

Installation

PACBRAKE[®]
ENGINE & EXHAUST BRAKES



InlineMount **EXHAUST BRAKES**

APPLICATIONS:

2003 and Newer Dodge Ram Trucks, equipped with aftermarket 4" exhaust system.

Getting Started

Thank you and congratulations on your purchase of a Pacbrake Dodge 2003 and newer Inline Mount exhaust brake kit.

Before starting, be sure you have attained the proper brake, mounting kit and control group for your vehicle.

***The Dodge 2003 and newer exhaust brake requires back pressure adjustment. PN C10600 gauge kit is required. Pacbrake offers 4 optional accessories to enhance your exhaust brake system that you may want to consider before starting the installation.**

Verify the vehicles exhaust pipe size is correct for the adapters supplied.

NOTE: The adapters supplied are expanded to slide over most 4" O.D. aftermarket exhaust pipes. Compare the exhaust pipe OD against the adapter I.D. before cutting the exhaust pipe. Pacbrake offers adapters to fit all standard exhaust sizes.



1 Optional Accessories

TRANSMISSION COMMANDER For Automatic Transmissions Only

Pacbrake offers a computer module called a Commander PN# C18046. Installing a Commander will enhance exhaust brake performance by locking the torque converter when the exhaust brake is activated. Locking the torque converter when using your Pacbrake will reduce transmission fluid temperature.



2 Switch-Pac Gear Shift Lever Switch - Part # C18042

MANUAL TRANSMISSION ONLY

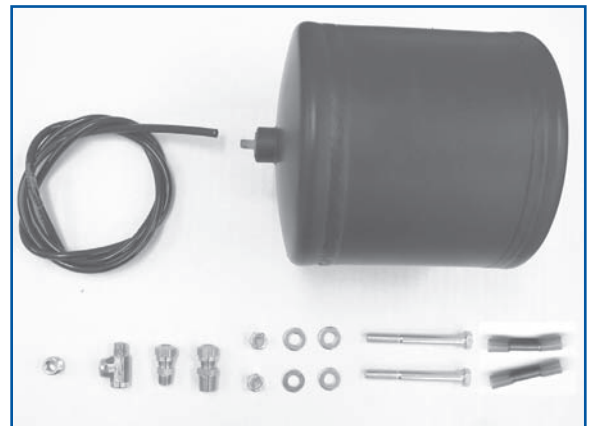
An optional gear shifter switch is available for manual transmission vehicles through Pacbrake distribution system. Pacbrake part number C18042 for shifter diameter of 5/8”.



3 Air Tank - Part # C11941

An optional air tank is available through Pacbrake distribution system. This air tank kit is designed to speed up the activation of the exhaust brake, and provide an air source for limited accessory use.

The current design is an air on demand system with no reservoir, and requires the compressor to charge the system before the exhaust brake will fully activate. PRXB exhaust brakes require the installation of pressure switch #C11946 when an airtank is added. With the air tank as the reservoir the exhaust brake will activate much quicker.



4 ECM Bypass

Pacbrake offers mechanical throttle switch groups to speed up the activation of the exhaust brake.

Part# C14033

2003 M/Y trucks with automatic transmission

Part# C14037

2003 M/Y trucks with manual transmission

Part# C20136

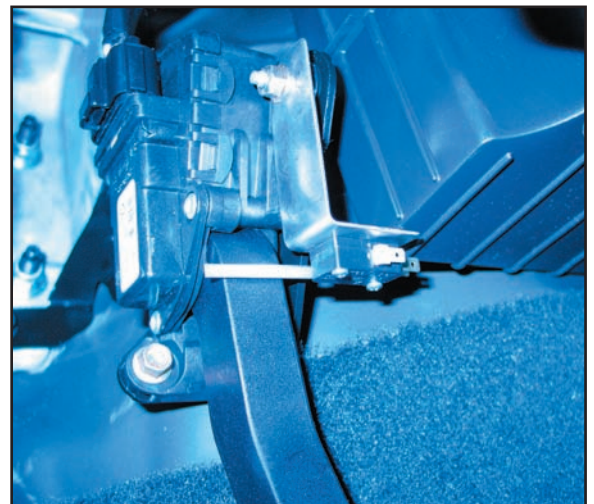
2004 M/Y trucks with automatic transmission

