

Document Title: Description	Function Group: 200	Information Type: Service Information	Date: 2014/5/4 0
Profile:			

Description

The L90D is equipped with an engine having the designation TD63KBE and the L120D is equipped with an engine having the designation TD73KDE. Both engines are low-emission, six-cylinder, four-stroke, direct-injected, turbocharged diesel engines with intercooler.

The engine has wet replaceable cylinder liners and two separate cylinder heads that cover three cylinders each. The cylinder heads are interchangeable.

Lubrication is achieved with a force-feed lubrication system where an oil pump presses lubricating oil to all lubrication points.

The turbocharger supplies the engine with pressurised fresh air, resulting in a surplus of air. Thus, the injected fuel amount can be increased, giving more engine power. The turbocharger is lubricated and cooled by the engine's lubricating oil, and is driven by the engine exhausts and makes use of energy that otherwise would remain unused.

The intercooler, located in the induction manifold, cools the air which contributes to cleaner exhausts and improved engine power.

A separate pump circulates coolant counter-clockwise in the intercooler.

Document Title: Engine, installing	Function Group: 200	Information Type: Service Information	Date: 2014/5/4 0
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Engine, installing

Op nbr 21072

Lifting sling, 3 m (9.8 ft)

Shackle 3/8"

Ratchet block, 750 kg (1654 lbs)

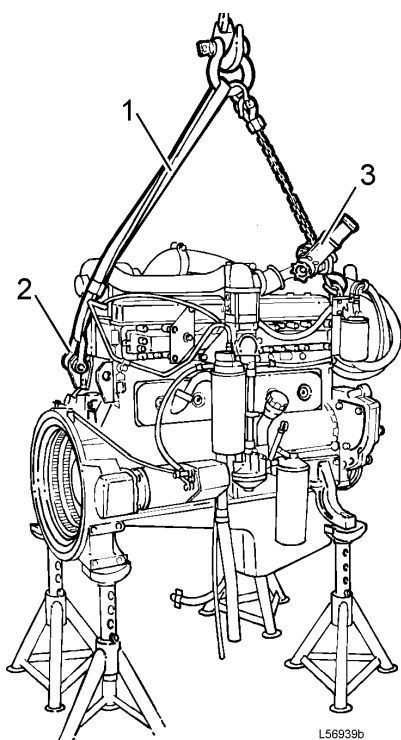


Figure 1

Attaching a lifting device (outline diagram)

1. Lifting sling, 3 m (9.8 ft)
2. Shackle 3/8"
3. Ratchet block, 750 kg (1654 lbs)

1. Attach a lifting device to the engine, see [Invalid linktarget] .
Weight: **approx. 750 kg (app. 1653.5 lbs)**

2. Lower the engine into the machine.

NOTE!

Make sure that no air conditioning hoses are damaged.

3. Fit the engine in with the hydraulic transmission and refit the screws.

Tightening torque: **85 ±8 Nm (63 ±6 lbf ft)**

Remove the supports from under the transmission.

4. Refit the screws between the engine mounts and the rubber elements.
Tightening torque: **220 ±22 Nm (162 ±16 lbf ft)**

5. Screw the transmission oil cooler to the bracket on the engine.

6. Refit the belt pulley, hub, bracket, and tension wheel.

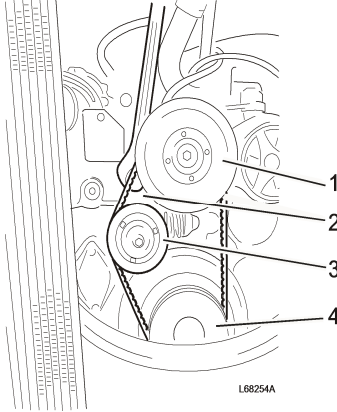


Figure 2
Fitting belt parts.

1. Belt pulley
 2. Bracket
 3. Tensioning wheel
 4. Hub
7. Bolt on the air conditioning compressor, if any, and fit its drive belt and fan belts.
 8. Refit the rod between the engine and the air deflection disc.
 9. Refit the fan.
 10. Install the coolant pipe between the water pump and the transmission oil cooler; change the o-ring.
Connect the hose of the expansion tank and the air conditioning to the pipe and any coolant filter hose.
 11. Screw the water trap of the fuel system to the bracket on the frame.
Attach the fuel lines to the fuel pump and the fuel injection pump.
 12. Connect the cables to the B+ generator, connector BB to the stop solenoid, and SE1 to the temperature sensor.
Clamp the cables in the screw clips.
 13. Attach the throttle control to the fuel injection pump.

