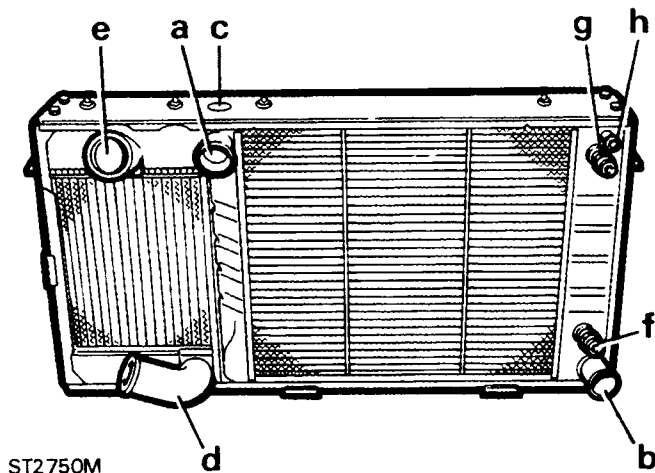


## REMOVE RADIATOR ASSEMBLY - Diesel vehicles

**NOTE:** the radiator assembly comprises the engine coolant radiator, turbo-charger intercooler and the engine oil cooler.

- a. Engine coolant inlet to radiator.
- b. Engine coolant outlet to waterpump.
- c. Engine coolant filler plug.
- d. High temperature air inlet from turbo-charger.
- e. Cooled air outlet to inlet manifold.
- f. High temperature engine oil inlet to radiator.
- g. Cooled engine oil from radiator to engine.
- h. Bleed outlet to expansion tank.



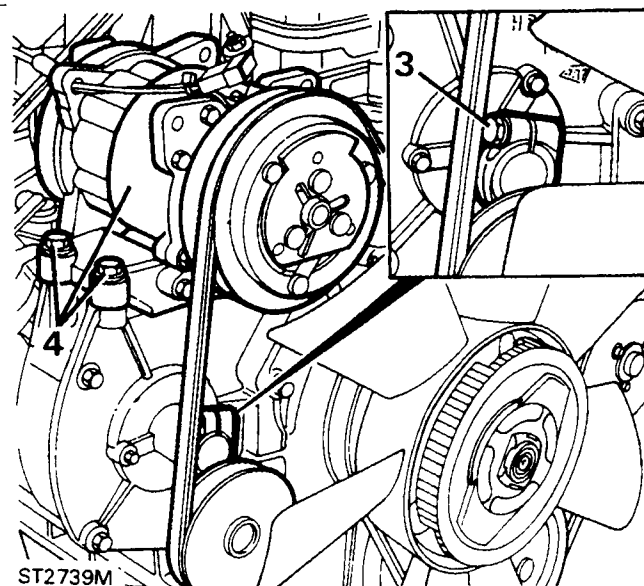
1. Disconnect the battery.

**WARNING:** Do not carry-out the next instruction until the coolant is cool to avoid personal injury from scalding water.

2. Remove the expansion tank cap and radiator filler plug. Also remove the bottom hose from the radiator and allow the coolant to drain into a suitable container.

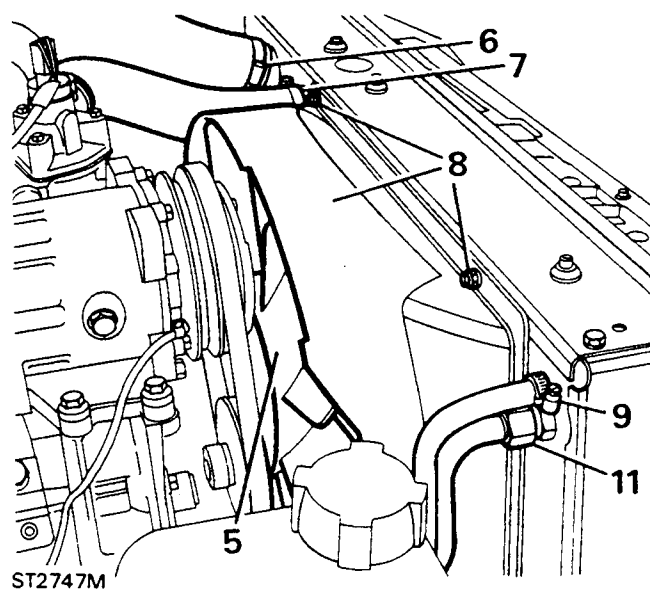
## Air conditioning vehicles.

3. Release the compressor drive belt tension and slip the belt from the pulleys.
4. Remove the four bolts securing the compressor mounting bracket to the engine and move the compressor aside.

