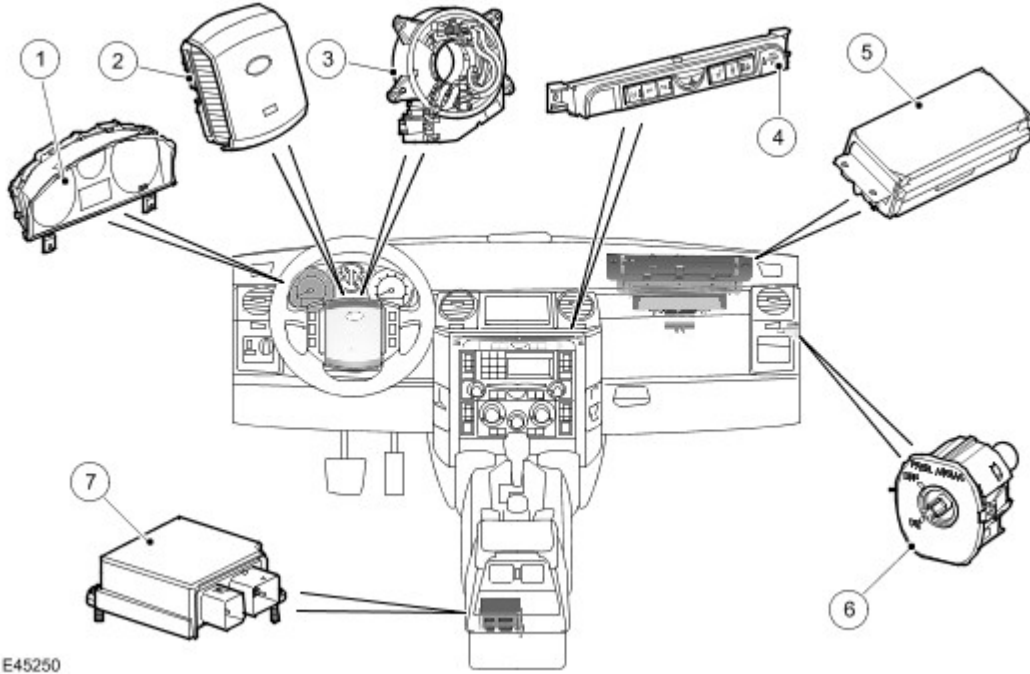




Air Bag and Safety Belt Pretensioner Supplemental Restraint System (SRS)

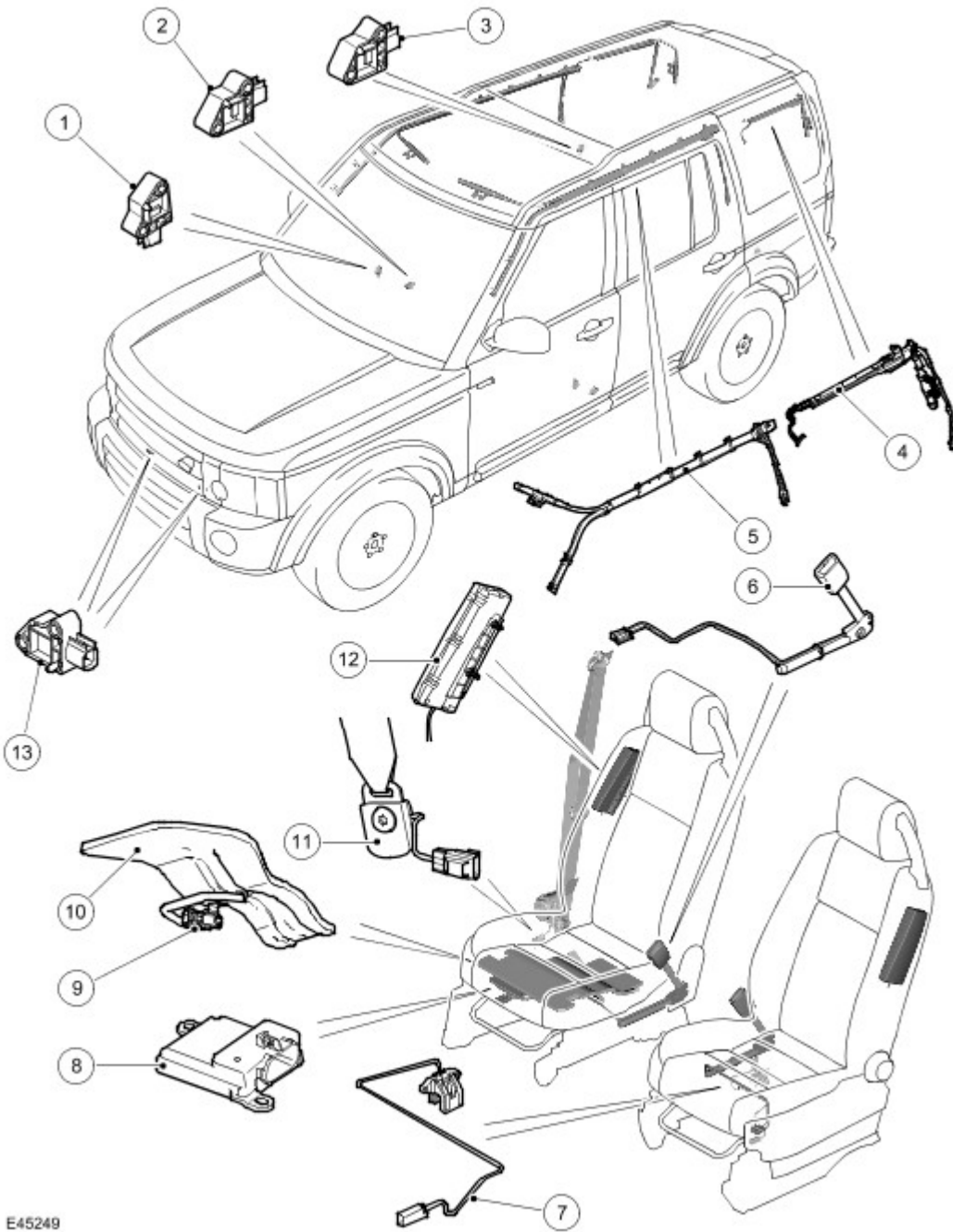
COMPONENT LOCATIONS, SHEET 1 OF 2



E45250

Item	Part Number	Description
1	-	SRS (supplemental restraint system) warning indicator
2	-	Driver air bag
3	-	Clockspring
4	-	Passenger air bag deactivation indicator
5	-	Passenger air bag
6	-	Passenger air bag deactivation switch (all except NAS (north American specification) and Australia)
7	-	RCM (restraints control module)

COMPONENT LOCATIONS, SHEET 2 OF 2



E45249

Item	Part Number	Description
1	-	Door side impact sensor
2	-	B pillar side impact sensor
3	-	Rear quarter side impact sensor
4	-	Third row side air curtain
5	-	First and second row side air curtain
6	-	Safety belt pretensioner and buckle switch
7	-	Seat position sensor
8	-	Occupant classification module (NAS only)
9	-	Seat cushion pressure sensor (NAS only)
10	-	Seat cushion pressure pad (NAS only)

11	-	Safety belt tension sensor (NAS only)
12	-	Side air bag
13	-	Front impact sensors