Part# C20135

2004 M/Y trucks with manual transmission

Part# C20141

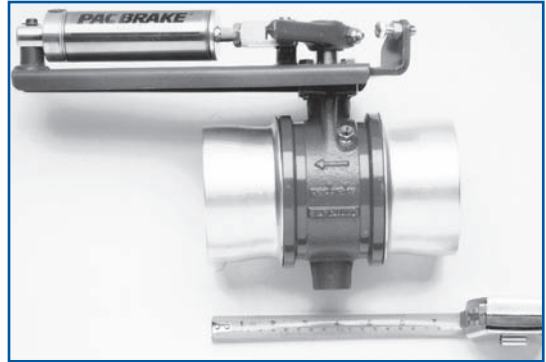
2005 M/Y trucks with either transmission



Note: 2005 vehicles equipped with automatic transmissions require the use of C20141 throttle switch group as the engine ECU is not turned on for exhaust braking.

INSTALLATION

- 1 With the exhaust brake on the bench, loosely attach the exhaust pipe adapters provided, and make a measurement to determine the length of vehicle exhaust pipe to be removed. The adapters are expanded to slide over the existing exhaust pipe—consider this in your measurement.



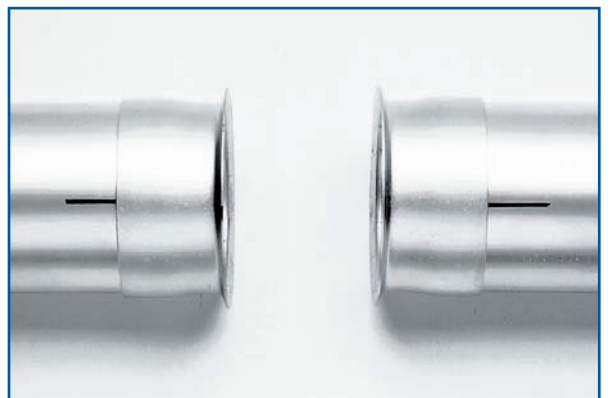
- 2 Select a location that has sufficient clearance for installation and servicing of the exhaust brake. This location should be as close to the turbo-charger as possible and away from dirt and road spray. Keep in mind that Exhaust Brakes subjected to road spray will shorten the life and require a Remote Cylinder Breather Kit PN# C11020. Transfer the brake/adapter measurement to this location and mark the exhaust pipe. Remove the exhaust pipe and cut the pre-marked section.



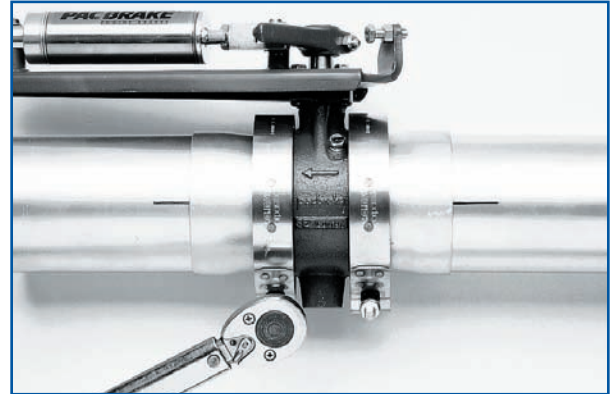
NOTE: In some cases, the cutting and welding of exhaust systems can be done without removing the pipe sections from the vehicle.

- 3 Clamp exhaust brake and exhaust system in place and tack weld prior to final welding. Weld the adapters to the sections of pipe, being careful to maintain the proper length and angles that exist. Welding can be done on the outside or the inside of the adapter, but it must be leak free.

NOTE: Clamped joints that exist between the brake and the engine must also be welded at this time to ensure the joint can not separate or leak under pressure.

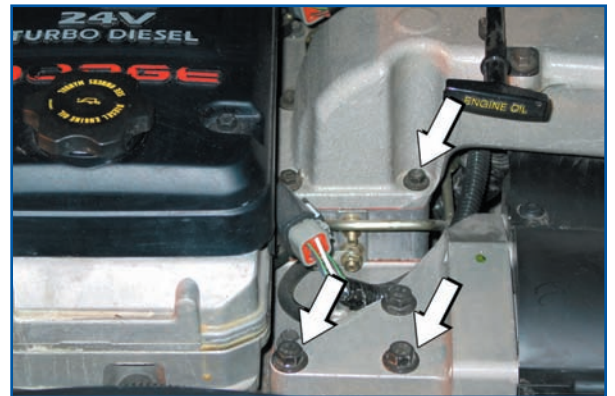


- 4** If removed, reinstall the front section of pipe on the engine. Torque turbo clamp to engine manufacturer's specification of 75 in-lbs. Center brake and tighten clamp on the exhaust brake pressure side. Install the rear section of pipe and loosely clamp. Check alignment of all sections and joints and torque the Pacbrake "V" clamps to 180 in-lbs.



