




LAB - Disc Brake Job

Students: 1. _____
 2. _____
 3. _____

Date: _____
 Block: _____

Fill in each box with the appropriate information.

Be sure to have the Instructor's initials before moving on to the next step. These are there to ensure everything is SAFE and CORRECT. Each team member must be able to answer questions from your instructor to receive credit for this lab.

VEHICLE IDENTIFICATION			
Year:		Make:	
Model:		Mileage:	
VIN Number:			
Minimum Brake Rotor Thickness:			
BEFORE YOU BEGIN			
SAFETY  Jack Stands  2-Post  4-Post	<input type="checkbox"/> Brake dust may contain ASBESTOS: a very fine, cancerous particle that NEVER leaves your body. Make extra effort to ensure the brake dust does not become airborne. <input type="checkbox"/> Brakes are done PER AXLE. <input type="checkbox"/> New PADS and new SHOES should go on new or freshly machined ROTORS and DRUMS (respectively) <input type="checkbox"/> Assembly must be WHITE-GLOVE CLEAN (no fingerprints, even!) <input type="checkbox"/> Calipers should be SERVICED or REPLACED if PISTONS or SLIDERS do not move FREELY		
	A BRAKE JOB MUST BE DONE 100% CORRECTLY YOU ARE RESPONSIBLE FOR THEIR SAFETY		
	<input type="checkbox"/> The Instructor MUST see your work BEFORE THE WHEELS ARE REPLACED <input type="checkbox"/> Raise and support the vehicle properly – see you instructor if you are unsure IMPROPER USE OF THE HOIST or JACK STANDS CAN BE FATAL! CORRECT SETUP IS CRITICAL FOR YOUR SAFETY AND THE SAFETY OF OTHERS! GET YOUR INSTRUCTOR TO HELP!		
<p><u>Jack Stands:</u> Raise the vehicle with jack in correct place, use jack stands in correct place <u>Two-Post Hoists:</u> Position arms, raise car slightly, check stability, continue raising, lock it. <u>Drive-On Hoists:</u> In Gear/Park, E-Brake on, wheel chocks; raise, then lock rails.</p>			
STOP!!!		INSTRUCTOR'S INITIALS:	

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Get a length of welding wire or a coat hanger to HANG the caliper off the chassis – NEVER let the caliper hang by the brake line

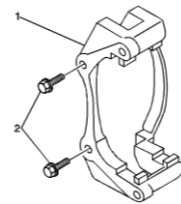
- Remove Wheels
- Is the caliper FIXED or FLOATING?

- On FLOATING CALIPERS - grab the caliper, still on the vehicle, and see if you can wiggle it – watch the sliders for motion. Does it move (ie: are the sliders free?)

- How is the caliper attached to the caliper bracket?

- CHECK that the bleeder screws can be cracked loose. BE GENTLE – there are tricks to un-sticking them, but it's harder if you round the hex or shear them off.
- How much FRICTION MATERIAL is left on the pads? (Mr. Wellwood's Speed Tip: friction material that is as thick as the backing plate is done – they need replacing)

- Remove brake caliper and hang by a wire (usually off the suspension or something)
- Remove the BRAKE CALIPER BRACKET if required to remove the rotor
- How is the BRAKE ROTOR attached? (slips onto hub, one-piece with the hub, bolts onto the back side of the hub, or...?)



- Remove the brake rotor for SERVICE or REPLACEMENT

STOP!!!

INSTRUCTOR'S INITIALS:

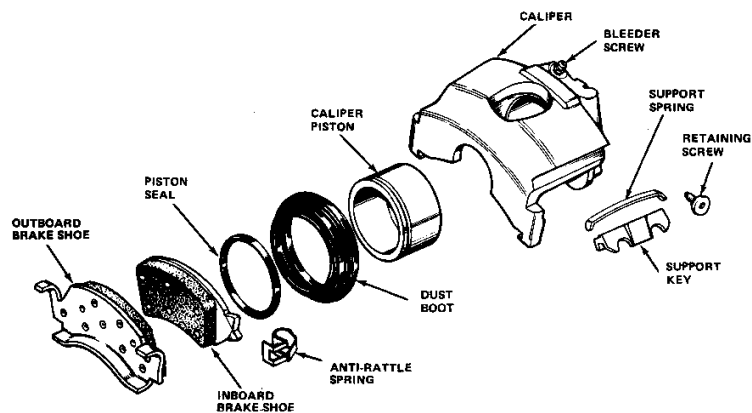
MOST FRONT DISC BRAKES:

- We will be pressing the CALIPER PISTONS back into the caliper. Check the BRAKE MASTER CYLINDER fluid level first. If the master is full:
 - OPTION 1: Remove about half of the fluid so there is room for the fluid displaced by the piston
 - OPTION 2: Crack open the bleeder screw, and attach a hose into a container to catch the fluid displaced by the piston



Bleeder screws sometimes fill up with crud. Remove them from the caliper, and gently twist a drill bit BY HAND through the holes (2) to clean the crud out of them.

