VOLVO

Construction Equipment

Service Information

Document Title:	Function Group:	Information Type:	Date:
Engine Tier 3 introduction	**200**	**Service Information**	**2014/3/19**
Profile: **SSL, MC80B [GB]**			

Engine Tier 3 introduction

Model	Engine	Part number	Variant
MC60B	D2.2 DCBE3	11852928	Standard hydraulics Pilot Standard hydraulics
MC70B	D2 DCAE3	11852929	Standard hydraulics Self level hydraulics Pilot Standard hydraulics Pilot Self level hydraulics Pilot High Flow self level
MC80B	D3.4 DCBE3	11852930	Standard hydraulics Self level hydraulics Pilot Standard hydraulics Pilot Self level hydraulics
MC90B/MC110B	D3.4 DCCE3	11852931	Standard hydraulics Self level hydraulics Pilot Standard hydraulics Pilot Self level hydraulics Pilot High Flow self level
MC90B/MC110B HF	D3.4 DCGE3	11852932	Standard hydraulics Self level hydraulics Pilot Standard hydraulics Pilot Self level hydraulics Pilot High Flow self level

Document Title:	Function Group:	Information Type:	Date:
Engine for MC80B, MC90B and MC110B, description	**200**	**Service Information**	**2014/3/19**
Profile: **SSL, MC80B [GB]**			

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Engine for MC80B, MC90B and MC110B, description

The engine is a vertical in-line, four cylinder, four stroke, water-cooled diesel engine with a direct injection system. The engines for MC90B and MC110B are also equipped with a turbocharger of radial flow type. The valve mechanism receives its movement from the camshaft via rods and rocker arms. Turning direction is counter-clockwise seen from the flywheel. Firing order is 1-3-4-2 and the first cylinder is on the flywheel side.
The fuel system is direct injection via a rotary high pressure pump, a so called MP pump. The pump has only one plunger cylinder to pressurize the fuel and a distribution shaft which regulates the fuel flow to each cylinder.
The lubrication system consists of forced lubrication with a trochoid pump.
The air system consists of a dual element, self cleaning air cleaner.
The cooling of the engine is performed by a high capacity radiator and a hydraulic oil cooler. The type of fluid used in the cooling system consists of 50% ethylene glycol and 50% water, which gives an anti-freeze protection.

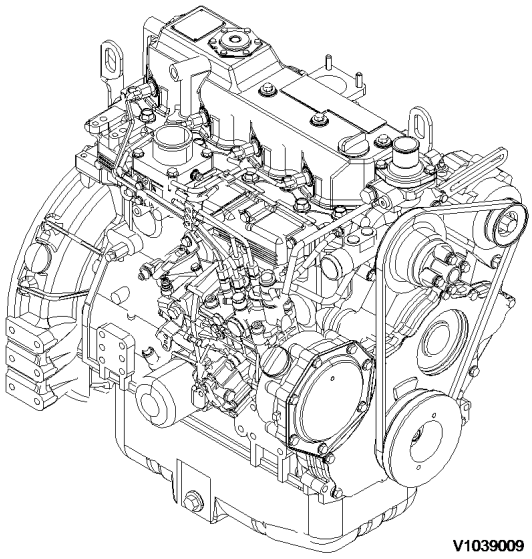

Figure 1
Engine, MC80B (Volvo D3.4A CAE2SW3U)

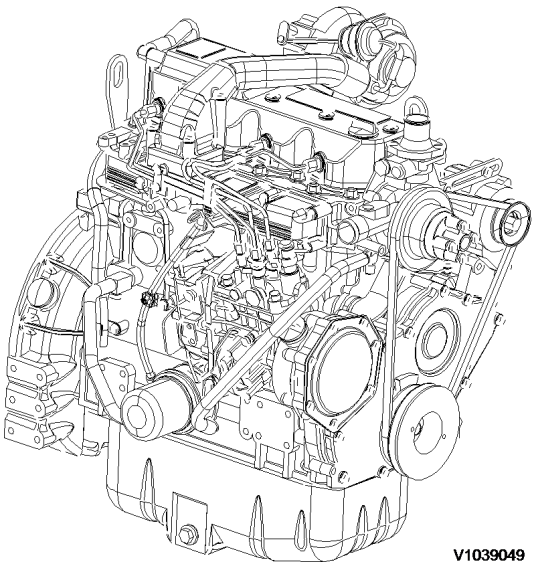

Figure 2
Engine, MC90B and MC110B (Volvo D3.4A CAE2SW1U, engine with high flow; Volvo D3.4A CAE2SW2U)

