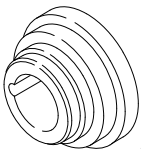
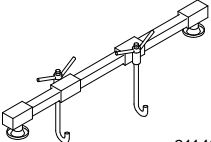
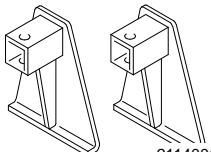
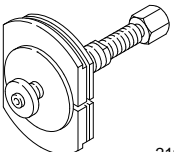
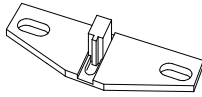
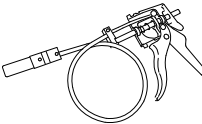


Timing Chain – Renew (21 314 0)

Special Tools

 21137	21-137 Oil seal installer/aligner, crankshaft front
 21140	21-140 Engine support bar
 2114001	21-140-01 Adaptor for 21-140
 21147	21-147 Remover for vibration damper

 21168	21-168 Crankshaft immobilising tool
 24003	24-003 Remover/installer, radiator hose clip

Materials

Engine oil	
Sealer	ESKM-4G-269-A
Sealer	SPM-2G-3121-A

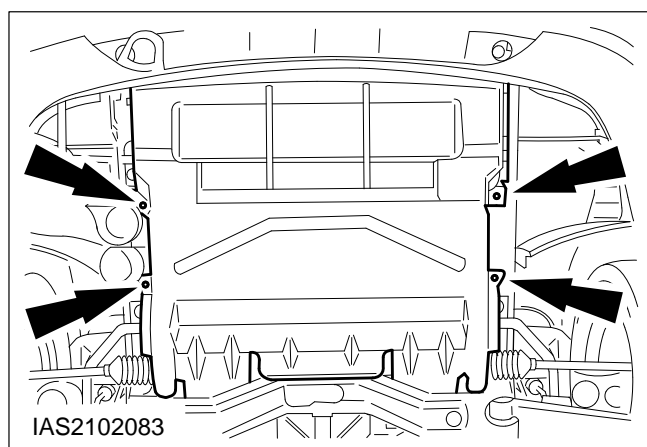
Remove

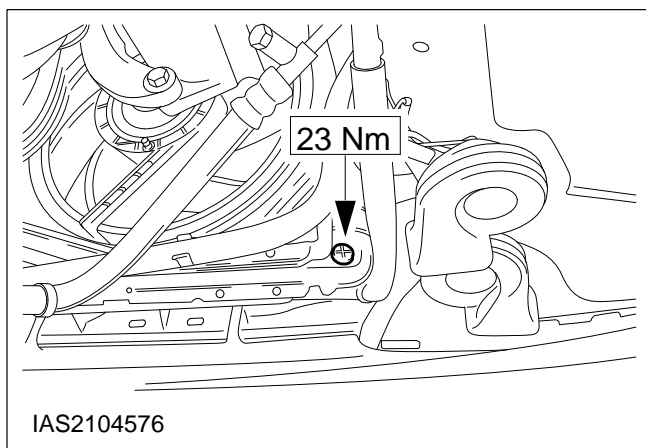
1. Preparatory measures:

- Make a note of the radio keycode.
- Make a note of the preset radio stations.
- Remove the battery cover (one nut).
- Disconnect the battery negative lead.
- Open the coolant expansion tank.

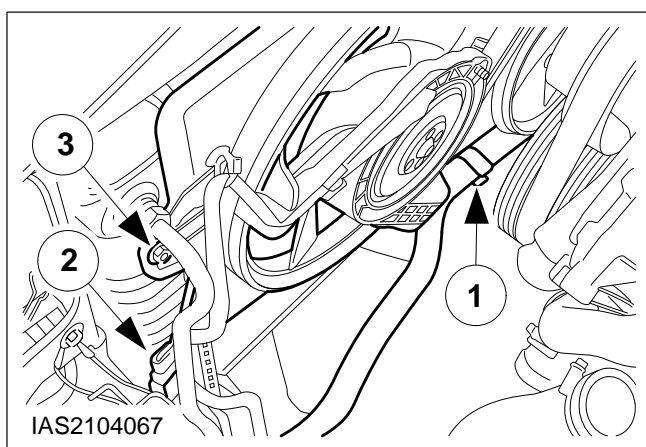
2. Raise the vehicle.

3. Detach the engine undershield.

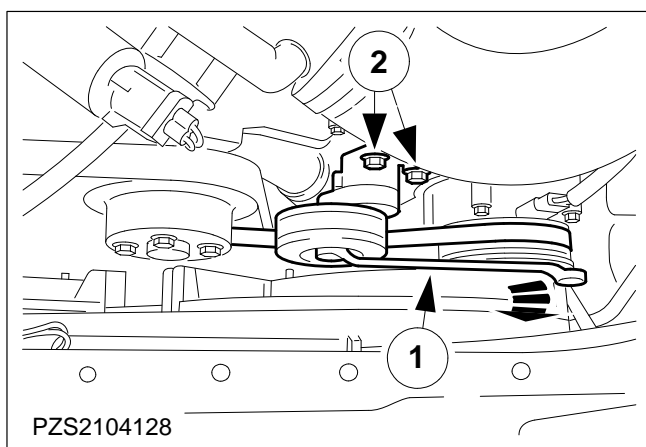




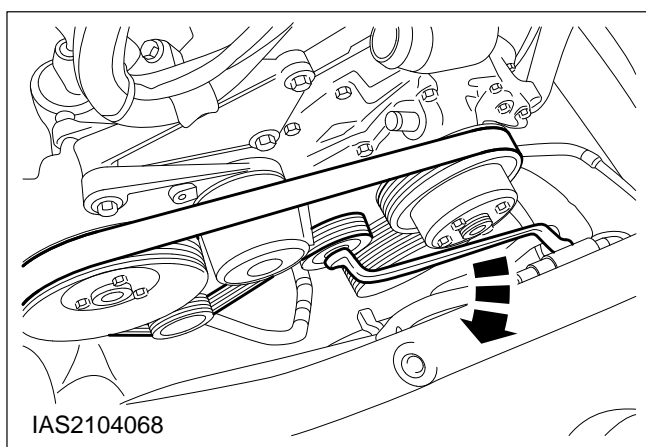
4. **Drain off the coolant.**
Tighten the drain plug again.
5. **Drain off the engine oil.**



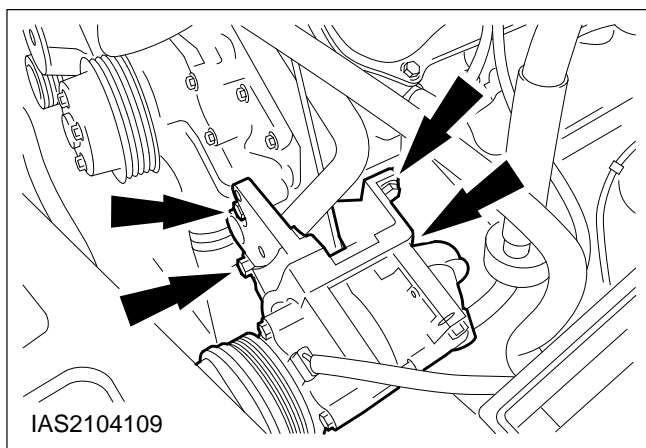
6. **Lower the vehicle.**
7. **Remove the fan motors complete with the retaining plate.**
 - 1 Unclip the lower coolant hose.
 - 2 Disconnect the two parts of the plug and unclip the wiring.
 - 3 Unscrew one nut on both sides.