- Use a C-Clamp to gently press the piston back into the caliper. This should move fairly easily.



If the Caliper Piston doesn't move easily, crap (dirt and/or corrosion, etc) is in there that has to be removed (rebuild time).

MOST REAR DISC BRAKES:

Most Rear Disc Brakes do not self-adjust the same as fronts – a C-Clamp will NOT work. You need to screw the piston back into the caliper (see tool on right)

You will likely need one of these to screw the piston back in.



If the caliper pistons and/or the caliper sliders are not moving – talk to your Instructor – the customer may have to be notified as this brake job just got more expensive

NEW ROTORS?

- Wire-brush the HUB surface so the rotor can sit straight and true
- Clean Rotor with soap and water, dry, then spray with Braklean
- Install new ROTOR (if rotor is bolt-on, torque to spec in a criss-cross pattern)
- Install CALIPER BRACKET (if removed)

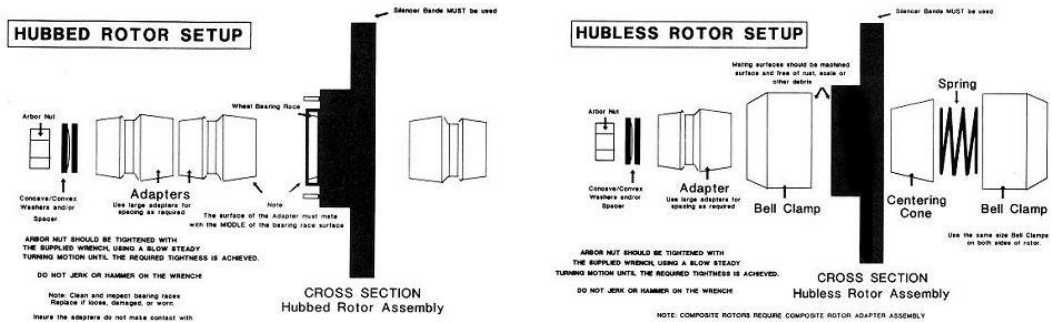


NO
FINGERPRINTS!

SERVICE ROTORS?

- Use a MICROMETER and RECORD the brake rotor thickness below. Within SPEC?:

- Place ROTOR on Brake Lathe (wire-brush hubless rotor centers so they sit true)



- Adjust cutters to take off ONLY ENOUGH to clean up the rotor.
- Cutters must cut BOTH SIDES at the same time – EVEN IF ONE SIDE IS A WEE CUT
- I usually cut 0.001 or 0.002” at a time, never more than 0.003”

**GET YOUR INSTRUCTOR TO CHECK YOUR SETUP
BEFORE YOU BEGIN CUTTING**

- Install Serviced ROTOR (if rotor is bolt-on, torque to spec in a criss-cross pattern)
- Install CALIPER BRACKET (if removed)

NO
FINGERPRINTS!

STOP!!!

INSTRUCTOR'S INITIALS:

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LOADING THE CALIPER:

- Disassemble the CALIPER SLIDERS, clean and lubricate with Never-Seize, and reassemble.
- Most pads today come with STICK-ON SHIMS to reduce brake noise. If yours do not come with them, smear a thin coat of Disc Brake Quiet on the backside, and place the new pads into the caliper (or bracket, depending)
- Spray BraKleen on the new pads, and install BRAKE CALIPER, torquing fasteners to spec
- SLOWLY depress the brake pedal to extend the pistons and press the pads against the rotor
- Check that the rotor still spins once the brakes are released (this confirms that the piston is not stuck).
- Check the level of Brake Fluid in the Master Cylinder, and top up as required.
- Consider bleeding the brake system with all new Brake Fluid (should be done every year)



STOP!!!

INSTRUCTOR'S INITIALS:

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CONFIRMATION

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- Test the vehicle's brakes and ensure they work properly
- Wipe off ANY and ALL finger prints, grease spots, brake fluid etc. The customer wants to know you made their vehicle BETTER, not WORSE.

What did you learn in this lab: