Cleveland
Wheels & Brakes

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PRODUCT REFERENCE MEMO

40-77A, 40-77B, AND 40-77F WHEEL ASSEMBLIES, TIE BOLT / OVERHAUL SET AVAILABILITY

1. PLANNING INFORMATION

A. APPLICABILITY

All Parker Hannifin (Cleveland Wheels & Brakes) P/N 40-77A, 40-77B, & 40-77F Wheel Assemblies used on the aircraft listed below or any application that is using the wheel assembly part numbers listed:

- Aermacchi Model SF-260 Aircraft
- Aerospatial /Socata Model TB9 Tampico, TB10 Tobaga, TB200, 100, 110 125, 150, & 180
- Avions Pierre Robin Model HR400 Series, DR400 Series, & R3000 Series Aircraft
- Cessna Model 150C Aircraft
- Commander Model BO 209 Aircraft
- Embraer Model EMB213 Aircraft
- FFA Flugzeugverke Model AS202-18A4 Aircraft
- Grob Model G115 Series Owner / Operators
- Grumman American Model 112 Series, AA-5 Series, and TR2 Aircraft
- Hunting Firecracker Model NDN 1T Aircraft
- Piper Aircraft Model PA-46-500, PA46-31P, PA44-180, PA34-220T, PA32-301, -301T, & PA28 Aircraft
- Slingsby Model T67C, M, T3A, & 200 Firefly Aircraft
- Sportavia Sportsman Model T67C, M, T3A, & 200 Firefly Aircraft
- Varga Aircraft Model 2150A/218 Kachina Aircraft
- Wing Aircraft Model D-1 Derringer Aircraft

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B. REASON

CAUTION: OWNER/OPERATORS ARE ADVISED THAT THE ENTIRE FASTENER SYSTEM SHOULD BE CHANGED TO MAINTAIN PROPER TORQUE-TENSION RELATIONSHIP. IT IS RECOMMENDED TO CHANGE THE FASTENER SYSTEM AS A COMPLETE SET AT EACH TIRE CHANGE OR OVERHAUL.

To bring these wheels into compliance with Cleveland's current fastener design standard and inform Owner/Operators of the resulting new washer thickness and low profile nut for the subject wheel assemblies.

The original tie bolt system guidance from the 1972 standard, AC43.13.1A, Chapter 5, Section 1, Para 230 (a) (2), permits just the chamfer or round end of the bolt to be seen at the top of the nut. No failure has occurred as a result of this original tie bolt system.

Cleveland's current fastener design standard, AC43.13-1B, Chapter7, Section 4, Para. 7-64 (f) recommends a minimum of one thread exposure above the nut.

Thus we are updating these assemblies with low profile all metal lock nuts that meet the minimum of one thread exposure above the nut under all conditions. The low profile nut provides distinct visual indication of proper thread engagement. Use of the existing nut is still an accepted configuration; however, a different torque value is required. Refer to Figures 1 and 2 for configuration examples.

C. DESCRIPTION

This PRM provides the inspection guidance and replacement instructions of tie bolt set in the subject wheel assemblies. The following procedures are provided to assure proper installation of low profile tie bolt nuts when accomplishing an overhaul.

The Cleveland Wheels & Brakes Component Maintenance Manual Number AWBCMM0001, latest issue, is available and should be used for general maintenance guidelines for External Design Wheels and brakes.

D. COMPLIANCE

Optional, at owner's discretion. The existing tie bolt nut remains an acceptable configuration for the subject wheel assemblies.

E. APPROVAL

The engineering contents of this Product Reference Memo are FAA DER approved.

F. WEIGHT AND BALANCE

Not affected.

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G. OTHER PUBLICATIONS AFFECTED

This PRM will be made available on the Cleveland Aircraft Wheel and Brake website.

2. ACCOMPLISHMENT INSTRUCTIONS

A. INSPECTION

Refer to Hardware Reference Identification Photos

(1) At next tire change or overhaul replace the tie bolt set and incorporate the low profile nut per this Product Reference Memo.