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Document Title:	Function Group:	Information Type:	Date:
Engine, description	**200**	**Service Information**	**2014/3/19**
Profile: **SSL, MC80B [GB]**			

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Engine, description

MC80B (D3.4DCAE2)

The engine is a vertical in-line, four cylinder, four stroke, water-cooled diesel engine with a direct injection system. The valve mechanism receives its movement from the camshaft via rods and rocker arms. Turning direction is counter-clockwise seen from the flywheel. Firing order is 1-3-4-2 and the first cylinder is on the flywheel side.
The fuel system is fed by an electric fuel pump that supplies the fuel to the electronic fuel injection pump.
The lubrication system consists of forced lubrication with a trochoid pump.
The air system consists of a dual element, self cleaning air cleaner.
The cooling of the engine is performed by a high capacity radiator and a hydraulic oil cooler.

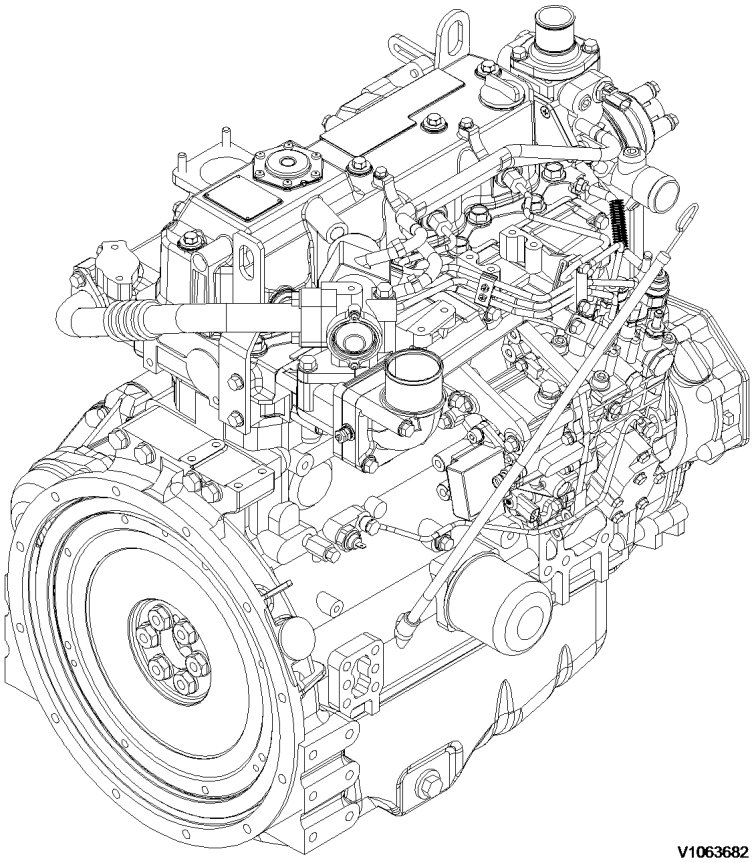

Figure 1

VOLVO
Construction Equipment

Service Information

Document Title:	Function Group:	Information Type:	Date:
E-ECU, MID 128, changing non-programmed ECU	**200**	**Service Information**	**2014/3/19**
Profile: **SSL, MC80B [GB]**			

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

Op nbr 200-068

VCADS Pro VCADS Pro Service Tool
88890180 Interface
88890027 Cable

This operation also includes required tools and times for applicable parts of the following operations:

- 191 Service position 1

1. Place the machine in service position, see 191 Service position 1.
2. Connect VCADS Pro and start the operation 28423-3 MID 128 ECU, programming.
3. Unplug the connectors from E-ECU.


