

/// PAC BRAKE®



Installation **MANUAL**

DirectMount **EXHAUST BRAKES**

APPLICATIONS:

**Freightliner M2 Model 106 and 112
Caterpillar C7 and C9 and Cummins ISC**

IMPORTANT CONSIDERATIONS BEFORE STARTING

- A. Ensure the exhaust brake unit is correct for the model of M2 chassis and engine.
CAUTION: Severe engine damage can result from improper application. Consult application guide.
- B. If the brake unit is subjected to heavy road spray due to its location, a remote breather for the actuating cylinder must be used. Pacbrake Kit #C11020 cylinder remote breather.
- C. In order to complete the installation of this brake, you are required to use a Freightliner “Smart Switch” part number A06-37217-056 as well as having the vehicle computer enabled. Smart switch not supplied in Pacbrake Kit.
The “Smart Switch” bulkhead module and chassis module require programming by a Freightliner dealer, activation of parameter #26-01003-001. There is a charge for this turn on by Freightliner.
Caterpillar C7 and C9 engines require the switch input at P1/J1 : #16 be programmed to “Installed”

Allison Automatic Transmissions and your Pacbrake:

MD Series: Has lock-up in top five (5) gears and when programmed, the MD Series electronic transmission provides preselected downshifting when the Pacbrake is activated. The increased RPM, while in lock-up, provides the best combination for retarding. Programming may be required for the MD Series, please consult the Pacbrake supplement on automatic transmissions or call 1-800-663-0096.

NOTE: This manual covers installation instructions for vehicles with air systems. An auxiliary compressor group is available for non-air equipped vehicles which has additional instructions for its installation.

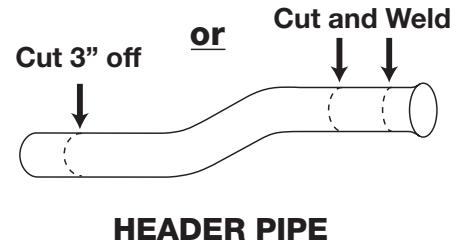
Getting Started

Before starting the installation, please read the installation manual carefully. Make sure you have a good understanding of the requirements and that you have all the necessary parts to complete installation. If you have any questions, please call 1-800-663-0096.

1 Exhaust Brake Installation

DIRECT TURBO MOUNT MODELS

Remove the necessary items to gain access to the turbocharger and header pipe. Remove the turbo “V” clamp and the exhaust header pipe from the vehicle. The stock header pipe will need to be shortened to facilitate the additional length of the Pacbrake housing. Depending on clearance some applications allow this length to be cut off the back end of the header pipe, others may require the flange be cut off and welded. Insert the header pipe into the exhaust system.



Note: For complete control system installation instructions using Pacbrake’s auxiliary air compressor and valving group, refer to instructions contained in that group.

2 VEHICLES WITHOUT AN ONBOARD AIR SYSTEM

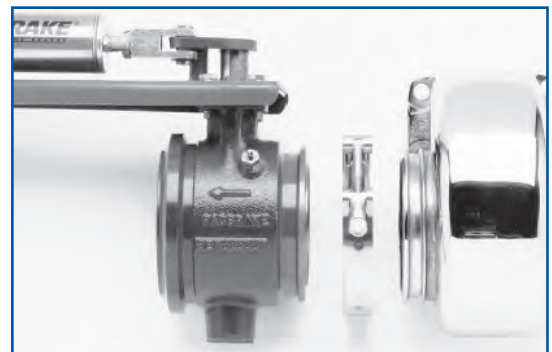
The quick release valve must be installed into the air cylinder on the brake unit using the fitting provided. One fitting has been prefitted to speed up installation and clarify the proper ports for plumbing purposes. Aim the exhaust port away from areas where contamination, such as road spray, may exist.



VEHICLES WITH AN ON BOARD AIR SYSTEM

Install the 90° fitting provided into the exhaust brake cylinder.

3 Using the new “V” clamp supplied, loosely install the exhaust brake to the turbocharger, align the header pipe to the outlet of the exhaust brake. With the exhaust brake and system aligned, torque the “V” clamp to the specifications below, (some applications reuse the original turbocharger “V” clamp on the outlet of the exhaust brake)



	Turbo Clamp Torque	Header Pipe Torque
Caterpillar C9	12 ft.lbs.	10 ft.lbs.
Caterpillar C7	12 ft.lbs.	10 ft.lbs.
Cummins C Series	10 ft.lbs.	10 ft.lbs.

4 VEHICLES WITH AN ONBOARD AIR SYSTEM

Mount the air solenoid valve as shown or in a location not exposed to heat or contamination. Select either of the two solenoid lead wires, attach an electrical terminal and secure it to a good ground. The solenoid mounting bolt can be used provided it will be fixed to a vehicle ground.

The ideal location is behind the air cleaner.



