



HURLIMANN XL160 DCR
Tractor
Service Repair Manual
(Serial No: 10010 and up;
30000 and up)



Assembly and disassembly of the crankshaft (L3)

Special tools:

- Rotation device: 100330

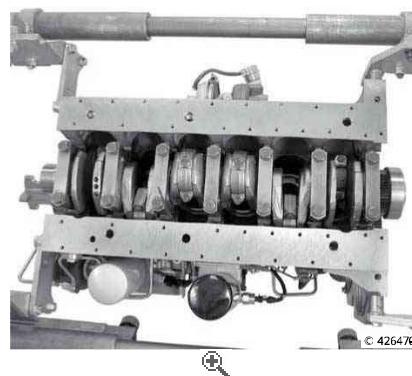
WARNING



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!

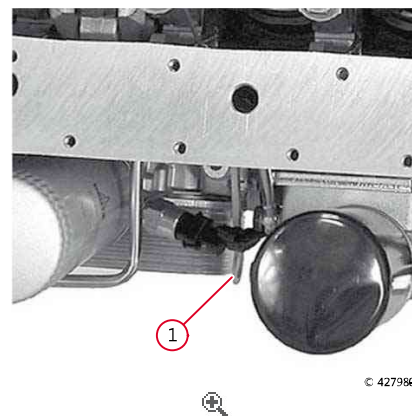
Disassembly of the crankshaft

- Disassemble the gear box cover (flywheel side).
See para. Disassembly and assembly of the gear case cover (L3)
- Disassemble the front cover (opposite end to flywheel).
See para. Removal and refitting of the front cover (opposite end to flywheel) (L3)



1.

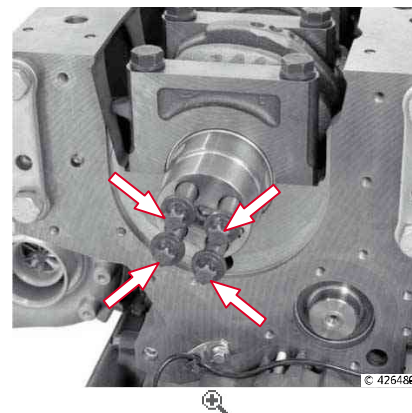
- Remove dipstick (1)



2.

Disassembly of the flanged bearing cover

- Tighten the screws (arrowed).



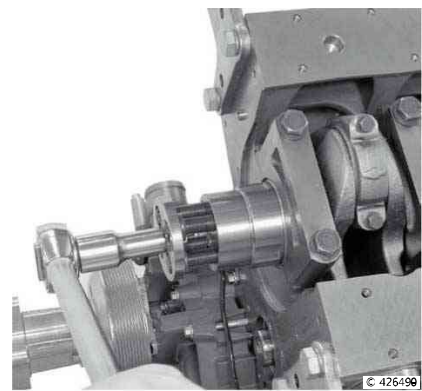
1.

- Move the connecting rod pins of the respective cylinder to the lower dead centre.

WARNING



Make sure the connecting rod drums do not bend at an angle during crankshaft rotation.



2.

- o Remove screws (1).
- o Remove flanged bearing cover (2).
- o Remove the bearing shell.

WARNING

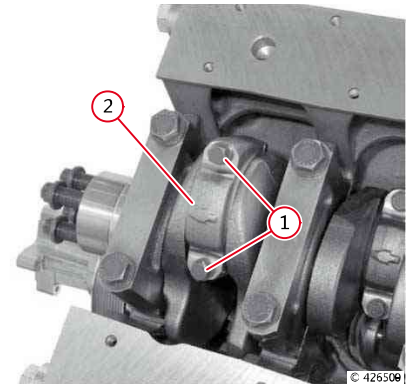


The allocation of the connecting rod drum and flanged bearing cover must be maintained. If the connecting rod drum and the flanged bearing cover are switched when assembled, the connecting rod drum will not be usable! Do not damage the breaking surfaces of the connecting rod drum and flanged bearing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



Note

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



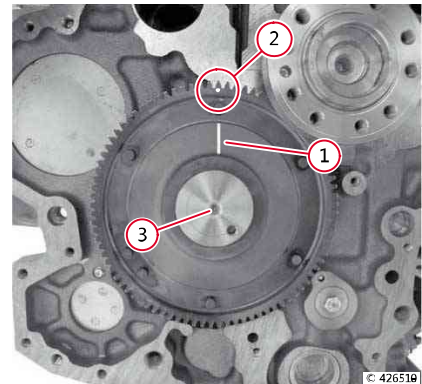
3.

- o Place the mark of reference (1) on the ring gear of the camshaft.



Note

The reference mark must be located on a line between the marking (2) and the mid point (3) of the camshaft.



4.

- o Uniformly rotate the crankshaft until the mark (1) on the flange of the shaft coincides with the auxiliary mark (2) on the camshaft ring gear.



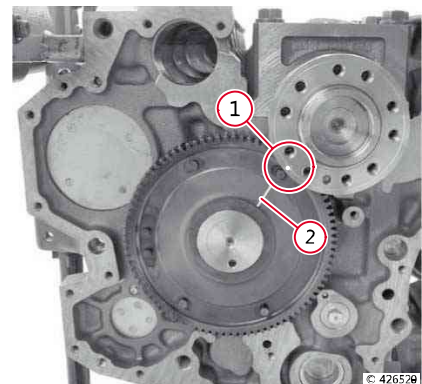
Note

If the crankshaft flange is aligned, the mark on the camshaft ring gear will be covered.

