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MultiLine MS52C3

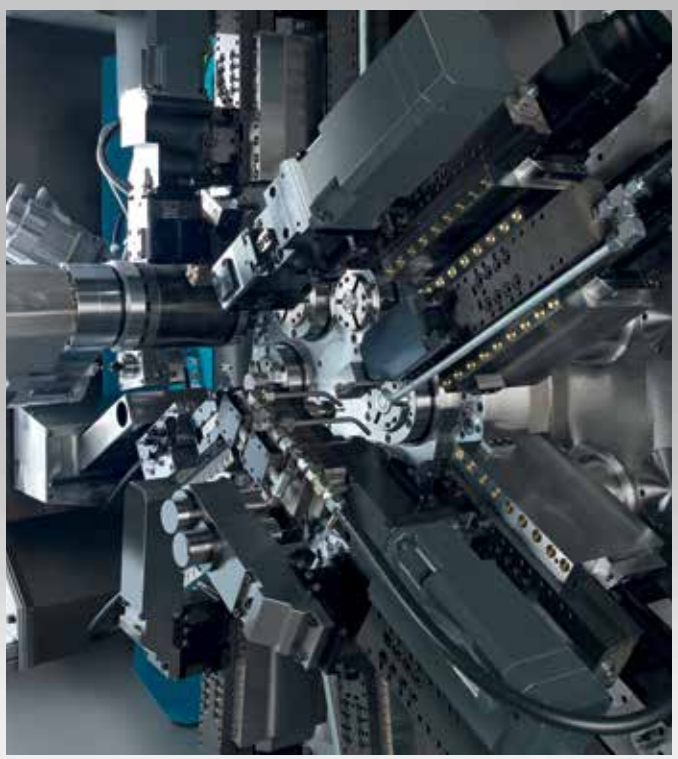
CNC Multi Spindle Turning Machine

INDEX CNC multi-spindle machines: The standard to beat!

With the totally configurable MS52C3, we offer a machine concept that meets all requirements and the most stringent demands. 6 main spindles, up to 2 swiveling synchronous spindles, and up to 12 tool carriers, which can be configured in XYZ, enable unimagined manufacturing possibilities.

All aspects of the MS52C3 were developed for use of state-of-the-art manufacturing technologies. Generously dimensioned and freely accessible, the working area minimizes setup cost especially for changeovers.
Unhindered chip flow is ensured even at full tooling.

Designed to meet precise user requirements – the concept behind the MS52C3



Machine concept

- Freely accessible working area and, thus, extremely easy setup
- Highly-dynamic slides with sliding guide (X-axis)
- Non-wearing Z-axis due to quills with hydrostatic support
- Front-opening machine for bar machining
- Chucked part machining with loading and unloading by robots or linear handling units
- Extremely fast swiveling synchronous spindles with C-axis
- Swivel arm is locked in the machining position with a three-piece Hirth coupling, ensuring maximum rigidity
- Maximum of 6 tools for backworking per swiveling synchronous spindle

The core – top precision from INDEX

Our trade mark – the spindle drum

The compact spindle drum ensures maximum precision in each position through the use of a three-piece Hirth coupling. The core is composed of 6 fluid-cooled motorized spindles integrated in the spindle drum. Infinitely variable speed control, high torque, small frame size, maintenance-free operation, and advanced synchronous technology – these are the criteria defining an INDEX CNC multi-spindle machine.

