

**ABC**

*Production turning machine for  
dynamic bar machining*

**INDEX**



*better.parts.faster.*

## More dynamics, less setup – unsurpassed power density

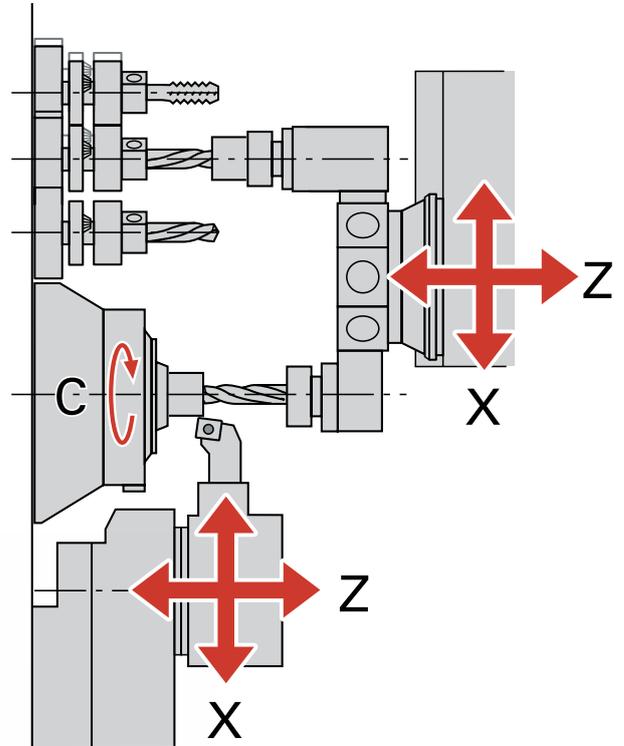
For machining simple to highly complex parts in small to large lot sizes, the INDEX ABC with a Siemens S840D or Fanuc 31i-B control

always provides for economic and productive solutions. The production turning machine INDEX ABC produces for you simple automatic turned parts just as well as complex CNC turned

parts. You work with high flexibility, deliver best quality and produce economically. The possibilities are almost unlimited. The technical equipment is designed to

meet your needs: There are up to 19 tools available with which you can completely produce your workpieces on one machine.

