

POWER BRAKE-BENDIX (Typical Installation)

GENERAL INFORMATION

The single or double diaphragm type power brake (Fig. 1) is a self contained vacuum hydraulic power braking unit. It is of the vacuum suspended type which utilizes engine intake manifold vacuum and atmospheric pressure for its power. This type of units does not require a vacuum reservoir.

The Bendix Power Brake Unit can be identified by the twist lock method of attaching the housing and cover together.

The basic elements of the vacuum unit are as follows:

A mechanically actuated control valve integral with the vacuum power diaphragms, controls the degree of power brake application or release in accord-

ance with the foot pressure applied to the valve operating rod through the brake pedal linkage.

The control valve is of a single poppet type valve with the atmospheric port and a vacuum port. The vacuum port seat is a part of the valve body attached to the diaphragm assembly. The atmospheric port is a part of the valve plunger which moves within the valve housing and vacuum power diaphragm assembly.

A hydraulic master cylinder which contains all of the elements of the standard brake master cylinder except for the special hydraulic push rod which is a part of the power brake.

SERVICE PROCEDURES

REMOVING POWER BRAKE

- (1) Remove nuts attaching master cylinder to brake unit. Remove master cylinder from unit.
- (2) Disconnect vacuum line from check valve.

- (3) From under instrument panel, remove nut and bolt from power brake link and brake pedal. (On linkage type power brake, remove lower pivot bolt).

- (4) From under instrument panel remove four brake unit attaching nuts and washers.

