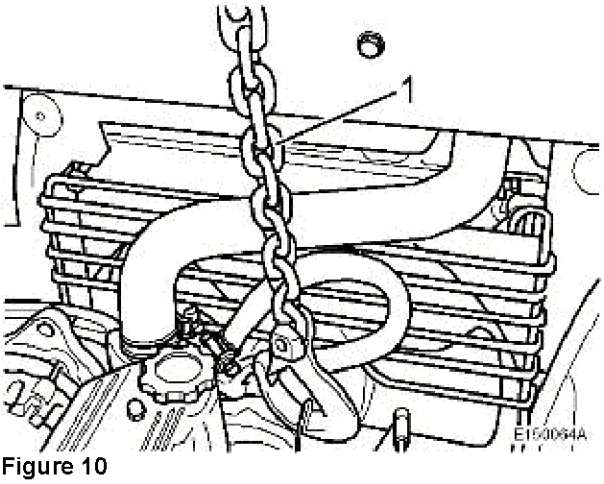


Figure 10

- Attach lifting tackle (1) to the engine.
- Lift the engine up and pull it out towards the rear.
- Disconnect all necessary electrical cables from the following components:
  - Starter
  - Generator

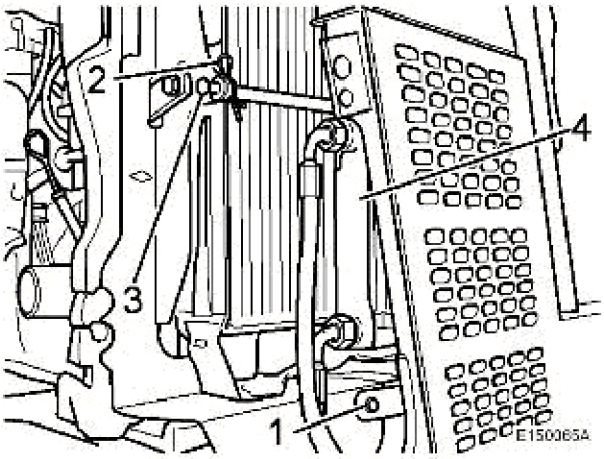


Figure 11

- Unscrew screw (1).
- Unhook calmp (2) and push out rod (3).
- Lay oil cooler (4) to the side and fasten it.
- Lift out engine with radiator and engine carrier.

WARNING! **When opening the lid of the compensation tank (radiator cap) there is a risk of scalding because of the overpressure in the cooling system. Catch running out coolant and dispose of environmentally.**

- Unscrew the drain plug, open the radiator cap and drain of all coolant.
  Filling quantity approx. 5 litres.
- Disconnect the water hose from the compensation container on the radiator.
- Remove top and bottom coolant hose

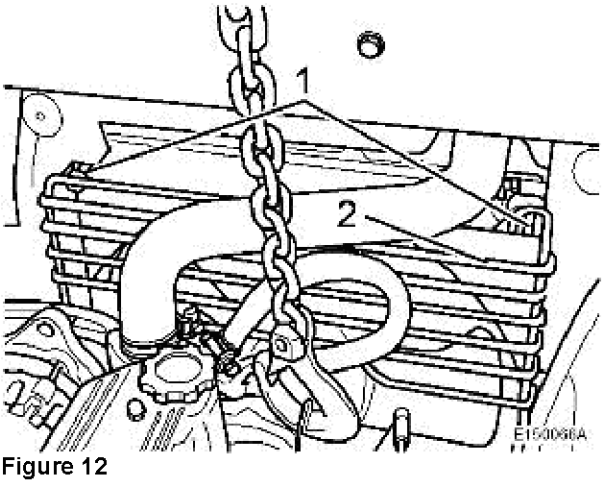


Figure 12

- Unscrew both screws (1) and take off the radiator grid (2).

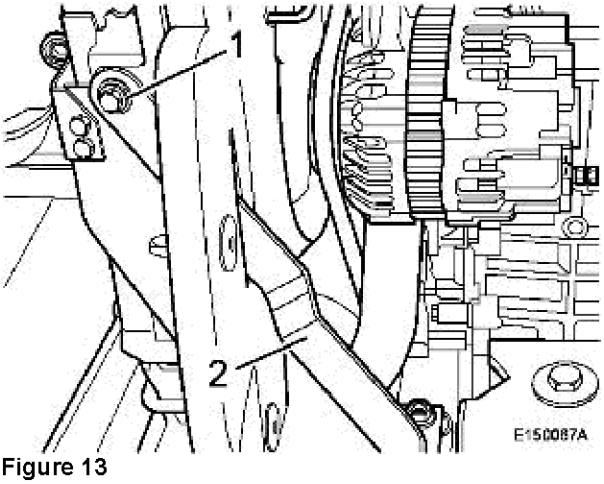


Figure 13

- Unscrew screw (1) from both tie rods (2).

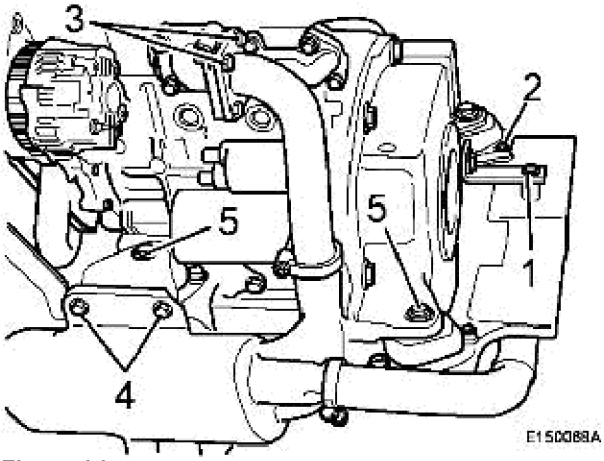


Figure 14

- Unscrew screw (1) from support (2).
- Remove screws (3) from the exhaust flange.
- Unscrew screws (4 and arrow) and take off the complete exhaust system.
- Unscrew both screws (5) of the front engine suspension.

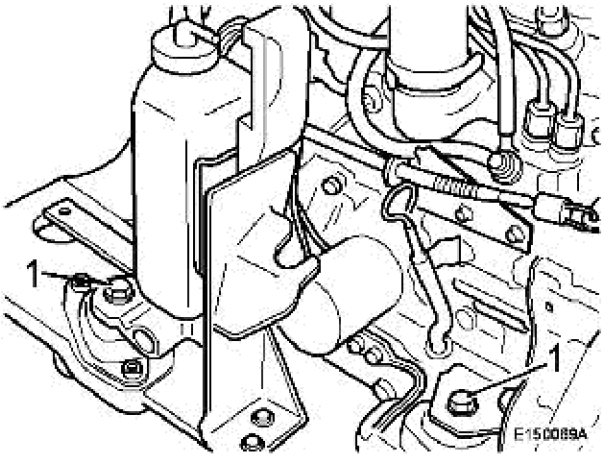
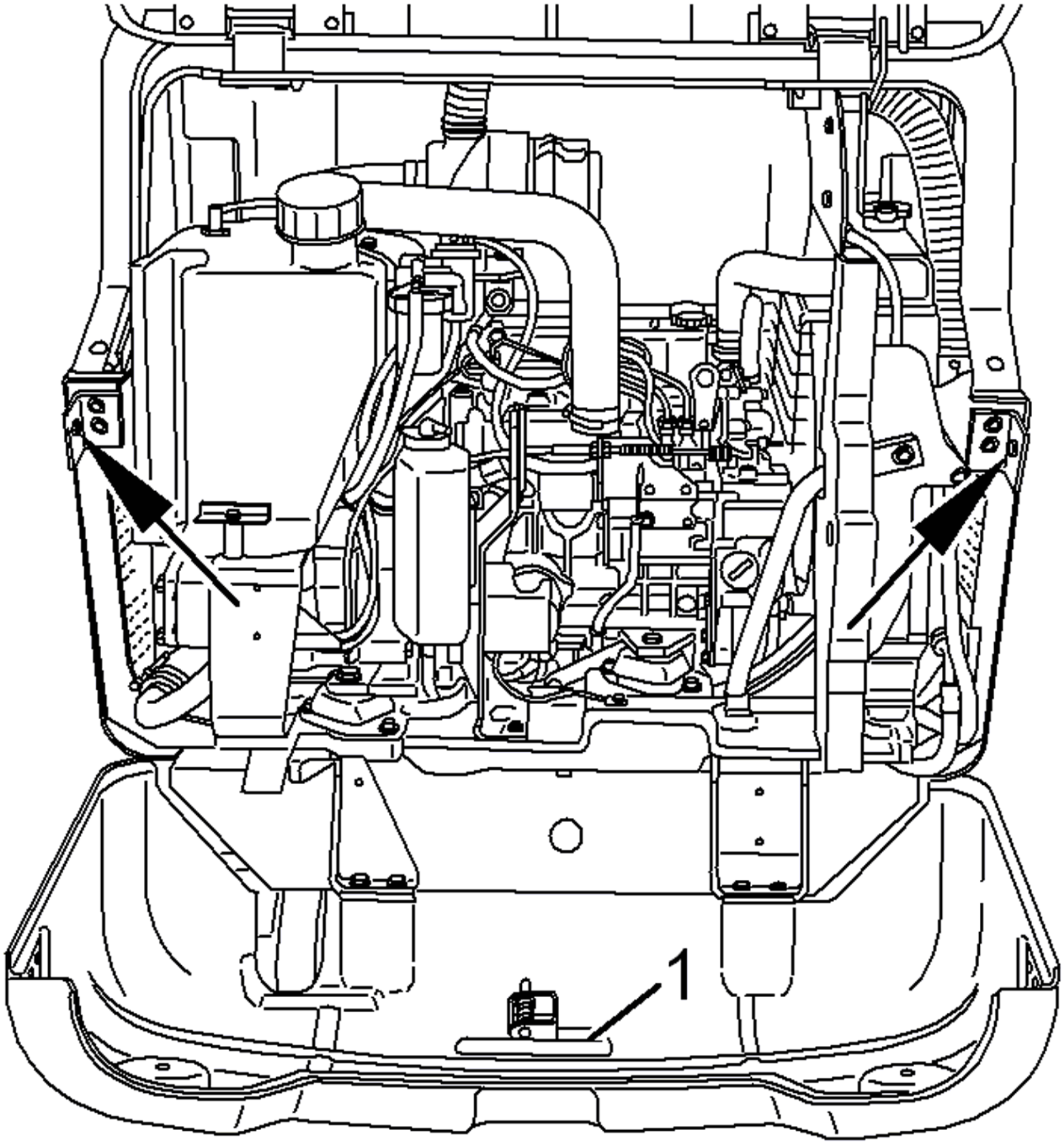


Figure 15

- Unscrew both screws (1) of the rear engine suspension.
- Take the engine out of the engine carrier.
  Weight: approx. 125 kg



E150055A

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Installing the engine**	Function Group : **200**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Installing the engine

Op nbr 2101

Lifting sling 1 m
Shackle 3/8""

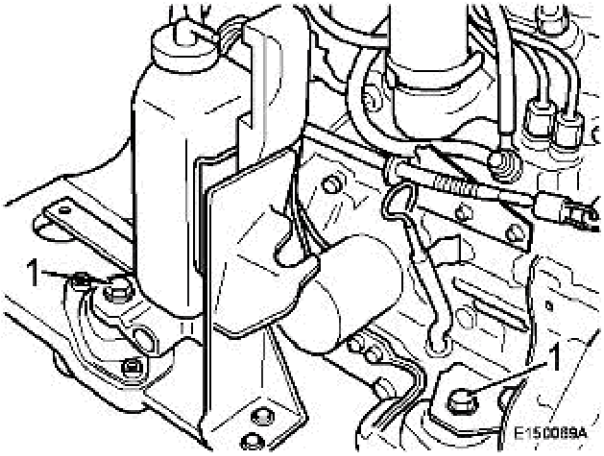


Figure 1

- Attach the lifting tackle to the engine. Weight approx. 125 kg.
- Place the engine into the engine carrier.
- Cover the threads of screws (1) with Loctite, turn them into the rear engine suspension and tighten with 105 Nm.

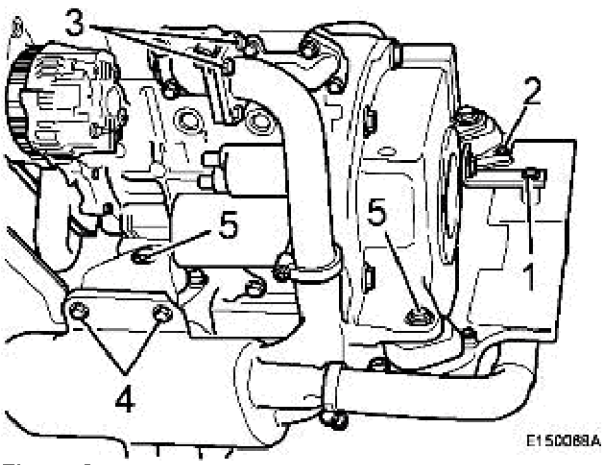


Figure 2

- Cover the threads of screws (5) with Loctite, turn them into the front engine suspension and tighten with 105 Nm.
- Assemble the exhaust system with a new seal to the exhaust manifold.
- Turn in screws (1 and 2) and tighten with 30 ± 5 Nm.
- Fasten the exhaust bracket to the engine carrier and tighten the screws (4 and arrow) with 60 ± 10 Nm.

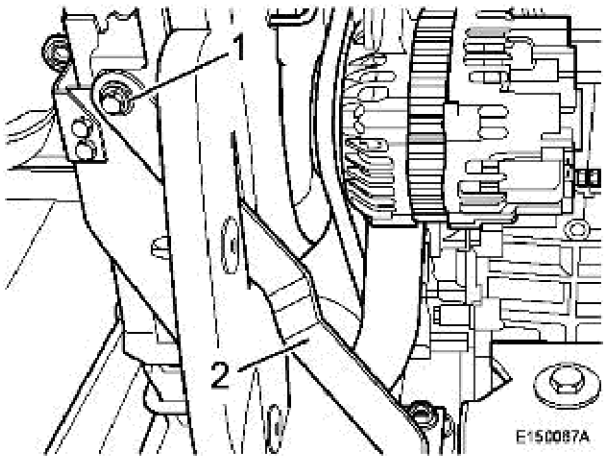


Figure 3

- Turn in screw (1) on both tie rods and tighten with 30 ± 5 Nm.

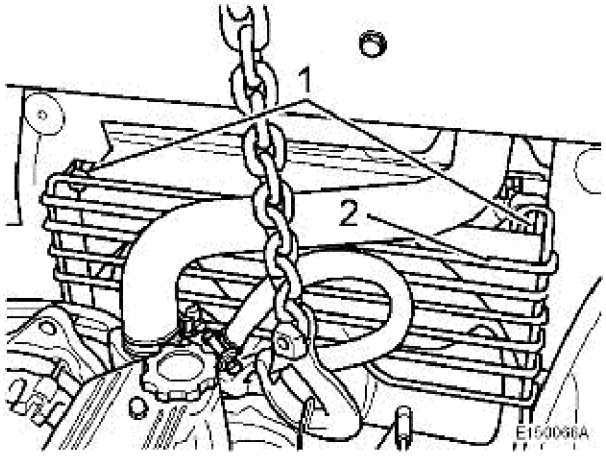


Figure 4

- Attach the radiator grid, turn in screws (1) and tighten with 30 ± 5 Nm.
- Assemble top and bottom coolant hose with new hose clamps.
- Close the drain screw and fill in coolant.
  Filling capacity: approx. 5 l
- Insert the engine with radiator and engine carrier and connect the following components:
  - Generator
  - Starter
- Push the engine forward and lower it.

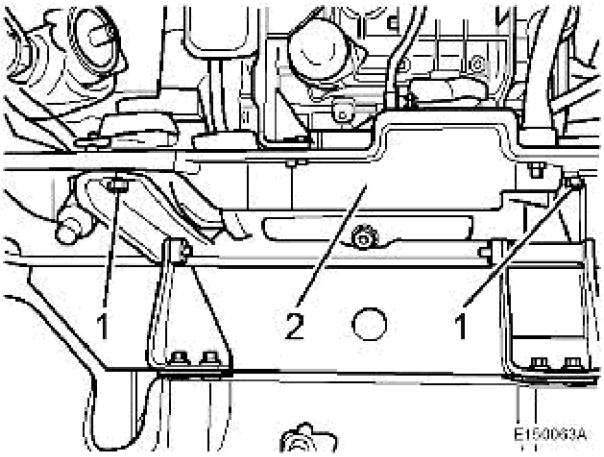


Figure 5

- Turn the fastening screws (1) into the engine carrier (2) and tighten with 105 Nm.
- Remove the lifting tackle to the engine.

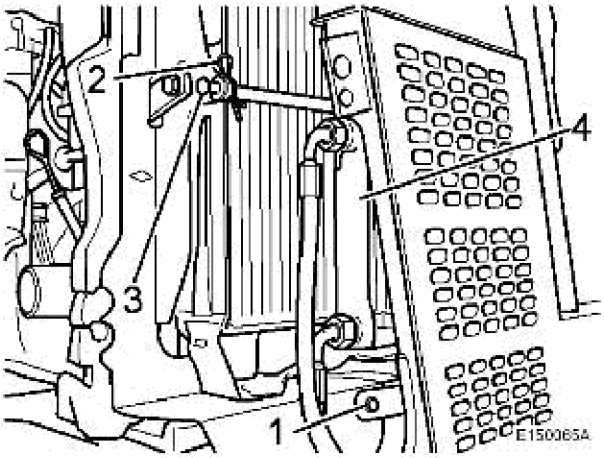


Figure 6

- Install oil cooler (4) and tighten screw (1) with 12 ± 2 Nm.
- Insert rod (3) and secure with clamp (2).

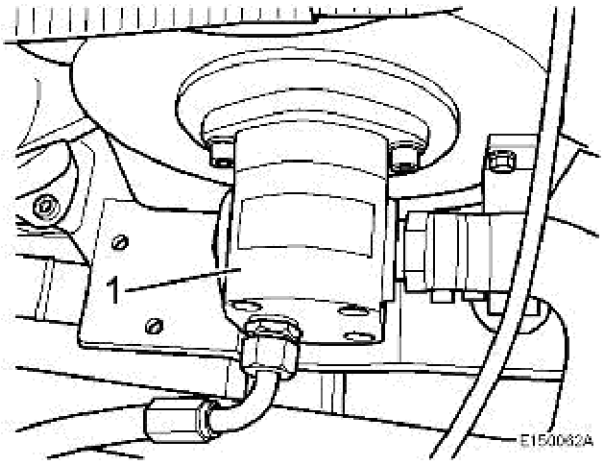


Figure 7

- Install hydraulic pump (1), cover the screws with Loctite, turn them in and tighten with 105 Nm.

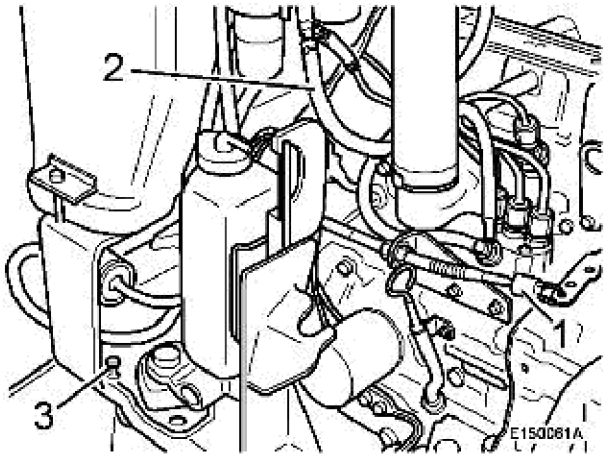


Figure 8

- Assemble fuel tank, filter and air filter and tighten the screws (3) with 30 ± 5 Nm.
- Connect fuel line (2).
- Fasten throttle control (1) on injection pump and adjust throttle cable.

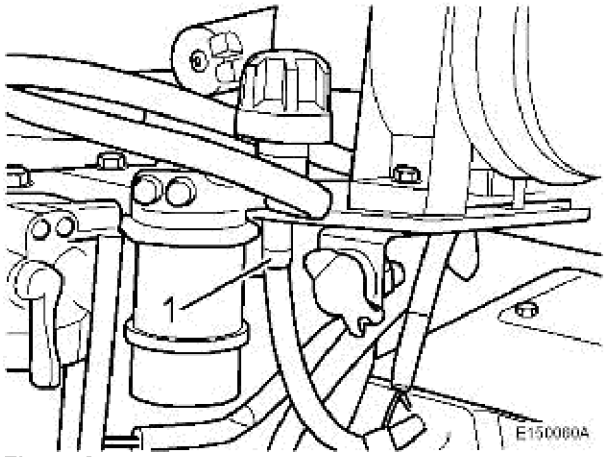


Figure 9

- Connect the breather line (1) to the hydraulic oil tank.
- Install the engine wiring loom and connect the following components:
    - Air filter contamination indicator
    - Fuel sensor
    - Glow plug
    - Shut-off solenoid
    - Plug for hand lamp
    - Temperature switch
    - Ground strap on engine and engine carrier

  Fasten the cables with cable straps.
- Assemble the fastening clamps for engine cable set.

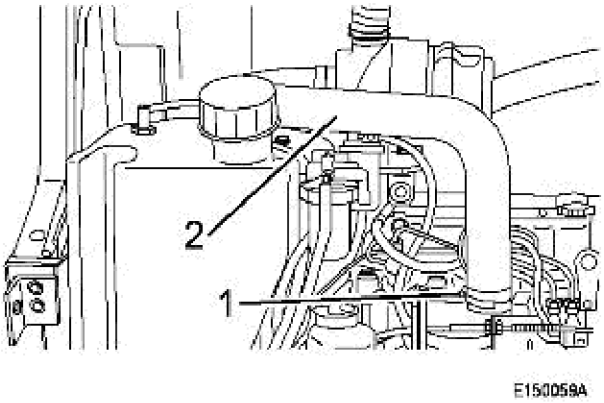


Figure 10

- Fasten the air intake hose (2) with a new hose clamp (1) to the air intake pipe.

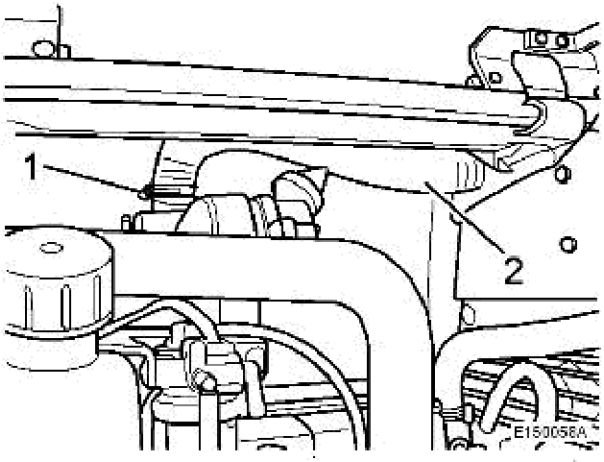


Figure 11

- Assemble hood with engine hood.
- Assemble the suction hose with a new hose clamp (1).
- Bleed the fuel system.
- Connect the ground cable to the battery.
- Lift the counterweight up and fasten with the screws.
- Check engine oil level, top up if necessary
- Start the engine and make sure that there are no leaks.

