

# COBB™ TUNING

## Installing an oil catch can and Positive Crankcase Ventilation (PCV) system in the Mazdaspeed3/Mazdaspeed6



Turbocharged engines often develop positive pressure inside the crankcase because combustion pressure escapes past the piston rings. This crankcase pressure has a detrimental effect on power production. While vacuum is present in the intake manifold, this crankcase pressure is relieved through a high strength tube that connects the crankcase to the intake manifold. This high strength tube connects to the intake manifold at a ONE way valve called a PCV or positive crankcase pressure ventilation valve. This function of this valve is to prevent positive manifold pressure from entering the crankcase.

The Mazdaspeed3/6 engines contains a PCV valve. However, the stock PCV valve and associated lines do a poor job of venting positive crankcase pressure without also contaminating the intake manifold with oil and combustion gases from the crankcase. The contaminant oil and crankcase gases lower the detonation threshold when ingested in the combustion cycle. This can lead to oil burning through the exhaust stream, decreased engine efficiency, and eventual engine damage.

This document outlines the installation of an additional PCV valve and, importantly, an oil catch can system for a Mazdaspeed3/6. With a system similar to this in place, much less oil from the crank case contaminates the intake tract. In fact, the installation of an additional PCV valve and oil catch can will often totally remedy Mazdaspeed3/6's persistent oil burning issues.

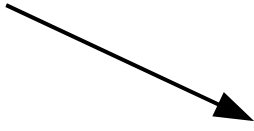
The system consists of the following items:

1. Approximately 6 feet of vacuum resistant 5/8 inch ID tubing. This tubing must be reinforced so as to resist high vacuum. Some forms of tubing will collapse under vacuum and will make this system totally ineffective. Make sure to specify vacuum resistant tubing.
2. A secondary PCV valve. We used NAPA part number 2-9303.
3. A catch can and mounting bracket – Any manufacturer can be substituted with reasonable results.

Installation:

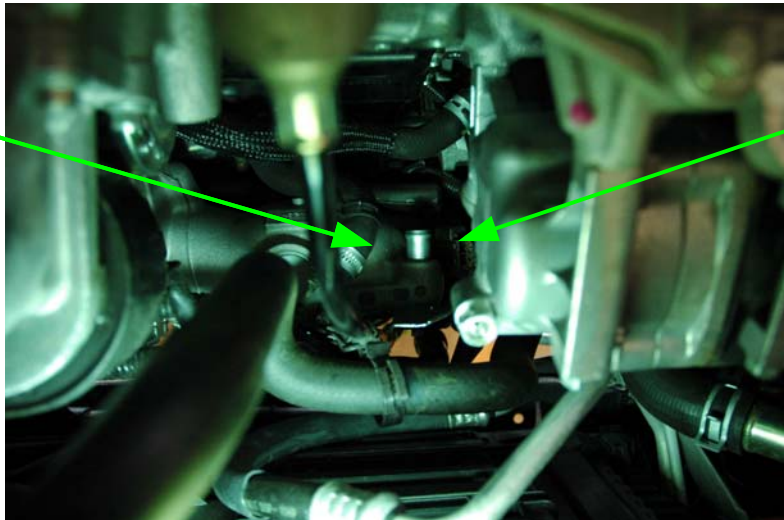
1) Be sure to set your emergency brake, carefully lift the front of the vehicle onto jack stands, and remove the plastic under tray to allow access to the front of the engine and intake manifold.

Remove the plastic under tray



2) Locate the tube connecting the intake manifold to the crankcase. Carefully remove this tube from the intake manifold.

Tubing to crankcase



Fitting to intake manifold

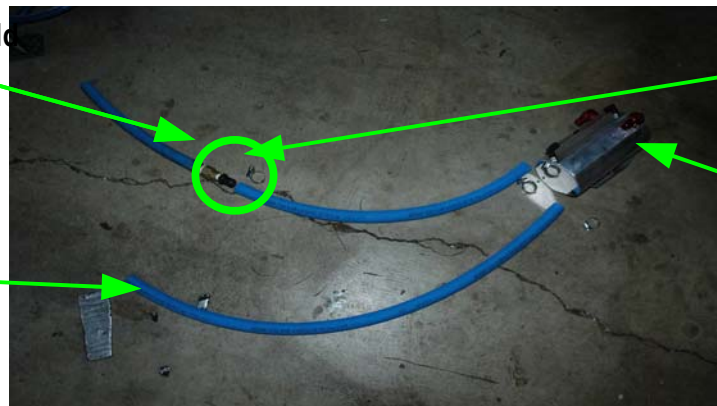
3) Assemble the catch can and PCV system components:

Attach to Intake Manifold  
(~39" long total)

PCV valve

Attach to Crankcase  
(~36" long)

Catch Can





**4) Attach the tube with the in-line PCV valve to the intake manifold fitting.**

Attach tubing with PCV  
to intake manifold fitting



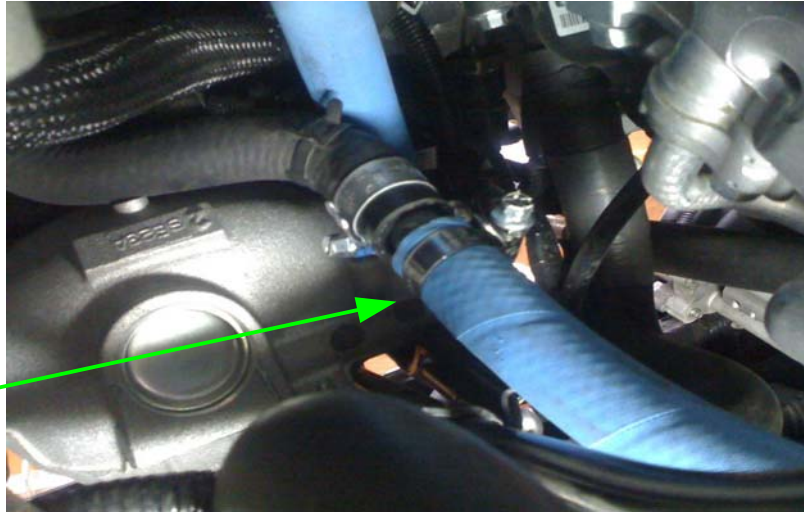
**5) Using a hose clamp, secure the 5/8 barbed adapter to the stock tube which has been removed from the intake manifold.**

Attach 5/8 barb straight  
fitting to the stock tubing  
removed from the intake  
manifold



**6) Attach the longer section of tube, without the PCV valve, to the straight barb fitting.**

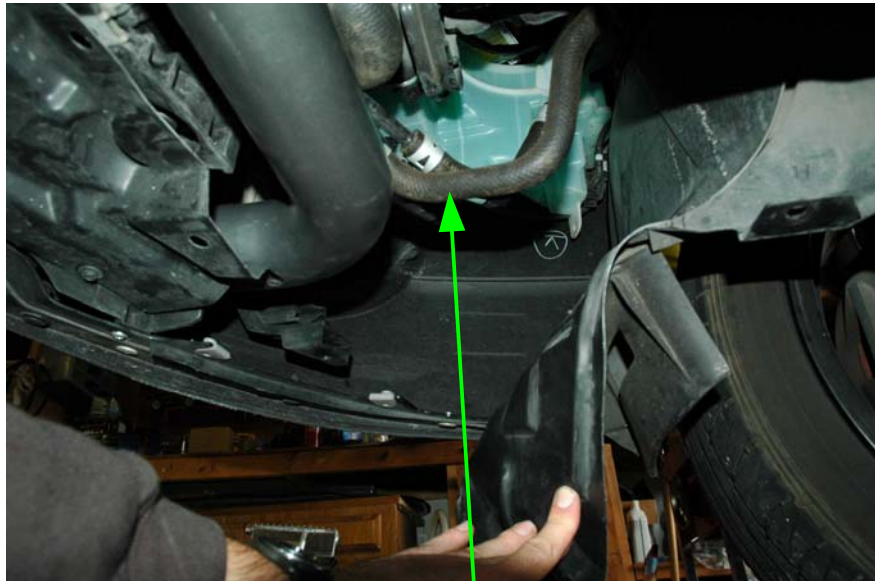
Attach long end of tuning without PCV to the barb fitting



7) Locate the catch can behind the lower passenger side bumper, just ahead of the front wheels.

Catch Can location looking from under the car toward the passenger tire

Front



Front wheel

Catch Can location just in front of the passenger tire behind the bumper



**8) Secure lines between catch can, intake manifold, and crank case so they do not rub and wear against any of the undercarriage.**



**9) Reinstall the plastic under tray.**

The improved PCV system will eliminate pressurized air from entering the crank case and help prevent oil contaminated air from entering the inlet air stream. The crank case will now properly ventilate only under vacuum. With a external oil catch can in place, less oil will enter the inlet air stream which will increase the detonation threshold of the engine, improving engine performance. This simple PVC system improvement will allow a stock or tuned Mazdaspeed3/6s to burn less oil under boost and during prolonged periods of vacuum.

Enjoy your COBB Tuned Mazdaspeed3/6!

V1.02