

/// PAC BRAKE®

Installation MANUAL



InLine Mount **PRXB EXHAUST BRAKES**

C40070, C40071, C40075 & C40076

APPLICATIONS:

GMC Duramax Diesel 2500 & 3500 Model Vehicles with Allison Transmission ONLY
(with the 8th digit of the VIN being the number 1, 2 or the letter D)

Before Starting

Below is a list of Duramax Applications. Please check the vehicles VIN to confirm the 8th digit is either a number 1, 2 or letter D. These vehicles are approved for Pacbrake PRXB kits.

8th Digit of VIN	Years Manufactured	Engine RPO Code (found in the glove box)	Pacbrake Kit Part Number	Kit Description and Application Information
1 or 2	2001 - 2005	LB7/LLY	C40075	Automatic Transmission only. Vehicles without optional 2nd alternator
1 or 2	2001 - 2005	LB7/LLY	C40076	Automatic Transmission only. Vehicles with optional 2nd alternator
D	2006 - 2007	LLY/LBZ	C40070	Automatic Transmission only. Vehicles without optional 2nd alternator
D	2006 - 2007	LLY/LBZ	C40071	Automatic Transmission only. Vehicles with optional 2nd alternator
D	2006 - 2007.5	LLY/LBZ	C40070	Automatic Transmission only. Vehicles without optional 2nd alternator
D	2006 - 2007.5	LLY/LBZ	C40071	Automatic Transmission only. Vehicles with optional 2nd alternator

NOTE: Engine mounted compressor is the preferred kit

NOTE: C40071 and C40076 kits DO NOT include an Air Compressor Mounting Bracket. An alternate location must be furnished by installer.

NOTE: The exhaust pipe adapters supplied in this kit are designed for vehicles with factory 3½" exhaust pipe. If the exhaust system has been changed to a larger diameter pipe, contact Pacbrake customer service with the exhaust pipe O.D. for replacement adapters.

1 Getting Started

Thank you and congratulations on your purchase of a Pacbrake exhaust retarder. Before starting, check that your kit contains everything shown in the photo.

CAUTION: This kit contains "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.

NOTE: Both negative battery terminals must be disconnected prior to starting the Pacbrake installation.



2 Exhaust Brake Installation

Confirm the vehicle has the factory exhaust system of 3 ½ inch diameter. If the vehicle has an aftermarket 4 inch exhaust system, contact Pacbrake for replacement adapters.

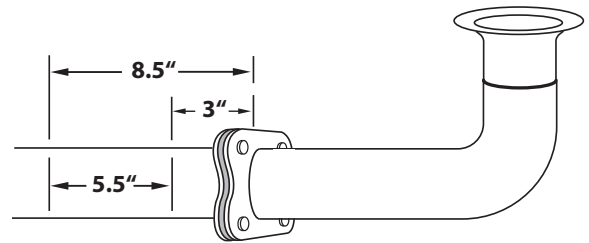
NOTE: Check the FACTORY alignment of the header pipe flange to the turbo outlet pipe, adjust if necessary. Exhaust leaks at this connection will effect exhaust brake performance and will be difficult to correct later. Measure 3" from the four bolt flange towards the rear of the vehicle and mark the pipe.

Measure 8 ½" from the four bolt flange towards the rear of the vehicle and mark the pipe. Cut the exhaust pipe on the 8 ½" mark. Remove the four bolts fastening the flange and remove the piece of pipe. Cut the pipe on the 3" mark and discard the 5 ½" section. Weld one of the two adapters supplied on the 3" pipe, being careful, to maintain the proper length and any angle that may exist. Welding can be done on the inside or outside of the adapter, but it must be leak free. Clean both gasket surfaces of the four bolt flange. Using the new exhaust gasket supplied and the factory fasteners, re-install the front section of exhaust pipe.

3 Install the remaining exhaust adapter over the rear section of the exhaust system. Using one of the two "V" clamps provided, secure the Pacbrake to the front adapter, then install the rear adapter to the outlet of the Pacbrake using the remaining "V" clamp. Position the Pacbrake so the PRXB regulator spring and air cylinder are protected by the frame rail, rotate the brake to attain maximum clearance and correct alignment to the exhaust and adapters. Torque both "V" clamps to 10 ft-lbs. 13 Nm.

