



# **Vehicle Vacuum System Kit**

Cummins Kit Number 4089285

## **Specification & Installation Manual**

**For 2003 and later Dodge Ram Trucks  
Equipped with the Cummins ISB 5.9L Engine**

## **Warning**

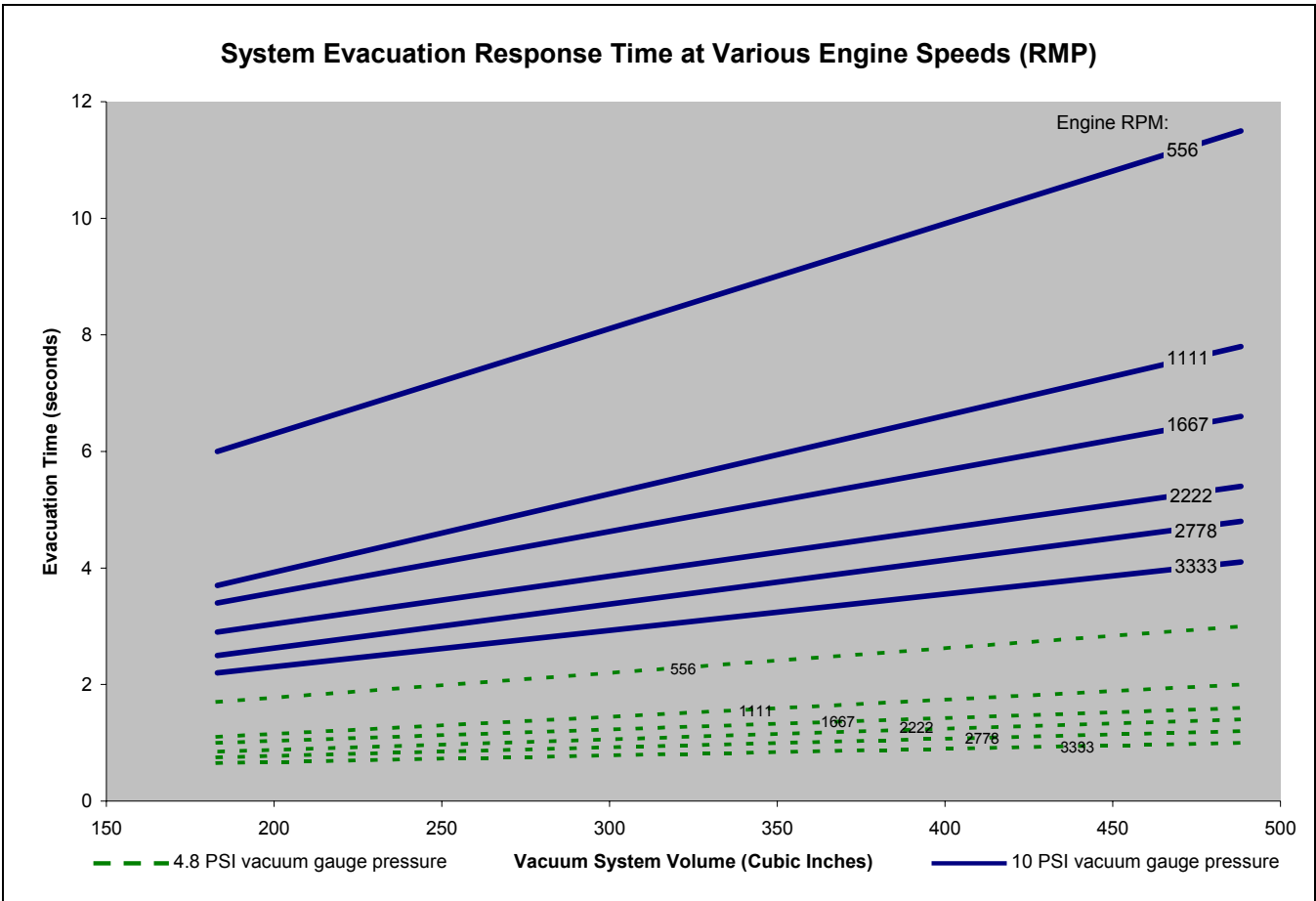
**The vacuum pump must never be run without a vacuum load.** If it is run in an “open to atmosphere” condition with no vacuum load, the diaphragm will malfunction in a matter of minutes.

To insure proper operation, the vacuum system must be sealed at all times in order to place a load on the vacuum pump. If a vacuum actuated accessory, such as a vacuum brake equipped trailer, is disconnected from the vacuum system, **the vacuum line leading to the vacuum pump must be capped. The vacuum side of the vacuum pump system must never be open to atmosphere when the engine is running.**

# Operating Specifications:

The vacuum pump is designed to operate vacuum accessories such as the Cummins Exhaust Brake by Jacobs. Other vacuum-operated accessories may be actuated by the vacuum pump as well. Consult the vacuum pump operation curve below to determine if the vacuum pump is compatible with the vacuum-actuated accessory.

