

UNIVERSAL FIREWALL MOUNT POWER BRAKE PEDAL CONVERSION KIT



WARNING

Proper operation of your brakes is essential for your safety and the safety of others. Any brake service should be performed **ONLY** by persons experienced in the installation and proper operation of brake systems. It is the responsibility of the person installing any brake component or kit to determine the suitability of the component or kit for the particular application. After installation and before operating your vehicle, be sure to test the function of the brakes under controlled conditions. **DO NOT DRIVE WITH UNTESTED BRAKES!**

IMPORTANT

Take time to read all the literature that came with this kit. Check the provided list of parts against what you received to ensure all parts are present. While this kit was designed to make the process of changing brake parts as simple as possible. **NOTE: WITH SOME KITS IT MAY BE NECESSARY TO MAKE MINOR CHANGES TO YOUR CAR! READ ALL WARRANTY DISCLAIMERS AND RETURN POLICIES INCLUDED IN THIS KIT PRIOR TO INSTALLATION!**

NOTE:

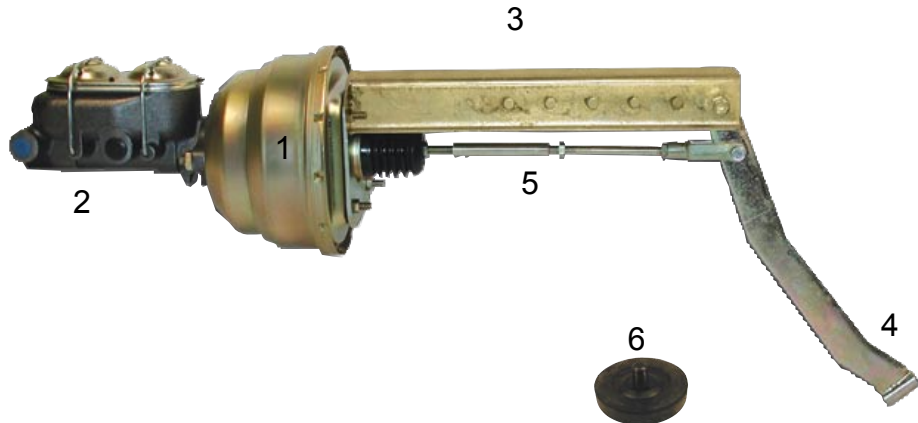
Before operating the vehicle after installation, test the function of the brakes under controlled conditions. Make several stops in a safe area from low speed and gradually work up to normal speeds. **DO NOT DRIVE WITH UNTESTED BRAKES!** Always utilize safety restraints when operating the vehicle.

Installation Instructions 631090

INCLUDED COMPONENTS

Your power brake conversion kit will contain the following components:

1. 8" dual diaphragm power booster
2. Master cylinder
3. Hanging pedal bracket
4. Pedal arm
5. Booster to pedal linkage
6. Pedal Pad



INSTALLATION

1. Pick a location that lines up with a proper brake pedal location.
2. Mark the firewall for drilling the center hole and the four booster mounting hole. The center hole is 2 1/2" diameter and the mounting holes are 3/8"
3. Measure the length of the pedal channel needed under the dash and cut off any excess.
4. Install the support bracket into position under the dash and attach the booster to the outside of the firewall using the 4 mounting studs and the supplied 3 MM nuts.
5. Mount the under dash support strap to the pedal support. Bend the support strap to conform to the dash as needed. Drill a 1/4" hole in the dash for attaching the strap.
6. Install the pedal on the pedal support using the 3/8 x 2 3/4" bolt Do not use a nut at this time. Check to be sure that this is where you want the pedal located. If the position is correct install the lock nut just enough to engage the nylon locking portion of the nut and have enough free play so the pedal will not bind.
7. Measure the distance between the booster push rod and the attachment hole in the swing pedal.
8. Pre assemble the push rod and forked clevis to the approximate measured length.
9. Screw the female end of the extension rod onto the booster rod with a minimum of 1/2" thread engaged. Secure the locknut to the push rod.
10. Adjust the clevis to fit the pedal. Note: at this time you may adjust your correct pedal height.
11. Mount the master to the booster. Check the pedal travel to be sure that the pedal will bottom out the master cylinder before the pedal touches the floor. You should be 1 1/2" off the floor
12. Remove the master cylinder and bench bleed it.
13. Bleed the entire braking system using the included instructions.
14. Test drive the vehicle in a safe area before using. If pedal is spongy re-bleed system.

