

Brake Bleeding Tutorial, Tips and Pictures - Bleed Brakes Like You Mean It

The Hows And Whys Of Brake System Bleeding

By Robert Young



It isn't exactly common practice but most Hondas' brake fluid should be flushed-or bled-every 30,000 miles or so. It'll also need to be performed any time the system is opened, like when changing brake lines or swapping master cylinders or calipers. Generally, if only one corner of the vehicle or a single line is cracked open, it's only necessary to bleed that corner. However, if the system has been left open for more than a few minutes, it might be necessary to bleed each corner.

Brake bleeding isn't one of those glorified tasks recognized by anyone who happens to own a car, like an oil change or coolant top off. No, brake system bleeding is easy to overlook and its symptoms can be gradual, even subtle, like a sinking or soft pedal or excessive brake steer. Perhaps the reason brake system bleeding is often overlooked is because of the procedure's difficulty. You simply can't drain the master cylinder reservoir and dump in a pint of fresh fluid-this just doesn't satisfy Honda's recommendation and, if it did, we'd likely see just as many drive-through brake flush shops as we do quick lubes. The procedure lies with the entire system-not just the master cylinder-where air bubbles, even sediments, can be trapped within the fluid, impairing proper operation and ultimately how well a car can stop.



There are four ways to bleed a brake system: the most common is the two-person manual method but there's also the single-person manual, pressure, and vacuum methods. No matter which one you choose, begin by removing the master cylinder reservoir cap and strainer. Stir the reservoir fluid to allow sediment or particles to float in suspension and remove them with a turkey baster or vacuum bleeder. Use a lint-free rag to wipe down the reservoir walls and strainer of any remaining sediment and dirt. You may need to repeat this a couple of times. Refill the reservoir with fresh fluid-Honda DOT 3 brake fluid (part number 08798-9008) works well, although there are other options. It's important to note that brake fluid is a solvent and also works well as a paint remover. Clean up spills with water as quickly as possible if you value that paint job.

Bleeding Sequence

Hondas have four bleeder screws-one at each caliper or drum-but you can only do one at a time. Always start with the caliper (or drum) farthest from the master cylinder working your way back to the closest one and be sure to top off the master cylinder periodically to avoid running dry. The sequence is as follows: right rear, left rear, right front, left front.



When bleeding brakes, it's important not to force the brake pedal down more than halfway. This runs the risk of driving the master cylinder's secondary piston through debris collected on the piston cylinder walls. In other words, you could end up shopping for a new master cylinder shortly after you're done bleeding those brakes.



There are two reasons you might need to bleed your brakes: Either the fluid is old, dirty, and discolored, or you've got air bubbles in your lines. Either way, be sure and suck the master cylinder reservoir dry and clean it out thoroughly before pouring in new fluid.



It's important to keep the master cylinder reservoir topped off during the entire bleeding procedure. Pumping a dry brake system could lead to other failures. Quickly tip a bottle of brake fluid over the master cylinder reservoir and leave it in place during the procedure. This will keep you from having to periodically refill the reservoir



Brake bleeder valves are often stubborn to remove. Their exposure to the elements is often enough to ensure a difficult removal. Always use a closed-end or box-end wrench to prevent stripping the valve. Honda brake system bleeder valves are self-sealing but do require a bit of anti-seize in order to prevent them from freezing in place. A bit of anti-seize and making sure to use a line wrench will ensure against these stripping out on you.

Two-Person Manual Bleeding

Two-person bleeding is by far the most common method and can be performed in any home garage without specialized tools. It does, however, require another person's help. Begin by cleaning the old fluid from the reservoir and either turn a full bottle of fresh fluid upside down onto the reservoir or make sure the reservoir is constantly topped off. Now is the time you need to find that extra person. Have him sit in the vehicle and pump the brake pedal several times to build pressure and remove the brake assist reserve. Open the bleeder valve and have your assistant pump the pedal four times, holding it down on the fourth pump until you re-tighten the valve closed. Don't lift off that pedal until the valve's tightened. Make sure the vacuum line drains into a bucket and repeat the process until a steady stream of fluid flows from the valve. Perform this step at each corner, several times until new fluid is visible. The process purges air from the system and as such will spurt and hiss fluid out until completely bled. A solid stream of clean fluid indicates the job is done at that particular corner. Be sure the person pumping the pedal does so no more than halfway to the floor. If it's pushed too far, you run the risk of driving the master cylinder's secondary piston across sediments or deposits that may have collected on the piston cylinder

walls. This can permanently and quickly damage piston seals and cause leaks. Place a small block of wood underneath the brake pedal to ensure this doesn't happen.



