



Disassembly and assembly of the piston and connecting rod drum (L3)

Commercially available tools:

- Rotation angle gauge: 8190

Special tools:

- Piston ring compression collar 130670

WARNING



The allocation of the connecting rod drum and flanged bearing cover must be maintained. If the connecting rod drum and the flanged bearing cover are switched when assembled, the connecting rod drum will not be usable! Do not damage the breaking surfaces of the connecting rod drum and flanged bearing cover!

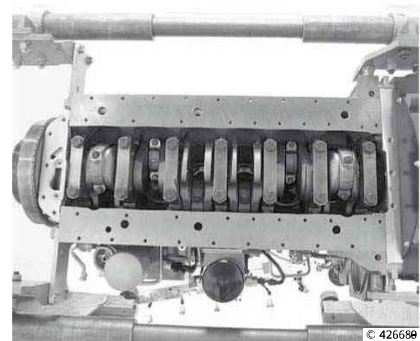
Note



Collect operating materials in suitable containers and dispose of them in compliance with the applicable regulations. The lubricant oil and the coolant must be added according to the user manual.

Disassembly of the piston and connecting rod drum

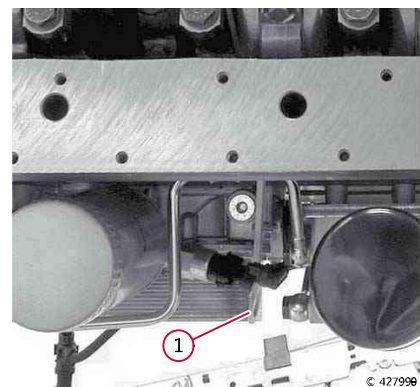
- Disassemble the cylinder head.
[See para. Disassembly and assembly of the cylinder head \(L3\)](#)
- Remove the oil suction pipe.
[See para. Assembly and disassembly of the oil intake pipe \(L3\)](#)



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1.

- Remove dipstick (1)



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2.

Disassembly of the flanged bearing cover

- Move the connecting rod pins to the bottom dead centre.
- Remove screws (1).
- Remove flanged bearing cover (2).
- Remove the bearing shell.
[See para. Test and adjustment data \(L3\)](#)

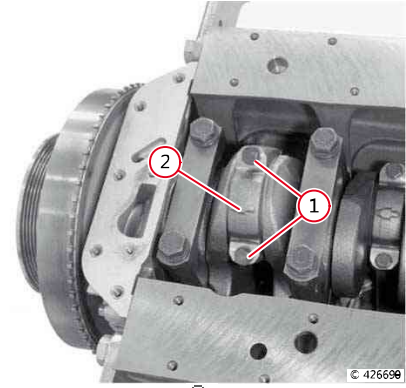
WARNING



Do not place the connecting rod bearing cover on the break section.

**Note**

Put the components to one side in the order in which they were removed. Note the cylinder order.

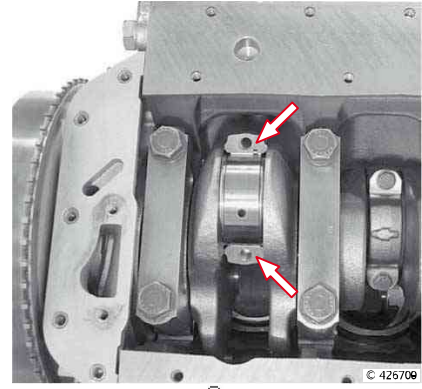


1.

- Disassemble the piston and connecting rod drum.
See para. Test and adjustment data (L3)

WARNING

The allocation of the connecting rod drum and flanged bearing cover must be maintained. If the connecting rod drum and the flanged bearing cover are switched when assembled, the connecting rod drum will not be usable! Do not damage the breaking surfaces of the connecting rod drum and flanged bearing cover!

**Note**

Put the components to one side in the order in which they were removed. Note the cylinder order.

2.

- Remove the connecting rod bearing shells (1).
- Visually check the wear of the components.



3.

- Remove the circlips.
- Pressure remove the piston pin.
- Visually check the wear of the components.



4.

Completion of the piston and connecting rod drum

- Insert a new circlip.

**Note**

Check the installation position is correct.




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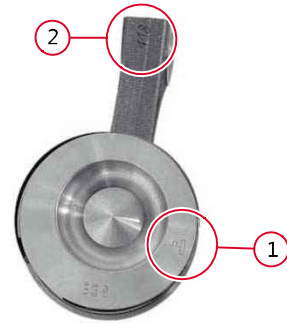
1.

- o Insert the connecting rod drum.

Note



The flywheel/crankshaft symbol (1), on the bottom of the piston, must face towards the right and numeric code (2) on the connecting rod drum must face upwards.




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2.

- o Lightly oil the piston pin.
- o Pressure insert the piston pin.
- o Insert a new circlip.

Note



Check the installation position is correct.



© 426759




3.

Assembly of the piston and connecting rod drum

- o Insert the connecting rod bearing shell into the connecting rod drum.

WARNING



Take care to couple the bearing shells. The anti-twist safety (1) must enter the groove (2).




