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SERVICE BULLETIN

40-83, 40-83A, 40-83B – WHEEL HALVES – INSPECT WEAR LIMITS

1. PLANNING INFORMATION

A. APPLICABILITY

Refer to Table 1. This service bulletin is applicable to the Beechcraft models listed using the designated Parker Hannifin Corporation, Aircraft Wheel & Brake Division main wheel assembly part numbers:

Table 1 Applicability

Parker Hannifin Part No.	Beechcraft Model	Serial Number
40-83	G33, F33A, F33C, V35BTC, 36, 76	CD-1272 thru 1304; CE-301 thru 634; CJ-31 thru 124; D-9193 thru 9861; E-1 thru 824; D-9862 and on.
40-83A	F33A, F33C, A36, A36TC, F33A, F33C	CE-635 thru 1071; CJ-125 thru 155; E-825 thru 1802; EA-1 thru 186; CE-1072 and on; CJ-156 and on.
40-83B	A36, A36TC, B36TC	E-1803 thru 2254; EA-187 thru 442; E-2255 and on; EA-443 and on.

B. REASON

To establish product life wear limits and prevent stress to assembly hardware (bolts) from excessive wheel half wear resulting in possible lateral shift between wheel halves.

C. DESCRIPTION

This service bulletin will provide instruction to the level required for inspection and the return of product to service. Replacement of parts may be required dependent on results of wear limit inspection per this document. Refer to paragraph 3. Material Information.

D. COMPLIANCE

Mandatory – Initial inspection at time of next scheduled overhaul or next scheduled flight of the aircraft; whichever occurs first. Maintain subsequent inspection intervals as follows:

- Every tire change
- Every annual inspection
- Every overhaul.

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E. APPROVAL

This service bulletin is approved for support of an FAA-TSO-C26 product.

F. MANPOWER

Estimate. 2 to 3 hours per aircraft.

G. TOOLING

Standard inspection equipment:

- Inspection surface plate
- CMM machine, if facility is so equipped; otherwise, the following inspection equipment can be used for measurements:
  - o Dial indicator
  - o Vernier dial calipers
  - o Gage pins: Ø 0.321 to Ø 0.329

H. WEIGHT AND BALANCE

Not affected.

I. REFERENCES

Use the latest issue in effect.

AWBPC0001 .....Product Catalog.
(Contains illustrated parts list of wheel and brake assemblies).
AWBCMM0001 .....Component Maintenance Manual – External Design Wheels & Brakes
(General maintenance support data for external design wheels & brakes)
AWBTSG0001.....Technician's Service Guide
(Condensed data from AWBCMM0001)

J. OTHER PUBLICATIONS AFFECTED

Not applicable.

K. PREVIOUS MODIFICATIONS

None.

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2. ACCOMPLISHMENT INSTRUCTIONS

Instructions are per landing gear.

All instruction related to aircraft support and non-related Parker Hannifin, Aircraft Wheel & Brake equipment shall be in accordance with the airframe manufacturer's instructions.

A. REMOVE THE WHEEL ASSEMBLY

SAFETY WARNING: MAKE SURE THE AIRCRAFT IS SECURE AND STABLE BEFORE BEGINNING ANY WORK. WORKING AROUND AN AIRCRAFT THAT IS NOT SECURE AND STABLE CAN CAUSE INJURY OR DEATH.

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.

(1) Refer to the airframe manufacturer's instructions to lift and support the aircraft.

(2) Fully deflate the tire by depressing the valve stem plunger in the tube valve stem until air can no longer be heard escaping from the tube.

(3) When all the tire pressure is released, then carefully remove the valve core from the tube valve stem.

NOTE: The brake disc on the wheel assembly is sandwiched between components of the brake assembly (back plate and pressure plate assemblies). The back plate assemblies must first be removed before the wheel assembly can be removed from the axle.

(4) Refer to Figure 1. Remove the four attachment bolts and washers from the cylinder assembly and remove the back plate assemblies.

(5) Remove the axle mounting hardware and slide the wheel assembly off the axle.

NOTE: It may be necessary to rock the wheel/tire slightly to unseat the outboard bearing.

B. DISASSEMBLE THE WHEEL

SAFETY WARNING: DO NOT DISASSEMBLE THE WHEEL UNTIL THE TIRE IS COMPLETELY DEFLATED. SERIOUS INJURY TO PERSONS, OR DAMAGE TO EQUIPMENT CAN RESULT.

CAUTION: REFER TO FIGURE 1. REPLACE BOLTS, WASHERS, AND NUTS AFTER THREE TORQUING APPLICATIONS. THE FACTORY ASSEMBLY TORQUE COUNTS AS ONE TORQUE APPLICATION. THE PRELOAD CONDITION WILL DIMINISH AFTER THREE TORQUING APPLICATIONS AND HARDWARE MAY SELF-LOOSEN FROM VIBRATION.

NOTES:

- Refer to AWBCMM0001 and inspect all removed components prior to re-installing.
- Refer to AWBPC0001 for component part numbers for the 40-83, 40-83A, and 40-83B wheel assemblies.

