Installation MANUAL

PACBRAKE®

InlineMount
EXHAUST BRAKES

C40008 & C40009

1995 – 2003 Ford F250 / F350 7.3 L Powerstroke Diesel with manual transmissions
1995 – 1998 Ford F250 / F350 7.3 L Powerstroke Diesel with automatic transmission*

*Requires the use of an aftermarket transmission torque converter lock-up controller (controller NOT included)

NOTE: 1999 – 2003 Ford F250 / F350 7.3 L Powerstroke Diesel with automatic transmission use Pacbrake C40019 kit (Includes transmission controller)

GETTING STARTED

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

Before starting the installation, please read the entire installation manual carefully and be sure you have a full understanding of the installation. Check that your Pacbrake kit is correct for the application and your kit contains all the necessary parts shown in the photo below.

NOTE: The adapters provided in the kit are for vehicles with stock exhaust pipe diameter. If the vehicle has an aftermarket exhaust, consult Pacbrake factory for replacement adapters.

C40009 - 1999-2003

C40008 - 1995-1998

A ½ gallon air tank is supplied to speed up the actuation of your Pacbrake and provide an air source for limited accessory use. Also provided is a 5-in-1 inline inflation/deflation kit that includes a 25' coiled air hose and accessories within a zippered storage bag (zippered storage bag not shown in photo). Please note: The air compressor has a 33% duty cycle, this is well above the exhaust brakes requirement. Caution must be exercised when using the compressor and inflation kit for other uses. Please consider the air compressors duty cycle when continually in use for more then 3 minutes, failure to do so may allow the air compressor or hoses to overheat causing failure.

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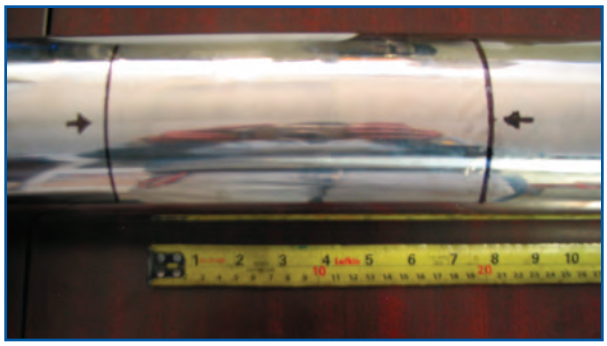
1 **Prior to starting the installation, check both exhaust manifolds and exhaust bellows for exhaust leaks. If exhaust leaks exist they should be repaired prior to installing the exhaust brake.**

Disconnect both negative battery terminals first. Then disconnect both positive battery leads.

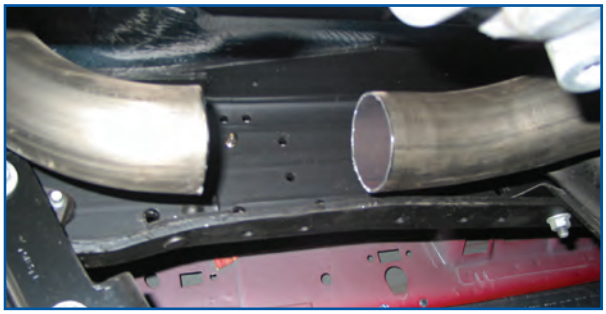
EXHAUST BRAKE INSTALLATION

2 With the exhaust brake on the bench, loosely attach the exhaust pipe adapters provided, then 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.

3 Select a location in the exhaust system that has sufficient clearance for installation and servicing of the exhaust brake. This location should be as close to the turbocharger as possible and away from dirt and road spray. Transfer the brake/adapter measurement, attained in step 2, to this location and mark the exhaust pipe. Remove the exhaust pipe and cut out 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.

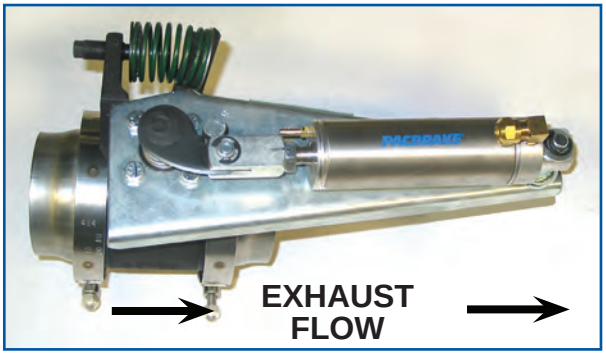


4 Loosely re-install the exhaust system into the chassis to fit the exhaust brake assembly. Make sure the header pipe flange is aligned correctly with the turbocharger outlet flange in order to ensure a leak free connection. Install the 90 degree fitting provided into the air cylinder with the inlet port pointing forward. Apply thread sealant to prevent air leaks.



