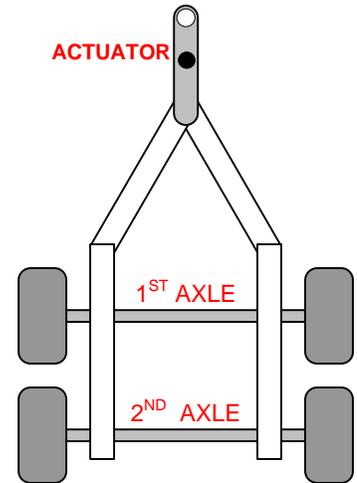
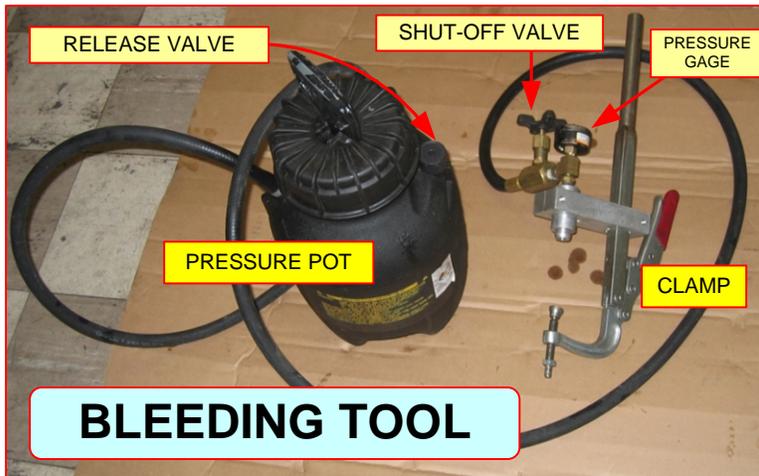


## **Trailer Brake System Bleeding Procedure:**

The procedure below assumes that a power bleeder will be used. Two people will be required to bleed the brakes if bleeding is to be performed conventionally by manually operating the actuator. Instructions for manually operating the actuator are also included in Section H of this manual under the specific actuator model.

1. To facilitate bleeding of the trailer's disc brake system it is helpful if the actuator is lower than the disc brake calipers. It is easier to push the air in the system up and out rather than trying to force the air down. It is also important that any rubber flexible brake lines are routed such that the line does not slope up before sloping down which would create a pocket where air can get trapped. Before starting, make sure the brake calipers are properly installed with the bleeder valves on the top side of the caliper. (The calipers are universal and could have been incorrectly installed upside down.) On a new trailer, before the actuator is connected to the (empty) main brake line, but after all calipers are installed and remaining lines are connected to the calipers, the air lines and calipers should be initially pressurized with dry shop air (90 psi max) to extend the calipers against the brake pads and rotors (and initially "adjust" the brakes). This may speed up the rest of the bleeding procedure. To accomplish this, use a rubber tipped air nozzle to momentarily put a puff of air into the main brake line. The air pressure should pass through the brake line system and pressurize all calipers at the same time. When a new replacement caliper is installed on an existing trailer, a puff of air into the caliper inlet port (prior to connecting the brake line) works the same way. After this dry initial pressurization, connect up the remaining brake line.
2. Bench bleeding the actuator prior to installation will also speed manual bleeding of the brake system, but this is not necessary with a power bleeder.
3. A single person can accomplish bleeding the brake system if you use a power bleeder and UFP's bleeder clamp assembly. The pressure in the power bleeder should not exceed 18 pounds/square inch (psi). Exceeding this pressure will damage the diaphragm in the master cylinder reservoir, causing it to leak. Always use clean DOT 3-brake fluid. Never reuse old fluid, as it will contain contaminants and water moisture. Always seal fluid containers as soon as possible as brake fluid is hygroscopic and readily absorbs moisture.
4. Attach bleeder clamp assembly to actuator. Make sure clamp assembly is adjusted properly. If clamp is too tight it will crush and damage the master cylinder reservoir cover plate. If the clamp is too loose it will not make a good seal and will leak fluid when bleeding the brake system.
5. Turn on valve at pressure bleeder and check for leaks where the bleeder head enters the master cylinder reservoir.
6. Start bleeding with the brake at the farthest end of the brake line. If trailer has tandem brake axles, start with the brake at the farthest end of the brake line on the rear axle first.

