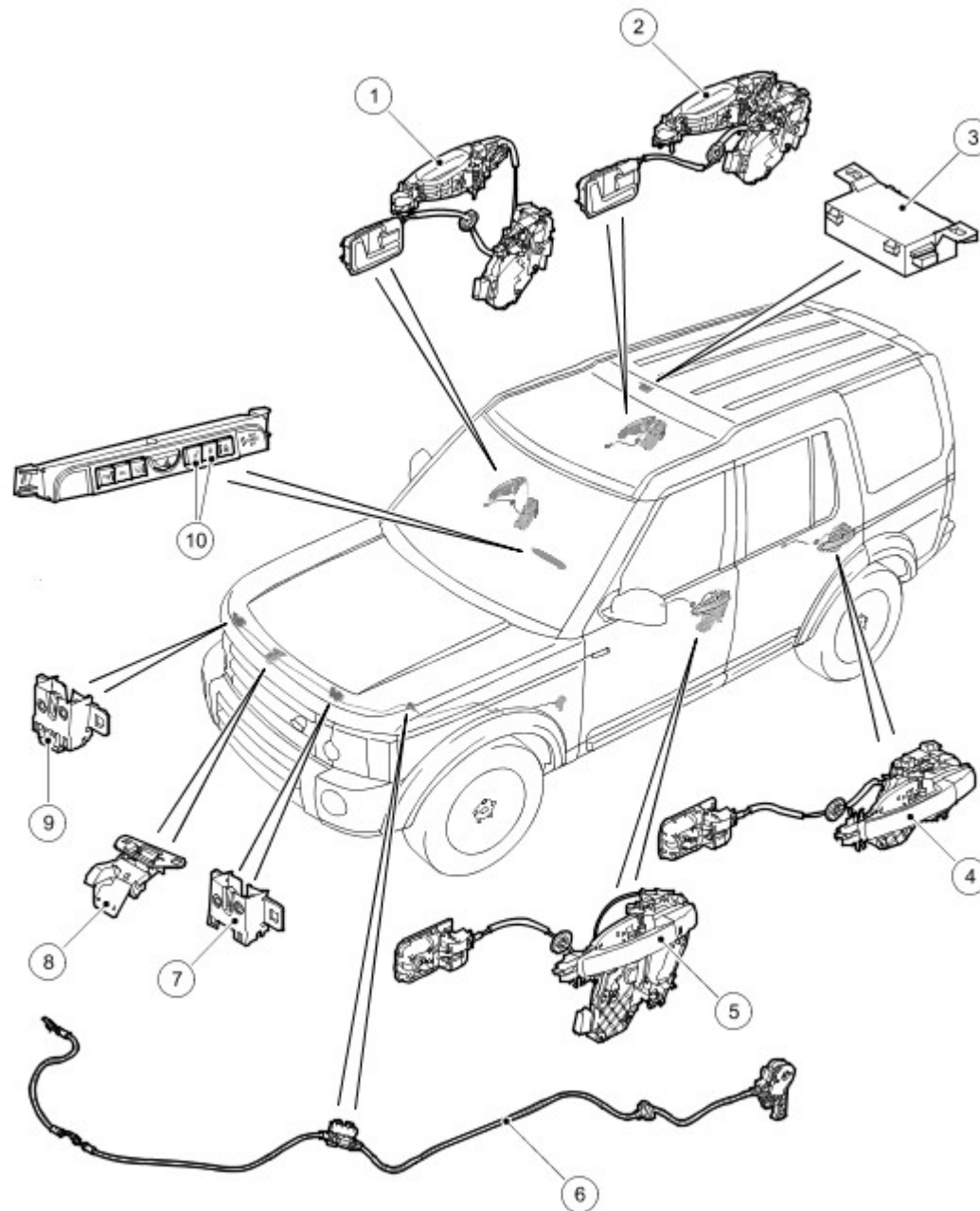


Published : Mar 16, 2005

Handles, Locks, Latches and Entry Systems

COMPONENT LOCATIONS - SHEET 1 OF 2

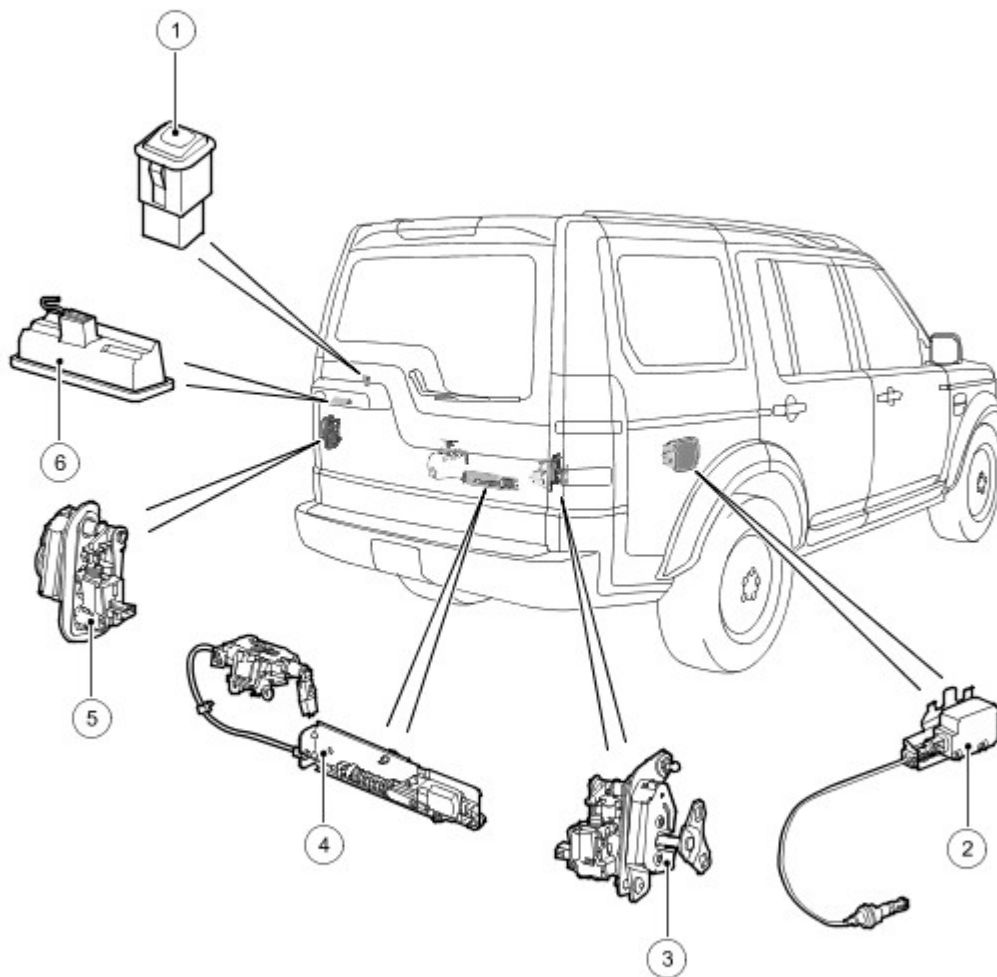


E46119

Item	Part Number	Description
1	-	Right front door latch and handles
2	-	Right rear door latch and handles
3	-	RF (radio frequency) receiver
4	-	Left rear door latch and handles

5	-	Left front door latch and handles
6	-	Hood release handle and release cables
7	-	Left hood latch
8	-	Hood safety catch
9	-	Right hood latch and hood ajar switch
10	-	CLS (central locking system) lock and unlock switches

COMPONENT LOCATION - SHEET 2 OF 2



E46120

Item	Part Number	Description
1	-	Lower tailgate release switch

2	-	Fuel filler door lock actuator
3	-	Lower tailgate right latch and actuator
4	-	Upper tailgate latch and actuator
5	-	Lower tailgate left latch and actuator
6	-	Upper tailgate release switch

GENERAL

The hinged panels on the vehicle are secured with latches and mating strikers. A safety catch is installed on the hood to prevent it from opening if the hood latches are open while the vehicle is moving.

The hood latches and the door latches are opened by pulling on the release handles. The tailgate latches are opened by pressing the release switches.

A remotely operated CLS controls the locking and unlocking of the door latches and the opening of the tailgate latches. In some markets, the CLS also locks and unlocks the fuel filler door. The CLS software is incorporated into the CJB (central junction box) .

