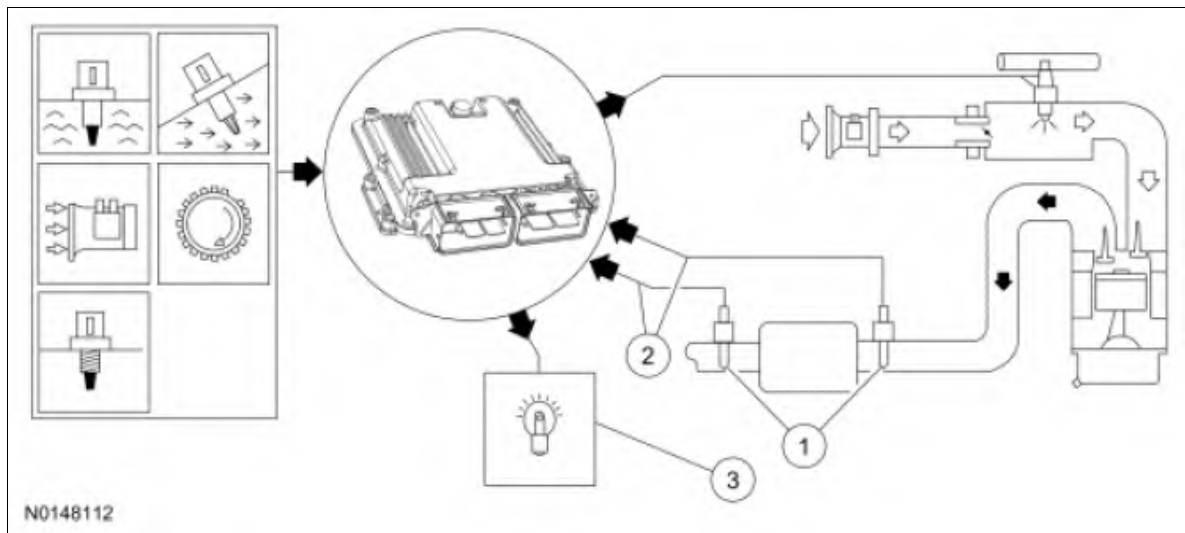


Fig 1: HO2S Monitor Flow Diagram



Courtesy of FORD MOTOR CO.

MISFIRE DETECTION MONITOR

The misfire detection monitor is an on board strategy designed to monitor engine misfire and identify the specific cylinder in which the misfire has occurred. Misfire is defined as lack of combustion in a cylinder due to absence of spark, poor fuel metering, poor compression, or any other cause. The misfire detection monitor is enabled only when certain base engine conditions are first satisfied. Input from the engine coolant temperature (ECT) or cylinder head temperature (CHT), intake air temperature (IAT), and mass airflow (MAF) sensors is required to enable the monitor. The misfire detection monitor is also carried out during an on-demand self-test.

1. The PCM synchronized ignition spark is based on information received from the crankshaft position (CKP) sensor. The CKP sensor signal generated is also the main input used in determining cylinder misfire.
2. The input signal generated by the CKP sensor is derived by sensing the passage of teeth from the crankshaft position wheel mounted on the end of the crankshaft.
3. The input signal to the PCM is then used to calculate the time between CKP sensor signal edges and the crankshaft rotational velocity and acceleration. By comparing the accelerations of each cylinder event, the power loss of each cylinder is determined. When the power loss of a particular cylinder is sufficiently less than a calibrated value and other criteria are met, then the suspect cylinder is determined to have misfired.
4. The malfunction indicator lamp (MIL) is activated after one of the above tests fail on 2 consecutive drive cycles.