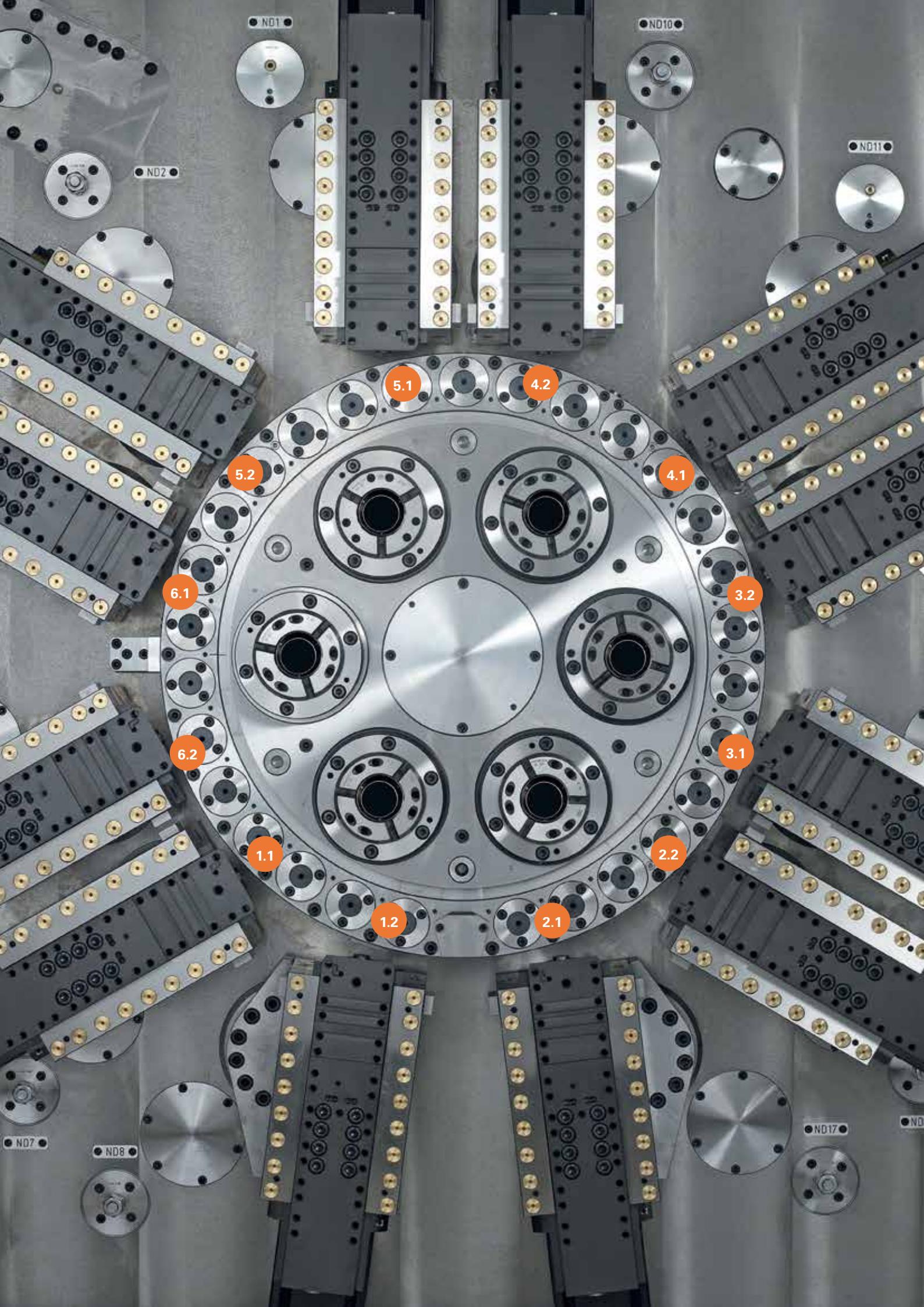
Independent speeds

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 result is ideal chipping, maximum surface quality, short part production times, and longer tool service life. You can also machine high-strength materials that up to now were hardly suitable for multi-spindle machines. It is also possible to make speed changes during drum indexing, thus avoiding any additional secondary processing times.

