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RatioLine G220

Turn-Mill Center

Turning-Milling or Milling-Turning

the G220 gets your workpieces and unit costs in shape

The generous work area of the G220 forms the basis for equal implementation of milling and turning in one machine design. The configuration of the machine is designed to provide a maximum of flexibility independent of the primary use of the machine.

The dynamic and powerful motorized milling spindle allows the production of demanding workpieces – even using five-axis machining.
Moreover, the lower tool turret with a Y-axis and a powerful tool drive ensures the possibility of three-dimensional machining on the main and counter spindle.

The machine design

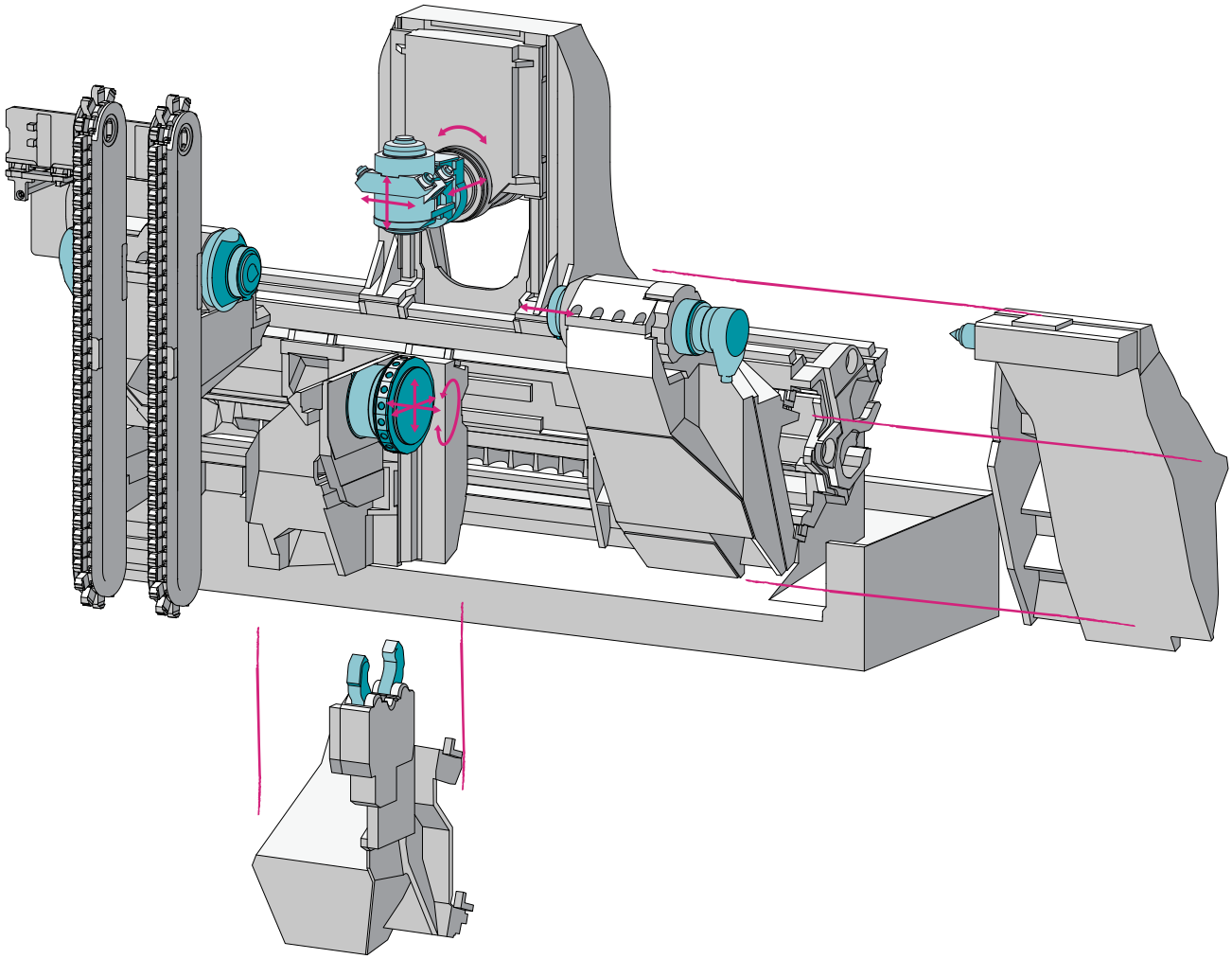
- Spindle clearance 65 mm, optional: Spindle clearance 90 mm, chuck ø=210 mm
- Powerful motorized spindles
- Lower tool turret with Y-axis (100 mm) and 18 stations (VDI25) or 12 stations (VDI30)
- Tool drive for lower turret 7,200 rpm, up to 6 kW and 18 Nm
- Fast tool change
- Generous work area designed for turning/milling or milling/turning
- Simultaneous machining with two tool carriers possible
- High dynamics (up to 55 m/min rapid traverse)

