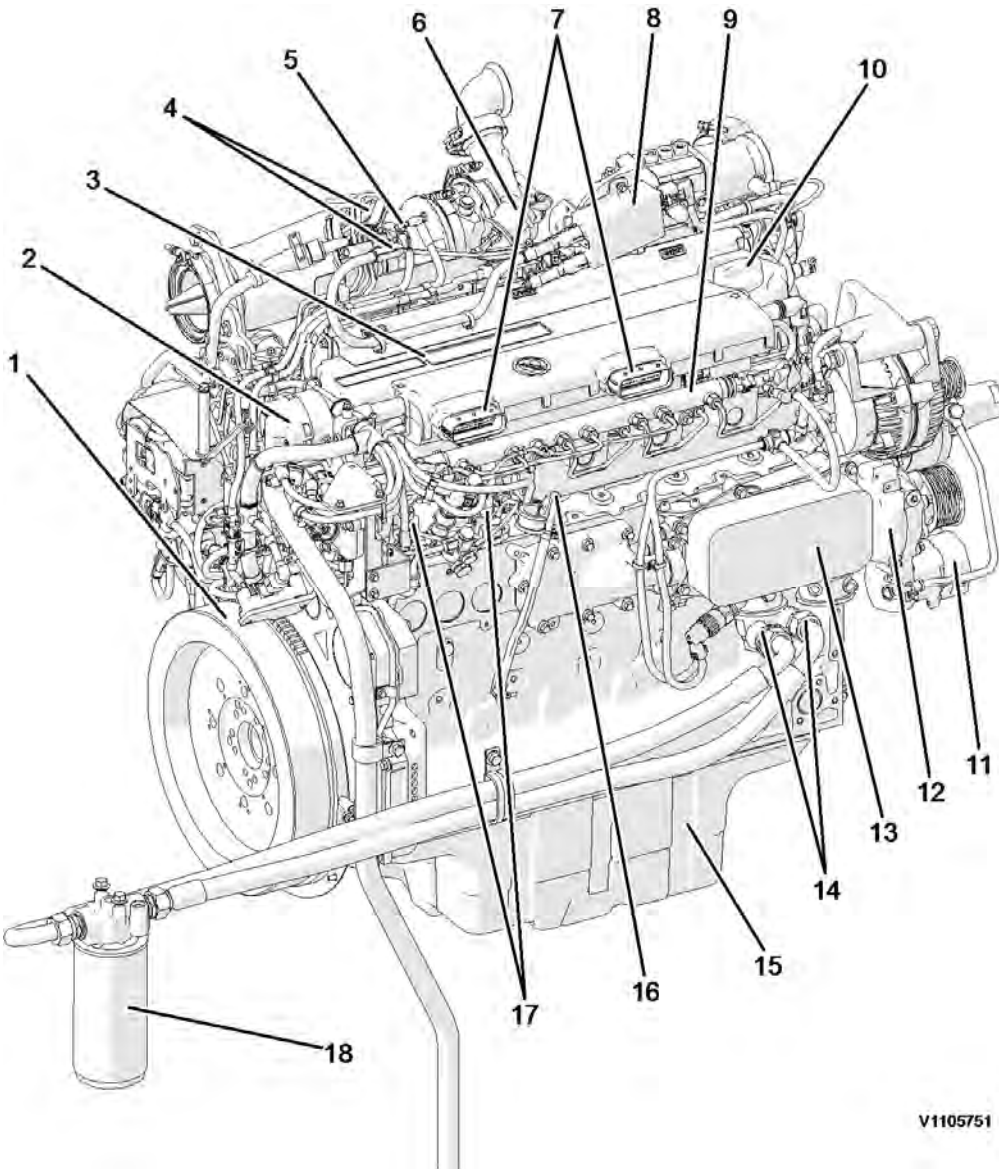


Document Title: Component locations	Function Group: 200	Information Type: Service Information	Date: 2014/6/12
Profile: EXC, EC220D L [GB]			