More than just turning

INDEX CNC multi-spindle machines with driven tools, C-axis, and Y-axis give you access to entirely new processes, such as:

- Off-center drilling and thread cutting
- Inclined drilling
- Cross drilling
- Contour milling
- Hobbing (tooth cutting)
- Multi-edge turning
- Use of fixed and driven turrets with up to 3 tools


ND1
ND10
ND11
ND2
5.1
4.2
5.2
4.1
6.1
3.2
6.2
3.1
1.1
2.2
1.2
2.1
ND7
ND8
ND17

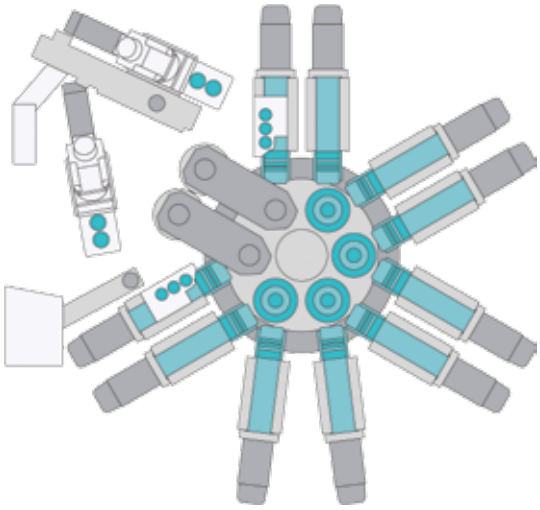
Precise, fast, and flexible

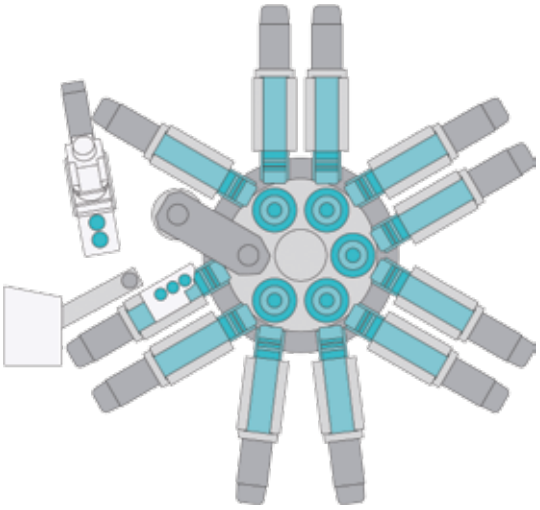
The strength of the MS52C3 lies is its versatility. Whether complex parts or different processes are involved – anything is possible

- 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
- Transverse machining with driven 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, of which up to 3 are driven
- Fast swiveling motion and hydraulic locking of the swiveling synchronous spindle via a Hirth coupling
- Favorable chip flow due to machining outside the main working area
- Numerous possibilities using live tools in conjunction with C- and Y-axes as well as an electronic shaft





