VOLVO
Construction Equipment

Service Information

Document Title:	Function Group:	Information Type:	Date:
Engine Tier 3 introduction	**200**	**Service Information**	**2014/3/29**
Profile: **SSL, MC70B [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

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Document Title:	Function Group:	Information Type:	Date:
Engine for MC60B and MC70B, description	**200**	**Service Information**	**2014/3/29**
Profile: **SSL, MC70B [GB]**			

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Engine for MC60B and MC70B, description

The engine is a vertical in-line, four cylinder, four stroke, water-cooled diesel engine with a direct injection system. The engine for MC70B is 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. It 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.

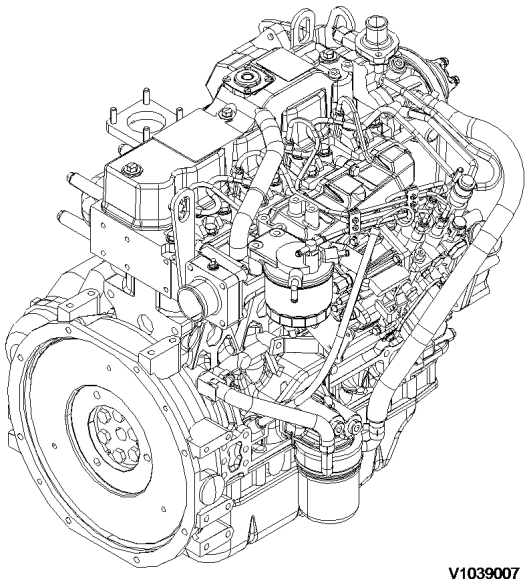

Figure 1
Engine, MC60B (Volvo D2.2A CAE2SW1U)

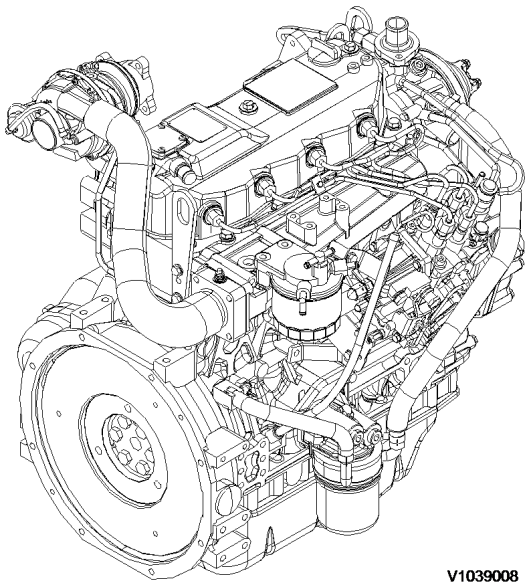

Figure 2
Engine, MC70B (Volvo D2.0A CAE2SW1U)

Document Title:	Function Group:	Information Type:	Date:
Engine, description	**200**	**Service Information**	**2014/3/29**
Profile: **SSL, MC70B [GB]**			

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Engine, description

MC70B (D2DCAE3)

The engine is a vertical in-line, four cylinder, four stroke, water-cooled diesel engine with a direct injection system. The engine is 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 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.