The motorized milling spindle

Powerful and dynamic motorized milling spindle (max. 18,000 rpm, 11 kW and 30 Nm). 70 or 140 magazine stations, HSK-T40 and fast tool change of approx. 6 s chip-to-chip time

Powerful milling and turning functionality

The G220 with its dynamic motorized milling spindle is ideal for machining of complex workpieces – up to five-axis machining.
With a high degree of rigidity, thermal and dynamic stability and vibration damping – also thanks to the Y/B-axis running in hydrostatic bearings – workpieces can be completely machined from six sides with high productivity and precision.



Main and counter spindles
- D 65 mm
- 5,000 rpm
- 32 kW, 170 Nm (40%)

optional: Spindle clearance
- D 90 mm
- 3,500 rpm

Main spindle
- 40 kW, 310 Nm (40%)

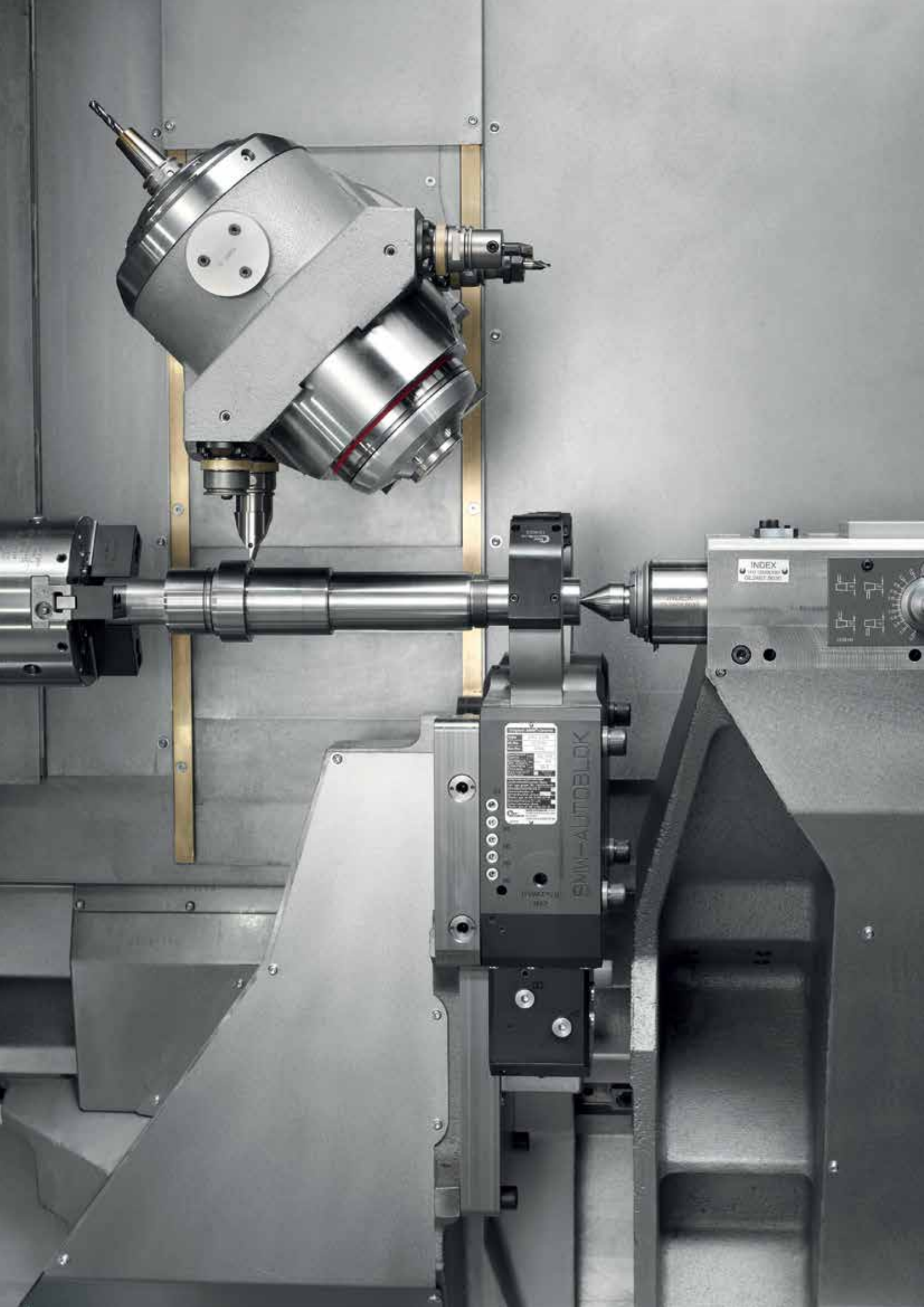
Counter spindle
- 40 kW, 207 Nm (40%)

