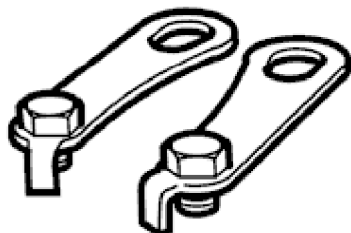


# 1998 XJ RANGE - Engine - 303-01

## Engine - Installation 12.41.01

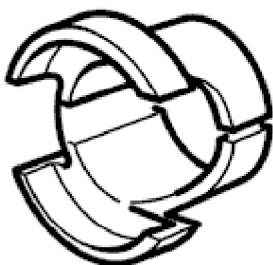
### Special Service tools



E36403

Engine Lifting Brackets  
303-536

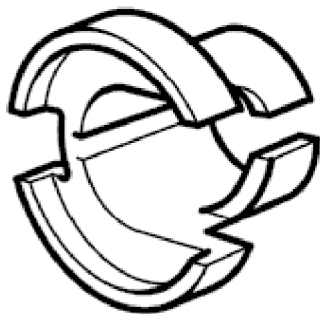
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E36393

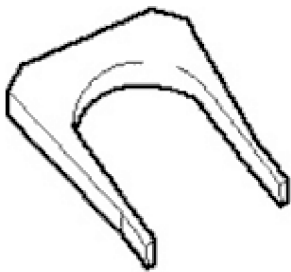
Quick Fit Connector Release Tool  
310-044

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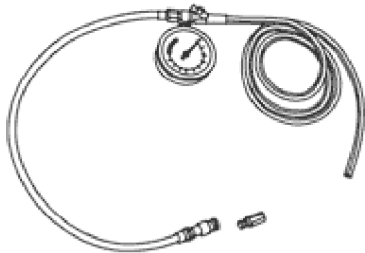
E36394

Quick Fit Connector Release Tool  
310-054



**E34592**  
Quick Fit Connector Release Tool  
303-623

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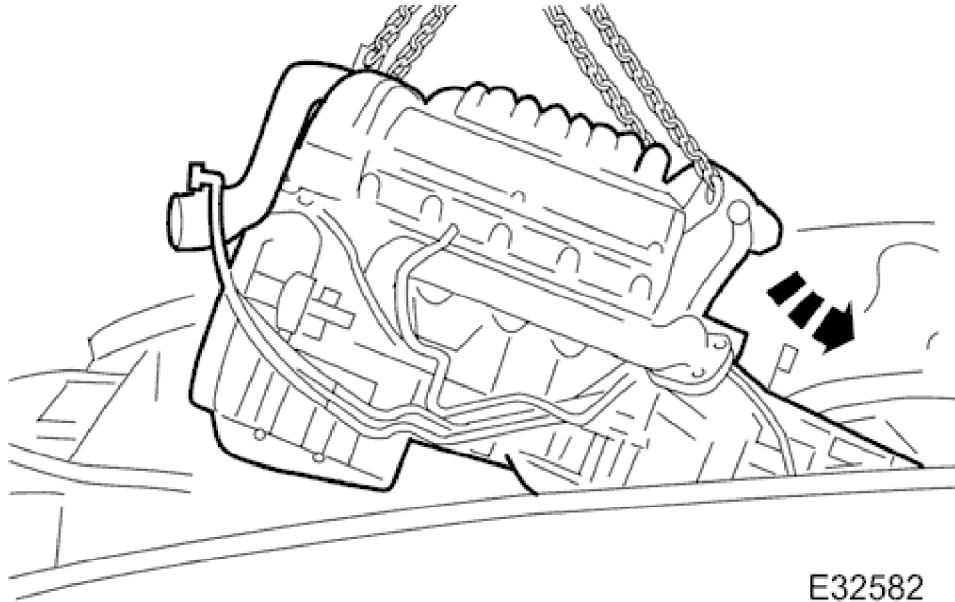


**E36466**  
Fuel Injection Pressure Test Equipment  
310-058

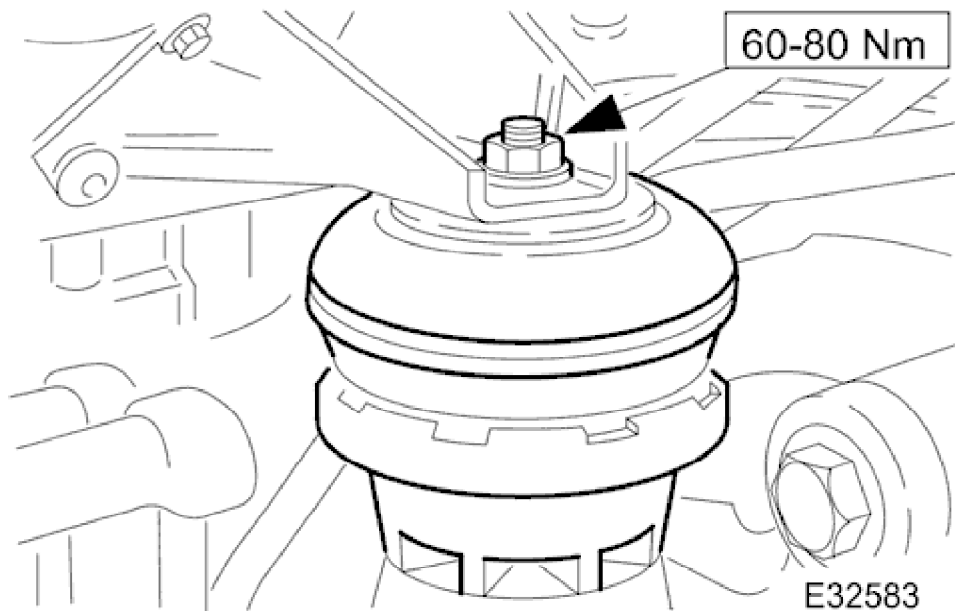
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**Installation**

## 1998 XJ RANGE - Engine - 303-01



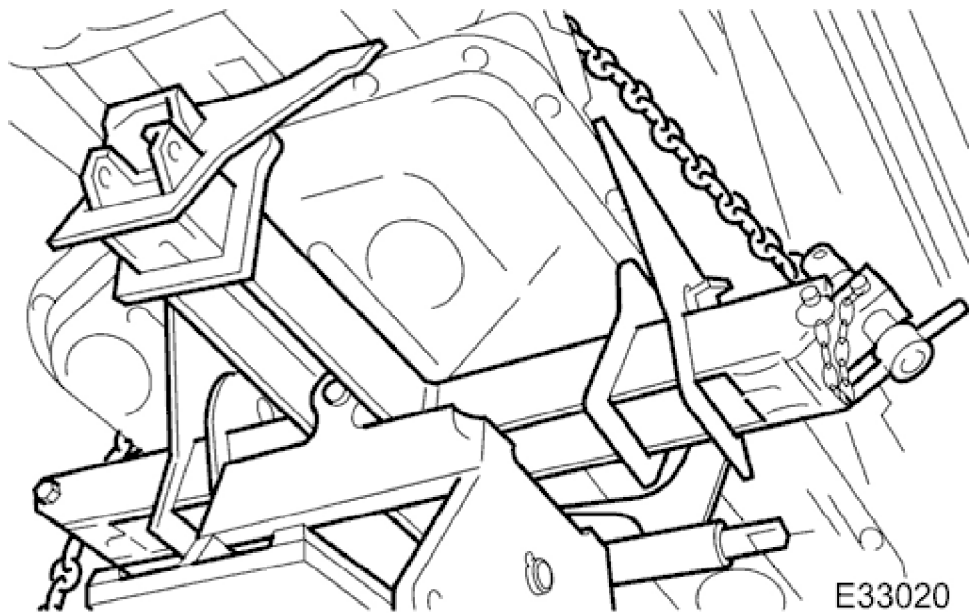
1. Position the engine into the engine compartment.
  - Traverse the engine / transmission assembly to the vehicle and lower the assembly into the engine compartment and onto front mounting locations.



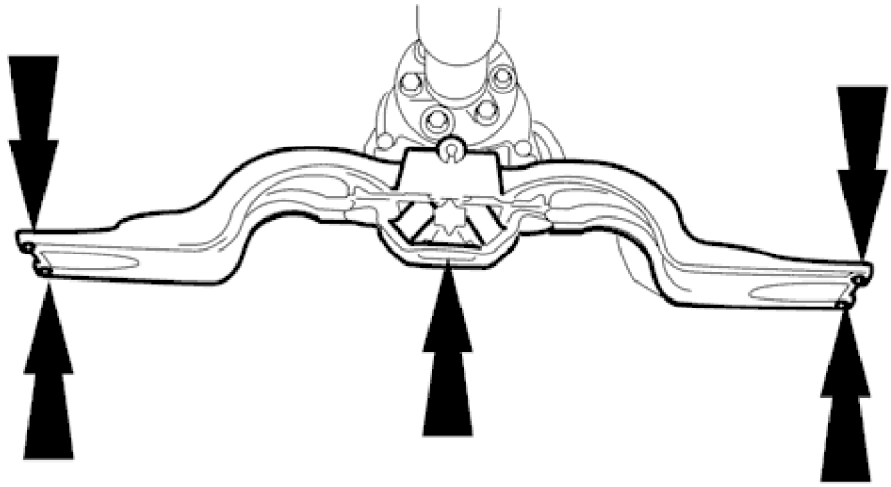
2. Align the engine front mountings.
  - Align the engine front mountings and fit the securing nuts.
  - Tighten to the stated torque value.

3. Operate the crane controls and the ramp simultaneously (with assistance) to raise the vehicle to a convenient working height.

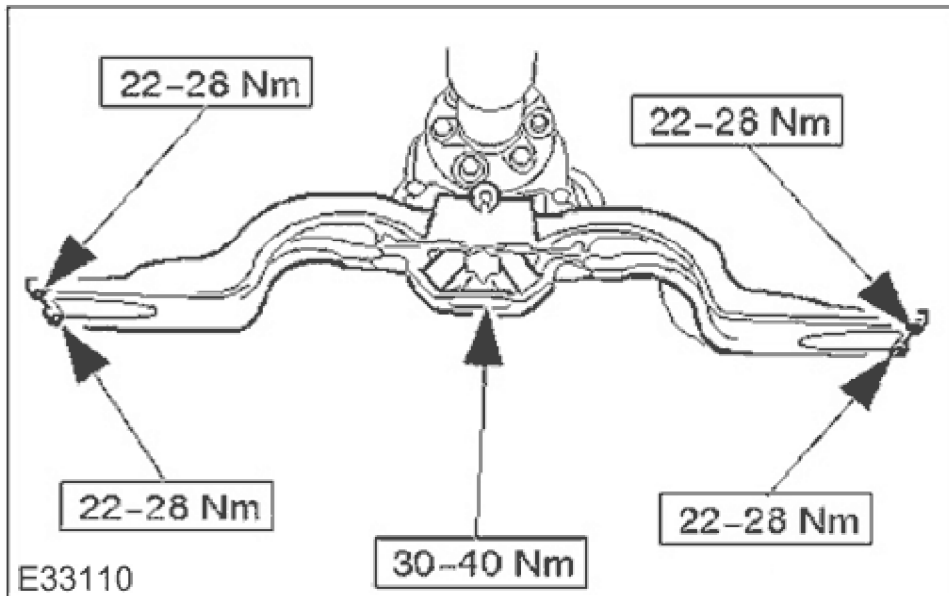
# 1998 XJ RANGE - Engine - 303-01



4. Position the transmission jack and raise it to take the weight of the transmission. Fit and adjust the chains to secure the transmission to the jack.