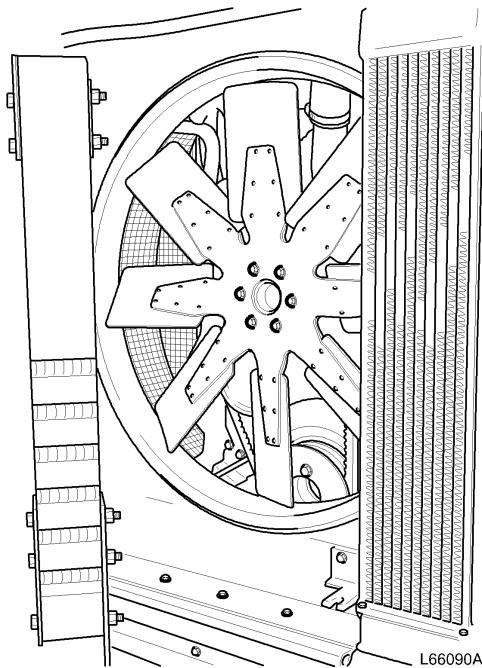


Figure 3

14. Screw in the preheating coil's relay console and console for any air conditioning receiver-drier to the bracket at the inlet line of the engine. Connect the lead to the preheating coil.
15. Connect the ground lead to the starter motor (black connection).
Connect the red leads of the cable harnesses to the starter motor (red connections).
16. Connect the leads to the oil pressure sensor and the air cleanliness indicator. Clamp the cables in the screw clips.
17. Refit the upper radiator hose.
18. Refit the breather filter and screw in any pumps for secondary steering.
19. Refit the cover unit.

Weight: **approx. 100 kg (app. 220 lbs)**

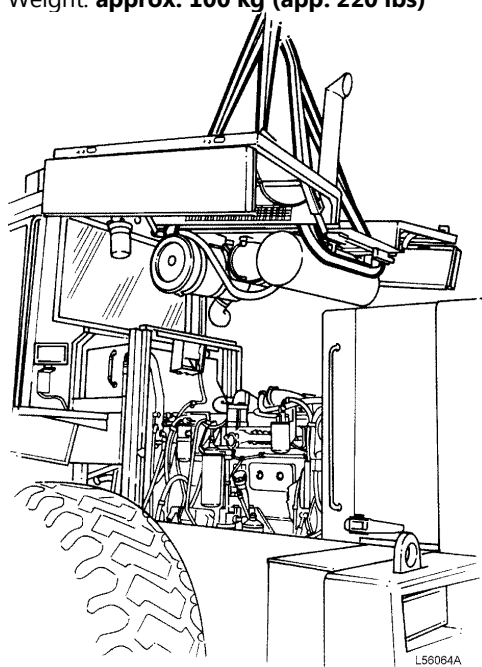


Figure 4

Installing the cover unit

20. Connect the following:
 - ☐ The exhaust pipe to the silencer.
 - ☐ The hoses to the expansion tank, 3 pcs.
 - ☐ The hose to the hydraulic oil tank breather filter.
 - ☐ The suction hose to the turbocharger.
 - ☐ The hoses to the air cleanliness indicator.
21. Refit the hood plates on top of and on both sides of the hydraulic oil tank.
22. Fill the coolant.
Volume: **53 litre (11.66 US gal.)**
Fill the engine oil.
Volume: **16 litre (3.52 US gal.)**
23. Remove the joint locks. Start the engine and make sure there are no leaks.

Document Title: Engine, removing	Function Group: 200	Information Type: Service Information	Date: 2014/5/4 0
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Engine, removing

Op nbr 21070

Lifting sling, 3 m (9.8 ft)

Shackle 3/8"

Ratchet block, 750 kg (1654 lbs)

1. Secure the frame joint with the joint lock.
2. Cut the current with the battery disconnect switch.

3. **WARNING**

Pressure in the cooling system may cause burns when the cap of the expansion tank (radiator cap) is opened.

Open the expansion tank filler cap and drain the coolant.

Volume: **53 litre (11.66 US gal.)**

Drain the engine oil.

Volume: **16 litre (3.52 US gal.)**

4. Remove the hood plates on top of and from both sides of the hydraulic oil tank.
5. Loosen the following:
 - Exhaust pipe from the silencer.
 - Hoses from the expansion tank.
 - Hose from hydraulic oil tank breather filter.
 - Suction hose from the turbocharger.
 - Hoses from the air cleanliness indicator.
6. Remove the hood plate above the engine and the side covers as a unit together with the silencer, air cleaner, and expansion tank.
Weight: **approx. 100 kg (app. 220 lbs)**

