

/// PACBRAKE®

Installation
MANUAL



**TRANSMISSION
CONTROLLER
INCLUDED!**

Direct Mount
EXHAUST BRAKES

APPLICATIONS:

Fixed Orifice & PRXB Exhaust Brakes

2003-2005 Dodge trucks with 3.5" & 4" exhaust and 47RE & 48RE Automatic Transmissions only

**THIS KIT IS NOT FOR USE ON 2006 & 2007 MODEL YEAR VEHICLES
WITH 610ft/lbs TORQUE AND AUTOMATIC TRANSMISSIONS**

L5743_REV26_ECN1-1976

GETTING STARTED

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

NOTE: Some early 2003 Dodge trucks were built with 47RE transmissions. These vehicles require the program within the Pacbrake controller be changed. Follow the instructions in Step 30 to change the program. See Pacbrake bulletin #L5807 for transmission identification

Please check the exhaust brake kit part number and application information listed below against the vehicle's model and transmission model to ensure compatibility before starting the installation.

This manual covers the installation of the following Pacbrake kits. Should your vehicle differ from the description below, contact Pacbrake Company at 800.663.0096

C14030AT – contains a fixed orifice exhaust brake kit for 2003 to 2004 Dodge trucks, vehicles built up to January 4, 2004 with 48RE automatic transmissions. See note on top of Page 4.

C14046AT – contains a fixed orifice exhaust brake kit for 2005 Dodge trucks with a 48RE automatic transmissions, vehicles built between January 5, 2004 and June 27, 2005 (prior to engines rated @ 610 ft-lbs of torque)

C44049 – contains a PRXB (high performance) exhaust brake kit for 2003 to 2004 Dodge trucks, vehicles built up to January 4, 2004 with 48RE automatic transmissions. See note #1 below

C44052 – contains a PRXB (high performance) exhaust brake kit for 2005 Dodge trucks with a 48RE automatic transmission, vehicles built between January 5, 2004 and June 27, 2005 (prior to engines rated @ 610 ft-lbs of torque)

C44051* is a **5" InLineMount PRXB** design for:
2003-2005 Cummins 5.9L ISB 24 valve engine with 47RE / 48RE, automatic transmission.

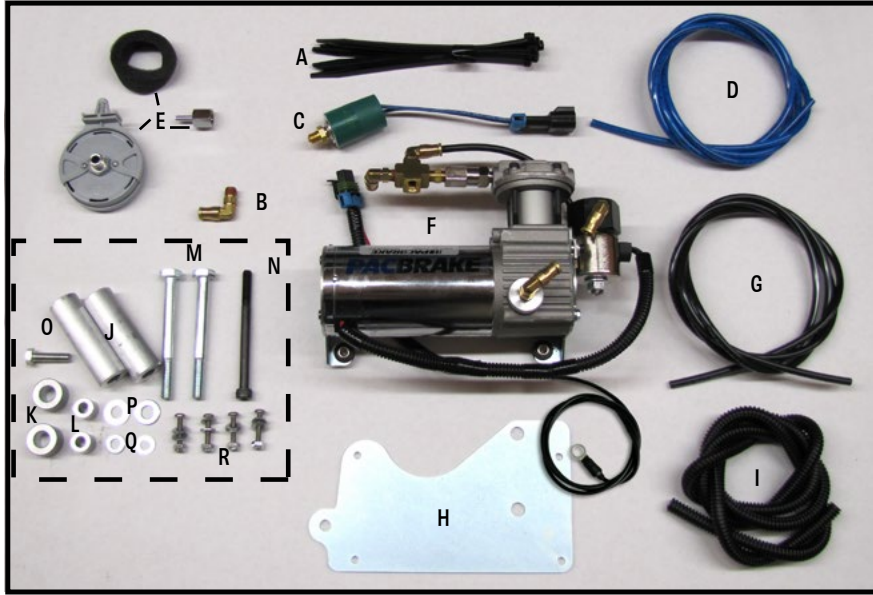
C44067* is a **4" InLineMount PRXB** design for:
2003-2005 Cummins 5.9L ISB 24 valve engine with 47RE / 48RE automatic transmission, **built up to** June 27, 2005.