5 Using the 2 “V” clamps provided, install the exhaust adapters onto the exhaust brake - making sure they are centered on the flanges. Insert the exhaust brake assembly into the exhaust system noting the direction of exhaust flow as shown in the photo. Rotate the exhaust brake to attain sufficient clearance around the PRXB mechanism and the frame rail. Tack weld the two adapters to the exhaust system, while being careful to maintain the correct length and any angles that exist. Remove the 2 “V” clamps and exhaust brake to facilitate welding of the adapters to the exhaust. Welding can be done on the inside or outside of the pipe and must be leak free.

Note: any clamped exhaust connections between the brake and the engine must be welded at this time to ensure the joint can not separate or leak under pressure

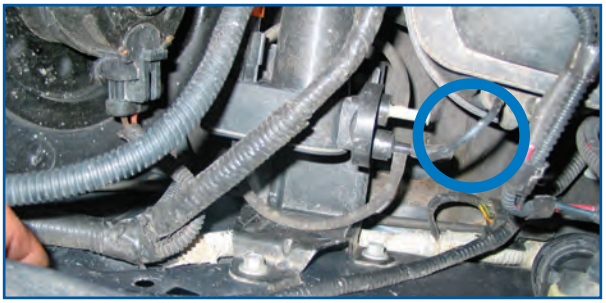


6 Re-install the exhaust system. Loosely install the factory turbocharger “V” clamp, but do not fully tighten the turbocharger “V” clamp at this time (if the exhaust system was removed for welding). Install the front “V” clamp onto the exhaust brake flange and adapter, making sure the exhaust brake is centered on the adapter. Torque the “V” clamp to 10 ft-lbs, (14 N•m). Then loosely install the rear “V” clamp onto the exhaust brake flange and adapter. (If the header pipe was removed for welding) center the header pipe flange to the turbocharger flange, torque the factory “V” clamp to 72 in-lbs, 6 ft-lbs, (8 N•m). Ensure the exhaust system is aligned correctly (flange centered) and that adequate clearance exists around the exhaust brake. Then, torque the rear “V” clamp to 10 ft-lbs, (14 N•m).

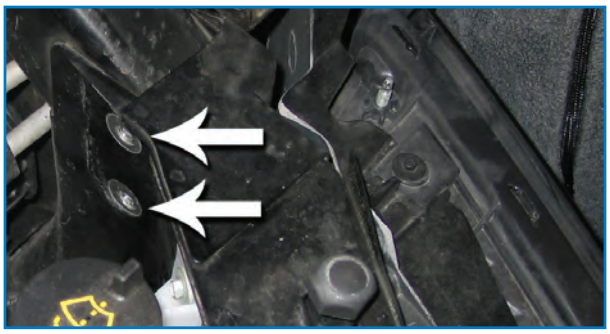
COMPRESSOR MOUNTING (SPECIFIC TO POST 1997 VEHICLES)

NOTE: 1995-1997 vehicles, it is not necessary to relocate the vacuum pump, the compressor can be mounted to the inner fender.

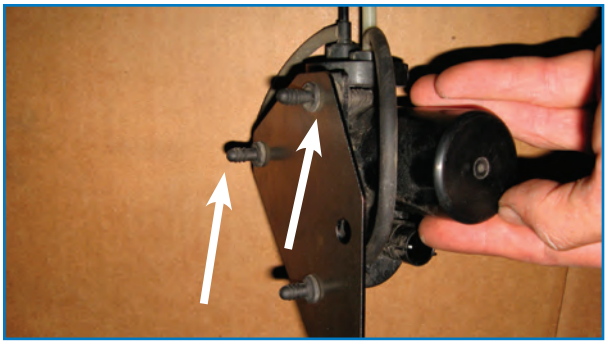
7 Post 1997, disconnect the short vacuum hose routed from the vacuum pump to the vacuum reservoir. Disconnect the electrical connector of the vacuum pump. Using a 13mm socket, remove the two bolts attaching the pump and bracket to the inside fender. Remove pump from the vehicle.



