VOLVO

Construction Equipment

Service Information

Document Title:	Function Group:	Information Type:	Date:
Engine Tier 3 introduction	**200**	**Service Information**	**2014/3/19**
Profile: **SSL, MC90B [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, MC90B [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.

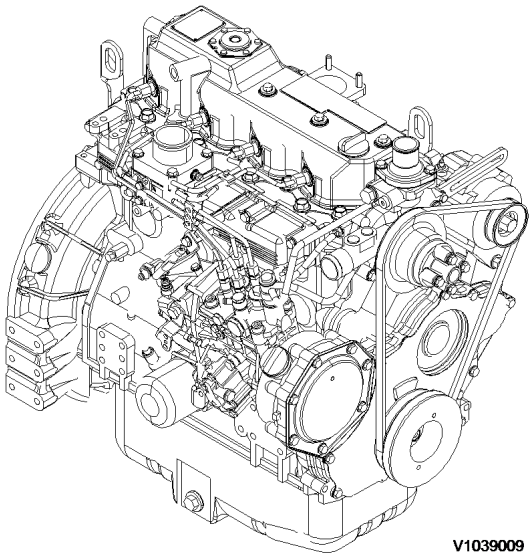

Figure 1
Engine, MC80B (Volvo D3.4A CAE2SW3U)

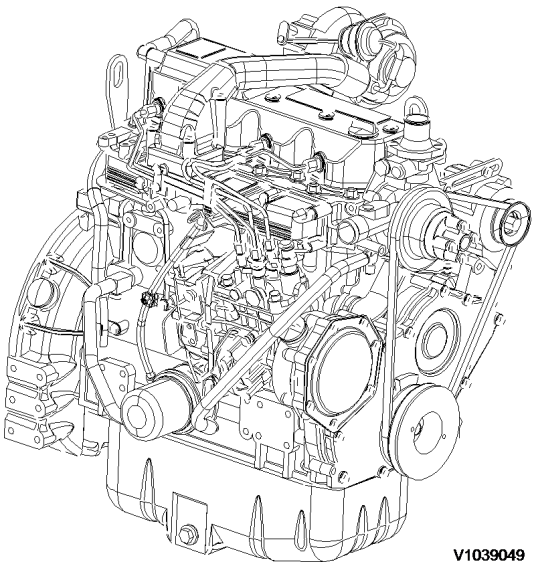

Figure 2
Engine, MC90B and MC110B (Volvo D3.4A CAE2SW1U, engine with high flow; Volvo D3.4A CAE2SW2U)

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

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Engine, description

MC90B, MC110B (D3.4DCEF3, D3.4DCGE3 High Flow)

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 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.

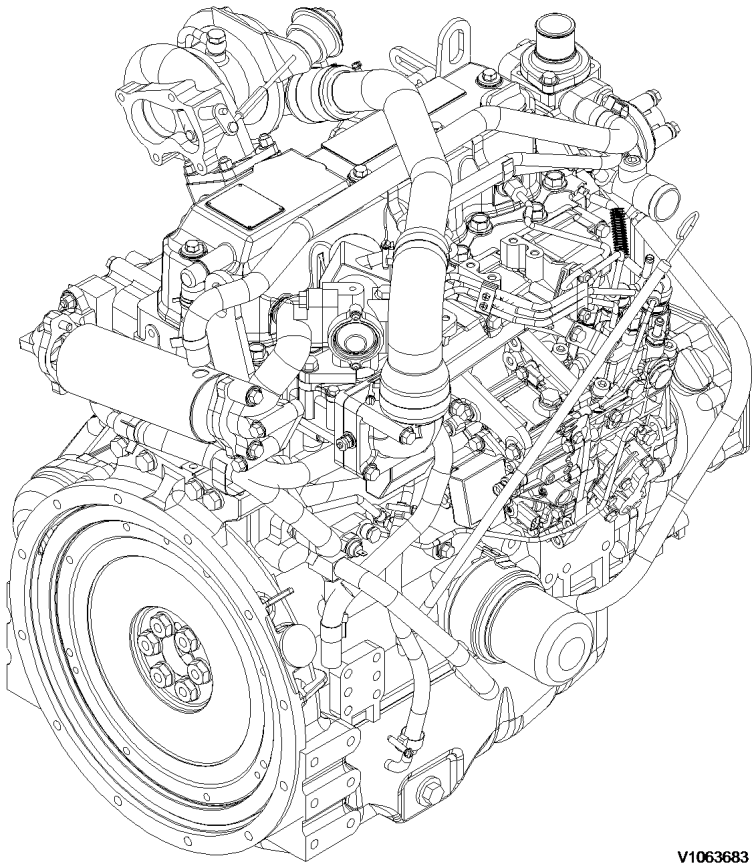

Figure 1

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, MC90B [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, MC90B [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: **2014/3/19**
Profile: **SSL, MC90B [GB]**			

