

Document Title: <b>Description</b>	Function Group: <b>210</b>	Information Type: <b>Service Information</b>	Date: <b>2014/5/23</b>
Profile:			

## Description

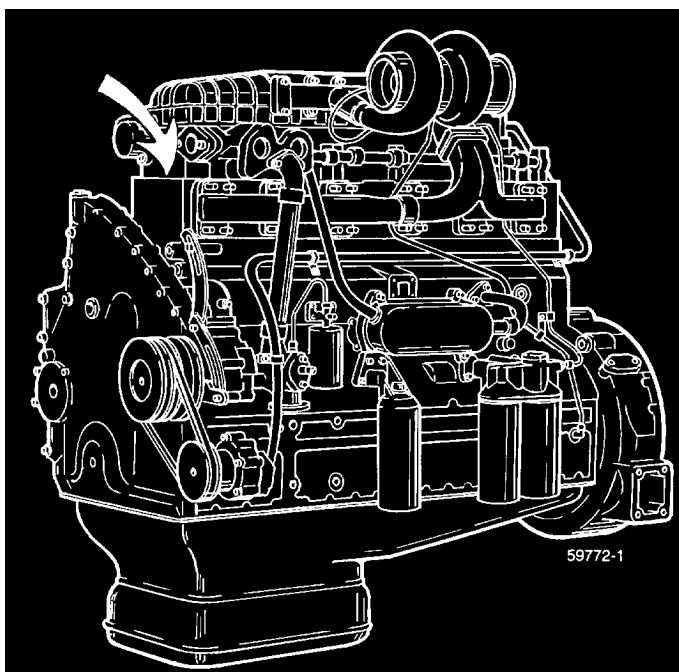
Loader L330C is provided with a type TD164KAE engine.

The engine is a straight, six-cylinder, direct-injection, diesel engine with turbo charging and charge-air cooler (Intercooler).

TD164KAE is a low-emission engine provided with an engine speed controlled injection timing device.

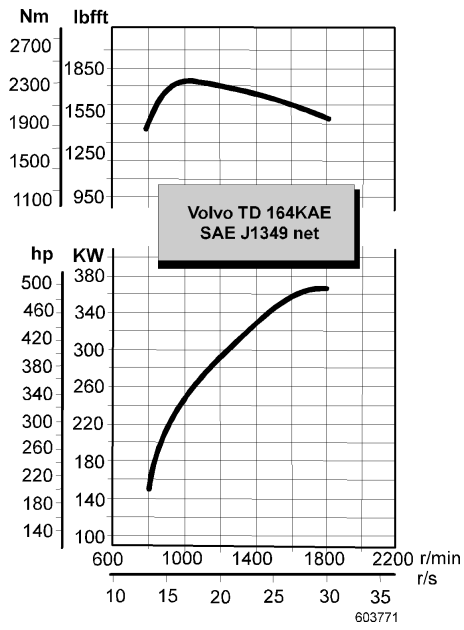
The cylinder bore is 144 mm (5.669 in) and the stroke 165 mm (6.496 in) which provides a total displacement of 16.12 litres (983 in<sup>3</sup>).

The engine type designation and serial numbers are stamped in on the cylinder block face for the cylinder heads, see Fig.



**Figure 1**  
**Engine type and serial numbers**

The applicable output and torque curves for the engine are shown in Fig.



**Figure 2**  
**Output and torque curves**

Document Title: <b>Engine, checking function</b>	Function Group: <b>210</b>	Information Type: <b>Service Information</b>	Date: <b>2014/5/23</b>
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## Engine, checking function

### Testing for possible causes

#### 1 First check:

- Fluid levels
- Control and warning lamps
- Instruments
- Battery voltage
- Fuses (correct rating)

#### 2 Separate systems:

- If two or more systems, and/or circuits work together.

CHECK THE SYSTEMS/CIRCUITS INDIVIDUALLY.

#### 3 If the machine has poor pulling power, the fault may be in the engine, torque converter or transmission; Then check the stall speed, see Specifications.

- If the engine stall speed is within the prescribed values, the fault can be found in the transmission or torque converter.
- If the engine stall speed is low, check according to point 4.

#### 4 Checking engine

- Checking oil and coolant respectively, discolouration, smell, etc.
- Checking exhaust pipe (inside sticky)
- Checking air filter and turbocharger.
- If the engine runs unevenly (imbalance–noise)
- Checking excess pressure in header tank.
- Crankcase ventilation (excess pressure/clogged)
- Oil dipstick, remove (excess pressure)
- Exhaust smoke (discolouration, smell).
- Bleed the fuel system.
- Check engine speed.
- Check feed pressure (before and after filter).
- Carry out compression test (if incorrect repeat using oil).
- Check the injectors.
- Check injection angle (injection timing).