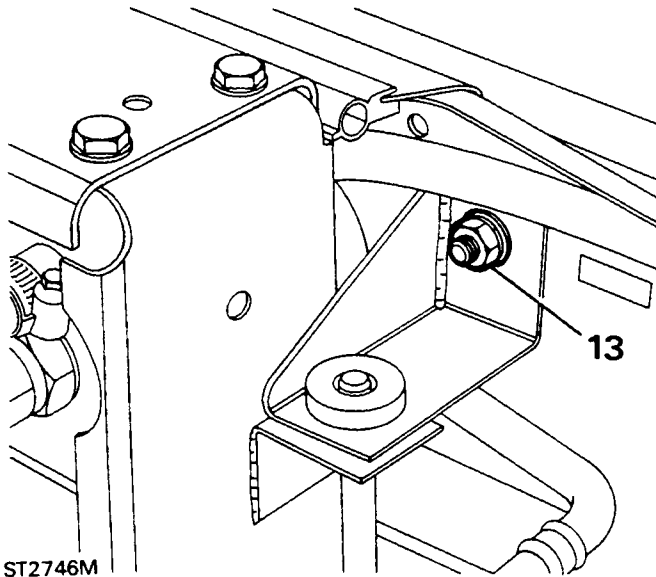


## All vehicles.

5. Remove the viscous coupling and fan assembly from the waterpump noting that the coupling has a left-hand thread.
6. Remove the intercooler to manifold hose.
7. Remove the radiator top hose.
8. Release the two nuts securing the fan cowl to the radiator and lift-out the cowl.
9. Disconnect the expansion tank bleed hose from the radiator.
10. Disconnect, from the intercooler, the hose to the turbo-charger.
11. Place a container beneath the oil pipe connections to the oil cooler to catch oil that may escape when the pipes are disconnected. Cover, not plug, the ends of the pipes to prevent entry of dirt.

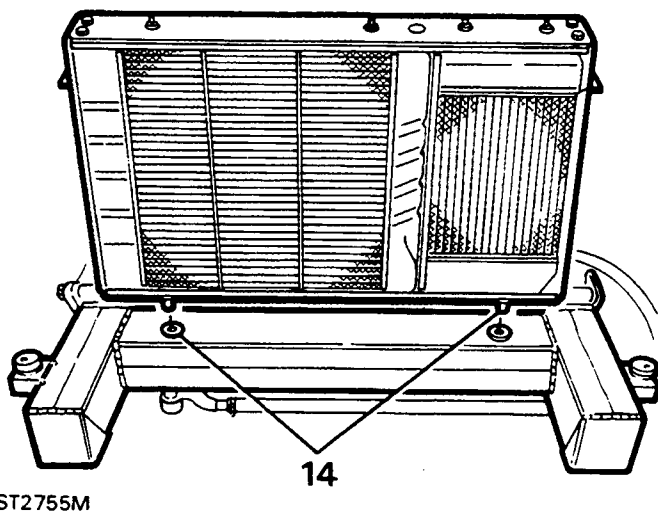


12. The radiator assembly is secured to the body with two bolts and nuts. Viewing the radiator from the front, remove the right hand nut and bolt and move the bracket, with the PAS reservoir attached, aside.
13. Remove the left hand nut and bolt and lift the radiator assembly from the vehicle.

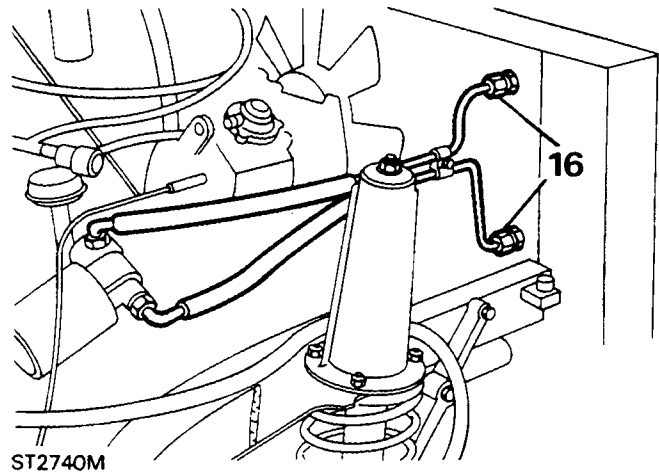


### Fitting radiator assembly.

14. Lower the radiator assembly into position in the vehicle. Ensure that the two pegs at the base of the radiator locate through the two corresponding grommets in holes in the chassis cross member.



15. Secure the radiator brackets to the body brackets and fit the PAS reservoir to the right hand bracket.
16. Fit the oil cooler pipes to the radiator connections.



17. Connect the expansion tank hose to the radiator.
18. Also connect the following hoses:

Turbo-charger to intercooler bottom hose.  
Engine coolant bottom hose.

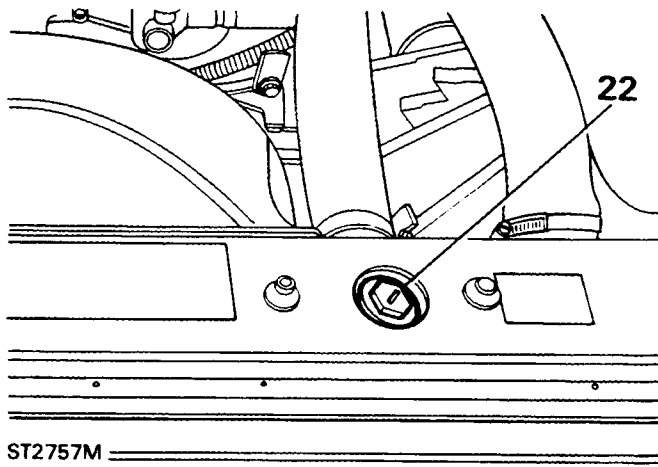
19. Fit the fan cowl and secure with the two screws to the top of the radiator. Now fit the following hoses.