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Checking the compression pressure**	Function Group : **211**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Checking the compression pressure

Op nbr

ST332270 Adapter for pressure gauge

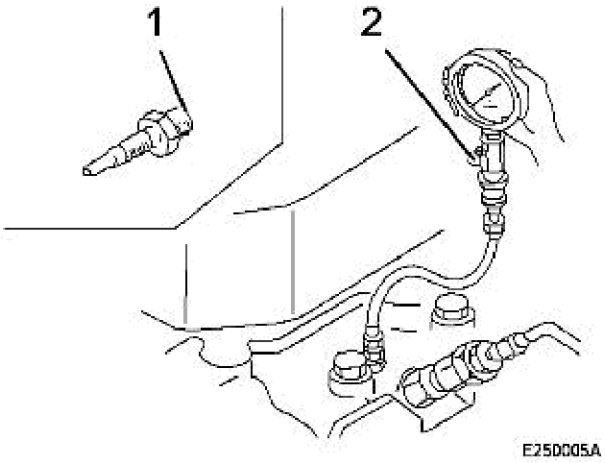


Figure 1

- Adjusting valve clearance, see See further .
- Set the control lever to a position in which the fuel supply is interrupted.
- Disassemble all glow plugs and install adapter (1) ST332270 with pressure gauge (2) to one of the cylinders.
- Crank the engine with the starter.

  Compression pressure, see tableSee table

  The measured compression pressure depends on the starter speed during the measuring process and the altitude of the engine location.

  Limit values can therefore not determined precisely. The compression pressure measurement is only recommended as a comparison measurement between all cylinders of an engine. If the detected deviation is higher than 10% the respective cylinder units should be dismantled to detect the cause.
- Insert all glow plugs and tighten with 17.2 ± 2.5 Nm.

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Adjusting the valves**	Function Group : **214**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Adjusting the valves

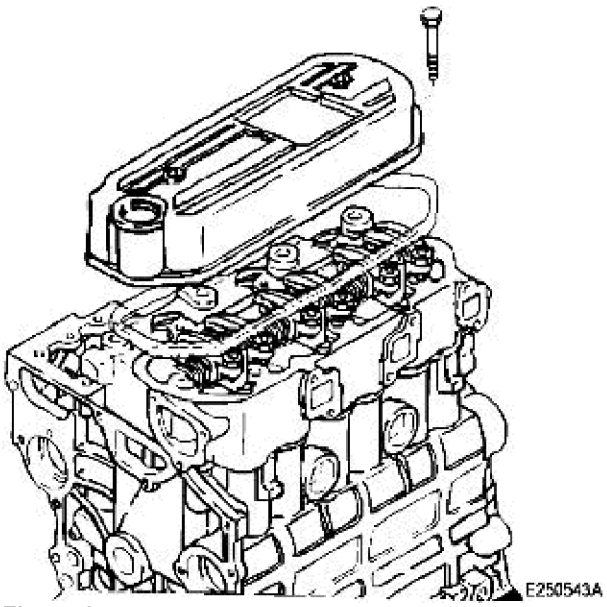


Figure 1

Op nbr 21412

NOTE **Clean the area around the rocker cover before starting adjustment work.**

- Pull off the hose for crankcase ventilation.
- Remove the cylinder head cover.
- Crank the engine until the valves are overlapping.

NOTE **Overlapping of valves means: Exhaust valve not yet closed, intake valve starts to open. In this situation both push rods cannot be turned.**

Position I

Cylinder 1	Overlapping of valves	
Cylinder 2	Intake valve	adjust
Cylinder 3	Exhaust valve	adjust

Position II

Turn crankshaft one full turn (360 Grad) further in direction of engine rotation

Cylinder 1	Intake valve	adjust

Position II

Cylinder 1	Exhaust valve	adjust
Cylinder 2	Exhaust valve	adjust
Cylinder 3	Intake valve	adjust

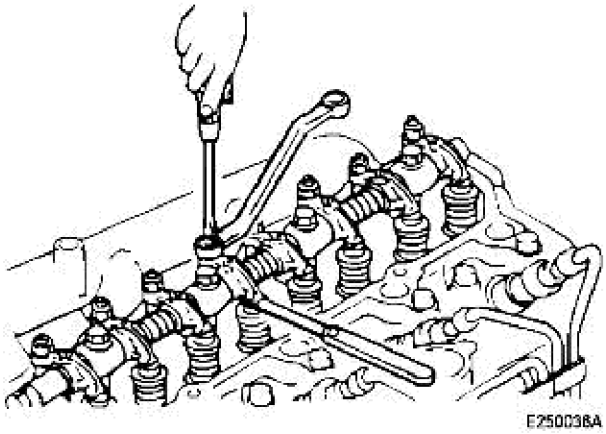
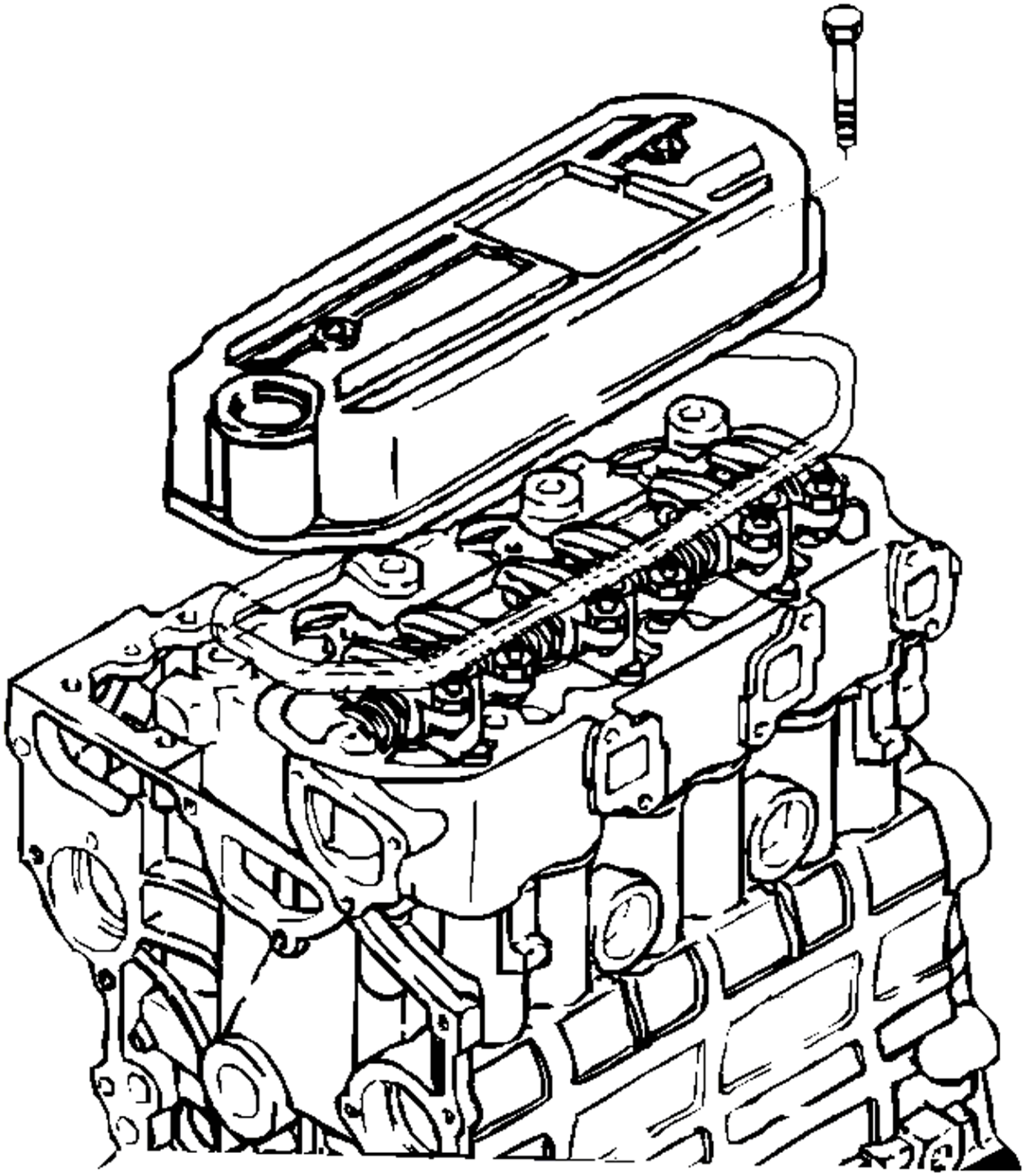


Figure 2

- Adjust the valve clearance on the respective cylinder using a feeler gauge (See figure).
- Tighten the counter nut. Check the adjustment again with the feeler gauge.
- Attach the gasket to the rocker cover.
- Install the rocker cover. Tighten the screws with a torque of 11.3 Nm.
- Push on the crankcase ventilation hose.



E250543A

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Lubrication system, specification**	Function Group : **220**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Lubrication system, specification

Specification, lubrication system

Engine		L3E2-64ESA
Type		Forced feed
Oil		Classification revision API CC or better
Capacity (max. level minus 0.5 litres of oil in filter)		3.6 l
Oil pump	Type	Gear type
	Driven by	Camshaft gear
Opening pressure of relief valve		3.45 ± 0,5 bar
Pressure difference at which the oil pressure switch is closed (warning lamp lights up)		0.5 ± 0.1 bar
Oil filter		Paper element (full-flow)

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Lubrication system, description**	Function Group : **220**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Lubrication system, description

- The oil pump delivers pressurized engine oil to lubricate the contact faces of moving parts, such as crankshaft, camshaft, intake/exhaust valves, rockers and engine timing gears.

Schematic flow of lubrication oil

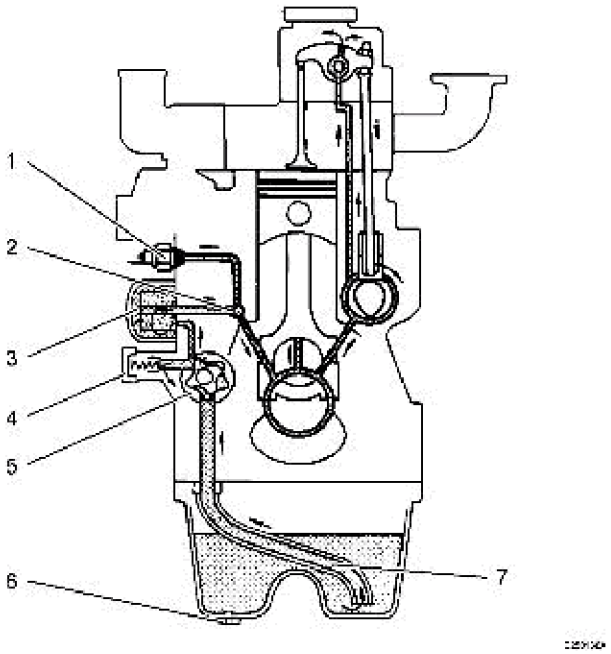
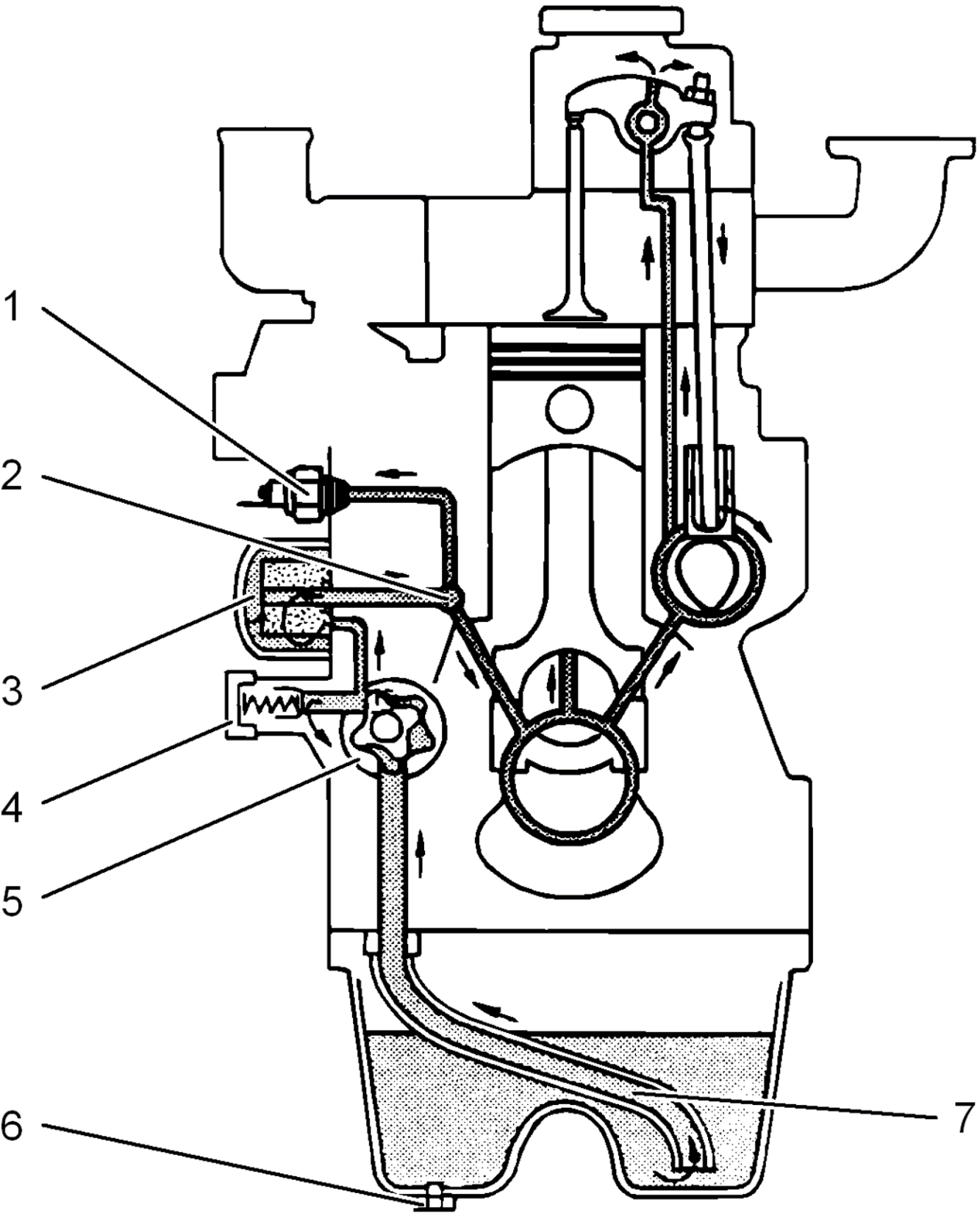


Figure 1

1. Oil pressure switch
2. Main oil gallery
3. Oil filter
4. Pressure relief valve
5. Oil pump
6. Oil drain plug
7. Oil screen



E250130A

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Removing the oil filter**	Function Group : **222**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Removing the oil filter

Op nbr 22202

Filter wrench

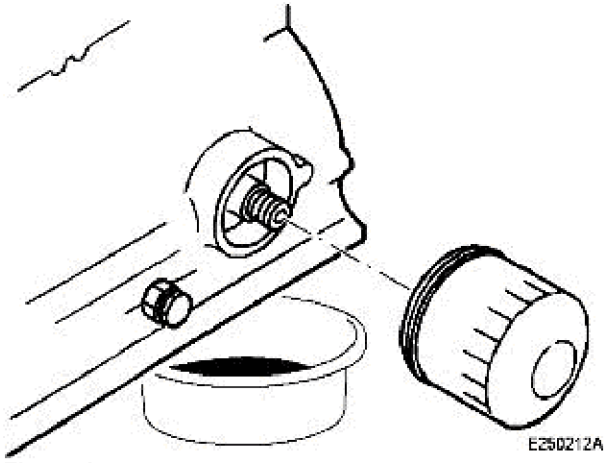


Figure 1

- Place a bowl under the oil filter to catch running out oil.

WARNING! **Dispose of collected engine oil environmentally.**

- Unscrew the oil filter from the engine block using the filter wrench.

WARNING! **Dispose of the disassembled oil filter environmentally.**

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Installing the oil filter**	Function Group : **222**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Installing the oil filter

Op nbr 22202

⇒

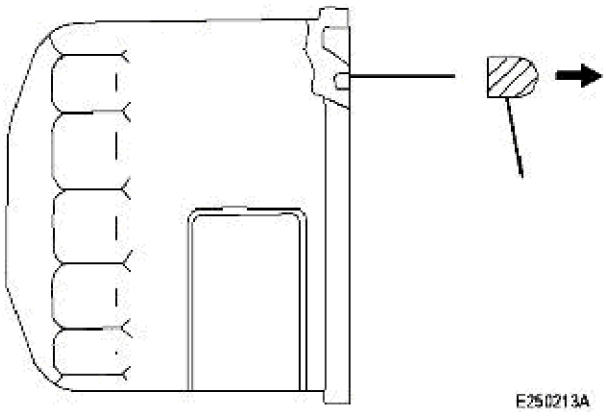


Figure 1

- Slightly oil the seal on the new oil filter with engine oil.
- Screw on the new filter cartridge by hand. When the seal touches the contact face turn further for another 1/2 of a turn.

WARNING! **Do not damage the seal during installation.**

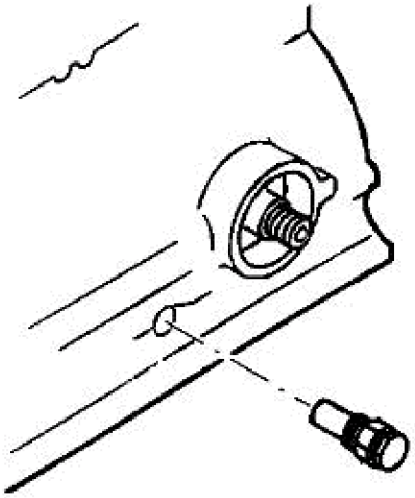
- Fill in 0.5 litres of oil.
- Start the engine and check for leaks in the vicinity of the filter.
- Shut the engine down. Check the oil level, fill up oil if necessary.

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Removing and installing the pressure relief valve**	Function Group : **222**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Removing and installing the pressure relief valve



E250131A

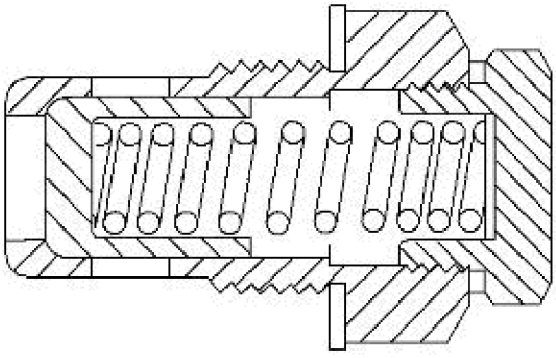
Figure 1

Disassembling

Op nbr

⇒

- Unscrew the pressure relief valve (1) from the engine block.



E250144A

Figure 2

Checking the pressure relief valve

Op nbr

⇒

- Check the contact of the valve seat. Check the spring for damage.
- Measure the oil pressure (3.5 ± 0.5 bar) at which the pressure relief valve opens (oil pressure at nominal engine speed). If the pressure does not comply with the specifications unscrew the nut from the valve and increase or reduce the number of shims. The engine oil pressure connecting point is located on the right hand side of the engine.

More shims	=	Increase pressure
Less shims	=	Reduce pressure

Installation

Op nbr

⇒

- Screw the new pressure relief valve into the engine block and tighten with 49 ± 5 Nm.

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Removing the oil pressure switch**	Function Group : **222**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Removing the oil pressure switch

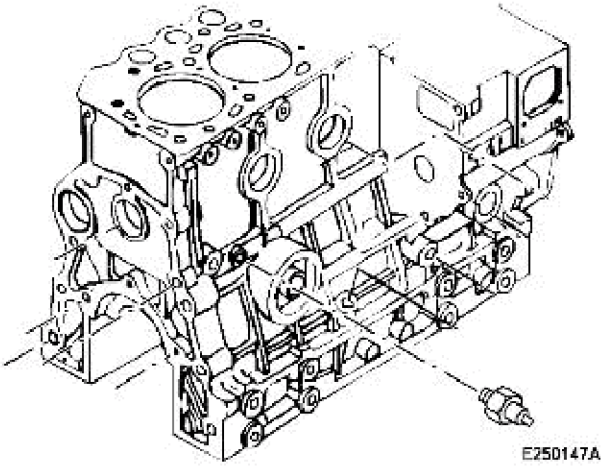


Figure 1

Op nbr 22205

Socket wrench for oil pressure switch

- Unscrew oil pressure switch (1) using a socket wrench for oil pressure switch.

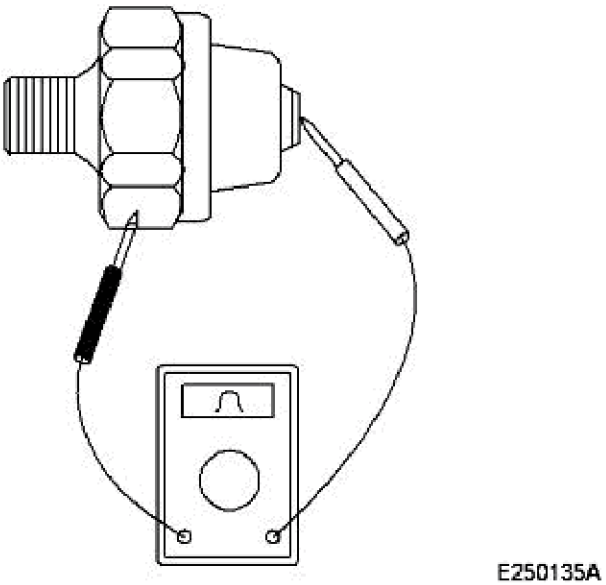


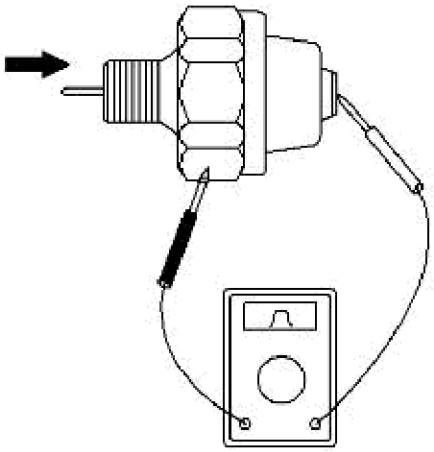
Figure 2

Oil pressure test

Op nbr

Ohmmeter

- Check the current flow between terminal and housing with an ohmmeter, as shown in the illustration. If this current flow is not assured replace the pressure switch.



E250136A

Figure 3
Oil pressure test (1)

- Insert a small diameter rod (1) into the oil bore of the pressure switch and push slightly in to check, whether current flow is applied (see illustration). If this is the case, replace the pressure switch.
- Blow with compressed air of 0.5 bar into the oil bore (arrow) to check whether current flow is present. If this is the case, replace the pressure switch. Check the switch also for air leaks. An air leak may be caused by a broken orifice. In this case the oil pressure switch must also be replaced.