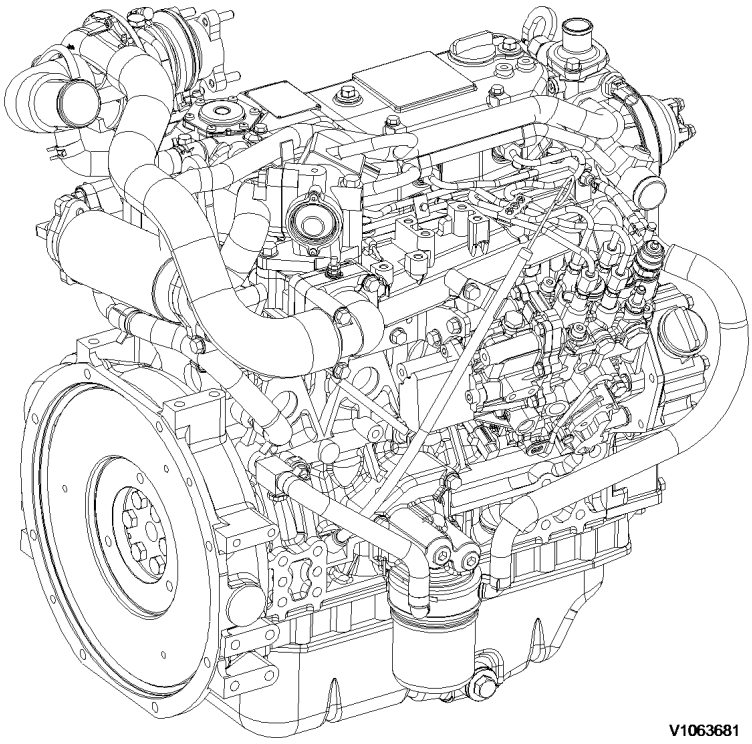

Figure 1

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Service Information

Document Title: **E-ECU, MID 128, changing non-programmed ECU**	Function Group: **200**	Information Type: **Service Information**	Date: **2014/3/29**
Profile: **SSL, MC70B [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.

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Service Information

Document Title: **E-ECU, MID 128, changing pre-programmed ECU**	Function Group: **200**	Information Type: **Service Information**	Date: **2014/3/29**
Profile: **SSL, MC70B [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.


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. 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: **2014/3/29**
Profile: **SSL, MC70B [GB]**			

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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!

NOTICE

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

1. Put the machine in **service position 1**, see 191 Service position 1.
2. Switch the battery master switch off.
3. Open the drain valve and drain the coolant to a suitable container.

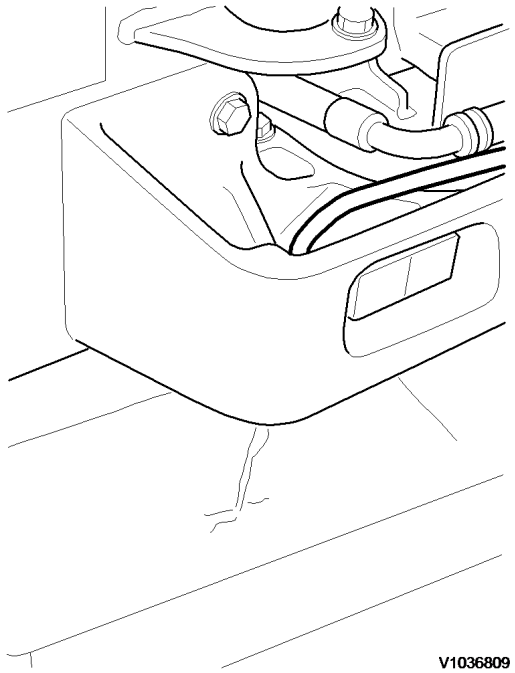

Figure 1

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

5. When the radiator is drained, close the drain valve

6. **Applies to engine equipped with high flow:**
   Open the drain valve and drain the hydraulic oil in a suitable container.

