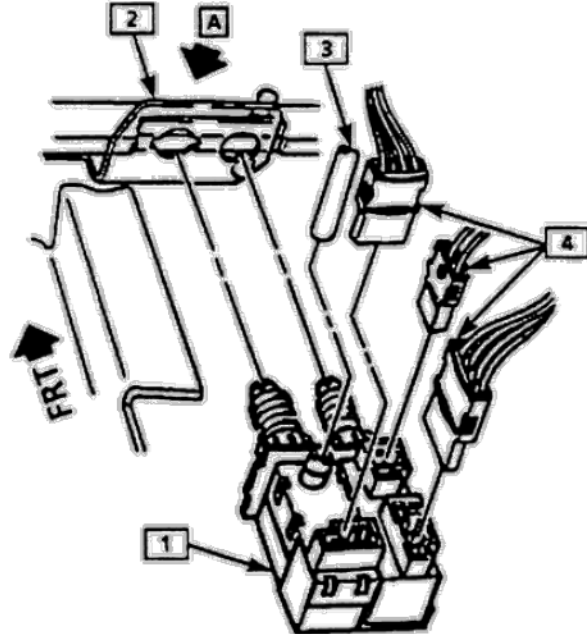


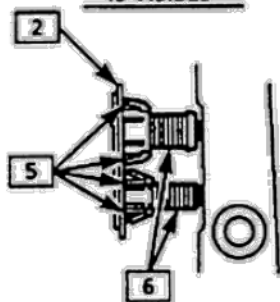


VIEW A

CHECKING ADJUSTMENT

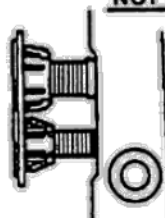
OKAY

**ONLY NOTCH
IS VISIBLE**

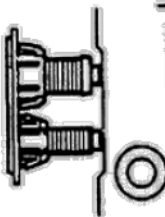


NOT OKAY

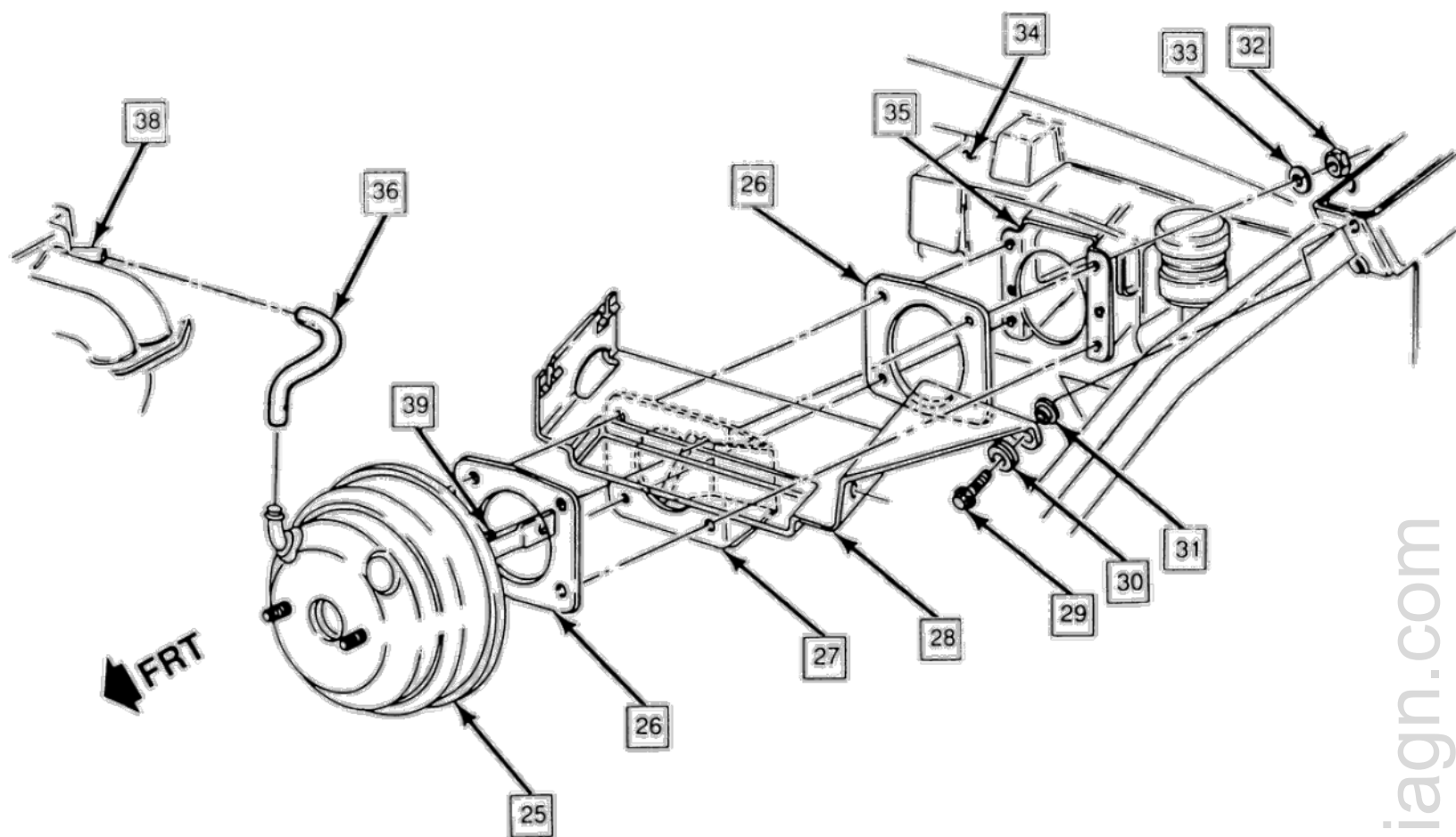
**NOTCH IS
NOT VISIBLE**



**PLUNGER
IS VISIBLE**



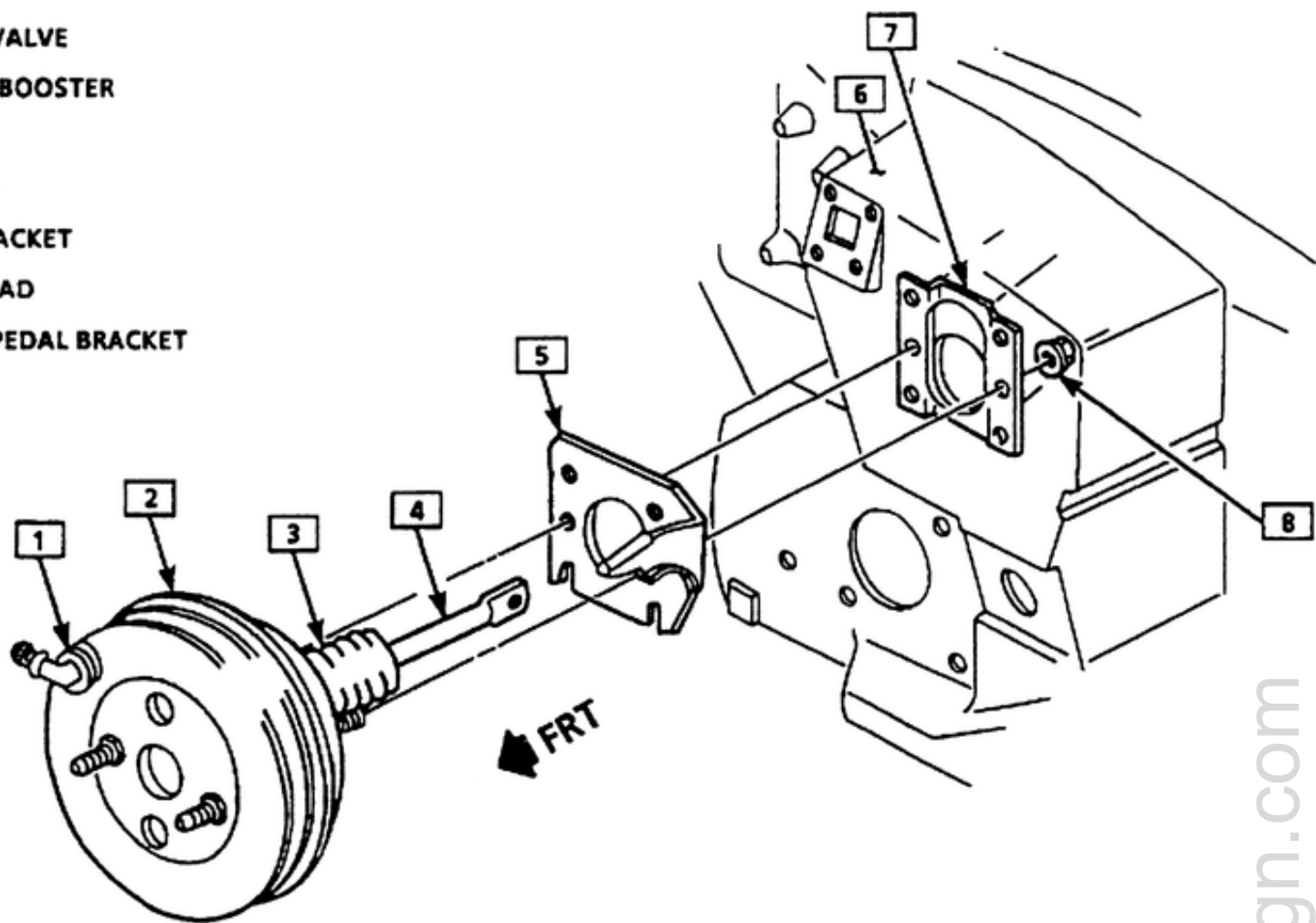
- 1** SWITCH
- 2** MOUNTING BRACKET