Component locations

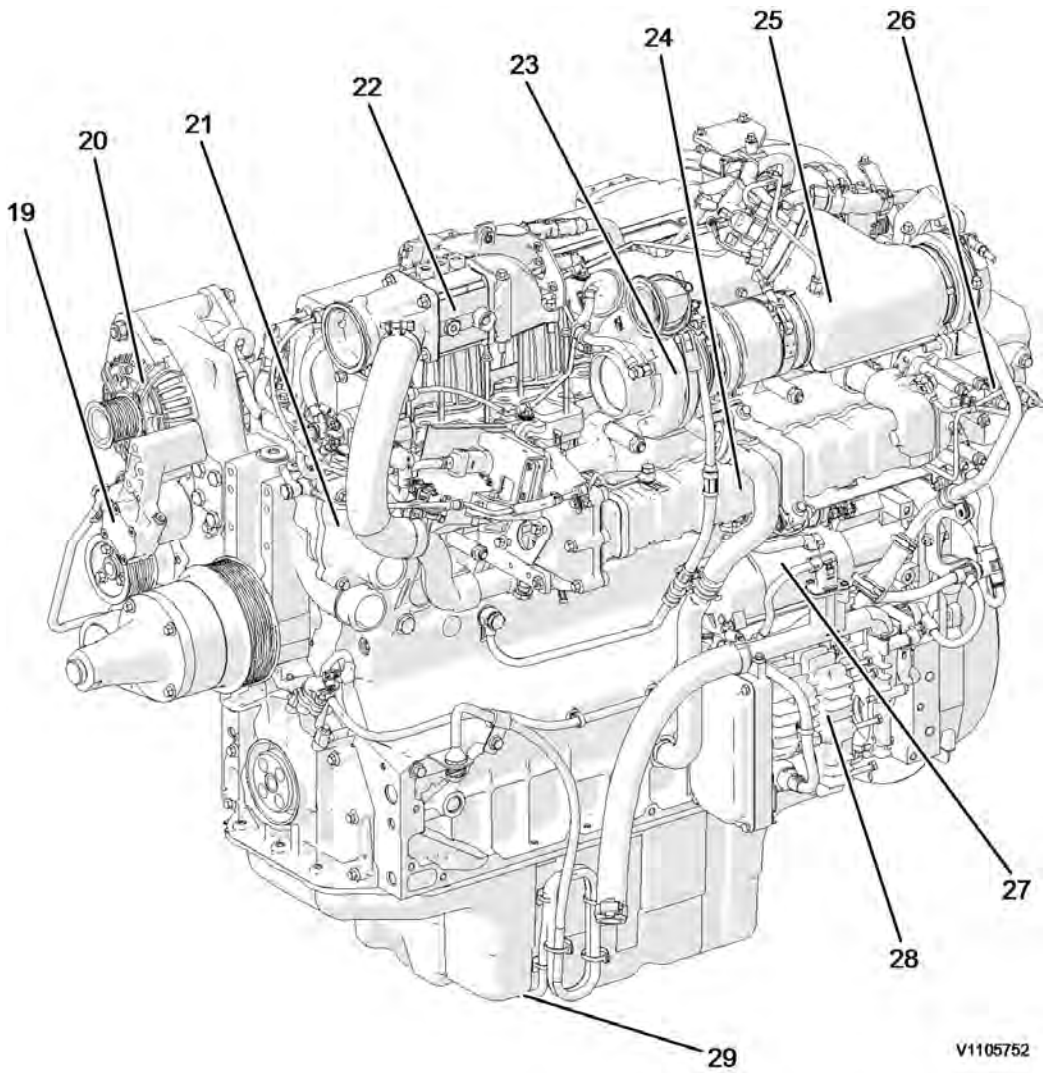


V1105751

Figure 1
Engine, front side

1	Flywheel	10	Engine oil filling port
2	Crankcase ventilation duct	11	Belt tensioner
3	Valve cover	12	Coolant pump
4	Spark plug	13	Engine oil cooler
5	Glow plug	14	Engine oil filter remote port
6	Turbocharger waste-gate	15	Oil pan
7	ECU connecting port	16	Engine oil dipstick gauge

