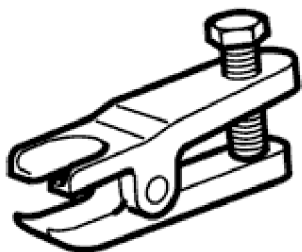


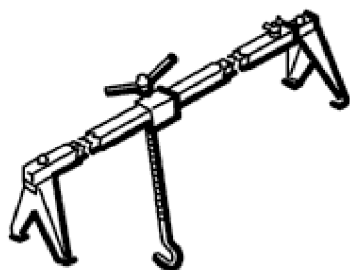
Front Axle Crossmember

Special Service tools



E36397

Tie-Rod-End Taper Separator
211-098 (JD 100)



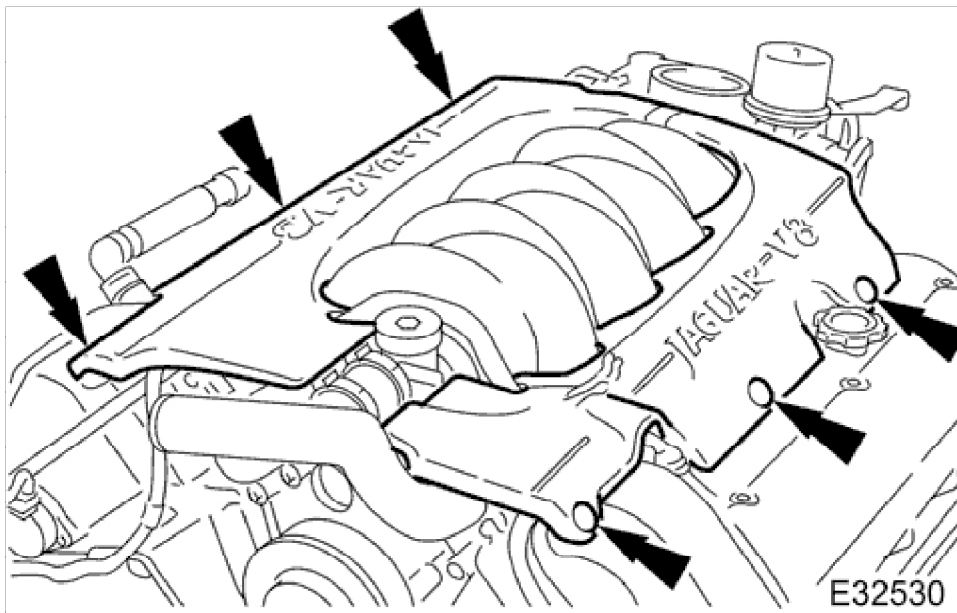
E36400

Engine Support Beam
303-021 (MS 53D)

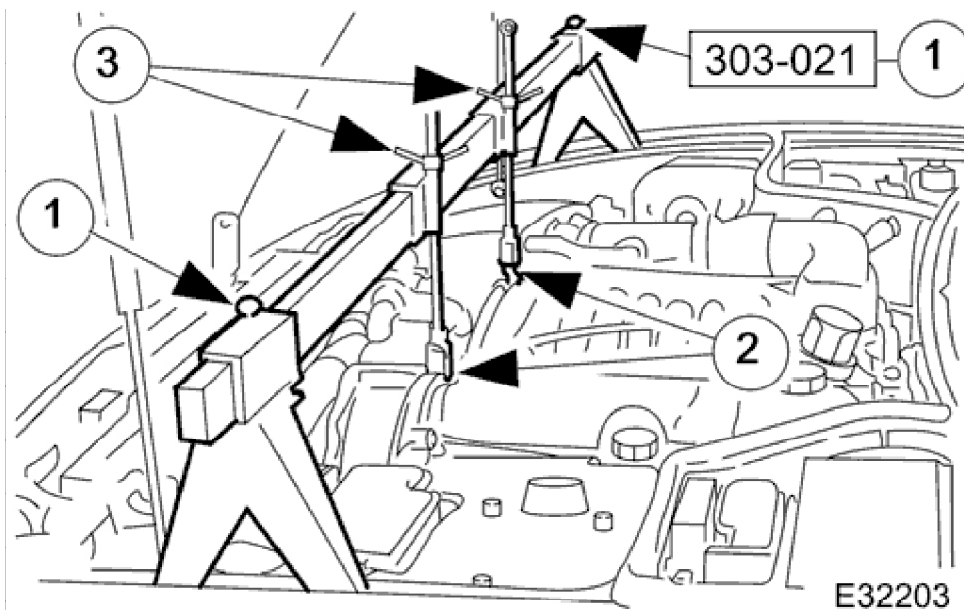
Removal  **CAUTION:**
Replacement of nuts and bolts: Various thread-locking devices are used on nuts and bolts throughout the vehicle. These devices restrict the number of times a nut or bolt can be used. See section <<100-00>> for information.

 **CAUTION:**
Do not attempt to weld or repair the aluminum crossbeam. If it is damaged, a new one must be installed.

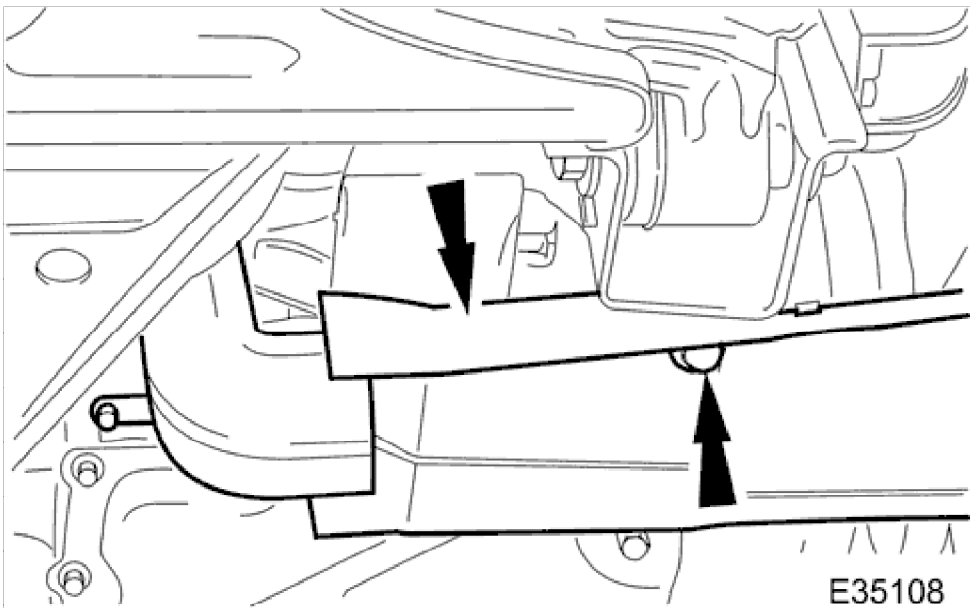
1. Position vehicle on a four-post lift.
2. Disconnect battery ground cable. Refer to section <<414-01>>.
3. Open engine compartment to service position, and fit paintwork protection covers to fenders.



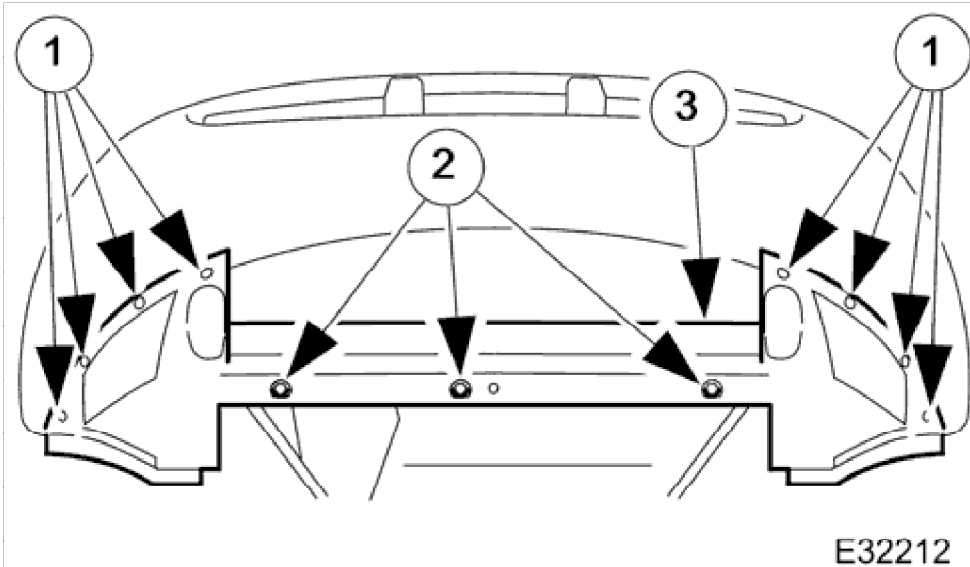
4. Remove both engine covers (normally aspirated vehicles only).
- Release pegs.
 - Remove covers.



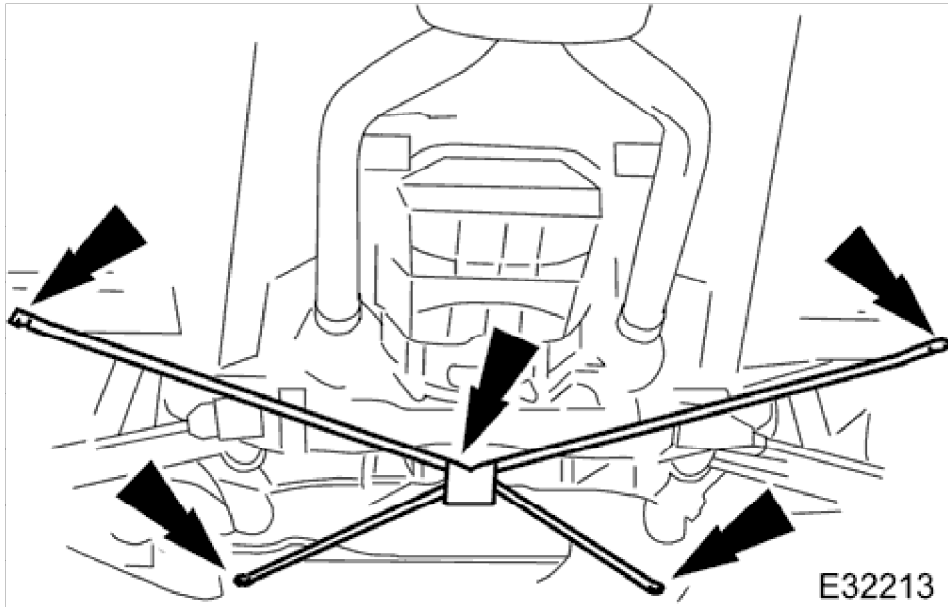
5. Support weight of engine.
1. Position special tool in RH and LH fender channels and tighten beam fixings.
 2. Engage hooks into the engine front lifting eyes.
 3. Tighten hook adjustment nuts until weight of engine is supported.



- 6. Remove generator front cooling duct.
 - Remove bolt.
 - Move duct rearwards to release tang from undertray.
 - Release front duct from rear vertical duct.



- 7. Remove undertray.
 - 1. Remove and discard eight scrivenets.
 - 2. Remove three screws.
 - 3. Remove undertray.

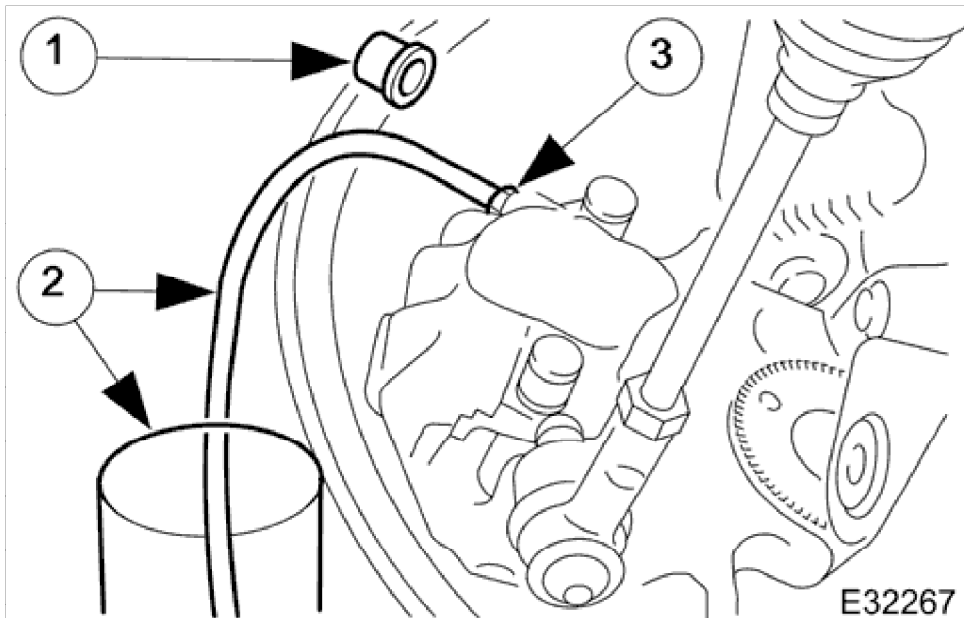


8. Remove cruciform strut (convertible vehicles only).

- Remove four bolts.
- Remove cruciform strut.

