

Document Title: Engine, description	Function Group: 200	Information Type: Service Information	Date: 2014/7/20
Profile: EXC, EC360B LC [GB]			

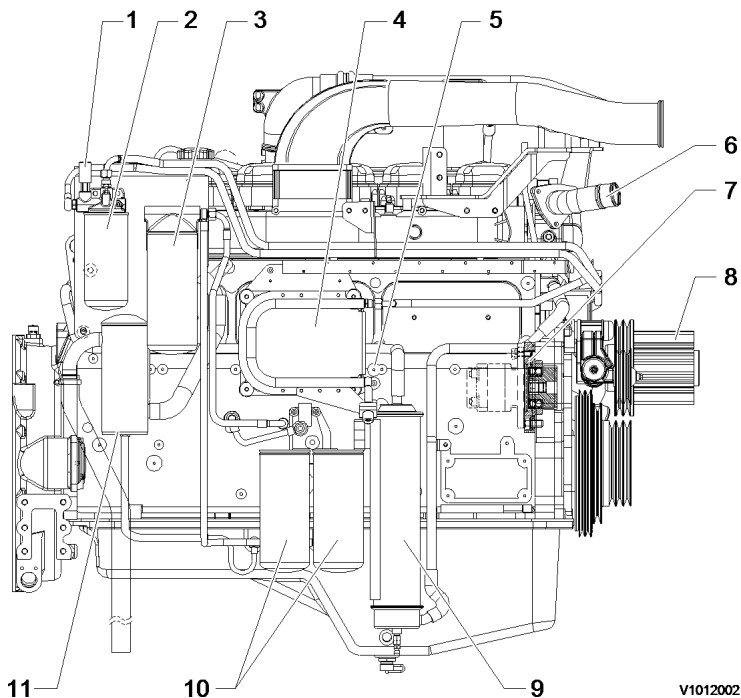
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Engine, description

Machine serial no. EC330B: 10001 ~ 10235, EC360B: 10001 ~ 10828

The engine is a straight six cylinder, four stroke, direct injection diesel with 9.6 liter cylinder volume, turbocharged, inter cooled and electronic controlled fuel injection, EMS (Engine Management System), with a cast iron block and cylinder head. The cylinder block and head are designed with internal passages formed as sets for lubrication and cooling. An engine driven power take off for a hydraulic pump can be provided for the D10 as extra equipment.

Structure, fuel filter side view



V1012002

Figure 1

Engine, fuel filter side view

1. Fuel feed pump
2. Fuel filter
3. Engine oil filter (bypass)
4. EMS (Engine Management System)
5. Fuel inlet
6. Water outlet
7. Engine PTO (Power Take Off)
8. Fan drive and pulley
9. Oil cooler
10. Engine oil filter (full)
11. Breather

