



HURLIMANN XM 115 DCR Tractor

Service Repair Manual

Serial No. zkdt700200th10001 and up



Check the piston rings and piston grooves (L3)

Commercially available tools:

- Feeler gauges

Special tools:

- Universal pliers for piston rings: 130300
- Trapezoidal groove wear gauge: 130440

Check the piston rings and piston grooves

- Disassemble the piston from the connecting rod drum.
See para. Disassembly and assembly of the piston and connecting rod drum (L3)
- Set the universal pliers for the rings based on the piston diameter.
See para. Test and adjustment data (L3)
- Disassemble the piston ring with universal pliers.



© 423231



1.

- Clean the piston.
- Inspect the piston.
- Visually inspect the piston grooves.

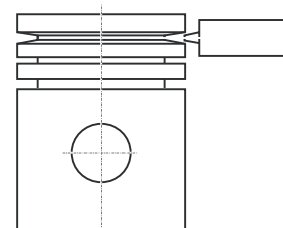


© 423221



2.

- Measure the race of the first piston ring using a trapezoidal race wear gauge.



© 338668

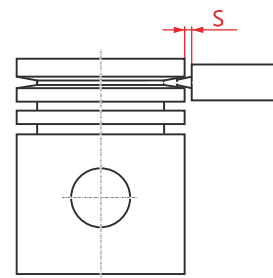


3.



Note

If there is a distance "S" between the trapezoidal race wear gauge and the piston, the piston can still be used.



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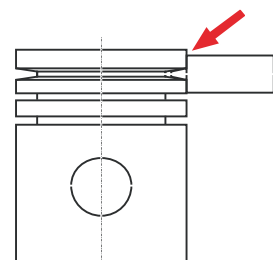


4.



Note

If the trapezoidal race wear gauge rests on the piston (arrow) the latter must be replaced.



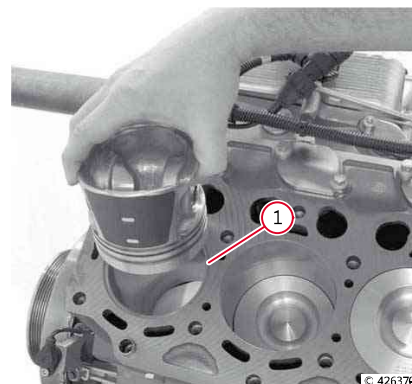
© 338684



5.

Check the coupling clearance of the piston rings

- Insert the piston ring (1) in the cylinder.
- Align the rings, pushing the piston into the cylinder.



© 426370



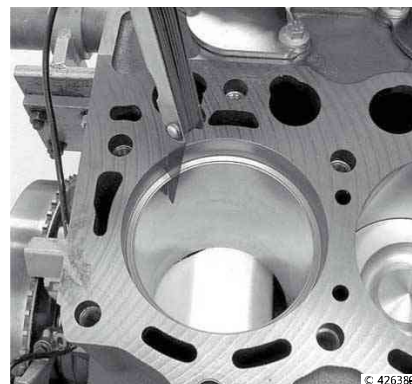
1.

- Measure the coupling clearance of the piston rings with the feeler gauge.
See para. Test and adjustment data (L3)



Note

The piston ring wear limit was reached, replace it.



© 426380



2.

- Assemble the piston rings.
Sequence and position of the piston rings viewed from the bottom of the piston:
 - double trapezoidal ring (1)
 - tapered ring (2)
 - oil scraper ring with spiral spring (3)

Note



The marking Top on piston rings (1) and (2) must face towards the combustion chamber.



© 423194



3.

- o Assemble the piston ring with universal pliers.



Note

Offset the flexible coupling of the oil scraper ring by 180° with respect to the ring coupling.



© 423184



4.

Check the endfloat of the piston ring



Note

Perform the check with new piston rings.

- o Measure the axial play of the piston rings in the first and second seats with a feeler gauge.
See para. Test and adjustment data (L3)



Note

If the piston wear limit was reached, replace it.

- o Complete the connecting rod drum and piston.
See para. Disassembly and assembly of the piston and connecting rod drum (L3)



© 423174



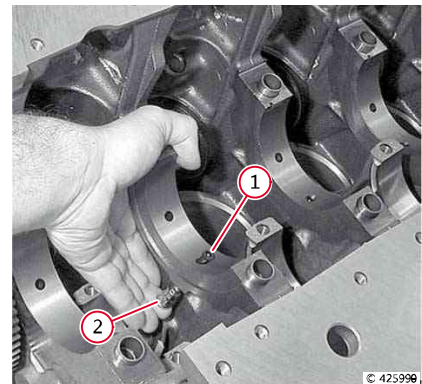
1.



