

ABC

*Production turning machine
for dynamic bar machining*

INDEX



Unsurpassed power density – high dynamic

For machining simple to complex parts in small or large batch sizes, the INDEX ABC has everything you need for economical and productive solutions.

The INDEX ABC production turning machine produces simple automatic turned parts just as well as complex CNC turned parts. Due to the Y-axis of the upper turret, it can be used in almost any situation.

The INDEX ABC offers great flexibility and delivers top quality as economically as possible.

The technical equipment is designed to meet your needs. Up to 19 tool mounts are available, allowing you to completely produce your workpieces on one machine.

The machine concept

- Compact design and high performance with minimal floor space requirements
- Spindle clearance up to 65 mm
- Reduced cycle time through dynamic performance and simultaneous machining with up to 3 tools
- Live tools can be used on all tool holders
- Up to 5 rear-end machining stations
- Fine adjustment of center height with Y axis
- Y axis-functionality for surface milling and off-center drilling
- Fast, easy setups through optimal accessibility with INDEX W-serration system
- Polygonal turning available, including in steel
- Smart, clearly structured work area concept
- Attractive design



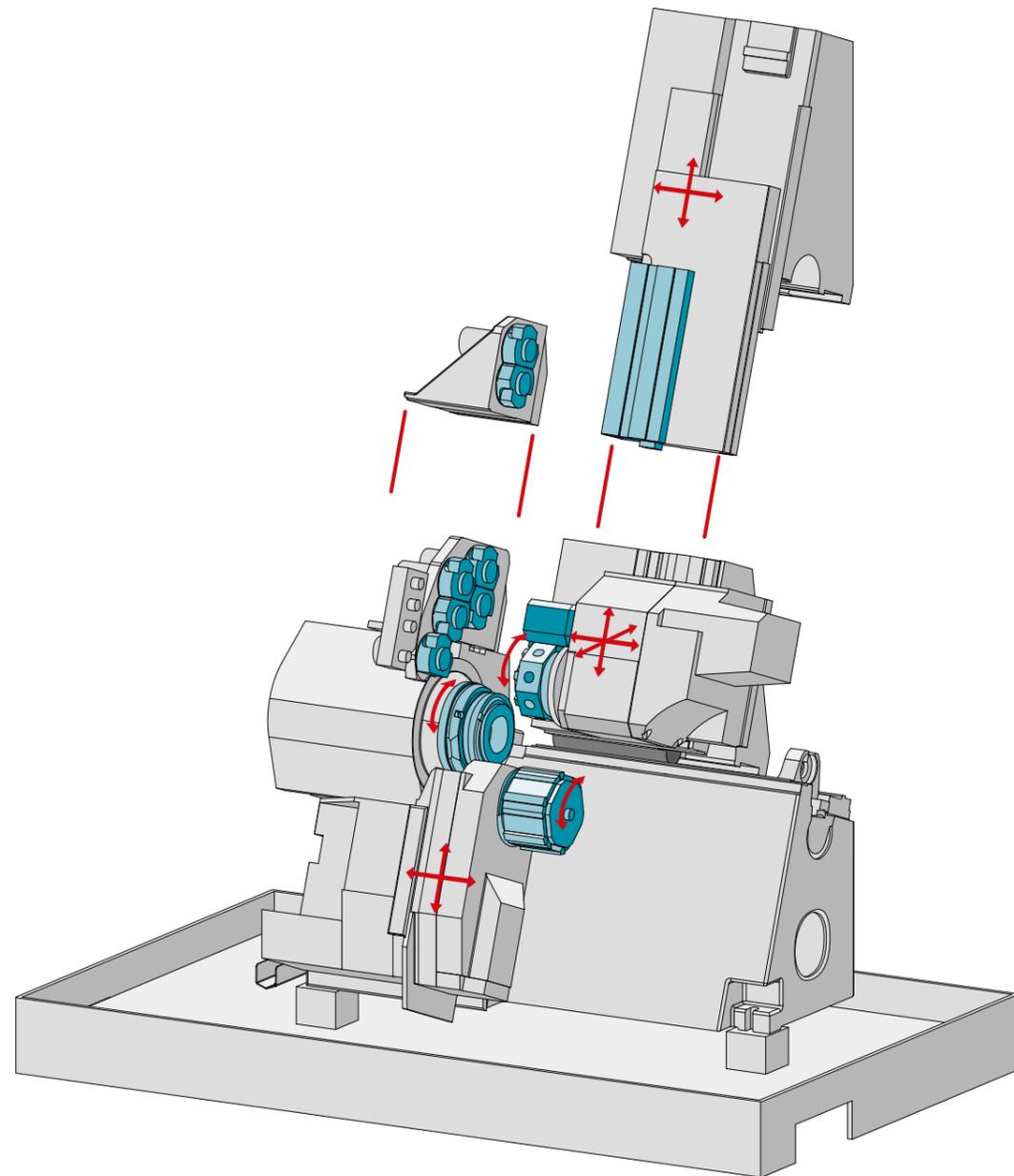
Structured machine layout for a wide variety of machining options

The INDEX ABC production turning machine is a further development of long established INDEX solutions. Individually equipped, this automatic lathe combines continuity and maximum power density for ideal machining results.