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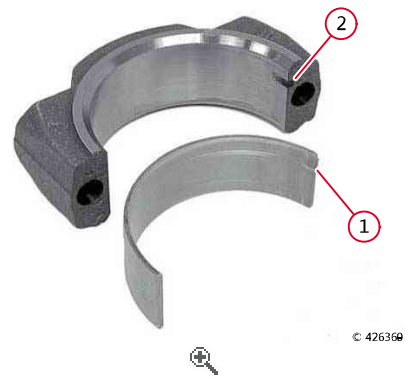
1.

- o Insert the connecting rod bearing shell into the relative flanged bearing cover.

WARNING



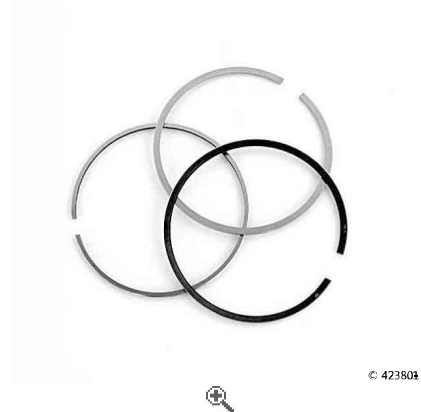
Take care to couple the bearing shells. The anti-twist safety (1) must enter the groove (2).



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2.

- Offset the piston ring joints by approx. 120°.
- Check the piston rings and grooves.
See para. Check the piston rings and piston grooves (L3)



© 423803

3.

- Lightly oil the cylinder sliding surface, piston, piston rings and connecting rod pins.
- Tighten the piston rings with a compression collar (1).



Note

Never rotate the piston rings.



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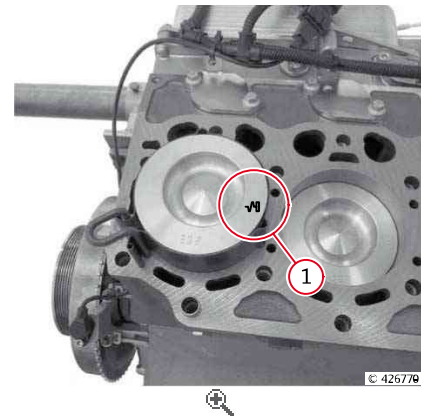
4.

- Move the connecting rod pins to the bottom dead centre.
- Insert the piston in the cylinder with the connecting rod drum.

WARNING



Pay attention to the piston cylinder allocation. Mark the assembly position on the bottom of the piston. The flywheel/crankshaft symbol (1) must be facing the flywheel. The piston ring blocking tape must rest flat on the crankcase.



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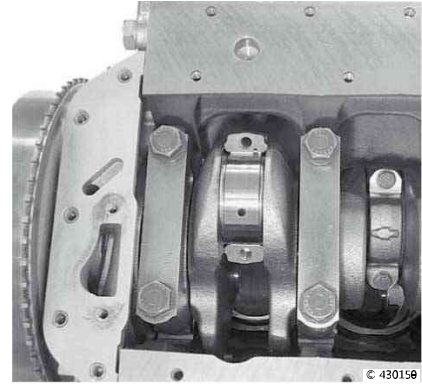
5.

- Delicately press the connecting rod drum against the connecting rod pins.



WARNING

Do not bend the connecting rod drum with the crankshaft.



© 430158

6.

Assembly of the flanged bearing cover

- o Apply the flanged bearing cover.

WARNING



The allocation of the connecting rod drum and flanged bearing cover must be maintained. If the connecting rod drum and the flanged bearing cover are switched when assembled, the connecting rod drum will not be usable! Do not damage the breaking surfaces of the connecting rod drum and flanged bearing cover!

Note



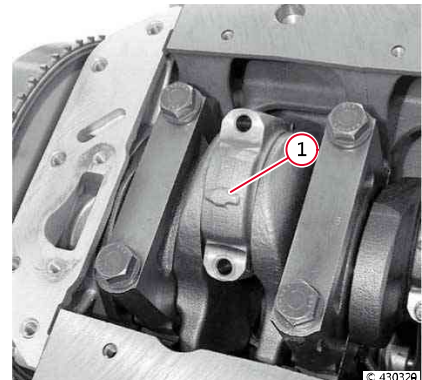
The arrow (1) on the connecting rod bearing cover must face towards the preceding cover.

1.

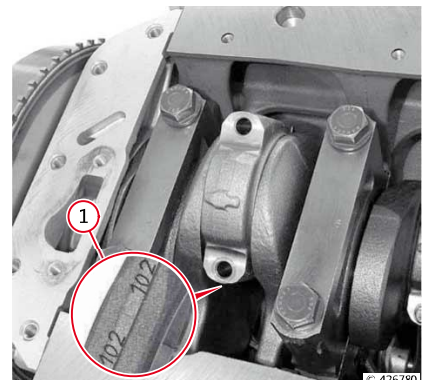
WARNING



Pay attention to coupling the flanged bearing cover. The numeric marks (1) on the connecting rod drum and on the connecting rod bearing cover must be identical and positioned in front of each other during assembly.



