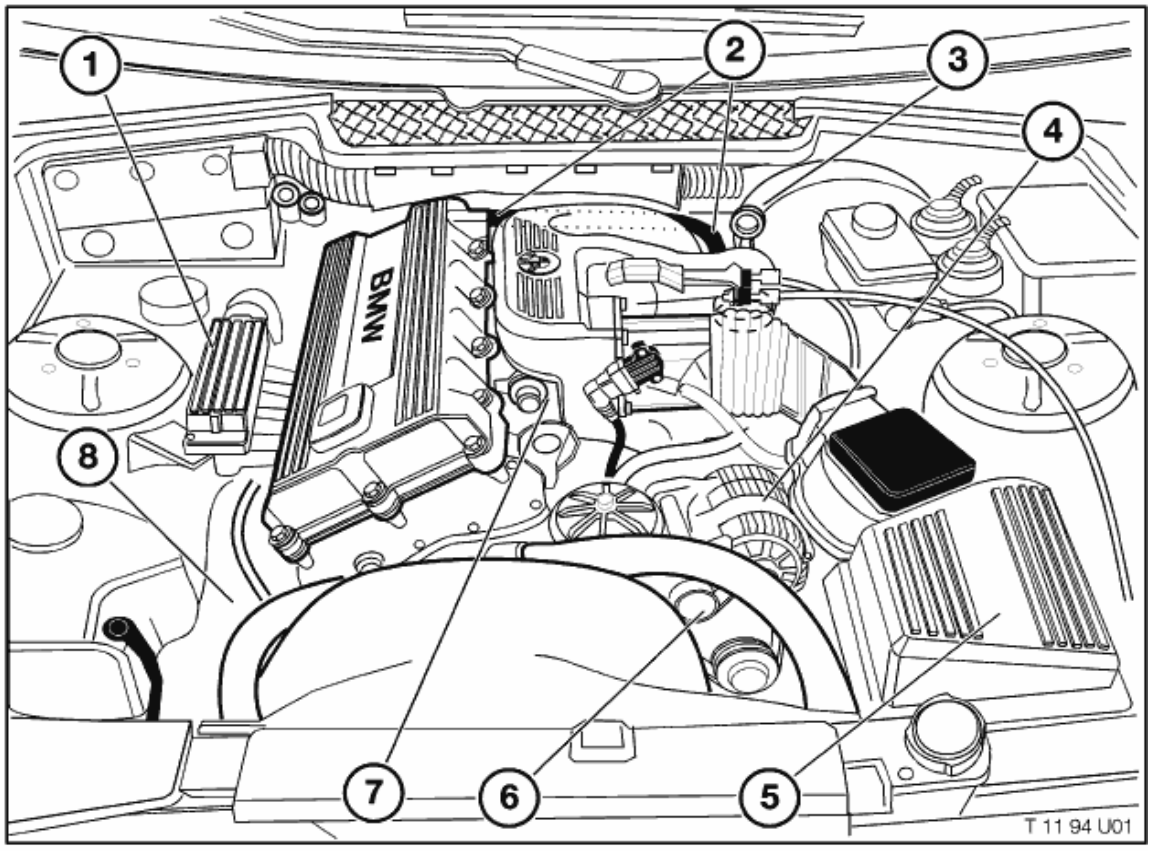
SUBJECT: 1.8 Liter Four Cylinder Engine (M42) Changes

MODELS: 318i and 318is E36

BMW has updated the M42 four cylinder engine to optimize noise levels (acoustics) and to comply with emission regulations. These changes are incorporated on all M42 E36 vehicles produced from 1/94.



The performance of the M42 engine remains unchanged with the maximum power output of 103kw (137hp) at 6000 rpm and maximum torque of 175Nm (129 lb-ft) at 4600 rpm.

The following engine changes have been included on the updated M42 engine:

(1) one piece ignition coil

(2) crankcase ventilation system

(3) oil dipstick and tube

(4) 80A generator

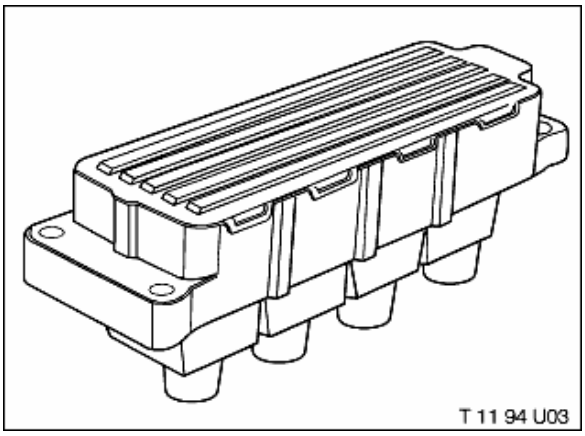
(5) air cleaner housing

(6) poly v-belts

(7) air shrouded fuel injectors

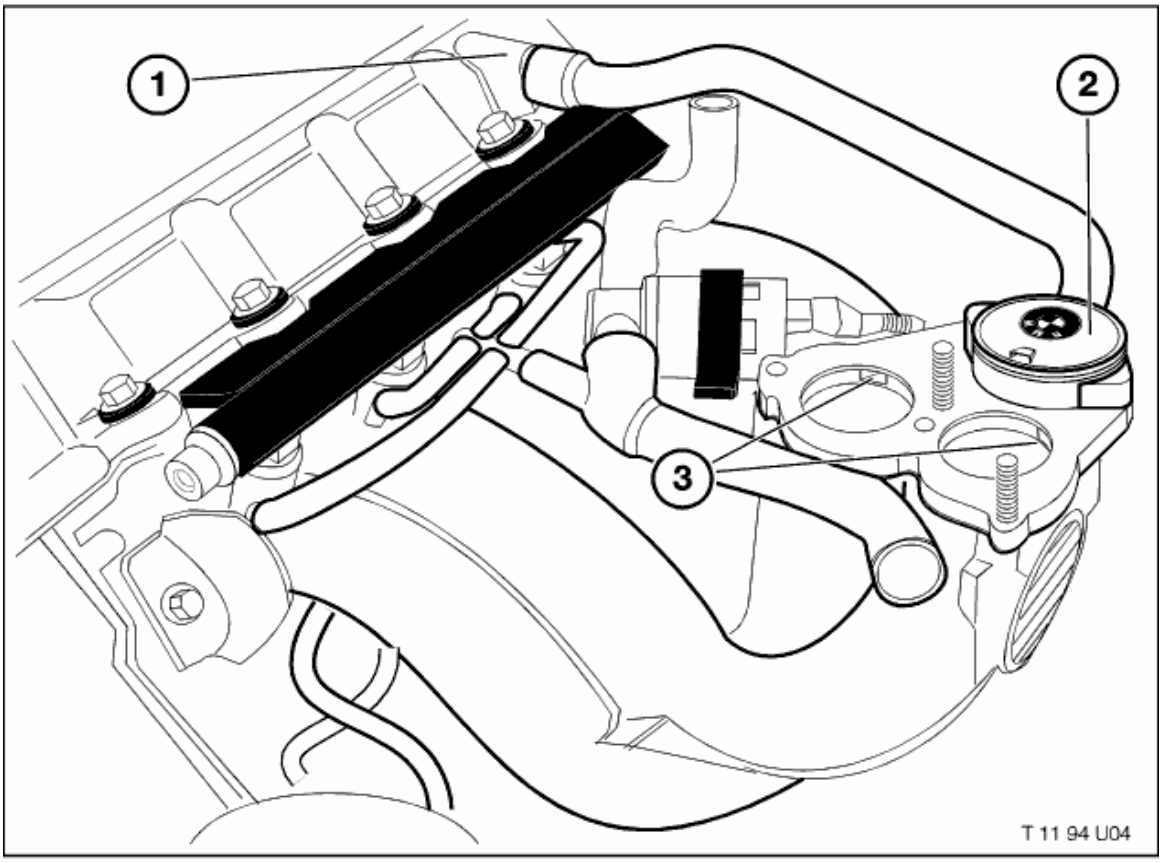
(8) compact air conditioning compressor

The timing chain deflection sprocket has been replaced with a deflection rail. The lower timing chain case is also changed to accommodate the new deflection rail.

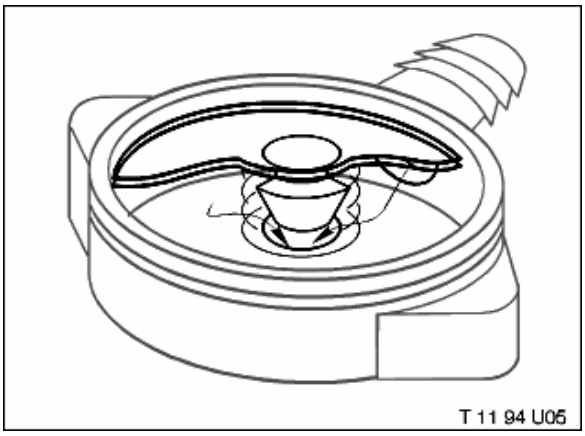


A one piece ignition coil is used which is located on the front of the right front strut tower.

