Installation MANUAL

PACBRAKE®

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

Getting Started

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

Do not install the kits listed below on 2003 model year Dodge trucks built up to June 27th 2005 with automatic transmissions without a transmission controller.

Contact Pacbrake's Customer Service @ 800.663.0096 for more information.
Pacbrake kit information and applications covered in this manual:

C14030 Pacbrake kit is a **fixed orifice** design for 2003 Dodge diesel trucks **built up to** January 4th 2004 with a Cummins 5.9L and a manual shift transmission only.
C44030 Pacbrake kit is a **PRXB** design for 2003 model year and newer Dodge trucks **built up to** January 4th 2004 with a Cummins 5.9L and manual shift transmission only.
C14045 Pacbrake kit is a **fixed orifice** design for Dodge diesel trucks **built after** January 5th 2004 and newer with a Cummins 5.9L and a manual shift transmission only.
C44045 Pacbrake kit is a **PRXB** design for Dodge trucks **built after** January 5th 2004 and newer with Cummins 5.9L diesel engines and a manual shift transmission. This kit also fits on Dodge trucks **built after** July 26th 2005 with Cummins 5.9L **610 ft-lbs of torque** and automatic transmissions.

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 - Compressor assembly
1 - Compressor Mounting Hardware
1 - Dash harness
1 - Dash switch and plate
1 - Nylon airline 6 ft. (solenoid to cylinder)
14 - Tie-Straps
1 - Nylon airline 8 ft. (compressor air intake)
1 - Remote breather housing (air intake)
2 - Replacement air intake filters
1 - Fitting (remote breather 1/4" NPT female barb)
51 inch - Conduit
1 - Tire fill kit
1 - Air tank
1 - Air tank mounting group
1 - Nylon airline 8 ft. (compressor to air tank)

2 Optional Accessories

SWITCH-PAC GEAR SHIFT LEVER SWITCH

Part Number C18042

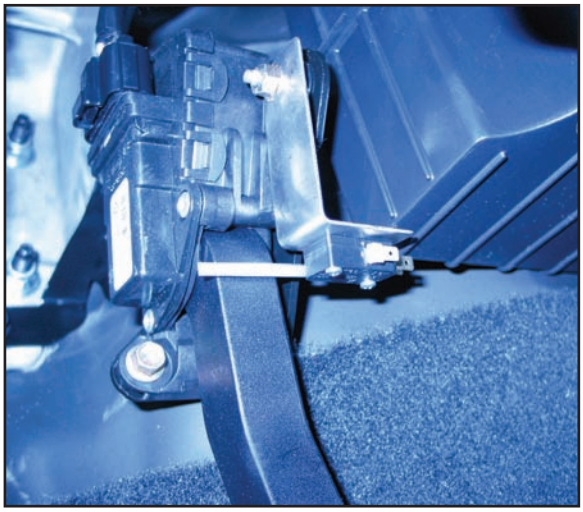
(for manual transmissions only)

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

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

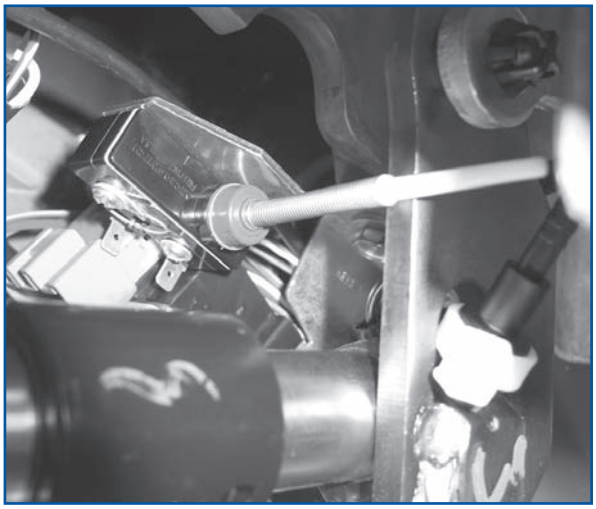


OPTIONAL CLUTCH SWITCH INSTALLATION KIT

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.



