



Installation Instructions

HYDRO-MAX® HYDRAULIC BRAKE BOOSTER

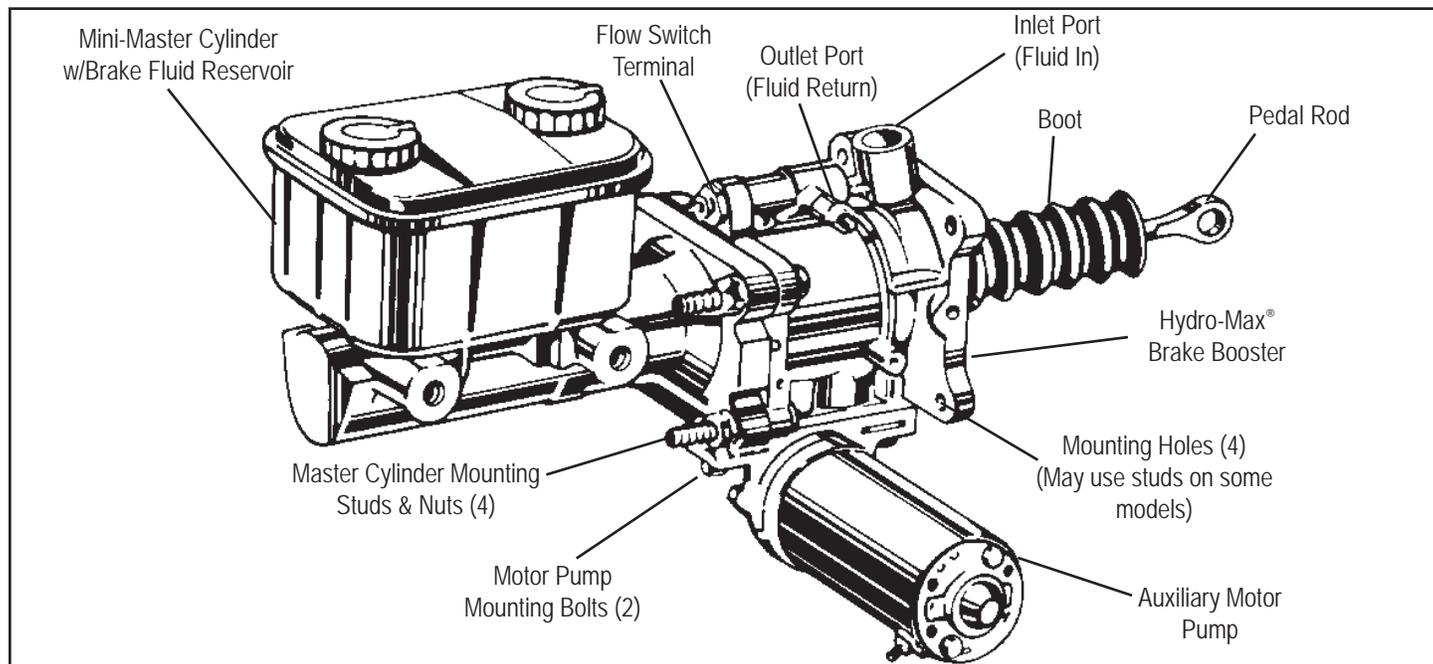


FIGURE 1 - TYPICAL HYDRO-MAX® BRAKE BOOSTER AND MINI-MASTER CYLINDER ASSEMBLY

WARNING: Do not remove the Pedal Rod from the Hydro-Max® Hydraulic Brake Booster. Removal of the Pedal Rod can damage the unit which can cause inadequate Pedal Rod attachment which can lead to a loss of brakes, accident or injury.

GENERAL INFORMATION

The complete Hydro-Max® Brake Assembly is composed of three major assemblies; the Hydro-Max® brake booster, mini-master cylinder and auxiliary motor pump. Each component is serviced as a separate item. The Hydro-Max® is intended as a replacement for the booster section only. (Refer to Figure 1.)

When replacing the Hydro-Max® brake booster, you must install the correct part number for the subject vehicle. Do not attempt to modify the Hydro-Max® brake booster.

Bendix does not recommend removing, modifying or substituting the pedal rod.

VEHICLE PREPARATION

Follow all standard industry precautions, including, but not limited to, the General Precautions listed on page 2.

1. Park the vehicle on a level surface and chock (block) the wheels.
2. Shut off the engine and make certain the ignition switch is in the OFF POSITION.

