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|---|-------------------------------|---|---------------------------|
| Document Title: Engine, description | Function Group: 200 | Information Type: Service Information | Date: 2014/4/11 |
| Profile: CEX, EC18C [GB] | | | |

Engine, description

The engine is a vertical, water-cooled, in-line, three-cylinder, four-stroke diesel with eddy chamber injection. It is a low emission engine to American EPA Guideline Tier IV.

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. Ignition sequence: 1-3-2 (cylinder no. 1 on flywheel side).

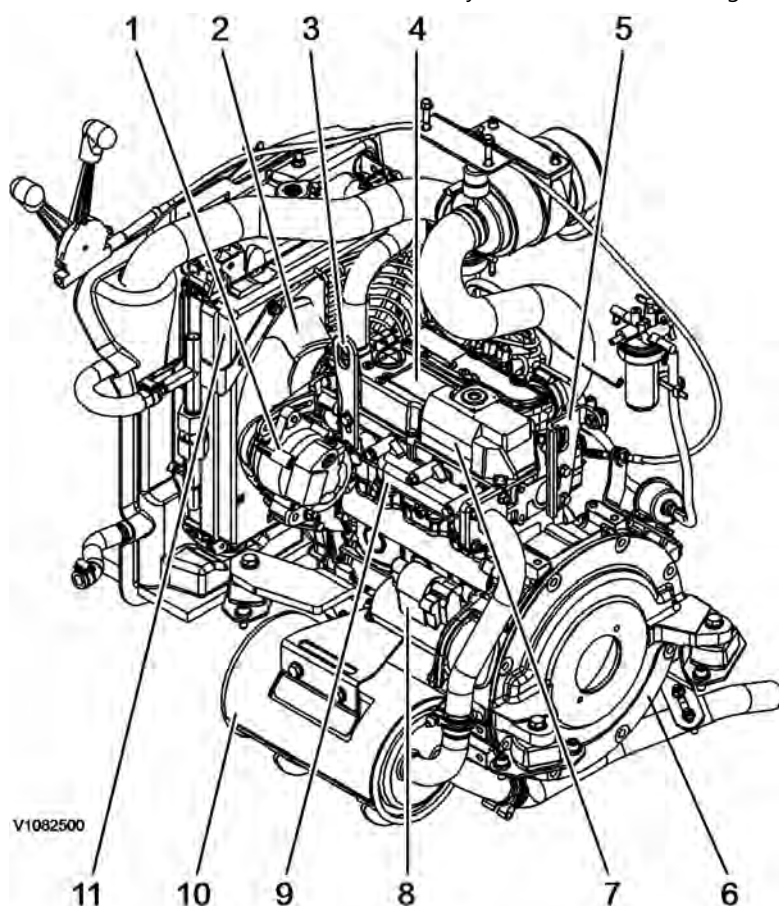


Figure 1
Engine and Components

- | | | | |
|---|-----------------------------|----|-----------------------------------|
| 1 | Alternator | 7 | Valve cover / cylinder head cover |
| 2 | Fan rotor | 8 | Starter motor |
| 3 | Lifting eye | 9 | Exhaust manifold |
| 4 | Engine identification plate | 10 | Muffler |
| 5 | Lifting eye | 11 | Radiator |
| 6 | Flywheel | | |