The left front exterior door handle incorporates a door lock, concealed under a removable cover. The door lock allows the left front door to be mechanically unlocked with the ignition key if there is a vehicle power failure. The CLS cannot be operated using the door lock.

The rear door latches incorporate child locks to enable the interior door handles to be disengaged from the latch mechanisms.

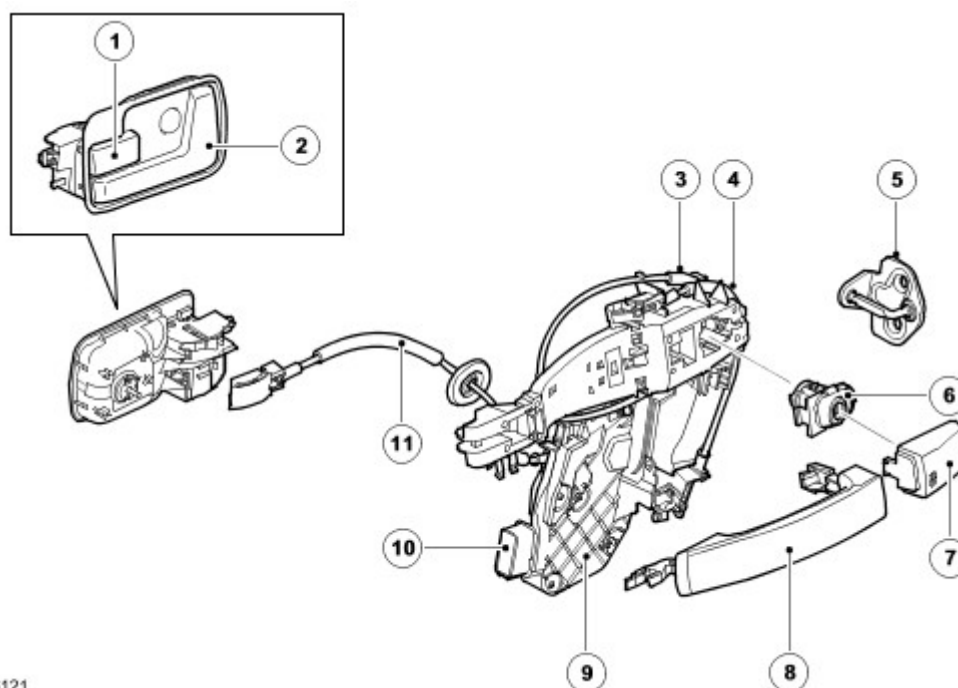
HOOD LATCHES

The hood is secured by two latches, installed under the hood locking platform, which engage with strikers on the hood. The hood safety catch is installed in the center of the hood leading edge and engages with a recess in the hood locking platform.

The hood latches are opened by a release handle on the lower part of the LH (left-hand) A pillar. Two hood release cables connect the hood latch release handle in series with the two hood latches. The two hood release cables are joined together by a connector block located on the front of the left inner fender.

DOOR LATCHES

Door Latch and Handles



E46121

Item	Part Number	Description
1	-	Locking button
2	-	Interior door handle
3	-	Door lock cable (front left door only)
4	-	Exterior release cable
5	-	Door striker
6	-	Door lock (front left door only)
7	-	Exterior door handle cap
8	-	Exterior door handle
9	-	Door latch
10	-	Electrical connector
11	-	Interior release cable

The door latches are installed in the rear edge of each door and each engage with a striker on the B or C pillar as appropriate.