- 3** CRUISE VACUUM LINE
- 4** ELECTRICAL CONNECTORS
- 5** RETAINING TABS
- 6** SWITCH BARRELS

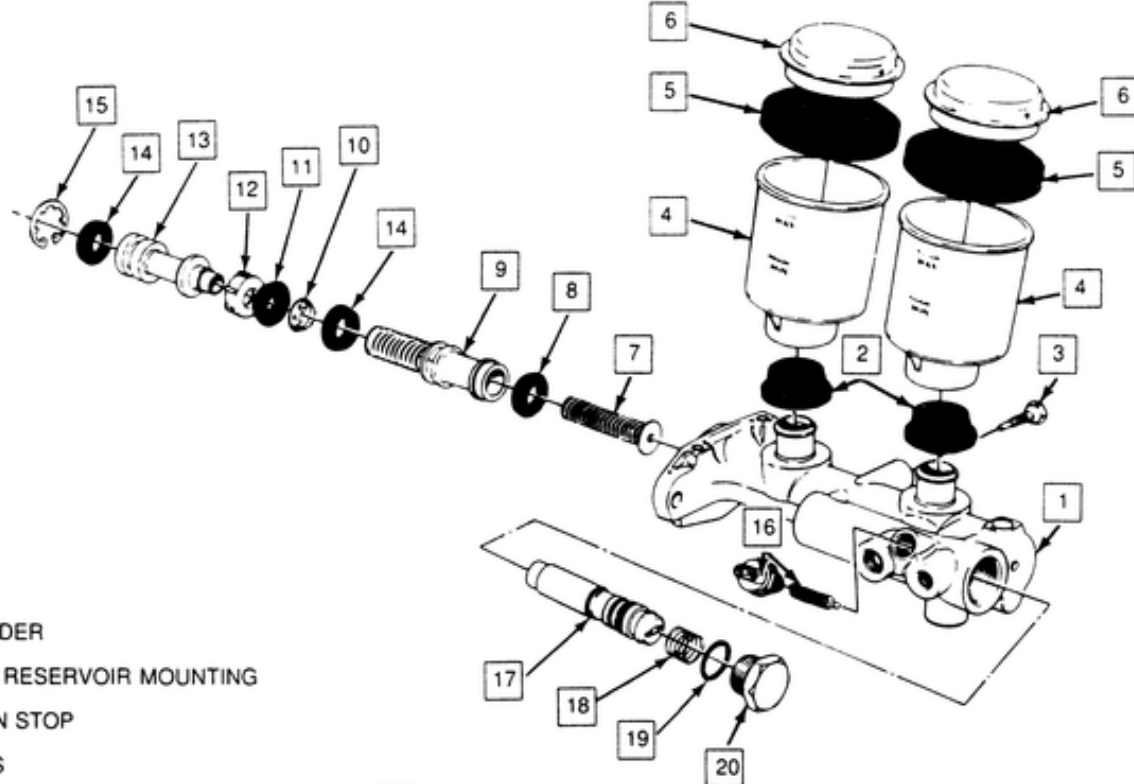


- 25 BOOSTER ASSEMBLY, POWER
- 26 SEALS, POWER BOOSTER
- 27 BRACKET, ECM SUPPORT
- 28 BRACKET, ECM HOUSING
- 29 BOLT
- 30 GROMMET
- 31 SPACER
- 32 NUT

- 33 WASHER
- 34 BULKHEAD
- 35 BRACKET, BRAKE PEDAL
- 36 HOSE, POWER BOOSTER VACUUM
- 38 PIPE, POWER BOOSTER VACUUM
- 39 STUD