8 Remove the two factory radiator support capscrews on the passengers side and discard (see photo). The two capscrews will be replaced with longer ones complete with spacers.

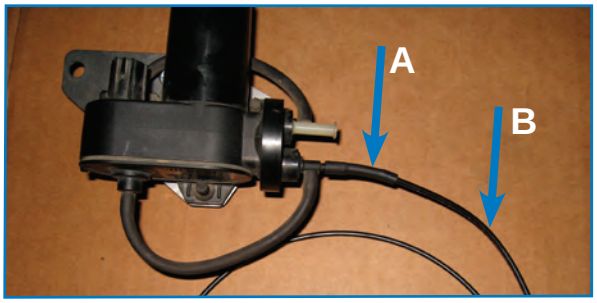


9 Remove the vacuum pump from the factory bracket, leaving the rubber isolators attached to the vacuum pump. Install the vacuum pump on to the Pacbrake supplied bracket as show in photo.

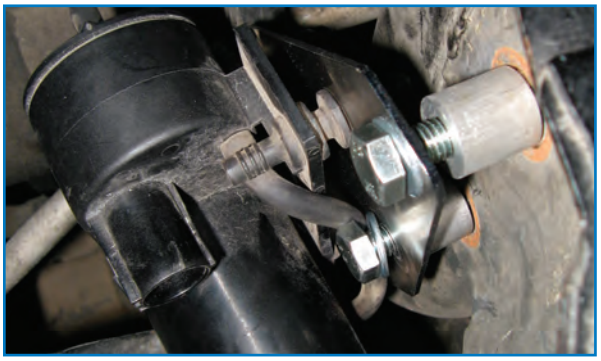


10 Install the supplied short piece of rubber vacuum hose onto the vacuum pump. Insert one end of the supplied ⅛" nylon hose into the rubber hose, as shown in photo.

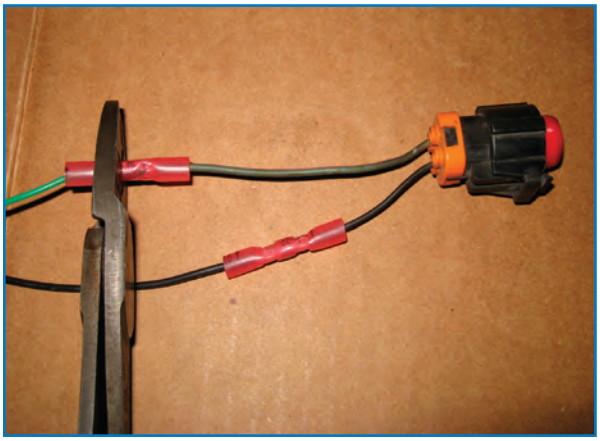
Rubber hose marked "A"
Nylon hose marked "B"



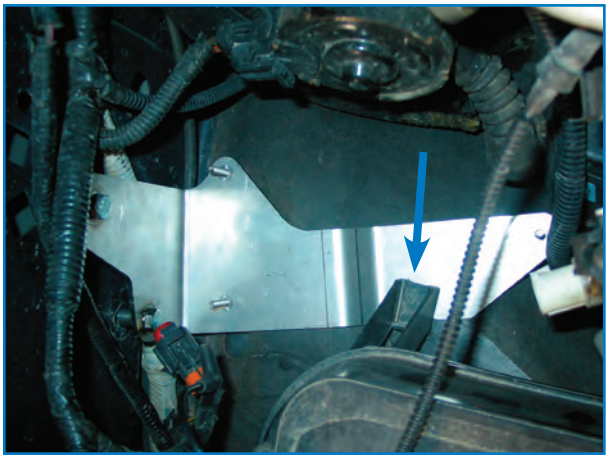
11 Insert the two supplied M8x40 capscrews and washers through the bracket and then the two spacers. Carefully insert the vacuum pump assembly onto the radiator support brace - making sure to not kink the vacuum hose. Torque the two capscrews into the threaded holes to 13 ft-lbs (18 N•m). Route the ⅛" nylon hose back to the port on the vacuum reservoir, cut off excess hose and install into the other port on the reservoir. Due to a slight size difference in the outside diameter of the nylon hoses, a second 3" length of rubber hose is provided to make this connection. Using the supplied tie-straps, secure the hose away from moving parts and heat sources.