Motorized milling spindle
- 18,000 rpm
- 11 kW (100%), 30 Nm (25%)
- X-axis 355 mm
  Rapid traverse rate 30 m/min
- Y-axis +/- 80 mm
  Rapid traverse rate 15 m/min
- Z-axis 1040 mm
  Rapid traverse rate 55 m/min
- B-axis -50° /+230°

Lower turret
- 7,200 rpm
- 6 kW, 18 Nm (25%)
- X-axis 185 mm
  Rapid traverse rate 30 m/min
- Y-axis +/- 50 mm
  Rapid traverse rate 15 m/min
- Z-axis 1000 mm
  Rapid traverse rate 55 m/min

Tailstock
- Max. pressure force 8,000 N
- Tool holding fixture DIN 2079, SK 30
- Max. distance from spindle zero 1265 mm

Steady rest
- Clamping range 12-152 mm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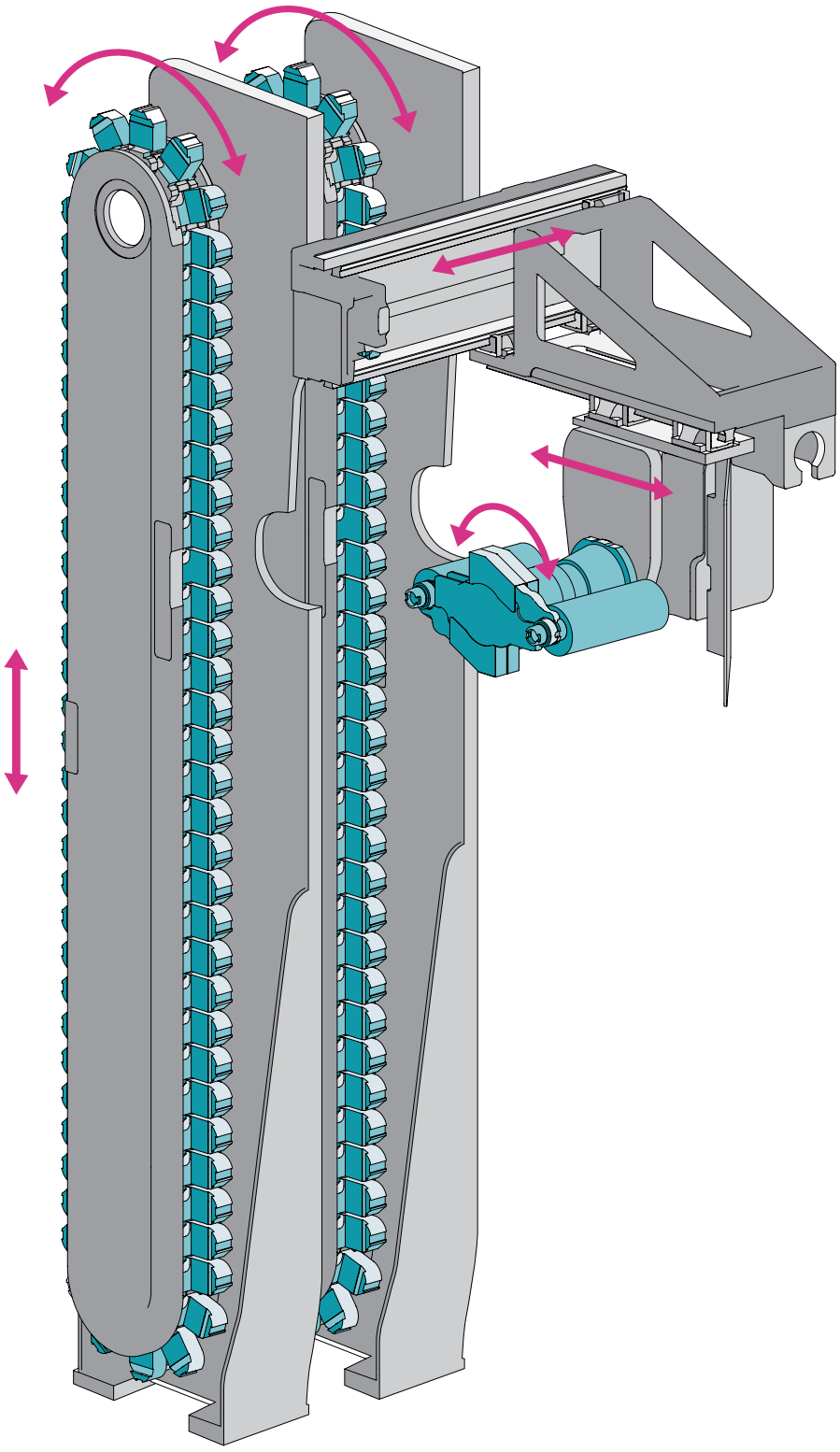
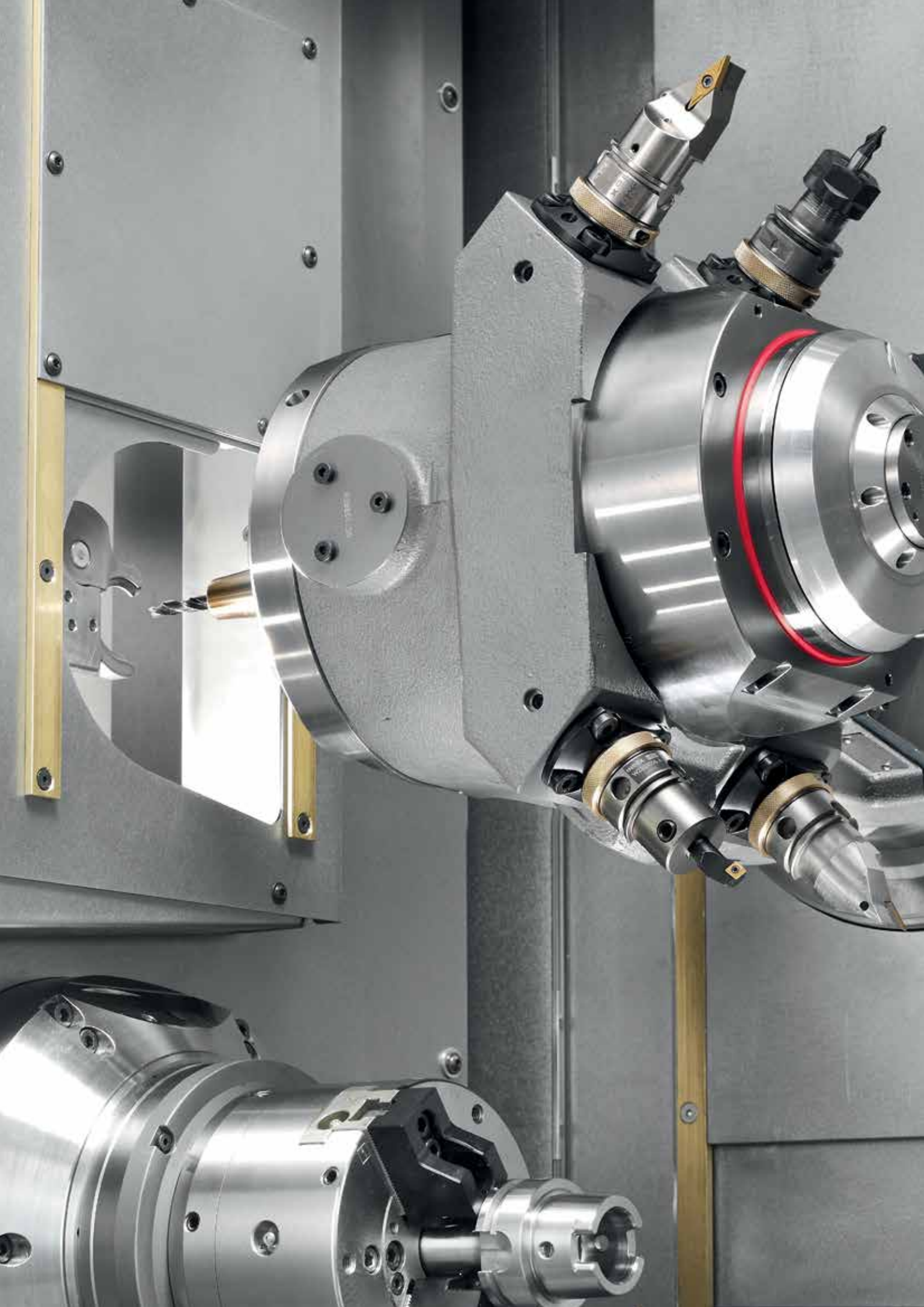
Fast tool change and large tool storage