8	Spark plug control unit	17	High pressure fuel pump
9	Common rail	18	Engine oil filter



V1105752

Figure 2
Engine, back side

19	Fuel feed pump	25	Partial flow-burner
20	Alternator	26	EGR actuator
21	Thermostat housing	27	Starter motor
22	Pre-heating coil housing	28	Electric air pump
23	Turbocharger	29	Engine oil level sensor
24	EGR cooler		

Document Title: E-ECU, MID 128, changing non-programmed ECU	Function Group: 200	Information Type: Service Information	Date: 2014/6/12
Profile: EXC, EC220D L [GB]			

E-ECU, MID 128, changing non-programmed ECU

Op nbr 200-068

[VCADS Pro VCADS Pro Service Tool](#)

[88890180 Interface](#)

[88890027 Cable](#)

1. Park the machine in the service position A, see [091 Service positions](#).
2. Turn OFF the battery disconnect switch.



V1097144

Figure 1

3. Open the side door on the left side of the machine.
4. Download software to VCADS Pro computer for target machine.
5. Connect the VCADS Pro computer to the machine, and perform the operation '28423-7 MID 128 control unit, programming'.
6. When VCADS Pro 'MID 128 ECU, programming' window appears, follow the instructions for replacing E-ECU.
7. Disconnect the wiring harness connectors from E-ECU and remove 2 screws fixing the clamps.

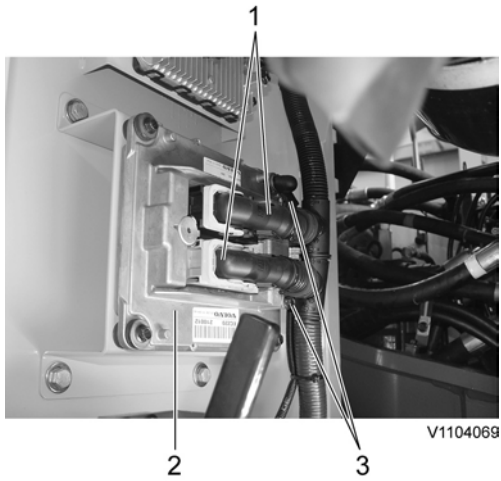


Figure 2

1. Connector
2. E-ECU
3. Screw

NOTE!

Pull up the locking device to disconnect the connector.

8. Remove 4 screws fixing the E-ECU.
9. Install new E-ECU, and tighten 4 screws.
10. Connect the wiring harness connectors to the E-ECU and tighten 2 screws fixing the clamps.
11. After replacing E-ECU, press OK button of VCADS Pro operation '28423-7 MID 128 control unit, programming'. Now VCADS Pro starts the programming of software and parameters to the new E-ECU.

NOTE!

If not able to read out the parameters with the program operation, the VCADS Pro operation 25438-8 "Nox sensor, age compensation, reset" has to be performed.

12. Close the side doors.

Document Title: E-ECU, MID 128, changing pre-programmed ECU	Function Group: 200	Information Type: Service Information	Date: 2014/6/12
Profile: EXC, EC220D L [GB]			

E-ECU, MID 128, changing pre-programmed ECU

Op nbr 200-070

[VCADS Pro VCADS Pro Service Tool](#)

[88890180 Interface](#)

[88890027 Cable](#)

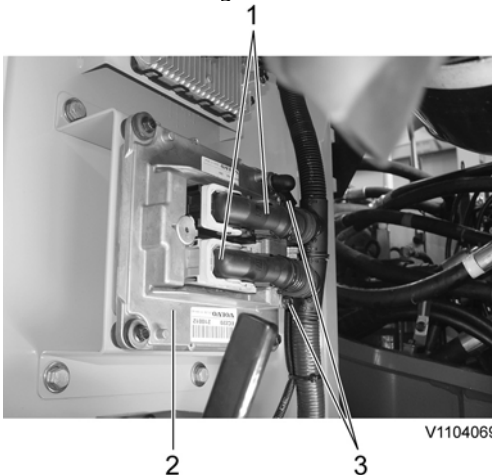
1. Park the machine in the service position A, see [091 Service positions](#).
2. Turn OFF the battery disconnect switch.