IMPORTANT: Before final welding the rear exhaust adaptor, ensure all the exhaust hanger isolators are straight down. Adjust the rear adapter on the exhaust system to ensure the exhaust is not being forced forward or back as this will cause the bypass plate within the exhaust brake to rattle at idle RPM.

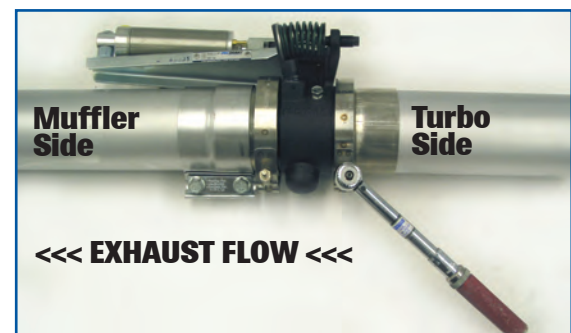
The rear exhaust adapter can be welded to the exhaust system and the band clamp provided be installed over the welded connection.



NOTE: 2006-2007 model year trucks will not have the 4 bolt flange. Instead, there is a band clamp. Remove this clamp and take your measurement from the end of the front pipe.

NOTE: Some vehicles may have a catalytic converter in front of the four bolt flange. It is permissible to install the exhaust brake behind the catalytic converter.

IMPORTANT: The exhaust brake provided is directional, it must be installed according to the exhaust flow as shown below.



- 4** Install the 90° fitting provided into the Pacbrake air cylinder using thread sealant. Locate the 14' black nylon hose provided (see *CAUTION* note on page 2) and insert the nylon hose into the fitting pushing it in until seated. Install the blue nylon hose provided onto the barbed fitting at the clevis end of the Pacbrake air cylinder.



- 5** Install the fittings supplied into the top of the air tank as shown. Install the 1/4" plug in the bottom or a drain valve if desired. Use thread sealant on all fittings.

Choose a location near the front of the passenger side outer frame to mount the air tank so that the inside of the frame has clearance to mount the solenoid valve in step 6.

Drill two 5/16" holes in the frame on 3 1/4" centers to mount the tank on the outside of the frame.



- 6** Install the two fittings provided into the solenoid using thread sealant. The solenoid valve mounts on the inside of the frame using one of the two air tank fasteners. Drill a 1/4" hole to secure the other hole in the solenoid mounting flange, secure with the fastener supplied.

NOTE: Solenoid exhaust port must point down as shown

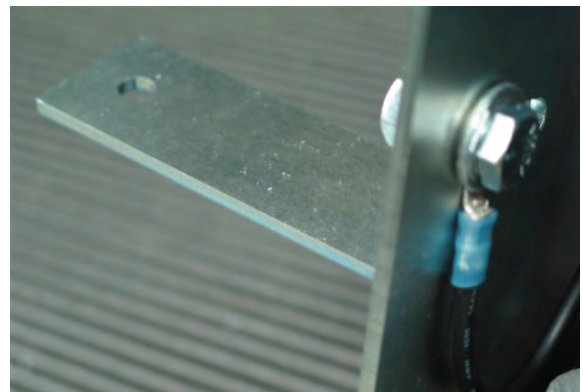
Route the black nylon airline from the Pacbrake air cylinder to the solenoid port marked "CYL". Connect the remaining length of the black nylon airline from the solenoid port marked "IN" to the top of the air tank. Connect the remaining length of the black airline to the 2nd fitting at the top of the air tank. Route the end with the blue nylon (cylinder breather) hose to the engine compartment to be connected later.



7 Compressor Installation

C40071 & C40076 KITS require the installer to find an alternate location to mount the air compressor due to the addition of the 2nd alternator.

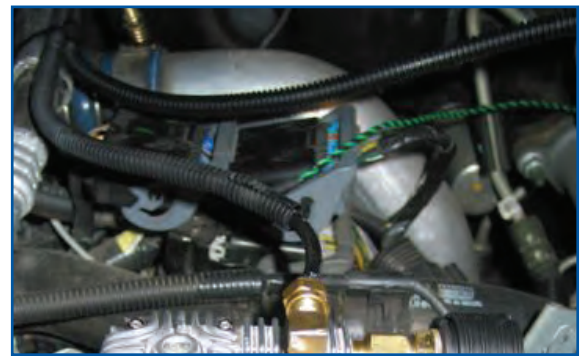
C40070 & C40075 KITS ONLY: Loosen and remove the capscrew that fastens the ground terminal bar to the support on the drivers side front of the engine. Locate the air compressor bracket support brace provided (above photo), loosely install it under the main compressor bracket with the short leg against the main bracket.



