

# Installation **MANUAL**

**PAC BRAKE®**



**Fixed  
Orifice &**

**PR  
XB™**

## **DirectMount®** EXHAUST BRAKES

**APPLICATION:**

2003–2007 Dodge Trucks equipped with 5.9L Cummins and Manual Transmissions  
2006 and 2007 Dodge Trucks equipped with 5.9L Cummins and Automatic Transmissions

**THIS KIT IS FOR VEHICLES WITH AN EXISTING AIR COMPRESSOR & AIR TANK**

## Getting Started

Thank you and congratulations on your purchase of a Pacbrake Direct Mount® exhaust retarder.

## THIS KIT IS FOR VEHICLES WITH AN EXISTING AIR COMPRESSOR & AIR TANK

Do not install the kits listed below on 2003 model year Dodge trucks built up to June 27<sup>th</sup> 2005 with automatic transmissions without a transmission controller. *Pacbrake has kits for these vehicles that include an automatic transmission controller.*

Contact Pacbrake's Customer Service @ 800.663.0096 for more information.

**Pacbrake kit information and applications covered in this manual:**

**C44031** Pacbrake kit is a **PRXB** design for 2003 model year and newer Dodge trucks **built up to** January 4<sup>th</sup> 2004 with a Cummins 5.9L and manual shift transmission only.

**C44037** Pacbrake kit is a **PRXB** design for Dodge trucks **built after** January 5<sup>th</sup>, 2004 and newer with Cummins 5.9L diesel engines and a manual shift transmission. This kit also fits on Dodge trucks **built after** June 27<sup>th</sup>, 2005 with Cummins 5.9L **610 ft-lbs of torque** and automatic transmissions, transmission controller is not required on trucks built after June 27<sup>th</sup>, 2005.

Pacbrake PRXB exhaust brakes require a minimum of 100PSI to fully close the butterfly valve, ensure your pressure switch will maintain pressure above 100PSI.

Before starting the installation, please read the entire installation manual carefully. Check that your PACBRAKE kit contains all the necessary parts. Pacbrake offers three optional accessories to enhance your exhaust brake system that you may want to consider before starting the installation (see page 2).

## 1

### Kit Contents

- 1 - Exhaust brake housing
- 1 - Dash harness
- 1 - Dash switch and plate
- 1 - Nylon airline 12 ft
- 8 - Tie straps
- 1 - Solenoid valve
- 1 - Engine harness
- 1 - Sub group solenoid mounting fasteners
- 1 - 90° fitting
- 2 - Tee fittings
- 3 - Straight fittings
- 1 - Tire fill kit



***If installing with a Pacbrake P59 LoadLeash, please pay close attention to **LoadLeash Installer Notes** in this manual.***

## 2 Optional Accessories

### SWITCH-PAC GEAR SHIFT LEVER SWITCH

#### **Part Number C18042**

(for manual transmissions only)

An optional gear shifter switch is available for manual transmission vehicles through Pacbrake distribution system. Pacbrake part number C18042 for shifter diameter of  $\frac{5}{8}$ ".



### MECHANICAL THROTTLE SWITCH GROUPS

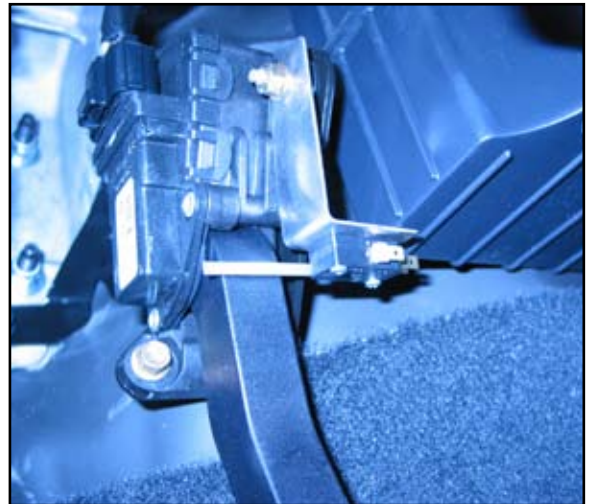
Pacbrake offers mechanical throttle switch groups to speed up the activation of the exhaust brake.

