



Latest machining techniques for aluminium cylinder bores (Alusil and Lokasil)

Alusil and Lokasil – these are the two sliding surface designs most frequently used on aluminium engine blocks. The reason for the high wear resistance of Alusil and Lokasil cylinder surfaces is the consequence of the cylinder sliding surfaces having been armoured with hard silicon crystals (Fig. 2).

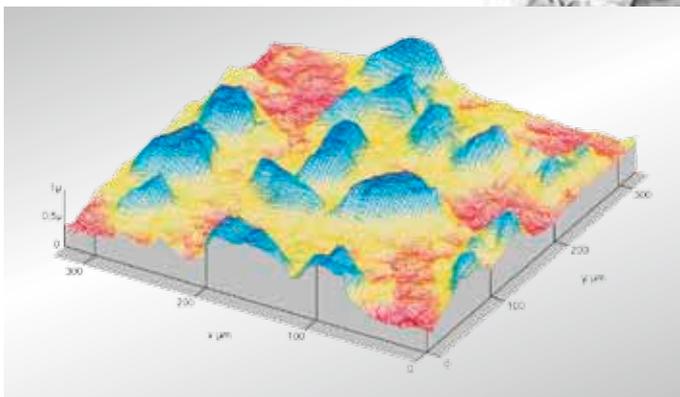


Fig. 1 “3D” roughness chart of an Alusil surface



Fig. 2 Alusil cylinder sliding surface (150-fold magnification)

Depending on the production method used, these silicon crystals are either homogeneously distributed in the engine block (Alusil) or only provided in the area of the running surface of the cylinder liner (Lokasil).

In the course of the subsequent silicon exposure, the silicon crystals are freed (exposed, Fig. 3) from the surrounding aluminium up to a certain depth.

In contrast to honing grey cast iron, the honing process for the aluminium cylinder does not aim at achieving a surface structure that generates tribological advantages on the cylinder surface by using the cross grinding process. The honing process here is mainly intended for fine-machining the cylinder bores and establishing a perfect bore geometry.

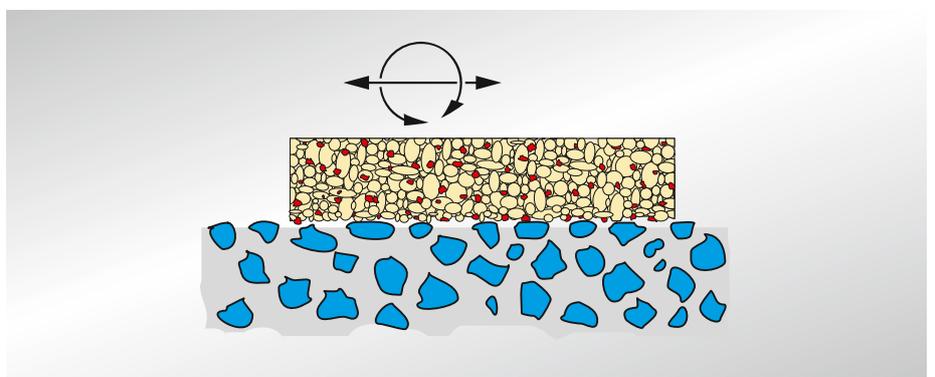
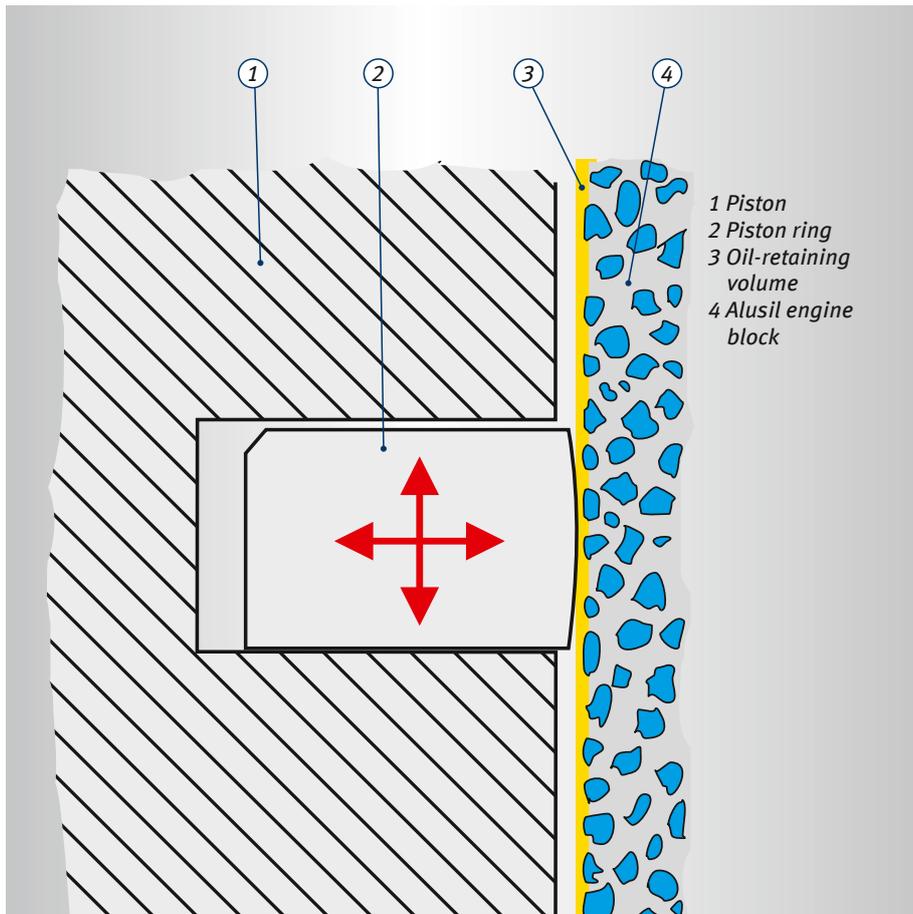


Fig. 3 Exposing process

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- 1 Piston
- 2 Piston ring
- 3 Oil-retaining volume
- 4 Alusil engine block

Fig. 4 Principle of operation

In this process, the silicon crystals are not only rounded but an oil-retaining volume is generated between the crystals that is required for ensuring the lubrication of the associated parts piston and cylinder block (Fig. 4).

New Tools

To meet the high requirements of present-day engine manufacture, it was mandatory to develop new machining strips that enable the machining of Alusil and Lokasil cylinder surfaces. Motor Service have focused on this issue and now offer engine reconditioners both the latest machining techniques and the associated machining tools.

These new KS honing and exposing strips achieve machining results in a quality that has never been possible before.

By using these patented machining techniques together with the new tools, the professional engine reconditioner can now machine cylinder sliding surfaces in a quality equal to that provided in up-to-date engine block series manufacture.

The entire know-how for machining, tool requirements, machining parameters and the repair material required for this are described in detail and summarised in the newly published “Reconditioning of Aluminium Engine Blocks” (Fig. 1) in the series Service Tips & Information.



Brochure

Reconditioning of Aluminium Engine Blocks in the Service Tips & Information series

Contains 100 pages, softcover book

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