

## SECTION 501-20A Safety Belt System

VEHICLE APPLICATION: 2011.00 Focus

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**SPECIFICATIONS****Torque Specifications**

| Item                                                                    | Nm | lb-ft | lb-in |
|-------------------------------------------------------------------------|----|-------|-------|
| Front safety belt upper anchor retaining bolt                           | 35 | 26    | -     |
| Front safety belt lower anchor retaining bolt                           | 38 | 28    | -     |
| Front safety belt retractor retaining bolt                              | 35 | 26    | -     |
| Rear outer safety belt retractor retaining bolt                         | 40 | 30    | -     |
| Rear outer safety belt lower anchor retaining bolt                      | 38 | 28    | -     |
| Rear center safety belt retractor retaining bolt                        | 35 | 26    | -     |
| Rear center safety belt lower anchor retaining bolt                     | 55 | 41    | -     |
| Rear center safety belt buckle retaining bolt                           | 55 | 41    | -     |
| Safety belt shoulder height adjuster retaining bolt                     | 35 | 26    | -     |
| Safety belt buckle and pretensioner retaining bolt                      | 47 | 35    | -     |
| Safety belt upper anchor retaining bolt - vehicles with convertible top | 40 | 30    | -     |
| Safety belt lower anchor retaining bolt - vehicles with convertible top | 40 | 30    | -     |
| Safety belt retractor retaining bolt - vehicles with convertible top    | 40 | 30    | -     |
| Rear safety belt buckle retaining bolt - vehicles with convertible top  | 40 | 30    | -     |

## DESCRIPTION AND OPERATION

## Safety Belt System

## System overview

**WARNING:** All safety belt components including retractors, buckles, child safety seat tether brackets and attaching hardware in use during a collision must be removed and new components installed. New safety belt components should also be installed where safety belts not in use during a collision, are inspected and found to be damaged or operate incorrectly. Failure to follow these instructions may result in personal injury.



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**WARNING:** All vehicles equipped with a passenger air bag have a **WARNING** sticker attached to the instrument panel **PROHIBITING** the use of rear facing child seats in the front seating positions. Failure to follow this instruction may result in personal injury.

**CAUTION:** Do not attempt to repair or lubricate the retractor / buckle mechanisms or modify the belts.

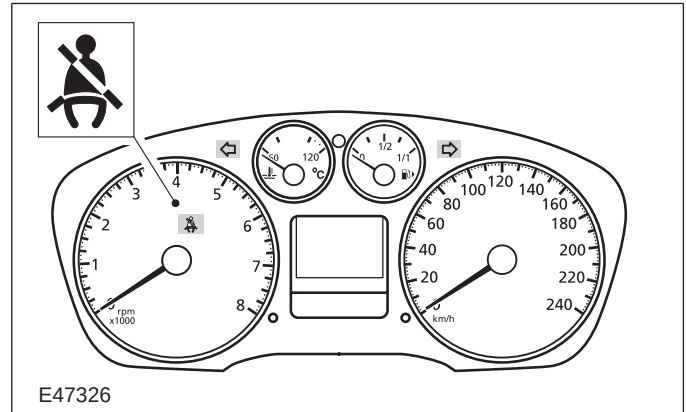
The safety belt system utilizes three-point lap and diagonal safety belts in all seat positions.

The front safety belt retractors incorporate a load limiting device, which allows progressive payout of additional safety belt webbing when the force exerted exceeds a predetermined limit.

The front safety belt upper anchors are connected to safety belt shoulder height adjusters mounted in the B-pillar.

The front seat safety belt buckles incorporate pretensioners and on the driver side a safety belt buckle switch. Both the safety belt buckle switch and the safety belt buckle pretensioner are connected to the air bag control module. The air

bag control module monitors both circuits and if a fault is detected will illuminate the air bag warning indicator located in the instrument cluster. The belt pretensioner is not deployed in any side, rear or minor frontal collisions.



When the vehicle speed exceeds 7 km/h (4 mph) and the driver safety belt is unfastened, the safety belt minder will provide the driver with an audible and visual warning. The warning will continue for up to ten minutes by sounding a chime and illuminating a warning indicator located in the instrument cluster.

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 pretensioners will deploy.

The additional safety belt minder feature can be disabled. For additional information, refer to Section 413-09.

The rear centre seat belt retractor is fitted in the roof and is engaged into the smaller belt buckle to the right of the centre seat and can be left there when the seat is not in use. The larger chrome buckle is engaged to the standard buckle to the left of the seat.

Rear seat safety belt retractors and buckles are of the conventional type.

## DIAGNOSIS AND TESTING

### Safety Belt System

#### Principles of Operation

**⚠ WARNING: All safety belt components including retractors, buckles, child safety seat tether brackets and attaching hardware in use during a collision must be removed and new components installed. New safety belt components should also be installed where safety belts not in use during a collision, are inspected and found to be damaged or operate incorrectly. Failure to follow these instructions may result in personal injury.**

The occupant restraint system utilizes three-point lap and diagonal safety belts in all seat positions.

Front seats are equipped with safety belt buckle pretensioners, which are controlled as part of the supplemental restraint system (SRS). For additional information,

REFER to: **Air Bag and Safety Belt Pretensioner Supplemental Restraint System (SRS)** (501-20 Supplemental Restraint System, Description and Operation).

The rear seat safety belt buckles are mounted directly to the floor panel.

The safety belt retractor, mounted within the base of the B-pillar, incorporates a torsion bar load limiting device. The device consists of a retractor reel which is mounted onto a spindle (torsion bar) which, once the sensor has locked the retractor reel and predetermined load is applied, twists and pays out additional webbing into the system. The deceleration force required to initiate this sequence is approximately the same as that required to initiate air bag deployment. The torsion bar load limiting device will only react if the safety belt is in use at the time of impact.

Rear seat safety belt retractors do not use this type of retractor, they are equipped with a conventional retractor.

#### Emergency Locking Retractor (ELR)

The retractors in all seat positions feature ELR. The ELR is part of the safety belt system that in

normal operation allows free movement of the belted occupant. In an emergency the ELR will lock, preventing webbing payout and hence forward movement of the occupant. Locking may be achieved by one of two mechanisms:

#### Vehicle Motion Sensor (VMS)

VMS is operated by sudden deceleration of the vehicle or excessive tilt. Once operated the VMS causes a locking pawl to be engaged, thus locking the retractor, preventing webbing payout. When the vehicle is stationary, the VMS stabilizes, causing the pawl to disengage and unlock the retractor, allowing webbing payout.

#### Webbing Motion Sensor (WMS)

The ELR WMS is operated by rapid acceleration of the webbing. Once operated, it causes a locking pawl to be engaged thus locking the retractor. Webbing payout is prevented in the same manner as VMS.

#### Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical and electrical damage.

#### Visual Inspection Chart

| Mechanical                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Safety belt retractor</li> <li>• Safety belt buckle and pretensioner</li> <li>• Safety belt buckle</li> </ul> |

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.

## DIAGNOSIS AND TESTING

### Symptom Chart

| Symptom                                               | Possible Sources         | Action                                                      |
|-------------------------------------------------------|--------------------------|-------------------------------------------------------------|
| • Normal mode - occupant restraint system inoperative | • Safety belt retractor. | • CARRY OUT the Safety Belt Component Test in this section. |

### Component Test

#### Poor Retraction

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 that 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 retighten the bolt.

The 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 technicians but note that technicians of larger than normal 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 driver and passenger allow the safety belts to provide the restraint and do not attempt to anticipate the sudden deceleration. The steering wheel should not be used as a brace. However, both driver and passenger should prepare themselves for the possibility that the safety belt will not lock. The passenger should hold their hands in front of them,

just clear of the instrument panel or front seat backrest, depending on which safety belt is being tested. Failure to follow these instructions may 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 a 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 10 km/h (6 mph). Do not exceed 10 km/h (6 mph) 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 reused. 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 steering 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, with no slack.
- Start the engine and, with the steering on full right-hand lock, drive the vehicle in a continuous circle at 16 km/h (10 mph). Do not exceed 16 km/h (10 mph) for this test.

