

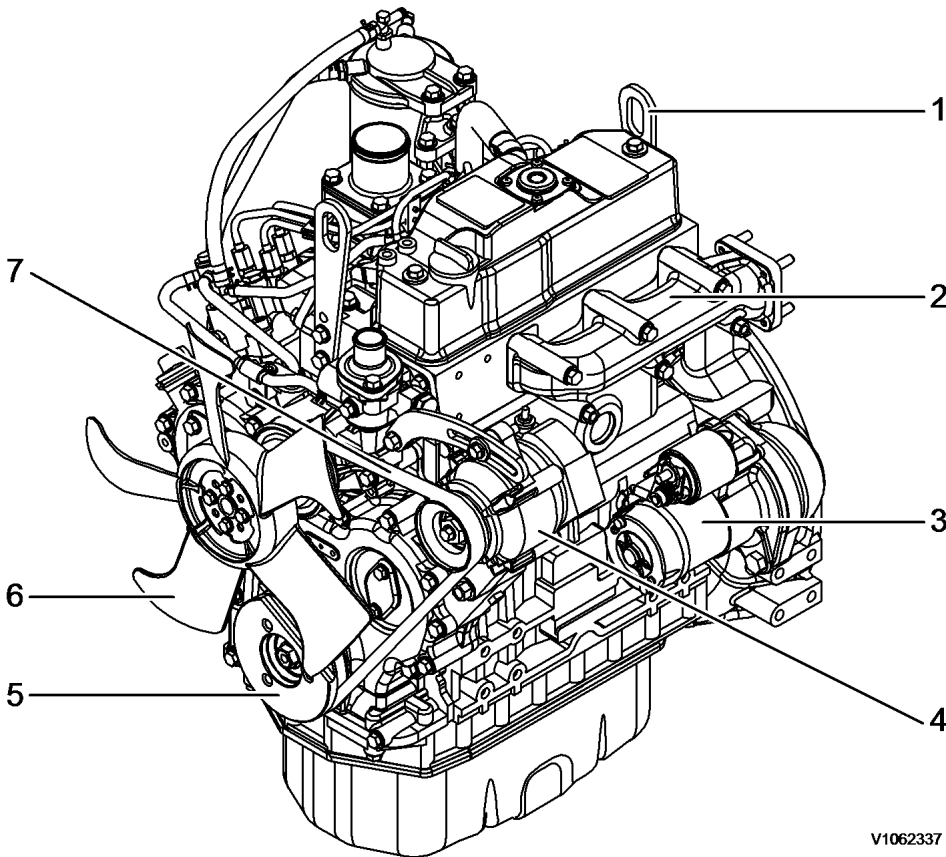
Document Title: Engine, description	Function Group: 200	Information Type: Service Information	Date: 2014/3/26
Profile: CEX, EC27C [GB]			

Engine, description

The engine is a vertical, water-cooled, in-line, three-cylinder, four-stroke diesel with direct injection. It is a low emission engine that complies with American EPA Guideline Stage interim Tier IV and European Directive 97/68/EC Class IIIA with automatic idle.

The engine serial number is stamped on the name plate, on the top of the valve cover. The engine model designation and serial number must be indicated when ordering spare parts.