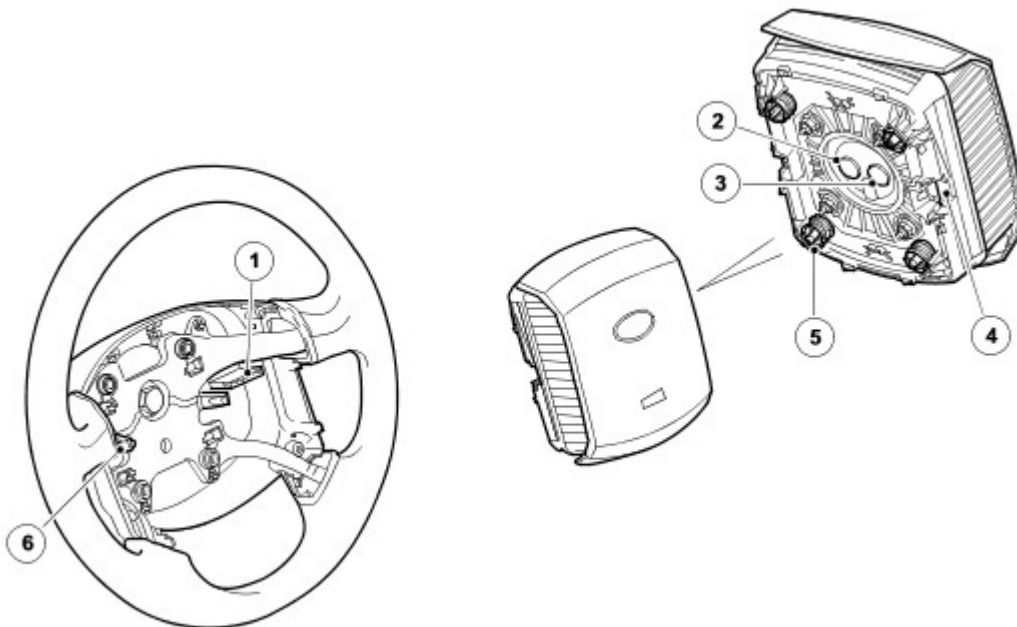
GENERAL

The SRS (supplemental restraint system) provides additional protection for occupants in certain vehicle accident conditions. The SRS (supplemental restraint system) consists of:

- A driver air bag
- A passenger air bag
- A side air bag on each front seat
- Side air curtains for first and second row seats
- Side air curtains for third row seats (where fitted)
- A pretensioner for each front safety belt
- A buckle sensor for each front safety belt
- Front and side impact sensors
- A passenger air bag deactivation indicator
- A passenger air bag deactivation switch (all except NAS and Australia)
- An occupant monitoring system for the front passenger seat
- A position sensor for the driver seat
- A SRS (supplemental restraint system) warning indicator
- A clockspring
- A RCM (restraints control module) .

The SRS features selective activation of the air bags and pretensioners, and two stage driver and passenger air bags. The RCM (restraints control module) monitors internal and external sensors and activates the required safety belt pretensioners and air bags if the sensors detect an impact or roll-over above preset limits.

DRIVER AIR BAG



E45251

Item	Part Number	Description
1	-	Release tool slot and guide channel
2	-	Inflator stage 1 connector

3	-	Inflator stage 2 connector
4	-	Latch spring
5	-	Locating pin and spring
6	-	Latch hook

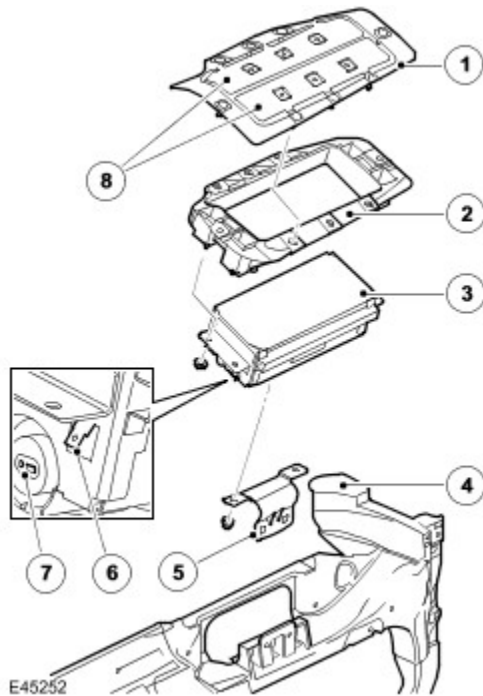
The driver air bag forms the center pad of the steering wheel. Four pins and two latches locate and secure the driver air bag to the steering wheel. The latches consist of wire springs on each side of the driver air bag which engage with hooks in the steering wheel. The driver air bag is released from the steering wheel by pulling on the wire springs with a special tool inserted through a slot on each side of the steering wheel hub. Springs on the locating pins then push the driver air bag away from the steering wheel.

A Lucar connector attaches a ground to the driver air bag.

The driver air bag has a two stage inflator, with separate electrical connectors for each stage. The inflator contains a non-azide propellant as the gas generator.

Lines molded into the inner surface of the driver air bag cover provide weak points that split open in a controlled manner when the driver air bag deploys. The inflated volume of the air bag is 57 liters (2.01 ft³).

PASSENGER AIR BAG



Item	Part Number	Description
1	-	Reinforcement lid
2	-	Chute
3	-	Passenger air bag
4	-	In-vehicle crossbeam
5	-	Mounting bracket
6	-	Lucar connector
7	-	Inflator connector
8	-	Deployment doors

The passenger air bag is located in the instrument panel, behind the upper glove compartment. The bottom of the passenger air bag is attached to a mounting bracket on the in-vehicle crossbeam. The top of the passenger air bag is

attached to a chute, which, in turn, is attached to a reinforcement lid in the top of the instrument panel. When the air bag deploys, the chute guides the air bag to the underside of the reinforcement lid. The reinforcement lid incorporates two deployment doors that are forced open, splitting the instrument panel covering, when the air bag deploys.

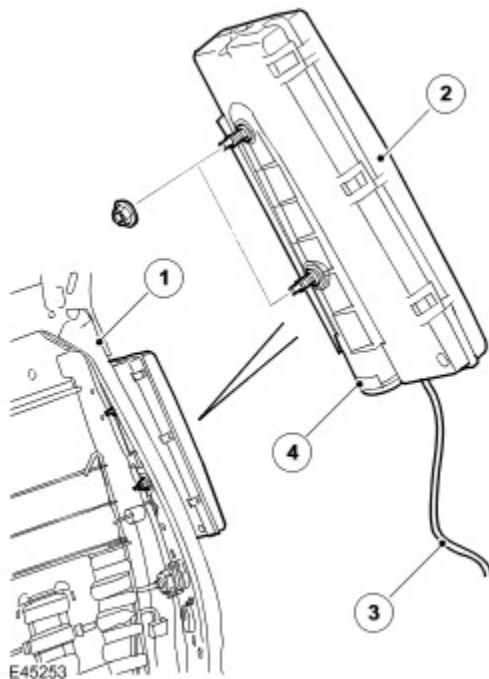
A Lucar connector attaches a ground to the passenger air bag.

The passenger air bag has a two stage inflator, with separate electrical connectors for each stage. The inflator contains a non-azide propellant as the gas generator. The inflator uses a high pressure mix of air and hydrogen gas as the inflation medium. The inflated volume of the air bag is 130 liters (4.59 ft³).

SIDE AIR BAGS

NOTE :

Left side air bag shown, right side air bag is mirror image



Item	Part Number	Description
1	-	Seat backrest frame
2	-	Side air bag
3	-	Cable
4	-	Inflator

A side air bag is attached to the outside of each front seat backrest frame, under the backrest cover.