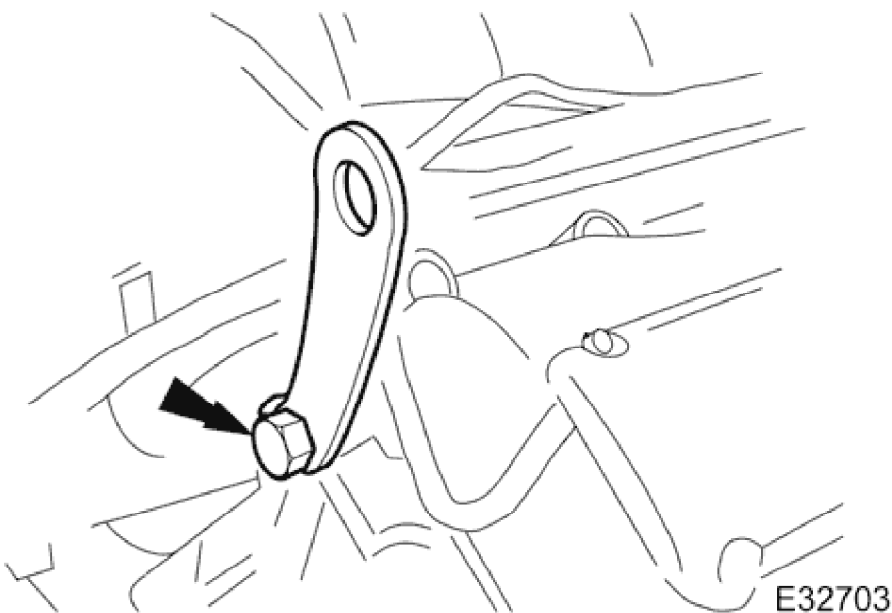
5. Fit the engine rear mounting bracket.  
• Fit the four bolts which secure the crossmember to the body.  
• Fit the bolt which secures the engine rear mounting rubber to the transmission.



6. Tighten the rear mounting bolts to the stated torque figure.

7. Release and remove the transmission jack.

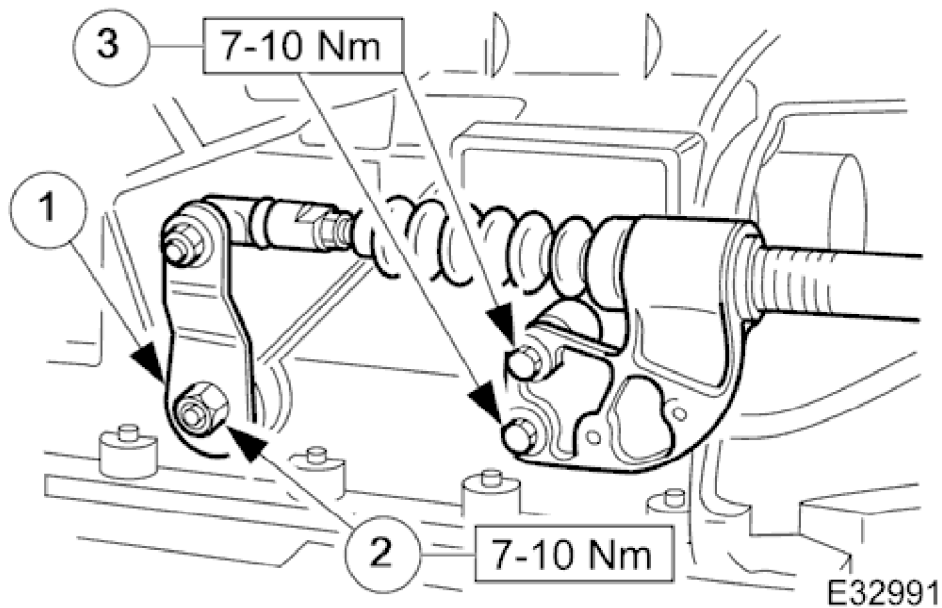
8. Operate the crane controls and the ramp simultaneously (with assistance) to lower the vehicle to a convenient working height.



9. Lower the crane and remove the chain assembly and lifting eyes.  
• Remove the engine rear lifting eyes.

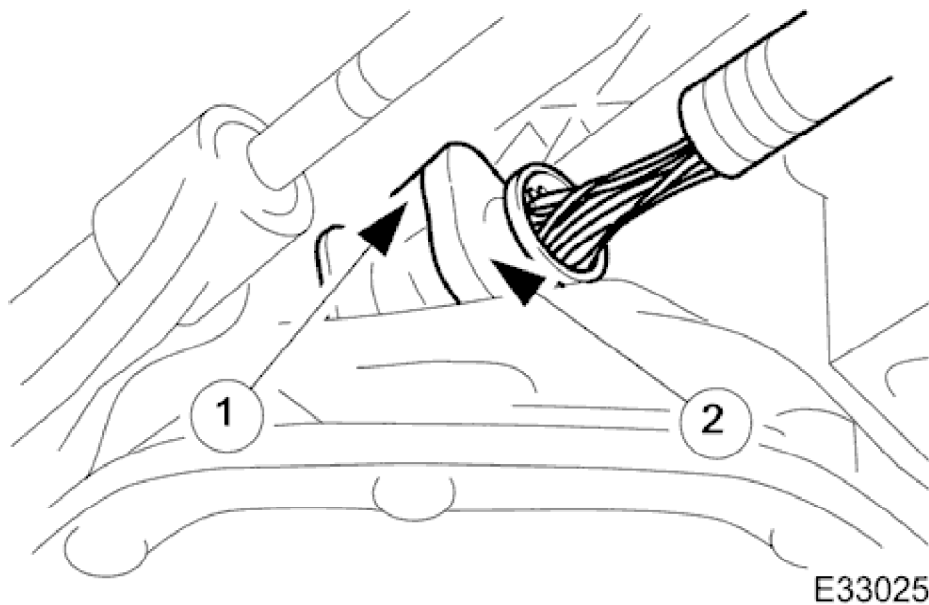
10. Move the crane away from the vehicle.

11. Raise the vehicle on the ramp.



12. Connect the transmission selector cable.

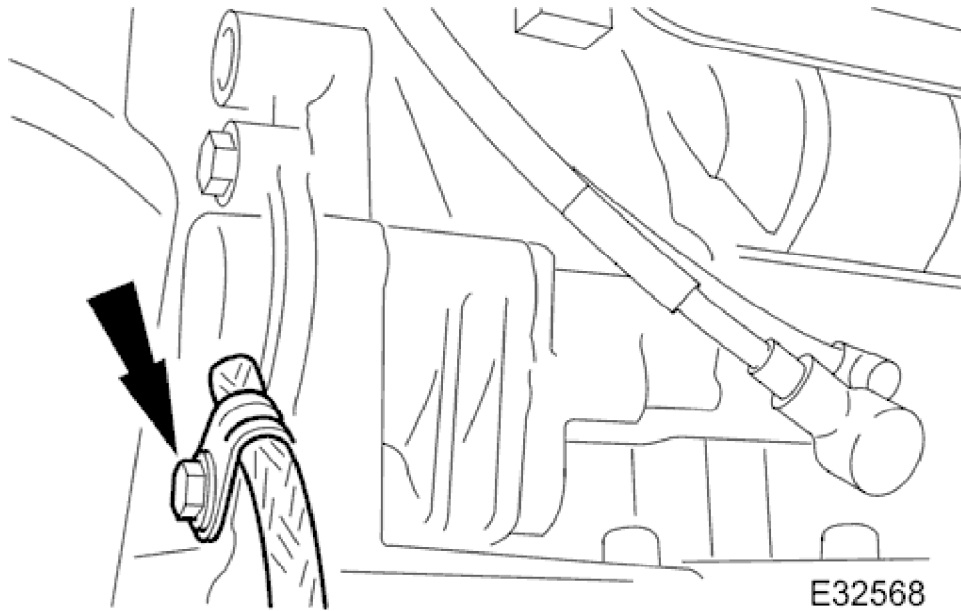
1. Fit the selector lever to the cross shaft.
2. Fit the nut which secures the selector lever to the transmission cross shaft.
3. Reposition the selector cable abutment bracket to the transmission and fit the securing bolts.



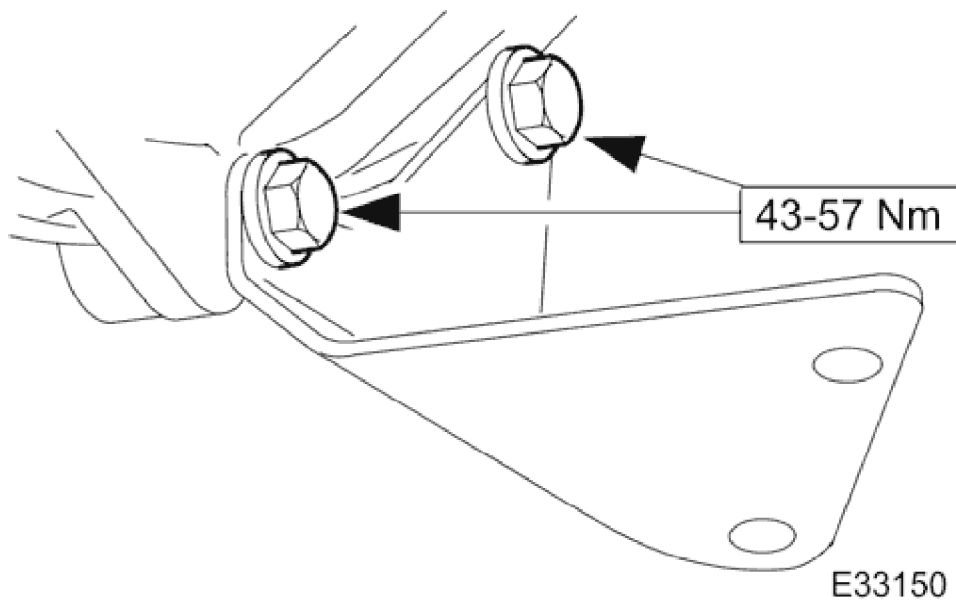
13. Connect the transmission harness connector.

1. Connect the transmission harness connector.
2. Secure the lever lock mechanism.

## 1998 XJ RANGE - Engine - 303-01

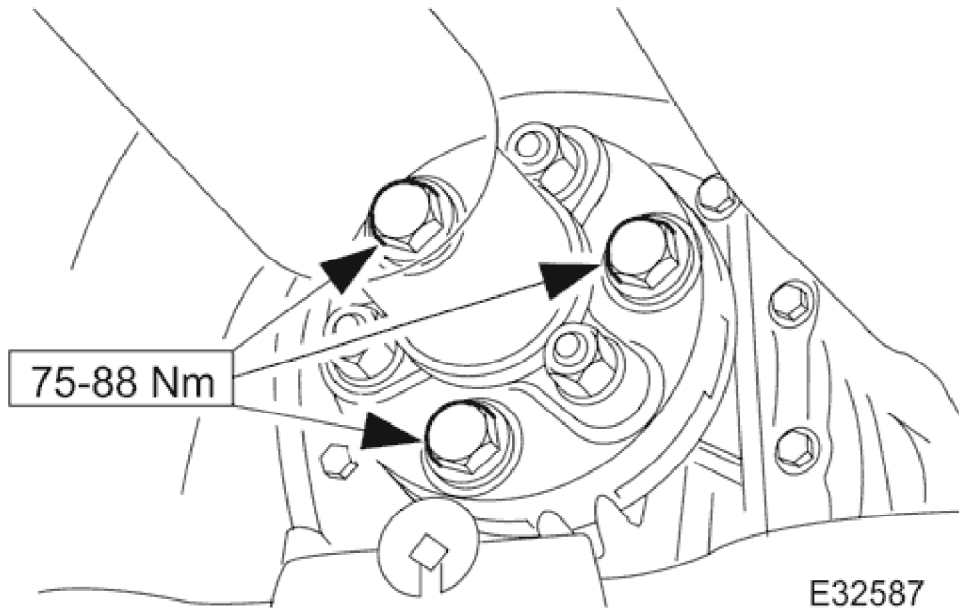


14. Reposition the ground lead to the transmission casing and fit the securing bolt.

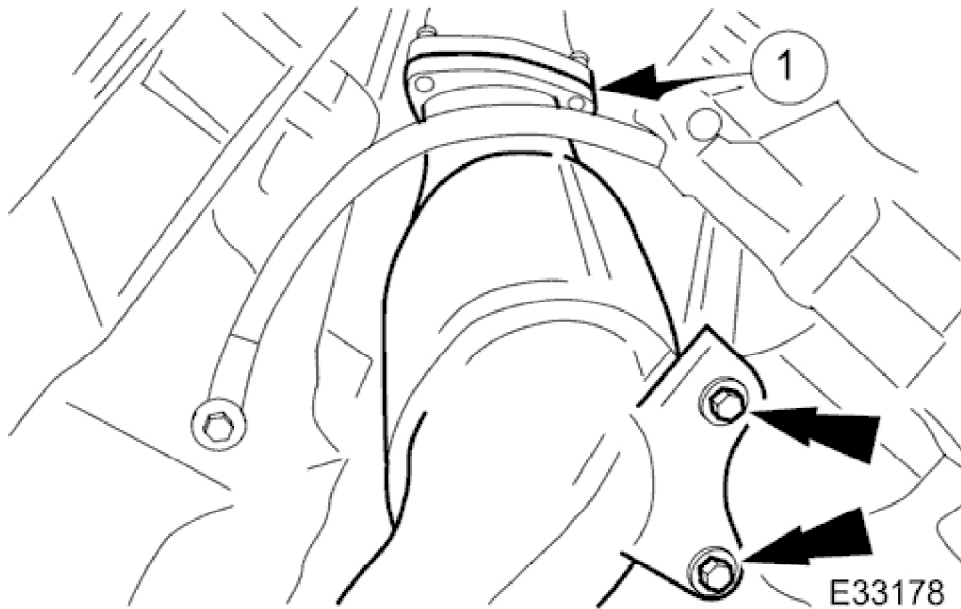


15. Fit the brackets which support the downpipe catalytic converters to the bell housing.

- Position the mounting bracket and fit the two bolts which secure it to the bell housing.
- Repeat the above procedure for the other side.