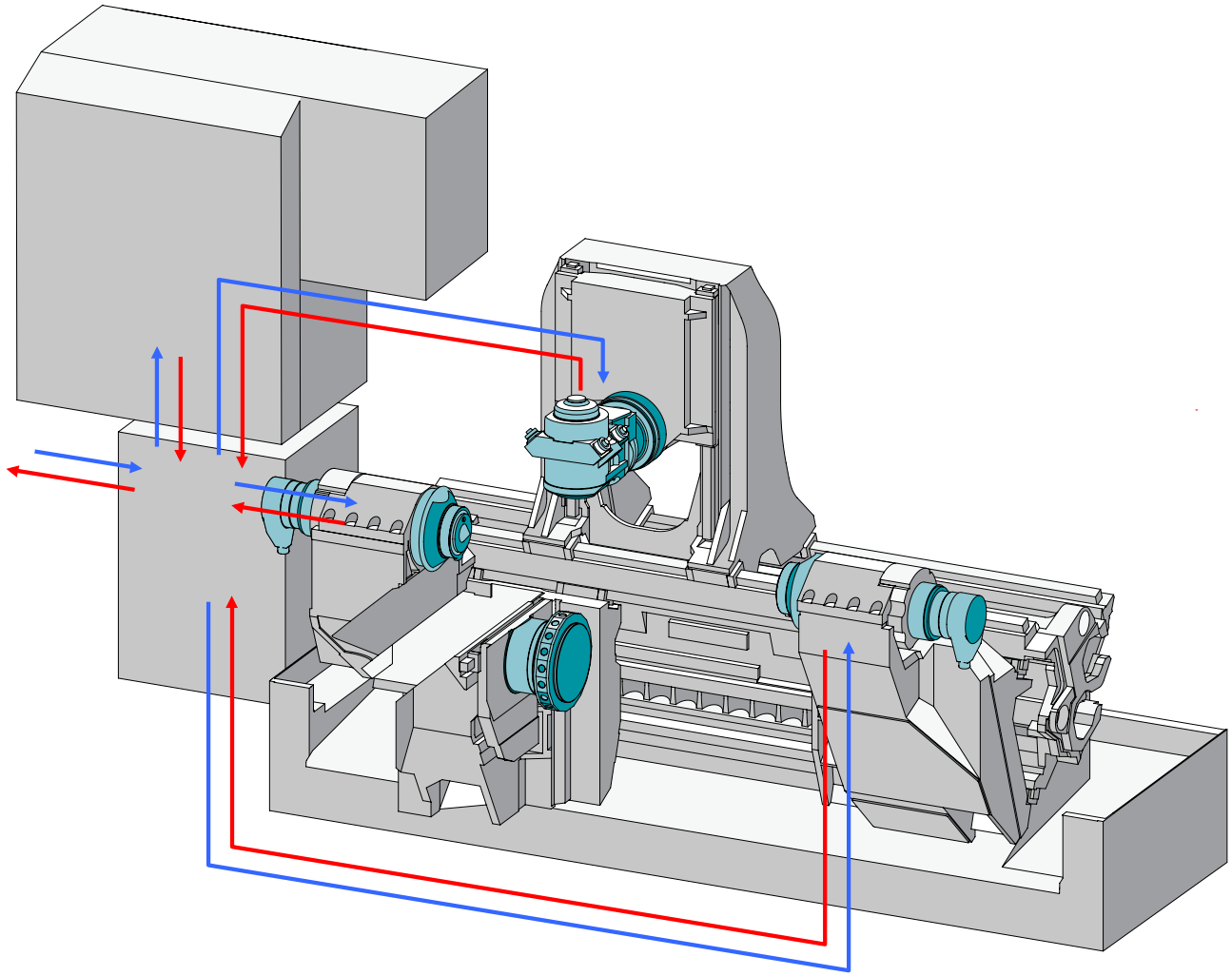
A shuttle supplies the motorized milling spindle with the required tools from the tool magazine. With a choice of 70 or 140 tool stations, the G220 has a large stock of tools, contributing to reduced setup costs.

A chip-to-chip time of approx. 6 s ensures short downtimes and high productivity.