Key components include a fast upper turret with a synchronous spindle, primarily for internal machining. The machine's lower spindle is ideal for external operations.

The upper turret features an interpolated Y-axis, continuously variable indexing and center height adjustment. Tooling stations can also hold multiple tools, allowing for a wide range of machining options.

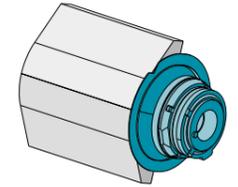
In addition, the back working attachment and linear unit add the equipment options you need for the production of complex workpieces. A machine-integrated gantry-type removal unit is available for gentle discharge of finished parts during the machining process.



The components

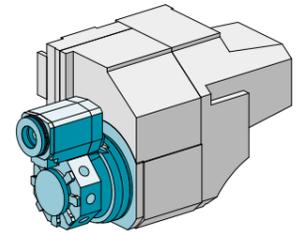
Main spindle

- Spindle clearance: \varnothing 65 mm
- Max. speed: 6,000 rpm
- Drive power (100%/40% DC) 20 kW/27 kW
- Torque (100%/40% DC) 105/145 Nm



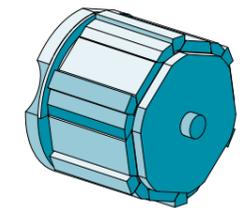
Upper turret with 7 stations and synchronous spindle

- 7 live tool stations, VDI 25 with W-serration
- 1 station with mount for synchronous spindle
- 6,000 rpm, 4.2 kW, 10 Nm (25% DC)
- X axis: 90 mm, rapid traverse rate 27 m/min
- Y axis: +/-50 mm, rapid traverse rate: 20 m/min
- Z axis: 280 mm, rapid traverse rate 36 m/min
- Synchronous spindle for collet or chuck clamping
- Alignment and indexing unit



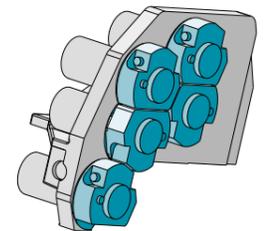
Lower turret with 6 stations

- 6 live tool stations with dovetail mounts or 2 VDI 25 mounts
- 6,000 rpm, 4.2 kW, 10 Nm (25% DC)
- X axis 81 mm, rapid traverse rate 27 m/min
- Z axis 80 mm, rapid traverse rate 36 m/min
- Optional: Thread milling and polygon turning unit



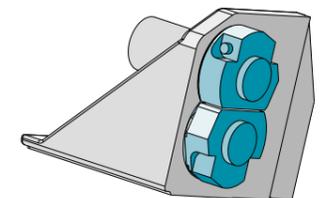
Back working attachment for 5 tool stations

- 5 tool stations VDI 25 or 1" mount for internal and external machining (2 of which are live)
- 6,000 rpm, 4.5 kW, 8 Nm (25% DC)



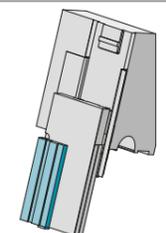
Back working attachment for 2 tool stations (optional)

- 2 tool stations VDI 25 or 1" mount for internal and external machining
- 6,000 rpm, 4.5 kW, 8 Nm (25% DC)