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(1) Confirm that the tire is completely deflated.

(2) Separate tire beads from the wheel halves using a bead breaker.

(3) Remove the three nuts, washers, and bolts holding the wheel halves together.

(4) Remove the brake disc from the inner wheel half.

(5) Remove the following to prevent accidental damage during the inspection procedure:

(a) For the 40-83 and 40-83A: snap rings, grease seal felts and rings, bearing cones.

(b) For the 40-83B: snap rings, molded grease seals, bearing cones.

(6) Separate the inner wheel half and outer wheel half assemblies and remove the tire.

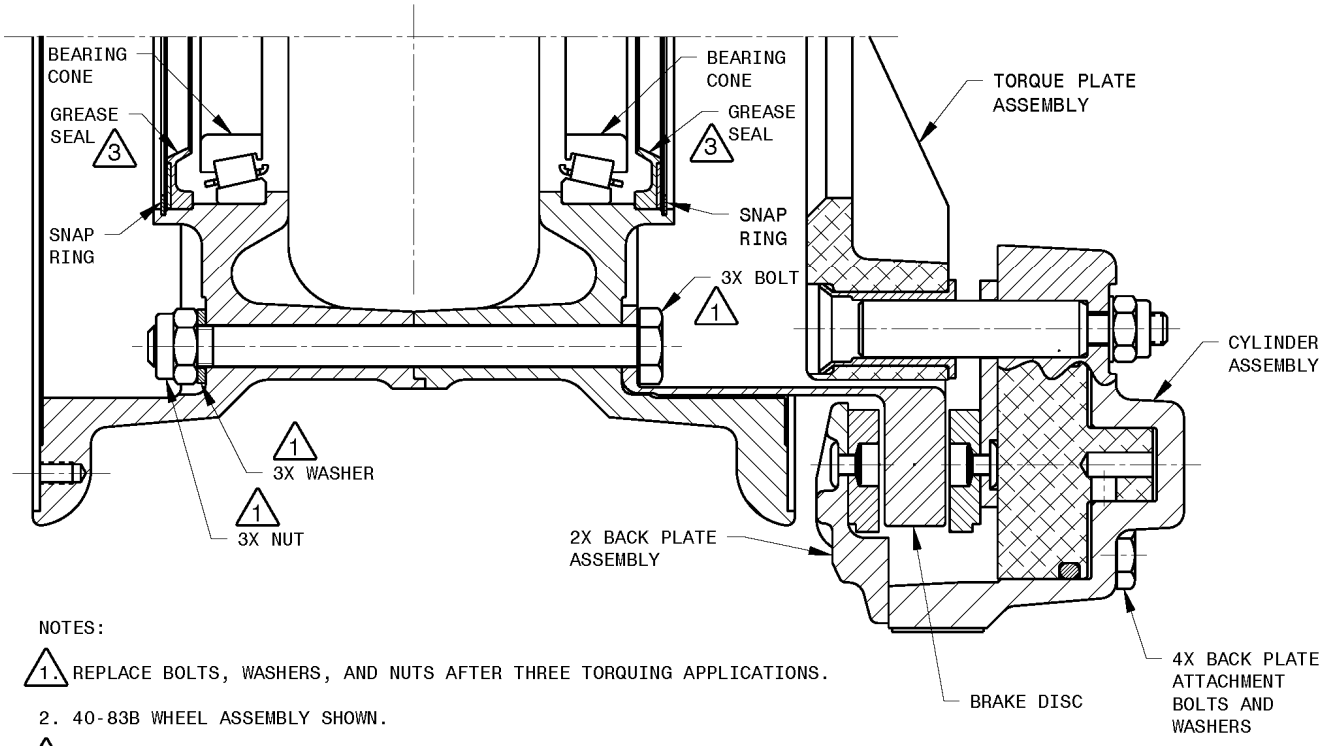

Figure 1 Remove the back plate assemblies

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C. WHEEL HALVES – INSPECT BOLT HOLES

Inspect features of the bolt holes as shown in Figure 2.

