

5. BODY AND PAINT

501 : Body and Paint

501-02 : Front End Body Panels

Removal and installation

Air Deflector (76.11.41)

Removal

1 . Disconnect the battery ground cable.

2



- **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

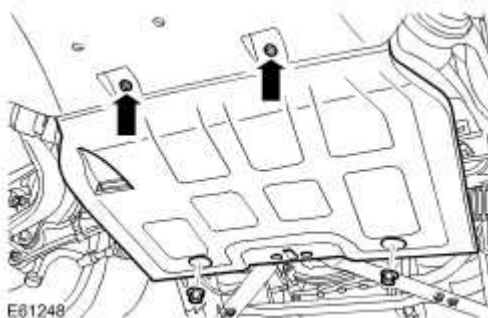
3 . **NOTE:**

Note the fitted position of the washers.

Remove the air deflector.

▶ Loosen the 2 screws.

▶ Remove the 2 nuts.



Installation

1 . Install the air deflector.

 Tighten the nuts.

 Tighten the screws.

2 . Connect the battery ground cable.

Cowl Vent Screen (76.10.01)

Removal



CAUTION: Always protect paintwork and glass when removing exterior components.

- 1 . Remove the air intake cover.

▶ Remove the 3 clips.



- 2 . Remove the brake master cylinder cover.

▶ Remove the 4 clips.



- 3 . Remove the windshield wiper arms.

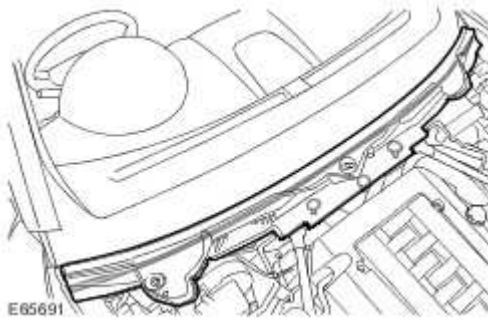
For additional information, refer to [Wiper Pivot Arm \(84.15.03\)](#)

- 4 . Remove the plenum chamber panel.

▶ Release the retaining clip.

▶ Release the 3 clips.

▶ Disconnect the washer jet hose.



Installation

- 1 . Install the plenum chamber panel.
 - ▶ Connect the washer jet hose.
 - ▶ Carefully secure the clips.
- 2 . Install the air intake cover.
 - ▶ Carefully secure the clips.
- 3 . Install the brake master cylinder cover.
 - ▶ Carefully secure the clips.
- 4 . Install the windshield wiper arms.
For additional information, refer to [Wiper Pivot Arm \(84.15.03\)](#)

Fender Splash Shield (76.10.90)

Removal

1 . Disconnect the battery ground cable.

2



· **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

3 . Remove the LH front wheel and tire.

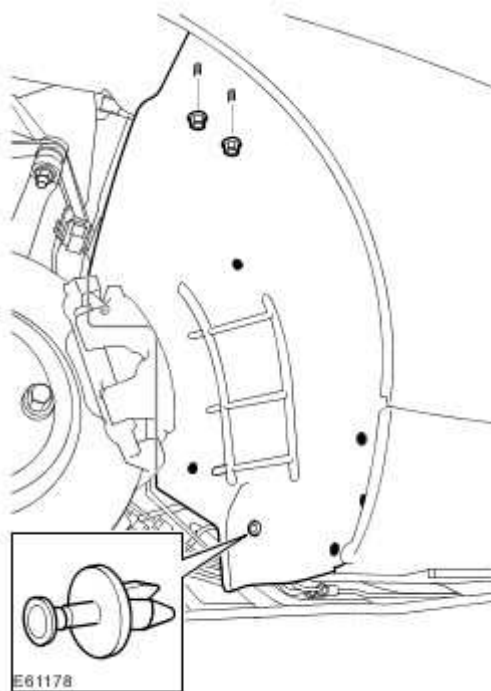
For additional information, refer to [Wheel and Tire \(74.20.05\)](#)

4 . Remove the fender splash shield, rear section.

▶ Remove the 6 Torx bolts.

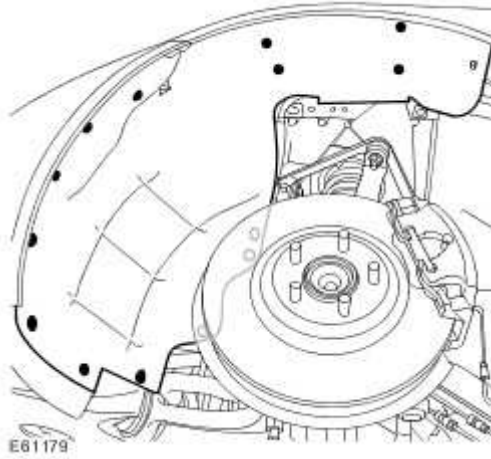
▶ Remove the clip.

▶ Remove the 2 nuts.



5 . Remove the fender splash shield, front section.

▶ Remove the 13 Torx bolts.



Installation

- 1 . Install the fender splash shield, front section.
 - ▶ Tighten the Torx bolts.
- 2 . Install the fender splash shield, rear section.
 - ▶ Tighten the Torx bolts.
 - ▶ Tighten the nuts.
 - ▶ Install the clip.
- 3 . Install the wheel and tire.

For additional information, refer to [Wheel and Tire \(74.20.05\)](#)
- 4 . Connect the battery ground cable.

Radiator Splash Shield (76.22.90)

Removal

- 1  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

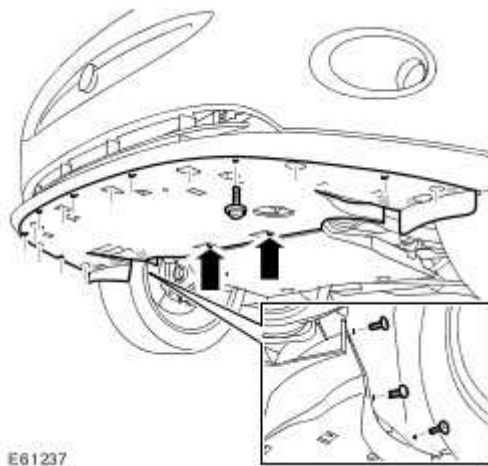
Raise and support the vehicle.

2 . NOTE:

Note the fitted position of the washers.

Remove the radiator splash shield.

-  Remove the 21 Torx bolts.
-  Remove the 2 screws.



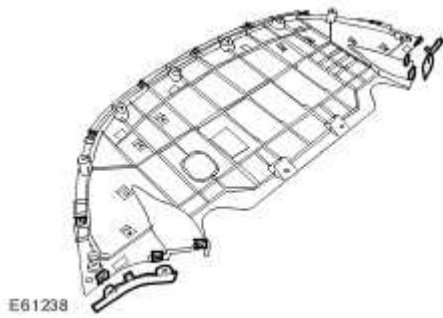
3 . NOTE:

Do not disassemble further if the component is removed for access only.

Remove the 13 clips.

4 . Remove the 2 air deflectors.

-  Release the 2 clips.



Installation

- 1 . Install the air deflectors.
 - ▶ Carefully secure the clips.
- 2 . Install the clips.
- 3 . Install the radiator splash shield.
 - ▶ Tighten the Torx bolts.
 - ▶ Tighten the screws.

501-03 : Body Closures

Specifications

Specifications

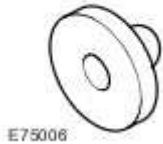
Torque Specifications

Item	Nm	lb-ft	lb-in
Door check strap to body - bolt	12	9	-
Door check strap to door - nut	12	9	-
Door hinge - pin bolt	25	18	-
Hood to hinge - nut	23	17	-
Hood hinge to body - bolt	23	17	-
Lift-gate to hinge - bolt	23	17	-
Lift-gate hinge to body - nut	23	17	-
Luggage compartment lid to hinge - nut	23	17	-
Luggage compartment lid hinge to body - bolt	23	17	-

Hood Alignment (76.16.02)

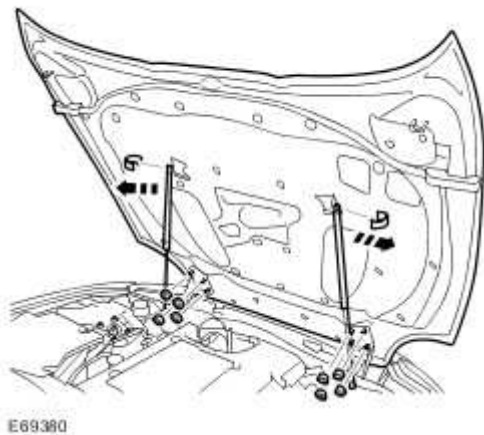
Special Service Tools

501-119



Actuator Aligners - Pedestrian Protection Hood Stops
501-119

1. With assistance, loosen the 8 nuts securing the hood to the hinges.
2. Release the hood support struts.



3. Lower the hood and check for alignment.
Body and Frame

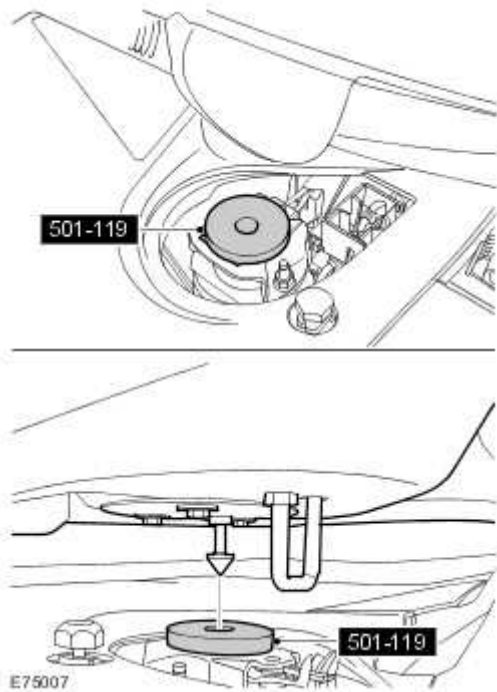
- Adjust as necessary.

4. Raise the hood.

- Tighten the nuts to 25 Nm (18 lb.ft).
Connect the hood support struts.

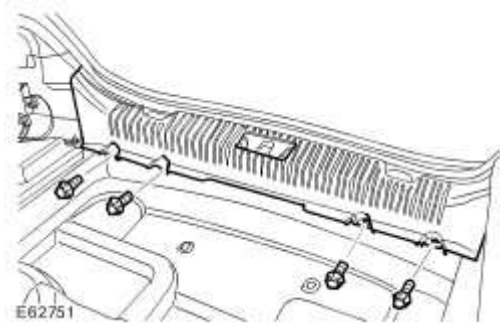
5. Align the hood to the pedestrian protection actuators using special tools 501-119.

- Insert special tools 501-119, into the pedestrian protection actuators.
- Loosen the 8 bolts securing the pedestrian protection actuator stops to the hood.
- Gently close the hood so that the pedestrian protection hood stops are aligned to the actuators.
- Open the hood.
- Tighten the bolts to 10 Nm (7 lb.ft).



Luggage Compartment Lid Alignment (76.19.03)

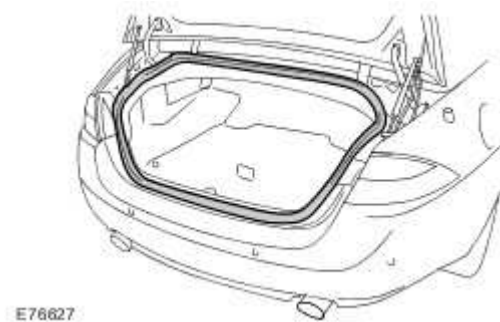
1. Remove the luggage compartment floor panel.
2. Remove the luggage compartment lid striker panel.
 - Remove the 4 Torx screws.



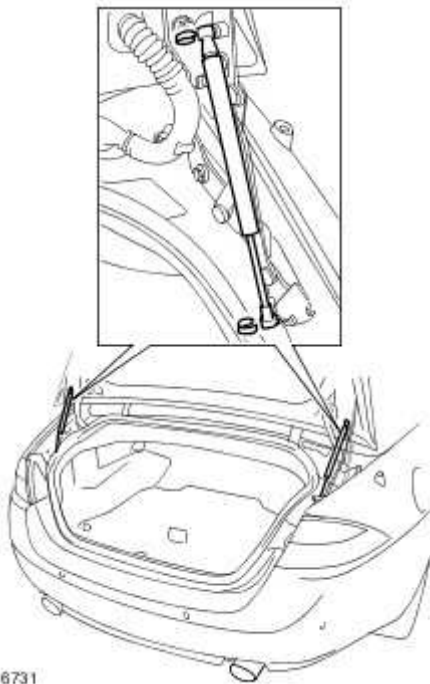
3. Remove the luggage compartment striker.
 - Remove the 2 Torx bolts.



4. Remove the luggage compartment aperture seal.



5. Remove the luggage compartment lid struts.
 - Release the 4 clips.



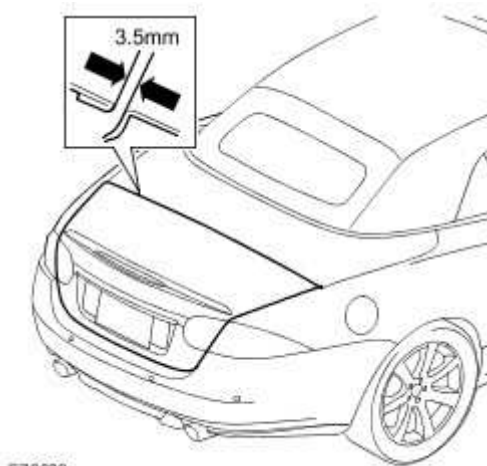
E76731

6. Loosen the luggage compartment lid hinge fixings.
 - Loosen but do not remove the 4 nuts.



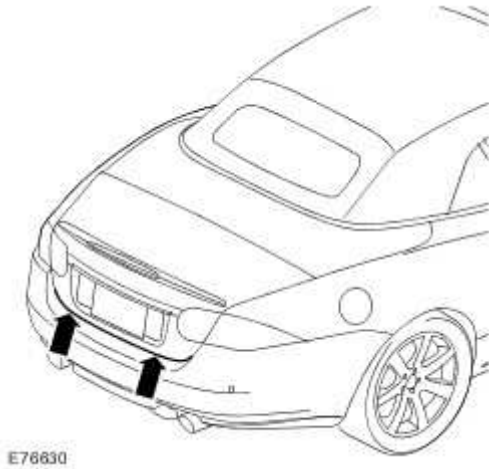
E76628

7. Make sure the gaps between the luggage compartment lid are all 3.5 mm.



E76629

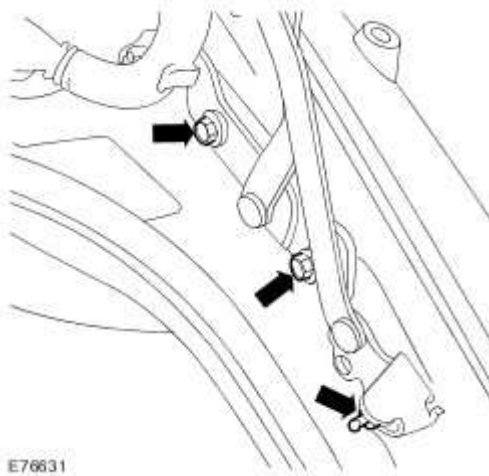
8. Make sure the luggage compartment lid to rear bumper gap is 6.8 mm.



9. Tighten the luggage compartment lid hinge nuts to 23 Nm (17 lb.ft).

10. Loosen the luggage compartment lid hinge to body fixings.

- Loosen the 6 bolts.



11. Make sure the gaps between the luggage compartment lid are all 3.5 mm.

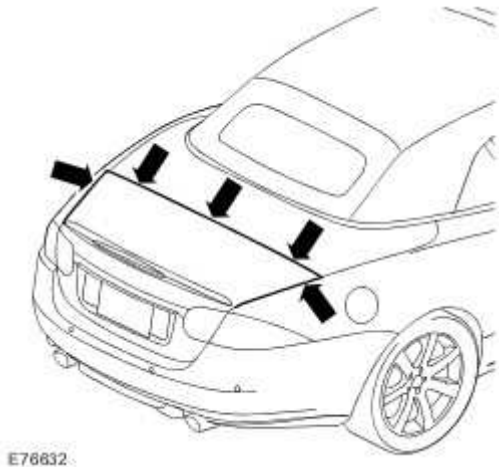
12. Tighten the luggage compartment lid hinge to body bolts, to 23 Nm (17 lb.ft).

13. Install the luggage compartment lid support struts.

- Secure the 4 clips.

14. With the luggage compartment lid closed, check the profile of the luggage compartment lid to convertible top compartment lid, and luggage compartment lid to rear body side is flush;

adjust as necessary.



15. Install the luggage compartment lid aperture seal.
16. Install the luggage compartment lid striker.
17. Install the luggage compartment lid striker trim panel.
 - Install the 4 Torx screws
18. Install the luggage compartment floor panel.

Liftgate Alignment (76.19.54.60)

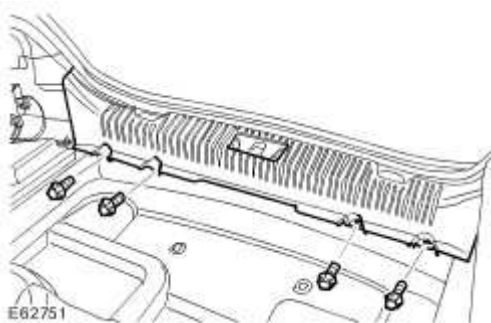
1. Check the gap and profiles of the liftgate are correct.

[Body and Frame](#)

2. Remove the loadspace floor panel.

3. Remove the scuff plate trim panel.

- Remove the 4 Torx bolts.



4. Remove the liftgate hinge cover.

- Remove the 8 clips.

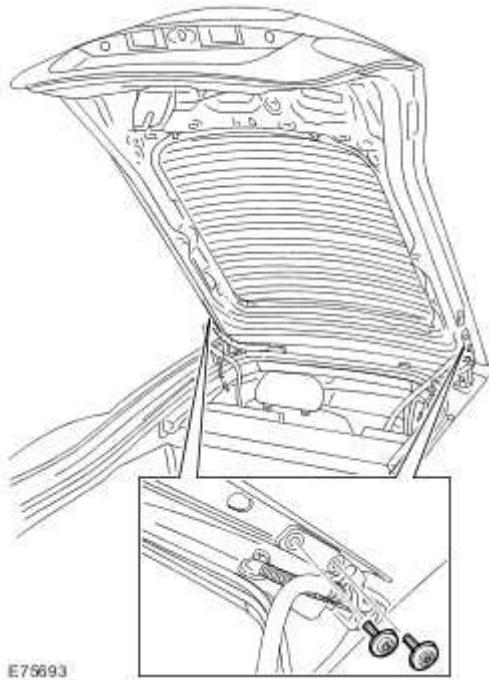


5. Loosen the liftgate striker.

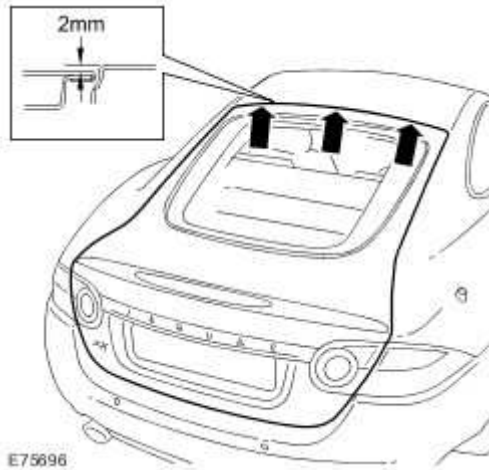
- Loosen the 2 Torx bolts.



6. Loosen the liftgate to hinge Torx bolts.

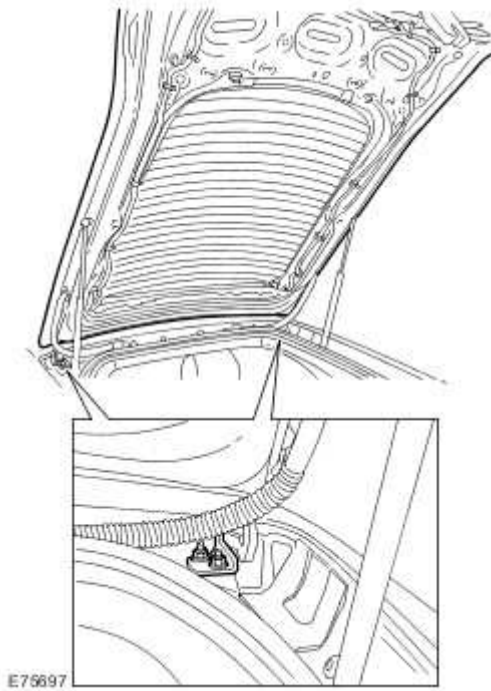


7. With the liftgate closed, check the alignment of the liftgate to the roof panel. Profile of the liftgate to roof panel should be 2 mm below flush.

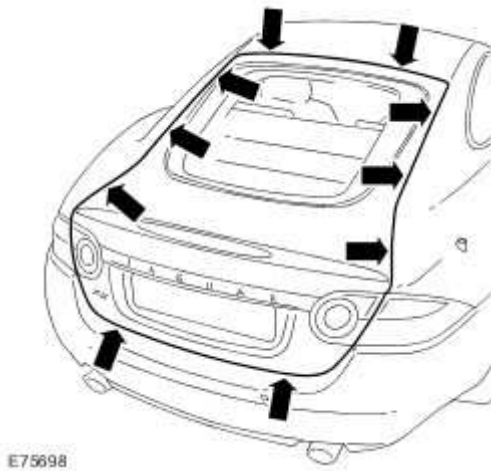


8. Tighten the liftgate to hinge Torx bolts to 25 Nm (18 lb.ft).

9. Loosen the liftgate hinge to body nuts.



10. With the liftgate closed, check the alignment of the liftgate to the roof panel and bodyside panel. The liftgate should be central in its aperture.



11. Tighten the liftgate hinge to body nuts to 25 Nm (18 lb.ft).

12. Secure the liftgate striker.

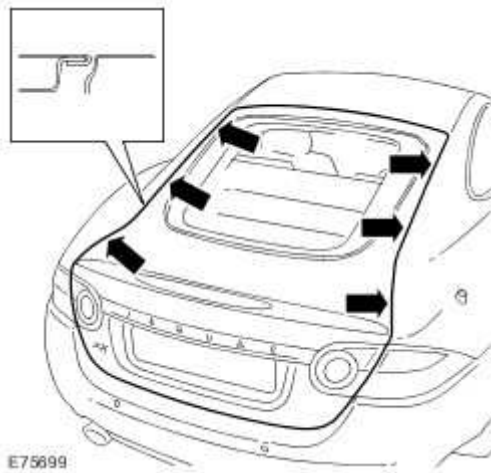
- Tighten the Torx bolts to 25 Nm (18 lb.ft).

13. Install the scuff plate trim panel.

- Install the 4 Torx screws

14. With the liftgate closed, check the profile of the liftgate to the bodyside panel. Adjust as

required.



15. Install the liftgate hinge cover.

- Secure with the clips.

16. Install the loadspace floor panel.

Hood (76.16.01)

Special Service Tools

501-119



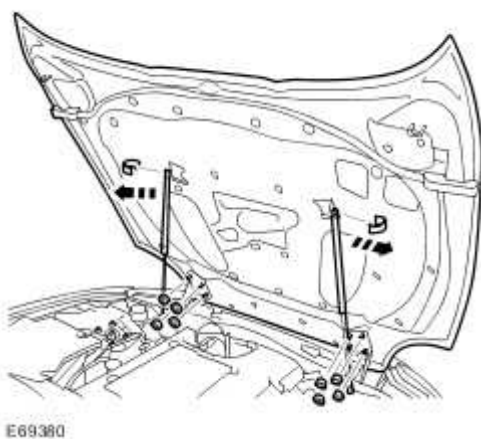
Actuator Aligners - Pedestrian Protection Hood Stops
501-119

Removal

1 . With assistance, remove the hood.

▶ Release the clips and disconnect the struts.

▶ Remove the 8 nuts.



2 . **NOTE:**

Do not disassemble further if the component is removed for access only.

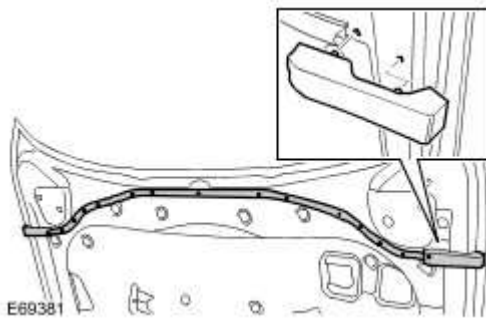
Remove the hood seal end caps.

▶ Release from the 4 clips.

3 . Remove the hood seal.

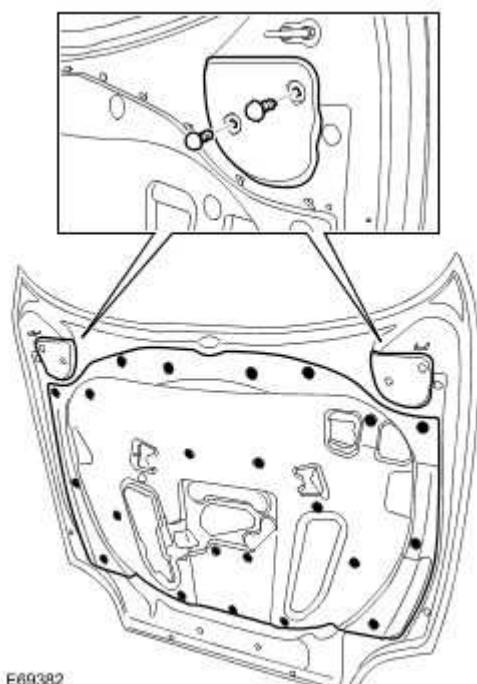
▶ Release the hood seal.

▶ Remove the 17 clips.



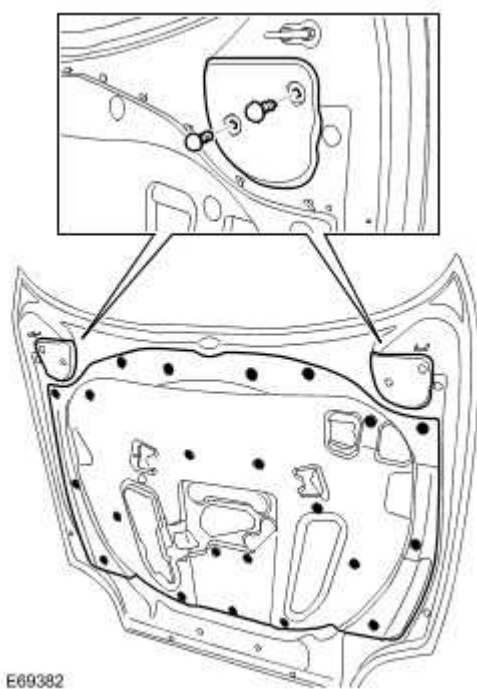
4 . Remove the hood pad.

▶ Remove the 23 clips.



5 . Remove the 2 secondary hood pads.

► Remove the 4 clips.



Installation

1 . Install the secondary hood pads.

▶ Secure with the clips.

2 . Install the hood pad.

▶ Secure with the clips.

3 . Install the hood seal.

▶ Install the clips.

▶ Attach the hood seal.

4 . Install the hood seal end caps.

▶ Secure with the clips.

5 . With assistance install and align the hood.

▶ Tighten the nuts to 25 Nm (18 lb.ft).

▶ Connect the struts and secure with the clips.

6 Align the hood to the pedestrian protection actuators using special tools 501-119.

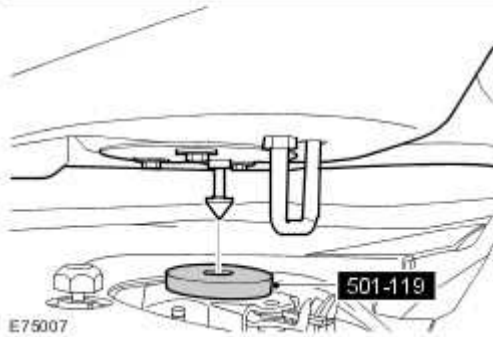
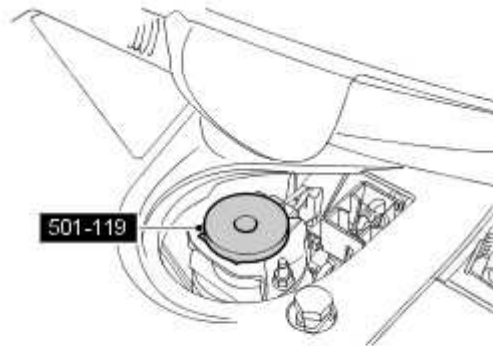
▶ Insert special tools 501-119 into the pedestrian protection actuators.

▶ Loosen the 8 bolts securing the pedestrian protection actuator stops to the hood.

▶ Gently close the hood so that the pedestrian protection hood stops are aligned to the actuators.

► Open the hood.

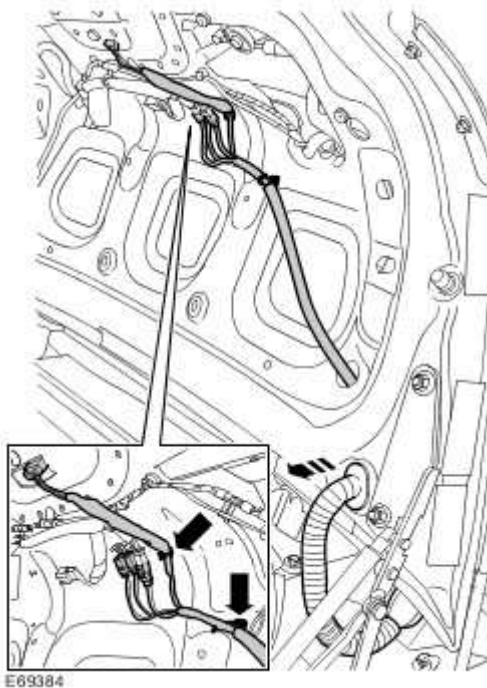
► Tighten the bolts to 10 Nm (7 lb.ft).



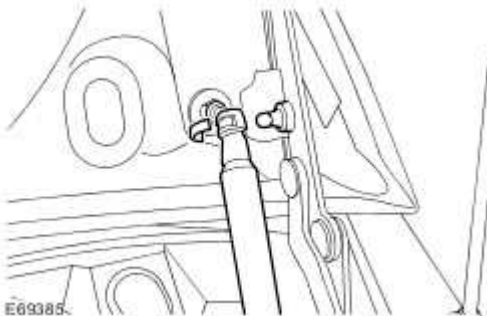
Luggage Compartment Lid (76.19.01)

Removal

- 1 . Remove the luggage compartment lid trim panel.
- 2 . Disconnect the 4 luggage compartment lid harness electrical connectors.
- 3 . Release the wiring harness.
 - ▶ Remove the electrical harness clip.

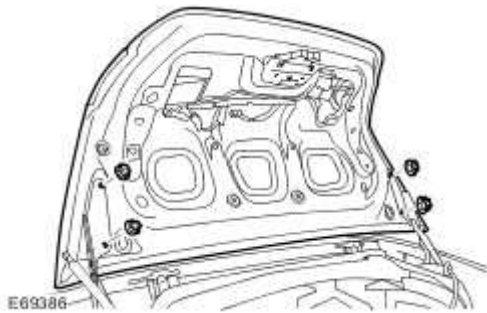


- 4 . Release the electrical harness.
 - ▶ Release the electrical harness clip.
- 5 . Release the clips and disconnect the struts.



6 . With assistance, remove the luggage compartment lid.

▶ Remove the 4 nuts.



7 . **NOTE:**

Do not disassemble further if the component is removed for access only.

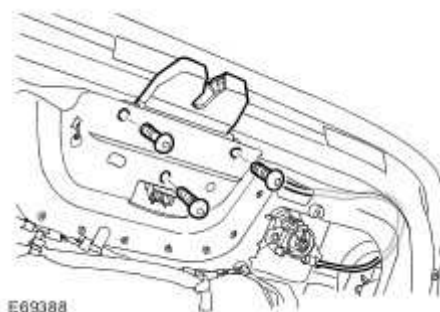
Remove the luggage compartment lid latch operating cable from the lock cylinder.

▶ Release the cable from the clip.



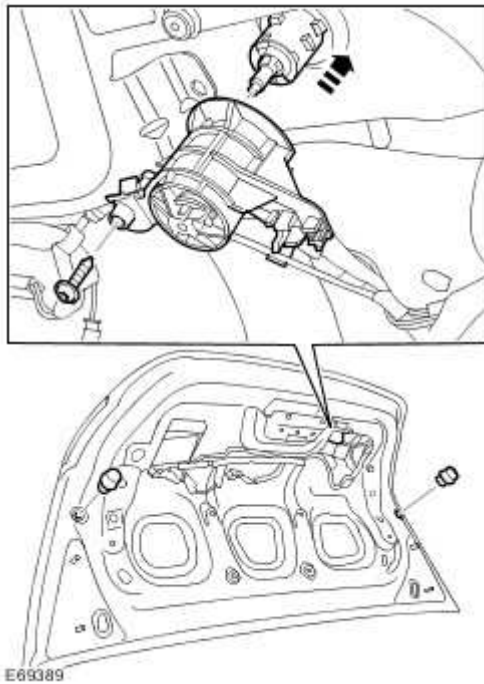
8 . Remove the luggage compartment lid latch assembly.

▶ Remove the 3 Torx bolts.



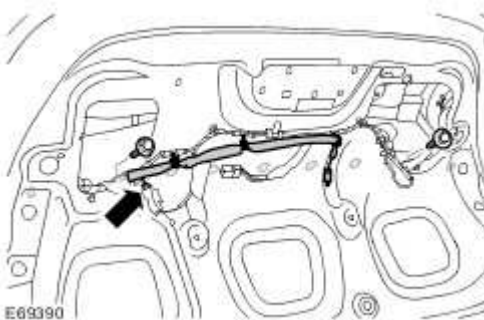
9 . Remove the bump stops.

10 . Remove the luggage compartment lid lock cylinder.



11 . Remove the rear spoiler.

- Disconnect the electrical connector.
- Release the 3 wiring harness clips.
- Remove the 2 bolts.
- Release the 9 clips.

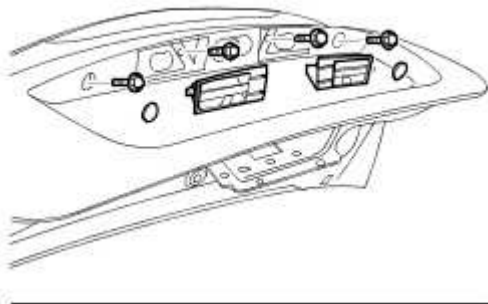


12 . Remove the license plate lamp housing.

13 . Remove the luggage compartment lid finisher.

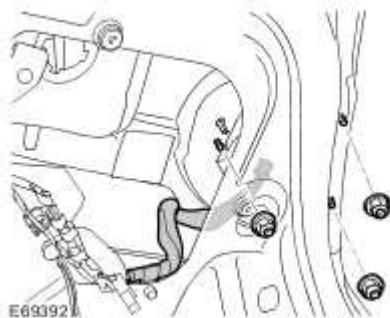
- Disconnect the license plate lamp electrical connector.
- Remove the grommets.
- Remove the 4 bolts.
- Release the 4 clips.

- ▶ Release the 4 clips.



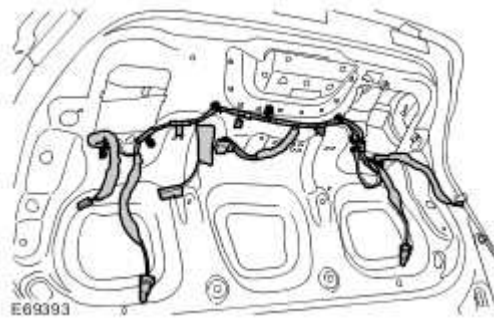
- 14 . Remove both rear lamp assemblies.

- ▶ Remove the 6 nuts.
- ▶ Disconnect the 2 electrical connectors.



- 15 . Remove the luggage compartment lid wiring harness.

- ▶ Release the 8 wiring harness securing clips.



16 Remove the luggage compartment lid decals.

- - ▶ Wipe the luggage compartment lid to remove all traces of the adhesive.
 - ▶ Polish the area to remove any bleaching.

Installation

1 . Install the luggage compartment lid decal.

- ▶ Remove the backing from the decal.
- ▶ Remove the protective cover from the decal.
- ▶ Secure the decal to the luggage compartment lid.
- ▶ Position and align the decal on the luggage compartment lid.

2 . Install the luggage compartment lid wiring harness.

3 . Install both of the rear lamp assemblies.

- ▶ Install the nuts.
- ▶ Connect the electrical connectors.

4 . Install the luggage compartment lid finisher.

- ▶ Connect the license plate lamp electrical connector.
- ▶ Secure the 4 clips.
- ▶ Install the 4 bolts.
- ▶ Install the grommets.
- ▶ Install the license plate lamp housing.

5 . Install the wiring harness.

- ▶ Install the 2 bolts.
- ▶ Secure in the 9 clips.

 Connect the electrical connectors.

6 . Install the luggage compartment lid lock cylinder.

 Tighten the Torx bolt to 3 Nm (2 lb.ft).

7 . Install the bump stops.

8 . Install the luggage compartment lid latch assembly.

 Install the 3 Torx bolts.

 Connect the electrical connector.

 Tighten the bolts to 20 Nm (15 lb.ft).

9 . Connect the luggage compartment lid latch operating cable to the lock cylinder.

 Install the cable.

10 . With assistance, install the luggage compartment lid.

 Install the 4 nuts.

 Tighten the nuts to 23 Nm (17 lb.ft).

11 . Install the luggage compartment lid support struts.

 Secure in the 2 clips.

12 . Install the wiring harness.

 Secure the electrical harness with the clip.

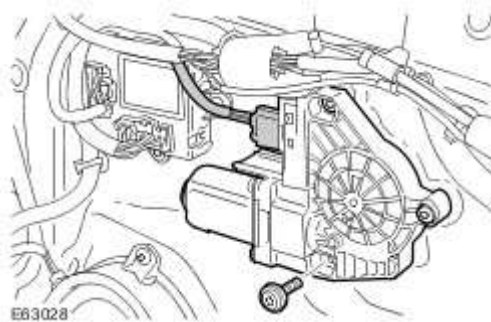
13 . Connect the 4 electrical connectors.

14 . Install the luggage compartment lid trim panel.

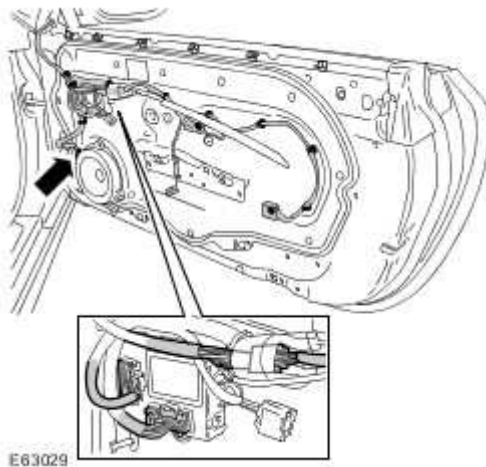
Door (76.28.04)

Removal

- 1 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to
- 2 . Remove the front door trim panel.
For additional information, refer to [Front Door Trim Panel \(76.34.01\)](#)
- 3 . Remove the window regulator motor.
 - ▶ Disconnect the electrical connector.
 - ▶ Remove the 3 Torx screws.

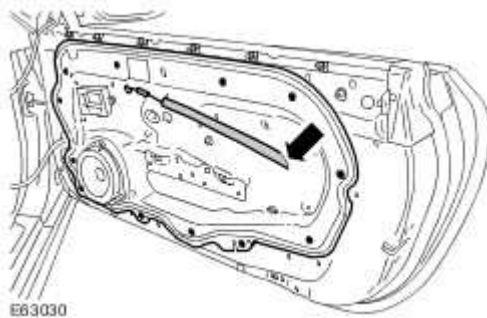


- 4 . Release the front door inner weathershield.
 - ▶ Disconnect the 3 electrical connectors.
 - ▶ Release the 9 wiring harness clips.



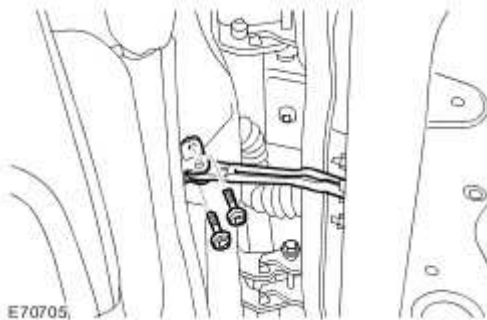
- 5 . Remove the front door inner weathershield.

- ▶ Remove the 12 Torx bolts.
- ▶ Release the front door interior handle cable.



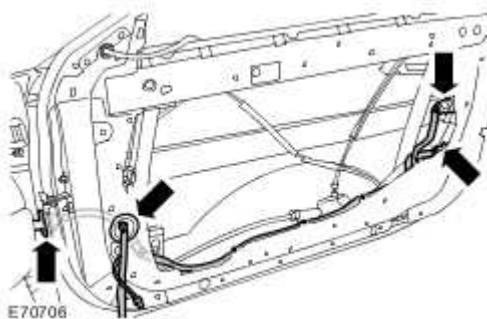
6 . Release the door check strap from the body.

- ▶ Remove the 2 Torx screws.



7 . Release the door harness from the door.

- ▶ Release the 5 clips.
- ▶ Disconnect the 2 electrical connectors.
- ▶ Release from the locating grommet.

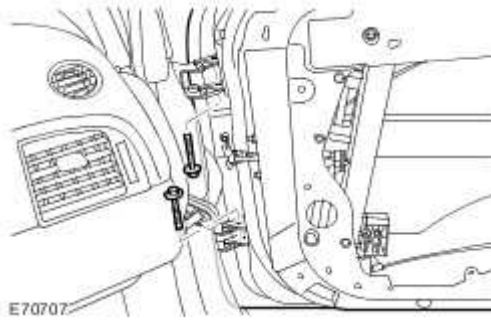


8 . **NOTE:**

With assistance remove the component.

Remove the door.

- ▶ Remove the 2 hinge bolts.



Installation

- 1 . With assistance, install the door assembly.
 - ▶ Lubricate the hinges and bolts tighten to 25 Nm (18 lb.ft).
- 2 . Install the door wiring harness.
 - ▶ Secure in the grommets.
 - ▶ Connect the electrical connectors.
 - ▶ Secure the clips.
- 3 . Install the door check strap.
 - ▶ Tighten the Torx screws to 10 Nm (7 lb.ft).
- 4 . Install the front door inner weathershield.
 - ▶ Attach the front door interior handle cable.
 - ▶ Tighten the Torx bolt to 10 Nm (7 lb.ft).
- 5 . Secure the front door inner weathershield.
 - ▶ Secure the wiring harness clips.
 - ▶ Connect the electrical connectors.
- 6 . Install the window regulator motor.
 - ▶ Install and tighten the Torx screws.
 - ▶ Connect the electrical connector.
- 7 . Install the front door trim panel.

For additional information, refer to [Front Door Trim Panel \(76.34.01\)](#)

- 8 . Connect the battery ground cable and install the cover.
For additional information, refer to

Door Check Arm

Removal

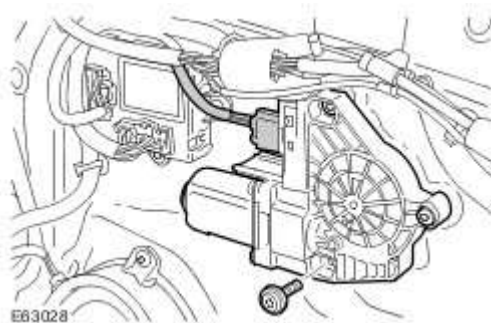
- 1 . Remove the front door trim panel.

For additional information, refer to [Front Door Trim Panel \(76.34.01\)](#)

- 2 . Remove the window regulator motor.

▶ Disconnect the electrical connector.

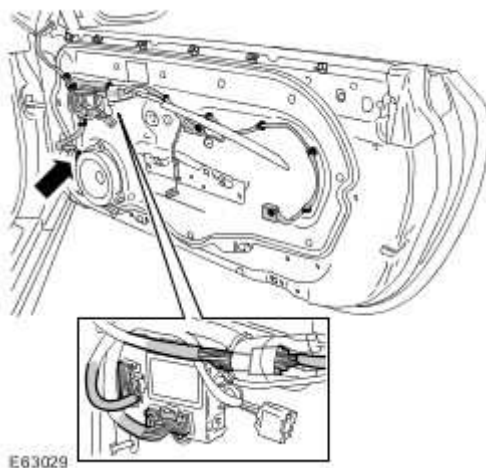
▶ Remove the 3 Torx screws.



- 3 . Release the front door inner weathershield.

▶ Disconnect the 3 electrical connectors.

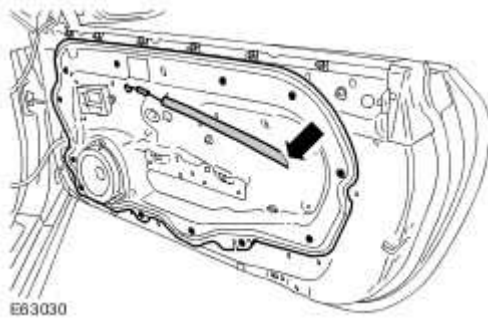
▶ Release the 9 wiring harness clips.



- 4 . Remove the front door inner weathershield.

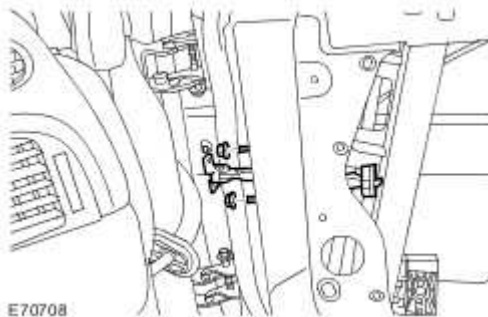
▶ Remove the 12 Torx bolts.

▶ Release the front door interior handle cable.



5 . Remove the door check-strap.

- ▶ Remove the 2 Torx screws.
- ▶ Remove the 2 nuts.



Installation

1 . Install the door check strap.

- ▶ Tighten the Torx screws to 10 Nm (7 lb.ft).
- ▶ Tighten the nuts to 25 Nm (18 lb.ft).

2 . Install the front door inner weathershield.

- ▶ Attach the front door interior handle cable.
- ▶ Tighten the Torx bolt to 10 Nm (7 lb.ft).

3 . Secure the front door inner weathershield.

- ▶ Secure the wiring harness clips.
- ▶ Connect the electrical connectors.

4 . Install the window regulator motor.

- ▶ Install and tighten the Torx screws.
- ▶ Connect the electrical connector.

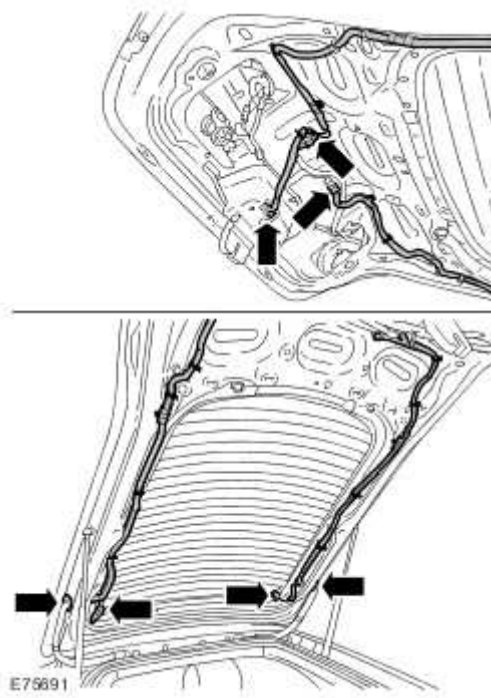
5 . Install the front door trim panel.

For additional information, refer to [Front Door Trim Panel \(76.34.01\)](#)

Liftgate

Removal

- 1 . Remove the liftgate lower trim panel.
For additional information, refer to [Liftgate Lower Trim Panel](#)
- 2 . Disconnect the rear screen electrical connectors.
- 3 Release the body harness from the liftgate.
 - ▶ Release the 15 clips.
 - ▶ Disconnect the 5 electrical connectors.
 - ▶ Release the 2 harness grommets and withdraw the harness from liftgate.

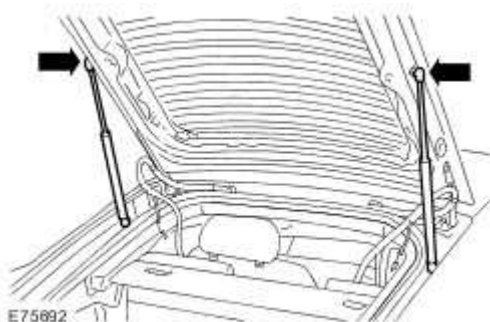


4 . NOTE:

Support the liftgate as necessary.

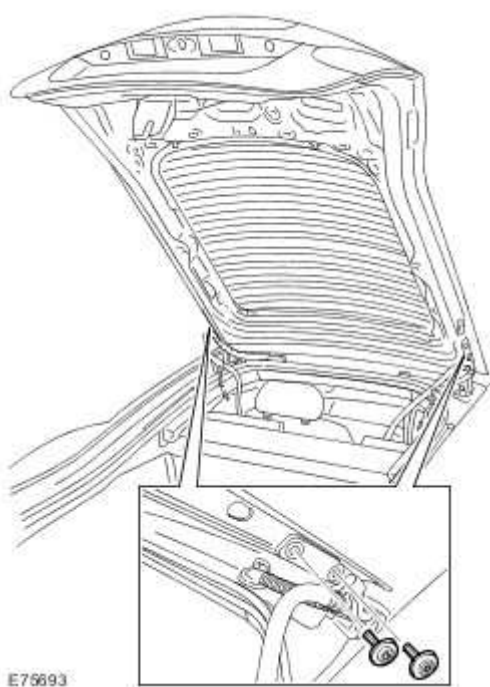
Release the liftgate support struts.

- ▶ Release the 2 clips.



5 . With assistance, remove the liftgate.

▶ Remove the 4 Torx bolts.



Installation

1 . With assistance, install the liftgate.

▶ Tighten the Torx bolts to 25 Nm (18 lb.ft).

2 . **NOTE:**

Support the lifgate as necessary.

Attach the liftgate support struts.

▶ Secure with the clips.

3 . Attach the body harness to the liftgate.

-  Secure with the clips.
-  Connect the electrical connectors.
-  Secure the harness grommets into the liftgate.

4 . Disconnect the rear screen electrical connectors.

5 . Install the liftgate lower trim panel.

For additional information, refer to [Liftgate Lower Trim Panel](#)

6 . Check and adjust the liftgate.

For additional information, refer to [Liftgate Alignment \(76.19.54.60\)](#)

501-05 : Interior Trim and Ornamentation

Specifications

Specifications

Torque Specifications

Item	Nm	lb-ft	lb-in
B-pillar trim panel - screw	3	2	26
Door trim panel - screw	3	2	26
Parcel shelf - bolt	6	4	53
Door scuff-plate - screw	6	4	53
Luggage compartment scuff plate - bolt	4	3	35
Rear quarter trim panel - screw	3	2	26
Sun visor - screw	1	-	9

A-Pillar Trim Panel (76.13.31)

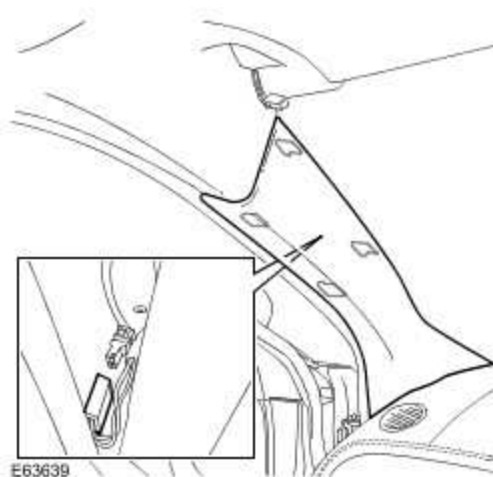
Removal

1 . **NOTE:**

Do not disassemble further if the component is removed for access only.

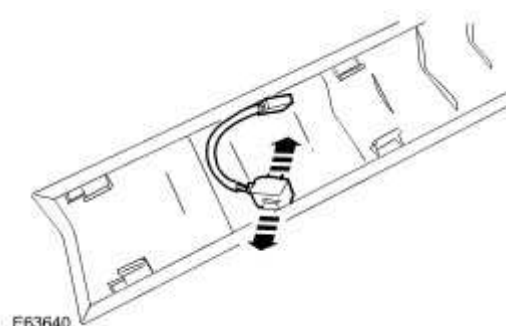
Remove the A-pillar trim panel.

- ▶ Release from the 4 clips.
- ▶ Disconnect the electrical connector.



2 . Remove the cellular phone microphone.

- ▶ Release from the 2 clips.



Installation

1 . Install the cellular phone microphone.

▶ Secure in the clips.

2 . Install the A-pillar trim panel.

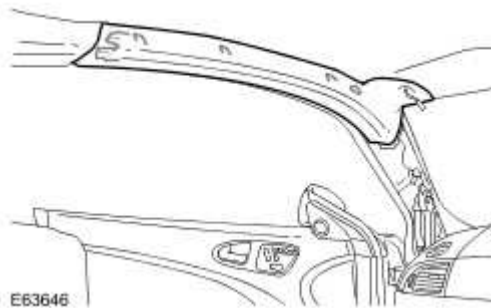
▶ Connect the electrical connector.

▶ Secure in the clips.

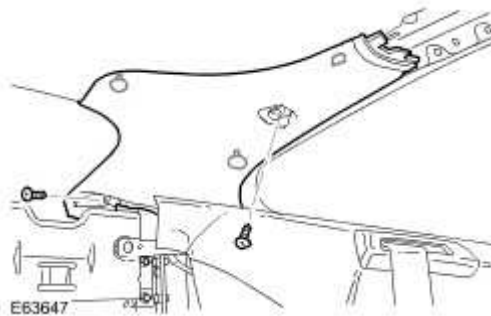
B-Pillar Trim Panel (76.13.28)

Removal

- 1 . Remove the parcel tray.
For additional information, refer to [Parcel Shelf \(76.67.06\)](#)
- 2 . Remove the sun visor.
For additional information, refer to [Sun Visor \(76.10.48\)](#)
- 3 . Remove the roof moulding.
▶ Release the 3 clips.



- 4 . Release the B-pillar trim panel.
▶ Remove the 2 Torx screws.



- 5 . Remove the B-pillar trim panel.
▶ Release from the 3 clips.

Installation

1 . Attach the B-pillar trim panel.

 Secure with the clips.

2 . Secure the B-pillar trim panel.

 Tighten the Torx screws.

3 . Install the roof moulding.

 Secure in the clips.

4 . Install the sun visor.

For additional information, refer to [Sun Visor \(76.10.48\)](#)

5 . Install the parcel tray.

For additional information, refer to [Parcel Shelf \(76.67.06\)](#)

Engine Cover (76.11.35)

Removal

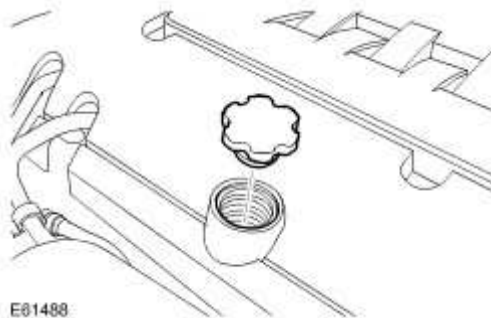


CAUTION: Correct installation of the oil filler cap can be obtained by tightening the cap until an audible click is heard.

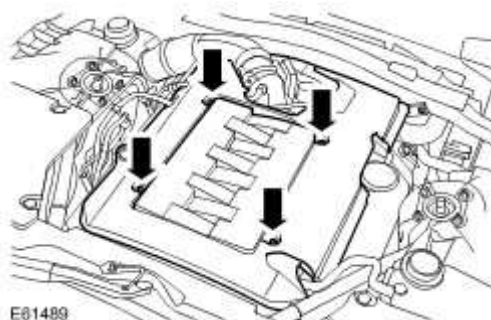
NOTE:

Naturally aspirated engine shown, supercharged engine is similar.

- 1 . Remove the cover and disconnect the battery ground cable.
- 2 . Open the hood.
- 3 . Remove the oil filler cap.



- 4 . Remove the engine cover.
▶ Release the 4 clips.



Installation

- 1 . Install the engine cover.

 Position and secure the clips.

2



- **CAUTION: Correct installation of the oil filler cap can be obtained by tightening the cap until an audible click is heard.**

Install the oil filler cap.

3 . Close the hood.

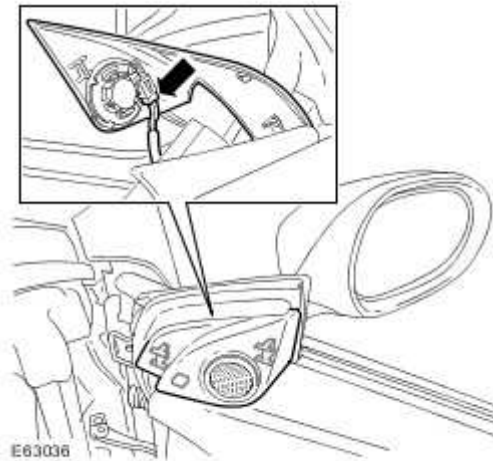
4 . Connect the battery ground cable and install the cover.

Front Door Trim Panel (76.34.01)

Removal

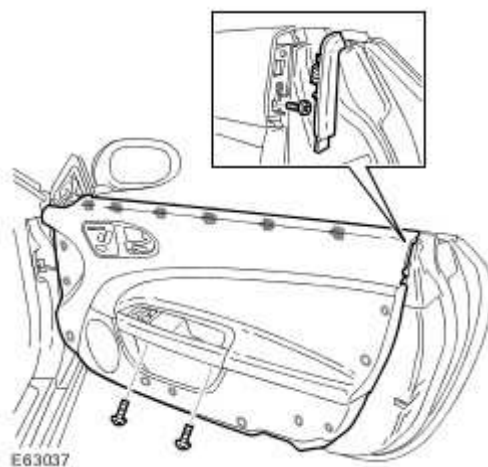
1 . Remove the exterior mirror trim panel.

- ▶ Release the 3 clips.
- ▶ Disconnect the electrical connector.



2 . Release the front door trim panel.

- ▶ Remove the bolt cover.
- ▶ Remove the 3 Torx bolts.
- ▶ Release the 16 clips.

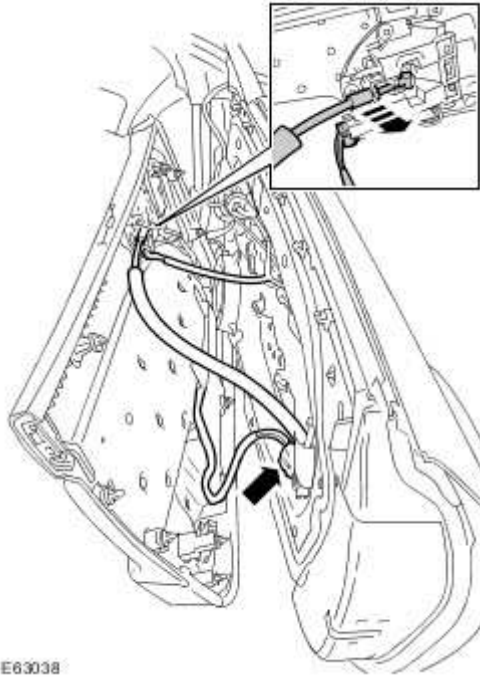


3 . **NOTE:**

Do not disassemble further if the component is removed for access only.

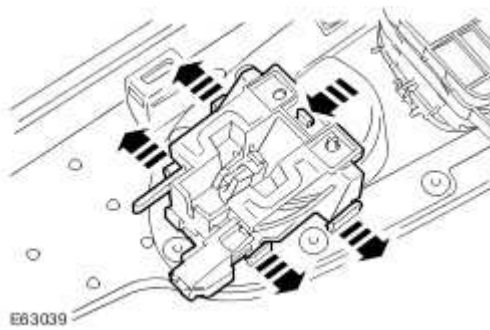
Remove the front door trim panel.

- ▶ Release the front door interior handle cable.
- ▶ Disconnect the 2 electrical connectors.



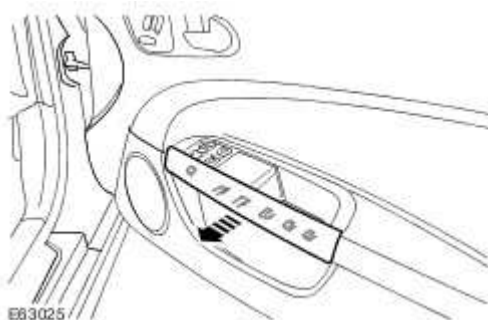
4 . Remove the front door latch remote control handle.

- ▶ Release from the 5 clips.



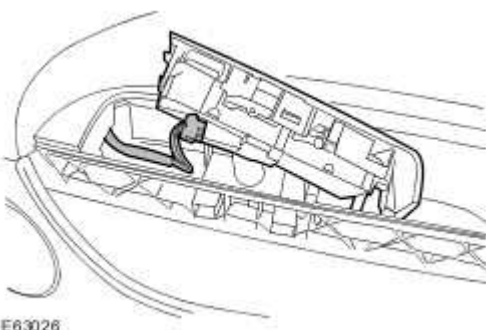
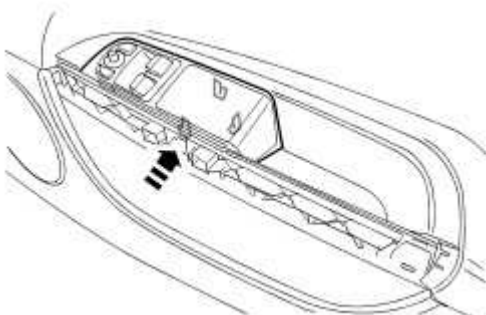
5 . Remove the grab handle cover.

- ▶ Release from the 6 clips.



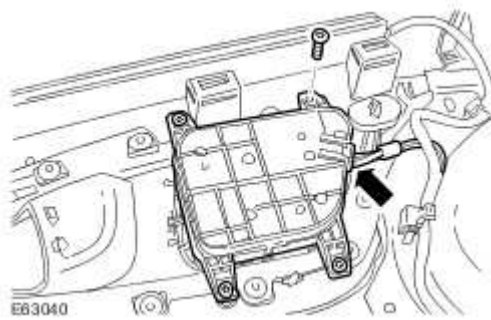
6 . Remove the window control switch.

- ▶ Release from the 3 clips.
- ▶ Disconnect the electrical connector.



7 . Remove the seat control switch.

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



Installation

1 . Install the seat control switch.

- ▶ Connect the electrical connector.
- ▶ Install and tighten the Torx screws.

2 . Install the window control switch.

- ▶ Connect the electrical connector.
- ▶ Secure in the clips.

3 . Install the grab handle cover.

- ▶ Secure in the clips.

4 . Install the front door latch remote control handle.

- ▶ Secure in the clips.

5



- **CAUTION: Make sure that the cable remains correctly installed to the front door trim panel.**

Install the front door trim panel.

- ▶ Attach the front door interior handle cable.
- ▶ Connect the electrical connectors.

6 . Secure the front door trim panel.

- ▶ Secure in the clips.
- ▶ Tighten the Torx bolts to 10 Nm.
- ▶ Install the bolt cover.

7 . Install the exterior mirror trim panel.

▶ Connect the electrical connector.

▶ Secure with the clips.

8 Check the operation of the door latch remote control handle.

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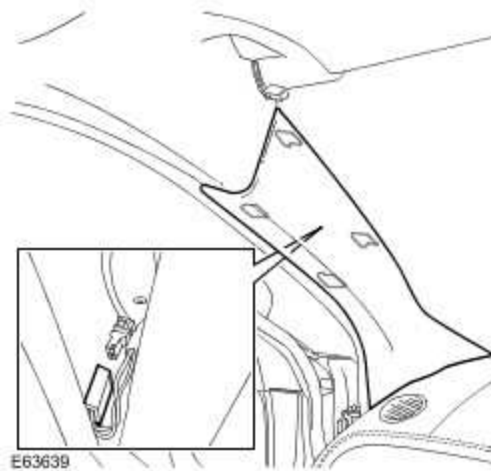
▶ With the door closed, check the latch operation of the door latch remote control handle.

▶ With the door closed, check the lock operation of the door latch remote control handle.

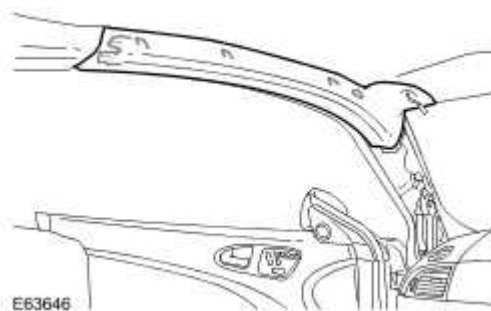
Headliner (76.64.01)

Removal

- 1 . Remove the LH A-pillar upper trim panel.
For additional information, refer to [A-Pillar Trim Panel \(76.13.31\)](#)
- 2 . Remove the RH A-pillar upper trim panel.
 - ▶ Release from the 4 clips.
 - ▶ Disconnect the electrical connector.



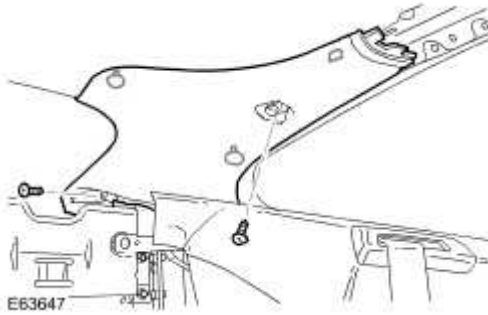
- 3 . Remove the roof mouldings.
 - ▶ Release the 6 clips.



- 4 . Remove the LH B-pillar upper trim panel.
For additional information, refer to [B-Pillar Trim Panel \(76.13.28\)](#)
- 5 . Release the RH B-pillar upper trim panel.
 - ▶ Remove the 2 Torx screws.

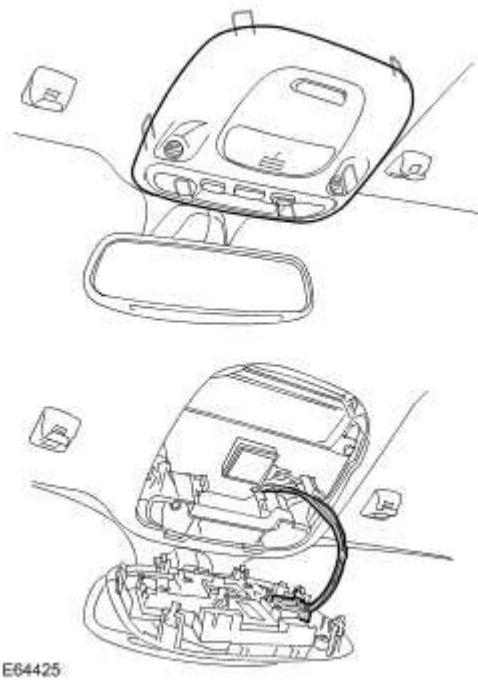
6 . Remove the RH B-pillar upper trim panel.

- ▶ Release from the 3 clips.



7 . Remove the front overhead console.

- ▶ Release from the 6 clips.
- ▶ Disconnect the electrical connector.

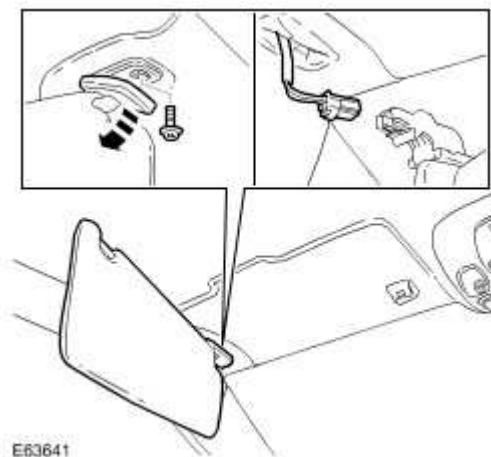


8 . Remove the LH sun visor.

For additional information, refer to [Sun Visor \(76.10.48\)](#)

9 . Remove the RH sun visor.

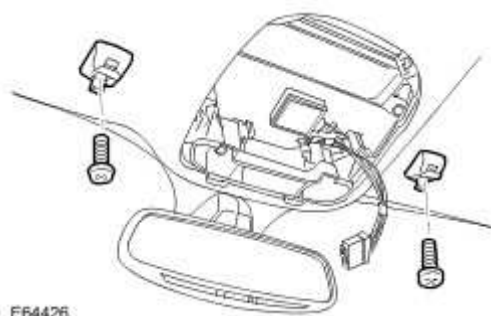
- ▶ Remove the bolt cover.
- ▶ Remove the Torx bolt.
- ▶ Disconnect the electrical connector.



E63641

10 . Remove the sun visor retaining clips.

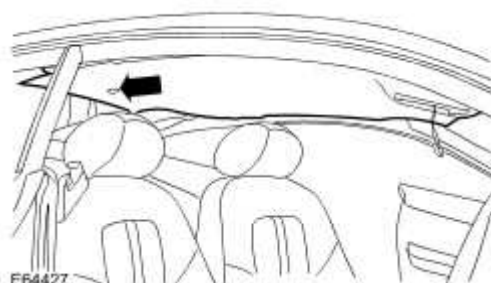
- ▶ Release the screw covers.
- ▶ Remove the screws.



E64426

11 . Remove the headliner.

- ▶ Release the clip.



E64427

Installation

1 . Install the headliner.

 Secure with the clip.

2 . Install the sun visor retaining clips.

 Install the screws.

 Install the screw covers.

3 . Install the RH sun visor.

 Connect the electrical connector.

 Tighten the Torx bolt to 10 Nm (7 lb.ft).

 Install the bolt cover.

4 . Install the LH sun visor.

For additional information, refer to [Sun Visor \(76.10.48\)](#)

5 . Install the front overhead console.

 Connect the electrical connector.

 Secure in the clips.

6 . Attach the RH B-pillar upper trim panel.

 Secure with the clips.

7 . Secure the RH B-pillar upper trim panel.

 Tighten the Torx screws.

8 . Install the LH B-pillar upper trim panel.

For additional information, refer to [B-Pillar Trim Panel \(76.13.28\)](#)

9 . Install the roof mouldings.

 Secure with the clips.

10 . Install the RH A-pillar upper trim panel.

 Connect the electrical connector.

 Secure in the clips.

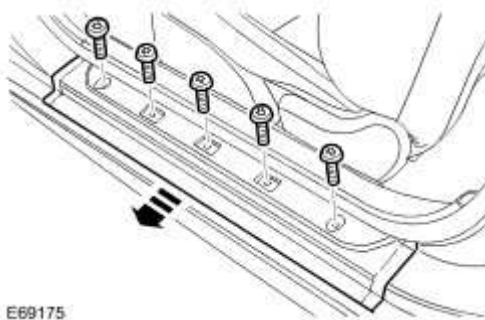
11 . Install the LH A-pillar upper trim panel.

For additional information, refer to [A-Pillar Trim Panel \(76.13.31\)](#)

Front Scuff Plate Trim Panel (76.13.81)

Removal

- 1 . Remove and discard the scuff plate decal.
 - ▶ Release the adhesive strip.
- 2 . Remove the front scuff plate trim panel.
 - ▶ Remove the 5 Torx screws.
 - ▶ Carefully release horizontally.



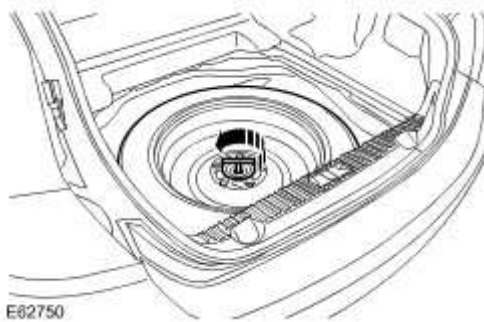
Installation

- 1 . Install the front scuff plate trim panel.
 - ▶ Align the component.
 - ▶ Tighten the Torx screws to 6 Nm (4 lb.ft).
- 2 . Install the scuff plate decal.
 - ▶ Remove backing tape from adhesive strip.
 - ▶ Clean the adhesive contact area.

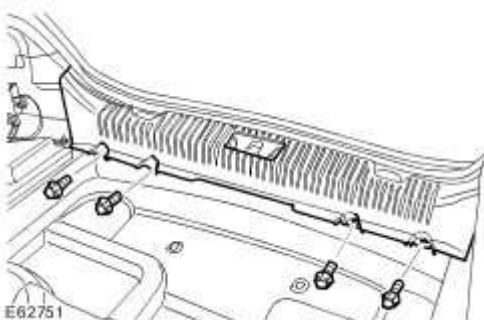
Scuff Plate Trim Panel (76.13.81)

Removal

- 1 . Remove the luggage compartment floor panel.
- 2 . Remove the tool kit tray.
- 3 . Remove the spare wheel and tire.
 - ▶ Remove the bolt.



- 4 . Remove the scuff plate trim panel.
 - ▶ Remove the 4 Torx bolts.



Installation

- 1 . Install the scuff plate trim panel.
 - ▶ Tighten the Torx bolts to 10 Nm (7 lb.ft).
- 2 . Install the spare wheel and tire.
 - ▶ Install the bolt.

3 . Install the tool kit tray.

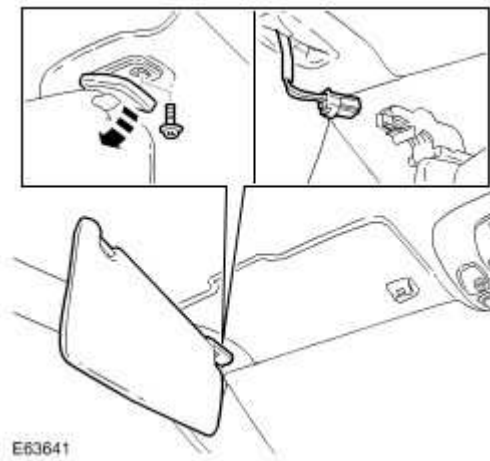
4 . Install the luggage compartment floor panel.

Sun Visor (76.10.48)

Removal

1 . Remove the sun visor.

- ▶ Remove the bolt cover.
- ▶ Remove the Torx bolt.
- ▶ Disconnect the electrical connector.



Installation

1 . Install the sun visor.

- ▶ Connect the electrical connector.
- ▶ Tighten the Torx bolt to 10 Nm (7 lb.ft).
- ▶ Install the bolt cover.

Liftgate Upper Trim Panel (76.34.11)

Removal

- 1 . Remove the liftgate upper trim panel.
 - ▶ Release from the 12 clips.



Installation

- 1 . Install the liftgate upper trim panel.
 - ▶ Secure in the clips.

Liftgate Lower Trim Panel

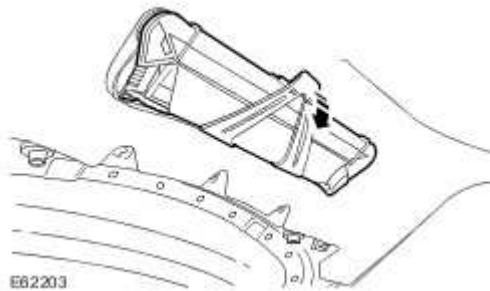
Removal

- 1 . Remove the liftgate upper trim panel.

For additional information, refer to [Liftgate Upper Trim Panel \(76.34.11\)](#)

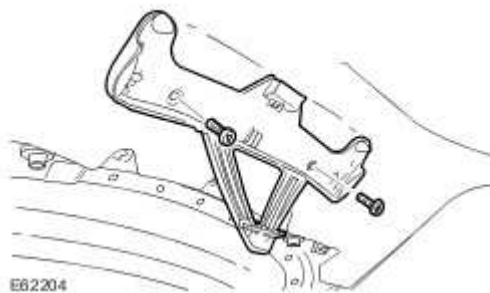
- 2 . Remove the warning triangle.

▶ Release the clip.



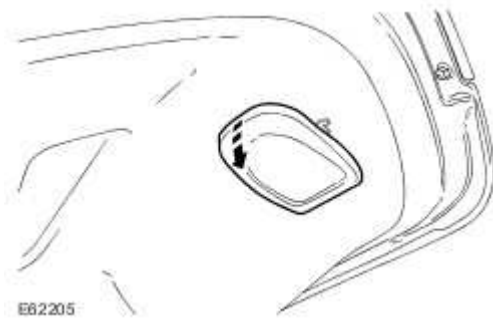
- 3 . Remove the warning triangle retaining bracket.

▶ Remove the 2 Torx bolts.



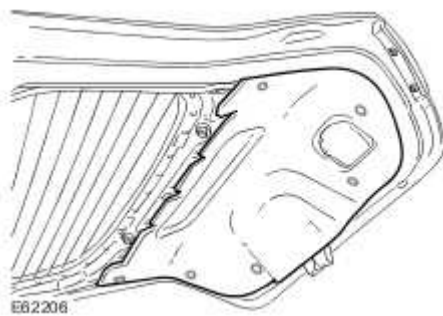
- 4 . Remove the liftgate grab handle.

▶ Release the 2 clips.



5 . Remove the liftgate lower trim panel.

▶ Release the 6 clips.



Installation

1 . Install the liftgate lower trim panel.

▶ Secure with the clips.

2 . Install the liftgate grab handle.

▶ Secure with the clips.

3 . Install the warning triangle retaining bracket.

▶ Tighten the Torx bolts to 10 Nm (7 lb.ft).

4 . Install the warning triangle.

▶ Secure with the clip.

5 . Install the liftgate upper trim panel.

For additional information, refer to [Liftgate Upper Trim Panel \(76.34.11\)](#)

Rear Quarter Trim Panel - 2-Door (76.13.73)

Removal

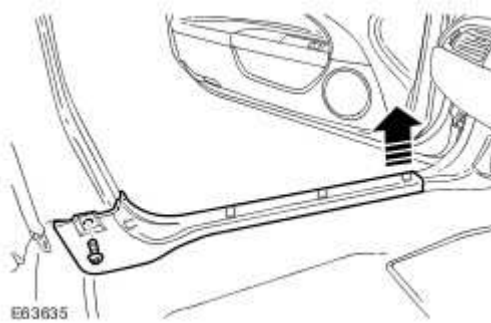
1 . Remove the rear seat backrest.

2 . **NOTE:**

Release the forward edge first.

Remove the scuff plate trim panel.

▶ Release from the 4 clips.



3 . Release the rear safety belt lower anchor.

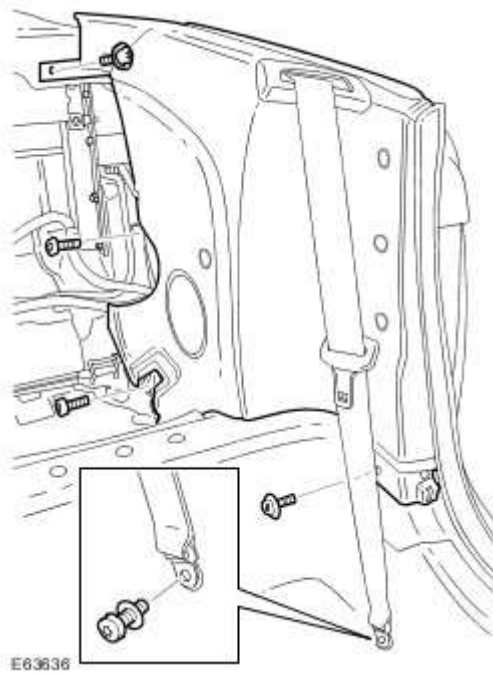
▶ Remove and discard the Torx bolt.

4 . Remove the rear quarter trim panel.

▶ Remove the 3 Torx bolts.

▶ Release from the 4 clips.

▶ Release the safety belt from the trim panel.



Installation

- 1 . Install the rear quarter trim panel.
 - ▶ Position the safety belt through the trim panel.
 - ▶ Secure with the clips.
 - ▶ Tighten the Torx bolts to 3 Nm (2.2 lb.ft).
- 2 . Secure the rear safety belt lower anchor.
 - ▶ Tighten the new Torx bolt to 45 Nm (33 lb.ft).
- 3 . Install the scuff plate trim panel.
 - ▶ Secure in the clips.
- 4 . Install the rear seat backrest.

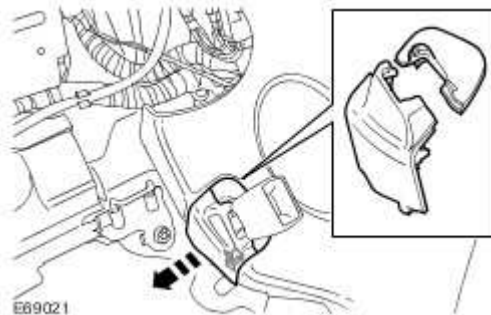
Rear Quarter Trim Panel - Convertible (76.13.73)

Removal

- 1 . Remove the rear seat backrest.
For additional information, refer to [Rear Seat Backrest \(76.70.38\)](#)

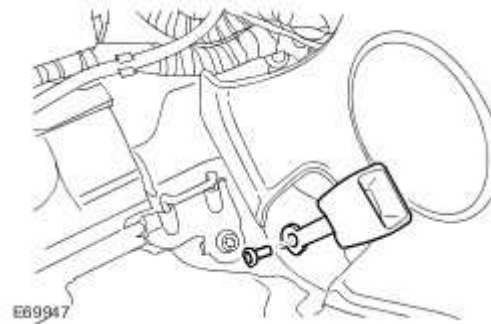
- 2 . Remove the rear safety belt stalk trim panel.

► Release from the clip.



- 3 . Remove the rear safety belt stalk.

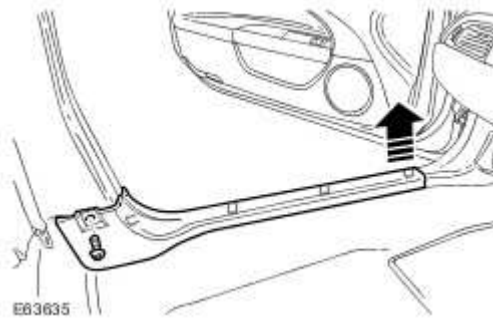
► Remove the Torx bolt.



- 4 . Remove the scuff plate trim panel.

► Remove the Torx bolt.

► Release from the 4 clips.

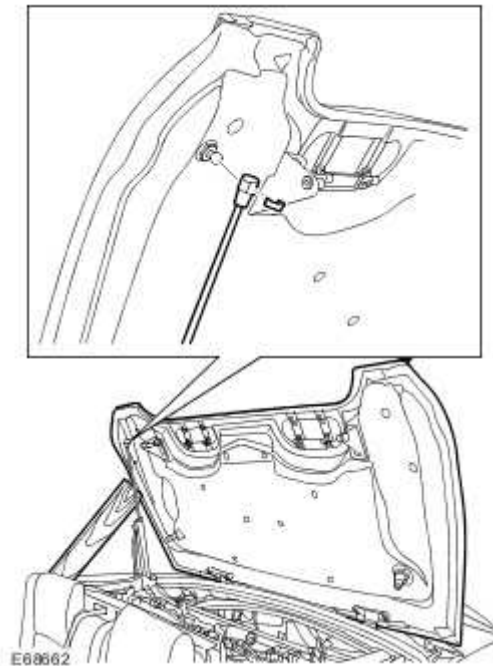


5 . NOTE:

Support the convertible top lid.

Open the convertible top to the position shown.

▶ Depress the switch.

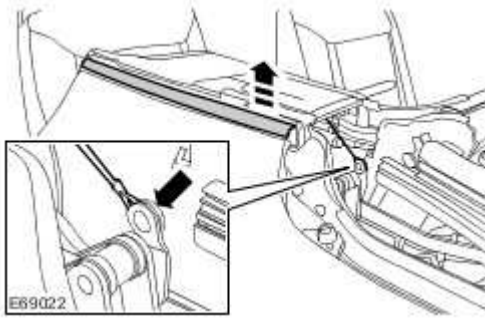


6 . Release the convertible top hinge cover tension strap.

▶ Release from the convertible top mechanism.

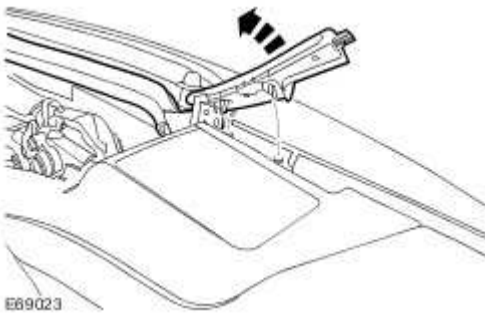
7 . Carefully remove the outer waist seal.

▶ Release each end of the seal from the body.



8 . Release the convertible top lid seal.

- ▶ Release from the 2 clips.

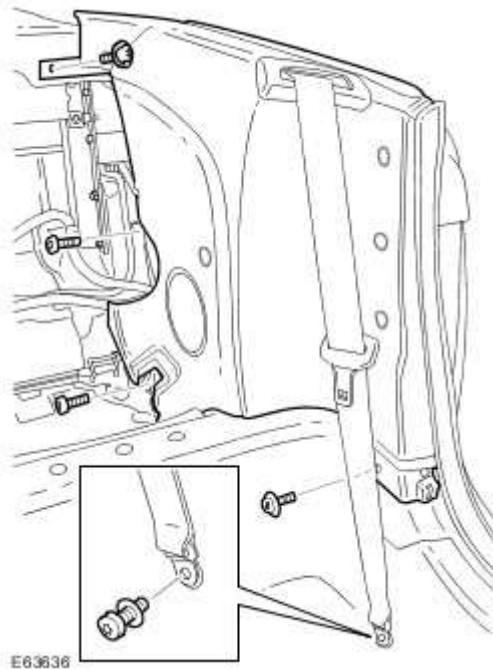


9 . Release the front safety belt lower anchor.

- ▶ Remove and discard the Torx bolt.

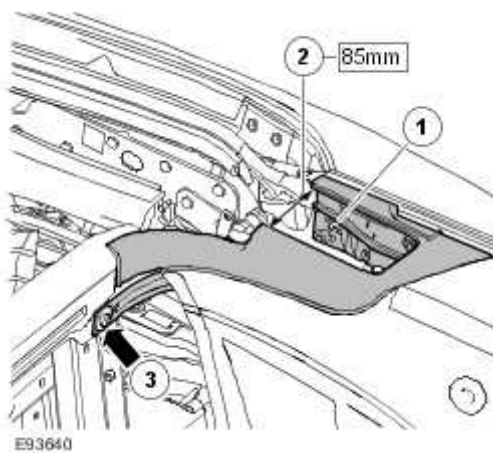
10 . Remove the rear quarter trim panel.

- ▶ Remove the 4 Torx bolts.
- ▶ Release from the 4 clips.
- ▶ Release the safety belt from the trim panel.



Installation

- 1 Install the rear quarter trim panel.
 - ▶ Position the safety belt through the trim panel.
 - ▶ Secure with the clips (1).
 - ▶ Check the illustrated trim dimension (2), before tightening the Torx bolt (3) to 3 Nm (2.2 lb.ft).



- 2 . Secure the front safety belt lower anchor.

 Tighten the new Torx bolt to 45 Nm (33 lb.ft).

3 . Attach the convertible top lid seal.

 Secure with the clips.

4 . Install the outer waist seal.

 Attach the outer waist seal to the body.

5 . Attach the convertible top hinge cover tension strap.

 Attach to the convertible top mechanism.

6 . Close the convertible top.

 Depress the switch.

7 . Install the scuff plate trim panel.

 Secure in the clips.

 Tighten the Torx bolt to 10 Nm (7 lb.ft).

8 . Install the safety belt stalk.

 Tighten the Torx bolt to 45 Nm (33 lb.ft).

9 . Install the rear safety belt stalk trim panel.

 Secure with the clip.

10 . Install the rear seat backrest.

For additional information, refer to [Rear Seat Backrest \(76.70.38\)](#)

Rear Quarter Trim Sliding Panel

No Data Available

Loadspace Trim Panel - 2-Door (76.13.73.60)

Removal

1 . Remove the battery cover.

▶ Remove the 4 retainers.



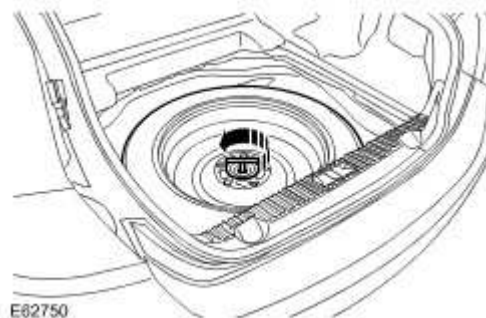
2 . Remove the loadspace floor panel.



3 . Remove the tool kit tray.

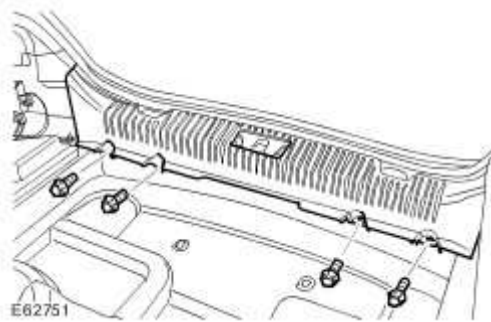
4 . Remove the spare wheel and tire.

▶ Remove the bolt.



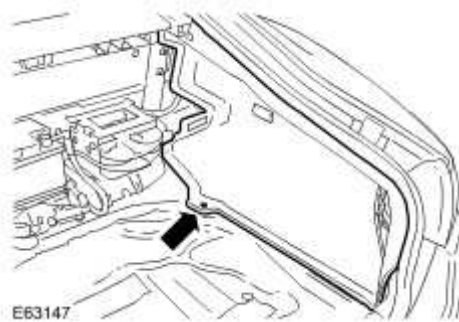
5 . Remove the scuff plate trim panel.

▶ Remove the 4 Torx bolts.



6 . Remove the loadspace trim panel.

▶ Remove the clip.



Installation

1 . Install the loadspace trim panel.

▶ Install the clip.

2 . Install the scuff plate trim panel.

▶ Remove the 4 Torx bolts.

▶ Tighten the Torx screws to 10 Nm (7 lb.ft).

3 . Install the spare wheel and tire.

▶ Install the retaining bolt.

4 . Install the tool kit tray.

5 . Install the loadspace floor panel.

6 . Install the battery cover.

 Install the 4 retainers.

Loadspace Trim Panel - Convertible (76.13.73.60)

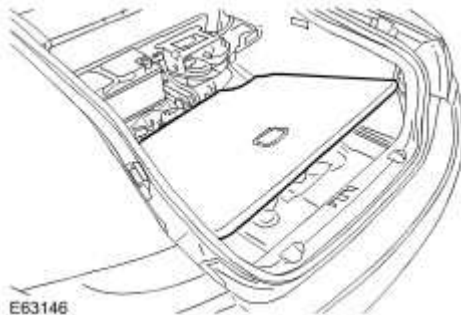
Removal

1 . Remove the battery cover.

▶ Remove the 4 retainers.

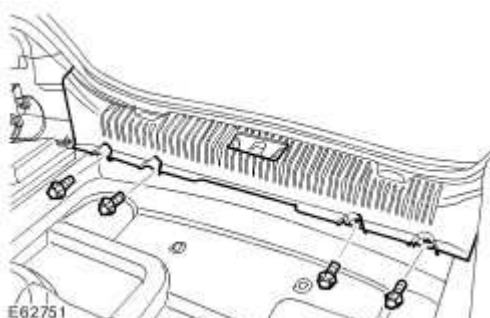


2 . Remove the loadspace floor panel.



3 . Remove the scuff plate trim panel.

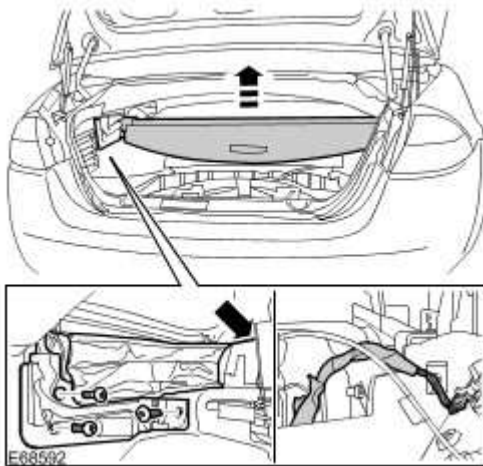
▶ Remove the 4 Torx bolts.



4 . Remove the luggage compartment retractable cover.

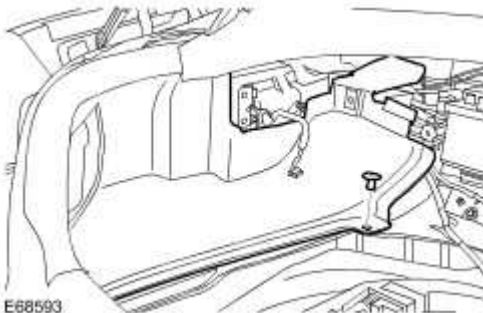
5 . Remove the luggage compartment retractable cover track.

- ▶ Release the fabric cover.
- ▶ Remove the 3 Torx bolts.
- ▶ Disconnect the 2 electrical connectors.



6 . Remove the loadspace trim panel.

- ▶ Remove the clip.



Installation

1 . Install the loadspace trim panel.

- ▶ Install the clip.

2 . Install the luggage compartment retractable cover track.

- ▶ Connect and secure the electrical connectors.
- ▶ Tighten the Torx bolts to 4 Nm (3 lb.ft).
- ▶ Secure the fabric cover.

3 . Install the scuff plate trim panel.

 Tighten the Torx bolts to 5 Nm (4 lb.ft).

4 . Install the loadspace floor panel.

5 . Install the battery cover.

 Install the 4 retainers.

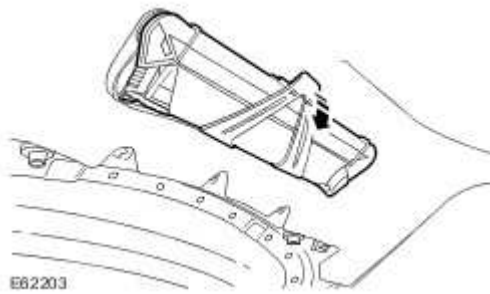
6 . Install the luggage compartment retractable cover.

Luggage Compartment Lid Trim Panel (76.19.05)

Removal

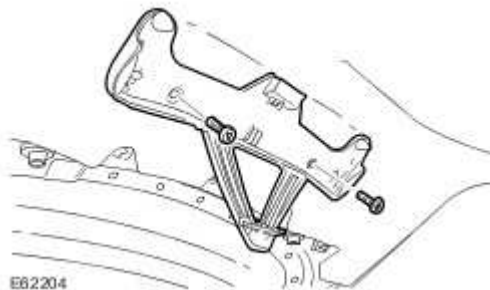
- 1 . Remove the warning triangle.

▶ Release the clip.



- 2 . Remove the warning triangle retaining bracket.

▶ Remove the 2 Torx bolts.



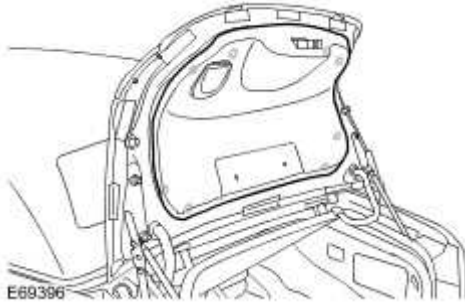
- 3 . Remove the luggage compartment lid latch handle.

▶ Remove the locking pin.



4 . Remove the luggage compartment lid trim panel.

▶ Release the 8 clips.

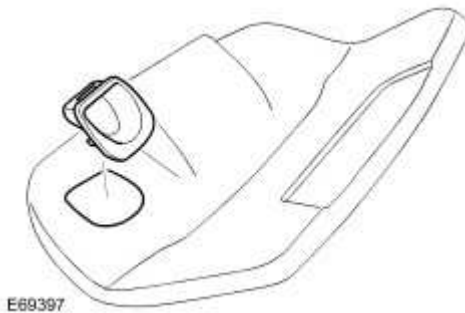


5 . **NOTE:**

Do not disassemble further if the component is removed for access only.

Remove the luggage compartment lid grab handle.

▶ Release the 2 clips.



Installation

1 . Install the luggage compartment lid grab handle.

▶ Secure the clips.

2 . Install the luggage compartment lid trim panel.

▶ Secure in the clips.

3 . Install the luggage compartment lid latch handle.

▶ Install the pin.

4 . Install the warning triangle retaining bracket.

 Tighten the Torx bolts to 10 Nm (7 lb.ft).

5 . Install the warning triangle.

 Secure with the clip.

501-08 : Exterior Trim and Ornamentation

Specifications

Specifications

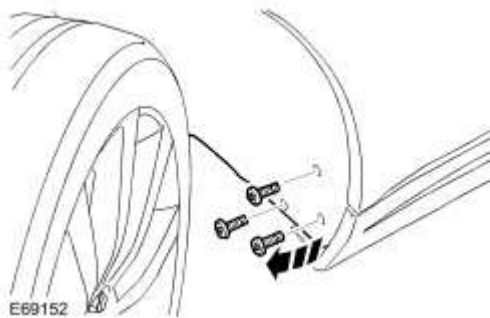
Torque Specifications

Item	Nm	lb-ft	lb-in
A-post outer finisher (convertible) - screw	2	-	18
Luggage compartment lid finisher - screw	1.5	-	13
Sill applique to body - screw	4	3	35
Spoiler to luggage compartment lid - nut	5	4	44
Spoiler to luggage compartment lid - screw	5	4	44

Front Fender Moulding (76.10.48)

Removal

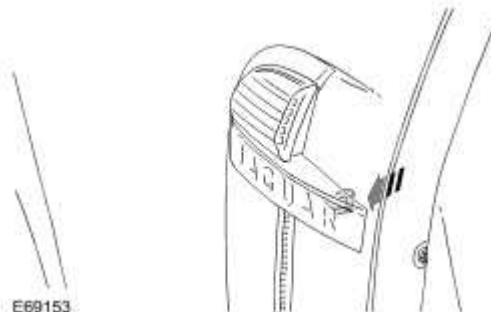
- 1 . Turn the steering on to full lock for access.
- 2 . Release the rear lower edge of the fender splash shield for access.
 - ▶ Remove the 3 Torx screws.



- 3  **CAUTION: Always protect paintwork and glass when removing exterior components.**

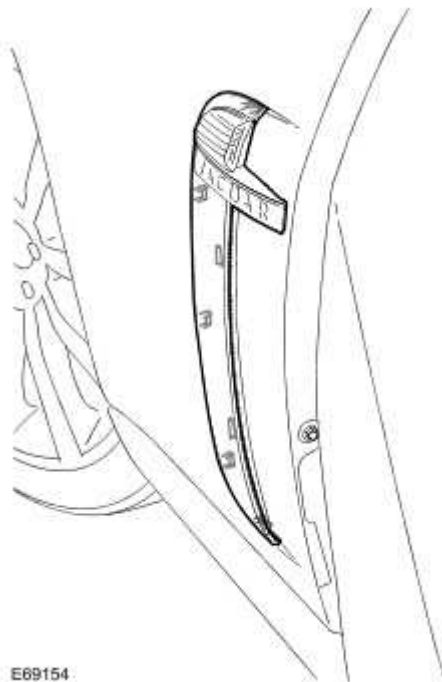
Release the rear fender moulding clip.

- ▶ Open the front door for access.
- ▶ Carefully release the clip with a small screwdriver; access is through the small aperture in the fender.



- 4 Release the fender moulding assembly.
 - ▶ Working from behind the fender splash shield, carefully release the 5

clips.



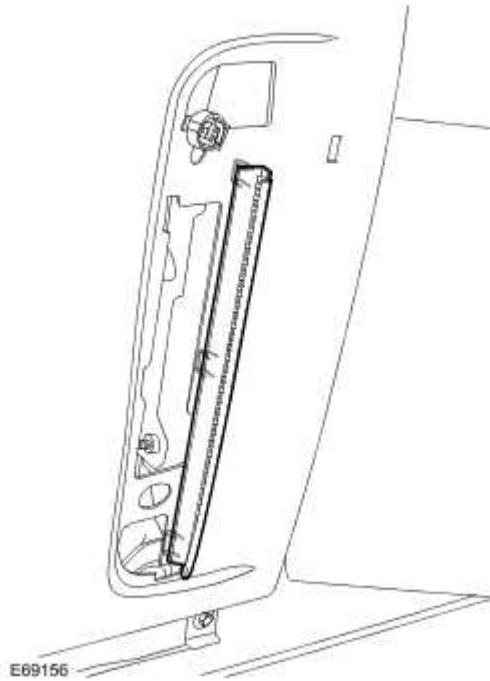
5 . Remove the fender moulding assembly.

▶ Disconnect the electrical connector.



6 . Remove the inner grille.

▶ Carefully release the 3 clips.

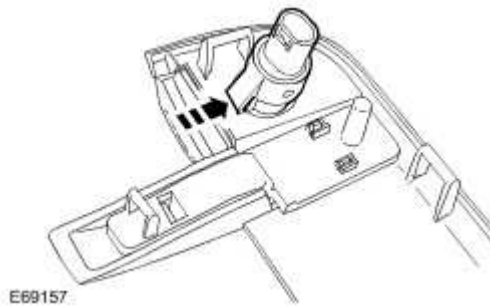


7 . NOTE:

Do not disassemble further if the component is removed for access only.

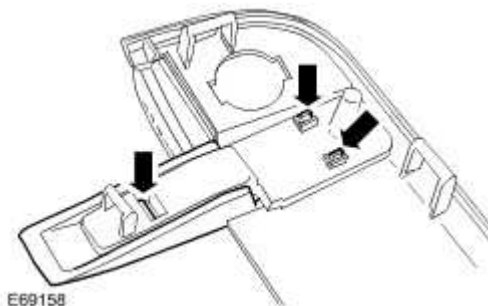
Remove the side repeater lamp.

► Carefully release the clip.



8 . Carefully remove the decal.

► Release the 3 clips.



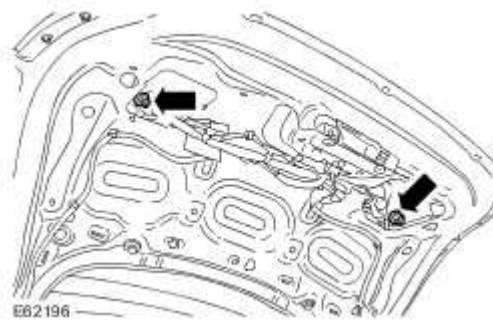
Installation

- 1 . Install the decal.
▶ Secure with the clips.
- 2 . Install the side repeater lamp.
▶ Secure the clip.
- 3 . Install the inner grille.
▶ Secure the clips.
- 4 . Install the fender moulding assembly.
▶ Secure the clips.
- 5 . Secure the fender splash shield.
▶ Install the Torx screws.

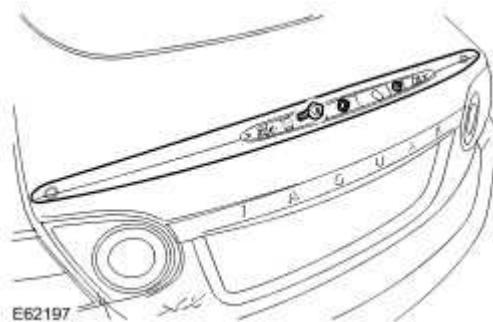
Rear Spoiler (76.19.86.60)

Removal

- 1 . Remove the high mounted stoplamp.
For additional information, refer to [High Mounted Stoplamp \(86.41.01\)](#)
- 2 . Release the rear spoiler.
 - ▶ Remove the 2 nuts.



- 3 . Remove the rear spoiler.
 - ▶ Remove the 3 Torx screws.
 - ▶ Release the 2 clips.



Installation

- 1 . Install the rear spoiler.
 - ▶ Secure with the clips.
 - ▶ Fit and tighten the Torx screws.
 - ▶ Tighten the nuts to 10 Nm (7 lb.ft).

2 . Install the high mounted stoplamp.

For additional information, refer to [High Mounted Stoplamp \(86.41.01\)](#)

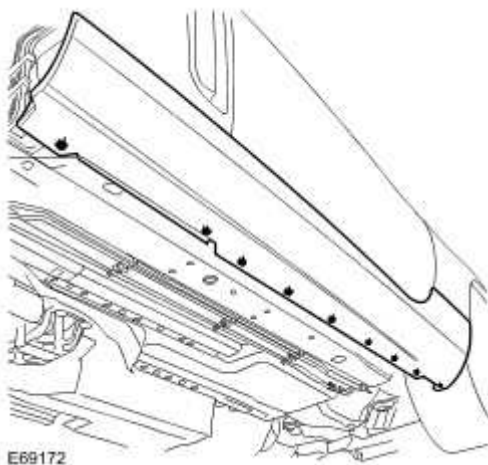
Rocker Panel Moulding (76.11.36)

Removal

- 1  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

- 2 . Remove the front scuff plate trim panel.
For additional information, refer to [Front Scuff Plate Trim Panel \(76.13.81\)](#)
- 3 . Release the rocker panel moulding lower edge.
 Remove the 9 clips.



- 4  **CAUTION: Always protect paintwork and glass when removing exterior components.**

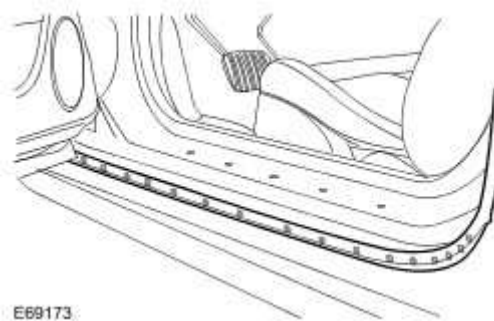
 **CAUTION: Removal of the clips is a delicate procedure, damage will occur if any force is used.**

NOTE:

When removing the seal, some clips may remain attached to the component.
These clips can be recovered and returned to their original fitted positions.

Release the rocker panel door seal lower for access.

 Release the 16 clips.



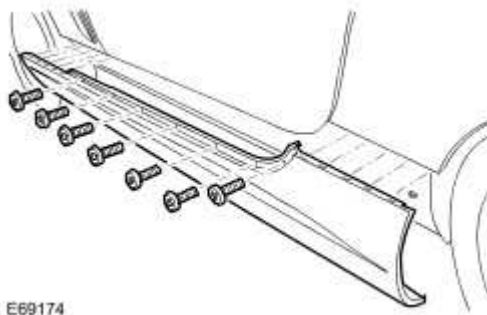
5.  **CAUTION: Protect the paintwork during this operation.**

NOTE:

Apply a sharp horizontal force to release the clips.

Remove the rocker panel moulding.

- ▶ Remove the 7 Torx screws.
- ▶ Release the front and rear clips.



Installation

- 1 . Install the rocker panel moulding.
 - ▶ Align and secure the front and rear rocker panel clips.
 - ▶ Tighten the Torx screws to 6 Nm (4 lb.ft).
- 2 . Install the aperture seal.
 - ▶ Carefully align and secure the clips.
- 3 . Secure the rocker panel lower edge.
 - ▶ Install the clips.

4 . Install the front scuff plate trim panel.

For additional information, refer to [Front Scuff Plate Trim Panel \(76.13.81\)](#)

501-09 : Rear View Mirrors

Specifications

Specifications

Torque Specifications

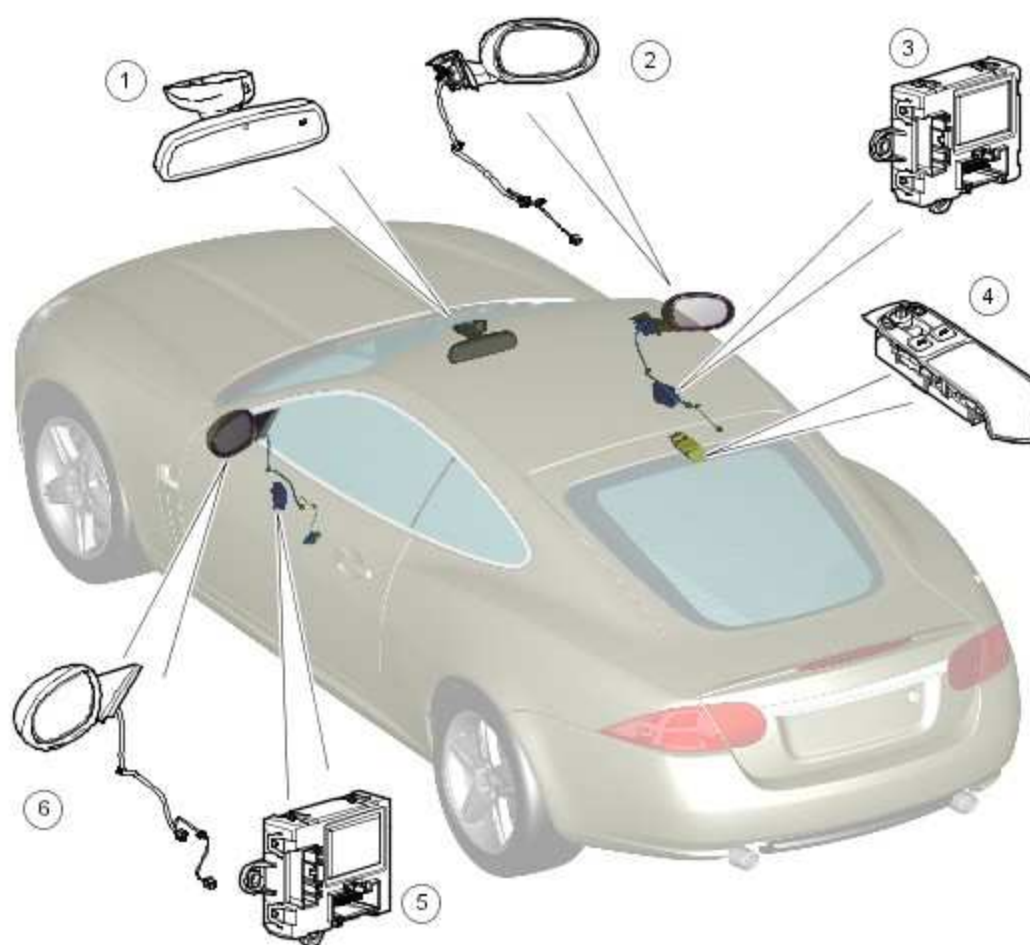
Item	Nm	lb-ft	lb-in
Exterior mirror - bolt	8	6	71

Rear View Mirrors

COMPONENT LOCATION

NOTE:

RHD (right-hand drive) shown, LHD (left-hand drive) mirror image.



E62404

Item	Part Number	Description
1		Interior mirror
2		Driver's door mirror
3		Driver's door module
4		Door mirror switches
5		Passenger door module

INTRODUCTION

Movement of the door mirrors is controlled from a switch pack located on the drivers door. The switch pack contains 2 non-latching mirror select buttons labelled 'L' and 'R' and a 4-way mirror movement switch. Door mirror movement commands are transmitted to the driver's door module over the LIN (local interconnect network) bus. The drivers door module transmits any mirror movement commands to the passenger door module over the medium speed CAN (controller area network) bus.

Movement of the door mirrors is carried out by the respective door module. The door modules provide supply and ground paths to the mirror motors and monitor mirror position via potentiometers located in the mirror housings.

An electrochromic interior mirror is mounted on the windshield and contains a forward and a rearward facing light sensor. The light sensors control the auto dimming feature of the interior mirror to reduce glare from the headlights of following vehicles.

When auto-dimming of the interior mirror is required, a supply is provided by the interior mirror to both door mirrors to initiate the door mirror auto-dimming sequence.

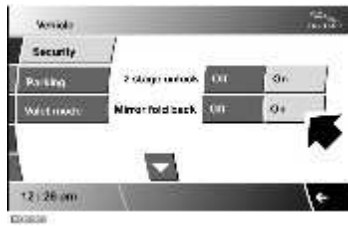
Some vehicles may be fitted with an interior mirror featuring an electronic compass with LED (light emitting diode) display. The compass is a self contained unit and does not interface with any other vehicle system or electronic control module. Details of how to set and calibrate the compass can be found in the 'Mirrors' section of the Owner's Handbook.

Up to 2009 Model Year (MY), some vehicles have door mirrors with an electric foldback feature. From 2009 MY, the mirror foldback feature is a standard fit in all markets. Where fitted, mirror foldback can be operated manually or automatically.

Manual operation of mirror foldback is initiated with the vehicle stationary or moving at 20 km/h (12 mph) or less, by pressing then releasing the L and R mirror select buttons at the same time. The first press of the mirror select buttons causes the two door mirrors to turn inwards to the folded position and stop. A further press of the mirror select buttons causes the door mirrors to turn outwards to the unfolded position and stop. If the mirror select buttons are pressed while the door mirrors are moving, they stop and reverse direction until they reach their original position. If one of the door mirrors has been manually folded, the two door mirrors can be re-synchronized by an inward and outward operating cycle.

Automatic mirror foldback is selected and deselected on the vehicle settings menu of the Touch Screen Display (TSD). Automatic operation is synchronised with the exterior locking and unlocking of the vehicle (it does not work with interior locking and drive away locking). If automatic operation is selected, the door mirrors fold when the vehicle is locked and unfold when unlocked. However, the door mirrors will not unfold automatically if they have been folded manually, even though automatic mode is selected on the TSD.

Automatic Mirror Foldback Selection on TSD

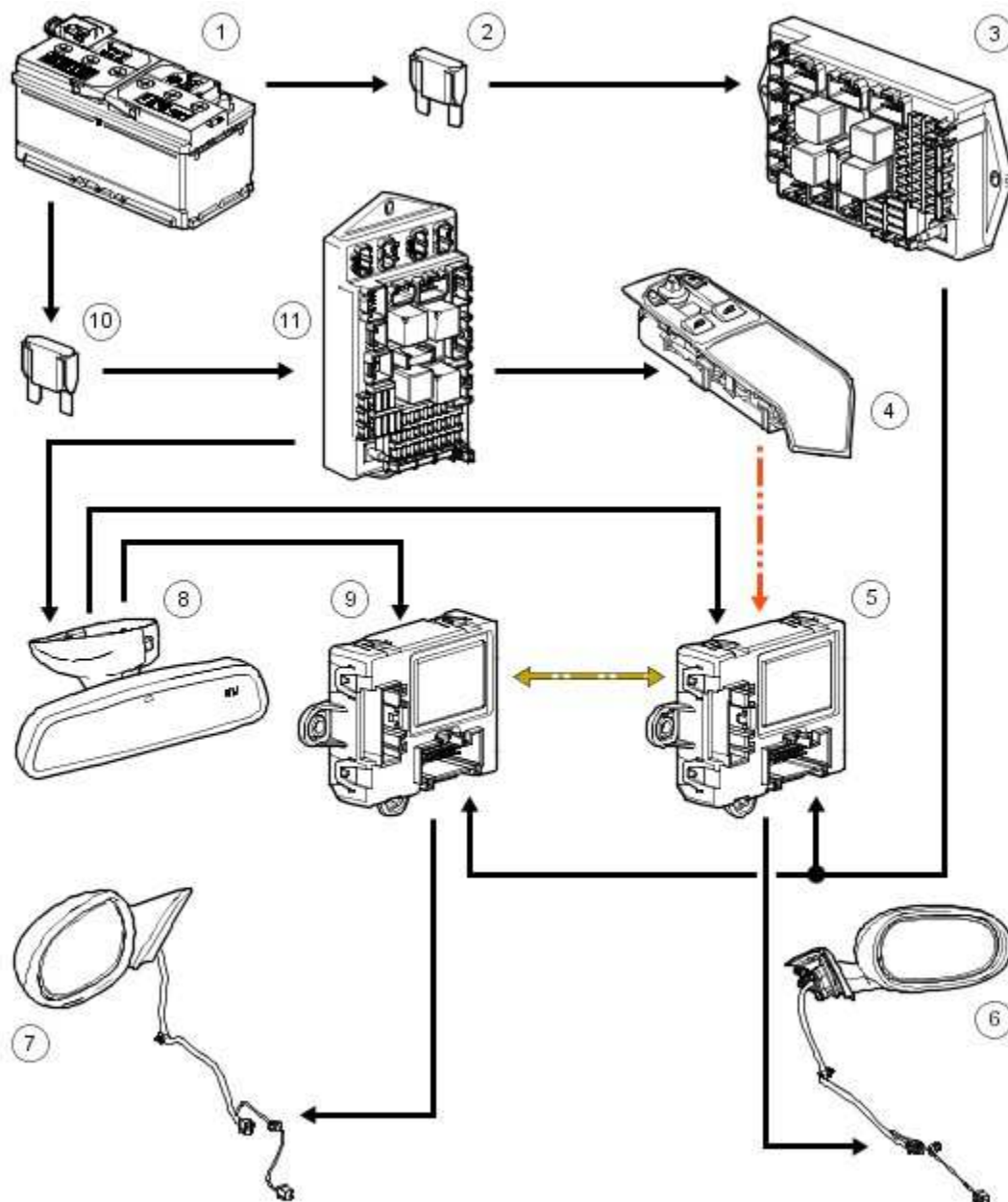


A thermal cut-out feature is incorporated to protect the mirror foldback motors. Thermal cut-out only occurs with the door mirrors in the unfolded position, and resets after 5 minutes.

CONTROL DIAGRAM

NOTE:

A = Hardwired; **N** = Medium Speed CAN (controller area network) bus; **O** = LIN (local interconnect network) bus



E62405



Item	Part Number	Description
1		Battery
2		Megafuse (175A)
3		Auxiliary junction box
4		Door mirror switches
5		Driver's door module
6		Driver's door mirror
7		Passenger door mirror
8		Interior mirror

9		Passenger door module
10		Mega fuse
11		Central Junction Box (CJB)

Rear View Mirrors

Principle of Operation

For a detailed description of the rear view mirrors, refer to the relevant Description and Operation section in the workshop manual.

[Rear View Mirrors](#)

Inspection and Verification

- 1 . Verify the customer concern.
- 2 . Visually inspect for obvious signs of damage and system integrity.

Mechanical	Electrical
• Exterior mirror(s)	• Fuse(s) • Relay • Electrical connector(s) • Switch

- 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, Check DDM/PDM for rear view mirror related DTCs and refer to the DTC Index.

DTC Index



CAUTION: When probing connectors to take measurements in the course of the pinpoint tests, use the adaptor kit, part number 3548-1358-00.

NOTE:

If the control module 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.

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 additional information read by the manufacturer

approved diagnostic system).

NOTE:

When performing electrical voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places, and with an up-to-date 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:

Inspect connectors for signs of water ingress, and pins for damage and/or corrosion.

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
B116311	Left Mirror Heater Output short to ground	Short to ground	Refer to the electrical circuit diagrams and test left mirror heater output circuit for short to ground
B116315	Left Mirror Heater Output short to power	Short to power or open circuit	Refer to the electrical circuit diagrams and test left mirror heater output circuit for short to power or open circuit
B116411	Right Mirror Heater Output short to ground	Short to ground	Refer to the electrical circuit diagrams and test right mirror heater output circuit for short to ground
B116415	Right Mirror Heater Output short to power	Short to power or open circuit	Refer to the electrical circuit diagrams and test right mirror heater output circuit for short to power or open circuit
B1A9411	Driver Mirror	Short to ground	Refer to the electrical circuit diagrams and test driver mirror fold motor circuit for short to ground
B1A9415	Driver Mirror	Short to power or open circuit	Refer to the electrical circuit diagrams and test driver mirror fold motor circuit for short to power

			or open circuit
B1A9511	Passenger Mirror	Short to ground	Refer to the electrical circuit diagrams and test passenger mirror fold motor circuit for short to ground
B1A9515	Passenger Mirror	Short to power or open circuit	Refer to the electrical circuit diagrams and test passenger mirror fold motor circuit for short to power or open circuit
B1A9883	LIN Bus Circuit #1	Value of signal protection calculation incorrect	Refer to the electrical circuit diagrams and test LIN circuit between driver switch pack and DDM for short/open circuits, clear DTC and re-test. If DTC remains install a new switch pack. Window Control Switch (86.25.08)
B1A9886	LIN Bus Circuit #1	Signal Invalid	Refer to the electrical circuit diagrams and test LIN circuit between driver switch pack and DDM for short/open circuits, clear DTC and re-test. If DTC remains install a new switch pack. Window Control Switch (86.25.08)
B1A9887	LIN Bus Circuit #1	Missing Message	Refer to the electrical circuit diagrams and test LIN circuit between driver switch pack and DDM for short/open circuits, clear DTC and re-test. If DTC remains install a new switch pack. Window Control Switch (86.25.08)
B1C0911	Driver Left/Right Mirror Motor Circuit	Short to ground	Refer to the electrical circuit diagrams and test driver left/right mirror motor circuit for short to ground
B1C0915	Driver Left/Right Mirror Motor	Short to power or open	Refer to the electrical circuit diagrams and test

	Circuit	circuit	driver left/right mirror motor circuit for short to power or open circuit
B1C1011	Driver Up/Down Mirror Motor Circuit	Short to ground	Refer to the electrical circuit diagrams and test driver up/down mirror motor circuit for short to ground
B1C1015	Driver Up/Down Mirror Motor Circuit	Short to power or open circuit	Refer to the electrical circuit diagrams and test driver up/down mirror motor circuit for short to power or open circuit
B1C1111	Passenger Left/Right Mirror Motor Circuit	Short to ground	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B1C1115	Passenger Left/Right Mirror Motor Circuit	Short to power or open circuit	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B1C1211	Passenger Up/Down Mirror Motor Circuit	Short to ground	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B1C1215	Passenger Up/Down Mirror Motor Circuit	Short to power or open circuit	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B1C1311	Driver Up/Down Mirror Motor Feedback Circuit	Short to ground	Refer to the electrical circuit diagrams and test driver up/down mirror motor feedback circuit for short to ground
B1C1315	Driver Up/Down Mirror Motor Feedback Circuit	Short to power or open circuit	Refer to the electrical circuit diagrams and test driver up/down mirror motor feedback circuit for short to power or open circuit
B1C1411	Driver Left/Right Mirror Motor Feedback Circuit	Short to ground	Refer to the electrical circuit diagrams and test driver left/right mirror

			motor feedback circuit for short to ground
B1C1415	Driver Left/Right Mirror Motor Feedback Circuit	Short to power or open circuit	Refer to the electrical circuit diagrams and test driver left/right mirror motor feedback circuit for short to power or open circuit
B1C1511	Passenger Up/Down Mirror Motor Feedback Circuit	Short to ground	Refer to the electrical circuit diagrams and test passenger up/down mirror motor feedback circuit for short to ground
B1C1515	Passenger Up/Down Mirror Motor Feedback Circuit	Short to power or open circuit	Refer to the electrical circuit diagrams and test passenger up/down mirror motor feedback circuit for short to power or open circuit
B1C1611	Passenger Left/Right Mirror Motor Feedback Circuit	Short to ground	Refer to the electrical circuit diagrams and test passenger left/right mirror motor feedback circuit for short to ground
B1C1615	Passenger Left/Right Mirror Motor Feedback Circuit	Short to power or open circuit	Refer to the electrical circuit diagrams and test passenger left/right mirror motor feedback circuit for short to power or open circuit
U001000	Medium speed CAN communication Bus	Medium speed CAN communication Bus	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U014000	Lost communication with CJB	Logged when subscribed CAN message missing from CJB	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U020800	Lost communication With Driver Seat Module (DSM)	Missing message	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U030000	Internal control module software	Invalid configuration	Re-configure the RJB using the manufacturer

	incompatibility	message is received	approved diagnostic system. Clear the DTC and retest. If the DTC is still logged suspect the DDM/PDM, refer to the new module installation note at the top of the DTC Index
U200224	Switch	Signal stuck high	Clear DTC and re-test. If DTC remains, install a new passenger side window switch
U201011	Switch illumination	Circuit short to ground	Carry out CAN network tests using the manufacturer approved diagnostic system
U201012	Switch illumination	Circuit short to battery	Carry out CAN network tests using the manufacturer approved diagnostic system
U201208	Car Configuration Parameter(s)	Bus signal/message failures	Cycle the ignition status and re-test. If DTC remains, re-configure the RJB using the manufacturer approved diagnostic system
U201324	Switch Pack	Signal stuck high	Clear DTC and re-test. If DTC remains, install a new driver side window switch pack. Window Control Switch (86.25.08)
U201444	Control module hardware	Data Memory Failure	Install a new DDM/PDM, refer to the new module installation note at the top of the DTC Index
U210000	Initial configuration not complete	No sub type information	Re-configure the DDM/PDM using the manufacturer approved diagnostic system
U300049	Control module	Internal electronic failure	Install a new DDM/PDM, refer to the new module installation note at the top of the DTC Index
U300255	Vehicle Identification Number (VIN)	Not configured	Re-configure the relevant module as new using the manufacturer approved

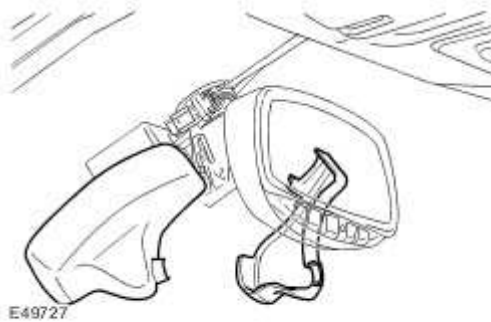
			diagnostic system and re-test. If DTC remains install a new module, refer to the new module installation note at the top of the DTC Index
U300281	Vehicle Identification Number (VIN)	Vehicle/component mismatch. Corrupt VIN data being transmitted, module previously installed to other vehicle	Install original module, check for DTCs and refer to relevant DTC Index
U300362	Battery voltage	Mis-match of battery voltage, of 2 volts or lower, between DDM/PDM and RJB	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system

Auto-Dimming Interior Mirror (76.10.56)

Removal

- 1 . Remove the 2 interior mirror covers.

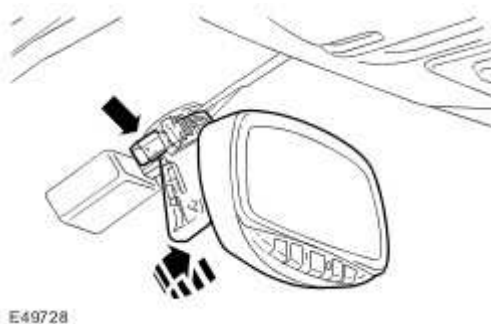
▶ Release the 2 clips.



- 2 . Remove the interior mirror.

▶ Disconnect the electrical connector.

▶ Rotate the mirror stem at its base to release from the windshield.



Installation

- 1 . Install the interior mirror.

▶ Rotate the mirror stem at its base to secure to the windshield.

▶ Connect the electrical connector.

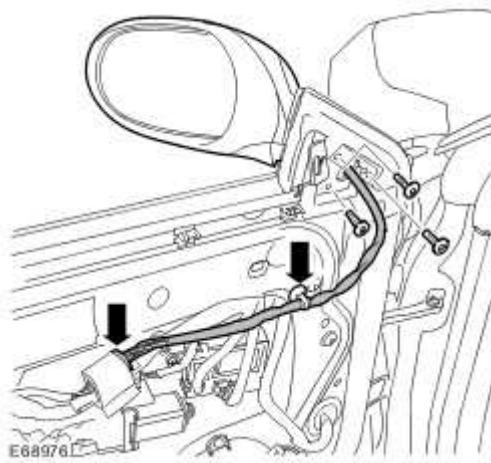
2 . Install the interior mirror covers.

 Secure with the clips.

Exterior Mirror (76.10.52)

Removal

- 1 . Remove the front door trim panel.
For additional information, refer to [Front Door Trim Panel \(76.34.01\)](#)
- 2 . Remove the exterior mirror.
 - ▶ Disconnect the 2 electrical connectors.
 - ▶ Release the 2 wiring harness clips.
 - ▶ Remove the 3 Torx bolts.



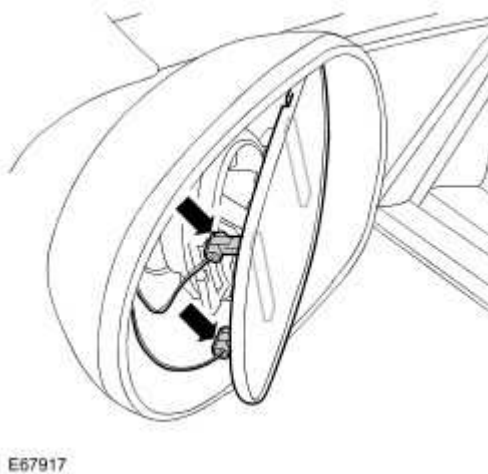
Installation

- 1 . Install the exterior mirror.
 - ▶ Tighten the Torx bolts to 10 Nm (7 lb.ft).
 - ▶ Secure the wiring harness in the clips.
 - ▶ Connect the electrical connectors.
- 2 . Install the front door trim panel.
For additional information, refer to [Front Door Trim Panel \(76.34.01\)](#)

Exterior Mirror Glass (76.10.53)

Removal

- 1 Remove the exterior mirror glass.
 - ▶ Carefully apply pressure to the outer edge of the glass, to release the 2 clips.
 - ▶ Disconnect the 2 electrical connectors.



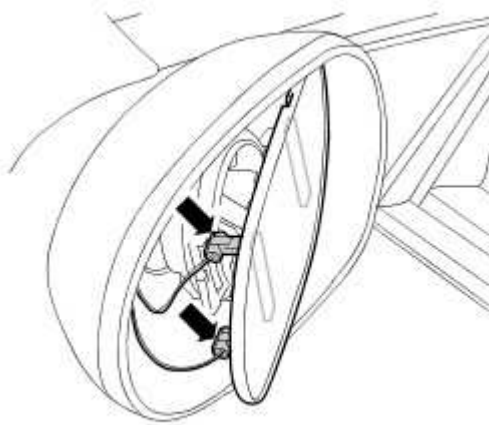
Installation

- 1 . Install the exterior mirror glass.
 - ▶ Connect the electrical connectors.
 - ▶ Align the glass to the motor.
 - ▶ Apply an even pressure to secure glass to the clips.
- 2 . Check the operation of the exterior mirror.

Exterior Mirror Motor (76.10.57)

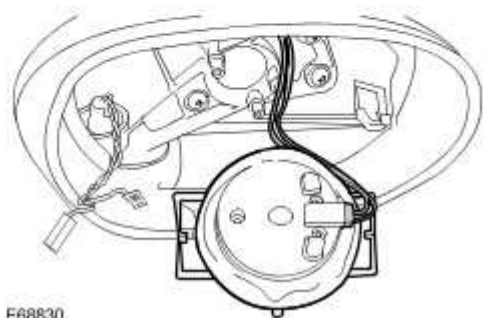
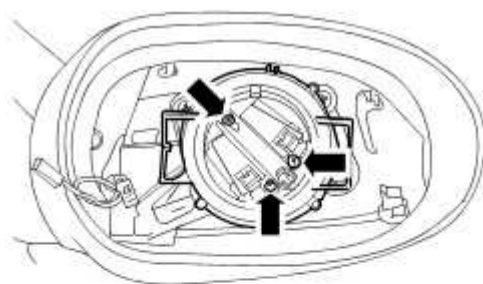
Removal

- 1 Remove the exterior mirror glass.
 - - ▶ Carefully apply pressure to the outer edge of the glass, to release the 2 clips.
 - ▶ Disconnect the 2 electrical connectors.



E67917

- 2 . Remove the exterior mirror motor.
 - ▶ Remove the 3 Torx screws.
 - ▶ Disconnect the electrical connector.



E68830

Installation

- 1 . Install the exterior mirror motor.
 - ▶ Connect the electrical connector.
 - ▶ Install and tighten the Torx screws.
- 2 . Install the exterior mirror glass.
 - ▶ Connect the electrical connectors.
 - ▶ Align the glass to the motor.
 - ▶ Apply an even pressure to secure glass to the clips.
- 3 . Check the operation of the exterior mirror.

501-10 : Seating

Specifications

Specifications

Torque Specifications

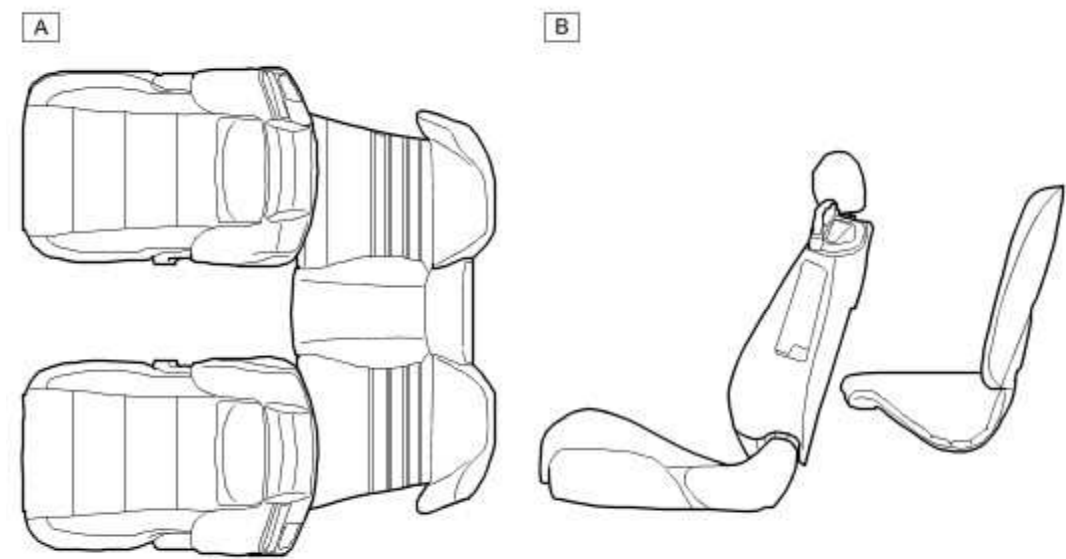
Item	Nm	lb-ft	lb-in
Front seat track to vehicle floor - bolt*	48	35	-
Rear seat support bracket - nut/screw	9	7	80

NOTE:

*New nut/bolt must be installed.

Seats

COMPONENT LOCATION



E73155

Item	Part Number	Description
A		Plan view
B		Side view

INTRODUCTION

Front Seat Sport Variant



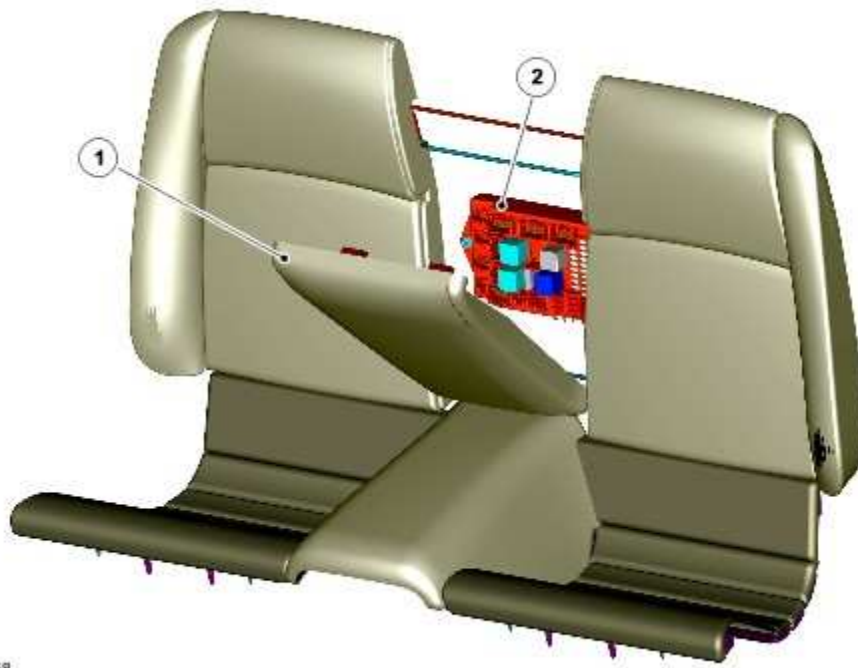
E73156

Front Seat Luxury Variant



E73157

Rear Seats



E73168

Item	Part Number	Description
1		Removable center panel
2		Auxiliary junction box

Two variants of driver and passenger seat are available; 10-way sports and 16-way luxury. The front seat frames are common to both the coupe and convertible and are equipped with the following:

- Seat control switches (door mounted)
- Front seat cushion front height adjustment
- Front seat cushion rear height adjustment
- Front seat backrest adjustment
- Front seat head restraint adjustment
- Lumbar adjustment
- Front seat forward and backward adjustment
- Side air bag module
- Front seat backrest heating
- Front seat cushion heating
- Extendible seat-cushion (luxury variant only)
- Adjustable side bolsters (luxury variant only)



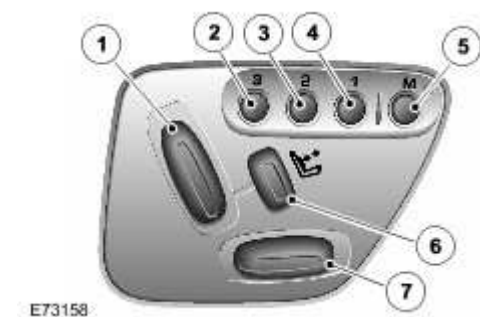
WARNING: Prior to removal of the front seats and before disconnecting the front seat wiring harness electrical connectors (which includes the side air bag module electrical connectors), the battery ground cable should be disconnected and a period of at least 1 minute allowed to elapse. The same amount of care should be taken when handling and storing the front seats, as would be taken when handling and storing air bag modules.

The driver and passenger front seats, although almost identical, have some unique components. The front driver seat has a seat position sensor and the front passenger seat has a occupancy sensing system. In both instances the components form an integral part of the air bag Supplemental Restraint System (SRS). For additional information, refer to [Air Bag Supplemental Restraint System \(SRS\)](#) (501-20B)

The rear seat squabs are conventionally trimmed over a wire frame with a removable center panel allowing access to the auxiliary junction box.

FRONT SEAT CONTROL SWITCHES

Sport Variant (10-way Adjustment)



Item	Part Number	Description
1		Backrest adjustment
2		Stored memory position button 3
3		Stored memory position button 2
4		Stored memory position button 1
5		Seat position memory store button
6		Lumbar adjustment, 2-way
7		Forward and backward adjustment, cushion front height and rear height adjustment

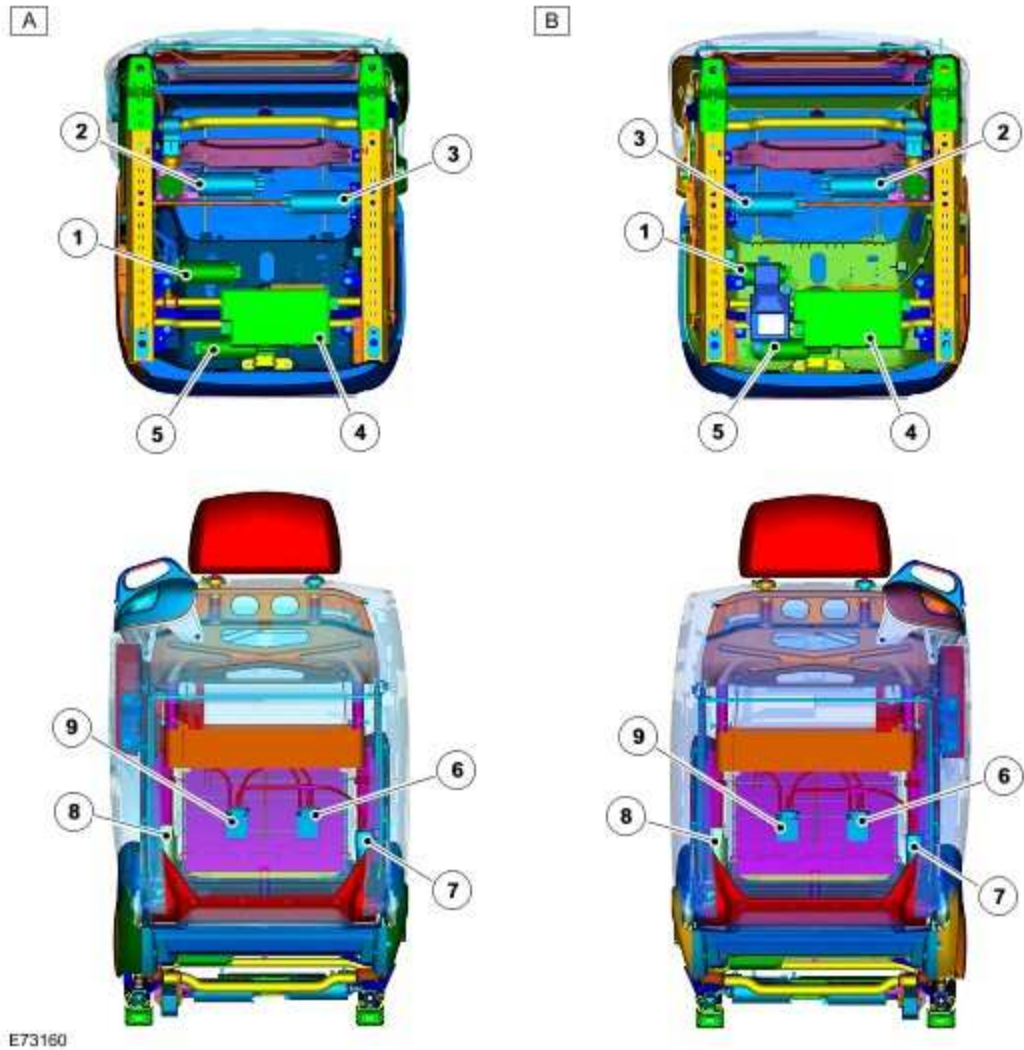
Luxury Variant (16-way Adjustment)



Item	Part Number	Description
1		Backrest adjustment
2		Stored memory position button 3
3		Stored memory position button 2
4		Stored memory position button 1
5		Seat position memory store button
6		Seat cushion extension adjustment
7		Lumbar adjustment, 4-way
8		Forward and backward adjustment, cushion front height and rear height adjustment
9		Bolster adjustment

The front seat control switches are installed in the driver and passenger door casings.

FRONT SEAT CONTROL COMPONENTS



E73160

Item	Part Number	Description
A		Drivers seat
B		Passenger seat
1		Cushion front height and rear height adjustment motor
2		Height adjustment motor
3		Forward and rearward adjustment motor
4		Memory control module
5		Seat cushion extension motor (luxury variant only)
6		Lumbar pump solenoid
7		Lumbar/bolster pump
8		Backrest adjustment motor
9		Bolster pump solenoid

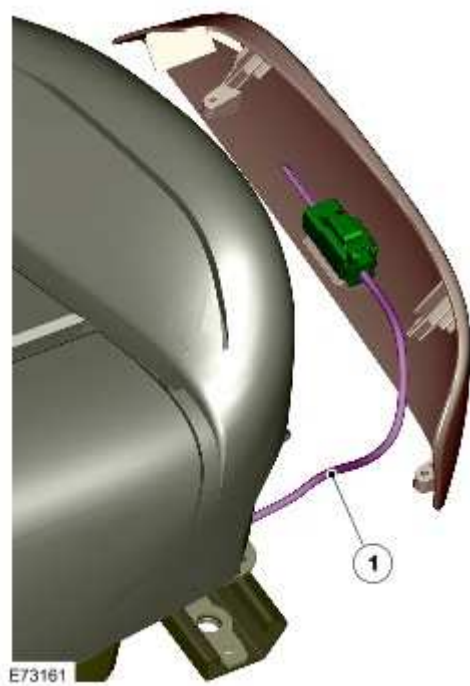
Seat position is monitored by the individual seat modules using seat track position Hall sensors incorporated into the motors. This prevents the seat from being adjusted to a position that will contact the surrounding interior trim or a rear seat passenger causing injury (clash

avoidance). Seat memory is standard on both drivers and passenger seats. Each seat memory can be configured for 3 personality positions, which are set using the seat memory switch and stored in the individual seat module.

The switches for electrically adjusting the seats are wired directly to the appropriate control module, which controls the movement of the seat via Local Interconnect Network (LIN) serial communication protocol.

NOTE:

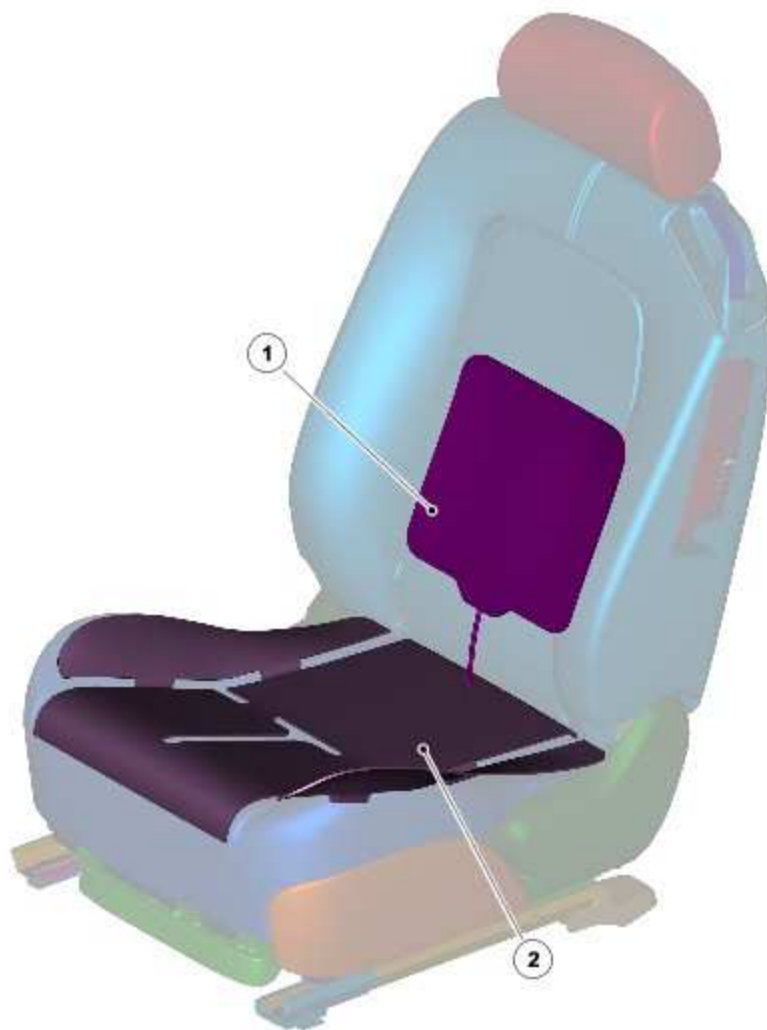
In the event of a control module failure a fly lead behind the seat valance can be used to connect a power source directly to the seat slide motor. This enables the seat to be moved to gain access to the front and rear seat fixings. The seat can then be removed from the vehicle in order to access the control module.



