MS24-6
CNC multi-spindle automatic lathe for high productivity and short cycle and setup times.
INDEX CNC multi-spindle automatic lathe: high level of flexibility, shorter setup and cycle times

With the INDEX MS24-6 multi-spindle automatic lathe, which can be configured according to manufacturers' specific needs, INDEX is presenting a machine concept that meets stringent requirements and the highest demands. Six main spindles, up to two swiveling synchronized spindles, and up to twelve tool carriers, which can be freely configured as cross slides X/Y/Z or boring slides Z, enable highly productive machining options.

The INDEX quick-clamping system, patented W-serration, and ergonomic open-front work area minimize setup times. Maximum dynamic response and minimum non-productive times also contribute to low part costs.
Flexible, highly productive, and quick to set up – the machine concept of the INDEX MS24-6:

- Highly-dynamic cross slide with sliding guide (X axis)
- Non-wearing Z axis thanks to quills with hydrostatic support
- Freely accessible working area, making setup particularly easy
- Fast tool setup with the INDEX quick clamping system and its W-serration interface
- Chucked part machining with loading and unloading by linear or robot handling units
- Extremely fast swiveling synchronized spindles with C axis
- The swivel arm is locked in its working position by a three-piece Hirth coupling providing maximum rigidity
- Up to 6 tools for rear end machining per swiveling synchronized spindle
- High productivity per unit area thanks to reduced footprint
The core: it’s original, when it originates from INDEX

Our hallmark: the spindle drum
The compact spindle drum ensures maximum precision in each and every position through the use of a Hirth coupling. The core is composed of six fluid-cooled motorized spindles integrated in the spindle drum. An infinitely variable speed range, high tractive force, compact design, low maintenance, and the latest synchronous drive technology – these are the criteria that make an INDEX CNC multi-spindle automatic lathe stand out.

Workpiece clamping can be achieved both by push/pull or chuck clamping. This opens up a wide range of possibilities for raw part feeding and machining.

Independent speeds
During machining, it is always possible to program the optimum speed, which can still be varied even during tool engagement, for each spindle position and each cutting edge of the tool.

The results are optimized material removal, maximum surface quality, short production times per piece, and extended tool life.
You can also machine high-strength materials that up to now were hardly suitable for multi-spindle machines.
It is possible to make speed changes during drum indexing, thus avoiding any additional secondary times.

More than just turning
INDEX CNC multi-spindle automatic lathes with live tooling, C axis, and Y axis give you access to entirely new processes, such as:
• off-center drilling and tapping
• inclined bores
• cross drilling
• contour milling
• Hobbing
• polygon turning
Precise, fast, and flexible

Versatility is a strength of the INDEX MS24-6. Whether complex or more simple parts are involved or even varying processes, anything is possible

- A maximum of 12 tool carriers with 1 or 2 travel axes
- Y axes (optional)
- 1 or 2 synchronized spindles
- Variable use of tool carriers for internal and external machining
- Use of several tools per tool carrier possible
- Cross machining with live tools
- C axis and polygon turning for extended fields of application

Rear-end machining with swiveling synchronized spindle

- Up to 6 tools, 2 of which are live
- Fast swivel motion and hydraulic locking of the swiveling synchronized spindle by means of a Hirth coupling
- Efficient chip flow, as machining takes place outside the main working area
- Numerous machining options using live tools in conjunction with C and Y axes, and also with an electronic shaft

The double three-spindle machine – for maximum work output

- Additional part production time reduction as a result of the simultaneous manufacturing of 2 workpieces
- 10 tool carriers with 1 or 2 axes (optionally also Y axis)
- 2 swiveling synchronized spindles
- 2 back-boring slides (optional) each with 3 tools, of which up to 2 are power-driven tools

With the same equipment level as a six-spindle machine and simultaneous rear-end machining in two spindle positions

- Front end machining on 4 main spindles
- Simultaneous cut-off-end machining on 2 swiveling synchronized spindles
The tool holders

Tool holder change: 50% faster setup times

The INDEX MS24-6 succeeds in further simplifying various setup tasks. Each cross slide now has a W-serration interface, which significantly facilitates the µm-accurate alignment of the tool holder and prevents its misalignment. The operator can preset the tool holder externally, place it on the slide, and fix it in position using the newly developed INDEX quick clamping device. All that is then needed is a quick turn with the wrench and the holder is ready to use. Thanks to this plug & play approach, the holder is changed in just half the time.