Linear unit

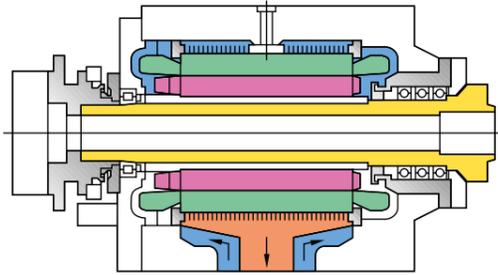
- For equipment as required



Power density

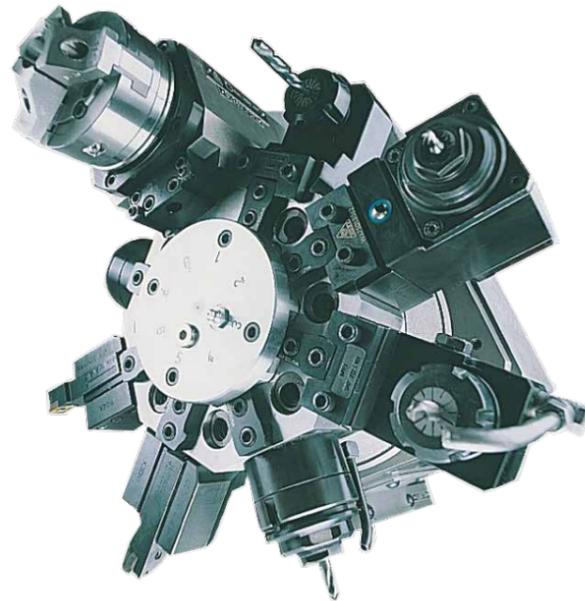
Main spindle

The ABC's main spindle utilizes a high-torque, hollow-shaft synchronous motor with patented headstock air cooling, delivering 20 kW of power at 100% DC. A low air overpressure in the headstock prevents ingress of emulsion, while the rotor, end windings and stator are cooled directly. The spindle features short acceleration times, no mechanical transmission elements, low rotating masses maximum smoothness and high torsional stiffness.



Synchronous spindle

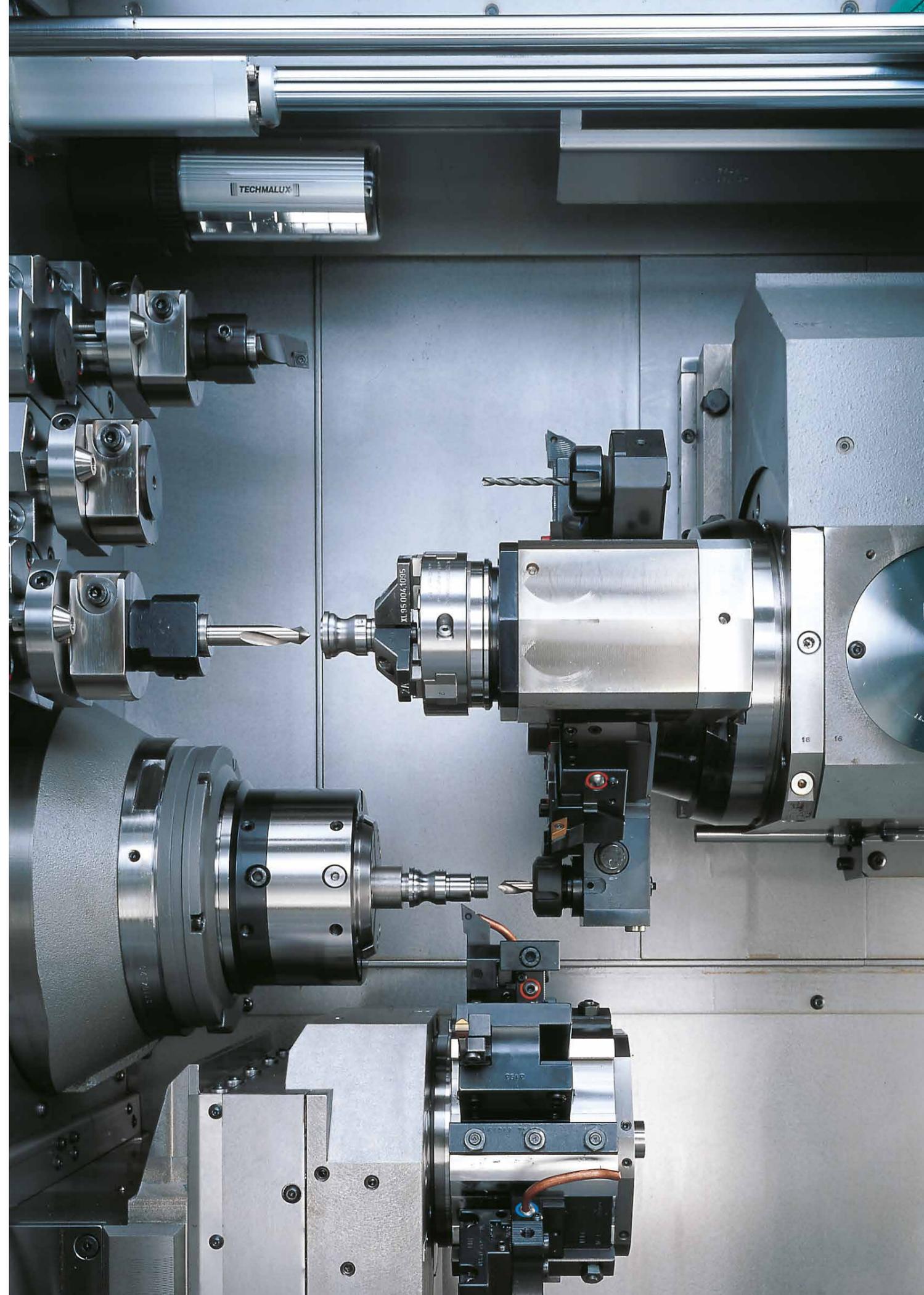
Offering a maximum speed of 4,500 rpm, the ABC's synchronous spindle provides collet clamping of up to 42 mm or with 90 mm chuck diameter, and also allows internal clamping. The spindle is equipped with an alignment and indexing unit as standard. The synchronous spindle is driven separately from the central drive, using a spur gear on a dedicated turret station..



