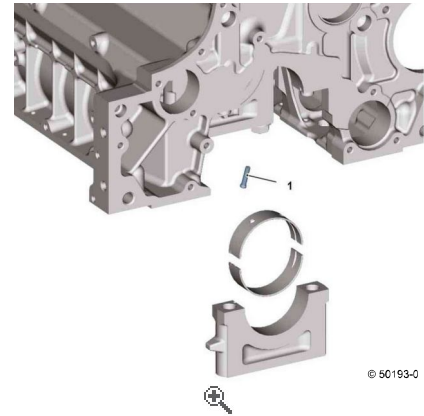




## Assembly and disassembly of the piston cooling nozzles (L3)

### Disassembly of the piston cooling nozzles

1. Piston cooling nozzle

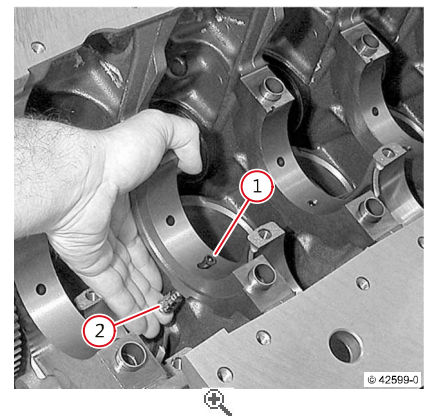


1.

- o Disassemble the crankshaft.



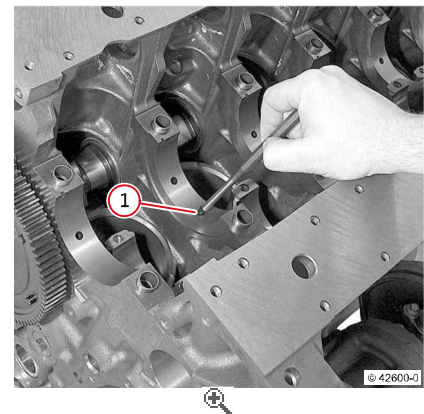
- o Push out the piston cooling nozzle (1) using a suitable tool (2).
- o Carry out a visual inspection of the components.



2.

### Assembly of the piston cooling nozzles

- o Clean the holes for the piston cooling nozzles in the crankcase.
- o With the bolt, insert a new piston cooling nozzle (1) to the stop.
- o Assemble the crankshaft.



1.



## Replacing the starter ring gear on the flywheel (L3)

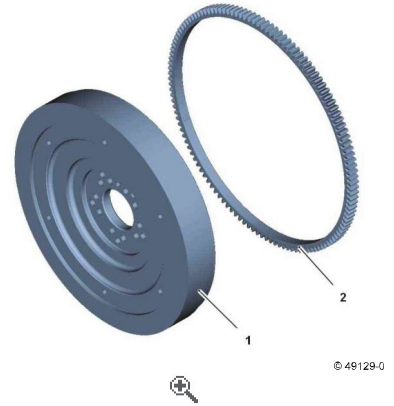


### DANGER

Risk of accident, do not touch hot components!

### Disassembly of the starter ring gear

1. Flywheel
2. Ring gear

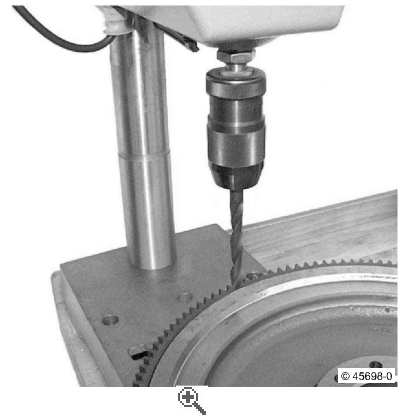


1.
  - o Perforate the ring gear.



#### Note

Counterhold the flywheel using a suitable tool.



2.
  - o Remove the starter ring gear with a suitable tool.
  - o Clean the flywheel.



3.

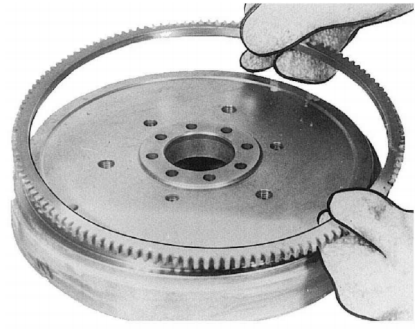
### Assembly of the starter ring gear

- o Heat the starter ring gear to 220 °C.
- o Position the starter ring gear on the flywheel.