Item	Part Number	Description
1		Fly lead

As part of the Pre-Delivery Inspection (PDI) each seat needs to perform a clash avoidance check. This procedure is to ensure there is no contact between the seat trim and rear quarter casing. If there is any contact between the seat trim and rear quarter casing the affected seat must be recalibrated via the seat calibration routine in the Integrated Diagnostic System (IDS). For more information refer to the PDI manual.

FRONT SEAT HEATING

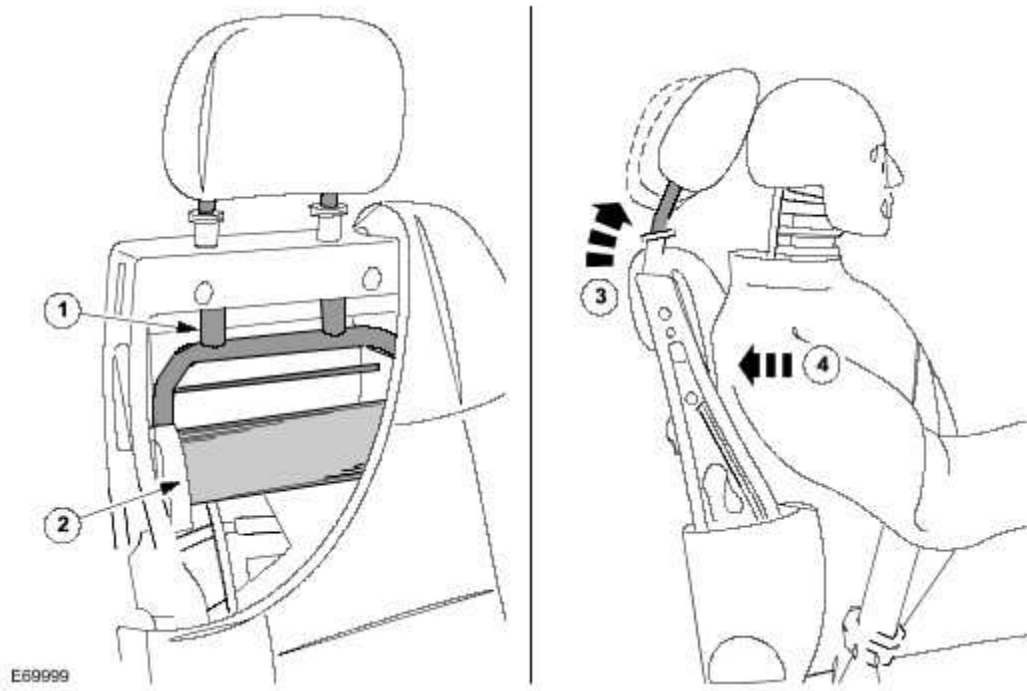


E73162

Item	Part Number	Description
1		Seat back heater
2		Seat cushion heater

Operation of the heated seats is controlled by the Automatic Temperature Control (ATC) module. The ATC module receives a request from the Touch Screen Display (TSD) and sends a message to the Central Junction Box (CJB), which then provides a feed to the seat heater elements. For additional information, refer to [Control Components](#) (412-04)

ACTIVE FRONT HEAD RESTRAINTS



Item	Part Number	Description
1		Head restraint support
2		Fabric tape
3		Headrest movement during rear end collision
4		Occupant movement during rear end collision

Both front seats are fitted with mechanical active head restraints that reduce injuries to the spinal column and possible whiplash in the event of a rear collision. The 2 supports of the head restraints inside the seat backrest are joined together with fabric tape. As the seat occupant's back and body weight presses against the fabric tape the head restraint moves upwards and forwards mechanically by means of a pivot point. The movement of the headrest cushions the occupant's head, altering the posture and reducing the relative motion between the body and the head. The head restraint then returns to its original position using a spring return mechanism.

PASSENGER SEAT OCCUPANCY SENSOR



E73163

Item	Part Number	Description
1		Occupancy sensor pad
2		Harness connector
3		Control module

Occupant monitoring provides the Restraints Control Module (RCM) with the occupancy status of the front passenger seat.

The occupant detection system determines if the front passenger seat is occupied or unoccupied. The system consists of a pressure sensor installed between the foam padding and the cover of the front passenger seat cushion. From the occupancy status, and the status of the front passenger safety belt, the instrument cluster determines the seat belt minder status. For additional information, refer to [Air Bag Supplemental Restraint System \(SRS\)](#) (501-20B)

FRONT SEAT BACK TILT



E73164

Item	Part Number	Description
1		Release cable
2		Release lever

The front seats tilt forward to allow access to the rear seats. To tilt the seat forward remove the seat belt from the seat belt guide. Lift the lever and push the seat back forwards. The seat back will latch when returned to the normal position. Ensure that the seat belt is returned to the seat belt guide.

AUDIBLE AND VISUAL CONFIRMATIONS

A single chime audible confirmation is generated by the instrument cluster to provide confirmation to the driver that the memory store operation has been successfully completed.

In addition to audible confirmation there is also a visual confirmation via the instrument cluster message center. For additional information, refer to [Instrument Cluster and Panel Illumination](#) (413-00)

STEERING COLUMN ADJUST



Item	Part Number	Description
1		Rotary joystick control switch

The instrument cluster controls the electric adjustable steering column in a rake (up and down) and reach (in and out). The steering column can be adjusted for rake and reach by operating the rotary joystick control switch on the LH side of the steering column.

Easy Entry Exit

The 'Easy Entry Exit' mode provides automatic movement of the steering column to allow easier entry to or exit from the vehicle.

This mode is selected by setting the steering column adjustment switch to the 'AUTO' position.

If the 'Easy Entry Exit' feature fails to function, it can be activated as follows:

- Rotate the steering column adjust switch to the 'AUTO' position
- The instrument cluster will now display 'Column Adjust Auto' in the message center

For more information refer to the owners handbook.

Steering Column Control

Adjustment of the steering column is achieved by a single Direct Current (DC) motor. Each adjustment movement is transmitted through a solenoid actuated clutch; 1 clutch for reach movement and 1 for rake movement.

When engaged, a clutch can be released only if the system is unstressed. As the clutches are mounted on the same motor spindle, the sequence for position adjustment is as follows:

- Engage the selected clutch by powering the appropriate solenoid
- After a time period (approximately 0.1 of a second), the motor is powered in the desired direction. When the motor reaches the stop position the solenoid and motor is released/unpowered. The clutch remains engaged under stress

- At the start of the next adjustment the motor is powered in the opposite direction to enable the clutch to disengage when the stress is released.

Simultaneous rake and reach movements are not possible since the motor must reverse direction as soon as the first axis has reached its required position.

Steering column rake and reach is controlled via potentiometer feedback.

MEMORY CONTROL MODULE



Item	Part Number	Description
1		Memory control module

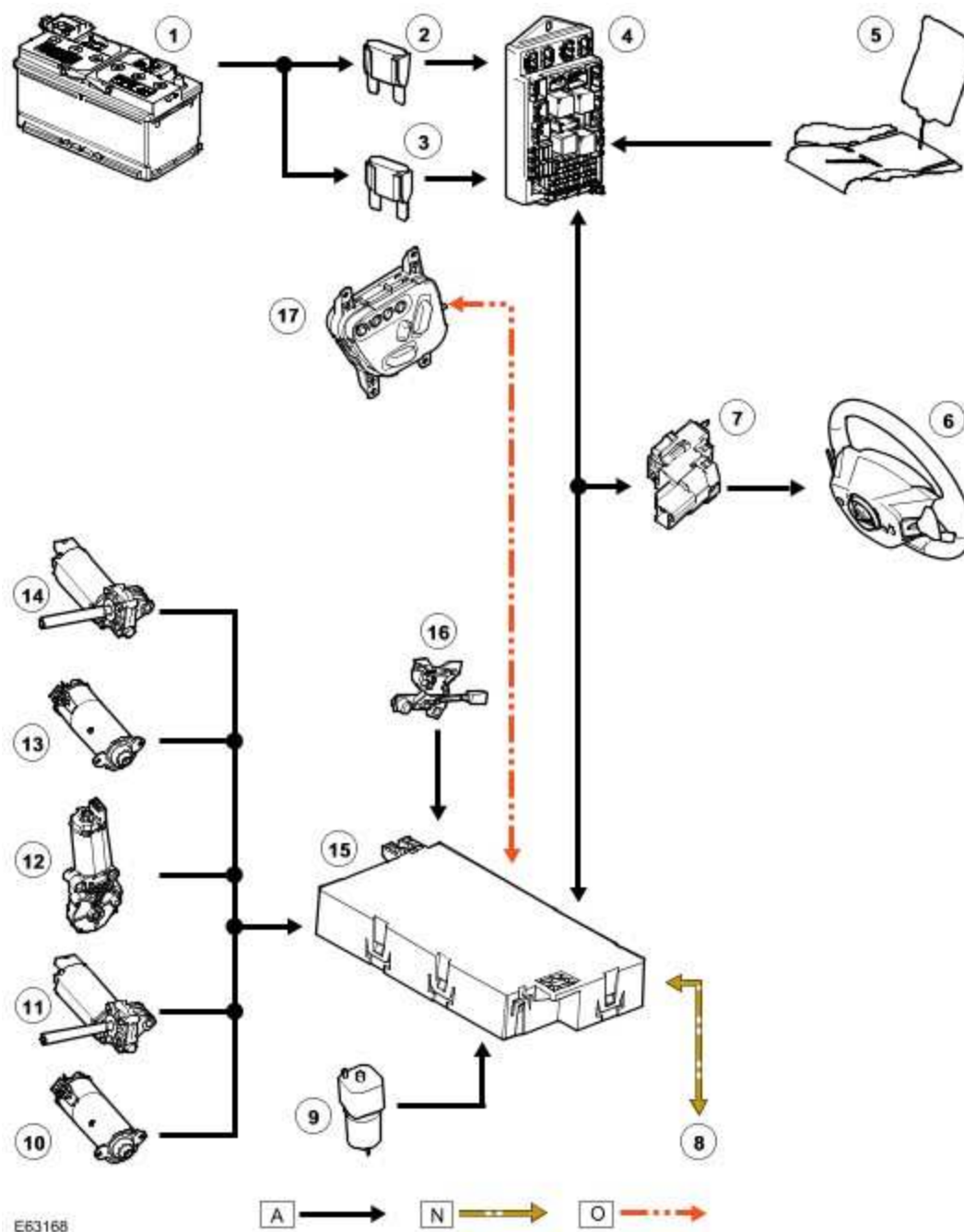
The memory control module, located under the drivers and passengers seat, relies upon a number of inputs to control various outputs. As with all electronic control modules, the unit needs information regarding the current operating conditions of the engine and other related systems before it can make calculations, which determine the appropriate outputs.

CONTROL DIAGRAMS

Driver Seat

NOTE:

A = Hardwired; N = CAN bus; O = LIN bus



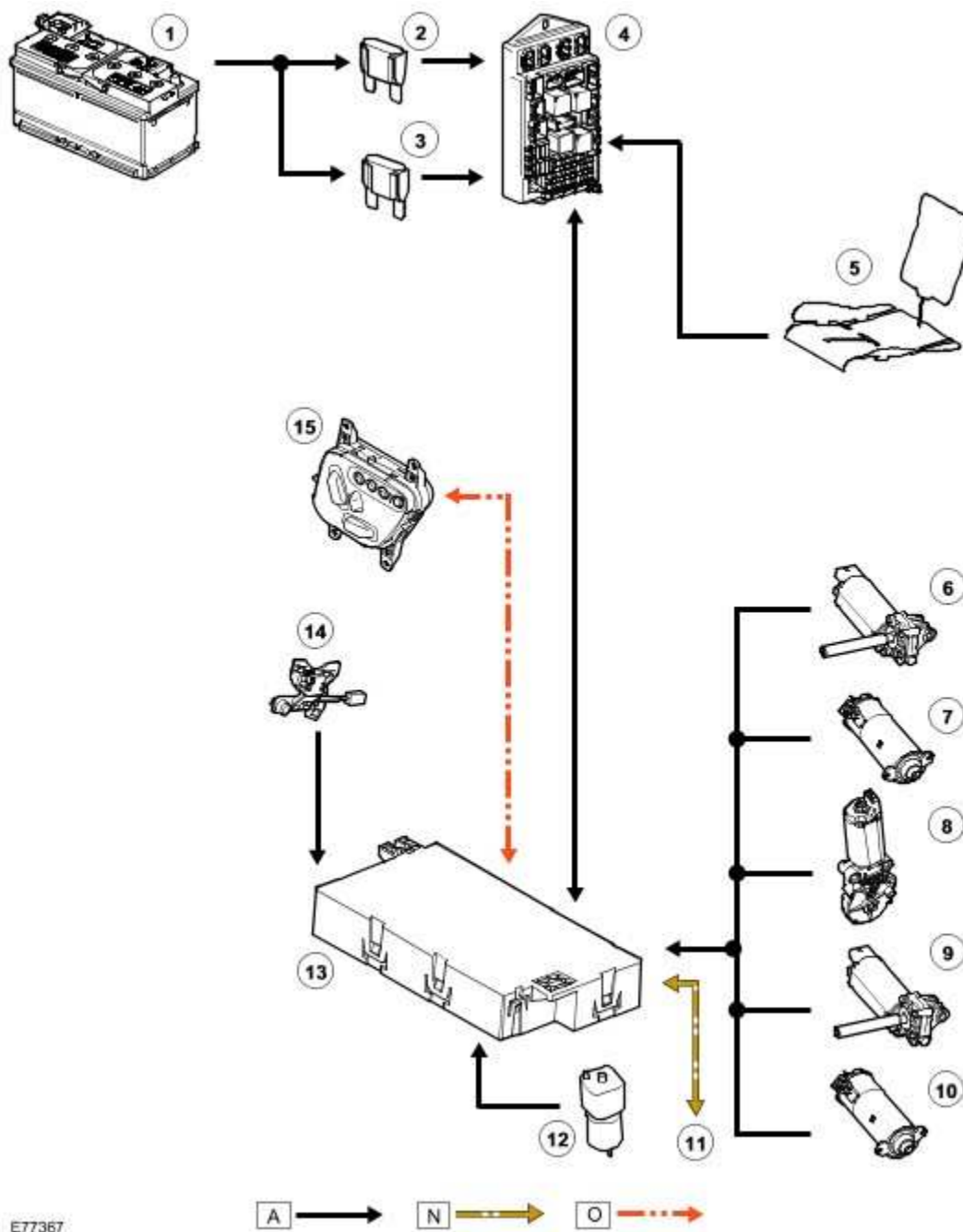
Item	Part Number	Description
1		Battery

2		Megafuse (175A)
3		Megafuse (175A)
4		Central Junction Box (CJB)
5		Driver seat heating elements
6		Heated steering wheel
7		Heated steering wheel module
8		Controller Area Network (CAN) input and output signals to and from various other vehicle systems
9		Driver lumbar pump
10		Driver cushion extend motor
11		Driver fore/aft adjustment motor
12		Driver recline adjustment motor
13		Driver height adjustment motor
14		Driver rake adjustment motor
15		Driver Seat Module (DSM)
16		Driver seat Hall sensor (seat position)
17		Driver seat switch pack

Passenger Seat

NOTE:

A = Hardwired; **N** = CAN bus; **O** = LIN bus



Item	Part Number	Description
1		Battery
2		Megafuse (175A)
3		Megafuse (175A)
4		Central Junction Box (CJB)
5		Passenger seat heating elements
6		Passenger rake adjustment motor
7		Passenger height adjustment motor

8		Passenger recline adjustment motor
9		Passenger fore/aft adjustment motor
10		Passenger cushion extend motor
11		Controller Area Network (CAN) input and output signals to and from various other vehicle systems
12		Passenger lumbar pump
13		Passenger Seat Module
14		Passenger seat Hall sensor (seat position)
15		Passenger seat switch pack

PRINCIPLES OF OPERATION

Drivers Memory Seat

The memory control module can store up to 3 different driver seating, mirror and steering column positions. The numbered memory and single memory store switches control memory storage and recall operations. Each switch is a momentary action push switch.



Memory Store

Drivers Seat

Once the driver's seat, steering column and exterior mirrors have been adjusted, the vehicle is able to memorise these settings for future use by using the following procedure:

- Push the memory button M, the red Light Emitting Diode (LED) will illuminate for five seconds
- Whilst the LED is illuminated, press button 1, 2 or 3 to memorise the current settings

The LED will extinguish, and a chime will sound to confirm that the settings have been memorised. If the ignition is in the 'ON' mode, the message centre will display a confirmation message.

Passenger Seat

The procedure to memorise a passenger seat position is the same as that for the driver's seat with two exceptions. There will be no chime or message to confirm the settings.

Memory Recall

Memory recall has 3 memory positions stored for the seats, steering column and exterior mirrors. The switches for this function are located on driver and passenger door side trim panel. Pressing the appropriate numbered memory switch allows the seat to start moving to the position appropriate to that memory. When the switch is released the system will operate in manual mode. This means that when the switch is released, the seat will stop moving. In order to reach the intended memory position, the switch must not be released until all movement has stopped.

When a memory recall is initiated, to limit the overall current consumption, only 2-seat axis will move towards their intended position at any one time.

Both mirrors move simultaneously about the vertical axis first (left/right), and then, once all vertical axis movements are complete, about the horizontal axis (up/down). To minimise the number of mirror drives required, a method of sharing is implemented, which dictates that all movement about 1 axis is complete before movement about the other axis commences.

Immediate Adjustment

Pressing one of the manual adjustment switches will initiate the corresponding motor for that axis until the switch is released.

Only 2 seat motors can be driven at any one time.

Stall Detection

Seat, steering column and mirror motors are deemed to have stalled if there is no change in the inputs that are received from the corresponding feedback sensors for 200 ms (seat).

If a stall condition is detected then the drive to that axis is cancelled for the remainder of that memory operation (memory recall) or until the switch is re-selected (manual movement).

If the motor movement has stopped due to loss of sensor feedback, either stall or sensor failure, then that axis may be activated again, to move past the stall position, by re-selecting the appropriate switch and pressing for longer than 2 seconds. This allows control of the motor to be maintained if sensor feedback is lost.

Upon re-selection of movement, if sensor pulses are detected then the motor will continue to be driven until the switch is released or another stall condition is detected. If sensor feedback is not detected then the motor is only driven for 0.5 second and then stops until the switch is released and then pressed again, when a further 0.5 second of activation is permitted, and so on, this is known as inch mode.

For all seat motor manual movements, whenever a motor is driven and a stall occurs, the memory control module records the position at which the stall occurred. If movement occurs

beyond a stall position, then that position is erased from the control modules memory. This will always allow movement past a previously recorded stall position once movement has been registered beyond that position. This is the case for both manual and memory movement.

Initialisation

When a replacement memory control module is fitted to a seat it should be calibrated via IDS diagnostic tester so that the control module can learn the seats absolute position.

Battery Monitor

If the battery voltage drops below 10.5 Volts, then the memory control module ignores all requests for a memory recall until the battery voltage has reached 11.5 Volts. This will conserve as much power in the vehicle battery as possible to enable engine cranking.

Stand-by Mode

The memory control module supports a stand-by mode to keep power consumption to a minimum.

If the control module is being prevented from entering stand-by mode due to motor movement, memory recall or switch operation, then it will enter stand-by mode when the current function has terminated.

NOTE:

In the case of a memory recall, all memory recall operations should be carried out before entering stand-by mode, not just the current motor movement.

The control module will exit stand-by mode if there is any CAN bus activity.

The exchange of information between the diagnostic unit and the memory control module is via the medium-speed CAN bus. There is a non-volatile Electronic Erasable Programmable Read Only Memory (EEPROM) for saving detected errors. Its contents are not lost when the power supply is disconnected. Only the IDS diagnostic tester can erase the error memory.

Seats

Principle of Operation

For a detailed description of the seats and seat operation, refer to the relevant Description and Operation section in the workshop manual.

[Seats](#)

Inspection and Verification

NOTE:

Prior to carrying out any diagnosis, ensure the vehicle battery is in a good serviceable condition, refer to the battery care manual.

- 1 . Verify the customer concern.
- 2 . Visually inspect for obvious signs of damage and system integrity.

Mechanical	Electrical
Security, condition and correct installation of seat components and fixings	- Fuses - Harnesses for damage/corrosion - Electrical connectors - Damaged/corroded pins

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 concern and refer to the Symptom Chart, alternatively, check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

Symptom Chart

Symptom	Possible Cause	Action
No seat movement from switch-pack (including no memory recall)	- Seat module has gone into sleep mode - Seat switch-pack LIN, power or ground circuit -	Set ignition ON. Re-check seat function from switch-pack. Check for DTC B1A9887 and refer to DTC Index. Check for DTC B1A9888 and refer to DTC Index

	- open circuit - Seat switch-pack LIN circuit - short to power, ground	
Seat movement from switch-pack occurs in inch mode (after 2 second delay from switch operation) - When seat axis movement is requested from the seat switch-pack the requested seat axis moves a short distance (after a 2 second delay from switch operation) then stops. This behaviour could occur on any seat axis (slide, height, squab, tilt or cushion)	Motor Hall sensor on affected axis is not connected or not receiving expected signals	Check for DTCs, B1B8731, B1B9131, B1B8931, B1B9331, B106331 and refer to DTC Index. Re-calibrate affected seat
Seat movement from switch-pack occurs in inch mode - When seat axis movement is requested from the seat switch-pack the requested seat axis moves a short distance then stops. This behaviour will occur on ALL seat axis (slide, height, squab, tilt and cushion)	MS CAN fault	Check Instrument Cluster and DDM/PDM for DTCs, U020800, U012600, U015500, U019900, U014200 and refer to relevant DTC Index. Check CAN network integrity using manufacturer approved diagnostic system. Re-calibrate affected seat
Seat moves forward/rearwards via the slide axis when the seat squab is tipped forwards/rearwards	Seat module is in manufacturing mode	Re-configure the affected seat module as a 'New Module' using the manufacturer approved diagnostic system
When seat squab axis is moved to its maximum recline position the squab makes contact with the rear quarter casing causing the squab to twist and bend	Seat is out of calibration	Re-calibrate the affected seat. Check for DTC U300146 and refer to DTC Index
Front seat fore/aft movement not functioning	Carry out the pinpoint test associated to this Symptom	GO to Pinpoint Test G841635p1 .
Front seat excessive fore/aft free play	Carry out the pinpoint test associated to this Symptom	GO to Pinpoint Test G841635p2 .
Front seat fore/aft movement noisy	Carry out the	GO to Pinpoint Test

	pinpoint test associated to this Symptom	G841635p3.
Front seat height, tilt and/or seat extension motor movement not functioning	Carry out the pinpoint test associated to this Symptom	GO to Pinpoint Test G841635p4.
Front seat height, tilt and/or extension movement noisy	Carry out the pinpoint test associated to this Symptom	GO to Pinpoint Test G841635p5.

DTC Index



CAUTION: When probing connectors to take measurements in the course of the pinpoint tests, use the adaptor kit, part number 3548-1358-00.

NOTE:

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.

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 additional information read by the manufacturer approved diagnostic system).

NOTE:

When performing electrical voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places, and with an up-to-date 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:

Inspect connectors for signs of water ingress, and pins for damage and/or corrosion.

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
B1C02-24	Memory Store Switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1C03-24	Memory #1 Switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1C04-24	Memory #2 Switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1C05-24	Memory #3 Switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B94-24	Seat Height Up Switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B95-24	Seat Height Down Switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B96-24	Seat Slide Forward Switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B97-24	Seat Slide Backward Switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.

B1C00-24	Seat Recline Up Switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1C01-24	Seat Recline Down Switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B98-24	Seat Tilt Up Switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B99-24	Seat Tilt Down Switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1065-24	Cushion extend switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1066-24	Cushion retract switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1067-24	Lumbar in switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1068-24	Lumbar out switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1069-24	Lumbar up switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B106A-24	Lumbar down switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with

			this DTC using the manufacturer approved diagnostic system.
B106B-24	Bolster inflate switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B106C-24	Bolster deflate switch - signal stuck high	Signal stuck high	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B86-15	Seat Height Motor Relay - circuit short to battery or open	Circuit Short to Battery or Open	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B86-11	Seat Height Motor Relay - circuit short to ground	Circuit Short to Ground	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B88-15	Seat Slide Motor Relay - circuit short to battery or open	Circuit Short to Battery or Open	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B88-11	Seat Slide Motor Relay - circuit short to ground	Circuit Short to Ground	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B90-15	Seat Tilt Motor Relay - circuit short to battery or open	Circuit Short to Battery or Open	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B90-11	Seat Tilt Motor Relay - circuit short to ground	Circuit Short to Ground	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B92-15	Seat Recline Motor Relay - circuit short to battery or open	Circuit Short to Battery or Open	Carry out any pinpoint tests associated with this DTC using the manufacturer approved

			diagnostic system.
B1B92-11	Seat Recline Motor Relay - circuit short to ground	• Circuit Short to Ground	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B105F-15	Seat Cushion Extension Motor Output - circuit short to battery or open	• Circuit Short to Battery or Open	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B105F-11	Seat Cushion Extension Motor Output - circuit short to ground	• Circuit Short to Ground	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1D94-15	Lumbar Motor Relay - circuit short to battery or open	• Circuit Short to Battery or Open	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1D94-11	Lumbar Motor Relay - circuit short to ground	• Circuit Short to Ground	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B87-31	Seat Height Motor Speed/Position Sensor - no signal	• No Signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B91-31	Seat Tilt Motor Speed/Position Sensor - no signal	• No Signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B89-31	Seat Slide Motor Speed/Position Sensor - no signal	• No Signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1B93-31	Seat Recline Motor Speed/Position Sensor - no signal	• No Signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.

B1063-31	Seat Cushion Extension Motor Speed/Position Sensor - no signal	No Signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1064-31	Seat Headrest Motor Speed/Position Sensor - no signal	No Signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B113A-00	General failure on seat lumbar - no sub type information	General failure	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B113B-00	Multiple failure on lumbar 4W - no sub type information	Multiple failure	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1138-11	Lumbar control C - circuit short to ground	Circuit short to ground	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1138-12	Lumbar control C - circuit short to battery	Circuit short to battery	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1138-13	Lumbar control C - circuit open	Circuit open	Refer to the electrical circuit diagrams and test lower lumbar inflate control circuit for open circuit.
B1139-11	Lumbar control D - circuit short to ground	Circuit short to ground	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1139-12	Lumbar control D - circuit short to battery	Circuit short to battery	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1139-13	Lumbar control D - circuit open	Circuit open	Refer to the electrical circuit diagrams and

			test lower lumbar deflate control circuit for open circuit.
B1136-11	Lumbar control A - circuit short to ground	• Circuit short to ground	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1136-12	Lumbar control A - circuit short to battery	• Circuit short to battery	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1136-13	Lumbar control A - circuit open	• Circuit open	Refer to the electrical circuit diagrams and test upper lumbar deflate control circuit for open circuit.
B1137-11	Lumbar control B - circuit short to ground	• Circuit short to ground	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1137-12	Lumbar control B - circuit short to battery	• Circuit short to battery	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1137-13	Lumbar control B - circuit open	• Circuit open	Refer to the electrical circuit diagrams and test upper lumbar inflate control circuit for open circuit.
B105D-11	Seat Bolster Inflate Output - circuit short to ground	• Circuit short to ground	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B105D-15	Seat Bolster Inflate Output - circuit short to battery or open	• Circuit Short to Battery or Open	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B105E-11	Seat Bolster Deflate Output - circuit short to ground	• Circuit short to ground	Carry out any pinpoint tests associated with this DTC using the manufacturer approved

			diagnostic system.
B105E-15	Seat Bolster Deflate Output - circuit short to battery or open	• Circuit Short to Battery or Open	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1A98-86	LIN Bus Circuit #1 - signal invalid	• Signal Invalid	Check LIN network for interference/EMC related issues.
B1A98-88	LIN Bus Circuit #1 - bus off	• Bus off	Refer to electrical circuit diagrams and test LIN Bus between seat switch pack and control module for short to ground or power.
B1A98-83	LIN Bus Circuit #1 - value of signal protection calculation incorrect	• Value of signal protection calculation incorrect	Check LIN network for interference/EMC related issues.
B1A98-87	LIN Bus Circuit #1 - missing message	• Missing Message	Refer to electrical circuit diagrams and test LIN Bus between seat switch-pack and control module for open circuit, check power and ground supplies to switch-pack.
U1A14-49	CAN Initialisation failure - internal electronic failure	• Internal electronic failure	Install a new DSM/PSM, refer to the new module installation note at the top of the DTC Index.
U0010-88	Medium speed Can communication Bus - bus off	• Bus off	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U0140-00	Lost communication with CJB - no sub type information	• Lost communication with CJB	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U0142-00	Lost communication with RJB - no sub type information	• Lost communication with RJB	Carry out any pinpoint tests associated with this DTC using the

			manufacturer approved diagnostic system.
U0155-00	Lost communications with instrument cluster - no sub type information	Lost communications with instrument cluster	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U0199-00	Lost communication with Driver Door Module (DDM) - no sub type information	Lost communication with DDM	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U3002-81	Vehicle Identification Number (VIN) - invalid serial data received	Vehicle/component mismatch. Corrupt VIN data being transmitted, module previously installed to other vehicle	Install original module, check for DTCs and refer to relevant DTC Index.
U0300-00	Internal control module software incompatibility - no sub type information	Invalid configuration message is received	Re-configure the RJB using the manufacturer approved diagnostic system. Clear the DTC and retest. If the DTC is still logged suspect the DSM/PSM, refer to the new module installation note at the top of the DTC Index.
U3000-55	Stored vehicle configuration data does not match - not configured	Incorrect car configuration data received	Re-configure the RJB using the manufacturer approved diagnostic system. Clear DTC and re-test. If the DTC remains suspect the DSM/PSM, refer to the new module installation note at the top of the DTC Index.
U3000-87	Control Module - missing message	Missing message	Re-configure the RJB using the manufacturer approved diagnostic system. Check DSM/PSM for DTCs and refer to the DTC Index. Check CAN network integrity using the manufacturer approved diagnostic

			system.
U1A4C-68	Build/end of line mode active - event information	Manufacturing mode has not been removed	Place DSM/PSM in to customer mode using manufacturer approved diagnostic system.
U3000-49	Control module - internal electronic failure	Internal electronic failure	Install a new DSM/PSM, refer to the new module installation note at the top of the DTC Index.
U3001-46	Control module improper shutdown - calibration/parameter memory failure	Calibration/parameter memory failure	Check for DTCs that could indicate power failure to the module and refer to the DTC Index.
U3003-16	Battery voltage - circuit voltage below threshold	Circuit voltage below threshold	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U3003-17	Battery voltage - circuit voltage above threshold	Circuit voltage above threshold	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.



CAUTION: When probing connectors to take measurements in the course of the pinpoint tests, use the adaptor kit, part number 3548-1358-00.

NOTE:

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.

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 additional information read by the manufacturer approved diagnostic system).

NOTE:

When performing electrical voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places, and with an up-to-date 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:

Inspect connectors for signs of water ingress, and pins for damage and/or corrosion.

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
B10B9-13	Blower Control - circuit open	- LH fans pwr circuit, open circuit - LH fans rtn circuit, open circuit - Connectors disconnected - Connector pin damage - Blower motor assembly open circuit - Climate Control Seat Module failure	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check LH fans pwr circuit for open circuit. Check LH fans rtn circuit for open circuit. Check for any disconnected connectors or damaged connector pins. Check blower motor assembly for open circuit. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B10B9-4B	Blower Control - over temperature	- Mechanical restriction in blower motor assembly - LH fans pwr circuit, short to ground - LH fans rtn circuit, short to ground - Blower motor assembly, short to	Check for mechanical restriction or debris in blower motor assembly. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check LH fans pwr circuit for

		- ground - Climate Control Seat Module failure	short to ground. Check LH fans rtn circuit for short to ground. Check blower motor assembly for short to ground. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification.
B1157-13	Blower Control "B" - circuit open	- RH fans pwr circuit, open circuit - RH fans rtn circuit, open circuit - Connectors disconnected - Connector pin damage - Blower motor assembly open circuit - Climate Control Seat Module failure	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check RH fans pwr circuit for open circuit. Check RH fans rtn circuit for open circuit. Check for any disconnected connectors or damaged connector pins. Check blower motor assembly for open circuit. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1157-4B	Blower Control "B" - over temperature	- Mechanical restriction in blower motor assembly - RH fans pwr circuit, short to ground - RH fans rtn circuit, short to ground - Blower motor assembly, short to ground - Climate Control Seat	Check for mechanical restriction or debris in blower motor assembly. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check RH fans pwr circuit for short to ground. Check RH fans rtn circuit for short to ground. Check blower motor assembly

		Module failure	for short to ground. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification.
B120E-13	Right Thermal Electric Device Control - circuit open	• RH seat back thermal electric device + circuit, open circuit • RH seat back thermal electric device - circuit, open circuit • RH seat cushion thermal electric device + circuit, open circuit • RH seat cushion thermal electric device - circuit, open circuit • Connectors disconnected • Connector pin damage • Climate seat backrest thermal electric device assembly, open circuit • Climate seat cushion thermal electric device assembly, open circuit • Climate Control Seat Module failure	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, RH seat back thermal electric device + circuit for open circuit. Check RH seat back thermal electric device - circuit for open circuit. Check RH seat cushion thermal electric device + circuit for open circuit. Check RH seat cushion thermal electric device - circuit for open circuit. Check for any disconnected connectors or damaged connector pins. Check climate seat backrest thermal electric device assembly for open circuit. Check climate seat cushion thermal electric device assembly for open circuit. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B120E-19	Right Thermal Electric Device Control - circuit current above threshold	• RH seat back thermal electric device + circuit, short to ground • RH seat back thermal electric device - circuit, short to ground	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, RH seat

		• RH seat cushion thermal electric device + circuit, short to ground • RH seat cushion thermal electric device - circuit, short to ground • Climate seat backrest thermal electric device assembly, short to ground • Climate seat cushion thermal electric device assembly, short to ground • Climate Control Seat Module failure	back thermal electric device + circuit for short to ground. Check RH seat back thermal electric device - circuit for short to ground. Check RH seat cushion thermal electric device + circuit for short to ground. Check RH seat cushion thermal electric device - circuit for short to ground. Check climate seat backrest thermal electric device assembly for short to ground. Check climate seat cushion thermal electric device assembly for short to ground. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B120E-4B	Right Thermal Electric Device Control - over temperature	• Restriction in thermal electric device airpath • RH seat back thermal electric device + circuit, short to ground • RH seat back thermal electric device - circuit, short to ground • RH seat cushion thermal electric device + circuit, short to ground • RH seat cushion thermal electric device - circuit, short to ground • Climate seat backrest thermal electric device assembly, short to ground • Climate seat cushion thermal electric device	Check for blockage or restriction in thermal electric device airpath. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, RH seat back thermal electric device + circuit for short to ground. Check RH seat back thermal electric device - circuit for short to ground. Check RH seat cushion thermal electric device + circuit for short to ground. Check RH seat cushion thermal electric device - circuit for short to ground. Check climate seat backrest thermal electric device assembly for short to ground. Check climate seat cushion thermal electric

		assembly, short to ground Climate Control Seat Module failure	device assembly for short to ground. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B120F-98	Left Seat Cushion - component or system over temperature	- The Climate Control Seat Module LH cushion sensor input circuit temperature exceeds 65 Degrees C continuously for more than 4 seconds during cooling - The Climate Control Seat Module LH cushion sensor input circuit temperature is greater than 110 Degrees C for more than 4 seconds during heating - Blocked or restricted thermal electric device fan exhaust vent - Restricted thermal electric fan movement	Check for blockage or restriction in thermal electric device fan exhaust vent. Check for restricted thermal electric fan movement. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification.
B1223-13	Right Seat Cushion Temperature Sensor - circuit open	- RH seat cushion sensor circuit, open circuit - RH seat cushion sensor rtn circuit, open circuit - Connectors disconnected - Connector pin damage - Climate seat cushion temperature sensor assembly, open circuit - Climate Control Seat	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, RH seat cushion sensor circuit for open circuit. Check RH seat cushion sensor rtn circuit for open circuit. Check for any disconnected connectors or damaged connector pins. Check Climate seat cushion

		Module failure	temperature sensor assembly for open circuit. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1224-13	Left Thermal Electric Device Control - circuit open	• LH seat back thermal electric device + circuit, open circuit • LH seat back thermal electric device - circuit, open circuit • LH seat cushion thermal electric device + circuit, open circuit • LH seat cushion thermal electric device - circuit, open circuit • Connectors disconnected • Connector pin damage • Climate seat backrest thermal electric device assembly, open circuit • Climate seat cushion thermal electric device assembly, open circuit • Climate Control Seat Module failure	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, LH seat back thermal electric device + circuit for open circuit. Check LH seat back thermal electric device - circuit for open circuit. Check LH seat cushion thermal electric device + circuit for open circuit. Check LH seat cushion thermal electric device - circuit for open circuit. Check for any disconnected connectors or damaged connector pins. Check climate seat backrest thermal electric device assembly for open circuit. Check climate seat cushion thermal electric device assembly for open circuit. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1224-	Left Thermal	• LH seat back thermal	Carry out On Demand Self Test

19	Electric Device Control - circuit current above threshold	electric device + circuit, short to ground • LH seat back thermal electric device - circuit, short to ground • LH seat cushion thermal electric device + circuit, short to ground • LH seat cushion thermal electric device - circuit, short to ground • Climate seat backrest thermal electric device assembly, short to ground • Climate seat cushion thermal electric device assembly, short to ground • Climate Control Seat Module failure	(ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, LH seat back thermal electric device + circuit for short to ground. Check LH seat back thermal electric device - circuit for short to ground. Check LH seat cushion thermal electric device + circuit for short to ground. Check LH seat cushion thermal electric device - circuit for short to ground. Check climate seat backrest thermal electric device assembly for short to ground. Check climate seat cushion thermal electric device assembly for short to ground. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1224-4B	Left Thermal Electric Device Control - over temperature	• Restriction in thermal electric device airpath • LH seat back thermal electric device + circuit, short to ground • LH seat back thermal electric device - circuit, short to ground • LH seat cushion thermal electric device + circuit, short to ground • LH seat cushion thermal electric device - circuit, short to ground • Climate seat backrest	Check for blockage or restriction in thermal electric device airpath. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, LH seat back thermal electric device + circuit for short to ground. Check LH seat back thermal electric device - circuit for short to ground. Check LH seat cushion thermal electric device + circuit for short to ground. Check LH seat cushion thermal electric device - circuit

		thermal electric device assembly, short to ground - Climate seat cushion thermal electric device assembly, short to ground - Climate Control Seat Module failure	for short to ground. Check climate seat backrest thermal electric device assembly for short to ground. Check climate seat cushion thermal electric device assembly for short to ground. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1225-13	Right Seat Back Temperature Sensor - circuit open	- RH seat back sensor circuit, open circuit - RH seat back sensor rtn circuit, open circuit - Connectors disconnected - Connector pin damage - Climate seat back temperature sensor assembly, open circuit - Climate Control Seat Module failure	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, RH seat back sensor circuit for open circuit. Check RH seat back sensor rtn circuit for open circuit. Check for any disconnected connectors or damaged connector pins. Check Climate seat back temperature sensor assembly for open circuit. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B1229-13	Left Seat Back Temperature Sensor - circuit	- LH seat back sensor circuit, open circuit - LH seat back sensor	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to

	open	rtn circuit, open circuit • Connectors disconnected • Connector pin damage • Climate seat back temperature sensor assembly, open circuit • Climate Control Seat Module failure	confirm the fault is present. Refer to the electrical circuit diagrams and check, LH seat back sensor circuit for open circuit. Check LH seat back sensor rtn circuit for open circuit. Check for any disconnected connectors or damaged connector pins. Check Climate seat back temperature sensor assembly for open circuit. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
B122A-11	Right Seat Cushion Blower Speed Sensor - circuit short to ground - circuit short to ground	• RH cushion fan speed, circuit short to ground • Blower motor assembly, short to ground • Climate Control Seat Module failure	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, RH cushion fan speed for circuit short to ground. Check blower motor assembly for short to ground. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification.
B122A-12	Right Seat Cushion Blower Speed Sensor - circuit short to battery	• RH cushion fan speed, circuit short to power • Blower motor assembly, short to power • Climate Control Seat	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, RH cushion fan speed for circuit short to

		Module failure	power. Check blower motor assembly for short to power. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification.
B122B-11	Right Seat Back Blower Speed Sensor - circuit short to ground	• RH seat back fan speed, circuit short to ground • Blower motor assembly, short to ground • Climate Control Seat Module failure	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, RH seat back fan speed for circuit short to ground. Check blower motor assembly for short to ground. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification.
B122B-12	Right Seat Back Blower Speed Sensor - circuit short to battery	• RH seat back fan speed, circuit short to power • Blower motor assembly, short to power • Climate Control Seat Module failure	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, RH seat back fan speed for circuit short to power. Check blower motor assembly for short to power. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification.
B122C-11	Left Seat Cushion Blower Speed	• LH cushion fan speed, circuit short to ground	Carry out On Demand Self Test (ODST) using manufacturer

	Sensor - circuit short to ground	• Blower motor assembly, short to ground • Climate Control Seat Module failure	approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, LH cushion fan speed for circuit short to ground. Check blower motor assembly for short to ground. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification.
B122C-12	Left Seat Cushion Blower Speed Sensor - circuit short to battery	• LH cushion fan speed, circuit short to power • Blower motor assembly, short to power • Climate Control Seat Module failure	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, LH cushion fan speed for circuit short to power. Check blower motor assembly for short to power. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification.
B122D-11	Left Seat Back Blower Speed Sensor - circuit short to ground	• LH seat back fan speed, circuit short to ground • Blower motor assembly, short to ground • Climate Control Seat Module failure	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, LH seat back fan speed for circuit short to ground. Check blower motor assembly for short to ground. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using

			manufacturer approved diagnostic system to confirm rectification.
B122D-12	Left Seat Back Blower Speed Sensor - circuit short to battery	• LH seat back fan speed, circuit short to power • Blower motor assembly, short to power • Climate Control Seat Module failure	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, LH seat back fan speed for circuit short to power. Check blower motor assembly for short to power. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification.
B122E-98	Right Seat Cushion - component or system over temperature	• The Climate Control Seat Module RH cushion sensor input circuit temperature exceeds 65 Degrees C continuously for more than 4 seconds during cooling • The Climate Control Seat Module RH cushion sensor input circuit temperature is greater than 110 Degrees C for more than 4 seconds during heating • Blocked or restricted thermal electric device fan exhaust vent • Restricted thermal electric fan movement	Check for blockage or restriction in thermal electric device fan exhaust vent. Check for restricted thermal electric fan movement. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification.
B122F-98	Right Seat Back - component or system over temperature	• The Climate Control Seat Module RH seat back sensor input circuit temperature exceeds 65 Degrees C continuously for more	Check for blockage or restriction in thermal electric device fan exhaust vent. Check for restricted thermal electric fan movement. Carry out On Demand Self Test (ODST) using

		than 4 seconds during cooling • The Climate Control Seat Module RH seat back sensor input circuit temperature is greater than 110 Degrees C for more than 4 seconds during heating • Blocked or restricted thermal electric device fan exhaust vent • Restricted thermal electric fan movement	manufacturer approved diagnostic system to confirm rectification.
B1230-98	Left Seat Back - component or system over temperature	• The Climate Control Seat Module LH seat back sensor input circuit temperature exceeds 65 Degrees C continuously for more than 4 seconds during cooling • The Climate Control Seat Module LH seat back sensor input circuit temperature is greater than 110 Degrees C for more than 4 seconds during heating • Blocked or restricted thermal electric device fan exhaust vent • Restricted thermal electric fan movement	Check for blockage or restriction in thermal electric device fan exhaust vent. Check for restricted thermal electric fan movement. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification.
B1231-7A	Right Seat - fluid leak or seal failure	• The Climate Control Seat Module has detected an input temperature difference greater than expected between RH seat back sensor and RH cushion sensor • Climate seat back assembly airpath leaking	Check for blockage or restriction in seat back thermal electric device fan ducts. Check seat back thermal electric device fan exhaust vent is clear. Check for blockage or restriction in seat cushion thermal electric device fan ducts. Check seat cushion thermal electric device fan exhaust vent is clear. Carry out On Demand Self Test

		- Climate seat cushion assembly airpath leaking - Seat assembly damaged	(ODST) using manufacturer approved diagnostic system to confirm rectification.
B1232-7A	Left Seat - fluid leak or seal failure	- The Climate Control Seat Module has detected an input temperature difference greater than expected between LH seat back sensor and LH cushion sensor - Climate seat back assembly airpath leaking - Climate seat cushion assembly airpath leaking - Seat assembly damaged	Check for blockage or restriction in seat back thermal electric device fan ducts. Check seat back thermal electric device fan exhaust vent is clear. Check for blockage or restriction in seat cushion thermal electric device fan ducts. Check seat cushion thermal electric device fan exhaust vent is clear. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification.
B1235-13	Left Seat Cushion Temperature Sensor - circuit open	- LH seat cushion sensor circuit, open circuit - LH seat cushion sensor rtn circuit, open circuit - Connectors disconnected - Connector pin damage - Climate seat cushion temperature sensor assembly, open circuit - Climate Control Seat Module failure	Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm the fault is present. Refer to the electrical circuit diagrams and check, LH seat cushion sensor circuit for open circuit. Check LH seat cushion sensor rtn circuit for open circuit. Check for any disconnected connectors or damaged connector pins. Check Climate seat cushion temperature sensor assembly for open circuit. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved

			diagnostic system.
U0010-88	Medium Speed CAN Communication Bus - bus off	Medium Speed CAN communication bus off	Refer to the electrical circuit diagrams and check the power and ground connections to the module. Using the manufacturer approved diagnostic system, complete a CAN network integrity test. Refer to the electrical circuit diagrams and check the CAN network. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U0140-00	Lost Communication With Body Control Module - no sub type information	- CAN harness link between Climate Control Seat Module and Central Junction Box malfunction - The Climate Control Seat Module has not received the expected CAN signal from the Central Junction Box within the specified time interval	Using the manufacturer approved diagnostic system, check Central Junction Box for DTCs and refer to the relevant DTC Index. Using the manufacturer approved diagnostic system, carry out network integrity test. Refer to the electrical circuit diagrams and check Central Junction Box power and ground circuits for open circuit. Check CAN harness between Climate Control Seat Module and Central Junction Box, repair as necessary. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U0142-00	Lost Communication With Body Control Module "B" - no sub type information	- CAN harness link between Climate Control Seat Module and Rear Junction Box malfunction - The Climate Control Seat Module has not received the expected CAN signal from the Rear Junction Box within the specified time interval	Using the manufacturer approved diagnostic system, check Rear Junction Box for DTCs and refer to the relevant DTC Index. Using the manufacturer approved diagnostic system, carry out network integrity test. Refer to the electrical circuit diagrams and check Rear Junction Box power and ground circuits for open circuit. Check CAN harness between Climate Control Seat Module and Rear Junction Box, repair as

			necessary. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U0155-00	Lost Communication With Instrument Panel Cluster (IPC) Control Module - no sub type information	- CAN harness link between Climate Control Seat Module and Instrument Cluster network malfunction - The Climate Control Seat Module has not received the expected CAN signal from the Instrument Cluster within the specified time interval	Using the manufacturer approved diagnostic system, check Instrument Cluster for DTCs and refer to the relevant DTC Index. Using the manufacturer approved diagnostic system, carry out network integrity test. Refer to the electrical circuit diagrams and check Instrument Cluster power and ground circuits for open circuit. Check CAN harness between Climate Control Seat Module and Instrument Cluster, repair as necessary. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U0156-00	Lost Communication With Information Center "A" - no sub type information	- CAN harness link between Climate Control Seat Module and Information and Entertainment Control Module network malfunction - The Climate Control Seat Module has not received the expected CAN signal from the Information and Entertainment Control Module within the specified time interval	Using the manufacturer approved diagnostic system, check Information and Entertainment Control Module for DTCs and refer to the relevant DTC Index. Using the manufacturer approved diagnostic system, carry out network integrity test. Refer to the electrical circuit diagrams and check Information and Entertainment Control Module power and ground circuits for open circuit. Check CAN harness between Climate Control Seat Module and Information and Entertainment Control Module, repair as necessary. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
U0300-	Internal Control	Incorrect or invalid	Using the manufacturer

00	Module Software Incompatibility - no sub type information	software has been installed	approved diagnostic system, re-configure the Climate Control Seat Module and the Rear Junction Box. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification. Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect.
U0401-00	Invalid Data Received From ECM/PCM - no sub type information	The Engine Control Module has transmitted engine speed quality factor CAN signal at a specific value for a greater than expected time period.	Using the manufacturer approved diagnostic system, check Engine Control Module for DTCs and refer to the relevant DTC Index.
U2101-00	Control Module Configuration Incompatible - no sub type information	Calibration incomplete/corrupt	Using the manufacturer approved diagnostic system, re-configure the Climate Control Seat Module and the Rear Junction Box. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm rectification.
U3000-04	Control Module - system internal failures	- Climate Control Seat Module failure - Climate Control Seat Module microprocessor failed internal ROM and/or RAM checksum test	Refer to the new module/component installation note at the top of the DTC Index if the Climate Control Seat Module is suspect.
U3003-62	Battery Voltage - signal compare failure	Mismatch in battery voltage of 2 volts or more between the measured battery voltage at the Climate Control Seat Module and the battery voltage signal sent from the Rear Junction Box	Refer to the electrical circuit diagrams and check that power supply voltage at Climate Control Seat Module and Rear Junction Box is not different by more than 2 volts. Rectify as required. Carry out On Demand Self Test (ODST) using manufacturer approved diagnostic system to confirm

			rectification. Alternatively carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system.
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Pinpoint Tests

PINPOINT TEST G841635p1 : Front seat fore/aft movement not functioning

G841635t1 : Check for front seat forward-rearward seat motor operation

1.



WARNING: Before work is carried out, make the air bag supplemental restraint system safe. For additional information, refer to Standard Workshop Practices section of workshop manual.

Set ignition status to 'ON'. 2. From the switch pack, operate the front seat forward-rearward seat motor switch and listen for evidence of the motor operating.

- **Does the motor operate?**

-> **Yes**

GO to Pinpoint Test [G841635t2](#).

-> **No**

GO to Pinpoint Test [G841635t3](#).

G841635t2 : Check front seat forward-rearward seat motor drive bar

1. Check front seat drive bar for correct installation and condition

- **Is the front seat drive bar correctly installed and in a serviceable condition?**

-> **Yes**

Re-check for correct front seat forward-rearward movement. Remove seat to allow for further investigation if required.

-> **No**

Correctly install front seat forward-rearward seat motor drive bar, or replace if required.

G841635t3 : Check front seat forward-rearward seat motor

1. Set ignition status to 'OFF'. 2. Disconnect front seat forward-rearward seat motor connector. 3. **NOTE:**

It may be that the seat has been driven to the limit of travel along the relevant axis, and when the link harness is connected, the seat will remain in the same position. If this is the case, a jolt may be felt from the motor. To confirm the motor operation, swap the link harness to alternate motor pin connections and the seat should travel in the opposite direction.

Using a locally made fused link harness and power supply, connect power and ground to forward-rearward seat motor.

Battery positive terminal	Battery negative terminal
forward-rearward seat motor pin 1	forward-rearward seat motor pin 2

- **Does the motor operate?**

-> **Yes**

Using manufacturer approved diagnostic system, check for related Diagnostic Trouble Codes (DTCs) and carry out the repair operations specified. Alternatively, refer to the electrical circuit diagrams and check front seat forward-rearward seat motor circuits.

-> **No**

Replace front seat forward-rearward seat motor. Refer to relevant section of workshop manual.

PINPOINT TEST G841635p2 : Front seat excessive forward-rearward free play

G841635t4 : Check front seat for excessive forward-rearward free play

1.



WARNING: Before work is carried out, make the air bag supplemental restraint system safe. For additional information, refer to Standard Workshop Practices section of workshop manual.

Check all accessible front seat frame fixings are installed and to the correct torque.

- **Are all accessible front seat frame fixings installed and to the correct torque?**

-> **Yes**

GO to Pinpoint Test [G841635t5](#).

-> **No**

Install and tighten all accessible front seat frame fixings to correct torque and re-check for excessive free play.

G841635t5 : Compare the front seat forward-rearward free play against a similar seat

1. Compare the front seat forward-rearward free play against a similar seat.

- **Is the front seat forward-rearward free play excessive when compared to a similar seat?**

-> **Yes**

GO to Pinpoint Test [G841635t6](#).

-> **No**

The front seat frame is operating correctly. Submit Electronic Product Quality Report (EPQR) with any further query.

G841635t6 : Check remaining front seat frame fixings

1. Remove front seat and/or any seat covers/trim to allow access to check remaining front seat frame fixings are all installed and to the correct torque.

- **Are all remaining front seat frame fixings installed and to the correct torque?**

-> **Yes**

Replace front seat frame. Refer to the relevant section of the workshop manual.

-> **No**

Install and tighten all remaining front seat frame fixings to correct torque and re-check for excessive free play.

PINPOINT TEST G841635p3 : Front seat forward-rearward movement noisy

G841635t7 : Compare front seat forward-rearward movement noise to other front seat

1.



WARNING: Before work is carried out, make the air bag supplemental restraint system safe. For additional information, refer to Standard Workshop Practices section of workshop manual.

Compare the front seat forward-rearward movement noise to other front seat.

- **Is the front seat forward-rearward movement noise excessive when compared to other front seat?**

-> **Yes**

GO to Pinpoint Test [G841635t8](#).

-> **No**

GO to Pinpoint Test [G841635t9](#).

G841635t8 : Compare front seat forward-rearward movement noise to front seat in other vehicle

1. Compare the front seat forward-rearward movement noise to front seat in other vehicle.

- **Is the front seat forward-rearward movement noise excessive when compared to front seat in other vehicle?**

-> **Yes**

GO to Pinpoint Test [G841635t9](#).

-> **No**

The front seat frame is operating correctly. Submit Electronic Product Quality Report (EPQR) with any further query.

G841635t9 : Check for debris obstructing seat movement

1. Check for debris obstructing seat movement.

- **Is the front seat forward-rearward movement obstructed by debris?**

-> **Yes**

Remove obstruction and re-check for noisy forward-rearward seat movement.

-> **No**

GO to Pinpoint Test [G841635t10](#).

G841635t10 : Re-align front seat frame

1. Loosen front seat frame fixings. 2. Set ignition status to 'ON'. 3. Using the front seat switch pack drive the front seat fully forward then fully rearward. 4. Tighten front seat frame fixings to the correct torque. 5. Re-check for noisy seat movement.

- **Is the front seat forward-rearward movement still noisy?**

-> **Yes**

GO to Pinpoint Test [G841635t11](#).

-> **No**

The front seat frame is now operating correctly.

G841635t11 : Check front seat forward-rearward seat motor drive bar

1. Check front seat drive bar for correct installation and condition.

- **Is the front seat drive bar correctly installed and in a serviceable condition?**

-> **Yes**

Replace front seat forward-rearward seat motor. Refer to relevant section of workshop manual.

-> **No**

Correctly install front seat forward-rearward seat motor drive bar, or replace if required.

PINPOINT TEST G841635p4 : Front seat height, tilt and/or seat extension motor movement not functioning

G841635t12 : Check front seat height, tilt or extension motor

1. Set ignition status to 'OFF'. 2. Disconnect front seat height, tilt or extension motor connector. 3. **NOTE:**

It may be that the seat has been driven to the limit of travel along the relevant axis, and when the link harness is connected, the seat will remain in the same position. If this is the case, a jolt may be felt from the motor. To confirm the motor operation, swap the link harness to alternate motor pin connections and the seat should travel in the opposite direction.

Using a locally made fused link harness and power supply, connect power and ground to relevant motor.

Battery positive terminal	Battery negative terminal
motor pin 1	motor pin 2

- **Does the motor operate?**

-> **Yes**

Using manufacturer approved diagnostic system, check for related Diagnostic Trouble Codes (DTCs) and carry out the repair operations specified. Alternatively, refer to the electrical circuit diagrams and check relevant motor circuits.

-> **No**

Replace the relevant motor. Refer to relevant section of workshop manual.

PINPOINT TEST G841635p5 : Front seat height, tilt and/or extension movement noisy

G841635t13 : Compare the height, tilt or extension movement noise with the other front seat

1.



WARNING: Before work is carried out, make the air bag supplemental restraint system safe. For additional information, refer to Standard Workshop Practices section of workshop manual.

Compare the front seat movement noise to other front seat.

- **Is the front seat height, tilt or extension movement noise excessive when compared to other front seat?**

-> **Yes**

GO to Pinpoint Test [G841635t14](#).

-> **No**

GO to Pinpoint Test [G841635t15](#).

G841635t14 : Compare front seat height, tilt or extension movement noise to front seat in other vehicle

1. Compare the front seat height, tilt or extension movement noise to front seat in other vehicle.

- **Is the front seat height, tilt or extension movement noise excessive when compared to front seat in other vehicle?**

-> **Yes**

GO to Pinpoint Test [G841635t15](#).

-> **No**

The front seat frame is operating correctly. Submit Electronic Product Quality Report (EPQR) with any further query.

G841635t15 : Check for debris obstructing seat movement

1. Check for debris obstructing seat movement.

- **Is the front seat height, tilt or extension movement obstructed by debris?**

-> **Yes**

Remove obstruction and re-check for noisy height, tilt or extension seat movement. If still noisy GO to Pinpoint Test [G841635t16](#).

-> **No**

GO to Pinpoint Test [G841635t16](#).

G841635t16 : Check for height, tilt or extension movement mechanism lubrication

1. Check and apply manufacturer approved lubrication to seat height, tilt or extension movement mechanism and re-test for noise.

- **Is the front seat height, tilt or extension noise still apparent?**

-> **Yes**

Replace the relevant motor. Refer to relevant section of workshop manual.

-> **No**

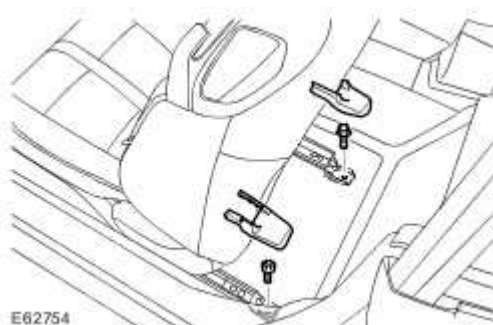
The front seat height, tilt or extension motor is operating correctly.

Front Seat (76.70.01)

Removal

1 . Release the front seat.

- ▶ Position the front seat fully forwards.
- ▶ Remove the bolt covers.
- ▶ Remove and discard the 2 rear bolts.

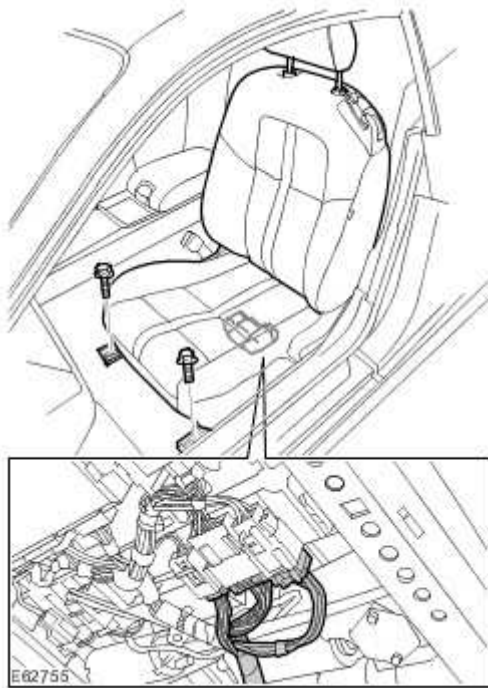


2 . Position the front seat fully rearwards.

3 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to

4 . With assistance, remove the front seat.

- ▶ Remove and discard the front 2 Torx bolts.
- ▶ Disconnect the 3 electrical connectors.



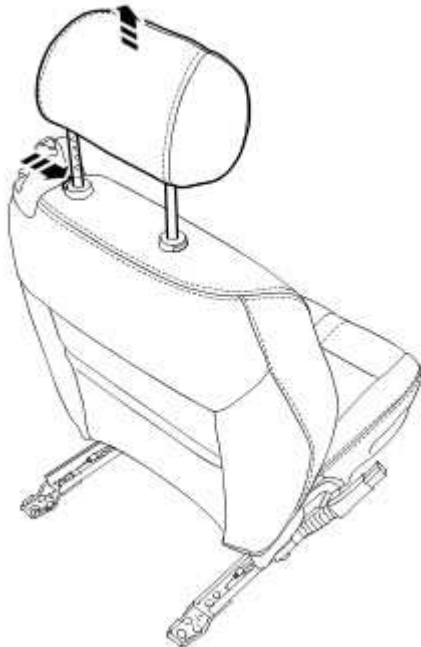
Installation

- 1 . With assistance, install the front seat.
 - ▶ Connect the electrical connectors.
 - ▶ Install the new bolts and tighten to 40 Nm (30 lb.ft).
- 2 . Connect the battery ground cable and install the cover.
For additional information, refer to
- 3 . Secure the front seat.
 - ▶ Position the front seat fully forwards.
 - ▶ Install the new bolts and tighten to 40 Nm (30 lb.ft).
 - ▶ Install the bolt covers.

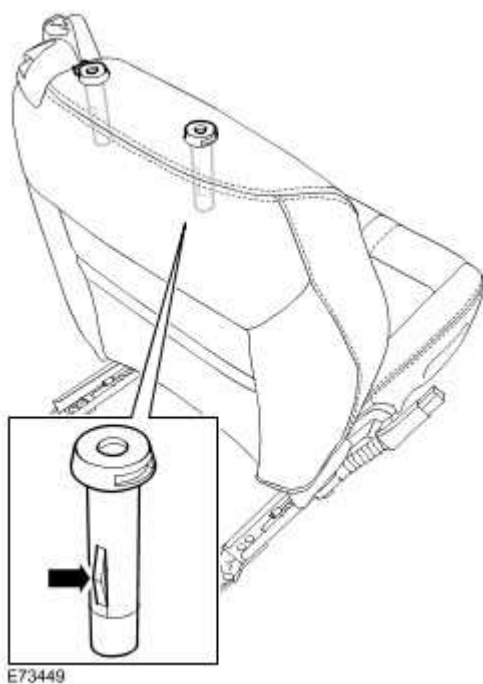
Front Seat Backrest Cover (76.70.15)

Removal

- 1 . Make the SRS system safe.
For additional information, refer to
- 2 . Remove the front seat.
For additional information, refer to [Front Seat \(76.70.01\)](#)
- 3 . Remove the front seat head restraint.
 Depress the 2 clips.



- 4 . Remove the front seat head restraint guide tubes.
 Release from the seat frame.



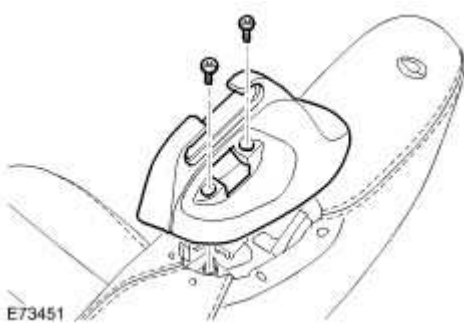
5 . Remove the front seat backrest tilt handle.

► Remove the screw.



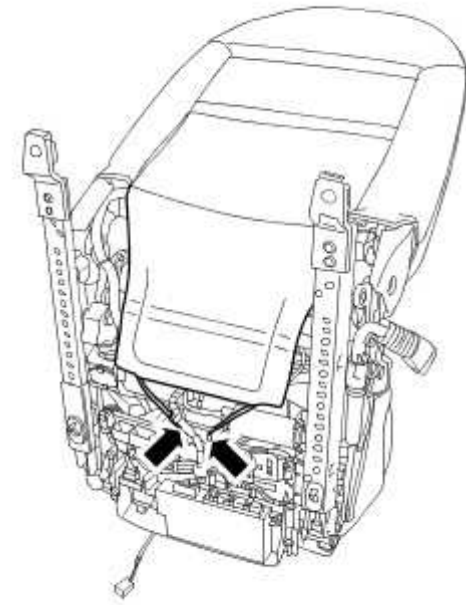
6 . Remove the front seat backrest tilt handle trim panel.

► Remove the 2 Torx screws.



7 . Release the front seat backrest cover lower tension straps.

► Release from the seat frame.

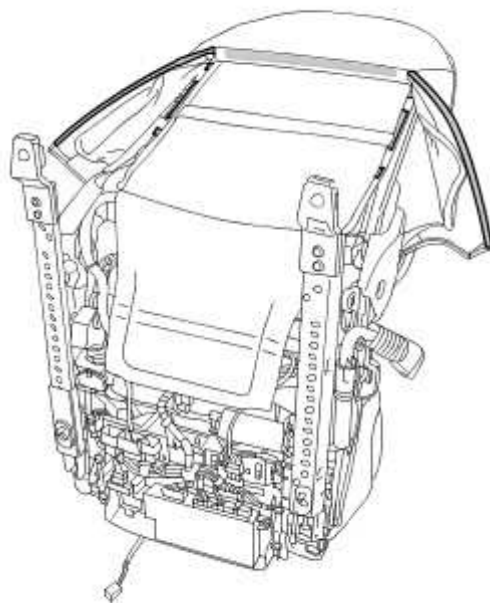


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8 . Release the 9 front seat backrest cover rear panel retaining clips.

► Release from the backrest cover.

► Release from the seat frame.



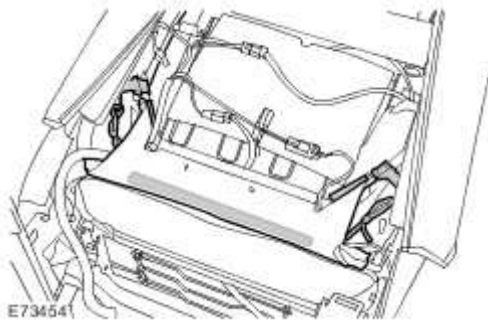
E73453

9 . Release the 5 front seat backrest cover lower retaining clips.

▶ Release from the seat frame.

10 . Release the front seat backrest cover central tension straps.

▶ Release from the seat frame.

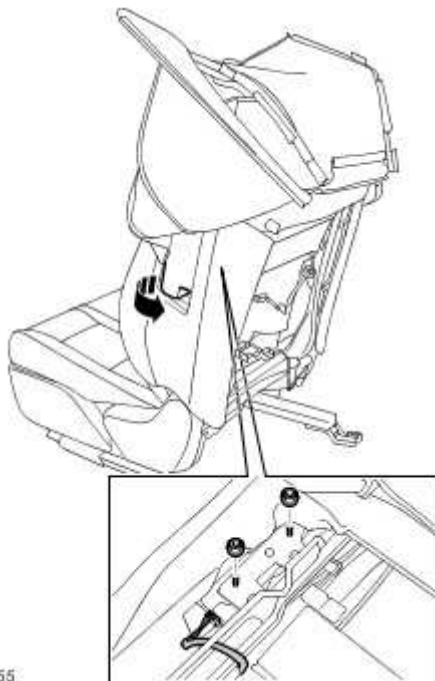


11 . Remove the side air bag module.

▶ Remove and discard the 2 nuts.

▶ Disconnect the electrical connector.

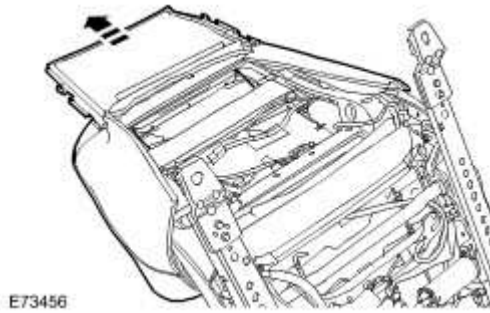
▶ Release the backrest cover.



12 . Release the front seat backrest cover upper tension straps.

▶ Release from the seat frame.

▶ Withdraw from the backrest pad.



- 13 . Remove the front seat backrest cover.
 - ▶ Remove the 16 hog rings.



Installation

- 1 . Install the front seat backrest cover.
 - ▶ Install the 16 hog rings.
- 2 . Secure the front seat backrest cover upper tension straps.
 - ▶ Pass through the backrest pad.
 - ▶ Attach to the seat frame.
- 3 . Install the side air bag module.
 - ▶ Attach the backrest cover.
 - ▶ Tighten the new nuts to 7 Nm (5 lb.ft).
 - ▶ Connect the electrical connector.
- 4 . Secure the front seat backrest cover central tension straps.
 - ▶ Attach to the seat frame.
- 5 . Secure the front seat backrest cover lower retaining clips.

 Attach to the seat frame.

6 . Secure the front seat backrest cover rear panel retaining clips.

 Attach to the seat frame.

 Attach to the backrest cover.

7 . Secure the front seat backrest cover lower tension straps.

 Attach to the seat frame.

8 . Install the front seat backrest tilt handle trim panel.

 Install and tighten the Torx screws.

9 . Install the front seat backrest tilt handle.

 Install the screw.

10 . Install the front seat head restraint guide tube.

 Release from the seat frame.

 Secure in the seat frame.

11 . Install the front seat head restraint.

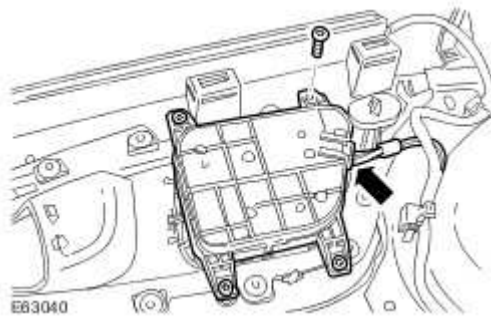
12 . Install the front seat.

For additional information, refer to [Front Seat \(76.70.01\)](#)

Front Seat Control Switch (86.75.46)

Removal

- 1 . Remove the front door trim panel.
For additional information, refer to [Front Door Trim Panel \(76.34.01\)](#)
- 2 . Remove the front seat control switch.
 - ▶ Remove the 4 Torx screws.
 - ▶ Disconnect the electrical connector.



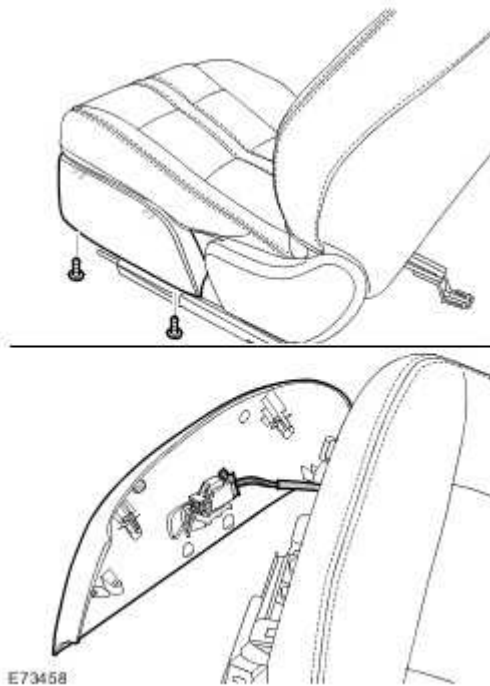
Installation

- 1 . Install the front seat control switch.
 - ▶ Connect the electrical connector.
 - ▶ Fit and tighten the Torx screws.
- 2 . Install the front door trim panel.
For additional information, refer to [Front Door Trim Panel \(76.34.01\)](#)

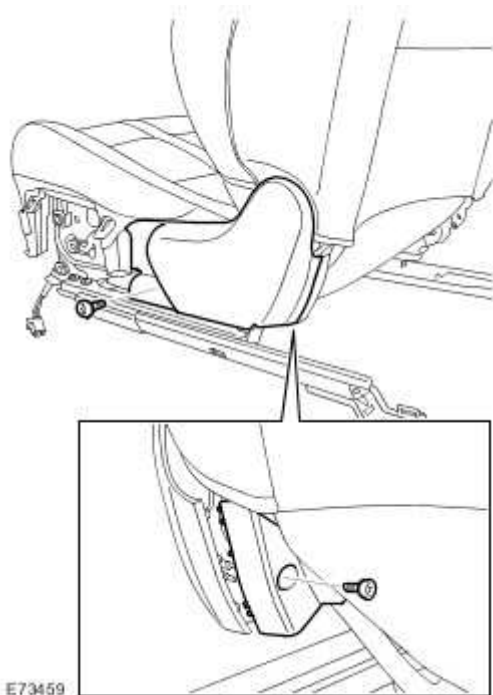
Front Seat Cushion Cover (76.70.33)

Removal

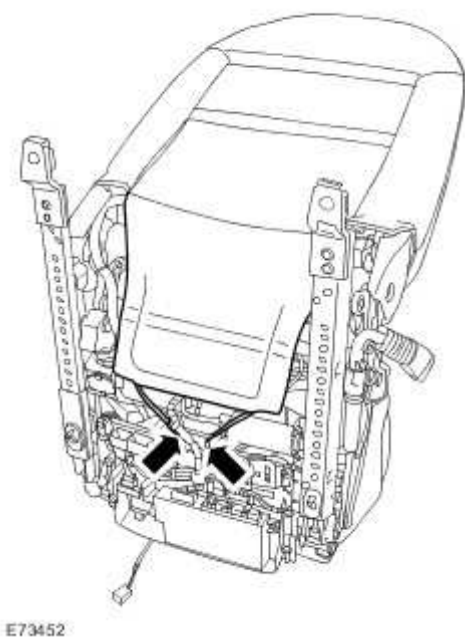
- 1 . Remove the cover and disconnect the battery ground cable.
- 2 . Make the SRS system safe.
For additional information, refer to
- 3 . Remove the front seat.
For additional information, refer to [Front Seat \(76.70.01\)](#)
- 4 . Release the front seat cushion outer trim panel.
 - ▶ Remove the 2 Torx screws.
- 5 . Remove the front seat cushion outer trim panel.
 - ▶ Release the 2 clips.
 - ▶ Disconnect the electrical connector.



- 6 . Remove the front seat hinge covers.
 - ▶ Remove the 2 Torx screws.
 - ▶ Remove the hinge cover retainers.

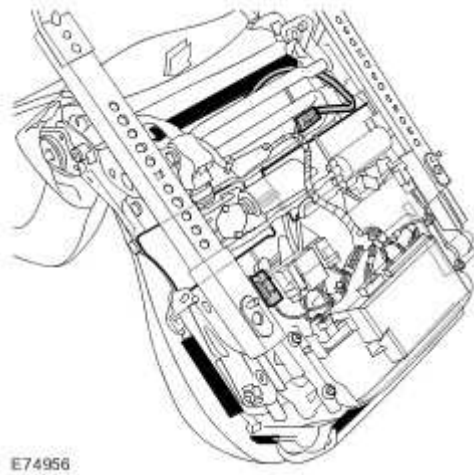


7 . Release the front seat backrest cover lower tension straps.



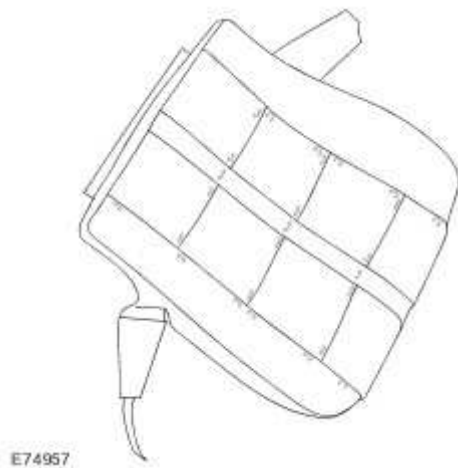
8 . Remove the front seat cushion assembly.

- ▶ Release and disconnect the 2 electrical connectors.
- ▶ Release the Velcro strap.
- ▶ Release the 5 clips.



9 . Remove the front seat cushion cover.

- ▶ Remove the 27 hog rings.



10 . Using WDS, calibrate a new front seat cushion cover.

Installation

1 . Install the front seat cushion cover.

2 . Secure the front seat cushion assembly.

- ▶ Connect and secure the electrical connectors.
- ▶ Secure the Velcro strap.
- ▶ Attach the clips.

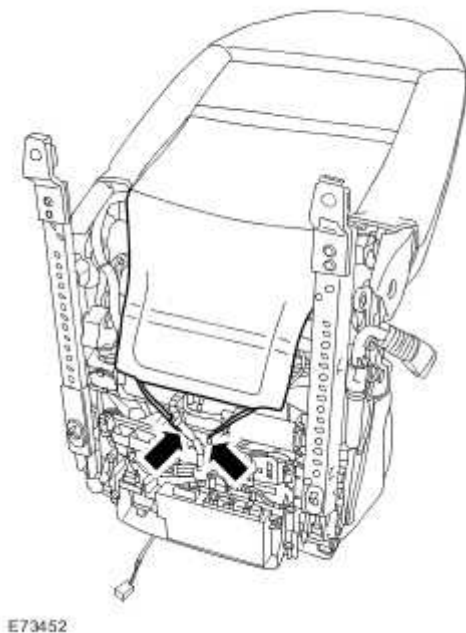
- 3 . Secure the front seat backrest cover lower tension straps.
- 4 . Install the front seat cushion outer trim panel.
 - ▶ Connect the electrical connector.
 - ▶ Secure in the clips.
- 5 . Secure the front seat cushion outer trim panel.
 - ▶ Tighten the Torx screws.
- 6 . Install the front seat hinge covers.
 - ▶ Attach the hinge cover retainers.
 - ▶ Tighten the Torx screws.
- 7 . Install the front seat.

For additional information, refer to [Front Seat \(76.70.01\)](#)
- 8 . Connect the battery ground cable and install the cover.

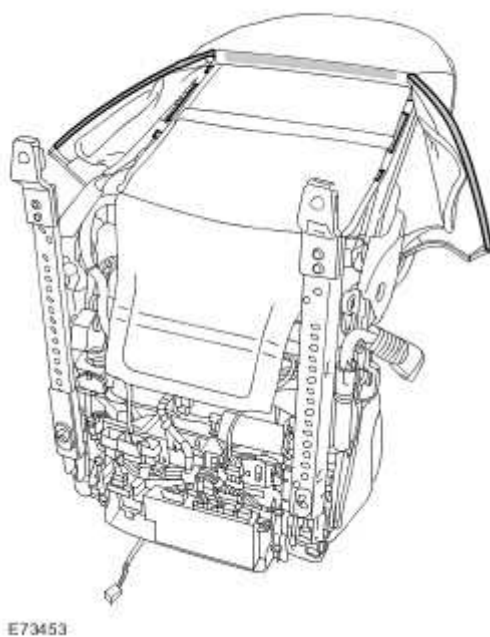
Front Seat Lumbar Motor (86.75.44)

Removal

- 1 . Make the SRS system safe.
For additional information, refer to
- 2 . Remove the front seat.
For additional information, refer to [Front Seat \(76.70.01\)](#)
- 3 . Release the front seat backrest cover lower tension straps.
 - ▶ Release from the seat frame.

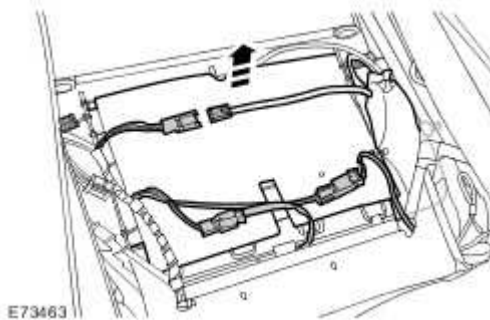


- 4 . Release the 9 front seat backrest cover rear panel retaining clips.
 - ▶ Release from the backrest cover.
 - ▶ Release from the seat frame.



5 . Release the front seat lumbar assembly.

- ▶ Release the 3 electrical connectors.
- ▶ Remove the clip.
- ▶ Disconnect the electrical connector.



6 . Remove the front seat lumbar assembly.

Installation

1 . Install the front seat lumbar assembly.

2 . Secure the front seat lumbar assembly.

- ▶ Install the clip.

- ▶ Connect the electrical connector.
- ▶ Secure the electrical connectors.

3 . Secure the front seat backrest cover rear panel retaining clips.

- ▶ Attach to the seat frame.
- ▶ Attach to the backrest cover.

4 . Secure the front seat backrest cover lower tension straps.

- ▶ Attach to the seat frame.

5 . Install the front seat head restraint.

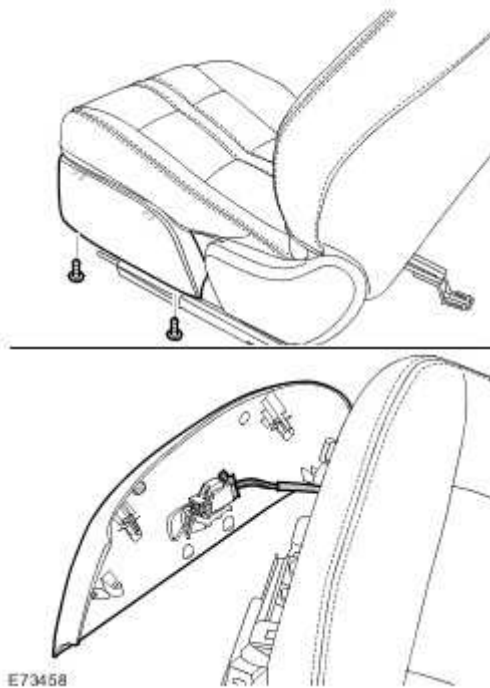
6 . Install the front seat.

For additional information, refer to [Front Seat \(76.70.01\)](#)

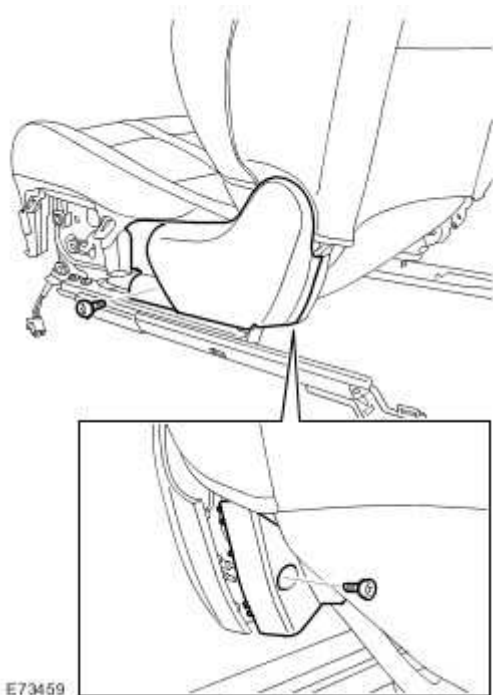
Front Seat Recliner Motor (86.75.04)

Removal

- 1 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to
- 2 . Make the SRS system safe.
For additional information, refer to
- 3 . Release the front seat cushion outer trim panel.
 - ▶ Remove the 2 Torx screws.
- 4 . Remove the front seat cushion outer trim panel.
 - ▶ Release the 2 clips.
 - ▶ Disconnect the electrical connector.



- 5 . Remove the front seat hinge cover.
 - ▶ Remove the 2 Torx screws.
 - ▶ Remove the hinge cover retainer.

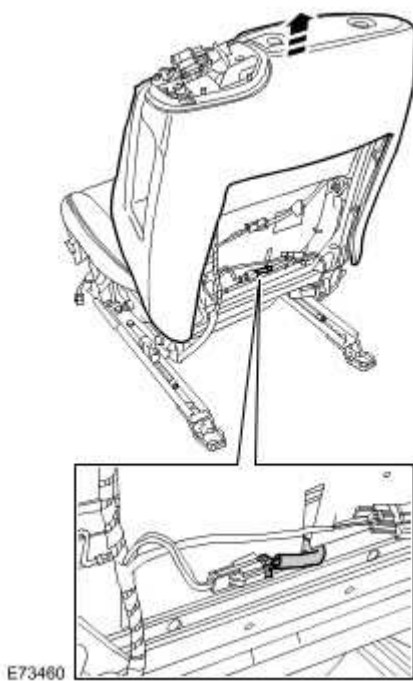


6 . Remove the front seat backrest cover.

For additional information, refer to [Front Seat Backrest Cover \(76.70.15\)](#)

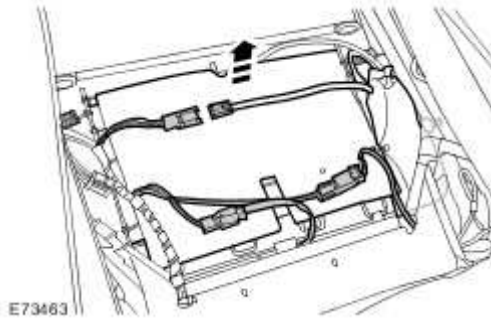
7 . Remove the front seat backrest pad.

► Disconnect the electrical connector.



8 . Release the front seat lumbar assembly.

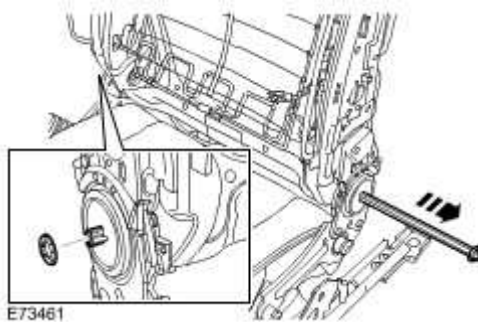
- ▶ Release the 3 electrical connectors.
- ▶ Remove the clip.
- ▶ Disconnect the electrical connector.



9 . Remove the front seat lumbar assembly.

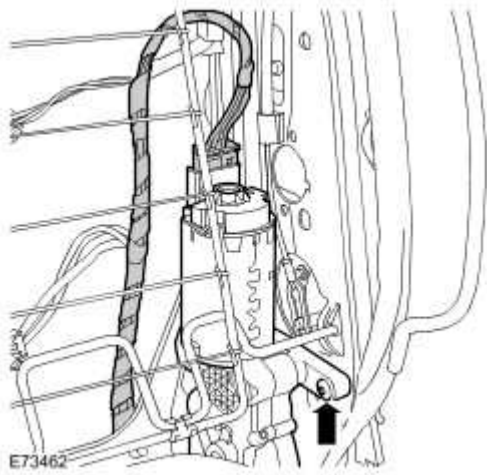
10 . Release the front seat recliner motor.

- ▶ Remove the front seat backrest shaft clip.
- ▶ Remove the front seat backrest shaft.



11 . Remove the front seat recliner motor.

- ▶ Disconnect the electrical connector.
- ▶ Drill out the rivet.



Installation

- 1 . To install, reverse the removal procedure.

Rear Seat Armrest (76.70.39)

Removal

- 1 . Remove the rear seat armrest.
 - ▶ Release from the 4 clips.



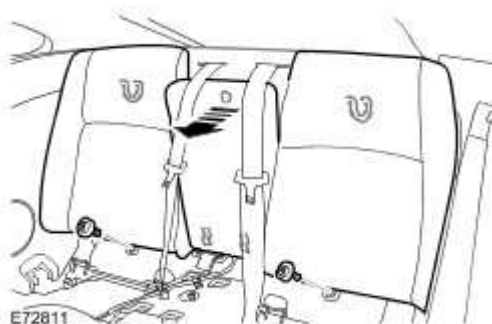
Installation

- 1 . Install the rear seat armrest.
 - ▶ Secure with the clips.

Rear Seat Backrest (76.70.38)

Removal

- 1 . Remove the LH rear seat cushion.
For additional information, refer to [Rear Seat Cushion \(76.70.37\)](#)
- 2 . Repeat the above procedure for the RH seat cushion.
- 3 . Remove the auxiliary junction box access cover.
 - ▶ Release the clip.
- 4 . Remove the rear seat backrest.
 - ▶ Remove the 2 Torx bolts.
 - ▶ Release from the 2 retainers.



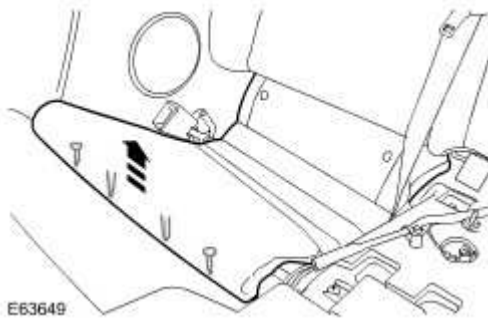
Installation

- 1 . Install the rear seat backrest.
 - ▶ Secure in the retainers.
 - ▶ Tighten the Torx bolt to 10 Nm (7 lb.ft).
- 2 . Install the auxiliary junction box access cover.
 - ▶ Align the pegs and secure the clip.
- 3 . Install the LH rear seat cushion.
For additional information, refer to [Rear Seat Cushion \(76.70.37\)](#)
 - ▶ Secure with the clips.
- 4 . Install the RH rear seat cushion.

Rear Seat Cushion (76.70.37)

Removal

- 1 . Remove the rear seat armrest.
For additional information, refer to [Rear Seat Armrest \(76.70.39\)](#)
- 2 . Remove the rear seat cushion.
 Release from the 2 clips.



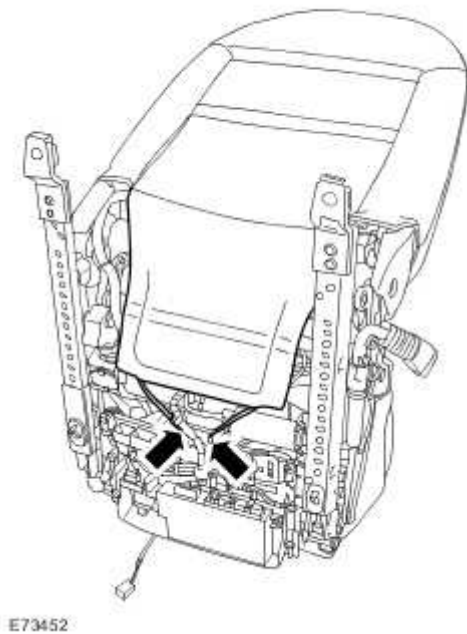
Installation

- 1 . Install the rear seat cushion.
 Secure with the clips.
- 2 . Install the rear seat armrest.
For additional information, refer to [Rear Seat Armrest \(76.70.39\)](#)

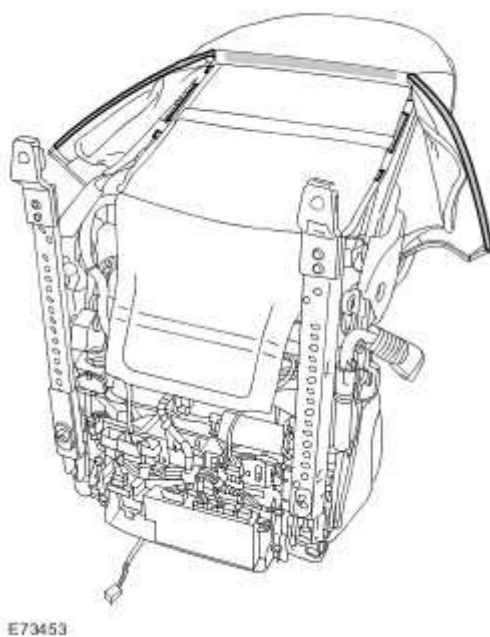
Front Seat Backrest Heater Mat (86.75.14)

Removal

- 1 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to
- 2 . Make the SRS system safe.
For additional information, refer to
- 3 . Remove the front seat.
For additional information, refer to [Front Seat \(76.70.01\)](#)
- 4 . Release the front seat backrest cover lower tension straps.
 - ▶ Release from the seat frame.



- 5 . Release the 9 front seat backrest cover rear panel retaining clips.
 - ▶ Release from the backrest cover.
 - ▶ Release from the seat frame.

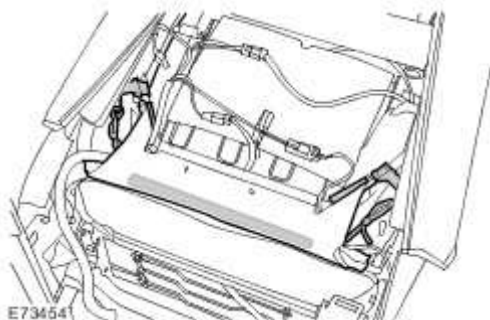


6 . Release the 5 front seat backrest cover lower retaining clips.

► Release from the seat frame.

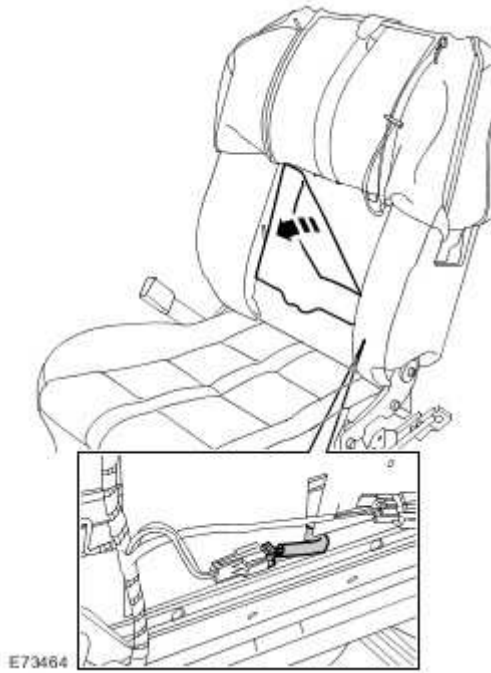
7 . Release the front seat backrest cover central tension straps.

► Release from the seat frame.



8 . Remove the front seat backrest heater mat.

► Disconnect the electrical connector.



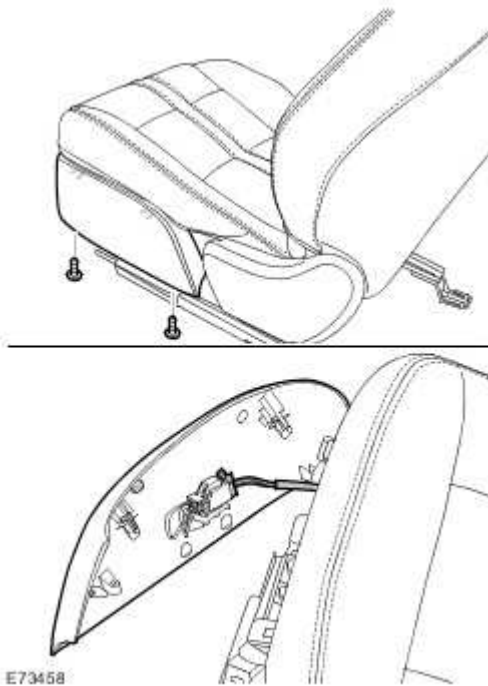
Installation

- 1 . Install the front seat backrest heater mat.
- 2 . Secure the front seat backrest cover central tension straps.
 - ▶ Attach to the seat frame.
- 3 . Secure the front seat backrest cover lower retaining clips.
 - ▶ Attach to the seat frame.
- 4 . Secure the front seat backrest cover rear panel retaining clips.
 - ▶ Attach to the seat frame.
 - ▶ Attach to the backrest cover.
- 5 . Secure the front seat backrest cover lower tension straps.
 - ▶ Attach to the seat frame.
- 6 . Connect the battery ground cable and install the cover.
For additional information, refer to

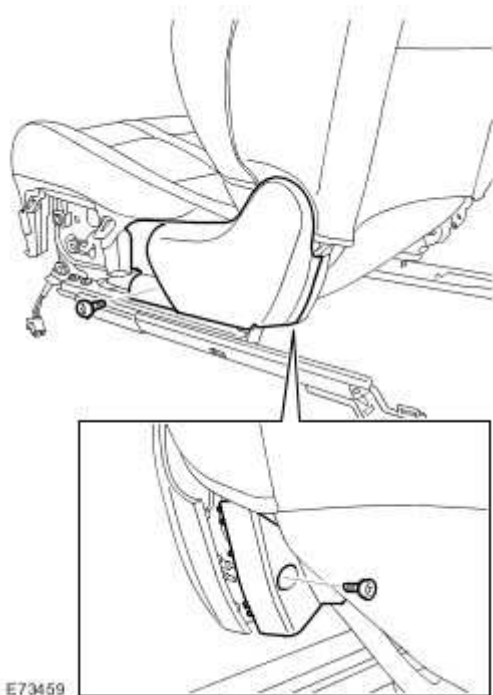
Front Seat Cushion Heater Mat (86.75.13)

Removal

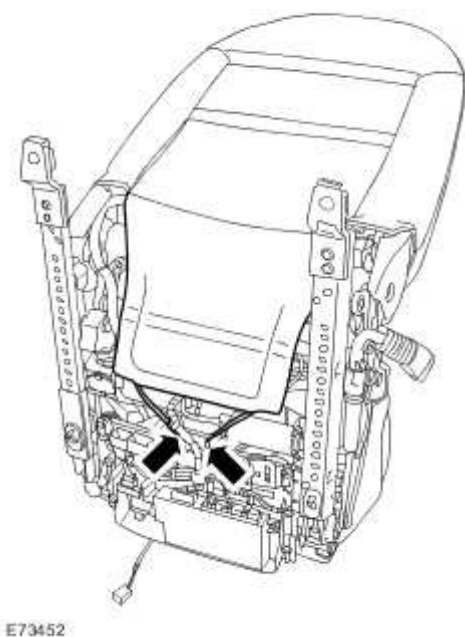
- 1 . Remove the cover and disconnect the battery ground cable.
- 2 . Make the SRS system safe.
For additional information, refer to
- 3 . Remove the front seat.
For additional information, refer to [Front Seat \(76.70.01\)](#)
- 4 . Release the front seat cushion outer trim panel.
 - ▶ Remove the 2 Torx screws.
- 5 . Remove the front seat cushion outer trim panel.
 - ▶ Release the 2 clips.
 - ▶ Disconnect the electrical connector.



- 6 . Remove the front seat hinge covers.
 - ▶ Remove the 2 Torx screws.
 - ▶ Remove the hinge cover retainers.

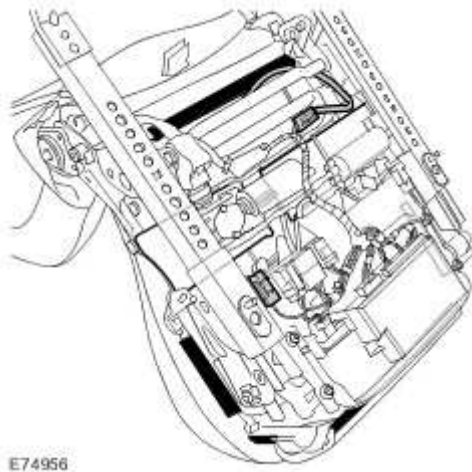


7 . Release the front seat backrest cover lower tension straps.



8 . Remove the front seat cushion assembly.

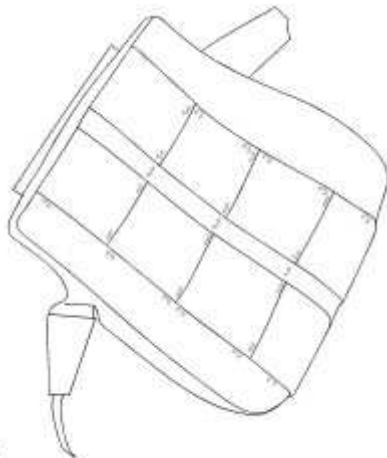
- ▶ Release and disconnect the 2 electrical connectors.
- ▶ Release the Velcro strap.
- ▶ Release the 5 clips.



E74956

9 . Remove the front seat cushion cover.

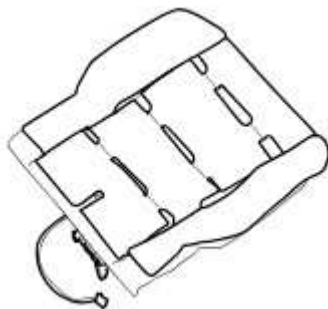
► Remove the 27 hog rings.



E74957

10 . Remove the front seat cushion heater mat.

► Carefully release from the seat cushion pad.



E74958

Installation

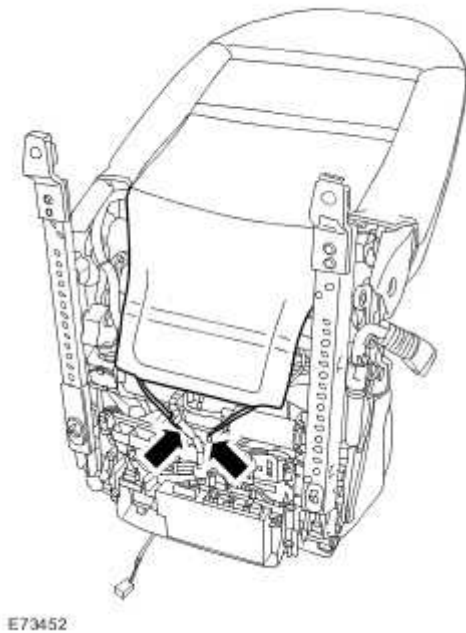
- 1 . Install the front seat cushion heater mat.
 - ▶ Secure to the seat cushion pad.
- 2 . Install the front seat cushion cover.
- 3 . Secure the front seat cushion assembly.
 - ▶ Connect and secure the electrical connectors.
 - ▶ Secure the Velcro strap.
 - ▶ Attach the clips.
- 4 . Secure the front seat backrest cover lower tension straps.
- 5 . Install the front seat cushion outer trim panel.
 - ▶ Connect the electrical connector.
 - ▶ Secure in the clips.
- 6 . Secure the front seat cushion outer trim panel.
 - ▶ Tighten the Torx screws.
- 7 . Install the front seat hinge covers.
 - ▶ Attach the hinge cover retainers.
 - ▶ Tighten the Torx screws.
- 8 . Install the front seat.

For additional information, refer to [Front Seat \(76.70.01\)](#)
- 9 . Connect the battery ground cable and install the cover.

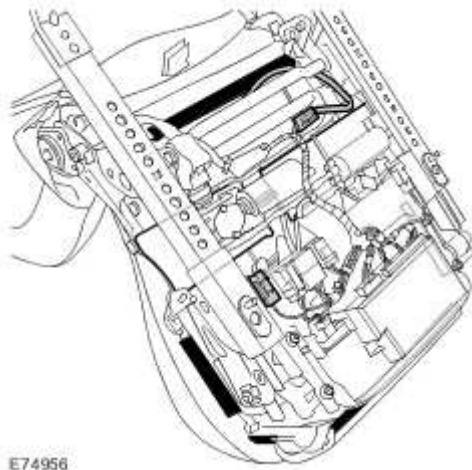
Seat Track

Removal

- 1 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to
- 2 . Make the SRS system safe.
For additional information, refer to
- 3 . Remove the front seat.
For additional information, refer to [Front Seat \(76.70.01\)](#)
- 4 . Release the front seat backrest cover lower tension straps.



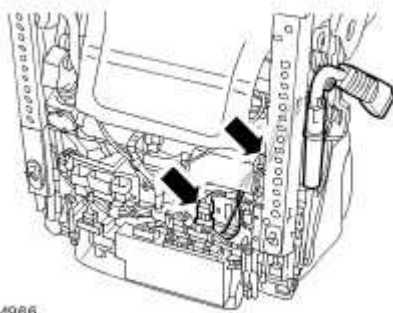
- 5 . Remove the front seat cushion assembly.
 - ▶ Release and disconnect the 2 electrical connectors.
 - ▶ Release the Velcro strap.
 - ▶ Release the 5 clips.



E74956

6 . Remove the front seat safety belt pretensioner.

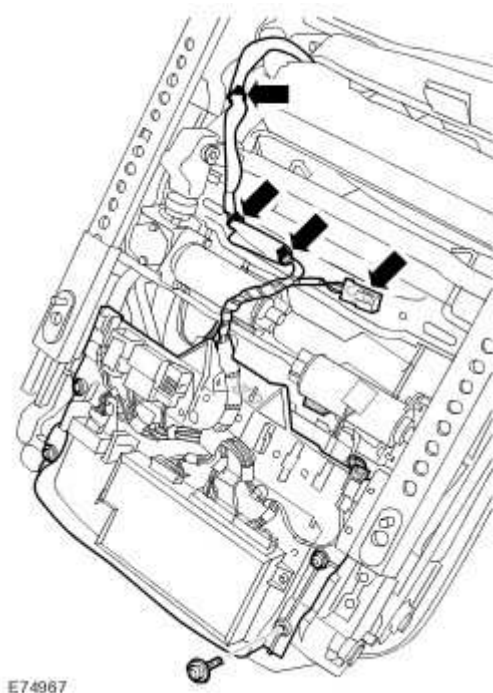
- ▶ Remove and discard the Torx bolt.
- ▶ Release and disconnect the electrical connector.



E74966

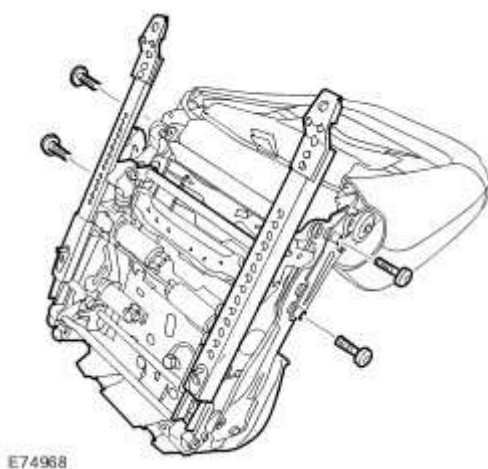
7 . Release the seat module bracket.

- ▶ Disconnect the 4 electrical connectors.
- ▶ Release the 3 wiring harness clips.
- ▶ Remove and discard the cable tie.
- ▶ Remove the 4 Torx bolts.



8 . Remove the seat track assembly.

► Remove and discard the 4 Torx bolts.



Installation

1 . Install the seat track assembly.

► Tighten the new Torx bolts to 45 Nm (33 lb.ft).

2 . Secure the seat module bracket.

- ▶ Tighten the Torx bolts to 10 Nm (7 lb.ft).
- ▶ Secure the harness with a cable tie.
- ▶ Attach the wiring harness clips.
- ▶ Connect the electrical connectors.

3 . Install the front seat safety belt pretensioner.

- ▶ Connect and secure the electrical connector.
- ▶ Tighten the new Torx bolt to 45 Nm (33 lb.ft).

4 . Secure the front seat cushion assembly.

- ▶ Connect and secure the electrical connectors.
- ▶ Secure the Velcro strap.
- ▶ Attach the clips.

5 . Secure the front seat backrest cover lower tension straps.

6 . Install the front seat.

For additional information, refer to [Front Seat \(76.70.01\)](#)

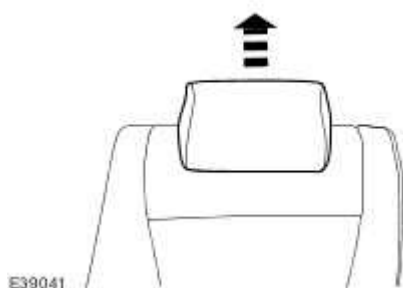
7 . Connect the battery ground cable and install the cover.

For additional information, refer to

Rear Seat Backrest - Vehicles With: 40/20/40 Split Seat (76.70.48)

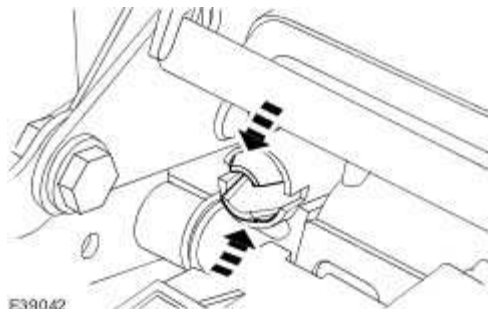
Disassembly

- 1 . Remove the rear outer seat backrest.
For additional information, refer to
- 2 . Remove the rear seat head restraint.



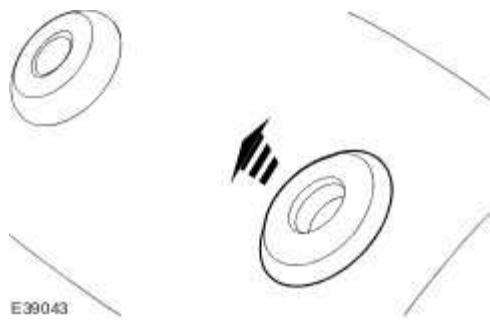
- 3 . **NOTE:**
Left-hand shown, right-hand similar.

Detach the rear seat head restraint retaining post.

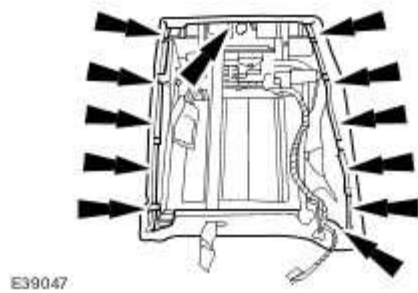


- 4 . **NOTE:**
Left-hand shown, right-hand similar.

Remove the rear seat head restraint retaining post.



5 . Detach the rear seat outer backrest cover.

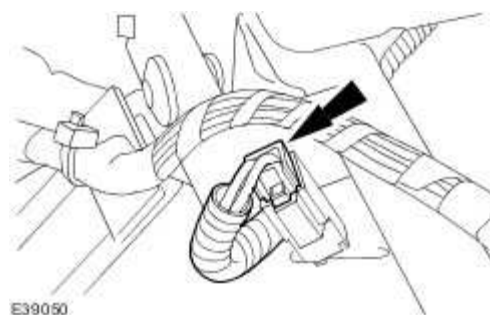


6 . Detach the rear seat backrest cover and cushion.

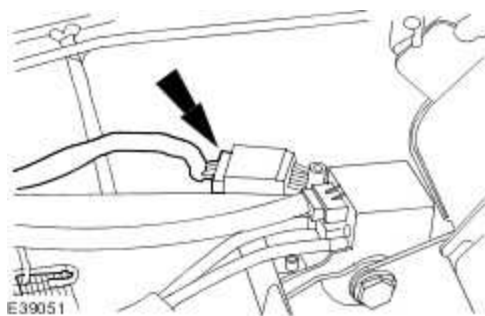


7 . Remove the rear seat backrest cover and cushion.

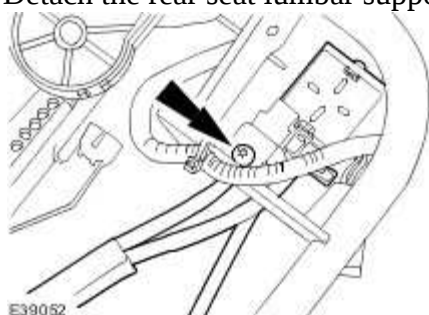
- Disconnect the rear seat backrest heater pad electrical connector.



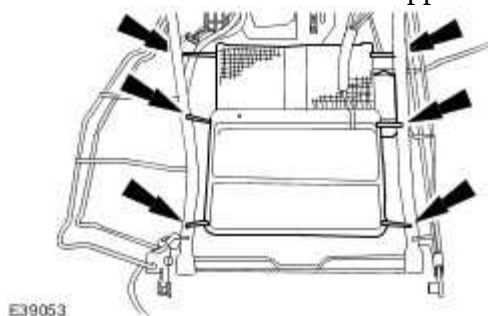
8 . Disconnect the rear seat lumbar support electrical connector.



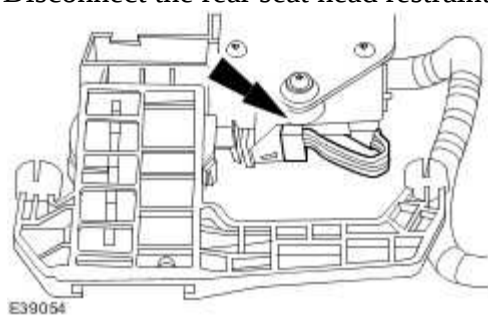
9 . Detach the rear seat lumbar support control valve.



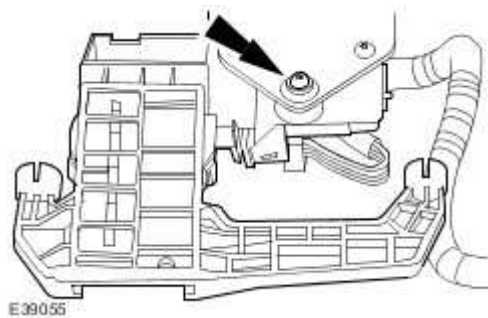
10 . Remove the rear seat lumbar support.



11 . Disconnect the rear seat head restraint motor electrical connector.



12 . Remove the rear seat head restraint motor.



Assembly

- 1 . To install, reverse the removal procedure.

501-11 : Glass, Frames and Mechanisms

Specifications

Specifications

Torque Specifications

Item	Nm	lb-ft	lb-in
Door glass into clamp - bolt	8	-	71
Door glass regulator motor to door - screw	4	-	35
Door glass regulator to door - nut/bolt	8	-	71
Door glass regulator to door - screw	4	-	35
Rear quarter glass, seal-carrier (coupe) - screw	4	-	35
Rear quarter glass, regulator motor (convertible) - nut	9	-	80

Door Window Motor Initialization

1. NOTE:

After the battery has been disconnected it is necessary to initialize each door window motor separately to operate the 'one-touch' up function.

Operate the window control switch until the door window glass is in the fully closed position, continue to operate the window control switch for a further two seconds.

2. Release the window control switch.

3. Operate the window control switch in the closed position and continue to operate the window control switch for a further two seconds.

4. Operate the window control switch until the door window glass is in the fully open position ('one-touch' down).

5. NOTE:

If the door window motor initialization has been completed correctly, when the window control switch is operated, the door window glass should move to the fully closed position ('one-touch' up) automatically.

NOTE:

If the door window glass does not fully close automatically ('one-touch' up), repeat the complete procedure.

Operate the window control switch once to the close position.

6. Repeat the door window motor initialization for each door window motor.

Door Window Glass Adjustment (76.31.03)



CAUTION: Protect the surrounding components.

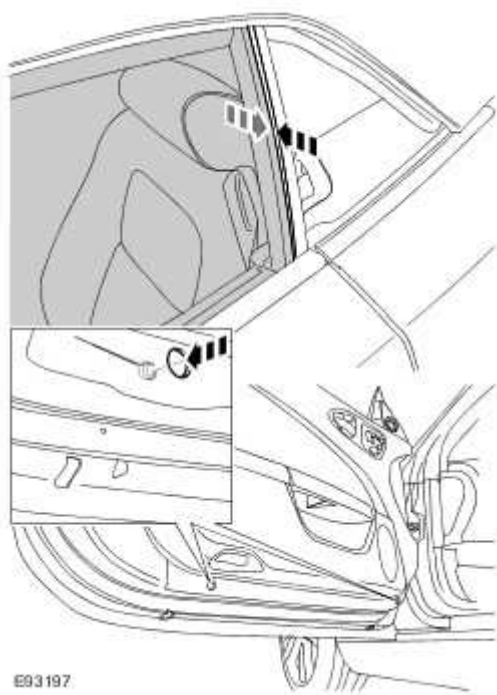
NOTE:

Final door glass alignment or adjustment, can be carried out without the need to remove the interior door trim panel.

1. Check the alignment of the front door glass.
2. Open the door.
3. Remove the 4 screw covers.



4. Using a 4mm Allen key, rotate the side adjusters to achieve lateral alignment with the rear quarter glass.



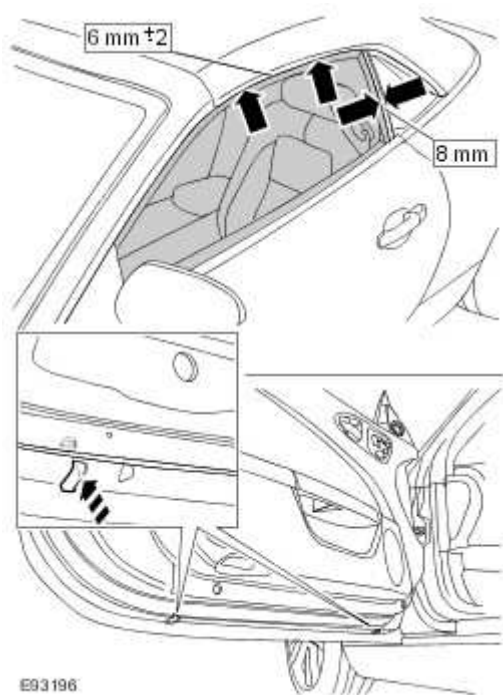
5. **NOTE:**

The glass must be in the lowered position to access the adjusters.

NOTE:

The glass should have 6mm +/- 2mm engagement into the upper seal, the glass may not have equal engagement when the 8mm door to rear quarter glass is set.

Using a extended 5mm Allen key, rotate the lower adjusters to adjust the glass height and achieve a parallel 8mm gap between the rear quarter and the door.



6. Install the screw covers.

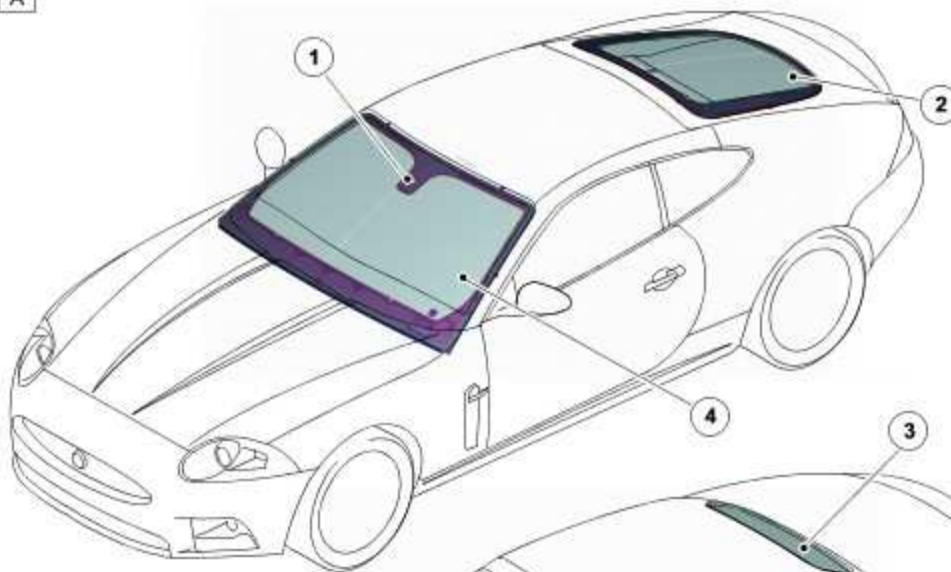
7. Check the alignment of the front door glass.

8. When the window glass adjustment is complete the window motor will need to be calibrated, to do this power the window fully up and continue to hold the switch for a further 3 seconds.

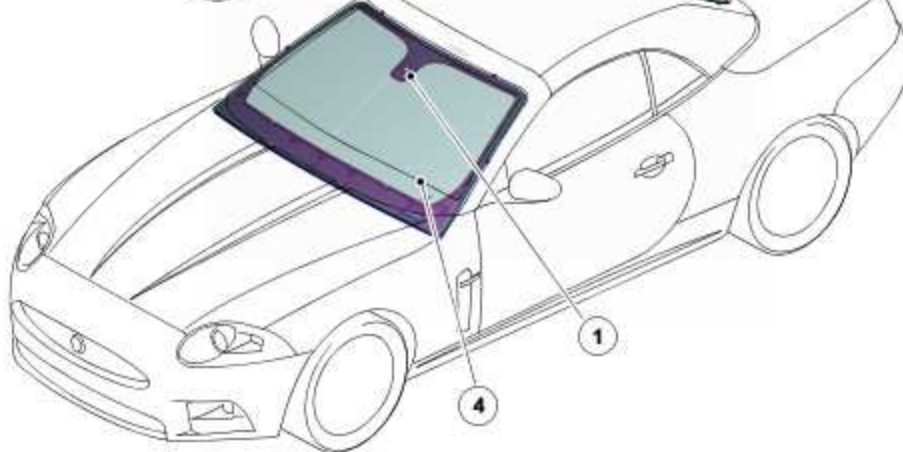
Glass, Frames and Mechanisms

COMPONENT LOCATION - WINDSHIELD AND BACKLIGHT

A



B



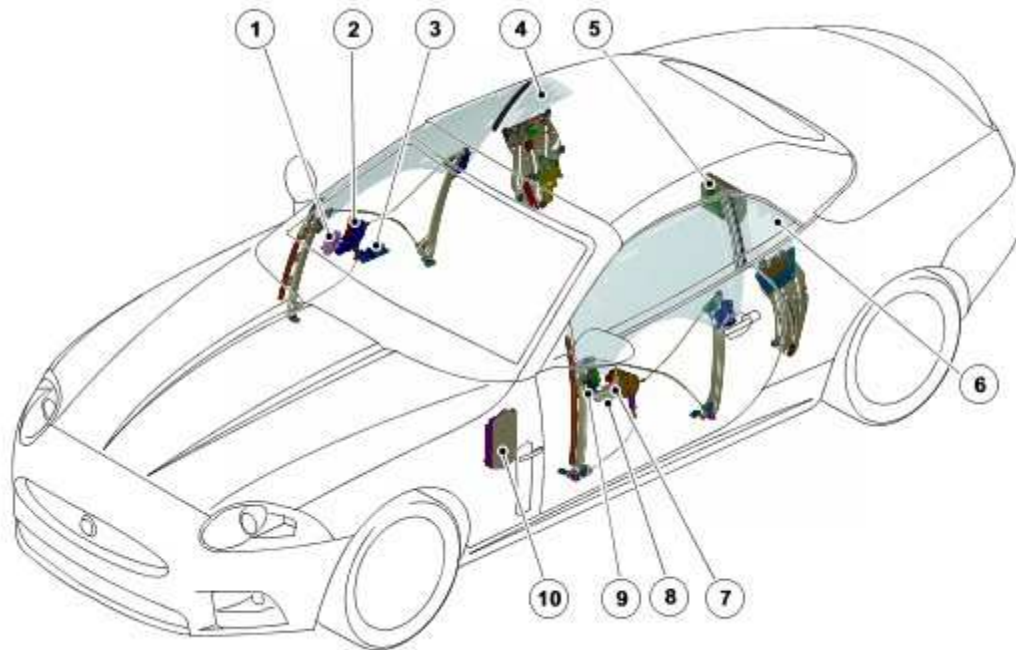
E74024

Item	Part Number	Description
A		Coupe
B		Convertible
1		Rain sensor mounting boss and interior mirror mounting button
2		Coupe backlight
3		Convertible backlight
4		Windshield

COMPONENT LOCATION - DOOR GLASS AND REAR QUARTER GLASS MECHANISMS

NOTE:

Convertible shown, coupe similar.



E74025

Item	Part Number	Description
1		Passenger door module
2		Passenger window motor
3		Passenger door switch pack
4		RH quarter glass assembly (convertible only)
5		Auxiliary junction box
6		LH quarter glass assembly (convertible only)
7		Driver window motor
8		Driver door switch pack
9		Driver door module
10		Central Junction Box (CJB)

INTRODUCTION

The windshield, which is constructed of 5.5 mm laminated glass with a black obscuration band, is bonded and sealed to the body aperture using Polyurethane (PU) adhesive. The

mounting boss for the rain sensor is also PU bonded to the inner surface of the screen and is common to the coupe and convertible. The mounting button for the interior mirror is attached to the windshield using adhesive. A vertical fine-wire multi-strand element, located between the glass laminations, is available as an option, except for North American Specification (NAS) vehicles, to de-ice and demist the windshield and is controlled from the Touch Screen Display (TSD). The backlight is 4 mm tempered glass, green tinted and heated and bonded to the liftgate using PU adhesive. The windshield and backlight, except for the convertible model, are direct glazed to the body.

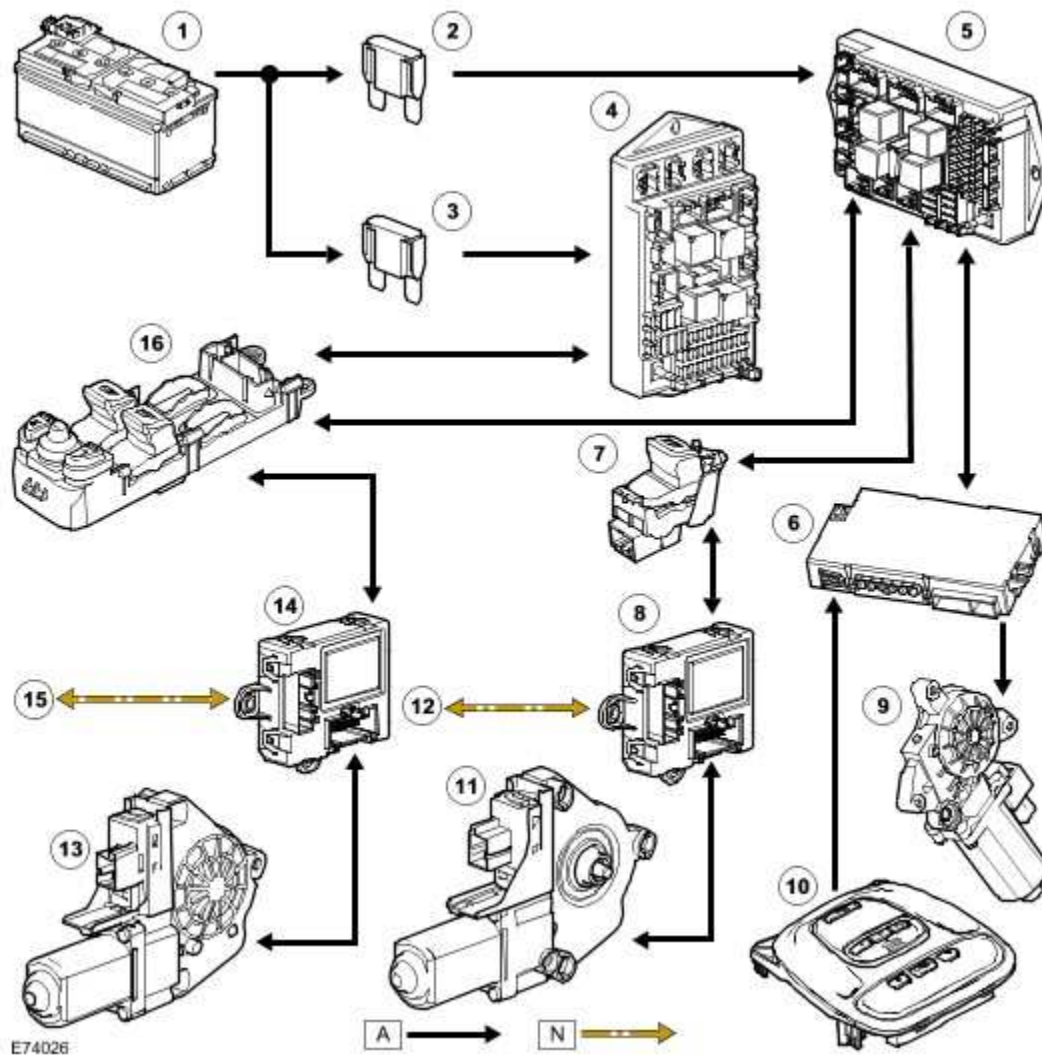
The door glass on both models is a frameless system with 5 mm green tempered glass. Both the driver and passenger window glass is operated electrically and raised and lowered by a Bowden cable mechanism.

Each door glass automatically drops when the door is opened or when the convertible top is raised or lowered, and raises when either the door is shut or the top is fully raised and latched in position (glass drops fully on hood operation). The door glass can be closed via the Smart Key. Glass operation is internally controlled from switch packs located in the driver and passenger door arm rests via their respective control modules. The switch packs are illuminated when the sidelights are on.

CONTROL DIAGRAM

NOTE:

A = Hardwired; **N** = CAN bus



Item	Part Number	Description
1		Battery
2		Megafuse (175A)
3		Megafuse (175A)
4		Central Junction Box (CJB)
5		Auxiliary junction box
6		Convertible top control module (convertible only)
7		Passenger door switch
8		Passenger door module
9		Rear quarter lift motors (convertible only)
10		Convertible top switch (convertible only)
11		Passenger window motor
12		Controller Area Network (CAN) input and output signals to and from various other vehicle systems

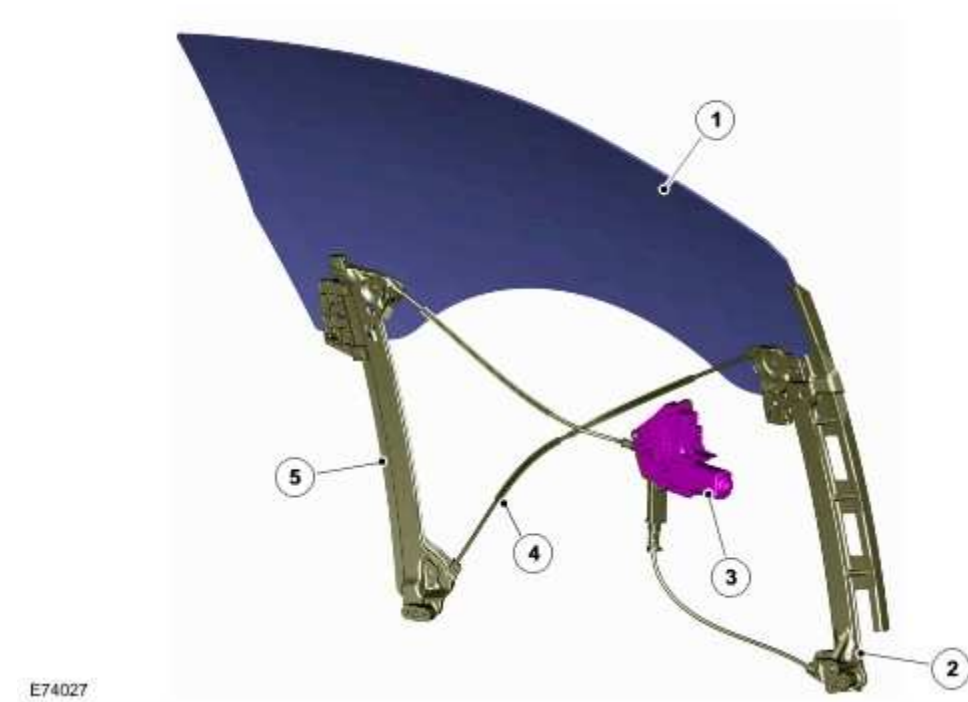
13		Driver window motor
14		Driver door module
15		Controller Area Network (CAN) input and output signals to and from various other vehicle systems
16		Driver door switch pack

PRINCIPLES OF OPERATION

The windshield and coupe backlight are supplied as assemblies complete with trim, which is directly bonded to the glass.

The convertible backlight is high frequency welded to the canopy and the outer seal is stitched and bonded to the top. On both models, the heated backlight remains on for 21 minutes after being switched on unless it is manually switched off before the time delay expires.

Front Door Glass Assembly



Item	Part Number	Description
1		Front door glass
2		'A' pillar guide rail
3		Window motor
4		Bowden cables
5		'B' pillar guide rail

One-touch up operation causes the door glass to fully close unless an object is detected ('Anti-

trap') or the glass is within 45 mm of top of travel when the door is opened. If the 'Anti-trap' regulator detects an object, the glass will drop fully open or to 200 mm below the obstruction. All door glass operates with the ignition in either 'Accessory' mode or 'On' mode and after the ignition enters 'Off' mode, until either door is opened.

The front windows must be programmed for one-touch operation in order for the convertible top to operate correctly. Failure to program the windows results in a 10 second opening delay once the top is unlatched. The windows can be manually programmed for one-touch operation using the following procedure:

- Engine running
- Raise window up to the top seal and release switch
- Raise again until window stops moving
- Release switch
- Raise again
- Lower window fully
- Release switch
- Press lower for a further 0.5 seconds until a relay is heard to CLICK

NOTE:

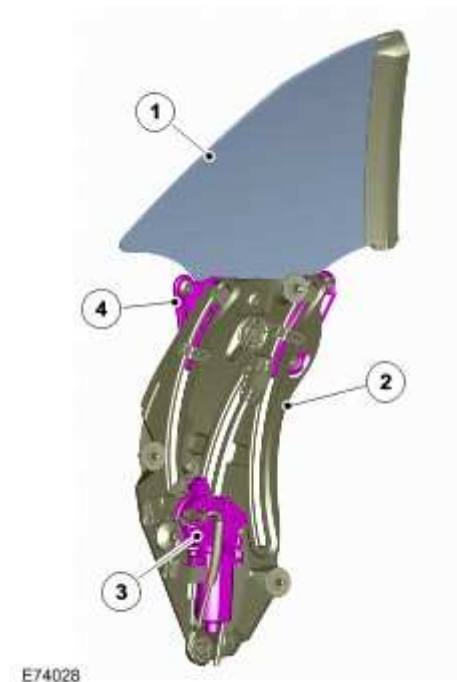
Before commencing work within a door interior, all Warnings and Notes within the appropriate Removal and Installation procedures must be read and fully understood.

To re-learn the glass operating characteristics, the associated door must be closed (door ajar switch inactive). The glass must then be driven fully down and held stalled at the bottom of its travel for a minimum of 1 second. The glass is finally driven to the fully up position and held stalled for a minimum of 1 second. The re-learning procedure must also be accomplished to regain the automatic glass closing sequence.

REAR QUARTER GLASS

The coupe rear quarter glass is a fixed 4 mm, tempered, green-tinted unit fitted by a single bolt fixing on the lower front corner of the glass assembly, and a pin into the body at the rear.

Convertible Rear Quarter Glass Assembly



Item	Part Number	Description
1		Convertible rear quarter glass
2		Base plate
3		Window motor
4		Lift plate

The rear quarter glass of the convertible is 5 mm, tempered, semi-flush and green tinted. A drum and wire system provides automatic full glass drop when the top is lowered. Rear glass control is incorporated in the convertible top switch, which is located in the roof console.

When lowering the rear quarters of the convertible at vehicle speeds up to 24 km/h (15 mph), failure to release the switch on operation of the audible alarm will result in lowering of the top.

Rear quarter glass is automatically powered to the bottom position when the top is lowered and further operation is inhibited until the top is raised and latched.

The rear quarters are operated automatically, up or down, when raising or lowering the convertible top. If the door glass is in the raised position when a request to close the top is made, the door glass and the rear quarters will be powered to the bottom of their travel. When the top is fully raised all glass will be powered up to close, rear quarters first followed by the door glass, forming a seal with the top.

If the front glass has been either fully or partially lowered manually, the rear quarters only will be powered up. If the power supply to the driver or passenger door module is

disconnected (battery disconnected, module unplugged or fuse removed) then the glass/system must re-learn the glass operating characteristics. The last known glass position is regarded as top of travel by one touch operation until re-learning has taken place. One touch down, manual up and down control and the automatic lowering of the glass for door opening are unaffected.

Glass, Frames and Mechanisms

Principle of Operation

For a detailed description of the Glass, Frames and Mechanisms, refer to the relevant Description and Operation section in the workshop manual.

[Glass, Frames and Mechanisms](#)

Inspection and Verification

- 1 . Verify the customer concern by operating the system.
- 2 . Visually inspect for obvious signs of damage and system integrity.

Mechanical	Electrical
• Window glass • Window regulator	• Fuse(s) • Window motor • Loose or corroded electrical connector(s) • Switch • Circuit(s)

- 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 concern is not visually evident, check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

DTC Index



CAUTION: When probing connectors to take measurements in the course of the pinpoint tests, use the adaptor kit, part number 3548-1358-00.

NOTE:

If the control module 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.

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 additional information read by the manufacturer approved diagnostic system).

NOTE:

When performing electrical voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places, and with an up-to-date 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:

Inspect connectors for signs of water ingress, and pins for damage and/or corrosion.

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
B117E72	Front Power Window up	• Actuator stuck open	Install a new DDM/PDM, refer to the new module installation note at the top of the DTC Index
B117E73	Front Power Window up	• Actuator stuck closed	Install a new DDM/PDM, refer to the new module installation note at the top of the DTC Index
B117F72	Front Power Window down	• Actuator stuck open	Install a new DDM/PDM, refer to the new module installation note at the top of the DTC Index
B117F73	Front Power Window down	• Actuator stuck closed	Install a new DDM/PDM, refer to the new module installation note at the top of the DTC Index
B118929	Front Window Position Sensor	• Signal invalid	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B118A29	Rear Window Position Sensor	• Signal invalid	Carry out any pinpoint tests associated with this DTC using the manufacturer approved

			diagnostic system
B1A9883	LIN Bus Circuit #1	Value of signal protection calculation incorrect	Refer to the electrical circuit diagrams and test LIN circuit between driver switch pack and DDM for short/open circuits, clear DTC and re-test. If DTC remains install a new switch pack. Window Control Switch (86.25.08)
B1A9886	LIN Bus Circuit #1	Signal Invalid	Refer to the electrical circuit diagrams and test LIN circuit between driver switch pack and DDM for short/open circuits, clear DTC and re-test. If DTC remains install a new switch pack. Window Control Switch (86.25.08)
B1A9887	LIN Bus Circuit #1	Missing Message	Refer to the electrical circuit diagrams and test LIN circuit between driver switch pack and DDM for short/open circuits, clear DTC and re-test. If DTC remains install a new switch pack. Window Control Switch (86.25.08)
C1B1411	Sensor Supply #1	Short to ground	Refer to the electrical circuit diagrams and test window sensor supply circuit for short to ground
C1B1415	Sensor Supply #1	Short to power or open circuit	Refer to the electrical circuit diagrams and test window sensor supply circuit for short to power or open circuit
U001000	Medium speed CAN communication Bus	Medium speed CAN communication Bus	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U014000	Lost communication with CJB	Logged when subscribed CAN message missing from	Carry out any pinpoint tests associated with this DTC using the

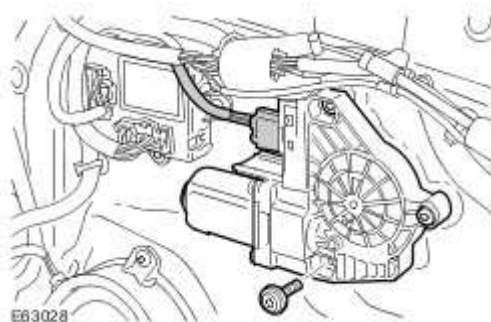
		CJB	manufacturer approved diagnostic system
U020800	Lost communication with Driver Seat Module (DSM)	Missing message	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U030000	Internal control module software incompatibility	Invalid configuration message is received	Re-configure the RJB using the manufacturer approved diagnostic system. Clear the DTC and retest. If the DTC is still logged suspect the DDM/PDM, refer to the new module installation note at the top of the DTC Index
U200224	Switch	Signal stuck high	Clear DTC and re-test. If DTC remains, install a new passenger side window switch
U201011	Switch illumination	Circuit short to ground	Carry out CAN network tests using the manufacturer approved diagnostic system
U201012	Switch illumination	Circuit short to battery	Carry out CAN network tests using the manufacturer approved diagnostic system
U201208	Car Configuration Parameter(s)	Bus signal/message failures	Cycle the ignition status and re-test. If DTC remains, re-configure the RJB using the manufacturer approved diagnostic system
U201324	Switch Pack	Signal stuck high	Clear DTC and re-test. If DTC remains, install a new driver side window switch pack. Window Control Switch (86.25.08)
U201444	Control module hardware	Data Memory Failure	Install a new DDM/PDM, refer to the new module installation note at the top of the DTC Index
U210000	Initial configuration not	No sub type information	Re-configure the DDM/PDM using the

	complete		manufacturer approved diagnostic system
U300049	Control module	Internal electronic failure	Install a new DDM/PDM, refer to the new module installation note at the top of the DTC Index
U300255	Vehicle Identification Number (VIN)	Not configured	Re-configure the relevant module as new using the manufacturer approved diagnostic system and re-test. If DTC remains install a new module, refer to the new module installation note at the top of the DTC Index
U300281	Vehicle Identification Number (VIN)	Vehicle/component mismatch. Corrupt VIN data being transmitted, module previously installed to other vehicle	Install original module, check for DTCs and refer to relevant DTC Index
U300362	Battery voltage	Mis-match of battery voltage, of 2 volts or lower, between DDM/PDM and RJB	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system

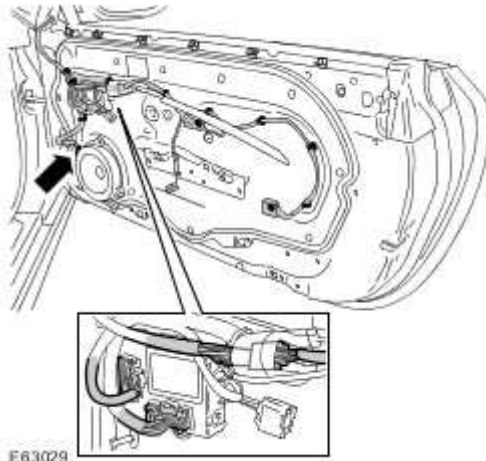
Front Door Window Glass (76.31.01)

Removal

- 1 . Raise the window glass.
- 2 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to [Specifications](#)
- 3 . Remove the front door trim panel.
For additional information, refer to [Front Door Trim Panel \(76.34.01\)](#)
- 4 . Remove the window regulator motor.
 - ▶ Disconnect the electrical connector.
 - ▶ Remove the 3 Torx screws.

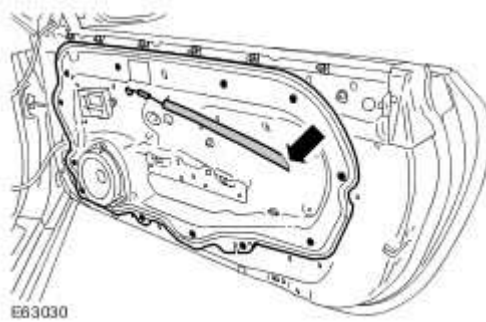


- 5 . Release the front door inner weathershield.
 - ▶ Disconnect the 3 electrical connectors.
 - ▶ Release the 9 wiring harness clips.



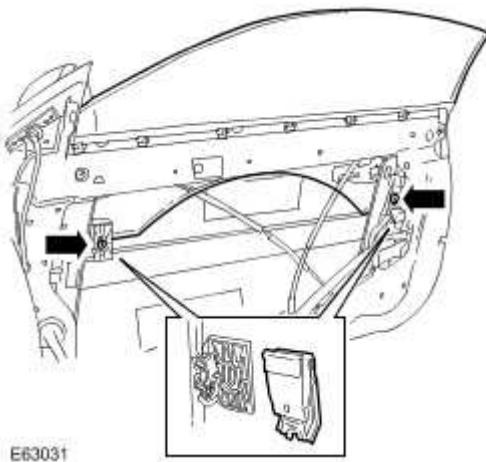
6 . Remove the front door inner weathershield.

- ▶ Remove the 12 Torx bolts.
- ▶ Release the front door interior handle cable.



7 . Remove the front door window glass.

- ▶ Remove the 2 Torx bolts.
- ▶ Collect the clamp and rubber washer.



Installation

1 . Install the front door window glass.

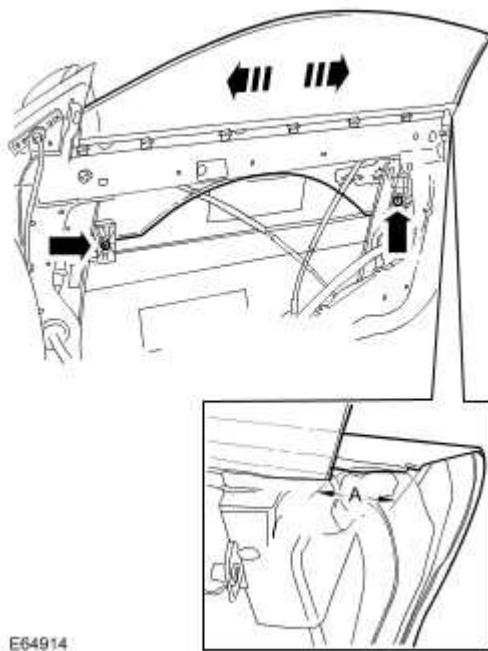
- ▶ Attach the clamp and rubber washer.
- ▶ Install the Torx bolts, but do not tighten fully at this stage.

2 NOTE:

- The window must be fully raised when carrying out measurements.

Align the front door window glass longitudinally.

- ▶ Position the window, forwards or rearwards, glass edge should be 44mm from edge of door as shown in dimension 'A'.
- ▶ Tighten the Torx bolts to 8 Nm (6 lb.ft).

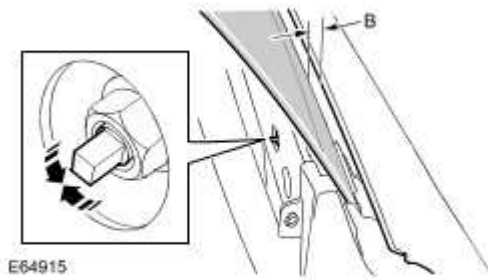


3 NOTE:

- To adjust the window hold the locknut and turn the centre spindle.

Align the front door window glass horizontally.

- ▶ Release the retaining nut.
- ▶ Align the glass to door, glass should be 12mm from door as shown in dimension 'B'.
- ▶ Tighten the retaining nut to 10 Nm (7 lb.ft).



- 4 . Install the front door inner weathershield.
 - ▶ Attach the front door interior handle cable.
 - ▶ Tighten the Torx bolt to 10 Nm (7 lb.ft).
- 5 . Secure the front door inner weathershield.
 - ▶ Secure the wiring harness clips.
 - ▶ Connect the electrical connectors.
- 6 . Install the window regulator motor.
 - ▶ Install and tighten the Torx screws.
 - ▶ Connect the electrical connector.
- 7 . Install the front door trim panel.

