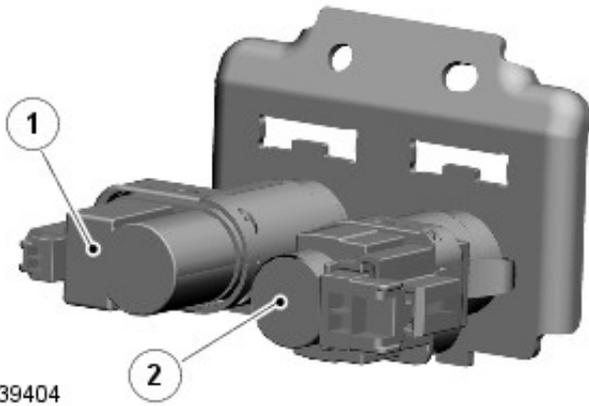


BRAKE PEDAL SWITCHES



Item	Part Number	Description
1	-	Brake diagnostic switch
2	-	Stoplamp switch

The brake pedal switches are located under a protective cover on the pedal box and operated by the brake pedal. The switches are plunger operated two-pole switches that supply pedal status signals to the ECM. The ECM compares the signals from the two switches to ensure the correct pedal status.

While the brake pedal is released:

- The stoplamp switch contacts are open
- The brake diagnostic switch contacts are closed, connecting a ground to the ECM.

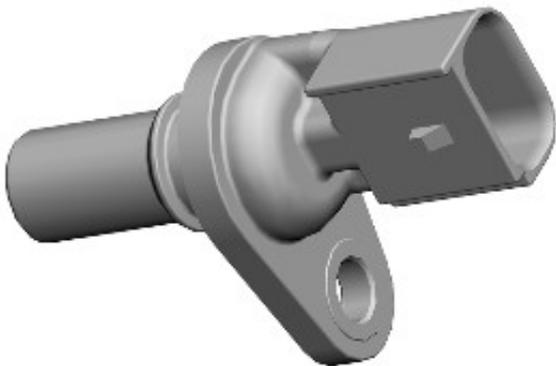
When the brake pedal is pressed:

- The stoplamp switch contacts close and connect an ignition feed from the [CJB \(central junction box\)](#) to the ECM
- The brake diagnostic switch contacts open and disconnect the ground from the ECM.

The [ECM](#) uses the brake pedal switch signals to check the plausibility of the [APP](#) sensor inputs.

In the event of a brake pedal switch failure and a single [APP](#) sensor track fault, there will be no response to accelerator pedal operation. The engine will idle at a raised value while the brake pedal is released, and at the normal value when the brake pedal is pressed. This allows a restricted limp-home operation.

CAMSHAFT POSITION SENSOR



E 139405

The CMP sensor is installed in the left side of the cylinder head, above the intake ports for cylinder number 4. The sensor tip is located close to a reluctor on the camshaft.

The sensor is a Hall effect sensor, which is used by the ECM at engine start-up to synchronize the CKP sensor signal to identify number one cylinder, to ensure the correct injector timing. Once the ECM has established the injector timing, the CMP sensor signal is no longer used.

The CMP sensor receives a 5V supply from the ECM. Two further connections to the ECM provide ground and signal outputs.

If a fault occurs with the CMP sensor when the engine is running, the engine will continue to run. Depending on the fault, the [ECM](#) may also restrict engine performance and signal the instrument cluster, on the high speed [CAN \(controller area network\)](#) bus, to illuminate the [MIL \(malfunction indicator lamp\)](#). Once the engine is switched off, the engine will crank, but will not restart while the fault is present.