

Document Title: General description	Function Group: 200	Information Type: Service Information	Date: 2014/4/24
Profile: WLO, L150E [GB]			

General description

The engine is a straight six-cylinder, turbocharged, four-stroke and direct-injected diesel engine with an air-cooled intercooler.

It has an overhead camshaft, four valves per cylinder and unit injectors.

The engine designation is D12DLBE3.

The engine is of low-emission version.

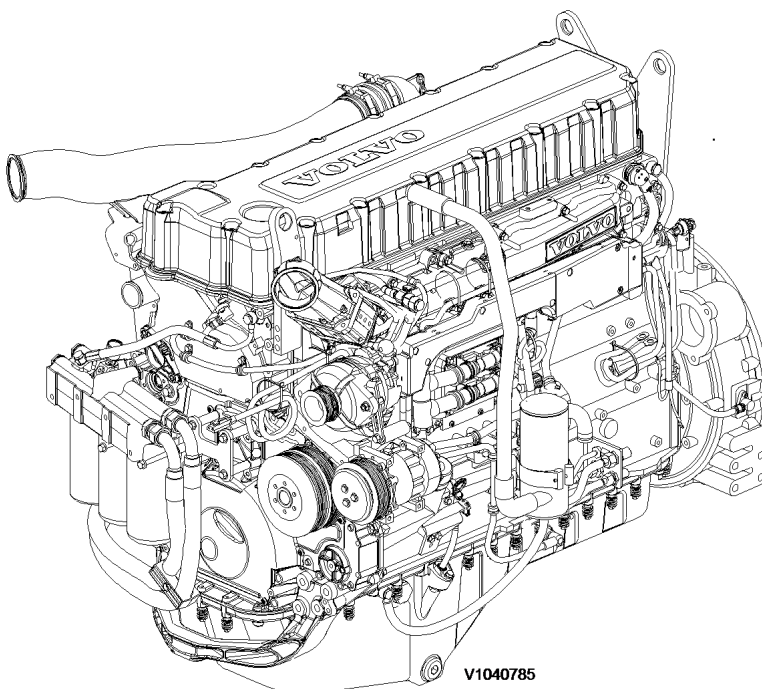


Figure 1

The cooling fan with vane motor is located in front of the radiator and is driven hydrostatically with a variable piston pump, Pump 3, (P3).

The speed of the fan is controlled by the vehicle ECU (V-ECU), which receives information about temperature in the following systems:

- Coolant temperature, radiator
- Coolant temperature, engine
- Transmission oil temperature
- Hydraulic oil temperature
- Temperature in front and rear axle (only when machine is equipped with axle oil cooler).
- Induction air temperature
- Charge-air temperature

Hydrostatically controlled cooling fan speed gives the engine high power as well as low sound level, since the cooling fan does not work at max. rpm as often.

The cooling system is based on a concept where cooling for engine, transmission, hydraulics and axle oil cooling (optional equipment) are integrated. These systems' cooling depends on the cooling fan speed.

Engine identification

Identification plate 1

Engine designation, serial number, part number and assembly plant are stamped in one field on the engine block's left rear edge

Identification plate 2

A decal with the software's ID-number, the engine's serial number and assembly plant is located on the valve cover to ensure installation of correct ECU on the engine in production. On the back of the ECU, there is a decal indicating its hardware number.

- Assembly plants:
 A = Skövde, Sweden
 E = Curitiba, Brazil
 F = Flen, Sweden
 L = Lyon, France

Identification plate 3

The certification decal is located on the valve cover as well as on the machine frame.

