Typical AAT Sensor

Barometric Pressure (BARO) Sensor

The BARO sensor measures barometric pressure to estimate the exhaust back pressure.

For vehicles with a turbocharger intake pressure and temperature (TCIPT) sensor, and without a BARO sensor, the BARO value is calculated from the TCIPT sensor value at key ON, engine OFF (KOEO). While driving, the BARO value is calculated from the TCIPT sensor value, with the difference calculated by the pressure drop across the air filter.

For direct injection vehicles, a BARO sensor is mounted internally to the PCM. The BARO sensor measures the barometric pressure to estimate the exhaust back pressure.

For vehicles without a BARO sensor and with a MAP sensor, the BARO value is inferred by the PCM based on the MAP value under certain operating conditions. At, or near wide open throttle the BARO value is calculated to be slightly higher than the MAP value, with the difference calculated by the pressure drop across the throttle plate.

For all other vehicles without a BARO sensor, the BARO value is inferred by the PCM. At, or near wide open throttle, the BARO value is calculated to be slightly higher than the inferred MAP value, with the difference calculated by the pressure drop across the throttle plate.

Camshaft Position (CMP) Sensor

The CMP sensor detects the position of the camshaft. The CMP sensor identifies when piston number 1 is on its compression stroke. A signal is then sent to the PCM and used for synchronizing the sequential firing of the fuel injectors. Coil on plug (COP) ignition applications use the CMP sensor signal to select the correct ignition coil to fire.

Inline engines with 2 camshafts and with variable camshaft timing (VCT) are equipped with 2 CMP sensors. The second sensor identifies the exhaust camshaft position.

The 2 sensor system on inline engines use the following CMP sensor signal circuit names:

- CMP11 - bank 1, sensor 1 (intake camshaft)
- CMP12 - bank 1, sensor 2 (exhaust camshaft)

Engines with 1 camshaft per bank and with VCT are equipped with 2 CMP sensors. The second sensor identifies the camshaft position on bank 2.

The 2 sensor system on engines with 1 camshaft per bank and with VCT use the following CMP sensor signal circuit names:

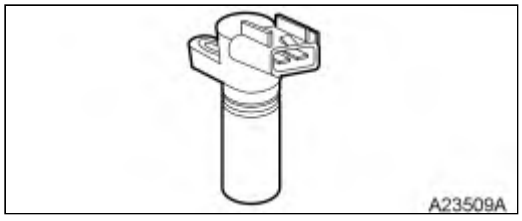
- CMP11 - bank 1, sensor 1 (intake camshaft)
- CMP21 - bank 2, sensor 1 (exhaust camshaft)

Engines with 4 camshafts and with VCT are equipped with 4 CMP sensors. The 4 sensors identify the position of each camshaft.

The 4 sensor system uses the following CMP sensor signal circuit names:

- CMP11 - bank 1, sensor 1 (intake camshaft)
- CMP12 - bank 1, sensor 2 (exhaust camshaft)
- CMP21 - bank 2, sensor 1 (intake camshaft)
- CMP22 - bank 2, sensor 2 (exhaust camshaft)

There are the 2 types of CMP sensors used. The 2 pin variable reluctance sensor and the 3 pin Hall effect sensor.



Typical Variable Reluctance CMP Sensor