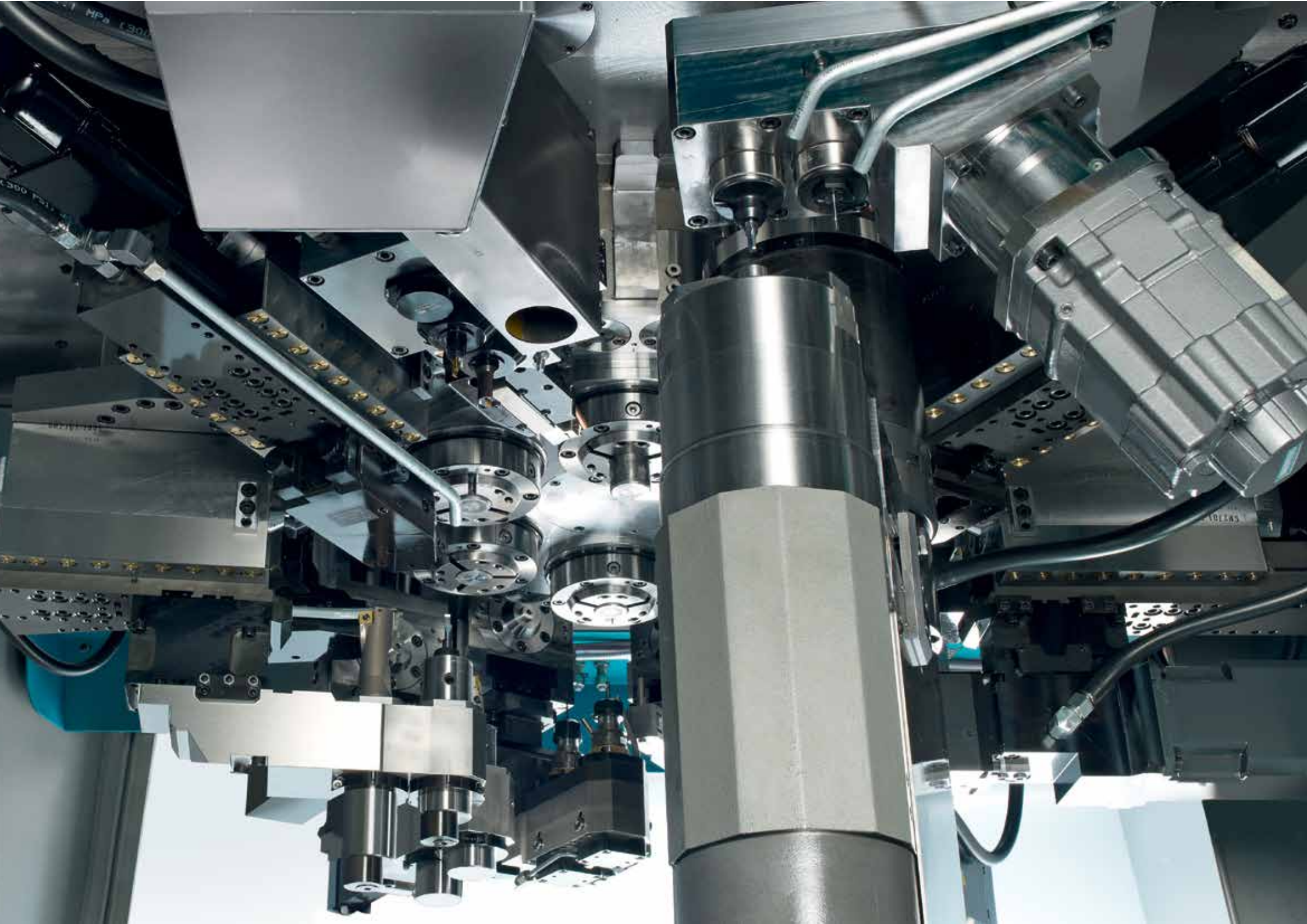
The double 3-spindle machine – an interesting configuration possibility

- 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) with max. 3 tools each, of with up to 2 are driven

With 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

Benefit: Reduced cycle time with time-determining backworking



Chucked part machining? Robot integration!

Robot as a productivity factor

If chucked parts are to be machined, the MS52C3 with its generously dimensioned working area without a longitudinal slide block lends itself to automatic straight-line feed. The robot integrated in the working area performs the loading and unloading of workpieces.

Equipped with a 160 (175) mm chuck, it is possible to machine premolded parts, forgings, or extruded parts up to approximately 125 mm.

Here, the multi-spindle machine provides a cost-effective alternative to single-spindle vertical lathes when small quantities and batch sizes are involved.

Automated workpiece handling with robot ensures optimum production

- Flexible, position-oriented loading and unloading in all 6 spindle positions
- Damage-free feed and discharge even for delicate parts
- Short loading and unloading times, including in conjunction with 2-fold or 4-fold gripper for double 3-spindle production
- Ideally suited for pick-and-place as interface to conveyor belts or palletizing systems

Benchmarking data

Max. part weight	kg	6
Approx. tool change time	s	9

The swivel disk:
Handover to the peripheral handling interface

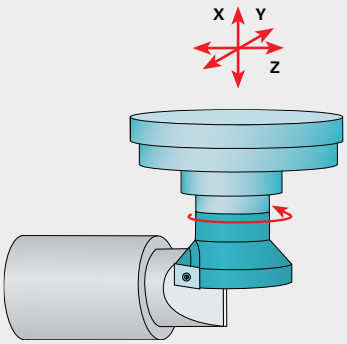
- Standardized interface (both mechanical and electrical)
- Closed system and, thus, hardly any oil discharge