The pump will produce a minimum vacuum of 10 psi (70 kPa) gauge pressure at an engine speed of 1950 RPM at standard atmospheric conditions. The vacuum pump will evacuate a system based on the curve below at standard atmospheric conditions:



# Installing the Vacuum System

## 1. Gaining access to gear housing.

For 2003 model vehicles, unfasten the three capscrews on top of the Throttle Position Sensor assembly. Relocate the Throttle Position Sensor assembly to gain access to the top of the gear housing. (see figure 1)



Figure 1

## 2. Prepare the Vacuum Pump/Bracket for mounting.

a. Attach the vacuum pump to the mounting bracket using the three M8 x 30 mm capscrews supplied in the vacuum kit. (See figure 2) Torque to 25 N.m (18 ft-lb).

b. Install 3/8" I.D. hose onto the vacuum pump and secure with the hose clamp provided.



Figure 2

## 3. Mount the Vacuum Pump/Bracket Assembly.

a. Attach the vacuum pump/bracket assembly to the rear of the gear housing using the four M8 x 45mm capscrews supplied in the vacuum kit. Reference gear housing holes in figure 3.

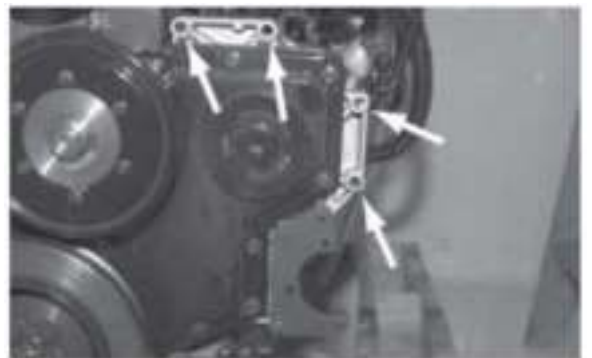


Figure 3

b. Install the vacuum pump as shown in figure 4. Torque to 25 N.m (18 ft-lb).

c. Insure no wiring harnesses are taut against the vacuum pump bracket. This is to avoid harness chafing.

NOTE: IT MAY BE NECESSARY TO REMOVE THE ACCESSORY DRIVE BELT TO EASE INSTALLATION



Figure 4

#### 4. Change the Alternator/Fan/Vacuum Pump Drive Belt.

a. Remove the current drive belt. Use a ½-inch socket wrench on the tensioner pulley to create slack in the belt.

NOTE: This belt can be reused if either the exhaust brake is removed or should there be a malfunction with either the vacuum pump for the accessory drive belt. The vacuum pump does not need to be removed if installing the original belt for any reason.

b. To install the new drive belt supplied in the vacuum kit, route the new belt as shown in figure 5. Create slack in the belt by using a ½-inch socket wrench on the tensioner pulley and slide belt into place.

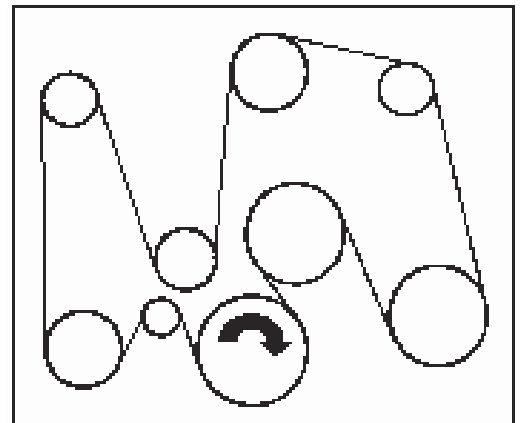


Figure 5

*NOTE: IF YOU HAVE A VEHICLE WITHOUT AIR CONDITIONING, YOU WILL NEED TO PURCHASE A DIFFERENT ACCESSORY DRIVE BELT: CUMMINS PART NUMBER 4025090, MOPAR PART NUMBER 05114188AA (LENGTH WILL BE 2,892 MM/113.9 IN).*

#### 5. Reinstall the throttle position sensor assembly

a. Reinstall the Throttle Position Sensor assembly. See figure 6.

b. Torque the three (3) cap screws to 48 N.m (35 ft lbs).



Figure 6

## Troubleshooting:

1. Check all vacuum hoses for kinks, leaks or damage.
2. To diagnose a vacuum solenoid issue, with the engine running, disconnect the vacuum hose from both sides of the vacuum solenoid and hold the hoses together. The component should be actuated. If it does, reconnect the hoses and troubleshooting the solenoid and the solenoid wiring. If testing the vacuum with a vacuum gage, your reading should be between 15 and 29 inches of mercury.
3. Check to see that the vacuum pump belt is in position and the vacuum pump pulley and shaft are rotating, spinning with the belt.
4. With the engine shut off, disconnect the vacuum hose from the vacuum pump. With the engine running, test for suction at the vacuum pump with your finger. If there is no suction, replace the vacuum pump.

### **Warning**

**The vacuum pump must never be run without a vacuum load.**