2003 Outlander Front Brake pad replacement

One of the easiest repairs to date was replacing the front brake pads on our 2003 Mitsubishi Outlander. The tools required are:

- safety glasses
- wheel chocks
- jack stands
- floor jack
- 14mm socket
- bungee cords/rope
- rags/gloves
- anti-squeal compound
- brake pads of your choice.

Terms:

Brake pads: friction device that grabs the rotor and stops the vehicle

Rotor: the metallic round disc that the brake pads grab

Caliper: piston that applies force to the brake pads when you press the brake pedal.

The first thing needed is to set the emergency brake. The emergency brake is applied at the rear tires, which helps keep the vehicle in place. Once set, place safety blocks behind the rear tires as an extra measure to prevent the vehicle from moving backward. (You can purchase these inexpensively at various stores).

If you have wheel covers, remove them by firmly pulling out on them or prying them off with a screwdriver. Most wheel covers are made of plastic so be careful not to break them and watch for sharp edges with your fingers.

Before lifting the vehicle, loosen the lug nuts on the wheel being serviced. Just loosen them enough to be removed by hand. Don't completely remove the lug nuts or the wheel will move around unexpectedly during jacking.

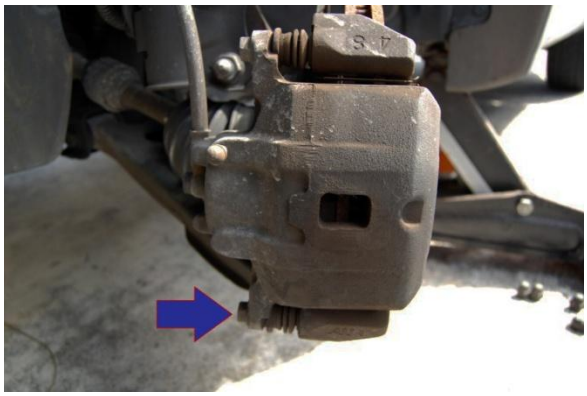
Place the jack under the appropriate lifting point on the vehicle and begin slowly lifting the vehicle. Your manual should show the proper jacking points, but on the 2003 it's just behind the front tires. Keep lifting the vehicle till tire no longer touches the ground. At this point, place the jack stand under the vehicle to provide support. Depending on the jack stands adjustability, you may need to lift the vehicle a little higher to have it rest on the jack stand. The goal is to have the jack stand hold the weight instead of the jack.

Personally, I use both the jack and jack stands as support. I'm a believer in redundant systems, especially when a vehicle is in the air.

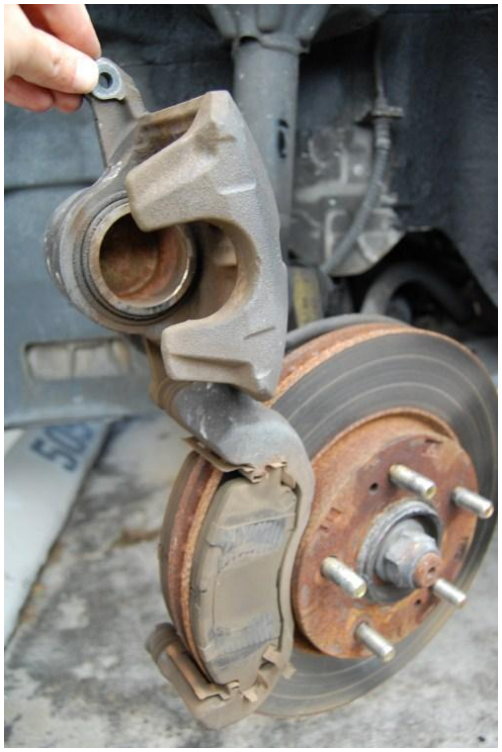
Now remove the lug nuts from the wheel and remove the wheel from the vehicle.

The brake pads are housed in the caliper toward the front of the brake rotor. You can look inside the "window" on the front of the caliper to see the thickness of the pads.