Structure, turbocharger side view

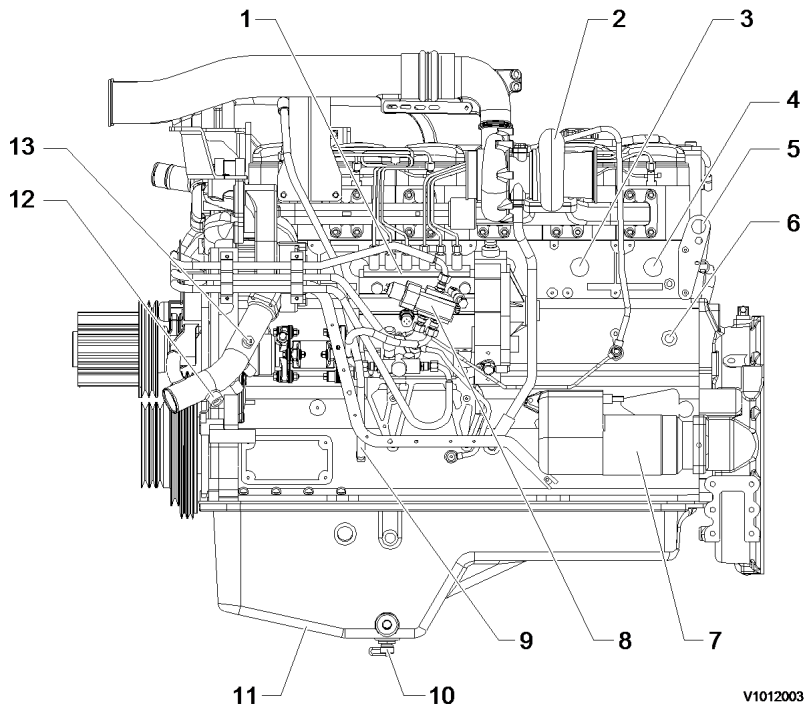


Figure 2
Engine, turbocharger side view

1. Fuel pump
2. Turbocharger
3. Cooler block heater (1 3/4" -16UN - 2B)
4. Cab heater supply (1/2" - 14UPSI)
5. Engine lifting eye
6. Coolant filter heater (1/2" - 14UPSI)
7. Starter
8. Fuel shut off solenoid
9. Dipstick
10. Oil drain valve
11. Oil pan
12. Coolant filter return (M 22 × 1.5)
13. Cab heater return (M 22 × 1.5)

Structure, top view

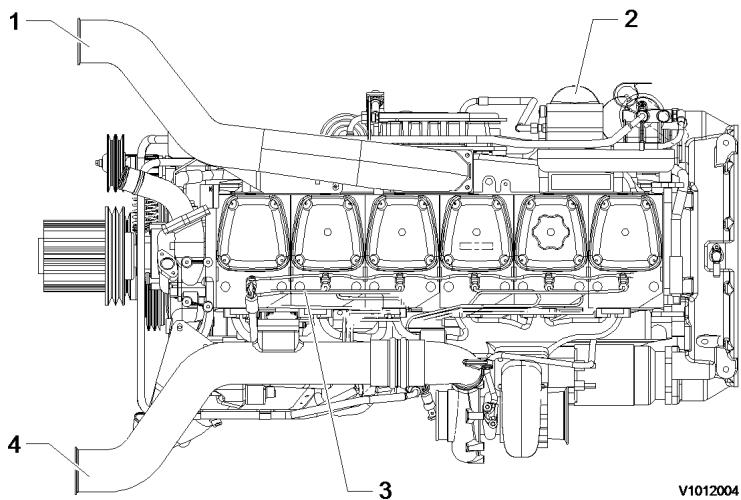
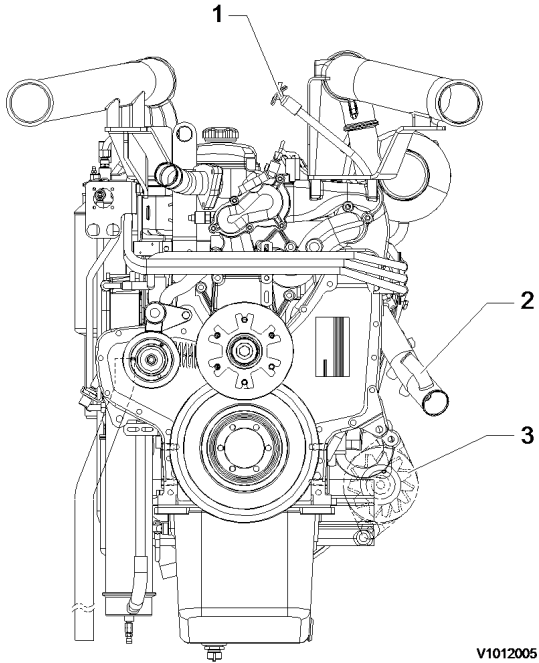