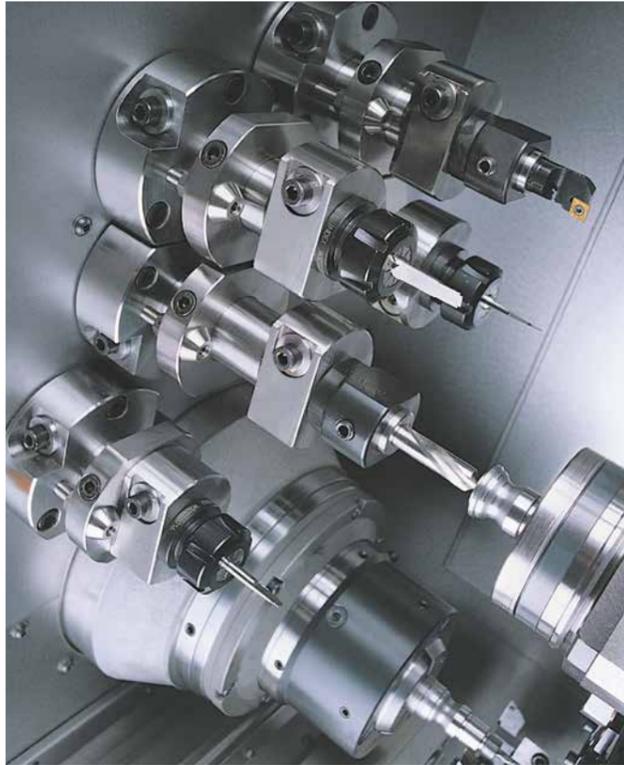
The principle of W-slots

The patented INDEX W-serration on the tool holders and turret ensures high repeatability when changing tools.

- Tool mount VDI 25
- Short tooling/setup times
- High change accuracy with long fixing grooves
- Extended life of cutting inserts
- DIN 69880-compatible
- Suitable for stationary and live tools



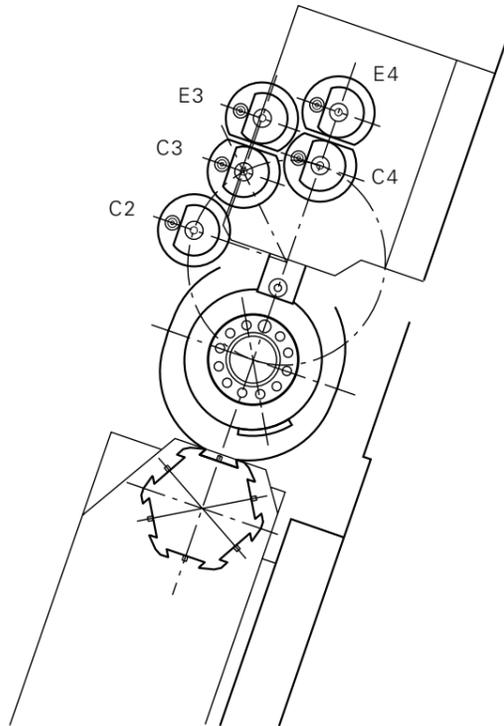
Automatic turning to perfection



An additional 5 back-boring stations, 2 of which are live, further enhance the machine's flexibility.

The freely positionable indexing axis allows for tool stations with multiple tools as well as a wide range of machining options including off-center drilling and milling using the Y-axis.