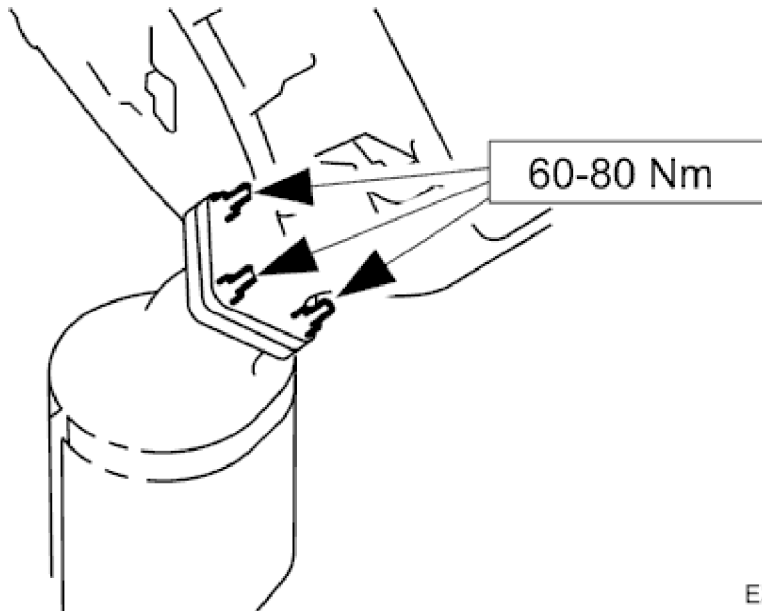


16. Connect the driveshaft (propshaft) flange to the transmission output flange.
- Fit the three bolts which secure the flange.



17. Fit the downpipe catalytic converters.
1. Fit a new gasket to the downpipe flange and fit the downpipe assembly to the manifold.
- Fit the bolts which secure the downpipe to the lower mounting bracket.
  - Repeat the above operations for the other downpipe catalytic converter.



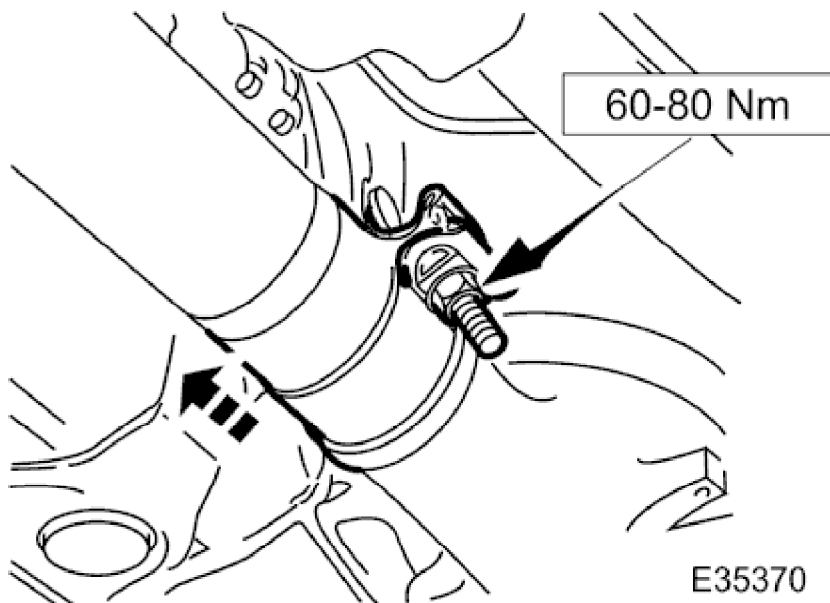


E34231

18. From above the vehicle, tighten the manifold flange nuts, A-Bank and B-Bank flanges, to the correct torque.

19. Fit the front muffler assembly.

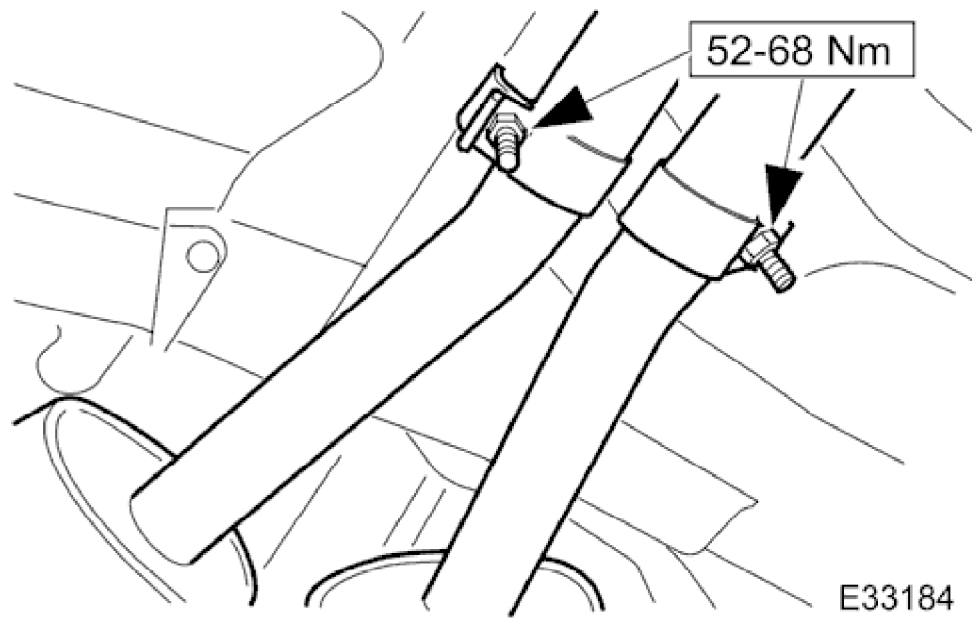
- Locate the front muffler into the downpipe catalytic converters.



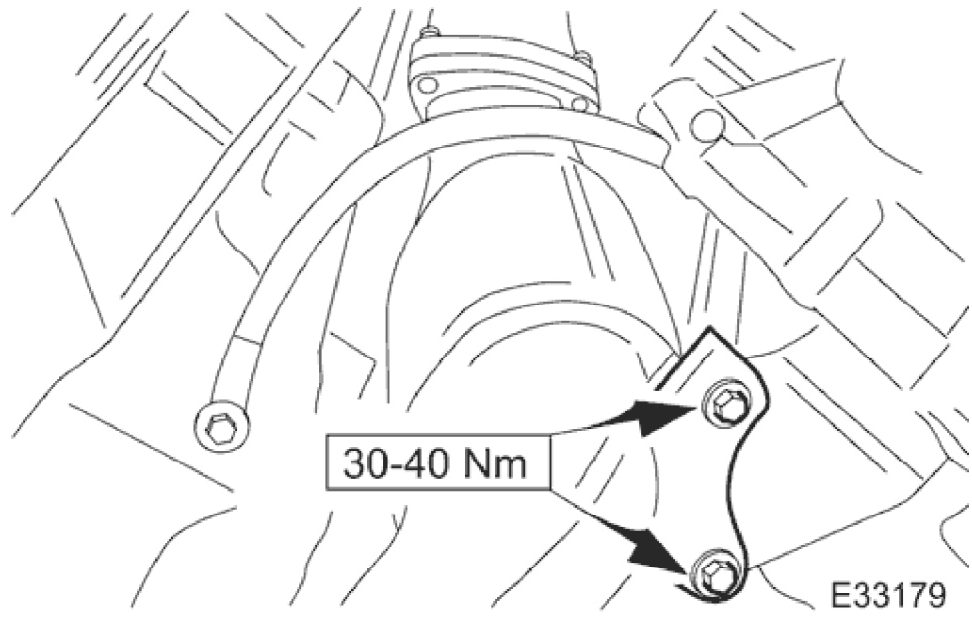
E35370

20. Move the front muffler forward to allow the intermediate mufflers to be connected.

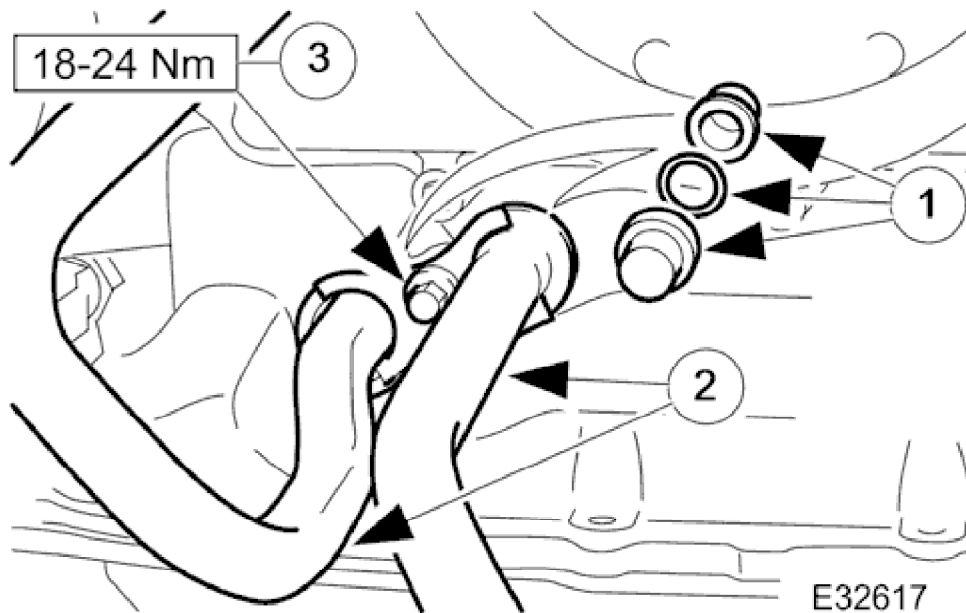
- Connect the front muffler to the intermediate muffler, noting the alignment of the indicator rings.
- With the front muffler positioned correctly, tighten the clamps (left-hand and right-hand sides) to the catalytic converter.