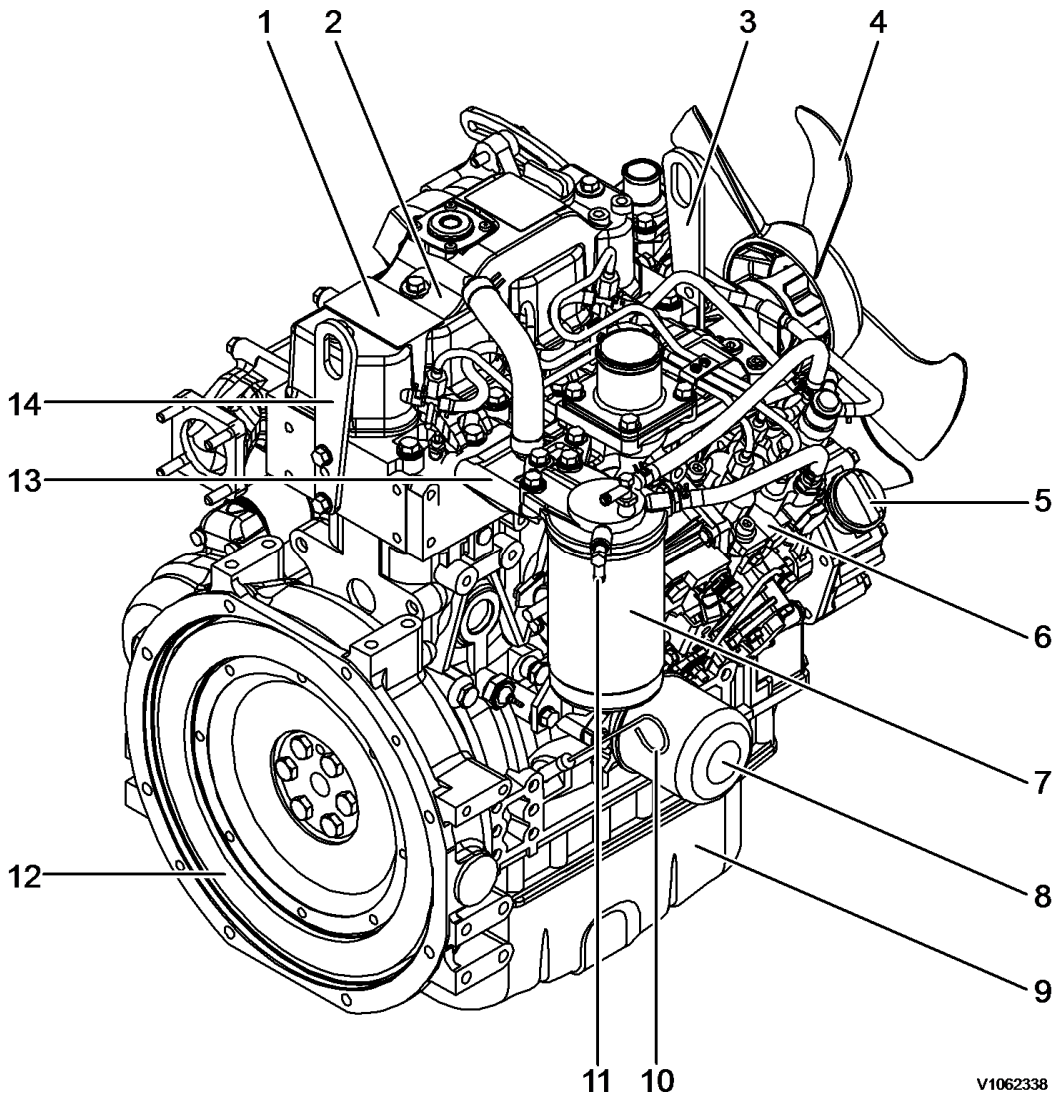
The direction of rotation viewed from the flywheel is anticlockwise. Firing order: 1-3-2 (cylinder no. 1 on flywheel side).



V1062337

Figure 1
Engine, front view

1	Lifting eye	4	Alternator	7	V-belt
2	Exhaust manifold	5	Crankshaft V-pulley		
3	Starter motor	6	Fan rotor		



V1062338

Figure 2
Engine, rear view

1	Engine name plate	6	Injection pump	11	Fuel oil inlet
2	Rocker arm cover	7	Fuel filter	12	Flywheel
3	Lifting eye	8	Oil filter	13	Intake manifold
4	Fan	9	Oil pan	14	Lifting eye
5	Oil filler port	10	Dipstick gauge		

Document Title: Engine, removing	Function Group: 210	Information Type: Service Information	Date: 2014/3/26
Profile: CEX, EC27C [GB]			

Engine, removing

Op nbr 210-070

Hoist or crane

Lifting device

Catch basin



The work involves handling heavy components - failure to stay alert may result in severe crushing injuries.