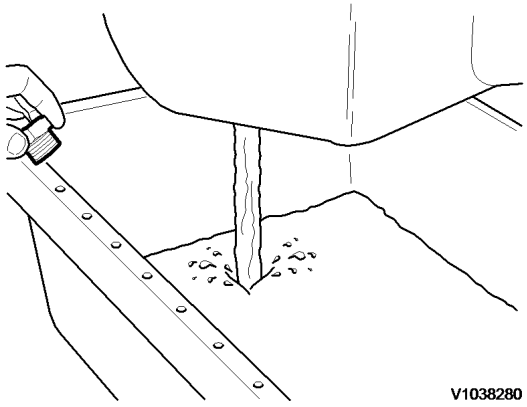

Figure 2

7. Remove the gas spring from the upper radiator support.

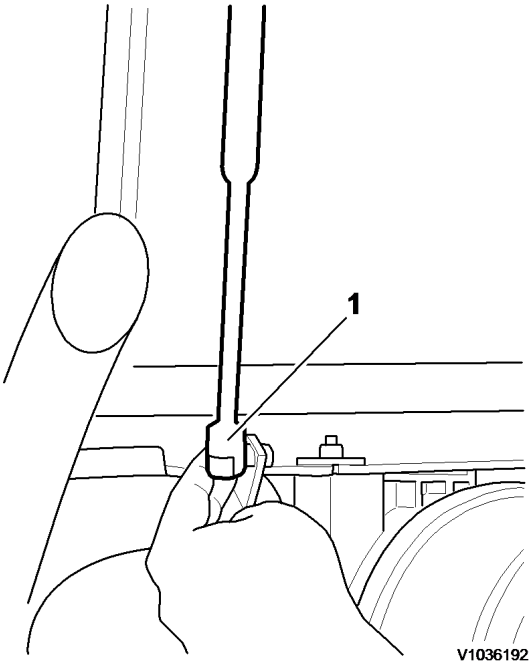

Figure 3

1. Gas spring

8. Remove the screw, moulding, stop, clamps and cover that holds the engine cover onto the chassis.

9. Remove the engine cover from the crossmember.

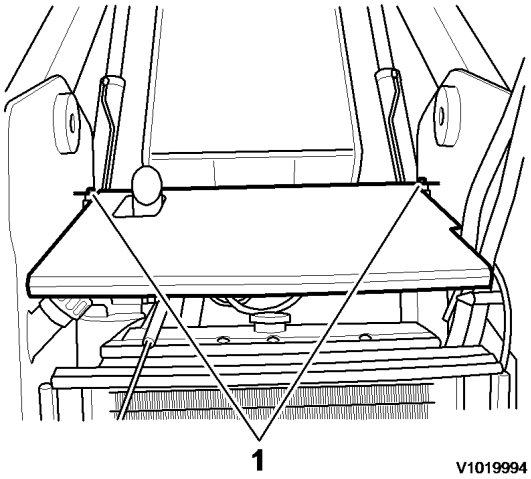

Figure 4

1. Engine cover mounting

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

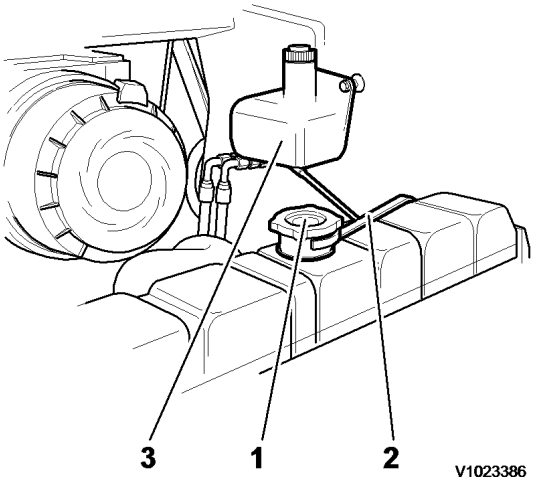

Figure 5

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

11. 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.

12. Disconnect and plug up the return hose from the hydraulic cooler. Use 9993902 Disassembly tool and 9993903 Disassembly tool.
    NOTE!
    Some hydraulic oil may still be in the system.