THE MOST COMMON REASONS FOR A POOR BRAKE PEDAL:

If you can't get a pedal PLEASE PERFORM THESE TESTS BEFORE CALLING!

1. The bleeder screws on the calipers are not facing up.
2. The master cylinder was not bench bled or was not bled completely.
3. Defective rebuilt master cylinder with pitted cylinder bore or defective pressure seals.
4. Master cylinder bore size too small for the system volume requirements.
5. Use of a disc/drum master for a 4 wheel disc system.
6. Master cylinder lower than the calipers or wheel cylinders.
6. Lines or components near a heat source.
7. Lines that loop up higher than the master cylinder and then come back down this traps air.
8. Low drag metric calipers without the use of a quick take up master cylinder.
9. No residual valve to rear drums.
10. Drum brake wheel cylinders too large.
11. Silicone brake fluid (it can tend to trap air and cause seals to swell).
12. Rear caliper parking brake / pistons not set properly with a rear disc system.
13. Rear calipers not being bled properly. Most four wheel disc brake problems come from the rear.
14. Improper pedal adjustment with too much free play.
15. Old or inferior quality brake hoses.

HOW TO PROPERLY DIAGNOSE A BRAKE PROBLEM:

If you have very poor brakes, a spongy pedal or no pedal at all you will have to do some diagnostics to determine where the problem is in your braking system. Is it in the master cylinder, the front brakes or the rear brakes? These tests assume that your system is properly installed and bled. Perform these simple tests to find where the problem is. Once you know where the problem is it will be much easier to fix.

1. Disconnect the brake lines from the master cylinder while leaving it-on the vehicle.
2. Obtain solid tapered plugs for the master cylinder outlets with the correct thread pitch. These are available at any good automotive auto parts store. You may also use our supplied bleeder kit.
3. Plug the master cylinder outlets. Step on the pedal and hold pressure for about 30 seconds. If the pedal remains firm then the master cylinder is good. If the pedal sinks to the floor then the cylinder is bad.
4. If the master cylinder is fine, connect the line to the front brakes. If the pedal remains firm then the problem is not coming from the front brakes. If the pedal sinks to the floor or is excessively spongy then the problem is with the front brakes.

5. Connect the rear and if the pedal goes bad then the problem is in the rear. You may also check whether your lack of a pedal comes from the front or the rear quickly this way. If you are sure the master cylinder is good, clamp off the front rubber hoses and try the pedal. If you get a good pedal then you know the problem is from the front calipers. Be very careful not to damage the hoses and try to protect them from damage by placing the hose between something smooth. There is a special tool sold in auto parts stores for this purpose. Try it on the rear if the front is fine.

IF YOU HAVE A GOOD PEDAL BUT YOUR CAR WILL NOT STOP YOU MUST OBTAIN PRESSURE READINGS AT THE MASTER CYLINDER AND THE FRONT AND REAR WHEELS BEFORE CALLING.

RECOMMENDED PRESSURE READINGS

Disc brakes minimum pressure: 800 psi.
Drum brakes minimum pressure: 400 psi.

