

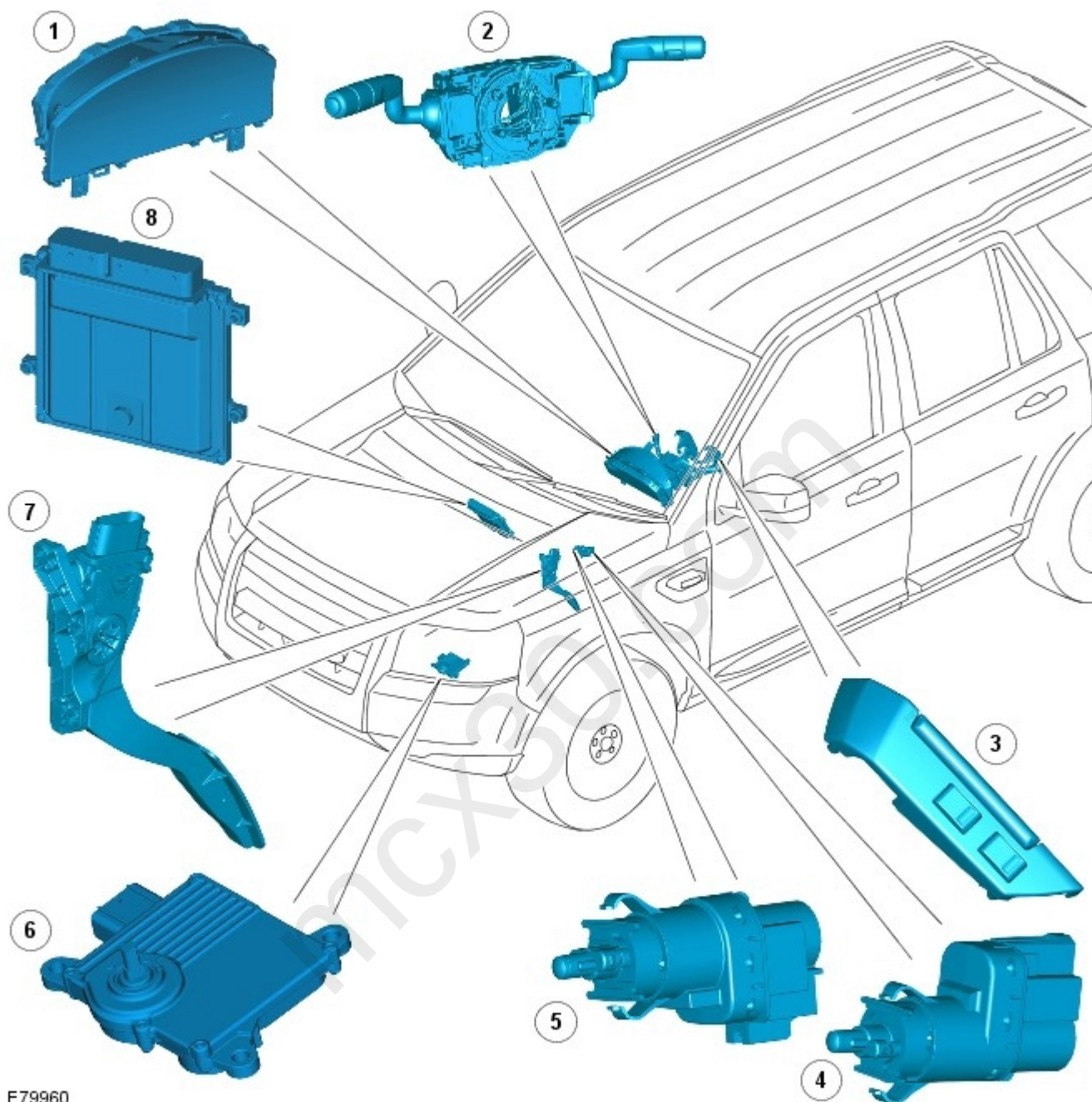
Speed Control - I6 3.2L Petrol -**Torque Specifications**

Description	Nm	lb-ft
Accelerator pedal assembly nuts	10	7
Speed control switch Torx bolts	3	2

Speed Control - I6 3.2L Petrol - Speed Control

Description and Operation

COMPONENT LOCATION



E79960

Item	Part Number	Description
1	-	Instrument cluster
2	-	Clockspring
3	-	Speed control steering wheel switches
4	-	Speed control inhibit switch
5	-	Stoplamp switch
6	-	Transmission Control Module (TCM)
7	-	Accelerator Pedal Position (APP)
8	-	Engine Control Module (ECM)

OVERVIEW

The speed control system maintains a set speed selected by the driver until operation is suspended or cancelled by a further input from the driver and is controlled by the ECM.

