

# **MS40-6**

*CNC multi-spindle automatic lathe  
for increased productivity*

# INDEX



*better.parts.faster.*

## INDEX CNC multi-spindle automatic lathe: the benchmark!

With a fully customizable model variant, INDEX offers a machine concept that meets all requirements and the most stringent demands.

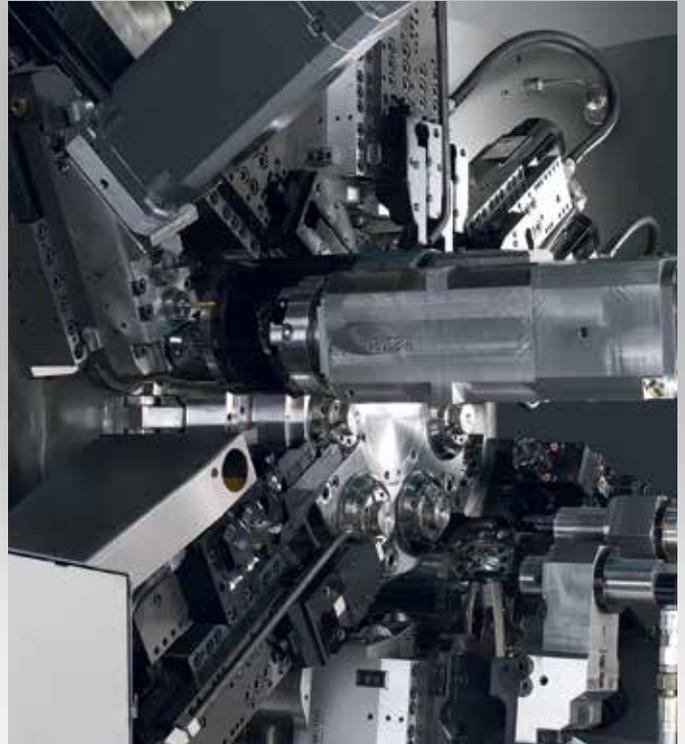
Six main spindles and up to two swiveling synchronous spindles allow previously inconceivable possibilities

in manufacturing engineering. All aspects of the INDEX MS40-6 were developed using state-of-the-art manufacturing technologies.

Generously dimensioned and freely accessible, the work area minimizes setup cost, especially for changeovers. Unhindered chip fall is ensured even with full tooling.



**Designed to meet precise  
user requirements –  
the concept behind the  
INDEX MS40-6**



#### **Machine design**

- Freely accessible work area, making setup particularly easy
- Highly dynamic slide with sliding guide (X axis)
- Non-wearing Z axis, due to quills with hydrostatic support
- Front-opening machine for bar machining
- Chuck part machining with robot loading and unloading
- Directed part discharge through linear handling
- Extremely fast swiveling synchronous spindles with C axis
- Swing arm is locked in machining position by three-piece Hirth coupling ensuring maximum rigidity
- Maximum of 6 tools for rear-end machining with swiveling synchronous spindle for rear-end machining

## The key element: it's original when it originates from INDEX

### Our hallmark – the spindle drum

The compact spindle drum ensures maximum precision in each 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.