Dash Switch Installation

3

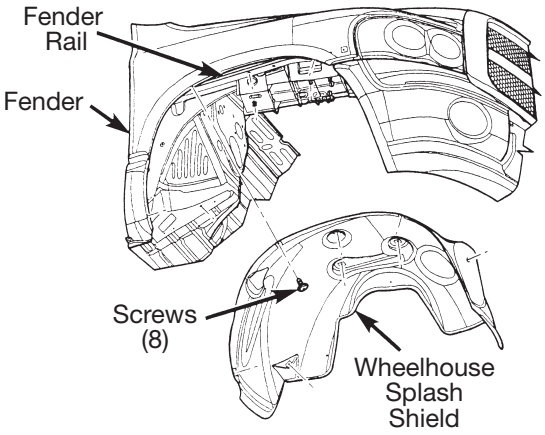
Consult with the owner or operator of the vehicle for their preference of dash switch location. The location shown in the photo is our recommendation for a vehicle equipped with an automatic transmission. Vehicles with manual transmissions, we recommend an optional shift lever mounted on/off switch (C18042).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

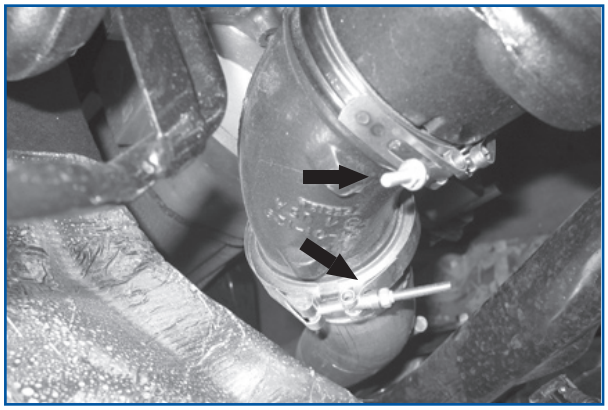
Some installers remove the front wheels and 8 screws which secure the wheelhouse splash shields. Doing this allows for easier access to the exhaust elbow and the engine ECU on the drivers side of the vehicle. To remove the wheelhouse splash shield completely, the ABS cable will need to be disconnected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



5

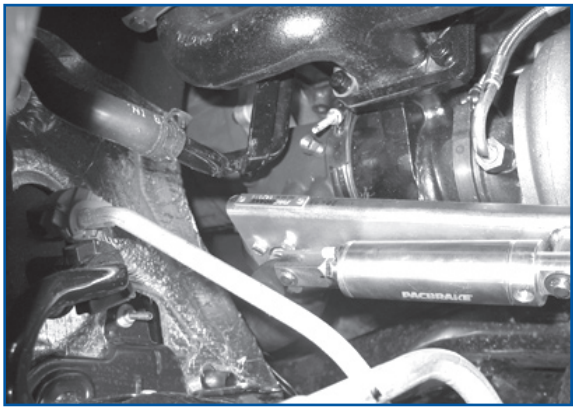
REMOVE FACTORY ELBOW

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.



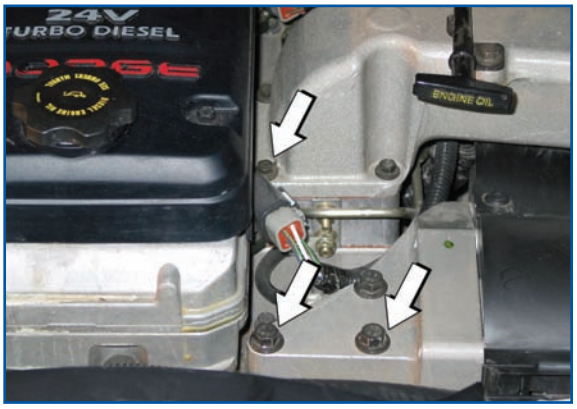
CAUTION: If installing a PRXB Exhaust Brake, use care. When handling the brake assembly be sure not to damage the regulator spring and lever arm.