## DIAGNOSIS AND TESTING

- 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.

### Static 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 meter (10 inches), preventing further webbing payout. Any safety belt retractor from which it is possible to extract further webbing must not be used. A new safety belt must be installed.

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REMOVAL AND INSTALLATION

## Front Safety Belt Retractor — 3-Door

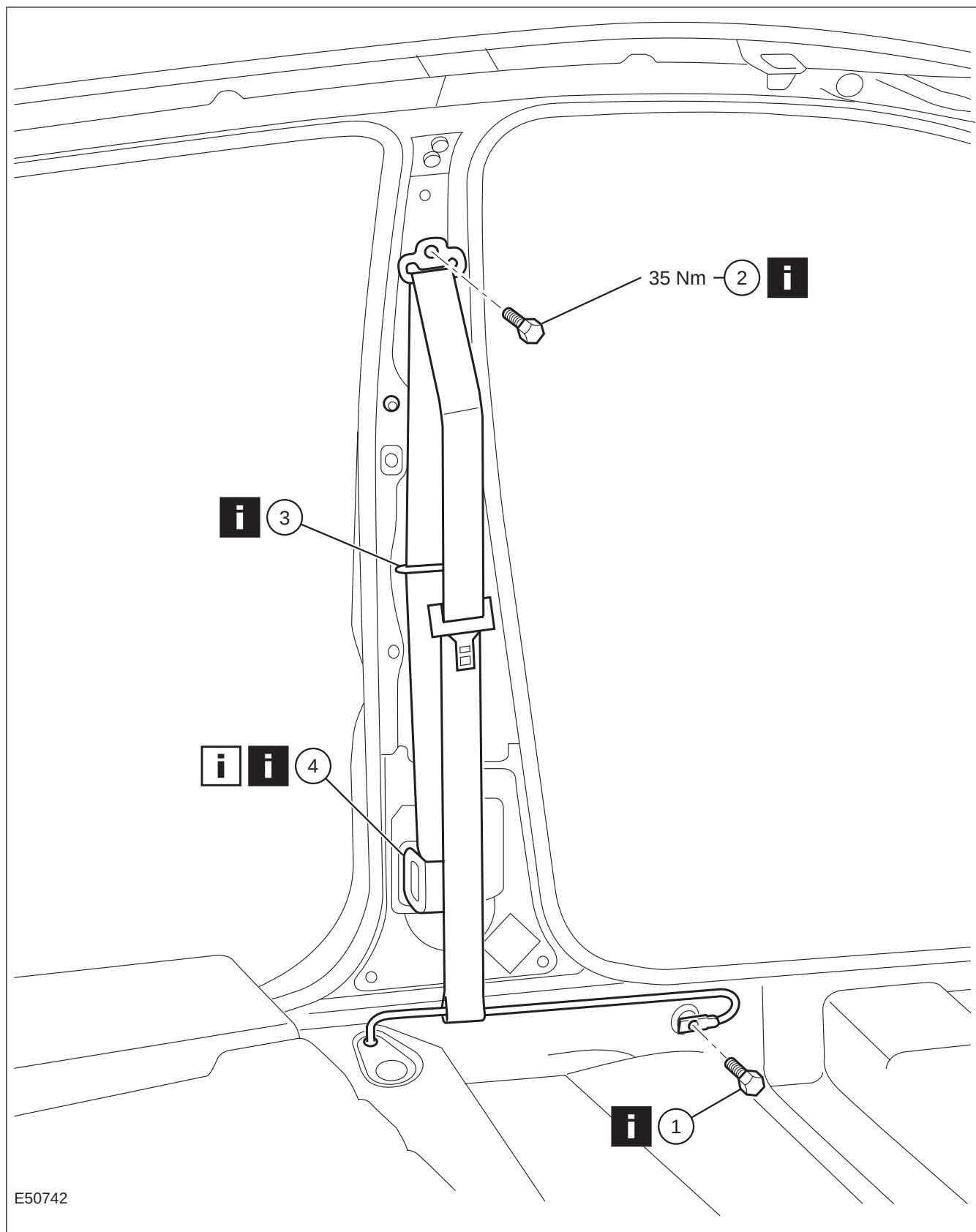
1. Remove the B-pillar trim panel.

For additional information, refer to: **B-Pillar Trim Panel - 3-Door** (501-05 Interior Trim

and Ornamentation, Removal and Installation).

2. Remove the components in the order indicated in the following illustration(s) and table(s).

## REMOVAL AND INSTALLATION



## REMOVAL AND INSTALLATION

| Item | Description                                                    |
|------|----------------------------------------------------------------|
| 1    | Safety belt lower anchor<br><a href="#">See Removal Detail</a> |
| 2    | Safety belt upper anchor<br><a href="#">See Removal Detail</a> |

| Item | Description                                                                                            |
|------|--------------------------------------------------------------------------------------------------------|
| 3    | Guide loop<br><a href="#">See Removal Detail</a>                                                       |
| 4    | Safety belt retractor<br><a href="#">See Removal Detail</a><br><a href="#">See Installation Detail</a> |

3. To install, reverse the removal procedure.

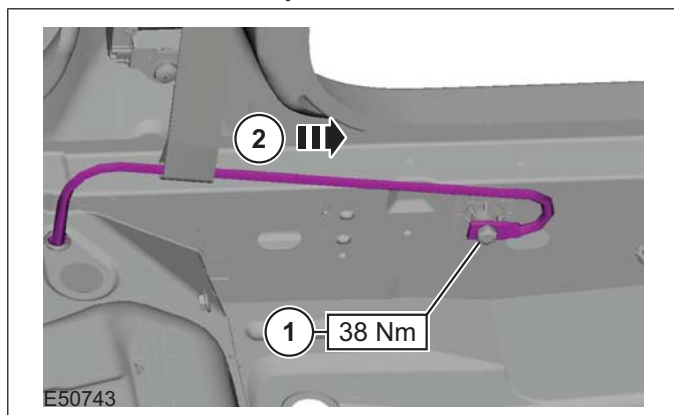
## Removal Details

## Item 1 Safety belt lower anchor

**CAUTION:** The bolt securing the safety belt anchor is held captive by a metal washer. The bolt, spacer and metal washer must remain on the safety belt anchor at all times when the safety belt is detached or removed.

## 1. Detach the safety belt lower anchor.

1. Remove the Torx bolt from the anchor rail.
2. Slide the safety belt off the anchor rail.



## Item 2 Safety belt upper anchor

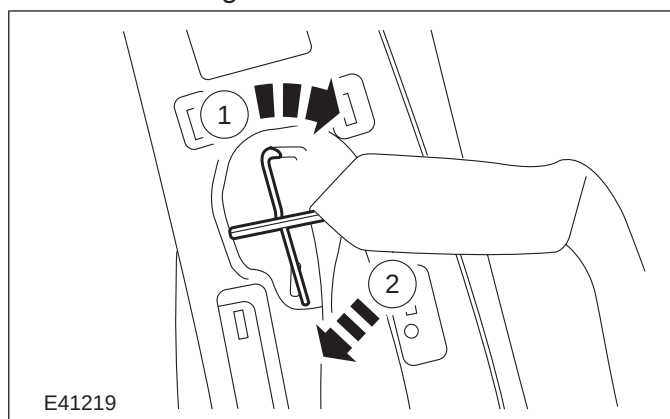
**CAUTION:** The bolt securing the safety belt anchor is held captive by a metal washer. The bolt, spacer and metal washer must remain on the safety belt anchor at all times when the safety belt is detached or removed.

