

Changing the seals in the brake calipers

Why do the work?

My front brake pads were frozen and I could not roll the bike because the brake pads were up tight against the front rotors. After 80,000 plus miles, I guess the bike was telling me they were tired & needed replacement.

Parts

1. 2 seals per cylinder or 4 per caliper (the thicker seal is the “dust seal” and the thinner one is the “piston seal”). They generally come one “dust seal” and one “piston seal” per package. (Part # 06431-MA3-405)
2. 1 pint of brake fluid (have another one as a backup)

Tools

- Torque wrench
- 5 mm socket with short extension
- 5 mm allen wrench
- Flat head screwdriver
- Phillips screwdriver
- Tweezers to pull out the seals from the calipers
- C-clamp
- ¼ inch thick flat metal bar (2” by 6”) (¼” wood could also work)
- Coat hanger or something else to pull the pressure off the brake lines when the caliper is hanging.
- Box wrench for the brake bleeder (speed bleeders use 5/16”)
- Pan to catch the brake fluid
- Old toothbrush
- Rags
- Plastic to cover all painted surfaces
- Steel wool or fine sandpaper to clean the pistons
- Anti-seize for bolts
- MityVac to get rid of any air in the brake lines

Procedures

1. Cover the painted surfaces to protect against any brake fluid spills. Brake fluid ruins painted surfaces.
2. Remove the pin pad plug with a flat head screwdriver **[#13 in the diagram]**
3. Remove the pin pad with a 5 mm allen wrench **[#14 in the diagram]**
4. Remove the brake pads (they may even fall out) **[#2 in the diagram]**
5. Remove the caliper mounting bolts with 5 mm socket (may need a short extension and remove the caliper from the disk/rotor. **[#9 in the diagram]**
6. Connect the coat hanger to the top caliper mounting bolt hole to relieve the pressure on the brake line when you let it hang.

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7. Place the flat metal bar or wood against the two pistons **[#8 in the diagram]** and the C clamp on the outside of the caliper and gradually let the pistons out by pumping the brake. Keep the pistons even as they gradually come out. The pistons will come out about 1 1/2 inches. Once you can move them with your fingers get ready for the brake fluid to start leaking out. Do you have the pan to catch the brake fluid?
8. If you keep wriggling the pistons they will fall out. Some people will use pliers to pull the pistons out but the pistons can be marked up very easily by the teeth on the pliers. I'd rather use time & patience instead of taking a chance of marring the piston and having to buy a new one (about \$25).
9. Because you have lost brake fluid when the pistons came out you will have air bubbles in the brake system.
10. Use the tweezers to pull out the seals **[#1 in the diagram]**. The inner "dust" seal is thicker than the outer "piston" seal.
11. Clean out the grooves where the seals will go with an old toothbrush.
12. Clean up the pistons with very fine (400) wet/dry sandpaper or 4 - O steel wool.
13. Wipe the new "dust" seal with new clean brake fluid and install into the inner groove. Be careful it doesn't twist as you install it.
14. Wipe the new "piston" seal with new clean brake fluid and install into the outer groove. Be careful it doesn't twist as you install it.
15. Wipe a cleaned piston with new clean brake fluid and push the piston back into the caliper. If the piston is straight and even, it should go in fairly easily. If it is crooked, it will not go into the caliper very easily.
16. Repeat with the other seals & piston.
17. If the "pad spring" **[#3 in the diagram]** fell out earlier reinstall it on the caliper.
18. Remove the coat hanger or what ever else you used to support the caliper and re-install the caliper on the disc/rotor using the caliper mounting bolt(s) (Torque foot pounds depends on front or rear caliper). Don't forget anti-seize on the bolt(s).
19. Reinstall the brake pads and screw in the pad pin with the 5 mm allen wrench and torque (13 foot pounds or 18 N/m). Don't forget anti-seize on the bolts.
20. Reinstall the pad pin plug hand tight (1.8 foot pounds [2.5 n/m]). Don't forget anti-seize on the plug.
21. With the caliper reinstalled, you will have air in the brake system. Use the MityVac's standard procedures to remove the air if an air bubble will not allow you to use the speed bleeders and the brake lever to bleed out the air in the system. During the bleeding process DO NOT ALLOW THE MASTER CYLINDER TO EMPTY COMPLETELY OR ELSE YOU WILL ADD MORE AIR TO THE BRAKE SYSTEM.
22. Done. Time for a test ride 1 to 2 hundred miles should be an adequate test.

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