

BRAKE PAD INSTALLATION GUIDE

THE INSTALLATION GUIDE IS FOR REFERENCE ONLY. PLEASE REFER TO THE VEHICLE'S SERVICE MANUAL OR PROFESSIONAL INSTALLER FOR COMPLETE INSTRUCTIONS.

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Ninety percent of the brake pad changes you make during the life of your vehicle will be to the front brakes because they do 60% to 70% of the braking. On most cars, you can look through the openings on the outside of the wheel/rim assembly to see the pads. On some vehicles, you may have to remove the wheel to see the pads. Look at it from above or the side. The pad will be pressed against the shiny metal rotor.

The best way to inspect a pad is through visual inspection. If the pad depth is less than 3/16 inch, plan on replacing it soon. If it's less than 1/8 inch, you should change the brakes immediately.

You can also tell if the brakes should be replaced if you hear noise from the wear sensor on the pad. However, some parts do not have

wear sensor clips, i.e. noisemaking clips that are mounted on the brake pad to tell you when the pads need to be changed. If you hear a screeching sound when you apply the brakes, then you are due for a brake change. (If the sound is more like a metal rasp or grinding sound, then you've already damaged your rotors and need to fix the brakes immediately.)

STEP 1 HAVE THE FOLLOWING PARTS AVAILABLE BEFORE YOU START THE BRAKE CHANGE:



Power Stop Performance
Brake Pads



Power Stop Cross-Drilled
& Slotted Performance Rotors



DOT 3 or 4 Brake Fluid
(as recommended by your owner's manual)



High-Temperature
Brake Pad Lubricant



C-Clamp, Car Jack
& Jack Stands

STEP 2

Block the rear wheels so the car won't roll once you jack it up. Put the car in park and set the parking brake firmly.

STEP 3

Before jacking the car up off the ground, set the parking brake and loosen the lug nuts on the wheels just enough to break them free. Work them off just enough until they loosen their resistance and become easy to turn with the tire iron. Be sure to jack the vehicle on level ground, and use jack stands designed to support the weight of the vehicle. Raise the car and support with jack stands placed at the

**CAUTION: ALWAYS USE JACK STANDS.
NEVER ATTEMPT TO WORK ON AN
ELEVATED VEHICLE HELD IN PLACE
ONLY BY A HYDRAULIC JACK.**

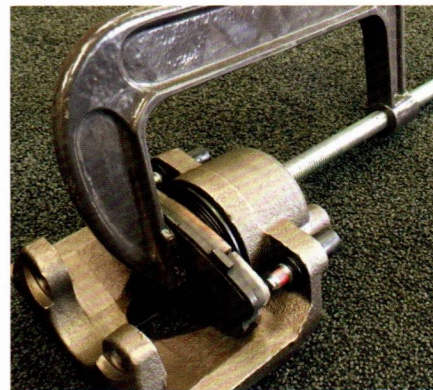


STEP 7

With the caliper out of the way, remove the rotor. Sometimes the rotor rust will make it bind and you will need to use a mallet to loosen it. Tap both the front and backside alternating left and right, top and bottom of the rotor. The rotor thickness should be measured and compared to the minimum discard thickness that is etched on the rotor. If the thickness is less than this minimum, then the rotor should be replaced.

STEP 8

The next step is to move the piston back inside the caliper. The piston has extended as the pad material wears. With new thicker pads, you must return the piston back inside the caliper body to give the thicker pads room for installation. First crack open the bleeder screw on the caliper to allow brake fluid to be relieved. Place a container under the caliper to collect the fluid. Get a large C-clamp, place the used brake pad over the face of the piston to protect the surface from marring, and work it back that way. As you turn the handle on the clamp, it will increase pressure on the piston, until it becomes flush with the surrounding metal. Brake fluid will be released through the bleeder. Then loosen and remove the C-clamp. Close the bleeder screw for now. If you cannot open the bleeder screw, then push the C-clamp in slowly to prevent unsafe back pressure and damage to the ABS modulator, brake valving or master cylinder. It may be necessary to drain some fluid from the master cylinder reservoir.

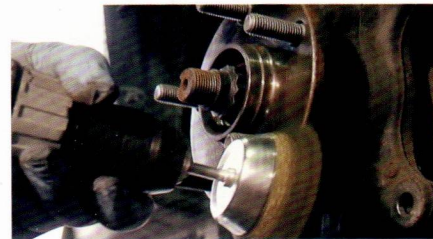


STEP 9

Check and replace all hardware as needed. Improper hardware can lead to noise or poor brake pad performance. Clean the caliper rails or hardware slides where the pads make contact. Clean the hub-mating surface with a wire brush. Rust or debris on the hub can cause rotor run out and lead to wheel vibration.

STEP 10

Resurface the rotor or replace the rotor. Most auto retailer stores provide rotor resurfacing. After machining, use a 120-grit sandpaper on the rotor in a light circular motion to give a non-directional finish. Clean the rotor with mild soap and wipe clean with a lint-free cloth. Do not use petroleum-based cleaners.



STEP 11

Install the new rotor and remount the caliper bracket (not the piston part) to the spindle knuckle arm. Use brake grease to lubricate the edge of the brake pad backing plate where it touches the caliper bracket sliding surfaces. Do not put grease on the friction material. The lubricant also goes between the brake pad backing plate and the piston or caliper back. Don't over-look this. If you don't do it, you may get brake noise when you apply the brakes.