Each door latch is a sealed unit that incorporates:

- A lock motor.
- A superlock motor (all except NAS (north American specification)).
- A door ajar switch.

An electrical connector on each door latch provides the interface between the door latch and the CJB (central junction box) .

Both front door latches incorporate a mechanical anti slam lock feature.

Separate release cables are connected between the door latch and the interior door handle, and between the door latch and the exterior door handle. In the left front door, a third cable is connected between the door latch and the door lock in the exterior door handle.

The lock and superlock motors control the engagement of the latches with the release cables to lock and unlock the vehicle. When the vehicle is locked, the lock motors disengage the latches from the exterior release cables. When the vehicle is superlocked, the superlock motors also disengage the latches from the interior release cables. When the

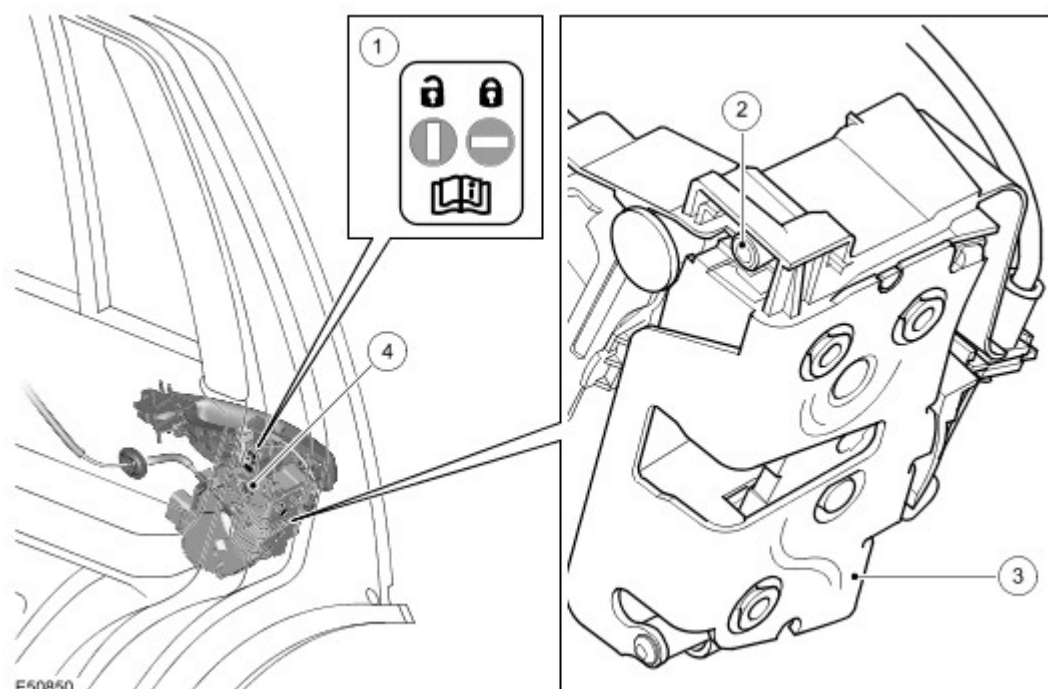
vehicle is unlocked, the CJB (central junction box) reverses the lock and superlock motors, to re-engage the release cables, by changing the polarity of their power and ground connections. To enable the SPE (single point entry) function, the lock motor in the driver door latch is operated by two dedicated connections with the CJB (central junction box) ; the lock motors in the other three doors are all operated by two (other) common connections with the CJB (central junction box) . The superlock motors in all four door latches are all operated by two common connections with the CJB (central junction box) .

All of the interior door handles incorporate a locking button. Pressing the front of the locking button pushes the interior release cable, which causes the door latch to disengage from the exterior release cable. On the rear doors, the button also disengages the interior handle from the interior release cable.

Pulling the front of the locking button out again re-engages the interior door handle with the interior release cable, and also pulls on the interior release cable. This causes the door latch to re-engage with the exterior release cable.

Child Locks

Child Lock and Label



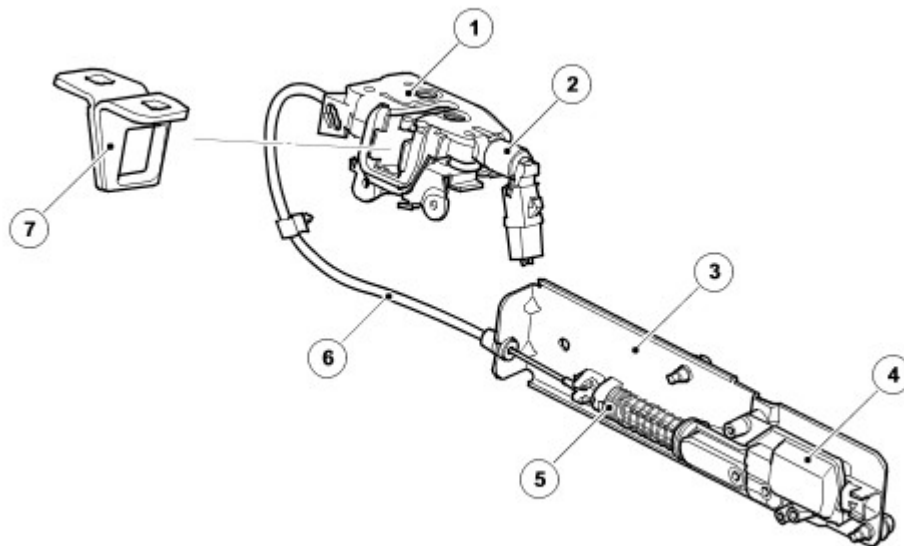
Item	Part Number	Description
1	-	Instruction label
2	-	Child lock barrel
3	-	Rear door latch
4	-	Child lock aperture

Each rear door incorporates a child lock. The child lock controls the engagement of the interior release lever with the latch mechanism. When a child lock is set to the locked position, the interior release lever is disengaged from the latch mechanism, which prevents the door being opened with the interior door handle.