Document Title: <b>Engine, fitting</b>	Function Group: <b>210</b>	Information Type: <b>Service Information</b>	Date: <b>2014/5/23</b>
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## Engine, fitting

### Op nbr 21072

999 3590 Gear

Ratchet block 750 kg (1654 lb), 4 pcs

Lifting sling 2 m (6.5 ft), 4 pcs

Lifting sling 4 m (13 ft)

Lifting sling 3 m (10 ft)

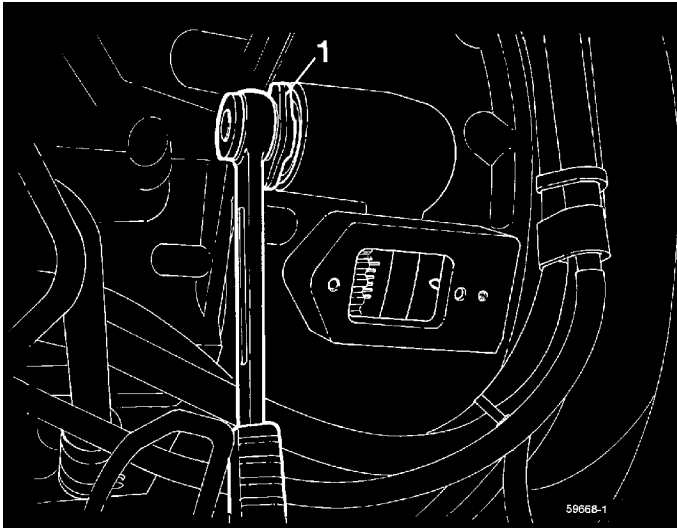
Shackle 7/16", 2 pcs

Shackle 5/8", 2 pcs

Shackle adapted for lifting device

Pipe Ø50 mm (1.97 in), length 800 mm (31 in), thickness of material approx. 4 mm (0.16 in)

1. Check that the bushing for the bearing stud and the ring gear are positioned in the flywheel.
2. Fit a new seal to the torque converter connection flange, also apply sealing compound type black silicone on the connecting flange.
3. Position a piece of board or sheet metal against the radiator so that it will not be damaged, see Fig. [Invalid linktarget]
4. Connect a hoist to the engine and lift in the engine according to Fig. [Invalid linktarget]  
Incline the engine so that the bearing stud on the torque converter does not catch in the flywheel housing.
5. Connect the hose for draining the oil to the oil sump.
6. Place the engine horizontally and move it against the torque converter.  
Rotate the flywheel according to Fig. so that the teeth enter engagement.



**Figure 1**  
**Rotating flywheel**

1. 999 3590

**! CAUTION**

Make sure that the rubber boots at the inlet manifold of the hydraulic oil pumps are under load.

7. Fit the bolted joint flywheel housing–torque converter and clamp the cable harnesses with the upper bolts. Tightening torque 60 N m (44 lbf ft).
8. Fit the front right engine mounting. Tightening torque 220 N m (162 lbf ft).
9. Position the rubber dampers for the engine mountings together with washers and bolts. Lower the engine and at the same time gradually take the load off the ratchet blocks in which the torque converter is suspended.
10. Tighten the bolts for the rubber dampers of the engine mountings. Tightening torque 350 N m (258 lbf ft).
11. Connect the coolant pipe between coolant pump and transmission oil cooler. Use a new O-ring.

**NOTE!**

Connect the coolant pump end first.

12. The following applies to machines equipped with air conditioning:  
Bolt on the AC compressor and tension the drive belt.  
Fit the member for the lower bracket of the condenser and bolt on the condenser.

**! CAUTION**

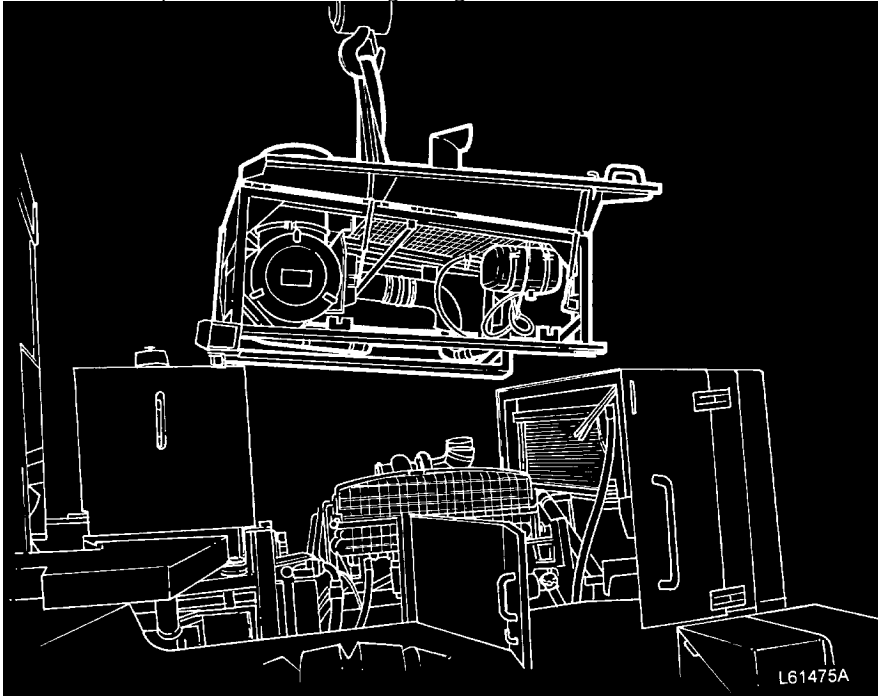
Do not bend the hoses so that they break. A broken hose must be changed.