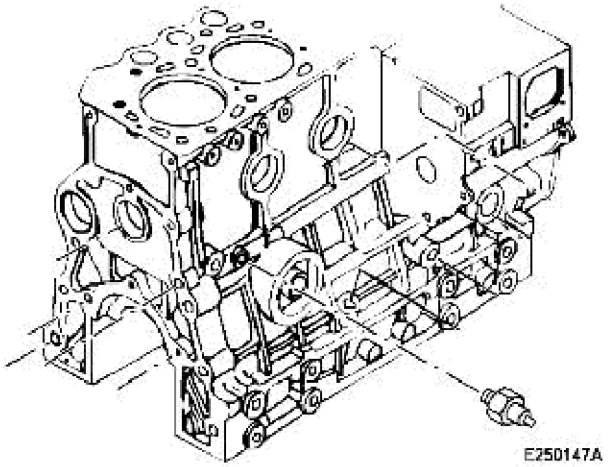


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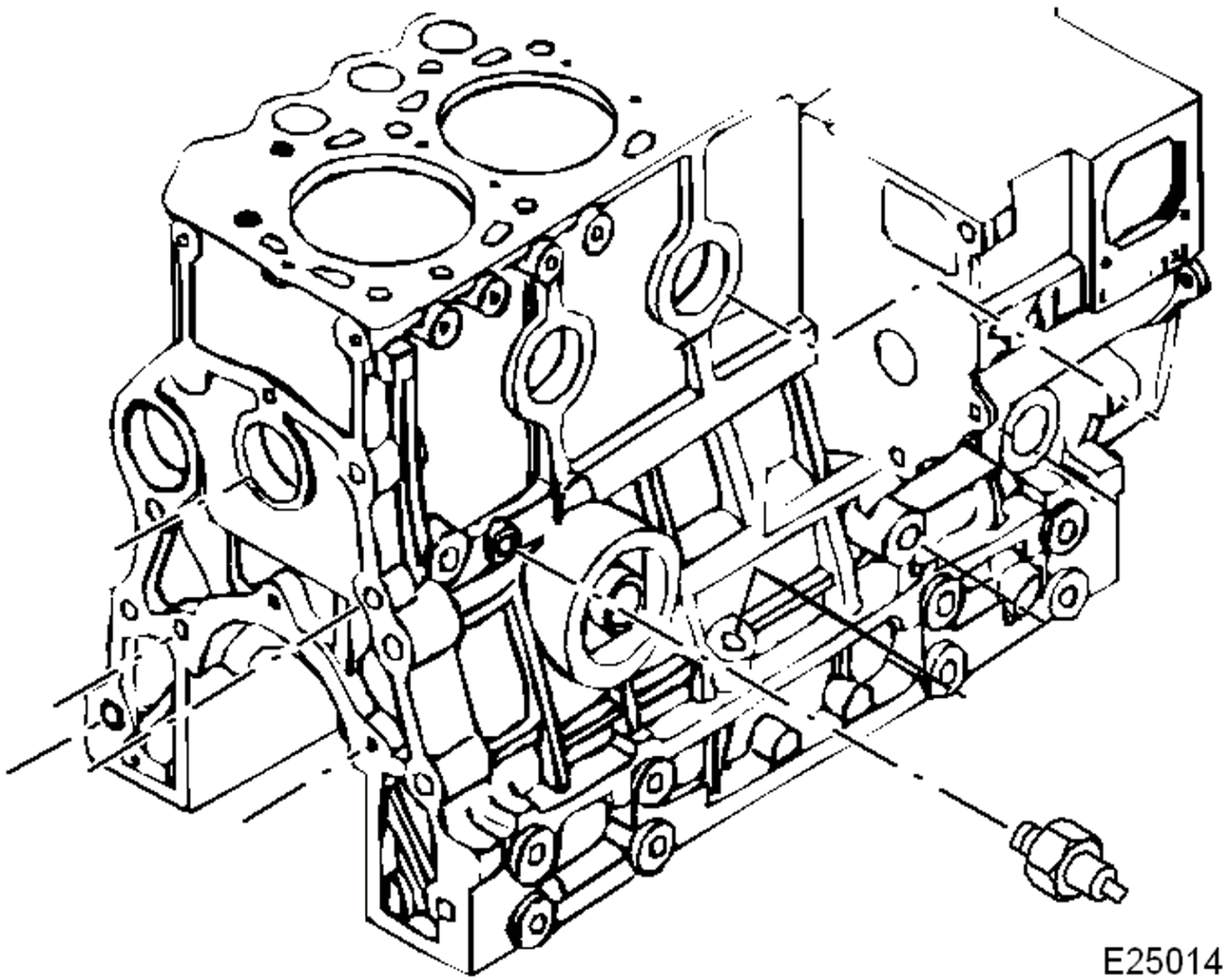
Figure 4
Oil pressure test (2)



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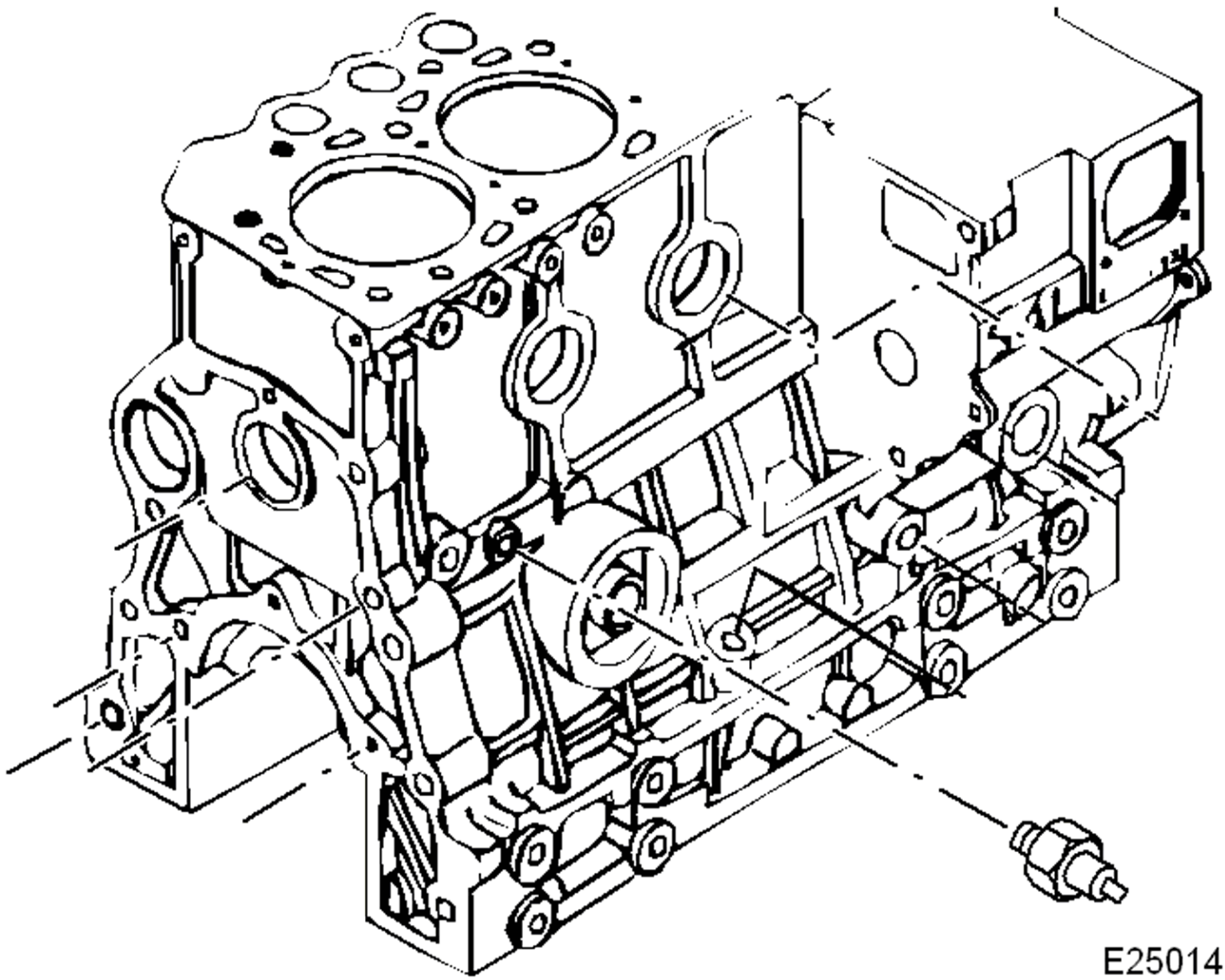

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VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Installing the oil pressure switch**	Function Group : **222**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Installing the oil pressure switch

Op nbr 22205

Socket wrench for oil pressure switch

- Cover the thread on the oil pressure switch with sealing compound. Turn in the oil pressure switch and tighten with the socket wrench to 10 ± 2 Nm.

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Schematic, fuel system**	Function Group : **230**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Schematic, fuel system

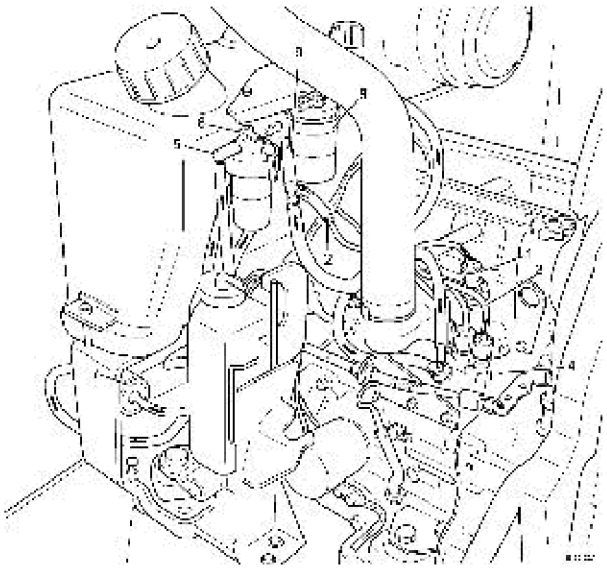
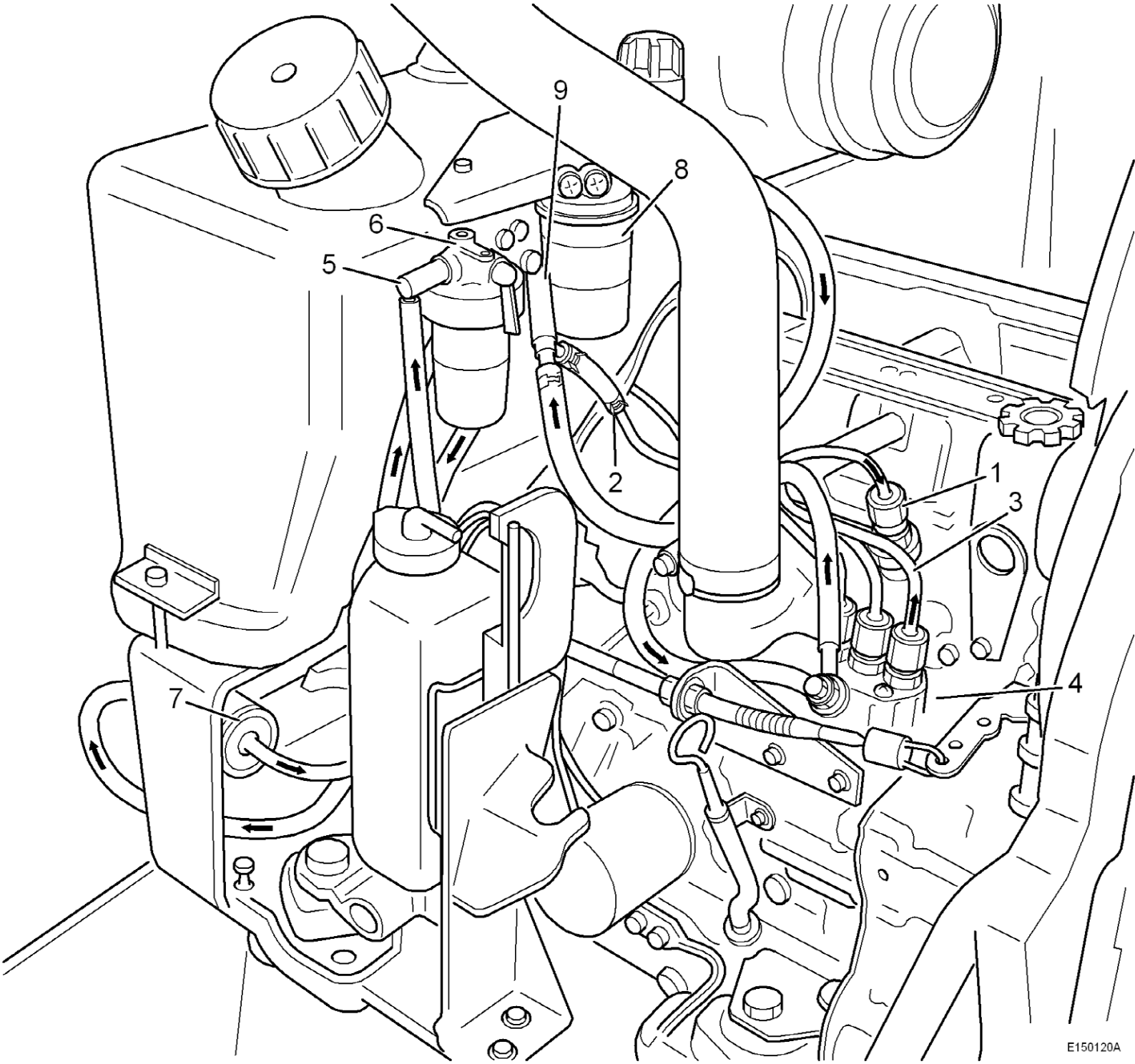


Figure 1
Fuel system

1 Injection nozzle
2 Leak oil line
3 Injection line
4 Injection pump
5 From fuel tank
6 Fuel filter
7 Fuel pump
8 Fuel filter
9 To fuel tank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VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Bleeding the fuel system**	Function Group : **230**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Bleeding the fuel system

Fuel filter with valve

Op nbr

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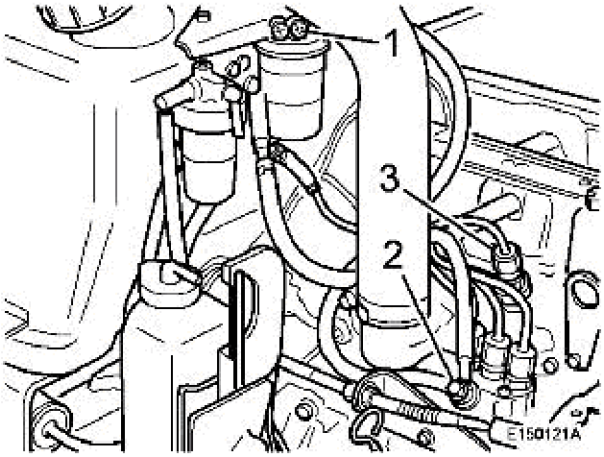


Figure 1

WARNING! **Catch running out fuel and dispose of environmentally.**

- Slacken bleeding screws (1 and 2).
- Start the engine, until fuel runs out of the bleeding screws without air bubbles.
- Tighten the bleeding screws.

NOTE **When working on the injection nozzels, these must be bled separately.**

- Loosen connections (3) on the injection lines.
- Start the engine, until fuel runs out of the injection lines without air bubbles.
- Tighten connections (3).

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Checking and adjusting the injection nozzles**	Function Group : **230**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Checking and adjusting the injection nozzles

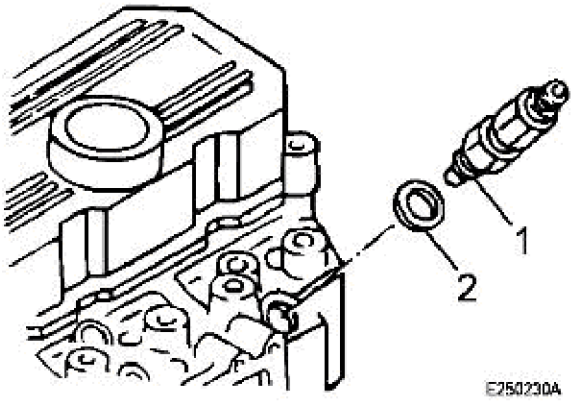


Figure 1
Removing the injection nozzle

1. Injection nozzle
2. Seal ring

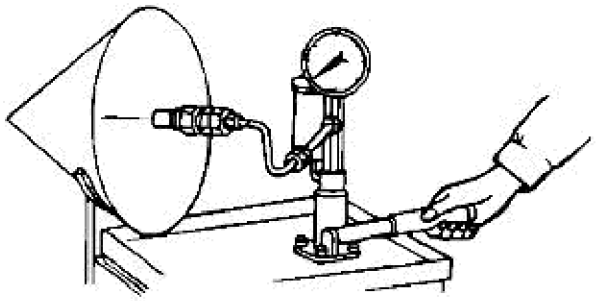
Op nbr

Injection nozzle tester

NOTE **Ensure strict cleanliness when working on injection equipment. Use only pure testing oil acc. To ISO 4113 or clean diesel fuel to test the injection nozzle.**

WARNING! **Keep you hands away from the nozzle yet. Fuel penetrates deep into the flesh and may cause blood poisoning.**

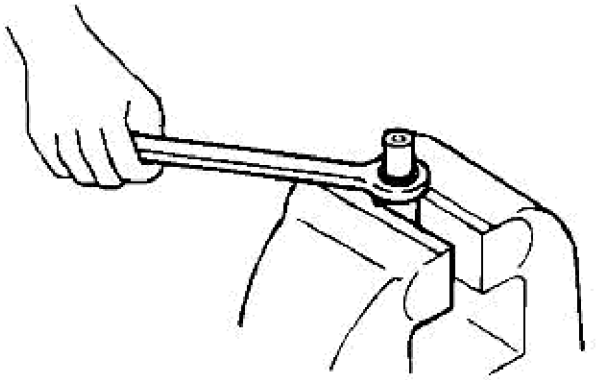
- Remove injection nozzle with seal ring.



E250181A

Figure 2

- Attach the injection nozzle to the injection nozzle tester.
- Operate the handle of the nozzle tester with a speed of one pulse per minute in order to achieve a slow pressure increase, until the valve of the injection nozzle opens. At the moment when fluid comes out of the socket read the maximum pressure on the pressure gauge.
  Opening pressure with new installation: 140 ± 5 bar.



E250182A

Figure 3
Disassembling the tip of the injection nozzle

- Unscrew the spigot nut, remove all parts.

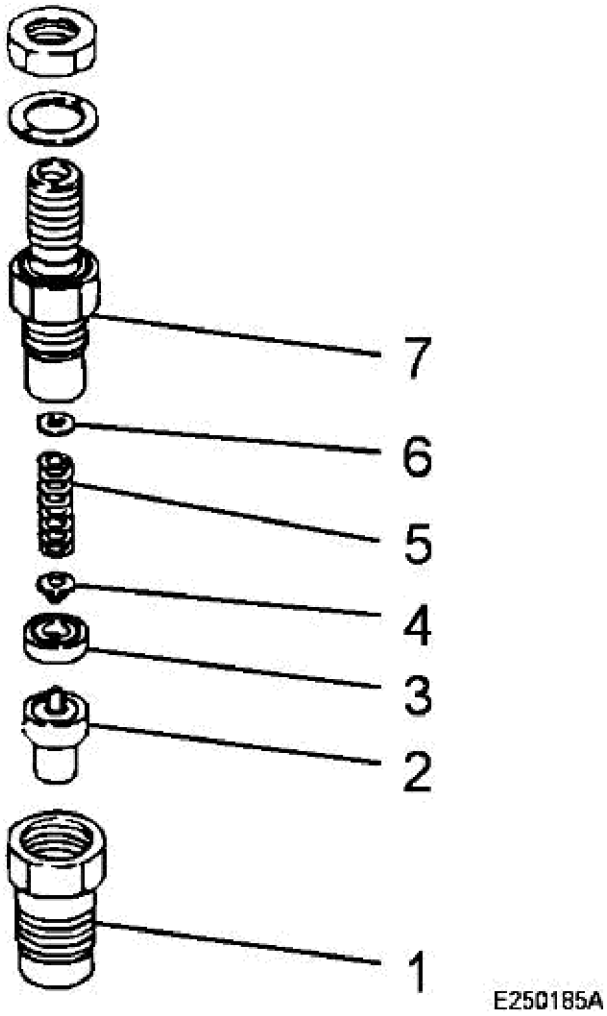


Figure 4
Sequence of individual disassembly

1. Spigot nut
2. Injection nozzle
3. Intermediate piece
4. Push rod
5. Pressure spring
6. Shims
7. Nozzle body

- Adjust the pressure by selecting the appropriate shim.

NOTE	**Increasing or reducing the shim thickness by 0.1 mm changes the injection pressure by 10 bar. 10 different shims in the thickness range from 1.25 mm to 1.70 mm in intervals of always 0.05 mm are available.**

- Assemble the injection nozzle. Tighten the spigot nut with 36.8 ± 2.5 Nm.
  Check the injection nozzles once again with the nozzle tester.

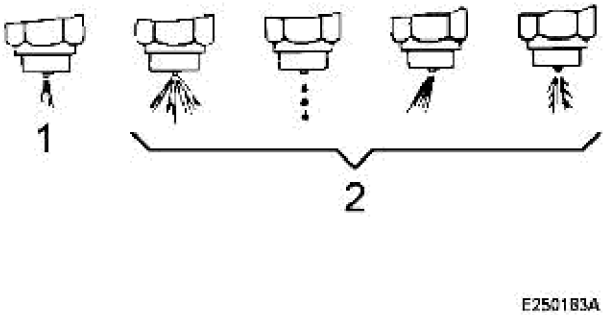


Figure 5

1. Injection nozzle O.K.
2. Injection nozzle not O.K.

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Checking the openings for clogging**	Function Group : **230**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Checking the openings for clogging

Op nbr

Injection nozzle tester

- Watch the jet coming out of the opening. The jet must be straight.
- If the jet has any other shape dismantle the injection nozzle and clean it out. If this is not successful replace the injection nozzle.

NOTE **Rework is not permitted.**

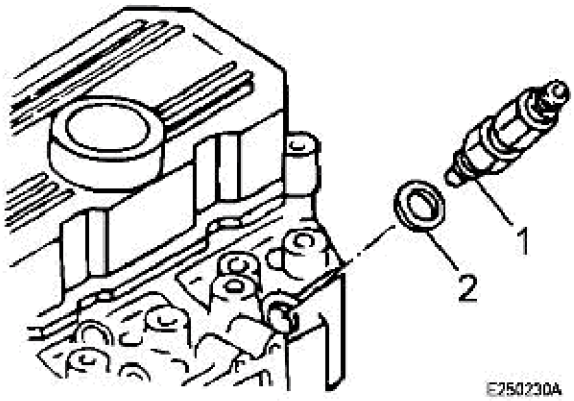


Figure 1
Installing the injection nozzle

1. Injection nozzle
2. Seal ring

- Screw in the injection nozzle with a new seal ring and tighten with 54 ± 5 Nm.

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Idle speed, inspection and adjustment**	Function Group : **230**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Idle speed, inspection and adjustment

Op nbr

Tachometer

For inspection:
Normal operating temperature.
Mayor current consumptionand a possible air conditioning system must be switched off.

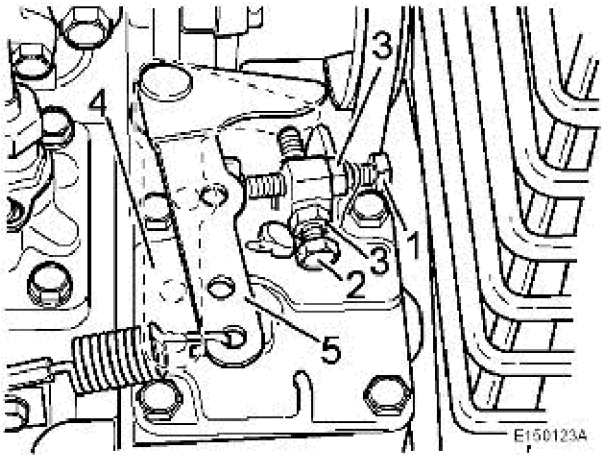


Figure 1
Adjusting idle speed

1. Setscrew, low idle speed
2. Setscrew, high idle speed (sealed)
3. Counter nut
4. High idle speed
5. Low idle speed

Low idle speed, inspection, adjustment

- Make sure, that the control lever touches setscrew (1). Start the engine and read low idle speed.
  Low idle speed: **1050 ± 100 rpm**
  Turn setscrew (1) to adjust (5). After adjustment secure the setscrew with counter nut (3) and check the speed again.