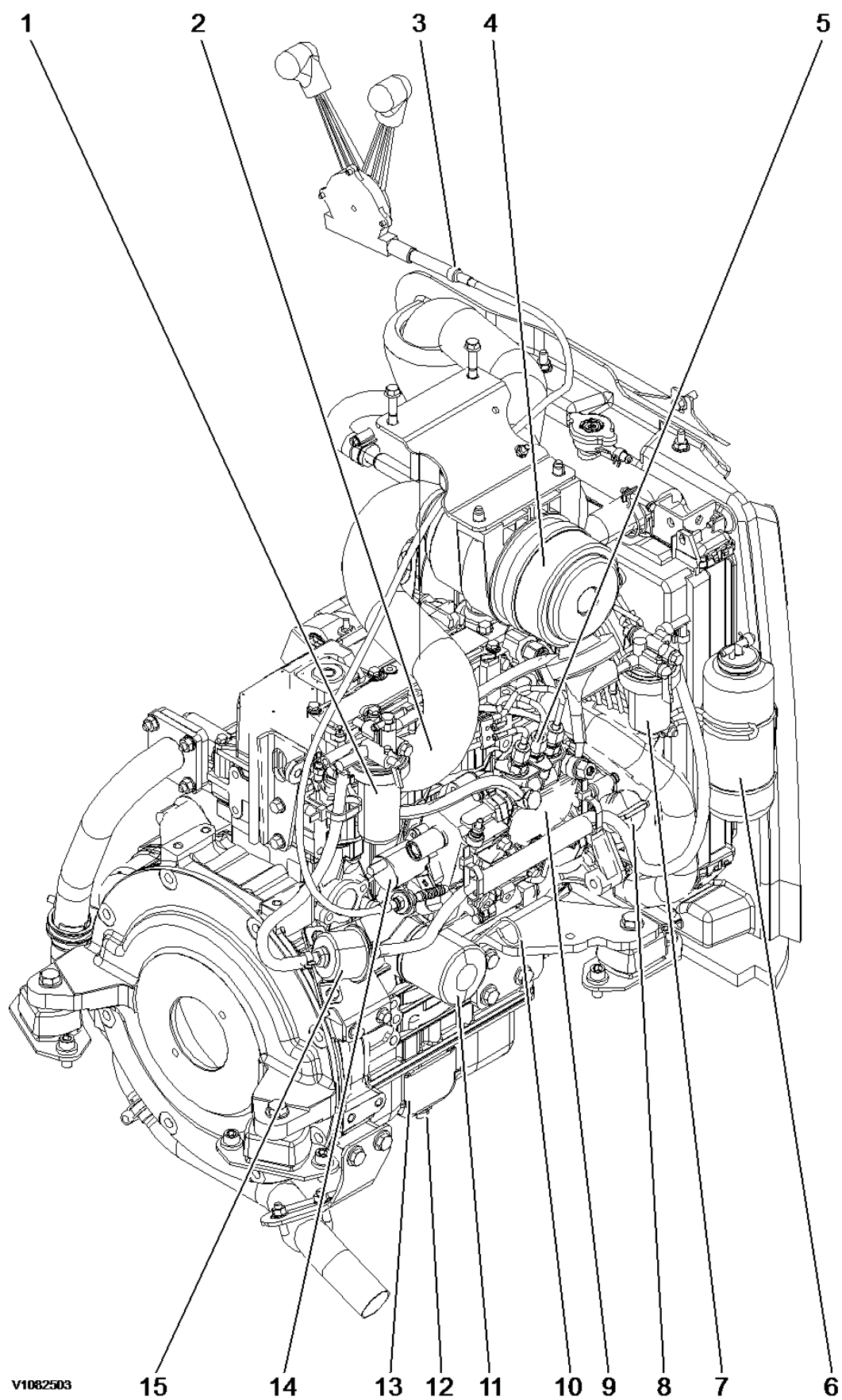


Figure 2
Engine and Components

1 Main fuel filter

9 Injection pump

- | | | | |
|---|------------------------|----|----------------------------------|
| 2 | Air intake hose | 10 | Dipstick gauge |
| 3 | Throttle cable | 11 | Engine oil filter |
| 4 | Air cleaner assembly | 12 | Gear oil outlet |
| 5 | Fuel delivery valves | 13 | Oil pan |
| 6 | Coolant expansion tank | 14 | Injection pump shutdown solenoid |
| 7 | Fuel water separator | 15 | Electric fuel feed pump |
| 8 | Oil filler pipe | | |

| | | | |
|--|-------------------------------|---|---------------------------|
| Document Title: Engine, removing | Function Group: 210 | Information Type: Service Information | Date: 2014/4/11 |
| Profile: CEX, EC18C [GB] | | | |

Engine, removing

Op nbr 210-070

Lifting device

Seat belt, 2m

Seat belt, 0.5m

2 Shackle



WARNING

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 [191 Service position 1](#)
2. Set the battery disconnect switch to the Off position.

