

17-04: Inspecting Your Brake Fluid

Date: 06-22-2017

Vehicles Involved: All

Condition:

Brake fluid plays a critical role in the brake system. Brake fluid is responsible for the transfer of hydraulic pressure into mechanical movement, allowing your brake pads to make contact with the rotor.

If your brake fluid levels are too low or your fluid is too old, you run the risk of greatly reduced braking power or a loss of braking completely. Therefore, it is important to check your brake fluid on an annual basis.

Checking Fluid Levels:

The first step is to check the level of the brake fluid in the master cylinder. The master cylinder is usually located on the driver's side of the vehicle behind the steering wheel (see Figure 1).



Figure 1

Almost every master cylinder will have a maximum and minimum line of the side of the reservoir. Check to make sure your fluid is at the proper level. Low fluid levels are caused by:

- Worn down brake pads
- Leakage in the hydraulic system

Checking Moisture Content:

Checking the moisture content of your brake fluid is a vital part of any brake fluid inspection. Most vehicles on the road today use glycol-based brake fluid (DOT 3, DOT 4, DOT 5.1). This type of brake fluid is hygroscopic, which means it is always absorbing moisture over time.

As fluid absorbs moisture, it lowers the boiling point of the fluid. If your fluid boils, air bubbles will form in your hydraulic system. Since air is compressible, this can greatly reduce the effectiveness of your brake system and even lead to a complete loss of brake pedal.

To check moisture content, you will need a moisture content tester (see Figure 2).



Figure 2

Take a sample of the brake fluid and use the tester to measure the moisture content. As a general rule of thumb, if the moisture content is above 3%, it is a good indication that your brake fluid needs to be replaced.

Repair Process:

Low Fluid Levels:

As discussed, low fluid levels are caused by either worn down brake pads or a leakage in the hydraulic system.

As your brake pads wear down, the pistons must come farther out of the caliper so that the pads can make contact with the rotor. When the pistons come farther out of the caliper, the void is filled with brake fluid. This causes your fluid levels to drop. To fix this problem, you will have to replace your pads.

If your brakes pads are not worn down, then you have to check your hydraulic system for leaks, including the:

- Master cylinder
- Brake hoses and lines
- Calipers
- Wheel cylinder (if you have drum brakes)

If there is a leak in any of these components, you will either have to repair or replace it.

High Moisture Content:

If the moisture content of your brake fluid is too high, you will have to replace the old fluid with fresh fluid. To do this, you will need to bleed the old fluid out of the hydraulic system. See our technical bulletin titled **Brake Bleeding Methods** for detailed information on the brake bleeding process.

As a reminder, always check the cap of the master cylinder to see what brake fluid to use. If the cap doesn't specify, check the vehicle's service manual.