

Document Title: Engine, description	Function Group: 200	Information Type: Service Information	Date: 2014/3/21
Profile: WLO, L50D [GB]			

Engine, description

Loader L50D is equipped with a four-stroke diesel engine with four cylinders and the type designation TD40GJE.

General

The cylinder block is cast in one piece and provided with dry, replaceable cylinder liners. The pistons are made of a light metal alloy.

The cylinder head is made of cast iron. The valves are installed in replaceable guides. The injectors are installed in their locations in the cylinder head and sealed with a copper washer at the bottom and an O-ring at the top.

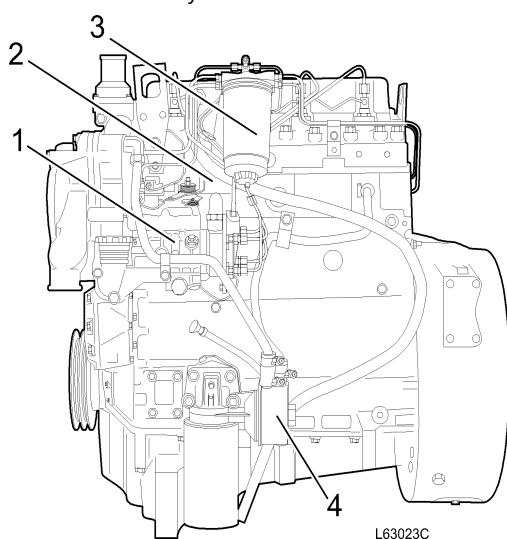


Figure 1
Engine TD40GJE

1. Injection pump
2. Engine number (behind the injection pump)
3. Fuel filter
4. Oil cooler

The cylinder bore is 100 mm (3.937 in) and the stroke is 127 mm (5.0 in), which provides a displacement capacity of 4.0 litres (244 in³). The compression ratio is 17.25:1.

The TD40GJE is a so called low-emission engine. It is provided with direct injection and is turbocharged.

The TD40GJE is provided with a device which limits the exhaust emissions when the engine is cold. The device is positioned on the injection pump.

The function of the device in short.

See also [238 Injection timing adjustment at low engine temperature, description](#) Section 238.

When the engine is cold the injection angle varies depending on load and engine speed.

When the engine temperature has reached approx. 70 °C (158 °F), a temperature sensor closes an electrical circuit. Because of this a heating element is connected and melts a wax body.

The injection timing device piston is then locked in the "max. delay" position with the aid of the fuel pressure.

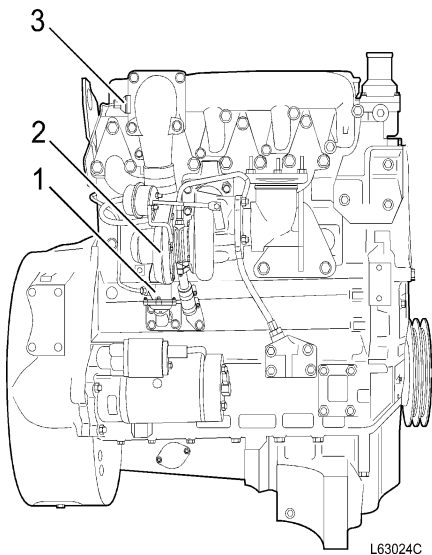


Figure 2
Engine TD40GJE

1. Feed pump
2. Turbocharger
3. Cold-starting device (Type Thermostart)

The engine compartment is fully enclosed which lowers the sound level both outside the machine and inside the cab.

The engine cooling system is based on a concept, which entails an integrated cooling of the engine, transmission and the hydraulics.

The degree of cooling of these systems is dependent of the cooling fan speed.

The engine cooling fan is driven by a vane motor positioned in front of the radiator. The fan drive is hydrostatic and powered by a variable axial piston pump. See also [263 Hydraulic cooling fan, description](#), Section 263.

The serial number can be found on a plate, which is positioned behind the injection pump. Type designation and serial number are given on a plate by the oil dipstick on the right side of the machine.

