Lincoln Mark VII

1984 – 1990 Brake Pad Replacement

by Brad Pearce

Tools you will need:
Hydraulic lift floor jack
Lug Wrench
Pliers
3/8" ratchet
T-45 Torx bit
3/8”- 6" extension for ratchet
Disc Brake Piston Tool
Micrometer (measure rotor thickness)
Large screw driver or pry bar
Nylon scrub pad or steel wool
Lubricant spray
Brake & Caliber Grease for caliper contact points
Dielectric Silicone compound for locating pins
1 – 2 cans of brake cleaner
Loctite or equivalent
3/8" Lb ft Torque wrench

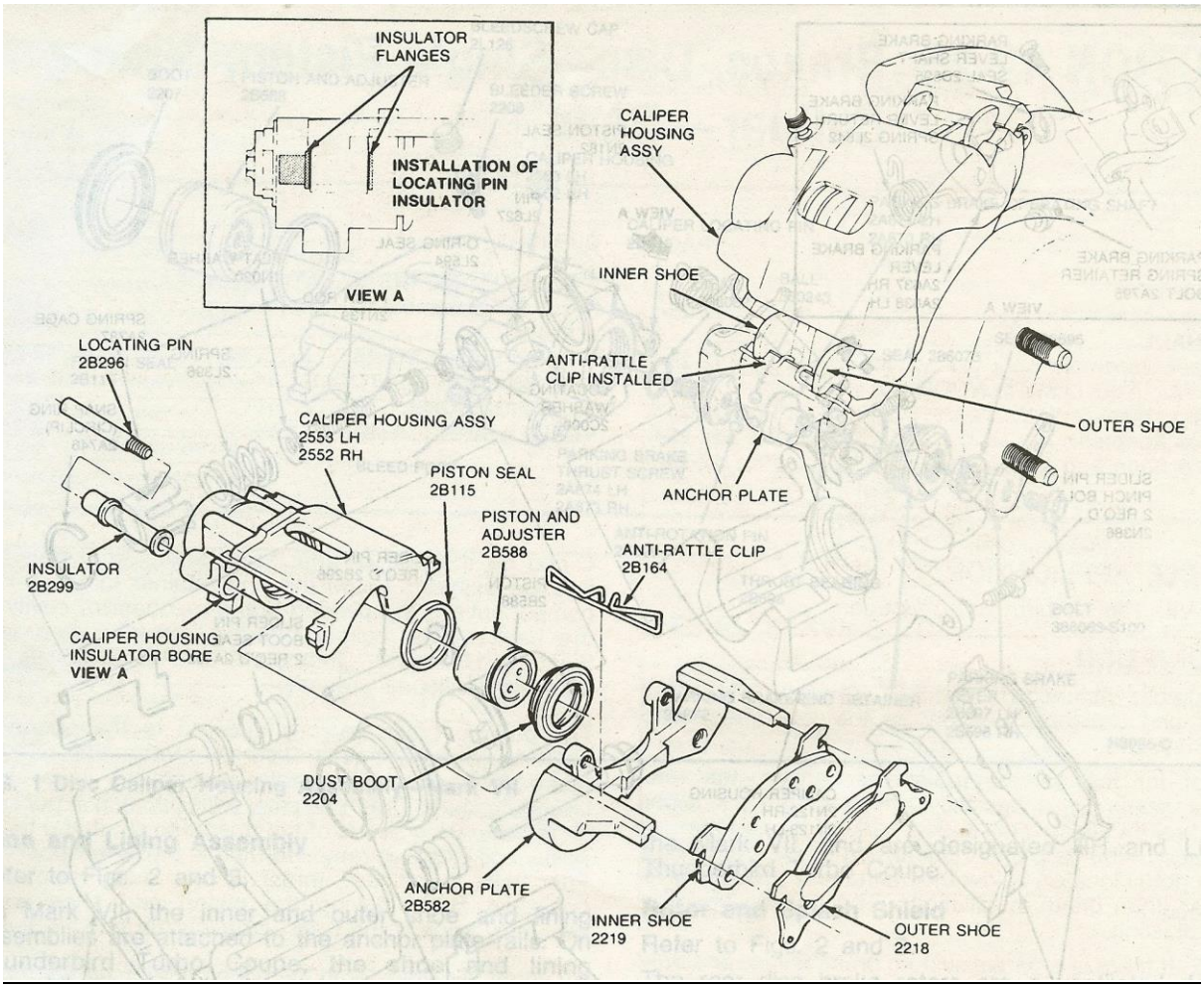
Torque specifications:

Caliper locating pins 40-50 Nm (29-37 lb-ft)
Anchor Plate 105 - 135 Nm (80-100 Lb-ft)
Parking brake cable bracket 40-50 Nm (29-37 lb-ft)
Lug nuts 80 – 105 Lb-ft

Process

1) **Raising the vehicle**
    a. Raise vehicle
    b. Remove Tires
2) **Disassembly of the brakes**
    a. Inspect brake assembly
    b. Disassemble brakes
3) **Assembly of brake**
    a. Replace pads, rotors
    b. Assemble brakes
4) **Check for pad to rotor clearance**
    a. Calibrate distance of piston to pad
5) **Caliper Adjustment**
    a. Press brake pedal several times
6) **Bleeding the Brakes**
    a. Bleed brakes
7) **Road test**

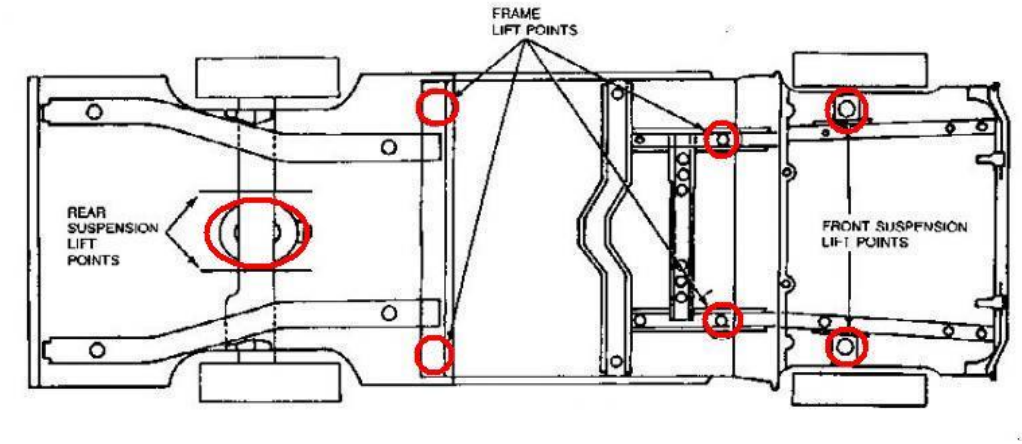
Layout of brake assembly



Raising the vehicle

Block front wheels to keep car from rolling
Release parking brake
Loosen lug nuts of both rear wheels

