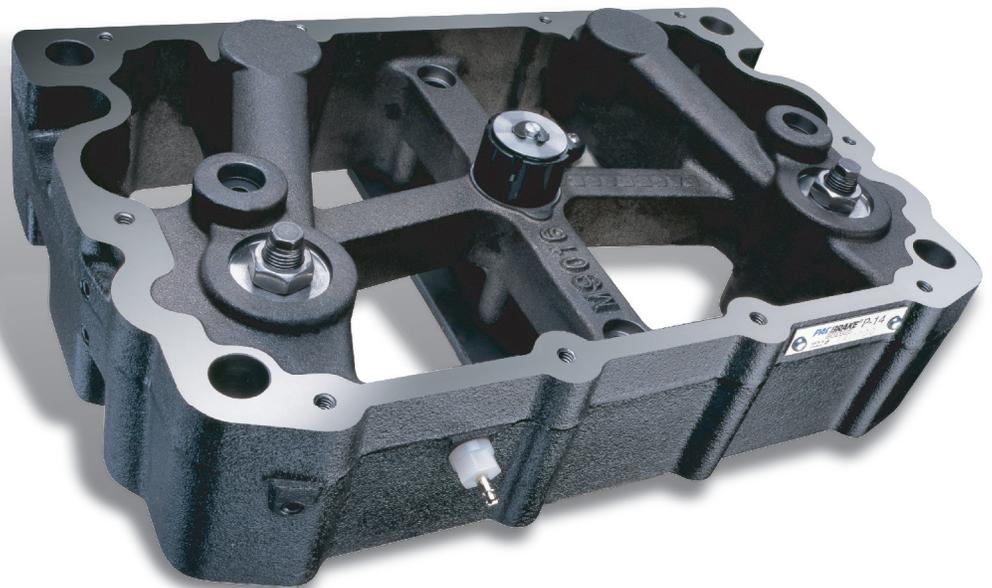


# Installation MANUAL

**PACBRAKE**<sup>®</sup>  
ENGINE & EXHAUST BRAKES



## **P-14A and P-14B** **ENGINE BRAKES**

**Designed for Cummins N-14 Engines**

**Kit Numbers P14018 (A), P14022(B)**

**Application Guide Inside**

## Important - Application Guide

**DESIGNED FOR CUMMINS N-14 ENGINES WITH THE FOLLOWING ENGINE CPL NUMBERS:**

P-14A				P-14B			
CPL	1833	N-14	330E/350E	CPL	2003	N-14	500E
CPL	1807	94	N-14	CPL	1896	94	N-14
CPL	1987	N-14	350E (310E-370E)	CPL	1852	94	N-14
				CPL	1844	94	N-14
				CPL	1809	94	N-14

### Important Note:

Do not install a P-14A or P-14B engine brake on engines not included in the above chart

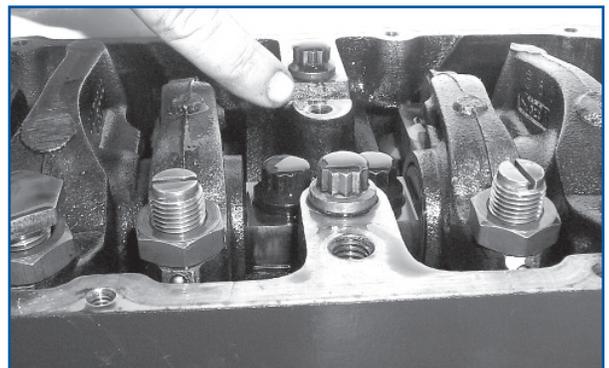
For Additional Engine Information, Consult Pacbrake at 1-800-663-0096.

## Brake Housing Installation

- 1 Clean the top of the engine around all three valve covers and remove all components required to access the rocker boxes. Remove all three valve covers, saving gaskets for reuse later.

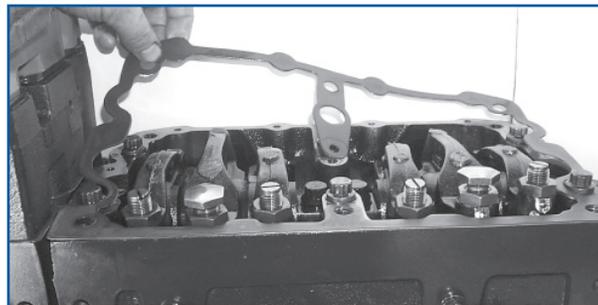


- 2 Remove the pipe plug shown in each of the three rocker boxes and discard. This is the oil supply to the engine brake, clean any debris from this area.



**3** Clean gasket surface and install the gaskets supplied on the rocker boxes.

NOTE: The gasket must be installed correctly, check the oil supply port for correct gasket alignment.