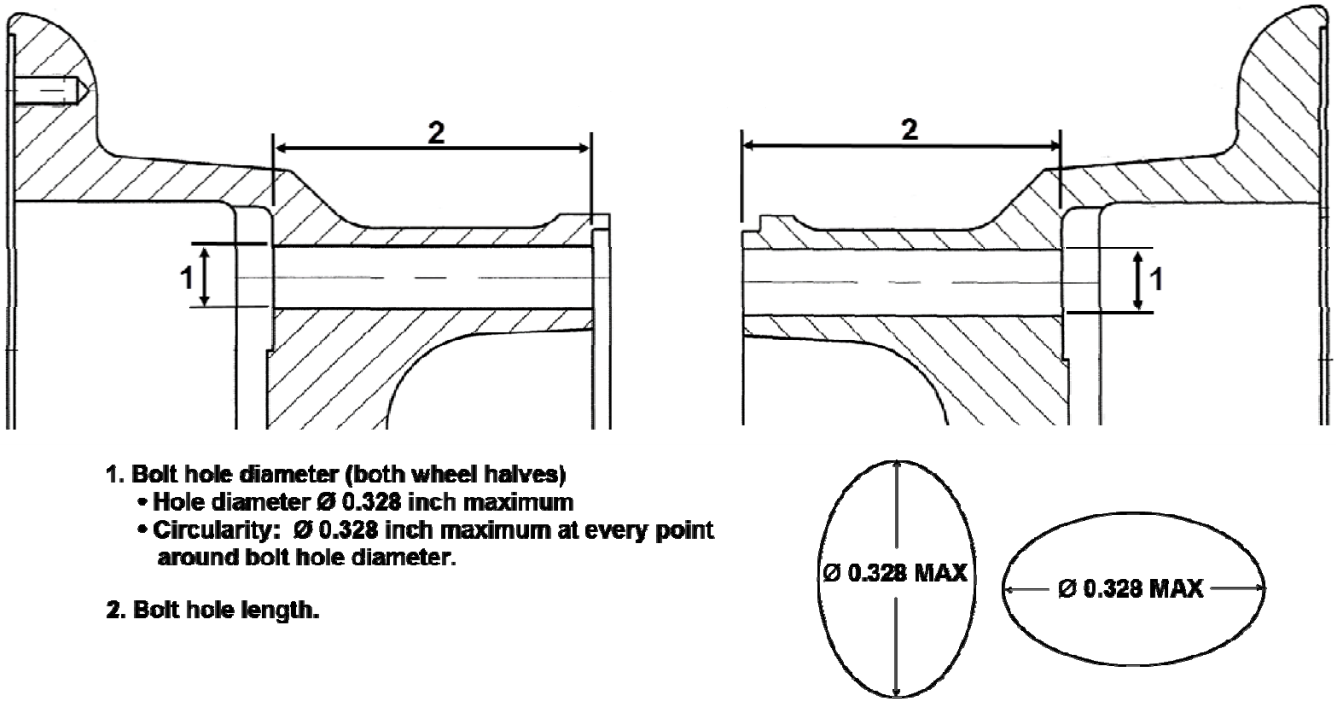

Figure 2 Wheel half bolt hole features

(1) Refer to Figure 3. Use gage pin diameters from Ø 0.321 inch to Ø 0.328 inch and measure all the bolt holes of the inboard and outboard wheel halves. The gage pins should fit into each of the bolt holes.

(2) Use a gage pin diameter of Ø 0.329 inches. If the gage pin can fit into one of the bolt holes, then the bolt hole is too large and the wheel half is considered scrap. Refer to E. Inspection Wear Limit Results.