### Independent speeds

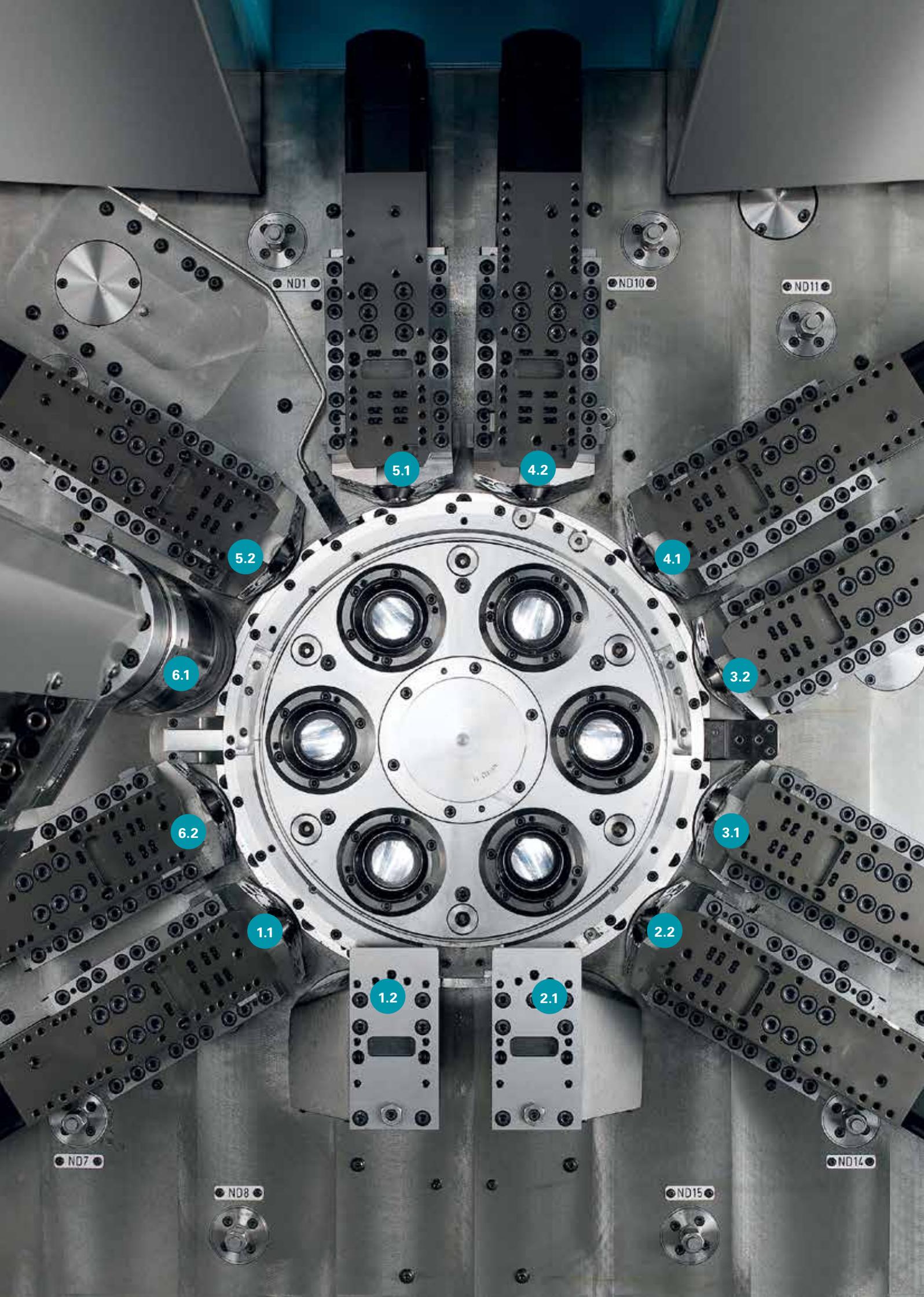
During machining, it is always possible to program the optimum speed, which can still be varied during cutting, for each spindle position and each cutting edge of the tool. The results are optimum chipping, maximum surface quality, short production times per piece, and extended tool life. You can also machine high-strength materials that, until now, were largely unsuited to multi-spindle automatic lathes. It is possible to make speed changes during drum indexing, thus avoiding any additional secondary processing 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 thread cutting
- inclined bores
- cross drilling
- contour milling
- hobbing
- polygon turning
- use of stationary and live turrets with up to 3 tools





ND1

ND10

ND11

5.1

4.2

5.2

4.1

6.1

3.2

6.2

3.1

1.1

2.2

1.2

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ND7

ND8

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ND14

## Precise, fast, and flexible

### Versatility is a strength of the INDEX MS40-6. Whether complex parts or different processes are involved – almost anything is possible

- A maximum of 12 tool carriers with 1 or 2 travel axes
- Y axis (optional)
- 1 or 2 swiveling synchronous 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 multi-edge turning for extended use options

### Even more possibilities for rear-end machining with a swiveling synchronous spindle

- Up to 6 tools, max. 3 of which are live
- Fast swiveling motion and hydraulic locking of the swiveling synchronous spindle via a Hirth coupling
- Efficient chip fall, as machining takes place outside the main work area
- Numerous possibilities using live tools in conjunction with C and Y axes, as well as an electronic shaft