It is important to note that previous tool holders with dovetail mounting can still be used.

The INDEX W-serration principle

The patented INDEX W-serration interface ensures high repeat accuracy for the cross slides when tools are changed:

• Quick and precise positioning of tool holders
• Short setup/changeover times
• Extended life of cutting inserts
• Suitable for stationary and live tools
• Measuring on an external presetting unit is possible
• Quick tool changes thanks to the INDEX quick-clamping system – changing takes only half the time compared to conventional clamping systems
Simply more possibilities

The work area – virtually limitless machining capabilities in each spindle position
The tool carrier arrangement in the work area, without longitudinal sliding block, allows more than one tool to be used on each spindle. Available machining operations are therefore limited only by the tool holder. The result is that all production steps in all spindle positions can be freely defined.

Another advantage: They have free chip fall.

Performance as we understand it
Maximum productivity and cost-effectiveness of multi-spindle automatic lathes, combined with the precision and flexibility of CNC single-spindle lathes, is the formula for success of the INDEX MS24-6 multi-spindle automatic lathes.

Machining examples:

1. External turning – internal turning
2. External turning – External turning
3. External live – internal live
4. External turning – Internal live (sequential)
5. External live – Internal turning (sequential)
6. External live – External turning (sequential)
For the most diverse technologies

Milling
Milling with live tools in the following variants:
• Disk milling cutter in conjunction with C axis operation (transmit function)
• End milling cutter in conjunction with Y axis operation
• Plunge milling (see diagram)

Gear cutting, gear hobbing
• Coupled with electronic precision
• Maximum stability
• Teeth in correct position relative to other surfaces or shaped elements
• Any angular offset can be programmed
• Greater tool service life as a result of shifting with Y axis

Elliptical deburring of cross-drilled holes
Uniform deburring (even chip removal) of cross-drilled holes based on interpolation of the C axis, X axis, and Z axis with live tool.
Workpiece handling systems

Stationary workpiece removal device with integral parts conveyor

The workpieces fall onto the internal conveyor belt through a chute and are then deflected 90° by a second chute to reach an external conveyor belt.

Position-aligned workpiece removal with integral parts conveyor

The workpieces are removed from position 6 by the synchronized spindle and are aligned in position to the internal conveyor belt for parts that are not to be ejected.

Position-aligned workpiece removal with intermediate gripper and linear shuttle

Very rapid, damage-free, position-oriented removal by a linear and rotary motion. The transfer of the workpieces first takes place from the synchronized spindle to the intermediate gripper. Then the linear shuttle transfers the workpieces to the external handling system. This procedure takes place during secondary processing time.

Parts feed and removal by a 6-axis robot via the swivel disk to the external handling system

The workpiece handling system for chuck parts and bar segments can be used for 6-spindle machining with and without synchronized spindle, and also for double 3-spindle machining. A version 3 x OP10 (page 1) and 3 x OP20 (page 2) with external reversing station are also possible.
Focus on production and control – Industry 4.0 included. The iXpanel operating concept provides access to networked production. With iXpanel, your staff always has all relevant information for efficient production right at the machine. iXpanel is already included as standard and can be individually extended. You can use iXpanel just as you require it for your business organization – that’s Industry 4.0 tailored to suit your needs.

Future-proof. iXpanel integrates the latest control generation SIEMENS S840D sl. Use iXpanel intuitively through an 18.5” touch monitor.

