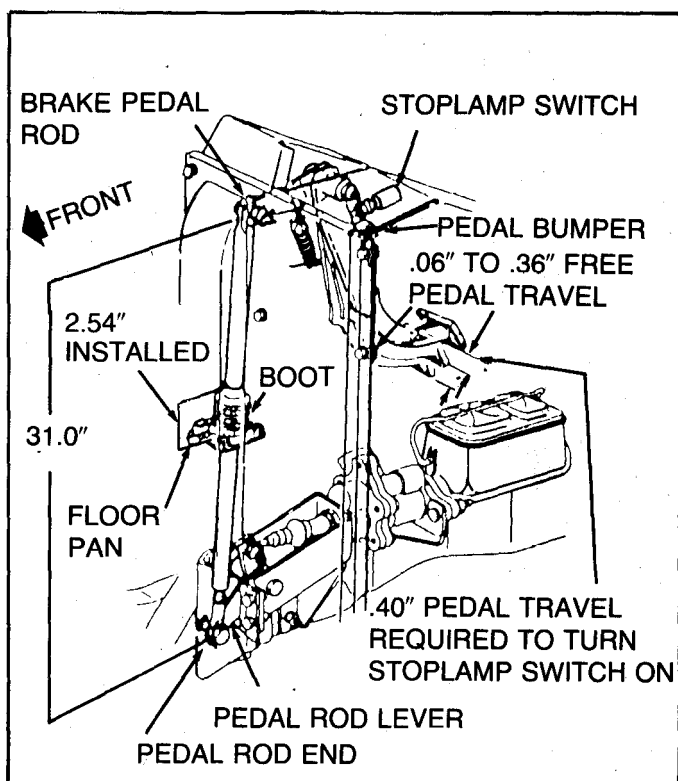


## SECTION 6 — BRAKES

3. Check the 31-inch rod that runs down the front of the chassis and connects the brake pedal to the Hydro-Boost for proper adjustment. (See Figure 6-8.) The rod can be adjusted (longer or shorter) using the screw adjustment located at the bottom of the rod. Block the wheels and hold the inside pedal in the "full-up" position. Check that there is free entry of the special bolt through the relaxed pedal rod lever connecting the linkage into the Hydro-Boost. Turn the adjustment screw to lengthen or shorten the rod as necessary.
4. Tighten the adjusting lock nut to 22-30 ft. lbs. then tighten the nut on the special bolt and install a new cotter pin.

**NOTE:** Newer model rods can not be adjusted.



**Figure 6-9 — Actuating Rod/Brake Pedal/Stoplight Adjustment**

### BLEEDING BRAKE HYDRAULIC SYSTEM

A bleeding operation is necessary to remove air whenever it is introduced into the hydraulic brake system.

It may be necessary to bleed the hydraulic system at all four wheel cylinders if air has been introduced through low fluid level or by disconnecting the brake pipes at the master cylinder. If a brake pipe is disconnected at any wheel cylinder, then that wheel cylinder only needs to be bled. If pipes are disconnected at any fitting located between the master cylinder and wheel cylinders, then all wheel cylinders served by the disconnected pipe must be bled.

**NOTE:** The following procedure is for manual bleeding of the brakes only. If possible, obtain approved commercial pressure-bleeding equipment or the GM Tools Vacuum Brake Bleeder. (See the GM Wheel Service System Brake Bleeder in Appendix 6-2 at the back of this section for further information regarding Brake Bleeder specifications, usage and ordering information.)

With power brakes, remove the vacuum reserve by applying the brakes several times with the engine off. Then, complete the following steps:

1. Fill the master cylinder reservoirs with brake fluid and keep at least one-half full of fluid during the bleeding operation. (See Figure 6-1.)
2. If the master cylinder is known or suspected to have air in the bore, then it must be bled (before bleeding any wheel cylinder or caliper) in the following manner:
  - a. Disconnect the forward (blind end) brake pipe connection at the master cylinder.
  - b. Allow brake fluid to fill the master cylinder bore until it begins to flow from the forward pipe connector port.
  - c. Connect the forward brake pipe to the master cylinder and tighten.
  - d. Depress the brake pedal slowly one time and hold. Loosen the forward brake pipe connection at the master cylinder to purge air from the bore. Tighten the connection and then release the brake pedal slowly. Wait 15 seconds. Repeat the sequence, including the 15-second wait, until all air is removed from the bore. Care must be taken to prevent brake fluid from contacting any painted surface.
  - e. After all air has been removed at the forward connection, bleed the master cylinder at the rear (cowl) connection in the same manner as the front, as in Step "d" above.
  - f. If it is known that the calipers and wheel cylinders do not contain any air, then it will not be necessary to bleed them.
3. Individual wheel cylinders or calipers are bled only after all air is removed from the master cylinder.
  - a. Place a proper size box-end wrench over the bleeder valve. Attach transparent tube over valve and allow tube to be hand submerged in brake fluid in a transparent container. Depress the brake pedal slowly one time and hold. Loosen the bleeder valve to purge the air from the cylinder. Tighten bleeder screw and slowly release pedal. Wait 15 seconds. Repeat the sequence, including the 15-second wait until all air is removed. It may be necessary to repeat the sequence ten or more times to remove all the air.

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4. If it is necessary to bleed all of the wheel cylinders and calipers, the following sequence should be followed:
  - 1) Right-rear wheel cylinder; 2) Left-rear wheel cylinder; 3) Right-front caliper; 4) Left-front caliper.
5. Check the brake pedal for "sponginess" and the brake warning light for indication of unbalanced pressure. Repeat entire bleeding procedure to correct either of these two conditions.
- c. Check the reservoir fluid level, filling it to the proper level if necessary, following operations 1 through 10. This step and step "d" are extremely important as low fluid level and/or air in the fluid are the most frequent causes of objectionable pump noises.
- d. Check for the presence of air in the fluid. Air will show up as a milky-looking fluid. If air is present, attempt to bleed the system as described in operations 1 through 10. If it becomes obvious that the pump will not bleed after a few trials, refer to the appropriate shop manual for more detailed test procedures.

### BLEEDING HYDRO-BOOST BRAKE SYSTEM

Whenever the booster is removed and reinstalled, the steering system should be bled as outlined below.

**NOTE:** Power steering fluid and brake fluid cannot be mixed. If brake seals contact steering fluid or steering seals contact brake fluid, seal damage will result.

1. Fill fluid reservoir to the proper level and let the fluid remain undisturbed for at least two minutes.
2. Start the engine and let it run momentarily.
3. Add fluid if necessary.
4. Repeat above procedure until the fluid level remains constant after running engine.
5. Raise front end of the vehicle so that the wheels are off the ground.
6. Turn the wheels (off ground) right and left, lightly contacting the wheel stops.
7. Add fluid if necessary.
8. Lower the vehicle.
9. Start engine and depress the brake pedal several times while rotating the steering wheel from stop to stop.
10. Turn engine off and then pump the brake pedal 4-5 times to deplete accumulator pressure.
11. Check the fluid level and refill as required.
12. If fluid is extremely foamy, allow vehicle to stand for a few minutes with the engine off and repeat above procedure.
  - a. Check belt tightness and check for a bent pulley. (Pulley should not wobble with engine running.)
  - b. Check to make sure hoses are not touching any other parts of the vehicle, particularly the sheet metal.

13. The presence of trapped air in the system will cause the fluid level in the pump to rise when the engine is turned off. Continue to bleed the system until this condition no longer occurs.

### POWER BRAKE UNITS

The hydraulic lines connecting the power steering pump, Hydro-Boost unit and steering gear, as well as the components themselves, should be checked regularly for signs of leaks, damage or deterioration on vehicles so equipped. For vehicles with vacuum boosters, inspect the vacuum hoses and booster chamber for damage or deterioration.

**NOTE:** Power steering fluid and brake fluid cannot be mixed. If brake seals contact steering fluid or steering seals contact brake fluid, seal damage will result.

Both the vacuum booster and Hydro-Boost should be serviced by a qualified repairman.