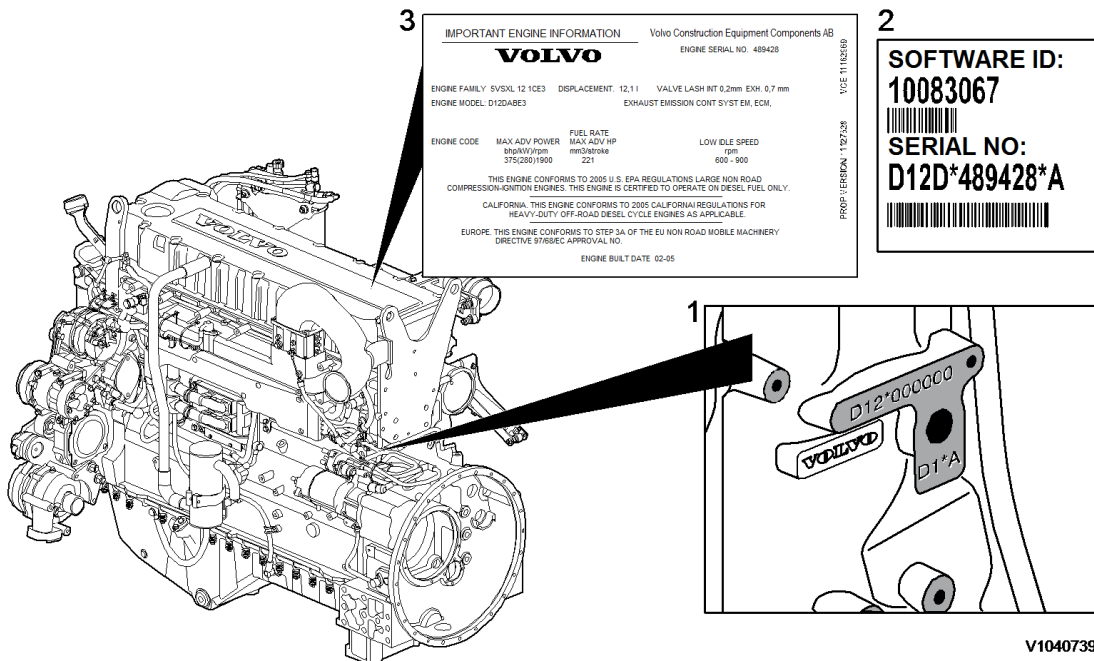


Figure 2
Engine identification, D12D

Document Title: Engine, description	Function Group: 200	Information Type: Service Information	Date: 2014/4/24
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Engine, description

The engine type is D10B. Engine type, product and serial number are stamped on the cylinder block above the starter motor (right-hand side of machine).

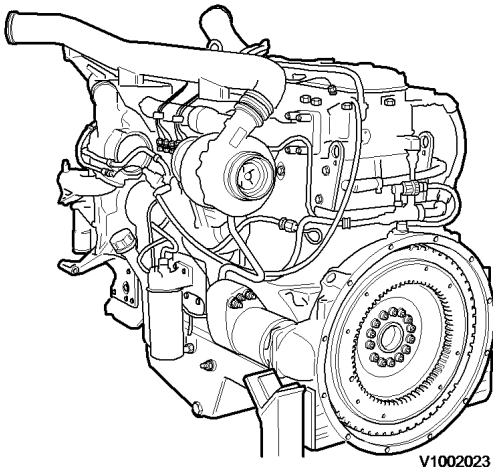


Figure 1

The engine is a straight six-cylinder, direct-injected diesel with 9.6 litre cylinder volume, turbocharger, intercooler and electronically controlled fuel injection EMS (Engine Management System). The valve mechanism is operated by the camshaft via push rods and rocker arms.

The engine is equipped with separate cylinder heads and wet, replaceable cylinder liners.

The engine has an electronic control unit (E-ECU), which is located on the engine on the left-hand side of the engine.