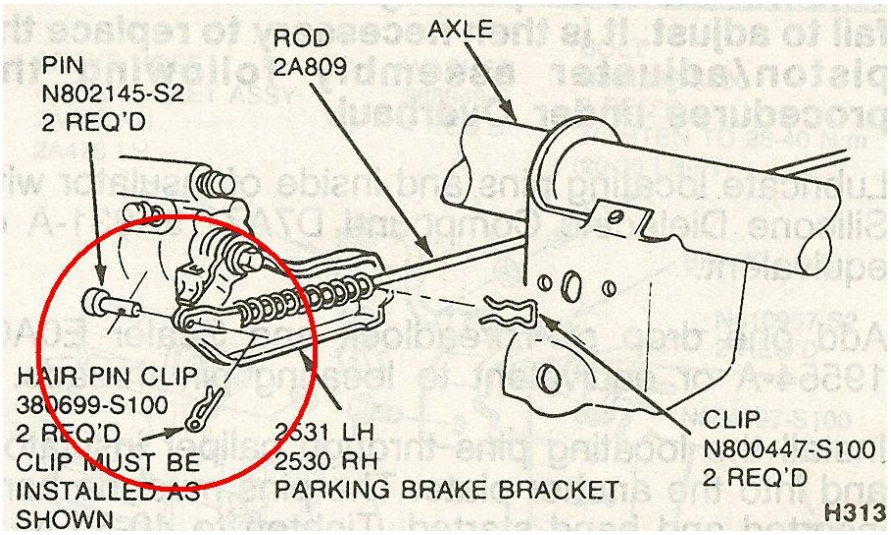
Jack up the rear of the car



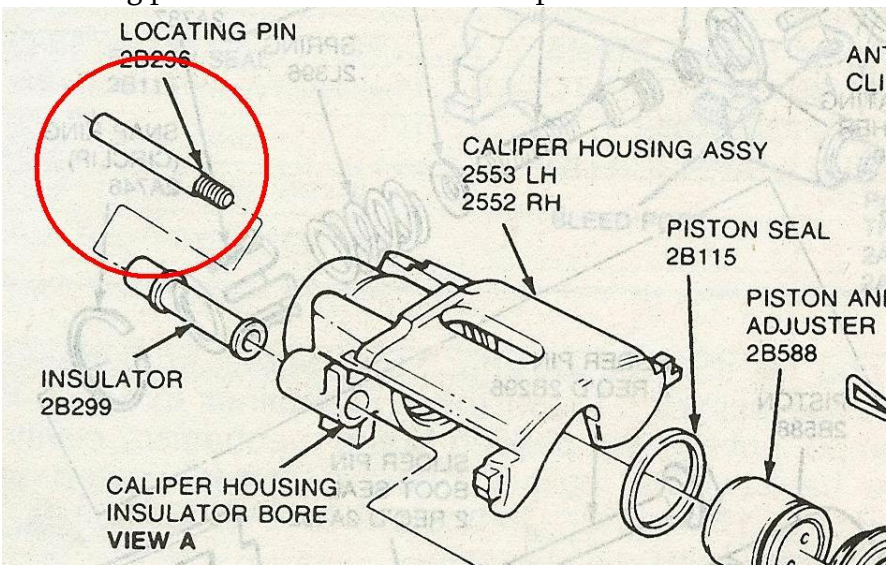
Raise car enough to remove wheels and place two lug nuts back on the rotor
Place jack stands under jack points in front of rear wheels
Lower car down to jack stands

Disassembly of the brakes

Remove clip and pin from parking brake cable



Remove caliper locating pins with Torx bit and clean pin and threads

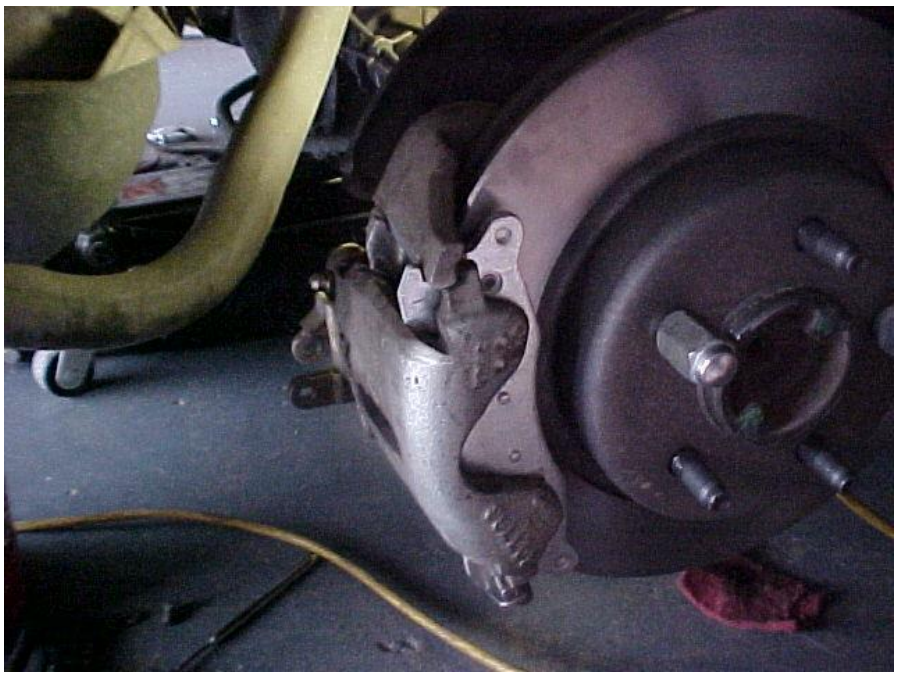


*Located behind caliper assembly

Lift caliper assembly away from anchor plate by pushing the caliper assembly up and in then pull the bottom out and the top down