Assembly and disassembly of the piston cooling nozzles (L3)

Disassembly of the piston cooling nozzles

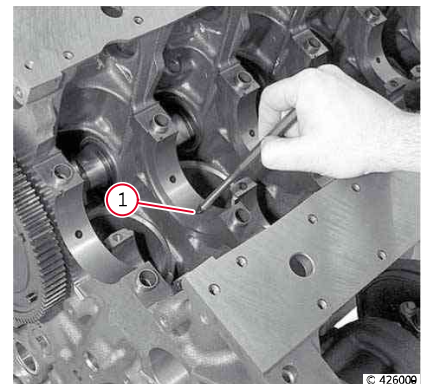
- Disassemble the crankshaft.
See para. Assembly and disassembly of the crankshaft (L3)
- Push out the piston cooling nozzle (1) using a suitable tool (2).
- Carry out a visual inspection of the components.



1.

Assembly of the piston cooling nozzles

- Clean the holes for the piston cooling nozzles in the crankcase.
- With the bolt, insert a new piston cooling nozzle (1) to the stop.
- Assemble the crankshaft.
See para. Assembly and disassembly of the crankshaft (L3)



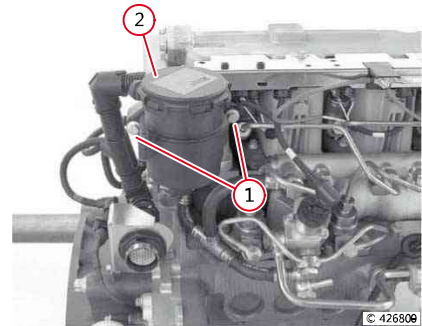
1.



Removing and fitting crankcase breather (L3)

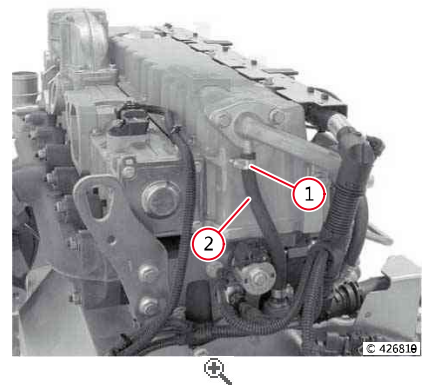
Removal of the crankcase breather

- Remove screws (1).
- Remove crankcase breather (2).



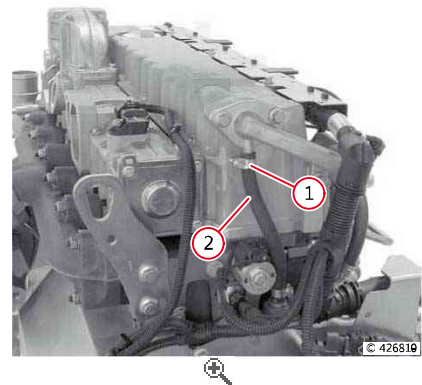
1.

- Loosen hose clip (1),
- Disconnect oil return pipe (2).



2.

- Remove screws (1).
- Remove the breather duct (2).
- Remove the gasket.



3.

Removing the crankcase breather

- Remove screws (1).
- Remove the upper part of the housing (2).



1.

- Remove the insert (1)



2.

- Detach all the mounting brackets (arrow).
- Remove the housing cover (1).



3.

- Remove diaphragm (1).
- Remove the spring.
- Clean the components.
- Visually check the wear of the components.



4.

Refitting the crankcase breather

- Fit the spring.
- Fit the diaphragm.



Note

Ensure that the diaphragm is installed in the correct position.



1.

- Fasten the housing cover.



Note

When fitting the cover, the outer edge of the diaphragm must set correctly in the groove in the housing. Ensure that the mounting bracket is fitted correctly.



© 426888



2.

- Fit a new O-ring (1).
- Lightly lubricate the O-ring.



© 426890



3.

- Fit a new O-ring (1).
- Lightly lubricate the O-ring.



© 426900



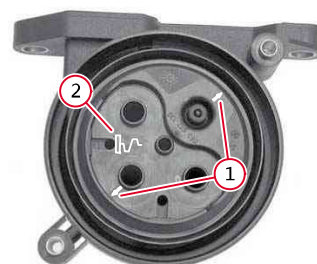
4.

- Fit the insert from the lower side of the housing.



