MS22-6
MS22-6L

CNC multi-spindle automatic lathe
CNC multi-spindle automatic lathe with sliding headstock function
INDEX MS22-6/INDEX MS22-6L

INDEX CNC multi-spindle automatic lathe: the benchmark!

With the INDEX MS22-6 / MS22-6L multi-spindle automatic turning machines, configurable as desired, INDEX offers a machine concept that meets all requirements and the highest standards.

Six main spindles, up to two swiveling synchronous spindles and up to 11 tool carriers, which can be configured in the X, Y and Z directions, allow for unimagined machining possibilities.

The highest degree of productivity and efficiency in multi-spindle automatic lathes, combined with the accuracy and flexibility of CNC single-spindle lathes, is the formula for the success of the INDEX MS22-6 and INDEX MS22-6L multi-spindle automatic lathes.

Machine design

- Compact front-opening machine for bar machining
- Freely accessible, making it extremely user-friendly
- Six high-precision motorized spindles
- Highly dynamic slide with sliding guide (X axis)
- Non-wearing Z axis, thanks to hydrostatically supported tailstock quills
- Integrated swiveling synchronous spindle for rear-end machining, and placement of finished parts on conveyor without risk of damage
- Each working spindle includes two tool carriers
- Includes iXpanel Cockpit solution (based on Siemens S840D sl)
The key element: it’s original when it originates from INDEX

The key element
The compact spindle drum provides maximum precision in any position, thanks to its three-part Hirth coupling. The central module is made up of six air-cooled motorized spindles, integrated in the 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.

Independent speeds
The spindle speed for each spindle position and each tool edge can be optimized, even while cutting is in progress. The results are optimum chipping, maximum surface quality, short production times per piece, and extended tool life. You can also machine materials that, until now, were largely unsuited to multi-spindle automatic lathes.

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 bores and threads
• inclined bores
• contour milling
• hobbing
• polygon turning
Precise, fast, and flexible

Versatility is a strength of the INDEX MS22-6. Whether complex parts or many different processes – almost anything is possible

- 11 tool carriers with 1 or 2 travel axes
- 1 or 2 synchronous spindles
- Insertion of up to 18 tools on main spindles
- Variable use of tool carriers for internal and external machining
- Cross machining with live tools
- C axis and multi-edge turning for extended use options

Rear-end machining with swiveling synchronous spindle

- Up to 6 tools, 3 of which are live
- Fast swiveling motion and hydraulic synchronous spindle clamping
- Efficient chip fall, as machining takes place outside the main work area
- A variety of machining possibilities: drilling, outside turning, facing, thread chasing, thread stripping, off-center machining, cross drilling
- X axis back-boring slide movement

Machine structure
The modular INDEX system allows you to build the MS22-6 according to your exact requirements.

The double three-spindle machine for maximum work output

- Additional part production time reduction due to simultaneous manufacturing of 2 identical workpieces
- 10 tool carriers with 1 or 2 axes
- 2 synchronous spindles
- 2 back-boring slides
- Rear-end machining with 6 tools per synchronous spindle, 2 of which are live
Simply more possibilities

The work area – virtually limitless machining options for 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 toolholder. As a result, you can specify all production steps in all spindle positions. 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 MS22-6 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

Gear cutting, hobbing
- Coupled with electronic precision
- Provides maximum stability
- Gears in correct position relative to other surfaces or shaped elements
- Any angular offset can be programmed
- Greater tool service life due to shifting with Y axis

Milling
Milling with live tooling 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 (graphic)

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 tooling.
INDEX MS22-6L – high-productivity manufacture of straight-turned parts

The newly developed INDEX MS22-6L sliding headstock turning unit enables highly productive machining of typical straight-turned parts, on a multi-spindle automatic lathe. The sliding headstock automatic lathes are inspired by the INDEX MS22-6, which is known for its reliability.

By simultaneous use of up to 11 tools (2 cutting edges per spindle) on the total of 6 work spindles, the INDEX MS22-6L is the world’s most productive solution for producing straight-turned parts of all kinds. A synchronous spindle also makes rear-end machining possible with up to 6 tools (2 of which are live).
INDEX multi-spindle sliding headstock principle

The core of the newly designed sliding headstock turning unit is the centered guide block, set up on the spindle drum, on which the 6 long turning sleeves move.

- Solid guide block with 6 high-precision hydro-dynamic slideways for the utmost machining accuracy
- Ball-bearing guide bushing unit with double-cone guide collet and programmable pressures
- The guide bush unit is moved during straight-turning by a tool carrier towards the work spindle.
- Workpiece length up to 200 mm

Parts range – straight-turned parts

On the INDEX MS22-6L, parts with a diameter of 5 to 22 mm and a turning length of up to 200 mm can be machined. The range of parts includes workpieces from all industries, such as injection components, shafts, pistons for the automotive and machine building industries, and as components for electric drives and medical instruments.
Workpiece handling systems

Parts feed and discharge by 6-axis robot via the swivel disk interface 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 synchronous spindle, as well as for double 3-spindle machining. A 3 x OP10 (first side) and 3 x OP20 (second side) variant, with external turning station, is also available.