#### **Part # C14037**

2003 M/Y trucks with manual transmission

#### **Part # C20135**

2004 M/Y trucks with manual transmission

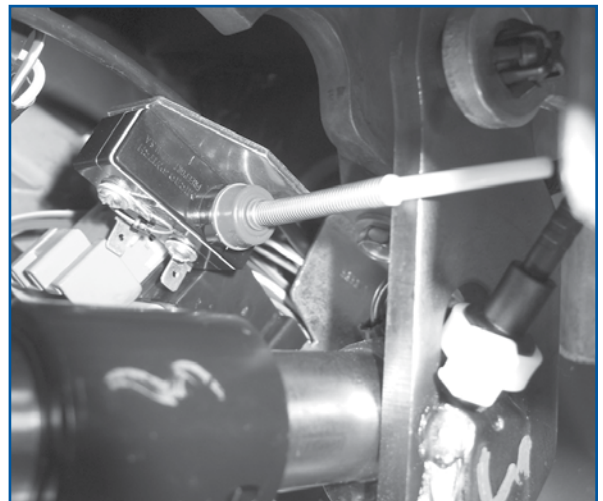


### OPTIONAL CLUTCH SWITCH INSTALLATION KIT

#### **Part Number C20097**

(for manual transmissions only)

Provides brake disengagement during clutching. Locate the two capscrews at the clutch lever. Remove the screw closest to the rear of the vehicle. Install the Pacbrake switch on this capscrew as shown. Tighten the capscrew. Adjust the switch on the bracket so when the clutch is fully released the clutch arm contacts the switch arm causing the switch to click. Check the adjustment by moving the clutch pedal. The switch should click in the free-play movement of the clutch pedal, if not readjust. Cut the white wire at the clutch switch, using the 2 push-on terminals supplied, crimp and connect to the terminals on either terminal of the clutch switch.



#### **LOADLEASH INSTALLERS NOTE:**

*If installing a Pacbrake P59 LoadLeash, skip Step 3 and follow the wiring instructions included in your P59 Kit's Manual.*

### Dash Switch Installation

- 3 Consult with the owner or operator of the vehicle for their preference of dash switch location. The location shown in the photo is our recommendation for a vehicle equipped with an automatic transmission. Vehicles with manual transmissions, we recommend an optional shift lever mounted on/off switch (C18042).

Once the switch location has been chosen, if a dash switch is being installed, drill a 1/2" hole to accommodate the toggle switch. Connect the white wire to the top terminal and the black wire to the bottom terminal. Connect the other end to a good chassis ground. The white wire is connected later. If installing a shift lever mounted on/off switch, follow the instructions provided within the C18042 kit.

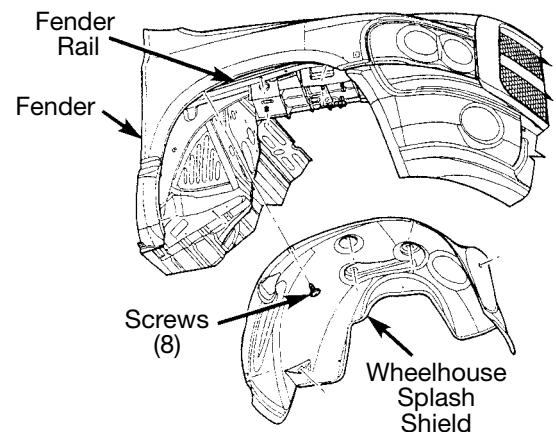


### Exhaust Brake Installation

- 4 INSTALLER OPTION (not mandatory)

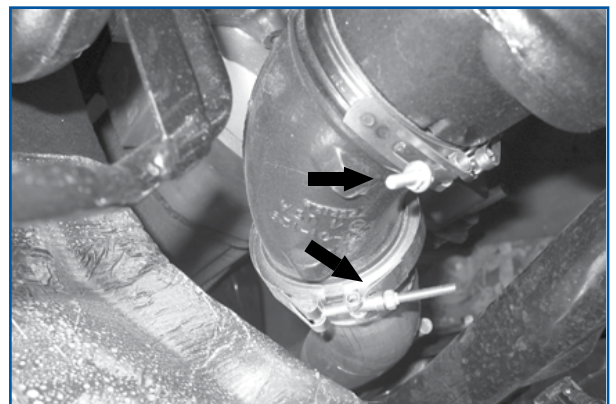
Some installers remove the front wheels and 8 screws which secure the wheelhouse splash shields. Doing this allows for easier access to the exhaust elbow and the engine ECU on the drivers side of the vehicle. To remove the wheelhouse splash shield completely, the ABS cable will need to be disconnected from the splash shield.

