



Typical disabled times

Vehicle speed, mph (km/h)	Time, minutes
1.3 (2)	40
12.5 (20)	33
15.6 (25)	17
25.0 (40)	9
31.3 (50)	6

Diagnostics

While the ignition is on, the diagnostics function of the SLABS ECU monitors the system for faults. In addition, the return pump is tested by pulsing it briefly immediately after the engine starts provided vehicle speed exceeded 4.4 mph (7 km/h) during the previous ignition cycle. If a fault exists in a warning lamp circuit, the lamp will not illuminate during the lamp check at ignition on but, provided there are no other faults, the related function will otherwise be fully operational. If a fault is detected during the power up, the SLABS ECU stores a related fault code in memory and illuminates the appropriate fault warning lamps. If a fault is detected later in the drive cycle, the SLABS ECU also sounds the audible warning three times.

Fault codes and diagnostic routines can be accessed by connecting Testbook to the vehicle's diagnostic connector in the driver's footwell.

Warning lamp fault operation

Item	Check	Warning lamp			
		ABS	Brake	ETC	HDC fault
ABS sensors	Resistance (to check status)	On	On	On	On
Brake lamps relay	Open/Short circuit	Off	Off	Off	On
Engine data	Sticking throttle, signal failure, data corruption	Off	Off	On	On
Inlet solenoid valves	Open/Short circuit	On	On	On	On
Outlet solenoid valves	Open/Short circuit	On	On	On	On
Reference earth	Connection to earth	On	On	On	On
Return pump monitor	Correct pump operation	On	On	On	On
Return pump relay	Open/Short circuit	On	On	On	On
Shuttle valve switches	Open/Short circuit	On	On	On	On
SLABS ECU	Internal failure	On	On	On	On
Supply voltages	Range (10 to 16 V)	On	On	On	On

After detecting a fault, the SLABS ECU selects an appropriate default strategy which, where possible, retains some operational capability. A shuttle valve switch fault and throttle position signal fault are classified as permanent faults. If a permanent fault is detected, the related warning lamp illumination and default strategies are automatically employed in subsequent ignition cycles, even if the fault is intermittent, until the fault has been rectified and cleared from memory. If a non permanent fault is detected, the related warning lamp illumination and default strategies will only be employed in subsequent ignition cycles if the fault is still present.

After rectification of an ABS sensor fault, the ABS and ETC functions are disabled, and the ABS warning lamp remains illuminated after the lamp check, until vehicle speed exceeds 9.4 mph (15 km/h) (to allow additional checks to be performed).

BRAKES

Default strategies

Fault	Default strategy
Brake lamps relay	ABS: Enabled. ETC: Enabled. EBD: Enabled. HDC: Enabled.
Throttle position signal failure	ABS: Enabled. ETC: Disabled. EBD: Enabled. HDC: Immediately disabled if not in active braking mode; faded out then disabled if in active braking mode.
No reference earth	ABS: Disabled. ETC: Disabled. EBD: Partly disabled. HDC: Disabled.
Return pump or relay fault	ABS: Disabled. ETC: Disabled. EBD: Partly disabled. HDC: Disabled.
Shuttle valve switch failure	ABS: Deceleration threshold increased; return pump activated if sum of output valve actuation on one axle exceeds 140 milliseconds. ETC: Disabled. EBD: Inlet valves of rear axle close at vehicle deceleration rates of 0.3 g and above. HDC: Disabled.
SLABS ECU internal failure	ABS: Disabled. ETC: Disabled. EBD: Disabled. HDC: Disabled.
Supply voltage out of limits	ABS: Disabled. ETC: Disabled. EBD: Disabled. HDC: Disabled.

Electrical data

Nominal resistance values for applicable brake control components are as detailed below:

Component	Resistance, ohms
Brake lamp relay coil	117 - 143
Return pump relay coil	82.8 - 101.2
ABS sensor	950 - 1100
Shuttle valve switches, both open (brakes off)	2977 - 3067
Shuttle valve switches, both closed (brakes on)	1007 - 1037
Shuttle valve switches, one open, one closed	1992 - 2052
Inlet solenoid valve	5.9 - 7.3
Outlet solenoid valve	3.0 - 3.6