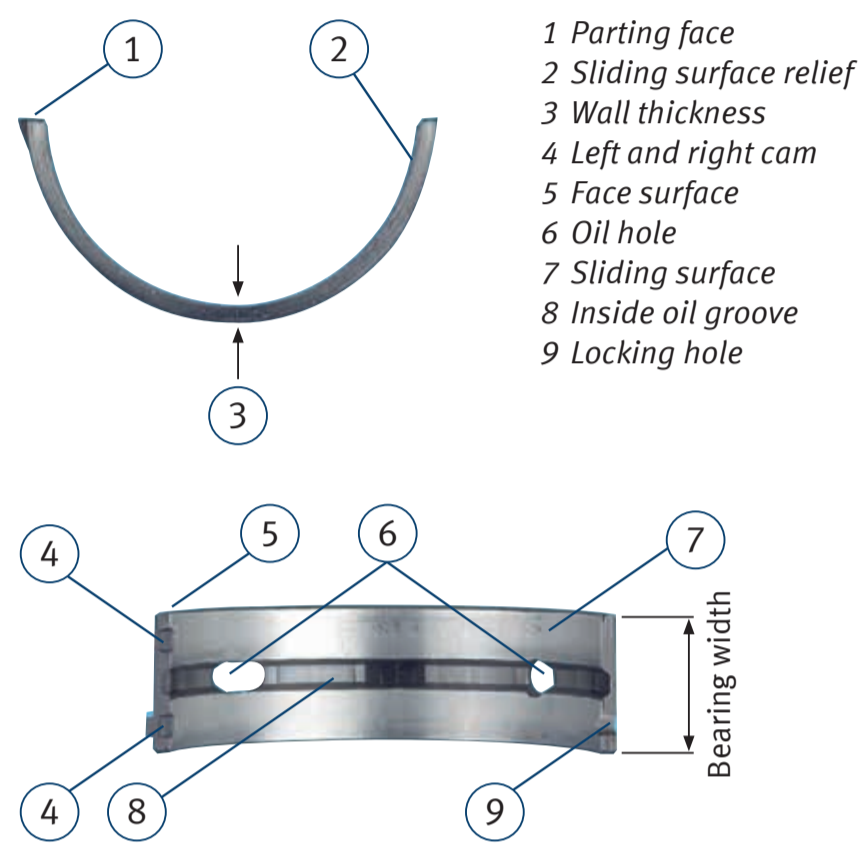


Installation of bearings

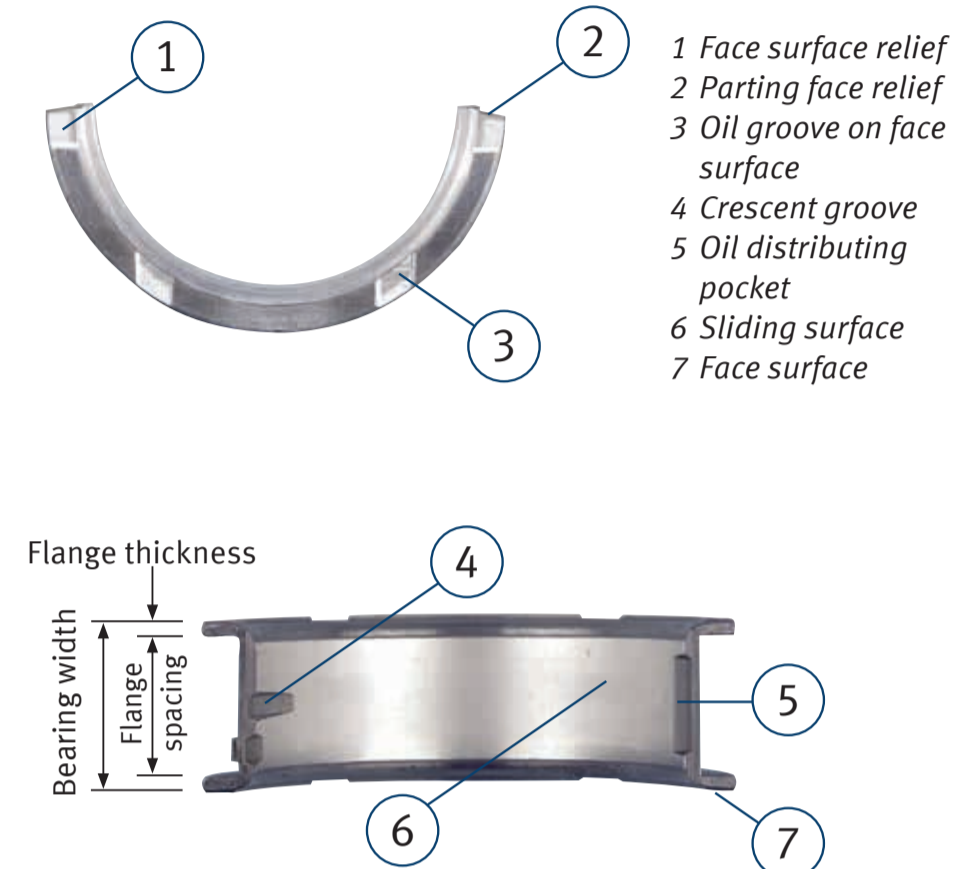
Step by step

Basic information

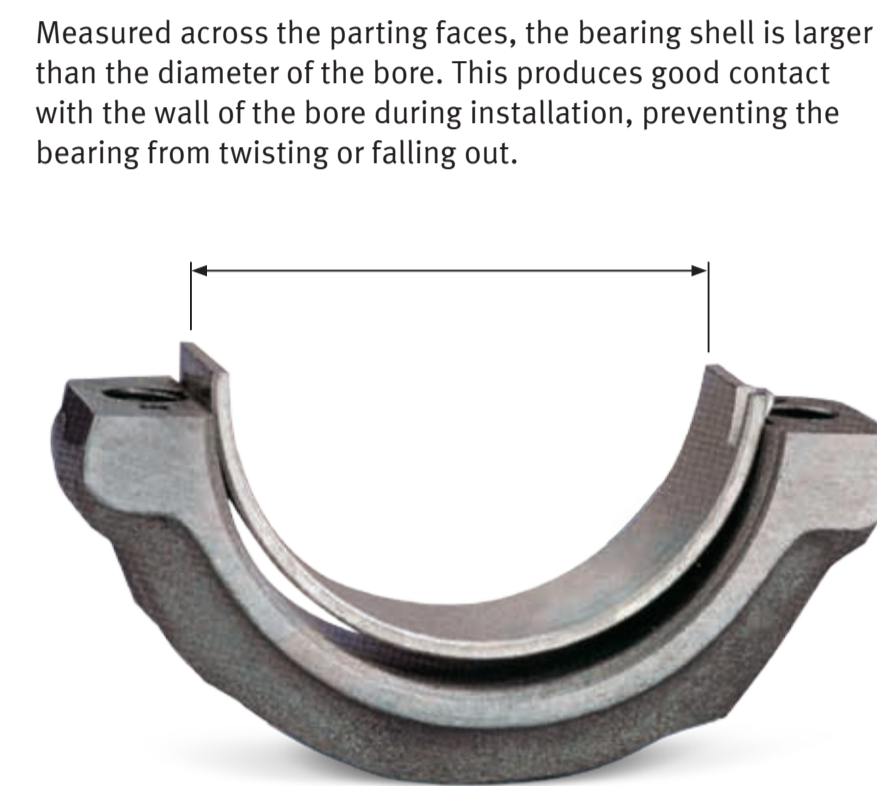
Details – flat bearing shells



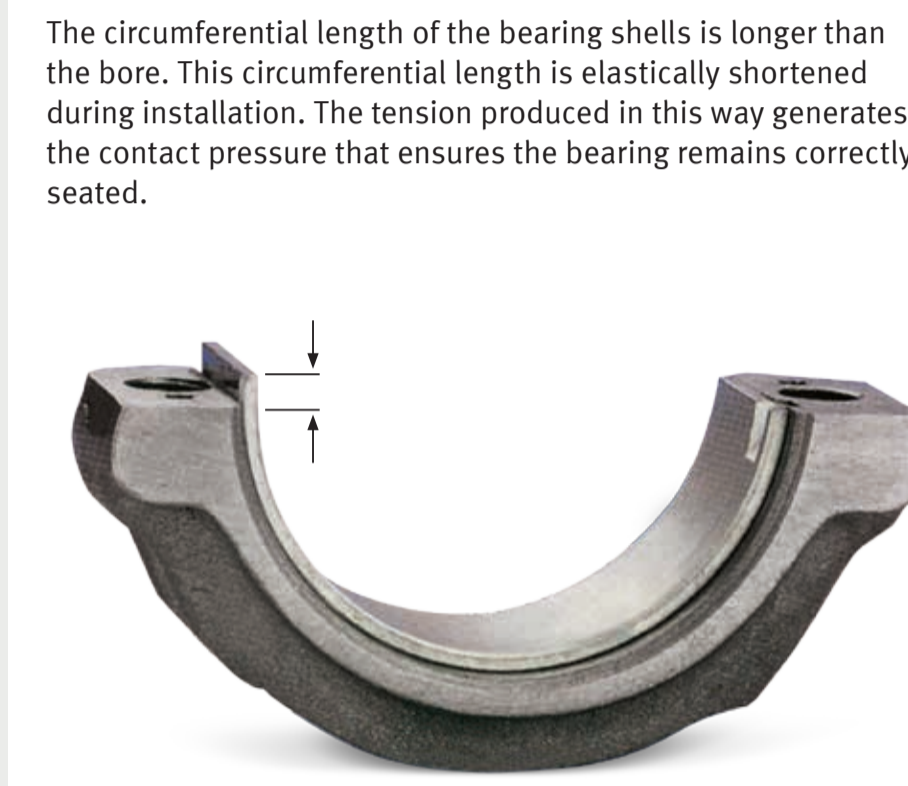
Details – flanged bearing halves