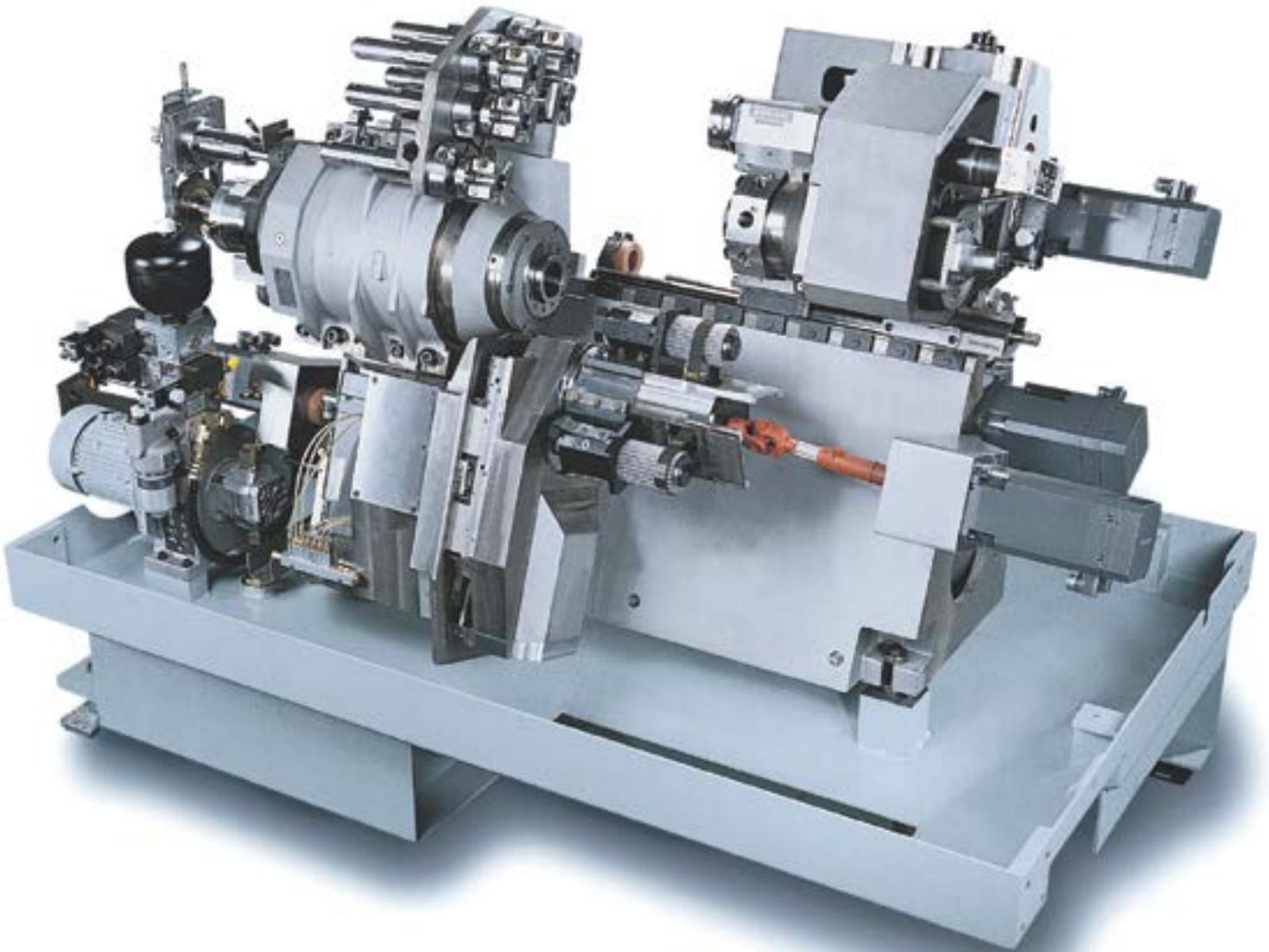




**Your benefits:**

- compact design and high performance with unrivalled low space requirements
- spindle clearance: up to 65 mm
- reduced cycle time through a highly dynamic work spindle and simultaneous machining with up to 3 tools
- live tools can be used on all tool holders
- up to 5 reverse side machining stations
- easy to set up thanks to very good accessibility with INDEX W-serration
- polygon turning possible also in steel

## Technology with impressive results

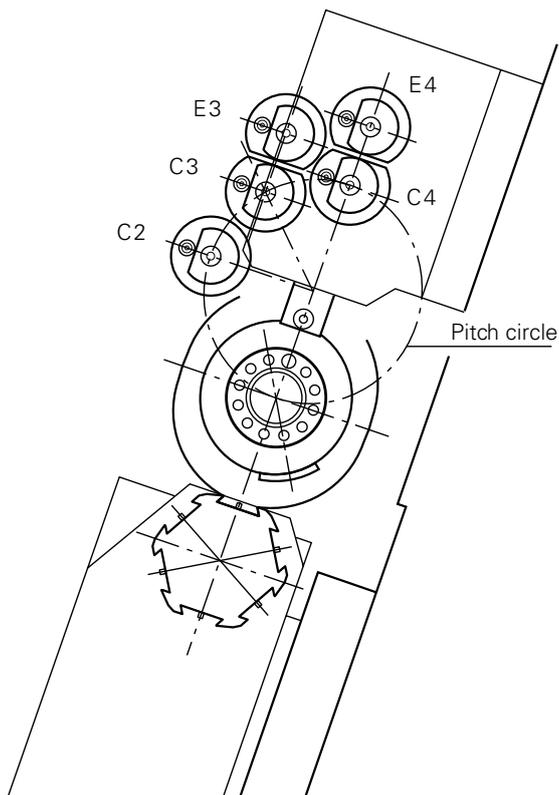


## Automatic turning to perfection



The INDEX ABC has 2 tool turrets with 14 tool mountings. An upper turret with 7 tool stations plus a fixed station for mounting a synchronous spindle (for chuck or collet clamping) and a lower turret with additional 6 tool mountings. Plus five back-boring stations (of which 2 are live) for cutoff-end machining.