To gain access to the pads, the caliper needs to be moved upward. Remove the 14mm bolt on the front, lower engine side of the caliper.



Pull upward and outward from the bottom of the caliper where the bolt was just removed. The caliper will swing up and back exposing the brake pads. Take a bungee cord, string, or wire and secure the caliper in the up position.



Remove the pads by pulling them out toward the front of the car. They should just slide out. On each pad will be a thin metal strip that runs the length of the pad. You'll also see on the ends little clips. Known as anti-rattle plates and shims, these parts are normally reused on the new pads so take note of which side goes where. You can just remove one at a time as well.

Your box of new pads will have 2 sets or 4 pads. Depending on the brand they may be wrapped separately or just loose. Pull out two that match the ones you're replacing.

The last set of pads had the anti rattle plate and shims already installed so I just installed them. Most pads I've seen reuse the old hardware. Before reinstalling the anti-rattle plates and shims, you'll need to apply anti-squeal compound. If you don't apply this or do it incorrectly, your brakes will squeal from the moment you apply them till you stop. It's very annoying so pay extra attention to this step.

Follow the application instructions on the anti-squeal compound and be sure to let it sit for the proper amount of time. Waiting for this to dry is one of the hardest parts, because you're almost done at this point and you're just waiting. While waiting, you can slide the caliper piston back into place which is described next.

When you press the brake pedal, fluid is pushed through the brake lines and forces the round piston in the caliper against the brake pads. This pushes the brakes against the rotor. The harder you press the pedal, the tighter the brakes grab. This caliper piston continues to move out as the brake pads wear. The thinner the pads, the more the piston moves out. New brake pads are much thicker than the old ones and they cannot physically fit with the caliper piston in the old position. So you have to move the caliper back to "home" position.

On this vehicle, I used a large C-clamp which worked quite easily. Position the fixed side of the C-clamp against the back of the caliper in a solid point. Position the adjusting screw side inside the caliper piston. It takes a little maneuvering to have it line up correctly. Once lined up, slowly turn the adjusting screw in and you'll see the caliper piston sliding inward. Continue gently turning the adjusting the screw till the caliper piston is flush with the caliper housing. Check periodically to ensure the caliper piston seal is not being damaged along the way.

Now it's time to install the new pads. Slide them into the correct position matching the curve of the pad to the curve of the rotor. Slowly lower the caliper over the pads ensuring the anti-rattle plates stay in place. If the caliper won't fit over the pads, double check they are flush against the rotor and the caliper piston is all the way in.

Once the caliper slides all the way down, reinsert the caliper locking bolt and tighten to specs. Give the assembly a double check that everything fits properly and is tightened. Reinstall the wheel and install the lug nuts in a cris-cross pattern and slowly tighten them evenly. You want to evenly torque the wheel, otherwise the rotor or wheel will get warped and you'll have expensive vibrations.

If you have the entire front of the car up, you can repeat this process on the other side. If you only lifted one side at a time, lower the car, tighten the lug nuts to specs and then repeat this on the other side.

Once everything is back together and you're washed up (no grease on the steering wheel), it's time for a test drive. When you first apply the brake pedal, you'll notice it's spongy, worse than before. That's because the caliper pistons are all the way in. Keep pumping the brakes to move the piston against the pads & you'll feel the pedal firm up.

Once the pedal is solid, take the vehicle out for a test drive and apply the brakes periodically (make sure there isn't traffic behind you!) After you've applied them gently drive on and begin applying them harder to get them fully broke in. I like to get up to 20-25mph and press them hard, but not enough to skid the tires. Again, make sure there isn't traffic around you!! After that, I'll up the speed to 40-45 and apply them solidly but slowly. The basic idea is to get the brakes warm and broken in. Once done, they should feel solid from the moment you press them till full stop.

After the test drive, double check the lug nuts to ensure they are tight and you're done.

Of course here's all the legal stuff:
This info is for your information only and the author assumes no responsibility for any work the reader completes or attempts. This description also assumes that the rest of the vehicle's brake system is in safe working order.