7. At the disc brake caliper assembly, connect a clear bleeder hose to the bleeder screw located on top of caliper body and place free end of hose in a suitable container. **DO NOT REUSE THIS FLUID.**
8. Loosen bleeder screw one turn. When no air bubbles are visible coming out of bleeder screw for at least three seconds, close bleeder screw securely and remove bleeder hose.
9. Repeat steps 6 and 7 above on brake on the opposite side of axle and then on front axle if so equipped.
10. If installation is tandem axle with brakes on both axles, repeat bleeding procedure on the rear axle brakes for the second time to assure positive purging of all air from system.
11. When done bleeding, relieve pressure in bleeder pot then close valve at bleeder head. Slowly remove bleeder clamp assembly so as not to spill fluid.
12. Check fluid level. Not enough fluid in the reservoir will cause the reservoir to run dry as the disc brake pads wear. Too much fluid will cause a overflow situation when the solenoid valve is energized during backing up. Proper fluid level is when the fluid in the reservoir just touches the end of the dip stick on the fill plug when it is inserted fully into the fill hole.
13. Wipe off any brake fluid that may have spilled on the top of the reservoir or actuator body.
14. Proper bleeding of brake system can be checked by performing one of the following procedures;
  - (1) Temporarily disconnect the tow vehicle/trailer electrical connector and back up the trailer, (without the energizing the backing solenoid valve), to verify brakes are working.
  - (2) Pull trailer forward and stop suddenly, pin on side of actuator should not travel more than about 1/2 way in slot for single brake axle or 3/4 way in slot for tandem brake axles.
  - (3) Stroke pushrod assembly with a screwdriver and verify brake rotor can not be rotated (Note: If using this procedure, make sure you push up on the pushrod release bracket afterward to fully release the brakes).
15. If brakes are not working properly, there is still air in the brake system and the system will have to be re-bled.
16. After initial trailer braking test, recheck fluid in actuator and refill as necessary. Very occasionally, if the calipers were not initially set as suggested in step 1, the fluid required to fully extend the calipers will exceed the capacity of the master cylinder, requiring the system to be refilled and re-bled.
17. Check for leaks at all fittings and connections and tighten or correct as necessary.

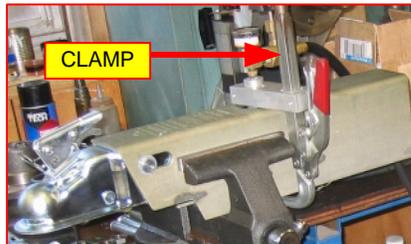
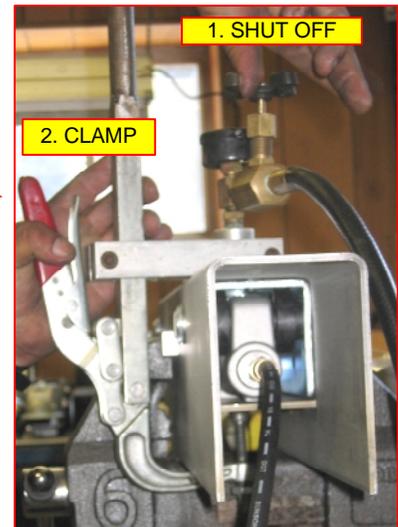


CONNECT BRAKE LINE

- CONNECT ACTUATOR TO BRAKE LINE.

CLAMPING

- CLOSE SHUT-OFF VALVE.
- ADJUST & CLAMP ON ACTUATOR.



PUMP IN FLUID

- TURN ON SHUT-OFF VALVE.
- PUMP PRESSURE POT TO 20 PSI TO POUR FLUID IN TO ACTUATOR AND BRAKE LINE.



BLEEDING 1<sup>ST</sup> AXLE (LEFT THEN RIGHT)

- RELEASE BLEEDER SCREW ¼ TURN. LET FLUID FLOW UNTIL THERE ARE NO AIR BUBBLES.
- CLOSE BLEEDER SCREW.