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Engine, removing

Op nbr 21070

[ratchet block](#)

[shackle](#)

[sling](#)

1. Break the connection from the battery by turning off the battery disconnect switch.
2. Remove the hydraulic motor for cooling fan. See [263 Fan motor, removing](#).
3. Drain off the engine oil and the coolant from the engine. Disconnect the engine oil draining hose.
4. Remove the side covers.
5. Disconnect the flexible hose and the inlet hose from the turbocharger. Plug all exposed openings.
6. Disconnect the coolant hoses from the expansion tank. Detach the engine hood and lift it away together with the expansion tank, air cleaner and silencer.
7. Disconnect hoses, sensors, fuel and electrical leads from the engine.
8. Take apart connector BZ, positioned by the fuel filler pipe.
9. Remove the fan shroud from the radiator.
10. Disconnect all hoses, cables and other items from the engine.
11. Remove AC compressor and its bracket and other equipment.
12. Remove the operator seat.
The weight of the seat is 45 kg (99 lb)
13. Fold back the floor mat and remove the rear cover plate from the cab floor.
14. With the aid of for example ratchet blocks and lifting slings, suspend the hydrostatic pump and the hydraulic pumps at the front and rear ends.

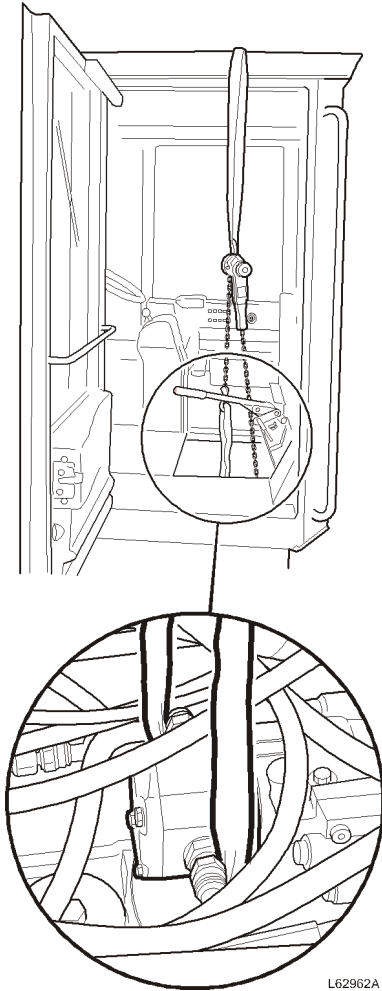


Figure 1
Suspension of hydrostatic and hydraulic pumps, front end.

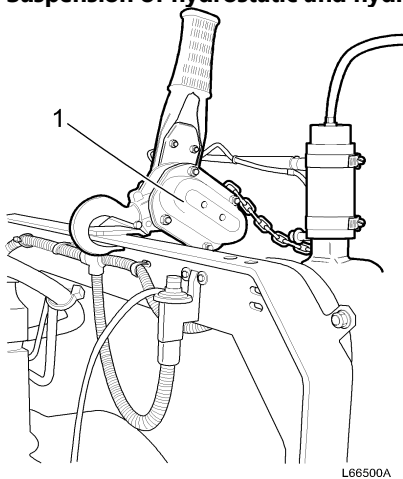


Figure 2
Suspension of hydrostatic and hydraulic pumps, rear end.

1. Ratchet block

15. Connect lifting slings to the engine. Use the attaching devices installed on the engine. The weight of the engine is approx. 450 kg (992 lb).

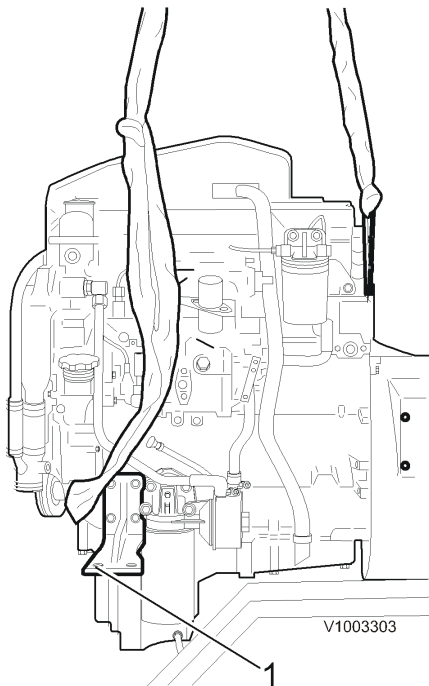


Figure 3
Lifting slings connected to engine

1. Rear engine mounting

16. Remove the front engine mountings.

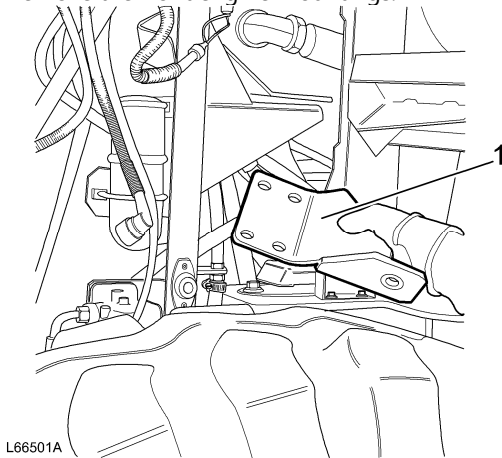


Figure 4
Removing front engine mountings

17. Remove the bolts retaining the rear engine mountings against the rubber elements.
18. Loosen the four attaching bolts for the radiator cowl and incline the cowl slightly rearward. Position a spacer sleeve on both sides and secure with bolts.