The side air bags are handed, and each consist of a molded plastic case which contains the folded air bag and the inflator. A cable connects the igniter of the inflator to a connector in the main seat harness connector block located under the front edge of the seat cushion.

When the air bag deploys it forces the front edge of the molded plastic case apart and splits open the backrest cover.

The side air bags use compressed argon as the inflation medium. The inflated volume of each side air bag is 12 liters (0.42 ft³).

SIDE AIR CURTAINS

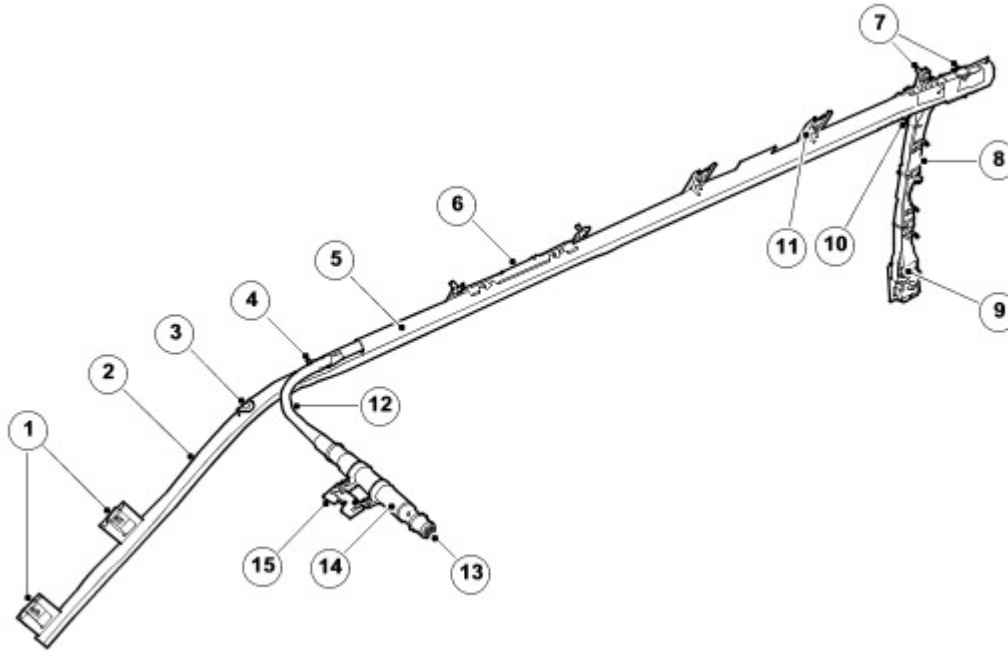
The side air curtains are designed to protect the head and upper body in side impact and roll-over situations. The first and

second row side air curtains are a standard fit on all vehicles. The third row side air curtains are fitted on seven seat vehicles only. The side air curtains use compressed argon as the inflation medium.

First and Second Row Side Air Curtain

NOTE :

Right side air curtain shown, left side air curtain is mirror image



E45254

Item	Part Number	Description
1	-	Air curtain anchorage points
2	-	Non inflatable section of air curtain
3	-	Air curtain clip (manufacturing aid)
4	-	Front gas guide attachment
5	-	Inflatable section of air curtain
6	-	B pillar ramp
7	-	Securing screws
8	-	Active tether device
9	-	Rear tether anchor
10	-	Rear tether
11	-	Cant rail clip
12	-	Gas guide pipe
13	-	Inflator electrical connector
14	-	Inflator
15	-	Inflator mounting bracket

The first and second row side air curtains are installed on the cant rails above the front and rear doors, behind the headliner.

Each side air curtain has an inflator, which is attached to the header rail by a mounting bracket and two screws. The inflator is connected to the air curtain by a gas guide pipe.

The gas guide pipe and air curtain are secured along the cant rail by a fixing at the front of the gas guide pipe, two fixings at the B pillar ramp, two clips and two screws, and two fixings at the end of the gas guide pipe and C pillar ramp.

At the rear of the air curtain, an active tether device is clipped in two positions down the C pillar. At the bottom of the active tether device is a fixing anchorage.

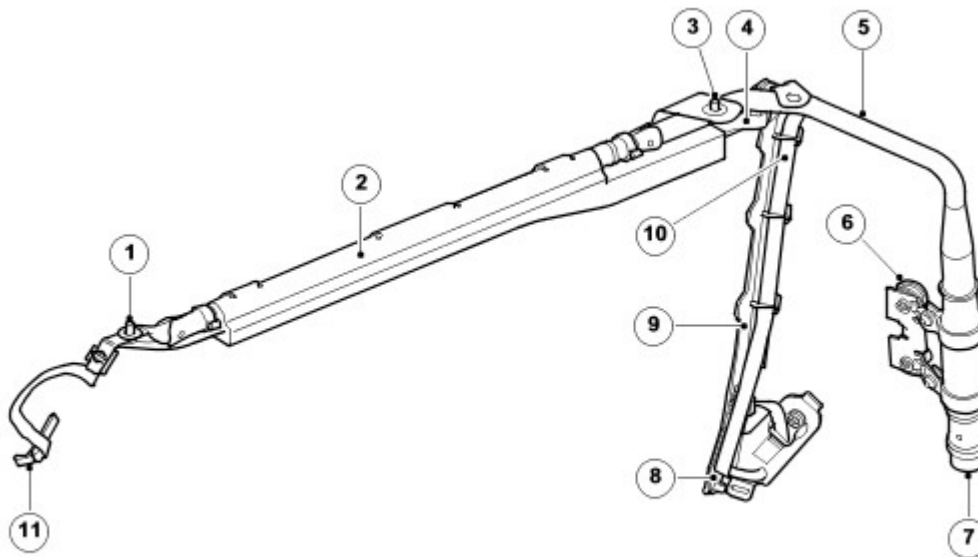
The front of the air curtain is secured to the A pillar by two fixings.

When the side air curtain deploys, it breaks out of the B pillar ramp and the clips on the cant rail and extends downwards from behind the headliner. The deploying air curtain is tensioned between the anchorage points on the A pillar and the active tether device on the C pillar. This retains the air curtain in position against the upper part of the doors and the B pillar.

Third Row Side Air Curtain

NOTE :

Right side air curtain shown, left side air curtain is mirror image



E45255

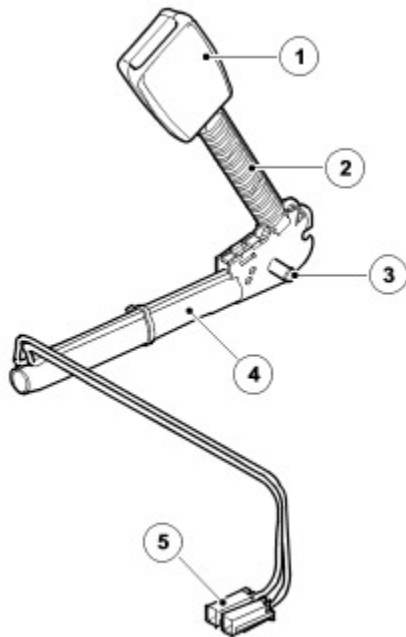
Item	Part Number	Description
1	-	Securing screw
2	-	Air curtain
3	-	Securing screw
4	-	Rear tether
5	-	Gas guide pipe
6	-	Inflator mounting bracket
7	-	Inflator
8	-	Rear tether anchor
9	-	Tether housing
10	-	Rear tether
11	-	Front tether anchor

The third row side air curtains are installed on the cant rails above the rear quarter windows, behind the headliner.