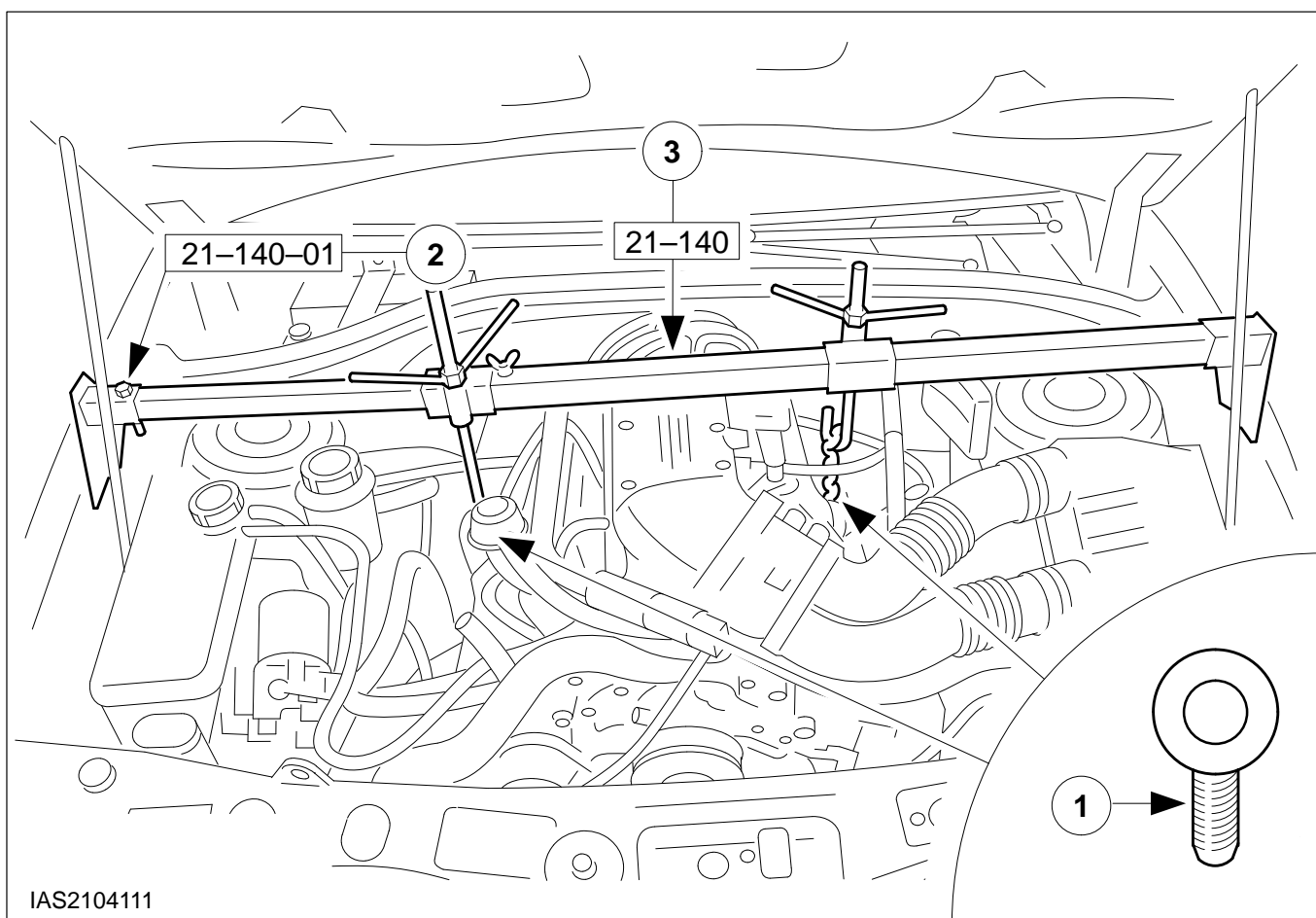
8. **Detach the belt tensioner for the air conditioning drive belt.**
 - 1 Slacken the drive belt and remove it.
 - 2 Remove the belt tensioner.



9. **Detach the drive belt.**



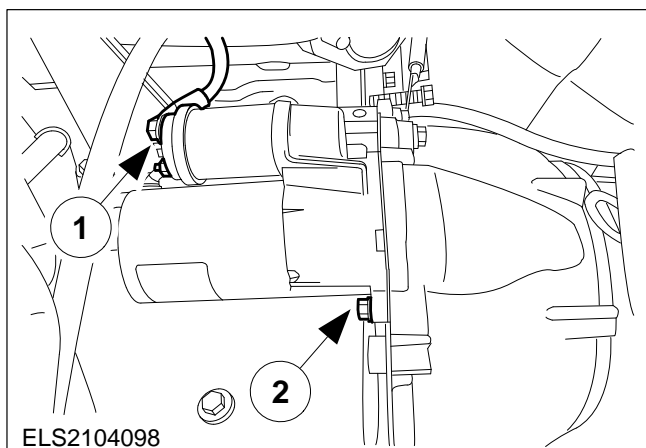
10. Remove the air conditioning compressor.



11. Attach the engine support bar.

- 1 Screw in the lifting eyes (M10).
- 2 Attach the adaptors.
- 3 Attach the engine support bar.

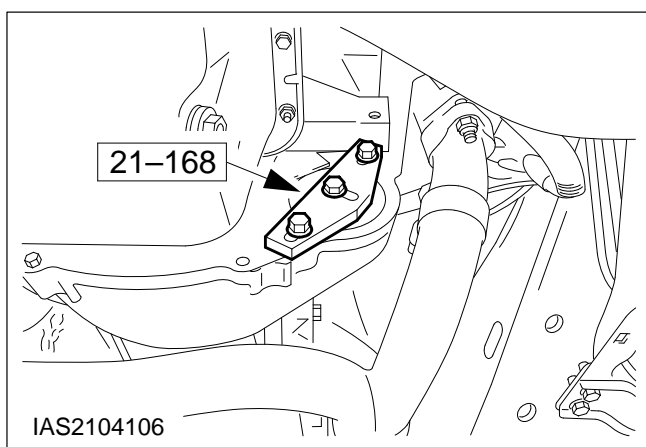
12. Raise the engine.