**The installation procedure for the C44051 & C44067 exhaust brake kits differ from the procedure in this DirectMount installation manual. Follow the steps in the provided addendum (Or view it at www.pacbrakeoem.com/wp-content/uploads/L5669.pdf) for installing the exhaust brake into the exhaust system, then continue following this manual for the remainder of the installation.*

All the above kits include a Pacbrake automatic transmission controller to engage the torque converter whenever the exhaust brake is applied. 2006 and 2007 model year vehicles with 610 ft-lbs of torque and an automatic transmission do not require a transmission controller, in which case Pacbrake has specific kits for these applications.

Before starting the installation, please read the entire installation manual carefully. Check that your PACBRAKE kit contains all the necessary parts.

KIT CONTENTS:



C14018 - Control Group

- | | | |
|---|-------------|-------------------------|
| A | 14 x C11618 | Tywraps |
| B | 1 x HP1019 | Brass Fitting |
| C | 1 x C11609 | Pressure Switch |
| D | 72" M8685 | Nylon Tube (blue) |
| E | 1 x C241 | Remote Inlet Air Filter |
| F | 1 x C11628 | Compressor, 12 Volt |
| G | 72" M8280 | Nylon Air Brake Tube |
| H | 1 x C20507 | Compressor Bracket |
| I | 51" M8014 | Conduit |

C20013 Mounting Group

- | | | |
|---|------------|------------------|
| J | 2 x C3003 | Spacer Long, M10 |
| K | 2 x C3004 | Spacer |
| L | 2 x C3002 | Spacer, M8 |
| M | 2 x C10468 | M10 x 1.5 |
| N | 1 x C10444 | Screw |
| O | 1 x C789 | Capscrew |
| P | 2 x C653 | 3/8 Flat Washer |
| Q | 2 x C10473 | Flat Washer |
| R | 8 x C10406 | #10 Flat Washer |
| | 4 x C3470 | Screw |
| | 4 x C10843 | Nyloc Nut |

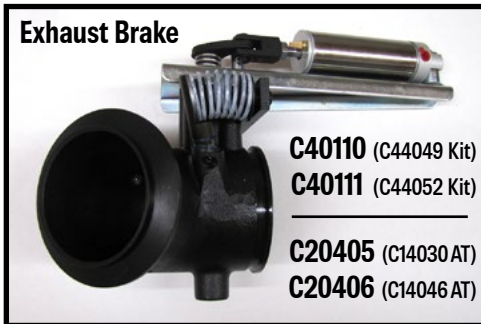
C11592 - Air Hose Kit



C11614 - Air Tank Group

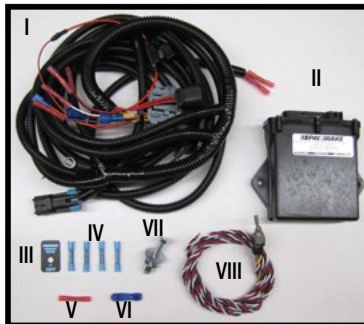
- | | | |
|----|--|-------------------------|
| AA | 1 x C11940 | 1/2 Gallon Air Tank |
| BB | 192" M8280 | Nylon Air Brake Tube |
| CC | 1 x C11737 | Brass Fitting |
| DD | 2 x HP1019 | Brass Fitting |
| EE | 1 x C11996 | Fitting |
| FF | 2 x PG0100 | Self Drill & Tap Screws |
| GG | 1 x C11815 | Quick Release Bracket |
| HH | 1 x M8677 | 1/4" Brass Coupler |
| II | 1 x HP1153 | 1/4" NPT Close Nipple |
| JJ | 1 x HP1152 | Bulk Head Fitting |
| KK | 1 x C11848 | 1/4" NPT Hex Plug |
| LL | C18018 (Bolt) + C3004 (Spacer) + C18007 (Lock Washer) + C653 (Flat Washers) + C11572 (Nut) | |

Exhaust Brake



- C40110** (C44049 Kit)
- C40111** (C44052 Kit)
- C20405** (C14030 AT)
- C20406** (C14046 AT)

- C40211** (C44051 Kit)
- C40128** (C44067 Kit)



Harness & Controller

- | | | |
|------|--|--------------------|
| I | 1 x C20232 | Harness |
| II | 1 x C20235 | Controller |
| III | 1 x C10314 | Switch Plate |
| IV | 4 x M8028 | Butt Connector |
| V | 1 x M8112 | Butt Connector |
| VI | 1 x M8108 | T-Tap Scotchlock |
| VII | C10440 (capscrew), C11944 (washer), C10483 (washers), C10450 (nut) | |
| VIII | 1 x C11312 | LED Switch Harness |

NOTE: EARLY PRODUCTION 2003 VEHICLES ONLY

Confirm this vehicle has a 48RE transmission BEFORE starting install (consult Addendum L5807)

1 LOCATING AN IGNITION POWER SOURCE

Remove the lower dash panel below the steering column. Under the lower dash panel, along the left side of the steering column, runs a bundle of wires that include three PINK wires with GREY tracers of different wire gages. These wires should be 12 Volt positive ignition power sources. Locate the thinnest (16 Gage) of the three, connect the "T" tap provided, then connect the "T" tap to the 3 Amp inline fuse of the Pacbrake harness.

