

Installation **MANUAL**

PACBRAKE[®]
ENGINE & EXHAUST BRAKES



DirectMount[®] EXHAUST BRAKES

APPLICATION:

Fixed Orifice and PRXB[™] Exhaust Brakes For
2003 and Newer Dodge Trucks with 3.5" and 4" Exhaust

Getting Started

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

NOTE: Four Pacbrake exhaust brake kits are available for 2003 and newer Dodge Ram diesel trucks. C14030 kit is for 2003 and newer vehicles built up to January 1st 2004 using a fixed orifice Pacbrake. *C44030 kit is for 2003 and newer vehicles built up to January 1st 2004 using PRXB Pacbrake. C14045 kit is for vehicles built after January 1st 2004 using a fixed orifice Pacbrake. *C44045 kit is for vehicles built after January 1st 2004 using a PRXB Pacbrake.

*Pacbrake's PRXB (pressure regulated exhaust brake) is designed for use on all Dodge trucks with Cummins engines with manual transmissions and 2006 automatic transmissions.

Installing this kit on a PRE-2006 truck without an automatic transmission controller is not recommended at this time due to the high retarding capabilities of the PRXB.

Vehicles built before January 2nd, 2004 have 3.5" exhaust and vehicles built after January 1st 2004 have a 4" exhaust. It is permissible to install a C14045 kit on a vehicle built before January 1st, 2004, if the customer requests a 4" exhaust system be added when installing the Pacbrake kit.

Before starting the installation, please read the entire installation manual carefully. Check that your PAC-BRAKE kit contains all the necessary parts. Pacbrake offers four optional accessories to enhance your exhaust brake system that you may want to consider before starting the installation.

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 - Tystraps
- 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 8ft (compressor to air tank)



2 Optional Accessories

TRANSMISSION CONTROLLER

(For automatic transmissions only)

Pacbrake offers a controller to enhance exhaust brake performance by locking the torque converter when the exhaust brake is activated. Locking the torque converter when using your Pacbrake will reduce transmission fluid temperature. Not required on 2006 vehicles.



Co-Pilot - Part Number C18069

2003 Dodge automatic vehicles

Co-Pilot - Part Number C18070

2004 - 2005 Dodge automatic vehicles

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 # C14033

2003 M/Y trucks with automatic transmission

Part # C14037

2003 M/Y trucks with manual transmission

Part # C20136

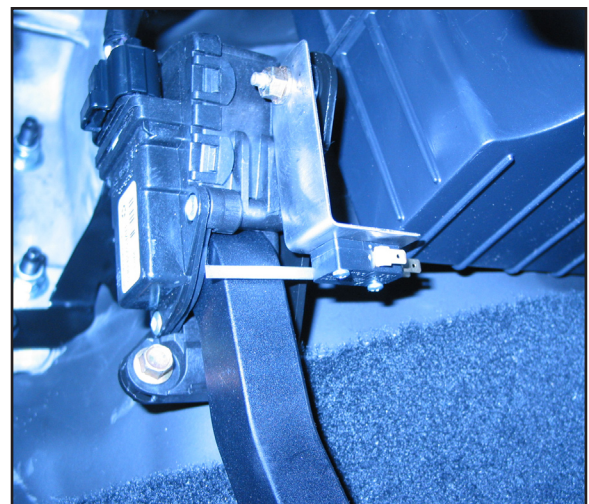
2004 M/Y trucks with automatic transmission

Part # C20135

2004 M/Y trucks with manual transmission

Part # C20141

2005 and 2006 M/Y trucks with either transmission

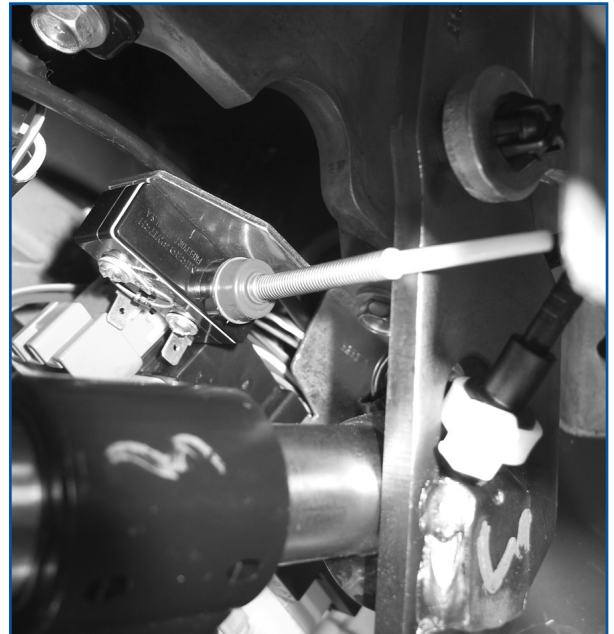


Note: 2005 vehicles only equipped with automatic transmissions require the use of C20141 throttle switch group as the engine ECU is not turned on for exhaust braking.