High idle speed, inspection, adjustment

NOTE	**Adjustments on a sealed pump must only be performed in a diesel workshop authorized by Bosch.**

- Check, with engine shut down and throttle pedal fully actuated, whether the control lever movement is limited by setscrew (2), see See figure. Start the engine, fully kick down the throttle pedal and read high idle speed.
  High idle speed, **2400 ± 20 rpm**
  The adjustment (4) is made with setscrew (2), after breaking the seal.
  After the adjustment secure the setscrew (2) with counter nut (3) and check the speed again.. Seal setscrew and nut.

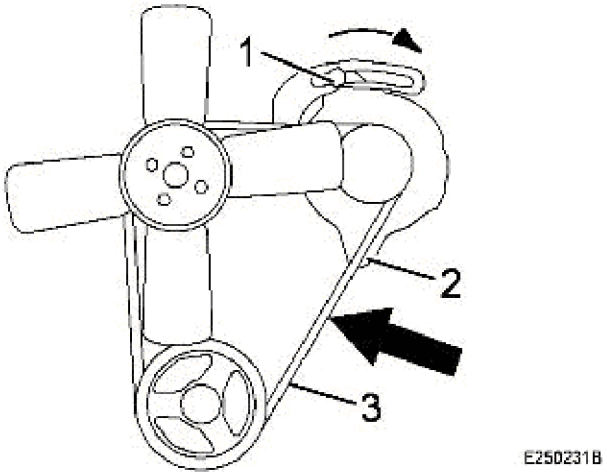


Figure 2
Tensioning the V-belt

1. Screw
2. Screw
3. Tightness test 10…12 mm

Tensioning the V-belt

Op nbr

⇒

WARNING! **Check/tighten or change the V-belt only with the engine stopped.**

- Slacken screws (1 and 2).
- Press the generator in direction of arrow, until the correct V-belt tension is reached.
- Retighten screws (1 and 2).

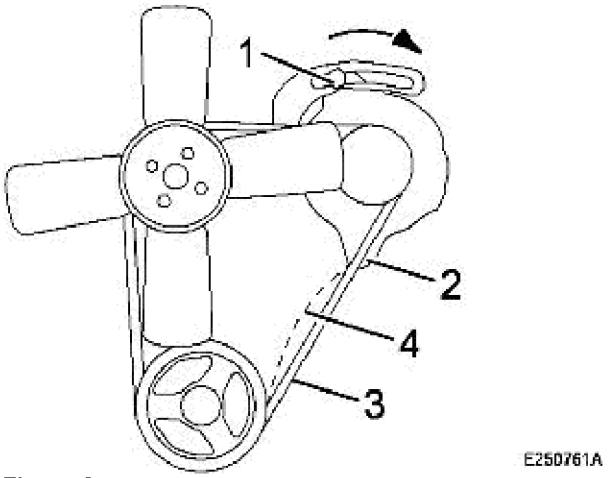


Figure 3
Changing the V-belt

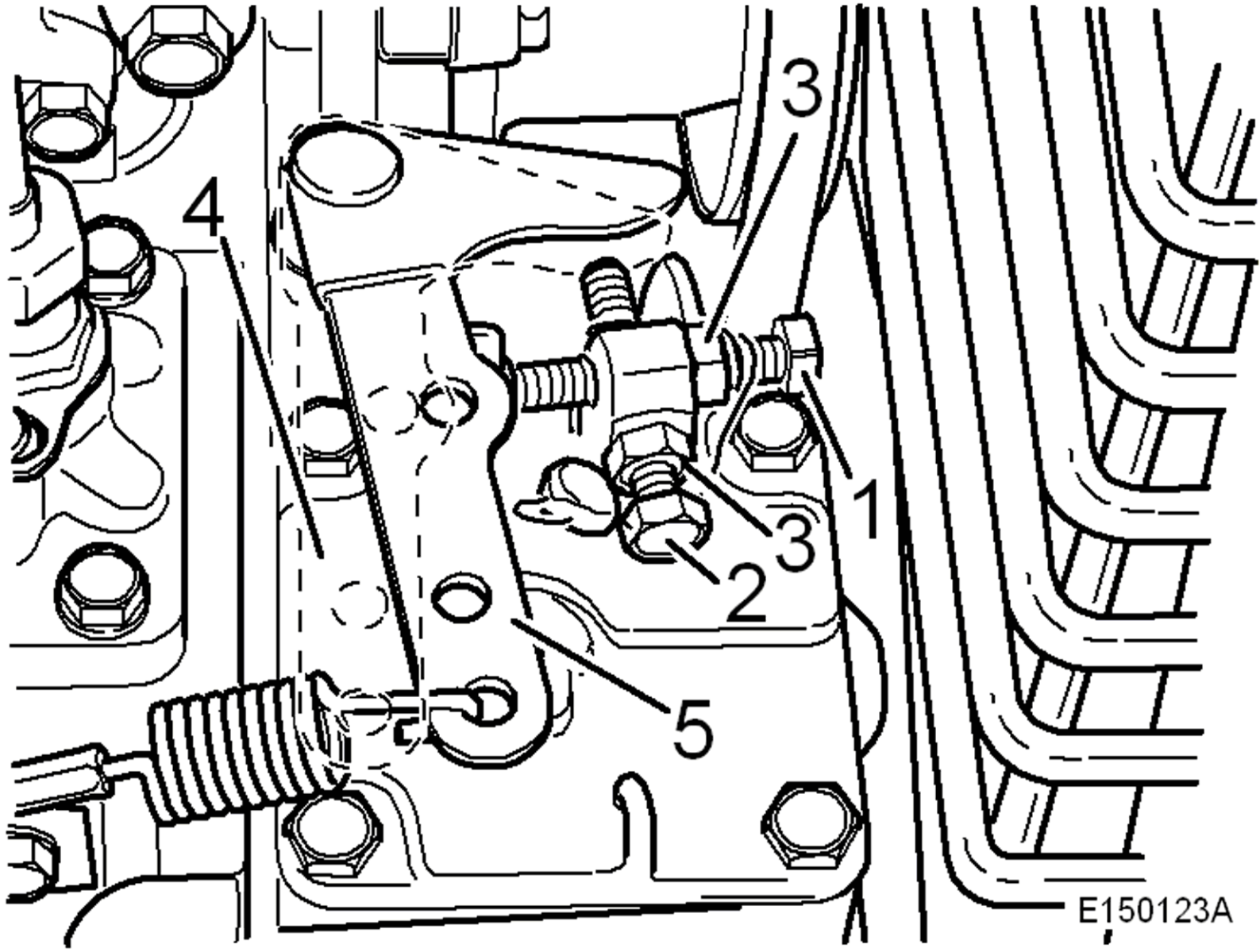
1. Screw
2. Screw
3. V-belt
4. Tightness test 12 mm

Changing the V-belt

Op nbr 262106

⇒

- Slacken screws (1 and 2).
- Press the generator in opposite direction of the arrows, until the V-belt can be taken off.
- Install a new V-belt (3).
- Press the generator in direction of arrow, until the correct V-belt tension is reached.
  With correct V-belt tension it should be possible to compress the V-belt with high force for approx. 12 mm (4).
- Retighten screws (1 and 2).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VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Fuel injection timing**	Function Group : **2331**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Fuel injection timing

General technical data

Engine		L3E2-64ESA
Injection pump	Type	Bosch NC
	Designation	ND-PFR3M
	Piston diameter	6.0 mm
	Injection delay (crank angle), degree	8
	Pressure valve, type	Silto or Bosch
	Bleeding screw	Yes
Fuel injection nozzle	Type	Throttle pin injection nozzle
	Designation	DN15PD6
	Injection pressure (opening pressure of valve)	140 ± 5 bar
Fuel filter (remote filter)	Type	Peper element
Fuel pump (remote pump)	Type	Electrical (diaphragm)
	Power (at 220 °C and a terminal voltage of 12 V DC)	300 cm^3/min minimum or 400 cm^3/min maximum

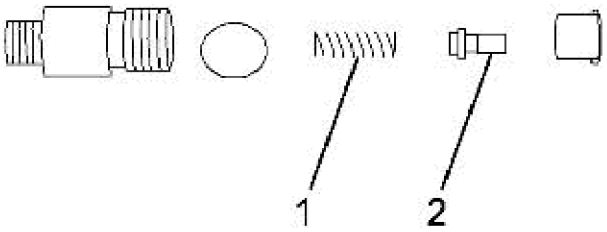

Figure 1
Removing delivery valve and spring

1. Valve spring
2. Delivery valve

Preparation

Op nbr

⇒

NOTE **When working on the fuel system ensure strict cleanliness.**

- Close the valve on the fuel filter.

- Disconnect fuel injection line 1 from injection valve and injection pump.
- Remove the delivery valve holder 1 from the injection pump. Remove delivery valve (2) and holder spring (1). Install the delivery valve holder to the injection pump.
- Connect the fuel injection line to the injection pump.
- Hold the control lever in low speed position.

Inspection

Op nbr

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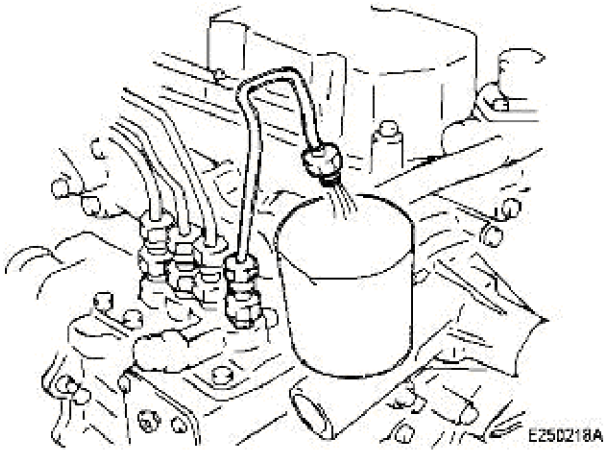

Figure 2
Fuel running out of the injection line

Fuel outflow method

- Open the valve on the fuel filter. Turn the ignition switch to ON.

WARNING! **If the engine is fitted with an electrical fuel pump and the ignition is switched ON, fuel will run out of the injection line under high pressure. Guide the fuel jet into a suitable vessel.**

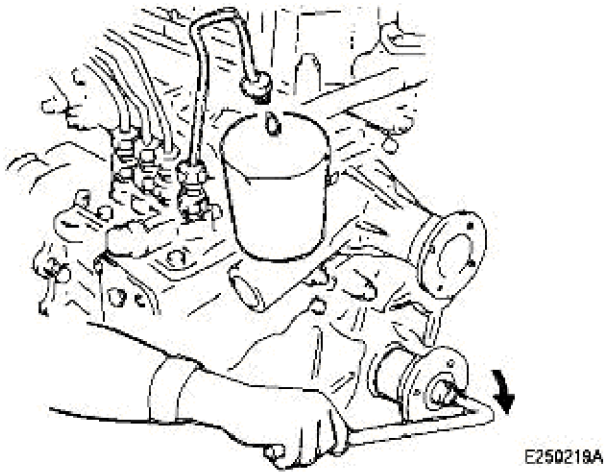

Figure 3
No fuel runs out of the injection line

- Turn the crankshaft slowly in clockwise direction and keep an eye on the free end of the injection line. The moment when fuel stops coming out of the injection line is ti injection timing point.

NOTE **Turn the crankshaft slightly back in opposite direction and repeat the process to check the fuel injection setting.**

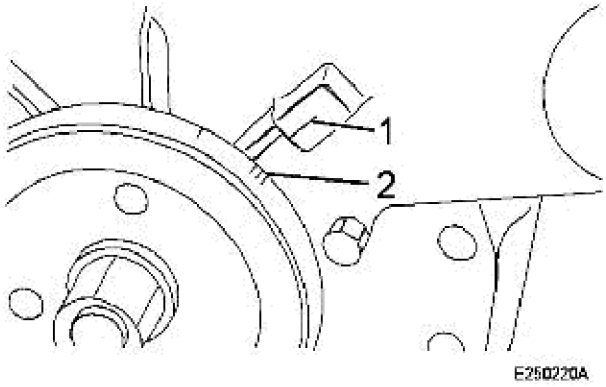

Figure 4
Adjustment mark

1. Reference mark
2. Mark CI

- The fuel injection setting of 17 degree (standard) is correct if the mark CI on the crakshaft pulley matches the timing gear cover at the point when fuel stops to run out of the injection line Grad.

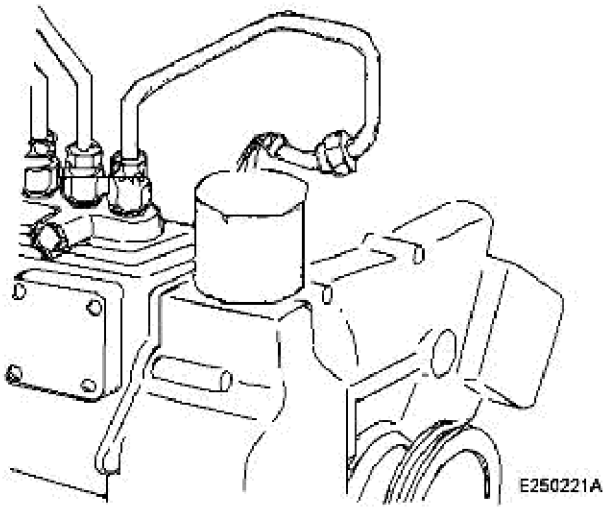

Figure 5
Loosening injection line 1

Alternative method

Op nbr

⇒

NOTE **For the method using the outflow of fuel the delivery valve needs to be removed. Dirt may enter into the injection pump. The following method does not require the removal of the delivery valve.**

- Loosen injection valve 1 in the area of the injection nozzle.
- Start the fuel circuit.
- Crank the crankshaft slowly in clockwise direction until the fuel reaches the open end of the injection line, in this moment check the position of mark CI (2) with respect to the mark on the timing gear cover (1). This setting is delayed by approx. 1 degree. This delay of 1 degree must be taken into account when choosing the shims.

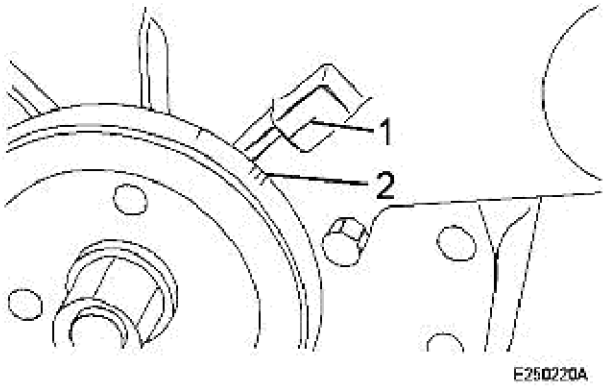

Figure 6
Adjustment mark

1. Reference mark
2. Mark CI

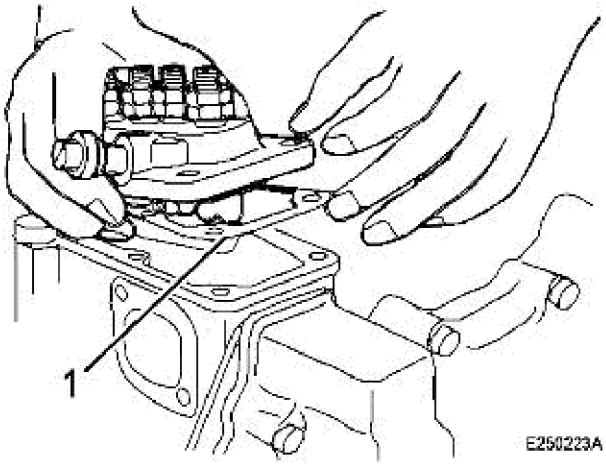

Figure 7
Fuel adjustment

1. Shim

Adjustment

Op nbr

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- If the fuel injection timing is not correctly adjusted change the thickness of the shims under the injection pump accordingly. An increase or reduction of the shim thickness by 0.1 mm changes the adjustment by 1 degree.

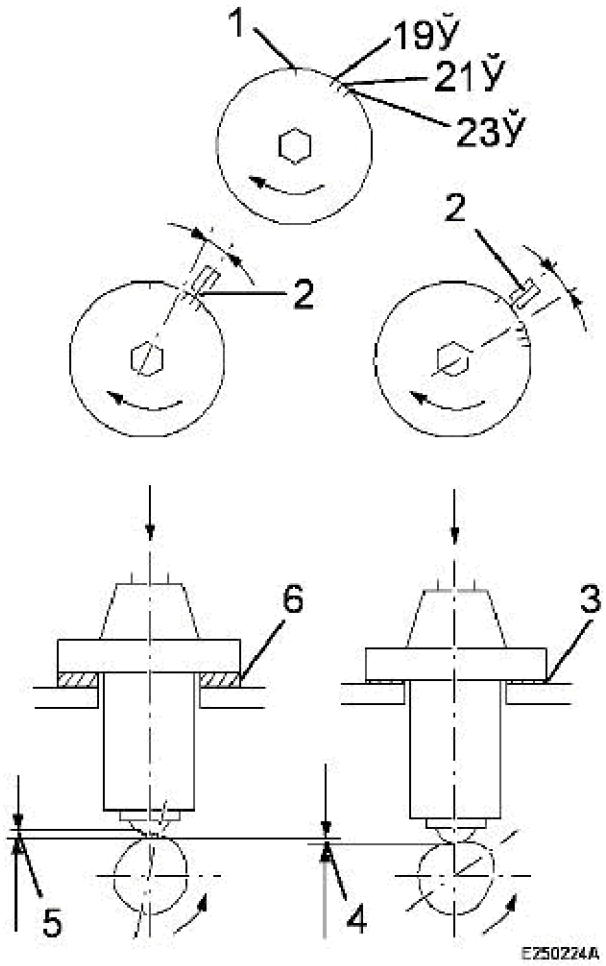

Figure 8
Fuel injection timing

1. Top dead centers
2. Mark on timing gear cover

- Increase the shim thickness to delay the injection or reduce the thickness to advance the injection.

NOTE

Adjustment range ± 1.5 degree
There are four shims with a thickness of 0.2 mm, 0.3 mm, 0.4 mm and 0.8 mm available. The shims are not marked. They must be measured with a vernier caliper before installation.

WARNING! **Apply sealing compound to both sides of the shim to prevent oil leaks.**

- After installation check whether the adjustment is correct.
- Close the valve on the fuel filter and return pressure valve and injection line to their original condition.

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Disassembling the fuel pump**	Function Group : **2331**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Disassembling the fuel pump

Op nbr 2331

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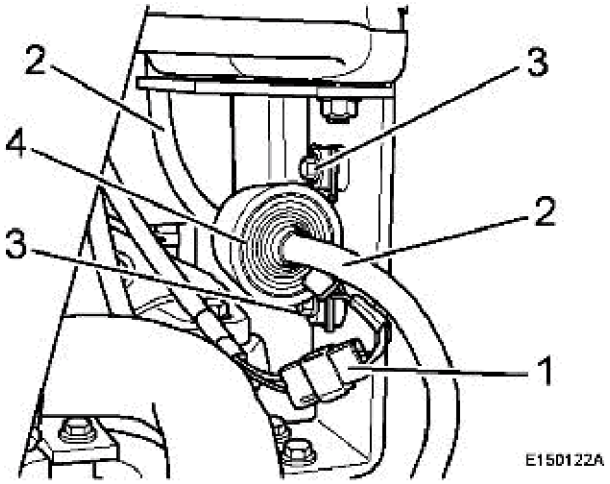
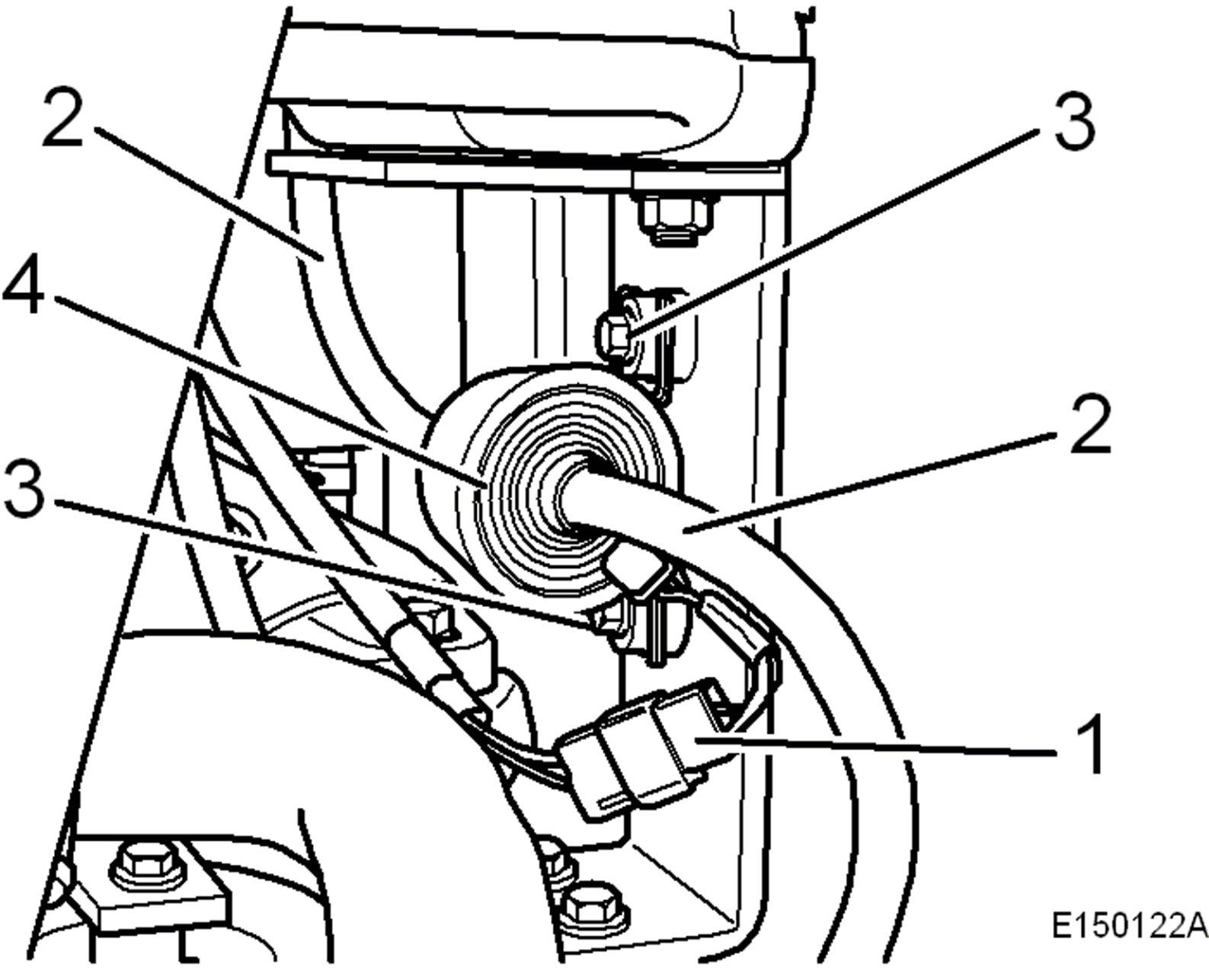


Figure 1

- Unscrew the screws from the rear counterweight, pull up the locking lever and fold the counter weight down.
- Disconnect plug connection (1).
- Disassemble fuel hoses (2).
- Unscrew both screws (3) and take fuel pump (4) off.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VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Installing the fuel pump**	Function Group : **2331**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Installing the fuel pump

Op nbr 2331

⇒

- Fasten new fuel pump (4) with screws (3) to the frame.
- Mount fuel hoses (2) with new hose clamps.
- Join plug connection (1) together.
- Fold the counterweight up and fasten with the screws.
- Bleed the fuel system.
- Start the engine and make sure that there are no leaks.