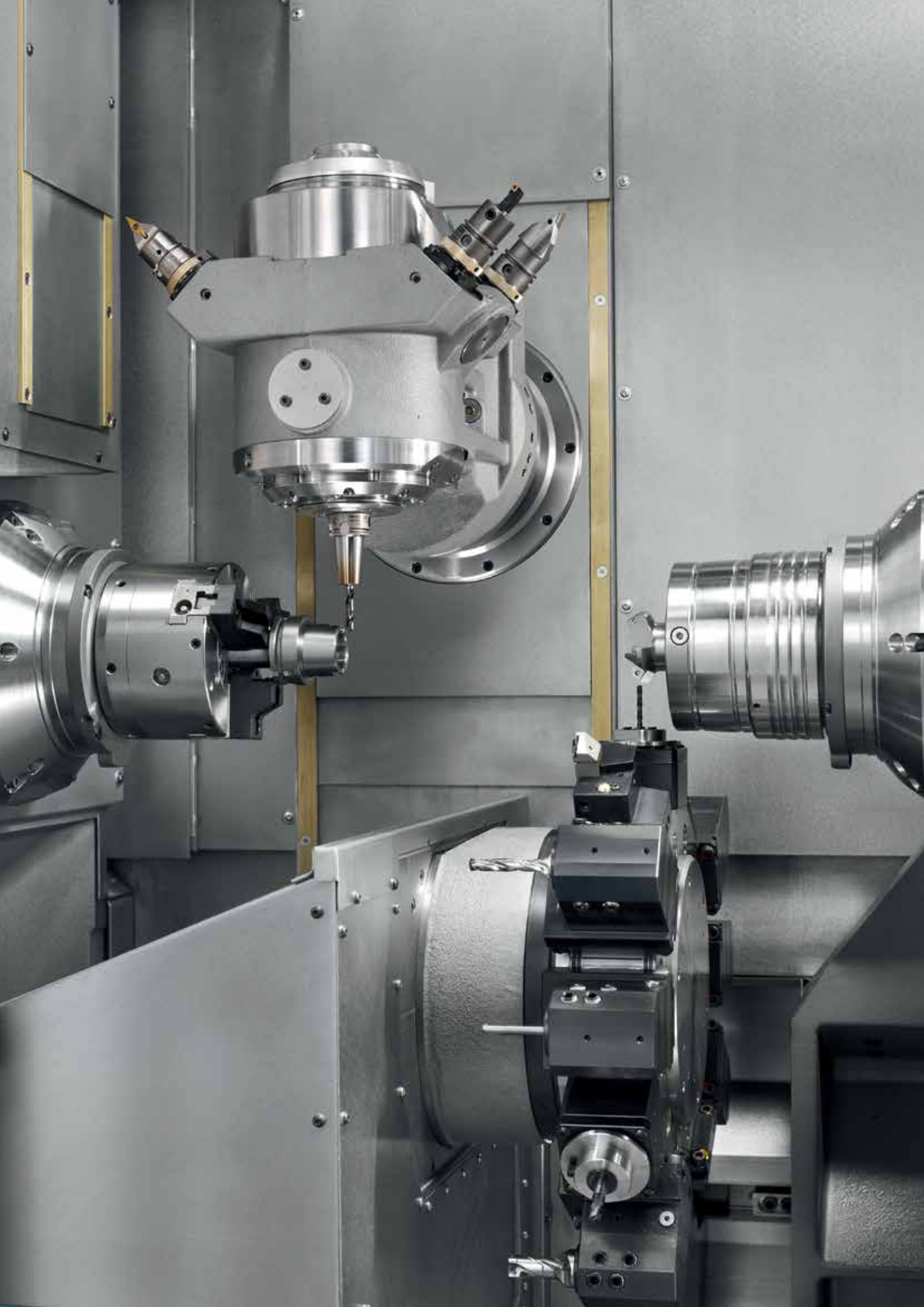


The cooling concept: efficient use of energy



Intelligent use of proven cooling principles:

- **Targeted heat dissipation**
  All high-loss heat sources of the G220 are cooled directly with different cooling media via multiple fluid circuits. In addition to the cooling circuits for the main spindle, counter spindle, and motorized milling spindle, torque drive of the B-axis, the hydraulic system and control cabinet also have a separate cooling circuit. The lost heat energy is absorbed directly in the fluid and removed from a central location of the machine.
- **Economic use of waste heat**
  The INDEX "cold water interface" allows the heat loss energy stored in the cooling medium to be removed from a central location and conveyed for another use, if required, e.g., production hall heating, service water heating, or process heating for other production steps. The recovery of machine waste heat enables a sustainable reduction of energy costs in the company.
- **Climate-neutral dissipation of heat**
  The cold water interface provides the ability to dissipate heat in a climate-neutral manner, if the machine waste heat stored in the cooling medium cannot be used otherwise. The necessary cooling unit can be used with the help of the water interface first on the outside of the production hall and secondly also centrally for several machines. This offers a considerable energy savings potential for production hall heating dissipation/climate control or increased efficiency as a result of centralized heat disposal.



