


## Hydraulic System Bleeding

When any part of the hydraulic system has been disconnected for service or replacement, air may enter the system causing a spongy pedal action. Bleed the hydraulic system, after it has been properly connected, to make sure that all air is expelled.

## Brake Master Cylinder Bleeding

When a new brake master cylinder (2140) has been installed, or the brake system emptied or partially emptied, fluid may not flow from the bleeder screws during normal bleeding. It may be necessary to prime the system using the following procedure:

1. Use a tubing wrench to remove the brake lines from the master cylinder.
2. Install short brake lines in the brake master cylinder and position them so that they point back into the reservoir, and the ends of the pipes are submerged in brake fluid.
3. Fill the reservoir with new Ford High Performance DOT-3 Brake Fluid C6AZ-19542-AA or DOT-3 equivalent meeting Ford specification ESA-M6C25-A.
4. Cover the reservoir with a clean shop towel.
5.  **CAUTION: Brake fluid is harmful to painted and plastic surfaces. If brake fluid is spilled onto a painted or plastic surface, immediately wash it with water.**

Pump the brakes until clear, bubble-free fluid comes out of both brake lines.

6. Remove the short brake lines and reinstall the ones from the vehicle.
7. Bleed each brake line at the brake master cylinder using the following procedure:
  - a. Have an assistant pump the brake pedal 10 times and then hold firm pressure on the pedal.
  - b. Loosen the front brake line fitting with a tubing wrench until a stream of brake fluid comes out. Have your assistant maintain pressure on the brake pedal until the brake line fitting is tightened again.
  - c. Repeat this operation until clear, bubble-free fluid comes out from around the tubing fitting.
  - d. Repeat this bleeding operation at the rear brake line fitting.
8. If any of the brake lines or calipers have been removed, it may be helpful to prime the system by gravity bleeding it. This should be done after the brake master cylinder is primed and bled.

To prime the brake system:

- a. Fill the brake master cylinder reservoir (2K478) with new Ford High Performance DOT-3 Brake Fluid C6AZ-19542-AA or equivalent meeting Ford specification ESA-M6C25-A.
- b. Loosen both rear caliper bleeder screws and leave them open until clear brake fluid flows out. Be sure to check the reservoir fluid level often and not let it run dry.
- c. Tighten the bleeder screws.
- d. One at a time, loosen the front caliper bleeder screws. Leave the bleeder screws open until

clear fluid flows out. Be sure to check the reservoir level often and not let it run dry.

- e. Tighten the bleeder screws to 7-9 Nm (61-87 lb-in).

9. After the brake master cylinder has been primed, the lines bled at the brake master cylinder, and the brake system primed, normal brake system bleeding can resume at each wheel.

## Manual Bleeding

The primary and secondary diagonally (front and rear) hydraulic brake systems are individual systems and are bled separately. Bleed the longest line first on the individual system being serviced. During the complete bleeding operation, DO NOT allow the brake master cylinder reservoir to run dry. Keep the brake master cylinder reservoir filled with Ford High Performance DOT-3 Brake Fluid C6AZ-19542-AA or DOT-3 equivalent meeting Ford specification ESA-M6C25-A. Never reuse brake fluid that has been drained from the hydraulic system or has been allowed to stand in an open container for an extended period of time.

1. To bleed the brake system, position a suitable box wrench on the bleeder fitting on the rear wheel cylinder (2261) or rear disc brake caliper (2553). Attach a rubber drain tube to the bleeder screw. The end of the tube should fit snugly around the bleeder screw.
2. Submerge the free end of the tube in a container partially filled with clean brake fluid and loosen the bleeder screw approximately three-quarters of a turn.
3. Have an assistant apply the brake pedal (2455) slowly through full travel. Close the bleeder screw; then return the brake pedal to full-release position. Repeat this operation until air bubbles cease to appear at the submerged end of the bleeder tube.
4. When the fluid is completely free of air bubbles, secure the bleeder screw and remove the bleeder tube.
5. Repeat this procedure at the front disc brake caliper (2B120) on the opposite side. Starting at the rear, repeat this procedure at the diagonally opposite wheel locations. Refill the brake master cylinder reservoir after each brake is bled and install the brake master cylinder filler cap (2162) and gasket. Make sure the diaphragm-type gasket is properly positioned in the brake master cylinder filler cap. When the bleeding operation is completed, the fluid level should be at the MAX line to 4.0 mm (0.16 inch) below.
6. After disc brake service, make sure that the disc brake pistons are returned to their normal positions and the brake shoe and lining assemblies are properly seated. Apply the brake pedal several times until normal pedal travel is established.
7. Check pedal feel. If pedal feels spongy, repeat bleed procedure.

## Pressure Bleeding



**CAUTION: Never exceed 344 kPa (50 psi) pressure in the brake bleeder tank.**

For pressure bleeding, use a bladder-type bleeder tank only, such as Rotunda Brake Bleeder 104-00064 or equivalent.

Bleed the longest lines first. The bleeder tank should contain enough new brake fluid to complete the bleeding operation. Use Ford High Performance DOT-3 Brake Fluid C6AZ-19542-AA or DOT 3 equivalent

meeting Ford specification ESA-M6C25-A. Never reuse brake fluid that has been drained from the hydraulic system. The tank should be charged with approximately 69-206 kPa (10-30 psi) of air pressure.

1. Clean all dirt from the brake master cylinder filler cap.
2. Remove the brake master cylinder filler cap. Fill the brake master cylinder reservoir with the specified brake fluid. Install the pressure bleeder adapter tool to the brake master cylinder and attach the bleeder tank hose to the fitting on the adapter. Master cylinder pressure bleeder adapter tools can be obtained from various manufacturers. Follow the instructions of the manufacturer to install the adapter.
3. If the rear wheel brakes are to be bled, use a suitable box wrench on the bleeder screw at the RH rear wheel cylinder or rear disc brake caliper (2552). Attach a bleeder tube snugly around the wheel cylinder bleeder screw (2208).
4. Open the valve on the bleeder tank to admit pressurized brake fluid into the brake master cylinder reservoir.
5. Submerge the free end of the tube in a container partially filled with clean brake fluid and loosen the bleeder screw.
6. When air bubbles cease to appear in the fluid at the submerged end of the bleeder tube, close the bleeder screw. Remove the tube. Replace rubber dust cap on bleeder screw.
7. Attach a bleeder tube and repeat Steps 4, 5 and 6 at the LH front disc brake caliper.
8. Repeat Steps 4, 5 and 6 starting at the LH rear wheel cylinder or rear disc brake caliper and ending at the RH front disc brake caliper.
9. When the bleeding operation is completed, close the bleeder tank valve and remove the tank hose from the adapter fitting.
10. After brake bleeding service, make sure disc brake pistons are returned to their normal positions and the shoe and lining assemblies are properly seated. This is accomplished by applying the brake pedal several times until normal pedal travel is established.
11. Remove the pressure bleeder adapter tool from brake master cylinder reservoir. Fill the brake master cylinder reservoir to the MAX line to 4 mm (0.16 inch) below. Install the brake master cylinder filler cap.

### **Anti-Lock Brake System Bleeding**

On Anti-Lock Brake System (ABS) equipped vehicles, bleeding procedures must be repeated to make sure all air is removed from system.

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