WARNING



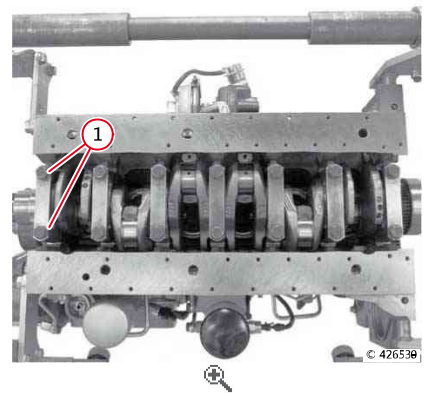
Do not bend the connecting rod drums while rotating the crankshaft.



5.

Disassembly of the main bearing cover

- o Unscrew all the screws (1) using the long reach socket.



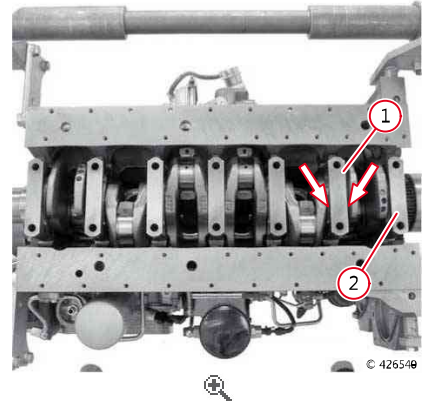
1.

- Remove flanged bearing cover (1).
- Remove the bearing shell.
- Remove the two halves of the thrust ring (arrows).
- Remove all the main bearing covers (2).
- Remove the bearing shells.



Note

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



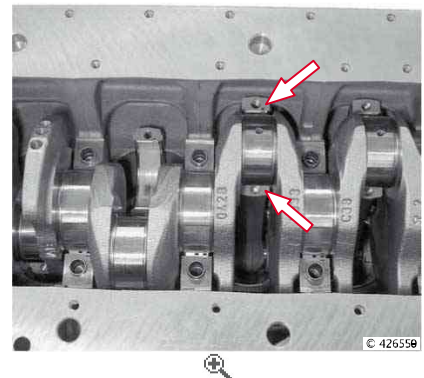
2.

- Delicately extract the connecting rod drums from the relative pins.

WARNING

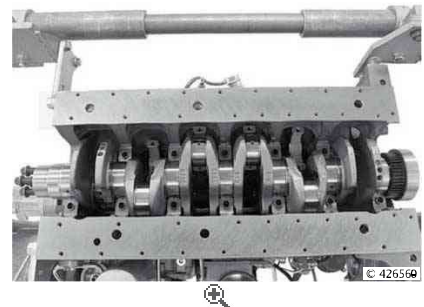


The allocation of the connecting rod drum and flanged bearing cover must be maintained. If the connecting rod drum and the flanged bearing cover are switched when assembled, the connecting rod drum will not be usable! Do not damage the breaking surfaces of the connecting rod drum and flanged bearing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



3.

- Extract the crankshaft by applying leverage.



4.

- Remove the two halves of the thrust ring (arrows).
- Remove all the main bearing shells (1).
- Remove all the connecting rod bearing shells (2).

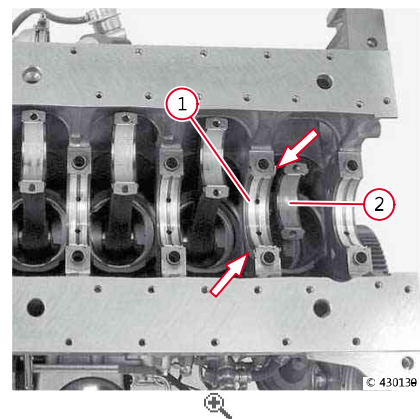
Note



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

- Visually check the wear of the components.

- o Check the endfloat of the crankshaft (disassembled crankshaft).
See para. Crankshaft check (L3)



5.

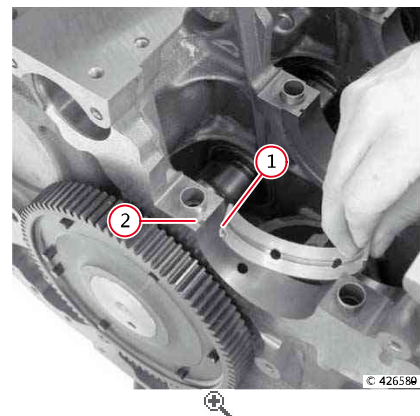
Assembly of the crankshaft

- o Insert the upper shells of the main bearings.



WARNING

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



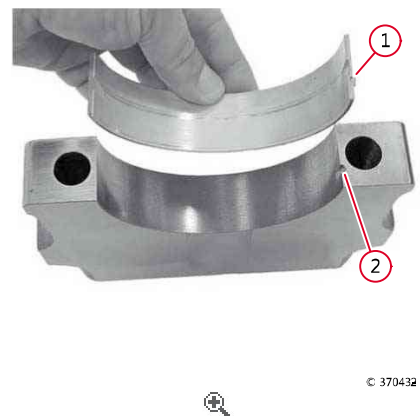
1.

- o Insert the lower shells of the main bearings in the relative main bearing covers.



WARNING

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



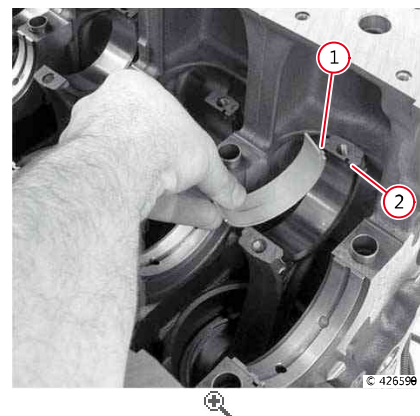
2.