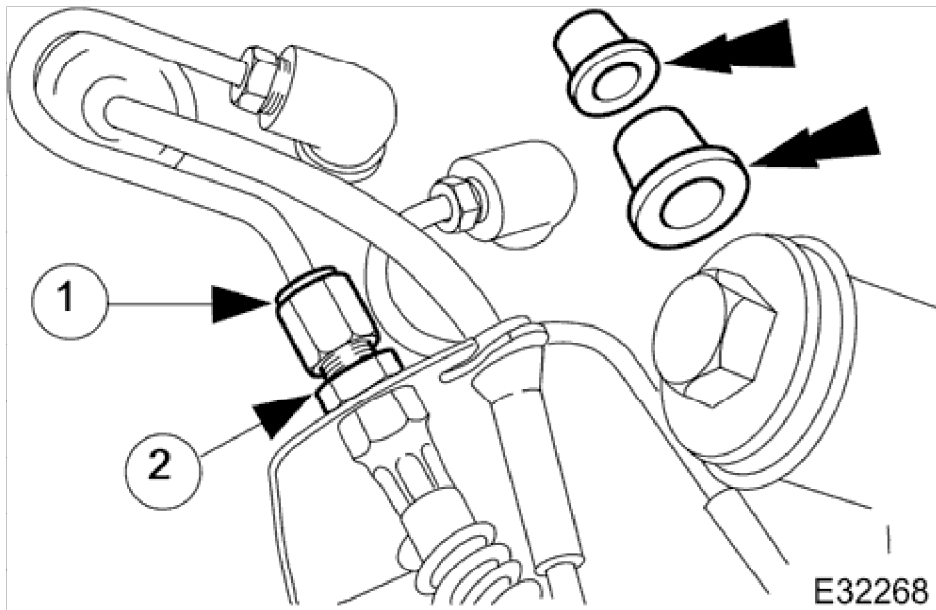
9. Raise front of vehicle and support on stands. Refer to section <<100-02>>.

10. Remove front wheels. Refer to section <<204-04>>.

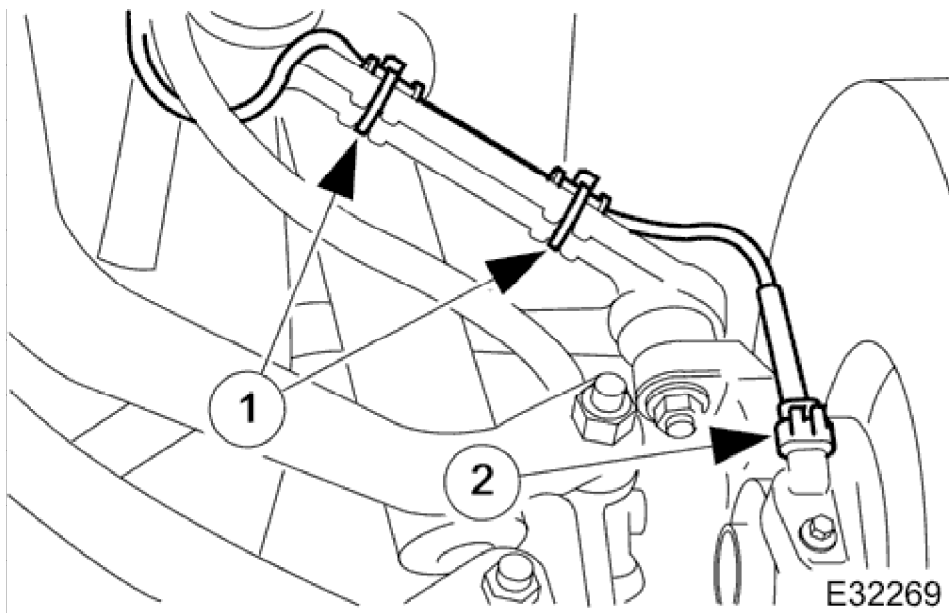


11. Drain brake fluid from both front brakes.

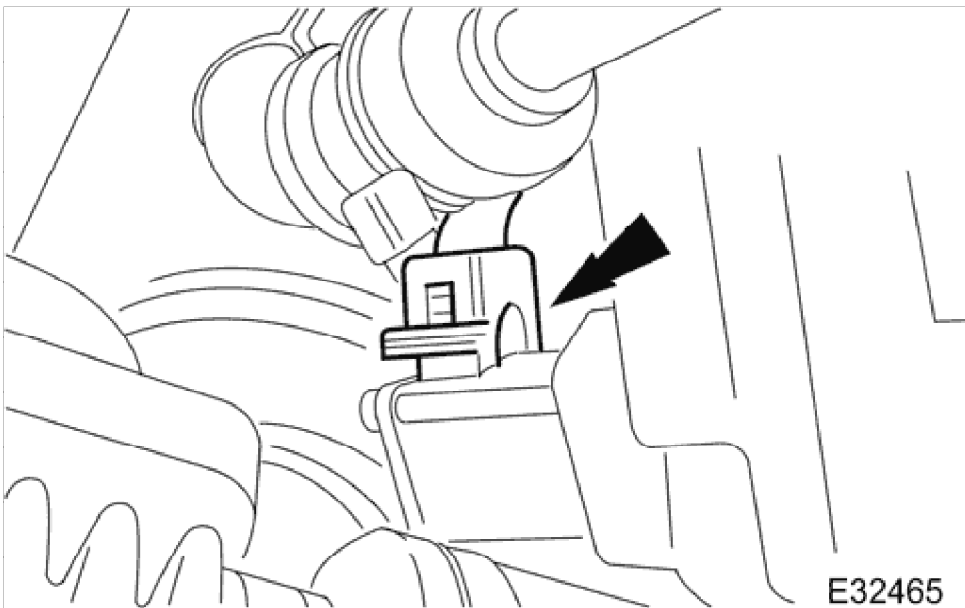
1. Remove dust cap.
 2. Connect pipe to bleed nipple, and insert pipe into a fluid container.
 3. Undo bleed nipple sufficiently, to allow brake fluid to drain.
- Pump brake pedal until brake fluid stops draining.
 - Tighten bleed nipple, remove pipe, and fit dust cover.
 - Repeat procedure on opposite-side brake caliper.



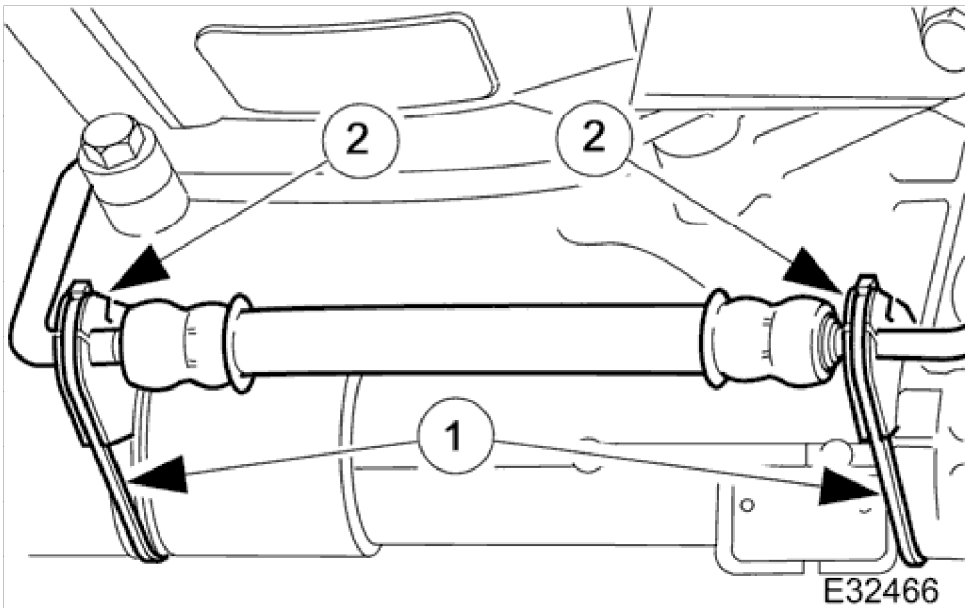
12. Disconnect both front brake hoses from brake tubes.
1. Undo union nut connecting brake tube to brake hose.
 2. Remove locknut securing brake hose to bracket and release brake hose.
- Fit blanking plugs to brake hose and tube.
 - Repeat procedure to disconnect opposite-side brake hose.



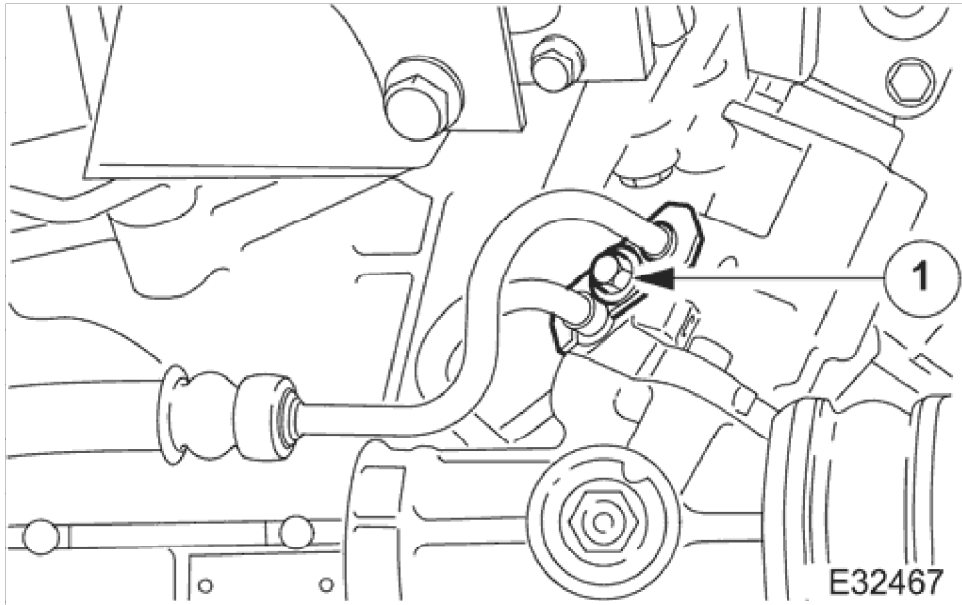
13. Disconnect connectors from both front ABS sensors.
1. Remove tie straps securing ABS harness to upper wishbone.
 2. Disconnect connector.
- Repeat procedure to disconnect opposite-side ABS sensor.



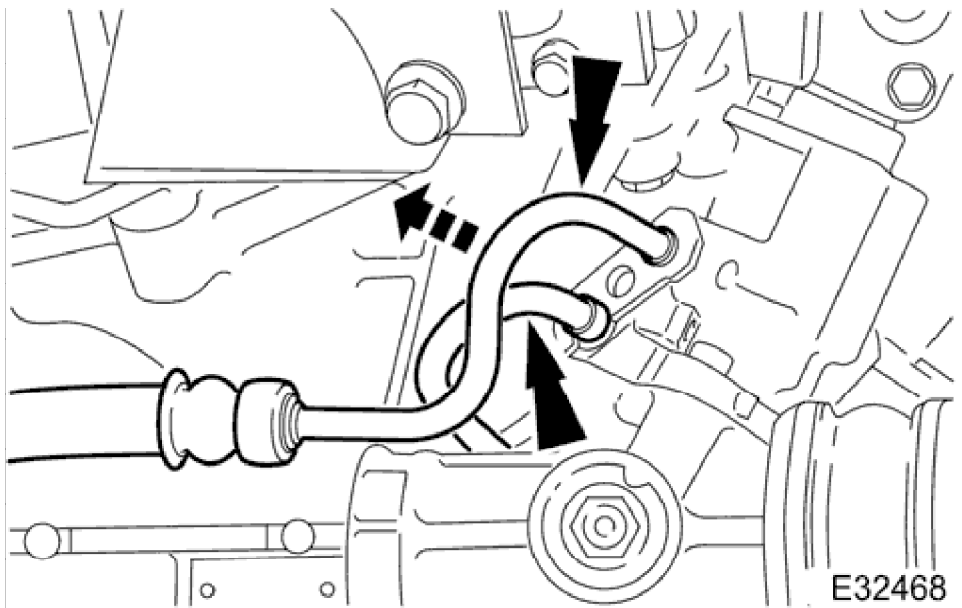
14. Disconnect electrical connector from steering rack transducer.