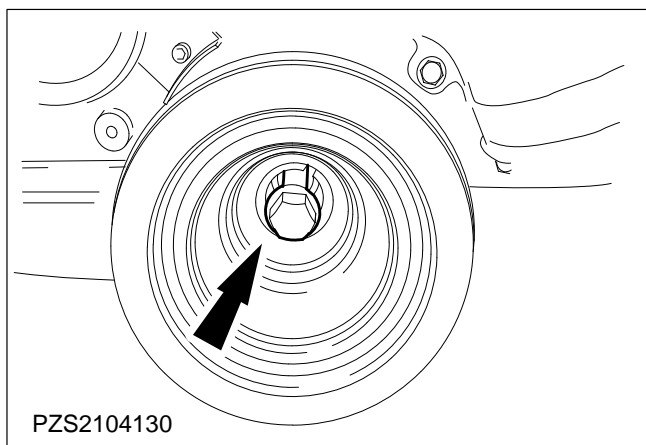
13. Raise the vehicle.

14. Remove the starter motor.

- 1 Disconnect the starter motor wiring.
- 2 Unscrew the two bolts.
 - Undo the starter motor wiring loom from the front crossmember.

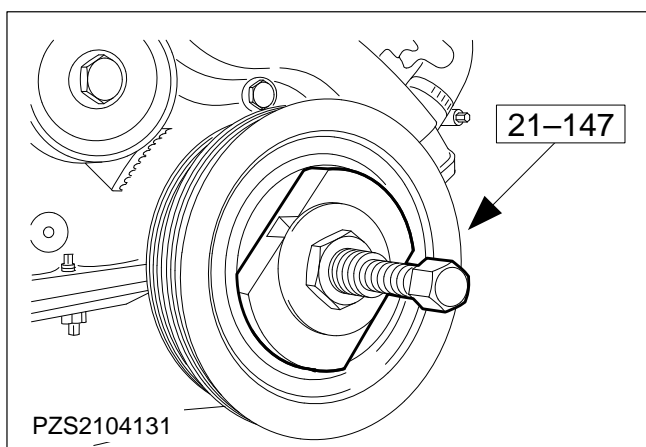


15. Fit the special tool.



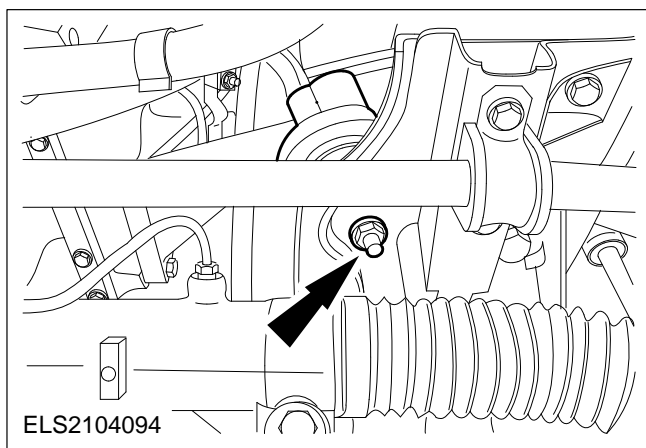
16. Detach the belt pulley with the crankshaft vibration damper.

- Remove the bolt.
- Screw the bolt back in again 15 turns.

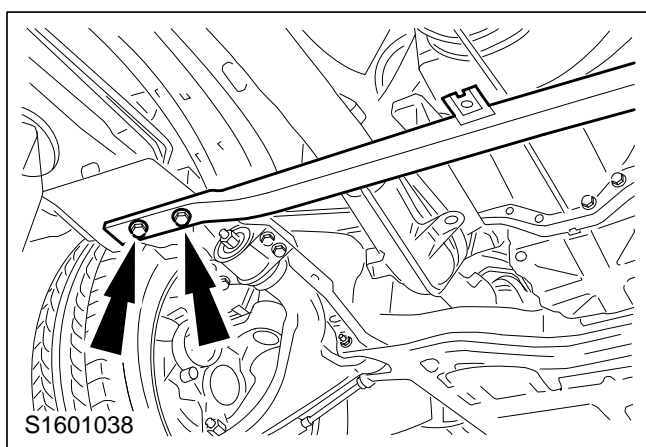


17. Detach the belt pulley with the crankshaft vibration damper (continued).

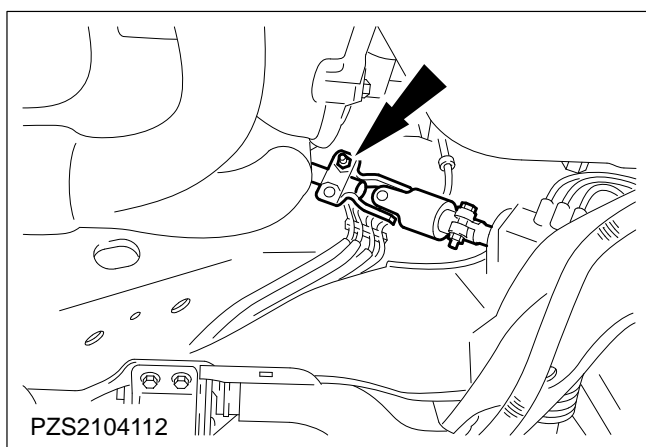
- Fit the special tool and remove the vibration damper.
- Remove the special tool.
- Unscrew the bolt and remove the Woodruff key.
- Remove the locking tool.



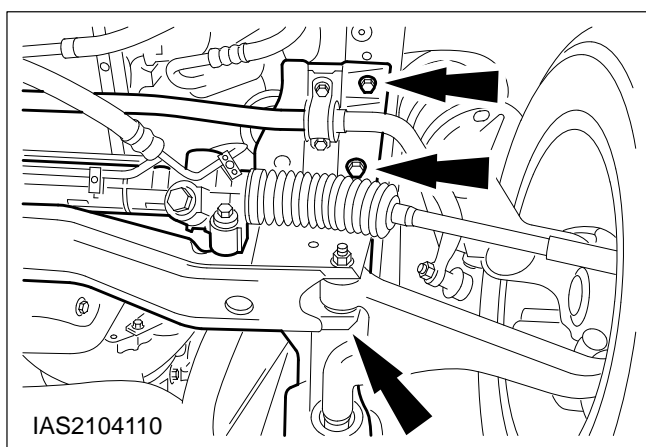
18. Unscrew the two lower engine mountings (one nut on each side).



19. Disconnect the front axle transverse brace from the chassis side member.



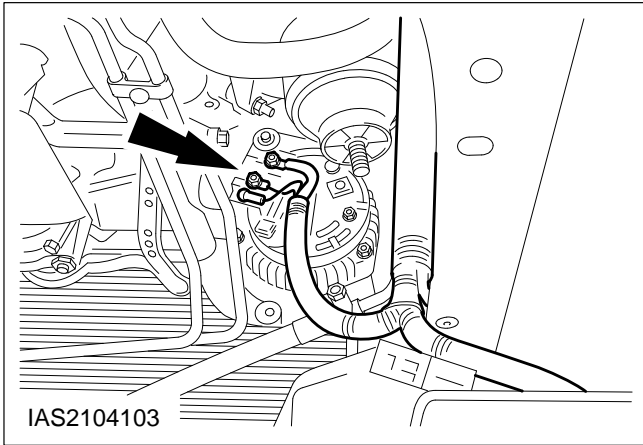
20. Detach the steering intermediate shaft.