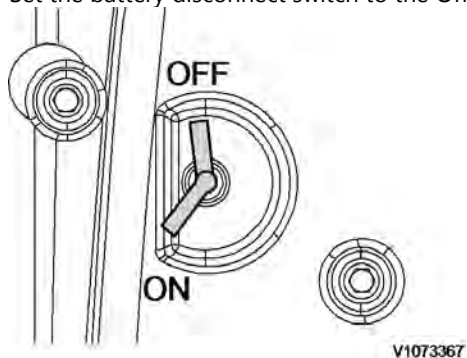


Figure 1
Battery disconnection switch

3. Turn fuel cock to position C.

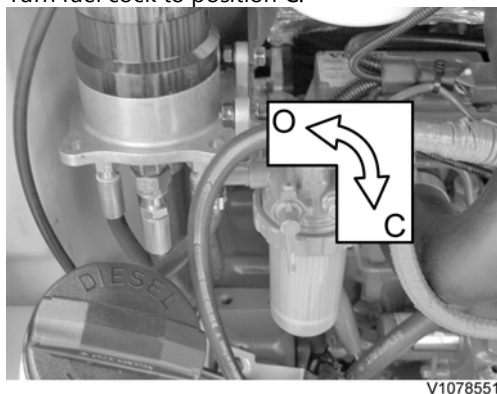


Figure 2
Main fuel filter

4. Turn fuel cock to position C.

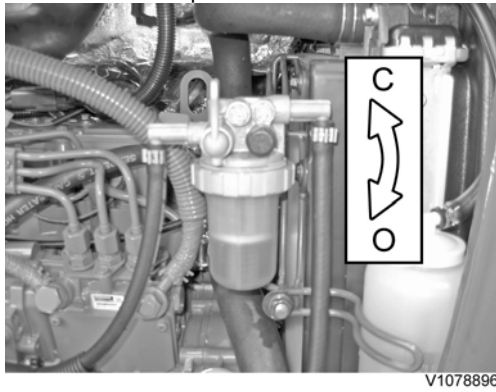


Figure 3
Water separator

5. Remove upper left-hand side panel.

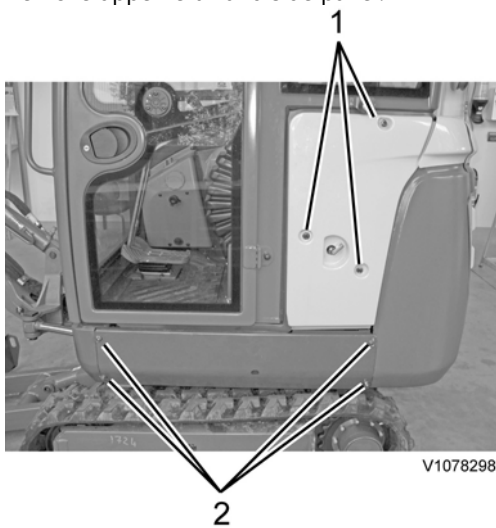


Figure 4
Left-hand side panels, remove

1. Attaching screws
2. Attaching screws

6. Remove lower left-hand side panel.



If the battery's plus terminal is short-circuited to the minus terminal or to the chassis, there is a risk of explosion or fire. Therefore, always protect the battery terminals.

7. Disconnect ground terminal (1) at battery.

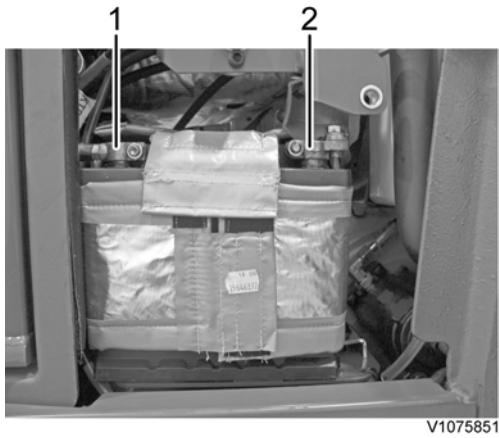


Figure 5
Battery, disconnect terminals

1. Ground terminal (- pole)
 2. Positive terminal (+ pole)
8. Remove pole cover at the positive terminal (2) of the battery and disconnect terminal.
 9. Remove battery holder.