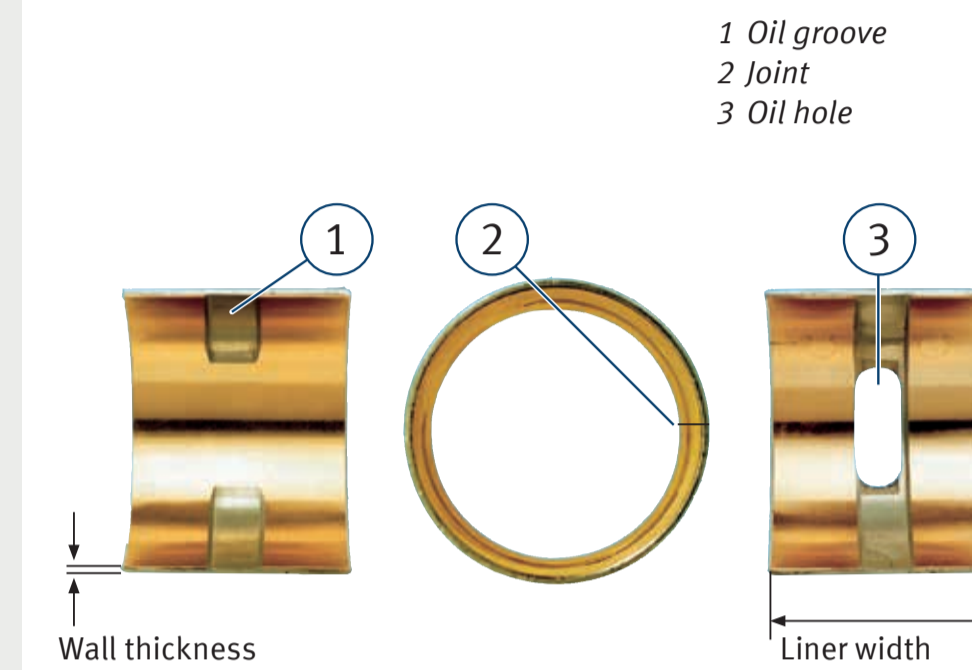
Free spread of the bearing shells



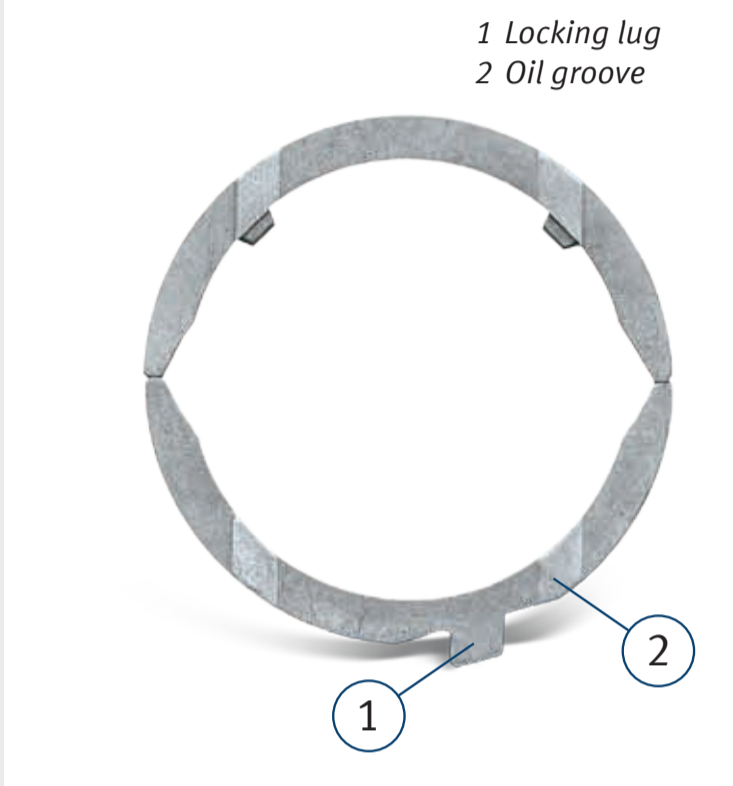
Press fit with protrusion



Details – liners

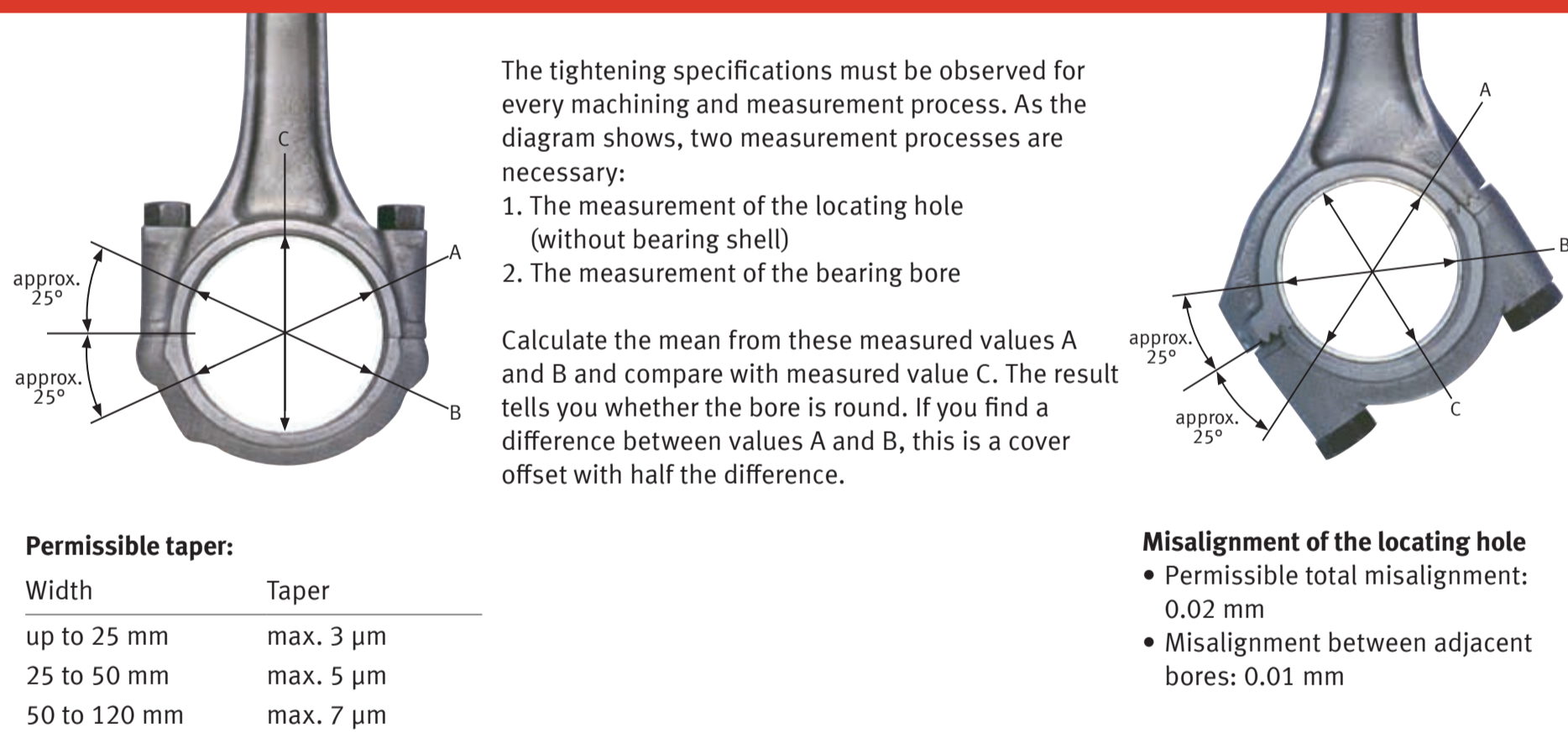


Details – thrust washers



Inspection

Diameter and roundness measurements on locating holes and connecting rods