12 Locate the vacuum pump electrical connector disconnected in step 7. Cut the two wires 4" back from the connector. Using the lengths of black and green wire and the butt connectors provided, extend the harness to enable the connector to reach the new vacuum pump location. Once the butt connectors are crimped, heat the connectors to provide a moisture tight seal. Protect the harness with the conduit provided and secure with tie-straps.



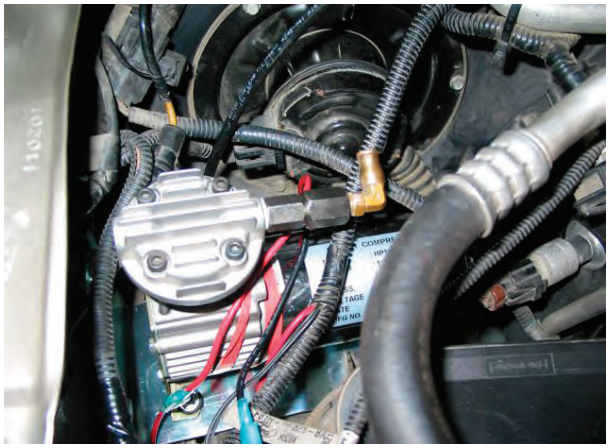
13 The Pacbrake air compressor mounting bracket mounts in the same location the vacuum pump was removed from. Insert the two supplied M8x40 capscrews and washers through the bracket and then the two spacers. Shown in the photo is the air compressor bracket. It needs to be installed UNDER the foot for the vacuum reservoir. This requires the nuts in the wheel well to be loosened enough to lift the reservoir so the notch in the compressor bracket can be inserted under the reservoir foot. Once the compressor bracket is under the reservoir foot, loosely thread the M8x40 capscrews into the inner fender. Tighten the vacuum reservoir nuts and then torque the M8x40 capscrews to 13 ft-lbs (18 N•m).



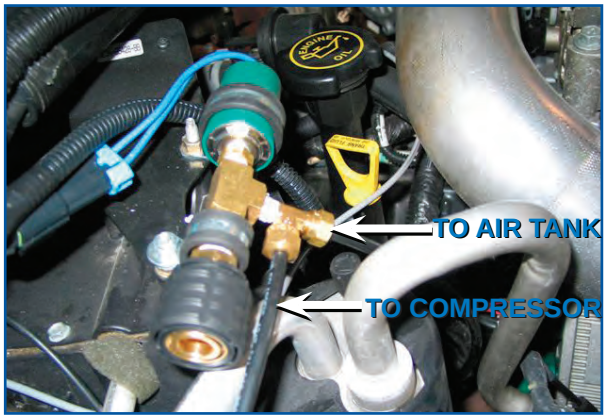
Note: The notch in the compressor bracket must be UNDER the vacuum reservoir foot.

14 Install the compressor on to the 3 mounting studs of the bracket, using the supplied washers and nyloc nuts, torque to 35 in-lbs, (4 N•m). Connect the nylon hose from the tee fitting of the pressure switch to the air compressor fitting at the check valve.

Locate the air compressor wiring harness. Using the self tapping screw provided, secure the relay receptacle to the inner firewall then insert the relay. Connect the 14 gage red (thicker wire) of the compressor harness to the 14 gage wire of the air compressor. Connect the red 14 gage fused wire to the positive battery terminal. Connect the black wire of the air compressor to a good chassis ground. (A ground extension harness is provided to connect to the factory ground stud on the firewall).



15 Locate the three studs of the MAP sensor bracket on the heater box. Remove the nut on the forward drivers side stud only. Place one of the supplied washers on top of the forward passengers side nut as a spacer. Locate the pressure switch assembly and the two clamps provided. Install the larger clamp around the pressure switch and the smaller clamp around the fitting for the air chuck. Then, using the washers and nut supplied (with the factory nut removed earlier), secure the pressure switch assembly. Connect the nylon airline from the compressor to the fitting on the pressure switch assembly. Connect the nylon airline to the remaining fitting at the pressure switch assembly and route it to the air tank location in step 17.