WHAT TO DO IF YOU SUSPECT YOUR BOOSTER IS NOT WORKING

It is rare that one of our kits will contain a defective power booster but if you suspect that your booster is not functioning, correctly perform the following tests:

BASIC TEST

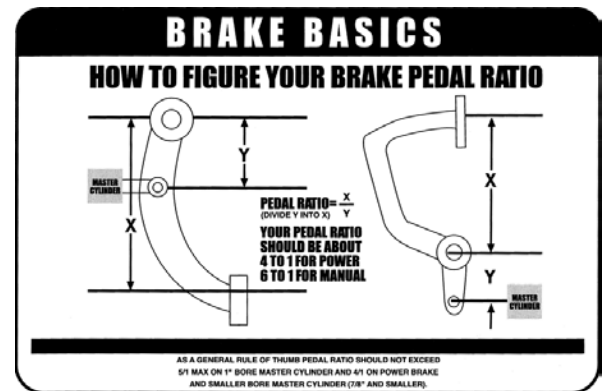
1. With the engine off depress and release the brake pedal several times to eliminate vacuum from the power section.
2. Depress the pedal and hold down with light pressure, 15 to 25 pounds.
3. Start engine.
4. If the power unit is operating the pedal will drop slightly. Less pressure will be needed to hold the pedal down.

IF BOOSTER IS NOT OPERATING (GIVING A VERY HARD PEDAL)

1. Disconnect the vacuum hose from the booster check valve and check the vacuum level at this point with the engine running with a vacuum gauge. You should have at least 18" vacuum to the booster. Anything lower will begin to give a hard pedal. If the vacuum level is below 18" you may be able to tune the engine and bring the vacuum level up to that level. If the vacuum level is around 16" the addition of a vacuum reserve canister will improve the braking. If the vacuum level is below 16" you will need to add an electric vacuum assist pump to supplement the engine vacuum.
2. If the vacuum level at the check valve is 18", check that the booster check valve is working. Disconnect the vacuum hose at the check valve and attach a piece of tubing. Blow into the valve. If air passes through, the valve is defective and must be replaced. Also look into the hose attachment neck on the check valve and be sure there is no obstruction inside the valve.
3. Check your booster for a vacuum leak. With everything hooked up, run the engine at moderate speed. Release the accelerator and turn the engine off. Wait 90 seconds and apply the brakes. If the brake applications are power assisted there is no leak. If there is no power assist the booster is defective and must be replaced.

IF THE BOOSTER IS OPERATING BUT YOU STILL HAVE A HARD PEDAL

1. Your combination valve may have tripped shutting off fluid flow to the front or rear brakes. This condition will produce a very hard pedal. Check that fluid passes through the valve to both the front and rear by cracking a bleeder screw and observing a good flow of fluid. If one half of the system does not have flow, re-center the valve.
2. You may have frozen rear wheel cylinders or frozen caliper pistons. If these components freeze you can get a very hard pedal.
3. Your pedal ratio may be too low. Check your pedal ratio. The pedal ratio must be in between 4:1 to 5:1. Some of the older cars that had power brakes used a ratio of almost 1:1. If you add a vacuum booster to this type of car you will have a very hard pedal. Typically we are talking about late 50's cars. Adjust ratio as necessary.
4. Your booster may be undersized for the weight of the vehicle or the bore size of the master. If you try to use a small diameter booster such as a 7" street rod booster for a heavy car you will get a very hard pedal. Compounding the problem is an attempt to use a large bore master (1-1/4" or larger) on a small booster.



IF YOUR BRAKE PEDAL IS VERY SENSITIVE AND THE BRAKES GRAB

1. Your pedal ratio may be too high. Power brakes will require a 4:1 to 5:1 ratio. If your ratio is around 6:1 you are getting too much mechanical advantage making the brakes extremely sensitive. Adjust the ratio to correct level.
2. The booster may be too large for the weight of the vehicle. Lightweight vehicles with large boosters give you "touchy brakes". This effect may be dampened somewhat by going to a larger bore master.
3. Too large a booster for front drum brakes. Drum brakes do not require as much pressure as disc brakes (500 psi vs. 1,000 psi). If your booster is very large (11") and you have drum brakes you are over-boosted. Do a pressure test to determine what you have.
4. The booster has a cracked internal hub. When there is a crack in the phenolic hub inside the booster it will be either totally on or totally off. Any slight pressure to the pedal will cause the brakes to lock up. The booster must be replaced.