

Crankshaft position (CKP) sensor - (up to 99MY)

The crankshaft position sensor is the most important sensor on the engine. It is located in the left hand side of the flywheel housing and uses a different thickness of spacer for manual and automatic gearboxes. The signal it produces informs the ECM:

- the engine is turning
- how fast the engine is turning
- which stage the engine is at in the cycle

As there is no default strategy, failure of the CKP sensor will result in the engine failing to start. The fault is indicated by illumination of the malfunction indicator light (MIL) on North American specification vehicles.

The output signal from the CKP sensor is obtained from the magnetic path being made and broken as the reluctor ring teeth pass the sensor tip. The reluctor ring has 35 teeth and one missing tooth spaced at 10° intervals. The missing tooth is positioned at 20° after TDC.

Fault codes:

- **P0335** -Crankshaft sensor circuit fault - no signal
- **P0336** -Crankshaft sensor generating poor quality signal

Camshaft position (CMP) sensor - (up to 99MY)

The camshaft sensor is located in the engine front cover, between the belt pulleys. It is a Hall Effect device which produces four pulses for every two revolutions of the engine. The signal is used for two purposes, injector timing corrections for fully sequential fuelling and active knock control. The CMP sensor signal pulses are generated from four gaps on the cam wheel, one gap is smaller than the other three, consequently one of the pulses is longer than the others.

If the camshaft sensor fails, default operation is to continue normal ignition timing. The fuel injectors will be actuated sequentially, timing the injection with respect to top dead centre. Injection will either be correct or one revolution out of synchronisation. The fault is not easily detected by the driver. The fault is indicated by illumination of the malfunction indicator light (MIL) on North American specification vehicles.

Fault codes:

- **P0340** - Camshaft sensor circuit fault or signal timing different from crankshaft sensor signal.



NOTE: It is physically possible to interchange the camshaft gear wheel fitted to pre-99MY and post-99MY vehicles.

However, because the GEMS and Motronic systems are incompatible, an incorrect camshaft signal will be received by the ECM and a P0340 fault code will result.