16 Install the compressor's air intake filter on the passenger side inner fender in a pre-existing hole. The air intake ports of the filter must point down. Connect the rubber hose supplied to the barbed fitting on the filter and the other end to the barbed fitting on top of the compressor. The air intake hose must not be restricted or poor compressor performance will result.

17 Install the fittings provided in the top of the air tank using thread sealant, as shown in the photo. Install the supplied ¼ NPT plug in the bottom of the tank. Choose a location on the outside of the frame to mount the air tank with the fasteners supplied (use existing holes in the frame if possible). Connect the airline from the pressure switch and air chuck assembly installed in step 15 to either of the two fittings at the top of the air tank.

18 Mount the solenoid valve inside the frame on the passenger side with the exhaust port pointing down, using one of the air tank fasteners. Drill a ¼" hole to secure the other side of the solenoid bracket. Install the supplied ¼" bolt, nut and washers. Connect the nylon airline from the air tank to the port on the solenoid marked “IN”. Connect the remaining piece of nylon airline to the solenoid port marked “CYL”. Now route the other end to the 90˚ fitting installed in the Pacbrake air cylinder and connect. Secure the airlines with the tie-straps provided.

19 Connect the air cylinder remote breather hose to the barbed fitting on the rod end of the air cylinder. Secure with a tie-strap. Route the other end to the compressor’s air intake filter, installed in step 16. A few inches from the compressor’s air intake filter, cut the hose and install the supplied barbed tee fitting. Attach all three hoses to the fitting.

ELECTRICAL INSTALLATION

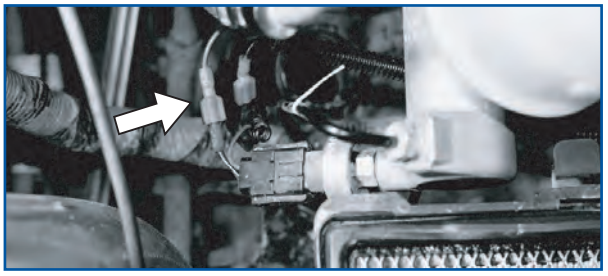
20 **For vehicles WITHOUT cruise control, omit steps 20 & 21.**

Locate the relay harness with two BLUE wires. Remove the ground strap bolt on the driver-side of the firewall and install the relay receptacle and relay ground wire on this bolt.

Install relay into the receptacle.

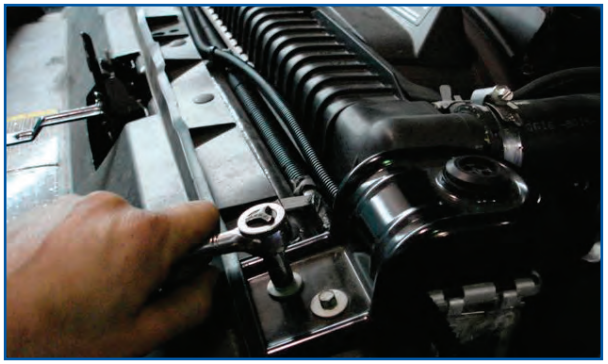
21 Ford installs a brake pressure applied switch on the front lower side of the master cylinder.

Locate the black wire with a yellow stripe. Cut this wire and crimp on the two red terminals provided. Connect these to the mating terminals of the two remaining blue wires coming from the relay harness. Neatly secure all wiring with the plastic ties.



22 Connect the single RED wire of the main wiring harness to the remaining RED wire of the cruise relay. If the vehicle is not equipped with cruise control, insulate the terminal as it is not required. Drill a ½" hole through the firewall for the Pacbrake harness, check for obstructions before drilling. Feed the switch end of the harness into the cab through the ½" hole.