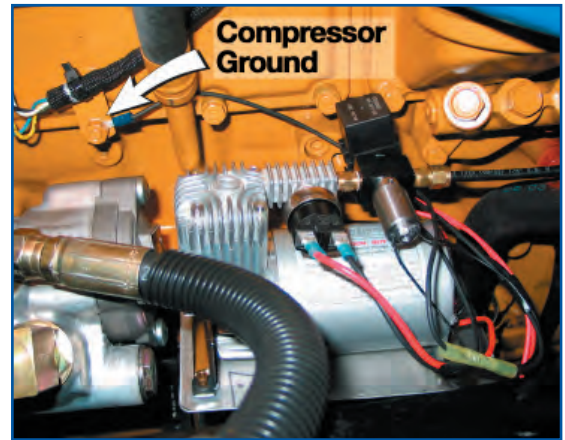
5 VEHICLES WITHOUT AN ONBOARD AIR SYSTEM

The compressor mounting location shown is on the driver's side of the engine for C7 applications. You will want to choose a location which utilizes the wire and airline length provided.

Depending on your mounting location you may need to fabricate a mounting bracket for mounting on the side of the engine.

Attach ground wire to a good ground.

See page 6 for wiring schematic.



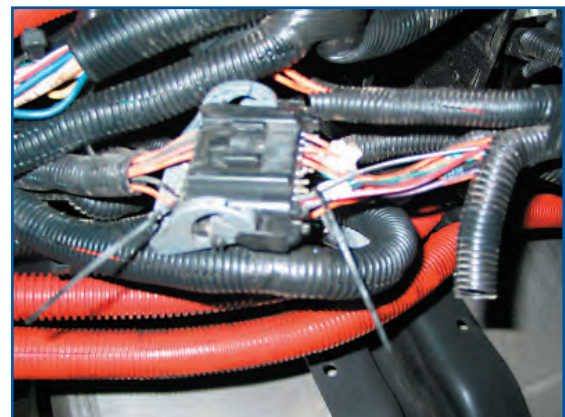
NOTE: Pacbrake offers an optional ½ gallon air tank to speed up the exhaust brake activation. Contact Pacbrake customer service.

6 Wiring

Locate the chassis head module, it should be behind the cab, inside the frame on the drivers side. Within 12" of the chassis head module, also inside the driver's side frame will be a camlock connector. In this connector locate the RED with WHITE tracer wire in port B2 (wire number 1502 203F), in most cases this wire will be in the forward side of the connector only.

WITH AIR:

Cut this wire, using the heat shrinkable butt connector supplied connect the RED with WHITE tracer wire supplied in the Pacbrake kit to the harness side of the RED with WHITE tracer in the Freightliner harness. Route the other end of the Pacbrake RED with WHITE tracer wire to the exhaust brake solenoid installed in step 4. Using the conduit and tystraps provided, protect and secure the wire.



WITHOUT AIR:

Route the RED with WHITE tracer wire from the compressor relay to the camlock connector pin B2 (wire number 1502 203F). Cut the RED with WHITE tracer wire in pin B2, using the heat shrinkable butt connector, connect the compressor relay RED with WHITE tracer wire to the harness side of the Freightliner RED with WHITE tracer wire. Using the conduit and tystraps provided and secure the wire.

7 Dash Switch Wiring

Remove the dash panel on the right of the steering column. Locate the designated exhaust brake switch receptacle containing the wire colors and wire numbers listed below. If this receptacle is being used, an alternate receptacle can be configured to control the Pacbrake. Locate a spare hole in the dash to install the exhaust brake control switch, connect the receptacle, reinstall the dash panel.

Freightliner "Smart Switch" (pn A06-37217-056)



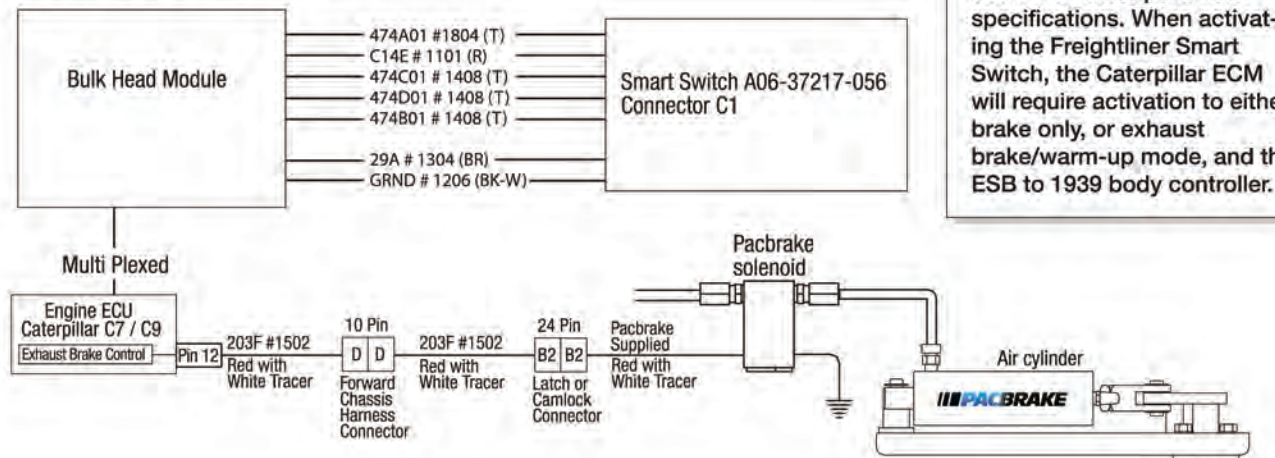
474A01 #1804 (T)
C14E # 1101 (R)
474C01 # 1408 (T)
474D01 # 1408 (T)
474B01 # 1408 (T)
29A # 1304 (BR)
GRND # 1206 (BK-W)