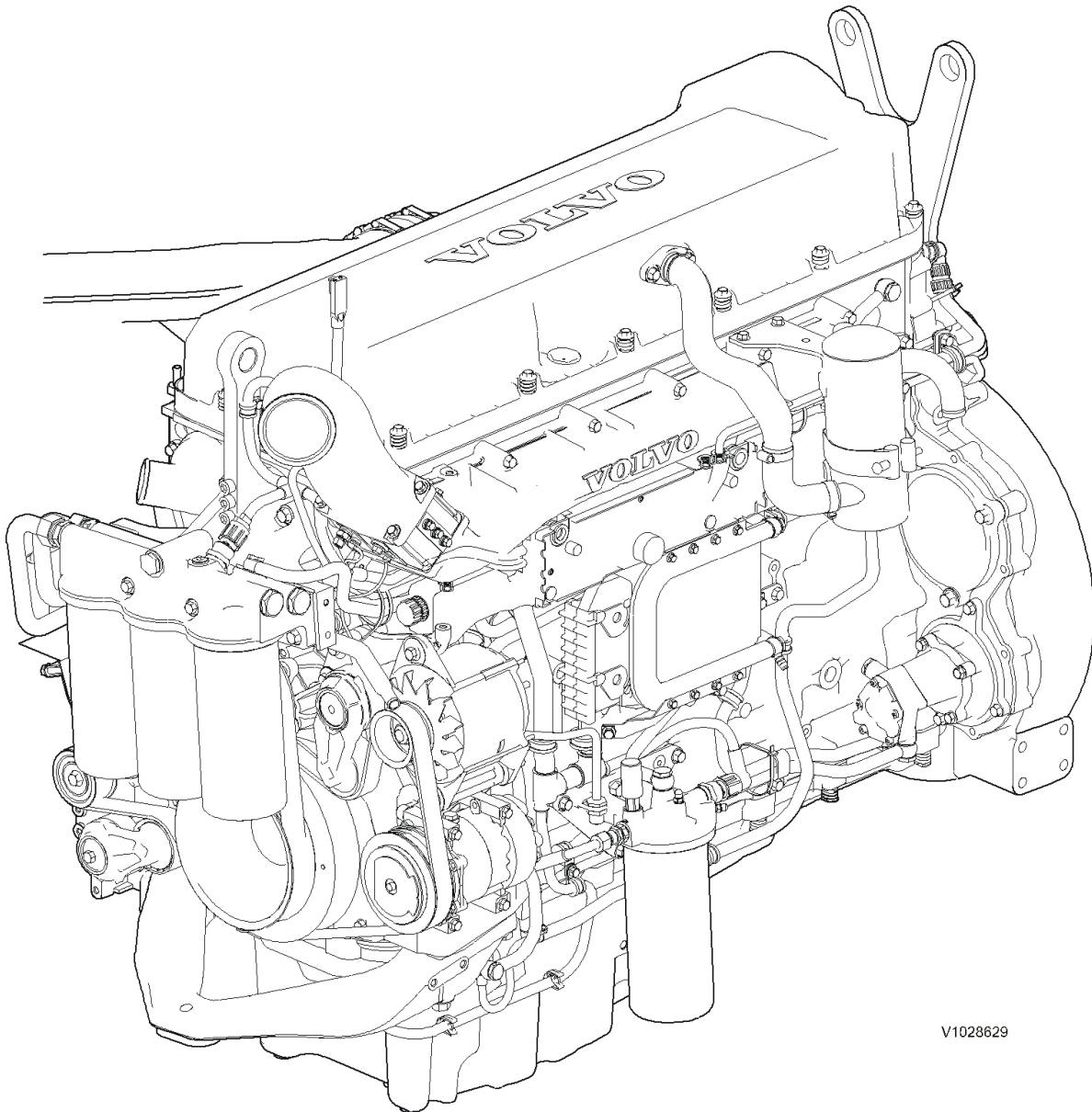
Document Title: Engine, description D9	Function Group: 200	Information Type: Service Information	Date: 2014/4/24
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Engine, description D9

L150E with engine D9A is introduced at serial number 8000.

D9A is a straight six cylinder, direct-injected diesel engine with a 9.4 litre cylinder capacity, with turbo, intercooler, and electronically controlled fuel injection.

The engine has an overhead camshaft and unit injectors, which are centred above the pistons and controlled by the camshaft and a control unit (E-ECU). The control unit is located on the engine's left side.



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Figure 1
Exterior view, D9A

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Engine identification, D9

Identification plate 1

Engine designation, serial number, part number and assembly plant are stamped in two fields on the engine block's left front edge

Stamping, field 1
Engine designation * serial number

Stamping, field 2
Engine designation
Part number * assembly plant

Assembly plants:
A = Skövde, Sweden
E = Curitiba, Brazil
F = Flen, Sweden

Identification plate 2

A decal with the engine's serial number is located on the engine's ECU to ensure that correct ECU is mounted on the engine in production.

Identification plate 3

The certification decal is located on the oil cooler's casing on the engine's right side as well as on the vehicle frame.