Each child lock is operated by installing the ignition key in an aperture in the inner skin of the rear door, where the ignition key engages with the child lock barrel on the door latch. Turning the ignition key sets the child lock to the locked or unlocked position, as detailed on the instruction label installed immediately above the child lock aperture.

TAILGATE LATCHES

Upper Tailgate Latch



E46122

Item	Part Number	Description
1	-	Upper tailgate latch
2	-	Tailgate ajar switch
3	-	Actuator mounting bracket
4	-	Actuator
5	-	Actuating rod
6	-	Release cable
7	-	Upper tailgate striker

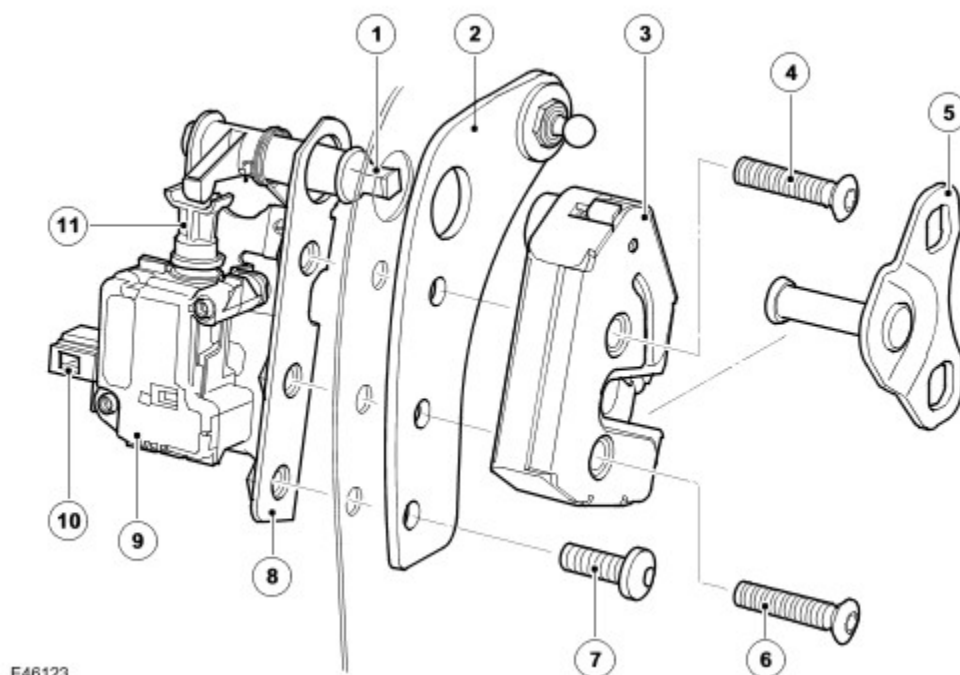
The upper tailgate latch is installed in the top edge of the lower tailgate. A lever on the latch is connected to an electric actuator by a release cable.

The latch is opened by the actuator and slam closed by the striker on the upper tailgate. When a valid request to open the upper tailgate is received, the CJB (central junction box) momentarily energizes the actuator. The actuating rod on the actuator then retracts and pulls on the cable to open the latch cam and release the upper tailgate. When power is removed from the actuator, a spring returns the actuating rod to the extended position.

Lower Tailgate Latch

NOTE :

RH (right-hand) shown, LH (left-hand) is mirror image

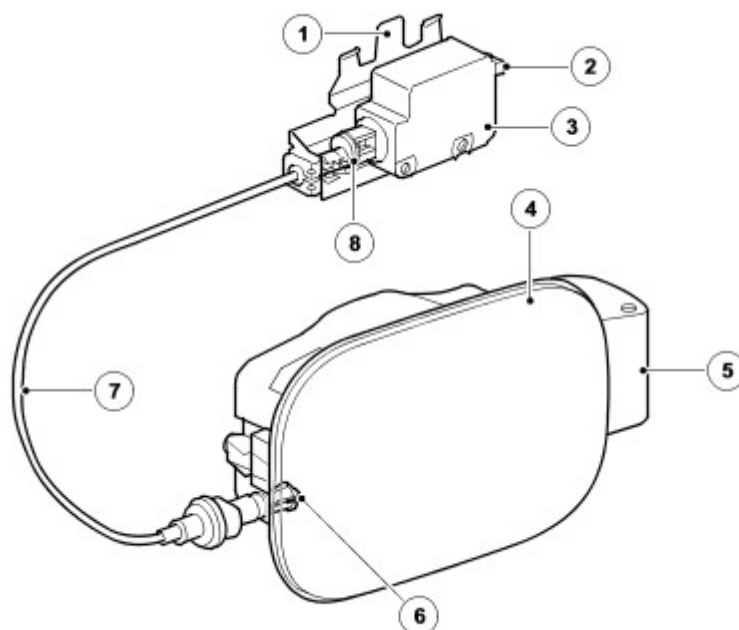


Item	Part Number	Description
1	-	Shaft
2	-	Stay mounting bracket (reference)
3	-	Lower tailgate latch
4	-	Screw
5	-	Lower tailgate striker
6	-	Screw
7	-	Screw
8	-	Actuator mounting bracket
9	-	Actuator
10	-	Electrical connector
11	-	Actuating rod

The lower tailgate latches are installed at each end of the lower tailgate. Each latch is operated by a shaft installed between the latch and an electric actuator.

The latches are opened by the actuators and slam closed by the strikers on the D pillars. When a valid request to open the lower tailgate is received, the CJB (central junction box) momentarily energizes the actuator of each latch. The actuating rod on each actuator then extends and turns the shaft to open the latch cam and release the lower tailgate. When power is removed from the actuator, springs return the actuating rod and shaft to the retracted position.

