

LSJ to LNF Brembo Front Brake Caliper upgrade instructions

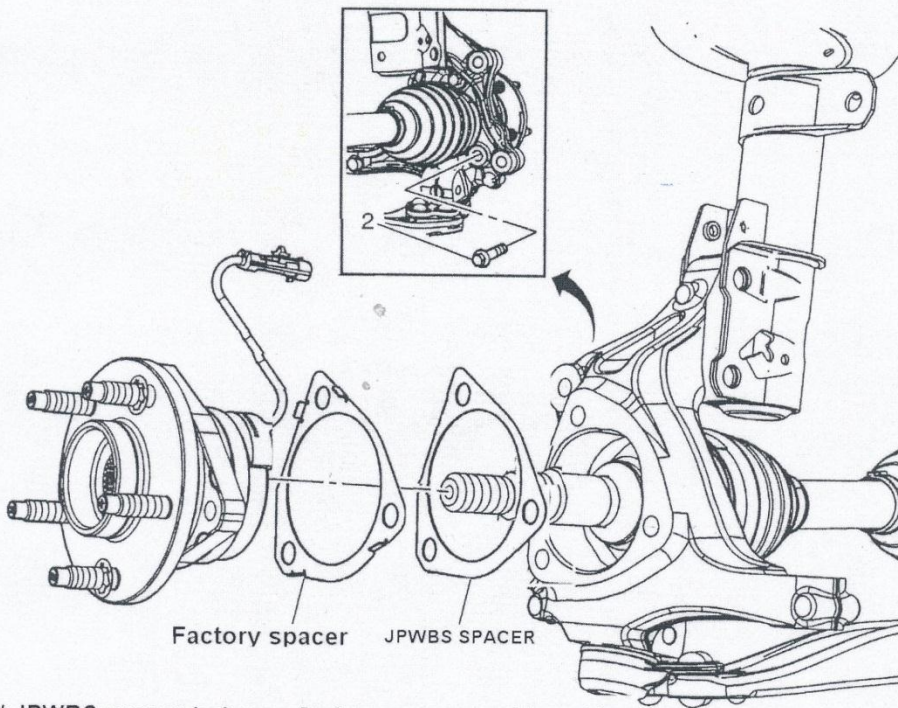
These instructions are to be used as a guide. We have included detailed instructions from the service manual and should be used where ever needed.

Make sure to read through all of these pages and become familiar with the parts and instructions before you attempt to start your brake upgrade package.

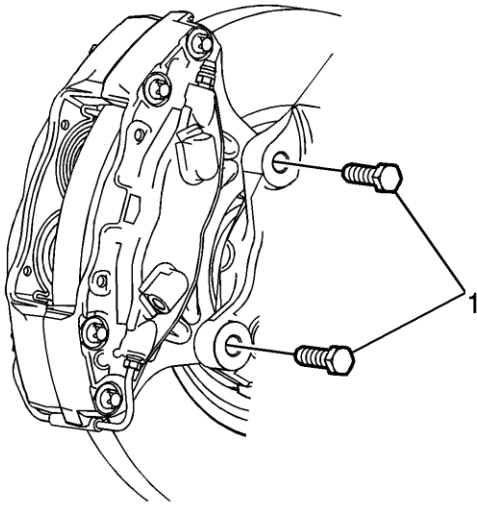
1. Remove the tire and wheel assembly.
2. With brakes applied loosen Axle nut (if using an impact you will not need to have brakes applied).
3. Remove existing calipers and support with a wire to springs (do not remove from hoses at this point, we will explain later).
4. Remove Rotor then reach behind knuckle and unclip wheel speed sensor.
5. Remove axle nut completely and then 3 hub bolts found on back side of knuckle.
6. The hub should now slide outward from knuckle, be careful so wire does not hang up on anything as you remove the hub. (you may need to tap on axle shaft end to free it from hub, if so make sure the nut is still on so you don't mess up the threads with the hammer/mallet).
7. Insert 1 JPWBS spacer (included with kit) between the factory spacer/backing plate and knuckle. See illustration.
8. Re assemble hub making note of correct rotation as it will only fit into the knuckle one way because of the wheel sensor wire.
9. Use locktite on the 3 mounting bolts and torque them to 159 LB ft.
10. Reconnect the wheel speed sensor wire.
11. Install the rotor and secure using one lug nut to hold it tight against the hub, this will help as you mount the caliper.
12. Install Brembo caliper (note bleeder valves towards top). Use locktite on the new caliper bolts supplied with kit and torque to 96 LB ft. (do not try to reuse old caliper bolts as they will be too long and not work with the new calipers).
13. Inspect the clearance between the rotor and the caliper opening. There should be equal space on both sides of the rotor and caliper where the brake pads mount. If you do not have equal space there double check that the JPWBS spacer was inserted correctly. So far we have had no problems with this but if you do at least if you have to bail at this point your old calipers are still connected so you won't have to bleed them. If everything looks good then proceed to step 14.
14. Install new brake pads (see detailed instructions a few pages back).