## Item 3 Guide loop

1. Detach the guide loop from the B-pillar.

## Installation Details

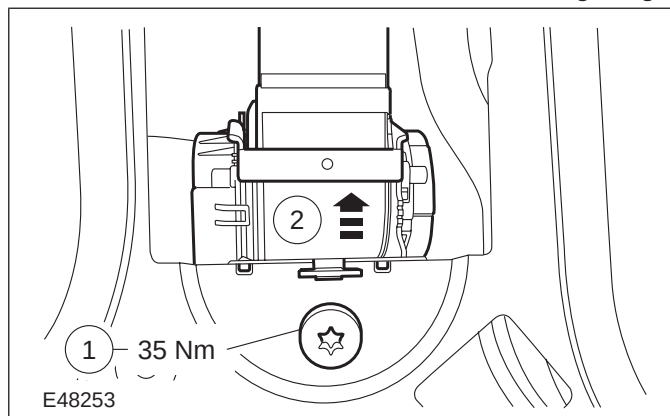
1. Rotate the guide in a clockwise direction.
2. Slide the guide outwards.



## Item 4 Safety belt retractor

## 1. Remove the front safety belt retractor.

1. Remove the bolt.
2. Lift the retractor to detach the locating tang.



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**REMOVAL AND INSTALLATION****Item 4** Safety belt retractor

**CAUTION:** Make sure the safety belt retractor locating tang is correctly located.

## REMOVAL AND INSTALLATION

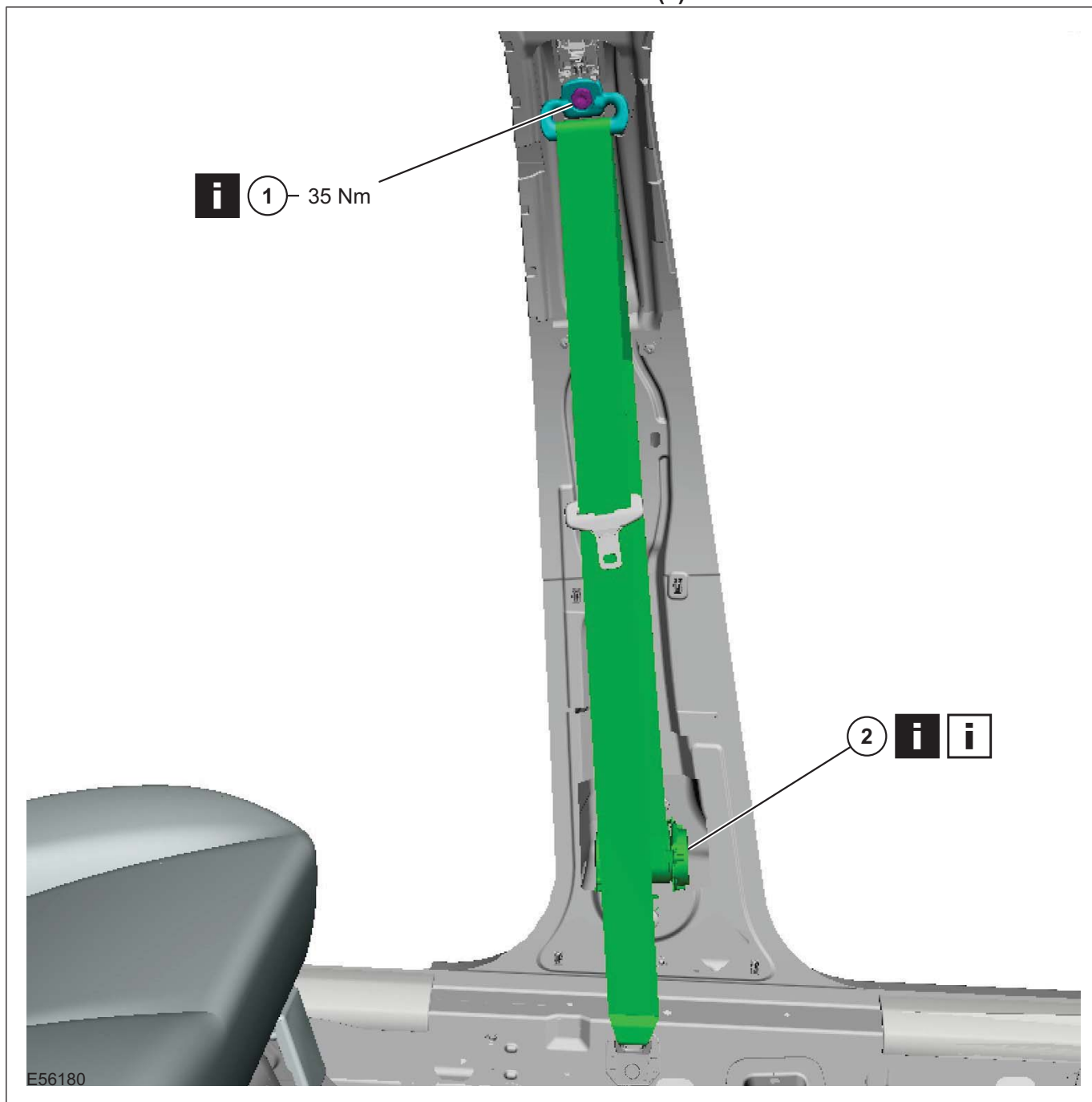
## Front Safety Belt Retractor — 4-Door/5-Door/Wagon

1. Remove the B-pillar trim panel.

For additional information, refer to: **B-Pillar Trim Panel - 4-Door/5-Door** (501-05 Interior

Trim and Ornamentation, Removal and Installation).

2. Remove the components in the order indicated in the following illustration(s) and table(s).



## REMOVAL AND INSTALLATION

| Item | Description                                                                         |
|------|-------------------------------------------------------------------------------------|
| 1    | Front safety belt upper anchor retaining bolt<br><a href="#">See Removal Detail</a> |

| Item | Description                                                                                                  |
|------|--------------------------------------------------------------------------------------------------------------|
| 2    | Front safety belt retractor<br><a href="#">See Removal Detail</a><br><a href="#">See Installation Detail</a> |

3. To install, reverse the removal procedure.

## Removal Details

**Item 1** Front safety belt upper anchor retaining bolt

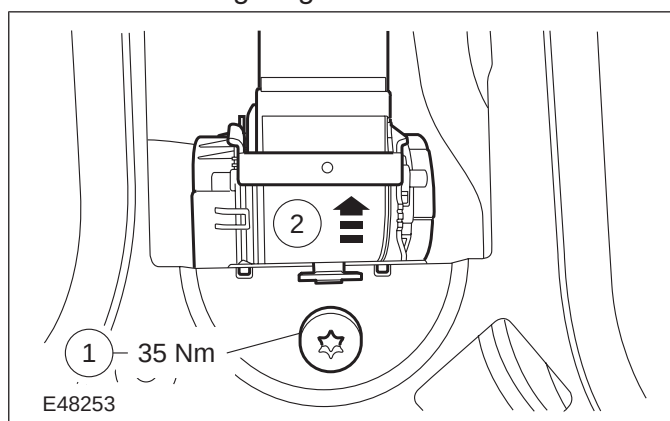
- CAUTION:** The bolt securing the front safety belt upper anchor is held captive by a metal washer. The bolt, spacer and metal washer must remain on the front safety belt upper anchor at all times when the front safety belt is detached or removed.

Detach the front safety belt upper anchor from the front safety belt shoulder height adjuster.

**Item 2** Front safety belt retractor

- Remove the front safety belt retractor.

- Remove the front safety belt retractor retaining bolt.
- Lift the front safety belt retractor to detach the locating tang.



