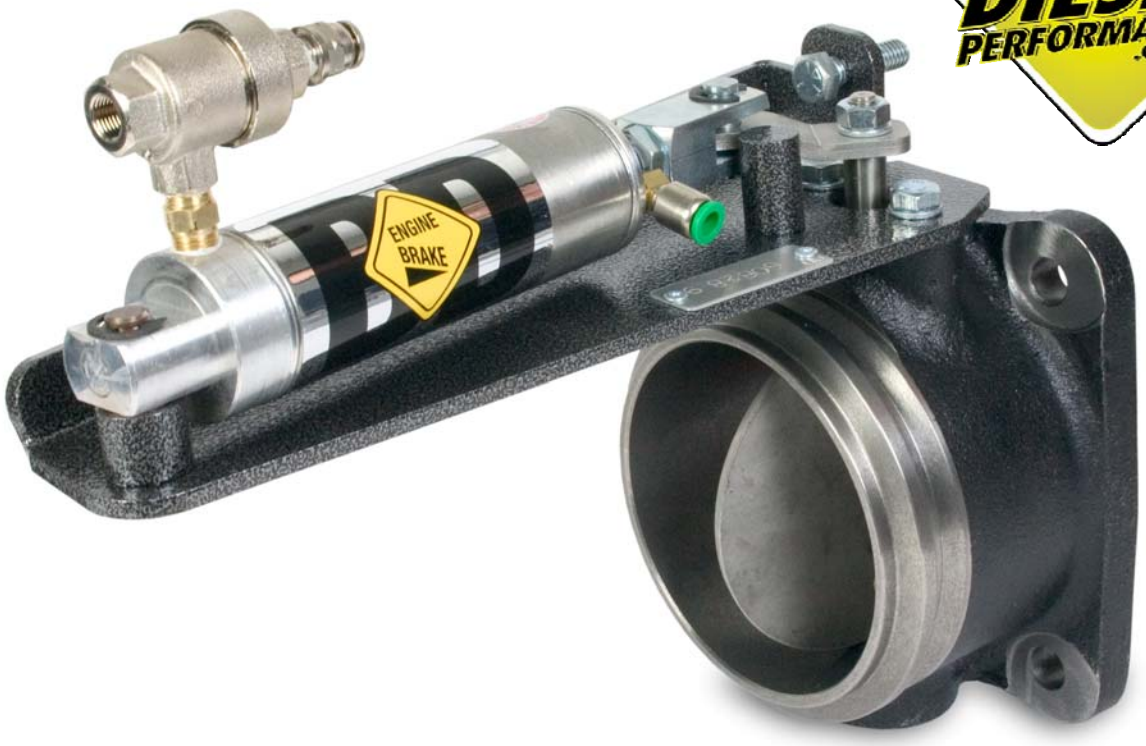

2001-2004 GMC/Chevy LB7 Duramax

BD Remote Mount Exhaust Brake

Part Number	Application
1024118	Duramax with 3.5” Stock Exhaust, Single Alternator
1024119	Duramax with 4.0” Aftermarket Exhaust, Single Alternator
1024118DA	Duramax with 3.5” Stock Exhaust, DUAL Alternators
1024119DA	Duramax with 4.0” Aftermarket Exhaust, DUAL Alternators

Serial # _____

Date Purchased _____

Purchased from _____

Installed by _____

***** Please read this manual before starting installation. *****

OWNER’S MANUAL - LEAVE IN GLOVE BOX

Install Manual Part # I1024118 – Printed in Canada

BD Engine Brake Inc.
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U.S. Shipping Address: 88-446 Harrison St, Sumas, WA 98295 U.S. Mailing Address: P.O. Box 231, Sumas, WA 98295
Phone: 604-853-6096 | Fax: 604-853-8749 | Internet: www.bd-power.com

T A B L E O F C O N T E N T S

Welcome

Thank you for purchasing a BD Exhaust Brake. This manual is divided into different areas to assist you with your installation and operation of your braking unit. We strongly suggest that you write down the kit and serial numbers of your unit in the spaces provided and retain this manual for any future reference.

**** Please fill out and mail registration card as soon as possible. ****

Brake Kit Contents

DURAMAX LB7 EXHAUST BRAKE BASE KIT

Every kit takes these components – specialty components on tables below.

Part #	Qty.	Description
1124015	1	Valve Assembly
1321039	1	DFIV Control Kit
1220015	1	Pump control Kit
1220100	1	Air Brake snorkel kit
1406577	1	Exhaust gasket
1100404	1	4.0” Marmon exhaust clamp

1024118 – Duramax 3.5” Stock Exhaust / Single Alternator

Additional Components

Part #	Qty.	Description
1030118	1	Compressor / Regulator Kit
1100350	1	3.5” Exhaust pipe adapter
1100735	1	3.5” Exhaust seal clamp

1024119 – Duramax 4.0” Aftermarket Exhaust / Single Alternator

Additional Components

Part #	Qty.	Description
1030118	1	Compressor / Regulator Kit
1100400	1	4.0” Exhaust pipe adapter
1100740	1	4.0” Exhaust seal clamp

1024118DA - Duramax 3.5” Stock Exhaust / DUAL Alternators ***Additional Components***		
Part #	**Qty.**	**Description**
1030116	1	Compressor / Regulator Kit
1100350	1	3.5” Exhaust pipe adapter
1100735	1	3.5” Exhaust seal clamp

1024119DA – Duramax 4.0” Aftermarket Exhaust / DUAL Alternators ***Additional Components***		
Part #	**Qty.**	**Description**
1030116	1	Compressor / Regulator Kit
1100400	1	4.0” Exhaust pipe adapter
1100740	1	4.0” Exhaust seal clamp

Pre-Installation

Before installation can begin, we must take a look at any other requirements or options for your particular application.

If the driver likes gauges, another handy option is the Brake Pressure Gauge Kit. This gauge will allow you to monitor the pressures being developed by the exhaust brake.

Special Tools Required

- Measuring tape or ruler
- Drill with 1/8” bit and Unibit
- Sawsall or hacksaw
- Crimping Pliers
- Test light

Brake Valve Installation

From underneath the vehicle, remove the 4 nuts at the flange that hold the intermediate pipe to the down pipe.