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).

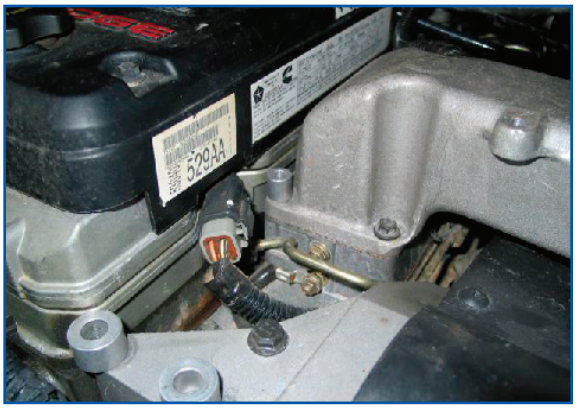


Compressor Installation

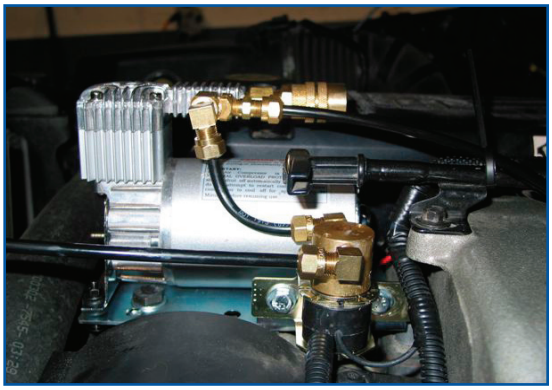
7 Remove the three capscrews shown with arrows in the photo. Not all vehicles have the three forward capscrews shown and removal of the front two capscrews may not be necessary. These vehicles will require the longer spacers.



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



9 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 6 ft. nylon airline provided, to the solenoid port marked CYL. Route this 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 .



10 Install the compressor air intake filter on the firewall flange using the 7/16" flat washer supplied, then offer the filter mounting stud through both.
Locate the 8 ft. nylon hose marked "air intake" and connect one end to the barbed fitting on the intake filter and the other end to the barbed fitting on the front of the compressor. Locate the relay harness (C20173) supplied. Insert the male connector of the harness into the female connector of the compressor. Secure with the tie-straps provided.

11 Install the pressure switch and the airline fitting into the top of the tank as shown in the photo. If desired, install the ¼" NPT fitting or drain valve into the bottom of the tank. Apply thread sealant to all fittings installed. Air leaks will cause the compressor to cycle more often reducing its life expectancy.

12 Choose a location to mount the air tank such as on the drivers side bumper support brace shown in the photo. Drill two 3/8" holes on 3¼" center to accommodate the tank mounting holes. Provided are two spacers and fasteners for mounting. If you prefer another location to mount the air tank, the pressure switch wires may need to be extended.

13 Connect the 8 ft. airline to the remaining fitting at the compressor. Route it with the two RED wires to the “Tee” fitting installed in the top of the air tank. Connect the ¼" airline to the fitting in the tank and connect the wiring harness connector to the pressure switch connector. Secure both the harness and airline away from moving parts and heat sources using the tie-straps provided.

Wiring Harness Installation

14 **All Models:**
Using the self tapping screw provided, secure the two relay receptacles to the side of the inner fender on the drivers side of the vehicle.

Locating an Ignition Power Source

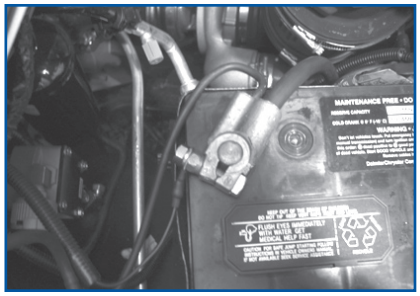
15 **2003 Model Year Vehicles:**
Locate the 14 pin connector on the passenger side firewall. Pin 13 will be a dark blue wire which should be a 12 volt positive ignition power source. Connect the 10 amp red fused link to this wire.