© 430328



© 426788

2.

- o Tighten the new screws using the rotation angle gauge.
See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine

WARNING



The screws must be renewed after being removed.



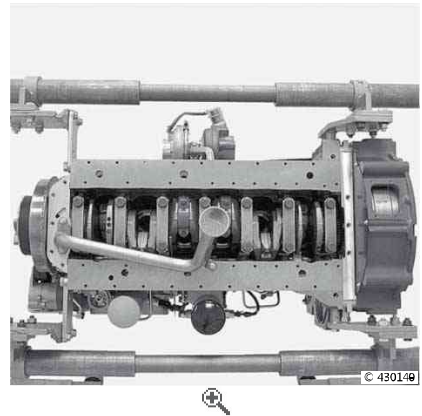
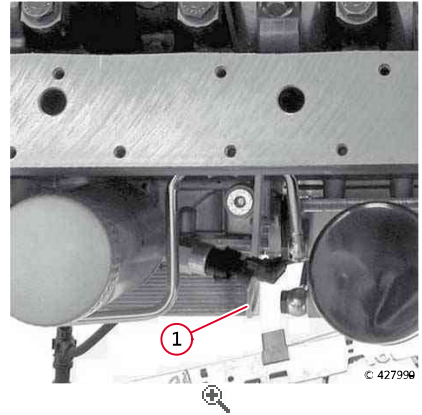
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3.

- o Insert dipstick (1)

4.

- Fit the oil suction pipe.
See para. Assembly and disassembly of the oil intake pipe (L3)
- Assemble the cylinder head.
See para. Disassembly and assembly of the cylinder head (L3)



5.



Check the piston (L3)

Commercially available tools:

- Palmer
- Internal bore meter

Special tools:

- Dial gauge: 100400



Note

If the piston wear limit was reached, replace it.

Check of the piston pin hole

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

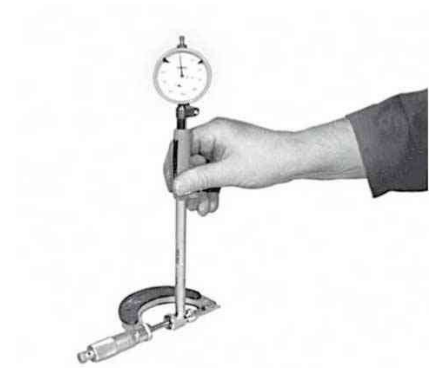


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1.

- o 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 39 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".



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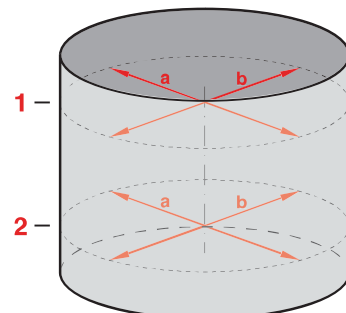


2.



Note

Measurement diagram of the piston pin hole in points "a" and "b" in surfaces "1" and "2".



© 372394



3.

- o Insert the internal bore meter in the piston pin hole.
- o 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.



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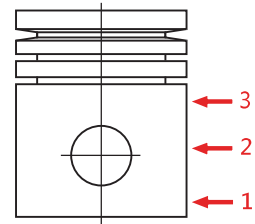
4.

Check the piston diameter



Note

Measurement diagram of the piston diameter in points "1, 2 and 3", transversal to the piston pin hole.



© 372444

1.

- o Measure the clearance of the piston pin with the palmer.
See para. Test and adjustment data (L3)



Note

Measurement points, see diagram.

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



© 364852

2.



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.



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1.

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

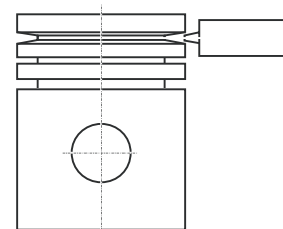


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2.

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



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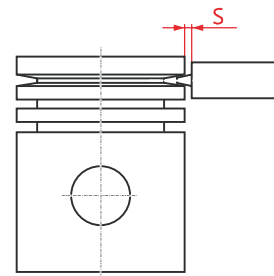


3.



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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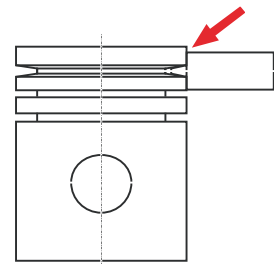


4.



Note

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



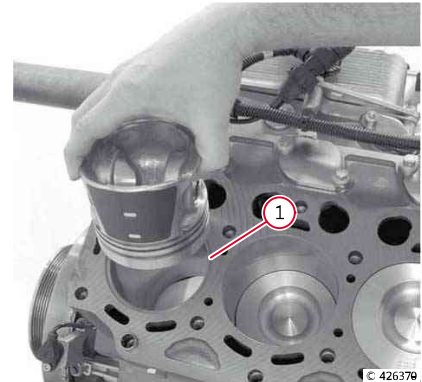
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5.

Check the coupling clearance of the piston rings

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



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1.

- o 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.



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2.

- o 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

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