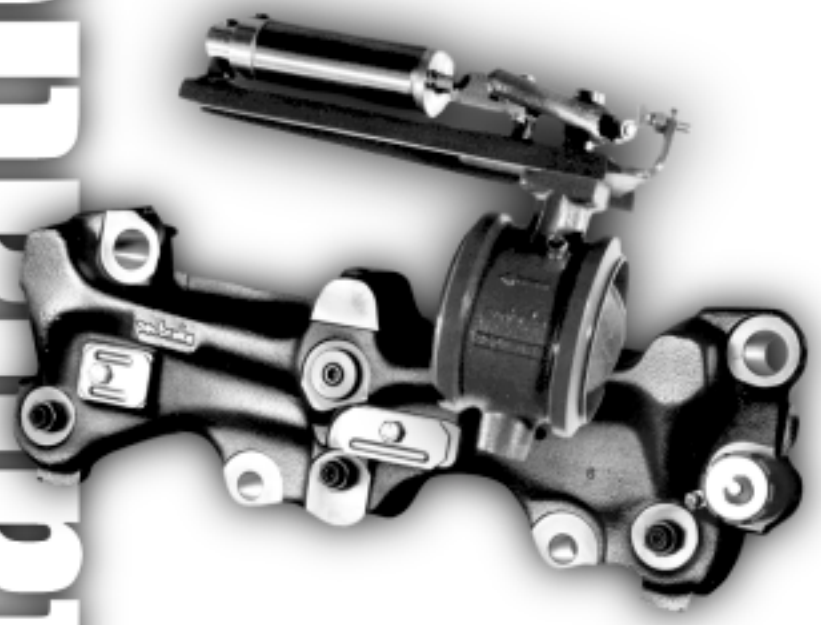
Installation



C11337

RETRO-FIT KIT

APPLICATIONS

FOR CATERPILLAR

3406B AND C

ATAAC & JWAC ENGINES

BACKGROUND

The Pacbrake Retro-Fit Kit is designed to convert a Pacbrake P-36 Engine Brake to a P-37 Superpac for 3406 B and C Engines.

A warm-up feature is included with this kit, and will benefit all 3406 Engines for quick and efficient warm-up.

Please note the instructions within regarding the .102 reset of the engine brake.

This high retarding horsepower conversion kit, has no retarding benefits when used with other manufacturers engine brakes.

BEFORE STARTING

Identify the engine model. The Retro-Fit Kit is designed for 3406B and C ATAAC & JWAC Engines.

ENGINE BRAKE RESET INSTRUCTIONS

1

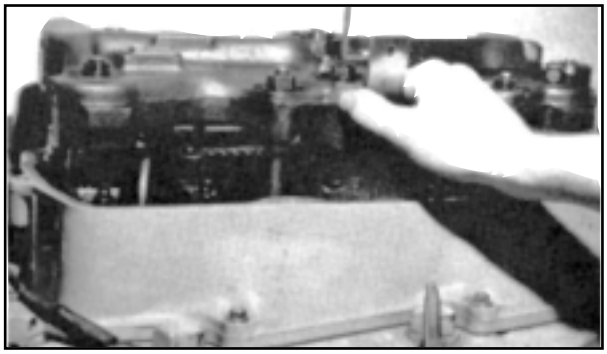
Thoroughly clean the top of the engine, and remove the crossover pipe and rocker covers.

2

Remove the serrated nuts and capscrews and lift the Pacbrake spacer off of the engine.

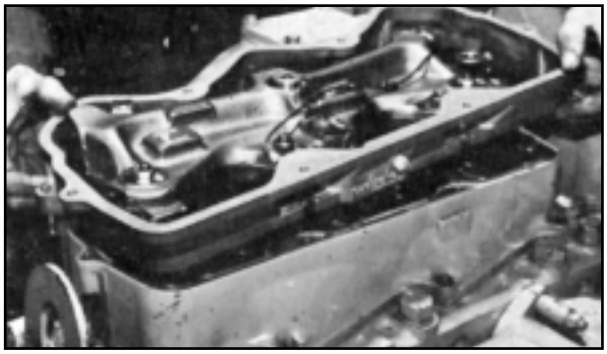
3

Slave piston readjustment can now be performed at any location that the exhaust crosshead is loose to the touch (has no pressure applied by a rocker arm). Insert a .102 Pacbrake feeler gauge Part Number P34675 between the slave piston feet and the crosshead. Turn the Paclash adjusting screw down until a slight drag is felt on the feeler gauge and torque the lock-nut to 25 lbs.ft. (35 N•m). Re-check the clearance.



4

Re-install the spacers over the base mounting studs.