Figure 3

Engine, top view

1. Air intake port
2. Oil filter (bypass)
3. Coolant vent
4. Air exhaust port

Structure, front side view



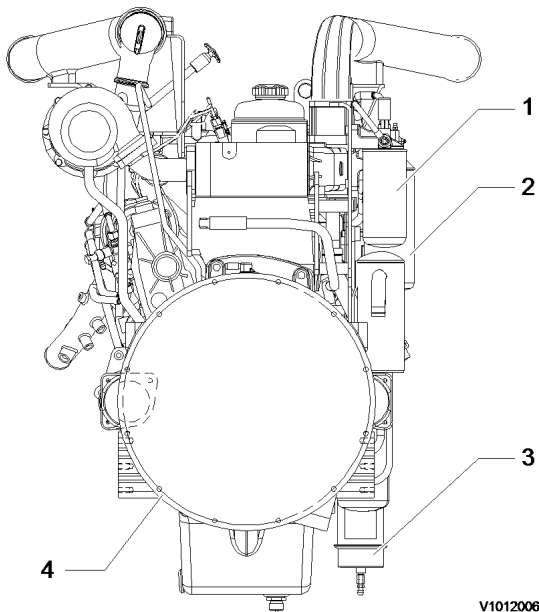
V1012005

Figure 4

Engine, front side view

1. Dipstick gauge
2. Water inlet
3. Alternator

Structure, rear side view



V1012006

Figure 5

Engine, rear side view

1. Fuel filter
2. Oil filter (bypass)
3. Oil cooler
4. Flywheel housing

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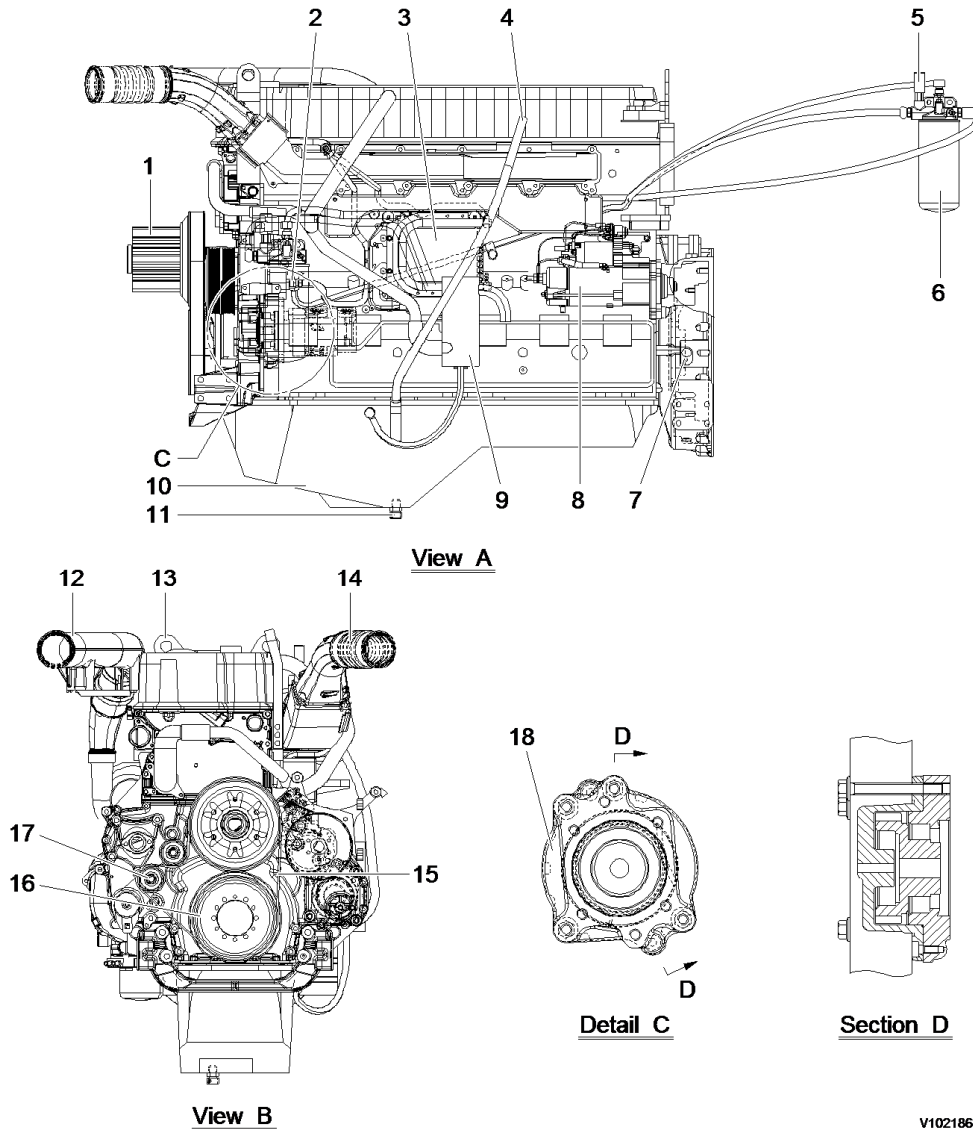
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Engine, description