21. Tighten the clamps (left-hand and right-hand sides), intermediate mufflers to front muffler.

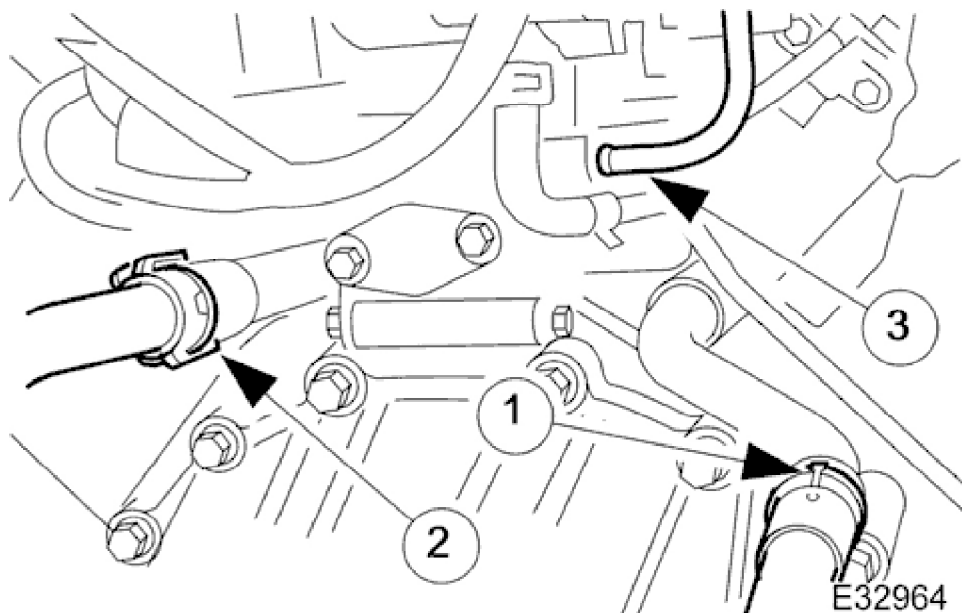


22. Tighten the downpipe bracket securing bolts to the correct torque

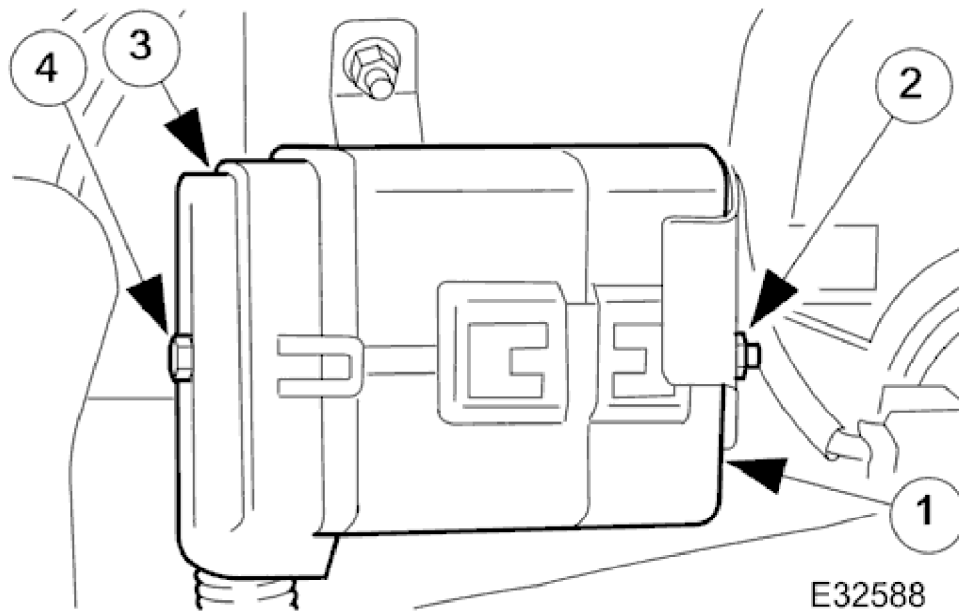


23. Connect the oil cooler pipes (where fitted) to the engine.
1. Remove the blanking plugs from the pipes and from the mating unions on the engine.
  2. Fit new O-ring seals to the pipes and lubricate with new engine oil.
  3. Connect the pipes to the engine and fit the clamping plate and bolt.

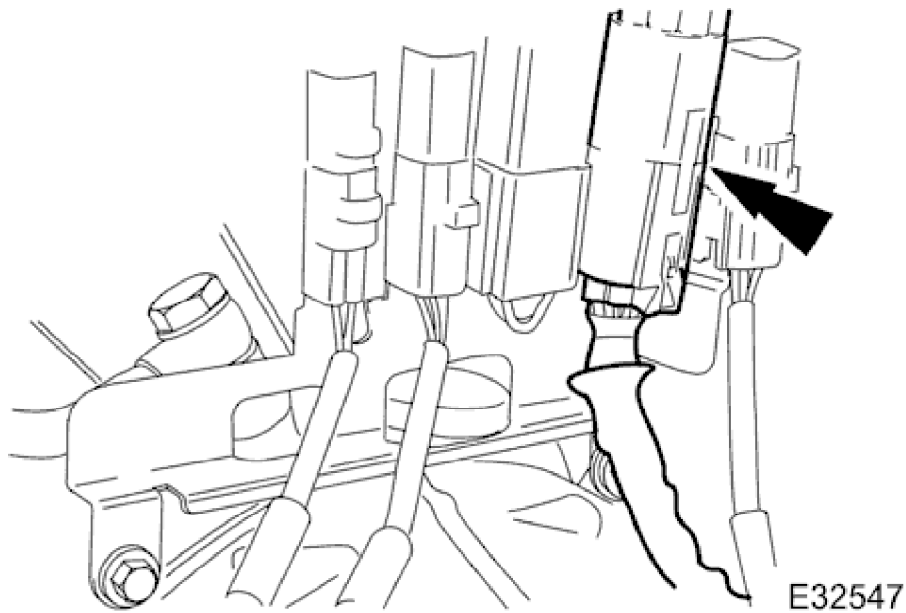
24. Lower the vehicle on the ramp.



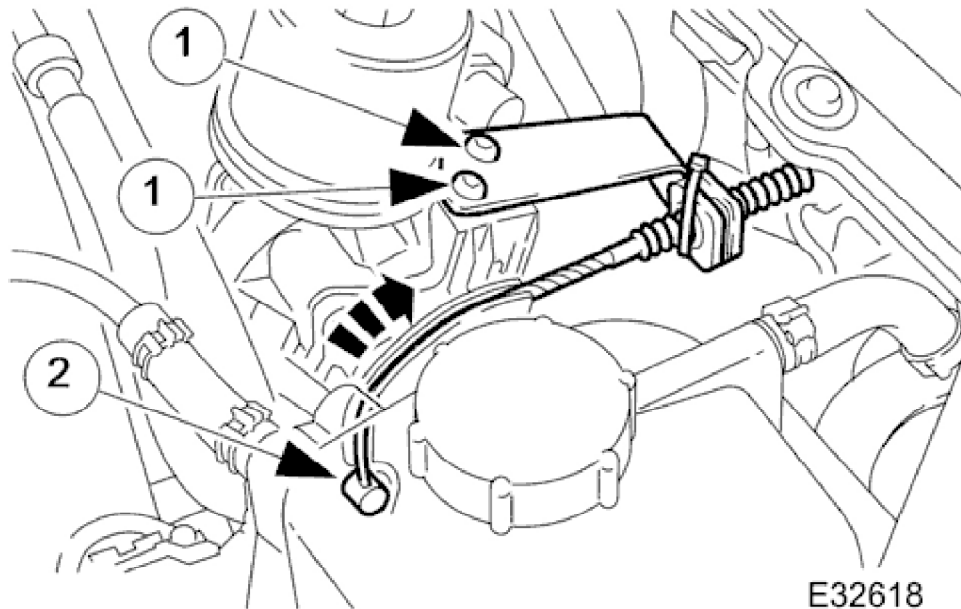
25. Connect the heater and brake servo hoses.
1. Connect the heater return hose.
  2. Connect the heater feed hose and secure the locking lever.
  3. Connect the brake servo hose.



26. Connect the P.I. harness to the engine management harness.
1. Reposition the engine management harness connector to the bracket.
  2. Fit the nut which secures the engine management harness connector to the mounting bracket.
  3. Connect the connectors.
  4. Fit the bolt which secures the P.I. harness connector to the engine management harness.

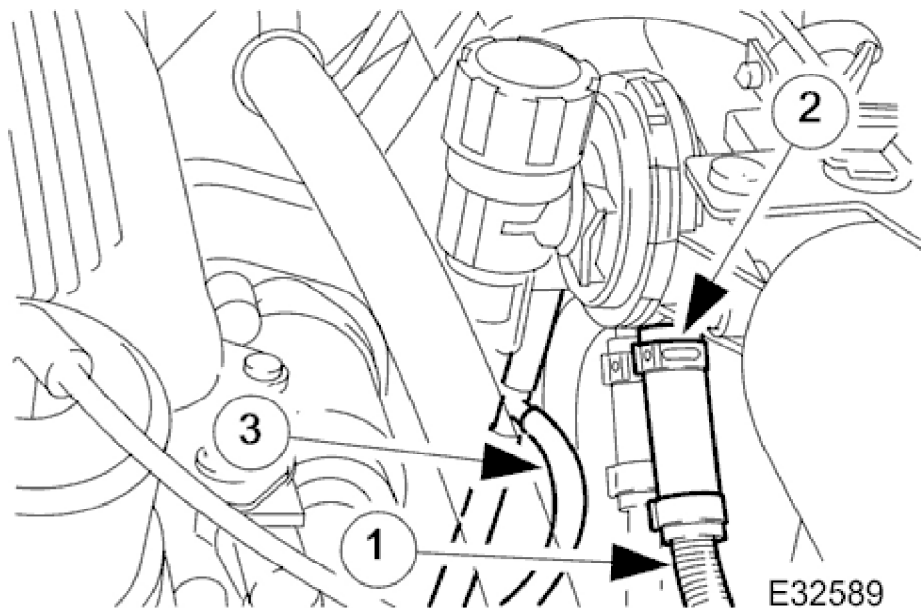


27. Connect the transmission rotary switch harness connector.
- Reposition and connect the harness.



28. Connect the throttle cable.

1. Fit the bolts which secure the abutment bracket to the throttle body. Tighten to 4-6 Nm.
  2. Rotate the butterfly actuator cam and connect the cable. Reposition the cable into the cam.
- Remove any tape or plastic strap which was fitted when disconnecting the cable abutment.

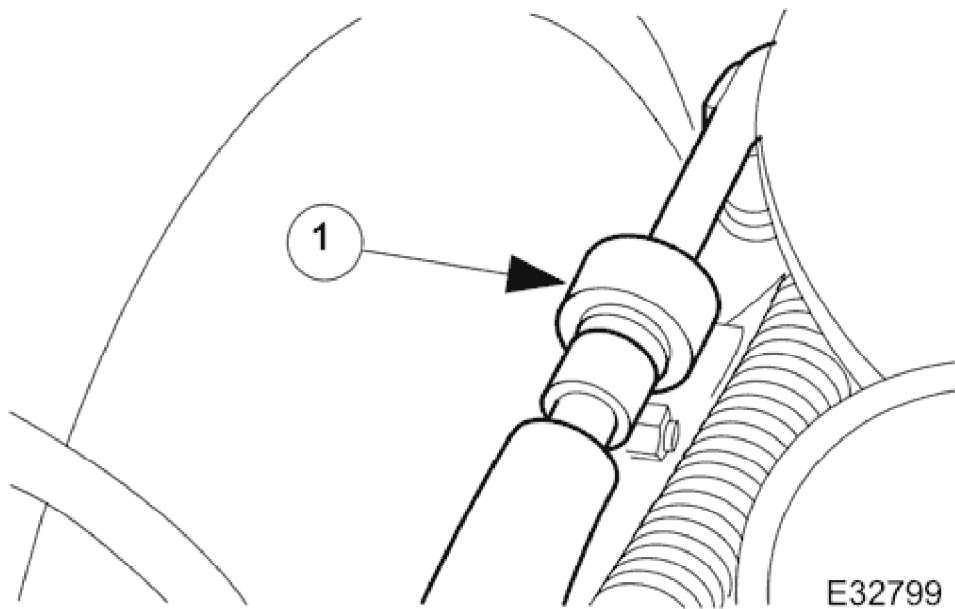


29. Connect the pipes to the purge valve.

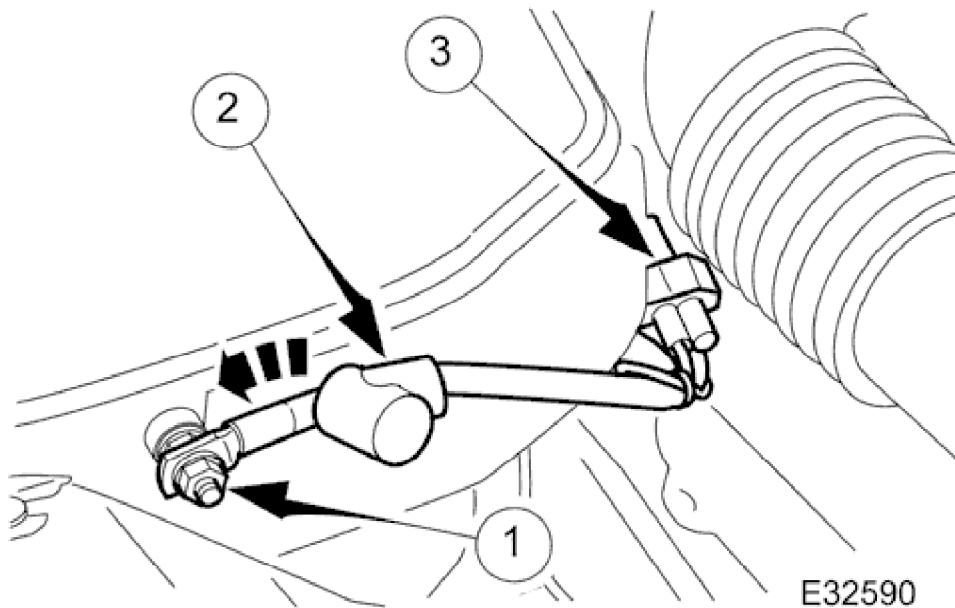
1. Connect the part load breather hose.
2. Fit the clip which secures the part load breather hose to the purge valve.
3. Connect the vacuum hose to the purge valve.