40-83, 40-83A, 40-83B – WHEEL HALVES – INSPECT WEAR LIMITS

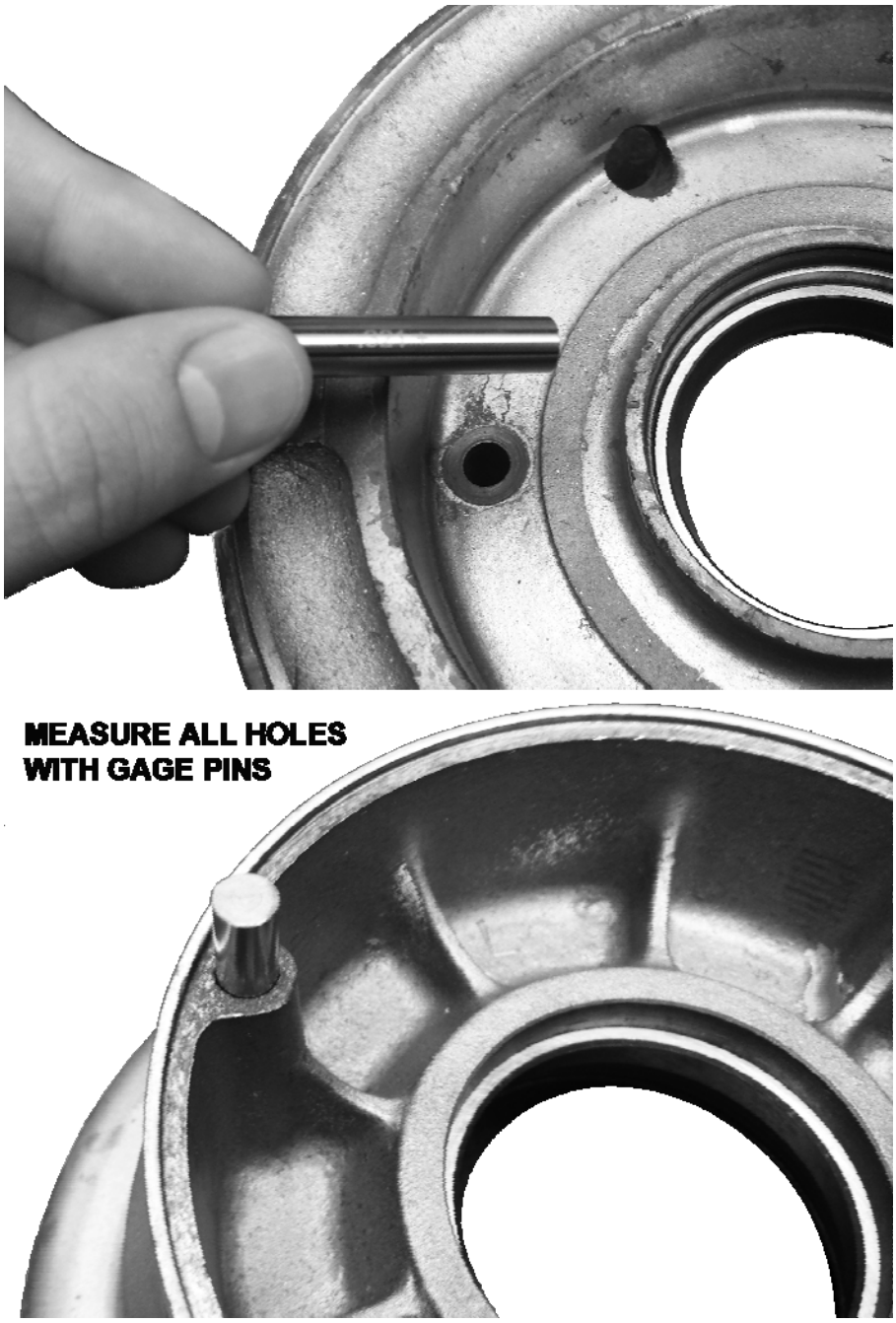

Figure 3 Measure bolt hole diameter

40-83, 40-83A, 40-83B – WHEEL HALVES – INSPECT WEAR LIMITS

NOTE: With the outboard wheel halves, be sure that the register face is laying on the flat surface and not the register lip. Refer to Figure 4.

