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2005.0 DISCOVERY 3, 206-09A

ANTI-LOCK CONTROL - TRACTION CONTROL [G1274367]

DIAGNOSIS AND TESTING

PRINCIPLE OF OPERATION

For information on the description and operation of the system, refer to section 206-09A - Anti-Lock Control - Traction Control in the workshop manual.

Many of the functions forming part of the anti-lock braking system (ABS) will communicate with the message center giving information to the driver about the operation of the system overall, which means that there are no real symptoms as such which are not covered by either a message or a diagnostic trouble code (DTC).

For information on the message center, refer to the relevant section in the workshop manual.

INSPECTION AND VERIFICATION

1. Verify the customer concern.
2. Visually inspect for obvious mechanical or electrical faults.

Visual Inspection

MECHANICAL	ELECTRICAL
<ul style="list-style-type: none"> ▪ Stoplamp Switch ▪ Tire size, condition and installation ▪ Wheel speed sensor condition and installation ▪ Steering Angle Sensor (SAS) condition and installation ▪ Yaw rate sensor and accelerometer condition and installation ▪ Hydraulic control unit (with attached ABS module) condition and installation 	<ul style="list-style-type: none"> ▪ Fuses ▪ Harnesses and connectors ▪ Warning lamp operation ▪ Wheel speed sensors ▪ Central junction box ▪ HDC switch ▪ DSC switch ▪ Stoplamp Switch ▪ Yaw rate sensor and accelerometer ▪ Steering Angle Sensor (SAS) ▪ ABS module ▪ Controller area network (CAN) circuits

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step
4. Use the approved diagnostic system or a scan tool to retrieve any DTCs before moving onto the DTC index.
 - Make sure that all DTCs are cleared following rectification.

D T C I N D E X

CAUTION:

Diagnosis by substitution from a donor vehicle is **NOT** acceptable. Substitution of control modules does not guarantee confirmation of a fault, and may also cause additional faults in the vehicle being tested and/or the donor vehicle.

NOTES:

- If the control module or a component is suspect and the vehicle remains under manufacturer warranty, refer to the Warranty Policy and Procedures manual (section B1.2), or determine if any prior approval programme is in operation, prior to the installation of a new module/component.
- Generic scan tools may not read the codes listed, or may read only 5-digit codes. Match the 5 digits from the scan tool to the first 5 digits of the 7-digit code listed to identify the fault (the last 2 digits give extra information read by the manufacturer-approved diagnostic system).
- Check and rectify basic faults before beginning diagnostic routines involving pinpoint tests.
- Inspect connectors for signs of water ingress, and terminals for damage and/or corrosion.
- If DTCs are recorded and, after performing the pinpoint tests, a fault is not present, an intermittent concern may be the cause. Always check for loose connections and corroded terminals.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
C1105-01	Brake Lamp Control - General electrical failure	General electrical failure <ul style="list-style-type: none"> ■ Stoplamp actuation (BLA) short to Power or ground <ul style="list-style-type: none"> ■ Harness/connector damaged 	Refer to the electrical guides and check harness connection to BLA. Ensure that harness is not shorted to either ground or supply.
C1105-67	Brake Lamp Control - Signal incorrect after event	Signal incorrect after event <ul style="list-style-type: none"> ■ Harness fault ■ Stoplamp/hill decent control relay fault 	Check operation of the Stoplamp relay (also known as HDC relay) and correct illumination of the Stoplamps. Refer to the electrical guides and check the Stoplamp Switch and circuits.
C1109-24	Vehicle Dynamics Control Switch - Signal stuck high	<ul style="list-style-type: none"> ■ Signal stuck high - DSC Switch operation fault <ul style="list-style-type: none"> ■ (If the DSC switch is pressed for longer than 1 minute, the switch is deemed to be malfunctioning) 	Refer to the electrical guides and check the DSC switch and circuits.
C1A00-04	Control Module - System internal failures	<ul style="list-style-type: none"> ■ Vehicle dynamics control module internal failure 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A00-05	Control Module - System programming failures	<ul style="list-style-type: none"> ■ Vehicle dynamics control module programming failure 	Refer to the warranty policy and procedures manual if a module is suspect.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
C1A00-16	Control Module - Circuit voltage below threshold	<ul style="list-style-type: none"> ▪ Vehicle dynamics control module power supply circuit voltage below threshold ▪ Harness/connector damaged ▪ Charging circuit fault ▪ Defective or flat battery 	Check vehicle battery and charging system. Refer to the relevant section in the workshop manual. Refer to the electrical guides and check the power supply circuits to the module.
C1A00-17	Control Module - Circuit voltage above threshold	<ul style="list-style-type: none"> ▪ Vehicle dynamics control module power supply circuit voltage above threshold ▪ Charging circuit fault ▪ Defective or flat battery 	Check the battery voltage and charging system. Refer to the relevant section in the workshop manual. Refer to the electrical guides and check the power supply circuits to the module.
C1A00-1C	Control Module - Circuit voltage out of range	<ul style="list-style-type: none"> ▪ Vehicle dynamics control module power supply circuit voltage out of range 	A momentary low voltage occurred, check vehicle battery and charging circuit. Refer to the relevant section in the workshop manual. Refer to the electrical guides and check the power supply circuits to the module.
C1A00-41	Control Module - General checksum failure	<ul style="list-style-type: none"> ▪ Vehicle dynamics control module general checksum failure 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A00-42	Control Module - General memory failure	<ul style="list-style-type: none"> ▪ Vehicle dynamics control module general memory failure 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A00-43	Control Module - Special memory failure	<ul style="list-style-type: none"> ▪ Vehicle dynamics control module special memory failure 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A00-44	Control Module - Data memory failure	<ul style="list-style-type: none"> ▪ Vehicle dynamics control module data memory failure 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A00-45	Control Module - Program memory failure	<ul style="list-style-type: none"> ▪ Vehicle dynamics control module program memory failure 	Clear the DTC and retest. If the problem reset after several attempts, renew the modulator. Refer to the warranty policy and procedures manual if a module is suspect.
C1A00-46	Control Module - Calibration / parameter memory failure	<ul style="list-style-type: none"> ▪ Incorrect car configuration file (CCF) data received from instrument pack cluster (IPC) or CCF incorrectly configured. ▪ Modulator installed to unrecognized vehicle configuration ▪ Vehicle dynamics control module calibration/parameter memory failure (internal error) 	Configure the module using the approved diagnostic system. Clear the DTC and check if the DTC resets after ignition reset following >10 seconds ignition on. If the above is correct and the DTC persists, renew the modulator. Refer to the warranty policy and procedures manual if a module is suspect.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
C1A00-47	Control Module - Watchdog / safety microprocessor failure	<ul style="list-style-type: none"> Vehicle dynamics control module watchdog/safety microprocessor failure 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A00-48	Control Module - Supervision software failure	<ul style="list-style-type: none"> Vehicle dynamics control module supervision software failure 	Configure the module using the approved diagnostic system.
C1A00-49	Control Module - Internal electronic failure	<ul style="list-style-type: none"> Vehicle dynamics control module internal electronic failure 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A00-4A	Control Module - Incorrect component installed	<ul style="list-style-type: none"> Vehicle dynamics control module incorrect component installed New modulator installed/not yet configured 	Configure the module using the approved diagnostic system.
C1A00-4B	Control Module - Over temperature	<ul style="list-style-type: none"> Vehicle dynamics control module over temperature 	Allow the unit to cool, clear the DTC and retest. Do not renew the modulator as this is a protection function to ensure no valve damage occurs. The DTC may be set if the service tool diagnostic tester requests long periods of valve control.
C1A00-62	Control Module - Signal compare failure	<ul style="list-style-type: none"> Vehicle dynamics control module signal compare failure 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A00-63	Control Module - Circuit / component protection time-out	<ul style="list-style-type: none"> Vehicle dynamics control module component protection time-out 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A00-64	Control Module - Signal plausibility failure	<ul style="list-style-type: none"> Vehicle dynamics control module signal plausibility failure 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A00-68	Control Module - Event information	<ul style="list-style-type: none"> Vehicle dynamics control module event information 	Check for an un-calibrated Steering Angle Sensor, defective Steering Angle Sensor, defective wheel speed sensor, defective yaw rate/lateral acceleration sensor. Rectify as necessary. Clear the DTC and retest.
C1A00-88	Control Module - Bus off	<ul style="list-style-type: none"> CAN bus off CAN bus harness /wiring damaged Incorrect CAN Master Config ID information from instrument pack 	Refer to the Network Communications section in the workshop manual.
C1A76-01	Valve Relay - General electrical failure	<ul style="list-style-type: none"> Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A76-04	Valve Relay - System internal failures	<ul style="list-style-type: none"> Modulator valve relay circuit internal failures 	Refer to the warranty policy and procedures manual if a module is suspect.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
C1A77-16	Valve Relay Supply Circuit - Circuit voltage below threshold	<p>Circuit voltage below threshold</p> <ul style="list-style-type: none"> ▪ Fuse ▪ Harness/connector damaged 	Refer to the electrical guides and check the harness connection to the valve relay circuits.
C1A78-04	Left Front Inlet Valve - System internal failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A78-09	Left Front Inlet Valve - Component failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A79-04	Left Front Outlet Valve - System internal failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A80-04	Right Front Inlet Valve - System internal failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A81-04	Right Front Outlet Valve - System internal failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A82-04	Left Rear Inlet Valve - System internal failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A82-09	Left Rear Inlet Valve - Component failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A83-04	Left Rear Outlet Valve - System internal failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A84-04	Right Rear Inlet Valve - System internal failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A85-04	Right Rear Outlet Valve - System internal failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A86-04	Commutation Valve # 1 - System internal failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A86-09	Commutation Valve # 1 - Component failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A87-04	Commutation Valve # 2 - System internal failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A88-04	High Pressure Switching Valve #1 - System internal failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
C1A89-04	High Pressure Switching Valve #2 - System internal failures	<ul style="list-style-type: none"> ▪ Modulator internal fault 	Refer to the warranty policy and procedures manual if a module is suspect.
