



## Tech Tip: Top 10 Brake Questions and Answers

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1. **Question:** What is a common cause for pedal pulsation that presents itself shortly after a brake job has been performed?

**Answer:** Today's vehicles are staying on the road much longer. The square cut seal in the caliper can become stiff and prevent the piston's return. While no leaks are visible, this condition keeps the piston from retracting and causes the friction material to drag. The buildup of friction material on the rotor face then creates pulsations that would not have otherwise occurred.

2. **Question:** Is there a way to quickly check for air in a base brake hydraulic system?

**Answer:** A little trick is to remember that air is highly compressible. Have someone firmly hold down the brake pedal while the engine is running. Watch the master cylinder reservoir and have your partner release the pedal. If there is air in the system, a large spout of fluid will come out of the vent port. If no air is present, very little fluid will release because the air-free circuit will simply release the amount of fluid required to apply the brakes.

3. **Question:** What is the proper way to clean brake rotors?

**Answer:** It is a good policy to thoroughly clean new and machined rotors before installation. The best way is to scrub them with a stiff brush in soap and water. This will de-ionize the surface and eliminate most of the metal particles stuck in the pores. Then use a petroleum-based cleaner, and follow it with a clean white paper towel. You should see some gray residue as this is a sign that metal had been trapped in the surface of the rotor.

4. **Question:** What is a common cause of premature ABS brake application?

**Answer:** Premature ABS applications are mostly caused by speed sensor issues. Rust build up under the speed sensors is one common cause as seen on General Motors light-duty trucks. The speed sensor output voltage drops as it moves away from the tone wheel and is interpreted as a slipping wheel. Then as it moves a little further, an ABS variable voltage speed sensor code can be set.

5. **Question:** Should there be any dampening products applied to the back of disc brake pads?

**Answer:** A number of "dampening" chemicals were used for older vehicles that had the consistency of adhesives and were designed for pads that did not use shims. That means there are virtually no applications on today's vehicles that need these chemicals. If used on pads with shims, they may

actually cause the shim to come off the pad, creating shim migration issues.

6. **Question:** Is it necessary to machine new rotors?

**Answer:** Premium quality rotors are machined on very accurate CNC lathes. These lathes cost upwards of \$1 million and feature 18" vertical arbors and use ceramic cutters that work at high speeds and machine many rotors in one operation. Basically, if the surface smoothness is below 70 to 80 Ra, then it is smooth enough to use. If you choose to machine new rotors regardless, any removal of metal increases the temperature the rotor will operate at, reduce cooling, and can increase occurrences of rotor runout.

7. **Question:** What are some commonly overlooked causes of rotor runout?

**Answer:** One reason runout can occur is due to unclean or corroded hub assemblies. The area that is commonly overlooked is around the studs. An over-the-stud cleaning tool will help the rotor remain flat when the wheel is tightened over it. Another reason can be lateral runout in the hub or axle flange. Vehicles with pulsation issues should have the hubs checked with a dial indicator to check for this issue. Left unchecked, the new rotors will have "built-in" runout that can create issues.

8. **Question:** What is the best way to tighten wheel lugs?

**Answer:** By far the most accurate way is with a torque wrench. Hand snug wheel lugs in a star pattern with the wheels off the ground. Rotate the wheel as you lightly tighten the lugs. This will help minimize the effect of wheel assembly movement, which can create vibration issues. Torque the wheels in at least two waves: half value and then to full torque. This will apply the pressure evenly and help prevent rotor runout both during installation and when they heat up and cool down during braking.

9. **Question:** After servicing a car on a hoist, the Stability Control lamp came on. Is there something wrong?

**Answer:** If the vehicle is set down with the key turned on, many stability control systems can be fooled while performing their self-diagnostics. The yaw sensor mounted in the center of the vehicle sees the up or down movement as a problem. The light can also come on if the sensor is jarred or disturbed while working on the center console area. Most are soft codes and the light will go out after the vehicle is sitting on the ground and runs through another key cycle.

10. **Question:** Should I replace the hardware kit when performing a brake job?

**Answer:** The answer to this would be a definite yes. Today's vehicles rely heavily on retainers, anti-rattle clips, springs and hardware to control noise. They can lose 15 percent of their tensile strength during their life, which reduces their ability to hold the pads or shoes in place. Brake squeal, rattles and premature rear shoe applications can occur if the hardware is not in good shape.