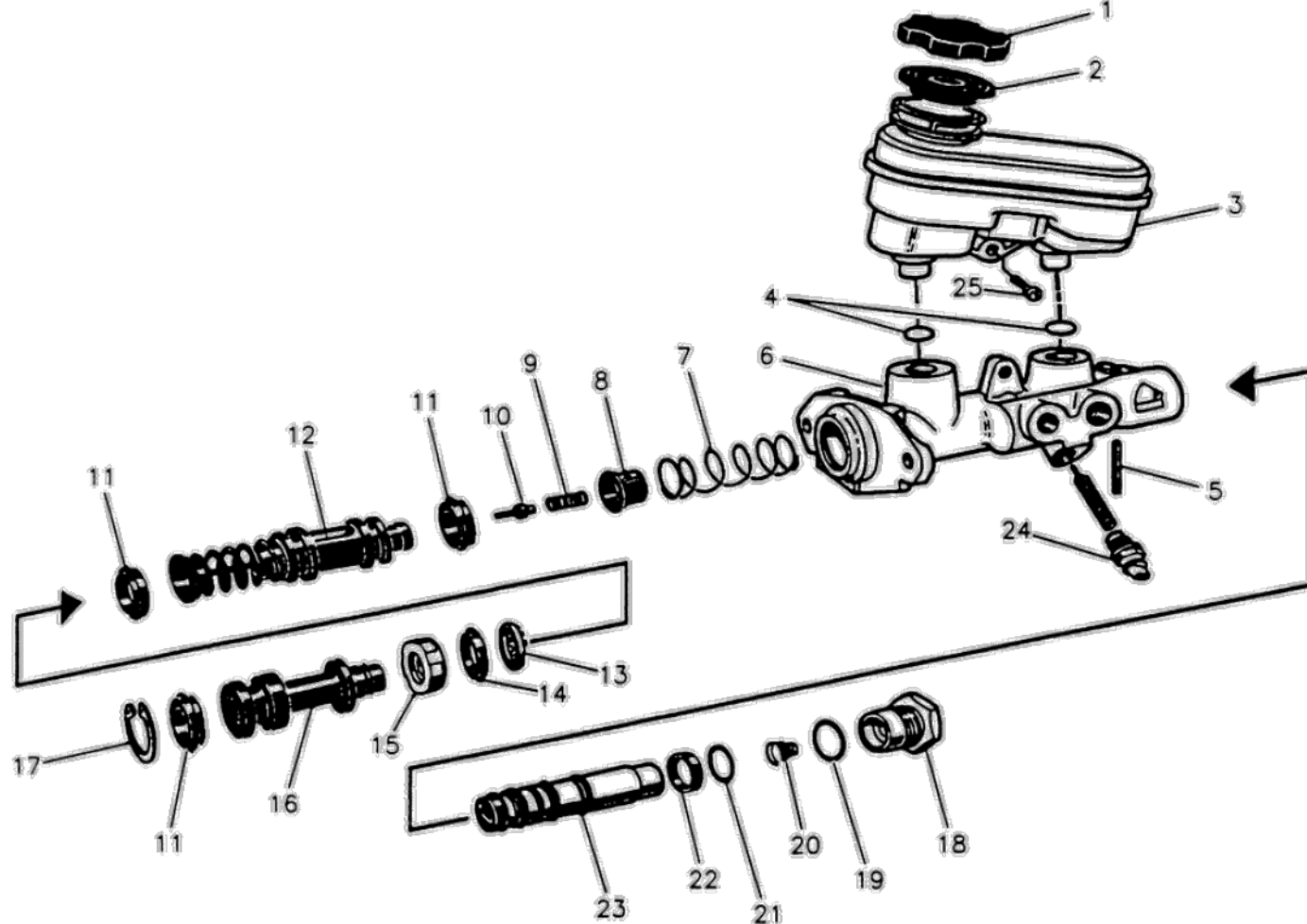
- 1 CHECK VALVE
- 2 POWER BOOSTER
- 3 BOOT
- 4 TIE ROD
- 5 ECM BRACKET
- 6 BULKHEAD
- 7 BRAKE PEDAL BRACKET
- 8 NUT





- 1 BODY, CYLINDER
- 2 GROMMETS, RESERVOIR MOUNTING
- 3 BOLT, PISTON STOP
- 4 RESERVOIRS
- 5 DIAPHRAGMS, RESERVOIR
- 6 CAPS, RESERVOIR DIAPHRAGM
- 7 VALVE, SECONDARY PISTON CENTER
- 8 SEAL, PRIMARY
- 9 PISTON ASSEMBLY, SECONDARY
- 10 RETAINER, SEAL
- 11 SEAL, PRIMARY
- 12 GUIDE, RECUPERATING

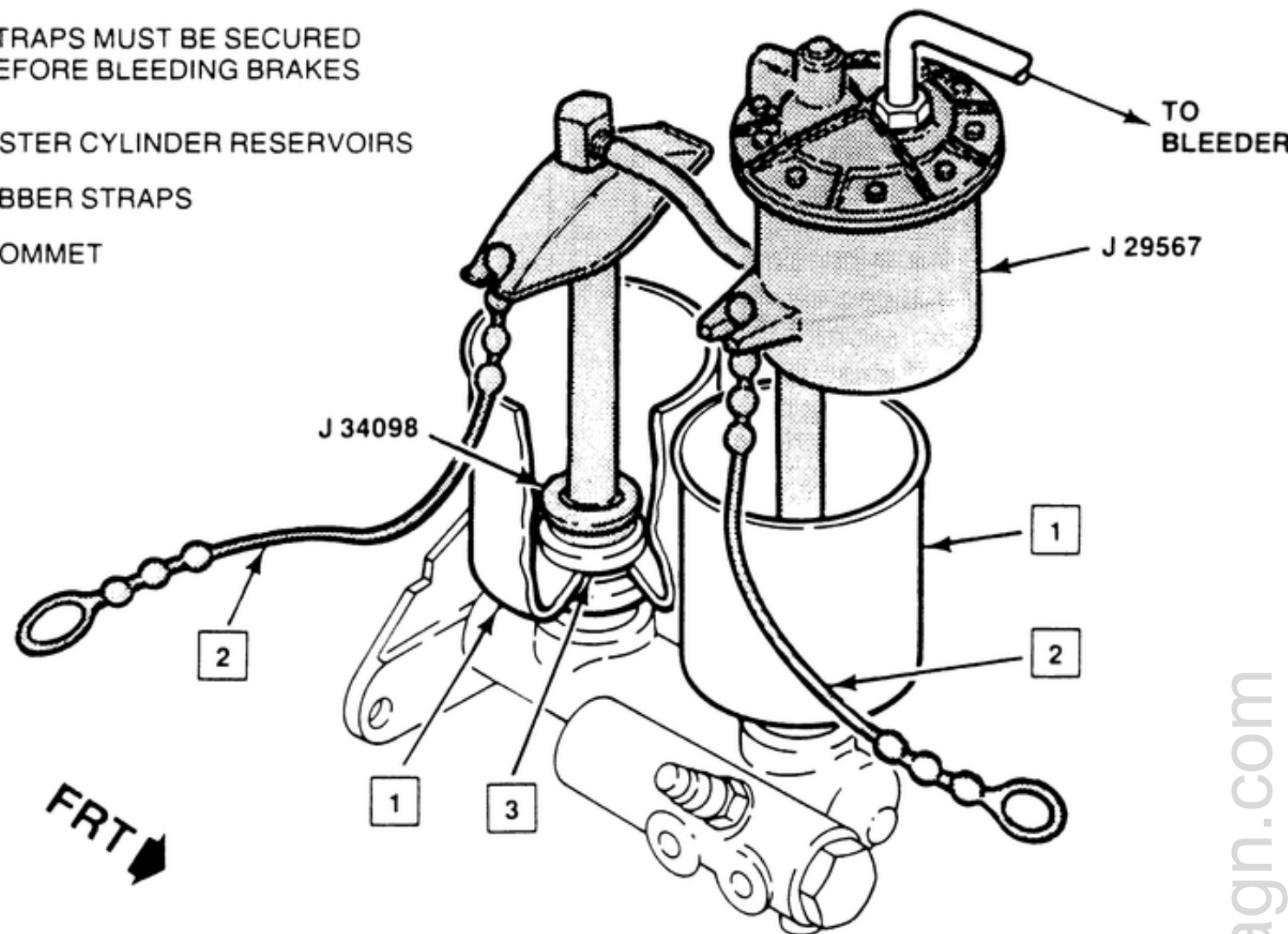
- 13 PISTON, PRIMARY
- 14 SEALS, SECONDARY
- 15 RING, PRIMARY PISTON RETAINING
- 16 SWITCH ASSEMBLY, WARNING
- 17 VALVE ASSEMBLY, PROPORTIONING
- 18 SPRING, PROPORTIONING VALVE GROUND
- 19 O-RING, PROPORTIONING VALVE END PLUG
- 20 PLUG, PROPORTIONING VALVE END