NOTE: Check the circuit with a volt meter for ignition power and 12 Volts prior to attaching the "T" tap. Using the BLUE "T" tap supplied, attach it to and ignition power source and then connect it to the supplied fuse harness.



- 2 Locate the plastic plate in the driver side of the firewall. Drill a hole large enough to feed the Pacbrake harness (C20205 or C20219) through, then feed the harness into the engine compartment from the cab side.

NOTE: Some installers remove the plastic plug to drill the hole and feed the harness through, then reinstall the plate.



- 3 Mount the Pacbrake control unit to the aluminum bracket on the inside of the firewall as shown. Connect the two connectors of the Pacbrake harness into the Pacbrake control unit. Once the harness is positioned and secured, with the straps provided, apply silicone around the loom to provide a seal.



4 Dash Switch Installation

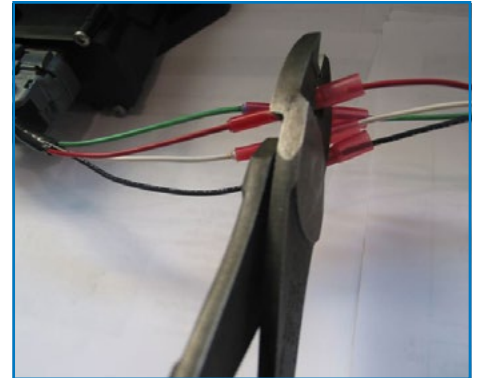
Consult with the owner or operator for their preference of the location for the Pacbrake ON/OFF switch. The dash switch location shown in **Photo 1** is a suggestion. Pacbrake offers an optional transmission gear selector lever switch bracket shown in **Photo 2**. Contact Pacbrake customer service to purchase. If installing the switch into the dash panel, drill a ¼" hole to accommodate the switch. Install the dash switch and identification plate, then route the wires towards the driver side of the firewall to be connected later in the installation (STEP 17).



Photo 1

Photo 2

- 5 Connect the GREEN, WHITE, BLACK and RED wires of the dash switch harness (installed in STEP 2) to the corresponding coloured wires at the GREY connector for the controller, (as shown in the schematic on PAGE 3). Once crimped, heat the connector to provide a water tight seal. Secure the Pacbrake wires using the tie-straps provided reinstall the lower dash panel.

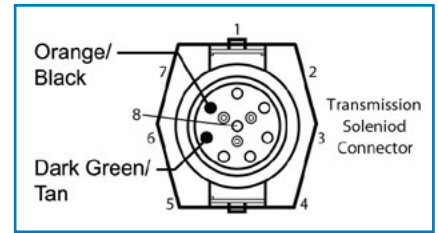


6 Disconnect both negative battery terminals.

In the engine compartment, Route the leg of the Pacbrake harness with the BROWN, ORANGE and BLUE wires down the driver's side frame rail to the transmission connector (shown in the photo). At the connector, locate the ORANGE with BLACK tracer wire in Pin #7. Cut this wire in a convenient location to install the butt connectors provided. Connect the ORANGE wire of the Pacbrake harness to the transmission side of the ORANGE with BLACK tracer and connect the BROWN wire of the Pacbrake harness to the harness side of the ORANGE with BLACK tracer.

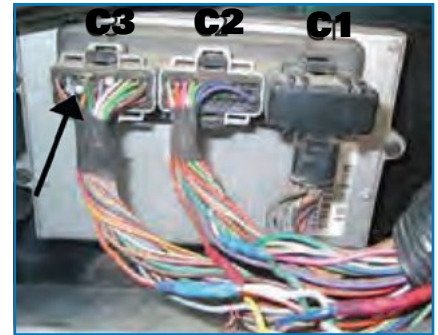


7 Locate Pin #6 at the transmission connector. It should be DARK GREEN with a TAN tracer. Cut this wire in a convenient location to splice the BLUE wire of the Pacbrake harness into the DARK GREEN factory wire. The butt connectors provided are heat shrinkable – they need to be heated after crimping the wires to provide a water tight seal.