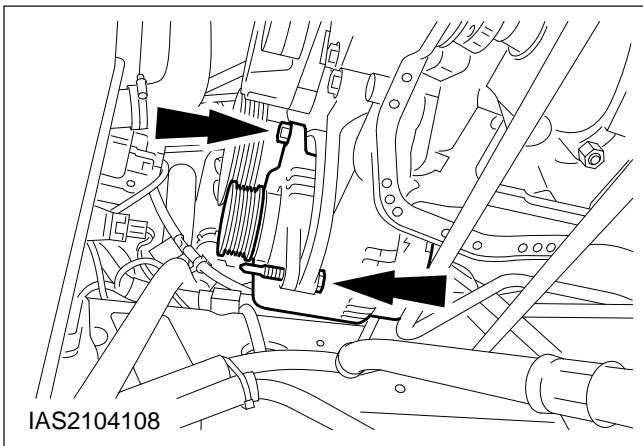
NOTE: Support the front crossmember on a transmission jack.

21. Detach the front crossmember (three bolts on each side).

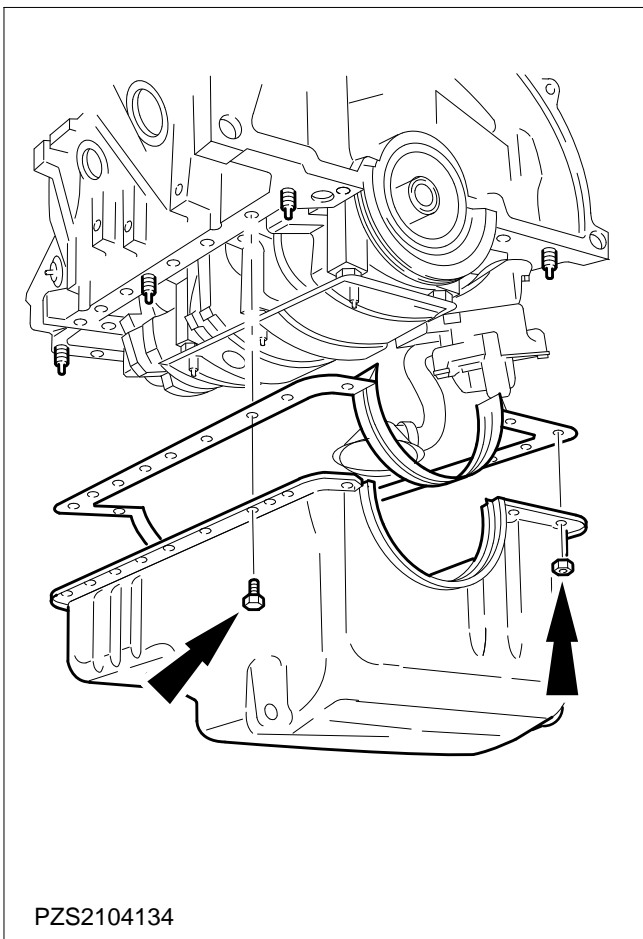
- Lower the front crossmember.
- Pull the transmission jack out from under the vehicle.



22. Disconnect the alternator wiring.

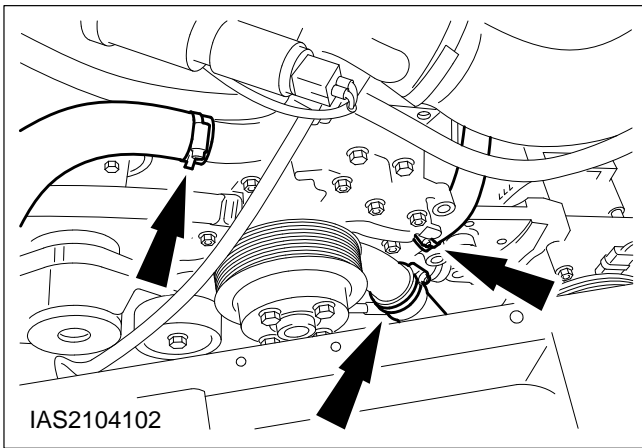


23. Remove the alternator.



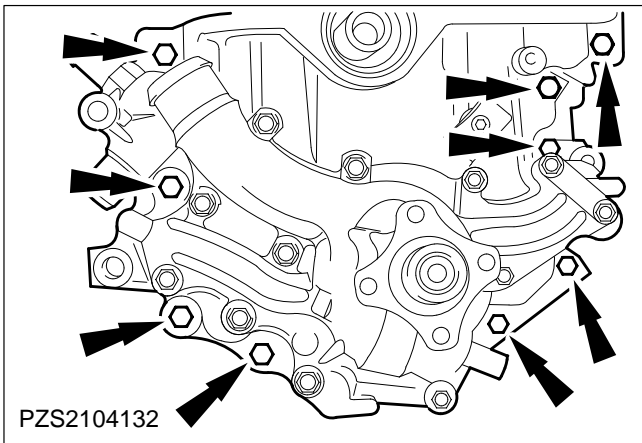
⚠ CAUTION: Oil sludge and abraded particles must not get into the engine.