5 COMPRESSOR INSTALLATION

Remove the three capscrews shown in the photo. Not all vehicles have the three forward capscrews shown, removal of the front two capscrews may not be necessary. These vehicles will require the longer spacers.



- 6** Position the 1 small OD spacer provided on the air intake horn. Choose the correct spacers for your application and position them over the two front mounting locations.



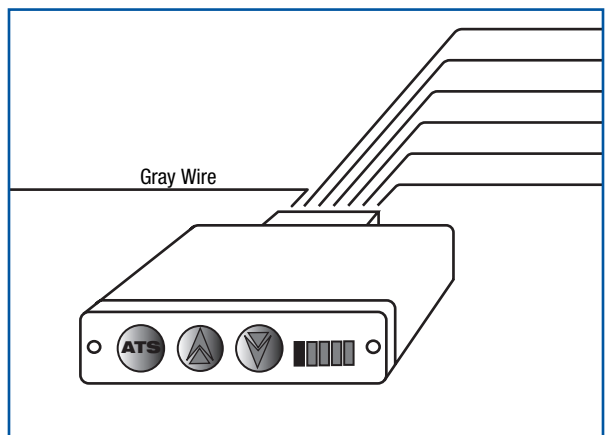
7 Install the compressor assembly over the spacers. Threading the front drivers side capscrew first, then the remaining two. Torque the rear capscrew to 18 ft. lbs. 24 N•m. Tighten the front capscrews to approx. 32 ft. lbs. 43 N•m. Install the nylon airline to the solenoid port marked CYL. Route the airline around the front of the engine to the exhaust brake air cylinder, keeping it away from heat sources and moving parts. Install the 90° fitting supplied into the air cylinder using thread sealant and connect the airline. Secure the airline with the tie-straps provided .



8 Install the compressor air intake filter on the fire-wall flange shown in the photo. Using the 7/16 flat washer supplied on the top of the firewall flange then offer the filter mounting stud through both. Locate the nylon hose marked air intake connect one end to the barbed fitting on the intake filter and the other to the barbed fitting on the front of the compressor. Secure with the tie-straps provided.



9 If your vehicle is equipped with an automatic transmission and installing a Commander torque converter lock-up system, follow the installation instructions provided with the Commander.

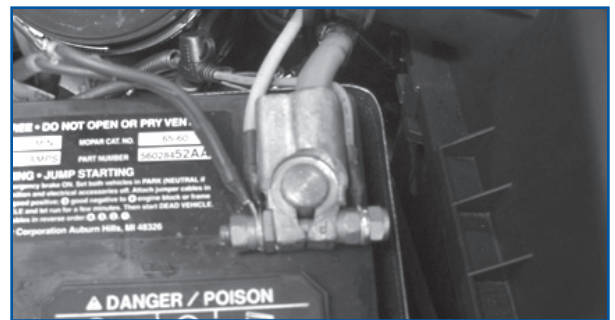


Wiring Harness Installation

10 Using the self tapping screw provided secure the relay receptacle to the side of the battery tray on the drivers side of the vehicle. Install the screw above the height of the battery to avoid interference with the battery.



11 Route the RED fused wire with the eye terminal to the positive battery terminal and connect. Secure with tie-straps provided.



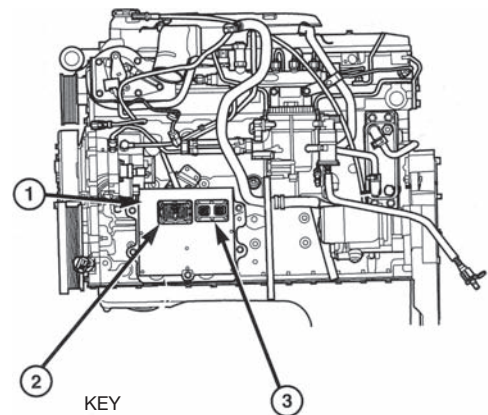
12 Connect the Black wire with the eye terminal to the negative battery terminal or a good chassis ground. Secure with tie-straps provided.