Note

The arrows (1) must face towards the threading of the bush. The symbol (2) must face towards the flywheel.



© 426910



5.

- Fit the upper part of the housing.
- Tighten the screws.



Note

The hose union (2) must face towards the fastener flange.

6.

Refitting the crankcase breather

- Clean the mating surfaces.
- Fit a new gasket (arrowed).



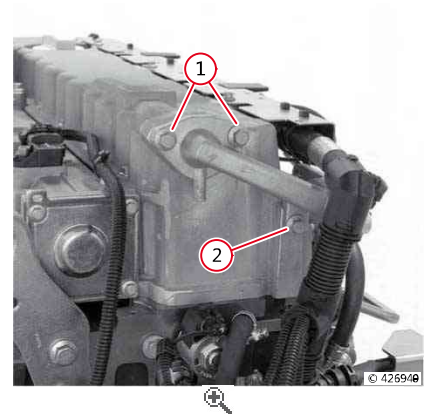
1.

- Fit the breather duct.
- Tighten the screws.



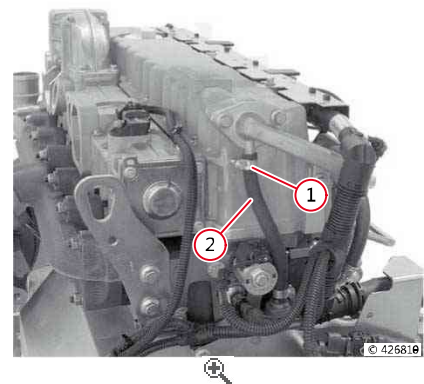
Note that the screws are of different lengths

M8 x 25 mm (1). M8 x 20 mm (2)



2.

- Fit oil return pipe (2).
- Tighten the pipe retaining clip (1).



3.

- Clean the contact surfaces of the engine block breather and the breather duct.
- Fit a new gasket (arrowed).

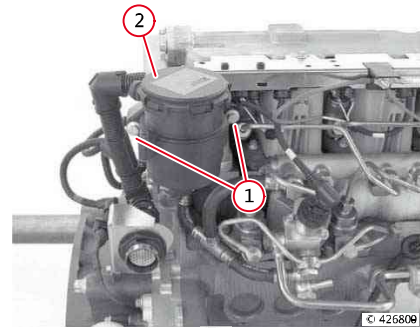


© 426959



4.

- Fit crankcase breather (2).
 - Tighten (1) the screws.
- See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine



© 426809



5.

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Checking cylinder (L3)

Commercially available tools:

- Palmer
- Internal bore meter

Special tools:

- Dial gauge: 100400

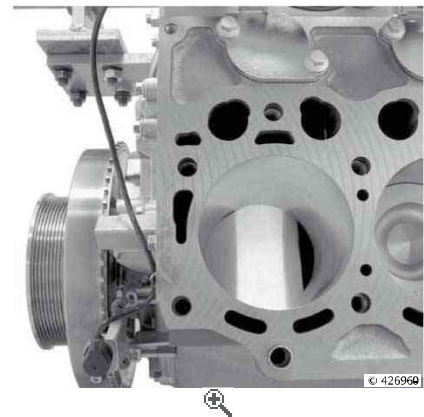


Note

To measure the cylinder, the crankshaft bearing covers must be assembled regularly. Once the wear limit is reached, the crankcase may be rebored and used again. Use suitable pistons and piston rings for the state of repair.

Check the cylinder

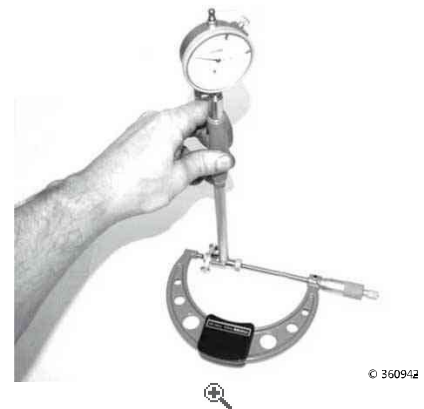
- Disassemble the piston and connecting rod drum.
See para. Disassembly and assembly of the piston and connecting rod drum (L3)
- Visually check the wear of the cylinder.



1.

Check the cylinder sliding surface

- Prepare the internal bore meter:
 - Fit the probes for the corresponding measurement interval in an internal bore meter.
 - Fit the dial gauge with a preload of approx. 1 mm in the internal bore meter.
 - Set the bracket measurement screw to 98 mm.
 - Apply the internal bore meter between the test surfaces of the palmer and in the return point of the pointer, bring the dial gauge to "0".

