Piper

VSP - 204
DATE: APRIL 29, 2010 (S)

VENDOR SERVICE PUBLICATION

TO: All affected owners/operators

SUBJECT: **GREASING WHEEL BEARINGS.**

MODELS AFFECTED: All models with Cleveland wheels

COMPLIANCE TIME: At the next regularly scheduled maintenance event.

PURPOSE: To emphasize proper wheel bearing greasing procedures.

ACTION:

1. Grease wheel bearings per Parker / Cleveland Component Maintenance Manual (CMM) No. AWBCMM0001-7/ USA and Product Reference Memo No. 73. An extract of the applicable procedures from the CMM is attached as well as PRM73 in its entirety.
2. The complete CMM may be downloaded from http://www.parker.com and then selecting Aircraft Wheel & Brake Division, Literature, Service Manuals / User Guides, Aerospace.

ATA: 3240

MAINTENANCE MANUAL

AWBCMM0001-7

Aircraft Wheel & Brake Division
Parker Aerospace

Parker

Cleveland
Wheels & Brakes

Cleveland
Wheels & Brakes

COMPONENT MAINTENANCE MANUAL

Publication Number: **AWBCMM0001-7/USA**
Issue 7, Dated: **April 01, 2007**

Reference

MANUALS

Refer to the Component Maintenance Manual for detailed maintenance / overhaul procedures. Consult the Aircraft Maintenance Manual and Airframe Log Books (for optional installations) to confirm the approved part numbers for the particular aircraft application. If any inconsistencies are observed in this data, please notify Cleveland Customer Support.

WARRANTY

The warranty clause for the Wheel and Brake Commercial Product Line is found on the inside back cover of the current Cleveland Wheel & Brake Price List.

IMPORTANT NOTE

Use of other manufacturer's components with original Cleveland Wheel & Brake assemblies will void the Cleveland Wheels & Brakes warranty.

SAFETY WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application, including consequences of any failure, and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the "Offer of Sale".

- 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.**

(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 bearing cones 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.

(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.

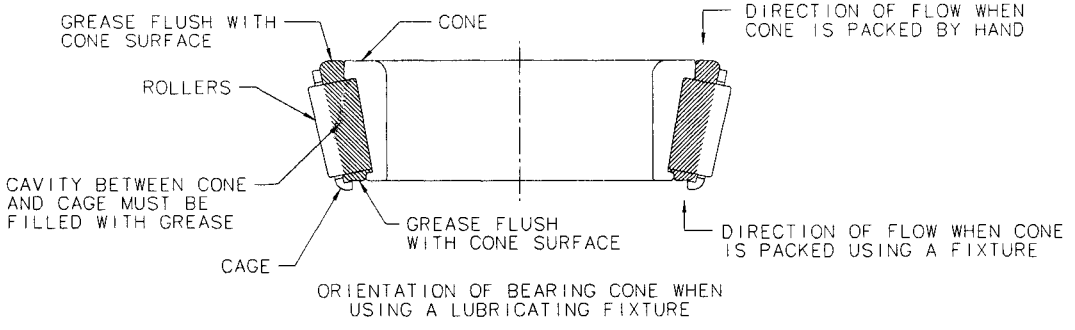

Figure 313 - Packing Bearing Cones

(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 125F (51.7°C) and as low as -20°F (-28.9°C) can be tolerated for shorter periods. Total time above 100°F (37.8C) shall not exceed three months. The recommended storage pressure for tires is 10 psi (68.9 kPa).

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PRODUCT REFERENCE MEMO

WHEELS & BRAKES - PREPARATION FOR SERVICE – ON-AIRCRAFT CLEANING

The following procedures are intended to extend the service life of wheel and brake equipment.

Wheel Assemblies: Refer to Figure 1

- Inspect bearings to ensure adequate grease and service as required using the preferred bearing grease per Mobil Aviation Grease SHC 100.
- If felt grease seals are used, lightly coat all surfaces of the seals with bearing grease prior to installing.
- If rubber lip seals are used, lubricate the bearing seal bore with bearing grease.

CAUTION: AVIATION WHEEL BEARING GREASES SHOULD NOT BE INTERMIXED WITH EACH OTHER. IF USING OTHER APPROVED GREASE, COMPLETE REMOVAL OF CONTAINED GREASE AND BEARING CLEANING IS REQUIRED.

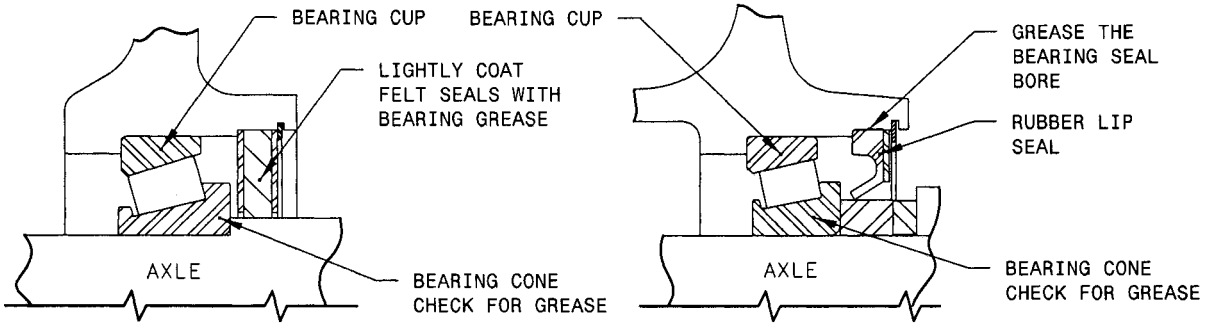

Figure 1

Brake Assemblies:

- Condition linings as applicable per PRM13A, PRM14A or individual maintenance manuals for internal type design.

On Aircraft Cleaning Procedure:

CAUTION: DO NOT USE HIGH PRESSURE SPRAY WASH EQUIPMENT. ITS USE CAN INJECT SOAP SOLUTION AND WATER INTO THE BEARINGS AND OTHER INTERNAL CAVITIES RESULTING IN CORROSION AND REDUCED SERVICE LIFE.

- Hand wash wheels & brakes with a mild soap and water solution. Rinse with low-pressure spray.

For additional assistance contact Technical Services:
Websites: www.clevelandwheelsandbrakes.com
www.parker.com/ag/wbd

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