OPTIONAL CLUTCH SWITCH INSTALLATION KIT - PART # 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 for their preference of location for the ON/OFF switch. The photo shown is a suggested location.

Once the switch location has been chosen, connect the wires as shown in the schematic on page 10. Drill a 1/2" hole and install the switch and switch plate.

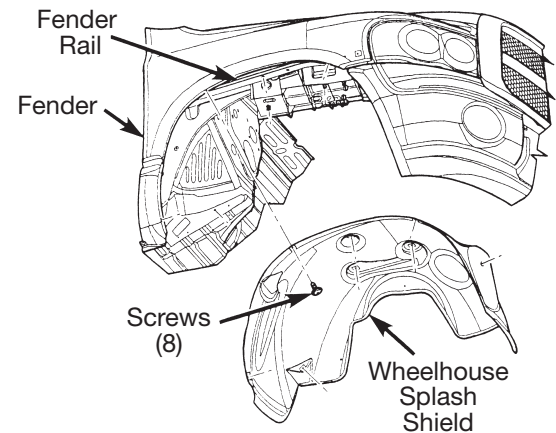


Exhaust Brake Installation

4 INSTALLER OPTION (not required)

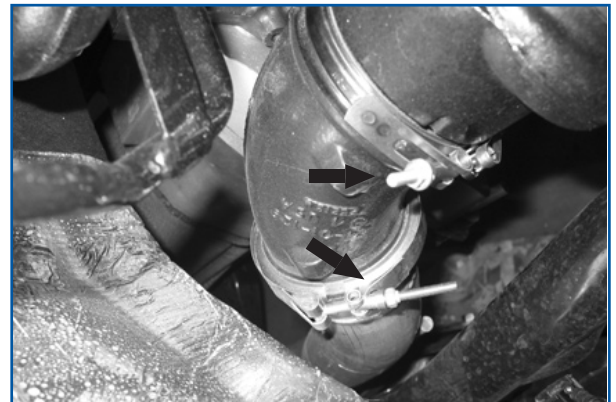
Some installers remove the front wheels and 8 screws which secure the wheelhouse splash shields. Doing this allows for easier access to the exhaust elbow and the engine ECU on the drivers side of the vehicle. To remove the wheelhouse splash shield completely, the ABS cable will need to be disconnected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

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



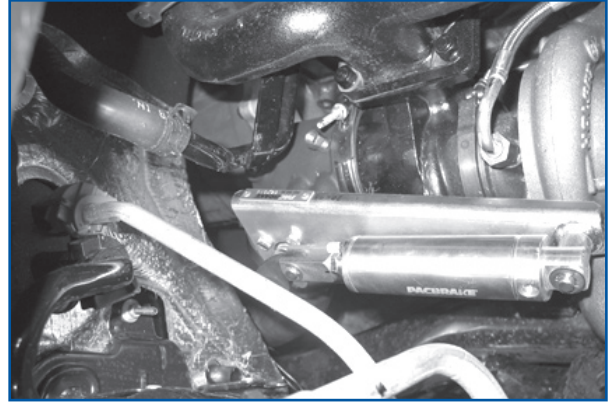
5 REMOVE FACTORY ELBOW

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, 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.



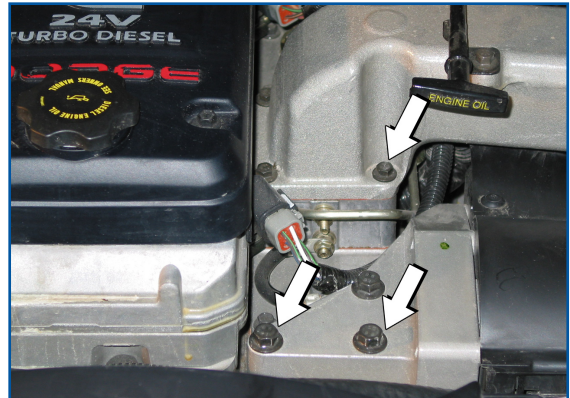
CAUTION: If installing a PRXB Exhaust Brake, use care when handling the brake assembly not to damage the regulator spring and lever arm.

- 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, rotate the Pacbrake until the outlet flange aligns with the header pipe. Loosely install the outlet side clamp. Once proper alignment is achieved torque the turbo side clamp to 75 in.lbs. (or 8.5 N•m). Then torque the outlet clamp to 100 in.lbs. (or 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, removal of the front two capscrews may not be necessary. These vehicles will require the longer spacers.