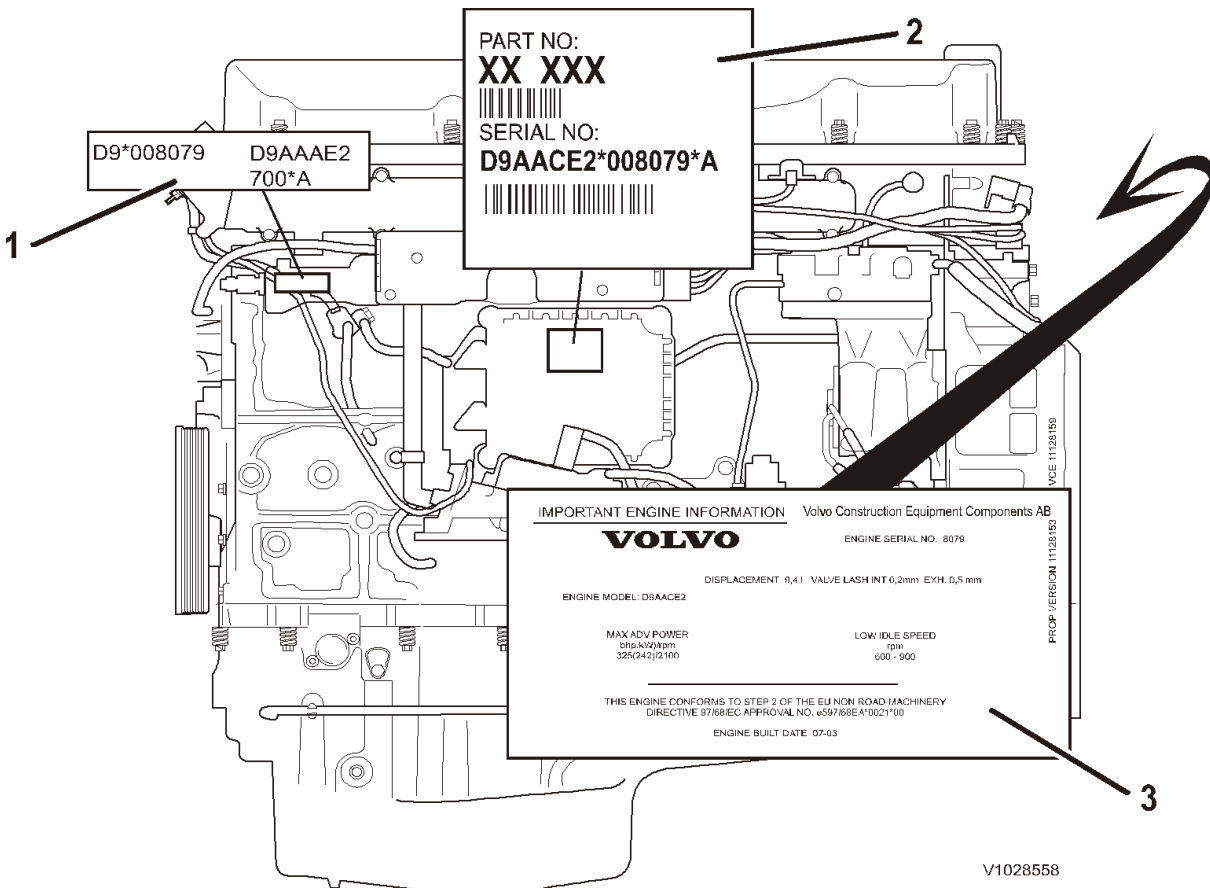


Figure 1
Engine identification, D9A

Document Title: Engine identification, D10	Function Group: 200	Information Type: Service Information	Date: 2014/4/24
Profile: WLO, L150E [GB]			

Engine identification, D10

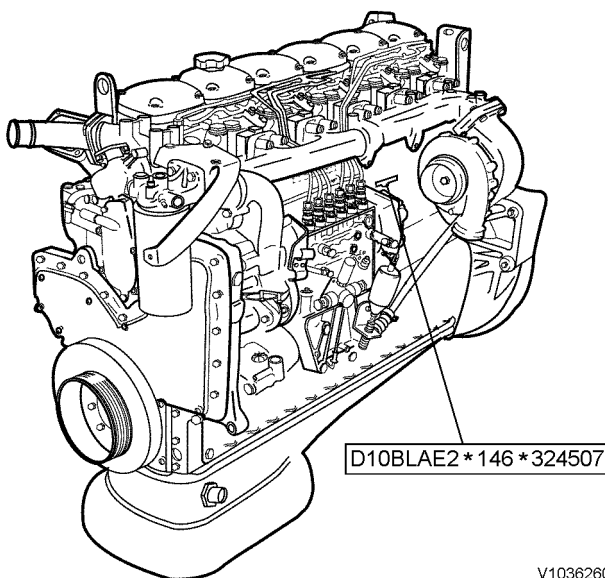
Identification plate

Engine designation, serial number and part number are stamped in three fields on the engine block's left trailing edge

Stamping, field 1
Engine designation

Stamping, field 2
Part number

Stamping, field 3
Serial number



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Figure 1
Engine identification, D10B

Document Title: Engine, removing	Function Group: 210	Information Type: Service Information	Date: 2014/4/24
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Engine, removing

Op nbr 210-070

[9998547 Lifting tool](#)

1. Remove the engine hood. See: [821 Engine hood, removing](#)

2. **⚠ WARNING**

Risk of burns when removing the header tank cap because of excess pressure in the cooling system.