Intercooler to inlet manifold hose.  
Engine coolant top hose.

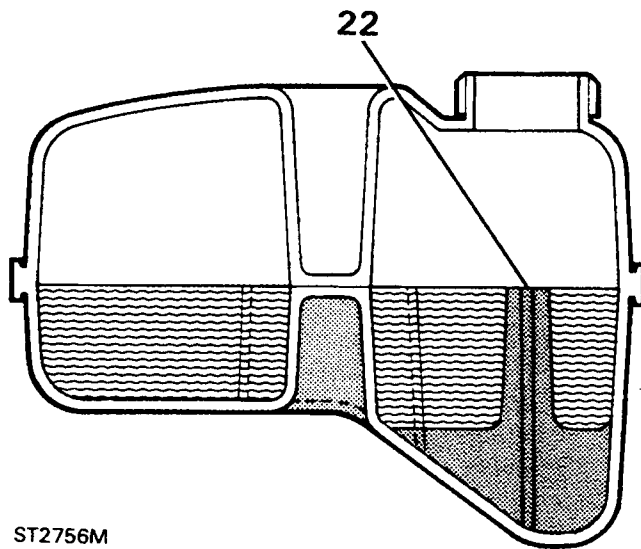
20. Fit the fan and viscous coupling noting that it has a left-hand thread.
21. Secure the compressor and bracket to the engine with the four bolts. Fit and tension the drive belt as described in the maintenance section 10.

### Filling Cooling System

22. Remove the radiator filler plug and fill the system with the required concentration of water and anti-freeze. Fit and tighten the plug. Check that the expansion tank level is to the top of the level indicator. Connect the battery, start the engine and run for about five to ten minutes until the thermostat has opened. Also check for oil and coolant leaks while the engine is running. Stop the engine and allow to cool and the oil to drain back into the sump.



ST2757M



ST2756M

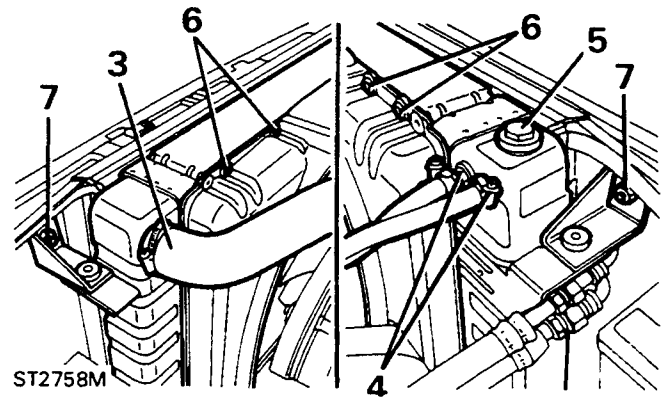
23. When cold, disconnect the battery and check the oil level in the sump. Top-up, if necessary, with oil of the correct make and grade from a sealed container to the high mark on the dipstick.
24. Remove the radiator filler plug and top-up if required and refit and tighten the plug to 5 to 6 Nm (3.7 to 4.4 lb ft). Also check the coolant level again in the expansion tank.
25. If air conditioning is fitted, check and if required adjust the drive belt tension. Reconnect the battery.

**REMOVE RADIATOR ASSEMBLY- petrol vehicles.**

1. Disconnect the battery.

**WARNING: Do not carry-out the next instruction until the coolant is cool to avoid personal injury from scalding water.**

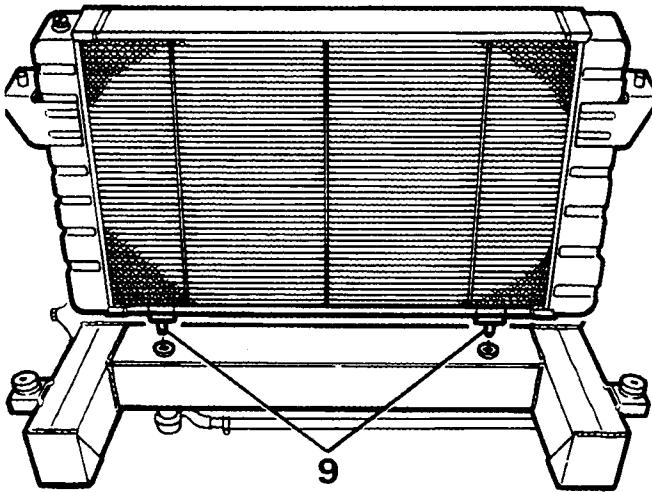
2. Remove the radiator bottom hose from the radiator and allow the coolant to drain into a suitable container.
3. Disconnect the top hose from the radiator.
4. Disconnect, from the radiator, the expansion tank and carburettor pent-house hoses.
5. Unscrew, anti-clockwise, the viscous coupling and fan assembly from the waterpump and remove from vehicle.
6. Remove the four screws securing the fan cowl to the radiator and withdraw the cowl.
7. Remove the two bolts, plain and spring washers, from both sides of the radiator to enable the securing brackets to be removed.
8. Lift-out the radiator.



