

FIXED ORIFICE EXHAUST BRAKES / PRXB EXHAUST BRAKES

# DRIVER'S GUIDE



HELPING YOU **ACHIEVE OPTIMUM RESULTS**  
FROM YOUR PACBRAKE EXHAUST BRAKE

Pacbrake's exhaust brakes are designed to give you many years and many miles of trouble-free operation so you can...

*Tow With* **Confidence**  
& *Brake With* **Authority**

# HOW AN EXHAUST BRAKE WORKS >>>

# EXHAUST BRAKE DRIVING TIPS

A typical diesel engine has some retarding power due to internal friction. However, in order to develop more retarding power, two things can be done to an engine: release compression from the cylinder (engine brake) or prevent exhaust from leaving the cylinder (exhaust brake).

The principle of an exhaust brake function is to prevent the exhaust from leaving the engine thus creating a resistance for piston movement. The resistance translates through the engine into the driveline and out the drive wheels, causing the vehicle to decelerate. The exhaust brake utilizes a butterfly valve that is attached to the outlet of the turbocharger. When activated, the butterfly closes and restricts the exhaust flow. Hold your finger over the nozzle of a bicycle pump and then pump. The resistance you feel is exactly what's happening in the engine.

The amount of braking power the engine will develop depends on the maximum exhaust backpressure allowed by the engine manufacturer and the speed (RPM) of the engine. The higher the backpressure and RPM the greater the retarding power. Exception should be given to the PRXB, Pacbrake's pressure regulated exhaust brake, which provides better performance by allowing the engine to work at maximum exhaust backpressure over a larger RPM range. Certain conditions may require the transmission to downshift in order for the retarding horsepower to increase. The driver controls the retarding horsepower by controlling the engine speed.

Pacbrake's exhaust brake is designed and will function best if used all the time. Whether the vehicle is in the mountain passes or routine driving conditions, using the exhaust brake to assist in controlling vehicle speed will reduce vehicle maintenance costs and ensure years of trouble free engine retarding.

An exhaust brake is intended as a supplement to your normal wheel (service) brakes and will not bring the vehicle to a complete stop. The exhaust brake will assist in the control or reduction of road speed in conjunction with the use of service brakes.

The Pacbrake is controlled through a master ON/OFF switch and then by a throttle position switch (for automatic actuation) or a manual foot switch (for manual actuation). All applications are additionally affected, controlled or governed by engine speed through transmission gear selection. *PLEASE NOTE: An Allison MD3060 transmission has automatic downshifting when the exhaust brake is requested (see Allison World Transmission section).*

On some applications (especially aftermarket and automotive) when the exhaust brake is in use, it may be necessary to ensure that the cruise control is not activated and the throttle is in the "no fuel" or idle position. Some applications electronically interface the engine, transmission, cruise control and exhaust brake.

## THE ECM MAY BE PROGRAMMED TO OPERATE THE EXHAUST BRAKE IN 3 DIFFERENT MODES:

**MANUAL MODE** - When the operator removes their foot from the accelerator, the exhaust brake system becomes active. Please Note: some engine programs do not allow for MANUAL MODE; consult with the engine manufacturer for more details.

**COAST MODE\*** - Braking does not come on until the operator removes their foot from the accelerator and then applies the foot brake. It will then disengage as soon as the operator releases the foot brake.

**LATCH MODE\*** - Braking operates the same as in Coast Mode, except that it remains ON after the operator removes their foot from the pedal. The exhaust brake is disengaged when another input is supplied, such as depressing the throttle/clutch, or the engine speed drops below 800 RPM, or the Pacbrake master switch is turned OFF.

**THE EXHAUST BRAKE SHOULD BE TURNED OFF WHEN OPERATING YOUR VEHICLE ON WET, ICY AND/OR SNOWY COVERED SURFACES**

## ALLISON WORLD TRANSMISSION

Factory installed Pacbrake exhaust brakes are integrated with Allison World Transmission MD series.