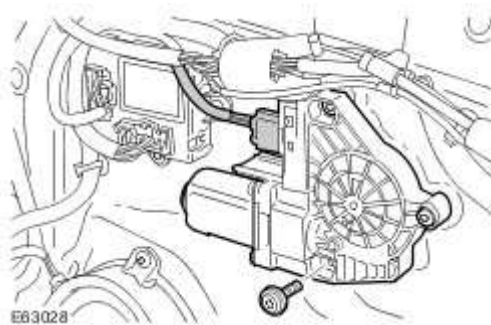
For additional information, refer to [Front Door Trim Panel \(76.34.01\)](#)
- 8 . Connect the battery ground cable and install the cover.

For additional information, refer to [Specifications](#)

Front Door Window Regulator Motor (76.31.45)

Removal

- 1 . Raise the window glass.
- 2 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to [Specifications](#)
- 3 . Remove the front door trim panel.
For additional information, refer to [Front Door Trim Panel \(76.34.01\)](#)
- 4 . Remove the window regulator motor.
 - ▶ Disconnect the electrical connector.
 - ▶ Remove the 3 Torx screws.



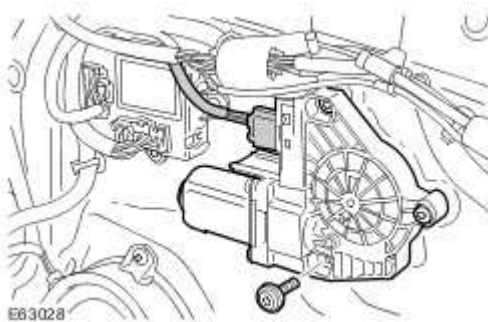
Installation

- 1 . Install the window regulator motor.
 - ▶ Install and tighten the Torx screws.
 - ▶ Connect the electrical connector.
- 2 . Install the front door trim panel.
For additional information, refer to [Front Door Trim Panel \(76.34.01\)](#)
- 3 . Connect the battery ground cable and install the cover.
For additional information, refer to [Specifications](#)

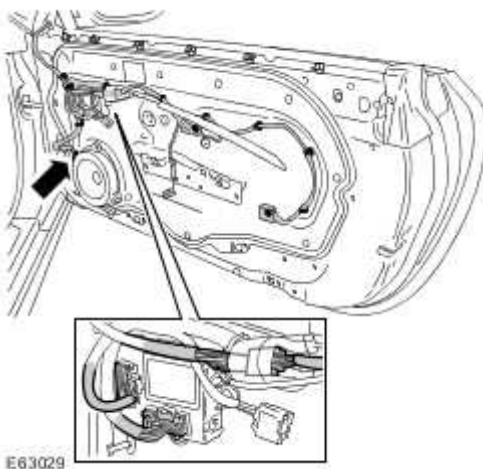
Front Door Window Regulator

Removal

- 1 . Raise the window glass.
- 2 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to
- 3 . Remove the front door trim panel.
For additional information, refer to [Front Door Trim Panel \(76.34.01\)](#)
- 4 . Remove the window regulator motor.
 - ▶ Disconnect the electrical connector.
 - ▶ Remove the 3 Torx screws.

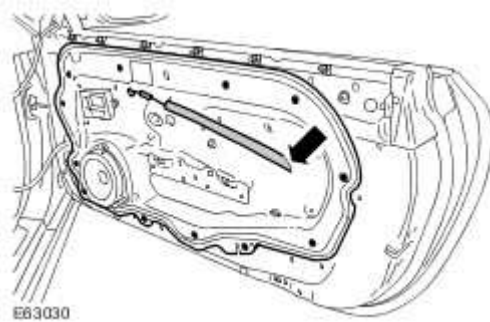


- 5 . Release the front door inner weathershield.
 - ▶ Disconnect the 3 electrical connectors.
 - ▶ Release the 9 wiring harness clips.



6 . Remove the front door inner weathershield.

- ▶ Remove the 12 Torx bolts.
- ▶ Release the front door interior handle cable.

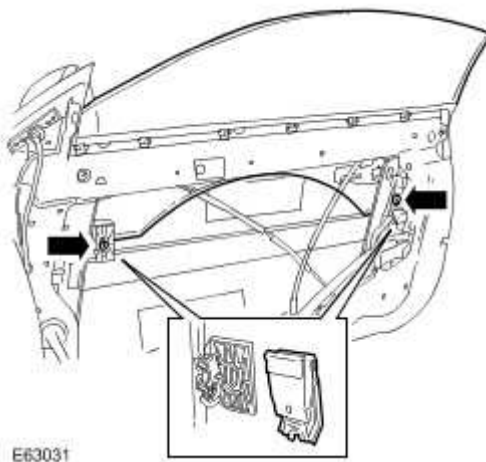


7 . Carefully remove the outer waist seal.

- ▶ Release each end of the seal from the door frame.

8 . Remove the front door window glass.

- ▶ Remove the 2 Torx bolts.
- ▶ Collect the clamp and rubber washer.



9 . Remove the window regulator assembly.

- ▶ Release the rubber lining from the glass channel.
- ▶ Remove the 4 Torx screws.
- ▶ Remove the bolt.
- ▶ Remove the nut.

Installation

1 . Install the window regulator assembly.

- ▶ Tighten the nut to 10 Nm (7 lb.ft).
- ▶ Tighten the bolt to 10 Nm (7 lb.ft).
- ▶ Install and tighten the Torx screws.
- ▶ Install the rubber lining to the glass channel.

2 . Install the front door window glass.

- ▶ Attach the clamp and rubber washer.
- ▶ Install the Torx bolts, but do not tighten fully at this stage.

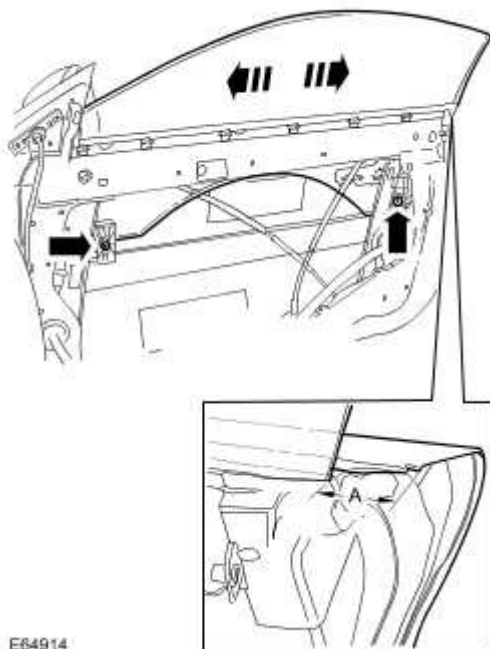
3 . Install the outer waist seal.

4 NOTE:

- The window must be fully raised when carrying out measurements.

Align the front door window glass longitudinally.

- ▶ Position the window, forwards or rearwards, glass edge should be 44mm from edge of door as shown in dimension 'A'.
- ▶ Tighten the Torx bolts to 8 Nm (6 lb.ft).

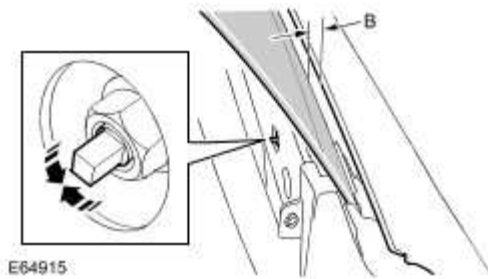


5 NOTE:

- To adjust the window hold the locknut and turn the centre spindle.

Align the front door window glass horizontally.

- ▶ Release the retaining nut.
- ▶ Align the glass to door, glass should be 12mm from door as shown in dimension 'B'.
- ▶ Tighten the retaining nut to 10 Nm (7 lb.ft).



6 . Install the front door inner weathershield.

- ▶ Attach the front door interior handle cable.
- ▶ Tighten the Torx bolt to 10 Nm (7 lb.ft).

7 . Secure the front door inner weathershield.

- ▶ Secure the wiring harness clips.
- ▶ Connect the electrical connectors.

8 . Install the window regulator motor.

- ▶ Install and tighten the Torx screws.
- ▶ Connect the electrical connector.

9 . Install the front door trim panel.

For additional information, refer to [Front Door Trim Panel \(76.34.01\)](#)

10 . Connect the battery ground cable and install the cover.

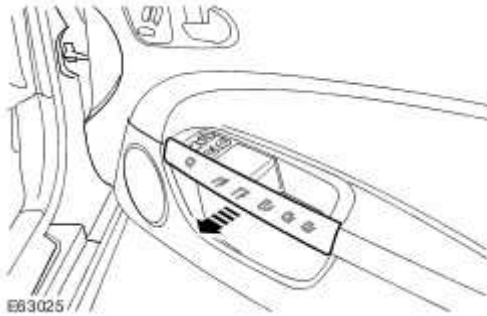
For additional information, refer to

Window Control Switch (86.25.08)

Removal

1 . Remove the grab handle cover.

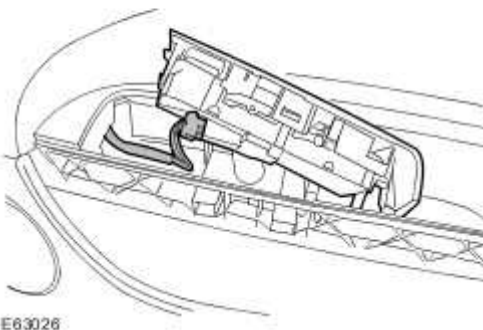
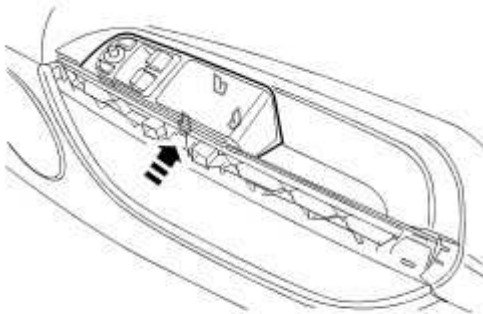
▶ Release from the 6 clips.



2 . Remove the window control switch.

▶ Release from the 3 clips.

▶ Disconnect the electrical connector.



Installation

1 . Install the window control switch.

 Connect the electrical connector.

 Secure in the clips.

2 . Install the grab handle cover.

 Secure in the clips.

Rear Quarter Window Glass - Convertible (76.31.31)

Removal

NOTE:

The procedure to remove and install the rear quarter window glass is shown in the rear quarter window regulator motor procedure.

- 1 . Remove the rear quarter window glass.
For additional information, refer to [Rear Quarter Window Regulator Motor \(86.25.11\)](#)

Installation

- 1 . Install the rear quarter window glass.
For additional information, refer to [Rear Quarter Window Regulator Motor \(86.25.11\)](#)

Windshield Glass (76.81.40)

Removal



CAUTION: Always protect paintwork and glass when removing exterior components.



CAUTION: Always protect the interior components when removing body glass.



CAUTION: Lay the glass on felt covered supports. Do not stand on edge as this can cause chips which subsequently develop into cracks.

NOTE:

The following equipment is required: 1 Cutting wire and handles 1 Kent knife 1 Glazing knife 1 Windshield replacement kit 1 Sealant applicator gun 1 Suction cups 1 A felt covered table or stand to support glass

- 1 . Remove the plenum chamber panel.

For additional information, refer to [Cowl Vent Screen \(76.10.01\)](#)

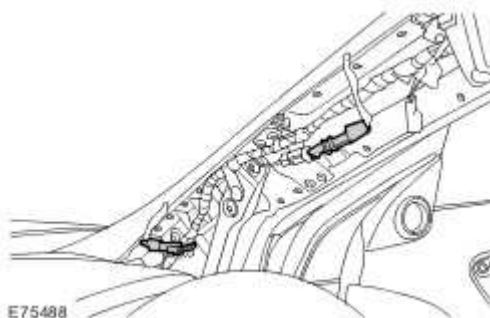
- 2 . Remove both A-pillar trim panels.

For additional information, refer to [A-Pillar Trim Panel \(76.13.31\)](#)

- 3 . **NOTE:**

LH illustration shown, RH is similar.

Disconnect the heated windshield electrical connectors.



- 4 . Remove the rain sensor.

For additional information, refer to [Rain Sensor \(84.12.10\)](#)

5



WARNING: Eye protection must be worn.



CAUTION: The two shaded areas in the graphic indicate the position of a body patch, that covers a body joint. Take care not to trap the cutting tool in the body joint.

With assistance, remove the windshield glass.

- ▶ Carefully cut through the sealant using a glazing knife or cutting wire.
- ▶ Attach the suction cups.



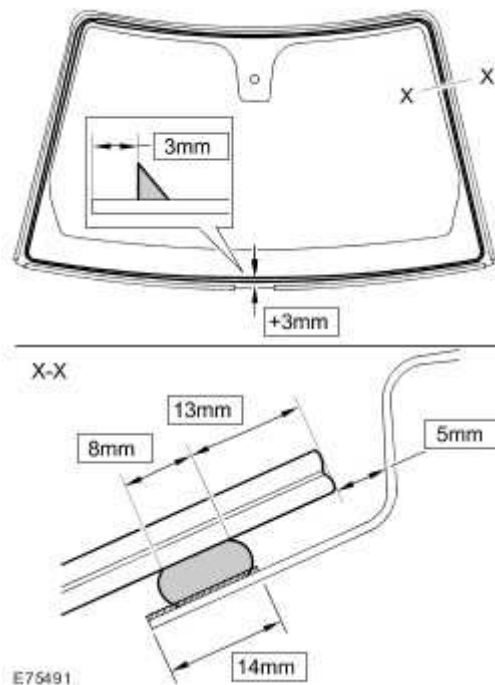
Installation

- 1 . Carefully remove the sealant from the body to leave a smooth surface.
- 2 . Install the windshield glass.
 - ▶ Use masking tape to establish reference marks as an alignment aid.



- 3 . Remove the windshield glass.
 - ▶ Clean the component mating faces.

- 4 . Apply etch primer to any bare metal.
- 5 . Apply primer over the etch primer.
- 6 . Apply glass primer to the sealant face on the windshield glass and allow to cure.
- 7 . Apply activator over the old sealant on the windshield glass and allow to cure.
- 8 Fit a pre-cut nozzle to the sealer cartridge, remove the lid, shake out the crystals and fit the cartridge to the applicator gun.
 - Modify the nozzle to achieve a bead section in the shape of a right angle triangle with a base of 8 mm and a vertical height of 12 mm.
- 9 . Apply a continuous bead of sealant to the windshield glass as shown.



- 10 . With assistance, install the window glass.
 - Lightly press the window glass to seat the sealer.
 - Connect the electrical connectors.
- 11 Test the sealer for leaks, apply additional sealer if necessary. If water is used, allow sealer to dry before testing. Spray water around the glass and check for leaks. Mark any area that leaks. Dry the glass and sealer then apply additional sealer.
- 12 . Install the rain sensor.

For additional information, refer to [Rain Sensor \(84.12.10\)](#)

13 . Connect the heated windshield electrical connectors.

14 . Install the A-pillar trim panels.

For additional information, refer to [A-Pillar Trim Panel \(76.13.31\)](#)

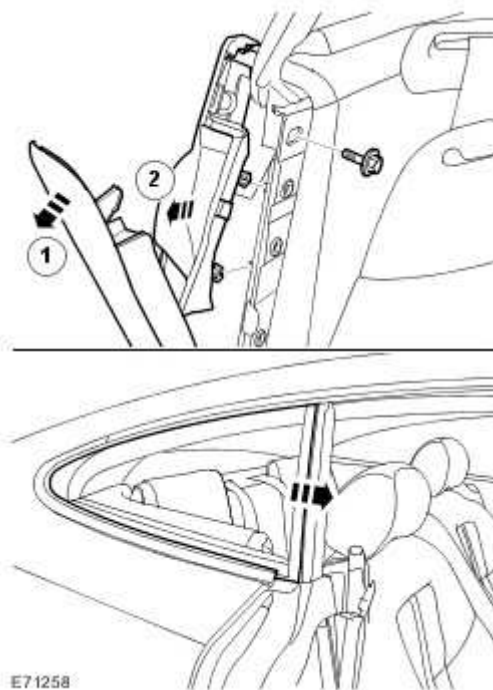
15 . Install the plenum chamber panel.

For additional information, refer to [Cowl Vent Screen \(76.10.01\)](#)

Rear Quarter Window Glass - 2-Door (76.31.31)

Removal

- 1 . Release the door aperture seal.
 - ▶ Release from the 2 clips.
- 2 . Remove the rear quarter window glass.
 - ▶ Remove the bolt.



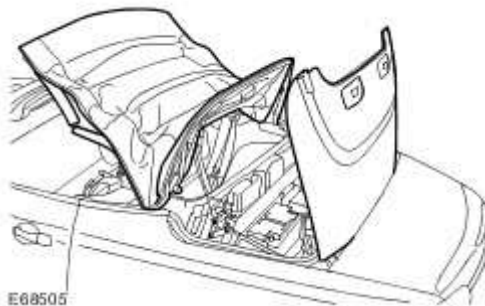
Installation

- 1 . Install the rear quarter window glass.
 - ▶ Tighten the bolt to 10 Nm (7 lb.ft).
- 2 . Attach the door aperture seal.
 - ▶ Release from the 2 clips.
 - ▶ Secure in the clips.

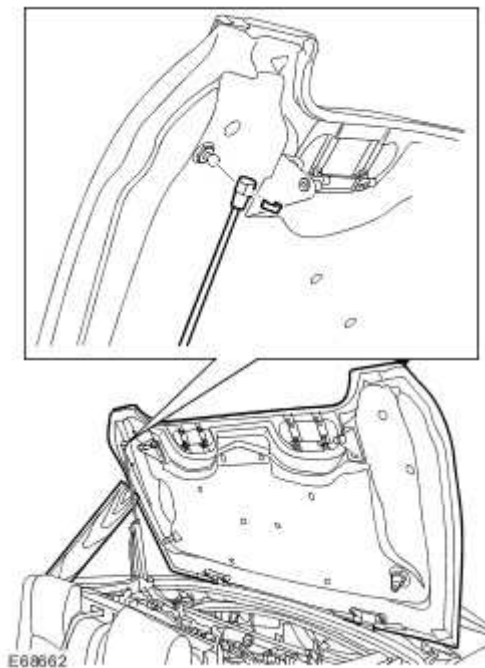
Rear Quarter Window Regulator Motor (86.25.11)

Removal

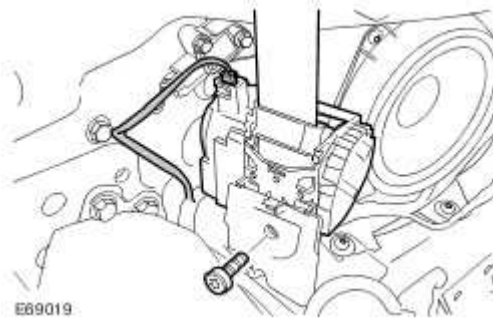
- 1 . Remove the rear quarter trim panels.
For additional information, refer to [Rear Quarter Trim Panel - Convertible \(76.13.73\)](#)
- 2 . Close the convertible top to the position shown.



- 3 . Open the convertible top to the position shown.

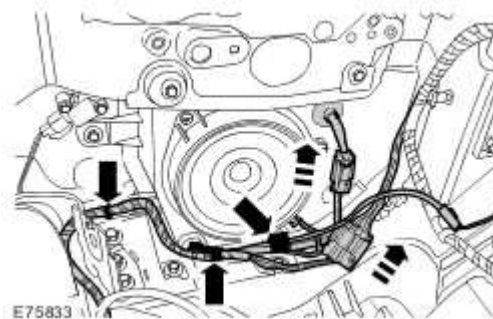


- 4 . Remove the safety belt retractor assembly.
 - ▶ Disconnect the electrical connector.
 - ▶ Remove and discard the Torx bolt.



5 . Release the rear speaker housing.

- ▶ Release the 3 wiring harness clips.
- ▶ Release the 2 electrical connectors.



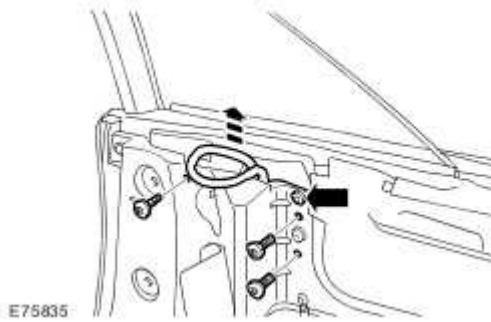
6 . Remove the rear speaker housing.

- ▶ Disconnect the 2 electrical connectors.
- ▶ Remove the 6 bolts.



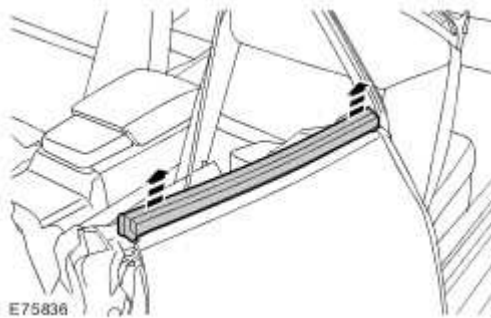
7 . Remove the safety belt guide.

- ▶ Remove the 3 Torx bolts.
- ▶ Loosen the Torx bolt.



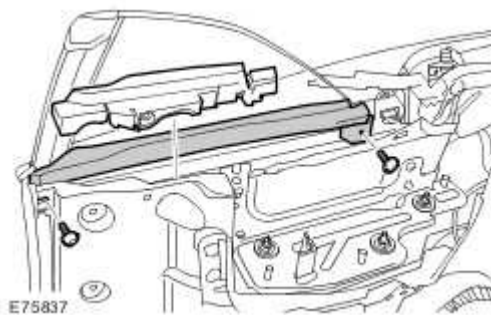
8 . Carefully remove the outer waist seal.

▶ Release each end of the seal from the body.



9 . Remove the rear quarter window glass inner seal.

▶ Remove the 2 Torx bolts.

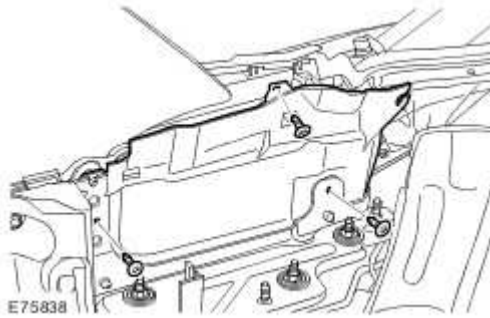


10 . **NOTE:**

Convertible top frame assembly show removed for clarity.

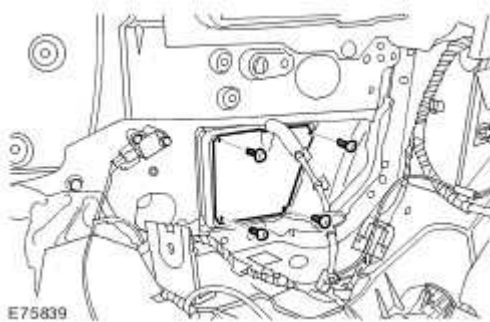
Remove the rear quarter closing panel.

▶ Remove the 3 Torx bolts.



11 . Remove the rear quarter window glass motor cover.

➤ Remove the 4 screws.



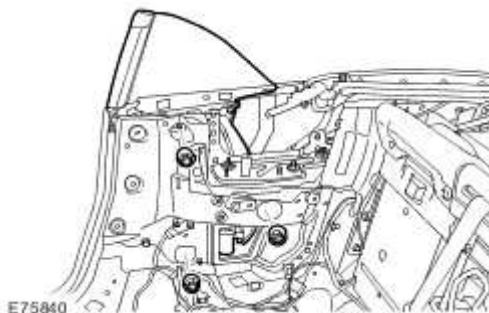
12



CAUTION: Make sure rear quarter is covered and protected, failure to follow this instruction may result in damage to the vehicle.

Remove the rear quarter window glass motor.

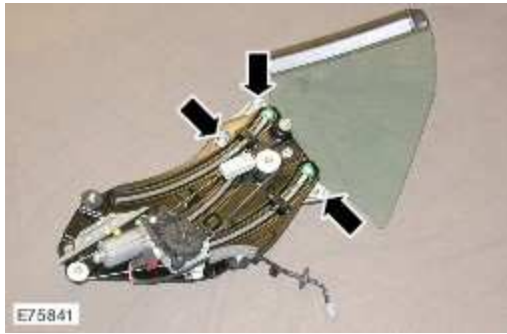
➤ Remove the 3 nuts.



13 . Remove the rear quarter window glass.

➤ Remove the 2 bolts.

➤ Remove the nut.



Installation

- 1 . Install the rear quarter window glass.

- ▶ Tighten the bolts to 10 Nm (7 lb.ft).
- ▶ Tighten the nut to 25 Nm (18 lb.ft).

2



- **CAUTION: Make sure rear quarter is covered and protected, failure to follow this instruction may result in damage to the vehicle.**

Install the rear quarter window glass motor.

- ▶ Install the nuts but do not fully tighten at this stage.

- 3 . Install the rear quarter window glass motor cover.

- ▶ Tighten the screws.

- 4 . Install the rear quarter closing panel.

- ▶ Tighten the Torx bolts to 10 Nm (7 lb.ft).

- 5 . Install the rear quarter window glass inner seal.

- ▶ Remove the 2 Torx bolts.
- ▶ Tighten the Torx bolts to 10 Nm (7 lb.ft).

- 6 . Install the outer waist seal.

- ▶ Attach the outer waist seal to the body.

- 7 . Install the safety belt guide.

- ▶ Tighten the Torx bolts to 25 Nm (18 lb.ft).
- ▶ Tighten the Torx bolt to 10 Nm (7 lb.ft).

8 . Install the rear speaker housing.

- ▶ Tighten the bolts to 10 Nm (7 lb.ft).
- ▶ Connect the electrical connectors.

9 . Secure the wiring harness.

- ▶ Secure the electrical connectors.
- ▶ Attach the wiring harness clips.

10 . Install the safety belt retractor assembly.

- ▶ Install a new Torx bolt and tighten to 45 Nm (33 lb.ft).
- ▶ Connect the electrical connector.

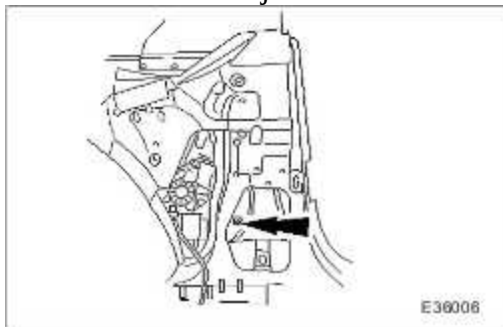
11 . Close the convertible top.

12 . Raise the rear quarter glass and check seal penetration.

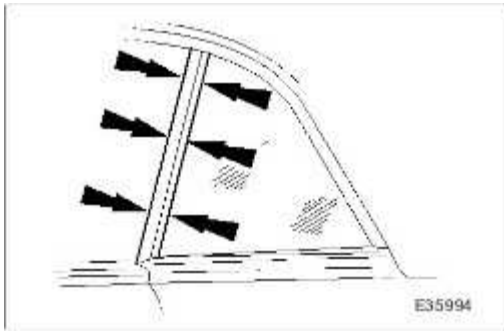


13 Carefully close the adjacent door ensuring that the glass does not contact the rear quarter glass.

14 . Loosen the lower adjuster locknut.

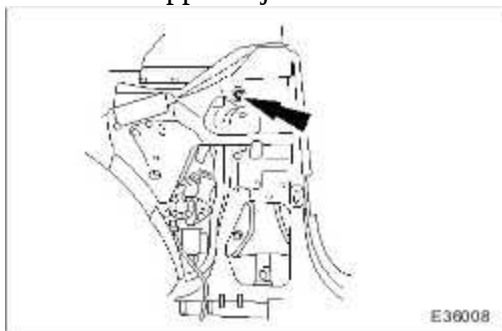


15 Move the rear quarter glass to achieve a parallel 8mm gap, between the front edge of the rear quarter glass and rear edge of the door glass.

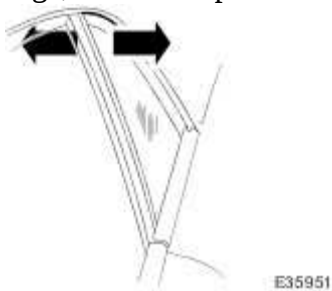


16 . Tighten the lower adjuster locknut to 9 Nm (7 lb.ft).

17 . Loosen the upper adjuster locknut.

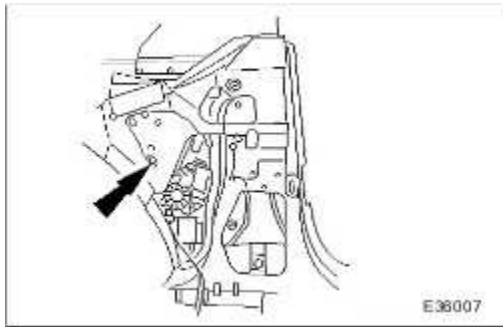


18 Turn the upper adjuster to achieve, lateral alignment of the rear quarter glass upper edge, with the top seal.

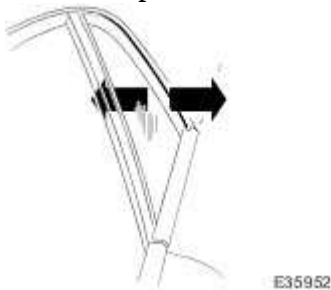


19 . Tighten the upper adjuster locknut to 9 Nm (7 lb.ft).

20 . Loosen the rear adjuster locknut.



- 21 Turn the rear adjuster to achieve, lateral alignment of the rear quarter glass rear edge, with the top seal.



- 22 . Tighten the rear adjuster locknut to 9 Nm (7 lb.ft).
- 23 . Install the rear quarter trim panels.
For additional information, refer to [Rear Quarter Trim Panel - Convertible \(76.13.73\)](#)

501-12 : Instrumentation Panel and Console

Specifications

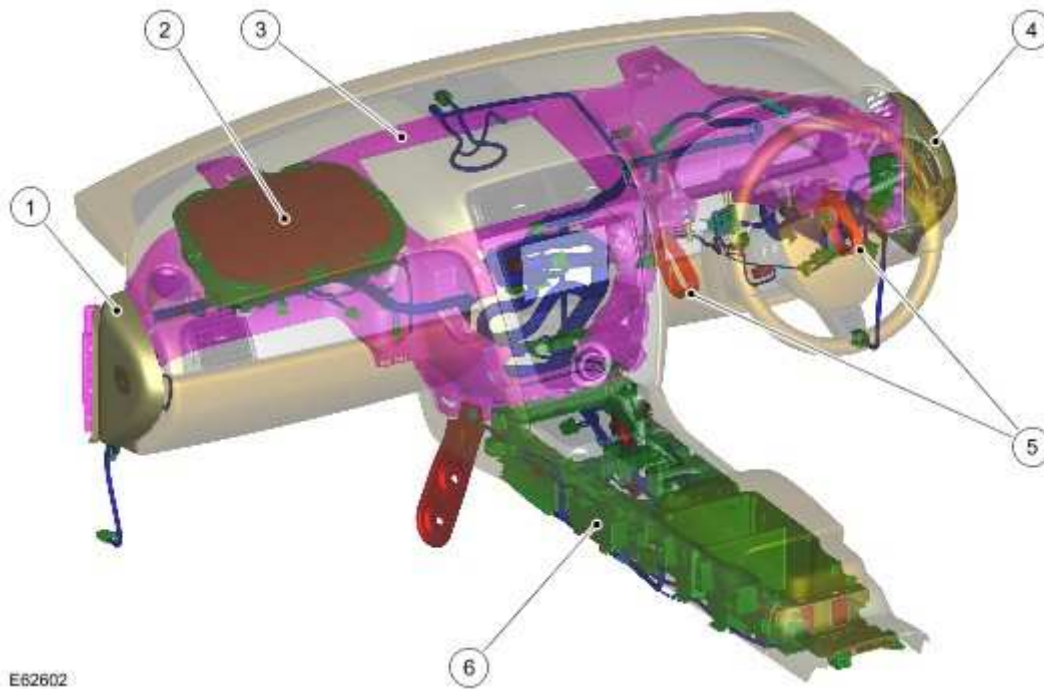
Specifications

Torque Specifications

Item	Nm	lb-ft	lb-in
Armrest to console - screw	6	4	53
Center console installation fixing points - screw	6	4	53
Centre console, side trim panel to console - screw	6	4	53
Instrument panel to A-post - bolt	20	15	-
Instrument panel upper retainers - bolt	20	15	-
Instrument panel bracket to console - bolt	9	7	80

Instrument Panel

COMPONENT LOCATION



Item	Part Number	Description
1		Instrument panel end cap
2		Passenger airbag
3		Cross car beam
4		Instrument panel end cap
5		Energy absorbing brackets (2 off)
6		Floor console

INTRODUCTION

The instrument panel incorporates a magnesium cross car beam and 2 deformable, energy absorbing brackets. The brackets are rivetted to the cross car beam and are not serviceable items.

The instrument panel electrical harness is mounted along the cross car beam and connects into the main vehicle harness via 4 connectors, 2 located either end of the instrument panel. To

access the connectors the instrument panel end covers can be removed by releasing a series of spring clips.

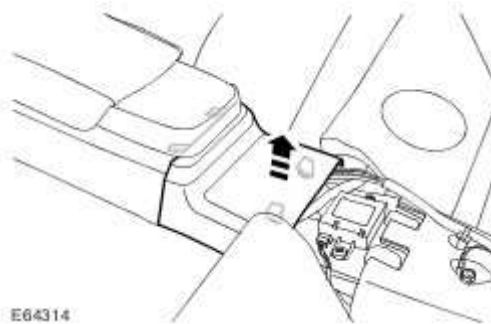
A further 3 connectors, located below the instrument panel, are used to connect the instrument panel harness to the Left Hand (LH) and Right Hand (RH) front end harnesses. Finally, 2 connectors located below the floor console connect the instrument panel harness to the telematics harness.

The floor console provides a location for the selector lever and the parking brake module. The floor console is secured to the transmission tunnel and to the cross car beam by a series of M6 bolts and trim fixings. The floor console electrical harness connects into the telematics harness via a single connector.

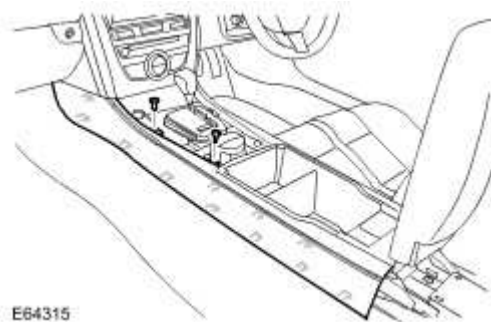
Floor Console (76.25.01)

Removal

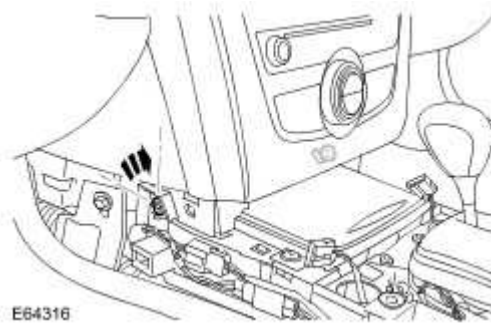
- 1 . Remove the rear seat armrest.
For additional information, refer to [Rear Seat Armrest \(76.70.39\)](#)
- 2 . Remove the floor console veneer trim panel.
For additional information, refer to [Floor Console Finish Panel \(76.47.26\)](#)
- 3 . Remove the floor console rear panel.
▶ Carefully release the 2 clips.



- 4 . Remove the floor console side panel trim.
▶ Remove the 2 Torx bolts.
▶ Carefully release 11 clips.
▶ Repeat the procedure and remove the opposite hand.

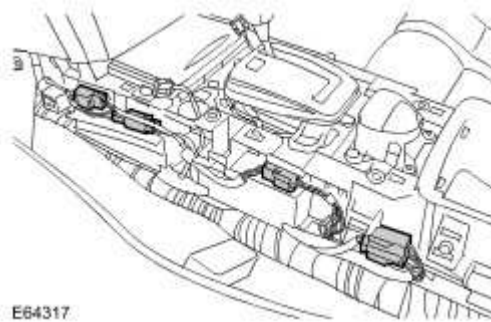


- 5 . Release the 2 Torx latches.



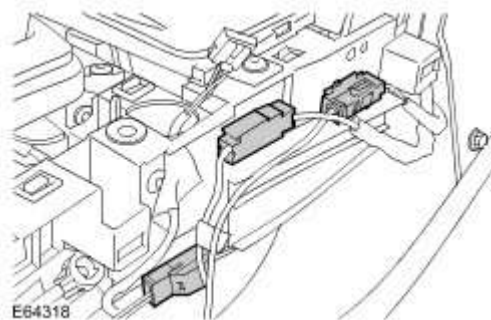
6 . Release the LH side floor console electrical harness connector blocks.

► Carefully release the 4 clips.



7 . Release the RH side floor console electrical harness connector blocks.

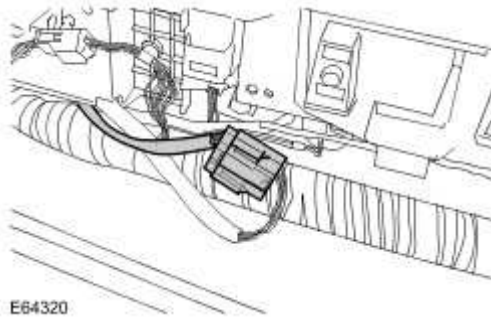
► Carefully release the 3 clips.



8 . Release the wiring harness clip.



9 . Disconnect the gear selector assembly electrical connector.



10 . Remove the gear selector assembly.

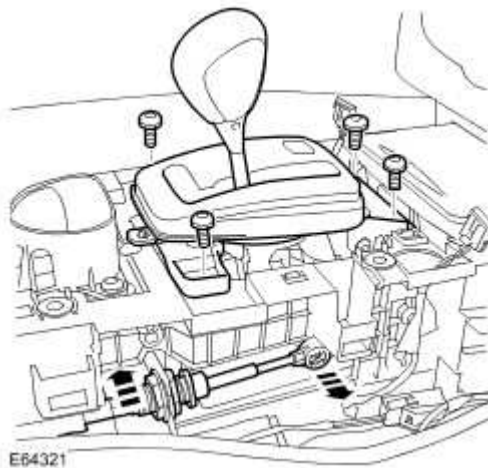
- Carefully disconnect the selector cable ball joint.
- Remove the 4 Torx bolts.
- Release the electrical harness.

11 . **NOTE:**

Use an additional wrench to prevent the component from rotating.

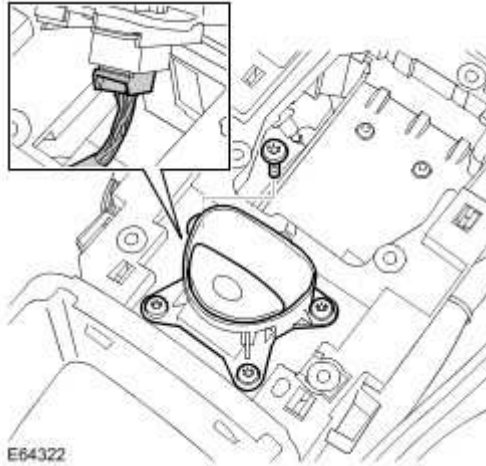
Release the gear selector cable at the abutment.

- Loosen the locknut.



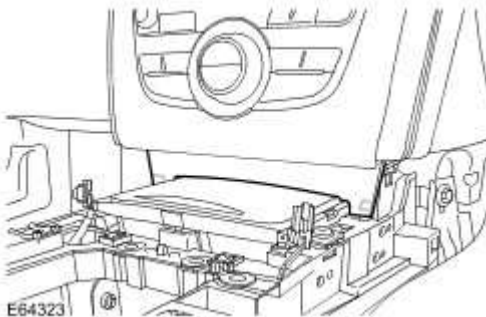
12 . Remove the parking brake switch.

- Remove the 4 Torx bolts.
- Disconnect the electrical connector.



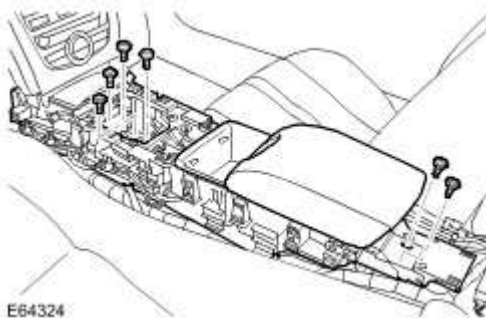
13 . Remove the ashtray trim panel.

- Release the 2 clips.



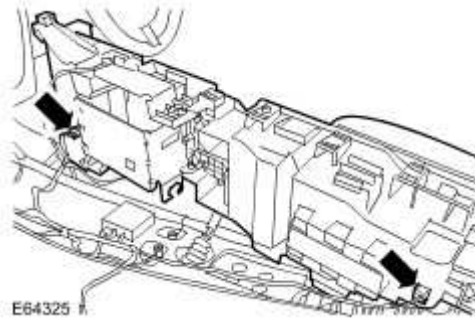
14 . Release the floor console.

- Remove the 6 Torx bolts.
- Lift and carefully withdraw from the instrument panel.



15 . Remove the floor console.

- Disconnect the cigar lighter electrical connector.
- Disconnect the keyless vehicle module electrical connector.



16 . **NOTE:**

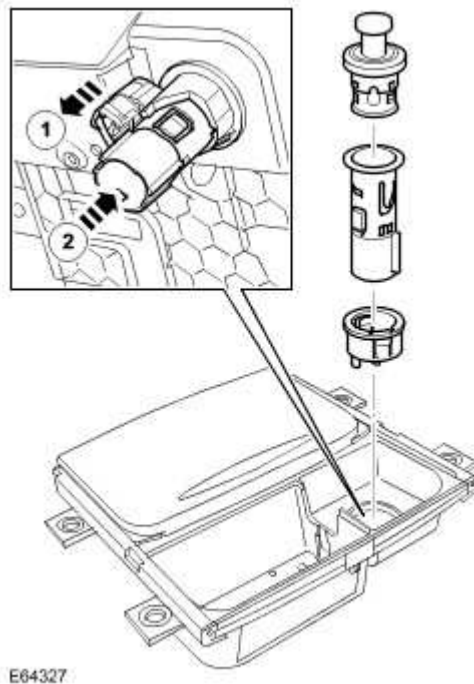
Do not disassemble further if the component is removed for access only.

Remove the ashtray.

- Remove the 4 Torx bolts.
- Remove the ashtray insert.

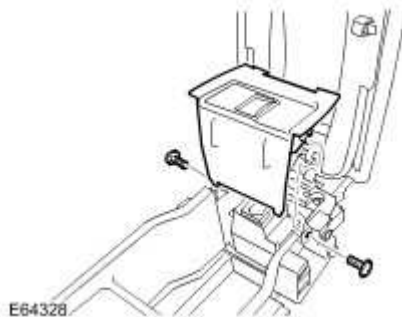


17 . Remove the cigar lighter.



18 . Remove the keyless start control module trim cover.

➤ Remove the 2 Torx screws.



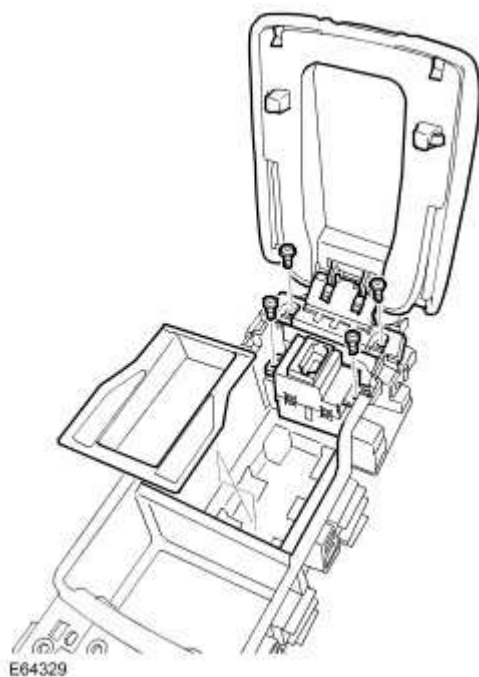
19 . Remove the floor console lid.

➤ Remove the 2 Torx bolts.

20 . Remove the keyless start control module.

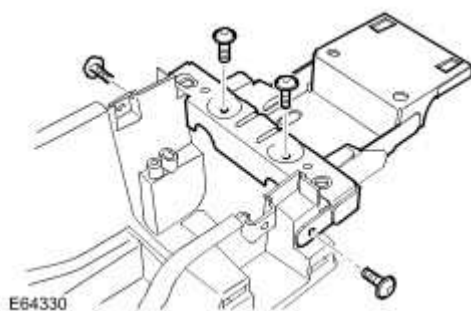
➤ Remove the 2 Torx screws.

21 . Remove the cubby box liner.



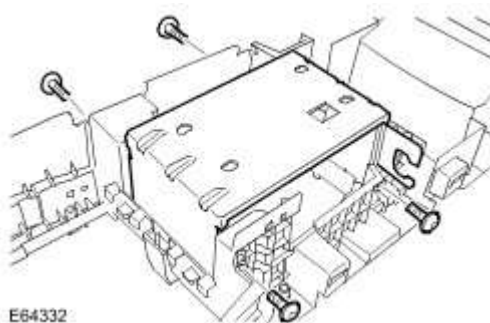
22 . Remove the floor console rear extension bracket.

➤ Remove the 4 Torx bolts.



23 . Remove the floor console central mounting bracket.

➤ Remove the 4 Torx bolts.



Installation

- 1 . Install the floor console central mounting bracket.
 - ▶ Install the Torx bolts, but do not tighten fully at this stage.
- 2 . Install the floor console rear extension bracket.
 - ▶ Tighten the Torx bolts to 6 Nm (4 lb.ft).
- 3 . Install the keyless start control module.
 - ▶ Install the Torx screws.
- 4 . Install the cubby box liner.
- 5 . Install the floor console lid.
 - ▶ Install the Torx bolts and tighten to 6 Nm (4 lb.ft).
- 6 . Install the keyless start control module trim cover.
 - ▶ Install the Torx screws.
- 7 . Install the cigar lighter assembly.
- 8 . Install the ashtray.
 - ▶ Install the Torx bolts and tighten to 6 Nm (4 lb.ft).
- 9 . Install the floor console.
 - ▶ Connect the cigar lighter electrical connector.
 - ▶ Connect the keyless vehicle module electrical connector.
 - ▶ Align the floor console with the Torx latch spigots and secure the latches.
 - ▶ Install the Torx bolts, tighten the M6 bolts to 10 Nm (7 lb.ft) and the M8 bolts to 25 Nm (18 lb.ft).
- 10 . Install the ashtray trim panel.
 - ▶ Carefully secure the clips.
- 11 . Install the parking brake switch.
 - ▶ Connect the electrical connector.
 - ▶ Tighten the Torx bolts to 6 Nm (4 lb.ft).

12 . **NOTE:**

Use an additional wrench to prevent the component from rotating.

Install the gear selector cable to the floor console abutment.

- ▶ Tighten the locknut to 15 Nm (11 lb.ft).

13 . Install the gear selector assembly.

- ▶ Position the electrical harness.
- ▶ Install the Torx bolts and tighten to 6 Nm (4 lb.ft).
- ▶ Connect the selector cable ball joint.

14 . Connect the gear selector assembly electrical connector.

15 . Install the RH side floor console electrical harness connector blocks.

- ▶ Carefully align and secure the clips.

16 . Install the LH side floor console electrical harness connector blocks.

- ▶ Carefully align and secure the clips.

17 . Secure the Torx latches.

18 . Install the floor console side panel trim.

- ▶ Carefully align and secure the clips.
- ▶ Tighten the Torx screws to 6 Nm (4 lb.ft).
- ▶ Install the opposite hand.

19 . Install the floor console rear panel.

- ▶ Align the lugs and secure the clips.

20 . Install the floor console veneer trim panel.

For additional information, refer to [Floor Console Finish Panel \(76.47.26\)](#)

21 . Install the rear seat armrest.

For additional information, refer to [Rear Seat Armrest \(76.70.39\)](#)

Floor Console Finish Panel (76.47.26)

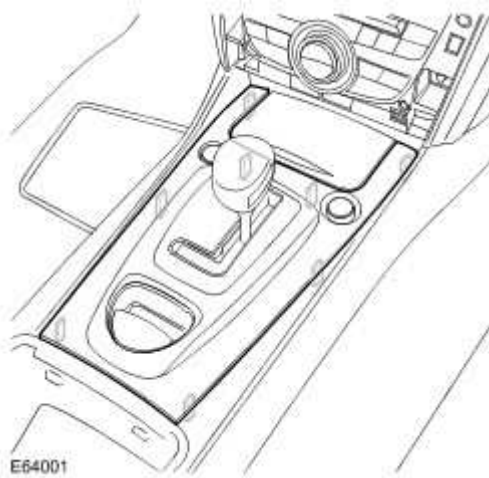
Removal

1 . Depress the footbrake and move the gear selector lever to NEUTRAL.

2 .  **CAUTION: Care must be taken to avoid damage to the mating surfaces.**

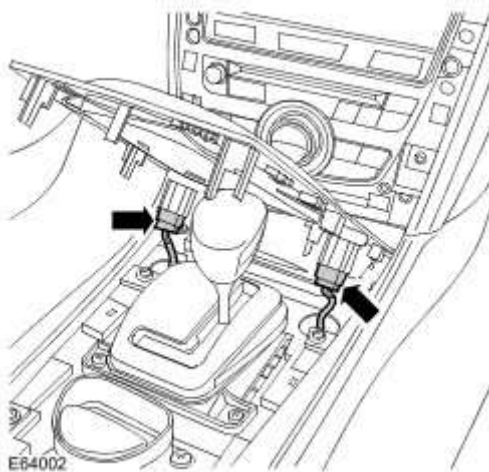
Release the floor console veneer trim panel.

 Carefully release the 8 clips.



3 Remove the floor console veneer trim panel.

-  Disconnect the engine START/STOP switch electrical connector.
-  Disconnect the automatic speed limiter (ASL) switch electrical connector.



4 . NOTE:

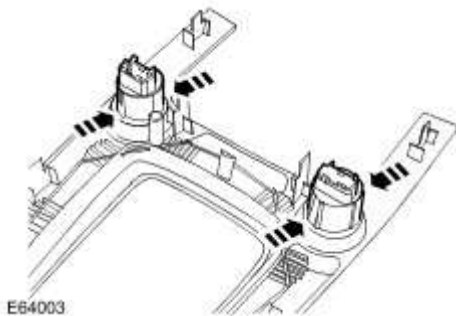
Do not disassemble further if the component is removed for access only.

NOTE:

Note the fitted position.

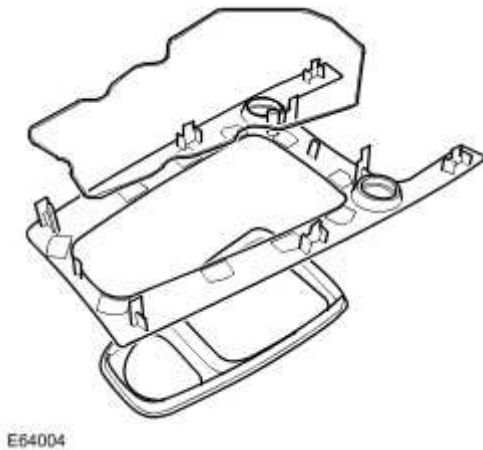
Remove the switches.

▶ Depress the 2 retaining clips.



5 . Remove the gear selector lever surround trim panel.

▶ Remove the wire clip.



Installation

1 . Install the gear selector lever surround trim panel.

▶ Install the wire clip.

2 . Install the switches.

3 . Install the floor console veneer trim panel.

 Connect the electrical connectors.

 Carefully align and secure the clips.

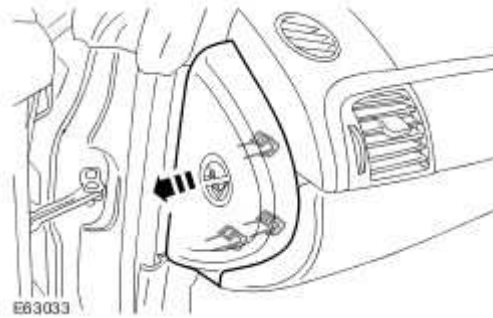
4 . Return the gear selector lever to PARK.

Glove Compartment (76.52.03)

Removal

- 1 . Remove the instrument panel end trim panel.

▶ Release the 3 clips.



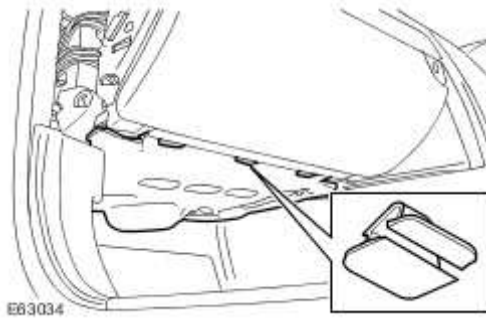
2



CAUTION: Removal of the clips is a delicate procedure, damage will occur if any force is used.

- Remove the passenger side footwell trim panel.

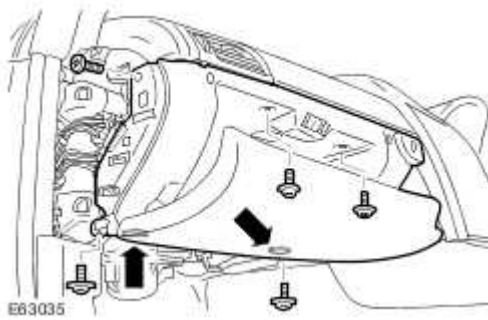
▶ Remove the 3 clips.



- 3 . Release the glove compartment.

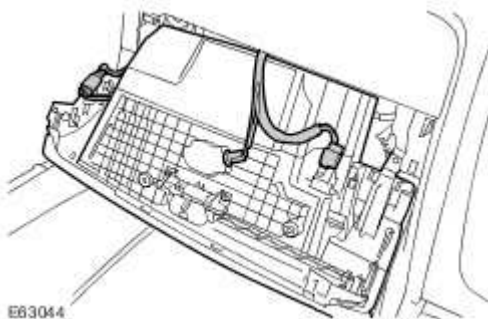
▶ Remove the 5 Torx screws.

▶ Release the 2 clips.



4 . Remove the glove compartment.

- ▶ Disconnect the 2 electrical connectors.
- ▶ Release the glove compartment lamp assembly.



Installation

1 . Install the glove compartment.

- ▶ Install the lamp assembly.
- ▶ Connect and secure the electrical connectors.
- ▶ Tighten the Torx screws.

2 . Install the passenger side footwell trim panel.

- ▶ Carefully secure the clips.

3 . Install the instrument panel end trim panel.

- ▶ Release the door aperture seal.
- ▶ Carefully secure the clips.
- ▶ Install the aperture seal.

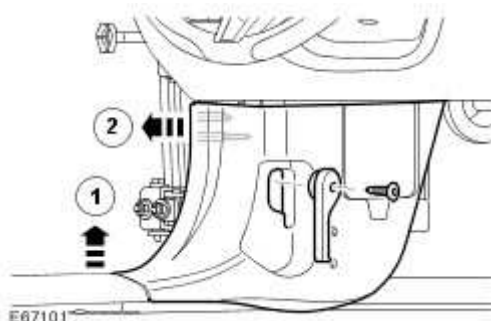
Instrument Panel (76.46.01)

Removal

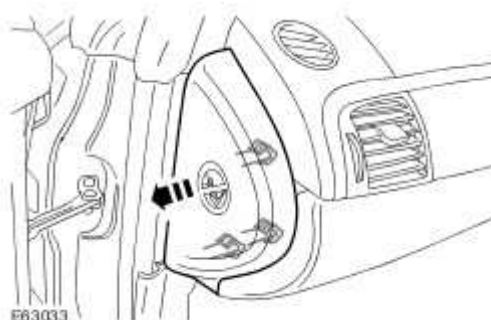
NOTE:

Some variation in the illustrations may occur, but the essential information is always correct.

- 1 . Disconnect the battery ground cable.
For additional information, refer to
- 2 . Remove the floor console.
For additional information, refer to
- 3 . Remove both cowl side trim panels.
 - ▶ LH side only: Remove the screw and remove hood release lever.
 - ▶ Release the leading edge of the scuff plate.



- 4 . Remove the instrument panel end trim panel.
 - ▶ Open the front door for access.
 - ▶ Carefully release the 3 clips.
 - ▶ Repeat the procedure and remove the opposite hand.



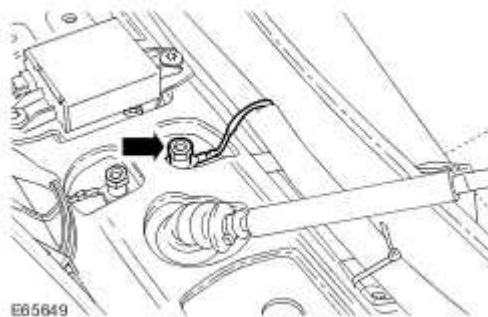
5 Remove both instrument panel support brackets.

- - ▶ Remove the self-tapping hexagonal screw from the instrument panel carrier.
 - ▶ Remove the 2 bolts.
 - ▶ Repeat the procedure and remove the opposite hand.

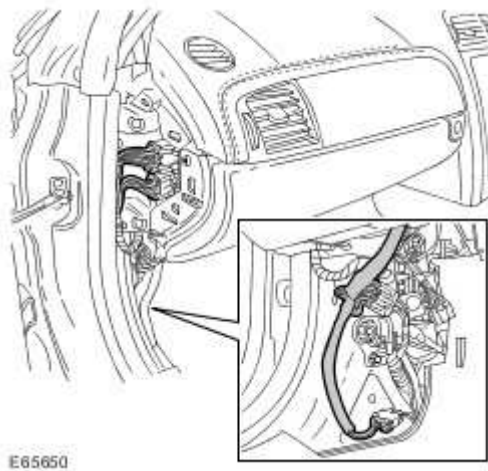


6 . Disconnect the instrument panel harness ground cable.

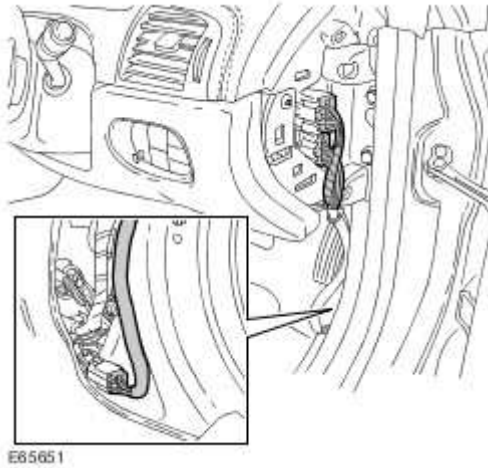
- ▶ Remove the nut.



7 . Disconnect the 4 instrument panel LH side electrical connectors.

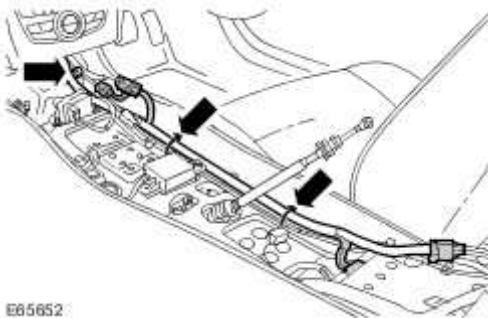


8 . Disconnect the 3 instrument panel RH side electrical connectors.



9 Release the instrument panel electrical harness from the RH side of the transmission tunnel.

- ▶ Remove the nut and disconnect the ground cable.
- ▶ Remove and discard the 2 cable ties.
- ▶ Disconnect the 4 electrical connectors.



10 . Disconnect the steering column intermediate shaft from the steering column.

- ▶ Remove the bolt.



11 . Carefully remove the instrument panel windshield register trim.

- Release the 2 clips.
- Repeat the procedure and remove the opposite hand.



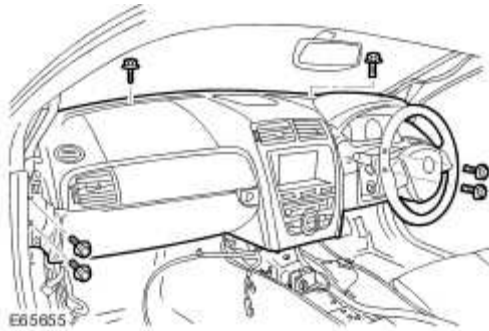
12 . Remove the 2 instrument panel carrier bolts, accessed through the upper trim panel.

- 13
-  **CAUTION: Protect the surrounding trim from damage when changing the component.**

 **CAUTION: Cover fiber optic cable connectors to minimize dust ingress and avoid bending the cables in a radius of less than 30 mm.**

Remove the instrument panel assembly.

- Remove the 4 A-pillar instrument panel carrier bolts.
- With assistance, release and remove.



Installation

- 1
-  **CAUTION: Make sure the the electrical harness is not trapped during the installation.**

With assistance, install the instrument panel assembly.

- ▶ Align the pegs and install the bolts.
- ▶ Evenly and progressively tighten the bolts to 20 Nm (15 lb.ft).

2



- **CAUTION: Make sure that the self tapping screw engages in the previously cut groove. Damage to the instrument panel carrier may result if this process is not followed.**

Install the instrument panel carrier bolts, access through the upper trim panel.

- ▶ Tighten the bolts to 20 Nm (15 lb.ft).

3 . Install the instrument panel windshield register trim.

- ▶ Carefully secure the clips.
- ▶ Repeat the above procedure on the opposite hand.

4 . Connect the instrument panel RH electrical connections

5 . Connect the instrument panel LH side electrical connectors.

6 . Install the instrument panel electrical harness to the RH side of the transmission tunnel.

- ▶ Connect the electrical connectors.
- ▶ Install the ground cable.
- ▶ Tighten the nut to 10 Nm (7 lb.ft).
- ▶ Install new cable ties.

7 . Connect the steering column intermediate shaft to the steering column.

- ▶ Tighten the bolt to 25 Nm (18 lb.ft).

8 . Install the instrument panel harness ground cable.

- ▶ Clean the component mating faces.
- ▶ Tighten the nut to 10 Nm (7 lb.ft).

9



- **CAUTION: Make sure that the self tapping screw engages in the previously cut groove. Damage to the instrument panel carrier may result if this process is not followed.**

Install both instrument panel support brackets.

- ▶ Tighten the bolts to 9 Nm (7 lb.ft).

- ▶ Tighten the self-tapping hexagonal headed screw to 9 Nm (7 lb.ft).

10 . Install the instrument panel end trim panel.

- ▶ Release the door aperture seal.
- ▶ Carefully align and secure the clips.
- ▶ Install the aperture seal.
- ▶ Repeat the above procedure on the opposite hand.

11 Install the cowl side trim panels.

- ▶ Align the pegs and secure the clip.
- ▶ Install the rocker panel scuff plate.
- ▶ LH side only: Install the hood release lever and secure with the screw.

12 . Install the floor console.

For additional information, refer to

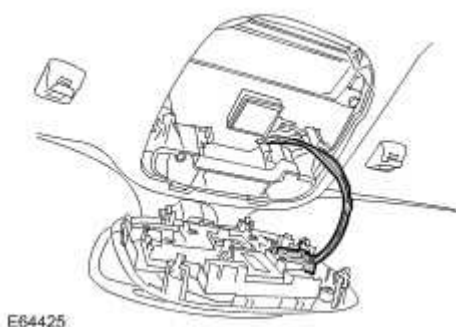
13 . Reconnect the battery ground cable.

For additional information, refer to

Overhead Console (76.13.69)

Removal

- 1 . Remove the front overhead console.
 - ▶ Release from the 6 clips.
 - ▶ Disconnect the electrical connector.



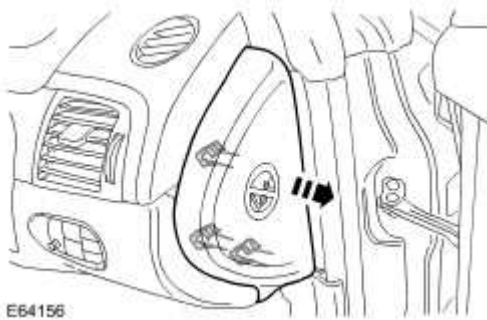
Installation

- 1 . Install the front overhead console.
 - ▶ Connect the electrical connector.
 - ▶ Secure in the clips.

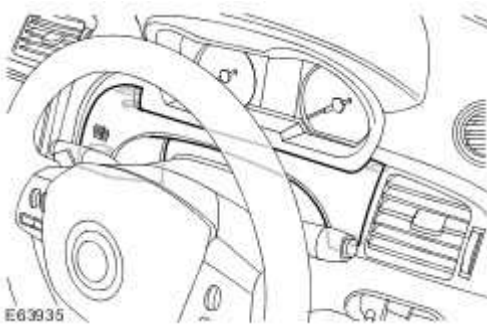
Instrument Panel Lower Trim Panel (76.46.11)

Removal

- 1 . Remove the instrument panel end trim panel.
 - ▶ Open the front door for access.
 - ▶ Carefully release the 3 clips.



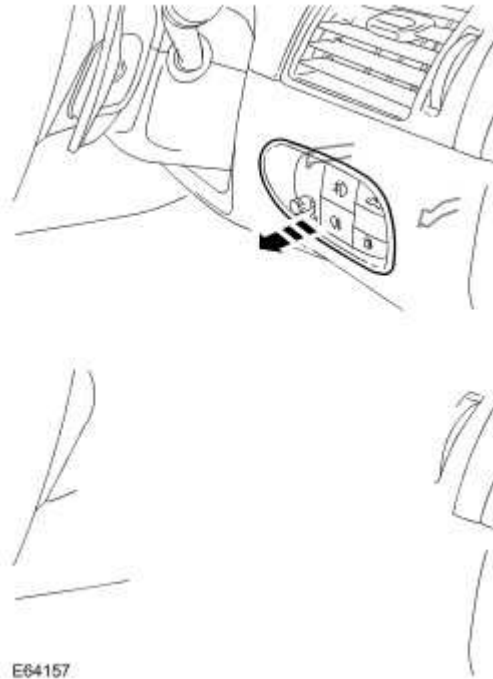
- 2 . Remove the instrument panel driver's side reinforcement trim panel.
 - ▶ Carefully release the 4 clips.



- 3 .  **CAUTION: Care must be taken to avoid damage to the mating surfaces.**

Carefully release and remove the rheostat switch assembly.

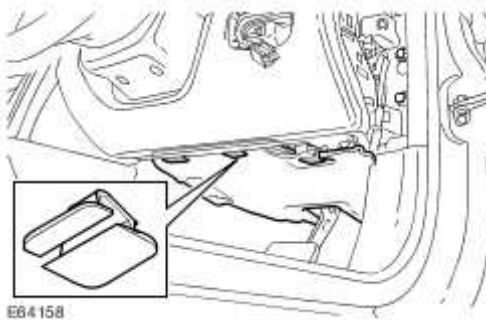
- ▶ Disconnect the electrical connector.



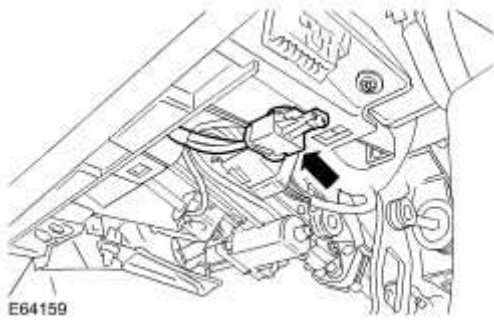
- 4
- 
CAUTION: Removal of the clips is a delicate procedure, damage will occur if any force is used.

Remove the driver's side footwell trim panel.

-  Carefully release the 3 clips.

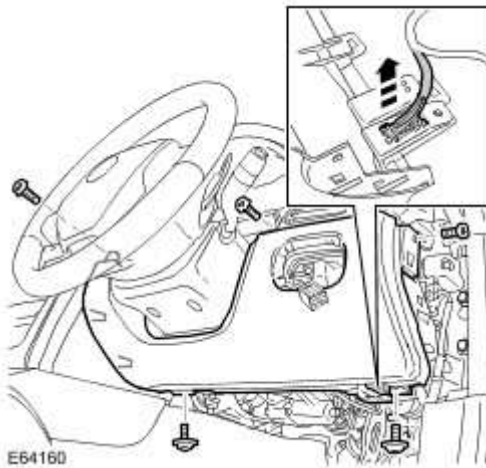


- 5 . Release the MOST diagnostic port.
-  Carefully release the clip.



6 . Remove the instrument panel, lower trim panel.

- ▶ Remove the 3 Torx bolts.
- ▶ Remove the 2 Torx screws.
- ▶ Release the 2 clips.
- ▶ Release the vehicle diagnostic port.



Installation

1 . Install the rheostat switch assembly and align the instrument panel lower trim panel.

- ▶ Secure the switch assembly clips.
- ▶ Connect the switch assembly electrical connector.

2 . Install the instrument panel, lower trim panel.

- ▶ Install and secure the diagnostic socket.
- ▶ Align the clips.
- ▶ Install the Torx screws.
- ▶ Install the Torx bolts and tighten to 6 Nm (4 lb.ft).

3 . Install the MOST diagnostic port.

 Secure the clip.

4 . Install the driver's side footwell trim panel.

 Carefully align and secure the clips.

5 . Install the instrument panel driver's side reinforcement trim panel.

 Align the pegs and secure with the clips.

6 . Install the instrument panel end trim panel.

 Release the door aperture seal.

 Carefully align and secure the clips.

 Install the aperture seal.

501-14 : Handles, Locks, Latches and Entry Systems

Specifications

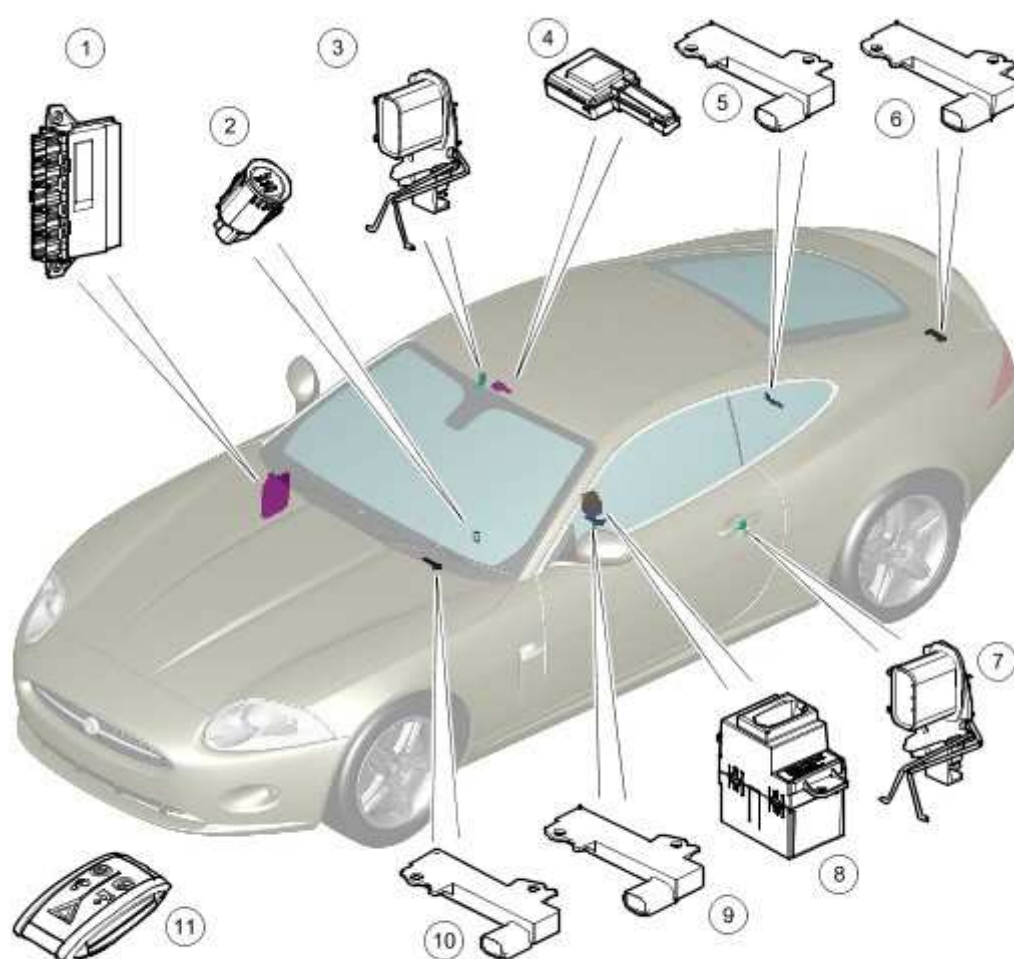
Specifications

Torque Specifications

Item	Nm	lb-ft	lb-in
Door, exterior handle bezel - screw	6	-	53
Door lock cylinder - screw	6	-	53
Door lock actuator to door rear panel - screw	7	-	62
Door striker to B-post - screw	9	-	80
Hood release mechanism to A-post - bolt	9	-	80
Hood release handle to mechanism	3	-	27
Luggage compartment lid, latch actuator to lid - screw	20	15	-
Luggage compartment lid, lock cylinder - screw	3	-	26
Luggage compartment lid, striker to back panel - screw	25	18	-
Liftgate, latch actuator to lid - screw	20	15	-
Liftgate, lock cylinder - screw	3	-	26
Liftgate, striker to back panel - screw	25	18	-

Handles, Locks, Latches and Entry Systems

COMPONENT LOCATION - CENTRAL LOCKING SYSTEM (Sheet 1 of 2)

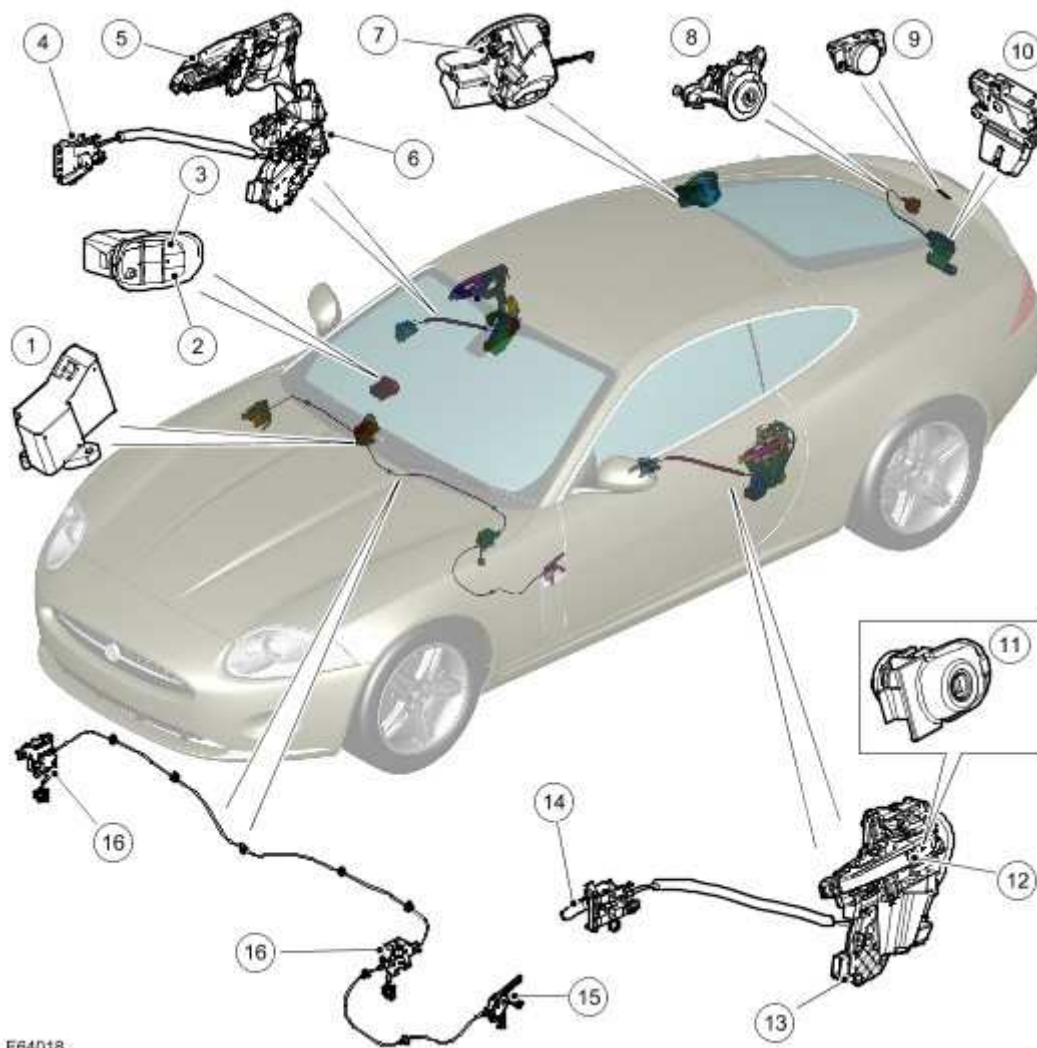


E64017

Item	Part Number	Description
1		Keyless vehicle module
2		Start/Stop button
3		Right Hand (RH) door handle keyless LF antenna (only with passive entry option fitted)

4		Central locking RF receiver
5		LF antenna (located on battery bracket)
6		LF antenna (located in rear bumper - only with passive entry option fitted)
7		Left Hand (LH) door handle keyless LF antenna (only with passive entry option fitted)
8		Start control module
9		LF antenna (center console)
10		LF antenna (instrument panel)
11		Smart Key

COMPONENT LOCATION - CENTRAL LOCKING SYSTEM (Sheet 2 of 2)



E64018

Item	Part Number	Description
------	-------------	-------------

1		Electric steering column lock
2		Fuel flap release switch
3		Liftgate release switch
4		RH interior door handle
5		RH exterior door handle
6		RH door latch and motor
7		Fuel flap release motor
8		Liftgate emergency key barrel
9		Liftgate external release switch
10		Liftgate latch and motor
11		Door emergency key barrel (LH door only)
12		LH exterior door handle
13		LH door latch and motor
14		LH interior door handle
15		Hood release lever
16		Hood latches and hood ajar switch

INTRODUCTION

The hinged panels are secured with latches and strikers. A remotely operated Central Locking System (CLS) controls the locking and unlocking of the door latches.

Two levels of CLS are available; remote central locking and an optional passive entry system.

CENTRAL LOCKING SYSTEM (CLS)

A Radio Frequency (RF) Smart Key, without an integrated key, is a standard fitment allowing the vehicle to be locked and unlocked by pressing the appropriate handset buttons. The Smart Key is available in three variants depending on market requirements. These can be identified by a suffix change to the base part number as follows:

- AA = 315 MHz
- BA = 433 MHz
- CA = 315 MHz Low power.

A new Passive Entry and Passive Start system is introduced. This system allows the driver to unlock and start the vehicle without using a vehicle key in a door lock or ignition switch. The passive entry system is an optional fitment. The passive start system is a standard fitment on all vehicles and allows the driver to start the vehicle without the use of a vehicle key. The system is combined with the passive anti-theft immobilization system. For additional information, refer to [Anti-Theft - Passive](#) (419-01B)

Emergency access to the vehicle is provided by a concealed key barrel located in the LH door handle only and in the liftgate. An emergency, removable key is fitted into the Smart Key. Operation of either key barrel unlocks the vehicle but does not disarm the alarm system. On European market vehicles, the emergency liftgate key barrel is concealed behind the license plate. The key barrel in the LH door is covered by a plastic cover which can be removed by inserting the blade of the emergency key into a slot in the underside of the cover.

The vehicle can be centrally locked and unlocked using the emergency key barrel. If the alarm is not armed the vehicle can be centrally unlocked. If the alarm is armed only the LH door can be opened using the emergency key and the alarm will be triggered. The vehicle cannot be double locked or the alarm system armed using the emergency key.

The vehicle can be centrally locked and unlocked from inside using the interior door handle release levers. Central locking and unlocking can also be performed using lock and unlock buttons on the Touch Screen Display (TSD).

The driver can select locking options, single point entry or drive away locking for example, from a menu available on the TSD.

Central Locking - RF Remote System

The RF CLS provides locking and unlocking of the vehicle from inside and outside of the vehicle. The system provides additional security by double locking the doors and liftgate from outside the vehicle.

The system is operated using buttons on the Smart Key. RF signals from the Smart Key are received by a RF receiver located in the overhead console, above the windshield. The RF receiver is available in two variants depending on market requirements. These can be identified by a suffix change to the base part number as follows:

- AA = 315 MHz
- BA = 433 MHz.

Additional buttons on the Smart Key provide for the convenience operation of the liftgate release, headlamp delay and panic alarm functions. A global open or close feature is also available in certain markets using the lock/unlock buttons.

Passive Start

The passive start system, which is standard on all vehicles, uses the Smart Key as a driver identification and authorisation device. The system is controlled by a keyless vehicle module located on the RH 'A' pillar. Three Low Frequency (LF) antennae (six if passive entry option is fitted) are positioned in specific locations in the vehicle and transmit a LF signal to the Smart Key.

On receipt of the LF signals, the Smart Key transmits a RF signal which is received by the remote receiver. Once the keyless vehicle module has approved the Smart Key, the ignition status is changed to 'accessory' by the Central Junction Box (CJB). The ignition can be switched on by pressing the 'start/stop' button, located in the center console. Starting of the

vehicle is achieved by simultaneously depressing the brake pedal and pressing the 'start/stop' button. The engine can be switched off by pressing the start/stop button for a second time.

NOTE:

The Smart Key does not need to be in the vicinity of the vehicle to switch the engine off.

In the event that the passive start system is unable to authorize the Smart Key, a start control unit is located in the center armrest. The start control unit allows the Smart Key to be inserted into a slot and allows the Smart Key transponder data to be exchanged in a conventional manner. Once the transponder data is authorized, the CJB permits the ignition to be switched on.

Passive Entry

On vehicles fitted with the optional passive entry system, the vehicle can be unlocked without the use of a key or pressing buttons on the Smart Key. The Smart Key operates for the passive entry system in addition to the passive start system.

The passive entry system is controlled by the keyless vehicle module and the six LF antennae. When the Smart Key is within one meter of the vehicle it receives the LF signals from the keyless vehicle module and the LF antennae and responds with an RF transmission of its authorization code. The RF signal is received by the RF receiver and passed to the keyless vehicle module which checks and approves the code as valid. The keyless vehicle module transmits this information to the CJB. The CJB then passes an unlock request to the door modules. When a door handle is pulled or the exterior liftgate release button is pressed, the applicable door module will allow the doors or the liftgate to be unlocked and opened.

Locking of the vehicle is performed by pressing a button located on each exterior door handle with the Smart Key within a one meter range of the vehicle. When the button is pressed, the Smart Key transmits a RF signal which is verified by the keyless vehicle module and allows the doors to be locked or double locked and the alarm system to be armed.

To double lock the vehicle, the button on the exterior door handle must be pressed twice within three seconds with the Smart Key in a one meter range of the vehicle.

If a door, liftgate or hood is ajar when an attempt to lock the vehicle is made, an error tone is emitted and the ajar panel will not lock. For additional information, refer to [Anti-Theft - Active](#) (419-01A)

LATCHES

Two hood latches are located on the bulkhead, below the windscreen. A hood release lever is located below the instrument panel on the LH 'A' pillar and is connected with a Bowden cable to the latches. A hood ajar switch is integrated in the LH hood latch.

The door latches are located at the rear of each door and engage with a striker on the 'B' pillar. Each door latch motor assembly contains microswitches for lock and unlock and door ajar. Two motors provide for the central door locking and the double locking feature. The electrical

control for the door latch components is provided by the CJB and auxiliary junction box via the driver's and passenger door modules.

The interior door handles are connected by a cable to the latch release mechanisms. The interior door handles also incorporate a locking facility to allow the doors to be locked from inside the vehicle, when the doors are closed and activate the central locking system. If a door is ajar the locking feature is inhibited.

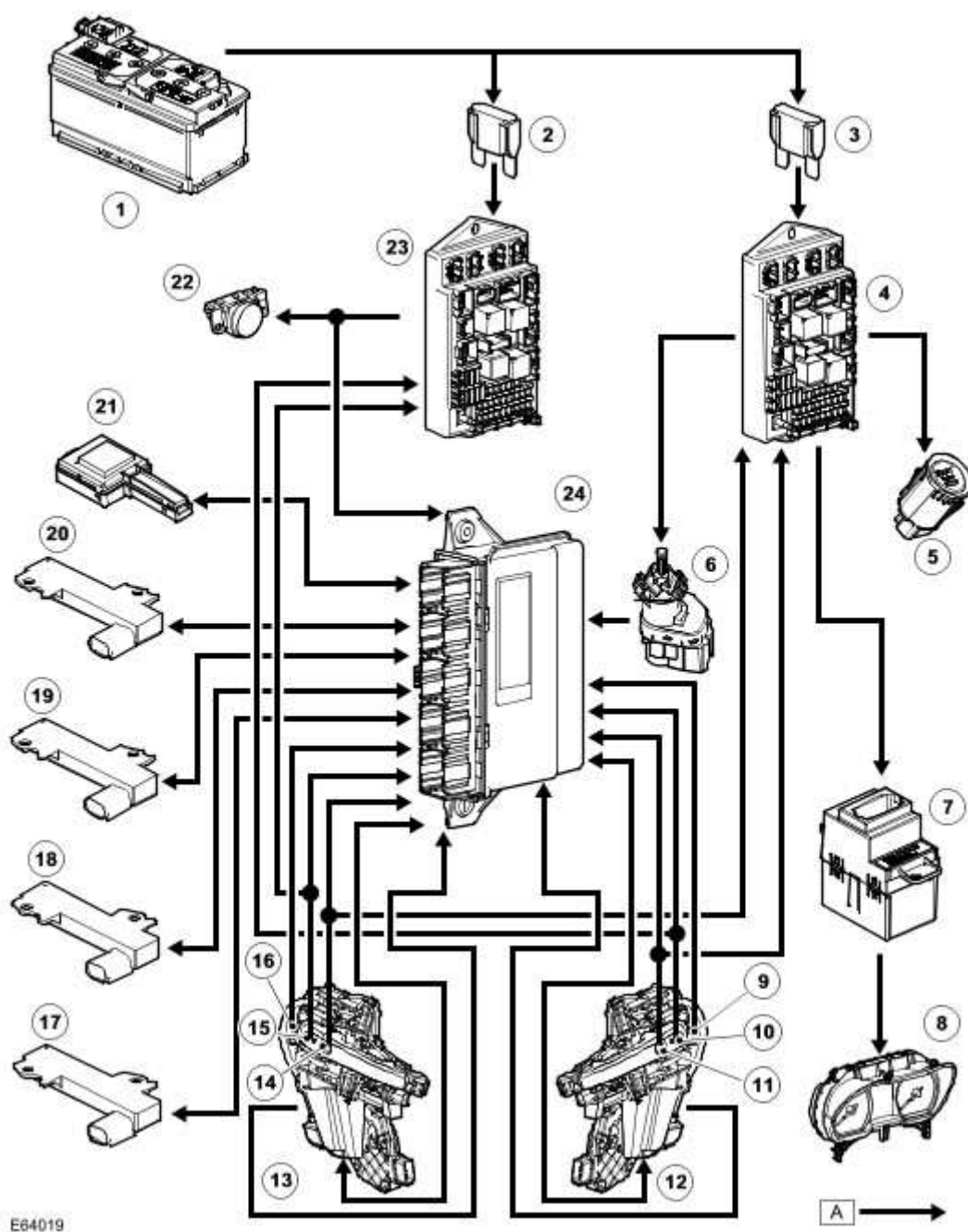
The liftgate latch is attached to the bottom of the liftgate. The latch can be released electrically by pressing the interior release button located in the auxiliary lighting switch, the exterior release button located in the licence plate finisher or the liftgate release button on the Smart Key. On North American Specification (NAS) vehicles an emergency release cable is attached to the latch. This allows the latch to be manually opened by pulling a handle located in the liftgate interior trim.

The fuel filler is electrically locked by a motor located on the fuel flap housing. The flap is locked when the vehicle is locked and alarmed and can be released by pressing the fuel flap release switch located in the auxiliary lighting switch.

CONTROL DIAGRAM - PASSIVE ENTRY SYSTEM

NOTE:

A = Hardwired



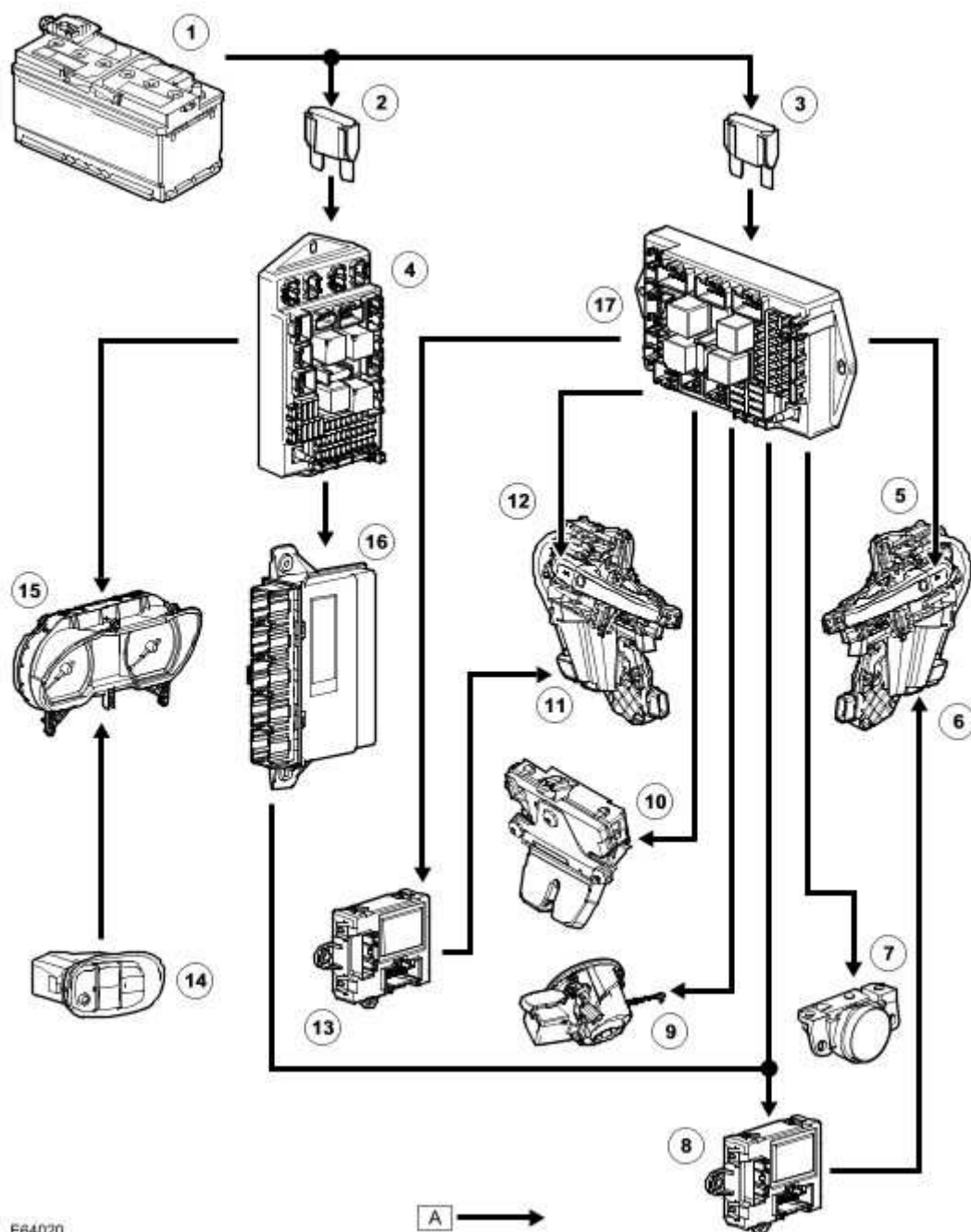
Item	Part Number	Description
1		Battery
2		Megafuse (175A)
3		Megafuse (175A)
4		CJB
5		Start/Stop switch
6		Stop lamp switch
7		Start control module

8		Instrument cluster
9		LF antenna (LH exterior door handle - only with passive entry option fitted)
10		Unlock pull switch
11		Lock push switch
12		LH Door handle, latch motor and clutch
13		RH door handle, latch motor and clutch
14		Lock push switch
15		Unlock pull switch
16		LF antenna (RH exterior door handle - only with passive entry option fitted)
17		LF antenna (rear bumper - only with passive entry option fitted)
18		LF antenna (battery bracket)
19		LF antenna (center console)
20		LF antenna (Instrument panel)
21		RF remote receiver
22		Exterior liftgate release switch
23		Auxiliary junction box
24		Keyless vehicle module

CONTROL DIAGRAM - CENTRAL LOCKING SYSTEM

NOTE:

A = Hardwired



E64020

Item	Part Number	Description
1		Battery
2		Megafuse (175A)
3		Megafuse (175A)
4		CJB
5		LH door handle pull switch
6		LH door latch motor assembly
7		Liftgate external release switch
8		LH door module

9		Fuel flap motor
10		Liftgate motor assembly
11		RH door latch motor assembly
12		RH door handle pull switch
13		RH door module
14		Auxiliary lighting switch (Liftgate and fuel flap release switches)
15		Instrument cluster
16		Keyless vehicle module
17		Auxiliary junction box

Locks, Latches and Entry Systems

Principle of Operation

For a detailed description of handles, locks, latches and entry systems, refer to the relevant Description and Operation section in the workshop manual.

[Handles, Locks, Latches and Entry Systems](#)

Inspection and Verification

- 1 . Verify the customer concern.
- 2 . Visually inspect for obvious signs of damage and system integrity.

Mechanical	Electrical
• Misaligned door(s), hood or luggage compartment lid • Door latch(s) • Actuating rod(s) • Exterior door handle(s) • Interior door handle(s) • Door lock cylinder • Cable(s) • Luggage compartment lid exterior release switch	• Fuse(s) • Wiring harness • Electrical connector(s) • Door lock actuator(s) • Remote transmitter batteries • Vehicle battery • Remote transmitter • Door lock switch(s)

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, check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

DTC Index



CAUTION: When probing connectors to take measurements in the course of the pinpoint tests, use the adaptor kit, part number 3548-1358-00.

NOTE:

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.

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 additional information read by the manufacturer approved diagnostic system).

NOTE:

When performing electrical voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places, and with an up-to-date 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:

Inspect connectors for signs of water ingress, and pins for damage and/or corrosion.

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
B10C100	FL unlock pull switch defect	No subtype information	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10C124	FL unlock pull switch error	Signal stuck high - button stuck in active position	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10C300	FR unlock pull switch defect	No subtype information	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10C324	FR unlock pull switch error	Signal stuck high - button stuck in active position	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10C524	TR unlock pull switch error	Signal stuck high - button stuck in active position	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system

B10C61F	Exterior Trunk Antenna - general electrical error	• Circuit intermittent	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10C71F	Interior Trunk Antenna - general electrical error	• Circuit intermittent	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10C81F	Interior Center Antenna - general electrical error	• Circuit intermittent	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10C91F	Interior Front Antenna - general electrical error	• Circuit intermittent	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10CC24	FL Latch Switch Clutch error	• Signal stuck high - button stuck in active position	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10CE24	FR Latch Switch Clutch error	• Signal stuck high - button stuck in active position	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10D124	FL lock button error	• Signal stuck high - button stuck in active position	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10D324	FR lock button error	• Signal stuck high - button stuck in active position	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U001000	Medium speed CAN communication Bus	• No subtype information	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U014000	Lost communication with CJB	• Missing message	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U014200	Lost communication with RJB	• Missing message	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U015500	Lost communication	• Missing message	Carry out any pinpoint tests associated with this DTC

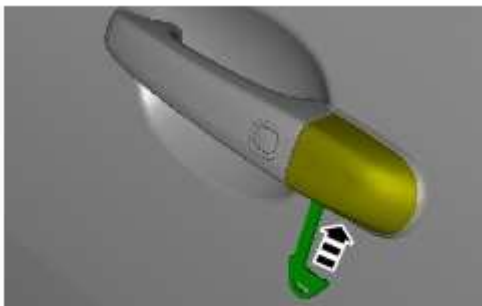
	with instrument cluster		using the manufacturer approved diagnostic system
U030000	Internal control module software incompatibility	Invalid configuration message is received	Re-configure the RJB using the manufacturer approved diagnostic system. Clear the DTC and retest. If the DTC is still logged suspect the remote keyless entry module, refer to the new module installation note at the top of the DTC Index
U201F00	Receiver communication error	No subtype information	Install a new RF receiver, refer to the new module/component installation note at top of DTC Index
U201F13	Receiver communication error	Line open	Refer to the electrical circuit diagrams and test RF receiver communication circuit to remote keyless entry module for short to ground or open circuit
U201F87	Receiver communication error	Transmission error	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U210000	Control Module/ECU not configured	No subtype information	Configure the Remote Keyless Entry module using the manufacturer approved diagnostic system
U210100	Control Module/ECU unexpected data values	No subtype information	Re-configure the RJB using the manufacturer approved diagnostic system
U300049	Control module	Internal electronic failure	Install a new remote keyless entry module, refer to the new module installation note at the top of the DTC Index
U300281	Vehicle Identification Number (VIN)	Vehicle/component mismatch. Corrupt VIN data being transmitted, module previously installed to other vehicle	Install original module, check for DTCs and refer to relevant DTC Index
U300362	Battery voltage	Mis-match of battery voltage, of 2 volts or lower, between remote	Carry out any pinpoint tests associated with this DTC using the manufacturer

		keyless entry module and RJB	approved diagnostic system
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Door Lock Cylinder Cover

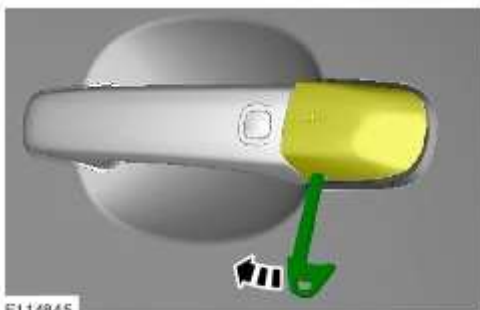
Removal

- 1  **CAUTION: Make sure that excessive force is not used. Failure to follow this instruction may result in damage to the vehicle.**



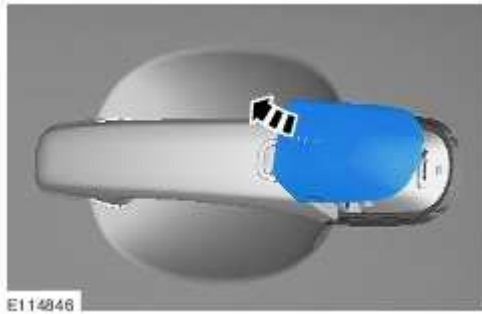
E114844

2.



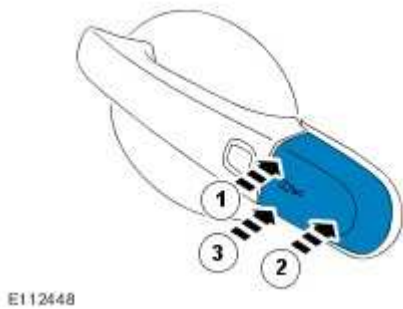
E114845

3.



Installation

- 1  **CAUTION:** Make sure that the door lock cylinder cover is pushed firmly in the sequence shown to install all 3 clips, and that the door lock cylinder cover is securely attached to the vehicle. Failure to follow this instruction may result in damage to the vehicle.



Exterior Door Handle (76.58.07)

Removal

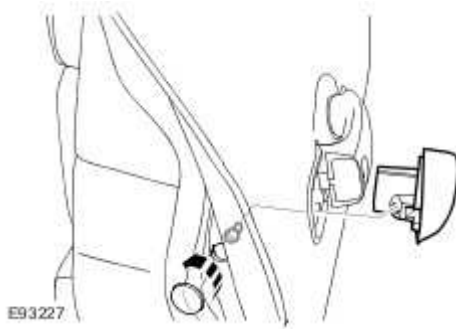
All vehicles

1 . NOTE:

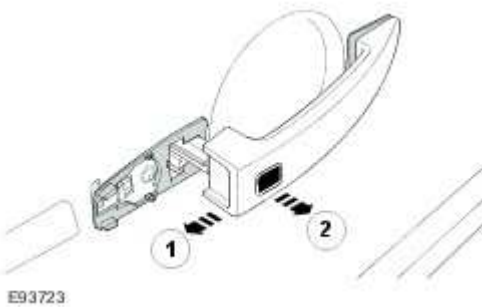
Remove the screw sufficiently, only to release the component.

Remove the door lock cylinder.

- ▶ Position the door seal aside for access.
- ▶ Remove the screw cover.
- ▶ Loosen the Torx screw to release the lock.



2 . Release the front door exterior handle.



Vehicles with keyless entry

3



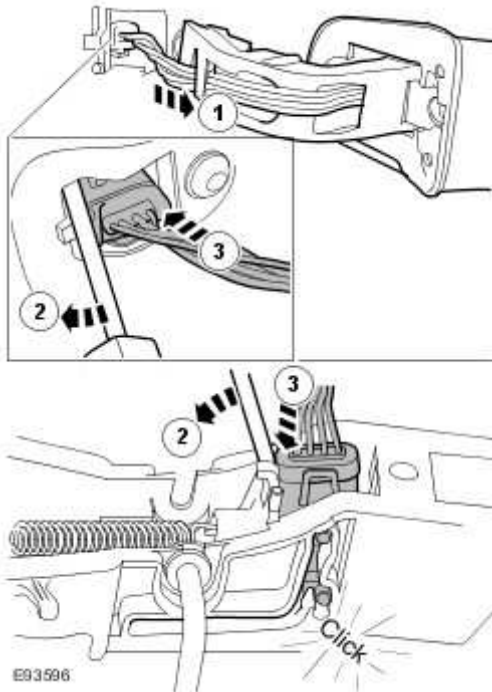
CAUTION: Take extra care not to damage the wiring harnesses.



CAUTION: Make sure the electrical connector is securely in the service position, before disconnection. If the connector springs back after disconnection the internal door trim panel will have to be removed for access.

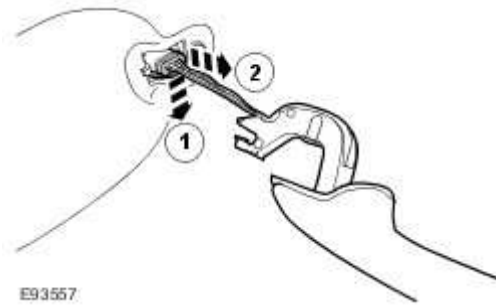
Position the electrical connector in the service position.

- ▶ Carefully pull on the harness to position the electrical connector at the door panel (1).
- ▶ Use a small screwdriver to align the electrical connector with its service location (2).
- ▶ While retaining its alignment, push on the electrical connector to 'click' it into its service location (3).



Vehicles with keyless entry

- 4 . Disconnect the electrical connector.

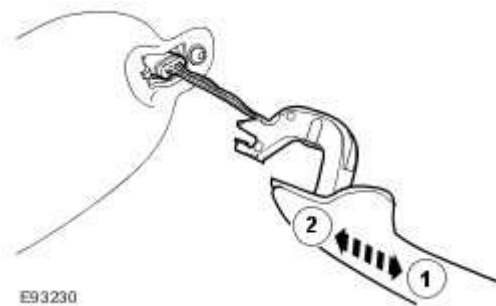


Installation

Vehicles with keyless entry

- 1 . Connect and secure the electrical connector.

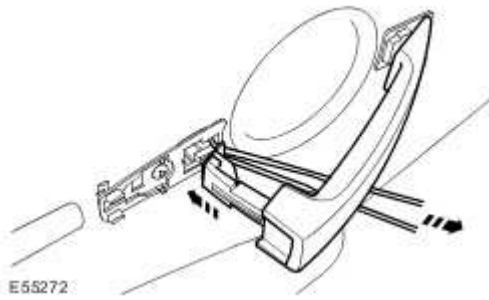
► Release the electrical connector from the service position.



All vehicles

- 2 Install the exterior door handle.

► Use a length of cord to hold the lock lever against spring pressure, while engaging the outside handle.



3 . Install the door lock cylinder.

- ▶ Tighten the Torx screw to 6 Nm (4 lb.ft).
- ▶ Install the screw cover.
- ▶ Re-position the seals if required.

Front Door Lock Actuator (76.37.74)

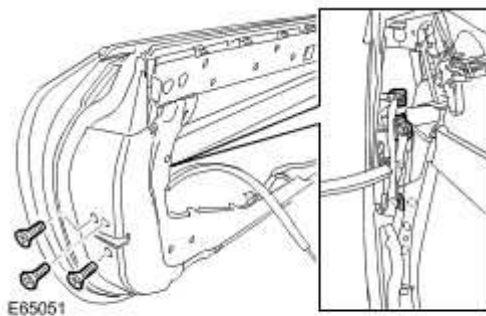
Removal

- 1 . Remove the window regulator.

For additional information, refer to [Front Door Window Regulator](#)

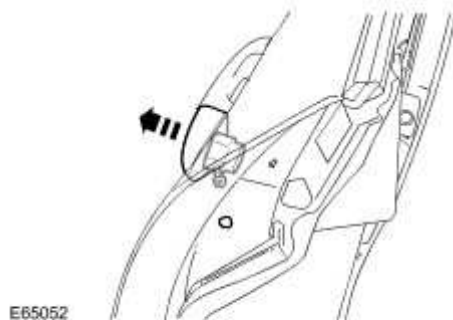
- 2 . Release the door latch.

- ▶ Remove the 3 Torx bolts.
- ▶ Disconnect the 3 electrical connectors.



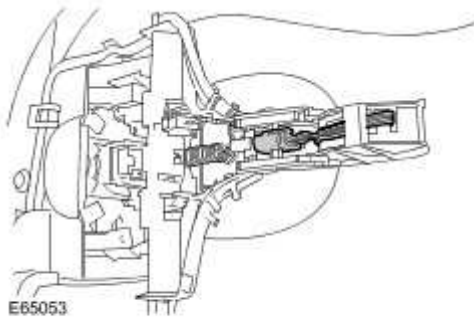
- 3 . Remove the door lock cylinder.

- ▶ Remove the Torx screw.



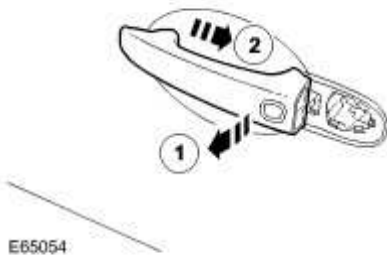
- 4 . Release the front door exterior handle.

- ▶ Disconnect the electrical connector.



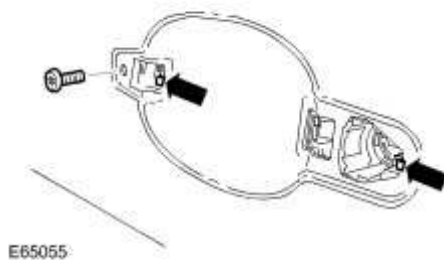
5 . Remove the front door exterior handle.

- ▶ Release from the door handle mechanism.



6 . Remove the door handle mechanism and latch assembly.

- ▶ Remove the Torx screw.
- ▶ Release the retainer.

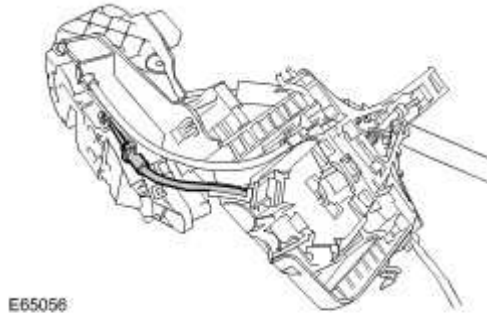


7 . **NOTE:**

Do not disassemble further if the component is removed for access only.

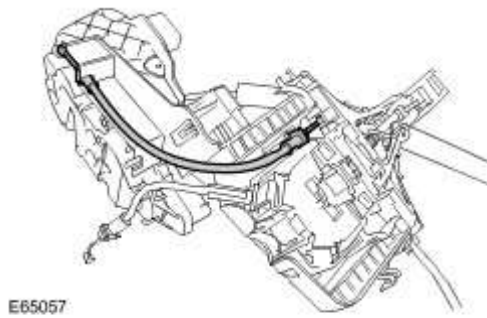
Detach the door release cable from the door handle mechanism.

▶ Carefully release the clips.



8 . Detach the door lock cable from the door latch.

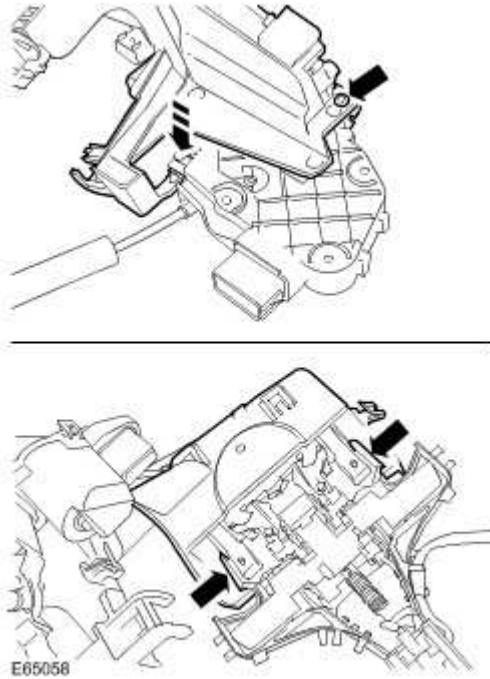
▶ Carefully release the clips.



9 . Remove the door handle mechanism and latch assembly security panel.

▶ Drill out the rivet.

▶ Release the 2 clips.



Installation

- 1 . Install the door handle mechanism and latch assembly security panel.
 - ▶ Secure in the clips.
 - ▶ Install the new rivet.
- 2 . Attach the door lock cable to the door latch.
 - ▶ Secure in the clips.
- 3 . Attach the door release cable to the door handle mechanism.
 - ▶ Secure in the clips.
- 4 . Install the door handle mechanism and latch assembly.
- 5 . Install the front door exterior handle.
 - ▶ Attach to the door handle mechanism.
- 6 . Secure the front door exterior handle.
 - ▶ Connect the electrical connector.
- 7 . Install the door lock cylinder.
 - ▶ Tighten the Torx screw to 6 Nm (4 lb.ft).

8 . Secure the door latch.

▶ Tighten the Torx bolts to 7 Nm (5 lb.ft).

▶ Connect the electrical connectors.

9 . Install the window regulator.

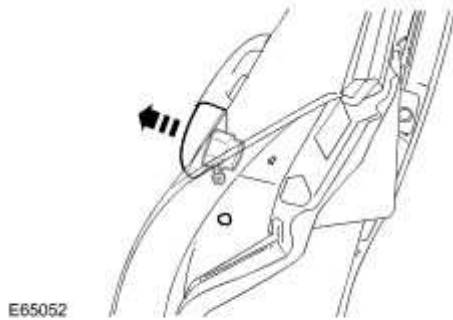
For additional information, refer to [Front Door Window Regulator](#)

Front Door Lock Cylinder (76.37.71)

Removal

- 1 . Remove the door lock cylinder.

▶ Remove the Torx screw.



Installation

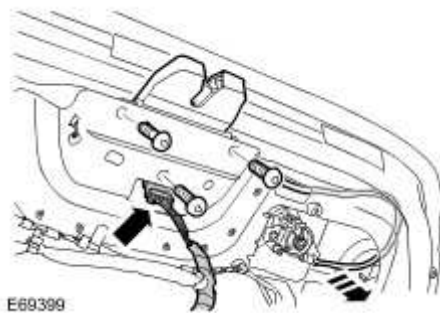
- 1 . Install the door lock cylinder.

▶ Tighten the Torx screw to 6 Nm (4 lb.ft).

Luggage Compartment Lid Latch Actuator (76.19.25)

Removal

- 1 . Remove the luggage compartment lid trim panel.
- 2 . Remove the luggage compartment lid latch operating cable from the lock cylinder.
 - ▶ Release the cable from the clip.
- 3 . Remove the luggage compartment lid latch assembly.
 - ▶ Disconnect the electrical connector.
 - ▶ Remove the 3 Torx bolts.



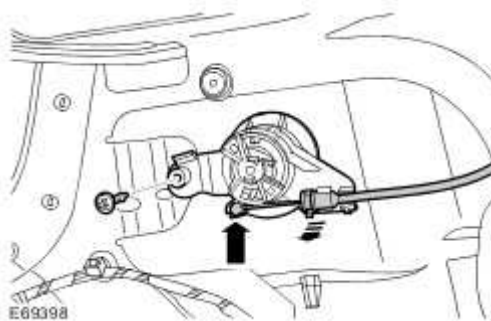
Installation

- 1 . Install the luggage compartment lid latch assembly.
 - ▶ Install the 3 Torx bolts.
 - ▶ Connect the electrical connector.
 - ▶ Tighten the bolts to 20 Nm (15 lb.ft).
- 2 . Connect the luggage compartment lid latch operating cable to the lock cylinder.
 - ▶ Install the cable.
- 3 . Install the luggage compartment lid trim panel.

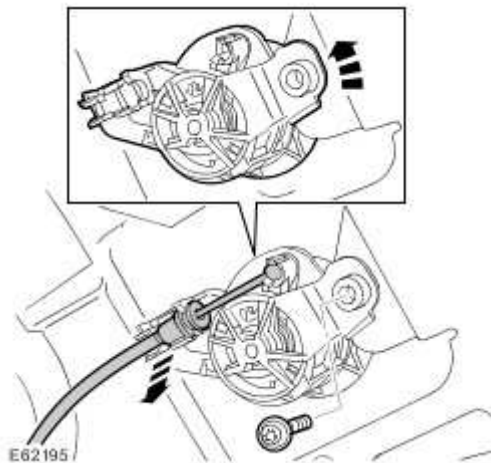
Luggage Compartment Lid Lock Cylinder (76.19.19)

Removal

- 1 . Remove the luggage compartment lid trim panel.
- 2 . Remove the luggage compartment lid latch operating cable from the lock cylinder.
 - ▶ Release the cable from the clip.



- 3 . Remove the luggage compartment lid lock cylinder.
 - ▶ Remove the bolt.



Installation

- 1 . Install the luggage compartment lid lock cylinder.
 - ▶ Install the bolt.

 Tighten the Torx bolt to 3 Nm (2 lb.ft).

2 . Connect the luggage compartment lid latch operating cable to the lock cylinder.

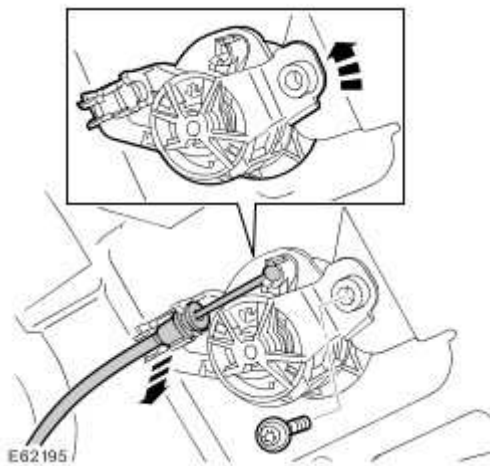
 Install the cable.

3 . Remove the luggage compartment lid trim panel.

Liftgate Lock Cylinder

Removal

- 1 . Remove the liftgate lower trim panel.
For additional information, refer to [Liftgate Lower Trim Panel](#)
- 2 . Remove the liftgate lock cylinder.
 - ▶ Remove the Torx screw.
 - ▶ Release the liftgate lock cylinder cable.
 - ▶ Remove the liftgate lock cylinder housing.



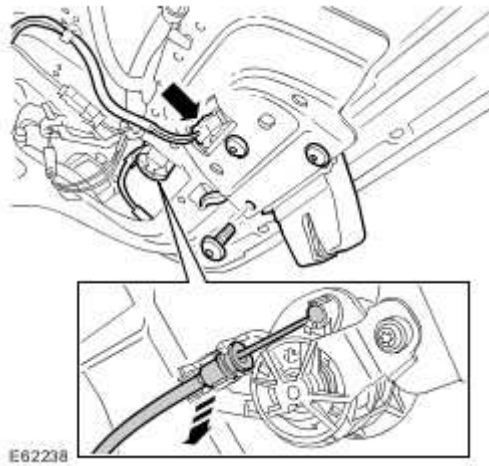
Installation

- 1 . Install the liftgate lock cylinder.
 - ▶ Install the liftgate lock cylinder housing.
 - ▶ Fit and tighten the Torx screw.
 - ▶ Attach the liftgate lock cylinder cable.
- 2 . Install the liftgate lower trim panel.
For additional information, refer to [Liftgate Lower Trim Panel](#)

Liftgate Latch Actuator (86.25.65.60)

Removal

- 1 . Remove the liftgate lower trim panel.
For additional information, refer to [Liftgate Lower Trim Panel](#)
- 2 . Remove the liftgate latch.
 - ▶ Release the liftgate latch cable.
 - ▶ Disconnect the electrical connector.
 - ▶ Remove the 3 bolts.



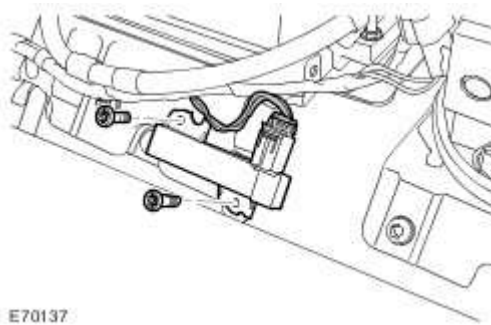
Installation

- 1 . Install the liftgate latch.
 - ▶ Tighten the bolts to 10 Nm (7 lb.ft).
 - ▶ Connect the electrical connector.
 - ▶ Attach the liftgate latch cable.
- 2 . Install the liftgate lower trim panel.
For additional information, refer to [Liftgate Lower Trim Panel](#)

Radio Frequency (RF) Receiver

Removal

- 1 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to
- 2 . Remove the keyless vehicle antenna.
 - ▶ Remove the 2 Torx bolts.
 - ▶ Disconnect the electrical connector.



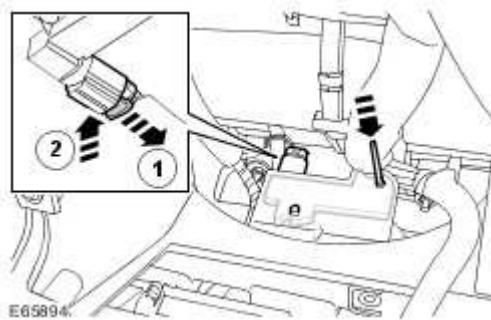
Installation

- 1 . Install the keyless vehicle antenna.
 - ▶ Connect the electrical connector.
 - ▶ Tighten the Torx bolts to 3 Nm (2 lb.ft).
- 2 . Connect the battery ground cable and install the cover.
For additional information, refer to

Keyless Vehicle Front Antenna

Removal

- 1 . Remove the navigation system display module.
For additional information, refer to [Navigation System Display Module \(86.62.07\)](#)
- 2 . Remove the keyless vehicle antenna.
 - ▶ Remove and collect the center of the clips.
 - ▶ Disconnect the electrical connector.



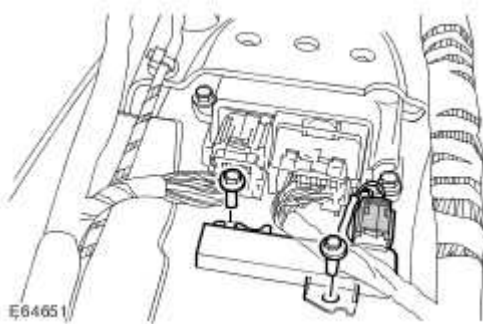
Installation

- 1 . Install the keyless vehicle antenna.
 - ▶ Connect the electrical connector.
 - ▶ Carefully align and secure the clips.
- 2 . Install the navigation system display module.
For additional information, refer to [Navigation System Display Module \(86.62.07\)](#)

Keyless Vehicle Center Antenna

Removal

- 1 . Remove the floor console.
For additional information, refer to [Floor Console \(76.25.01\)](#)
- 2 . Remove the keyless vehicle antenna.
 - ▶ Remove the 2 Torx bolts.
 - ▶ Disconnect the electrical connector.



Installation

- 1 . Install the keyless vehicle antenna.
 - ▶ Connect the electrical connector.
 - ▶ Tighten the Torx bolts to 3 Nm (2 lb.ft).
- 2 . Install the floor console.
For additional information, refer to [Floor Console \(76.25.01\)](#)

Hood Latch

Removal

- 1 . Remove the pedestrian protection actuator and bracket.

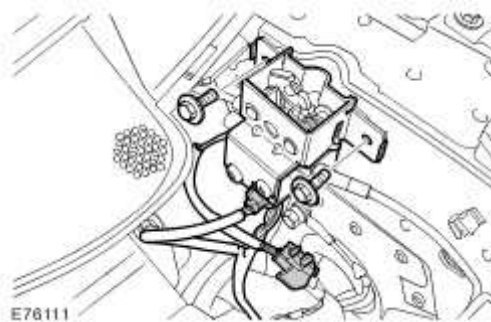
For additional information, refer to [Pedestrian Protection Hood Actuator LH](#)

For additional information, refer to [Pedestrian Protection Hood Actuator RH](#)

- 2 . Release the hood latch.

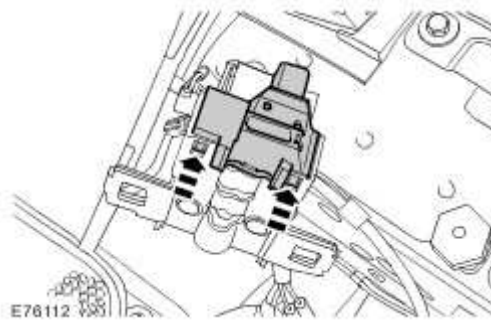
▶ Remove the 2 bolts.

▶ Disconnect the 2 electrical connectors.



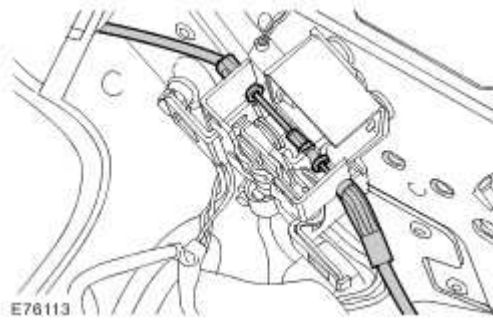
- 3 . Remove the hood switch.

▶ Release the 2 clips.



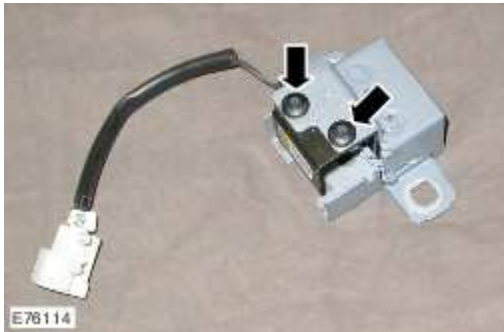
- 4 . Remove the hood latch.

▶ Release the latch cable.



5 . Remove the pedestrian protection latch actuator.

- ▶ Remove and discard the 2 Torx bolts.
- ▶ Disconnect the 2 electrical connectors.



Installation

1 . Install the pedestrian protection latch actuator.

- ▶ Connect the electrical connector.
- ▶ Tighten the new Torx bolts to 9 Nm (7 lb.ft).

2 . Install the hood latch.

- ▶ Attach the latch cable.

3 . Install the hood switch.

- ▶ Secure in the clips.

4 . Secure the hood latch.

- ▶ Connect the electrical connectors.
- ▶ Tighten the bolts to 10 Nm (7 lb.ft).

5 . Install the pedestrian protection actuator and bracket.

For additional information, refer to [Pedestrian Protection Hood Actuator LH](#)
For additional information, refer to [Pedestrian Protection Hood Actuator RH](#)

501-16 : Wipers and Washers

Specifications

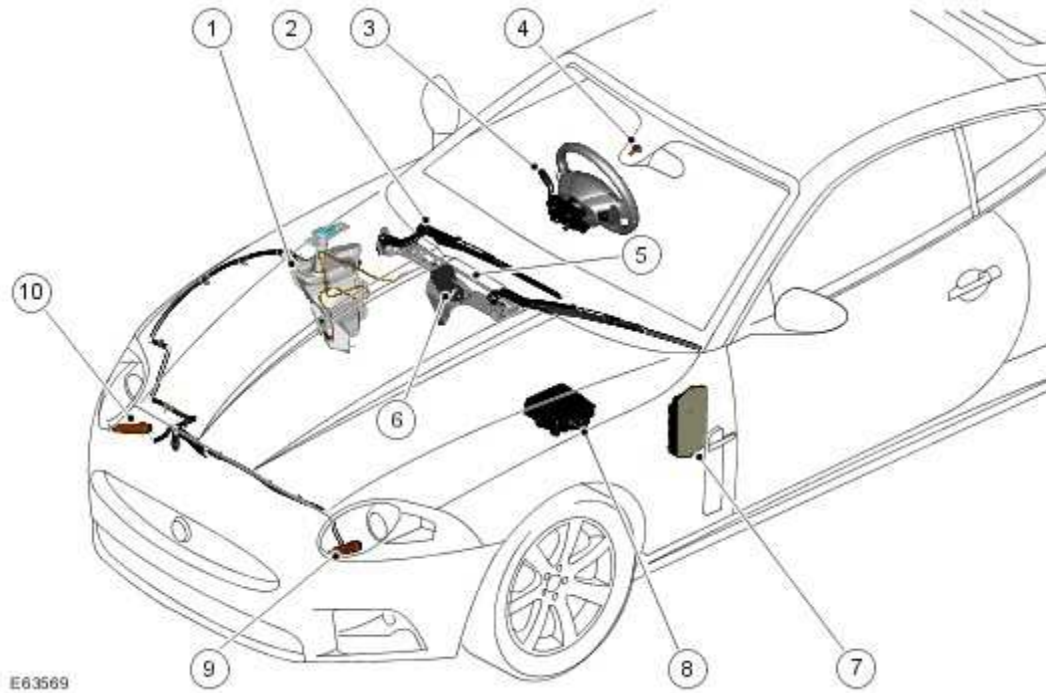
Specifications

Torque Specifications

Item	Nm	lb-ft	lb-in
Windshield washer reservoir - screw	9	-	79
Windshield wiper arm to spindle - nut	23	17	-
Windshield wiper motor and wiper spindles to bulkhead - screw	9	-	79

Wipers and Washers

COMPONENT LOCATION



Item	Part Number	Description
1		Washer reservoir bottle and filler neck
2		Wiper arms/blades (2 off)
3		Wiper/washer control switch
4		Rain sensor
5		Mounting arm and pivot shaft
6		Wiper motor
7		Central Junction Box (CJB)
8		Power distribution box
9		RH headlamp power wash jet
10		LH headlamp power wash jet

INTRODUCTION

The wipers have two speed controls, low and high, and an intermittent wipe mode. The wipers will park automatically irrespective of their position, when the ignition is in power mode 3

(OFF) or the control switch is selected.

A timed jet function eliminates the trail of washer fluid left on the windshield after a wiping action and reduces fluid consumption by only operating the washer jets on the up stroke of the wiper arms.

Within the wiper and washer system the following features can be attained:

- Adjustable interval intermittent wiping
- Speed dependant wiping
- Programmable wash and wipe sequencing
- Automatic moisture sensitive wiping (rain sensor).

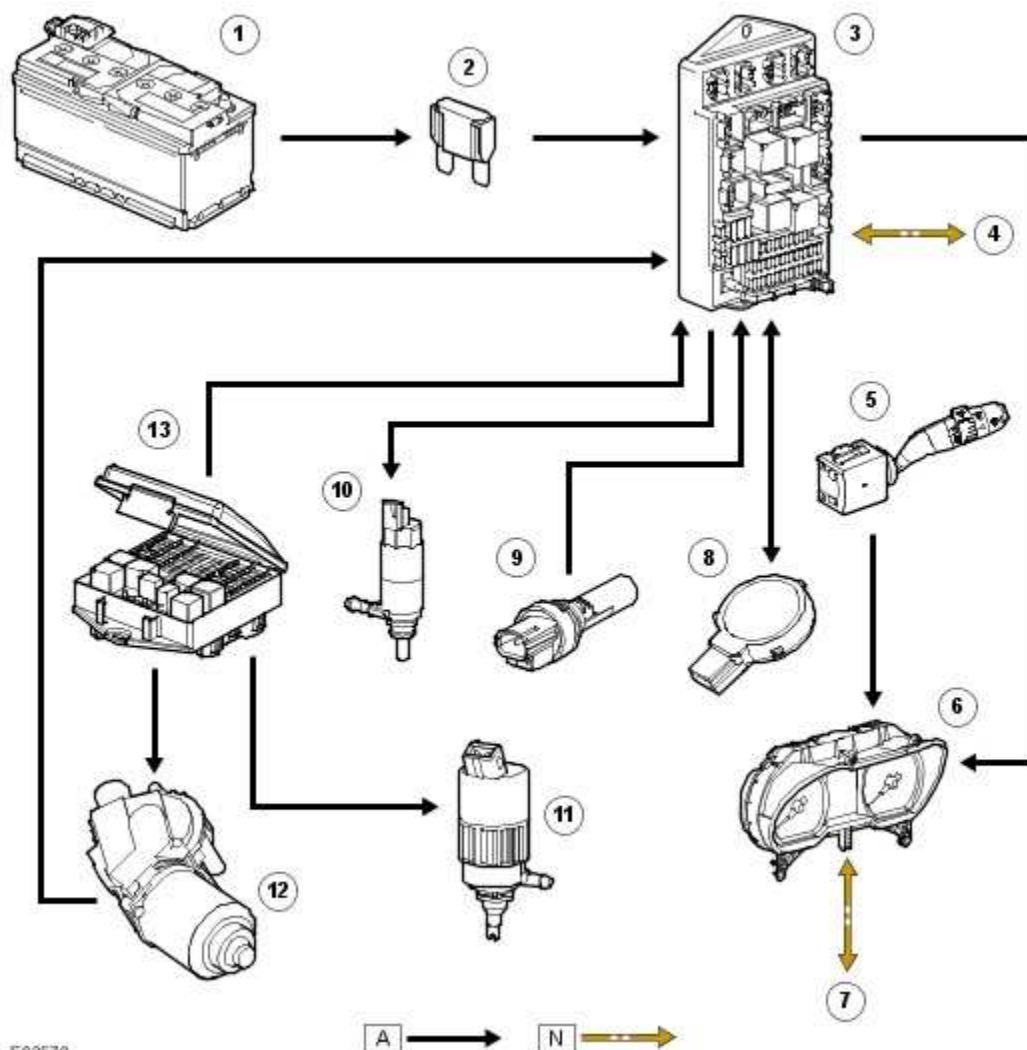
Moisture sensitive wiping will be initiated when the vehicle is running and not in the PARK or NEUTRAL gear selection. The wiper switch must be in the AUTO position.

The system and features are controlled by the Central Junction Box (CJB).

CONTROL DIAGRAM

NOTE:

A = Hardwired: **N** = CAN bus



E63570

Item	Part Number	Description
1		Battery
2		Megafuse (175A)
3		Central Junction Box (CJB)
4		Controller Area Network (CAN) input and output signals to and from various other vehicle systems
5		Column switch
6		Instrument cluster
7		Controller Area Network (CAN) input and output signals to and from various other vehicle systems
8		Rain sensor
9		Reservoir fluid level sensor
10		Windshield washer pump
11		Headlamp powerwash pump

12		Wiper motor
13		Power distribution box

Wipers and Washers

Principle of Operation

For a detailed description of the wipers and washers, refer to the relevant Description and Operation section in the workshop manual.

Inspection and Verification

- 1 . Verify the customer concern.
- 2 . Visually inspect for obvious signs of damage and system integrity.

Mechanical	Electrical
• Wiper blade(s) • Wiper pivot arm shaft • Washer reservoir • Hose(s) • Washer jet(s)	• Fuse(s) • Wiring harness • Electrical connector(s) • Washer pump(s) • Wiper motor

- 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 manufacturer approved diagnostic system.

Headlamp Washer Jet (84.20.08)

Removal



WARNING: Vehicles fitted with Xenon headlamps, the following precautions must be observed. Failure to comply may result in exposure to ultra violet rays, severe electric shock, burns or the risk of explosion. Ensure the headlamps are switched off at all times. Eye and hand protection must be worn. Never switch on the lamps or test the bulbs with the lamp holder released from the headlamp.

- 1 . Disconnect the battery ground cable.
For additional information, refer to

- 2 . Open the hood.

3



- **CAUTION:** Always protect paintwork and glass when removing exterior components.

Release the headlamp assembly.

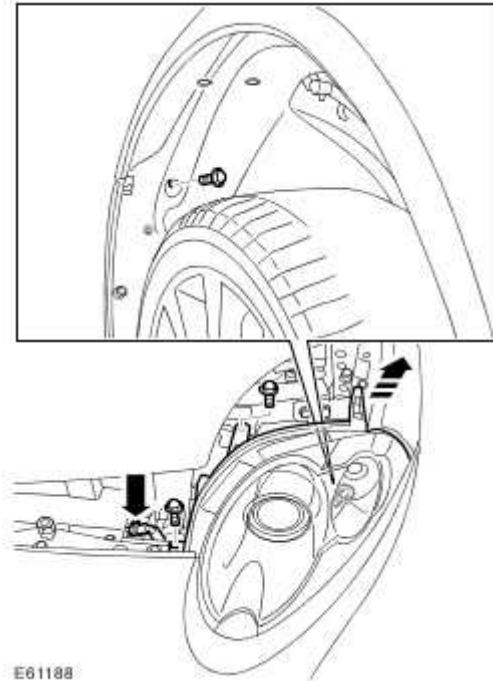


Remove the 3 bolts.



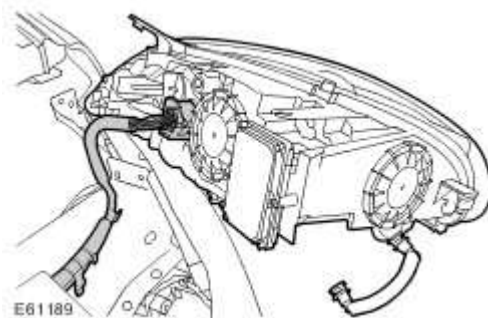
Release the locating pegs.

- 4 . Disconnect the washer jet hose.



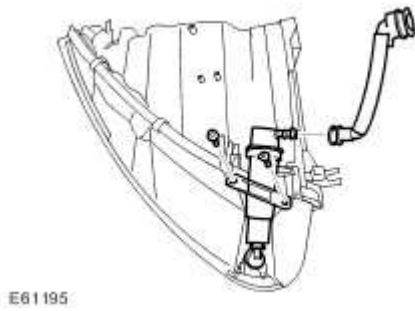
5 . Remove the LH headlamp assembly.

- ▶ Disconnect the electrical connector.



6 . Remove the headlamp washer jet.

- ▶ Disconnect the washer jet hose.
- ▶ Remove the 2 Torx screws.



Installation

- 1 . Install the headlamp washer jet.
 - ▶ Tighten the Torx screws.
 - ▶ Connect the washer jet hose.
- 2 . Install the headlamp assembly.
 - ▶ Connect and secure the electrical connector.
 - ▶ Position the locating pegs.
- 3 . Connect the washer jet hose.
- 4 . Secure the headlamp assembly.
 - ▶ Tighten the bolts.
- 5 . Close the hood.
- 6 . Connect the battery ground cable.

For additional information, refer to

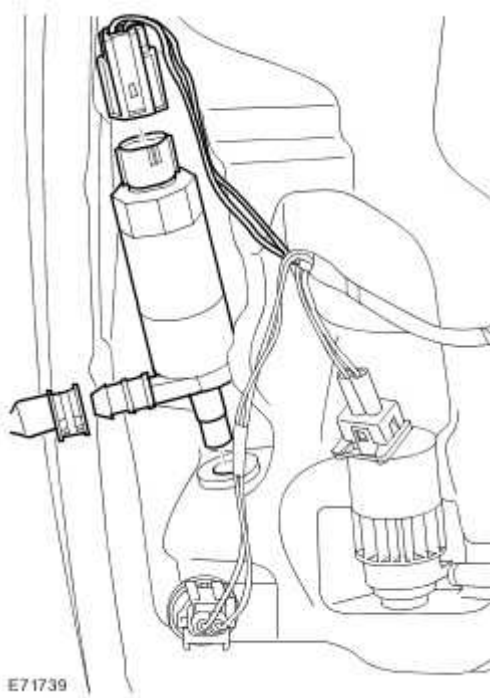
Headlamp Washer Pump (84.20.21)

Removal

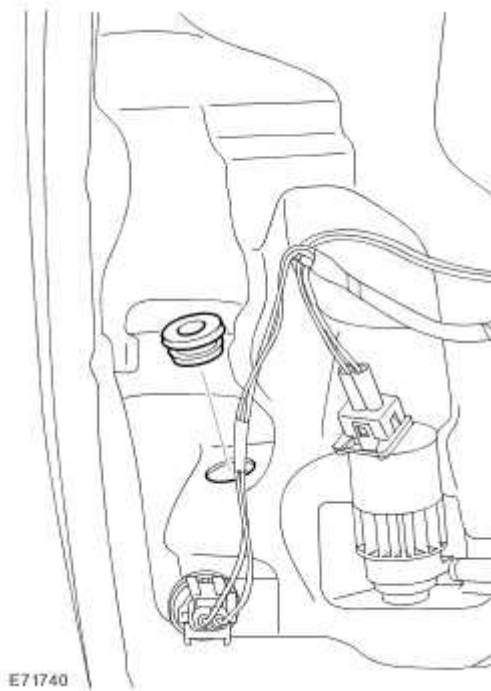
- 1  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

- 2 . Remove the RH fender splash shield.
For additional information, refer to [Fender Splash Shield \(76.10.90\)](#)
- 3 . Drain the washer reservoir fluid.
 - ▶ Position a container to collect the fluid.
- 4 . Remove the headlamp washer pump.
 - ▶ Disconnect the washer jet hose.
 - ▶ Disconnect the electrical connector.



- 5 . Remove and discard the seal.



Installation

- 1 . Install a new seal.
- 2 . Install the windshield washer pump.
 - ▶ Connect and secure the electrical connector.
 - ▶ Connect the washer jet hose.
- 3 . Install the fender splash shield.

For additional information, refer to [Fender Splash Shield \(76.10.90\)](#)
- 4 . Refill the washer reservoir.
- 5 . Install the windshield washer pump.
 - ▶ Connect and secure the electrical connector.
 - ▶ Connect the washer jet hose.

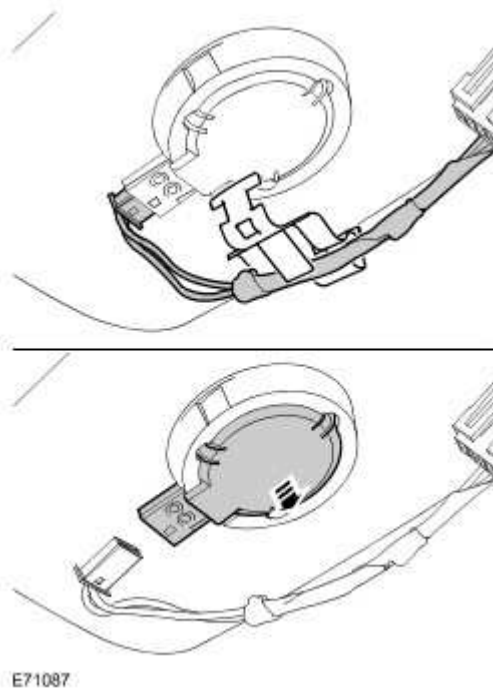
Rain Sensor (84.12.10)

Removal

- 1 . Remove the interior mirror.
For additional information, refer to [Auto-Dimming Interior Mirror \(76.10.56\)](#)
- 2 . **NOTE:**
Note the fitted position.

Remove the rain sensor.

- ▶ Remove the clip.
- ▶ Disconnect the electrical connector.



Installation

- 1 . **NOTE:**
Align to the position noted on removal.
- Install the rain sensor.
- ▶ Install the clip.
 - ▶ Connect and secure the electrical connector.

2 . Install the interior mirror.

For additional information, refer to [Auto-Dimming Interior Mirror \(76.10.56\)](#)

Windshield Washer Pump (84.10.21)

Removal

1



- **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

2 . Remove the RH fender splash shield.

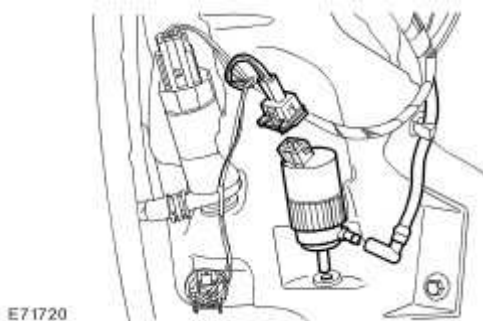
For additional information, refer to [Fender Splash Shield \(76.10.90\)](#)

3 . Drain the washer reservoir fluid.

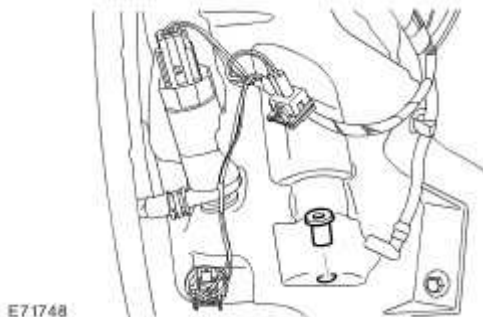
- ▶ Position a container to collect the fluid.

4 . Remove the windshield washer pump.

- ▶ Disconnect the washer jet hose.
- ▶ Disconnect the electrical connector.



5 . Remove and discard the seal.



Installation

- 1 . Install a new seal.
- 2 . Install the windshield washer pump.
 -  Connect and secure the electrical connector.
 -  Connect the washer jet hose.
- 3 . Install the fender splash shield.
For additional information, refer to [Fender Splash Shield \(76.10.90\)](#)
- 4 . Refill the washer reservoir.

Windshield Washer Reservoir (84.10.01)

Removal

NOTE:

Some fluid spillage is inevitable during this operation.

1



- **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

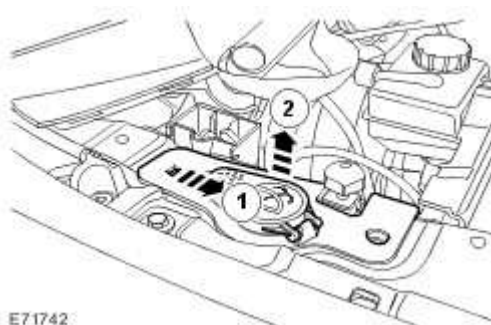
Raise and support the vehicle.

- 2 . Remove the RH fender splash shield.

For additional information, refer to [Fender Splash Shield \(76.10.90\)](#)

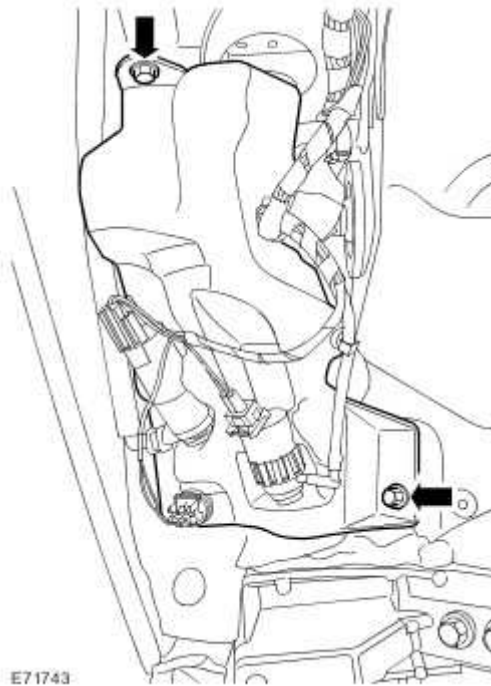
- 3 . Remove the windshield washer reservoir filler neck.

▶ Release the clip.



- 4 . Release the washer reservoir.

▶ Remove the 2 bolts.

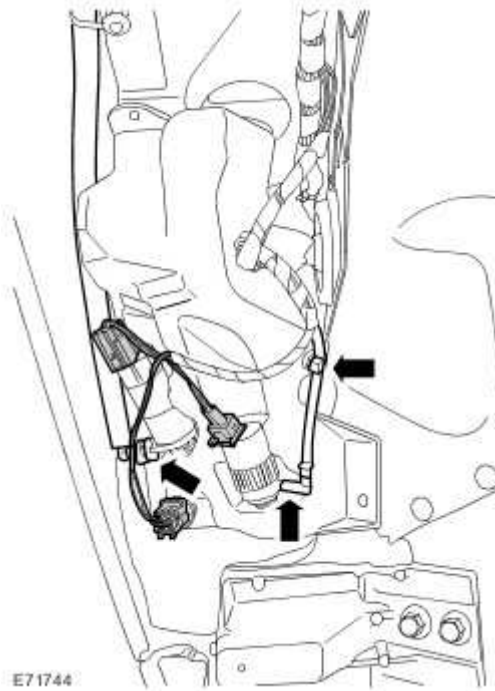


5 . NOTE:

Note the fitted position.

Remove the windshield washer reservoir.

- ▶ Position a container to collect spillage.
- ▶ Disconnect the 3 electrical connectors.
- ▶ Carefully release the clip.
- ▶ Disconnect the 2 washer jet hoses.



6 . **NOTE:**

Do not disassemble further if the component is removed for access only.

Remove the washer reservoir low level sensor.

▶ Remove and discard the seal.