C1A90-12	Wheel Speed Sensor Supply - Circuit short to battery	<ul style="list-style-type: none"> ▪ Wheel speed sensor supply circuit short circuit to power <ul style="list-style-type: none"> ▪ Harness/connector fault ▪ Sensor failure 	Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A91-13	Left Front Wheel Speed Sensor - Circuit open	<ul style="list-style-type: none"> ▪ Wheel speed sensor circuit high resistance <ul style="list-style-type: none"> ▪ Harness/connector fault ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A91-25	Left Front Wheel Speed Sensor - Signal shape / waveform failure	<ul style="list-style-type: none"> ▪ Signal shape/waveform failure <ul style="list-style-type: none"> ▪ Harness/connector fault ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A91-2F	Left Front Wheel Speed Sensor - Signal erratic	<ul style="list-style-type: none"> ▪ Signal erratic <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A91-36	Left Front Wheel Speed Sensor - Signal frequency too low	<ul style="list-style-type: none"> ▪ Signal frequency too low <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Incorrect mounting of sensor ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A91-38	Left Front Wheel Speed Sensor - Signal frequency incorrect	<ul style="list-style-type: none"> ▪ Signal frequency incorrect <ul style="list-style-type: none"> ▪ Tone ring tooth missing or damaged 	Remove the sensor and visually inspect the sensor ring on the constant velocity joint (CVJ) for missing or damaged teeth. If the sensor ring is damaged, renew the CVJ. Refer to the guided diagnostic routine for this code on the approved diagnostic system. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair.
C1A91-62	Left Front Wheel Speed Sensor - Signal compare failure	<ul style="list-style-type: none"> ▪ Signal compare failure <ul style="list-style-type: none"> ▪ Incorrect wheel or tire size installed ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
C1A91-64	Left Front Wheel Speed Sensor - Signal plausibility failure	<ul style="list-style-type: none"> ▪ Signal plausibility failure <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A91-65	Left Front Wheel Speed Sensor - Signal has too few transitions / events	<ul style="list-style-type: none"> ▪ Signal has too few transitions/events <ul style="list-style-type: none"> ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A91-78	Left Front Wheel Speed Sensor - Alignment or adjustment incorrect	<ul style="list-style-type: none"> ▪ Sensor alignment incorrect ▪ Sensor air gap incorrect 	Check the wheel speed sensor installation. Refer to the relevant section in the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A92-13	Left Rear Wheel Speed Sensor - Circuit open	<ul style="list-style-type: none"> ▪ Wheel speed sensor circuit high resistance <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A92-25	Left Rear Wheel Speed Sensor - Signal shape / waveform failure	<ul style="list-style-type: none"> ▪ Signal shape/waveform failure <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A92-2F	Left Rear Wheel Speed Sensor - Signal erratic	<ul style="list-style-type: none"> ▪ Signal erratic <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A92-36	Left Rear Wheel Speed Sensor - Signal frequency too low	<ul style="list-style-type: none"> ▪ Signal frequency too low <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A92-38	Left Rear Wheel Speed Sensor - Signal frequency incorrect	<ul style="list-style-type: none"> ▪ Signal frequency incorrect <ul style="list-style-type: none"> ▪ Tone ring tooth missing or damaged 	Remove the sensor and visually inspect the sensor ring on the constant velocity joint (CVJ) for missing or damaged teeth. If the sensor ring is damaged, renew the CVJ. Refer to the guided diagnostic routine for this code on the approved diagnostic system. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair.
C1A92-62	Left Rear Wheel Speed Sensor - Signal compare failure	<ul style="list-style-type: none"> ▪ Signal compare failure <ul style="list-style-type: none"> ▪ Incorrect wheel or tire size installed ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
C1A92-64	Left Rear Wheel Speed Sensor - Signal plausibility failure	<ul style="list-style-type: none"> ▪ Signal plausibility failure <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A92-65	Left Rear Wheel Speed Sensor - Signal has too few transitions / events	<ul style="list-style-type: none"> ▪ Signal has too few transitions/events <ul style="list-style-type: none"> ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A92-78	Left Rear Wheel Speed Sensor - Alignment or adjustment incorrect	<ul style="list-style-type: none"> ▪ Sensor alignment incorrect ▪ Sensor air gap incorrect 	Check the wheel speed sensor installation. Refer to the relevant section in the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system
C1A93-13	Right Rear Wheel Speed Sensor - Alignment or adjustment incorrect	<ul style="list-style-type: none"> ▪ Wheel speed sensor circuit high resistance <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A93-25	Right Rear Wheel Speed Sensor - Signal shape / waveform failure	<ul style="list-style-type: none"> ▪ Signal shape/waveform failure <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A93-2F	Right Rear Wheel Speed Sensor - Signal erratic	<ul style="list-style-type: none"> ▪ Signal erratic <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A93-36	Right Rear Wheel Speed Sensor - Signal frequency too low	<ul style="list-style-type: none"> ▪ Signal frequency too low <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A93-38	Right Rear Wheel Speed Sensor - Signal frequency incorrect	<ul style="list-style-type: none"> ▪ Signal frequency incorrect <ul style="list-style-type: none"> ▪ Tone ring tooth missing or damaged 	Remove the sensor and visually inspect the sensor ring on the constant velocity joint (CVJ) for missing or damaged teeth. If the sensor ring is damaged, renew the CVJ. Refer to the guided diagnostic routine for this code on the approved diagnostic system. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair.
C1A93-62	Right Rear Wheel Speed Sensor - Signal compare failure	<ul style="list-style-type: none"> ▪ Signal compare failure <ul style="list-style-type: none"> ▪ Incorrect wheel or tire size installed ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
C1A93-64	Right Rear Wheel Speed Sensor - Signal plausibility failure	<ul style="list-style-type: none"> ▪ Signal plausibility failure <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A93-65	Right Rear Wheel Speed Sensor - Signal has too few transitions / events	<ul style="list-style-type: none"> ▪ Signal has too few transitions/events <ul style="list-style-type: none"> ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A93-78	Right Rear Wheel Speed Sensor - Alignment or adjustment incorrect	<ul style="list-style-type: none"> ▪ Sensor alignment incorrect ▪ Sensor air gap incorrect 	Check the wheel speed sensor installation. Refer to the relevant section in the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system
C1A94-13	Right Front Wheel Speed Sensor - Circuit open	<ul style="list-style-type: none"> ▪ Wheel speed sensor circuit high resistance <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A94-25	Right Front Wheel Speed Sensor - Signal shape / waveform failure	<ul style="list-style-type: none"> ▪ Signal shape/waveform failure <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A94-2F	Right Front Wheel Speed Sensor - Signal erratic	<ul style="list-style-type: none"> ▪ Signal erratic <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A94-36	Right Front Wheel Speed Sensor - Signal frequency too low	<ul style="list-style-type: none"> ▪ Signal frequency too low <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A94-38	Right Front Wheel Speed Sensor - Signal frequency incorrect	<ul style="list-style-type: none"> ▪ Signal frequency incorrect <ul style="list-style-type: none"> ▪ Tone ring tooth missing or damaged 	Remove the sensor and visually inspect the sensor ring on the constant velocity joint (CVJ) for missing or damaged teeth. If the sensor ring is damaged, renew the CVJ. Refer to the guided diagnostic routine for this code on the approved diagnostic system. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair.
C1A94-62	Right Front Wheel Speed Sensor - Signal compare failure	<ul style="list-style-type: none"> ▪ Signal compare failure <ul style="list-style-type: none"> ▪ Incorrect wheel or tire size installed ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
C1A94-64	Right Front Wheel Speed Sensor - Signal plausibility failure	<ul style="list-style-type: none"> ▪ Signal plausibility failure <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Test the vehicle to a speed greater than 20km/h (12.5mph) to confirm the success of any repair. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A94-65	Right Front Wheel Speed Sensor - Signal has too few transitions / events	<ul style="list-style-type: none"> ▪ Signal has too few transitions/events <ul style="list-style-type: none"> ▪ Sensor failure 	Check the wheel speed sensor and refer to the electrical guides to check the circuit. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A94-78	Right Front Wheel Speed Sensor - Alignment or adjustment incorrect	<ul style="list-style-type: none"> ▪ Sensor alignment incorrect ▪ Sensor air gap incorrect 	Check the wheel speed sensor installation. Refer to the relevant section in the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system
C1A95-4A	Wheel Speed Sensor - Incorrect component installed	<ul style="list-style-type: none"> ▪ The incorrect wheel speed sensor has been installed 	Check the wheel speed sensors. Clear the DTC and retest.
C1A95-62	Wheel Speed Sensor - Signal compare failure	<ul style="list-style-type: none"> ▪ Signal compare failure <ul style="list-style-type: none"> ▪ Wheel speed sensor rotation plausibility 	A wheel speed sensor is installed in the reverse direction. Check the wheel speed sensors for correct installation.
C1A95-64	Wheel Speed Sensor - Signal plausibility failure	<ul style="list-style-type: none"> ▪ Signal plausibility failure <ul style="list-style-type: none"> ▪ Wheel speed sensor fault (any) ▪ Sensor ring damaged, incorrect or defective ▪ Harness fault ▪ Incorrect wheel/tire assembly size 	Check for correct wheel/tire sizes. Check the wheel speed sensors and circuits. Remove the sensor and visually inspect the sensor ring on the constant velocity joint (CVJ) for missing or damaged teeth. If the sensor ring is damaged, renew the CVJ. Renew sensors as necessary. Refer to the relevant section in the workshop manual.
C1A96-13	Brake Light Switch - Circuit Open	<ul style="list-style-type: none"> ▪ Stoplamp Circuit fault 	Refer to Workshop Manual Section 206-09 Diagnosis and Testing GO to Pinpoint Test A .
C1A96-24	Brake Light Switch - Signal Stuck High	<ul style="list-style-type: none"> ▪ Stoplamp Switch (BLS) signal is Active (1)(Footbrake pedal pressed condition) for more than 60 seconds while the vehicle is not braking ▪ Stoplamp Switch Circuit fault ▪ Stoplamp Switch internal fault ▪ Stoplamp Switch incorrect installation ▪ Stoplamp Switch incorrectly adjusted 	Refer to Workshop Manual Section 206-09 Diagnosis and Testing GO to Pinpoint Test B .