15. Once the brake pads are installed spin rotor, it should rotate.
16. If all still looks good its ok to remove the old caliper and hoses from vehicle. (be sure to clean the area where the hose mounts to the pipe as a lot of road dust collects there and you don't want any of that falling into the new hose as you assemble them. You will need a 13mm tubing wrench to remove and install the hose, otherwise you will round off the flare nut).
17. Install new hose using new brass washers (supplied in kit) between the caliper hose and the hose and banjo bolt. See image. Torque banjo bolt to 30 LB ft (it may be easier to mount hose to caliper first for proper fitment before attaching it to the hydraulic pipe).
18. Repeat procedure for the other side.
19. Once everything is installed on both sides proceed with the detailed bleeding instructions.
20. Refer to Brake Pad and Rotor Burnishing page for breaking in your new pads and rotors.

Front Wheel Bearing and Hub



Install # JPWBS spacer between factory spacer and knuckle



1. Prepare the bolts and the threaded holes for assembly:

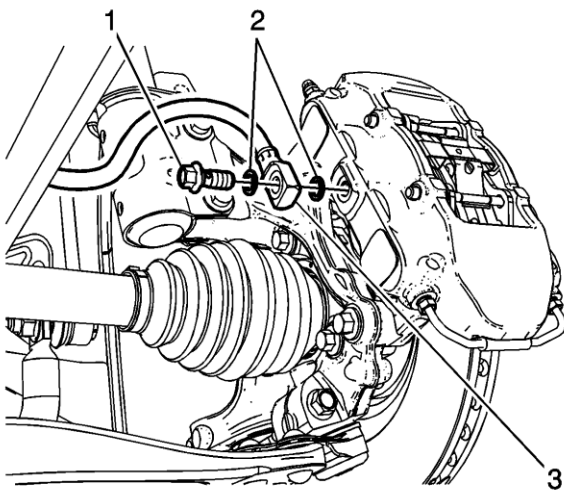
- Thoroughly clean the residue from the bolt threads by using denatured alcohol or equivalent and allow to dry.
- Thoroughly clean the residue from the threaded holes by using denatured alcohol or equivalent and allow to dry.

2. Apply threadlocker GM P/N 12345493 (Canadian P/N 10953488), or equivalent to 2/3 of the threaded length of the caliper bolts. Ensure that there are no gaps in the threadlocker along the length of the filled area of the bolts.
3. Allow the threadlocker to cure approximately 10 minutes before installation.
4. Install the brake caliper to the wheel knuckle.
5. Install the brake caliper bolts (1).

Tighten

Tighten the bolts to 130 N·m (96 lb ft).

Note: Install NEW copper brake hose gaskets.