V1097144

Figure 1

3. Open the side doors on the left side of the machine.
4. Connect VCADS Pro computer to the machine, and perform the operation '17030-3 Parameter, programming'.
5. Use the function 'save all parameters to job card'.
6. Disconnect the wiring harness connectors from E-ECU and remove 2 screws fixing the clamps.



V1104069

Figure 2

1. Connector
2. E-ECU
3. Screw

NOTE!

Pull up the locking device to disconnect the connector.

7. Remove 4 screws fixing the E-ECU.
8. Install new E-ECU, and tighten 4 screws fixing the E-ECU.
9. Connect the wiring harness connectors to the E-ECU and tighten 2 screws fixing the clamps.
10. Connect VCADS Pro computer to the machine, and perform the operation 17030-3 Parameter, programming'. Now the customer parameters are changed according to the job card saved at step 2.
11. Perform VCADS Pro operation 25438-8 "Nox sensor, age compensation, reset".
12. Close the side doors.

Document Title: VCADS Pro, Operations	Function Group: 200	Information Type: Service Information	Date: 2014/6/12
Profile: EXC, EC220D L [GB]			

VCADS Pro, Operations

The following VCADS Pro operations are available for function group 2. Operations used when changing or working on components are mandatory.

Tests

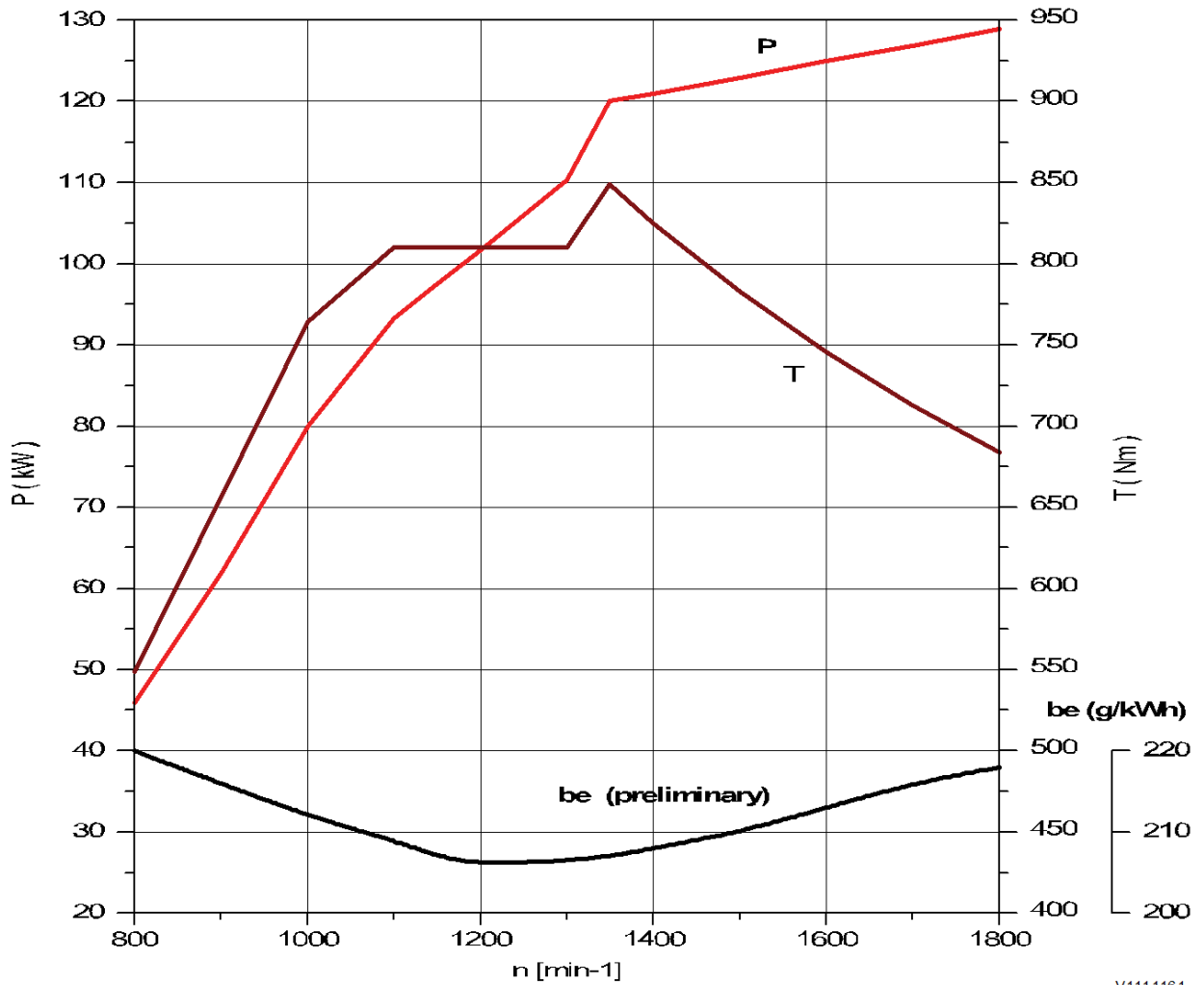
Operation	Application
20046-3 Read out engine information	The operation is used to read out the engine emission and engine certificate information when requested by the customer or other interested parties.
21006-3 Cylinder compression, test	Used when there is a suspicion of fault and/or at abnormal values/readings. This test indicates if there is any deviation in compression in any cylinder in relation to the other cylinders. As a first check this operation is both easy and fast to perform instead of a real compression test.
23017-3 Feed pressure, inspection	Used when there is a suspicion of fault and/or at abnormal values/readings.
23712-3 Injectors shut off, manual	Used when there is a suspicion of fault and/or at abnormal values/readings.