Machine serial no. EC330B: 10236 ~ 10712, EC360B: 10829 ~ 12151

- D12C EC(D,E)E2 is the model number of the Volvo 12 liter engine for the EC330B/360B excavator.
- The engine is a 6-cylinder, 4-stroke, direct injection diesel with a 12 liter cylinder volume, turbocharger, charged air cooler and electronic controlled fuel injection, EMS (Engine Management System).
- The serial number of the engine is to be found stamped in the cylinder block on the rear left side.
- The cylinder head is of cast iron and manufactured in one piece which is necessary in order to provide stable bearings for the overhead camshaft.
- The cylinder liner is sealed against the coolant casing with rubber rings.
- The D12C EC(D,E)E2 has a four-valve system and overhead camshaft.
- The engine timing gear transmission is located at the front of the engine on a 10 mm thick steel plate bolted to the cylinder block.
- The crankshaft is drop forged and has induction hardened bearing surfaces and fillets.
- The engine is force fed lubricated by an oil pump which is gear driven from the engine crankshaft via an intermediate gear.
- The fuel system for D12C EC(D,E)E2 has electronic control with unit injectors one for each cylinder and which operate at a very high pressure.
- The fuel feed pump is a gear driven type and is driven from the engine timing gear with the same gear.

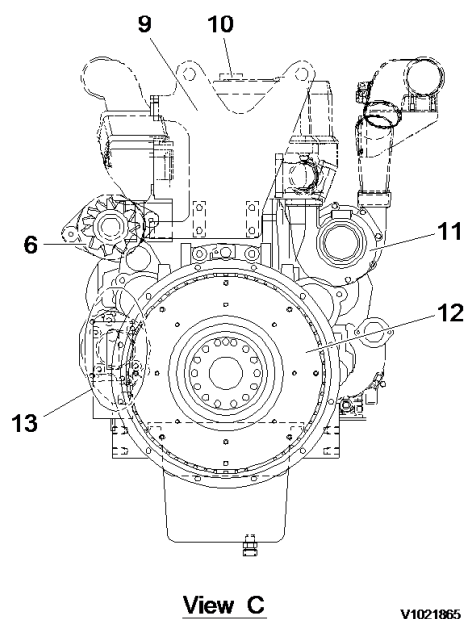
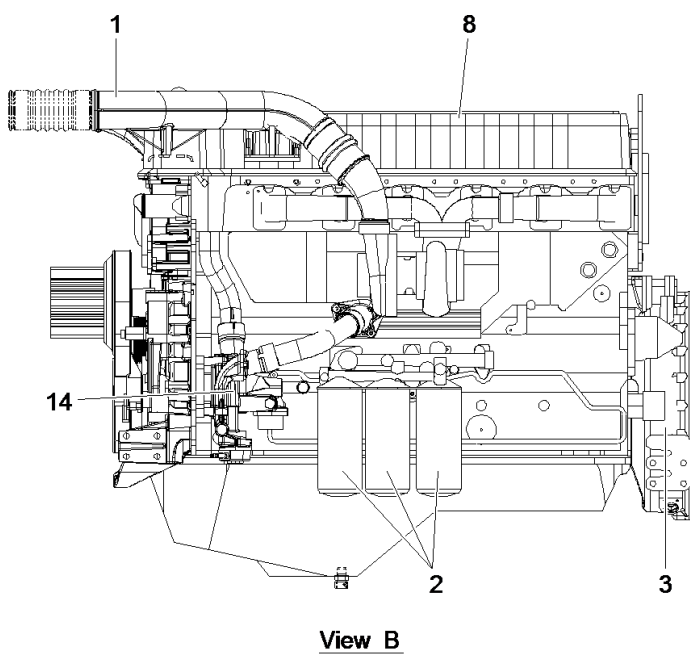
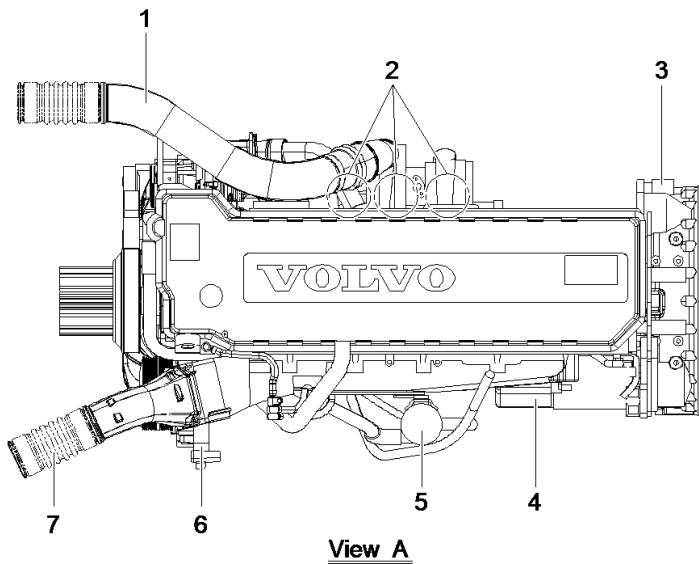
Engine, structure



