

# DESCRIPTION AND OPERATION

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## **SELF LEVELLING AND ANTI-LOCK BRAKING SYSTEM (SLABS)**

### **DESCRIPTION**

#### **General**

SLS and ABS is controlled by the Self Levelling and Anti-Lock Braking System (SLABS) ECU. The two systems are housed in the one ECU, but operate independently of each other.

The SLS system comprises an air supply unit comprising a compressor and air valves, two height sensors and the SLS part of the SLABS ECU. The SLS system controls the height of the rear suspension for off-road driving and passenger/load compensation. Refer to Workshop Manual - Description and Operation for further details.

The ABS system comprises ABS wheel sensors, an ABS modulator and the ABS part of the SLABS ECU. The ABS system also controls electronic brake distribution, hill descent control, centre differential lock control and electronic traction control. Refer to Workshop Manual - Description and Operation for further details.

*NOTE: This Description and Operation applies to vehicles with Self Levelling Suspension (SLS). For vehicles without SLS refer to the ABS Description and Operation in this manual.*

### **OPERATION**

#### **SLABS Supply**

##### ***Circuit supply***

A feed from the battery positive terminal is connected by an R wire to the engine compartment fusebox, where it passes through fusible links 8, 9 and 11 and fuse 11.

The feed from fusible link 11 is connected to the contacts of the ABS return pump relay in the engine compartment fusebox.

The feed from fusible link 9 is connected to the contacts of the SLS relay in the engine compartment fusebox.

The feed from fuse 11 is connected to the SLABS ECU pin C0504-1 on an NK wire.

The feed from fusible link 8 is connected to the passenger compartment fusebox on an NW wire and from the fusebox to the ignition switch on an N wire.

## ***Ignition switch supply***

When the ignition switch is in position II, the feed from fusible link 8 flows through the ignition switch to the passenger compartment fusebox on a Y wire and passes through fuses 25, 27 and 28.

From fuse 25 is connected to the contacts of the hill descent relay in the passenger compartment fusebox. The feed from fuse 25 is also connected on a GY wire to the reverse lamp switch (manual gearbox vehicles) or the starter inhibitor/reverse lamp switch (automatic gearbox vehicles). When the switch is operated, the feed is connected on a GN wire, through header joint C0287 LHD/C0294 RHD, to the SLABS ECU pin C0504-7.

From fuse 27 the feed is connected, via header C0760, on an LG wire to the hill descent switch. When the hill descent switch is operated, the feed continues from the switch on a PS wire to the SLABS ECU pin C0504-14.

From fuse 28 the feed is connected on an LG wire to the SLABS ECU pin C0504-2.

## **SLS Operation**

### ***Air supply unit***

Compressor:

When compressor operation is required, the SLABS ECU supplies an output feed from pin C0655-6 on an NP wire to the engine compartment fusebox. The feed is connected to the coil of the SLS relay closing the relay contacts. The coil is connected from the fusebox on a B wire, via header C0286 LHD/ C0288 RHD to earth header C0018.

The feed from fusible link 9 passes through the relay contacts and is connected from the engine compartment fusebox on a WB wire to the SLS compressor. The compressor is connected on a B wire, via splice joint A47, to earth eyelet connector C0811-1.

SLS exhaust valve:

When exhaust valve operation is required, the SLABS ECU outputs a feed on pin C0655-5 on a BW wire to the exhaust valve. The valve is connected on a B wire, via splice joint A47 to earth eyelet connector C0811-1.

SLS LH rear valve:

When LH rear valve operation is required, the SLABS ECU outputs a feed on pin C0655-3 on a WY wire to the valve. The valve is connected on a B wire, via splice joint A47 to earth eyelet connector C0811-1.

# DESCRIPTION AND OPERATION

---

SLS RH rear valve:

When RH rear valve operation is required, the SLABS ECU outputs a feed on pin C0655-4 on a UO wire to the valve. The valve is connected on a B wire, via splice joint A47 to earth eyelet connector C0811-1.

## ***Off-road mode switch***

When the non-latching off-road mode switch is pressed, an earth path is completed from SLABS ECU pin C0655-11 on a PK wire, via splice joint A186, to the off-road mode switch. The switch is connected on a B wire, via headers C0725 and C0760 to earth header C0017 LHD/C0018 RHD.

The momentary completion of the earth path is sensed by the ECU which then operates the air supply unit accordingly. The ECU then connects pin C0655-11 to earth. The earth is also connected to the off-road mode warning lamp in the instrument pack on a PK wire from splice joint A186, causing the warning lamp to illuminate. The ECU quickly removes and reinstates the earth path continuously to check if a second off-road mode switch request has been made.

## ***Door switches***

The SLABS ECU receives earth input signals from the door switches to inform the ECU that a door is open. The ECU can only differentiate between the driver's door on ECU pin C0655-1 and the remaining doors on pin C0655-2.

