GM Full-Size Trucks 1980-1987 Repair Guide

Hydro-Boost (Hydraulic Boost)

See Figures 1, 2 and 3

Diesel engine trucks and some heavy duty gasoline trucks are equipped with the Bendix Hydro-boost system. This power brake booster obtains hydraulic pressure from the power steering pump, rather than vacuum pressure from the intake manifold as in most gasoline engine brake booster systems. Procedures for removing, overhauling, and replacing the master cylinder are the same as previously outlined. The master cylinder uses the same DOT 3 brake fluid recommended for other systems.

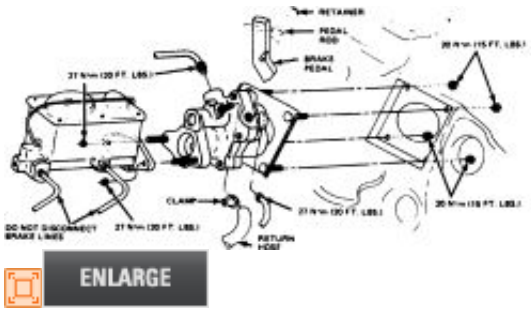

Fig. Fig. 1: Removal and installation of Hydro-Booster

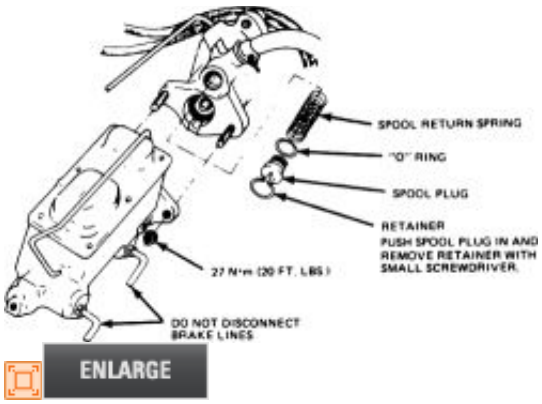

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Fig. Fig. 2: Removing Hydro-Boost spool valve and seal

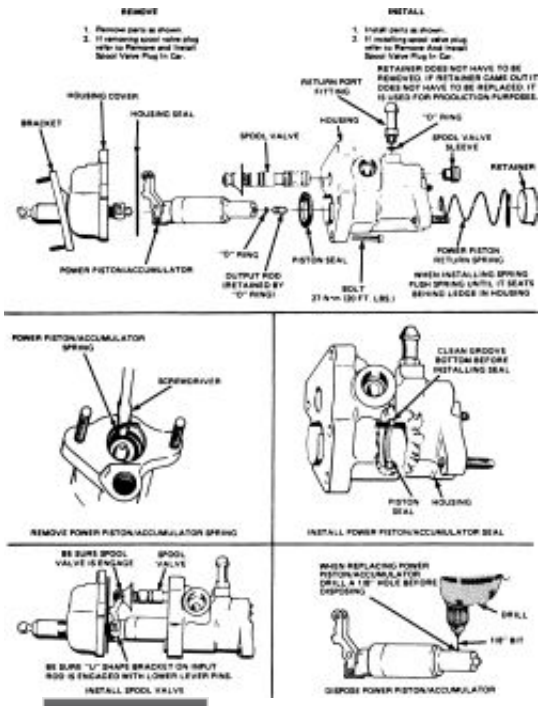

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Fig. Fig. 3: Hydro-Boost overhaul

SYSTEM CHECK

1. A defective Hydro-Boost cannot cause any of the following conditions:
   a. Noisy brakes
   b. Fading pedal
   c. Pulling brakes
2. If any of these occur, check elsewhere in the brake system.
3. Check the fluid level in the master cylinder. It should be within 1/4 in. of the top. If it isn't,

add only DOT-3 or DOT-4 brake fluid until the correct level is reached.

4. Check the fluid level in the power steering pump. The engine should be at normal running temperature and stopped. The level should register on the pump dipstick. Add power steering fluid to bring the reservoir level up to the correct level. Low fluid level will result in both poor steering and stopping ability.

WARNING
The brake hydraulic system uses brake fluid only, while the power steering and Hydro-Boost systems use power steering fluid only. Don't mix the two.

4. Check the power steering pump belt tension, and inspect all of the power steering/Hydro-Boost hoses for kinks or leaks.

5. Check and adjust the engine idle speed, as necessary.

6. Check the power steering pump fluid for bubbles. If air bubbles are present in the fluid, bleed the system:
   a. Fill the power steering pump reservoir to specifications with the engine at normal operating temperature.

   b. With the engine running, rotate the steering wheel through its normal travel 3 or 4 times, without holding the wheel against the stops.

   c. Check the fluid level again.