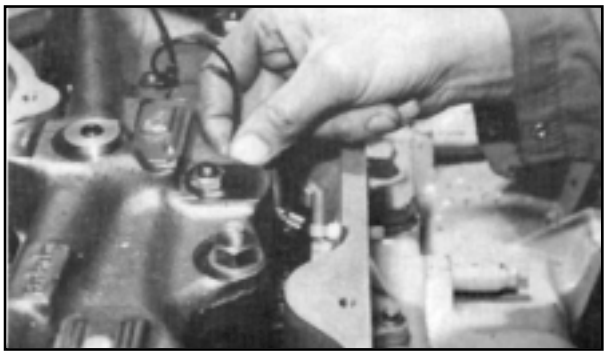


5

Install the Pacbrake serrated nuts and capscrews in the proper locations and tighten evenly to 13 lbs.ft. (18 N•m).

6

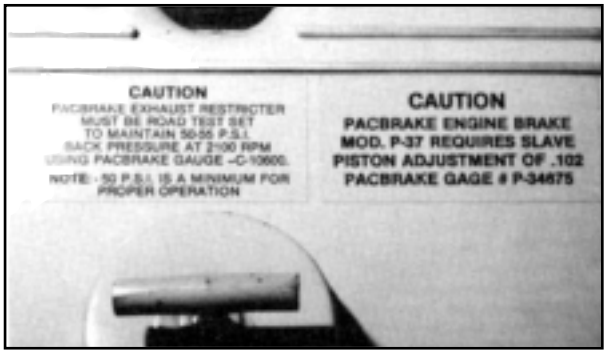
Install the solenoid wire on the spacer leadout terminal.



7

Install valve covers and torque holddown screws to 13 lbs.ft. (18 N•m). Install the breather pipe extension hose.

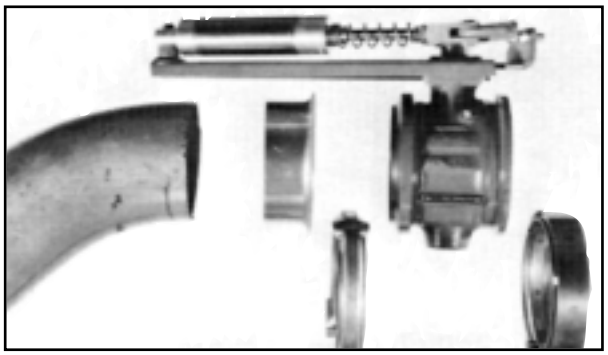
NOTE: Attach the two orange decals supplied with this kit to the valve covers. The information on these decals is important to future servicing of this Pacbrake.



EXHAUST RESTRICTER INSTALLATION

8

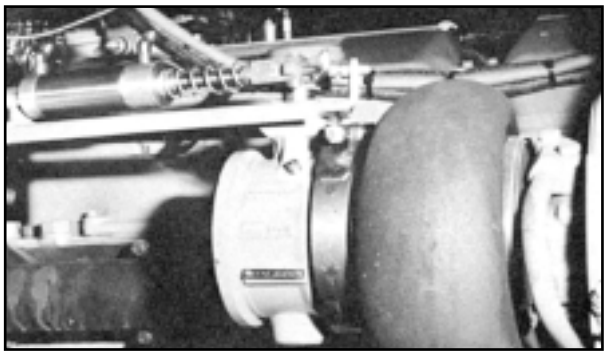
This kit contains an exhaust restricter which mounts in the upright position directly to the turbo. (No more than a 45˚ rotation form vertical in either direction is allowed). In some instances a lack of room may require repositioning of the cylinder and cylinder mounting bracket 90˚. If this should become necessary please consult factory for the proper alignment procedures. The restricter can also be mounted downstream from the turbo, but will require a special adapter ring PT # C11752 and minor exhaust modification.



NOTE: All connections between the exhaust restricter and the engine must be leak free, ie. No flex pipe or clamps other than "V" clamps. To ensure maximum efficiency, all exhaust connections, ie. turbo to manifold and manifold to head, must be inspected.

9

Mount the restricter to the turbo with the special "V" clamp provided. The adapter included in the kit is for shortening the exhaust pipe if required. Maintain adequate flex pipe to allow for slight misalignment and to prevent stressing of restricter, turbo, or exhaust manifold. Use the original turbo clamp to connect the exhaust pipe to the non pressure side of the restricter.