Each side air curtain has an inflator, which is attached to the D pillar by a mounting bracket and two screws. The inflator is connected to the air curtain by a gas guide pipe. The gas guide pipe and air curtain are secured to the cant rail by two screws. Tethers are attached to the front and rear of the air curtain. The front tether is anchored to the C pillar. The rear tether is anchored to the D pillar and held in position by a tether housing.

When a third row side air curtain deploys, it extends downwards from behind the headliner. The expanding air curtain tightens the tethers, which retain the air curtain in position against the rear quarter window.

PRETENSIONERS



E45256

Item	Part Number	Description
1	-	Safety belt buckle
2	-	Boot
3	-	Anchor bolt
4	-	Piston and tube
5	-	Electrical connectors for inflator and buckle switch

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.

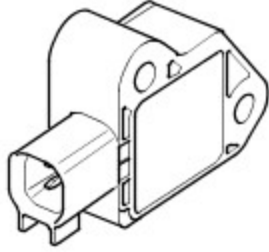
Each pretensioner has a tube containing an inflator and a piston. The inflator is connected to the RCM (restraints control module) . The piston is attached to a steel cable, the opposite end of which is attached to the safety belt buckle.

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.

SAFETY BELT SENSORS

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.

IMPACT SENSORS



E45257

Impact sensors are installed in the front and both sides of the vehicle. The use of multiple impact sensors provides shorter air bag trigger times, through faster detection of lateral and longitudinal acceleration, and improves detection accuracy.

There are two front impact sensors attached to brackets on the body front support frame, just above each front longitudinal.

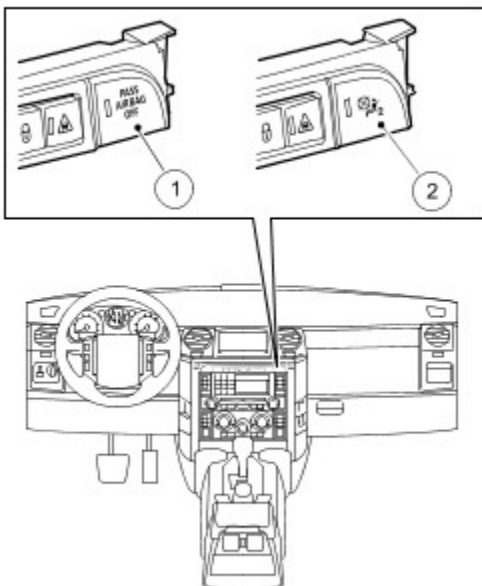
There are six side impact sensors located in the passenger compartment, as follows:

- One attached to each front door.
- One attached to the base of each B pillar.
- One installed in each rear quarter, above the rear wheelarch.

Each impact sensor incorporates an accelerometer and a microcontroller powered by a feed from the RCM (restraints control module) . The power feed also provides the interface connection through which the impact sensor communicates with the RCM (restraints control module) using serial data messages. Acceleration is evaluated by the microcontroller and transmitted to the RCM (restraints control module) , which then makes the decision on whether or not to activate the air bags and pretensioners.

When the ignition is switched on the RCM (restraints control module) supplies power to the impact sensors, which perform a self test. After satisfactory self tests the impact sensors continually output 'sensor active' messages to the RCM (restraints control module) . If a fault is detected the relevant impact sensor sends a fault message, instead of the sensor active message, to the RCM (restraints control module) . The RCM (restraints control module) then stores a related fault code and illuminates the SRS (supplemental restraint system) warning indicator.

PASSENGER AIR BAG DEACTIVATION INDICATOR



E45258

Item	Part Number	Description
1	-	Deactivation indicator (NAS and Japan)
2	-	Deactivation indicator (all except NAS and Japan)

The passenger air bag deactivation indicator is installed on the center switch pack of the instrument panel. When appropriate, the indicator illuminates to advise front seat occupants that the passenger air bag is disabled. Operation of the indicator is controlled by the RCM (restraints control module) . The RCM (restraints control module) illuminates the indicator when:

- There is a fault with the passenger air bag firing circuit(s).
- The passenger air bag is deactivated with the passenger air bag deactivation switch (where fitted).
- Required by passenger seat occupant monitoring (see below).

PASSENGER AIR BAG DEACTIVATION SWITCH (ALL EXCEPT NAS AND AUSTRALIA)



E45259

The passenger air bag deactivation switch provides a method of manually disabling the passenger air bag. The switch is installed in the front passenger end of the instrument panel and operated by the ignition key.

When the passenger air bag deactivation switch is operated, it changes a ground connection between two pins in the connectors of the RCM (restraints control module) . When the passenger air bag deactivation switch is selected to OFF, the RCM (restraints control module) disables the passenger air bag and, if the front passenger seat is occupied, illuminates the passenger air bag deactivation indicator.

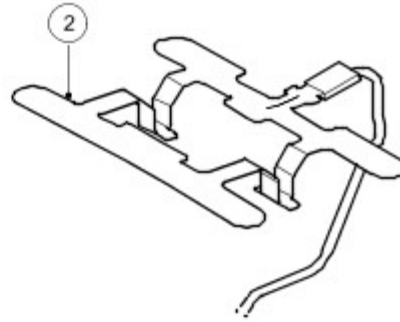
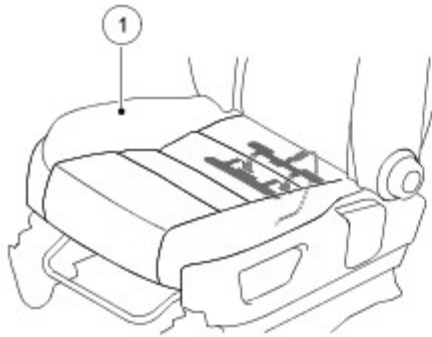
OCCUPANT MONITORING

Occupant monitoring provides the RCM (restraints control module) with the occupancy status of the front passenger seat. On NAS vehicles, the RCM (restraints control module) uses the occupancy status for control of the passenger air bag deactivation indicator.

There are two types of occupant monitoring:

- In all markets except NAS, vehicles have an occupant detection system.
- In NAS markets, vehicles have an occupant classification system.

Occupant Detection System (All Except NAS)