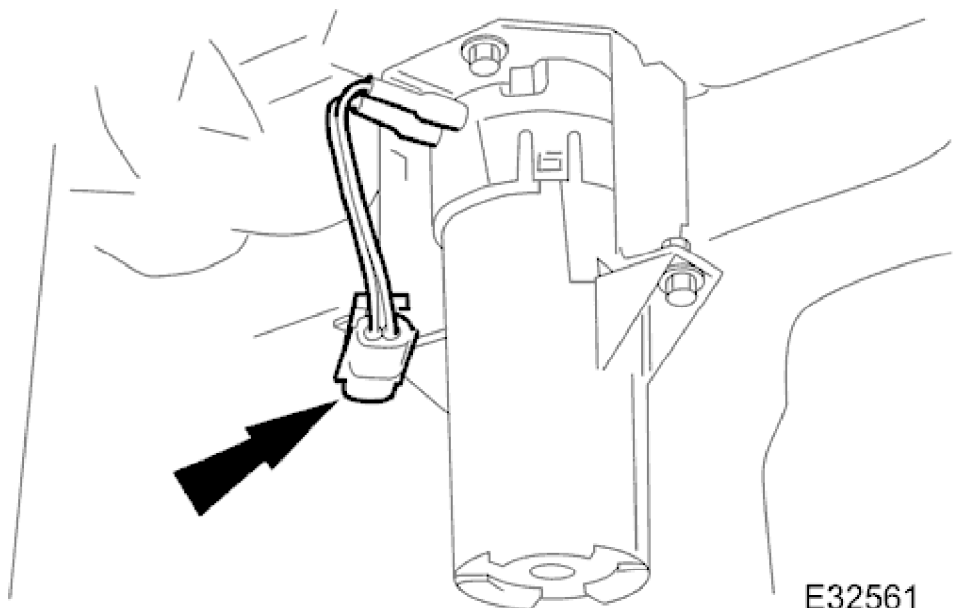
**WARNING:**  
**BEFORE PROCEEDING, IT IS ESSENTIAL THAT THE WARNING NOTES GIVEN IN SECTION <<100-00>> (UNDER THE HEADING 'SAFETY PRECAUTIONS') ARE READ AND UNDERSTOOD.**



30. Connect the fuel feed and return hoses.
- Remove the blanking plugs from the mating pipes.
    1. Connect the hoses at the Quick Fit connectors.
  - Fit the return hose into the feed hose clip.

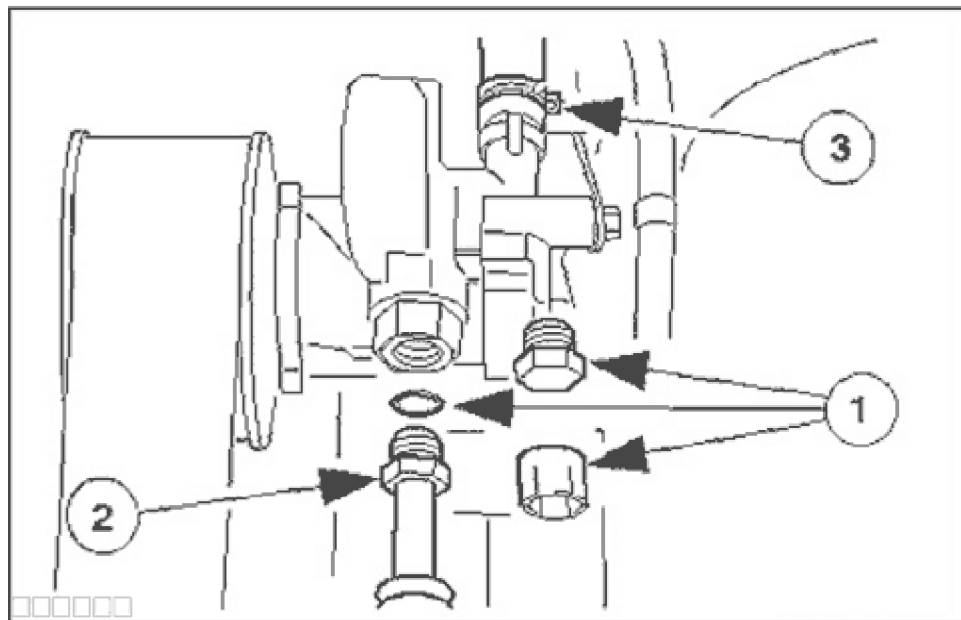


31. Connect the starter motor power cable.
1. Reposition and connect the power cable to the power stud. Fit the securing nut to the stud.
  2. Reposition the protective boot over the starter motor power stud.
  3. Connect the harness connector, engine management harness to starter motor. Fit the connector to the mounting bracket.
- Renew the tie strap which secures the power cable to the right hand enclosure.

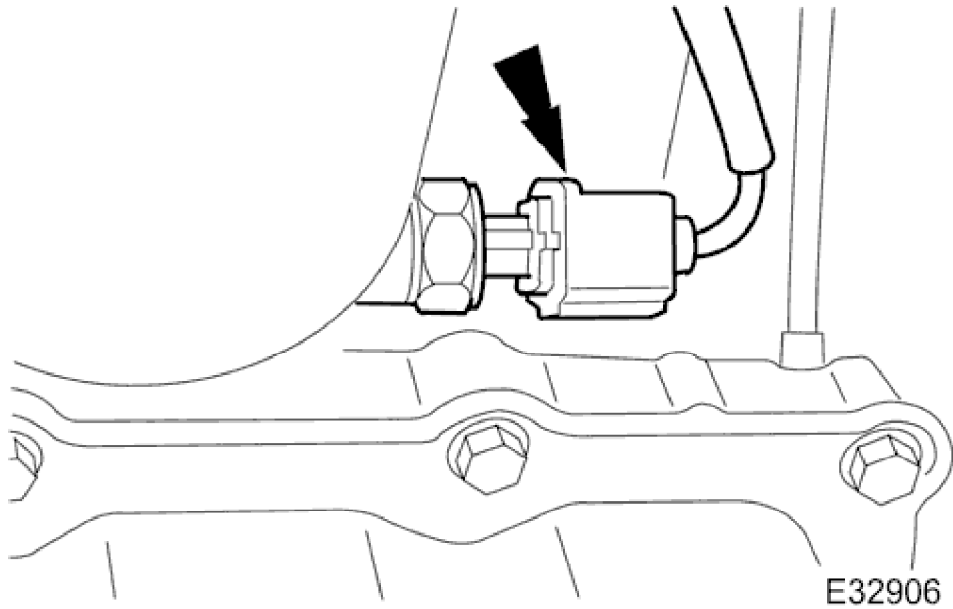


E32561

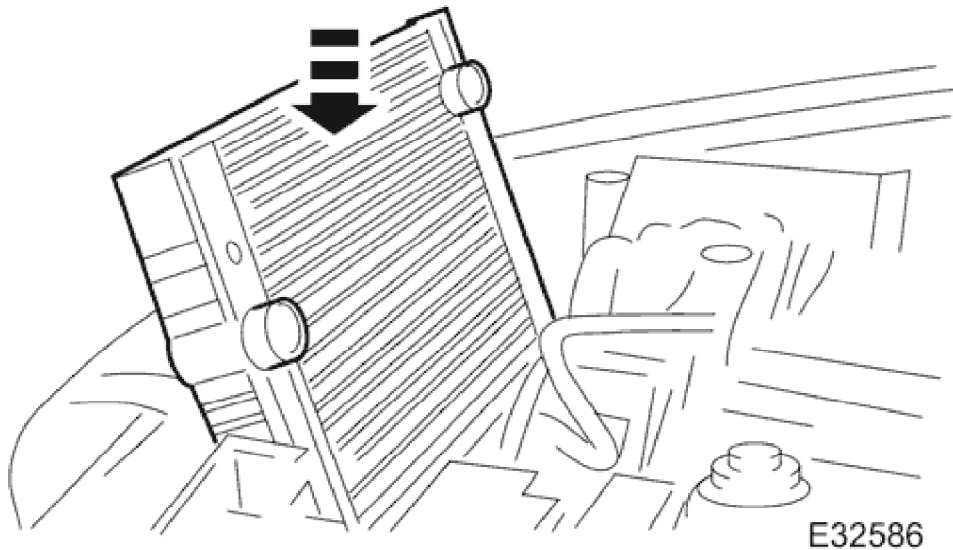
32. Connect the generator suppression module (where fitted) harness.
- Reposition the harness under the suppression module and connect the harness connector.



33. Connect the hoses to the power steering pump.
1. Remove the blanking plugs from the pipes and unions. Fit a new sealing washer to the high pressure hose joint.
  2. Connect the high pressure hose union.
  3. Connect the feed hose to the pump.

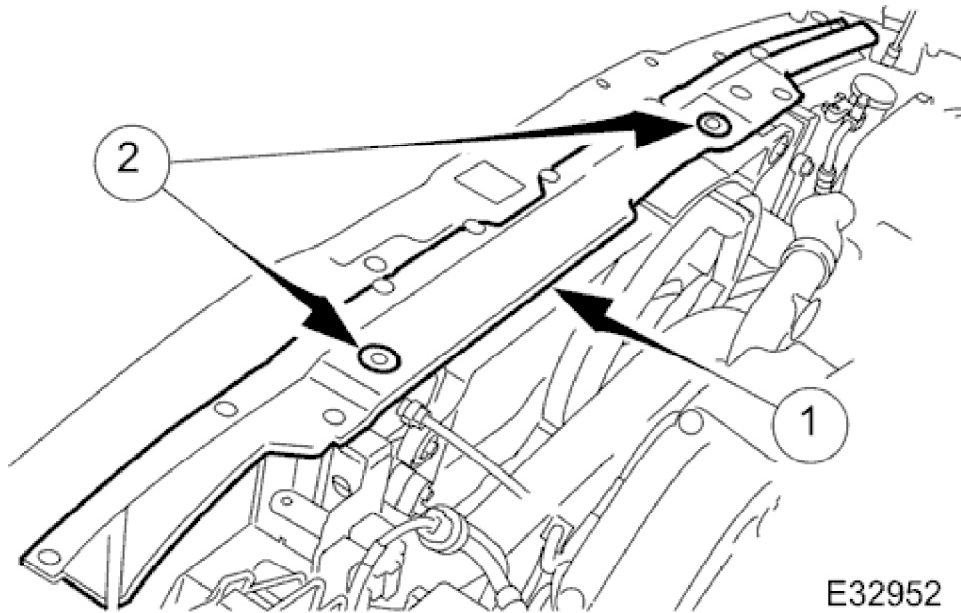


34. Connect the engine oil pressure transmitter.



35. Fit the radiator and condenser assembly. Check that the lower mounting rubbers are located correctly.

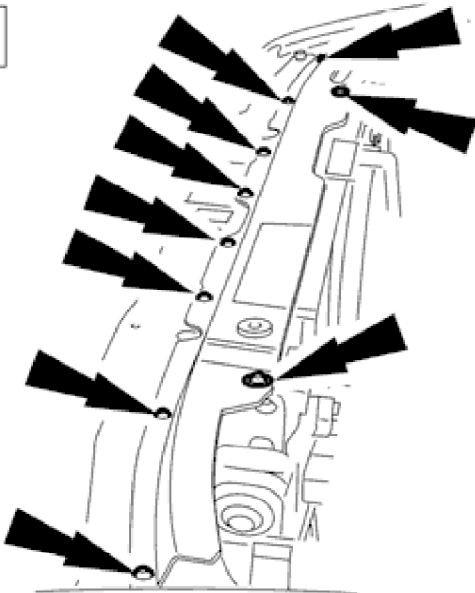




E32952

36. Fit the radiator top retaining panel.
- 1. Fit the panel.
  - 2. Check that the radiator top mounting bushes are located correctly.

