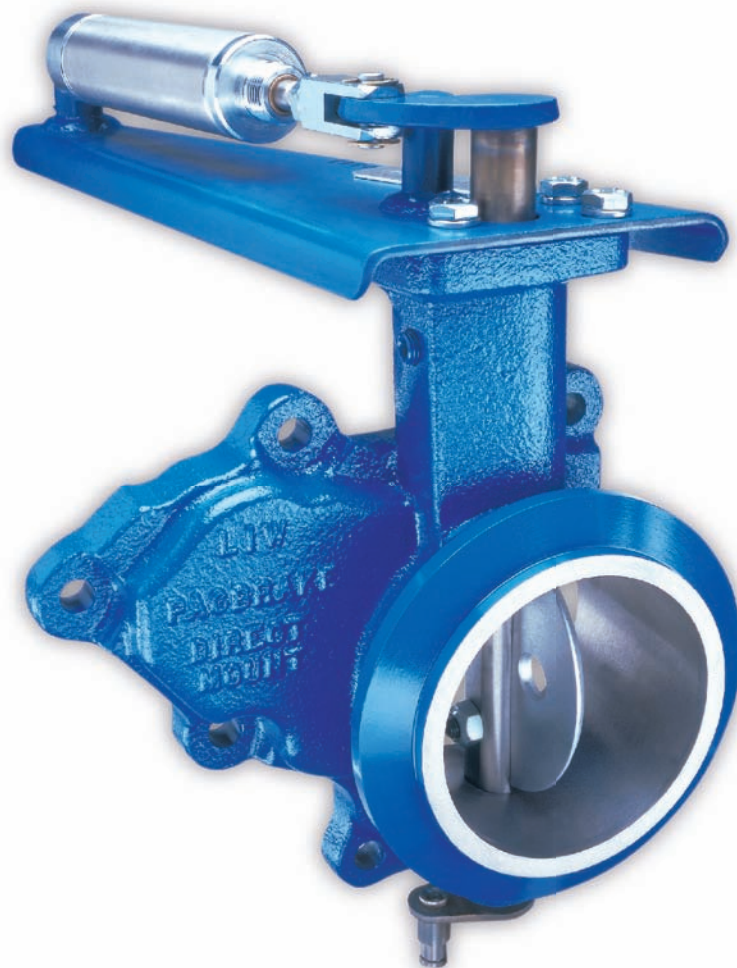


Installation

PACBRAKE[®]
ENGINE & EXHAUST BRAKES



C20002 **EXHAUST BRAKES**

APPLICATION:

Post November 1998 to early 2003 Ford F Series with 7.3L Power Stroke Diesel Engines



The market leader because...

#1 Exhaust Brake Manufacturer

PROVEN PERFORMANCE EXCELLENCE SINCE 1985. Pac-brake is the only patented design that's approved, optional and standard equipment with more OE manufacturers than all other makes combined.
Why trust your safety AND your money to anyone else?

Maximum Retarding/Braking Power

Superior design and function provide maximum allowable retarding power for maximum peace of mind.
In a standardized test; we will exceed or match any competitive brake on the market.

Superior Design

PACBRAKE DIRECTMOUNT® design mounts on the turbo-charger to provide:
a) Instant retarding horse power (no time delay)
b) Increased reliability
c) Easiest installation of all exhaust brakes available.
Other brands require more parts, clamps, and installation time.

Arcor® Nitrided Housing & Components*

PACBRAKE's Industry exclusive coating process makes Pac-brake the toughest, most durable brake on the market.
a) Reduces wear and increases corrosion resistance
b) Adds strength and maintains flawless action.
* Available on most models.
Other brands are more susceptible to rusting, corrosion and seizing up in a harsh exhaust environment.

Free Flow Exhaust & Backpressure Limiter

PACBRAKE exhaust brakes offer an unrestricted exhaust flow design and provides maximum retarding power without reducing power output. The backpressure limiter guarantees engine safety.
Braking power when you need it - without sacrificing engine power.

Precision Exhaust Pipe Mounting Surface

PACBRAKE's contacting surfaces are precision machined – eliminating the need for a gasket.
A better fit with less parts.

Lower Price AND Less Expensive Installation

PACBRAKE technology and quality are available to you at hundreds of dollars less than most competitors. Add to that fewer parts and easier installation (= less labor) and you benefit financially from purchase to installation to long term performance.
Other brakes cost you more upfront, more at installation and more down the road.

PACBRAKE Parts & Dealer Network

It's one thing to purchase an exhaust brake, but it's another to have parts and/or service available everywhere you go.

Important Note

Every effort has been made to ensure that this manual is as complete and comprehensive as possible. However, as changes and updates do occur, we recommend checking our website for the most up-to-date manuals and information.