E46657

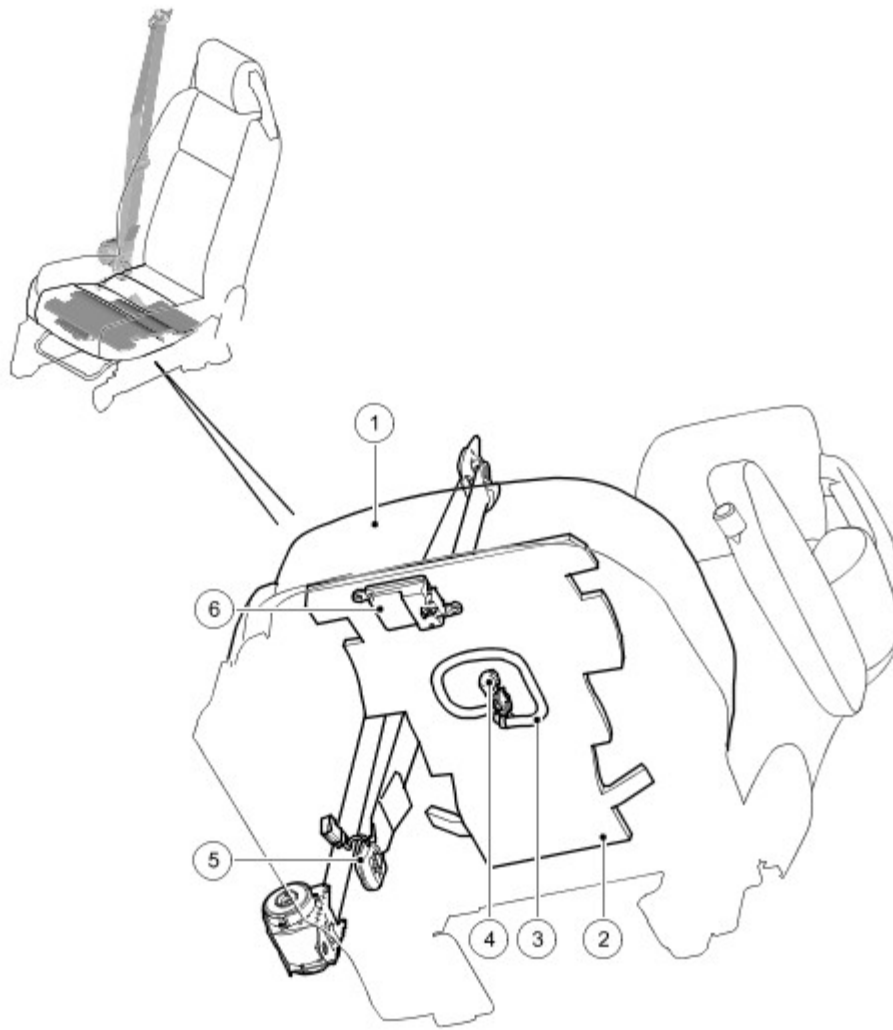
Item	Part Number	Description
1	-	Seat cushion
2	-	Pressure sensor

The occupant detection system can only determine if the front passenger seat is occupied or unoccupied. The occupant detection system consists of a pressure sensor installed between the foam padding and the cover of the front passenger seat cushion.

The pressure sensor incorporates a number of load cells connected in series and embedded in a plastic film. Weight on the pressure sensor increases the resistance of the circuit.

The instrument cluster supplies a reference voltage to the pressure sensor and measures the current draw to determine the occupancy status. From the occupancy status, and the status of the front passenger safety belt (received from the RCM (restraints control module) on the high speed CAN (controller area network) bus), the instrument cluster determines the belt minder status.

Occupant Classification System (NAS Only)



E45261

Item	Part Number	Description
1	-	Seat cushion
2	-	Pressure pad
3	-	Pressure tube
4	-	Pressure sensor
5	-	Safety belt tension sensor
6	-	Occupant classification 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 occupant classification module supplies a reference voltage to the pressure sensor and the safety belt tension sensor and, from the return signals, measures the loads acting on the pressure pad and the safety belt tension sensor. The load

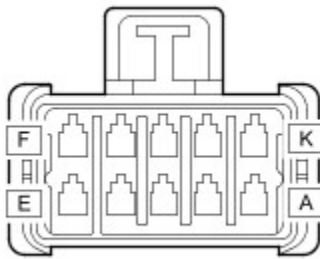
measurement from the safety belt tension sensor is used to produce a correction factor for the load measurement from the pressure pad. The tightness of the safety belt affects the load acting on the pressure pad, so without the correction factor the occupant classification module cannot derive an accurate 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 four possible states:

- Empty. Passenger air bag operation is disabled and the passenger air bag deactivation indicator remains off.
- Occupied inhibit. The seat is occupied by a small person. Passenger air bag operation is disabled and the passenger air bag deactivation indicator is illuminated.
- Occupied allow. The seat is occupied by a large person. Passenger air bag operation is enabled and the passenger air bag deactivation indicator remains off.
- Error. There is a fault with the system. Only stage 1 (slowest deployment speed) passenger air bag operation is enabled and the passenger air bag deactivation indicator remains off.

Occupant Classification Module Harness Connector C0962

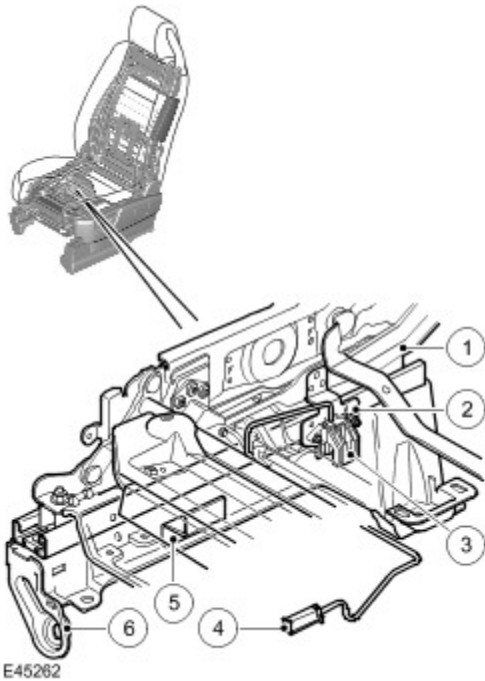


E46656

Occupant Classification Module Harness Connector C0962 Pin Details

Pin No.	Description	Input/Output
A	Safety belt tension sensor signal	Input
B	Safety belt tension sensor reference voltage	Output
C	Safety belt tension sensor ground	Input
D	Module ground	Output
E	High speed CAN (controller area network) bus high	Input/Output
F	High speed CAN (controller area network) bus low	Input/Output
G	Ignition power feed	Input
H	Seat cushion pressure sensor ground	Input
J	Seat cushion pressure sensor reference voltage	Output
K	Seat cushion pressure sensor signal	Input

SEAT POSITION SENSOR

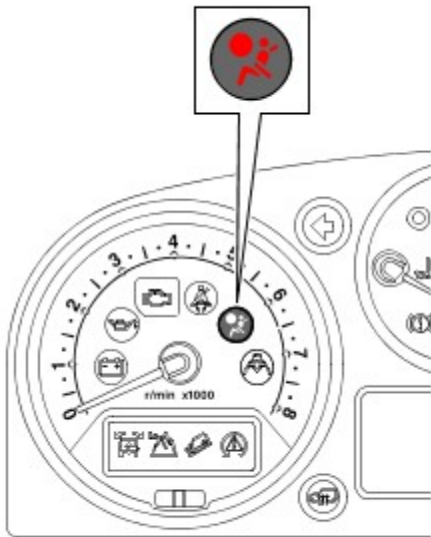


Item	Part Number	Description
1	-	Seat frame
2	-	Mounting plate
3	-	Seat position sensor
4	-	Electrical connector
5	-	Target plate
6	-	Seat base

The seat position sensor allows the RCM (restraints control module) to detect when the driver seat is forward of a given point on the seat track. The seat position sensor consists of a Hall effect sensor attached to the driver 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 the driver 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 air bag. When the driver seat is rearward of the switching point, the RCM (restraints control module) uses the normal time delay between firing the two stages.

SRS WARNING INDICATOR

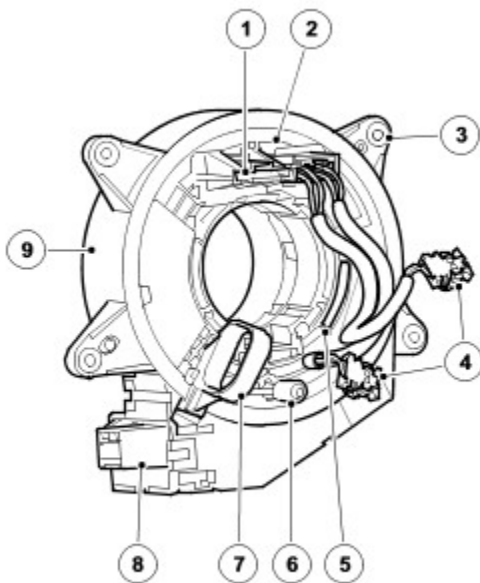


E45263

The SRS (supplemental restraint system) warning indicator consists of a red LED (light emitting diode) behind a SRS (supplemental restraint system) graphic in the tachometer of the instrument cluster.