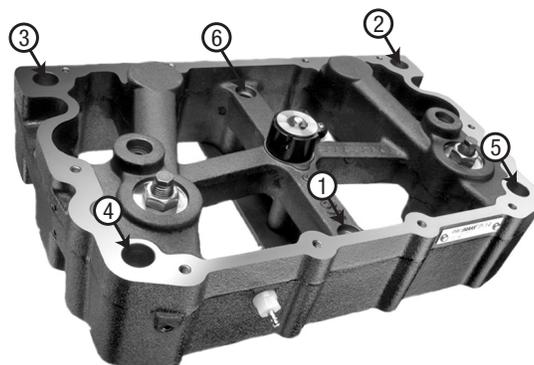
**4** Place one housing on each rocker box housing carefully. Loosely install the 6 mounting capscrews into each Pacbrake housing. Before tightening the capscrews check each slave piston adjusting screw, it should be backed off until the screw is no longer in contact with the slave piston. (This will prevent possible valve to piston contact when torquing.)



**5** Carefully run the capscrews down evenly in the torque sequence below.

DO NOT use an impact wrench.

Torque the capscrews to 35 lbs ft (48 N•m) in the sequence shown. Then torque to 70 lbs ft (95 N•m) in the same sequence. Double check the torque on all 18 capscrews before proceeding.



**6** **SLAVE PISTON ADJUSTMENT- FEELER GAGE METHOD.**

Pacbrake feeler gauge .023" PN P30870 is required.

IMPORTANT:  
This adjustment must be done correctly. Follow these instructions carefully.



Pacbrake feeler gage .023" PN P30870

The engine must be cold, below 140°F (60°C) to attain the proper lash of .023". Do not adjust the slave lash with the engine running or engine damage may occur.

The slave lash can be adjusted only on cylinders where the exhaust valves are fully closed. Once these cylinders are complete the engine will need to be rotated to set the remaining cylinders.

Locate the cylinders which have fully closed exhaust valves. Turn the slave adjusting screw clockwise to zero lash and then turn the screw one additional turn and wait one minute before proceeding. Zero lash is no clearance between the end of the slave fork and the crosshead. (This is important because the adjusting screw has a spring loaded plunger which must be compressed to attain the correct lash.)

Once zero lash is attained, back the screw out to allow enough clearance to insert the special .023" feeler gage between the slave piston and the crosshead, turn the screw clockwise to attain .023" clearance. Torque adjusting screw lock-nut to 25 lbs. ft. (35 N·m). Remove and then reinstall feeler gage, if done correctly the lash will be unchanged. If lash has changed, readjust until it remains constant.

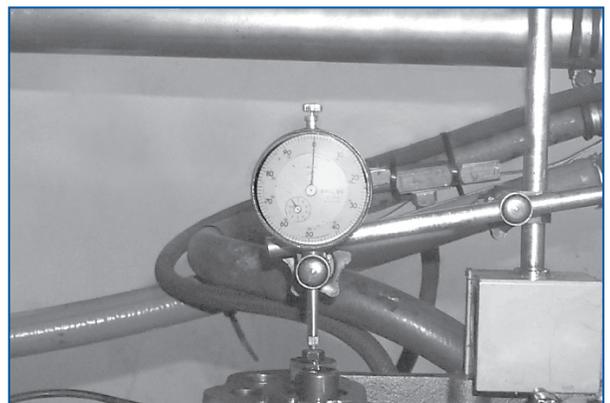
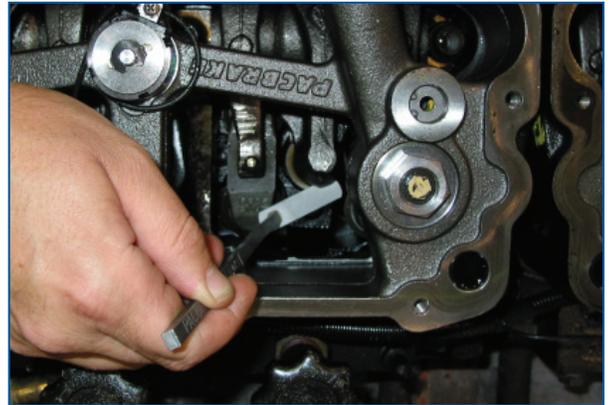
Rotate the engine to the next valve set marks, repeat on remaining cylinders until all 6 cylinders have been done. Double check slave lock-nut torque. Do not exceed the adjusting screw torque of 25 lbs. ft. or screw failure will result.

#### **SLAVE LASH ADJUSTMENT- DIAL INDICATOR METHOD.**

---

The engine must be cold (below 140°F (60°C)) to attain the proper lash of .023". Do not adjust the slave lash with the engine running or engine damage may occur.