16 **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. Connect the 10 amp red fused link to this wire.

17 **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 this wire.

18 Route the red fused wire with the eye terminal to the positive battery terminal and connect.

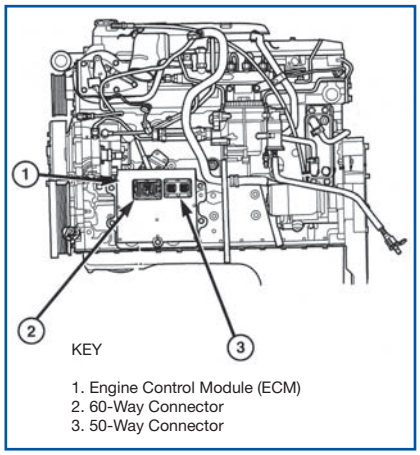
19 Connect the black wire with the eye terminal to the negative battery terminal or a good chassis ground. Secure with the tie-straps provided.



20 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).

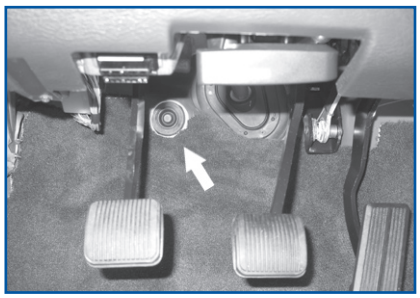
The Engine Control Module (ECM) is bolted to the left side of the engine below the intake manifold. At the engine ECM, locate the two connectors. The front connector is a 60 pin and the rear is a 50 pin.

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



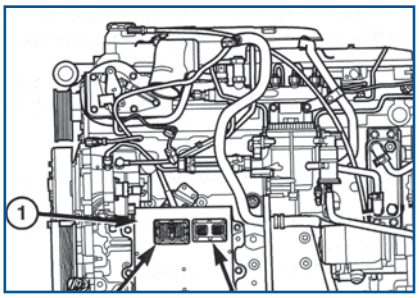
21 From inside the cab, locate the grommet in the floor. Make a small hole in the grommet for the white wire only. Insert the end with the special ECM pin into the hole.

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

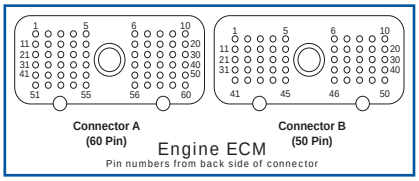


22 Recover this wire and route it to the engine ECM. **At the 50 pin (rear) connector**, locate pin #39. Remove the sealing plug. Be careful not to push it in.

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.

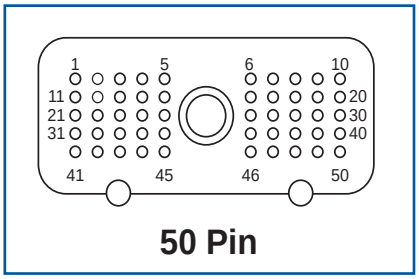


23 At the 50 pin (rear) connector, locate pin #42, and remove the sealing plug. Be careful not to push it in. Once the sealing plug is removed, insert the black wire, with the special ECM pin, from the compressor harness, into cavity #42. Push in until seated. Gently pull on the wire to ensure the pin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



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.