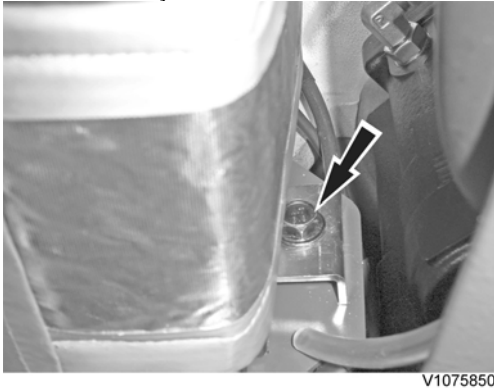


Figure 6
Battery holder, remove

10. Carefully lift battery out of superstructure.
11. Remove ground cable (1).

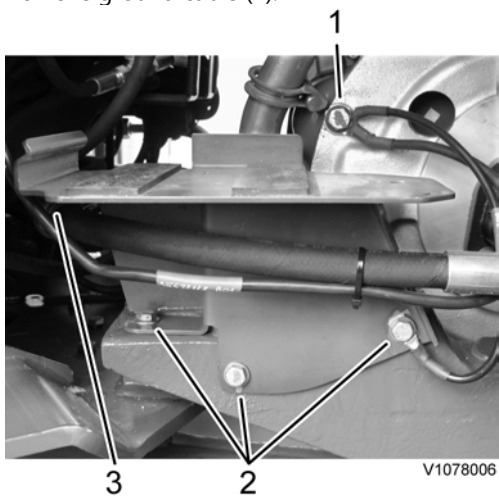


Figure 7
Remove battery bracket

1. Ground cable
2. Attaching screws
3. Hose clamp

12. Remove hose clamp (3), fixing bolts (2) and bracket.

13. Remove hose clamp at underside of battery disconnection switch.

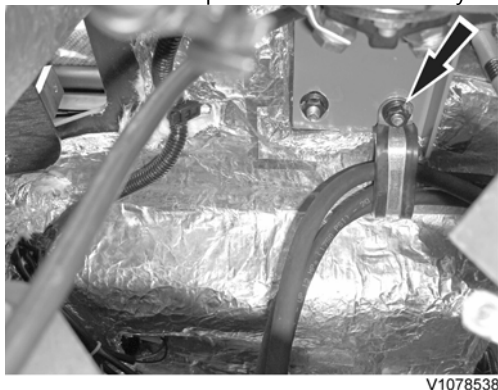


Figure 8
Hose clamp, remove

14. Remove fixing bolts (1) for upper rear panel and remove upper rear panel including engine hood.

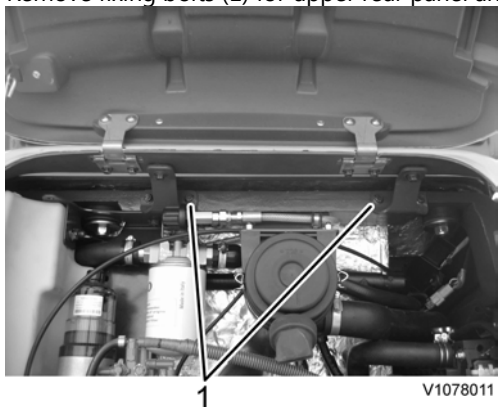


Figure 9
Remove rear panel

1. Attaching screws

15. Remove closing panel (1).

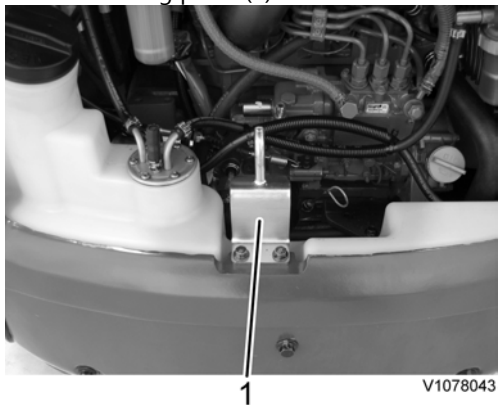


Figure 10
Closing panel, remove

1. Closing panel

16. Remove cover plate (1)

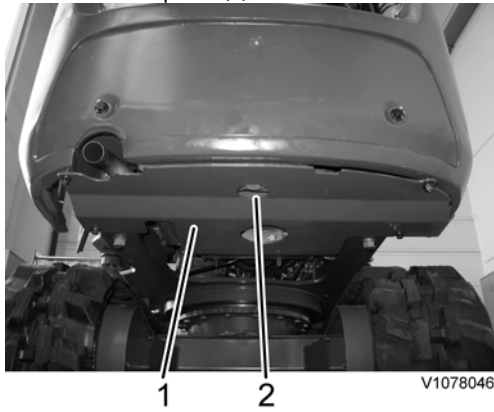


Figure 11
Cover plate, remove

1. Cover plate
2. Drain plug, fuel tank

17. Remove drain plug (2) and drain fuel tank into a suitable catchment container.

NOTICE

Do the work in an environmentally safe manner.

18. Drain hydraulic tank, see [173 Hydraulic system, changing oil](#).

19. Remove nuts (1) from rear cab fixing bolts.

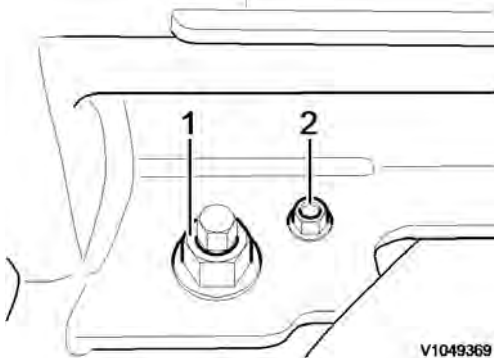


Figure 12
Cab mounting

1. Nuts, cab fixing bolts
2. Connecting bolt cab - cab platform

! WARNING

The parts are heavy. Take appropriate safety precautions.

20. Using suitable lifting gear, raise cab at rear eyelets by approx. 3 cm (1.18 in) and secure.



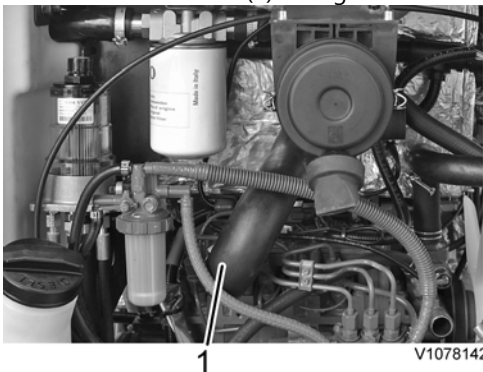
V1078556

Figure 13
Cab with lifting tool

NOTE!

Weight approx. 260 kg (573.2 lbs)

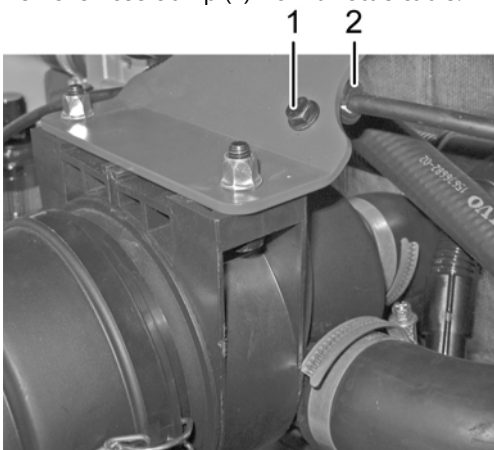
21. Remove radiator, see [261 Radiator removal](#).
22. Remove alternator, see [321 Alternator removing](#).
23. Detach air intake hose (1) at engine.