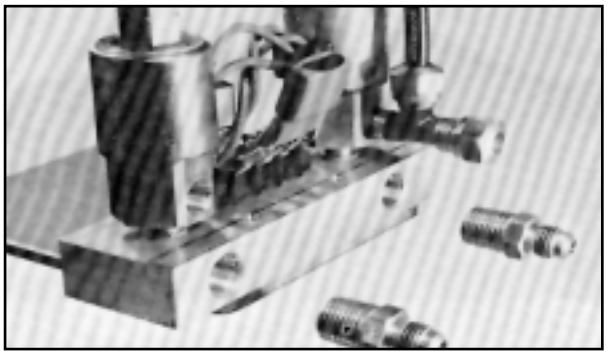


IMPORTANT: Torque "V" clamps to 20 lb.ft. (28 N•m), tap clamp lightly and retorque. Clamps MUST be retrorqued after road test to ensure the proper sealing.

CONTROL SYSTEM INSTALLATION

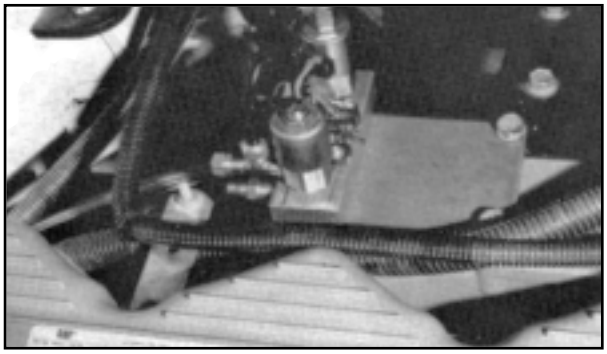
10

Attach two 1/8 NPT x #4 straight fittings to the ports in the aluminum block below each solenoid. Attach the mounting bracket to the solenoid block with two 5/16 x 3/4" capscrews provided.



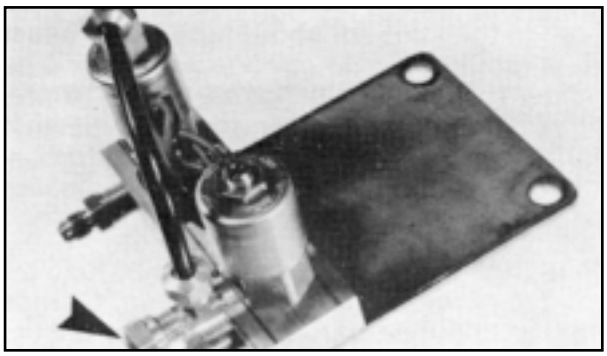
11

Bolt the assembly to the manifold location as shown, alternatively it may be fire wall mounted.



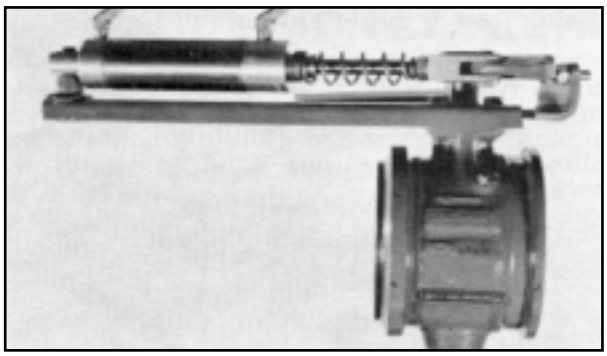
12

Source reservoir air from the dry tank. Using the fittings and nylon tubing provided, plumb this air to the solenoid tee fitting on the block assembly, as shown here.



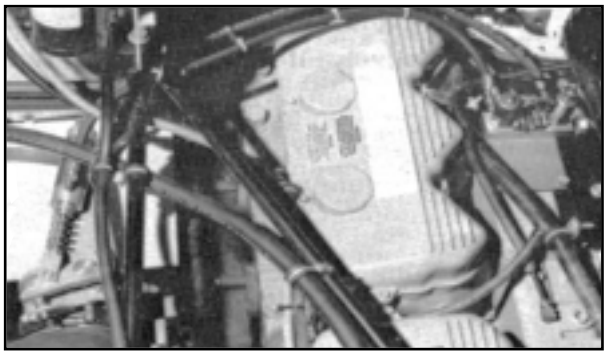
13

Attach two 45° 1/8 NPT x #4 fittings to the air cylinder ports on the exhaust restricter.



14

Connect the two wire braid hose assemblies to the air cylinder on the restricter, and route to the fittings on the solenoid block and attach.



NOTE: One hose is slightly longer for ease of installation. (See schematic to determine the correct hose plumbing, ie. which cylinder fitting to which solenoid fitting.