STEP 12

With the caliper bracket bolted to the spindle, reinstall the brake pads. Slide the caliper over the pads and rotor and line up the bolt holes. Bolt the caliper to the caliper bracket. Torque caliper and caliper bracket bolts to manufacturer specifications.

STEP 13

Bleed the brakes to remove air from the brake line. First make sure the brake fluid is full to the top. When you open the bleeder screw, have a buddy press down slowly on the pedal as you monitor the bleeder screw. Before he releases the pedal, close the bleeder screw. This prevents sucking air back into the brake caliper. Repeat this process until you see a constant stream of fluid with no bubbles, then close the bleeder screw. It usually takes 5 or 6 pumps of the pedal to clear the air and old brake fluid out of the line. You may need to pump quite a few times more if you haven't changed your brake fluid in a long time. Check the master cylinder reservoir and replace brake fluid to the MAX line. Do not overfill the reservoir. Pump the brakes several times to seat the brake pads to the rotor and check the reservoir one more time. Top off as necessary.

STEP 14

Replace the wheel and lugs. Drop the car to the ground to finish tightening the bolts to the manufacturer's specified bolt torque. Alternate tightening sequence by going to the opposite side of the hub. A torque gun is not recommended.

STEP 15

Break – in new brake pads and rotors as shown below.

manufacturers recommended lift points. Usually the frame support area is immediately to the rear of the front wheels.

STEP 4

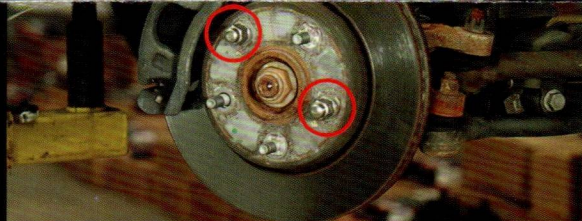
Remove the lug nuts and the wheel. It is best to work on one wheel at a time, leaving the other side intact as a point of reference. As a safety precaution, roll the wheel/tire assembly under the front-center of the car, between the jack stands, and set it down beneath the engine's K-member, in the event of a faulty jack stand.

STEP 5

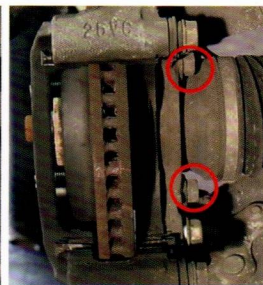
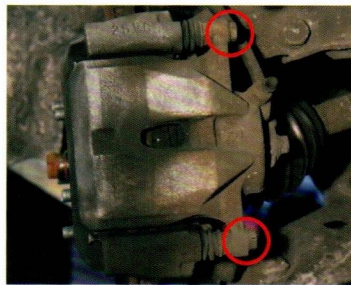
Review the brake components. A disc brake assembly is composed of a caliper, two brake pads, and a rotor. The caliper works on pressurized brake fluid through a piston in the caliper. The caliper mounting bracket is bolted to the spindle, and holds the brake pads in position relative to the brake rotor. The caliper fits over the pads and is fastened to the brackets with special sliding bolts. These bolts usually have dust boots. When the brakes are applied, the caliper piston squeezes the pads against the rotor creating friction.

STEP 6

Remove the bolts fastening the caliper to the caliper mounting bracket. Gently slide it out and away from the rotor. Hang the caliper inside the wheel well using a coat hanger, so that the hose is not stressed. Do not let the caliper dangle from the brake hose line. Inspect the inside of the caliper and remove the brake pads. Remove the two remaining bolts that hold the caliper bracket to the knuckle. Use a wire brush to clean rust from the rails where the pads contact the caliper.



NOTE: IF YOU ARE NOT REPLACING OR TURNING DOWN THE ROTOR, THEN INSTALL 2 LUG NUTS BACKWARDS TO HOLD THE ROTOR IN PLACE WHEN REMOVING THE CALIPER.



BREAK-IN PROCEDURE

IMPORTANT BREAK-IN NEW BRAKE PADS/ROTORS USING THE PAD BEDDING PROCEDURE AS FOLLOWS. PROPER PAD BEDDING CAN PREVENT ROTOR WARPING.

The break-in procedure is critical to brake performance. The reason for a proper break-in is to establish an even layer of friction material deposited on the rotors from the brake pads. It is very important that this initial layer of friction material is evenly distributed.



- 1** 5 aggressive decelerations from 40mph - 10mph in rapid succession without letting the brakes cool and do not come to a complete stop. If you're forced to stop, either shift into neutral or give room in front so you can allow the vehicle to roll slightly. The rotors will be very hot and holding down the brake pedal will cause the pad to create an imprint on the rotor, causing DTV (Disc Thickness Variation) Issues. Shift into neutral and keep your foot off the brake pedal.



- 2** 5 moderate decelerations from 35mph to 5mph in rapid succession without letting the brakes cool. You should expect to smell some resin as the brakes get hot.



- 3** After steps 1 and 2 are complete, drive around slowly, for as long as possible without excessively using the brakes and without coming to a complete stop (Try for about 5 minutes at moderate speed). This is the cooling stage. It allows the heated resin in the brake pads to cool and cure.

The Break-In procedure can also be found on WWW.POWERSTOP.COM