A new version engine control module (DME 1.7.2) is used due to a final stage output modification for the ignition coil and all programming changes to accommodate the new air shroud injector system. DME pin designations remain the same when compared to DME 1.7.



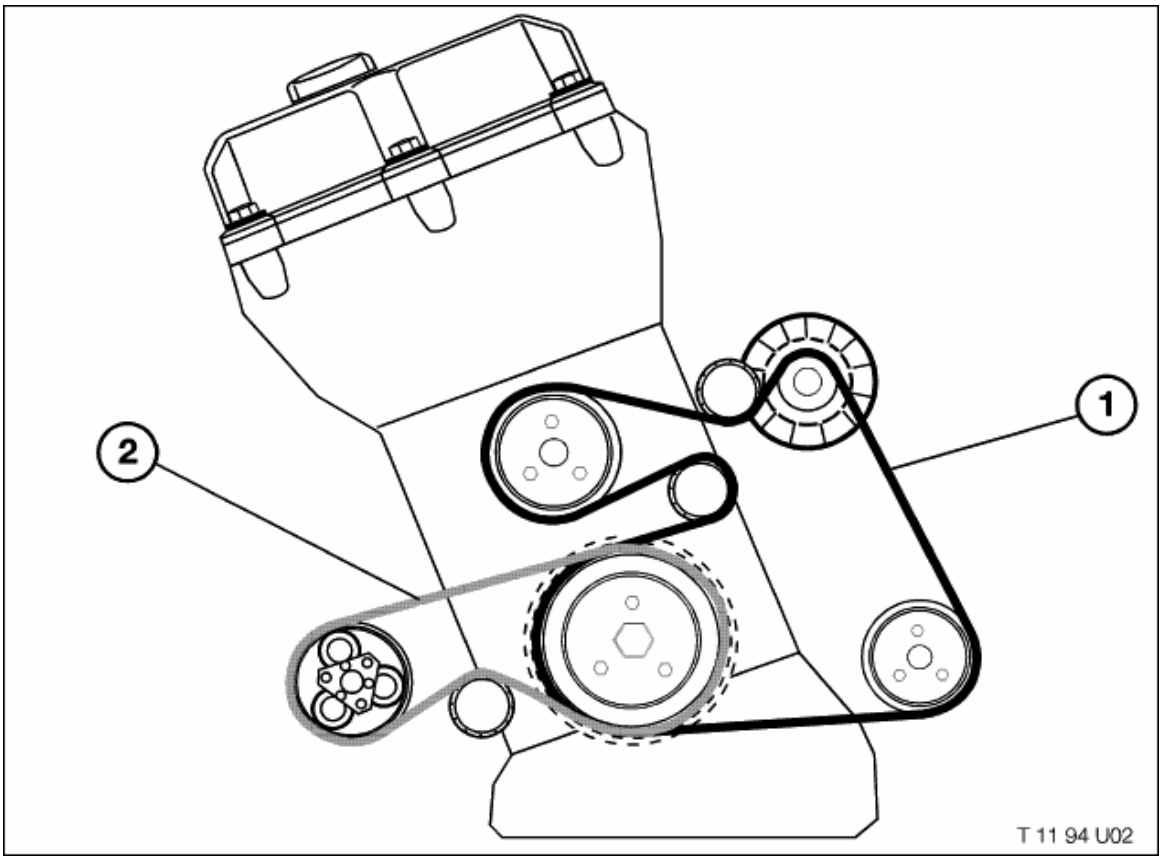
The crankcase is ventilated by a pressure controlled system. The oil vapors from the crankcase enter a labyrinth/oil trap which is integrated into the cylinder head cover (1). Here liquid oil is separated out, returned into the cylinder head and eventually the sump. The remaining vapors are drawn into the intake manifold (3) via a pressure control valve (2).



The pressure control valve is mounted on a heated flange plate located between the upper and lower intake manifold sections above the Differential Air Intake System (D.I.S.A.). It is connected to the rear of the cylinder head cover by a rubber hose, and varies the pressure in the crankcase continuously depending on engine load and speed conditions. This prevents blue exhaust smoke and excessive oil consumption on deceleration due to peaking manifold vacuum, and assures reliable crankcase venting during all other operating conditions.