23777-3 Fuel system, check	Check the fuel system on common rail engines. In this test, it is possible to check the engine at different running condition.
25410-3 Air pump exhaust aftertreatment, test	Used when there is a suspicion of fault and/or at abnormal values/readings. Air for combustion and HC injection
25411-3 Burner exhaust aftertreatment, test	Used when there is a suspicion of fault and/or at abnormal values/readings.
25433-3 Fuel system exhaust aftertreatment, bleeding	Used to remove any air in the EATS system.
25438-3, Nox sensor, age compensation, reset	Used to reset the age compensation value stored in the MID 128, E-ECU. A reset is needed either when the E-ECU is replaced and there is no possibility to read out the values from the old E-ECU or when a new Nox sensor is mounted.
25440-3 Fuel pressure, exhaust aftertreatment system, test	The test checks; The fuel supply to the shut off valve, pressure and temperature The pressure after MV1 to the HC injector The pressure after MV2 to the burner
25456-3 Exhaust aftertreatment diagnostics	Perform a simple check of the included components in the exhaust aftertreatment system.
25457-3 Diesel Particulate Filter Service Regeneration	Used when the soot load level becomes higher than what can be removed by the normal regeneration process. See 254 Exhaust Aftertreatment System, description
25460-3 Reset soot and ash load	When the diesel particulate filter has been changed, the soot load and the ash load must be reset. The reset is needed to indicate to the system that the filter has been cleaned. The soot load and ash load must only be reset if a clean filter has been installed.
27502-2 Engine speed control, test	Used when there is a suspicion of fault and/or at abnormal values/readings.
28407-3 Sensor values, monitoring	Used when there is a suspicion of fault and/or at abnormal values/readings.
28420-3 Flywheel and camshaft signal, test	Used when there is suspicious of faulty signals or faulty connected sensor.