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Changing the fuel filter**	Function Group : **2334**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Changing the fuel filter

Op nbr 2334

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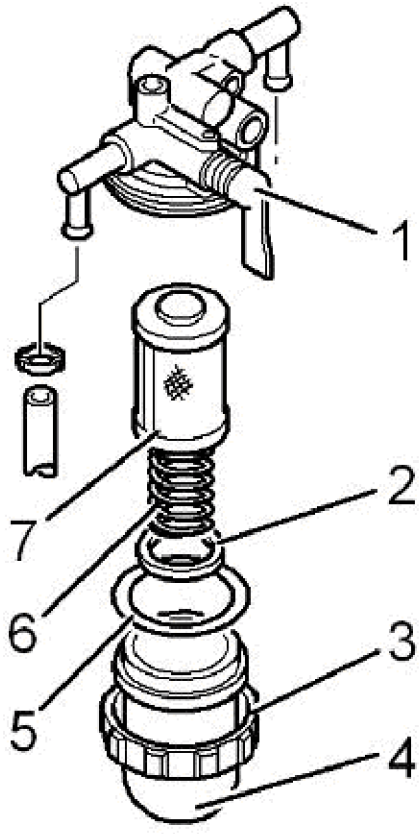


E250622A

Figure 1

NOTE **Ring (2) indicates the condensation water level in the pre-filter, drain condensation water off if level is too high.**

- Close fuel cock (1).

WARNING! **Catch running out fuel and dispose of environmentally.**

- Slacken ring nut (3), take off and empty water separator (4).
- Take out filter (7) and spring (6).
- Check condition of seal (5), replace if necessary.

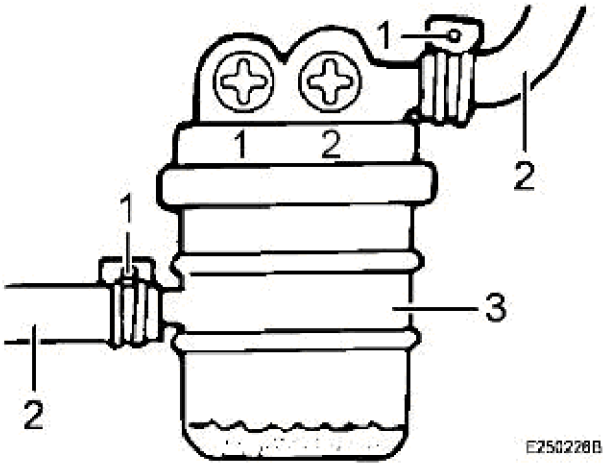


Figure 2
Fuel filter with element

Changing the fuel filter element

Op nbr 23341

⇒

- Loosen the clamps.
- Pull off fuel hoses.
- Take fuel filter element out of elastic bracket and change.

WARNING! **Dispose of fuel filter in compliance with environmental legislation.**

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Technical data**	Function Group : **260**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Technical data

Engine model		L3E2-64ESA
Fan belt		Type LL or HM (width = 10.7 mm, angle V = 38°, outer circumference = 980 mm
Cooling fan	Suction fan	Number of blades = 5, Diameter = 320 mm
Water pump		Centrifugal pump
Thermostat	Opening temperature of valve	82 ± 1.5 °C
	Temperature at which the valve stroke is 8 mm	95 °C
Thermoswitch	Type	Bi-metal
	Temperature at which the thermoswitch is set to ON	111 ± 3.5 °C
	Temperature difference for SWITCHING ON/OFF	8 ± 3.5 °C
Resistance in temperature sensor		50 °C: 80 ± 10 Ω 80 °C: 29.5 ± 2.5 Ω 120 °C: 10 ± 0.3 Ω

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Fault remedy**	Function Group : **260**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Fault remedy

General

The diagnose of anomalies, especially the ones caused by a defective injection pump, defective injection nozzles or too low compression pressure, may cause certain difficulties. It requires thorough examination, because the fault may not be caused by just one component, and it may be necessary to determine how many causes there are for this fault and which is the main reason. An anomaly can generally have several reasons.

The following pages show trouble shooting tables which will help to identify the reason for an engine fault. Each table lists the components to be tested and the testing method to be applied.

During operation diesel engines are characterized by specific features. If these characteristics are known the time needed to determine the nature of an engine problem can be reduced. The following list contains some characteristics of diesel engines which should be known to be able to perform a correct diagnose:

- Black exhaust fumes (when the engine is overloaded).
- Vibrations (caused by high compression pressure and torque).
- Irregular engine speeds (with rapid drop of engine speed).
- White exhaust fumes (with cold engine or immediately after starting the engine).

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Removing the radiator**	Function Group : **2611**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Removing the radiator

Op nbr 2611

⇒

WARNING! **Disconnect and connect the battery only with the ignition switched off. Disconnect the minus pole (green fastening) first. During assembly connect the plus pole (red cable) first.**

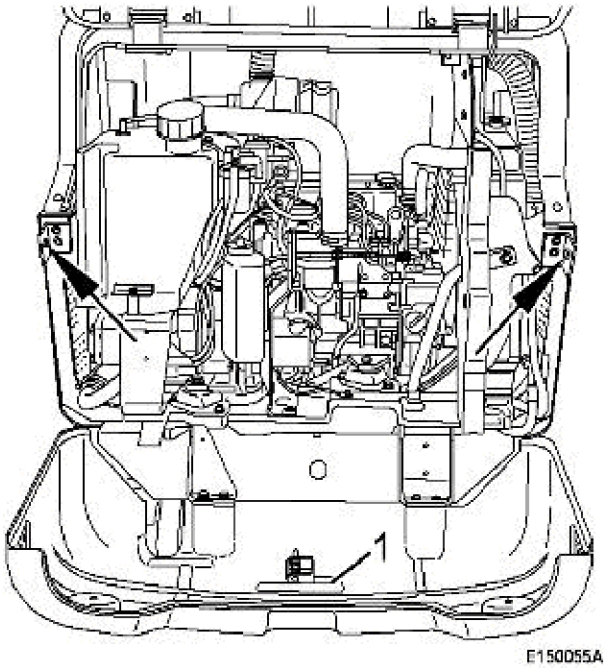


Figure 1

- Disconnect the ground cable from the battery.
- Unscrew both screws (arrows) on both sides of the counterweight.
- Pull safety lever (1) and move the counterweight to bottom position.

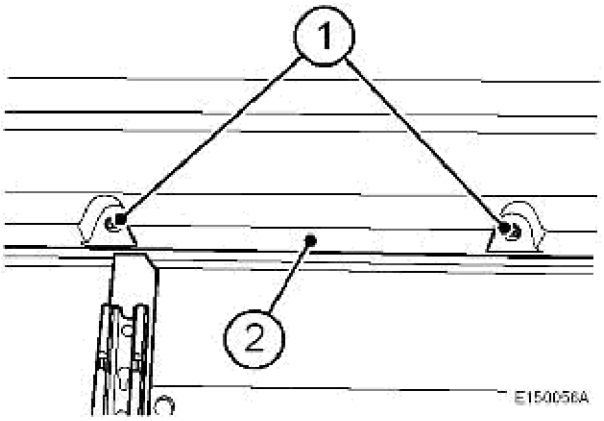


Figure 2

- Unscrew the front socket head cap screws (1) for the hood (2).

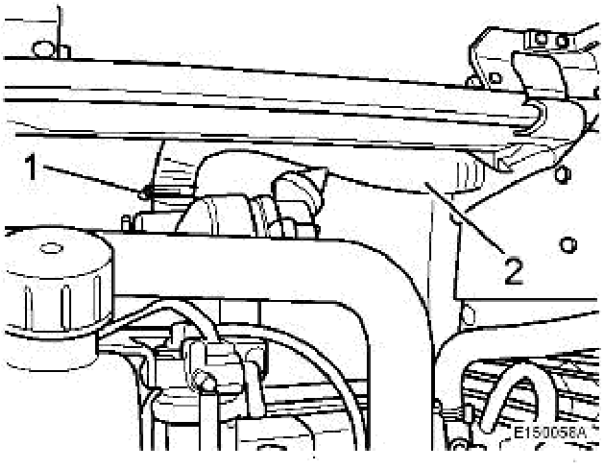


Figure 3

- Loosen hose clamp (1) and place the suction hose (2) to the side.

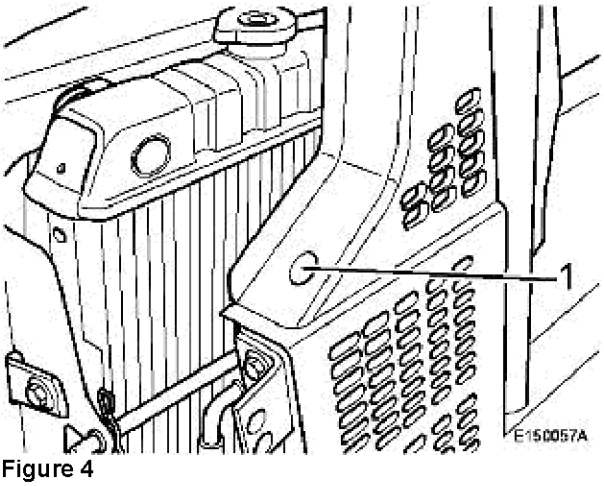


Figure 4

- Unscrew both rear socket head cap screws (1) and take off hood with engine hood.

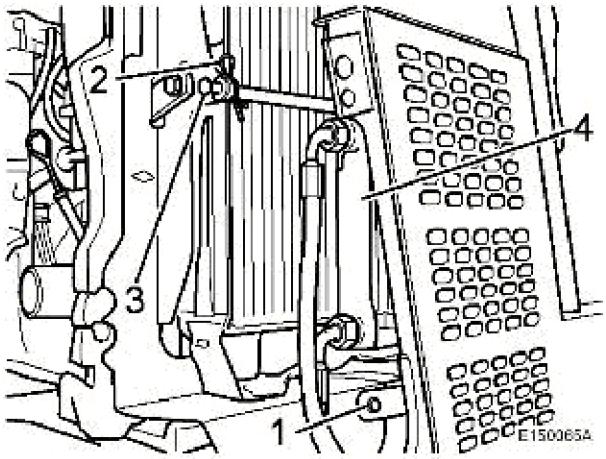


Figure 5

- Unscrew screw (1).
- Unhook calmp (2) and push out rod (3).
- Lay oil cooler (4) to the side and fasten it.

WARNING! **When opening the lid of the compensation tank (radiator cap) there is a risk of scalding because of the overpressure in the cooling system. Catch running out coolant and dispose of environmentally.**

- Unscrew the drain plug, open the radiator cap and drain of all coolant.
  Filling quantity approx. 5 litres.
- Disconnect the water hose from the compensation container on the radiator.
- Remove top and bottom coolant hose

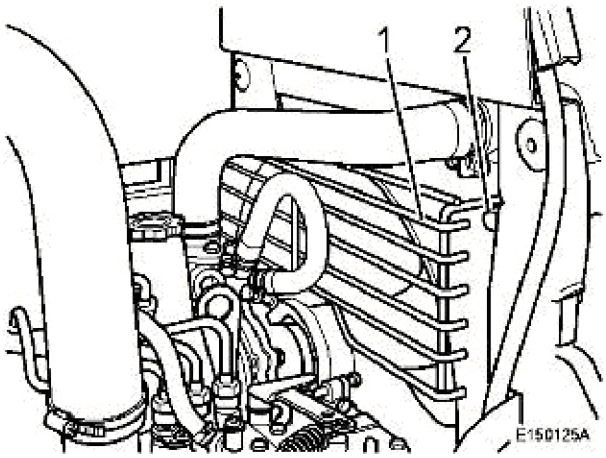


Figure 6

- Unscrew both screws (1) and take off the radiator grid (2).

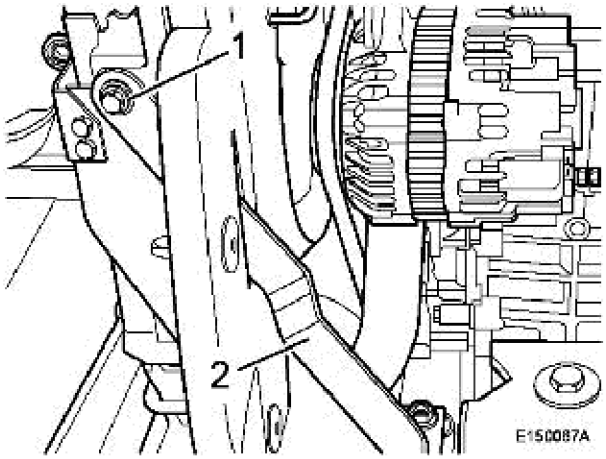


Figure 7

- Unscrew screw (1) from both lateral radiator tie rods.

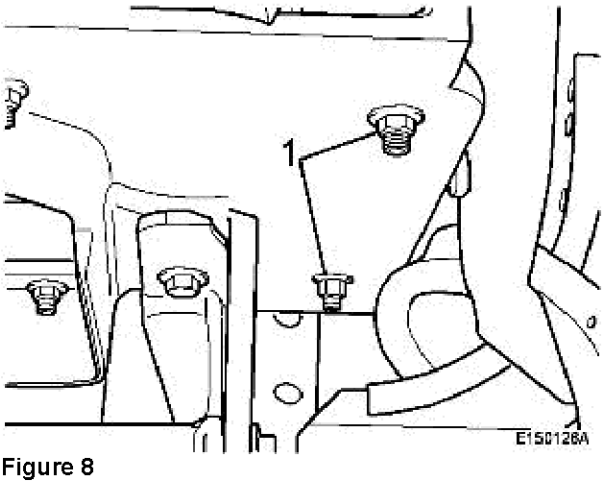
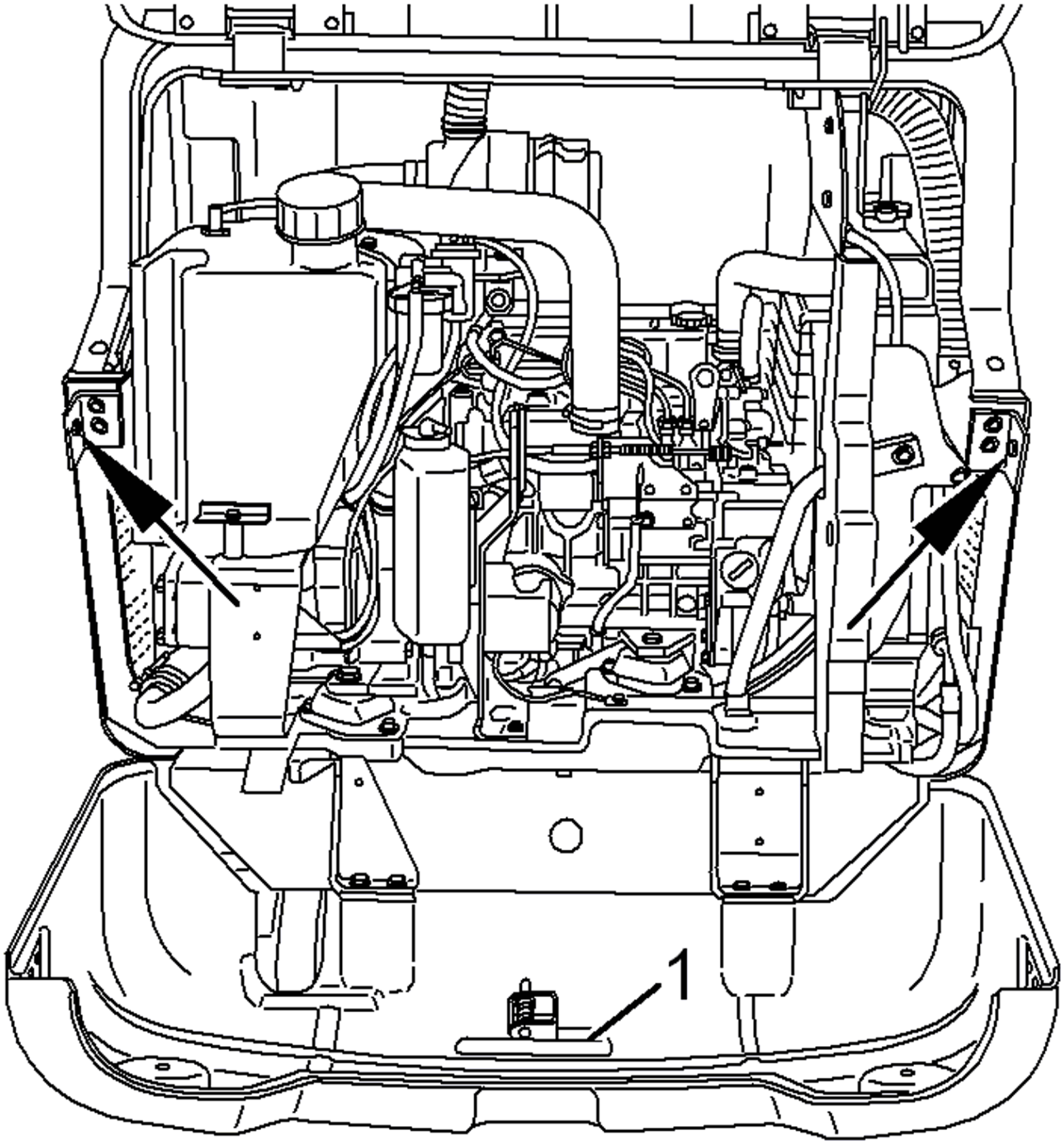


Figure 8

- Unscrew both nuts (1).
- Take the radiator out to the side.



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VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Assembling the radiator**	Function Group : **2611**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Assembling the radiator

Op nbr 2611

⇒

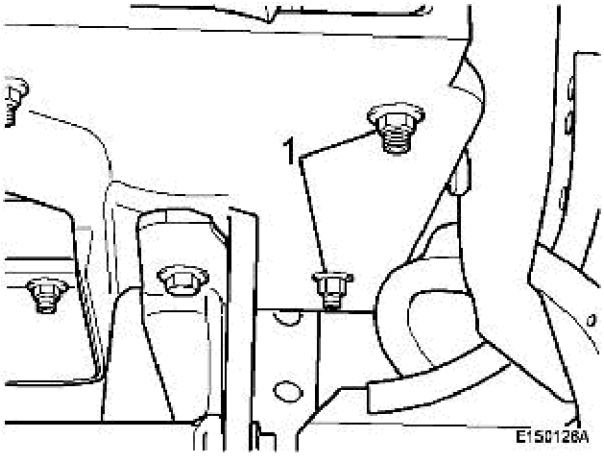


Figure 1

- Slide the radiator (2) in from the side and turn on both nuts (1) and tighten with 60 ± 10 Nm.

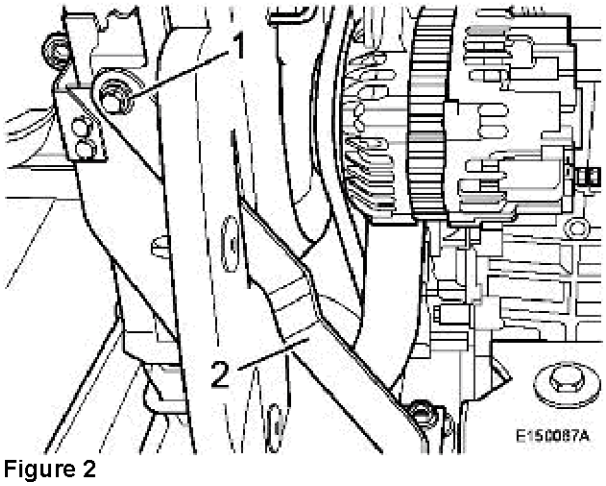


Figure 2

- Turn in screw (1) on both tie rods at the side of the radiator and tighten with 30 ± 5 Nm.

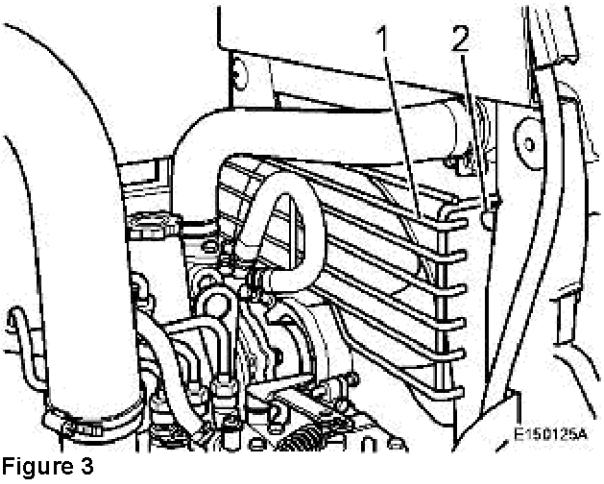


Figure 3

- Attach the radiator grid (2), turn in screws (1) and tighten with 30 ± 5 Nm.
- Assemble top and bottom coolant hose with new hose clamps.
- Close the drain screw and fill in coolant.
  Filling capacity: 5 l

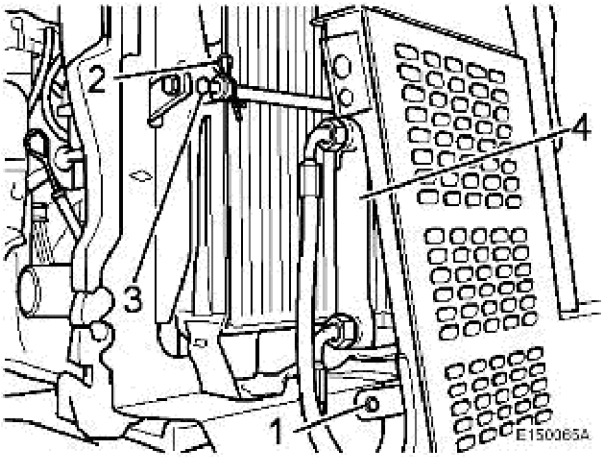


Figure 4

- Install oil cooler (4) and tighten screw (1) with 12 ± 2 Nm.
- Insert rod (3) and secure with clamp (2).
- Assemble hood with engine hood.
- Assemble the suction hose (2) with a new hose clamp (1).
- Connect the ground cable to the battery.
- Lift the counterweight up and fasten with the two screws.
- Start the engine and make sure that there are no leaks.

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Removing the coolant pump**	Function Group : **2621**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Removing the coolant pump

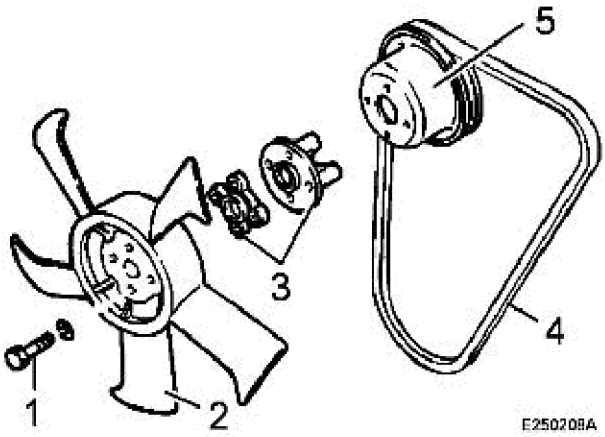


Figure 1

1. Screws
2. Fan
3. Intermediate pieces
4. V-belt
5. V-belt pulley

Op nbr 2621

⇒

- Hold the fan and unscrew the screws.
- Take off fan, intermediate pieces, V-belt and V-belt pulley.