Operation of the SRS (supplemental restraint system) 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 SRS (supplemental restraint system) warning indicator if a fault is detected, and for approximately 6 seconds during the bulb check at the beginning of each ignition cycle.

CLOCKSPRING



E45264

Item	Part Number	Description

1	-	Electrical connector for steering wheel switch packs and horn
2	-	Inner rotor
3	-	Outer housing securing lug
4	-	Driver air bag link leads
5		Viewing window
6	-	Drive peg
7	-	Stopper
8	-	Electrical connector for steering column harness
9	-	Outer cover

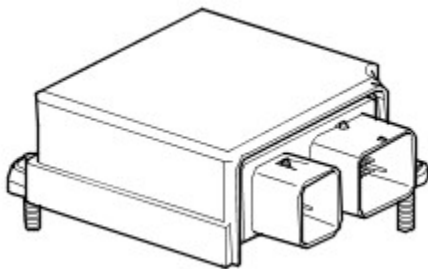
The clockspring is installed on the steering column to provide the electrical interface between the fixed wiring harness of the steering column and the components that rotate with the steering wheel, i.e. the driver air bag, the horn and the steering wheel switch packs.

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.

RCM (restraints control module)



E45265

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. The main functions of the RCM (restraints control module) include:

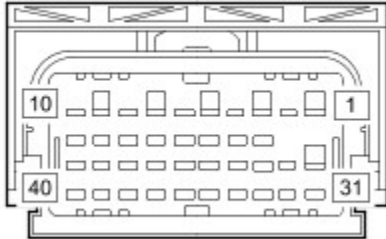
- Crash detection and recording.
- Air bag and pretensioner firing.
- Self test and system monitoring, with status indication via the SRS (supplemental restraint system) warning lamp and non volatile storage of fault information.

A safing sensor in the RCM (restraints control module) 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 SRS (supplemental restraint system) warning indicator. The faults can be retrieved by T4 on a dedicated link between the RCM (restraints control module) and the diagnostic socket. If a fault that could cause a false fire signal is detected, the RCM (restraints control module) disables the respective firing circuit, and keeps it disabled during a crash event.

RCM (restraints control module) Harness Connector C0256



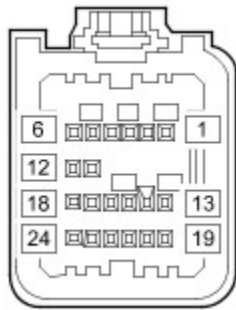
E45266

RCM (restraints control module) Harness Connector C0256 Pin Details

Pin No.	Description	Input/Output
1	Left side air bag feed	Output
2	Left side air bag return	Input
3	Left first and second row side air curtain feed	Output
4	Left first and second row side air curtain return	Input
5	Right first and second row side air curtain feed	Output
6	Right first and second row side air curtain return	Input
7	Left third row side air curtain feed	Output
8	Left third row side air curtain return	Input
9	Right third row side air curtain feed	Output
10	Right third row side air curtain return	Input
11 and 12	Not used	-
13	Left rear quarter side impact sensor feed and data	Output/Input
14	Left rear quarter side impact sensor return	Input
15	Right rear quarter side impact sensor feed and data	Output/Input
16	Right rear quarter side impact sensor return	Input
17	Driver safety belt pretensioner feed	Output
18	Driver safety belt pretensioner return	Input
19 and 20	Not used	-
21	Right side air bag feed	Output
22	Right side air bag return	Input
23	Seat position sensor feed	Output
24	Passenger air bag deactivation switch feed (on selection)	Output
25	Driver safety belt buckle sensor feed	Output
26	Front passenger safety belt buckle sensor feed	Output
27	Left B pillar side impact sensor feed and data	Output/Input

28	Left B pillar side impact sensor return	Input
29	Right B pillar side impact sensor feed and data	Output/Input
30	Right B pillar side impact sensor return	Input
31	High speed CAN (controller area network) bus high (main network)	Input/Output
32	High speed CAN (controller area network) bus low (main network)	Input/Output
33	High speed CAN (controller area network) bus low (link to occupant classification module, where fitted)	Input/Output
34	High speed CAN (controller area network) bus high (link to occupant classification module, where fitted)	Input/Output
35	Front passenger safety belt pretensioner feed	Output
36	Front passenger safety belt pretensioner return	Input
37	Left door side impact sensor feed and data	Output/Input
38	Left door side impact sensor return	Input
39	Right door side impact sensor feed and data	Output/Input
40	Right door side impact sensor return	Input

RCM (restraints control module) Harness Connector C1649



E45267

RCM (restraints control module) Harness Connector C1649 Pin Details

Pin No.	Description	Input/Output
1	Driver air bag stage 1 feed	Output
2	Driver air bag stage 1 return	Input
3	Passenger air bag stage 1 feed	Output
4	Passenger air bag stage 1 return	Input
5	Driver air bag stage 2 feed	Output
6	Driver air bag stage 2 return	Input
7 to 10	Not used	-
11	ISO 9141 K line diagnostic bus	Input/Output
12	Ignition power supply	Input
13	Passenger air bag stage 2 feed	Output
14	Passenger air bag stage 2 return	Input
15	Passenger air bag deactivation indicator	Output
16	Passenger air bag deactivation switch feed (off selection)	Output
17	Crash signal	Output
18	Ground	-
19	Right front impact sensor feed and data	Input/Output

20	Right front impact sensor return	Input
21	Left front impact sensor power and data	Input/Output
22	Left front impact sensor ground	Input
23 and 24	Not used	-

SRS OPERATION

General

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 and high speed CAN bus messages from the ABS (anti-lock brake system) module and the steering angle 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 side impact.
- RH 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 seat 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 large person, i.e. someone over a given weight (NAS only).

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 passenger air bag is disabled unless the front passenger seat is occupied by a large person (NAS only), or the passenger air bag deactivation switch is on (all except NAS). The time delay between firing the two stages of the inflator in the driver air bag is increased if the driver seat is forward of the seat position sensor switching point.

If there is a fault with a safety belt buckle sensor, the RCM (restraints control module) assumes the related safety belt is fastened for the pretensioner firing strategy and unfastened for the driver and passenger air bag firing strategies. If there is a fault with the occupant detection system, or if there is a fault with the passenger air bag deactivation switch, the RCM (restraints control module) increase the time delay between firing the two stages of the inflator in the passenger air bag.

If a side impact limit is exceeded, the RCM (restraints control module) fires the side air bag and the side air curtain(s) on that side of the vehicle. If the side impact limit on the front passenger side of the vehicle is exceeded, the RCM (restraints control module) also evaluates the input from the occupant classification system, and fires the side air bag only if the front passenger seat is occupied by a large person (NAS only).

The side air curtain(s) on both sides of the vehicle are fired if the roll-over limit is exceeded.

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 if unfired units are available.

Crash Signal

When the RCM (restraints control module) outputs any of the fire signals, it also outputs a hard wired crash signal to the Engine Control Module (ECM) 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) and the FFBH (fuel fired booster heater).