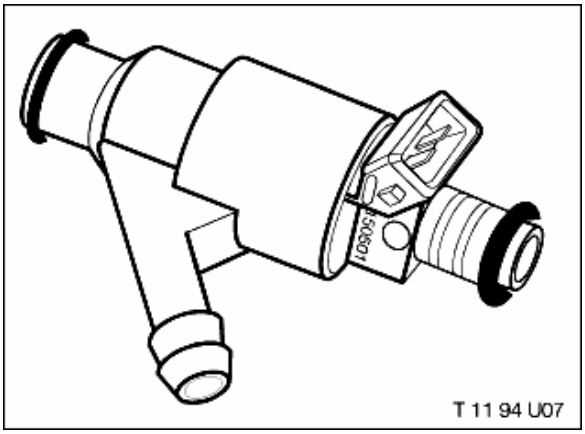
Additional changes include:

- Oil dipstick approximately 1" (26mm) shorter compared to early M42 engines. Routing of dipstick and tube changed to accommodate location of the pressure control valve for the redesigned crankcase ventilation system.



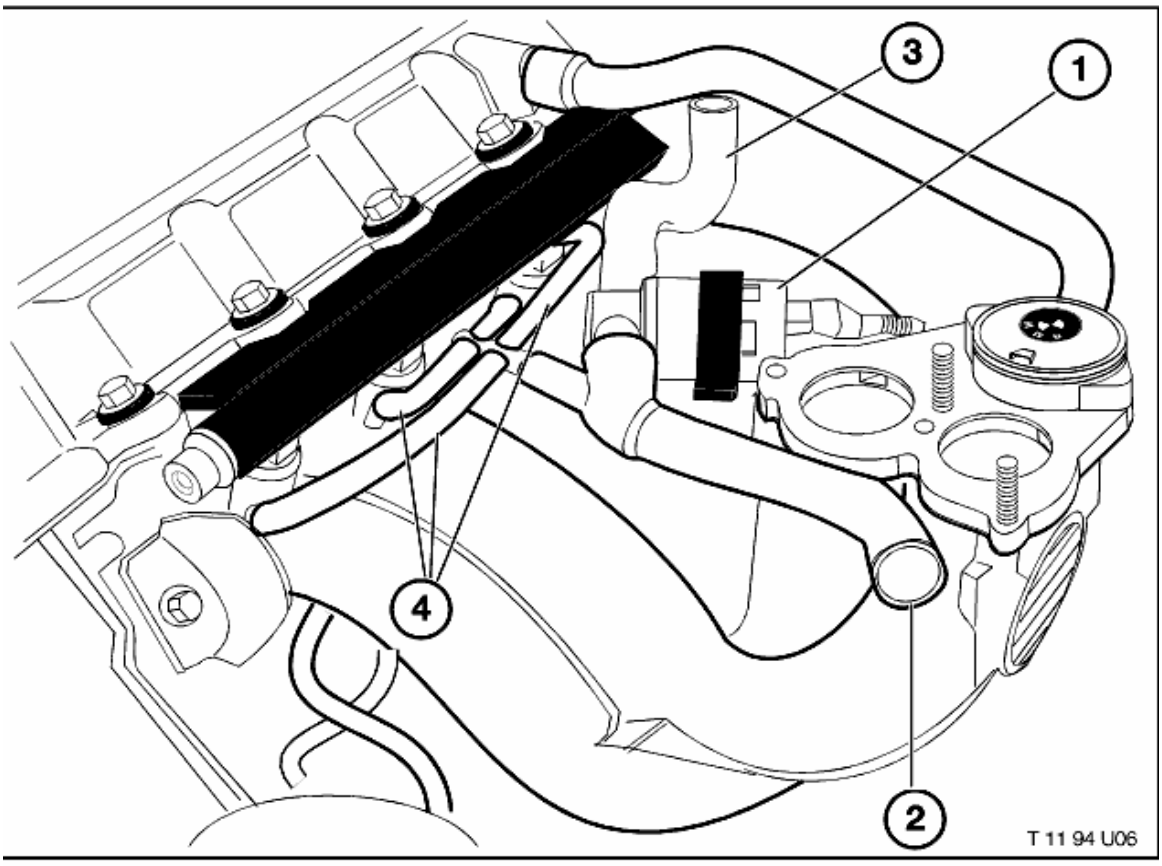
- Two poly v-belts drive all accessory component rotary drives. The first belt (2) drives the new compact design air conditioning compressor. Note: See fill capacity label on the vehicle when servicing the A/C system for new system filling capacity.