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Engine, removing

Op nbr 210-070

11668023 Lifting 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. Park the machine in the, see 191 Service position 1
2. For lifting the loader arm when engine is not running see 191 Manual lifting of loader arm
3. Switch off the battery .
4. Open the drain valve and drain the coolant to a suitable container.

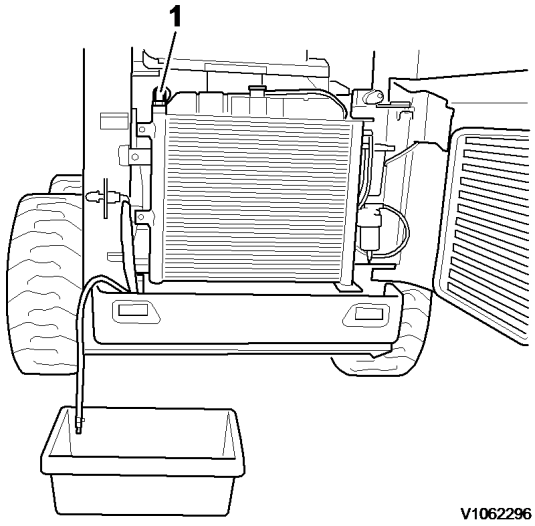

Figure 1

1. Drain valve

5. Carefully open the fill cap on the radiator to speed up the draining.
6. When the radiator is drained, close the drain valve
7. 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.

8. Disconnect the radiator overflow hose from the radiator.
   Secure the hose so that the coolant remains in the over flow bottle.

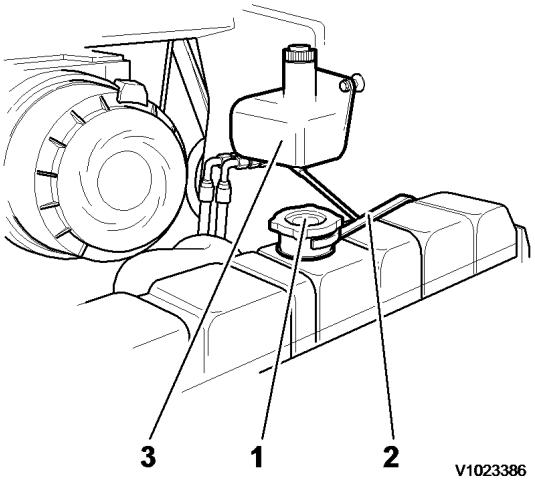

Figure 2

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

9. Remove the engine cover from the crossmember.

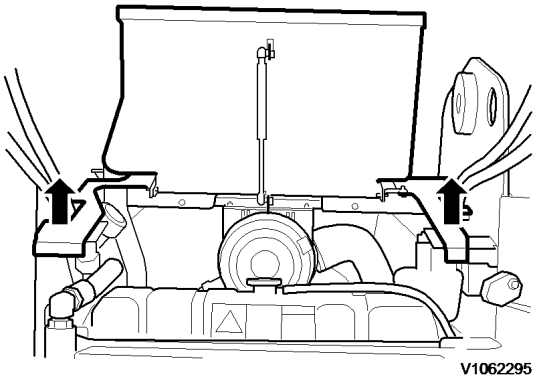

Figure 3

10. Remove the fan guard.

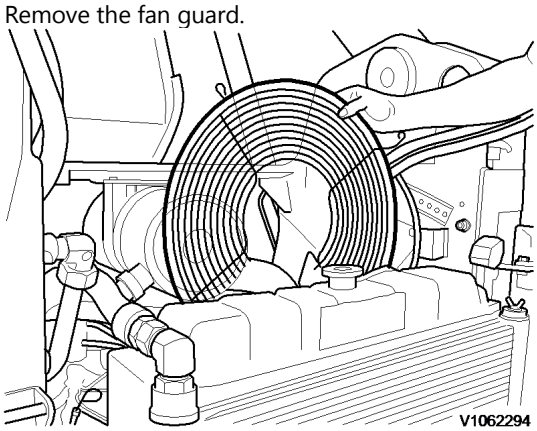

Figure 4

11. **Applies to engine equipped with high flow:**

WARNING

Hydraulic oil is toxic and may be hot and highly pressurised. If jets of oil should penetrate the skin, medical advice must be sought immediately. Allow the machine to cool and use protective equipment when handling hydraulic oil.