(2) At next available maintenance interval, and at Owner's discretion, inspect tie bolt system for evidence of one complete thread exposed from the nut. If one complete bolt thread is exposed above the nut, aircraft may be returned to service at Owner's discretion.

B. REPLACEMENT INSTRUCTIONS

SAFETY WARNING: WHEN INFLATING DEFLATING TIRES OR CONDUCTING INFLATION CHECKS FOLLOWING A DISASSEMBLY, ALWAYS USE A BLASTPROOF EXPLOSION CAGE TO PROTECT FROM PERSONAL INJURY.

(1) Deflate the tire and remove the wheel assemblies from the aircraft in accordance with the aircraft manufacturer's instructions.

SAFETY WARNING: FULLY DEFLATE THE TIRE BEFORE REMOVING THE VALVE CORE. THE AIR IN A TIRE PUTS PRESSURE ON THE VALVE CORE. THE VALVE CORE CAN EJECT WITH GREAT FORCE AND CAN CAUSE INJURY OR DEATH.

(2) Remove the valve core from the tire.

(3) Prior to disassembly, note the orientation of washers, bolts and nuts relative to the disc so the same orientation is used during reassembly.

(4) Disassemble and service wheel in accordance with instructions in Component Maintenance Manual, AWBCMM0001, latest issue, and proceed as follows: Remove and discard the tie bolts, nuts, and washers. Thoroughly clean wheel assembly per Component Maintenance Manual. Deepwell 7/16 and 5/16, 6-point sockets are recommended.

(5) Thoroughly clean wheel assembly per Component Maintenance Manual. Completely remove the contained grease and clean the bearings and bore. Refer to AWBCMM0001, latest issue, for grease packing instructions and pack bearings with Mobile SHC-100.

(6) Align tube on wheel half and join inner and outer wheel halves assuring that the tube is free from the joint line between wheel halves.

SAFETY WARNING: NEVER INFLATE THE MOUNTED TUBE WITHOUT ALL TIE BOLTS INSTALLED AND PROPERLY TORQUED.

(7) Install new tie bolts, washers, and nuts as a set. The bolt head must be located against the brake disc flange and the washers are installed under the nuts.

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

CAUTION: THE USE OF POWER TOOLS TO INSTALL NUTS AND BOLTS IS NOT A RECOMMENDED PRACTICE. IT MAY CAUSE OVER TORQUING OF THE FASTENER SYSTEM AND RESULT IN DAMAGE TO THE FASTENER OR MATING COMPONENTS.

NOTE: Fastener torque information is also available in the Cleveland Wheels & Brakes Component Maintenance Manual, AWBCMM0001, latest issue, or Technician's Service Guide, AWBTSG0001, latest issue. If there is any conflict or question regarding dry torque value on your assembly, contact Cleveland Customer Support for assistance.

(8) Reassemble wheel per maintenance manual instructions installing one (1) washer under each nut and DRY torque nuts in two steps; first to 35 in-lbs then to 75 in-lbs. ALWAYS restrain the bolt head and torque the nuts using a crisscross pattern until all nuts are properly torqued. Lubricant is **NOT** to be used.

(9) Place Warning label adjacent to valve hole.

(10) Place identification label opposite valve hole.

(11) Reinstall wheel on aircraft per applicable aircraft manual.

C. RETURN TO SERVICE

(1) When returning the wheel assembly to service, apply a liberal amount of Mobile Aircraft grease SHC-100 to the bearings per PRM 78, the mating cavity areas, and lightly coat all contact surfaces of the grease seals (see Figure 1). Install rubber lip grease seals per PRM 97.

(2) After installation of the wheel assembly on the aircraft, torque the axle nut to manufacturer's recommendation and secure with cotter pin as specified in the Airframe Owner's Handbook, install hubcap and secure with snap ring as applicable.