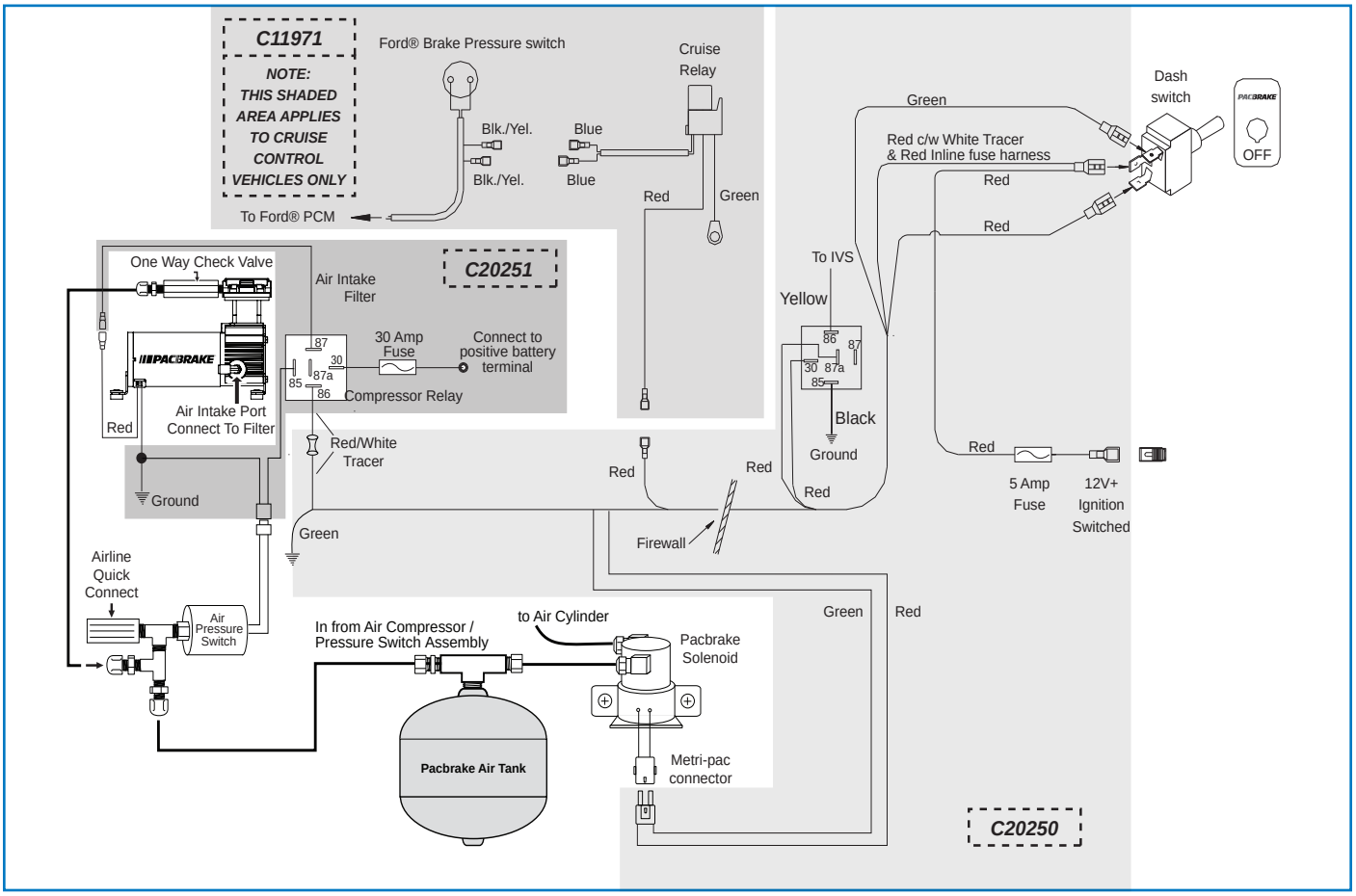
23 Route the other end of the Pacbrake wiring harness in front of the radiator, under the radiator supports to the air compressor and pressure switch assembly. The metri-pac connector with the two black wires connects to the pressure switch assembly. The metri-pac connector with the red and green-wires connects to the solenoid valve. Connect the red with white tracer wire of the harness to the red with white tracer wire of the compressor relay, once crimped, heat the connector to provide a water tight seal. Connect the green wire with eye terminal to a good chassis ground. Secure the entire harness with the tie-straps provided. Seal the ½" hole in the firewall with silicone.