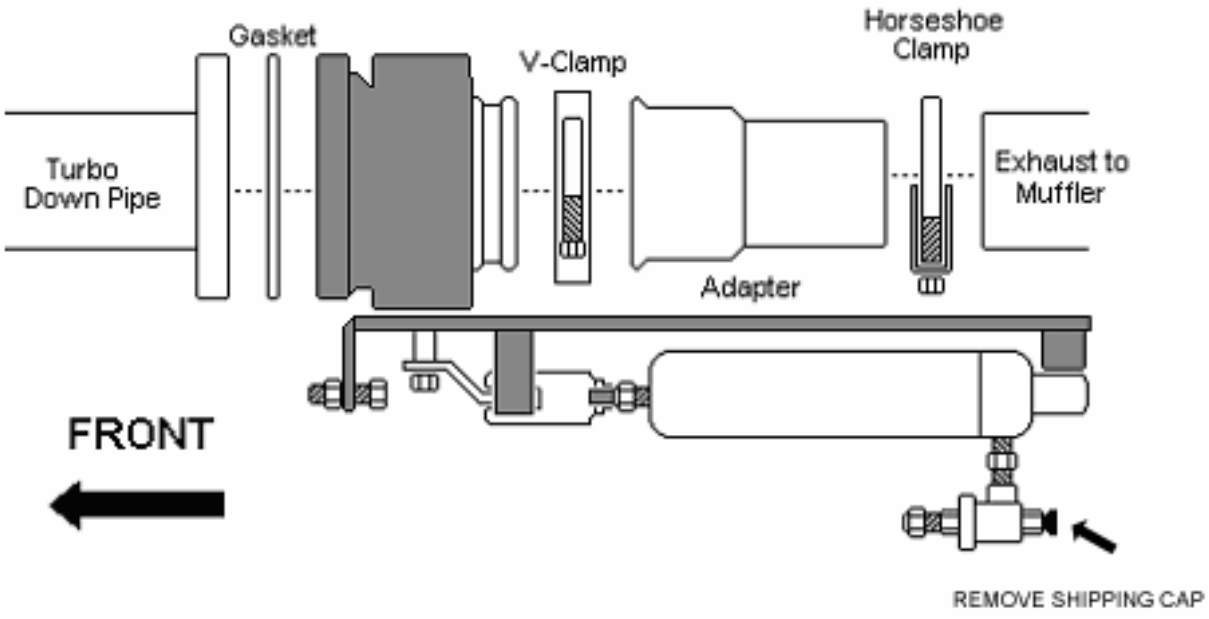
Remove two of the exhaust pipe hanger pins from the exhaust hangers to allow the rear section of the exhaust to hang down and provide access to the exhaust. It may help to spray WD40 on the pins and slide the rubber hangers off.

SUPPORT THE REAR SECTION OF THE EXHAUST OR IT COULD FALL RESULTING IN INJURY OR DAMAGE.

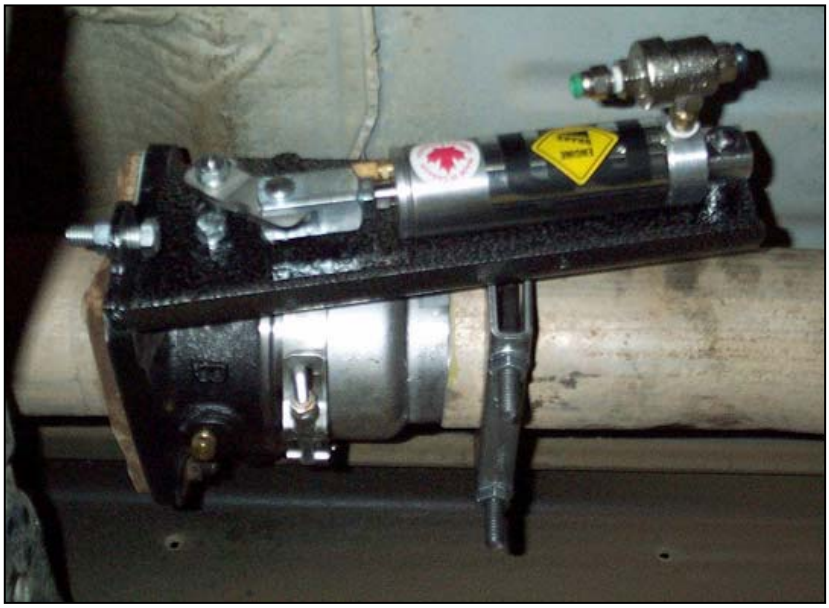
Measure and mark the intermediate exhaust pipe 5½" from the flange and cut it off. ***Do not cut the down pipe.***

Clean off the cut end of the intermediate pipe with a file (to remove burrs left from cutting the pipe) and insert the adapter pipe and pipe clamp loosely. (You may have to tap the adapter in with a soft-faced hammer or a piece of wood)

Clean off any old gasket material existing from the down pipe flange and install the BD Brake valve assembly with the new gasket provided. Install the 4 mounting bolts. Ensure that the brake is properly aligned and tighten the 4 mount bolts.



THE VALVE ACTUATING CYLINDER MUST BE POSITIONED TO THE MIDDLE / INSIDE OF THE VEHICLE. ***REMOVE THE BLACK SHIPPING CAP FROM RELEASE VALVE VENT OR THE BRAKE MAY STAY ENGAGED.***



Install the rear exhaust with the adapter flange onto the mounted BD Brake valve, then install the v-style wedge clamp and tighten it.

Re-install the rubber exhaust hangers that were removed in step #2 checking for proper exhaust alignment, and then tighten the horseshoe style clamp.

NOTE: WHISTLING FROM THE EXHAUST BRAKE WHILE IS ENGAGED INDICATES IMPROPER V-STYLE WEDGE CLAMP ALIGNMENT.

Solenoid Valve Installation

The **solenoid valve assembly** controls the application of air pressure to the exhaust brake valve. There is no viable place to mount this assembly on the passenger side of the vehicle because of the exhaust system, so it must be mounted on the driver side. The solenoid valve should be mounted *as close as possible* to the exhaust brake so that it actuates quickly.