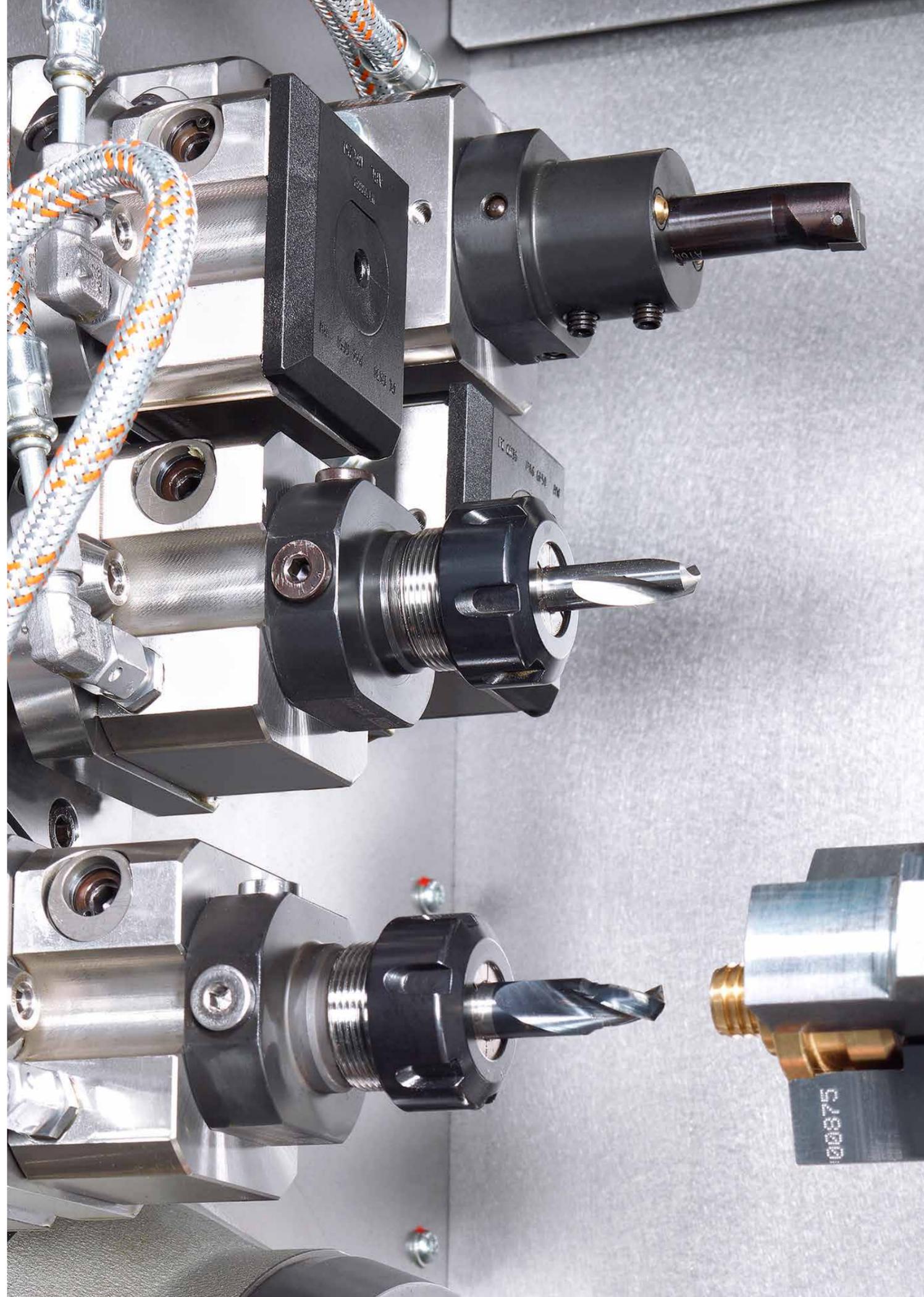
An optional polygonal turning unit is also available.