Optional polygon turning unit up to size 24 also in steel.



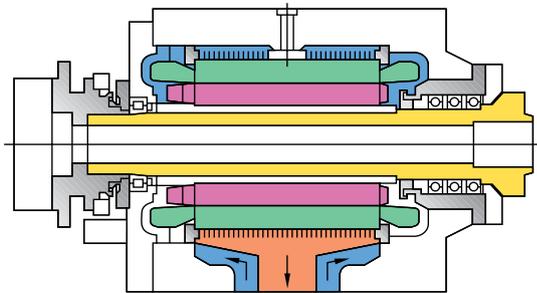
### Complete machining

With 5 back-boring stations (of which 2 are live), workpieces can be machined also on the cutoff end.

# The power density

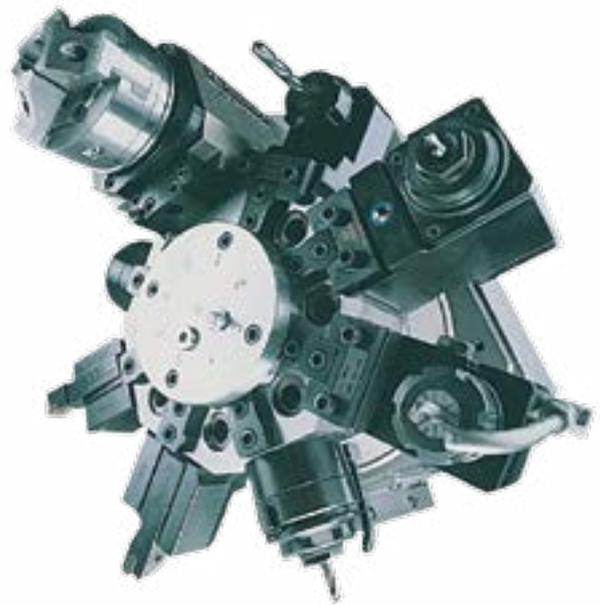
## Motorized spindle

High-torque hollow-shaft synchronous motor with patented headstock air cooling. It delivers 20 kW of power at 100%. A low air over-pressure in the headstock prevents ingress of emulsion; rotor, end windings and stator are cooled directly. Short acceleration times, no mechanical transmission elements, low rotating masses, maximum smoothness, high torsional stiffness.