On receipt of the crash signals:

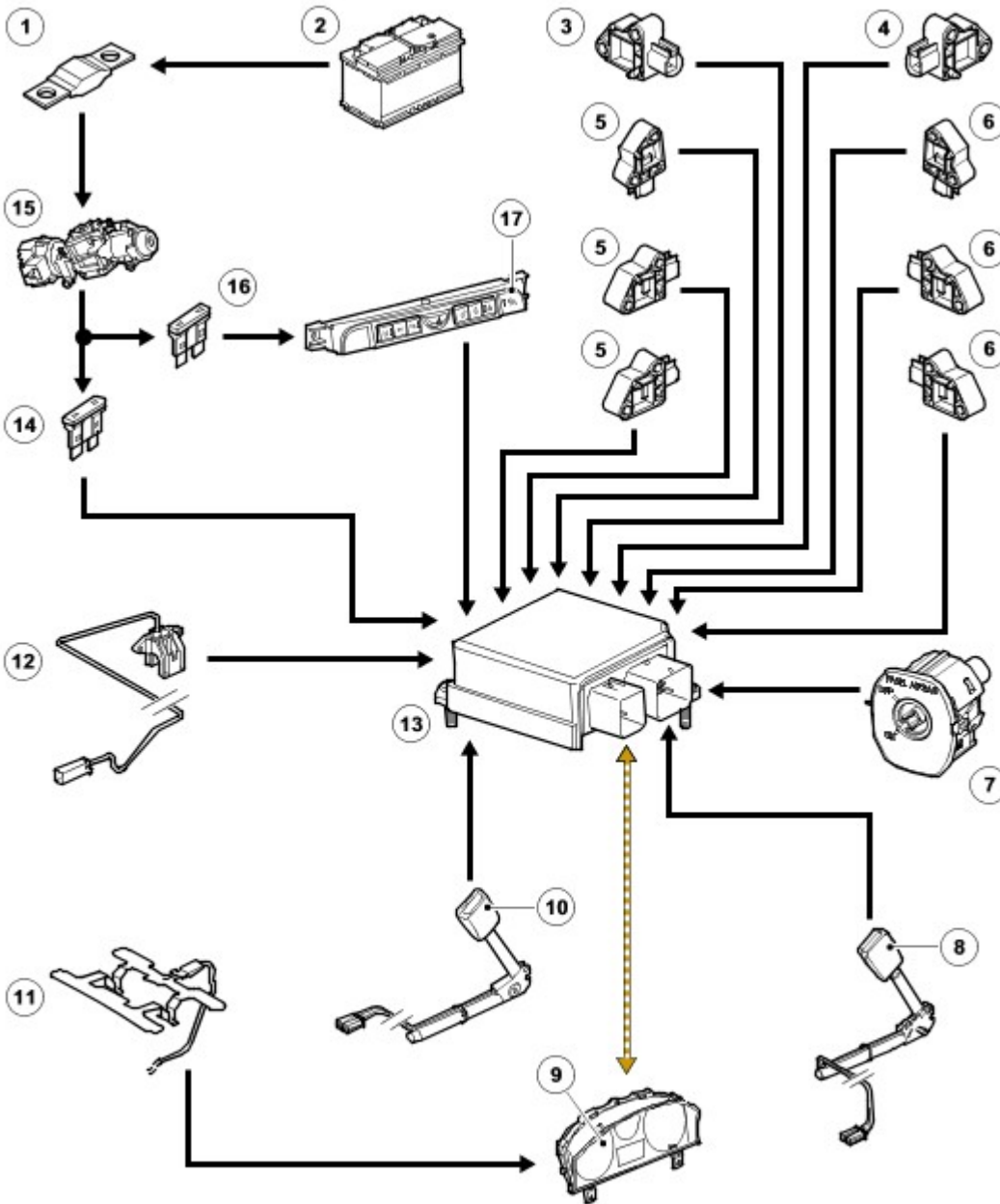
- The ECM (engine control module) disables the fuel pump.
- Operation of the FFBH is disabled.
- The CJB (central junction box) enters the crash mode and:
 - Activates all of the unlock signals of the vehicle locking system, even if the vehicle is already unlocked. After 3 seconds, the CJB (central junction box) activates the unlock signals again, in case a lock button is pressed during the crash, by flailing limbs for example. 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 they are manually switched off at the lamp unit, or the CJB (central junction box) crash mode is cancelled, when they return to normal operation. Activates the hazard warning lamps. The hazard warning lamps remain on until cancelled by turning the ignition switch from position II to position I or 0, or until the crash mode is cancelled.
 - Activates all of the unlock signals of the vehicle locking system, even if the vehicle is already unlocked. After 3 seconds, the CJB (central junction box) activates the unlock signals again, in case a lock button is pressed during the crash, by flailing limbs for example.
 - 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 they are manually switched off at the lamp unit, or the CJB (central junction box) crash mode is cancelled, when they return to normal operation.
 - Activates the hazard warning lamps. The hazard warning lamps remain on until cancelled by turning the ignition switch from position II to position I or 0, or until the crash mode is cancelled.

The crash mode is cancelled by cycling the ignition switch.

CONTROL DIAGRAM - SHEET 1 OF 2 (ALL EXCEPT NAS)

NOTE :

A = Hardwired connections; D = High speed CAN (controller area network) bus



E48032 A → D →

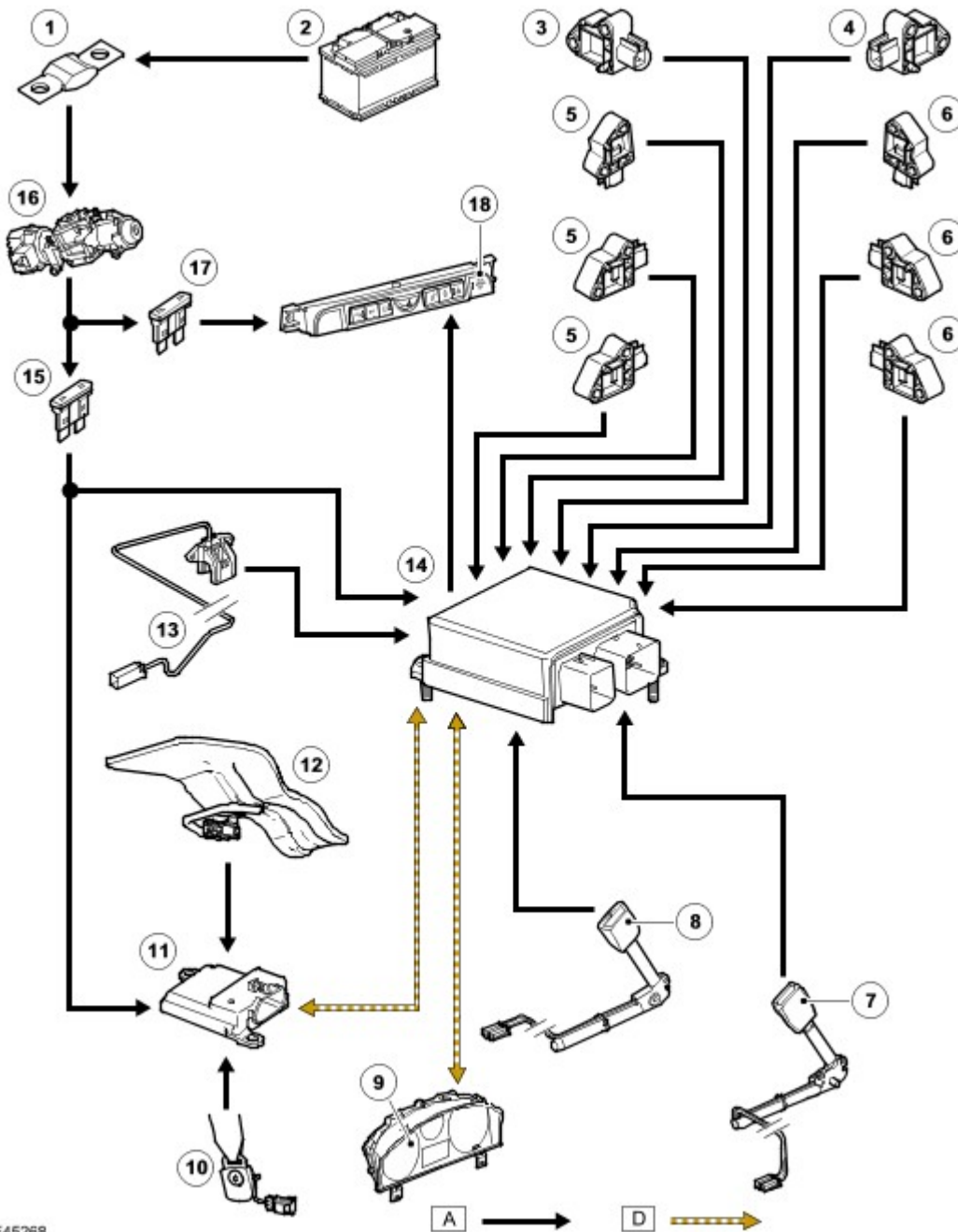
Item	Part Number	Description
1	-	Fusible link 11E, BJB (battery junction box)
2	-	Battery
3	-	Left front impact sensor
4	-	Right front impact sensor
5	-	Left side impact sensor
6	-	Right side impact sensor
7	-	Passenger air bag deactivation switch
8	-	Left safety belt buckle sensor
9	-	Instrument cluster
10	-	Right safety belt buckle sensor