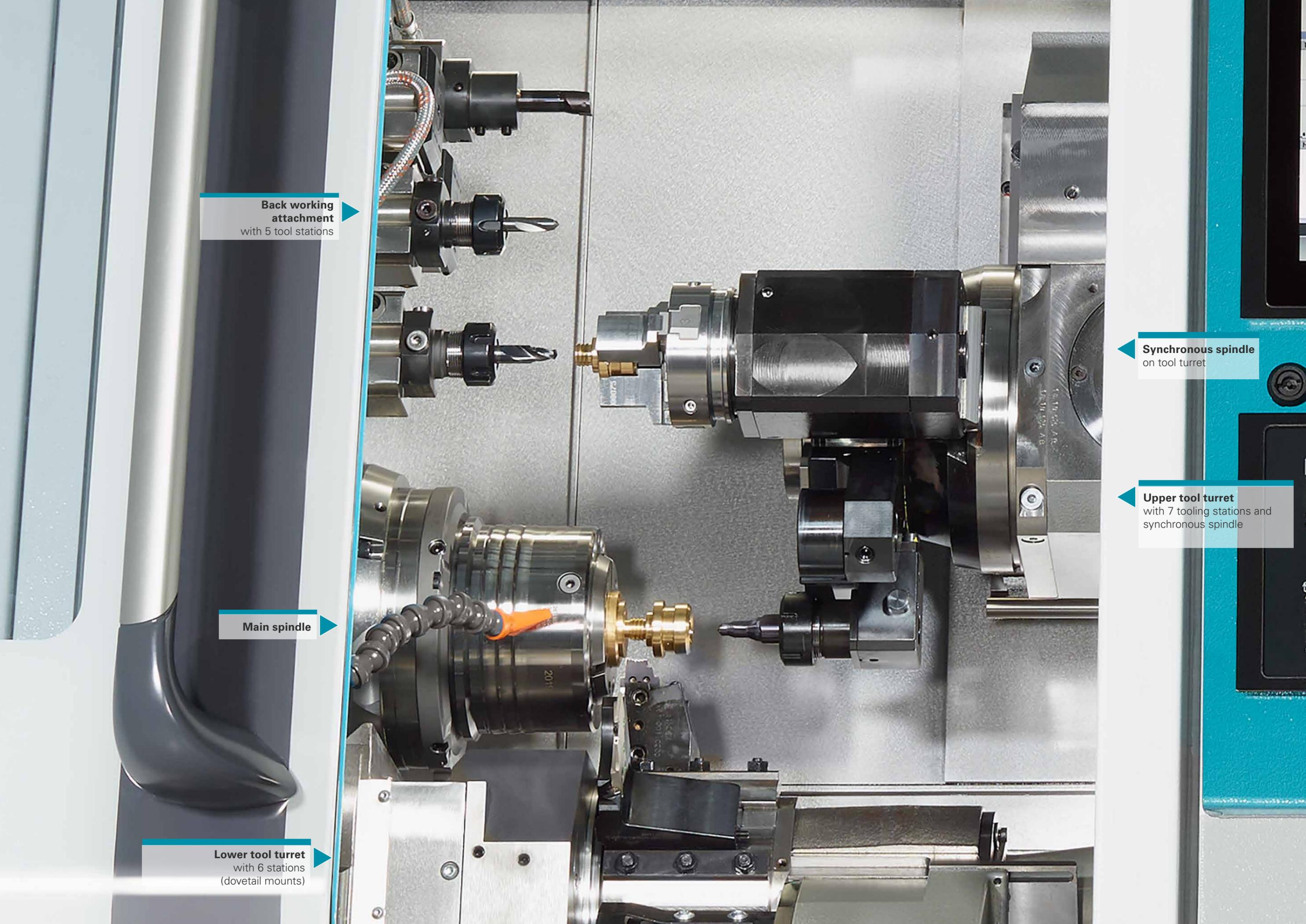


Complete machining

The ABC's 5 back-boring stations allow parts to be machined to completion in a single setup.

Optional:
2 tool stations





Back working attachment
with 5 tool stations

Main spindle

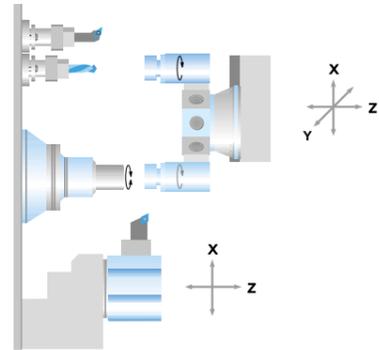
Lower tool turret
with 6 stations
(dovetail mounts)

Synchronous spindle
on tool turret

Upper tool turret
with 7 tooling stations and
synchronous spindle

Precision in automatic turning

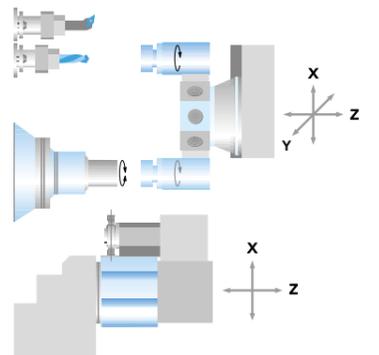
A large variety of machining options for a wide range of parts



9SMnPb28K
 Size 17 x 45 mm
 45 s



ETG 100
 D 26 x 33 mm
 63 s



X10CrNiS1810
 D 25.8 x 64.3 mm
 71 s



CuZn39Pb3
 Size 19 x 29 mm
 16 s



CuZn39Pb3
 Size 48 x 60 mm
 90 s

An investment that pays for itself

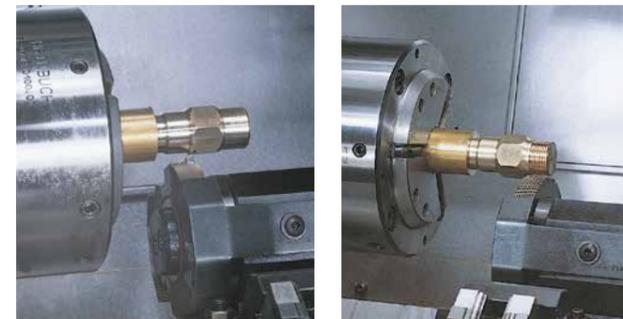
Whether producing simple or complex parts, the ABC allows you to cut complete parts in a single setup, streamlining your production and reducing throughput times. Furthermore, the machine can produce small batch sizes economically and offers high production reliability.

Automation and additional equipment



The ABC comes with a standard bar loader interface for bar loading magazines

The ABC integrates with INDEX LMI and MBL bar loaders for optimal productivity, smoothness and accuracy. The machine's interface allows for the use of common third-party solutions.



Polygon turning or thread cutting

An optional auxiliary drive enables you to combine operations such as cutting threads and polygons in brass, aluminum, steel and free-machining steels.



Automated workpiece handling

The gantry-type removal unit moves the finished parts to a conveyor belt while the next part is being machined. The bar remnant is carried away separately.