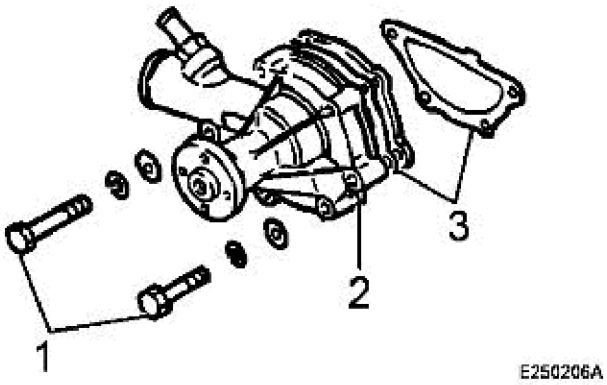


Figure 2

1. Screws
2. Water pump
3. Seal

- Disconnect the hoses from the coolant pump.

NOTE **Clamp the hoses with clamping pliers to prevent the coolant from running out of the hoses.**

- Unscrew the screws for the coolant pump and take the coolant pump off.

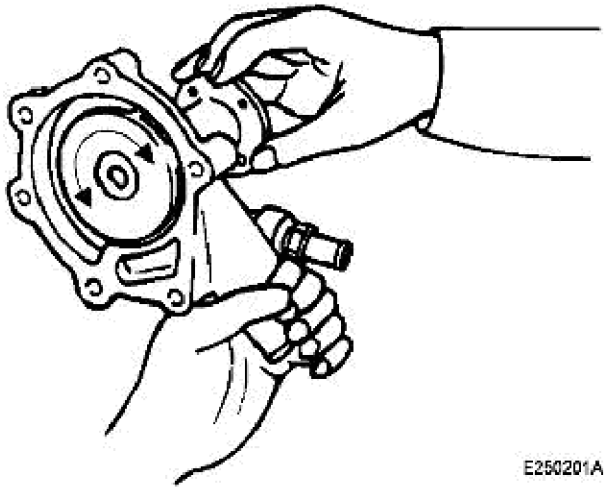


Figure 3
Checking the water pump

- Turn the shaft of the coolant pump and check for noise and smooth running, replace if necessary.

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Assembling the coolant pump**	Function Group : **2621**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Assembling the coolant pump

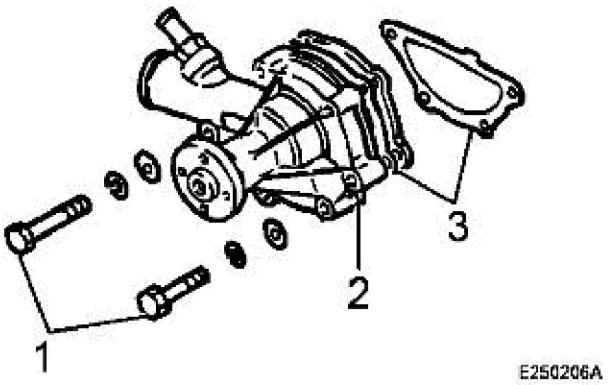


Figure 1

1. Screws
2. Water pump
3. Seal

Op nbr 2621

⇒

- Fasten the coolant pump with gasket, plate and second gasket to the engine block.
- Connect the hoses with the ports on the cooling pump.

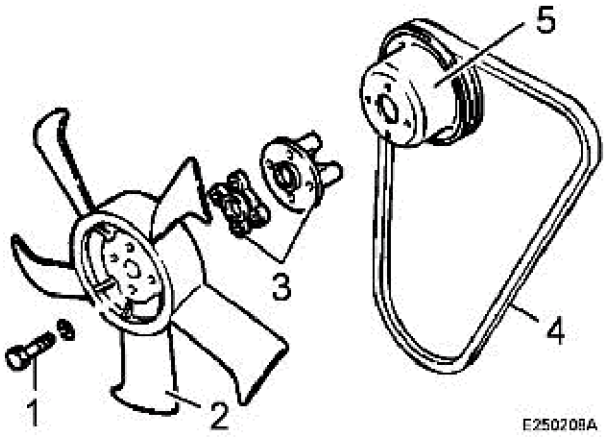


Figure 2

1. Screws

2. Fan
3. Intermediate pieces
4. V-belt
5. V-belt pulley

- Mount intermediate pieces (3) to fan (2).
- Attach V-belt pulley (5) to the coolant pump.
- Fasten the fan with screws (1) to the V-belt pulley.

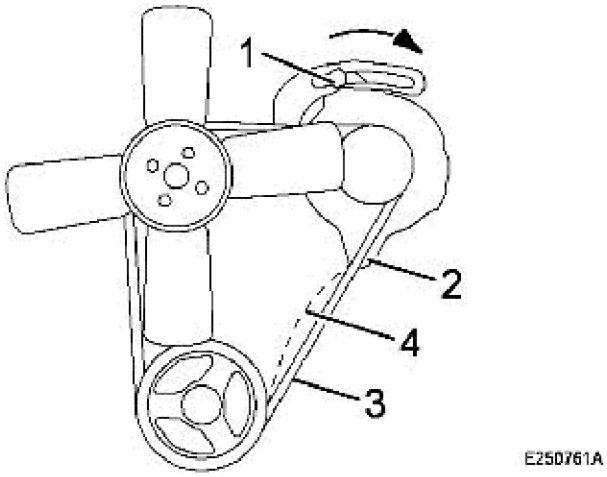


Figure 3
Changing the V-belt

1. Screw
2. Screw
3. V-belt
4. Tightness test 12 mm

- Assemble the coolant pump V-belt and adjust the V-belt tension.
  With correct V-belt tension it should be possible to compress the V-belt with high force for approx. 12 mm (4).
- Start the engine and make sure that there are no leaks.
- Check the coolant level. Fill up if necessary.

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Removing the thermostat housing**	Function Group : **2627**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Removing the thermostat housing

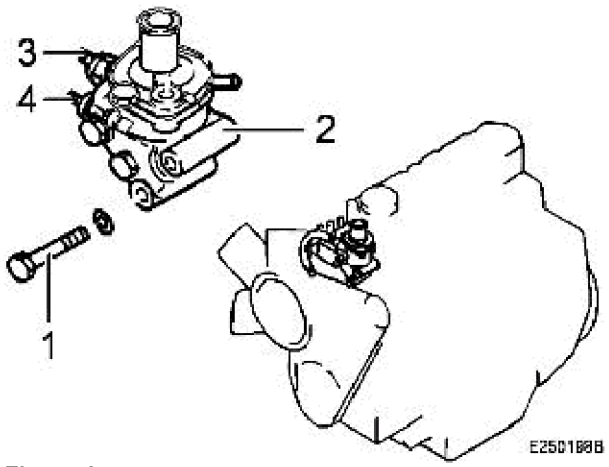


Figure 1
Removing the thermostat housing

1. Screw
2. Thermostat housing
3. The temperature sensor has two flags
4. The thermal switch has one flag

Op nbr

⇒

- Disconnect the hose from the cover.
- Disconnect the hoses from the thermostat housing.

NOTE **Clamp the hoses with clamping pliers to prevent the coolant from running out of the hoses.**

- Pull the electric cable off the temperature sensor.
- Remove screws (1) from the thermostat housing and take the thermostat housing off.

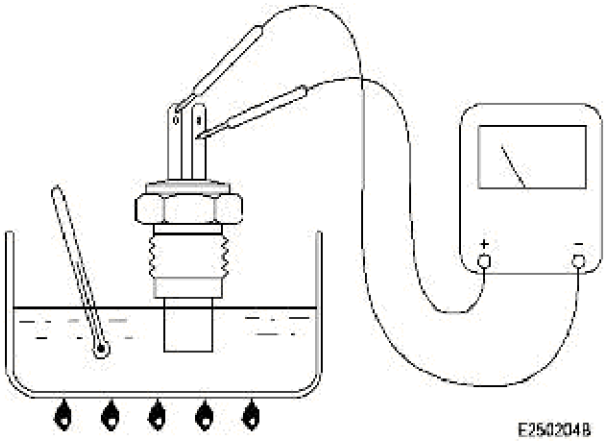


Figure 2
Testing the temperature sensor

- Unscrew temperature sensor (See figure/3) or thermal switch (See figure/4).
- Hang the temperature sensor (See figure/3) into a container with anti-freeze so that the sensor is below the surface of the anti-freeze and measure the resistance while heating up the anti-freeze.
  If the resistance does not comply with specification, see table See further , replace the temperature sensor.

WARNING! **The anti-freeze in the container is very hot and can cause severe injury by scalding.**

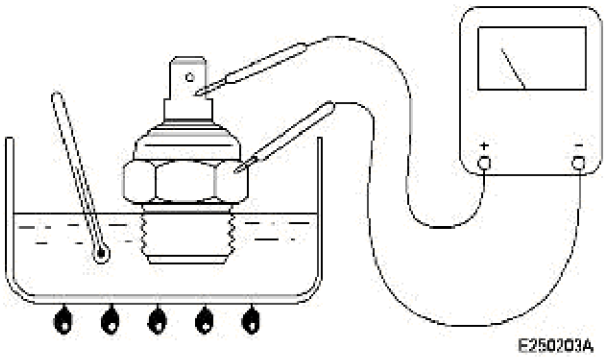
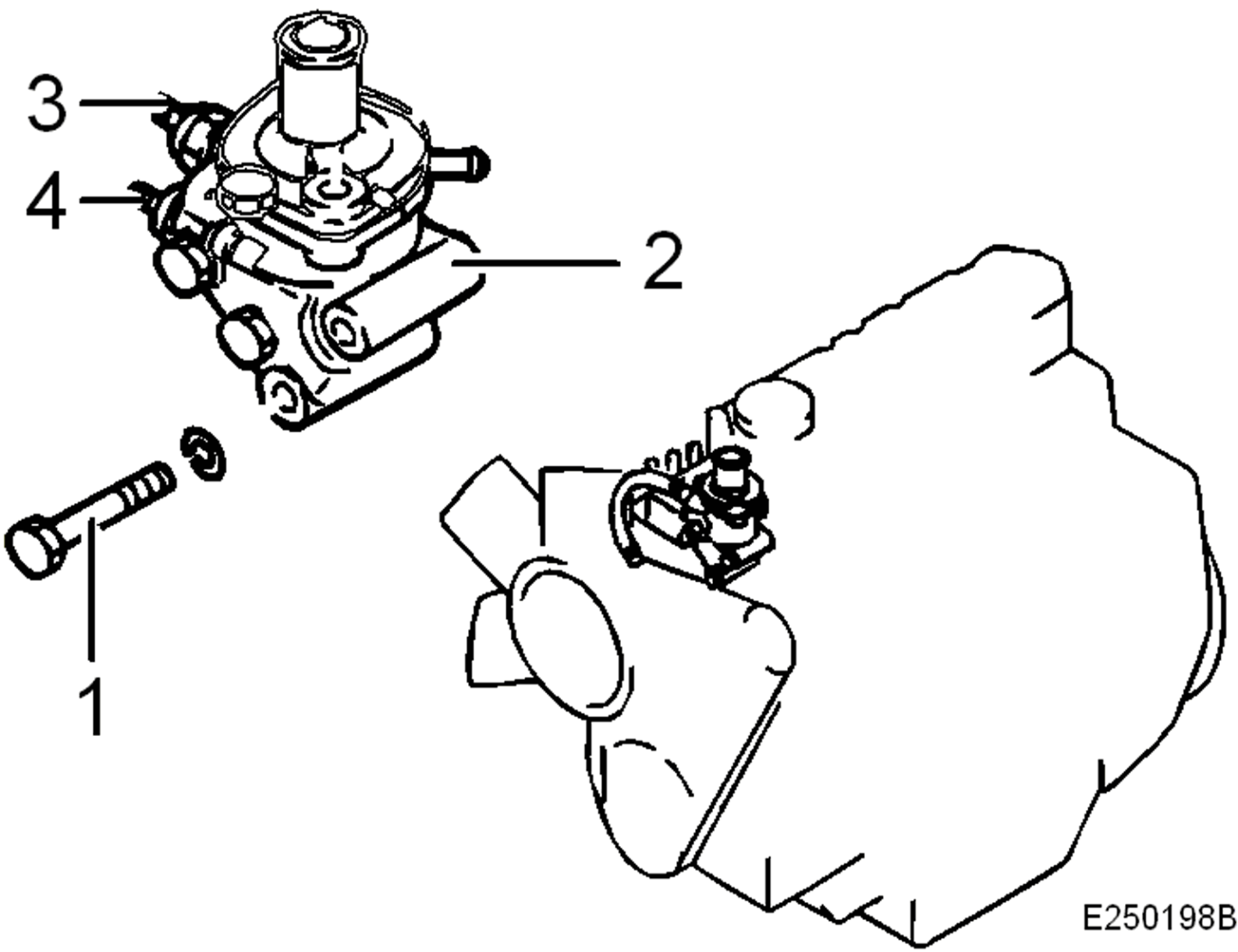


Figure 3
Testing the thermoswitch

- Hang the thermal switch (See figure/4) into the oil tank, so that the temperature sensor of the thermostat is below the surface of the oil and measure the resistance while heating up the oil. If the resistance does not comply with the specification (see table See table), replace the thermal switch.

WARNING! **The oil in the container is very hot and can cause severe injury by scalding.**


3
4
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VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Assembling the thermostat housing**	Function Group : **2627**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Assembling the thermostat housing

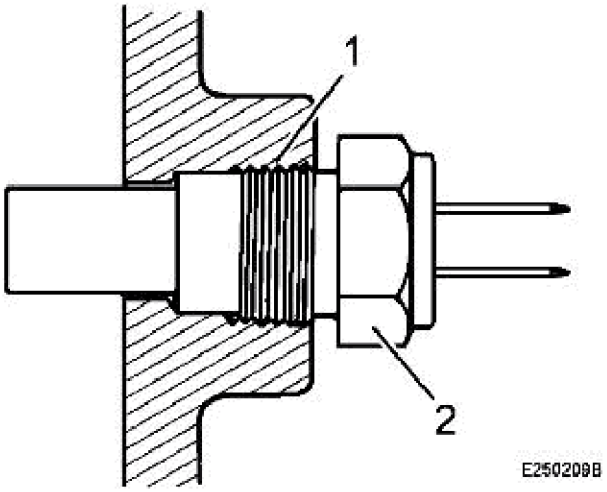

Figure 1

1. Cover the thread with sealing compound
2. Thermal switch or temperature sensor unit

Op nbr

⇒

- Fit the thermostat housing with a new seal to the cylinder head.
- Cover the thread of thermal switch and temperature sensor unit with sealing compound. Screw the unit in and tighten with 22.8 ± 0.4 Nm.

NOTE **The thermal switch has one flag The temperature sensor unit has two flags.**

- Connect the electric cable.
- Connect the hoses to the ports on the thermostat housing.
- Start the engine and make sure that there are no leaks.
- Check the coolant level. Fill up if necessary.

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Construction Equipment

PROSIS Service Information

Document Title : **Removing the thermostat**	Function Group : **2627**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Removing the thermostat

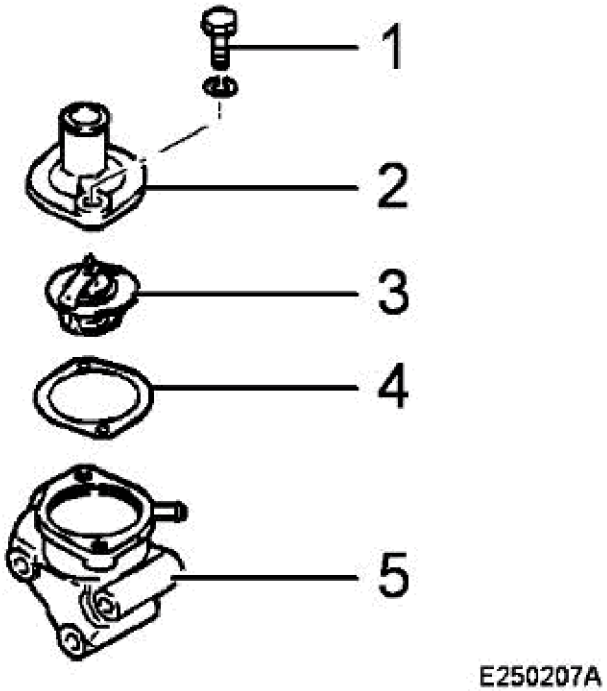

Figure 1

1. Screw
2. Cover
3. Thermostat
4. Seal
5. Thermostat housing

Op nbr 262708

⇒

- Disconnect the hose from the cover.

NOTE **Clamp the hose with clamping pliers to prevent the coolant from running out of the hoses.**

- Unscrew the screws and take off the cover with thermostat and seal.

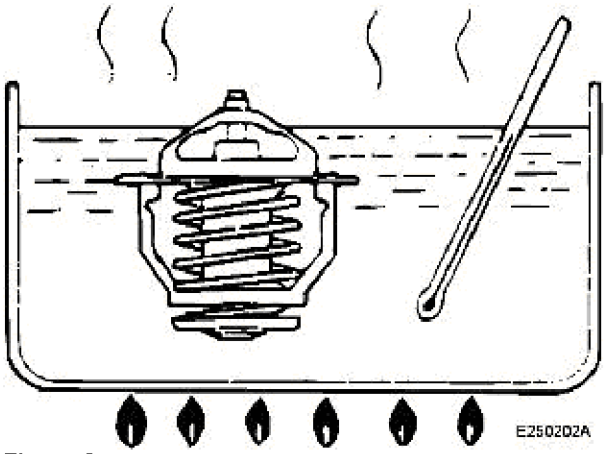

Figure 2
Testing the thermostat

- Hang the thermostat into a water container, as shown in the illustration. The thermostat must be below the water surface and should have a sufficient clearance to the side walls of the container. Heat up the water in the container evenly and measure the temperature at which the valve starts to open (82 °C). In addition measure the temperature at which the valve stroke is 8 mm (95 °C). Replace the thermostat if it is defective.

WARNING! **The water in the container is very hot and can cause severe injury by scalding.**

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Construction Equipment

PROSIS Service Information

Document Title : **Assembling the thermostat**	Function Group : **2627**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Assembling the thermostat

Op nbr 262708

⇒

- Insert the thermostat into the thermostat housing.
- Attach a new gasket to the thermostat housing.
- Assemble the cover to the thermostat housing.
- Connect the hose to the port of the cover.
- Start the engine and make sure that there are no leaks.
- Check the coolant level. Fill up if necessary.

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Construction Equipment

PROSIS Service Information

Document Title : **Electrical system, description**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Electrical system, description

The electrical system consists of three major circuits: the voltage circuit, the monitoring circuit and the control circuit.

- The functions of the main power circuit include: Starting of the engine, charging of the battery and lighting functions. The main power supply circuit works with 12 Volt.
- The monitoring circuit provides information on the operating state of the machine gathered by numerous sensors and switches.
- For easier trouble shooting all connections on wiring looms are numbered.
- Slow-blowing fuses protect the electrical components in the main power supply circuit.

Caution!
Do not disconnect electrical plug connections while the engine is running. This may cause damage to engine, I-ECU, sensors or other components.

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Construction Equipment

PROSIS Service Information

Document Title : **Electric system, trouble shooting**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Electric system, trouble shooting

Check before trouble shooting

- Malfunctions in the electric system can be identified and isolated by strictly following these worked out trouble shooting procedures. Collect all facts → Analyze the problem → Set the symptoms in relation to other systems → Examine current repairs → Use circuit diagrams → Look for the most obvious faults first → Determine and rectify the main cause.

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Construction Equipment

PROSIS Service Information

Document Title : **Basic objects of examination**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Basic objects of examination

No.	Item	Set value	Remedy
1	Check the battery voltage (with engine shut down).	12 V	Replace
2	Check battery acid level.		Use only distilled water to fill up or replace battery
3	Check for abrasion, unprotected or burned cables, damaged or disconnected plug connections.		Replace
4	Check for missing cable terminals, loose cables, damaged connections and faulty ground cables.		Repair
5	Look for water that runs into the cable looms. (Check thoroughly for water leaks /damaged plug connectors and pins.) Corrosion has a tremendous effect on the function of electrical components.		Disconnect the plug connection, remove all corrosion and dry thoroughly.
6	Check the generator voltage (with engine running at a speed higher than half full speed).	14,7 ±0.3 V	Replace
7	Abnormal noise when battery relay is operated. (Turn ignition switch ON/OFF.)		Replace
8	Check the condition of the slow-blowing and the standard fuses (burned or discontinuous function).		Replace

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Construction Equipment

PROSIS Service Information

Document Title : **Diagnostics**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Diagnostics

Trouble shooting on currently used, complex electronic/electrical systems, which is based on the replacement of components according to the principle **Trial an Error** and on an unreasonable maintenance practice like the opening of wiring looms or the piercing/removal of cable insulations for test probes and multimeter clips is a **Hit or Miss method**, which is time consuming and expensive with respect to parts, labour and downtime.

Normally this results in an **temporary repair**, the rectification of a symptom, but does not eliminate the nature of the problem.

- Examine the system: Read the service manual → check the main electrical wiring diagram → become acquainted with the function of the components.
- Analyse the complaint: Ask the driver → When did the problem first occur → What is the malfunction → Were parts repaired or replaced lately → If yes, why?
- Examine the machine: Check battery, fuses, connecting pins of plug connectors, wiring looms, switches etc. → Check also other systems. E.g. no fuel
- Start the machine: Listen → Watch → Try to sense the effect of the fault symptom.
- Try to narrow down the cause of the fault: Look for the most obvious reasons first → Avoid unnecessary replacement of parts → Use appropriate tools and the correct diagrams to find the main cause.
- Objective: To isolate and identify a fault(s) on one (several) component(s).

Malfunctions in electrical control circuits, high resistance in the electrical circuit

1. A high resistance in the electrical circuit can result in weak lighting and slow or non-functioning components.
2. Fault:
   - Loose, corroded, soiled or oily connections.
   - Poor connection to ground
   - Wrong cable cross section
   - Broken flexible leads in a cable
3. To localize the fault:
   - Measure the voltage in the power circuit at various points in order to localize the section with a voltage drop, e.g. via the plug connection in a wiring loom.

Malfunctions of electrical control circuits, interrupted electrical circuits

1. An interrupted electrical circuit has the effect that no component in this circuit will work.
2. Fault:
   - Blown-out fuse, disconnected cable, plug connection without connection, loose connecting pin on a component or ground cable without connection.
3. To localize the fault:
   - Check visually for blown fuses, loose connections or cables.
   - Perform voltage tests in this electric circuit to check the continuity.
   - If there is no continuity measure along the electrical circuit, until continuity is found.

Malfunction in the electrical system, electrical circuit short to ground

1. A short to ground in an electrical circuit will cause tripping of the fuse and blow out the spare fuse after replacement.
2. Fault:
   - A conducting cable with the insulation worn off down to the unprotected conductor in contact with the chassis or a squashed cable on which the insulation has been cut open.
3. To localize the fault:
   - Check the wiring looms visually for worn or squashed sections. Pay special attention to locations where the wiring loom passes through clamps, bushings or close to hot components, such as exhaust or radiator.
   - Remove the fuse and disconnect the plug connections of the wiring loom at several places and check each location for ground connection.

Malfunction of the electrical system, short circuits

1. A short circuit in an electric circuit has the effect that components in separate electrical circuits will be actuated when switching only one of the switches in an electrical circuit.

   NOTE **Components can also cause a short circuit to ground, but in such a case the fuse normally blows.**

2. Fault:
   - Two wiring looms rubbing against each other until the insulation is chafed through, so that the electrical conductors have contact between each other.
3. To localize the fault:
   - Disconnect the cable to the switch for the component that should not be active.
   - Disconnect the plug connections in the wiring loom of the electrical circuit until the component is switched off. The short circuit should be located between the two points at which the electrical circuit was interrupted.