#### Note

The starter ring gear must rest evenly on the flywheel support flange.



© 45701-0



1.

T.\$84.21.B0.02.03.00.03 - v1



## Fitting and removing counterweight drive system, checking (L3)

Readily available commercial tools:

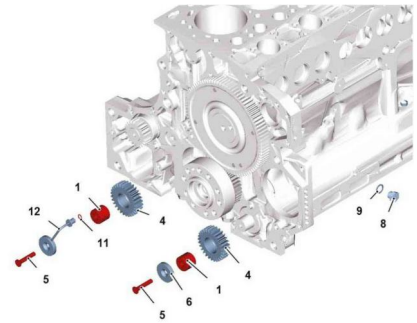
- Torque wrench

Special tools:

- Alignment pins (q.ty 2): 100810
- Plaster
- DEUTZ DW 72 mastic

### Removing counterweight drive system

- 3 - Mounting pin
- 4 - Gear wheel
- 5 - Self-tapping screw
- 6 - Washer
- 8 - Hex screw
- 9 - O-ring
- 11 - O-ring
- 12 - Mounting pin



© 50330-0

1.

- Disassemble the gear case.



#### Construction unit

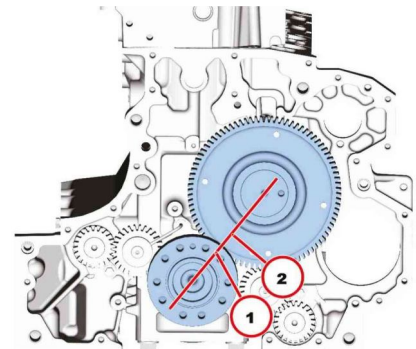
09

- Bring cylinder piston 1 to top dead centre.



#### Note

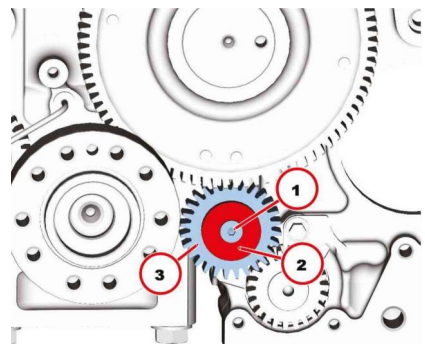
The mark (1) on the flange of the crankshaft must line up with the reference mark (2).



© 50305-0

2.

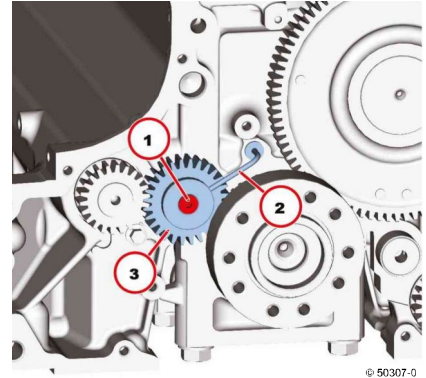
- Remove screw (1).
- Remove washer (2).
- Remove the intermediate wheel (3).
- Remove the bearing pin.



© 50306-0

3.

- Remove screw (1).
- Remove lube oil pipe (2).
- Remove the intermediate wheel (3).
- Remove the bearing pin.



© 50307-0



4.

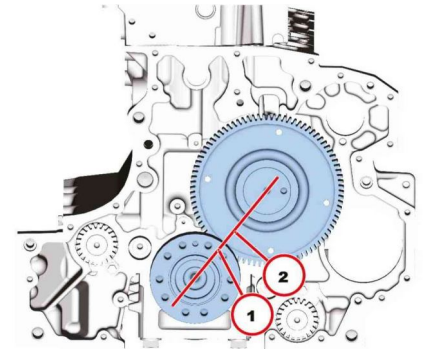
### Fitting the counterweight drive system

- o Bring cylinder piston 1 to top dead centre.



#### Note

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

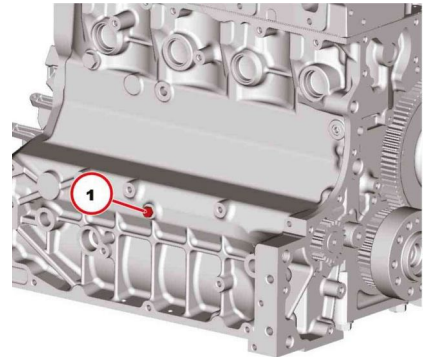


© 50305-1



1.