1. Place the machine in the service position 1. See [091 Service position 1](#).
2. Battery disconnect switch off.

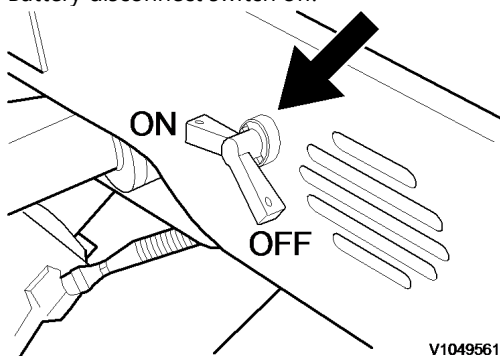


Figure 1
Battery disconnection switch

3. Remove the bonnet.

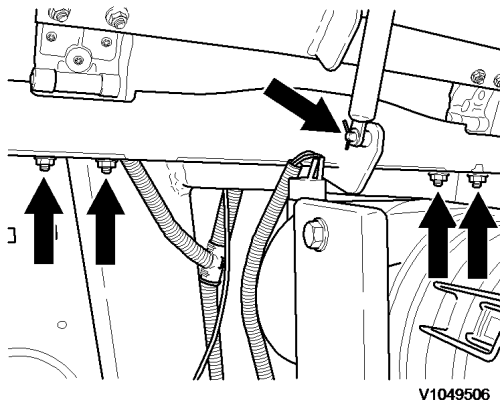
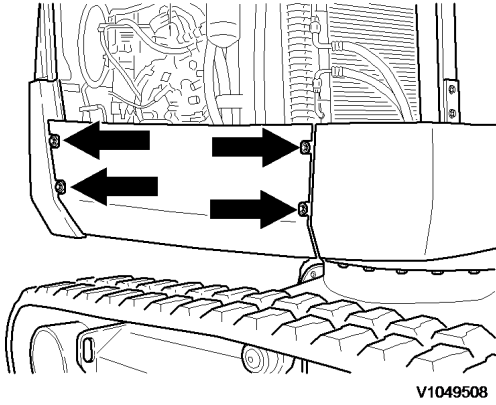


Figure 2
Bonnet, remove

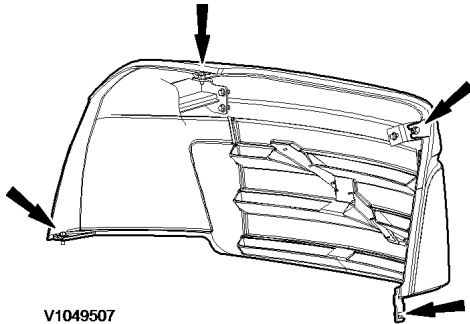
4. Remove right-hand side panel.



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Figure 3
Right-hand side panel, remove

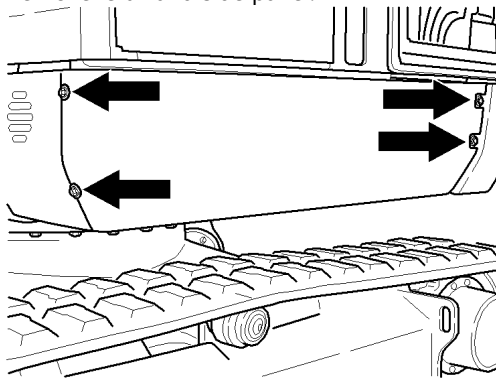
- Remove rear cover.



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Figure 4
Rear cover, remove

- Remove left-hand side panel.



V1049509

Figure 5
Left-hand side panel, remove

- Remove counterweight. See [716 Counterweight, removing](#).
- Remove silencer with tailpipe. See [252 Silencer, removing](#).

⚠ WARNING

Open the radiator cap carefully if the engine is warm. High pressure in the radiator may cause hot coolant to jet out.

⚠ WARNING

Risk of scalding and burns. The coolant may be hot.