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Precautions when handling plug connectors**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Precautions when handling plug connectors

1. Our plug connectors are fitted with an interlock. Always release the lock before disconnecting a plug connector.

Figure 1
Plug connector, precaution 1

1. When connecting align the arrows at the same level and press the parts together. Make sure that the rubber cap seals the connection properly.
2. To disconnect press this part and pull the plug connector out.
3. For conection align the guides of the plug connectors and press them together.
4. To disconnect press both ends and pull the plug connection apart.

2. Do not pull on the cables to disconnect the plug connector.

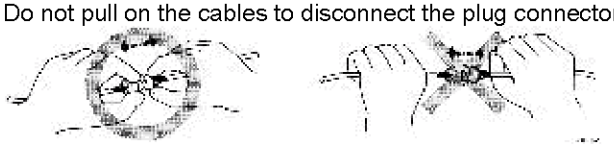


Figure 2
Plug connector, precaution 2

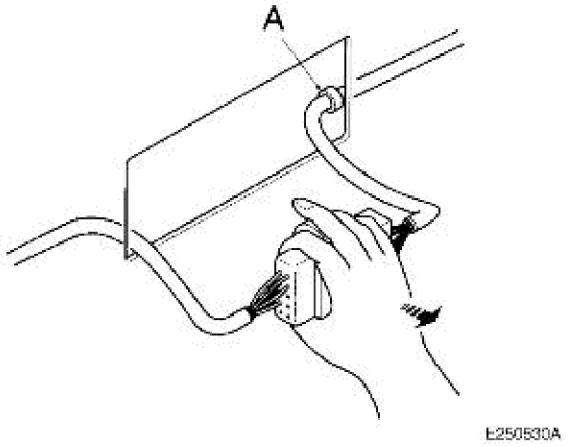
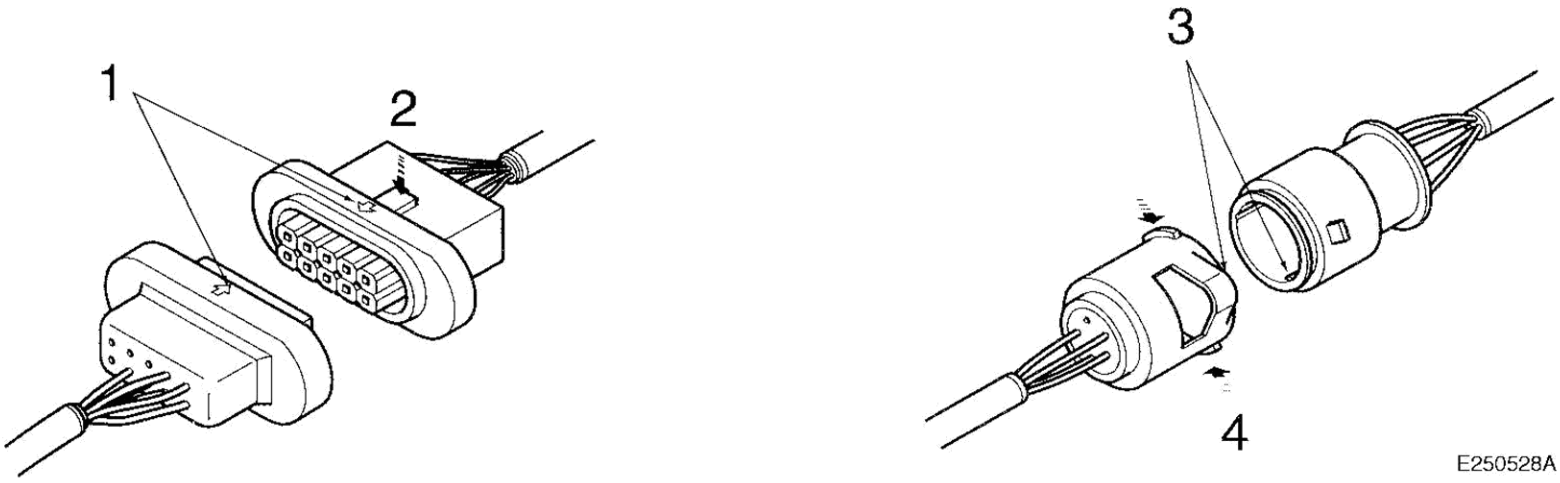


Figure 3
Plug connector, precaution 3

A. Must be removed.

3. If the plug connection is hard to disconnect to not attempt to pull it out. (If it is difficult to access remove the clamp and take the wiring loom out.)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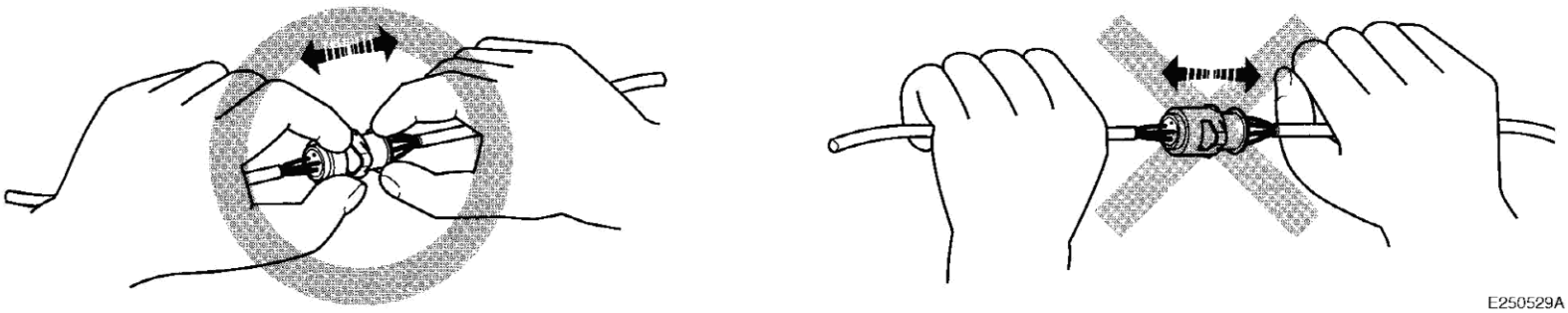

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VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Identification of plug connectors/lines**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Identification of plug connectors/lines

The different parts in the electrical system are normally joined by multi-pole plug and socket connectors, enabling easy replacement of components. Lines and plug connectors are marked as follows.

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Construction Equipment

PROSIS Service Information

Document Title : **Marking of plug connectors**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Marking of plug connectors

In the wiring diagram all plug connectors are marked with their full designation.

Plug connectors between wiring looms and plug connectors on equipment have different designations:

Plug connectors for wiring looms
The designation is **CN...**, followed by a number, e.g. **CN19**.

Plug connectors on equipment
The designation is **X...**, followed by the designation of the connected equipment, e.g. **XMA3**.

XMA3	Connecting plug on **X** solenoid valve for slewing/offsetting **(MA3)**

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PROSIS Service Information

Document Title : **Identification of lines**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Identification of lines

In compliance with the wiring diagram all lines are identified

– in colour.

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Construction Equipment

PROSIS Service Information

Document Title : **Line connections in the wiring loom**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Line connections in the wiring loom

Each pin of a plug and socket connector has a position number (See figure/2) assigned. Beginning and end of a line have an **identical** position number.

In order to find the end of a cable, you must search for the position number assigned to the beginning of the cable in the wiring loom.

Each line is identified by a colour code (See figure/1).

Each line end is designated with the pin-no. of the connected plug (See figure/3).

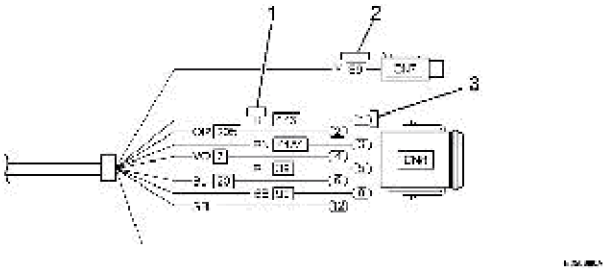

Figure 1

The cable is in this case connected with the plug connection **CN7** and **CN8**. Join the wiring looms together.

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PROSIS Service Information

Document Title : Wiring diagram - legend	Function Group : 300	Information Type : Service Information	Print Date : 19/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Wiring diagram - legend

Optional equipment

NOTE **Current paths for optional equipment are drawn in form of dashedlines (------) in the wiring diagram.**

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PROSIS Service Information

Document Title : **Identification of plug connectors/lines**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Identification of plug connectors/lines

The versions See further are valid.

In the wiring diagram lines are identified by colours:

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PROSIS Service Information

Document Title : **Colur codes**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Colur codes

SB	= Black	**BN**	= Brown
R	= Red	**GR**	= Grey
GN	= Green	**P**	= Pink
BL	= Blue	**VO**	= Violet
Y	= Yellow	**OR**	= Orange
W	= White		

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PROSIS Service Information

Document Title : **Plus connection**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Plus connection

B+ Battery (+)

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PROSIS Service Information

Document Title : **Minus connection**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Minus connection

B- Battery (-)

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PROSIS Service Information

Document Title : **Designations of electrical components**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Designations of electrical components

Designation	Designation
ALT	Generator
AUX	Accessories
BA	Battery
CA	Capacitor
CN	Plug connector
DI	Diode
ECU	Electronic central unit Zentraleinheit
FC	Fuse, cabin
FE	Fuse, electronic equipment
FH	Line fuse
FU	Fuse, standard equipment
FUSE	Fuse box, old model
HE	Heating element
IM	Instrument
LA	Lamps
LC	Control light
MA	Solenoid valve
MO	Engine
RS	Resistor/regulating resistor
BK	Switch

Wiring diagram

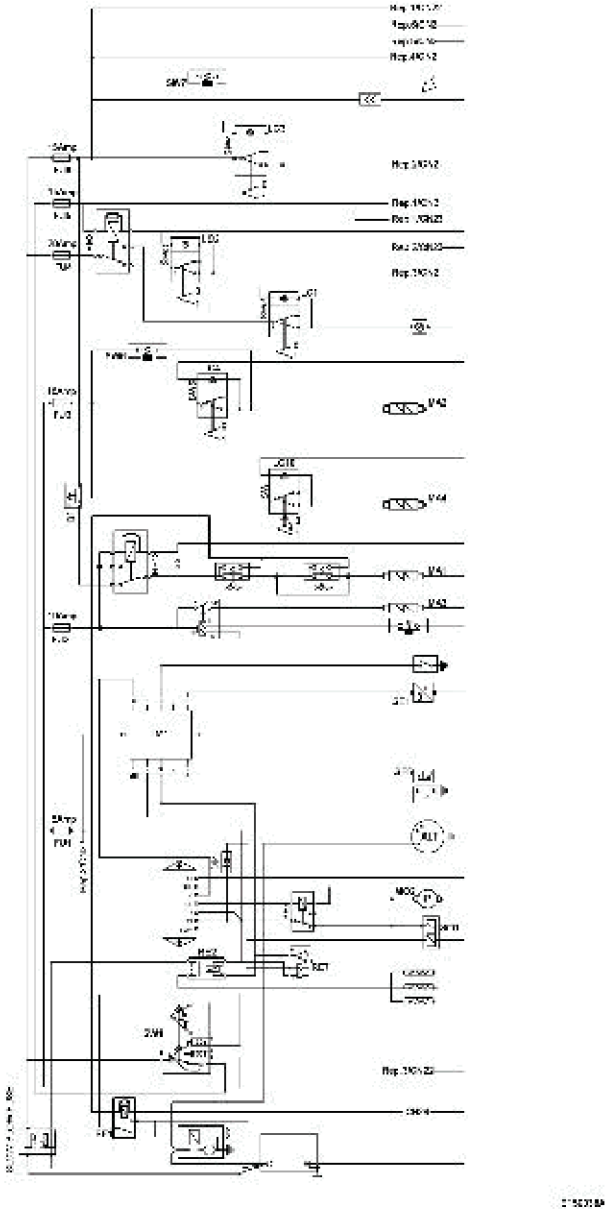


Figure 1

Designation	Designation	Comment	Page of wiring diagram
ALT	Generator		See further , See further , See further , See further
AUX1	Radio		
AUX2	Loudspeaker, left		
AUX3	Loudspeaker, right		
AUX4	Hand lamp		See further , See further
BA	Battery		See further
CA	Capacitor		
CN1	Cabin (ventilation/heating)		

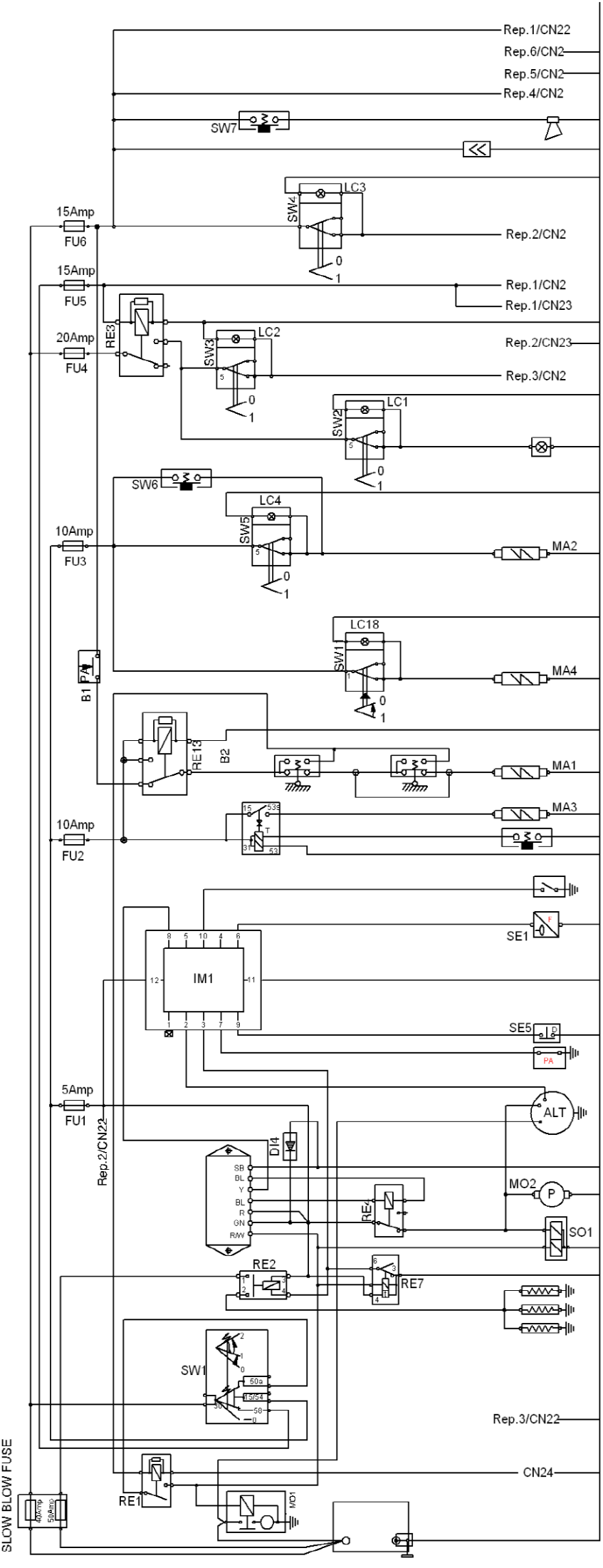
Designation	Designation	Comment	Page of wiring diagram
CN2	Cabin (main...)		
CN3	Headlights/boom		
CN4	Feed/boom		
CN5	Windscreen wiper, cabin		
CN6	Diagnostics (Puma)/optional immobilizer		
CN7	Pre-heater plugs, engine		
CN8	Main motor		
CN9	Unlocking of single or double acting attachments		
CN10	Pre-heating of intake air		
CN11	Main dashboard, right		
CN12	Main dashboard, left		
CN13	Input dashboard left or right		
CN14	Switch, offset/slewing and hydraulic/electric support		
CN15	Car radio (BV, AMP)		
CN16	Input wiring loom, construction site or road		
CN17	Main signal horn		
CN18	Flashing beacon between frame and beam or roll over protection structure		
CN19	Triggering of 6-way plug		
CN20	Triggering of 3-way plug		
CN21	Rear plate, ITALY		
CN22	Optional immobilizer		
CN23	Optional warning buzzer (NAFTA)		
CN24	Ground, starter relay (for optional immobilizer)		See further
Diodes			
D11	Fault, engine oil pressure		
D12	Fault, coolant		
D13	Battery charge condition		
D14	Interference suppression, engine fuse		See further , See further
Electronic central unit Zentraleinheit			
ECU1	Electronic multi-function switch (PUMA)		
ECU2	Basic control unit		
ECU3	Basic control unit and options		
ECU4	Control unit for engine control		See further , See further , See further , See further
ECU5	Numerical keyboard for immobilizer		
ECU6	Congtrol unit for numerical immobilizer		
Fuses (cabin)			
FC1	Ventilation/heating of cabin		
FC2	Memory, car radio		
FC3	Supply, car radio		
FC4	Ceiling light		
FC5	Windscreen wiper and washer		
Fuses (electronic equipment)			
FE1	Puma		
FE2	Puma		
FE3	Puma		
FE4	Lighting		
FE5	Cabin, optional travel alarm system		
FE6	Warning buzzer, service plug, car radio memory, optional flashing beacon		
Main fuses			

Designation	Designation	Comment	Page of wiring diagram
FH1	Main fuse (MASTER)		See further , See further , See further , See further
FH2	Pre-heating plugs		See further
FH3	Pre-heating of intake air		
Fuses (standard equipment)			
FU1	Engine, dashboard, optional immobilizer		See further , See further , See further , See further , See further
FU2	Slewing/offset, hydraulic support, safe starting		See further , See further , See further
FU3	2-speed, optional unlocking of attachments, variable track, accessories		See further , See further , See further
FU4	Lighting		See further , See further
FU5	Cabin and optional travel alarm system		See further , See further
FU6	Main signal horn, service plug, car radio memory, optional flashing beacon, immobilizer		See further , See further , See further , See further
Heating elements			
HE1	Pre-heating plugs		See further , See further
HE2	Cigarette lighter		
HE3	Pre-heating of intake air		
Instruments			
IM1	Control switch		See further , See further , See further
IM2	Hour meter		
IM3	Fuel level gauge		
Lamps (illumination)			
LA1	Headlights/boom		See further , See further
LA2	Headlight/cabin front right		
LA3	Headlight/cabin weather roof front left		
LA4	Headlight/cabin weather roof rear		
LA5	Flashing beacon		
LA6	Cabin ceiling light		
LA7	Ceiling light motor		
LA8	Headlight, front (version for construction site ED750)		
LA9	Headlight StVO, left hand side		
LA10	Headlight StVO, right hand side		
LA11	Rear plate, left hand side (ITALY)		
LA12	Rear plate, right hand side (ITALY)		
LA13	Backup light		
LA14	Direction indicator, left		
LA15	Direction indicator, right		
LA16	Parking light, left		
LA17	Parking light, right		
LA18	Brake light, left		
LA19	Brake light, right		

Designation	Designation	Comment	Page of wiring diagram
Control lights			
LC1	Headlights/boom		See further , See further
LC2	Headlights/cabin or weather roof		See further , See further
LC3	Flashing beacon		See further , See further
LC4	2-speeds		See further , See further
LC5	Travel safety		
LC6	Pre-heating of engine		
LC7	Engine oil pressure		
LC8	Coolant temperature, engine		
LC9	Battery charge condition		
LC10	Contamination of hydraulic oil filter		
LC11	Contamination of air filter		
LC12	Serviceleuchte		
LC13	Cabin heating		
LC14	Unlocking of attachment, right hand side		
LC15	Unlocking of attachment, left hand side		
LC16	Working headlights, rear		
LC17	Slewing/offsetting		See further
LC18	Variable track		See further , See further
LC19	Hour meter		
LC20	Headlights		
Solenoid valves			
MA1	Support		See further , See further
MA2	2-speeds		See further , See further
MA3	Slewing/offsetting		See further , See further
MA4	Variable track		See further , See further
MA5	Unlocking of attachment		
MA6	Accessory, right hand side		
MA7	Accessory, left hand side		
Engines			
MO1	Starter		See further , See further , See further
MO2	Fuel pump		See further , See further , See further
MO3	Ventilator/cabin heater		
MO4	Windscreen washing system, front		
MO5	Windscreen wiper, front		
Relay			
RE1	Starter (40)		See further , See further , See further
RE2	Pre-heating of engine		See further , See further , See further
RE3	Lighting		See further , See further

Designation	Designation	Comment	Page of wiring diagram
RE4	Engine safety		See further , See further , See further , See further
RE5	Slewing/offsetting		See further , See further
RE6	Safety with engine running		
RE7	Pre-heating delay		See further , See further , See further
RE8	Unlocking of attachment, double acting		
RE9	Steering switch-over		
RE10	Pre-heating of intake air		
RE11	Intake air pre-heating delay		
RE12	Digital immobilizer		
RE13	Safety, hydraulics		See further , See further
RF1	Direction indicator		
Resistors			
RS1			
Warning buzzer			
SA1	Main signal		See further , See further
SA2	Travel operation		
SA3	Unlocking of attachment		
SA4	Fault, engine oil pressure		
Transducer			
SE1	Fuel level		See further , See further
SE2	Engine oil pressure		See further , See further
SE3	Thermal switch, coolant		See further , See further
SE4	Contamination of hydraulic oil filter		
SE5	Contamination of air filter		See further , See further
SE6	Transport, valve/boom		
SE7	Steering switch-over		
SE8	Hydraulic oil temperature		
SE9	Coolant temperature (sensor)		
Electro magnets			
SO1	Engine shut down		See further , See further
Switch			
SW1	Ignition switch		See further , See further , See further , See further , See further
SW2	Headlights/boom		See further , See further , See further
SW3	Headlight/cabin weather roof		See further , See further , See further
SW4	Flashing beacon		See further , See further

Designation	Designation	Comment	Page of wiring diagram
SW5	2-speeds		See further , See further , See further
SW6	2-speeds, secondary		See further , See further
SW7	Buzzer		See further , See further
SW8	Slewing/offsetting		See further , See further
SW9	Safety of working hydraulics		See further , See further
SW10	Safety of secondary hydraulics		See further , See further , See further
SW11	Variable track		See further
SW12	Ventilation/cabin heating		
SW13	Windscreen wiper and washer		
SW14	Unlocking of attachment, right hand side		
SW15	Unlocking of attachment, left hand side		
SW16	Transport lock/boom		
SW17	Travel lever, right		
SW18	Travel lever, left		
SW19	Warning buzzer, travel system		
SW20	Equipment accessories/control lever, right		
SW21	Equipment accessories/control lever, left		
SW22	Oscillation lock		
SW23	Hazard light system		
SW24	Working headlights, rear		
SW25	Battery disconnecting switch		
SW26	Headlights, front		
SW27	Starting safety for engine, clutch pedal		
SW28	Multi-function switch		
SW29	Foot brake contact switch		
SW30	Backup light contact switch		
SW31	Hand brake contact switch		


Rep.1/CN22
Rep.6/CN2
Rep.5/CN2
Rep.4/CN2
SW7
LC3
SW4
15Amp
FU6
Rep.2/CN2
15Amp
FU5
Rep.1/CN2
Rep.1/CN23
RE3
20Amp
FU4
LC2
SW3
Rep.2/CN23
Rep.3/CN2
LC1
SW2
SW6
LC4
SW5
10Amp
FU3
MA2
LC18
SW11
MA4
B1
RE13
B2
MA1
MA3
10Amp
FU2
SE1
IM1
SE5
5Amp
FU1
Rep.2/CN22
ALT
DI4
MO2
SO1
RE4
RE2
RE7
SW1
Rep.3/CN22
CN24
RE1
MO1
SLOW BLOW FUSE