There is a wiring harness running along the outside of the driver's side frame rail and is secured with plastic clamps.

Locate one of the clamps closest to the rear transmission cross-member and pop the clamp mount out of the frame. This should leave a hole which is approximately 3/8" in diameter.

Using the hardware provided, mount the Solenoid Valve Assembly to the inside of the frame rail and re-install filter.

NOTE: Removal of the filter may necessary to install mounting bolt.

Air Supply

Insert one end of the ¼" plastic hose into the quick-connect coupler on the quick release valve on the brake air cylinder and route it over the drive shaft/transfer case to the 90° fitting on the solenoid valve.

Cut the hose with a knife or a hose cutter, leaving some slack for routing (do NOT use side cutting pliers as the hose will be squashed and leak). Ensure the end is cleaned of any burrs and insert the loose end into the 90° fitting on the solenoid valve.

An air vent snorkel kit is supplied in the brake kit which has a 14' section of ¼" plastic with a plastic yellow filter on one end. Insert the free end of the hose into the 90° fitting on the front of the brake air cylinder and route it over the drive shaft/transfer case.

Support these two hoses with the four plastic support clamps positioned in pairs using the self-tapping screws provided. You will have to drill a 1/8" pilot hole into the cross support for the clamp screws.

CARE MUST BE TAKEN NOT TO KINK THE PLASTIC HOSE OR ROUTE IT NEAR A HEAT SOURCE.

Insert one end of the remaining ¼" hose into the straight fitting of the solenoid valve and route this hose as well as the plastic hose with the yellow snorkel filter along the frame rail and into the engine compartment. The hose from the solenoid valve will later be attached to the regulator on the air compressor assembly when that is installed. The hose with the filter can be run through the firewall and secured under the dash area, away from any moving or heated equipment.

NOTE: To remove the plastic hose from the quick-connect coupler, push the outer colored ring toward the fitting and pull the hose out.

Main Wiring Harness Installation

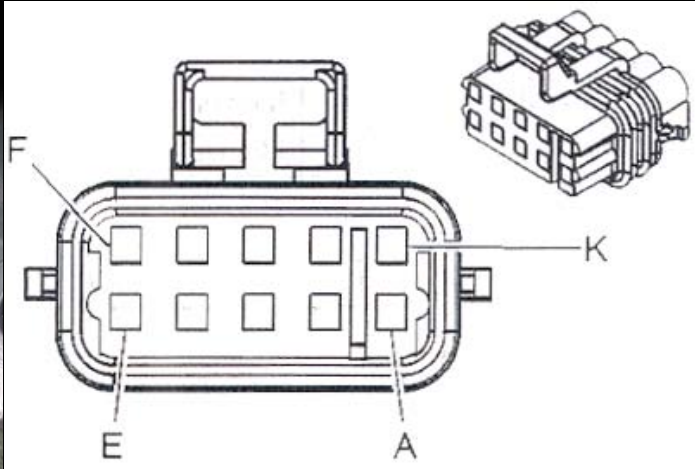
To obtain access to the accelerator pedal and wiring harness remove the dashboard bezel by pulling rearward on the corners of the bezel.

Note: Placing the transmission all the way into 1st/low gear and ensuring the tilt steering is all the way down will allow for easy removal.

Remove the lower steering column panel by removing the mounting screws and unsnapping the panel from the instrument panel.

You will need to find a suitable mounting location for the DFIV. Double sided tape or zap straps can be used to securely store the DFIV out of harms way.

DURAMAX APPS WIRING



APP SENSOR 1 SIGNAL -
Pin F (Dark Blue wire – Circuit 1161)

At the throttle pedal, locate the accelerator position pedal sensor plug and find the dark blue wire located at pin F. Use the provided gray (or red) Posi-Tap to tap on this wire. This wire should be routed to the TPS/APPS input of the DFIV.

Under the dash, by the brake pedal, locate the brake light switch and the Purple wire coming from it. With the key turned on, test the purple wire to ensure it is the correct one. This wire will have power when the key is on and power will go OFF when the brake pedal is applied.

Strip away some of the insulation wrapping to expose the wire about 6-8" (a good working length) away from the brake switch.

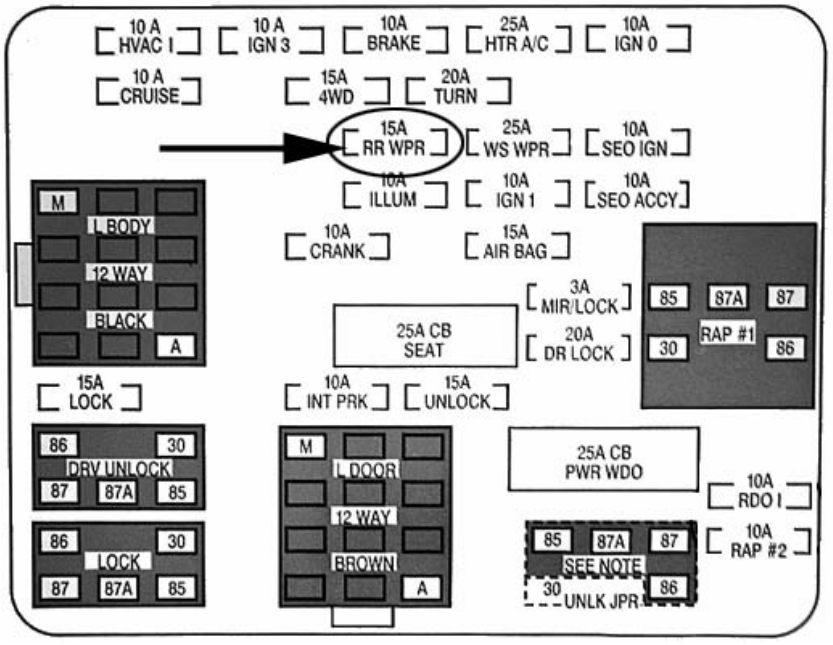
Cut the purple wire at this point and strip ¼" insulation off each end and move it up out of the way at this time.

Insert one end of the cut wire into the DFIV input marked **"COMMON"** and the other cut end into the FORD input. Extra wire has been provided to ease the installation.