9. Open the radiator cap (1) slightly to relieve pressure and then remove the radiator cap.

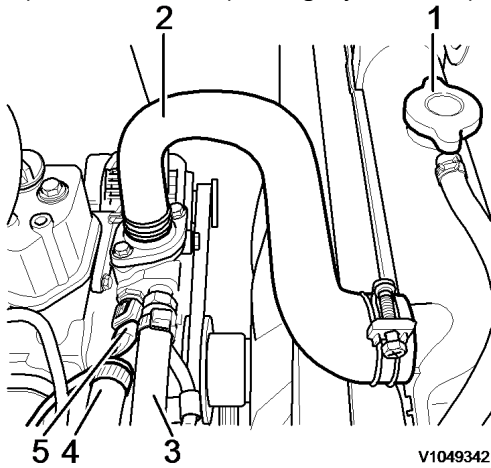


Figure 6
Position of radiator cap

1. Radiator cap
2. Upper radiator hose
3. Feed
4. Return
5. Engine temperature sensor

10. Provide a suitable catchment container for the coolant.

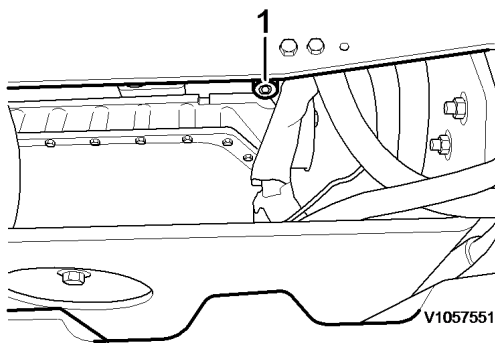


Figure 7
Position of drain plug

1. Drain plug

11. Undo and unscrew the drain plug (1). Drain all of the coolant into a catch basin.

NOTICE

Cooling system conditioners must be disposed of in accordance with environmental regulations.

NOTICE

Do the work in an environmentally safe manner.

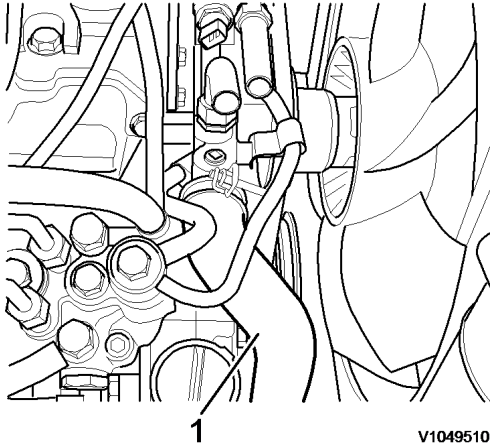
12. Remove the expansion tank from the bracket and drain the fluid into the catch basin.

13. Screw in the drain plug and screw on the radiator cap.

14. Remove hoses (3, 4) for cab heating on the engine.

15. Remove the hose clamp on the upper radiator hose (2) and pull off the hose.

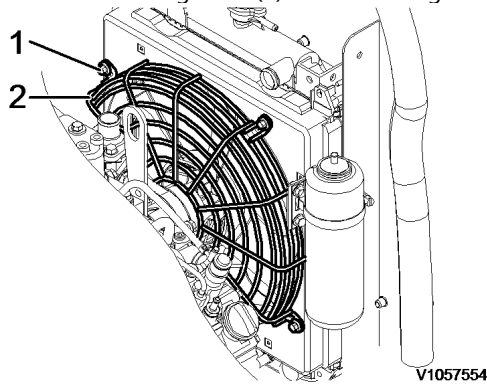
16. Remove the hose clamp on the lower radiator hose (1) and pull off the hose.



V1049510

Figure 8
Radiator hose, remove

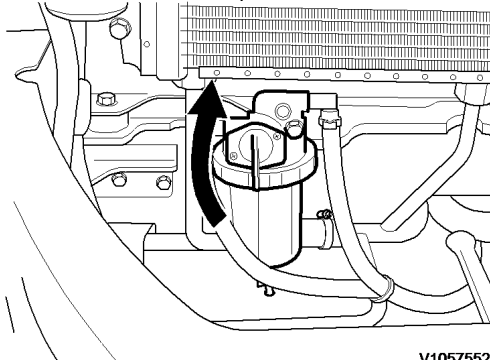
1. Lower cooler hose
17. Remove the fixing bolts (1) from the fan grille (2) and remove the fan grille.



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Figure 9
Fan grille, removal

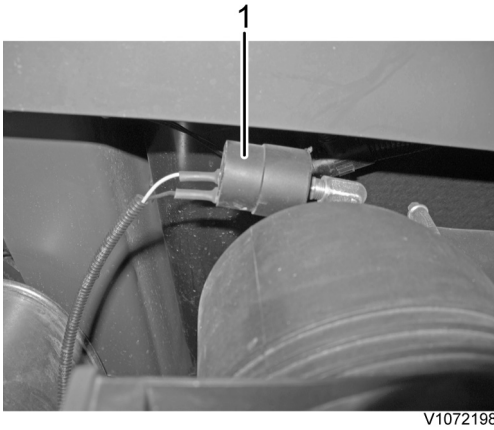
1. Retaining screw
 2. Fan grid
18. Turn fuel cock to OFF position.



V1057552

Figure 10
Fuel cock, close.

