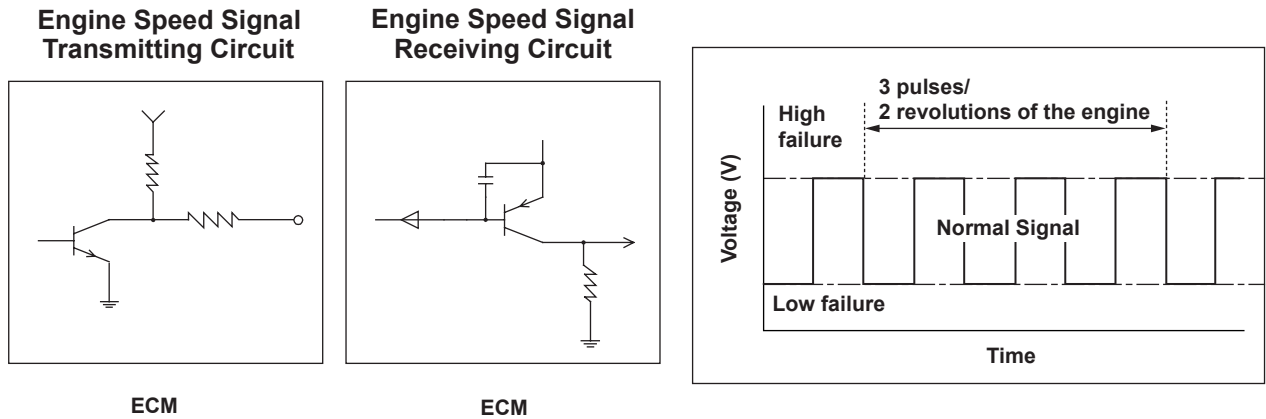


Advanced Diagnostics

DTC P1647 (43): Engine Speed Signal Circuit Problem



P1647-0075

General Description

The IMA (integrated motor assist) system receives an engine speed signal from the engine control module (ECM), and it produces a torque in the opposite phase of the engine torque to cancel out changes of the engine torque and control the frequencies of vibration created by the engine at idle. If the engine speed signal fails, the IMA stops controlling the frequencies of vibration created by the engine. If the difference between the estimated engine speed, based on the engine speed signal, and the estimated motor speed, based on the assist motor magnetic pole position sensor signal (NMOT), increases, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON, IMA system indicator ON

Enable Conditions

Condition	Minimum	Maximum
MCM power-supply voltage	10.5 V	—
Motor speed	400 rpm	—
No active DTCs	Mode signal circuit, MPI, IMA system, Detection signal circuit	

Malfunction Threshold

The difference between the estimated engine speed and the estimated motor speed is 500 rpm or more for at least 2 seconds.

Driving Pattern

1. Start the engine.
2. Hold the engine at 1,000 rpm for at least 10 seconds.
3. Hold the engine at 3,000 rpm for at least 10 seconds.
4. Stop the engine.

Diagnosis Details

Conditions for illuminating the MIL

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.