

# Cleveland

Wheels & Brakes

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# PRODUCT REFERENCE MEMO

## EXTERNAL CALIPER BRAKE ASSY – PISTON ORIENTATION – INSPECT/CORRECT

**EFFECTIVITY:** Any external brake assemblies that use a piston that is flat on both sides.

**APPLICABILITY:** The following chart has been created to assist maintenance personnel in identifying those brake assemblies that are in production. The procedures discussed in this publication are applicable to any external brake assembly products that use a piston that is flat on both ends. (Ref Fig. 1 on page 2.)

30-4	30-23	30-32E	30-59A	C-30018-1	D-30118-5
30-5	30-23A	30-35	30-59D	C-30018-2	D-30118-6
30-6	30-23B	30-40	30-60	C-30018-3	D-30118-7
30-7	30-23C	30-40A	30-60A	C-30018-4	D-30118-8
30-9	30-23D	30-41	30-68	C-30018-5	D-30118-9
30-9A	30-24	30-41A	30-68B	C-30018-5	D-30118-10
30-9C	30-28B	30-41B	30-181	C-30018-6	D-30793-3
30-9D	30-28C	30-45	35-200A (30-1)	C-30018-7	D-30793-4
30-9E	30-28D	30-51	37-200-2 (30-8)	C-30764-5	D-30793-5
30-18	30-32	30-51A	37-200A (30-72)	C-30764-6	D-30793-6
30-19	30-32A	30-51B	3000-250 (30-12)	C-30764-7	
30-19A	30-32B	30-53	3000-500 (30-13)	D-30118-3	
30-21	30-32C	30-53A	C-30018	D-30118-4	

**REASON:** Informational- Parker Hannifin has received a report of a P/N 30-9 brake assembly with the piston installed backwards. The piston o-ring is located closer to one end of the piston than the other. That end is to be inserted towards the bottom of the cylinder piston bore cavity. Proper installation provides adequate engagement of the o-ring to cylinder bore for minimum lining and disc wear conditions. A brake caliper with an incorrectly installed piston may leak hydraulic fluid from around the piston prior to the linings and discs reaching their minimum thickness replacement limits.

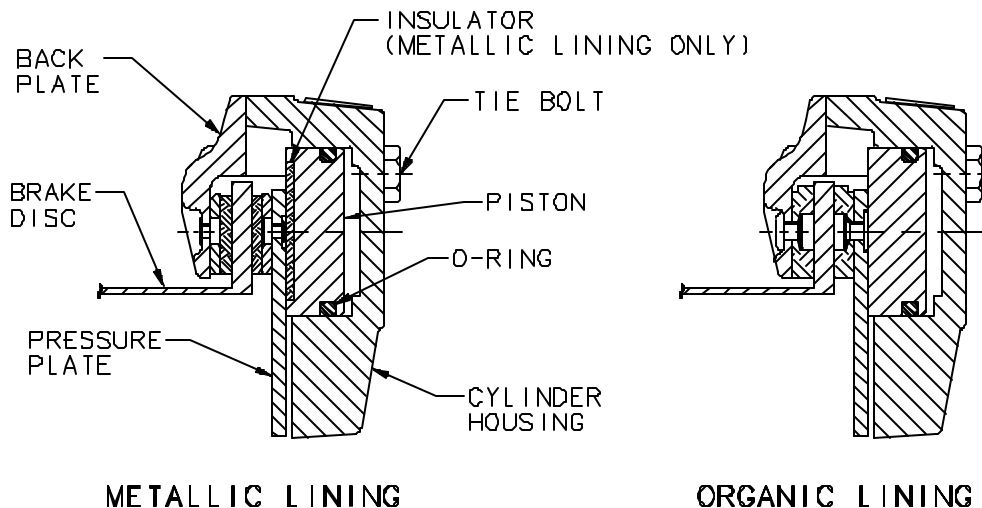
Continued use of any brake caliper with an incorrectly installed piston can result in loss of brake effectiveness or directional control of the aircraft.

**DESCRIPTION:** This Product Reference Memo is issued to clarify proper piston orientation and reassembly requirements for the external brake assemblies that use a piston that is flat on both ends. In the event of hydraulic fluid leakage occurring prior to achieving a maximum lining wear condition, then the piston may be installed incorrectly. If the piston is suspected of being improperly installed, then perform the inspection procedure in accordance with the Accomplishment Instructions outlined on page 2.

**APPROVAL:** The contents of this service communication are FAA DER approved.

WT. & BALANCE: Not applicable.

PUBLICATIONS: This PRM will be incorporated into the Cleveland Wheels & Brakes Component Maintenance Manual at next revision.



**FIGURE 1- CROSS-SECTIONAL VIEW SHOWING CORRECT PISTON ORIENTATION FOR BRAKE ASSEMBLIES WITH METALLIC OR ORGANIC LINING**

## ACCOMPLISHMENT INSTRUCTIONS:

### To verify proper piston orientation prior to brake installation:

1. With back plate properly installed, inject low air pressure into the brake fluid port to push the piston out to expose 1/8 to 3/16 of an inch. If you don't see the o-ring, then the o-ring groove is correctly positioned on the inner side of the piston and no further action is required.
2. If the o-ring is visible then disassemble, inspect and reinstall piston with proper orientation in accordance with the Figure 1 above and AWBCMM0001 Component Maintenance Manual (available from Web site: [www.parker.com/cleveland](http://www.parker.com/cleveland)) prior to installation on the aircraft.

### To verify proper piston orientation with brake installed:

1. Loosen back plate tie bolts 3 to 4 complete turns. Do not remove back plate. Apply slight brake pressure at the pedals as needed to move the piston. The piston will extend and be visible between the cylinder housing and the pressure plate. You may need an assistant to inspect the piston while you are applying brake pressure.
2. If the o-ring is visible after 1/8 to 3/16 of an inch of piston travel then the piston is installed incorrectly. Disassemble, inspect and replace any worn components. After inspection, reassemble and test in accordance with the AWBCMM0001 Component Maintenance Manual. Make appropriate log book maintenance entry.
3. If the o-ring is not visible after 1/8 to 3/16 of an inch of piston travel and no fluid leakage is observed, the piston is installed correctly. Re-torque the tie bolts to value specified for your specific brake assembly in accordance with the AWBCMM0001 Component Maintenance Manual (available from Web site: [www.parker.com/cleveland](http://www.parker.com/cleveland)).