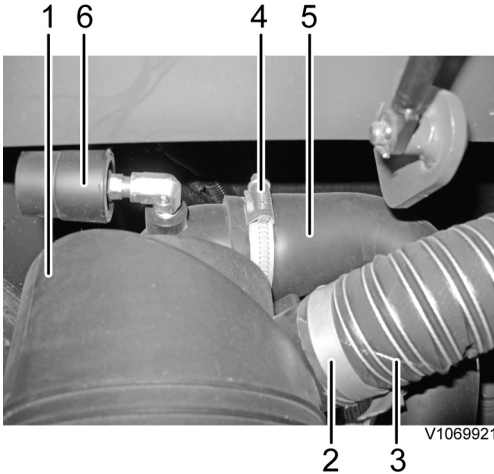
19. Disconnect the electrical connection from the air filter sensor (1) and lay the connecting cable aside.



V1072198

Figure 11
Air filter, remove connections

1. Air cleaner sensor
20. Detach the hose clamp (2) at the intake air hose (3) and pull off the intake air hose (3).



V1069921

Figure 12
Air filter casing with hose connections

1. Air cleaner case
2. Hose clamp
3. Intake air hose
4. Hose clamp
5. Air intake hose, engine
6. Air cleaner sensor
21. Detach the hose clamp (4) at the engine intake air hose (5) and pull off the engine intake air hose (5).
22. Remove the air filter holder fixing bolts and remove holder together with air filter casing.