**Caution: If removing the front wheels for easier access, make sure the vehicle is supported properly.**



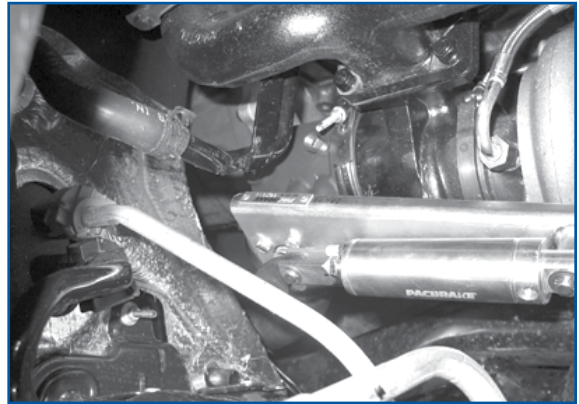
- 5 REMOVE FACTORY ELBOW

At the turbocharger locate the 2 "V" clamps fastening the exhaust elbow to the turbo and header pipe. To prevent damage to the threads when removing, apply a drop of oil as close to the nut as possible, then remove both. Save both "V" clamps for reuse. The factory elbow is indexed with two roll pins. These pins should remain in the elbow and if not, they MUST be removed from the turbo outlet flange. These are for alignment of the elbow at the truck assembly plant and are not required. Inspect the sealing face of the turbo for carbon or other imperfections. If necessary, clean or repair to assure a good seal will be made as no gaskets are used.



**CAUTION:** If installing a PRXB Exhaust Brake, use care. When handling the brake assembly be sure not to damage the regulator spring and lever arm.

- 6** With the original turbocharger to elbow “V” clamp placed loosely over the turbocharger outlet, insert the Pacbrake housing into the exhaust system and rotate the housing until the turbo flange and the exhaust brake’s pressure flange are parallel. Install the turbo clamp loosely first and rotate the Pacbrake until the outlet flange aligns with the header pipe. Once proper alignment is achieved torque the turbo side clamp to 75 in-lbs (8.5 N•m). Now loosely install the outlet side clamp and then torque the outlet clamp to 100 in-lbs (11.3 N•m).



## **7 Solenoid Installation**

Choose a location to mount the solenoid valve. It should be mounted in a clean, dry area between the air tank and the exhaust brake with the exhaust port pointing down. Using the fasteners provided, secure the solenoid to the vehicle.



- 8** Using the fittings and nylon airline provided, source supply air from the tank, connect to solenoid port mark “IN”. Connect the solenoid port marked “CYL” to the air cylinder on the exhaust brake. Secure the airline with the tie-straps provided.

*Note: a quick connect air chuck is provided in the accessory kit to connect the curly hose to the air source. Also provided is a tee fitting to supply air to the quick connect air chuck, install the tee fitting either at the air tank or the solenoid port marked “IN”. Install the air chuck in a clean dry area accessible to the operator.*



- 9 Using the eye terminal provided, connect one of the two solenoid wires to a good chassis ground. The remaining solenoid wire connects yellow wire of the main harness installed in step 10.



### Wiring Harness Installation

- 10 Using the self tapping screw provided, secure the relay receptacle to the inner fender on the drivers side of the vehicle. Connect the yellow wire of the Pacbrake harness to the remaining solenoid wire.



### Locating an Ignition Power Source

- 11 **2003 Model Year Vehicles:**  
Locate the 14 pin connector on the passenger side firewall. Pin 13 will be a dark blue wire which should be a 12 volt positive ignition power source. Using the T-Tap provided, connect the 10 amp red fused link to the ignition power source.



- 12 **2004 and 2005 Model Year Vehicles:**  
Locate the two 24 pin connectors on the driver's side of the firewall. One connector is grey and the other is black. In the black connector, pin B4 will be a pink wire with a grey tracer. This wire should be a 12 volt positive ignition power source. Using the T-Tap provided, connect the 10 amp red fused link to the ignition power source.



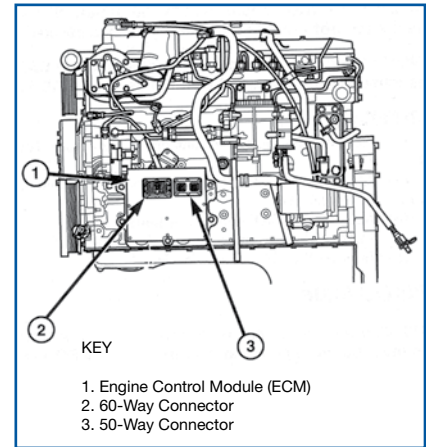
- 13 **2006 and Newer Model Year Vehicles:**  
Locate the TIMP Module in front of the drivers' side battery. Release the lock tabs on the side of the TIMP. This will allow the TIMP to be removed as an assembly. Under the unit, locate connector "G". Cavity 14 will be a grey wire with pink tracer. This wire should be a 12 volt positive ignition power. Using the T-Tap provided, connect the 10 amp red fused link to the ignition power source.



