Figure 103-1 Typical parking brake cable system showing the foot-operated parking brake lever and cable routing.

Figure 103-2 A typical parking brake pedal assembly.
Figure 103-3 Typical hand-operated parking brake. Note that the adjustment for the cable is underneath the vehicle at the equalizer.

Figure 103-4 A ratchet mechanism is used to lock parking brakes in the applied position.

Figure 103-5 A remote-mounted parking brake release lever.
REAL WORLD FIX

Pump to Release?
A customer called and asked a dealer for help because the parking brake could not be released. The service technician discovered that the customer was attempting to release the parking brake by depressing the parking brake pedal, as was done on the customer’s previous vehicle. The service technician simply pulled on the release lever and the parking brake was released.

Figure 103-6 Automatic parking brake release mechanisms usually use a vacuum servo to operate the release lever.

Figure 103-7 The two plastic vacuum tubes on the steering column are used to release the parking brake when the gear selector is moved from park into a drive gear.
Figure 103-8 The cable from the activating lever to the equalizer is commonly called the control cable. From the equalizer, the individual brake cables are often called application cables. These individual cables can usually be purchased separately.

TECH TIP: Look for Swollen Parking Brake Cables

Always inspect parking brake cables for proper operation. A cable that is larger in diameter in one section indicates that it is rusting inside and has swollen. **SEE FIGURE 103-9.** A rusting parking brake cable can keep the rear brake applied even though the parking brake lever has been released. This can cause dragging brakes, reduced fuel economy, and possible vehicle damage due to overheated brakes.

Figure 103-9 Notice how rust inside the covering of this parking brake cable has caused the cable to swell.
Figure 103-10 Intermediate levers in the parking brake linkage increase the application force.

Figure 103-11 A cable guide is a common type of parking brake linkage equalizer.

Figure 103-12 Some parking brake equalizers are installed in the brake cable.
Many parking brake linkages use both an intermediate lever and an equalizer.

Notice the spring at the end of the parking brake strut. This antirattle spring helps prevent rattling of the strut. The parking brake lever is usually attached with a pin and spring (wavy) washer and retained by a horseshoe clip.

The parking brake cable pulls on the parking brake lever, which in turn forces the brake shoe against the drum.
The inside "flat" of the disc brake rotor is the friction surface for the parking brake shoes.

A typical rear disc brake auxiliary drum brake friction assembly.

A Ford rear brake caliper ball and ramp-type apply mechanism.
Figure 103-19  Operation of a ball and ramp-type rear disc brake caliper parking brake.

Figure 103-20  Automatic adjustment of a ball and ramp-type rear disc brake parking brake occurs when the service brakes are applied.

Figure 103-21  A typical General Motors rear disc brake with an integral parking brake. This type uses a screw, nut, and cone mechanism to apply the caliper piston.
Figure 103-22 Parking brake application of a General Motors rear drive brake caliper.

Figure 103-23 Automatic adjustment of a General Motors rear disc brake caliper.

Figure 103-24 Removing the piston from a typical General Motors rear disc brake caliper.
Figure 103-25 Installing the piston into a General Motors rear disc brake caliper.

Figure 103-26 A piston installation tool is often needed to complete the installation of the piston in a General Motors rear disc brake.

Figure 103-27 A spanner wrench (or needle-nose pliers) can be used to rotate the caliper piston clockwise, ensuring that the brake pads are kept in the center of the caliper bore and not wedged between brake pads. A notch on the piston must line up with a tab on the back of the brake pad to keep the piston from rotating when the parking brake is applied.
Figure 103-28 After removing the parking brake lever and thrust bearing, remove the antirotation pin.

Figure 103-29 Unscrew the thrust screw from the piston with an Allen (hex) wrench. After removing the thrust screw, push the piston out of the caliper bore.

Figure 103-30 To test the piston adjuster, thread the thrust screw into the piston, hold the piston and pull the thrust screw outward 1/4 in. (6 mm). The adjuster nut should not turn when the thrust screw is retracted. Replace the piston assembly if it is functioning improperly.
To adjust the parking brake cable on a Ford vehicle equipped with rear disc brakes, start by loosening the cable adjustment until the cables to the calipers are slack. Tighten until the caliper lever moves. Position a 1/4-in. drill bit or dowel into the caliper alignment hole. Adjustment is correct if the parking brake lever does not hit the 1/4-in. dowel.

**TECH TIP: The Parking Brake “Click” Test**

When diagnosing any brake problem, apply the parking brake and count the “clicks.” This method works for both hand- and foot-operated parking brakes. Most vehicle manufacturers specify a maximum of 10 clicks. If the parking brake travel exceeds this amount, the rear brakes may be worn or out of adjustment.

**CAUTION:** Do not adjust the parking brake cable until the rear brakes have been thoroughly inspected and adjusted. If the rear brake lining is usable, check for the proper operation of the self-adjustment mechanism. If the rear brakes are out of adjustment, the service brake pedal will also be low. This “click” test is a fast and easy way to determine if the problem is due to rear brakes.

After checking that the rear brakes are okay and properly adjusted, the parking brake cable can be adjusted. Always follow the manufacturer’s recommended procedure.
Figure 103-33  Many hand-operated parking brakes are adjusted inside the vehicle.

Figure 103-34  Always check that both brake shoes contact the anchor pin.

Figure 103-35  A 1/8-in. (3-mm) drill bit is placed through an access hole in the backing plate to check for clearance between the brake shoes. Adjust the parking brake cable until the drill bit can just fit between the shoe web and the parking brake lever.
Figure 103-36 Many parking brake cables can be removed easily from the backing plate using a 1/2-in. (13-mm) box-end wrench. The wrench fits over the retainer fingers on the end of the parking brake cable.

Figure 103-37 An electric parking brake button on the center console of a Jaguar.

TECH TIP: The Hose Clamp or Wrench Trick
It is often difficult to remove a parking brake cable from the backing plate due to the design of the retainer. The many fingers used to hold the cable to the backing plate can be squeezed all at once if a hose clamp is used to compress the fingers. A wrench as shown in FIGURE 103-36 can also be used.