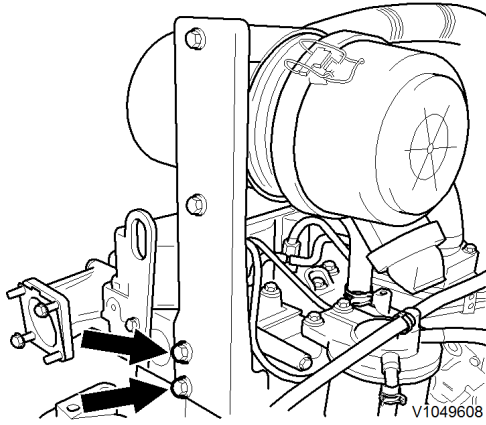


Figure 13
Air filter holder fixing bolts

23. Remove accelerator cable on engine.

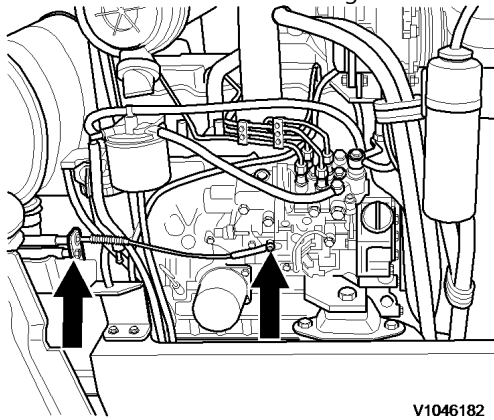


Figure 14
Remove accelerator cable

24. Disconnect the plug connection (5) at the fuel feed pump.

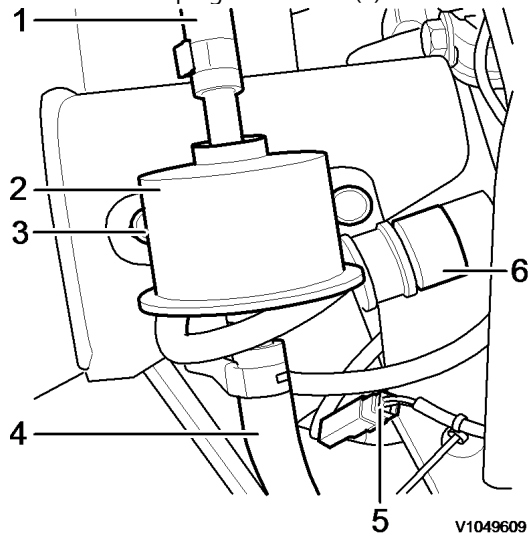


Figure 15
Fuel feed pump

1. Output (OUT)
2. Fuel feed pump
3. Retaining screw
4. Input (IN)

5. Plug connection
6. Plug connection, automatic idle control - LS

25. Disconnect the plug connection (6) for automatic idle control (option) at LS.

26. Disconnect the plug connection (3) for automatic idle control (option).

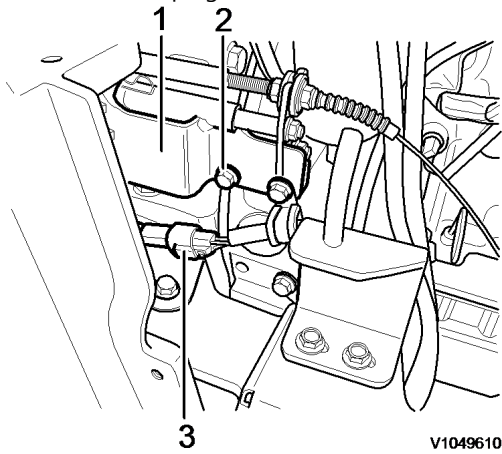


Figure 16
Automatic idle control, remove

1. Holder with magnet
2. Attaching screws
3. Plug connection

27. Remove fixing bolts (2) at the holder, and lay aside holder and magnets (1) for automatic idle control (option).

28. Remove hose lines at the fuel filter (3).

NOTICE

When a hose has been disconnected, plug both the hose and the connection immediately. The hoses should be marked for correct connection.

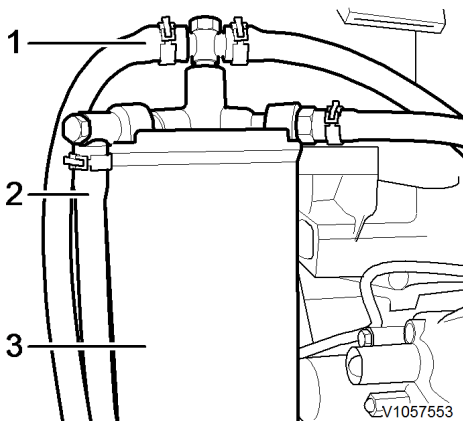
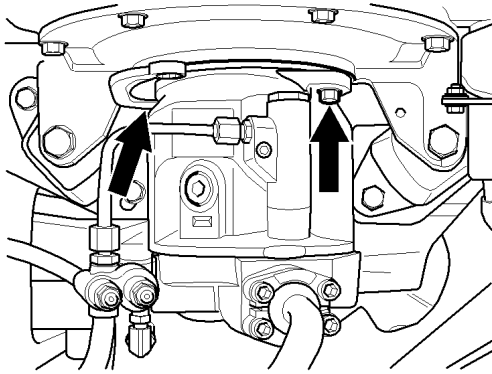


Figure 17
Fuel lines, disconnect

1. Fuel return
2. Fuel supply
3. Fuel filter

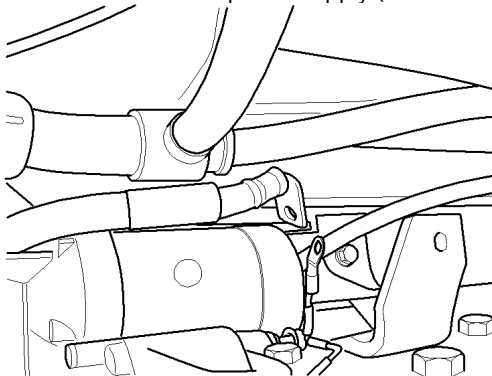
29. Loosen and unscrew the pump mounting bolts.



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Figure 18
Fixing bolts, remove

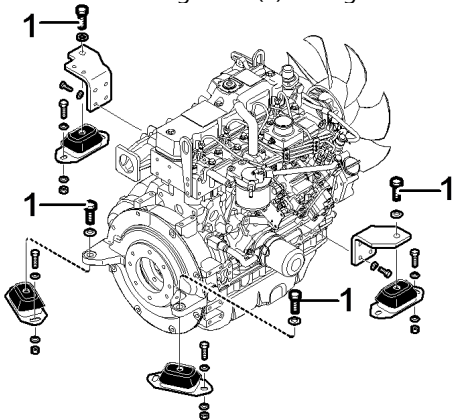
30. Pull the pump towards the back and secure against falling.
31. Disconnect the main power supply (terminal 87) from the battery to the starter.