24 Remove the lower instrument panel (see arrow). Drill a 1/2" hole as shown for the dash switch. The dash switch location is a suggestion only. Install the Pacbrake on/off switch. Switch location can vary depending on customer choice or the availability of space. Choose a location which is convenient to the driver. Pacbrake offers a transmission gear lever mounted on/off switch for manual transmission equipped vehicles. Crimp the RED with WHITE trace wire with the RED inline fuse harness together using the connector provided. Connect the two wiring harnesses to this switch, observing the correct wire and terminal locations as shown in the wiring schematic.

Exhaust Brake Wiring Schematic - C40009 Kits ONLY

1999-2003 Ford Trucks and Econoline Vans Equipped with Powerstroke Only. (For 1995 to 1998 Vehicles, see Page 11)



Throttle Relay Installation

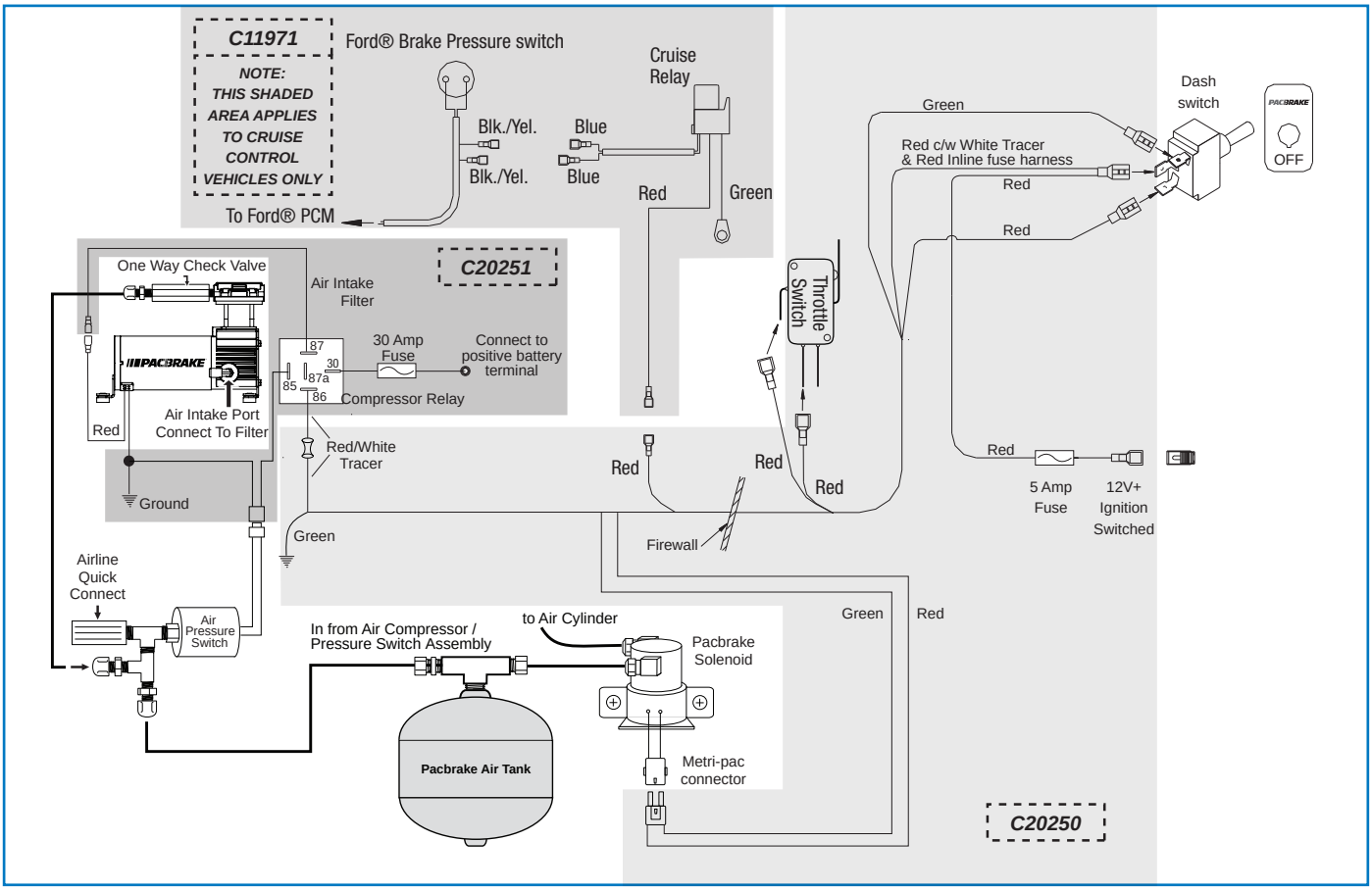
At the throttle pedal, locate the I.V.S. (Idle Validation Switch). NOTE: The IVS connection is critical and must be correct. We recommend using a 12 volt test light to verify the correct wire BEFORE installing the “T” tap.