Programming

Operation	Application
25801-3 MID 233 Control unit, programming	When changing ACM or only reprogramming. See 254 ACM, replacing non-programmed
25802-3 MID 233 Control unit, campaign	
28423-3 MID 128 ECU, programming	When changing ECU or only reprogramming. See 200 E-ECU, MID 128, changing non-programmed ECU
28422-3 MID 128 ECU, campaign	

Document Title: Engine characteristic curve	Function Group: 210	Information Type: Service Information	Date: 2014/6/12
Profile: EXC, EC220D L [GB]			

Engine characteristic curve



V1111161

Figure 1
Engine characteristic curve, ISO 14396 Gross power

P	Output power
rpm	Engine speed
T	Torque
be	Fuel consumption

Document Title: Engine, removing	Function Group: 210	Information Type: Service Information	Date: 2014/6/12
Profile: EXC, EC220D L [GB]			

Engine, removing

Op nbr 210-070

! WARNING

Risk of burns - stop the diesel engine and allow it to cool down before starting any work.

! WARNING

Removal of residual pressure from the circuit must be done prior to any maintenance.

NOTE!

Cable ties and clamps that secure hoses and electrical wiring must be removed and then replaced when installing components.

NOTE!

Disconnected hoses, lines and connections must be plugged. Oil that drains from hoses, lines and connections should be collected in a container.

1. Place the machine in the service position B. See [091 Service positions](#)
2. Turn off the battery disconnect switch.
3. Drain the coolant in a collection container. See [261 Coolant changing](#).
4. Remove the DPF hood and the radiator hood.

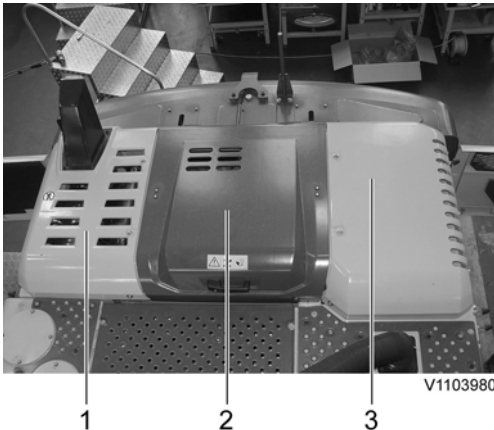


Figure 1

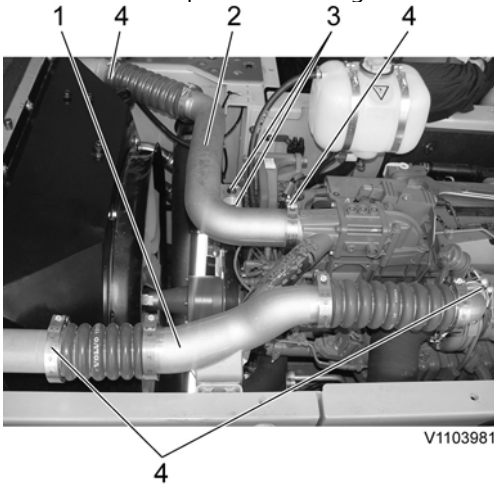
1. DPF hood
 2. Engine hood
 3. Radiator hood
5. Remove the engine room cowl frame with the engine hood using a lifting device.