At this time you can also route the ground connection to the DFIV. You can select one of the mounting bolts or nuts that are fastened to the firewall. Be sure that it is a good solid clean ground.

12V Power

Locate a switched power supply on the fuse panel such as the located in this diagram then install the brass fuse tap provided onto the HOT side of fuse which will be the side with power to it when the fuse is removed and key on.



Run the power wire from the exhaust brake toggle switch over to the fuse block and connect to installed fuse tap.

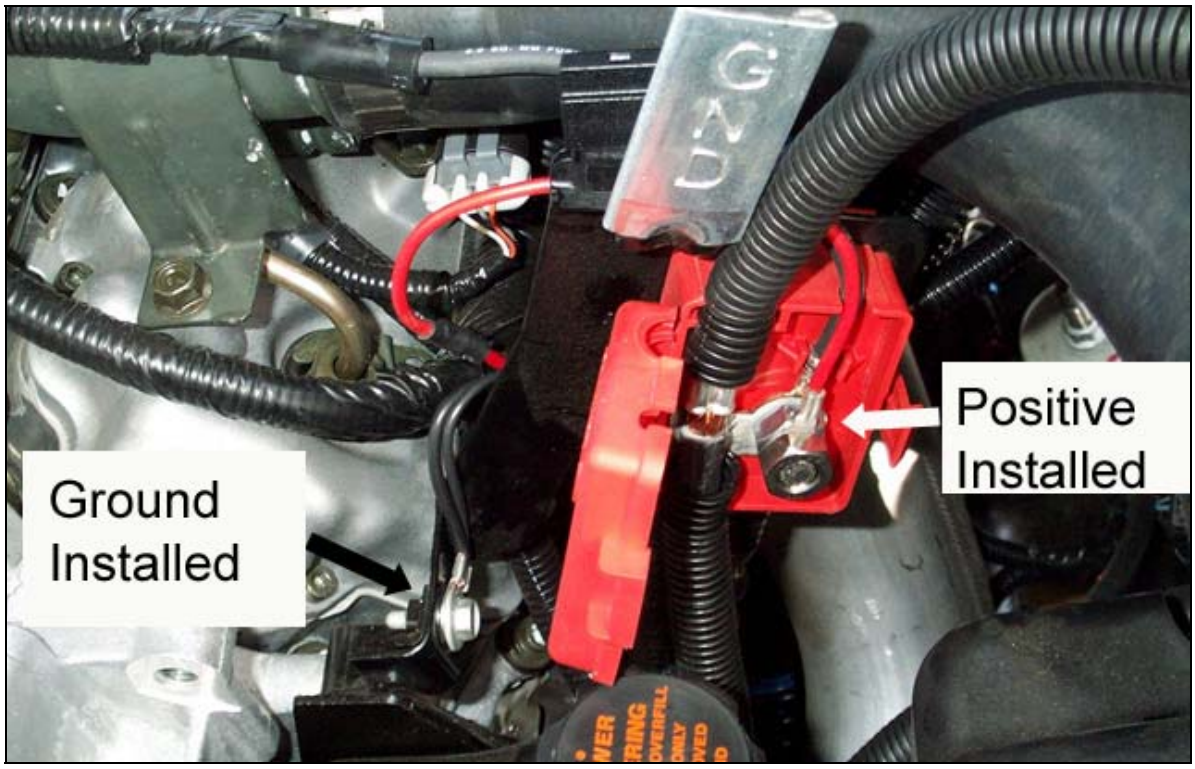
Located at the end of the manual is the master wiring diagram that you can use for assistance.

Power Hook-up

Open the red protective cover of the remote battery connection and you will see a nut and stud attached to the positive terminal.

Route the power wire segment from the air compressor assembly to this terminal. Attach the red connector to the positive terminal and secure with nut provided.

Locate the bolt on the power steering reservoir bracket to the left of the protective cover, and install ground wires.



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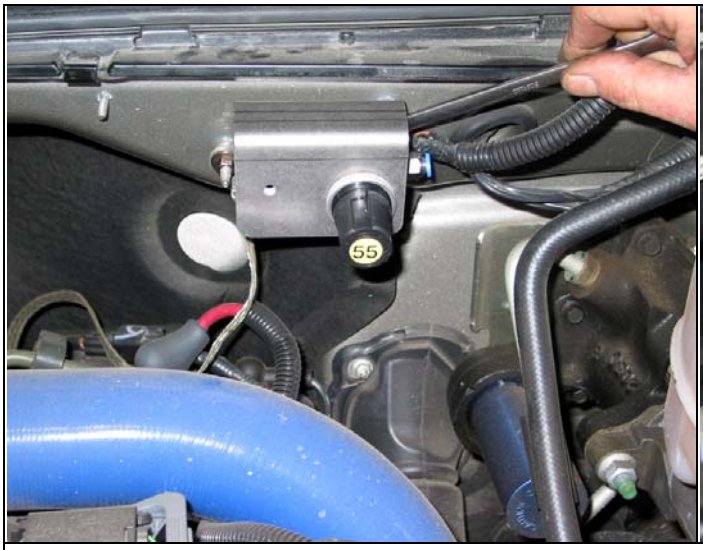
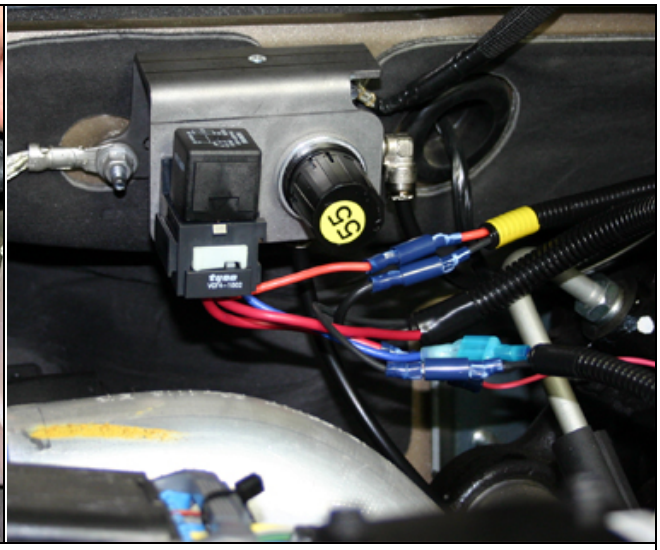
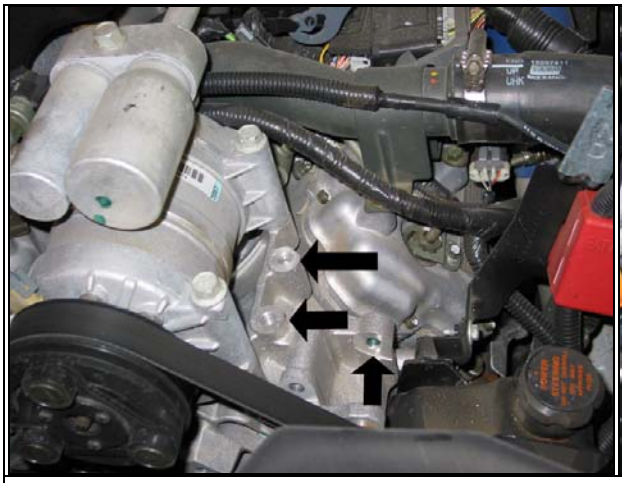
Air Regulator & Air Compressor Install (Single Alternators)