For various technologies

Milling

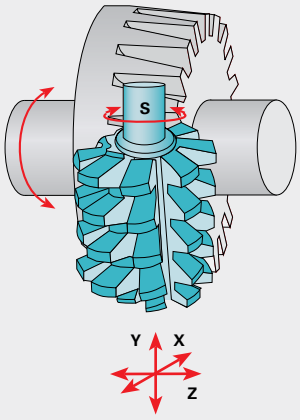
Milling using driven tools in the following versions

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



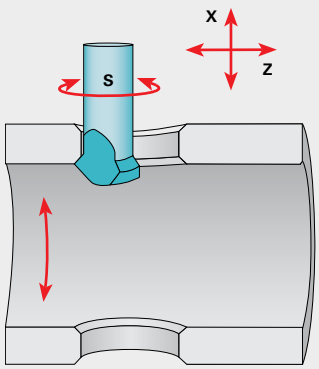
Gear cutting, gear hobbing

- Coupled with electronic shaft
- Maximum rigidity
- Positionally correct gearing with other surfaces or form elements
- Any desired angle offset can be programmed
- Higher tool life due to shifting of Y-axis



Elliptic deburring of transverse holes

Uniform deburring (uniform chip removal) of transverse holes by interpolation of C-axis, X-axis and Z-axis with driven tool.



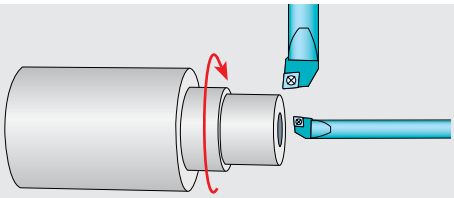
Simply more possibilities

The working area – almost limitless machining capabilities in each spindle position

The tool carrier arrangement in the working 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:
You have an open flow of chips

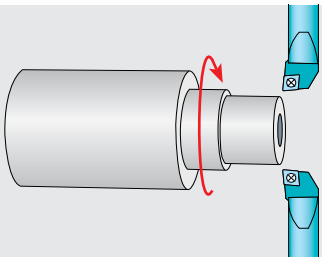
Performance as we understand it

Maximum productivity and cost-effectiveness of multi-spindle machines, combined with the precision and flexibility of CNC single-spindle machines, is the formula for success of the MS52C3 multi-spindle machine.

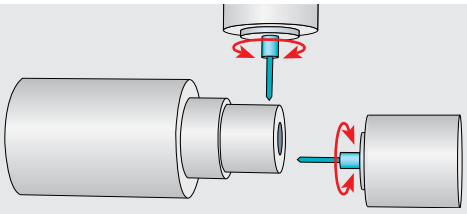


Machining examples

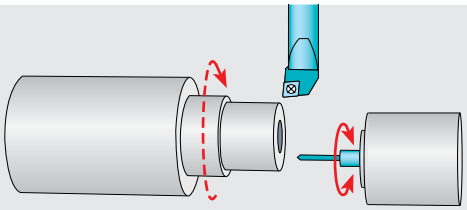
1. Turning O.D. – Turning I.D.



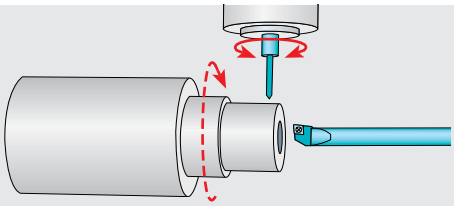
2. Turning O.D. – Turning O.D.



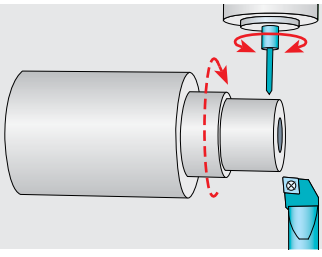
3. Driven tool outside – Driven tool inside



4. Turning O.D. – Driven tool inside (sequentially)



5. Driven tool outside – Turning I.D. (sequentially)



6. Driven tool outside – Turning O.D. (sequentially)

Powerful and convenient control

New and optimized
The new INDEX C200-SL control is firmly committed to the new SIEMENS S840D solution line control and SIEMENS SINAMICS drives and therefore represents the highest level of performance and functionality.
This ensures future security and productivity!