13. Connect the following on the right side of the engine:
  - Cable harness and cable connections to the alternator, temperature sensor and tank sensor.
  - Cable connections to air conditioning pressure monitor (if fitted).
  - The hoses to the cab heater.
  - The engine part-flow oil filter.
14. Fit the pipe between the transmission oil cooler and the thermostat housing.
15. Fit the pipe between the lower connection on the radiator and the thermostat housing.

16. Connect the following on the left side of the engine:

- Cable harness and cable connections to starter motor.
- The fuel system prefilter.
- The fuel lines to the fuel pump.
- The bracket with the engine speed control.
- The control cable to the control arm on the injection pump.
- The bracket and relay for the air preheater.
- The bracket with the transmission oil filters.

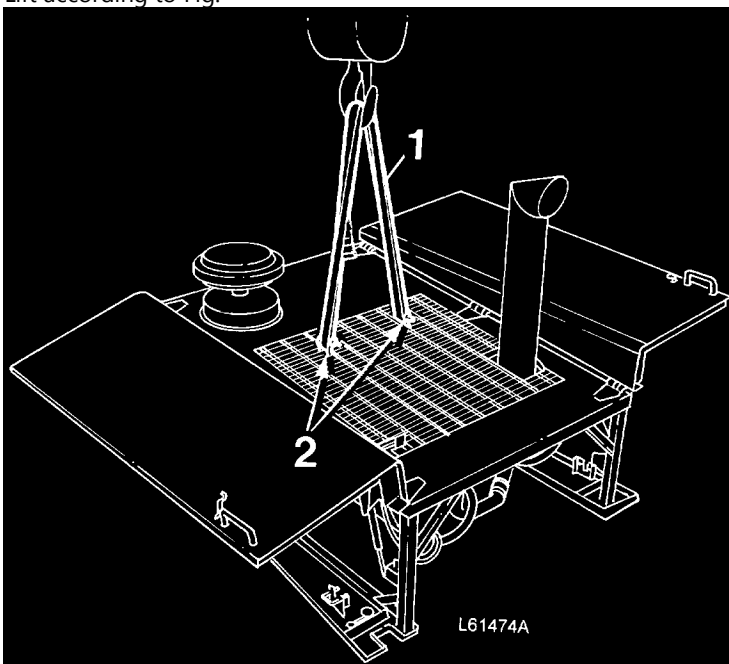
17. Position the superstructure according to Fig.



**Figure 2**

**Fitting superstructure**

Lift according to Fig.



**Figure 3**

**Position of lifting points**

1. Sling 4 metres (13 ft)
2. Shackle 7/16"

At the same time connect the hose for the turbocharger.

Adjust the height of the superstructure with the required number of washers under the rubber dampers.

18. Connect the following:

- The hoses to the header tank.
- The electrical lead to the air filter indicator.
- The coolant hoses to the engine.
- The pipe to the exhaust side of the turbocharger.

19. Fill with coolant and engine oil.

20. Disconnect the frame joint lock.

21. Bleed the fuel system.

Start the engine and check that there are no leaks.

22. Fit the cover above the hydraulic tank and the side plates.

Document Title: <b>Engine, removing</b>	Function Group: <b>210</b>	Information Type: <b>Service Information</b>	Date: <b>2014/5/23</b>
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## Engine, removing

### Op nbr 21070

#### E 1034 Nipple

Ratchet block 1500 kg (3308 lb)

Ratchet block 750 kg (1654 lb), 3 pcs

Sling, 2 m (6.5 ft), 4 pcs

Sling, 3 m (10 ft)

Sling, 4 m (13 ft)

Shackle 7/16", 2 pcs

Shackle 5/8", 2 pcs

Shackle adapted for lifting device

Nipple part no. 11 054 659

Pipe Ø50 mm (2 in), length 800 mm (31 in), thickness of material 4 mm (0.16 in)

1. Secure the frame joint with the frame joint lock.
2. Turn off the battery disconnect switch.
3. Drain the coolant, using E1034.  
Drain the engine oil using nipple part. no. 11054659.