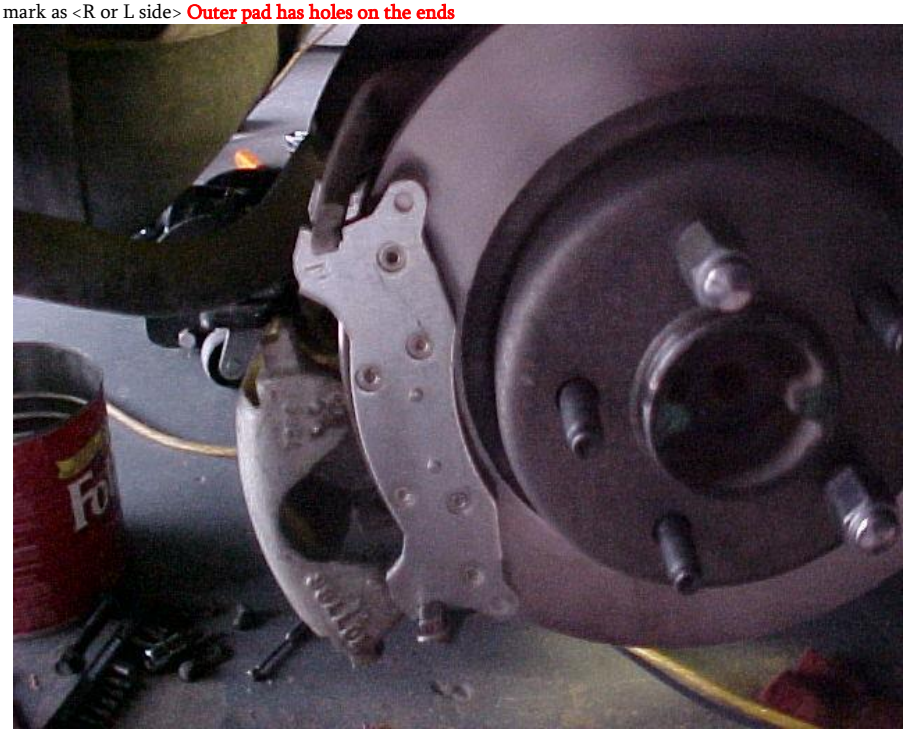
Move caliper assembly out of way

*Note: If it is stuck on, use the large screwdriver or pry bar to assist removing the caliper assembly by prying from the bottom as you push up on the assembly



Remove the outer pad

*If to be reinstalled, mark as <R or L side> **Outer pad has holes on the ends**



Remove lug nuts and remove rotor

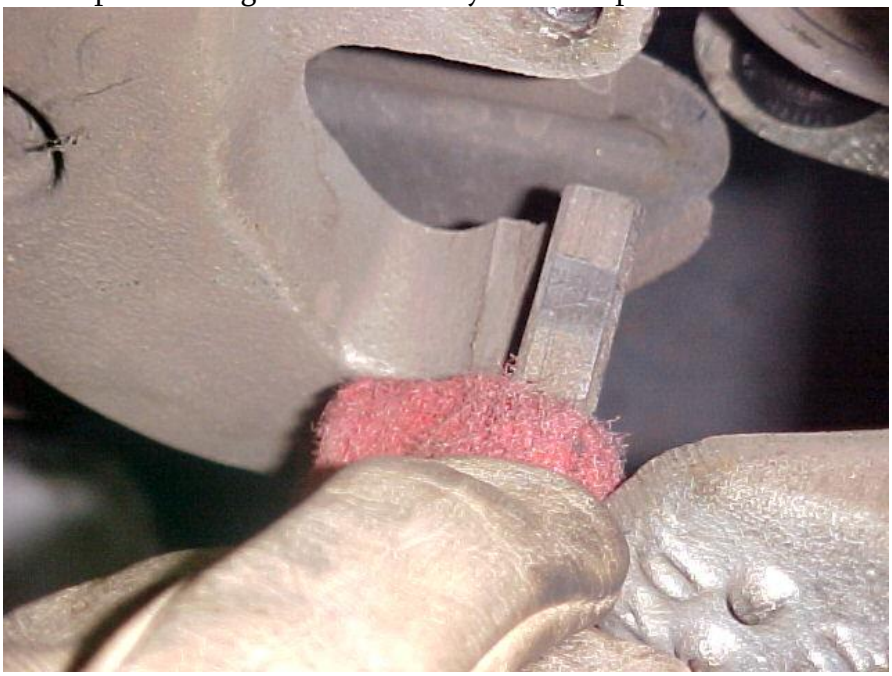
Inspect rotor and measure / replace if less than specs on side of rotor.
If there are no specs on the rotor, replace rotors.
Minimal tolerance is 0.910 thousands of an inch

Remove inner shoe

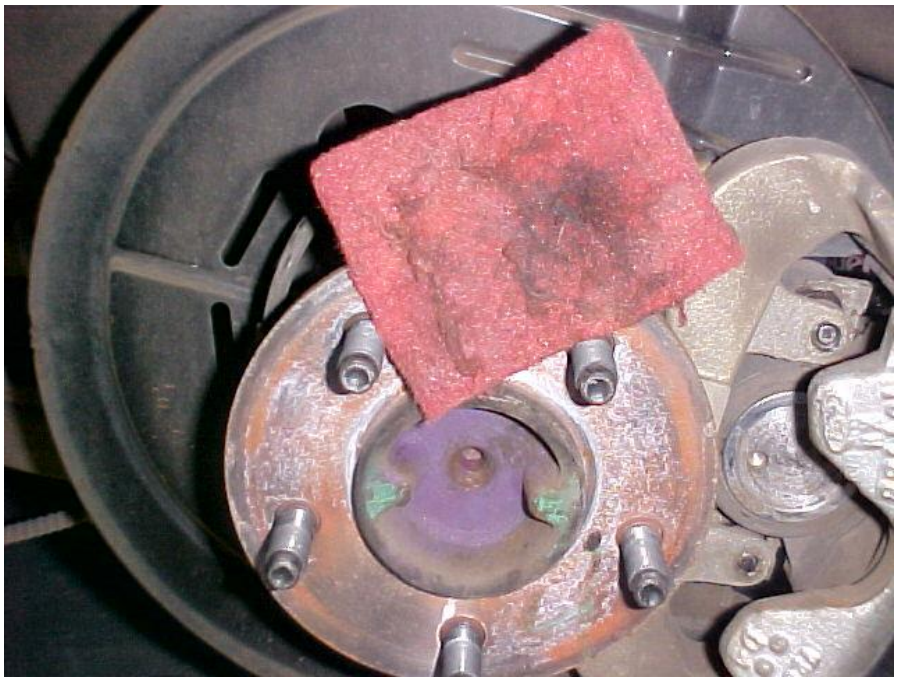
Inspect shoes and measure / replace if less than 3.1mm (1/4") thick