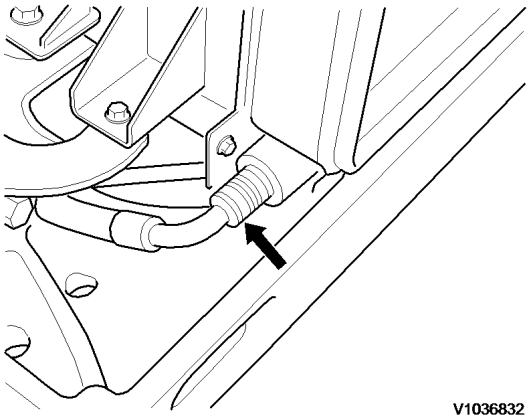

Figure 6

13. Disconnect and plug up the swivel connection on the right side of the radiator.

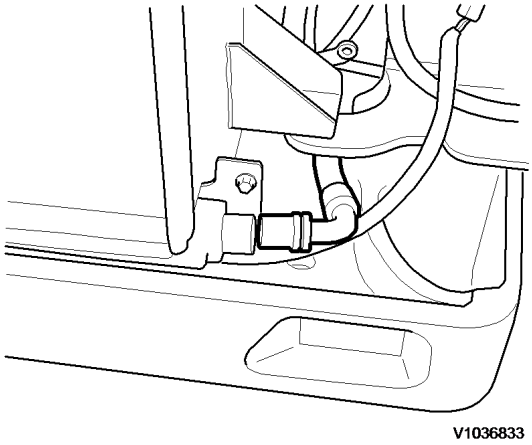

Figure 7

14. Unbolt the cable from oil cooler.

15. Open the latches holding the cooling assembly together. Lift the oil cooler from the radiator. Carefully place the oil cooler on a flat surface.

