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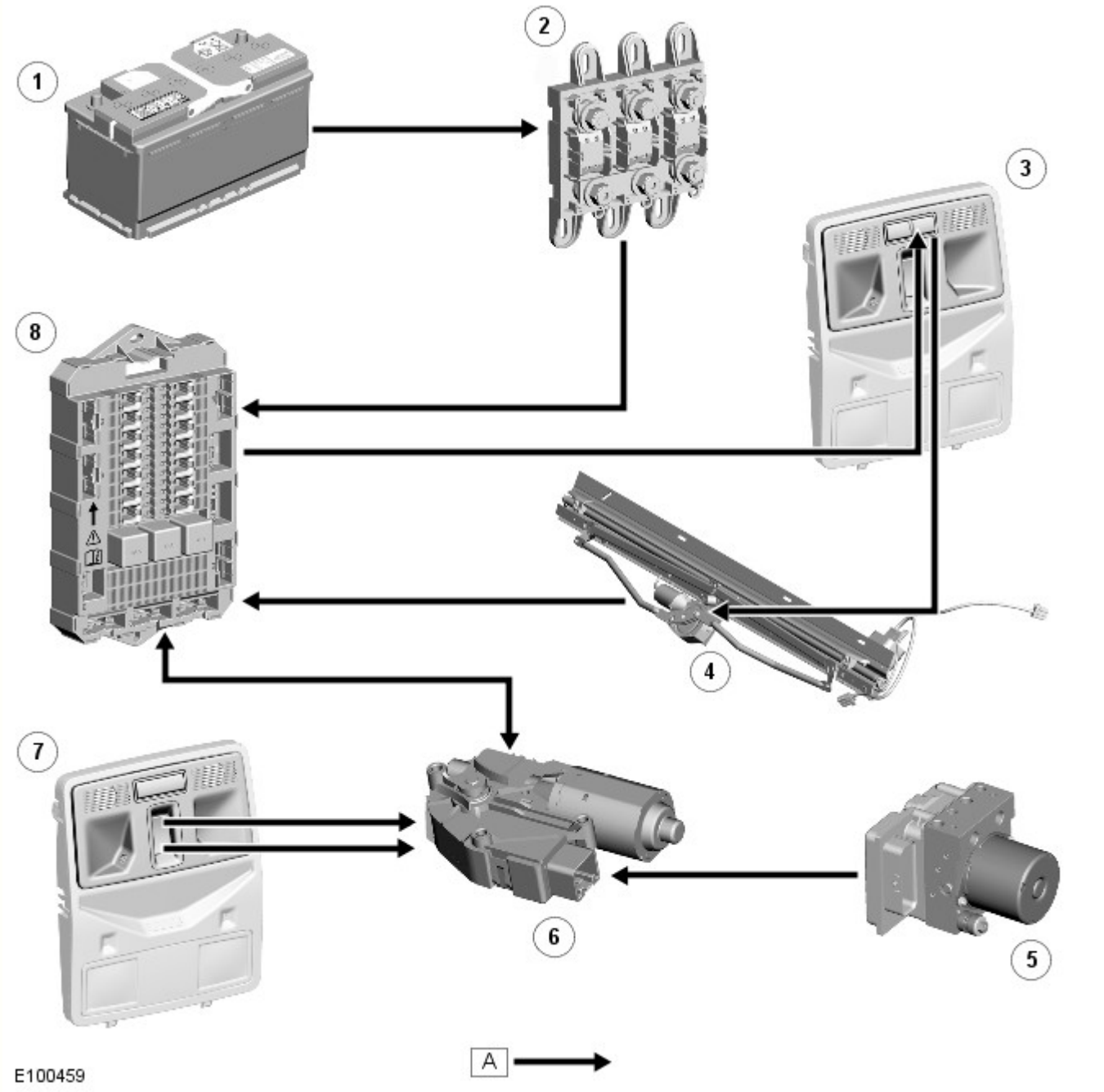
Roof Opening Panel - Roof Opening Panel - System Operation and Component Description