Open the drain valve and drain the hydraulic oil in a suitable container.

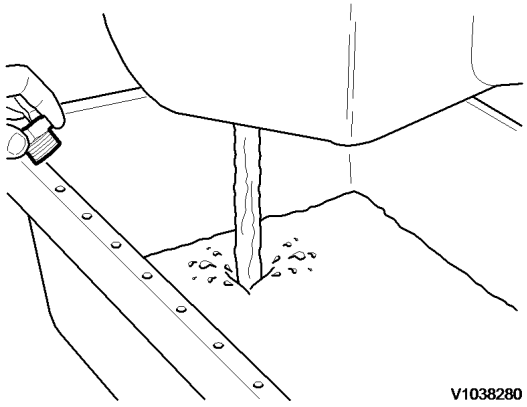

Figure 5

12. Remove the hose from the oil cooler.
Applies to engine equipped with high flow:

13. Disconnect and plug up the hose for the Charge/Implement pump.

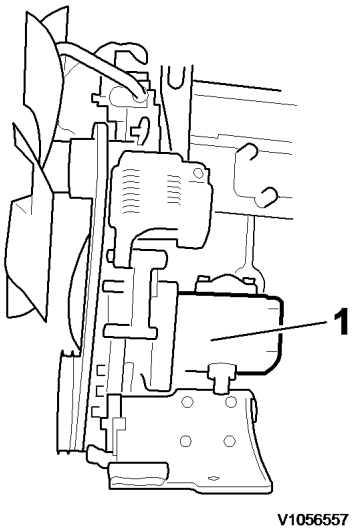

Figure 6

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

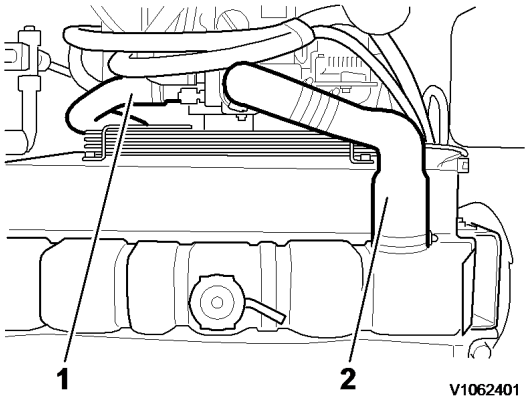

Figure 7

1. Lower radiator hose
2. Upper radiator hose

15. Disconnect the lower radiator hose from the engine block.
    Cab heating (Optional)

16. Disconnect the hoses for cab heating (Option) from the engine.

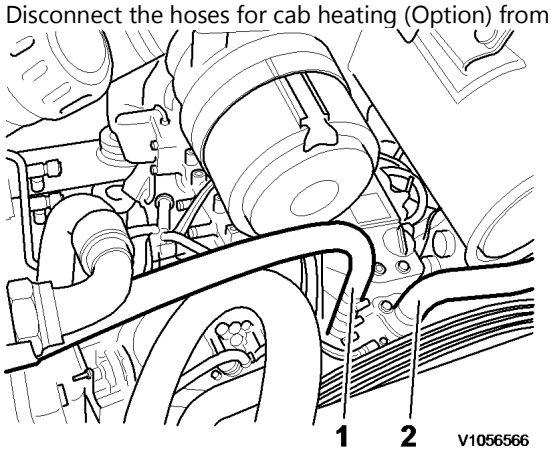

Figure 8

1. Supply hose
2. Return hose

17. Close the valve on the fuel supply line at the water separator. Loosen the fuel filter and the water separator and put them a side.