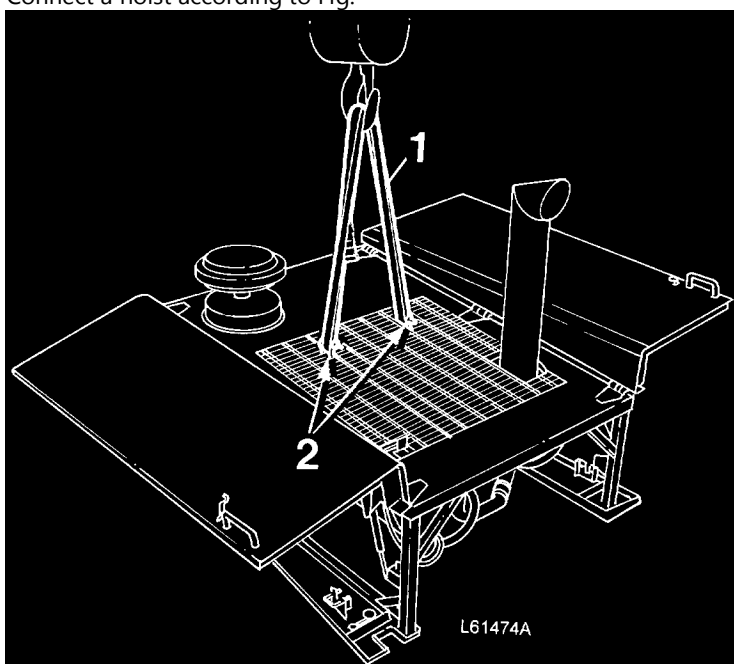
### **WARNING**

**There is a danger of scalding when removing the cap for the header tank (radiator cap), as the cooling system is pressurised when hot.**

4. Remove the side plates and the cover above the hydraulic tank and open the side covers.
5. Detach the following connections to the superstructure:
  - The hoses from the header tank.
  - The electrical lead from the air filter indicator.
  - The turbocharger inlet hose.
  - Hoses from the engine.
  - The pipe from the turbocharger exhaust side.
6. Remove all attaching bolts (4 pcs) for the superstructure. Note the number of washers on the rubber dampers on which the superstructure stands.  
The weight of the superstructure is approx. 340 kg (750 lb).



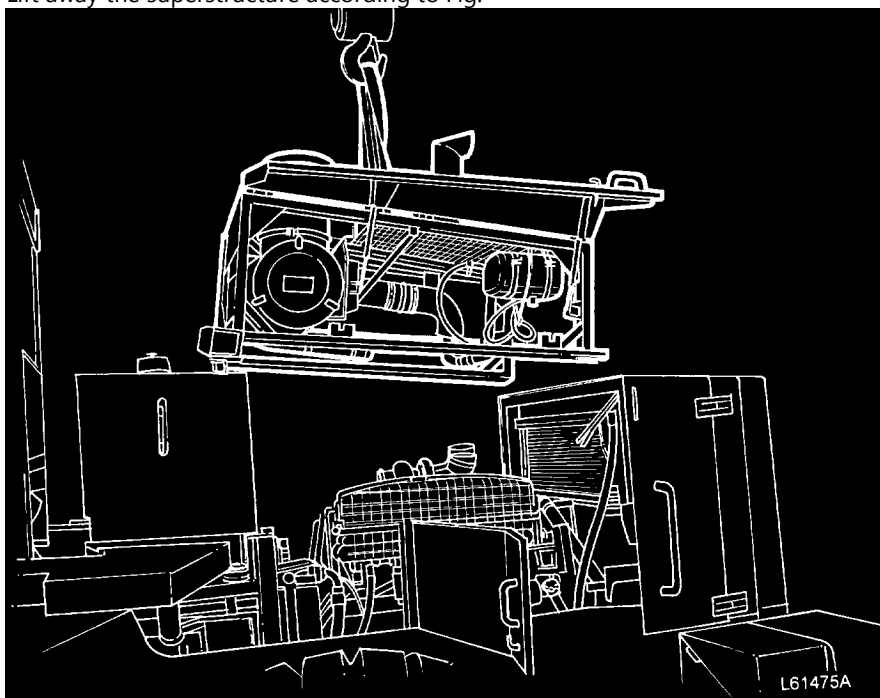
7. Connect a hoist according to Fig.