24. Remove the sump downwards (18 bolts/six nuts).

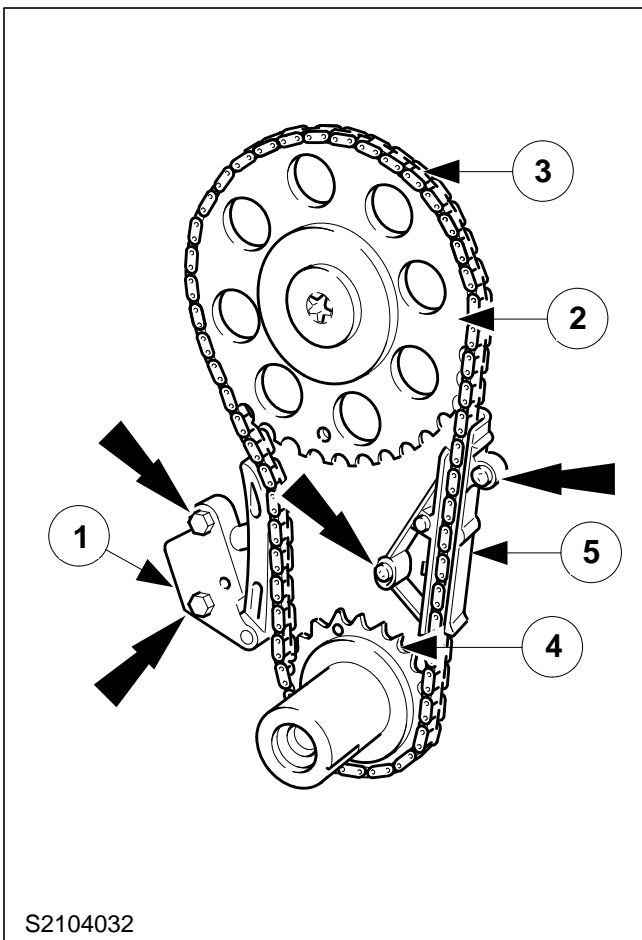


25. Lower the vehicle.

26. Disconnect the coolant hoses.



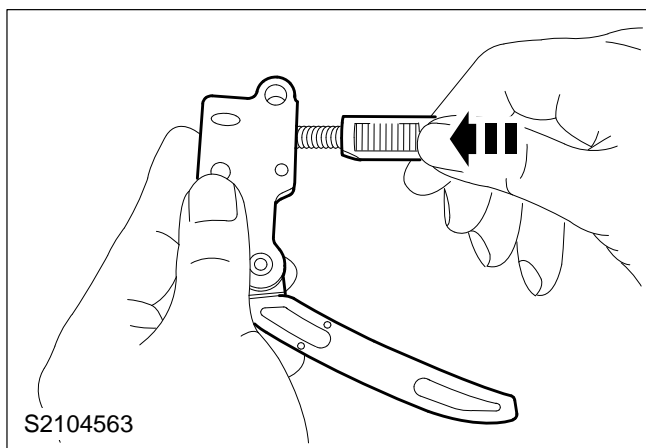
27. Detach the timing cover with the coolant pump.



28. Remove the camshaft chain drive complete.

⚠ CAUTION: The chain tensioner plunger is spring-loaded.

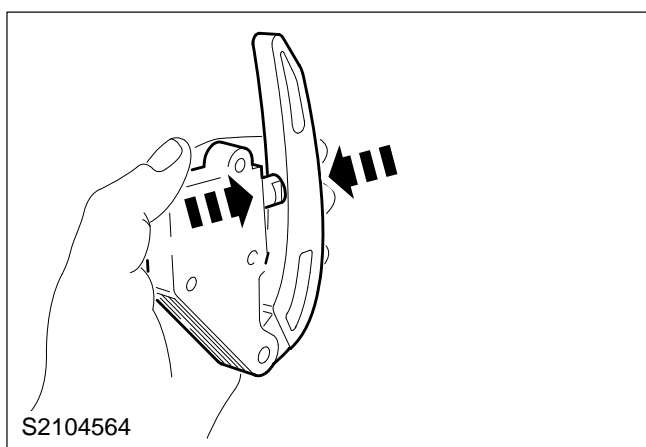
- 1 Chain tensioner (two bolts).
- 2 Camshaft sprocket.
- 3 Timing chain.
- 4 Crankshaft sprocket.
- 5 Chain guide (two bolts).



Install

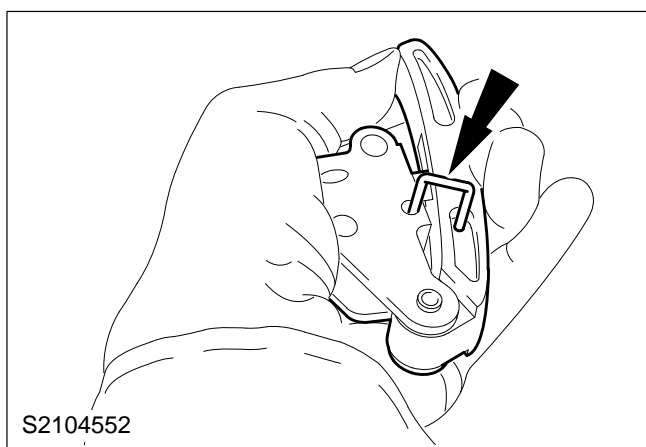
29. Preload the chain tensioner.

Press the spring and plunger into the chain tensioner and fit the plunger in the sliding block.



30. Preload the chain tensioner (continued).

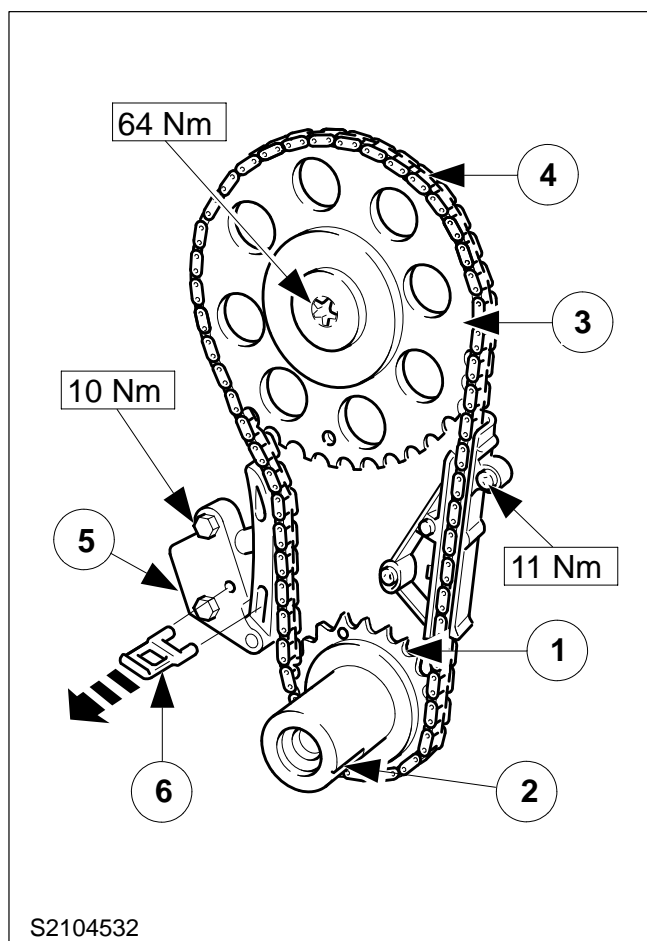
Press the plunger and sliding block right into the chain tensioner and hold it in this position.



NOTE: A locking clip is supplied with new chain tensioners. If necessary, fabricate a locking clip from welding rod.

31. Preload the chain tensioner (continued).

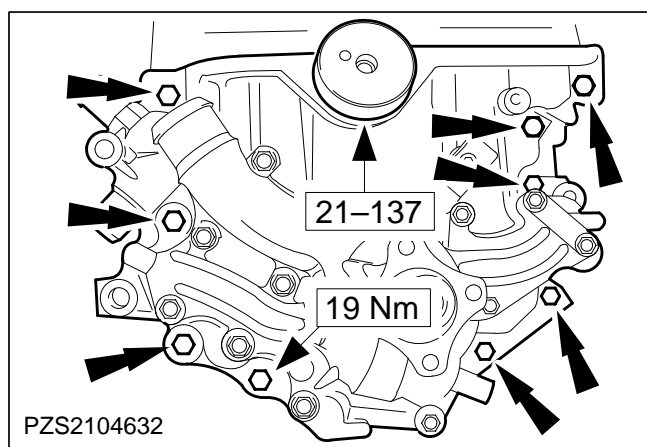
Immobilise the sliding block in this position with a locking clip.