V1049612

Figure 19
Main power supply to starter, disconnect

32. Remove retaining bolts (1) at engine mount.

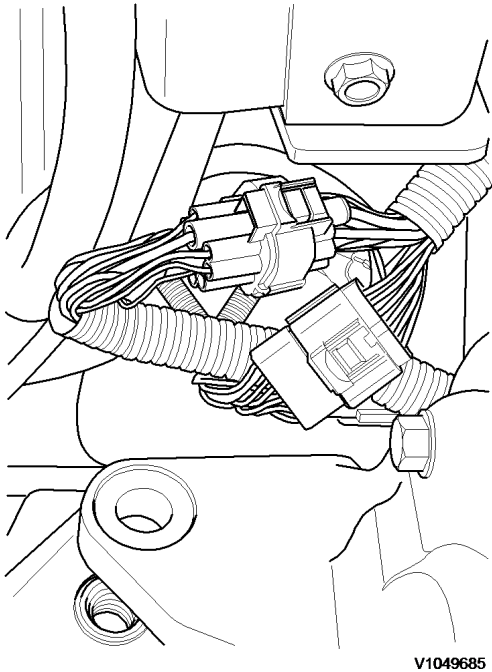


V1049614

Figure 20
Retaining bolts at engine mount, remove

1. Retaining bolts

33. Disconnect the plug connections of the frame and engine shutdown cable harnesses.



V1049685

Figure 21
Plug connections, disconnect

34. Remove fixing clamps on wiring harness.

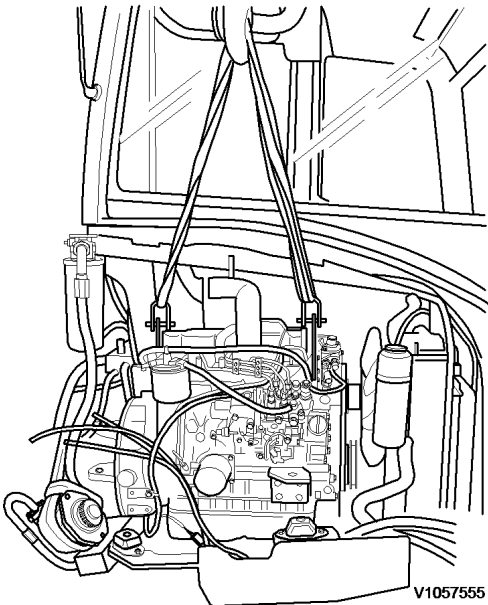


WARNING
Risk of personal injury. Very heavy object.

35. Attach lifting gear to engine lifting eyes.

NOTE!

Weight: approx. 170 kg (374.79 lb)



V1057555

Figure 22
Lifting gear, attach

36. Slowly lift out the engine and deposit on a suitable support.

Document Title: Engine, installing	Function Group: 210	Information Type: Service Information	Date: 2014/3/26
Profile: CEX, EC27C [GB]			

Engine, installing

Op nbr 210-072

Hoist or crane

Lifting device

! WARNING

The work involves handling heavy components - failure to stay alert may result in severe crushing injuries.

1. Attach the engine to suitable lifting gear.

NOTE!

Weight: approx. 170 kg (374.79 lb)

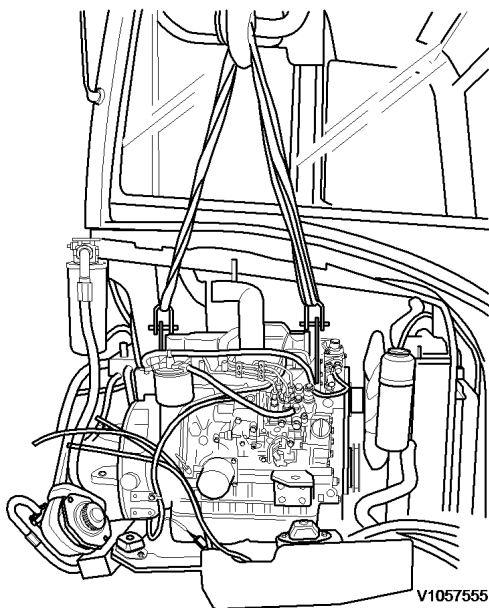


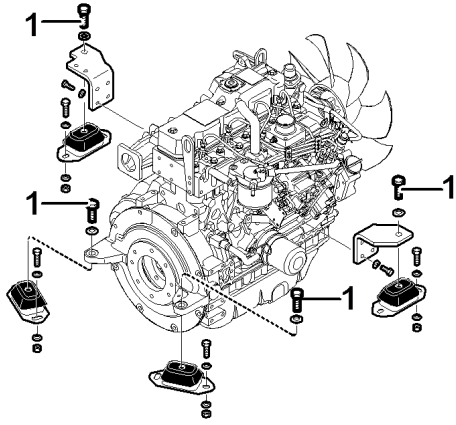
Figure 1
Engine with lifting gear

2. Slowly lower the engine into the engine bay and position on the engine mounts.

NOTICE

Make sure that no hoses or cables are trapped.