11	-	Occupant detection pressure sensor
12	-	Seat position sensor
13	-	RCM (restraints control module)
14	-	Fuse 9P, CJB (central junction box)
15	-	Ignition switch
16	-	Fuse 68P, CJB (central junction box)
17	-	Passenger air bag deactivation indicator

CONTROL DIAGRAM - SHEET 1 OF 2 (NAS ONLY)

NOTE :

A = Hardwired connections; D = High speed CAN (controller area network) bus



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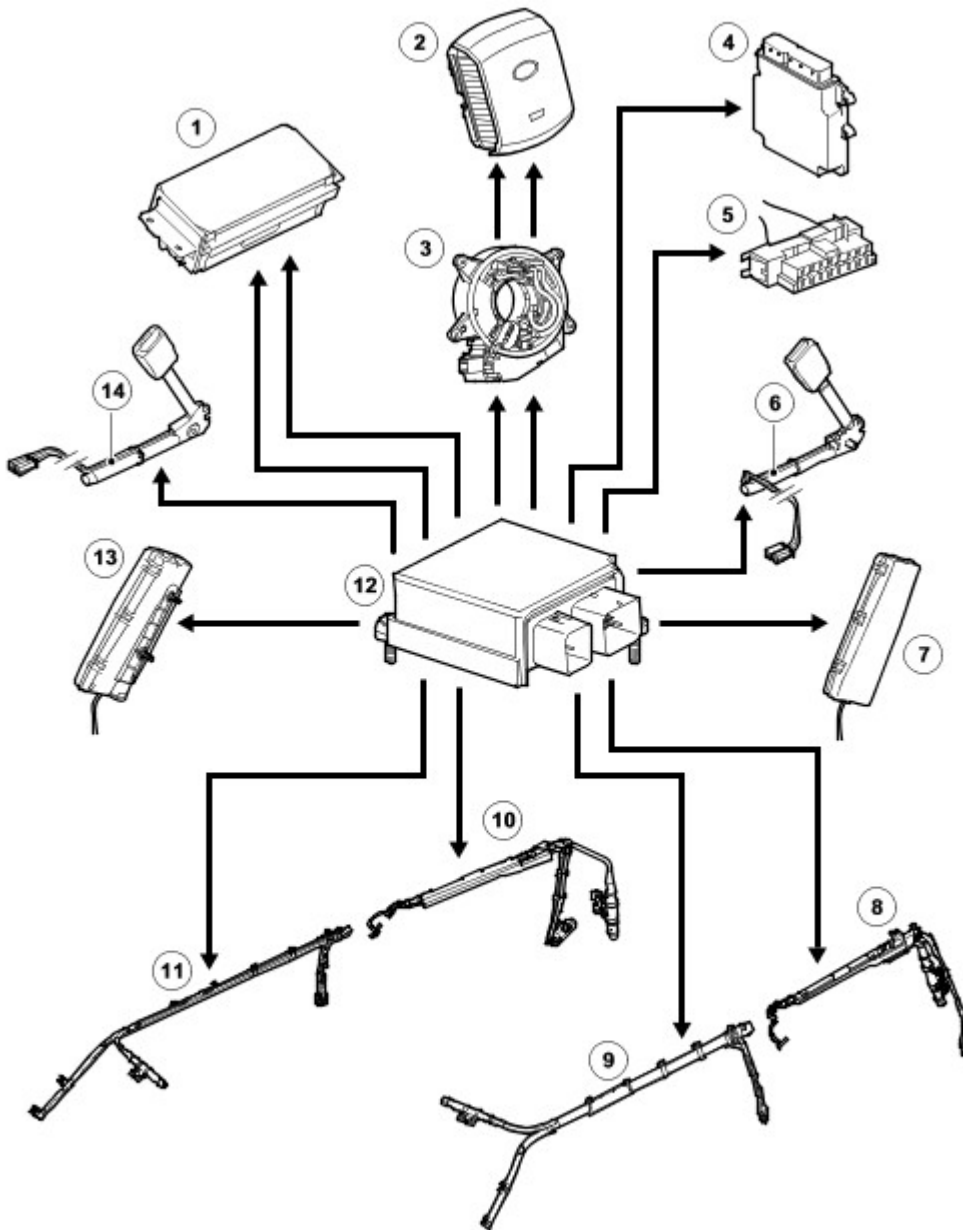
Item	Part Number	Description
1	-	Fusible link 11E, BJB (battery junction box)
2	-	Battery
3	-	Left front impact sensor
4	-	Right front impact sensor
5	-	Left side impact sensor
6	-	Right side impact sensor
7	-	Left safety belt buckle switch
8	-	Right safety belt buckle switch
9	-	Instrument cluster
10	-	Safety belt tension sensor

11	-	Occupant classification module
12	-	Pressure pad and sensor
13	-	Seat position sensor
14	-	RCM (restraints control module)
15	-	Fuse 9P, CJB (central junction box)
16	-	Ignition switch
17	-	Fuse 68P, CJB (central junction box)
18	-	Passenger air bag deactivation indicator

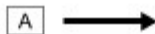
CONTROL DIAGRAM - SHEET 2 OF 2 (ALL MARKETS)

NOTE :

A = Hardwired connections



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Item	Part Number	Description
1	-	Passenger air bag
2	-	Driver air bag
3	-	Clockspring
4	-	ECM (engine control module)
5	-	Diagnostic socket
6	-	Left pretensioner
7	-	Left side air bag
8	-	Left third row side air curtain
9	-	Left first and second row side air curtain
10	-	Right third row side air curtain

11	-	Right first and second row side air curtain
12	-	RCM (restraints control module)
13	-	Right side air bag
14	-	Right pretensioner