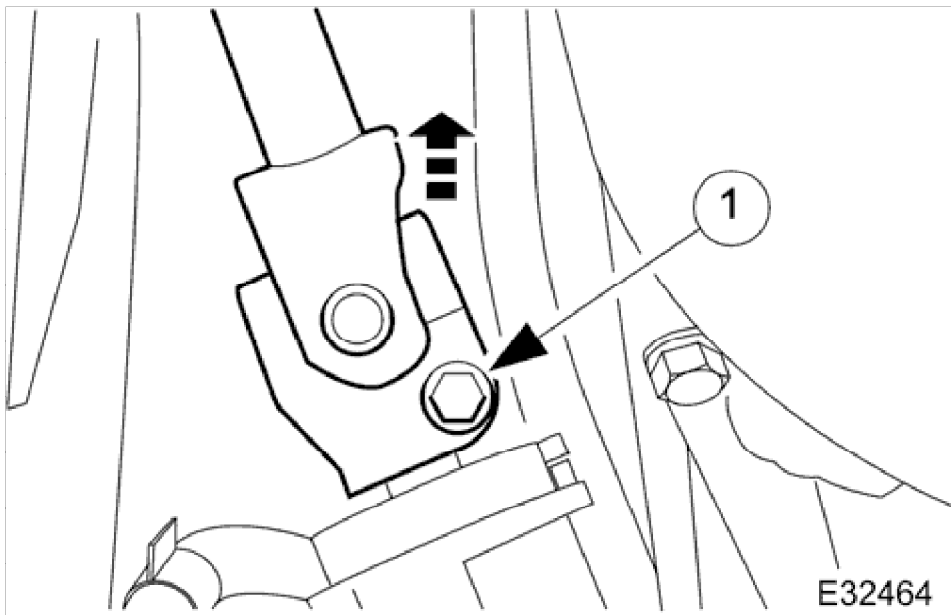
15. Release hose from steering rack.
1. Remove tie straps.
2. Remove insulation rubbers.



16. Release hose retaining plate from pinion housing.
1. Remove bolt.
- Move retaining plate along hose.



17. Drain power steering fluid.
- Position drain pan under pinion housing.
 - Disconnect hoses and allow fluid to drain.
 - Remove and discard 'O'-ring seals from hoses.
 - Fit blanking plugs to hoses and pinion housing ports.

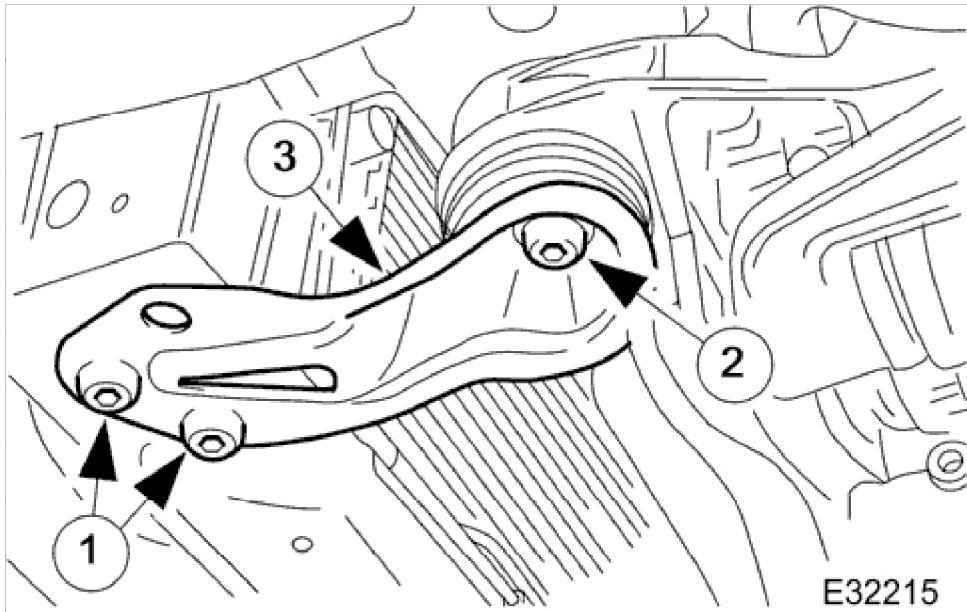


18. **NOTE:**
Make sure steering is in the central position.

- Release steering column from pinion shaft.
- 1. Remove bolt.
 - Move column upwards to release it from pinion shaft.

19.  **CAUTION:**
To prevent damage to the crossbeam, place a piece of wood between the jack and crossbeam.

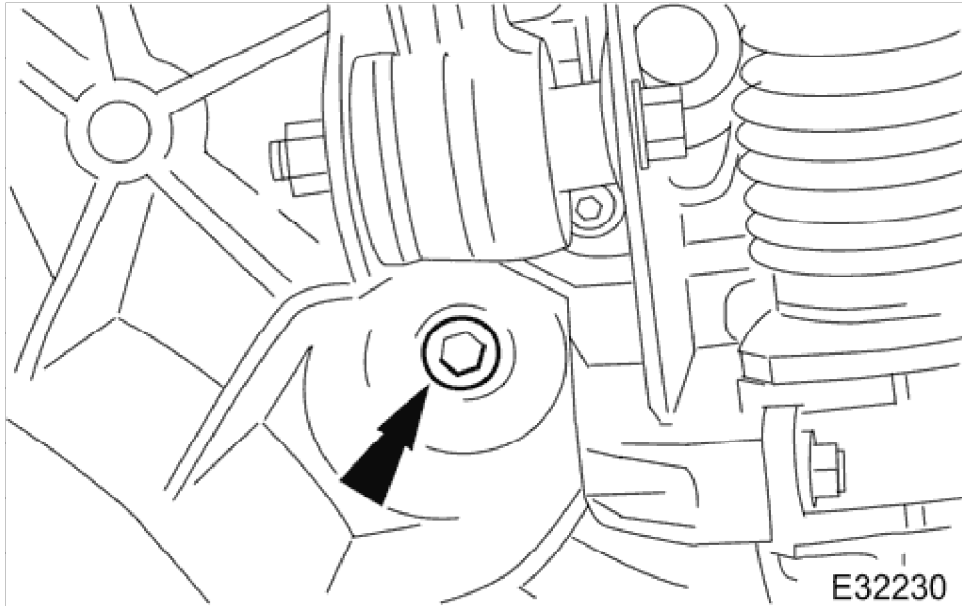
Using a suitable jack, support weight of crossbeam.



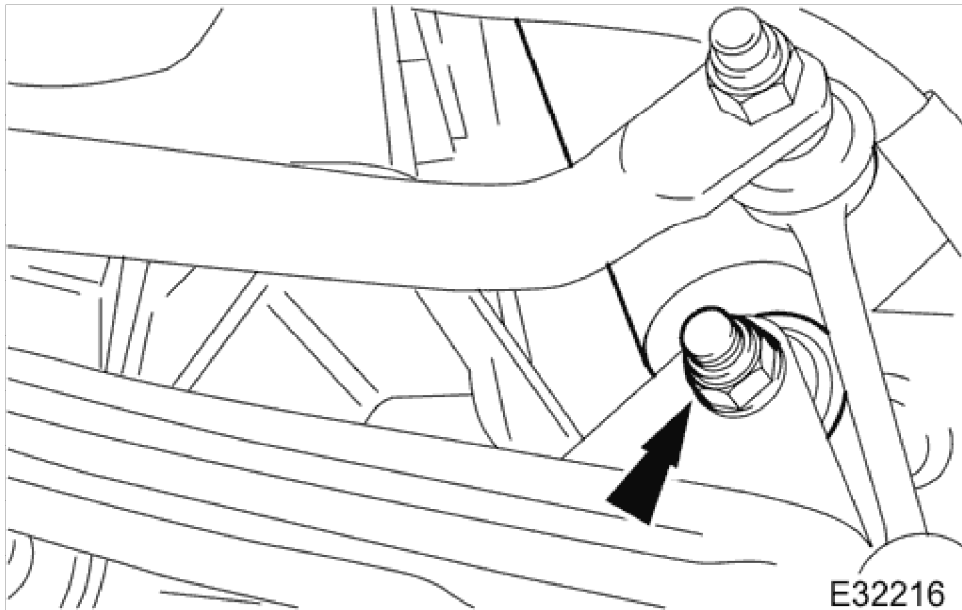
20. Remove both front mounting brackets from the crossbeam.


- 1. Remove front bolts (one bolt on convertible vehicles).
- 2. Remove rear bolt.
- 3. Remove bracket.

- Repeat procedure to remove opposite-side bracket.

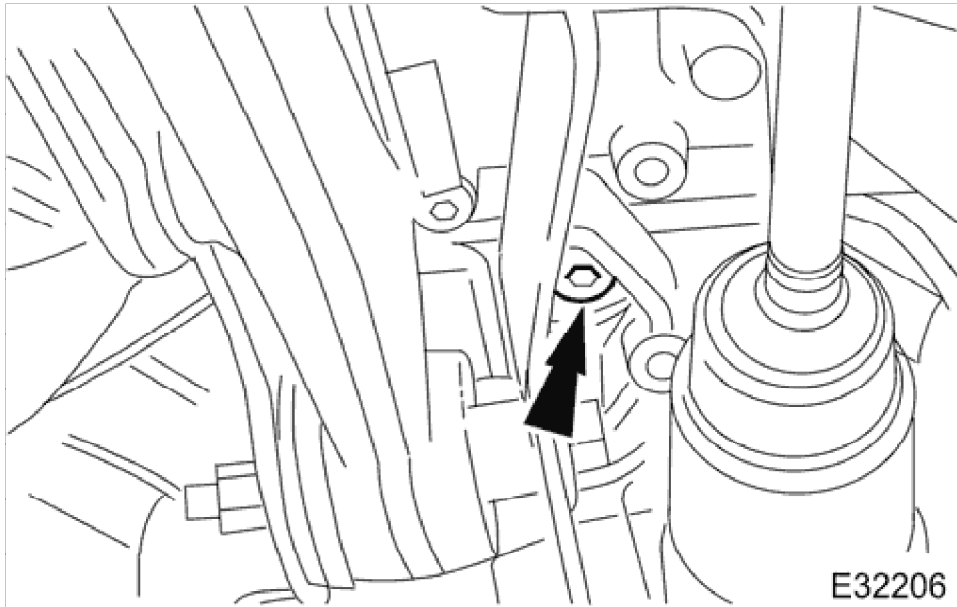


21. Release both front engine mountings from crossbeam.
- Remove bolt.
 - Repeat procedure to release opposite-side mounting.



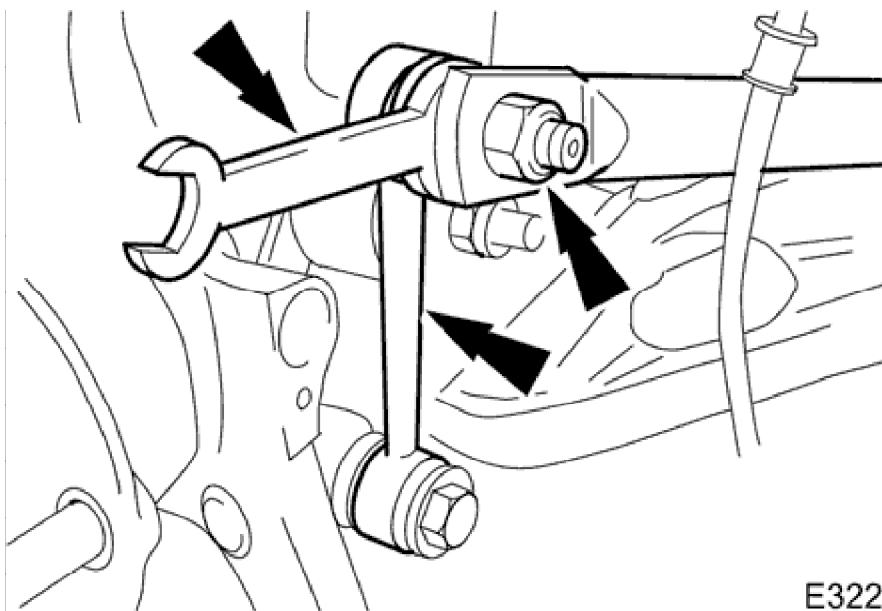
22.  **CAUTION:**
Do not allow the weight of the hub assembly to hang on the ball-joints. Support the weight of the hubs before releasing the shock absorbers.

- Release both front shock absorbers from the lower mountings.
- Remove nut and bolt.
 - Repeat procedure to release opposite-side shock absorber.

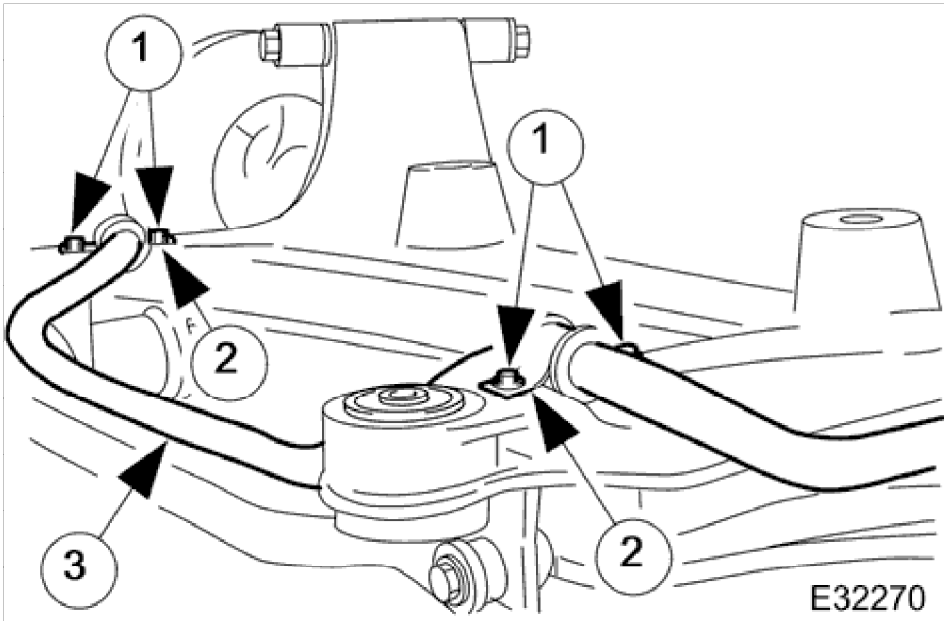


23. Release crossbeam rear mountings from chassis.
- Remove mounting center bolt.
 - Repeat procedure to release opposite-side mounting.