V1068647

Figure 1
E-ECU

4. Change E-ECU.
5. Plug in the connector.
6. Turn on the voltage with the battery disconnect switch.
7. Finish VCADS Pro operation 28423-3 MID 128 ECU, programming.
8. Start the machine and check that no error messages appear.
9. Restore the machine to operating condition.

Document Title: **E-ECU, MID 128, changing pre-programmed ECU**	Function Group: **200**	Information Type: **Service Information**	Date: **2014/3/19**
Profile: **SSL, MC80B [GB]**			

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

Op nbr 200-070

VCADS Pro VCADS Pro Service Tool
88890180 Interface
88890027 Cable

This operation also includes required tools and times for applicable parts of the following operations:

- 191 Service position 1

1. Place the machine in service position, see 191 Service position 1.
2. The new control unit has basic set parameters for the machine. If it is possible to read out customer parameters, connect VCADS Pro and start the operation 17030-3 Parameter, programming. Save all read parameters to job card. The operation is used to read out customer parameters from the old control unit to enable later comparison with parameters in the new control unit.
3. Unplug the connector from E-ECU.


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Figure 1
E-ECU

4. Change E-ECU.
5. Plug in the connector.
6. Turn on the voltage with the battery disconnect switch.
7. If customer parameters have been read out from the old control unit, compare these to the parameters in the new control unit.
   - Connect VCADS Pro and perform the operation 17030-3 Parameter, programming. Save all read parameters to job card.
   - Compare parameter settings on the job cards.

- Perform operation 17030-3 Parameter, programming and change customer parameters according to job card for the old control unit.

8. Start the machine and check that no error messages appear.

9. Restore the machine to operating condition.

Document Title: **Engine, removing**	Function Group: **210**	Information Type: **Service Information**	Date: **2014/3/19**
Profile: **SSL, MC80B [GB]**			

Engine, removing

Op nbr 210-070

11668023 Lifting tool
9993902 Disassembly tool

9993903 Disassembly tool

WARNING

Hot oil and hot engine coolant can cause severe burns!

1. Put the machine in **service position 1**, see 191 Service position 1.
2. Turn off the electric power with the battery disconnect switch.

   NOTICE

   Always handle oils and other environmentally hazardous fluids in an environmentally safe manner.
3. Open the drain valve and drain the coolant into a suitable container.
   Volume, approx.: **10 l (2.7 US gal)**