The control – Future proof · Flexible · Innovative

Future-proof
The C200 SL control of the INDEX G220 is based on the new S840D solution line (sl) control and SINAMICS drives from SIEMENS.
This ensures both efficiency and future-proof investment: The user gets the latest generation of control technology that assists the operator in any type of application.
New from INDEX:
INDEX VirtualLine is now executable directly on the machine operating panel and assists the operator at the machine with features such as CrashStop® and VPro Programming (option).

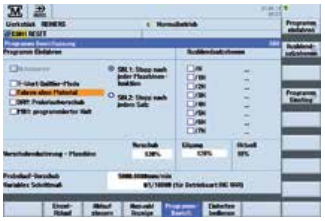
Ease of use
The operating panel of the G220 is equipped with a 18 inch touchscreen. As a result, various selector and control switches are now integrated directly into the user interface so that operating the machine is substantially simplified and made more transparent without compromising on familiar features.
A touch of the finger now suffices to use softkeys directly on the screen to open menu trees or to move entire pages on the screen.

Flexible
The C200-SL control, enhanced by INDEX's intelligent editing features, provides optimal and flexible support for complex turning, drilling and milling operations with a wide variety of canned cycles and programming templates – even when using multiple tools.
Numerous other special machining technologies are available as options, such as internal or external grinding, various gear cutting methods, etc.
And in addition, various system solutions are available for the integration of measuring, loading and handling requirements (options).

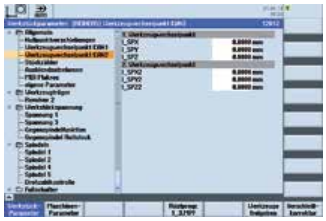
Innovative
VirtualLine in the operating panel supports three modes of operation:
CrashStop® mode
(predictive simulation)
The next steps in the machining program are simulated in advance. If a collision is detected, the machine is stopped before reaching the block that causes the collision.
RealTime mode
(synchronous simulation)
The machining program is simulated synchronously (and switchable) on the control screen.
VM on Board
(independent simulation)
Independent operation of the Virtual Machine on the control panel

Advanced
- 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
- Positions and movements of all axes and spindles in one basic screen (INDEX)
- Familiar machine operation and keypad layout (INDEX)
- Practical machine cycles for safe and collision-free machine operation
- Supported re-entry after program termination
- Internal calculation accuracy better than nano-interpolation (80 bit floating point arithmetic)
- All displays and operating inputs in clear text



Productive
- Latest control generation with maximum performance
- Comprehensive technology cycles for error-free and optimal machining quality
- Fast and safe job changes by automatic saving of setup data, automatic re-initialization after (re-) selection of the job
- INDEX Virtual Machine & VPro Programming Studio for programming, setup, and optimizing on a PC (option)



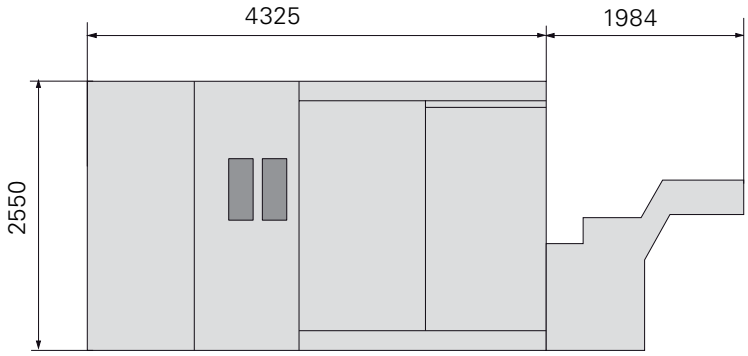
Safe
- Safe machine start by start requirements and guided return to machine home position
- Direct access to tool offsets, program parameters, etc. via individual keys
- User assistance through backlighting of active control buttons
- Safety Integrated Inside: Continuous safety monitoring and testing integrated in the control
- INDEX tool breakage monitoring available (option)
- INDEX VirtualLine available on the machine (option)


Hornaußbetrieb
Platz bereitstellen
Schalten
Beladeplatz bereitstellen
Synchronisieren
Drehen
Verriegelung
Platz (vor.2) bereitstellen
Einzel-Ablauf
Ablauf steuern
Auswahl Anzeige
Programm-Beeinfl.
Tabellen bedienen

