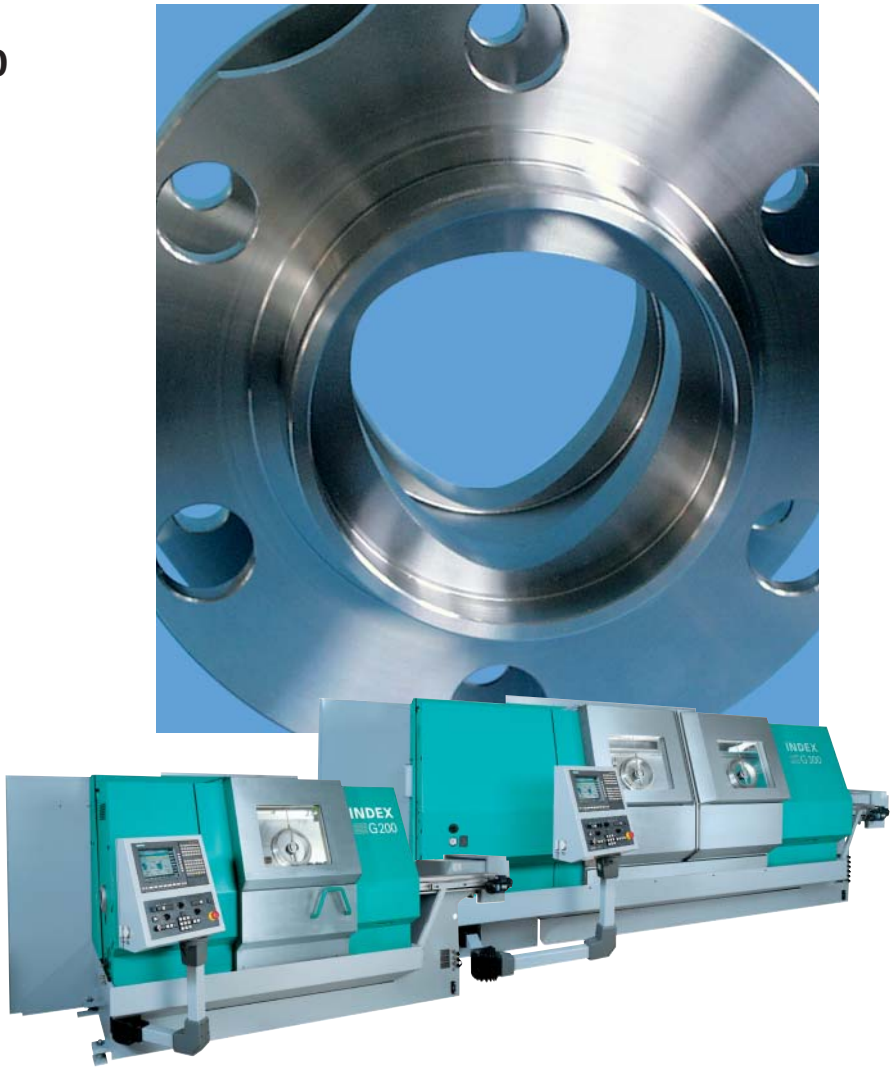
INDEX

RatioLine G200/G300

Turn mill centers



Standard for us - future for others

INDEX turn-mill centers set the standard for economic high-precision solutions tailored to the customer's needs. Standards ranging from the classic production turning machine to tailor-made machining cells equipped with handling units. For the machining of simple to highly complex parts, in small to large lot sizes, INDEX is offering consistently economic and technologically superior solutions.

We provide you with an individually configured machine for your production tasks. You can choose among a multitude of universal units, such as the machine bed and spindles, available in various designs, different turret types, tailstocks, steady rests and handling systems in accordance with your requirements.

A solid construction - added value already in the machine construction
The tubular machine bed made of heavily ribbed cast iron convinces by its maximum bending and torsional stiffness as well as excellent dampening.

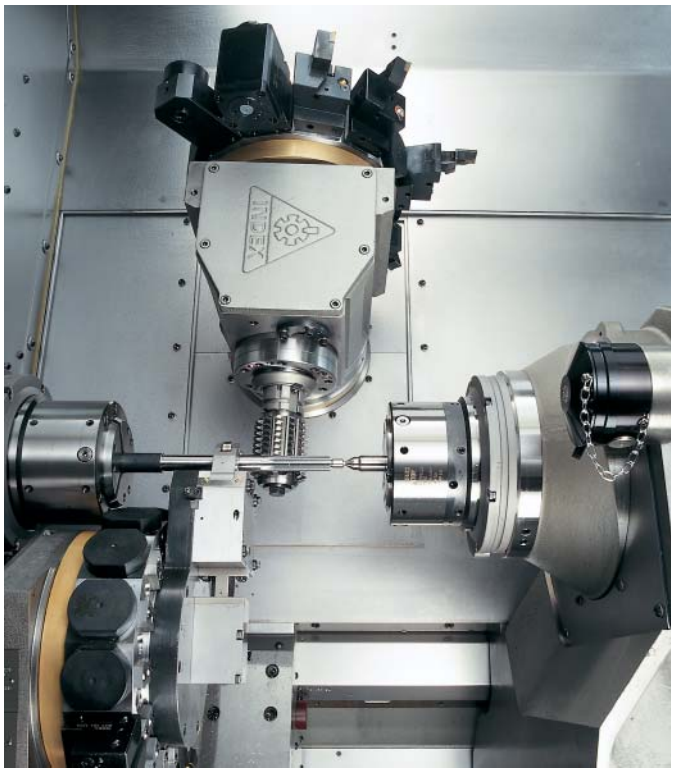
High-quality linear guideways provide precision in combination with a long service life. In case of collision, the machine is protected by friction-locked connections between headstock and machine bed and by overload clutches on all ball screws. INDEX quality for long life.

