

Grid Bearings

MaK

Parts Development Based on Know-How, Technology and Experience

For MaK Marine Engines

A completely new design developed by Caterpillar Motoren for bearing shells (main and big-end) offers the following advantages:

- Increased service life
- Reduced wear
- Increased load-bearing capability
- Improved oil distribution
- Avoidance of cavitation
- Avoidance of cam formation on the bearing journal
- No more bearing journal rework when replacing a bearing

■ Why a new bearing design?

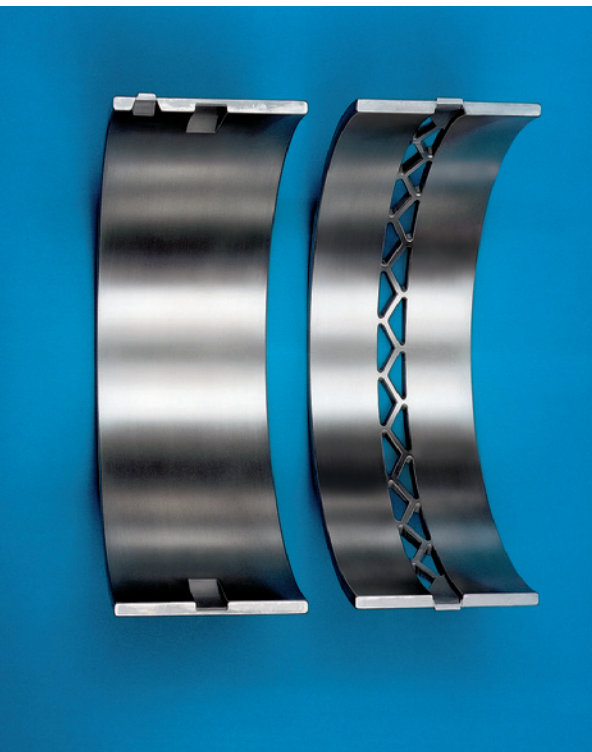
Higher piston speeds and up-ratings require new bearing technologies.

The existing bearing design with oil grooves, run-outs and „spoons“ in the highly loaded shells limited further development and improvement. A new idea was required – and found by Caterpillar Motoren.

■ MaK Grid Bearing – a pioneering concept

The above detrimental phenomena were cured by fundamental studies, calculations and R&D tests, in combination with field experience. The Grid Bearing Concept has the following features:

- Cam formation on the bearing journal is eliminated because the oil is supplied through the grid and not through a groove.
- A uniform and continuous oil flow is provided throughout the entire working cycle, due to the special shape, distribution and run-out of the lubricating oil passages.
- The load-bearing capability is improved because there are no more oil grooves, run-outs and spoons in the highly loaded shell. The bearing has an improved inertia force absorption capability in this area.

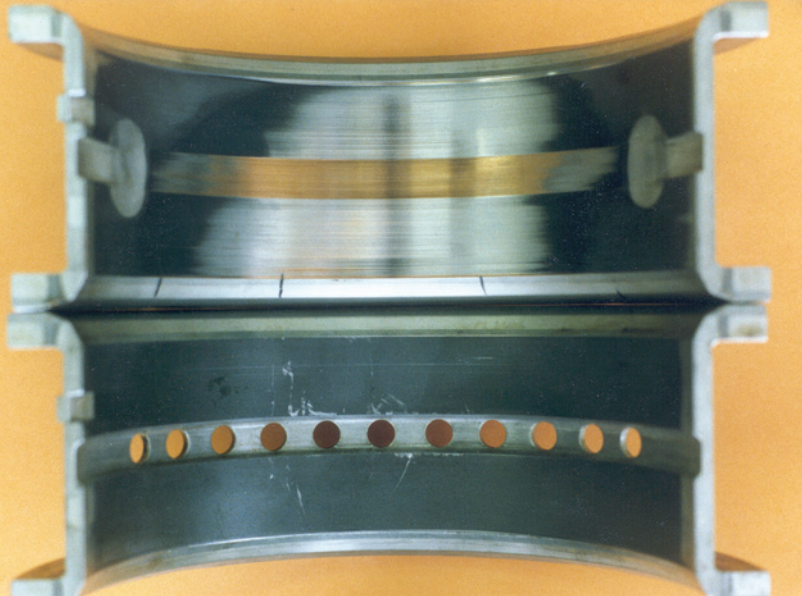


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Because lubeoil is not 100 % clean, heavy fuel operation introduces additional tribological problems involving higher wear in the bearing.

Particles embedded in the shell lead to cam formation on the crank pins and crankshaft main bearing journals. This kind of wear is caused by the circulating oil groove in the less loaded bearing shell.

It is easy to see what may happen if a bearing looks like this!



Well-known problems:
Cam formation and the result.

▶ **These problems do not occur
with the MaK Grid Bearings!**

**With excellent field test results these bearings
are readily available for M32 and M32 C engines
and will be introduced for other engines.**

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