The speed control system comprises the following components:

- A set +/- switch
- A RESUME switch

- A CANCEL switch.

The system also uses the following:

- The ECM
- The stoplamp switch.
- The APP sensor

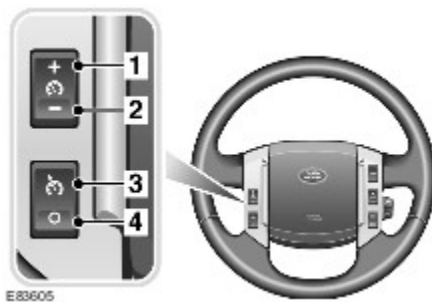
The ECM controls the set speed by modifying engine speed/torque and requesting gear changes from the transmission (automatic variants only).

The speed control system also uses inputs from the brake pedal switch, the APP sensor, the ECM and the ABS control module.

The speed control is operated by the driver using only the steering wheel switches. When speed is active, the ECM regulates the PWM signals to the fuel injectors to adjust the fuel supply as required to maintain the set speed.

During speed control operation, the ECM controls vehicle speed by adjusting fuel injection duration and timing. When the accelerator pedal is pressed with speed control active, the ECM outputs a calculated throttle angle signal in place of the actual throttle angle signals produced by the APP sensor. The calculated throttle angle is derived from fuel demand.

CONTROL SWITCHES



Item	Part Number	Description
1	-	Set target speed/increase speed
2	-	Set target speed/decrease speed
3	-	Resume set speed
4	-	Speed control suspend.

The speed control switches are located on the LH side of the steering wheel. The switches are connected via fly leads directly to the clock spring. All the speed control switches are non-latching momentary rocker switches. The minimum set speed is 18 mph (30 (km/h)). Speed control is automatically suspended if the vehicle speed falls below 15 mph (24 km/h).

The speed control switches are resistive ladder type switches. There are three rocker switches associated with speed control, two of which are for adaptive speed control (where specified). The switches vary the resistance of a signal voltage sent to the ECM. The switches receive a 5 volt reference supply. The ECM measures the returned voltage to determine which switch has been pressed.

Suspend Switch

The suspend/resume switch controls the selection of speed control. When the ignition is in position II, a single press of the suspend switch will activate the suspend mode. This temporarily switches off the speed control system, but retains the previously set speed in the ECM memory.