BLEEDING 2<sup>ND</sup> AXLE (LEFT THEN RIGHT)

- SAME AS ABOVE. (PUMP UP PRESSURE POT IF NECESSARY TO 20 PSI.)

UNCLAMP & RELEASE PRESSURE

- BLEEDING TOOL: CLOSE SHUT-OFF VALVE. / UNCLAMP. / RELEASE PRESSURE.
- PUT CAPS BACK ON ACTUATOR.



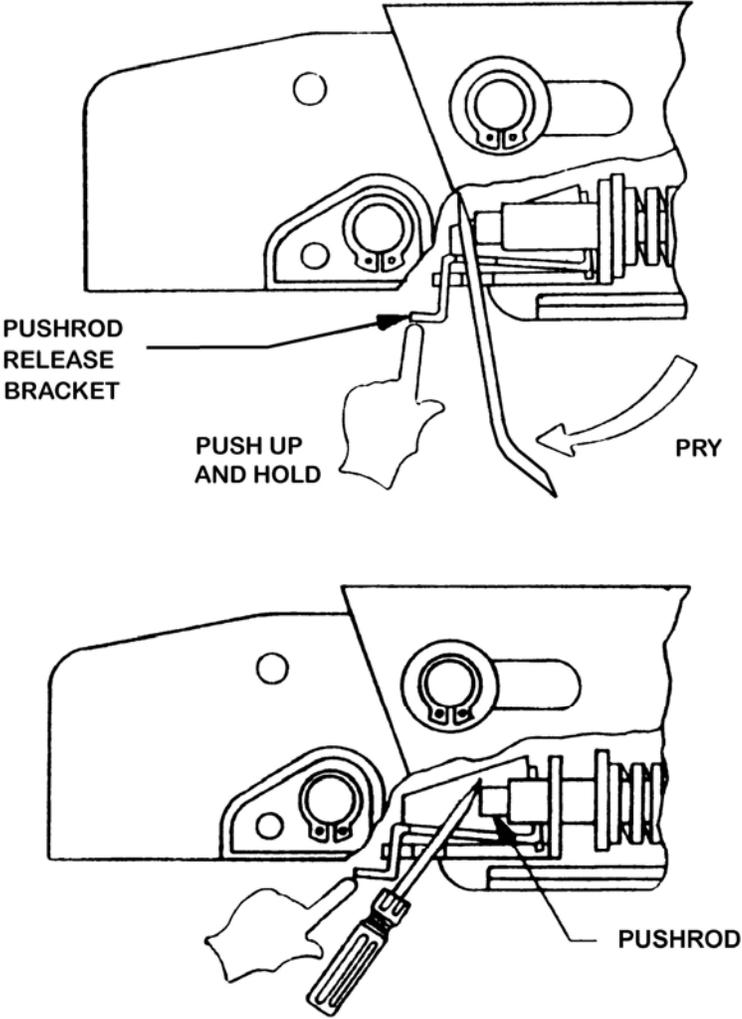
# MANUAL BLEEDING OF THE BRAKE SYSTEM

Check that all hydraulic fittings are secure. Read and understand all instructions before starting. Two people are required for manual bleeding.