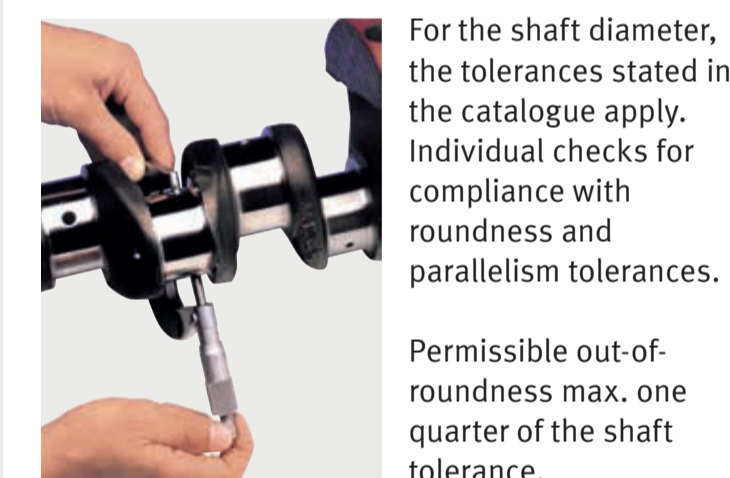
Permissible taper:

Width	Taper
up to 25 mm	max. 3 µm
25 to 50 mm	max. 5 µm
50 to 120 mm	max. 7 µm

Misalignment of the locating hole

- Permissible total misalignment: 0.02 mm
- Misalignment between adjacent bores: 0.01 mm

Final inspection of the crankshaft