Resume Switch

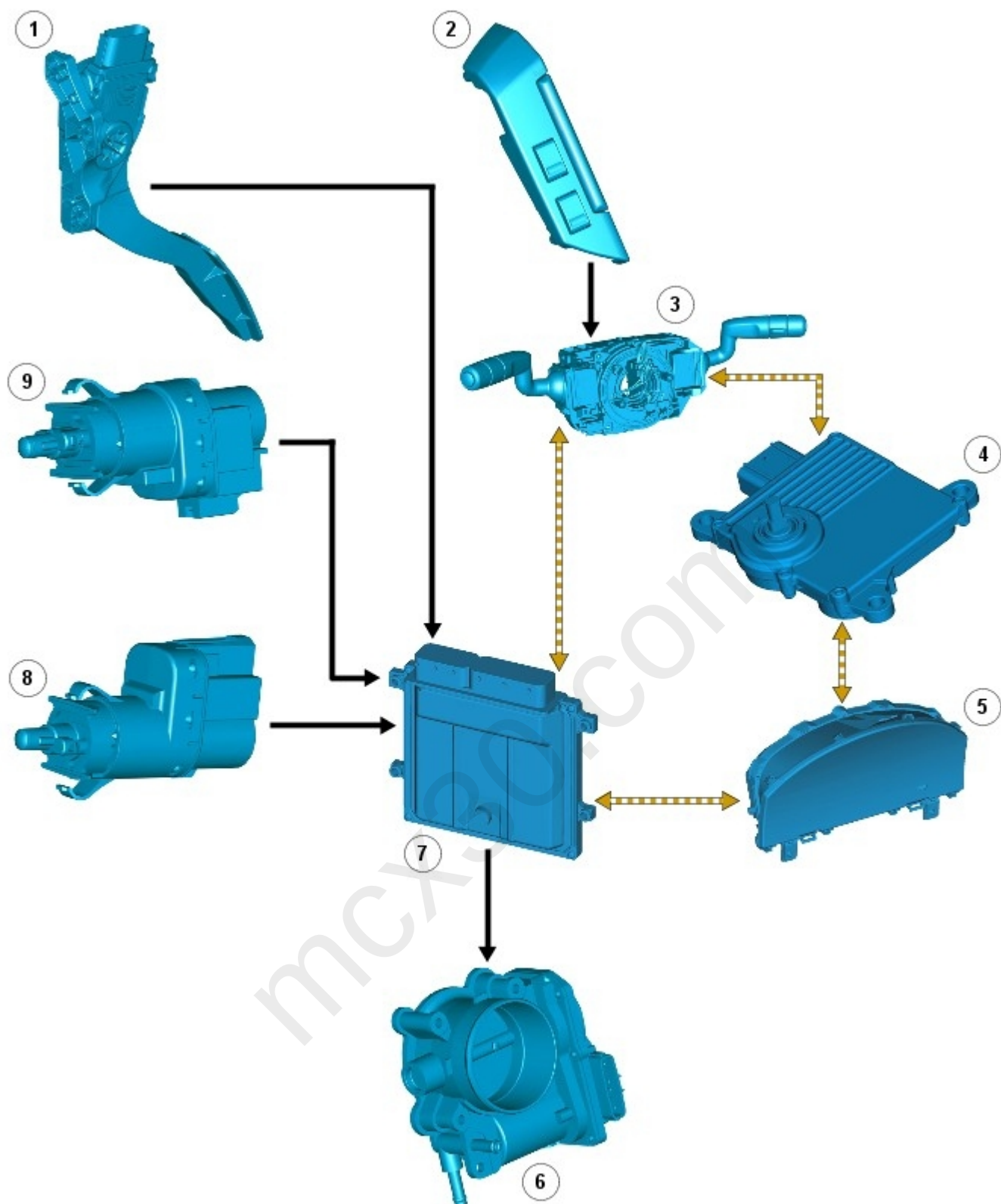
A second press of the switch re-activates the previously set speed after the speed control has been suspended by pressing the suspend switch or by depressing the brake pedal.

Set Speed/Increase/Decrease Speed (+/-) Switches

When the speed control system is active, pressing the '+' switch sets the controlled speed to the current road speed of the vehicle. Subsequent momentary presses of the switch increases the set road speed by 0.6 mph (1 km/h). If the switch is pressed and held the road speed will continue to increase until the switch is released. Momentarily pressing the '-' switch, decreases the set speed by 0.6 mph (1 km/h). If the switch is pressed and held, the set speed is decreased until the switch is released.

CONTROL DIAGRAM

- NOTE: **A** = Hardwired; **D** = High speed CAN bus



E79961



Item	Part Number	Description
1	-	APP
2	-	Speed control steering wheel switches
3	-	Clockspring
4	-	TCM
5	-	Instrument cluster
6	-	Electric throttle
7	-	ECM
8	-	Speed control inhibit switch
9	-	Stoplamp switch

Speed Control - I6 3.2L Petrol - Speed Control

Diagnosis and Testing

Principles of Operation

For a detailed description of the speed control system, refer to the relevant Description and Operation section in the workshop manual.

REFER to: Speed Control - 3.2L (310-03, Description and Operation) /

[Speed Control - 2.2L Diesel](#) (310-03B Speed Control - TD4 2.2L Diesel, Description and Operation).

Inspection and Verification



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.