7 . Remove the headlamp washer pump.

▶ Remove and discard the seal.

8 . Remove the windshield washer pump.

▶ Remove and discard the seal.

9 . Remove the filler neck seal.

10 . Remove the rubber mount.



Installation

1 . Install the rubber mount.

2 . Install the filler neck seal.

3 . Install the windshield washer pump.

▶ Install a new seal.

4 . Install the headlamp washer pump.

▶ Install a new seal.

5 . **NOTE:**

Do not disassemble further if the component is removed for access only.

Install the washer reservoir low level sensor.

▶ Install a new seal.

6 . **NOTE:**

Align to the position noted on removal.

Install the windshield washer reservoir.

▶ Connect the washer jet hoses.

▶ Connect and secure the electrical connectors.

▶ Tighten the bolts to 6 Nm (4 lb.ft).

7 . Install the windshield washer reservoir filler neck.

 Release the clip.

8 . Install the fender splash shield.

For additional information, refer to [Fender Splash Shield \(76.10.90\)](#)

9 . Refill the washer reservoir.

Windshield Wiper Motor - LHD RWD (84.15.13)

Removal

1. Remove the cover and disconnect the battery ground cable.
For additional information, refer to [Specifications](#)

2.  **WARNING: Do not work on or near the engine if the engine is hot. Failure to follow these instructions may result in personal injury.**

Remove the cowl vent screen.

For additional information, refer to [Cowl Vent Screen \(76.10.01\)](#)

3. Remove the engine cover.
For additional information, refer to [Engine Cover \(76.11.35\)](#)

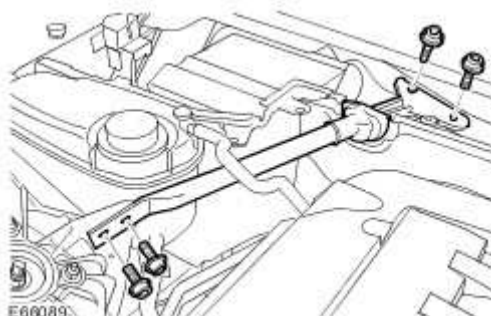
4.  **CAUTION: Care must be taken whilst removing the engine compartment bolts. Failure to follow this instruction may result in damage to the A/C pipes.**

NOTE:

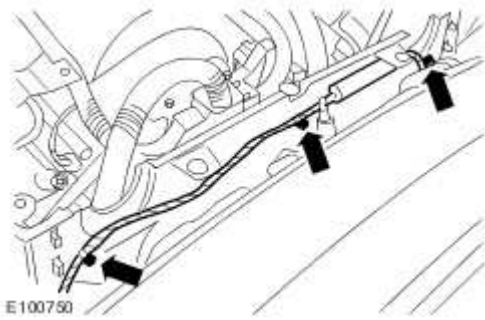
Right-hand shown, left-hand similar.

Remove the engine compartment braces.

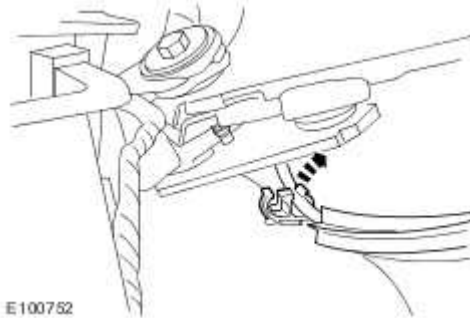
- ▶ Release the grommet.
- ▶ Remove the 4 Torx bolts.
- ▶ Repeat the above procedure for the other side.



5. Detach the wiring harness.
 - ▶ Release the 3 clips.

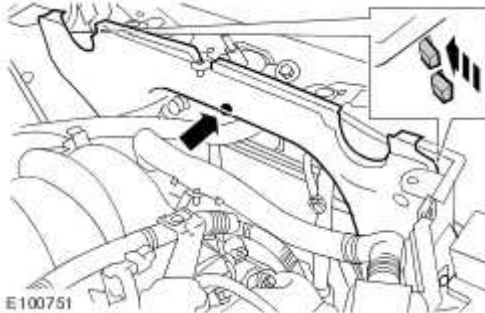


6 . Using a suitable tool, remove the hood release cable clip.



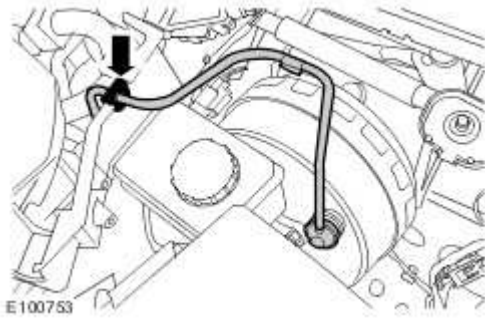
7 . Remove the secondary bulkhead center panel.

- ▶ Remove the nut.
- ▶ Release the 4 clips.



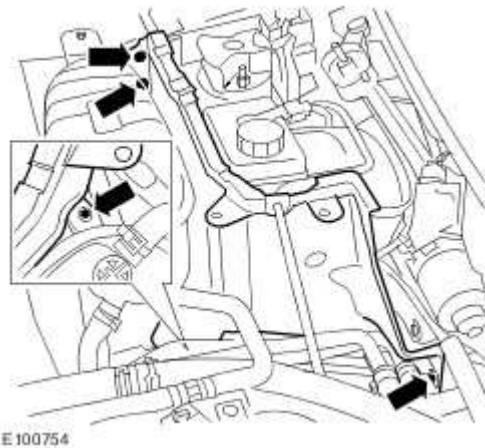
8 . Release the brake booster vacuum hose.

- ▶ Release the grommet.



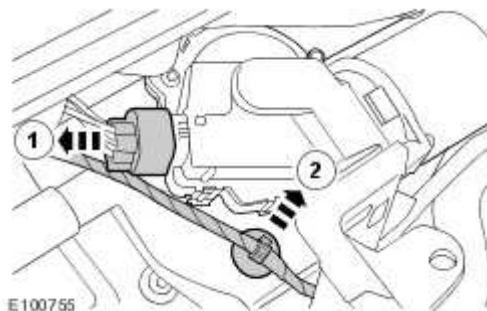
9 . Release the secondary bulkhead RH panel.

- ▶ Remove the air conditioning (A/C) pipe bracket bolt.
- ▶ Remove the coolant expansion tank mounting bracket bolt.
- ▶ Remove the remaining 2 bolts.



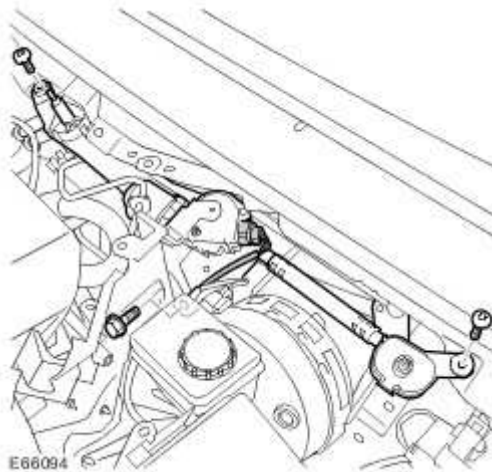
10 . Disconnect the windshield wiper motor electrical connector.

- ▶ Detach the wiring harness clip.

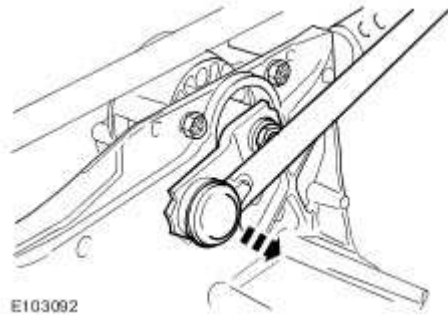


11 . Remove the windshield wiper motor and linkage mechanism.

- ▶ Remove the 3 bolts.



12 . Disconnect the connecting rod.

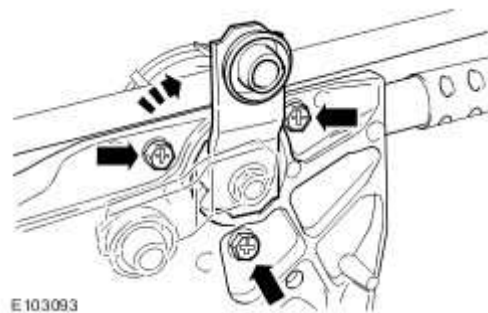


13 . **NOTE:**

Note the original position of the windshield wiper motor crank arm.

Remove the windshield wiper motor.

- Rotate the windshield wiper motor crank arm 90 degrees clockwise.
- Remove the 3 bolts.

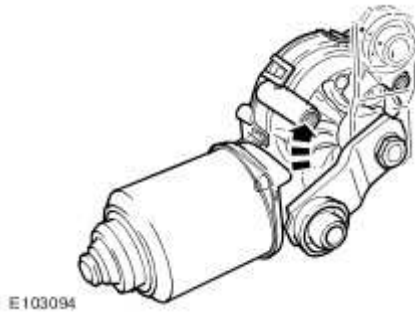


Installation

1 . NOTE:

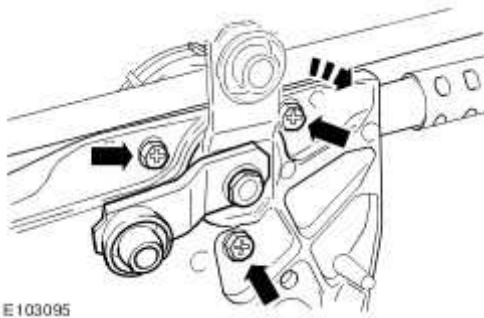
Note the original position of the windshield wiper motor crank arm.

Rotate the windshield wiper motor crank arm 90 degrees clockwise.



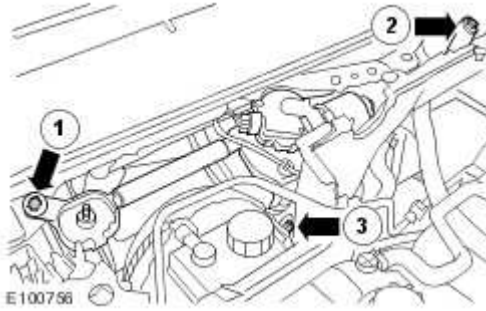
2 Install the windshield wiper motor.

- ▶ Tighten the 3 bolts to 5 Nm.
- ▶ Rotate the windshield wiper motor crank arm 270 degrees clockwise to the original position.



3 . Install the windshield wiper motor and linkage mechanism.

- ▶ Loosely install the 3 bolts.
- ▶ Tighten bolt 1 to 9 Nm.
- ▶ Tighten bolt 2 to 9 Nm.
- ▶ Tighten bolt 3 to 9 Nm.
- ▶ Connect and secure the electrical connector.



4 . Install the secondary bulkhead RH panel.

- ▶ Tighten the 4 bolts to 4 Nm.

5 . Install the secondary bulkhead center panel.

- ▶ Attach the hood release cable clip.
- ▶ Attach the 3 wiring harness clips.
- ▶ Secure the 4 clips.
- ▶ Tighten the nut to 4 Nm.

6 . Position the brake booster vacuum hose to one side.

- ▶ Position and secure the grommet.

7 . Install the engine compartment braces.

- ▶ Tighten the Torx bolts to 55 Nm.
- ▶ Install the grommet.
- ▶ Repeat the above procedure for the other side.

8 . Install the engine cover.

For additional information, refer to [Engine Cover \(76.11.35\)](#)

9 . Connect the battery ground cable and install the cover.

For additional information, refer to [Specifications](#)

10 Carry out the windshield wiper motor park operation.

.

- ▶ Switch the ignition on.
- ▶ Turn on the windshield wipers and make sure that the wiper spindles perform a full cycle.
- ▶ Turn off the windshield wipers.
- ▶ Switch the ignition off.

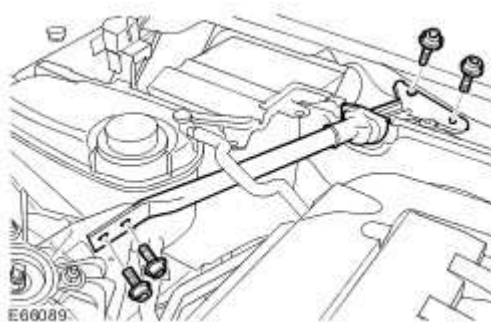
11 . Install the cowl vent screen.

For additional information, refer to [Cowl Vent Screen \(76.10.01\)](#)

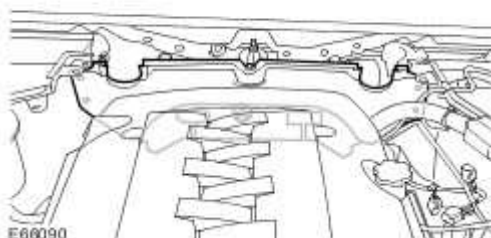
Windshield Wiper Motor - RHD RWD (84.15.13)

Removal

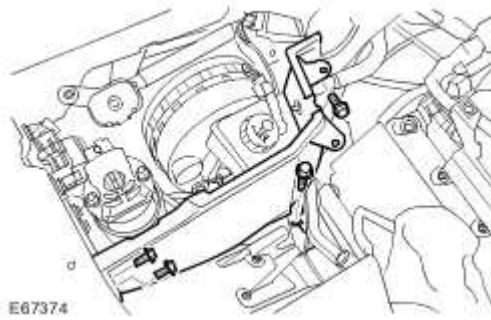
- 1 . Remove the plenum chamber panel.
For additional information, refer to [Cowl Vent Screen \(76.10.01\)](#)
- 2 . Remove the coolant expansion tank.
For additional information, refer to [Coolant Expansion Tank \(26.15.01\)](#)
- 3 . Remove the engine compartment braces.
 - ▶ Release the grommet.
 - ▶ Remove the 4 Torx bolts.
 - ▶ Repeat the above procedure for the other side.



- 4 . Remove the secondary bulkhead panel.
 - ▶ Remove the nut.
 - ▶ Release the 4 clips.

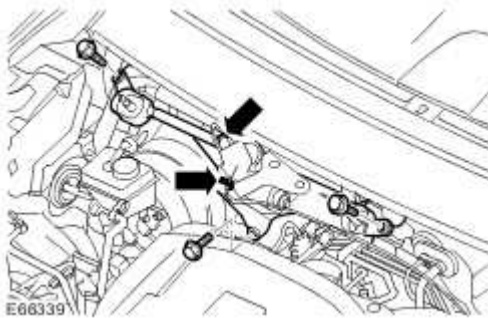


- 5 . Release the engine compartment RH side wall.
 - ▶ Remove the 4 bolts.



6 . Remove the windshield wiper motor.

- ▶ Disconnect the electrical connector.
- ▶ Remove the 3 bolts.



Installation

1 . Install the windshield wiper motor.

- ▶ Tighten the bolts to 10 Nm (7 lb.ft).
- ▶ Connect and secure the electrical connector.

2 . Install the engine compartment RH side wall.

- ▶ Tighten the bolts to 6 Nm (4 lb.ft).

3 . Install the secondary bulkhead panel.

- ▶ Carefully secure the clips.
- ▶ Tighten the nut to 4 Nm (3 lb.ft).

4 . Install the engine compartment braces.

- ▶ Tighten the Torx bolts to 25 Nm (18 lb.ft).
- ▶ Install the grommet.

 Repeat the above procedure for the other side.

5 . Install the coolant expansion tank.

For additional information, refer to [Coolant Expansion Tank \(26.15.01\)](#)

6 . Remove the plenum chamber panel.

For additional information, refer to [Cowl Vent Screen \(76.10.01\)](#)

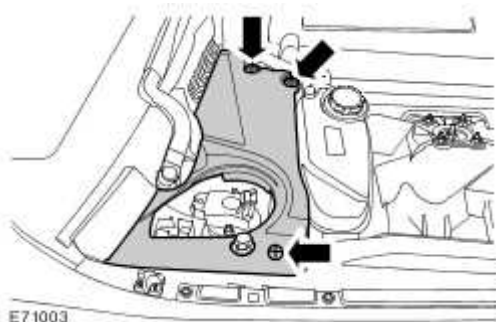
Wiper Pivot Arm (84.15.03)

Removal



CAUTION: Always protect paintwork and glass when removing exterior components.

- 1 . Open the hood.
- 2 . Remove the RH air intake cover.
 - ▶ Remove the 3 clips.



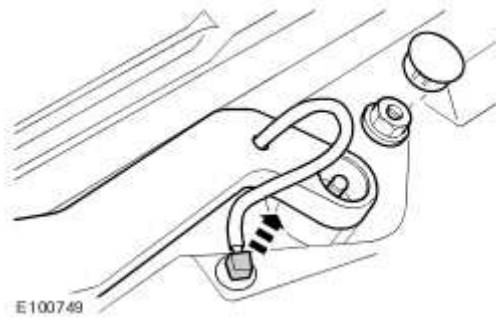
- 3  **CAUTION:** Wipers arms do not lock in the upright position. Windshield damage may occur if the wiper pivot arms are allowed to drop against the glass.

NOTE:

RH illustration shown, LH is similar

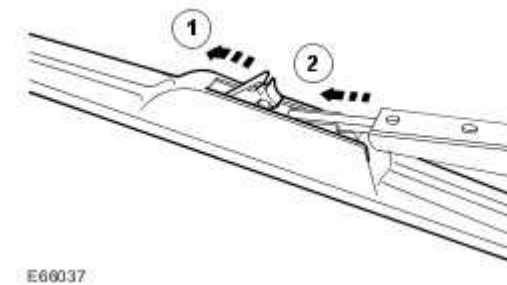
Remove the windshield wiper arms.

- ▶ Remove the 2 access plugs.
- ▶ Remove the 2 nuts.
- ▶ Disconnect the 2 washer jet blocks from the cowl vent screen.



4 . Remove the wiper blades.

- ▶ Release the 2 clips.



Installation

1 . Install the wiper blades.

- ▶ Position the locating clip in the upright position.
- ▶ Position the blade at the end of the arm.
- ▶ Secure the clip.
- ▶ Repeat for the other side

2



- **CAUTION: Incorrect fitting of the wiper pivot arms will result in damage to the bonnet on closure.**

NOTE:

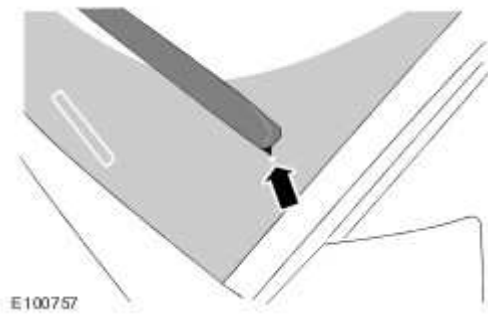
Align the wiper with the mark on the windscreen.

NOTE:

LH illustration shown, RH is similar.

Install the windshield wiper arm.

- ▶ Make sure the spindle is free from contamination.
- ▶ Apply gentle pressure on the pivot arm hinge to make sure the pivot arm is located evenly.
- ▶ Lightly tighten the nut.
- ▶ Align the tip of the wiper blade with the mark on the windshield.
- ▶ Tighten the nut to 23 Nm (17 lb.ft).
- ▶ Install the covers.
- ▶ Connect the washer jet hose block.
- ▶ Repeat for the other side.



3 . Install the RH air intake cover.

501-18 : Convertible Top

Specifications

Specifications

Torque Specifications

Item	Nm	lb-ft	lb-in
Convertible top, base plate to BIW - nut	25	18	-
Convertible top to base plate - nut	25	18	-
Convertible top, compartment lid striker - bolt	9	-	80
Convertible top, compartment lid trim panel - screw	1	-	9
Convertible top, compartment lid moulding - screw/nut	4	-	35
Convertible top striker to body - bolt	23	17	-
Convertible top header rail - screw	1	-	9
Hydraulic system, lift cylinder and motor - bolt	8	6	71
Luggage separator mounting bracket - bolt	4	-	35

Convertible Top Compartment Lid Alignment

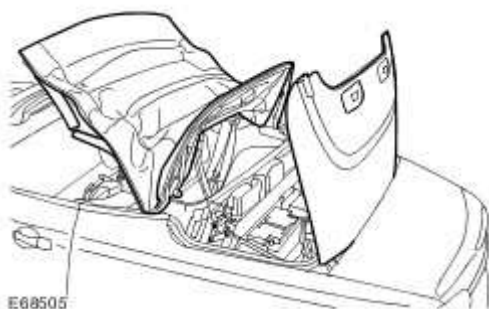
1. Check the alignment of the convertible top lid. Adjust, if required, using the steps below.

2. **NOTE:**

Support as necessary.

Open the convertible top to the position shown.

- Depress the switch.

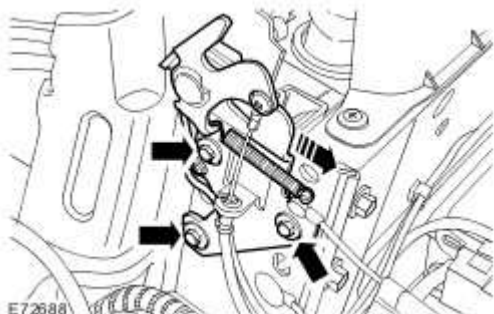


3. **NOTE:**

LH illustration shown, RH is similar.

Release the convertible top lid latches.

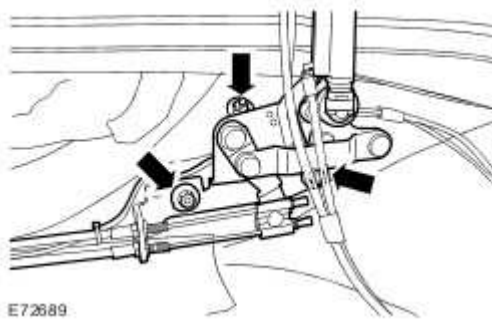
- Loosen the 6 bolts.
- Tighten the 6 bolts to 1 Nm (1 lb.ft).



4. Release the convertible top lid lift cylinder bracket.

- Loosen the 3 nuts.
- Push the convertible top lift cylinder bracket fully rearwards.

- Tighten the 3 nuts to 1 Nm (1 lb.ft).



5. Close the convertible top compartment lid.

- Depress the switch.

6. With the convertible top compartment lid closed, check the alignment of the lid to the body. The lid should be central in its aperture. The profile of the lid to the body should be flush.

7. Install the convertible lid cylinder bracket lower nuts.

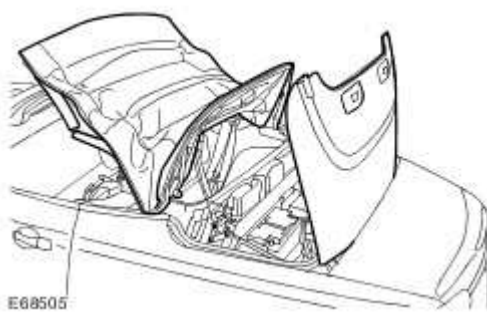
- Tighten the nuts to 10 Nm (7 lb.ft).

8. **NOTE:**

Support as necessary.

Open the convertible top to the position shown.

- Depress the switch.



9. Secure the convertible top lid latches.

- Tighten the bolts to 10 Nm (7 lb.ft).

10. Install the convertible lid cylinder bracket upper nut.

- Tighten the nut to 10 Nm (7 lb.ft).

11. Close the convertible top compartment lid.

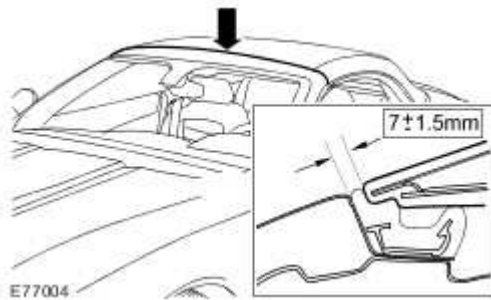
- Depress the switch.

Convertible Top Alignment

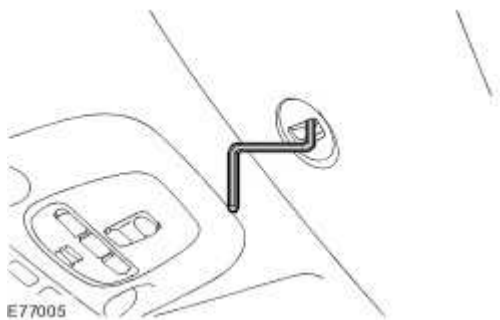
NOTE:

This procedure details how to align a new convertible top assembly.

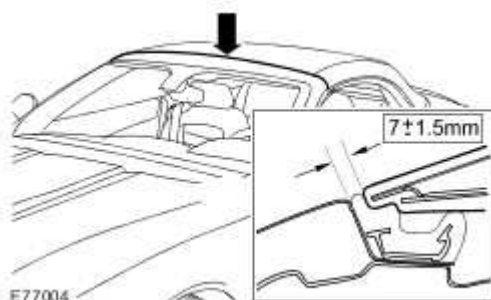
1. Align the convertible top to the dimensions shown using the procedure below.



2. With assistance, install the convertible top assembly.
 - Install and lightly tighten the nuts.
3. Close the convertible top compartment lid.
4. Close the convertible top.
 - Using an Allen key, manually latch the convertible top.



5. Ensure the forward edge of the convertible top has an equal 7mm gap to the header panel.



6. Open the convertible top.

- Using an Allen key, manually release the convertible top latches.

7. Open the convertible top compartment lid.

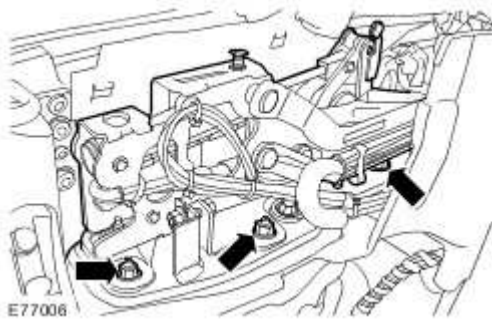
8.



CAUTION: Under no circumstances must the base plate fixing nuts be loosened or removed. Each base plate fixing nut can be identified by a large aluminium spacer.

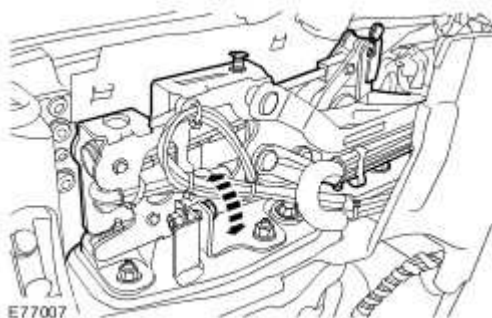
Release the convertible top assembly.

- Loosen the 6 nuts.



9. Adjust the convertible top.

- Loosen the 2 locknuts.
- Adjust the convertible top as necessary.
- Tighten the locknuts to 25 Nm (18 lb.ft).



10. Secure the convertible top assembly.

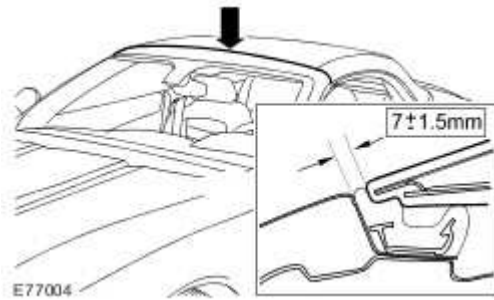
- Lightly tighten the nuts.

11. Close the convertible top compartment lid.

12. Close the convertible top.

- Using an Allen key, manually latch the convertible top.

13. Ensure the forward edge of the convertible top has an equal 7mm gap to the header panel.



14. Open the convertible top.

- Using an Allen key, manually release the convertible top latches.

15. Open the convertible top compartment lid.

16. Secure the convertible top assembly.

- Tighten the nuts to 25 Nm (18 lb.ft).

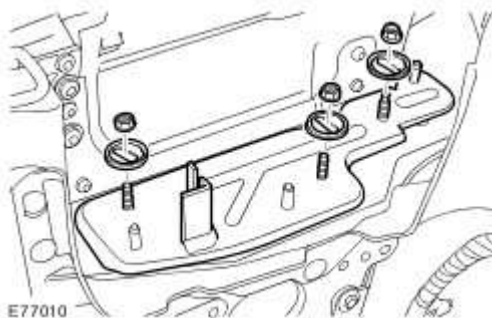
Convertible Top Base Plate Adjustment

1. Remove the convertible top assembly.

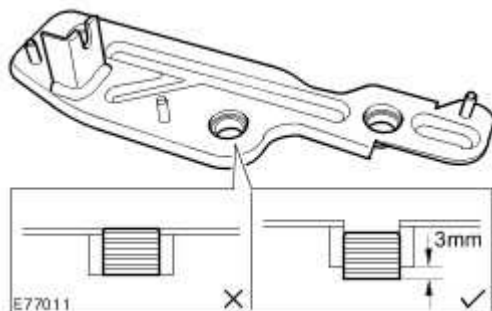
[Convertible Top Assembly \(76.86.15\)](#)

2. Remove the convertible top base plates.

- Remove the 6 nuts.
- Collect the washers.



3. Adjust the 6 base plate height adjustment washers, so they are 3mm below the underside of the base plates.



4. Install the convertible top base plates.

- Make sure the base plates are installed central to the studs.
- Install the washers.
- Lightly tighten the nuts.

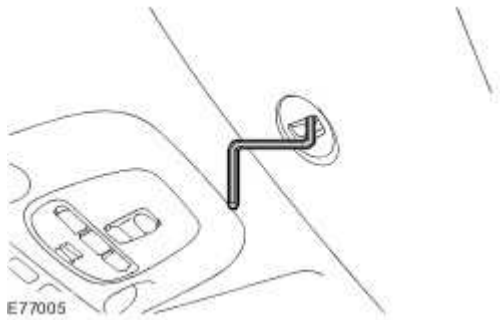
5. With assistance, install the convertible top assembly.

- Install and lightly tighten the nuts.

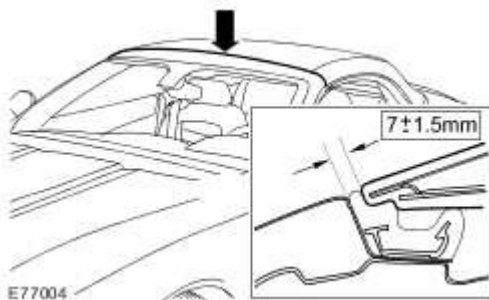
6. Close the convertible top compartment lid.

7. Close the convertible top.

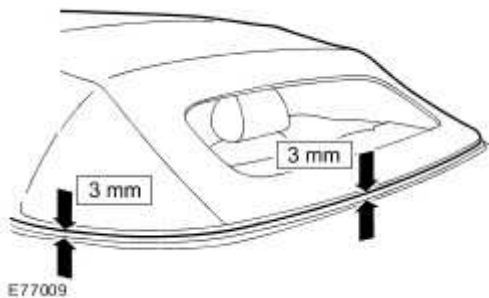
- Using an Allen key, manually latch the convertible top.



8. Ensure the forward edge of the convertible top has an equal 7mm gap to the header panel.



9. Ensure the rear edge of the convertible top has an equal 3mm gap to the convertible top compartment lid and rear quarter glass outer seal seal.



10. Open the convertible top.

- Using an Allen key, manually release the convertible top latches.

11. Open the convertible top compartment lid.

12. With assistance, remove the convertible top assembly.

- Remove the 6 nuts.

13. Remove the convertible top base plates.

- Remove the 6 nuts.
- Collect the washers.

14. Adjust the 6 base plate adjustment washers to the necessary height.

15. Install the convertible top base plates.

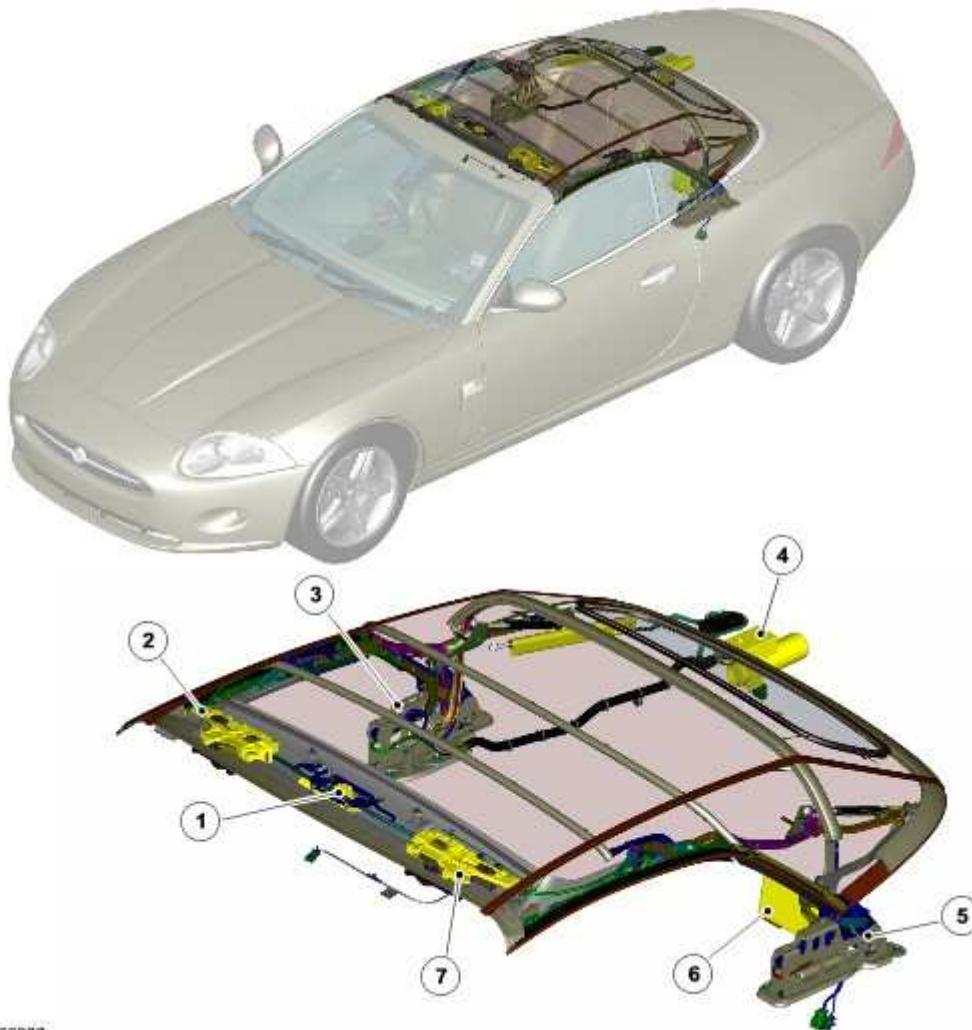
- Align the base plates to the studs as necessary.
- Install the washers.
- Tighten the nuts to 25 Nm (18 lb.ft).

16. Install the convertible top assembly.

[Convertible Top Assembly \(76.86.15\)](#)

Convertible Top

COMPONENT LOCATION



E66287

Item	Part Number	Description
1		Front latch motor
2		RH front latch plate
3		RH actuation lever assembly
4		Valve block and motor
5		LH actuation lever assembly
6		Convertible top control module
7		LH front latch plate

INTRODUCTION

The power-operated convertible top consists of a fabric canopy with a 'Thinsulate' inner liner, which is fitted to a steel frame with cast linkages.

The fully automatic flush mounted aluminum tonneau panel conceals the stowed top and incorporates the Roll-over Protection System doors in its trim panel. The top has a low-stack height of 200 mm (7.9 in) and manual roller blind luggage separator to optimize the luggage compartment volume. The open and close time of the top is approximately 17 seconds depending on ambient temperature and battery voltage.

A heated glass backlight is high frequency welded to the canopy.

A pump motor and valve block provides hydraulic power to open and close the top while an electric motor controls a tension bow system to latch and unlatch the top. A single hold-down switch located in the roof console operates the top. This switch also operates the rear quarter glass.

In the event that the top cannot be powered to the raised or lowered position, provision is made for manual operation.

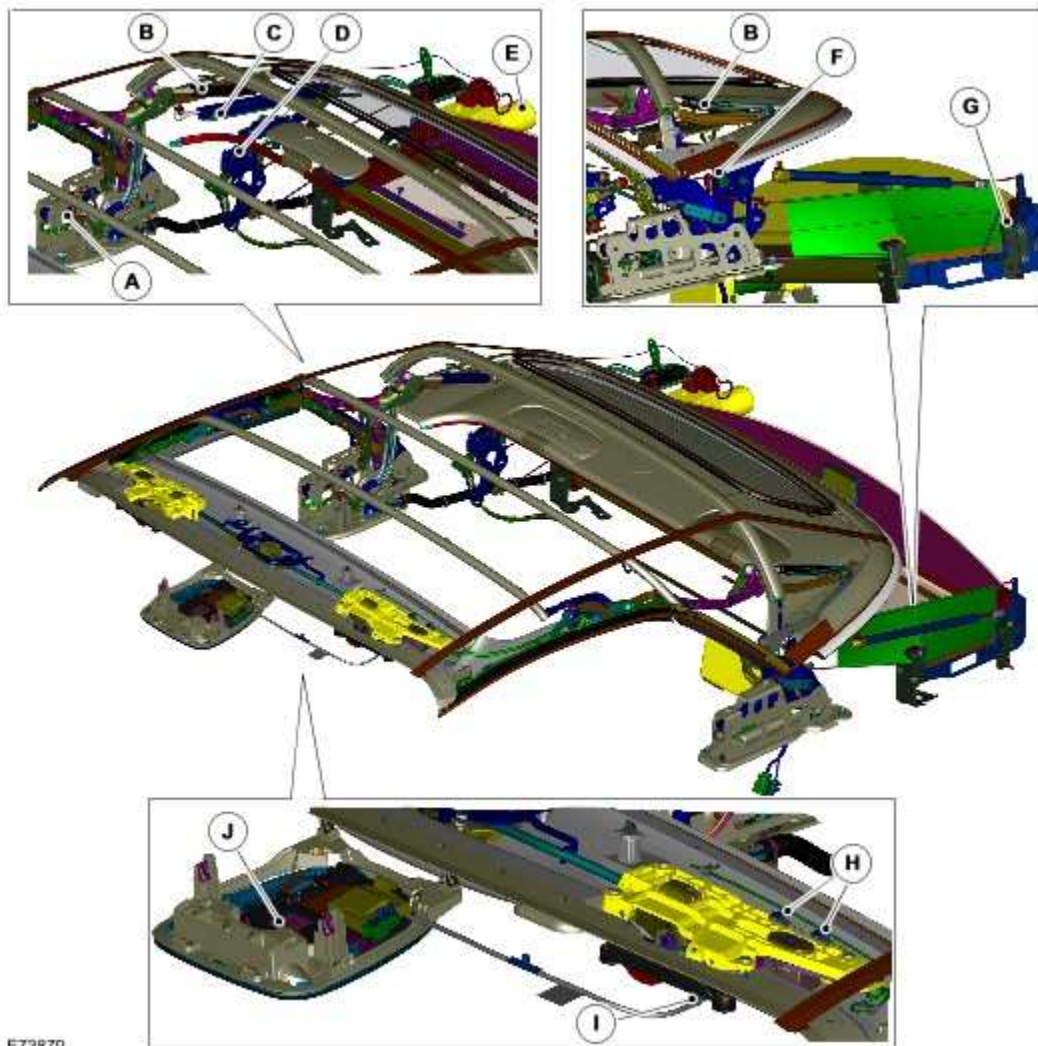
For information regarding convertible top operation, manual operation and the removal and installation of the luggage separator, refer to the Owner's Handbook.



CAUTION: The convertible top frame is located on the vehicle body accurately using a steel adjuster plate; under no circumstances must the top steel adjuster plates be released. For more information refer to the adjuster plate section.

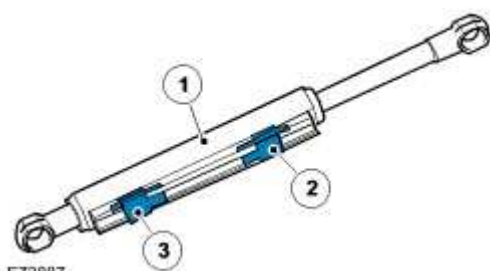
COMPONENTS

A control module, located behind the LH rear seat, controls the power-operated convertible top. The control module operates the top based on data received on the Controller Area Network (CAN) bus and from the hardwired components described below:



E73879

A - Tension Bow Sensors

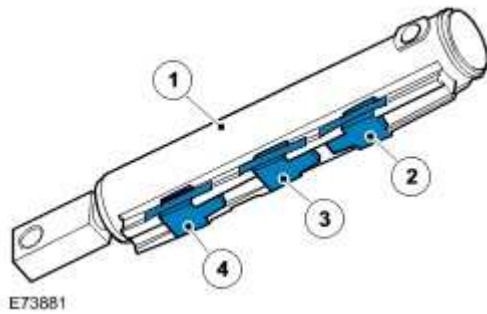


E73887

Item	Part Number	Description
1		Tension bow piston tube assembly
2		Tension bow 'In' sensor
3		Tension bow 'Out' sensor

The tension bow sensors are Hall effect sensors located in the tension bow piston tube assembly. The piston tube assembly is located next to the LH tension bow linkage. These sensors inform the control module as to the position of the convertible top tension bow assembly.

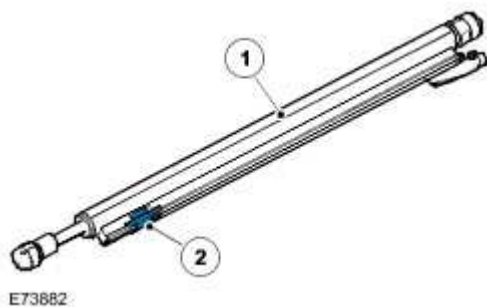
B - Main Bow Sensors



Item	Part Number	Description
1		Main bow piston tube assembly
2		Main bow 'In' sensor
3		Main bow 'Center' sensor
4		Main bow 'Out' sensor

The main bow sensors are Hall effect sensors located in the main bow piston tube assembly. The piston tube assembly is located on the RH main bearing bracket assembly. These sensors sense the position of the main bow piston so the control module knows the exact position of the convertible top.

C - Tonneau Panel Open Sensor

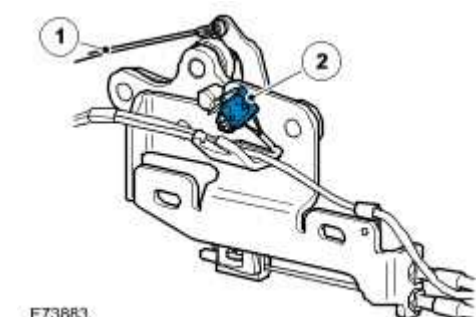


Item	Part Number	Description
1		Tonneau panel piston tube assembly
2		Tonneau panel open sensor

The tonneau panel open sensor is a Hall effect sensor located in the tonneau panel piston tube

assembly. The piston tube assembly is located between the RH base latch plate and the lever assembly. This sensor informs the control module of when the tonneau panel is in the open position so the convertible top can be stowed.

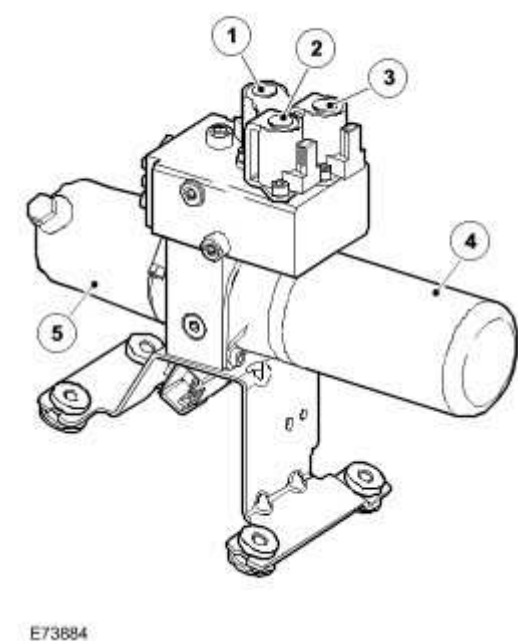
D - Tonneau Panel Switch 1



Item	Part Number	Description
1		Emergency release cable
2		Tonneau panel switch

Tonneau panel switch 1 is located on the RH lever assembly. This switch is a normally open microswitch that, when switched to ground, informs the control module that the RH side of the tonneau panel is closed.

E - Pump Motor Temperature Sensor

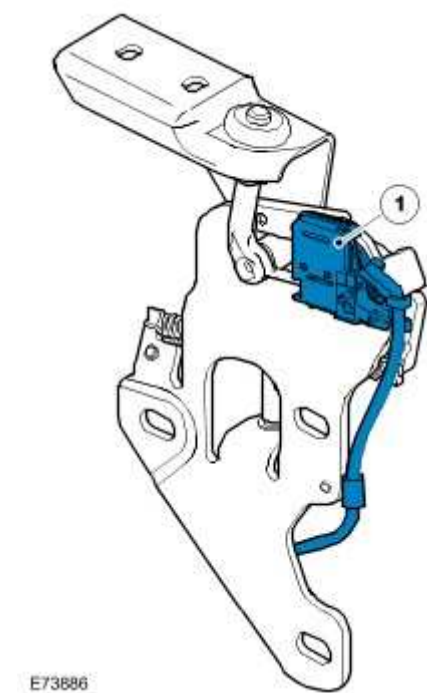


Item	Part Number	Description
------	-------------	-------------

1		Tension bow up solenoid valve
2		Tension bow down solenoid valve
3		Tonneau panel solenoid valve
4		Hydraulic pump
5		Hydraulic fluid reservoir

The hydraulic fluid temperature sensor is a Negative Temperature Coefficient (NTC) sensor, which is integral to the pump assembly. The sensor informs the control module as to the temperature of the hydraulic fluid. If the fluid temperature exceeds a predetermined value, the control module will stop pump operation to prevent the valve block from overheating. Once the fluid temperature decreases below the predetermined value, the control module will then resume pump operation.

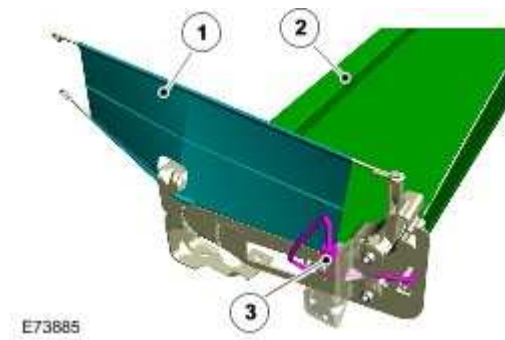
F - Tonneau Panel Switch 2



Item	Part Number	Description
1		Tonneau panel switch

Tonneau panel switch 2 is located on the LH latch base plate assembly. This switch is a normally open microswitch that, when switched to ground, informs the control module that the LH side of the tonneau panel is closed.

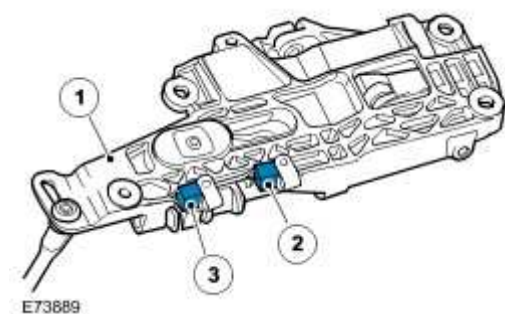
G- Luggage Separator Position Sensor



Item	Part Number	Description
1		Cargo net
2		Luggage separator (roller blind)
3		Luggage separator position sensor

The Luggage separator position sensor is a Hall effect sensor located on the LH luggage separator housing bracket. The sensor informs the control module of when the separator is in the correct position. When the separator is in the correct position there is enough space in the luggage compartment to stow the convertible top when open.

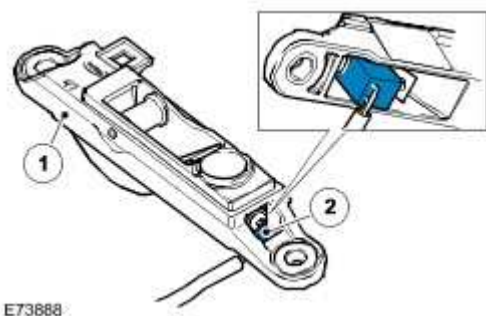
H - Front Latch Open and Close Sensors



Item	Part Number	Description
1		Latch plate
2		Front latch open sensor
3		Front latch closed sensor

The front latch open and closed sensors are Hall effect sensors located in the LH front latch plate. These sensors inform the control module of when the latch is in the open or closed position.

I - Convertible Top Latched Sensor



E73888

Item	Part Number	Description
1		Latching bracket
2		Hall sensor

The convertible top latched sensor is a Hall effect sensor located in the LH latching bracket. The sensors function is to inform the control module of when the convertible top is in the closed position.

J - Convertible Top Open and Close Switch



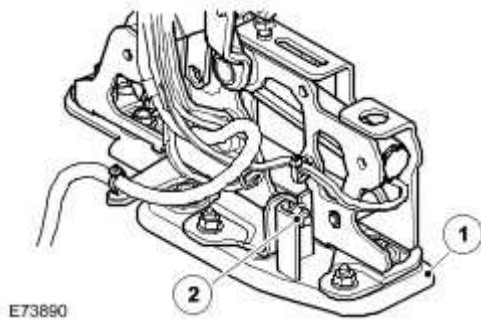
E73880

Item	Part Number	Description
1		Open and Close switch
2		Overhead console

The convertible top open and close switch is located in the overhead console. The switch is a momentary switch that is normally open. When switched to ground the convertible top will start its open or close motion depending on which operation has been requested.

Adjuster Plate

The convertible top frame, actuation levers and main bow hydraulic cylinder assembly is located on the vehicle body accurately using a steel adjuster plate, which is set to the body using adjustable shims.



Item	Part Number	Description
1		Steel adjuster plate
2		Adjuster



CAUTION: Under no circumstances must the top steel adjuster plates be released, as they are set and adjusted to the body during manufacture, providing an accurate location for the convertible top frame. Service action and special tools will be required to reset the plate if this area of the vehicle requires service.

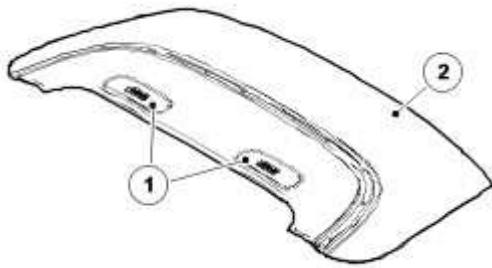
Tonneau Panel Cover

A fully automatic flush mounted aluminum tonneau cover panel protects the stowed top.



WARNING: Special care must be taken when carrying out maintenance in the area underneath the aluminum tonneau cover. After approximately five minutes the hydraulic pressure is lost due to the release of the spool valves to prevent the valves overheating. A suitable support must be used to prevent the aluminum tonneau cover falling when the hydraulic pressure is released.

The aluminum tonneau cover panel trim also incorporates Roll Over Protection hoop doors. The roll over protection system is deployed through the hoop doors and rear screen in the event of a vehicle roll over situation. For additional information, refer to [Air Bag Supplemental Restraint System \(SRS\)](#) (501-20 Supplemental Restraint System)



E73891

Item	Part Number	Description
1		Hoop doors
2		Aluminum tonneau cover panel

The hydraulic pump, motor and valve block assembly is located in the RH luggage area. The fluid reservoir is filled with Pentosin hydraulic oil. Two fluid levels are marked on the pump reservoir body, the upper mark denotes the fluid level when the top is fully lowered and the lower mark denotes the level when the top is fully raised. The hydraulic pump supplies a maximum pressure of approximately 140 bar during convertible top operation. When the pump is idle the system pressure is approximately 0.1 bar.

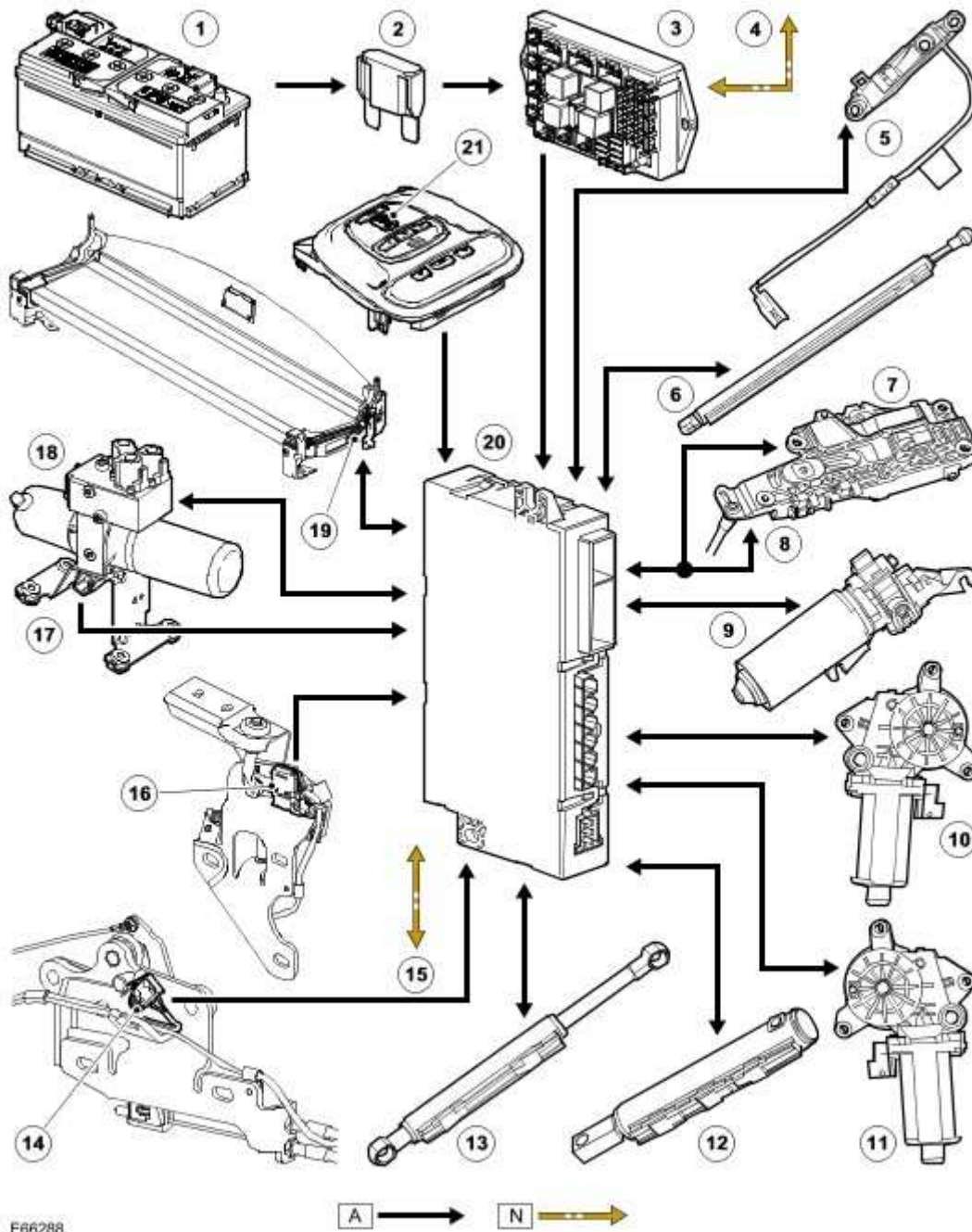
NOTE:

The convertible top hydraulic system is 'self-bleeding' and does not require action to expel trapped air.

CONTROL DIAGRAM

NOTE:

A = Hardwired; **N** = CAN bus



E66288

Item	Part Number	Description
1		Battery
2		Megafuse (175A)
3		Auxiliary junction box
4		Controller Area Network (CAN) input and output signals to and from various other vehicle systems
5		Convertible top latched sensor
6		Tonneau panel sensor

7		Front latch open sensor
8		Front latch close sensor
9		Front latch motor
10		RH quarter glass motor
11		LH quarter glass motor
12		Main bow sensors (3 off)
13		Tension bow sensors (2 off)
14		Tonneau panel switch 1
15		Controller Area Network (CAN) input and output signals to and from various other vehicle systems
16		Tonneau panel switch 2
17		Pump motor temperature sensor
18		Pump motor
19		Luggage separator position sensor
20		Convertible top control module
21		Convertible top open and close switch

PRINCIPLES OF OPERATION

The convertible top is opened and closed using four hydraulically controlled pistons. Two main bow pistons in the top frame are fixed to the body and lift the complete top assembly into and out of the stowage area. Two tension bow pistons open and close the tension bow at the rear of the convertible top. This allows clearance for the tonneau cover panel to be opened when the top is being retracted in to the luggage compartment. It also seals the rear of the top with the tonneau cover panel when the top is opened.

The top and rear quarter glasses are operated using a hold-down switch located in the overhead console. The convertible top will only open if:

- The vehicle speed is below 24km/h (15mph)
- The tonneau panel is closed
- The luggage separator is in position
- The hydraulic fluid temperature sensor confirms pump is not overheated

The front windows must be programmed for one-touch operation in order for the convertible top to operate correctly. Failure to program the windows results in a ten second opening delay once the top is unlatched. The windows can be manually programmed for one-touch operation using this procedure:

- Ignition ON
- Raise window up to the top seal and release
- Raise again until window stops moving
- Release
- Raise again

- Lower window fully
- Release
- Press lower for a further 0.5 seconds until a relay is heard to CLICK

A luggage compartment separator prevents items from moving into the area in which the convertible top is stowed. The luggage separator incorporates a Hall effect proximity sensor, which prevents the convertible top from operating unless the separator is in the fully deployed position.

The aluminum tonneau cover is secured in the closed position by a mechanically controlled cable operated latching system. The cables are tensioned using a mechanical lever assembly operated by the movement of the covers hydraulic piston. The latches are released by spring tension when the covers hydraulic piston releases the tension in the cables.

The aluminum tonneau cover is raised and lowered hydraulically by a single piston.

The convertible top incorporates a fully automatic latch and unlatch tension rod system, which uses an electric motor with a gearbox and flexible shafts to latch and unlatch the top. Failure of a tension rod, motor gearbox or latch motor will prevent the top from unlatching. In the event of either of these failures it is possible to release each of the top latches manually.

OPERATION LOGIC

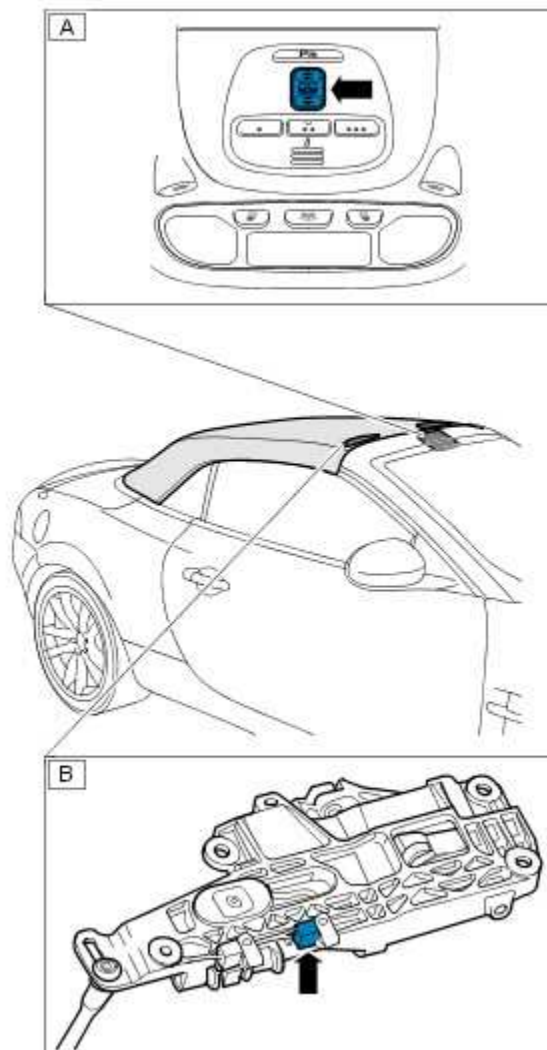
CONVERTIBLE TOP - CLOSED TO OPEN PROCESS

Each stage of the convertible top 'closed-to-open' process is described below. This is accompanied with the corresponding 'Data-Logger' values which can be monitored using Jaguar Approved Diagnostic Equipment. These values can be found in the 'Body Modules' area of the diagnostic equipment.

Stage 1: Convertible Top - fully closed

NOTE:

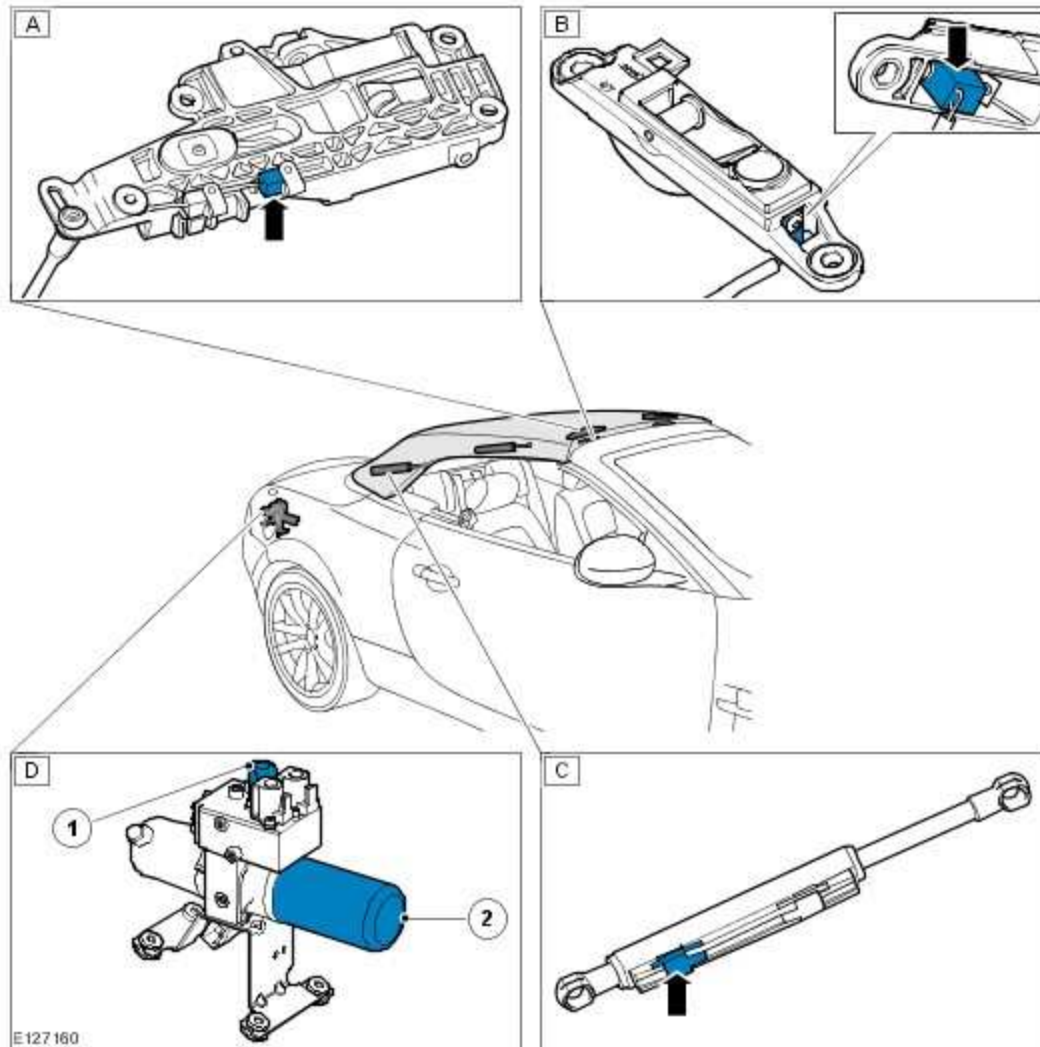
The luggage compartment lid must be closed and latched.



E127159

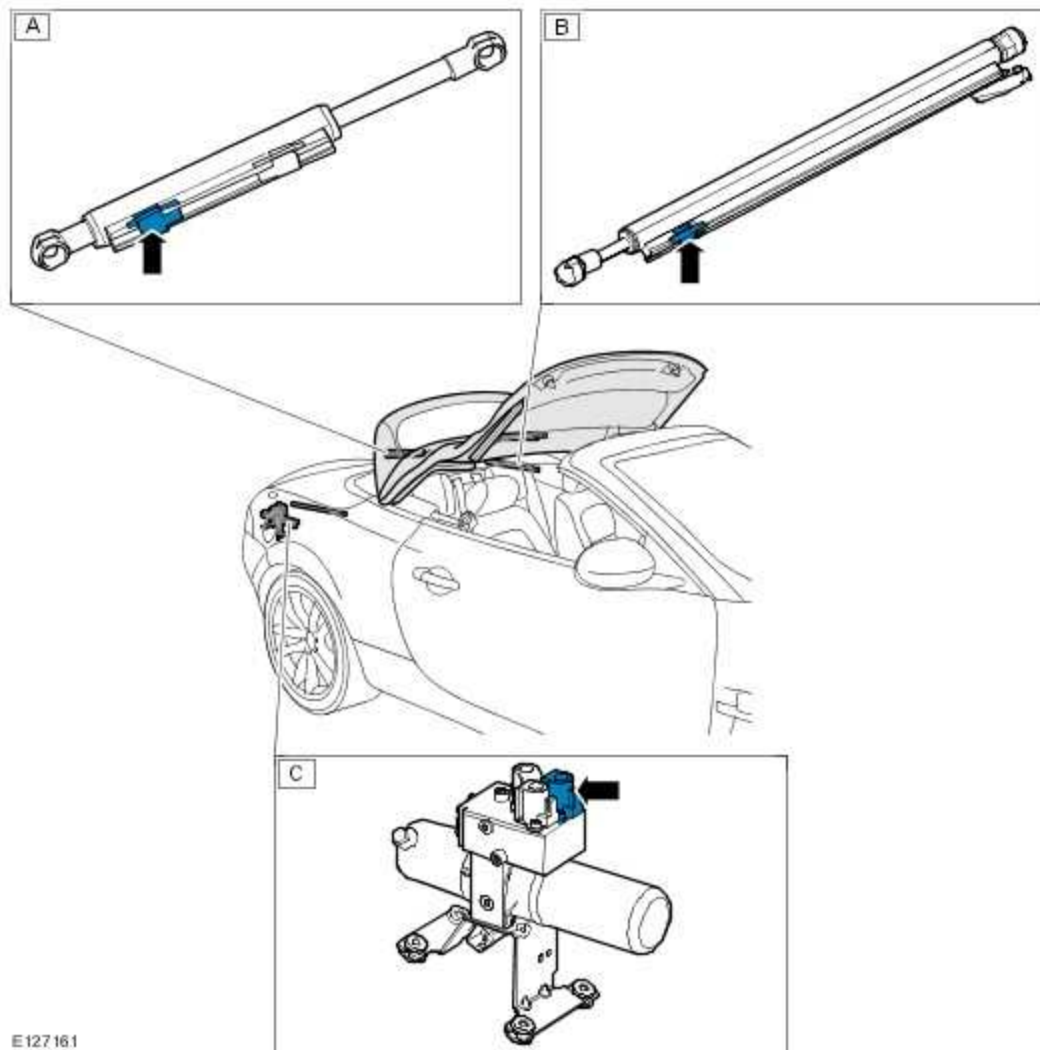
- Press and hold the open switch (A), this will signal the convertible top control module to commence the opening process. (Data-Logger: Convertible Top Switch inputs – Convertible top DOWN switch – **ON**).
- The control module will signal the door glass and rear quarter glass to be powered for 4 seconds to the lowered position. (Data-Logger: Convertible Top motor outputs – Rear Quarter down - **ON**).
- An audible chime will confirm the start of the convertible top opening process.
- The control module will confirm that the 'open' sensor in the front latch (B) is not transmitting a signal; verifying the front latch is closed. (Data-Logger: Convertible Top position sensor inputs – Front latch open sensor - **INACTIVE**).
- Once this is confirmed the front latch motor is powered to release the roof latches from the header strikers. (Data-Logger: Convertible Top module motor outputs - Latch motor open – **ON**).

Stage 2: Convertible Top - unlatched from header



- The control module will confirm the 'open' sensor in the front latch (A) is transmitting a 'front latch open' signal; verifying the front latch has opened. (Data-Logger: Convertible Top position sensor inputs – Front latch open sensor - **ACTIVE**).
- The control module will confirm the sensor in the top latch (B) is not transmitting a 'latched' signal; verifying the front latch has opened. (Data-Logger: Convertible Top position sensor inputs - Convertible Top latched sensor - **INACTIVE**)
- The control module will confirm the 'in' sensor in the tension bow cylinder (C) is not transmitting a 'tension bow up' signal. (Data-Logger: Convertible Top position sensor inputs – Tension bow piston IN sensor - **INACTIVE**).
- Once confirmed the control module energizes the 'tension bow up' solenoid valve (D-1) and powers the hydraulic pump (D-2) in the raise direction. (Data-Logger: Convertible Top module motor outputs – tension bow valve 2 - **ON**).

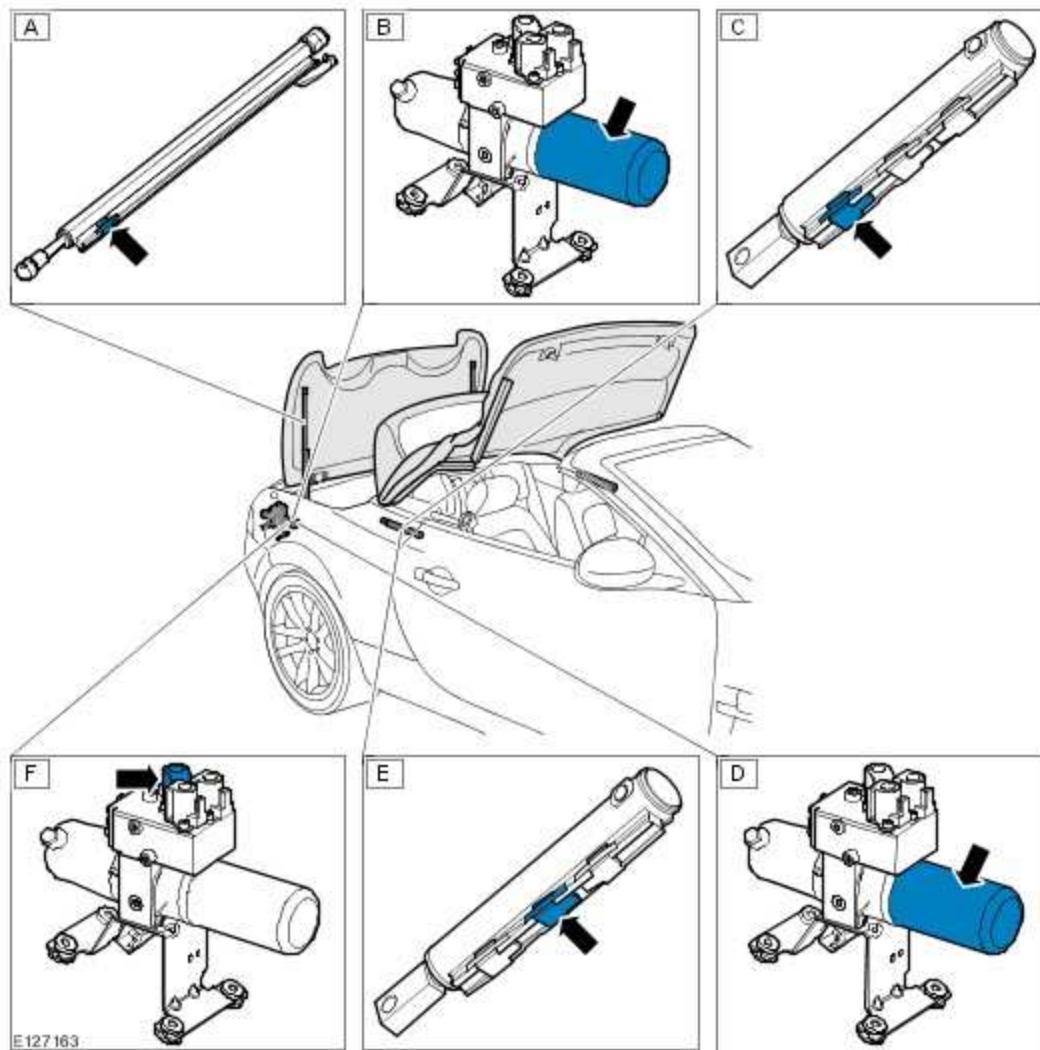
Stage 3: Tension Bow - raised



E127161

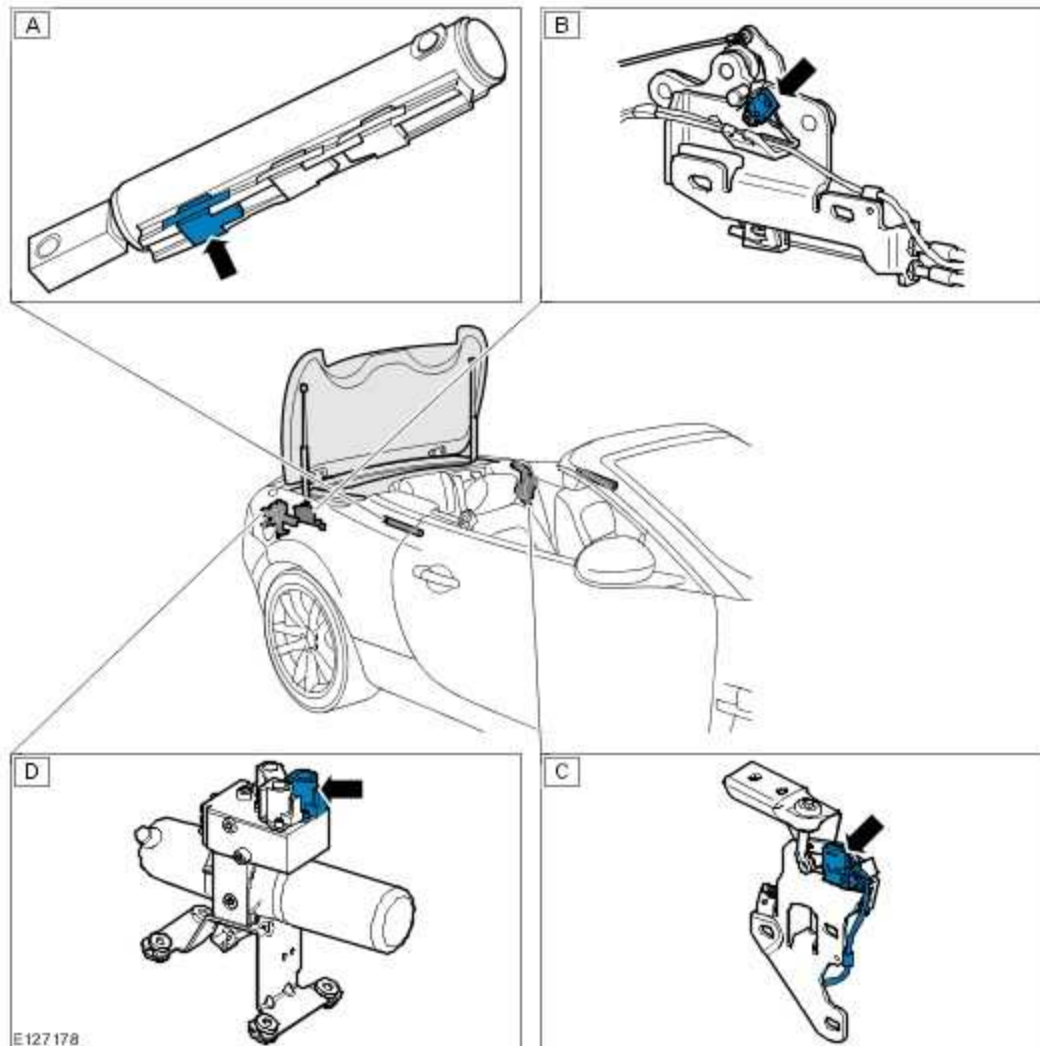
- The control module will confirm the 'in' sensor in the tension bow cylinder (A) is transmitting a 'tension bow up' signal. (Data-Logger: Convertible Top position sensor inputs – Tension bow piston IN sensor - **ACTIVE**).
- The control module will confirm the 'open' sensor in the tonneau panel cylinder (B) is not transmitting a 'tonneau open' signal; verifying the tonneau panel is closed. (Data-Logger: Convertible Top position sensor inputs – Convertible top lid compartment cover piston out sensor - **INACTIVE**).
- Once confirmed the control module energizes the tonneau panel solenoid valve (C). (Data-Logger: Convertible Top module motor outputs – Compartment cover valve 1 – **ON**).

Stage 4: Tonneau Panel and Convertible Top - raised



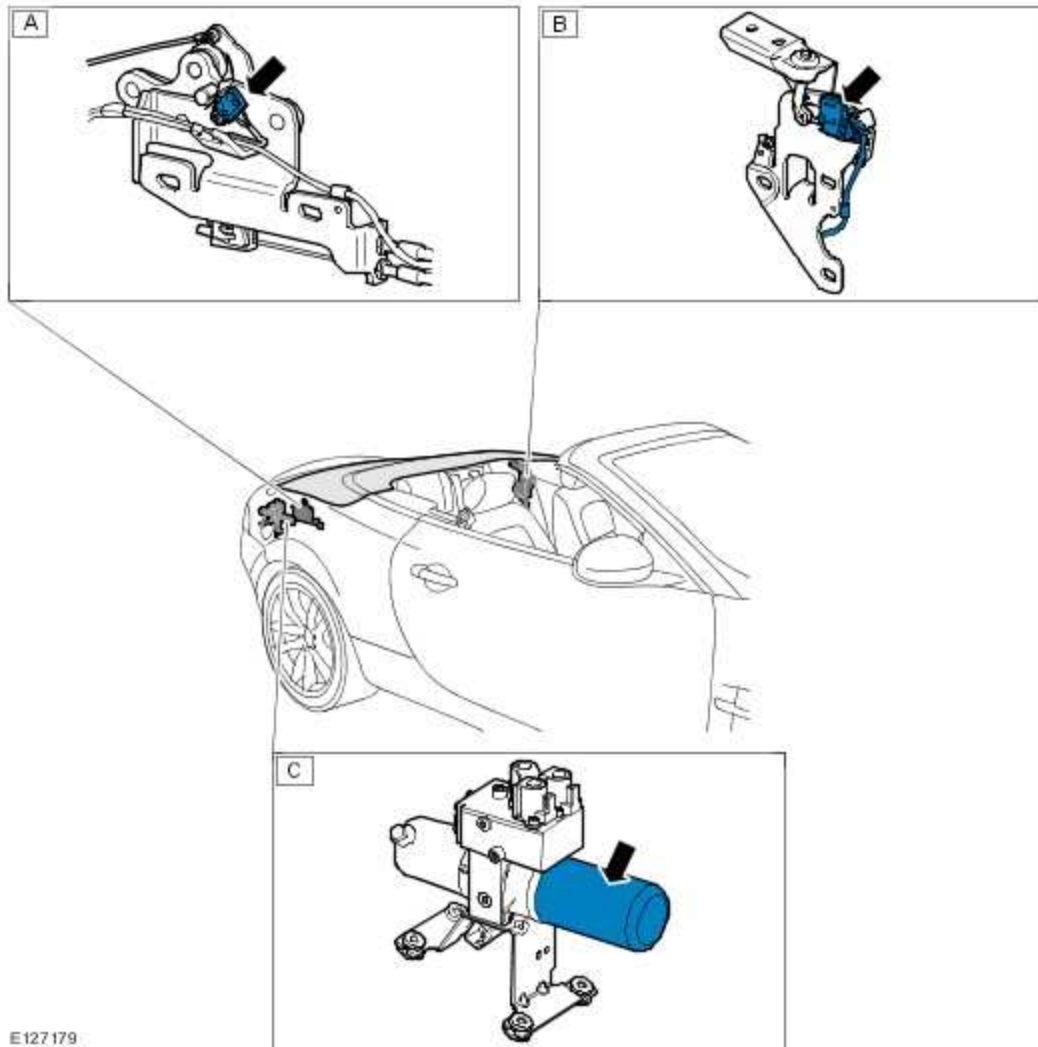
- The control module will confirm the 'open' sensor in the tonneau panel cylinder (A) is transmitting a 'tonneau panel open' signal. (Data-Logger: Convertible Top position sensor inputs – Convertible top lid compartment cover piston out sensor – **ACTIVE**).
- Once confirmed the control module powers the hydraulic pump (B) in the raise direction. (Data-Logger: Convertible Top module motor outputs - Convertible top right pump - **ON**).
- The control module will confirm the 'out' sensor in the main bow cylinder (C) is not transmitting a signal; verifying the convertible top is not open. (Data-Logger: Convertible Top position sensor inputs - Main bow piston OUT sensor - **INACTIVE**).
- Once confirmed the control module powers the hydraulic pump (D) in the lower direction. (Data-Logger: Convertible Top module motor outputs - Convertible top left pump - **ON**).
- The control module will confirm the 'center' sensor in the main bow cylinder (E) transmits a momentary signal; verifying the convertible top is opening. (Data-Logger: Convertible Top position sensor inputs - Main bow piston CENTER sensor - **ACTIVE**).
- Once confirmed the control module de-energizes the 'tension bow up' solenoid valve (F). (Data-Logger: Convertible Top module motor outputs – Tension bow valve 2 - **OFF**).

Stage 5: Tonneau Panel - raised, and Convertible Top - lowered



- The control module will confirm the 'out' sensor in the main bow cylinder (A) is transmitting a signal; verifying the convertible top is open. (Data-Logger: Convertible Top position sensor inputs - Main bow piston OUT sensor - **ACTIVE**).
- The control module will confirm the tonneau panel switches (B) and (C), which are wired in series, are not transmitting a signal; verifying the tonneau panel is not latched. (Data-Logger: Convertible Top Switch inputs – Convertible top lid compartment cover latch status - **OFF**).
- Once confirmed the control module de-energizes the tonneau panel solenoid valve (D), powering the tonneau panel closed. (Data-Logger: Convertible Top module motor outputs – Compartment cover valve 1 – **OFF**).

Stage 6: Convertible Top - fully open



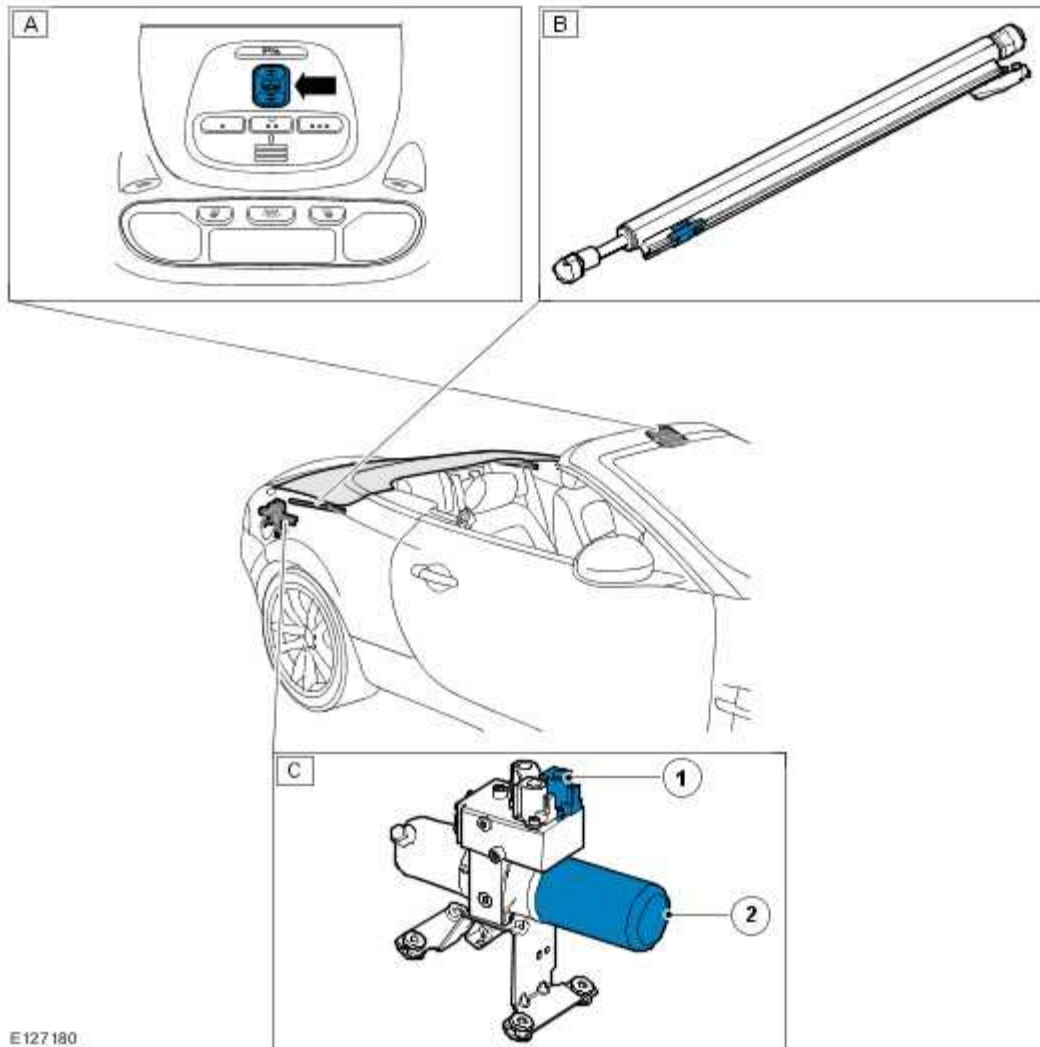
E127179

- The control module will confirm the tonneau panel switches (A) and (B) which are wired in series are transmitting a signal; verifying the tonneau panel is latched. (Data-Logger: Convertible Top Switch inputs – Convertible top lid compartment cover latch status - **ON**).
- Once confirmed the control module powers the hydraulic pump (C) off. (Data-Logger: Convertible Top module motor outputs - Convertible top left pump - **OFF**).
- An audible chime will confirm the completion of the convertible top opening cycle.

CONVERTIBLE TOP - OPEN TO CLOSE PROCESS

Each stage of the convertible top 'open-to-close' process is described below. This is accompanied with the corresponding 'Data-Logger' values which can be monitored using Jaguar Approved Diagnostic Equipment. These values can be found in the 'Body Modules' area of the diagnostic equipment.

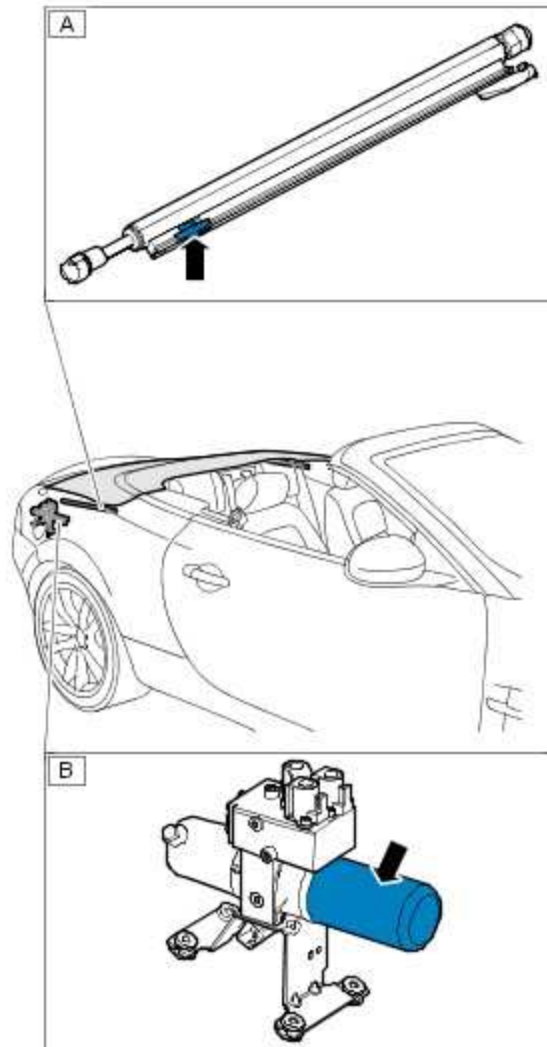
Stage 7: Convertible Top - fully open



E127180

- Press and hold the open switch (A), this will signal the convertible top control module to commence the closing process. (Data-Logger: Convertible Top Switch inputs – Convertible top UP switch - **ON**).
- The control module will confirm the 'open' sensor in the tonneau panel cylinder (B) is not transmitting a 'tonneau panel open' signal; verifying the tonneau panel is closed. (Data-Logger: Convertible Top position sensor inputs – Convertible top lid compartment cover piston out sensor – **INACTIVE**).
- Once confirmed the control module will: Transmit a signal to the door control module to lower the door glass, if required. Energize the tonneau panel 'open' solenoid (C-1). (Data-Logger: Convertible Top module motor outputs – Compartment cover valve 1 – **ON**) Power the hydraulic pump (C-2) in the lower direction. (Data-Logger: Convertible Top module motor outputs - Convertible top left pump - **ON**).
- An audible chime will confirm the beginning of the convertible top closing process.

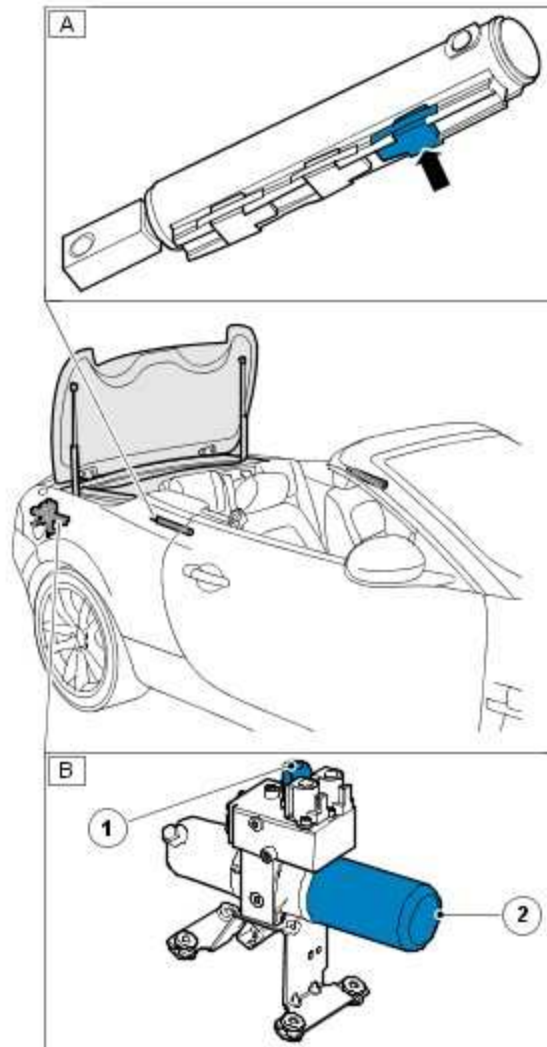
Stage 8: Tonneau Panel - primed for opening



E127184

- As the tonneau panel is powered open the 'open' sensor in the tonneau panel cylinder (A) will transmit a 'tonneau open' confirmation signal to the control module. (Data-Logger: Convertible Top position sensor inputs – Convertible top lid compartment cover piston out sensor – **ACTIVE**).
- Once confirmed the control module will power the hydraulic pump (B) in the lower direction. (Data-Logger: Convertible Top module motor outputs - Convertible top left pump - **ON**).

Stage 9: Tonneau Panel - open



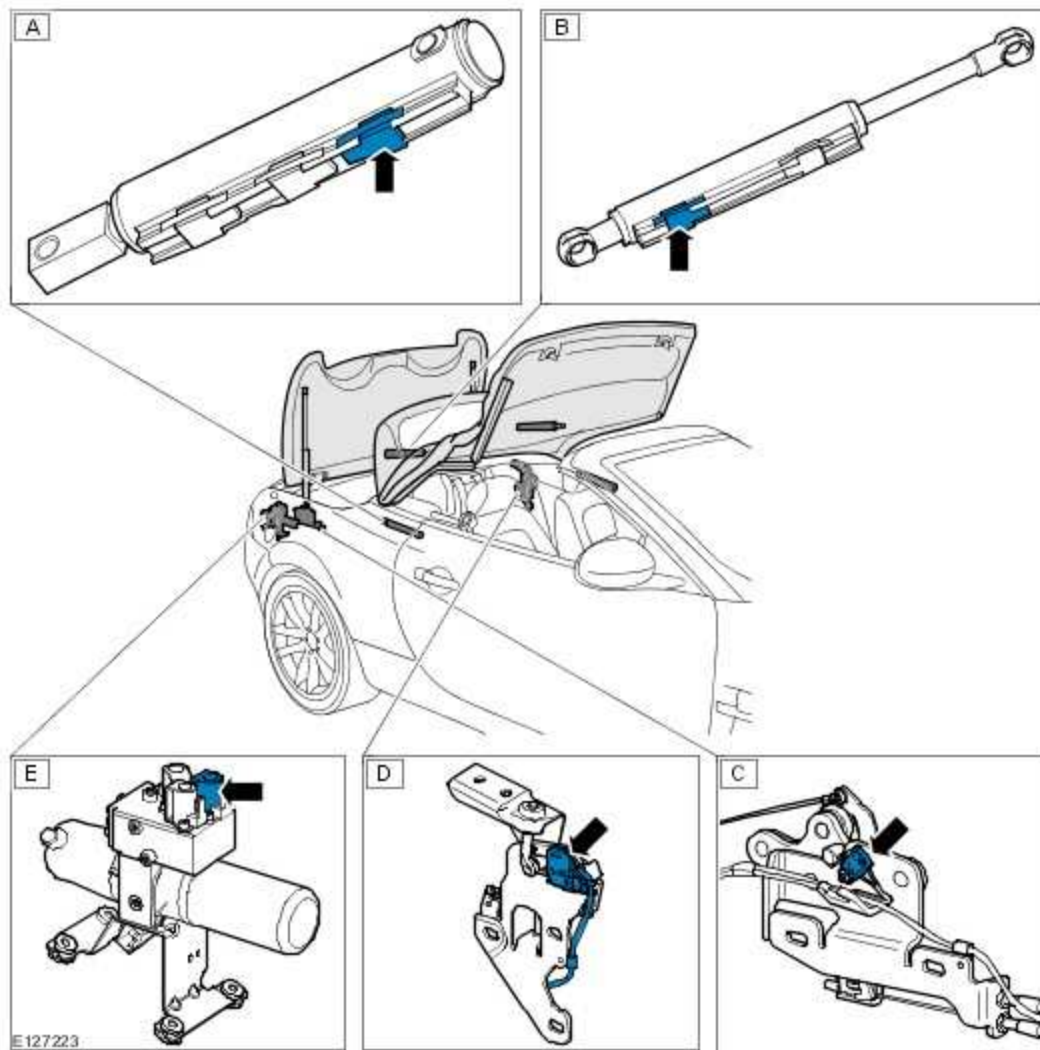
E127190

- The control module will confirm the 'in' sensor in the main bow cylinder (A) is not transmitting a convertible top raised signal. (Data-Logger: Convertible Top position sensor inputs - Main bow piston IN sensor - **INACTIVE**).
- Once confirmed the control module energizes the 'tension bow up' solenoid valve (B-1) and powers the hydraulic pump (B-2) in the raise direction. (Data-Logger: Convertible Top module motor outputs – Tension bow valve 2 – **ON**). (Data-Logger: Convertible Top module motor outputs - Convertible top left pump - **OFF**). (Data-Logger: Convertible Top module motor outputs - Convertible top right pump - **ON**).

NOTE:

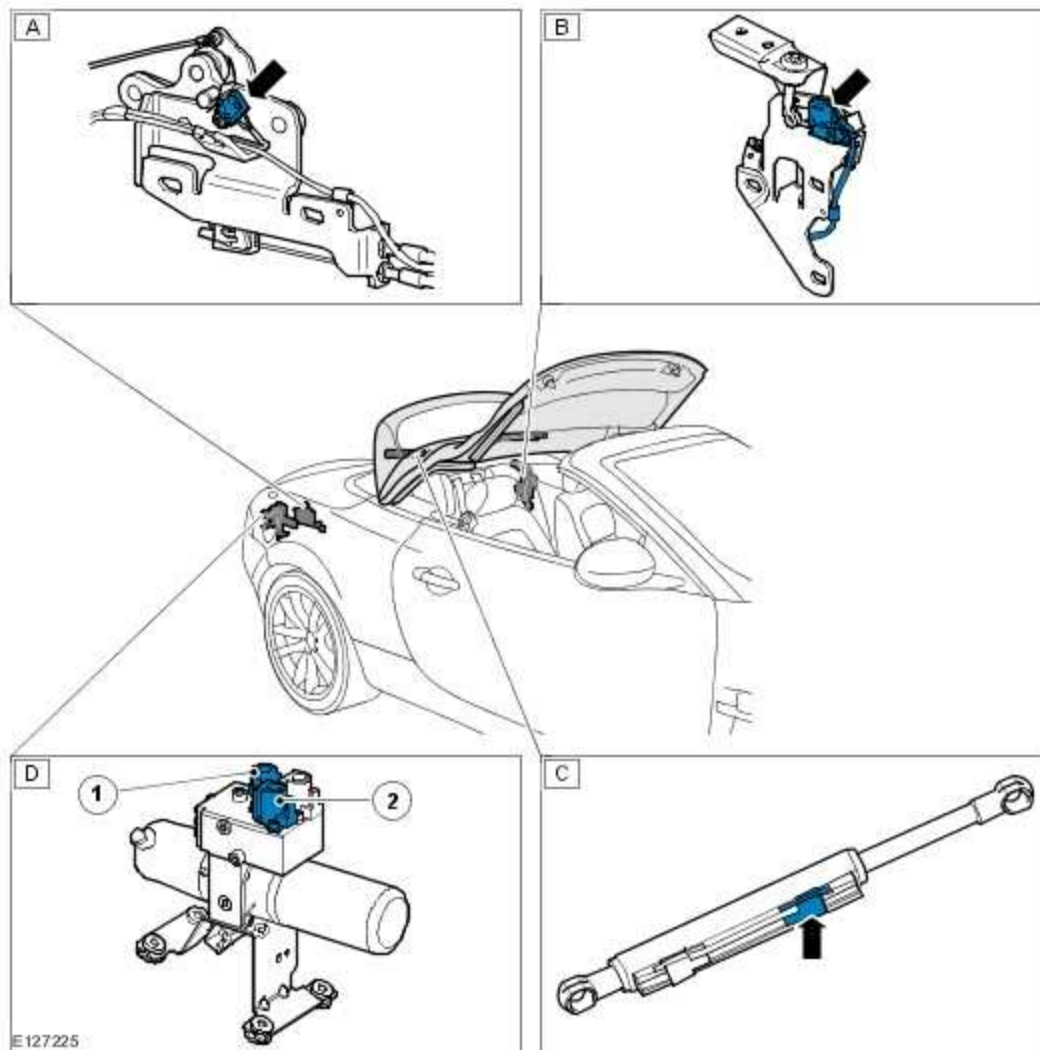
The 'tension bow up' solenoid valve (B-1) remains energized.

Stage 10: Convertible Top and Tension Bow - raised



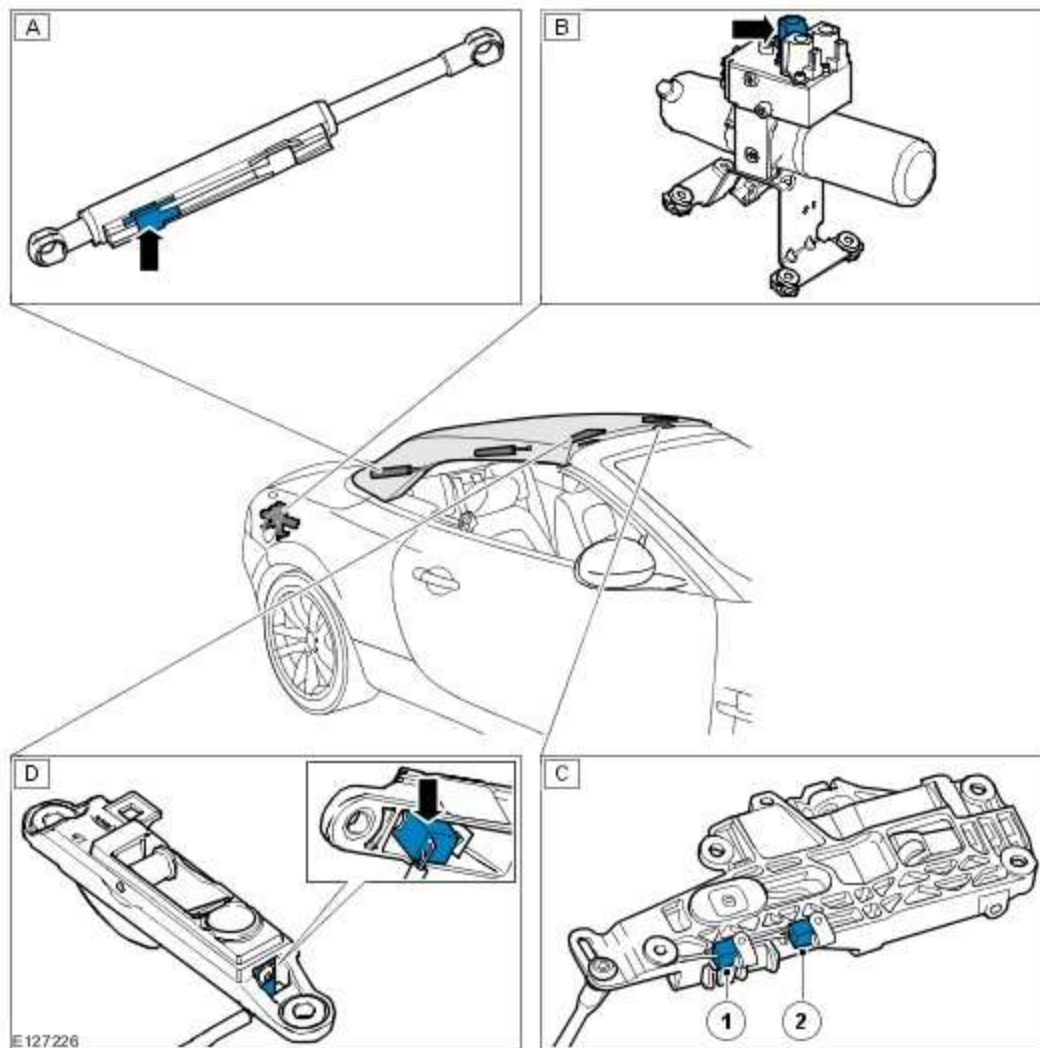
- The control module will confirm the 'in' sensor in the main bow cylinder (A) is transmitting a signal to indicate the convertible top is raised. (Data-Logger: Convertible Top position sensor inputs - Main bow piston IN sensor - **ACTIVE**).
- The control module will confirm the 'in' sensor in the tension bow cylinder (B) is transmitting a 'tension bow up' signal; verifying the tension bow is in the raised position. (Data-Logger: Convertible Top position sensor inputs – Tension bow piston IN sensor - **ACTIVE**).
- The control module will confirm the tonneau panel switches (C) and (D) which are wired in series are not transmitting a signal; verifying the tonneau panel is not latched. (Data-Logger: Convertible Top Switch inputs – Convertible top lid compartment cover latch status - **OFF**).
- Once confirmed the control module de-energizes the tonneau panel solenoid valve (E), powering the tonneau panel closed. (Data-Logger: Convertible Top module motor outputs – Compartment cover valve 1 – **OFF**).

Stage 11: Tonneau Panel - closed



- The control module will confirm the tonneau panel switches (A) and (B) which are wired in series are transmitting a tonneau panel closed signal. (Data-Logger: Convertible Top Switch inputs – Convertible top lid compartment cover latch status - **ON**).
- The control module will confirm the ‘out’ sensor in the tension bow cylinder (C) is not transmitting a signal; verifying the tension bow is in the raised position. (Data-Logger: Convertible Top position sensor inputs – Tension bow piston OUT sensor - **INACTIVE**).
- Once confirmed the control module de-energizes the ‘tension bow up’ solenoid valve (D-1), and energizes the ‘tension bow down’ solenoid valve (D-2), causing the tension bow to lower. (Data-Logger: Convertible Top module motor outputs – Tension bow valve 2 – **OFF**). (Data-Logger: Convertible Top module motor outputs – Tension bow valve 3 – **ON**).

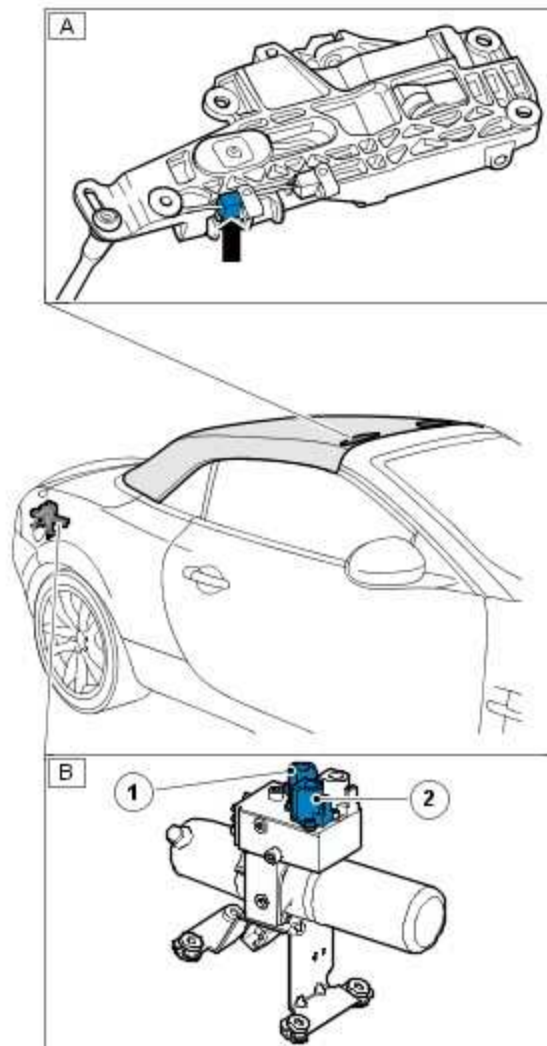
Stage 12: Tension Bow - lowered



- The control module will confirm the 'out' sensor in the tension bow cylinder (A) is transmitting a signal; verifying the tension bow is in the lowered position. (Data-Logger: Convertible Top position sensor inputs – Tension bow piston OUT sensor - **ACTIVE**).
- Once confirmed the control module switches off the hydraulic pump, and energizes the 'tension bow up' solenoid valve (B). (Data-Logger: Convertible Top module motor outputs - Convertible top right pump - **OFF**). (Data-Logger: Convertible Top module motor outputs – Tension bow valve 2 - **ON**).
- The control module will confirm that the 'close' sensor in the front latch (C-1) is not transmitting a signal; verifying the latches are open. (Data-Logger: Convertible Top position sensor inputs – Front latch closed sensor – **INACTIVE**).
- Once confirmed control module powers the front latch motor to pull the convertible top down and direct the convertible top's latch claws to latch onto the header strikers. (Data-Logger: Convertible Top module motor outputs - Latch motor close - **ON**).
- When the convertible top is fully latched, the 'open' latch sensor (C-2) signal is lost, and the sensor (C-1) and convertible top latched sensor (D) signals are supplied. (Data-Logger: Convertible Top position sensor inputs – Front latch open sensor – **INACTIVE**). (Data-Logger: Convertible Top position sensor inputs – Front latch closed sensor – **ACTIVE**). (Data-Logger: Convertible Top position sensor inputs – Convertible top latched sensor – **ACTIVE**).

- The control module will confirm the sensor in the top latch (D) is transmitting a signal. (Data-Logger: Convertible Top position sensor inputs – Convertible top latched sensor – **ACTIVE**).
- Once confirmed the control module switches off the latch motor. (Data-Logger: Convertible Top module motor outputs - Latch motor close - **OFF**).

Stage 13: Convertible Top - latched



E127228

- The control module will confirm the 'close' sensor (A) in the front latch is transmitting a signal. (Data-Logger: Convertible Top position sensor inputs – Convertible top latched sensor – **ACTIVE**).
- Once confirmed the control module de-energizes the 'tension bow up' solenoid valve (B-1), and the 'tension bow down' solenoid valve (B-2). (Data-Logger: Convertible Top module motor outputs – Tension bow valve 2 – **OFF**). (Data-Logger: Convertible Top module motor outputs – Tension bow valve 3 – **OFF**).
- The control module powers for 4 seconds: both rear quarter glass windows to the raised position, followed by the door glass windows to the raised position. (Data-Logger: Convertible Top module motor outputs - Rear quarter up - **ON**).
- The control module will confirm that all windows are fully closed.
- An audible chime will confirm the completion of the convertible top closing process.

Convertible Top

Principles of Operation

For a detailed description of the Convertible Top operation, refer to the relevant Description and Operation section in the workshop manual.

Inspection and Verification

- 1 . Verify the customer concern.
- 2 . Visually inspect for obvious signs of damage and system integrity.

Mechanical	Electrical
- Luggage separator position - Luggage compartment lid is closed - Latching assemblies/mechanisms	- Fuses - Wiring harness - Correct engagement of electrical connectors - Loose or corroded connections

- 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 DTC Index.

Symptom Chart

Symptom	Possible Cause	Action
There is a ten second delay in convertible top movement when switch is operated	Door window glass upper and lower parameters have not been set	Carry out the 'Door Window Motor Initialization' procedure. Door Window Motor Initialization
Rear quarter window glass is not fully closed/raised when convertible top close cycle is complete	- Glass sticking in seals - Battery voltage low	Press and hold convertible top switch in close position. The door window glass will be driven down, then the rear quarter window glass will be driven up for four seconds, followed by the door window glass to fully closed. Check

		battery is in fully charged and serviceable condition. Refer to the battery care manual
Glass will not raise after the convertible top has been raised manually	Latched signal is not being seen	Manually latch the convertible top compartment lid by pushing the convertible top compartment lid cylinder forward until the latch has travelled over center
Glass will not raise	Latched signal is not being seen	Carry out the convertible top compartment lid latch over center bracket setting procedure
Excessive gap between front edge of convertible top and windshield header when manually closed	Convertible top header latch not in fully open position when latched with convertible top	Manually open the latch when pushing the front of the convertible top upwards until the fork is seen to locate on the pin - the top can then be re-latched manually
Convertible top module memory lost	Ignition set to OFF when convertible top is mid cycle	Move convertible top to fully open position, this is recognised by the module as a safe start position which will allow cycle to be re-started

DTC Index



CAUTION: When probing connectors to take measurements in the course of the pinpoint tests, use the adaptor kit, part number 3548-1358-00.

NOTE:

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.

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 additional information read by the manufacturer approved diagnostic system).

NOTE:

When performing electrical voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places, and with an up-to-date 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:

Inspect connectors for signs of water ingress, and pins for damage and/or corrosion.

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
B107923	Convertible top up switch	Signal Stuck Low	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B107A23	Convertible top down switch	Signal Stuck Low	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B107B15	Convertible top pump motor	Convertible top pump motor circuit - short to power, high resistance	Refer to the electrical circuit diagrams and test convertible top pump motor circuit for short to power, high resistance
B107B11	Convertible top pump motor	Convertible top pump motor circuit - short to ground	Refer to the electrical circuit diagrams and test convertible top pump motor circuit for short to ground
B107C15	Convertible top rear quarter motor	Convertible top rear quarter motor circuit - short to power, high resistance	Refer to the electrical circuit diagrams and test convertible top rear quarter motor circuit for short to power, high resistance
B107C11	Convertible top rear quarter motor	Convertible top rear quarter motor circuit - short to ground	Refer to the electrical circuit diagrams and test convertible top rear quarter motor circuit for short to ground
B107D15	Convertible top latch motor	Convertible top latch motor circuit - short to power, high resistance	Refer to the electrical circuit diagrams and test convertible top latch motor circuit for short to power, high resistance
B107D11	Convertible top latch motor	Convertible top latch motor circuit - short to	Refer to the electrical circuit diagrams and test convertible top latch motor circuit for

		ground	short to ground
B107E15	Convertible top compartment lid valve 1	Convertible top compartment lid valve1 circuit - short to power, high resistance	Refer to the electrical circuit diagrams and test convertible top compartment lid valve1 circuit for short to power, high resistance
B107E11	Convertible top compartment lid valve 1	Convertible top compartment lid valve1 circuit - short to ground	Refer to the electrical circuit diagrams and test convertible top compartment lid valve1 circuit for short to ground
B107F15	Tension bow valve 2	Tension bow valve 2 circuit - short to power, high resistance	Refer to the electrical circuit diagrams and test tension bow valve 2 circuit for short to power, high resistance
B107F11	Tension bow valve 2	Tension bow valve 2 circuit - short to ground	Refer to the electrical circuit diagrams and test tension bow valve 2 circuit for short to ground
B108015	Tension bow valve 3	Tension bow valve 3 circuit - short to power, high resistance	Refer to the electrical circuit diagrams and test tension bow valve 3circuit for short to power, high resistance
B108011	Tension bow valve 3	Tension bow valve 2 circuit - short to ground	Refer to the electrical circuit diagrams and test tension bow valve 2 circuit for short to ground
B107031	Convertible top compartment lid piston out sensor	No signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B107131	Tension bow piston in sensor	No signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B107231	Tension bow piston out sensor	No signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B107331	Main bow piston in sensor	No signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B107431	Main bow piston out sensor	No signal	Carry out any pinpoint tests associated with this DTC using the manufacturer

			approved diagnostic system
B107531	Main bow piston centre sensor	No signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B107631	Front latch open sensor	No signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B107731	Front latch close sensor	No signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B107831	Convertible top latched sensor	No signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B113531	Convertible top compartment lid switch	No signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U001088	Medium speed CAN communication Bus	Bus off	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U014000	Lost communication CJB	Lost communication CJB	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U014200	Lost communication with RJB	Lost communication with RJB	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U015500	Lost communication with Instrument Cluster	Lost communication with Instrument Cluster	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U019900	Lost communication with Driver Door Module (DDM)	Lost communication with Driver Door Module (DDM)	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U020000	Lost communication with Passenger Door Module (PDM)	Lost communication with Passenger Door Module (PDM)	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system

U030000	Control module software incompatibility	RJB car configuration data is not compatible with the convertible top module	Re-configure the RJB using the manufacturer approved diagnostic system. Clear DTCs and re-test. If DTC still logged, suspect convertible top module. Refer to new module installation note at top of DTC Index
U049A67	Invalid data received from Driver Door Module (DDM)	Signal incorrect after event	Check DDM for DTCs and refer to DTC Index
U050167	Invalid data received from Passenger Door Module (PDM)	Signal incorrect after event	Check PDM for DTCs and refer to DTC Index
U1A1449	CAN initialisation failure	Internal electronic failure	Install a new convertible top module, refer to the new module installation note at the top of the DTC Index
U1A4C68	Build/end of line mode active	Manufacturing mode has not been removed	Set convertible top to customer mode using manufacturer approved diagnostic system
U300316	Battery voltage	Circuit voltage below threshold	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U300317	Battery voltage	Circuit voltage above threshold	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system

Convertible Top Compartment Lid Latch, Over Center Bracket Setting Procedure

- 1 . Set hydraulic pump to manual override.
- 2 . Set ignition status to OFF.
- 3 . Open the convertible top compartment lid to access the top fixing nut of the latch bracket on the right hand wheelhouse and slacken the nut.
- 4 . Slacken the two lower fixing nuts of the latch bracket on the right hand wheel house, these can be accessed through the luggage compartment.

5 . Position the mechanism to the fully over center position, then push the bracket forward until the cylinder is at it's shortest length, then release.

6 . Tighten the two lower fixing nuts to 9Nm, open the convertible top compartment lid and tighten the top fixing nut to 9Nm.

Convertible Top Assembly (76.86.15)

Removal

- 1 . Remove the rear quarter trim panels.
For additional information, refer to [Rear Quarter Trim Panel - Convertible \(76.13.73\)](#)
- 2 . Remove the RH loadspace trim panel.
For additional information, refer to [Loadspace Trim Panel - Convertible \(76.13.73.60\)](#)

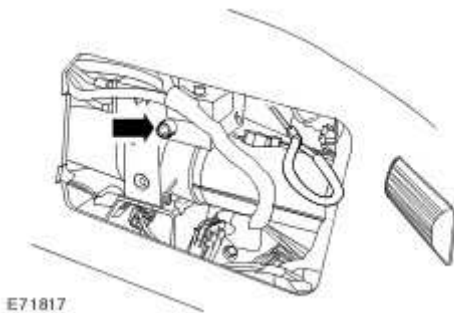
- 3  **CAUTION: Do not loosen the Allen bolt more than 2 complete turns. Failure to follow this instruction may result in damage to the vehicle.**

NOTE:

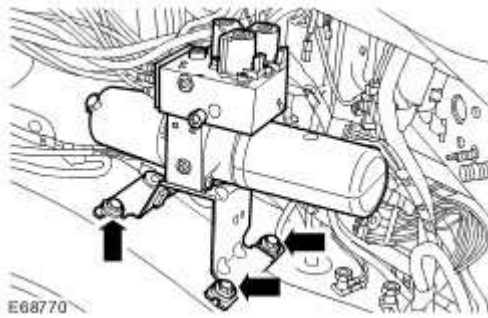
The ignition must be switched off.

Release the convertible top system pressure.

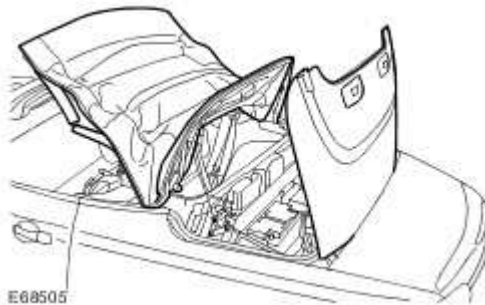
- ▶ Loosen the Allen bolt up to a maximum of 2 complete turns.



- 4 . Disconnect the convertible top hydraulic pump electrical connectors.
- 5 . Release the convertible top hydraulic pump.
 - ▶ Remove the 3 bolts.

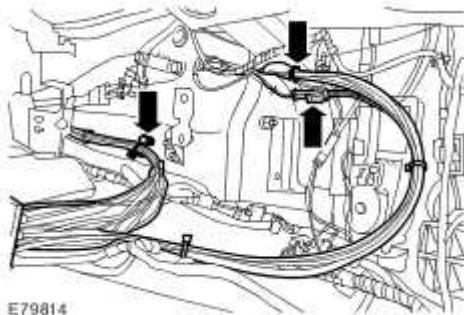


6 . Close the convertible top to the position shown.



7 . Release the convertible top fluid lines and harness.

- ▶ Disconnect the electrical connector.
- ▶ Release the 2 fluid line and harness clips.

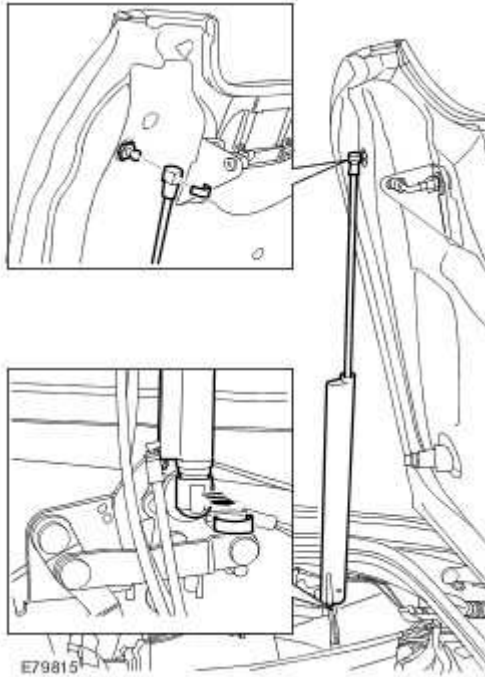


8 . **NOTE:**

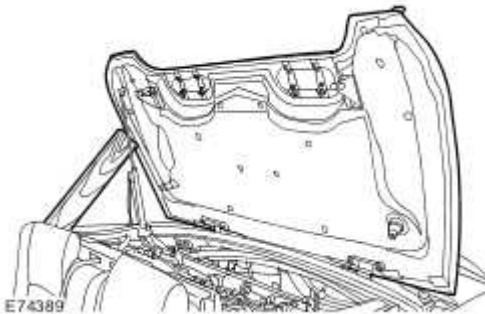
Support the convertible top compartment lid.

Release the convertible top compartment lid RH lift cylinder.

- ▶ Release the 2 clips.



9 . Open the convertible top to the position shown.



10



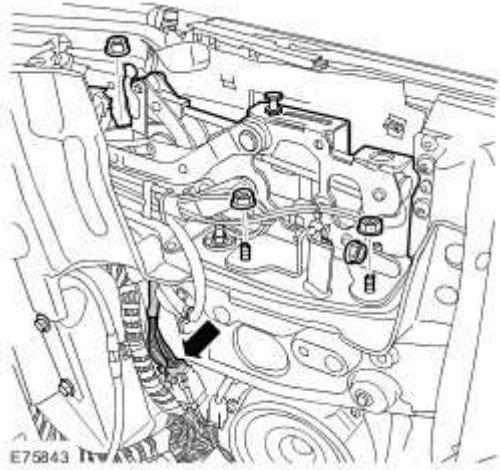
CAUTION: Under no circumstances must the base plate fixing nuts be loosened or removed. Each base plate fixing nut can be identified by a large aluminium spacer.

NOTE:

This step requires the aid of other technicians.

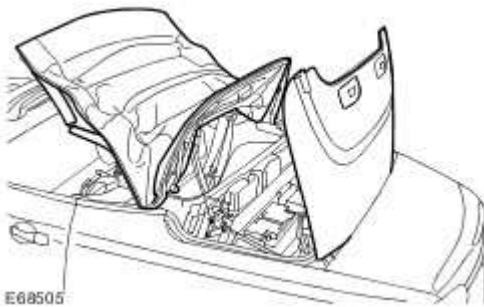
Remove the convertible top assembly.

- Disconnect the 2 electrical connectors.
- Remove the 8 nuts.



Installation

- 1 . Install the convertible top assembly.
 - ▶ Tighten the nuts to 25 Nm.
 - ▶ Connect the electrical connectors.
- 2 . Align the convertible top assembly.
For additional information, refer to [Convertible Top Alignment](#)
- 3 . Close the convertible top to the position shown.

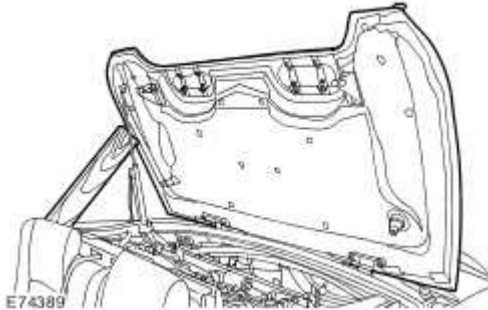


- 4 . **NOTE:**
Support the convertible top compartment lid.

Attach the convertible top compartment lid RH lift cylinder.
 - ▶ Secure with the clips.
- 5 . Secure the convertible top fluid lines and harness.
 - ▶ Secure the fluid line and harness clips.

- ▶ Connect the electrical connector.
- ▶ Install new cable ties.

6 . Open the convertible top to the position shown.



7 . Secure the convertible top hydraulic pump.

- ▶ Tighten the bolts to 8 Nm.

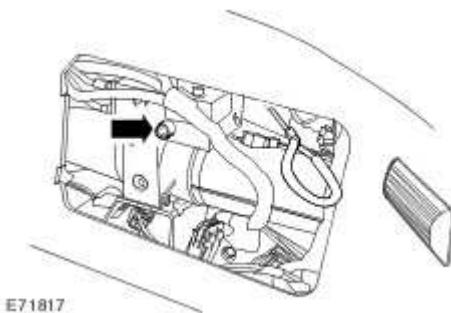
8 . Connect the convertible top hydraulic pump electrical connectors.

9 . **NOTE:**

The ignition must be switched off.

Tighten the convertible top system pressure Allen bolt.

- ▶ Tighten to 2 Nm.



10 Install the RH loadspace trim panel.

- . For additional information, refer to [Loadspace Trim Panel - Convertible \(76.13.73.60\)](#)

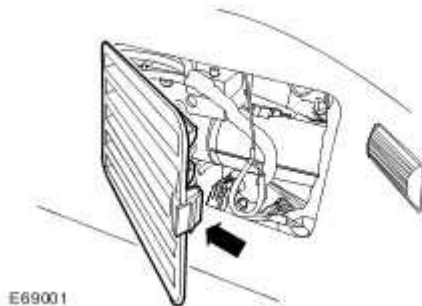
11 . Install the rear quarter trim panels.

- For additional information, refer to [Rear Quarter Trim Panel - Convertible \(76.13.73\)](#)

Convertible Top Headliner (76.86.16)

Removal

- 1 . Remove the header rail upper trim panel.
For additional information, refer to [Header Rail Upper Trim Panel \(76.86.20\)](#)
- 2 . Remove the convertible top hydraulic pump access panel
▶ Release the clip.



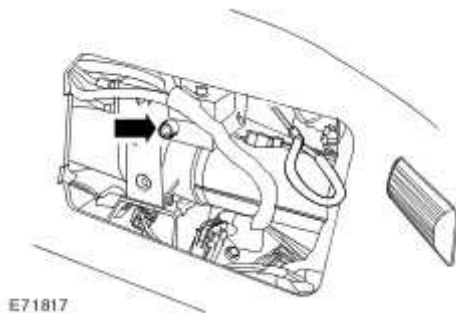
- 3  **CAUTION: Do not loosen the Allen bolt more than 2 complete turns. Failure to follow this instruction may result in damage to the vehicle.**

NOTE:

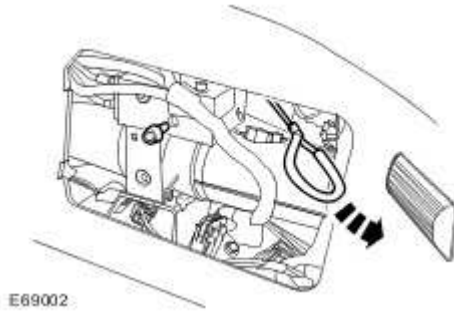
The ignition must be switched off.

Release the convertible top system pressure.

- ▶ Loosen the Allen bolt up to a maximum of 2 complete turns.



- 4 . Release the convertible top compartment lid.
▶ Release using the cable.



5 . **NOTE:**

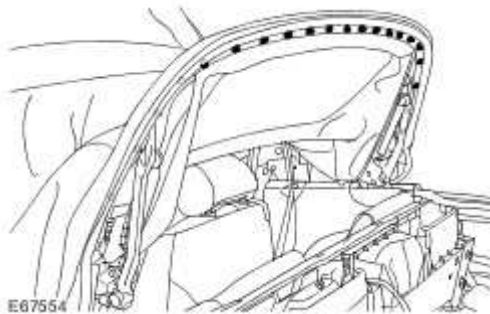
Support as necessary.

Open the convertible top to the position shown.

- ▶ Raise the rear of the convertible top.

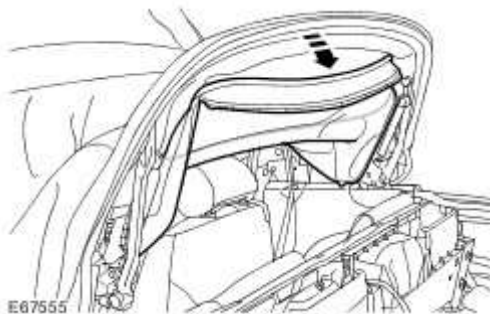
6 . Release the rear edge of the convertible top headliner.

- ▶ Remove the 21 Torx screws.
- ▶ Remove the securing bracket.



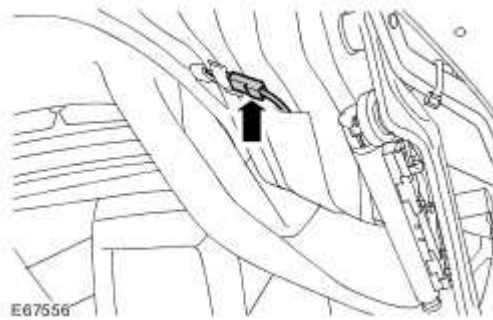
7 . Release the headliner from the rear window.

- ▶ Release from the Velcro strip.



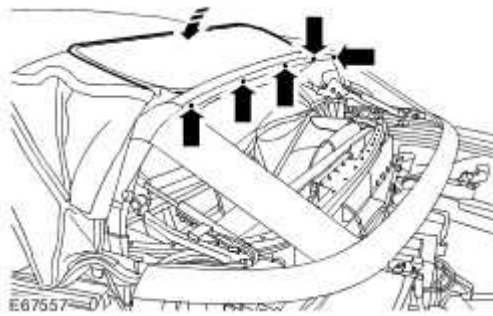
8 . Release the heated rear window wires from the headliner.

- ▶ Disconnect both heated rear window electrical connectors.
- ▶ Release the heated rear window wires from the headliner.



9 Reposition the rear window

- ▶ Fold over the rear window to allow access to the headliner retaining screws.



10 . NOTE:

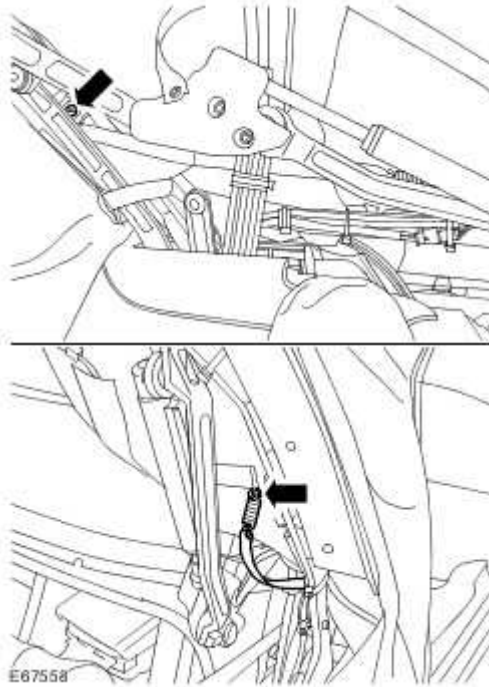
Take note of the routing.

NOTE:

Note the fitted position.

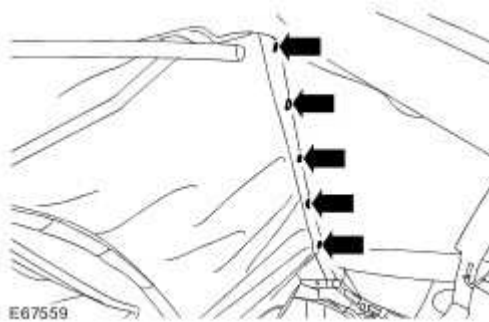
Release the headliner rear tension straps.

- ▶ Remove the 2 Torx bolts.
- ▶ Release the 2 springs.



11 . Release the headliner from the rear of the convertible top frame.

➤ Remove the 5 screws.

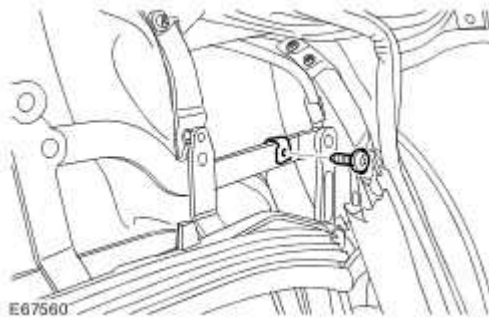


12 . **NOTE:**

Note the fitted position.

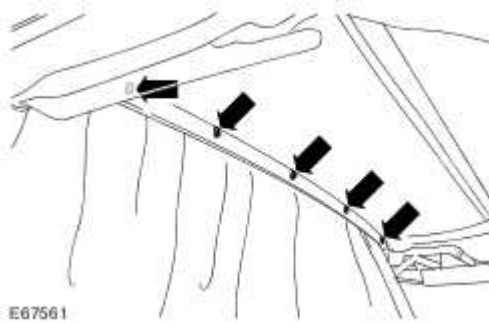
Release the headliner central tension straps.

➤ Remove the 2 Torx bolts.



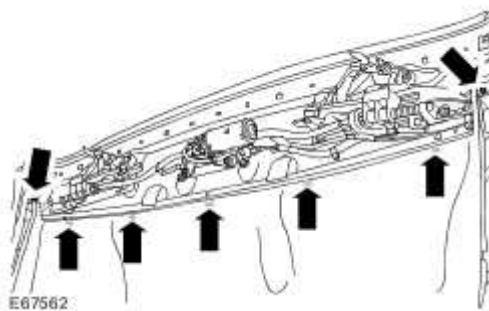
13 . Release the headliner from the center of the convertible top frame.

- ▶ Remove the 5 screws.



14 . Release the headliner from the front of the convertible top frame.

- ▶ Remove the 5 screws.
- ▶ Remove the 2 bolts.
- ▶ Collect the retaining bracket.



15 . Remove the headliner.

Installation

- 1  **CAUTION: Ensure grease from latching mechanisms does not contact the headliner.**

Secure the headliner to the front of the convertible top frame.

- ▶ Position the retaining bracket.
- ▶ Install and tighten the screws.
- ▶ Tighten the bolts to 10 Nm.

- 2 . Secure the headliner to the center of the convertible top frame.

- ▶ Remove the 5 screws.
- ▶ Install and tighten the screws.

- 3 . **NOTE:**

Note the fitted position.

Attach the headliner central tension straps.

- ▶ Tighten the Torx bolts to 4 Nm.

- 4 . Secure the headliner to the rear of the convertible top frame.

- ▶ Install and tighten the screws.

- 5 . **NOTE:**

Take note of the routing.

NOTE:

Note the fitted position.

Attach the headliner rear tension straps.

- ▶ Tighten the Torx bolts to 4 Nm.
- ▶ Attach the springs.

- 6 Reposition the rear window

- ▶ Fold over the rear window to allow access to the headliner retaining screws.
- ▶ Fold the rear window into fitted position.

- 7 . Secure the heated rear window wires to the headliner.

- ▶ Attach the heated rear window wires to the headliner.
- ▶ Connect the electrical connectors.

- 8 . Secure the rear edge of the convertible top headliner.

- ▶ Position the securing bracket.
- ▶ Install and tighten the Torx screws.

9 . NOTE:

Support as necessary.

Close the convertible top compartment lid.

- ▶ Raise the rear of the convertible top.

10 . Install the header rail upper trim panel.

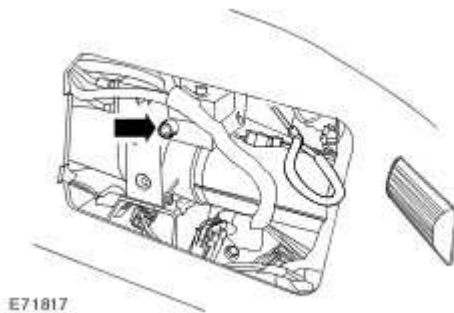
For additional information, refer to [Header Rail Upper Trim Panel \(76.86.20\)](#)

11 . NOTE:

The ignition must be switched off.

Tighten the convertible top system pressure Allen bolt.

- ▶ Tighten to 2 Nm.



12 . Install the convertible top hydraulic pump access panel

- ▶ Secure in the clip.

13 . Operate the convertible top fully in each direction.

- ▶ Depress the switch.

Convertible Top Latch (76.86.19)

Removal

- 1 . Remove the header rail upper trim panel.

For additional information, refer to [Header Rail Upper Trim Panel \(76.86.20\)](#)

- 2 . Release the convertible top locking mechanism rod.

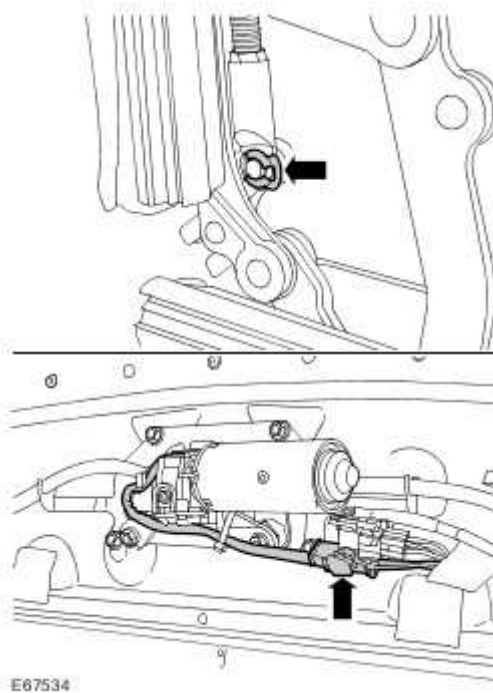
▶ Remove the retaining clip.

- 3 . **NOTE:**

Electrical connector is installed on the LH latch only.

Release the convertible top latch assembly.

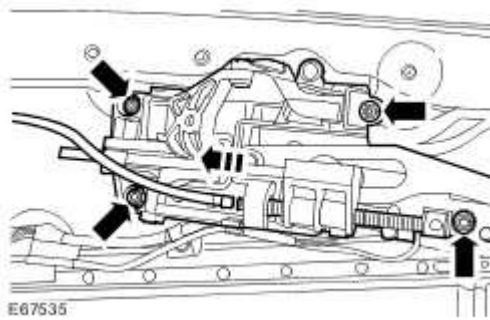
▶ Disconnect the electrical connector.



- 4 . Remove the convertible top latch assembly.

▶ Remove the 4 nuts.

▶ Release the drive cable.



Installation

- 1 . Install the convertible top latch assembly.
 - ▶ Attach the drive cable.
 - ▶ Tighten the nuts to 10 Nm (7 lb.ft).
 - ▶ Connect the electrical connector.
- 2 . Attach the convertible top locking mechanism rod.
 - ▶ Install the retaining clip.
- 3 . Install the header rail upper trim panel.

For additional information, refer to [Header Rail Upper Trim Panel \(76.86.20\)](#)

Header Rail Upper Trim Panel (76.86.20)

Removal

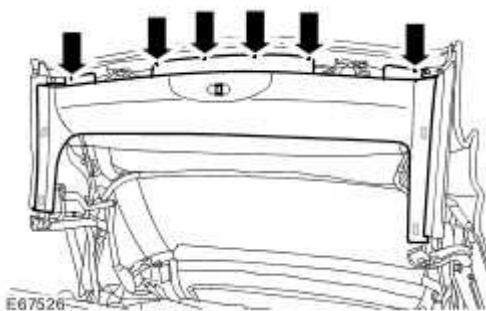
- 1 . Release the convertible top front latches.

- ▶ Depress the switch.

- 2 . Remove the header rail upper trim panel.

- ▶ Remove the 6 screws.

- ▶ Release the 4 clips.



Installation

- 1 . Install the header rail upper trim panel.

- ▶ Secure with the clips.

- ▶ Install and tighten the screws.

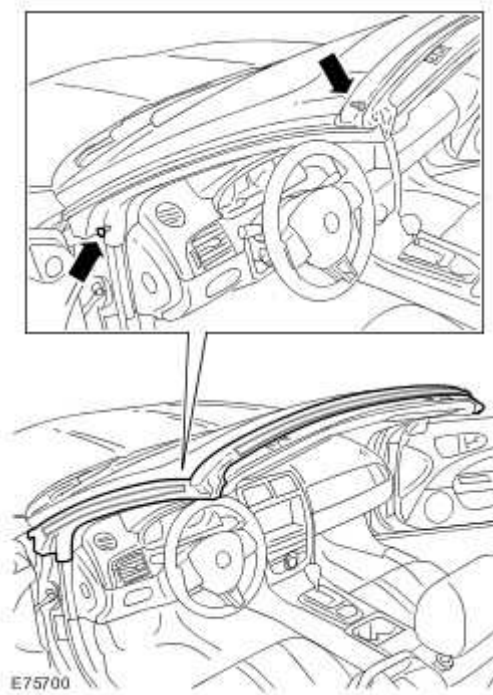
- 2 . Close the the convertible top.

- ▶ Depress the switch.

Header Rail Weatherstrip

Removal

- 1 . Open the convertible top.
 - ▶ Depress the switch.
- 2 . Release the header rail weatherstrip.
 - ▶ Remove the 4 clips.



- 3 . Remove the header rail weatherstrip.
 - ▶ Release from the header rail.

Installation

- 1 . Install the header rail weatherstrip.
 - ▶ Attach to the header rail.
- 2 . Secure the header rail weatherstrip.
 - ▶ Install the clips.
- 3 . Close the convertible top.

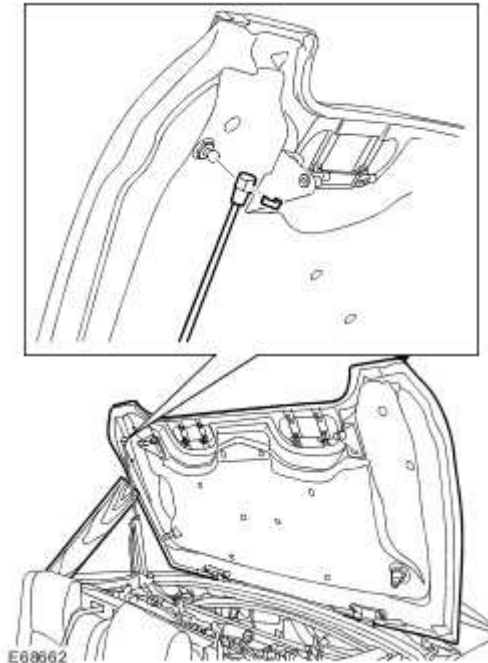
 Depress the switch.

Convertible Top Compartment Lid

Removal

1 . Open the convertible top to the position shown.

- ▶ Depress the switch.
- ▶ Support as necessary.

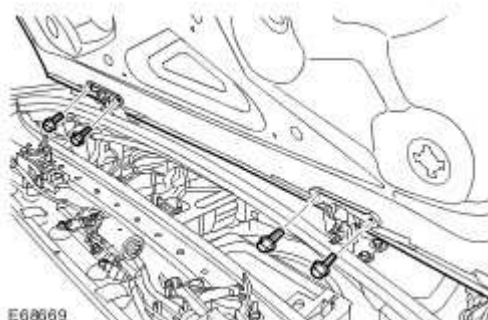


2 . Release the convertible top compartment lid lift cylinder.

- ▶ Release the clip.

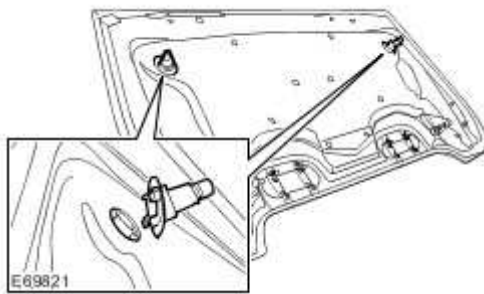
3 . With assistance, remove the convertible top compartment lid.

- ▶ Remove the 4 bolts.



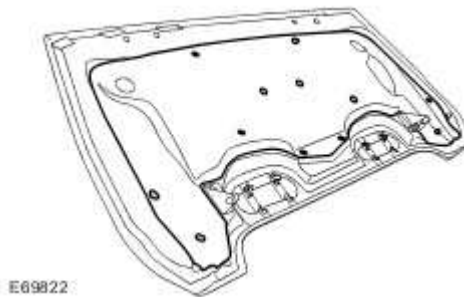
4 . Remove the convertible top compartment lid buffers.

► Release the clips.

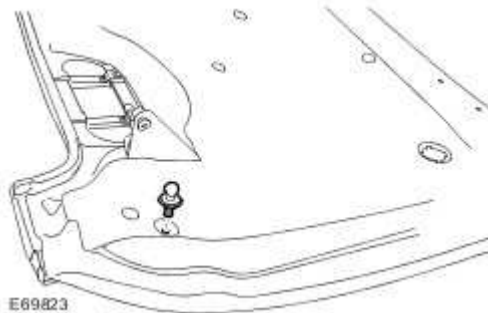


5 . Remove the convertible top compartment lid pad.

► Remove the 11 clips.



6 . Remove the convertible top compartment lid lift cylinder spigot.



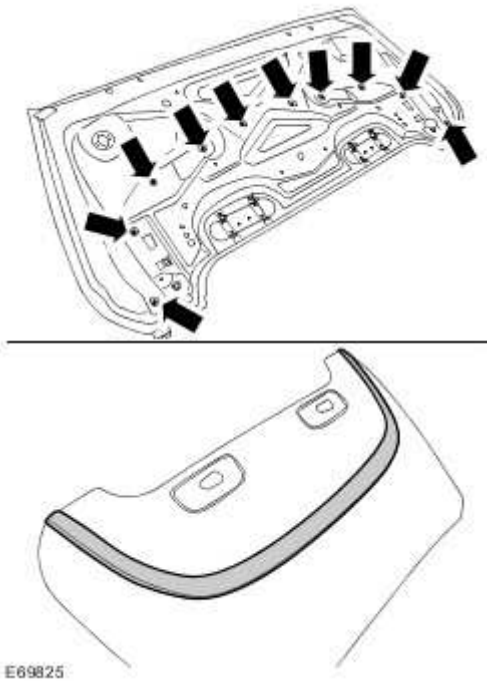
7 . Remove the convertible top compartment lid strikers.

► Remove the 4 bolts.



8 . Remove the convertible top compartment moulding.

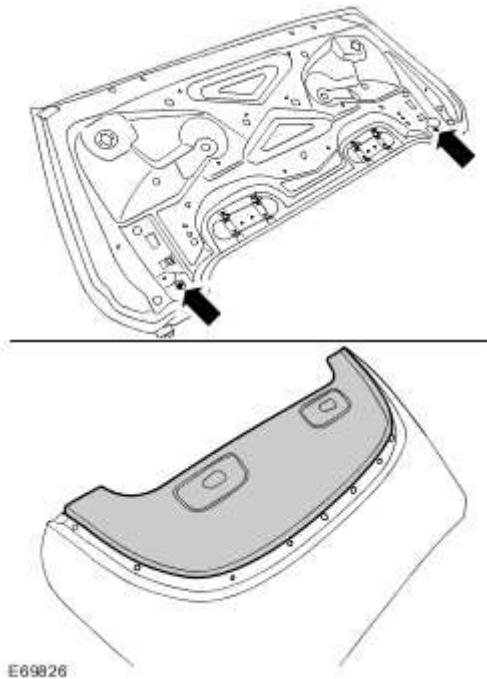
▶ Remove the 10 nuts.