13 Route the black wire with the special ECM pin of the Pacbrake harness to the engine's ECM (drivers side of the engine) unless you are installing an ECM Bypass system. (See note below).

The Engine Control Module (ECM) is bolted to the left side of the engine below the intake manifold. At the engine ECM locate the two connectors, the front connector is a 60 pin and the rear is 50 pin.

NOTE: If installing the ECM bypass system, now would be a convenient time to install. Follow the instructions provided with that kit.

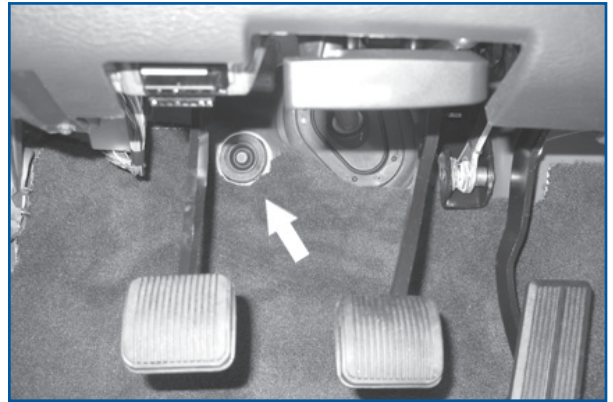


KEY

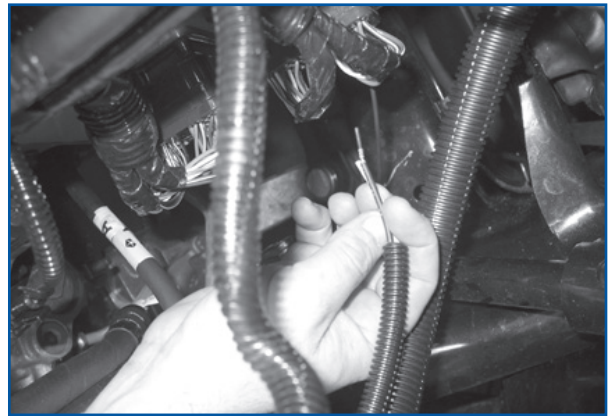
- 1. Engine Control Module (ECM)
- 2. 60-Way Connector
- 3. 50-Way Connector

14 From inside the cab, locate the grommet in the floor, make a small hole in the grommet for the WHITE wire only. Insert the end with the special ECM pin into the hole.

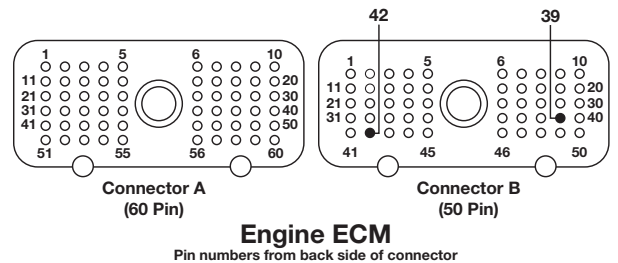
NOTE: If installing the optional clutch switch PN# C20097, now would be a convenient time to install. See instructions provided with the clutch switch kit.



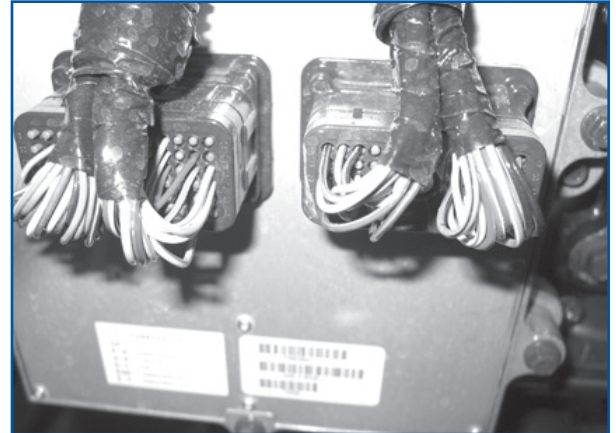
15 Recover this wire and route it to the engine ECM. At the 50 pin (REAR) connector locate pin #39, remove the sealing plug, be careful not to push it in. Once the sealing plug is removed, insert the WHITE wire with the special ECM "PIN" into cavity #39, push in until seated. Gently pull on the wire to ensure the pin is locked in place. Use the 51" piece of conduit supplied to protect the WHITE wire.