- | | | | |
|----|----------------------------|----|--|
| 1 | RESERVOIR CAP | 14 | RECUPERATING TYPE CUP SEAL |
| 2 | RESERVOIR CAP DIAPHRAGM | 15 | RECUPERATING GUIDE |
| 3 | RESERVOIR BODY | 16 | PRIMARY PISTON |
| 4 | RESERVOIR 'O' RING | 17 | RETAINING RING |
| 5 | SECONDARY PISTON STOP PIN | 18 | ENG PLUG |
| 6 | CYLINDER BODY | 19 | END PLUG 'O' RING |
| 7 | SECONDARY RETURN SPRING | 20 | ELECTRICAL BIAS SPRING |
| 8 | SECONDARY SPRING RETAINER | 21 | PROPORTIONING VALVE O-RING |
| 9 | CENTER VALVE SPRING | 22 | PROPORTIONING VALVE SPACER |
| 10 | CENTER VALVE PLUNGER | 23 | PROPORTIONING VALVE/PRESSURE DIFFERENTIAL ASSEMBLY |
| 11 | 'L' TYPE CUP SEAL | 24 | PRESSURE DIFFERENTIAL WARNING SWITCH ASSEMBLY |
| 12 | SECONDARY PISTON ASSEMBLY | 25 | RESERVOIR RETAINER SCREW |
| 13 | PRIMARY CUP RETAINING RING | | |

NOTE: STRAPS MUST BE SECURED
BEFORE BLEEDING BRAKES

- 1 MASTER CYLINDER RESERVOIRS
- 2 RUBBER STRAPS
- 3 GROMMET



1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

Hydraulic systems are used to actuate the brakes of all modern automobiles. The system transports the power required to force the frictional surfaces of the braking system together from the pedal to the individual brake units at each wheel. A hydraulic system is used for two reasons.

First, fluid under pressure can be carried to all parts of an automobile by small pipes and flexible hoses without taking up a significant amount of room or posing routing problems.

Second, a great mechanical advantage can be given to the brake pedal end of the system, and the foot pressure required to actuate the brakes can be reduced by making the surface area of the master cylinder pistons smaller than that of any of the pistons in the wheel cylinders or calipers.

The master cylinder consists of a fluid reservoir along with a double cylinder and piston assembly. Double type master cylinders are designed to separate the front and rear braking systems hydraulically in case of a leak. The master cylinder converts mechanical motion from the pedal into hydraulic pressure within the lines. This pressure is translated back into mechanical motion at the wheels by the caliper.

Steel lines carry the brake fluid to a point on the vehicle's frame near each of the vehicle's wheels. The fluid is then carried to the calipers by flexible tubes in order to allow for suspension and steering movements.

In disc brake systems, the cylinders are part of the calipers. At least one cylinder in each caliper is used to force the brake pads against the disc.

All pistons employ some type of seal, usually made of rubber, to minimize fluid leakage. A rubber dust boot seals the outer end of the cylinder against dust and dirt. The boot fits around the outer end of the piston on disc brake calipers.

The hydraulic system operates as follows: When at rest, the entire system, from the piston(s) in the master cylinder to those in the calipers, is full of brake fluid. Upon application of the brake pedal, fluid trapped in front of the master cylinder piston(s) is forced through the lines to the cylinders. Here, it forces the pistons inward toward the disc, in the case of disc brakes.

Upon release of the brake pedal, a spring located inside the master cylinder immediately returns the master cylinder pistons to the normal position. The pistons contain check valves and the master cylinder has compensating ports drilled in it. These are uncovered as the pistons reach their normal position. The piston check valves allow fluid to flow toward the calipers as the pistons withdraw. Then, as the return springs force the brake pads or shoes into the released position, the excess fluid reservoir through the compensating ports. It is during the time the pedal is in the released position that any fluid that has leaked out of the system will be replaced through the compensating ports.

Dual circuit master cylinders employ two pistons, located one behind the other, in the same cylinder. The primary piston is actuated directly by mechanical linkage from the brake pedal through the power booster. The secondary piston is actuated by fluid trapped between the two pistons. If a leak develops in front of the secondary piston, it moves forward until it bottoms against the front of the master cylinder, and the fluid trapped between the pistons will operate the rear brakes. If the rear brakes develop a leak, the primary piston will move forward until direct contact with the secondary piston takes place, and it will force the secondary piston to actuate the front brakes. In either case, the brake pedal moves farther when the brakes are applied, and less braking power is available.

All dual circuit systems use a switch to warn the driver when only half of the brake system is operational. This switch is usually located in a valve body which is mounted on the firewall or the frame below the master cylinder. A hydraulic piston receives pressure from both circuits, each circuit's pressure being applied to one end of the piston. When the pressures are in balance, the piston remains stationary. When one circuit has a leak, however, the greater pressure in that circuit during application of the brakes will push the piston to one side, closing the switch and activating the brake warning light.

In disc brake systems, this valve body also contains a metering valve and, in some cases, a proportioning valve. The metering valve keeps pressure from traveling to the disc brakes on the front wheels until the brake pads rear wheels have contacted the rotors, ensuring that the front brakes will never be used alone. The proportioning valve controls the pressure to the rear brakes to lessen the chance of rear wheel lock-up during very hard braking.

Warning lights may be tested by depressing the brake pedal and holding it while opening one of the bleeder screws. If this does not cause the light to go on, substitute a new lamp, make continuity checks, and, finally, replace the switch as necessary.

The hydraulic system may be checked for leaks by applying pressure to the pedal gradually and steadily. If the pedal sinks very slowly to the floor, the system has a leak. This is not to be confused with a springy or spongy feel due to the compression of air within the lines. If the system leaks, there will be a gradual change in the position of the pedal with a constant pressure.

Check for leaks along all lines and at wheel cylinders. If no external leaks are apparent, the problem is inside the master cylinder.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

Instead of the traditional expanding brakes that press outward against a circular drum, disc brake systems utilize a disc (rotor) with brake pads positioned on either side of it. An easily-seen analogy is the hand brake arrangement on a bicycle. The pads squeeze onto the rim of the bike wheel, slowing its motion. Automobile disc brakes use the identical principle but apply the braking effort to a separate disc instead of the wheel.

The disc (rotor) is a casting, usually equipped with cooling fins between the two braking surfaces. This enables air to circulate between the braking surfaces making them less sensitive to heat buildup and more resistant to fade. Dirt and water do not drastically affect braking action since contaminants are thrown off by the centrifugal action of the rotor or scraped off by the pads. Also, the equal clamping action of the two brake pads tends to ensure uniform, straight line stops. Disc brakes are inherently self-adjusting. There are three general types of disc brake:

1. A fixed caliper.
2. A floating caliper.
3. A sliding caliper.

The fixed caliper design uses two pistons mounted on either side of the rotor (in each side of the caliper). The caliper is mounted rigidly and does not move.

The sliding and floating designs are quite similar. In fact, these two types are often lumped together. In both designs, the pad on the inside of the rotor is moved into contact with the rotor by hydraulic force. The caliper, which is not held in a fixed position, moves slightly, bringing the outside pad into contact with the rotor. There are various methods of attaching floating calipers. Some pivot at the bottom or top, and some slide on mounting bolts. In any event, the end result is the same.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7
Fuel Delivery: FI | Fuel: GAS

Metal lines and rubber brake hoses should be checked frequently for leaks and external damage. Metal lines are particularly prone to crushing and kinking under the vehicle. Any such deformation can restrict the proper flow of fluid and therefore impair braking at the wheels. Rubber hoses should be checked for cracking or scraping; such damage can create a weak spot in the hose and it could fail under pressure.

Any time the lines are removed or disconnected, extreme cleanliness must be observed. Clean all joints and connections before disassembly (use a stiff bristle brush and clean brake fluid); be sure to plug the lines and ports as soon as they are opened. New lines and hoses should be flushed clean with brake fluid before installation to remove any contamination.