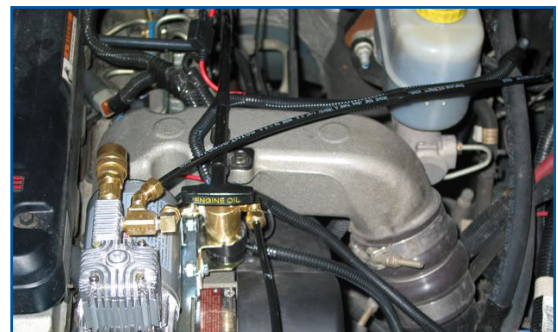
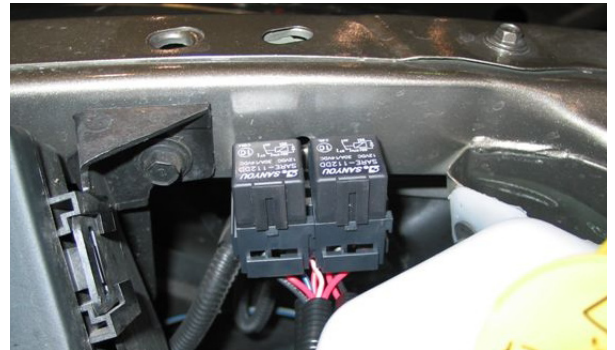


- 8 Position the 1 small OD spacer provided, on the air intake horn. Choose the correct spacers for your application and position them over the two front mounting locations.



- 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 6ft. 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 shown in the photo. Using the 7/16 flat washer supplied on the top of the firewall flange then offer the filter mounting stud through both. Locate the 8ft nylon hose marked "air intake" 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 into the female connector. Secure with the tie-straps provided.
- 11** Choose a location close to the air compressor to mount the air tank assembly, such as on the frame behind the left front wheel. Install the "Tee" fitting in the top of the tank with the pressure switch in one side and the fitting supplied in the other side, use thread sealant on all connections. Install the 1/4 " NPT plug supplied or drain valve if requested in the bottom of the tank also using thread sealant. Drill 2 - 5/16" diameter holes on 3 1/4" center. Using the fasteners supplied secure the tank to the frame.
- 12** Connect the 8ft 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 1/4" 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

13 ALL MODELS

Using the self tapping screw provided secure the two relay receptacles to the side of the battery tray on the drivers side of the vehicle. Install the screw above the height of the battery to avoid interference with the battery.



- 14 Route the RED fused wire with the eye terminal to the positive battery terminal and connect. Locate an ignition power source in one of the two electrical connectors on the firewall. Check this circuit with a test light for ignition power prior to attaching the "T"tap provided. Do not separate the connector, as a fault code will be logged in the ECM. If you want to separate the connector, disconnect both batteries first. Connect the "T"tap to the wire and then the inline fuse harness. Secure with tie-straps provided.



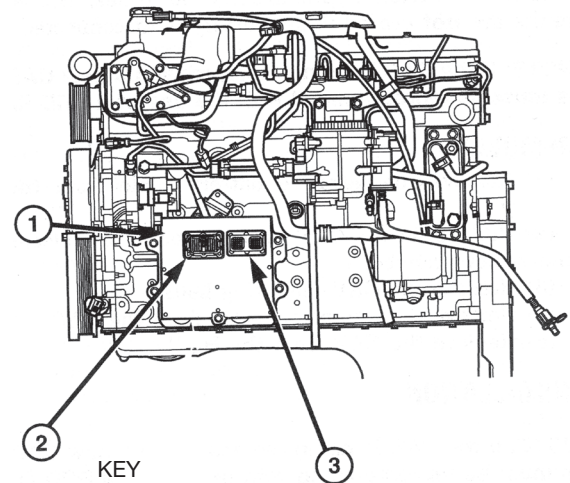
- 15 Connect the Black wire with the eye terminal to the negative battery terminal or a good chassis ground. Secure with tie-straps provided.



- 16** Route the black wire with the special ECM pin of the harness to the engine's ECM (drivers side of the engine) unless you are installing an ECM Bypass 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 50 pin.