Aftermarket brakes can be either interfaced with the transmission electronic control module (ECM) or set up to be used independently at the driver's discretion. Aftermarket installations may require the transmission ECM to be re-programmed to enable the exhaust brake circuit. An exhaust brake enabled transmission ECM will usually provide converter lock-up in gears 2 through 6.

Effective exhaust braking begins when the transmission automatically downshifts into fifth gear (62 MPH or less). Once on, the exhaust brake will control road speed and/or slow the vehicle sufficiently so that the transmission will automatically downshift, if necessary, to Allison's pre-select mode. The pre-select mode is normally assigned to second gear, however the transmission can be re-programmed by an Allison Transmission distributor to third or fourth gear, should the operator desire. If additional retarding power is required before the automatic downshifting occurs, you can select a lower transmission gear on the Allison driver control panel. Contact Pacbrake for additional information.

## WARM-UP FEATURES

**In cold weather, or on initial startup, engaging the Pacbrake exhaust brake at idle, and up to 1000 RPM, will lower the required warm-up time by half as well as reduce cold engine emissions and engine wear & tear.**

*PLEASE NOTE: Not all applications have the ability, to use the warm-up feature.*

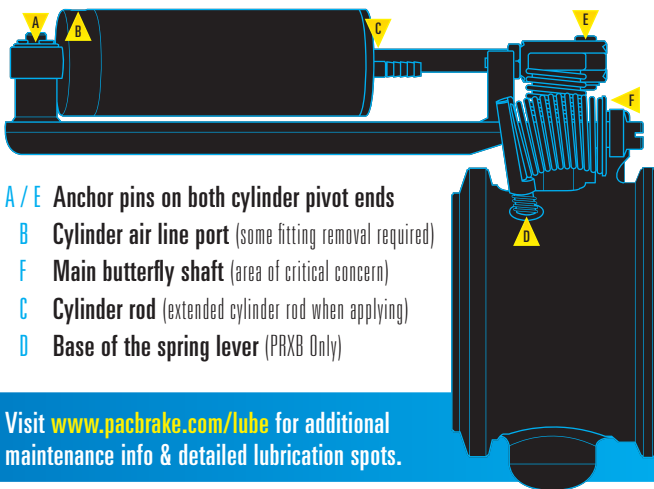
*\*These options are only available on medium/heavy duty electronic engines, all other engines and automotive (pick-up truck) applications will have the manual option only.*

# EXHAUST BRAKE MAINTENANCE TIPS

Pacbrake exhaust brakes are relatively maintenance free when used at every opportunity. However, to get the maximum amount of trouble free service, a few areas require periodic lubrication.

Wear and seizing parts due to long periods of inactivity are two major concerns for your exhaust brake. Periodic lubrication will prevent both these issues.

**WITH THE ENGINE OFF**, APPLY 4-5 DROPS OF SYNTHETIC LUBRICANT TO THE FOLLOWING LOCATIONS OF THE EXHAUST BRAKE:



- A / E** Anchor pins on both cylinder pivot ends
- B** Cylinder air line port (some fitting removal required)
- F** Main butterfly shaft (area of critical concern)
- C** Cylinder rod (extended cylinder rod when applying)
- D** Base of the spring lever (PRXB Only)

Visit [www.pacbrake.com/lube](http://www.pacbrake.com/lube) for additional maintenance info & detailed lubrication spots.

**ONCE ALL POINTS HAVE BEEN LUBRICATED**, CYCLE THE EXHAUST BRAKE EITHER ELECTRONICALLY OR MANUALLY TO WORK IN THE LUBRICANT.



**WE STRONGLY RECOMMEND USING PACBRAKE'S SUPERLUBE ON YOUR EXHAUST BRAKE.**

SuperLube is a multi-purpose, high-heat resistant, synthetic lubricant that penetrates and protects your exhaust brake from binding or sticking.

Superior to petroleum based lubricants, SuperLube's long-lasting high quality formula was specifically developed to reduce friction & wear and prevent rust & corrosion - making it a must-have for vehicles exposed to excess moisture and/or seasonal use.

Order a bottle of Pacbrake's SuperLube Part No: C18073



*Greatly decreased  
stopping distances without  
the use of service brakes*

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