**14** Route the black wire with the special ECM pin of the harness to the engine's ECM (drivers side of the engine) if you are installing an ECM By-pass system. (See note below).

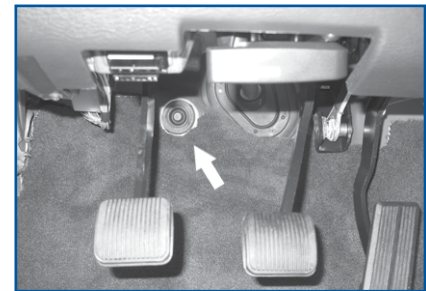
The Engine Control Module (ECM) is bolted to the left side of the engine below the intake manifold. At the engine ECM, locate the two connectors. The front connector is a 60 pin and the rear is a 50 pin.

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



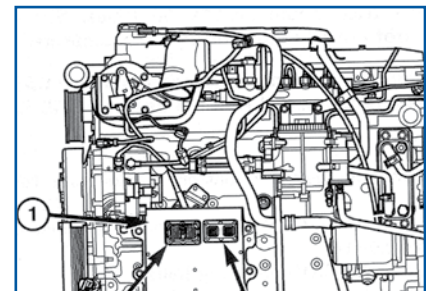
**15** From inside the cab, locate the grommet in the floor. Make a small hole in the grommet for the white wire only. Insert the end with the special ECM pin into the hole.

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

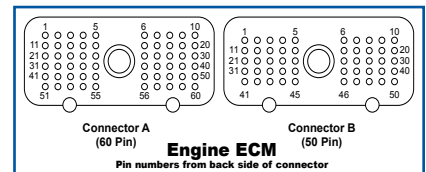


**LOADLEASH INSTALLERS NOTE:**  
 If installing a Pacbrake P59 LoadLeash, skip Steps 16-18 and follow the wiring instructions included in your P59 Kit's Manual.

**16** 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.

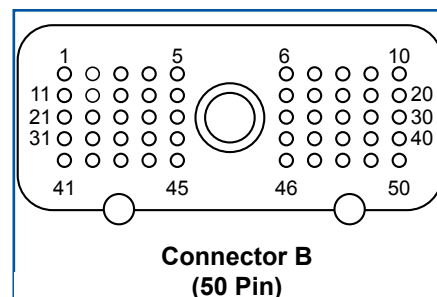


**17** **At the 50 pin (rear) connector**, locate pin #42, and remove the sealing plug. Be careful not to push it in. Once the sealing plug is removed, insert the black wire, with the special ECM pin, from the compressor harness, into cavity #42. Push in until seated. Gently pull on the wire to ensure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

Cont. Next Page...

Secure both ECM wires with the tie-straps provided

**Note:** If the sealing plug is in too deep to remove, 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 must 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, re-install the 50 pin connector and tighten. Reconnect the batteries.



#### CAUTION!

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

- 18 **Note:** If the wheelhouse splash guards were removed, they may be reinstalled now by following the procedure in reverse.

#### Check Operation

- 19 Start the vehicle and allow it to idle. **Note:** The compressor should pump to fill the air tank. Turn the Pacbrake switch to the ON position, and the exhaust brake should activate. Slowly raise the engine's RPM. The Pacbrake should shut off above 900 RPM (if it was on at an idle). Late 2003 and newer vehicles will disable the exhaust brake at idle when the coolant temperature is above 170° F. If the exhaust brake fails to activate, using a 12 volt test light, connect one side of the test light to the positive battery terminal. Place the probe end on the relay terminal 85 which connects to Pin 42 of the engine ECM. Increase engine RPM and release the throttle quickly. The test light should illuminate when the engine is decelerating. Keep in mind the ECM has a slight delay activating the exhaust brake. If the test light does not illuminate, check the Pacbrake white wire in Pin 39 and Pacbrake black wire in Pin 42 of the engine ECM for a good connection. **See note in Step 17.** Road test the vehicle and retorque the clamps after the first 100 miles of driving. It may be necessary to remove the Pin 50 connector from the ECM if the wires don't lock in the connector.



**Dodge Compressor Wiring - Vehicles not Using ECM Bypass  
Vehicle has an existing air source**