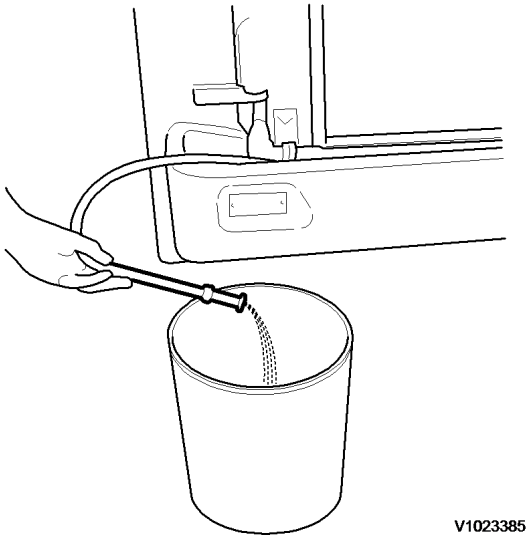


Figure 1

4. Carefully open the filler cap on the radiator to speed up the draining.

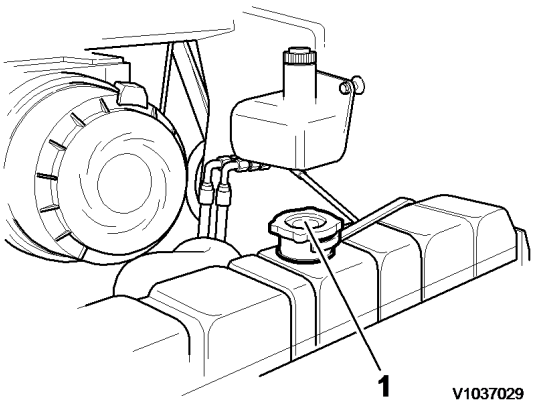


Figure 2

1. Radiator cap

5. When the radiator is drained, close the drain valve.
6. Disconnect the lower end of the gas spring.

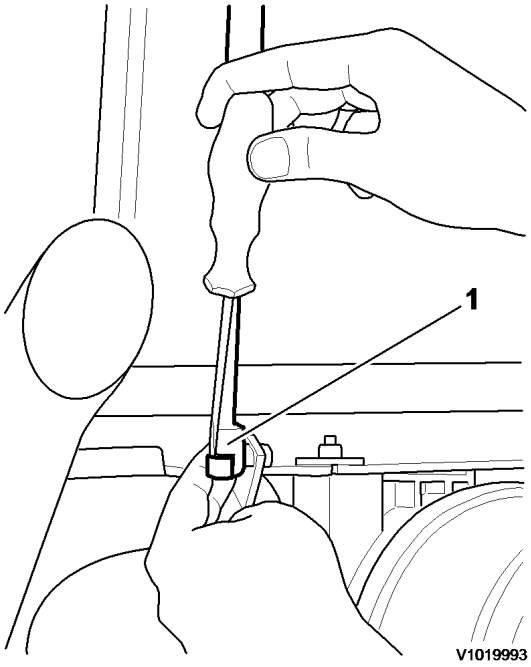


Figure 3

1. Gas spring

7. Remove the engine cover from the crossmember.

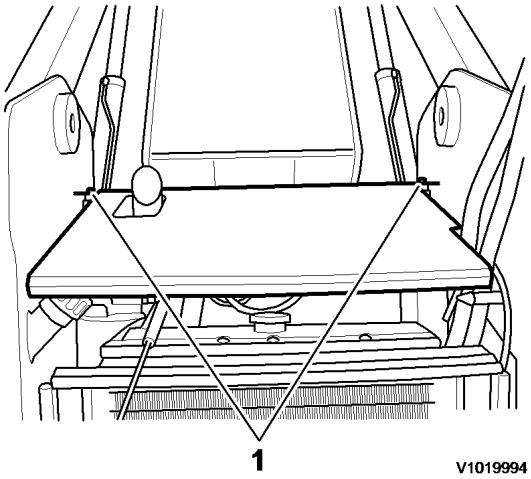


Figure 4

1. Engine cover mounting

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

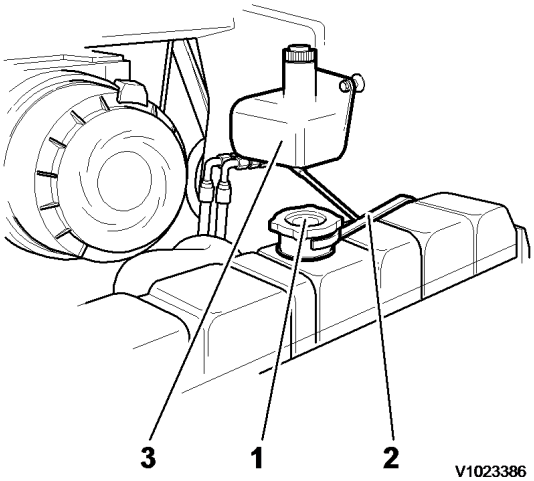


Figure 5

1. Radiator fill cap
2. Over flow hose
3. Over flow bottle

NOTICE

Always handle oils and other environmentally hazardous fluids in an environmentally safe manner.