9 . Remove the convertible top compartment trim panel.

▶ Remove the 2 Torx bolts.

▶ Release from the 8 clips.



Installation

- 1 . Install the convertible top compartment trim panel.
 - ▶ Install and tighten the Torx screws.
 - ▶ Secure with the clips.
- 2 . Install the convertible top compartment moulding.
 - ▶ Tighten the nuts to 4 Nm (3 lb.ft).
- 3 . Install the convertible top compartment lid strikers.
 - ▶ Tighten the bolts to 9 Nm (7 lb.ft).
- 4 . Install the convertible top compartment lid lift cylinder spigot.
- 5 . Install the convertible top compartment lid pad.
 - ▶ Secure with the clips.
- 6 . Install the convertible top compartment lid buffers.
 - ▶ Release the clips.
 - ▶ Secure in the clips.
- 7 . Check the convertible top compartment lid profile.

- ▶ Loosen the locknut.
- ▶ Adjust the striker.
- ▶ Check the convertible top compartment lid profile.

8 . With assistance, install the convertible top compartment lid.

- ▶ Tighten the bolts to 25 Nm (18 lb.ft).

9 . Attach the convertible top compartment lid lift cylinder.

- ▶ Secure with the clip.

10 . Close the convertible top compartment lid.

- ▶ Remove the support.
- ▶ Depress the switch.

11 . If required, adjust the convertible top compartment lid.

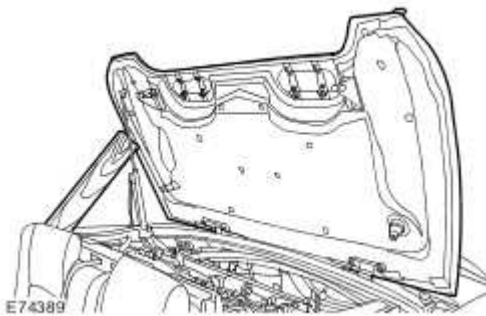
Convertible Top Compartment Lid Trim Panel

Removal

1 . Open the convertible top to the position shown.

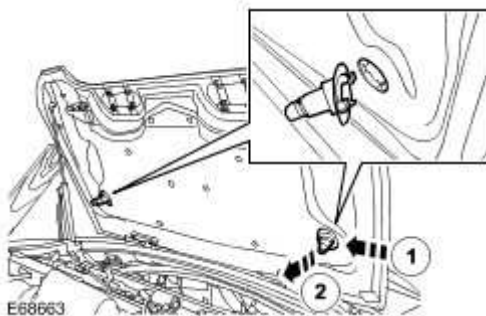
▶ Depress the switch.

▶ Support as necessary.



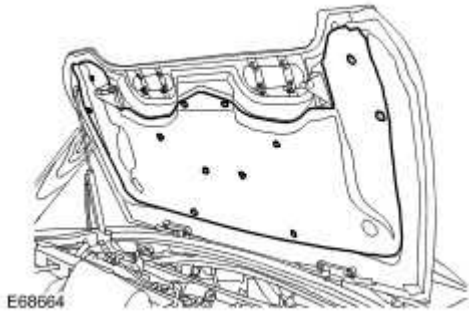
2 . Remove the convertible top compartment lid buffers.

▶ Release the clips.



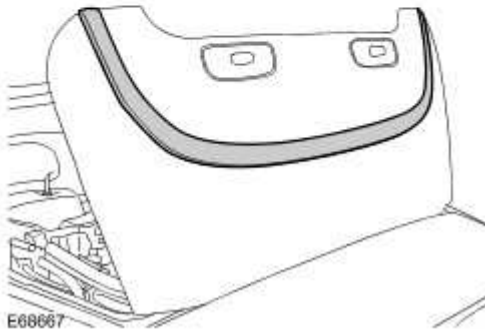
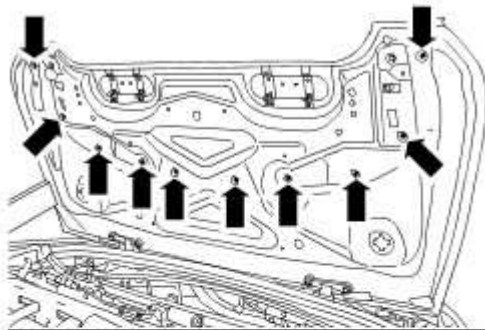
3 . Remove the convertible top compartment lid pad.

▶ Remove the 11 clips.



4 . Remove the convertible top compartment moulding.

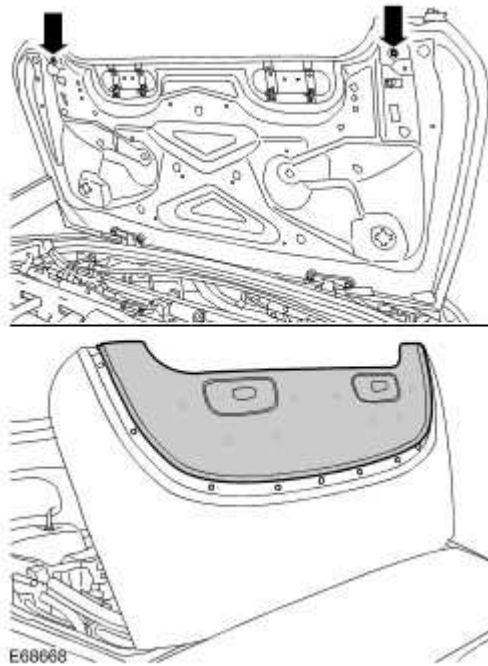
▶ Remove the 10 nuts.



5 . Remove the convertible top compartment trim panel.

▶ Remove the 2 Torx bolts.

▶ Release from the 8 clips.



Installation

- 1 . Install the convertible top compartment trim panel.
 - ▶ Install and tighten the Torx screws.
 - ▶ Secure with the clips.
- 2 . Install the convertible top compartment moulding.
 - ▶ Tighten the nuts to 4 Nm (3 lb.ft).
- 3 . Install the convertible top compartment lid pad.
 - ▶ Secure with the clips.
- 4 . Install the convertible top compartment lid buffers.
 - ▶ Release the clips.
 - ▶ Secure in the clips.
- 5 . Close the convertible top compartment lid.
 - ▶ Remove the support.
 - ▶ Depress the switch.

Convertible Top Compartment Lid Hinge

Removal

- 1 . Remove the convertible top compartment lid.
For additional information, refer to [Convertible Top Compartment Lid](#)
- 2 . Remove the convertible top compartment lid hinge.
 - ▶ Remove the 3 bolts.
 - ▶ Remove and discard the gasket.



Installation

- 1 . Install the convertible top compartment lid hinge.
 - ▶ Install a new gasket.
 - ▶ Tighten the bolts to 25 Nm (18 lb.ft).
- 2 . Install the convertible top compartment lid.
For additional information, refer to [Convertible Top Compartment Lid](#)

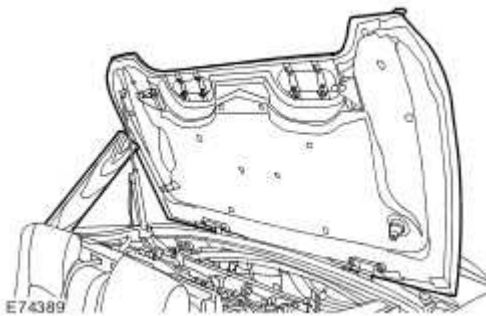
Convertible Top Compartment Lid Moulding

Removal

1 . Open the convertible top to the position shown.

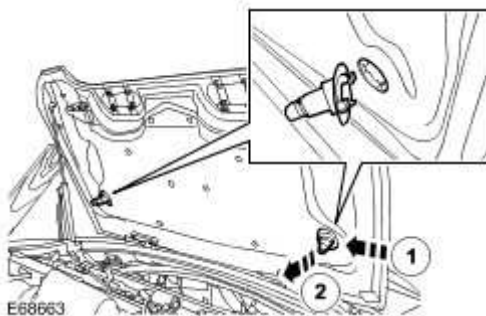
▶ Depress the switch.

▶ Support as necessary.



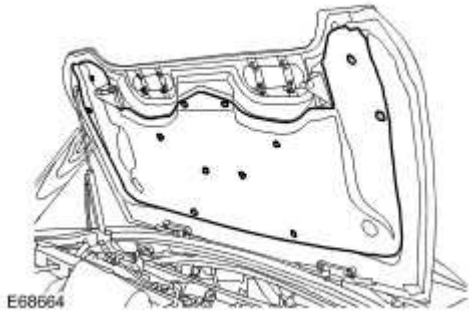
2 . Remove the convertible top compartment lid buffers.

▶ Release the clips.



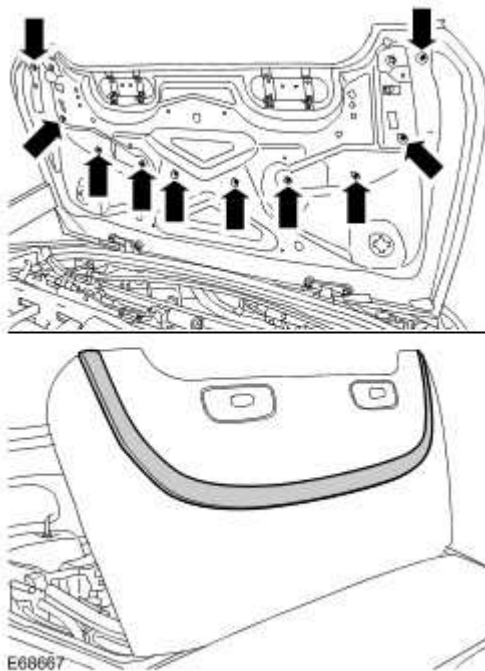
3 . Remove the convertible top compartment lid pad.

▶ Remove the 11 clips.



4 . Remove the convertible top compartment moulding.

▶ Remove the 10 nuts.



Installation

1 . Install the convertible top compartment moulding.

▶ Tighten the nuts to 4 Nm (3 lb.ft).

2 . Install the convertible top compartment lid pad.

▶ Secure with the clips.

3 . Install the convertible top compartment lid buffers.

▶ Release the clips.

 Secure in the clips.

4 . Close the convertible top compartment lid.

 Remove the support.

 Depress the switch.

Convertible Top Compartment Lid Latch

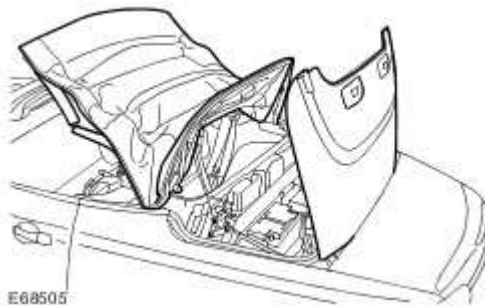
Removal

1 . NOTE:

Support as necessary.

Open the convertible top to the position shown.

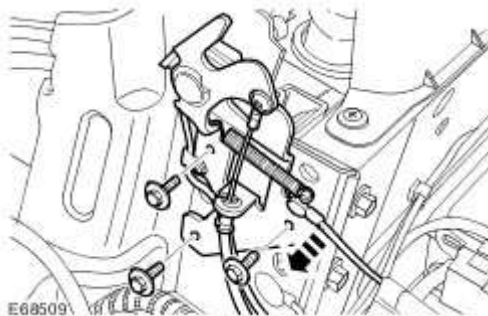
▶ Depress the switch.



2 . Release the luggage compartment retractable cover rail upper tension strap.

3 . Release the convertible top lid latch.

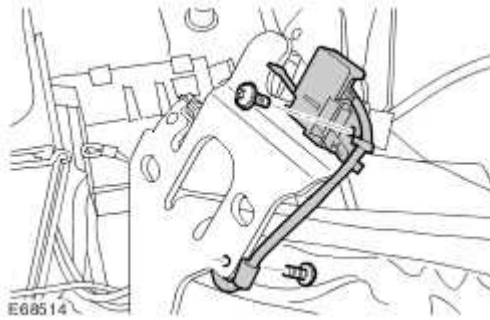
▶ Remove the 3 bolts.



4 . Release the convertible top lid position switch

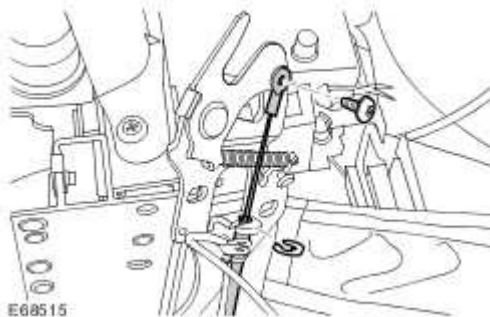
▶ Remove the 2 Torx bolts.

▶ Release the switch.



5 . Release the convertible top latch release cable.

- ▶ Remove the Torx bolt.
- ▶ Carefully release the clip.



Installation

1 . Attach the convertible top latch release cable.

- ▶ Tighten the Torx bolt.
- ▶ Install the clip.

2 . Secure the convertible top lid position switch.

- ▶ Attach the switch.
- ▶ Tighten the Torx bolts.

3 . Secure the convertible top lid latch.

- ▶ Tighten the bolts to 10 Nm (7 lb.ft).

4 . **NOTE:**

Support as necessary.

Close the convertible top compartment lid.

Convertible Top Compartment Lid Release Cables

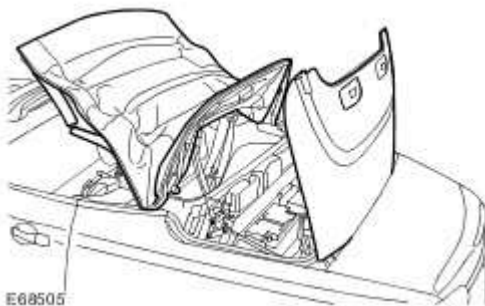
Removal

1 . NOTE:

Support as necessary.

Open the convertible top to the position shown.

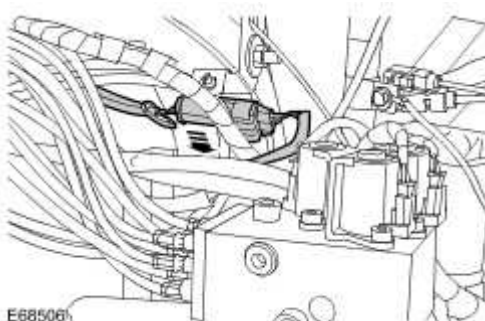
▶ Depress the switch.



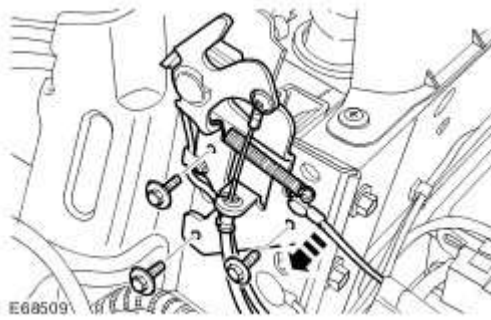
2 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to

3 . Remove the RH loadspace trim panel.
For additional information, refer to [Loadspace Trim Panel - Convertible \(76.13.73.60\)](#)

4 . Release the convertible top electrical connector
▶ Release from the clip.
▶ Disconnect the electrical connector.

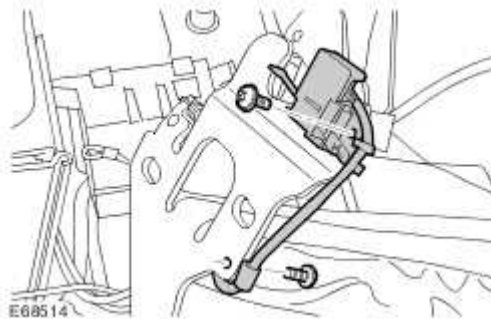


5 . Release the LH convertible top lid latch.
▶ Remove the 3 bolts.



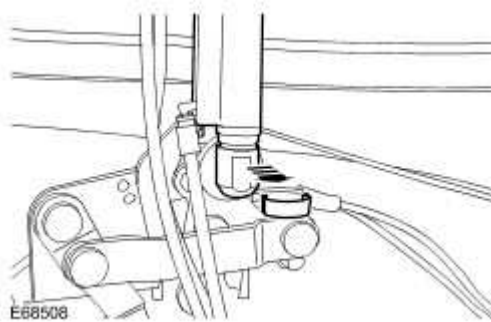
6 . Release the convertible top lid position switch

- ▶ Remove the 2 Torx bolts.



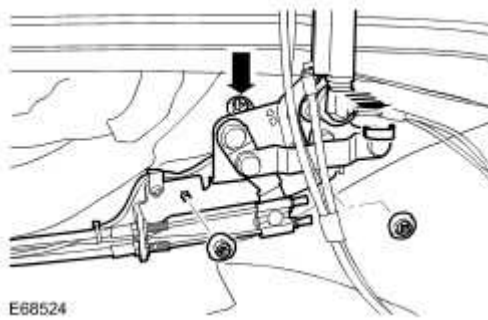
7 . Release the convertible top lid lift cylinder.

- ▶ Release the clip.



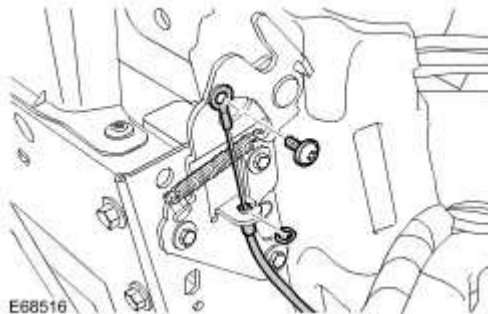
8 . Release the convertible top lid lift cylinder bracket.

- ▶ Remove the 2 lower nuts.
- ▶ Loosen the upper retaining nut.



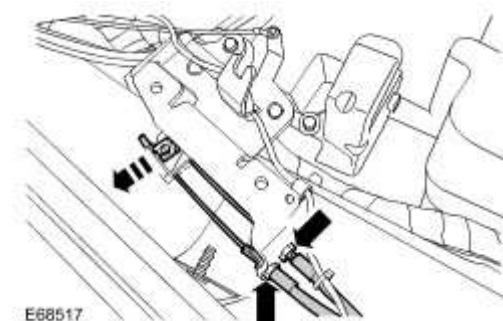
9 . Release the convertible top latch release cables.

- ▶ Remove the 2 Torx bolts.
- ▶ Carefully release the 2 clips.



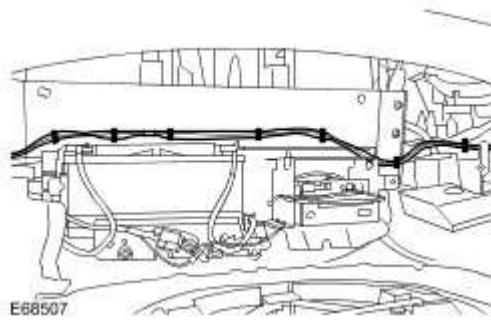
10 . Release the convertible top lid lift cylinder bracket release cables.

- ▶ Loosen the 2 locknuts.
- ▶ Remove the clip.



11 . Remove the convertible top lid release latch cables.

- ▶ Release from the 7 clips.



Installation

- 1 . Install the convertible top lid release latch cables.
 - ▶ Release from the 7 clips.
- 2 . Attach the convertible top lid lift cylinder bracket release cables.
 - ▶ Loosen the 2 locknuts.
 - ▶ Remove the clip.
- 3 . Attach the convertible top latch release cables.
 - ▶ Secure with the clips.
 - ▶ Tighten the Torx bolts.
- 4 . Attach the convertible top lid lift cylinder.
 - ▶ Secure with the clip.
- 5 . Secure the convertible top lid lift cylinder bracket.
 - ▶ Remove the 2 lower nuts.
 - ▶ Loosen the upper retaining nut.
- 6 . Secure the convertible top lid position switch.
 - ▶ Tighten the Torx bolts.
- 7 . Secure the LH convertible top lid latch.
 - ▶ Tighten the bolts to 10 Nm (7 lb.ft).
- 8 . Secure the convertible top electrical connector.
 - ▶ Connect the electrical connector.
 - ▶ Secure with the clip.

9 . Install the RH loadspace trim panel.

For additional information, refer to [Loadspace Trim Panel - Convertible \(76.13.73.60\)](#)

10 . Connect the battery ground cable and install the cover.

For additional information, refer to

11 . Close the convertible top compartment lid.

12 . If required, adjust the convertible top compartment lid.

Convertible Top Compartment Lid Latch and Cable Assembly

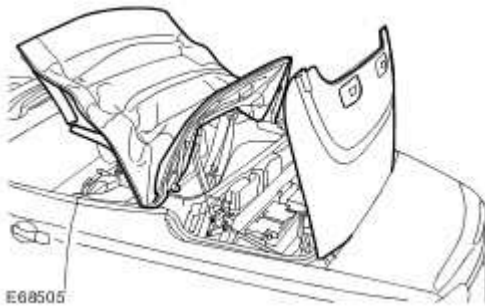
Removal

1 . NOTE:

Support as necessary.

Open the convertible top to the position shown.

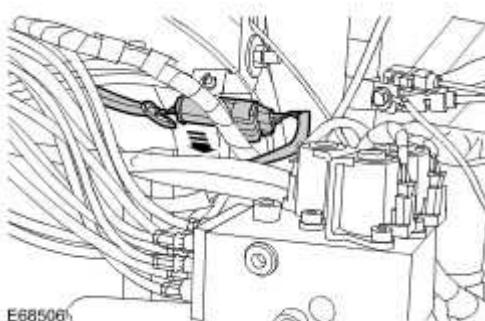
▶ Depress the switch.



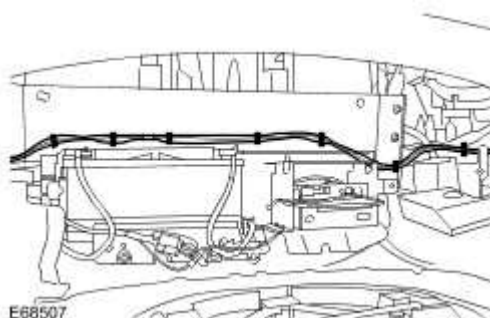
2 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to

3 . Remove the RH loadspace trim panel.
For additional information, refer to [Loadspace Trim Panel - Convertible \(76.13.73.60\)](#)

4 . Release the convertible top electrical connector
▶ Release from the clip.
▶ Disconnect the electrical connector.

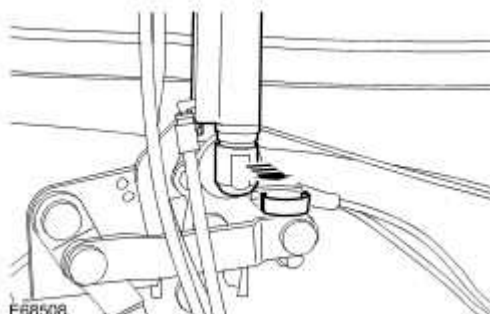


5 . Release the convertible top lid latch and cable assembly.
▶ Release the cables from the 7 clips.



6 . Release the convertible top lid lift cylinder.

▶ Release the clip.



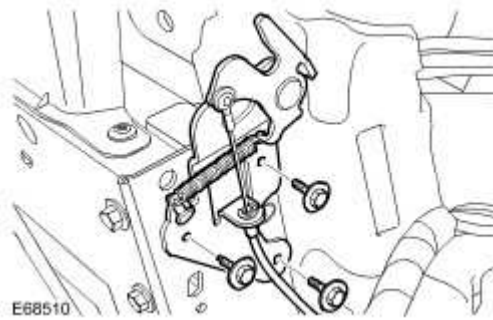
7 . Release the LH convertible top lid latch.

▶ Remove the 3 bolts.



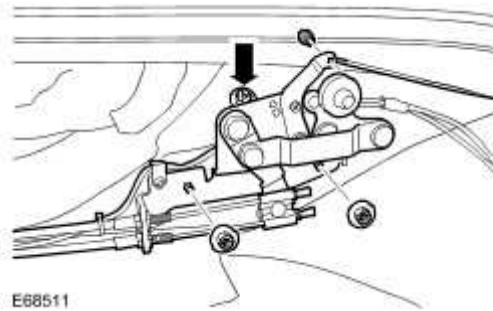
8 . Release the convertible top lid RH latch.

▶ Remove the 3 bolts.



9 . Remove the convertible top lid latch and cable assembly.

- ▶ Remove the 2 lower nuts.
- ▶ Loosen the upper retaining nut.
- ▶ Release the emergency release cable.



Installation

1 . Install the convertible top latch and cable assembly.

- ▶ Attach the emergency release cable.
- ▶ Tighten the nuts to 10 Nm (7 lb.ft).

2 . Secure the convertible top lid RH latch.

- ▶ Tighten the bolts to 10 Nm (7 lb.ft).

3 . Secure the LH convertible top lid latch.

- ▶ Tighten the bolts to 10 Nm (7 lb.ft).

4 . Attach the convertible top lid lift cylinder.

- ▶ Secure with the clip.

5 . Secure the convertible top lid latch and cable assembly.

- ▶ Connect the electrical connector.
- ▶ Secure the cables in the clips.

6 . Secure the convertible top electrical connector.

- ▶ Connect the electrical connector.
- ▶ Secure with the clip.

7 . Install the RH loadspace trim panel.

For additional information, refer to [Loadspace Trim Panel - Convertible \(76.13.73.60\)](#)

8 . Connect the battery ground cable and install the cover.

For additional information, refer to

9 . **NOTE:**

Support as necessary.

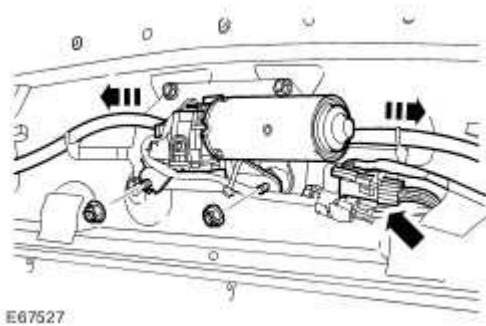
Close the convertible top compartment lid.

- ▶ Raise the rear of the convertible top.

Convertible Top Motor

Removal

- 1 . Remove the header rail upper trim panel.
For additional information, refer to [Header Rail Upper Trim Panel \(76.86.20\)](#)
- 2 . Release the convertible top latch motor.
 - ▶ Disconnect the electrical connector.
- 3 . Remove the convertible top latch motor.
 - ▶ Remove the 2 nuts.
 - ▶ Release the latch motor drive cables.



Installation

- 1 . Install the convertible top latch motor.
 - ▶ Attach the drive cables.
 - ▶ Tighten the nuts to 10 Nm (7 lb.ft).
 - ▶ Connect the electrical connector.
- 2 . Install the header rail upper trim panel.
For additional information, refer to [Header Rail Upper Trim Panel \(76.86.20\)](#)

Hydraulic System, Lift Cylinder and Motor

Removal

1. Remove the RH loadspace trim panel.
For additional information, refer to [Loadspace Trim Panel - Convertible \(76.13.73.60\)](#)

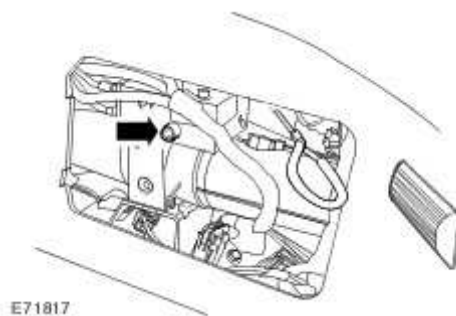
- 2  **CAUTION: Do not loosen the Allen bolt more than 2 complete turns. Failure to follow this instruction may result in damage to the vehicle.**

NOTE:

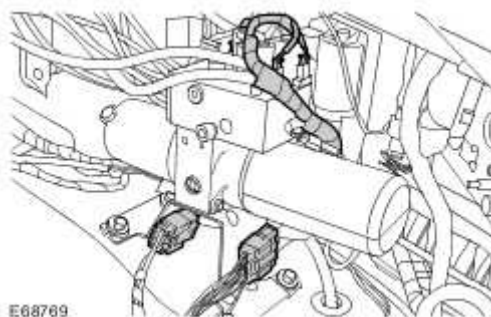
The ignition must be switched off.

Release the convertible top system pressure.

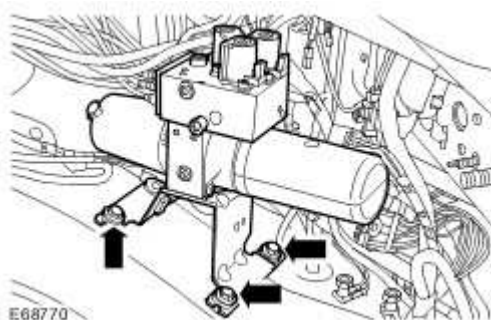
- ▶ Loosen the Allen bolt up to a maximum of 2 complete turns.



- 3 Disconnect the convertible top hydraulic pump electrical connectors.
 - ▶ Release the 2 electrical connectors from the convertible top pump bracket.



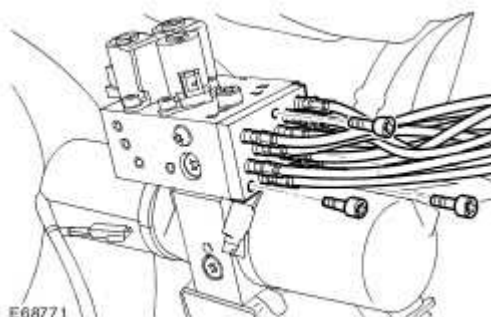
4. Release the convertible top hydraulic pump.
 - ▶ Remove the 3 bolts.



5.  **CAUTION: Always plug any open connections to prevent contamination.**

Disconnect the convertible top hydraulic pump hoses.

- ▶ Remove the 3 Allen bolts.
- ▶ Release the hose retaining clamp.
- ▶ Remove and discard the O-ring seals.



- 6 . Remove the convertible top hydraulic pump.

Installation

- 1 . Install the convertible top hydraulic pump.
- 2 . Connect the convertible top hydraulic pump hoses.
 - ▶ Install new O-ring seals.
 - ▶ Attach the hoses and position the retaining clamp.
 - ▶ Tighten the Allen bolts to 10 Nm.
- 3 . Secure the convertible top hydraulic pump.
 - ▶ Tighten the bolts to 8 Nm.

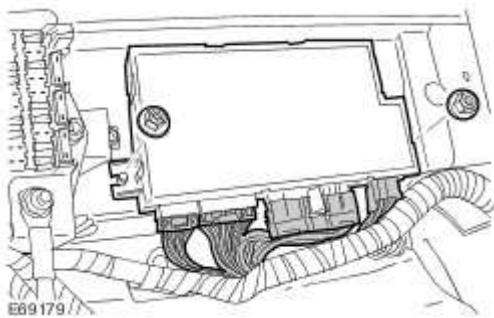
- 4 . Connect the convertible top hydraulic pump electrical connectors.
 - ▶ Secure the electrical connectors to the convertible top pump bracket.
- 5 . Fill the convertible top pump with the correct amount of fluid.
 - ▶ Remove the convertible top fluid filler plug.
 - ▶ Top-up the convertible top fluid.
 - ▶ Install the convertible top fluid filler plug.
- 6 . Install the RH loadspace trim panel.

For additional information, refer to [Loadspace Trim Panel - Convertible \(76.13.73.60\)](#)
- 7 . Cycle the convertible top to bleed the hydraulic system.

Convertible Top Module

Removal

- 1 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to
- 2 . Make the SRS system safe.
For additional information, refer to
- 3 . Remove the LH roll over protection unit.
For additional information, refer to [Rollover Protection Unit](#)
- 4 . Remove the convertible top module.
 - ▶ Disconnect the 4 electrical connectors.
 - ▶ Remove the 2 nuts.



Installation

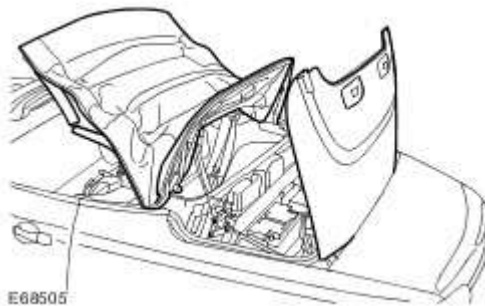
- 1 . Install the convertible top module.
 - ▶ Tighten the nuts to 10 Nm (7 lb.ft).
 - ▶ Connect the electrical connectors.
- 2 . Install the LH roll over protection unit.
For additional information, refer to [Rollover Protection Unit](#)
- 3 . Connect the battery ground cable and install the cover.
For additional information, refer to

Convertible Top Rear Panel Lower Weatherstrip

Removal

1 . Open the convertible top to the position shown.

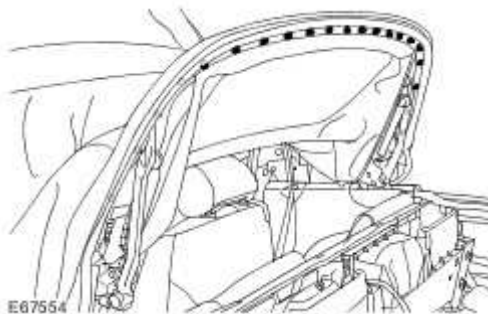
▶ Depress the switch.



2 . Release the rear edge of the convertible top rear panel lower weatherstrip.

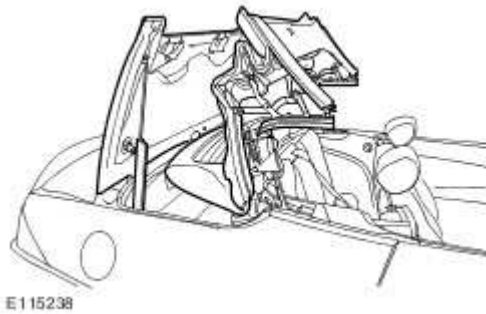
▶ Remove the 21 Torx screws.

▶ Remove the main carrier.



3 . Open the convertible top to the position shown.

▶ Depress the switch.

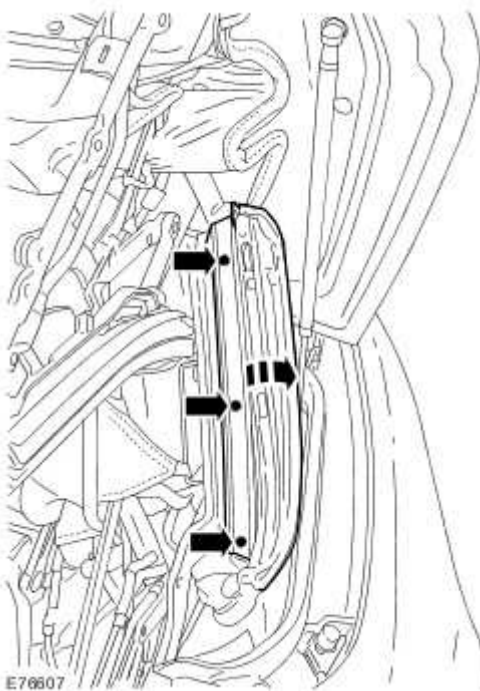


4.  **CAUTION: Make sure that filings and swarf do not enter the component.**

 **CAUTION: LH illustration shown, RH is similar.**

Remove the convertible top rear panel lower weatherstrip C-post carriers.

- ▶ Release the seal.
- ▶ Drill out the 6 rivets.

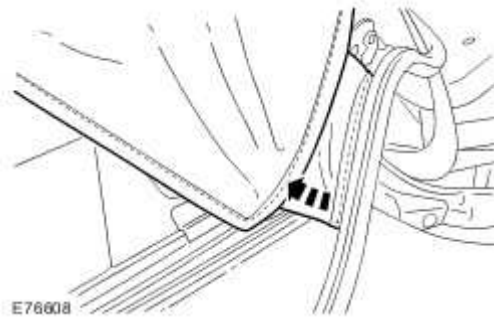


5.  **CAUTION: LH illustration shown, RH is similar.**

Remove the convertible top rear panel lower weatherstrip.

- ▶ Carefully release the convertible top rear panel lower weatherstrip

from the outer material.



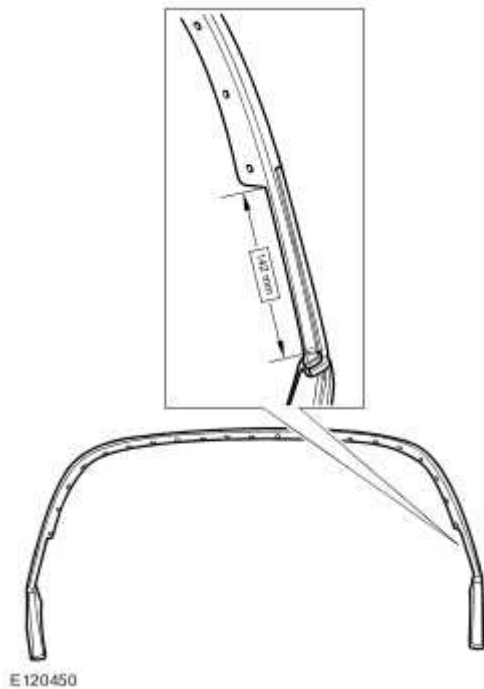
Installation

- 1 Install the convertible top rear panel lower weatherstrip carriers.
 -  Install the convertible top rear panel lower weatherstrip C-post carrier to the seal.
 -  Install the convertible top rear panel lower weatherstrip seal to the main carrier.

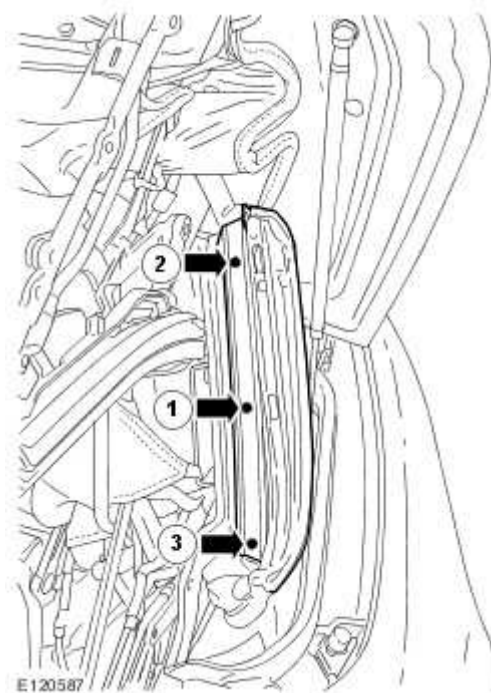
- 2  **CAUTION: Make sure that the seal is correctly positioned and does not move during installation. Failure to follow this instruction may result in damage to the vehicle.**

Make sure that the seal is correctly positioned.

-  Make sure that the datum mark is positioned 142mm from the edge of the main carrier.
-  Repeat the operation for the other side.

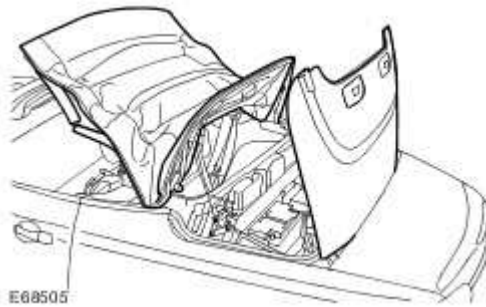


- 3 Install the convertible top rear panel lower weatherstrip and carriers assembly.
 - ▶ Clamp the convertible top outer material between the convertible top rear lower weatherstrip seal and the roof frame.
 - ▶ Install and secure the rivets in the sequence shown.



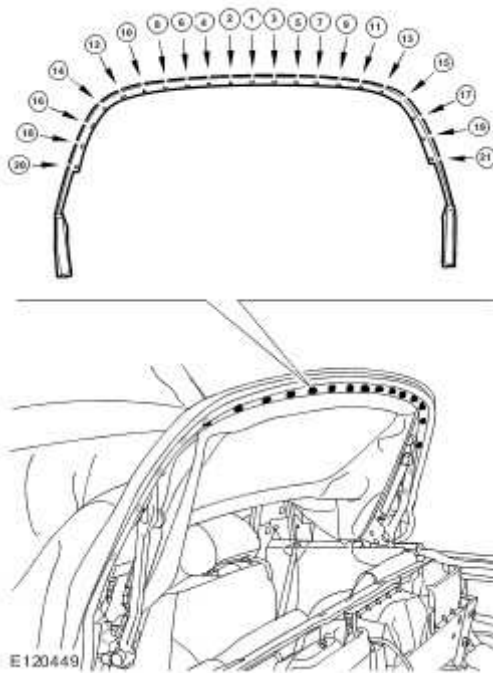
- 4 . Close the convertible top to the position shown.

- ▶ Depress the switch.



5 Secure the rear edge of the convertible top rear panel lower weatherstrip.

- ▶ Install the Torx screws and tighten to 4 Nm in the sequence shown.
- ▶ Make sure that the datum marks are still positioned 142mm from the edge of the main carrier.



6 . Operate the convertible top fully in each direction.

- ▶ Depress the switch.

Convertible Top Tension Cylinder

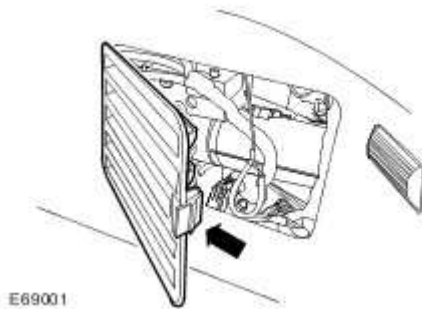
Removal

- 1 . Release the convertible top front latches.

▶ Depress the switch.

- 2 . Remove the convertible top hydraulic pump access panel

▶ Release the clip.



3



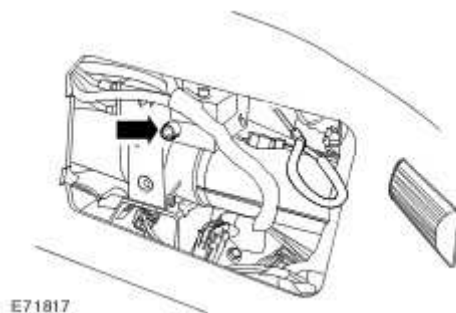
- **CAUTION: Do not loosen the Allen bolt more than 2 complete turns. Failure to follow this instruction may result in damage to the vehicle.**

NOTE:

The ignition must be switched off.

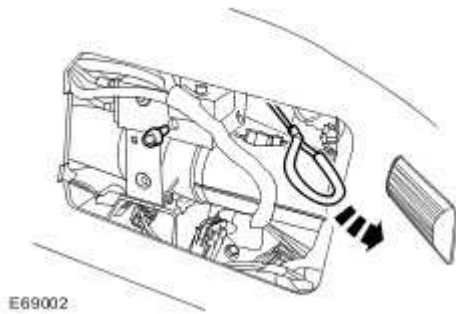
Release the convertible top system pressure.

▶ Loosen the Allen bolt up to a maximum of 2 complete turns.



- 4 . Release the convertible top compartment lid.

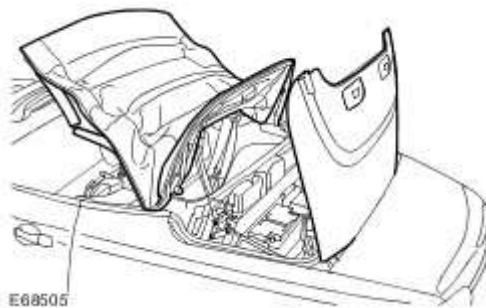
▶ Release using the cable.



5 . **NOTE:**

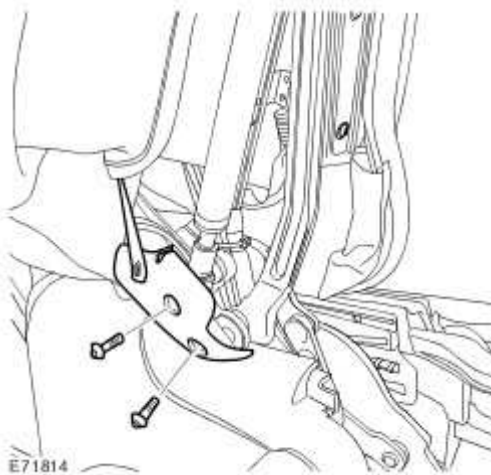
Support as necessary.

Open the convertible top to the position shown.



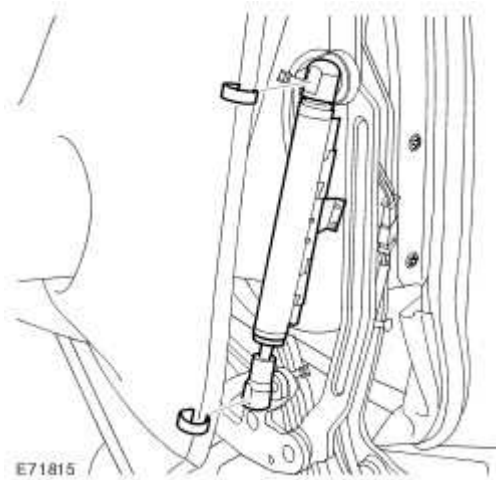
6 . Release the cylinder cover.

► Remove the 2 Torx screws.



7 . Release the hydraulic cylinder.

► Release the 2 clips.



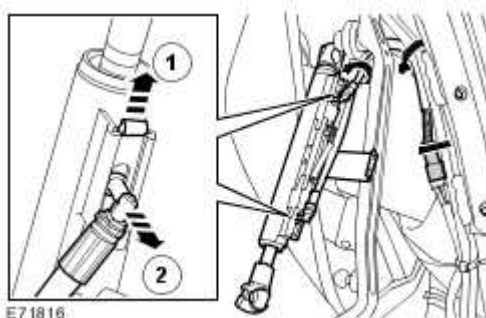
- 8  **CAUTION: Fluid loss is unavoidable care must be taken to protect the interior of the vehicle.**

Disconnect the hydraulic cylinder lines.

- ▶ Carefully release the 2 clips.
- ▶ Withdraw the hydraulic lines from the cylinder, remove and discard the O-rings.

9 . Remove the hydraulic cylinder.

- ▶ Remove and discard the 3 cable ties.
- ▶ RH hydraulic cylinder only: Disconnect the electrical connector.



Installation

1 . Connect the hydraulic cylinder lines.

- ▶ Lubricate and install the new O-rings.
- ▶ Connect the hydraulic lines to the cylinder.

- ▶ Secure with the clips.

2 . Install the hydraulic cylinder.

- ▶ RH hydraulic cylinder only: Connect the electrical connector.
- ▶ Secure with cable ties.
- ▶ Secure with the clips.

3 . Install the cylinder cover.

- ▶ Tighten the Torx screws.

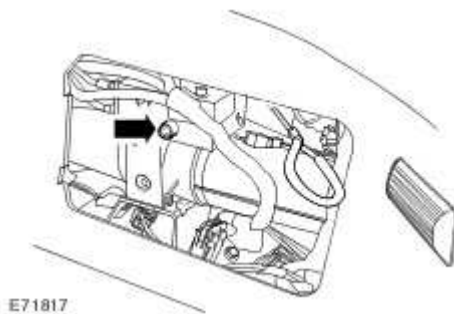
4 . Close the convertible top.

5 . **NOTE:**

The ignition must be switched off.

Tighten the convertible top system pressure Allen bolt.

- ▶ Tighten to 2 Nm.



6 . Install the convertible top hydraulic pump access panel

- ▶ Secure in the clip.

7 . Operate the convertible top fully in each direction.

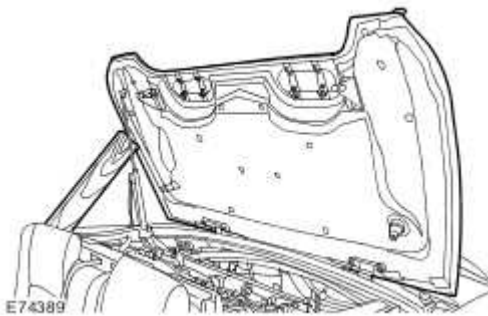
- ▶ Depress the switch.

Convertible Top Compartment Lid Lift Cylinder

Removal

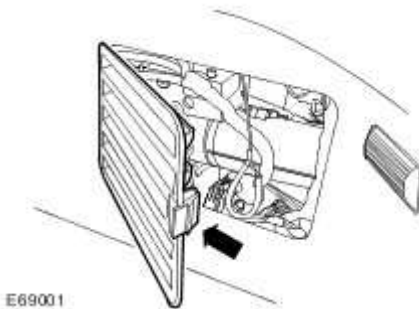
1 . Open the convertible top to the position shown.

- ▶ Depress the switch.
- ▶ Support as necessary.



2 . Remove the convertible top hydraulic pump access panel

- ▶ Release the clip.



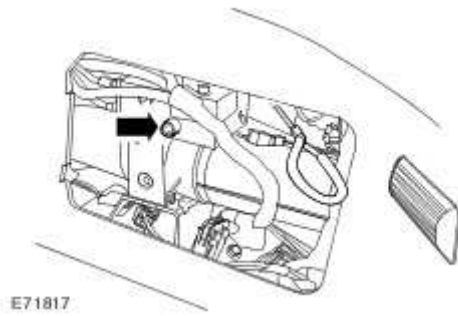
3  **CAUTION: Do not loosen the Allen bolt more than 2 complete turns. Failure to follow this instruction may result in damage to the vehicle.**

NOTE:

The ignition must be switched off.

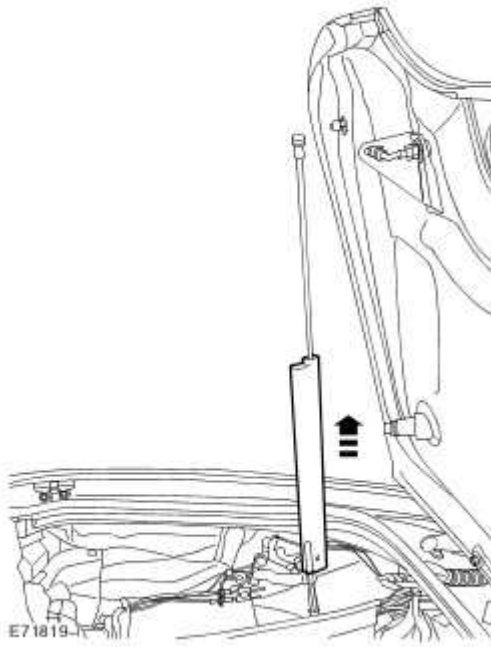
Release the convertible top system pressure.

- ▶ Loosen the Allen bolt up to a maximum of 2 complete turns.



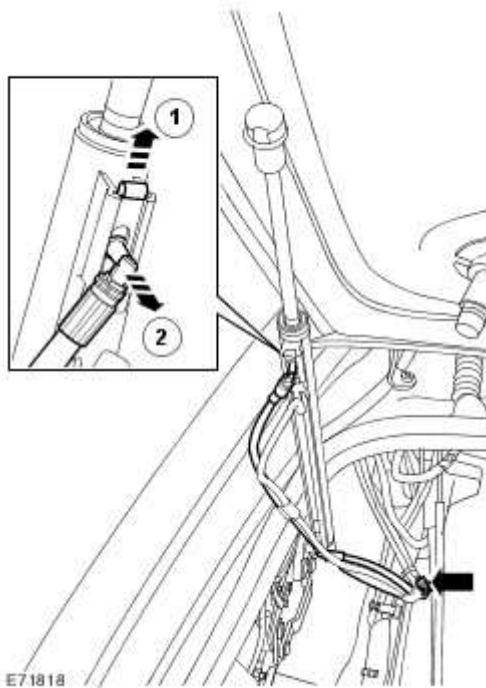
4 . Remove the convertible top compartment lid lift cylinder cover.

- ▶ Release the clip.
- ▶ Release the lift cylinder

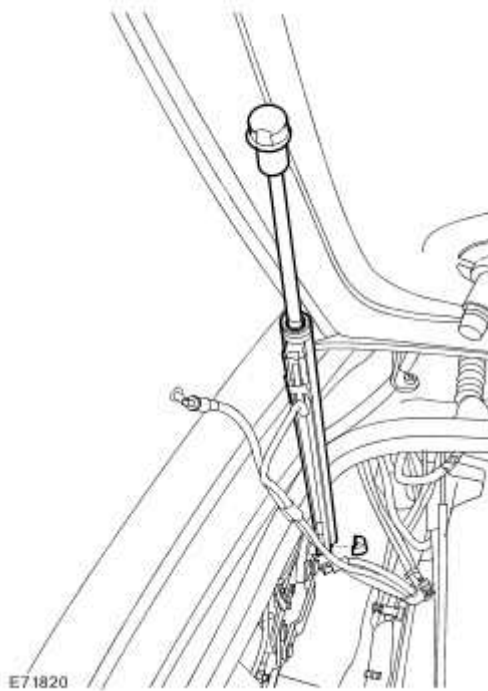


5 . Release the convertible top compartment lid lift cylinder.

- ▶ Disconnect the 2 fluid lines.
- ▶ Disconnect the electrical connector.



- 6 . Remove the convertible top compartment lid lift cylinder.
 ► Release the clip.



Installation

1 . Install the convertible top compartment lid lift cylinder.

 Secure with the clip.

2 . Install the convertible top compartment lid lift cylinder cover.

 Attach the lift cylinder.

 Secure with the clip.

3 . Secure the convertible top compartment lid lift cylinder.

 Connect the 2 fluid lines.

 Connect the electrical connector.

4 . **NOTE:**

Support as necessary.

Close the convertible top compartment lid.

 Raise the rear of the convertible top.

5 . **NOTE:**

The ignition must be switched off.

Tighten the convertible top system pressure Allen bolt.

 Tighten to 2 Nm.

6 . Cycle the convertible top to bleed the hydraulic system.

7 . Check the convertible top fluid level.

8 . Install the convertible top hydraulic pump access panel

 Secure in the clip.

Convertible Top Material (76.86.12)

Removal

- 1 . Remove the convertible top headliner.

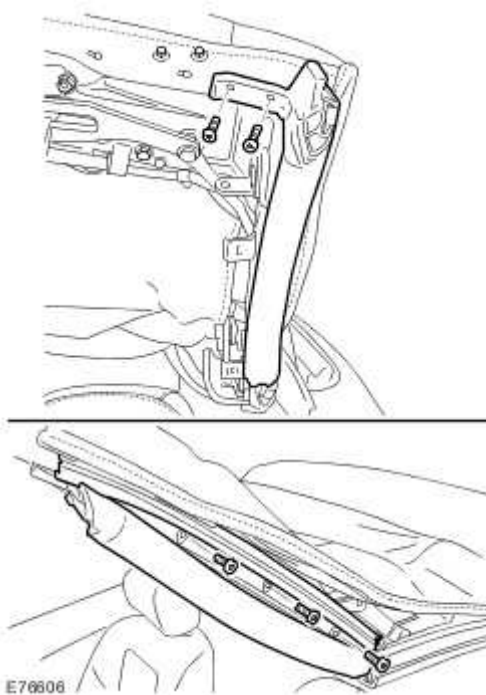
For additional information, refer to [Convertible Top Headliner \(76.86.16\)](#)

- 2 . **NOTE:**

Note the fitted position of the spacers

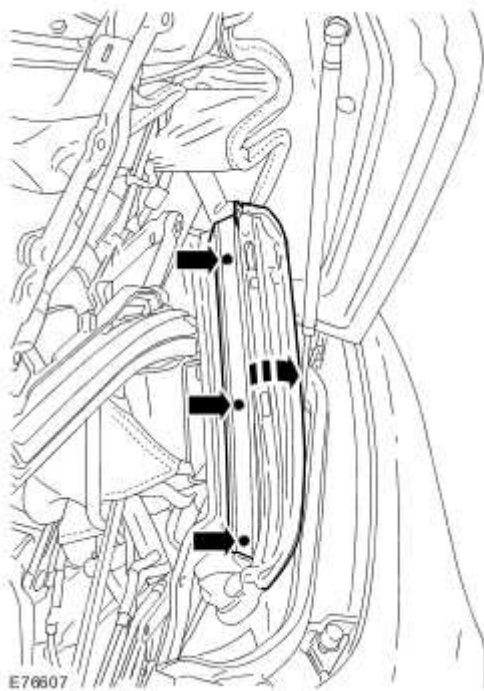
Remove the convertible top front seal carriers.

- ▶ Remove the 4 screws.
- ▶ Release the seal.
- ▶ Remove and discard the 6 Torx bolts.
- ▶ Collect the spacers.

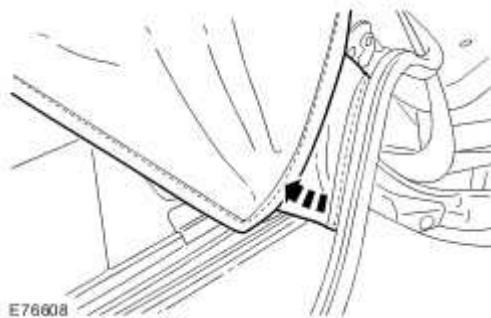


- 3 . Remove the convertible top side seal carriers.

- ▶ Release the seal.
- ▶ Drill out the 6 rivets.



4 . Carefully release the convertible top outer material from the rear seal.

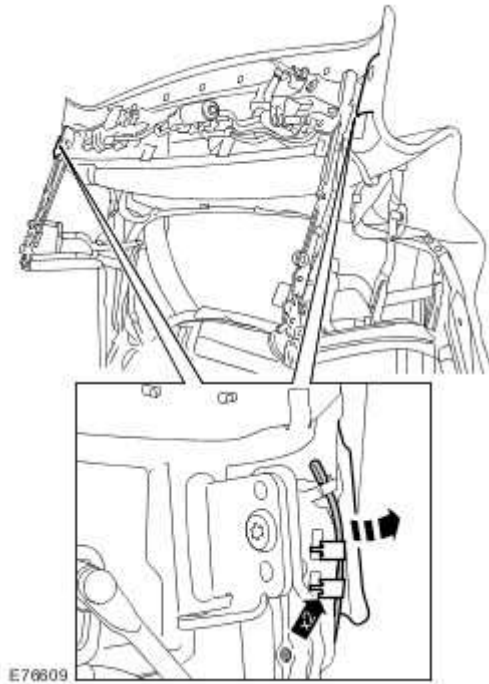


5 . **NOTE:**

Note the routing of the convertible top tension cables.

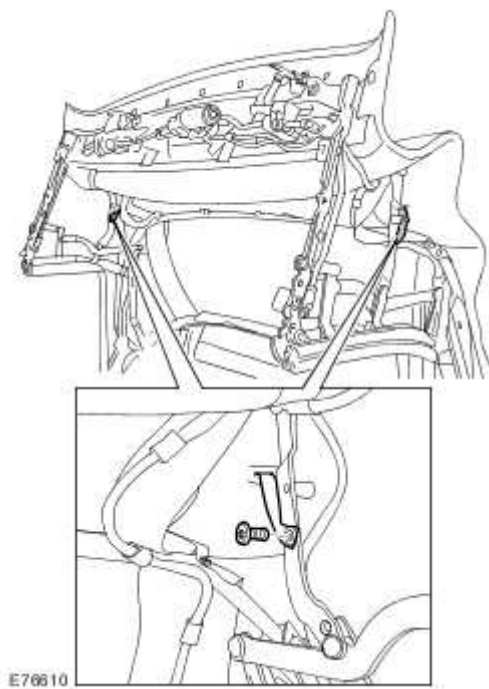
Release the convertible top tension cables.

- ▶ Remove and discard the 4 clips.
- ▶ Release the tension cables from the convertible top frame.
- ▶ Withdraw from the convertible top material.



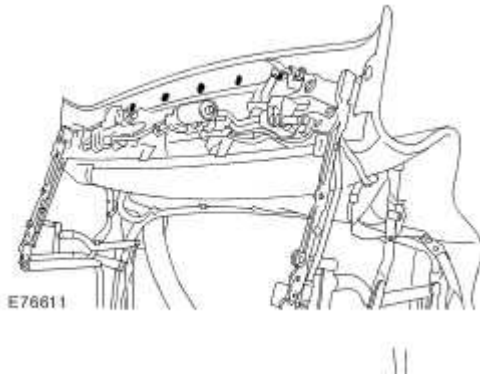
6 . Release the convertible top retaining straps.

► Remove the 2 Torx bolts.



7 . Release the front edge of the convertible top material.

► Remove the 5 Torx screws.



8 . Remove the convertible top outer material.

- ▶ Release the convertible top material from the frame.



Installation

1 . Install the convertible top outer material.

- ▶ Secure the convertible top material to the frame.

2 . Secure the front edge of the convertible top material.

- ▶ Install the Torx screws.

3 . Secure the convertible top outer material retaining straps.

- ▶ Tighten the Torx bolts to 6 Nm (4 lb.ft).

4 . Feed the tension cables through the convertible top outer material ensuring the correct routing.

- ▶ Attach the tension cables to the convertible top frame.
- ▶ Install new clips.

5 . Secure the convertible top to the rear seal.

- - ▶ Carefully open the rear seal sufficiently to locate the convertible top outer material.
 - ▶ Attach the convertible top outer material.
 - ▶ Clamp the seal to retain the outer material.

6 . Install the convertible top side seal carriers.

- ▶ Install the rivets.
- ▶ Attach the seal.

7 . Install the convertible top front seal carriers.

- ▶ Install the spacers.
- ▶ Tighten the new Torx bolts to 6 Nm (4 lb.ft).
- ▶ Attach the seal.
- ▶ Tighten the Torx screws.

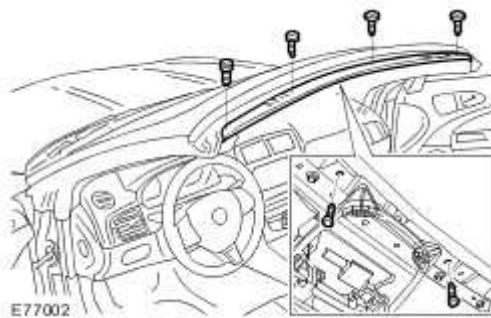
8 . Install the convertible top headliner.

For additional information, refer to [Convertible Top Headliner \(76.86.16\)](#)

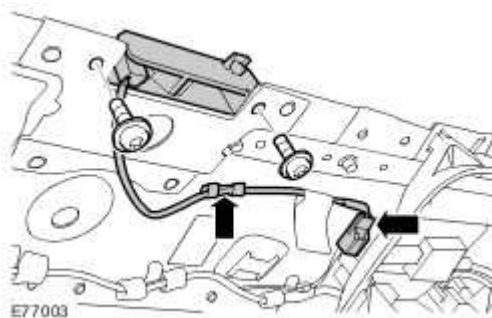
Convertible Top Striker

Removal

- 1 . Open the convertible top.
- 2 . Remove the header rail upper trim panel.
For additional information, refer to [Header Rail Upper Trim Panel \(76.86.20\)](#)
- 3 . Remove the header rail.
 - ▶ Remove the 6 screws.



- 4 . Remove the convertible to latch striker.
 - ▶ Remove the 2 Torx bolts.
 - ▶ Release the electrical harness clip.
 - ▶ Disconnect the electrical connector.



Installation

- 1 . Install the convertible to latch striker.
 - ▶ Install the Torx bolts, but do not tighten fully at this stage.

-  Connect the electrical connector.
-  Secure the wiring harness clip.

2 . Install the header rail.

-  Tighten the screws.

3 . Secure the convertible to latch striker.

-  Tighten the Torx bolts to 23 Nm (17 lb.ft).

4 . Install the header rail upper trim panel.

For additional information, refer to [Header Rail Upper Trim Panel \(76.86.20\)](#)

5 . Close the convertible top.

501-19 : Bumpers

Specifications

Specifications

Torque Specifications

Item	Nm	lb-ft	lb-in
Foam to front bumper beam (ROW markets) - screw	6	-	53
Front bumper cover - guide screw	18	13	-
Front bumper cover to vehicle panels - screw	4	-	35
Front bumper undertray to vehicle - screw	4	-	35
Rear bumper beam to crash tubes - bolt	15	11	-
Rear bumper cover to panel brackets - screw	4	-	35
Rear bumper, crash tubes to vehicle - nut	23	17	-

Front Bumper (76.22.08)

Removal

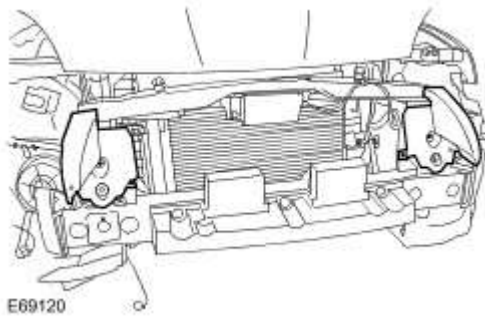
- 1  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

- 2 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to
- 3 . Remove the front bumper cover.
For additional information, refer to [Front Bumper Cover \(76.22.78\)](#)
- 4 Remove the crush pad.
 -  Remove the 3 clips.
 -  Vehicles with a pedestrian impact sensor only: Remove 2 additional bolts.



- 5 . Remove the air deflector.
 -  Remove the 3 clips.
 -  Repeat the procedure and remove the opposite hand.



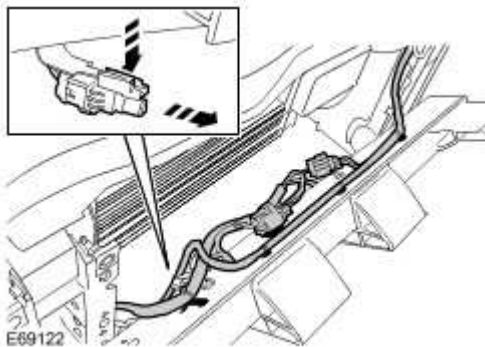
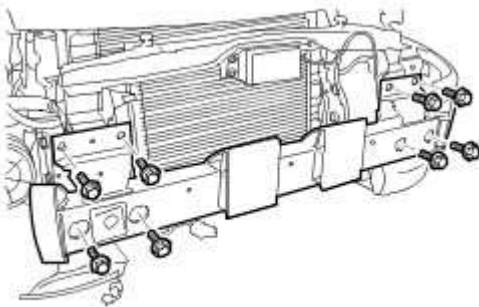
6 . Remove the front bumper.

- ▶ Remove the 8 bolts.
- ▶ Release the 9 clips.
- ▶ Disconnect the electrical connector.

7 . **NOTE:**

Do not disassemble further if the component is removed for access only.

Remove the ambient air temperature sensor.



Installation

1 . Install the ambient air temperature sensor.

2 . Install the front bumper.

- ▶ Secure the wiring harness clips.
- ▶ Connect the electrical connector.
- ▶ Tighten the bolts to 45 Nm (33 lb.ft).

3 . Install the air deflectors.

- ▶ Secure the clips.

4 . Install the crush pad.

- ▶ Secure the clips.
- ▶ Vehicles with a pedestrian impact sensor only: Install the additional bolts and tighten to 10 Nm (7 lb.ft).

5 . Install the front bumper cover.

For additional information, refer to [Front Bumper Cover \(76.22.78\)](#)

6 . Connect the battery ground cable and install the cover.

For additional information, refer to

Front Bumper Cover (76.22.78)

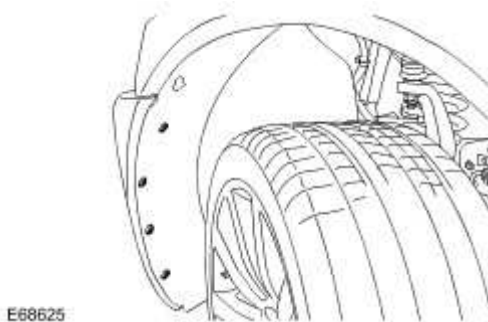
Removal

All vehicles

- 1  **WARNING:** Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

Raise and support the vehicle.

- 2 . Remove the radiator splash shield.
For additional information, refer to Radiator Splash Shield (76.22.90)
- 3 . Remove the headlamps.
For additional information, refer to Headlamp Assembly (86.41.33)
- 4 . Release the front of the fender splash shield.
 - ▶ Remove the 4 Torx screws.
 - ▶ Repeat the above procedure for the other side.



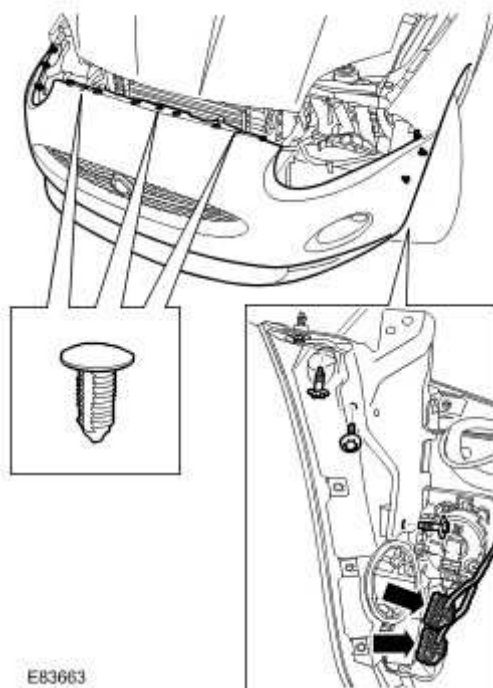
- 5  **CAUTION:** Always protect paintwork and glass when removing exterior components.

NOTE:

This step requires the aid of another technician.

Remove the front bumper cover.

- ▶ Remove the 12 bolts.
- ▶ Release the 3 clips.
- ▶ Disconnect the 2 electrical connectors.



6 . NOTE:

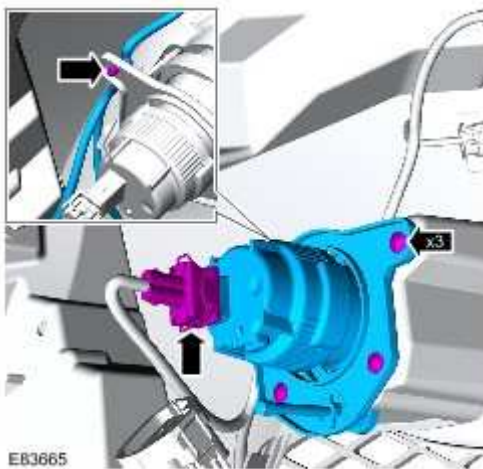
Do not disassemble further if the component is removed for access only.

Remove the towing eye cover.



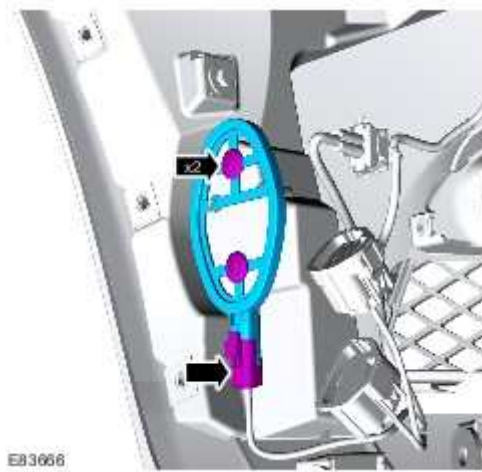
7 . Remove the front fog lamp.

- Remove the 3 Torx screws.
- Disconnect the electrical connector.
- Release the wiring harness.
- Repeat the above procedure for the other lamp.



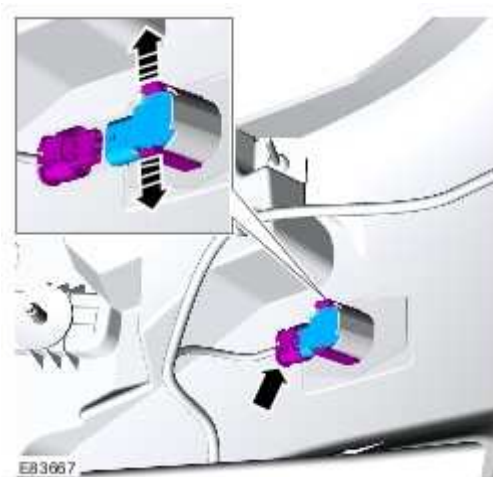
8 . Remove the tire pressure antenna.

- Disconnect the electrical connector.
- Remove the 2 clips.
- Repeat the above procedure for the other side.



9 . If installed: Remove the parking aid sensor.

- ▶ Disconnect the electrical connector.
- ▶ Release the 2 clips.
- ▶ Repeat the above for the other 3 sensors.



10 . If installed: Remove the license plate.

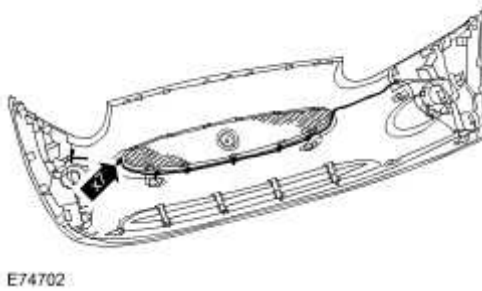
11 . If installed: Remove the license plate panel.

- ▶ Remove the 3 clips.



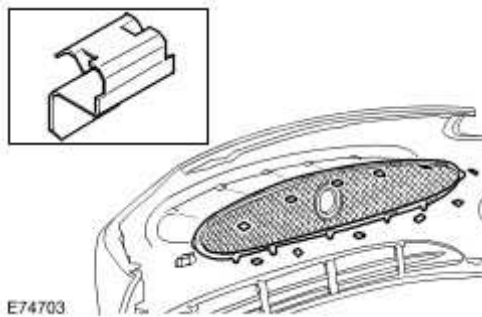
12 . Release the wiring harness.

► Release the 7 clips.



13 . Remove the radiator grille.

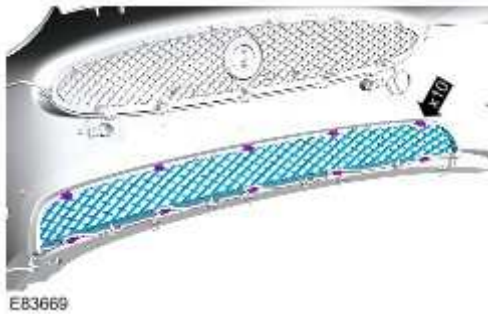
► Remove the 11 clips.



Vehicles with supercharger

14 . Remove the radiator lower grille.

▶ Remove the 10 clips.



15 . Remove the front fog lamp bezel.

▶ Release the 7 clips.

▶ Repeat the above procedure for the other side.



All vehicles

16 . Remove the wiring harness.

▶ Release the 2 electrical connectors.

▶ Release the 3 clips.



Installation

All vehicles

1 . Install the wiring harness.

▶ Secure the electrical connectors.

▶ Secure with the clips.

Vehicles with supercharger

2 . Install the front fog lamp bezels.

▶ Secure the clips.

3 . Install the radiator lower grille.

▶ Secure with the clips.

All vehicles

4 . Install the radiator grille.

- ▶ Secure with the clips.
- ▶ Attach the wiring harness.

5 . Install the license plate panel.

- ▶ Secure with the clips.

6 . Install the license plate.

- ▶ Clean the component mating faces.

7 . Install the parking aid sensors.

- ▶ Secure with the clips.
- ▶ Connect the electrical connectors.

8 . Install the tire pressure antenna.

- ▶ Install the clips.
- ▶ Connect the electrical connectors.

9 . Install the front fog lamps.

- ▶ Install the Torx screws.
- ▶ Connect the electrical connectors.

10 . Install the towing eye cover.

11 **NOTE:**

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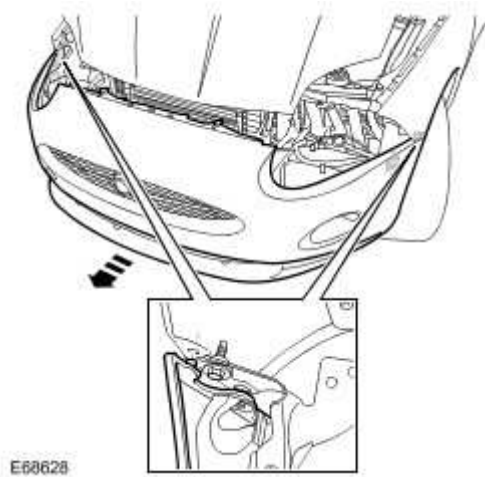
Make sure the bumper cover spigots are aligned with the locating holes in the fenders.

NOTE:

This step requires the aid of another technician.

Install the front bumper cover.

- ▶ Align the spigots and clips.
- ▶ Install and tighten the upper mounting bolts to 5 Nm (4 lb.ft), tighten the remaining bolts to 10 Nm (6 lb.ft).
- ▶ Connect the electrical connectors.



12 . Raise the vehicle.

13 . Install the radiator splash shield.

For additional information, refer to Radiator Splash Shield (76.22.90)

14 . Align and secure both fender splash shields.

- ▶ Install the Torx screws.

15 . Install the headlamps.

For additional information, refer to Headlamp Assembly (86.41.33)

Rear Bumper (76.22.27)

Removal



CAUTION: Always protect paintwork and glass when removing exterior components.

1



- **WARNING:** Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

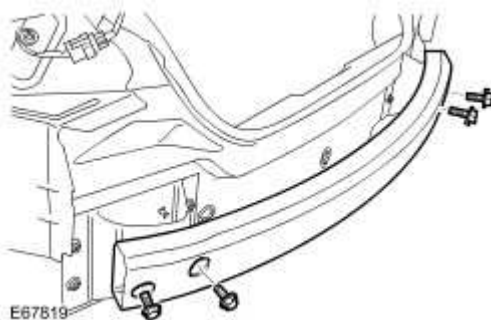
Raise and support the vehicle.

- 2 . Remove the rear bumper cover.

For additional information, refer to [Rear Bumper Cover \(76.22.74\)](#)

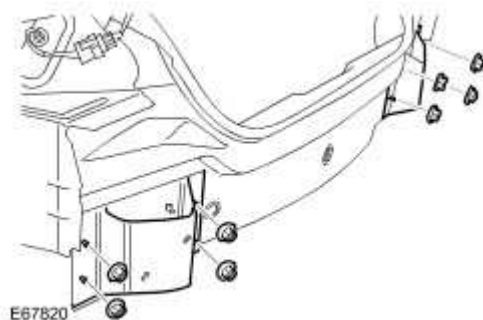
- 3 . With assistance, remove the bumper.

▶ Remove the 4 bolts.



- 4 . Remove the 2 crush tubes.

▶ Remove the 8 nuts.



Installation

1 . Install the 2 crush tubes.

 Tighten the nuts to 25 Nm (18 lb.ft).

2 . With assistance, install the bumper.

 Tighten the M8 bolts to 25 Nm (18 lb.ft).

3 . Install the rear bumper cover.

For additional information, refer to [Rear Bumper Cover \(76.22.74\)](#)

Rear Bumper Cover (76.22.74)

Removal

All vehicles

- 1  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

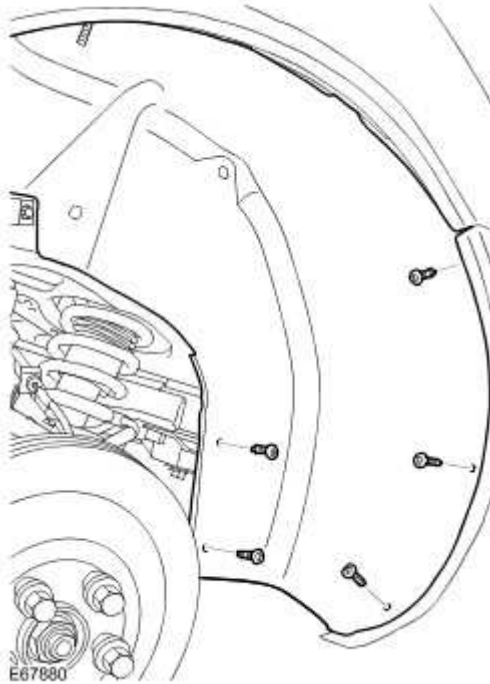
Raise and support the vehicle.

- 2 . Remove both rear wheels and tires.
For additional information, refer to Wheel and Tire (74.20.05)
- 3 . Remove the LH rear quarter trim panel.
For additional information, refer to Loadspace Trim Panel - 2-Door (76.13.73.60)
- 4 . Remove the RH rear quarter trim panel.
 - ▶ Remove the clip.
 - ▶ Disconnect the electrical connector.



5 . Release the rear lower edge of the LH fender splash shield.

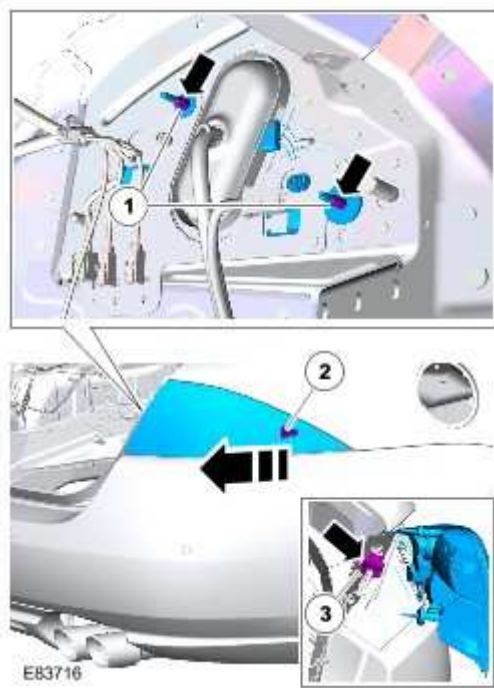
- Remove the 5 Torx screws.
- Tie the splash shield aside.
- Repeat the above procedure for the other side.



6  **CAUTION: Take great care when removing the rear lamp assembly as the forward point of the lens can be easily damaged.**

Remove the rear lamp assembly.

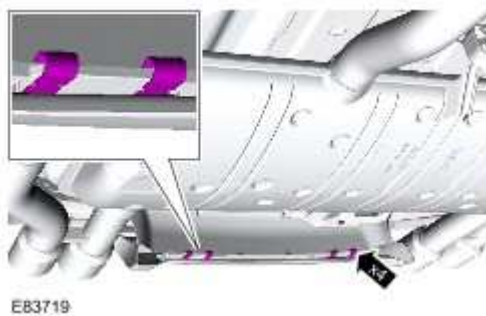
- Remove the 2 nuts.
- Carefully release the clip.
- Disconnect the electrical connector.
- Repeat the above procedure for the other side.



7 . NOTE:

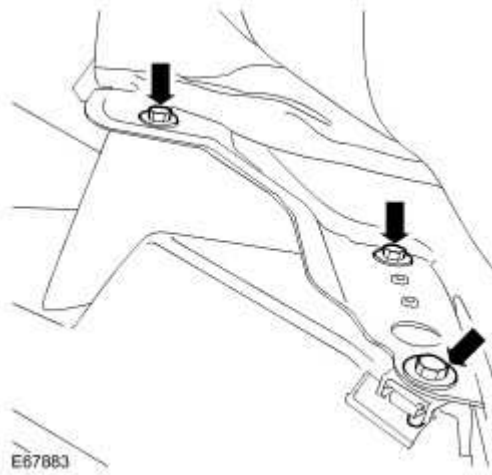
Naturally aspirated graphic shown, supercharged is similar.

Remove 4 clips from the lower edge of the bumper cover.



8 . Remove 3 bolts from the LH rear wheel arch.

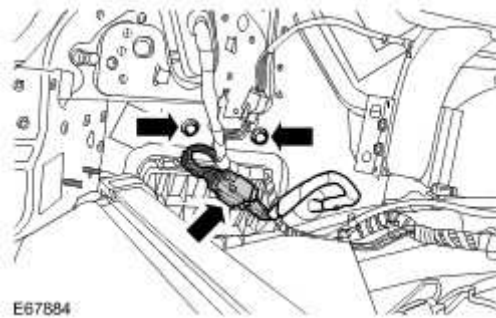
➤ Repeat the above procedure for the other side.



9 . Remove 2 bolts from the LH inner quarter panel.

▶ Repeat the above procedure for the other side.

10 . Disconnect the bumper harness electrical connector.



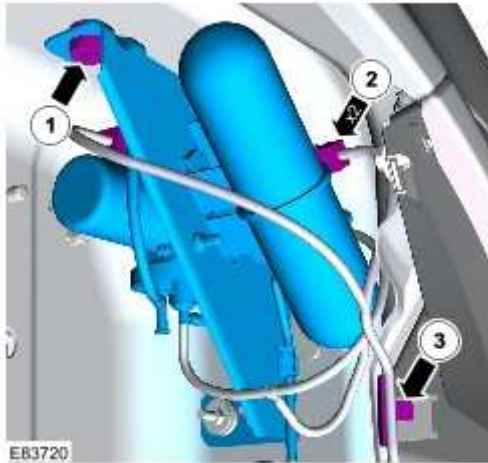
Vehicles with supercharger

11 . Release the exhaust sound enhancement vacuum pump assembly.

▶ Remove the bolt.

▶ Disconnect the 2 electrical connectors.

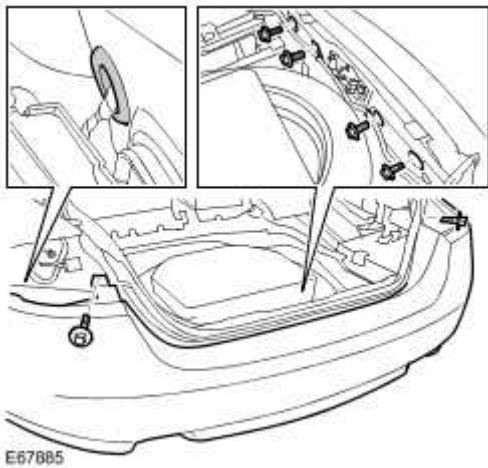
▶ Release the wiring harness clip.



All vehicles

12 . With assistance, remove the rear bumper cover.

- Remove the 6 bolts.
- Release the wiring harness grommet.
- Release the harness.

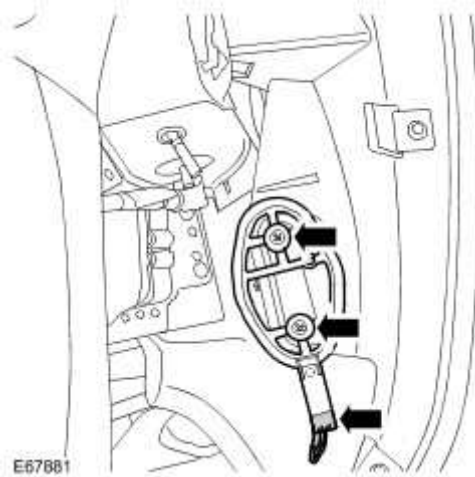


13 . **NOTE:**

Do not disassemble further if the component is removed for access only.

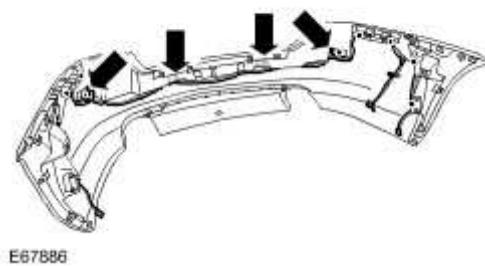
Remove the LH tire pressure antenna.

- ▶ Disconnect the electrical connector.
- ▶ Remove the 2 clips.
- ▶ Repeat the above procedure for the other side.



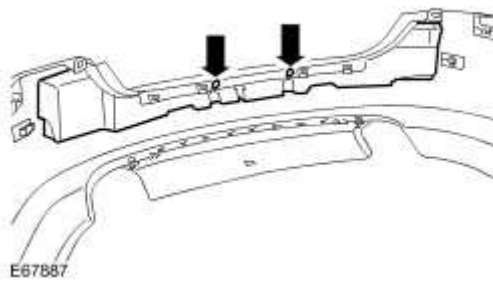
14 . Remove the bumper harness.

- ▶ Disconnect the 4 electrical connectors.
- ▶ Carefully release the 10 clips.



15 . Remove the bumper insert.

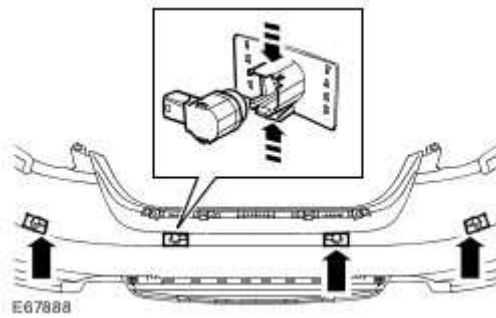
- ▶ Remove the 2 clips.



16 . Remove the parking aid sensor.

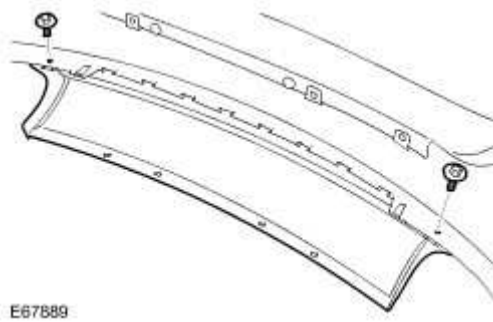
▶ Release the 2 clips.

▶ Repeat the above for the other 3 sensors.

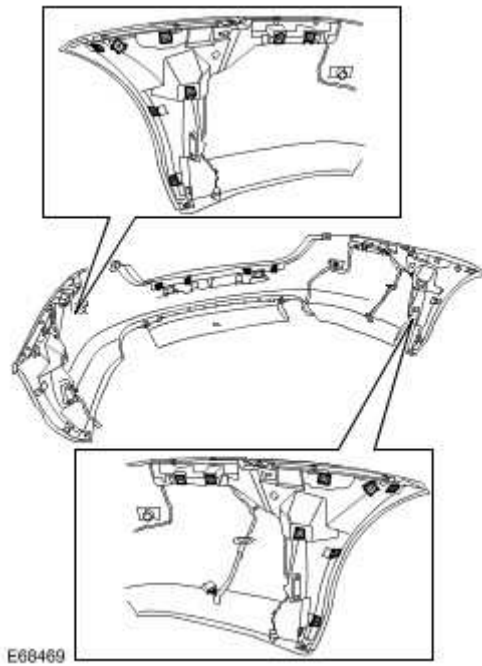


17 . Remove the lower trim panel.

▶ Remove the 2 bolts.



18 . Remove the 20 clips.



Installation

All vehicles

1 . Install the clips.

2 . Install the lower trim panel.

▶ Tighten the bolts to 6 Nm (4 lb.ft).

3 . Install the parking aid sensor.

▶ Carefully secure the clips.

▶ Repeat the above for the other 3 sensors.

4 . Install the bumper insert.

- ▶ Install the clips.

5 . NOTE:

Do not disassemble further if the component is removed for access only.

Install the wiring harness.

- ▶ Connect and secure the electrical connectors.
- ▶ Carefully secure the clips.

6 . Install the tire pressure antenna.

- ▶ Install the clips.
- ▶ Connect the electrical connector.
- ▶ Repeat the above procedure for the other side.

7 . With assistance, install the rear bumper cover.

- ▶ Install the bolts and tighten to 6 Nm (4 lb.ft).
- ▶ Install the wiring harness.

Vehicles with supercharger

8 . Attach the exhaust sound enhancement vacuum pump.

- ▶ Connect the electrical connectors.
- ▶ Tighten the bolt to 7 Nm (5 lb.ft)
- ▶ Secure the wiring harness clip.

All vehicles

9 . Secure the lower edge of the bumper cover.

10 . **NOTE:**

Align to the position noted on removal.

Install the rear lamp assembly.

-  Secure with the clip.
-  Tighten the nuts to 2 Nm (1.5 lb.ft).
-  Connect the electrical connector.
-  Repeat the above procedure for the other side.

11 . Install the fender splash shield.

-  Tighten the Torx bolts.
-  Repeat the above procedure for the other side.

12 . Install the RH rear quarter trim panel.

-  Install the clip.

13 . Install the LH rear quarter trim panel.

For additional information, refer to Loadspace Trim Panel - 2-Door (76.13.73.60)

14 . Install the wheels and tires.

For additional information, refer to Wheel and Tire (74.20.05)

501-20A : Safety Belt System

Specifications

Specifications

Torque Specifications

Item	Nm	lb-ft	lb-in
Front safety belt anchorage - bolt*	35	26	-
Front safety belt retractor - bolt*	35	26	-
Rear safety belt anchorage - bolt*	35	26	-
Rear safety belt retractor - bolt*	35	26	-
Rear safety belt buckle - bolt*	35	26	-

* Install new nut/bolt.

Safety Belt System

COMPONENT LOCATION

NOTE:

Seat belts and retractors are a single assembly.



E64888

Item	Part Number	Description
1		RH front seat belt
2		RH front seat belt retractor
3		RH rear seat belt buckle
4		RH rear seat belt retractor
5		LH rear seat belt retractor

6		LH rear seat belt retractor
7		LH front seat belt buckle
8		LH front seat belt
9		LH front seat belt buckle
10		RH front seat belt buckle

INTRODUCTION

A three point safety belt is installed in all seating positions. Each seatbelt has Emergency locking retractor (ELR) functionality.

The ELR function incorporates a lift shaft locking system with webbing sensor and car sensing activating mechanisms. The webbing sensor activates the locking mechanism if the webbing is subjected to a sharp pull. The car sensor activates the locking system if the vehicle is subjected to sudden deceleration or severe tilt angle.

All second row passengers and NAS front Passenger ELR's are enhanced with Automatic Locking Retractors (ALR).

The ALR allows webbing to be extracted to activate a ratchet device. This device allows webbing to be cinched tight to facilitate child seat fitment. With seatbelt webbing tensioned in ALR mode the seatbelt is always locked.

All row 1 driver and passenger ELRs incorporate an electrically activated webbing tension reducer (comfort device). This device is activated at vehicle ignition on and insertion of seatbelt tongue into buckle.

A safety belt warning indicator is installed in the instrument cluster to remind the front seat occupants to fasten their safety belts. The warning indicator illuminates if the safety belt of an occupied front seat is not fastened. On NAS vehicles the belt minder system will ignore the state of the passenger safety belt for the first 75 seconds after ignition on. The warning indicator remains illuminated until the safety belt of each occupied front seat is fastened, or the ignition is switched off.

FRONT SAFETY BELTS

The retractor of each front seatbelt is attached to the related B pillar mounting bracket. The webbing runs from the retractor through a fixed D loop bracket mounted to B pillar upper to an anchor point on the sill.

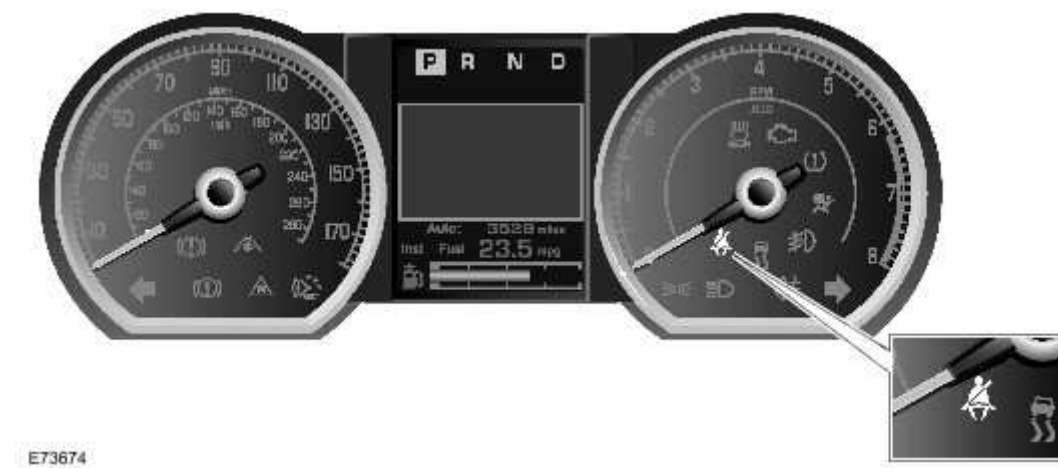
The retractor for each front safety belt incorporates a load limiter that allows the retractor reel to partially unwind when the load on the webbing exceeds a predetermined limit.

The buckle for each front safety belt is attached to a pretensioner secured to the inboard side of the related front seat frame. Each buckle incorporates a safety belt buckle sensor that provides a status input to the RCM (restraints control module) , which uses the input to

determine the air bag and pretensioner activation strategies. The RCM (restraints control module) also relays the status of the safety belts to the instrument cluster on the high speed CAN (controller area network) bus.

Belt Minder Function

Safety Belt Warning Indicator



The belt minder function provides warnings to the driver if the appropriate front safety belts are not fastened when driving. The belt minder function is controlled by the instrument cluster using:

- High speed CAN (controller area network) bus messages, from the RCM (restraints control module) , to monitor the status of the front safety belts.
- An input from the occupant detection system to monitor the status of the front passenger seat.

When the ignition is switched to on, the instrument cluster illuminates the safety belt warning indicator until one of the front safety belts is fastened or the belt minder function is triggered. The belt minder function is triggered when the ignition switch is in accessory/convenience and the following conditions coexist:

- The belt minder function is enabled.
- Vehicle speed is 8 km/h (5 mph) or more.
- The vehicle is not in reverse.
- The driver safety belt or, if the front passenger seat is occupied, the front passenger safety belt, is unfastened.

When the belt minder is triggered, the instrument cluster generates the following warnings for 10 seconds.

- Flashes the safety belt warning indicator at 2 Hz.
- Sounds a repeating chime in sequence with the flashing safety belt warning indicator.

After 10 seconds, the repeating chime is discontinued and the safety belt warning indicator changes from flashing to continuously illuminated for 20 seconds. While the trigger conditions still coexist, the warnings are repeated every 30 seconds until one of the following occurs:

- 5 minutes has elapsed from when the warnings were first triggered.
- The safety belt of each occupied front seat is fastened.
- The ignition mode is position 0.
- The vehicle speed decreases to 5 km/h (3 mph).

For non NAS vehicles the belt minder function can be enabled and disabled using the driver safety belt switch. The instrument cluster changes the state of the belt minder function if, within 60 seconds of first entering ignition mode II, the driver safety belt is fastened and unfastened nine times. Successful completion of the change is indicated by a single chime and the safety belt warning indicator flashing five times, at 2 Hz. The belt minder function can also be enabled and disabled using IDS.

SECOND ROW SAFETY BELTS

The retractor of each second row safety belt is attached to the rear shelf immediately behind the seat. The retractors are located in the center of the shelf. The webbing runs from the retractor, to an anchor point in the center of the vehicle either side of the transmission tunnel. The seat belt buckles are attached to the vehicle body on the outer side of the seat.

Safety Belt System

Principle of Operation

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

[Safety Belt System](#)

Inspection and Verification

- 1 . Verify the customer concern by operating the safety belt.
- 2 . Visually inspect for obvious signs of damage and system integrity.

Mechanical	Electrical
• Loose webbing • Damaged/frayed webbing • Safety belt retractor	• Warning indicator bulb

- 3 . If the fault is not visually evident determine the symptom(s) and proceed to the Symptom Chart.

Symptom Chart

Symptom	Possible Cause	Action
Normal Mode - Occupant Restraint System inoperative	• Broken tooth on retractor sensor gear. • Loose webbing.	REFER to the Component Tests in this section.
Automatic Locking Retraction System (ALR) Inoperative.	• Broken tooth on retractor sensor gear. • Loose webbing.	REFER to the Component Tests in this section.

Component Tests

Poor Retraction



WARNING: In the event of an accident in which the air bags have been deployed, the front safety belts that were in use and the rear whether in use or not at the time of the accident must be removed and NEW safety belts **MUST** be installed. Failure to follow this instruction will result in personal injury and component failure.

If a safety belt does not retract correctly, check that the anchor covers and trim bezels are correctly installed and not rubbing against the safety belt webbing. Where necessary, check the safety belt webbing is not rubbing at one end of the retractor cover slot and if so, correct by loosening the retaining bolt, aligning the retractor to centralize the safety belt webbing and re-tighten the bolt.

The vehicle is equipped with two front and three rear inertia reel safety belts. These safety belts are "dual sensitive" which means that they have:

- a vehicle motion sensor, which locks the safety belt webbing under braking, cornering, on steep hills and in adverse camber conditions.
- a webbing motion sensor, which locks when the safety belt webbing is quickly extracted.

Both systems should be fully operational and can be checked by the tests below:

Vehicle Motion Sensor Test

Either of the following two procedures may be used to check correct operation of the vehicle motion sensor. Both methods require two people but note that people of larger than average build should not be asked to conduct these tests. This is to avoid the possibility of a fully unrolled safety belt webbing being mistaken for a correctly locked safety belt retractor.

Test Method 1 (braking)



WARNING: It is important that during this test, the wearer allows the safety belt to provide the restraint, the wearer should not attempt to anticipate the sudden deceleration and the driver should not brace themselves against the steering wheel. However, both the driver and the passenger must prepare themselves for the possibility that the safety belt will not lock. The passenger should hold their hands in front of him, just clear of the instrument panel or front seat backrest. Depending on which belt is being tested. Failure to follow these procedures will result in personal injury.

- Select for this test a quiet or private stretch of road. Make sure that the road is clear and that full visibility is maintained at all times.
- Both driver and passenger should adopt normal, comfortable seating position. Both occupants should wear the safety belts and the safety belt webbing must be correctly adjusted, with no slack.

- Proceed at a speed of approximately 10 km/h (6 miles/hour), do not exceed 10 km/h (6 miles/hour) for this test.
- Apply the foot brake sharply to stop the vehicle. If the vehicle motion sensitive lock mechanism is operating correctly, the safety belt webbing will lock and restrain the wearer.
- Conduct the test twice in each front and rear passenger seat position.
- Any safety belt retractor which does not restrain the wearer during this test must not be used. A NEW safety belt must be installed.

Test Method 2 (turning circle)

This method requires a flat open area of private road, sufficient for the vehicle to be driven in a continuous circle on full lock.

- The driver should wear the safety belt provided and the belt webbing must be correctly adjusted, with no slack.
- The passenger should occupy a rear seat with the safety belt correctly adjusted.
- Start the engine and, with the steering on full right-hand lock, drive the vehicle in a continuous circle at 16 km/h (10 miles/hour), do not exceed 16 km/h (10 miles/hour).
- When the speed is stable, the passenger should attempt to slowly extract the safety belt webbing from each safety belt retractor in turn. If the vehicle motion sensitive lock mechanism is operating correctly, it will not be possible to extract the webbing.
- Any safety belt retractor from which it is possible to extract the webbing during this test must not be used. A NEW safety belt must be installed.

Safety Belt Webbing Sensor Test

With the vehicle stationary and on level ground take firm hold of the safety belt webbing (on the tongue side of the upper safety belt anchor) and pull out quickly. The retractor should lock within 0.25 metre (10 inches), preventing further webbing pullout. Any safety belt retractor from which it is possible to extract further webbing must not be used. A NEW safety belt must be installed.

Service Installation of Safety Belts

It is possible that the safety belt assemblies installed in service may have been damaged during handling or installation to the vehicle. The damage is contained within the inner workings of the retractor and is therefore, not visible. However, the damage usually causes the retractor to stick or jam. The damage can only occur before installation is completed and is usually in one of the following ways:

- The safety belt webbing is allowed to retract onto the spindle until it jams the locking mechanism in a way that cannot occur when the safety belt is installed in the car. The safety belt webbing prevents the correct locking action and if the safety belt webbing is snatched or jerked out of the retractor, the loads are not taken on this high strength locking mechanism.
- The webbing is snatch loaded by attempted fast extraction or manual testing with the safety belt held in the hand. This can result in deceleration which are much higher than those occurring in accident situations and there is a risk of damage to the mechanism.

When handling safety belt assemblies, adopt the following procedures:



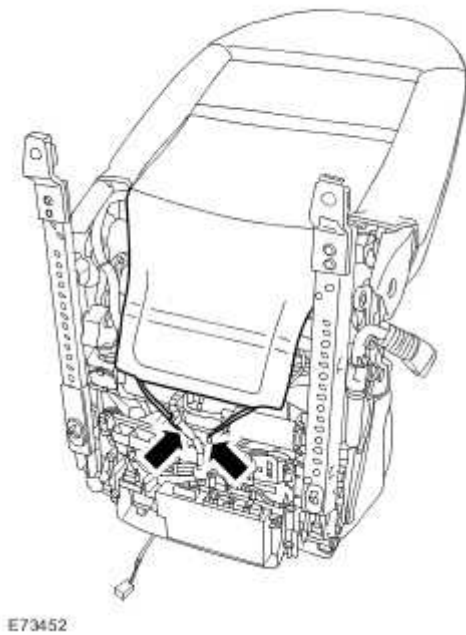
WARNING: If the following procedures are not successful, reject the safety belt assembly. Do not try to jerk or snatch the webbing out of the retractor as this may cause damage. Failure to follow these procedures could and may cause damage or personal injury.

- If the safety belt webbing retracts and will not extract under low webbing tension, install the retractor onto its mounting in the car , which will set it at its correct angle, and the safety belt webbing should extract easily.
- If it does not, feed 5-10 mm (3/16 - 3/8 inch) more safety belt webbing onto the spindle (rotate the spindle using finger pressure if necessary) and the safety belt webbing should then extract.

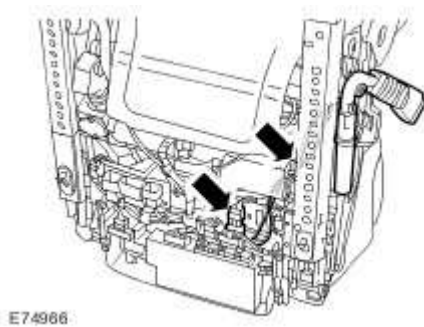
Front Safety Belt Buckle (76.73.49)

Removal

- 1 . Remove the cover and disconnect the battery ground cable.
- 2 . Make the SRS system safe.
For additional information, refer to
- 3 . Remove the front seat.
For additional information, refer to [Front Seat \(76.70.01\)](#)
- 4 . Release the front seat backrest cover lower tension straps.



- 5 . Remove the front seat safety belt pretensioner.
 - Remove and discard the Torx bolt.
 - Release and disconnect the electrical connector.



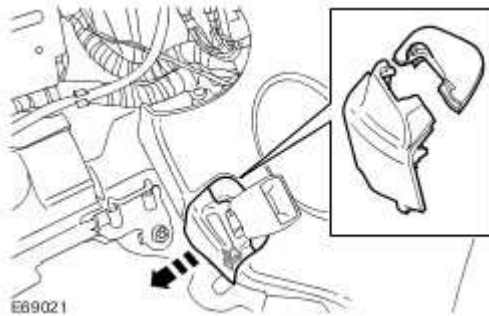
Installation

- 1 . Install the front seat safety belt pretensioner.
 - ▶ Connect and secure the electrical connector.
 - ▶ Tighten the new Torx bolt to 45 Nm (33 lb.ft).
- 2 . Secure the front seat backrest cover lower tension straps.
- 3 . Install the front seat.
For additional information, refer to [Front Seat \(76.70.01\)](#)
- 4 . Connect the battery ground cable and install the cover.

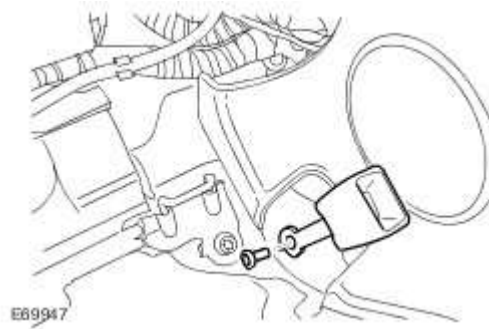
Rear Safety Belt Buckle (76.73.50)

Removal

- 1 . Remove the rear seat cushion.
For additional information, refer to [Rear Seat Cushion \(76.70.37\)](#)
- 2 . Remove the rear safety belt stalk trim panel.
▶ Release from the clip.



- 3 . Remove the rear safety belt stalk.
▶ Remove the Torx bolt.



Installation

- 1 . Install the safety belt stalk.
▶ Tighten the Torx bolt to 45 Nm (33 lb.ft).
- 2 . Install the rear safety belt stalk trim panel.
▶ Secure with the clip.

3 . Install the rear seat cushion.

For additional information, refer to [Rear Seat Cushion \(76.70.37\)](#)

Rear Safety Belt Retractor - 2-Door (76.73.18)

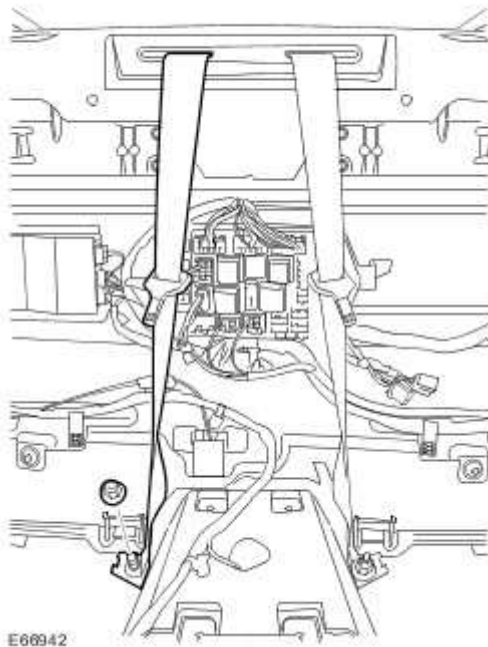
Removal

- 1 . Remove the parcel tray.

For additional information, refer to [Parcel Shelf \(76.67.06\)](#)

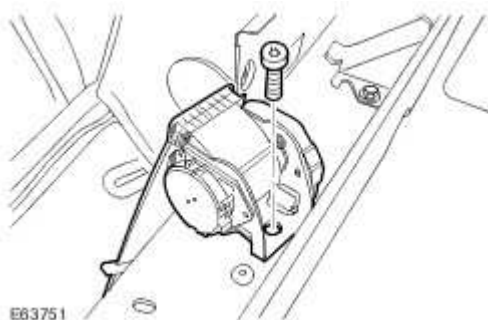
- 2 . Release the safety belt.

▶ Remove and discard the safety belt lower anchor nut.



- 3 . Remove the safety belt assembly.

▶ Remove and discard the Torx bolt.



Installation

1 . Install the safety belt assembly.

 Install a new Torx bolt and tighten to 45 Nm (33 lb.ft).

2 . Secure the safety belt.

.

 Attach the safety belt lower anchor, install a new nut and tighten to 30 Nm (22 lb.ft).

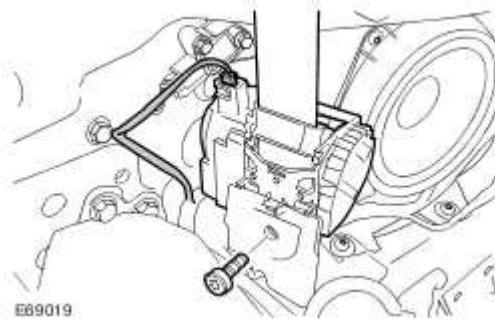
3 . Install the parcel tray.

For additional information, refer to [Parcel Shelf \(76.67.06\)](#)

Front Safety Belt Retractor (76.73.10)

Removal

- 1 . Make the SRS system safe.
For additional information, refer to
- 2 . Remove the rear quarter trim panel.
For additional information, refer to [Rear Quarter Trim Panel - 2-Door \(76.13.73\)](#)
For additional information, refer to [Rear Quarter Trim Panel - Convertible \(76.13.73\)](#)
- 3 . Remove the safety belt retractor assembly.
 - ▶ Disconnect the electrical connector.
 - ▶ Remove and discard the Torx bolt.



Installation

- 1 . Install the safety belt retractor assembly.
 - ▶ Install a new Torx bolt and tighten to 45 Nm (33 lb.ft).
 - ▶ Connect the electrical connector.
- 2 . Install the rear quarter trim panel.
For additional information, refer to [Rear Quarter Trim Panel - 2-Door \(76.13.73\)](#)
For additional information, refer to [Rear Quarter Trim Panel - Convertible \(76.13.73\)](#)

Rear Safety Belt Retractor - Convertible (76.73.18)

Removal

1 . NOTE:

Support the convertible top lid.

Open the convertible top to the position shown.

▶ Depress the switch.

2 . Remove the rear seat backrest.

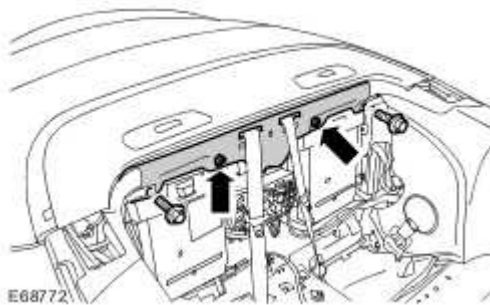
For additional information, refer to [Rear Seat Backrest \(76.70.38\)](#)

3 . Release the rear seat backrest trim panel.

▶ Remove the 2 clips.

▶ Remove the 2 bolts.

▶ Position the rear seat backrest trim panel aside.



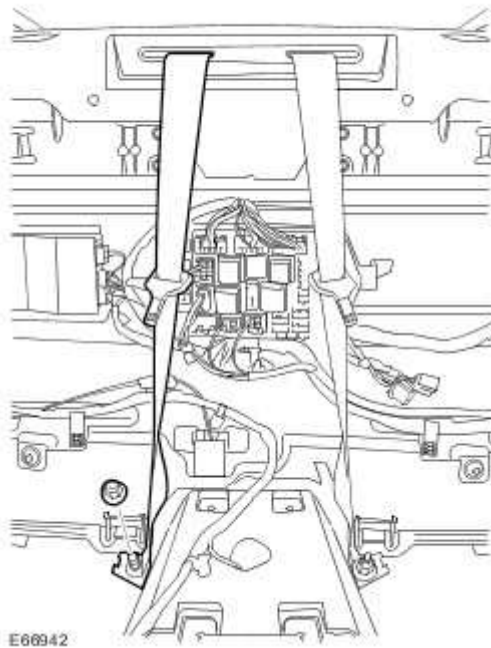
4 . Remove the rear safety belt trim panel.

▶ Release the 2 clips.

▶ Remove the 2 nuts.

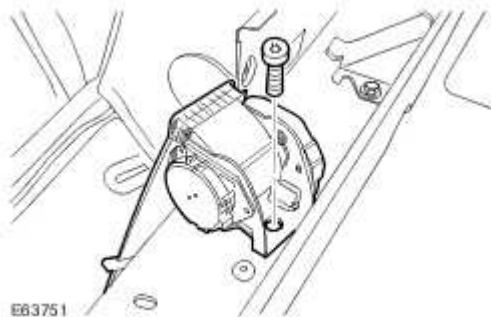
5 . Release the safety belt.

▶ Remove and discard the safety belt lower anchor nut.



6 . Remove the safety belt assembly.

- ▶ Remove and discard the Torx bolt.
- ▶ Release the safety belt.



Installation

1 . Install the safety belt assembly.

- ▶ Install a new Torx bolt and tighten to 45 Nm (33 lb.ft).
- ▶ Position the safety belt through the rear seat backrest trim panel.

2 Secure the safety belt.

- ▶ Attach the safety belt lower anchor, install a new nut and tighten to 30 Nm (22 lb.ft).

3 . Install the rear safety belt trim panel.

▶ Secure with the clips.

▶ Tighten the nuts to 10 Nm (7 lb.ft).

4 . Install the rear seat backrest trim panel.

▶ Tighten the bolts to 10 Nm (7 lb.ft).

▶ Install the clips.

5 . Install the rear seat backrest.

For additional information, refer to [Rear Seat Backrest \(76.70.38\)](#)

6 . Close the the convertible top.

▶ Depress the switch.

501-20B : Supplementary Restraint System

Specifications

Specifications

Torque Specifications

Item	Nm	lb-ft	lb-in
Airbag crash sensor to B-post - bolt	8	-	71
Airbag crash sensor to radiator support - bolt	8	-	71
Child upper anchorage (coupe) - bolt	25	18	-
Roll-over protection unit to back seat panel - bolt	25	18	-
Restraints control module - nut	8	-	71

Air Bag Disposal

Deployed Air Bag

1.



WARNING: Always wear safety glasses when repairing an air bag supplemental restraint system (SRS) vehicle and when handling an air bag module. Failure to follow this instruction may result in personal injury.

Deployed air bag modules are to be disposed of as special waste and must comply with local environmental requirements, if in doubt, contact Authority for disposal requirements.

2. **NOTE:**

The storage, transportation, disposal, and/or recycling of air bag module components must be carried out in accordance with all applicable federal, state and local regulations including, but not limited to, those governing building and fire codes, environmental protection, occupational health and safety, and transportation.

Modules removed and deployed by Jaguar service are to be returned to the importer for disposal.

Undeployed Air Bag — Inoperative

1.



WARNING: Carry a live air bag module with the air bag and trim cover or deployment door pointed away from your body. This will reduce the risk of injury in the event of an accidental deployment. Failure to follow this instruction may result in personal injury.



WARNING: All inoperative air bag modules have been placed on the Mandatory Return List. All discolored or damaged air bag modules must be treated the same as any inoperative live air bag being returned. Failure to follow this instruction may result in personal injury.

Remove the inoperative driver air bag module or passenger air bag module. For additional information see or in this section.

Undeployed Air Bag — Scrapped Vehicle

1.



WARNING: Always wear safety glasses when repairing an air bag supplemental restraint system (SRS) vehicle and when handling an air bag module. Failure to follow this instruction may result in personal injury.



WARNING: Carry a live air bag module with the air bag and trim cover or deployment door pointed away from your body. This will reduce the risk of injury in the event of an accidental deployment. Failure to follow this instruction may result in personal injury.



WARNING: Remote deployment is to be carried out outdoors with all personnel at least 6.1 meters (20 feet) away to ensure personal safety. Due to the loud report which occurs when the air bag is deployed, hearing protection is required. Failure to follow this instruction may result in personal injury.



WARNING: Do not place the driver or passenger air bag module with the trim cover or deployment door facing down, as the forces of the deploying air bag can cause it to ricochet and cause personal injury. Failure to follow this instruction may result in personal injury.

Equipment required: Universal deployment tool-Part N° 418-S135 and 12V Battery.

2. The deployment procedure should be carried out outdoors away from other personnel.
3. Remove any loose debris from around air bag. Make sure that no flammable liquids are present.
4. Disconnect the battery ground and positive cables.
5. Disconnect the relevant air bag module electrical connector.
6. Connect the appropriate adaptor lead to the restraint device.

7. Connect the deployment lead to the adaptor lead. Pass wire of the deployment tool through window, close all doors, leave window with lead for deployment tool open.

8.



WARNING: Before proceeding, make sure precautions have been taken to warn personnel of a possible loud noise upon activation. Do not allow anybody to approach closer to restraint device than six meters. Failure to follow this instruction may result in personal injury.

Move as far from restraint device as possible and connect the tool clips to a 12V vehicle battery.

9.



WARNING: Do not handle the deployed device immediately after activation - it may be hot. Allow the unit to cool for at least 20 minutes. Cooling modules should be continuously monitored to make sure heat does not create a fire with spilled liquids or other debris. Failure to follow this instruction may result in personal injury.

Deploy the module by depressing both switches on the tool. If activation does not occur, disconnect battery from tool and seek advice from Jaguar Engineering and wait for further instructions.

10. Repeat procedure for all air bags in vehicle.

11. The vehicle is now to be scrapped in the normal manner with modules installed.

Disposal of live air bag modules for driver air bag module, passenger air bag module and side air bag module, using tyres

1. Equipment required: Deployment tool 418-S135, Battery (12V), Safety goggles to BS2092 grade 2, Rubber gloves to PrEN 374 class 2, Ear protectors that have been measured to BS.EN 24869, Particulate respirator to EN 149 grade FFP2S.

2. The deployment procedure should be carried out outdoors, away from other personnel.

3. Stack four scrap tyres, securing together with heavy gauge wire or cable. While

disconnected from any electrical power source, connect deployment harness and place air bag adaptor portion under tyre stack, ready for connection to air bag.

4.



WARNING: Power must not be connected during this step. Failure to follow this instruction may result in personal injury.



CAUTION: Make sure the connector is not in contact with the inflator or it will be damaged during the test.

Connect air bag to air bag connector, make sure the locking sleeve is fully engaged. Position the air bag with the cover facing upwards.

5. Make sure battery connections of deployment harness are ten meters away from the tyre stack

6. Remove any loose parts from around the air bag. Make sure that no flammable liquids are present.

7.



WARNING: Before proceeding, make sure precautions have been taken to warn personnel of a possible loud noise upon activation. Do not allow anybody to approach closer to restraint device than six meters. Failure to follow this instruction may result in personal injury.

Move as far from restraint device as possible and connect the tool clips to a 12V vehicle battery.

8.



WARNING: Do not handle the deployed device immediately after activation - it may be hot. Allow the unit to cool for at least 20 minutes. Cooling modules should be continuously monitored to make sure heat does not create a fire with spilled liquids or other debris. Failure to follow this instruction may result in personal injury.

Deploy the module by depressing both switches on the tool. If activation does not occur, disconnect battery from tool and seek advice from Jaguar Engineering and wait for further instructions.

9. Allow the air bag to cool for at least 20 minutes. Cooling modules should be continuously

monitored to make sure heat does not generate a fire with spilled liquids or other debris.

10. Remove the air bag from the tyre stack and seal in a plastic bag, ready for disposal.

11. In the event of any problems or queries arising from this procedure, contact Jaguar Engineering.

Disposal of side curtain air bag module using tyres

1. Equipment required: Deployment tool 418-S135, Battery (12V), Safety goggles to BS2092 grade 2, Rubber gloves to PrEN 374 class 2, Ear protectors that have been measured to BS.EN 24869, Particulate respirator to EN 149 grade FFP2S.

2. The deployment procedure should be carried out outdoors, away from other personnel.

3.



WARNING: Make sure that the tyre stack is stable before and after deployment. Failure to follow this instruction may result in personal injury.

Stack scrap tyres of a sufficient height to mask the side curtain air bag module, securing together with heavy gauge wire or cable. While disconnected from any electrical power source, connect deployment harness and place air bag adaptor portion under tyre stack, ready for connection to air bag.

4.



WARNING: Power must not be connected during this step. Failure to follow this instruction may result in personal injury.



CAUTION: Make sure the connector is not in contact with the inflator or it will be damaged during the test.

Connect air bag to air bag connector, make sure the locking sleeve is fully engaged. Position the air bag into the tyres with the inflator canister at the lowest point.

5. Make sure battery connections of deployment harness are ten meters away from the tyre stack

6. Remove any loose parts from around the air bag. Make sure that no flammable liquids are present.

7.



WARNING: Before proceeding, make sure precautions have been taken to warn personnel of a possible loud noise upon activation. Do not allow anybody to approach closer to restraint device than six meters. Failure to follow this instruction may result in personal injury.

Move as far from restraint device as possible and connect the tool clips to a 12V vehicle battery.

8.



WARNING: Do not handle the deployed device immediately after activation - it may be hot. Allow the unit to cool for at least 20 minutes. Cooling modules should be continuously monitored to make sure heat does not create a fire with spilled liquids or other debris. Failure to follow this instruction may result in personal injury.

Deploy the module by depressing both switches on the tool. If activation does not occur, disconnect battery from tool and seek advice from Jaguar Engineering and wait for further instructions.

9. Allow the air bag to cool for at least 20 minutes. Cooling modules should be continuously monitored to make sure heat does not generate a fire with spilled liquids or other debris.

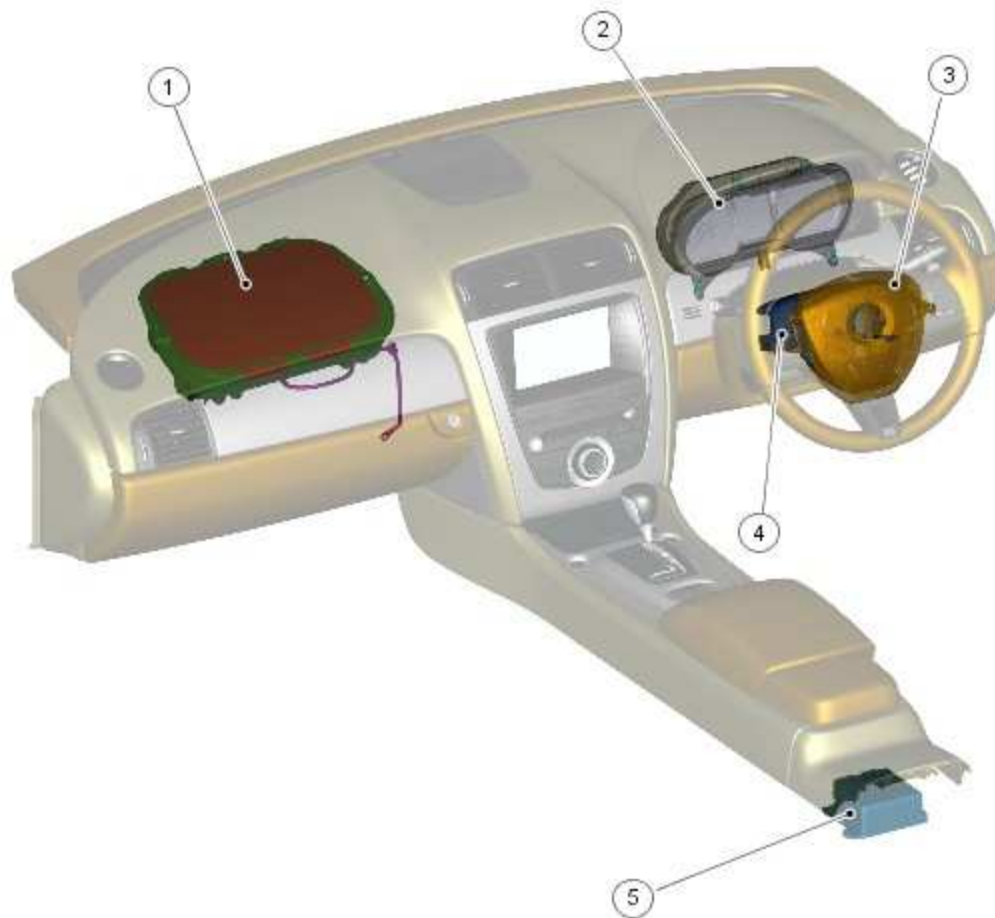
10. Remove the air bag from the tyre stack and seal in a plastic bag, ready for disposal.

11. In the event of any problems or queries arising from this procedure, contact Jaguar Engineering.

Description and operation

Air Bag Supplemental Restraint System (SRS)

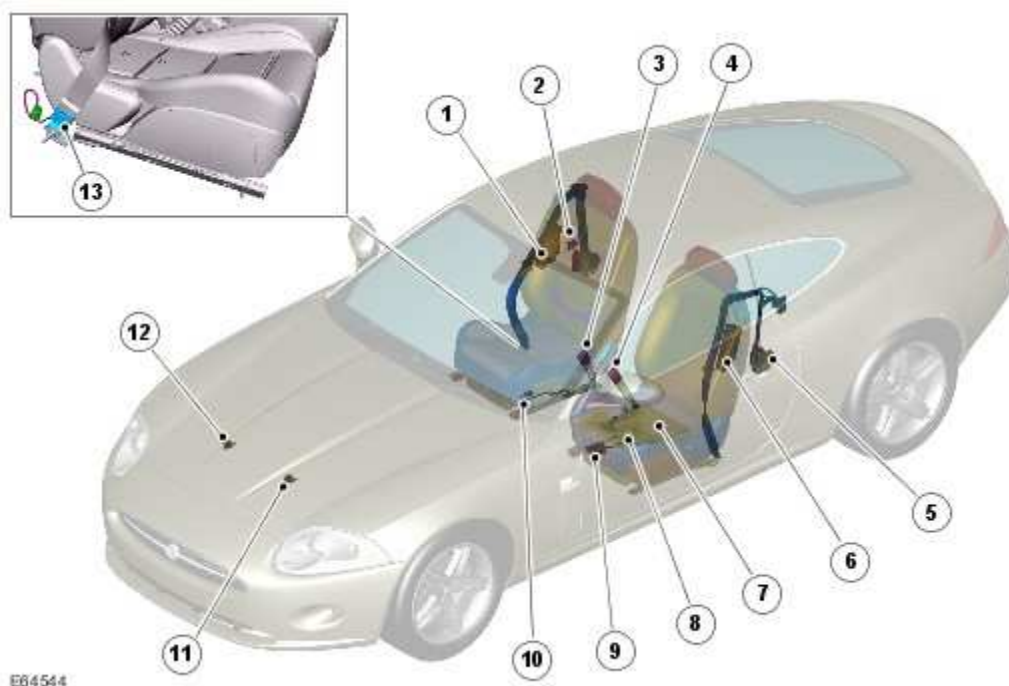
COMPONENT LOCATION - SHEET 1 OF 3



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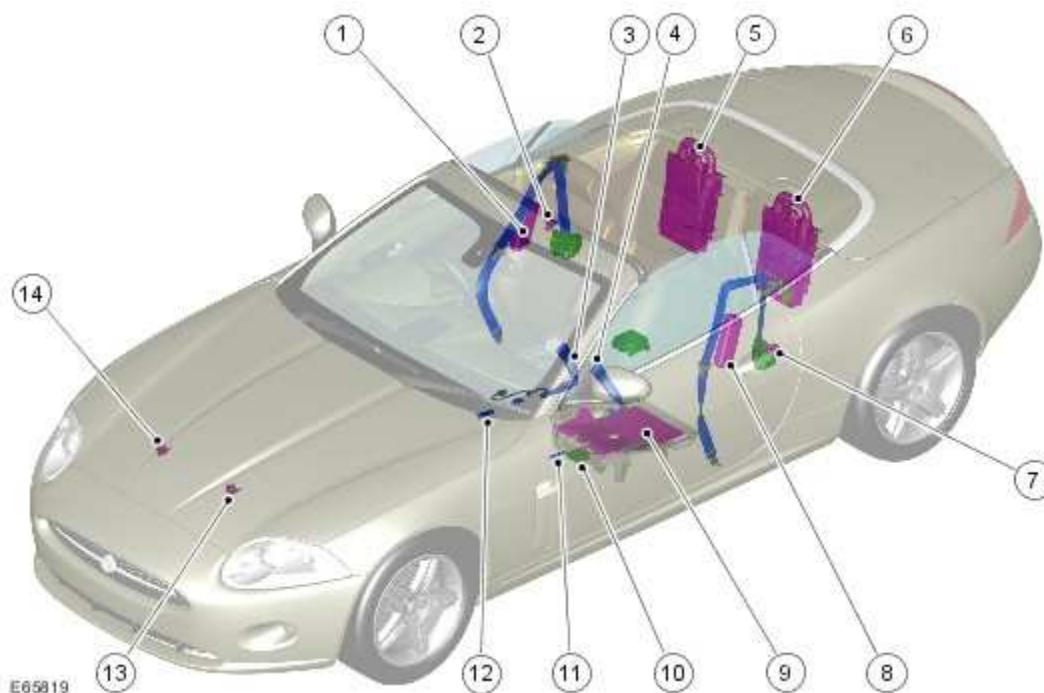
Item	Part Number	Description
1		Passenger air bag
2		Instrument cluster
3		Drivers air bag
4		Clock spring
5		RCM

COMPONENT LOCATION - SHEET 2 OF 3



Item	Part Number	Description
1		RH side air bag
2		Crash sensor
3		RH safety belt pre-tensioner
4		LH safety belt pre-tensioner
5		Crash sensor
6		LH side air bag
7		Seat occupancy/occupant classification sensor
8		Passenger seat position sensor (where fitted)
9		Seat occupancy classification system control module
10		Driver seat position sensor
11		Crash sensor
12		Crash sensor
13		Safety belt tension sensor

COMPONENT LOCATION - SHEET 3 OF 3



Item	Part Number	Description
1		RH side air bag
2		Crash sensor
3		RH safety belt pre-tensioner
4		LH safety belt pre-tensioner
5		Roll over protection system hoop (convertible only)
6		Roll over protection system hoop (convertible only)
7		Crash sensor
8		LH side air bag
9		Seat occupancy/occupant classification sensor
10		Passenger seat position sensor (where fitted)
11		Seat occupancy control module
12		Driver seat position sensor
13		Crash sensor
14		Crash sensor

INTRODUCTION



WARNING: All pyrotechnic devices are dangerous. Before performing any procedures on any pyrotechnic device, read all information contained within the Standard Workshop Practices section of this manual. For additional information, refer to [Standard Workshop Practices \(100-00\)](#)

The SRS (supplemental restraint system) provides additional protection for occupants in certain vehicle accident conditions.

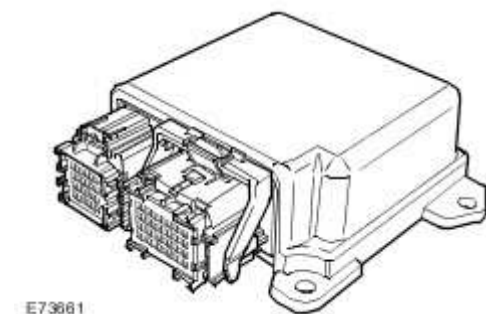
The SRS (supplemental restraint system) comprises the following sub-systems:

- Driver and passenger front air bag system.
- Roll over protection system (convertible only).
- Driver and passenger side air bag system.
- Safety belt pretension system.
- Passenger occupancy detection system
- Passenger occupancy classification system

The SRS (supplemental restraint system) features selective activation of the air bags and safety belt pre-tensioners, and two stage driver and passenger air bags. The RCM (restraints control module) monitors internal and external sensors and activates the required safety belt pre-tensioners, air bags and roll-over protection hoops (convertible only) if the sensors detect an impact or roll-over above preset limits.

The Roll-over Protection System comprises two spring loaded hoops located behind the rear seat. The hoops incorporate a pin to break the rear screen glass as the hoop is released. The hoops are released by a pyrotechnic device when the RCM (restraints control module) detects a roll-over condition.

RESTRAINTS CONTROL MODULE



The RCM (restraints control module) is installed on the top of the transmission tunnel, in line with the B pillars, and controls operation of the SRS (supplemental restraint system) . The main functions of the RCM (restraints control module) include:

- Crash detection and recording.
- Air bag and pre-tensioner firing.
- Self test and system monitoring, with status indication via the air bag warning lamp and non volatile storage of fault information.

The RCM (restraints control module) determines which elements of the SRS are to be deployed by using two internal areas:

Crash severity evaluation

This area evaluates crash severity by using data from the RCM (restraints control module) internal accelerometer, the front crash sensor and the safety belt buckle sensor. Based on this data, the RCM (restraints control module) decides which level of air bag module deployment is required and forwards the information to the second area, the deployment handler.

Deployment handler

The status of the seat track position sensor(s) and safety belt buckle sensors are examined before a decision is made about which restraints should finally be deployed.

Data from the side crash sensors is used by the RCM in conjunction with acceleration data from the RCM (restraints control module) internal accelerometer to make a deployment decision. The RCM (restraints control module) processes the acceleration data and subject to an impact being of high enough severity, decides whether the side air bag module should be deployed.

On board testing of the air bag modules, front safety belt pretensioner firing circuits, warning indicator circuits and module status (the crash and side impact sensors perform basic self-tests) is performed by the RCM (restraints control module) together with the storing of fault codes.

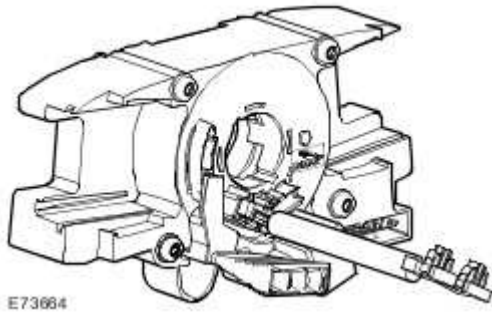
The RCM (restraints control module) drives the SRS (supplemental restraint system) indicator on the instrument pack via a CAN (controller area network) signal. If the warning lamp fails, a fault code is recorded and a warning tone is sounded in place of the lamp if a further fault occurs. It also provides a temporary back-up power supply to operate the air bag modules in the event that in crash conditions, the battery supply is lost. In the event of a crash, it records certain data which can be accessed via the diagnostic connector.

A safing sensor in the RCM provides confirmation of an impact to verify if air bag and pretensioner activation is necessary. A roll-over sensor monitors the lateral attitude of the vehicle. Various firing strategies are employed by the RCM (restraints control module) to ensure that during an accident only the appropriate air bags and pretensioners are fired. The firing strategy used also depends on the inputs from the safety belt switches and the occupant monitoring system.

An energy reserve in the RCM (restraints control module) ensures there is always a minimum of 150 milliseconds of stored energy available if the power supply from the ignition switch is disrupted during a crash. The stored energy is sufficient to produce firing signals for the driver air bag, the passenger air bag and the safety belt pretensioners.

When the ignition is switched on the RCM (restraints control module) performs a self test and then performs cyclical monitoring of the system. If a fault is detected the RCM (restraints control module) stores a related fault code and illuminates the air bag warning indicator. The faults can be retrieved by IDS (Integrated Diagnostic System) over the CAN (controller area network) bus. If a fault that could cause a false fire signal is detected, the disables the respective firing circuit, and keeps it disabled during a crash event

CLOCK SPRING



The clockspring is installed on the steering column to provide the electrical interface between the fixed wiring harness of the steering column and the components that rotate with the steering wheel, i.e. the driver air bag, the horn and the steering wheel switch packs.

The clockspring consists of a plastic cassette which incorporates an outer cover fixed to the steering column and an inner rotor which turns with the steering wheel. Four securing lugs attach the cover to the multifunction switch on the steering column. The rotor is keyed to the steering wheel by a drive peg. A lug on the underside of the rotor operates the self-cancelling feature of the turn signal indicator switch. A ribbon lead, threaded on rollers in the rotor, links two connectors on the cover to two connectors on the rotor. Link leads for the driver air bag are installed in one of the connectors on the rotor.

To prevent damage to the ribbon lead, both the steering and the clockspring must be centralized when removing and installing the clockspring or the steering wheel. The clockspring is centralized when the drive peg is at six o'clock and 50 - 100% of a yellow wheel is visible in the viewing window.

Replacement clocksprings are fitted with a stopper, which locks the cover to the rotor, in the central position. The stopper must be broken off when the replacement clockspring is installed.

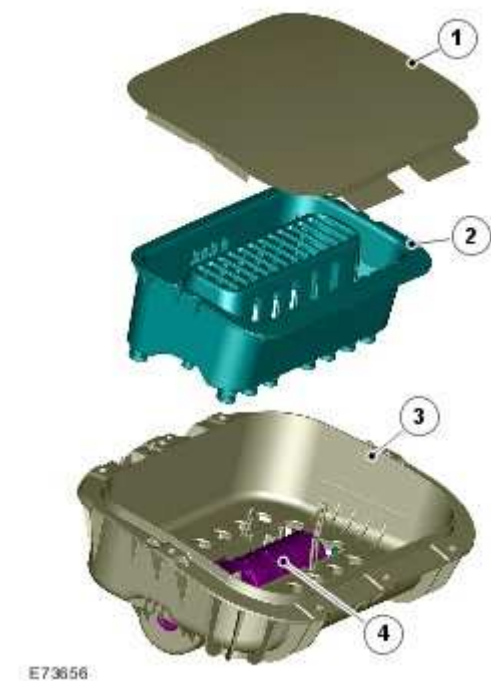
DRIVERS AIR BAG MODULE



The driver air bag module is controlled by the RCM (restraints control module) which chooses between single or dual stage deployment, depending on the occupant position and the crash severity. To reduce the risk of an air bag module induced injury to a driver that is positioned close to the steering wheel, the air bag module deploys radially. It has a non-azide propellant that reduces particulates and effluents. It consists of a two stage inflator with separate chambers for the two inflation stages, each being independently activated by the

RCM. It has two electrical connectors that are color coded and mechanically keyed to the respective connector on the inflator.

PASSENGER AIR BAG MODULE

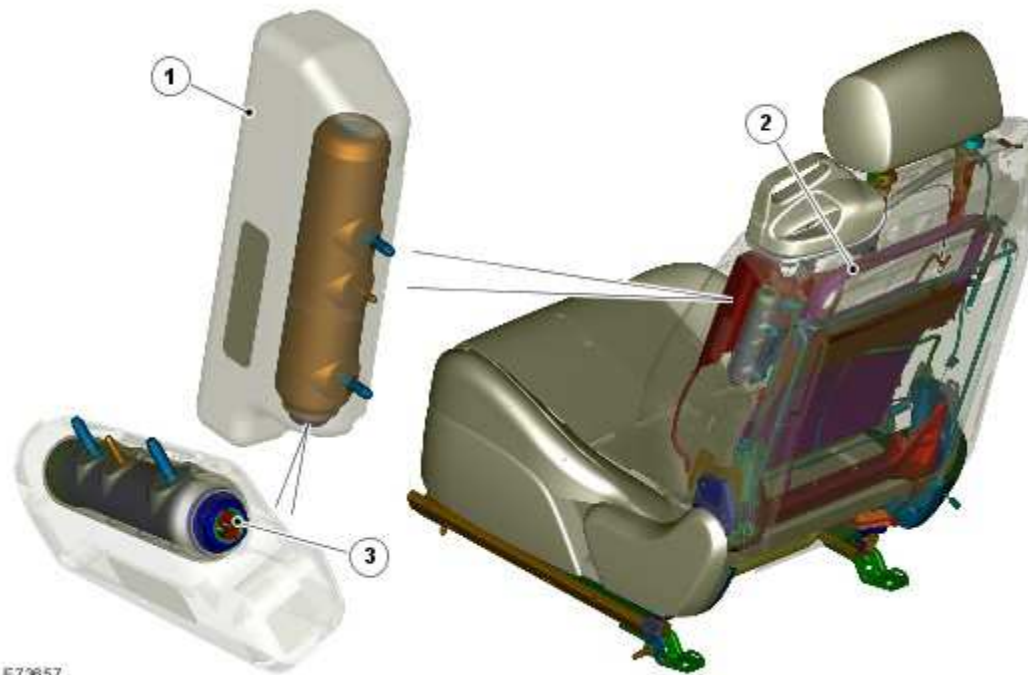


Item	Part Number	Description
1		Passenger air bag module cover
2		Passenger air bag module retainer
3		Passenger air bag module container
4		Passenger air bag module inflator

The passenger air bag module is controlled by the RCM (restraints control module) which chooses between single or dual stage deployment, depending on the occupant status and the crash severity. It consists of a two stage inflator with two air bag electrical connectors to accommodate the two stage inflation.

The heated gas inflator consists of a high-pressure mix of clean air and hydrogen gas, triggered by two separate ignition squibs. It produces a controlled generation of clean gas to rapidly fill the air bag. It is classified as a stored flammable gas (not as an explosive) and as such, has less restrictive storage and transportation requirements. It produces a very clean burn and almost no particulates and is almost free of any toxins, making disposal or recycling much easier.

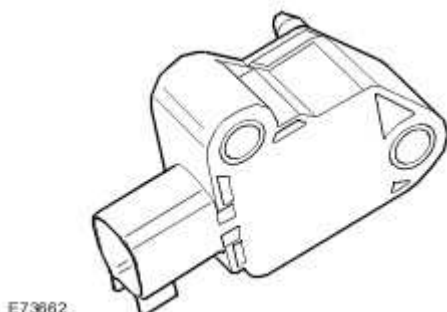
SIDE AIR BAG MODULE



Item	Part Number	Description
1		Side air bag
2		Seat frame
3		Side air bag electrical connector

The side air bag module is mounted in the outboard bolster of each front seat and uses compressed gas to inflate. It provides protection for the thorax (the part of the trunk between the neck and the abdomen) and the head. In an air bag deployment situation, it deploys through the stitch seam in the side bolster. To ensure the air bag always emerges at the same point, a chute is attached to the inside of the trim cover and wrapped around the air bag module.

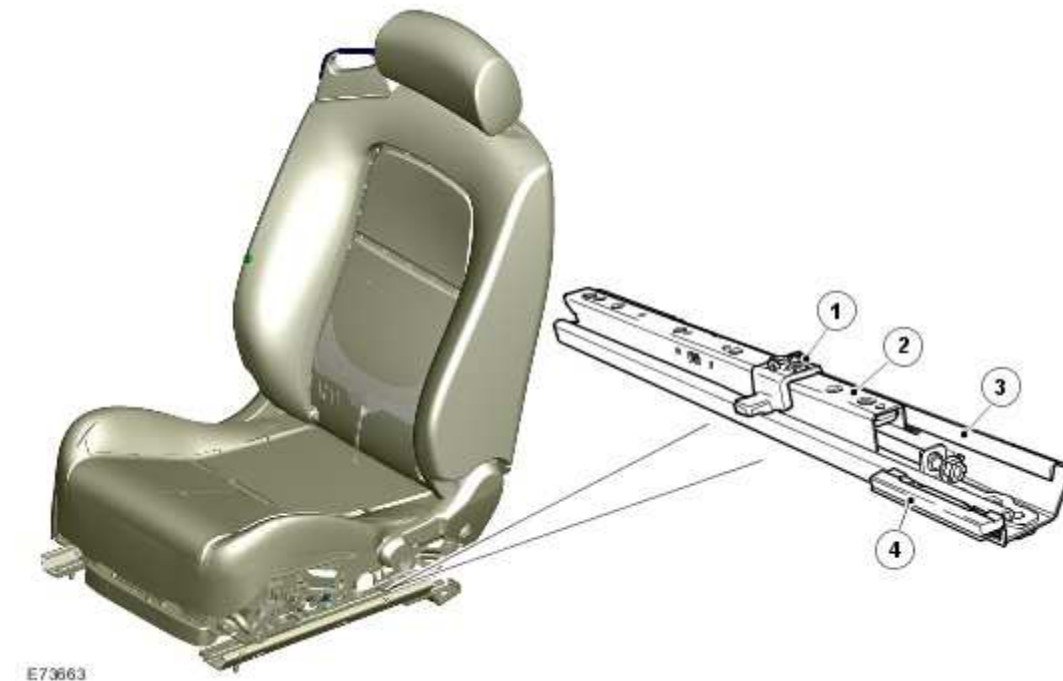
IMPACT SENSORS



Two front impact sensors are attached to the body behind the radiator grille. The RCM (restraints control module) processes the crash data sent by the crash sensor against stored data, and deploys the front air bags and pretensioners.

Two side impact sensors are mounted at the base of the B-pillars to facilitate lateral impact sensing. In the event of a side impact, the RCM (restraints control module) processes the crash data against the stored data. The RCM (restraints control module) will deploy the side air bag module on the side the deployment request was initiated.