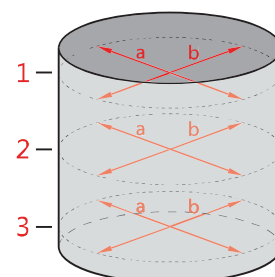


1.



Note

Measuring diagram of the cylinder liner in points "a" and "b" in surfaces "1" - "3".



2.

- Insert the internal bore meter in the cylinder.
- Apply the internal bore meter to the measurement points required occasionally and read the value measured in the return point of the pointer.

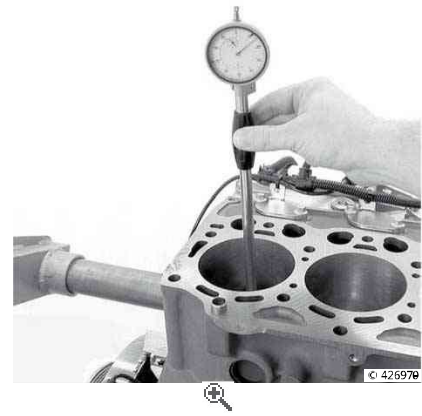
See para. Test and adjustment data (L3)



Note

Measurement points, see diagram.

- Assemble the piston and the connecting rod drum.
See para. Disassembly and assembly of the piston and connecting rod drum (L3)



3.

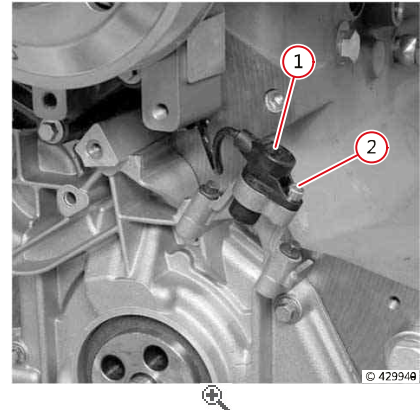


Removal and refitting of the front cover (opposite end to flywheel) (L3)

- Sealant: DEUTZ DW 59

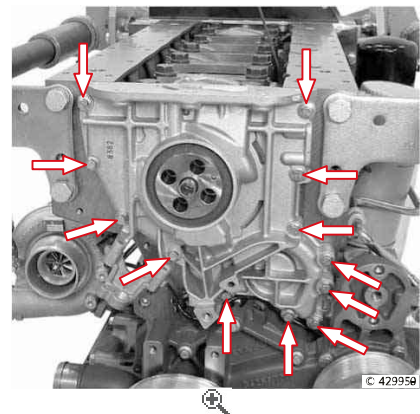
Removal of the front cover

- Remove the torsional vibration damper
See para. Disassembly and assembly of the torsional vibration damper (L3).
- Unscrew screw (2)
- Detach the crankshaft speed sensor (1) from the mount.
- Remove the oil suction pipe.
See para. Assembly and disassembly of the oil intake pipe (L3)



1.

- Unscrew the screws (arrowed).
- Remove the front cover.



2.

- Carry out a visual inspection of the components.



3.

Refitting the front cover.

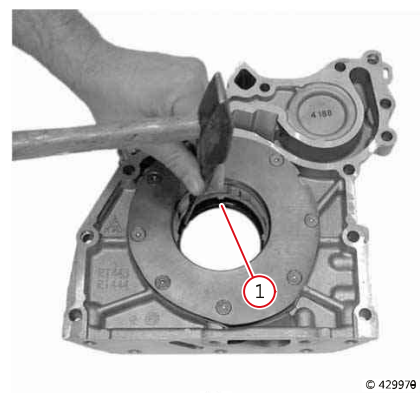
- Remove crankshaft seal (1).



WARNING

Be careful not to damage the mating surfaces when removing the front cover.

- Clean the mating surfaces of the front cover and the engine block.



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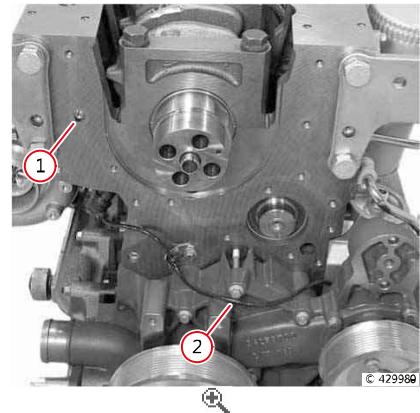
1.



Note

Check that bush (1) is present.