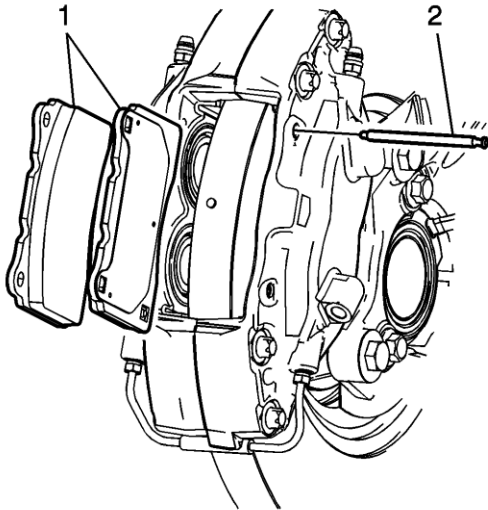


6. Assemble the brake hose fitting bolt (1) and new fitting gaskets (2) to the brake hose (3).
7. Install the brake hose assembly to the brake caliper.

Tighten

Tighten the fitting bolt to 40 N·m (30 lb ft).

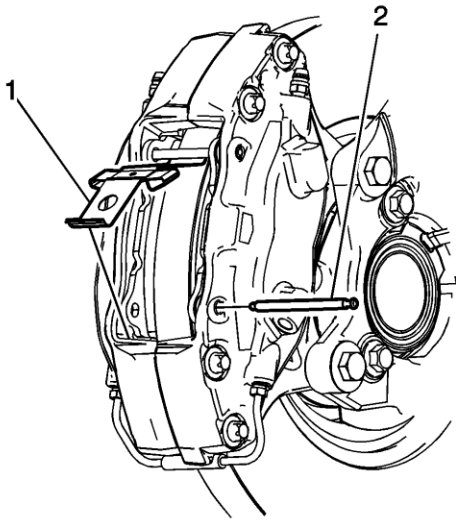
8. Install the front disc brake pads.
9. Bleed the hydraulic brake system. Refer to [Hydraulic Brake System Bleeding](#).
10. With the engine OFF, gradually apply the brake pedal to approximately 2/3 of its travel distance.
11. Slowly release the brake pedal.
12. Wait 15 seconds, then repeat steps 10 and 11 until a firm brake pedal is obtained. This will properly seat the brake caliper pistons and brake pads.



1. Using a hammer and punch carefully tap the upper caliper to brake pad mounting pin (2) inward out of the caliper.
2. Using a disc brake pad spreader, apply pressure to the brake pad backing plates until the caliper pistons are fully compressed into the caliper piston bores.
3. Remove the brake pads (1) from the caliper.

Inspect the brake caliper guide pins. If damaged, or corroded replace the guide pin. Do not attempt to clean away any corrosion.

1. Inspect the brake caliper piston boot for damage and/or deterioration, replace if damaged or deteriorated.
2. Install the brake pads (1) to the caliper.
3. Install the upper caliper guide pin (2) through the caliper, inner and outer brake pads.
4. Using a hammer and punch, carefully seat the upper guide pin (2) to the outer caliper half. Ensure the caliper guide pin is seated into the outer caliper pin seat



5. Install the brake pad retainer (1) under the upper caliper pin assembly.
6. Rotate brake pad retainer (1) down.
7. Carefully apply pressure downward on the lower end of the brake pad retainer.
8. Carefully install the lower caliper guide pin (2) through the caliper, inner and outer brake pads.
9. Using a hammer and punch carefully seat the upper guide pin (2) to the outer caliper half. Ensure the caliper guide pin is seated into the outer caliper pin seat. Ensure the brake pad retainer is centered and retaining both brake pads.
10. Install the tire and wheel assembly.
11. Lower the vehicle.
12. With the engine OFF, gradually apply the brake pedal to approximately 2/3 of its travel distance.
13. Slowly release the brake pedal.
14. Wait 15 seconds, then repeat steps 13 and 14 until a firm brake pedal apply is obtained; this will properly seat the brake caliper pistons and brake pads.
15. Fill the brake master cylinder reservoir to the proper level. Refer to [Master Cylinder Reservoir Filling](#).
16. Burnish the pads and rotors. Refer to [Brake Pad and Rotor Burnishing](#).