Applies to engines equipped with High flow:
Open the hydraulic fluid drain plug and drain the hydraulic fluid into a suitable container (approx. 70 l, 18.5 US gal)

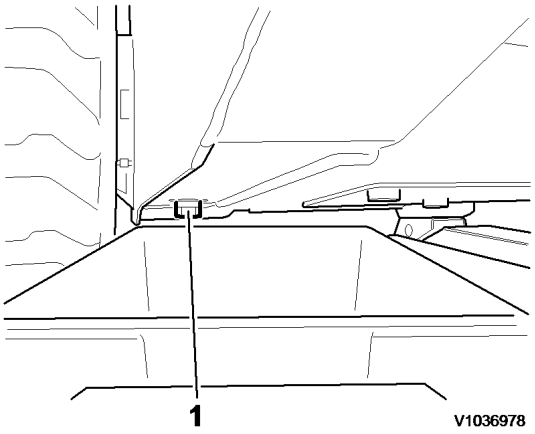


Figure 6

1. Hydraulic fluid drain plug beneath the left hand tower

9. Disconnect the return hose from the main hydraulic oil filter. Drain the oil cooler via the hose into a container. Plug the connections.

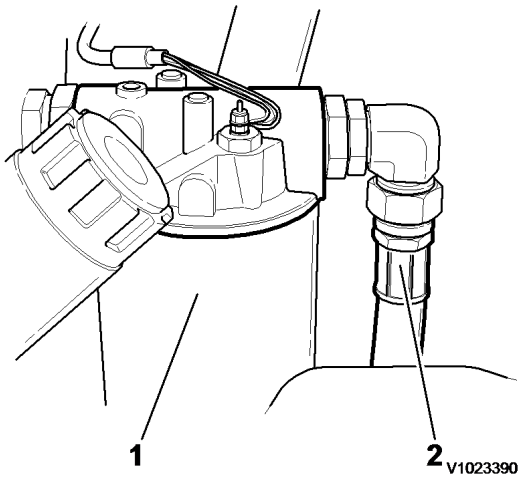


Figure 7

1. Main hydraulic oil filter
2. Return hose

10. Disconnect the support cable from the hydraulic oil cooler.

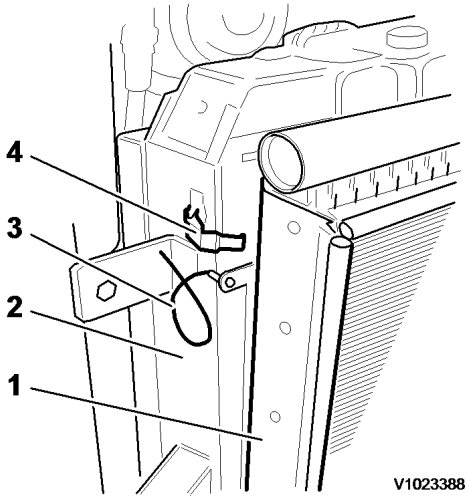


Figure 8

1. Hydraulic oil cooler
2. Radiator
3. Support cable
4. Latch

11. Disconnect the right side swivel connection from the radiator by sliding the lock washer inwards.Use 9993902 Disassembly tool and 9993903 Disassembly tool. Use a suitable container to collect any spillage. Plug the connections.

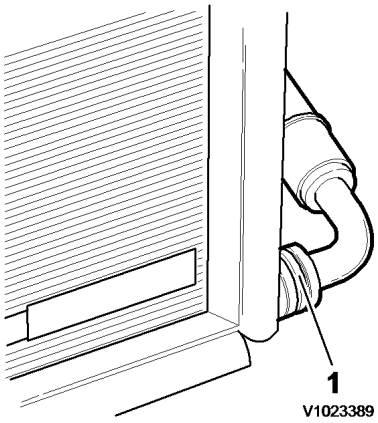


Figure 9

1. Swivel joint

12. Open the latches holding the cooling assembly together. Lift the oil cooler from the radiator. Carefully place the oil cooler on a flat surface.
    Weight, approximately: **20 kg (44 lb)**