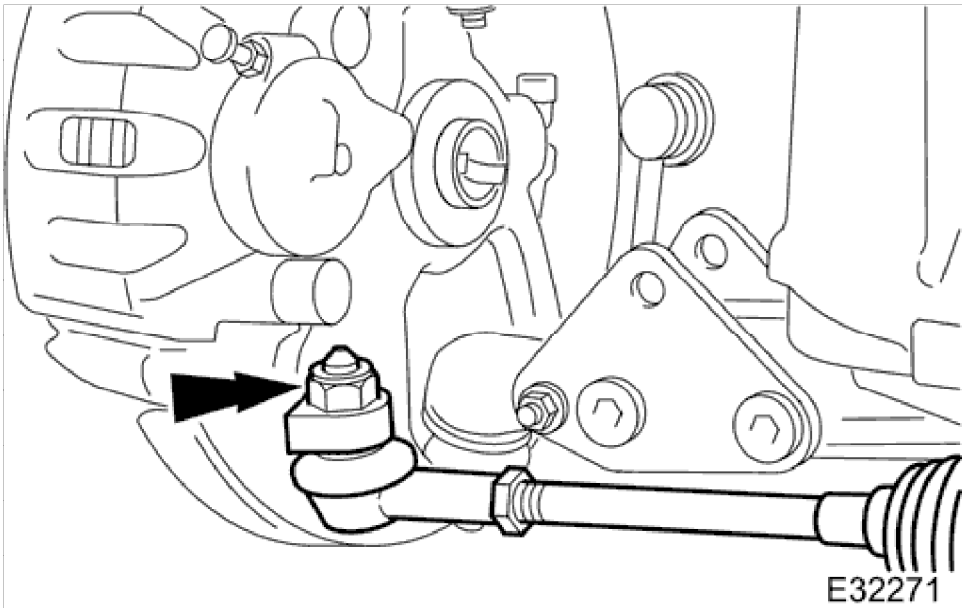
24. With assistance, lower crossbeam, and place it on a workbench.



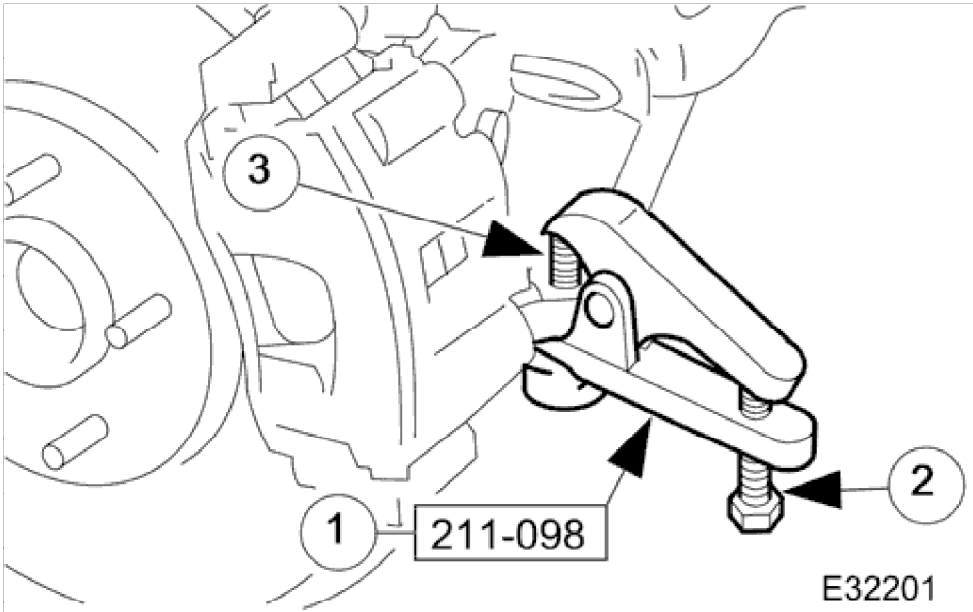
25. Release both links from stabilizer bar.
- Remove nut, use an open-ended spanner on the ball-pin flats to prevent the rubber cover from twisting.
 - Release link.
 - Repeat procedure to release opposite-side link.



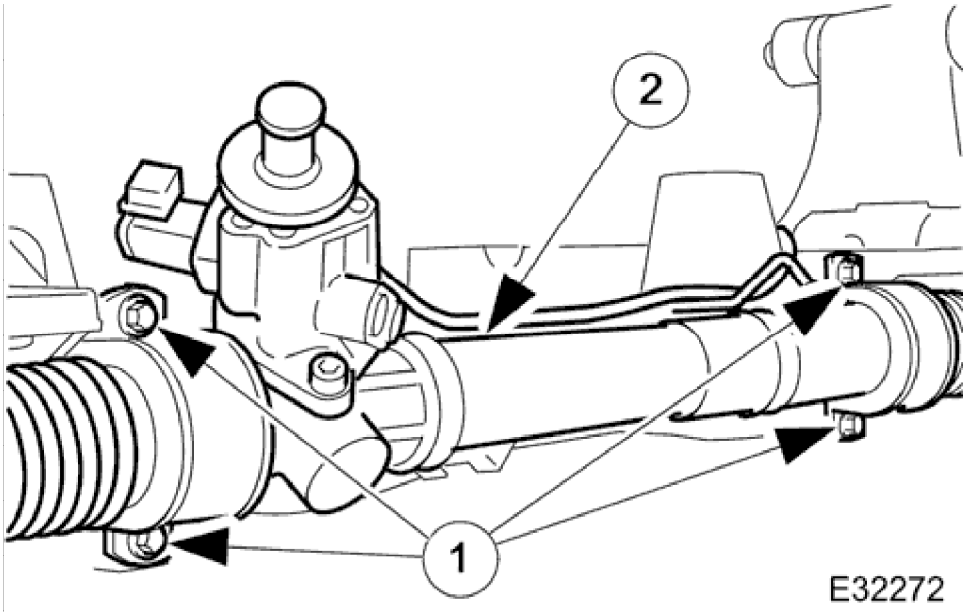
26. Remove stabilizer bar from crossbeam.
- 1. Remove bolts.
 - 2. Remove mounting brackets.
 - 3. Remove stabilizer bar.



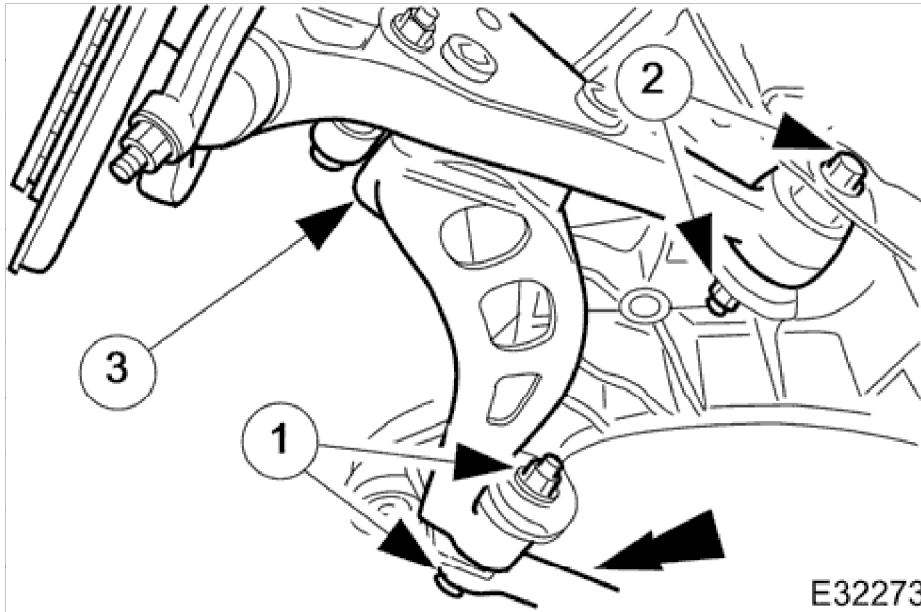
27. Remove nuts from both tie-rod-ends.
- Remove nut.
 - Remove opposite-side, tie-rod-end nut.




28. Release both tie-rod-ends from steering arms.
- 1. Fit special tool to tie-rod-end.
 - 2. Tighten tool bolt to release tie-rod-end, taper-pin.
 - 3. Remove tool and disengage tie-rod-end.
- Repeat procedure to release opposite-side tie-rod-end.



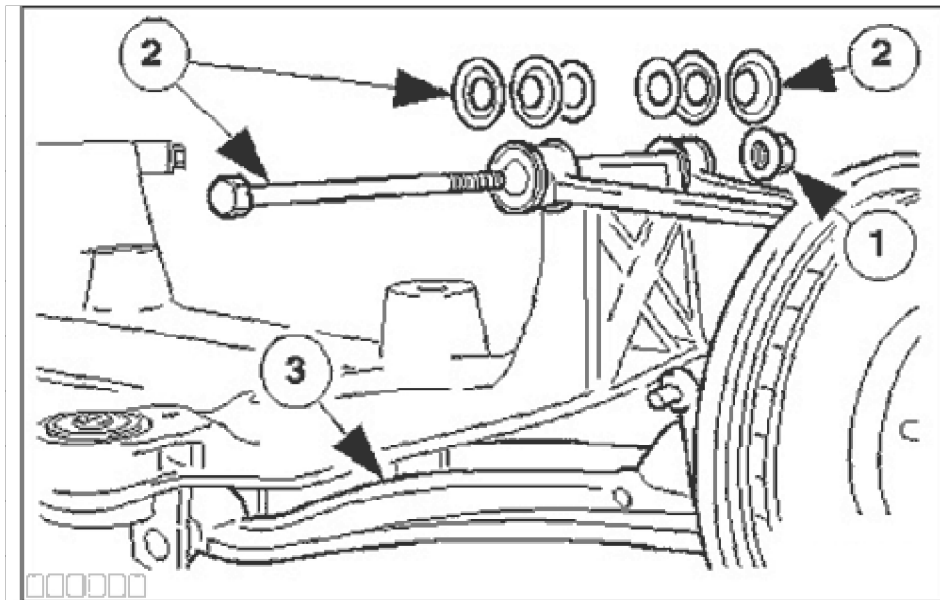
29. Remove steering rack from crossbeam.
- 1. Remove bolts.
 - 2. Remove steering rack.




30.  **CAUTION:**
Note the position of the fulcrum bolts, as some vehicles are fitted with an eccentric bolt to the rear wishbone arm. See General Procedures section <<204-01>> for information.

Release both lower wishbones from crossbeam.

1. Remove nut and bolt from front arm of wishbone.
 2. Remove nut and bolt from rear arm of wishbone.
 3. Release wishbone from crossbeam.
- Repeat procedure to release opposite-side lower wishbone: collect fulcrum tie.



31.  **CAUTION:**
For installation reference, note position of washers and shims before removing fulcrum bolt.

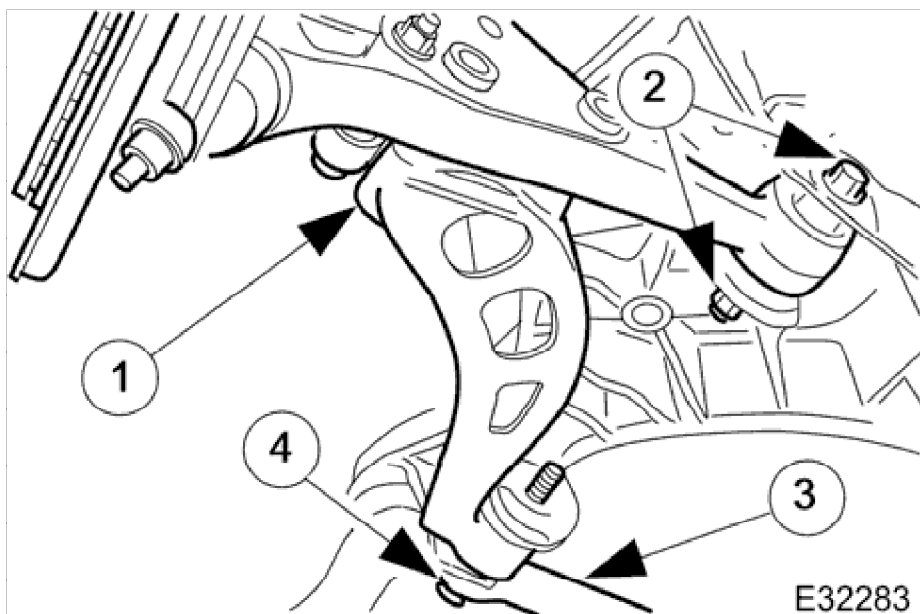
With assistance remove both vertical link and wishbone assemblies from crossbeam.