- 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).



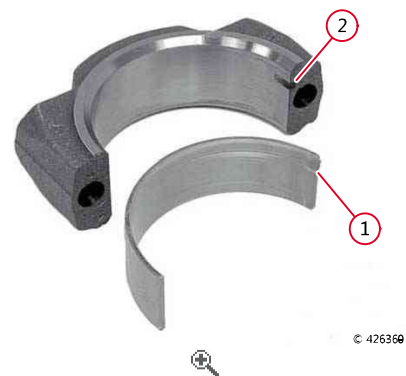
3.

- 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).

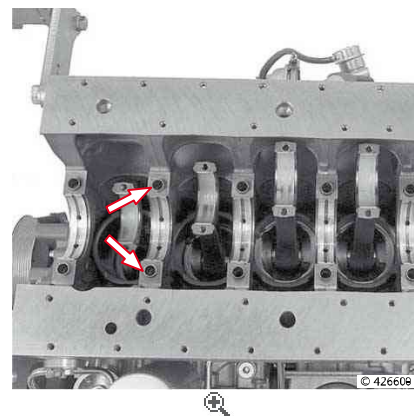


4.



Note

Make sure all the tightening bushes are present (arrows).



5.

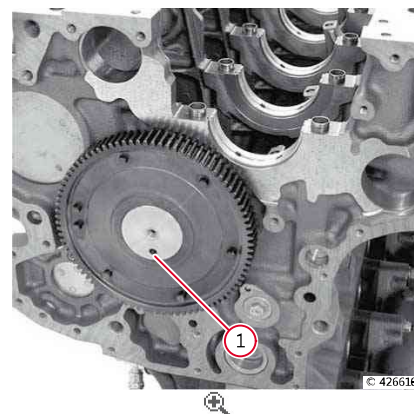
- Position the camshaft.



Note

Align the hole (1) in the direction of the cylinder head.

- Oil the surfaces of the bearings.



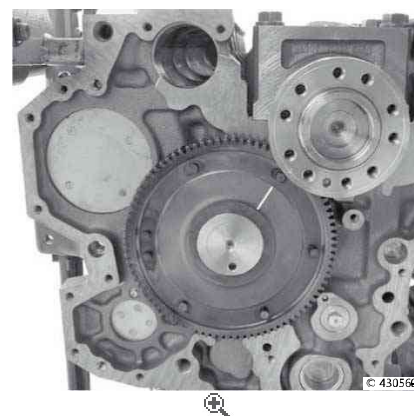
6.

- Delicately insert the crankshaft in the crankcase.

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! Do not bend the connecting rod drums while inserting the crankshaft!



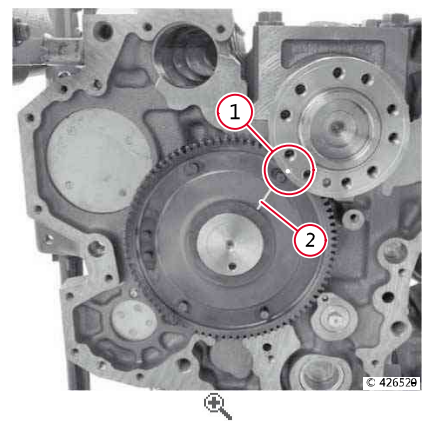
7.

- Move the crankshaft in correspondence of the camshaft.



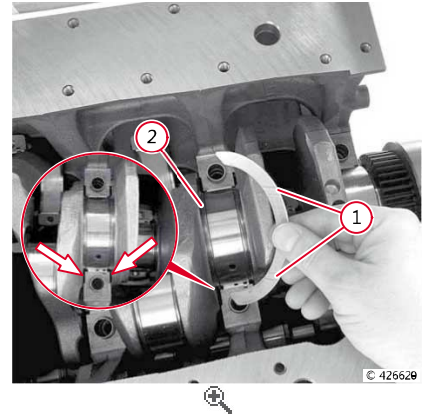
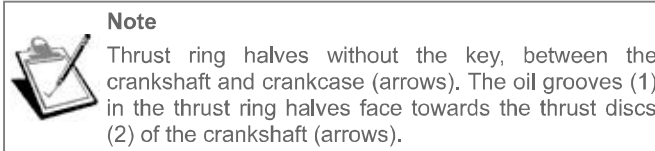
Note

The mark (1) on the flange of the crankshaft must line up with the reference mark (2).



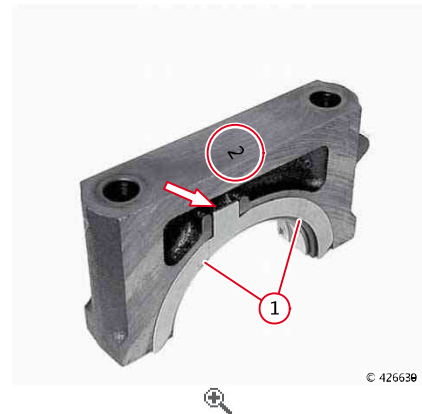
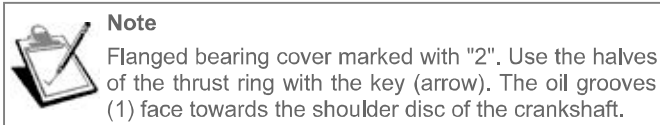
8.

- Assemble the upper thrust ring halves based on the measured endfloat.



9.