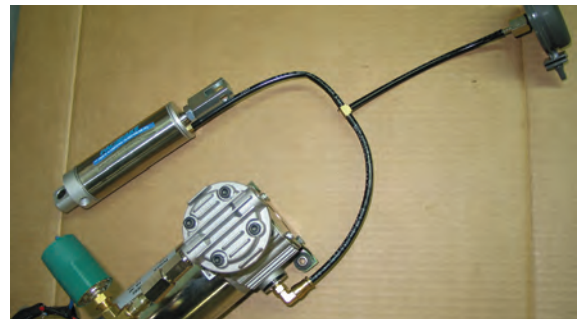
- 8** Loosely install the two metric capscrew's, lock washer's and flat washers supplied through the bracket, loosely install the capscrew removed from the ground terminal bar through the compressor support bracket. Tighten all the capscrew's evenly including the 1/4" nut and bolt under the compressor, make sure the compressor ground wire is tightened with the bolt.



- 9** Locate the black nylon airline connected to the air tank in step 5. Route the airline away from moving components and heat sources to the air compressor. Secure with the tie straps provided. Connect the airline to the "tee" fitting at the air compressor.



- 10** Locate the air cylinder breather hose (blue) in the engine compartment installed in step 4. This hose connects to the air compressor inlet filter with the "T" fitting provided. Connect the filter, the air compressor intake and the cylinder breather hose as shown. The filter housing is installed into the hole below the radiator in the support bracket. Secure the breather hose with the tie straps provided.



- 11** Locate the grounding stud on the firewall, shown in the photo. Mount the pressure switch and quick connect airline assembly to this stud using the factory nut, with the quick connect pointing towards the driver side. Make sure the one wire of the pressure switch with a ring terminals is attached to this stud, ensure a good ground is achieved. Using the remaining length of nylon air line, connect one end to the open fitting at the tee of the air compressor and the other end to the fitting on the quick connect/ pressure switch assembly.



12 C40075/C40076 CONTROL MODULE INSTALLATION ONLY (C40070 & C40071, proceed to step 15)

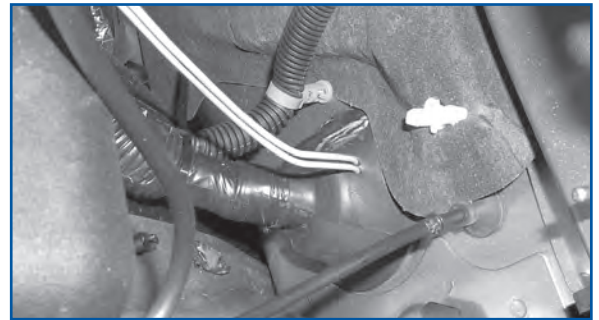
Locate the two studs on the drivers side of the firewall. Fasten the control module mounting plate onto the studs, then fasten the Pacbrake Control module to the mounting plate using the hardware supplied.

Locate the electrical harness provided, connect both connectors into the Pacbrake control module.



13

Locate the red and orange wires in the Pacbrake control module harness, route these two wires into the cab through the firewall boot to be connected to the dash switch in step 20.



14

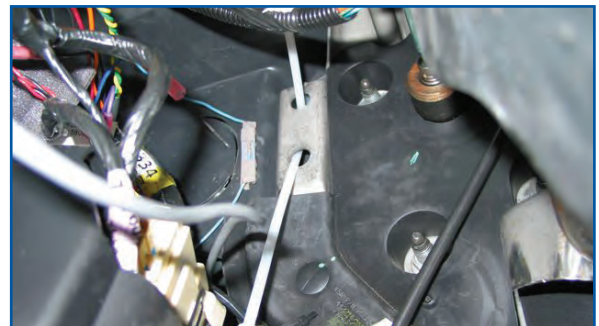
Locate the cam-lock connector above the valve cover on the drivers side of the engine, separate the connector, install the Pacbrake double ended cam-lock connector.

Locate the black wire with eye terminal, attach to a good chassis ground.