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection

Mechanical	Electrical
- Speed control inhibit switch - Stop lamp switch - Steering wheel rotation sensor	- Fuses - Wiring harness - Electrical connector(s) - Steering wheel switches - Brake switch - Speed control inhibit switch - Transmission Control Module (TCM) - Engine Control Module (ECM)

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. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart, alternatively check for Diagnostic Trouble Codes (DTCs) and refer to the relevant DTC Index.

Symptom Chart

Symptom	Possible Cause	Action
Speed control inhibited or disabled	- Steering wheel speed control switch(s) - Steering wheel speed control switch circuit - Throttle sensors - Brake switch	- Refer to electrical circuit diagrams and check steering wheel speed control switches and circuits - Check ECM for throttle related DTCs and refer to the DT Index. REFER to: Electronic Engine Controls (303-14A Electronic Engine Controls - I6 3.2L Petrol, Diagnosis and Testing) / Electronic Engine Controls (303-14B Electronic Engine Controls - TD4 2.2L Diesel, Diagnosis and Testing). - Refer to the electrical circuit diagrams and check brake switches and circuits
Unable to regulate/adjust vehicle speed	Steering wheel switch malfunction	Refer to electrical circuit diagrams and check steering wheel speed control switch and circuits
Unable to cancel speed control from steering wheel	Steering wheel switch malfunction	Refer to electrical circuit diagrams and check steering wheel speed control switch and circuits
Unable to cancel speed control from brake pedal	Brake switch malfunction	Refer to the electrical circuit diagrams and check brake switches and circuits

DTC Index

• NOTE: If a module or component is suspect, and the vehicle remains under the Manufacturers warranty, refer to the Warranty Policy and Procedure manual (section B1.2), or determine if any prior approval programme is in operation, prior to the installation of a new module/component.

• NOTE: Generic scan tools may not read the codes listed, or may read only five digit codes. Match the five digits from the scan tool to the first five digits of the seven digit code listed to identify the fault (the last two digits give extra information read by the manufacturer-approved diagnostic system).

• NOTE: When performing voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places and with a current calibration certificate. When testing resistance, always take the resistance of the DMM leads into account.

• NOTE: Check and rectify basic faults before beginning diagnostic routines involving pinpoint tests.

• NOTE: 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 Cause	Action
B10AC86	Cruise Control Switch - Signal invalid	Signal invalid	Carry out the pinpoint tests associated to this DTC using the manufacturer approved diagnostic system
B10AC87	Cruise Control Switch - Missing message	Missing message	Carry out the pinpoint tests associated to this DTC using the manufacturer approved diagnostic system
B10AC95	Cruise Control Switch - Wrong assembly	Mis-match between Car Configuration File and vehicle	Check/up-date Car Configuration File using the manufacturer approved diagnostic system
C004064	Brake Pedal Switch "A" - Signal plausibility failure	- Brake pedal switch circuit - short to ground, short to power, open circuit - Brake pedal switch failure	Carry out pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Install a new brake switch as required. REFER to: Speed Control Deactivator Switch (310-03B Speed Control - TD4 2.2L Diesel, Removal and Installation).
P012023	Accelerator pedal position sensor A circuit - signal stuck low	- Accelerator pedal position (APP) sensor A circuit: short circuit to ground - Accelerator pedal position (APP) sensor failure	Check the APP sensor and circuits. Refer to the electrical guides. Install a new sensor as required.
P012024	Accelerator pedal position sensor A circuit - signal stuck high	- Accelerator pedal position (APP) sensor A circuit: short circuit to power - Accelerator pedal position (APP) sensor A circuit: open circuit - Accelerator pedal position (APP) sensor power supply circuit: open circuit - Accelerator pedal position (APP) sensor ground circuit: open circuit - Accelerator pedal position (APP) sensor failure	Check the APP sensor and circuits. Refer to the electrical guides. Install a new sensor as required.
P012038	Accelerator pedal position sensor A circuit - signal frequency incorrect	- Accelerator pedal position (APP) sensor A circuit: loose connection - Accelerator pedal position (APP) sensor A circuit: interference - Accelerator pedal position (APP) sensor failure	Check the APP sensor and circuits. Refer to the electrical guides. Install a new sensor as required.
P012100	Throttle/Pedal Position Sensor A Circuit Range/Performance	Analogue accelerator pedal ADC error	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
P012200	Throttle/Pedal Position Sensor A Circuit Low	Analogue accelerator pedal duty cycle below lower limit	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
P012300	Throttle/Pedal Position Sensor A Circuit High	Analogue accelerator pedal duty cycle above upper limit	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
P012400	Throttle/Pedal Position Sensor A Intermittent	Analogue accelerator pedal signal - noisy, disturbance	Carry out CAN network integrity tests using the manufacturer approved diagnostic system
P022000	Accelerator pedal position switch B circuit	- Accelerator pedal position (APP) sensor B circuit: short circuit to ground - Accelerator pedal position (APP) sensor B circuit: open circuit - Accelerator pedal position (APP) sensor B circuit: short circuit to power - Accelerator pedal position (APP) sensor failure	Check the APP sensor and circuits. Refer to the electrical guides. Carry out a complete vehicle read for APP sensor DTCs. Rectify as necessary.
P022023	Accelerator pedal position sensor B circuit - signal stuck low	- Accelerator pedal position (APP) sensor B circuit: short circuit to ground - Accelerator pedal position (APP) sensor B circuit: open circuit - Accelerator pedal position (APP) sensor failure	Check the APP sensor and circuits. Refer to the electrical guides. Carry out a complete vehicle read for APP sensor DTCs. Rectify as necessary.
P022024	Accelerator pedal position sensor B circuit - signal stuck high	- Accelerator pedal position (APP) sensor B circuit: short circuit to power - Accelerator pedal position (APP) sensor failure	Check the APP sensor and circuits. Refer to the electrical guides. Carry out a complete vehicle read for APP sensor DTCs. Rectify as necessary.