V1097442

Figure 2

6. Remove the clamps and the charge air cooler tubes.

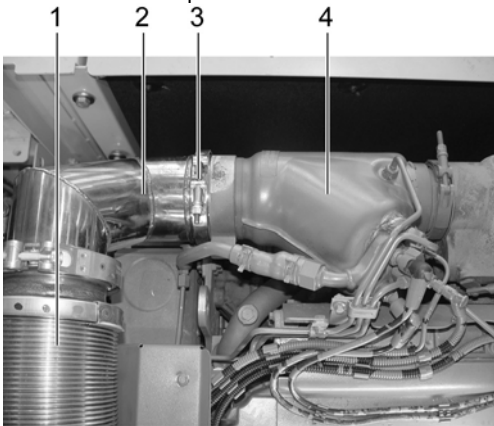


V1103981

Figure 3

1. Charge air cooler tube (Outlet)
2. Charge air cooler tube (Inlet)
3. Screw
4. Clamp

7. Remove the clamp and disconnect the exhaust pipe.



V1104036

Figure 4

1. Exhaust flexible tube

2. Exhaust pipe
3. Clamp
4. Burner

8. Remove the radiator under cover and the engine room under covers.

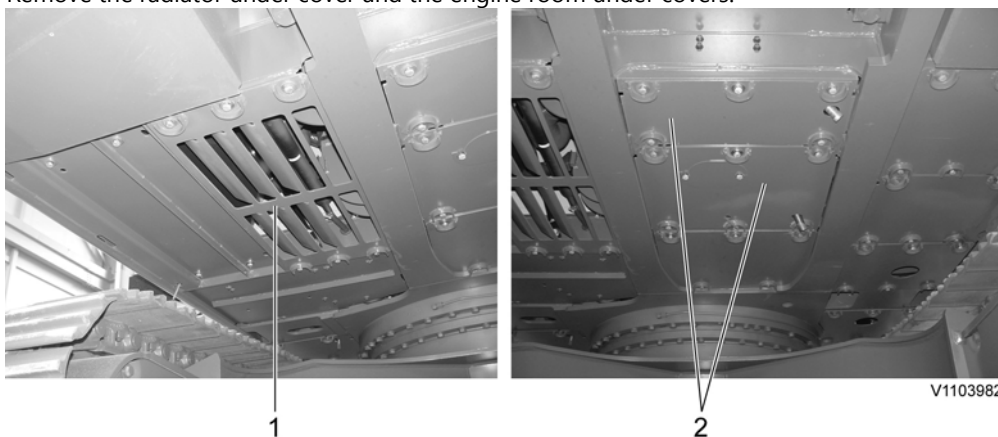


Figure 5

1. Radiator under cover
2. Engine room under cover

9. Remove the clamps and disconnect the radiator hoses.

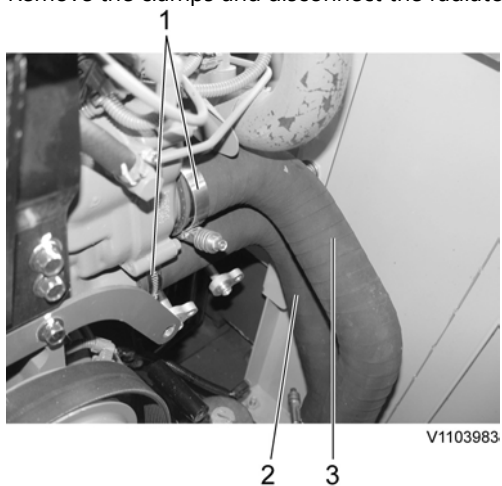


Figure 6

1. Clamp
2. Radiator hose (Inlet)
3. Radiator hose (Outlet)

10. Remove the clamps and disconnect the connector.

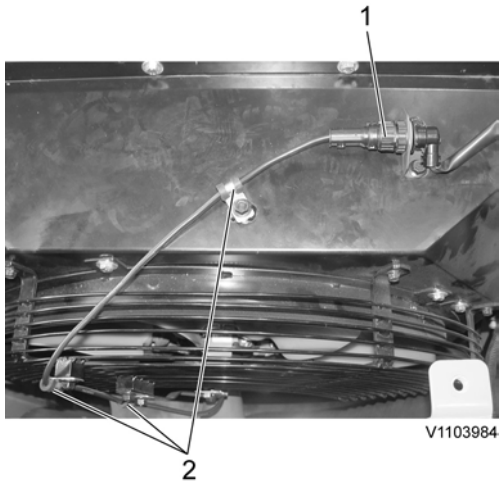


Figure 7