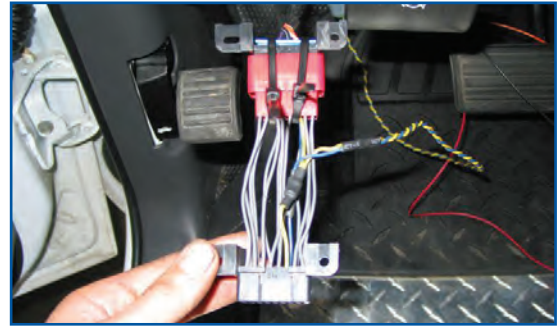


15 C40070 & C40071 KITS ONLY

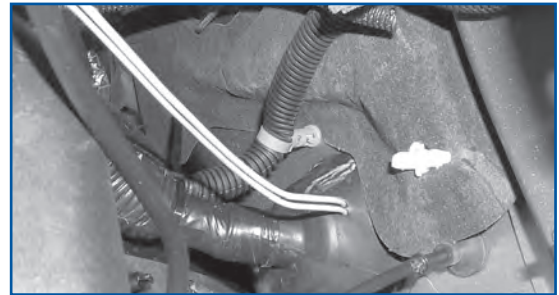
Remove the lower dash panel. Locate the two holes shown in the bracket on the firewall to the left of the steering column and thread a tie strap through the two holes, as shown, to secure the Pacbrake controller. Locate the two harnesses provided and connect both the Pacbrake control module.



- 16** Locate the diagnostic connector under the dash on the drivers side. Remove the two screws fastening it to the dash. Connect the male/female plugs of the Pacbrake harness to the factory diagnostic connector, secure the Pacbrake connector to the lower dash panel using the original screws. Secure the two connectors with a tie strap.



- 17** Route the blue, two red wires, and the metri-pac connector (purple and black wires) through the firewall boot into the engine compartment.



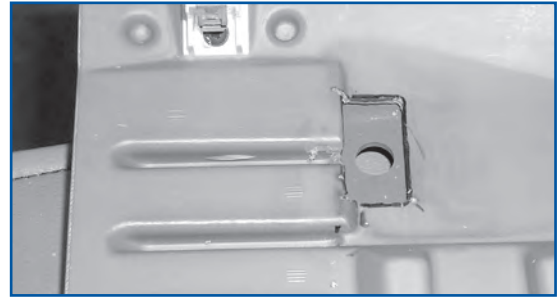
18 ALL INSTALLATIONS

At the smaller connector of the Pacbrake harness originating at the Control Module locate the two red wires. Route the red wire with the inline fuse to the red box on the front drivers side of the engine. Open the box and connect the eye terminal to the battery stud. Route the second red wire with metri-pac connector to the compressor mounting location, it is connected to the air compressor in the next step.



- 19** Connect the blue wire of the Pacbrake harness to the remaining wire at the pressure switch. Connect the red wire of the Pacbrake harness to the red wire of the air compressor. Route the metri-pac connector with the purple and black wires to the solenoid valve and connect. Connect the black wire with eye terminal to a good chassis ground. Secure all the wires with the tie straps provided.

- 20** Pacbrake control switch location can vary depending on customer preference and the availability of space. A suggested location is in the lower dash panel, a template is provided on the back page. This panel is double walled and requires a rectangular hole cut into the inner panel to accept the switch. Connect the red, orange and black wires to the on off switch as shown in the schematic on page 9.



- 21** Remove the lower dash panel below the steering column. Locate the fuse harness supplied, connect it to the red dash switch wire installed in step 20. Heat the connector to provide a moisture tight seal. . At the left of the steering column locate the mid-bec (electrical panel) and remove the cover. Using a volt meter, locate the ignition power supply terminal in the upper left corner of the mid-bec, connect the terminal of the fused harness.