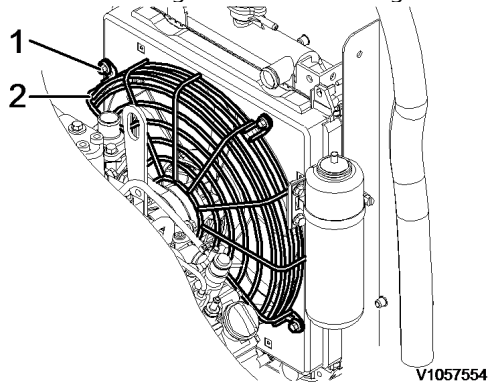
3. Screw in retaining bolts (1) on engine mounts and tighten with a torque wrench. See [030 Engine, tighten torques](#).



V1049614

Figure 2
Retaining bolts at engine mount, install

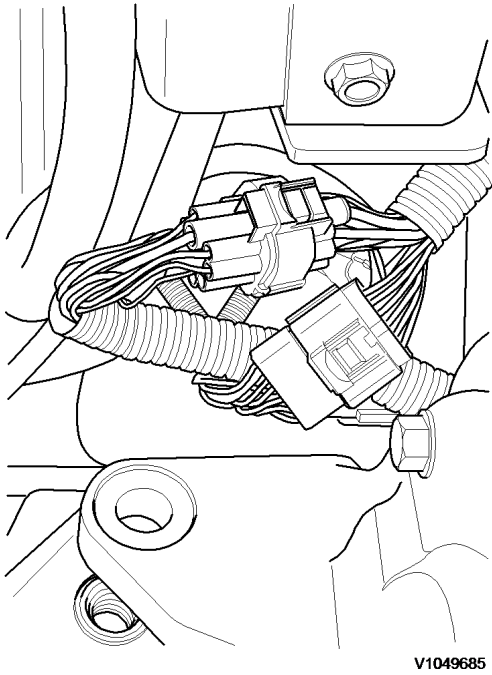
1. Retaining bolts
4. Remove the lifting gear.
5. Position the fan grille and fit the fixing bolts.



V1057554

Figure 3
Fan grille, installing

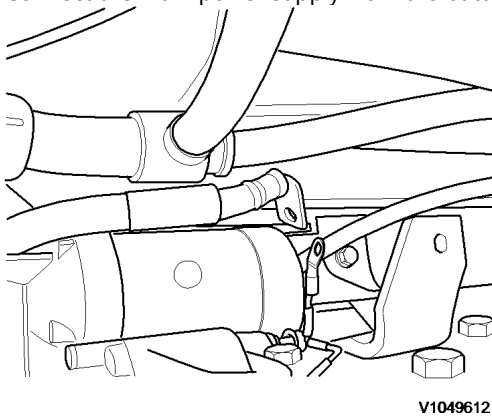
1. Retaining screw
2. Fan grid
6. Connect the plug connections of the frame and engine shutdown cable harnesses.



V1049685

Figure 4
Plug connections, connect

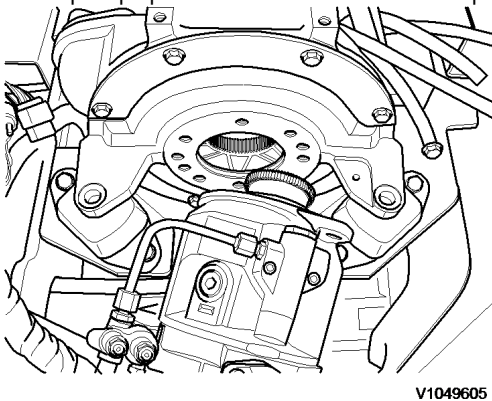
7. Install fixing clamps on wiring harness.
8. Connect the main power supply from the battery to the starter.



V1049612

Figure 5
Main power supply to starter, connect

9. Insert pump splined shaft into clutch carrier plate.



V1049605

Figure 6
Hydraulic pump, install

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