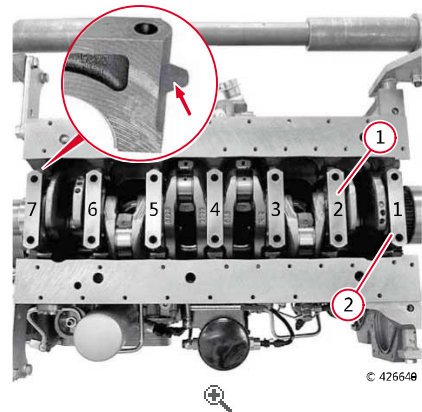
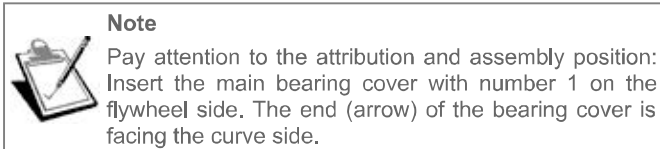
- Fix the two thrust ring halves with a small amount of grease on the flanged bearing cover.



10.

Assembly of the main bearing cover

- Insert the flanged bearing cover (1).
- Insert the main bearing cover (2) based on the numbering.



1.

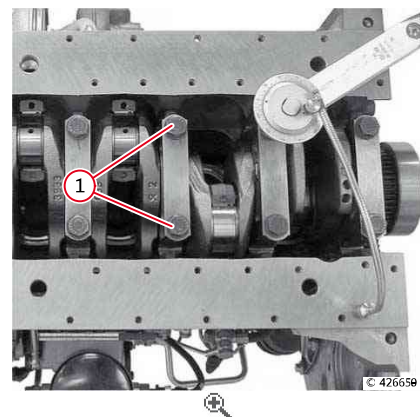
- Main bearing cover with socket wrench insert and rotation angle gauge.
See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine



WARNING

In the case of written certification, the screws can be used a

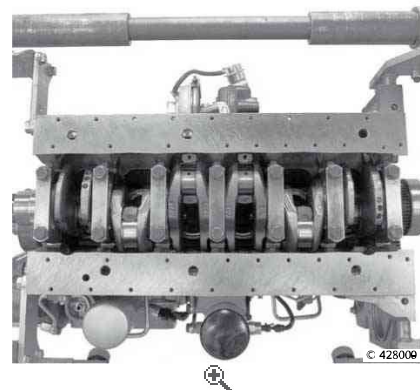
maximum of 3 times. Otherwise, replace the screws each time after being removed.



2.

Assembly of the flanged bearing cover

- o Carefully tighten the connecting rod drums on the connecting rod pins.
- o Move the connecting rod pins to the bottom dead centre.



1.

- o Apply the flanged bearing cover.

WARNING

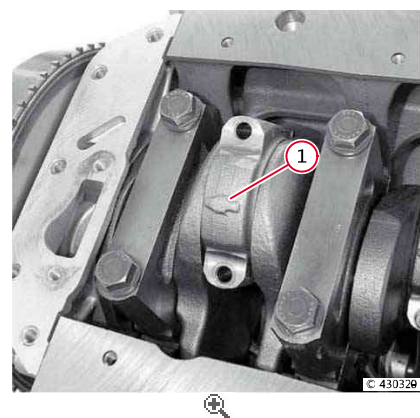


The allocation of the connecting rod drum and flanged bearing cover must be maintained. If the connecting rod drum and the flanged bearing cover are switched when assembled, the connecting rod drum will not be usable! Do not damage the breaking surfaces of the connecting rod drum and flanged bearing cover! Make sure the connecting rod drums do not bend at an angle during crankshaft rotation.



Note

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

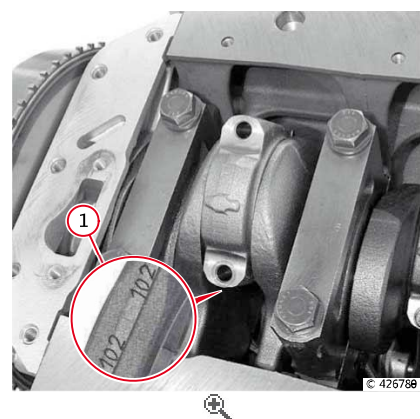


2.

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.



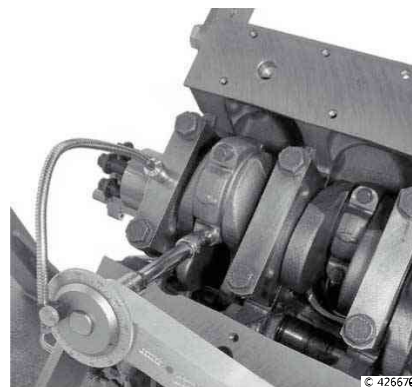
3.

- o Tighten the new screws with the box spanner insert and the rotation angle gauge.
See para. Tightening requirements TCD 2012 L04/L06 2V DCR engine

WARNING

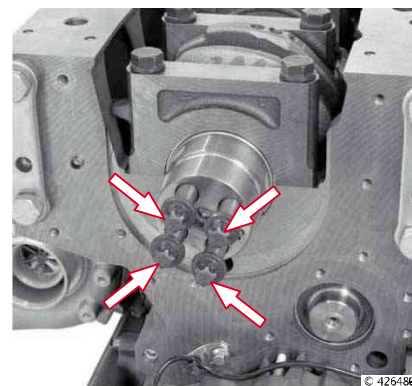


The screws must be renewed after being removed.



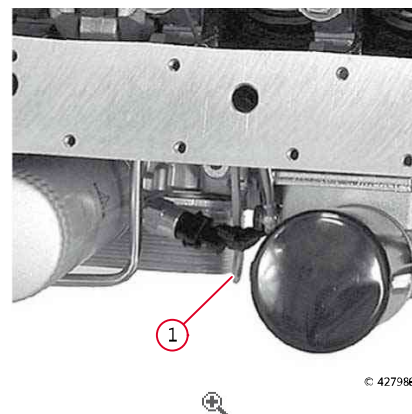
4.