V1021864

Figure 1
Engine, structure 1

View A :fuel pump side		View B : front side		Detail C : Power Take Off (option)	
1	Fan drive and pulley	7	Speed sensor	13	Lifting bracket
2	Fuel pump	8	Starter	14	To charged air cooler
3	EMS (Engine Management System)	9	Breather	15	Fan belt
4	Dipstick gauge	10	Oil pan	16	Crankshaft pulley
5	Fuel feed pump	11	Oil drain valve	17	Belt tensioner
6	Remote fuel filter	12	From charged air cooler	18	Power take off drive



V1021865

Figure 2
Engine, structure 2

View A : top side		View B : turbocharger side		View C : rear side	
1	From charged air cooler	6	Alternator	11	Turbocharger
2	Engine oil filter	7	To charged air cooler	12	Flywheel
3	Flywheel housing	8	Valve cover	13	Power take off (option)
4	Starter	9	Lifting bracket	14	Coolant pump
5	Breather	10	Oil filler cap		

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Engine, description

Machine serial no. EC330B: 10713 ~ , 80001 ~ , EC360B: 12152 ~ , 80001 ~

Model	Engine model number	Machine serial number
EC330B	D12DEBE2	10712 ~
	D12DEBE3	80001 ~
EC360B	D12DEBE2	12152 ~
	D12DEBE3	80001 ~

- D12DEBE2 and D12DEBE3 are the model number of the Volvo 12 liter engine.
- The engine is a 6-cylinder, 4-stroke, direct injection diesel with a 12 liter cylinder volume, turbocharger, charged air cooler and electronic controlled fuel injection, EMS (Engine Management System).
- The serial number of the engine is to be found stamped in the cylinder block on the rear left side.
- The cylinder head is of cast iron and manufactured in one piece which is necessary in order to provide stable bearings for the overhead camshaft.
- The cylinder liner is sealed against the coolant casing with rubber rings.
- The D12DEBE2 and D12DEBE3 have a four-valve system and overhead camshaft.
- The engine timing gear transmission is located at the front of the engine on a 10 mm thick steel plate bolted to the cylinder block.
- The crankshaft is drop forged and has induction hardened bearing surfaces and fillets.
- The engine is force fed lubricated by an oil pump which is gear driven from the engine crankshaft via an intermediate gear
- The fuel system for D12DEBE2 and D12DEBE3 have electronic control with unit injectors one for each cylinder and which operate at a very high pressure.
- The fuel feed pump is a gear driven type and is driven from the engine timing gear with the same gear.