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Figure 14
Engine with ancillaries

1. Air intake hose
24. Remove hose clamp (2) from throttle cable.



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Figure 15
Hose clamp, remove

1. Mounting screw
2. Hose clamp, throttle cable

25. Detach hose for hydraulic tank ventilation at tank.

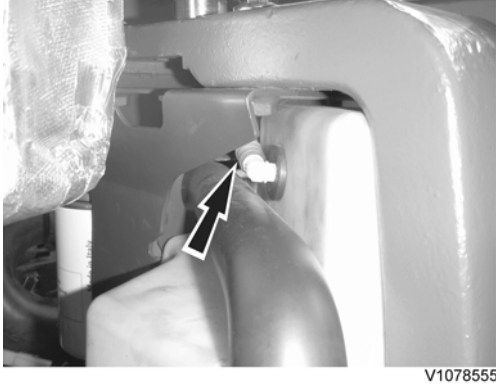


Figure 16
Hose line, remove

26. Remove hose clamp (2) and connecting hose (3) with grommet (4).

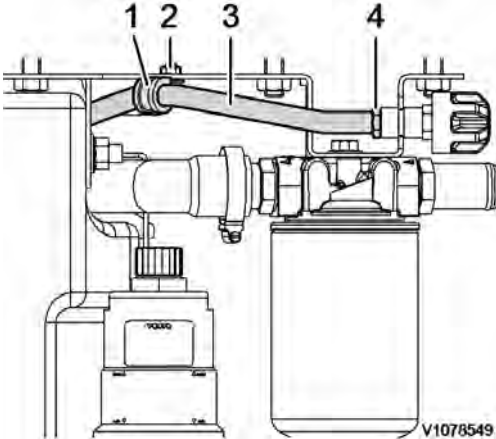


Figure 17
Hydraulic tank ventilation, remove

1. Hose clamp
2. Screw
3. Jumper hose
4. Grommet

27. Withdraw connecting cable at air filter casing sensor.

28. Remove air filter casing with bracket (1).



Figure 18
Air filter

1. Carrier

29. Detach cable at fixing and at lever.

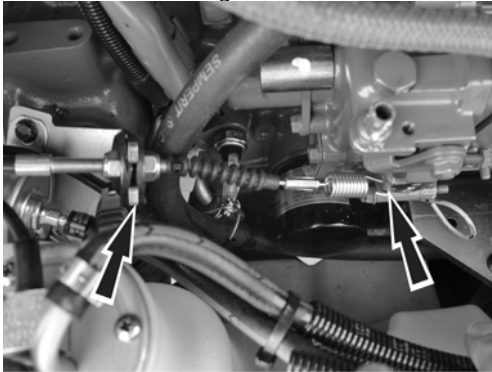


Figure 19
Cable, remove

30. Remove hose (4) at inlet to hydraulic oil filter.

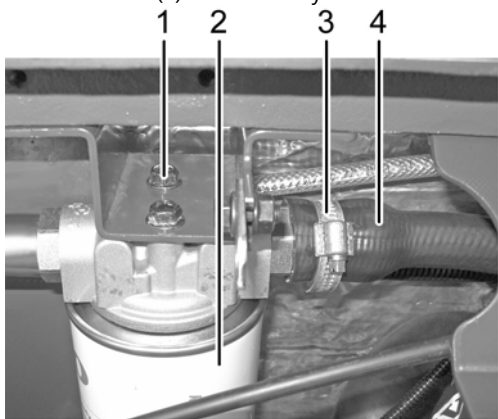


Figure 20
Return filter

1. Mounting screw
2. Hydraulic oil filter inc. filter holder
3. Hose clamp
4. Hose assembly

31. Remove fixing bolts (1) and remove hydraulic oil filter.
32. Remove fixing bolt (1) for main fuel filter.

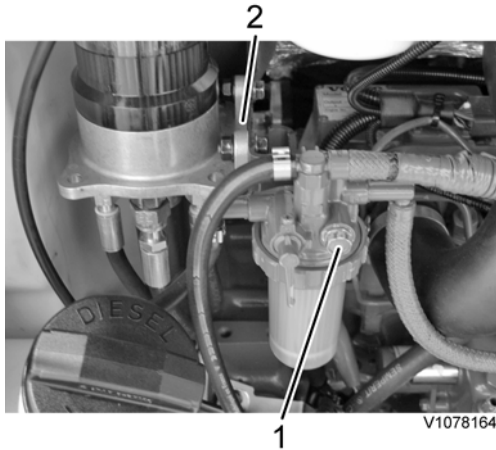


Figure 21
Main fuel filter, remove

1. Main fuel filter
2. Leak-oil filter

33. Remove fixing bolts and remove leakage oil filter (2).
34. Remove hydraulic hose at leakage oil filter.

NOTICE

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

35. Guide leakage oil lines through the opening in the hydraulic oil tank bracket.

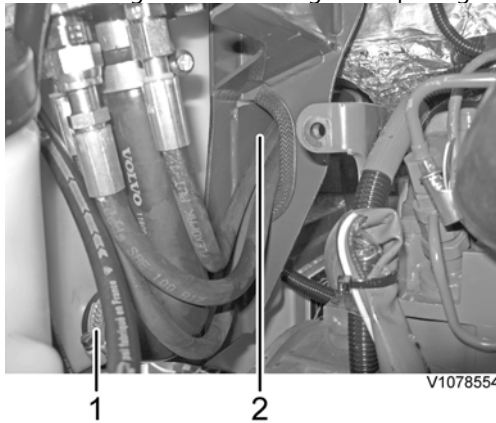


Figure 22
Opening, hydraulic oil tank bracket

1. Hose clamp, return line
2. Opening, hydraulic oil tank bracket

36. Release hose clamp (2) and remove suction hose (3) from hydraulic pump.

NOTICE

Collect draining oil.