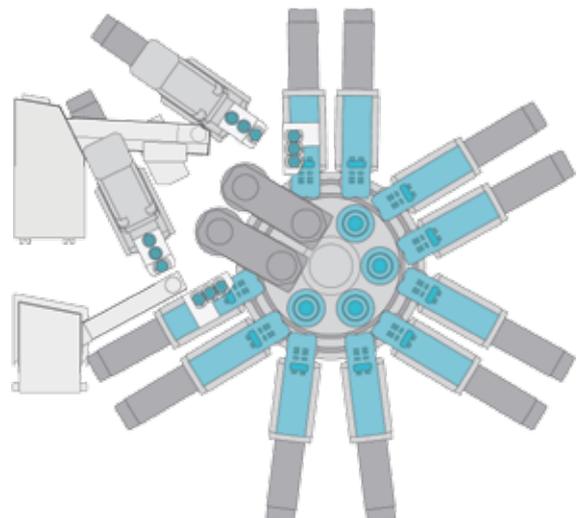
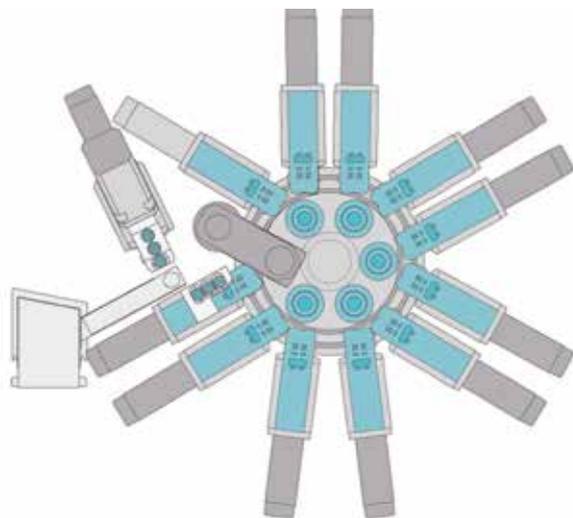
### The double three-spindle machine – a highly productive upgrade option

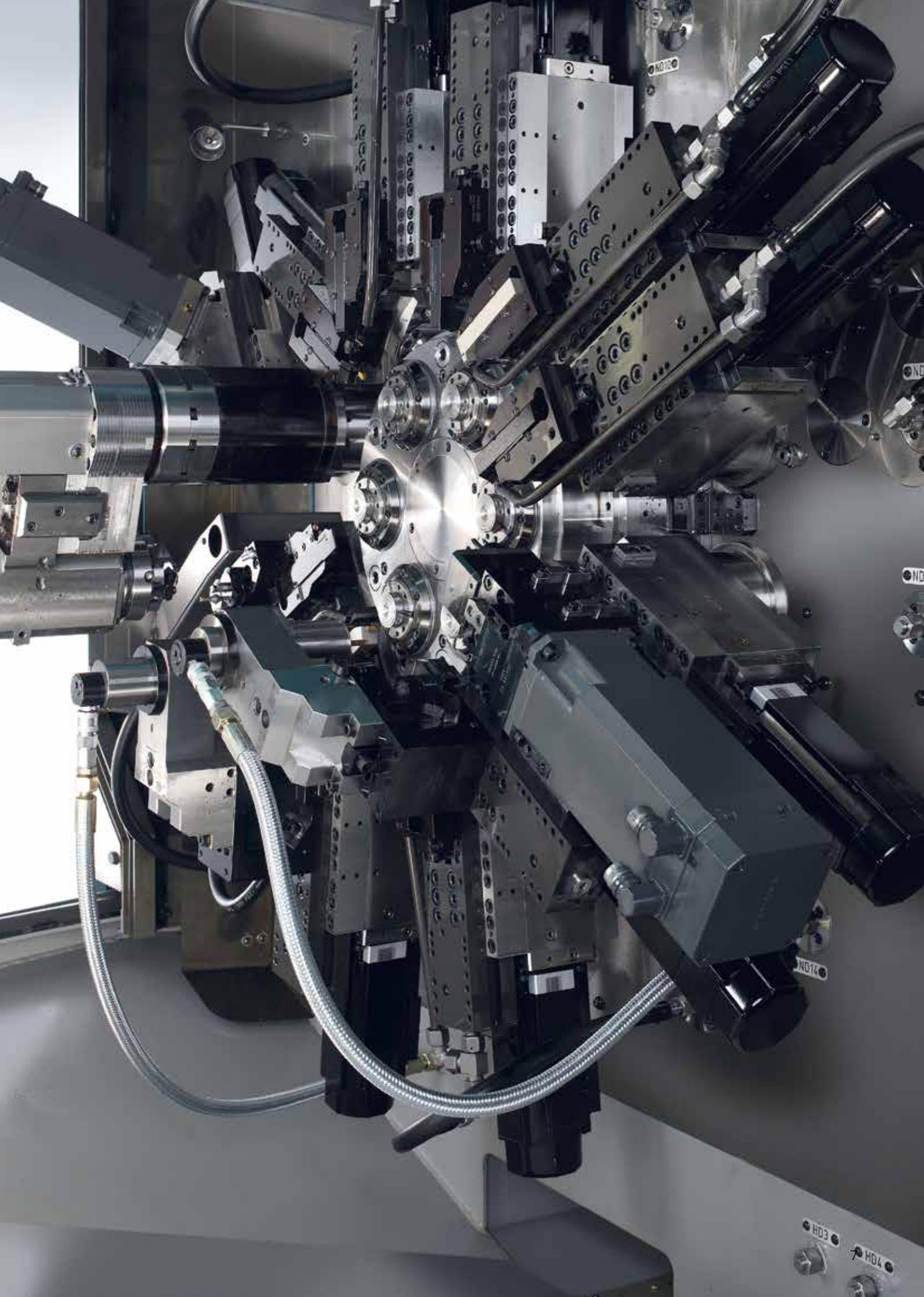
- Additional part production time reduction due to simultaneous manufacturing of 2 workpieces
- 10 tool carriers with 1 or 2 axes (optionally also Y axis)
- 2 swiveling synchronous spindles
- 2 back-boring slides (option)
- Rear-end machining with up to 6 tools per synchronous spindle, with up to 2 spots for live tools