1. Remove nut.
2. Remove fulcrum bolt: collect washers and shims.

3. Remove vertical link and wishbone assembly.
- Repeat procedure to remove opposite-side vertical link and wishbone assembly.

Installation

1. Fit front mounting bushes to crossbeam. Refer to operation <<60.35.24>>.

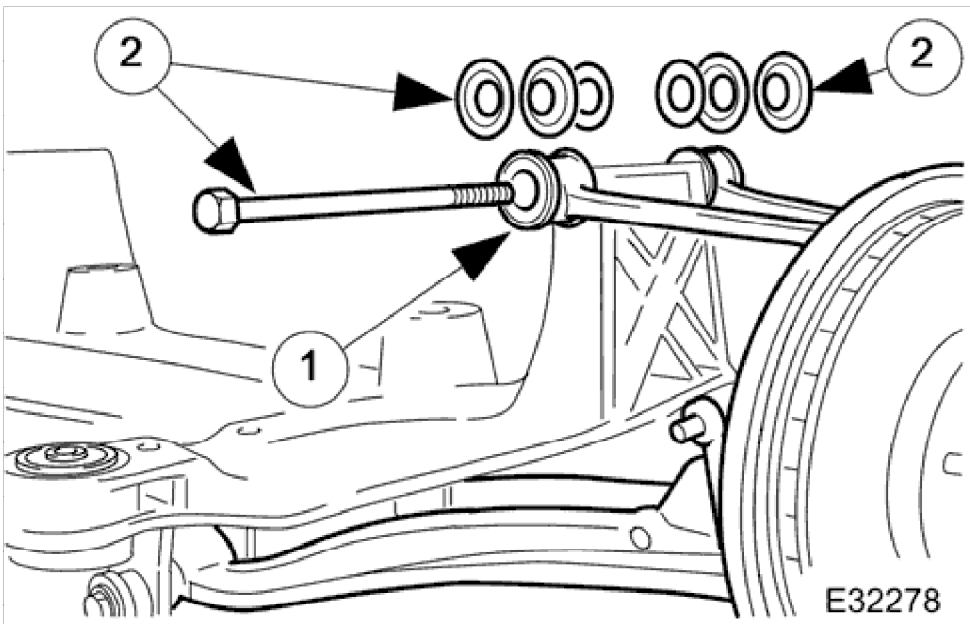


2. CAUTION:

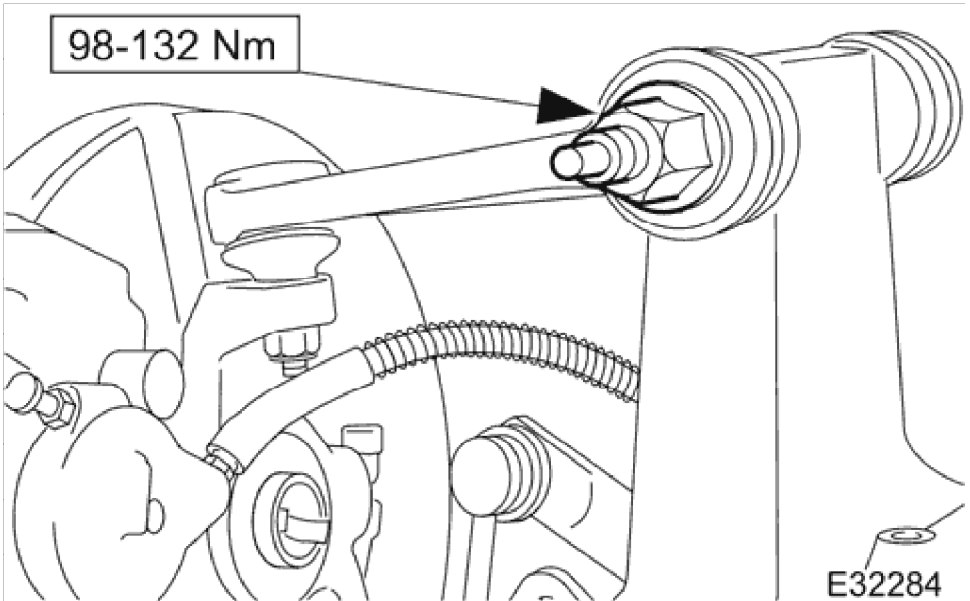
Support the hub assembly. Do not allow the weight of the hub assembly to hang on the ball-joints.

With assistance, fit the vertical link and wishbone assembly to the crossbeam.

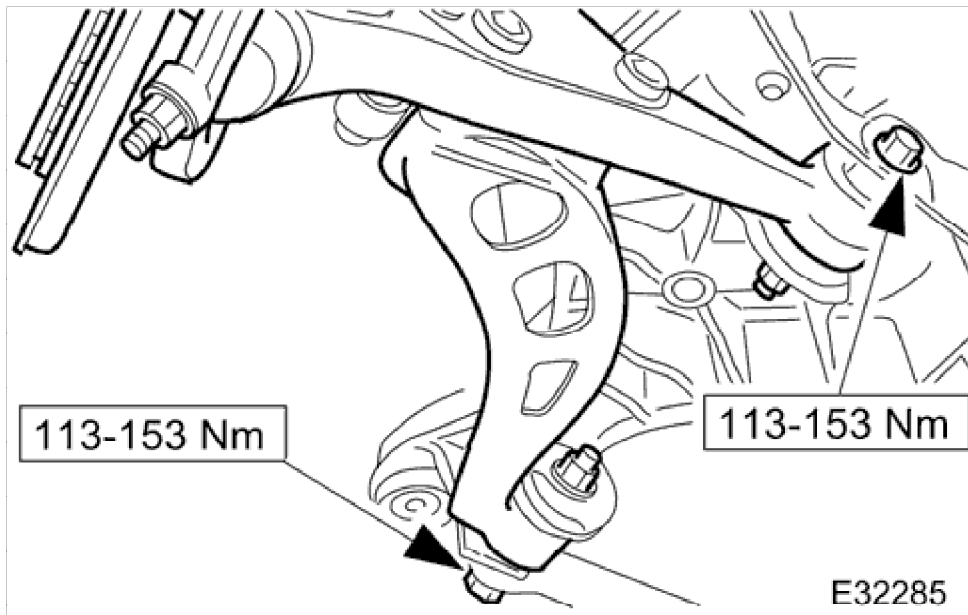
1. Align lower wishbone to crossbeam.
2. Fit nut and bolt to wishbone rear arm: DO NOT tighten at this stage.
3. Align fulcrum tie to front arm of wishbone.
4. Fit front bolt to wishbone.



- 3. Fit upper wishbone to crossbeam.
- 1. Position wishbone to crossbeam.
- 2. Fit fulcrum bolt, also fit shims and washers in positions noted in removal.



- 4. Fit and tighten upper wishbone fulcrum-shaft nut.

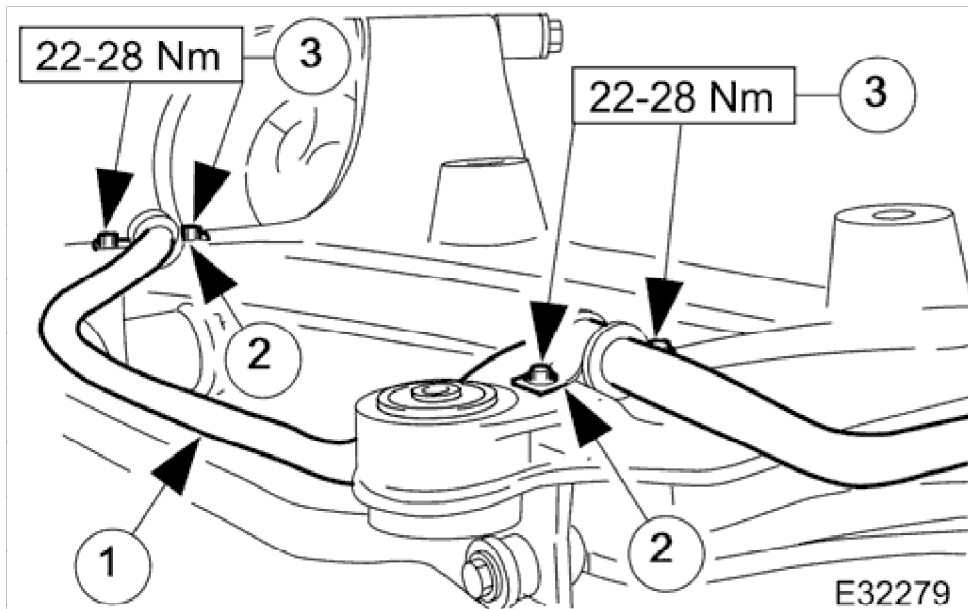


5.  **CAUTION:**
Make sure the fulcrum bolts are fitted in their original positions as noted in removal.

Tighten lower wishbone nuts and bolts.

- Raise wishbone to the horizontal position.
- Fit nut, and tighten front-arm fulcrum bolt.
- Tighten rear-arm fulcrum bolt.

6. Repeat four previous pictorial procedures to fit opposite-side wishbone and vertical link assembly.

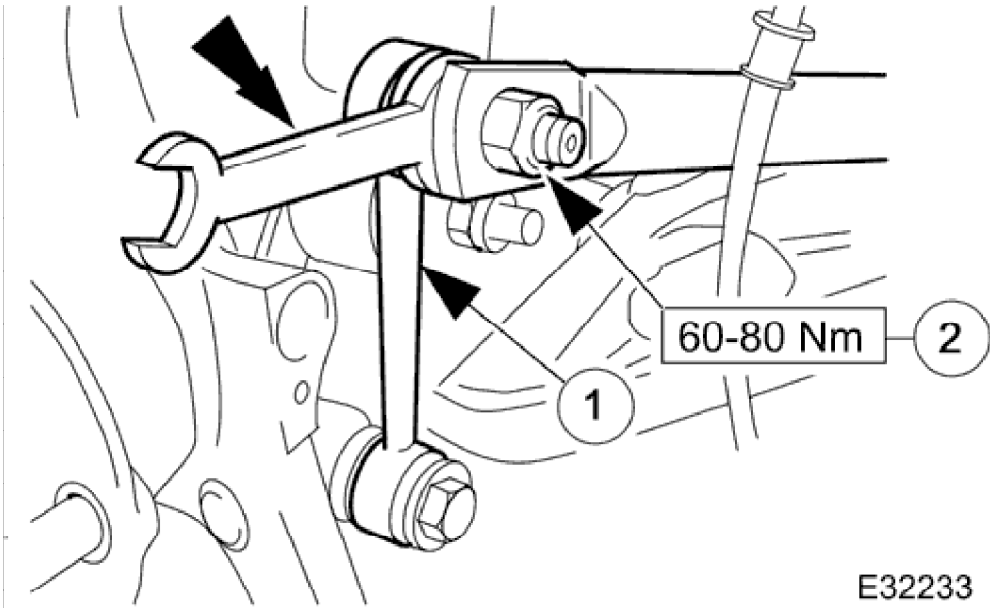


7. **NOTE:**
Make sure mounting rubbers are fully seated in stabilizer bar retaining bosses and crossbeam recesses.

Fit stabilizer bar to crossbeam.

1. Position stabilizer bar to crossbeam.
2. Position mounting brackets.

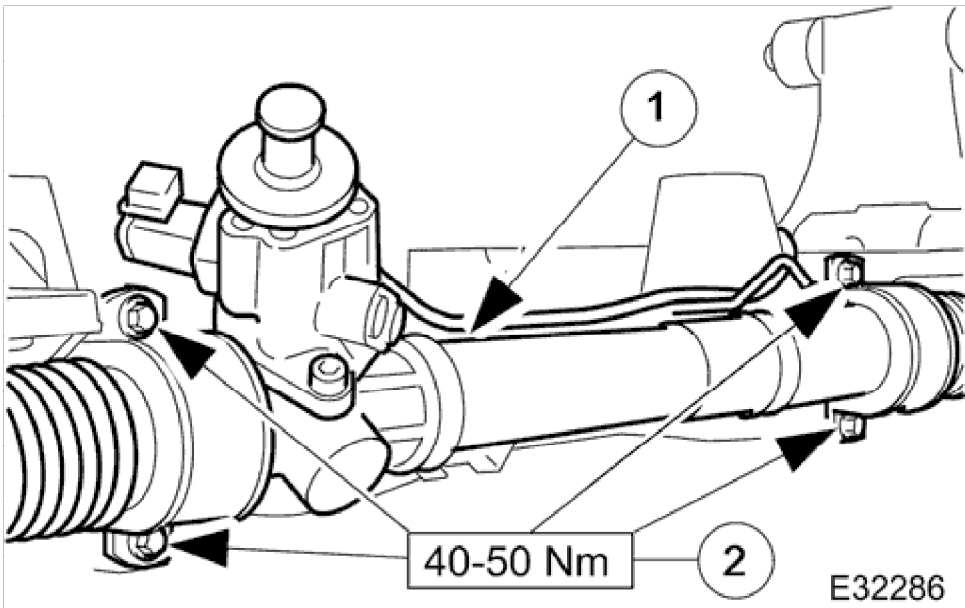
3. Fit and tighten bolts.



