

PIPER AIRCRAFT
PA-28-236
MAINTENANCE MANUAL

CLEANING, INSPECTION, AND REPAIR OF BRAKE CYLINDER

1. Clean cylinder parts with a suitable solvent and dry thoroughly.
2. Inspect interior walls of cylinder for scratches, burrs, corrosion, etc.
3. Inspect general condition of cylinder fitting threads.
4. Check piston and valve for scratches, burr, corrosion, etc.
5. Repairs to cylinder are limited to polishing out small scratches, burrs, etc., and replacing valve, washer, seal, and O-rings.

ASSEMBLY OF BRAKE CYLINDER (TOE BRAKE)

—CAUTION—

Use a small amount of hydraulic fluid (MIL-H-5606) on the O-ring and component parts to prevent damage and ease handling during reassembly.

1. Cleveland cylinder number 10-30: (Refer to figure 32-16.)
 - a. Install new O-rings on inside and outside of packing gland and on outside of piston.
 - b. To assemble piston rod assembly, install on rod, in order, roll pin, washer, spring, washer, packing gland with O-rings, seal, piston assembly and O-ring, spring and roll pin.
 - c. Insert piston rod assembly in cylinder and secure with retaining ring.
 - d. Install cylinder. (Refer to Installation of Brake Cylinder.)
2. Gar-Kenyon cylinder number 17000: (Refer to figure 32-17.)
 - a. Install new O-rings on inside and outside of fitting and on outside of piston.
 - b. To assemble piston rod assembly, install on rod, in order, roll pin, return spring retainer washer, return spring, fitting with O-rings, seal, piston with O-ring, spring and sleeve. Secure pieces with retaining ring on end of rod.
 - c. Insert piston rod assembly in cylinder and secure fitting.
 - d. Install cylinder. (Refer to Installation of Brake Cylinder.)

INSTALLATION OF BRAKE CYLINDER (TOE BRAKE) (figure 32-14)

1. Position cylinder at mounting points and attach with clevis pins. Safety pins with cotter pins.
2. Connect brake lines to cylinder fittings.
3. Bleed brakes.

BLEEDING BRAKES

BRAKE BLEEDING PROCEDURE (GRAVITY)

1. Attach a clean, clear plastic tube to brake bleeder of right landing gear. Extend free end of tube to a container partially filled with hydraulic fluid (MIL-H-5606). Ensure that end of tube is submerged in fluid. Open bleeder 1/2 to 1 turn.
2. Fill brake fluid reservoir located on firewall with hydraulic fluid.

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3. Ensure that right toe brake pedals have been pulled full aft.
4. Pull hand brake handle and slowly pump master cylinder approximately 50 times or until hydraulic fluid is observed passing through plastic tube at brake bleeder.

—CAUTION—

Fluid level in reservoir must be maintained to prevent air from entering system.

5. Pump right brake cylinder very slowly approximately 12 times. This will purge air from toe brake cylinder system. Watch for any air forced through clear plastic tube during this operation to ensure air has been forced from toe brake system.
6. Pump hand brake an additional 25 times or until no air is observed through clear plastic tube.
7. Tighten brake bleeder and remove plastic tube.
8. Repeat steps 1 through 6 for left main landing gear.

BRAKE BLEEDING PROCEDURE (PRESSURE)

1. Place a clean, clear plastic tube on vent fitting on top of brake fluid reservoir. Extend free end of tube to a container partially filled with hydraulic fluid (MIL-H-5606). Ensure that end of tube is submerged in fluid.
2. Attach another clear plastic tube to brake bleeder of right landing gear. Connect free end of tube to pressure source. Open bleeder 1 to 2 turns and pressure fill system with fluid.
3. With fluid continually flowing through the system, slowly and simultaneously actuate hand brake and toe brake pedal, of side being bled, several times to purge cylinders of air. On dual brake installations, both pedals for brake being bled must be actuated.

—NOTE—

By watching fluid pass through plastic hose at fluid reservoir and bleeder fitting on gear being bled, it can be determined whether any air is left in system. If air bubbles are evident, filling of system must continue until all the air is out of system and a steady flow of fluid is obtained. Should brake handle remain spongy, it may be necessary to disconnect the bottom of the toe brake cylinders (next to pedal) and rotating cylinder horizontally or even above horizontal and use hand brake alone to purge air from the system.

4. Close bleeder fitting. Do not remove tube from fluid reservoir until both brakes have been bled. Check brakes on side being bled for proper pedal pressure. Replace cap on bleeder fitting.

—NOTE—

It may be necessary to remove any trapped air in the top of wheel brake unit by applying pressure to the system with brake handle and slowly opening bleeder and release hand lever.

5. Repeat steps 2 through 4 for left main landing gear.
6. Drain excess fluid from reservoir to fluid level with a syringe.

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BRAKE SYSTEM LEAK CHECK

1. Pull brake handle and lock parking brake.
2. Allow system to stand for approximately 10 minutes, then pull brake handle. It should not be able to be pulled further than originally set.
3. If the handle is able to be pulled towards the panel or if it feels spongy, a leak is present at some point in the system.

—NOTE—

This leak may appear at one of the connections in the system or internally in the master brake cylinder or wheel brake assemblies.

BLEEDING OF THE BRAKES AFTER A UNIT HAS BEEN CHANGED

—CAUTION—

Do not allow pressure to bleed off before closing bleeders; this will allow air to enter the system. Repeat pumping and bleeding approximately 10 or more times or until all air is released from the system. During all bleeding, fluid level of reservoir must be maintained.

1. Actuate hand brake handle until pressure builds up in the system. Crack the attaching B nuts at any hose connection of the replaced unit.

—NOTE—

Most handle sponginess should be displaced by cracking of the attaching B nuts.

2. Actuate master cylinder and toe brake cylinder of changed unit and bleed fluid through brake assembly on wheel by pumping pressure and cracking bleeder until pressure drops.

—END—