### PARKING BRAKE

Adjustment of the parking brake cable is necessary whenever holding ability is not adequate or whenever the center brake cables have been disconnected. An improperly adjusted parking brake cable may also cause the brakes to drag. On 16,000# GVW units, the transmission must be in neutral.

The service brakes must be properly adjusted as a base for parking brake adjustment; conversely, the parking brake must be properly adjusted for the service brake to function as intended.

### Inspection

If a complete release of the parking brake is not obtained, unless it is forcibly returned to its released position, or if application effort is high, check parking brake assembly for free operation. If operation is sticky or a bind is experienced, correct as follows:

1. Clean and lubricate brake cables and equalizer with Delco Brake Lube (or equivalent).

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2. Inspect brake assembly for straightness and alignment (replace if necessary).
3. Clean and lubricate parking brake assembly with Delco Brake Lube (or equivalent).
4. Check routing of cables for kinks or binding.
3. Loosen nut at intermediate cable equalizer and then adjust nut to give light drag at rear wheels. (See NOTE at the end of this procedure.)
4. Readjust parking brake lever knob to give a definite snap-over-center feel. Proper pull-over force is 90 pounds.

### Drum Balance

An imbalanced parking brake drum can cause vibrations. If a vibration occurs, perform the following to check for an imbalance problem with the parking brake drum:

1. Place the transmission into NEUTRAL and increase the engine speed to the approximate speed that the vibration is felt while driving the vehicle on the road.
2. If the vibration has disappeared, check the parking brake drum on the back of the transmission if so equipped.
3. Disconnect the propeller shaft at the back of the transmission and remove the drum.
4. Retest as in Step 1. If the vibration is gone, replace the drum. (See Figure 6-9.)

**NOTE:** If a strobe light wheel balancer is available, position the strobe pick-up against the transmission pan. Adapt the procedure listed in the Driveline Balance section of this manual to check for a balanced drum. Add weight under the retaining bolt of the parking brake drum as necessary.

### Cable Adjustment

FOOT PEDAL TYPE (G-P series) — Before adjusting parking brake, check service brake condition and adjustment.

1. Loosen the equalizer adjusting nut.
2. Apply parking brake four notches from fully released position. Only 1 notch on P series.
3. Tighten the equalizer nut until a moderate drag is felt when the rear wheels are rotated forward. (See NOTE at the end of this procedure.)
4. Fully release parking brake and rotate the rear wheels. No drag should be present.

ORSCHELN LEVER TYPE (P-SERIES) —

1. Turn adjusting knob on parking brake lever counter-clockwise to stop.
2. Apply parking

**NOTE:** This fastener is an important attaching part in that it could affect the performance of vital components and systems, and/or could result in major repair expense. It must be replaced with one having the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design.

### Propeller Shaft Drum-Type Brake Adjustment (Adjustment — Drum On)

Refer to Figure 6-9.

1. Using a jack, raise vehicle so that at least one rear wheel is off ground. Block wheels and release the hand brake.
2. Remove cotter pin and clevis pin connecting the pull rod and relay lever. This will assure freedom for full shoe release.

**NOTE:** It may be necessary to knock out lanced area in brake drum (or backing plate) with punch and hammer to gain entry to adjusting screw through brake drum. Be sure to remove any metal that has fallen inside the parking brake drum.

3. Rotate brake drum to bring one of the access holes into line with adjusting screw at bottom of shoes (manual transmission), or top of shoes (automatic transmission).
4. Expand shoes by rotating adjusting screws with a screwdriver inserted through hole in the drum. Move outer end of screwdriver away from the drive shaft. Continue adjustment until shoes are tight against drum and drum cannot be rotated by hand. Back off adjustment and check drum for free rotation.
5. Place parking brake lever in the fully released position. Take up slack in the brake linkage by pulling back on cable just enough to overcome spring tension. Adjust clevis of the pull rod or front cable to line up with hole in the relay levers.
  - a. Insert clevis pin and cotter pin, then tighten clevis locknut.
  - b. Install a new metal hole cover in drum to prevent contamination of the brake.
  - c. Lower rear wheels. Remove jack and wheel blocks. See Note under Cable Adjustment procedure in this section.