16 At the 50 pin (REAR) connector locate pin #42, remove the sealing plug, be careful not to push it in. Once the sealing plug is removed insert the black wire from the compressor harness with the special ECM pin into cavity #42, push in until seated. Gently pull on the wire to ensure the pin is locked in place.



Note: If the sealing plug is in too deep to remove it or you cannot push the two ECM pins in far enough to lock in place, use a 4mm hex wrench to remove the center capscrew of the 50 pin connector from the ECM. If it is necessary to remove the plug from the ECM, both the batteries should be disconnected first to prevent damage to the ECM. Once the connector is removed from the ECM, push the sealing plug out from the ECM side with a small probe. Install both pins into the correct cavities, reinstall the 50 pin connector and tighten. Reconnect the batteries.



CAUTION!

The **WHITE** wire goes into the ECM pin 39, this is a ground input, under no circumstances should 12 volts positive be applied to this circuit, Damage to the ECM will result.

Switch Installation

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Consult with the owner or operator for their preference of location for the ON/OFF switch. The photo shown is using a dash switch in a suggested location. This application requires a 1/2" hole be drilled to accommodate the switch. Connect the white wire to the upper terminal of the dash switch. Connect the remaining terminal of the dash switch to a good chassis ground. Install the dash switch.



Check Brake Operation

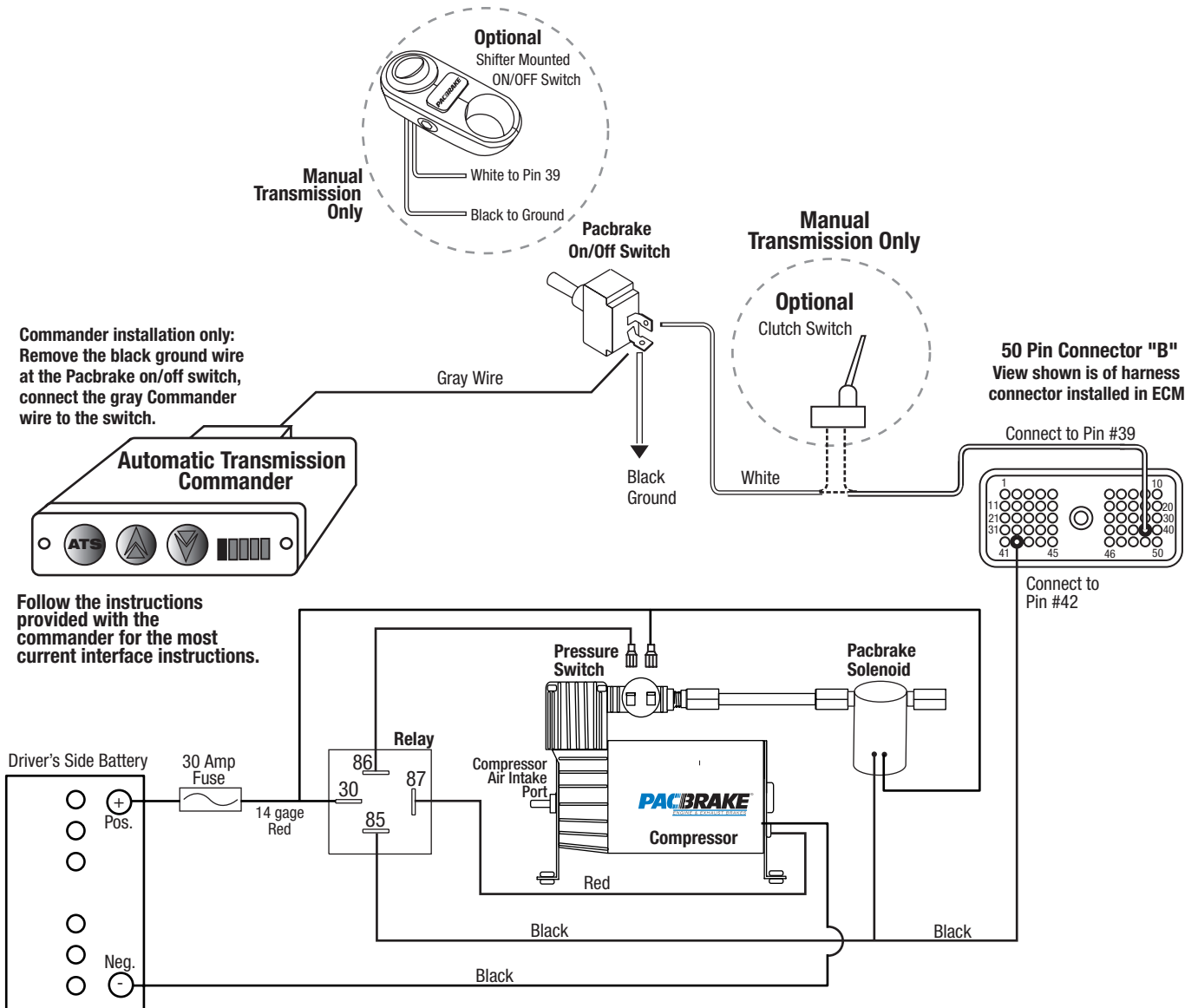
- 18** Slowly raise the engines RPM, the Pacbrake should shut off above 900 RPM if it was on at an idle. With a 12 volt test light, ground one side to the negative battery terminal, place the probe end on the compressor pressure switch terminal with two wires. Increase engines RPM and release the throttle quickly, the test light should luminate when the engine is decelerating. Keep in mind the ECM has a slight delay activating the exhaust brake. Road test vehicle. Retorque clamps after first 100 miles of driving.