## Installation Details

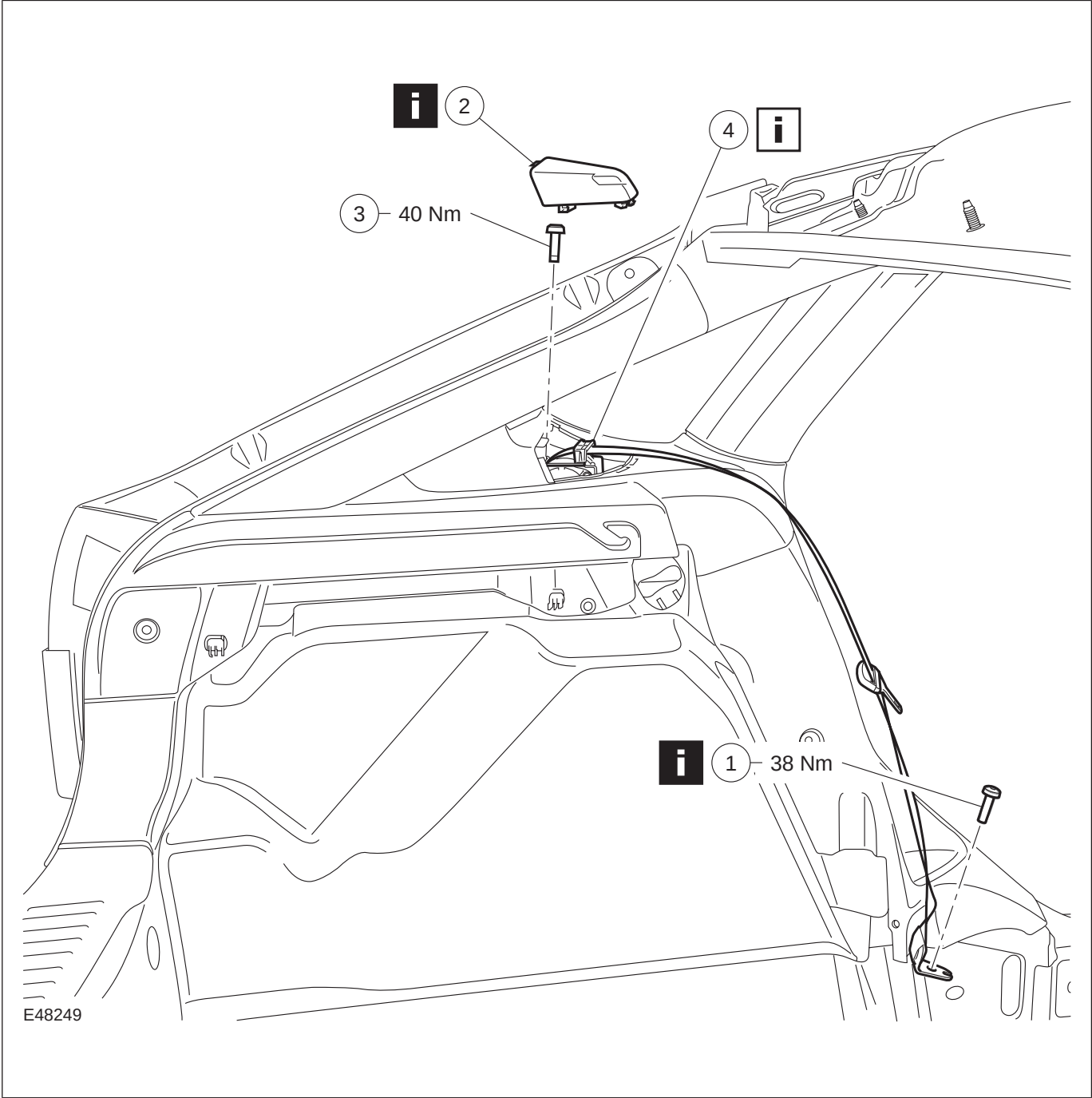
**Item 2** Front safety belt retractor

- CAUTION:** Make sure that the front safety belt retractor locating tang is correctly located.

REMOVAL AND INSTALLATION

Rear Safety Belt Retractor — 3-Door/5-Door/Wagon

1. Remove the components in the order indicated in the following illustration(s) and table(s).



| Item | Description                                                   |
|------|---------------------------------------------------------------|
| 1    | Safety belt lower anchor retaining bolt<br>See Removal Detail |
| 2    | Safety belt retractor cover<br>See Removal Detail             |

| Item | Description                                      |
|------|--------------------------------------------------|
| 3    | Safety belt upper anchor retaining bolt          |
| 4    | Safety belt retractor<br>See Installation Detail |

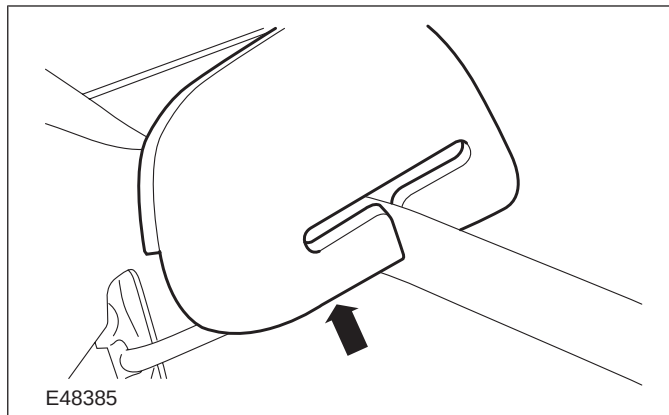
2. To install, reverse the removal procedure.

**REMOVAL AND INSTALLATION****Removal Details****Item 1 Safety belt lower anchor retaining bolt**

1. Fold the rear seat cushion forward, to gain access to the rear safety belt lower anchor retaining bolt.

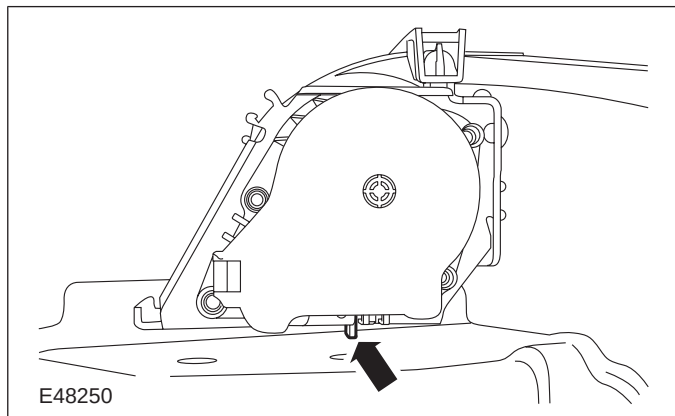
**Item 2 Safety belt retractor cover**

1. Remove the rear safety belt retractor cover.

**Installation Details****Item 4 Safety belt retractor**

1. **⚠ CAUTION:** Make sure the rear safety belt retractor locating tang is correctly located.

Install the rear safety belt retractor.