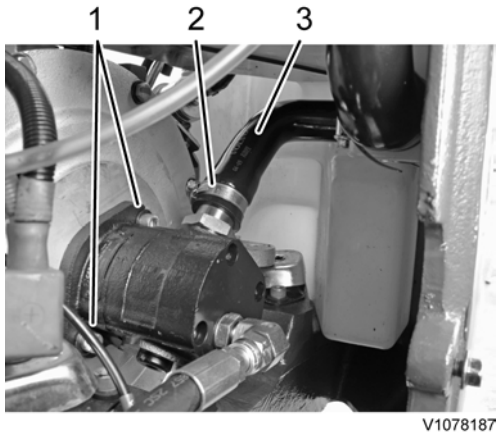


Figure 23
Hydraulic pump, remove

1. Attaching screws
2. Hose clamp
3. Suction line

37. Remove hydraulic pump

38. Release pipe bracket (1) and connecting clamp (2) and remove exhaust tailpipe (3).

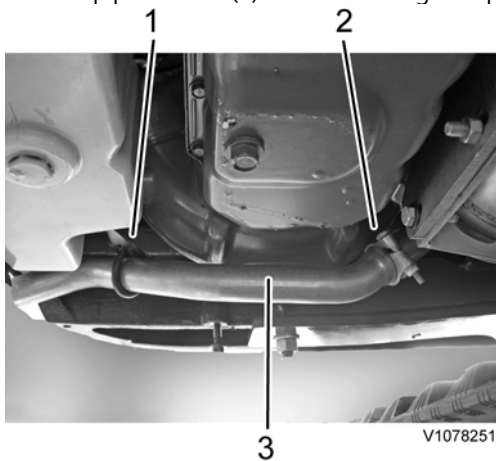


Figure 24
Exhaust tailpipe, remove

1. Pipe bracket
2. Clamp
3. Exhaust tailpipe

39. Release fixing bolts on bracket (1).

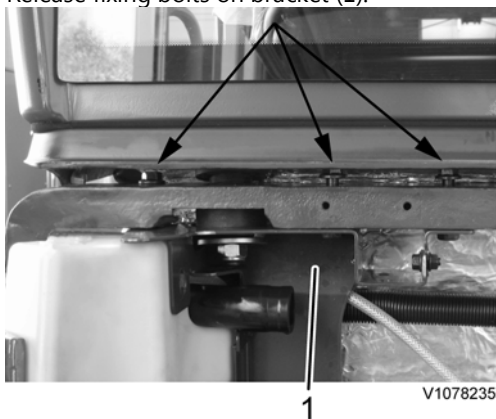


Figure 25
Bracket, remove

1. Bracket
40. Remove upper fixing bolt (2) for left transport bracket (1) on engine, release lower fixing bolt (3) and swivel the bracket forwards.

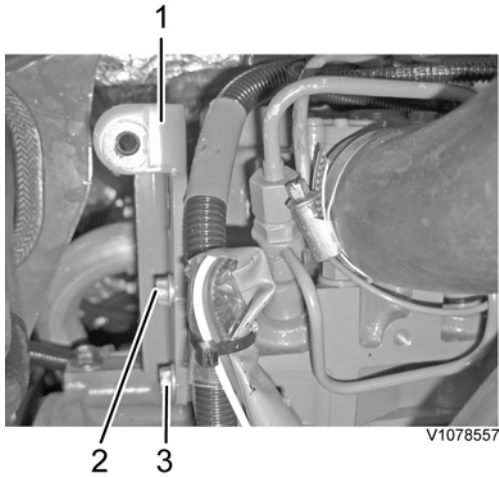


Figure 26
Transport bracket, swivel

1. Transport bracket
 2. Upper fixing bolt
 3. Lower fixing bolt
41. Remove hydraulic oil tank bracket together with hydraulic oil tank.
42. Swivel the transport bracket into the original position and install bolts (2, 3).
43. Remove bolts (1) for engine mount