1. Connector
2. Clamp

11. Remove the cooling fan guard.

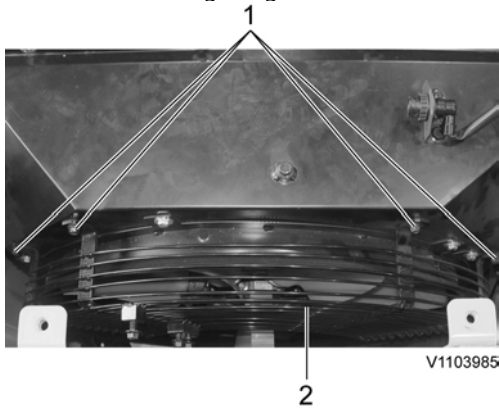


Figure 8

1. Screw
2. Cooling fan guard

12. Remove the mounting screws and lay down the cooling fan inside the radiator shroud safely.

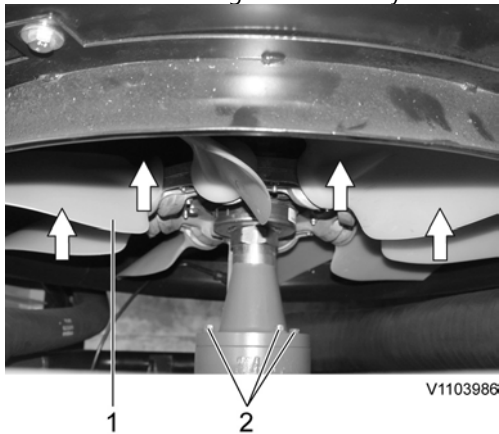


Figure 9

1. Cooling fan
2. Screw

13. Remove the main pump. See [913 Hydraulic pump, replacing](#)

14. Disconnect the hose on the top side of the expansion tank.

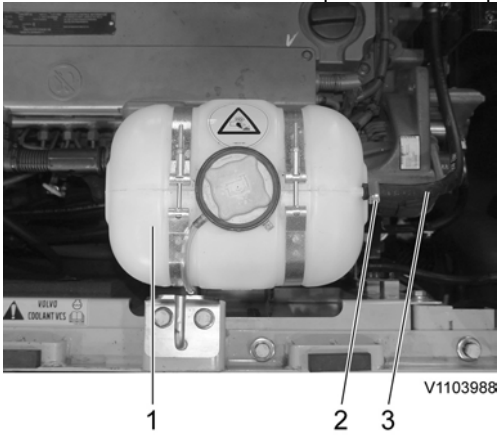


Figure 10

1. Expansion tank
2. Clamp
3. Hose

15. Disconnect wire harness connector and the hoses.

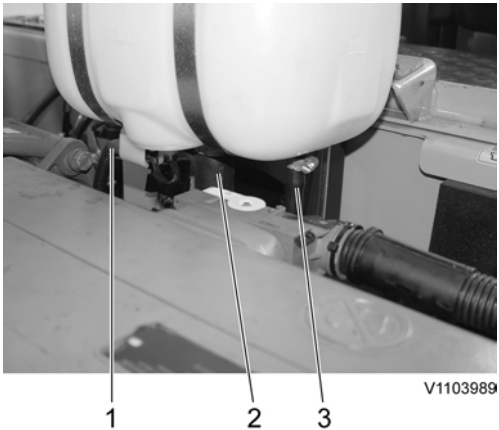


Figure 11

1. Wire harness connector
2. Hose
3. Hose

16. Remove the screws and the cover plate with the expansion tank.

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