Remove the cap from the header tank.

Drain the coolant. Use the drain hose stored in the right-hand battery box or the toolbox on the machine.

Volume: See [030 Cooling system volume](#).

Drain the engine oil if needed. Use the drain hose, located in the toolbox on the machine.

Volume: [030 Engine volume](#).

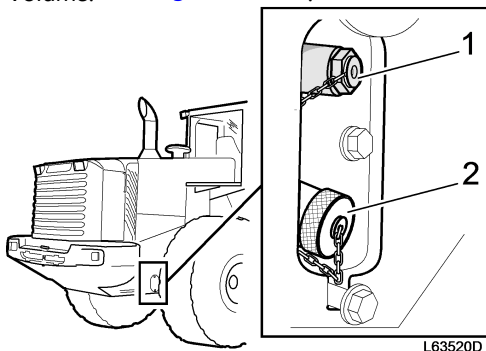


Figure 1

1. Draining the coolant
 2. Draining the engine oil
3. Remove the clamp securing the oil drain plug.

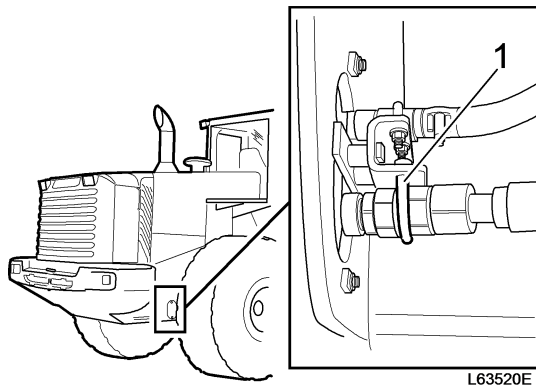


Figure 2

1. Clamp
4. Remove the side panels.
5. **Loosen the following from the right side of the machine:**
 - Disconnect the cab heater hose from the engine block (1).
 - Remove the charge-air pipe (2).
 - Disconnect the return fuel line from the injection pump (3).
 - Remove the protective grating over the alternator and AC compressor (4).
 - Loosen the drive belt's adjusting screw and remove the belt (5).
 - Remove the ventilation casing on the alternator. Make a note of and disconnect the electric connections (6).
 - Loosen the AC compressor's bolts (4 pcs.) and move it aside without stressing the connectors (7).
 - Loosen the engine's lower coolant hose (8).
 - Loosen the starter motor's electric connections (9)
 - Loosen the connection to the oil level sensor (SE213) (10).
 - Disconnect the cable connection from the air filter indicator and remove the air hose from the turbocharger (11).
 - Remove the radiator's lower hose (12).

