

# More Tool Flexibility for Multi Spindles

Universal, external adjustable tool clamping system MEX has been comprehensively extended

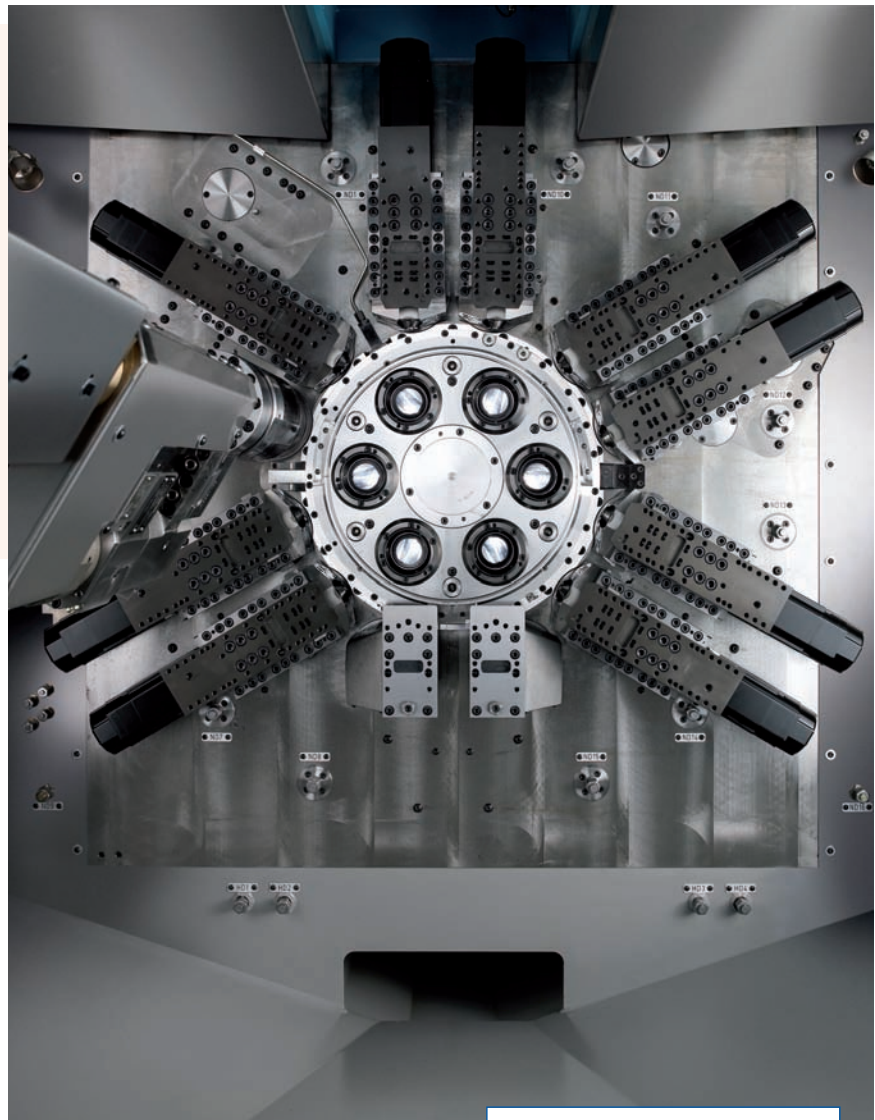
MAS has significantly extended the application range and the functions of the innovative tool clamping system MEX. From now on, also operators of multi spindle lathes can benefit from the advantages of short mounting times and high precision adjustment of the tool cutting edge to the centre height.

Manufacturers are already able to benefit from the advantages of the tool clamping system MEX by MAS on linear lathes. These include reduced mounting times, high precision adjustment, and quick centre height configuration also outside of the lathe; high damping by hydraulic clamping sleeves, and increased flexibility through quick change of pre-adjusted, and by an index bolt precisely adjustable tool.

To realize these advantages also for highly productive machining on multi spindle lathes, MAS tool specialists have completed the MEX clamping system with several variants. For use on multi spindles, there are tool blocks with one, two, or three cylindrical holders for hydraulic clamping sleeves. They are suitable for clamping tables of conventional multi spindle lathes, such as those of the manufacturer Index. They are positioned exactly against mechanical stops, and fixed with four or rather six screws to be rugged and rigid.