32. Fit the camshaft chain drive.

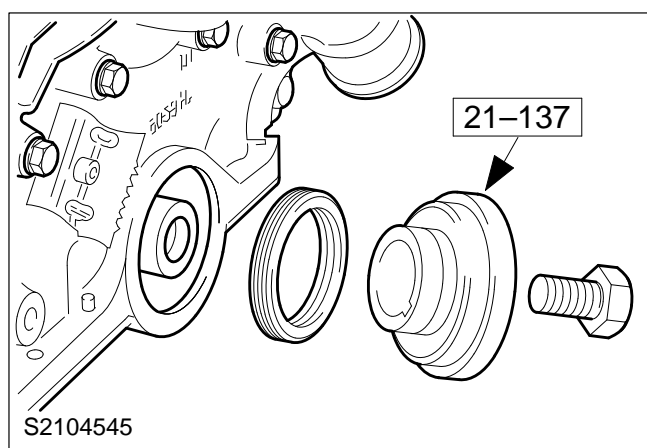
NOTE: The dots on the sprockets must be exactly opposite each other on the inside.

- 1 Crankshaft sprocket.
- 2 Crankshaft Woodruff key.
- 3 Camshaft sprocket.
- 4 Timing chain.
- 5 Chain tensioner.
- 6 Remove the locking clip after tensioner has been fitted.



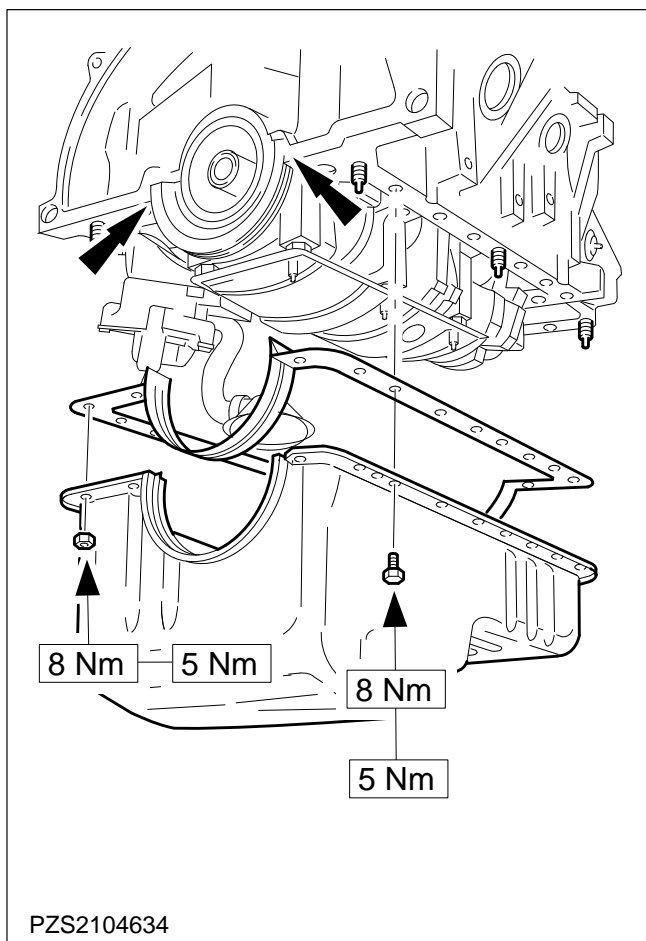
33. Attach the timing cover with the coolant pump.

- Fit the timing cover with the gasket and screw in the bolts fingertight.
- Locate the timing cover using the special tool and align it to the sump mating face.
- Tighten the bolts.
- Remove the special tool.



34. Fit the new crankshaft front oil seal.

- Lubricate the oil seal lip and the crankshaft with oil.
- Insert the oil seal as far as it will go.
- Remove the bolt and the special tool.



35. Apply sealer (Loctite 518, ESKM-4G-269-A).

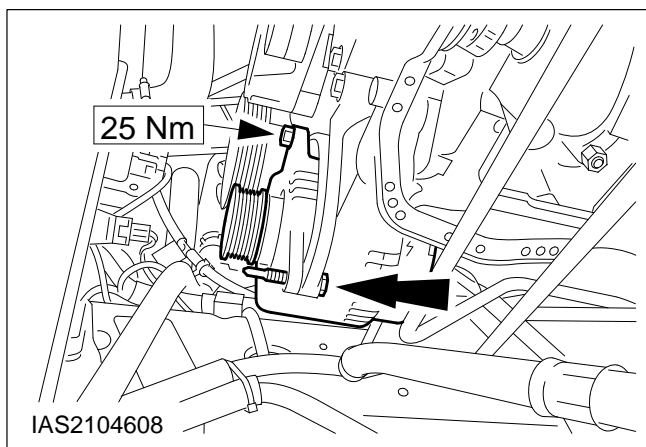
- To the gap at the mating face between cylinder block and the timing cover,
- To the groove in the rear main bearing cap.

36. Fit the sump with a new one-piece gasket.

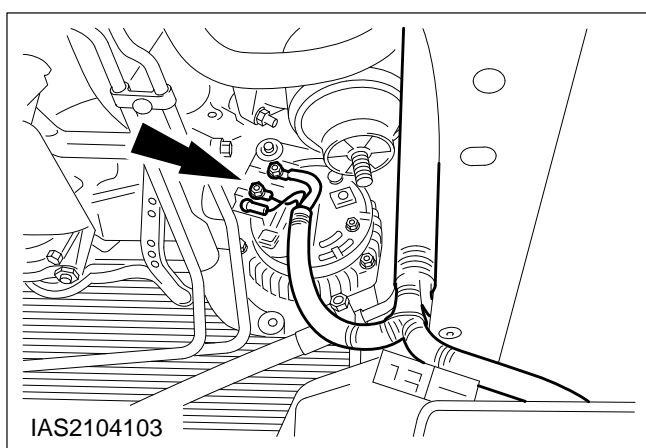
- Fit the gasket in place over the studs on the cylinder block.
- Fit the sump and screw on the nuts.

NOTE: The sump knobs must be located in the corresponding holes in the gasket.

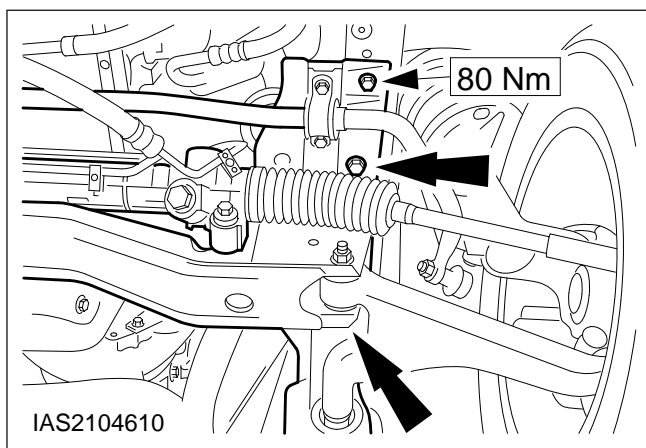
- Tighten the nuts and bolts in two stages.