### The same configuration level as a 6-spindle machine with simultaneous reverse-side machining in two spindle positions

- Front-end machining on 4 main spindles
- Simultaneous cutoff-side machining on 2 swiveling synchronous spindles

**Advantage:** Reduced cycle time with time-determining rear-end machining





ND10

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ND

ND14

HD3

HD4

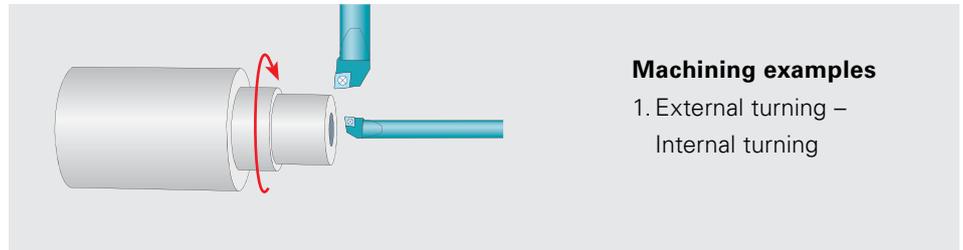
## Simply more possibilities

### The work area – virtually limitless machining capabilities for each spindle position

The tool carrier arrangement in the work area, without a longitudinal sliding block, allows more than one tool to be used on each spindle. The possible machining operations are thus limited only by the tool holder. 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

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 MS40-6 multi-spindle automatic lathes.