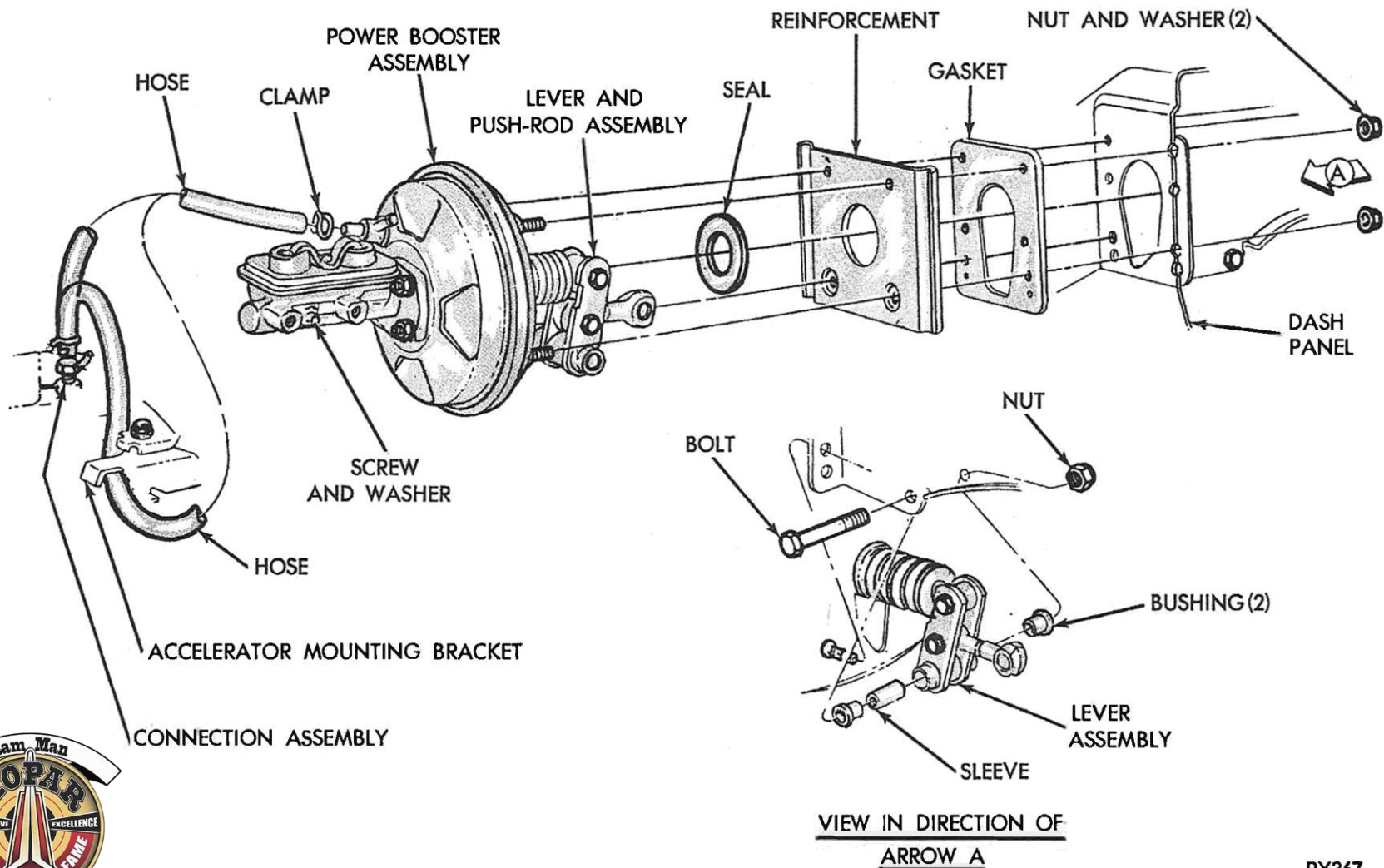
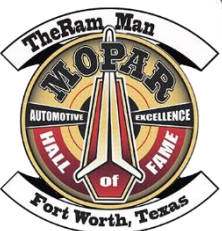
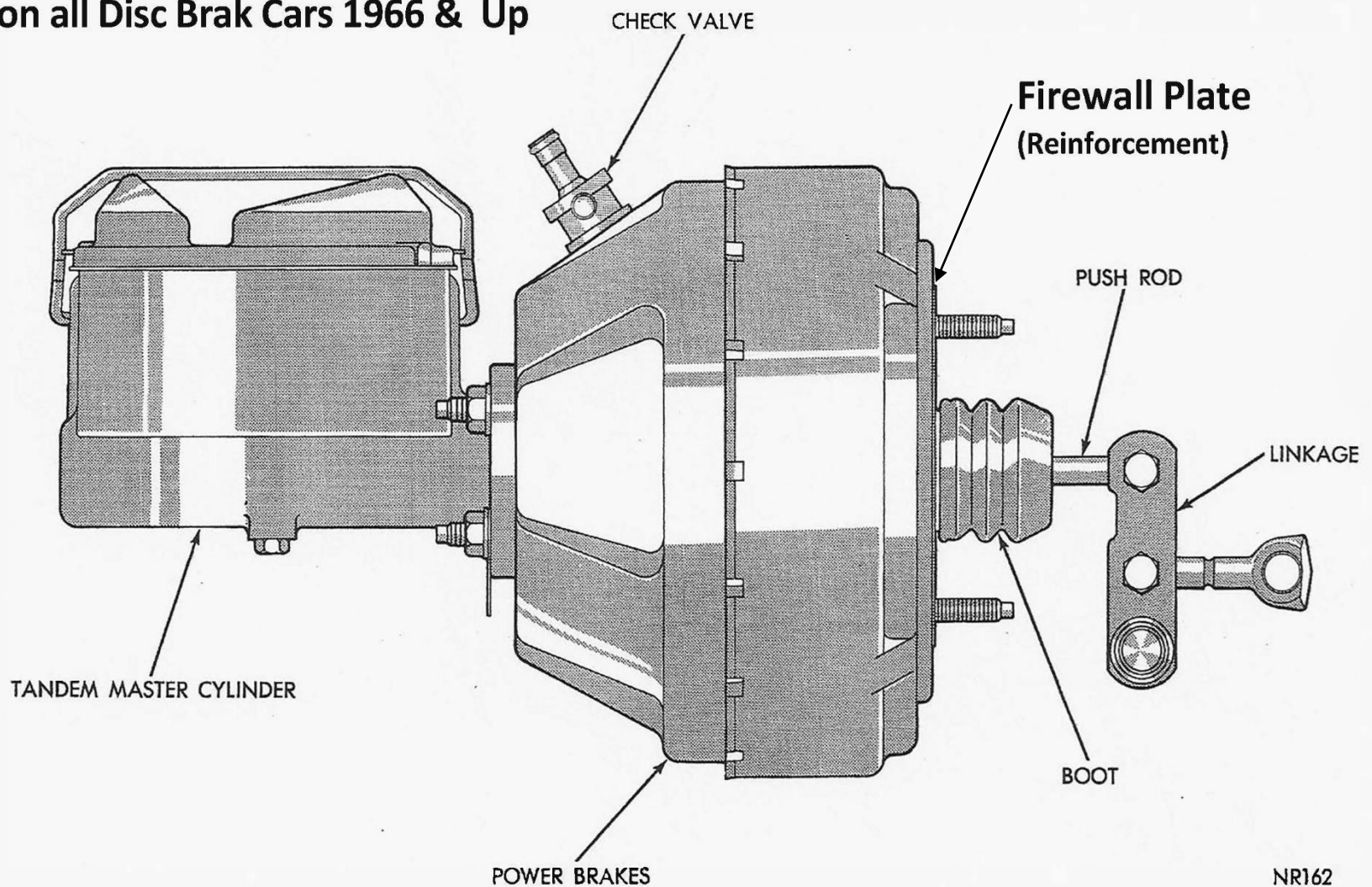