## Install more tools on the work piece

On multi spindle lathes the work pieces should be preferably completely

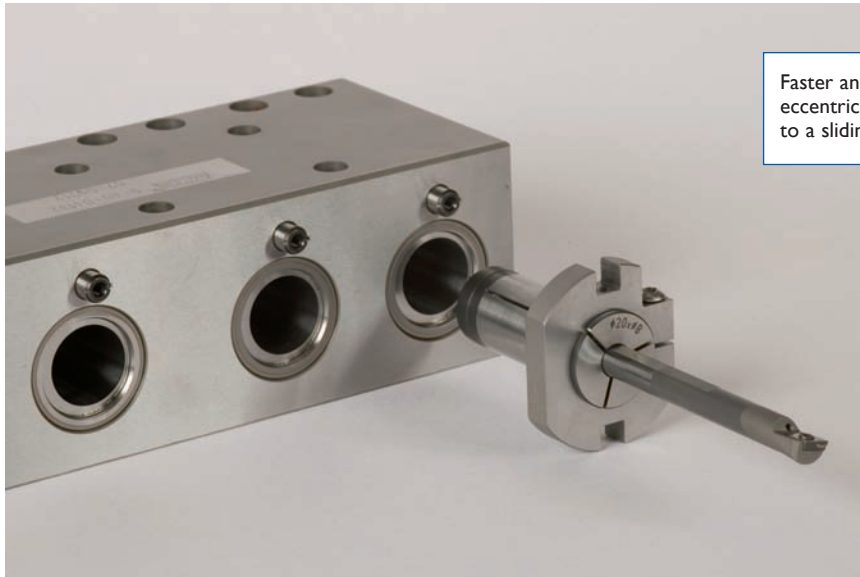


(foto courtesy of Index Werke, Esslingen)

machined in one operation. This way, additional clamping is rendered unnecessary and allows high accuracy, minimum processing times, and thus efficient series production. However, occasionally there is a lack of sufficient number of tool places. MAS has therefore realized versions of clamping blocks with three cylindrical holders for the clamping system MEX. Compared to the previous tool blocks, these have a narrower distance. The hydraulic clamping sleeves hold tools with cylindrical shafts

The innovative tool clamping system MEX creates more flexibility and shorter mounting times for multi spindle lathes.

with a diameter of 12 mm, in contrast to the already proven system of linear lathes with 20 mm of diameter. This results in a distance of only 32 mm between the centers of the tools. Therefore, in future, on the usual guideways of slides on multi spindles a total of three tools can be engaged on one station. That creates an extra tool position at each station and allows an additional



Faster and more accurate: Clamping block, eccentric, and hydraulic clamping sleeves, ground to a sliding fit, ensure easy and accurate setting.

machining operation. Consequently, depending on the type of multi spindles, a total of 12 additional tools are available for the processing procedure.

Due to the separate clamping of individual tools into hydraulic clamping sleeves, users have advantages when changing, for instance, worn tools. The machine setter or operator can replace individual tools without removing or rather dismantling the complete clamping block. That contributes to shorter downtimes.

The machining of difficult materials requires large quantities of cooling lubricants at the cutting edges. This is now made possible by internal coolant supply through the tool block. This has the advantage that even in blocks with three cylindrical holders, only one external coolant supply pipe is sufficient. The tool block has ingenious channels that lead the cooling lubricant directly at the cutting edges.

### Integrate additional machining operations

In order to achieve complete machining with driven tools, it is possible to use MEX tool blocks that hold clamping bushes with a diameter of 25,4 mm or 33 mm and through-holes. There is enough space for the usual, directly dri-

ven high frequency motor spindles. Favourable are the uniform clamping forces across the entire spindle housing that are precisely adjustable with the hydraulic clamping sleeves. Consequently, a deformation of motor spindle housings and premature wear, or rather a failure of high frequency motor spindles is prevented.

Additionally, there are clamping blocks for hydraulic clamping sleeves with holes having diameters of 28,5 mm and 36 mm. These are particularly designed for sleeves that are used in this industrial sector. Thereby, special tools and multi tools can be clamped in one holder. Due to the high precision adjustment of the centre tip with the