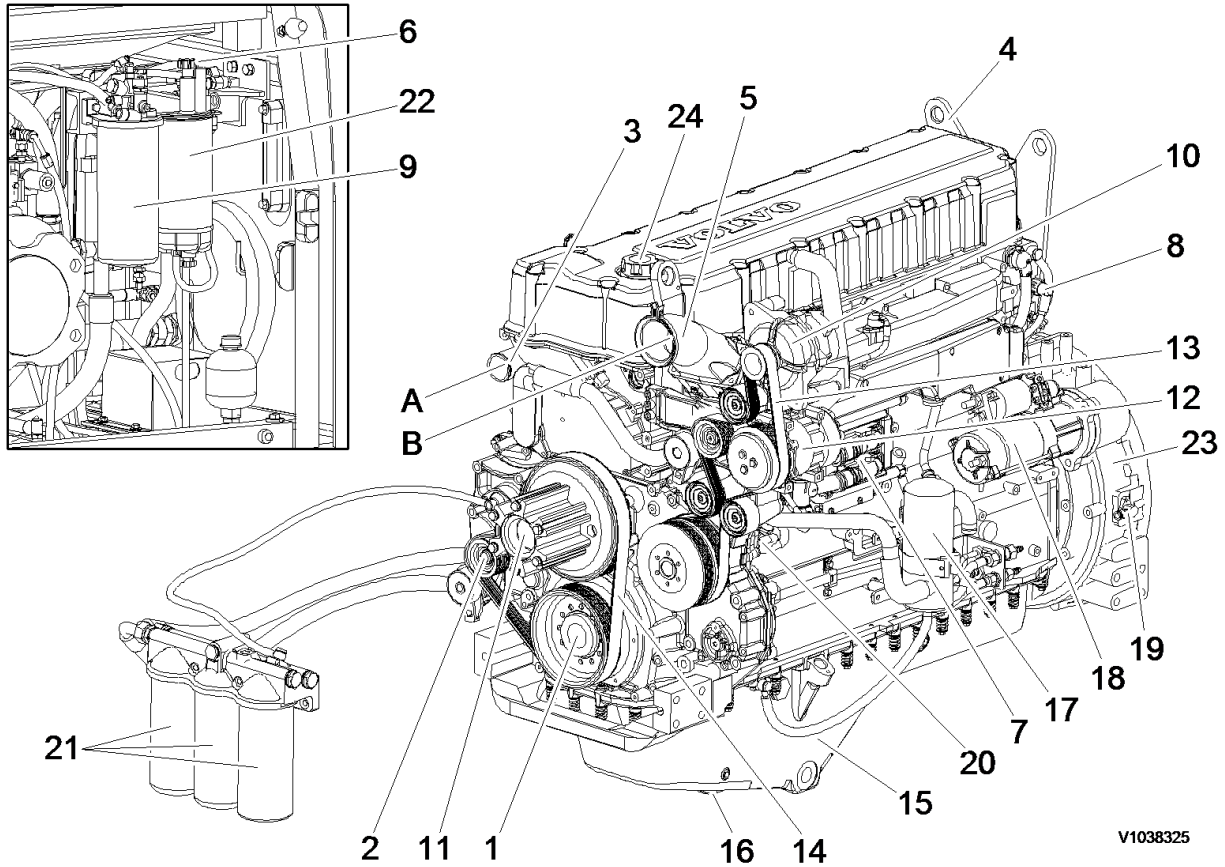
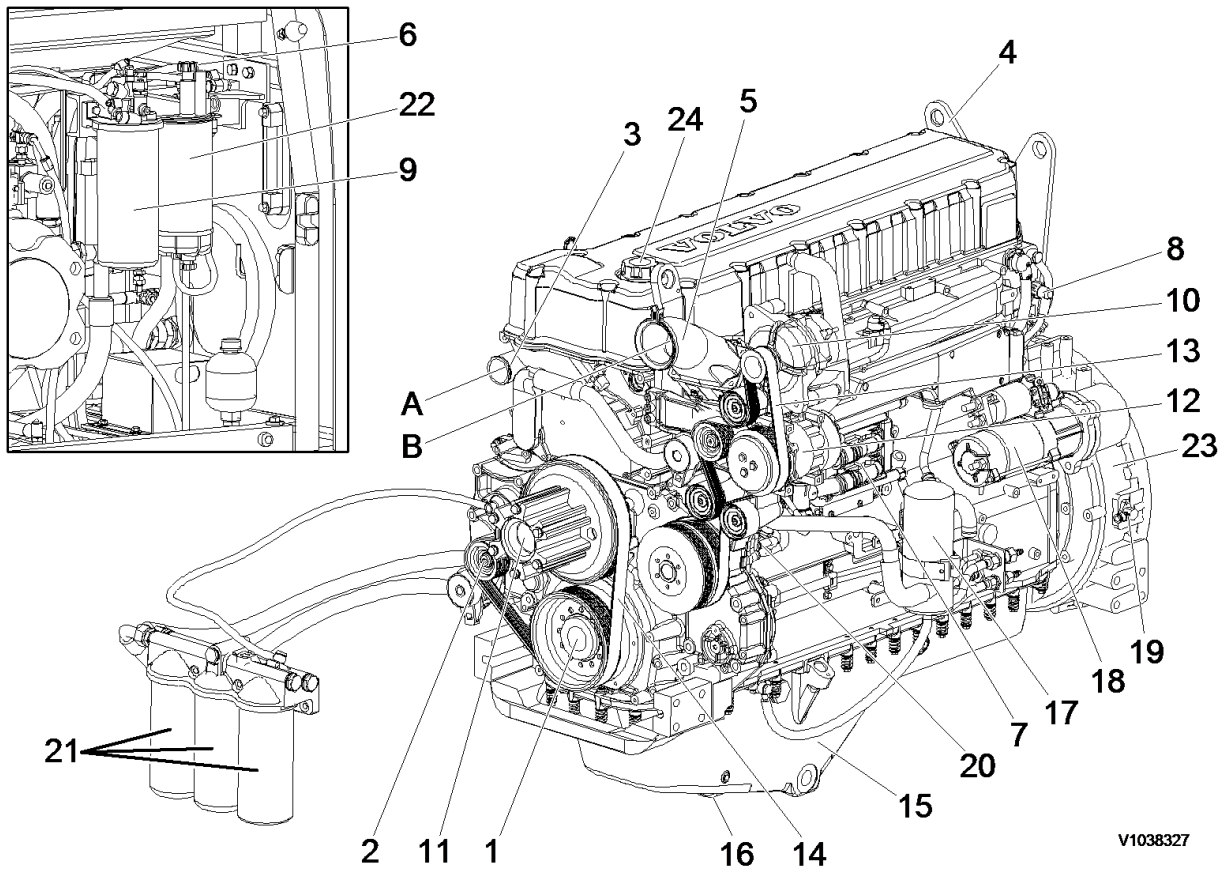