8. Fit links to stabilizer bar.

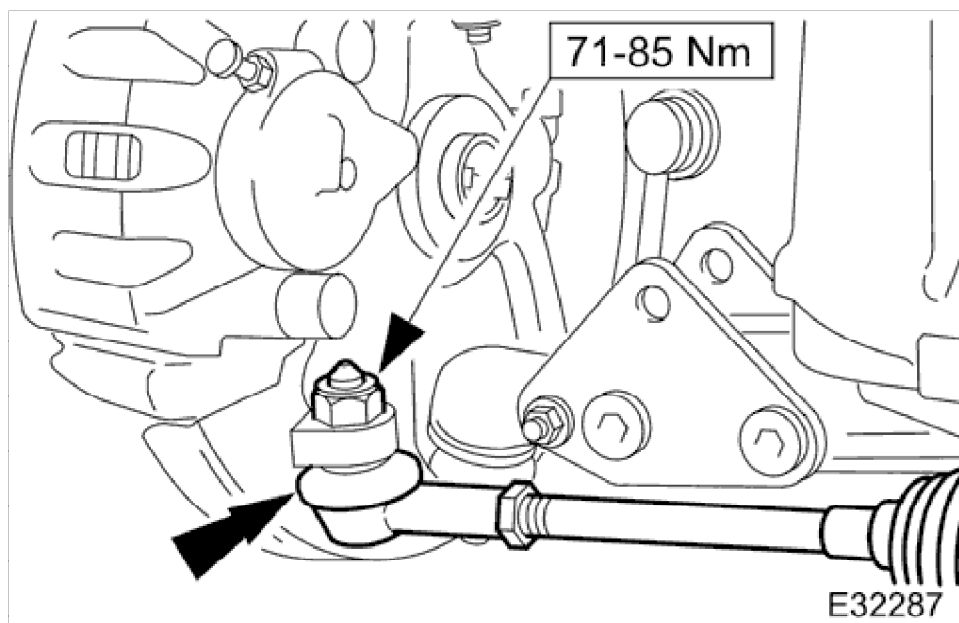
- 1. Position link to stabilizer bar.
- 2. Fit and tighten nut: use an open-ended spanner on the ball-pin flats to prevent the rubber cover from twisting.

• Repeat procedure to fit opposite-side link.




9. Fit steering rack to crossbeam.

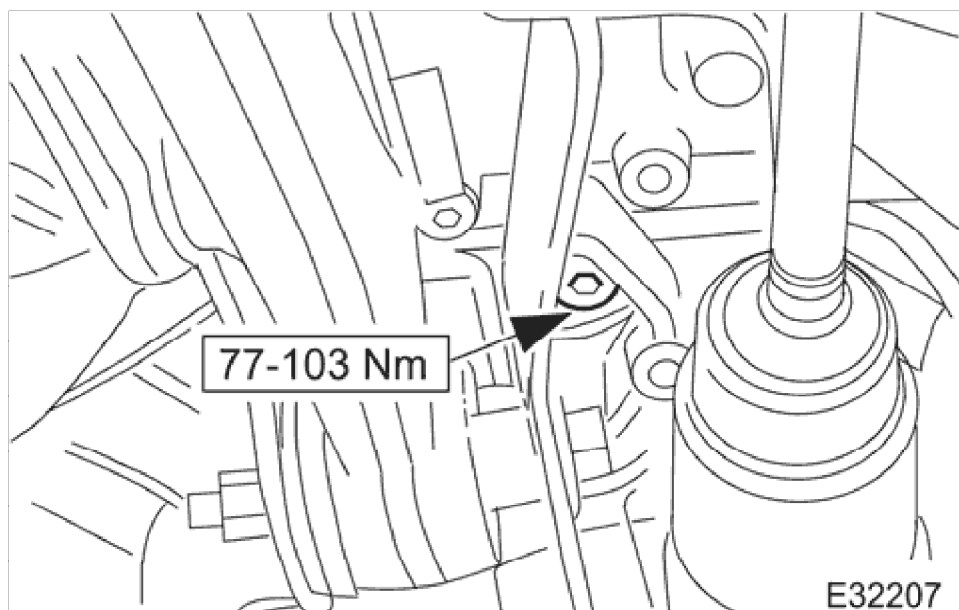
- 1. Align steering rack to crossbeam.
- 2. Fit and tighten bolts.



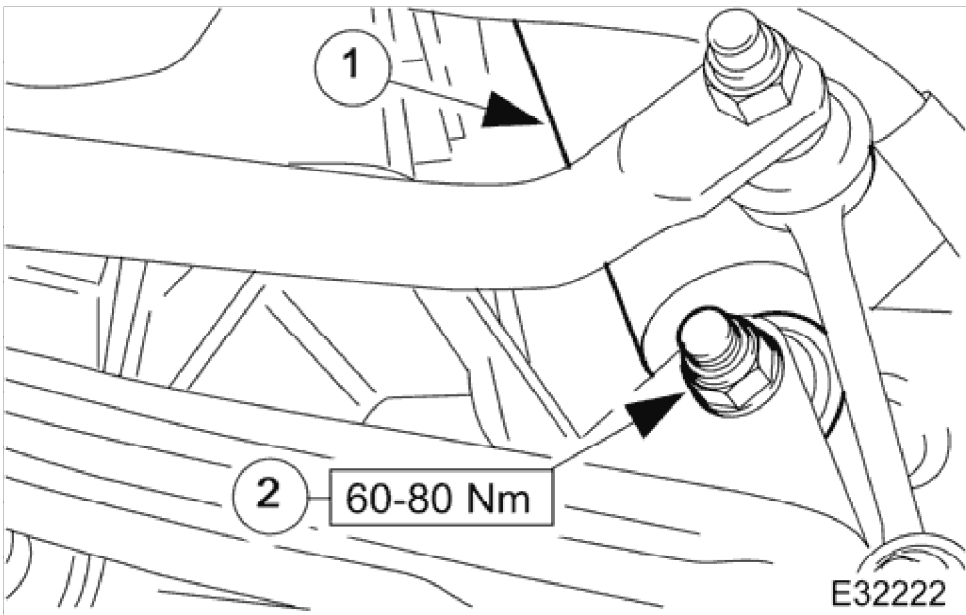
10. Fit both tie-rod-ends to steering arms.
- Insert tie-rod-end taper pin into steering arm.
 - Fit and tighten nut.
 - Repeat procedure to fit opposite-side, tie-rod-end.

11.  **CAUTION:**
To prevent damage to the crossbeam, place a piece of wood between the transmission jack and crossbeam.

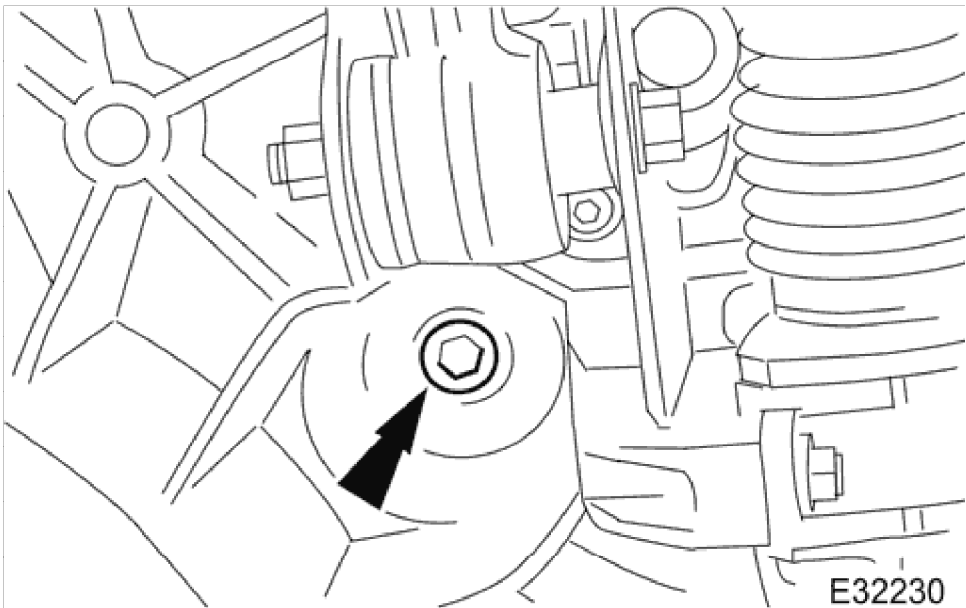
With assistance, position crossbeam on jack, and align crossbeam to vehicle.



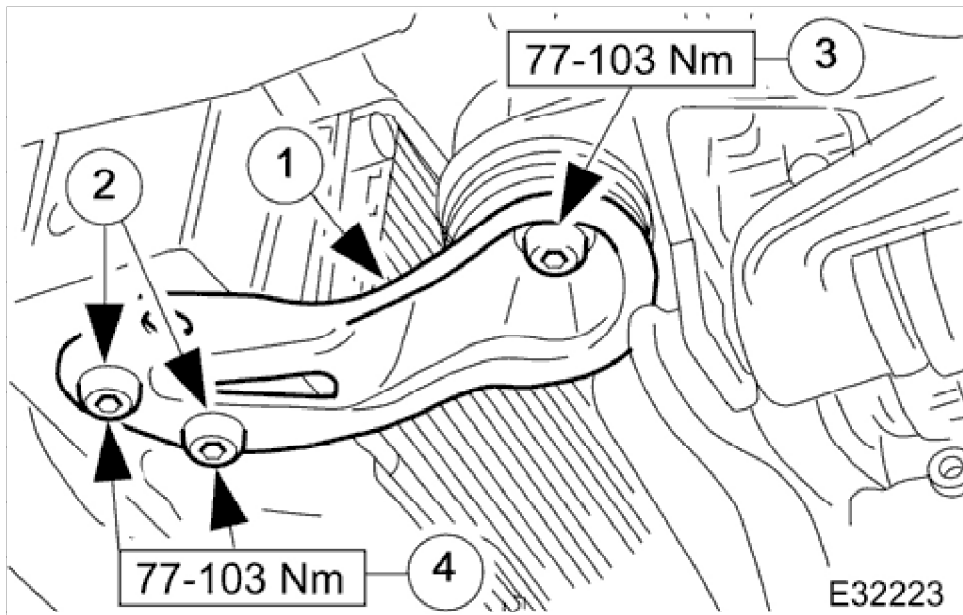
12. Secure crossbeam rear mountings to chassis.
- Fit and tighten mounting center bolt
 - Repeat procedure to secure opposite-side rear mounting.



- 13. Fit shock absorbers to lower mountings.
 - 1. Align shock absorber to mounting and fit bolt.
 - 2. Fit and tighten nut.
- Repeat procedure to fit opposite-side shock absorber.



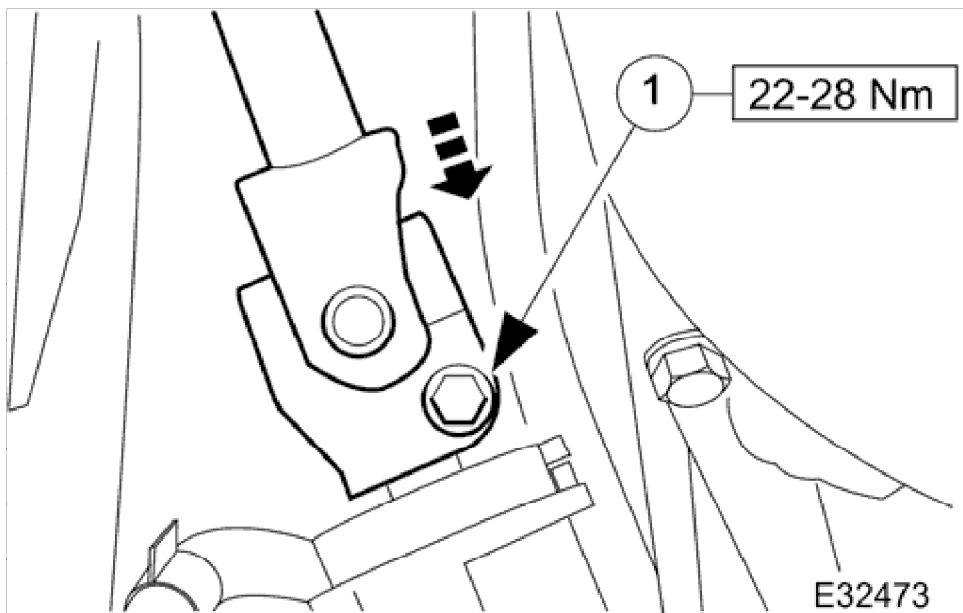
- 14. Fit front engine mounting bolts, but DO NOT tighten at this stage.
- Repeat procedure on opposite-side mounting.



15. Fit crossbeam front mounting-brackets.

1. Align mounting bracket to crossbeam.
 2. Fit front bolts: do not tighten at this stage, (one bolt on convertible vehicles).
 3. Fit and tighten rear bolt.
 4. Tighten front bolts.
- Repeat procedure to fit opposite-side mounting bracket.