DTC	Description	Possible Cause	Action
P022082	Accelerator pedal position sensor B circuit	- Accelerator pedal position (APP) sensor B circuit: short circuit to ground - Accelerator pedal position (APP) sensor B circuit: open circuit - Accelerator pedal position (APP) sensor B circuit: short circuit to power - Controller area network (CAN) circuit: open circuit - Controller area network (CAN) circuit: short circuit to ground - Controller area network (CAN) circuit: short circuit to power - Accelerator pedal position (APP) sensor failure	Check the APP sensor and circuits. Check the CAN circuits. Refer to the electrical guides. Carry out a complete vehicle read for APP sensor DTCs. Rectify as necessary.
P022200	Accelerator pedal position sensor B circuit low	- Accelerator pedal position (APP) sensor B circuit: short circuit to ground - Accelerator pedal position (APP) sensor B circuit: open circuit - Accelerator pedal position (APP) sensor failure	Check the APP sensor and circuits. Refer to the electrical guides. Carry out a complete vehicle read for APP sensor DTCs. Rectify as necessary.
P022300	Throttle/Pedal Position Sensor/Switch B Circuit High	PWM accelerator pedal duty cycle above upper limit	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
P050429	Brake switch A/B correlation - general signal failures - signal invalid	- Brake switch circuit: short circuit to ground - Brake switch circuit: open circuit - Brake switch circuit: high resistance - Brake pedal switch failure - Brake control module fault	Carry out a complete vehicle read for related DTCs. Rectify as necessary. Check the brake switch and circuits. Refer to the electrical guides. Install a new brake switch as necessary. REFER to: Speed Control Deactivator Switch (310-03B Speed Control - TD4 2.2L Diesel, Removal and Installation).
P050462	Brake Switch A/B Correlation	Brake pedal switch signal compare failure	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
P050464	Brake Switch A/B Correlation	Brake pedal switch signals not plausible	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
P050465	Brake switch A/B correlation	- Brake switch circuit: short circuit to ground - Brake switch circuit: open circuit - Brake switch circuit: high resistance - Brake pedal switch failure - Brake control module fault	Carry out a complete vehicle read for related DTCs. Rectify as necessary. Check the brake switch and circuits. Refer to the electrical guides. Install a new brake switch as necessary. REFER to: Speed Control Deactivator Switch (310-03B Speed Control - TD4 2.2L Diesel, Removal and Installation).
P057100	Brake Switch A Circuit	Brake switch error - inspectible fault counter beyond limit	Refer to electrical circuit diagrams and check both brake switch circuits for short/open circuit faults. Check/install new brake switch as required
P080600	Clutch Position Sensor Circuit Range/Performance	Error with at least one clutch pedal switch	Refer to electrical circuit diagrams and check Bottom of Travel clutch switch circuit, carry out CAN network integrity tests using the manufacturer approved diagnostic system
P083100	Clutch Pedal Switch 'A' Circuit Low	Top Of Travel clutch switch circuit - short to ground, open circuit	Refer to electrical circuit diagrams and check Top Of Travel clutch switch circuit for short to ground, open circuit
P083200	Clutch Pedal Switch 'A' Circuit High	Top Of Travel clutch switch circuit - short to power	Refer to electrical circuit diagrams and check Top Of Travel clutch switch circuit for short to power
P083300	Clutch Pedal Switch 'B' Circuit	Error with 75% switch	Refer to electrical circuit diagrams and check Bottom of Travel clutch switch circuit
P193B00	Throttle/Pedal Signal	Analogue accelerator pedal CAN signal error	Carry out CAN network integrity tests using the manufacturer approved diagnostic system
P210100	Throttle actuator control motor circuit range/performance	- Throttle actuator control motor circuit: short circuit to ground - Throttle actuator control motor circuit: open circuit - Throttle actuator control motor circuit: short circuit to power - Throttle actuator control motor failure	Check the throttle motor and circuits. Refer to the electrical guides. Install a new throttle body as necessary. REFER to: Throttle Body (303-04A Fuel Charging and Controls - I6 3.2L Petrol, Removal and Installation).

