

Document Title: <b>Engine manufacturer manuals</b>	Function Group: <b>200</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/17</b>
Profile: <b>SSL, MC80 [GB]</b>			

## Engine manufacturer manuals

There are other engine-related maintenance procedures that must be performed on the Perkins engines not covered in this Service Manual.

The Perkins Engines in the Volvo MC products will be supported through the Perkins Distribution network worldwide. The Perkins website (**[www.perkins.com](http://www.perkins.com)**) lists all of the distributors worldwide by country together with addresses, phone numbers, e-mail addresses etc.

Document Title: <b>Engine, removal</b>	Function Group: <b>210</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/17</b>
Profile: <b>SSL, MC80 [GB]</b>			

## Engine, removal

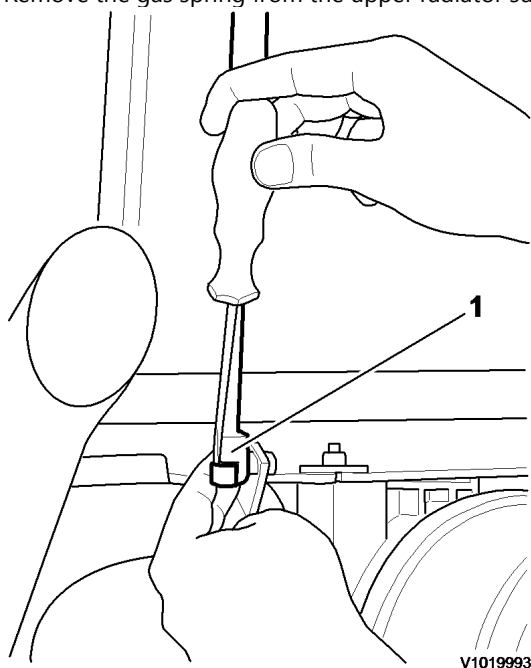
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11668023 Lifting equipment



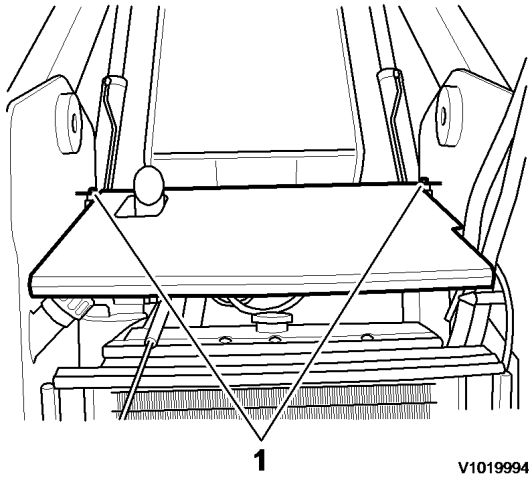
**Hot oil and hot engine coolant can cause severe burns!**

1. Put the machine in **service position 1**, see [191 Service position 1](#).
2. Raise and block the machine, see [191 Raising and blocking](#)
3. Remove the floor plate between the foot pedals and turn off the electric power with the battery disconnect switch.
4. Remove the gas spring from the upper radiator support.