16. Lower and remove jack from underneath crossbeam.



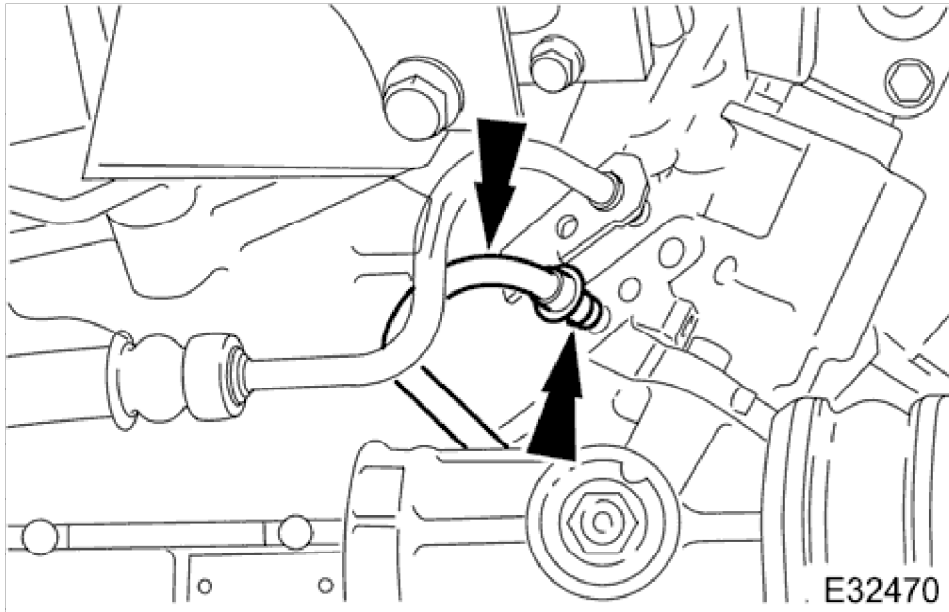
17. **NOTE:**

Make sure steering wheel and wheels are in the central position before fitting steering column.

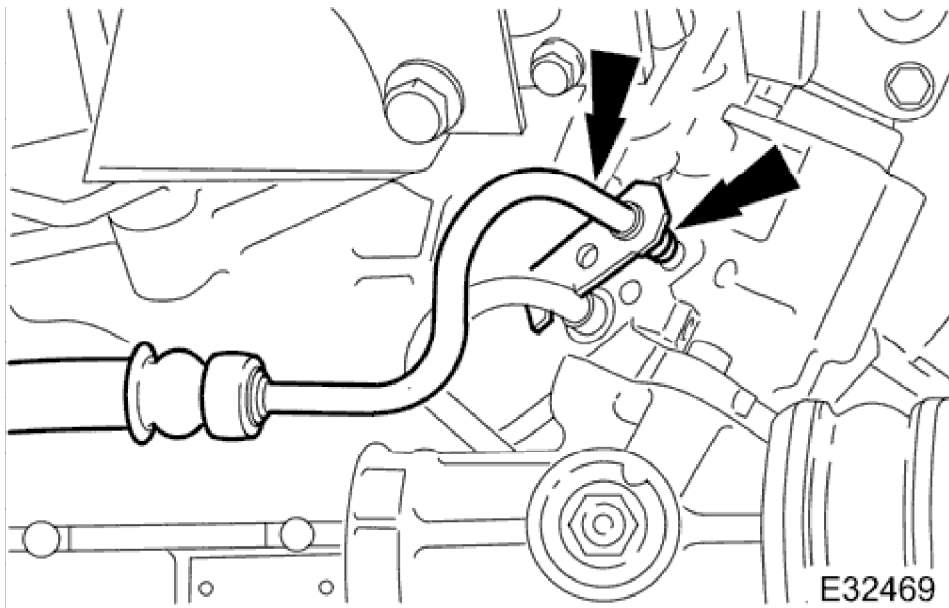
Fit steering column to pinion shaft.

- Move column downwards onto pinion shaft.
 1. Fit and tighten bolt.

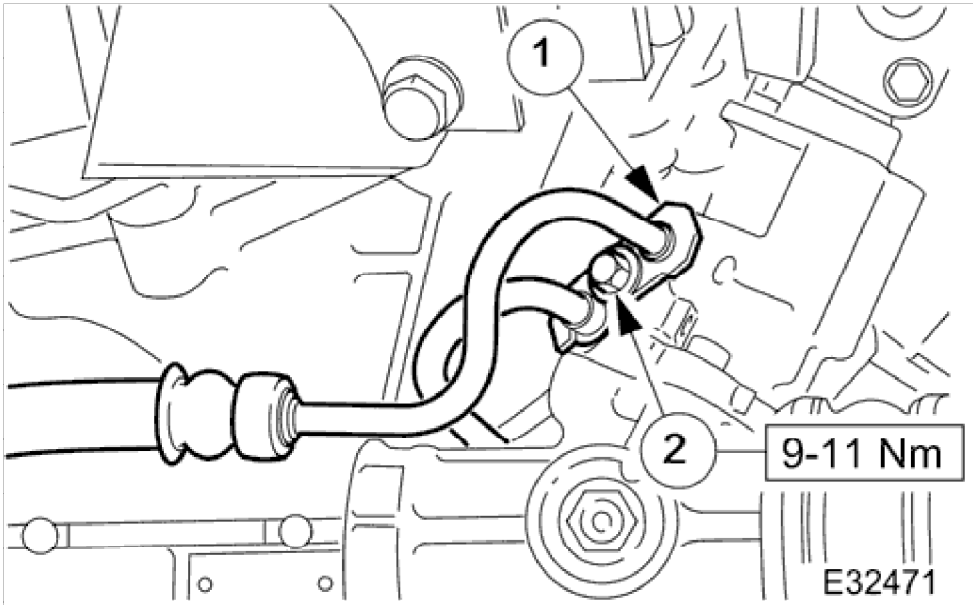
18. Remove blanking plugs from PAS hoses and pinion housing ports.



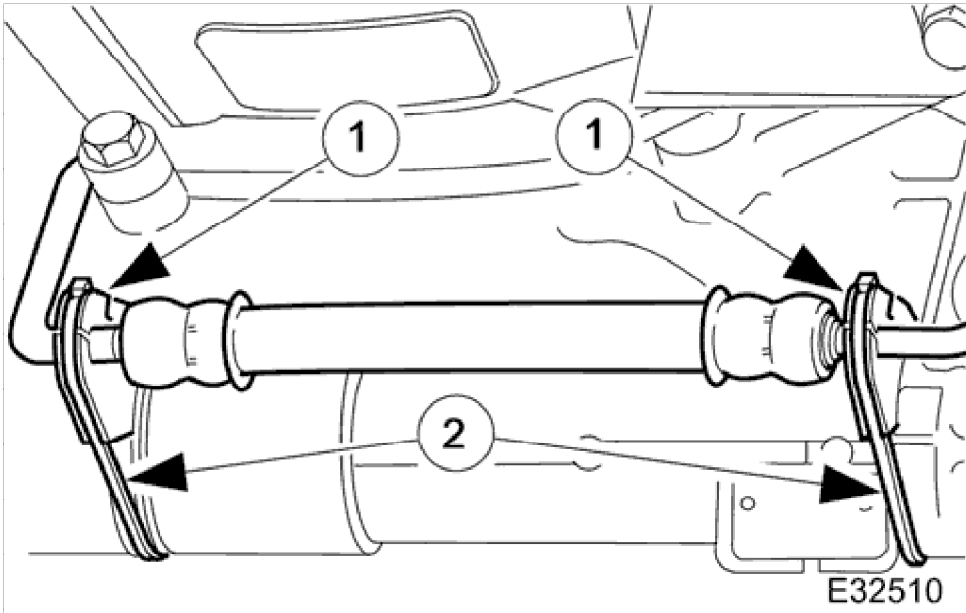
19. Connect return hose to pinion shaft housing.
- Apply clean PAS fluid to a new O-ring and fit to hose.
 - Connect and fully seat hose.



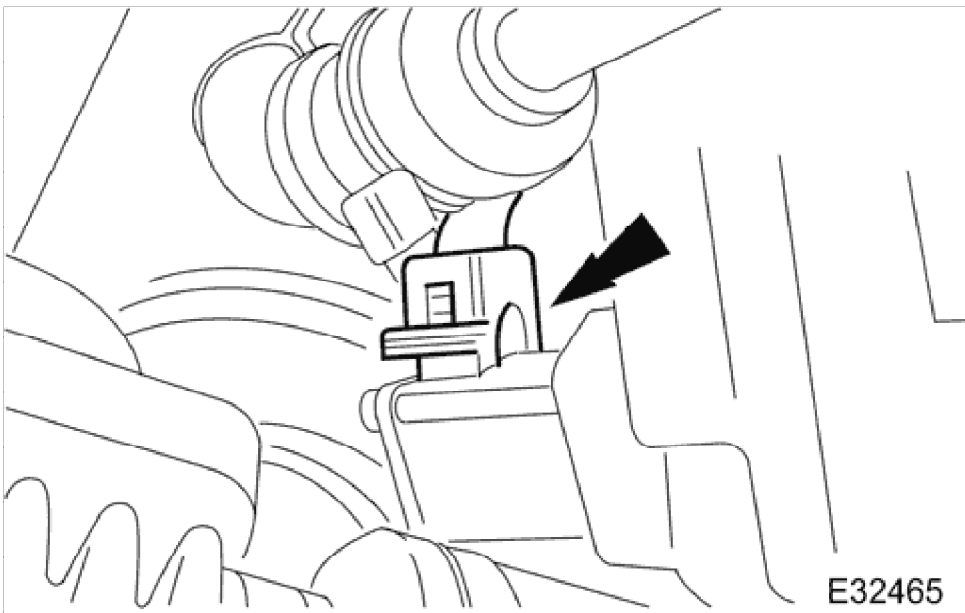
20. Connect feed hose to pinion shaft housing.
- Apply clean PAS fluid to a new O-ring and fit to hose.
 - Connect and fully seat hose.



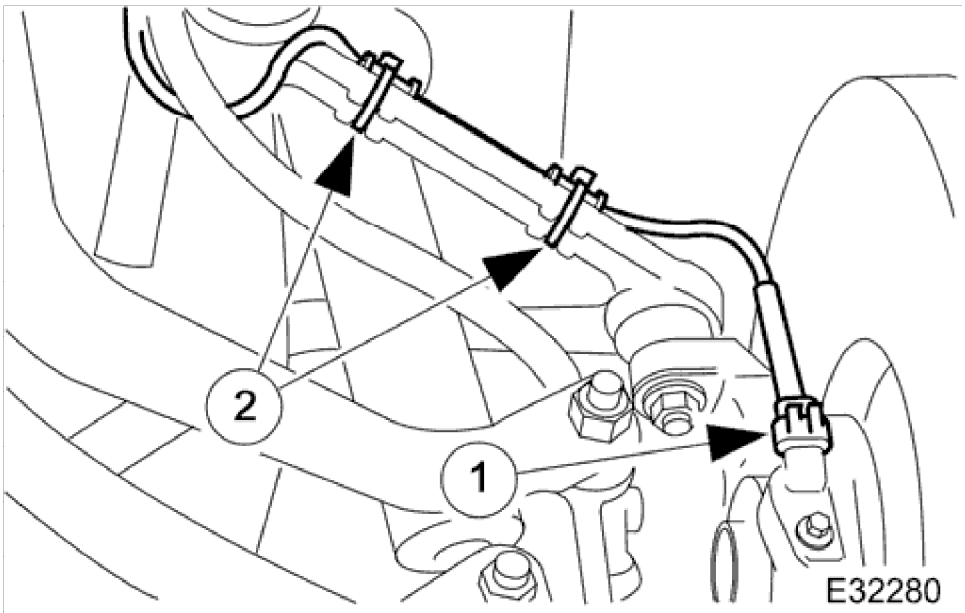
21. Fit retaining plate to pinion housing.
1. Align retaining plate and hoses.
2. Fit and tighten bolt.



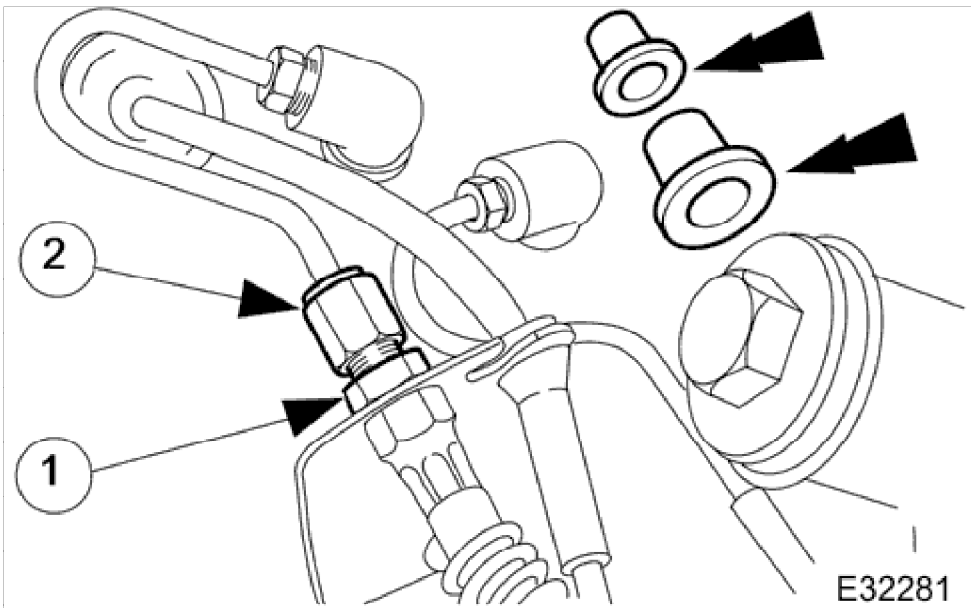
22. Secure PAS hose to steering rack.
1. Fit insulation rubbers.
2. Secure hose to steering rack with tie straps.