FUEL FILLER DOOR LOCK ACTUATOR (WHERE FITTED)



E46124

Item	Part Number	Description
1	-	Actuator mounting bracket
2	-	Electrical connector
3	-	Actuator
4	-	Fuel filler door
5	-	Door mounting arm
6	-	Pin
7	-	Cable
8	-	Actuating rod

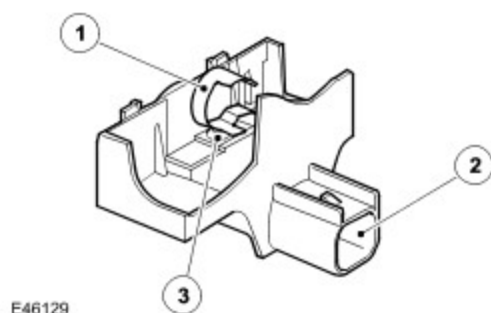
The fuel filler door lock actuator extends and retracts a wire reinforced plastic pin to lock and unlock the fuel filler door. The actuator is installed on a bracket located behind the trim in the right rear quarter of the vehicle.

The pin is incorporated onto the end of the cable installed between the actuator and the fuel filler door assembly. In the locked position, the pin engages with a spigot on the door mounting arm.

The CJB (central junction box) changes the direction of drive of the actuator by changing the polarity of the power and ground connections.

In an emergency, the fuel filler door can be unlocked by manually retracting the actuating rod on the actuator. The actuating rod can be reached through the access cover in the rear quarter trim.

HOOD AJAR SWITCH



E46129

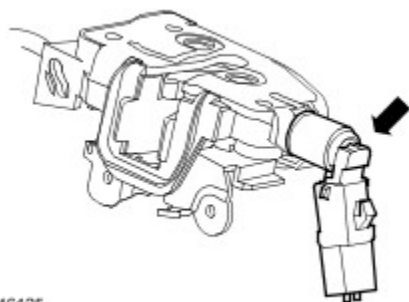
Item	Part Number	Description
1	-	Leaf spring
2	-	Electrical connector
3	-	Switch

The hood ajar switch is attached to the bottom of the right hand hood latch. The hood ajar switch consists of a microswitch operated by a leaf spring which bears on the latch cam. When the hood latch opens, the latch cam presses on the leaf spring, which closes the microswitch to connect a ground to the CJB (central junction box) .

DOOR AJAR SWITCHES

A door ajar switch is incorporated into the latch of each door. When a door latch opens, the respective door ajar switch opens and disconnects a ground from the CJB (central junction box) .

TAILGATE AJAR SWITCH



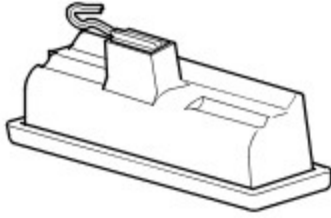
E46125

The tailgate ajar switch is installed on the upper tailgate latch. When the upper tailgate latch opens, the tailgate ajar switch opens and disconnects a ground from the CJB (central junction box) .

The tailgate ajar switch is an integral part of the upper tailgate latch and is not available separately.

TAILGATE RELEASE SWITCHES

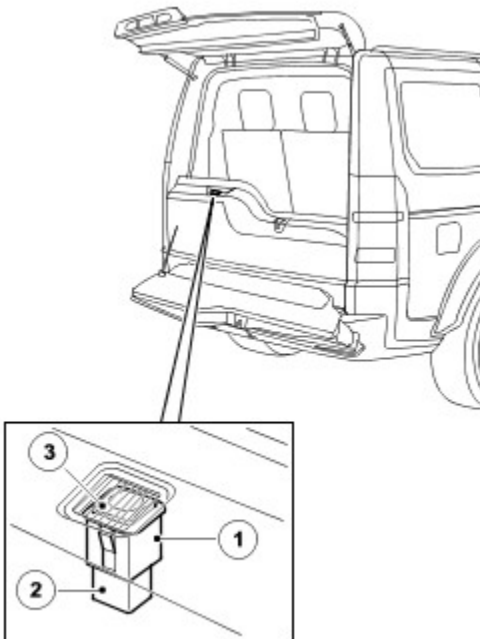
Upper Tailgate Release Switch



E46126

The upper tailgate release switch is a non latching switch installed in the exterior door handle, behind a rubber cover. Pressing the cover closes the switch and connects a ground to the CJB (central junction box) . This momentarily energizes the actuator of the upper tailgate latch. The CJB (central junction box) only responds to the switch input when the CLS system is unlocked and the vehicle is stationary.

Lower Tailgate Release Switch

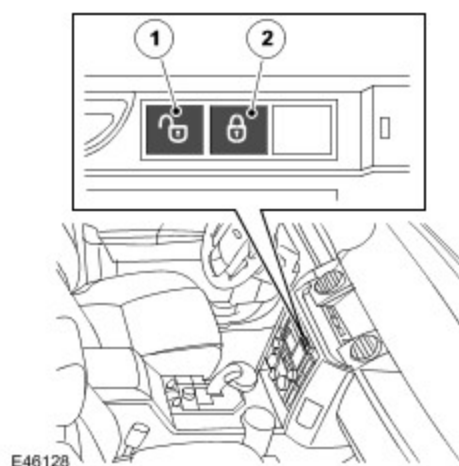


E46127

Item	Part Number	Description
1	-	Switch
2	-	Electrical connector
3	-	Rubber cover

The lower tailgate release switch is a non latching switch installed under a rubber cover in the top edge of the lower tailgate. Pressing the cover closes the switch and connects a ground to the CJB (central junction box) , which then momentarily energizes the actuators of the two lower tailgate latches. The CJB (central junction box) only responds to the switch input when the upper tail door is unlatched and the vehicle is stationary.