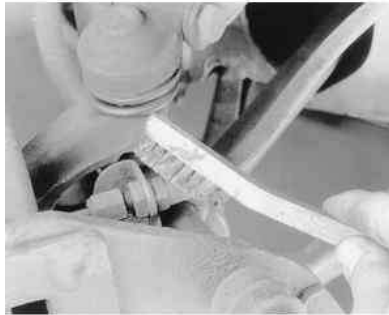
1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Disconnect the negative battery cable.
2. Raise and safely support the vehicle on jackstands.
3. Remove any wheel and tire assemblies necessary for access to the particular line you are removing.
4. Thoroughly clean the surrounding area at the joints to be disconnected.

Fig. 1: Use a brush to clean the fittings of any debris



5. Place a suitable catch pan under the joint to be disconnected.
6. Using two wrenches (one to hold the joint and one to turn the fitting), disconnect the hose or line to be replaced.

Fig. 2: Use two wrenches to loosen the fitting. If available, use flare nut type wrenches

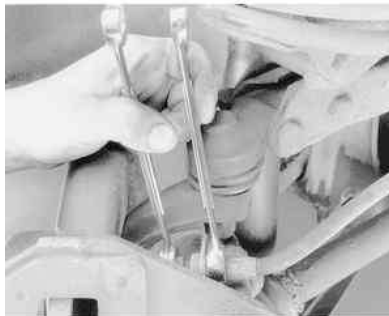


Fig. 3: When possible, use a flare nut wrench to loosen brake lines



7. Disconnect the other end of the line or hose, moving the drain pan if necessary. Always use a back-up wrench to avoid damaging the fitting.

Fig. 4: Loosen the bolt securing the brake line to the caliper

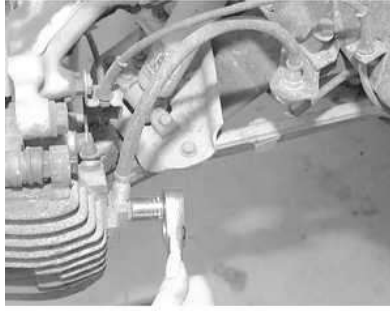


Fig. 5: Remove the bolt (1), brake line (2) and washer (3) from the caliper

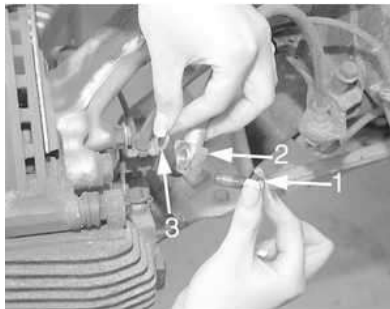
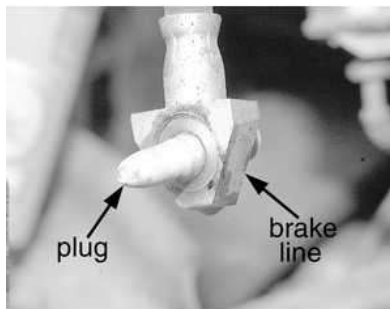


Fig. 6: You should always plug open brake lines to avoid getting contaminants in the brake system



8. Disconnect any retaining clips or brackets holding the line and remove the line from the vehicle.

Fig. 7: Remove any routing clips retaining the brake line that is being removed



NOTE: If the brake system is to remain open for more time than it takes to swap lines, tape or plug each remaining clip and port to keep contaminants out and fluid in.

Fig. 8: Any gaskets/crush washers should be replaced with new ones during installation



Fig. 9: Tape or plug the line to prevent contamination



To install:

9. Install the new line or hose, starting with the end farthest from the master cylinder. Connect the other end, then confirm that both fittings are correctly threaded and turn smoothly using finger pressure. Make sure the new line will not rub against any other part. Brake lines must be at least 1/2 in. (13mm) from the steering column and other moving parts. Any protective shielding or insulators must be reinstalled in the original location.

WARNING

Make sure the hose is NOT kinked or touching any part of the frame or suspension after installation. These conditions may cause the hose to fail prematurely.

10. Using two wrenches as before, tighten each fitting.
11. Install any retaining clips or brackets on the lines.
12. If removed, install the wheel and tire assemblies, then carefully lower the vehicle to the ground.
13. Refill the brake master cylinder reservoir with clean, fresh brake fluid, meeting DOT 3 specifications. Properly bleed the brake system.
14. Connect the negative battery cable.

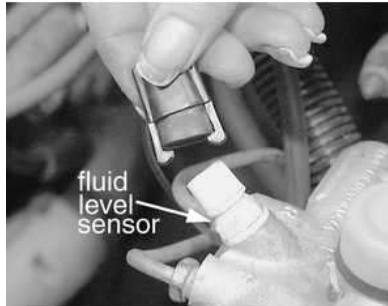
1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Disconnect the negative battery cable.
2. Unplug the electrical connector from the warning switch and, if equipped, the fluid level warning switch assemblies.

Fig. 1: Unplug the electrical connector from the fluid level sensor



3. Disconnect the hydraulic brake lines at the master cylinder. Plug the openings to prevent fluid contamination or loss.

Fig. 2: With a rag underneath to soak up any drips, use a flare nut wrench to loosen the brake lines

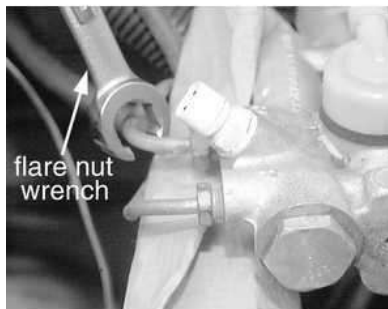


Fig. 3: Pull the brake lines from the side of the master cylinder, then plug the holes to avoid contaminating the system



4. If equipped, disconnect the master cylinder prime pipe from the reservoir.
5. Remove the retaining nuts holding the cylinder to the brake booster assembly.

Fig. 4: The brake master cylinder is secured to the power booster with 2 retaining nuts

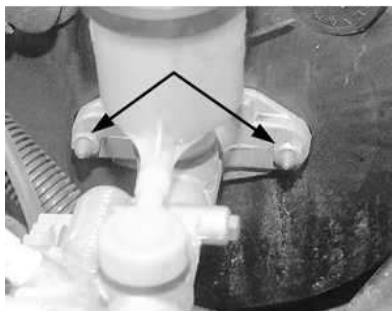


Fig. 5: Unfasten the retaining nuts, then pull the master cylinder off the power booster studs



6. If necessary for removal, reposition the battery cable and cruise control cable.
7. Remove the master cylinder assembly from the brake booster.

Fig. 6: The master cylinder on 1984–91 vehicles has 2 fluid reservoirs . . .

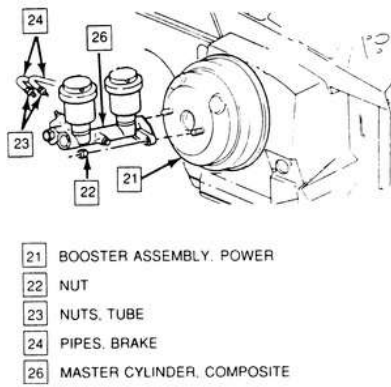
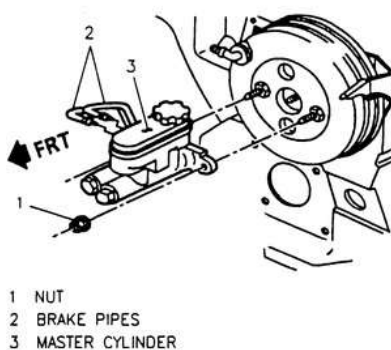


Fig. 7: . . . while the master cylinder on 1992–96 vehicles has a single reservoir



To install:

8. Position the master cylinder assembly to the power booster.
9. If removed, clip the battery and cruise control cables into position.
10. Install the master cylinder retaining nuts and tighten to 15–25 ft. lbs. (20–34 Nm) for 1984–87 vehicles or to 13 ft. lbs. (18 Nm) for 1988–96 vehicles.