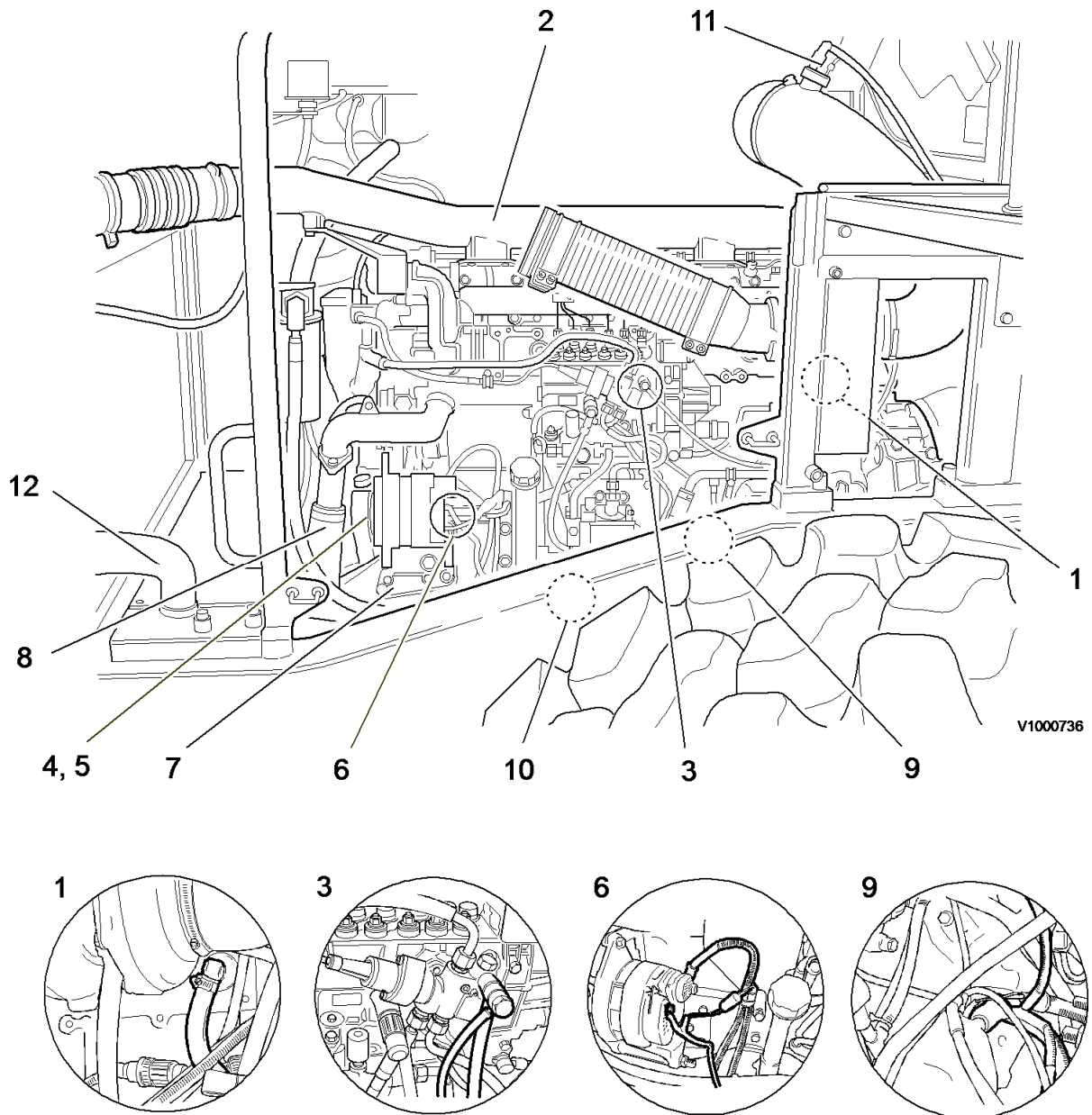


Figure 3
Machine's right side

6. Loosen the following from the left side of the machine:



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

- Loosen the fuel line from the primary fuel filter (1).
- Loosen the breather hose from the air/oil separator (2).
- Loosen the radiator's upper hose (3).
- Disconnect the coolant hoses (2 pcs.) and remove the expansion tank with bracket (4).
- Loosen the charge-air pipe's clamp and the sheet metal lead-through in the partition wall (5).
- Loosen the secondary steering pump and hold it away from the engine using a ratchet block, see fig.