Hydraulic Brake System Bleeding (Manual With RPO LNF and MU3)

1. Place a clean shop cloth beneath the brake master cylinder reservoir to catch brake fluid spills.
2. With the ignition OFF and the brakes cool, apply the brakes 3-5 times, or until the brake pedal effort increases significantly, to deplete the brake booster power reserve.
3. If you have performed a master cylinder bench bleeding on this vehicle, or if you have disconnected the brake pipes from the proportioning valve assembly or the brake modulator assembly, you must perform the following steps to bleed air at the ports of the hydraulic component.
 - 3.1. Fill the master cylinder reservoir (combined with the hydraulic clutch (on manual (transmission)) to the maximum-full level with GM approved or equivalent brake fluid from a clean, sealed brake fluid container.

If removal of the reservoir cap and diaphragm is necessary, clean the outside of the reservoir on and around the cap prior to removal.

 - 3.2. With the brake pipes installed securely to the master cylinder and the brake modulator assembly, loosen and separate one of the brake pipes from the port of the component.

Note: For the brake modulator assembly, perform these steps in the sequence of system flow; begin with the fluid feed pipes on the master cylinder.

- 3.3. Allow a small amount of brake fluid to gravity bleed from the open port of the component.
 - 3.4. Connect the brake pipe fitting to the component and tighten securely.
 - 3.5. Have an assistant slowly depress the brake pedal fully and maintain steady pressure on the brake pedal.
 - 3.6. Loosen the same brake pipe fitting to purge air from the open port of the component.
 - 3.7. Tighten the brake pipe fitting, then have the assistant slowly release the brake pedal.
 - 3.8. Wait 15 seconds, then repeat steps 3.3-3.7 until all air is purged from the same port of the component.
 - 3.9. With the brake pipe fitting installed securely to the master cylinder, proportioning valve assembly, or brake modulator assembly after all air been purged from the first port of the component that was bled, loosen and separate the next brake pipe from the component and repeat steps 3.3-3.8 until each of the ports on the component has been bled.
 - 3.10. After completing the final component bleeding procedure, ensure each of the brake pipe fittings is properly tightened.
4. Fill the master cylinder reservoir and combined hydraulic clutch, if equipped, to the maximum-full level with GM approved or equivalent brake fluid from a clean, sealed brake fluid container. Ensure the master cylinder reservoir remains at least half-full during this bleeding procedure. Add fluid as needed to maintain the proper level.

Clean the outside of the reservoir on and around the reservoir cap prior to removing the cap and diaphragm.

5. Install a proper box-end wrench onto the RIGHT REAR wheel hydraulic circuit bleeder valve.
6. Install a transparent hose over the end of the bleeder valve.
7. Submerge the open end of the transparent hose into a transparent container partially filled with GM approved or equivalent brake fluid from a clean, sealed brake fluid container.
8. Have an assistant slowly depress the brake pedal fully and maintain steady pressure on the brake pedal.
9. Loosen the bleeder valve to purge air from the wheel hydraulic circuit.
10. Tighten the bleeder valve, then have the assistant slowly release the brake pedal.
11. Wait 15 seconds, then repeat steps 8-10 until all air is purged from the same wheel hydraulic circuit.
12. With the right rear wheel hydraulic circuit bleeder valve tightened securely and after all air has been purged from the right rear wheel hydraulic circuit, install a proper box-end wrench onto the LEFT FRONT wheel hydraulic circuit bleeder valve.
13. Install a proper box-end wrench onto the LEFT FRONT wheel hydraulic circuit INBOARD bleeder valve.
14. Install a transparent hose over the end of the bleeder valve, then repeat steps 7-11.
15. Install a proper box-end wrench onto the LEFT FRONT wheel hydraulic circuit, OUTBOARD bleeder valve.
16. Install a transparent hose over the end of the bleeder valve, then repeat steps 7-11.
17. With the left front wheel hydraulic circuit bleeder valve tightened securely and after all air has been purged from the left front wheel hydraulic circuit, install a proper box-end wrench onto the LEFT REAR wheel hydraulic circuit bleeder valve.
18. Install a transparent hose over the end of the bleeder valve, then repeat steps 7-11.
19. With the left rear wheel hydraulic circuit bleeder valve tightened securely and after all air has been purged from the left rear wheel hydraulic circuit, install a proper box-end wrench onto the RIGHT FRONT wheel hydraulic circuit bleeder valve.
20. Install a proper box-end wrench onto the RIGHT FRONT wheel hydraulic circuit INBOARD bleeder valve.
21. Install a transparent hose over the end of the bleeder valve, then repeat steps 7-11.
22. Install a proper box-end wrench onto the RIGHT FRONT wheel hydraulic circuit, OUTBOARD bleeder valve.