Remove anti-rattle clip

Remount caliper to anchor plate
Clean and inspect caliper for leakage and damage, replace if necessary
Sand caliper anchor plate sliding surfaces with nylon scrub pad or steel wool



Clean wheel hub with nylon scrub pad or steel wool
Clean inside of rotor where it contacts to wheel hub
Lightly lubricate with WD40 or similar to retard rust
DO NOT SPRAY ANYWHERE ON ROTOR EXCEPT IN SIDE AT LUG HOLES!
*The wheel hub and back of rotor should be clean so they seat together flush



Finished wheel hub

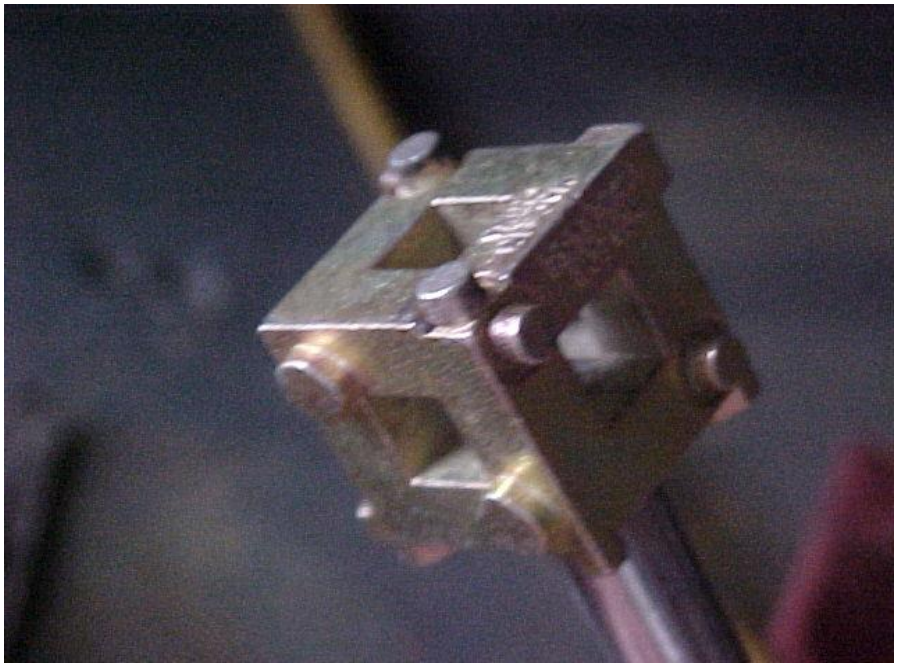
If replacing shoes and rotor:

Remove the cap on the master cylinder reservoir to allow fluid levels to rise

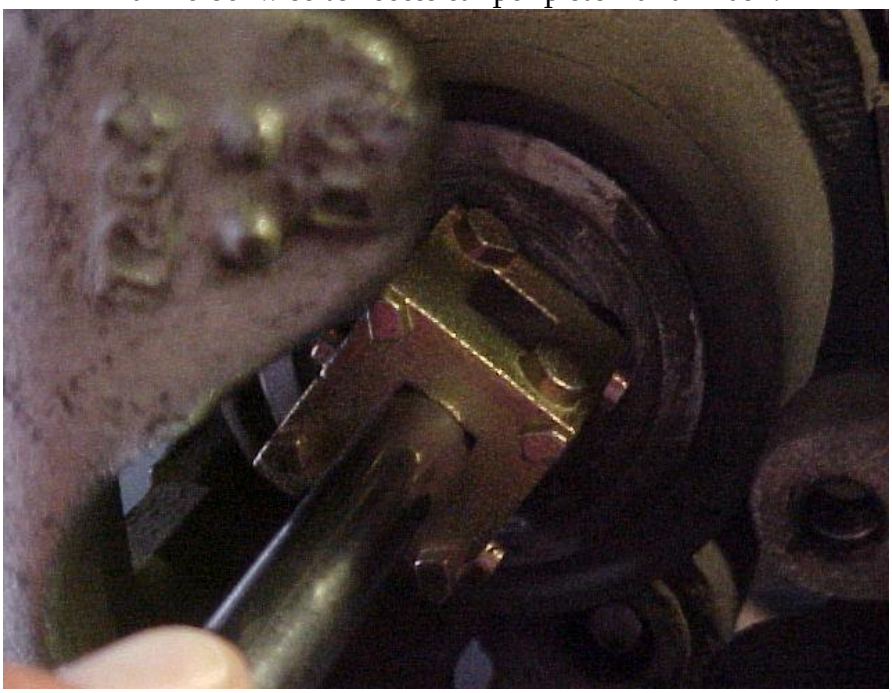
*Check fluid level frequently so it dose not over flow