Fig. 1—Power Brake Assembly (Bendix)

PY367



Used on all Disc Brak Cars 1966 & Up



NR162

Power Brake Assembly (Bendix) Disc Type Brakes

(5) Withdraw brake unit assembly from vehicle.

(3) Attach vacuum hose to check valve.

INSTALLING POWER BRAKE

(1) Install power brake and linkage assembly (if so equipped) into dash panel. Install attaching nuts and washers. Tighten nuts to 150 inch-pounds.

(4) Install master cylinder on power brake. Tighten mounting nuts to 100 inch pounds. With power brake attached to dash panel and vacuum supplied to unit, the master cylinder should compensate (force jet of fluid up through front chamber compensation port).

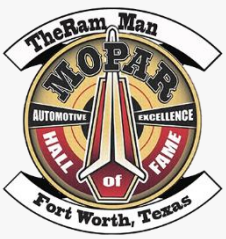
(2) Using lubriplate, coat the bearing surface of bolt that connects power brake pedal link with brake pedal. Install bolt and nut. Tighten to 30 foot-pounds. Install lower pivot bolt (if so equipped).

(5) Inspect adjustment of stop light switch.

CAUTION: Do not attempt to disassemble brake booster as this unit will be serviced by Manufacturer's Service Station.

IMPORTANT INFORMATION

1. **DO NOT** over tighten Master Cylinder 100 inch lbs!
2. **DO NOT** over tighten linkage bolts! The linkage must pivot freely 30 ft lbs.
3. The Brake Light Switch is mounted in long slotted holes and can be adjusted, just like they are on the assembly line (manual vs power).



TESTING POWER BRAKE ON VEHICLE

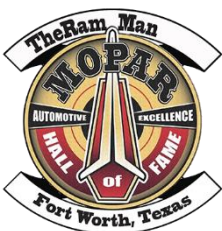
1. With engine off, press brake pedal several times to deplete all vacuum reserve in system.
2. Press brake pedal and hold light foot pressure on pedal. Start vehicle engine. If power brake is operating, pedal will fall away under foot pressure and less pressure is required to hold pedal in applied position. 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 wider 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.