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
C1A96-62	Brake Light Switch - Signal Compare Failure	<ul style="list-style-type: none"> ▪ Signal Compare Failure the Stoplamp Switch (BLS) and the Brake Switch (BS) have shared the same output state at the same time ▪ Stoplamp Switch Circuit fault ▪ Stoplamp Switch internal fault 	Refer to Workshop Manual Section 206-09 Diagnosis and Testing GO to Pinpoint Test C .
C1A96-64	Brake Light Switch - Signal Plausibility Failure	<ul style="list-style-type: none"> ▪ Signal Plausibility Failure the Brake Fluid Hydraulic Pressure (PS) has exceeded 10bar and the Stoplamp Switch output state has not switched from Inactive (0) to Active (1)(Footbrake pedal pressed condition) ▪ Stoplamp Switch Circuit fault ▪ Stoplamp Switch internal fault ▪ Stoplamp Switch incorrect installation ▪ Stoplamp Switch incorrectly adjusted 	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;">NOTE:</p> <p>Check for Pressure Sensor DTCs C1A99-01, C1A99-29, C1A99-49 or C1A99-64. If any of these DTCs has been stored carry out the specified action prior to investigating DTC C1A96-64</p> </div> <p>Refer to Workshop Manual Section 206-09 Diagnosis and Testing GO to Pinpoint Test D.</p>
C1A97-24	Lateral Accelerometer - Signal stuck high	<ul style="list-style-type: none"> ▪ Signal stuck high <ul style="list-style-type: none"> ▪ Yaw rate/lateral acceleration sensor internal error 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A97-27	Lateral Accelerometer - Signal rate of change above threshold	<ul style="list-style-type: none"> ▪ Signal rate of change above threshold <ul style="list-style-type: none"> ▪ Harness/connector issue ▪ Yaw rate/lateral acceleration sensor internal error 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A97-28	Lateral Accelerometer - Signal bias level out of range / zero adjustment failure	<ul style="list-style-type: none"> ▪ Signal bias level out of range/internal zero adjustment failure <ul style="list-style-type: none"> ▪ Yaw rate/lateral acceleration sensor internal error 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A97-29	Lateral Accelerometer - Signal invalid	<ul style="list-style-type: none"> ▪ Signal invalid <ul style="list-style-type: none"> ▪ Yaw rate/lateral acceleration sensor internal error 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
C1A97-49	Lateral Accelerometer - Internal electronic failure	<ul style="list-style-type: none"> ■ Internal electronic failure <ul style="list-style-type: none"> ■ Possible open circuit on sensor harness connector, AY pin ■ Yaw rate/lateral acceleration sensor internal error 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A97-64	Lateral Accelerometer - Signal plausibility failure	<ul style="list-style-type: none"> ■ Signal plausibility failure <ul style="list-style-type: none"> ■ Yaw rate/lateral acceleration sensor internal error 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A97-86	Lateral Accelerometer - Signal invalid	<ul style="list-style-type: none"> ■ Signal invalid <ul style="list-style-type: none"> ■ Signal circuit high resistance ■ Signal circuit short circuit to ground ■ Signal circuit short circuit to power ■ Yaw rate/lateral acceleration sensor internal error 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A97-96	Lateral Accelerometer - Component internal failure	<ul style="list-style-type: none"> ■ Component internal failure <ul style="list-style-type: none"> ■ Yaw rate/lateral acceleration sensor internal error 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A98-01	Yaw Rate Sensor - General electrical failure	<ul style="list-style-type: none"> ■ General electrical failure <ul style="list-style-type: none"> ■ Reference circuit high resistance (DRSR pin) ■ Reference circuit short circuit to ground (DRSR pin) ■ Reference circuit short circuit to power (DRSR pin) ■ Yaw rate/lateral acceleration sensor internal error 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A98-22	Yaw Rate Sensor - Signal amplitude > maximum	<ul style="list-style-type: none"> ■ Signal amplitude greater than specified maximum <ul style="list-style-type: none"> ■ Yaw rate/lateral acceleration sensor internal error ■ Un-calibrated Steering Angle Sensor ■ Defective Steering Angle Sensor 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
C1A98-27	Yaw Rate Sensor - Signal rate of change above threshold	<ul style="list-style-type: none"> ■ Signal rate of change above threshold <ul style="list-style-type: none"> ■ Yaw rate/lateral acceleration sensor internal error 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A98-28	Yaw Rate Sensor - Signal bias level out of range / zero adjustment failure	<ul style="list-style-type: none"> ■ Signal bias level out of range/internal zero adjustment failure <ul style="list-style-type: none"> ■ Yaw rate/lateral acceleration sensor internal error 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A98-29	Yaw Rate Sensor - Signal invalid	<ul style="list-style-type: none"> ■ Signal invalid <ul style="list-style-type: none"> ■ Yaw rate/lateral acceleration sensor internal error 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A98-61	Yaw Rate Sensor - Signal calculation failure	<ul style="list-style-type: none"> ■ Signal calculation failure <ul style="list-style-type: none"> ■ Yaw rate/lateral acceleration sensor internal error ■ Un-calibrated Steering Angle Sensor ■ Defective Steering Angle Sensor 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A98-62	Yaw Rate Sensor - Signal compare failure	<ul style="list-style-type: none"> ■ Signal compare failure <ul style="list-style-type: none"> ■ Yaw rate/lateral acceleration sensor internal error ■ Un-calibrated Steering Angle Sensor ■ Defective Steering Angle Sensor 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A98-64	Yaw Rate Sensor - Signal plausibility failure	<ul style="list-style-type: none"> ■ Signal plausibility failure <ul style="list-style-type: none"> ■ Yaw rate/lateral acceleration sensor internal error ■ Un-calibrated Steering Angle Sensor ■ Defective Steering Angle Sensor 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
C1A98-86	Yaw Rate Sensor - Signal invalid	<ul style="list-style-type: none"> ■ Signal invalid <ul style="list-style-type: none"> ■ Signal circuit high resistance (DRSS pin) ■ Signal circuit short circuit to ground (DRSS pin) ■ Signal circuit short circuit to power (DRSS pin) ■ Yaw rate/lateral acceleration sensor internal error 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1A98-92	Yaw Rate Sensor - Performance or incorrect operation	<ul style="list-style-type: none"> ■ Performance or incorrect operation <ul style="list-style-type: none"> ■ Check that the sensor is correctly oriented ■ Yaw rate/lateral acceleration sensor internal error 	Check the combined lateral acceleration/yaw rate sensor installation. Refer to the electrical guides and check the yaw rate sensor circuit. Repair/renew as necessary. Refer to the relevant section of the workshop manual. Refer to the guided diagnostic routine for this code on the approved diagnostic system. A drive test is required before the Instrument pack lamps will be cleared.
C1A99-01	Pressure Sensor - General electrical failure	<ul style="list-style-type: none"> ■ General electrical failure <ul style="list-style-type: none"> ■ Internal modulator error 	Renew ABS modulator. Refer to the warranty policy and procedures manual if a module is suspect.
C1A99-29	Pressure Sensor - Signal invalid	<ul style="list-style-type: none"> ■ Signal invalid <ul style="list-style-type: none"> ■ Internal modulator error 	Renew ABS modulator. Refer to the warranty policy and procedures manual if a module is suspect.
C1A99-49	Pressure Sensor - Internal electronic failure	<ul style="list-style-type: none"> ■ Internal electronic failure <ul style="list-style-type: none"> ■ Internal modulator error 	Renew ABS modulator. Refer to the warranty policy and procedures manual if a module is suspect.
C1A99-64	Pressure Sensor - Signal plausibility failure	<ul style="list-style-type: none"> ■ Signal plausibility failure <ul style="list-style-type: none"> ■ Internal modulator error 	Renew ABS modulator. Refer to the warranty policy and procedures manual if a module is suspect.