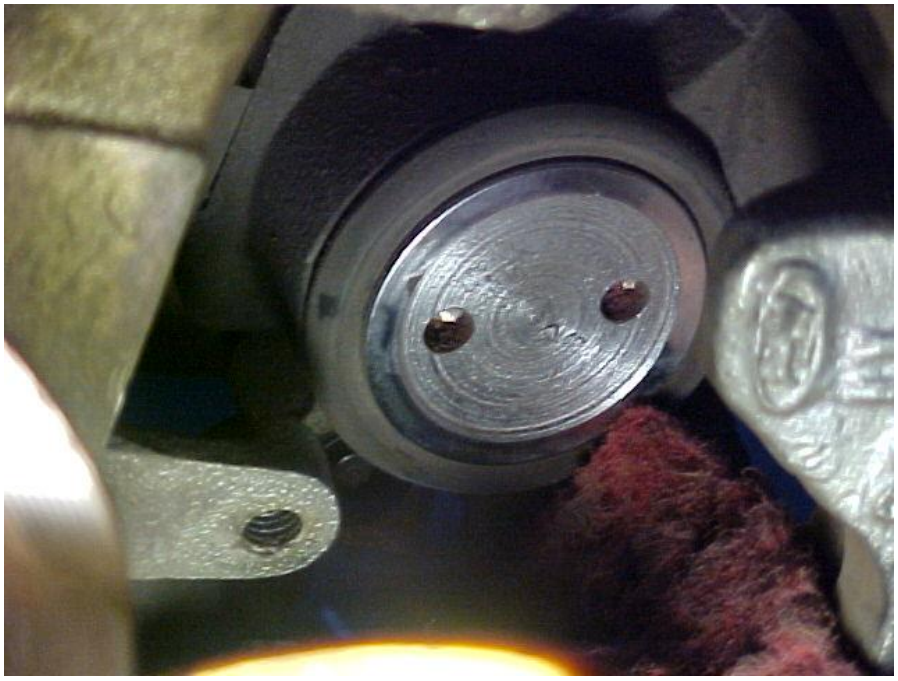
Ensure caliper is mounted to anchor plate

Place Disc Brake Piston Tool of choice into piston



Turn clockwise to recess caliper piston until flush.



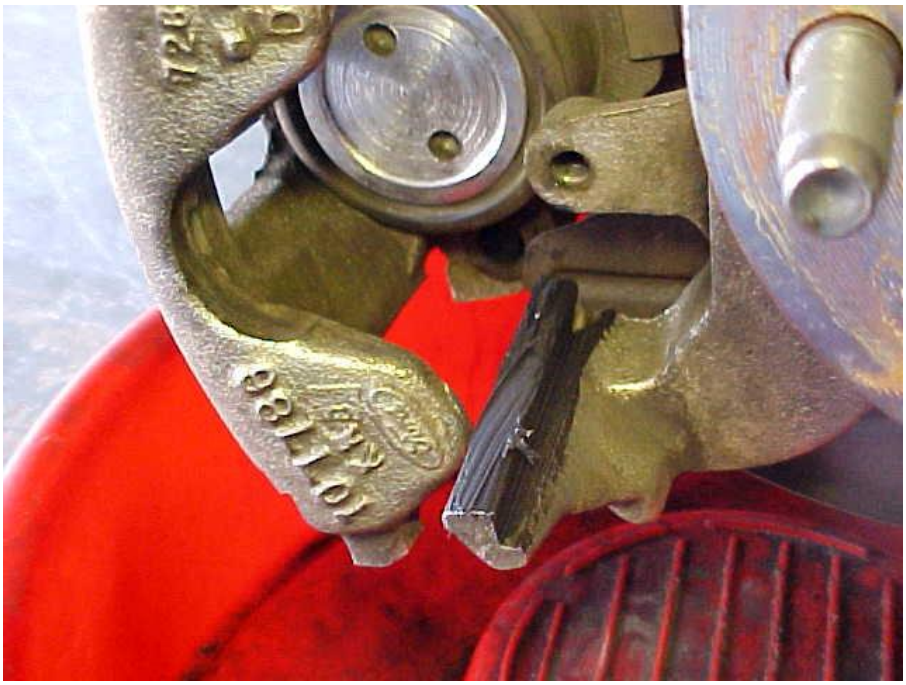


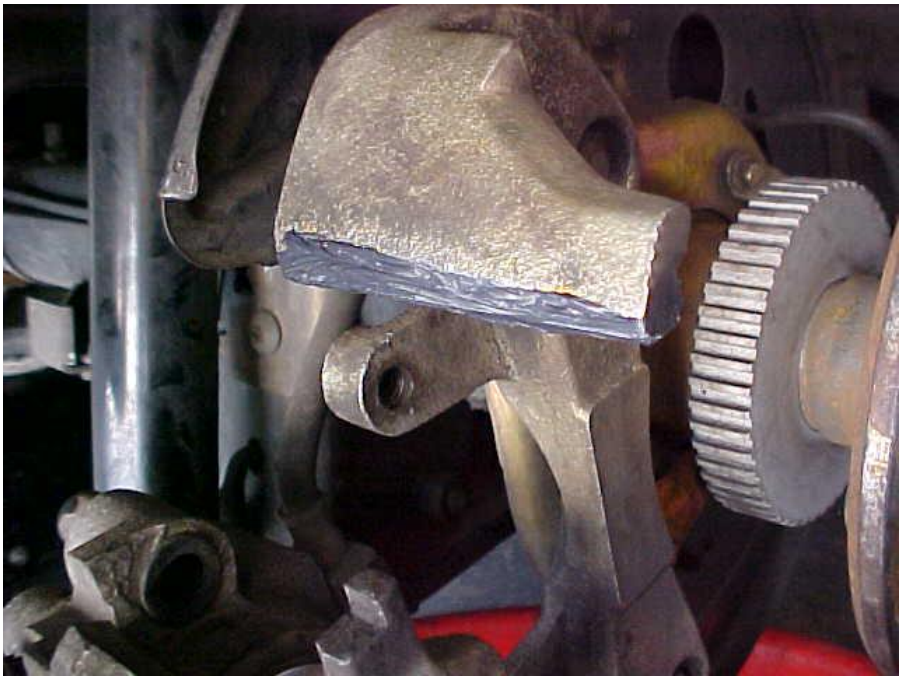
Remove caliper from anchor plate and place out of way