Pioneering – The user interface
As standard equipment, has the INDEX MS52C3 a 43.5 cm screen with a full touch-sensitive surface. A touch of the finger now suffices to use softkeys directly on the screen to open files, folders and menu trees or to move entire pages on the screen.
Even switching the operating areas or enabling/disabling of block skip levels is now done simply by "finger pointing" on the screen.

Compatible
Despite the innovative technology, the new INDEX C200-SL control is compatible with the previous control in all key operating areas. And existing MS52C3 NC programs can be run in the new control as well.

Innovative
In addition to the adoption of various selector switches directly into the touch-sensitive user interface on the screen, LED backlit control buttons and switches on the machine control panel are also part of the new control concept.
They are used by the control to actively indicate allowable movements or enabled switches to the operator – inadmissible movements and switches remain dark.
Actions expected by the operator are signaled by flashing keys!
In this way, the C200-SL control communicates directly with the operator!

Modern
- The latest editor for easy and fast programming
- Convenient display functions such as multi-editor, animated cycles, etc.
- Programming of mathematical functions, variables and workpiece counts
- The same functionality for turning, milling, drilling
- Easy network integration through control-integrated network technology
- Intelligent online help, detailed descriptions of error causes and remedies

Efficient
- Largely unchanged machine operation and key arrangement compared to the previous control (INDEX)
- Practical machine cycles support safe, time-effective and collision-free machine operation
- Internal calculation accuracy better than nano-interpolation (80 bit floating point arithmetic)
- All displays and operating inputs in clear text
- More than 20 foreign languages

Productive
- Latest control generation with maximum performance
- Full-fledged Y-axis/axes for drilling and milling
- Comprehensive technology cycles for error-free and optimal machining quality
- Free assignment and programming of additional drilling and milling units
- Fast and safe job change by automatic saving of setup data and automatic re-initialization at (re-)selection of the job

Safe
- Tool breakage monitoring from INDEX or from ARTIS available (option)
- Safety Integrated Inside: Continuous safety monitoring and testing integrated in the control
- Post-process and in-process measurement possible (optional))
- INDEX Virtual Machine & VPro Programming Studio for off-machine programming, setup, optimizing on a PC (option)


INDEX
HC/UKS/UELLE/MP11
Schaltung 60 Grad
Schaltung 30 Grad
Schaltung Spind. 1 in 1
Verriegeln
Entriegeln
Details ausblenden
Zurück
Position 180.000 °
Istwert 1180.000 mm
Sollwert 1180.000 mm
Container 3
Stellung genau 1150.1=1
Auslastung 0 %
Betriebsart UHR16G
Freigabe UHR16G
TR1
180.0°
Einrichten
Ablauf Steuern
Programm Fahren
Programm-Beeinfl.
Einheiten Bedienen
Messen / Überwach.
Werkzeug-korrekturen

Technical data

Work spindles		**6**
Maximum bar diameter	mm (inch)	52 (2.1)
Speed *	rpm	5000
Power (at 100% / 25%)	kW (hp)	20 / 30 (26.8 / 40.2)
Torque (at 100% / 25%)	Nm (ft lbs)	88 / 130 (64.9 / 95.9)

Headstock tool carriers	**max.**	**12**
Slide travel X	mm (inch)	100 (3.9)
Slide travel Z	mm (inch)	180 (7.1)
Slide travel Y	mm (inch)	56 (2.2)

Swiveling synchronous spindles		**1 / 2**
Maximum bar diameter	mm (inch)	52 (2.1)
Speed	rpm	6000
Power (at 100% / 40%)	kW (hp)	5.7 / 7.2 (7.6 / 9.7)
Torque (at 100% / 40%)	Nm (ft lbs)	18 / 23 (13.3 / 17.0)
Swiveling angle of synchronous spindles	Degrees	132
Slide travel Z	mm (inch)	190 (7.5)
Max. number of tools for backworking		3 / 6

Back-boring slides 1 + 2 (optional)		
Tool carriers for backworking		1 / 2
Slide travel X	mm (inch)	82 (3.2)
Number of tools for backworking		3
of which driven		2