Locate a spot just to the left of the brake master cylinder assembly and install regulator & relay assembly. You may have to remove the relay and the relay socket holder to enable access to the mounting screw.



Locate a position by the air conditioner compressor to mount the pump assembly. There should be two open ended threaded bolt holes that will accommodate the two rear mounts of the air compressor nicely.

Install compressor and mount assembly into the position as displayed in the photos above.

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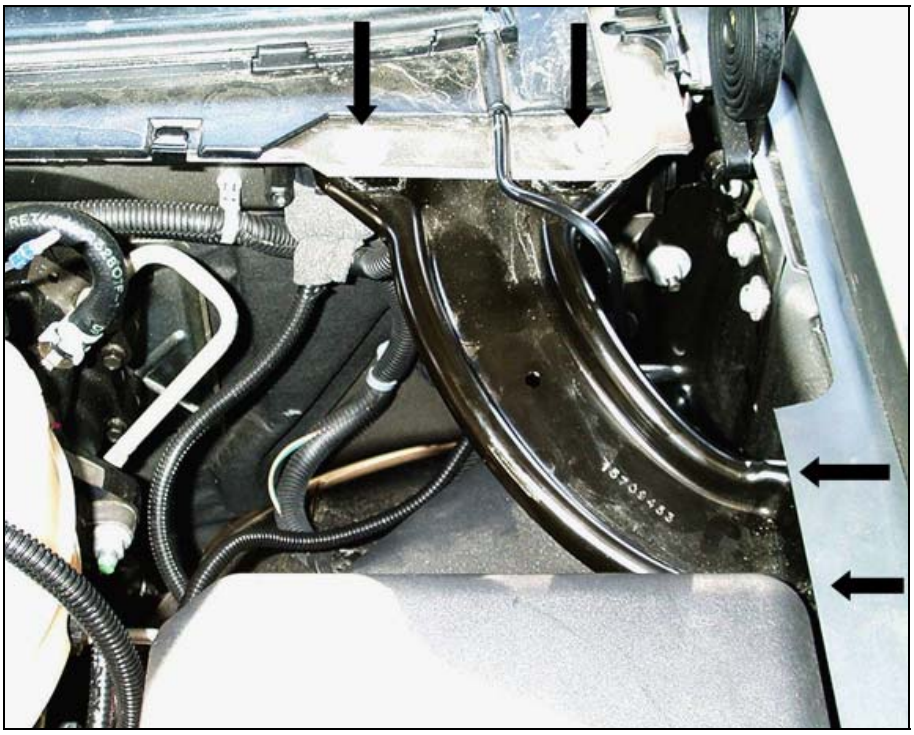
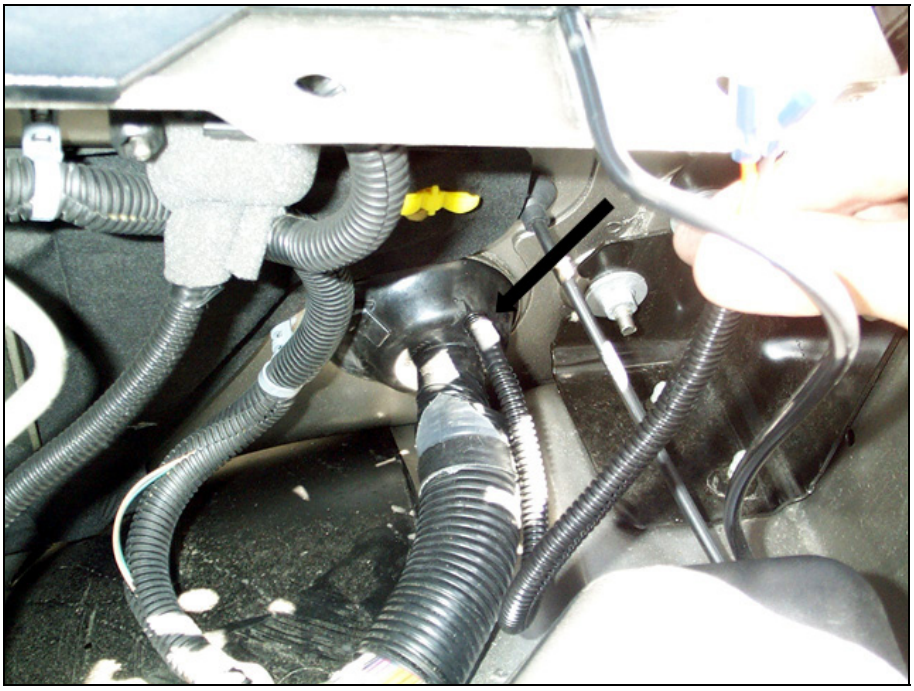
Dual Alternator Air Compressor Installation



Locate the four (4) mounting bolts that secure the driver's side fender brace and remove them.