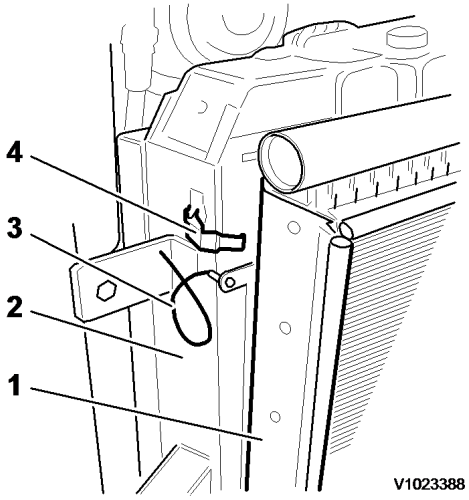

Figure 8

1. Oil cooler
2. Radiator

3. Cable
4. Latch

16. Disconnect the upper radiator hose from the engine block.

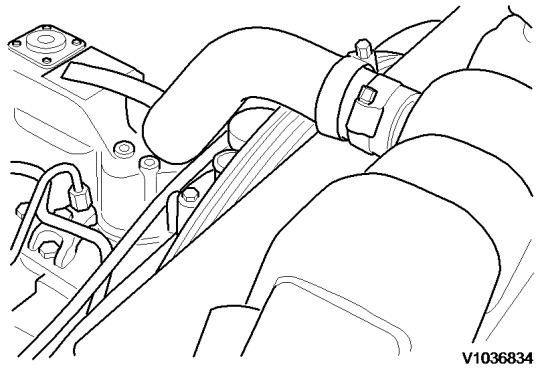

Figure 9

17. Remove the fan guard.

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

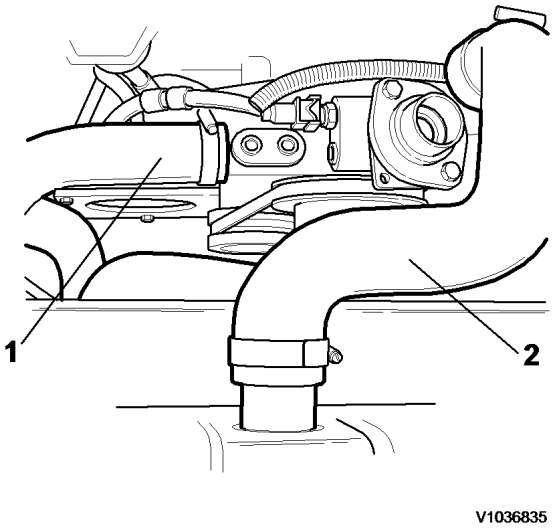

Figure 10

1. Lower radiator hose
2. Upper radiator hose

19. Remove the locknuts and the washers from the bottom of the radiator.

20. Remove the capscrews, washers and locknuts from the top of the radiator.

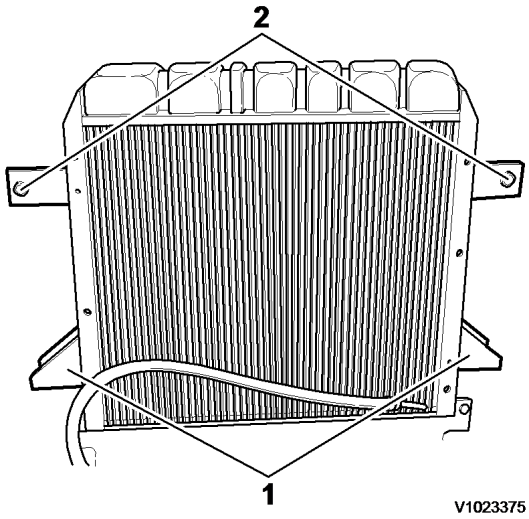

Figure 11

1. Lower radiator mounts
2. Upper radiator mounts

21. Carefully lift the radiator assembly.
    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.

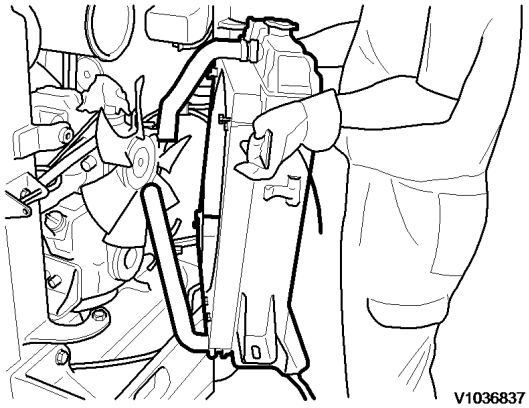

Figure 12

22. Disconnect the wires to the air cleaner restriction sensor.

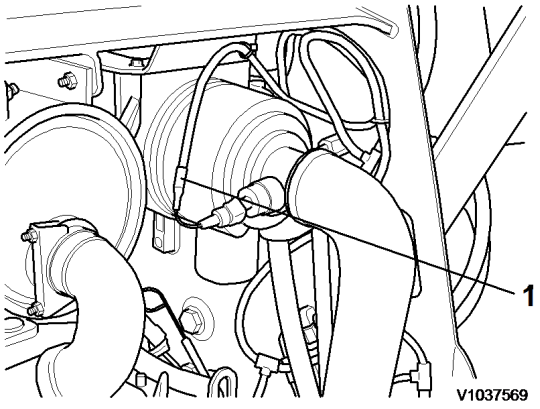

Figure 13

1. Restriction sensor

23. 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.
    Engine equipped with turbo remove the hose between air cleaner and turbo charger.
    NOTE!
    Remove the hose between the air cleaner and the turbo charger on engines equipped with turbo.

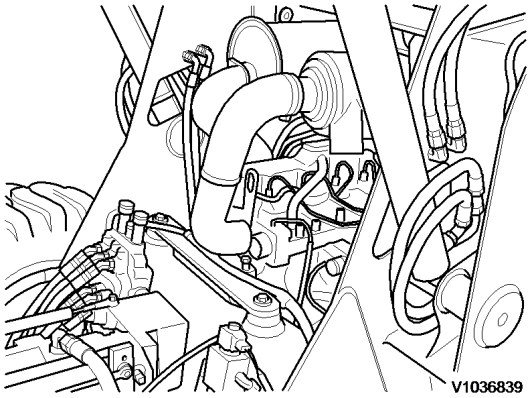

Figure 14
Picture shows MC60B

24. Loosen the capscrews holding the muffler and the capscrews holding the exhaust mainfold.
    On engine equipped with turbo remove the exhaust manifold between muffler and turbo charger.

