40 Huntingwood Drive Huntingwood NSW 2148

Phone: (02) 8825 1999 Website: www.aeroflowperformance.com

AEROFLOW PERFORMANCE

BRAKE BOOSTER

WARNING!

THIS PRODUCT REQUIRES DETAILED KNOWLEDGE OF AUTOMOTIVE SYSTEMS. WE RECOMMEND THAT THIS INSTALLATION BE CARRIED OUT BY A QUALIFIED AUTOMOTIVE TECHNICIAN.

The selection and installation of brake components should only be done by personnel experienced in the proper installation and operation of braking systems. The installer must use his/her own discretion to determine the suitability of the brake components and brake kits for every particular application.

INTRODUCTION

Congratulations on your purchase of Aeroflow Performance Brake Booster. Aeroflow Performance products cannot and will not be responsible for any damage, or other conditions resulting from misapplication of the parts described herein. However, it is our intention to provide the best possible products for our customer, products that perform properly and satisfy your expectations. Should you have any questions? Please call technical support at +61 2 8825 1900 and have the product part number on hand when calling.

If you're pushing your brake to the floor while driving, or you've lost that vacuum feeling in the pedal, means you may need to replace your brake booster. Aeroflow Performance brake boosters can assist in upgrading your manual or factory brake system to help you stop your vehicle with minimal pressure to your brakes. These vacuum dual diaphragm units enhance braking ability, while offering much easier pedal operation. These GM specific brake boosters are available in 7” or 8” diameters in either a black or chrome finish.



INSTALLATION GUIDELINES

Removing a Brake Booster

1. **CAUTION:** Perform all work on a level surface. Chock the wheels, set the emergency brake and put the transmission in Park.
2. Disconnect the ground cable from the battery. Vent any vacuum from the booster by applying the brakes several times. You will notice a change to a hard pedal when all vacuum has been vented.
3. Empty Brake master cylinder so no brake fluid remains in the master cylinder.
4. Carefully disconnect all hydraulic brake lines from the brake master cylinder.
5. Remove the nuts attaching the master cylinder to the brake booster.
6. Separate the master cylinder from the brake booster mounting studs. Keep the master cylinder level
    I. **CAUTION**: DO NOT let brake fluid contact painted surfaces as the fluid will damage paint. Should brake fluid get on paint, immediately flush with water.
7. Disconnect vacuum hose(s) from the brake booster.
8. Working under the instrument panel, disconnect the brake booster rod linkage from the brake pedal.
9. Remove the nuts holding the brake booster unit to the firewall.
    I. **NOTE**: The nuts may be located under the dash or on the engine side of the firewall.
10. Rotate the rod linkage if necessary and guide it through the firewall as you remove the brake booster.
11. Remove linkage parts from the original brake booster for installation on the replacement unit.
    I. **IMPORTANT:** Be sure to save any spacers or non-riveted mounting brackets since they must be reused when installing the replacement unit. These parts are critical to the operation of the replacement brake booster.