C1B00-27	Steering Angle Sensor - Signal rate of change above threshold	<ul style="list-style-type: none"> ■ Signal rate of change above threshold <ul style="list-style-type: none"> ■ Un-calibrated Steering Angle Sensor ■ Steering Angle Sensor issue 	Check for Steering Angle Sensor DTCs. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1B00-29	Steering Angle Sensor - Signal invalid	<ul style="list-style-type: none"> ■ Signal invalid <ul style="list-style-type: none"> ■ Un-calibrated Steering Angle Sensor ■ Steering Angle Sensor issue 	Check for Steering Angle Sensor DTCs. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1B00-61	Steering Angle Sensor - Signal calculation failure	<ul style="list-style-type: none"> ■ Signal calculation failure <ul style="list-style-type: none"> ■ Un-calibrated Steering Angle Sensor ■ Steering Angle Sensor issue 	Check for Steering Angle Sensor DTCs. Refer to the guided diagnostic routine for this code on the approved diagnostic system.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
C1B00-64	Steering Angle Sensor - Signal plausibility failure	<ul style="list-style-type: none"> ▪ Signal plausibility failure <ul style="list-style-type: none"> ▪ Un-calibrated Steering Angle Sensor ▪ Steering Angle Sensor issue 	Check for Steering Angle Sensor DTCs. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1B00-92	Steering Angle Sensor - Performance or incorrect operation	<ul style="list-style-type: none"> ▪ Performance or incorrect operation <ul style="list-style-type: none"> ▪ Un-calibrated Steering Angle Sensor ▪ Steering Angle Sensor issue 	Check for Steering Angle Sensor DTCs. Refer to the guided diagnostic routine for this code on the approved diagnostic system.
C1B02-01	Return Pump - General electrical failure	<ul style="list-style-type: none"> ▪ Return pump circuit general electrical failure <ul style="list-style-type: none"> ▪ Internal modulator error 	Renew ABS modulator. Refer to the warranty policy and procedures manual if a module is suspect.
C1B02-16	Return Pump - Circuit voltage below threshold	<ul style="list-style-type: none"> ▪ Return pump circuit voltage below threshold <ul style="list-style-type: none"> ▪ Harness / wiring damaged ▪ Defective fuse 	Refer to the electrical guides and check the harness and fuses to the module and rectify as necessary.
C1B02-49	Return Pump - Internal electronic failure	<ul style="list-style-type: none"> ▪ Internal electronic failure <ul style="list-style-type: none"> ▪ Internal modulator error 	Renew ABS modulator. Refer to the warranty policy and procedures manual if a module is suspect.
C1B22-24	Hill Descent Switch - Signal stuck high	<ul style="list-style-type: none"> ▪ Signal stuck high <ul style="list-style-type: none"> ▪ If the HDC switch is pressed for longer than 1 minute, this DTC may be stored. ▪ Harness/connector issue 	Refer to the electrical guides and check the switch and circuit for short to power. Check the operation of the HDC switch and rectify/renew as necessary.
U0100-87	Lost Communication With ECM/PCM "A" - Missing message	<ul style="list-style-type: none"> ▪ CAN bus fault ▪ ECM disconnected ▪ ECM not configured ▪ ECM failure ▪ Harness/connector issue 	Check the ECM installation/configuration. Refer to the Network Communications section in the workshop manual.
U0101-87	Lost Communication with TCM - Missing message	<ul style="list-style-type: none"> ▪ CAN bus fault ▪ TCM disconnected ▪ TCM not configured ▪ TCM failure ▪ Harness/connector issue 	Check the TCM installation/configuration. Refer to the Network Communications section in the workshop manual.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
U0102-87	Lost Communication with Transfer Case Control Module - Missing message	<ul style="list-style-type: none"> ▪ CAN bus fault ▪ TCCM disconnected ▪ TCCM not configured ▪ TCCM failure ▪ Harness/connector issue 	Check the TCCM installation/configuration. Refer to the Network Communications section in the workshop manual.
U0104-87	Lost Communication With Cruise Control Module - Missing message	<ul style="list-style-type: none"> ▪ CAN bus fault ▪ Cruise control module disconnected ▪ Cruise control module not configured ▪ Cruise control module failure ▪ Harness/connector issue 	Check the control module installation/configuration. Refer to the Network Communications section in the workshop manual.
U0126-87	Lost Communication With Steering Angle Sensor Module - Missing message	<ul style="list-style-type: none"> ▪ CAN bus fault ▪ Steering Angle Sensor module disconnected ▪ Steering Angle Sensor module not configured ▪ Steering Angle Sensor module failure ▪ Harness/connector issue 	Check the control module installation/configuration. Refer to the Network Communications section in the workshop manual.
U0128-87	Lost Communication With Park Brake Control Module - Missing message	<ul style="list-style-type: none"> ▪ CAN bus fault ▪ PBM disconnected ▪ PBM not configured ▪ PBM failure ▪ Harness/connector issue 	Check the control module installation/configuration. Refer to the Network Communications section in the workshop manual.
U0132-87	Lost Communication With Suspension Control Module "A" - Missing message	<ul style="list-style-type: none"> ▪ CAN bus fault ▪ RLM disconnected ▪ RLM not configured ▪ RLM failure ▪ Harness/connector issue 	Check the control module installation/configuration. Refer to the Network Communications section in the workshop manual.
U0133-87	Lost Communication With Active Roll Control Module - Missing message	<ul style="list-style-type: none"> ▪ CAN bus fault ▪ ARC disconnected ▪ ARC not configured ▪ ARC failure ▪ Harness/connector issue 	Check the control module installation/configuration. Refer to the Network Communications section in the workshop manual.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
U0136-87	Lost Communication With Differential Control Module - Rear - Missing message	<ul style="list-style-type: none"> ▪ CAN bus fault ▪ RDCM disconnected ▪ RDCM not configured ▪ RDCM failure ▪ Harness/connector issue 	Check the control module installation/configuration. Refer to the Network Communications section in the workshop manual.
U0138-87	Lost Communication with All Terrain Control Module - Missing message	<ul style="list-style-type: none"> ▪ CAN bus fault ▪ ATCM disconnected ▪ ATCM not configured ▪ ATCM failure ▪ Harness/connector issue 	Check the control module installation/configuration. Refer to the Network Communications section in the workshop manual.
U0155-87	Lost Communication With Instrument Panel Cluster (IPC) Control Module - Missing message	<ul style="list-style-type: none"> ▪ CAN bus fault ▪ IPC disconnected ▪ IPC not configured ▪ IPC failure ▪ Harness/connector issue 	Check the control module installation/configuration. Refer to the Network Communications section in the workshop manual.
U0401-68	Invalid Data Received from ECM/PCM A - Event information	<ul style="list-style-type: none"> ▪ Event information 	Check for engine management DTCs. Refer to the relevant section in the workshop manual.
U0402-68	Invalid Data Received from TCM - Event information	<ul style="list-style-type: none"> ▪ Event information 	Check for transmission DTCs. Refer to the relevant section in the workshop manual.
U0403-68	Invalid Data Received From Transfer Case Control Module - Event information	<ul style="list-style-type: none"> ▪ Event information 	Check for transfer case DTCs. Refer to the relevant section in the workshop manual.
U0405-68	Invalid Data Received From Cruise Control Module - Event information	<ul style="list-style-type: none"> ▪ Event information 	Check for cruise control DTCs. Refer to the relevant section in the workshop manual.
U0417-68	Invalid Data Received From Park Brake Control Module - Event information	<ul style="list-style-type: none"> ▪ Event information 	Check for parking brake DTCs. Refer to the relevant section in the workshop manual.
U0421-68	Invalid Data Received from Suspension Control Module A - Event information	<ul style="list-style-type: none"> ▪ Event information 	Check for dynamic suspension DTCs. Refer to the relevant section in the workshop manual.

