

The goal of position honing is to shorten the process chain of cylinder block production without a loss to the end quality. Position honing replaces the fine boring and rough honing steps.

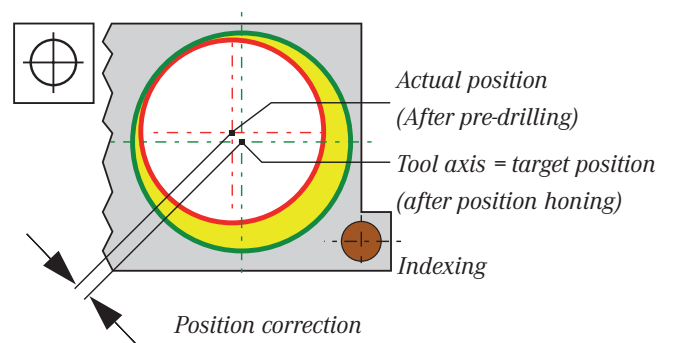
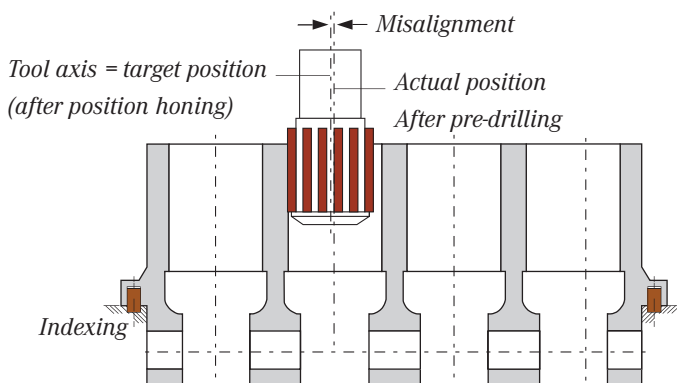
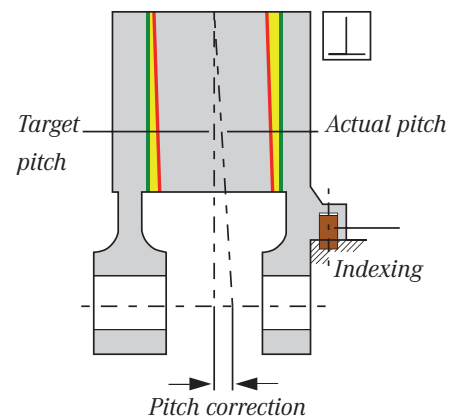
The honing process is adapted to the extended task in that not only dimensional, shape and surface accuracy are improved, but also positional accuracies such as perpendicularity and location. The extended tasks require a high degree of stock removal capacity, tailor-made process components such as tools and machine drives as well as suitable kinematic process parameters.

## Principles of position honing

Position honing improves the dimensional and shape accuracy in addition to the positional accuracy of the bore. For this reason, the tool is taken up by the spindle with high rigidity. The workpiece is positioned by index boring so that the tool axis is transferred to the bore during position honing. The tool then moves into the bore and local cutting is carried out which moves to full cutting in the process of machining the bore and with increased stock removal. The positional accuracy in respect of location and perpendicularity is thus corrected.



*Cylinder bore, left side of picture: Boring position before honing, right side of picture: Boring position at the start of position honing*





### Objective of position honing

In the process chain to date, fine boring is carried out after rough boring and then followed by three honing operations. By means of position honing, it is now possible to shorten the process chain to three steps after rough boring. These are position, intermediate and finish honing. A machining allowance of up to 0.8 mm in diameter is required for this, which is however reached in the usual cycle times of  $\leq 30$  s. Position honing has proven itself especially in the machining of coated cylinder bores.

### Position honing components

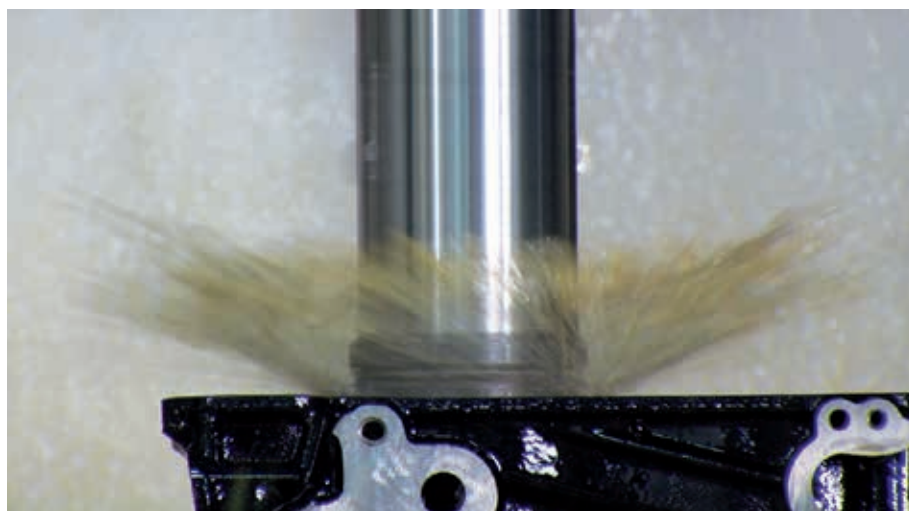
In order to implement position honing from a manufacturing point of view, a rigid spindle design and a fixed workpiece clamping is required. In order to achieve the high chip removal rate, high cutting speeds are used. Diamond honing stones with wear-resistant

bondings enable economic tool lives. A chamfering tool inside the honing tool provides the chamfered edge at the upper end of the bore. Water-miscible cooling lubricants ensure sufficient heat dissipation.

### Your benefits

With position honing, the complete investment on fine boring in respect of investment and operating costs

can be saved. Position honing is especially beneficial in the machining of thermal spray coatings, where conventional machining with defined edges only achieves minimal tool life. In position honing however new sharpness is generated due to tool wear thus reaching long lives. Despite shortening the conventional process chain, there is absolutely no loss to the end quality.



*Position honing*

**Trust in the technology leader with many years' experience and global presence!  
Innovative technology combined with an economical mindset sets us apart.**