3. Clean the exterior of the Hydro-Max® brake assembly and the lines and fittings attached to the Hydro-Max® brake booster.

REMOVAL

General

WHERE AVAILABLE, ALWAYS USE THE REMOVAL PROCEDURES PRESENTED IN THE VEHICLE MANUFACTURER'S MAINTENANCE AND SERVICE MANUAL. THE PROCEDURES PRESENTED HERE ARE A GENERAL GUIDE, BUT NOTE THAT SPECIFIC VEHICLE REQUIREMENTS MAY VARY.

1. Disconnect the vehicle brake pedal assembly from the Hydro-Max® booster pedal rod.
2. Disconnect the wire harness from the Hydro-Max® flow switch terminal.
3. Disconnect the power wire from the auxiliary motor pump assembly.

IMPORTANT! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:

When working on or around a vehicle, the following general precautions should be observed at all times:

Warning! PLEASE READ and follow these instructions to avoid personal injury or death:

When working on or around brake systems and components, the following precautions must be observed at all times:

1. Park the vehicle on a level surface, apply the parking brakes, and always block the wheels. When working around or under the vehicle, stop the engine and remove the key from the ignition. Always keep hands away from chambers as they may apply as system pressure drops. Always wear safety glasses.
2. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, extreme caution should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically charged components.
3. Do not attempt to install, remove, disassemble or assemble a component until you have read and thoroughly understand the recommended procedures. Some components contain powerful springs and injury can result if not properly disassembled. Use only the proper tools and observe all precautions pertaining to the use of those tools.

4. Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.
5. If the vehicle is equipped with an air over hydraulic brake system or any auxiliary pressurized air system, make certain to drain the air pressure from all reservoirs before beginning ANY work on the vehicle. If the vehicle is equipped with an AD-IS® air dryer system or a dryer reservoir module, be sure to drain the purge reservoir.
6. Never connect or disconnect a hose or line containing pressure; it may whip. Never remove a component or pipe plug unless you are certain all system pressure has been depleted.
7. Never exceed manufacturer's recommended pressure.
8. Use only genuine Bendix® replacement parts, components and kits.
 - A. Use only components, devices and mounting and attaching hardware specifically designed for use in hydraulic brake systems.
 - B. All replacement hardware, tubing, hose, fittings, etc. must be of equivalent size, type and strength as the original equipment.
9. Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.
10. Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.

4. If the electrical power relay for the motor pump is mounted on the Hydro-Max® booster, remove it and retain the mounting hardware.
5. Remove the lock nuts that secure the mini-master cylinder on the four Hydro-Max® booster studs and retain for use in re-assembly.
6. Remove both the inlet (pressure) and outlet (return) hydraulic lines from the Hydro-Max® booster and cover the end of each to prevent contamination from entering.

CAUTION: Both the Hydro-Max® booster and these lines contain power steering fluid (oil base). Do not allow this material to contact hot surfaces or accumulate in or on areas that will become hot during vehicle operation. Clean up any fluid that has spilled.

7. Remove the four nuts (and bolts on some units) that secure the Hydro-Max® booster to the vehicle. Note: It may be necessary to have an assistant support the Hydro-Max® booster during this operation.
8. GENTLY move the Mini-Master cylinder away from the Hydro-Max® booster sufficiently to allow the Hydro-Max® and attached auxiliary motor pump to be removed. Support the Mini-Master cylinder until the replacement Hydro-Max® booster is installed.