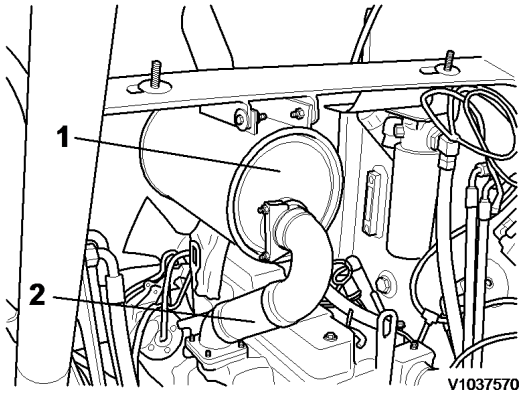

Figure 15

1. Muffler
2. Exhaust manifold

25. Remove the muffler assembly.

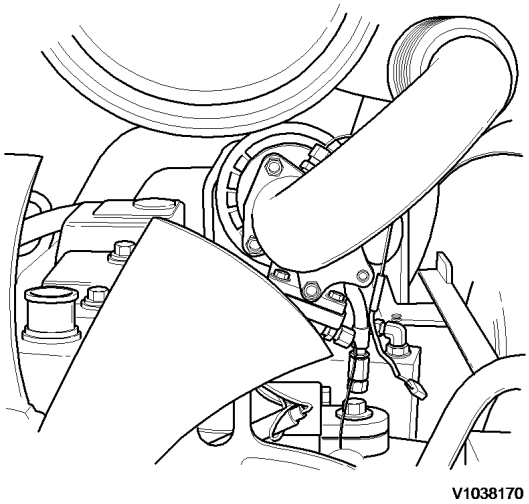

Figure 16
Picture shows MC70B

26. Disconnect the engine harness from the main chassis harness.

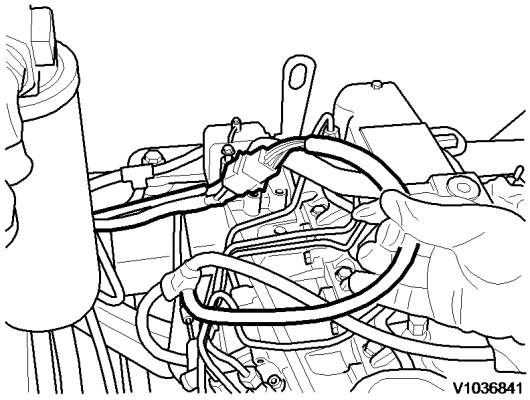

Figure 17

27. Tag and remove the wires from the positive (+) terminal on the starter.

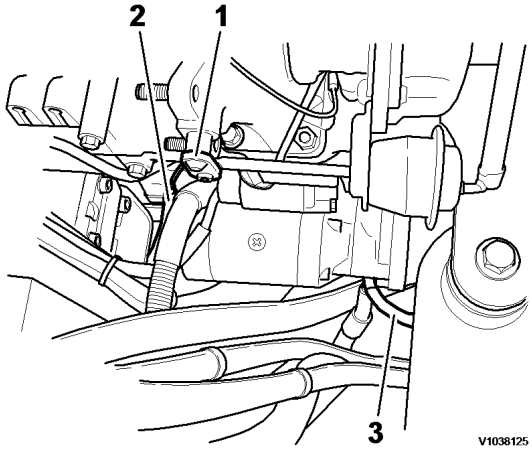

Figure 18

1. Positive (+) terminal
2. Starter flange
3. Negative (-) cable

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