23. Install a transparent hose over the end of the bleeder valve, then repeat steps 7-11.
24. After completing the final wheel hydraulic circuit bleeding procedure, ensure each of the 4 wheel hydraulic circuit bleeder valves is properly tightened.
25. After completing the final wheel hydraulic circuit bleeding procedure, ensure each of the 6 wheel hydraulic circuit bleeder valves is properly tightened.
26. Fill the brake master cylinder reservoir to the maximum-full level with GM approved or equivalent brake fluid from a clean, sealed brake fluid container.
27. Slowly depress and release the brake pedal. Observe the brake pedal feel.
28. If the brake pedal feels spongy, repeat the bleeding procedure. If the brake pedal still feels spongy after repeating the bleeding procedure, perform the following steps:
 - 28.1. Inspect the brake system for external leaks.
 - 28.2. Pressure bleed the hydraulic brake system in order to purge any air which may still be trapped in the system.
29. Turn the ignition ON, with the engine OFF. Check to see if the brake system warning lamp remains illuminated.

Note: DO NOT allow the vehicle to be driven until it is diagnosed and repaired.

Master Cylinder Reservoir Filling

Caution: When adding fluid to the brake master cylinder reservoir, use only GM approved or equivalent DOT-3 brake fluid from a clean, sealed brake fluid container. The use of any type of fluid other than the recommended type of brake fluid may cause contamination which could result in damage to the internal rubber seals and/or rubber linings of hydraulic brake system components.

1. Visually inspect the brake fluid level through the brake master cylinder auxiliary reservoir.
2. If the brake fluid level is at or below the half-full point during routine fluid checks, the brake system should be inspected for wear and possible brake fluid leaks.
3. If the brake fluid level is at or below the half-full point during routine fluid checks, and an inspection of the brake system did not reveal wear or brake fluid leaks, the brake fluid may be topped-off up to the maximum-fill level.
4. If brake system service was just completed, the brake fluid may be topped-off up to the maximum-fill level.
5. If the brake fluid level is above the half-full point, adding brake fluid is not recommended under normal conditions.
6. If brake fluid is to be added to the master cylinder auxiliary reservoir, clean the outside of the reservoir on and around the reservoir cap prior to removing the cap and diaphragm.

Brake Pad and Rotor Burnishing

Warning: Road test a vehicle under safe conditions and while obeying all traffic laws. Do not attempt any maneuvers that could jeopardize vehicle control. Failure to adhere to these precautions could lead to serious personal injury and vehicle damage.

Burnishing the brake pads and brake rotors is necessary in order to ensure that the braking surfaces are properly prepared after service has been performed on the disc brake system.

This procedure should be performed whenever the disc brake rotors have been refinished or replaced, and/or whenever the disc brake pads have been replaced.

1. Select a smooth road with little or no traffic.
2. Accelerate the vehicle to 48 km/h (30 mph).

Note: Use care to avoid overheating the brakes while performing this step.

- Using moderate to firm pressure, apply the brakes to bring the vehicle to a stop. Do not allow the brakes to lock.
- Repeat steps 2 and 3 until approximately 20 stops have been completed. Allow sufficient cooling periods between stops in order to properly burnish the brake pads and rotors.

Cobalt Brembo Brake Upgrade

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Lug nuts	140 N-m	100 Lb ft
Brake Caliper Mounting Bolts	130 N-m	96 Lb ft
Brake Hose Fitting Bolt LNF	40 N-m	30 Lb ft
Brake Caliper Bleeder Valve	14 N-m	124 Lb in
Wheel Hub Mounting Bolts	115 N-m	85 Lb ft
Axle Drive Nut (non LSJ, MU3)	210 N-m	155 Lb ft
Axle Drive Nut LSJ w/MU3	215 N-m	159 Lb ft