

Easy Access Brake Fluid Reservoir for Military 6x6's

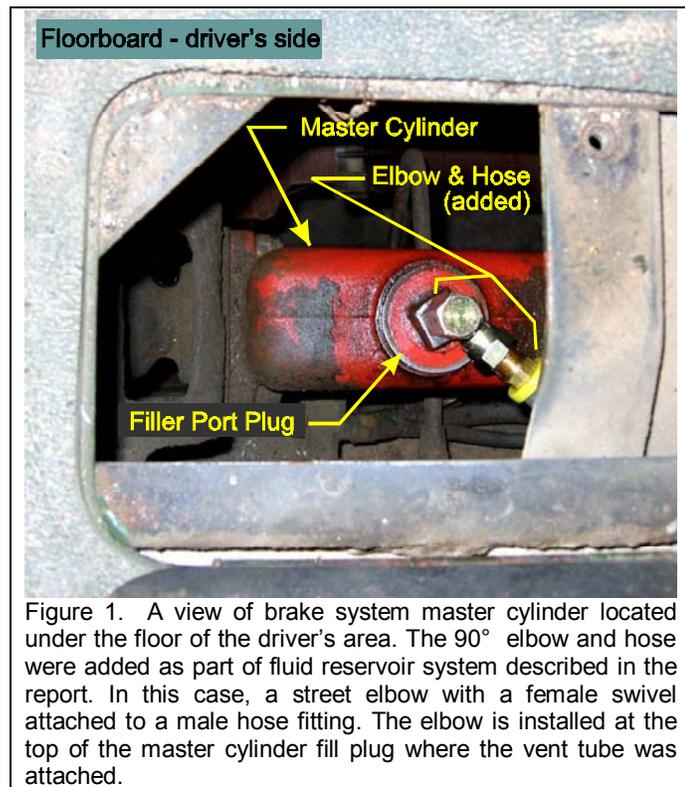
Roscommon Equipment Center

National Association of State Foresters

in Cooperation with

Michigan's Forest Fire Experiment Station

The brake system master cylinder for military 6x6 trucks is located under the floor of the driver's compartment (Figure 1). In order to check the brake fluid level or add fluid, the operator must first remove the floorboard panel to access the master cylinder. The brake fluid fill port, a threaded plug with a wrench lug for tightening, is located on the top of the master cylinder housing. The system's vent tube¹ is also screwed into the fill port plug. The vent tube must be disconnected to remove the fill port plug to view the fluid level. The truck's original design makes what should be a routine preventative maintenance task, a time consuming job. While checking the fluid, it is also easy to knock dirt from the floorboard into the reservoir. This presents a potential safety hazard resulting in contaminated fluid. In this document, REC shows a way to mount a translucent plastic reservoir, located in the cab, to provide an easy way to view the fluid level and refill it when necessary.



Design Overview and Parts Needed. For this design, we will add a brake fluid reservoir in the cab and run a hose from it to the brake system master cylinder. The hose, tank and fittings used must be made from material compatible with the brake fluid. *Wilwood Engineering* has

a plastic reservoir that works well for this application. The parts to make the reservoir assembly are found below, including a 3/8-inch ID hose that is brake fluid compatible. The hose diameter matches the hose-attachment barb of the new fluid reservoir. There is no fluid pressure on this system so simple hose clamps can be used if secured tightly. On one end of the hose, install a brass, hose barb to 1/8-inch female NPT swivel fitting. Also needed is a brass, 1/8-inch male NPT to 1/8-inch male NPT 90° elbow. This will be used to connect the hose to the master cylinder.

Brake Fluid Reservoir Parts.

Wilwood Engineering
4700 Calle Bolero
Camarillo, CA 93012
(805) 388-1188
www.wilwood.com

Order and assemble these parts to make the vented brake fluid reservoir used in this report. Part numbers are from Wilwood Engineering (cost approximately \$60).

Qty	Part #	Description
1	330-4355	Cap, Plastic, w/seal Girling Style
1	260-3393	Clamp, Reservoir
1	260-5751	Reservoir, 10.7 oz.
1	260-3395	Filter for 10.7 oz. Reservoir
1	250-3381	Bracket, Mounting, Reservoir
4 ft.	220-5613	3/8" ID hose (brake fluid compatible)

Hose Assembly Parts.

Obtain brass fittings from a hose fitting source.