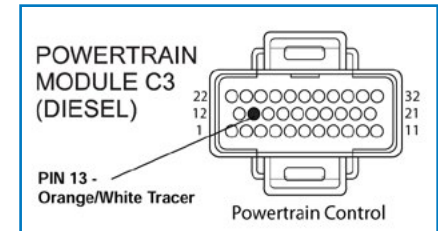
NOTE: If the wire color in the transmission connector don't appear to be correct, ensure the pin location is correct. It is not uncommon for the VOEM to change wire colors in mid-production.

NOTE: Early 2003 vehicles will have 3 connectors at the PCM. The PCM is located on the passenger side of the firewall. For all vehicles with the PCM is located on the passenger side of the firewall. For all vehicles with the PCM on the firewall follow STEP 8, all others proceed to STEP 9.



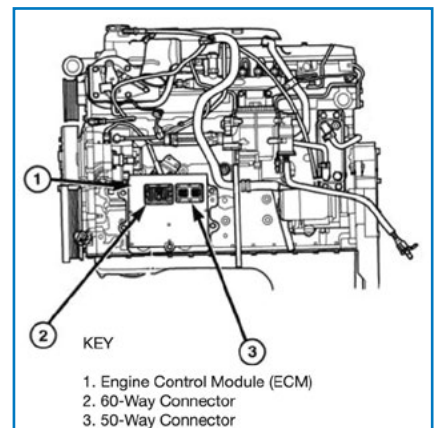
8 EARLY PRODUCTION 2003 VEHICLES ONLY:

Locate the PCM connector C3, remove the protective cover. Locate the ORANGE with WHITE tracer wire found in Pin 13. Cut this wire in a convenient location to splice in the YELLOW wire of the Pacbrake harness, using the heat shrinkable butt connector provided. Crimp two wires in one end of the connector and one wire in the other end, heat the connector to provide a water tight seal.



9 LATE PRODUCTION 2003 – 2005 VEHICLES:

Vehicles without the PCM on the firewall, connect to the engine ECM on the driver's side of the engine below the intake manifold. The engine ECM has two connectors: the front connector is 60 Pin and the rear is 50 Pin. In the 50 Pin connector, locate the DARK GREEN wire in Pin 13. Cut this wire in a convenient location to splice in the YELLOW wire of the Pacbrake harness, using the heat shrinkable butt connector provided, crimp two wires in one end of the connector and one wire in the other end. Heat the connector to provide a water tight seal.



- 10** Locate the factory 3 Pin Weather-Pac connector on the driver's side of the engine (*shown by the arrow*). Remove the protective cap and install the mating connector in the Pacbrake harness. Install the protective cap removed on the unused connector on the Pacbrake harness – unless you have a performance module connected to it. If so, connect the performance module to the mating connector of the Pacbrake harness.

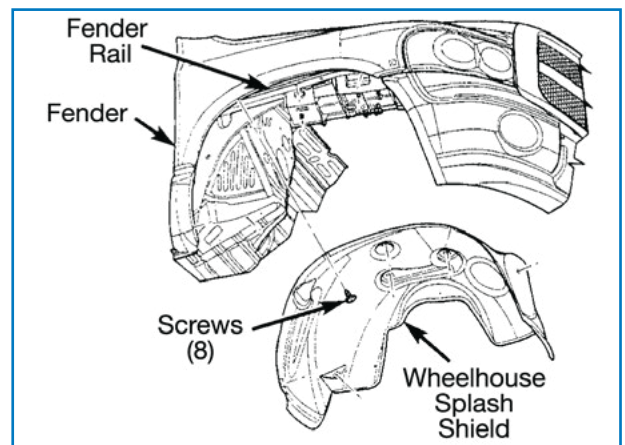


11 EXHAUST BRAKE INSTALLATION

Installer Option (not mandatory)