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

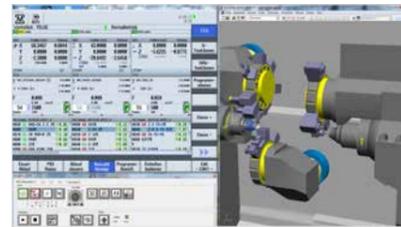


Focus on production and control – Industry 4.0 included.

The iXpanel operating concept provides access to networked production. With iXpanel, your operator always has all relevant information for efficient production right at the machine. iXpanel is included with the standard version and can be enhanced with custom options. 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.

Maximum performance through comprehensive technology cycles and programming screens, e.g., for optimum turning, milling and drilling, especially when using several tools simultaneously.

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., and all this right at the machine.

Virtual & open.

With the optional VPC box (industrial PC), iXpanel opens up the world of the Virtual Machine with the 3 operating modes
- CrashStop
- RealTime mode
- Independent simulation (VM on board) directly in the control system.
Thanks to the VPC box, the machine can be integrated into your IT structure without any restrictions.



The FANUC 31i control: Powerful and proven

FANUC 31i-B control – the future-proof standard control

All advantages at a glance:

- Control from the latest FANUC series (31i-B)
- FANUC operating panel with CNC keyboard and 15" touch screen
- Original FANUC machine operating panel with axis and spindle override
- Electronic handwheel integrated into the machine control panel (standard)
- Memory for 1000 part programs
- File system for structured program storage
- USB port and CARD reader on operating panel
- Enhanced user safety with FANUC Dual Check Safety
- Protection level concept for defined access rights

INDEX enhancements and additions

- Individual keys on the control panel with direct access to the following functions:
 - Turret indexing / single station (CCW/CW rotation)
 - Setup / Production
 - Cycle Start / Cycle Stop
 - Acknowledgment device
 - Open workpiece clamp
- Improved ease of machine operation, program and parameter input, machine monitoring
- Sensorless tool monitoring based on motor current
- Freely programmable interface for adjusting external (automation) devices to the machine (e.g., handling system) (option)
- Lateral "INDEX Hotkey" bar for quick navigation



Programming

- Text editor with Insert, Overwrite, Find, Replace, Copy, and Delete
- Annotating NC programs
- NC program numbers or NC program names
- Up to 3 M functions possible per NC block
- Arithmetic and trigonometric calculations
- Parameter calculation and reading/loading of system data
- Manual guide *i*, workshop programming (option)

Technology

- Standard cycles for turning and milling
- Cutting longitudinal, transverse, and tapered threads with constant or variable pitch
- Thread-cutting without compensating chuck (up to $n_{max} = 2000$ rpm)
- TRANSMIT and cylinder surface interpolation
- Oriented spindle stop
- Minimum input/output precision 0.0001 mm or 0.00001 inch
- Program execution with handwheel (option)

Program input/output

- Program input via control keyboard
- USB port
- Memory card
- ETHERNET interface
- Input switchable between metric/inch for
 - Program entry
 - Programmed travel movements
 - Tool offsets
 - Two screen displays
- Three-channel program display and editor

Production

- Absolute measuring systems in all axes, i.e., no referencing required
- Electronic tool correction in X, Y, Z
- Total number-of-parts counter
- Counter for setting the order batch size
- Tool breakage monitoring
- Operating data signals
- Warm-up control
- Channel lock for easy run-in of individual channels