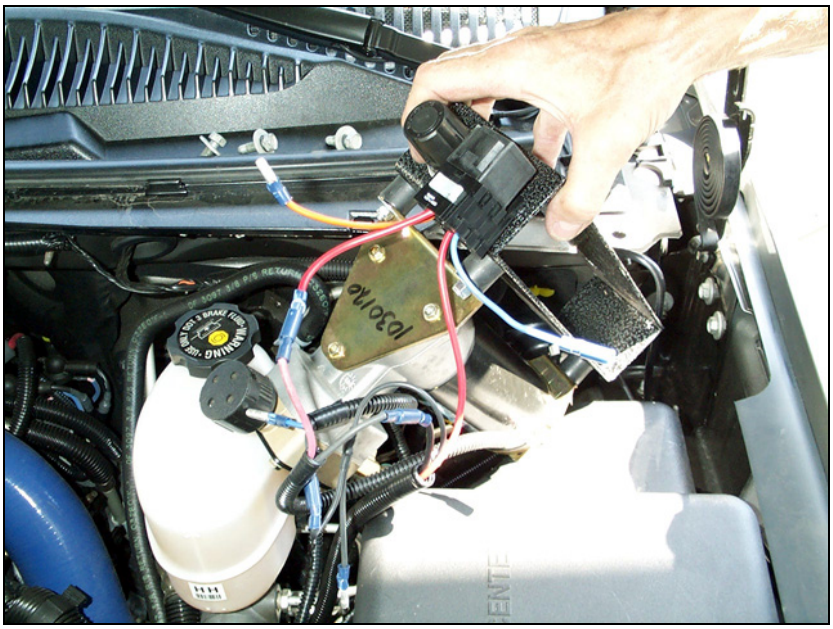


Push the black wire with the male bullet connector through the firewall grommet and connect it to the female bullet connector on the black wire coming from the brake controller module.

Secure any loose wiring under the dash with tie straps or electric tape and then re-install the lower kick panel.

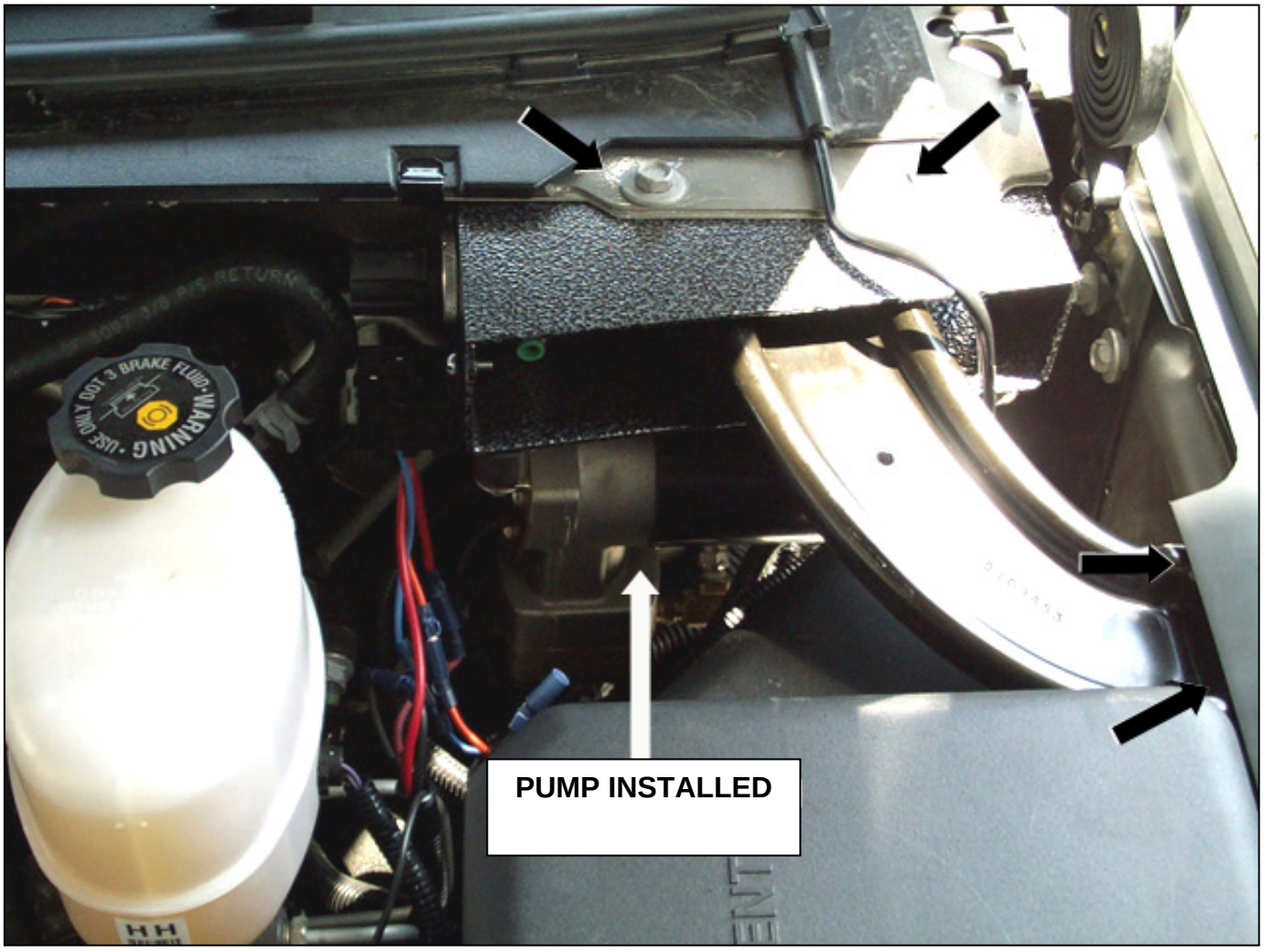
Ensure the air compressor relay is mounted to the end of the mounting bracket before installation and install the grey filter supplied.

Connect the wiring harness from the cab to the compressor, Orange-to-Orange and Black-to-Black. Then install airline from solenoid to the fitting on the compressor.



Position the air compressor assembly under the firewall flange into the cavity under the corner brace. Adjust the mount plate so that the upper 2 brace mounting bolts pass through the holes in the plate.