**Figure 1**

1. Gas spring
5. Remove the engine cover from the crossmember.

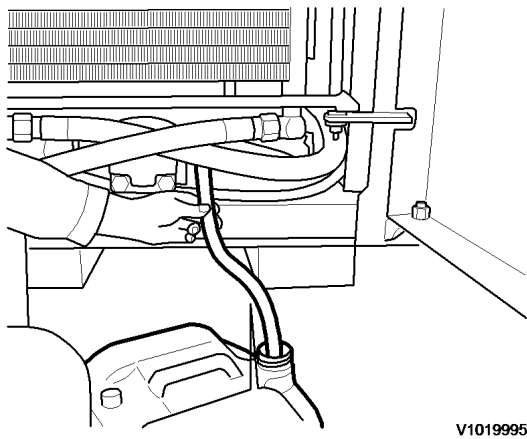


**Figure 2**

1. Engine cover mounting

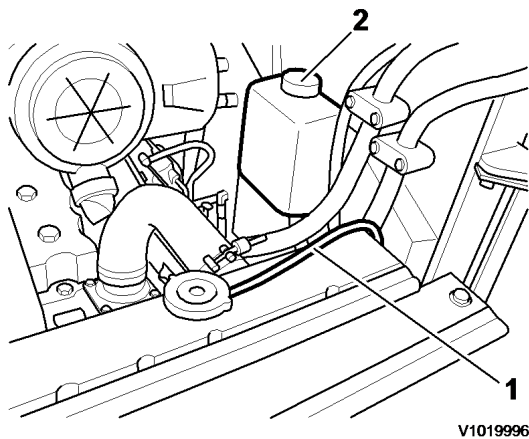
### **Radiator, removal**

6. Connect a hose to the radiator drain valve and drain the coolant to a suitable container. Remove the hose and close the drain valve.



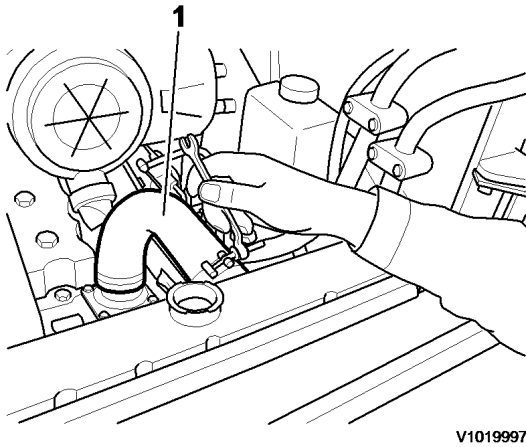
**Figure 3**

7. Disconnect the radiator overflow hose from the radiator and drain the overflow bottle into the container.



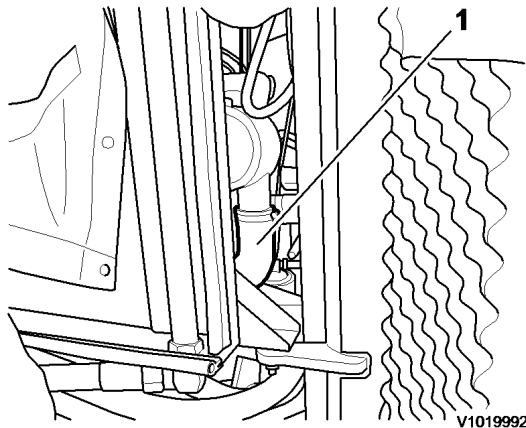
**Figure 4**

1. Radiator overflow hose
  2. Overflow bottle
8. Transfer the coolant to a container with a cover and label the container as "Used Antifreeze". Dispose of the coolant at an approved recycling facility.
9. Remove the upper radiator hose.



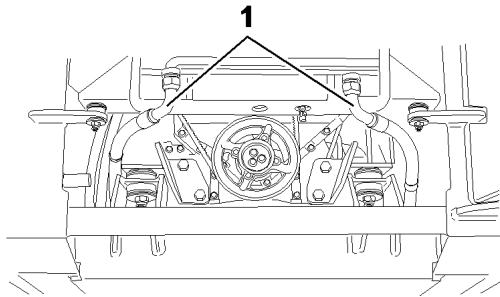
**Figure 5**

1. Upper radiator hose
10. Remove the lower radiator hose.



**Figure 6**

1. Lower radiator hose
11. **For models without 'High flow' only:** Place a drain pan under the hydraulic oil cooler lines to catch any oil that comes out of the oil cooler or lines as they are removed. Loosen and remove one line from the bottom of the cooler. Plug the hose end and cap the cooler fitting immediately. Loosen and remove the remaining cooler line. Plug the hose end and cap the line. Transfer the oil to a container with a cover and label the container with a cover and label the container as "Used oil". Dispose of the oil at an approved recycling facility



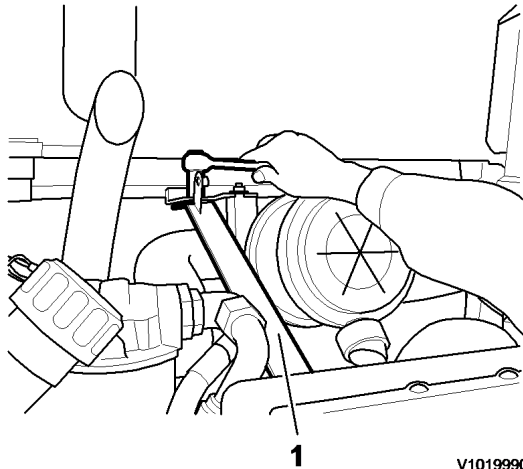
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**Figure 7**  
**Hydraulic oil cooler connections**