Reinstall the lower dash panel and then both negative battery terminals

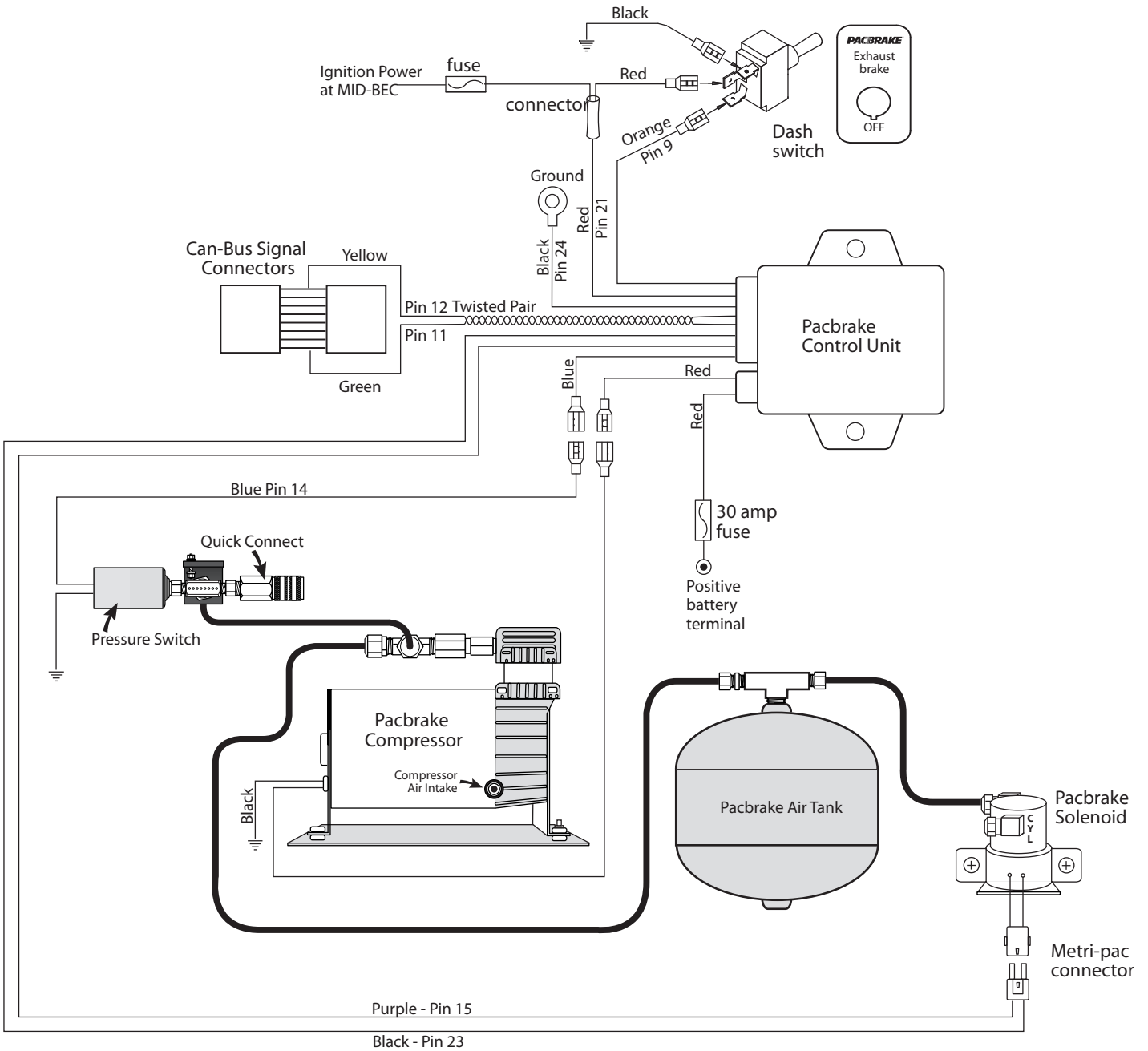
22 CHECK OPERATION

With the Pacbrake switch in the OFF position, start the engine and allow to idle. The Pacbrake compressor should pump air for approx. 2 minutes (this will fill the air tank from empty). Once the Pacbrake control unit confirms the air tank has reached maximum pressure the control unit will perform a “Self Test Cycle” which activates the exhaust brake 3 times with the vehicle stationary. After the “Self Test Cycle” is complete the exhaust brake will not activate with the vehicle stationary even with the exhaust brake switch in the ON position.