SEAT POSITION SENSOR(S)



Item	Part Number	Description
1		Seat position sensor
2		Seat rail
3		Floor runner
4		Seat position trigger

A seat position sensor is installed on the driver seat and, up to VIN (vehicle identification number) B03409, some front passenger seats. The seat position sensor allows the RCM (restraints control module) to detect when the seat is forward of a given point on the seat track. The seat position sensor consists of a Hall effect sensor attached to the seat frame and a target plate on the seat base. While the ignition is on, the RCM (restraints control module) supplies the sensor with a power supply of 12V nominal, and monitors the return voltage. When the seat frame moves forwards, the sensor moves over the target plate, which changes the reluctance of the sensor. The change of voltage is detected by the RCM (restraints control module) and used as a switching point. The switching point is when the center of the sensor is 3 ± 4 mm from the leading edge of the target plate.

When a seat is forward of the switching point, the RCM (restraints control module) increases the time delay between firing the two stages of the inflator in the driver or passenger air bag, as applicable. When the seat is rearward of the switching point, the RCM (restraints control module) uses the normal time delay between firing the two stages.

SAFETY BELT SENSOR

The buckle of each front safety belt incorporates a Hall effect sensor that provides a safety belt status signal to the RCM (restraints control module) . The RCM (restraints control module) broadcasts the status of the two front safety belts on the high speed CAN (controller area network) bus for use by the instrument cluster. In the event of a front impact the RCM (restraints control module) will deploy the pretensioners provided the safety belt buckles are fastened. The safety belt buckle pretensioners have a lower deployment threshold than that required by the air bags. Hence it is possible during a minor collision, which exceeds the deployment threshold, that only the safety belt buckle pretensioners will deploy. For additional information, refer to [Safety Belt System](#) (501-20 Safety Belt System)

PRETENSIONERS



Item	Part Number	Description
1		Electrical connector
2		Pyrotechnic pretensioner
3		Safety belt buckle

The pretensioners are used to tighten the front safety belts during a collision to ensure the occupants are securely held in their seats. A pretensioner is integrated into each front safety belt buckle.

Each pretensioner has a tube containing an inflator and a piston. The inflator is connected to the RCM (restraints control module) . The piston is attached to a steel cable, the opposite end of which is attached to the safety belt buckle.

On receipt of a fire signal from the RCM (restraints control module) , the inflator generates nitrogen gas that rapidly expands to drive the piston along the tube, pulling the cable and drawing the safety belt buckle downwards.

AIR BAG WARNING INDICATOR



The air bag warning indicator consists of a amber LED (light emitting diode) behind a graphic in the tachometer of the instrument cluster.

Operation of the air bag warning indicator is controlled by a high speed CAN (controller area network) bus message from the RCM (restraints control module) to the instrument cluster. The RCM (restraints control module) illuminates the air bag warning indicator if a fault is detected, and for approximately 6 seconds during the indicator check at the beginning of each ignition cycle.

OCCUPANT MONITORING

There are two types of occupant monitoring:

- In all markets except NAS & Australia, vehicles have an occupant detection sensor
- In NAS markets, vehicles have an occupant classification system

For markets which have an occupant detection sensor, this has no interface with the restraints system and only provides the belt reminder function.

For markets that have an occupant classification system, this provides the RCM (restraints control module) with the occupancy status of the front passenger seat. The RCM (restraints control module) uses this and the seat buckle status in the evaluation of the firing strategy for the passenger front air bag, side air bag, and pretensioner.

SAFETY BELT SWITCHES

A safety belt switch is installed in the buckle of each front safety belt to provide the RCM (restraints control module) with status signals of the related safety belts. When a safety belt is

unfastened the switch outputs a low current to the RCM (restraints control module) . When the safety belt is fastened the switch outputs a high current to the RCM (restraints control module) .

OCCUPANT DETECTION SYSTEM

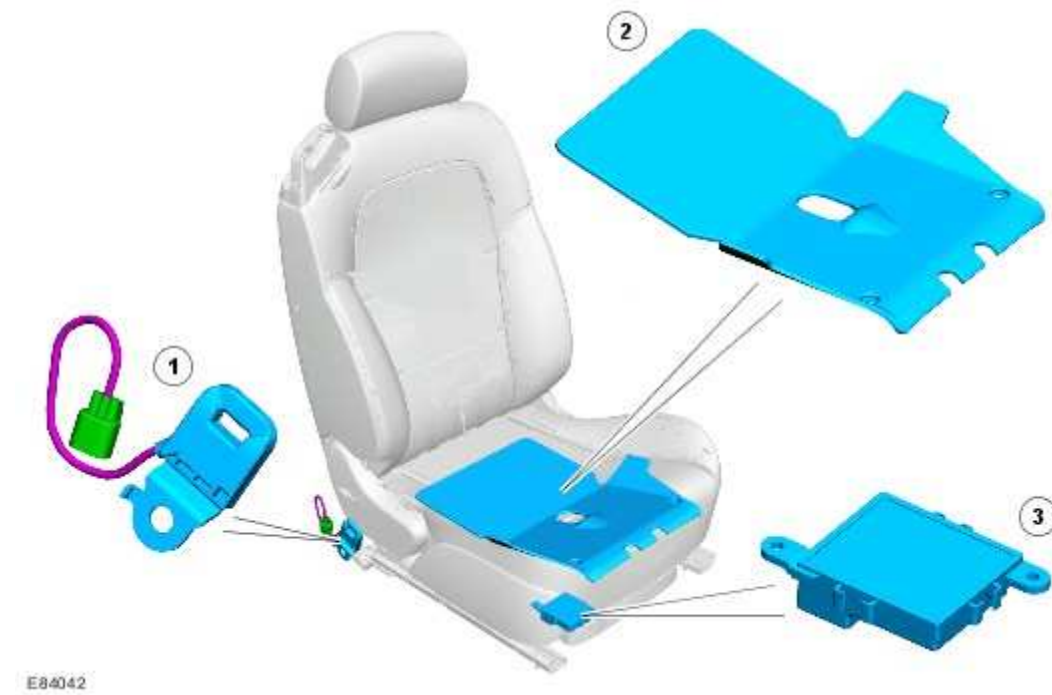


Item	Part Number	Description
1		Seat occupancy sensor pad
2		Harness connector
3		Control module

The occupant detection system can only determine if the front passenger seat is occupied or unoccupied. The occupant detection system consists of a captive sensor mat installed between the foam padding and the cover of the front passenger seat cushion and a control module.

The mat's output is fed to the control module which gives either empty or occupied state signal to the instrument cluster. The instrument cluster illuminates the safety belt minder lamp when it detects that the seat is occupied and the safety belt is not engaged.

OCCUPANT CLASSIFICATION SYSTEM



Item	Part Number	Description
1		Belt tension sensor
2		Pressure pad
3		Occupant classification system control module

The occupant classification system can determine if the front passenger seat is unoccupied, occupied by a small person, or occupied by a large person. The occupant classification system consists of:

- A pressure pad, installed under the cushion of the front passenger seat, which is connected to a pressure sensor
- A safety belt tension sensor, integrated into the anchor point of the front passenger safety belt
- An occupant classification module, installed under the front passenger seat.

The pressure pad is a silicone filled bladder. Any load on the pressure pad is detected by the pressure sensor.

The safety belt tension sensor is a strain gauge that measures the load applied by the safety belt anchor to the anchor bolt. The sensor is located in the lower safety belt anchor point.

Safety Belt Tension Sensor



The occupant classification module supplies a reference voltage to the pressure sensor and the safety belt tension sensor and, from the returned signals, measures the loads acting on the pressure pad and the safety belt tension sensor. The load measurement from the safety belt tension sensor is used to produce a correction factor for the load measurement from the pressure pad. The tightness of the safety belt affects the load acting on the pressure pad, so without the correction factor the occupant classification module cannot derive an accurate occupancy status.

The occupant classification module translates the load readings into a seat occupancy status and transmits the result to the RCM (restraints control module) , on a dedicated high speed CAN (controller area network) bus link. The occupant classification module incorporates two load limits for the seat cushion: When the load exceeds the lower limit, but is less than the upper limit, the occupant is classified as small; when the upper limit is exceeded, the occupant is classified as large.

The occupant classification system has 4 possible states which are detailed in the following table.

Classification	Seat Status	Passenger Air Bag Status	Air Bag Indicator Status
Empty	Empty	Disabled	Off
Occupied inhibit	The seat is occupied by a small person or child restraint is being used	Passenger air bag/Thorax air bag operation is disabled	On
Occupied allow	The seat is occupied by a large person	Passenger air bag/Thorax air bag operation is enabled	Off
Error	-	Passenger air bag/Thorax air bag operation is disabled	On

ROLL OVER PROTECTION SYSTEM

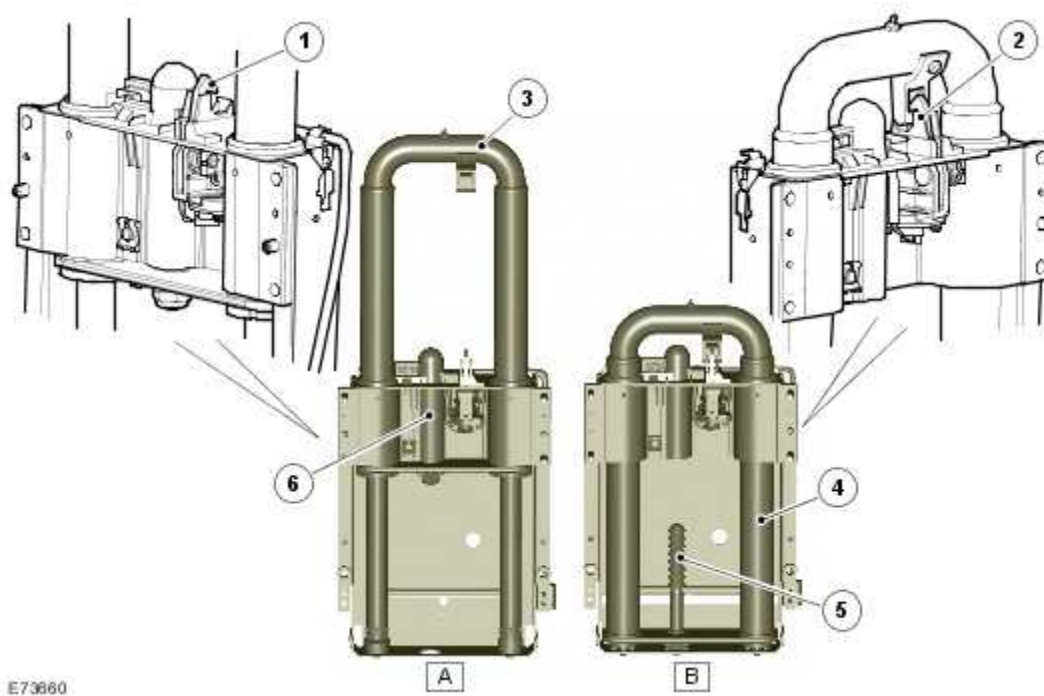
The roll over protection system fitted to the convertible vehicle comprises two roll over protection hoops located behind the rear seat. The roll over protection system is controlled by the RCM (restraints control module) . The RCM (restraints control module) has an internal

roll over sensor which triggers the pyrotechnic latches that hold the roll over protection hoops in place.

Roll Over Protection Hoops

NOTE:

A= Deployed, B= Normal state



Item	Part Number	Description
1		Hoop retaining latch-deployed
2		Hoop retaining latch
3		Roll over protection hoop-deployed
4		roll over protection hoop
5		Roll over protection hoop latch pin
6		Roll over protection hoop latch

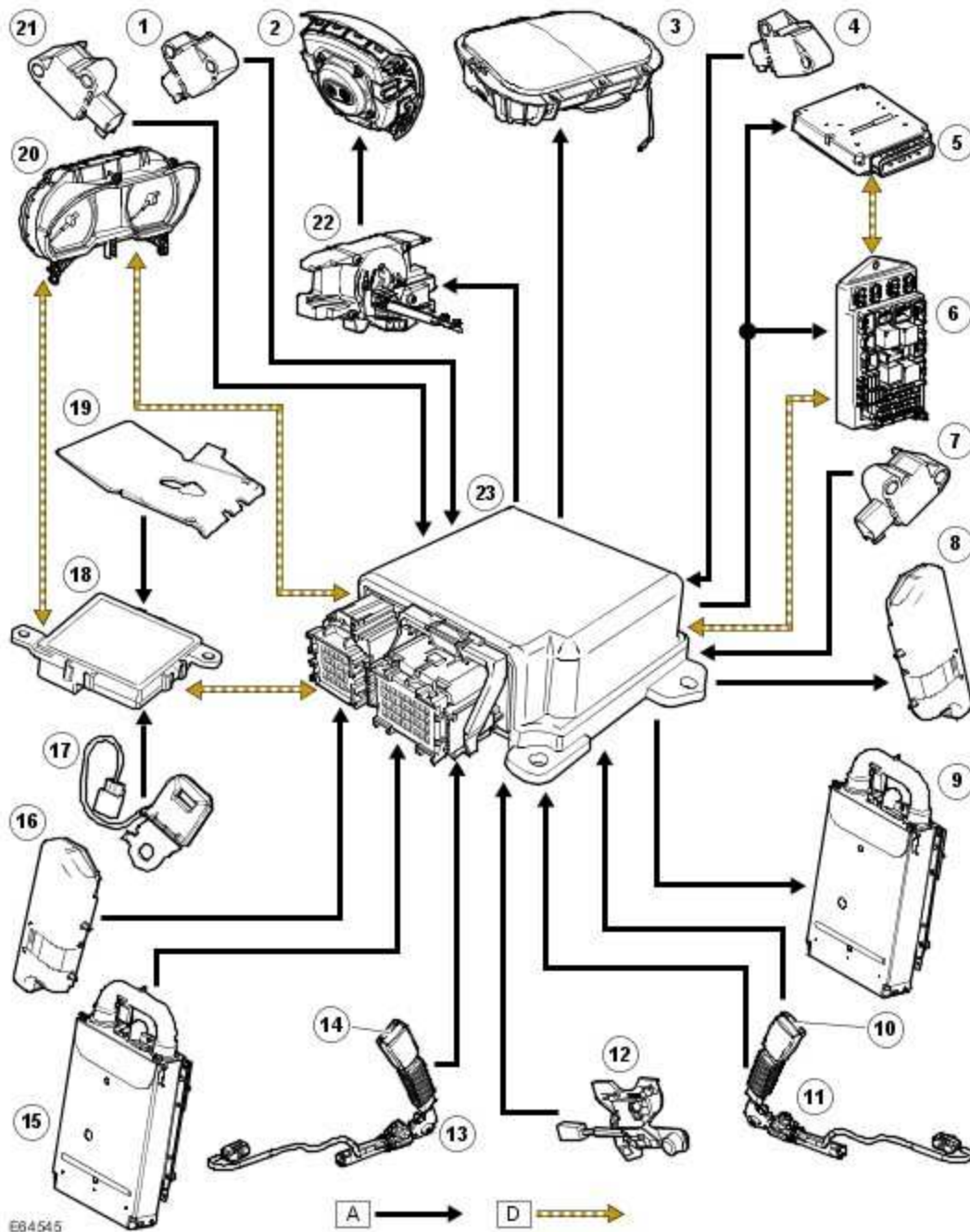
The roll over protection system hoops are located behind the rear seat underneath the tonneau cover. The tonneau cover has two hatches set into it to allow the hoops to break through once triggered. The hoops are spring loaded and held in place by a pyrotechnic latch. The latch is fired in response to a trigger from the RCM (restraints control module) . Once fired the latch opens and the hoops are released. As the hoops move upwards a ratchet in the body of the hoops locks into place and prevents the hoops from being forced back down by the weight of the vehicle. Once deployed the hoops cannot be re-set and should be replaced with new components.

The hoops have a small pin mounted on top which breaks the rear screen if the convertible top is up. This allows clear passage for the roll over protection hoops to operate.

CONTROL DIAGRAM

NOTE:

A = Hardwired connection: D = High speed CAN (controller area network)



Item	Part Number	Description
1		Front crash sensor
2		Drivers air bag
3		Passenger air bag
4		Front crash sensor

5		ECM
6		Auxiliary junction box
7		Side crash sensor
8		Thorax air bag
9		Roll over protection hoop
10		Safety belt buckle switch
11		Safety belt pre-tensioner
12		Seat position sensor(s)
13		Safety belt pre-tensioner
14		Safety belt buckle switch
15		Roll over protection hoop
16		Thorax air bag
17		Driver safety belt tension sensor
18		OCS control module
19		OCS sensor
20		Instrument cluster
21		Side crash sensor
22		Clock spring
23		RCM

PRINCIPLES OF OPERATION

In a collision, the sudden deceleration or acceleration is measured by the safing sensor in the RCM (restraints control module) and by the impact sensors. The RCM (restraints control module) evaluates the readings to determine the impact point on the vehicle and whether the deceleration/acceleration readings exceed the limits for firing any of the air bags or pretensioners. During a collision, the RCM (restraints control module) only fires the air bags and pretensioners if the safing sensor confirms that the data from the remote sensor(s) indicates an impact limit has been exceeded. The RCM (restraints control module) also monitors the vehicle for a roll-over accident using the internal roll-over sensor.

The RCM (restraints control module) incorporates the following impact thresholds to cater for different accident scenarios:

- Front impact, pretensioners.
- Front impact, driver and passenger air bags stage 1, belt unfastened.
- Front impact, driver and passenger air bags stage 2, belt unfastened.
- Front impact, driver and passenger air bags stage 1, belt fastened.
- Front impact, driver and passenger air bags stage 2, belt fastened.
- Rear impact.
- LH (left-hand) side impact.
- RH (right-hand) side impact.

- Roll-over.

The front impact thresholds increase in severity from pretensioners, through to driver and passenger air bag stage 2, belt fastened.

Firing Strategies

The safety belt pretensioners are fired when either the pretensioner impact limit or the roll-over limit is exceeded. The RCM (restraints control module) only fires the pretensioners if the related safety belt is fastened. For the front passenger pretensioner to fire, the seat must also be occupied by a person.

The driver and passenger air bags are only fired in a frontal impact that exceeds the stage 1 threshold. Both stages of the inflator in the driver and passenger air bags are fired. At impacts between the stage 1 and 2 thresholds, the delay between the firing of the two stages varies with the severity of the impact; the more severe the impact the shorter the delay. At stage 2 impact thresholds and above, the two stages of the inflator are fired almost simultaneously. The time delay between firing the two stages of the inflator is increased if the related seat is forward of the seat position sensor switching point.

If a side impact limit is exceeded, the RCM (restraints control module) fires the side air bag on that side of the vehicle.

If multiple impacts occur during a crash event, after responding to the primary impact the RCM (restraints control module) will output the appropriate fire signals in response to any further impacts.

Crash Signal

When the RCM (restraints control module) outputs any of the fire signals, it also outputs a hard wired crash signal to the ECM (engine control module) and changes the high speed CAN (controller area network) bus output message from 'no crash' to 'crash condition'. The high speed CAN (controller area network) bus message is used by the CJB (central junction box) .

On receipt of the crash signals:

- The ECM (engine control module) disables the fuel pump.
- The auxiliary junction box enters the crash mode and: Activates all of the unlock signals of the vehicle locking system, even if the vehicle is already unlocked, repeatedly for 3 seconds, in case a lock button is pressed during the crash. Ignores all locking and superlocking inputs until the crash mode is cancelled, when it returns the locking system to normal operation. Activates all of the courtesy lamps, except for the approach lamps. The activated courtesy lamps remain on until crash mode is cancelled, when they return to normal operation. Activates the hazard warning lamps. The hazard warning lamps remain on until crash mode is cancelled.

The crash mode is cancelled by cycling the ignition mode.

Air Bag Supplemental Restraint System (SRS)

Principle of Operation

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

[Air Bag Supplemental Restraint System \(SRS\)](#)

Inspection and Verification



WARNING: TO AVOID ACCIDENTAL DEPLOYMENT AND POSSIBLE PERSONAL INJURY, THE BACKUP POWER SUPPLY MUST BE DEPLETED BEFORE REPAIRING OR REPLACING ANY AIR BAG SUPPLEMENTAL RESTRAINT SYSTEM (SRS) COMPONENTS. TO DEplete THE BACKUP POWER SUPPLY ENERGY, DISCONNECT THE BATTERY GROUND CABLE AND WAIT ONE MINUTE. FAILURE TO FOLLOW THIS INSTRUCTION MAY RESULT IN PERSONAL INJURY.

NOTE:

Given the legal implications of a restraints system failure, harness repairs to Air Bag module circuits are not acceptable. Where the text refers to "REPAIR the circuit", this will normally mean the replacement of a harness.

- 1 . Verify the customer concern.
- 2 . Visually inspect for obvious signs of damage and system integrity.

Electrical
• Battery condition, state of charge • Make sure all electrical connector(s) are engaged correctly on the air bag circuits • Wiring harness • Air bag module(s) • Make sure the restraints control module (RCM) is correctly installed • Fuse(s) • Sensor(s) • Pretensioner(s) • Warning lamp bulb(s)

- 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, check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

Given the complexity of the system and the potential for damage/injury, the preferred method of diagnosis is via the Manufacturer approved diagnostic system.

If the Manufacturer approved diagnostic system is not available, use a scan tool to extract DTCs and refer to the DTC Index.

DTC Index



CAUTION: When probing connectors to take measurements in the course of the pinpoint tests, use the adaptor kit, part number 3548-1358-00.

NOTE:

If the control module 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.

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 additional information read by the manufacturer approved diagnostic system).

NOTE:

When performing electrical voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places, and with an up-to-date 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:

Inspect connectors for signs of water ingress, and pins for damage and/or corrosion.

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
B000111	Driver Frontal Stage 1	Driver front stage 1 air bag	Refer to electrical

	Deployment Control	circuit - short to ground	circuit diagrams and test driver front stage 1 air bag circuit for short to ground
B000112	Driver Frontal Stage 1 Deployment Control	Driver front stage 1 air bag circuit - short to power	Refer to electrical circuit diagrams and test driver front stage 1 air bag circuit for short to power
B00011A	Driver Frontal Stage 1 Deployment Control	Circuit resistance below threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B00011B	Driver Frontal Stage 1 Deployment Control	Circuit resistance above threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B000164	Driver Frontal Stage 1 Deployment Control	Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B000211	Driver Frontal Stage 2 Deployment Control	Driver front stage 2 air bag circuit - short to ground	Refer to the electrical circuit diagrams and test driver front stage 2 air bag circuit for short to ground
B000212	Driver Frontal Stage 2 Deployment Control	Driver front stage 2 air bag circuit - short to power	Refer to the electrical circuit diagrams and test driver front stage 2 air bag circuit for short to power
B00021A	Driver Frontal Stage 2 Deployment Control	Circuit resistance below threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B00021B	Driver Frontal Stage 2 Deployment Control	Circuit resistance above threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic

			system
B000264	Driver Frontal Stage 2 Deployment Control	Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B001011	Passenger Frontal Stage 1 Deployment Control	Passenger front stage 1 air bag circuit - short to ground	Refer to the electrical circuit diagrams and test passenger front stage 1 air bag circuit for short to ground
B001012	Passenger Frontal Stage 1 Deployment Control	Passenger front stage 1 air bag circuit - short to power	Refer to the electrical circuit diagrams and test passenger front stage 1 air bag circuit for short to power
B00101A	Passenger Frontal Stage 1 Deployment Control	Circuit resistance below threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B00101B	Passenger Frontal Stage 1 Deployment Control	Circuit resistance above threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B001064	Passenger Frontal Stage 1 Deployment Control	Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B001111	Passenger Frontal Stage 2 Deployment Control	Passenger front stage 2 air bag circuit - short to ground	Refer to the electrical circuit diagrams and test passenger front stage 2 air bag circuit for short to ground
B001112	Passenger Frontal Stage 2 Deployment Control	Passenger front stage 2 air bag circuit - short to power	Refer to the electrical circuit diagrams and test passenger front stage 2 air bag circuit for short to power
B00111A	Passenger Frontal Stage 2 Deployment Control	Circuit resistance below threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer

			approved diagnostic system
B00111B	Passenger Frontal Stage 2 Deployment Control	• Circuit resistance above threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B001164	Passenger Frontal Stage 2 Deployment Control	• Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B002011	Left Side Air Bag Deployment Control	• Left side air bag circuit - short to ground	Refer to the electrical circuit diagrams and test left side air bag circuit for short to ground
B002012	Left Side Air Bag Deployment Control	• Left side air bag circuit - short to power	Refer to the electrical circuit diagrams and test left side air bag circuit for short to power
B00201A	Left Side Air Bag Deployment Control	• Circuit resistance below threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B00201B	Left Side Air Bag Deployment Control	• Circuit resistance above threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B002064	Left Side Air Bag Deployment Control	• Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B002811	Right Side Air Bag Deployment Control	• Right side air bag circuit - short to ground	Refer to the electrical circuit diagrams and test right side air bag circuit for short to ground
B002812	Right Side Air Bag Deployment Control	• Right side air bag circuit -	Refer to the electrical circuit diagrams and

		short to power	test right side air bag circuit for short to power
B00281A	Right Side Air Bag Deployment Control	Circuit resistance below threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B00281B	Right Side Air Bag Deployment Control	Circuit resistance above threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B002864	Right Side Air Bag Deployment Control	Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B005011	Driver Safety Belt Sensor	Driver safety belt sensor circuit - short to ground	Refer to the electrical circuit diagrams and test driver safety belt sensor circuit for short to ground
B005015	Driver Safety Belt Sensor	Driver safety belt sensor circuit - short to power or open circuit	Refer to the electrical circuit diagrams and test driver safety belt sensor circuit for short to power or open circuit
B00501D	Driver Safety Belt Sensor	Circuit current out of range	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B005064	Driver Safety Belt Sensor	Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B005211	Passenger Safety Belt Sensor	Passenger safety belt sensor circuit - short to ground	Refer to the electrical circuit diagrams and test passenger safety belt sensor circuit for short to ground

B005215	Passenger Safety Belt Sensor	• Passenger safety belt sensor circuit - short to power or open circuit	Refer to the electrical circuit diagrams and test passenger safety belt sensor circuit for short to power or open circuit
B00521D	Passenger Safety Belt Sensor	• Circuit current out of range	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B005264	Passenger Safety Belt Sensor	• Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B007011	Driver Safety Belt Pretensioner Deployment Control	• Driver safety belt pretensioner circuit - short to ground	Refer to the electrical circuit diagrams and test driver safety belt pretensioner circuit for short to ground
B007012	Driver Safety Belt Pretensioner Deployment Control	• Driver safety belt pretensioner circuit - short to power	Refer to the electrical circuit diagrams and test driver safety belt pretensioner circuit for short to ground
B00701A	Driver Safety Belt Pretensioner Deployment Control	• Circuit resistance below threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B00701B	Driver Safety Belt Pretensioner Deployment Control	• Circuit resistance above threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B007064	Driver Safety Belt Pretensioner Deployment Control	• Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B007211	Passenger Safety Belt Pretensioner Deployment Control	• Passenger safety belt pretensioner circuit - short	Refer to the electrical circuit diagrams and test passenger safety

		to ground	belt pretensioner circuit for short to ground
B007212	Passenger Safety Belt Pretensioner Deployment Control	• Passenger safety belt pretensioner circuit - short to power	Refer to the electrical circuit diagrams and test passenger safety belt pretensioner circuit for short to power
B00721A	Passenger Safety Belt Pretensioner Deployment Control	• Circuit resistance below threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B00721B	Passenger Safety Belt Pretensioner Deployment Control	• Circuit resistance above threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B007264	Passenger Safety Belt Pretensioner Deployment Control	• Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B009011	Left Front Impact Sensor Communications Line	• Left front impact sensor circuit - short to ground	Refer to the electrical circuit diagrams and test left front impact sensor circuit for short to ground
B009012	Left Front Impact Sensor Communications Line	• Left front impact sensor circuit - short to power	Refer to the electrical circuit diagrams and test left front impact sensor circuit for short to power
B009064	Left Front Impact Sensor	• Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B009081	Left Front Impact Sensor Communications Line	• Left side impact sensor circuit - open circuit • Sensor fault	Refer to the electrical circuit diagrams and test left front impact sensor circuit for open circuit fault. Install a new sensor as

			necessary. Front Impact Severity Sensor
B009092	Left Front Impact Sensor	Performance or incorrect operation	Install a new front impact sensor. Front Impact Severity Sensor
B009096	Left Front Impact Sensor	Component internal failure	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B009211	Left Side Impact Sensor Communications Line	Left side impact sensor circuit - short to ground	Refer to the electrical circuit diagrams and test left side impact sensor circuit for short to ground
B009212	Left Side Impact Sensor Communications Line	Left side impact sensor circuit - short to power	Refer to the electrical circuit diagrams and test left side impact sensor circuit for short to power
B009264	Left Side Impact Sensor	Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B009281	Left Side Impact Sensor Communications Line	- Left side impact sensor circuit - open circuit - Sensor fault	Refer to the electrical circuit diagrams and test left side impact sensor circuit for open circuit fault. Install a new sensor as necessary. Side Impact Sensor - Convertible (76.73.53) Side Impact Sensor - 2-Door (76.73.53)
B009292	Left Side Impact Sensor	Performance or incorrect operation	Install a new side impact sensor. Side Impact Sensor - Convertible (76.73.53) Side Impact Sensor - 2-Door (76.73.53)

B009296	Left Side Impact Sensor	Component internal failure	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B009511	Right Front Impact Sensor Communications Line	Right front impact sensor circuit - short to ground	Refer to the electrical circuit diagrams and test right front impact sensor circuit for short to ground
B009512	Right Front Impact Sensor Communications Line	Right front impact sensor circuit - short to power	Refer to the electrical circuit diagrams and test right front impact sensor circuit for short to power
B009564	Right Front Impact Sensor	Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B009581	Right Front Impact Sensor Communications Line	- Left side impact sensor circuit - open circuit - Sensor fault	Refer to the electrical circuit diagrams and test left front impact sensor circuit for open circuit fault. Install a new sensor as necessary. Front Impact Severity Sensor
B009592	Right Front Impact Sensor	Performance or incorrect operation	Install a new front impact sensor. Front Impact Severity Sensor
B009596	Right Front Impact Sensor	Component internal failure	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B009711	Right Side Impact Sensor Communications Line	Right side impact sensor circuit - short to ground	Refer to the electrical circuit diagrams and test right side impact sensor circuit for short to ground
B009712	Right Side Impact Sensor	Right side impact sensor	Refer to the electrical circuit diagrams and

	Communications Line	circuit - short to power	test right side impact sensor circuit for short to power
B009764	Right Side Impact Sensor	Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B009781	Right Side Impact Sensor Communications Line	Performance or incorrect operation	Install a new side impact sensor. Side Impact Sensor - Convertible (76.73.53) Side Impact Sensor - 2-Door (76.73.53)
B009792	Right Side Impact Sensor	Performance or incorrect operation	Install a new side impact sensor. Side Impact Sensor - Convertible (76.73.53) Side Impact Sensor - 2-Door (76.73.53)
B009796	Right Side Impact Sensor	Component internal failure	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B00A049	Occupant Classification System	Internal module failure	Install a new OCS module
B00A054	Occupant Classification System	Missing calibration	Install a new OCS module
B00A064	Occupant Classification System	Component is fitted but not configured in equipment set	Re-configure the RCM using the manufacturer approved diagnostic system
B00A081	Occupant Classification System	Invalid serial data received	Install a new OCS module
B00A088	Occupant Classification System	Bus 'OFF'	Refer to electrical circuit diagrams and check seat harness for open circuit or backed out connector. Carry out CAN network integrity tests using the manufacturer

			approved diagnostic system
B00A092	Occupant Classification System	Performance or incorrect operation	Install a new OCS module
B00A095	Occupant Classification System	Incorrect assembly	Install the correct assembly
B00A096	Occupant Classification System	Component internal failure	Refer to electrical circuit diagrams and check seat harness for open circuit or backed out connector. Install a new OCS module
B00B511	Driver Seat Track Position Restraints Sensor	Driver seat position sensor circuit - short to ground	Refer to the electrical circuit diagrams and test driver seat position sensor circuit for short to ground
B00B515	Driver Seat Track Position Restraints Sensor	Driver seat position sensor circuit - short to power or open circuit	Refer to the electrical circuit diagrams and test driver seat position sensor circuit for short to power or open circuit
B00B51D	Driver Seat Track Position Restraints Sensor	Circuit current out of range	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B00B564	Driver Seat Track Position Restraints Sensor	Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B00C096	Occupant Belt Tension Sensor	Component internal failure	Refer to electrical circuit diagrams and check safety belt tension sensor circuit for open circuit or backed out connector
B00C511	Passenger Seat Track Position Restraints Sensor	Passenger seat position sensor circuit - short to ground	Refer to the electrical circuit diagrams and test passenger seat position sensor circuit for short to ground
B00C515	Passenger Seat Track	Passenger seat position	Refer to the electrical

	Position Restraints Sensor	sensor circuit - short to power or open circuit	circuit diagrams and test passenger seat position sensor circuit for short to power or open circuit
B00C51D	Passenger Seat Track Position Restraints Sensor	Circuit current out of range	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B00C564	Passenger Seat Track Position Restraints Sensor	Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B00DF55	Passenger Air bag Cut Off Switch and Seat Track Position Sensor equipped simultaneously	Not configured	Re-configure the RCM using the manufacturer approved diagnostic system
B00D268	Restraint System Malfunction Indicator 1	Events information	Check CAN network using manufacturer approved diagnostic system
B00D287	Restraint System Malfunction Indicator 1	Missing message	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B00D511	Restraint System Passenger Disable Indicator	Passenger Air bag De-activation (PAD) lamp circuit - short to ground	Refer to electrical circuit diagrams and test Passenger Air bag De-activation (PAD) lamp circuit for short to ground
B00D515	Restraint System Passenger Disable Indicator	Passenger Air bag De-activation (PAD) lamp circuit - short to power, open circuit	Refer to electrical circuit diagrams and test Passenger Air bag De-activation (PAD) lamp circuit for short to power or open circuit
B1A0016	Supply voltage	Circuit voltage below	Refer to electrical circuit diagrams and

		threshold	test RCM ignition supply circuit for short to ground or open circuit
B1A0017	Supply voltage	• Circuit voltage above threshold	Refer to electrical circuit diagrams and test RCM ignition supply circuit for short to power
B1A0049	All internal faults	• Internal electronic failure	Install a new RCM, refer to the new module installation note at top of the DTC Index
B1A1795	Driver Stage 1 Air Bag Squib Short Circuit To Ignition Loop	• Incorrect assembly	Refer to the electrical circuit diagrams and check pins are installed into correct connector cavities
B1A1995	Driver Stage 2 Air Bag Squib Short Circuit To Ignition Loop	• Incorrect assembly	Refer to the electrical circuit diagrams and check pins are installed into correct connector cavities
B1A2195	Passenger Stage 1 Air Bag Squib Short Circuit To Ignition Loop	• Incorrect assembly	Refer to the electrical circuit diagrams and check pins are installed into correct connector cavities
B1A2395	Passenger Stage 2 Air Bag Squib Short Circuit To Ignition Loop	• Incorrect assembly	Refer to the electrical circuit diagrams and check pins are installed into correct connector cavities
B1A2595	Driver Safety Belt Pretensioner Squib Short Circuit To Ignition Loop	• Incorrect assembly	Refer to the electrical circuit diagrams and check pins are installed into correct connector cavities
B1A2795	Passenger Safety Belt Pretensioner Squib Short Circuit To Ignition Loop	• Incorrect assembly	Refer to the electrical circuit diagrams and check pins are installed into correct connector cavities
B1A2995	Left Side Air Bag Squib Short Circuit To Ignition Loop	• Incorrect assembly	Refer to the electrical circuit diagrams and check pins are

			installed into correct connector cavities
B1A3195	Right Side Air Bag Squib Short Circuit To Ignition Loop	Incorrect assembly	Refer to the electrical circuit diagrams and check pins are installed into correct connector cavities
B1A5514	Air Bag Deployed Signal	Air bag deployed signal circuit - short to ground or open circuit	Refer to the electrical circuit diagrams and test air bag deployed signal circuit for short to ground or open circuit
B1A5564	Air Bag Deployed Signal	Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B1D7611	Left Roll Over Protection System Deployment Control	Left roll over protection system circuit - short to ground	Refer to the electrical circuit diagrams and test left roll over protection system circuit - short to ground
B1D7612	Left Roll Over Protection System Deployment Control	Left roll over protection system circuit - short to power	Refer to the electrical circuit diagrams and test left roll over protection system circuit - short to power
B1D761A	Left Roll Over Protection System Deployment Control	Circuit resistance below threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B1D761B	Left Roll Over Protection System Deployment Control	Circuit resistance above threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B1D7664	Left Roll Over Protection System Deployment Control	Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system

B1D7695	Left Roll Over Protection System Deployment Control	Incorrect assembly	Refer to the electrical circuit diagrams and check pins are installed into correct connector cavities
B1D7711	Right Roll Over Protection System Deployment Control	Right roll over protection system circuit - short to ground	Refer to the electrical circuit diagrams and test right roll over protection system circuit for short to ground
B1D7712	Right Roll Over Protection System Deployment Control	Right roll over protection system circuit - short to power	Refer to the electrical circuit diagrams and test right roll over protection system circuit for short to power
B1D771A	Right Roll Over Protection System Deployment Control	Circuit resistance below threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B1D771B	Right Roll Over Protection System Deployment Control	Circuit resistance above threshold	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B1D7764	Right Roll Over Protection System Deployment Control	Signal plausibility failure	Re-configure the RCM using the manufacturer approved diagnostic system
B1D7795	Right Roll Over Protection System Deployment Control	Incorrect assembly	Refer to the electrical circuit diagrams and check pins are installed into correct connector cavities
U000188	CAN Bus	Bus off	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U010000	Lost Communication With ECM	Missing message	Carry out the pinpoint tests associated with

			this DTC using the manufacturer approved diagnostic system
U012100	Lost Communication With Anti-Lock Brake System (ABS) Control Module	No subtype information	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U015587	Lost Communication With Instrument Cluster	Missing message	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U030055	Internal control module software incompatibility	Mis-match between vehicle and RCM software levels	Re-configure the RCM with the latest level software using the manufacturer approved diagnostic system
U1A0266	Impact Telegrams reached maximum of 3 stored	Signal has too many transitions	Install a new RCM, refer to the new module installation note at top of the DTC Index
U1A0387	CAN Signal Car Configuration Parameters HS	Missing message	Re-configure the RJB using the manufacturer approved diagnostic system
U1A1455	Volcano Initialisation	Not configured	Install a new RCM module, refer to the new module installation note at the top of the DTC Index
U201A51	Control Module Main Calibration Data	Not programmed	Re-configure the RCM with the latest level software using the manufacturer approved diagnostic system
U201B4A	Control Module Calibration Data #2	Incorrect component installed	Install correct RCM, refer to the new module installation note at the top of the

			DTC Index
U201B51	Control Module Calibration Data #2	Not programmed	Re-configure the RCM using the manufacturer approved diagnostic system. Clear DTC and re-test, if DTC remains install a new RCM, refer to the new module installation note at the top of the DTC Index
U201C4A	Control Module Calibration Data #3	Incorrect component installed	Install correct RCM, refer to the new module installation note at the top of the DTC Index
U201C51	Control Module Calibration Data #3	Not programmed	Re-configure the RCM using the manufacturer approved diagnostic system. Clear DTC and re-test, if DTC remains install a new RCM, refer to the new module installation note at the top of the DTC Index
U300281	Vehicle Identification Number (VIN)	Vehicle/component mismatch. Corrupt VIN data being transmitted, module previously installed to other vehicle	Install original module, check for DTCs and refer to relevant DTC Index

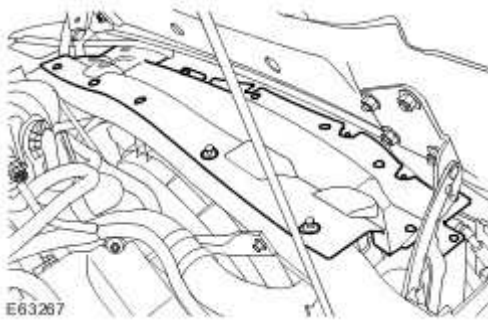
Front Impact Severity Sensor

Removal

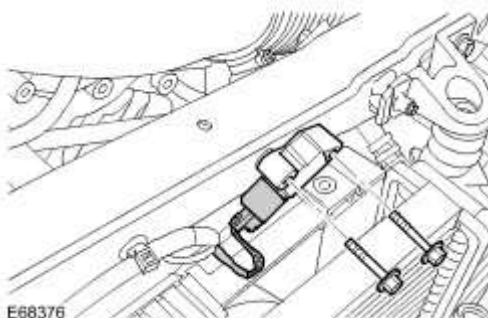
NOTE:

The LH front impact severity sensor is illustrated, removal of the RH sensor is a similar procedure.

- 1 . Open the hood.
- 2 . Remove the fan cowl.
 - ▶ Remove the 15 clips.



- 3 . Remove the front impact severity sensor.
 - ▶ Remove the 2 bolts.
 - ▶ Disconnect the electrical connector.



Installation

1 . Install the front impact severity sensor.

 Connect the electrical connector.

 Tighten the bolts to 8 Nm (6 lb.ft).

2 . Install the fan cowl.

 Secure with the clips.

Driver Air Bag Module (76.73.39)

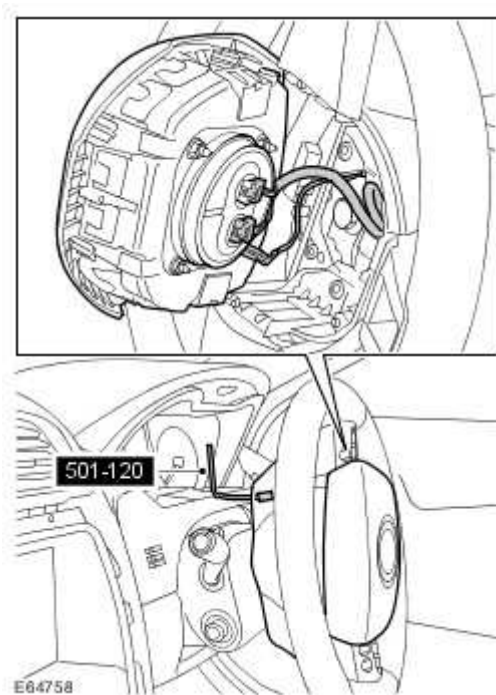
Special Service Tools



Driver air bag module remover
501-120

Removal

- 1 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to
- 2 . Make the SRS system safe.
For additional information, refer to
- 3 . Using the special tool remove the driver air bag module.
 - ▶ Rotate the steering wheel for access to slots.
 - ▶ Carefully release the 2 clips.
 - ▶ Disconnect the 3 electrical connectors.



Installation

- 1 . Install the driver air bag module.
 - ▶ Connect the electrical connectors.
 - ▶ Carefully align and secure the clips.
- 2 . Connect the battery ground cable and install the cover.
For additional information, refer to
- 3 . Connect WDS to the vehicle and configure a new module.

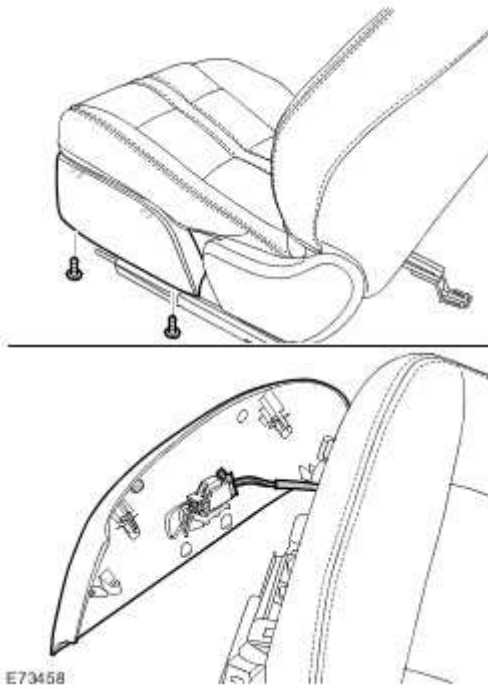
Front Passenger Seat Occupant Classification Sensor (76.73.60)

Removal

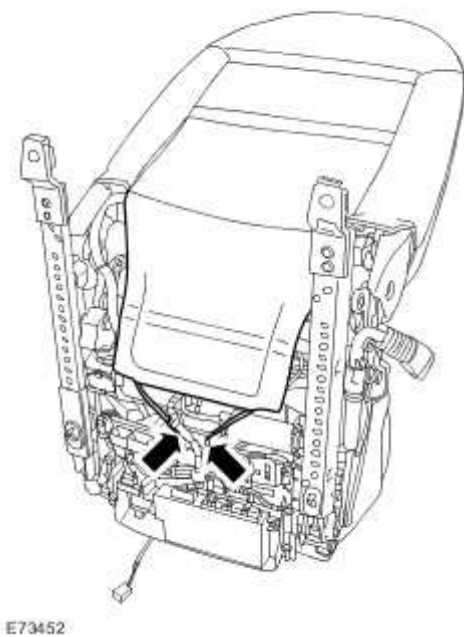


WARNING: The front passenger seat occupant classification sensor is available only as a service kit. No attempt should be made to replace individual components. Failure to follow this instruction may result in personal injury.

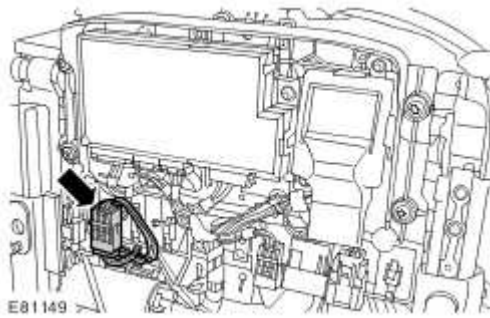
- 1 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to [Specifications](#)
- 2 . Make the SRS system safe.
For additional information, refer to
- 3 . Remove the front seat.
For additional information, refer to [Front Seat \(76.70.01\)](#)
- 4 . Release the front seat cushion outer trim panel.
 - ▶ Remove the 2 Torx screws.
- 5 . Remove the front seat cushion outer trim panel.
 - ▶ Release the 2 clips.
 - ▶ Disconnect the electrical connector.



6 . Release the front seat backrest cover lower tension straps.

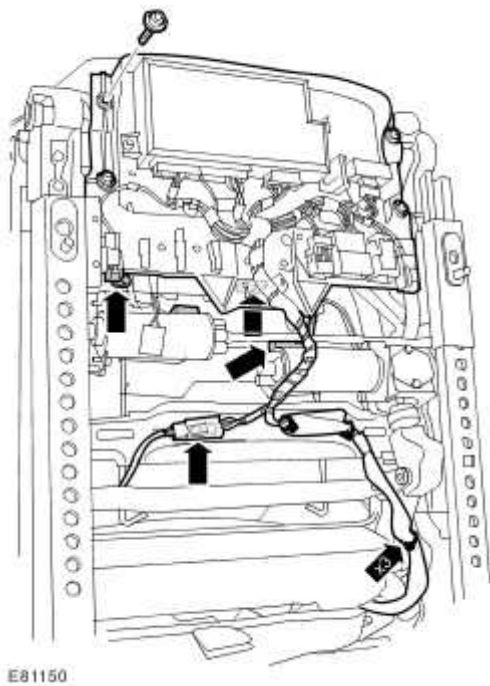


7 . Release the pre-tensioner harness and disconnect the electrical connector.



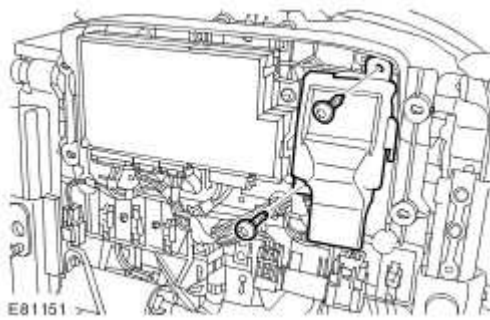
8 . Release the seat module bracket.

- ▶ Disconnect the 4 electrical connectors.
- ▶ Release the 3 wiring harness clips.
- ▶ Remove and discard the cable tie.
- ▶ Remove the 4 Torx bolts.



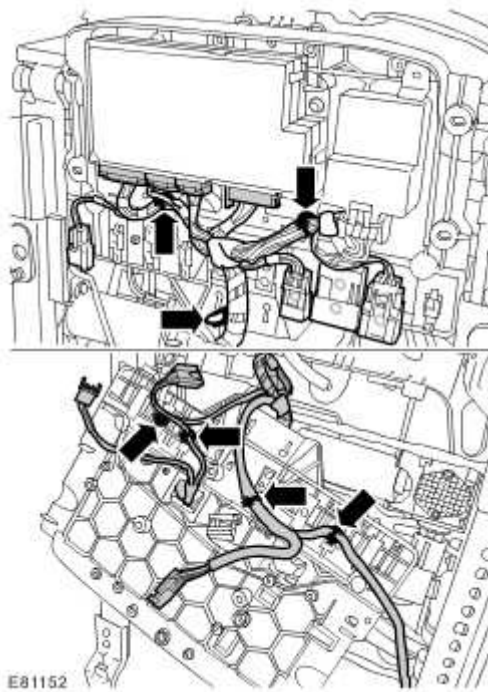
9 . Release the occupant classification module from the seat module bracket.

- ▶ Remove the 2 Torx screws.



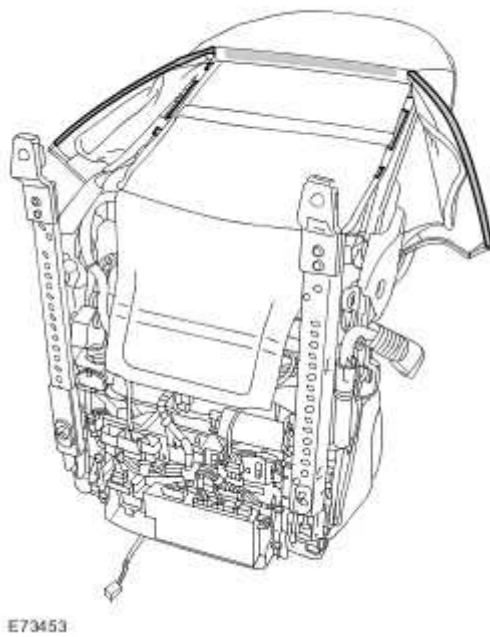
10 . Release the harness assembly from the seat module bracket.

- Release the 7 wiring harness clips.
- Release the 4 electrical connectors.
- Disconnect the 4 electrical connectors.



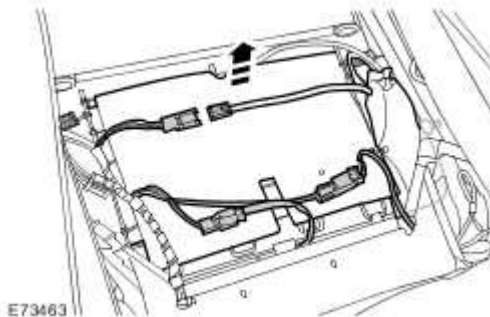
11 . Release the 9 front seat backrest cover rear panel retaining clips.

- Release from the backrest cover.
- Release from the seat frame.



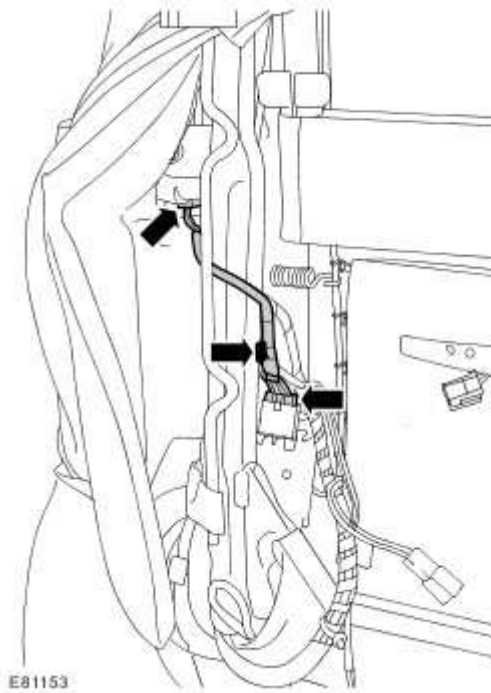
12 . Release the harness from the lumbar assembly.

- Disconnect the 3 electrical connectors.
- Release the 3 electrical connectors.



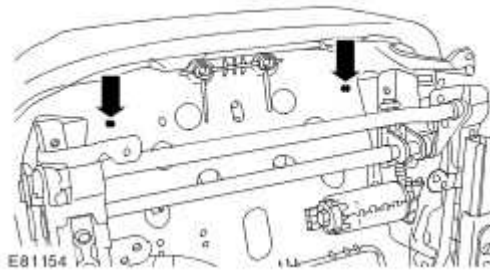
13 . Release the harness from the seat airbag and backrest frame.

- Disconnect the electrical connector.
- Release the wiring harness clip.



14 . Release the occupant classification assembly from the seat cushion frame.

➤ Release the 2 clips.



15 . **NOTE:**

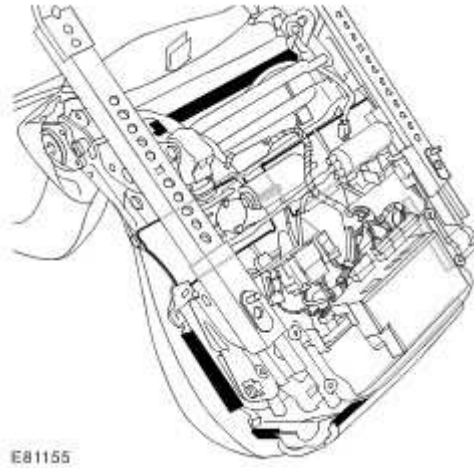
Seat harness is part of the occupant classification sensor assembly.

NOTE:

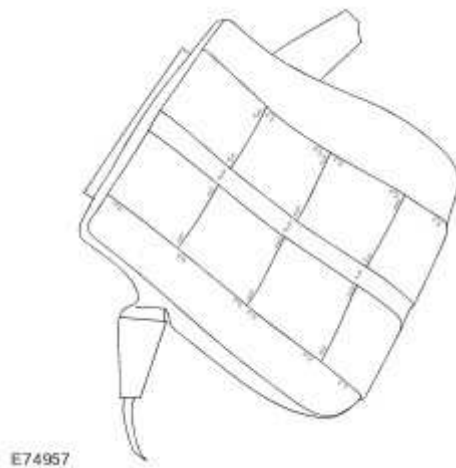
Note the routing of the seat harness.

Remove the passenger seat cushion and occupant classification sensor assembly.

- Release and disconnect the electrical connector.
- Release the Velcro strap.
- Release the 5 clips.



- 16 . Remove the front seat cushion cover.
 - Remove the 27 hog rings.



Installation

- 1 . Install the front seat cushion cover.
- 2 . Secure the passenger seat cushion and occupant classification sensor assembly.
 - Connect and secure the electrical connectors.
 - Secure the Velcro strap.
 - Attach the clips.
- 3 . Secure the occupant classification assembly to the seat cushion frame.
 - Secure with the clips.

- 4 . Secure the harness to the seat airbag and backrest frame.
 - ▶ Connect the electrical connector.
 - ▶ Secure the wiring harness with the clip.
- 5 . Attach the harness to the lumbar assembly.
 - ▶ Connect the electrical connectors.
 - ▶ Secure with the clips.
- 6 . Secure the front seat backrest cover rear panel retaining clips.
 - ▶ Attach to the seat frame.
 - ▶ Attach to the backrest cover.
- 7 . Attach the harness assembly to the module bracket.
 - ▶ Connect the electrical connectors.
 - ▶ Secure the electrical connectors.
 - ▶ Secure the wiring harness in the clips.
 - ▶ Install and tighten the Torx screws.
- 8 . Secure the seat module bracket.
 - ▶ Connect the electrical connectors.
 - ▶ Secure the wiring harness in the clips.
 - ▶ Secure the harness with a cable tie.
 - ▶ Tighten the Torx bolts to 10 Nm (7 lb.ft).
- 9 . Secure the front seat backrest cover lower tension straps.
- 10 . Install the front seat cushion outer trim panel.
 - ▶ Connect the electrical connector.
 - ▶ Secure in the clips.
- 11 . Secure the front seat cushion outer trim panel.
 - ▶ Tighten the Torx screws.
- 12 . Install the front seat hinge covers.
 - ▶ Attach the hinge cover retainers.
 - ▶ Tighten the Torx screws.
- 13 . Install the front seat.

For additional information, refer to [Front Seat \(76.70.01\)](#)

14 . Connect the battery ground cable and install the cover.
For additional information, refer to [Specifications](#)

15 . Using IDS, calibrate a new front seat cushion.

- 1) • Select the 'Vehicle Configuration' tab.
- 2) • Select ' Setup and Configuration'.
- 3) • Select 'Seats'.
- 4) • Select 'Seat Cover Replacement'.

Restraints Control Module (RCM) (76.73.48)

Removal

- 1 . Connect WDS to the vehicle and up-load the relevant data.
- 2 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to
- 3 . Make the SRS system safe.
For additional information, refer to
- 4 . Remove the keyless vehicle antenna.
For additional information, refer to [Radio Frequency \(RF\) Receiver](#)

5 **NOTE:**

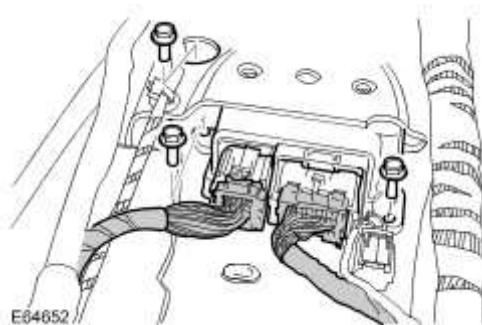
- If the SRS component is to be replaced, the bar code of the new unit must be recorded.

NOTE:

The RCM will record and store impact data. The module must be replaced when three records are noted.

Remove the restraints control module (RCM).

- ▶ Remove the 3 bolts.
- ▶ Disconnect the 2 electrical connectors.



Installation

- 1 . Install the RCM.

-  Tighten the bolts to 10 Nm (7 lb.ft).
-  Connect the electrical connectors.

2 . Install the keyless vehicle antenna.

For additional information, refer to [Radio Frequency \(RF\) Receiver](#)

3 . Connect the battery ground cable and install the cover.

For additional information, refer to

4 . Using WDS, configure a new module.

Passenger Air Bag Module (76.73.37)

Removal

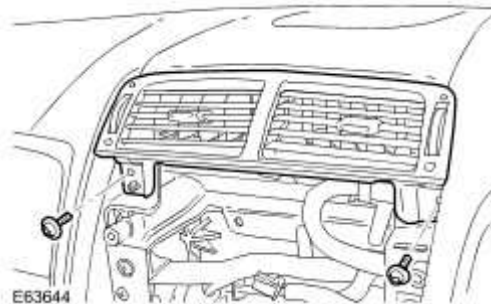
- 1 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to
- 2 . Make the SRS system safe.
For additional information, refer to
- 3 . Remove the instrument panel.
For additional information, refer to [Instrument Panel \(76.46.01\)](#)
- 4 . Remove the navigation system display module.
For additional information, refer to [Navigation System Display Module \(86.62.07\)](#)

5 . **NOTE:**

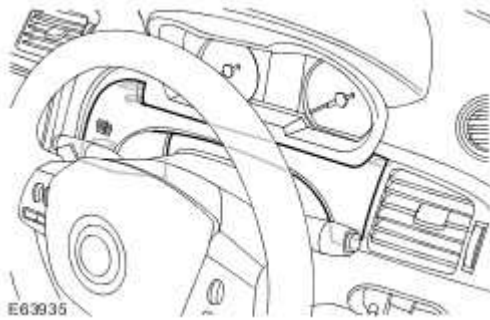
The Torx screws may not be fitted.

Remove the center register.

- ▶ Remove the 2 Torx screws.
- ▶ Carefully release the component.



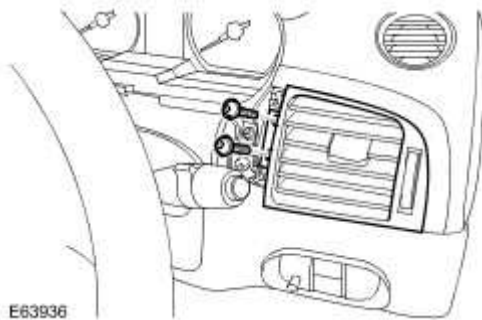
- 6 . Remove the instrument panel driver's side reinforcement trim panel.
 - ▶ Carefully release the 4 clips.



7.  **CAUTION: Care must be taken to avoid damage to the mating surfaces.**

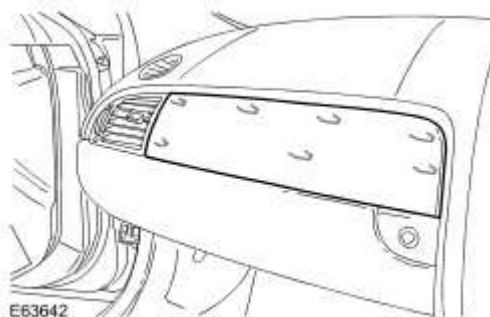
Remove the driver side register trim panel.

- ▶ Remove the 2 Torx screws.



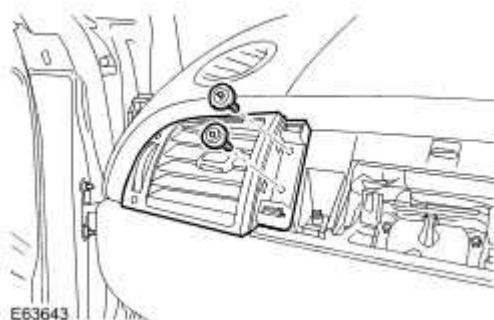
- 8 . Remove the instrument panel passenger side reinforcement trim panel.

- ▶ Carefully release the 7 clips.



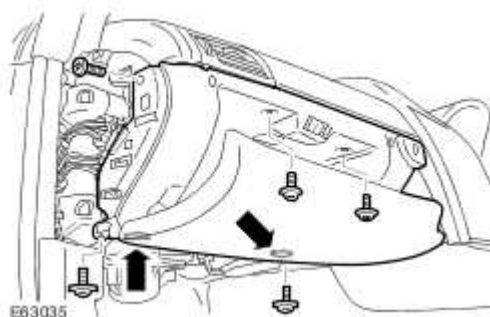
- 9 . Remove the passenger side register.

- ▶ Remove the 2 Torx screws.
- ▶ Carefully release the component.



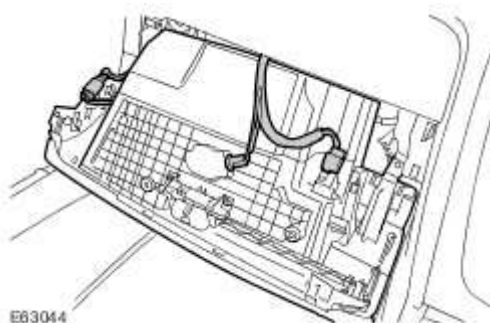
10 . Release the glove compartment.

- Remove the 5 Torx screws.
- Release the 2 clips.



11 . Remove the glove compartment.

- Disconnect the 2 electrical connectors.
- Release the glove compartment lamp assembly.



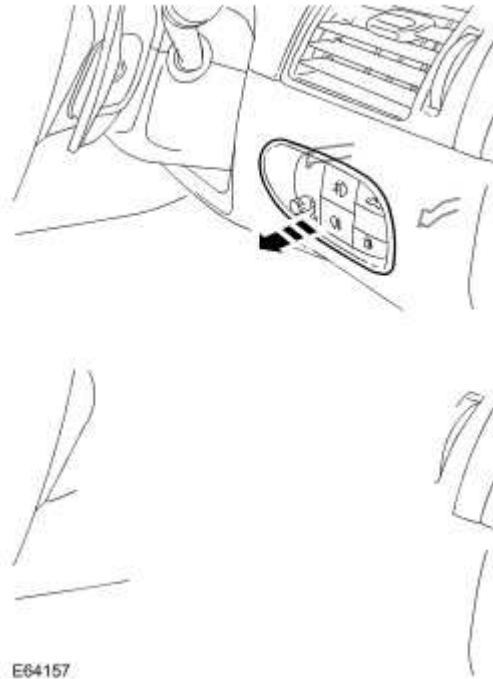
12 .



CAUTION: Care must be taken to avoid damage to the mating surfaces.

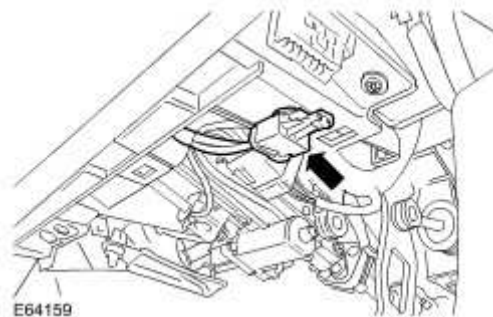
Carefully release and remove the rheostat switch assembly.

- Disconnect the electrical connector.



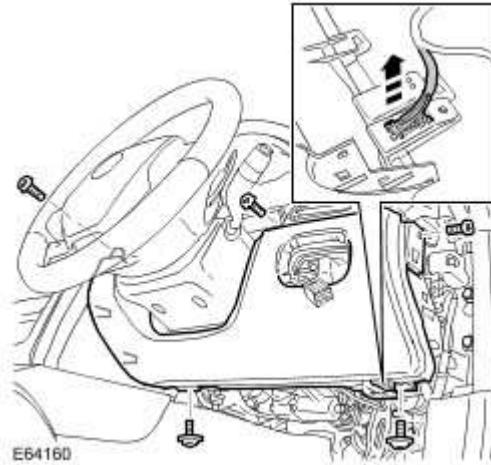
13 . Release the MOST diagnostic port.

- ▶ Carefully release the clip.



14 . Remove the instrument panel, lower trim panel.

- ▶ Remove the 3 Torx bolts.
- ▶ Remove the 2 Torx screws.
- ▶ Release the 2 clips.
- ▶ Release the vehicle diagnostic port.



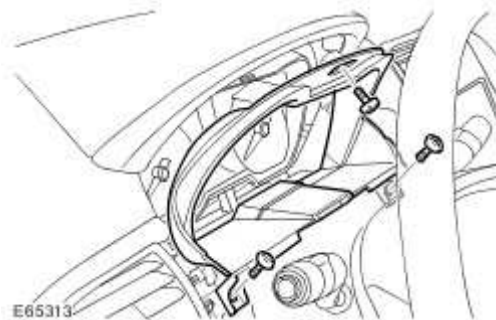
15



CAUTION: Protect the surrounding trim from damage when changing the component.

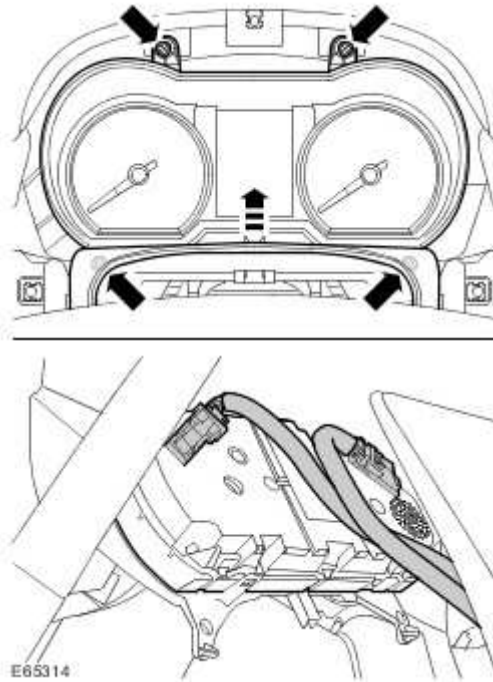
Remove the instrument cluster surround.

- ▶ Remove the 3 screws.



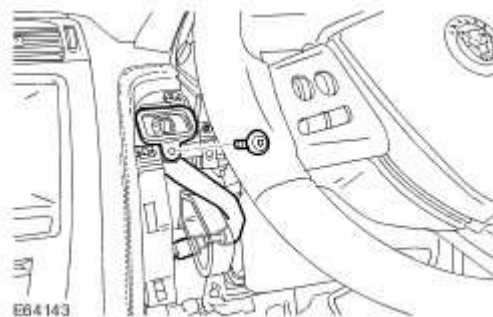
16 . Remove the instrument cluster.

- ▶ Raise the steering column finisher for access to the lower screws.
- ▶ Remove the 4 screws.
- ▶ Disconnect the 2 electrical connectors.



17 . Remove the in-vehicle temperature sensor.

- Remove the Torx screw.
- Disconnect the electrical connector.



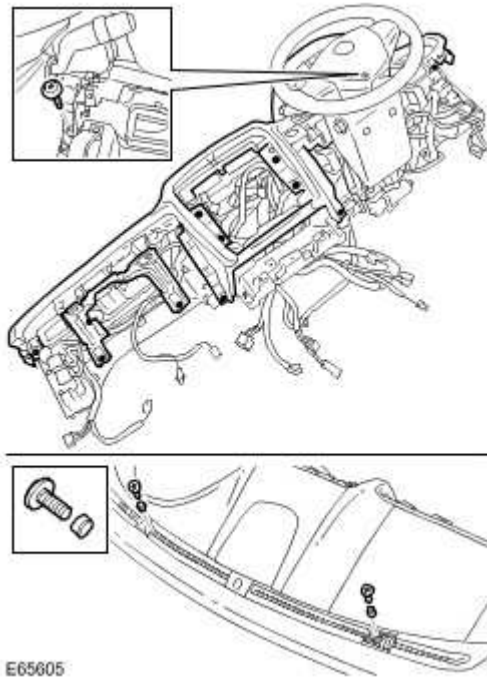
18



CAUTION: Protect the surrounding trim from damage when changing the component.

Release the instrument panel upper trim.

- Remove the 11 Torx screws.
- Collect the compression limiters.
- Release the glove box support bracket.
- Remove the 2 Torx screws.
- With assistance, separate the components.

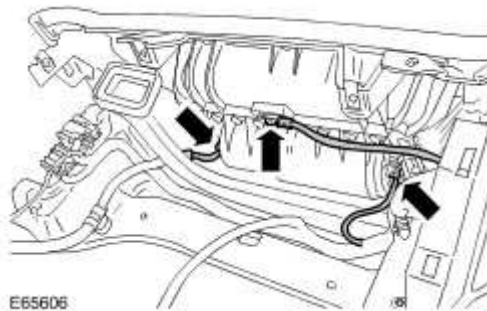


19 . Disconnect the passenger air bag ground cable.

➤ Remove the Torx bolt.

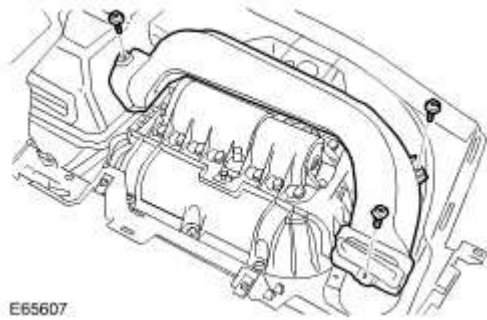
20 . Disconnect the passenger air bag module 2 electrical connectors.

➤ Carefully release the clips.



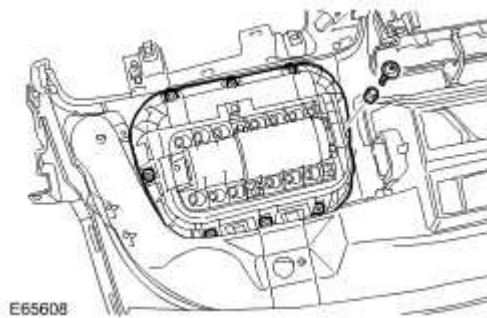
21 . Remove the heater duct.

➤ Remove the 3 Torx screws.



22 . Remove the passenger air bag module.

- ▶ Remove the 8 Torx bolts.



Installation

1 . Install the passenger air bag module.

- ▶ Tighten the Torx bolts to 3 Nm (2 lb.ft).

2 . Install the heater duct.

- ▶ Install the Torx screws.

3 . Connect the passenger air bag module electrical connectors.

4 . Connect the passenger air bag ground cable.

- ▶ Install the Torx bolt and tighten to 6 Nm (4 lb.ft).

5 . Install the instrument panel upper trim.

- ▶ With assistance, align the components.
- ▶ Install the compression limiters.
- ▶ Install and tighten the Torx screws.

6 . Install the in-vehicle temperature sensor.

- ▶ Position the electrical harness.
- ▶ Connect and secure the electrical connector.
- ▶ Install the Torx screw.

7 . Install the instrument cluster.

- ▶ Connect and secure the electrical connectors.
- ▶ Install the screws.

8 . Install the instrument cluster surround.

- ▶ Install the screws.

9 . Install the MOST diagnostic port.

- ▶ Secure the clip.

10 . Install the instrument panel, lower trim panel.

- ▶ Install and secure the diagnostic socket.
- ▶ Align the clips.
- ▶ Install the Torx screws.
- ▶ Install the Torx bolts and tighten to 6 Nm (4 lb.ft).

11 . Install the rheostat switch assembly and align the instrument panel lower trim panel.

- ▶ Secure the switch assembly clips.
- ▶ Connect the switch assembly electrical connector.

12 . Install the glove compartment.

- ▶ Install the lamp assembly.
- ▶ Connect and secure the electrical connectors.
- ▶ Tighten the Torx screws.

13 . Install the passenger side register.

- ▶ Install the Torx screws.

14 . Install the instrument panel passenger side reinforcement trim panel.

- ▶ Align the pegs and secure with the clips.

15 . Install the driver side register trim panel.

- ▶ Install the Torx screws.

16 . Install the instrument panel driver's side reinforcement trim panel.

 Align the pegs and secure with the clips.

17 . NOTE:

The Torx screws may not be fitted.

Carefully install the center register.

 Install the Torx screws.

18 . Install the navigation system display module.

For additional information, refer to [Navigation System Display Module \(86.62.07\)](#)

19 . Install the instrument panel.

For additional information, refer to [Instrument Panel \(76.46.01\)](#)

20 . Connect the battery ground cable and install the cover.

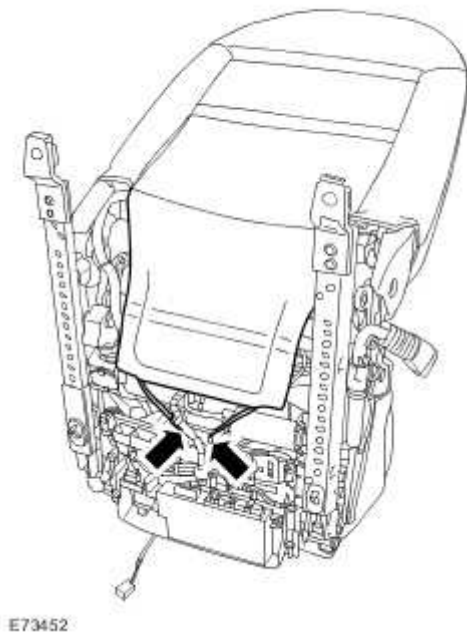
For additional information, refer to

21 . Connect WDS to the vehicle and configure a new module.

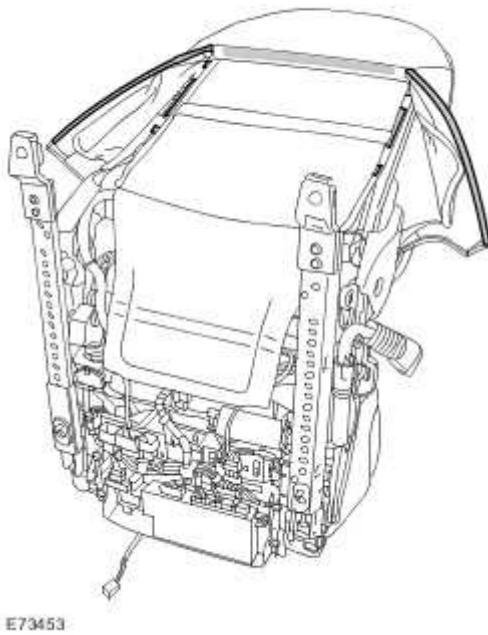
Side Air Bag Module (76.73.47)

Removal

- 1 . Make the SRS system safe.
For additional information, refer to
- 2 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to
- 3 . Remove the front seat.
For additional information, refer to [Front Seat \(76.70.01\)](#)
- 4 . Release the front seat backrest cover lower tension straps.
 - ▶ Release from the seat frame.



- 5 . Release the 9 front seat backrest cover rear panel retaining clips.
 - ▶ Release from the backrest cover.
 - ▶ Release from the seat frame.

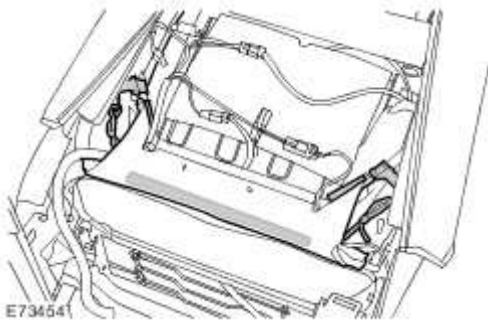


6 . Release the 5 front seat backrest cover lower retaining clips.

▶ Release from the seat frame.

7 . Release the front seat backrest cover central tension straps.

▶ Release from the seat frame.

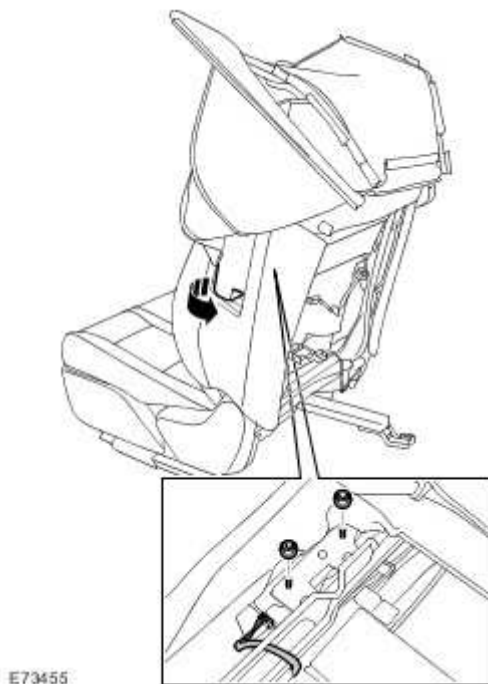


8 . Remove the side air bag module.

▶ Remove and discard the 2 nuts.

▶ Disconnect the electrical connector.

▶ Release the backrest cover.



Installation

- 1 . Install the side air bag module.
 - ▶ Attach the backrest cover.
 - ▶ Tighten the new nuts to 7 Nm (5 lb.ft).
 - ▶ Connect the electrical connector.
- 2 . Secure the front seat backrest cover central tension straps.
 - ▶ Attach to the seat frame.
- 3 . Secure the front seat backrest cover lower retaining clips.
 - ▶ Attach to the seat frame.
- 4 . Secure the front seat backrest cover rear panel retaining clips.
 - ▶ Attach to the seat frame.
 - ▶ Attach to the backrest cover.
- 5 . Secure the front seat backrest cover lower tension straps.
 - ▶ Attach to the seat frame.
- 6 . Install the front seat.

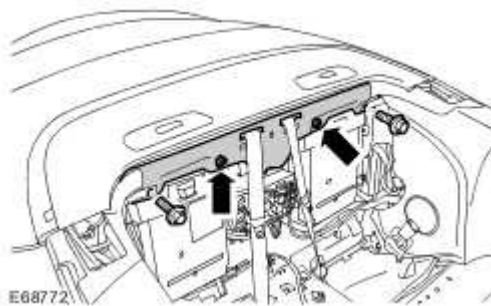
For additional information, refer to [Front Seat \(76.70.01\)](#)

- 7 . Connect the battery ground cable and install the cover.
For additional information, refer to

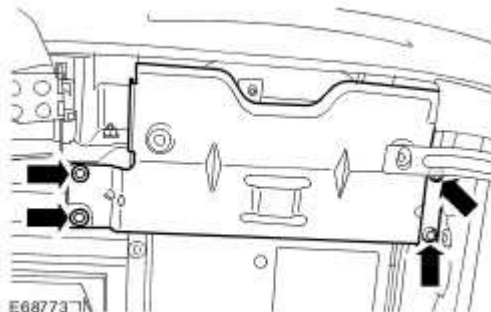
Rollover Protection Unit

Removal

- 1 . Remove the cover and disconnect the battery ground cable.
For additional information, refer to
- 2 . Make the SRS system safe.
For additional information, refer to
- 3 . Remove the rear seat backrest.
For additional information, refer to [Rear Seat Backrest \(76.70.38\)](#)
- 4 . Release the rear seat backrest trim panel.
 - ▶ Remove the 2 clips.
 - ▶ Remove the 2 bolts.
 - ▶ Position the rear seat backrest trim panel aside.

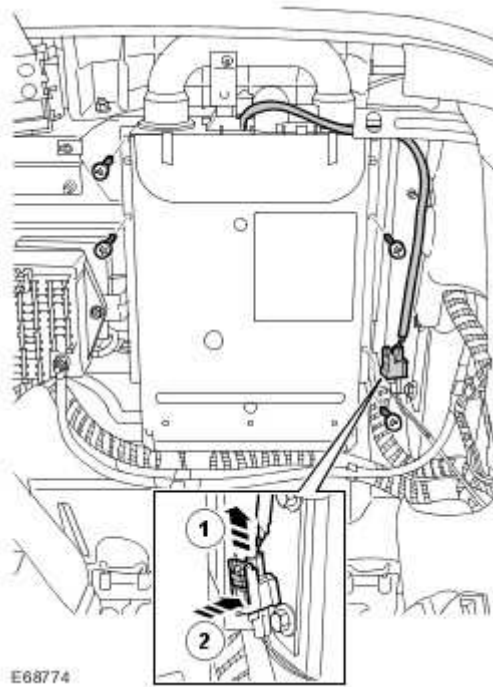


- 5 . Remove the rear seat backrest retaining bracket.
 - ▶ Remove the 2 nuts and 2 bolts.



- 6 . Remove the roll over protection unit.
 - ▶ Disconnect the electrical connector.

- ▶ Remove the 4 Torx bolts.



Installation

- 1 . Install the roll over protection unit.
 - ▶ Tighten the Torx bolts to 25 Nm (18 lb.ft).
 - ▶ Connect the electrical connector.
- 2 . Install the rear seat backrest retaining bracket.
 - ▶ Tighten the nuts and bolts to 10 Nm (7 lb.ft).
- 3 . Install the rear seat backrest trim panel.
 - ▶ Tighten the bolts to 10 Nm (7 lb.ft).
 - ▶ Install the clips.
- 4 . Install the rear seat backrest.

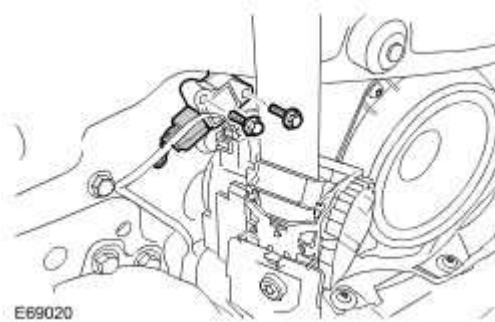
For additional information, refer to [Rear Seat Backrest \(76.70.38\)](#)
- 5 . Connect the battery ground cable and install the cover.

For additional information, refer to
- 6 . Connect WDS to the vehicle and configure a new module.

Side Impact Sensor - Convertible (76.73.53)

Removal

- 1 . Remove the rear quarter trim panel.
For additional information, refer to [Rear Quarter Trim Panel - Convertible \(76.13.73\)](#)
- 2 . Remove the side impact sensor.
 - ▶ Remove the 2 bolts.
 - ▶ Disconnect the electrical connector.



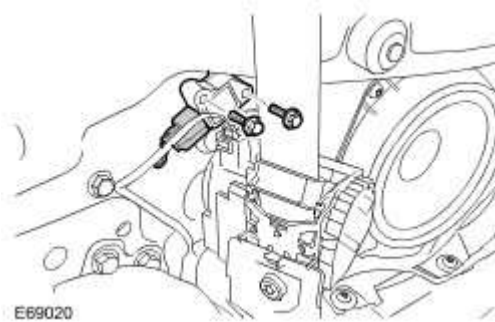
Installation

- 1 . Install the side impact sensor.
 - ▶ Tighten the bolts to 10 Nm (7 lb.ft).
 - ▶ Connect the electrical connector.
- 2 . Install the rear quarter trim panel.
For additional information, refer to [Rear Quarter Trim Panel - Convertible \(76.13.73\)](#)

Side Impact Sensor - 2-Door (76.73.53)

Removal

- 1 . Remove the rear quarter trim panel.
For additional information, refer to [Rear Quarter Trim Panel - 2-Door \(76.13.73\)](#)
- 2 . Remove the side impact sensor.
 - ▶ Remove the 2 bolts.
 - ▶ Disconnect the electrical connector.



Installation

- 1 . Install the side impact sensor.
 - ▶ Tighten the bolts to 10 Nm (7 lb.ft).
 - ▶ Connect the electrical connector.
- 2 . Install the rear quarter trim panel.
For additional information, refer to [Rear Quarter Trim Panel - 2-Door \(76.13.73\)](#)

501-20C : Pedestrian Protection System

Specifications

Specifications

Torque Specifications

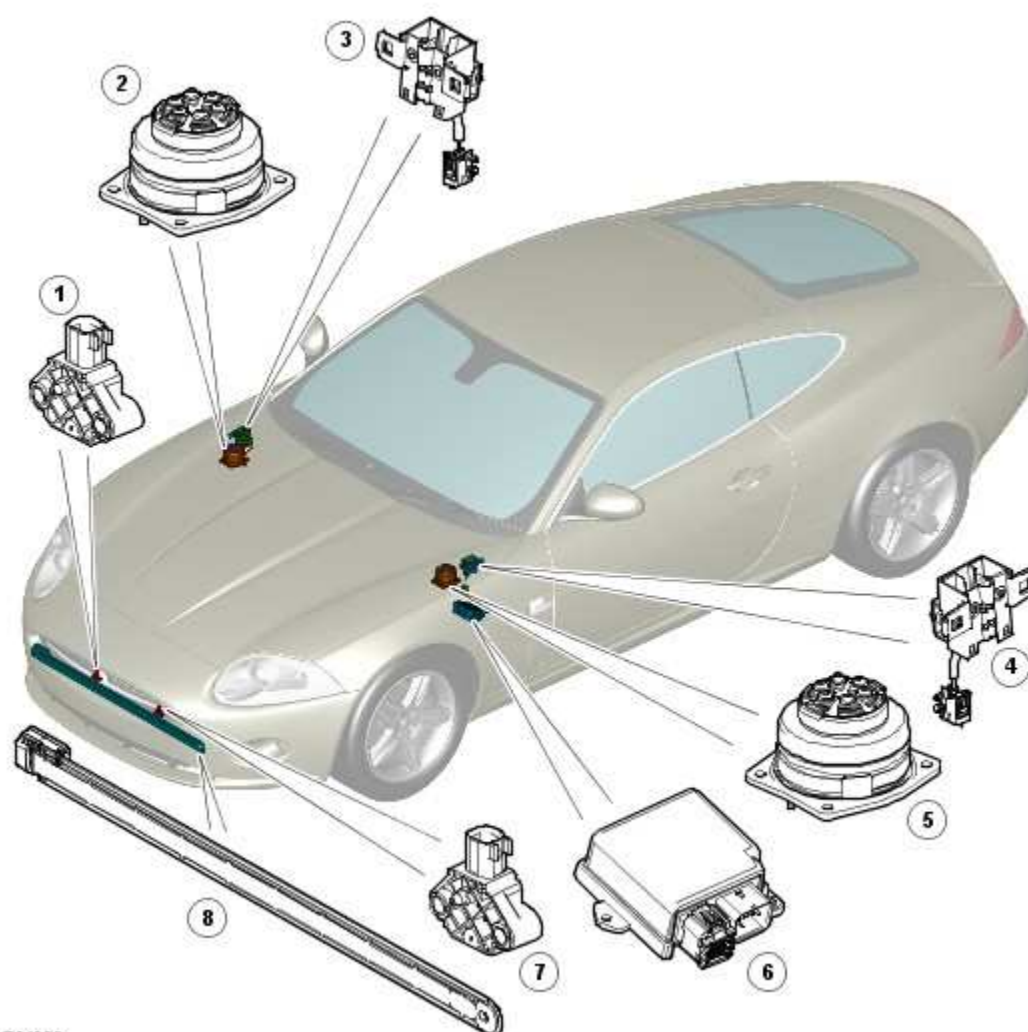
Item	Nm	lb-ft	lb-in
Pedestrian impact sensor strip - screw	6	-	53
Deployable hood, crash sensor to front bumper beam - bolt	8	-	71
Contact sensing system module to front bumper - screw	6	-	53
Hood deployment support bracket to vehicle - bolt*	8	-	71
Hood deployment striker to hood - bolt*	8	-	71
Pyrotechnic device to hood latch - bolt*	9	-	80
Hood deployment actuator bracket to body - screw*	8	-	71
Hood deployment actuator - screw*	8	-	71
Hood secondary latch to deployment actuator - nut*	9	-	80



CAUTION: *Refer to Removal and Installation procedures for important information.

Pedestrian Protection System

COMPONENT LOCATION



E64868

Item	Part Number	Description
1		RH accelerometer
2		RH hood actuator
3		RH hood latch
4		LH hood latch
5		LH hood actuator
6		Pedestrian protection system control module
7		LH accelerometer

INTRODUCTION

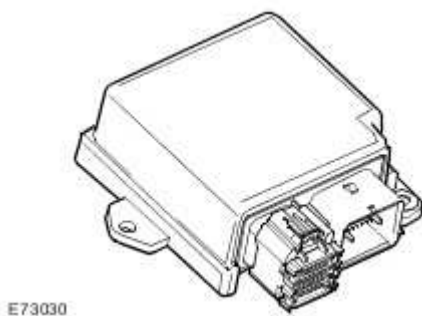


WARNING: All pyrotechnic devices are dangerous. Before performing any procedures on any pyrotechnic device, read all information contained within the Standard Workshop Practices section of this manual. For additional information, refer to [Standard Workshop Practices \(100-00\)](#)

The Pedestrian Protection System control module receives an impact signal from Pedestrian Contact Sensor (PCS) and two accelerometers mounted on the front bumper beam. The control module interprets the signals to determine whether impact is with a pedestrian or other object, such as a traffic cone. When the control module detects a valid impact signal and the vehicle is in the 15 to 45 kph speed range, it fires the two pyrotechnic hood latch release units and two pyrotechnic actuators which opens the hood approximately 130 mm.

The Pedestrian Protection System is factory fit only to non Federal vehicles.

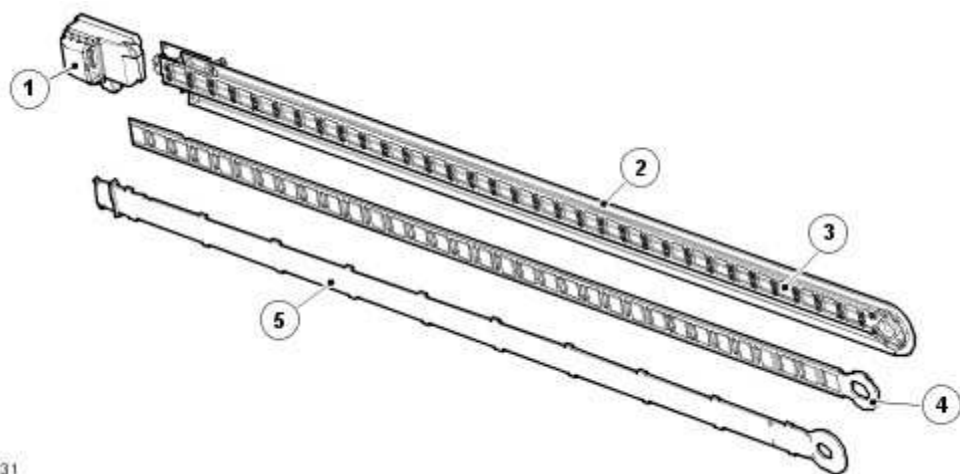
CONTROL MODULE



The control module is secured to the underside of the wing behind the wheelarch liner with two screws. The control module is hardwired to the other system components and is also connected to the High Speed (HS) CAN bus. The control module receives ambient air temperature, Ignition state and vehicle reference speed on the HS CAN bus.

The Control Module uses signals from the Pedestrian Contact Sensor (PCS) and the accelerometers to determine if the impact on the bumper is a pedestrian or an other object. The system will always deploy where the control module determines a pedestrian impact. The system minimizes deployment for other impacts that are similar to pedestrian impact, such as traffic cones.

PEDESTRIAN CONTACT SENSOR (PCS)



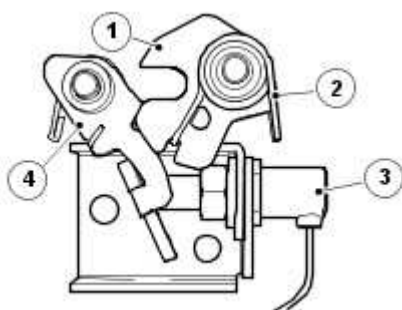
E73031

Item	Part Number	Description
1		Sensor module
2		Sensor backing strip/rear cover
3		Fibre optic cable
4		Foam insert
5		Sensor front cover

The PCS is located in a slot behind the bumper foam on the front bumper beam and is secured with a single fixing.

At the end of the sensor next to the fixing there is a PCB and fibre optic transceiver, which is connected to a fibre optic cable configured in a loop. The PCS uses this fibre optic loop to detect an impact by measuring the amount of light returned to the fibre optic transceiver. A reduction in light levels occurs when the PCS is deformed by an impact. The PCS monitors the level of light returned from the loop, if a reduction of a predetermined magnitude is measured a trigger signal will be sent to the control module.

HOOD LATCH



E73032

Item	Part Number	Description
1		Latch claw
2		Spring

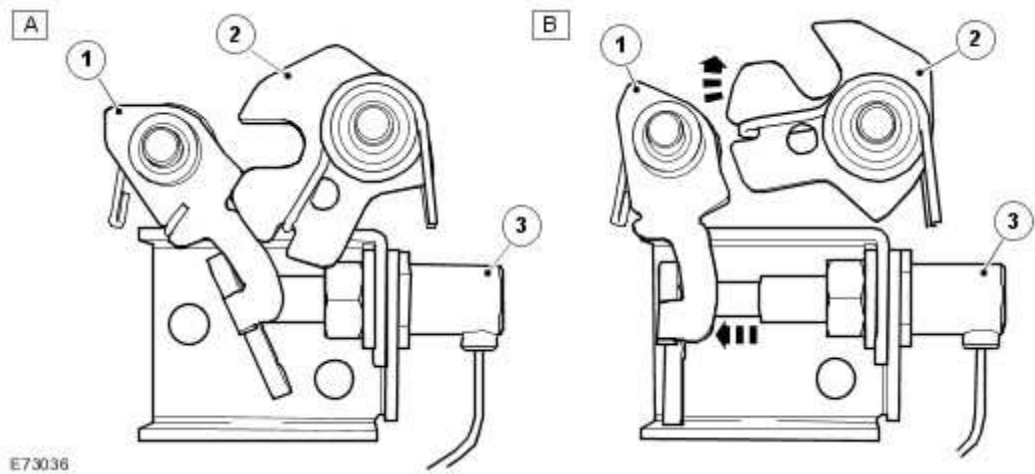
3		Pyrotechnic pin
4		Latch pawl

The hood latches are located at either side of the trailing edge of the hood. Each latch is released by a small pyrotechnic pin, which is fired in response to a signal from the control module. The pyrotechnic pin engages with the latch pawl which is holding the latch claw closed. Once the pawl is moved by the pyrotechnic pin the latch claw is released and the return spring moves the latch claw to the open position allowing the hood to move open under the pressure of the hood actuator.

Hood Latch Deployment

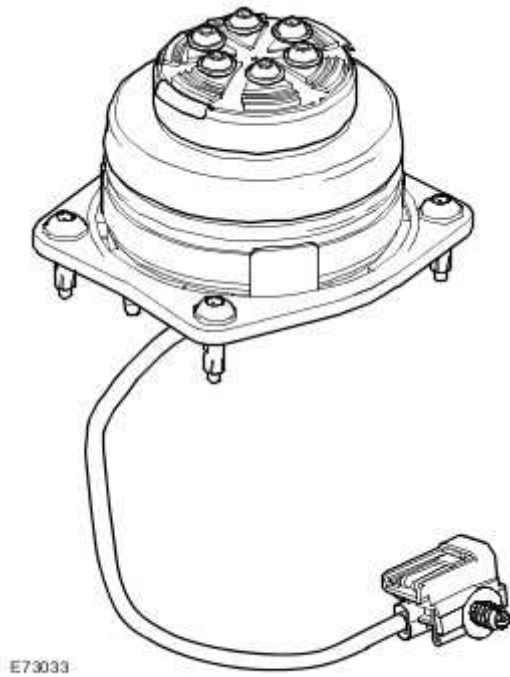
NOTE:

A = Latched; B = Deployed



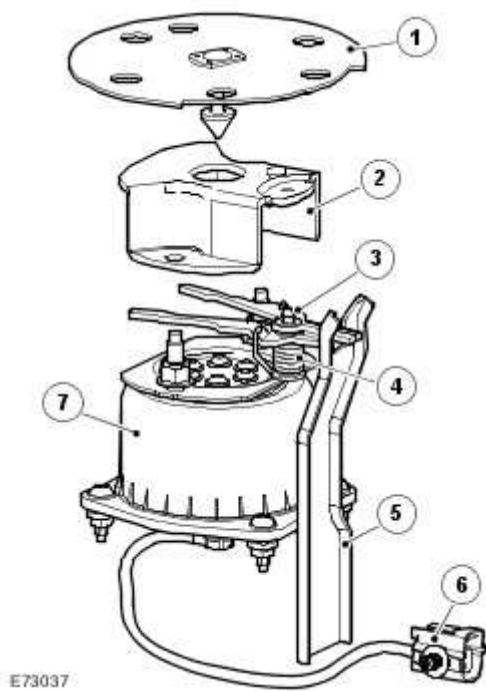
Item	Part Number	Description
1		Latch pawl
2		Latch claw
3		Pyrotechnic pin

HOOD ACTUATOR



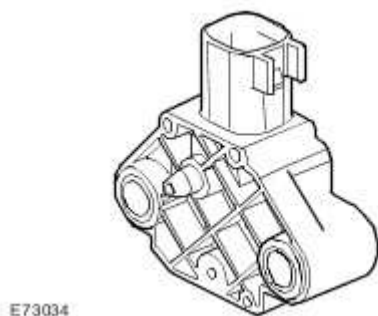
The hood actuators are pyrotechnic air bags. The hood actuators are located just forward of the hood latches on either side of the hood. The actuators comprise a pyrotechnic device to raise the hood, a secondary hood latch mechanism and a tether sleeve. Once fired a locking device mounted on top of the actuator couples with the secondary hood latch before the airbag inflates to raise the hood. This ensures that the hood can only deploy to a pre-determined height (approximately 130 mm). As the hood actuator is fired two prongs located in the secondary latch housing are moved out of their retaining clamp. The prongs are spring loaded to grip the secondary hood latch striker securing it to the actuator tether cone.

Hood Actuator and Secondary Latch



Item	Part Number	Description
1		Secondary hood latch striker plate
2		Secondary hood latch body
3		Secondary hood latch
4		Secondary hood latch spring
5		Secondary hood latch retaining bracket
6		Electrical connector
7		Hood actuator assembly

ACCELEROMETER



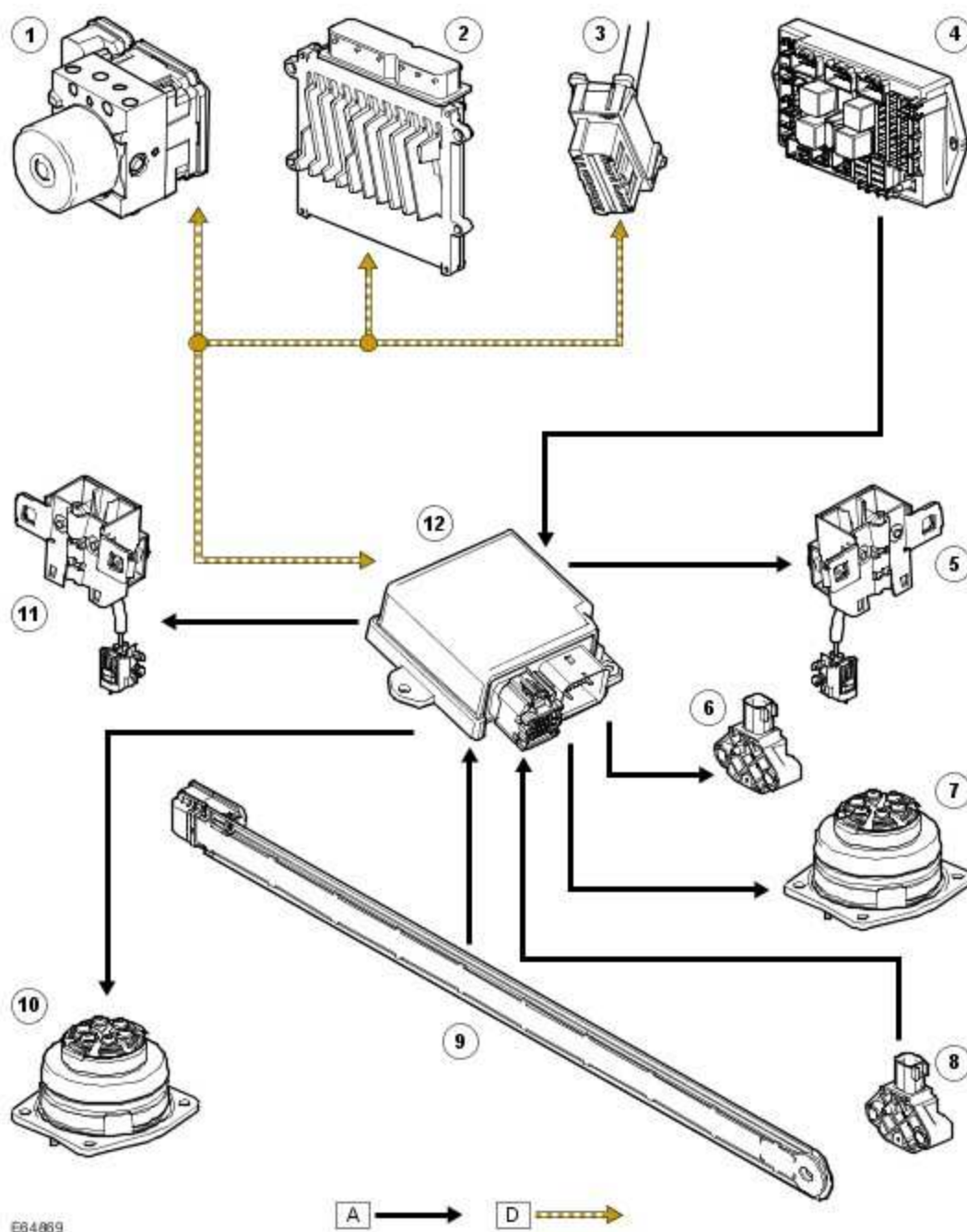
Two accelerometers are mounted on the rear of the bumper beam. The accelerometers measure the amount of inertia when an impact occurs and send a signal to the control module. This signal is used by the control module to calculate the firing of the Pedestrian Protection System. The accelerometers are modified crash sensors. The sensors have a lower detection

range than front/side crash sensors to enable them to detect lower level impacts and therefore assist in the object discrimination process.

CONTROL DIAGRAM

NOTE:

A = Hardwired connection; D = High speed CAN bus



E64869

Item	Part Number	Description
1		ABS control module
2		ECM

3		Diagnostic socket
4		CJB
5		Hood latch
6		Accelerometer
7		Hood actuator
8		Accelerometer
9		Pedestrian Contact Sensor (PCS)
10		Hood actuator
11		Hood latch
12		Pedestrian protection system control module

PRINCIPLES OF OPERATION

The system is designed to help reduce head and lower leg injuries when a pedestrian has been hit by a vehicle. This is achieved in two main ways:

- Bumper design
- Pyrotechnic deployment of the hood.

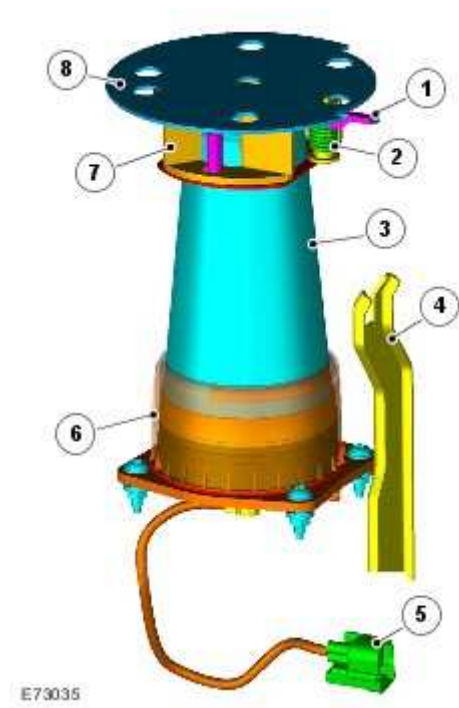
The front bumper of the vehicle has been designed with a profile which encourages the pedestrians lower leg to lift upwards rolling around the front of the bumper surface. The bumper is constructed of energy absorbing foam and plastics and is designed to be softer around the top part of the bumper than the middle. This helps reduce injuries to the pedestrians lower leg.

As the pedestrians leg rolls around the bumper it deforms the bumper and the sensor beneath. If the predetermined parameters are met the Pedestrian Protection System control module fires the pyrotechnic hood latch pins which opens the hood latch claw. This is followed by the pyrotechnic actuator firing to force the hood upwards. As the hood moves upwards the secondary hood latch automatically engages with the secondary hood latch striker plate locking the hood and the body together via the tether cone attached to the hood actuator. This ensures that the hood only rises a set amount. The raising of the hood creates a more cushioned effect between the vehicle and the pedestrian. The hood actuators will deflate within 3 seconds of deployment to improve visibility. The secondary hood latch remains connected to the hood when the hood actuators have deflated and can be released by squeezing the two latch forks together, either by hand or with a pair of pliers.

The hazard warning lights will be activated and can only be switched off by pressing the engine Start/Stop button to turn the engine OFF and ON again (without pressing the brake pedal) to revert to the convenience mode.

A warning message CHECK PEDESTRIAN SYSTEM will appear on the message center and the vehicle must be immediately recovered to the nearest Jaguar Dealer/Authorised Repairer. The vehicle must not be driven once the bonnet has been deployed.

Hood Actuator-Deployed



Item	Part Number	Description
1		Secondary hood latch
2		Secondary hood latch spring
3		Tether cone
4		Secondary hood latch retaining bracket
5		Electrical connector
6		Hood actuator
7		Secondary hood latch body
8		Secondary hood latch striker plate

Function	Value
Operating speed	15-45 kph
Hood deployment height	130mm
Hood deployment time (approx)	30ms

Pedestrian Protection System

Principles of Operation

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

[Pedestrian Protection System](#)

Inspection and Verification

- 1 . Verify the customer concern.
- 2 . Visually inspect for obvious signs of damage and system integrity.

Mechanical	Electrical
• Damaged, loose, or missing fixings or components	• Ensure dummy electrical connector is installed to the Pedestrian Protection module • Blown fuse(s) • Damaged, loose or corroded connectors • Wiring harness • Damaged Pedestrian Protection module

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, check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

DTC Index



CAUTION: Prior to carrying out any pinpoint tests on the pedestrian protection system the back-up power supply must be depleted. Disconnect the battery and wait two minutes for the back-up power supply to deplete.



CAUTION: When probing connectors to take measurements in the course of the pinpoint tests, use the adaptor kit, part number 3548-1358-00.

NOTE:

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.

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 additional information read by the manufacturer approved diagnostic system).

NOTE:

When performing electrical voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places, and with an up-to-date 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:

Inspect connectors for signs of water ingress, and pins for damage and/or corrosion.

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
B100211	Left hood latch deployment control	Left hood latch deployment control circuit - short to ground	Refer to the electrical circuit diagrams and test left hood latch deployment control circuit for short to ground
B100212	Left hood latch deployment control	Left hood latch deployment control circuit - short to power	Refer to the electrical circuit diagrams and test left hood latch deployment control circuit for short to power
B10021A	Left hood latch deployment control	Left hood latch deployment control circuit - circuit resistance below threshold	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10021B	Left hood latch deployment control	Left hood latch deployment control circuit - circuit	Carry out any pinpoint tests associated with this

		resistance above threshold	DTC using the manufacturer approved diagnostic system
B10021C	Left hood latch deployment control	Left hood latch deployment control circuit - circuit voltage out of range	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10024A	Left hood latch deployment control	Incorrect component installed	Disconnect latch actuator connector, clear DTC and re-test. If DTC remains along with additional DTCs, install a new pedestrian protection module. Pedestrian Protection Module If DTC cleared install a new latch actuator. Pedestrian Protection Latch Actuator
B100011	Right hood latch deployment control	Right hood latch deployment control circuit - short to ground	Refer to electrical circuit diagrams and test right hood latch deployment control circuit for short to ground
B100012	Right hood latch deployment control	Right hood latch deployment control circuit - short to power	Refer to electrical circuit diagrams and test right hood latch deployment control circuit for short to power
B10001A	Right hood latch deployment control	Right hood latch deployment control circuit - circuit resistance below threshold	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10001B	Right hood latch deployment control	Right hood latch deployment control circuit - circuit resistance above threshold	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10001C	Right hood latch deployment control	Right hood latch deployment control circuit - circuit voltage out of range	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10004A	Right hood latch	Incorrect component	Disconnect latch actuator

	deployment control	installed	connector, clear DTC and re-test. If DTC remains along with additional DTCs, install a new pedestrian protection module. Pedestrian Protection Module If DTC cleared install a new latch actuator. Pedestrian Protection Latch Actuator
B100311	Left hood deployment control	Left hood deployment control circuit - short to ground	Refer to electrical circuit diagrams and test left hood deployment control circuit for short to ground
B100312	Left hood deployment control	Left hood deployment control circuit - short to power	Refer to electrical circuit diagrams and test left hood deployment control circuit for short to power
B10031A	Left hood deployment control	Left hood deployment control circuit - circuit resistance below threshold	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10031B	Left hood deployment control	Left hood deployment control circuit - circuit resistance above threshold	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10031C	Left hood deployment control	Left hood deployment control circuit - circuit voltage out of range	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10034A	Left hood deployment control	Incorrect component installed	Disconnect hood actuator connector, clear DTC and re-test. If DTC remains along with additional DTCs, install a new pedestrian protection module. Pedestrian Protection Module If DTC cleared install a new hood actuator. Pedestrian Protection

			Hood Actuator LH
B100111	Right hood deployment control	Right hood deployment control circuit - short to ground	Refer to the electrical circuit diagrams and test right hood deployment control circuit for short to ground
B100112	Right hood deployment control	Right hood deployment control circuit - short to power	Refer to the electrical circuit diagrams and test right hood deployment control circuit for short to power
B10011A	Right hood deployment control	Right hood deployment control circuit - circuit resistance below threshold	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10011B	Right hood deployment control	Right hood deployment control circuit - circuit resistance above threshold	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10011C	Right hood deployment control	Right hood deployment control circuit - circuit voltage out of range	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10014A	Right hood deployment control	Incorrect component installed	Disconnect hood actuator connector, clear DTC and re-test. If DTC remains along with additional DTCs, install a new pedestrian protection module. Pedestrian Protection Module If DTC cleared install a new hood actuator. Pedestrian Protection Hood Actuator RH
B100613	Pedestrian impact sensor	Pedestrian impact sensor circuit - open circuit	Refer to the electrical circuit diagrams and test pedestrian impact sensor circuit for open circuit
B100611	Pedestrian impact sensor	Pedestrian impact sensor circuit - short to ground	Refer to the electrical circuit diagrams and test pedestrian impact sensor circuit for short to

			ground
B100612	Pedestrian impact sensor	Pedestrian impact sensor circuit - short to power	Refer to the electrical circuit diagrams and test pedestrian impact sensor circuit for short to power
B100696	Pedestrian impact sensor	Component internal failure	Install a new pedestrian impact sensor. Pedestrian Impact Sensor
B100684	Pedestrian impact sensor	Pedestrian impact sensor circuit - signal below allowable range	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10064A	Pedestrian impact sensor	Incorrect component installed	Install a new pedestrian impact sensor. Pedestrian Impact Sensor
B10061D	Pedestrian impact sensor	Pedestrian impact sensor circuit - current out of range	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10068F	Pedestrian impact sensor	Sensor fault	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B100631	Pedestrian impact sensor	No signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B100692	Pedestrian impact sensor	Performance or incorrect operation	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system. Install new crush pad and air deflectors (even if no damage is apparent). Front Bumper (76.22.08)
B100628	Pedestrian impact sensor	Signal bias level out of range/zero adjustment failure	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system

B100654	Pedestrian impact sensor	Missing calibration	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B100513	Left pedestrian protection accelerometer	Left pedestrian protection accelerometer circuit - open circuit	Refer to the electrical circuit diagrams and test left pedestrian protection accelerometer circuit for open circuit
B100511	Left pedestrian protection accelerometer	Left pedestrian protection accelerometer circuit - short to ground	Refer to the electrical circuit diagrams and test left pedestrian protection accelerometer circuit for short to ground
B100512	Left pedestrian protection accelerometer	Left pedestrian protection accelerometer circuit - short to power	Refer to the electrical circuit diagrams and test left pedestrian protection accelerometer circuit for short to power
B100596	Left pedestrian protection accelerometer	Component internal failure	Install a new left pedestrian protection accelerometer. Pedestrian Protection Accelerometer
B100584	Left pedestrian protection accelerometer	Signal below allowable range	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10054A	Left pedestrian protection accelerometer	Incorrect component installed	Install a new left pedestrian protection accelerometer. Pedestrian Protection Accelerometer
B10058F	Left pedestrian protection accelerometer	Erratic	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B100531	Left pedestrian protection accelerometer	No signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B100413	Right pedestrian protection	Right pedestrian protection accelerometer circuit -	Refer to electrical circuit diagrams and test right

	accelerometer	open circuit	pedestrian protection accelerometer circuit for open circuit
B100411	Right pedestrian protection accelerometer	Right pedestrian protection accelerometer circuit - short to ground	Refer to electrical circuit diagrams and test right pedestrian protection accelerometer circuit for short to ground
B100412	Right pedestrian protection accelerometer	Right pedestrian protection accelerometer circuit - short to power	Refer to electrical circuit diagrams and test right pedestrian protection accelerometer circuit for short to power
B100496	Right pedestrian protection accelerometer	Component internal failure	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B100484	Right pedestrian protection accelerometer	Signal below allowable range	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B10044A	Right pedestrian protection accelerometer	Incorrect component installed	Install a new right pedestrian protection accelerometer. Pedestrian Protection Accelerometer
B10048F	Right pedestrian protection accelerometer	Erratic	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
B100431	Right pedestrian protection accelerometer	No signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U012100	Lost communication with ABS module	Lost communication with ABS module	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U010000	Lost communication with ECM	Lost communication with ECM	Carry out any pinpoint tests associated with this DTC using the manufacturer approved

			diagnostic system
U014200	Lost communication with RJB	Lost communication with RJB	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U000155	High speed CAN communication Bus	Not configured	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U000152	High speed CAN communication Bus	Not configured	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U000188	High speed CAN communication Bus	Bus off	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U1A0266	Permanent memory store full	Signal has too many transitions/events	Install a new pedestrian protection module. Pedestrian Protection Module Install new crush pad and air deflectors (even if no damage is apparent). Front Bumper (76.22.08)
U300055	Stored vehicle configuration data does not match	Incorrect car configuration data received	Re-configure the RJB using the manufacturer approved diagnostic system. Clear DTC and re-test. If the DTC remains suspect the pedestrian protection system, refer to the new module installation note at the top of the DTC Index
U300049	Control module	Internal electronic failure	Install a new pedestrian protection module, refer to the new module installation note at the top of the DTC Index
U300087	Control Module	Missing message	Re-configure the RJB using the manufacturer

			approved diagnostic system. Check pedestrian protection module for DTCs and refer to the DTC Index. Check CAN network integrity using the manufacturer approved diagnostic system
U300316	Battery voltage	Circuit voltage below threshold	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U300317	Battery voltage	Circuit voltage above threshold	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
P193429	Vehicle speed signal	Invalid signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
P007129	Ambient air temperature sensor range/performance	Invalid signal	Carry out any pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
U201B4A	Control module calibration data #2	Incorrect component installed	Install a new pedestrian protection module. Pedestrian Protection Module
U201B51	Control module calibration data #2	Not programmed	Re-configure the pedestrian protection module using the manufacturer approved diagnostic system. Clear DTC and re-test, if DTC remains install a new pedestrian protection module. Pedestrian Protection Module
U210000	Initial configuration not complete	Module is in Plant mode	Place module into normal operation mode, by running the new module programming

			application, using the manufacturer approved diagnostic system
U300281	Vehicle Identification Number (VIN)	Vehicle/component mismatch. Corrupt VIN data being transmitted, module previously installed to other vehicle	Install original module, check for DTCs and refer to relevant DTC Index
U030000	Internal control module software incompatibility	Invalid configuration message is received	Re-configure the RJB using the manufacturer approved diagnostic system. Clear the DTC and retest. If the DTC is still logged suspect the pedestrian protection module, refer to the new module installation note at the top of the DTC Index

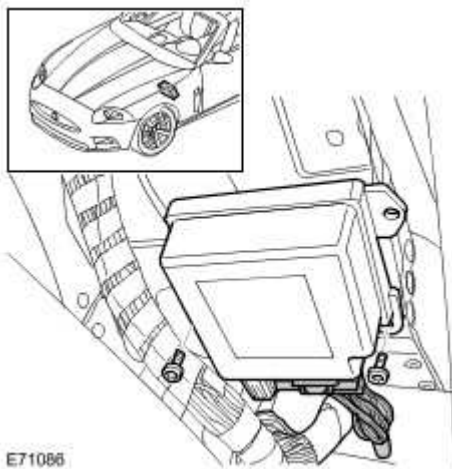
Pedestrian Protection Module

Removal

NOTE:

The pedestrian protection module must be renewed if the system has deployed on 3 occasions.

- 1 . Make the pedestrian protection system safe.
- 2 . Remove the front LH fender splash shield.
For additional information, refer to [Fender Splash Shield \(76.10.90\)](#)
- 3 . Remove the pedestrian protection module.
 - ▶ Remove and discard the 2 Torx bolts.
 - ▶ Disconnect the electrical connector.



Installation

- 1 . Install the pedestrian protection module.
 - ▶ Connect the electrical connector.
 - ▶ Tighten the new Torx bolts to 10 Nm (7 lb.ft).
- 2 . Install the front LH fender splash shield.

For additional information, refer to [Fender Splash Shield \(76.10.90\)](#)

3 . Using WDS, configure a new module.

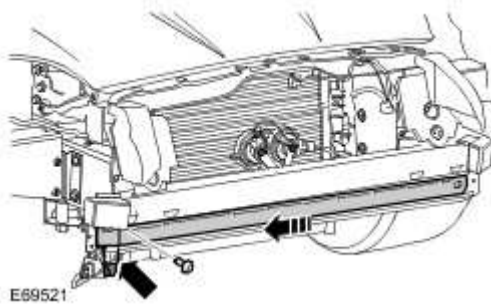
Pedestrian Impact Sensor

Removal

- 1  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

- 2 . Remove the front bumper cover.
For additional information, refer to [Front Bumper Cover \(76.22.78\)](#)
- 3 . Remove the pedestrian impact sensor.
 - ▶ Disconnect the electrical connector.
 - ▶ Remove the Torx screw.
 - ▶ Carefully release the 3 clips.



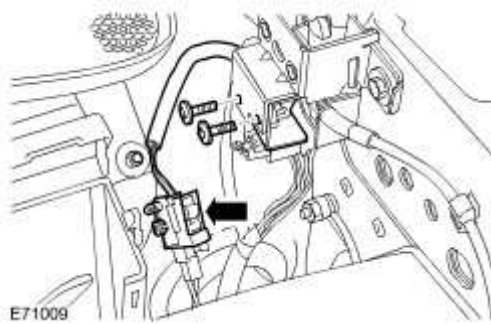
Installation

- 1 . Install the pedestrian impact sensor.
 - ▶ Carefully secure the clips.
 - ▶ Connect the electrical connector.
- 2 . Install the front bumper cover.
For additional information, refer to [Front Bumper Cover \(76.22.78\)](#)

Pedestrian Protection Latch Actuator

Removal

- 1 . Remove the pedestrian protection hood actuator and bracket.
For additional information, refer to [Pedestrian Protection Hood Actuator LH](#)
For additional information, refer to [Pedestrian Protection Hood Actuator RH](#)
- 2 . Remove the pedestrian protection latch actuator.
 - ▶ Remove and discard the 2 Torx bolts.
 - ▶ Disconnect the electrical connector.



Installation

- 1 . Install the pedestrian protection latch actuator.
 - ▶ Connect the electrical connector.
 - ▶ Tighten the new Torx bolts to 9 Nm (7 lb.ft).
- 2 . Install the pedestrian protection hood actuator and bracket.
For additional information, refer to [Pedestrian Protection Hood Actuator LH](#)
For additional information, refer to [Pedestrian Protection Hood Actuator RH](#)

Pedestrian Protection Accelerometer

Removal

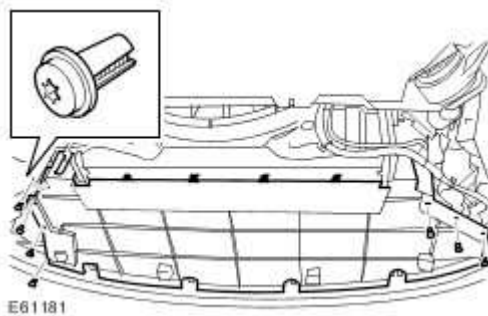
- 1 . Remove the radiator splash shield.

For additional information, refer to [Radiator Splash Shield \(76.22.90\)](#)

- 2 . Remove the front bumper air ducting.

▶ Remove the 7 clips.

▶ Release the 4 clips.



- 3 . Remove the pedestrian protection accelerometer.

▶ Disconnect the electrical connector.

▶ Remove the 2 bolts.



Installation

- 1 . Install the pedestrian protection accelerometer.

▶ Tighten the 6 bolts to 10 Nm (7 lb.ft).

▶ Connect the electrical connector.

2 . Install the front bumper air ducting.

 Secure with the clips.

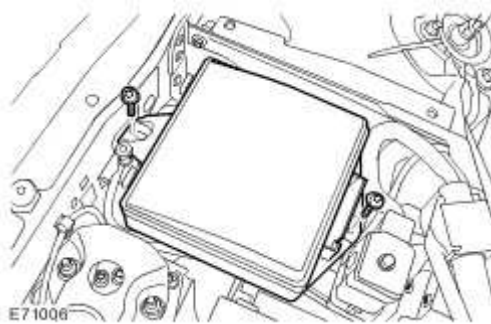
3 . Install the radiator splash shield.

For additional information, refer to [Radiator Splash Shield \(76.22.90\)](#)

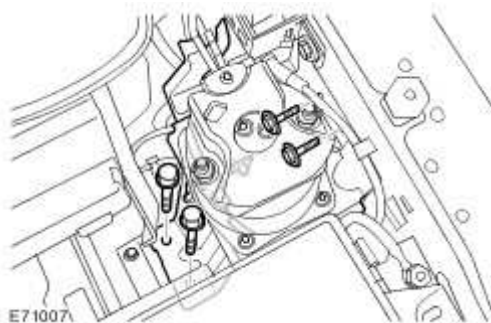
Pedestrian Protection Hood Actuator LH

Removal

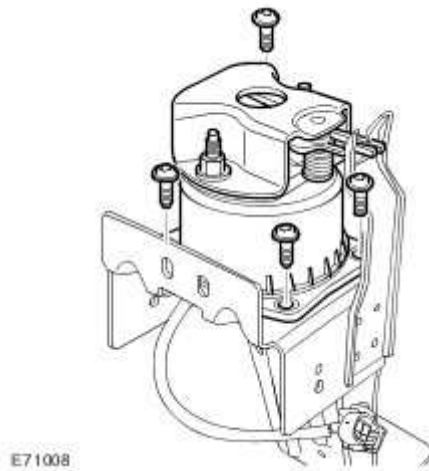
- 1 . Make the pedestrian protection system safe.
- 2 . Remove the pollen filter.
For additional information, refer to [Pollen Filter \(76.10.09\)](#)
- 3 . Release the power distribution box and position aside.
 - ▶ Remove the 2 Torx screws.



- 4 . Release the pedestrian protection actuator bracket.
 - ▶ Release the 3 wiring harness clips.
 - ▶ Remove the 4 bolts.
- 5 . Remove the pedestrian protection actuator and bracket.
 - ▶ Disconnect the electrical connector.



- 6 . Remove the pedestrian protection actuator.
 - ▶ Remove and discard the 4 Torx bolts.



Installation

- 1 . Install the pedestrian protection actuator.
 - ▶ Tighten the new Torx bolts to 8 Nm (6 lb.ft).
- 2 . Install the pedestrian protection actuator and bracket.
 - ▶ Connect the electrical connector.
- 3 . Secure the pedestrian protection actuator bracket.
 - ▶ Attach the wiring harness clips.
 - ▶ Tighten the bolts to 8 Nm (6 lb.ft).
- 4 . Position and install the power distribution box.
 - ▶ Tighten the Torx bolts to 8 Nm (6 lb.ft).
- 5 . Install the pollen filter.

For additional information, refer to [Pollen Filter \(76.10.09\)](#)

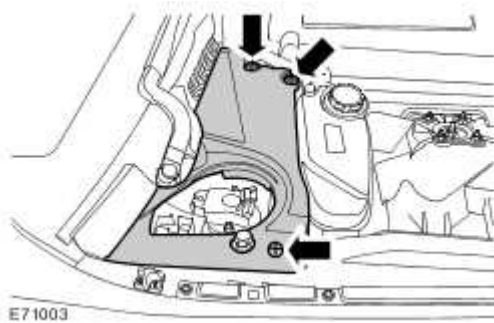
Pedestrian Protection Hood Actuator RH

Removal

- 1 . Make the pedestrian protection system safe.
For additional information, refer to

- 2 . Remove the air intake cover.

▶ Remove the 3 clips.



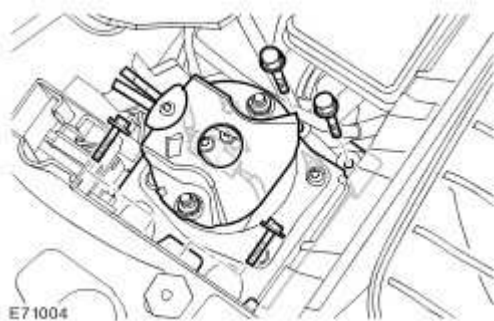
- 3 . Release the pedestrian protection actuator bracket.

▶ Release the 3 wiring harness clips.

▶ Remove the 4 bolts.

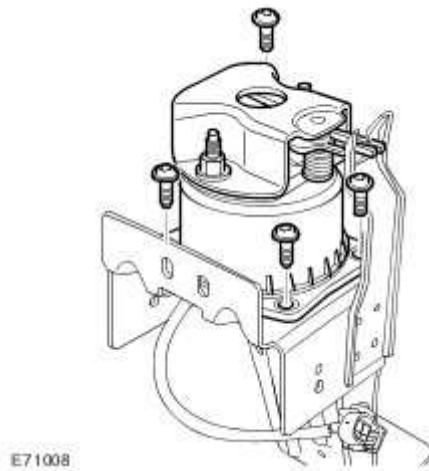
- 4 . Remove the pedestrian protection actuator and bracket.

▶ Disconnect the electrical connector.



- 5 . Remove the pedestrian protection actuator.

▶ Remove and discard the 4 Torx bolts.



Installation

- 1 . Install the pedestrian protection actuator.
 - ▶ Tighten the new Torx bolts to 8 Nm (6 lb.ft).
- 2 . Install the pedestrian protection actuator and bracket.
 - ▶ Connect the electrical connector.
- 3 . Secure the pedestrian protection actuator bracket.
 - ▶ Attach the wiring harness clips.
 - ▶ Tighten the bolts to 8 Nm (6 lb.ft).
- 4 . Install the air intake cover.
 - ▶ Carefully secure the clips

501-25A : Body Repairs – General Information

Description and operation

Body Repairs

General Information

Introduction

The all-new Jaguar XK Aluminium is unique in the industry as a complete Aluminium monocoque body structure, as distinct from an Aluminium spaceframe with separate Aluminium exterior panels. Developed from aircraft industry methods, where strength and light weight are critical, Jaguar's manufacturing process produces a massively strong but very light structure that is both rivetted and epoxy-bonded.

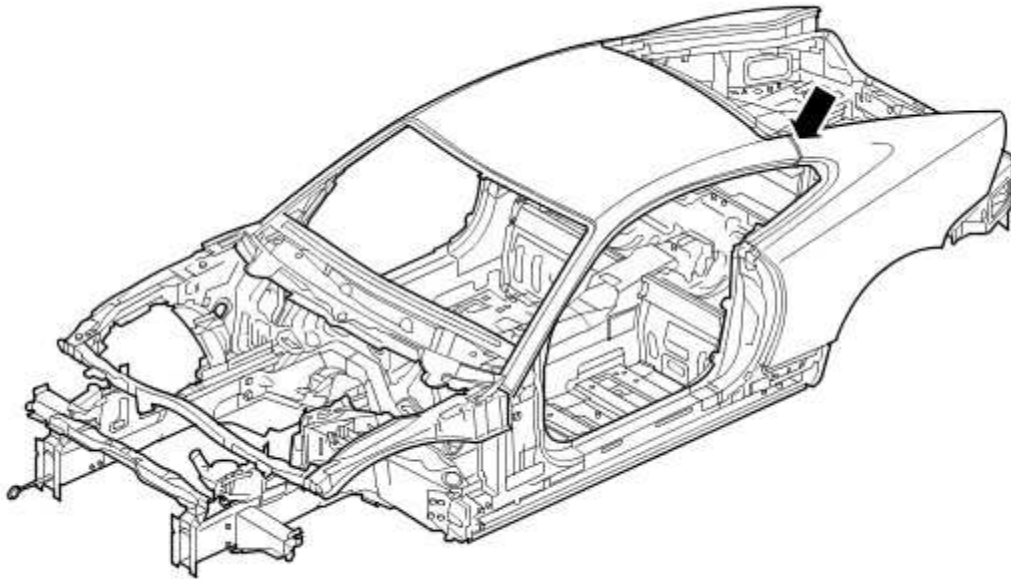
The key to the XK's character is Jaguar's industry-leading bonded and rivetted aluminium monocoque body structure, introduced with the latest XJ saloons. The aluminium body incorporates the latest thinking in epoxy bonding and riveting techniques to produce a chassis that is very safe and very light. In fact, the new XK's aluminium chassis is significantly lighter and stiffer in both coupe and convertible form than the steel model it replaces. The coupe chassis is over 30 percent stiffer than the previous XK, while the convertible is an impressive 50 percent. It also offers a 10 percent improvement in power to weight ratio. The XK Aluminium is up to 90 percent stiffer and 180kg lighter than key rivals, with a kerb weight of just 1595kg.

The XK takes the Lightweight Vehicle concept a step further with extended use of Aluminium castings and extrusions, as well as pressed Aluminium panels. Its remarkable strength and light-weight come from both the way the bodyshell is constructed and the use of new jointing technologies developed by Jaguar and its suppliers.

Jaguar guarantee high quality standards by ensuring that mechanical strength properties are tried and tested in numerous computer simulations, crash tests, by testing materials and by employing sophisticated manufacturing technologies. In the event of repairs it is vital that the production quality standards are upheld. This requires a well-equipped workshop, and places particular emphasis on the qualifications of the workshop technicians. Up-to-date knowledge of current manufacturing technologies and continuous training on new repair methods and techniques are vital for high-quality body repairs. The model-specific repair manuals and the general repair techniques provide valuable support when undertaking body repairs. Always follow the repair instructions published in this manual. Failure to observe this instruction can result in serious impairment of vehicle safety. All specified safety requirements must be met after the work has been carried out.

Vehicle Design

Body



E76363

There is only a single welded joint in the XK coupe body, the one 'cosmetic' joint is on the roof. This has an environmental benefit in that the body construction needs no high electrical current, produces no welding sparks or fumes, and needs no water for cooling. All other joints in the XK shell are formed using self-piercing rivets applied by hydraulic pressure against a fixed tool. Where access to only one side of the joint is possible, as in some of the new extruded box sections, a new riveting process has been developed; and where particularly high stiffness is required in a joint, a combination of riveting and bonding is used - with the adhesive bond in effect creating a continuous joint which is stronger than a similar, rivetted-only joint. All visible exterior panels are bonded to the underlying structure, and a new automated seam-sealing process seals all relevant areas of the shell before painting, to ensure that no gaps are missed.

In the XK, a secondary front bulkhead of aluminium and composite materials help reduce noise transmission from the engine compartment and provides a dry area under the bonnet for accommodating electrical components. The new structure also has the benefits in refinement; castings used for the mounting points for the engine, transmission and suspension make those points significantly stiffer, further reducing transmitted noise and helping to improve suspension dynamics. In terms of long-term strength, Jaguar's all-aluminium shell has durability approaching twice that of a traditional spot-welded steel body.

Another major advantage of this lightweight vehicle technology is that all the necessary stiffness is in the structure of the body shell, with a very large rectangular-section side sills. So the convertible, even without a roof, does not need the traditional stiffening panels seen on many other convertibles - meaning no added weight and no penalty in stiffness or refinement.

The XK's all-aluminium doors are each over 6kg lighter than an equivalent steel door and their mountings are significantly stiffer, which allows for smaller gaps. Mounting the window

glass rails directly to the aluminium castings at the front and rear of the door gives better sealing from the frameless layout, and an impressively solid sound seal.

Passenger Safety Cell

Beyond the exceptional body integrity and built-in deformation zones, the all-new XK Aluminium is also available with a host of other safety solutions for protecting pedestrians as well as car occupants. Those include the shape and construction of the bumpers and bonnet, plus a completely new technology, the pedestrian deployable bonnet, (European Models). This is deployed upwards away from its rear edge, in milliseconds, in the event of a pedestrian impact. This forms a safety zone between the bonnet and the engine and other under-bonnet hard areas to reduce significantly the potential for injuries.

Crumple Zone

Safety is another major benefit of this very strong construction method. That is partly inherent in aluminium as a material, which absorbs significantly more energy per kilogramme of material weight than steel when it is deformed. But the strength advantage does not only apply to high-speed impacts, it also means lower-speed accident repair costs are kept to a minimum. The reduction in the number of joints in the XK further increases strength, and the front of the body is protected by easily replaced 'crush cans' that absorb the energy in impacts up to 15kph.

Contents

This manual includes technical data and information for the Jaguar XK Aluminium range. The information contained within is valid at the time of production and incorporates:

- Who should use this manual?
- Aluminium information
- Category 'A' and 'B' definition
- Equipment
- Panel replacement times
- Fixings
- Bonding
- Tolerances and gap specification
- Body alignment

The methods described for panel replacement operations have been obtained from a study of physical repair operations.

In line with Jaguars continuous improvement programme, information and data contained will be updated periodically.

All activities described within are based on the use of genuine Jaguar Parts, tools and approved materials.

Aluminium

The design of the modern motor vehicle attempts to overcome two conflicting needs:

- Fuel economy - lighter, aerodynamic and fuel sensitive technology.
- High levels of comfort - this often equates to higher specifications and more accessories.

Aluminium alloy is the ideal material to meet these demands; it provides a lighter vehicle body with improved rigidity. Aluminium is different from traditional steel, with the correct knowledge and suitable tools it is easily repaired.

There are two Aluminium alloys discussed in this manual, the attributes detailed in the following table should be considered when deciding to repair or replace:

	6111	5754
Material Description	6000 Series is a Magnesium / Silicon / Copper Aluminium alloy.	5000 Series is an Aluminium alloy with Magnesium content.
Location on Vehicle	This alloy is used mainly in the outer body panels. Thickness: 0.9 - 2.0mm	Internal structural panels Thickness: 1.0 - 3.0mm
Attributes	High dent resistance.	Strength and durability.
Repairability	Yes - Light damage only.	Yes - Light damage only. Limited straightening is acceptable.
Heat During Repair	Yes - caution material sensitive to heat. Range: 140 - 160°C Ideal panel temperature: 150°C	Yes - must be heated to maintain original alloy properties. Ideal panel temperature: 250°C
Notes	Equipment: Hot air gun. Use panel temperature indicator strips.	Equipment: Heat inducer. Use panel temperature indicator strips. Heat must be applied and maintained during the straightening process.

Other materials are used in the construction of the XK Aluminium range, however, repair of these materials is not covered as they fall outside the scope of this manual.

Steel: Used in seat belt anchorages, hinge reinforcements and various small brackets and mountings.

The following illustration shows the panels covered by this manual and the alloys used.

Galvanic Corrosion and Housekeeping

Galvanic corrosion is the 'cross-contamination' of dissimilar metals, in this case Aluminium and steel. Avoidance of galvanic corrosion is an important issue to be considered in the repair of Aluminium bodied vehicles.

Precautions to prevent the contamination of exposed bare Aluminium surfaces should be taken. Good housekeeping / cleanliness should be adopted throughout repairs and especially

prior to welding, pre-treatment and adhesive bonding.

The repair environment requires control and protection from dust and debris from conventional steel body repairs. All equipment must be clearly identified and used solely on Aluminium.

Tools should be kept clean and in good order. Steel fastenings are coated to prevent galvanic corrosion. Fastenings should be examined during repairs and where damaged or suspect must be renewed

The use of graphite, "penetrating" oil, or copper based anti-seize compounds upon the steel fixings is not recommended.

Who Should Use This Information?

The information and repair methods listed are designed as an aid for Jaguar Approved Body Repair Facilities achieving the Jaguar approved Bodyshop Operating Standards. The relevant section should be read completely before commencing any repairs. Only technicians who have successfully completed the approved XK Aluminium range training programme should work on the model. Jaguar Approved Bodyshop Operating Standards require that the skills of technicians be regularly assessed and that any training needs identified are addressed within a reasonable time. This information complements the Jaguar training programme.

Definition of Category 'A' and 'B'

Category 'A'

- **NOTE:**

Specific equipment and facilities are required to carry out Category 'A' repairs, see equipment.

- Damage that requires panel(s) to be replaced with any one or combination of the following procedures:
 - Welded panel
 - Bonded panel
 - Panel secured with fixings
 - The following list identifies Category 'A' procedures

Category 'A' procedures

- Hood. For additional information, refer to [Hood](#) (501-03 Body Closures)
- Front bumper cover. For additional information, refer to [Front Bumper Cover](#) (501-19 Bumpers)
- Front bumper. For additional information, refer to [Front Bumper](#) (501-19 Bumpers)
- Auxiliary front crossmember. For additional information, refer to [Auxiliary Front Crossmember](#) (501-27 Front End Sheet Metal Repairs)

- Front Crossmember. For additional information, refer to [Front Crossmember](#) (501-27 Front End Sheet Metal Repairs)
- Fender apron panel front extension. For additional information, refer to [Fender Apron Panel Front Extension](#) (501-27 Front End Sheet Metal Repairs)
- Side member deformation element. For additional information, refer to [Side Member Deformation Element](#) (501-27 Front End Sheet Metal Repairs)
- Front side member side extension mounting. For additional information, refer to [Front Side Member Side Extension Mounting](#) (501-27 Front End Sheet Metal Repairs)
- Front side member side extension. For additional information, refer to [Front Side Member Side Extension](#) (501-27 Front End Sheet Metal Repairs)
- Front side member to deformation element bracket. For additional information, refer to [Front Side Member To Deformation Element Bracket](#) (501-27 Front End Sheet Metal Repairs)
- Front side member extension. For additional information, refer to [Front Side Member Extension](#) (501-27 Front End Sheet Metal Repairs)
- Suspension top mount. For additional information, refer to [Suspension Top Mount](#) (501-27 Front End Sheet Metal Repairs)
- Front wheel house. For additional information, refer to [Front Wheelhouse](#) (501-27 Front End Sheet Metal Repairs)
- Front side member. For additional information, refer to [Front Side Member](#) (501-27 Front End Sheet Metal Repairs)
- Fender apron panel reinforcement. For additional information, refer to [Fender Apron Panel Reinforcement](#) (501-27 Front End Sheet Metal Repairs)
- Fender apron panel. For additional information, refer to [Fender Apron Panel](#) (501-27 Front End Sheet Metal Repairs)
- Fender apron panel closing panel. For additional information, refer to [Fender Apron Panel Closing Panel](#) (501-27 Front End Sheet Metal Repairs)
- Front fender. For additional information, refer to [Front Fender](#) (501-27 Front End Sheet Metal Repairs)
- Door For additional information, refer to [Door](#) (501-03 Body Closures)
- A-pillar outer panel. For additional information, refer to [A-Pillar Outer Panel](#) (501-29 Side Panel Sheet Metal Repairs)
- A-pillar assembly. For additional information, refer to [A-Pillar Assembly](#) (501-29 Side Panel Sheet Metal Repairs)
- Rocker panel. For additional information, refer to [Rocker Panel](#) (501-29 Side Panel Sheet Metal Repairs)
- Quarter panel assembly. For additional information, refer to [Quarter Panel Assembly - Vehicles Without: Convertible Top](#) (501-30)
For additional information, refer to [Quarter Panel Assembly - Vehicles With: Convertible Top](#) (501-30)
- Rear outer wheelhouse half. For additional information, refer to [Rear Outer Wheelhouse Half](#) (501-30 Rear End Sheet Metal Repairs)
- Rear wheelhouse outer. For additional information, refer to [Rear Wheelhouse Outer](#) (501-30 Rear End Sheet Metal Repairs)
- Rear side member closing panel. For additional information, refer to [Rear Side Member Closing Panel](#) (501-30 Rear End Sheet Metal Repairs)
- Rear side member reinforcement panel. For additional information, refer to [Rear Side Member Reinforcement Panel](#) (501-30 Rear End Sheet Metal Repairs)
- Rear side member (section). For additional information, refer to [Rear Side Member Section](#) (501-30 Rear End Sheet Metal Repairs)

- Spare wheel well. For additional information, refer to [Spare Wheel Well](#) (501-30 Rear End Sheet Metal Repairs)
- Back panel assembly. For additional information, refer to [Back Panel Assembly](#) (501-30 Rear End Sheet Metal Repairs)
- Liftgate.
- Rear bumper cover. For additional information, refer to [Rear Bumper Cover](#) (501-19 Bumpers)
- Rear bumper. For additional information, refer to [Rear Bumper](#) (501-19 Bumpers)
- Roof panel. For additional information, refer to [Roof Panel](#) (501-28 Roof Sheet Metal Repairs)
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Category 'B'

- Damage associated to bolt on panel(s) that are replaced, or light surface damage to exterior cosmetic panels. The following list identifies Category 'B' procedures

Category B procedures

- Hood. For additional information, refer to [Hood](#) (501-03 Body Closures)
- Front bumper cover. For additional information, refer to [Front Bumper Cover](#) (501-19 Bumpers)
- Front bumper. For additional information, refer to [Front Bumper](#) (501-19 Bumpers)
- Auxiliary front crossmember. For additional information, refer to [Auxiliary Front Crossmember](#) (501-27 Front End Sheet Metal Repairs)
- Front Crossmember. For additional information, refer to [Front Crossmember](#) (501-27 Front End Sheet Metal Repairs)
- Fender apron panel front extension. For additional information, refer to [Fender Apron Panel Front Extension](#) (501-27 Front End Sheet Metal Repairs)
- Side member deformation element. For additional information, refer to [Side Member Deformation Element](#) (501-27 Front End Sheet Metal Repairs)
- Front side member side extension mounting. For additional information, refer to [Front Side Member Side Extension Mounting](#) (501-27 Front End Sheet Metal Repairs)
- Front side member side extension. For additional information, refer to [Front Side Member Side Extension](#) (501-27 Front End Sheet Metal Repairs)
- Front fender. For additional information, refer to [Front Fender](#) (501-27 Front End Sheet Metal Repairs)
- Door For additional information, refer to [Door](#) (501-03 Body Closures)
- Liftgate.
- Rear bumper cover. For additional information, refer to [Rear Bumper Cover](#) (501-19 Bumpers)
- Rear bumper. For additional information, refer to [Rear Bumper](#) (501-19 Bumpers)

Equipment

All Jaguar approved body repair facilities are expected to be equipped in line with Jaguar Body and Paint Centre of Excellence Operating Standards.

The approved body equipment for the XK Aluminium range is listed as either:

- Category 'A'
- Category 'B'

All approved equipment is available on a Worldwide basis from:

Country	Phone	Fax
Austria	+800-291714	+800-291694
Belgium (flemish)	00800-36733731	00800-36733292
Belgium (french)	0800-36733732	0800-36733292
Denmark	+800-36733732	+800-36733292
Finland	+800-36733732	+800-36733292
France	0800-904986	0800-901329
Germany	0800-3673373	0800-3673329
Greece	00800-49129046	00800-49129057
Hungary	+800-36733732	+800-36733292
Ireland	1800-409574	1800-409580
Italy	0800-790959	0800-780959
Netherlands	00800-36733732	00800-36733292
Norway	+800-36733732	+800-36733292
Poland	00800-4911241	00800-4911240
Portugal	+800-36733732	+800-36733292
Spain	900-998303	900-998304
Sweden	+800-36733732	+800-36733292
Swiss french	00800-36733732	00800-36733292
Swiss German	00800-36733731	00800-36733291
Turkey	00800-44910087	00800-44910096
UK	0800-214390	0800-281705
All other markets	+49 2203 106199	+49 2203 106241

A copy of the approved equipment standards for category 'A' and 'B' repair facilities is available on request from:

Jaguar Equipment Programme

Unit 6

Wollaston Crescent

Burnt Mills Industrial Estate

Basildon

Essex

SS13 1QD

0800 214390

Alternatively, you can access the programme via their website: www.eqseurope.com

Panel Replacement Times

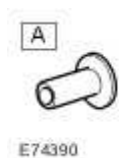
Panel replacement times are available for the following:

- Front end sheet metal. For additional information, refer to [Front End Sheet Metal](#) (501-27 Front End Sheet Metal Repairs)
- Side panel sheet metal. For additional information, refer to [Side Panel Sheet Metal](#) (501-29 Side Panel Sheet Metal Repairs)
- Rear end sheet metal. For additional information, refer to [Rear End Sheet Metal](#) (501-30 Rear End Sheet Metal Repairs)
- Roof sheet metal. For additional information, refer to [Roof](#) (501-28 Roof Sheet Metal Repairs)

Fixings

There are five groups of fixings used on the XK Aluminium range, other than conventional nuts and bolts. It is important that the correct procedures are followed for the removal and replacement of these fixings and, where applicable, the correct tools are used.