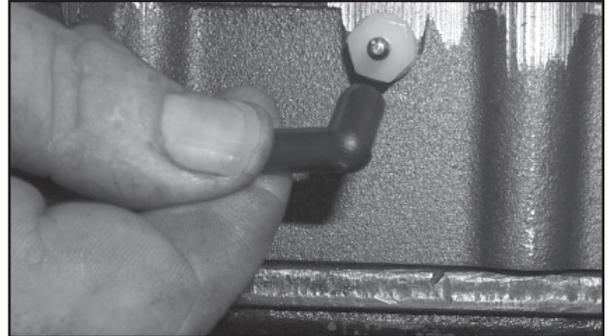
Turn adjusting screw clockwise to zero lash, then past zero lash one additional turn, wait one minute before proceeding, then back out screw to attain zero lash. Zero lash is no clearance between the end of the slave fork and the crosshead. (This is important because the adjusting screw has a spring loaded plunger which must be compressed to attain the correct lash.)



Once zero lash is attained, install a dial indicator on the top of the adjustment screw, zero the dial indicator, then back out the screw slowly until .023" is read on the dial indicator. Torque lock nut to 25 lbs. ft. (35 N•m).

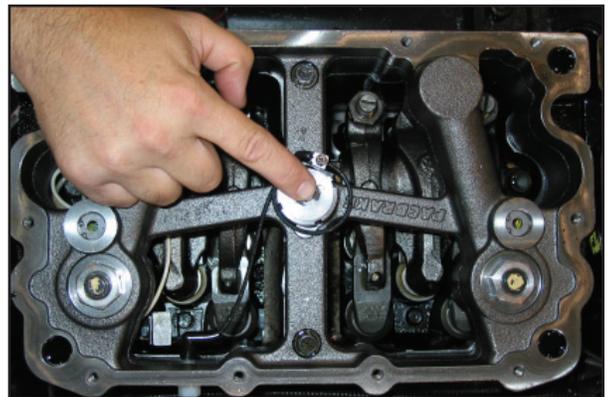
Rotate the engine to the next valve set marks, repeat on remaining cylinders until all 6 cylinders have been done. Double check slave lock-nut torque. Do not exceed the adjusting screw torque of 25 lbs. ft. Screw failure will result.

- 7** Connect Pacbrake wiring harness to the lead out terminals and to the weather-pac connector.

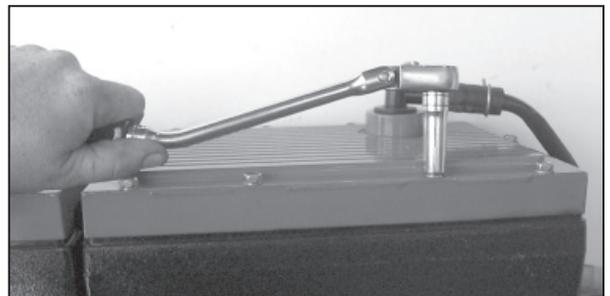


## **Bleeding Air From The Pacbrake Housings.**

- 8** Note: Use caution and wear eye protection when performing this step as oil from the control valve towers will be discharged when the solenoids are released. Check all components removed to see if the engine can be started without causing any damage. If so, start the engine. Allow engine to idle for a couple of minutes, depress the armature on each solenoid one at a time until the air is purged from the housings.



- 9** Install valve cover gaskets and valve covers. Torque valve cover capscrews to 9 lbs ft (12 N•m)  
Install all previously removed components.