**Figure 1**  
**Position of lifting points**

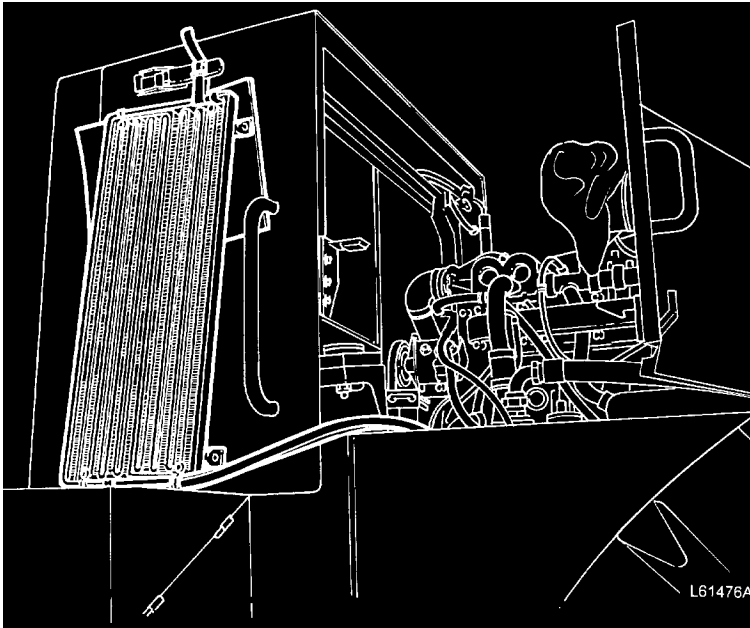
1. Sling 4 metres (13 ft)
2. Schackle 7/16"

8. Lift away the superstructure according to Fig.



**Figure 2**  
**Removing superstructure**

9. For machines equipped with air conditioning, the following applies:  
– Remove the condenser attaching bolts.  
Position the condenser according to Fig



**Figure 3**  
**Position of condenser**

**⚠ CAUTION**

Do not loosen the hose connections to the condenser.

**NOTE!**

Do not bend the hoses, so that they break. A broken hose must be changed.

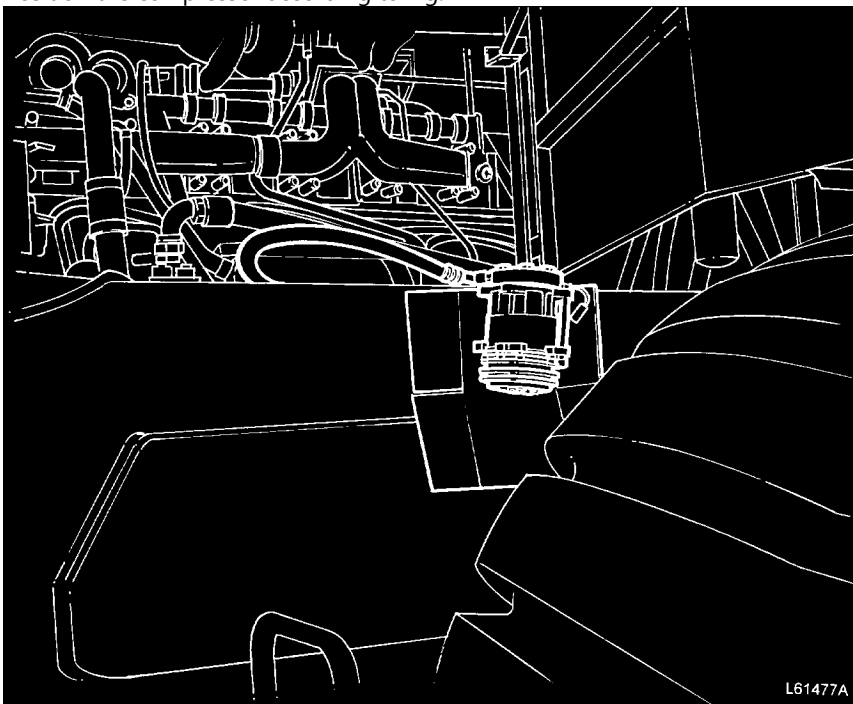
Remove the member for the lower brackets of the condenser.

– Remove the compressor drive belt and attaching bolts.

**⚠ CAUTION**

Do not loosen the hose connections to the compressor.

Position the compressor according to Fig.



**Figure 4**  
**Position of compressor**

**NOTE!**

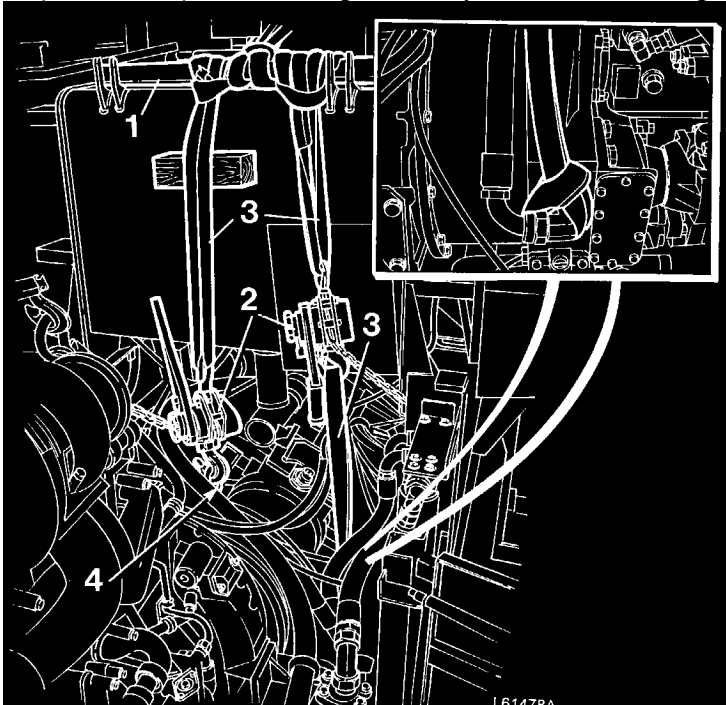
Do not bend the hoses so that they break. A broken hose must be changed.