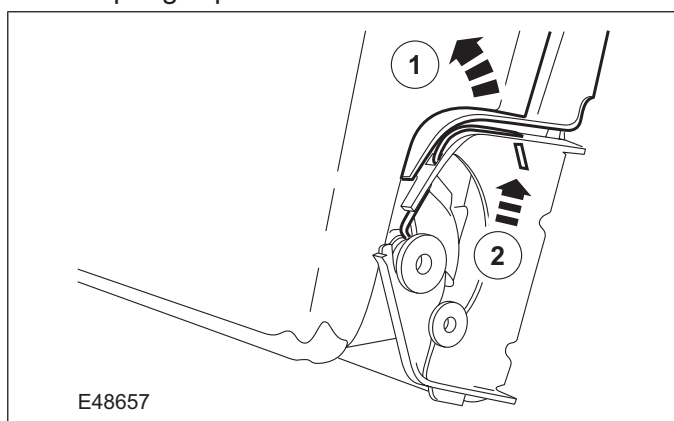
## REMOVAL AND INSTALLATION

## Rear Center Safety Belt Retractor

| Materials |               |
|-----------|---------------|
| Name      | Specification |
| Cleaner   | WSK-M5B401-A1 |
| Adhesive  | WSK-M2G402-A4 |

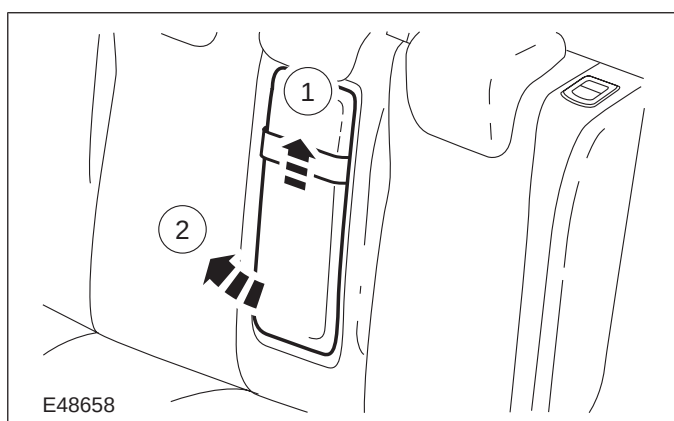
### 1. Detach the armrest pivot pins from the armrest retaining bracket on both sides (if equipped).

1. Pull the outer edge of the armrest backing panel upwards to gain access to the spring clip.
2. Using a thin bladed screwdriver, release the spring clip.



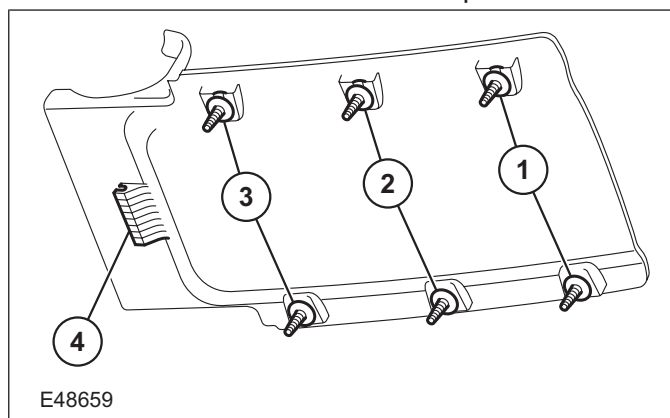
### 2. Remove the armrest (if equipped).

1. Slide the armrest upwards.
2. Slide the armrest outwards.

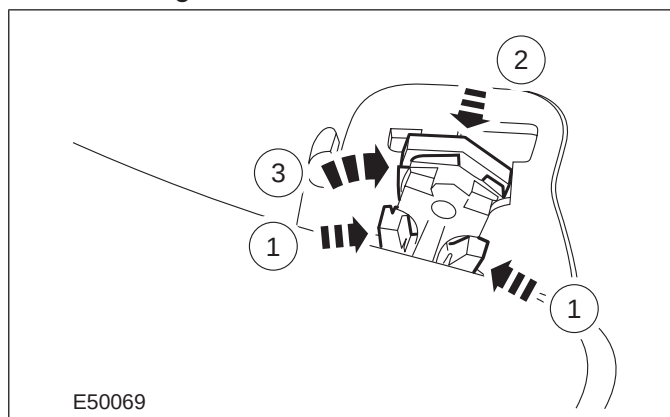


### 3. Remove the armrest backing panel (if equipped).

1. Detach the retaining clips from the left hand rear seat backrest in the sequence shown.



4. Fold the rear seat cushions forwards.
5. Release the rear seat backrest upper latch on both sides.
6. Fold the rear seat backrests forwards.
7. Release the rear seat backrest from the outer mounting bracket on both sides.
  1. Using a suitable pair of long nose pliers, depress the clips.
  2. Push the clip inwards.
  3. Using a suitable screwdriver, release the locking latch.



8. **CAUTION:** The left-hand rear seat backrest inner pivot pin has radial grooves. Take care not to damage the right-hand seat backrest inner pivot bush.

### Remove the right-hand rear seat backrest.

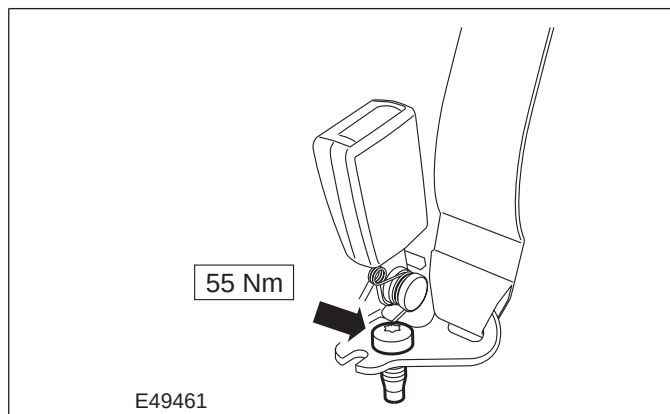
1. Detach the outer pivot pin from the mounting bracket.

## REMOVAL AND INSTALLATION

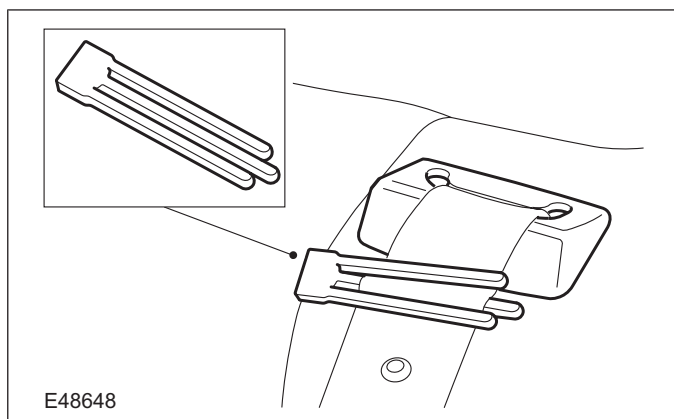
2. Detach the right-hand seat backrest from the left-hand seat backrest.



- Remove the rear center safety belt lower anchor retaining bolt.



9. **CAUTION:** Make sure a webbing retainer is installed at least 200 mm towards the safety belt retractor from the webbing stop. Install the safety belt webbing retainer.



10. **CAUTION:** The bolt securing the safety belt anchor is held captive by a metal washer. The bolt, spacer and metal washer must remain on the safety belt anchor at all times when the safety belt is detached or removed.

11. **CAUTION:** The left-hand rear seat backrest inner pivot pin has radial grooves. Take care not to damage the center hinge pivot bush.