Note: If the exhaust brake fails to operate, check for a good connection at the ECM Pins 39 and 42. See note in Step 19.

NOTE: The air compressor provided in this kit has a duty cycle of 20%. This means for every 5 minutes of operation it must be off for 20 minutes. The exhaust brake itself will not exceed the compressors duty cycle unless air leaks are present.

Dodge Compressor Wiring Schematic

vehicles not using ECM Bypass



Follow the instructions provided with the commander for the most current interface instructions.

Testing Exhaust Brake Pressure for Dodge 2003 and Newer Inline Exhaust Brake

Prepare for road test check or set exhaust brake back pressure. Pacbrake test gauge kit PT# C10600, can be purchased through the Pacbrake distribution system. This kit contains all the necessary parts to perform back pressure tests. The gauge used must be a dampened (liquid filled) type to accurately read this pressure.

- 1** Remove the 1/8" NPT plug located in the exhaust brake body and install fitting #3. Install the steel tube #4 into the fitting installed in the exhaust brake. Insert fittings #5 and #6 into the neoprene hose, moistening the fittings and firmly pushing the hose onto the barbed end. Install one end of the hose to the steel tube and the other to the gauge. Tighten all fittings securely. Route neoprene hose into cab.

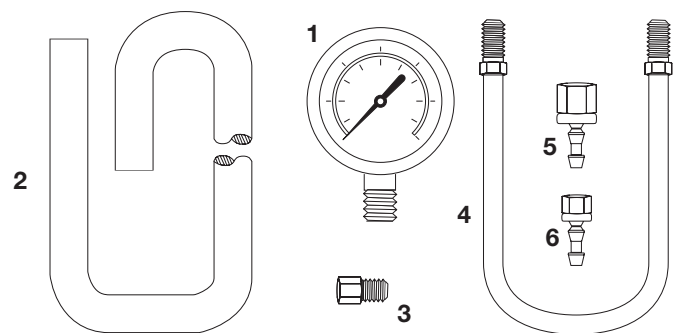
Note: This test must be performed to ensure engine manufactures back pressure specifications are not exceeded. The maximum allowable backpressure for 2003 Dodge trucks equipped with 5.9 litre Cummins engines is 60 PSI @ 3100 RPM.

- 2** Warm the engine to normal operating temperature.
- 3** Road test the vehicle by providing long durations of maximum RPM with the exhaust brake applied. This is best achieved with weight in the vehicle and a downhill grade.
- 4** Read and record the pressure achieved on the gauge at the governed engine speed. Pacbrake inline models have an adjustable stop bolt to adjust exhaust back pressure, This is done by the stop screw which limits the activating arm travel, thus reducing back pressure.

C10600 Test Gauge Kit

must be ordered separately

Illus.No.	Part No.	Description	Qty
1	C10650	Gauge	1
2	C10800	Hose	1
3	C10678	Fitting	1
4	C10677	Steel Tube	1
5	C10676	Fitting	1
6	C10775	Fitting	1



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