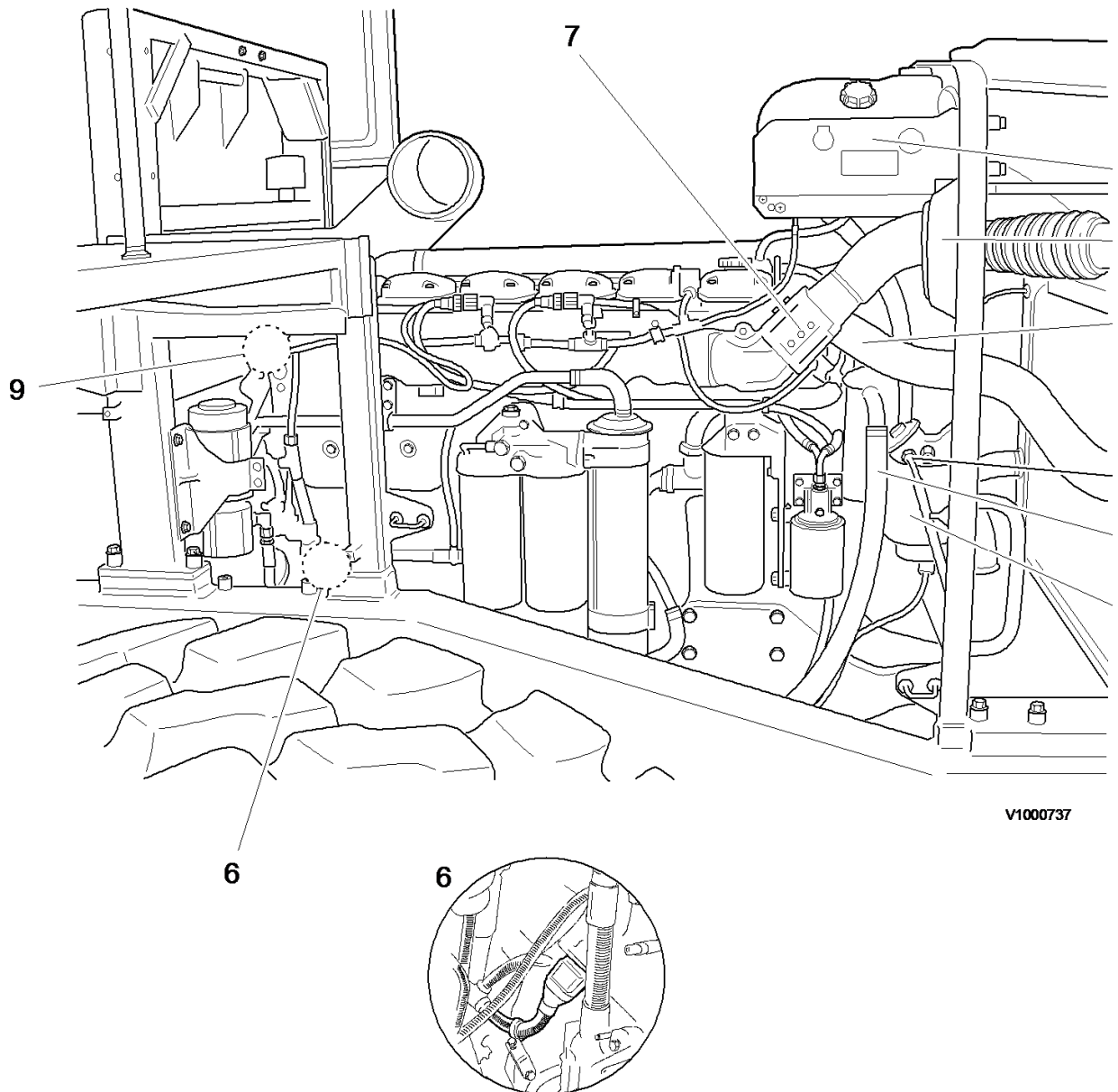


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Figure 4

Suspension of secondary steering pump

- Disconnect the connector for the engine connection (6).
- Loosen the clamps and cables to the preheating coil (7).
- Remove the primary fuel filter from the partition wall (8).
- Disconnect the connector for the cabling to the air filter indicator (9).



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Figure 5
Machine's left side

7. Remove the bolts for the coolant pipe's brackets.
Remove the plate between the partition wall and bottom plate.



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

Loosen the receiver dryer from the partition wall and place it to the side.

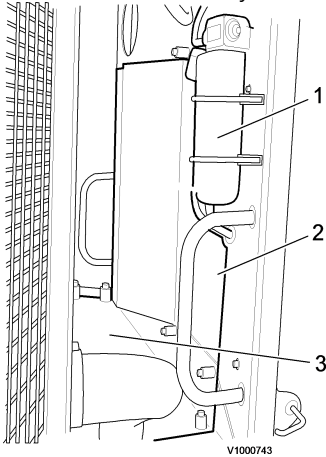


Figure 6

1. Receiver drier
2. Plate
3. Bottom plate

8. Loosen and move the condenser to the rear.
9. Remove the partition wall's support members.
10. Loosen and lift away the partition wall.
Partition wall, weight: **approx. 65 kg (143 lbs)**