- 1** This manual covers installation procedures for Ford F Series Powerstroke diesel trucks built after 11/98. Before starting installation please check the Ford warm-up housing (attached to the turbocharger). This housing must have a shaft running through it which attaches to the warm-up cylinder rod. The difference between PRE and POST 11/98 trucks is the length the warm-up shaft protrudes below the housing. In PRE 11/98 trucks the shaft protrudes 1/2"; in POST 11/98 trucks the shaft protrudes 1". Please check that the length of the warm-up shaft on the housing supplied in your kit correctly matches your application.
- If your warm up housing does not have rod running through it — please call Pacbrake service at: 1-800-663-0096.
- Before starting, check that the kit contains everything shown in this photo.



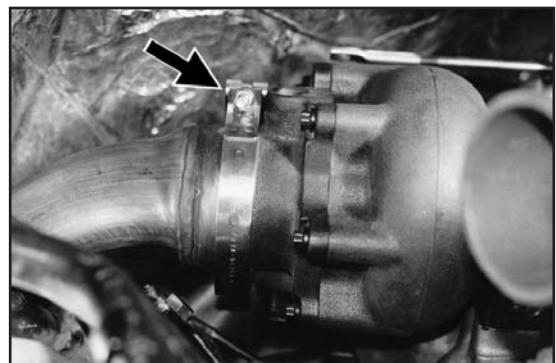
NOTE: An extra harness has been included in this kit for vehicles equipped with cruise control.

NOTE: A 5/16 12 PT box end wrench and/or socket is required for warm-up housing removal & Pacbrake installation.

- 2** From below the vehicle at the first exhaust pipe connection, loosen the two exhaust pipe flange connector nuts. This allows movement of the exhaust pipe, which makes the exhaust brake mounting bolts easier to install.



- 3** Remove the passenger-side intercooler pipe and remove the engine lifting eye, located by the turbocharger. Remove the turbo outlet V-clamp and move the pipe away from the turbo.



4 Remove the seven bolts which attach the warm-up housing to the turbo and remove the warm-up housing. At the lower shaft of the warm-up unit push the retaining clip towards the turbo and remove the lever from the arm.

5 Install the 90° fitting into the Pacbrake cylinder, pointing the fitting 180° from the brake unit and install the 31" air line. Check the turbo face for carbon build-up or imperfections which will effect sealing.

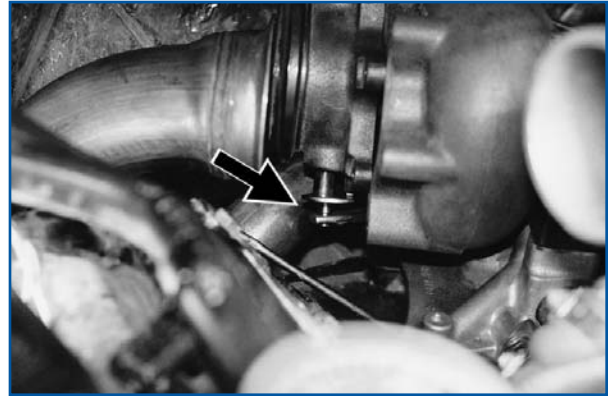
6 Install the Pacbrake and tighten only 2 of the cap screws. Attempt to attach the Ford warm-up arm and clevis to the Pacbrake arm pin. The clevis should slip over the pin easily, without having to extend or pull the rod any amount (see diagram). If they do not line up exactly, an adjustment must be made to the Ford warm-up rod clevis.

Make note of the amount of adjustment to be made, and remove the brake in order to easily access the Ford warm-up clevis.

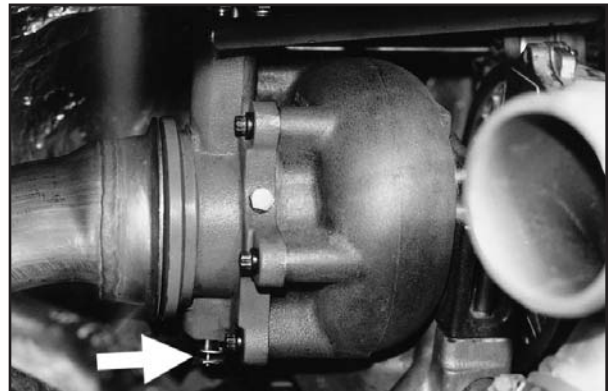
Hold the Ford warm-up actuation rod with a gripping tool, and screw the Ford warm-up actuation clevis in or out to the amount previously determined necessary for a precise fit. **DO NOT** adjust the Pacbrake actuation rod or clevis, or braking power may be reduced.

Remount the brake with 2 cap screws, and check the alignment. If correct, install the remaining cap screws and torque to 72 in.lbs. If adjustment of Ford warm-up clevis is still incorrect, continue to adjust until Ford clevis slides onto Pacbrake arm pin.