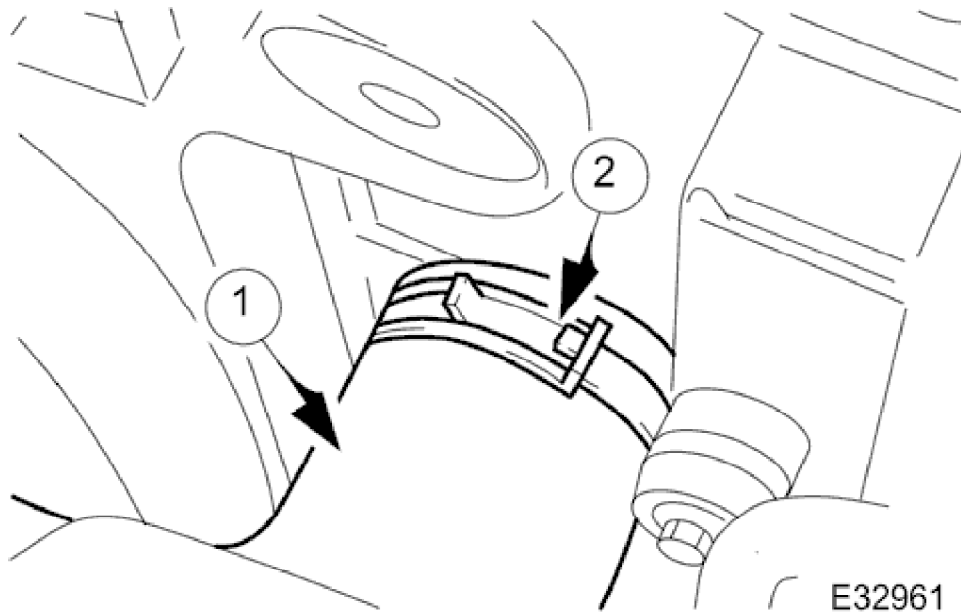
8 - 10 Nm



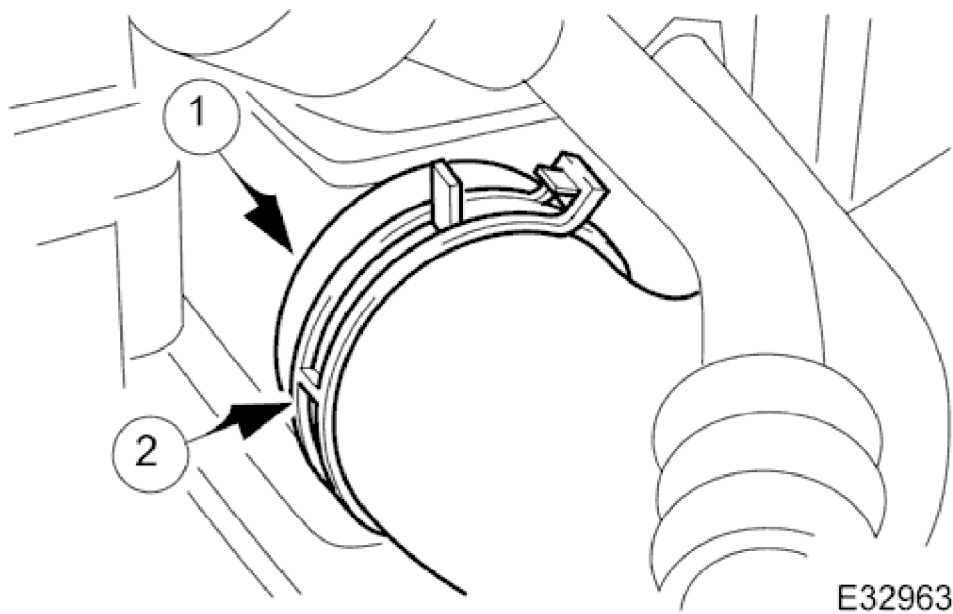
E33902

37. Fit the radiator top retaining panel.
- Fit the ten bolts which secure the panel.

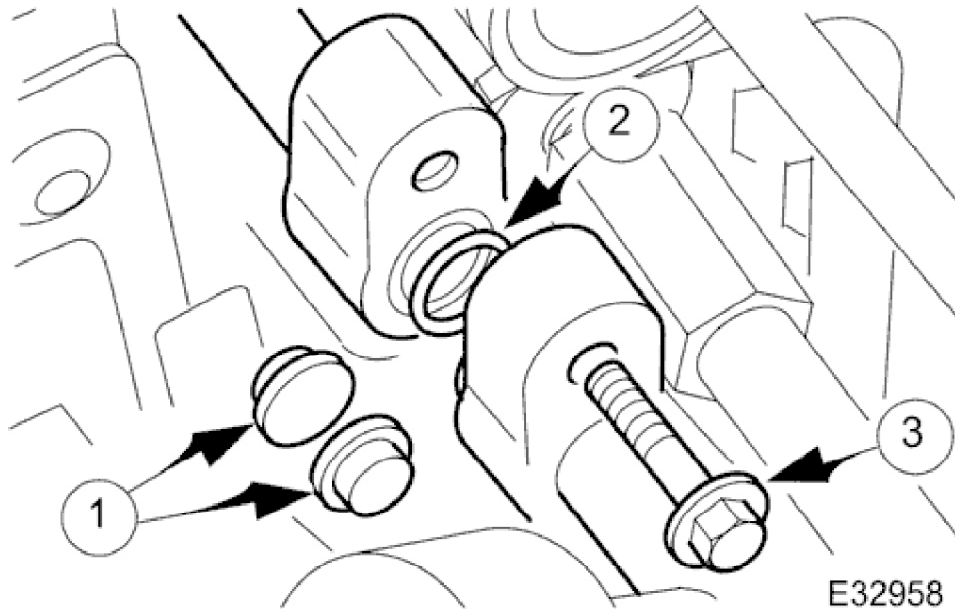
**1998 XJ RANGE - Engine - 303-01**



38. Connect the radiator top hose.  
1. Connect the hose to the radiator.  
2. Reposition and secure the hose retaining clip.

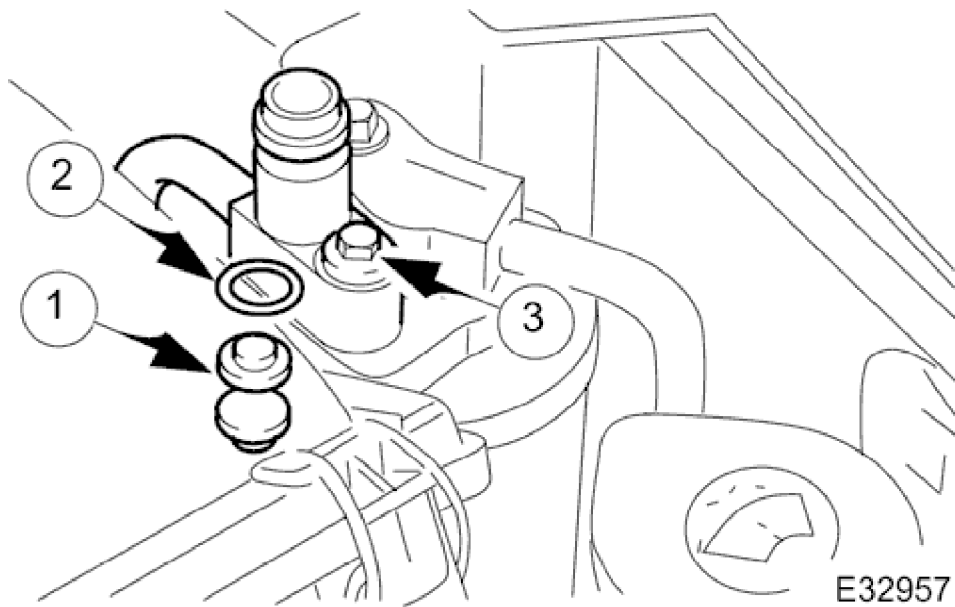


39. Connect the radiator bottom hose.  
1. Connect the hose to the radiator.  
2. Reposition and secure the hose retaining clip.



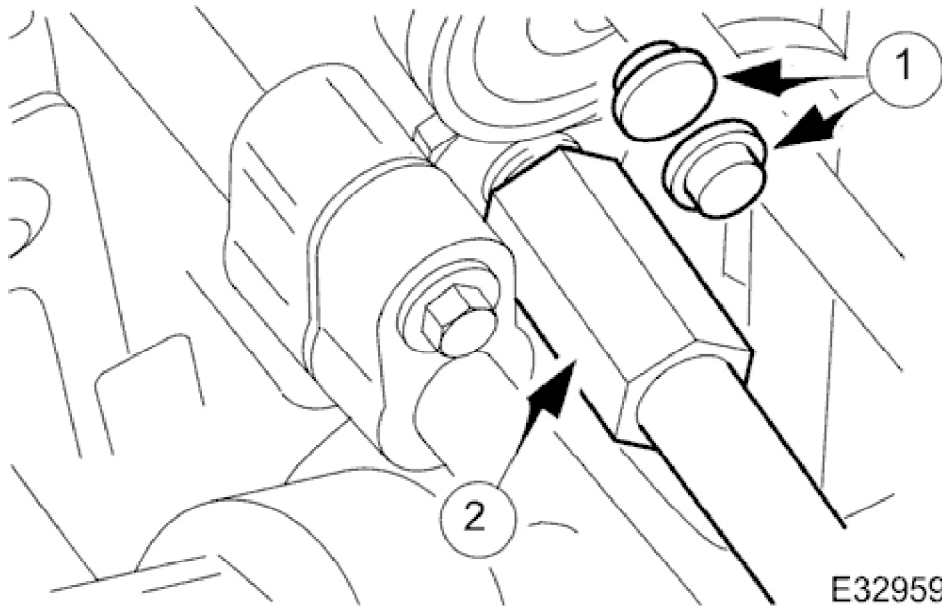
40. Connect the discharge hose to the condenser.

1. Remove the blanking plugs from the hose and condenser.
2. Fit and fully seat a new O-ring seal to the hose. Lubricate the seal with clean compressor oil
3. Fit the hose to the condenser and tighten the securing bolt.