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
U0424-68	Invalid Data Received From HVAC Control Module - Event information	<ul style="list-style-type: none"> Event information 	Ignore this DTC.
U0428-68	Invalid Data Received From Steering Angle Sensor Module - Event information	<ul style="list-style-type: none"> Event information 	Check the Steering Angle Sensor and circuits. Refer to the electrical guides. Test the vehicle on roads requiring varying steering input to confirm the success of any repair.
U1A49-68	Invalid Data Received From All Terrain Control Module - Event information	<ul style="list-style-type: none"> Event information 	Check for all-terrain DTCs. Refer to the relevant section in the workshop manual.
U1A4A-68	Invalid Data Received From Differential Control Module / Rear - Event information	<ul style="list-style-type: none"> Event information 	Check for RDCM DTCs. Refer to the relevant section in the workshop manual.
U2001-68	Reduced System Function - Event information	<ul style="list-style-type: none"> Event information <ul style="list-style-type: none"> Not a fault condition. System operation suspended while system cools. Customer may have seen the warning lamp illuminated during a period of reduced functionality or may have noticed the vehicle behaving differently in relation to a traction control event. 	This Event is triggered if the ECU reduces the level of functionality, to prevent over heating of the foundation brakes. It is a normal function of the ECU and is not a fault. Clear/ignore this DTC.