Most common for vehicles built after 10/2000 is a red wire with a green stripe 2nd from the top of the connector, however because of possible production changes, using a test light is the only way to be sure. With the ignition on, probe this wire with the test light first as it should be 12 volt positive with the accelerator pedal to the floor. Release the pedal and the light should go off. If this is correct connect this wire as explained below, if not, probe the remaining wires until you locate the one which has 12 volts positive with the accelerator pedal depressed and no current with the pedal released.

With the correct wire selected, use the blue electrical “T” tap supplied and tap into this wire. Plug the insulated male end of the 12” yellow wire into the “T” tap. Connect the opposite end of the yellow wire to terminal 86 of the supplied relay. Connect the 12” black wire to terminal 85 of the relay and find a good vehicle ground for the eye terminal on the opposite end. Connect the two red harness wires to terminals 30 and 87A and then secure the relay to existing wiring (in this location) with the tie straps provided.

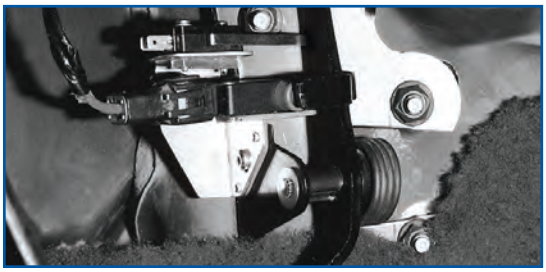
Exhaust Brake Wiring Schematic - C40008 Kits ONLY

1995 to 1998 Ford Trucks and Econoline Vans Equipped with Powerstroke Only.

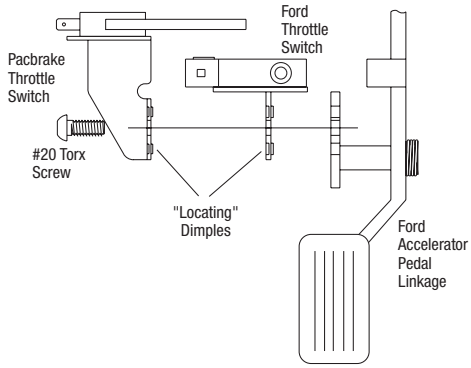


The Pacbrake throttle switch assembly mounts on the outside of the existing Ford switch located above the accelerator pedal, as shown in the schematic. Using a #20 Torx driver, remove the screw which attaches the existing switch and install the Pacbrake switch assembly. Align the two small bracket dimples with the depressions in the mounting bracket. Adjust the switch by bending the switch arm to obtain a “click” each time the throttle returns to idle. The Ford switch will also click at this time. NOTE: Should the “locating” dimples not be realigned, poor throttle response will result.

Connect the two red wires of the Pacbrake harness to the terminals shown above.



Throttle Switch Schematic-



BOTH C40008 AND C40009 KITS

Locate a 12 volt ignition power source in the harness directly below the steering column (see arrow).
Attach the yellow T-tap connector to this wire which should be 12V+ ignition switched.

CHECK OPERATION

Start engine and turn Pacbrake on (engine will idle with Pacbrake engaged). Advance the throttle from idle to approximately 1200 RPM and back to idle several times, ensuring that the Pacbrake applies and releases each time.

Check for exhaust leaks at all connections. Shut engine down and do a final check of all clamps, fittings, wiring and plastic ties.

Road test vehicle, and with cruise control activated, turn Pacbrake switch on. With throttle in idle position, cruise control should cancel immediately. NOTE: Whenever the Pacbrake switch is on and throttle at idle, cruise control cannot be engaged.

NOTE: Re-torque turbo clamp and exhaust brake clamps after 100 miles (engine should be cold).

If you have any questions or comments, please don't hesitate to give us call at 1-800-663-0096.

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