FIGURE 13.1 Minimum thickness for various types of disc brake pads.

FIGURE 13.2 This cracked disc brake pad must be replaced even though it is thicker than the minimum allowed by the vehicle manufacturer.
FIGURE 13.3 A brake pad display used by shops to help customers visualize the measurements taken when their brakes were inspected.

FIGURE 13.4 Most disc brake calipers have a brake inspection opening. For a thorough inspection, however, the caliper should be removed and the entire braking system thoroughly inspected.

FIGURE 13.5 Both rear- and forward-mounted calipers have the bleeder valve at the top.
FIGURE 13.6 Many manufacturers recommend removing one-half of the brake fluid from the master cylinder before servicing disc brakes.

FIGURE 13.7 Most manufacturers recommend that the bleeder valve be opened and the brake fluid forced into a container rather than back into the master cylinder reservoir.

FIGURE 13.8 Many calipers use a hollow “banjo bolt” to retain the flexible brake line to the caliper housing. The fitting is usually round like a banjo.
FIGURE 13.9 Caliper retaining bolts are often called guide pins. These guide pins are used to retain the caliper to the steering knuckle.

FIGURE 13.10 If the caliper is not being removed, it must be supported properly so that the weight of the caliper is not pulling on the flexible rubber brake line.

FIGURE 13.11 A wooden block or a folded shop cloth helps prevent damage when caliper pistons are removed.
FIGURE 13.12 After the piston is removed from the caliper housing, the dust boot can often be removed using a straight-blade screwdriver.

FIGURE 13.13 Phenolic (plastic) pistons should be carefully inspected.

FIGURE 13.14 All caliper pistons should be inspected for damage and replaced if there are any faults found.
FIGURE 13.15 These pads were found to be cracked and a section was missing from a part of one pad.

FIGURE 13.16 Removing the square-cut O-ring seal from the caliper bore. Use a wooden or plastic tool to prevent damage to the seal groove.

FIGURE 13.17 Some manufacturers recommend cleaning the inside of the caliper bore using a honing tool as shown.
FIGURE 13.18 Installing a new piston seal. Never reuse old rubber parts.

FIGURE 13.19 Brake assembly fluid or clean brake fluid from a sealed container can be used to lubricate the caliper seal and caliper pistons before assembly.

FIGURE 13.20 Installing the caliper piston. Many calipers require that the dust boot be installed in the groove of the piston and/or caliper before installing the piston.
FIGURE 13.21 Installing a piston into a caliper. Sometimes a C-clamp is needed to install the piston. Both the piston and the piston seal should be coated in clean brake fluid before assembly.

FIGURE 13.22 Seating the dust boot into the caliper housing using a special plastic seating tool.

FIGURE 13.23 All rubber bushings should be lubricated with silicone brake grease for proper operation.
FIGURE 13.24A Using a screwdriver to force the outboard pad into proper position before bending the retaining tabs.

FIGURE 13.24B Use two hammers to bend the tab where it extends through the hole in the caliper body.

FIGURE 13.25 Often, a hammer is necessary to bend the retainer flange to make certain that the pads fit tightly to the caliper. If the pads are loose, a “click” may be heard every time the brakes are depressed.
FIGURE 13.26 A loaded caliper includes all hardware and shims with the correct pads all in one convenient package, ready to install on the vehicle.

FIGURE 13.27 Floating calipers must be able to slide during normal operation.

FIGURE 13.28 Using an air-powered sanding disc to clean the caliper mount pads.
FIGURE 13.29 Determine which face of the special tool best fits the holes or slots in the piston.

FIGURE 13.30 Note the twisted flexible brake line. This was caught by an automotive instructor before the brake work on the vehicle was completed.

FIGURE 13.31 For best braking performance, purchase replacement disc brake pads that include all clips and shims specified by the vehicle manufacturer.
FIGURE 13.32 Notice the beveled pads. The shape of the pad helps reduce brake noise.

FIGURE 13.33 The screwdriver blade is used to keep the piston applied to allow self-adjustment to occur when the brake pedal is released.

FIGURE 13.34A A brake pressure tester.
FIGURE 13.34B The small “pads” can be placed between the caliper piston and the rotor to check for applied pressure and inserted between the caliper and the rotor on the outside of the rotor to test the pressure—the pressure should be the same if the caliper is able to slide on its pins or slides.

Use a hex wrench to remove the caliper mounting bolts.

Remove the caliper and pads from the brake rotor.
Remove the brake pads from the caliper.

Hang the caliper with wire or a hook. Do not let the caliper hang from the brake hose.

Measure the rotor thickness and machine or replace, if necessary.
Clean the rotor and install it on the hub.

Bottom the piston and install the new brake pads.

Slide the caliper and new pads into position on the rotor and steering knuckle.
Install and torque the caliper mounting bolts to factory specifications.