## ***Driver's door***

The earth input for ECU pin C0655-1 is connected on a PW wire, via headers C0287 LHD/C0285 RHD, to the front (driver's) door lock motor. The motor is connected on a B wire to earth header C0017 LHD/C0018 RHD.

## ***Passenger door***

The earth input for ECU pin C0655-2 is connected on a PLG wire to header C0291 LHD/C0285 RHD. From the header a PLG wire is connected to connector interface C0464-1/C0733-1. A PW wire connects the front (passenger) door lock motor to the connector interface. The motor is connected on a B wire to earth header C0018 LHD/C0017 RHD.

## ***LH and RH rear doors***

The earth input for ECU pin C0655-2 is connected on a PLG wire to header C0291 LHD/C0285 RHD. From the header PLG wires connect to the LH and RH rear door lock motors. Each motor is connected on a B wire to earth header C0552.

## ***Tail door***

The earth input for ECU pin C0655-2 is connected on a PLG wire to header C0291 LHD/ C0285 RHD. From the header a PLG wire connects to the tail door motor switch. The motor is connected on a B wire to earth header C0706.

## ***Body Control Unit (BCU)***

The SLABS ECU provides outputs and receives inputs to/from the BCU on connectors C0655 and C0504 as follows:

- An output is passed from SLABS ECU pin C0655-7 to BCU pin C0660-10 on a WK wire. This output enables the SLS audible warning.
- An input is received from BCU pin C0660-12 to SLABS ECU C0655-12 on a WU wire. This input is the SLS raise/lower command from the remote handset.

## ***Instrument pack***

The SLABS ECU provides an output from pin C0655-8 on a WO wire to the instrument pack pin C0233-2 for SLS warning lamp operation.

## ***Height sensors***

The SLABS ECU provides outputs and receives inputs from the left and right hand height sensors as follows:

### ***LH height sensor***

- Power supply output from SLABS ECU pin C0654-1 on an SY wire to LH height sensor pin C0764-5.
- Earth output from SLABS ECU pin C0654-2 on an SU wire to LH height sensor pin C0764-1.
- Signal input from LH height sensor pin C0764-4 on an SR wire to SLABS ECU pin C0654-3.

### ***RH Height sensor***

- Power supply output from SLABS ECU pin C0654-4 on an SG wire to RH height sensor pin C0763-5.
- Earth output from SLABS ECU pin C0654-5 on an SO wire to RH height sensor pin C0763-1.
- Signal input from RH height sensor pin C0763-4 on an SB wire to SLABS ECU pin C0654-6.

## ***Engine Control Module (ECM)***

The ECM provides an engine speed signal on a WS wire to header C0291. From the header the signal is passed on a WS wire to the instrument pack for tachometer operation. A second WS wire is connected from the header to the SLABS ECU pin C0655-10.

## ***ABS Operation***

Refer to Anti-lock Braking System (ABS) - Operation in this manual for description of the ABS circuit.

# DESCRIPTION AND OPERATION

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## **ANTI-LOCK BRAKING SYSTEM (ABS)**

### **DESCRIPTION**

#### **General**

ABS is controlled by the Self Levelling and Anti-lock Braking System (SLABS) ECU. The ABS system comprises the ECU, ABS wheel sensors and an ABS modulator. The ABS system also controls electronic brake distribution, hill descent control, centre differential lock control and electronic traction control. Refer to Workshop Manual - Description and Operation for further details.

*NOTE: This Description and Operation applies to vehicles without Self Levelling Suspension (SLS). For vehicles with SLS refer to the SLABS Description and Operation in this manual.*

### **OPERATION**

#### **ABS Supply**

##### ***Circuit supply***

A feed from the battery positive terminal is connected by an R wire to the engine compartment fusebox, where it passes through fusible links 8 and 11 and fuse 11.

The feed from fusible link 8 is connected to the passenger compartment fusebox on an NW wire and from the fusebox to the ignition switch on an N wire.

The feed from fusible link 11 is connected to the contacts of the ABS return pump relay in the engine compartment fusebox.

The feed from fuse 11 is connected to the SLABS ECU pin C0504-1 on an NK wire.

##### ***Ignition switch supply***

When the ignition switch is in position II, the feed from fusible link 8 flows through the ignition switch to the passenger compartment fusebox on a Y wire and passes through fuses 25, 27 and 28.

From fuse 25 the feed is connected to the contacts of the hill descent relay. The feed from fuse 25 is also connected on a GY wire to the reverse lamp switch (manual gearbox vehicles) or the starter inhibitor/reverse lamp switch (automatic gearbox vehicles). When the switch is operated, the feed is connected on a GN wire, through header joint C0287 LHD/ C0294 RHD, to the SLABS ECU pin C0504-7.

From fuse 27 the feed is connected, via header joint C0760, on an LG wire to the hill descent switch. When the hill descent switch is operated the feed continues from the switch on a PS wire to the SLABS ECU pin C0504-14.

From fuse 28 the feed is connected on an LG wire to the SLABS ECU pin C0504-2.