PINPOINT TESTS

PINPOINT TEST A : STOPLAMP SWITCH CIRCUIT FAULT (DTC C1A96-13)

A1: FUSE CHECK

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

NOTES:

- These tests are to be carried out if DTC C1A96-13 has been stored. This DTC indicates a fault in the Stoplamp Switch circuit between the Anti-lock Brake System Module (Pin C0506R-30) and the Stoplamp ground connection.
- The Stoplamp Switch Circuit is monitored by the Anti-lock Brake System Module on (C0506R-30) for open circuit. A small voltage is applied to the Stoplamp Switch circuit by the Anti-lock Brake System Module, this voltage grounds through the Stoplamps, the Anti-lock Brake System Module monitors this voltage for open circuit.
- The Stoplamp Switch and Brake Switch are fused separately.

- 1 Set the Ignition State to the on position and operate the Footbrake.

PINPOINT TEST A : STOPLAMP SWITCH CIRCUIT FAULT (DTC C1A96-13)	
A1: FUSE CHECK	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>Do all the Stoplamps illuminate correctly when the Footbrake is pressed?</p> <p>Yes</p> <p>Refer to electrical circuit diagrams and check for an open circuit fault in the Stoplamp circuit connectors, splices and wiring between the Anti-lock Brake System Module (C0506R-30) and splice joint (SJ1814). Repair the circuit as required using the approved process. Clear the stored DTC, operate the Footbrake and check for correct Stoplamp operation.</p> <p>No</p> <p>Refer to electrical circuit diagrams and check for an open circuit fault in the Stoplamp circuit connectors, splices and wiring between the Anti-lock Brake System Module (C0506R-30) and the Stoplamp Ground Circuit Eyelets (C2922-1 and C1355-1). Repair the circuit as required using the approved process. Clear the stored DTC, operate the Footbrake and check for correct Stoplamp operation.</p>

PINPOINT TESTS

PINPOINT TEST B : STOPLAMP SWITCH PLAUSIBILITY FAULT (DTC C1A96-24)	
B1: CUSTOMER INDUCED DTC	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<div style="border: 1px solid #add8e6; padding: 10px;"> <p>NOTES:</p> <ul style="list-style-type: none"> These tests are to be carried out if DTC C1A96-24 has been stored. This DTC indicates plausibility – The Stoplamp Switch signal is high (Footbrake pedal pressed condition) while the vehicle is not braking. Plausibility detail – A DTC will be stored if the Stoplamp Switch signal is high for more than 60 seconds while the accelerator pedal is pressed and the vehicle speed is greater than 7 mph/10.8 km/h and the Anti-lock Brake System Module is not actively controlling pressure. </div>	
	<p>1 Confirm that the fault is not being provoked by a customer driving habit (Resting a foot on the brake pedal while accelerating / cruising).</p>
	<p>Is the fault being provoked by a customer driving habit?</p> <p>Yes</p> <p>Advise the customer that the cause of the DTC being stored maybe due to His/Her foot resting on the Brake Pedal whilst the vehicle is in motion. Clear the stored DTC, operate the Footbrake and check for correct Stoplamp operation.</p> <p>No</p> <p>GO to B2.</p>
B2: STOPLAMP SWITCH ADJUSTMENT CHECK	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<div style="border: 1px solid #add8e6; padding: 10px;"> <p>NOTE:</p> <p>Removal and correct installation of the Stoplamp Switch will reset the adjustment. Ensure the Footbrake Pedal is fully raised against its Upstop, (pedal rest position) when installing the Stoplamp Switch.</p> </div>	
	<p>1 Check that the Stoplamp Switch is securely installed and correctly adjusted. REFER to: Stoplamp Switch (417-01 Exterior Lighting, Removal and Installation).</p>

B2: STOPLAMP SWITCH ADJUSTMENT CHECK	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>Is the Stoplamp Switch securely installed and correctly adjusted?</p> <p>Yes GO to B3.</p> <p>No Adjust the Stoplamp Switch using the approved process. Clear the stored DTC, operate the Footbrake and check for correct Stoplamp operation.</p>
B3: STOPLAMP CIRCUIT SHORT TO POWER	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>NOTE: If a circuit short to power is present the Stoplamps may be illuminated (Footbrake Pedal released).</p>	
	<p>1 Using the manufacturer approved diagnostic system, monitor the Data Logger Signal, PID-2B00 Brake Input Switch Status - Brake Pedal Switch (brake lamp switch), set the Ignition State to the on position and with the Footbrake released PID-2B00 Brake Input Switch Status should show Inactive (BLS = 0).</p>
	<p>Does PID-2B00 Brake Input Switch Status show Inactive (BLS =0)?</p> <p>Yes GO to B4.</p> <p>No Refer to electrical circuit diagrams to locate the fault. Repair the circuit as required using the approved process. Clear the stored DTC, operate the Footbrake and check for correct Stoplamp operation.</p>
B4: SHORT CIRCUIT TO ANOTHER POWER CIRCUIT	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>NOTE: A short circuit to another circuit will cause the DTC to log in the Anti-lock Brake System Module.</p>	
	<p>1 Using the manufacturer approved diagnostic system, monitor the Data Logger Signal, PID-2B00 Brake Input Switch Status - Brake Pedal Switch (brake lamp switch), set the Ignition State to the on position and with the Footbrake released PID-2B00 Brake Input Switch Status should show Inactive (BLS = 0).</p>
	<p>2 Operate any electrical circuits that could supply a voltage to the Stoplamp Switch circuit.</p>
	<p>Does PID-2B00 Brake Input Switch Status show Inactive (BLS =0)?</p> <p>Yes Suspect an intermittent fault. Carry out visual and mechanical check of splice joints, all connectors and cables, check for corrosion, bent or damaged contact faces of pins, terminals and for security of connectors. Where possible flex cables while using the manufacturer approved diagnostic system to monitor the Data Logger Signal, PID-2B00 Brake Input Switch Status - Brake Pedal Switch (brake lamp switch). This test should be carried out with the ignition on and the Footbrake Pedal in the released position. BLS should remain Inactive (BLS=0).</p> <p>No Refer to electrical circuit diagrams to locate the fault. Repair the circuit as required using the approved process. Clear the stored DTC, operate the Footbrake and check for correct Stoplamp operation.</p>

PINPOINT TESTS

PINPOINT TEST C : SIGNAL COMPARE PLAUSIBILITY (DTC C1A96-62)

C1: STOPLAMP SWITCH CIRCUIT

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
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NOTES:

- These tests are to be carried out if DTC C1A96-62 Signal Compare - Plausibility, has been stored. This DTC indicates that the Brake Lamp Switch and Brake Switch have shared the same state (both switches in the open circuit condition at the same time).
- The Stoplamp Switch contains the Brake Lamp Switch (BLS) and the Brake Switch (BS) these are located within the same housing.
- Signal Compare - Plausibility: Brake Lamp Switch and Brake Switch must not be open circuit at the same time.
- The Datalogger Signals represent the position of the Stoplamp Switch. Both Brake Lamp Switch (BLS) and the Brake Switch (BS) are shown as **Active** with the **Footbrake pressed** and **Inactive** with the **Footbrake released**. This does **not** directly reflect the state of the Stoplamp Switch internal switch contacts as shown in the circuit diagrams.