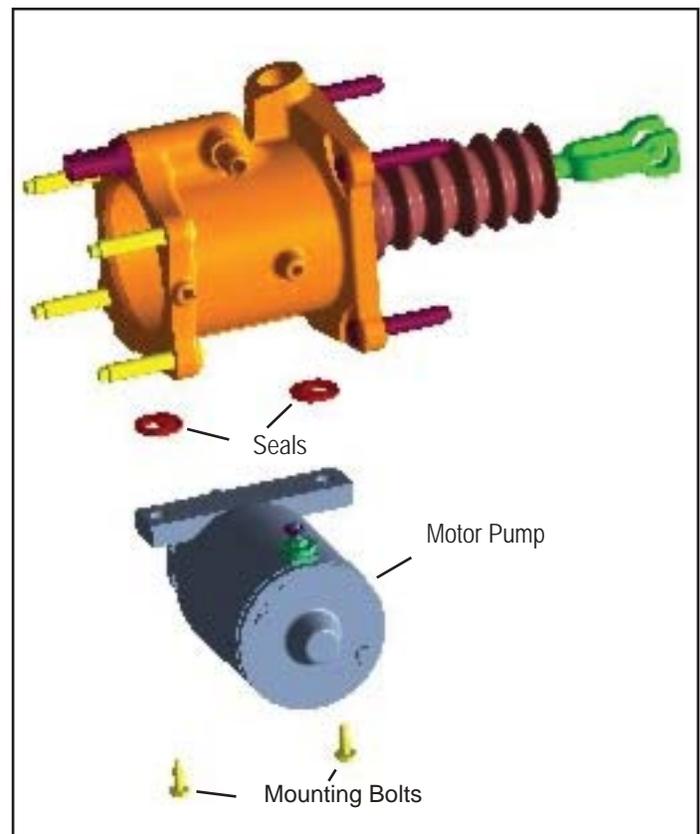


FIGURE 2 - TYPICAL HYDRO-MAX® SYSTEM WITH HYDRAULIC PARKING BRAKES

Note: Depending upon the vehicle installation, it may be difficult to move the mini-master cylinder without damaging the brake fluid delivery lines. In this case, it will be necessary to remove the brake fluid delivery lines from the master cylinder before removing the Hydro-Max® booster assembly. The Hydro-Max® and motor pump contain power steering fluid which must be drained.

9. Place the Hydro-Max® booster upside down (motor pump up) in a clean pail and note and mark the position of the motor pump relative to the Hydro-Max® body. Remove the two bolts that secure the motor pump to the Hydro-Max®. Remove and discard the two sealing rings and drain the fluid from the motor pump. Drain the remaining fluid from the Hydro-Max® booster.
10. Leave the accordion boot on the Hydro-Max® booster to protect the power piston shaft during transport and note the number and position of studs on the vehicle mounting end of the Hydro-Max® booster.
11. **DO NOT ATTEMPT TO REMOVE THE PEDAL ROD** from the Hydro-Max® booster. The booster can be damaged, which can adversely affect proper pedal rod attachment. Damage to the Hydro-Max® booster unit can also reduce or eliminate its value as an exchange unit.

CLEANING & INSPECTION

1. Inspect the Hydro-Max® booster mounting surface on the vehicle. This surface should be clean and allow the Hydro-Max® booster to be mounted flush. Remove any accumulated grime and any floor matting material that may prevent a flush mounting of the Hydro-Max® booster on the engine compartment bulkhead.

2. The hole through engine compartment bulkhead for the Hydro-Max® booster power piston and accordion boot should be open with no floor matting material protruding.
3. Inspect for physical damage to the Hydro-Max® booster mounting surface on the vehicle. Repair as required.
4. Inspect all line fittings for corrosion and replace as necessary.

INSTALLATION

1. Mount the Hydro-Max® booster and motor pump assembly on the vehicle using the hardware (nuts and bolts) removed during disassembly.
2. Install the mini-master cylinder on the Hydro-Max® booster studs using the four lock nuts removed during disassembly.

Note: If it was necessary to remove the brake fluid delivery lines to remove the mini-master cylinder, the master cylinder must be bench-bled and the delivery lines reconnected.

3. Install both the inlet (pressure) and outlet (return) hydraulic lines on the Hydro-Max® booster and tighten the fittings.
4. Re-attach the electrical power relay for the motor pump, if it was mounted on the Hydro-Max® booster, using the mounting hardware retained during disassembly.
5. Connect the power wire to the auxiliary motor pump assembly.
6. Connect the wire harness to the Hydro-Max® booster flow switch terminal.