37. Fit the alternator.

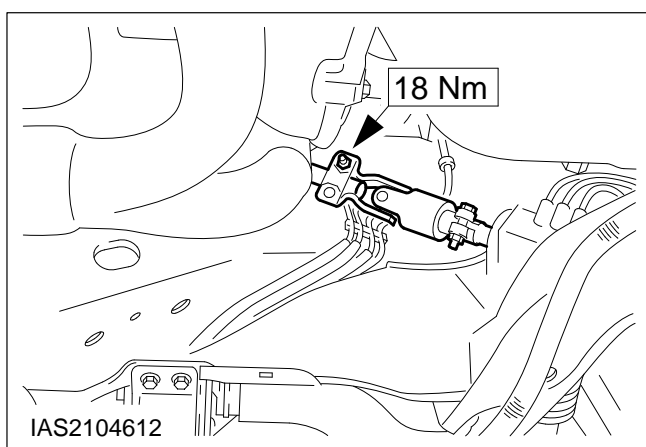


38. Connect the alternator wiring.

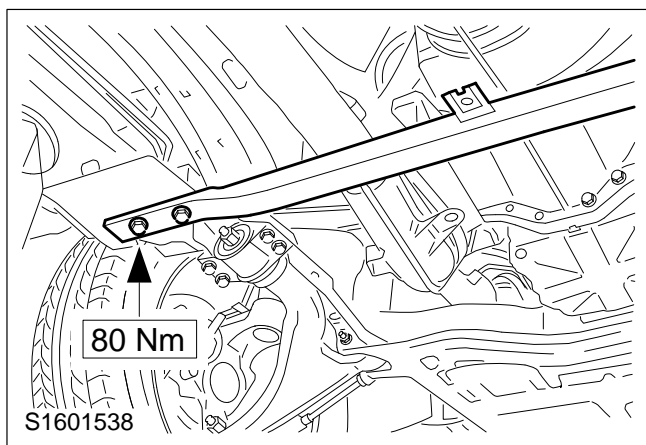


39. Attach the front crossmember (three bolts on each side).

- Position the front crossmember ready for installation on the transmission jack.
- Secure the starter motor wiring to the front crossmember with cable ties.



40. Connect the steering intermediate shaft.



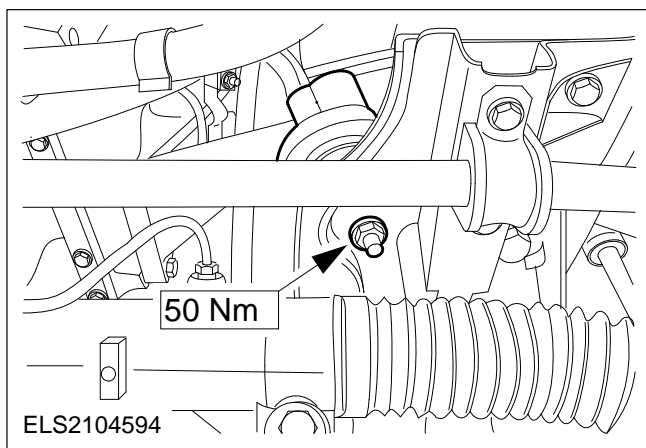
41. Attach the front axle transverse brace to the side member.

42. Position the engine ready for installation.

- Lower the vehicle.
- Lower the engine.

NOTE: Correct position of engine in engine mounting.

- Detach the engine support bar.

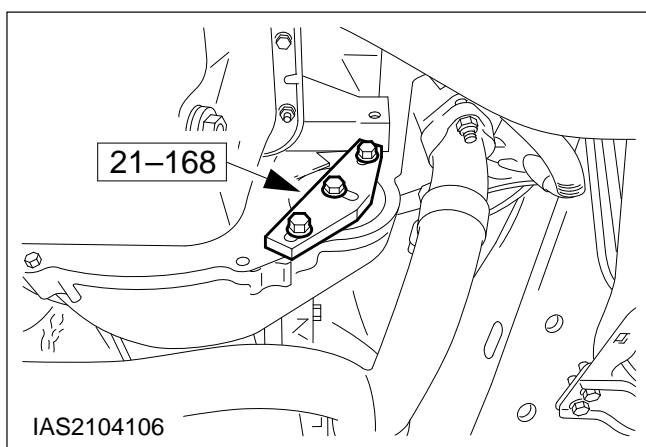


43. Raise the vehicle.

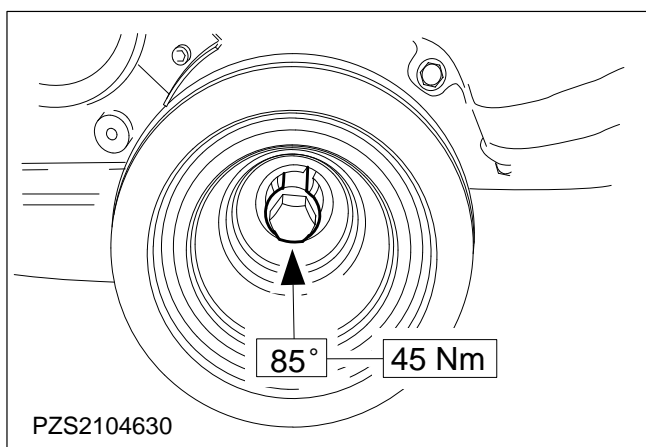
NOTE: Locating pin.

44. Tighten the two lower engine mountings (one nut on each side).

Raise the vehicle.

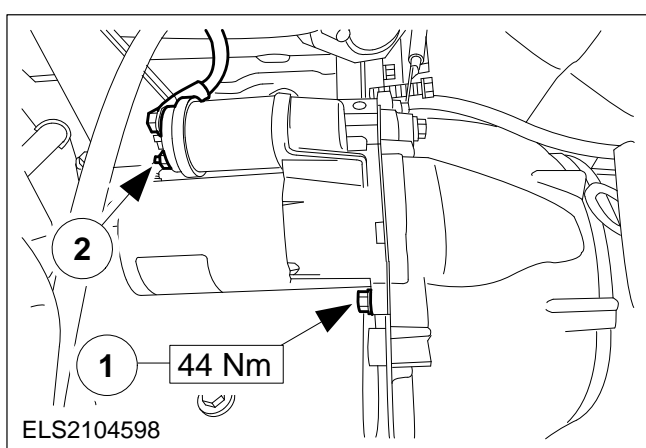


45. Fit the special tool.



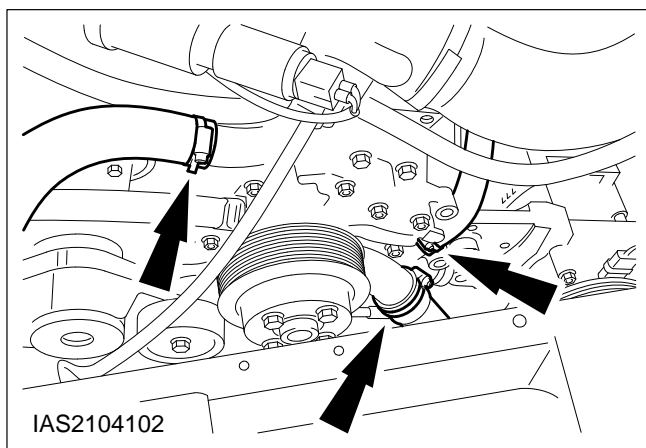
46. Attach the belt pulley with the vibration damper.