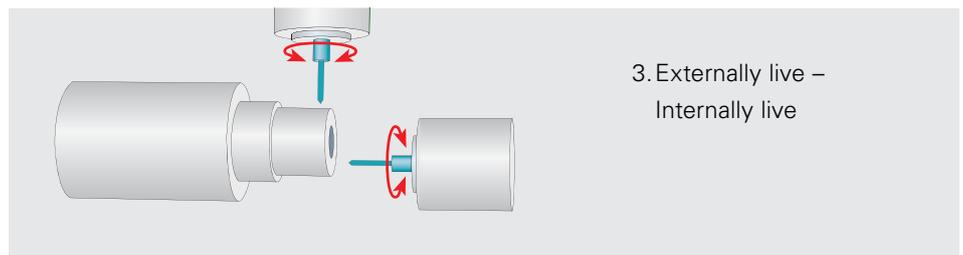


#### Machining examples

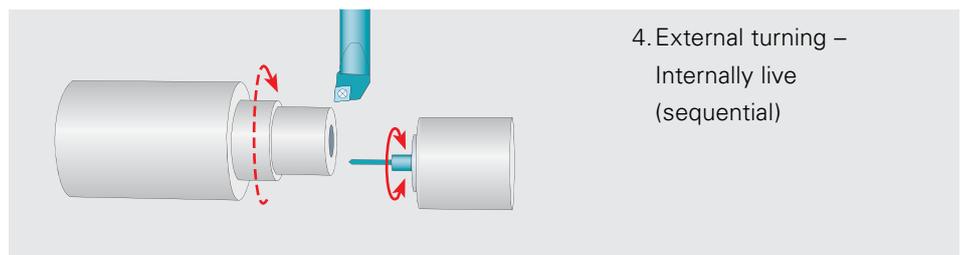
1. External turning – Internal turning



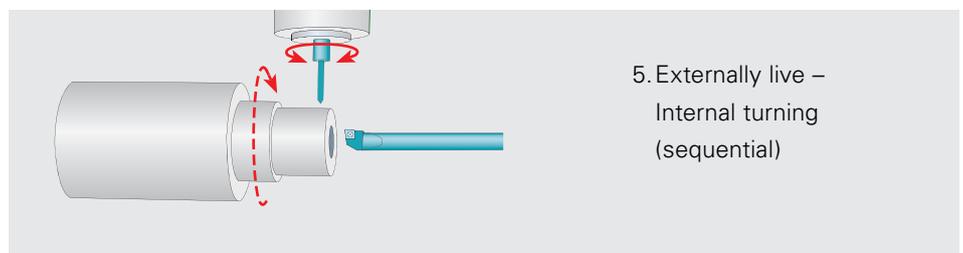
2. External turning – External turning



3. Externally live – Internally live



4. External turning – Internally live (sequential)



5. Externally live – Internal turning (sequential)



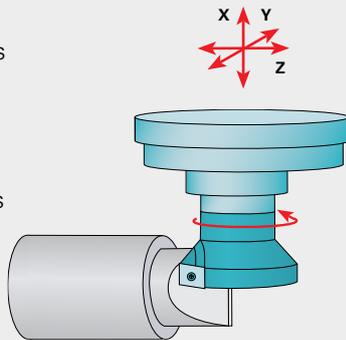
6. Externally live – External turning (sequential)

# For the most diverse technologies

## Milling

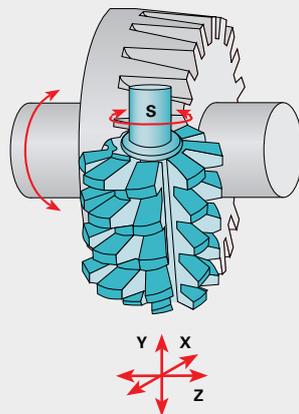
Milling with live tooling in the following variants:

- Disk milling cutter in conjunction with C axis operation (transmit function)
- End milling cutter in conjunction with Y axis operation
- Plunge milling (see graphic)