- 1 Remove the master cylinder reservoir plug and fill the reservoir with brake fluid. Use either DOT 3 or DOT 4 automotive brake fluid. Follow instructions on brake fluid container. Avoid shaking brake fluid container and pour fluid slowly to minimize air entrapment. Let fluid in reservoir stand until completely free of air bubbles.
- 2 **IMPORTANT:** Before bleeding brake lines, bleed the actuator master cylinder. Insert a screw driver through hole in bottom of inner member and use short strokes to pry on pushrod (while holding safety release bracket up) until no air bubbles are seen coming from small orifice hole in the bottom of the master cylinder reservoir.
- 3 Start bleeding procedure on the brake furthest from master cylinder.
- 4 At the brake assembly, connect a transparent bleeder hose to bleed screw fitting on wheel cylinder and submerge free end into a container partially filled with brake fluid. Do not reuse this fluid.
- 5 The first person strokes the pushrod slowly while holding safety release bracket up. The second person opens the bleed screw fitting. He then closes the bleed screw fitting **BEFORE** the first person **SLOWLY** releases the pushrod. Repeat this procedure until the fluid expelled from the bleeder hose is free of air bubbles. Remember to always tighten the bleeder screw before releasing pushrod. During this procedure, the master cylinder reservoir fluid level must be maintained at no less than 1/2 full.
- 6 Repeat steps 4 and 5 for the other brake and the brakes on the front axle, if equipped with tandem brake axles.
- 7 If installation is tandem axle with brakes on both axles, repeat bleeding procedure on rear axle brakes for the second time to assure purging of all air in system.
- 8 As a final check after bleeding is completed, stroke pushrod and check to be sure brake system is pressurized by attempting to rotate a tire.
- 9 Push up on the safety release bracket to ensure that pushrod is in released position.
- 10 After bleeding has been completed, re-check fluid level in master cylinder. Fill the master cylinder reservoir to indicator on reservoir plug. Do not overfill.

**⚠ CAUTION**

**IMPORTANT: DO NOT USE BRAKE FLUID DRAINED FROM BRAKE SYSTEM TO REFILL MASTER CYLINDER RESERVOIR AS SUCH FLUIDS CONTAIN CONTAMINANTS FROM SYSTEM WHICH MAY RESULT IN BRAKE FAILURE OR COSTLY REPAIRS.**



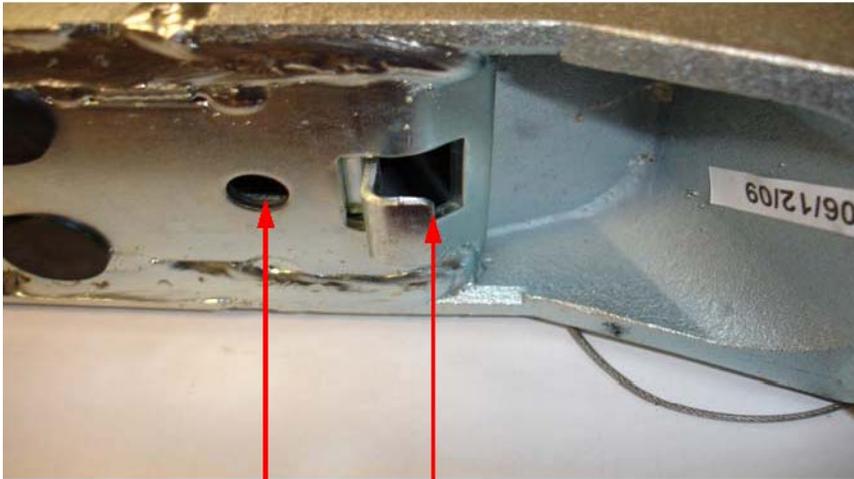
**FIGURE 16 STROKING PUSHROD TO BLEED BRAKES**

## Manually Stroking/Releasing the Actuator to Bleed Brakes

Be sure to check the brake fluid often when bleeding, as the reservoir is small, and will run out quickly if brake lines are empty. If it runs out of fluid, air will be introduced again into the brake lines and you will have to start over.

1. With the A60, A75, and A84 actuators, see figure 16 above or on page 25 of their manual. Insert a 3/16" wide standard screwdriver into the hole in the bottom of the actuator to press the pushrod. You will have to press the brake release bracket to release each time after you stroke the pushrod.

Important: When finished bleeding the brakes, press the release one last time so the brakes will be "off" when the trailer is towed.



**Pushrod Access Hole**

**Pushrod Access Hole Brake Release Tab**

2. With the larger A160 actuator, stroking the master cylinder can be done by first temporarily removing the two 7/16" bolts and the safety stop metal plate on the top of the actuator (Manual Items 21, 22, and 23) so the breakaway lever can be easily operated. The master cylinder can then be stroked by pulling the breakaway lever forward. A pair of vise grips or other tool about 8" long can be used to increase leverage on the breakaway lever, but be careful and not overstroke/bend the lever if using a tool. Replace the safety stop metal plate when done.