10. Detach the following from the right side of the engine:
  - Cable harness.
  - The hoses to the cab heater.
  - The engine part-flow filter.
11. Remove the coolant pipe from the thermostat housing connecting pipe.
12. Remove the coolant pipe from the lower connection on the radiator.
13. Loosen the transmission oil cooler at the front end and detach the coolant pipe. Position the pipe under the transmission oil cooler.
14. Detach the following from the left side of the engine:
  - Cable harness and cable connections to starter motor.
  - The fuel system prefilter.
  - The fuel lines from the fuel pump.
  - The bracket for the engine speed control.
  - The control cable from the control arm on the injection pump.
  - The bracket and relay for the air preheater.
  - The bracket for the transmission filters from the frame.
15. Remove the engine mounting bolts at the rubber dampers.

**NOTE!**

If the machine is provided with secondary steering, it may be necessary to disconnect certain hoses in order to improve accessibility.

16. Suspend the torque converter against the hydraulic tank according to Fig.

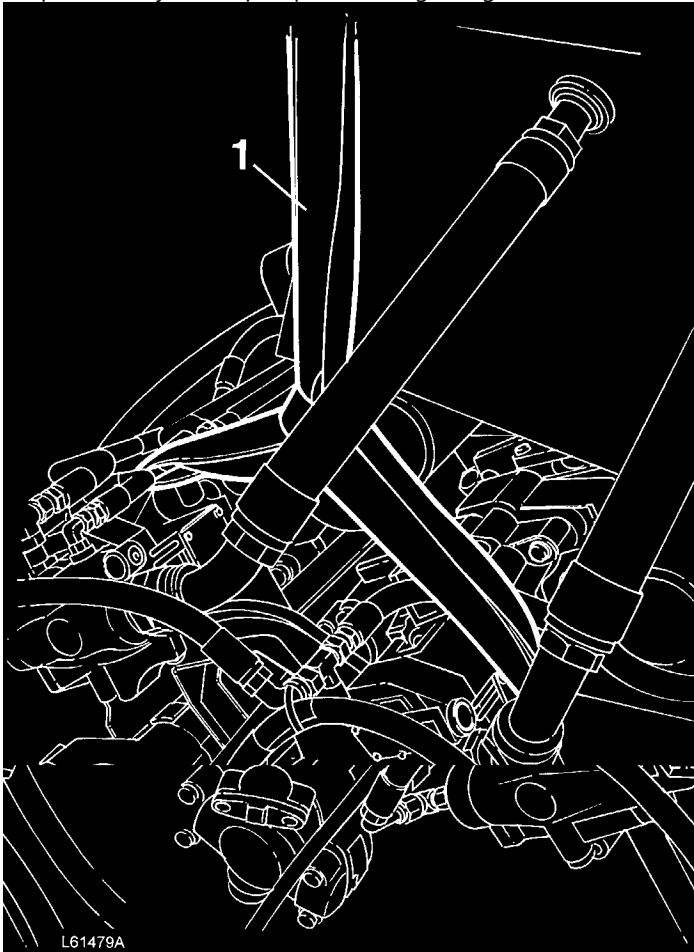


**Figure 5**  
**Suspension of torque converter**

1. Pipe length 0.8 metre (31 in)
2. Ratchet block 750 kg (1654 lb)
3. Sling 2 m (6.5 ft)

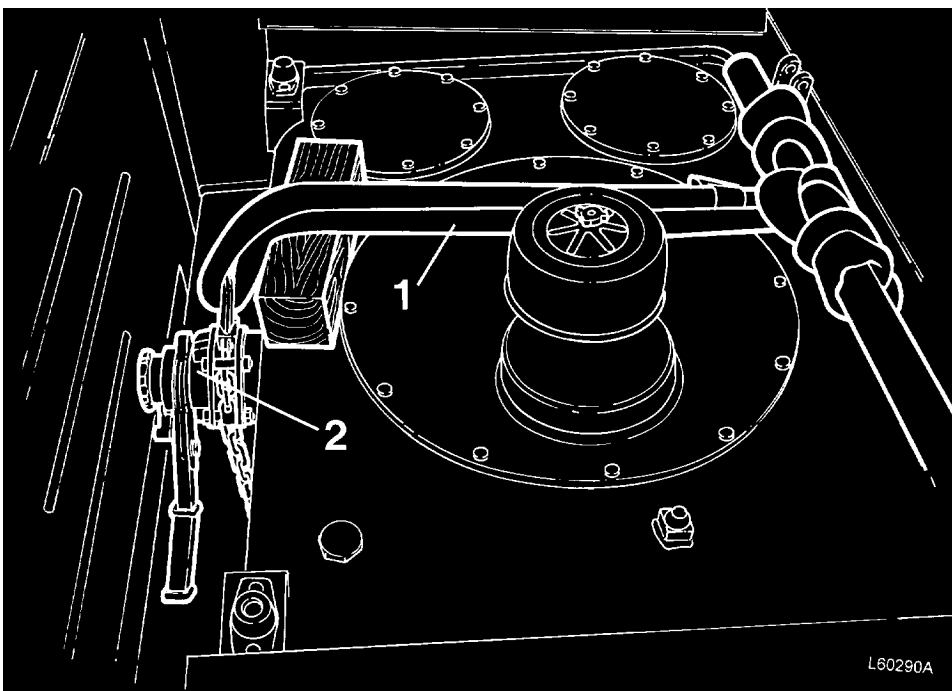
4. Lifting eye 3/4" UNC

17. Suspend the hydraulic pumps according to Fig.



**Figure 6**  
**Suspending hydraulic pumps**

1. Sling 4 m



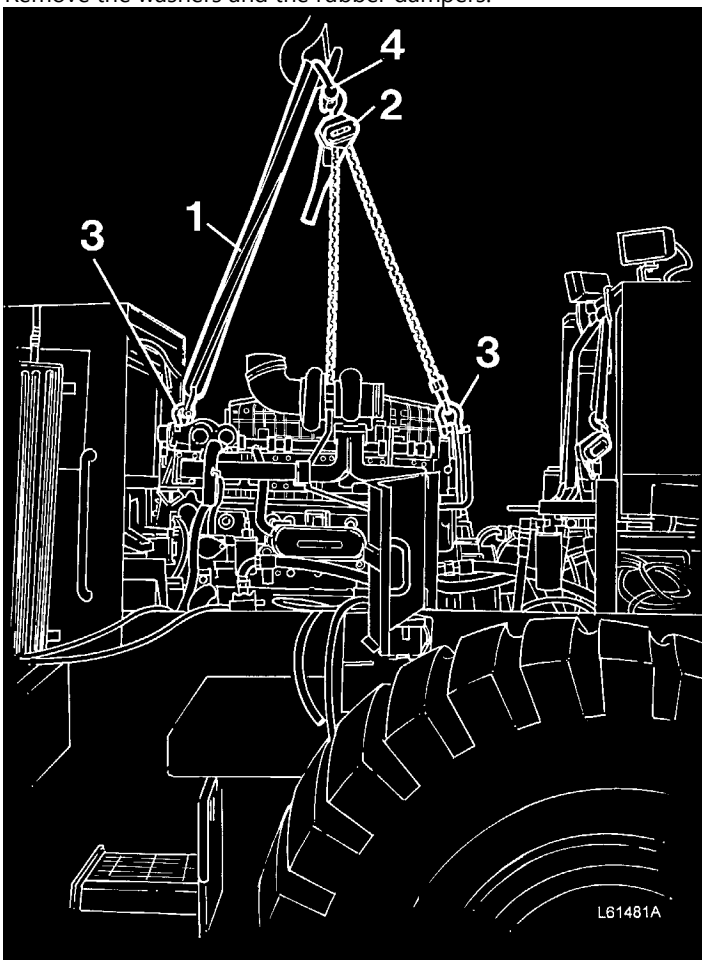
**Figure 7**  
**Suspending hydraulic oil pumps**

1. Sling 2 m (6.5 ft)
  2. Ratchet block 750 kg (1654 lb)
18. Detach the hose from the flywheel housing.
  19. Connect a hoist to the engine, see Fig. [Invalid linktarget]  
The engine weight is approx. 1430 kg (3153 lb).
  20. Lift the engine so that the rubber dampers are unloaded. Tension the ratchet blocks which are connected to the torque converter.