ST2758M

**Fitting radiator assembly.**

9. Lower the radiator into position with the filler plug towards the left (viewing vehicle from front). Ensure that the two pegs at the base of the radiator locate through the two grommets in the chassis crossmember.
10. Fit the two securing brackets to the top of the radiator locating the two pegs through the grommets. secure with the two bolts, nuts, spring and plain washers to the front panel.
11. Connect the bottom hose to the radiator.

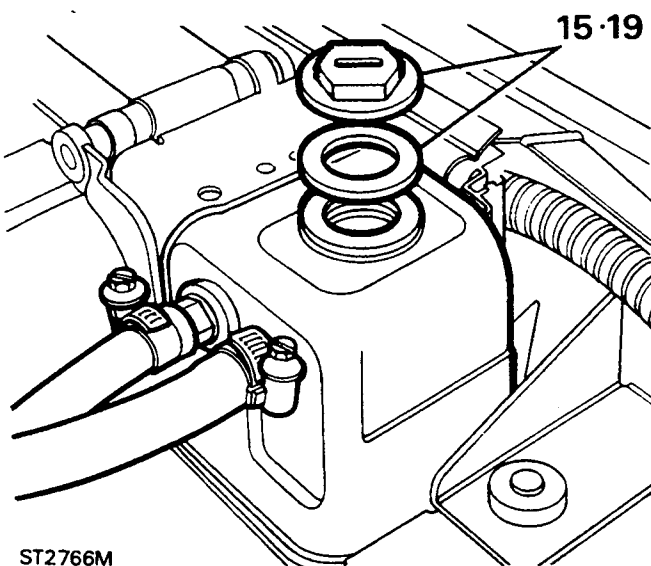


ST2762M

12. Fit the fan cowl and secure with the four screws.
13. Viewing vehicle from the front, fit the expansion tank hose to the left-hand connection and the pent house hose to the right. Connect the top hose to the radiator.
14. Fit the fan and viscous coupling to the waterpump noting that it has a left-hand thread.

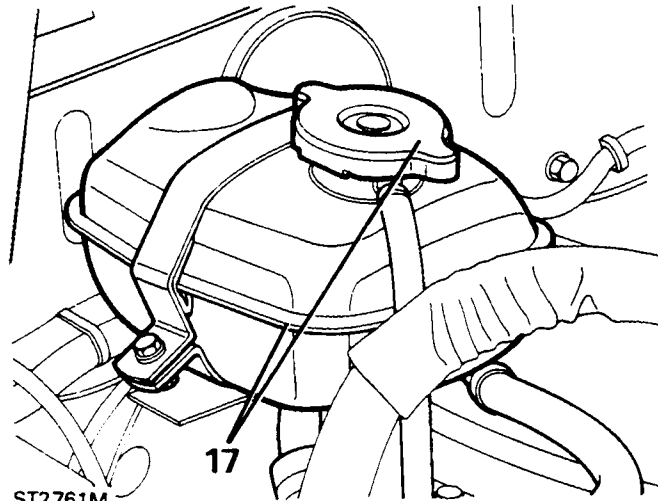
#### Filling cooling system.

15. Remove the radiator filler plug and expansion tank filler cap.
16. Fill the radiator with the required concentration of water and anti-freeze to just below the filler neck and fit and tighten the plug and washer.



ST2766M

17. Check that the coolant level in the expansion tank is above the level of the seam but no higher than 25mm (1.00 inch) below the filler neck. Fit the expansion cap and turn it clockwise until fully seated.



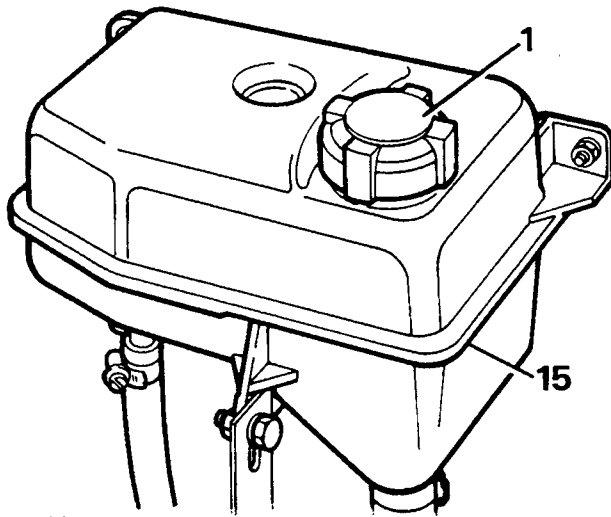
ST2761M

18. Connect the battery, start the engine and run for about five to ten minutes until the thermostat has opened. Stop the engine and allow to cool and examine the system for leaks. When safe to do so, turn the expansion cap one quarter of a turn to allow all pressure to escape before removing the cap. Check that the coolant level is correct and top-up if necessary.
19. Finally, remove the radiator filler plug and check that the level is just below the filler neck. top-up if required and refit the plug to 5 to 6 Nm (3.7 to 4.4 lb ft).