CLS SWITCHES

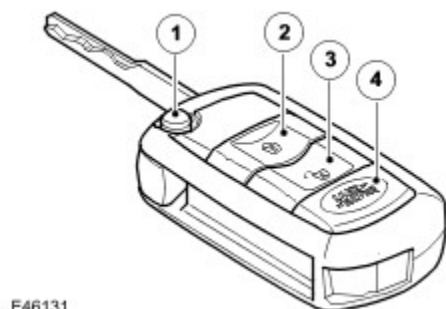


Item	Part Number	Description
1	-	Unlock switch
2	-	Lock switch

The CLS lock and unlock switches are non latching switches installed in the center switch pack of the instrument panel. The switches control the internal locking of the CLS. When the CLS lock or CLS unlock switch is pressed, a ground is connected to the CJB (central junction box) , which then energizes the lock or unlock motor in the door latches, as appropriate.

Pressing and holding the CLS lock switch and the CLS unlock switch simultaneously, for 3 seconds, releases the upper tailgate. This is an emergency tailgate release, in case the upper tailgate release switch is inoperative. This only operates if the vehicle is unlocked, or internally locked, and the vehicle speed is less than 8 km/h (5 mph). The emergency tailgate release only operates the upper tailgate latch, regardless of the status of the tailgate ajar switch.

IGNITION KEY



Item	Part Number	Description
1	-	Key release button
2	-	Lock button
3	-	Unlock button
4	-	Personal button

The ignition key is of the folding blade type, which is released from the stowed position by pushing the key release button on the key head. The key head is a sealed unit that contains a PCB (printed circuit board) and a rechargeable battery. The PCB incorporates the electronics that generate RF signals for remote operation of the CLS and personalized feature. The PCB also incorporates the transponder for engine immobilization. For additional information, refer to [Anti-Theft - Passive](#) (419-01B)

The battery is non serviceable, and recharges while the engine is running. If the battery charge is low, the remote

operating range is reduced. The nominal life of the battery is approximately 14 years.

The key head has three buttons for operation of the CLS and the personalized feature, as follows:

- A lock button, for locking and superlocking of the vehicle.
- An unlock button, for unlocking the vehicle.
- A personal button, for operating the personalized feature, which can be programmed to trigger a panic alarm, operate the headlamp courtesy delay or remotely raise and lower the suspension. Programming the personalized feature with a different function automatically overwrites the previous function. The personalized feature is programmed with the key removed from the ignition switch, as follows:
 - Panic alarm. Push and hold the personal button, then push and hold the hazard flasher switch. After a confirmation chime sounds on the instrument cluster speaker, release the personal button and the hazard flasher switch. Push and release the hazard flasher switch again, to cancel the hazard flashers. Headlamp courtesy delay. Push and hold the personal button, then activate the main beam flash switch (pull switch towards you). After a confirmation chime sounds on the instrument cluster speaker, release the personal button and the main beam flash switch. Suspension. Push and hold the personal button, then use the air suspension switch to select a different ride height. After a confirmation chime sounds on the instrument cluster speaker, release the personal button and the air suspension switch. Programming the personal button to operate the air suspension must take place within 60 seconds of turning the ignition off. The air suspension switch position is relayed to the CJB (central junction box) on the CAN (controller area network) systems, which power down 60 seconds after the ignition is switched off.
 - Headlamp courtesy delay. Push and hold the personal button, then activate the main beam flash switch (pull switch towards you). After a confirmation chime sounds on the instrument cluster speaker, release the personal button and the main beam flash switch.
 - Suspension. Push and hold the personal button, then use the air suspension switch to select a different ride height. After a confirmation chime sounds on the instrument cluster speaker, release the personal button and the air suspension switch. Programming the personal button to operate the air suspension must take place within 60 seconds of turning the ignition off. The air suspension switch position is relayed to the CJB (central junction box) on the CAN (controller area network) systems, which power down 60 seconds after the ignition is switched off.

The ignition keys are externally identical for all markets, but differ in the frequency and power at which the RF transmitter in the key head operates. The RF transmitters operate at 433 MHz, 315 MHz or 315 MHz low power.

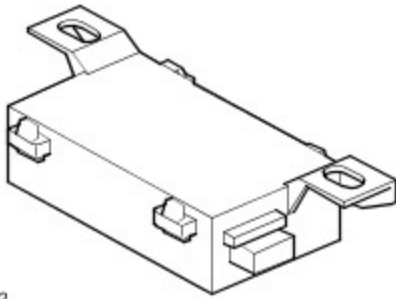
Each ignition key has a unique identification which is determined by the transponder in the key head. Every RF signal from the ignition key contains the identification code and a rolling code. The CJB (central junction box) checks the codes and only responds if the signal is from a valid ignition key. During vehicle production, the identification code of each ignition key supplied with the vehicle is programmed into the CJB (central junction box), and the rolling codes in the ignition key and the CJB (central junction box) are synchronized. A total of 30 'slots' are available in the CJB (central junction box) software to allow for replacement and additional ignition keys. In service, T4 can be used to communicate with the CJB (central junction box) for the following:

- Identify ignition key allocation within the CJB (central junction box) .
- Enable new ignition keys.
- Disable ignition keys.
- Re-enable a previously disabled ignition key.

If the vehicle lockset is replaced, the keys supplied with the new lockset must be enabled and the old keys disabled.

If the rolling code of an ignition key loses synchronisation with the CJB (central junction box), the remote operating functions will cease to operate. Synchronisation can be restored by starting the engine with the unsynchronized ignition key and allowing the engine to run for a minimum of 6 minutes.

RF RECEIVER



E46132

The RF receiver converts the signals from the remote handset into digital messages and transmits them to the CJB (central junction box) . The RF receiver is installed above the headlining, on the cross-rail between the top of the B pillars. Operation of the RF receiver is powered by a permanent battery feed from the CJB (central junction box) .

CLS OPERATION

The CLS allows the doors and, where applicable, the fuel filler door, to be centrally locked and unlocked using the remote handset or the CLS switches. Depending on the market, the CLS has either two or three locking states: internally locked, externally locked and superlocked (all except NAS).