**CAUTION**

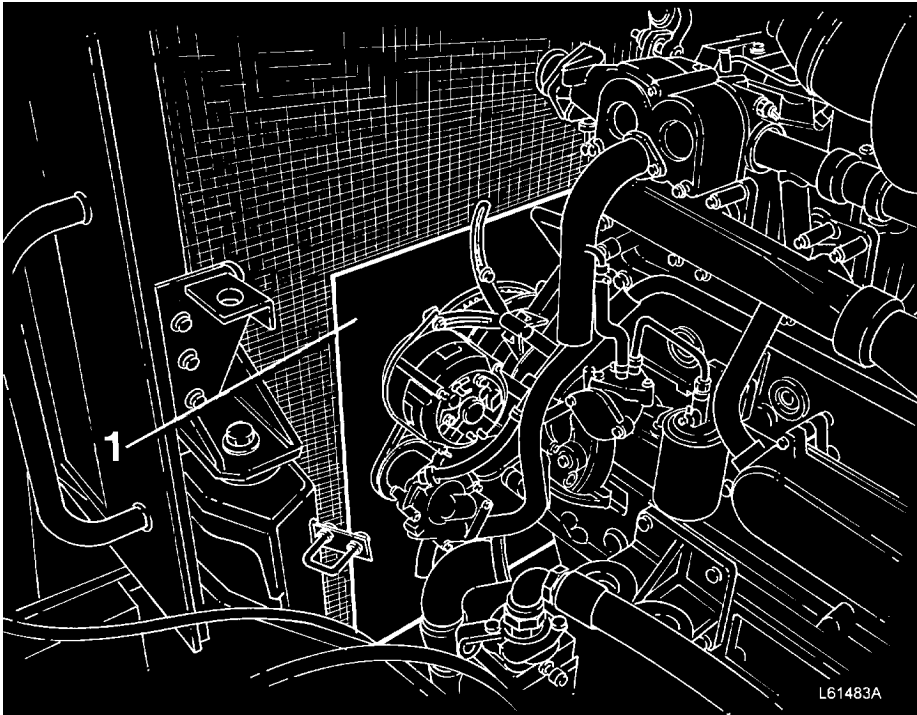
Make sure that the rubber boots on the inlet pipes do not have to take any load.

Remove the washers and the rubber dampers.



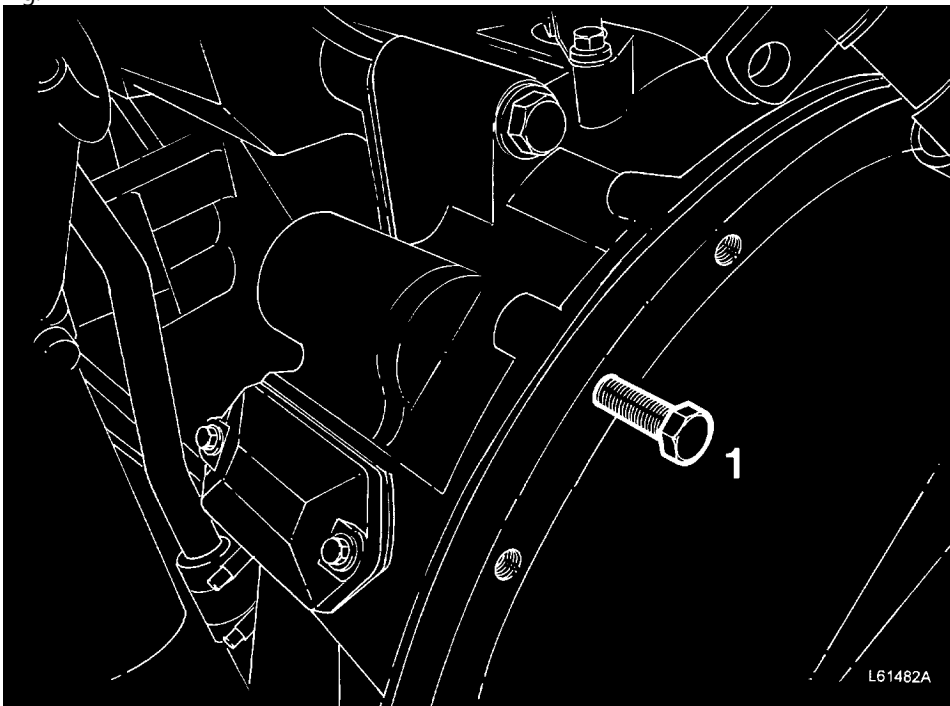
**Figure 8**  
**moving engine**

1. Sling 3 m (10 ft)
  2. Ratchet block 1.5 tonnes (3307 lb)
  3. Shackle 5/8", 2 pcs
  4. Shackle adapted for the lifting device
21. Remove the front right engine mounting.
  22. Position a protective board or metal sheet against the radiator by the belt pulley. See Fig.



**Figure 9**  
**Guard for radiator**

1. Piece of board
23. Remove the bolts between the flywheel housing and torque converter housing. Press the parts apart according to Fig.



**Figure 10**  
**Pressing flywheel housing and torque converter housing apart**

1. Puller bolt, upper (lower bolt is positioned diametrically opposite)

**NOTE!**

The figure shows the upper puller bolt. The lower puller bolt is positioned diametrically opposite the upper one.

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