Maximum values for tapered, convex or concave ground shafts:

Width	Tolerance
up to 30 mm	3 µm
over 30 to 50 mm	5 µm
over 50 mm	7 µm

Inspection – radial eccentricity

A concentricity check must be performed for each reconditioned crankshaft, especially after rehardening. The permissible radial eccentricity is measured supported on the outer main bearing journals.

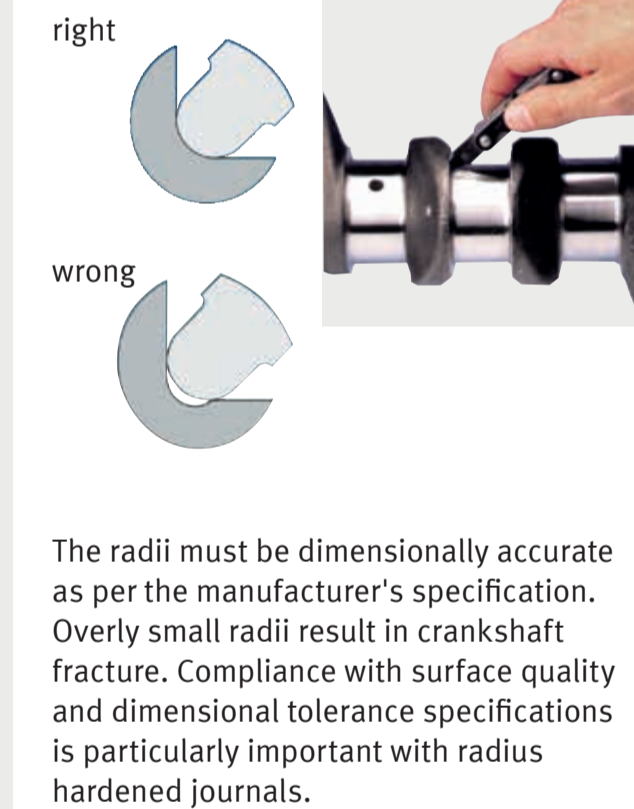
Permissible misalignment of the main bearing journals:

Adjacent journal	0.005 mm
Total	0.010 mm

These tolerances are standard values unless different figures are specified by the manufacturer.