Figure 1
D12DEBE2 Engine, structure

A	Water from engine	B	To charged air cooler		
1	Crankshaft pulley	9	Fuel filter	17	Breather
2	Belt tensioner	10	Alternator	18	Starter
3	Water from engine	11	Fan drive and pulley	19	Speed sensor
4	Lifting bracket	12	Air-condenser compressor	20	Fuel pump
5	To charged air cooler	13	Alternator belt	21	Engine oil filter
6	Fuel feed pump	14	Fan belt	22	Water separator
7	E-ECU	15	Oil pan	23	Flywheel housing
8	Coolant temperature sensor	16	Oil drain valve	24	Engine oil filter



V1038327

Figure 2
D12DEBE3 Engine, structure

A	Form charged air cooler	B	To charged air cooler		
1	Crankshaft pulley	9	Fuel filter	17	Breather
2	Belt tensioner	10	Alternator	18	Starter
3	Intake to charged air cooler	11	Fan drive and pulley	19	Speed sensor
4	Lifting bracket	12	Air-condenser compressor	20	Fuel pump
5	To charged air cooler	13	Alternator belt	21	Engine oil filter
6	Fuel feed pump	14	Fan belt	22	Water separator
7	E-ECU	15	Oil pan	23	Flywheel housing
8	Coolant temperature sensor	16	Oil drain valve	24	Engine oil filter

Document Title: Basic check, Engine	Function Group: 210	Information Type: Service Information	Date: 2014/7/20
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Basic check, Engine

NOTE!

Certain tests and checks are performed with unlocked safety locking lever. Make sure that the machine cannot operate unexpectedly when the safety locking lever is unlocked.

Purpose of the basic check

The purpose of the basic check is to provide fast and accurate information about the general condition of the engine.

The basic check should be performed and evaluated according to instructions in the PC-tool VCADS Pro.

Tests included in the basic check

The basic check which is divided into the following tests should be performed after **reading out error codes and checking parameters**.

Tests:

1. **Cylinder compression, test**
The purpose of the test is to show if any cylinder has a deviating compression pressure. The test replaces the old pressure check method but does not give any absolute values.
2. **Cylinder balancing, test**
The purpose of the test is to show if there is any deviation in the fuel injection to a cylinder.
3. **Feed pressure, test**
The purpose of the test is to check that the feed pressure is as per specification.
4. **Sensor, test**
The purpose of the test is to check the function of all sensors.

Document Title: Troubleshooting	Function Group: 210	Information Type: Service Information	Date: 2014/7/20
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Troubleshooting

General about troubleshooting

When a malfunction is suspected or has been confirmed, it is important to identify the cause as soon as possible.

The starting point for all troubleshooting is that there is some type of trouble symptom or malfunction.

Malfunctions can be indicated by:

- generation of error codes
- detection of a malfunction symptom.

Troubleshooting work

The first step in troubleshooting is to gather information from the operator concerning the malfunction symptoms, see Electrical and information system, Collection of basic data. Then, attempt to pin-point the cause by checking in a certain order, for more information, see Electrical and information system, troubleshooting strategy.