**COOLANT V8i Petrol engine****Drain and refill****Draining**

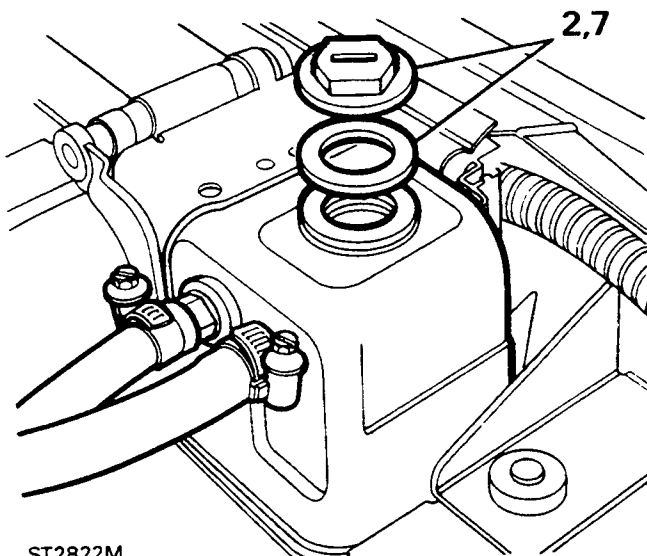
**WARNING: Do not remove the expansion tank filler cap when the engine is hot because the cooling system is pressurised and personal scalding could result.**

1. Remove the expansion tank filler cap by slowly turning it anti-clockwise, pause to allow pressure to escape, continue turning it in the same direction and lift off.



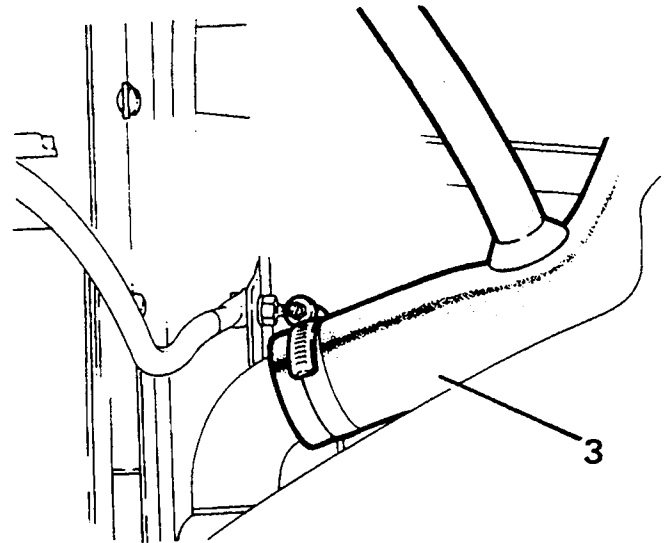
ST2823M

2. Remove the radiator filler plug and 'O' ring to assist drainage.



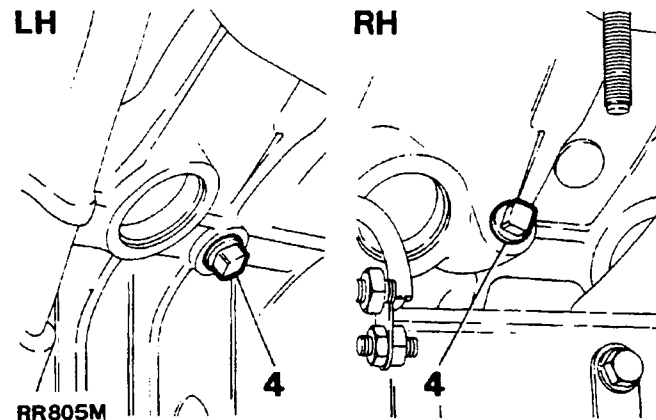
ST2822M

3. Disconnect the bottom hose at its junction with the radiator and allow the coolant to drain into a suitable container. Ensure that the container is clean if the coolant solution is to be re-used. Reconnect the bottom hose after draining and re-tighten the hose clamp.



ST2824M

4. Remove the engine drain plugs, one each side of the cylinder block, beneath the exhaust manifolds. Allow the coolant to drain, refit and tighten the plugs.



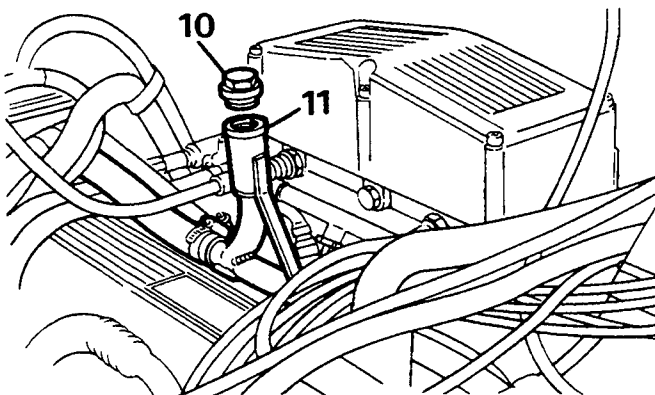
RR805M

**NOTE:** It is not possible to drain all the coolant retained in the heaters system. Flush through the system, after draining, by pouring clean water into the fill tower, (see below), with the bottom hose disconnected and engine drain plugs removed.