Assembly of brake

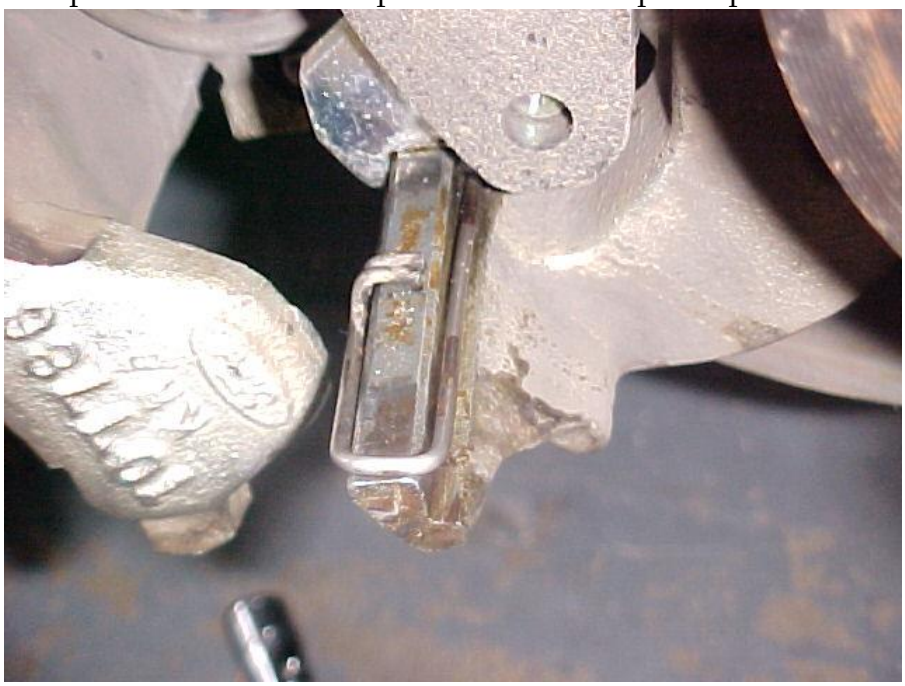
*Do not touch the shoe rotor contact sides and do not touch the rotor to pad contact surfaces

Lubricate upper and lower anchor plate contact sliding points with Brake & Caliper Grease

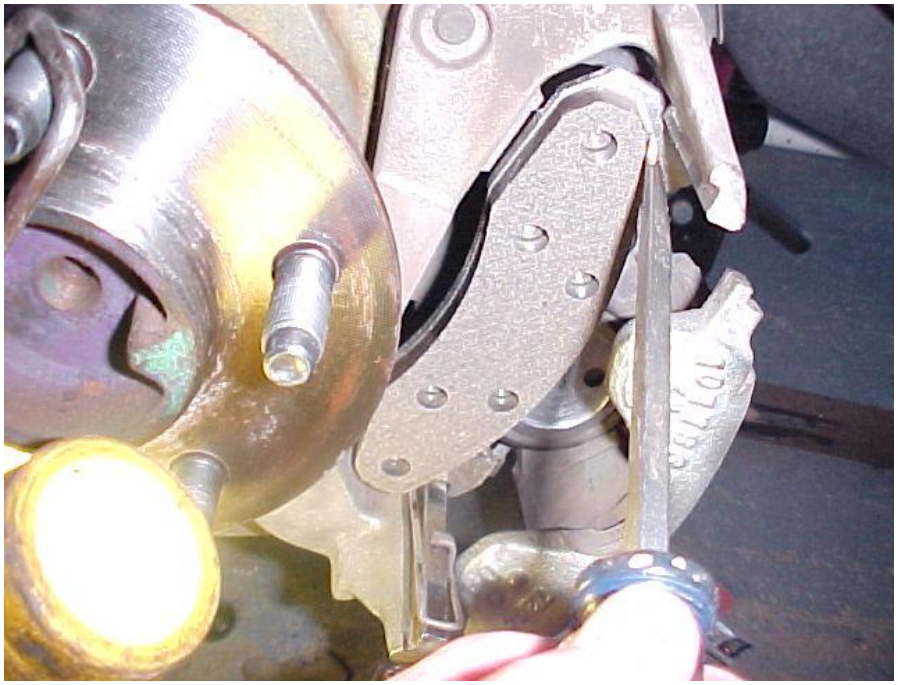




Place anti-lock clip on bottom of anchor plate and slide rear pad in place



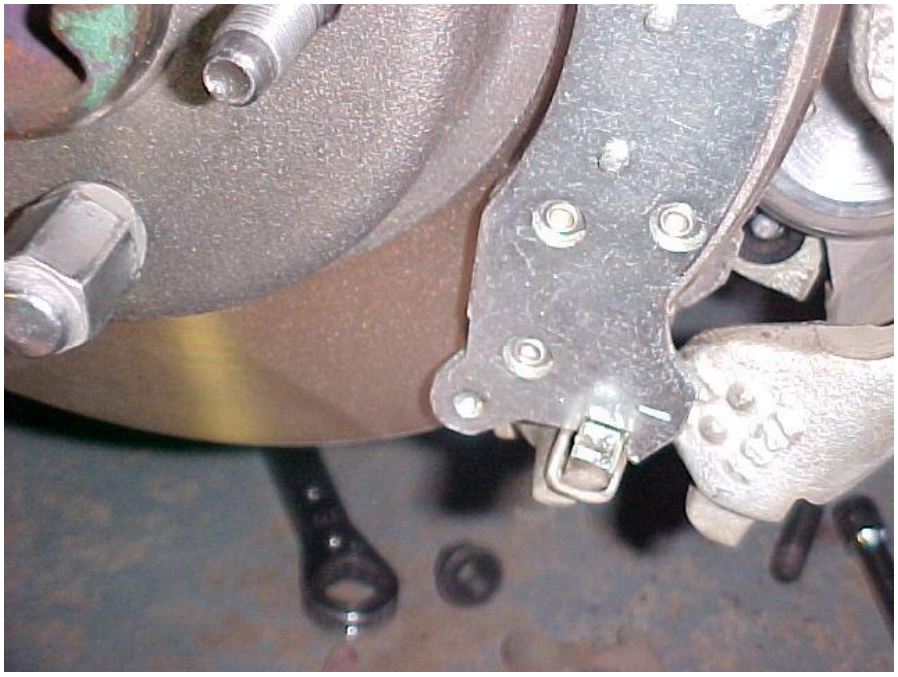
BE SURE NOT TO TOUCH THE CONTACT SURFACE!