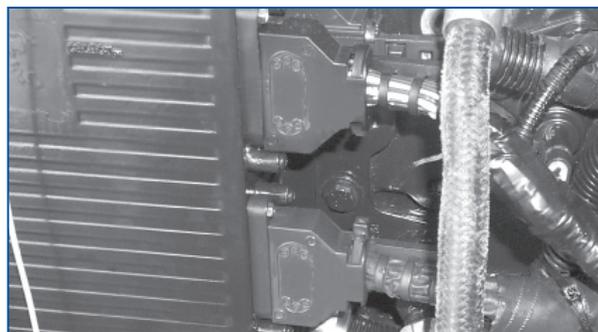


**10**

**Wiring Installation**

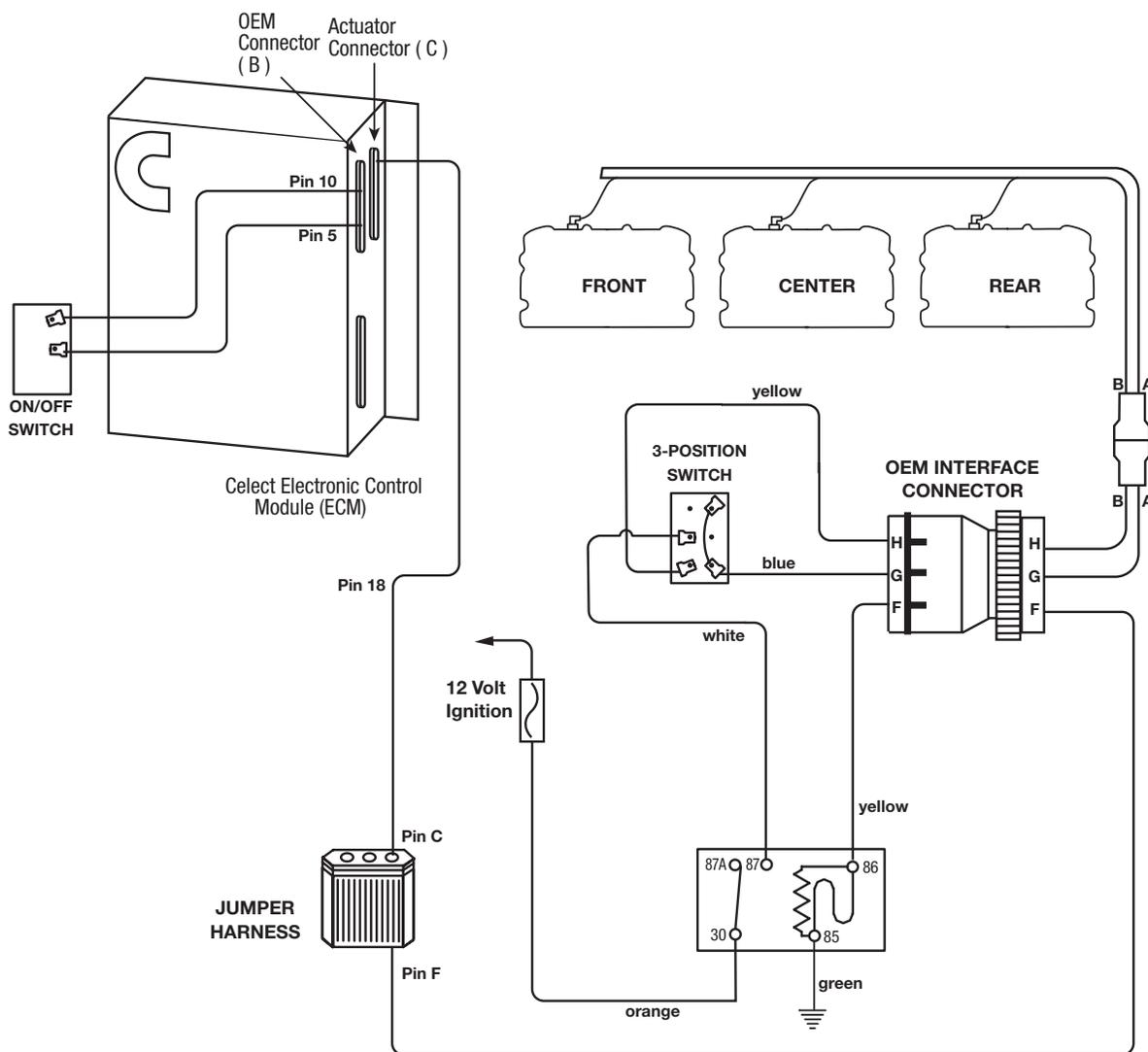
Locate the Cummins ECM on the driver side of the engine. Check the OEM connector for wires in pin 5 and pin 10 and the actuator connector pin 18. If wires exist in these pins, connect as shown in the schematic below. If no wires exist in these dedicated engine brake ports, contact your Cummins distributor.

NOTE: This application requires the use of gold plated contacts in the dash switches.



**Wiring Schematic - P-14A and P-14B**

(Engines equipped with ECM Part No's 3618046, 3619037 and 3084473)



Pacbrake Company  
toll-free: 800-663-0096  
phone: 604-882-0183  
fax: 604-882-9278  
e-mail: [info@pacbrake.com](mailto:info@pacbrake.com)  
Internet: [www.pacbrake.com](http://www.pacbrake.com)  
Canada: 19594 96 Ave. Surrey BC V4N 4C3  
USA: 250 H St. Box 1822 Blaine WA 98231-1822

Pacbrake exhaust brakes are protected by law.  
U.S. patents 5,445,248. Patents pending. Pacbrake and Direct Mount are registered trademarks  
of Pacbrake Company. Other trademarks used herein are property of their respective holders.  
Printed in Canada L2039.180805

**PACBRAKE**  
ENGINE & EXHAUST BRAKES