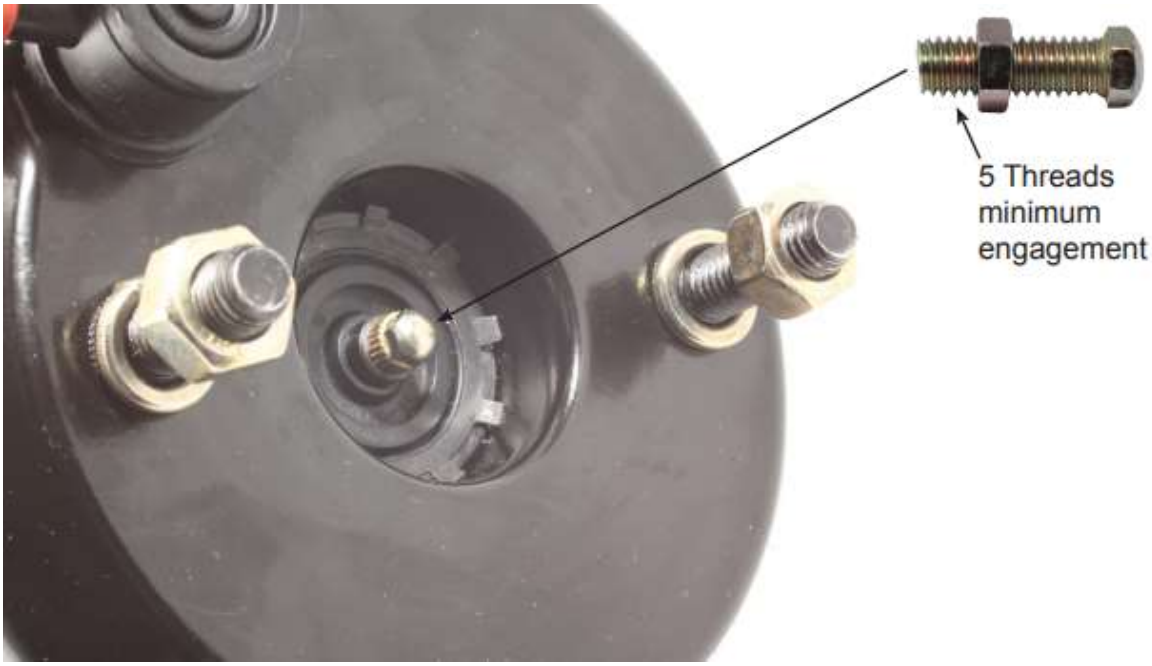
Installing the Brake Booster

1. Install any linkage from the old unit onto the replacement unit (if applicable).
    I. **Important**: Install spacers, gaskets and or mounting brackets from the old unit onto the replacement unit.
2. Rotate the rod linkage as required to guide it through the firewall and position the new brake booster. Do not force the rod in either direction as this will damage the hub and void the warranty.
3. Install and tighten the 4 brake booster mounting nuts.
4. Working under the instrument panel, connect the rod linkage to the brake pedal.
    I. **NOTE:** Pedal free play should be 1/16” to 1/4”.
    II. Adjust pedal stop or stop light switch behind brake pedal if necessary.
5. Carefully locate the master cylinder onto the front brake booster mounting studs.
6. Install and tighten the master cylinder-to-booster mounting nuts.
7. Connect the vacuum hose(s) to the brake booster.
8. Connect hydraulic lines to the master cylinder with the fittings just snug. While an assistant applies moderate pressure to the brake pedal, loosen one brake line fitting to let any trapped air from the connection. Then tighten the fitting before releasing the pedal. Wait 15 seconds and then repeat the process (including the 15 second delay) for each fitting on the master cylinder. Make sure the brake fluid reservoir is kept properly filled during and after this process.
9. Refer to bleeding the master cylinder steps down below.

MASTER-CYLINDER PUSH ROD ADJUSTMENT

Correct push rod length is essential to reliable braking. If the rod is too long, it causes the compensating ports in the master cylinder to be closed off, eventually resulting in brake drag. If the push rod is too short, there will be excessive brake pedal travel and possible there will be a groaning noise from the brake booster. Use the following procedure to check the push rod adjustment.

1. Remove the master cylinder reservoir cap or cover.
2. While an assistant slightly depresses the brake pedal, watch for fluid to erupt in the reservoir when the pedal is depressed 3/8” to 1/2”. This indicates correct push rod length.
3. If the pedal travels more than 1/2” before master cylinder fluid erupts, the push rod is too short. If nothing happens no matter how far the pedal is depressed, the push rod is probably too long.
4. To adjust the push rod length, first remove the master cylinder from the brake booster. Using a pair of pliers, turn the push rod adjusting not in to shorten and out to lengthen the push rod.
5. Install the master cylinder onto the brake booster and recheck push rod length.
6. Connect the vacuum hose(s) to the brake booster.
7. Reconnect the ground cable to the battery.
8. Make sure the braking system works correctly before moving the vehicle. If the pedal is soft or has excessive travel, it may be necessary to bleed the entire braking system.



BENCH BLEEDING THE MASTER CYLINDER

"Bench bleeding" (removing air from the master cylinder) must be completed BEFORE the replacement unit is installed in the vehicle. Otherwise, the brake pedal will be insufficient and **THE WARRANTY WILL BE VOID!**

1. Position the replacement master cylinder in a vice so that the jaws clamp onto the mounting flange. DO NOT TIGHTEN THE VISE JAWS ON THE MASTER CYLINDER BODY! This will cause damage and void the warranty.
2. Install bleeder tubes, if available, into the brake line outlet ports or use plugs to seal the ports.
3. Add enough clean brake fluid to the reservoir so that the bleeder tube ends are submerged beneath the fluid level.
4. Use a wooden dowel or similar tool to slowly push the master cylinder piston in about one inch, then release the piston slowly.
    I. **CAUTION:** Be careful to avoid spraying brake fluid! Keep your face away from the open reservoir.
5. Wait 15 seconds and repeat step 5 until you no longer see air bubbles in the reservoir.
6. Replace the reservoir cover. Do not remove bleeder tubes from the brake line fittings yet.
    I. **NOTE:** Some fluid around the mouth of the piston bore is normal and does not indicate leakage. This is a rust inhibitive bore lubricant used during assembly.