7. If the problem still exists, go on to the Hydro-Boost test sections and troubleshooting chart.

HYDRO-BOOST TESTING

Functional Test

1. Check the brake system for leaks or low fluid level. Correct as necessary.

2. Place the transmission in Neutral and stop the engine. Apply the brakes 4 or 5 times to empty the accumulator.

3. Keep the pedal depressed with moderate (25-40 lbs.) pressure and start the engine.

4. The brake pedal should fall slightly and then push back up against your foot. If no movement is felt, the Hydro-Boost system is not working.

Accumulator Leak Test

1. Run the engine at normal idle. Turn the steering wheel against one of the stops; hold it there for no longer than 5 seconds. Center the steering wheel and stop the engine.

2. Keep applying the brakes until a hard pedal is obtained. There should be a minimum of 1 power assisted brake application when pedal pressure of 20-25 lbs. is applied.

3. Start the engine and allow it to idle. Rotate the steering wheel against the stop. Listen for a light hissing sound; this is the accumulator being charged. Center the steering wheel and stop the engine.

4. Wait one hour and apply the brakes without starting the engine. As in Step 2, there should be at least 1 stop with power assist. If not, the accumulator is defective and must be replaced.

HYDRO-BOOST SYSTEM BLEEDING

The system should be bled whenever the booster is removed and installed.

1. Fill the power steering pump until the fluid level is at the base of the pump reservoir neck. Disconnect the battery lead from the distributor.

Remove the electrical lead to the fuel solenoid terminal on the injection pump before cranking the engine.

2. Jack up the front of the car, turn the wheels all the way to the left, and crank the engine for a few seconds.

3. Check steering pump fluid level. If necessary, add fluid to the *ADD* mark on the dipstick.

4. Lower the car, connect the battery lead, and start the engine. Check fluid level and add fluid to the *Add* mark if necessary. With the engine running, turn the wheels from side to side to bleed air from the system. Make sure that the fluid level stays above the internal pump casting.

5. The Hydro-Boost system should now be fully bled. If the fluid is foaming after bleeding, stop the engine, let the system set for one hour, then repeat the second part of Step 4.

The preceding procedures should be effective in removing excess air from the system, however sometimes air may still remain trapped. When this happens the booster may make a gulping noise when the brake is applied. Lightly pumping the brake pedal with the engine running should cause this noise to disappear. After the noise stops, check the pump fluid level and add as necessary.

HYDRO-BOOST TROUBLESHOOTING

High Pedal and Steering Effort (Idle)

1. Loose/broken power steering pump belt.
2. Low power steering fluid level.
3. Leaking hoses or fittings.
4. Low idle speed.
5. Hose restriction.
6. Defective power steering pump

High Pedal Effort (Idle)

1. Binding pedal/linkage.
2. Fluid contamination.
3. Defective Hydro-Boost unit

Poor Pedal return

1. Binding pedal linkage.
2. Restricted booster return line.
3. Internal return system restriction

Pedal Chatter/Pulsation

1. Power steering pump drive belt slipping.
2. Low power steering fluid level.
3. Defective power steering pump.
4. Defective Hydro-Boost unit

Brakes Oversensitive

1. Binding linkage.
2. Defective Hydro-Boost unit

Noise

1. Low power steering fluid level.
2. Air in the power steering fluid.
3. Loose power steering pump drive belt.
4. Hose restrictions

OVERHAUL

GM Hydro-Boost units may be rebuilt. Kits are available through auto parts jobbers and GMC/Chevrolet truck dealers.

Have a drain pan ready to catch and discard leaking fluid during disassembly.

Use the accompanying illustrations to overhaul the Hydro-Boost system. If replacing the power piston/accumulator, dispose of the old one as shown.

REMOVAL & INSTALLATION

Hydro-Boost Unit

WARNING

Power steering fluid and brake fluid cannot be mixed. If brake seals contact the steering fluid or steering seals contact the brake fluid, damage will result.

1. Turn the engine off and pump the brake pedal 4 or 5 times to deplete the accumulator inside the unit.
2. Remove the two nuts from the master cylinder, and remove the cylinder keeping the brake lines attached. Secure the master cylinder out of the way.
3. Remove the three hydraulic lines from the booster.
4. Remove the booster unit from the firewall.
5. To install, reverse the removal procedure, torque the booster retaining bolts to 25 ft. lbs. and bleed the Hydro-Boost system.

Spool Valve Plug and Seal

1. Turn the engine off and pump the brake pedal 4 or 5 times to deplete the accumulator inside the boost unit.
2. Remove the master cylinder from the boost unit with the brake lines attached. Fasten the master cylinder out of the way with tape or wire.

3. Push the spool valve plug in and use a small screwdriver to carefully remove the retaining ring.
4. Remove the spool valve plug and O-ring.
5. Installation is the reverse of removal. Bleed the system upon installation, following the above bleeding instructions.

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