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Multi cutting edge fine boring of interrupted bores with the EA-system

Open or extremely interrupted bores such as those found, for example, in the cast housings of gear pumps, are a challenge for fine machining. Until now the desired results, for example with regard to the parallel alignment of the bores, could generally only be reliably achieved using single cutting edge tools. Spindle tools or pad-guided tools were used for this. These methods are effective, but very time-consuming.

In order to allow such bores to be machined faster and hence more cost-effectiveness, MAPAL has developed a multi cutting edged fine boring tool with guide pads. Thanks to the multiple cutting edges, the cycle time is significantly reduced compared with single cutting edged tools. At the same time, the guide pads ensure maximum accuracy. The tool diameter can be adjusted. When the feed rate for the machining is known, a single axial fine adjustment is necessary. This provides a uniform distribution of the material removal at the inserts. This leads to long tool lives and a very good surface quality.

The tool can be fitted with HX or TEC indexable inserts, depending on the application. The HX indexable inserts with six cutting edges are suitable for through holes. Blind holes and shoulders can be finely machined using TEC indexable inserts with four cutting edges. The EasyAdjust-System from MAPAL is used for clamping the indexable inserts. The heart of the system is an innovative cassette that stably holds the indexable insert with its six or four cutting edges without any play. The back taper of the minor cutting edge is already integrated into this cassette. The setting effort for the back taper is thus completely eliminated. Due to the exact guidance of the cassette on a precision guide pin, the back taper remains unchanged even during diameter adjustments.

The new finely adjustable tool with the number of indexable inserts and guide pads adapted to the diameter impresses in particular with the high accuracy of the results

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and the high cost-effectiveness. Initial tests in practice have shown very good results:
In particular the tool achieves a parallel alignment of the bores of $< 1 \mu\text{m}$.

Captions:

The new multi cutting edge tool from MAPAL for fine boring can be fitted with HX or TEC indexable inserts, depending on the application.

Bores with extreme interrupted cuts can be reliably fine bored using the new tool from MAPAL.

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Short profile of MAPAL Dr. Kress KG:

MAPAL – tooling the customer's success

MAPAL Präzisionswerkzeuge Dr. Kress KG is one of the leading international suppliers of precision tools for the machining of practically all materials. The company founded in 1950 supplies leading customers in particular from the automotive and aerospace industries and from machine and plant engineering. With its innovations the family-owned company sets trends and standards in production and machining technology. MAPAL sees itself as a technology partner, supporting its customers with the development of efficient and resource-conserving machining processes using individual tool concepts. The company is represented with production facilities, sales outlets and service partners in 44 countries. In 2015 the MAPAL Group had 4,800 employees, generating sales of EUR 540 million.