



Experiences with the new Alusil honing process

Situation

Some time ago, we informed you of our new tool and the latest aluminium machining techniques. We would now like to pass on some information and experience gained by us as well as by some engine reconditioners who are already using the new machining techniques.

Number of honing stones

Due to the lack of availability of honing heads with 6 or 8 machining strips, a few engine reconditioners equipped their existing 4-fold honing heads with KS diamond honing stones (Fig. 1 and 2). The machining and results were also very good, so that we can give the go-ahead for honing heads with 4 honing stones. In addition, illustration 2 shows a doubling of the stones in the lower section; this has an advantageous effect on the cylinder geometry in the event of blind hole bores.

Conditioning the new honing stones

To be able to get the new honing stones cylinder-parallel and rounded on their cutting area as soon as possible, after their attachment on the honing head, it is urgently recommended to run in the honing stones in a cast iron cylinder bore that has only been drilled. The running-in period should be carried out until the surface of the honing stones has adapted to the shape of the cylinder bore.

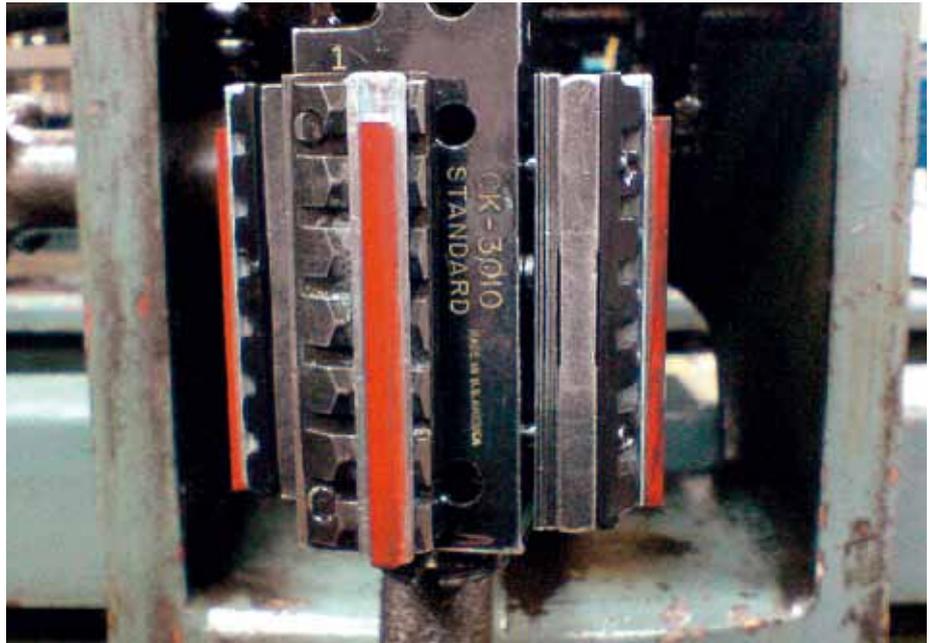


Fig. 1



Fig. 2



This is achieved once the cutting areas on the honing stones are uniformly grey. The running-in process in an aluminium cylinder bore would take too much time, because the honing stones are very sharp and durable, and would consequently not adapt to the cylinder shape for a long time. Faults in the cylinder geometry may result. The very soft exposing strips do not require this conditioning process. In this case, it is sufficient to slightly break the edges using abrasive paper.

Honing heads with spring-loaded guide shoes

Wherever guide shoes are located on conventional honing heads and during the cast-iron honing process, honing stones must be provided when using the new diamond honing technique. The spring-loaded stone supports must be modified in such a way that the spring effect is neutralised. This is normally possible with conical feed devices. On honing heads with a toothed rack feeding mechanism this may not be possible under certain circumstances. In such a case, there is the possibility to use stronger spiral springs to ensure the contact pressure of the honing stones. After a certain machining time, the extent to which the stones are cutting becomes visible on the cutting surfaces. If the spring-loaded honing stones are not cutting adequately, corrective action should be initiated if necessary.

Squeaking noises during the exposing process

may be caused in particular as long as the exposing strips are still new. However, these are not of disadvantage to the machining result.



Fig. 3

Honing oil

In the course of practical training courses it has turned out that cylinder machining is quicker the lower the viscosity of the honing oils is. Machining takes longer when oils with higher viscosity are used. To ensure adequate cutting performance, the contact pressure of the honing stones and exposing strips must be increased to a considerable extent if oils with higher viscosity are used. However, this affects both the service life of the stones and cylinder geometry (oval deformation of the cylinder bore).

Machining results

The results of aluminium machining have been very satisfactory. This is expressed in the (consistently) positive reaction of the engine reconditioners who are already using the new machining techniques.

Their unique statement is:

“These new machining stones cut excellently and the results are better by far than the honing and exposing techniques used previously.”

The fact that silicon crystals can now also be exposed using honing oil was particularly welcomed.