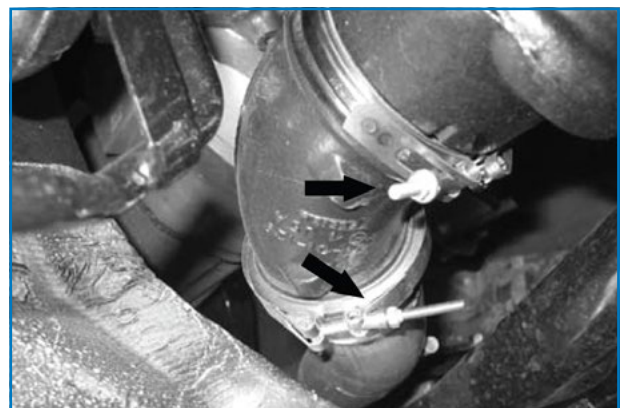
Some installers remove the front wheels and 8 screws which secure the wheelhouse splash shields. Doing this allows for easier access to the exhaust elbow. To remove the wheelhouse splash shield completely, the ABS cable will need to be disconnected from the splash shield.

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



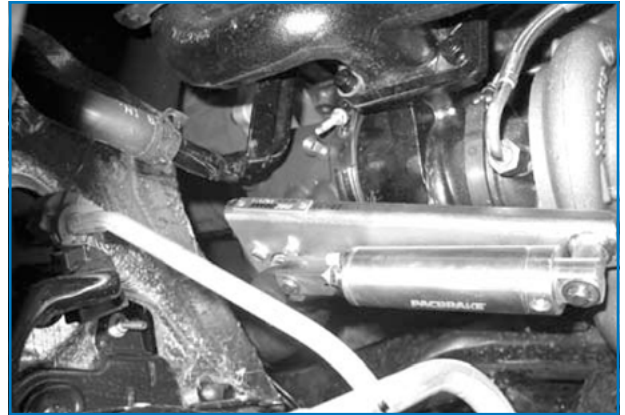
12 Remove Factory Elbow

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 re-use. The factory elbow is indexed with two roll pins. These pins should remain in the elbow, 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: When installing the PRXB Exhaust Brake, use care when handling the brake assembly to not damage the regulator spring and lever arm.

- 13** 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 then 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 (or 8.5 N•m). Now install the outlet side clamp and torque to 100 in-lbs (or 11.3 N•m).



14 AIR COMPRESSOR SUB-ASSEMBLY:

Locate the poly bag containing the air compressor mounting bracket, fasteners and mounting hardware.

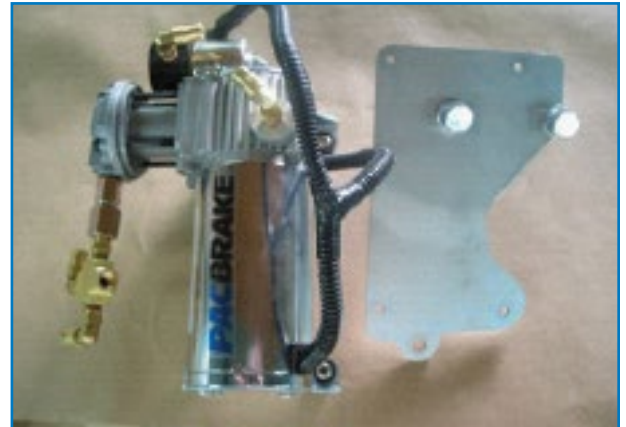
Place one M10 flat washer on each of the two M10 capscrews. Insert both capscrews into the mounting bracket.

- 15** Install the two capscrews into the bracket assembly as shown. Make note of the mounting bracket cut out, as it **MUST** be to the right side.



- 16** Using the four 10/32 x1" machine screws, eight #10 flat washers and four Nyloc nuts LOOSELY attach the compressor to the bracket - compressor head must face the opposite side from the cut out on the bracket.

Ensure the leg of the Pacbrake harness is between the air compressor and the mounting bracket.



- 17** Machine screws must be installed as shown in the photo (threaded ends pointing upwards).

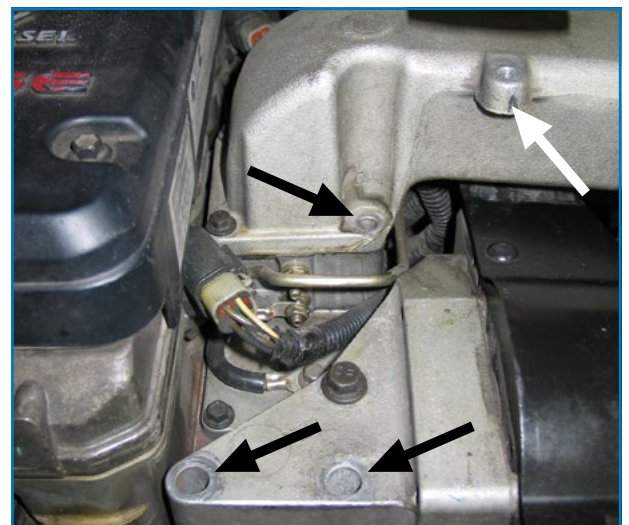
Tighten the four mounting screws and nuts until the washers first contact the isolator and then tighten TWO additional turns. Do not over tighten.