Productive. Maximize machine performance with optimally tuned processes in machine cycles with clear control screens. In addition, the control offers technology cycles for frequently recurring machining operations and safe machine operation and also for optimum machining quality.

Intelligent. The machine always starts with the control home screen. Other functions can be displayed on a second screen at any time, and operators can enjoy direct, activity-related assistance already with the standard version, such as workpiece drawings, setup lists, programming aids, documentation, etc. All of this can be accessed right at the machine.

Virtual & open. With the optional VPC box (industrial PC), iXpanel opens up the world of the virtual machine and of simulation directly at the control system (VM on Board). Thanks to the VPC-box (option), the machine can also be integrated easily and fully into IT networks and structures. You determine what additional applications are used on the VPC box!

index-werke.de/ixpanel
18.5" TOUCHSCREEN MONITOR

- 3D simulation
- Virtual machine
- Programming help
- VPC Box
- VirtualPro programming studio
- Custom applications

Order documents  
Customer data  
Workpiece counter  
Production status  
Drawings  
Setup sheet

Notes  
Information center  
Maintenance & care  
User management  
Technology computer  
Programming help

+ many more standard features
## Technical data

<table>
<thead>
<tr>
<th>Working spindles</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. bar diameter</td>
<td>mm</td>
</tr>
<tr>
<td>Speed *</td>
<td>rpm</td>
</tr>
<tr>
<td>Power (at 100% / 25% DC)</td>
<td>kW</td>
</tr>
<tr>
<td>Torque (at 100% / 25% DC)</td>
<td>Nm</td>
</tr>
<tr>
<td>Tool carriers max.</td>
<td>12</td>
</tr>
<tr>
<td>Slide travel X</td>
<td>mm</td>
</tr>
<tr>
<td>Slide travel Z</td>
<td>mm</td>
</tr>
<tr>
<td>Slide travel Y</td>
<td>±13</td>
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<tr>
<td>Synchronized spindles max.</td>
<td>2</td>
</tr>
<tr>
<td>Max. clamping diameter</td>
<td>mm</td>
</tr>
<tr>
<td>Speed*</td>
<td>rpm</td>
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<tr>
<td>Power (at 100% / 40% DC)</td>
<td>kW</td>
</tr>
<tr>
<td>Torque (at 100% / 40% DC)</td>
<td>Nm</td>
</tr>
<tr>
<td>Synchronized spindle swivel angle</td>
<td>degrees</td>
</tr>
<tr>
<td>Slide travel Z</td>
<td>mm</td>
</tr>
<tr>
<td>Max. number of tools for rear-end machining</td>
<td>6</td>
</tr>
<tr>
<td>Back-boring slides 1+2 (optional)</td>
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</tr>
<tr>
<td>Tool carriers for rear-end machining</td>
<td>1 / 2</td>
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<tr>
<td>Slide travel X</td>
<td>mm</td>
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<tr>
<td>Number of tools for rear-end machining</td>
<td>3</td>
</tr>
<tr>
<td>of which are live max.</td>
<td>2</td>
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**Dimensions, mass, and connected power (at maximum equipment level, without bar guide or loading magazine)**

<table>
<thead>
<tr>
<th>Weight</th>
<th>kg</th>
<th>approx. 5,700</th>
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<tbody>
<tr>
<td>Length</td>
<td>mm</td>
<td>3,387</td>
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<tr>
<td>Width</td>
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<tr>
<td>Height</td>
<td>mm</td>
<td>2,854</td>
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<tr>
<td>Connected power</td>
<td>73 kW, 87 kVA, 125 A, 400 V, 50 Hz or 460-480 V, 60 Hz</td>
<td></td>
</tr>
</tbody>
</table>

**Controller**

- Siemens S840D Solution Line, with teleservice, spindle stop, C-axis as standard

**Options**

- Polygon turning, gear hobbing, tool monitoring, Y-axis, transmit function

*Speed limitations are necessary, depending on bar diameter, bar guide, and workpiece clamping.*