5. Pour the correct solution of water and anti-freeze into the expansion tank until the radiator is full.
6. Start the engine and run it until normal operating temperature is attained, topping up as necessary.
7. Refit the radiator filler plug and 'O' ring if required. Tighten to the correct torque, 5 to 6 Nm (3.7 to 4.4 lb/ft).
8. Fit the expansion tank filler cap.
9. Allow the engine to cool, check coolant level and top up the expansion tank until the level reaches the seam of the expansion tank.

**CAUTION:** The following fill procedure **MUST** be followed if the heater pipes mounted on top of the rocker cover have been removed for any reason.

10. Remove the plug from the fill tower.
11. Briskly pour the correct solution of water and anti-freeze into the fill tower until the radiator is full.



ST2821M

12. Start the engine and run it until normal operating temperature is attained, topping up as necessary.
13. Refit the radiator filler plug and fill tower plug, fitting new 'O' rings if required. Tighten to the correct torque, 5 to 6 Nm (3.7 to 4.4 lb/ft)
14. Fit the expansion tank filler cap.
15. Allow the engine to cool, check coolant level in the expansion tank and top up until the level reaches the seam of the expansion tank.

## COOLANT PUMP - Mpi

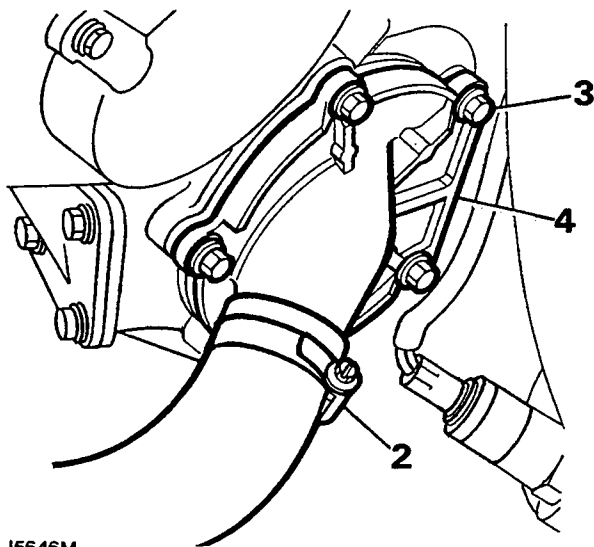
## Remove

1. Position drain tin below coolant pump hose.



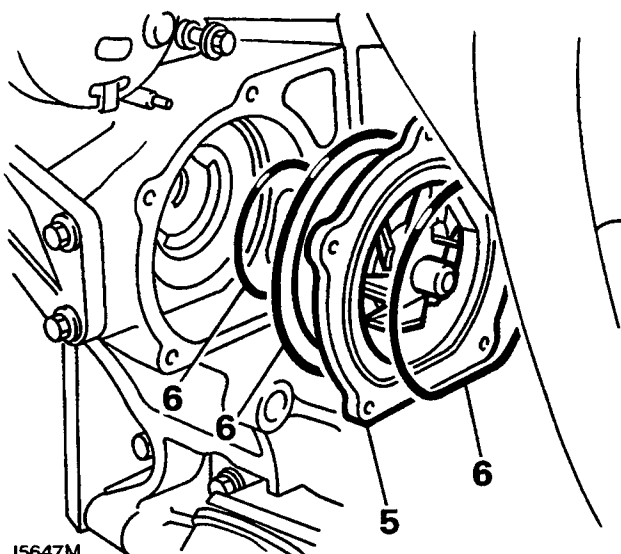
**WARNING: Do not carry out the next instruction until the coolant is cool to avoid personal injury from scalding.**

2. Release clip and disconnect hose from coolant pump housing cover.
3. Remove 5 bolts securing housing cover.
4. Remove housing cover.



J5646M

5. Remove coolant pump from housing.
6. Discard 3 sealing rings.



J5647M

## Refit

1. Clean coolant pump housing and mating faces.
2. Lubricate new sealing rings with Loctite 405 and fit to coolant pump.
3. Fit coolant pump to housing.
4. Position housing cover, fit 5 bolts and tighten to the correct torque.
5. Connect hose to housing cover and tighten clip.
6. Refill cooling system.

