POWER BRAKE BOOSTERS
INSTALLATION INSTRUCTIONS

1. Carefully remove old unit from vehicle by disconnecting hydraulic lines, brackets and connections to pedal.

2. Attach all mounting brackets and fittings from old unit on the replacement unit. Install on vehicle in the same position as the old unit was removed. Re-connect hydraulic brake lines.

3. Do not remove any nut that is holding a cylinder or face plate to install a bracket. You should install the bracket over the present nuts and secure with other nuts.

4. Do not plug or bypass any hydraulic port on the unit. This could substantially reduce the brake performance.

5. **WARNING:** Brake bleeding instructions included must be followed. Failure to follow this procedure will result in inefficient braking performance.

NOTE: LOCATE AND ELIMINATE CAUSE OF FAILURE BEFORE INSTALLING REPLACEMENT UNIT. DIRT, SAND, or foreign material in the brake system is responsible for most failures of original equipment units after years of service and is a major cause of early failure in replacement units. All old brake fluid should be flushed from the system. On remote mounted boosters, (units mounted underneath truck on frame) the master cylinder on the firewall should be rebuilt and thoroughly cleaned making sure all sludge and dirt are removed from reservoir. Otherwise the dirt will be forced down into the booster during the first applications.

GASOLINE and OIL contamination are also major causes of early failure in power brake units. If the vacuum hose runs directly from engine down to the booster, gasoline could be entering the unit and destroying the rubber diaphragm. The vacuum supply hose should always run slightly above carburetor and through a check valve before going to unit. Also, if the hose from the atmospheric breather tube is attached to the air filter that is an oil soaked type, there is a possibility the filter has been overfilled and oil is entering the unit.

SPECIAL NOTE: A major portion of all warranty returns are the result of IMPROPER BLEEDING (not removing all of the air bubbles from the hydraulic system) and **IMPROPER BRAKE SHOE ADJUSTMENT.**

CAUTION: Do NOT pedal bleed system with engine running.

TESTING POWER BRAKE ON VEHICLE

1. With engine off, press brake pedal several times to deplete all vacuum reserve in system.

2. Press brake pedal and hold light foot pressure on pedal. Start vehicle engine. If power brake is operating, pedal will fall away under foot pressure and less pressure is required to hold pedal in applied position. If no action is felt when engine is started, power brake is not functioning.

3. Stop engine. Again deplete all reserve in vacuum system. Press brake pedal and hold foot pressure on pedal. If pedal gradually falls away under foot pressure, hydraulic system is leaking.

4. If brake pedal travels to within 1" of floorboard, brake shoes require adjustment.

5. Start engine and run to medium speed; then turn off ignition. Immediately close throttle. This builds up vacuum. Wait at least 90 seconds and then try brake action. Two or more applications should be vacuum assisted. If not, vacuum check valve is faulty or there is a leak in vacuum system.

WARNING
DO NOT RELEASE A VEHICLE UNTIL A FIRM BRAKE PEDAL IS OBTAINED

Road test a vehicle in a safe area by making a brake application at about 20 mph to determine if vehicle stops evenly and quickly. If pedal has a spongy feel, hydraulic system may contain air. Bleed the system thoroughly to remove all air.

A properly working brake system should have a normal height brake pedal with power assist on first application each time (no pumping required). If not, the system should be reexamined for cause of low pedal.

TROUBLESHOOTING GUIDE

LOW PEDAL (Excessive pedal travel to apply brakes)

1. Air in hydraulic system – bleed hydraulic system thoroughly.
2. Brake shoes need adjusting.
3. Low brake fluid level – fill reservoir(s) to proper level.
4. Poor quality brake fluid (low boiling point) – replace with approved fluid.
5. Broken front or rear hydraulic line (dual system master cylinder) replace line.
6. Soft or weak hydraulic hose (expanding under pressure) – replace hose.

SPONGY PEDAL (Springy sensation to pedal upon application.)