Self-Piercing Rivet (SPR)



Self-Piercing Rivets are available in various sizes dependant on the size of the "stack" of panels to which they are fitted. A "stack" refers to the combined gauge of the panels being Rivetted. The following table identifies the sizes and part numbers available:

NOTE:

It is important to identify and select the correct size fixing by referencing this table prior to installation.

Size	Stack	Jaguar Service Number
4.8mm x 5.0mm	3.0mm	C2C 20589
4.8mm x 7.0mm	4.0mm	C2C 20590
4.8mm x 8.0mm	5.0mm	C2C 20591
4.8mm x 8.5mm	5.5mm	C2C 20592

4.8mm x 9.0mm	6.0mm	C2C 20593
4.8mm x 9.5mm	6.5mm	C2C 20594
4.8mm x 11.0mm	8.0mm	C2C 20595

Removal: The ESN50 is the approved removal tool for Self Piercing Fixings. The ESN50 can be used with an optional, larger, 200mm "C" frame for improved access. Where tool access is impossible, remove fixings using approved drill bits.

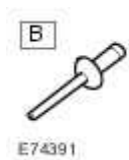
Installation: The ESN50 is the approved installation tool for Self Piercing Fixings. Where the original panel is being refitted, the new fixings should be placed adjacent to the original. Only where the ESN50 cannot be used, or there is insufficient space on the panel, should the fixings be replaced with Hemloks, unless the repair method dictates otherwise.



Using the ESN50: Ensure there is access for the ESN50 on both sides of the fixing to be removed / installed, including the optional "C" frame if required. **Removal:** Align the plunger and anvil over the fixing and depress the trigger. Depressing the trigger will allow the plunger to act on the fixing and remove it from the panel. **Installation:** Note: Prior to replacing a self piercing fixing, a test, using identical materials from waste panels, should be performed, to ensure that all settings are correct and an acceptable joint has been achieved.

Load new fixing into ESN50. Align the ESN50 over the fixing position and depress the trigger. As the trigger is depressed the ESN50 will clamp itself onto the work piece and install the fixing.

Hemlok (rivet)



Hemloks are available in various sizes dependant on the size of the "stack" of panels to which they are fitted. A "stack" refers to the combined gauge of the panels being Rivetted. The following table identifies the sizes and part numbers available:

NOTE:

It is important to identify and select the correct size fixing by referencing this table prior to installation.

Size	Stack	Jaguar Service Number
6.4mm x 13.7mm	1.5mm - 3.0mm	C2S 11487
6.4mm x 15.0mm	2.8mm - 4.8mm	C2C 7792
6.4mm x 17.0mm	4.8mm - 6.8mm	C2C 10349
6.4mm x 19.0mm	6.8mm - 8.8mm	C2C 9818
6.4mm x 20.0mm	7.5mm - 9.5mm	C2C 22613
6.4mm x 21.0mm	8.8mm - 10.8mm	C2C 9966

Removal: Hemloks are not used in production, however, if a previous repair has been carried out they may be present. Remove the centre of the fixing using a 4mm punch - in some instances it may be necessary to loosen the centre using a hardened centre punch. Once the centre has been removed, drill out the remnant using a 6.5mm Cryobit drill bit. Remove all debris.



Installation: The Genesis G4 is the approved installation tool for Hemloks. Prior to replacement ensure the fixing hole has been drilled to 6.5mm, using Cryobit drill bit and all debris has been removed.

Using the Genesis G4: Ensure the fixing hole has been drilled to 6.5mm and all debris has been removed. Check that you have the correct size Hemlok for replacement and insert it into the Genesis G4. Use the weight of the Genesis G4 to apply light pressure as the Hemlok is inserted into its hole. Depress the trigger which will tighten the Hemlok in the hole, the wasted stud will be ejected into the Genesis G4 once a pre-determined pressure is reached.

Monobolt (rivet)



Removal: Remove the centre of the fixing using a 4mm punch - in some instances it may be necessary to loosen the centre using a hardened centre punch. Once the centre has been removed, drill out the remnant using a 6.5mm Cryobit drill bit. Remove all debris.

Installation: The Genesis G4 is the approved installation tool for Monobolts. Prior to

replacement ensure the fixing hole has been drilled to 6.5mm, using Cryobit drill bit and all debris has been removed.



Using the Genesis G4: Ensure the fixing hole has been drilled to 6.5mm and all debris has been removed. Insert a new Monobolt into the Genesis G4, (there is only one size of Monobolt used on the XK Aluminium Range). Use the weight of the Genesis G4 to apply light pressure as the Monobolt is inserted into its hole. Depress the trigger which will tighten the Monobolt in the hole, the wasted stud will be ejected into the Genesis G4 once a pre-determined pressure is reached.

Countersunk Monobolt (rivet)



Countersunk Monobolts are used in replacement where a Self-Piercing Rivet, (SPR), cannot be replicated and where a Hemlok cannot be used because a flush surface is required.

Removal: Countersunk Monobolts are not used in production, however, if a previous repair has been carried out they may be present. Remove the centre of the fixing using a 4mm punch - in some instances it may be necessary to loosen the centre using a hardened centre punch. Once the centre has been removed, drill out the remnant using a 6.5mm Cryobit drill bit. Remove all debris.

Installation: The Genesis G4 is the approved installation tool for Monobolts. Prior to replacement ensure the fixing hole has been drilled to 6.5mm, using Cryobit drill bit, the hole has been countersunk, using a countersink drill bit and all debris has been removed.



Using the Genesis G4: Ensure the fixing hole has been drilled to 6.5mm and all debris has been removed, check Countersunk Monobolt sits flush with panel. Insert a new Countersunk Monobolt into the Genesis G4, (there is only one size of Countersunk Monobolt used on the XK Aluminium Range). Use the weight of the Genesis G4 to apply light pressure as the Countersunk Monobolt is inserted into its hole. Depress the trigger which will tighten the Countersunk Monobolt in the hole, the wasted stud will be ejected into the Genesis G4 once a pre-determined pressure is reached.

Ejot (flow drilled screw)

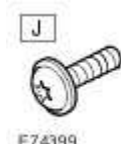


Removal: Ejots are removed using a T30 Torx driver.

Installation: An Ejot can only be reused where its original thread remains and is intact, Ejots are installed using a T30 Torx Driver. Where new panels have been fitted and no original threaded Ejot hole exists, a Hemlok fixing should be used.

If the Ejot cannot be re-used, and the original thread remains intact, then a Torx screw (C2C 1964) can be used in its place.

Torx Screw and Rivnut



A Torx Screw and Rivnut are used where the fitment of a Hemlok would give a poor cosmetic appearance. There are also occasions where the Torx Screw and Rivnut replaces a Monobolt, where there is no access for the Genesis G4. The Rivnut acts as the thread. The Rivnut is installed using the Wurth HES412 Rivet Nut Thread Setter, (Part No: 964948900).

Description	Jaguar Service Number
Rivnut (G)	C2C 10348
Torx screw (J)	C2G 1964

Removal: The removal of the Torx Screw is carried out using a T30 Torx Driver. The Rivnut

is not an original fixing.



Installation: The Torx Screw is installed using a T30 Torx Driver. The Rivnut is installed using the Wurth HES412 Rivet Nut Thread Setter, (Part No: 964948900).

Bonding

This section provides information on the bonded joints used in repair throughout the XK Aluminium body. The following topics are covered:

- Equipment
- Materials
- Bonding Pre Treatment
- Bonding Application

It is a pre-requisite that any person undertaking any repairs which involve panel bonding has attended Jaguar Approved Training and has achieved the correct skill level to undertake these processes. Bonding is classed as a Category 'A' repair.



Equipment

The approved bonding equipment consists of:

- Pyrosil gas applicator kit
- Approved two-pack adhesive applicator

Materials

The materials listed in this section are those approved to be used on the XK Aluminium range in conjunction with the repairs shown in this manual.

Consumable	Material	Supplier
Weld crack Penetrant	Rocol	Jaguar Equipment Programme
Weld crack Developer	Rocol	Jaguar Equipment Programme
Weld crack Cleaner	Rocol	Jaguar Equipment Programme
Bonding primer	SurAlink GP15	Jaguar Equipment Programme
Bonding adhesive	Structural adhesive DP490	3M
Bonding adhesive	Structural adhesive 8115	3M
Cavity foam	DM4330 foam	3M
Semi rigid sealer	0893 – 2251	Wurth
Seam sealer	Terostat 1K PUR 11272C (4500010)	Teroson
Cleaner/De-greaser	08984	3M
Cleaner/De-greaser	3608S	DuPont
MIG weld wire (6111)	4043 / 4047 filler wire	Fronius dealer network
MIG weld wire (5754)	5554 filler wire	Fronius dealer network
Abrasive discs	Roloc bristle discs 07528	3M
Self-Pierce fixings (all variants)	JEPC	Jaguar Dealer Network
Hemlok fixings (all variants)	JEPC	Jaguar Dealer Network

Bonding Pre Treatment

Pre-treating the panels to be bonded, as described in this section, promotes the improved adhesion of the bonding adhesive.

The pre-treatment is carried out using the approved "Pyrosil kit". The kit contains all of the equipment required to perform the pre-treatment process.



Bonding without pre-treatment will reduce the performance of the joint.

The pre-treatment application is a two stage process:

- Chemical application via a flame
- Coupling Agent

Performing the Pre-treatment Application

- **NOTE:**

Apply caution when using a naked flame. Remove all risk of combustion Do not overheat the alloy Move the flame over the work piece at a constant velocity

- Remove any original adhesive, or E-Coat from new panels
- Clean surface to be treated using approved pre-cleaner / degreaser
- Using the Pyrosil torch, pass the flame, (use the blue tip which is the oxidation flame), across the surface of the joint.
- Immediately brush primer onto panel surface and allow to dry

The application is colourless and has no visual indication.

Apply the bonding adhesive immediately after the pre-treatment process.

Bonding Application

The approved bonding adhesive is supplied in a two pack cartridge

A two-pack cartridge gun with a disposable mixing nozzle is used for the application of the adhesive



Apply a 5mm "zig zag" bead directly to either the replacement panel or vehicle structure

Ensure a continuous bead of adhesive surrounds fixing holes

On completion the mixing nozzle must be discarded. Ensure an air tight seal is provided for the cartridges.

NOTE:

The curing process of the adhesive begins once mixed and has a working time of approx 30 minutes

Aluminium Welding

Health and Safety

Refer to equipment manufacturers' manual.

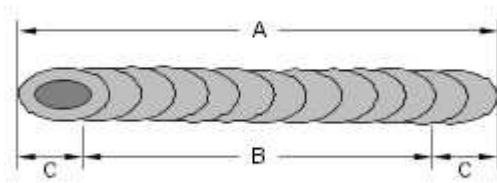
Set Up / Equipment Check

Refer to equipment manufacturers operator's manual.

Weld Process

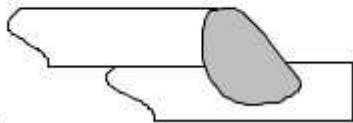
This section provides information on aftermarket Aluminium welding for the XK Aluminium range. It covers the following areas:

- **Equipment:** Metal Inert Gas (MIG)
- **Materials:** Extruded and pressed Aluminium sheet alloy.
- **Weld Structure:** Fusion welding process: Metal Inert Gas (MIG)
- **Weld Procedures:** Pre-weld, test weld, weld and post weld checks.
- **Weld Types:**



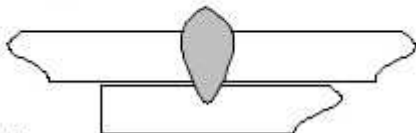
E70247

Lap Weld



E70248

Butt Weld



E70249

Plug Weld



It is a pre-requisite that any person undertaking Category 'A' welding on the XK Aluminium range is fully qualified in Aluminium Welding.

Equipment



Approved equipment obtained from the Jaguar Equipment Programme:

- Fronius Aluminium Edition - Metal Inert Gas (MIG) Welder.
- Speedglas with Adflo face shield / weld mask.
- Approved fume extractor.
- Stainless Steel Brush.
- Personal Protection Equipment (PPE)

Materials

Prior to any welding activity, it is necessary to identify the type of material to be welded. The XK Aluminium range is constructed from a number of Aluminium Alloys, each has different attributes that should be considered prior to the weld process.

Body Materials

The repair methods shown focus on the replacement of:

- Pressed Aluminium Alloy sheet - 6111 - Used in skin-panels.
- Extruded Aluminium Alloy - 5754 - Used in structural panels.

Weld Wire

The approved weld wires for these alloys are:

- 6111 - 4043 or 4047 filler wire.
- 5754 - 5554 filler wire.

Weld Structure

The approved aftermarket weld process is based on Fusion Welding.:

- Metal Inert Gas (MIG) Welding

The approved MIG welder uses DC current. The Electrode, (filler wire), is Positive Pole and the work piece is Negative Pole. The arc burns between a melting electrode, (which also acts as the filler wire) and the work piece. The shielding gas is :

Inert

- MIG - (Argon, Helium or a mixture of these).

Successful Aluminium welding is partly dependent on the removal of surface Oxidisation.

Oxide MUST be removed prior to welding. The oxide melts at a different temperature:

- Aluminium melting temperature - approximately 660°C.
- Aluminium Oxide melting temperature - approximately 2040°C.

Fronius Pulsed MIG

The 2700 Alu Edition utilises a 100% digitally controlled power source, this produces final weld attributes of:

- Smoothness.
- Refinement.
- Consistency.
- Repeatability.

The accuracy of the approved equipment enables the delivery of one droplet of wire per pulse. This enables welding of incredibly thin parent material, i.e 0.6mm sheet can be welded using a 1.2mm filler wire.

The approved MIG welder uses Direct Current, (DC) and does not produce High Frequency, (HF), at start up, (initial arc).

Safety Precautions

The following safety precautions should always be implemented:

- Disconnect the vehicle battery.
- Isolate the Electronic Control Modules (ECMs).
- Remove any ECMs within 500mm of the weld area.

Weld Procedures

Pre-weld

Prior to starting any weld procedure you should:

- Disconnect the vehicle battery.
- Isolate the ECM.

The Aluminium surfaces **MUST** be cleaned prior to welding. Cleaning will aid penetration and avoid contamination. There are three steps to this process:

1. Clean Surface

- To remove wax and any other contaminants use a chemical surface cleaner, either: Jaguar approved product: DuPont 3608S. Alternatively, an Isopropyl based product.

2. Remove Oxide

- This can be achieved through a number of processes: Stainless Steel brush. 80 Grit abrasive paper. Non-Metallic scuff pad.
- Note, if a Stainless Steel brush is used it should not be contaminated by use on a steel vehicle.

3. Remove Oxide Dust

- Remove dust with a lint free cloth.

Note: Oxide builds up very quickly, therefore, perform steps 2 and 3 immediately prior to welding. If left for a period of time, steps 2 and 3 should be repeated.

Equipment Set Up

The approved welding equipment for the XK Aluminium range is the "Fronius 2700 Alu Edition". The user should always refer to the operators manual for detailed instructions. The following provides an overview of the set-up procedure:

- Health and Safety - read operators manual.
- Check correct power supply.
- Check gas supply.
- Check all equipment parts - safety check.

- Attach power cables, connect to supply.
- Purge gas bottle, attach.
- Attach clamp.

Test Weld

A test weld using identical coupons from waste panels should take place prior to working on the vehicle. The test piece is then visually checked and destructively tested to ensure all settings are correct and an acceptable weld has been achieved.

Prior to starting, the following should be checked:

- Gas - Correct for the type of job.
- Filler Wire - Correct for the type of material to be welded.

An effective weld should demonstrate the following qualities:

- All visible weld surfaces shall be clean, bright and of a uniform profile.
- The weld seam should show uniform height and width over its entire length.
- There shall be complete fusion between the surfaces of the work piece and the weld metal deposit.

Correct level of penetration will be visible at the rear of the coupon as a fine continuous line.

Effective Weld Length

The effective weld length is the weld seam as described in the Body Repair Sections. The effective weld length does not include allowances for the run-in/run-out, or termination defects, (start / stop), of the weld seam. It is permissible that the overall weld length is longer than detailed in the repair section, as the overall weld will include a minimum of 5mm at both the start and the stop of the weld seam, provided the function of the part is not affected, or the weld finishes on the edge of a panel.

Post Weld Checks

Weld inspections take the form of a visual examination and destruction testing.

Visual Examinations

A visual examination of fusion welds should be carried out in accordance with the acceptance criteria detailed in the Imperfections / Defect Levels table.

Defect Imperfection Type	Details	Limits
Burn-through	Burn holes	Not permitted
Seam offset, sides melted away	Incomplete fusion	Not permitted within effective weld length

Cracks	Any form of cracking is not permitted at any position along the entire length of the weld seam	Not permitted
Fused weld spatter		Limited acceptance. Not permitted on visible surfaces or in areas where functional performance of the part is affected, e.g. mating surfaces, sealing surfaces, etc. In such instances spatter is to be removed. All loosely adherent spatters must be removed.
Visible ignition marks	Local melting of parent metal due to arc	Permitted provided functional performance of the component is not affected.
Open end crater	Reduces the cross sectional area of the weld seam	Not permitted
Visual pores		Not permitted
Weld skip	Discontinuity / interruption in weld seam	Not permitted at any position along the entire length of the weld seam

Nominal effective weld lengths are detailed within the appropriate body repair section. Weld lengths may be greater than that specified providing the part remains functional.

Dye penetrate testing **MUST** be used for detection of discontinuities, such as cracks, laps, folds, porosity and lack of fusion that are open to the surface of the material. Typical defects include start, (cold start / incomplete fusion) and stop, (crater cracking), defects within a fusion weld run. In addition to this lack of fusion / coalescence at the weld toe, solidification cracks in the weld bead may also be detected.

Non-destructive Crack Inspection Process

Use the product as listed in the Approved Materials Section, this product is supplied within the Category 'A' tool kit. The product is an aerosol applied dye system. It is designed to penetrate the finest cracks and flaws to facilitate detection, the system includes: Cleaner, Penetrant and Developer.

The process is as follows:

- 1. Use the cleaner to de-grease/clean the test area, then wipe with a lint free cloth.
- 2. When the surface is completely dry apply the penetrant. Cover the test area and allow a minimum contact time of 10 minutes
- 3. Remove excess penetrant from the surface with a lint free cloth wetted with the cleaner.
- Apply a **THIN** film of the developer and leave for a minimum of 10 minutes to draw up the retained dye from flaws or cracks.
- Suspect areas should then be examined under natural or electric light for signs of flaws and/or cracks. Cracks will show up as lines whilst porosity will appear as pin holes.

Destructive Testing

Each test weld should be pulled apart to check the quality and penetration of the weld. Visual examination should be conducted to evaluate and detect all the characteristic/defects detailed in the Imperfection and Defect Levels Table.

Types of Welded Joint

This section identifies the three types of joint used in Category 'A' panel replacement. It is not a guide to welding, as all Category A repairers will have staff who are suitably qualified in welding Aluminium. This section highlights the key points for each weld type.

Lap Joint

Key Points

- Run-In/Out distance of 5mm.
- Minimum overall length of 20mm.
- Must use Start / Finish tabs.

Butt Joint

Key Points

- Run-In/Out distance of 5mm.
- Minimum overall length of 20mm.
- Must use Start/Finish tabs.
- Nominal penetration of fillet required.

Plug Weld

Key Points

- Hole size 10mm.
- Position of MIG nozzle - vertical.

501-25B : Body Repairs – Corrosion Protection

Description and operation

Corrosion Protection

General

The application of additional corrosion protection following body repair is not necessary and not recommended.

However, it is important to be aware of **galvanic corrosion** and take steps to prevent its occurrence.

Galvanic Corrosion

Galvanic corrosion is the 'cross-contamination' of dissimilar metals, in this case Aluminium and Steel. Avoidance of galvanic corrosion is an important issue to be considered in the repair of Aluminium bodied vehicles.

Precautions to prevent the contamination of exposed bare Aluminium surfaces should be taken. Good housekeeping / cleanliness should be adopted throughout repairs and especially prior to welding, pre-treatment, (Pyrosil), and adhesive bonding.

The repair environment requires control and protection from dust and debris from conventional steel body repairs. All equipment must be clearly identified and used solely on Aluminium.

Tools should be kept clean and in good order. Steel fastenings are coated to prevent galvanic corrosion. Fastenings should be examined during repairs and where damaged or suspect must be renewed

The use of graphite, "penetrating" oil, or copper based anti-seize compounds upon the steel fixings is not recommended.

Where the OE surface protection, (paint), is removed, it must be reinstated to the recommended standard.

Only Jaguar Cars Ltd original bodywork components and Jaguar Cars Ltd approved repair materials, (sealer, paint, etc), are to be used for bodywork repairs.

501-25C : Body Repairs – Water Leaks

Description and operation

Water Leaks

General

- If water leaks occur after bodywork repairs, the cause can be established using the checks described below. A systematic and logical procedure is required to locate water leaks. Before beginning extensive checks, a thorough visual inspection must be carried out.
- Visual Inspection The following characteristics may indicate existing leaks: Check the clearance and accurate fit of ancillary components such as the hood, tailgate, liftgate, doors, and so on. Check for correct fit and possible damage to sealing elements such as blanking plugs, rubber door seals, and so on. Check water drain holes for unhindered flow.
- Various tests can be used to provide further information on possible leaks: Water test Washer test Road test Chalk (powder) test

Practical execution of tests and checks

Water test

NOTE:

Never aim a jet of water directly at a rubber seal.

- Carry out the water test with a second person present (in the passenger compartment).
- Use variable washer nozzles (concentrated water jet to fine spray mist).
- Start in the lower section and spray the whole area, working upwards in stages.

Washer test

- Further tests can be carried out in the washer system.
- Some leaks originate here, or only occur here.
- The relevant passenger compartment should be checked using a torch during the wash procedure.

Road test

- If no leaks are located during the tests above, road tests should be carried out on wet roads.

- Road tests under various conditions: At various speeds. On various road surfaces (asphalt to cobbles). With loaded or unloaded vehicle. Driving through puddles (splash water).

Chalk test (powder test)

- In this test, the clamping load and the bearing surface of the seal are checked.
- Performing the test: Dust the door seal with powder or coat with chalk. Coat the bearing surface of the seal with a thin film of vaseline. Slowly close the door and open it again. Check the width and continuity of the imprint on the door seal.

Other test equipment

- Other equipment such as stethoscopes, UV lamps, special mirrors or ultrasound measuring instruments can be used to locate leaks.

Rectifying the leak using recommended tools, auxiliary equipment and materials

- Tools and auxiliary equipment: Dry, absorbent cloths Variable washer nozzle Torch, fluorescent tube Mirror Compressed air Seal lip installer Wet/dry vacuum cleaner Sealing compound compressor Remover for interior trim Cutter blade or pocket knife Wedge (wood or plastic) Hot air blower Special mirror for concealed leaks Air flow checker Sealing compound (tape and plastic compound) Multi-purpose sticker Clinched flange sealer Window sealing compound Water shield (PVC) Double-sided adhesive tape for water shield Methylated spirit (available from trade outlets) PU adhesive Silicone remover Tar remover

Water leaks according to mileage or running time

Increasing mileage has an effect on the problem of leaks in a vehicle. Possible influencing factors are:

- Servicing and maintenance of seals: No maintenance, lack of maintenance or incorrect maintenance Using an incorrect agent
- Damaged seals: As a result of aging, wear or incorrect handling/assembly.
- Heavy soiling of the vehicle: Heavy soiling of a vehicle can seriously impair the function of water drainage channels in particular, and also of rubber seals.
- Age-related factors: Environmental factors UV radiation Extreme climatic conditions
- Corrosion can have a serious impact on bodywork, in particular as a result of: Lightly or heavily rusted seal carriers Rusted body seal welds Perforation corrosion

Water leaks after body repairs

If a vehicle develops a leak after body repairs, the following points must be taken into consideration in particular:

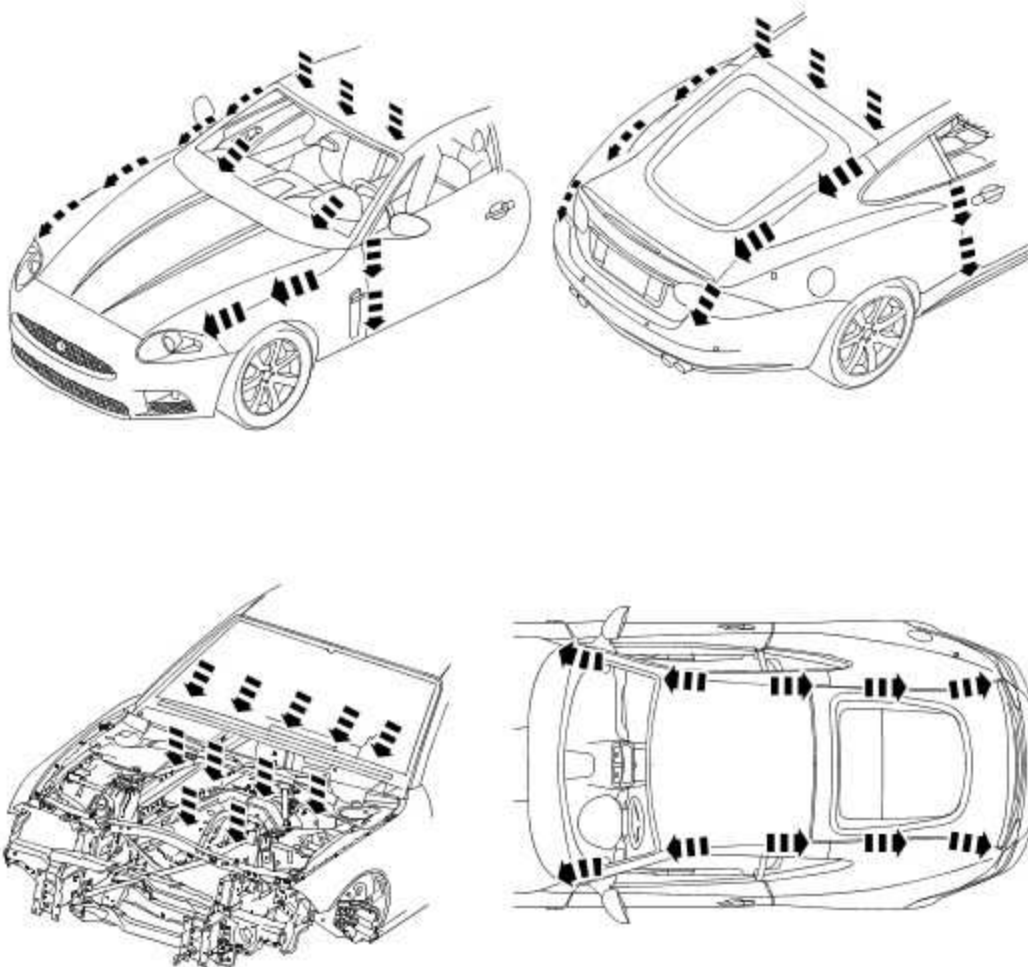
- The correct seating of ancillary components and their seals must be checked.

- The correct alignment of doors/tailgate and liftgate must be checked. The associated seals must not be damaged and must be installed correctly.
- Check that panel seams are correctly sealed.
- The correct seating of rubber grommets must be checked.
- Directly-glazed windows must have correct and complete bonding.

Water drainage system

If a vehicle develops water leaks, then areas into which water is routed or drained should be checked first.

Water drainage system (illustration for reference only)



E102719

Item	Part Number	Description
1		Water drainage, front
2		Water drainage, side and rear
3		Roof drainage

Water leaks, diagnosis and corrective action: Front passenger compartment

Windscreen

- Diagnosis: Ingress of water into A-pillar area or instrument cluster area and rocker panel area.
- Cause: Breaks in adhesive beads
- Corrective action: The breaks in adhesive beads can be located from inside by using compressed air. The leak can be identified from outside by the escaping air. The second test method is by means of a water test. The outer trims must be raised carefully using a plastic wedge. The leak should be located from inside by a second assistant.

Side windows

In the case of side windows, the same problems can arise as for a windscreen. The same corrective actions must therefore be used.

Door seal

- Diagnosis: Water ingress in the lower part of the interior door trim or in the rocker panel area.
- Cause: The water shield fitted behind the interior door trim exists to drain off water that has entered the door via the drainage holes, either downwards or outwards. If the water shield seal is damaged or has been fitted incorrectly, then water can get into the passenger compartment. In addition to this, the drainage holes can become clogged with leaves, dirt or excess cavity protection agents. Water gathers in the door and ingresses into the passenger compartment. Check water shield for damage or correct fitting. If the water shield needs to be re-bonded, then approved seam sealer should be used. Before the water shield is installed, the drainage holes must be checked for unhindered flow.

Door seals

- Diagnosis: Ingress of water into the rocker panel area
- Cause: Insufficient clamping load between seal and door.
- Corrective action: Check clamping load: The easiest way to check the clamping load of a seal to the respective bearing surface is by means of a paper strip test. This consists of trapping strips of paper at various points between the door and the seal, and fully closing the door. If it is possible to pull out the paper with no great resistance, then the clamping load is too low. **NOTE:**

When adjusting the clamping load, the profile alignment of the relevant components must always be taken into consideration.

- Adjust the clamping load: The clamping load is normally adjusted using the striker. When doing so, the edge alignment from the door to the side panel, or from the front door to the rear door must be taken into account. Another setting method is to realign the panel flange for the seal mounting. The clamping load is increased by moving the flange towards the door. **NOTE:**

Do not realign the flange too far in the direction of the door, as this can reduce the bearing surface of the seal to the door.

- Check the bearing surface: Apply chalk evenly to the surface of the seal. Evenly coat the bearing surface of the door with vaseline. Close the door fully, the lock must engage. Open the door. The imprint of the chalk (bearing surface) can be identified in the film of vaseline. The bearing surface should be at least 5mm across at all points.
- Other causes: The door seal must completely seal the door where it meets the bodywork. Water can ingress directly or indirectly into the interior of the vehicle if the seal is damaged at any point.
- Corrective action: A damaged or worn door seal must always be renewed in full. When renewing the seal, the following must be taken into account: Always fit the seal first in the area of the narrow radii (corner points). Next, secure the seal to the flange evenly by tapping lightly with a rubber hammer. The installed seal must not be kinked at any point.

NOTE:

The prescribed length of a seal must not be shortened.

- Other cause: The door seal is attached to the welded flange all the way round. If this welded flange is uneven or damaged at any point (usually in areas with small radii) then this point could be subject to leaks. A stretched seal carrier can also cause a leak. In both cases, water gets into the vehicle interior under the seal carrier.
- Corrective action: Align the deformed welded flange using a hammer and anvil block, prevent and, if necessary, repair any paint damage.

Sliding roof/tilting roof

- Diagnosis: Ingress of water at sliding roof aperture
- Cause: The sliding roof/tilting roof is installed in a water trap. The water drains off via the water trap, water drain holes and drain hoses. The drain hoses lead downwards on both sides via the A-pillar and B-pillar. The drain holes or drain hoses can become clogged with leaves, dirt, underbody protection and so on.
- Corrective action: **NOTE:**

In the case of a sliding or tilting roof, the external rubber seal and the lock actuator or latch mechanism must be checked first of all.

- Check the water trap for leaks. Check the drain hoses for leaks and for correct connection to the water trap. Check the drainage system for unhindered flow, and blow out with compressed air if necessary. Check the external seal and the correct adjustment of the sliding roof.

Liftgate

- Diagnosis: Ingress of water into rear headlining area and luggage area.
- Cause: The leak problems of the tailgate and liftgate correspond to those of the doors. In addition to this, the area to be sealed is much bigger. The routing holes for cables and hoses must also be sealed. The rubber grommets for the routing holes must be checked for damage and correct seating (fully unhooked). The mounting points of the liftgate hinges may leak.
- Corrective action: Check the rubber grommets and renew if necessary. Check the hinge mounting points, and re-seal with sealing compound if necessary.

Forced air extraction

- Diagnosis: Ingress of water into side luggage compartment area
- Cause: The forced air extraction for the vehicle interior is located in the quarter panel lower extension. The rubber flap of the forced air extraction must be able to move freely.
- Corrective action: Remove the forced air extraction. Check the seal area between the bodywork and housing, as well as the rubber flap. Renew seal if necessary.

Rear window

- Diagnosis: Ingress of water into the luggage compartment area
- Cause: Rear window leaking. Check for leak in the same way as for leaking windscreen.

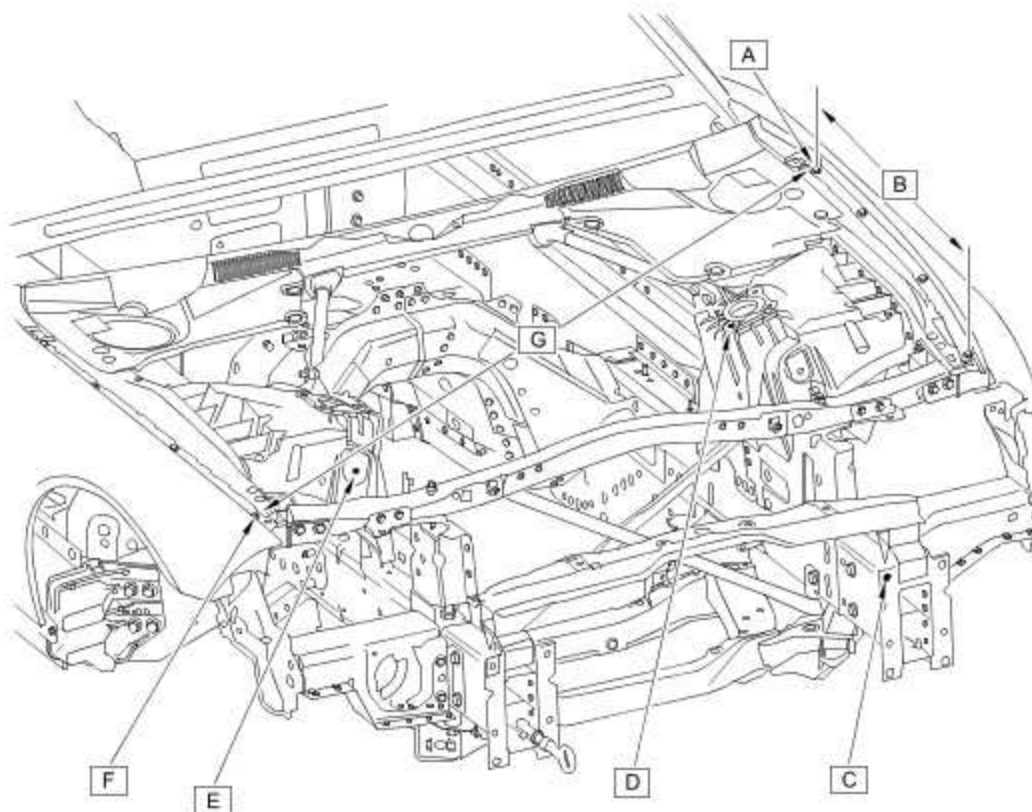
501-26 : Body Repairs – Vehicle Specific Information and Tolerance Checks

Description and operation

Body and Frame

NOTE:

Dimensions are always to the hole center.

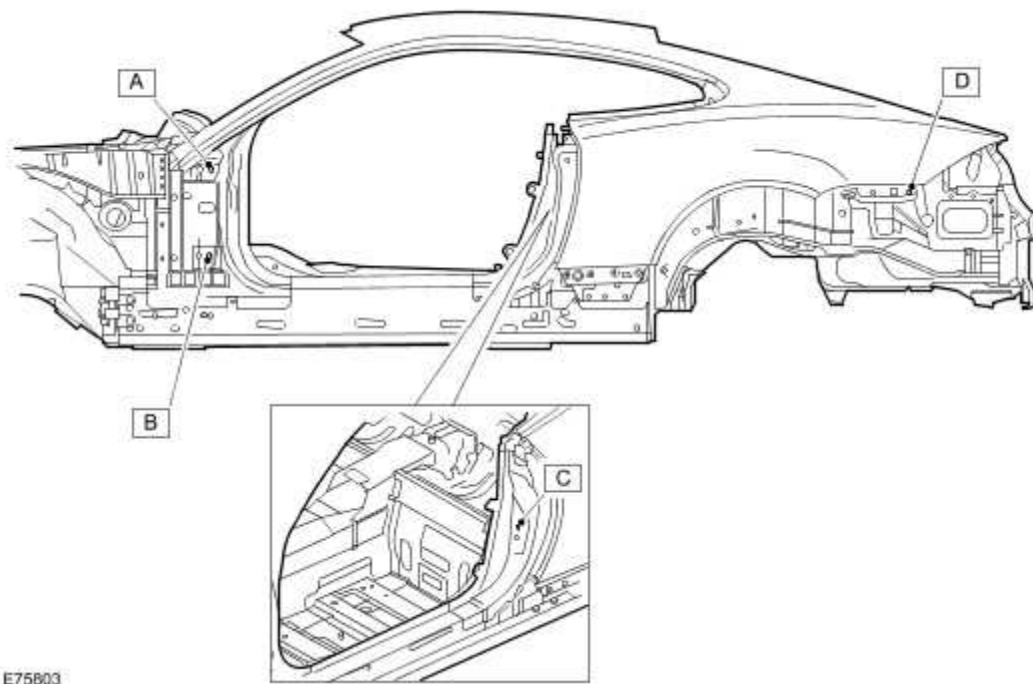


E72361

Front end dimensions The following dimensions are on the front end of the vehicle.

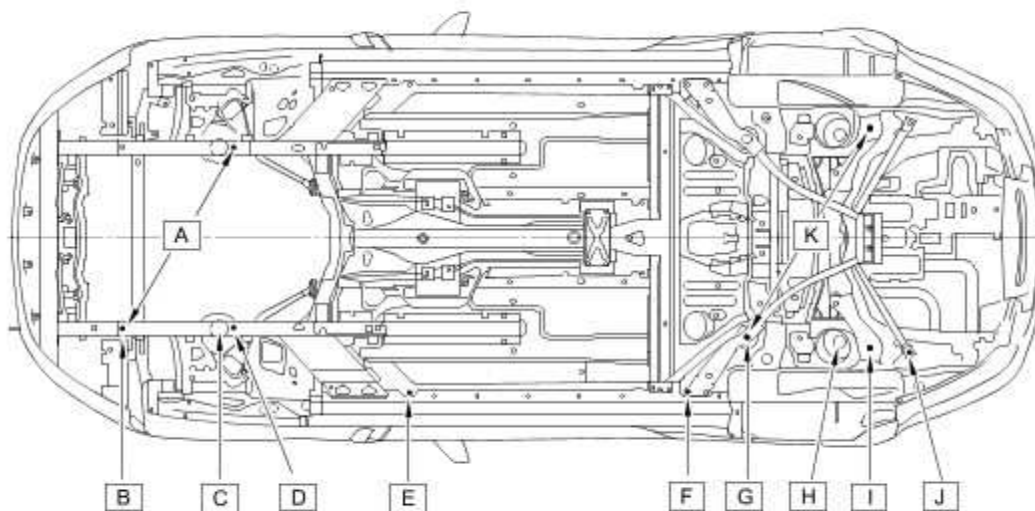
Detail	Dimension
'A' - Rear fender fixing hole	1802.6X, 814.9Y, 964Z

'B' - Rear fender fixing hole to front fender fixing hole	778.7
'C' - Bumper beam top outboard fixing hole	593.5X, 473.7Y, 678.5Z
'D' - Spring mount, forward inboard hole	1304X, 471.4Y, 948.2Z
'E' - Upper arm, top fixing hole	1175.5X, 468.8Y, 862.8Z
'F' - Front fender, fixing hole	1030.4X, 752.6Y, 884.9Z
'G' - Front fender fixing hole to rear fender fixing hole	1749.2



Body side dimensions

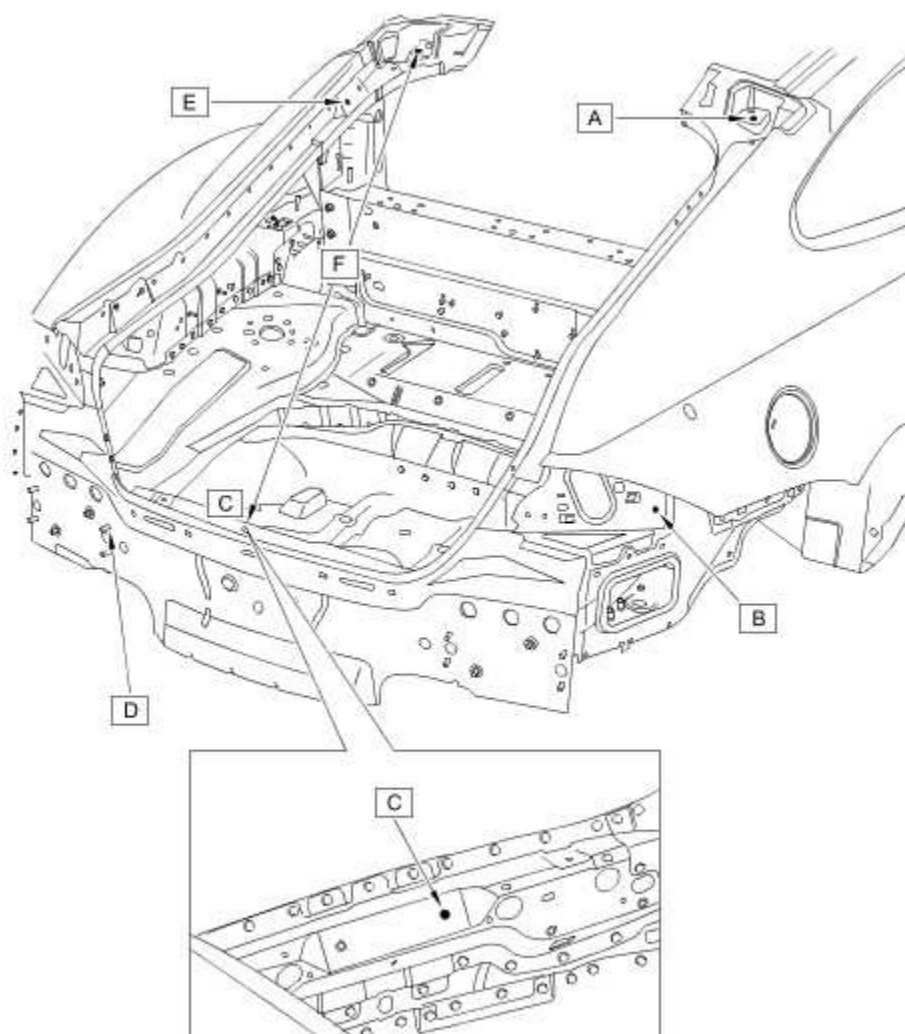
Detail	Dimension
'A' - Top door hinge, rearward fixing hole	2136.05X, 807.4Y, 894.2Z
'B' - Bottom door hinge, rearward fixing hole	2138.7X, 818.2Y, 593.5Z
'C' - Door striker fixing, top hole	3352.4, 792.7Y, 728.7Z
'D' - Body side rear tooling hole	4607.3X, 786.9Y, 819.03Z



E72359

Underbody dimensions

Detail	Dimension
'A' - Front sub-frame front fixing to front sub-frame rear fixing	982.6
'B' - Front sub-frame front fixing	893.1X, 419.5Y, 494Z
'C' - Front spring mount, large hole	1342.9X, 434.4Y, 934.2Z
'D' - Front sub-frame rear fixing	1409.8X, 416.25Y, 493Z
'E' - A-frame rear fixing hole	2237.3X, 703.4Y, 282.2Z
'F' - K-frame front fixing hole	3517X, 704Y, 287.6Z
'G' - Rear sub-frame front fixing hole	3791.7X, 454.5Y, 403.1Z
'H' - Rear spring mounting, large hole	4222.7X, 482.4Y, 755Z
'I' - Rear sub-frame rear fixing hole	4366.5X, 507.6Y, 595Z
'J' - K-frame rear fixing hole	4550X, 528Y, 583.1Z
'K' - Rear sub-frame front fixing to rear sub-frame rear fixing	1120.3

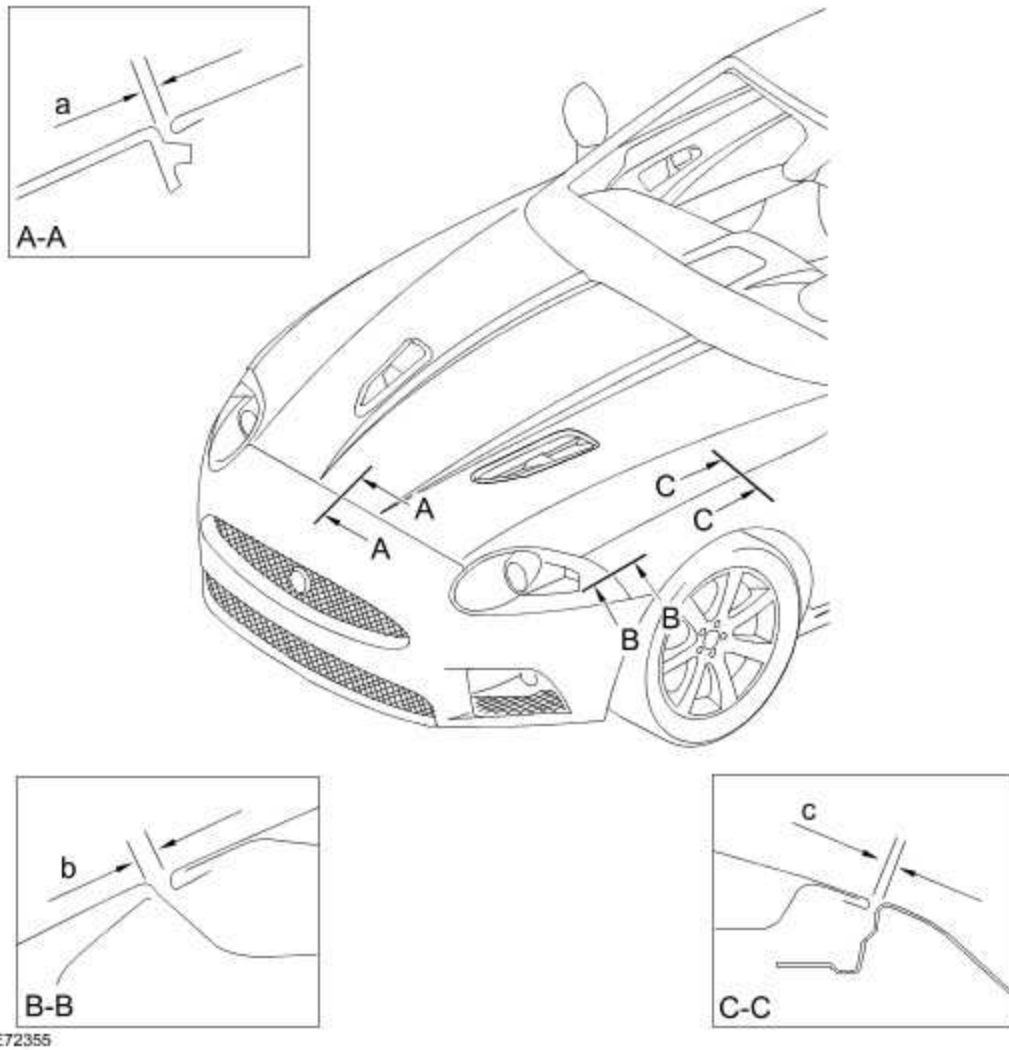


E72360

Rear end body dimensions

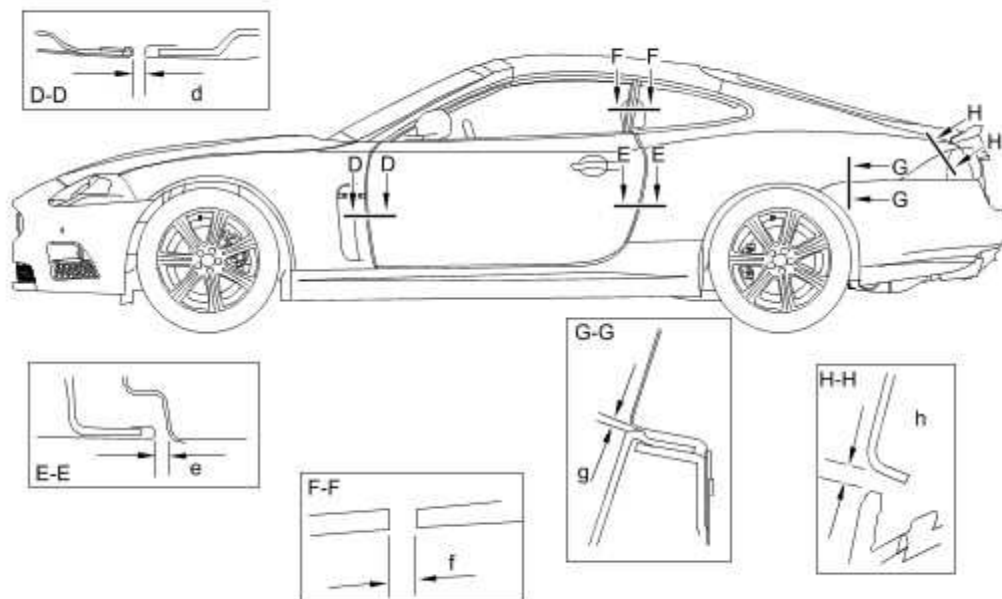
Detail	Dimension
'A' - Liftgate, hinge fixing rear hole	3686X, 427Y, 1312.6Z
'B' - Tail lamp, outboard fixing hole	4761.1X, 709.5Y, 881Z
'C' - Liftgate striker fixing hole	4985.5X, 71Y, 712.4Z
'D' - Rear bumper inner fixing hole	4676.2X, 396.3Y, 618Z
'E' - Liftgate spigot strut fixing hole	4268.9X, 445.3Y, 1201.8Z
'F' - Liftgate, hinge fixing rear hole to liftgate striker fixing hole	1475.0

Gap and Profile dimensions



Gap and profile information on the front end of the vehicle

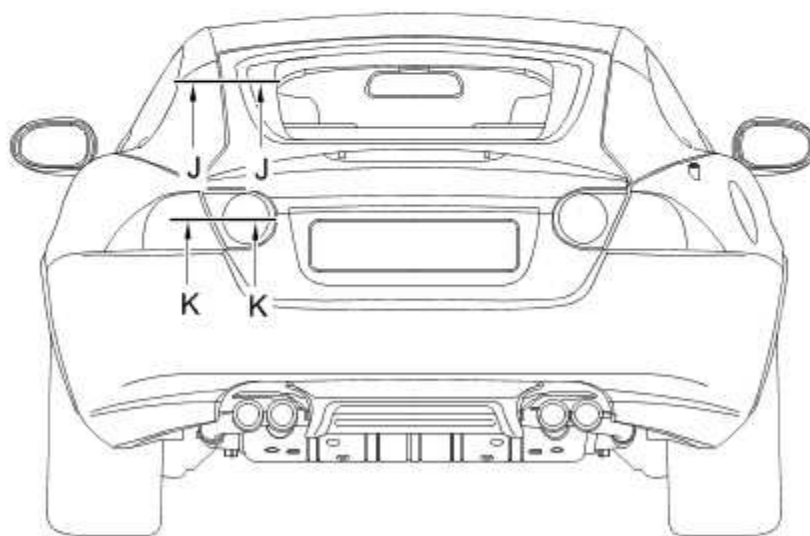
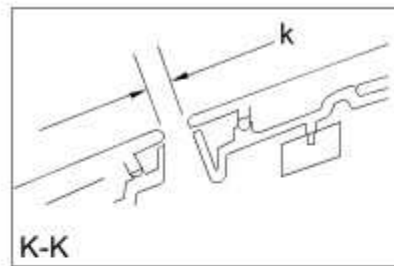
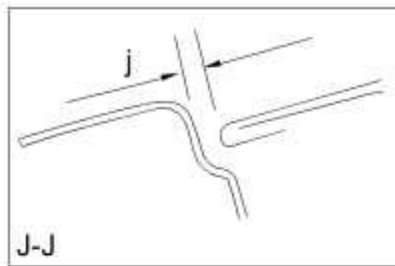
Detail	Gap	Profile
'a' - Hood to front bumper	4.0 ± 1.7	-1.0 ± 1.1
'b' - Fender to head lamp	2.0 ± 1.6	-1.0 ± 1.5
'c' - Hood to fender	3.5 ± 1.1	-1.0 ± 1.0



E72356

Gap and profile information on the side of the vehicle

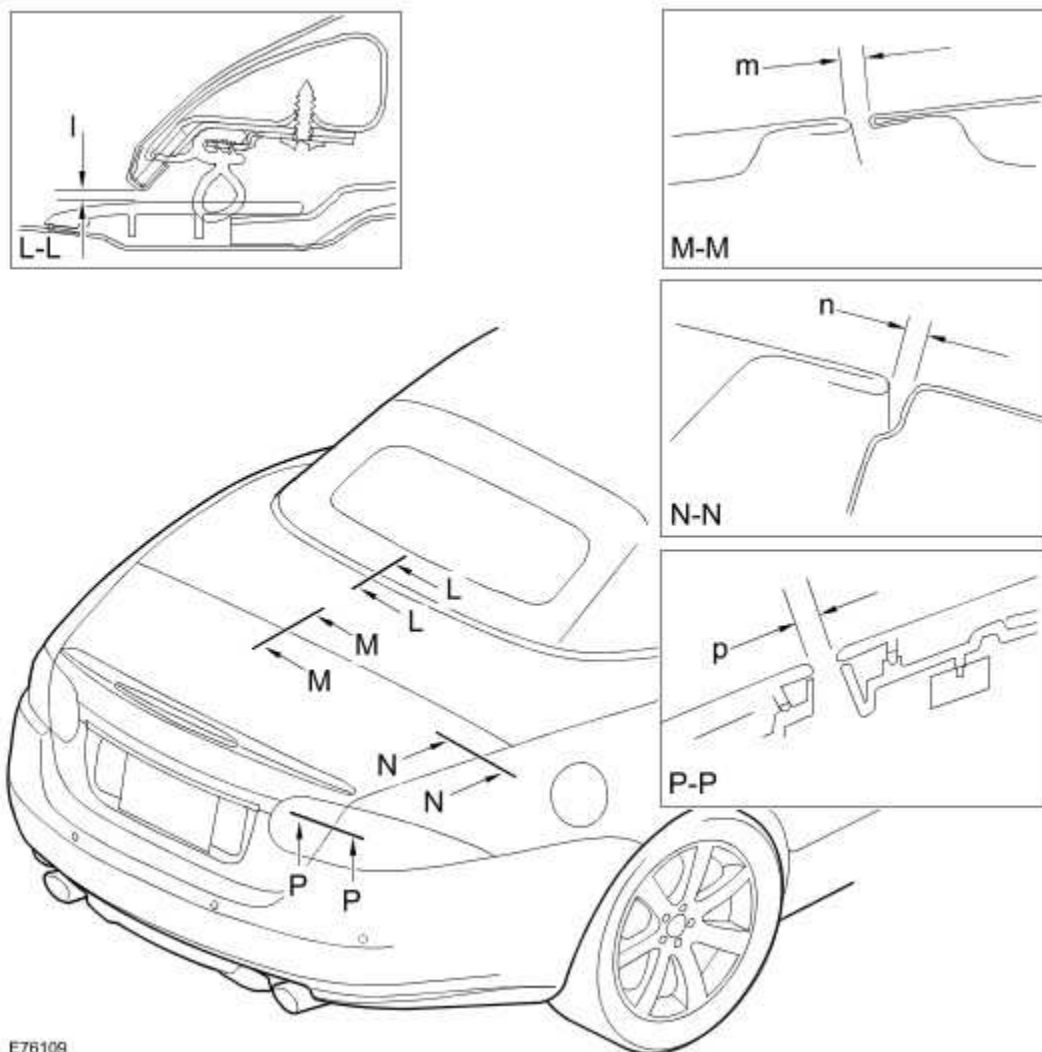
Detail	Gap	Profile
'd' - Door to fender	4.0 ±1.0	0.0 +0.5 -1.5
'e' - Door to bodyside panel	4.0 ±1.0	0.0 ±0.5
'f' - Door glass to rear quarter glass	8.0 ±2.0	0.0 ±1.0
'g' - Bodyside panel to rear bumper	0.0 +0.5 -0.0	0.0
'h' - Rear lamp to bodyside panel	2.0 ±0.5	0.0 ±1.0



E72357

Gap and profile information on the rear end of a Coupe vehicle

Detail	Gap	Profile
'j' - Liftgate to bodyside panel	3.5 ±1.2	-5.0 ±1.2
'k' - Rear lamp to rear fog lamp	4.0 ±1.0	-1.0 ±1.0



Gap and profile information on the rear end of a Cabriolet vehicle

Detail	Gap	Profile
'l' - Convertible hood to convertible hood compartment lid	3.0 ±3.0	N/A
'm' - Convertible hood compartment lid to luggage compartment lid	5.5 ±1.5	0.0 ±1.0
'n' - Luggage compartment lid to body side panel	3.5 ±1.0	-1.0 ±1.0
'p' - Tail lamp to indicator lamp	4.0 ±1.6	0 ±1.7

501-27 : Front End Sheet Metal Repairs

Specifications

Specifications

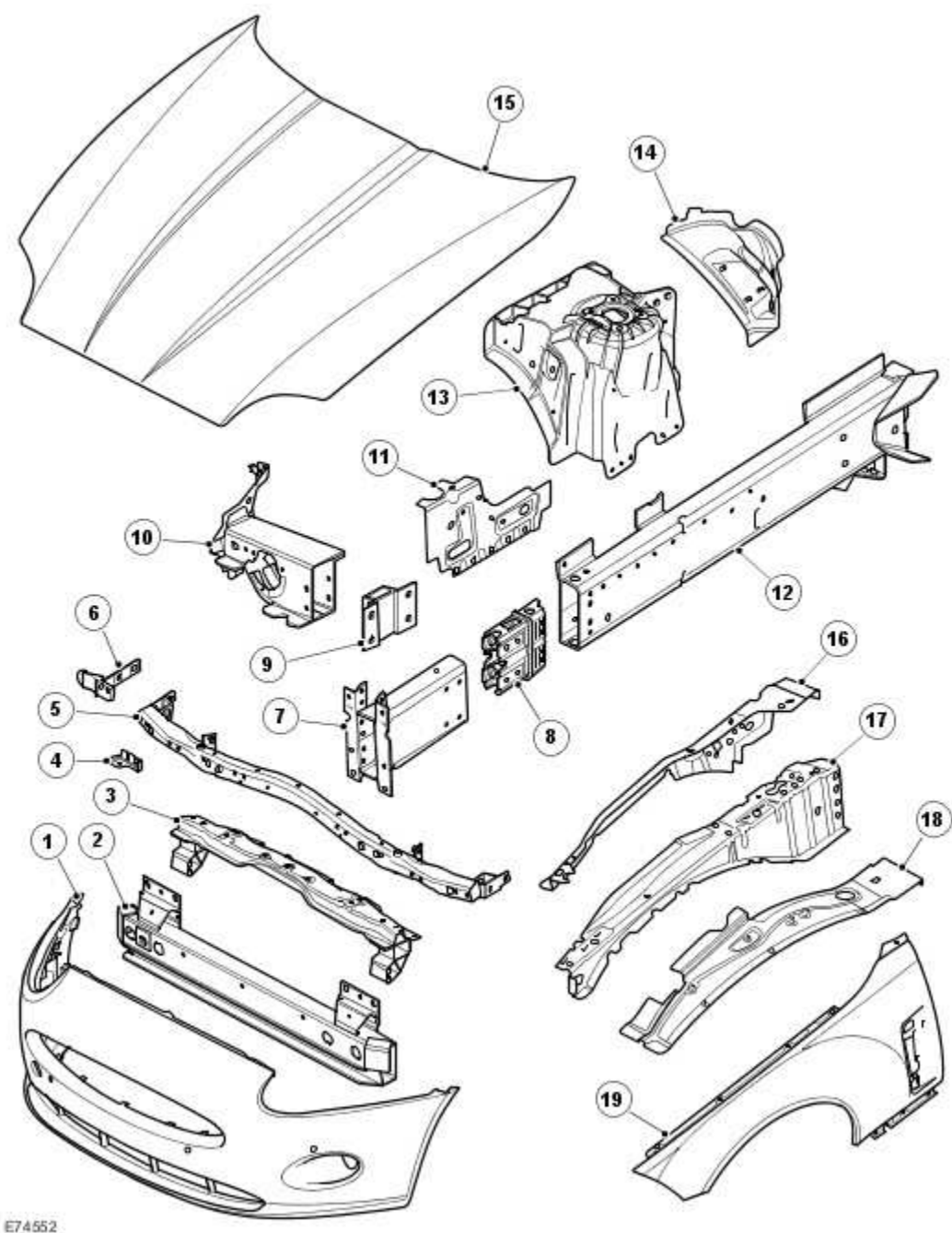
Torque Specifications

Item	Nm	lb-ft	lb-in
Auxiliary front crossmember - bolt	25	18	-
Front fender - bolt	10	7	-
Front crossmember to fender apron panel front extension - bolt	20	15	-
Front crossmember to fender apron panel reinforcement - bolt	30	22	-
Front crossmember to front side member extension- bolt	25	18	-
Front crossmember to headlamp mounting bracket - bolt	9	-	80
Front side member	A	-	-
Front side member, side extension - bolt	25	18	-
Front side member, side extension mounting - bolt	70	52	-
Front side member to deformation element bracket	A	-	-
Side member deformation element - bolt	70	52	-

A = refer to Removal and Installation procedure.

Front End Sheet Metal

Front end service panels



Item	Description	Service part No
1	Front bumper cover	

2	Front bumper	
3	Auxiliary front crossmember	C2P 8487
4	Headlamp mounting bracket	R/H C2P 5457 L/H C2P 5458
5	Front crossmember	C2P 4831
6	Fender apron panel front extension	R/H C2P 5642 L/H C2P 5643
7	Side member deformation element	R/H C2P 3370 L/H C2P 3370
8	Front side member to deformation element bracket	R/H C2P 4646 L/H C2P 4647
9	Front side member side extension mounting	R/H L/H
10	Front side member side extension	R/H C2P 8095 L/H C2P 8096
11	Front side member extension	R/H L/H
12	Front side member	R/H L/H
13	Suspension top mount	R/H C2P9666 L/H C2P9667
14	Front Wheelhouse	R/H C2P 8474 L/H C2P 8475
15	Hood	
16	Fender apron panel reinforcement	R/H C2P 8489 L/H C2P 8490
17	Fender apron panel	R/H C2P 8097 L/H C2P 8098
18	Fender apron panel closing panel	R/H L/H
19	Front fender	R/H L/H

Time schedules, front end

The following information shows the total time taken to replace single panels and complete assemblies. This time includes removal of Mechanical, Electrical and Trim, (MET), items, plus paint times based on Metallic Clear Over Base Paint, (blends to adjacent panels are not included).

The times shown were generated by Thatcham, (the Motor Insurance Repair Research Centre), and are to be used as a guide only.

Panel Description	coupe
Hood	5.6
Front bumper cover	5.9
Front fender L/H	7.0
Front Fender R/H	7.0
Front Crossmember	4.4
Auxiliary front crossmember	5.7
Engine and Suspension assembly remove and install	10.5

Combination panel replacement times

The following panel combination times show the total time to remove/refit body panels, MET items and paint times based on Metallic Clear Over Base Paint process, (blends to adjacent panels are not included).

Panel Description	coupe
Hood	
Front bumper cover	
Front bumper	
Auxiliary front crossmember	
Side member deformation element L/H and R/H	
Front side member side extension mounting	
Front side member side extension	
Front Fender	
Total Time	L/H 21.2 R/H 21.2

Panel Description	coupe
Hood	
Front bumper cover	
Front bumper	
Auxiliary front crossmember	
Side member deformation element L/H and R/H	
Front side member side extension mounting	
Front side member side extension L/H and R/H	
Front Fender L/H and R/H	
Total Time	24.1

Panel Description	coupe
Hood	
Front bumper cover	
Front bumper	
Auxiliary front crossmember	
Side member deformation element L/H and R/H	
Front side member side extension mounting	
Front side member side extension	

Front bumper	
Front side member to deformation element bracket.	
Front side member	
Front Crossmember	
Fender apron panel front extension	
Fender apron panel front reinforcement	
Fender apron panel	
Fender apron panel closing panel	
Front Wheelhouse	
Suspension top mount	
Front Fender	
Engine and suspension assembly remove and install	
Total Time	L/H 45.4 R/H 43.9

Panel Description	coupe
Hood	
Front bumper cover	
Front bumper	
Auxiliary front crossmember	
Side member deformation element L/H and R/H	
Front side member side extension mounting L/H and R/H	
Front side member side extension L/H and R/H	
Front bumper	
Front side member to deformation element bracket L/H and R/H	
Front side member L/H and R/H	
Front Crossmember	
Fender apron panel front extension L/H and R/H	
Fender apron panel front reinforcement L/H and R/H	
Fender apron panel L/H and RH	
Fender apron panel closing panel L/H and R/H	
Front Wheelhouse L/H and R/H	
Suspension top mount L/H and R/H	
Front Fender L/H and R/H	
Engine and suspension assembly remove and install	
Total Time	60.7

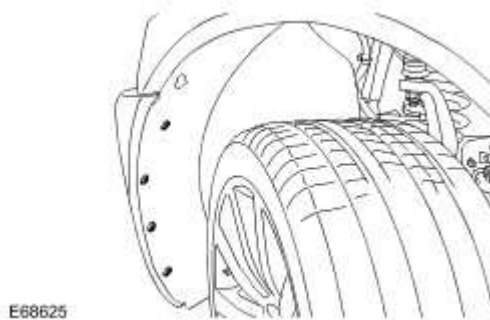
Front Fender

Removal

- 1  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

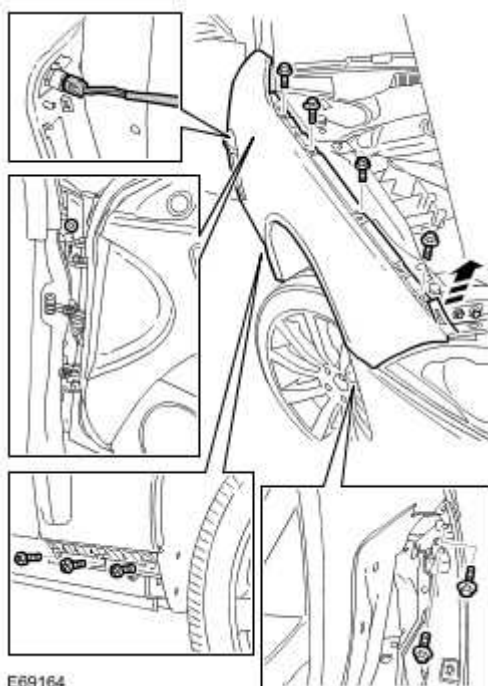
- 2 . Remove the rocker panel moulding.
For additional information, refer to [Rocker Panel Moulding \(76.11.36\)](#)
- 3 . Release the front of the fender splash shield.
 - ▶ Remove the 4 Torx screws.



- 4 . Open the hood.
- 5 . Open the door.
- 6 .  **CAUTION: Protect the paintwork during this operation.**

Remove the front fender.

- ▶ Remove the 12 bolts.
- ▶ Release the headlamp clip.
- ▶ Carefully release the fender.
- ▶ Disconnect the electrical connector.

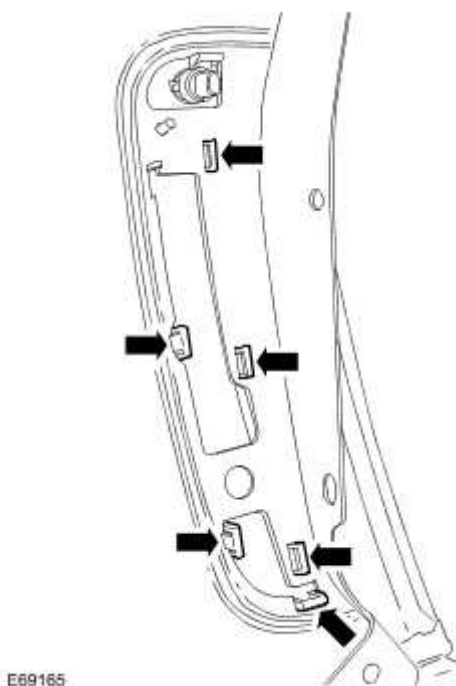


7 . NOTE:

Do not disassemble further if the component is removed for access only.

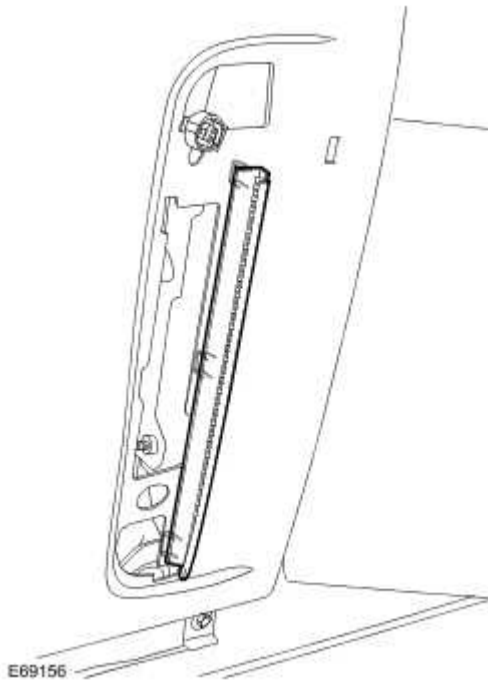
Remove the fender moulding assembly.

► Release the 6 clips.



8 . Remove the inner grille.

- ▶ Carefully release the 3 clips.



Installation

- 1 . Install the inner grille.
 - ▶ Secure the clips.
- 2 . Install the fender moulding assembly.
 - ▶ Carefully align and secure the clips.
- 3 . Install the front fender.
 - ▶ Connect the electrical connector.
 - ▶ Tighten the bolts to 10 Nm (7 lb.ft).
 - ▶ Secure the headlamp clip.
- 4 . Install the fender splash shield, front section.
 - ▶ Install the Torx screws.
- 5 . Install the rocker panel moulding.

For additional information, refer to [Rocker Panel Moulding \(76.11.36\)](#)

Front Crossmember

Removal

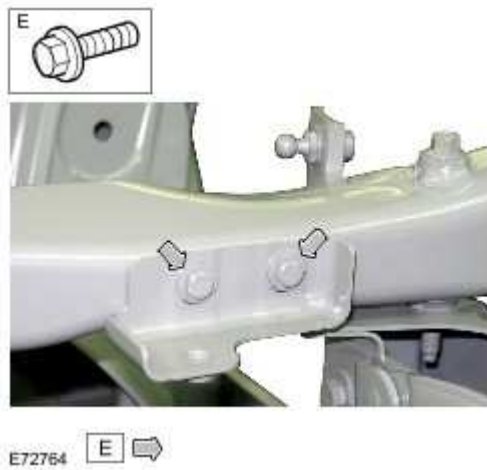
NOTE:

This is a category 'B' repair.

NOTE:

In this procedure the front crossmember is removed and installed without the need to remove any other body panels.

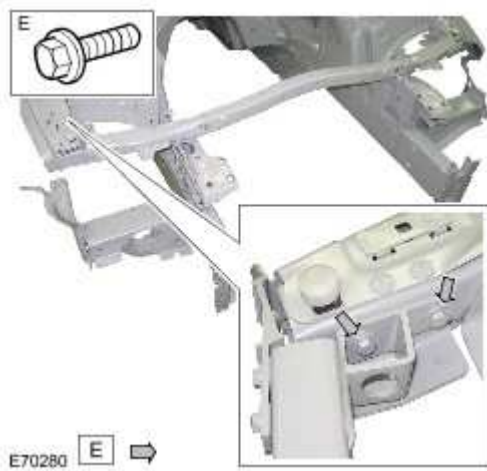
- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.
For additional information, refer to [Health and Safety Precautions](#)
- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.
For additional information, refer to [Body Repairs](#)
- 3 . Disconnect the battery.
For additional information, refer to
- 4 . Remove the fan cowl.
- 5 . Release the air intake duct and position it aside.
- 6 . Release the PAS reservoir and position it aside.
- 7 Remove the LH & RH radiator upper mountings, this also releases the support braces.
 . If the crossmember is being renewed, completely remove the mountings and save for fitment to the new panel.
- 8 . Release the crossmember wiring harness and position it aside.
- 9 If the panel is being renewed, remove the RH & LH SRS front impact severity sensors
 . and save for installation to the new panel.
For additional information, refer to [Front Impact Severity Sensor](#)
- 10 . Remove the 2 headlamp mounting brackets, 2 10mm Bolts on each side.



11 . Remove 4 13mm bolts, 2 each side, to the fender apron panel front extension.



12 . Remove 4 13mm bolts, 2 each side, to the fender apron panel reinforcement.

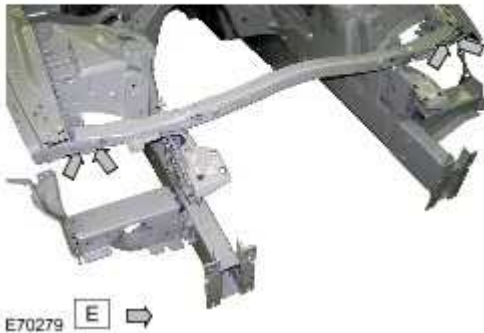


13 . Remove 2 10mm bolts, 1 each side, to the front side member extension.



Installation

- 1 . Install is the reversal of removal.
- 2 Tighten the crossmember to fender apron panel front extension bolts to: 20 Nm (15 lb.ft).



- 3 Tighten the crossmember to fender apron panel reinforcement bolts to: 30 Nm (22 lb.ft).



4 . Tighten the crossmember to front side member extension bolts to: 25 Nm (18 lb.ft).



5 . Tighten the headlamp mounting bracket to crossmember bolts to: 9 Nm (7 lb.ft).



6 . Check headlamp alignment, adjust as necessary.

For additional information, refer to [Headlamp Adjustment \(86.40.18\)](#)

Fender Apron Panel

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the fender apron panel is replaced in conjunction with the:

- front bumper cover
- front fender
- fender apron panel front extension

- 1 . Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 . For further information on the methods, tools and fixings used in this procedure, refer to the body repairs - general information section.

For additional information, refer to

- 3 . Disconnect the battery.

For additional information, refer to

- 4 . Remove the front fender.

For additional information, refer to [Front Fender](#)

- 5 . Remove the fender apron panel front extension.

For additional information, refer to [Fender Apron Panel Front Extension](#)

- 6 . Remove the hood catch.

- 7 . Remove the cowl vent screen.

For additional information, refer to [Cowl Vent Screen \(76.10.01\)](#)

- 8 . Remove the pedestrian protection hood actuator.

For additional information, refer to [Pedestrian Protection Hood Actuator LH](#)

- 9 . LH Side: Remove the pedestrian protection module.

For additional information, refer to [Pedestrian Protection Module](#)

- 10 . RH Side: Remove the windshield washer reservoir.

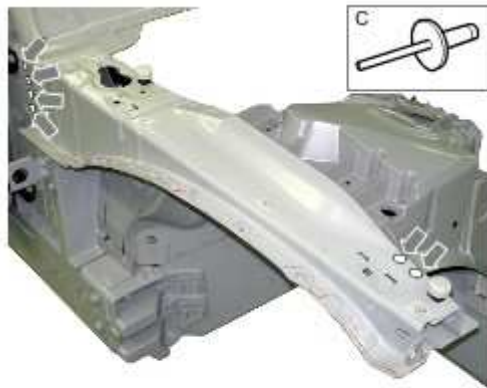
For additional information, refer to [Windshield Washer Reservoir \(84.10.01\)](#)

11 . RH Side: Remove the coolant expansion tank.

For additional information, refer to [Coolant Expansion Tank \(26.15.01\)](#)

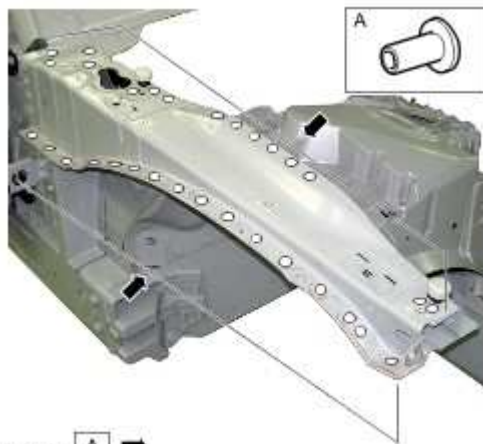
12 . Release the inner wheelhouse wiring harness and position it aside.

13 Remove 6 Monobolts, 4 from the A-Pillar and 2 from the fender apron panel reinforcement.



E72297 **C** ➡

14 Using a 6.5mm Cryobit drill bit, remove 15 Self Piercing Rivets, upper edge, to the fender apron panel reinforcement. Using the ESN50, remove 16 Self Piercing Rivets, lower edge, to the fender apron panel closing panel.



E72296 **A** ➡

15 . Separate the joints and remove the panel.

Installation

1 . Remove rivet remnants.

- 2 . Using a Roloc Bristle Disc, remove adhesive residue.
- 3 Offer up the new panel, using the fender to aid alignment. When aligned, clamp into position.
- 4 . Remove the fender.
- 5 If re-using the fender apron panel reinforcement, transfer the location of the 13 fixing holes to the new fender apron panel, (avoiding any internal fixings), drill through using a 6.5mm Cryobit Drill Bit.



- 6 . Remove the new panel and deburr the drilled holes.



- 7 . Using a Roloc Bristle Disc, clean and prepare the new panel joint surfaces.
- 8 . Pyrosil the joints.
- 9 . Apply the coupling agent and allow to dry.
- 10 . Apply a 5mm adhesive bead to the body panel joints.
- 11 . Offer up the new panel, align and clamp into position.
- 12 Using the Genesis G4, install 13 Hemloks, part no: C2C 7792, to the fender apron panel reinforcement and install 6 Monobolts, part no: C2P 4773, 2 to the fender apron panel reinforcement and 4 to the A Pillar.



- 13 Using the ESN50, install 18 Self Piercing Rivets, part no: C2C 20590, along the lower edge, to the fender apron panel closing panel.



- 14 . Remove any excess adhesive.
- 15 . Install is the reversal of removal.

Fender Apron Panel Reinforcement

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the fender apron panel reinforcement is replaced in conjunction with the:

- front bumper cover
- front fender
- front crossmember
- fender apron panel
- fender apron panel closing panel
- fender apron panel front extension

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to [Body Repairs](#)

- 3 Remove the fender apron panel.

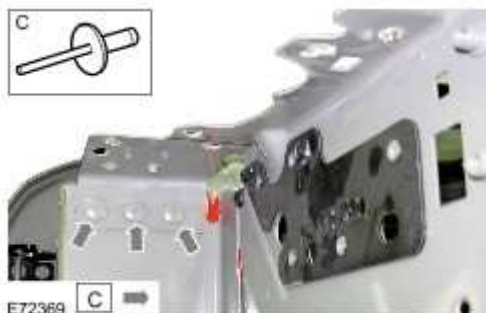
For additional information, refer to [Fender Apron Panel](#)

- 4 Remove the fender apron panel closing panel.

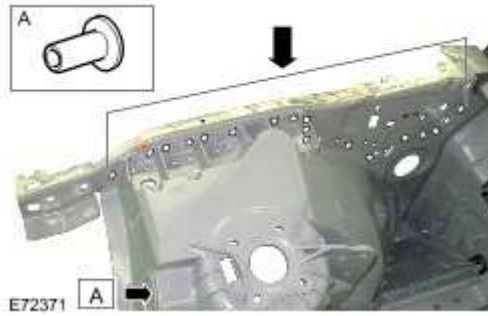
For additional information, refer to [Fender Apron Panel Closing Panel](#)

- 5 Remove the insulating material from the bulkhead.

- 6 Remove 3 Monobolts.



7 . Using a 6.5mm Cryobit drill bit, remove 18 Self Piercing Rivets.



8 . Separate joints and remove the panel.

Installation

1 . Remove rivet remnants.

2 . Using a Roloc Bristle Disc, remove adhesive residue.

3 . Offer up the new panel, align and clamp into position.

4 . Mark the position of 10 fixing holes to the suspension top mount.

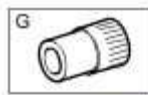
5 . Remove the new panel.

6 Drill 10 pilot holes in the new panel, in the positions marked, then, using a 9.5mm drill bit, enlarge these holes.



7 . Deburr the drilled holes.

8 Using the HES 412 Rivet Nut Tool, insert 10 Rivet Nuts, part no: C2C 10348, into the pre-drilled holes.



E72373 G

9 . Using a Roloc Bristle Disc, clean and prepare the panel joint surfaces.

10 . Pyrosil the joints.

11 . Apply the coupling agent and allow to dry.

12 . Apply a 5mm adhesive bead to the body joints.



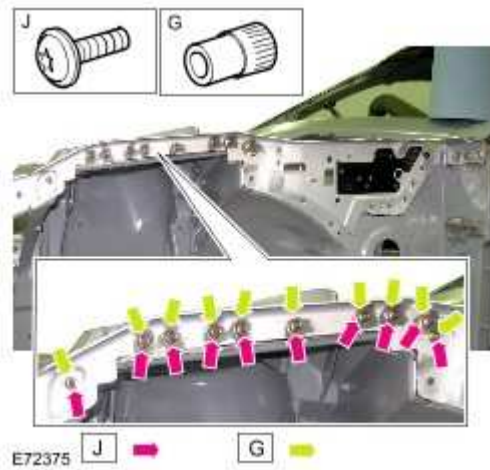
E72374

13 . Offer up the new panel, align and clamp into position.

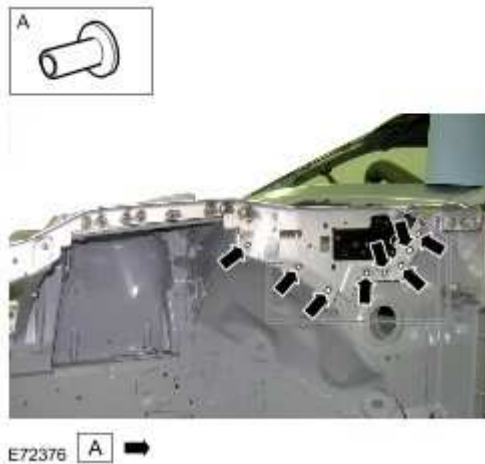
14 . **NOTE:**

The replacement fixings must be Torx screws and not Ejots.

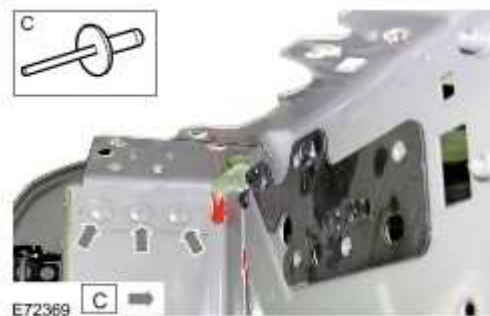
Install 10 T30 Torx screws, part no: C2G 1964, to the suspension top mount.



- 15 Using the ESN50, install 7 Self Piercing Rivets, part no: C2C 20590, 5 to the A-Pillar closing and 2 to the front wheelhouse. Install 1 Self Piercing Rivet, part no: C2C 20591, to the suspension top mount.



- 16 . Using the Genesis G4, install 3 Monobolts, part no: C2P 4773, to the A- Pillar.



- 17 . Remove any excess adhesive.

- 18 . Install is the reverse of removal.

Fender Apron Panel Closing Panel

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the fender apron panel closing panel is replaced in conjunction with the:

- front bumper cover
- front fender
- front crossmember

- 1 . Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 . For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to

- 3 . Remove the front fender.

For additional information, refer to [Front Fender](#)

- 4 . Remove the front crossmember.

For additional information, refer to [Front Crossmember](#)

- 5 . Remove the hood catch.

- 6 . Remove the cowl vent screen.

For additional information, refer to [Cowl Vent Screen \(76.10.01\)](#)

- 7 . Remove the strut brace.

- 8 . LH Side: Remove the pedestrian protection module.

For additional information, refer to [Pedestrian Protection Module](#)

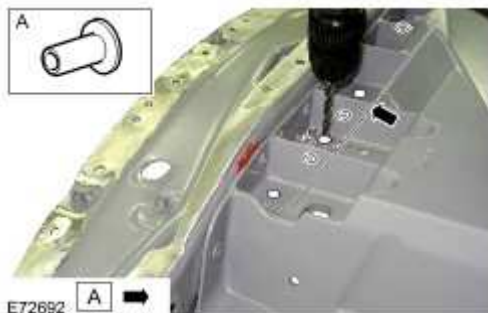
- 9 . RH Side: Remove the windshield washer reservoir.

For additional information, refer to [Windshield Washer Reservoir \(84.10.01\)](#)

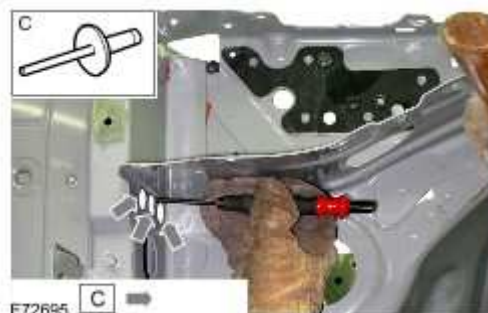
- 10 . RH Side: Remove the coolant expansion tank.

For additional information, refer to [Coolant Expansion Tank \(26.15.01\)](#)

- 11 . LH Side: Remove the air cleaner.
For additional information, refer to [Air Cleaner \(19.10.05\)](#)
- 12 . LH Side: Remove the power distribution box.
- 13 . LH Side: Remove the engine control module, including its bracket.
For additional information, refer to [Engine Control Module \(ECM\) \(18.30.01\)](#)
- 14 . Release the inner wheelhouse wiring harness and position it aside.
- 15 . LH Side: Remove the pollen filter housing.
- 16 . LH Side: Remove the anti-lock brake system (ABS) module.
For additional information, refer to [Anti-Lock Brake System \(ABS\) Module \(70.60.02\)](#)
- 17 . Remove the LH & RH plenum chambers.
- 18 . Remove the pedestrian protection bonnet actuator and its bracket.
- 19 . Using a 6.5mm Cryobit drill bit, remove 6 Self Piercing Rivets, from the suspension top mount.



- 20 . Using a 6.5mm Cryobit drill bit, remove 7 Self Piercing Rivets, from the fender apron panel reinforcement.
- 21 . Remove 3 Monobolts from the A-Pillar.



22 . Separate joints and remove the panel.

Installation

1 . Remove rivet remnants.

2 . Using a Roloc Bristle Disc, remove adhesive residue.

3 . Offer up the new panel, align and clamp into position.

4 . Using a 6.5mm Cryobit drill bit, drill 5 holes to the inner panel.



5 . Mark the position of the 6 fixing holes to the suspension top mount.



6 . Remove the new panel.

7 Using a 6.5mm Cryobit drill bit, drill 6 holes in the new panel, as marked, at the joint
· with the suspension top mount.

8 . Deburr drilled holes.

9 . Using a Roloc Bristle Disc, clean and prepare the panel joint surfaces.

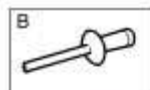
10 . Pyrosil the joints.

11 . Apply the coupling agent and allow to dry.

12 . Apply a 5mm bead of adhesive to the new panel joints.

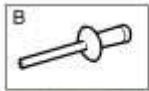
13 . Offer up the new panel, align and clamp into position.

14 Using the Genesis G4, install 6 Hemlocks, part no: C2C 10349, to the suspension top
mount.



E73838  

15 Using the Genesis G4, install 5 Hemlocks, part no: C2C 10349, to the fender apron
panel reinforcement.



E72699  

16 . Using the Genesis G4, install 3 Monobolts, part no: C2P 4773, to the A Pillar.



- 17 Using the ESN50, install 2 Self Piercing Rivets, part no: C2C 20590, to the fender apron panel reinforcement.



- 18 . Remove any excess adhesive.
- 19 . Install is the reversal of removal.

Front Side Member

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the front side member is replaced in conjunction with the:

- front bumper cover
- front bumper
- auxiliary front crossmember
- hood
- front crossmember
- front side member side extension
- suspension top mount
- front side member side extension mounting
- front side member deformation element
- front side member to deformation element bracket

NOTE:

It is necessary to remove the engine and suspension as an assembly.

NOTE:

It is necessary to remove the front side member lower inner and the front side member closing panel assembly to enable the fitment of the front side member. These panels cannot be reused and will require replacement.

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to [Body Repairs](#)

- 3 . Remove the front crossmember.

For additional information, refer to [Front Crossmember](#)

- 4 Remove the front side member to deformation element bracket.

For additional information, refer to [Front Side Member To Deformation Element Bracket](#)

- 5 . Remove the suspension top mount.

For additional information, refer to [Suspension Top Mount](#)

NOTE:

This procedure assumes that the suspension top mount is damaged and has been removed, however, the front side member can be replaced with the suspension top mount in situ.

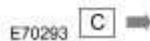
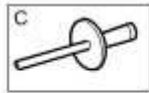
- 6 . Remove the engine and front suspension as an assembly.
- 7 . Remove the cowl vent screen.
For additional information, refer to [Cowl Vent Screen \(76.10.01\)](#)
- 8 . LH Side: Remove the junction box.
- 9 . RH Side: Remove the coolant expansion tank.
For additional information, refer to [Coolant Expansion Tank \(26.15.01\)](#)
- 10 . LH Side: Remove the A/C pipe.
- 11 . LH Side: Remove the fuel pipes.
- 12 . LH Side: Remove the Anti-lock Brake System, (ABS), module.
For additional information, refer to [Anti-Lock Brake System \(ABS\) Module \(70.60.02\)](#)
- 13 . LH Side: Remove the engine control module, (ECM) and its mounting bracket.
For additional information, refer to [Engine Control Module \(ECM\) \(18.30.01\)](#)
- 14 . RH Only: Remove the secondary air injection pump.
For additional information, refer to [Secondary Air Injection \(AIR\) Pump](#)
- 15 . LH Side: Remove the pollen filter housing.
- 16 . Remove the steering column lower shaft.
For additional information, refer to [Steering Column Lower Shaft \(57.40.05\)](#)
- 17 . Remove the brake pipes along the side member.
- 18 . Remove the side member exhaust heat shield.
- 19 . Remove the insulating material from the bulkhead.
- 20 . Remove the LH and RH plenum chambers.
- 21 . Remove the heater supply and return hoses.

22 . Remove the brake pipes from the bulkhead.

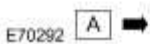
23 . Release the side member wiring harness and position it aside.

24 The following steps identify the procedure for removing the front side member lower
· inner.

25 . Remove 3 Monobolts.

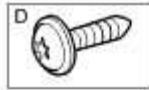


26 Using a combination of the ESN50 and a 6.5mm Cryobit drill bit, remove 10 Self
· Piercing Rivets.



27  **CAUTION: Do not discard the Ejots. They are to be re-used during installation.**

Remove 10 T30 Ejots.



E72475 D ➔

28 NOTE:

- Take care when making the saw cut, do not cut into the reinforcement under the panel.

Saw cut the old panel along the point shown in the illustration. This allows the panel to be removed without the need to disturb the joint at the bulkhead / floor panel.



E70295

29 . Separate the joints and remove the front side member lower inner.

30 . Remove the rivet remnants.

31 Using a Roloc Bristle Disc, remove any adhesive residue and clean and prepare the panel joint surfaces.

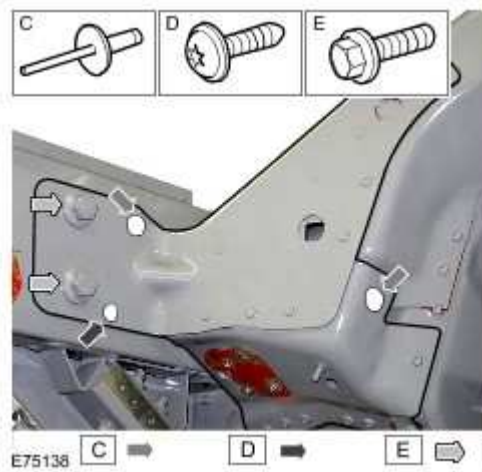
32 The following steps identify the procedure for removing the front side member closing panel assembly.

33

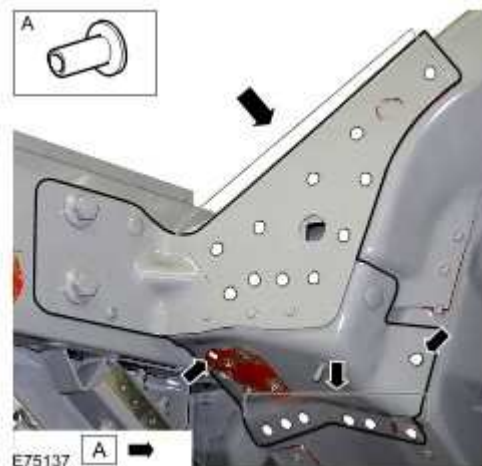


- CAUTION: Do not discard the Ejot. It is to be re-used during installation.**

Remove 2 Monobolts, remove 2 21mm bolts and 1 T30 Ejot.



34 . Using a 6.5mm Cryobit drill bit, remove 18 Self Piercing Rivets, (19 on the LH side).



35 **NOTE:**

- On removal, keep panel damage to a minimum as it will be used as a template for the new panel.

Separate the joints and remove the front side member closing panel assembly. Retain the old panel for use as a template.

36 . Remove the rivet remnants.

37 Using a Roloc Bristle Disc, remove any adhesive residue and clean and prepare the panel joint surfaces.

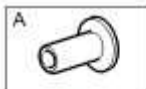
38 . The following steps identify the procedure for removing the front side member.

39 . Remove 2 21mm bolts and 2 13mm bolts.



E72484 **E** ➞

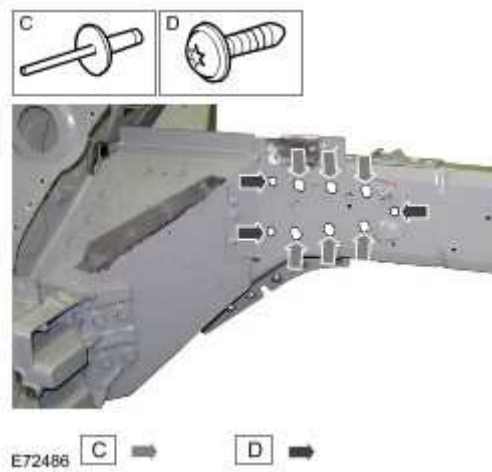
- 40 Using a Belt Sander, remove the "button" heads of 2 Self Piercing Rivets, located at the rear of the side member. Using the ESN50, remove these 2 rivets plus a further 3 Self Piercing Rivets. Using a 6.5mm Cryobit drill bit, remove a further 5 Self Piercing Rivets from the bulkhead reinforcement.



E72485 **A** ➞

- 41  **CAUTION: Do not discard the Ejots. They are to be re-used during installation.**

Remove 6 Monobolts and 3 Ejots.



42 . Separate the joints and remove the front side member.

Installation

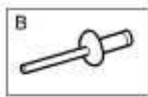
- 1 . Remove the rivet remnants.
- 2 . Using a Roloc Bristle Disc, remove any adhesive residue.
- 3 Offer up the new panel and secure using the 4 21mm and 2 13mm bolts. Check
 . alignment, if correct proceed to next step, if not, rectify and recheck before proceeding.
- 4 When aligned, clamp into position. Using a 6.5mm Cryobit drill bit, drill 3 holes which
 . were Ejot fixings in the original front side member.



- 5 Mark the positions of 10 fixing holes. 5 From underneath, illustrated at 1 and 5 along
 . the top flange, illustrated at 2.

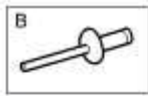


- 6 . Remove the new panel and using a 6.5mm Cryobit drill bit, drill the 10 marked holes.
- 7 . Deburr the drilled holes.
- 8 . Using a Roloc Bristle Disc, clean and prepare the panel joint surfaces.
- 9 . Pyrosil the joints.
- 10 . Apply the coupling agent and allow to dry.
- 11 . Apply a 5mm adhesive bead to the body joints.
- 12 Offer up the new panel and secure using the 4 21mm and 2 13mm bolts. Tighten the
 . 21mm bolts to 133 Nm (98 lb.ft).
- 13 Check alignment, if correct proceed to the next step, if not, rectify and recheck before
 . proceeding.
- 14 . Using the Genesis G4, install 5 Hemloks, part no: C2C 10349.



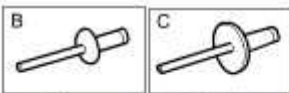
E72489 **B** ➞

15 . Using the Genesis G4, install 5 Hemloks, part no: C2C 10349.



E72490 **B** ➞

16 Using the Genesis G4, install 3 Hemloks, part no: C2C 10349 and 6 Monobolts, part no: C2P 4773.



E72491 **B** ➞ **C** ➞

17 . Remove any excess adhesive.

NOTE:

Allow the adhesive applied to the front side member to cure before installing the front side member closing panel assembly.

18 The following steps identify the procedure for installing the front side member closing panel assembly.

19 . Remove 2 21mm bolts from the front side member.

20 From the old panel, cut a template, as illustrated, to use for alignment of the new panel.



21 . Offer up the new panel to the car and scribe around the inside of the 2 facing holes.



22 Offer up the template to the car and ensure that the scribe marks and original fixing holes are aligned, if not, rectify and recheck before proceeding.

23 Clamp the template to the new panel and using a 6.5mm Cryobit drill bit, drill through the 11 holes, (12 on the LH), into the new panel.

24 Offer up the new panel, align and clamp into position, use the 2 21mm bolts to secure.

25 Using a 6.5mm Cryobit drill bit, drill 1 hole, illustrated at 1, through the new panel into the front side member.



26



CAUTION: Take care not to drill right through as this will go into the vehicle. Drill only through the new panel and 2 further panel thicknesses.

Using a 6.5mm Cryobit drill bit, drill 1 hole, illustrated at 2, through the new panel into the tunnel, (there are 2 holes on the LH side).



27 . From inside the vehicle, mark the positions of 5 fixing holes for drilling.



28 . Remove the new panel.

29 . Using a 6.5mm Cryobit drill bit, drill the 5 holes in the new panel, as marked.

30 . Deburr the drilled holes.

31 . Using a Roloc Bristle Disc, clean and prepare the new panel joint surfaces.

32 . Pyrosil the joints.

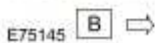
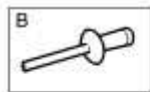
33 . Apply the coupling agent and allow to dry.

34 . Apply a 5mm adhesive bead to the body joints.

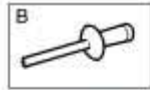


35 . Offer up the new panel and use the 2 21mm bolts to loose fit.

36 . Using the Genesis G4, install 7 Hemloks, part no: C2C 10349.

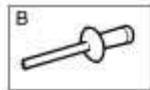


37 . Using the Genesis G4, install 1 Hemlok, part no: C2C 10349.



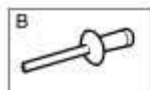
E75209 **B** ➞

38 . Using the Genesis G4, install 4 Hemloks, part no: C2C 22613.



E75208 **B** ➞

39 . Using the Genesis G4, install 6 Hemloks, (7 on the LH side), part no: C2C 9818.



E75210 **B** ➞

40 Using the Genesis G4, install 2 Monobolts, part no: C2P 4773. Then, fully tighten the
 . 2 21mm bolts to 133 Nm (98 lb.ft).



41 . Remove any excess adhesive.

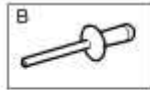
42 The following steps identify the procedure for installing the front side member lower inner.

43 Saw cut a section of the new panel corresponding to the part cut from the old panel, as shown in the illustration. Ensure an allowance is made for overlap.



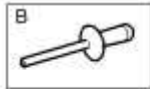
44 . Offer up the new panel, align and clamp into position.

45 Using a 6.5mm Cryobit drill bit, drill 13 holes. Use the existing holes in the body as a guide.



E70299 **B** ⇒

- 46 . Using a 6.5mm Cryobit drill bit, drill 5 holes at the point where the old and new panels overlap.



E72253 **B** ⇒

- 47 . Remove the new panel.

- 48 . Deburr the drilled holes.

- 49 . Pyrosil the joints.



E70297

50 . Apply the coupling agent and allow to dry.

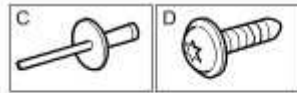
51 . Apply a 5mm adhesive bead to the body joints.

52

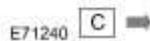
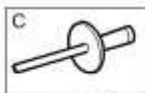


- **CAUTION: If the original Ejot cannot be re-used, and the original thread remains intact, then a Torx screw (C2C 1964) can be used in its place.**

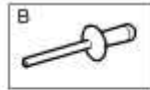
Install 8 original Ejots. Using the Genesis G4, install 1 Monobolt, part no: C2P 4773.



53 . Using the Genesis G4, install 2 Monobolts, part no: C2P 4773.

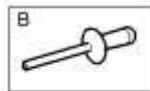


54 . Using the Genesis G4, install 13 Hemloks, part no: C2C 10349.



E70299 **B** ⇒

55 . Using the Genesis G4, install 5 Hemloks, part no: C2C 22613.



E72253 **B** ⇒

56 . Remove any excess adhesive.

57 . Install of mechanical components is the reversal of removal.

Side Member Deformation Element

Removal

NOTE:

This is a category 'B' repair.

NOTE:

In this procedure the side member deformation element is replaced in conjunction with the:

- front bumper cover
- front bumper
- auxiliary front crossmember
- front side member side extension
- front side member side extension mounting

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to

NOTE:

Whenever there is damage to the side member deformation element, the front side member to deformation element bracket must always be checked for damage. Where damage is evident or suspected, the bracket must be renewed.

For additional information, refer to [Front Side Member To Deformation Element Bracket](#)

- 3 . Remove the front bumper.

For additional information, refer to [Front Bumper \(76.22.08\)](#)

- 4 . Remove the auxiliary front crossmember.

For additional information, refer to [Auxiliary Front Crossmember](#)

- 5 . Remove the front side member side extension mounting.

For additional information, refer to [Front Side Member Side Extension Mounting](#)

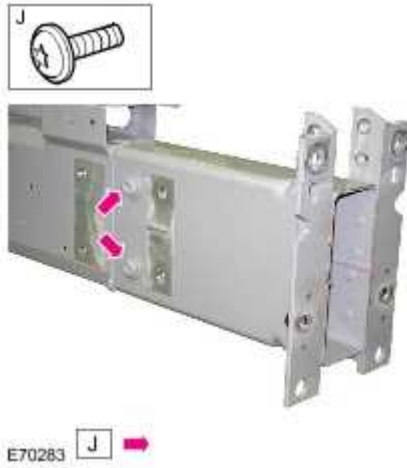
- 6 Remove the radiator and A/C condenser.

- . For additional information, refer to [Radiator - Vehicles Without: Supercharger \(26.40.01\)](#)

7 . RH Side: Remove the fender splash shield.

8 . Release the deformation element wiring harness and position it aside.

9 . Remove 2 T50 Torx bolts, (RH Illustrated).



10 . Remove 4 T50 Torx bolts, (only 2 on LH), RH Illustrated.



Installation

1 Install is the reversal of removal. Tighten the deformation element bolts to 70 Nm (52 lb.ft).

Front Side Member Extension

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the front side member extension is replaced in conjunction with the:

- front bumper
- auxiliary front crossmember
- front crossmember
- hood
- side member deformation element
- side member side extension
- side member side extension mounting

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to

- 3 . Remove the auxiliary front crossmember to subframe brace.

- 4 . Remove the exhaust manifold heat shield.

- 5 Drain the cooling system.

- . For additional information, refer to [Cooling System Draining, Filling and Bleeding - 4.2L NA V8 - AJV8](#)

- 6 . RH Side: Remove the heater pipes.

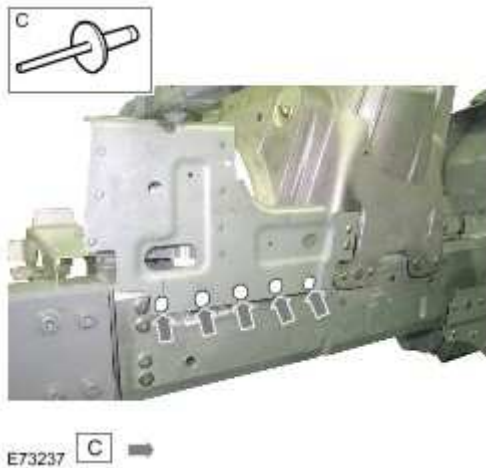
- 7 . Release the side member wiring harness and position it aside.

- 8 . LH Side: Release the A/C pipes and position them aside.

NOTE:

In this procedure the engine remains in the vehicle. The mechanical components listed below are removed to allow access for the Genesis G4. If the engine is removed it is not necessary to remove these additional components.

- 9 . LH Side: Remove the radiator bottom hose.
- 10 . RH Side: Remove the radiator top hose.
- 11 LH Side: Remove the PAS pump.
 - . For additional information, refer to [Power Steering Pump - 4.2L NA V8 - AJV8 \(57.20.14\)](#)
- 12 LH Side: Remove the A/C compressor.
 - . For additional information, refer to [Air Conditioning \(A/C\) Compressor - 4.2L NA V8 - AJV8 \(82.10.20\)](#)
- 13 . RH Side: Remove the generator.
 - For additional information, refer to [Generator - 4.2L NA V8 - AJV8 \(86.10.02\)](#)
- 14 . Remove the hood.
 - For additional information, refer to [Hood \(76.16.01\)](#)
- 15 . Remove the front crossmember.
 - For additional information, refer to [Front Crossmember](#)
- 16 . Remove the side member deformation element.
 - For additional information, refer to [Side Member Deformation Element](#)
- 17 . Remove the hood hinge.
- 18 . Remove 5 Monobolts from the side member.



- 19 Using the ESN50, remove 2 Self Piercing Rivets, from the side member, as shown in
 - . the inset. Using a 6.5mm Cryobit Drill Bit remove 2 Self Piercing Rivets, from the suspension top mount.



20 . Separate joints and remove the panel.

Installation

1 . Remove rivet remnants.

2 . Using a Roloc Bristle Disc, remove adhesive residue.

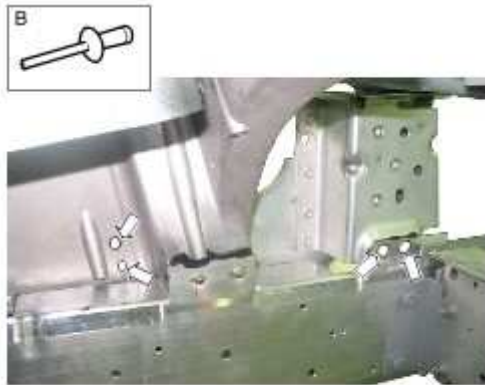


3 Offer up the new panel and clamp into position, using the front crossmember to aid
 . alignment.

4 Check alignment, if correct proceed to next step, if not, rectify and recheck before
 . proceeding.

5 Using a 6.5mm Cryobit Drill Bit, drill 4 holes at the points shown; 2 through the side

- member and 2 through the suspension top mount, into the new panel, ready for Hemlok fixings.



E73073 **B** ➞

- 6 . Remove the new panel.
- 7 . Deburr the drilled holes.
- 8 . Using a Roloc Bristle Disc, clean and prepare the panel joint surfaces.
- 9 . Pyrosil the joints.
- 10 . Apply the coupling agent and allow to dry.
- 11 . Apply a 5mm adhesive bead to the new panel joints.
- 12 . Offer up the new panel, align and clamp into position.
- 13 Using the Genesis G4, install 4 Hemloks; 2 to the suspension top mount and 2 to the side member, part no: C2C 7792.

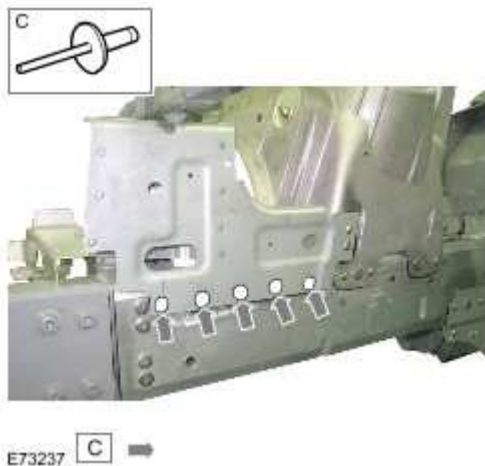


E73073 **B** ➞

- 14 The illustration shows the Genesis G4 being used with the engine in place. In order to gain access the "catcher" chamber of the Genesis G4 has to be removed. This does not affect the operation or safety of the gun. However, to prevent the remnant being ejected into any engine bay components, a plastic bag should be attached to collect it.



- 15 . Using the Genesis G4, install 5 Monobolts, part no: C2P 4773, to the side member.



- 16 . Remove any excess adhesive.
- 17 . Install is the reversal of removal.

Front Wheelhouse

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the front wheelhouse is replaced in conjunction with the:

- front bumper cover
- front fender
- front crossmember
- fender apron panel
- fender apron panel closing panel
- fender apron panel reinforcement
- fender apron panel front extension

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

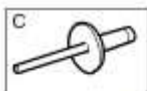
- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to

- 3 Remove the fender apron panel reinforcement.

For additional information, refer to [Fender Apron Panel Reinforcement](#)

- 4 Remove 4 Monobolts, from the torque box.

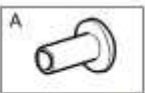


- 5 Using a 6.5mm Cryobit Drill Bit, remove 1 Self Piercing Rivet, from the front side member lower outer.



E75010  →

- 6 Using a combination of the ESN50 and 6.5mm Cryobit Drill Bit, remove 6 Self Piercing Rivets, from the A-Pillar closing panel.



E75008  →

- 7 Using a combination of the ESN50 and 6.5mm Cryobit Drill Bit, remove 7 Self Piercing Rivets, from the suspension top mount.



8 . Separate the joints and remove the panel.

Installation

- 1 . Remove rivet remnants.
- 2 . Using a Roloc Bristle Disc, remove adhesive residue.
- 3 . Where necessary, dress the flanges of adjacent panels.
- 4 . Offer up the new panel and clamp into position.
- 5 . Check alignment, if correct proceed to next step, if not, rectify and recheck before proceeding.
- 6 . Using a 6.5mm Cryobit Drill Bit, drill 12 holes ready for Hemlok fixings.



- 7 . Remove the new panel.
- 8 . Deburr the drilled holes.

9 . Using a Roloc Bristle Disc, clean and prepare the panel joint surfaces.

10 . Pyrosil the joints.

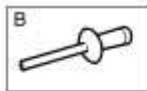
11 . Apply the coupling agent and allow to dry.

12 . Apply a 5mm adhesive bead to the new panel joints.

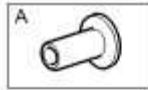


13 . Offer up the new panel, align and clamp into position.

14 Using the Genesis G4, install 12 Hemloks, part no: C2C 7792, 7 to the suspension top mount, 4 to the A-Pillar closing panel and 1 to the side member lower outer.

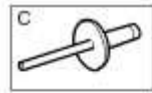


15 Using the ESN50, install 2 Self Piercing Rivets, part no: C2C 20589 to the A-Pillar closing panel.



E75013 **A** ➔

16 . Using the Genesis G4, install 4 Monobolts, part no: C2P 4773, to the torque box.



E72628 **C** ➔

17 . Remove any excess adhesive.

18 . Install is the reversal of removal.

Fender Apron Panel Front Extension

Removal

NOTE:

This is a category 'A' repair

NOTE:

In this procedure the fender apron panel front extension is replaced in conjunction with the:

- front bumper cover
- front fender
- front crossmember

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 For further information on the methods, tools and fixings used in this procedure, refer to the body repairs - general information section.

For additional information, refer to

- 3 . Remove the front fender.

For additional information, refer to [Front Fender](#)

- 4 . Remove the front crossmember.

For additional information, refer to [Front Crossmember](#)

- 5 . Using the ESN50, remove 1 Self Piercing Rivet to the fender apron panel.



Installation

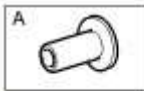
- 1 . Remove the rivet remnant and deburr the hole.



2 NOTE:

- The original Rivet hole should be filled using adhesive.

Using the ESN50, install 1 Self Piercing Rivet, part no: C2C 20590, to the fender apron panel.



- 3 . Install is the reversal of removal.

Front Side Member Side Extension

Removal

NOTE:

This is a category 'B' repair.

NOTE:

In this procedure the front side member side extension is replaced in conjunction with the:

- front bumper cover
- front fender

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to

- 3 Remove the front fender.

For additional information, refer to [Front Fender](#)

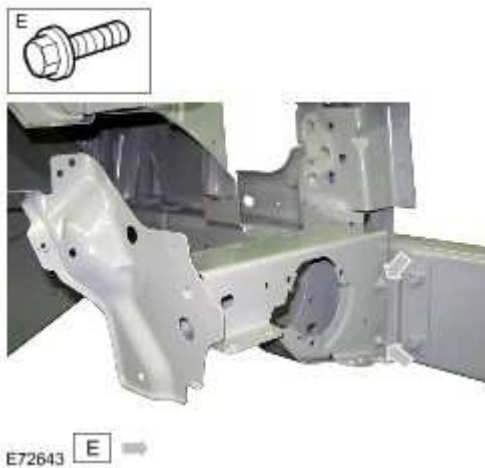
- 4 LH Only: Remove the air cleaner.

For additional information, refer to [Air Cleaner \(19.10.05\)](#)

- 5 RH Only: Remove the secondary air injection pump.

For additional information, refer to [Secondary Air Injection \(AIR\) Pump](#)

- 6 Remove 2 10mm bolts.



Installation

- 1 Offer up the new panel, using the fender for alignment. When aligned tighten bolts to
. 25 Nm (18 lb.ft).
- 2 . Install is the reversal of removal.

Auxiliary Front Crossmember

Removal

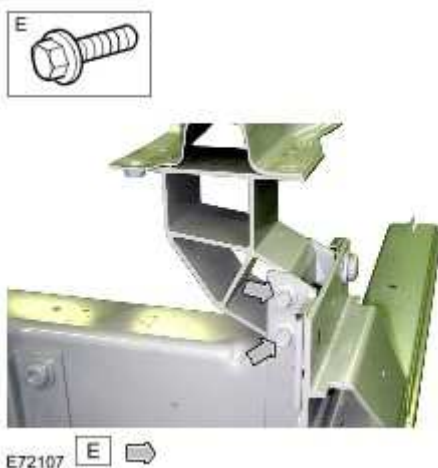
NOTE:

This is a category 'B' repair.

NOTE:

In this procedure the auxiliary front crossmember is replaced in conjunction with the:

- front bumper cover
- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.
For additional information, refer to [Health and Safety Precautions](#)
 - 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.
For additional information, refer to
 - 3 . Remove the front bumper cover
For additional information, refer to [Front Bumper Cover \(76.22.78\)](#)
 - 4 . Remove the fan cowl.
 - 5 Remove 4 10mm bolts, 2 each side, to the side member deformation element and
remove the panel.



Installation

- 1 Offer up new panel, align and secure using the 4 10mm bolts, 2 each side. Tighten the
bolts to 25 Nm (18 lb.ft).

- 2 . Install is the reversal of removal.

Front Side Member Side Extension Mounting

Removal

NOTE:

This is a category 'B' repair.

NOTE:

In this procedure the front side member side extension mounting is replaced in conjunction with the:

- front bumper cover
- front fender
- front side member side extension

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

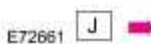
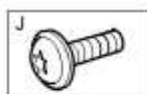
- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to

- 3 Remove the front side member side extension.

For additional information, refer to [Front Side Member Side Extension](#)

- 4 Remove 4 T50 Torx bolts.



Installation

- 1 . Offer up the new panel and tighten the bolts to 70 Nm (52 lb.ft).
- 2 . Install is the reversal of removal.

Front Side Member To Deformation Element Bracket

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the front side member to deformation element bracket is replaced in conjunction with the:

- front bumper cover
- front bumper
- auxiliary front crossmember
- side member side extension
- side member side extension mounting
- side member deformation element

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.
For additional information, refer to [Health and Safety Precautions](#)
- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.
For additional information, refer to

NOTE:

Whenever there is damage to the deformation element, the front side member to deformation element bracket must always be checked for damage. Where damage is evident or suspected the bracket must be renewed.

NOTE:

Whenever there is damage to the front side member, the front side member to deformation element bracket must always be renewed. When renewing the bracket and side member in combination, removal of the bracket is not required.

- 3 . Remove the side member deformation element.
For additional information, refer to [Side Member Deformation Element](#)
- 4 . Remove 4 Monobolts.



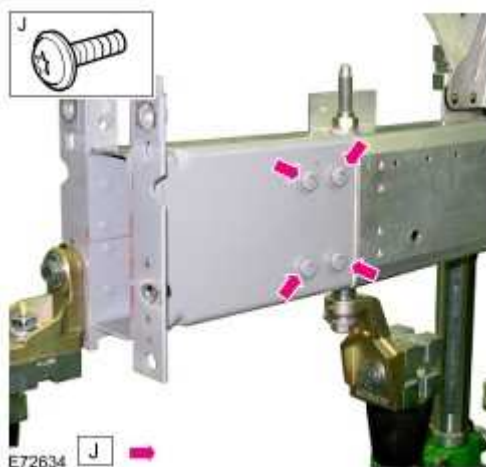
5 NOTE:

- Take care not to damage the side member when removing the bracket.

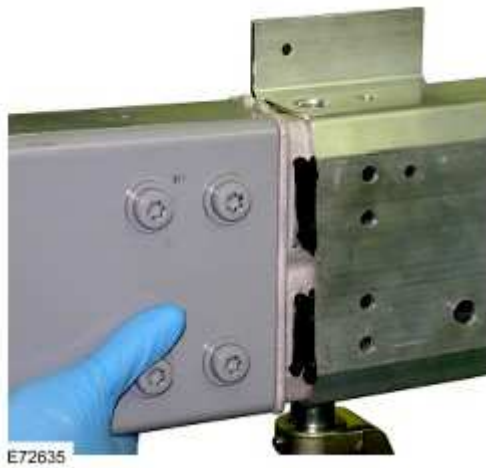
Separate and remove the bracket from the side member. Adhesive is applied in production so the bracket will need to be eased from the side member, use a hammer and chisel on the lip of the bracket to remove.

Installation

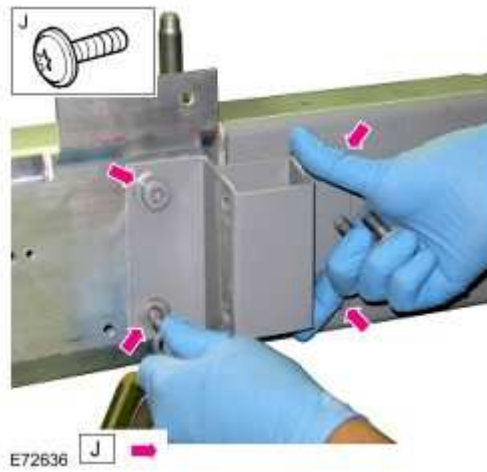
- Using a belt sander, remove adhesive residue from inside the side member.
- Bolt the bracket to the side member using 1 subframe bolt and 2 T50 Torx bolts.
- Install the side member deformation element and fix with 6 T50 Torx bolts, (4 on LH Side).



- 4 Check alignment, if correct, tighten the bolts to the deformation element to 70 Nm (52 lb.ft), if not, rectify and recheck before proceeding.
- 5 Following a successful dry fit, remove the bracket with the deformation element attached.
- 6 Using a Roloc Bristle Disc, clean and prepare the bracket at its joint with the side member, (engine bay side only).
- 7 . Pyrosil the joints.
- 8 . Apply the coupling agent and allow to dry.
- 9 . Apply a 5mm adhesive bead to the bracket on the engine bay side.
- 10 . Slide the bracket into the side member.



- 11 Bolt on the front side member side extension mounting using its 4 T50 Torx bolts.
 - . Check alignment. If alignment is correct, tighten the bolts to 70 Nm (52 lb.ft), if not, rectify and recheck before proceeding.



12 . Using the Genesis G4, renew 4 Monobolts, part no: C2P 4773.



13 . Remove any excess adhesive.

14 . Install is the reversal of removal.

Suspension Top Mount

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the suspension top mount is replaced in conjunction with:

- front bumper cover
- front bumper
- auxiliary front crossmember
- front crossmember
- front fender
- fender apron panel
- side member extension

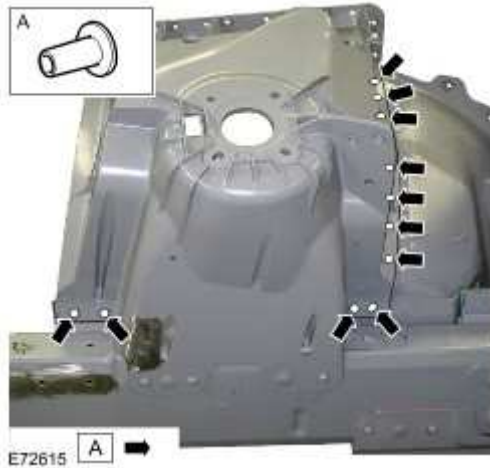
NOTE:

It is also necessary to remove the engine and suspension as an assembly.

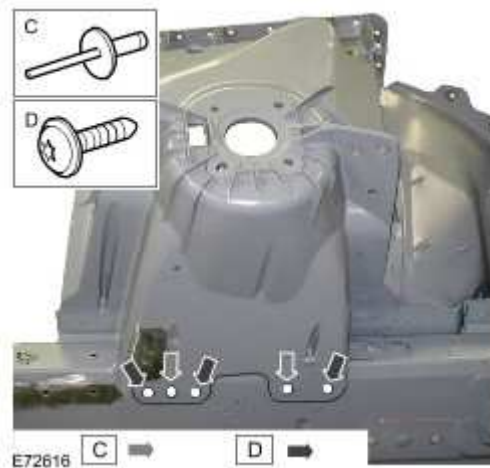
- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.
For additional information, refer to [Health and Safety Precautions](#)
- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.
For additional information, refer to
- 3 . Remove the front bumper.
For additional information, refer to [Front Bumper \(76.22.08\)](#)
- 4 . Remove the engine and suspension as an assembly.
- 5 . Remove the cowl vent screen.
For additional information, refer to [Cowl Vent Screen \(76.10.01\)](#)
- 6 . Remove the LH & RH plenum chambers.
- 7 . LH Side: Remove the junction box.
- 8 . LH Side: Remove the air cleaner.
For additional information, refer to [Air Cleaner \(19.10.05\)](#)

- 9 . Remove the LH and RH strut braces.
- 10 . Remove the heater supply and return hoses
- 11 . Release the brake pipes at the bulkhead and position them aside.
- 12 . Release the brake pipes at the side member / inner wheelhouse and position them aside.
- 13 . Remove the insulating material from the bulkhead.
- 14 . LH Side: Remove the A/C lines.
- 15 . LH Side: Remove the upper suspension arm.
 - For additional information, refer to [Upper Arm LH - 4.2L NA V8 - AJV8/4.2L SC V8 - AJV8 \(60.35.41\)](#)
- 16 . RH Side: Remove the upper suspension arm.
 - For additional information, refer to [Upper Arm RH - 4.2L NA V8 - AJV8/4.2L SC V8 - AJV8 \(60.35.42\)](#)
- 17 . RH Side: Remove the windshield washer reservoir.
 - For additional information, refer to [Windshield Washer Reservoir \(84.10.01\)](#)
- 18 . RH Side: Remove the coolant expansion tank.
 - For additional information, refer to [Coolant Expansion Tank \(26.15.01\)](#)
- 19 . Release the side member and inner wheelhouse wiring harness and position it aside.
- 20 . LH Side: Remove the engine control module (ECM) and its mounting bracket.
 - For additional information, refer to [Engine Control Module \(ECM\) \(18.30.01\)](#)
- 21 . LH Side: Remove the pollen filter housing.
- 22 . LH Side: Release the fuel pipes and position them aside.
- 23 . Remove the auxiliary front crossmember.
 - For additional information, refer to [Auxiliary Front Crossmember](#)
- 24 . Remove the fender apron panel.
 - For additional information, refer to [Fender Apron Panel](#)
- 25 . Remove the front side member extension.
 - For additional information, refer to [Front Side Member Extension](#)

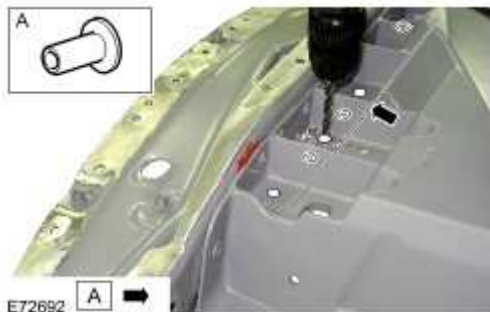
- 26 Using a combination of the ESN50 and a 6.5mm Cryobit drill bit, remove 11 Self Piercing Rivets.



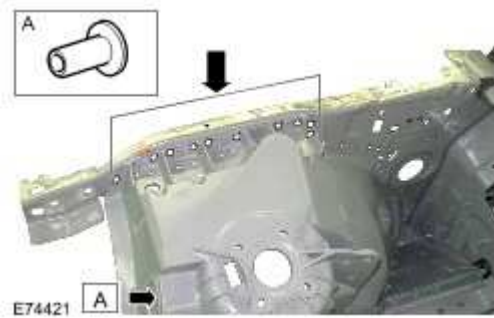
- 27 . Remove 2 Monobolts and 3 Ejots, from the side member.



- 28 Using a 6.5mm Cryobit drill bit, remove 6 Self Piercing Rivets, from the fender apron panel closing panel.



- 29 Using a 6.5mm Cryobit drill bit, remove 10 Self Piercing Rivets, to the fender apron panel reinforcement.



30 . Separate joints and remove the panel.

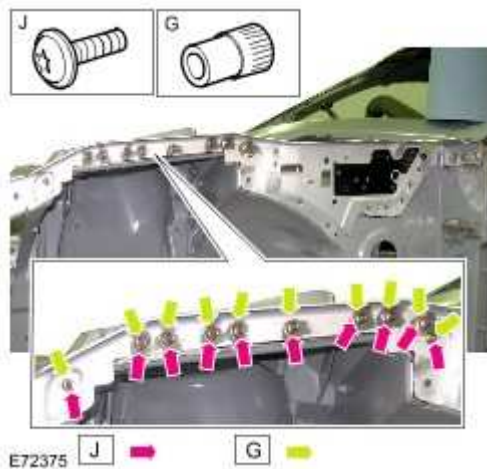
Installation

- 1 . Remove rivet remnants.
- 2 . Using a Roloc Bristle Disc, remove adhesive residue.
- 3 Offer up new panel and bolt to jig. Use Monobolt holes to aid alignment. If alignment is correct proceed to next step, if not, rectify and recheck before proceeding.
- 4 Using a 6.5mm Cryobit drill bit, drill 10 holes, through the fender apron panel reinforcement into the suspension top mount.
- 5 Using a 6.5mm Cryobit drill bit, drill 6 holes, through the fender apron panel closing panel into the suspension top mount.
- 6 Using a 6.5mm Cryobit drill bit, drill 7 holes, through the front wheelhouse into the suspension top mount.
- 7 Using a 6.5mm Cryobit drill bit, drill 2 holes, through the front side member into the suspension top mount.
- 8 Using a 6.5mm Cryobit drill bit, drill 2 holes, through the side member lower outer into the suspension top mount.
- 9 If a new side member is being fitted: An additional 3 holes will need to be drilled in the positions of the original Ejots, as these will be replaced with Hemloks, part no: C2C 10349.



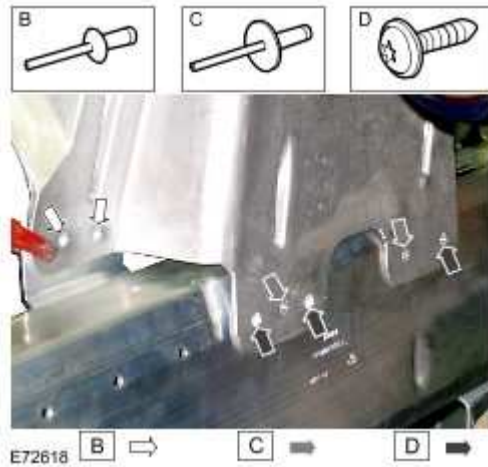
- 10 . Remove the new panel.
- 11 Using a 9.5mm drill bit, enlarge the 10 holes in the fender apron panel reinforcement.
 . Deburr the drilled holes and then, using the HES 412 Rivet Nut Tool, insert 10 Rivet Nuts into the drilled holes.
- 12 . Using a Roloc Bristle Disc, clean and prepare the panel joint surfaces.
- 13 . Pyrosil the joints.
- 14 . Apply the coupling and allow to dry.
- 15 . Apply a 5mm adhesive bead to the new panel joints.
- 16 . Bolt new panel to jig bracket, align and clamp to the side member.
- 17 . **NOTE:**
 The replacement fixings must be Torx Screws and not Ejots.

Install 10 T30 Torx screws to the suspension top mount.

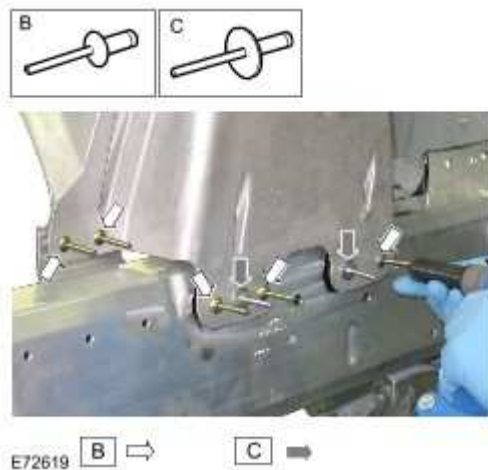


- 18 . Install 3 Ejots, (not applicable when a new side member is being installed).

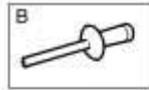
- 19 If the original side member is re-used: Install 3 Ejots and using the Genesis G4, install
2 Hemloks, part no: C2C 10349 and 2 Monobolts, part no: C2P 4773.



- 20 If a new side member is being installed: Using the Genesis G4, install 5 Hemloks, part
no: C2C 10349 and 2 Monobolts, part no: C2P 4773.

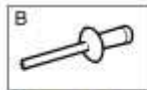


- 21 Using the Genesis G4, install 6 Hemloks, part no: C2C 10349, to the suspension top
mount.



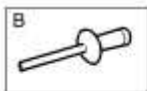
E73838 **B** →

- 22 Using the Genesis G4, install 7 Hemloks, part no: C2C 10349, to the front wheelhouse.



E72620 **B** →

- 23 Using the Genesis G4, install 2 Hemloks, part no: C2C 10349, to the side member lower outer.



E72621 **B** →

24 . Remove any excess adhesive.

25 . Install is the reversal of removal.

Front Side Member and Suspension Top Mount Assembly

Removal

NOTE:

This is a category 'A' repair

NOTE:

In this procedure the front side member and suspension top mount assembly is replaced in conjunction with the:

- front bumper cover
- front bumper
- auxiliary front crossmember
- front fender
- hood
- front crossmember
- front side member side extension
- front side member side extension mounting
- bulkhead lower reinforcement
- fender apron panel
- fender apron panel closing panel
- fender apron panel reinforcement

NOTE:

It is also necessary to remove the engine and suspension as an assembly.

NOTE:

It is necessary to remove the secondary, inner, floor panel and the front side member closing panel to enable the fitment of the front side member and suspension top mount assembly. These panels cannot be reused and will require replacement, the closing panel should be retained for use as a template.

- 1 . Before commencing this procedure ensure that you are aware of all Health and Safety requirements.
For additional information, refer to [Health and Safety Precautions](#)
- 2 . For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.
For additional information, refer to [Body Repairs](#)
- 3 . Remove the front side member side extension mounting.
For additional information, refer to [Front Side Member Side Extension Mounting](#)
- 4 . Remove the front bumper.
For additional information, refer to [Front Bumper \(76.22.08\)](#)
- 5 . Remove the hood.
- 6 . Remove the auxiliary front crossmember.
For additional information, refer to [Auxiliary Front Crossmember](#)
- 7 . Remove the fender apron panel reinforcement.
For additional information, refer to [Fender Apron Panel Reinforcement](#)
- 8 . Remove the bulkhead lower reinforcement.
For additional information, refer to [Bulkhead Lower Reinforcement](#)
- 9 . Remove the front seat.
For additional information, refer to [Front Seat \(76.70.01\)](#)
- 10 . Remove the RH rear seat cushion.
For additional information, refer to [Rear Seat Cushion \(76.70.37\)](#)
- 11 . Remove the rear quarter trim panel.
For additional information, refer to [Rear Quarter Trim Panel - 2-Door \(76.13.73\)](#)
- 12 . Remove the carpet.
- 13 . Remove the instrument panel.
For additional information, refer to [Instrument Panel \(76.46.01\)](#)
- 14 . Remove the cowl vent screen.
For additional information, refer to [Cowl Vent Screen \(76.10.01\)](#)
- 15 . Remove the LH & RH plenum chambers.
- 16 . LH Side: Remove the junction box.

- 17 . LH Side: Remove the air cleaner.
For additional information, refer to [Air Cleaner \(19.10.05\)](#)
- 18 . Remove the LH and RH strut braces.
- 19 . Remove the heater supply and return hoses.
- 20 . Release the brake pipes at the bulkhead and position them aside.
- 21 . Release the brake pipes at the side member / inner wheelhouse and position them aside.
- 22 . RH Side: Remove the coolant expansion tank.
For additional information, refer to [Coolant Expansion Tank \(26.15.01\)](#)
- 23 . LH Side: Remove the A/C pipe.
- 24 . LH Side: Remove the Anti-lock Brake System, (ABS), module.
For additional information, refer to [Anti-Lock Brake System \(ABS\) Module \(70.60.02\)](#)
- 25 . LH Side: Remove the engine control module, (ECM) and its mounting bracket.
For additional information, refer to [Engine Control Module \(ECM\) \(18.30.01\)](#)
- 26 . RH Only: Remove the secondary air injection pump.
For additional information, refer to [Secondary Air Injection \(AIR\) Pump](#)
- 27 . LH Side: Remove the pollen filter housing.
- 28 . Remove the steering column lower shaft.
For additional information, refer to [Steering Column Lower Shaft \(57.40.05\)](#)
- 29 . LH Side: Remove the upper suspension arm.
For additional information, refer to [Upper Arm LH - 4.2L NA V8 - AJV8/4.2L SC V8 - AJV8 \(60.35.41\)](#)
- 30 . RH Side: Remove the upper suspension arm.
For additional information, refer to [Upper Arm RH - 4.2L NA V8 - AJV8/4.2L SC V8 - AJV8 \(60.35.42\)](#)
- 31 . RH Side: Remove the windshield washer reservoir.
For additional information, refer to [Windshield Washer Reservoir \(84.10.01\)](#)
- 32 . RH Side: Remove the coolant expansion tank.

For additional information, refer to [Coolant Expansion Tank \(26.15.01\)](#)

33 . Release the side member and inner wheelhouse wiring harness and position it aside.

34 . LH Side: Release the fuel pipes and position them aside.

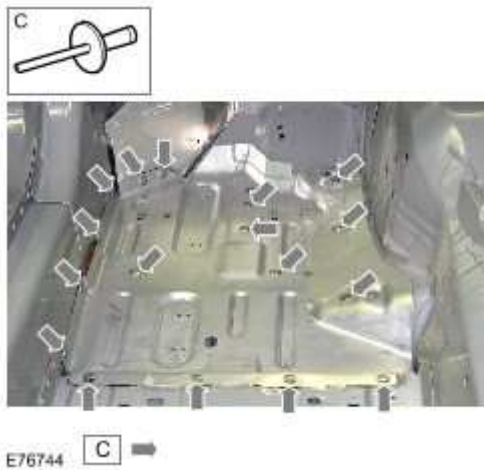
35 . Remove the side member exhaust heat shield.

36 . Remove the insulating material from the bulkhead.

37 . Remove the engine and suspension as an assembly.

38 The following steps identify the procedure for removing the secondary, inner, floor panel.

39 . Remove 17 Monobolts.

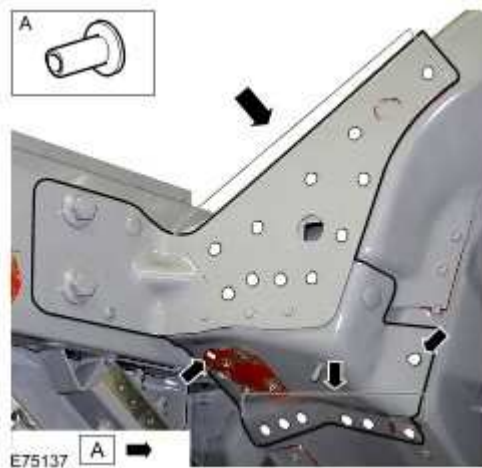


40 . Separate the joints and remove the secondary, (inner), floor panel.

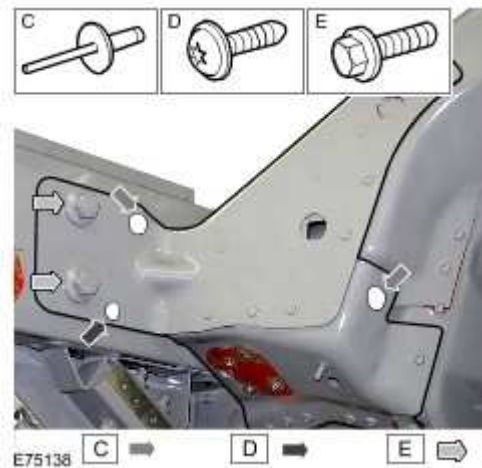
41 The following steps identify the procedure for removing the front side member closing panel.

42 Using a 6.5mm Cryobit Drill Bit, remove 4 Self Piercing Rivets from the front side member lower inner. Separate this joint and bend down to reveal 1 "hidden" self piercing rivet.

43 Using a 6.5mm Cryobit drill bit, remove 18 Self Piercing Rivets, (19 on the LH side). This joint includes the 1 "hidden" rivet. The graphic shows the side member lower inner removed and is for reference only.



- 44 Remove 2 Monobolts, remove 2 21mm bolts and 1 T30 Ejot. The illustration shows the side member lower inner removed and is for reference only.

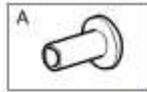


45 **NOTE:**

- On removal, keep panel damage to a minimum as it will be used as a template for the new panel.

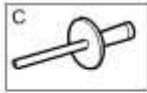
Separate the joints and remove the front side member closing panel. Retain the old panel for use as a template.

- 46 Using a combination of the ESN50 and 6.5mm Cryobit Drill Bit, remove 6 Self Piercing Rivets, from the A-Pillar closing panel.



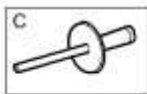
E75008 A ➔

47 . Remove 3 Monobolts from the bulkhead.



E76745 C ➔

48 . Remove 14 Monobolts from the floor panel.



E76848 C ➔

49 Using a 6.5mm Cryobit Drill Bit, remove 18 Self Piercing Rivets from the floor panel.



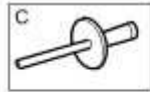
- 50 Using a 6.5mm Cryobit Drill Bit, remove 12 Self Piercing Rivets from the floor panel.



- 51 From inside the rocker panel, use a belt sander to sand down the heads of 6 Self Piercing Rivets. Use a 6.5mm Cryobit Drill Bit to drill these out from underneath. Remove 6 18mm bolts.



- 52 . Remove 3 Monobolts, from inside the vehicle.



E77098 **C** ➔

- 53 Of the 2 remaining 21mm bolts to the side member, remove the upper one. This will aid the removal of the assembly.



E77099 **E** ➔

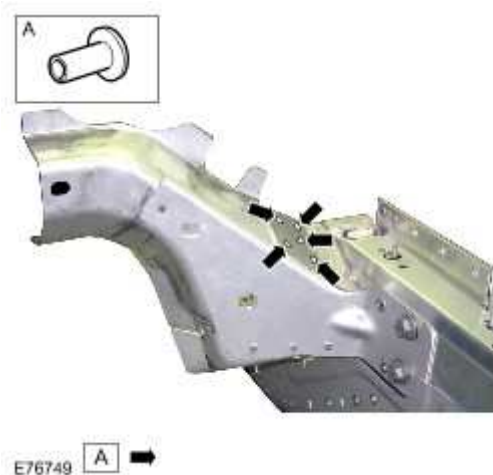
- 54 Separate the joints and with assistance, remove the front side member and suspension top mount assembly.

Installation

NOTE:

The front side member and suspension top mount assembly is fitted less the closing panel and the front side member reinforcement panel. These panels are removed from the new panel prior to its fitment. The following method of removing these panels is specific to the replacement of the front side member and suspension top mount assembly.

- 1 . Using the ESN50, remove 5 Self Piercing Rivets from the new panel.



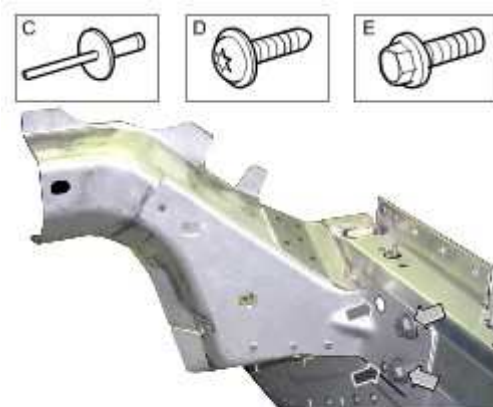
E76749 **A** ➡

2 . Using the ESN50, remove 5 Self Piercing Rivets from the new panel.



E76748 **A** ➡

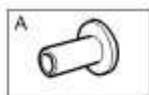
3 . Remove 1 Monobolt, 2 21mm bolts and 1 Ejot from the new panel.



E76750 **C** ➡ **D** ➡ **E** ➡

4 Separate the joints and remove the closing panel and the front side member reinforcement panel from the new assembly.

- 5 . Remove rivet remnants from the new panel.
- 6 . Remove rivet remnants from the body.
- 7 . Deburr the drilled holes on the new panel and the body.
- 8 . Using a Roloc Bristle Disc, clean and prepare the body panel joint surfaces.
- 9 Of the 2 remaining 21mm bolts to the side member, remove the upper one. This will
 . aid the offer up and dry fit of the panel.
- 10 With assistance, offer up the new assembly, install 6 18mm bolts from inside the
 . rocker panel, hand tighten and clamp into position.
- 11 Check alignment. If correct proceed to next step, if not, rectify and recheck before
 . proceeding.
- 12 . Tighten the 6 18mm bolts.
- 13 Offer up and clamp into position, the fender apron panel, fender apron panel
 . reinforcement and the fender apron panel closing panel. Bolt on the front side member
 side extension and front side member side extension mounting, the front bumper, the
 hood and the fender.
- 14 Check alignment. If correct proceed to next step, if not, rectify and recheck before
 . proceeding.
- 15 . Using a 6.5mm Cryobit Drill Bit, drill 18 holes through the floor into the new panel.



E76849 A ➔

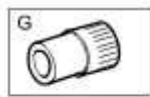
- 16 Using a 6.5mm Cryobit Drill Bit, drill 5 holes into the side member. Use any existing
 . holes that align, where they do not align drill adjacent.



- 17 . Scribe the position of 6 holes through the rocker panel onto the assembly.
- 18 Remove the front bumper, the hood, the fender, the fender apron panel, the fender apron panel reinforcement and the fender apron panel closing panel.
- 19 . With assistance, remove the assembly.
- 20 Using a 6.5mm Cryobit Drill Bit, drill the 6 holes previously marked through the rocker panel.
- 21 . Deburr the drilled holes.
- 22 . Using a 9.5mm Drill Bit, drill the lowermost fixing hole on the torsion box.



- 23 . Using the HES 412 Rivet Nut Tool, insert 1 Rivet Nut into the pre-drilled hole.



E76852 G

24 . Using a Roloc Bristle Disc, clean and prepare the new panel joint surfaces.

25 . Pyrosil the joints.

26 . Apply the coupling agent and allow to dry.

27 . Apply a 5mm adhesive bead to the panel joints.



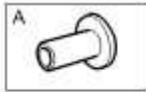
E76753

28 With assistance, offer up the new assembly, install 6 18mm bolts from inside the
 . rocker panel, hand tighten and clamp into position.

29 Check alignment. If correct proceed to next step, if not, rectify and recheck before
 . proceeding.

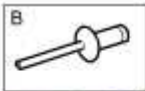
30 . Fully tighten the 6 18mm bolts.

31 Using the Genesis G4, install 18 Hemloks to the floor panel. Use part no: C2C 7792 in
 . areas of 2 panel thickness and part no: C2C 10349 in areas of 3 panel thickness. Install
 a further 7 Hemloks to the floor panel where it meets the bulkhead, part no: C2C 7792,
 (2 panel thickness).



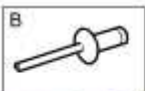
E76849 **A** ➔

32 . Using the Genesis G4, install 5 Hemloks, part no: C2C 7792, to the floor panel.