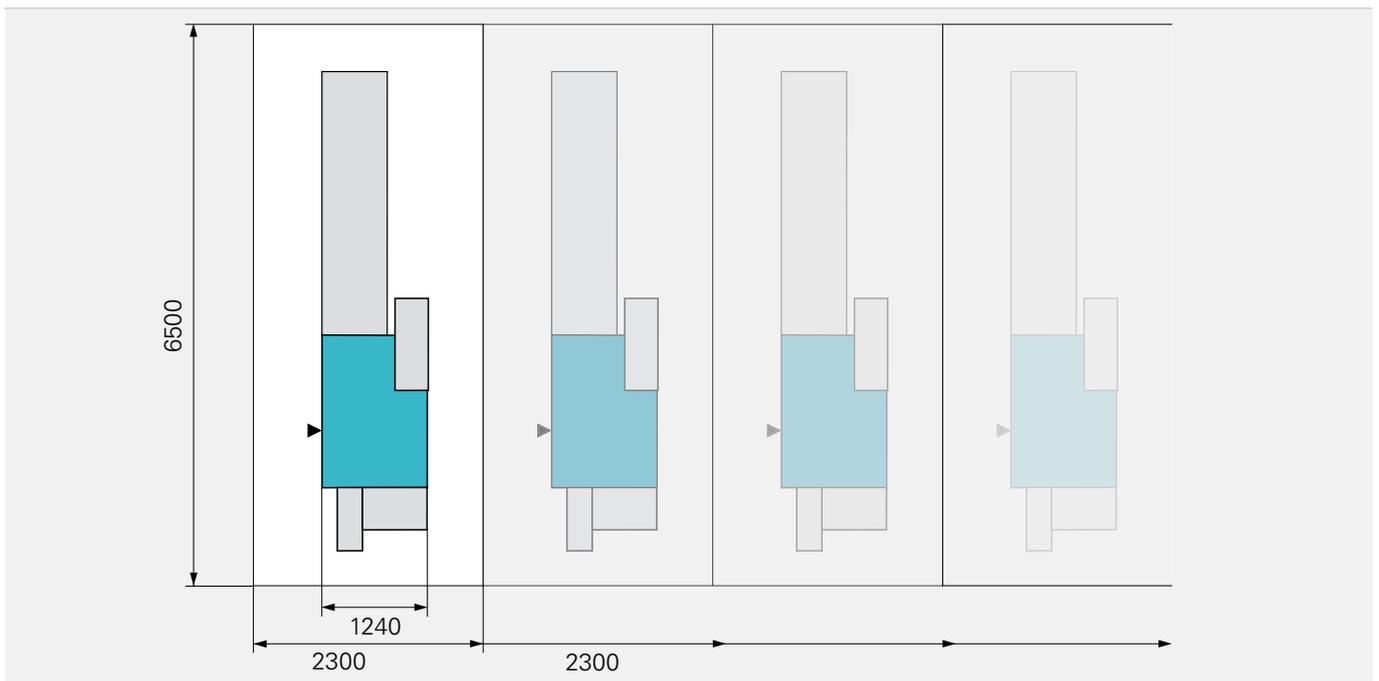


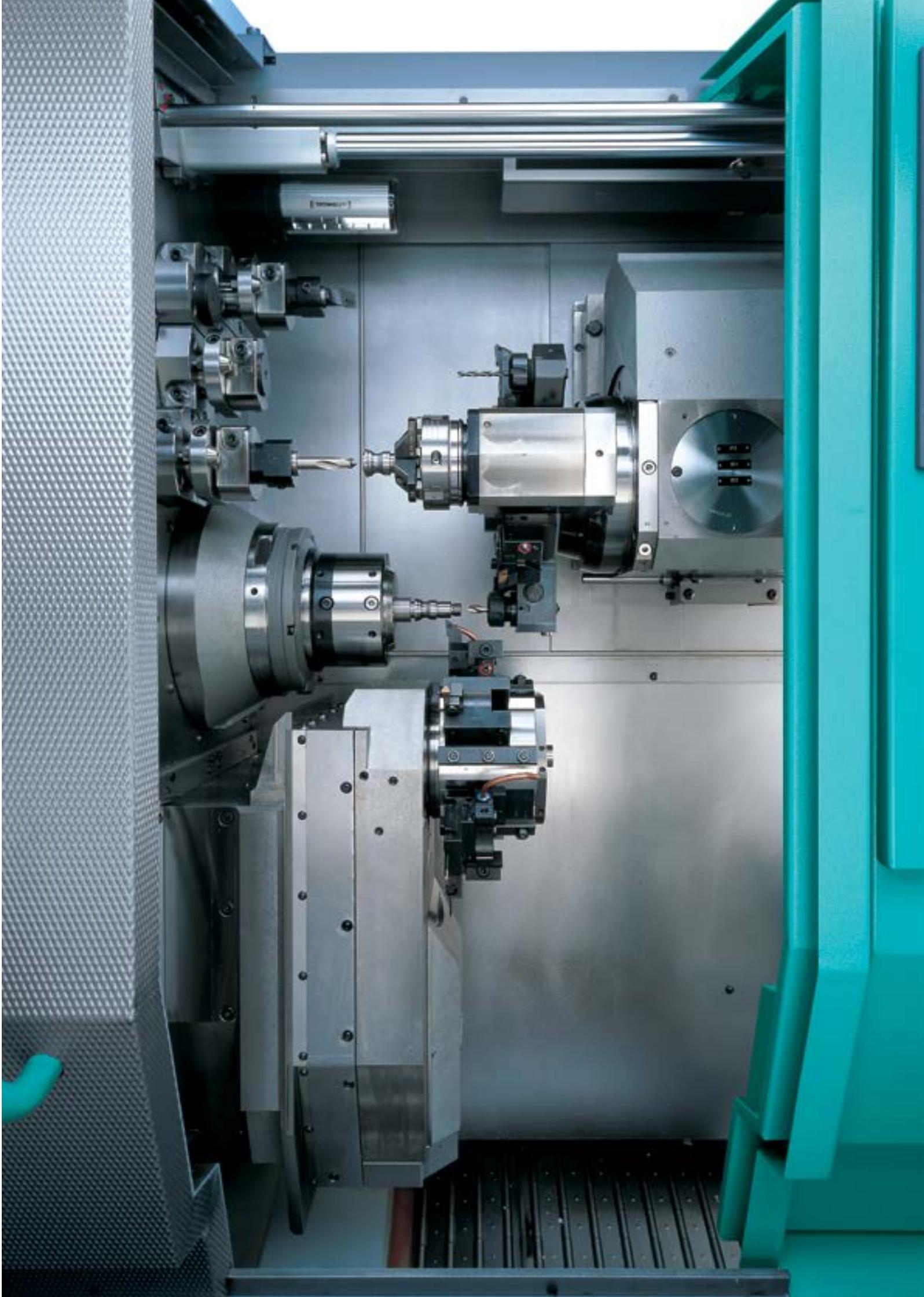
## Synchronous spindle

With collet clamping up to 42 mm or with 90 mm chuck diameter also for internal clamping. Max. speed 4,500 rpm The synchronous spindle is equipped with an alignment and indexing unit as standard. It is driven separately from the central drive on a dedicated turret station by a spur gear.



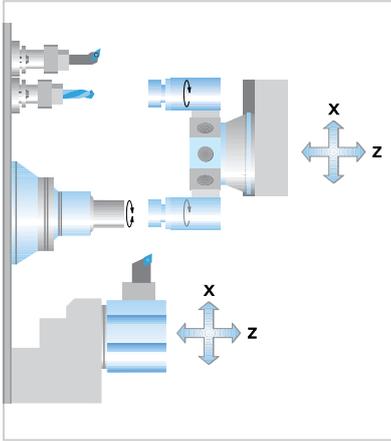
## More machines in a production line





## Precision in automatic turning

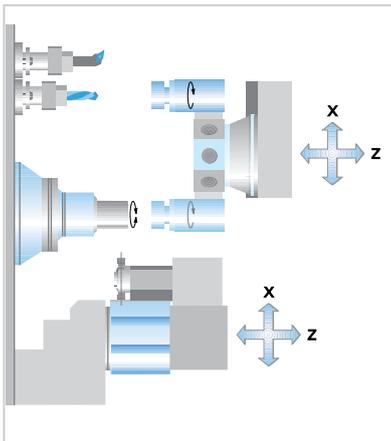
A large variety of machining options for a wide range of parts



9SMnPb28K  
SW 17 x 45 mm  
45 s



ETG 100  
Ø 26 x 33 mm  
63 s



X10CrNiS1810  
Ø 25,8 x 64,3 mm  
71 s



CuZn39Pb3  
SW 19 x 29 mm  
16 s

### An investment that pays for itself

No matter what you produce – the ABC is the solution for all your manufacturing tasks.

Regardless of whether you produce classic or demanding automatic turned parts. Whether you perform complex CNC turning or simple reworking.

Your benefits when using an ABC: You turn complex workpieces in one cycle. You save throughput and setup times.

The ABC allows you to produce even small batch sizes economically. You increase your production reliability.

## Automation and additional equipment



**The ABC comes with an interface for bar loading magazines as standard.**

- By attaching a loading magazine INDEX LMI, you gain up to 4 s for bar feeding in connection with the bar feeder
- Attaching the loading magazine INDEX MBL provides for maximum smoothness and accuracy due to the unique guiding principle
- The interface also allows attaching common third-party makes



### **Reduce your unit costs**

You need another machining station for the production of threads and polygons? The ABC can be equipped with an auxiliary drive. This allows you to realize threads and polygons in brass, aluminum, steel and free machining steels using common methods in a minimum of time.