- Unscrew the screws (arrowed).



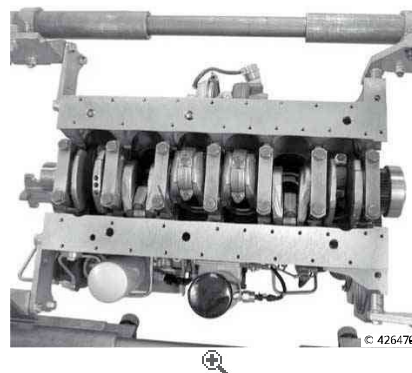
5.

- Insert dipstick (1)



6.

- Assemble the front cover (opposite end to flywheel).
See para. Removal and refitting of the front cover (opposite end to flywheel) (L3)
- Assemble the gear case cover (flywheel side).
See para. Disassembly and assembly of the gear case cover (L3)



7.



Crankshaft check (L3)

Commercially available tools:

- Magnetic stand for measurements
- Palmer
- Internal bore meter
- Prisms
- Hardness tester

Special tools:

- Dial gauge: 100400



Note

Perform modification on the outer side, on the flywheel side of the crankshaft. H = polished main bearing pin P = polished big end bearing pin. In the event of crankshaft wear, have the crankshaft repaired at one of our service centres.

Check the hardness of the main journal

- Disassemble the crankshaft.
See para. Assembly and disassembly of the crankshaft (L3)
- Rest the crankshaft on the prisms.



© 426029



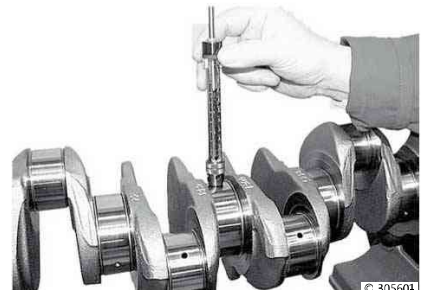
1.

- Measure the hardness of the crankpin with the hardness tester.
See para. Test and adjustment data (L3)



Note

The measurement values must be converted using the tester table.



© 305601

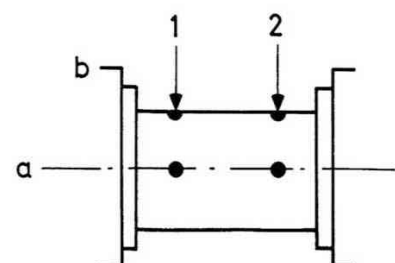


2.



Note

Measurement diagram of the main journals on points 1 and 2 in surfaces a and b.



© 364242

3.

Check the diameter of the main bearing pins

- o Measure the main bearing pins with the palmer.
See para. Test and adjustment data (L3)



Note

Measurement points, see diagram.



1.

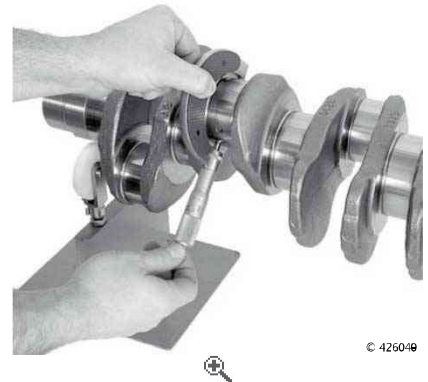
Check the diameter of the connecting rod pins

- o Measure the main journal with the palmer.
See para. Test and adjustment data (L3)



Note

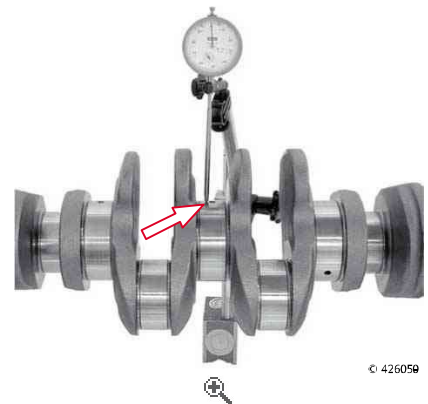
Measurement points, see diagram.



1.

Check the coaxiality

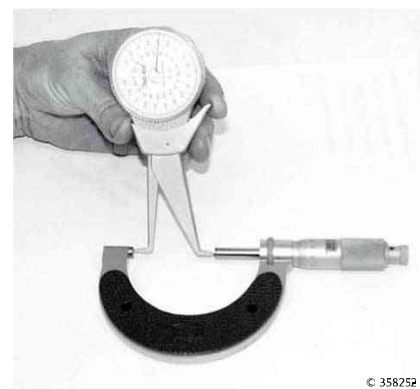
- o Apply the magnetic stand for measurements.
- o Insert the dial gauge.
- o Apply the preloaded probe on the main bearing pins (arrow) and adjust the dial gauge to "0".
- o Uniformly turn the crankshaft and check the coaxiality.
See para. Test and adjustment data (L3)
- o Remove the magnetic stand for measurements.
- o Disassemble the dial gauge.



1.

Measuring the length of the flanged bearing

- o Adjust the palmer to 32 mm.
- o Push the internal bore meter between the test surfaces of the palmer and bring to "0".



© 358252



1.

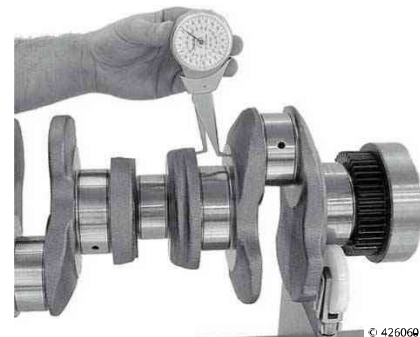
- Measure the width of the flanged bearing using the internal bore meter between the support surfaces of the thrust rings.
- Make a note of dimension (a).