- o Do not fully unscrew drain plug (1).



© 50309-0



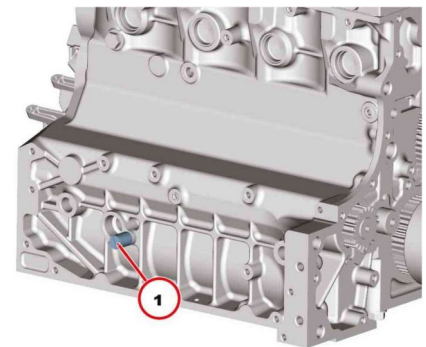
2.

- o Insert the centring pins (1).
- o Fasten the mass compensation shaft with the centring pins (1).



#### WARNING

Stop rotating the mass compensation shaft.

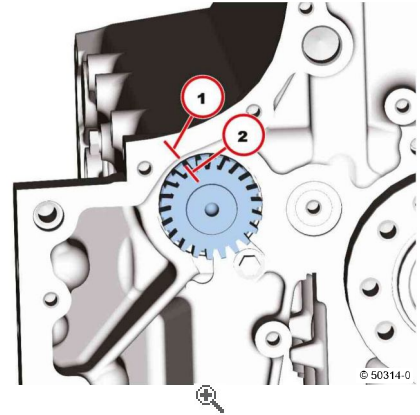


© 50311-0

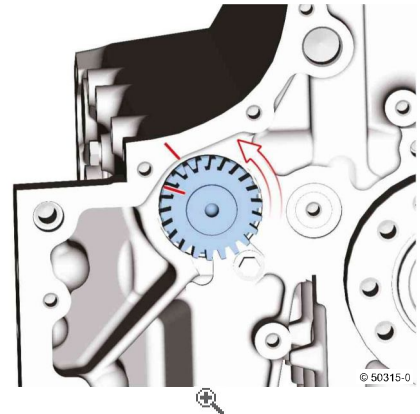


3.

- o Apply the reference marks (1) and (2).



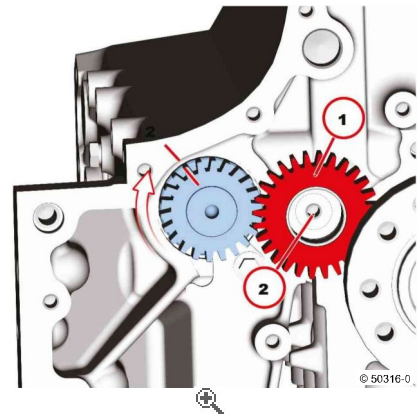
- 4.
- Unscrew the centring pins (side A).
  - Turn the mass compensation shaft of the two teeth in the direction of the arrow.



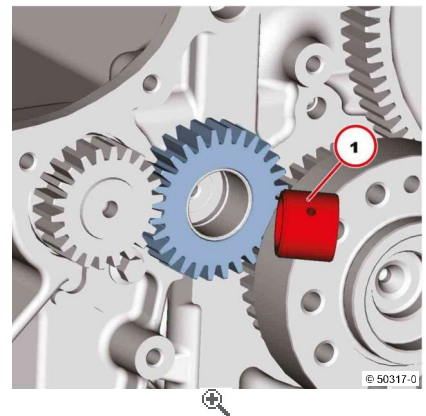
- 5.
- From above, engage the intermediate wheel (1) in the tothing.

**Note**

Turn the mass compensation shaft in the direction of the arrow until the reference marks coincide. Centre the intermediate wheel (1) with respect to the threaded hole (2).

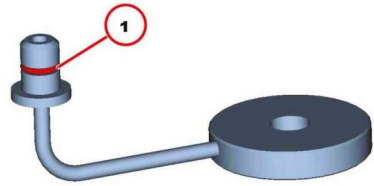


- 6.
- Lightly oil the bearing pins (1).
  - Insert the bearing pins (1).



- 7.
- Fit new O-ring (1).





© 50318-0



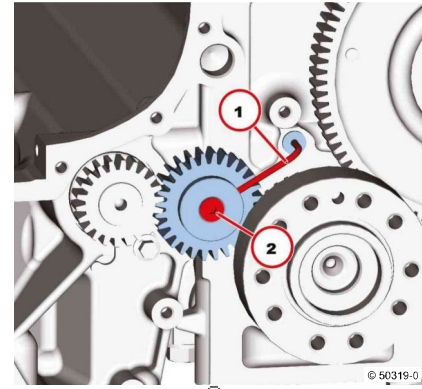
8.