When complete - install remaining cap screws and torque to 72 in.lbs.



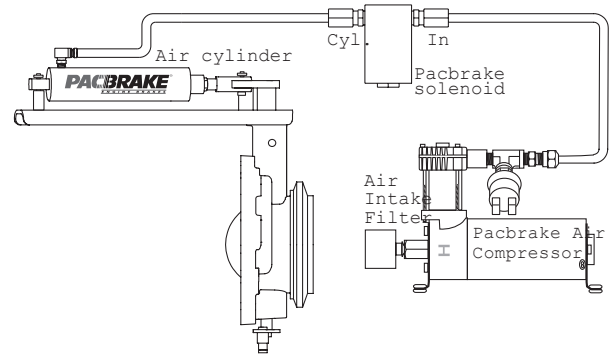
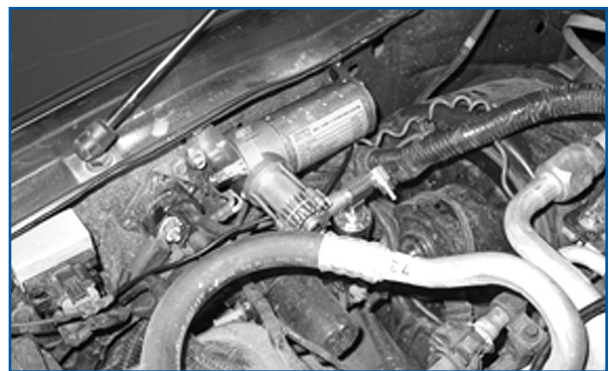
NOTE: If this adjustment is not correct, the warmup cylinder may limit the travel of the Pacbrake when closing. This will reduce maximum back pressure, and lower your retarding performance.



- 7** Align the exhaust pipe and install the v-clamp. Reinstall the intercooler pipe removed earlier. From the underside of the truck, tighten the two exhaust connector nuts loosened earlier in Step #2.



- 8** Using the 4 self tapping screws provided, mount the compressor on the passenger side inner fender as shown in the photo. When mounting the compressor, attach the black compressor ground wire and the green (harness ground) wire to one of the 4 mounting screws. Install the red wire with the push on terminal of the Pacbrake harness to the remaining terminal at the pressure switch. Install the 89" air line into the compressor outlet, route the air line and the wiring harness along the cowl to the drivers side of the firewall. Secure with plastic ties provided. Install air intake filter (supplied) into front of compressor.



- 9** Mount the solenoid to the firewall as shown using the two self-tapping screws provided (it may be easier to drill a pilot hole). Connect the air line from the compressor to the port marked "in" and the port marked "cyl" to the Pacbrake air cylinder. Install both of the air lines to the solenoid.



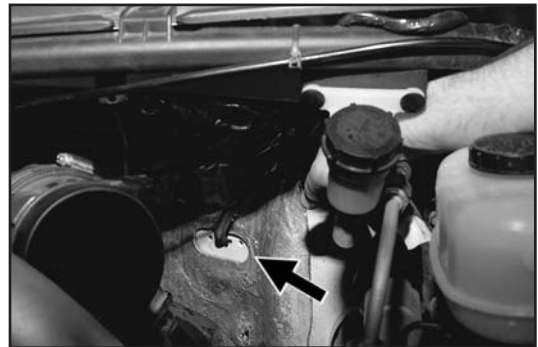
- 10** For vehicles WITHOUT cruise control, omit steps 10-11.
Remove the ground strap bolt on the driver-side of the firewall and install the relay receptacle and relay ground wire on this bolt.
Install relay into the receptacle.



- 11** 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.
Neatly secure all wiring with the plastic ties. Connect the wiring harness to the solenoid and to the cruise relay.



- 12** The firewall has a plug which can be removed to insert the harness. If this hole has been used it will be necessary to drill a hole for the harness. Feed the harness through the hole and seal around the loom.



Throttle Relay Installation

13

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 tystraps provided.

Please see full schematic on page 6.

14

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.

Connect the two wiring harnesses to this switch, observing the correct wire and terminal locations as shown in the wiring schematic.



15

Locate a 12 volt ignition power supply in the harness directly below the steering column (see arrow).

Attach the yellow T-tap connector to this wire which should be 12V+ ignition switch.



Check Operation

Start engine and turn Pacbrake ON (engine will idle with Pacbrake engaged). Advance the throttle from idle to approximately 1,200 rpm and back to idle several times, ensuring that the Pacbrake applies and releases each time.

NOTE: With the Pacbrake switch in the OFF position, the exhaust brake will cycle during cold engine warm-up only.

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

Road test the vehicle, and with cruise control activated, turn Pacbrake switch ON. With the throttle in the idle position, cruise control should cancel immediately.