1. Hydraulic oil cooler connections (Models without 'High flow')

**Radiator, removing cont.**

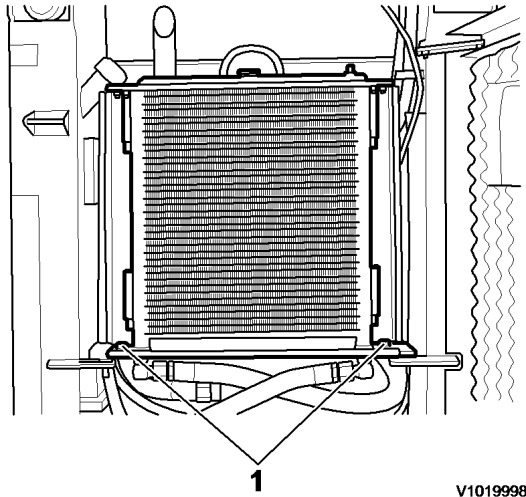
12. Remove the upper radiator support from the crossmember.



V1019990

**Figure 8**

1. Radiator support
13. Remove the fan guard.
14. Remove the locknut and the washer from the left and right side of the bottom of the radiator. Leave the capscrews in place until it's time to remove the radiator.



V1019998

**Figure 9**

1. Bottom radiator mounting

15. **For models without 'High flow':** Remove the radiator as an assembly from the machine and set aside.  
**For 'High flow' models only:** Carefully lift and fold down the radiator assembly from the rear of the frame and place the radiator on a flat surface approximately 300 mm (11.8 in) off the ground.



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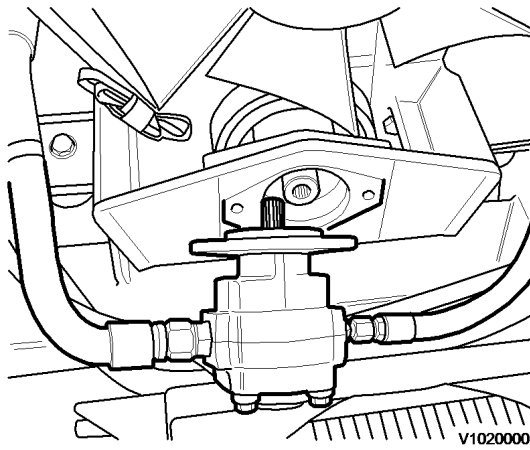
**Figure 10**

**Radiator assembly with optional 'High flow'**

**NOTE!**

Use care when handling the radiator/oil cooler assembly. To prevent damage to the radiator drain valve, do not place the radiator on its bottom surface without support blocks used on each side.

16. **For 'High flow' models only:**
  - Remove the two screws that secure the 'High flow' pump to the mounting bracket.
  - Remove the pump by sliding the pump shaft out of the coupler.