### **Automated workpiece handling**

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

# The control Siemens S840D sl : New – Fast – Optimal

## New

The control concept of the INDEX ABC-sl consistently relies on the new SIEMENS S840D sl (Solution Line) control and the new generation SIEMENS SINAMICS drive. This ensures a future-proof investment: the user gets the latest generation of control technology that supports any type of application. Also the use of Virtual Line for programming support (VPro) or simulation (VM) is now easily possible directly on the control screen! This reduce time and cost!

## Fast

The consistent use of the performance-enhanced S840D solution line control provides uncompromising short execution times for all types of machining operations. At the same time, NC servo drives in both turrets allow shortest retooling and chip-to-chip times. Also the new main spindle drive featuring state-of-the-art synchronous motor technology is not only more energy-efficient, but contributes with markedly reduced acceleration and deceleration times to the significantly increased productivity of the ABC-sl.

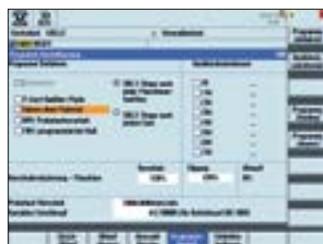
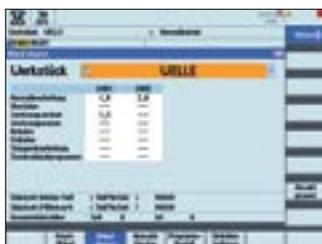
## Optimal

The new Siemens S840D sl control, enhanced by INDEX with intelligent machine functions, optimally supports simultaneous machining operations with multiple tool carriers. For example, the new control facilitates also directly the loading of new workpieces – if required also separate by subsystems. In combination with INDEX machine cycles, this creates optimized machining processes in minimal time – a truly added value of the machine. This is all inclusive machining

efficiency!

## Complete

All INDEX ABC-sl machines come with extensive control equipment: TRANSMIT (front side) and TRACYL (peripheral surfaces) machining operations are included. Milling and drilling operations – also off-center – are easily programmed and executed in the X/Y or Y/Z plane. INDEX ABC-sl with the new C200 sl control – automatic bar lathe and turning center in one – complete from the factory!



## 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
- More than 20 foreign languages

## Efficient

- Positions and movements of all axes and spindles in the home screen (INDEX)
- Largely unchanged machine operation and key arrangement (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

- The latest generation of control for maximum quality and productivity
- Comprehensive technology cycles for error-free and optimal machining quality
- Fast and safe job change with automatic saving of setup data and automatic re-initialization at (re-)selection of the job
- INDEX Virtual Machine & VPro programming studio for programming, setup, optimizing on a PC (option) or on the machine control panel (option)

## Safe

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

EX ABC



# The control FANUC 31i: Powerful and proven

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

### All advantages at a glance:

- Control of the latest FANUC series (31iB)
- FANUC control panel with CNC keyboard and 15" touchscreen monitor
- Original FANUC machine control panel with axis and spindle override
- Electronic handwheel integrated in machine control panel (standard)
- Memory for 1000 part programs
- File system for structured program storage
- USB interface and CARD reader at the control panel
- Advanced operator safety by 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)
- Setup / Production (key removable in "Production" position)
- Cycle Start / Cycle Stop
- Consent function
- Open workpiece clamping
- INDEX-specific enhancements of the user inter-

- face for easier 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)
- Lateral "INDEX Hotkey" bar for quick navigation



## Programming

- Text editor with Insert, Overwrite, Find, Replace, Copy, and Delete functions
- Annotating NC programs
- NC program numbers or NC program names
- Up to 3 M functions possible per NC block
- Arithmetic and trigonometric computing operations
- 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
- Threading without compensating chuck (up to  $n_{max} = 2000$  rpm)
- TRANSMIT and cylinder surface interpolation
- Oriented spindle stop
- Minimum input/output unit 0.0001 mm or 0.00001"
- Program sequence 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
  - Screen display
- Two-channel program display and editor

## Production

- Absolute measuring systems in all axes, i.e. no referencing required
- Electronic tool offset in X, 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

FANUC Series 31-MODEL B

PATH1

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100	10099	PROGRAM NAME	2018-03-27	15:00:20
101	10100	PROGRAM NAME	2018-03-27	15:00:20

Navigation buttons: Home, Left Arrow, Right Arrow, Stop, Refresh, and other control keys.