Configurable CLS features include automatic speed locking, automatic relocking and SPE. All vehicles incorporate crash unlocking.

The internally locked state is activated with a single press of the CLS lock switch. The method of activating the externally locked and superlocked states is market dependant:

- In all markets except NAS, a single press of the lock button on the remote handset activates the superlocked state. A second press of the lock button on the remote handset, within 2 seconds of the first press, changes the CLS to the externally locked state.
- In NAS markets, a single press of the lock button on the remote handset activates the externally locked state. A second press of the lock button on the remote handset, within 2 seconds of the first press, arms the active anti-theft system. For additional information, refer to [Anti-Theft - Active](#) (419-01A)

In the internally locked state:

- The exterior door handles are disengaged from the latches, to prevent the doors being opened from outside the vehicle.
- The CJB (central junction box) ignores inputs from the tailgate release switch, which prevents the tailgates being opened.
- The doors can be opened using the internal door handles.
- The vehicle can be unlocked using a single press of the CLS unlock switch or a single press of the unlock button on the remote handset.

In the externally locked state:

- In addition to the conditions adopted for the internally locked state, the CJB (central junction box) also ignores inputs from the CLS lock and unlock switches.
- The vehicle can be unlocked using a single press of the unlock button on the remote handset.

In the superlocked state:

- In addition to the conditions adopted for the externally locked state, the CJB (central junction box) activates: The superlock motors in the door latches, to disengage the interior door handles. The fuel filler door lock motor (where fitted), to secure the fuel filler door.
 - The superlock motors in the door latches, to disengage the interior door handles.
 - The fuel filler door lock motor (where fitted), to secure the fuel filler door.
- The vehicle can be unlocked using a single press of the unlock button on the remote handset.

When the CLS lock switch is used, the CJB (central junction box) will internally lock the vehicle regardless of the position of the ignition switch, with or without the key in the ignition switch and with or without the engine running.

When the remote handset is used, the CJB (central junction box) will only lock or superlock the vehicle provided the ignition key has been removed from the ignition switch.

When the vehicle is externally locked or superlocked, the CJB (central junction box) flashes the turn signal lamps three times, for 500 milliseconds, with a 500 milliseconds pause between flashes. When the vehicle is unlocked using the remote handset, the CJB (central junction box) flashes the turn signal lamps once, for 3 seconds.

Mislock

A mislock occurs if the CJB (central junction box) receives an external lock or superlock request when any hinged panel is ajar, an invalid key is in the ignition switch or the repetition blocking limit for the door latches is reached. To indicate a mislock the CJB (central junction box) uses the horns to produce a 100 milliseconds 'chirp' and withholds flashing of the turn signal lamps.

If a mislock occurs because an invalid key is in the ignition switch or a hinged panel is ajar, the CJB (central junction box) still externally locks any doors that are closed. The closed doors are only externally locked, even if the original request was for superlocking.

If a mislock occurs because a hinged panel is ajar, when the hinged panel is subsequently closed the CJB (central junction box) maintains the current locking state until it receives another external lock or superlock request.

SPE

When SPE is enabled, an unlock command from the remote handset only unlocks the driver door. To unlock the remaining doors a second unlock command from the remote handset or the CLS unlock switch is required.

For each remote handset, SPE can be toggled on and off by pressing and holding the lock and unlock buttons on the remote handset at the same time, for 3 seconds, with the vehicle either locked or unlocked and the key removed from the ignition switch. Confirmation of the change to the SPE setting is provided by the vehicle locking and then unlocking in the selected mode.

Speed Dependant Locking

When speed dependant locking is enabled, the CJB (central junction box) internally locks the doors when the vehicle speed exceeds 8 km/h (5 mph) with the driver door closed and the engine running. If the vehicle slows down or stops, then increases to more than 8 km/h (5 mph) again, the CJB (central junction box) internally locks the doors again only if a door was opened while the vehicle speed was less than 8 km/h (5 mph). When the key is removed from the ignition switch, the CJB (central junction box) returns the vehicle to the previous unlocked state, i.e. unlocks all the doors, or just the driver door if SPE is enabled.

Speed dependant locking can be enabled and disabled in the customer settings menu. For additional information, refer to [Information and Message Center](#) (413-08 Information and Message Center)

Crash Unlocking

When the ignition switch is in position II, if a crash that triggers the air bags occurs the CJB (central junction box) unlocks all of the doors. After 3 seconds, the CJB (central junction box) unlocks the doors again, in case a lock button is pressed during the crash, by flailing limbs for example. The CJB (central junction box) is informed of the crash by a status message from the restraints control module, on the medium speed CAN bus, which changes from 'no crash' to 'crash'. The CLS will also perform crash unlocking if a 'no crash' status message is not received every 500 milliseconds.

The vehicle cannot be centrally locked again until the status message has been reset to 'no crash' by the restraints control module. For additional information, refer to [Air Bag and Safety Belt Pretensioner Supplemental Restraint System \(SRS\)](#) (501-20B)

Repetition Blocking

To protect the CLS motors and actuators from operating abuse, the CJB (central junction box) incorporates a repetition blocking feature, which limits the maximum operating rate of each motor and actuator. The lock motor in each door latch

also incorporates thermal protection.

CLS Motor and Actuator Operating Parameters

Motor or Actuator	Current On Time, ms	Maximum Operations, Per Minute	Nominal Operating Current, A	Stall Current, A
Upper Tailgate Latch	400 ± 10	10	2.5	8.0
Lower Tailgate Latch	700 ± 10	10	TBD	10.5
Fuel Filler Door Lock	700 ± 10	5	2.0	8.0
Door Superlock	100 - 110	10	1.0	3.4
Door Lock	100 - 110	10	3.0	10.9

Nominal operating current is at 23°C (73°F). Stall current is for 15 volts at -40°C (-40°F)

Lockout Protection

The vehicle cannot be locked or superlocked when the driver door is open. If an attempt is made to lock or superlock the vehicle with the remote handset, while the driver door is open, the CJB (central junction box) ignores the request.