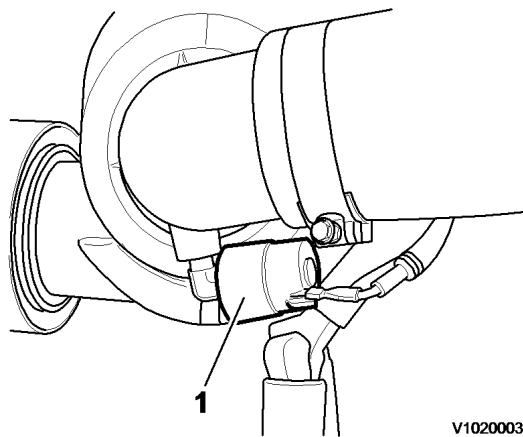


**Figure 11**

**Removing, cont.**

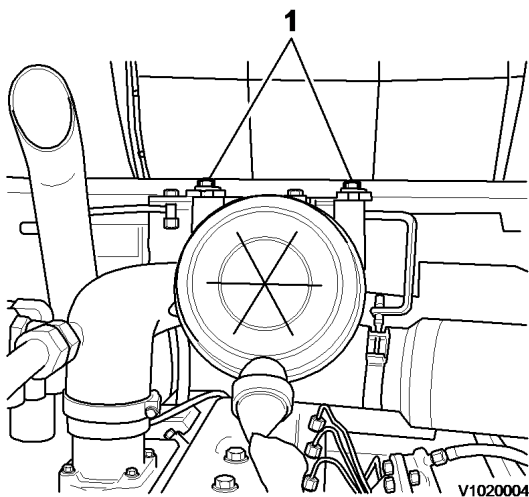
### **Air cleaner, removal**

17. Disconnect the air cleaner restriction sensor.



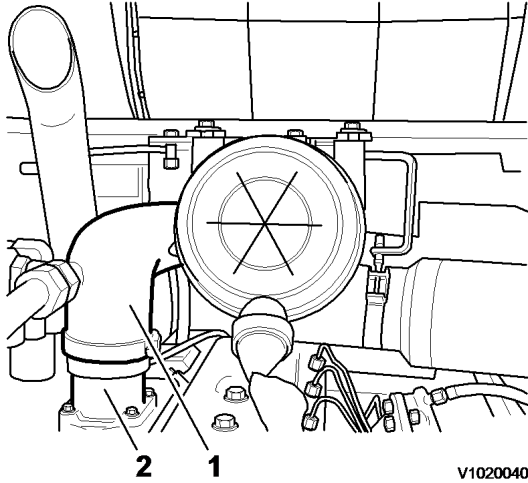
**Figure 12**

1. Air cleaner restriction sensor
18. Loosen the two capscrews holding the air cleaner assembly to the crossmember.



**Figure 13**

1. Air cleaner mounting
19. Loosen the hose clamp that secures the air intake hose to the engine induction manifold and remove the intake hose. Plug or cover the induction manifold intake port to prevent entry of dirt or debris into the engine. Remove the air cleaner assembly out of the frame.

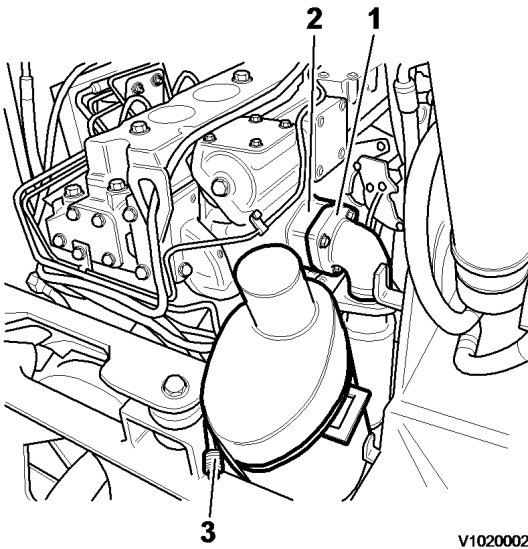


**Figure 14**

1. Air intake hose
2. Engine induction manifold

### **Muffler, removal**

20. Remove the tail pipe from the muffler.
21. Remove hex locknuts securing the exhaust elbow to the engine exhaust manifold. Loosen the muffler body clamp and lift and remove the muffler assembly with flexible exhaust pipe from the machine.



**Figure 15**

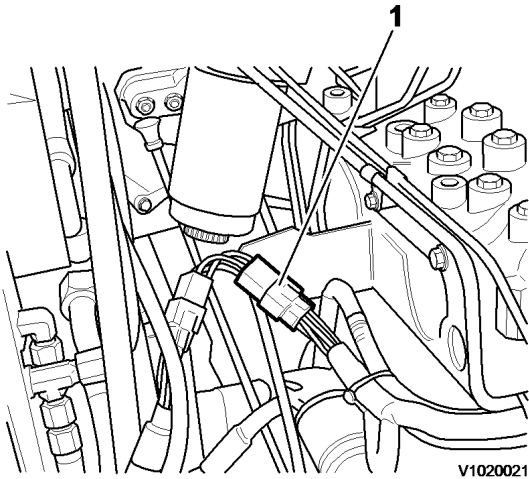
1. Exhaust elbow
2. Exhaust manifold
3. Muffler body clamp



**NOTE!**

It is not necessary to remove the engine/chassis wiring harness from the machine to remove the engine.