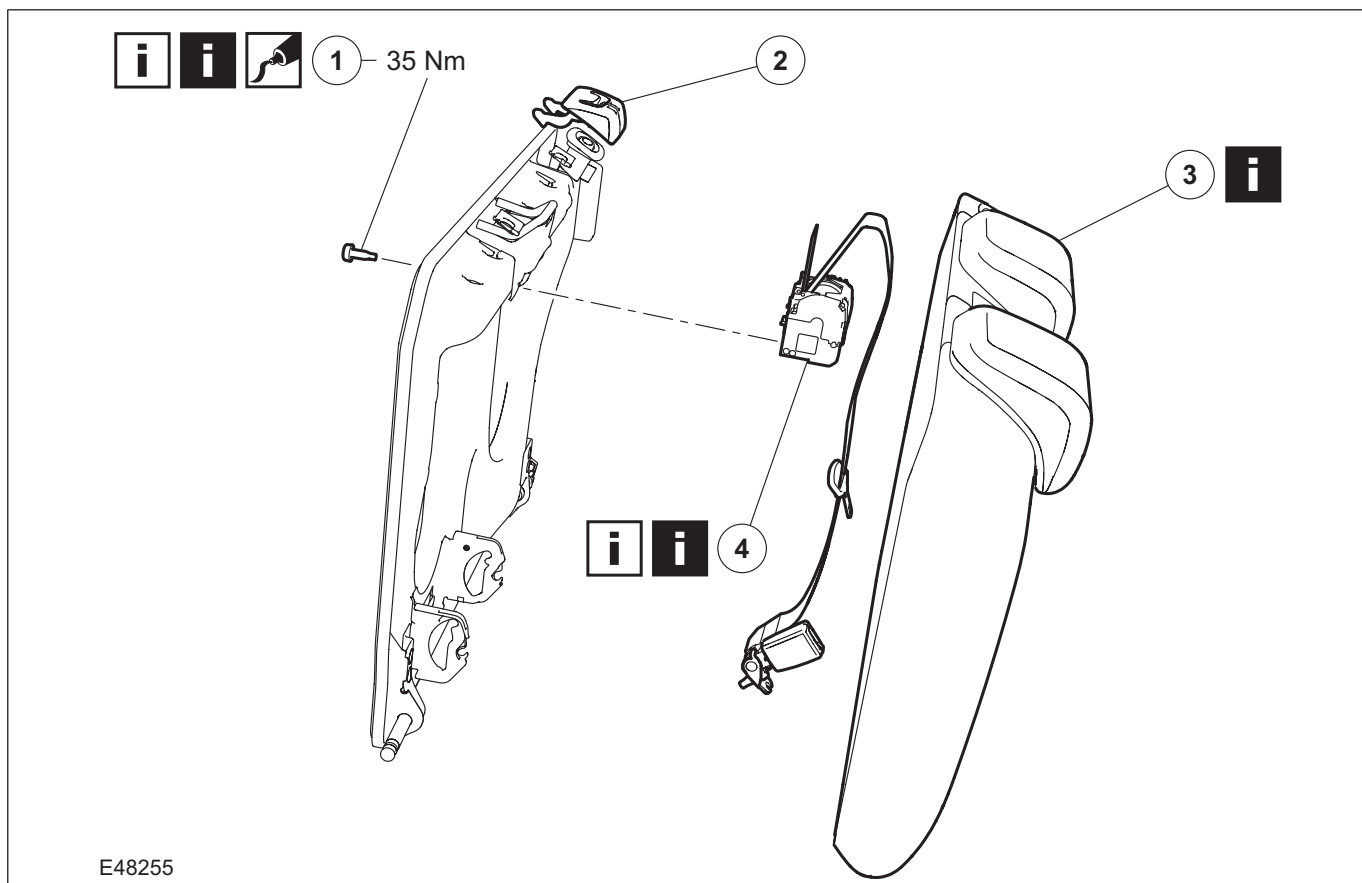
Remove the left-hand rear seat backrest.

1. Detach the outer pivot pin from the outer mounting bracket.
2. Slide the backrest from the center mounting bracket.



12. Remove the components in the order indicated in the following illustration(s) and table(s).

## REMOVAL AND INSTALLATION



| Item | Description                                                                                                                                    |
|------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Rear center safety belt retractor upper anchor retaining bolt<br><a href="#">See Removal Detail</a><br><a href="#">See Installation Detail</a> |
| 2    | Rear center safety belt webbing trim panel                                                                                                     |

| Item | Description                                                                                                        |
|------|--------------------------------------------------------------------------------------------------------------------|
| 3    | Left-hand backrest cover and pad<br><a href="#">See Removal Detail</a>                                             |
| 4    | Rear center safety belt retractor<br><a href="#">See Removal Detail</a><br><a href="#">See Installation Detail</a> |

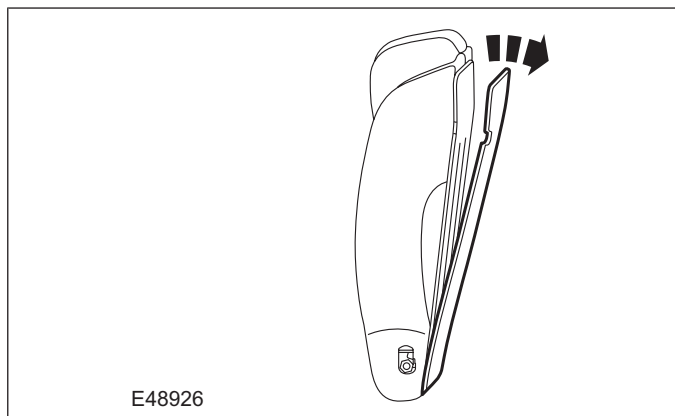
13. To install, reverse the removal procedure.

## Removal Details

## REMOVAL AND INSTALLATION

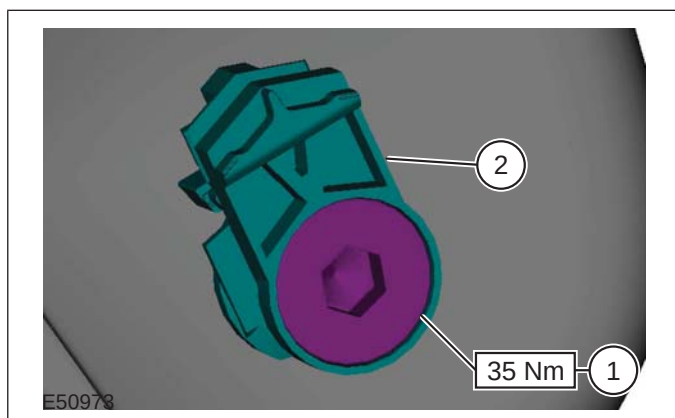
**Item 1** Rear center safety belt retractor upper anchor retaining bolt

1. Detach the rear seat backrest carpet from the left-hand rear seat backrest.

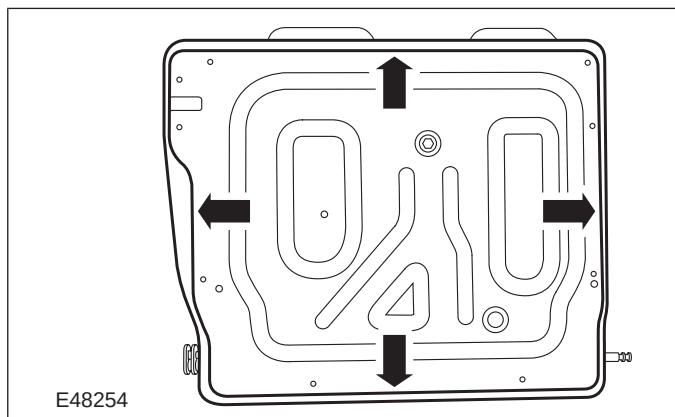
**Item 3** Left-hand backrest cover and pad

1. Remove the backrest outer pivot pin bush.

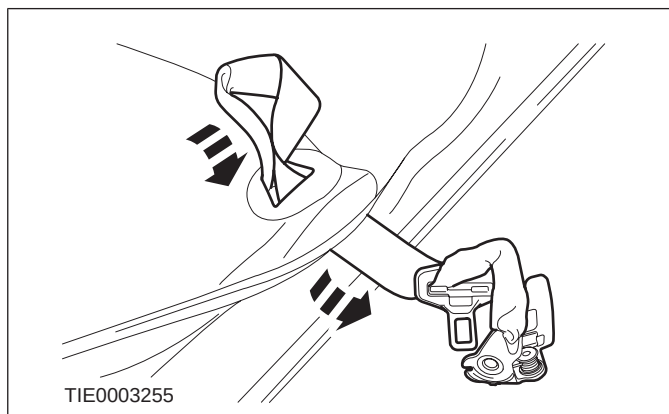
1. Remove the pivot pin bush retaining bolt.
2. Remove the bush.