Qty	Description
1	Hose Fitting, 3/8" Hose Barb x 1/8" NPT Female Swivel (brass)
2	Hose clamps
1	90° Elbow, 1/8" Male NPT x 1/8" Male NPT (brass)

Preparing the master cylinder for installation.

- Remove the floorboard access plate from above the master cylinder.
- Disconnect the vent tube from the master cylinder and discard. The fill cap of the new reservoir is vented so this part is no longer needed.
- Remove the master cylinder fill plug. Be careful not to contaminate the inside of the cylinder with dirt.

- The vent tube port of the master cylinder fill plug is threaded for 1/8-inch NPT. Below the vent port is a splash plate that prevents fluid from splashing up into the vent tube. This must be removed for the new fluid reservoir system to operate properly. Use a punch to knock it out.
- Install the 90° elbow into the 1/8-inch NPT port of the fill plug.
- Reinstall the fill port plug into the master cylinder.

- Fill the reservoir with the proper brake fluid and check that air is bled from the system. With this design, the master cylinder should fill with fluid without air being trapped.
- Reinstall the floorboard access plate.

Mounting the brake fluid reservoir.

- Determine the location of the new tank. It is not critical as long as it is in a place that is easy to view and refill, elevated higher than the master cylinder, and protected from damage. A good place is on the inside rear cab wall in the corner behind the driver's seat as shown in Figure 2.
- Fabricate a bracket and mount the tank to the cab.
- Drill a hole through the floorboard below the new reservoir for running the hose. It is a good idea to use a grommet or some type of protection to keep the hose from chafing on the sharp edge of floorboard. The hole diameter will be dependant on what parts are used.

Installing the hose and finishing for use.

- Attach the threaded fitting of the hose to the elbow fitting installed on the master cylinder port.
- The other end of the hose will run under the floorboard to the fluid reservoir through the hole previously drilled in the floorboard. Make sure that the hose does not have any low points that might impede venting of air.
- Cut the hose to length and clamp to the hose barb at the bottom of the fluid reservoir.

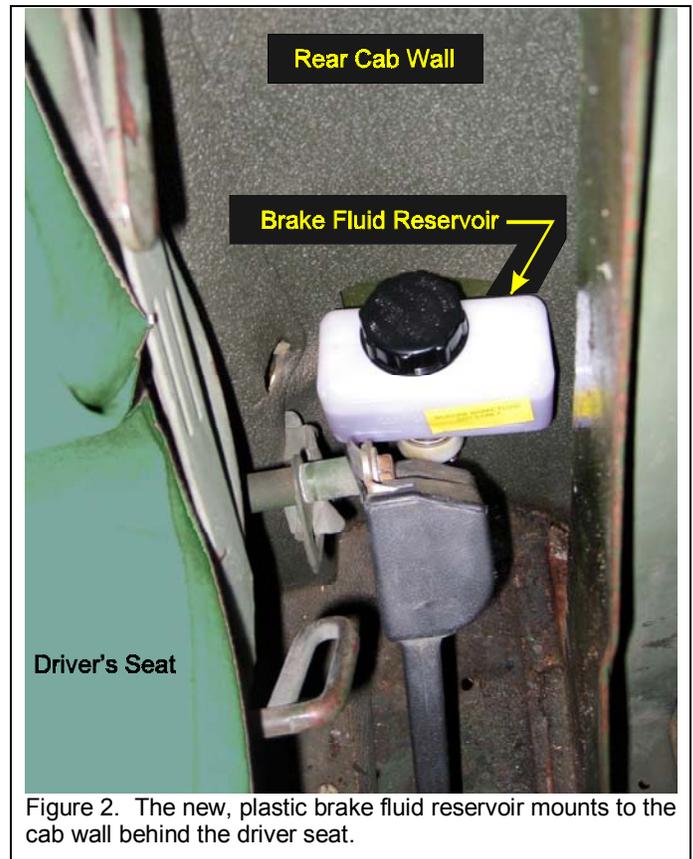


Figure 2. The new, plastic brake fluid reservoir mounts to the cab wall behind the driver seat.

¹ These vehicles were designed to ford bodies of water. This vent tube allows for an elevated vent to prevent water contamination of the brake system during fording. Users that do not require fording may have removed the vent tube. The fluid reservoir discussed in this report utilizes a vented reservoir cap to assure proper venting.

Disclaimer

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