## RADIATOR Mpi

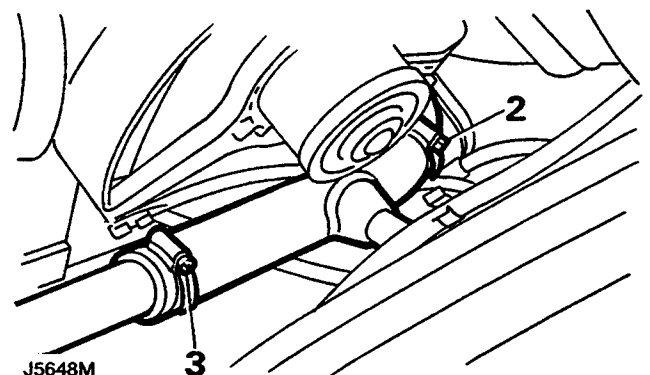
## Remove

1. Disconnect the battery negative lead.



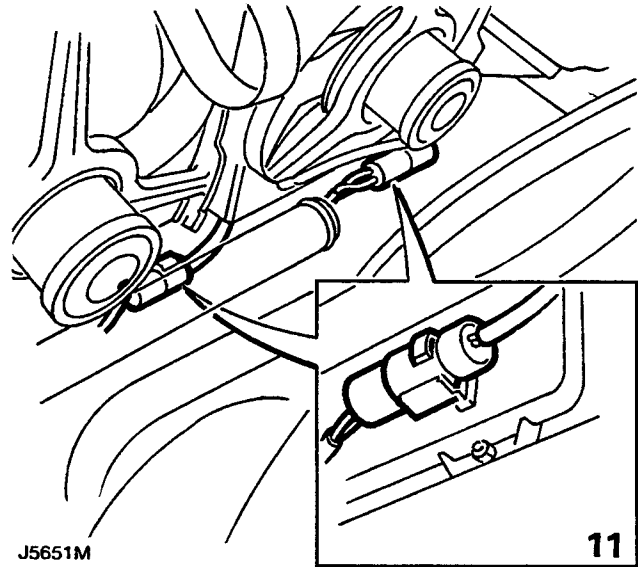
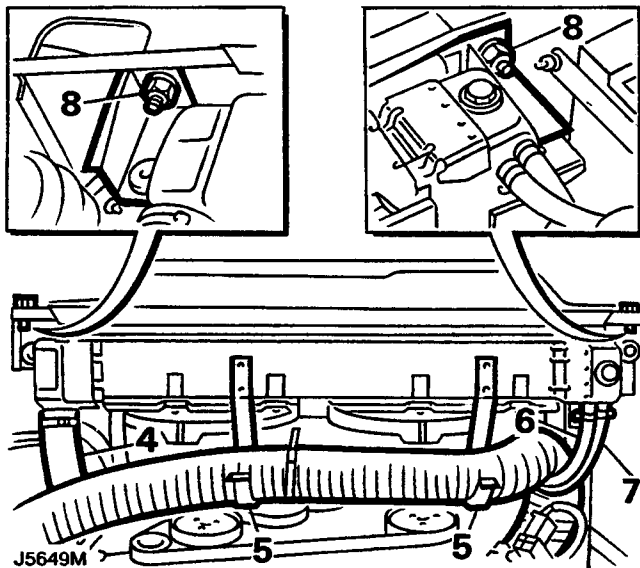
**WARNING: Do not carry out the next instruction until the coolant is cool to avoid personal injury from scalding.**

2. Slacken clip and release bottom hose from radiator, allow coolant to drain into a suitable container
3. Slacken clip and release bottom hose from radiator rail.

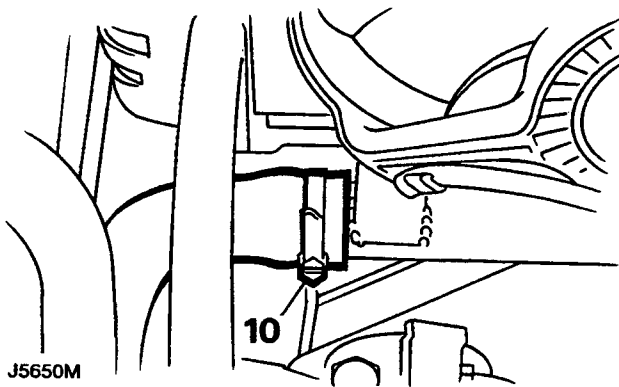


J5648M

4. Slacken clip and release top hose from radiator.
5. Release air cleaner to throttle housing hose from securing brackets.
6. Slacken clip and release bypass hose from radiator.
7. Slacken clip and release top expansion hose from radiator.
8. Remove 2 bolts securing radiator side support brackets.
9. Collect L.H. support bracket and position R.H. support bracket aside.



10. Slacken clip and release heater hose from radiator rail.



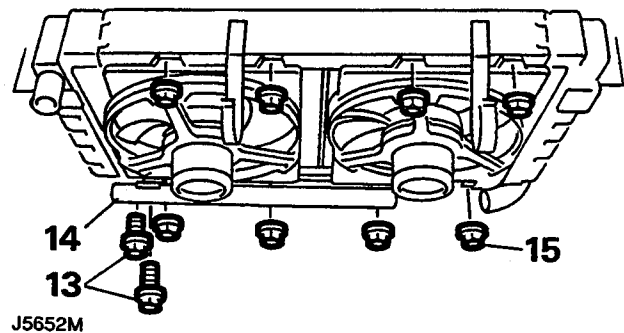
11. Disconnect 2 multiplugs from cooling fan assemblies.

