Crankcase breather valve (turbo)

The crankcase ventilation system is integrated into the plastic cylinder head cover and is not serviceable as a separate component.

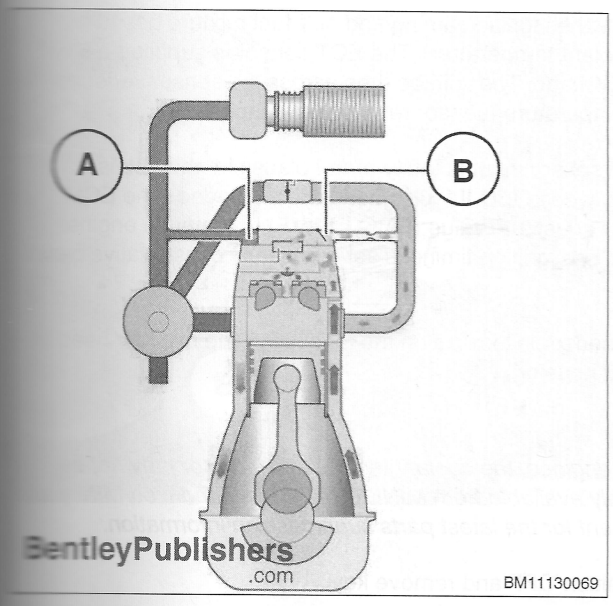
The pressure control valve varies the vacuum applied to the crankcase breather depending on engine load. The valve is balanced between spring pressure and the amount of manifold vacuum.

At idle when the intake manifold vacuum is high, vacuum reduces the valve opening, allowing a small amount of crankcase vapors to be drawn into the intake manifold.

At part to full load conditions, when intake manifold vacuum is lower, the spring opens the valve and additional crankcase vapors are drawn into the intake manifold.

Oil separation is carried out via a labyrinth system and a cyclone separator. Once the liquid oil is separated from the crankcase vapors, the oil is allowed to drain back through check valves into the engine.

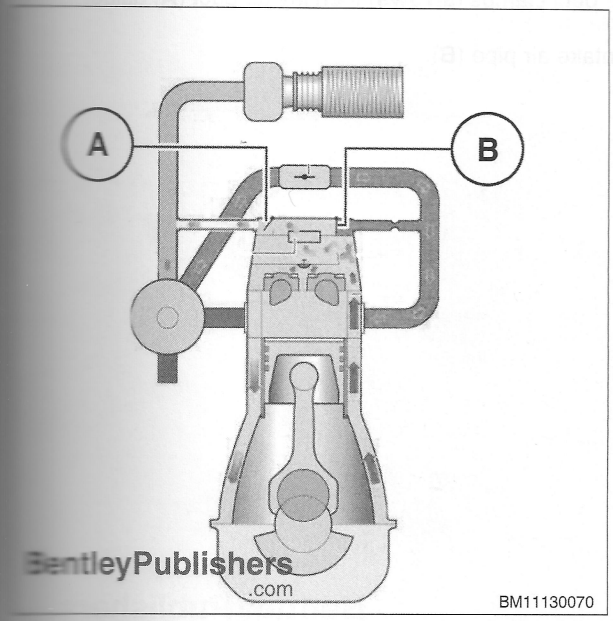
The MINI turbocharged engine greatly influences intake manifold pressure and hence, the operation of the pressure control valve.



Turbo engine crankcase venting system is designed to function in two modes. One mode is under load and the other is during deceleration or idle. There is a check valve (**A**) in the cylinder head cover to prevent boost air from the turbocharger from entering into the crankcase.

When under deceleration or in idle mode, crankcase gasses are sent to the cyclone separator. The liquid oil is separated and allowed into the crankcase via the drainback valve.

The cleaned crankcase gas (less oil) is sent to intake manifold via the pressure control valve and non-return valve (**B**). The intake manifold is under low pressure (vacuum), which allows the gasses to enter the engine.



In acceleration mode (under load), the turbocharger supplies boost pressure which in turn increases the pressure in the intake manifold. The check valve (**A**) prevents boost pressure from entering the crankcase.

The crankcase gasses flow the same path through the cyclone separator and pressure control valve. However, it is at this point where the gasses are rerouted to the suction side pipe via the non-return valve (**B**). The gasses are then fed into the turbocharger and ultimately into the engine via the intake manifold.

If the diaphragm valve in the breather housing leaks, full intake vacuum may be applied to the crankcase, resulting in excessive oil consumption, irregular idle, whistling or howling noises or oil smoke in the exhaust.