Parts routing via a shoot with built-in parts conveyor

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

Linear shuttle with intermediate gripper for directed parts removal

Zero damage, fast, position-oriented removal by a linear and rotary motion. The workpiece is transferred from the synchronous spindle, from spindle position 6 on the linear shuttle; this transfers the workpiece to the external handling system.
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 a standard and can be individually extended. You can use iXpanel as you want it for your business organization – that’s Industry 4.0 tailored to your needs.

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

Productive.
Machine performance is maximized by optimally tuned processes in machine cycles with clear control screens. In addition, technology cycles are provided for frequently recurring machining operations and safe machine operation as well as for optimum machining quality.

Intelligent.
The machine always starts with the control home screen. Other functions can always be displayed on a second screen, and the operator enjoys direct, activity-related assistance already in the standard version, such as workpiece drawing, setup lists, programming tools, documentation, etc., right at the machine.

Virtual & open.
With the optional VPC box (industrial PC), iXpanel opens up the world of Virtual Machine and of simulation directly at the control (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
### Technical data INDEX MS22-6

<table>
<thead>
<tr>
<th>Working spindles</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. bar diameter</td>
<td>mm 22 (24)</td>
</tr>
<tr>
<td>Speed *</td>
<td>rpm 10,000</td>
</tr>
<tr>
<td>Power (at 100%/25% duty cycle)</td>
<td>kW 8.7/16</td>
</tr>
<tr>
<td>Torque (at 100%/25% duty cycle)</td>
<td>Nm 10 / 18</td>
</tr>
<tr>
<td>Tool carrier</td>
<td>11</td>
</tr>
<tr>
<td>Side travel X</td>
<td>mm 62</td>
</tr>
<tr>
<td>Side travel Z</td>
<td>mm 85</td>
</tr>
<tr>
<td>Side travel Y</td>
<td>±12</td>
</tr>
<tr>
<td>Synchronous spindle</td>
<td>1/2</td>
</tr>
<tr>
<td>Max. clamping diameter</td>
<td>22</td>
</tr>
<tr>
<td>Speed *</td>
<td>rpm 10,000</td>
</tr>
<tr>
<td>Power (at 100%/40% duty cycle)</td>
<td>kW 9.2/12</td>
</tr>
<tr>
<td>Torque (at 100%/40% duty cycle)</td>
<td>Nm 11 / 14</td>
</tr>
<tr>
<td>Synchronous spindle swivel angle</td>
<td>degrees 132 (165)</td>
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<tr>
<td>Slide travel Z</td>
<td>mm 120</td>
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<tr>
<td>Number of tools for rear-end machining</td>
<td>6</td>
</tr>
</tbody>
</table>

#### Back-boring slides 1x2 (optional)
- Tool carriers for rear-end machining: 1/2
- Slide Travel X: mm 82
- Slide Travel Y: ±12
- Number of tools for rear-end machining: 3/6
- Of which are live: max. 2/4

#### Dimensions, mass, and connected power (for maximum configuration level, without bar guide or loading magazine)
- Mass: kg approx. 6,000
- Length: mm 3,330
- Width: mm 1,830
- Height: mm 2,854
- Connected power: kW, 75 kVA, 105 A, 400 V, 50/60 Hz

#### Control
- Siemens Sinumerik 840D Solution Line

#### Options
- Polygon turning, hobbing, tool monitoring, Y axis, transmit function

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

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### Technical data INDEX MS22-6L

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<tr>
<td>Max. bar diameter</td>
<td>mm 22 (24)</td>
</tr>
<tr>
<td>Speed</td>
<td>rpm 7,500</td>
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<tr>
<td>Turning length</td>
<td>mm 200</td>
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<tr>
<td>Tool carrier</td>
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<tr>
<td>Slide travel X</td>
<td>mm 62</td>
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<tr>
<td>Slide travel Z</td>
<td>mm 85</td>
</tr>
<tr>
<td>Slide travel Y</td>
<td>±12</td>
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<tr>
<td>Synchronous spindle</td>
<td>1</td>
</tr>
<tr>
<td>Slide travel Z</td>
<td>mm 120</td>
</tr>
<tr>
<td>Speed</td>
<td>rpm max. 10,000</td>
</tr>
<tr>
<td>Number of tools for rear-end machining</td>
<td>6</td>
</tr>
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<td>Of which are live:</td>
<td>max. 2/4</td>
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</tbody>
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#### Guide bushing unit
- Displacement: mm > 200

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