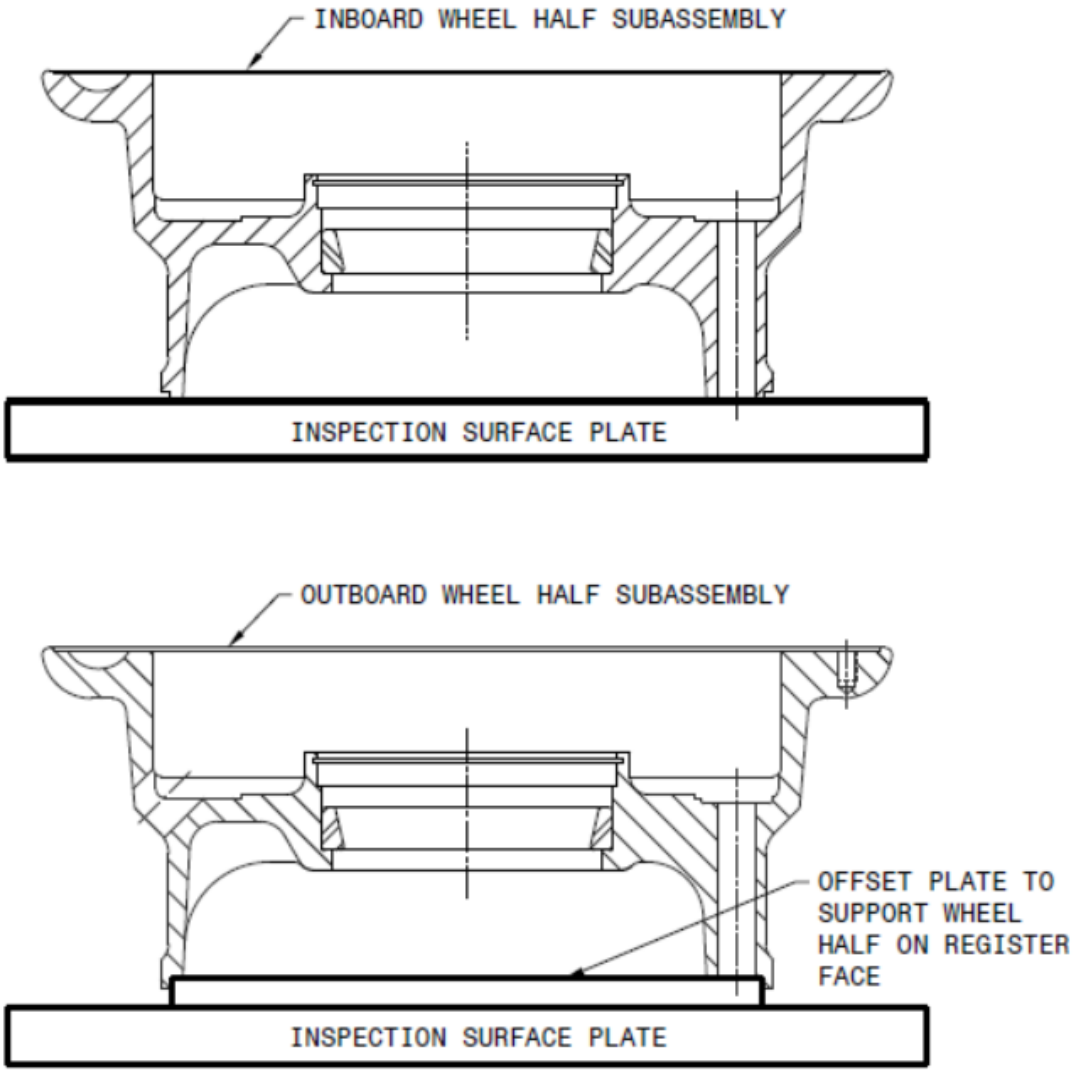

Figure 4 Setup for bolt hole length measurement

40-83, 40-83A, 40-83B – WHEEL HALVES – INSPECT WEAR LIMITS

(3) Refer to Figure 5. With the wheel register side of each wheel half laying on a flat surface, measure the bolt hole length using the depth gage on a Vernier caliper. Refer to Table 2 for acceptable limits.

(4) Check the base material for noticeable compression from the washer. This is a result of applying a torque greater than the maximum torque allowed for the wheel nuts. If there is notable compression of the base material, then the wheel half is considered scrap. Refer to E. Inspection Wear Limit Results.

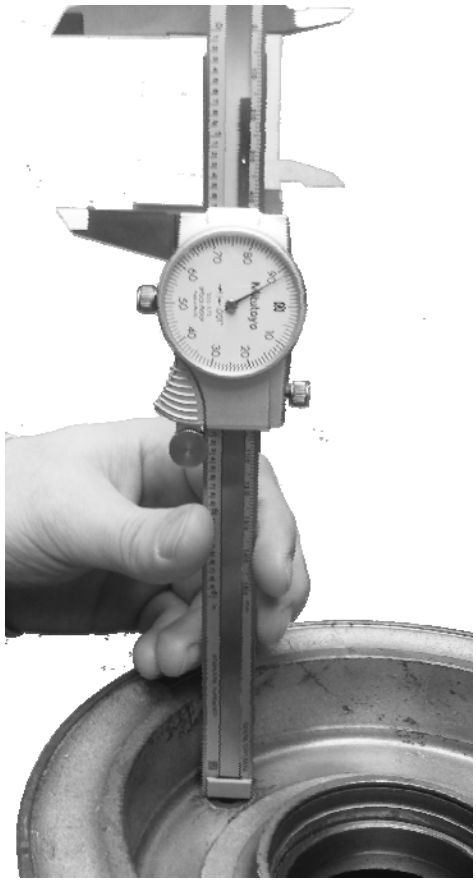

Figure 5 Measure bolt hole length

Table 2 Bolt hole length limits

Wheel Half Subassy Part No.	Wheel Assembly Part No.	Measurement	Action
162-02700 (outboard)	40-83, 40-83A	Less than 1.538 inch	Replace wheel half
161-03000 (inboard)		Less than 1.588 inch	Replace wheel half
162-02711 (outboard)	40-83B	Less than 1.588 inch	Replace wheel half
161-03011 (inboard)		Less than 1.588 inch	Replace wheel half

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D. WHEEL HALVES – INSPECT LATERAL MOVEMENT ALONG WHEEL REGISTERS

Inspect lateral movement limits of wheel halves.

CAUTION: AVOID C-CLAMP INDUCED DAMAGE TO THE BEAD SEAT.

(1) Refer to Figure 6. Bring both wheel halves together so that one is stacked on top of the other (outboard or inboard). Clamp the bottom wheel half to a flat surface.

Figure 6 Setup for dial indicator inspection

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(2) Refer to Figure 7. Set the dial indicator so that it is touching the register lip of the bottom wheel half.

(a) Zero out the dial indicator.

Figure 7 Setup the first position of the dial indicator

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(3) Refer to Figure 8. Carefully move the dial indicator to the register lip of the top wheel half without disturbing the reading on the dial indicator.