11. Remove the plugs, then connect the hydraulic brake lines to the master cylinder and tighten the fittings to 13 ft. lbs. (18 Nm).
12. If equipped, connect the master cylinder prime pipe.
13. Engage the electrical connections to the warning switch assemblies.

WARNING

Clean, high quality brake fluid is essential to the safe and proper operation of the brake system. You should always buy the highest quality brake fluid that is available. If the brake fluid becomes contaminated, drain and flush the system, then refill the master cylinder with new fluid. Never reuse any brake fluid. Any brake fluid that is removed from the system should be discarded.

14. Fill the master cylinder and properly bleed the hydraulic brake system.
15. Connect the negative battery cable.

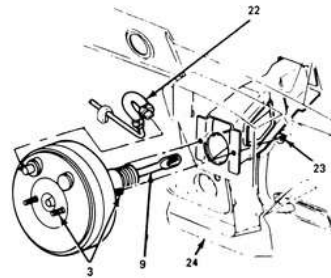
1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7
Fuel Delivery: FI | Fuel: GAS

1984-89 Vehicles

1. Unbolt the master cylinder from the power booster and position it aside. You do not have to disconnect the fluid lines, unless necessary for access.
2. Disconnect the vacuum hose from the check valve.
3. Remove the pushrod end of the valve assembly from the brake pedal by removing the retaining clip.
4. Unfasten the nuts from the tie rods.
5. Remove the power booster assembly from the cowl.

Fig. 1: Exploded view of power booster assembly — 1984-89 vehicles



- 3. TIE RODS
- 9. VALVE ASSEMBLY
- 22. VACUUM HOSE
- 23. NUT
- 24. COWL

To install:

6. Position the power booster assembly to the cowl.
7. Install the retaining nuts on the tie rods and tighten to 15 ft. lbs. (20 Nm).
8. Connect the pushrod end of the valve assembly to the brake pedal and install the retaining clip.
9. Attach the vacuum hose to the vacuum check valve.
10. Install the master cylinder to the power booster and tighten the retaining nuts.
11. If the brake lines were disconnected, bleed the brake system as outlined later in this section.

1990-96 Vehicles

1. Disconnect the negative battery cable.
2. Remove the ECM, then remove the ECM housing bracket attaching bolt.
3. Remove the cruise control cable from the cruise control servo and the servo mounting bracket.
4. Disengage the pressure differential sensor electrical connector and the vacuum hose.
5. Disengage the master cylinder warning switch electrical connector, then remove the nuts attaching the master cylinder to the power booster assembly.
6. Reposition the master cylinder assembly, cruise control cable and the battery cable aside. Be careful not to damage the hydraulic lines.
7. Remove the power booster vacuum check valve from the power booster assembly.
8. Remove the instrument panel left sound insulator.
9. Remove the input pushrod assembly retaining ring and washer from the brake pedal.
10. For the VIN P engine, remove the nuts and washers from the tie rods.
11. Remove the power booster assembly attaching nuts and washers, then remove the power booster with seals and the ECM bracket attached, while disengaging the input pushrod assembly.

Fig. 2: Exploded view of the brake power booster — 1990 vehicle shown

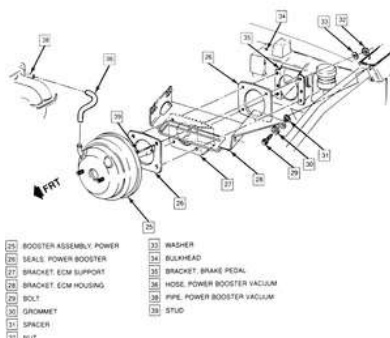
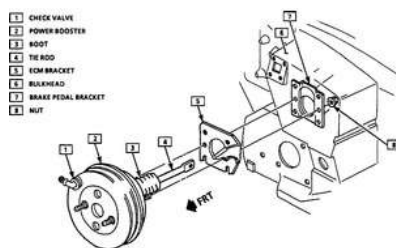


Fig. 3: Power booster assembly mounting — 1996 vehicle shown



To install:

12. Install the seals, ECM bracket and power booster assembly to the brake pedal bracket. Have an assistant engage the pushrod assembly onto the brake pedal while installing the booster.
13. Install the booster assembly retaining nuts and tighten to 15 ft. lbs. (21 Nm).
14. Install the washer and retaining clip to the brake pedal, then install the left sound insulator.
15. Connect the vacuum check valve to the power booster assembly.
16. Position the master cylinder, cruise control cable bracket and the battery cable clip, then install the retaining nuts and tighten to 13 ft. lbs. (18 Nm).
17. Engage the master cylinder warning switch electrical connector.
18. Engage the pressure differential sensor electrical connection and vacuum hose.
19. Connect the cruise control cable to the servo and the mounting bracket.
20. Install the ECM housing bracket bolt and tighten to 18 ft. lbs. (25 Nm).
21. Install the ECM.
22. Connect the negative battery cable.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Disconnect the negative battery cable.
2. Remove the master cylinder assembly from the vehicle.
3. Remove the warning switch assembly from the master cylinder.
4. Remove the end plug and O-ring from the master cylinder.
5. For 1984–91 vehicles, remove the proportioning valve with the ground spring attached.
6. For 1992–96 vehicles, remove the electrical bias spring, then remove the proportioning valve assembly along with the O-ring and spacer.

NOTE: If necessary, gently tap the cylinder body against a piece of wood to dislodge the proportioning valve assembly.

7. Do not disassemble the proportioning valve, it is serviced only as an assembly. Also, do not clean the proportioning valve with any solution as the internal components are lubricated with a special grease.

Fig. 1: Exploded view of the master cylinder components, including the proportioning valve — 1984–91 vehicles

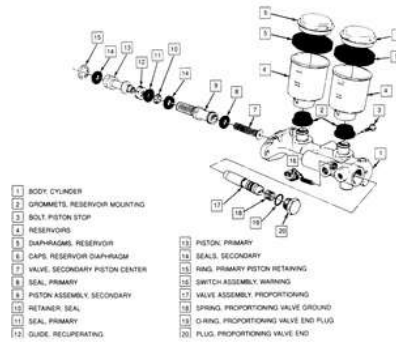
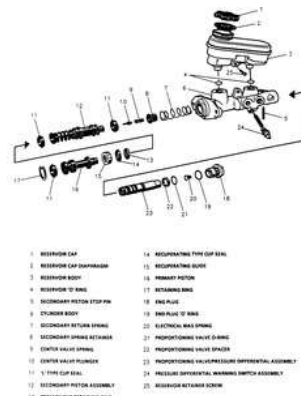


Fig. 2: Location of the proportioning valve and related components — 1992–96 vehicles



To install:

8. Lubricate the valve and cylinder bore with clean brake fluid, then install the valve into the master cylinder and bottom it into the bore. On 1984–91 vehicles, the proportioning valve should be installed with the open end first. On 1992–96 vehicles, the valve should be installed with the capped end first.
9. Install a new O-ring over the end plug, then install the spring followed by the end plug.
10. Tighten the proportioning valve end plug to 18 ft. lbs. (25 Nm).
11. Install the warning switch assembly, hand-tighten only.
12. Install the master cylinder assembly to the vehicle.
13. Connect the negative battery cable and properly bleed the hydraulic brake system.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

When any part of the hydraulic system has been disconnected for repair or replacement, air may get into the lines and cause spongy pedal action (because air can be compressed and brake fluid cannot). To correct this condition, it is necessary to bleed the hydraulic system so to be sure all air is purged. If air is introduced into the system at the master cylinder, it may be necessary to bleed the entire system. If the disconnection of a fitting or pipe is the cause for air presence in the system, then only the caliper(s) served by that component need to be bled. Do not move the vehicle until a firm brake pedal is obtained. Air in the system can cause the loss of brake operation.