See para. Test and adjustment data (L3).



Note

The measurement (a) is necessary to determine endfloat.



© 426069



2.

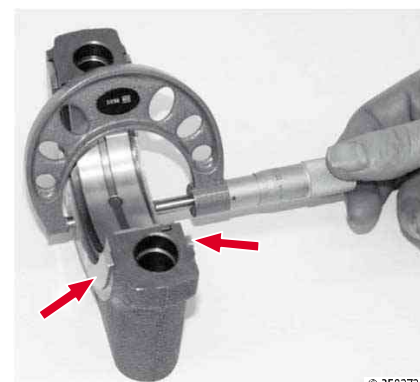
Check the endfloat

- Apply the thrust ring halves on the flanged bearing cover (arrows).
- Measure the width with the palmer.
- Make a note of dimension (b).



Note

The measurement (b) is necessary to determine endfloat.



© 358272



1.

- Determine the endfloat.

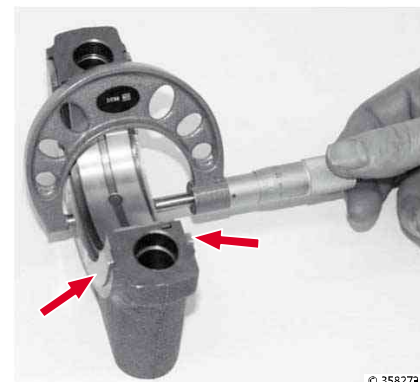
See para. Test and adjustment data (L3).



Note

Use the corresponding halves of the thrust ring (arrow).

See para. Test and adjustment data (L3).



© 358272



Calculation example:

Target:	Endfloat
Measured value:	(a) = 32.2 mm
	(b) = 32.1 mm
Calculation:	Dimension (a) - dimension (b)
The results of all this are:	= 0.1 mm

2.

Visual inspection

- Inspect the sliding surfaces (1) of the crankshaft O-rings.
 - Inspect the ring gear (2).
 - Assemble the crankshaft.
- See para. Assembly and disassembly of the crankshaft (L3)



© 426079



1.

T.\$77.21.B0.04.00.00.01 - v1



Replace the crankshaft O-ring (flywheel end) (L3)

Commercially available tools:

- Bradawl: 8198
- Assembly lever: 9017

Special tools:

- Assembly tool: 142830
- Self-tapping screw
- Washer

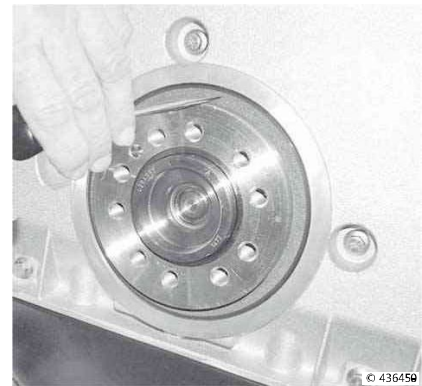
Removal of the crankshaft oil seal

- Remove the flywheel.
See para. Assembly and disassembly of the flywheel (L3)
- Using a bradawl, make a hole about 3 mm in diameter in the old crankshaft oil seal.



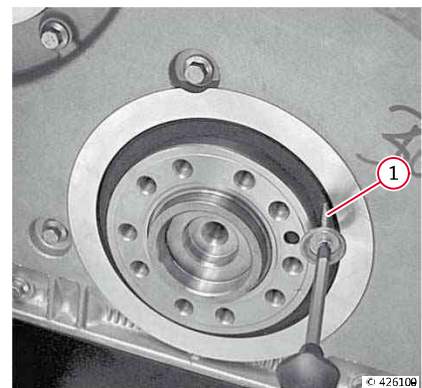
WARNING

Do not damage the gearbox cover or the crankshaft.



1.

- Insert a self-tapping screw (1) with washer.



2.

- Extract the crankshaft O-ring using the assembly lever.
- Carefully examine the crankshaft O-ring sliding surfaces.

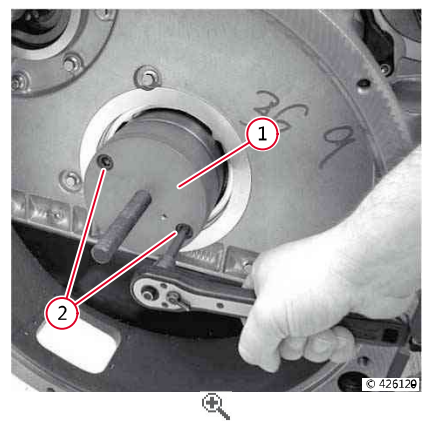
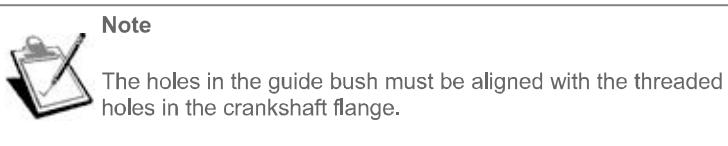


3.