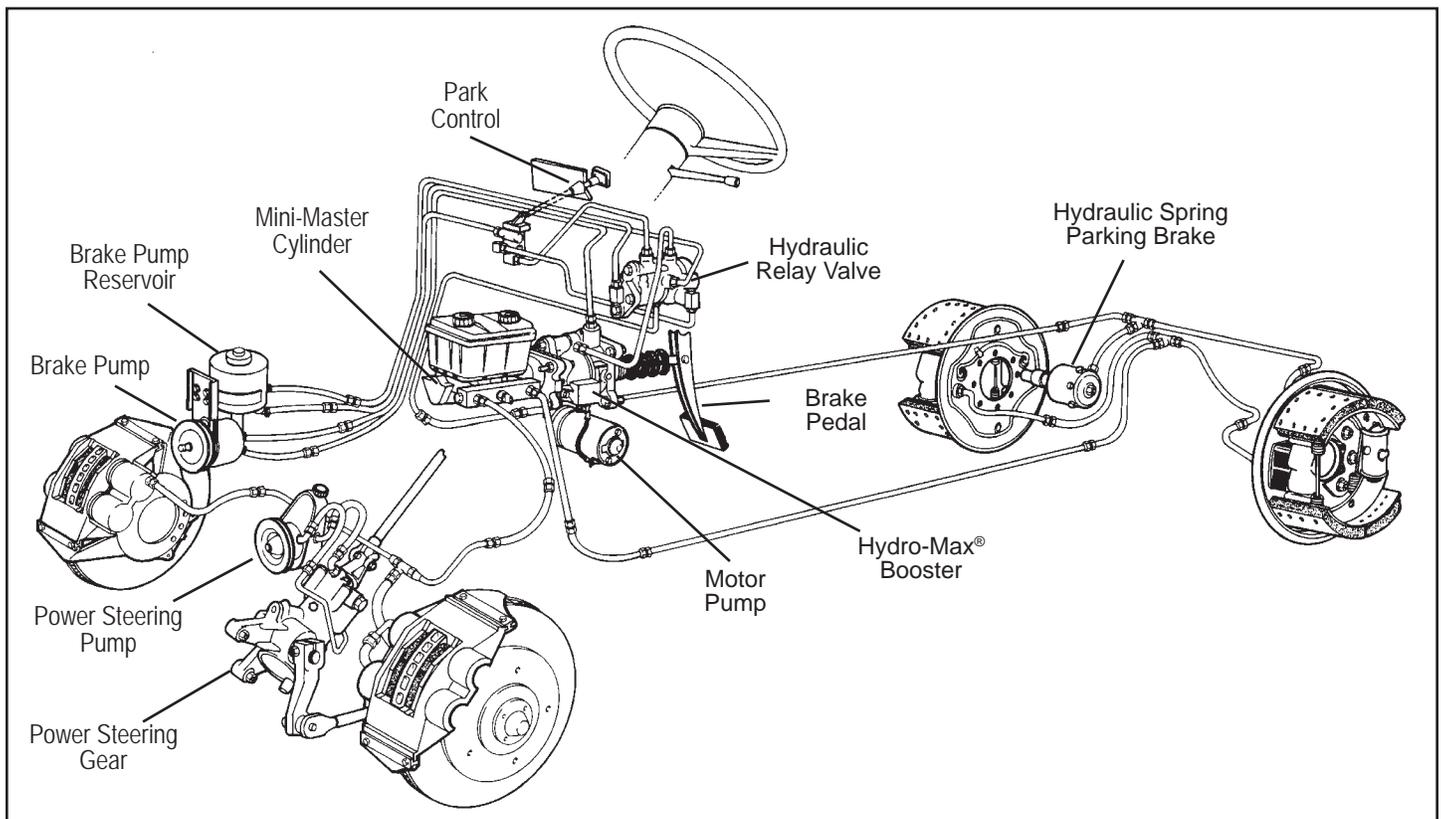


FIGURE 3 - TYPICAL HYDRO-MAX® SYSTEM WITH HYDRAULIC PARKING BRAKES

7. Attach the vehicle brake pedal assembly to the Hydro-Max® booster pedal rod. Following the vehicle manufacturer's manual, make any adjustments that may be required to assure that the Hydro-Max® booster is COMPLETELY released when the driver's foot is off the pedal.
8. If the brake fluid delivery lines were removed to allow removal of the mini-master cylinder, bleed the brake lines.
9. Before starting the vehicle, the fluid in the power steering or brake pump reservoir must be replenished to replace fluid lost during replacement of the Hydro-Max® booster. Refill the reservoir of the brake pump (see Figure 2) or power steering pump (see Figure 3) with the appropriate power steering fluid.

IMPORTANT CAUTION: If the vehicle has a separate brake pump and hydraulic spring parking brakes as shown in Figure 3, FILL THE BRAKE PUMP RESERVOIR WHILE THE PARKING BRAKES ARE APPLIED. Failure to follow this important procedure will cause the brake pump reservoir to overflow.

10. For vehicles **WITHOUT** hydraulic spring parking brakes (shown in Figure 4), start the vehicle and let run for a period of time to bleed air from the system. This type of system will "self bleed" air back into the pump reservoir.