- Fit lube oil pipe (1).
- Tighten screws (2).



**Note**

Insert the screw with DEUTZ DW 72 sealant. Do not tighten the screw at this stage.

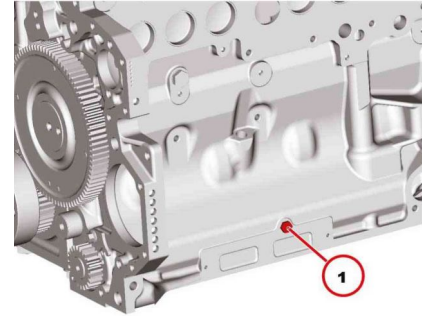


© 50319-0



9.

- Do not fully unscrew drain plug (1).



© 50308-0



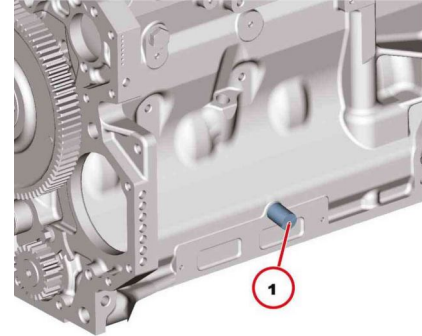
10.

- Insert the centring pins (1).
- Fasten the mass compensation shaft with the centring pins (1).



**WARNING**

Stop rotating the mass compensation shaft.



© 50310-0



11.

- Assemble the B side intermediate wheel.



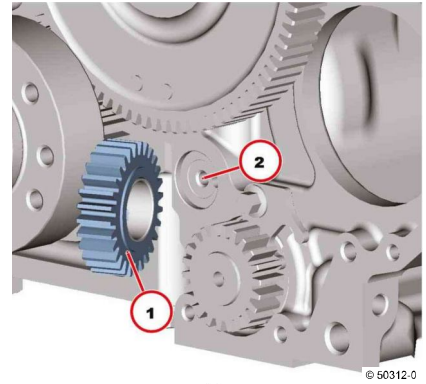
**Note**

Centre the intermediate wheel (1) with respect to the threaded hole (2). If the sides of the teeth do not coincide with the crankshaft, it can be rotated easily.



**WARNING**

Stop rotating the mass compensation shaft.



© 50312-0



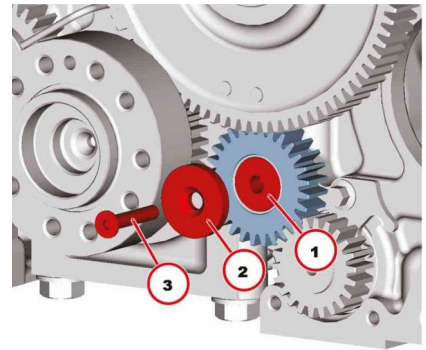
12.

- Lightly oil the bearing pins (1).
- Insert the bearing pins (1).
- Fit washer (2).
- Screw in the screw (3).



**Note**

Insert the screw with DEUTZ DW 72 sealant. Do not tighten the screw at this stage.

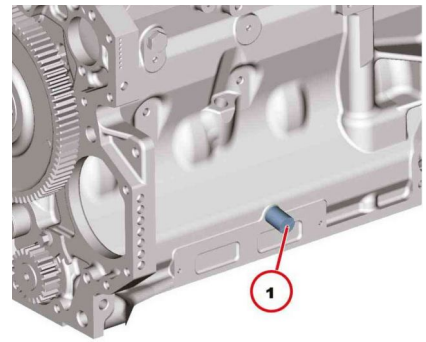


© 50313-0



13.

- Unscrew the centring pins (1).

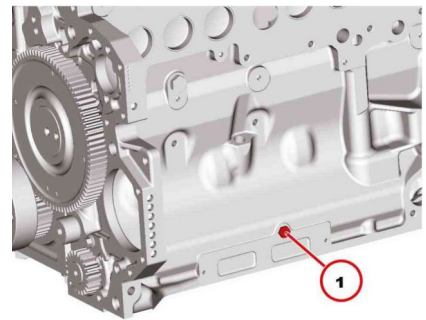


© 50316-0



14.