13. Disconnect the upper radiator hose from the engine block. Plug the connections.

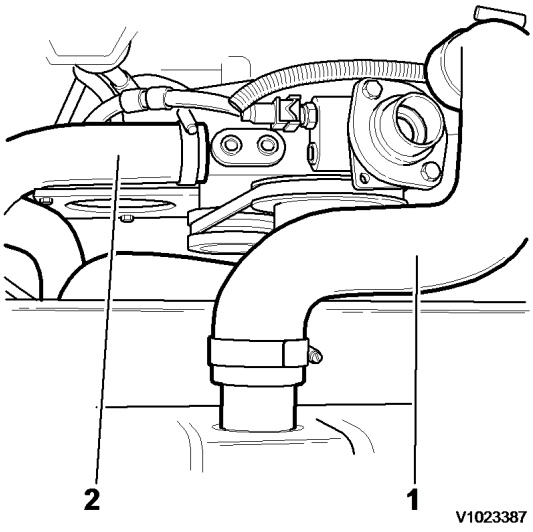


Figure 10

1. Upper radiator hose
2. Fan guard
3. Lower radiator hose

14. Disconnect the lower radiator hose from the engine block.

15. Remove the fan guard from the radiator.

16. Remove the screws from the radiator mounts. Carefully remove the radiator and place the radiator on a flat surface. Weight, approx.: **40 kg (88 lb)**
    NOTE!
    Use care when handling the radiator.

    To prevent damage to the radiator drain connection, do not place the radiator on its bottom surface without support blocks used on each side.

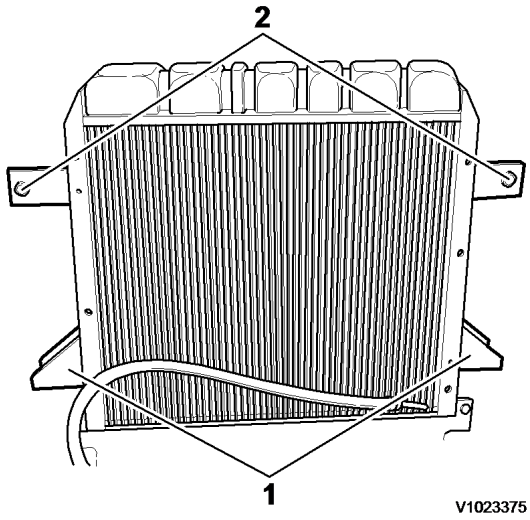


Figure 11

1. Lower radiator mounts
2. Upper radiator mounts

If the machine is equipped with cab heater, disconnect the hoses from the water pump.