DTC	Description	Possible Cause	Action
P210177	Throttle actuator control motor circuit range/performance	- Throttle body contaminated/sticking - Throttle actuator control motor failure	Check the throttle body condition and operation. Clean the throttle body and recheck. Install a new throttle body as necessary. REFER to: Throttle Body (303-04A Fuel Charging and Controls - I6 3.2L Petrol, Removal and Installation).
P210300	Throttle actuator control motor circuit high	- Throttle actuator control motor circuit: short circuit to power - Throttle actuator control motor failure	Check the throttle motor and circuits. Refer to the electrical guides. Install a new throttle body as necessary. REFER to: Throttle Body (303-04A Fuel Charging and Controls - I6 3.2L Petrol, Removal and Installation).
P211800	Throttle actuator control motor current range/performance	- Throttle actuator control motor circuit: short circuit to power - Throttle actuator control motor circuit: short circuit to ground - Throttle actuator control motor circuit: short circuit to power - Throttle actuator control motor failure	Check the throttle motor and circuits. Refer to the electrical guides. Install a new throttle body as necessary. REFER to: Throttle Body (303-04A Fuel Charging and Controls - I6 3.2L Petrol, Removal and Installation).
P211900	Throttle actuator control throttle body range/performance	Throttle body contaminated/sticking	Check the condition and operation of the throttle body. Rectify as necessary. Install a new throttle body as necessary. REFER to: Throttle Body (303-04A Fuel Charging and Controls - I6 3.2L Petrol, Removal and Installation).
P213562	Accelerator pedal position sensor A/B voltage correlation	- Accelerator pedal position (APP) sensor signal circuit: open circuit - Accelerator pedal position (APP) sensor signal circuit: short circuit to ground - Accelerator pedal position (APP) sensor signal circuit: short circuit to power - Accelerator pedal position (APP) sensor fault	Carry out a complete vehicle read for related DTCs. Check the APP sensor and circuits. Refer to the electrical guides. Rectify as necessary.
P213800	Throttle/Pedal Position Sensor/Switch D/E Voltage Correlation	Accelerator Pedal plausibility - plausibility violated	Refer to electrical circuit diagrams and check accelerator pedal circuits for short, open circuit faults. Check/install new pedal as required
P213827	Throttle/Pedal Position Sensor/Switch D/E Voltage Correlation	Accelerator Pedal plausibility - dynamic plausibility violated	Refer to electrical circuit diagrams and check accelerator pedal circuits for short, open circuit faults. Check/install new pedal as required
P213828	Throttle/Pedal Position Sensor/Switch D/E Voltage Correlation	Accelerator Pedal plausibility - extended plausibility violated	Refer to electrical circuit diagrams and check accelerator pedal circuits for short, open circuit faults. Check/install new pedal as required