18 COMPRESSOR INSTALLATION

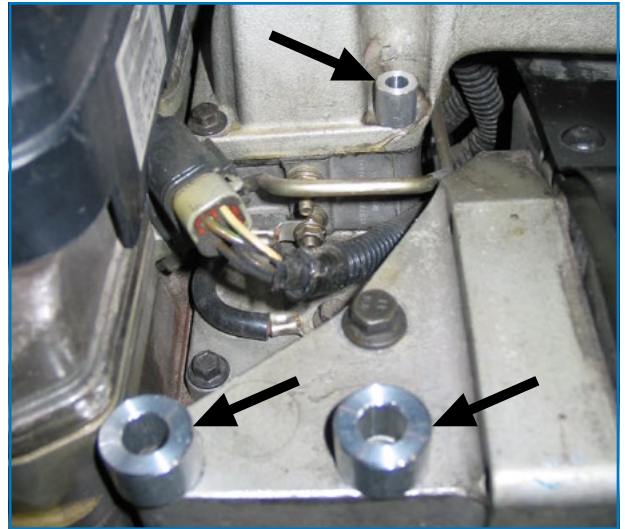
Remove the four capscrews indicated in the photo with arrows (three with BLACK arrows and the one with a WHITE arrow). Not all vehicles will have the three forward capscrews shown in the photo; therefore the removal will not be necessary. Vehicles without the forward capscrews require two long spacer tubes and those with the capscrews will require two short spacers, both lengths are provided.

Remove the capscrew holding the oil dip stick tube down (*shown with the WHITE arrow*), discard this bolt, a new fastener and spacer will be installed in STEP 20.



- 19** Position the correct length spacers in the locations shown in the photo (with arrows). All installations require the small O.D. spacer on the air intake horn.

NOTE: An engine with the forward capscrews is shown in the photo



- 20** Install the compressor assembly over the 3 spacers. Obtain the best clearance of the compressor to coolant hose and compressor to intake horn as possible. Torque the 2 large capscrews to approximately 32ft-lbs, (43 N•m). Torque the allen head capscrew to 18 ft-lbs (24 N•m). Place the spacer provided over top of the mounting hole for the oil dip stick. Using the longer M8-1.25x30mm bolt, spacer and flat washer, secure the dip stick tube to the intake horn, torque to 15ft-lbs, (20 N•m). Install the pressure switch using thread sealant, into the open port on the compressor assembly as show in the photo.

NOTE: The blind threaded port on the compressor head facing the front of the vehicle remains open.



- 21** Install the Black 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. Cut the airline to length with a sharp razor knife. Secure the airline with the tie-straps provided.

CAUTION: This kit includes "push to connect" airline fittings. They require the end of the airline to be round, square and cleanly cut to ensure the internal seal will not leak. The airline must only be cut with a sharp razor knife or hose cutter

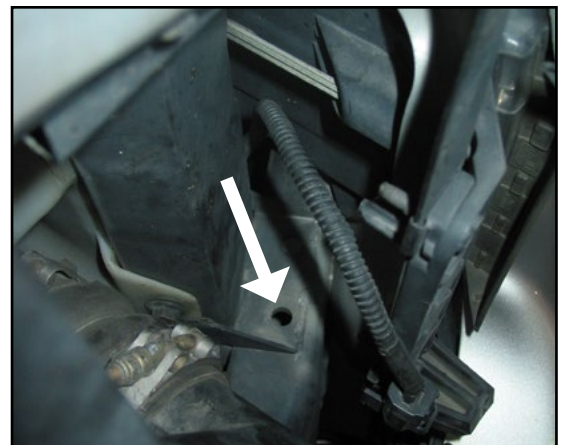


- 22** Under the hood, route the leg of the Pacbrake wiring harness with the two Weather-Pac connectors to the air compressor. Connect the female connector to the male connector at the compressor and connect the male connector to the female connector at the pressure switch. Secure the harness with the tie-straps provided.