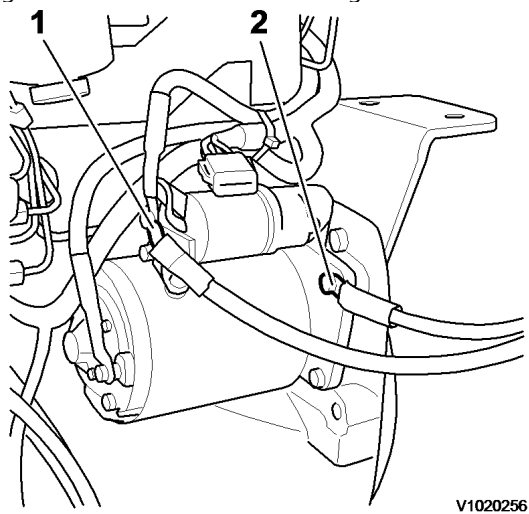
22. Separate the connector to the chassis wire harness.



**Figure 16**

1. Chassis wire harness connector

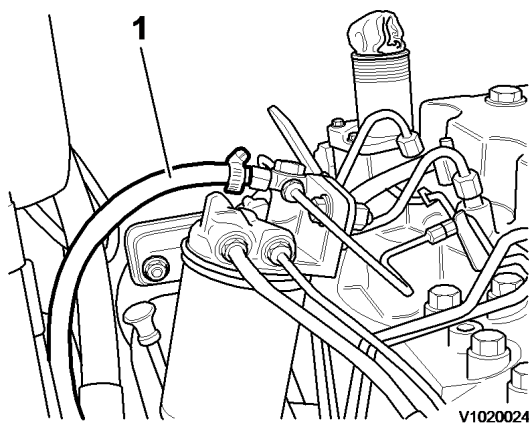
23. Tag and remove the wires from the positive (+) terminal on the starter. Tag and remove the negative (-) cable and ground wire from the starter flange.



**Figure 17**

1. Positive (+)  
2. Negative (-)

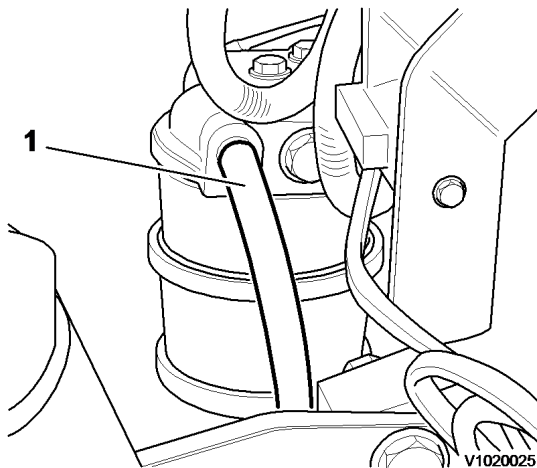
24. Disconnect and plug the fuel return line at the fuel filter on the right side of the engine.



**Figure 18**

1. Fuel return line

25. Disconnect and plug the fuel supply line at the water separator on the left side of the engine.

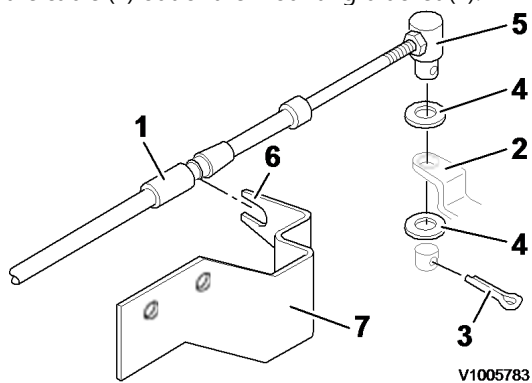


**Figure 19**

1. Fuel supply line

26. Disconnect the throttle cable (1) from the fuel injection pump lever (2) by removing the cotter pin (3) and flat washer (4) from the rod end (5) and lift the rod end (5) and flat washer (4) from the fuel injection pump lever (2).