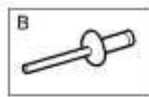
E76751 **B** ➔

33 . Using the Genesis G4, install 6 Hemloks, part no: C2C 9966, to the rocker panel inner.



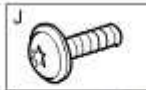
E76752 **B** ➔

34 . Using the Genesis G4, install 5 Hemloks, part no: C2C 10349, to the bulkhead.



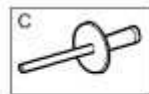
E72489 **B** →

- 35 Using the Genesis G4, install 2 Monobolts, part no: C2P 4773, to the bulkhead. Install 1 T30 Torx Screw.



E76754 **C** → **J** →

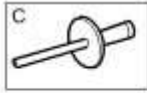
- 36 . Using the Genesis G4, install 14 Monobolts, part no: C2P 4773, to the floor panel.



E76848 **C** →

- 37 From inside the vehicle, using the Genesis G4, install 3 Monobolts, part no: C2P

- 4773, through the bulkhead into the assembly.



E77098

C

- 38 . Install 1 21mm bolt, to the side member. Torque to: 133Nm (98 lb.ft).

- 39 . Remove any excess adhesive.

40 **NOTE:**

- A new closing panel will be required as the original from the vehicle and the one removed from the new front side member and suspension turret assembly, will not be suitable for reuse.

Using a Roloc Bristle Disc, clean and prepare the joint surfaces of the new closing panel.

- 41 Using the original closing panel removed from the vehicle, cut a template, as illustrated, to use for alignment



E75140

- 42 Offer up the new closing panel to the assembly and scribe around the inside of the 2 facing holes. Remove the closing panel.

- 43 Offer up the template to the assembly, so that the scribe marks align and ensure that the fixing holes align, if not, rectify and recheck before proceeding. Remove the template.

- 44 Clamp the template to the assembly, then, using a 6.5mm Cryobit Drill Bit, drill through the 11 holes, (12 on the LH).
- 45 Offer up the closing panel to the assembly, align and clamp into position, using the 2 21mm bolts to secure.
- 46 Using a 6.5mm Cryobit Drill Bit, drill 1 hole, illustrated at 1, through the new panel into the side member.



CAUTION: Take care not to drill right through as this will go into the vehicle. Drill only through the new panel and a further 2 panel thicknesses.

- 47 Using a 6.5mm Cryobit Drill Bit, drill 1 hole, illustrated at 2, through the new panel into the tunnel.



- 48 . From inside the vehicle, mark the positions of 5 fixing holes for drilling.



49 . Remove the closing panel.

50 . Using a 6.5mm Cryobit Drill Bit, drill the 5 holes in the closing panel, as marked.

51 . Deburr the drilled holes.

52 . Using a Roloc Bristle Disc, clean and prepare the joint surfaces of the closing panel.

53 . Pyrosil the joints of the closing panel.

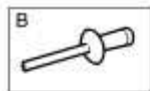
54 . Apply the coupling agent to the closing panel and allow to dry.

55 . Apply a 5mm adhesive bead to the closing panel joints of the assembly.

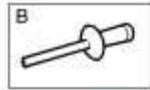


56 . Offer up the closing panel and use the 2 21mm bolts to loose fit.

57 . Using the Genesis G4, install 7 Hemloks, part no: C2C 10349.

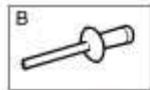


58 . Using the Genesis G4, install 1 Hemlok, part no: C2C 10349.



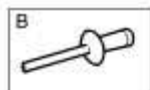
E75209 **B** ➞

59 . Using the Genesis G4, install 4 Hemloks, part no: C2C 22613.



E75208 **B** ➞

60 . Using the Genesis G4, install 6 Hemloks, (7 on the LH side), part no: C2C 9818.



E75210 **B** ➞

61 Using the Genesis G4, install 2 Monobolts, part no: C2P 4773. Then , fully tighten the
 . 2 21mm bolts to 133 Nm (98 lb.ft).



62 . Remove any excess adhesive from the closing panel.

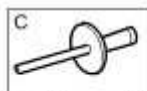
63 Using a Roloc Bristle Disc, clean and prepare the joint surfaces of the secondary, (inner), floor panel.

64 . Pyrosil the joints of the secondary, (inner), floor panel.

65 . Apply coupling agent to the secondary, (inner), floor panel joints and allow to dry.

66 . Apply a 5mm adhesive bead to the vehicle joint of the secondary, (inner), floor panel.

67 Using the Genesis G4, install 17 Monobolts, part no: C2P 4773 and install the secondary, (inner), floor panel.



68 . Remove any excess adhesive.

69 . The installation of mechanical components is the reversal of removal.

Windshield Frame - Convertible

Removal

NOTE:

This is a category "A" repair.

NOTE:

In this procedure the windshield frame is replaced in conjunction with the:

- Front bumper cover
- Both front fenders
- Both front doors
- Header rail

NOTE:

The windshield glass has to be removed for access.

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to [Body Repairs](#)

- 3 Remove the cover and disconnect the battery ground cable.

For additional information, refer to [Specifications](#)

- 4 Remove the windshield glass.

For additional information, refer to [Windshield Glass \(76.81.40\)](#)

- 5 Remove both convertible top strikers.

For additional information, refer to [Convertible Top Striker](#)

- 6 Disconnect the harness at the header rail and A-Pillar and position aside.

- 7 Remove both front fenders.

For additional information, refer to [Front Fender](#)

- 8 Remove both front doors.

For additional information, refer to [Door \(76.28.04\)](#)

9

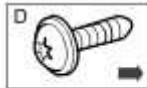


- **CAUTION: Do not discard the Ejots. They are re-used when installing the header rail.**

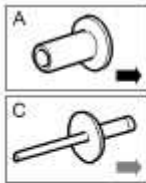
NOTE:

The header rail is bonded as well as bolted, care should be taken not to damage it on removal.

Remove the header rail. Remove 8 T30 Ejots.



- 10 Remove 4 Monobolts, 2 each side, and using a 6.5mm Cryobit drill bit, remove 2 Self-Piercing rivets, one each side.



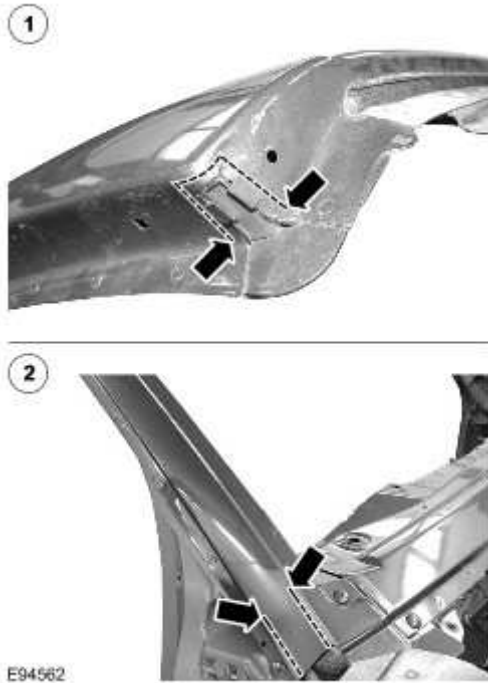
- 11 . Using the ESN50, remove 70 Self-Piercing Rivets, 35 each side.



- 12 **NOTE:**

- There is an NVH element at the top of the panel, 1 and adhesive applied at the bottom, 2.

Separate the joints and remove the panel.



Installation

- 1 . Remove the rivet remnants.
- 2 . Remove any foam / adhesive residue.
- 3 Offer up the new panel, clamp into position and check alignment. If correct, proceed to . next step, if not, rectify and recheck before proceeding.
- 4 . From the inside, using a 6.5mm Cryobit drill bit, drill 1 hole ready for Hemlok fixing.



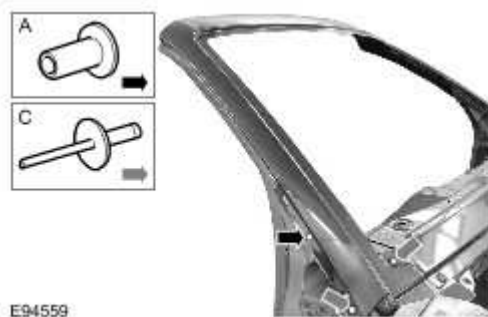
E75191

- 5 . Remove the new panel.
- 6 . Deburr the drilled hole.
- 7 . Using a Roloc Bristle Disc, clean and prepare the panel joints.
- 8 . Pyrosil to the joints.
- 9 . Apply the coupling agent and allow to dry.
- 10 . Apply a 5mm adhesive bead to the body joints.
- 11 . Apply sealer / adhesive to the NVH element.



E94563

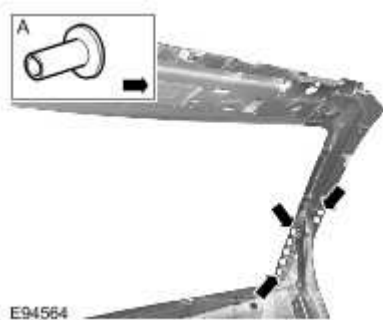
- 12 . Offer up the new panel, align and clamp into position.
- 13 Using the Genesis G4, install 2 Hemlocks, 1 each side, part no: C2C 7792, and 4
 . Monobolts, 2 each side, part no: C2P 4773.



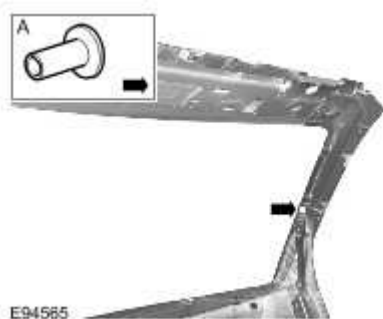
14 . Using the ESN50, install 26 Self-Piercing rivets, 13 each side, part no: C2C 20589.



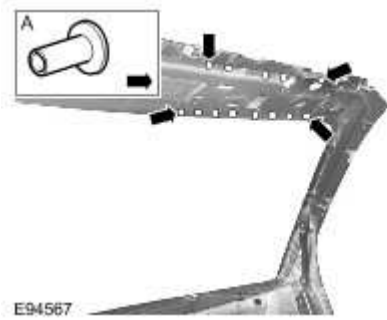
15 . Using the ESN50, install 16 Self-Piercing rivets, 8 each side, part no: C2C 20590.



16 . Using the ESN50, install 2 Self-Piercing rivets, 1 each side, part no: C2C 20593.



17 . Using the ESN50, install 26 Self-Piercing rivets, 13 each side, part no: C2C 20589.



18 . Using a Roloc Bristle Disc, clean and prepare the joints on the header rail.

19 . Apply a sealing adhesive to the front edge of the header rail.



20 . Offer up the header rail and install 8 T30 Ejots.



21 . Apply cavity foam, each side, to the inside of the panel.



22 . When the adhesive has cured, use an air saw to cut off the transportation brace.



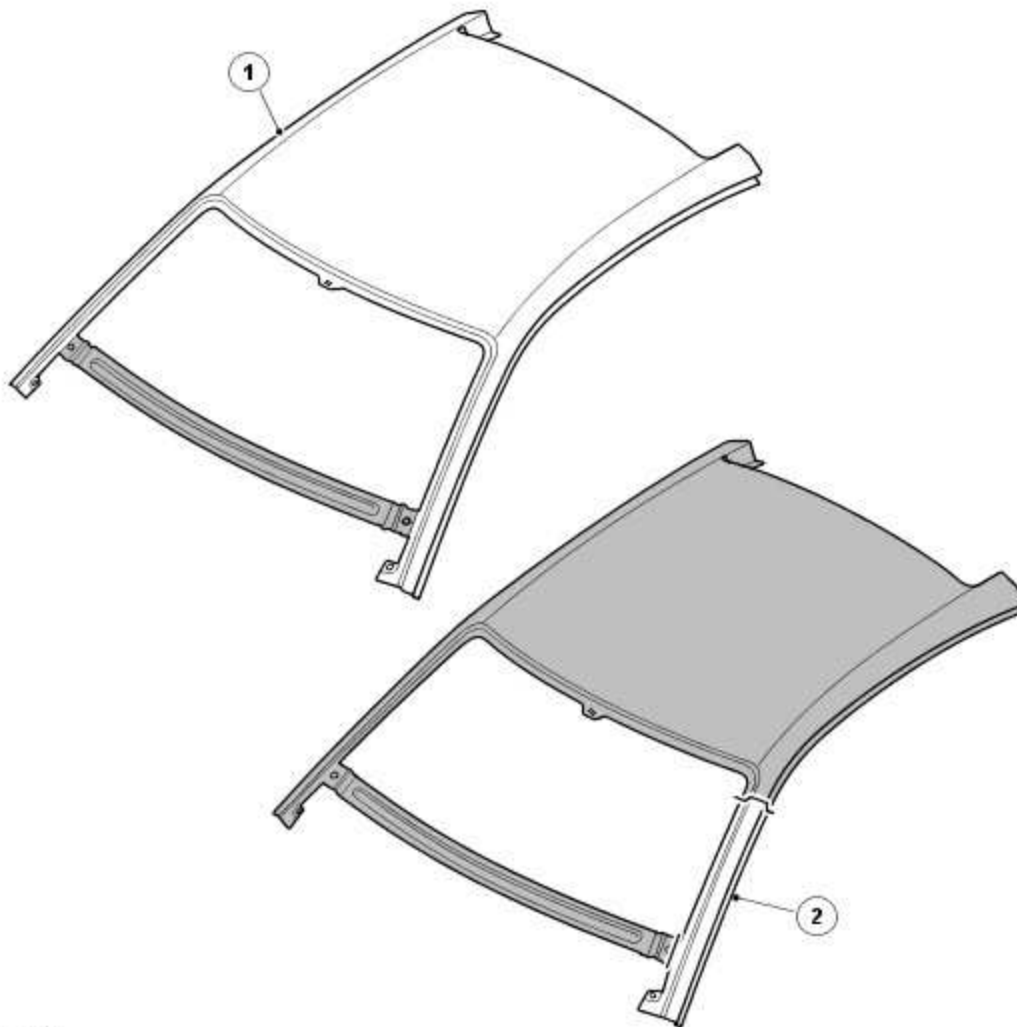
23 The installation of associated panels and mechanical components is the reverse of
removal.

501-28 : Roof Sheet Metal Repairs

Description and operation

Roof

Roof service panels



E74553

Item	Description	Service part No
1	Roof panel	
2	A-Pillar outer panel (cut from roof panel)	

Time schedules, roof panels

The following information shows the total time taken to replace single panels and complete assemblies. This time includes removal of Mechanical, Electrical and Trim, (MET), items, plus paint times based on Metallic Clear Over Base Paint, (blends for adjacent panels not included).

The times shown were generated by Thatcham, (the Motor Insurance Repair Research Centre), and are to be used as a guide only.

Panel Description	coupe
Roof panel	25.9
A-Pillar outer panel	14.0

Roof Panel

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the roof panel is replaced in conjunction with the:

- front bumper cover
- both front fenders
- both doors
- liftgate

NOTE:

The windshield glass has to be removed for access.

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.
For additional information, refer to [Health and Safety Precautions](#)
- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.
For additional information, refer to [Body Repairs](#)
- 3 . Disconnect the battery.
For additional information, refer to
- 4 . Disconnect the generator electrical connections.
- 5 . Remove the headliner.
For additional information, refer to [Headliner \(76.64.01\)](#)
- 6 . Remove the front windshield.
For additional information, refer to [Windshield Glass \(76.81.40\)](#)
- 7 . Remove both rear quarter window glasses.
For additional information, refer to [Rear Quarter Window Glass - 2-Door \(76.31.31\)](#)

8 . Remove both front seats.

For additional information, refer to [Front Seat \(76.70.01\)](#)

9 . Remove both roof mouldings.

10 . Remove the rear drain moulding.

11 . Remove both bodyside weatherseals.

12 . Disconnect both A-Pillar wiring harnesses and position them aside.

13 . Disconnect both cant rail wiring harnesses and position them aside.

14 . Remove the liftgate.

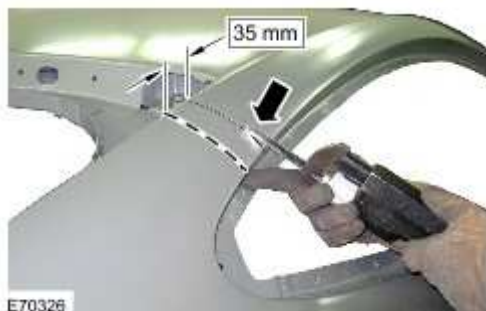
15 . Remove both fenders.

For additional information, refer to [Front Fender](#)

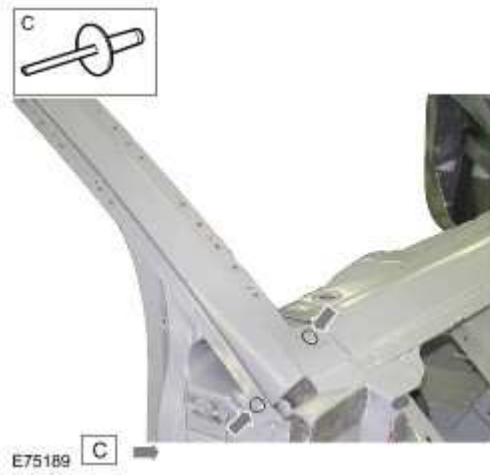
16 . Remove both doors.

For additional information, refer to [Door \(76.28.04\)](#)

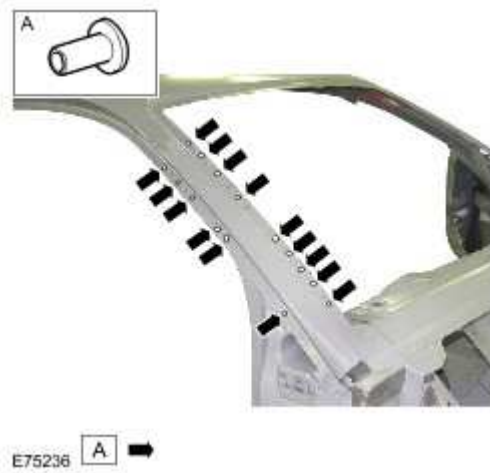
17 Saw cut the roof panel at its joints with the rear quarter panels. Make the cut approximately 35mm forward of the roof to quarter panel assembly joint, (illustrated by the dotted line).



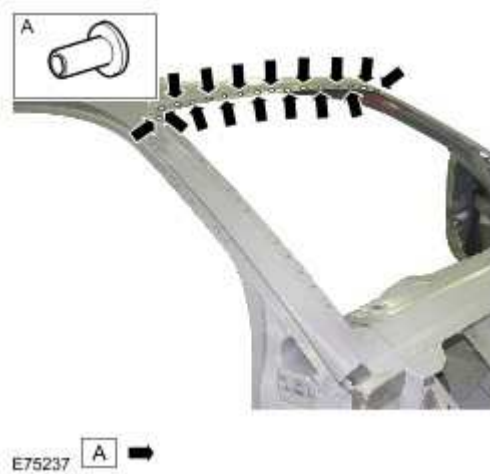
18 . Remove 4 Monobolts, 2 each side, from the A-Pillar.



19 . Using the ESN50, remove 30 Self Piercing Rivets, 15 each side, from the A-Pillar.



20 . Using the ESN50, remove 16 Self Piercing Rivets, from the front header rail.



21 . Using the ESN50, remove 12 Self Piercing Rivets, from the rear header rail.



22 . Using the ESN50, remove 28 Self Piercing Rivets, 14 each side, from the cantrail.



23 Remove the foil patches, 1 each side, to expose 4 Self Piercing Rivets, 2 each side, to the rear quarter panel / drain channel. Using the ESN50, remove these 4 Self Piercing Rivets.



24 . Separate the roof panel joints.

25 Using a long cutting blade, cut through the foam between the roof and its front and rear header rails.



26 . With assistance, remove the old roof panel.

27 Remove the small remnant of the roof panel that is left, by cutting close to the weld.
 . Using a Belt Sander, sand back to the weld line, illustrated as the dotted line.



Installation

- 1 . Remove foam residue from the header rails.
- 2 . Remove rivet remnants.
- 3 . Dress the body flanges where necessary.
- 4 With assistance, offer up the new roof panel and check alignment. If correct proceed to
 . next step, if not, rectify and recheck before proceeding.
- 5 Using a 6.5mm drill bit, drill 2 holes, 1 each side, from inside, through the A-Pillar
 . into the roof panel.



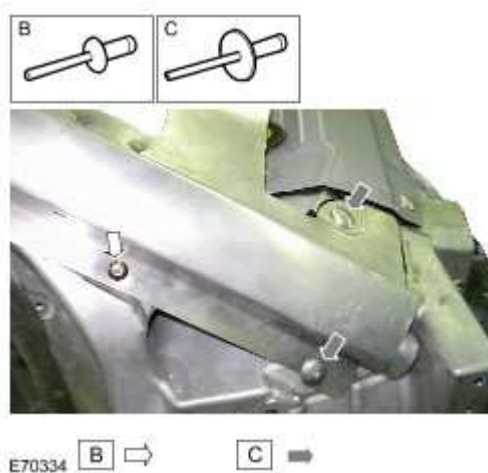
E75191

- 6 . Using assistance, remove the roof panel.
- 7 . Deburr the drilled holes.
- 8 . Using a Roloc Bristle Disc, clean and prepare the panel joint surfaces.
- 9 . Pyrosil the joints.
- 10 . Apply the coupling agent and allow to dry.
- 11 . Apply foam in the same locations as original.
- 12 . Apply a 5mm adhesive bead to the body joints.

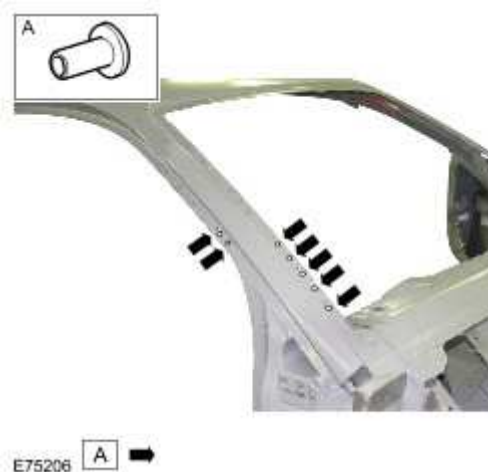


E70332

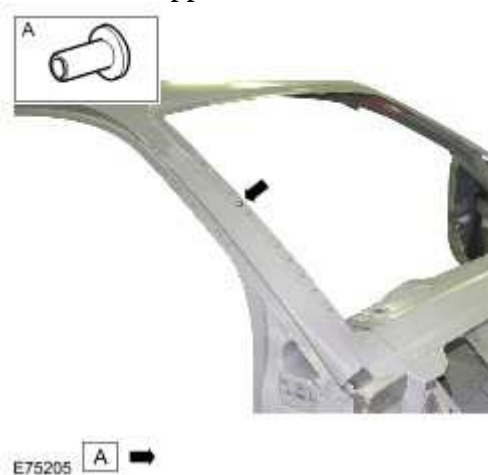
- 13 . With assistance, fit the new roof panel, align and clamp into position.
- 14 Using the Genesis G4, install 2 Hemlocks, 1 each side, part no: C2C 7792 and 4
Monobolts, 2 each side, part no: C2P 4773 into the A-Pillar.



- 15 Using the ESN50, install 14 Self Piercing Rivets, 7 each side, part no: C2C 20590, to the A-Pillar casting.



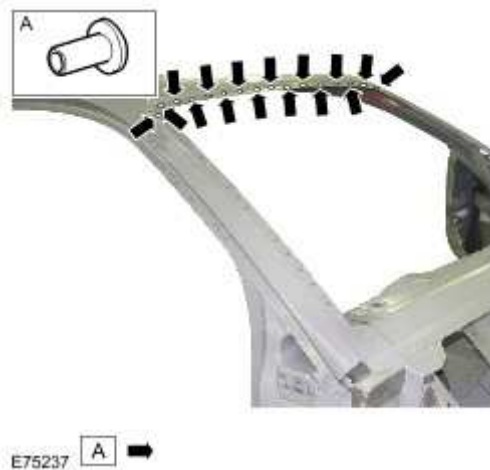
- 16 Using the ESN50, install 2 Self Piercing Rivets, 1 each side, part no: C2C 20593, to the A-Pillar upper.



- 17 Using the ESN50, install 12 Self Piercing Rivets, 6 each side, part no: C2C 20589, to the A-Pillar upper.



- 18 Using the ESN50, install 16 Self Piercing Rivets, part no: C2C 20589, to the front header rail.



19 **NOTE:**

- Where a Self Piercing Rivet cannot be installed in an area of 2 panel thickness it may be necessary to install it in an area of 3 panel thickness. The part number of the rivet is the same for both areas.

Using the ESN50, install 26 Self Piercing Rivets, 13 each side, part no: C2C 20591, to the side cant rails.



E75240 A ➔

- 20 The illustration shows the side cant rail joint from inside, where the 2 and 3 thicknesses occur.



E72274 A ➔

- 21 Using the ESN50, install 12 Self Piercing Rivets, part no: C2C 20591, to the rear header rail.



E75239 A ➔

22 . Cut 2 run on / run off tabs from the original panel, or from similar material.

23 . Tack weld the run on / run off tabs into position.

24 . Lap weld the joints between the roof panel and the rear quarter panels.



25 . Remove the run on / run off tabs.

26 Carry out a non destructive crack inspection on the lap weld. If correct proceed to next step, if not, rectify and recheck before proceeding.

27 . Using a belt sander, dress the welded joint.



28 . Remove any excess adhesive.

29 . When adhesive has cured, use an air saw to cut off the transportation brace.



30 . **NOTE:**

Replace the foil patches on the drain channels after the primer application.

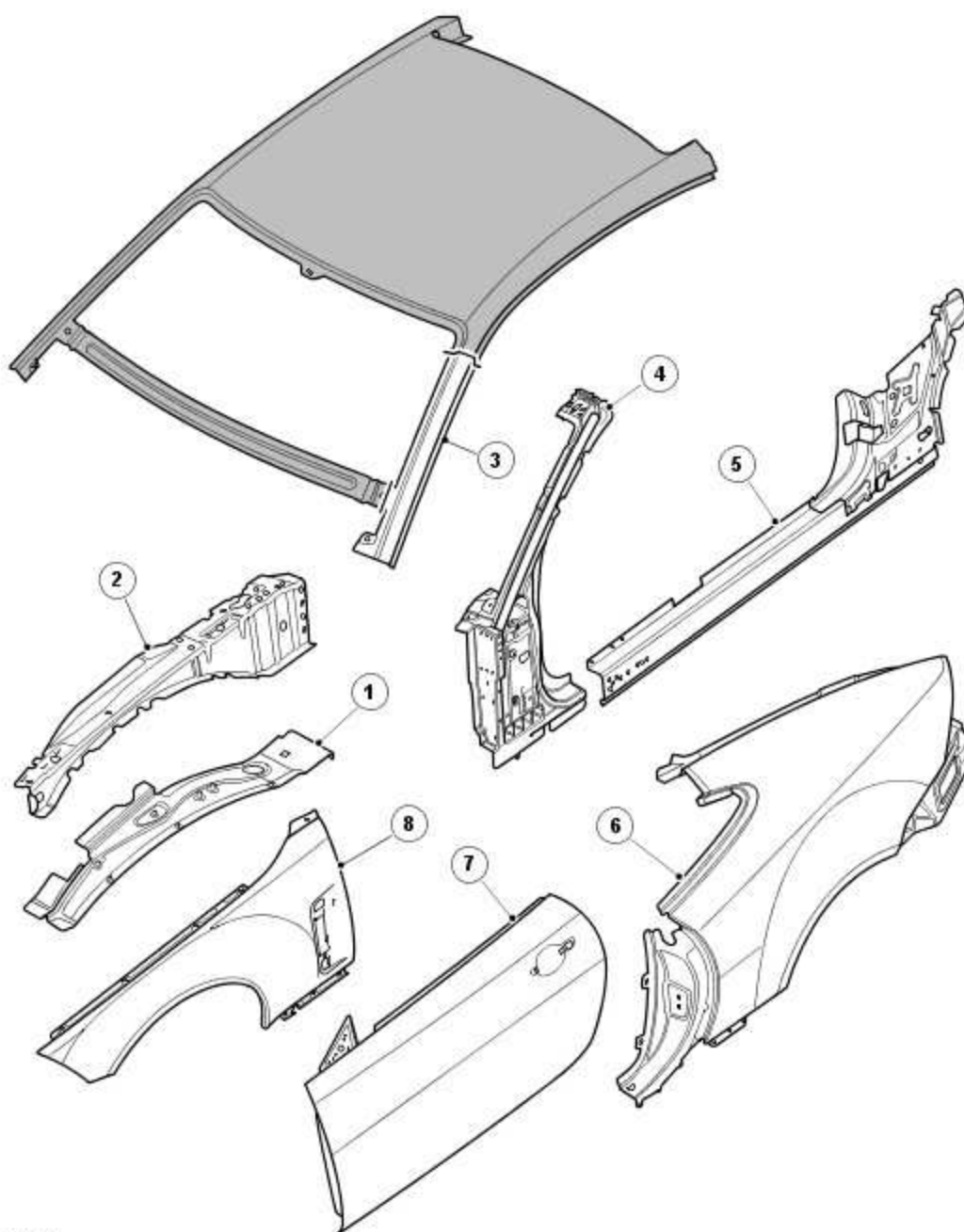
Install is the reverse of removal.

501-29 : Side Panel Sheet Metal Repairs

Description and operation

Side Panel Sheet Metal

Side service panels



E74554

Item	Description	Service part No
1	Fender apron panel closing panel	L/H R/H
2	Fender panel apron	L/H R/H
3	A-Pillar outer panel (cut from roof panel)	L/H R/H
4	A-Pillar assembly	L/H R/H
5	Rocker panel	L/H R/H
6	Quarter panel assembly	L/H R/H
7	Door	L/H R/H
8	Front fender	L/H R/H

paragraph

Time schedules, side panels

The following information shows the total time taken to replace single panels and complete assemblies. This time includes removal of Mechanical, Electrical and Trim, (MET), items, plus paint times based on Metallic Clear Over Base Paint, (blends to adjacent panels are not included).

The times shown were generated by Thatcham, (the Motor Insurance Repair Research Centre), and are to be used as a guide only.

Panel Description	coupe
A-Pillar outer	14.0
Rocker panel	L/H 37.1 R/H 37.3
Quarter panel assembly	L/H 17.2 R/H 17.2
Door	6.4
Front fender	7.0

Combination panel replacement times

The following panel combination times show the total time to remove/refit body panels, MET items and paint times based on Metallic Clear Over Base Paint process, (blends to adjacent panels are not included).

Panel Description	coupe
Door	
Front fender	
Total Time	L/H 10.1 R/H 10.1

Panel Description	coupe
Door	
Quarter panel assembly	
Total Time	L/H 21.9 R/H 22.1

Panel Description	coupe
A-Pillar outer panel	
A-Pillar assembly	
Door	
Quarter panel assembly	
Rocker panel	
Fender apron panel closing panel	
Fender apron panel.	
Front fender	
Rocker panel moulding	
Headliner remove and install	
Windshield glass remove and install	
Instrument panel remove and install	
Total Time	L/H 52.0 R/H 51.3

Panel Description	coupe
Door	
Quarter panel assembly	
Front fender	
Rocker panel moulding	
Total Time	L/H 25.1 R/H 25.4

Panel Description	coupe
A-Pillar outer panel	
A-Pillar assembly	
Door	
Fender apron panel closing panel	
Fender apron panel	
Front fender	

Headliner remove and Install	
Windshield glass remove and Install	
Instrument panel remove and Install	
Total Time	L/H 35.2 R/H 34.0

Rocker Panel

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the rocker panel is replaced in conjunction with the:

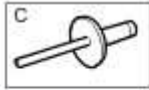
- front bumper cover
- front fender
- fender apron panel
- fender apron panel front extension
- fender apron panel closing panel
- door
- bulkhead lower reinforcement
- A-Pillar assembly
- A-Pillar outer panel
- rear bumper cover
- liftgate
- quarter panel assembly

NOTE:

It is also necessary to remove the windshield glass and the instrument panel to allow for access.

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.
For additional information, refer to [Health and Safety Precautions](#)
- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.
For additional information, refer to [Body Repairs](#)
- 3 Remove the A-Pillar assembly.
For additional information, refer to [A-Pillar Assembly](#)
- 4 The rear inner wheelhouse half has to be removed from the vehicle to allow access for removing the rocker panel. The new panel is supplied on the rocker panel and is installed as an assembly.
For additional information, refer to [Rear Inner Wheelhouse Half](#)

5 . Remove 4 Monobolts securing the striker plate bracket.



E75161 [C] ➡

6 Remove 6 13mm bolts, 3 from the inner rocker panel and 3 from the B-Pillar reinforcement.



E72744 [E] ➡

7 Using a Belt Sander, remove the heads of 11 Self-Piercing Rivets, along the upper flange. Using the ESN50, remove these rivets.



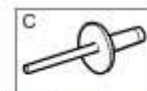
E75155 **A** ➔

- 8 Using a Belt Sander, remove the heads of 31 Self-Piercing Rivets, along the lower flange. Using the ESN50, remove these rivets.



E72745 **A** ➔

- 9 . Remove 1 Monobolt, from the inner rocker panel.



E75156 **C** ➔

- 10 . Separate the joints and remove the panel.

Installation

- 1 . Remove foam residue.
- 2 . Remove rivet remnants.
- 3 . Using a Roloc Bristle Disc, remove adhesive residue.
- 4 . Dress flanges, where applicable.



- 5 . With assistance, offer up the new rocker panel.
- 6 Install 6 fixing bolts, 3 to the inner rocker panel and 3 to the B-Pillar reinforcement, to
 . secure the panel.
- 7 . Offer up the bulkhead lower reinforcement and secure with its 6 fixing bolts.
- 8 . Offer up the A-Pillar assembly.
- 9 Check the alignment of all panels, if correct proceed to next step, if not, rectify and
 . recheck before proceeding.
- 10 . When aligned, clamp into position.
- 11 . Mark the position of 31 holes on the lower flange of the new panel.
- 12 Using a Cryobit drill bit, drill through 5 original holes of the rear wheelhouse outer
 . into the new panel.
- 13 Using a Cryobit drill bit, drill through 7 original holes of the rear outer wheelhouse
 . half into the new panel.

14 . Remove the A-Pillar.

15 Remove 2 fixing bolts from the bulkhead lower reinforcement, leaving the panel on the car.

16 . Remove the new rocker panel.

17 Using a Cryobit drill bit, drill 31 holes at the positions previously marked along the lower flange.



18 . Deburr the drilled holes.

19 . Using a Roloc Bristle Disc, clean and prepare panel joint surfaces.

20 . Pyrosil the joints.



21 . Apply the coupling agent and allow to dry.

22 . Apply foam in the same locations as originally applied.

23 . Apply a 5mm adhesive bead to the body joints.

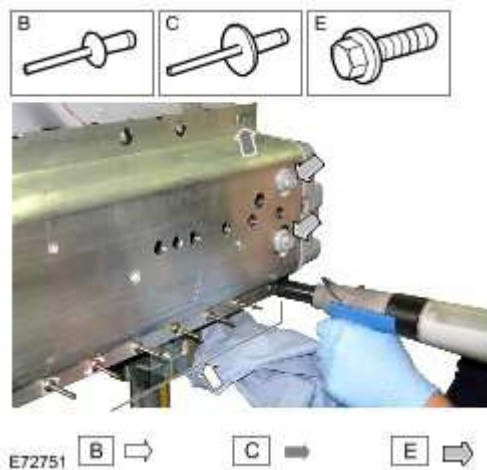
24 . With assistance, offer up the new rocker panel.

25 Install 6 13mm bolts, 3 to the inner rocker panel and 3 to the B-Pillar reinforcement, (illustration for reference purposes only).

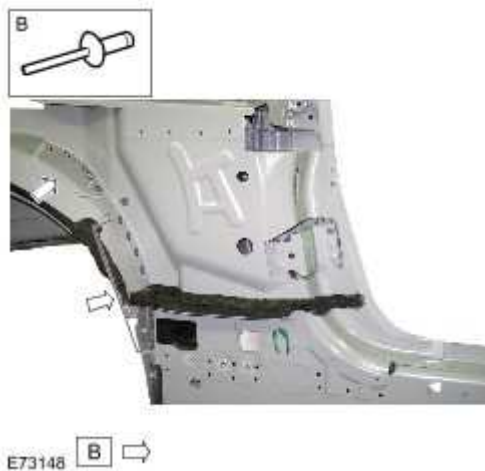


26 . Install 2 18mm bolts, to the bulkhead lower reinforcement.

27 . Using the Genesis G4, install 31 Hemloks, to the lower flange, part no: C2C 10349.



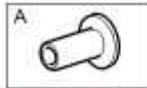
28 Using the Genesis G4, install 12 Hemloks, part no: C2C 7792, 5 to the rear wheelhouse outer and 7 to the rear outer wheelhouse half.



29 Using the Genesis G4, install 1 Monobolt, part no: C2P 4773, to the inner rocker panel, (front).

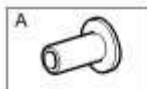
30 Using the Genesis G4, install 1 Monobolt, part no: C2P 4773, to the inner rocker panel, (rear).

31 Using the ESN50, install 11 Self-Piercing Rivets, to the upper flange, part no: C2C 20593.



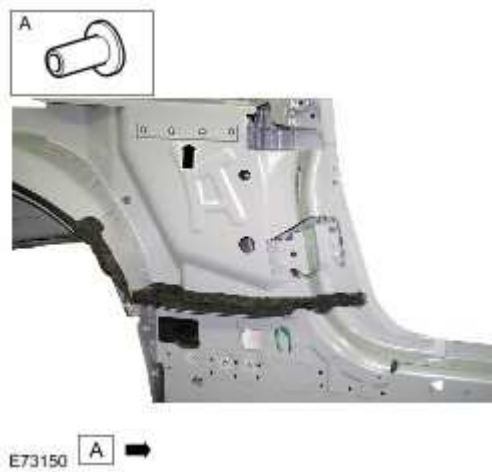
E72752  ➡

32 Using the ESN50, install 2 Self-Piercing Rivets, part no: C2C 20591, to the inner B-Pillar.

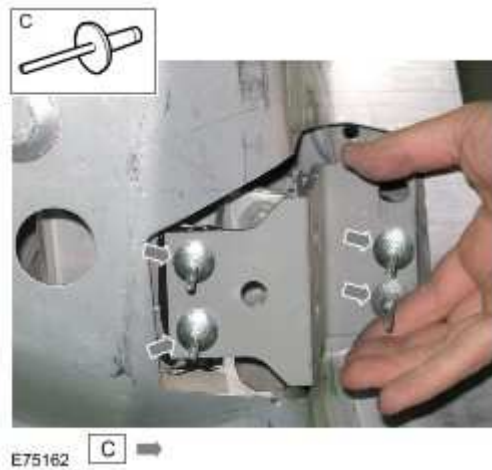


E73149  ➡

33 Using the ESN50, install 4 Self-Piercing Rivets, part no: C2C 20589, to the quarter panel reinforcement.



- 34 Using the Genesis G4, install 4 Monobolts, part no: C2P 4773, to secure the striker plate bracket.



- 35 . Remove any excess adhesive.
- 36 . Install is the reversal of removal.

Bulkhead Lower Reinforcement

Removal

NOTE:

This is a category 'B' repair.

NOTE:

In this procedure the bulkhead lower reinforcement is replaced in conjunction with the:

- front bumper cover
- front fender

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to

- 3 . LH Only: Remove the ABS Hydraulic Control Unit, (HCU).

For additional information, refer to [Hydraulic Control Unit \(HCU\) \(70.60.18\)](#)

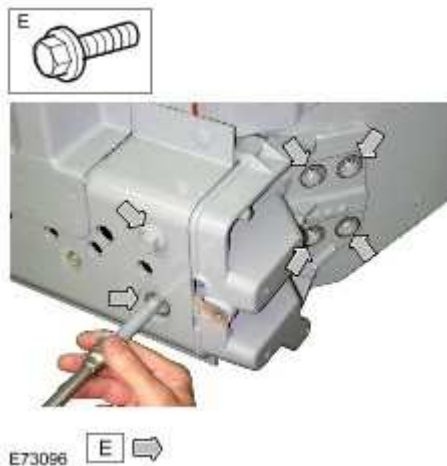
- 4 . RH Only: Remove the windshield washer reservoir.

For additional information, refer to [Windshield Washer Reservoir \(84.10.01\)](#)

- 5 . Remove the front fender.

For additional information, refer to [Front Fender](#)

- 6 . Remove 6 18mm bolts.



7 . Remove the panel.



Installation

- 1 . Offer up and align the new panel, tighten the 6 18mm bolts to 133 Nm (98 lb.ft).
- 2 . Install is the reversal of removal.

A-Pillar Assembly

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the A-Pillar assembly is replaced in conjunction with the:

- front bumper cover
- front fender
- door
- bulkhead lower reinforcement
- fender apron panel
- fender apron panel closing panel

NOTE:

The windshield glass and instrument panel have to be removed for access.

- 1 . Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 . For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to

- 3 . Remove the instrument panel.

For additional information, refer to [Instrument Panel \(76.46.01\)](#)

- 4 . Release the front side carpet section and remove.

- 5 . Remove the fender apron panel.

For additional information, refer to [Fender Apron Panel](#)

- 6 . Remove the fender apron panel closing panel.

For additional information, refer to [Fender Apron Panel Closing Panel](#)

- 7 . Remove the A-Pillar outer panel.

For additional information, refer to [A-Pillar Outer Panel](#)

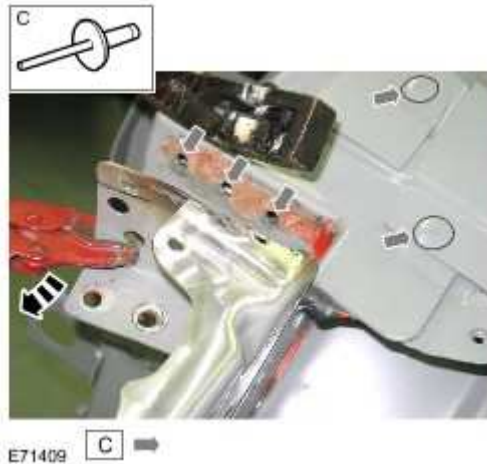
- 8 . Remove the bulkhead lower reinforcement.

For additional information, refer to [Bulkhead Lower Reinforcement](#)

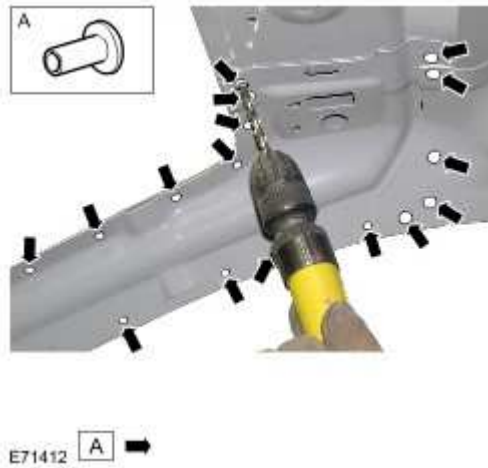
9 NOTE:

- The fender apron panel reinforcement can be left in situ for this procedure, however it has to be part removed to enable the removal of the A-Pillar assembly.

Remove 3 Monobolts from the A-Pillar assembly and separate this joint. Using the induction heater, apply heat to enable the flange to be eased out of the way to allow access for the A-Pillar removal. Remove 1 Monobolt from the windshield aperture panel, (the other Monobolt illustrated is removed with the A-Pillar outer panel).



- 10 Using a 6.5mm Cryobit drill bit, remove 1 Self Piercing Rivet, from the windshield aperture panel.
- 11 Using a combination of the ESN50 and a 6.5mm Cryobit drill bit, remove 8 Self Piercing Rivets, from the door aperture.
- 12 Using a 6.5mm Cryobit drill bit, remove 6 Self Piercing Rivets, from the A-Pillar inner. The upper rivet is drilled from inside the vehicle.
- 13 Using a 6.5mm Cryobit drill bit, remove 25 Self Piercing Rivets, from the rocker panel and the rocker panel upper flange.
- 14 Using a 6.5mm Cryobit drill bit, remove 3 Self Piercing Rivets, from the A-Pillar inner.
- 15 Using a combination of the ESN50 and a 6.5mm Cryobit drill bit, remove 16 Self Piercing Rivets, from the roof panel and front header rail.



16 . Separate the joints and remove the panel.

Installation

1 . Remove the rivet remnants. See next step.

2 Remove rivet remnants from the roof front header rail: Using the induction heater, heat the area, in the position illustrated and ease down the flange. This will enable access for the removal of 2 remnants. Use a 6.5mm Cryobit drill bit to remove the remnants. Using the induction heater, heat the area and ease the flange back into position.



3 MIG plug weld the 2 drilled remnant holes, after welding use a Belt Sander to dress the 2 welds.

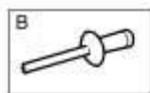


- 4 . Using a Roloc Bristle Disc, remove any adhesive residue.
- 5 . Remove the foam residue.
- 6 . Offer up the new panel, align and clamp into position.
- 7 Bolt on the door hinges and offer up the door. Check gaps and alignment, if correct . proceed to next step, if not, rectify and recheck before proceeding.
- 8 . Remove the door.
- 9 Mark the position of 1 hole from the A-Pillar to the roof side cant rail, (to be drilled . when the panel is removed).
- 10 . Using a 6.5mm Cryobit drill bit, drill 2 holes to the roof panel front header rail.

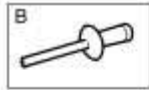


- 11 . Using a 6.5mm Cryobit drill bit, drill 1 hole to the windshield aperture panel.
- 12 Using a 6.5mm Cryobit drill bit, from inside the vehicle, drill 5 holes through the . rocker panel upper flange, into the new A-Pillar assembly.
- 13 Using a 6.5mm Cryobit drill bit, from inside the vehicle, drill 3 holes, through the A- . Pillar inner, into the new A-Pillar assembly.
- 14 Using a 6.5mm Cryobit drill bit, from inside the engine bay, drill 6 holes, through the . A-Pillar inner, into the new A-Pillar assembly.

- 15 Mark the position of 19 holes from inside the rocker panel to the new A-Pillar assembly, (to be drilled when the panel is removed). If the new A-Pillar assembly is to be fitted to a new rocker panel drill 19 new holes.
- 16 . Remove the new panel.
- 17 Using a 6.5mm Cryobit drill bit, drill 1 hole in the new panel, as marked, (to the roof side cant rail).
- 18 Using a 6.5mm Cryobit drill bit, drill 19 holes in the new panel, as marked, (to the rocker panel).
- 19 . Deburr the drilled holes.
- 20 . Using a Roloc Bristle Disc, clean and prepare the panel joint surfaces.
- 21 . Pyrosil the joints.
- 22 . Apply the coupling agent and allow to dry.
- 23 . Apply a 5mm adhesive bead to the new panel joints.
- 24 . Offer up the new panel, align and clamp into position.
- 25 . Using the Genesis G4, install 19 Hemloks, part no: C2C 9966, to the rocker panel.

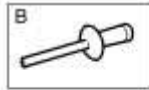


- 26 Using the Genesis G4, install 2 Hemloks, part no: C2C 10349, to the rocker panel upper flange.



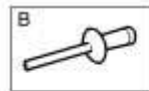
E75283 **B** ➞

- 27 Using the Genesis G4, install 3 Hemloks, part no: C2C 9966, to the rocker panel upper flange.



E75281 **B** ➞

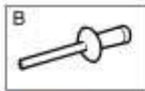
- 28 . Using the Genesis G4, install 9 Hemloks, part no: C2C 7792, to the A-Pillar inner.



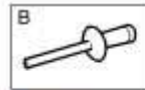
E75282 **B** ➞

- 29 Using the Genesis G4, install 2 Hemloks, part no: C2S 11487, 1 to the roof panel side

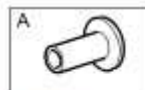
- cant rail and 1 to the roof panel front header rail.



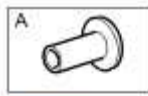
- 30 Using the Genesis G4, install 1 Hemlok, part no: C2C 7792, to the roof panel front header rail.
- header rail.



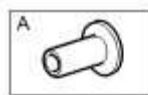
- 31 Using the ESN50, install 2 Self Piercing Rivets, part no: C2C 20591, to the roof panel side cant rail.
- side cant rail.



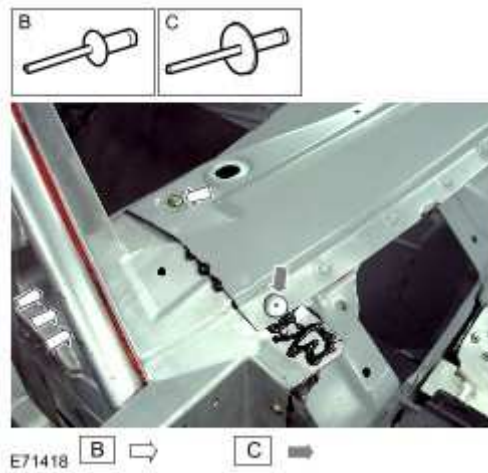
- 32 Using the ESN50, install 8 Self Piercing Rivets. 2, part no: C2C 20591, to the roof front header rail and 6, part number: C2C 20589 to the roof panel, (3 to the screen aperture and 3 to the door aperture).



- 33 Using the ESN50, install 9 Self Piercing Rivets. 8, part no: C2C 20591 to the door aperture and 1, part number: C2C 20595, to the inner rocker panel.



- 34 Using the Genesis G4, install 1 Hemlok, part no: C2C 7792 and 1 Monobolt, part no: C2P 4773, to the windshield aperture panel.



35 . Remove any excess adhesive.

36 If the fender apron panel reinforcement was left in place, use the induction heater to . ease back the flange to its original position. Apply adhesive, then using the Genesis G4, install the 3 Monobolts. Remove any excess adhesive.

37 . Install is the reversal of removal.

A-Pillar Outer Panel

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the A-Pillar outer panel is replaced in conjunction with the:

- front bumper cover
- front fender
- door

NOTE:

The windshield glass has to be removed for access.

- 1 . Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 . For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to [Body Repairs](#)

- 3 . Remove the front fender.

For additional information, refer to [Front Fender](#)

- 4 . Remove the door.

For additional information, refer to [Door \(76.28.04\)](#)

- 5 . Remove the headliner.

For additional information, refer to [Headliner \(76.64.01\)](#)

- 6 . Remove the windshield glass.

For additional information, refer to [Windshield Glass \(76.81.40\)](#)

- 7 . Remove the rear quarter window glass.

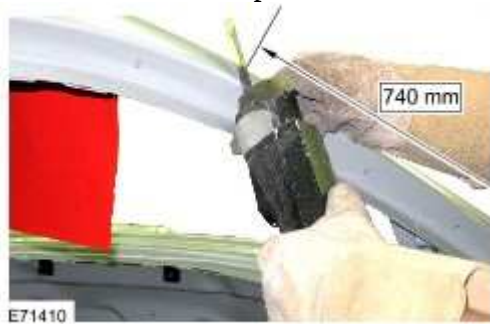
For additional information, refer to [Rear Quarter Window Glass - 2-Door \(76.31.31\)](#)

- 8 . Remove the seat.

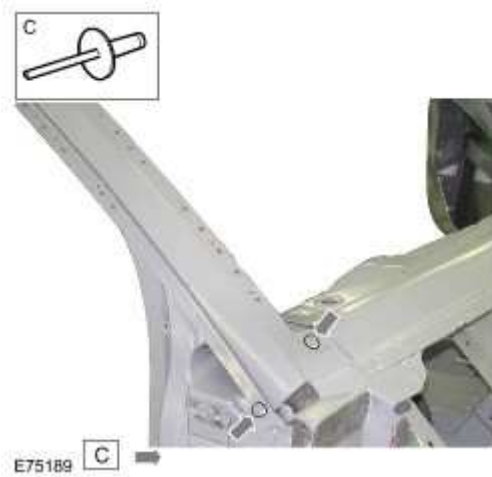
For additional information, refer to [Front Seat \(76.70.01\)](#)

- 9 . Remove the roof moulding.

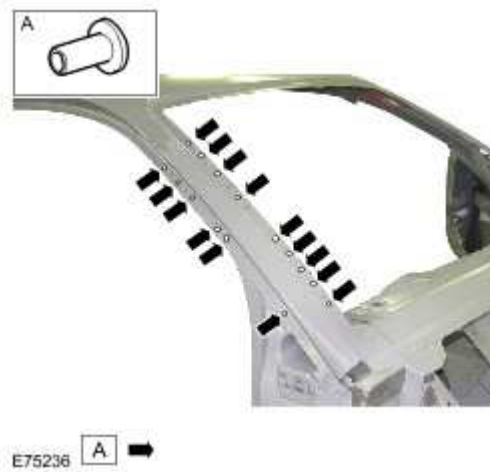
- 10 . Remove the door aperture weatherseal.
- 11 . Remove the bodyside weatherseal.
- 12 . Disconnect the A-Pillar wiring harness and position aside.
- 13 . Disconnect the cantrail wiring harness and position aside.
- 14 . Disconnect the generator electrical connectors.
- 15 . Using an air saw, cut through the roof panel at a point 740mm from the bottom of the outer A-Pillar / roof panel.



- 16 . Remove 2 Monobolts, from the A-Pillar.



- 17 . Using a combination of the ESN50 and a 6.5mm Cryobit drill bit, remove 15 Self-Piercing Rivets, from the A-Pillar assembly.



18 . Separate the joints and remove the panel.

Installation

- 1 . Remove the rivet remnants.
- 2 . Remove any foam residue.
- 3 Measure and cut a 50mm backing plate and 2 run on / run off tabs from the original
 . panel, or from similar material.
- 4 Using a Roloc Bristle Disc, clean and prepare the backing plates and run-on/run-off
 . tabs.
- 5 Offer up the new panel, clamp into position and check alignment. If correct proceed to
 . next step, if not, rectify and recheck before proceeding.
- 6 . From inside, using a 6.5mm Cryobit drill bit, drill 1 hole ready for a Hemlok fixing.

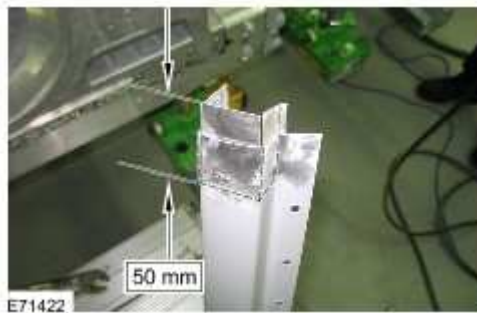


7 . Remove the new panel.

8 . Deburr the drilled hole.

9 . Using a Roloc Bristle Disc, clean and prepare the panel joints.

10 . Weld the backing plates into position on the new panel.



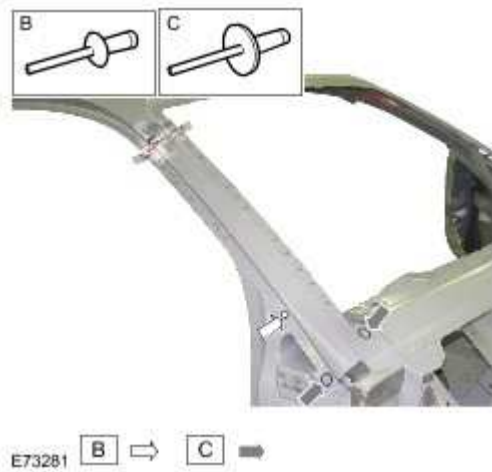
11 . Apply Pyrosil to the joints, avoiding the area of the butt joint.

12 . Apply the coupling agent, avoiding the area of the butt joint and allow to dry.

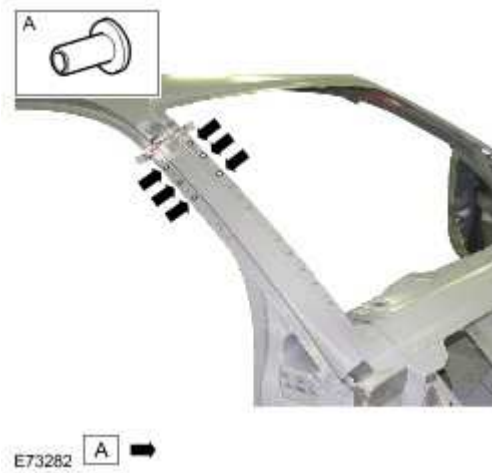
13 . Apply a 5mm adhesive bead to the body joints, avoiding the area of the butt joint.

14 . Offer up the new panel, align and clamp into position.

15 Using the Genesis G4, install 1 Hemlok, part no: C2C 7792 and 2 Monobolts, part no: C2P 4773.



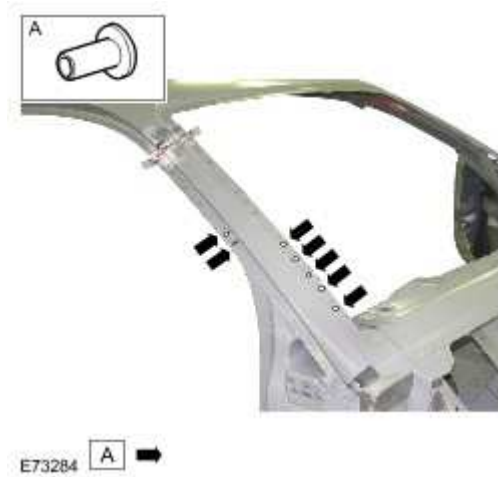
16 . Using the ESN50, install 6 Self-Piercing Rivets, part no: C2C 20589.



17 Using the ESN50, install 1 Self-Piercing Rivet, (through 3 thicknesses), part no: C2C 20593.



18 . Using the ESN50, install 7 Self-Piercing Rivets, part no: C2C 20590.



19 NOTE:

- If the original panel is being reused, use adhesive to fill the holes left from the removal of the original Self Piercing Rivets.

Remove any excess adhesive.

20 . Tack Weld the run-on/run-off tabs.

21 . Weld the joint between the A-Pillar and roof panel.



22 . Cut off the run-on/run-off tabs.

- 23 Carry out a non destructive crack inspection on the butt joint. If correct, proceed to
- next step, if not, rectify and recheck before proceeding.

24 . Using a belt sander, remove the welded joint.

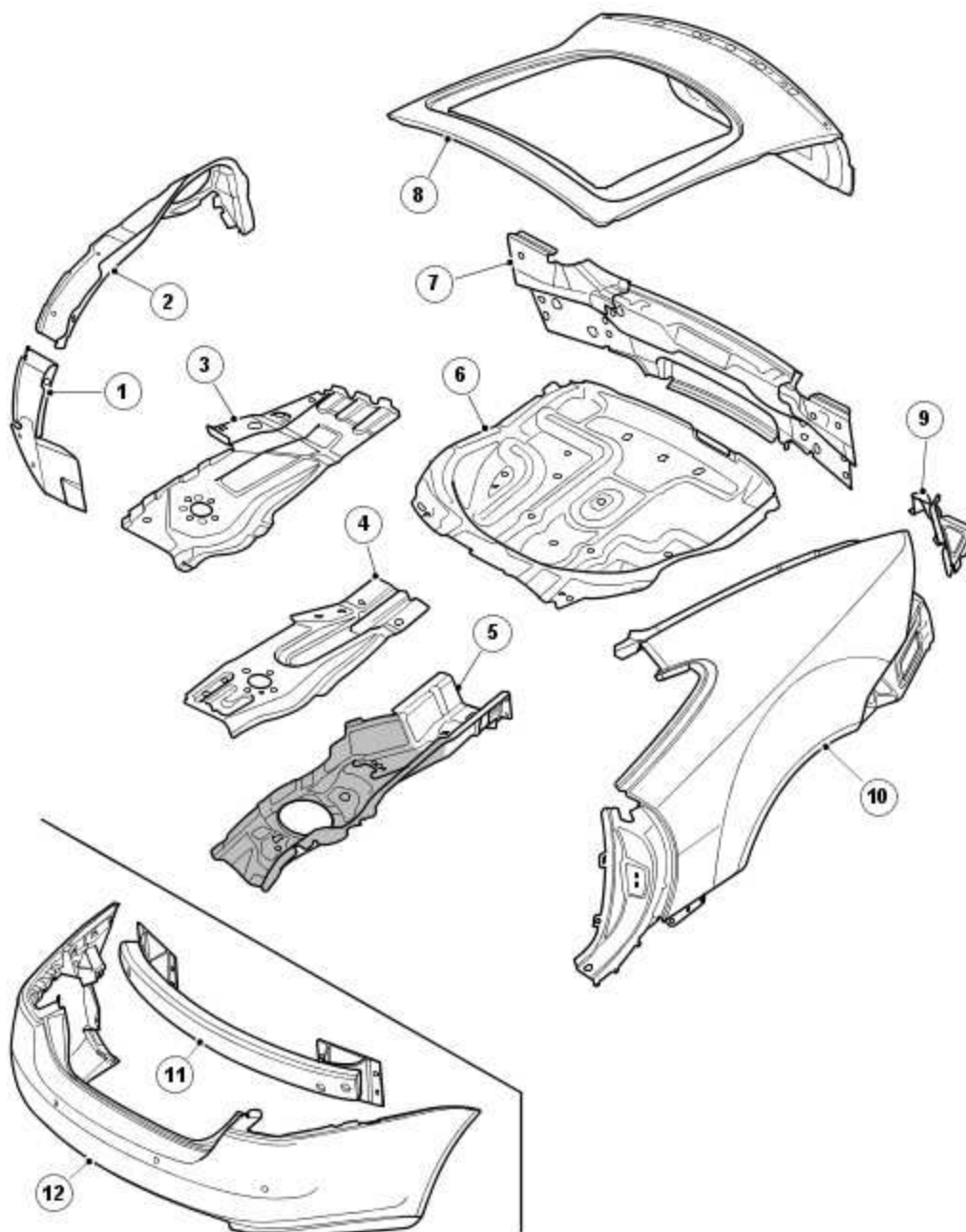
25 . Install is the reversal of removal.

501-30 : Rear End Sheet Metal Repairs

Description and operation

Rear End Sheet Metal

Rear end service panels



E74555

Item	Description	Service part No
1	Rear outer wheelhouse half	R/H = L/H
2	Rear wheelhouse outer	R/H L/H
3	Rear side member closing panel	R/H L/H
4	Rear side member reinforcement panel	R/H L/H
5	Rear side member section, (cut from full rear side member)	R/H L/H
6	Spare wheel well	
7	Back panel assembly	
8	Liftgate	
9	Rear lamp mounting panel	R/H L/H
10	Quarter panel assembly	R/H L/H
11	Rear bumper	
12	Rear bumper cover	

Time schedules, rear end

The following information shows the total time taken to replace single panels and complete assemblies. This time includes removal of Mechanical, Electrical and Trim, (MET), items, plus paint times based on Metallic Clear Over Base Paint, (blends to adjacent panels are not included)

The times shown were generated by Thatcham, (the Motor Insurance Repair Research Centre), and are to be used as a guide only.

Panel Description	coupe
Liftgate	6.9
Rear lamp mounting panel	4.1
Back panel assembly	25.9
Quarter panel Assembly	L/H 17.2 R/H 17.6
Rear bumper cover	6.5

Combination panel replacement times

The following panel combination times show the total time to remove/refit body panels, MET items and paint times based on Metallic Clear Over Base Paint process, (blends to adjacent panels are not included).

Panel Description	coupe
Back panel assembly	

Liftgate	
Quarter panel assembly	
Rear bumper	
Rear bumper cover	
Headliner remove and install	
Total Time	L/H 29.9 R/H 30.2

Panel Description	coupe
Back panel assembly	
Liftgate	
Quarter panel assembly L/H and R/H	
Rear bumper	
Rear bumper cover	
Headliner remove and install	
Total Time	37.5

Panel Description	coupe
Back panel assembly	
Liftgate	
Quarter panel assembly L/H and R/H	
Rear bumper	
Rear bumper cover	
Rear side member closing panel	
Rear side member reinforcement panel	
Rear side member (section)	
Spare wheel well	
Headliner remove and install	
Rear subframe remove and install	
Fuel tank remove and install	
Total Time	L/H 45.6 R/H 45.8

Panel Description	coupe
Back panel assembly	
Liftgate	

Quarter panel assembly L/H and R/H	
Rear bumper	
Rear bumper cover	
Rear side member closing panel L/H and R/H	
Rear side member reinforcement panel L/H and R/H	
Rear side member (section) L/H and R/H	
Spare wheel well	
Headliner remove and install	
Rear subframe remove and install	
Fuel tank remove and install	
Total Time	59.8

Panel Description	coupe
Back panel assembly	
Rear bumper	
Rear bumper cover	
Spare wheel well	
Rear subframe remove and install	
Total Time	21.1

Rear Wheelhouse Outer

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the rear wheelhouse outer is replaced in conjunction with the:

- rear bumper cover
- quarter panel assembly
- rear inner wheelhouse half

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to

- 3 Remove the rear inner wheelhouse half.

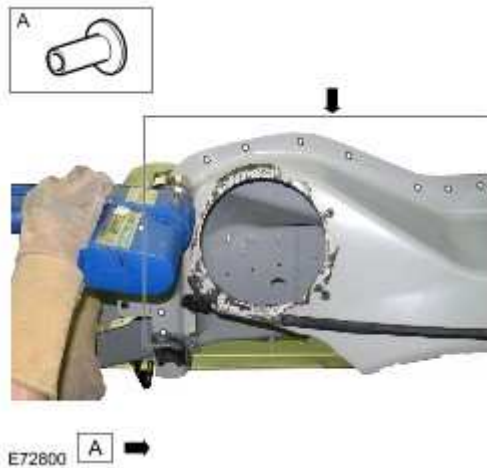
For additional information, refer to [Rear Inner Wheelhouse Half](#)

- 4 Using a combination of the ESN50 and a 6.5mm Cryobit drill bit, remove 3 Self Piercing Rivets, from the rear outer wheelhouse half.



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- 5 Using a combination of the ESN50 and a 6.5mm Cryobit drill bit, remove 18 Self Piercing Rivets, (17 on the LH), from the inner wheelhouse.

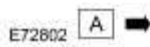


- 6 . Separate the joints and remove the panel.

Installation

- 1 . Remove rivet remnants.
- 2 . Using a Roloc Bristle Disc, remove adhesive residue.
- 3 . Offer up the new panel and clamp into position.
- 4 Check alignment, if correct proceed to next step, if not, rectify and recheck before proceeding.
- 5 Mark the positions of 18 holes, 17 on the LH side, on the new panel, ready for installing Self Piercing Rivets, (avoiding the original holes).
- 6 . Remove the new panel.
- 7 . Using a Roloc Bristle Disc, clean and prepare the panel joint surfaces.
- 8 . Pyrosil the joints.
- 9 . Apply the coupling agent and allow to dry.
- 10 . Apply a 5mm adhesive bead to the body joints.

- 11 Using the ESN50, install 21 Self Piercing Rivets. 17 to the inner wheelhouse, (16 on the LH side), part no: C2C 20591, 3 to the rear outer wheelhouse half, part no: C2C 20590 and 1 to the inner wheelhouse, (through 3 thicknesses), part no: C2C 20594.



- 12 . Remove any excess adhesive.
- 13 . Install is the reversal of removal.

Rear Inner Wheelhouse Half

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the rear inner wheelhouse half is replaced in conjunction with the:

- rear bumper cover
- quarter panel assembly

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to

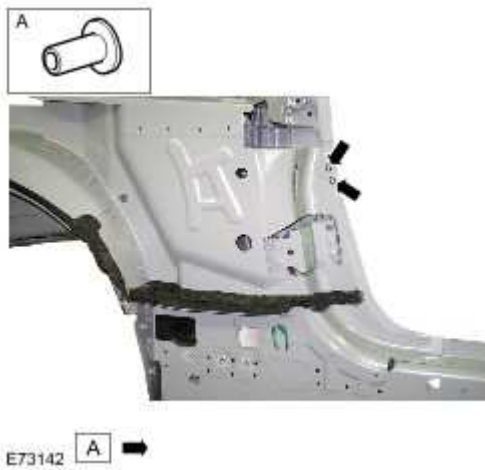
- 3 Remove the quarter panel assembly.

For additional information, refer to [Quarter Panel Assembly - 2-Door](#)

- 4 Remove 3 Monobolts, from the rocker panel.



- 5 Using the ESN50, remove 2 Self Piercing Rivets, from the inner B-Pillar.



- 6 Using a 6.5mm Cryobit drill bit, remove 28 Self Piercing Rivets. 12 from the rocker panel, 5 from the rear wheelhouse outer, 7 from the rear outer wheelhouse half and 4 from the quarter panel reinforcement.



- 7 . Separate the joints and remove the panel.

Installation

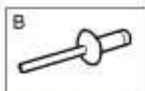
- 1 . Remove foam residue.
- 2 . Using a Roloc Bristle Disc, remove adhesive residue.
- 3 . Remove rivet remnants.
- 4 Mark the position of 12 holes on the new panel, using the original panel as a template.
 - . Using a 6.5mm Cryobit drill bit, drill these 12 holes.



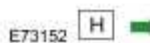
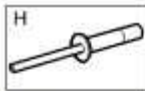
5 Offer up the new panel, check alignment, if correct proceed to next step, if not, rectify
 . and recheck before proceeding.

6 . When aligned, clamp into position.

7 Using a 6.5mm Cryobit drill bit, drill through 12 original holes into the new panel,
 . (illustration shown for reference).



8 Countersink 3 holes in the new panel, in readiness for countersunk Monobolts,
 . (illustration shown for reference).



9 . Remove the new panel.

10 . Deburr the drilled holes.

11 . Using a Roloc Bristle Disc, clean and prepare panel joint surfaces.

12 . Pyrosil the joints.

13 . Apply coupling agent and allow to dry.

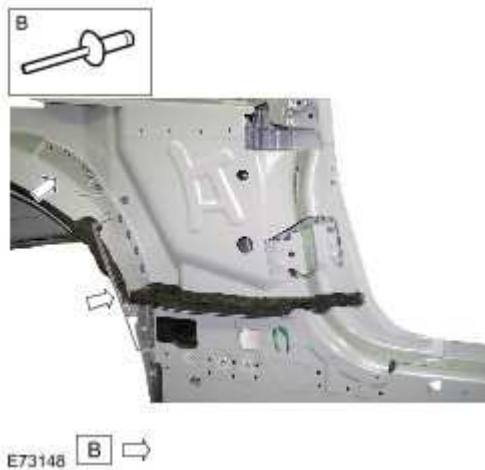
14 . Apply a 5mm bead of adhesive to the body joints.

15 . Offer up the new panel, align and clamp into position.

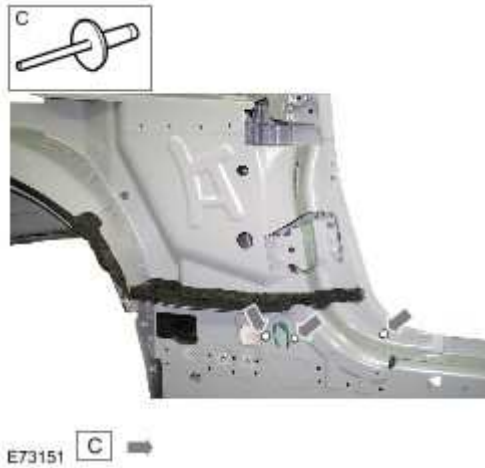
16 . Using the Genesis G4, install 9 Hemloks, part no: C2C 9818, to the rocker panel.



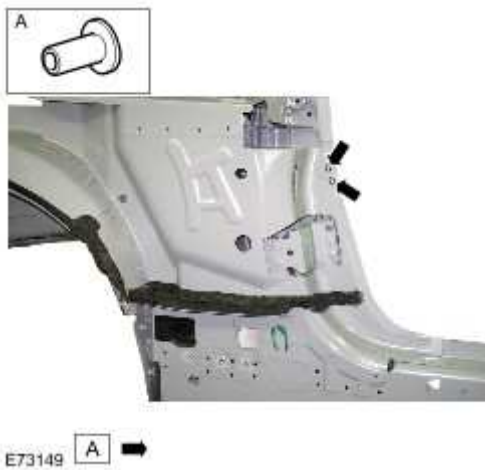
17 Using the Genesis G4, install 12 Hemloks, part no: C2C 7792, 7 to the rear outer wheelhouse half and 5 to the rear wheelhouse outer.



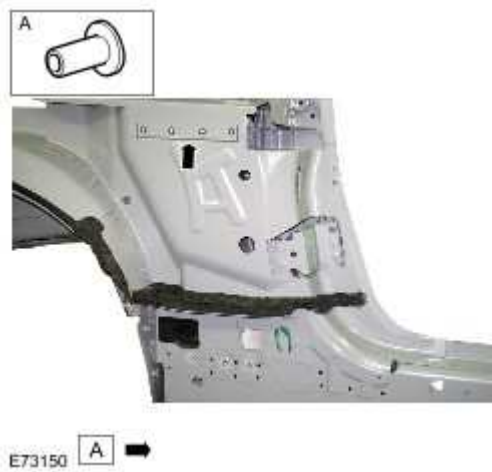
18 . Using the Genesis G4, install 3 Monobolts, part no: C2P 4773, to the rocker panel.



19 Using the ESN50, install 2 Self Piercing Rivets, part no: C2C 20591, to the inner B-Pillar.



20 Using the ESN50, install 4 Self Piercing Rivets, part no: C2C 20589, to the quarter panel reinforcement.



21 . Using the Genesis G4, install 3 Monobolts, part no: C2P 4773, to the rocker panel.



22 . Remove any excess adhesive.

23 . Install is the reversal of removal.

Rear Outer Wheelhouse Half

Removal

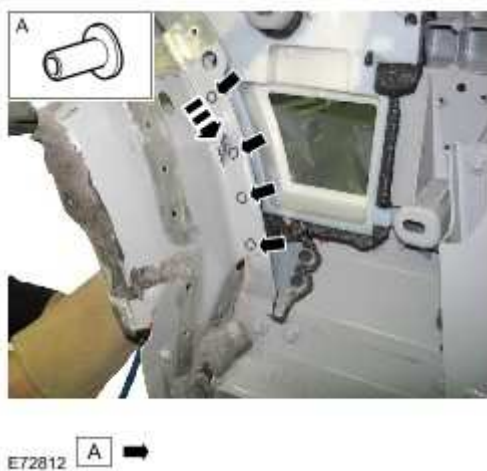
NOTE:

This is a category 'A' repair.

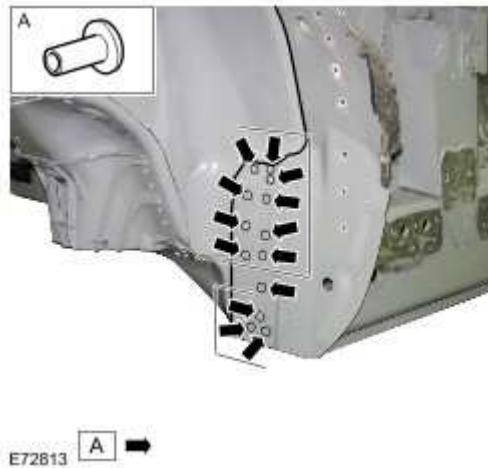
NOTE:

In this procedure the rear outer wheelhouse half is replaced in conjunction with the:

- rear bumper cover
 - quarter panel assembly
 - rear wheelhouse outer
 - rear inner wheelhouse half
- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.
For additional information, refer to [Health and Safety Precautions](#)
 - 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.
For additional information, refer to
 - 3 . Remove the rear wheelhouse outer.
For additional information, refer to [Rear Wheelhouse Outer](#)
 - 4 Using an air saw, bulk cut a section of the old panel to allow access for the ESN50.
Then using the ESN50, remove 4 Self Piercing Rivets, from the inner wheelhouse.



- 5 Using a 6.5mm Cryobit Drill Bit, remove 13 Self Piercing Rivets, 9 from the inner wheelhouse and 4 from the inner rocker panel.



6 . Separate the joints and remove the panel.

Installation

- 1 . Remove rivet remnants.
- 2 . Remove any foam residue.
- 3 . Offer up the new panel and clamp into position.
- 4 Check alignment, if correct proceed to next step, if not, rectify and recheck before proceeding.
- 5 . Remove the new panel.
- 6 Using the old panel as a template, mark and drill 13 holes, using a 6.5mm Cryobit Drill Bit.



7 . Deburr the drilled holes.

8 . Using a Roloc Bristle Disc, clean and prepare the panel joint surfaces.



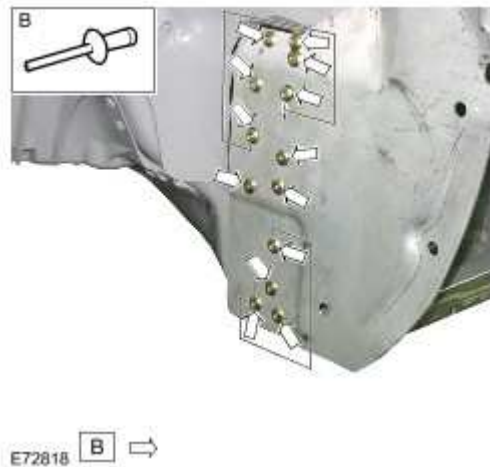
9 . Pyrosil the joints.

10 . Apply the coupling agent and allow to dry.

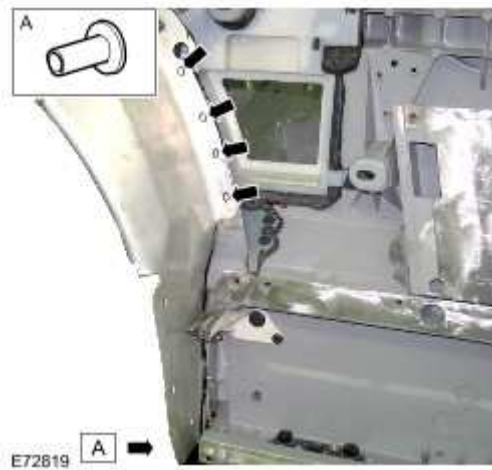
11 . Apply a 5mm adhesive bead to the new panel joints.



12 Using the Genesis G4, install 13 Hemloks to the inner rocker panel. 9 part no: C2C 10349, (2 panel thickness) and 4 part no: C2C 22613, (3 panel thickness).



13 Using the ESN50, install 4 Self Piercing Rivets, part no: C2C 20591, to the inner wheelhouse.



14 . Remove any excess adhesive.

15 . Install is the reversal of removal.

Rear Lamp Mounting Panel

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the rear lamp mounting panel is replaced in conjunction with the:

- rear bumper cover
- rear bumper
- back panel assembly

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to

- 3 Remove the back panel assembly.

For additional information, refer to [Back Panel Assembly](#)

- 4 Using a combination of the ESN50 and a 6.5mm Cryobit drill bit, remove 10 Self Piercing Rivets, to the quarter panel.

- 5 Separate joints, cut through foam and remove the panel.

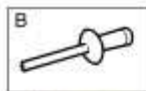
Installation

- 1 Remove foam residue.

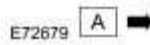
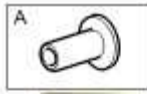
- 2 Using a Roloc Bristle Disc, remove adhesive residue.



- 3 . Remove rivet remnants.
- 4 Offer up the new panel and check alignment. If correct proceed to next step, if not, . rectify and recheck before proceeding.
- 5 Using a 6.5mm Cryobit drill bit, drill 7 holes through the quarter panel lower . extension, into the new panel.
- 6 . Remove the new panel.
- 7 . Using a Roloc Bristle Disc, clean and prepare panel joint surfaces.
- 8 . Pyrosil the joints.
- 9 . Apply the coupling agent and allow to dry.
- 10 . Apply a 5mm adhesive bead to the body joints.
- 11 . Offer up the new panel, align and clamp into position.
- 12 Using the Genesis G4, install 7 Hemloks, part no: C2S 11487, to the quarter panel . lower extension.



- 13 Using the ESN50, install 3 Self Piercing Rivets, part no: C2C 20589, to the quarter panel.



- 14 . Remove any excess adhesive.
- 15 . Install is the reversal of removal.

Spare Wheel Well

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the spare wheel well is replaced in conjunction with the:

- rear bumper cover
- rear bumper
- back panel assembly

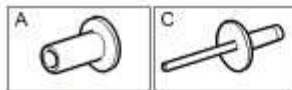
NOTE:

The rear subframe also has to be removed for access.

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.
For additional information, refer to [Health and Safety Precautions](#)
- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.
For additional information, refer to
- 3 . Remove the battery.
- 4 . Remove the battery tray.
- 5 . Remove the navigation system module.
For additional information, refer to [Navigation System Module \(86.62.05\)](#)
- 6 . Remove the rear subframe.
For additional information, refer to [Rear Subframe \(64.25.01\)](#)
- 7 . Remove the fuel tank filler pipe.
For additional information, refer to [Fuel Tank Filler Pipe \(19.55.33\)](#)
- 8 . Remove the back panel assembly.
For additional information, refer to [Back Panel Assembly](#)
- 9 . Using an air saw, bulk cut the panel to allow access to joints for removal.



- 10 Using a 6.5mm Cryobit Drill Bit, remove 25 Self Piercing Rivets from the luggage floor. Remove 2 Monobolts, 1 from each side member.



11 **NOTE:**

- Save the remnant as it will be used as a guide for drilling the fixing holes in the new panel, take care when separating the joint.

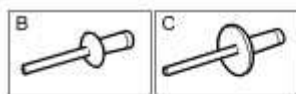
Separate joints and remove the panel.

Installation

- 1 . Remove rivet residue.
- 2 . Using a Roloc Bristle Disc, remove adhesive residue.
- 3 Offer up the old panel remnant to the new panel and using this as a guide, drill 25 holes in the new panel using a 6.5mm Cryobit Drill Bit.



- 4 . Deburr drilled holes.
- 5 Offer up the new panel. Check alignment, if correct proceed to next step, if not, rectify . and recheck before proceeding.
- 6 . Remove the new panel.
- 7 . Using a Roloc Bristle Disc, clean and prepare the new panel joint surfaces.
- 8 . Pyrosil the joints.
- 9 . Apply the coupling agent and allow to dry.
- 10 . Apply a 5mm adhesive bead to the new panel joints.
- 11 . Offer up the new panel, align and clamp into position.
- 12 Using the Genesis G4, install 25 Hemloks, part no: C2C 7792, to the luggage floor . and 2 Monobolts, 1 each side, part number: C2P 4773, to the rear side member.



- 13 . Remove any excess adhesive.

14 . Install is the reversal of removal.

Rear Side Member Section

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the rear side member section is replaced in conjunction with the:

- rear bumper cover
- rear bumper
- back panel assembly
- spare wheel well
- rear side member closing panel
- rear side member reinforcement panel

NOTE:

The rear subframe and the fuel tank have to be removed for access.

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.
For additional information, refer to [Health and Safety Precautions](#)
- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.
For additional information, refer to
- 3 . Remove the rear side member reinforcement panel.
For additional information, refer to [Rear Side Member Reinforcement Panel](#)
- 4 . Remove the spare wheel well.
For additional information, refer to [Spare Wheel Well](#)
- 5 Using a Belt Sander, sand down the heads of 8 Self Piercing Rivets to the exhaust hanger bracket. Use a 6.5mm Cryobit Drill Bit to remove these 8 rivets.



6 . Remove the rivet remnants.

7 Using an air saw, Bulk cut the old panel at a point measured 185mm rearward from the . top of the flange, as illustrated. Discard the cut section.



Installation

1 . Bulk cut the new panel, allowing for overlap.



2 . Offer up the new panel section, align and clamp against the old panel.

- 3 Using an air saw, cut through the new panel, using the edge of the original panel as a guide, (at the 185mm marked point).
- 4 Measure and cut a 50mm section, to be used as a backing plate and 2 run on, run off tabs, from the remnant of the new panel.
- 5 . Using a Roloc Bristle disc, clean and prepare the panel joint surfaces.
- 6 Clamp the backing plates and run on / run off tabs into position and check alignment. If within tolerance continue to weld the backing plates, then the run on / run off tabs into position. If not, rectify and recheck before proceeding.



- 7 . Clamp the weld run on / run off tabs into position and then tack weld.
- 8 . Weld the section joint.



- 9 . Cut off run on / off tabs.
- 10 Carry out a non destructive crack inspection on the Butt Joint. If correct, proceed to next step, if not, rectify and recheck before proceeding.
- 11 . Using a belt sander, sand down the weld joint.



12 . Prime the area, in and around, the backing plates.



13 Using the exhaust mounting bracket as a template, use a 6.5mm Cryobit Drill Bit to
 . drill out the 8 holes in the Side Member.

14 . Deburr drilled holes.

NOTE:

Do not Roloc the exhaust hanger bracket.

15 . Apply a 5mm bead of adhesive to the exhaust hanger bracket.

16 Offer up the exhaust hanger bracket, then, using the Genesis G4, install 8 Hemloks.
 . The 4 in the centre, (grouped in the illustration) are part no: C2C 22613. The
 remaining 4, outer Hemloks are part no: C2C 10349.



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17 . Remove any excess adhesive.

18 . Install is the reversal of removal.

Quarter Panel Lower Extension

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the quarter panel lower extension is replaced in conjunction with the:

- rear bumper cover
- rear bumper
- back panel assembly
- rear lamp mounting panel

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to

- 3 . Release the inner wheelhouse wiring harness and position it aside.

- 4 . RH Side: Remove the antenna.

For additional information, refer to [Antenna \(86.51.17.60\)](#)

- 5 . Remove the rear lamp mounting panel.

For additional information, refer to [Rear Lamp Mounting Panel](#)

- 6 Using a combination of the ESN50 and a 6.5mm Cryobit drill bit, remove 12 Self Piercing Rivets.



7 . Remove the foil patch at the joint with the rear quarter panel.



8 . Separate the joints, cut through foam and remove the panel.

Installation

- 1 . Remove foam residue.
- 2 . Using a Roloc Bristle Disc, remove adhesive residue.
- 3 . Remove rivet remnants.
- 4 Offer up the new panel and check alignment. If correct proceed to next step, if not,
 - . rectify and recheck before proceeding.
- 5 Using a 6.5mm Cryobit drill bit, drill 4 holes through the rear quarter panel into the
 - . new panel, ready for hemlok fixings.
- 6 . Remove the new panel.

- 7 . Using a Roloc Bristle Disc, clean and prepare panel joint surfaces.
- 8 . Pyrosil the joints.
- 9 . Apply the coupling agent and allow to dry.
- 10 . Apply a 5mm adhesive bead to the body joints.
- 11 . Offer up the new panel, align and clamp into position.
- 12 . Using the Genesis G4, install 4 Hemloks, to the quarter panel, part no: C2S 11487.



- 13 Using the ESN50, install 8 Self Piercing Rivets, part no: C2C 20589, 6 to the rear side member closing panel and 2 to the rear wheelhouse.



- 14 . Remove any excess adhesive.
- 15 Note: Replace the foil patch at the joint with the quarter panel, after the primer application.

Quarter Panel Assembly - 2-Door

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the quarter panel assembly is replaced in conjunction with the:

- rear bumper cover
- liftgate

- 1 . Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 . For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to [Body Repairs](#)

- 3 . Disconnect the battery.

For additional information, refer to

- 4 . Disconnect the generator electrical connections.

- 5 . Remove the rear bumper cover.

For additional information, refer to [Rear Bumper Cover \(76.22.74\)](#)

- 6 . Remove the rocker panel moulding.

For additional information, refer to [Rocker Panel Moulding \(76.11.36\)](#)

- 7 . Remove the liftgate.

- 8 . Remove the headliner.

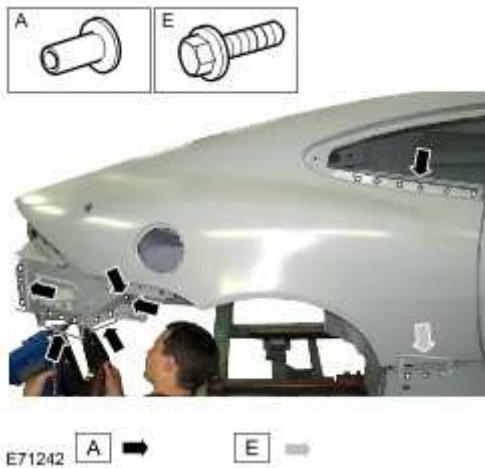
For additional information, refer to [Headliner \(76.64.01\)](#)

- 9 . Remove the rear quarter window glass.

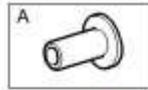
For additional information, refer to [Rear Quarter Window Glass - 2-Door \(76.31.31\)](#)

- 10 . Remove the bodyside weatherseal.

- 11 . Remove the roof moulding.
- 12 . Remove the rear drip gutter moulding.
- 13 . Remove the boot extractor vent.
- 14 . Remove the quarter panel speaker.
For additional information, refer to [Quarter Panel Speaker - 2-Door \(86.50.12\)](#)
- 15 . Remove the front safety belt retractor.
For additional information, refer to [Front Safety Belt Retractor \(76.73.10\)](#)
- 16 . Remove the door striker.
- 17 . Remove the liftgate guide.
- 18 . RH Side: Remove the antenna.
For additional information, refer to [Antenna \(86.51.17.60\)](#)
- 19 . Release the inner wheelhouse wiring harness and position it aside.
- 20 . RH side: Remove the fuel filler flap.
- 21 Using a combination of the ESN50 and a 6.5mm Cryobit drill bit, remove 18 Self Piercing Rivets. 6 from the quarter panel inner reinforcement, 4 from the back panel assembly, 2 from the rear wheelhouse outer and 6 from the rear side member closing panel. Remove 3 10mm bolts from the rocker panel.



- 22 . Using the ESN50, remove 14 Self Piercing Rivets, from the door aperture.



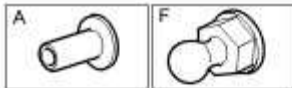
E71243 **A** →

23 . Remove the foil patch, located in the drain channel.



E75238

24 Using the ESN50, remove 16 Self Piercing Rivets. Remove the 2 which were covered by the foil patch and remove 14 from the drain channel. Remove the 1 13mm liftgate strut mounting bolt.



E71245 **A** → **F** →

25 . Saw cut the panel. Separate the joints and remove the panel bulk.

26 Mark the position of the roof panel to rear quarter panel assembly welded joint and saw cut 3mm below this point.

27 NOTE:

- There is a "hidden" Self Piercing Rivet under the roof panel.

Measure the position of the "hidden" Rivet, (see 1), and using a 6.5mm Cryobit drill bit, drill through from the drain channel side, to remove it.



28 . Separate the joint and remove the remaining quarter panel / drain channel remnant.

29 Using a belt sander, sand back the welded joint, inside and out, in preparation for the new quarter panel assembly.



Installation

- 1 . Remove the rivet remnants.
- 2 . Remove any foam/sealer remnants.
- 3 . Using a Roloc Bristle Disc, remove the adhesive residue.
- 4 . Deburr the drilled holes.
- 5 . With assistance, offer up the new panel, align and clamp into position.
- 6 Check alignment, if correct proceed to next step, if not, rectify and recheck before

. proceeding.

7 . Remove the new panel.

8 . Using a Roloc Bristle Disc, clean and prepare the panel joint surfaces.

9 . Pyrosil the joints, avoiding the area of the weld joint.

10 . Apply the coupling agent, avoiding the area of the weld joint and allow to dry.

11 . Apply Wurth semi-rigid sealer in the same locations as the old panel.

For additional information, refer to [Body Repairs](#)

12 . Apply a 5mm adhesive bead to the body joints, avoiding the area of the weld joint.

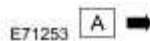
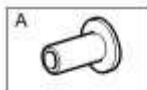
13 . With assistance, offer up the new panel, align and clamp into position.

14 Check alignment, if correct proceed to next step, if not, rectify and recheck before proceeding.

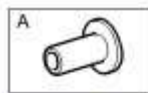
15 . Install 3 10mm bolts to the rocker panel.

16 . Install 1 13mm liftgate strut mounting bolt.

17 Using the ESN50, install 2 Self Piercing Rivets, part no: C2C 20591, to the inner B-Pillar.

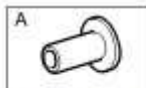


18 . Using the ESN50, install 11 Self Piercing Rivets, part no: C2C 20593, to the B-Pillar.



E71254 **A** ➡

- 19 Using the ESN50, install 6 Self Piercing Rivets, part no: C2C 20589, to the quarter panel reinforcement.
- 20 Using the ESN50, install 1 Self Piercing Rivet, part no: C2C 20593, to the rocker panel.
- 21 Using the ESN50, install 1 Self Piercing Rivet, part no: C2C 20590, to the rear quarter window aperture, (lower side of the weld joint).
- 22 Using the ESN50, install 1 Self Piercing Rivet, part no: C2C 20589, to the rear quarter window aperture, (upper side of the weld joint).
- 23 Using the ESN50, install 14 Self Piercing Rivets, to the drain channel casting. Install 2, part no: C2C 20591 and 12, part no: C2C 20590.



E71255 **A** ➡

- 24 Using the ESN50, install 6 Self Piercing Rivets, part no: C2C 20589, to the rear side member closing.
- 25 Using the ESN50, install 2 Self Piercing Rivets, part no: C2C 20589, to the rear

. wheelhouse outer.

26 . Cut 2 run on / run off tabs from the original panel, or from similar material.

27 . Tack weld the run on / run off tabs into position.

28 . Lap weld the joint between the quarter panel assembly and the roof panel.



29 . Remove the run on / run off tabs.

30 Carry out a non destructive crack inspection on the lap weld. If correct proceed to
. next step, if not, rectify and recheck before proceeding.

31 . Using a belt sander, dress the welded joint.



32 . Remove any excess adhesive.

33 . Note: Replace the foil patch on the drain channel after the primer application.

34 . Install is the reversal of removal.

Quarter Panel Assembly - Convertible

Removal

NOTE:

This is a category "A" repair.

NOTE:

In this procedure the quarter panel assembly is replaced in conjunction with the:

- rear bumper cover
- rear bumper
- Luggage compartment lid
- Convertible top compartment lid
- Convertible top compartment lid hinges LH and RH
- Convertible top assembly
- Water drain panel

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to [Body Repairs](#)

- 3 Remove the cover and disconnect the battery ground cable.

- 4 Remove the rear bumper cover.

For additional information, refer to [Rear Bumper Cover \(76.22.74\)](#)

- 5 Remove the rocker panel moulding.

For additional information, refer to [Rocker Panel Moulding \(76.11.36\)](#)

- 6 Remove the convertible top assembly.

For additional information, refer to [Convertible Top Assembly \(76.86.15\)](#)

- 7 Remove the convertible top compartment lid.

For additional information, refer to [Convertible Top Compartment Lid](#)

- 8 Remove the convertible top compartment lid hinges.

- 9 Remove the rear quarter window glass.

For additional information, refer to [Rear Quarter Window Glass - Convertible](#)

(76.31.31)

10 . Remove the boot extractor vent.

11 . Remove the door striker.

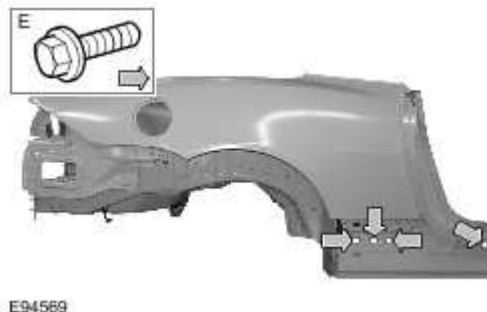
12 . RH side: Remove the antenna.

For additional information, refer to [Antenna \(86.51.17.60\)](#)

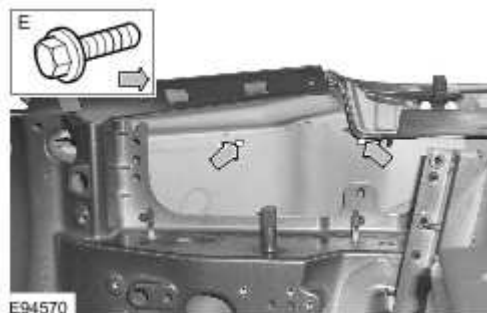
13 . RH side: Remove the fuel filler flap.

14 . Release the inner wheelhouse wiring harness and position it aside.

15 . Remove 4 10mm bolts at the rocker panel.



16 . Remove 2 10mm bolts from the inner quarter panel.



17 . Use the ESN50 to remove 1 Self Piercing Rivet at the rear inner wheelhouse half.



18 . Use the ESN50 to remove 14 Self Piercing Rivets at the door aperture.



E94572

19 Using a combination of the ESN50 and a 6.5mm Cryobit drill bit, remove 12 Self Piercing Rivets at the quarter panel lower extension.



E94573

20 Using a combination of the ESN50 and a 6.5mm Cryobit drill bit, remove 6 Self Piercing Rivets at the back panel.



E94574

21 Using a combination of the ESN50 and a 6.5mm Cryobit drill bit, remove 4 Self Piercing Rivets at the water drain panel.



22 . Separate the joints and remove the panel.

Installation

- 1 . Remove the rivet remnants.
- 2 . Remove any foam/sealer remnants.
- 3 . Using a Roloc Bristle Disc, remove the adhesive residue.
- 4 . Deburr the drilled holes.
- 5 . Offer up the new panel, align and clamp into position.
- 6 . Check alignment, if correct proceed to next step, if not, rectify and recheck before proceeding.
- 7 . Remove the new panel.
- 8 . Using a Roloc Bristle Disc, clean and prepare the panel joints.
- 9 . Pyrosil the joints.
- 10 . Apply the coupling agent and allow to dry.
- 11 . Apply a flexible sealant / adhesive to the areas illustrated, in the same locations as the old panel.
For additional information, refer to [Body Repairs](#)



E94575

- 12 . Apply a flexible sealant / adhesive to the NVH element.
For additional information, refer to [Body Repairs](#)



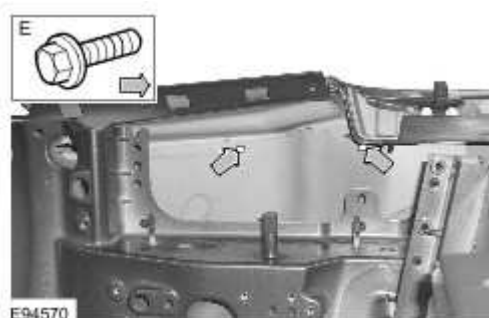
E94576

- 13 Apply a 5mm adhesive bead to the body joints. Adhesive must be applied between all riveted joints and any other locations where it was originally applied.
- 14 . Offer up the new panel, align and clamp into position.
- 15 Check alignment, if correct proceed to next step, if not, rectify and recheck before proceeding.
- 16 . Install 4 10mm bolts to the Rocker Panel.



E94569

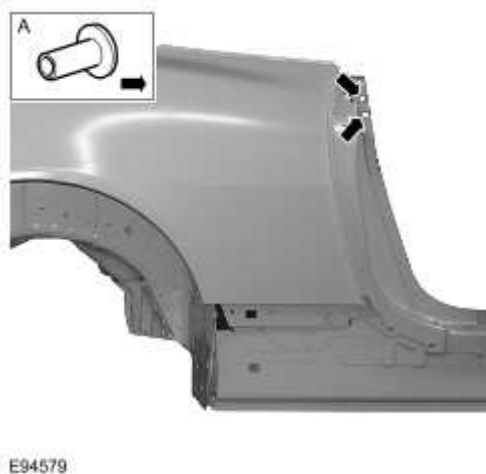
- 17 . Install 2 10mm bolts to the inner quarter panel.



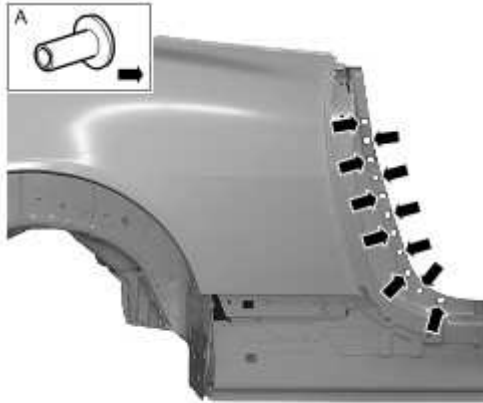
- 18 Using the ESN50, install 1 Self Piercing Rivet, part no: C2C 20589, (2 panel thickness), at the rear inner wheelhouse half.



- 19 Using the ESN50, install 2 Self Piercing Rivets, part no: C2C 20591, (2 panel thickness), at the door aperture.



- 20 Using the ESN50, install 11 Self Piercing Rivets, part no: C2C 20593, (3 panel thickness), at the door aperture.



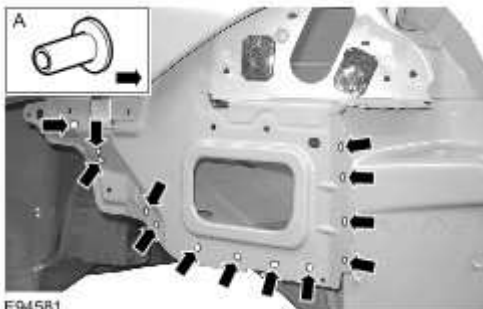
E94580

- 21 Using the ESN50, install 1 Self Piercing Rivet, part no: C2C 20590, (2 panel thickness), at the door aperture.



E94578

- 22 Using the ESN50, install 12 Self Piercing Rivets, part no: C2C 20589, (2 panel thickness), at the quarter panel lower extension.



E94581

- 23 Using the ESN50, install 6 Self Piercing Rivets, part no: C2C 20589, (2 panel thickness), at the back panel.



24 . Using the ESN50, install 3 Self Piercing rivets, part no: C2C 20589.



25 . Using the ESN50, install 1Self Piercing rivets, part no: C2C 20592.



26 . Remove any excess adhesive.

27 The installation of associated panels and mechanical components is the reverse of removal.

Back Panel Assembly

Removal

NOTE:

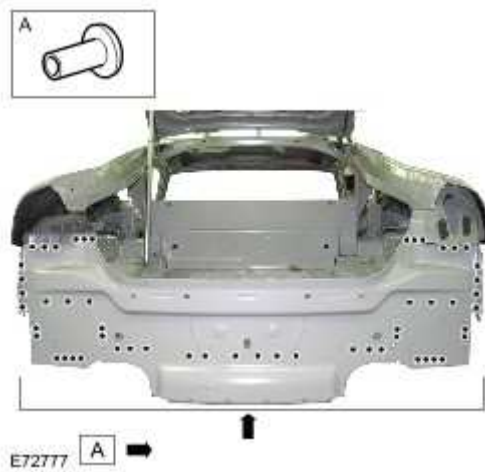
This is a category 'A' repair.

NOTE:

In this procedure the back panel assembly is replaced in conjunction with the:

- rear bumper cover
- rear bumper

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.
For additional information, refer to [Health and Safety Precautions](#)
- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.
For additional information, refer to
- 3 . Disconnect the battery.
For additional information, refer to
- 4 . Remove the rear bumper.
For additional information, refer to [Rear Bumper \(76.22.27\)](#)
- 5 . Remove the LH and RH extractor vents.
- 6 . Remove the liftgate striker.
- 7 . Release the back panel wiring harness and position it aside.
- 8 Using a combination of the ESN50 and a 6.5mm Cryobit Drill Bit, remove 54 Self Piercing Rivets.



9 . Separate the joints and remove the panel.

Installation

1 . Remove rivet remnants.

2 . **NOTE:**

Do not clean the steel bracket on the spare wheel well.

Using a Roloc Bristle Disc, remove adhesive residue.

3 . Dress flanges where necessary.

4 Offer up the new panel and clamp into position. Check alignment, if correct proceed to
 . next step, if not, rectify and recheck before proceeding.

5 Using a 6.5mm Cryobit Drill Bit, drill 4 holes, 2 each side, through the rear side
 . member into the new panel.



6 Using a 6.5mm Cryobit Drill Bit, drill 12 holes through the trunk floor into the new

. panel.

7 Using a 6.5mm Cryobit Drill Bit, drill 6 holes, 3 each side, through the side member
. closing into the new panel.

8 . Countersink 4 holes, 2 each side, in the new panel.



9 . Remove the new panel.

10 . Deburr drilled holes.

11 . Using a Roloc Bristle Disc, clean and prepare the panel surfaces.

12 . Pyrosil the joints.

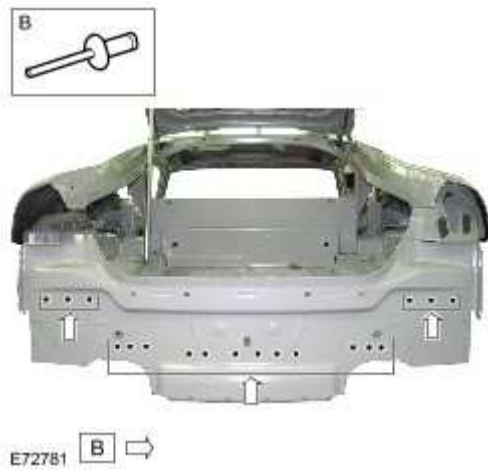
13 . Apply the coupling agent and allow to dry.

14 . Apply a 5mm adhesive bead to the body joints.



15 . Offer up the panel, align and clamp into position.

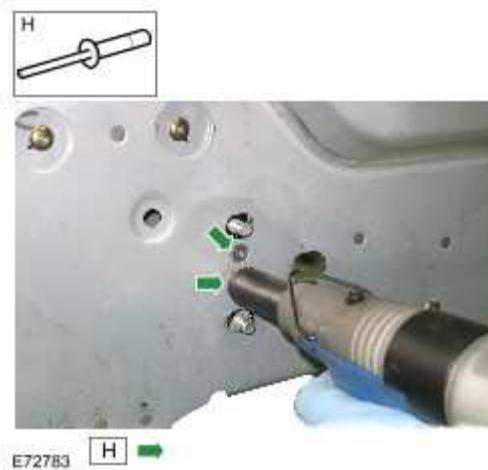
16 Using the Genesis G4, install 18 Hemloks, 12 into the spare wheel well and 6 , 3 each
. side, into the rear side member closing panel, part no: C2C 7792.



17 NOTE:

- These need to be Countersunk fixings as the rear bumper is fixed at these points and needs to sit flush with the back panel.

Using the Genesis G4, install 4 Countersunk Monobolts, 2 each side, into the rear side member, 2 each side.



- 18 Using the ESN50, install 20 Self Piercing Rivets, 10 each side, into the quarter panel,
- part no: C2C 20589.



E72782 A ➔

- 19 Using the ESN50, install 12 Self Piercing Rivets, 6 each side, into the rear side member, part no: C2C 20591.



E7311Q A ➔

20 . Remove any excess adhesive.

21 . Install is the reversal of removal.

Rear Side Member Closing Panel

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the rear side member closing panel is replaced in conjunction with the:

- rear bumper cover
- rear bumper
- back panel assembly

NOTE:

The fuel tank and rear subframe have to be removed for access.

NOTE:

The rear side member closing panel can only be installed with the rear side member reinforcement panel.

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.
For additional information, refer to [Health and Safety Precautions](#)
- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.
For additional information, refer to
- 3 . Remove the battery.
- 4 . Remove the battery tray.
- 5 . Remove the fuel tank.
For additional information, refer to [Fuel Tank \(19.55.01\)](#)
- 6 . RH Side: Remove the fuel tank filler pipe.
For additional information, refer to [Fuel Tank Filler Pipe \(19.55.33\)](#)
- 7 . RH Side: Remove the antenna.
For additional information, refer to [Antenna \(86.51.17.60\)](#)
- 8 . Release the inner wheelhouse wiring harness and position it aside.

9 . Remove the navigation system module.

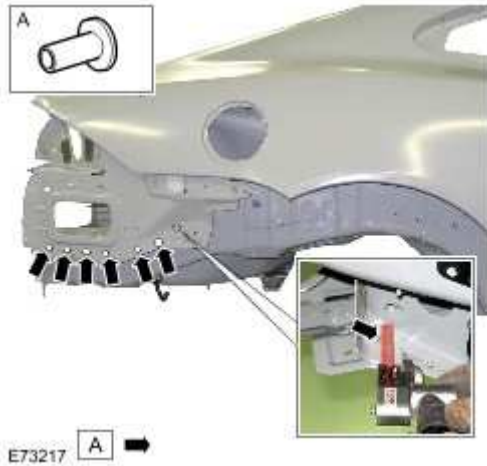
For additional information, refer to [Navigation System Module \(86.62.05\)](#)

10 . Remove the back panel assembly.

For additional information, refer to [Back Panel Assembly](#)

11 Using the ESN50, remove 6 Self Piercing Rivets, to the quarter panel lower extension.

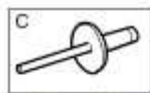
- Using a Belt Sander, sand down the head of 1 Self Piercing Rivet, (inset), accessed from underneath. (If the quarter panel assembly or the quarter panel lower extension is removed, the fixing can be removed using the ESN50).



12 . Using a 6.5mm Cryobit drill bit, remove 11 Self Piercing Rivets, to the wheelhouse.

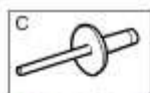


13 . Remove 3 Monobolts, to the rear side member reinforcement panel.



E73219 C ➡

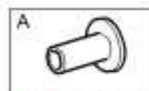
14 . Remove 2 Monobolts, to the luggage floor.



E73220 C ➡

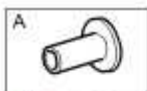
15 Using an air saw, Bulk Cut the old panel to enable access to further fixings. If the
 . quarter panel or quarter panel lower extension is removed the Bulk Cut is not required.

16 Using a Belt Sander, sand down the underside heads of 20 Self Piercing Rivets, to the
 . rear side member. Then, using the ESN50, remove the rivets.



E73221 **A** ➡

17 . Using the ESN50, remove 5 Self Piercing Rivets, to the rear side member.



E73222 **A** ➡

18 Using an air saw, bulk cut the old panel at its joint with the luggage floor, approx 42cm long.



E73223

19 . Separate joints and remove the bulk of the closing panel.

Installation

- 1 The side member closing panel is installed with the side member reinforcement panel.
 - (The procedure for removing the remaining rear side member closing panel remnant and the installation of the rear side member closing panel, is described in the rear side member reinforcement panel procedure).

For additional information, refer to [Rear Side Member Reinforcement Panel](#)

Rear Side Member Reinforcement Panel

Removal

NOTE:

This is a category 'A' repair.

NOTE:

In this procedure the rear side member reinforcement panel is replaced in conjunction with the:

- rear bumper cover
- rear bumper
- back panel assembly
- rear side member closing panel

NOTE:

The fuel tank and rear subframe have to be removed for access.

NOTE:

The rear side member reinforcement panel can only be installed with the rear side member closing panel.

- 1 Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to

- 3 Remove the rear side member closing panel.

For additional information, refer to [Rear Side Member Closing Panel](#)

- 4 Using an air saw, bulk cut the panel, then, using a 6.5mm Cryobit drill bit, remove 1 Self Piercing Rivet, to the rear suspension top mount.



5 . Separate the joints and remove the bulk of the rear side member reinforcement panel.

6 Using a combination of the ESN50 and a 6.5mm Cryobit drill bit, remove 4 Self
 . Piercing Rivets. Separate the joints and remove the rear side member reinforcement
 panel remnant.

7 Locate 3 hidden Self Piercing Rivets, (under the luggage floor), to the rear side
 . member. Using a 6.5mm Cryobit drill bit, drill through the luggage floor above these
 rivets for access. Note: The holes may need to be enlarged slightly to expose the rivet
 heads. Use a 6.5mm Cryobit drill bit to remove.



8 Using a 6.5mm Cryobit drill bit, remove 1 Self Piercing Rivet, from underneath the
 . vehicle, to the rear side member.



- 9 Separate the joints and remove the remaining remnant of the rear side member closing panel.

Installation

NOTE:

The installation of the rear side member closing panel is carried out with the rear side member reinforcement panel.

- 1 . Using a Roloc Bristle Disc, remove adhesive residue.
- 2 . Remove rivet remnants.
- 3 . Offer up the rear side member reinforcement panel.
- 4 Check alignment, if correct proceed to next step, if not, rectify and recheck before proceeding.
- 5 Clamp the rear side member reinforcement panel into position and using a 6.5mm Cryobit drill bit, drill 4 holes. Countersink the holes in the body panel ready to accept countersunk Monobolts.



- 6 Offer up the rear side member closing panel to the rear side member reinforcement panel. Use a nut and bolt through the two panels and one of the the rear suspension top mount fixing holes to align and clamp into position.



- 7 Check alignment, if correct proceed to next step, if not, rectify and recheck before proceeding.
- 8 Using a 6.5mm Cryobit drill bit, drill 11 holes through the wheelhouse into the new closing panel.



- 9 Using a 6.5mm Cryobit drill bit, drill 4 holes through the floor panel into the new closing panel. 3 of these holes are drilled from above, the fourth is drilled from underneath, (as shown in the inset).



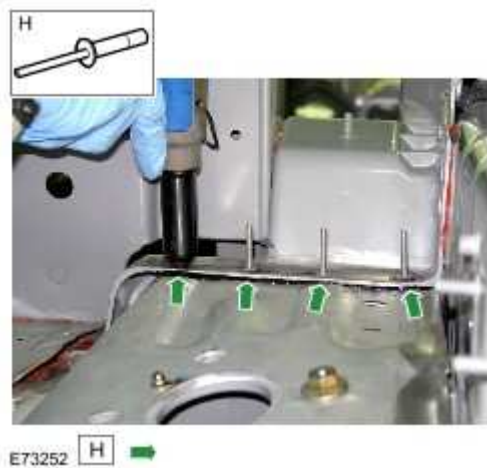
E74932

- 10 . Remove the new panels.
- 11 . Deburr the drilled holes.
- 12 . Using a Roloc Bristle Disc, clean and prepare both panel joint surfaces.
- 13 . Pyrosil the joints of both panels.
- 14 . Apply the coupling agent to both panels and allow to dry.
- 15 . Apply a 5mm adhesive bead to the reinforcement panel, offer up the panel and align.
- 16 . Using the Genesis G4, install 1 Hemlok, from underneath, part no: C2C 10349.



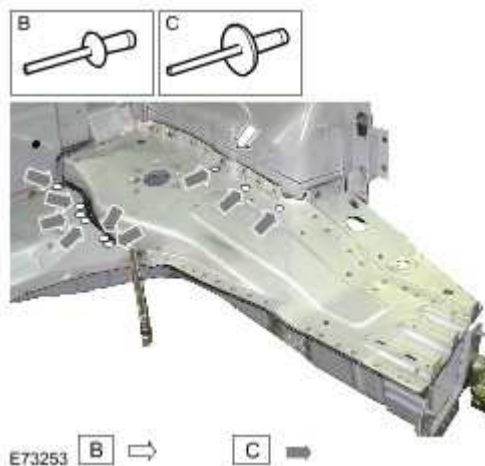
E73251 B ➡

- 17 . Using the Genesis G4, install 4 Countersunk Monobolts.

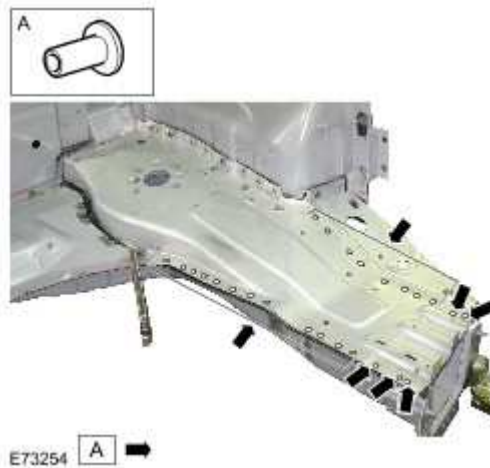


18 . Apply a 5mm adhesive bead to the closing panel, offer up the panel and align.

19 Using the Genesis G4, install 11 Hemloks, part no: C2C 7792, to the wheelhouse and
 . 9 Monobolts, part no: C2P 4773, 3 to the rear side member reinforcement panel and 6 to the luggage floor.



20 Using the ESN50, install 25 Self Piercing Rivets, part no: C2C 20595, to the rear side
 . member.



E73254 A →

- 21 If the rear quarter panel lower extension, or quarter panel assembly is removed: Using the ESN50, install 1 Self Piercing Rivet, part no: C2C 20590, through the rear wheelhouse outer into the rear side member reinforcement panel, (as shown in the illustration).



E73255 A →

- 22 If the rear quarter panel lower extension, or quarter panel assembly is in place: Using the ESN50, install 1 Self Piercing Rivet, part no: C2C 20595, through the rear quarter panel lower extension into the rear side member reinforcement panel.

- 23 . Remove any excess adhesive.

- 24 . Install is the reversal of removal.

Water Drain Panel - Convertible

Removal

NOTE:

This is a category "A" repair.

NOTE:

If the water drain panel is removed for access only, it will require renewal due to the holes made during its removal.

NOTE:

In this procedure the water drain panel is replaced in conjunction with the:

- Luggage compartment lid
- Convertible top compartment lid
- Convertible top compartment lid hinges LH and RH
- Convertible top assembly

- 1 . Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 . For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to [Body Repairs](#)

- 3 . Remove the convertible top assembly.

For additional information, refer to [Convertible Top Assembly \(76.86.15\)](#)

- 4 . Remove the convertible top compartment lid.

For additional information, refer to [Convertible Top Compartment Lid](#)

- 5 . Remove the convertible top compartment lid hinges.

For additional information, refer to [Convertible Top Compartment Lid Hinge](#)

- 6 . Using the ESN50, remove 8 Self-Piercing Rivets.



7 NOTE:

- To aid separation, use a heat gun to soften the adhesive bond to the water drain panel reinforcement.

Separate the joints and remove the panel.

Installation

- 1 . Remove the rivet remnants.
- 2 . Using a Roloc Bristle Disc, clean and prepare the panel joints.
- 3 . Pyrosil the joints.
- 4 . Apply the coupling agent and allow to dry.
- 5 . Apply a 5mm adhesive bead to the water drain panel reinforcement.



6 NOTE:

- If the water drain panel is being fitted to the original quarter panel, the rivets must be installed avoiding the original removal holes.

Using the ESN50, install 6 Self-Piercing rivets, part no: C2C 20589.



E94586

7 NOTE:

- If the water drain panel is being fitted to the original water drain panel reinforcement, the rivets must be installed avoiding the original removal holes.

Using the ESN50, install 2 Self-Piercing rivets, part no: C2C 20592.



E94587

- 8 The installation of associated panels and mechanical components is the reverse of removal.

Water Drain Panel Reinforcement - Convertible

Removal

NOTE:

This is a category "A" repair.

NOTE:

In this procedure the water drain panel reinforcement is replaced in conjunction with the:

- Luggage compartment lid
- Convertible top compartment lid
- Convertible top compartment lid hinges LH and RH
- Convertible top assembly
- Water drain panel
- Quarter panel

NOTE:

At least one quarter panel has to be removed to enable this repair.

- 1 . Before commencing this procedure ensure that you are aware of all Health and Safety requirements.

For additional information, refer to [Health and Safety Precautions](#)

- 2 . For further information on the methods, tools and fixings used in this procedure refer to the body repairs - general information section.

For additional information, refer to [Body Repairs](#)

- 3 . Remove the water drain panel.

For additional information, refer to [Water Drain Panel - Convertible](#)

- 4 . Remove the quarter panel.

For additional information, refer to [Quarter Panel Assembly - Convertible](#)

- 5 . Remove 4 10mm bolts, 2 each side.



6 . NOTE:

To aid separation, use a heat gun to soften the adhesive bond to the quarter panel.

Separate the joints and remove the panel.

Installation

NOTE:

The water drain panel reinforcement cannot be installed if the quarter panel is in place. The following 4 steps should be performed to the new panel prior to installing the quarter panel.

- 1 . Using a Roloc Bristle Disc, clean and prepare the panel joints.
- 2 . Pyrosil the joints.
- 3 . Apply the coupling agent and allow to dry.
- 4 . Install the water drain panel reinforcement between its fixing brackets, but do not secure it.
- 5 . Install the quarter panel.

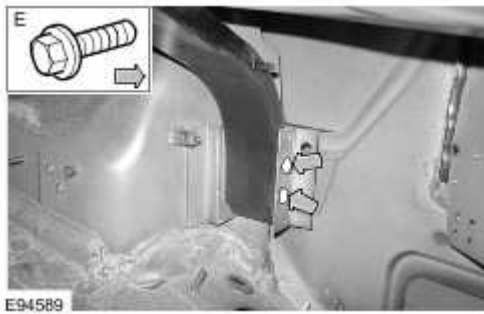
6 NOTE:

- The water drain panel rivets should be installed before the adhesive cures.

Apply a 5mm adhesive bead to the water drain panel reinforcement in the areas illustrated.



- 7 Raise and align the reinforcement panel, once aligned, install 4 10mm bolts, 2 each side.



- 8 . Install the water drain panel.
- 9 The installation of associated panels and mechanical components is the reverse of removal.

502 : Frame and Mounting

502-00 : Uni-Body, Subframe and Mounting System

Specifications

Specifications

Torque Specifications

Item	Nm	lb-ft	lb-in
Dash braces to engine bay - bolt	55	40	-
Front subframe to body - forward bolt	80 Nm + 360 degrees	59 lb-ft + 360 degrees	-
Front subframe to body - rear bolt	80 Nm + 270 degrees	59 lb-ft + 270 degrees	-
Front subframe NVH brace - bolt	55	40	-
Radiator brace lower to longitudinal brackets - bolt	23	17	-
Rear subframe to body - bolt	60 Nm + 240 degrees	44 lb-ft + 240 degrees	-
Rear K-frame brace - forward bolt	133	98	-
Rear K-frame brace - rear bolt	40	30	-
Reinforcer front floor pan to underfloor of BIW - screw	40	30	-

Front Subframe (76.10.05)

Special Service Tools



303-021

Engine support bracket

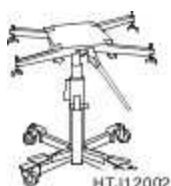
303-021



303-749

Engine lifting brackets

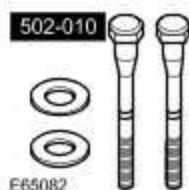
303-749



HTJ12002

Power train assembly jack HTJ

1200-2



Subframe alignment bolts

502-010

Removal

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

For additional information, refer to

2



WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

Raise and support the vehicle.

3 . Remove the radiator air deflector.

For additional information, refer to Radiator Splash Shield (76.22.90)

4 . Remove the engine undershield.

For additional information, refer to Air Deflector (76.11.41)

5 . Remove the lower suspension arms.

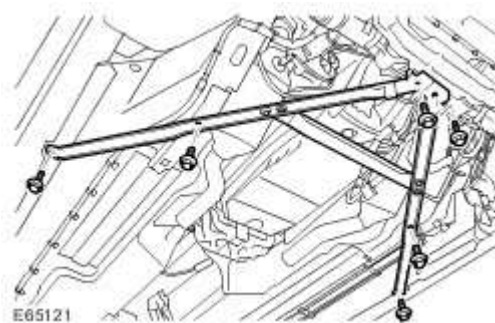
For additional information, refer to Rear Lower Arm (60.35.54)

6 . Remove the throttle body.

For additional information, refer to Throttle Body (19.70.04)

7 . With assistance, remove the A-frame.

 Remove the 6 bolts.



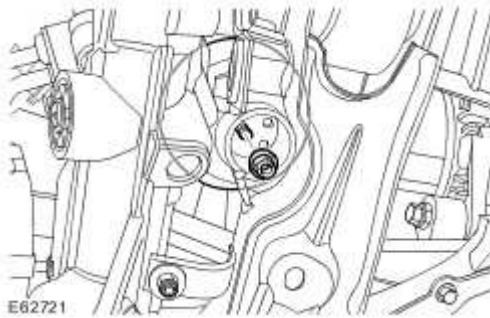
8 . **NOTE:**

RH illustration shown, LH is similar

Release the engine mounts.

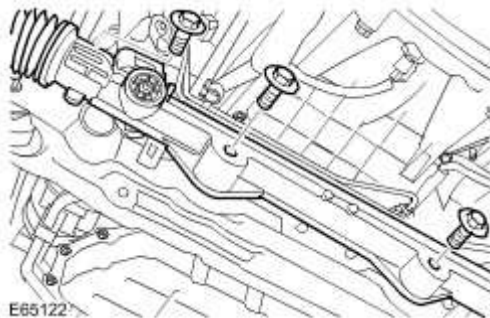
➤ Remove and discard the 2 nuts.

➤ Raise the engine.



9 . Support and release the power steering rack.

➤ Remove the 3 bolts.

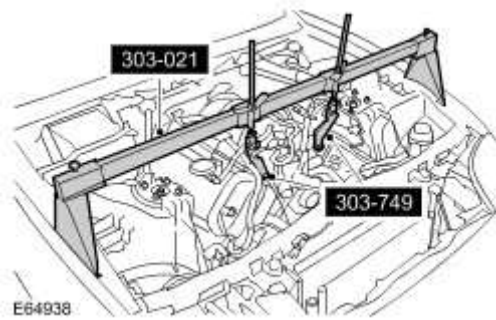


10 .



CAUTION: Protect the paintwork during this operation.

Using the special tools, support the engine.



11 . Secure the radiator assembly.

▶ Secure with cable ties.

12 . Using the special tool, support the subframe.

13 . **NOTE:**

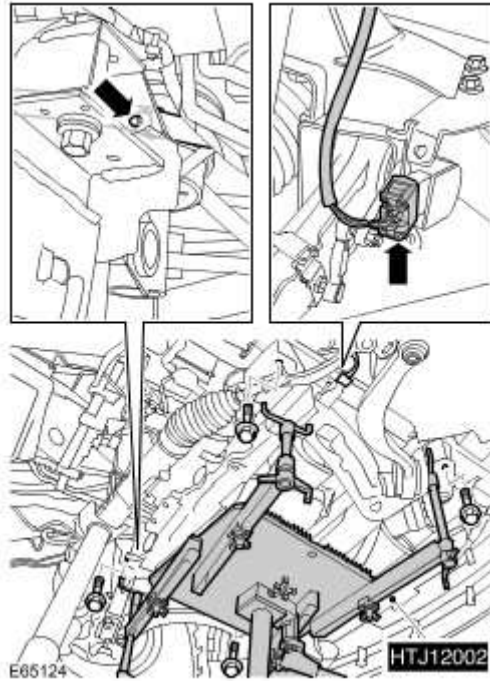
Note the fitted position.

With assistance, remove the front subframe assembly.

▶ Remove the 4 bolts.

▶ Release the PAS pipe to subframe clip.

▶ Disconnect the electrical connector.

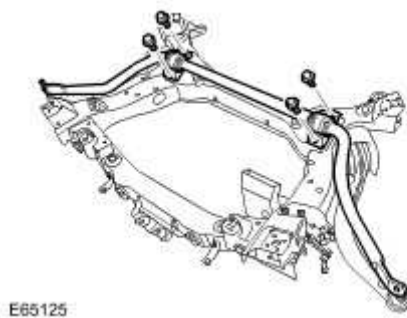


14 . NOTE:

Do not disassemble further if the component is removed for access only.

Remove the stabilizer bar.

- ▶ Remove the 4 bolts.
- ▶ Remove the stabilizer bar bushing.

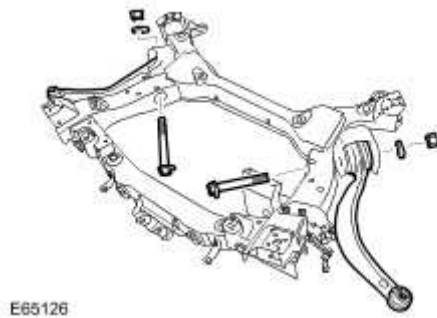


15 . NOTE:

Note the fitted position of the fasteners.

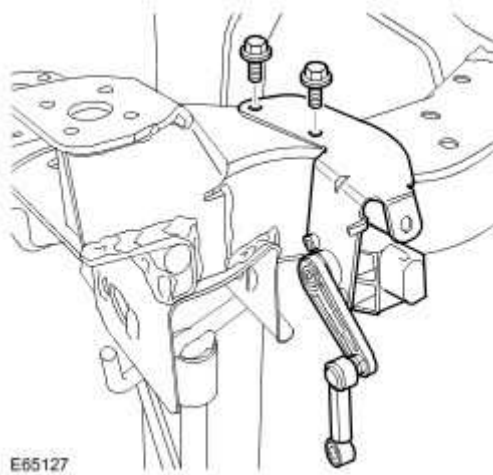
Remove the lower suspension arms.

▶ Remove the 2 bolts and discard the nuts.



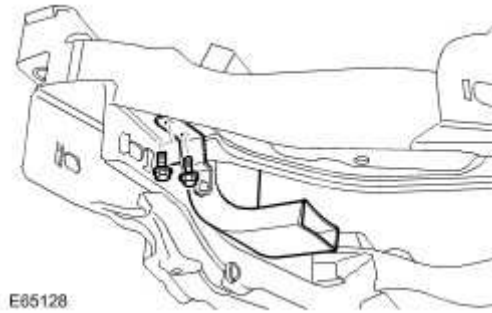
16 . Remove the suspension height sensor.

▶ Remove the 2 bolts.



17 . Remove the generator cooling duct

▶ Remove the 2 screws.



Installation

- 1 . Install the generator cooling duct

▶ Tighten the screws.

- 2 . Install the height sensor.

▶ Tighten the bolts to 25 Nm (18 lb.ft).

3



- **CAUTION: The final tightening of the suspension components must be carried out with the vehicle on its wheels.**

NOTE:

Align to the position noted on removal.

Install the lower suspension arms.

▶ Tighten the nut and bolt to 175 Nm (129 lb.ft).

- 4 . Install the stabilizer bar.

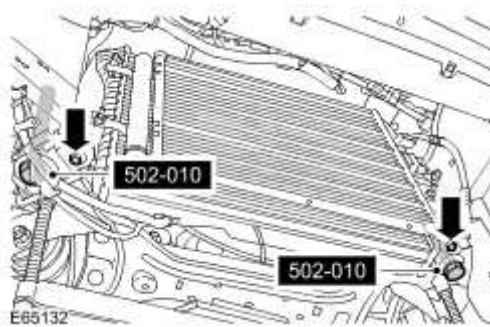
▶ Install the stabilizer bar bushings.

- ▶ Tighten the bolts to 45 Nm (33 lb.ft).

- 5 .  **CAUTION:** To align the sub-frame, install the special bolts in place of the front fixings. Tighten the rear fixings to set the position, remove the special bolts.

With assistance, install the front subframe.

- ▶ Position the radiator mountings.
- ▶ Using the special the special tools, align the subframe.
- ▶ Connect and secure the electrical connector.



- 6 . Tighten the subframe bolts.

- ▶ Tighten the front bolts (M15) to 80 Nm plus 360deg.
- ▶ Tighten the rear bolts (M12) to 80 Nm plus 270deg.

- 7 . With assistance, install the A-frame.

- ▶ Tighten the bolts to 55 Nm (40 lb.ft).

- 8 . Install the engine undershield.

For additional information, refer to Air Deflector (76.11.41)

9 . Install the radiator deflector.

For additional information, refer to Radiator Splash Shield (76.22.90)

10 . Lower the engine onto its mounts.

 Tighten the new nuts to 63 Nm (46 lb.ft).

 Remove the special tools.

11 . Remove and discard the 2 cable ties.

12 . Install the lower suspension arms.

For additional information, refer to Rear Lower Arm (60.35.54)

13 . Install the throttle body.

For additional information, refer to Throttle Body (19.70.04)

14 . Connect the battery ground cable and install the cover.

For additional information, refer to

15 Using only four-wheel alignment equipment approved by Jaguar, check the wheel alignment,
and adjust if required.

Rear Subframe (64.25.01)

Special Service Tools



Power train assembly jack HTJ
1200-2



Brake pedal hold down tool JDS 9013

Removal



CAUTION: Prior to removing the subframe it is important to mark the fitted position of the subframe in relation to the body. The subframe must then be accurately aligned to these marks upon installation.

1



WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

Raise and support the vehicle.

2 . Remove the rear wheels and tires.

For additional information, refer to Wheel and Tire (74.20.05)

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

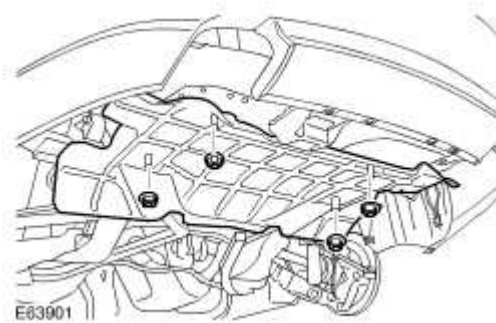
For additional information, refer to Specifications

4 Remove the driveshaft.

- For additional information, refer to Driveshaft - 4.2L NA V8 - AJV8/4.2L SC V8 - AJV8 (47.15.01)

5 . Remove the exhaust rear heat shield .

▶ Remove the 4 nuts.



6



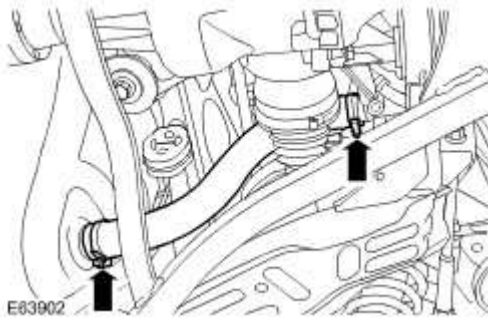
- **WARNING:** The spilling of fuel is unavoidable during this operation. Ensure that all necessary precautions are taken to prevent fire and explosion.

NOTE:

The fuel tank has a non-return valve in the filler stub pipe, only the fuel present in the filler hose will be spilt.

Remove the fuel filler hose.

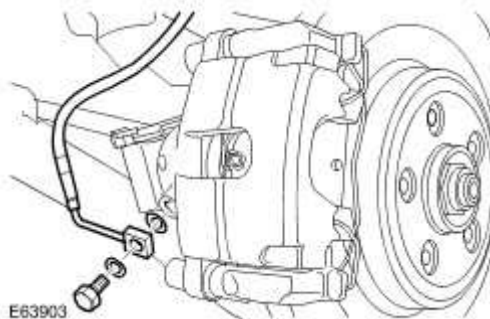
▶ Remove the 2 clips.



7 . Using the special tool, press and hold the brake pedal.

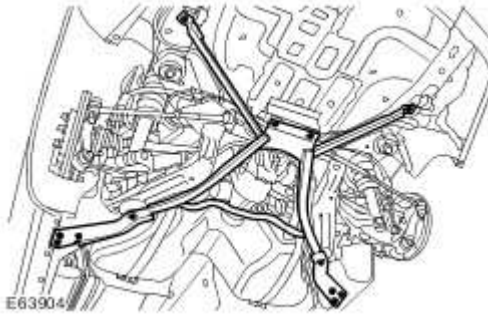
8 . Disconnect the brake hose from the LH caliper and tie aside.

- Remove and discard the 2 sealing washers.
- Release the brake hose from the upper arm.
- Repeat the above procedure for the other side.

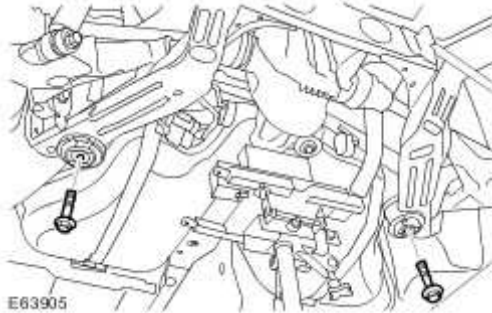


9 . With assistance: Remove the body K-frame.

- Using a jack, support the differential.
- Remove the 8 bolts.
- Remove the 4 Torx bolts.



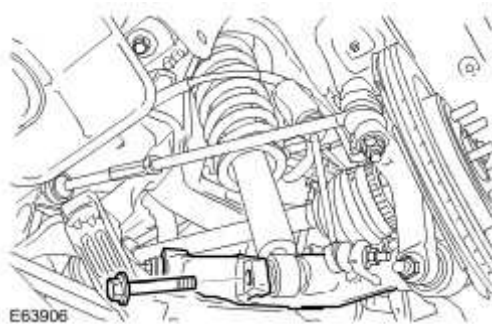
10 . Install the 2 subframe mounting bolts and remove the support jack.



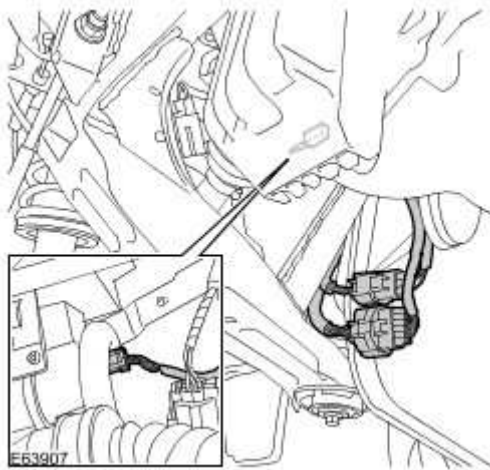
11 . Release the LH rear shock absorber from the lower suspension arm.

▶ Remove the bolt.

▶ Repeat the above procedure for the other side.



12 . Disconnect the 3 electrical connectors.



13 . Support the subframe using the special tool.

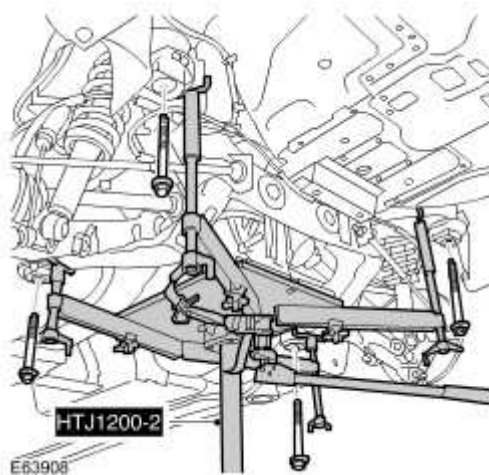
14  **CAUTION:** Mark the fitted position of the subframe in relation to the body at the 4 mounting points.

NOTE:

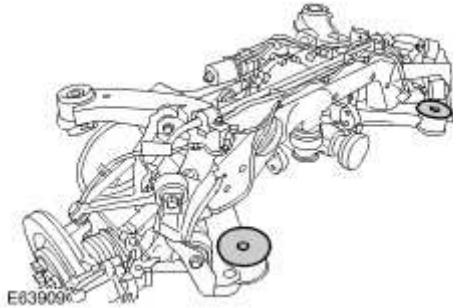
Note the fitted position.

With assistance, remove the rear subframe assembly.

 Remove and discard the 4 bolts.



15 . Remove the 2 spacers.



Installation

1 . Install the spacers.

2 NOTE:

Align to the positions marked on removal. If installing a new subframe, or new body panels have been installed, the subframe bushes must be central to the holes in the body panels.

With assistance, position and secure the subframe.

▶ Install the bolts, but do not tighten fully at this stage.

3 . Position and secure the rear shock absorbers.

▶ Tighten the bolts to 133 Nm (98 lb.ft).

4 . Using a transmission jack, support the differential.

▶ Remove the 2 bolts.

5 . With assistance, install the K-frame.

- ▶ Tighten the M10 bolts to 40 Nm (30 lb.ft).
- ▶ Tighten the M12 bolts to 133 Nm (98 lb.ft).
- ▶ Tighten the sub frame bolts to 60 Nm (44 lb.ft), then a further 240 degrees.

6 . Remove the transmission jack.

7 . Connect and secure the electrical connectors.

8 . Connect the brake hose to the brake caliper.

- ▶ Install new sealing washers.
- ▶ Tighten the union to 35 Nm (26 lb.ft).
- ▶ Repeat the above procedure for the other side.
- ▶ Remove the special tool.

9 . Install the heat shield.

- ▶ Tighten the nuts to 10 Nm (7 lb.ft).

10 . Install the fuel filler hose.

- ▶ Remove the 2 clips.
- ▶ Position and secure the clips.

11 Install the driveshaft.

- For additional information, refer to Driveshaft - 4.2L NA V8 - AJV8/4.2L SC V8 - AJV8 (47.15.01)

12 . Bleed the brake system.

For additional information, refer to Brake System Bleeding (70.25.03)

13 . Install the wheels and tires.

For additional information, refer to Wheel and Tire (74.20.05)

14 . Connect the battery ground cable and install the cover.

For additional information, refer to Specifications

15 Using only four-wheel alignment equipment approved by Jaguar, check the wheel alignment,
and adjust if required.

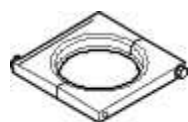
For additional information, refer to Four-Wheel Alignment

Rear Subframe Front Bushing (64.25.34)

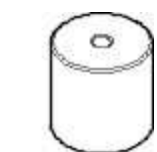
Special Service Tools



Forcing bolt
204-469



Remover support
204-479



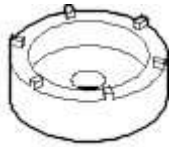
Reciever-bush
204-481



Remover-bush
204-482



Support-bush
204-480



204-483

Installer-bush
204-483

Removal

All vehicles

- 1 . Disconnect the battery ground cable.
For additional information, refer to Specifications

2



- **CAUTION: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

Vehicles with 4.2L engine

- 3 . Remove the rear subframe assembly.
For additional information, refer to Rear Subframe (64.25.01)

Vehicles with 5.0L engine

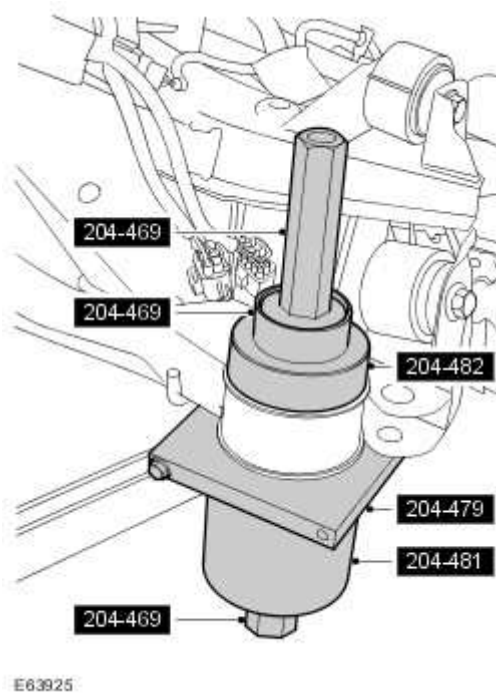
- 4 . Remove the rear subframe assembly.
For additional information, refer to

All vehicles

- 5 . **NOTE:**

Note the fitted position.

Using the special tools, remove and discard the rear subframe front bushing.



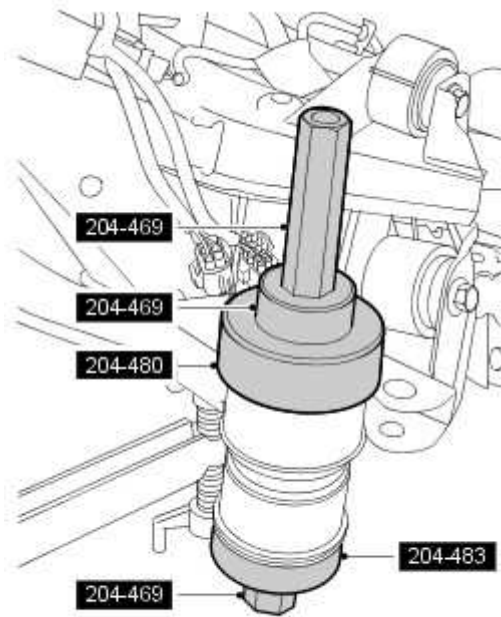
Installation

All vehicles

1 . NOTE:

Align to the position noted on removal.

Using the special tools, Install the new front bushings.



E63927

Vehicles with 4.2L engine

- 2 . Install the rear subframe.

For additional information, refer to Rear Subframe (64.25.01)

Vehicles with 5.0L engine

- 3 . Install the rear subframe.

For additional information, refer to

All vehicles

- 4 . Connect the battery ground cable.

For additional information, refer to Specifications

Rear Subframe Rear Bushing (64.25.36)

Special Service Tools



Forcing bolt
204-469



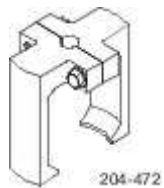
Receiver-bush
204-475



Replacer-bush
204-474



Remover bush
204-473



Remover support-bush
204-472

Removal

All vehicles

- 1 . Disconnect the battery ground cable.
For additional information, refer to Specifications

- 2  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

Vehicles with 4.2L engine

- 3 . Remove the rear subframe assembly.
For additional information, refer to Rear Subframe (64.25.01)

Vehicles with 5.0L engine

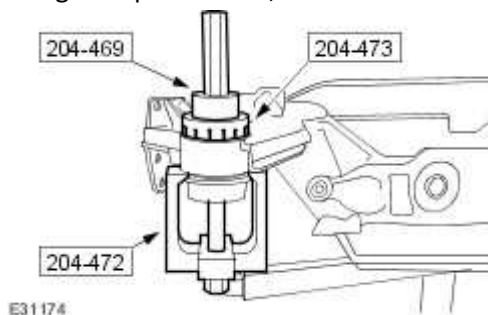
- 4 . Remove the rear subframe assembly.
For additional information, refer to

All vehicles

- 5 . **NOTE:**

Note the fitted position.

Using the special tools, remove and discard the rear subframe rear bushing.



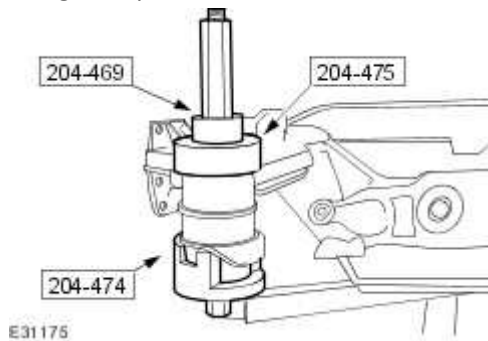
Installation

All vehicles

1 . NOTE:

Align to the position noted on removal.

Using the special tools, Install the new rear bushings.



Vehicles with 4.2L engine

2 . Install the rear subframe.

For additional information, refer to Rear Subframe (64.25.01)

Vehicles with 5.0L engine

3 . Install the rear subframe.

For additional information, refer to

All vehicles

4 . Connect the battery ground cable.

For additional information, refer to Specifications