer's instructions.

(b) Check to be sure that the wheel bearings are installed and lubricated, and that the felt grease seal surfaces were lightly coated with the wheel bearing grease (refer to paragraph 3.A. Bearing Grease).

(c) Check tire inflation pressure. Refer to aircraft service manual for proper inflation value.

(d) Install axle, axle spacers, and shims on nose wheel for fork type assemblies.

(e) Install nose wheel/tire in fork and install axle attachment bolts, washers, and nuts. Torque nuts and bolts to level specified in aircraft manual.

(f) On axle-type nose struts, wheel installation would be as defined in paragraph 5.B.(1).

(g) Carefully lower aircraft to ground following manufacturer's instructions.

(h) Replace wheel fairings, if applicable.

(i) Recheck tire inflation pressure.

(3) Tail Wheel

SAFETY WARNING : INSURE AIRCRAFT IS SECURE AND STABLE BEFORE BEGINNING ANY WORK. WORKING UNDER AN IMPROPERLY STABILIZED AIRCRAFT COULD CAUSE INJURY OR DEATH.

(a) Properly raise the aircraft off the ground following the manufacturer's instructions.

(b) Check to be sure that the wheel bearings are installed and lubricated, and that the felt grease seal surfaces were lightly coated with the wheel bearing grease (refer to paragraph 3.A. Bearing Grease).

(c) Check tire inflation pressure. Refer to aircraft service manual for proper inflation value.

(d) Install axle, axle spacers, and shims on tail wheel.

(e) Install tail wheel/tire in fork and install axle attachment bolts, washers, and nuts. Torque nuts and bolts to level specified in aircraft manual.

(f) Carefully lower aircraft to ground following manufacturer's instructions.

(g) Recheck tire inflation pressure.