1. Air in hydraulic system – bleed system thoroughly.
2. Brake shoes need adjusting.
3. Poor quality brake fluid (low boiling point) – replace with approved fluid.
4. Soft or weak hydraulic hose (expanding under pressure) – replace hose.
5. Faulty check valve(s) in master cylinder – repair master cylinder.

HARD PEDAL (Excessive pedal pressure needed to stop vehicle– pedal is high – but hard – on first pump. NOTE: If pedal must be pumped once or more before the hard pedal is received – refer back to low pedal section.

1. Vacuum hose collapsed (*can be internal and not show on outside*). Replace vacuum hose.
2. Loose or plugged vacuum fittings – repair or tighten fittings.
3. Cracked or broken plastic hub – replace unit.
4. Engine does not develop enough vacuum – tune up required.
5. Faulty vacuum check valve – replace check valve.
6. Kinked, collapsed, dented or clogged hydraulic lines, hoses or connections – repair or replace faulty part.
7. Swollen master cylinder cups (by fluid contamination) - flush hydraulic system with alcohol to remove contaminated fluid and replace cylinder.
8. Restricted air filter or manual brake boot is installed (boot without air inlet holes) – replace air filter or boot.
9. Damaged diaphragm – replace unit.
10. Damaged valve rod and plunger assembly - replace unit.
11. Binding pedal linkage – free up and lubricate.

FADING PEDAL (A falling away of pedal under steady foot pressure.)

1. Loose hydraulic connections; ruptured or damaged hoses or lines (causing leakage) – repair or replace faulty part.
2. Worn or damaged master cylinder cups or master cylinder bore – replace unit.
3. Cracked master cylinder castings – replace unit.

PEDAL KICKBACK

1. Hydraulic valve seats damaged by dirt or fluid contamination – flush system with clean, heavy duty brake fluid and replace unit.

PEDAL APPLIES BY ITSELF

1. Cracked or broken hub – replace unit.
2. Damaged internal valve – replace unit.

BRAKES TOO SENSITIVE

1. Internal push rod not adjusted out to master cylinder piston. Adjust screw out until it touches (but does not apply) master cylinder piston.
2. Damaged reaction valve – replace unit.

DRAGGING BRAKES (Slow or incomplete release of brakes.)

1. Hydraulic system contaminated with dirt causing check valves or pistons to stick. Flush system with clean, heavy duty brake fluid.
2. Faulty check valves in master cylinder – repair or replace cylinder.
3. Swollen cups on master cylinder (by fluid contamination) – flush hydraulic system with alcohol to remove contaminated fluid and replace unit.
4. Kinked, collapsed, dented or clogged lines, hoses or connections – repair or replace faulty part.
5. Broken return springs – replace unit.
6. Binding pedal linkage – free up and lubricate.

BRAKES WON'T RELEASE

MEDIUM DUTY TRUCKS WITH POWER BRAKE MOUNTED ON THE FRAME UNDERNEATH THE VEHICLE:

Be sure master cylinder on the firewall has been replaced or completely cleaned and rebuilt with new seals.

Be sure push rod adjustment between pedal and master cylinder is correct and linkage is not binding.

If the power brake unit has a residual check valve the master cylinder must <u>not</u> have a residual check valve.

To test – with the brakes locked up, loosen the brake line at the master cylinder outlet. If this releases the brakes, the trouble is in the master cylinder, push rod adjustment or pedal linkage.

If this does not release the brakes, loosen the hydraulic brake line that goes to the wheel cylinders (located on the end of the slave cylinder of power brake unit) If this releases the brakes, the trouble is in the power brake unit, wheel cylinders or brake shoes.

PASSENGER CARS AND PICK-UPS WITH POWER BRAKES MOUNTED ON FIREWALL:

Loosen nuts holding master cylinder to power booster. If this releases brakes the push rod between the booster and the master cylinder could be out of adjustment. Remove master cylinder. If adjustment screw is present on the rod, lower the screw about 1/16" at a time until it does not apply the master cylinder piston. CAUTION – if screw is turned in too far it will cause excessive pedal travel and cause inefficient brake performance. If no adjustment screw is present, check pedal linkage for binding.