Fit the crankshaft O-ring

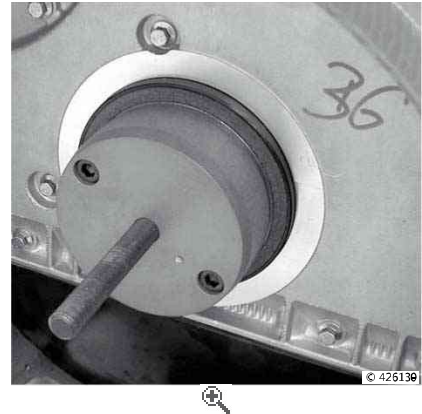
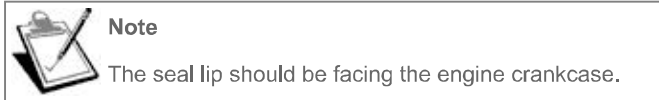
- Fit guide bush (1).

- o Tighten screws (2).



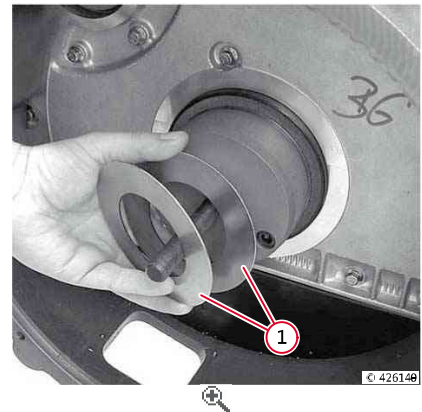
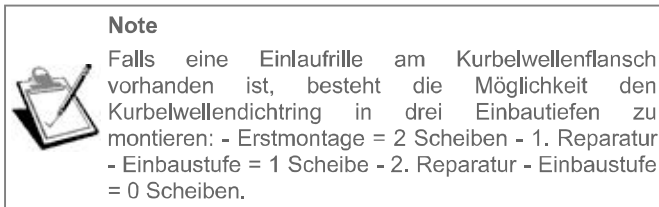
1.

- o Lightly oil the lip of the crankshaft O-ring.
- o Carefully place the crankshaft O-ring on the sliding surface.



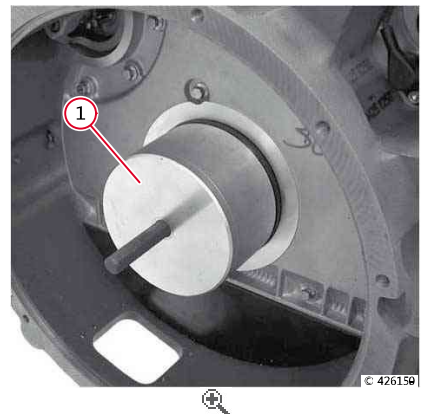
2.

- o Distanzscheiben (1) ansetzen.



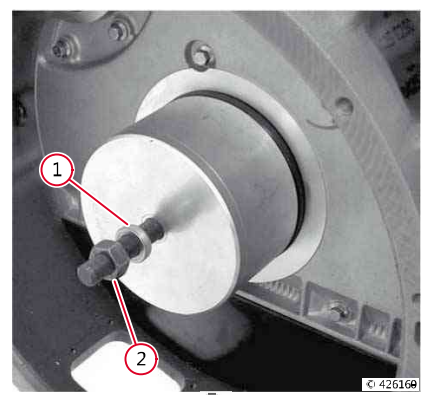
3.

- o Fit installation bush (1).
- o Push the crankshaft O-ring to the support.



4.

- o Insert bearing (1).
- o Screw in nut (2);



5.

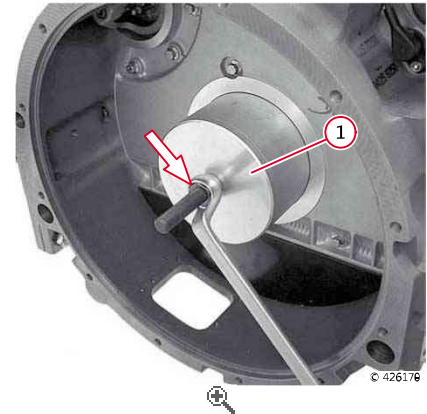
- Screw in the nut until it seats against installation bush (1).



Note

The crankshaft oil seal is now installed at the correct depth.

- Remove the installation tool.
- Fit the flywheel.
See para. Assembly and disassembly of the flywheel (L3)



6.

**Thank you very much for
your reading. Please Click
Here. Then Get COMPLETE
MANUAL. NO WAITING**



NOTE:

**If there is no response to
click on the link above,
please download the PDF
document first and then
click on it.**



Replace the crankshaft O-ring (opposite end to flywheel) (L3)

Commercially available tools:

- Bradawl: 8198
- Assembly lever: 9017

Special tools:

- Assembly tool: 142670
- Self-tapping screw
- Washer

Removal of the crankshaft oil seal

- Remove the torsional vibration damper
See para. Disassembly and assembly of the torsional vibration damper (L3).
- Using a bradawl, make a hole about 3 mm in diameter in the old crankshaft oil seal.



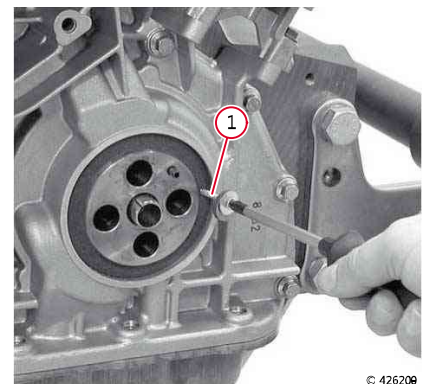
WARNING

Be careful not to damage the front cover or the crankshaft.



