

PCV Bypass

How to stop the PCV (Positive Crank Case Ventilation) gas feeding back into cylinder and vent directly to air for more power, economy and engine longevity.

Every time a cylinder burns fuel and expand, there is a blow-by gas which leaks out between the cylinder walls and piston and this gas build up the pressure in the crankcase and cylinder overhead camshaft area which need to be vented to outside of air. Otherwise, the all the seals in the engine will start leak oil everywhere.

It is normal to have blow-by gas up to 5-7% of in new engines and up to or over 10% in many old engines.

Instead of letting the blow-by gas out to air, it is fed back into inlet manifold to re-burn as a part of emission control. However, the problem is this blow-by gas reduces combustion efficiency by competing with oxygen in the cylinder. Not only that, it also introduces large amount of oil mist which churned up by mechanical action of the moving parts in the engine. This oil mist with blow-by gas will form a mud cake in the inlet manifold and cylinder head valve area by mixing with soot coming from exhaust gas through EGR pipe. This mud cake like sludge formation chock up the engine breathing and causes poor acceleration and bad fuel economy. The soot is carbon and it will gradually scratches the cylinder walls and other parts like valve and its seats and wears them out prematurely thus ending the life of the engine early.

The most surprising fact was the amount of suction introduced by turbo charger to suck out the crank case blow-by gas was around 15 PSI average. We were very surprised amount of oxygen depleting burnt gas was sucked out and pushed into the inlet to hinder proper combustion.

I have measured with engine dynamo-meter in increase of around 12 kw of extra power when you block EGR system and PCV bypass combined.

Illustration is based on Mazda BT-50/Ford Ranger 3.0 Litre Diesel engine.

Please Do Not block the PCV pipe in the engine, crank case need to be breathed, otherwise all the oil seals will leak the engine oil everywhere.

This photo shows crankcase gas is vented out directly to air and oil catch can is not used but only for water crossing.

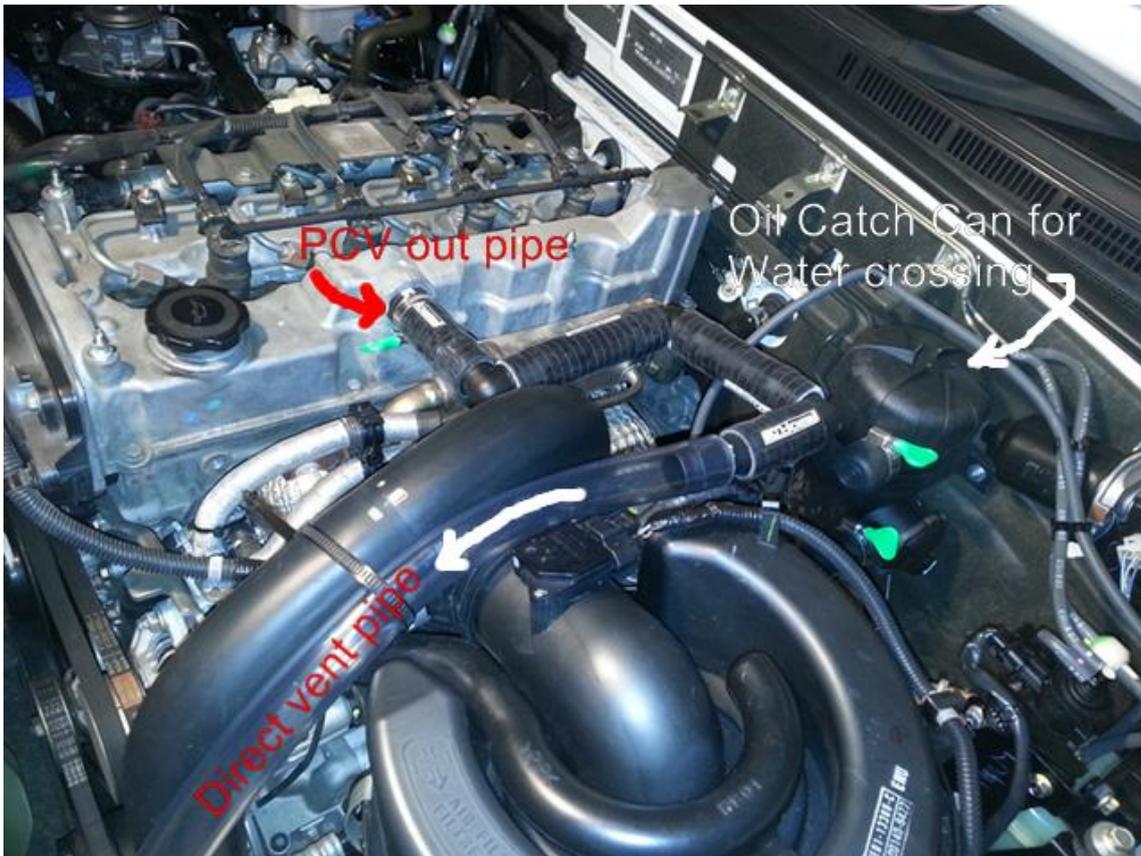


The inlet of the Oil catch can is blocked to stop air leak and against water entering.

Normally, you would not need to connect PCV pipe to oil catch can unless you are crossing the very deep water.

The Direct vent pipe is installed under the middle of the body where gas discharge does not entering the cabin.

Another way to do it.



Original PCV pipe is used to connect directly to oil catch can.



In this photo PCV pipe is connected to oil catch can for deep water crossing.



Chair foot is used to block the oil catch can inlet when not used.

In my experience, the only oil catch can which worked properly was Mann Provent 200 oil catch can. But replacement filter is expensive.



This photo is using Oil catch can to stop oil mist going into inlet without direct air dump.
But blow-by gas will lower the power and economy.



Use small mesh breather filter like this at the end of direct vent pipe to stop insects and small animal getting into pipe. Install this middle of the under carriage where no gas will enter the cabin. Normal water crossing is not a problem with this dump pipe under the chassis unless you are crossing very deep water.



If you need this breather filter then go to <http://www.ebay.com.au/itm/25-mm-Mini-valve-cover-BREATHER-FILTER-air-oil-crackcase-vent-chrome-/151344803389?hash=item233cda6e3d>

If you need aluminium joiner then go to <http://www.ebay.com.au/itm/25mm-1-OD-ALUMINIUM-HOSE-JOINER-75mm-long-Silicone-Rubber-pipe-tube-alloy-/251417084312?hash=item3a89a04198>

Please note: Driving disabled emission control system in public road is illegal. Above illustrations are only for off-road or racing use.