ROAD TESTING WITH AN ALLISON 1000 SERIES TRANSMISSION

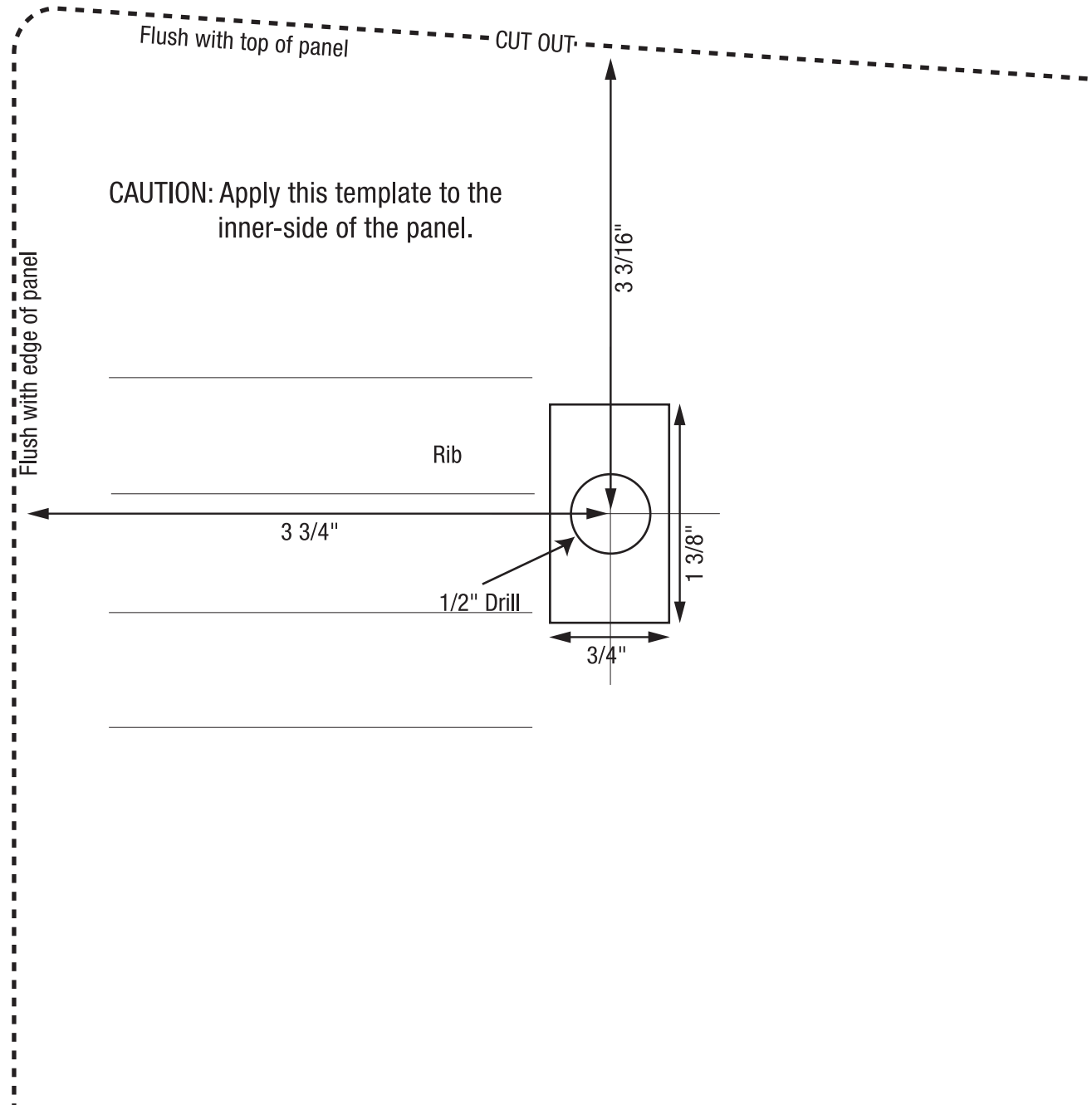
Test drive the vehicle with the Tow/Haul switched ON and the Pacbrake switch ON. Tow/Haul mode must be engaged when using the exhaust brake. Activating the Pacbrake several times will send a message to the Allison ECU to engage lock up and downshift the transmission to enhance exhaust braking. The first few times the exhaust brake activates it may not be very impressive but once the Allison ECU learns an exhaust brake is being activated, the ECU will apply lockup quicker and generate greater retarding. Downshifting will occur when the exhaust brake is activated as this is a normal feature of the Allison transmission. Customers may experience a very strong 2nd to 1st gear downshift. Over time the Allison ECU will compensate for it. The exhaust brake will turn off below 15 to 18 MPH or 25 to 30 km/h.

Wiring Schematic



Duramax Dash Switch Template

NOTE: This panel is double walled. It requires a 1/2" hole through both walls and a rectangular hole through the inner wall only



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