When bleeding the brake system, bleed one brake cylinder at a time, observing the sequence given in the following procedures. ALWAYS Keep the master cylinder reservoir filled with brake fluid during the bleeding operation. Never use brake fluid that has been drained from the hydraulic system, no matter how clean it is.

WARNING

Clean, high quality brake fluid is essential to the safe and proper operation of the brake system. You should always buy the highest quality brake fluid that is available. If the brake fluid becomes contaminated, drain and flush the system, then refill the master cylinder with new fluid. Never reuse any brake fluid. Any brake fluid that is removed from the system should be discarded.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

[1984-87 Vehicles](#)

1. Fill the master cylinder with the proper type of brake fluid and keep at least one half full during the bleeding procedure.
2. For 1984-86 vehicles, bleed the brakes in the following sequence: left rear, right rear, left front, right front.
3. For 1987 vehicles, bleed the brakes in the following sequence: right front, right rear, left rear, left front.
4. With the proper sized box wrench over the bleeder valve, attach a bleeder tube to the valve and allow the tube to hang submerged in brake fluid in a clear glass jar.

Fig. 1: Location of the rear brake bleeder valve

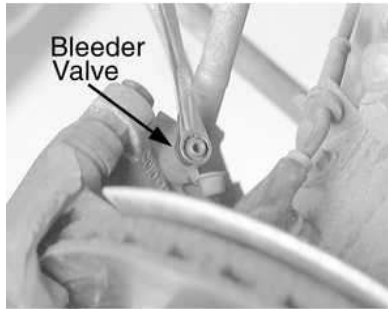


Fig. 2: With a hose over the end of the bleeder valve, and the other end submerged in clean brake fluid, open the valve to bleed the system



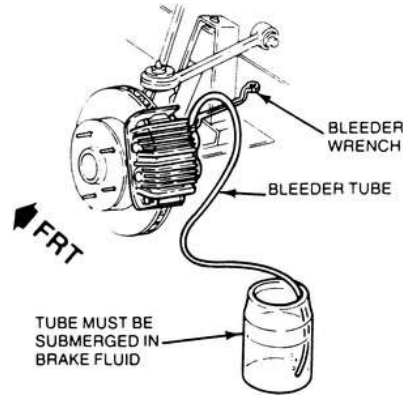
5. Open the bleeder valve and have an assistant fully depress the brake pedal.
6. Close the bleeder valve and release the brake pedal.
7. Repeat the 2 previous steps until all air is evacuated. Check and refill the master cylinder reservoir as necessary to prevent air from being drawn through the master cylinder.
8. Repeat the bleeding procedure at all wheels if the entire system is to be bled.
9. Check the brake pedal for sponginess and, if any is found, repeat the entire bleeding procedure until a firm pedal is achieved.

[1988-96 Vehicles](#)

1. Fill the master cylinder reservoir with brake fluid and keep it at least $\frac{1}{2}$ full of fluid at all times during the bleeding operation.
2. Deplete the brake vacuum reserve by applying and releasing the brakes several times while the engine is **OFF**.
3. On 1992-94 vehicles and 1995 vehicles equipped with the VIN J engine, if the entire system must be bled, the master cylinder prime pipe must first be bled at the hydraulic modulator located in the left rear storage compartment.
 - A. Open the left rear storage compartment, then remove the sound insulator pad.
 - B. Remove the cap from the modulator bleed screw, then position a box wrench and a short piece of clear tube over the screw.
 - C. Position a container and rags to protect the vehicle interior from the brake fluid. Open the bleed screw and allow fluid to flow until all air is removed.
 - D. Tighten the bleed screw to 106 inch lbs. (12 Nm) and remove the tubing. Wipe the screw off and make sure it has properly sealed.
 - E. Install the sound insulator pad, making sure it covers the entire modulator valve or excessive noise may be heard when the system is operating. Close the rear compartment.
4. If the master cylinder is known or suspected to have air in the bore, bleed the unit before bleeding the calipers, in the following manner:
 - A. Disconnect the forward (blind end) brake line connection at the master cylinder.
 - B. Allow brake fluid to fill the master cylinder piston bore until it begins to flow from the forward pipe connector port at the master cylinder.
 - C. Connect the forward brake line to the master cylinder and tighten.
 - D. Have an assistant depress the brake pedal slowly 1 time and hold. Loosen the forward brake line connection at the master cylinder to purge air from the bore. Tighten the connection to 13 ft. lbs. (18 Nm), and have the assistant release the pedal slowly. Wait 15 seconds and repeat the sequence, including the 15 second pause, until all air is removed from the bore. Make sure brake fluid does not contact any painted surface.

- E. Repeat the procedure at the rear master cylinder brake line connection.
- F. If it is known that the calipers do not contain any air, it will not be necessary to bleed them.
- 5. If it is necessary to bleed all of the calipers, follow the proper sequence:
 - A. 1988–91 vehicles: right front, right rear, left rear, left front.
 - B. 1992–96 vehicles: right rear, left rear, right front, left front.
- 6. After all air is removed from the master cylinder, bleed the individual calipers as follows:
 - A. Place a suitable sized box wrench over the bleeder valve.
 - B. Attach a clear tube over the bleeder valve and allow the tube to hang, submerged in a clear container partially filled with brake fluid.

Fig. 3: Proper set-up for bleeding the individual calipers



- C. Have an assistant depress the brake pedal slowly 1 time and hold. Loosen the bleeder valve to purge the air from the cylinder. Tighten the bleeder screw to 80 inch lbs. (9 Nm), and have the assistant slowly release the pedal. Wait 15 seconds and repeat the sequence, including the 15 second pause, until all air is removed.
 - D. It may be necessary to repeat the sequence 10 or more times to remove all of the air.
- NOTE: Rapid pumping of the brake pedal pushes the master cylinder secondary piston down the bore in a way that makes it difficult to bleed the system.**
- 7. Check the brake pedal for sponginess and the brake warning light for an indication of unbalanced pressure. Repeat the bleeding procedure to correct either of these conditions.
 - 8. On 1995–96 vehicles, if the proper pedal height and feel is not achieved after the bleeding is completed, you must perform the Auto Bleed procedure, located under the ABS section of this manual. This procedure requires the use of a Tech 1® , or equivalent scan tool.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

The pressure bleeding equipment you use must be of the diaphragm type, which means it must have a rubber diaphragm between the air supply and the brake fluid to prevent air, moisture, oil and other contaminants from entering the hydraulic system. Make sure you are using the proper master cylinder bleeder adapters to avoid damaging master cylinder reservoirs.

1984–87 Vehicles

1. Install the proper bleeding adapter(s) to the master cylinder reservoirs, Tool J-35690, or equivalent.
2. Make sure the pressure tank is at least $\frac{1}{3}$ full of the proper type of brake fluid. The bleeder ball must be re-bled each time fluid is added.
3. Charge the bleeder ball to between 20–25 psi (140–175 kPa).
4. When you are ready to start the bleeding procedure, connect the hose to the master cylinder bleeder adapter, and open the tank valve.
5. For 1984–86 vehicles, bleed the brakes in the following sequence: left rear, right rear, left front, right front.
6. For 1987 vehicles, bleed the brakes in the following sequence: right front, right rear, left rear, left front.