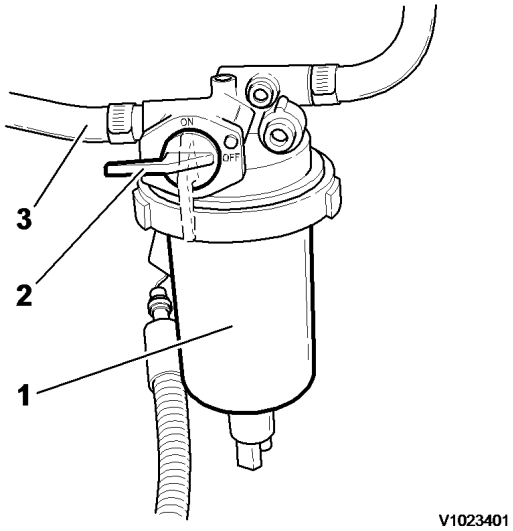

Figure 9

1. Water separator
2. Valve
3. Fuel supply line

18. Remove the capscrews, locknuts and the washers from the bottom of the radiator.

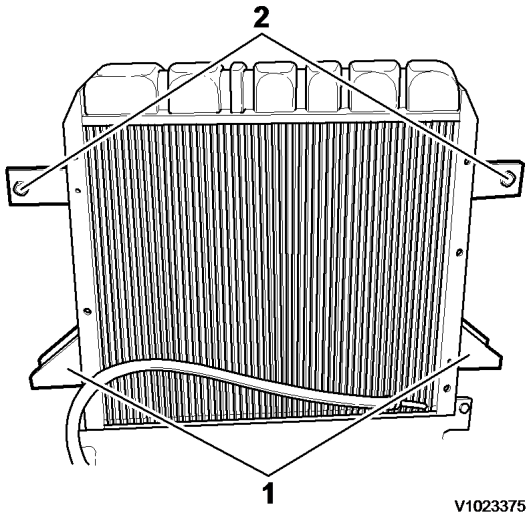

Figure 10

1. Lower radiator mountings
2. Upper radiator mountings

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

20. Disconnect and plug the hydraulic hose at the main valve.

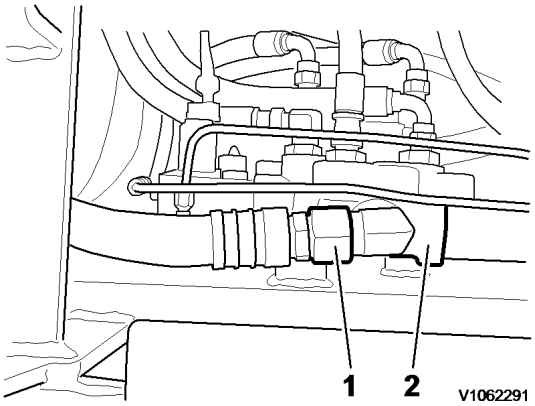

Figure 11

1. Hydraulic hose
2. Main valve

21. Carefully lift the radiator and oil cooler assembly. Let the hydraulic hose that was connected to the main valve slide along with the assembly.
    Place the assembly a side on a suitable steady support and secure the radiator and oil cooler assembly to the rear door.
    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.

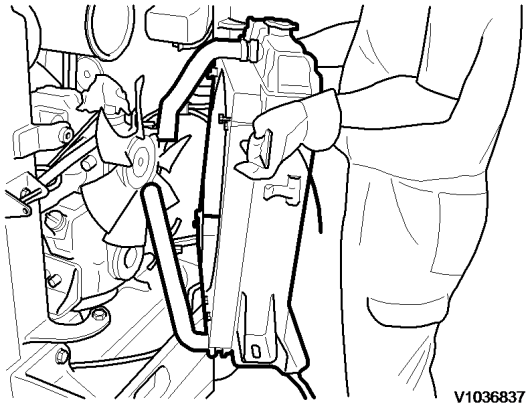

Figure 12

WARNING

Do not disconnect or loosen connections for the air conditioning unit (AC). Risk of gas leakage.

Applies to models equipped with AC:

22. Loosen the screw (1) Adjust the adjusting screw (2) on the compressor "bracket" to loosen up the belt. Loosen and remove the screws that holds the compressor. Put the compressor aside without disconnecting any AC-hoses.