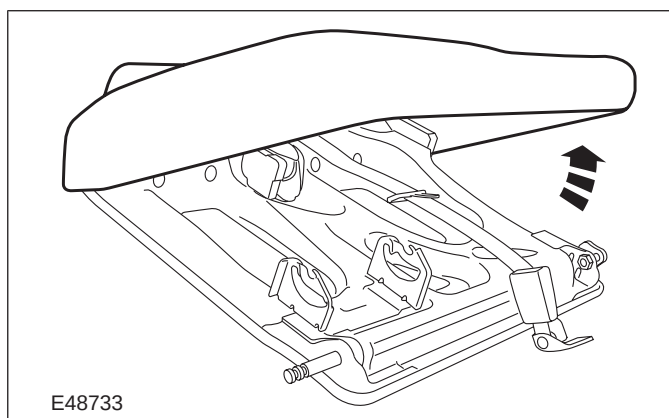
2. Detach the rear seat cover and pad from the rear seat backrest.



3. Feed the rear center seat safety belt and anchor through the rear seat cover and pad.

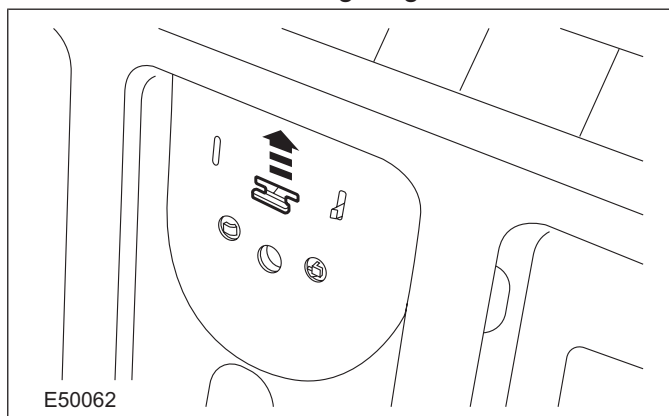


4. Raise the rear seat cover and pad to gain access to the rear center safety belt retractor.

**Item 4** Rear center safety belt retractor

1. Remove the rear seat center safety belt retractor.

- Release the locking tang.



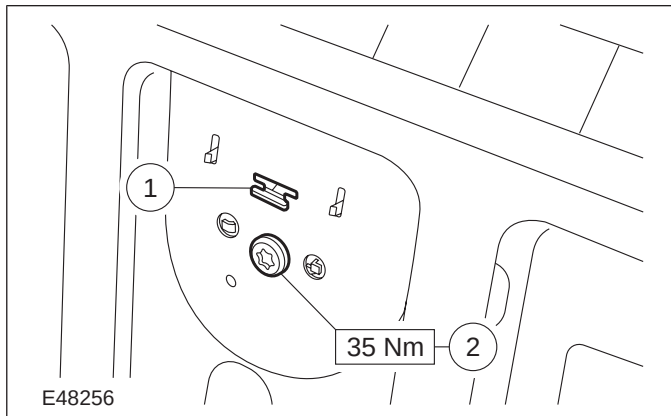
## Installation Details

**REMOVAL AND INSTALLATION****Item 4 Rear center safety belt retractor**

1.  **CAUTION:** Make sure the rear center safety belt retractor locating tang is correctly located.

Install the rear center seat belt retractor.

1. Locate the locking tang.
2. Install the retaining bolt.

**Item 1 Rear center safety belt retractor upper anchor retaining bolt**

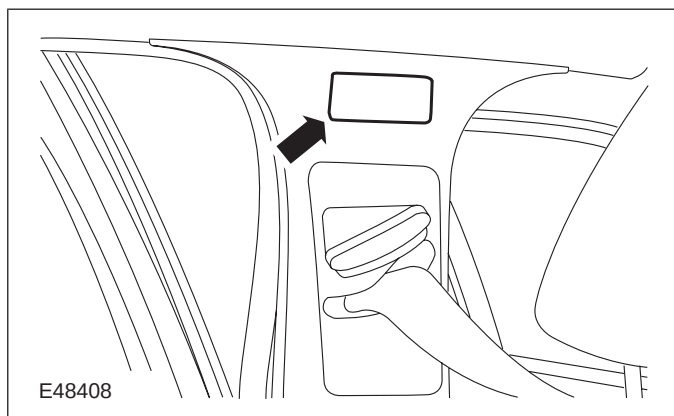
1. Using a suitable cleaner, remove the old adhesive from the rear seat backrest.
2. Using a suitable adhesive, attach the rear seat backrest carpet to the rear seat backrest.

## REMOVAL AND INSTALLATION

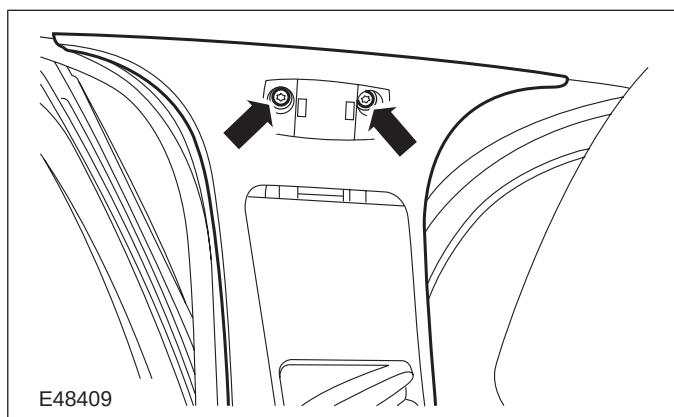
## Safety Belt Shoulder Height Adjuster(40 225 0)

## Removal

1. Using a thin bladed screwdriver, remove the B-pillar upper trim panel retaining screws cover.

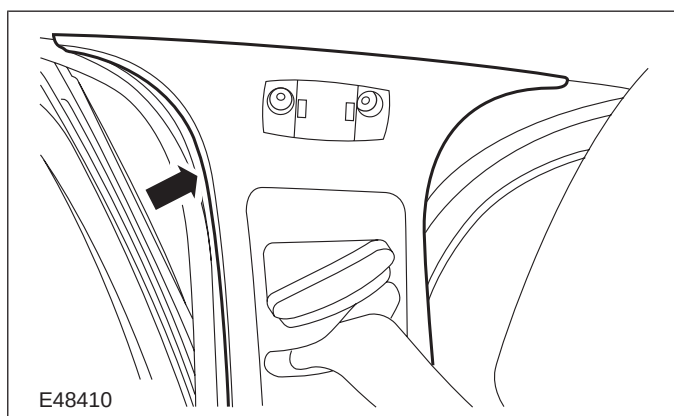


2. Remove the B-pillar upper trim panel retaining screws.



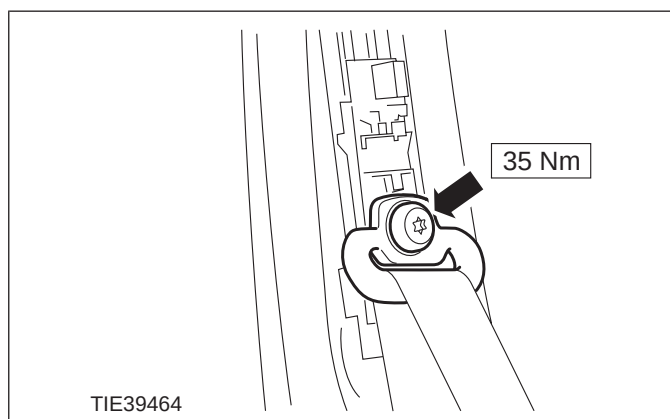
3. Locally detach the front and rear door weatherstrips.