Dimensions, weight and connected power (for maximum configuration level, without bar guide or loading magazine)		
Weight	kg (lbs)	12000 (26455.1)
Length	mm (inch)	4030 (158.7)
Width	mm (inch)	2232 (87.9)
Height	mm (inch)	3129 (123.2)
Connected power **		94-127 kW, 111-150 kVA, 160-216 A 400 V, 50/60 Hz

Control

INDEX C200-4D (based on Siemens S840D sl) with teleservice, spindle stop, C-axis in standard scope

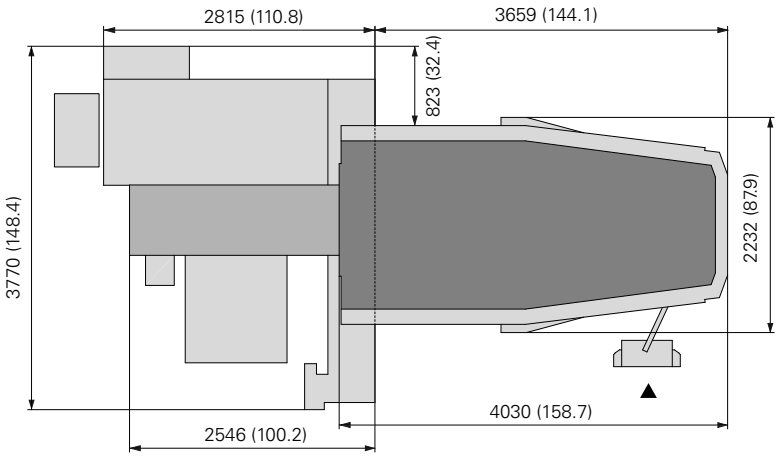
Options

Multi-edge turning, hobbing, tool monitoring, Y-axis, transmit function

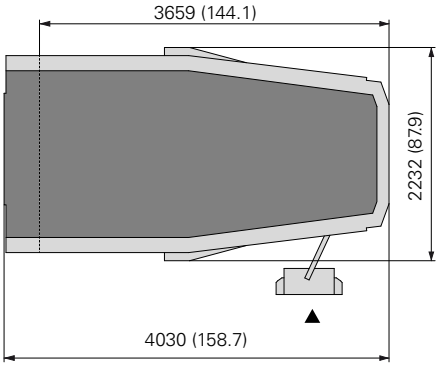
* Speed limitations are necessary, depending on bar diameter, bar guide and workpiece clamping.

** Dependent on I/O devices.

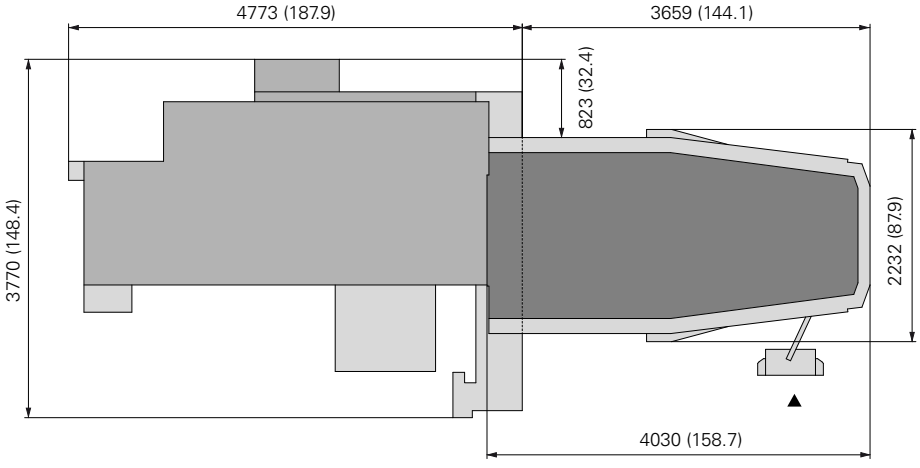
MS52C3
INDEX bar guide 3800



MS52C3
Chuck machine



MS52C3
IEMCA loading magazine SIR 3300



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