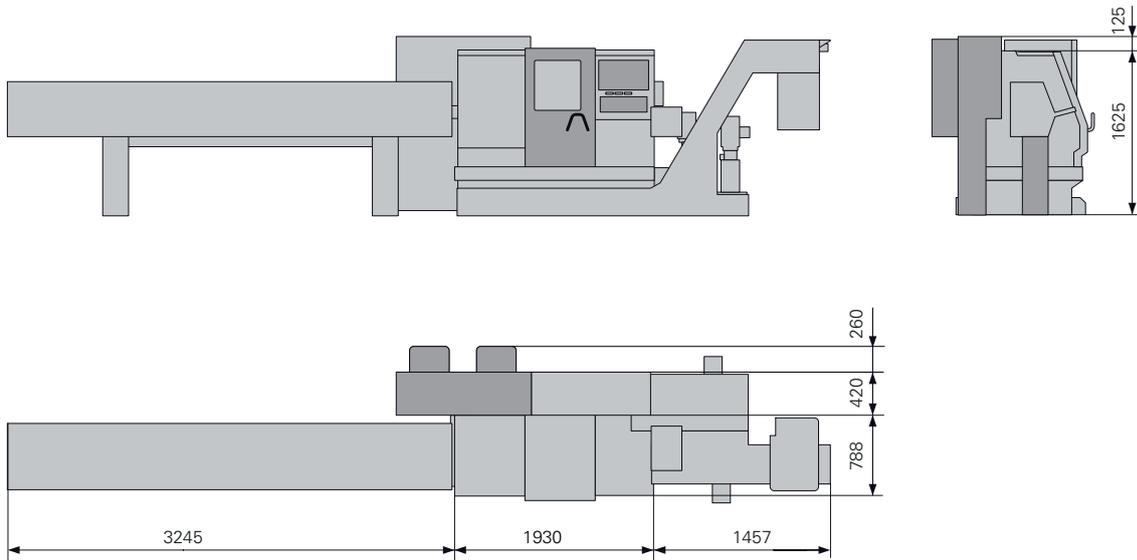
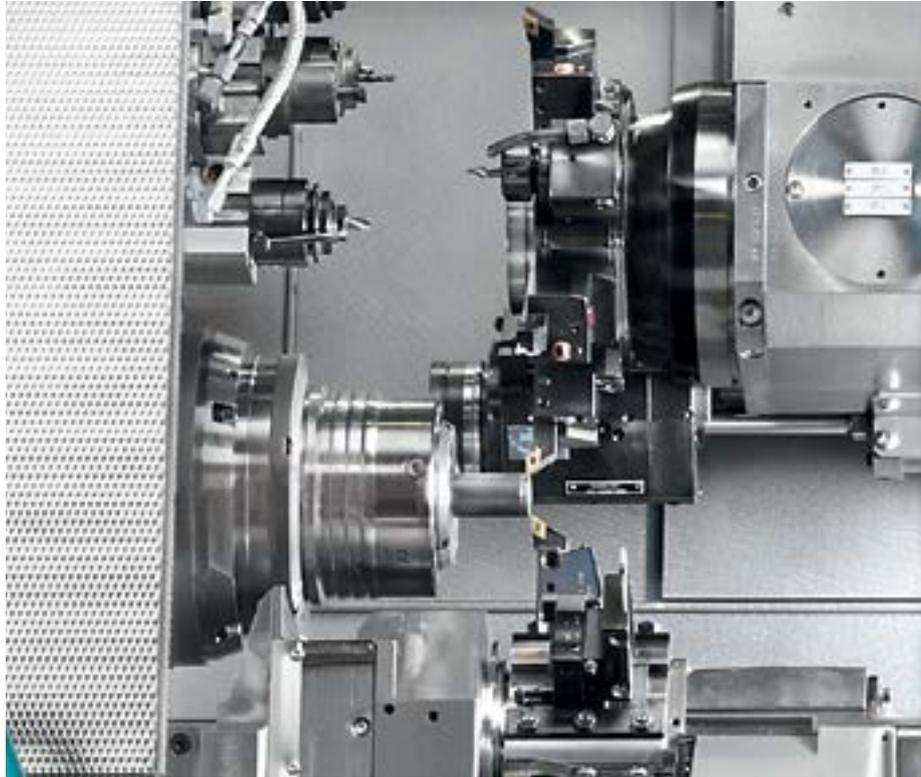
Standard QWERTY keyboard with function keys and numeric keypad.