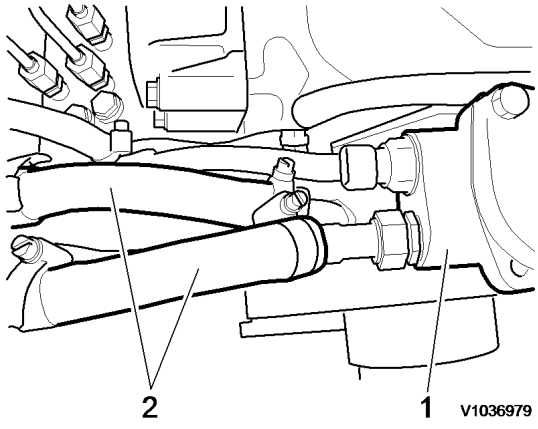


Figure 12

1. Water pump
2. Cab heat hose

17. Disconnect the connector from the air cleaner restriction sensor.

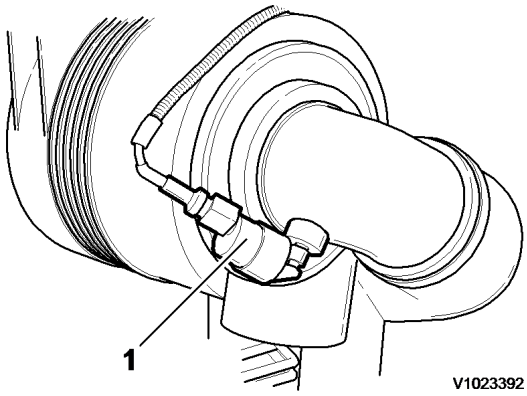


Figure 13

1. Air cleaner restriction sensor

18. Disconnect the air intake hose from the engine intake manifold

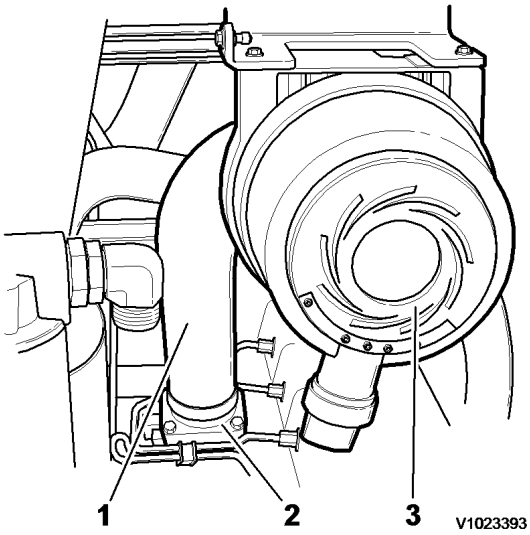


Figure 14
Engine without Turbo

1. Air intake hose
2. Engine intake manifold

NOTICE

Always cover open air connections with a plastic bag and rubber bands. Gravel, dust and other particles in these connections may result in engine failure!

If the machine is equipped with turbo, disconnect the air intake hose from the turbo.

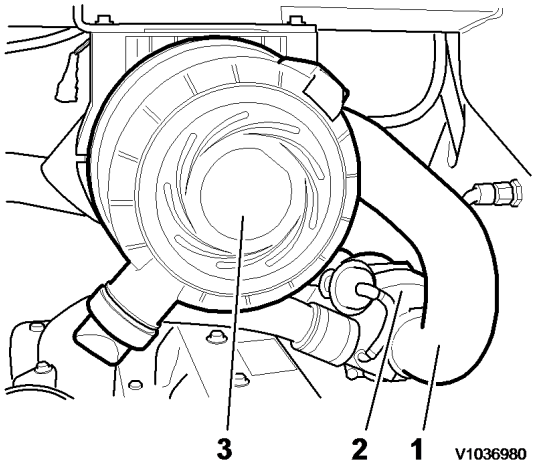


Figure 15
Engine with turbo

1. Air intake hose
2. Turbo

19. Remove the air cleaner assembly from the mounting bracket.

20. Remove the exhaust pipe between the exhaust manifold and the muffler. Plug the exhaust manifold.

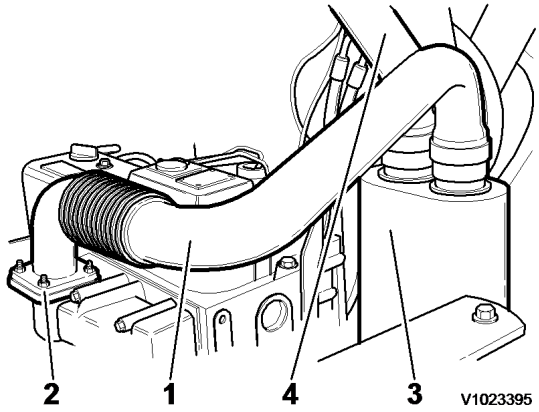
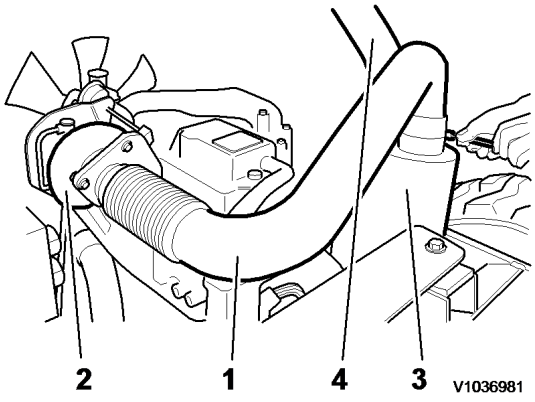


Figure 16
Engine without turbo

1. Exhaust pipe
2. Exhaust manifold
3. Muffler
4. Tail pipe

If the machine is equipped with turbo, remove the exhaust pipe between the turbo and the muffler. Plug the connections to the turbo.



Our support email:

ebooklibonline@outlook.com