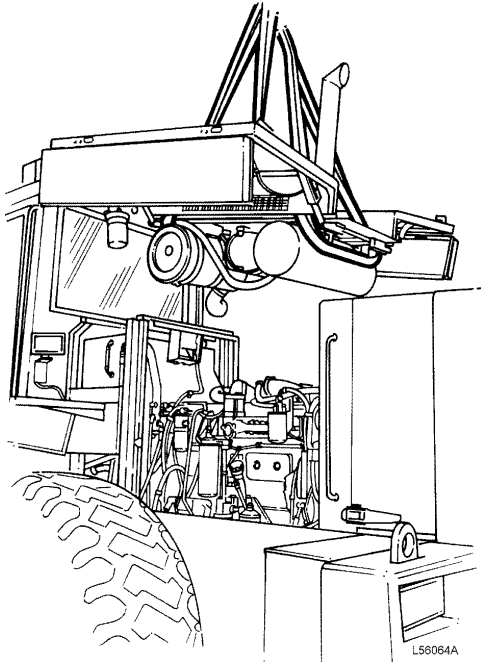


Figure 1
Removing hood plate

7. Disconnect the throttle control from the fuel injection pump.
8. Disconnect the necessary cables and clamps from:
 - the starter motor
 - the preheating coil
 - the alternator
 - the temperature sensor
 - the oil pressure sensor and the stop solenoid.
9. Disconnect the preheating coil's relay console and console for any air conditioning receiver-drier from the bracket at the inlet line of the engine.
Place the receiver-drier on the frame without loosening the hoses.

! WARNING

10. **Do not loosen hoses of the air conditioning unit (AC) because gas will leak out.**
Disconnect the compressor of the air conditioning unit, including brackets and hoses, and place it on the fuel tank.
11. Loosen the bracket for the engine's oil and coolant drain hoses.
Disconnect the fuel lines from the fuel injection pump and feed pump.
Loosen the water trap and lay it on the frame.
12. Swing out the radiator and condenser, if any. Remove the fan.
Remove the attachment rods of the air deflection disc, 3 pcs.
Remove the fan belts.
13. Remove the belt pulley of the fan, including hub, bracket, and tension wheel.

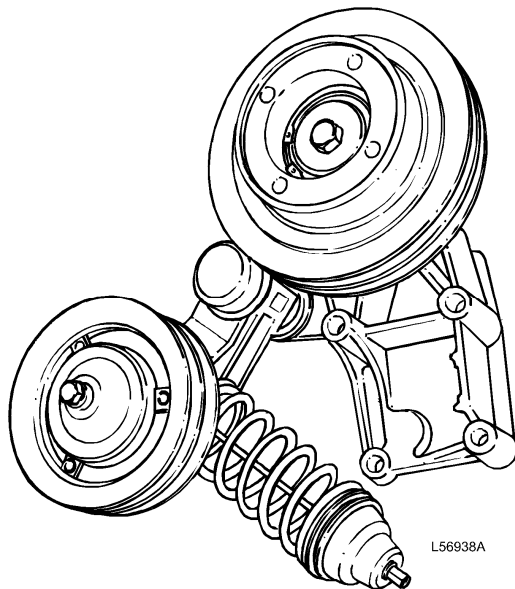


Figure 2
The belt pulley of the fan complete with hub, bracket, and tension wheel

14. Remove the axle ventilation filter and loosen any secondary steering pumps.
15. Remove the lead for the air filter's air cleanliness indicator from the tank.
16. Attach a lifting device to the engine, see [Invalid linktarget] .
Remove the screws between the engine mounts and the rubber elements.
Remove the screws between the engine and the transmission.

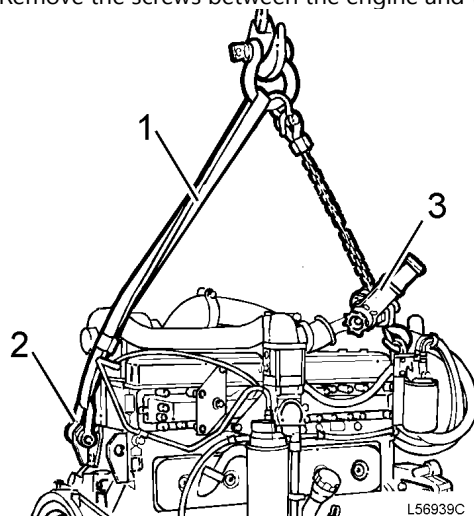


Figure 3
Attaching a lifting device (outline diagram)

1. Lifting sling, 3 m (9.8 ft)
 2. Shackle 3/8"
 3. Ratchet block, 750 kg (1654 lbs)
17. Place supports against the front rear axle mounting to support the transmission.