Emergency stop button (red) and power switch (black).

Specialized control panel with various function keys, including G-code keys (G0, G1, G2, G3, G4, G5, G6, G7, G8, G9, G10, G11, G12, G13, G14, G15, G16, G17, G18, G19, G20, G21, G22, G23, G24, G25, G26, G27, G28, G29, G30, G31, G32, G33, G34, G35, G36, G37, G38, G39, G40, G41, G42, G43, G44, G45, G46, G47, G48, G49, G50, G51, G52, G53, G54, G55, G56, G57, G58, G59, G60, G61, G62, G63, G64, G65, G66, G67, G68, G69, G70, G71, G72, G73, G74, G75, G76, G77, G78, G79, G80, G81, G82, G83, G84, G85, G86, G87, G88, G89, G90, G91, G92, G93, G94, G95, G96, G97, G98, G99, G100, G101, G102, G103, G104, G105, G106, G107, G108, G109, G110, G111, G112, G113, G114, G115, G116, G117, G118, G119, G120, G121, G122, G123, G124, G125, G126, G127, G128, G129, G130, G131, G132, G133, G134, G135, G136, G137, G138, G139, G140, G141, G142, G143, G144, G145, G146, G147, G148, G149, G150, G151, G152, G153, G154, G155, G156, G157, G158, G159, G160, G161, G162, G163, G164, G165, G166, G167, G168, G169, G170, G171, 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## Technical data

<b>Main spindle</b>		
Spindeldurchlass	mm	65
Bar capacity	mm	80
Speed	rpm	6.000
Acceleration time (0 - 5000 rpm)	sec.	1,2
Power (100% / 40%)	kW	20/ 27
Torque (100% / 40%)	Nm	105 / 145
<b>Turret 1</b>		
Number of stations	Number	8 (7 + Synchronous spindle)
Tooling system DIN 69880	mm	25
Slide travels X: Rapid traverse rate: Feed forces	mm / m/min / N	90 / 27 / 5.500
Slide travels Z: Rapid traverse rate: Feed forces	mm / m/min / N	280 / 36 / 5.500
Acceleration X / Z	m/s <sup>2</sup>	7 / 8,5
Option: Tool drive unit for all stations		
Speed	rpm	6.000
Power at 25%	kW	4,2
Torque at 25%	Nm	10
<b>Synchronous spindle</b>		
Speed	rpm	4.500
Power at 25%	kW	4,2
Torque at 25%	Nm	10
Alignment and indexing unit	Grad	7,5 pitch angle
Alignment and indexing unit ejector stroke	mm	42
<b>Back-boring stations</b>		
Stations	Number	6
Live tools max.	Number	2
Speed	rpm	6.000
Power at 25%	kW	4,5
Torque at 25%	Nm	8
<b>Turret 2</b>		
Number of tools	number	6
Slide travels X: Rapid traverse rate: Feed forces	mm / m/min / N	80 / 27 / 8.300
Slide travels Z: Rapid traverse rate: Feed forces	mm / m/min / N	81 / 36 / 5.500
Acceleration X / Z	m/s <sup>2</sup>	7 / 8,5
Tool drive unit for all stations		
Speed	rpm	6.000
Power at 25%	kW	4,2
Torque at 25%	Nm	10
Option: Thread cutting unit, polygon turning unit (simultaneously mountable to a max. of 2 stations)		
Speed	rpm	6.000
Power at 25%	kW	5,2
<b>Allgemeine Daten</b>		
Mass	approx. kg	2.500
Electrical connection	kW	12-34 kW, 15-43 kV, 25-80 A, 400 V, 50 / 60 Hz
Control		Siemens S840D sl or FANUC 31i-B



### Installation plan

INDEX loading magazine LMI 3200

Slat band conveyor (discharge height 840 mm)

with integrated coolant tank 220 liters

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