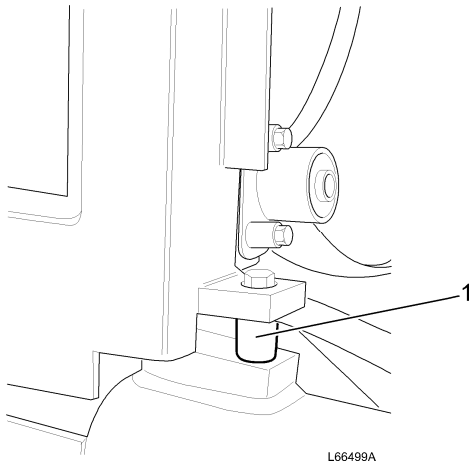


Figure 5

1. Spacer sleeve

19. Remove the bolts in the joint between the diesel engine and the hydrostatic pump.

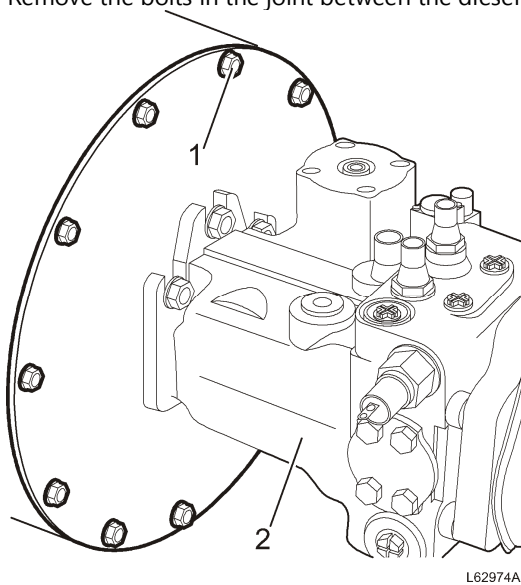


Figure 6
Bolted joint between diesel engine and hydrostatic pump.

1. Bolt
2. Hydrostatic pump

20. Pull the engine slightly outward and then lift it out of the machine. The weight of the engine is 450 kg (992 lb)
21. Move any optional equipment to the engine which is to be installed.
22. Check the connecting parts for wear, that is the hub and flexible disc, between the diesel engine and the hydrostatic motor. Change necessary parts.

NOTE!

In order not to considerably reduce the service life of both flexible disc and hub they must be re-installed in a particular way. See [440 Hydrostatic pump, installingdamping element and hub](#).

