

ENGINE MANAGEMENT SYSTEM - V8

Function

Input for the rough road signal is measured via pin 34 of connector C0637 of the ECM. The SLABS ECU generates a PWM signal that varies in accordance with changing road conditions. The rough road PWM signal operates at a frequency of 2.33 Hz \pm 10%. The significance of changes in the PWM signal are shown in the following table:

PWM signal	Indication
<10%	Electrical short circuit to ground
25% \pm 5 %	Smooth road
50% \pm 5 %	SLABS error
75% \pm 5%	Rough road
>90%	Electrical short circuit to battery voltage

The rough road signal can fail in the following ways:

- Harness or connector damage
- SLABS failure — wheel speed sensor

A rough road signal failure may be evident from the following:

- HDC / ABS warning light on

Should a malfunction of the rough road signal occur, the following fault codes may be evident and can be retrieved by TestBook:

P Code	J2012 Description	Land Rover Description
P1590	ABS rough road signal circuit malfunction	Hardware is OK, but SLABS ECU is sending an error signal
P1591	ABS rough road signal circuit low	Signal from SLABS ECU short circuit to earth
P1592	ABS rough road signal circuit high	Signal from SLABS ECU short circuit to vehicle battery supply

Hill Descent Control (HDC) signal

The ECM transmits throttle angle, engine torque, engine identification (Td5 or V8), and transmission type (automatic or manual) data to the SLABS ECU to support the Hill Descent Control system. The information is transmitted via a 0 – 12V pulse width modulated (PWM) signal at a frequency of 179.27 Hz.

Function

The HDC signal output from the ECM is via pin 29 of connector C0636. The ECM generates a PWM signal that varies in pulse width in accordance with changing throttle angle or engine torque. The throttle angle data is transmitted on pulses 1, 3, 5 and 37. The engine torque data is transmitted on pulses 2,4,6 and 38. The engine and transmission information is transmitted on pulse 39. A synchronising pulse is transmitted after every 39th pulse.

The HDC signal can fail in the following ways:

- Harness or connector damage
- A HDC signal failure may be evident from the following:
 - HDC / ABS warning light on
 - HDC inoperative
 - Audible warning

Should a malfunction of the HDC signal occur, the following fault codes may be evident and can be retrieved by TestBook:

P Code	J2012 Description	Land Rover Description
P1663	Throttle angle/Torque signal circuit malfunction	SLABS HDC link open circuit
P1664	Throttle angle/Torque signal circuit low	SLABS HDC link short circuit to ground
P1665	Throttle angle/Torque signal circuit high	SLABS HDC link short circuit to battery voltage