E150038A

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Complete wiring diagram (part 1)**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Complete wiring diagram (part 1)

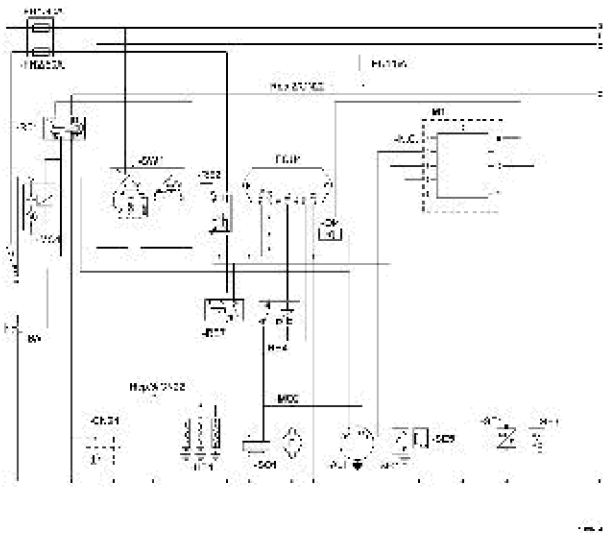
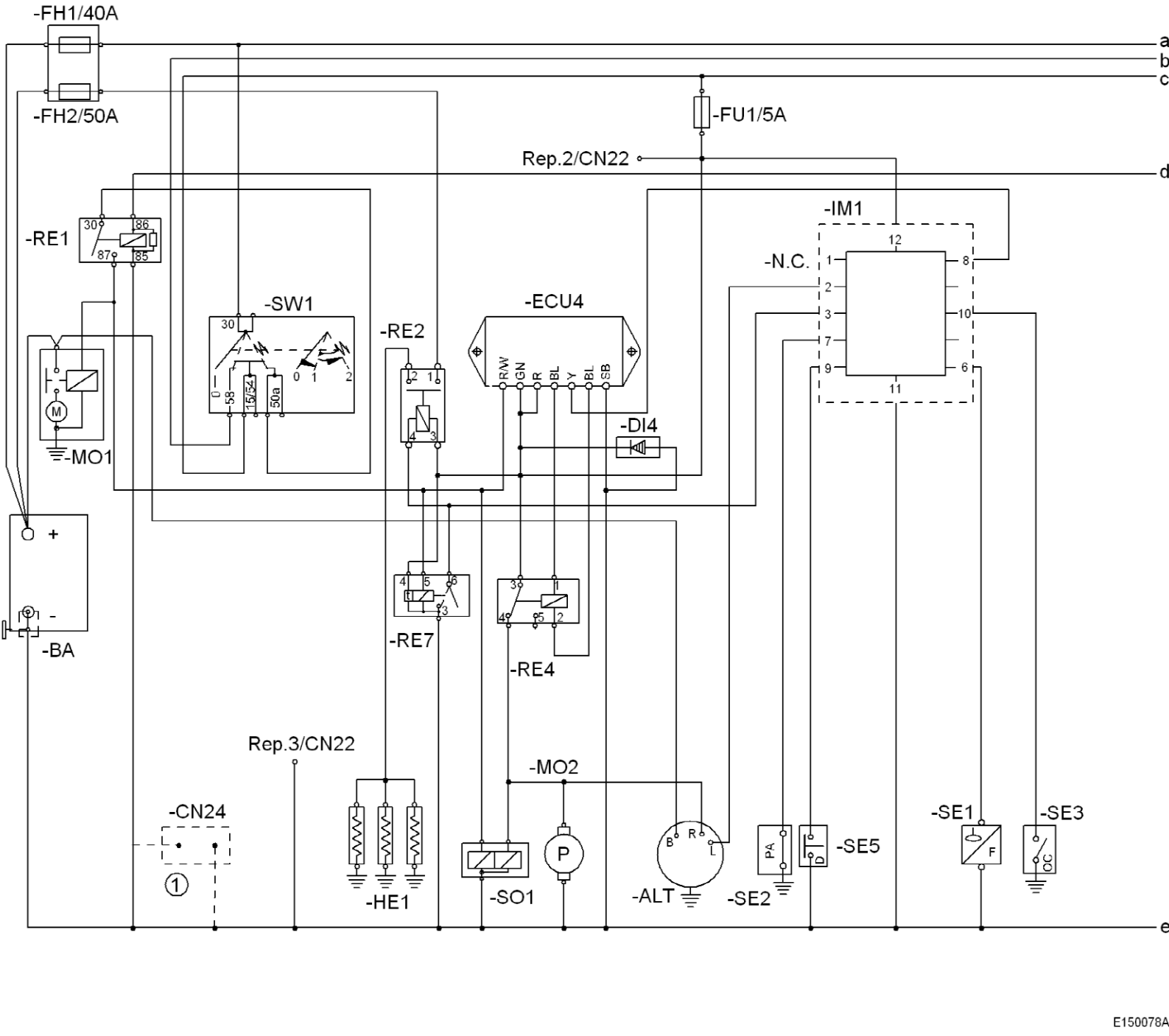


Figure 1

- **1** Switched ground from relay - **RE1** (starter). (Only on version with immobilizer)


-FH1/40A
-FH2/50A
-FU1/5A
Rep.2/CN22
a
b
c
d
e
-RE1
-SW1
-RE2
-ECU4
-IM1
-N.C.
-DI4
-MO1
-BA
-RE7
-RE4
Rep.3/CN22
-MO2
-CN24
-HE1
-SO1
-ALT
-SE2
-SE5
-SE1
-SE3
R/W
GN
R
BL
Y
BL
SB
E150078A

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Construction Equipment

PROSIS Service Information

Document Title : **Complete wiring diagram (part 2)**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Complete wiring diagram (part 2)

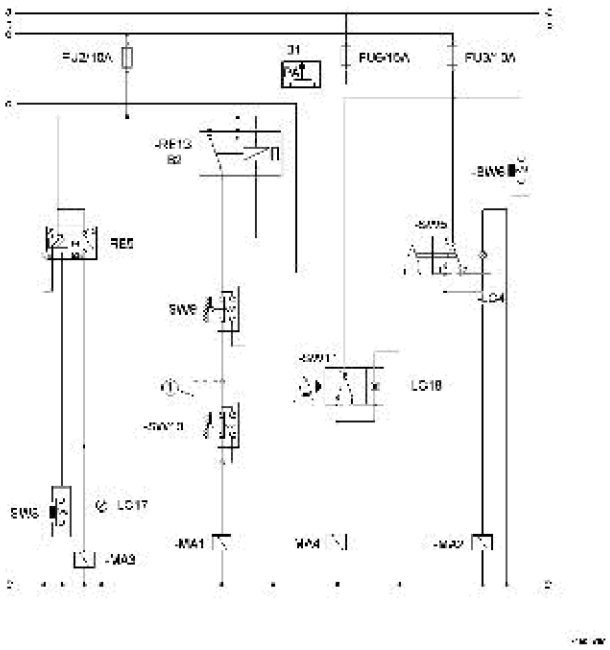
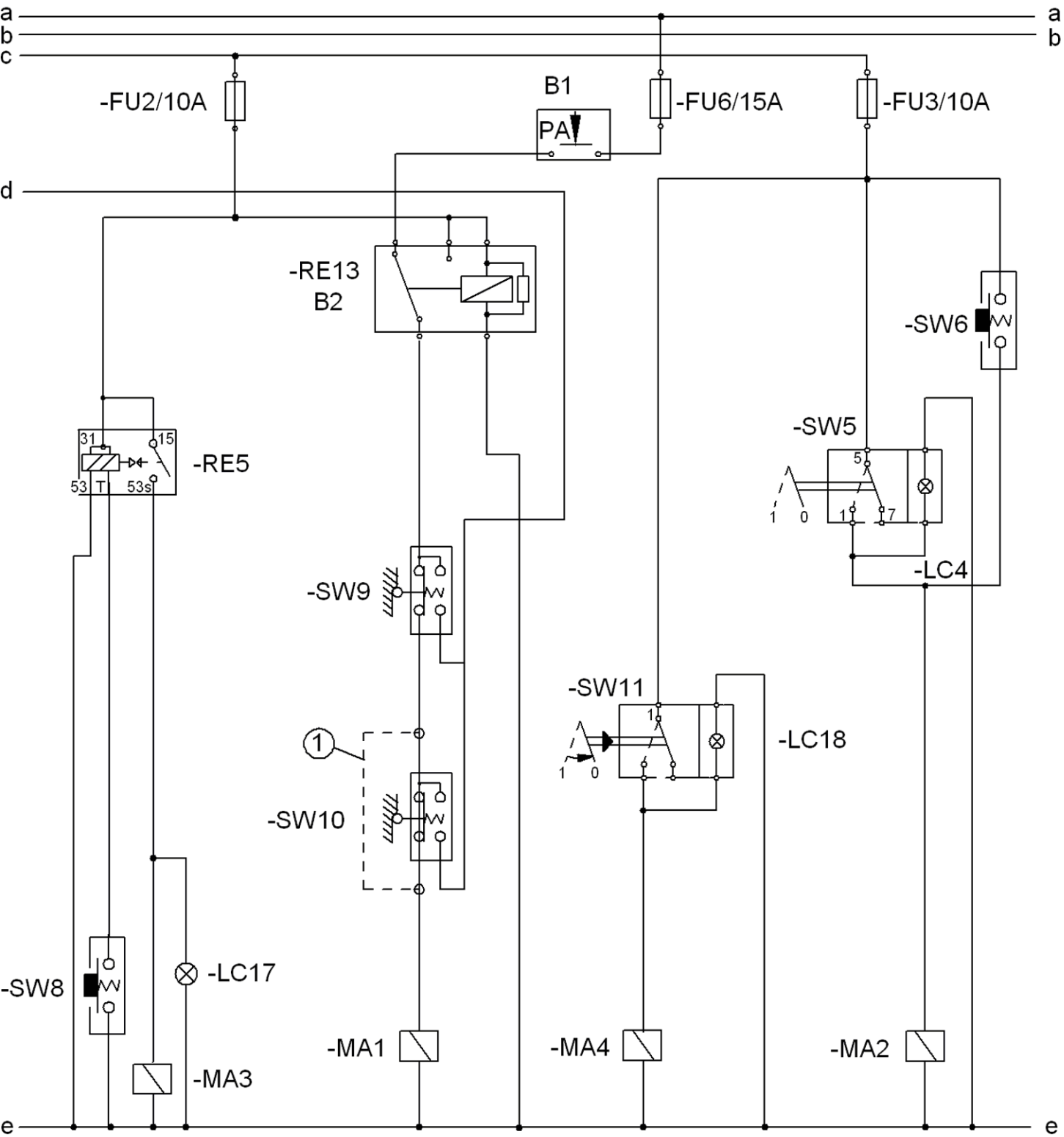


Figure 1

- **1** Switch - **SW10** bridged.


a
b
c
d
e
-FU2/10A
B1
PA
-FU6/15A
-FU3/10A
-RE13
B2
-SW6
-SW5
-RE5
31
15
53
T
53s
5
1
0
1
7
-LC4
-SW9
-SW11
1
-LC18
1
0
-SW10
-SW8
-LC17
-MA1
-MA4
-MA2
-MA3

E150079A

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PROSIS Service Information

Document Title : **Complete wiring diagram (part 3)**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Complete wiring diagram (part 3)

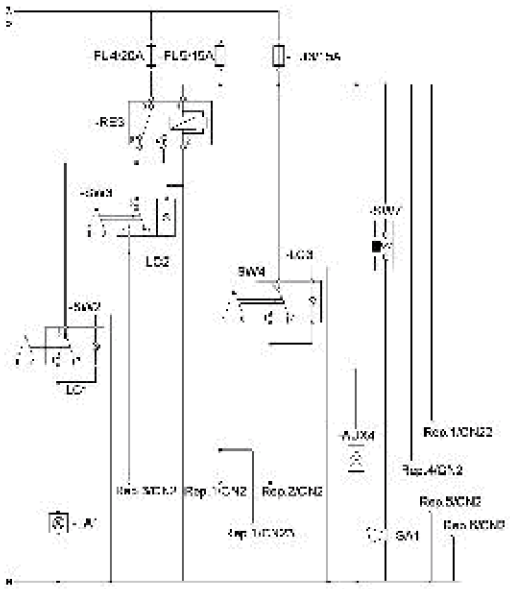
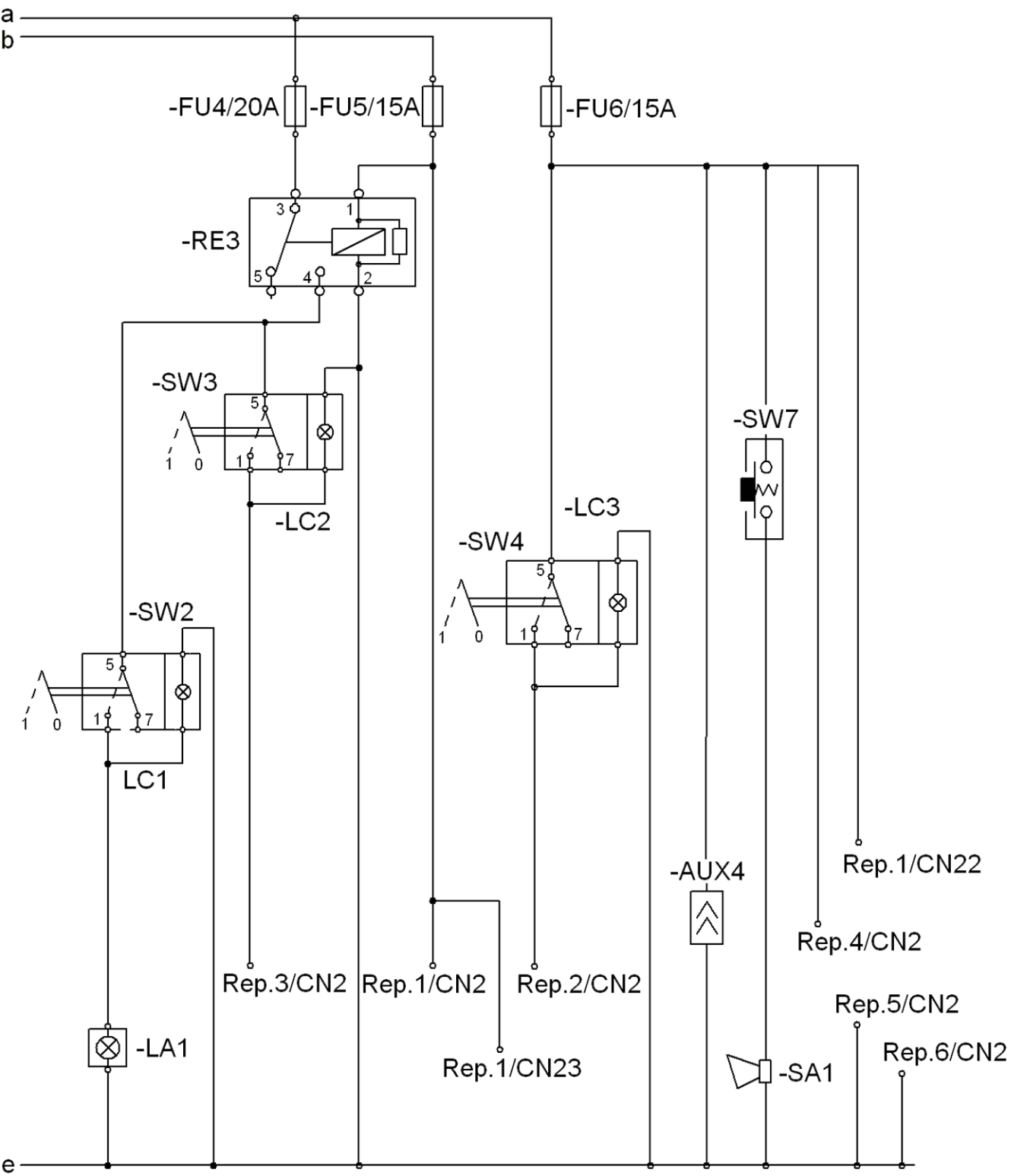


Figure 1


a
b
-FU4/20A
-FU5/15A
-FU6/15A
-RE3
3
1
5
4
2
-SW3
5
1
0
1
7
-LC2
-SW7
-LC3
-SW4
5
1
0
1
7
-SW2
5
1
0
1
7
LC1
-AUX4
Rep.1/CN22
Rep.4/CN2
Rep.3/CN2
Rep.1/CN2
Rep.2/CN2
Rep.5/CN2
Rep.6/CN2
-LA1
Rep.1/CN23
-SA1
e

E150080A

VOLVO
Construction Equipment

PROSIS Service Information

Document Title : **Travel operation**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Travel operation

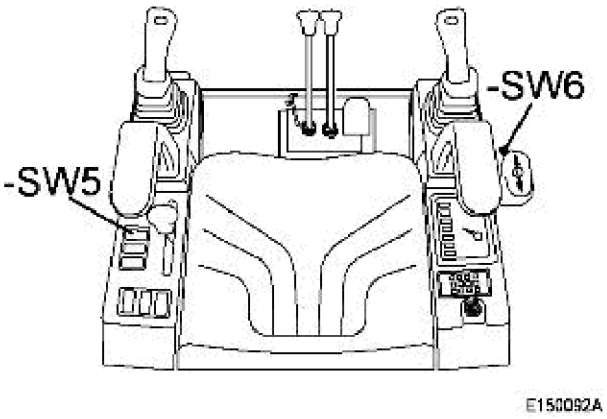


Figure 1

- **SW5** Selector switch, 2 speed ranges
- **SW6** Switch for 2 speed ranges, secondary

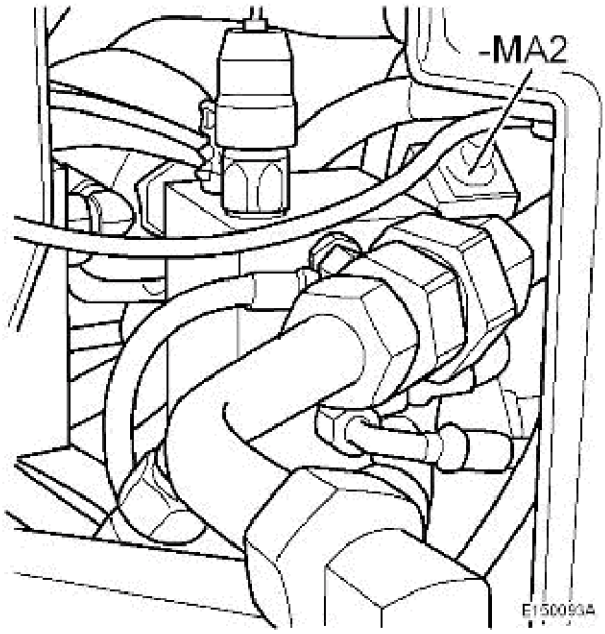


Figure 2

- **MA2** 2-speed solenoid valve

The solenoid valve - **MA2** is located in the driver''s cab under the floor plate on the left hand side.

Fuses

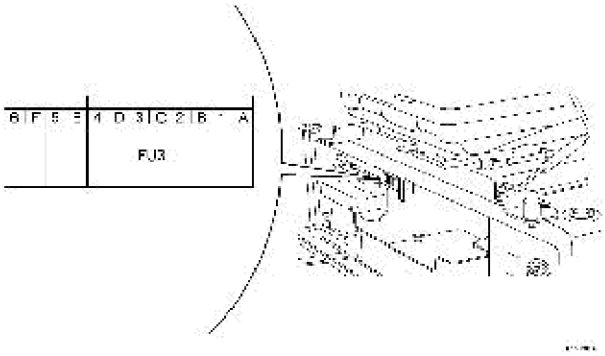


Figure 3

- FU3/10 A 2-speeds, attachment carrier, variable track, accessories

Travel operation

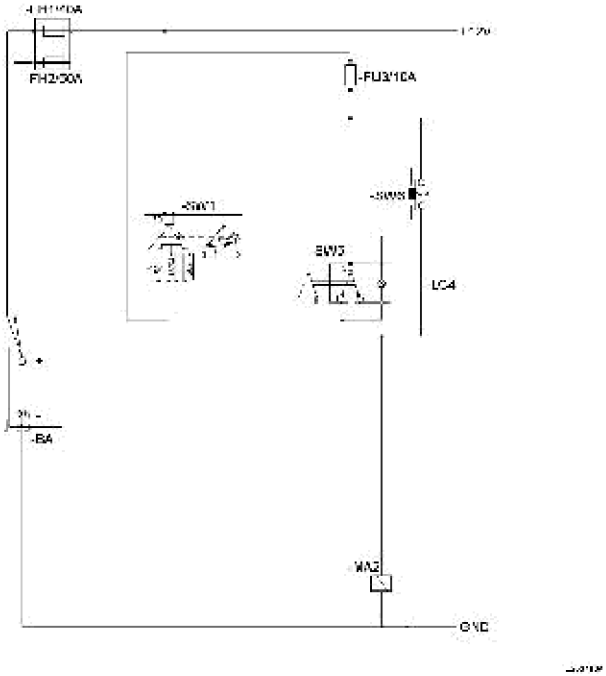


Figure 4

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PROSIS Service Information

Document Title : **Travel operation**	Function Group : **300**	Information Type : **Service Information**	Print Date : **19/10/2011**
Profile : **CEX, EC15B XTV (Volvo) [GB]**			

Travel operation

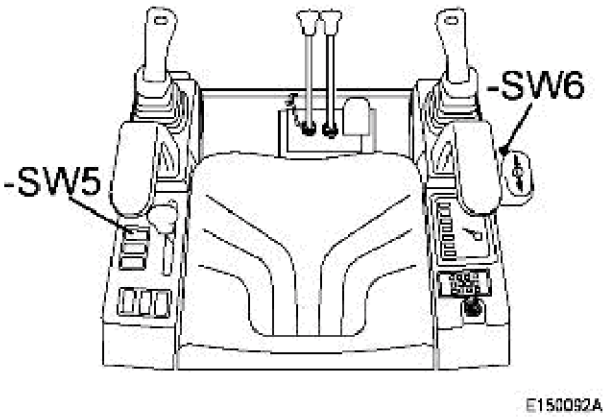

Figure 1

- **SW5** Selector switch, 2 speed ranges
- **SW6** Switch for 2 speed ranges, secondary

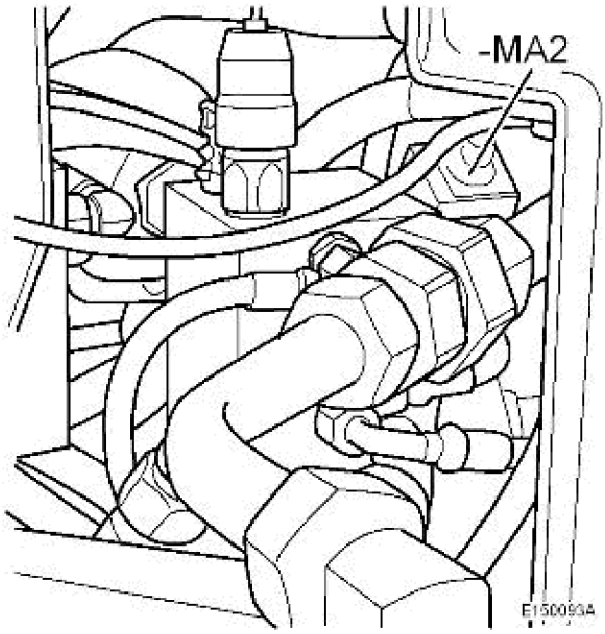

Figure 2

- **MA2** 2-speed solenoid valve

The solenoid valve - **MA2** is located in the driver''s cab under the floor plate on the left hand side.