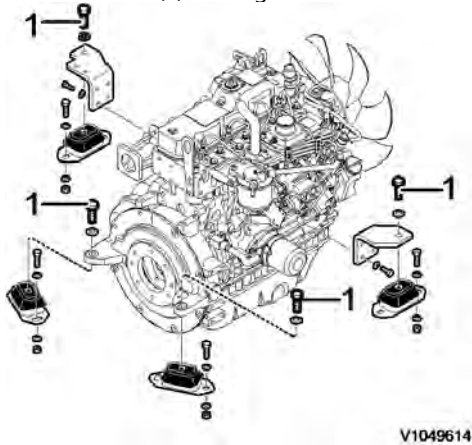


Figure 27
Engine mount

1. Screw
44. Remove hose clamp (1) on engine mount.

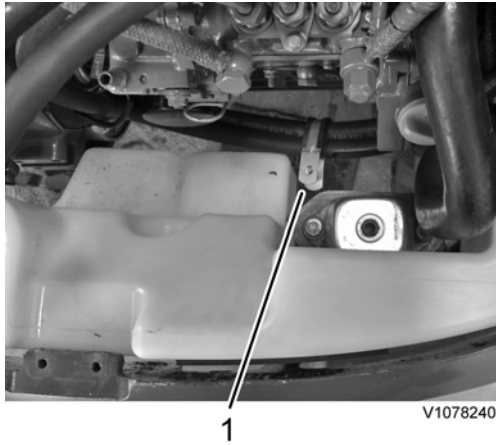


Figure 28
Hose clamp, remove

1. Clamp, coolant hoses
45. Remove engine mount rear/right



Figure 29
Engine mount, remove

46. Remove heating hoses on engine.

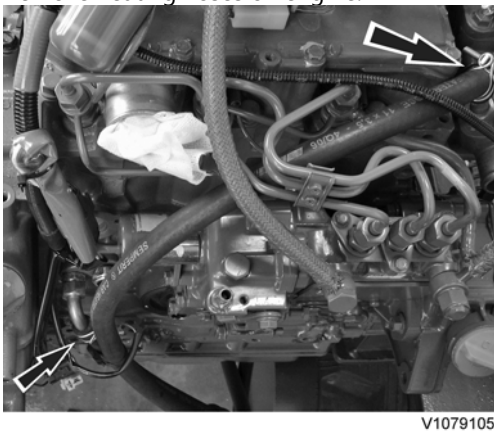


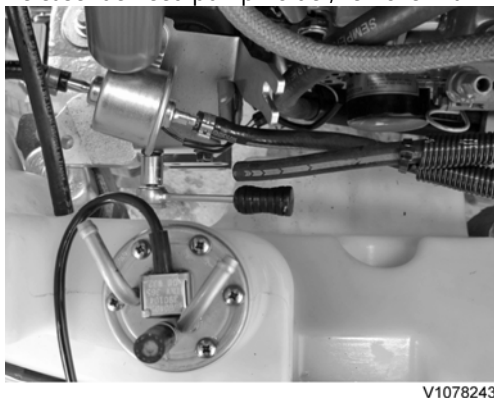
Figure 30
Remove coolant hoses

NOTICE

Do the work in an environmentally safe manner.

47. Detach hose lines from fuel tank and withdraw.
48. Remove connecting cable from fill level sender (SE 2303) and fuel pump (MO 2303).

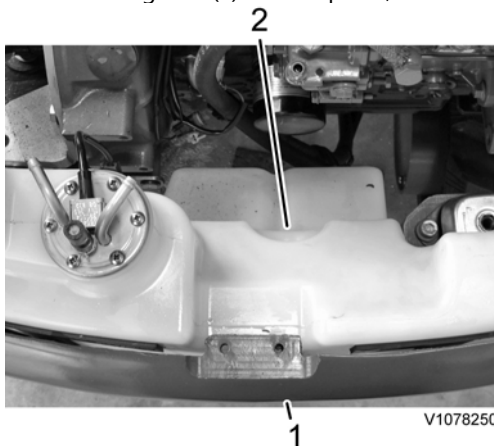
49. Detach the fuel lines at the injection pump.
50. Release fuel feed pump holder, remove with hoses and filter.



V1078243

Figure 31
Fuel feed pump, remove

51. Remove fixing bolt (1) on rear panel, or counterweight bolt.

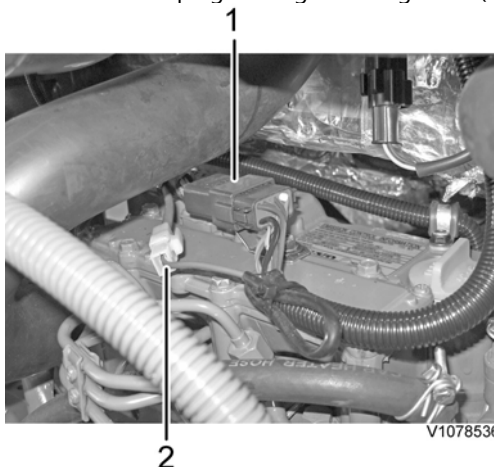


V1078250

Figure 32
Remove fuel tank

1. Fixing bolt, rear panel / counterweight
2. Fixing bolt, fuel tank

52. Remove fixing bolt (2) for fuel tank.
53. Move engine on mounts and remove fuel tank.
54. Remove central plug for engine wiring loom (CN2101) and supply line to preheat system (HE 2501).



V1078536

Figure 33
Engine pin plug connections, separate

55. Separate connection (5) from panel.

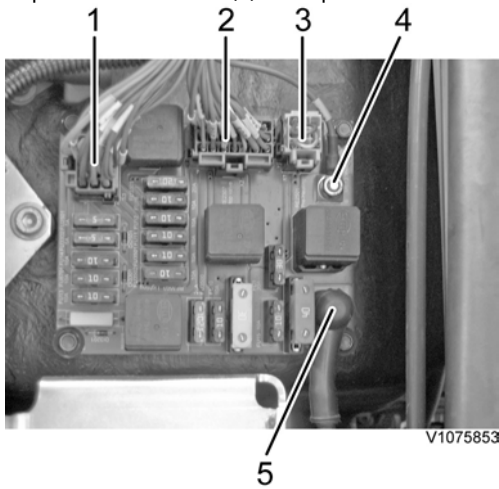


Figure 34
Panel

1. Port CB3703
2. Port CB3702
3. Port CBAECU (Option)
4. Port CB3704
5. Port CB3701

56. Remove engine mounts rear/left



Figure 35
Remove engine mounts
NOTE!