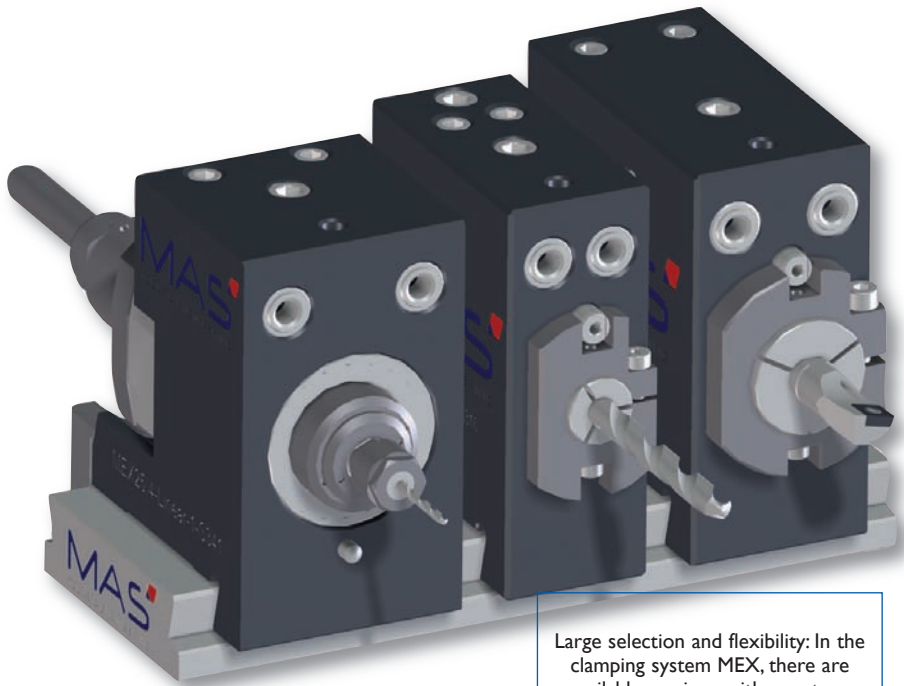
clamping system MEX, furthermore, reaming tools can be inserted without the previously required pendulum holder.

In addition, with the clamping system MEX it is possible to integrate hard machining on multi spindle lathes. The high accuracy when adjusting the centre height is supplemented by the optimal damping of the hydraulic clamping sleeves. That way, CBN cutting edges are held rigid and can be processed without risk of disruption of the cutting edge.

With MEX, stations of multi spindle lathes can be used more flexible and more universal. This is because tools with different holders can be combined on one station. Several single tool clamping blocks with different diameters of the cylindrical holder can be combined on one base plate. The holder is designed in such a way that the cutting edges are all at the same level. The complete base plate can be changed very quickly via a special, high-precision interface. Consequently, the advantage of minimal mounting times of the clamping system MEX is fully maintained.



Open for complete machining: The clamping block holds high-frequency motor spindles for milling and drilling in locating holes measuring 25.4 or 33 mm.



Large selection and flexibility: In the clamping system MEX, there are available versions with one, two, and three parallel locating holes, optionally with different diameters.

### Easy adjustment inside the machine

The machine setter simply pushes the hydraulic clamping sleeves until the flange into the clamping block, and inserts the tool with the round shank into the eccentric hole. For adjusting the tool tip to the exact centre height, optionally on a desired over- or underlay, he turns by means of two adjusting screws the clamping sleeve inside the base body. Due to the eccentric, the tool height can be adjusted very precisely up to one tenth of a millimeter up or down. After adjusting, the setter clamps the tool and the hydraulic clamping sleeve inside the base body just by turning the clamping screw of the clamping sleeve. Internally and externally the clamping sleeve is ground to a sliding fit, which is free of play, so that the alignment of the tool does not change. In contrast to the previous process with adjusting wedges and adjusting screws, this way of setting up and adjusting of tools significantly reduces the mounting times. Also repeated clamping and releasing of the hydraulic clamping sleeve does not effect the high-precision adjustment of the tool above the index ring with groove, which is clamped on the tool shank, and the alignment pin on the clamping block. This considerably increases the process reliability and reduces the mounting

times. In addition, this indexing offers the opportunity to mount and pre-adjust tools outside the lathes.

### Setting up outside the machine reduces downtimes

Until now, a laborious and time-consuming setting up caused long downtimes of multi spindle lathes. But especially with highly productive machines, this is very uneconomical. The clamping system MEX minimizes these downtimes. This is because for the clamping blocks of this innovative tool clamping system, the machine setter is able to set up and adjust the tools with high accuracy outside the lathe. For this purpose, he adjusts the tools on an adjusting plate or a tool presetter outside the lathe in a base body of the clamping system, which simulates the multi spindle holder. Then he exchanges the hydraulic clamping sleeves on the lathe for the external, with tools pre-adjusted clamping sleeves. Due to the index ring on the tool shank and the alignment pin on the clamping block, he easily finds the exact position of the tool. This reduces the tool change to a few minutes. With the clamping system MEX the mounting times on multi spindles are so reduced to a quarter. (120b11-18)