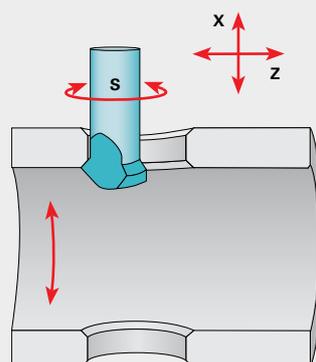
## Gear cutting, hobbing

- 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

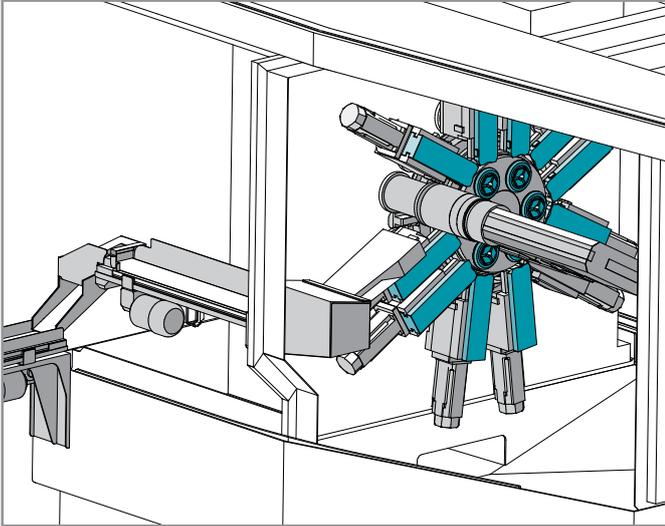


## Elliptical deburring of cross-drilled holes

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

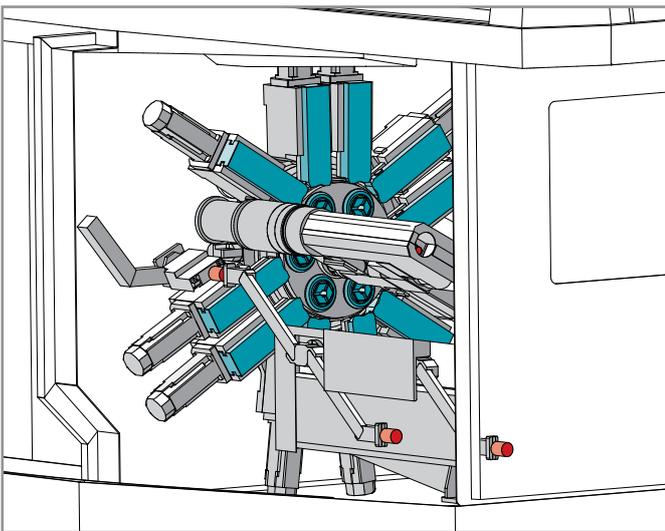


## Workpiece handling systems



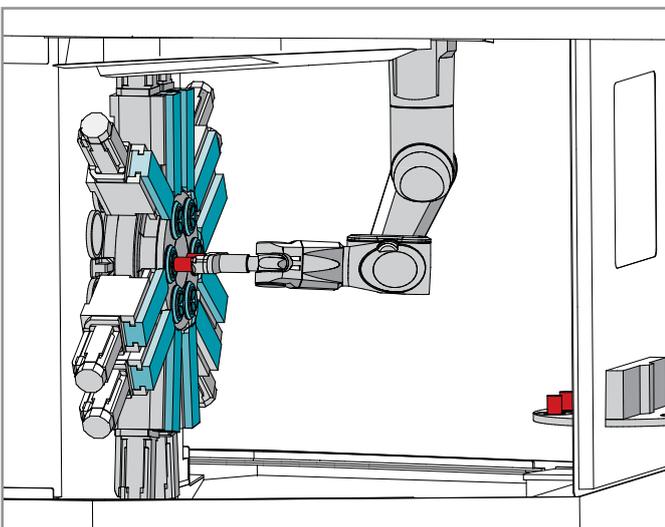
### Stationary parts removal with integral parts conveyor