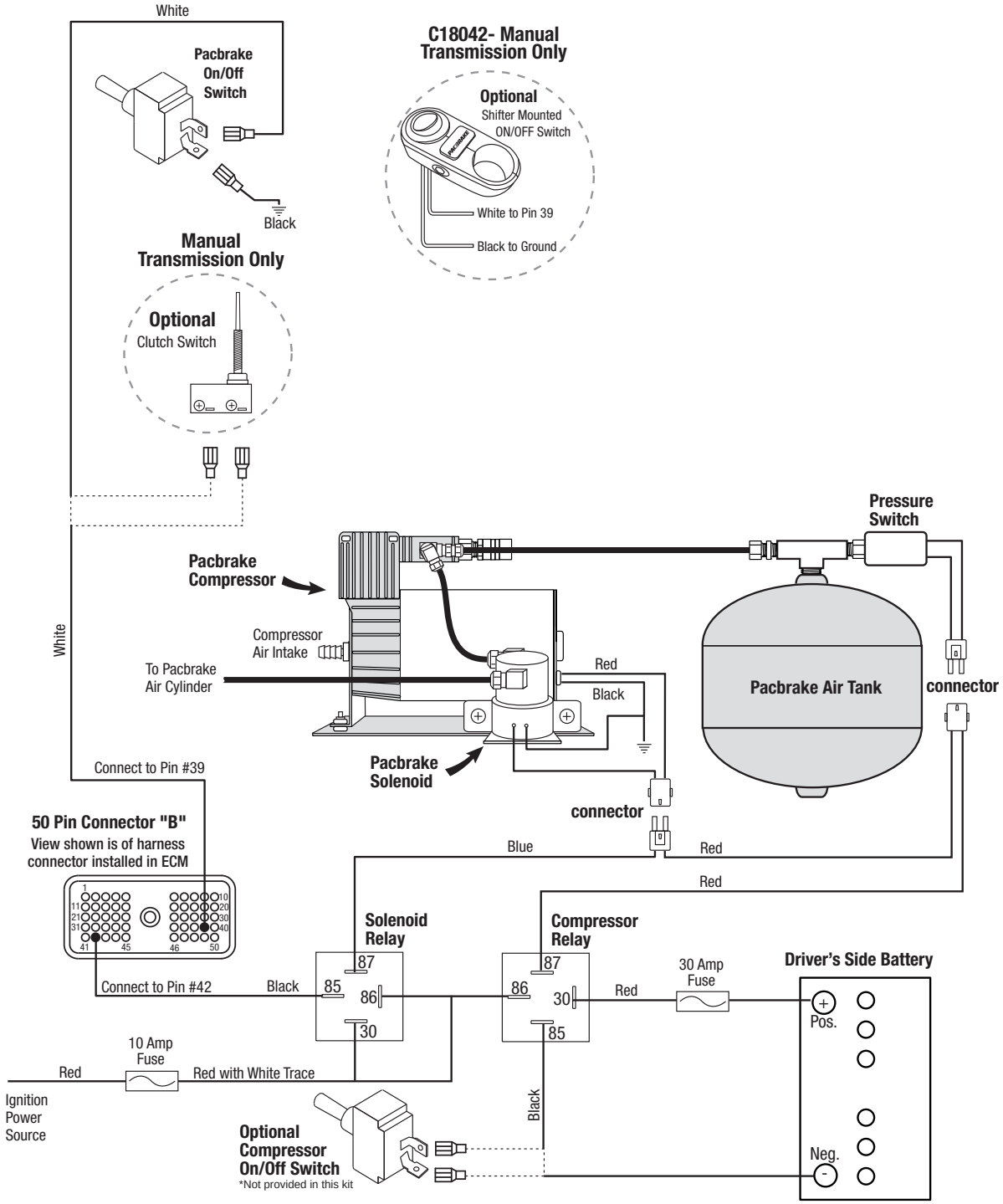
CAUTION!
The white wire goes into the ECM pin #39. This is a ground input and under no circumstances should 12 volts positive be applied to this circuit. Damage to the ECM will result.

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

Check Operation

25 Start the vehicle and allow it to idle. **Note:** The compressor will pump for approximately 2 minutes to fill the air tank. Turn the Pacbrake switch to the on position, and the exhaust brake should activate. Slowly raise the engines 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. With a 12 volt test light, power one side to the negative battery terminal. Place the probe end on 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. 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 Step 23. It may be necessary to remove the 50 pin connector from the ECM if the wires don’t lock in the connector.

Dodge Compressor Wiring - Vehicles not Using ECM Bypass



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