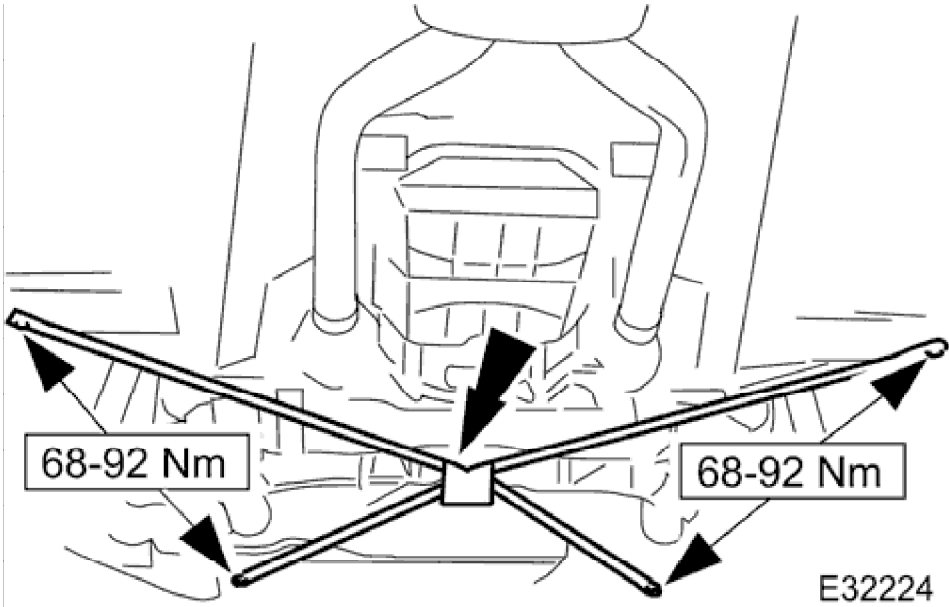
23. Connect electrical connector to steering rack transducer.



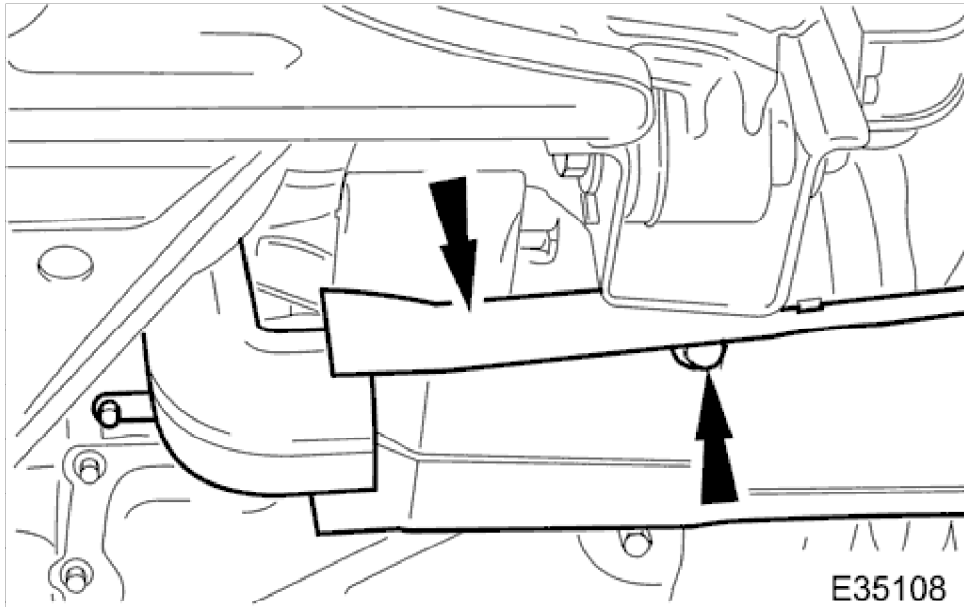
24. Connect ABS sensor connectors.
1. Connect ABS sensor connector.
2. Secure ABS harness to upper wishbone with tie-straps.
• Repeat procedure to connect opposite side ABS sensor.



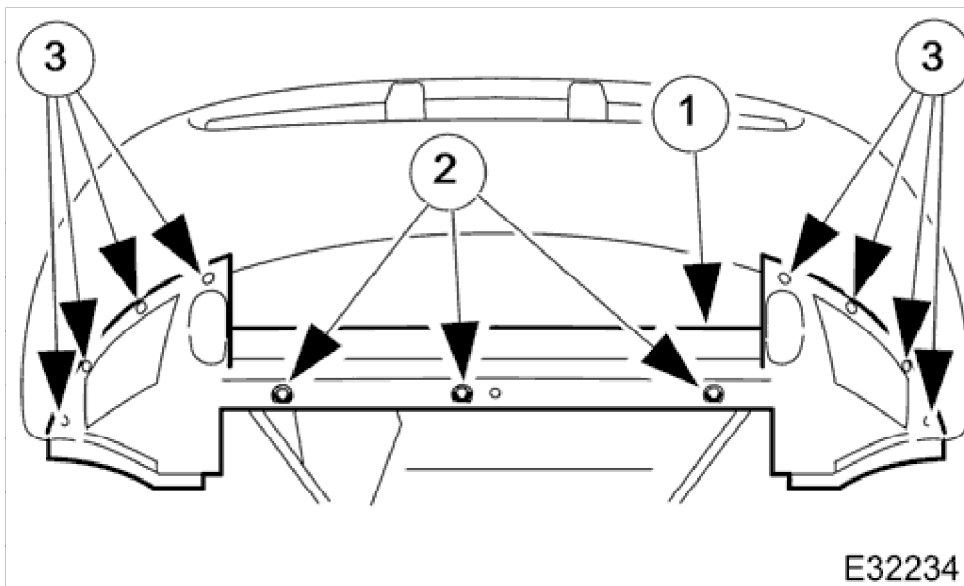
25. Connect brake hoses to brake tubes.
- Remove blanking plugs.
 1. Position hose to bracket and tighten locking nut.
 2. Connect brake tube to hose and tighten union nut.
 - Repeat procedure to connect opposite-side brake hose.



26. Fit cruciform strut (convertible vehicles only).
- Position cruciform strut.
 - Fit and tighten bolts.



27. Fit generator cooling duct deflector.
- Position deflector over rear vertical duct.
 - Slide deflector forward to engage center tang over undertray.
 - Fit bolt and tighten to 17-23Nm.

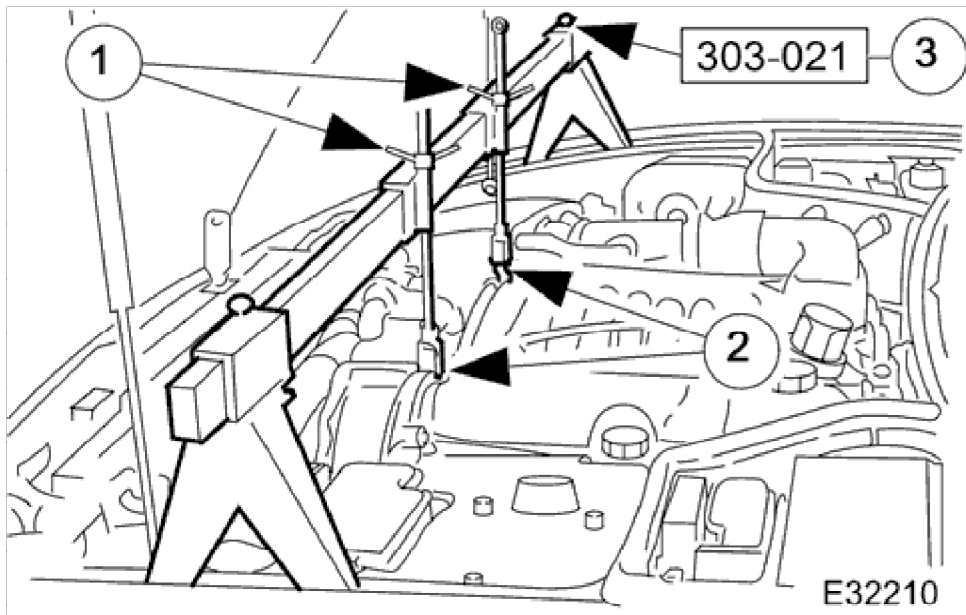


28. Fit undertray.
1. Position undertray.
 2. Fit three screws fasteners.
 3. Fit eight new scrivenets.

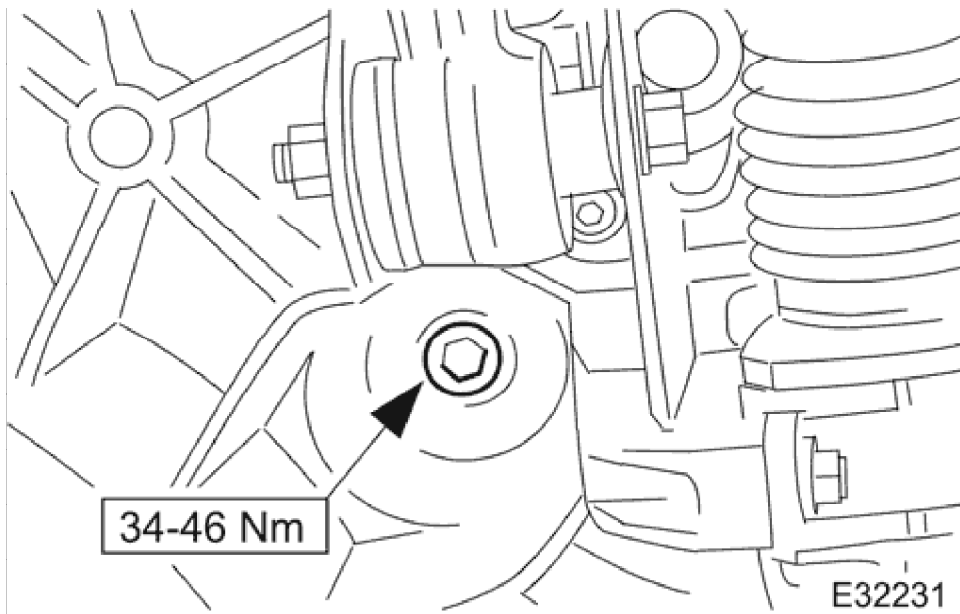
29. Fit front wheels. Refer to section <<204-04>>.

30. Remove stands and lower vehicle.

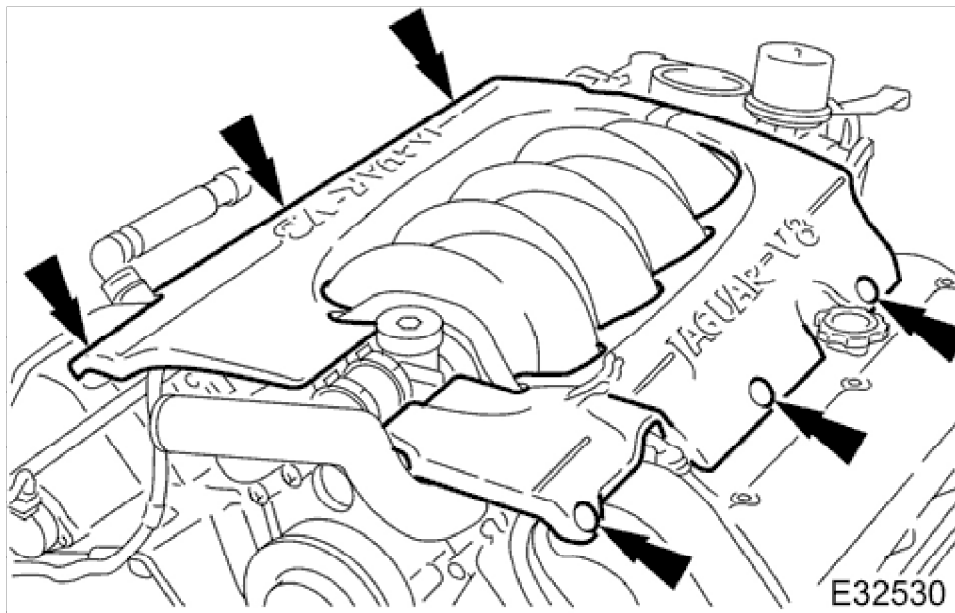
31. Lower four-post lift.



32. Remove engine support tool.
- 1. Release hook adjustment nuts.
 - 2. Release hooks from brackets.
 - 3. Remove special tool.



33. Secure front engine mountings to crossbeam.
- Tighten bolt.
 - Repeat procedure to secure opposite-side mounting.



34. Fit engine covers (normally aspirated vehicles only).
• Secure pegs.

35. Connect battery ground cable. Refer to section <<414-01>>: Battery Reconnection Procedure.

36. Bleed brake system. Refer to section <<206-06>>.

37. Fill power-steering system. Refer to section <<211-02>>.

38. Remove paintwork protection covers.