NOTE: Whenever the Pacbrake switch is ON and throttle is at idle, cruise control CAN NOT be engaged.

Re-torque turbo clamp and flange bolts after 100 miles (engine should be cold).

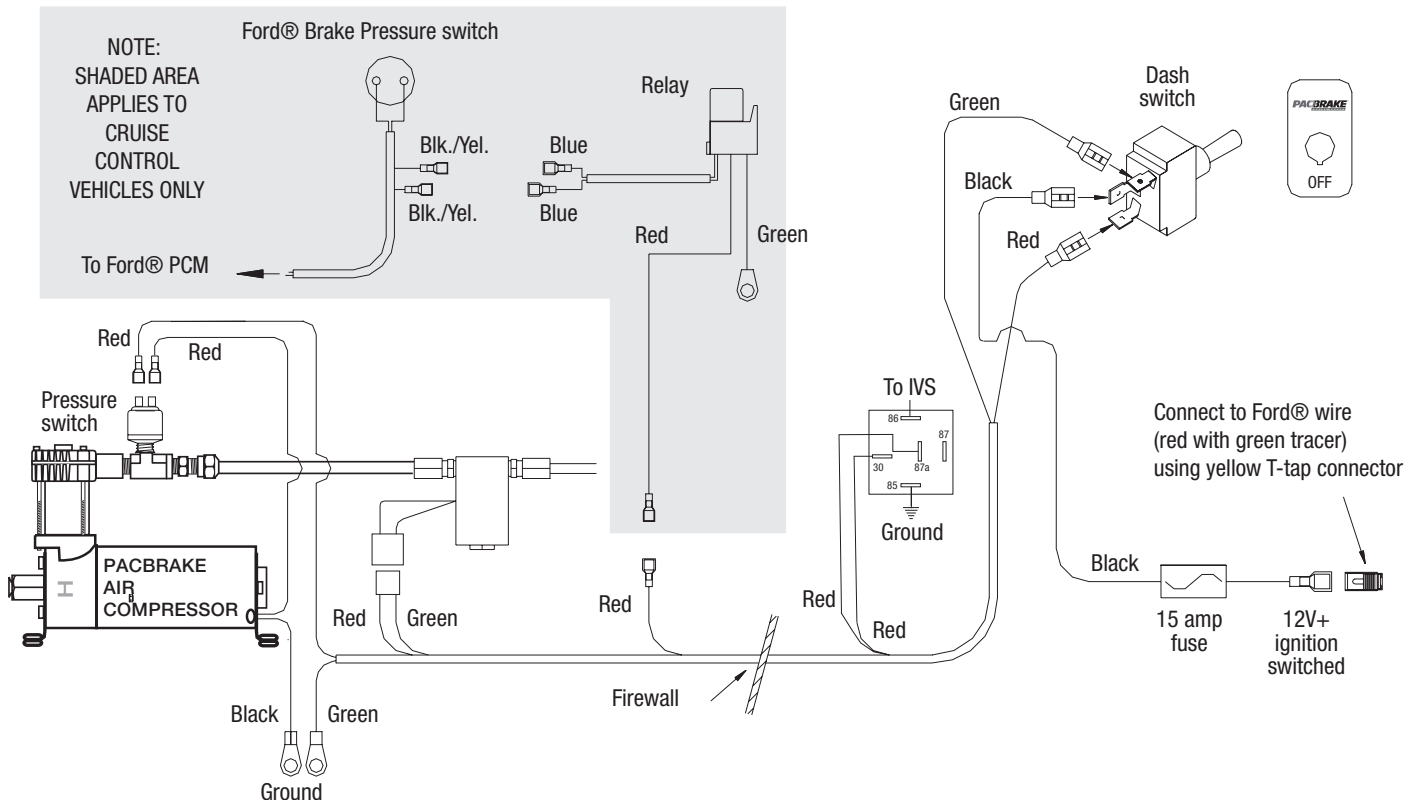
RETARDING PERFORMANCE

250 retarding horsepower @ 3,400 rpm. Dynamometer recorded at the rear wheels (automatic transmission model only).

Caution: Automatic Transmissions w/o ATS Torque Converter Lock-up

Ford F Series Power Stroke trucks with automatic transmissions should only be operated with overdrive OFF when being used with an active exhaust brake. Operating the vehicle in overdrive with the exhaust brake engaged may be putting unnecessary strain on the transmission. Disengaging the overdrive is strongly recommended during an exhaust braking event.

Schematic - Wiring Switch





Pacbrake Company

toll-free: 800-663-0096 phone: 604-882-0183 fax: 604-882-9278 e-mail: info@pacbrake.com Internet: www.pacbrake.com

Canada: 19594 96 Ave. Surrey BC V4N 4C3 USA: 250 H St. Box 1822 Blaine WA 98231-1822

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