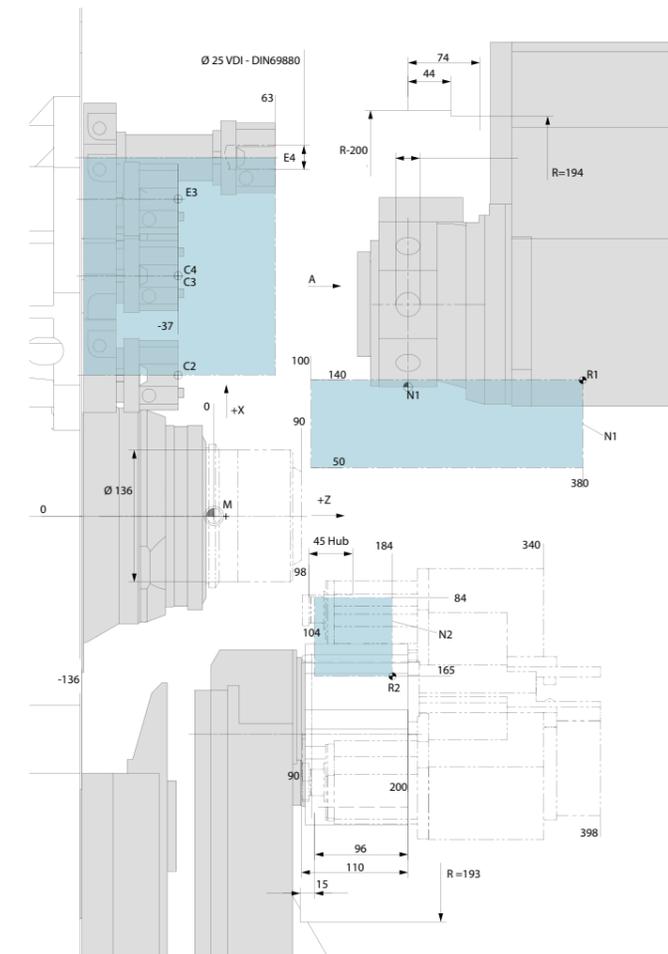


Technical data

Work area		
Turning length	mm	280
Main spindle		
Spindle clearance	mm	65
Max. bar feeder	mm	80
Max. speed	rpm	6,000
Ramp-up time (0-5000 rpm)	sec.	1.2
Drive power (100%/40% DC)	kW	20/27
Torque (100%/40% DC)	Nm	105/145
Upper tool turret		
Tool stations (all live)	Number	8 (7+synchronous spindle)
Tooling system DIN 69880	mm	25
X slide travel, rapid traverse rate, feed force	mm / m/min / N	90/27/5,500
Y slide travel, rapid traverse rate, feed force	mm / m/min / N	+/- 50/20/7,000*
Z slide travel, rapid traverse rate, feed force	mm / m/min / N	280/36/5,500
Acceleration X/Y/Z	m/s ²	7/7/8.5
Max. speed	rpm	6,000
Power 25% DC	kW	4.2
Torque at 25% DC	Nm	10
Synchronous spindle		
Max. speed	rpm	4,500
Power 25% DC	kW	4.2
Torque at 25% DC	Nm	10
Alignment and indexing unit	deg.	7.5 pitch angle
Hydraulic ejecting and flushing unit discharge stroke	mm	42
Back working attachment		
Tool stations	Number	5 (optional 2)
Live tools max.	Number	2
Max. speed	rpm	6,000
Power 25% DC	kW	4.5
Torque at 25% DC	Nm	8
Lower tool turret		
Tool stations (all live)	Number	6
X slide travel, rapid traverse rate, feed force	mm / m/min / N	80/27/8,300
Z slide travel, rapid traverse rate, feed force	mm / m/min / N	81/36/5,500
Acceleration X/Z	m/s ²	7/8.5
Max. speed	rpm	6,000
Power 25% DC	kW	4.2
Torque at 25% DC	Nm	10
Max. speed	rpm	6,000
Power 25% DC	kW	5.2
General data		
Weight	kg	2,500
Connected power	kW	12-34 kW, 15-43 kV, 25-80 A, 400 V, 50/60 Hz
Control		Siemens S840D sl or FANUC 31i-B

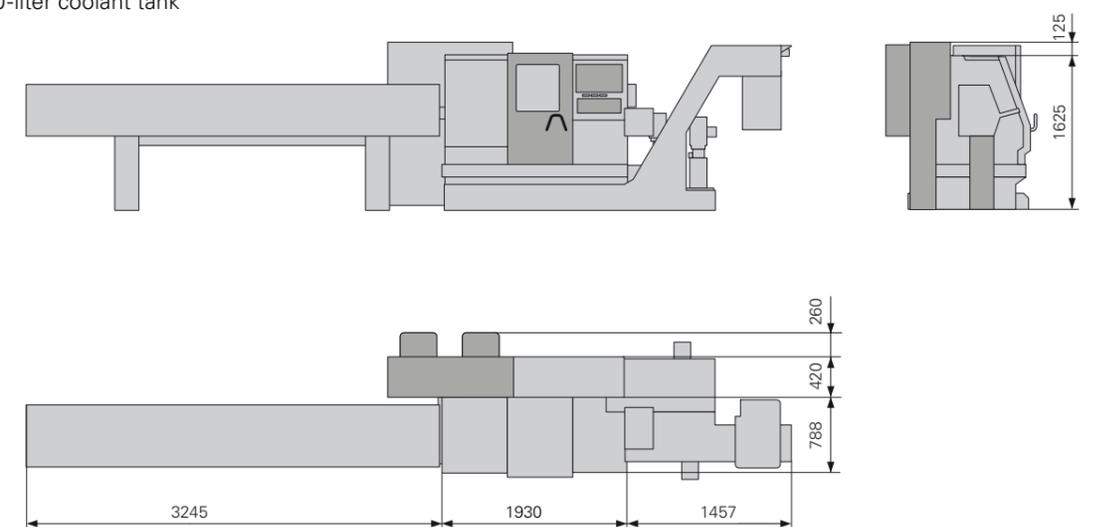
* with tool projection of 115 mm

Work area of INDEX ABC



INDEX LMI 3200 loading magazine installation plan

Slat band conveyor (height 840 mm)
with integrated 220-liter coolant tank



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