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



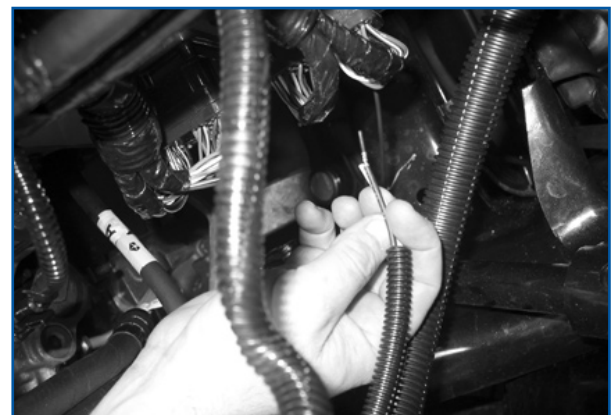
- KEY
- 1. Engine Control Module (ECM)
 - 2. 60-Way Connector
 - 3. 50-Way Connector

- 17** 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.

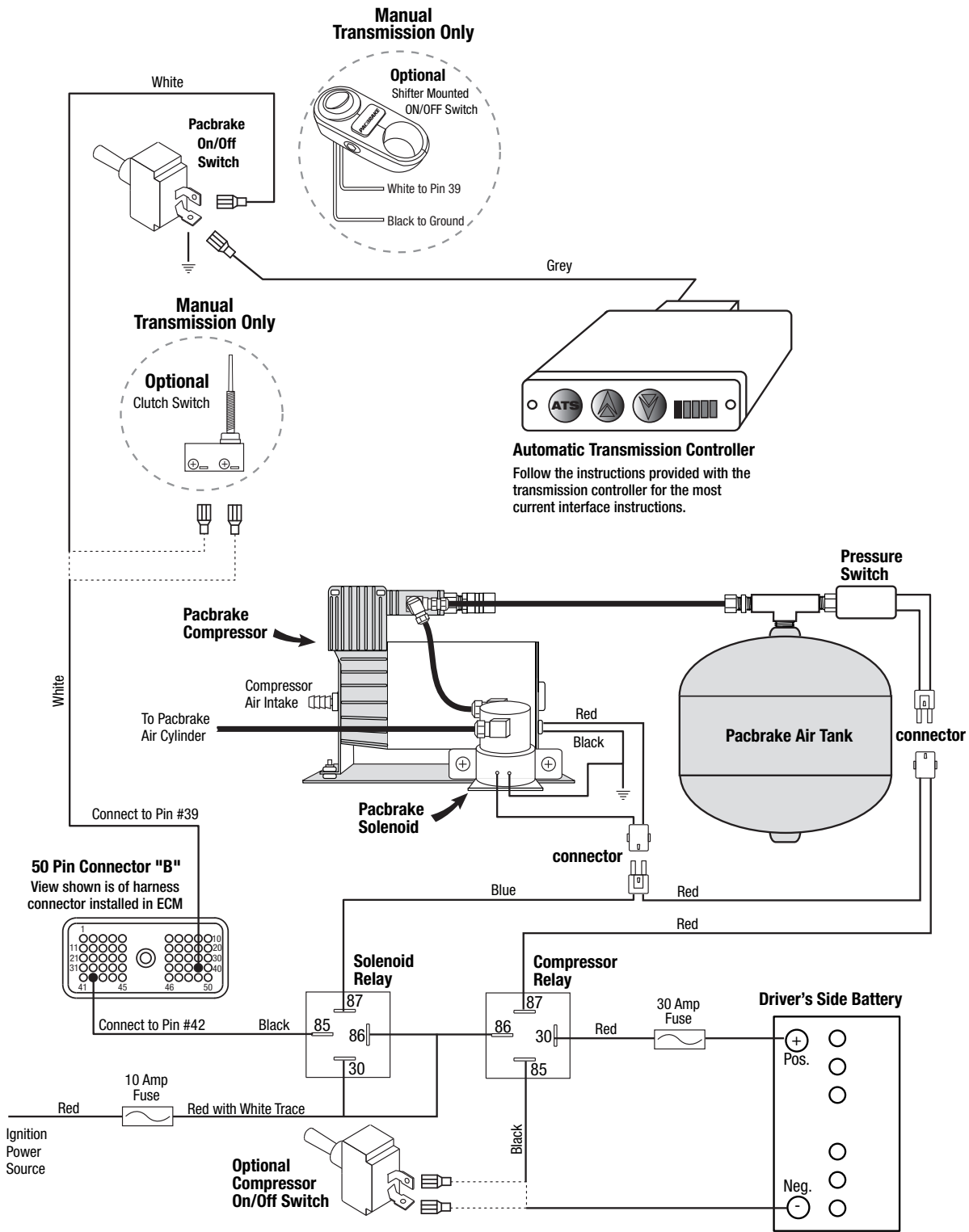
NOTE: If installing the optional clutch switch PN# C20097, now would be a convenient time to install. See instructions provided with the clutch switch kit.



- 18** 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.



Dodge Compressor Wiring - Vehicles not Using ECM Bypass





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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