BLEEDING THE LINES ON CAR

1. Remove the master cylinder cover and check the fluid level. Be sure to check the fluid level often during the bleeding process. And add fluid as necessary to prevent air from entering the master cylinder. If this happens you MUST start over at bench bleeding the master cylinder.
2. Replace the master cylinder cap.
3. You will need an assistant to pump the brake pedal while you open and close the bleeder screws at the appropriate times during this process.
4. The wheel farthest away from the master cylinder is bled first which in most cases is in this order: Right rear, left rear, right front and left front. Failure to bleed in the proper order will cause air to remain in the lines.
5. Crack the bleeder screws at the appropriate wheel just enough to make it easy to loosen later. Attach a length of clear plastic tube to the end of the bleeder screw. Submerge the other end of the tube into a container filled with brake fluid.
6. Crack the bleeder screw open just enough to allow fluid to leave the valve and have an assistant slowly and firmly apply pressure to the pedal. Have the assistant hold pressure on the pedal until you see no more air bubbles coming out of the hose. Close the bleeder screw and have the assistant release the brake pedal. Repeat this step until no more air is seen leaving the tube.
7. Proceed to the next wheel in the bleeding order and repeat steps 5 & 6 for each. Be sure to check the fluid level in the master cylinder frequently.
8. Refill the master cylinder to the appropriate level when finished with the entire bleeding process.
9. Check the pedal, it should feel solid when depressed with no sponginess and should hold under constant pressure without dropping. If you still have a spongy pedal, repeat the entire process.
10. Before operating the vehicle test the brakes under controlled conditions. Make several stops in a safe area from low speeds gradually working up to operating speeds.

BRAKE TESTING

- Make sure pedal is firm: Hold firm pressure on pedal for several minutes, it should remain in position without sinking. If pedal sinks toward floor, check system for fluid leaks. DO NOT drive vehicle if pedal does not stay firm or can be pushed to the floor with normal pressure.
- At very low speed apply brakes hard several times while turning steering from full left to full right, repeat several times. Remove the wheels and check that components are not touching, rubbing, or leaking.
- Carefully examine all brake components, brake lines, and fittings for leaks and interference.
- Make sure there is no interference with wheels or suspension components.
- Drive vehicle at low speed making moderate and hard stops. Brakes should feel normal and positive. Again, check for leaks and interference.
- Always test vehicle in a safe place where there is no danger to (or from) other people or vehicles.
- Always wear seat belts and make use of all safety equipment.

THE MOST COMMON REASON FOR A POOR PEDAL

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 master cylinder with pitted cylinder bore or defective seals.
4. Master cylinder bore size too small for system volume requirements.
5. Master cylinder mounted lower than the calipers or wheel cylinders without the use of a residual valve.
6. Lines or components near a heat source.
7. No residual valve to rear drums.
8. Drum brake wheel cylinders too large.
9. Rear caliper parking / pistons not set up properly with a rear disc system.
10. Rear calipers not being bled properly. Most four-wheel disc brake problems come from the rear.
11. Improper pedal adjustment with too much play.
12. Old or inferior quality brake hoses.

HOW TO PROPERLY DIAGNOSE A BRAKE PROBLEM

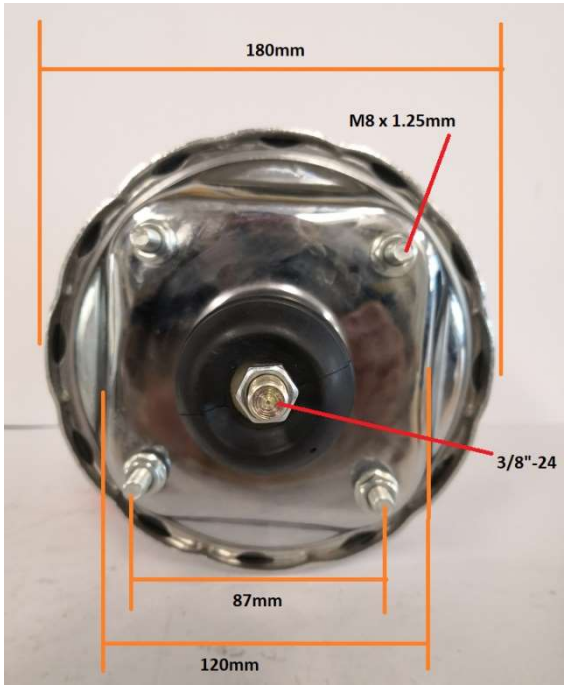
If you have very poor brakes, a spongy pedal or no pedal at all you will have to do some diagnostics to determine where the problem is in your system. Is it the master cylinder, the front brakes or the rear brakes? These tests assume that your system is properly installed and bled. Perform these simple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

Disc brakes minimum pressure 800 PSI Drum brakes minimum pressure 400 PSI


115mm
100mm
128mm


3/8" Barb
Push Rod
M10 x 1.50mm
87mm


180mm
M8 x 1.25mm
3/8"-24
87mm
120mm