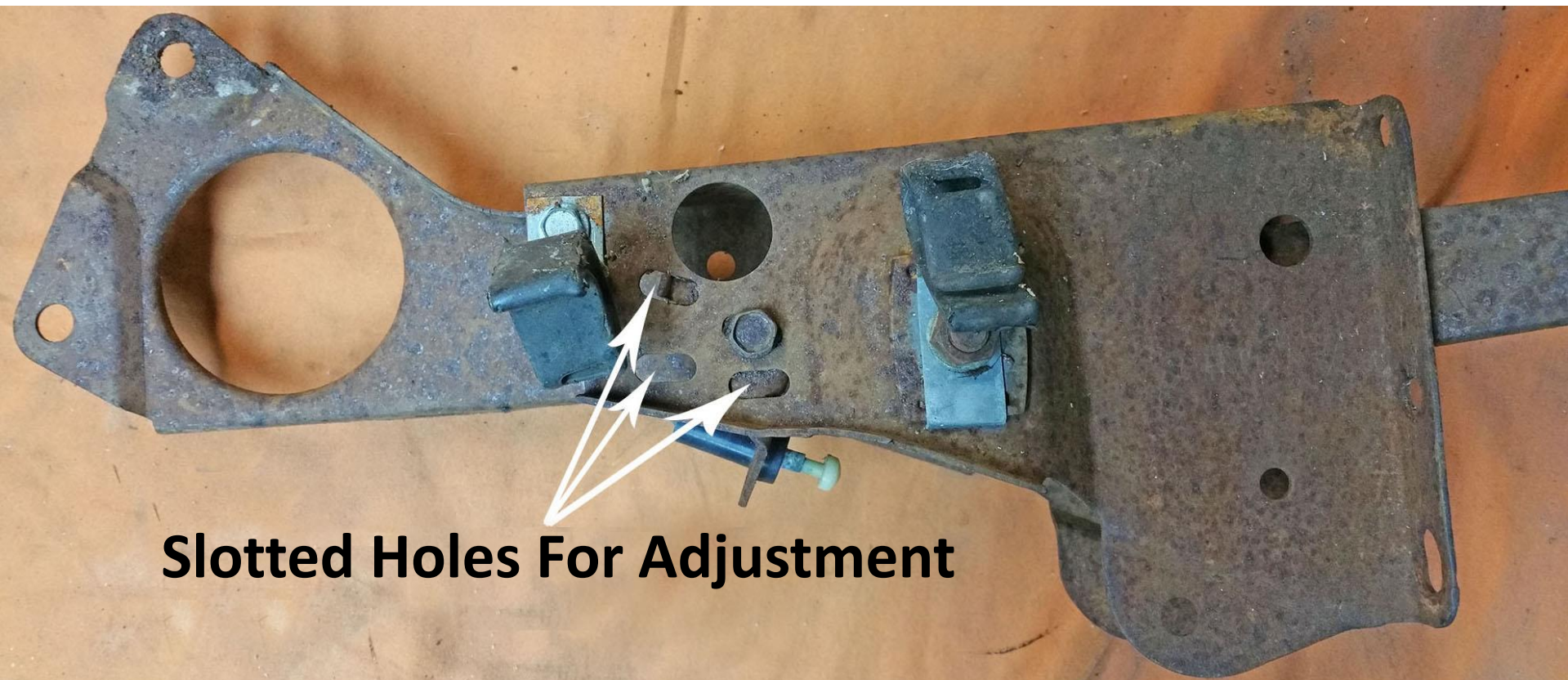


BRAKE SWITCH POSITION ADJUSTMENT

REAR

TOP

FRONT



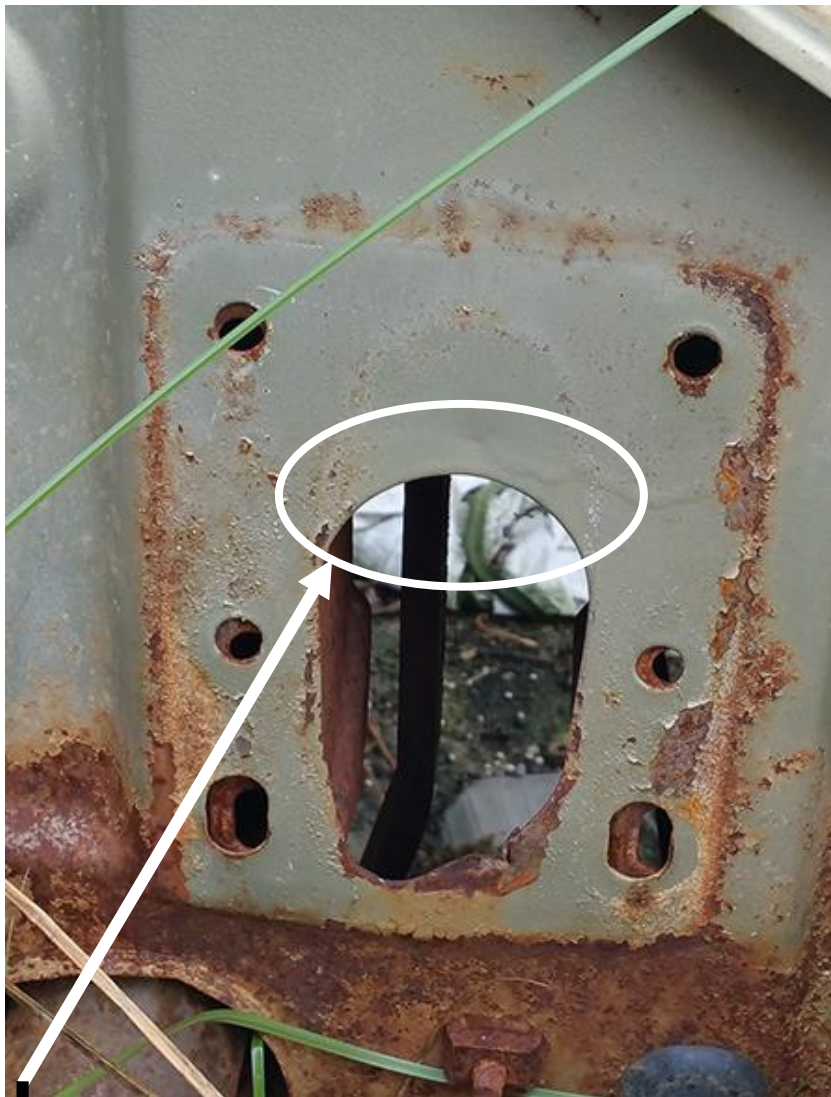
Slotted Holes For Adjustment

BOTTOM



Typical Firewall Hole

Fig. 1



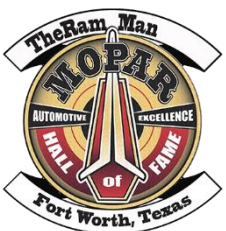
**Do Not Damage Your
Boot or Hub!**



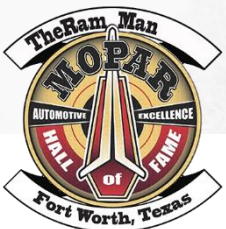
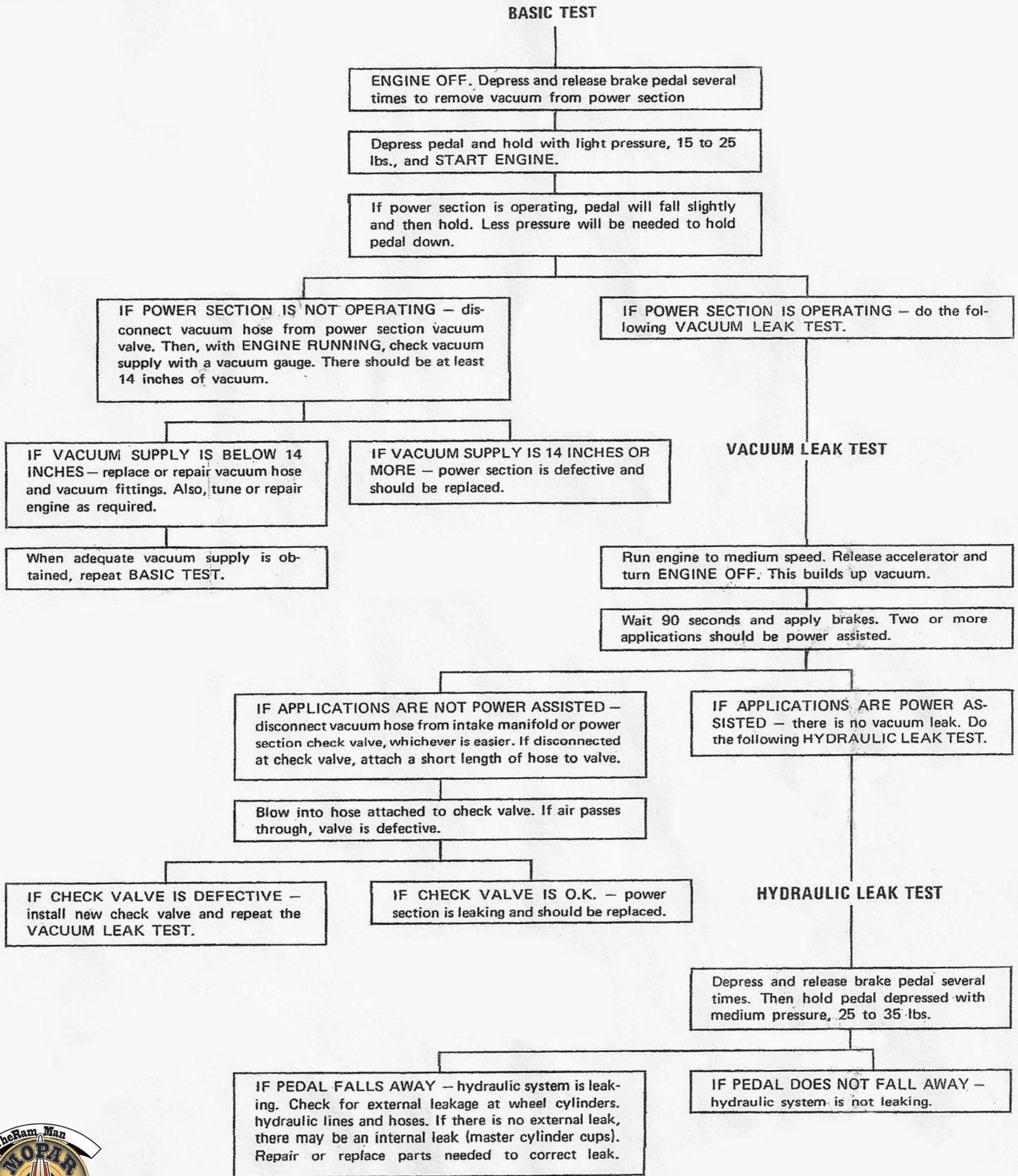
- ❖ The rear hub of the 2nd generation booster is 3/8" larger than the original. It uses modern internals that provide more air flow and approximately 10% more assist than the original.
- ❖ **You must enlarge the original firewall booster hole (see Fig. 1) at the top, approximately 3/8" for hub clearance.**
- ❖ **NOTE: If you damage the hub or boot (see Fig. 2) of your new Bendix booster, it will not be replaced under warranty. A new unit will cost approximately \$300.**
- ❖ A drill or air tool with a carbide cutter will make simple work of the solution.