4. Detach the B-pillar upper trim panel from the B-pillar.

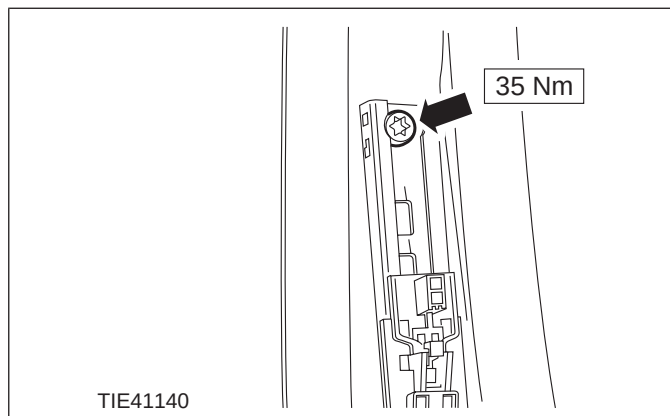


5. **CAUTION:** The bolt securing the safety belt anchor is held captive by a metal washer. The bolt, spacer and metal washer must remain on the safety belt anchor at all times when the safety belt is detached or removed.

Detach the safety belt upper anchor from the safety belt shoulder height adjuster.



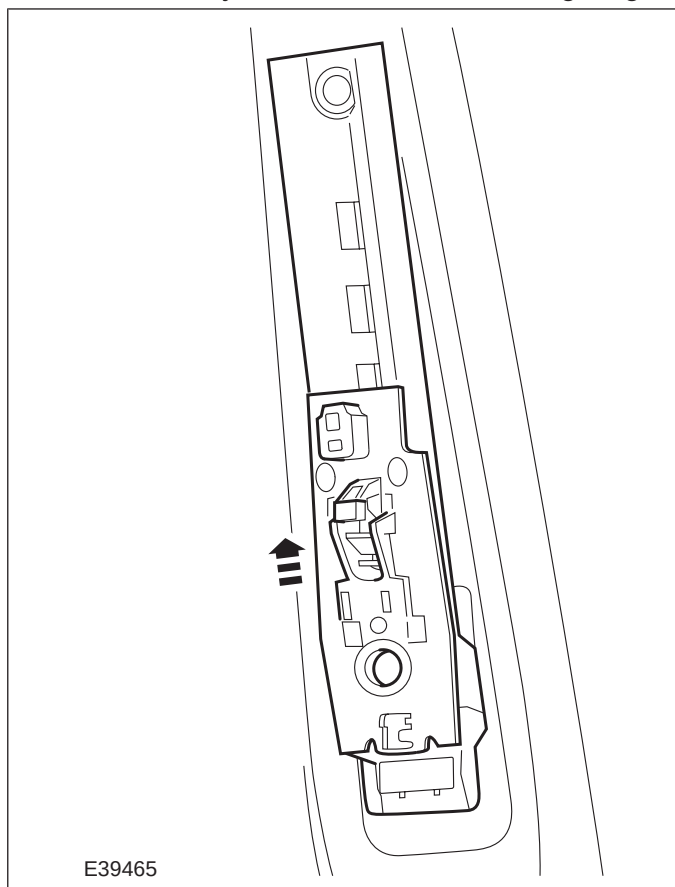
6. Remove the safety belt shoulder height adjuster retaining bolt.



7. Remove the safety belt shoulder height adjuster.

**REMOVAL AND INSTALLATION**

- Lift the adjuster to detach the locating tangs.

**Installation**

1. **⚠ CAUTION:** Make sure the safety belt shoulder height adjuster locating tangs are correctly located.

**NOTE:** Make sure the safety belt shoulder height adjuster locking control is correctly located on the safety belt shoulder height adjuster.

**To install, reverse the removal procedure.**

## REMOVAL AND INSTALLATION

## Safety Belt Buckle and Pretensioner(40 232 0)

## Removal

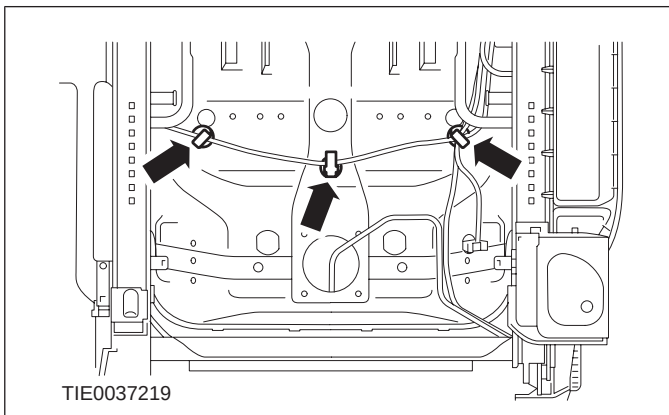
**⚠ WARNING:** Never probe the electrical connectors of air bag modules or any other supplemental restraint system component. Failure to follow this instruction may result in personal injury.

## 1. Remove the front seat.

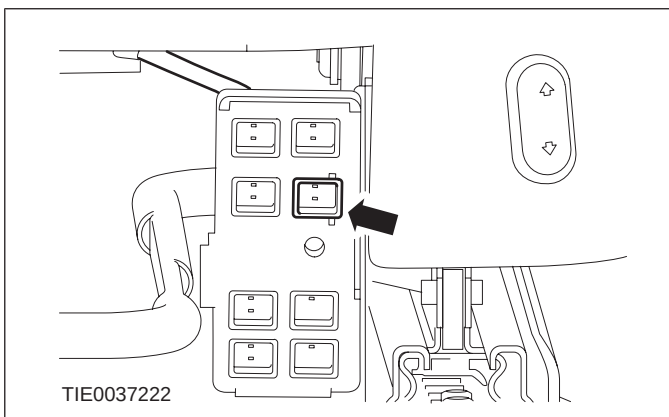
For additional information, refer to: **Front Seat** (501-10 Seating, Removal and Installation).

2. **⚠ CAUTION:** Note the position and routing of the safety belt buckle pretensioner wiring harnesses to aid installation. An incorrectly routed wiring harness may lead to the wiring harness becoming damaged on the seat mechanism.

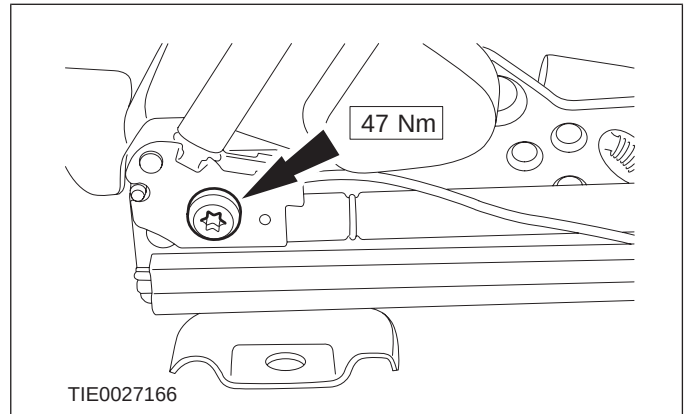
Detach the safety belt buckle pretensioner wiring harness from the seat.



3. Detach the safety belt buckle pretensioner electrical connector from the seat frame



4. Remove the safety belt buckle and pretensioner.



## Installation

**⚠ WARNING:** Never probe the electrical connectors of air bag modules or any other supplemental restraint system component. Failure to follow this instruction may result in personal injury.

1. To install, reverse the removal procedure.