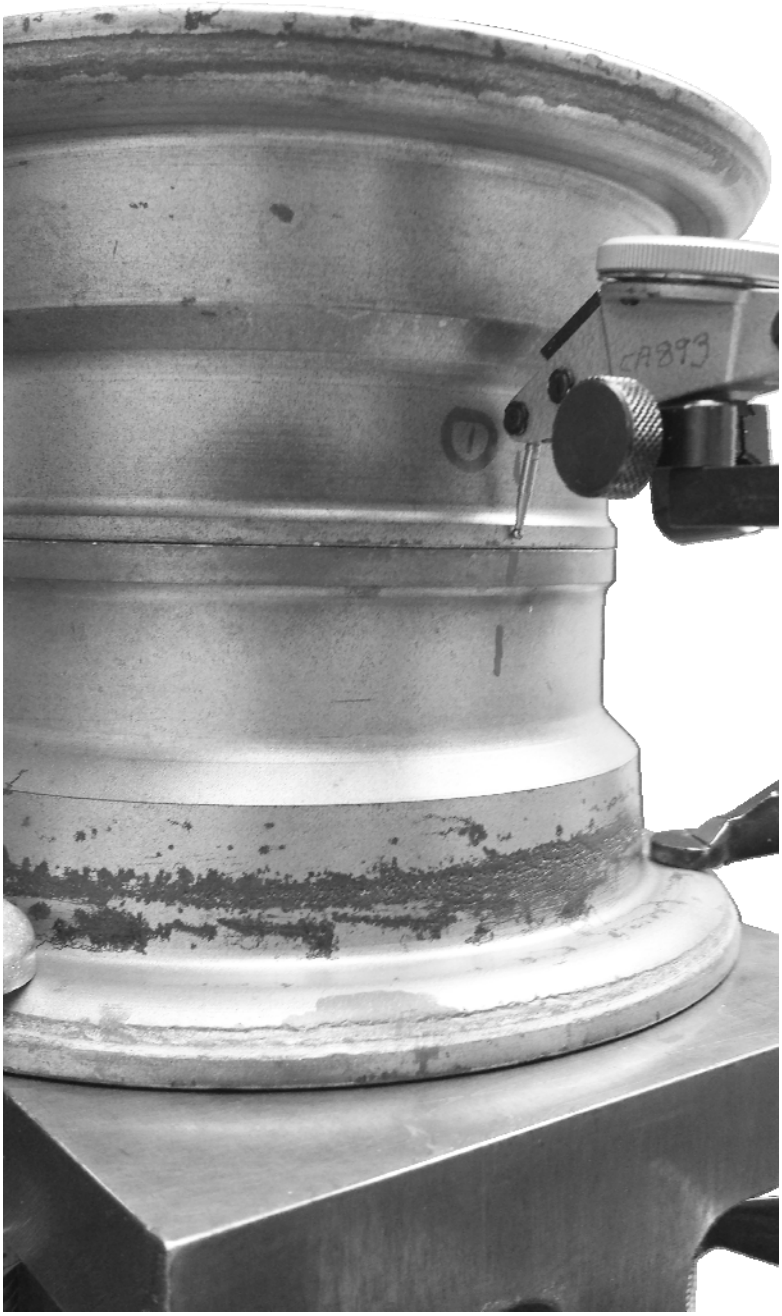

Figure 8 Setup the second position of the dial indicator

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(4) Lightly pull the top wheel half (without tilting it) toward you and slowly rotate the top wheel half.

(a) Mark at least 3 of the biggest deviations that are found.

(5) Once rotated a full 360 degree of rotation, lightly push the top wheel half (without tilting it) away from you until it cannot go any further, then slowly rotate the top wheel half.

(a) Mark at least 3 of the biggest deviations that are found.

(6) Once rotated another full 360 degree of rotation, shift the top wheel half back and forth at the highest marked deviations to determine the total register clearance at each point.

(a) Add the total reading, “A” going clockwise (push or pull depending on the setup) from the zero indicator and total reading, “B” going counterclockwise (push or pull depending on the setup) from the zero indicator. This is the total clearance between the wheel half registers.

(7) Refer to Figure 9. If the total register clearance is more than 0.007 inch, then both wheel halves are considered scrap. Refer to E. Inspection Wear Limit Results.

Figure 9 Dial indicator reading, example

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E. INSPECTION WEAR LIMIT RESULTS

(1) If both wheel halves satisfy the wear limit requirements in accordance with this service bulletin., then complete the service bulletin accomplishment instructions starting with paragraph F. Assemble the Wheel.

NOTES:

- Wheel halves are not procurable at the 151- or 152- part level and must be obtained at the 161- or 162- wheel half subassembly level which includes the installed bearing cup.
- Replace bearing cups and cones as a matched set. A new wheel half subassembly includes a new installed bearing cup. If replacing a wheel half subassembly, replace the mating bearing cone.

(2) If either of the wheel halves do not satisfy the wear limit requirements per section 2.C., then replace the applicable wheel half subassembly and complete the service bulletin accomplishment instructions starting with paragraph F. Assemble the Wheel.

(3) If the total register clearance per section 2.D. is more than 0.007 inches, then replace both wheel half subassemblies and complete the service bulletin accomplishment instructions starting with paragraph F. Assemble the Wheel.

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F. ASSEMBLE THE WHEEL

(1) Wheel and tire pre-assembly preparation

(a) Examine the bead seat area of the wheel halves. If necessary, remove all lubricant, grease or foreign material with a clean cloth moistened with a mild soap and water solution or with denatured alcohol.

(b) The mating surfaces of the wheel halves should not have nicks, burrs, small dents, or other damage. Damaged mating surfaces can prevent the wheel halves from mating or sealing.

(c) Make sure that the tire is clean inside. If it is not clean, then wipe the bead base with a clean cloth moistened with a mild dishwashing soap and water solution or a suitable rubber cleaner.

(2) Tire mounting and assembly of wheel

Refer to Figure 10.

SAFETY WARNING: WEAR THE APPROPRIATE PROTECTIVE CLOTHING AND ALWAYS FOLLOW PROPER TIRE INFLATION SAFETY PRACTICES. SERVICE THE TIRE WITH INFLATION SAFETY EQUIPMENT DESIGNED FOR THIS OPERATION.

NOTE: Refer to AWBPC0001 for component part numbers for the 40-83, 40-83A, and 40-83B wheel assemblies.