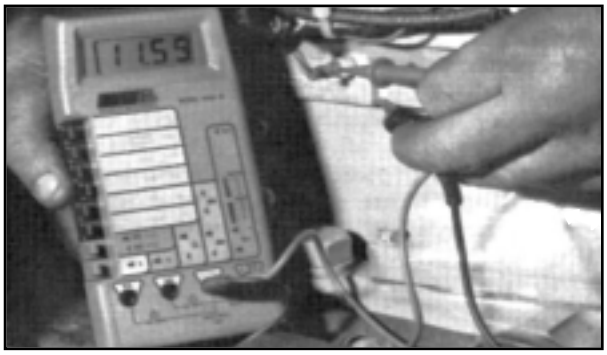
IMPORTANT: When setting exhaust resticter back pressure, actuating arm must make contact with adjusting screw stop bolt, to avoid butterfly to wall contact.

FINAL ADJUSTMENTS

15

The warm-up switch must be mounted in a convenient place in the dash and the colour coded wiring harness provided should be used to modify the existing wiring (see schematic).

NOTE: With the engine off and the engine brake circuit energized, a minimum of 11.3 volts must be obtained - measure at either of the engine brake lead-out terminals.



TO TEST WARM-UP SYSTEM

16

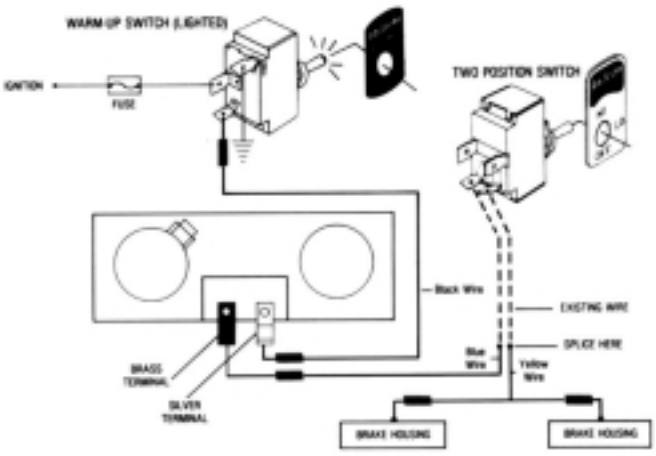
The testing of the warm-up system can now be done. (1) Start engine. (2) Turn on warm-up switch, toggle will be lit-up. (3) Increase engine RPM to 1000, exhaust restricter is applied and engine is in warm-up mode.

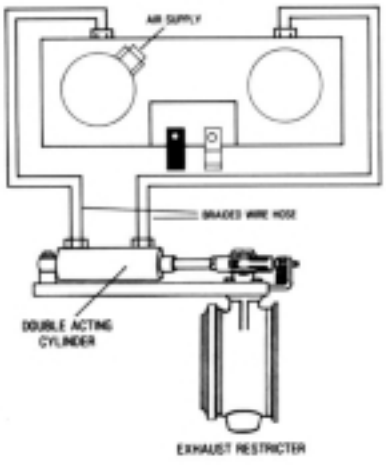
17

Prior to road test a check of the electrical system should be performed as follows. To test retarding modes, select low position on the high, low, off switch. The exhaust restricter portion should activate, and the truck should still idle. To activate the engine brake, increase RPM to governed RPM and release the throttle with the switch in the Hi position, full retarding should occur. As engine RPM falls to idle, engine will stall.

WIRING INSTRUCTIONS:

1. Disconnect both wires at the brake housings.
2. Determine which brake housing wire is energized in the "Low" dash switch position, and note its colour or marking.
3. Connect the new harness to the brake housings.
4. Cut both existing brake housing wires at the location they meet the two terminals attached to the new harness (marked "Splice Here" on the schematic), making sure the blue wire in the new harness connects to the predetermined "Low" position wire, and the other existing wire is connected to the yellow wire of the new harness.
5. Route the new harness to the solenoid block assembly and the dash switch and connect as shown in the schematic.





FINAL ADMUSTMENTS AND TESTS

18

A road test can now be done to set the exhaust restricter back pressure. The gauge used must be a dampened (liquid filled) type to accurately read the pressure. This gauge kit, part #C10600, can be purchased through Pacbrake's Distribution System. It contains the gauge and all hose and fittings to perform back pressure tests. Remove the 1/8 N.P.T. plug from exhaust restricter and connect the hose with the gauge into this fitting and route into the truck cab to be read during road testing.

19

Road testing must provide long durations of 2100 RPM to properly adjust the 50-55 PSI back pressure setting. Do not consider the split-second peak pressure but read the pressure that it settles at. This setting must be done by adjusting the stop screw located on the restricter unit. It is crucial to the operation of this braking system that a minimum of 50 PSI back pressure has been obtained during this test but not exceeding 55 PSI.

20

When proper setting is completed, remove the gauge kit and reinstall the plug. Recheck the torque of all “V” clamps. Torque should be 20 lbs.ft. (28 N•m). The P-37 has maximum retarding capabilities without the noise normally associated with engine braking.

PACBRAKE® ENGINE BRAKES