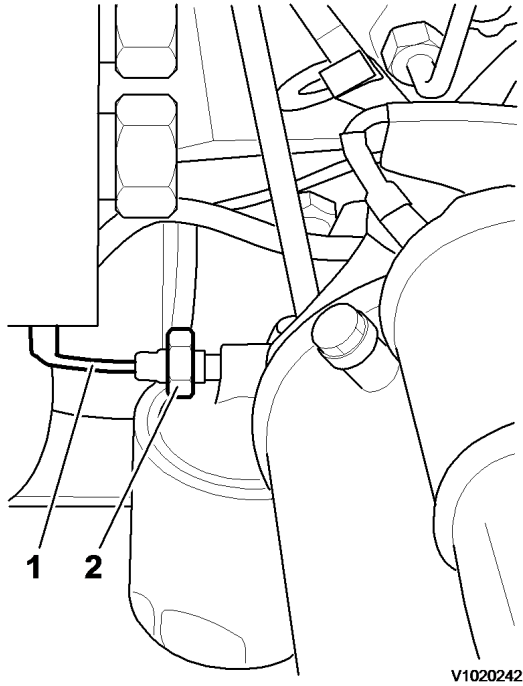
27. Spread the tangs (6) on the throttle cable mounting bracket (7) just enough to release the throttle cable (1) and pull the cable (1) out of the mounting bracket (7).



**Figure 20**

1. Throttle cable
2. Fuel injection pump lever
3. Cotter pin
4. Flat washer
5. Rod end
6. Tangs
7. Mounting bracket

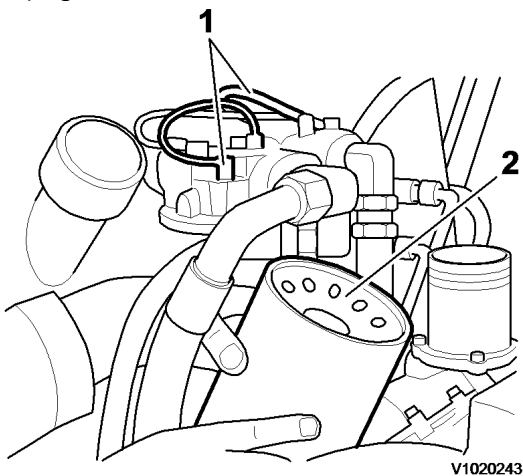
28. Unplug the electrical connector SE2201 from the oil pressure switch at the oil filter bracket. Remove the pressure switch.



**Figure 21**

1. Connector SE2201
2. Oil pressure switch

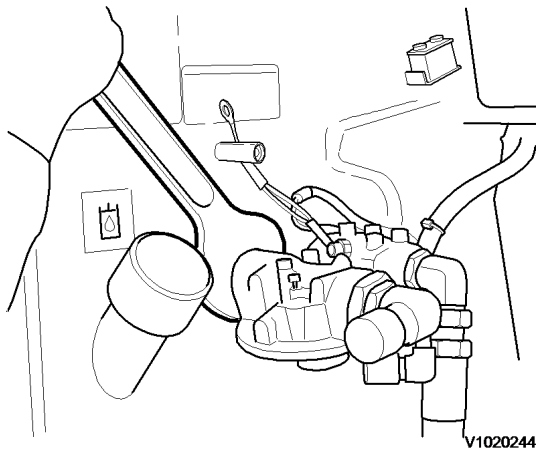
29. Unplug the electrical connectors SE9102 and SE9103 from the hydraulic oil filter brackets and remove the oil filters.



**Figure 22**

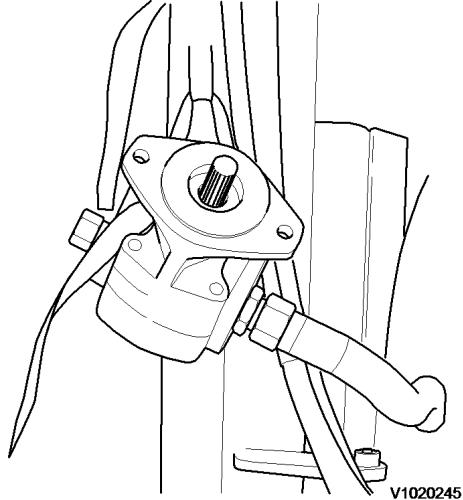
1. Connectors SE9102, SE9103
2. Hydraulic oil filter

30. Disconnect and plug the hoses from the hydraulic oil filter brackets.
31. Remove the hydraulic oil filter brackets.



**Figure 23**

32. **For 'High flow' models only:**  
Disconnect and plug the hose on the pressure side of the hydraulic pump and strap the pump to the side.