Description and Operation

Control Diagram

NOTE: A = Hardwired



Item	Description
1	Battery
2	Megafuse (250 A)
3	Rear window sunblind, switch
4	Rear window sunblind, motor
5	ABS (anti-lock brake system) module
6	Roof opening panel, control module
7	Roof opening panel, rocker switch
8	CJB (central junction box)

System Operation

Roof opening panel

Operation of the roof opening panel is controlled by the roof opening panel control module, which is integral with the motor. The control module receives inputs from the CJB, which provides an 'open' or 'close' signal for remote handset operation, and an 'enable' signal when the vehicle enters power mode 6.

The control module also receives a vehicle speed signal from the ABS module. The vehicle speed signal is used by the control module to calibrate the anti-trap feature.

If the battery is disconnected, or the power supply is interrupted while the roof opening panel is in a partially open position, the motor and control module will need to be calibrated to restore full functionality. To recalibrate:

1. Switch ignition on.
2. Press the front of the switch, so the roof opening panel is the tilt position, and then release the switch.
3. Press the front of the switch and hold for thirty seconds.
4. After thirty seconds the roof opening panel will begin to move. Keep the front of the switch pressed until the roof opening panel has fully opened and then closed.
5. Once the open/close cycle has completed and the roof opening panel has stopped moving, release the switch.
6. The roof opening panel can now be operated as normal.

Drain hoses are connected to the front and rear corners of the roof opening panel frame. The drain hoses are located inside of the cabin on the 'A' and 'D' post pillars to allow water, which has collected in the frame, to escape. One-way valves fitted to the end of each drain hose, prevent the ingress of dirt and moisture.

Rear window sunblind

The powered rear window sunblind is operated through a switch in the roof console. Power to the sunblind motor is provided by a pair of relays located in the CJB when the vehicle enters power mode 4. The sunblind motor is located beneath the rear parcel shelf and is supplied as a sealed unit with the sunblind mechanism.

If the battery is disconnected or a replacement sunblind is fitted, the motor will require re-calibrating. To re-calibrate the motor the sunblind should be powered through two-full cycles of movement.

Component Description

Roof opening panel, motor

The roof opening panel motor has a worm drive which drives a gear in the cast housing attached to the end of the motor. The gear has a small pinion gear attached to the outer part of its spindle. The pinion engages with two cables to form a rack and pinion drive. Rotation of the motor turns the pinion which in turn drives the cables in the required direction.

The two cables are attached either side of the pinion. One end of each cable is attached to the guide; the opposite end of each cable is held in position on the pinion by a metal insert in the frame. The cables run in channels, in the panel frame to the guides. As the panel is closed the cables are pushed through channels in the front of the frame. The displaced cable is guided into a further two channels in the frame, which protect the cable and prevent it from snagging. The cables manufactured from rigid spring steel can pull as well as push the panel along the guides.

The motor contains a micro-switch and Hall effect sensor. Signals received from these components enable the control module to calculate the exact position of the roof opening panel. The Hall effect sensor is also responsible for the operation of the anti-trap function.

If the anti-trap feature is activated while the roof opening panel is closing, the panel is reversed for 200mm or as far as possible. The Hall effect sensor, located in the motor, monitors the speed of the motor and if the speed decreases below a set threshold, indicating an obstruction, the power feed to the motor is reversed so the panel goes back. In an emergency the anti-trap function can be overridden by holding the switch in the closed position.

Roof opening panel, control module

The roof opening panel control module is integrated within the motor. The control module receives inputs from the CJB, which provides an 'open' or 'close' signal for remote handset operation, and an 'enable' signal when the vehicle enters power mode 6.

The control module also contains the algorithm for the anti-trap system and receives a vehicle speed signal from the ABS module. The vehicle speed signal is used by the control module to calibrate the anti-trap feature.