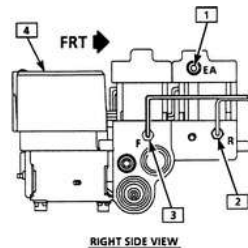
NOTE: Have an assistant stroke the brake pedal while pressure bleeding.

7. With the proper size wrench over the bleeder valve, attach the bleeder tube. The discharge end must hang submerged in a clean container partially filled with brake fluid.
8. Open the bleeder valve at least $\frac{3}{4}$ turn and allow the flow to continue until no air can be seen in the fluid.
9. Close the bleeder valve, making sure it seals.
10. Repeat the 3 previous steps for the remaining bleeder valves.
11. Check the brake pedal for sponginess and, if any is found, repeat the entire bleeding procedure until a firm pedal is achieved.
12. Properly dispose of all of the brake fluid that was removed from the system.
13. Disconnect the bleeder equipment from the brake bleeder adapter. Remove the adapter, then if any fluid was spilled, make sure to wipe all areas so they are clean and dry.
14. Fill the master cylinder reservoirs to the proper level, then install the master cylinder diaphragm and cover.

1988–96 Vehicles

1. On 1992–94 vehicles and 1995 vehicles equipped with the VIN J engine, if the entire system must be bled, the master cylinder prime pipe must first be bled at the hydraulic modulator located in the left rear storage compartment.
 - A. Fill the master cylinder to the proper level.
 - B. Open the left rear storage compartment, then remove the sound insulator pad.
 - C. Remove the cap from the modulator bleed screw, then position a box wrench and a short piece of clear tube over the screw.
 - D. Position a container and rags to protect the vehicle interior from the brake fluid.
 - E. Remove the master cylinder cap and install a suitable compact pressure bleeding adapter, such as tool J 35589, or equivalent.

Fig. 1: Location of the prime pipe bleed screw — 1995 VIN J engine shown



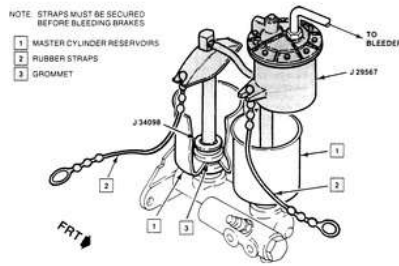
- | | |
|---|----------------------------------|
| 1 | PRIME PIPE BLEED SCREW |
| 2 | MASTER CYLINDER REAR BRAKE PIPE |
| 3 | MASTER CYLINDER FRONT BRAKE PIPE |
| 4 | MODULATOR VALVE |

- F. Charge the bleeder to 20–25 psi (140–172 kPa).
- G. Connect a hose to the adapter.
- H. Open the valve on the brake bleeder tank.
- I. Open the modulator valve bleed screw $\frac{3}{4}$ turn and allow the flow continue until no air is seen in the fluid.
- J. Tighten the bleed screw to 106 inch lbs. (12 Nm) and remove the tubing. Wipe the screw off and make sure it has properly sealed.
- K. Install the sound insulator pad, making sure it covers the entire modulator valve or excessive noise may be heard when the system is operating. Close the rear compartment.
- L. Fill the master cylinder to the proper level and install the cap.

NOTE: To bleed the hydraulic system, perform the following procedure.

2. Remove the master cylinder reservoir cap, then connect the proper bleeder adapter(s) to the master cylinder reservoirs.
3. Charge the bleeder to 20–25 psi (140–172 kPa).
4. Connect the hose to the bleeder adapter tank, and open the valve on top of the tank. Depress the bleed-off valve until a few drops of brake fluid appear. Refer to the accompanying figure for installation details.
5. Raise and safely support the vehicle.
6. If it is necessary to bleed all of the calipers, follow the proper sequence:
 - A. 1988–91 vehicles: right front, right rear, left rear, left front.
 - B. 1992–96 vehicles: right rear, left rear, right front, left front.
7. Place a proper size box end wrench over the bleeder screw. Attach a clear tube over the screw and let the tube hang submerged in a clear container partially filled with brake fluid.

Fig. 2: View of the pressure bleeding adapters installed on the master cylinder — 1988–91 vehicles shown



8. Open the bleeder screws at least $\frac{3}{4}$ turn and let the flow continue, until you can see no air in the fluid. Have an assistant stroke the brake pedal while pressure bleeding.
9. Close the bleeder screws, and tighten to 80 inch lbs. (9 Nm), making sure they seal.
10. Repeat the 3 previous steps until all of the calipers have been bled.
11. Carefully lower the vehicle.
12. Check the brake pedal for sponginess and the "BRAKE" warning lamp for any indication of unbalanced pressure. If either of these 2 conditions exist, repeat the entire bleeding procedure.
13. Properly dispose of all of the brake fluid that was removed from the system.
14. Disconnect the bleeder equipment from the brake bleeder adapter. Remove the adapter, then if any fluid was spilled, make sure to wipe all areas so they are clean and dry.
15. Check the brake pedal for sponginess and the brake warning light for an indication of unbalanced pressure. Repeat the bleeding procedure to correct either of these conditions.
16. On 1995–96 vehicles, if the proper pedal height and feel is not achieved after the bleeding is completed, you must perform the Auto Bleed procedure, located under the ABS section of this manual. This procedure requires the use of a Tech 1® , or equivalent scan tool.

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Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

NOTE: The stoplamp switch must be adjusted for proper operation of the ABS and ASR systems.

The design of the switch allows for automatic adjustment when the brake pedal is manually return to its mechanical stop, as follows:

1. With the brake pedal depressed, insert the stoplamp switch into the retainer until the switch body seats on the retainer. Make sure you can hear the clicks as the threaded part of the switch is pushed through the retainer toward the brake pedal.

NOTE: Do not use excessive force when adjusting the stoplamp switch, as this will cause damage to the power booster.

2. Pull the brake pedal fully rearward against the pedal stop, using a force of about 42 lbs. (187 N), until you no longer hear the click sounds. The switch will be moved in the retainer providing proper adjustment.
3. Release the brake pedal, then repeat Step 2, to make sure no clicking sounds remain.

Submodel: | **Engine Type:** V8 | **Liters:** 5.7
Fuel Delivery: FI | **Fuel:** GAS

1. Disconnect the negative battery cable.
2. Remove any necessary instrument panel sound insulators.
3. Remove the retaining clip, then unscrew and remove the stoplamp switch from the brake pedal.

Diagram of the front suspension assembly. Components are labeled: 1 (Lower Control Arm), 2 (Ball Joint), 3 (Ball Joint Nut), 4 (Upper Control Arm), 5 (Upper Control Arm Bush), 6 (Lower Control Arm Bush), and A (Lower Control Arm). An arrow labeled 'FRT' indicates the front of the vehicle.

- | | |
|------------------------------|----------------------------------|
| 1 NORMAL TRAVEL | 4 STOPLAMP SWITCH BRACKET |
| 2 BRAKE PEDAL BRACKET | 5 ACTUATOR |
| 3 RETAINER | 6 BRAKE PEDAL |
| 7 STOPLAMP SWITCH | |

1. Disconnect the negative battery cable.
2. Remove the instrument panel sound insulator.
3. Detach the electrical and vacuum connectors from the switch.
4. Remove the stoplamp/cruise control switch.

The diagram illustrates the vacuum unit with various components labeled with numbers 1 through 6. Below the diagram, a legend identifies these components:

- 1 SWITCH
- 2 INSULATING BRACKET
- 3 GROUND VACUUM LINE
- 4 ELECTRICAL CONNECTING
- 5 AUTOMATIC FUSE
- 6 SWITCH-BAGGELS

5. Install and adjust the stoplamp/cruise control switch.
6. Attach the electrical and vacuum connectors.
7. Connect the negative battery cable.