**Wiring Schematic
Freightliner M2, Caterpillar C7, C9**

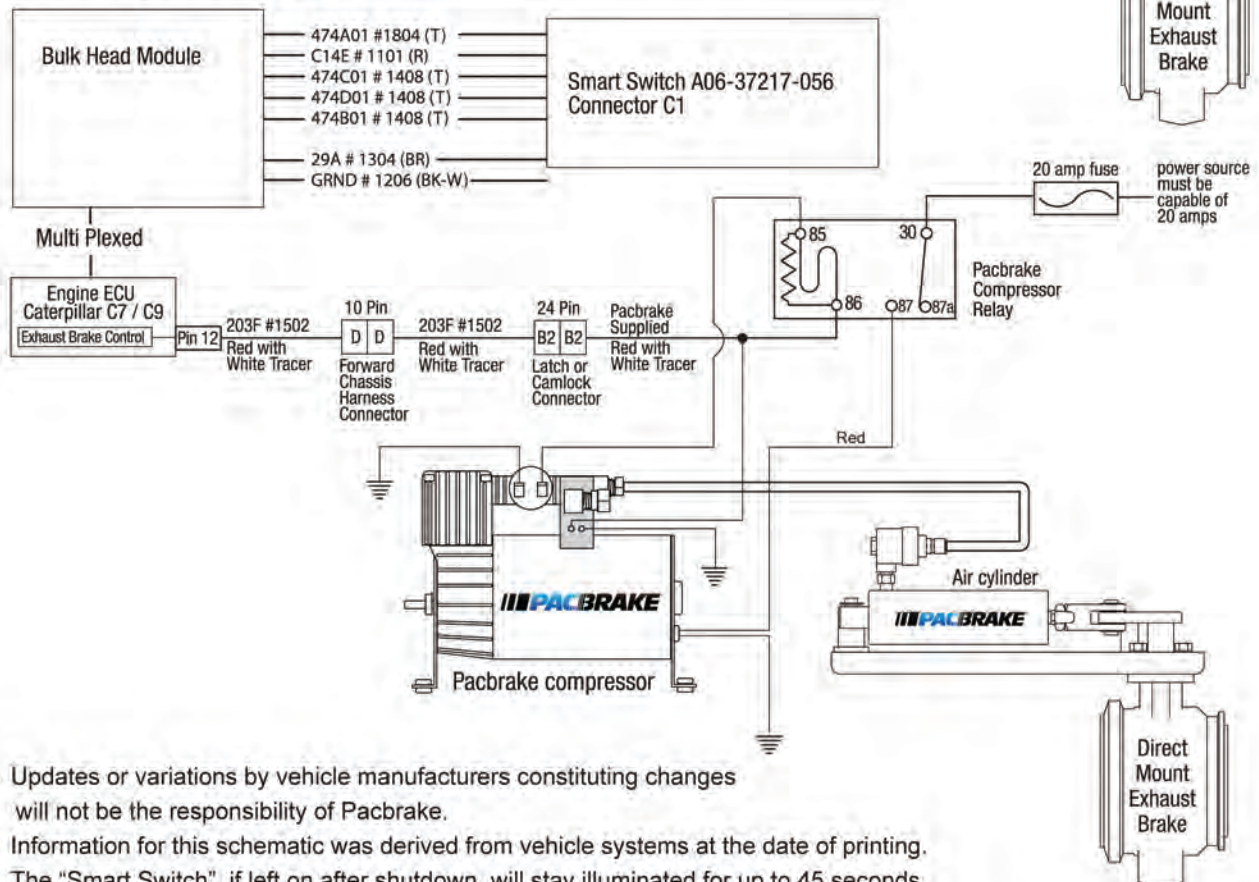
IMPORTANT

NOTE: The Smart Switch, bulkhead module and chassis head module will require activation of parameter 26-01003-001 or newer. Consult your Freightliner dealer for latest parameter specifications. When activating the Freightliner Smart Switch, the Caterpillar ECM will require activation to either brake only, or exhaust brake/warm-up mode, and the ESB to 1939 body controller.

Vehicles With Air



Vehicles Without Air



- Updates or variations by vehicle manufacturers constituting changes will not be the responsibility of Pacbrake.
- Information for this schematic was derived from vehicle systems at the date of printing.
- The "Smart Switch", if left on after shutdown, will stay illuminated for up to 45 seconds.

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