12. With assistance lift out radiator assembly.

*Do not carry out further dismantling if component is removed for access only.*

13. Remove 2 bolts securing radiator rail to radiator.
14. Remove radiator rail.
15. Remove 8 nuts securing fan assemblies to radiator.

**NOTE: Vehicles without air conditioning have one cooling fan fitted.**



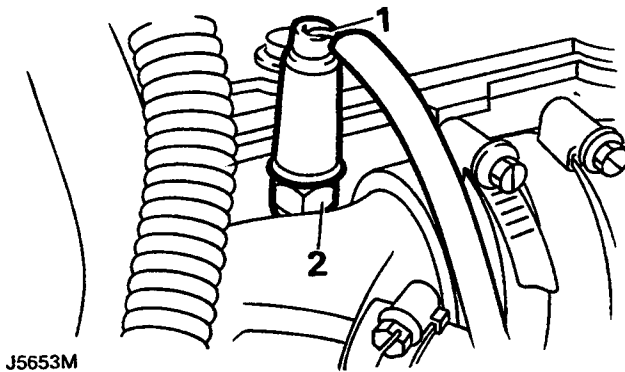


**Refit**

1. Position fan assemblies to radiator and tighten nuts to the correct torque.
2. Position radiator rail to radiator and secure with bolts.
3. Position radiator to vehicle.
4. Secure radiator to body with the side support brackets and retaining bolts.
5. Connect multiplugs to cooling fans.
6. Fit and secure 6 hoses to radiator.
7. Secure air cleaner to throttle housing to brackets.
8. Refill cooling system.
9. Connect battery earth lead.

**THERMOSTATIC SENSOR - Mpi****Remove**

1. Disconnect Lucar connector from sensor.
2. Remove sensor.



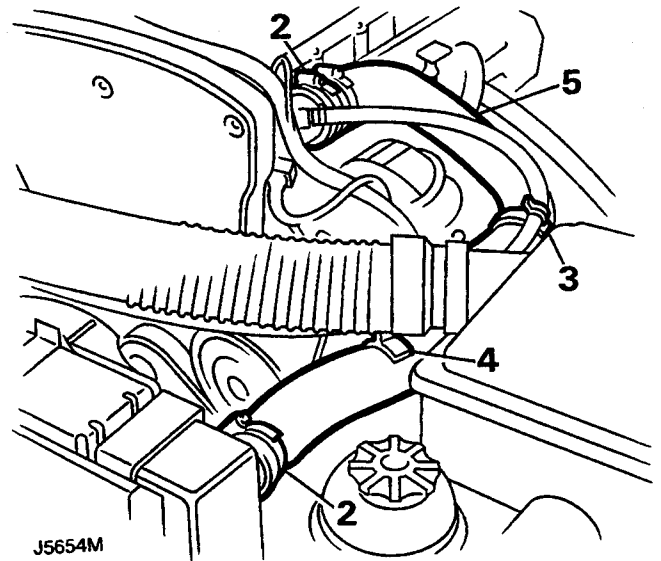
J5653M

**Refit**

1. Clean sensor.
2. Apply Loctite 405 to threads of sensor.
3. Fit sensor and tighten to the correct torque.
4. Connect Lucar to sensor.
5. Top-up cooling system.

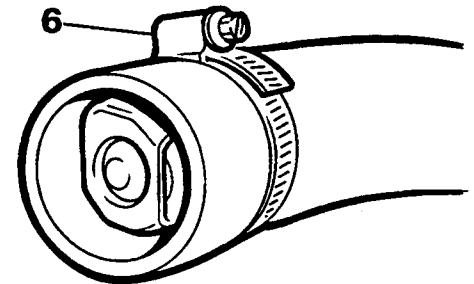
**THERMOSTAT - Mpi****Remove**

1. Position suitable container to collect coolant.
2. Slacken 2 clips and release radiator top hose.
3. Release bypass hose from securing bracket.
4. Release top hose from securing bracket.
5. Remove top hose.



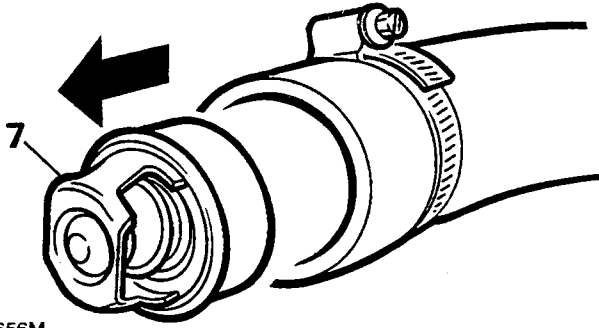
J5654M

6. Remove clip securing thermostat in hose.



J5655M

7. Lubricate hose in front of thermostat and manoeuvre thermostat from hose.



J5656M

**Refit**

1. Lubricate inside of top hose with liquid soap.
2. Manoeuvre thermostat into hose to previous position.
3. Fit and tighten clip securing thermostat to top hose.
4. Refit radiator hose.
5. Top-up cooling system.