(3) Make a logbook entry referencing the change of hardware Record the flight hours from the Hobbs meter, the length of time wheels have been in service, number of tire changes, the torque applied to the tie bolt nuts, inflation pressure, and date that the aircraft is returned to service.

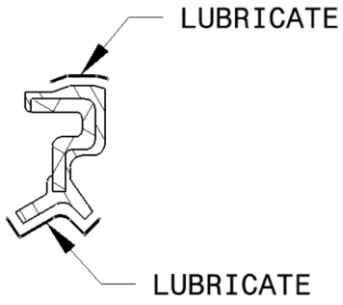

Figure 1 Lubricate the seals

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HARDWARE REFERENCE IDENTIFICATION PHOTOS

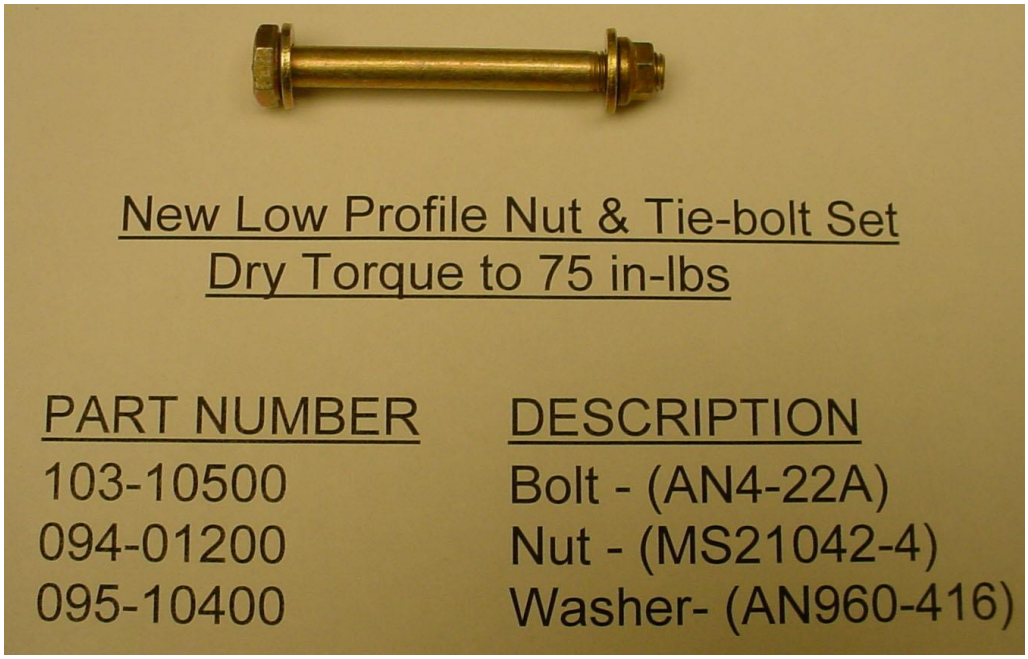

Figure 2 New Configuration

Figure 3 Previous Configuration

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3. MATERIAL INFORMATION

A. LIST OF COMPONENTS

Service kit 199-266 will upgrade and includes components to overhaul one (1) wheel assembly for 40-77A.

Service kit 199-268 will upgrade and includes components to overhaul one (1) wheel assembly for 40-77B.

Service kit 199-269 will upgrade and includes components to overhaul one (1) wheel assembly for 40-77F.

Standard parts not listed and optional parts should be ordered separately.

PART NUMBER	DESCRIPTION	QUANTITY
103-10500	Bolt-(AN4-22A)	3
094-01200	Nut-(MS21042-4)	3
095-10400	Washer-(AN960-4)	3
154-13000	Grease Seal	2
166-19700	Nameplate	1
166-20000	Nameplate	1
PRM 73	Product Reference Memo	1
PRM 78	Product Reference Memo	1
PRM 94	Product Reference Memo	1
PRM 97	Product Reference Memo	1