41. Connect the jump hose to the receiver/drier.

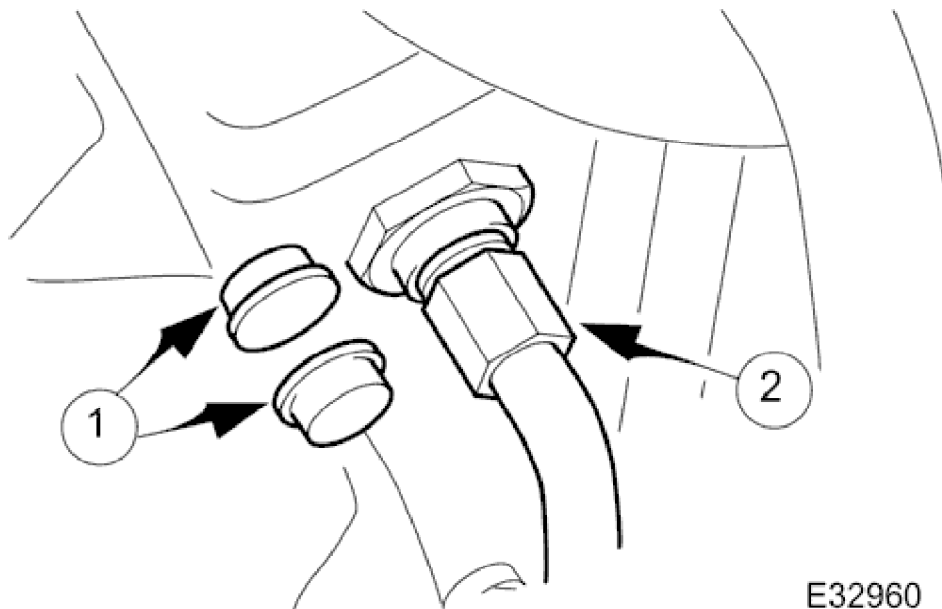
1. Remove the blanking plugs from the hose and receiver/drier.
2. Fit and fully seat a new O-ring seal to the hose. Lubricate the seal with clean compressor oil
3. Fit the hose and tighten the securing bolt.



E32959

42. Connect the transmission oil cooler upper pipe.

1. Remove the blanking plugs from the pipe and the radiator.
- Fit and fully seat a new O-ring seal to the pipe. Lubricate the seal with clean transmission oil
2. Reposition and connect the union nut, upper cooler pipe to radiator.

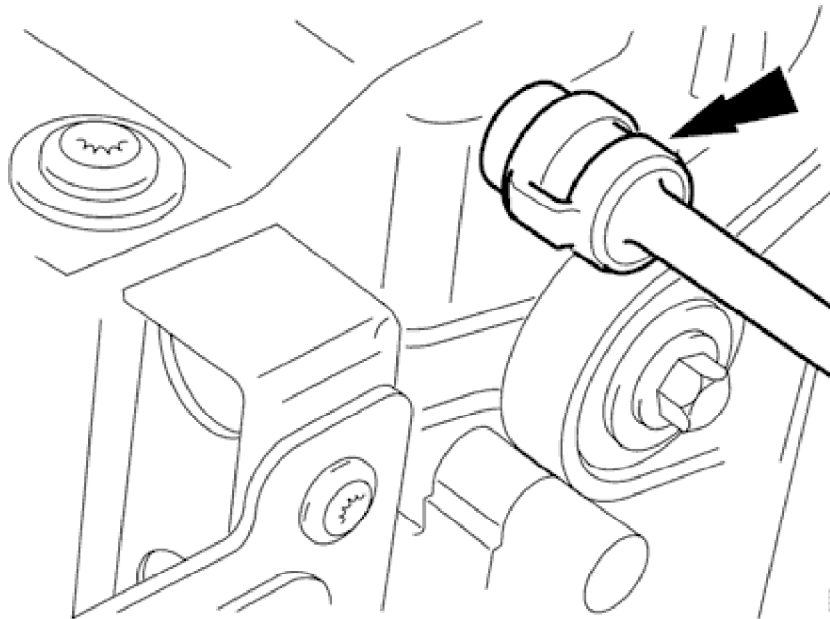


E32960

43. Connect the transmission oil cooler lower pipe.

1. Remove the blanking plugs from the pipe and the radiator.
- Fit and fully seat a new O-ring seal to the pipe. Lubricate the seal with clean transmission oil
2. Reposition and connect the union nut, lower cooler pipe to radiator.

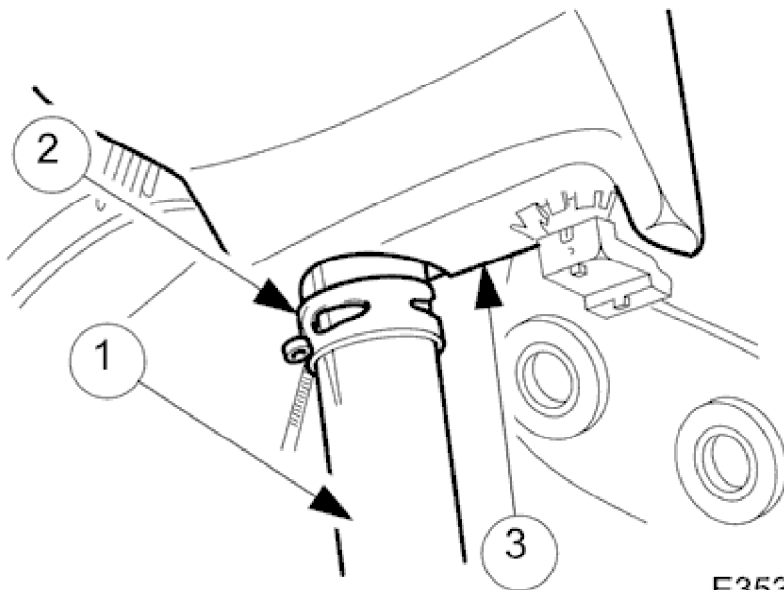
44. Fit the twin fan and motor assembly. Refer to Operation 26.25.12.



E32945

45. Connect the radiator breather hose.

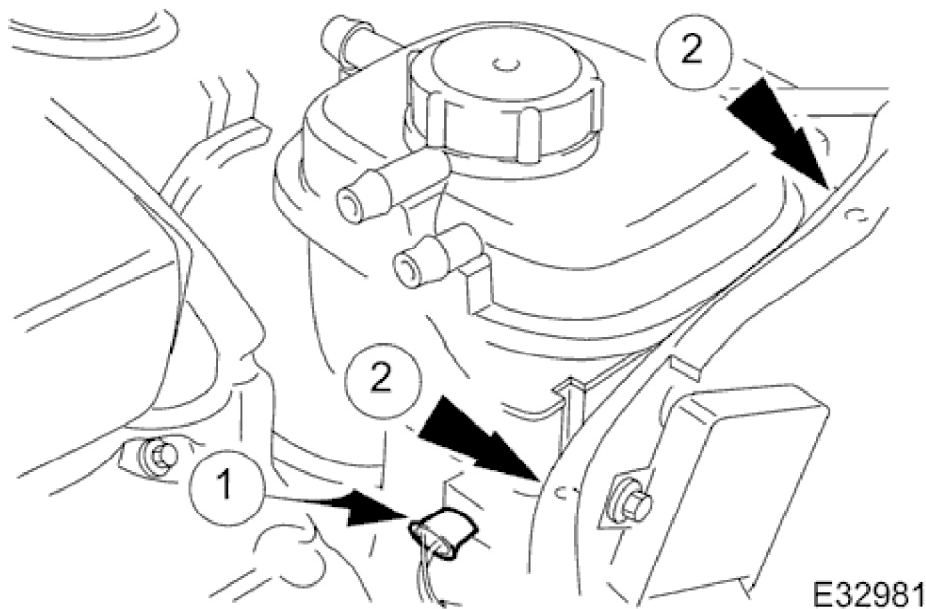
- Reposition the Quick-Fit hose (radiator to expansion tank) and connect the hose to the radiator.



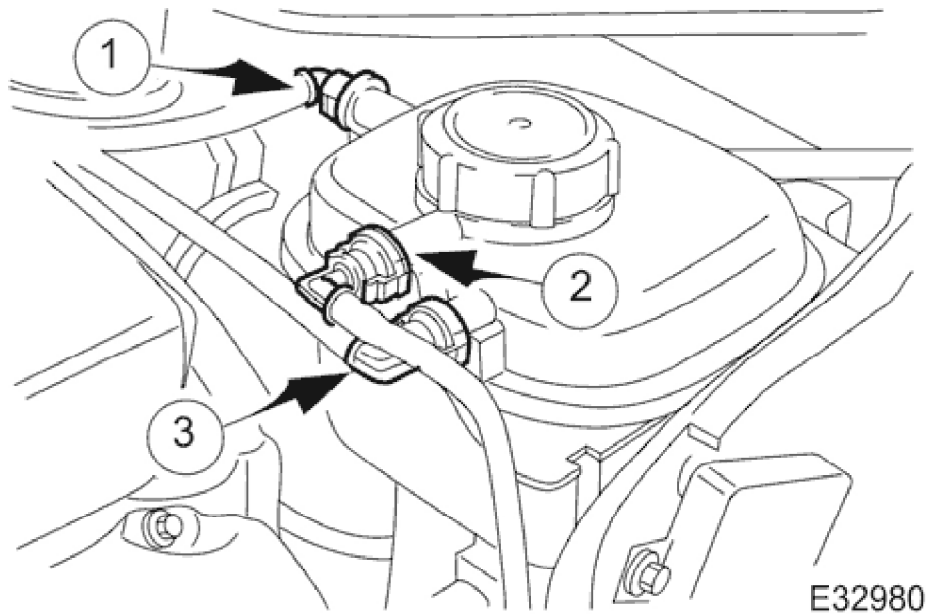
E35324

46. Fit the expansion tank to the vehicle.

1. Remove the pipe clamp if still in place and connect the hose to the expansion tank.
2. Reposition and secure the pipe clip.
3. Position the expansion tank to the left side enclosure panel.

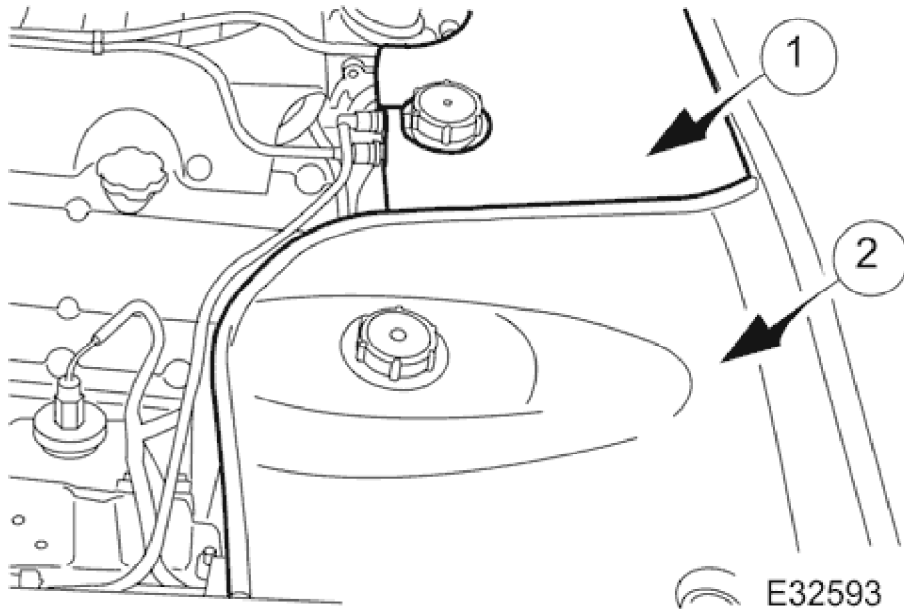


47. Fit the expansion tank securing nuts.
1. Connect the coolant level sensor connector.
  2. Fit the nuts which secure the tank.