Bleeding brakes yourself is easy. All you need is a short section of vacuum line and an empty water bottle. Fill the bottle with fresh brake fluid, submerge one end of the vacuum line in it, and connect its other end to the bleeder valve. Open the valve and pump the brake pedal a good 25 times to release any air bubbles. When you're done, re-tighten the valve and move to the next wheel.

Single-Person Manual Bleeding

Single-person manual bleeding is another do-it-at-home, at-the-track, no-help-from-a-friend, kind of job. You'll still need that piece of vacuum hose along with a clean, 20-ounce, clear plastic bottle. Begin by filling the bottle with about 2 inches of clean brake fluid and connect the vacuum hose to the brake caliper bleeder fitting. Next insert the hose into the bottle, making sure it touches the bottom, fully submerged within the fluid. Position yourself in the driver seat and pump the pedal approximately 25 times using slow, controlled pumps, being sure not to pass the halfway point. Repeat the procedure for each caliper (or drum) in the specified sequence.



It's important to replace this small rubber cap when finished bleeding the valve. The cap prevents debris from entering the bleeder orifice and clogging the valve.

Pressure Bleeding

Pressure bleeding is generally reserved for the pros. The process is quick but involves pricey equipment. Connect an air hose to the pressurized bleeding machine, which regulates brake fluid pressure. It works by running new brake fluid through a hose with a fitted cap that seals to the master cylinder's reservoir top so new brake fluid is forced in while pushing out the old. The machine does the work but someone still has to perform the normal bleeding sequence, opening the bleeder valves to catch the old fluid with a small suction line usually provided with the machine. The process is simple and quick, yet expensive and unpractical.



Expensive machinery like this professional brake bleeding machine make quick work of brake system jobs but are really unnecessary for the do-it-yourselfer. Really, all you need is a 10mm wrench, a bucket, and a friend with some time on his hands.

Vacuum Bleeding

Vacuum bleeding is cheaper than pressure bleeding but still requires a specialized vacuum pump, and sometimes an air compressor. Begin by removing the old fluid with the pump's suction end, cleaning sediment from the reservoir. Open a new container of fluid and turn it upside down onto the reservoir-it won't overflow if you're quick. When performing the normal bleeding sequence, suck the old fluid through the brake caliper bleeder until new fluid is visible. Note: Never allow the brake fluid that is in the reservoir to fall below the minimum mark, despite what method you're using-this can damage the master cylinder's internals.



How You Know It's Right

A properly bled brake system will yield a firm, consistent brake pedal feel. To double-check for a properly bled system simply look to the master cylinder. Remove the cover while an assistant pumps the pedal several times, holding it down on the final pump. Observe brake fluid squirts within the master cylinder as the pedal is quickly released. The fluid should squirt no higher than 3 inches from the fluid's surface. A well-bled system is sometimes the only difference between your car stopping behind the car in front of you or underneath the car in front of you. Improperly bled systems have also led to the false assumption that some monster-sized rotor and multi-piston caliper set is needed when, in reality, a \$5 bottle of fluid will often do the trick.

No Refills!

Just because your brake master cylinder reservoir is low doesn't necessarily mean you should top it off with fresh fluid. As brake pads wear, pistons move outward in order to maintain an equal distance between the pads and rotor. As such, as pads wear, the brake fluid level drops in order to compensate for the increased displacement. If the pads are known to be in new condition, it's time to look for a leak.

Which Dot Is Right For Me?

There are four different types of DOT-certified brake fluids to choose from, however, the higher number fluid isn't always what you need:

DOT 3: This is the most common fluid. DOT 3 fluid absorbs approximately 2 percent moisture per year, which isn't a good thing by the way since moisture absorbed through microscopic seams and cracks can corrode the system and thicken the fluid. This is partially why brake system bleeding is recommended every 30,000 miles. DOT 3 has a dry boiling point of 401 degrees F and a wet boiling point of 284 degrees F.

DOT 4: Although twice as expensive, DOT 4 fluid absorbs far less moisture than DOT 3, has a dry boiling point of 446 degrees F, and a wet boiling point of 311 degrees F. DOT 4 and DOT 3 fluids can be mixed together.

DOT 5: Silicone-based brake fluids like DOT 5 do not absorb moisture at all and, as such, can't be mixed with DOT 3 or DOT 4 fluids. When switching to DOT 5 it's important to flush the entire system at least a few times. DOT 5 fluids exhibit much higher boiling points but are not compatible with most Hondas since they aren't ABS friendly. DOT 5 fluids easily absorb air bubbles that can negatively effect ABS systems and braking in general. Few Hondas should be using DOT 5 fluids.

DOT 5.1: Unlike DOT 5, this fluid is non-silicone-based and has a boiling point over 500 degrees F and can be mixed with DOT 3 and DOT 4 fluids. These three fluids are all clear in color, while DOT 5 fluid is purple.