The different checking steps are:

- Check error codes
- Check parameters
- Perform basic check

Troubleshooting information

The following is included in Electrical and information system and is used when troubleshooting:

1. **Troubleshooting strategy**
Describes troubleshooting work, step by step.
2. **Troubleshooting, assistive devices**
Brief summary of the assistive devices that are available for troubleshooting.
3. **Functional checks and tests, VCADS Pro**
Brief description of VCADS Pro. For a detailed description, see VCADS Pro User's Manual.
4. **Error code information**
Contains information regarding error code design, lists of all error codes and error code information about each error code.
5. **Components, troubleshooting and specifications**
Contains methods and measuring values for troubleshooting of components. Also includes wiring diagrams and certain specifications.
6. **Parameters**
Incorrectly set parameters may cause malfunction symptoms. The parameter list includes all limit and command values for parameters.
7. **Control units, functional description**
Describes the functions of the control units, inputs and outputs as well as communication between the various control units.
8. **Control units, active and passive measuring**
Contains measuring values for active and passive measuring of the ECUs.
9. **Software functions**
Describes the pre-requisite conditions for the control and monitoring functions that are performed by the software in the ECUs.

Document Title: Valves, adjusting	Function Group: 214	Information Type: Service Information	Date: 2014/7/20
Profile: EXC, EC360B LC [GB]			

Valves, adjusting

Op nbr 214-012

[88820003 Setting tool](#)

[9993590 Gear wheel](#)

Feeler gauge



WARNING

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

1. Place the machine in service position B. See [091 Service positions](#)
2. Open the engine hood.
3. Remove step (1).

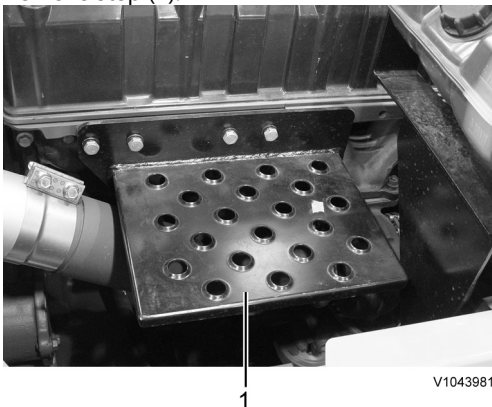
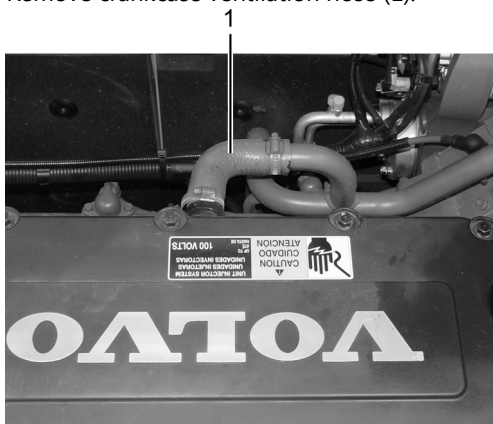


Figure 1
Removal, step

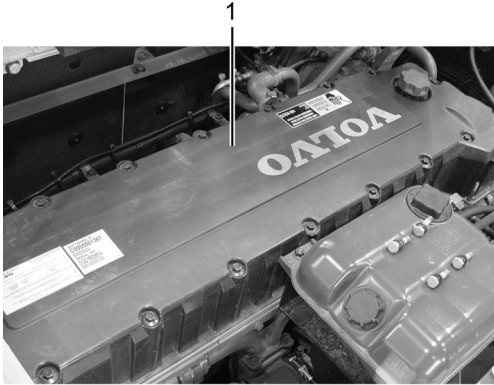
4. Remove crankcase ventilation hose (1).



V1043982

Figure 2
Removal, crankcase ventilation hose

5. Remove valve cover (1).



V1043983

Figure 3
Removal, valve cover

6. Remove the protective cover on the flywheel housing and install tool 9993590, an extension and a ratchet handle.



V1043984

Figure 4
9993590, extension and ratchet handle

Adjusting inlet valve

7. Turn the flywheel with tool 9993590 until the nearest dash marking on the camshaft is between the marks on the bearing cap.

NOTE!

The number identifies the cylinder for which both inlet and exhaust valves are in correct position for adjusting.

NOTE!

Cylinder 1 is closest to the engine timing gear.

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