On some very early builds (1970 E-Body's), the original studs coming out of the firewall were spot welded to the pedal hanger. These must be removed with a carbide cutter for booster installation. The factory soon realized this and immediately changed this.



TROUBLE-SHOOTING POWER BRAKES





7200 Winters Street
Fort Worth, TX 76120
(817) 429-0105

Email: info@therammanINC.com
Website: www.therammanINC.com

FANTASTIC TIPS AND IMPORTANT INFORMATION ON BRAKE SYSTEM HYDRAULICS

A major portion of all brake system problems and grief, can definitely be diagnosed with a simple procedure called, 2 person bleeding. Fluid flow issues, component failures and blocked brake lines, can all be identified easily, seeing is believing.

THE AWESOME ADVANTAGES OF THE OLD SCHOOL 2 PERSON BRAKE SYSTEM BLEEDING

1. A human gets to see and interpret the fluid flow at the bleeder fittings, no guessing.
2. This simple act indicates there are no flow restrictions and all components of the system are working correctly. No (or poor) fluid flow definitely indicates problems.

ADVANTAGE OF BENCH BLEEDING THE MASTER CYLINDER

You get to see and interpret the fluid flow, indicating the true status of the master cylinder. This simple act answers all questions. Are both ports flowing? Is only one flowing? Does it leak out of the back?.....etc.

BENCH BLEEDING MASTER CYLINDER

1. Clamp master cylinder securely in a bench vise.
2. Twist/push pointed bleeder tube adaptors into the outlet ports of the master cylinder and bend the tubes into the master cylinder reservoirs. Use the hose retainer.
3. Fill the reservoir with new brake fluid to approximately 1/4" from the top. Be sure the ends of the tubes are covered by the brake fluid.
4. Using a bleeding tool or suitable blunt stroking tool, begin slowly depressing the master cylinder piston using 3/4 to 1 inch strokes. Continue this procedure until you see a nice steady stream of fluid. While fluid is flowing on the compression stroke, you can lift the end of the clear tube out of the brake fluid, observe flow.
5. Remove master cylinder from vise and install on vehicle.
6. Now remove the bleeder tubes from the outlet ports and attach the vehicle's brake lines.
7. The wheel cylinders and calipers must now be bled to remove any remaining air from the system. Refer to the Service Manual or bleeding sequence guide for the proper bleeding procedure.

**There are multiple videos on YouTube at [theramman01](https://www.youtube.com/channel/UC...) channel,
showing Bleeding and Fluid Flow verification.**

TURN OVER FOR MORE NOTES



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TESTING MASTER CYLINDER

Be sure that the master cylinder compensates at both ports. This can be done by applying the pedal lightly with the engine running (power brakes) and observing for a geyser of fluid squirting up in the reservoirs. This may only occur in the front chamber and so to determine if the rear compensating port is open, it will be necessary to pump up the brakes rapidly and then hold the pedal down. Have an observer watch the fluid in the rear reservoir while the pedal is raised. A disturbance in the fluid indicates that the compensating port is open.

IMPORTANT NOTE

There is no warranty for any client that chooses to use Dot 5 Brake fluid. When Dot 5 and Dot 3 mix on any level (even microscopic), a chemical reaction happens that causes the seals, gaskets and cups to swell and drag, increasing resistance. This can cause slow apply and slow or no release. It is the single worst thing you can do to an old car, using original rubber cups and seals.

God Bless America,
Wayne

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