Speed Control - I6 3.2L Petrol - Speed Control Switch

Removal and Installation

Removal

1. Disconnect the battery ground cable.

Refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

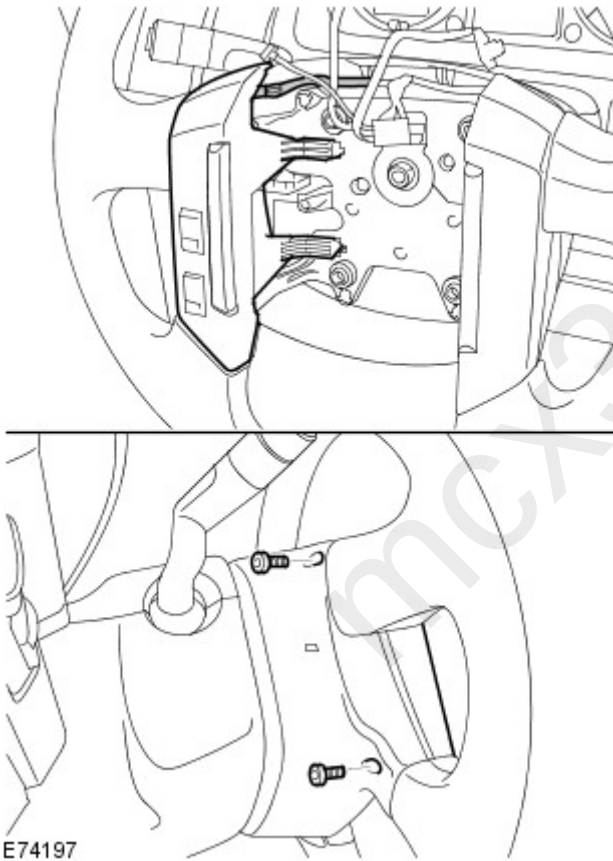
2. Make the SRS system safe.

Refer to: Supplemental Restraint System (SRS) Depowering and Repowering (501-20, General Procedures).

3. Remove the driver air bag module.

Refer to: [Driver Air Bag Module](#) (501-20B Supplemental Restraint System, Removal and Installation).

4.
 - Remove the 2 Torx screws.
 - Disconnect the electrical connector.



Installation

1. To install, reverse the removal procedure.

Speed Control - I6 3.2L Petrol - Speed Control Actuator

Removal and Installation

Removal

1. Remove the accelerator pedal assembly.

Refer to: [Accelerator Pedal](#) (310-02 Acceleration Control, Removal and Installation).

Installation

1. Install the accelerator pedal assembly.

Refer to: [Accelerator Pedal](#) (310-02 Acceleration Control, Removal and Installation).

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Speed Control - I6 3.2L Petrol - Speed Control Deactivator Switch

Removal and Installation

Removal

Right-hand drive vehicles

1. Remove the cover and disconnect the battery ground cable.

Refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

2. Remove the stoplamp switch.

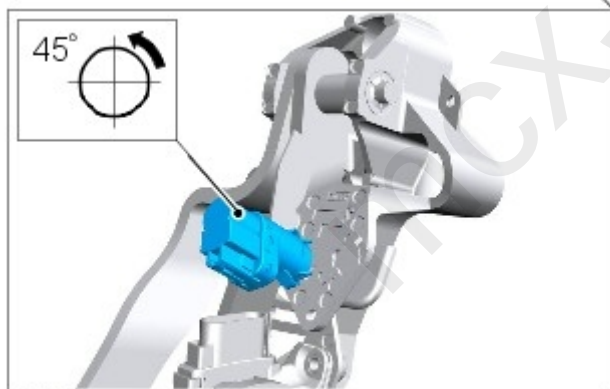
Refer to: [Stoplamp Switch](#) (417-01 Exterior Lighting, Removal and Installation).

All vehicles



3.  **CAUTION:** The switch has a latching device that only allows the switch to be removed or installed when the switch plunger is depressed.

- NOTE: RHD illustration shown, LHD is similar.



E91180

Installation

1. To install, reverse the removal procedure.