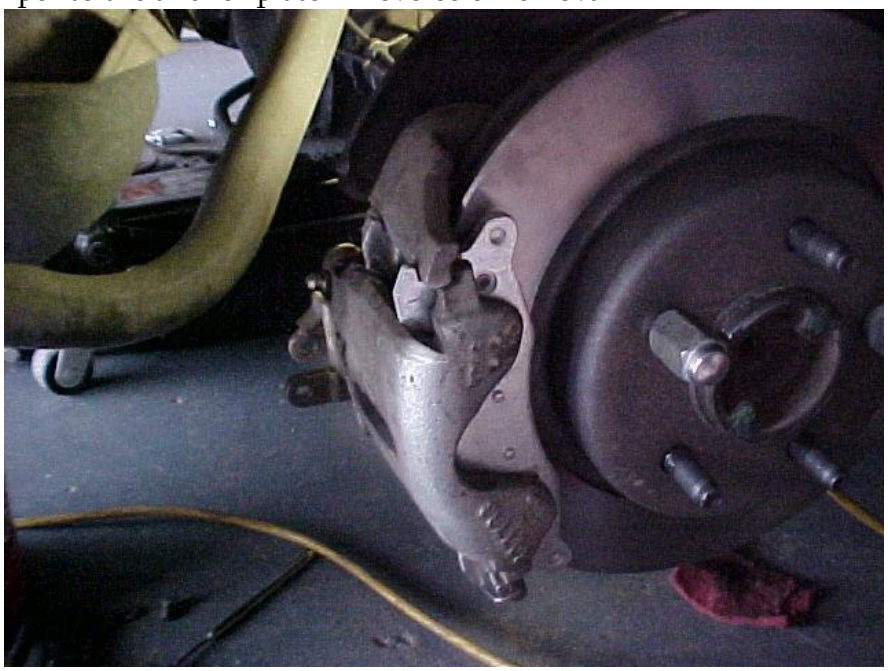
Insert rotor and mount with 2 - 3 lug nuts to hold in place

BE SURE NOT TO TOUCH THE CONTACT SURFACE OF THE ROTOR!

Holding down the anti-rattle clip to the outside of the anchor plate, insert the outside pad

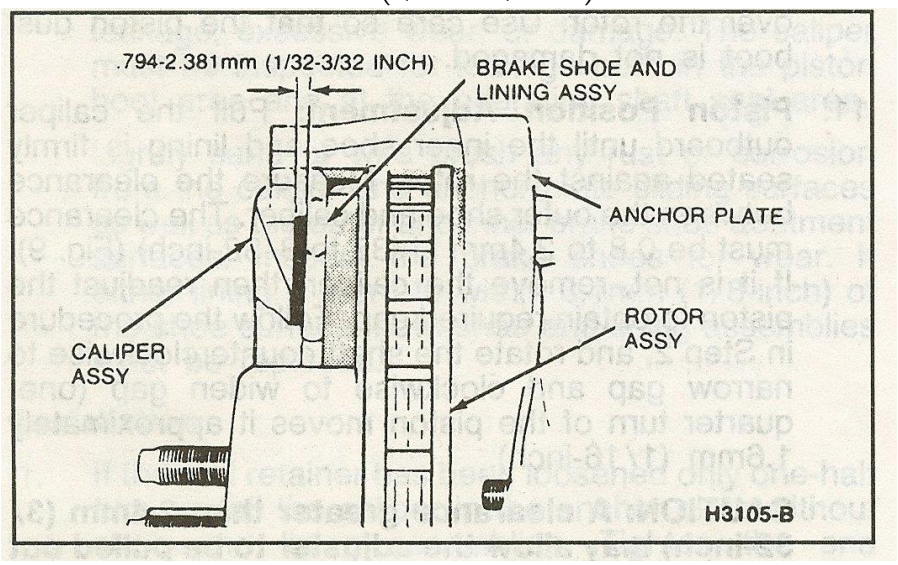


Mount the caliper to the anchor plate in reverse of removal



Check for pad to rotor clearance

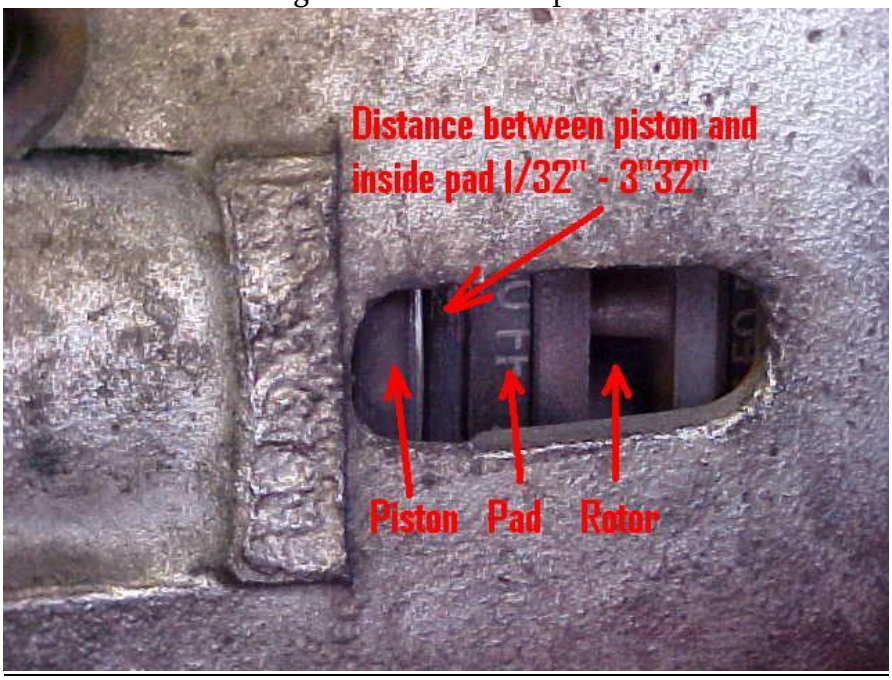
1) Pull on the caliper towards the outer most part of the brakes
2) Measure the clearance between the shoe and the caliper
   a) The clearance must be 0.8 to 2.4mm (1/32 to 3/32 in)



   b) If it is not within the range suggested, remove the caliper and using the caliper tool, turn the piston in or out to adjust the piston to get the desired specs. 1/4 turn of the piston roughly equals 1.6mm (1/16 in)