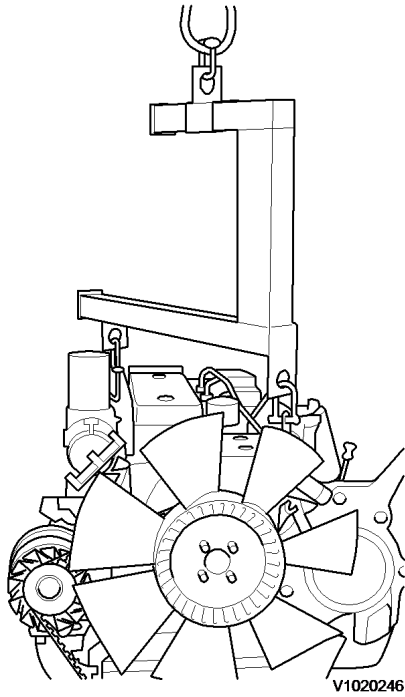
**Figure 24**

#### **Removing, cont.**

##### **NOTE!**

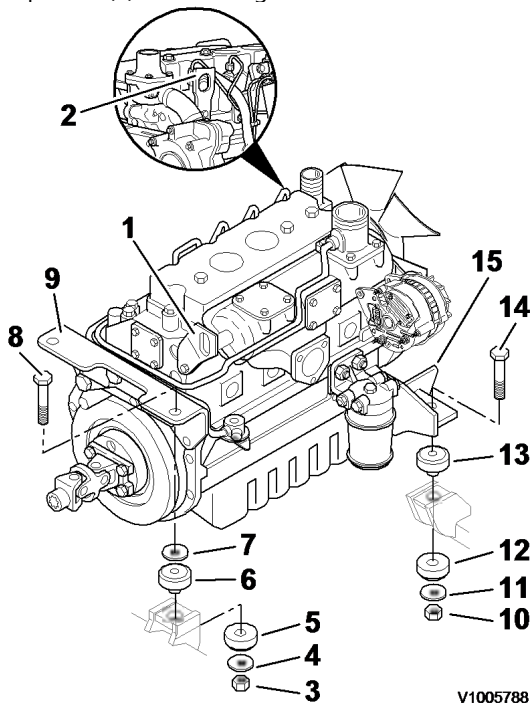
The engine must be lifted from the machine using an overhead or frame type hoist and lift sling or frame, rated at a minimum capacity of **500 kg (1100 lb)**. The lifting equipment which is used must be connected to the front and rear engine lift eyes. Before lifting the engine, ensure that the lift eye mounting capscrews are torqued to **44 Nm (33 lbf ft)**. Inspect the lift eyes for damage. If any damage is noted, do not lift the engine until the eye(s) are replaced.

33. Connect the lifting equipment 11668023 to the front (1) and rear (2) lift eyes and remove all slack in the lift equipment to prevent the engine from unintended movement during removal of the engine mounting hardware.



**Figure 25**

34. Remove hex elastic locknut (3), rebound washer (4), bottom isolator (5), top isolator (6), flat washer (7) and capscrew (8) from the right and left side of the front engine mount (9).



**Figure 26**  
**Engine mounting**

1. Front lift eye
2. Rear lift eye
3. Hex elastic locknut
4. Rebound washer
5. Bottom isolator
6. Top isolator
7. Rebound washer

8. Capscrew
9. Front engine mount
10. Hex elastic locknut
11. Rebound washer
12. Bottom isolator
13. Top isolator
14. Capscrew
15. Rear engine mounts

35. Remove hex elastic locknut (10), rebound washer (11), bottom isolator (12), top isolator (13) and capscrew (14) from the right and left rear engine mount.

36. Lift and move the engine slightly toward the rear of the machine until the transmission universal drive joint drops free of the splined transmission drive shaft.

**NOTE!**

Weight approximately: **425 kg (940 lb)**.

37. Lift the engine until the oil pan clears from the lower crossmember at the rear.

38. Move the engine further to the rear of the machine and finally lift the engine from the machine.

39. Place the engine on engine stands or similar, strong and stable enough to support the weight of the engine.

**NOTE!**

If this engine is to be replaced, it may be necessary to remove all the hardware that will be used on the replacement engine. These components may not be included with the replacement engine.



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