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

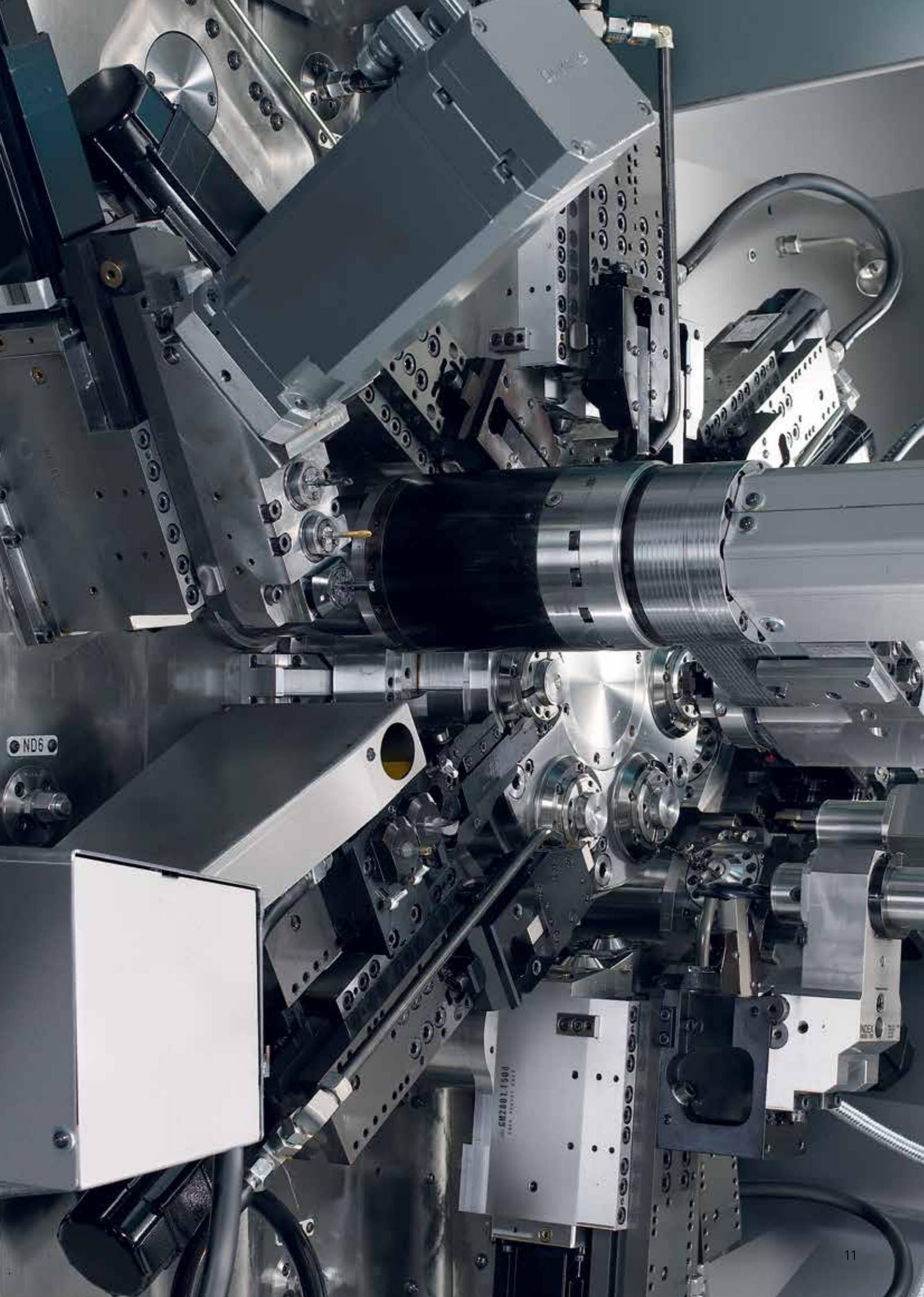
Very rapid, position-oriented removal is provided by a linear and rotary motion. The workpiece is transferred first from the synchronous spindle to the intermediate gripper. The linear shuttle then transfers the workpiece to the external handling system. This process takes place during secondary processing time.



### 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.



ND6

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S&B UNIVERSAL



## The cockpit for easy integration of the machine in your business organization.

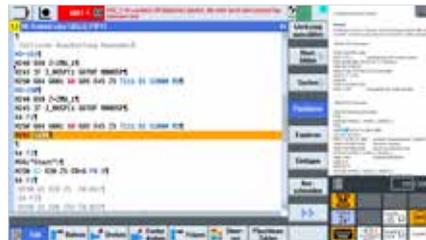


### Focus on production and control – Industry 4.0 included.

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 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.

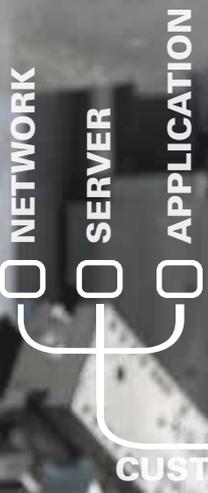
Machine performance is maximized by optimally tuned processes in machine cycles with clear control screens. In addition, technology cycles are provided for frequently recurring machining operations and safe machine operation as well as for optimum machining quality.