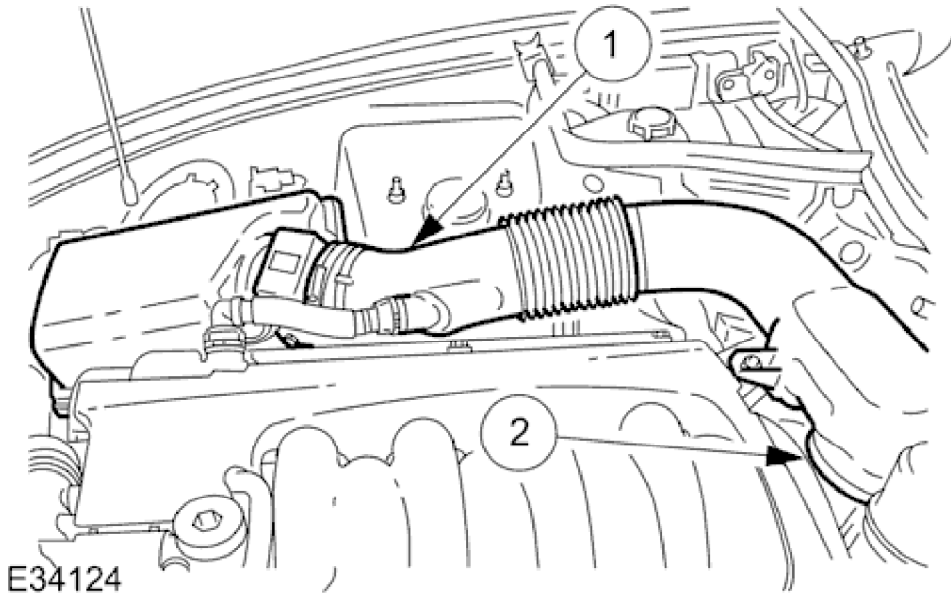


48. Connect the hoses (Quick Fit connections) to the expansion tank.
- Remove all blanking plugs from the pipes and the expansion tank.
    1. Connect the hose, expansion tank to thermostat housing (coolant outlet pipe on supercharged engines).
    2. Connect the hose, expansion tank to recovery tank.
    3. Connect the hose, expansion tank to radiator.

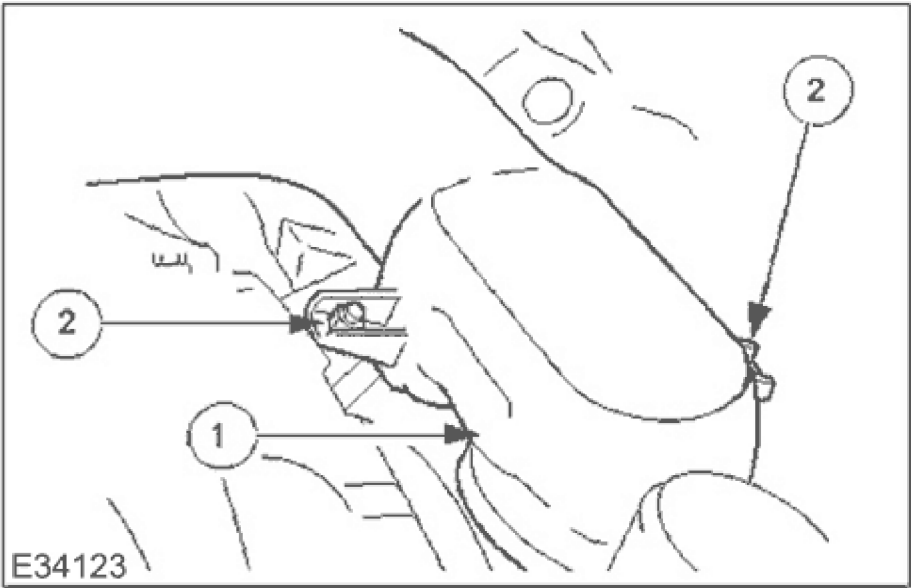
# 1998 XJ RANGE - Engine - 303-01



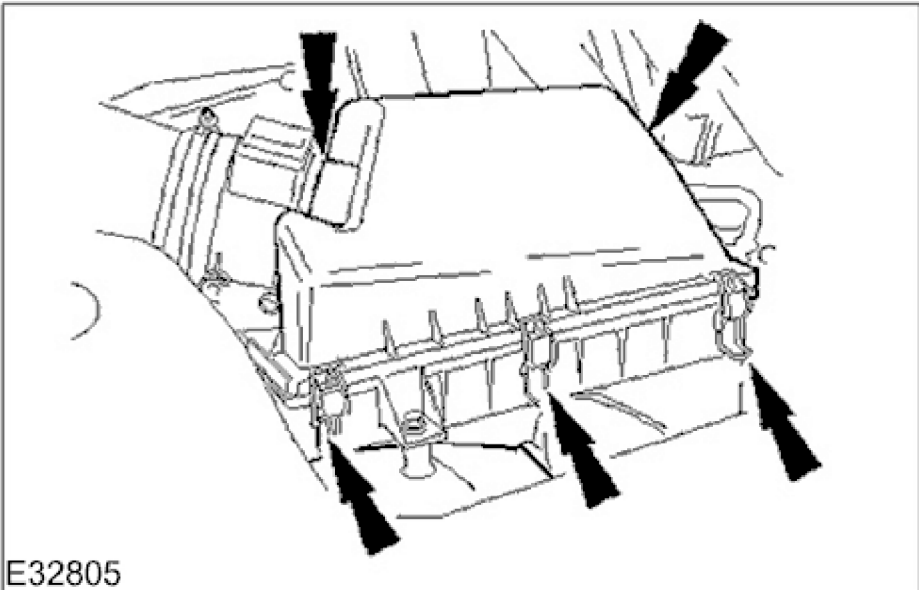
49. Fit the trim panels to the engine compartment.
1. Locate the centre trim panel.
  2. Fit the left hand side enclosure panel.



50. Fit the intake tube / air flow meter / air cleaner cover assembly.
1. Position the intake tube / air flow meter / air cleaner cover assembly.
  2. Fit a new rubber seal and position the air intake tube to the throttle body.

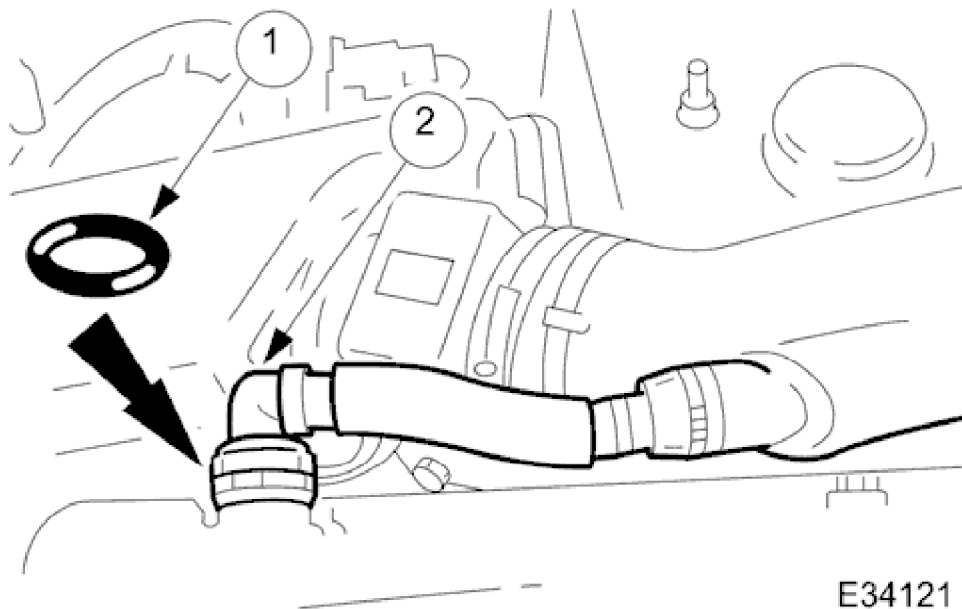


- 51. Connect the intake tube to the throttle body.
  - 1. Fit a new seal and connect the intake tube to the throttle body.
  - 2. Fit the two bolts which secure the intake tube to the throttle body.



- 52. Connect the air cleaner cover.
  - Fit the five clips which secure the air cleaner cover.





53. Reconnect the breather pipe to the A-Bank camshaft cover.

1. Fit a new O-ring seal to the breather pipe.
2. Connect the breather pipe to the stub pipe.

54. Connect the air flow meter connector.

55. Fit a new Ty-strap to secure the vacuum pipe to the induction elbow.

56. Refill the cooling system. Refer to Operation 26.10.01.

57. **NOTE:**

When the engine is started from cold and run for a short period only, before being switched off, a quantity of oil will be 'hung up' within the engine because it is not up to operating temperature.

Should the oil level subsequently be topped-up, the level could become too high, causing oil burning.

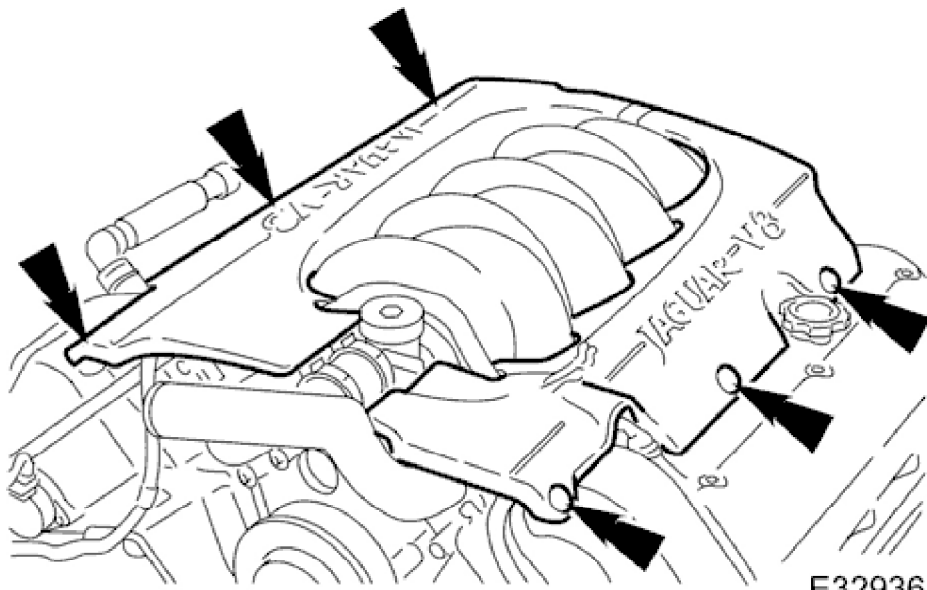
Typically, 0.875L is hung up.

Refill the engine with the correct specification engine oil.

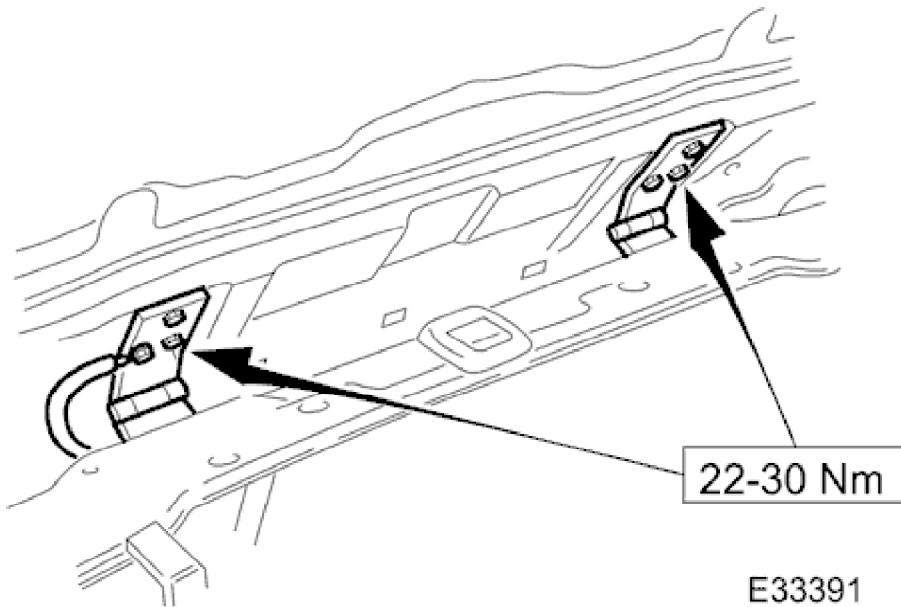
58. Refill the automatic transmission. Refer to Section <<307-01A>>, Operation 44.24. 02.

59. Refill and bleed the power steering system. Refer to Section <<211-02>> General Procedures.

60. Repressurise the air conditioning system. Refer to Operation <<82.30.30>> and note all Warnings and Cautions.



61. Fit the engine covers.



62. With assistance, reposition the engine compartment cover (bonnet) and fit the six bolts; reconnect the ground lead to the original location on the left hand hinge.

- Reconnect the gas struts.
- Remove the masking tape from the front edge.

63. Remove the paintwork protection sheets and close the engine compartment cover.

64. Reconnect the battery ground cable and fit the battery cover.

- Reset the clock and the radio information.