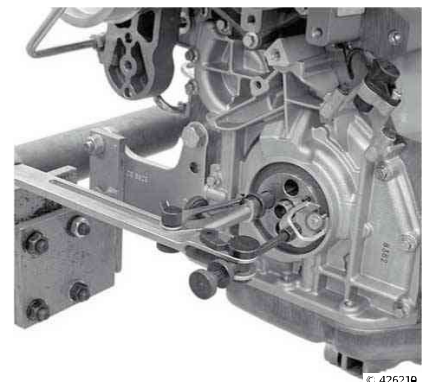
1.

- Insert a self-tapping screw (1) with washer.



2.

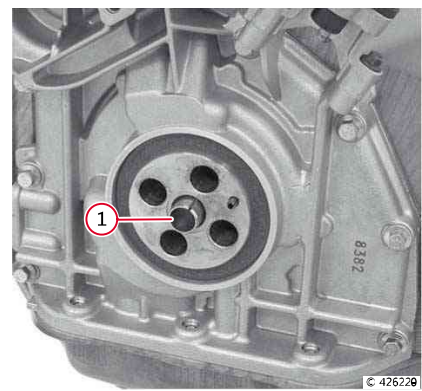
- Extract the crankshaft O-ring using the assembly lever.
- Carefully examine the crankshaft O-ring sliding surfaces.



3.

Assembly of the crankshaft O-ring

- Remove tightening bush (1).



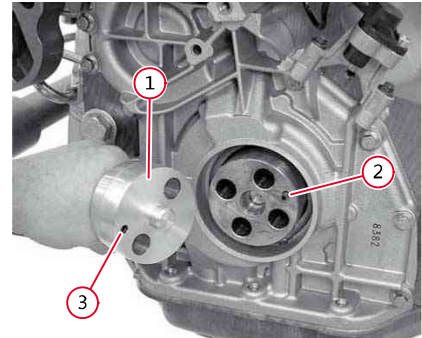
1.

- o Fit guide bush (1).



Note

Check that locating dowel (2) is aligned with hole (3).



© 426239



2.

- o Tighten (1) the screws.



© 426240



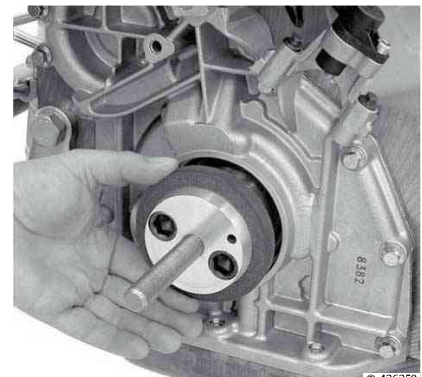
3.

- o Lightly oil the lip of the crankshaft O-ring.
- o Carefully place the crankshaft O-ring on the sliding surface.



Note

The seal lip should be facing the engine crankcase.



© 426250



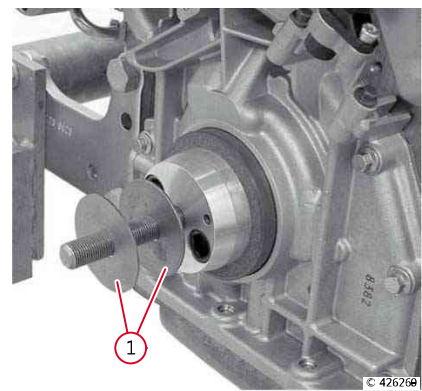
4.

- o Fit spacer (1).



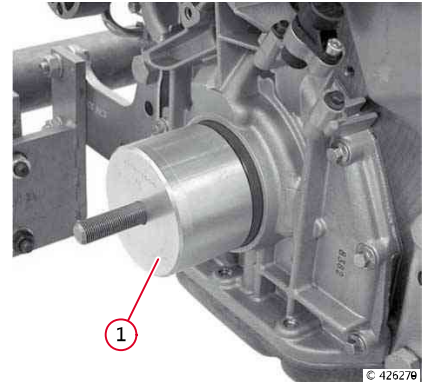
Note

If the crankshaft flange has an entry groove, the O-ring can be installed at three different depths: First assembly = 2 washers, 1st repair - assembly level = 1 washer - 2nd repair - assembly level = 0 washers.



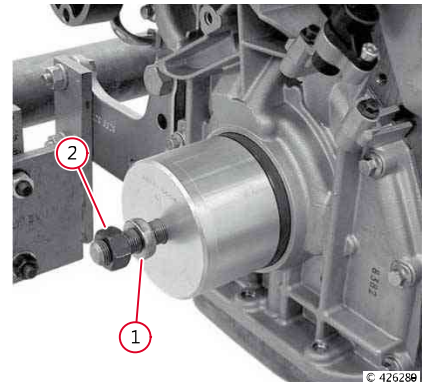
5.

- o Fit installation bush (1).
- o Push the crankshaft O-ring to the support.



6.

- o Insert bearing (1).
- o Screw in nut (2);



7.

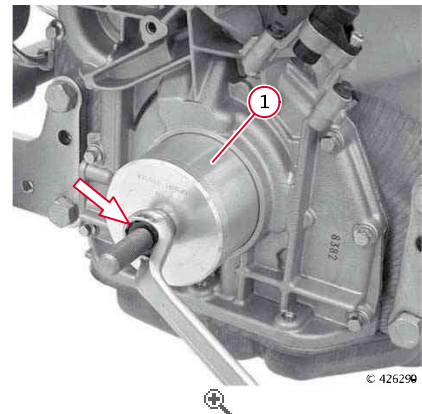
- o Screw in the nut until it seats against installation bush (1).



Note

The crankshaft oil seal is now installed at the correct depth.

- o Remove the installation tool.



8.

- o Insert bush (1) fully.
- o Fit the torsional vibration damper.
See para. Disassembly and assembly of the torsional vibration damper (L3).