***NOTE: if the clearance is greater than 2.4mm (3/32 in), this may allow the adjuster the be pulled out of the piston when the service brake is applied. This will cause the parking brake mechanism to fail to adjust. It is necessary to replace the piston/adjuster assembly following the procedures under 'Overhaul'.**

Looking at the back of caliper mount



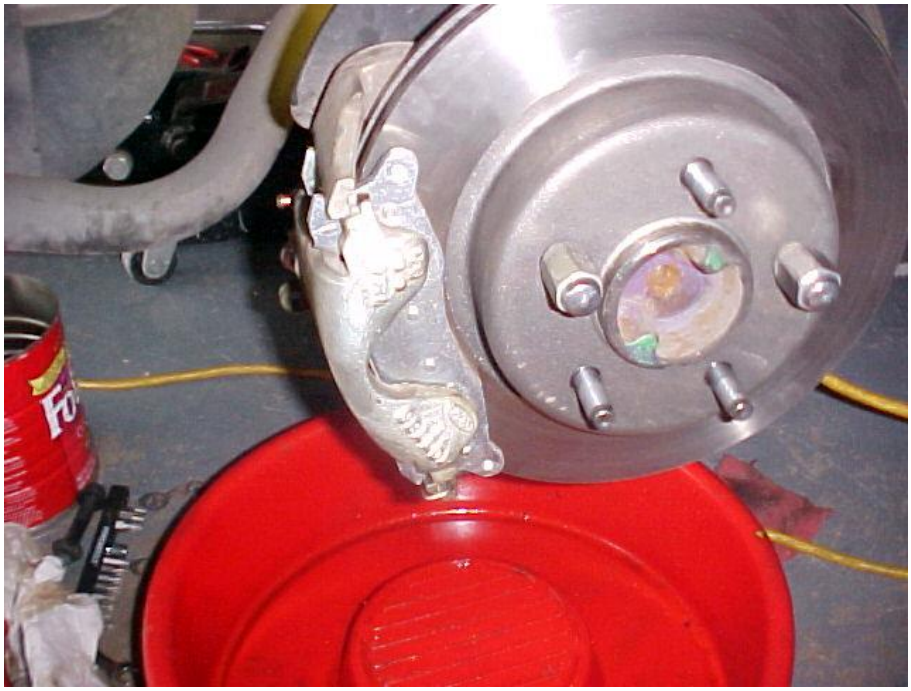
After verifying that the caliper is installed with the correct clearance, remove the locating pins (if not already done) and lubricate sleeve with silicone dielectric compound and add one drop of Loctite or similar to the threads.

Hand tighten the locating pins and then torque to 40-50 Nm (29-37 lb-ft)

*If you don't torque the caliper locating pins, you stand the chance acquiring wobble when the brakes are applied

Connect the parking brake in reverse order of removal

Once assembled, spray the rotor (both sides) and contact side of pads vigorously with brake cleaner while spinning the wheel
Make sure to do both sides of rotor and pads



Check brake fluid level and bleed the brakes (see end of document)

Caliper Adjustment

With the engine running, pump the service brake pedal lightly (~14lbs) at one second intervals, 40 times

*Alternative: with the engine off, pump the service brake pedal lightly (~87lbs) 30 times

Test the parking brake for excessive travel or very light effort. If either issue exists, repeat pumping the brake pedal or check the parking brake cable for proper tension

NOTE: The caliper levers MUST return to the off position when the parking brake is released.

Bleeding the Brakes

***Note:**

Front Brakes

The front brakes can be bled in the conventional method listed below with or without the accumulator being charged.

Rear Brakes

Bleeding the rear brakes requires a fully charged accumulator. Once the accumulator pressure is available to the system, the rear brakes can be bled by opening the rear brake caliper bleed screws for 10 seconds at a time while holding down the brake pedal in the applied position with the ignition switch in the RUN position. Repeat until an air-free flow of brake fluid has been observed at each caliper, then close the bleed screws. Pump the brake pedal several times to complete the bleed procedure. Adjust the brake fluid level in the reservoir to the MAX level with a fully charged accumulator

1) Clean all dirt from the Master Cylinder filler cap
2) If master cylinder is known or suspected of having air in bore, it must be bled ***before*** any wheel cylinders or calipers are bled. To bleed the master cylinder, loosen the upper secondary outlet fitting approximately three-quarter turn.
3) Have an assistant push brake pedal down ***slowly*** through full travel. Close outlet, return the pedal ***slowly*** to full released state. Wait 5 seconds the repeat operation until air bubbles cease to appear
4) Loosen up primary outlet fitting approximately three-quarter turn.
5) Repeat step three
6) To continue to bleed brake system, remove rubber dust cover from right rear bleeding fitting. Place suitable box wrench on fitting and connect clear rubber drain tube to fitting. The end of the tube should fit snuggly around bleeder fitting.
7) Submerge free end of tubing in container partially filled with **clean** brake fluid and loosing fitting approximately ¾ turn.
8) Have assistant push brake pedal down slowly through full travel. Close bleeder fitting, then return peddle to full release position. Wait 5 seconds and repeat until operation until air bubbles cease to appear at submerged end of bleeder tube. Check brake fluid in master cylinder and add as needed.
9) When fluid is completely free of air bubbles, secure bleeder fitting and remove bleeder tube and wrench. Install rubber dust cover on bleeder fitting.
10) Repeat the process to the left rear caliper, right front caliper then left front caliper. Keep checking the brake fluid level in the master cylinder and add fluid as needed. Once complete check the master cylinder fluid level. It should be at the maximum position indicated on the reservoir. Return the master cylinder filler cap to the master cylinder and ensure it is tight.
11) Always ensure disc brake pistons are returned to their normal positions by depressing the brake pedal several times until normal pedal travel is established.
12) Check pedal feel. If pedal feels spongy, repeat bleed procedure.