Route the compressor assembly ground wire along the Pacbrake wiring harness and connect the ring terminal to the negative battery terminal.



- 23** Install the 1/4" NPT-1/4" push on barbed hose fitting on to the plastic filter housing. Locate the 6ft. blue nylon hose marked "air intake" and connect one end to the barbed fitting on the intake filter. Install the compressor air intake filter into the hole located in the radiator support bracket behind the driver side headlight (*as shown in the photo*). Route this line up to the compressor, and connect the other end to the push to connect fitting on the bottom side of the compressor.



- 24** Install the 1/4" NPT to 1/8" NPT nipple into the air tank. Install the two push to connect airline fittings into the ends of the tee fitting. Install the tee fitting on to the top of the nipple, as shown in the photo. Install the 1/4" NPT plug fitting or drain valve (optional) 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.



- 25** Choose a location to mount the air tank such as on the driver's side bumper support brace (*shown in the photo*). Drill two 3/8" holes on 3 1/4" 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 airline provided may need to be substituted for a long piece.



- 26** Connect the 8ft. airline to the remaining fitting at the compressor. Route it to the top of the air tank. Cut the airline to length with a sharp razor knife. Connect the 1/4" airline to either fitting in the tank. Secure the airline away from moving parts and heat sources using the tie-straps provided. Using the remaining length of airline, connect one end to the remaining fitting in the air tank, consultate the customer for a preferred location for the quick connect airline coupler. Route this air line to this location and connect to the coupler.



- 27** Route the RED fused wire of the Pacbrake harness with the eye terminal to the driver's side positive battery terminal.



- 28** Reconnect both negative battery terminals with the BLACK wire of the Pacbrake harness with the eye terminal to the negative battery terminal driver's side. Secure with the tie-straps provided.



- 29** **NOTE: If the wheelhouse splash shields were removed, they may be reinstalled now by following the procedure in reverse.**

30 CHECK OPERATION AND CONTROLLER PROGRAMMING

Check the Pacbrake system for air leaks. Turn the ignition to ON, the air compressor should pump to fill the air tank, once the air tank has reached full operating pressure the air compressor must NOT cycle until the exhaust brake is activated. If the air compressor cycles, check and repair any air leaks.

All controllers come pre programmed for 48RE transmissions (two ORANGE wires approximately 6" from controller are disconnected).

Early 2003 trucks with 47RE transmissions should connect the two ORANGE wires originating at the GREY connector. Early 2003 trucks with 47RE transmissions which have been modified with aftermarket valve bodies and aftermarket lock-up torque converters which are able to hold lock-up during exhaust braking in 1st and 2nd gears can use the later 48RE programming. The difference between the two programs is that the 48RE transmission program will allow exhaust braking in the 1st and 2nd gears, where the factory 47RE transmissions will not. Modified 47RE vehicles should test drive the vehicle. If lock-up will not hold during the exhaust braking in the 1st or 2nd gear, re-connect the two ORANGE wires. To verify program within the Pacbrake control unit, simply turn the ignition ON, with the exhaust brake switch OFF. If the exhaust brake cycles 2 times, the 47RE program has been loaded (ORANGE wires connected). If the brake cycles 3 times it indicates the 48RE program (ORANGE wires' disconnected).

NOTE: All vehicles with 48RE transmissions should have the ORANGE wires disconnected.

LED SWITCH OPERATION

RED LIGHT – Air system charging/charged, waiting for torque converter lock-up

GREEN LIGHT – Torque converter locked up, exhaust brake will apply then throttle is released