CAUTION: ENSURE WIRING AND HOSES ARE NOT PINCHED OR SQUASHED UNDER THE AIR COMPRESSOR WHEN INSTALLED.



Re-install the fender brace and secure with 4 mounting bolts.

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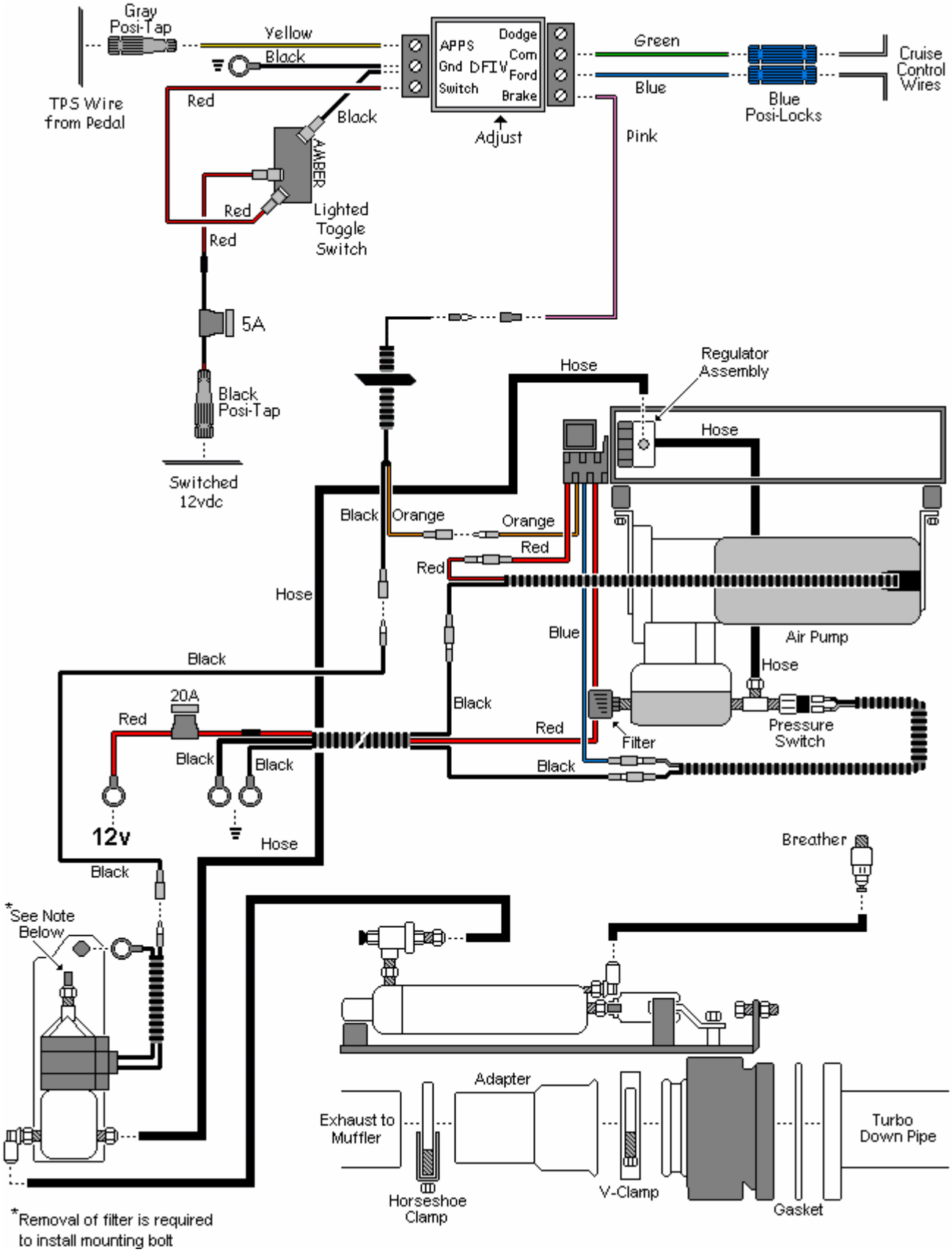
Main Switch Installation

Measure and mark a spot for the Toggle Switch 1 5/8” up from the bottom edge of the dash panel and 1 5/8” in from the edge of the accessory panel as shown in the photo above. Drill a pilot hole with a 1/8” bit at this point. Finish drilling the hole with a Unibit to exactly ½”.

Note: This measurement must be exact as possible to ensure room for the switch on the inside of the panel.

Install switch into drilled hole and secure with lock ring. Attach ground wire to a good ground like such as the mount screw of the relay assembly then reinstall kick panel and dash bezel to finish installation. Please follow the wire diagram on the next page to finish connecting the DFIV to the toggle switch.

WIRING AND PLUMBING DIAGRAM



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DFIV Calibration

Ensure the connections of the corresponding wires to the DFIV Control Module are correct as shown in the wiring diagram.

To achieve the correct setting for the activation of the exhaust brake in relation to the throttle pedal the DFIV Module must be calibrated for your vehicle.

Connect one end of a test light to the “BRAKE” terminal of the DFIV module and the other end to a good ground.

With the throttle at idle, start the engine and turn on brake switch. Then, using a small flat bladed screwdriver, turn the small adjusting screw in the DFIV Module counterclockwise or clockwise until the test light JUST turns on.

CAUTION: THE ADJUSTING SCREW IS A MICRO-SWITCH THAT IS VERY DELICATE, SO TURN USING SMALL ADJUSTMENTS.

Test by revving up the engine to approximately 1200 RPM and releasing the throttle. As the accelerator pedal is applied the test light should turn off just before the engine starts to rev, indicating proper calibration of the DFIV Module with the APPS.

Then the test light should activate again when the throttle pedal returned to idle. If not, readjust the DFIV Module so that it does. Reinstall lower dash cover.

Testing

Start engine and turn the BD Engine Exhaust Brake on. Rev-up the engine to approximately 1200RPM and release the throttle. The brake should have disengaged then activated again when the throttle pedal returns to idle. If not, reposition the switch so that it does.

Check for any exhaust leaks and recheck all connections and hoses for security and interference from moving or heated items. After about 100 miles (160 km), re-torque the flange bolts.