- Lubricate the belt pulley bore with oil.
- Fit the belt pulley with the bolt by means of the Woodruff key on the crankshaft.
- Loosen the bolt, apply sealer (SPM-2G-3121-A) and re-tighten it.



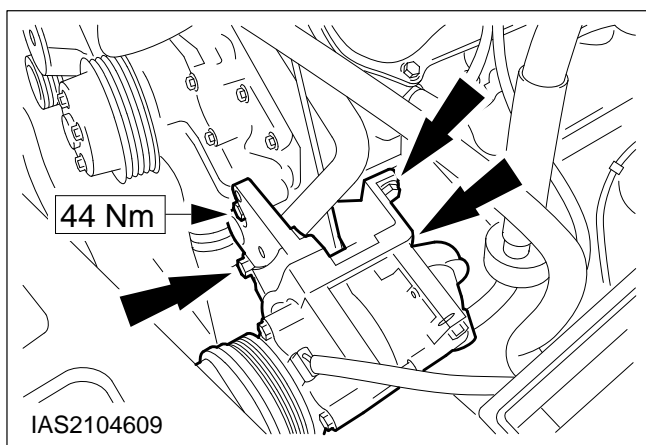
47. Fit the starter motor and connect the wiring.

- Remove the locking tool.
- 1 Secure the starter motor with two bolts.
 - 2 Connect the starter motor wiring.

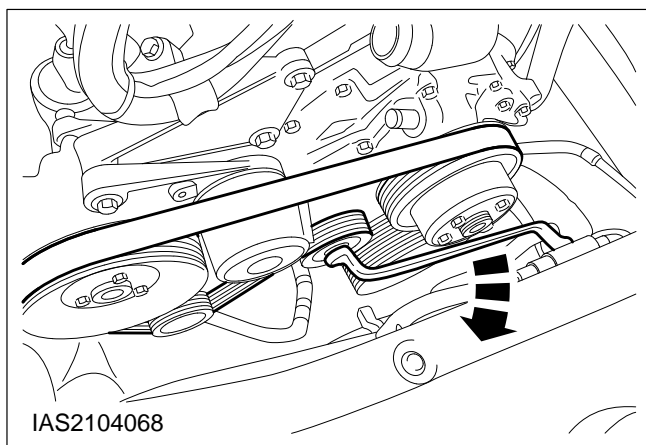


48. Lower the vehicle.

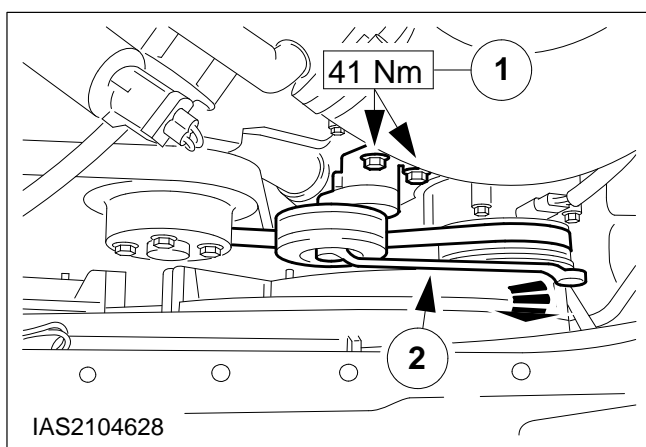
49. Attach the coolant hoses.



50. Attach the air conditioning compressor.



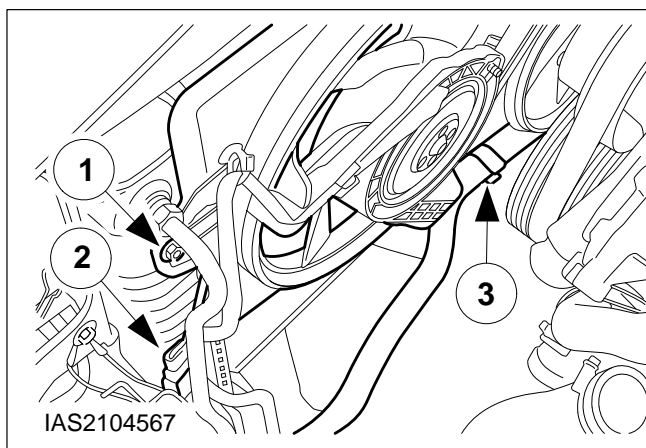
51. Fit the drive belt.



52. Fit the belt tensioner for the air conditioning drive belt.

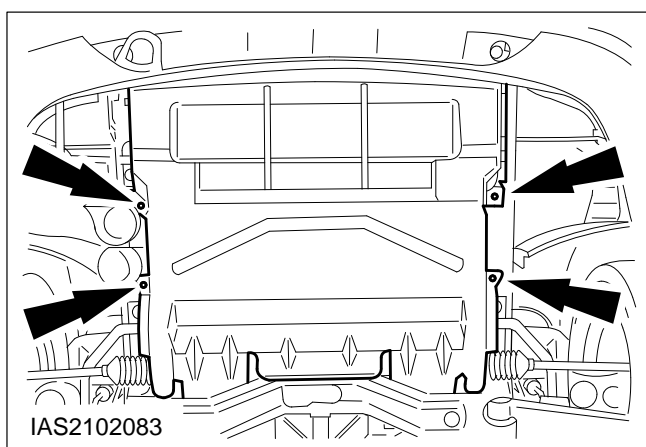
1 Attach the belt tensioner.

2 Slacken the belt tensioner and fit the drive belt.



53. Install the fan motors complete with the retaining plate.

- 1 Screw on one nut on each side.
- 2 Connect the two parts of the plug and clip the wiring in place.
- 3 Clip the lower coolant hose in place.



54. Finishing operations:

- Top up the coolant.
- Top up the engine oil.
- Check the fluid levels and rectify as necessary.
- Check the routing of the vacuum hoses and the wiring and secure them using cable ties as required.
- Enter the radio keycode.
- Reprogramme the preset radio stations.
- Reset the clock.
- Carry out a road test to enable the PCM module to collect data.
- Check the engine and cooling system for leaks (visual check).
- Attach the engine undershield.