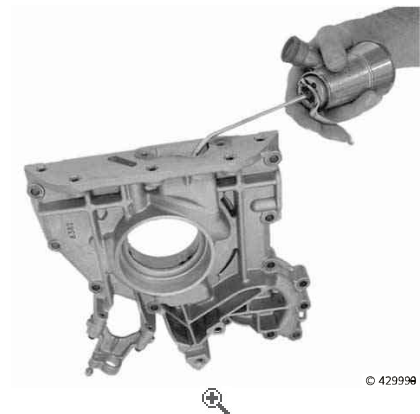
- Pull cable (2) forwards slightly.



© 429980

2.

- Stick the new gasket to the engine block with a little grease.
- Fill the oil pump housing with lubricating oil.



© 429999

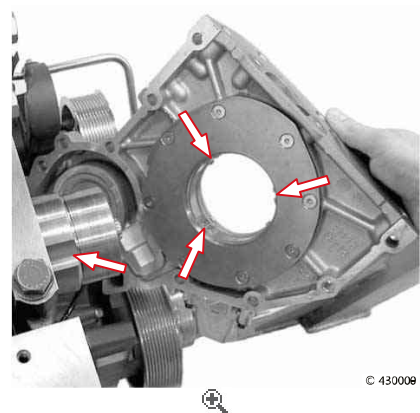
3.

- Position the internal rotor relative to the crankshaft.



Note

The machining on the crankshaft and the rotor guides must coincide. The internal rotor can only be fitted to the crankshaft in one position.



© 430009

4.

- Fit the front cover.
- Fit the screws.



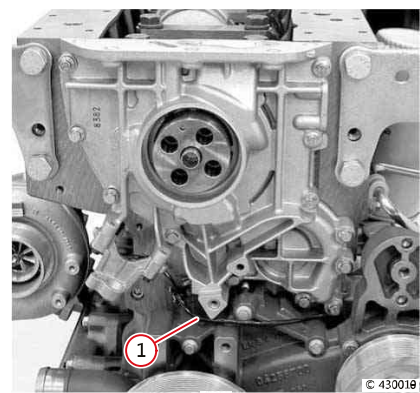
WARNING

Do not connect cable (1).



Note

Do not tighten the screws at this stage.



5.

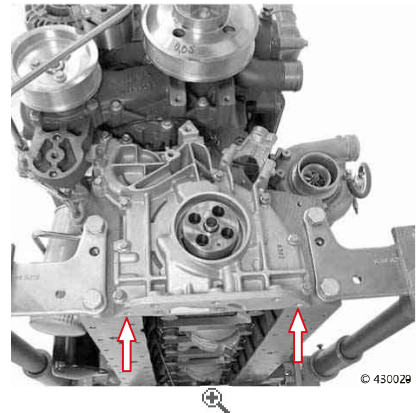
- Turn the engine over.



Note

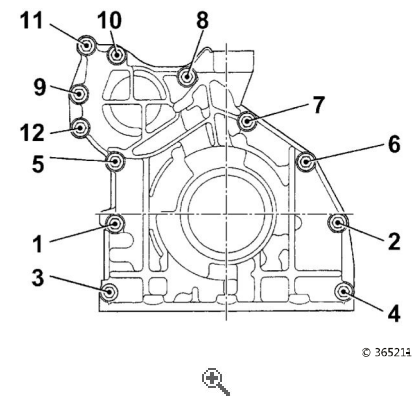
The oil sump sealing surface in correspondence of the crankcase must face downwards.

- Push the front cover upwards and align it with the mating surface of the oil sump pan (arrowed).



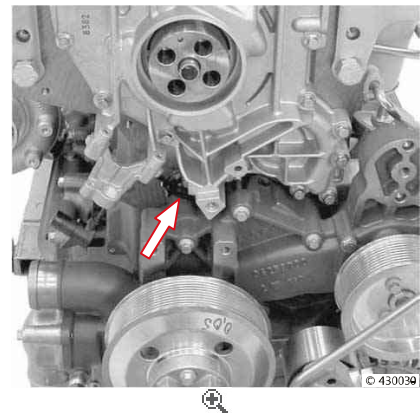
6.

- Tighten the screws in the sequence indicated.
See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine



7.

- Turn the engine over.
- Route the cable (arrow) between the front cover and the fan mount.



8.

- Trim any protruding gasket (arrowed) flush with the mating surface of the oil sump pan.
- Fit the oil suction pipe.
See para. Assembly and disassembly of the oil intake pipe (L3)

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