- Fit a new seal.
- Tighten the screw plug (1): 9 Nm



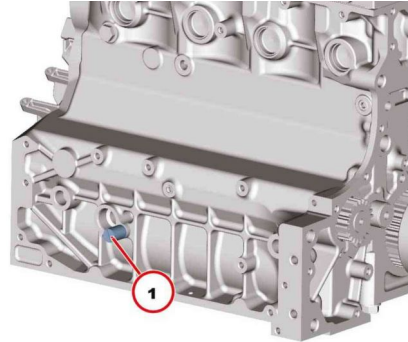
© 50308-0



15.

- Unscrew the centring pins (1).



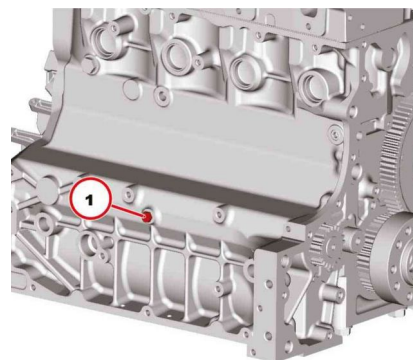


© 50311-0



16.

- Fit a new seal.
- Tighten the screw plug (1): 9 Nm



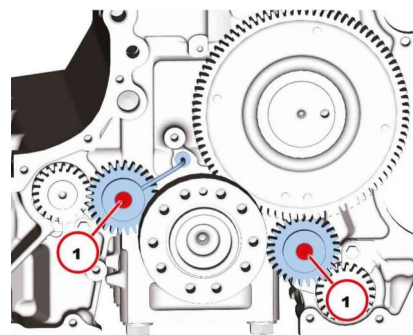
© 50309-0



17.

- Tighten the screws (1): 22 Nm
- Assemble the gear case.

	<b>Construction unit</b> 09
--	--------------------------------



© 50320-0




18.

## Technical data

### Tightening torque

ID no.	Designation	Screws type	Indications/observations	Value
A72 001	Screw plug (counterweight shaft) on crankcase			9 Nm
A72 003	Intermediate wheel on crankcase		Fit with DEUTZ DW 72 2 sealant	22 Nm

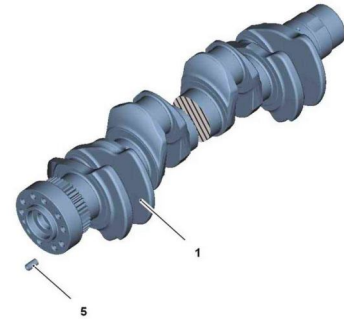
	<b>Note</b> When tightening fasteners to the specified torque using a torque wrench, a torque dispersion of +/- 10 % is permitted.
--	---



## Assembly and disassembly of the crankshaft (L3)

### Disassembly of the crankshaft

- o 1 - Crankshaft
- o 5 - Threaded insert



© 48779-0

1.

- o Disassemble the front cover.



**Construction unit**

01

- o Disassemble the gear case cover.



**Construction unit**

09

- o Disassemble the connecting rod drum.



**Construction unit**

06

- 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.

2.

- 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.

- o Disassemble the crankshaft bearing covers.



**Construction unit**

01

- o Disassemble the crankshaft bearings.

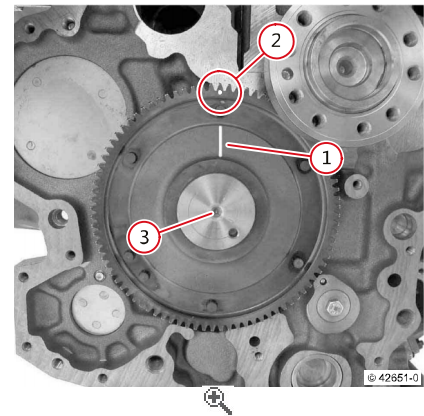


**Construction unit**

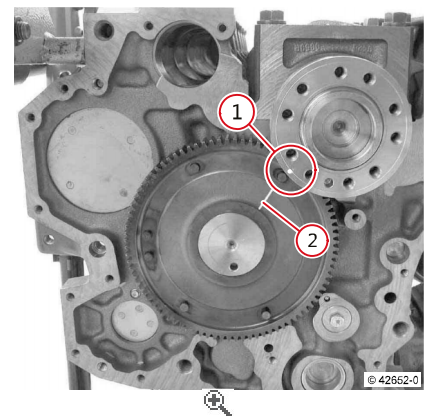
05

3.

- o Remove the crankshaft.



© 42651-0



© 42652-0

### Assembly of the crankshaft

- o Check the crankshaft endfloat.



**Construction unit**

05

- o Position the camshaft.

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