Technical data

Working range			
Turning length	mm	1000	1000
Main spindle			
Spindle clearance	mm	65	90
Spindle nose ISO 702/1		Z140	A8
Max. speed	rpm	5,000	3,500
Drive power (100%/40%)	kW	31.5 / 32	40/40
Torque (100%/40%)	Nm	125 / 170	190 / 310
Chuck diameter	mm	210	210
C-axis resolution	Deg.	0.001	0.001
Counter spindle			
Spindle clearance	mm	65	90
Spindle nose ISO 702/1		Z140	A8
Max. speed	rpm	5,000	3,500
Drive power (100%/40%)	kW	31.5 / 32	29 / 40
Torque (100%/40%)	Nm	125 / 170	142 / 207
Chuck diameter	mm	210	210
C-axis resolution	Deg.	0.001	0.001
Slide travel Z, rapid traverse rate, feed force	mm / m/min / N	1040 / 55 / 6,400	
Tailstock			
Quill DIN 2079		SK30	
Slide travel Z	mm	1080	
Max pressure force	N	8,000	
Upper tool carrier		**Motorized milling spindle**	
Tooling system		HSK-T40	
Max. speed	rpm	18,000	
Drive power (100%)	kW	11	
Torque (100%/25%)	Nm	19 / 30	
Slide travel X, rapid traverse rate, feed force	mm / m/min / N	355 / 30 / 9,050	
Slide travel Y, rapid traverse rate, feed force	mm / m/min / N	+/- 80 / 15 / 7,850	
Slide travel Z, rapid traverse rate, feed force	mm / m/min / N	1040 / 55 / 6,400	
Swivel range B	Deg.	-50/+230	
Fixed tool locations on MMS		4 x HSK-T40	
Lower tool carrier			
Tooling system DIN ISO 10889		25 x 48	30 x 55
Number of stations		18	12
Max. speed	rpm	7,200	
Max. drive power, torque (25%)	kW / Nm	6 / 18	
Slide travel X, rapid traverse rate, feed force	mm / m/min / N	185 / 30 / 7,000	
Slide travel Y, rapid traverse rate, feed force	mm / m/min / N	+/- 50 / 15 / 7,850	
Slide travel Z, rapid traverse rate, feed force	mm / m/min / N	1000 / 55 / 6,400	
Steady rest with sep. slide			
Clamping range	mm	12 - 152	
Slide travel Z	mm	1000	
Gantry-type receiving unit with conveyor belt			
Workpiece weight / workpiece length max.	kg / mm	7.5 / 400	
Tool magazine			
Tooling system DIN69893		HSK-T40	
Tool magazine stations		70 (opt. 140)	
Max. tool weight	kg	3	
Chip-to-chip time	s	6	
Slide travel Z	mm	1000	
Machine dimensions			
Length x width x height	mm	4325 x 2340 x 2550	
Weight	kg	14,000 *	
Connected power	kW	68	
Control	INDEX C200-4D (based on Siemens 840D solutionline)		

* incl. tool magazine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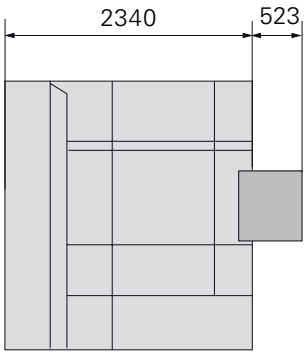
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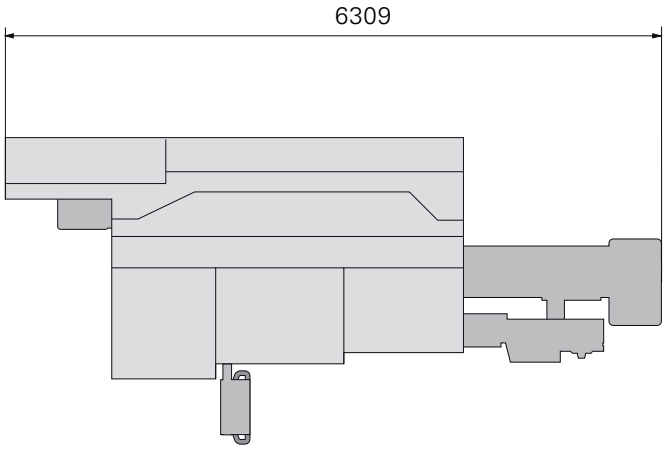
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