

BRAKES

Checks Performed By Diagnostics

Fault	Status of Warning Lamps				Default Strategy
	ABS	ETC	HDC Fault	HDC Information	
ABS ECU internal failure	On	On	On	Off	ABS: Disabled. ETC: Disabled. HDC: Disabled.
ECM input failure	Off	On	On	Off*	ABS: Enabled. ETC: Disabled. HDC: Immediately disabled if not in active braking mode, faded out then disabled if in active braking mode.
Sticking throttle	Off	Off	On	Off*	ABS: Enabled. ETC: Disabled. HDC: Immediately disabled if not in active braking mode, faded out then disabled if in active braking mode.
Implausible gear position input	Off	Off	On	Off*	ABS: Enabled. ETC: Enabled. HDC: Immediately disabled if not in active braking mode, faded out then disabled if in active braking mode.
No reference earth	On	On	On	Off	ABS: Disabled. ETC: Disabled. HDC: Disabled.
Failure of ABS sensor	On	On	On	Off†	ABS: Enabled. ETC: Enabled. HDC: Immediately disabled if not in active braking mode, faded out then disabled if in active braking mode.
Failure of 2 ABS sensors	On	On	On	Off*	ABS: Enabled on unaffected hydraulic circuit (if applicable), disabled on affected hydraulic circuit(s). ETC: Disabled. HDC: Immediately disabled if not in active braking mode, faded out then disabled if in braking mode.
Failure of more than 2 ABS sensors	On	On	On	Off	ABS: Disabled. ETC: Disabled. HDC: Disabled.
Failure of input valve	On	On	On	Off	ABS: Enabled on unaffected hydraulic circuit (if applicable), disabled on affected hydraulic circuit(s). ETC: Disabled. HDC: Immediately disabled if not in active braking mode, faded out then disabled if in braking mode.
Failure of more than one input valve	On	On	On	Off*	ABS: Enabled on unaffected hydraulic circuit (if applicable), disabled on affected hydraulic circuit(s). ETC: Disabled. HDC: Immediately disabled if not in active braking mode, faded out then disabled if in braking mode.



Fault	Status of Warning Lamps				Default Strategy
	ABS	ETC	HDC Fault	HDC Information	
Failure of output valve	On	On	On	Off*	ABS: Enabled on unaffected hydraulic circuit (if applicable), disabled on affected hydraulic circuit(s). ETC: Disabled. HDC: Immediately disabled if not in active braking mode, faded out then disabled if in braking mode.
Failure of more than one output valve	On	On	On	Off*	ABS: Enabled on unaffected hydraulic circuit (if applicable), disabled on affected hydraulic circuit(s). ETC: Disabled. HDC: Immediately disabled if not in active braking mode, faded out then disabled if in braking mode.
Battery short in more than two input or output valve circuits	On	On	On	Off	ABS: Disabled. ETC: Disabled. HDC: Disabled.
Return pump fault	On	On	On	Off	ABS: Disabled. ETC: Disabled. HDC: Disabled.
HDC relay fault	Off	Off	On	Off*	ABS: Enabled. ETC: Enabled. HDC: Enabled.
Supply voltage out of limits	On	On	On	Off*	ABS: Enabled. ETC: Disabled. HDC: Immediately disabled if not in active braking mode, faded out then disabled if in active braking mode.

* = Flashes if HDC faded out; † = Flashes if HDC in active braking mode

Electrical Data






Component resistance and voltage values are detailed below:

Component	Resistance, Ohms
HDC relay coil	73 to 89
ABS sensor (up to 2002 MY)	950 to 1100
ABS sensor (from 2002 MY)	1 maximum
Inlet solenoid valve	5.9 to 7.3
Outlet solenoid valve	3.0 to 3.6

Component	Signal
First gear switch	Earth when first gear selected. Open circuit when first gear not selected.
HDC switch	Battery voltage when HDC selected. Open circuit when HDC not selected.
Reverse gear switch	Battery voltage when reverse gear selected. Open circuit when reverse gear not selected.

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ABS System Failure Warning Lamps

Operating Condition					
	Brake/ EBD (Red)	ABS (Amber)	ETC (Amber)	HDC Fault (Amber)	HDC Information (Green)
Bulb check (ABS warning lamp only flashes off if there are no faults stored in the ABS ECU): Up To 2002 MY	On for 1.7 seconds	On for 1.7 seconds, off for 0.5 second, on until vehicle speed >7 km/h then off	On for 1.7 seconds	On for 1.7 seconds	On for 1.7 seconds
From 2002 MY	On for 2.7 seconds	On for 1.7 seconds, off for 0.5 second, on for 0.5 second then off	On for 2.7 seconds	On for 2.7 seconds	On for 2.7 seconds
Normal operation (no faults detected)	Off	Off (after lamp check)	Off	Off	Off
Hand brake on	On	Off	Off	Off	Off
Low brake fluid	On	Off	Off	Off	Off
ABS failure	Off	On	On	On	Off
ETC failure	Off	Off	On	On	Off
ABS and EBD failure	On	On	On	On	Off
ABS ECU not connected	On	On	On	On	Off
Diagnostic mode	On	On	On	On	On
ETC disabled mode	Off	Off	On	On	Off
HDC selected, conditions not met for HDC operation	Off	Off	Off	Off	Flashes at 2Hz
HDC selected, HDC is available and vehicle ready for descent	Off	Off	Off	Off	On
HDC failure	Off	Off	Off	On	Off
Brakes overheated	Off	Off	Flashes at 2Hz	Flashes at 2Hz (if HDC selected)	-