The brake will need to be adjusted for the vehicle. If more holdback performance is required with the vehicle loaded, adjust the regulator to give 50 – 55 psi under braking with load. (**NOTE:** 1/4-turn adjustments should be used to gain the desired effect)

Maintenance & Troubleshooting

To extend the life of the valve assembly, do not operate vehicle for an extended periods of time without activating the exhaust brake. We suggest activating the brake at least a couple times on any day you operate the vehicle to prevent any carbon or rust build-up on the inner components of the valve assembly.

The hoses, wires, fittings and clamps should be inspected on a regular basis for any deterioration, damage or leaks.

Following the diagrams in this manual, tracing hoses and wiring, checking continuity through electric components or checking for any lines that are disconnected, should solve any problems that may arise. If you have any problems or need replacement parts, call us at 1-800-887-5030, between 8:30am and 4:30pm Pacific Time.

FOR MAXIMUM EFFICIENCY USE TRANSMISSION IN TOWING MODE

OPERATING GUIDELINES

Thank you for taking interest in the BD Engine Exhaust Brake. As a driver, you probably already know the need for extra braking power that your vehicle requires on the hills and long grades. With loads being towed behind you, the extra push when slowing down or maintaining speed on downward grades can prove to be a great strain on your vehicles hydraulic braking system, even to the point of "burn-up". These guidelines were designed to offer you a better understanding of the benefits of exhaust brakes and are partly based upon material developed by the U.S. Department of Transportation National Highway Traffic Safety Administration.

The emphasis on today's vehicles is to give the consumer a product that can give them usable power with fuel efficiency. But, in the transition, the vehicles have lost their natural braking power, making it more easy for the vehicle to continue to roll and harder to stop. Of course, this gets more noticeable with the increase of weight, on or behind the vehicle. This is where an exhaust brake becomes a useful tool in increasing the driveline drag of the vehicle without the use of the hydraulic brakes. It is a tool that with maximum use, or even occasional use, can reduce wear on hydraulic braking parts and at the same time increase safety.

The BD Exhaust Brake can be used to help maintain a controlled vehicle speed on a downward grade, as well as slowing the vehicle down for such times as turns or exit ramps, without you using your hydraulic brakes. **But, the exhaust brake cannot be used as a parking brake or will not bring your vehicle to a complete stop.** By using a BD Exhaust Brake, the life and effectiveness of your hydraulic brakes will increase.

This is because of the decreased use of the hydraulic brakes in situations like hills, the wear factor is reduced and there is less opportunity for your hydraulic brakes to heat up which would reduce the efficiency. When you ride your hydraulic brakes, make hard stops or have poorly adjusted brakes, this creates high temperatures and as your brakes get hotter, the more chance there is for fade or failure.

With terrain that is a series of up and down grades, the BD Exhaust Brake will aid in reducing exhaust valve warpage. Because of the power needed to pull your vehicle and load up a hill, this generates a lot of heat. When you have reached the crest of the hill and are now coasting down the other side, the heated valves are too quickly cooled. With the exhaust brake engaged, the heat loss to the valves will be reduced, which can prevent valve warpage.

When the toggle switch is turned to the "On" position, the valve is activated every time the driver takes his foot off of the throttle pedal. When the driver puts pressure back on the throttle pedal, the throttle switch (or electronic brake module) is deactivated and the valve opens again. Exhaust brakes are designed to operate with the throttle at idle, not to be used in conjunction with cruise controls, and not

designed to aid in gear shifting. Such cases could cause damage to engine and/or the exhaust brake.

The best scenario for exhaust braking is when going down hill, select a gear that lets you maintain a constant speed with little or no use of the hydraulic brakes, or the same gear that would be used to go up the same grade of hill. This also depends on the weight, load or road conditions that the vehicle will come upon.

So, in summary, by using the BD Exhaust Brake, you reduce the need for use of your hydraulic brakes in situations where you need to slow down or maintain (i.e. hills, off ramps, corners, approaching speed changes or traffic lights). Reducing the use of your hydraulic brakes in these situations will reduce the heat build up, as well as wear and damage to linings and drums.

And, when you reduce these factors, you save your hydraulic brakes for when you really need them (for stopping or emergencies).

The BD Exhaust Brake is not a substitute for your hydraulic brakes and, cannot correct or compensate for poorly maintained or misadjusted brakes. But, when you need to slow down or maintain a constant speed, the BD Exhaust Brake will be a valuable and effective tool. Exhaust Brakes are more efficient at preventing than correcting an over speed condition.

Thank you and happy motoring.

BD Engine Brake, Inc.

BD Engine Brake, Inc.
Limited Warranty Statement

BD Engine Brake, Inc. (BD) warrants to the original purchaser that any parts purchased shall be free from defects in material workmanship. A defect is defined as a condition that would render the product inoperable. BD limits the liability to the repair or replacement, at BD's option, of any warrantable product, returned prepaid with a complete service history and proof of purchase to the factory. A valid proof of purchase is a dated bill of sale. Repaired or replaced product will be returned to the customer freight collect. Accepted warranty units, which have been replaced, become the sole property of BD.

A Return Authorization (WA) number obtained in advance from a BD customer service representative must accompany product returned for warranty determination. BD will be the final authority on all warranty decisions.

This warranty shall not apply to any unit that has been improperly stored or installed; or to misapplication, improper operation conditions, accidents, or neglect, or which has been improperly repaired or altered or otherwise mistreated by the owner or his agent.

This parts warranty shall terminate at the end of 24 months in service with the original user. Labor costs incurred by the removal and replacement of the BD product, while performing warranty work, will be covered for 12 months at authorized centers with prior approval. Until the claim has been approved by BD, the consumer may be responsible for these costs.

Except as set forth in our parts outline, BD disclaims any implied warranties of merchantability and fitness for a particular purpose. BD also disclaims any liability for incidental or consequential damages including but not limited to, repair labor, rental vehicles, hotel cost or any other inconvenience costs. This warranty is in lieu of all other warranties or guaranties, either expressed or implied, and shall not extend to any consumer or to any person other than the original purchaser residing within the boundaries of the continental U.S. or Canada.

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