- The second belt (1) drives the new smaller power steering pump, new 80A generator and the water pump. The belt tensioner for this drive is mechanically dampened by a spring damper.



Air Shroud Injector

To comply with emission regulations, a new air shroud injection system is used which allows additional metered air to be drawn into the combustion chamber thus lowering CO/HC emissions.



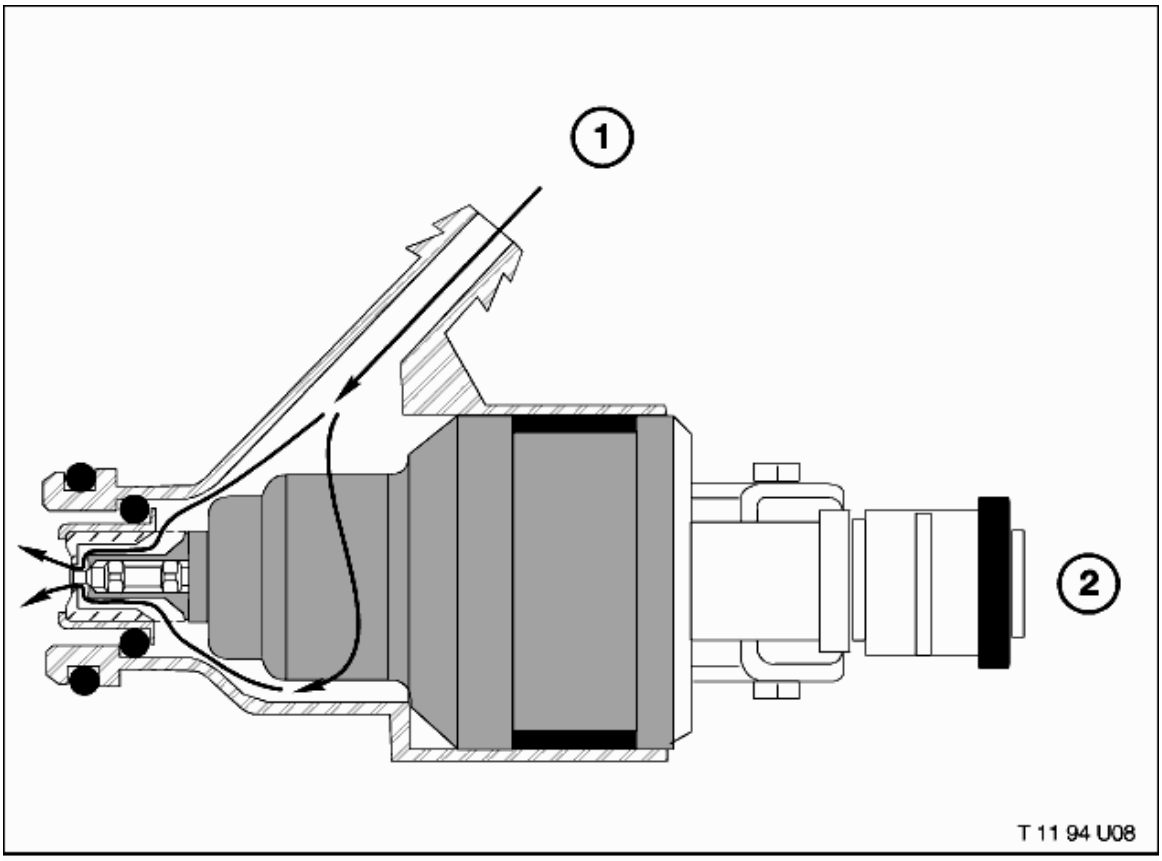
(1) Idle control valve

(2) Connection to intake bellows boot

(3) Connection to intakemanifold

(4) Hoses for air shrouded injectors (ported vacuum)

The metered air drawn into the combustion chamber via the injectors is taken from a fitting located in the intake system bellows boot in front of the throttle body (ported vacuum). Due to the pressure differential, ported vs. manifold vacuum at the injector tip, the system is self-regulating with greater airflow to reduce emissions in the idle and low part load engine ranges, i.e., (large pressure differential) more air drawn in versus less airflow during high part load and full load engine ranges, i.e., (small pressure differential) less air drawn in.



(1) Air hose fitting

(2) Fuel injector rail fitting

The air shrouded injectors incorporate a hose fitting on the outer injector body which connects each injector, via a rubber hose, to the new idle control valve molded hose, located under the intake manifold. The gap between the inner and outer body of the fuel injector guides the metered air and allows it to disperse and mix with the injected fuel at the injector tip (improved fuel atomization)