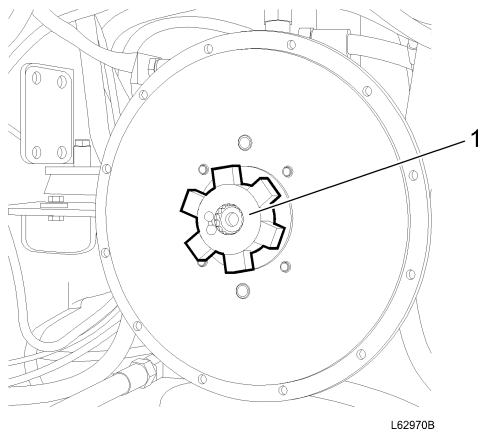


Figure 7
Connecting parts, hydrostatic unit side

1. Hub
23. Clean the engine compartment.

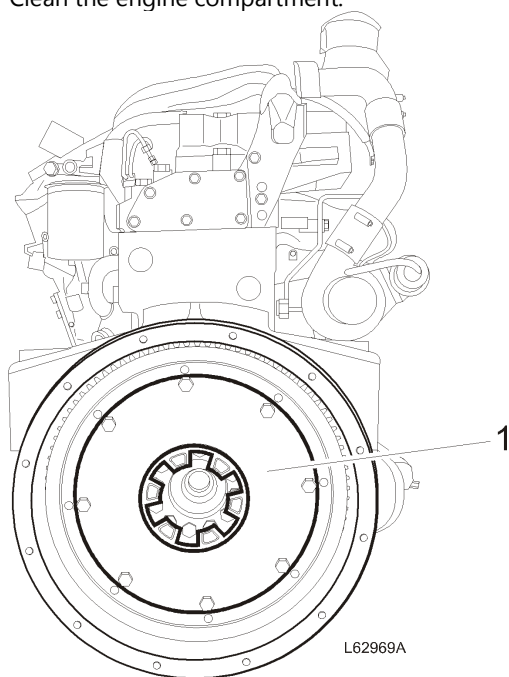


Figure 8
Connecting parts, diesel engine side

1. Flexible disc

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Engine, installing

Op nbr

1. Align the flexible disc lugs and hub lugs, so that engine and pump can dock.
2. Lift the engine into position. When necessary adjust the engine inclination with the ratchet blocks.
NOTE!
Bear in mind that the engine lifting points are positioned diagonally.
3. Install and tighten down the bolts between the engine and the hydrostatic pump.
4. Install and torque-tighten the bolts for the engine mountings.
Tightening torque: **78 Nm (58 lbf ft)**
5. Remove all lifting devices, lifting slings, lifting hooks etc. Install the oil draining nipple.
6. Install the rear cover plate for the cab floor and lay down the floor matt.
7. Install the operator seat. The weight of the seat is 45 kg (99 kg).
8. Connect hoses, cables and other items to the engine.
9. Install the oil draining hose.
10. Assemble connector "BZ".
11. Install the engine hood.
12. Install the fan.
13. Connect the hose to the turbocharger and the silencer.
14. Install the engine side covers.
15. Fill with coolant.
16. Fill with engine oil.
17. Bleed the fuel system.
18. Reconnect the positive cable to the battery.
19. Reconnect the battery current with the battery disconnect switch.
20. Start the engine and check its functions.
21. Recheck oil and coolant levels.

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21. Recheck oil and coolant levels.

Document Title: Valves, checking and adjusting	Function Group: 214	Information Type: Service Information	Date: 2014/3/21
Profile: WLO, L50D [GB]			

Valves, checking and adjusting

Op nbr 21412

Valve clearance cold or warm engine	
Inlet	0.20 mm (0.008 in)
Exhaust	0.45 mm (0.018 in)

1. Turn the crankshaft in the normal direction of rotation of the engine until the inlet valve (valve No. 7) for the 4th cylinder has just opened and the exhaust valve (valve No. 8) for the same cylinder is not quite closed, that is the valves are "rocking". Check the clearance for valves 1 and 2 (cylinder 1). Adjust when necessary. Then check and adjust if necessary the clearance for valves 5 and 6 (cylinder 3).

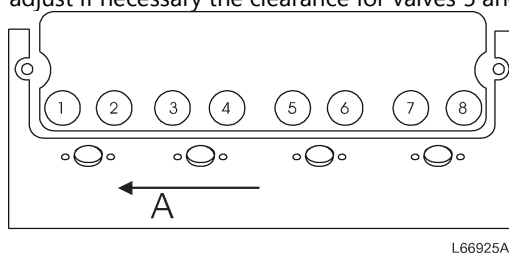


Figure 1
Position of valves in cylinder head.

A. Direction towards rear of machine

2. Turn the crankshaft in the normal direction of rotation until valves 3 and 4 (cylinder 2) "are rocking".
3. Turn the crankshaft in the normal direction of rotation until valves 1 and 2 (cylinder 1) "are rocking". Then check/adjust the clearance for valves 7 and 8 (cylinder 4).
4. Turn the crankshaft in the normal direction of rotation until valves 5 and 6 (cylinder 3) "are rocking". Then check/adjust the clearance for valves 3 and 4 (cylinder 2).

A	1		2		3		4	
B	1	2	3	4	5	6	7	8
	I	E	I	E	I	E	I	E

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Figure 2
Valve sequence

A = Cylinder number

B = Valve number

I = Inlet valve

E = Exhaust valve

Document Title: Crankshaft, description	Function Group: 216	Information Type: Service Information	Date: 2014/3/21
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Crankshaft, description

Description

The crankshaft is made of forged chrome molybdenum steel. It is carried in five main bearings. The end float is adjusted with thrust washers positioned on either side of the centre main bearing. All bearing journals are surface hardened and ground. Drilled ducts in the crankshaft provide supply of oil from the main bearings to the big-end bearings.

Document Title: Fuel feed pump specifications	Function Group: 233	Information Type: Service Information	Date: 2014/3/21
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Fuel feed pump specifications

Fuel feed pump	
Type	Diaphragm
Feed pressure	100–200 kPa (1–2 bar) (15–29 psi)



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