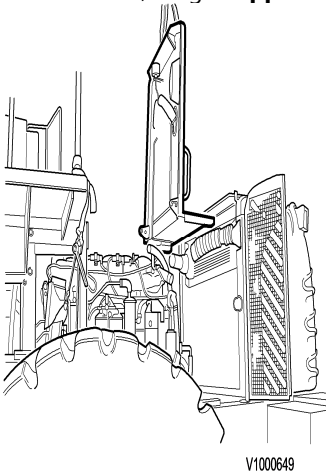


Figure 7
Lifting partition wall

11. Remove the oil pipe from the flywheel housing.

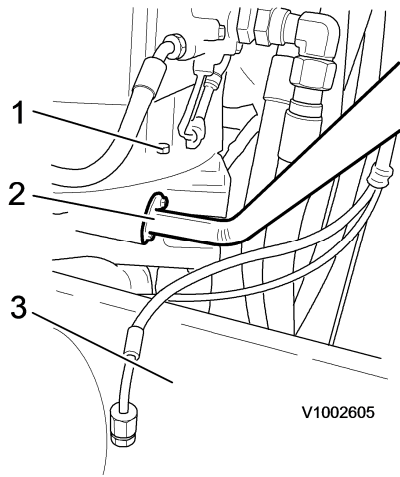


Figure 8

- 1. Transmission bolt
- 2. Oil pipe
- 3. Rear axle

12. Remove the lower transmission bolts, 4 pcs.

13. Secure the hydraulic transmission in place with a sling and a ratchet blocks as illustrated.

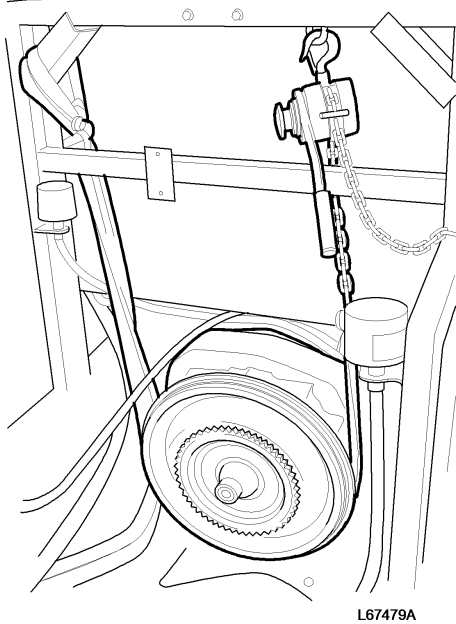


Figure 9
Hydraulic transmission secured (engine removed)

14. Fit lifting device 9998547 to the engine's front and rear lifting eyes.

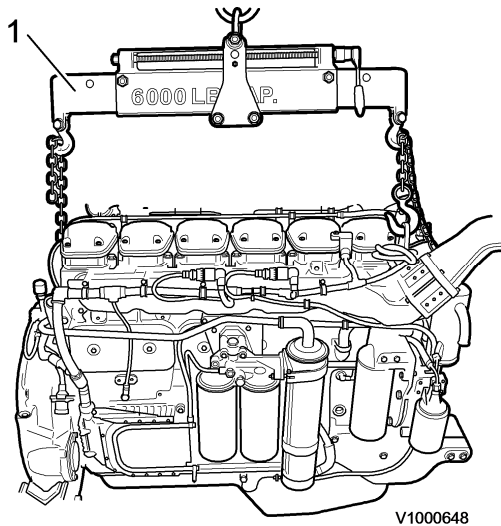


Figure 10
Lifting device position

1. 9998547
15. Remove the remaining attaching bolts, 8 pcs., for the hydraulic transmission.
16. Remove the bolts securing the engine mounting.
Remove the engine.
Engine's weight, including oil: **approx. 1130 kg (approx. 2500 lbs)**

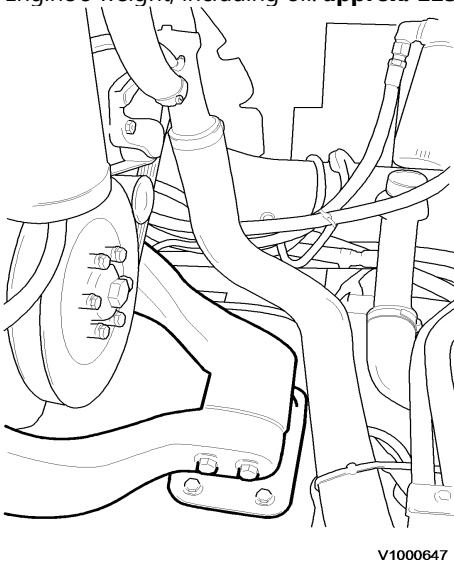


Figure 11
Engine mount

17. If changing the engine, transfer the components required to the new engine.
NOTE!
Never transfer a component that could cause a malfunction.

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