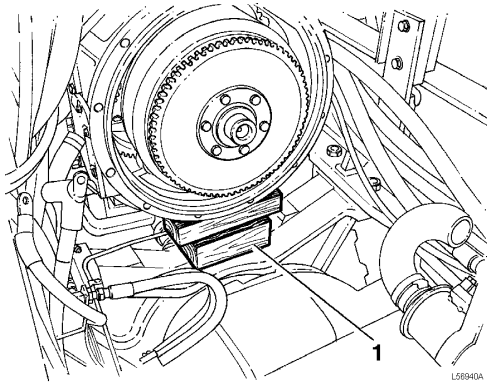


Figure 4
Supporting the transmission

1. Wood blocks
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18. Lift out the engine.
Weight: **approx. 750 kg (app. 1653.5 lbs)**

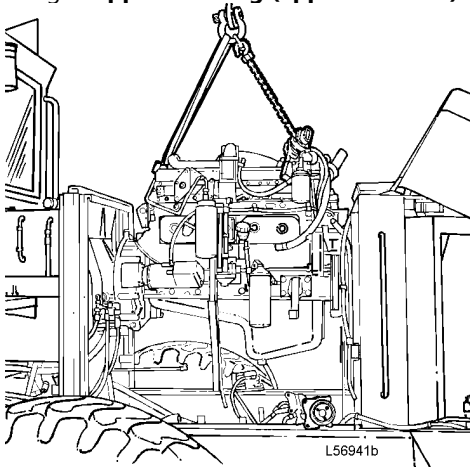


Figure 5
Lifting out the engine (outline diagram)



Construction Equipment

Service Information

Document Title: Specifications, capacities	Function Group: 200	Information Type: Service Information	Date: 2014/5/4 0
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Specifications, capacities

Engine, when changing oil incl. filter	16 l (4.2 US gal)
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Document Title: Specifications, general	Function Group: 200	Information Type: Service Information	Date: 2014/5/4 0
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Specifications, general

Engine	
Type designation	TD63KBE, part no. 8188107
Flywheel output at 2100 rpm	113 kW SAE J 1349 Net 113 kW DIN 70020
Gross output at 2100 rpm	118 kW SAE J 1349 Gross
Max. torque at 1100 rpm	690 Nm (508.9 lbf ft) SAE J 1349 Net 695 Nm (512.6 lbf ft) SAE J 1349 Gross 690 Nm (508.9 lbf ft) DIN 70020
Number of cylinders	6
Cylinder bore	98.43 mm (3.875 in)
Stroke	120 mm (4.72 in)
Cylinder displacement, total	5.48 dm ³ (334 in ³)
Compression ratio	18.3:1
Compression at starter motor speed, 200 rpm	2.4 MPa (348 psi)
Max. pressure difference allowed between cylinders at starter motor speed	0.3 MPa (44 psi)
Injection sequence	1-5-3-6-2-4
Idle speed, low	670 ±50 rpm
Idle speed, high	2420 ±60 rpm
Stall speed	2190 ±75 rpm

Document Title: Specifications, tightening torques	Function Group: 200	Information Type: Service Information	Date: 2014/5/4 0
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Specifications, tightening torques

Engine	Nm
Engine - engine mount	85 ±8 Nm (63 ±6 lbf ft)
Flywheel housing - hydraulic transmission	85 ±8 Nm (63 ±6 lbf ft)
Engine mount - tapered rubber damper	220 ±22 Nm (162 ±16 lbf ft)
Tapered rubber damper - frame	45 ±4.5 Nm (33 ±3 lbf ft)

Document Title: Specifications, capacities	Function Group: 200	Information Type: Service Information	Date: 2014/5/4 0
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Specifications, capacities

Engine, when changing oil incl. filter	21 l (5.5 US gal)
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Document Title: Specifications, general	Function Group: 200	Information Type: Service Information	Date: 2014/5/4 0
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Specifications, general

Engine	
Type designation	TD73KDE, part no. 8188126
Flywheel output at 2100 rpm	148 kW SAE J 1349 Net
Gross output at 2100 rpm	153 kW SAE J 1349 Gross
Max. torque at 1100 rpm	920 Nm (678.5 lbf ft) SAE J 1349 Net 925 Nm (682.2 lbf ft) SAE J 1349 Gross
Number of cylinders	6
Cylinder bore	104.77 mm (4.124 in)
Stroke	130 mm (5.12 in)
Cylinder displacement, total	6.7 l (1.8 US gal)
Compression ratio	17.5:1
Compression at starter motor speed, 200 rpm	2.4 MPa (348 psi)
Max. pressure difference allowed between cylinders at starter motor speed	0.3 MPa (44 psi)
Injection sequence	1-5-3-6-2-4
Idle speed, low	670 ±50 rpm
Idle speed, high	2345 ±60 rpm
Stall speed	2120 ±75 rpm



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