ORANGE LIGHT – Exhaust brake is activated

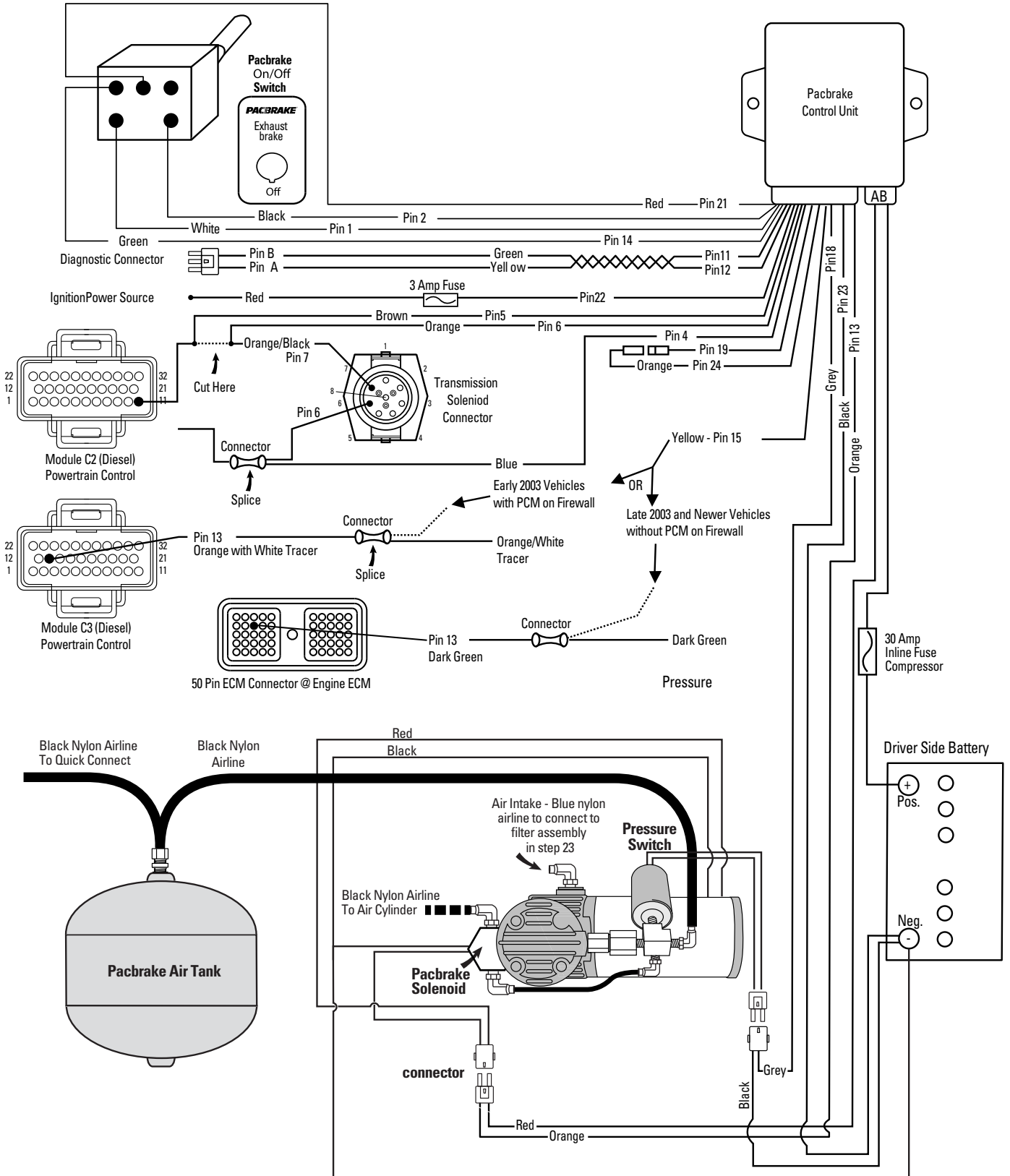
No Illumination – Brake disabled/OFF

The exhaust brake will not activate unless the LED light is GREEN. This is to protect the transmission. In certain conditions it will be necessary to apply light pressure to the accelerator to achieve torque converter lock-up, most commonly after downshifting.

FEATURES

The Pacbrake control unit has a built in warm-up feature. This feature will activate the exhaust brake at idle with the vehicle stationary when the Pacbrake switch is turned ON. When the coolant temperature reaches 170°F or 75°C, the control unit will disable the warm-up feature at idle. When performing a road test, the O.D. (overdrive) switch must be in the OFF position and the Pacbrake switch in the ON position. Some vehicles may have TOW/HAUL instead of O/D, if equipped, turn ON the TOW/HAUL feature with the Pacbrake switch in the ON position. Attain road speed above 40 MPH or 65km/h and release the accelerator pedal. The exhaust brake should apply, slowing the vehicle. Once the exhaust brake has brought the vehicle's engine speed below 900 RPM, the exhaust brake will disengage. When using the auxiliary coil hose for inflation, the Pacbrake switch must be turned ON with the engine running for compressor activation.

Dodge Compressor Wiring – 2003-2005 Vehicles



**NOTE: Do not operate vehicle with Pacbrake controller disconnected.
If you need to do this, jump Pins 5 and 6 at GREY connector of the Pacbrake harness.**