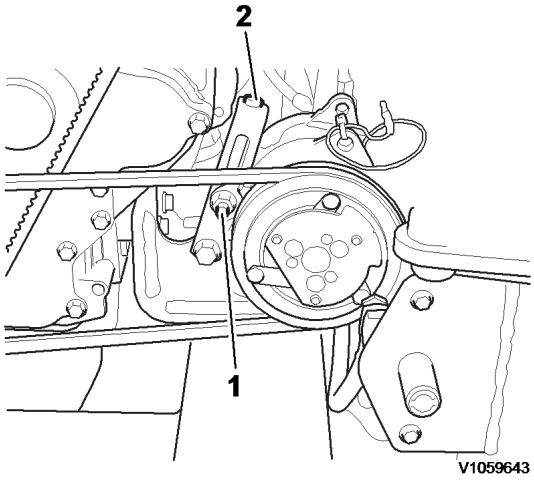

Figure 13
V1059643

1. Screw
2. Adjusting screw

23. Disconnect the cable connection to the air cleaner restriction sensor SE2501.

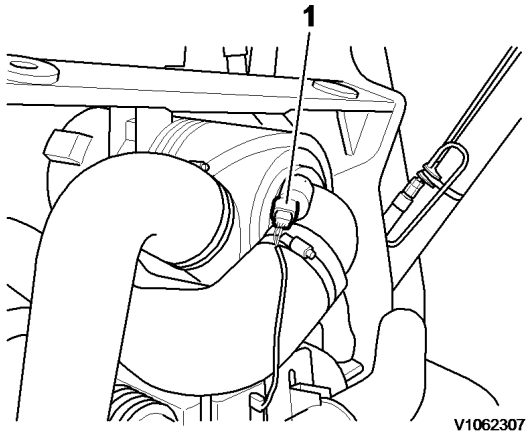

Figure 14
V1062307

1. SE2501

24. Loosen the hose clamp and plastic tie that secures the air intake hose to the turbo charger. Plug or cover the fitting to prevent entry of dirt or debris into the engine.

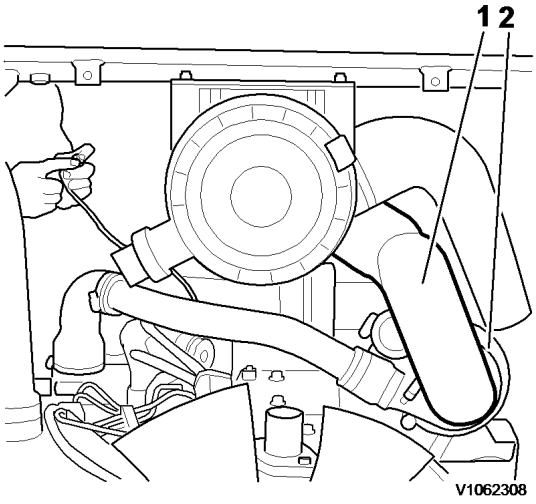

Figure 15

1. Air intake hose
2. Turbo charger

25. Remove the air cleaner assembly out of the frame.

26. Remove the bracket for the exhaust pipe.

27. Loosen and remove the exhaust pipe between the turbo charger and muffler.

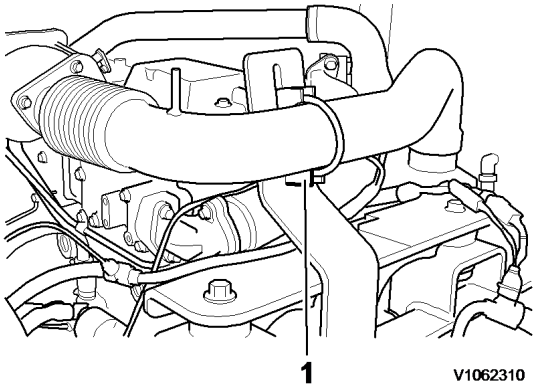

Figure 16

1. Bracket

28. Tag, disconnect and plug the fuel supply– and fuel return line at the fuel injection pump.

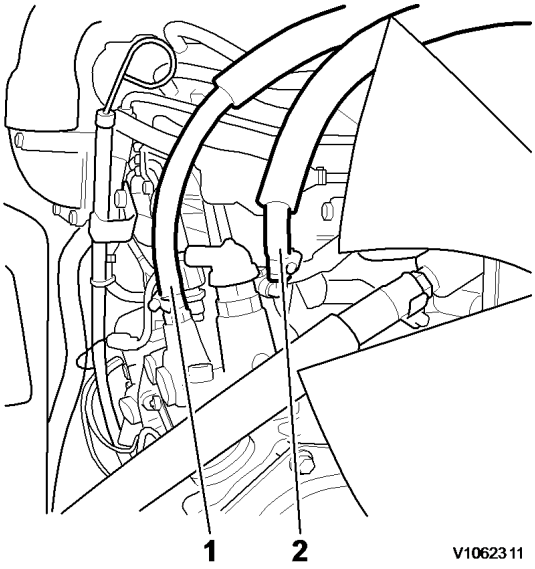

Figure 17

1. Fuel supply line
2. Fuel return line

29. Disconnect the engine harness from the main chassis harness.
    4 connections : CN7A, CN7B, CN7C and CN1

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