Secure engine against tilting.

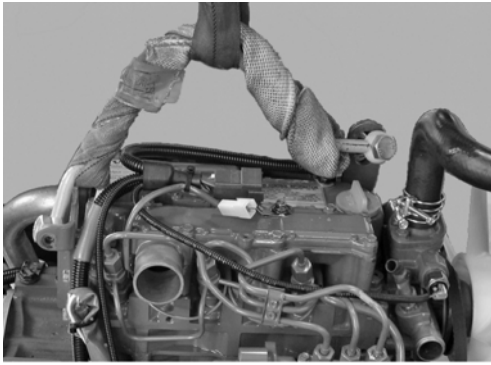


Lift objects only with the lifting tackle provided for this purpose.

57. Attach the engine to suitable lifting gear.

NOTE!

Weight engine, approx.: 130 kg (286.6 lbs)



V1078295

Figure 36
Attach lifting gear

58. Carefully lift out the engine and deposit on a suitable support.



V1078287

Figure 37
Engine, remove

| | | | |
|--|-------------------------------|---|---------------------------|
| Document Title: Engine, installing | Function Group: 210 | Information Type: Service Information | Date: 2014/4/11 |
| Profile: CEX, EC18C [GB] | | | |

Engine, installing

Op nbr 210-072

Lifting device

Seat belt, 2m

Seat belt, 0.5m

2 Shackle

WARNING

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

WARNING

Lift objects only with the lifting tackle provided for this purpose.

1. Attach the engine to suitable lifting gear.

NOTE!

Weight engine, approx.: 130 kg (286.6 lbs)



V1078295

Figure 1
Lifting gear, attach

2. Lift engine and lower onto engine mounts.

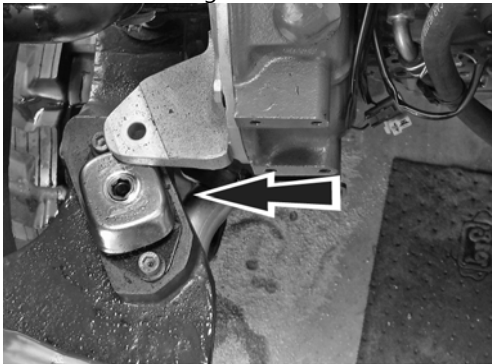


V1078287

Figure 2
Engine, install
NOTE!

Secure engine against tilting.

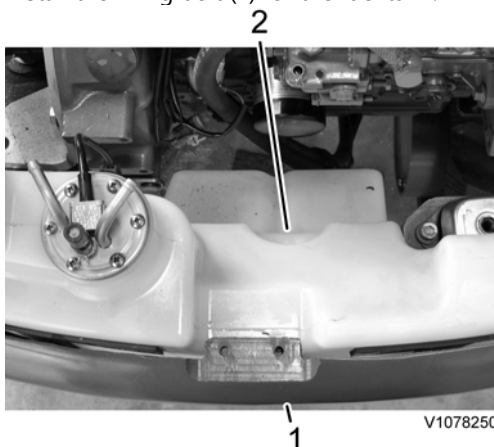
3. Install rear / left engine mount.



V1078239

Figure 3
Engine mount, install

4. Detach the lifting gear from the engine.
5. Install drain plug on fuel tank and insert fuel tank.
NOTE!
Ensure it is seated correctly.
6. Install the fixing bolt (2) for the fuel tank.



V1078250

Figure 4
Install fuel tank

1. Fixing bolt, rear panel / counterweight

2. Fixing bolt, fuel tank
7. Install fixing bolt (1) on rear panel, or counterweight bolt.
8. Install holder for fuel feed pump, attach hose lines and filter.



V1078243

Figure 5
Fuel feed pump, install

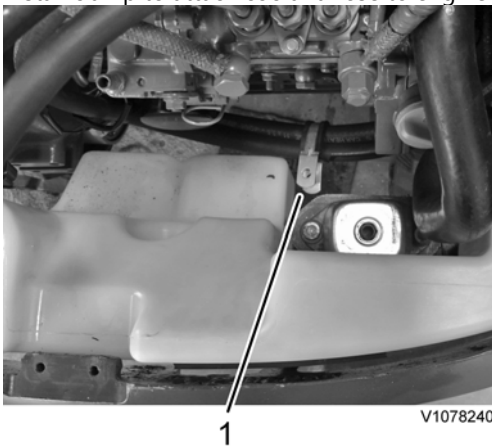
9. Install the fuel lines at the injection pump.
10. Install engine mount rear/right



V1079078

Figure 6
Engine mount, install

11. Install clamp to attach coolant hose to engine holder.



V1078240

Figure 7
Hose clamp, install

1. Clamp, coolant hoses

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