For systems **WITH** hydraulic spring parking brakes (shown in Figure 3), start the vehicle and bleed air from the parking brake actuators as recommended by the vehicle manufacturer. *These systems are not able to "self bleed" because of the parking brakes.*

11. Before placing the vehicle in service **test** the brake system.

TESTING

1. With the vehicle running, make and hold a full brake application and check for leakage around the hydraulic and brake fluid fittings that were disconnected during replacement.
2. Using the vehicle manufacturer's manual, test the operation of the brakes at **LOW SPEED** in an area where other vehicles and obstructions are not present.

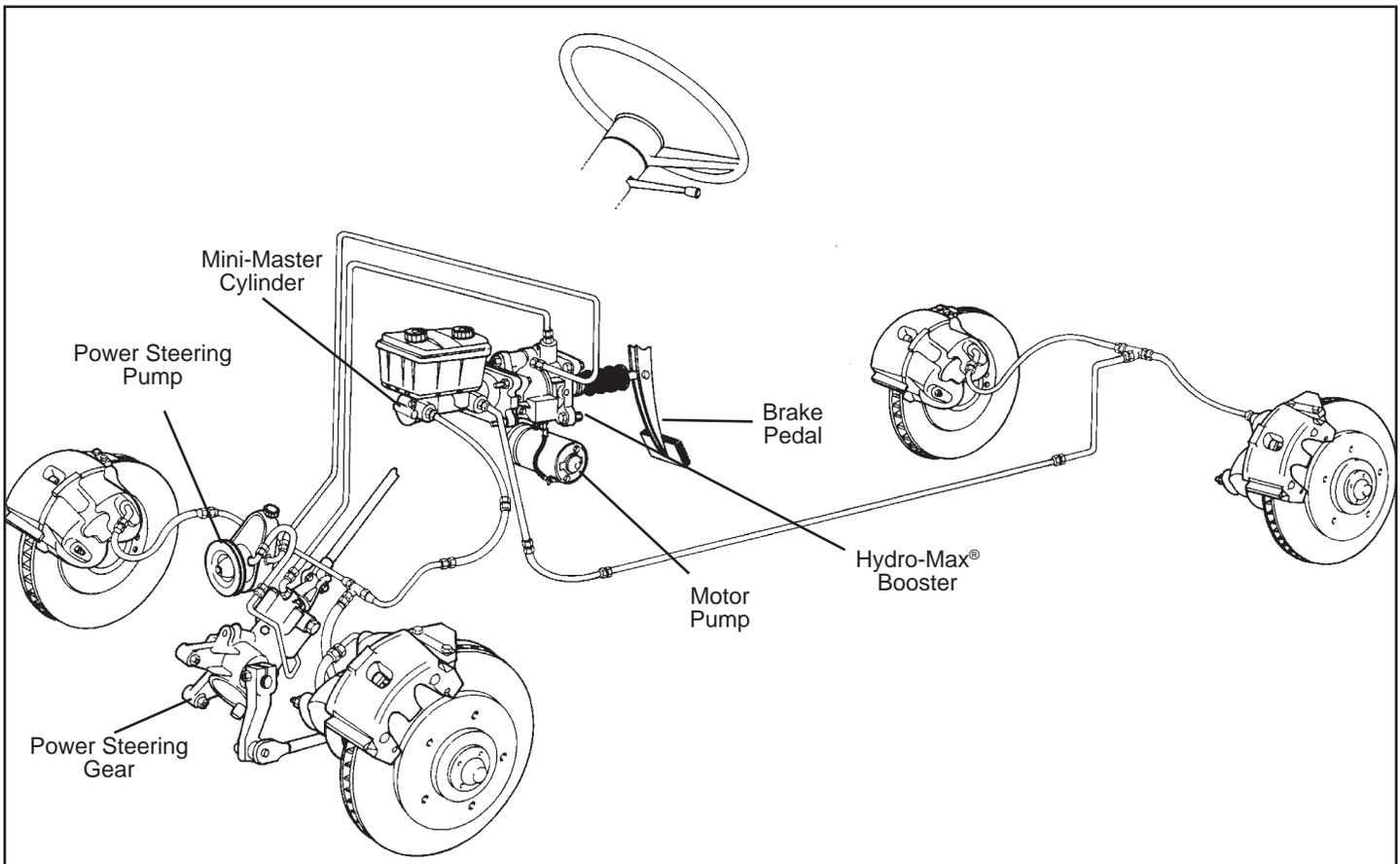


FIGURE 4 - TYPICAL HYDRO-MAX® SYSTEM WITHOUT HYDRAULIC PARKING BRAKES