(a) After the inside of the tire has been cleaned, lubricate lightly with tire talc.

(b) Inflate the tube with dry nitrogen to slightly round, and insert in the tire. The tube heavy spot is indicated by a painted yellow stripe about ½ inch wide by 2 inches long. Align the stripe on the tube with the tire red balance dot. If the tube has no balance mark, align the tube valve with the tire red balance dot.

(c) Position the tire on the outer wheel half subassembly (2), inserting the valve stem through the valve hole in the wheel.

(d) Place the inner wheel half subassembly (1) inside the tire, aligning the bolt holes.

(e) Install the brake disc (3) in the inner wheel half aligning the bolt holes.

(f) Install the three bolts (8) through the brake disc.

NOTE: The washers (9) and nuts (10) must be located on the outer wheel half.

(g) Compress the wheel halves and install a washer and nut on each of the three bolts. Run the nuts down by hand as far as possible.

CAUTION: DO NOT USE IMPACT OR POWER WRENCHES TO TORQUE THE WHEEL NUTS AND BOLTS. THE USE OF IMPACT OR POWER WRENCHES CAN CAUSE OVER TIGHTENING.

NOTE: The fasteners must be tightened by applying the torque to the nut while holding the bolt head.

(h) Final torque the nuts to 150 lb-in (16.9 N-m).

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(i) Install the following in each wheel half subassembly:

- For the 40-83 and 40-83A: bearing cone (4), grease seal felt (5A) and rings (6), snap ring (7).
- For the 40-83B: bearing cone (4), molded grease seal (5), snap ring (7).

NOTE: Install the end of the snap ring into the groove in the hub of the wheel half and wind or spiral the ring into the groove.

ITEM	QTY	NOMENCLATURE
1	1	WHEEL HALF SUBASSY, INNER
-	1	CUP, BEARING
2	1	WHEEL HALF SUBASSY, OUTER
-	1	CUP, BEARING
3	1	BRAKE DISC
4	2	BEARING CONE
5	2	MOLDED GREASE SEAL (40-83B ONLY)
5A	2	FELT, GREASE SEAL (40-83, 40-83A)
6	4	RING, GREASE SEAL (40-83, 40-83A)
7	2	SNAP RING
8	3	BOLT
9	3	WASHER
10	3	NUT

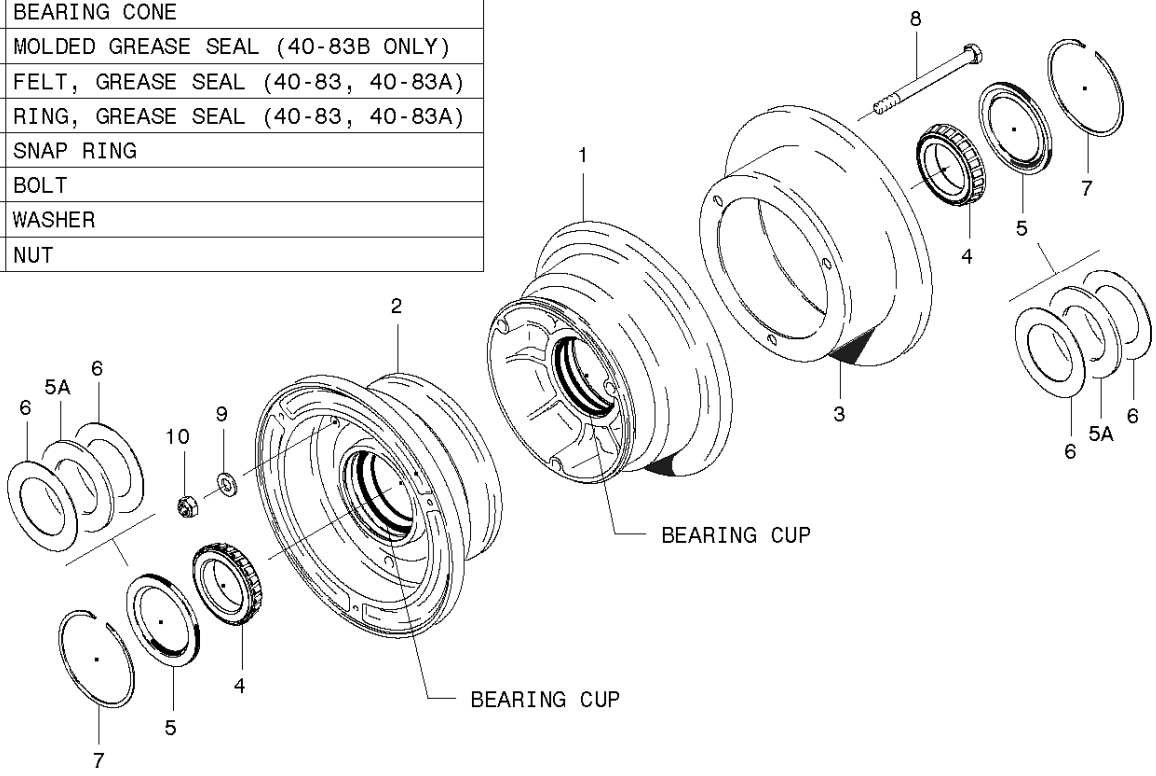

Figure 10 Wheel assembly components

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G. INSTALL THE WHEEL ASSEMBLY ON THE AXLE

(1) Install the wheel/tire unit on the axle making certain that the bearing cones are seated.