	<p>1 Using the manufacturer approved diagnostic system, monitor the Data Logger Signal, PID-2B00 Brake Input Switch Status - Brake Pedal Switch (brake lamp switch) and PID-2B00 Brake Input Switch Status - Brake Pedal Switch (brake switch) inputs while the Footbrake pedal is slowly pressed & released.</p>
	<p>2 BLS = Brake Pedal Switch (brake lamp switch), BS = Brake Pedal Switch (brake switch). The correct inputs should be, Pedal Released BLS = Inactive (BLS = 0), BS = Inactive (BS = 0). Brief Transition (as the pedal is pressed BLS = Active (BLS = 1), BS = Inactive (BS = 0). Pedal Pressed BLS = Active (BLS = 1), BS = Active (BS = 1). If either input remains inactive during the test procedure a fault is evident.</p>
	<p>Did the inputs show correctly? Yes Suspect an intermittent fault. Carry out visual and mechanical check of splice joints, all connectors and cables, check for corrosion, bent or damaged contact faces of pins, terminals and for security of connectors. Where possible flex cables while using the manufacturer approved diagnostic system, monitor the Data Logger Signal, PID-2B00 Brake Input Switch Status - Brake Pedal Switch (brake lamp switch) and PID-2B00 Brake Input Switch Status - Brake Pedal Switch (brake switch). This test should be carried out with the Stoplamp Switch in both the pressed and released position independently. Refer to electrical circuit diagrams to locate the intermittent open circuit. Repair the circuit as required using the approved process. Clear the stored DTC, operate the Footbrake and check for correct Stoplamp operation.</p> <p>No GO to C2.</p>

C2: STOPLAMP SWITCH CIRCUIT 2

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
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	<p>1 If BLS = Inactive (0) BS = Active (1) occurred with the Footbrake Released the fault is with the (BS) = Brake Pedal Switch (brake switch) circuit. If BLS = Inactive (0) BS = Active (1) occurred with the Footbrake Pressed the fault is with the (BLS) = Brake Pedal Switch (brake lamp switch) circuit.</p>
	<p>Did BLS (brake lamp switch) = Inactive (0) BS (brake switch) = Active (1) occur with the Footbrake Released? Yes Suspect a Stoplamp Switch (brake switch) circuit fault. Refer to electrical circuit diagrams and replace blown fuse or locate the open circuit. Repair the circuit as required using the approved process. Clear the stored DTC, operate the Footbrake and check for correct Stoplamp operation.</p> <p>No Suspect a Stoplamp Switch (brake lamp switch) circuit fault. Refer to electrical circuit diagrams and replace blown fuse or locate the open circuit. Repair the circuit as required using the approved process. Clear the stored DTC, operate the Footbrake and check for correct Stoplamp operation.</p>

PINPOINT TEST D : PLAUSIBILITY – STOPLAMP SWITCH (BLS) VERSES BRAKE PRESSURE (PS) (DTC C1A96-64)	
D1: IDS MONITOR	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>NOTES:</p> <ul style="list-style-type: none"> These tests are to be carried out if DTC C1A96-64 Plausibility – Stoplamp Switch (BLS) verses Brake Fluid Hydraulic Pressure (PS) has been stored. This DTC indicates Plausibility – The Stoplamp Switch must be seen to operate before Brake Fluid Hydraulic Pressure (PS) exceeds a pressure threshold of 10 Bar. The Stoplamp Switch status is monitored by the Anti-lock Brake System Module (C0506R terminal 30). The Anti-lock Brake System Module contains an Internal Pressure Sensor and monitors the Brake Fluid Hydraulic Pressure (PS). 	
	<p>1 Using the manufacturer approved diagnostic system, check for Anti-lock Brake System Module Pressure Sensor DTCs C1A99-01, C1A99-29, C1A99-49 or C1A99-64. If any of these DTCs has been stored carry out the specified action prior to investigating DTC C1A96-64.</p>
	<p>2 Using the manufacturer approved diagnostic system, monitor the Data Logger Signal PID-2B00 Brake Input Switch Status - Brake Pedal Switch (brake lamp switch) and PID-2B0D Brake Fluid Hydraulic Pressure (PS). When the brake pedal is pressed, the Brake Pedal Switch (brake lamp switch) status should change from Inactive (BLS = 0) to Active (BLS = 1) before the Brake Fluid Hydraulic Pressure reaches 1000KPa (10 Bar).</p>
	<p>Does the Brake Pedal Switch (brake lamp switch) change from Inactive (BLS = 0) to Active (BLS = 1) before the Brake Fluid Hydraulic Pressure reaches 1000KPa (10 Bar)?</p> <p>Yes Suspect an intermittent Brake Lamp Switch circuit fault. Refer to electrical circuit diagrams, carry out visual and mechanical check of the of splice joints, connectors and cables of the Stoplamp Switch circuit, check for corrosion, bent or damaged contact faces of pins, terminals and for security of connectors. Where possible flex cables to attempt to induce the intermittent open circuit. Repair the circuit as required using the approved process. Clear the stored DTC, operate the Footbrake and check for correct Stoplamp operation.</p> <p>No GO to D2.</p>
D2: STOPLAMP SWITCH ADJUSTMENT CHECK	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>NOTE:</p> <p>Removal and correct installation of the Stoplamp Switch will reset the adjustment. Ensure the Footbrake Pedal is fully raised against its Upstop, (pedal rest position) when installing the Stoplamp Switch.</p>	
	<p>1 Check that the Stoplamp Switch is securely installed and correctly adjusted. REFER to: Stoplamp Switch (417-01 Exterior Lighting, Removal and Installation).</p>
	<p>Is the fault still present with the Stoplamp Switch securely installed and correctly adjusted?</p> <p>Yes Suspect a Brake Lamp Switch circuit fault. Refer to electrical circuit diagrams, carry out visual and mechanical check of the splice joints, connectors and cables of the Stoplamp Switch circuit, check for corrosion, bent or damaged contact faces of pins, terminals and for security of connectors. Repair the circuit as required using the approved process. Clear the stored DTC, operate the Footbrake and check for correct Stoplamp operation.</p> <p>No Adjust the Stoplamp Switch using the approved process. Clear the stored DTC, operate the Footbrake and check for correct Stoplamp operation.</p>

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