### 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!



18.5" TOUCHSCREEN MONITOR

**STANDARD** included as standard

**OPTION**

Industry 4.0 features



Order documents



Customer data



Workpiece counter



Production status



Drawings



Setup sheet



Notes



Information center



Maintenance & care



User management



Technology computer



Programming help



VPC Box



Virtual machine 3D simulation



VirtualPro Programming Studio



Custom applications

+ many more standard features

## Technical data

<b>Working spindles</b>		<b>6</b>
Max. bar diameter	mm	40
Speed <sup>*</sup>	rpm	7,000
Power (at 100%/25% duty cycle)	kW	13/24
Torque (at 100%/25% duty cycle)	Nm	31/57
<b>Tool carrier/headstock</b>		<b>max. 12</b>
Slide travel X	mm	73
Slide travel Z	mm	120
Slide travel Y	mm	42
<b>Swivel synchronous spindle</b>		<b>max. 2</b>
Max. clamping diameter	mm	40
Speed N <sub>max.</sub>	rpm	8,000
Speed N <sub>rated</sub>	rpm	6,000
Power (at 100%/40% duty cycle) and N <sub>rated</sub>	kW	10/14
Torque (at 100%/40% duty cycle) and N <sub>rated</sub>	Nm	16/22
Synchronous spindle swivel angle	degrees	144
Slide travel Z	mm	150
Max. number of tools for rear-end machining		6
<b>Back-boring slide</b>		
Tool carriers for rear-end machining		1/2
Slide travel X	mm	82
Number of tools for rear-end machining		3/6
of which driven		2 / 4
<b>Dimensions, mass, and connected power</b> (for maximum configuration level, without bar guide or loading magazine)		
Mass	kg	approx. 7,100
Length	mm	3,329
Width	mm	2,032
Height	mm	2,854
Connected power		65 kW, 78 kVA, 110 A, 400 V, 50/60 Hz

### Control

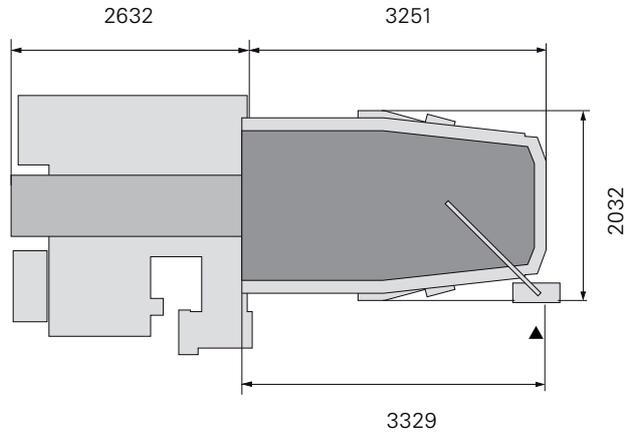
Siemens Sinumerik 840D Solution Line, with Teleservice, spindle stop, C axis as standard

### Options

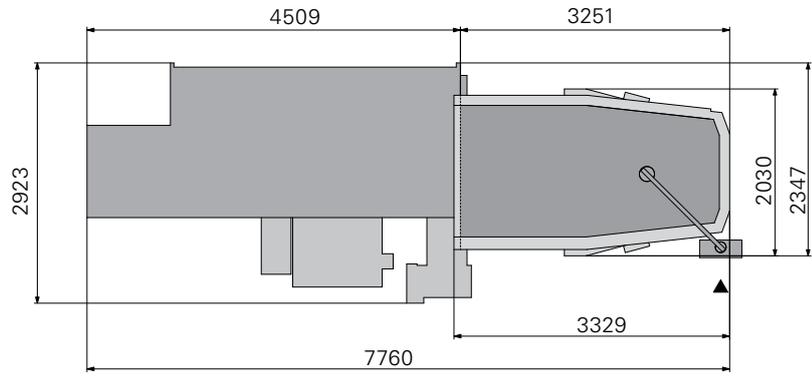
Polygon turning, hobbing, tool monitoring, Y axis, transmit function

<sup>\*</sup>Speed limitations are necessary, depending on bar diameter, bar guide, and workpiece clamping.

INDEX MS40-6  
INDEX bar guide 3300



INDEX MS40-6  
Loading magazine INDEX MBL 3300



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