Measuring radii



Surface roughness

Exceeding the specified tolerance for the journal surface quality leads to increased wear.

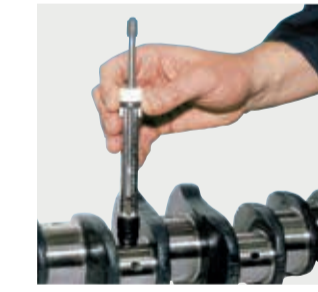
The surface roughness should have an arithmetic mean roughness Ra (CLA) of 0.2 µm max. (corresponds to approx. Rt 1 µm max.). The same applies to the thrust faces of the flanged bearing.



Hardness test

Sufficient hardness depth is available on the crankshafts to enable grinding to all undersize grades without rehardening. An exception to this is if the journal has been softened as a result of overheating. Nitrided shafts must always be retreated.

Attention: During crankshaft reconditioning, inspections for cracks must be carried out after aligning, after hardening and after grinding.



Inspection – bolts

Expansion bolts increase in length. If they reach a maximum length or a minimum diameter, they must be replaced. The same applies to mechanically damaged bolts.



Installation

Checking the bearing shells

1. Kolbenschmidt supplies the bearing shells ready to fit, whatever the undersize grade. The bearings must not be remachined.
2. Make a comparison with the removed bearing. This is the only way you can be sure that you have selected the right bearing.



Locking lugs

With this assembly device, the bearing shell is correctly positioned. The locking lugs on the bearing shells are used purely for facilitating manual installation. The lugs are an obstacle during mechanical engine assembly, however. For this reason, various bearing shells in new engines are no longer equipped with locking lugs.



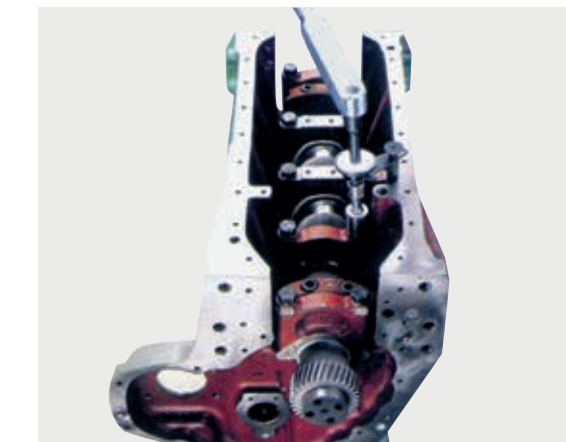
Oiling the bearing shells

Use an oil can. A brush may transfer dirt particles from the oil container.



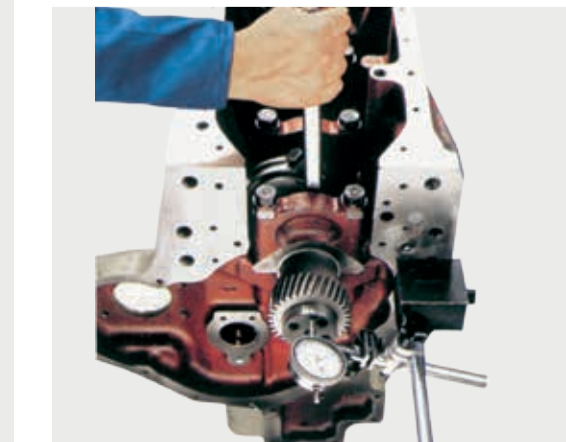
Tightening specifications

Strictly follow the tightening specifications. This is important to obtain the prescribed pressure and fit, ensuring firm bearing seating and perfect running clearance.



Inspection – axial clearance

The flanged bearing is designed with extra width for reconditioning purposes. If you grind the crankshaft to match this bearing shell width, you will adhere to the correct axial clearance.



Countdown

All engine components must be sufficiently lubricated. In newly installed engines, in particular, the oil requires some time to reach all the individual bearings. The risk of premature damage due to increased mixed friction is very high at this time. You can prevent this by pressurizing the entire oil circuit.



Information on the product range can be found in our catalogue "Engine Bearings". Or ask your local Motorservice partner. We have also provided a lot more information for you at www.ms-motorservice.com and on our Technipedia at www.technipedia.info.