Automatic Relock

If the CLS is unlocked using the remote handset, and a door or the tailgate is not opened, or the key is not put in the ignition switch within 1 minute, the CJB (central junction box) automatically locks or superlocks the vehicle again, depending on the previously locked mode. Automatic relock is designed to prevent inadvertent unlocking and disarming of the vehicle by accidentally pressing the unlock button on the remote handset.

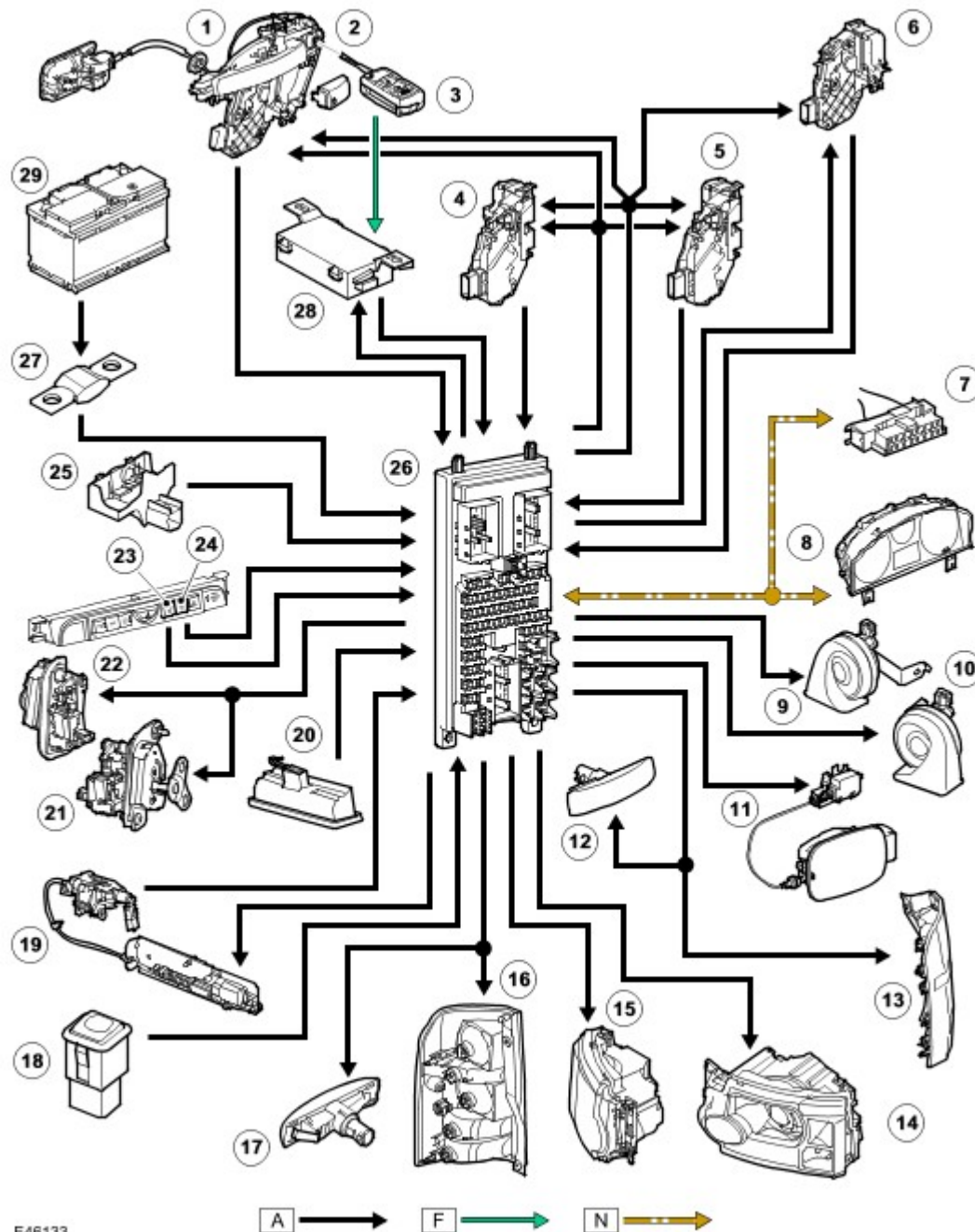
Transportation Mode

When the vehicle is in the transportation mode, SPE is enabled and global unlocking with the remote handset is disabled. The speed locking function is also disabled, but crash unlocking is retained.

CONTROL DIAGRAM

NOTE :

A = Hardwired connection; F = RF transmission; N = Medium speed CAN (controller area network) bus



E46133

Item	Part Number	Description
1	-	Left front door latch (signals for RHD (right-hand drive) version shown)
2	-	Door lock
3	-	Ignition key
4	-	Left rear door latch
5	-	Right rear door latch
6	-	Right front door latch (signals for RHD (right-hand drive) version shown)
7	-	Diagnostic socket
8	-	Instrument cluster
9	-	Left horn
10	-	Right horn

11	-	Fuel filler door lock actuator
12	-	Right side turn signal indicator lamp
13	-	Right rear turn signal indicator lamp
14	-	Right front turn signal indicator lamp
15	-	Left front turn signal indicator lamp
16	-	Left rear turn signal indicator lamp
17	-	Left side turn signal indicator lamp
18	-	Lower tailgate switch
19	-	Upper tailgate latch
20	-	Upper tailgate switch
21	-	Right lower tailgate latch
22	-	Left lower tailgate latch
23	-	CLS unlock switch
24	-	CLS lock switch
25	-	Hood ajar switch
26	-	CJB (central junction box)
27	-	Fusible link F17E, BJB (battery junction box)
28	-	RF receiver
29	-	Battery