(2) Install the axle hardware in accordance with the airframe manufacturer's manual.

(3) Inflate the tire to the required service pressure.

H. RE-ATTACH THE BACK PLATE ASSEMBLIES

Refer to Figure 11.

(1) Install four bolts and washers into the cylinder assembly.

(2) Slide the two back plate assemblies between the brake disc and the wheel flange.

(3) Thread two bolts into each back plate assembly and tighten the bolts to the torque listed on the brake assembly nameplate:

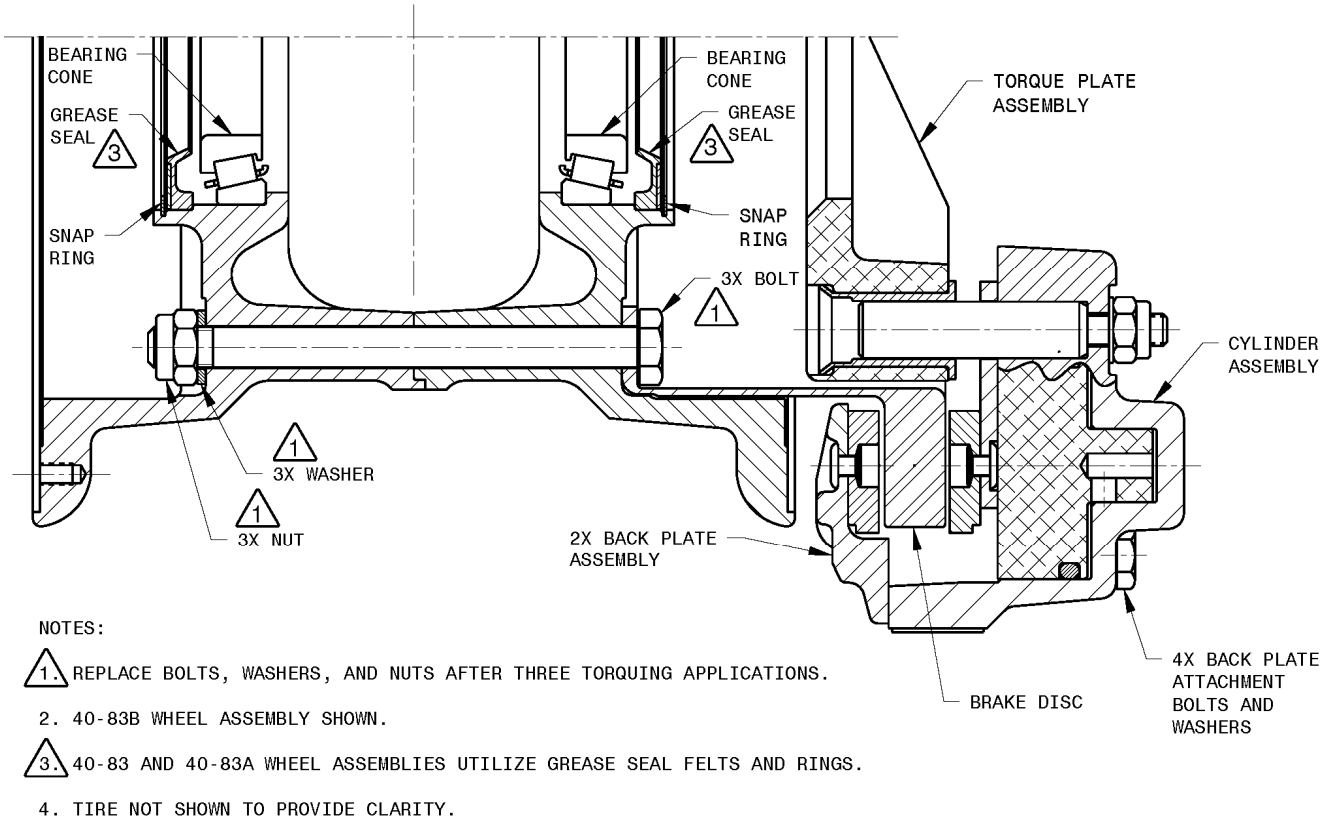

Figure 11 Re-attach the back plate assemblies

40-83, 40-83A, 40-83B – WHEEL HALVES – INSPECT WEAR LIMITS

3. MATERIAL INFORMATION

A. MATERIAL-REQUIREMENTS

Contact Parker Hannifin for replacement parts availability.

Parker Hannifin Corporation
Aircraft Wheel & Brake Division
Technical Service Hotline: 1-800-BRAKING
Customer Support Fax: 440-937-5409
E-mail: clevelandwbhelp@parker.com

B. LIST OF COMPONENTS

Not applicable.

C. INTERCHANGEABILITY

None.

D. PARTS DISPOSITION

Not applicable.