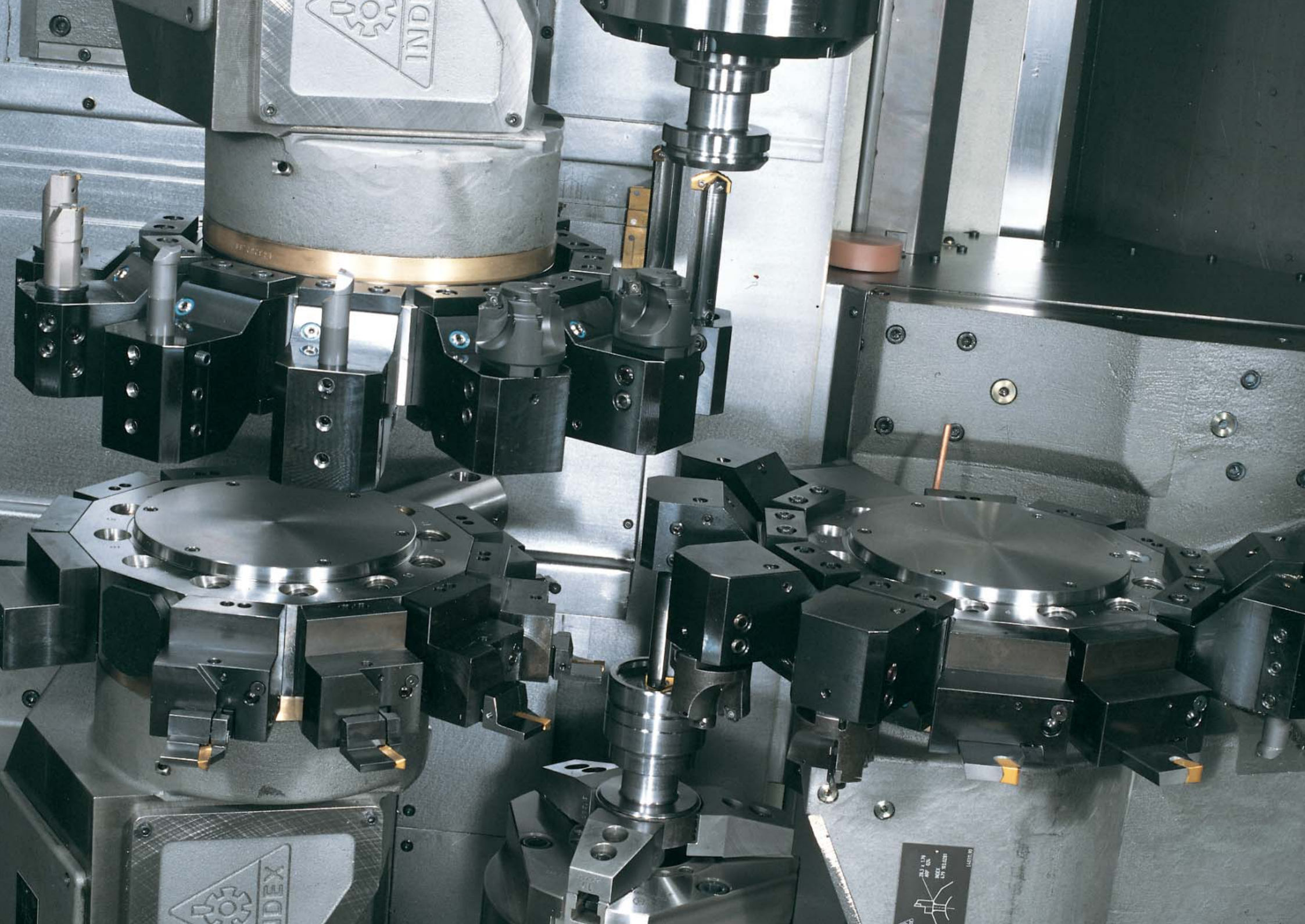
The thermo-symmetric headstock with its controlled heat transfer perpendicularly to the tool plane impresses by its superior turning precision.

Also manufactured with the known INDEX precision are: The highly rigid, rugged main spindles with a large diameter in the front bearing. The high maximum speeds ensure optimum and economical machining from the small to the large workpiece.

Your system benefits:

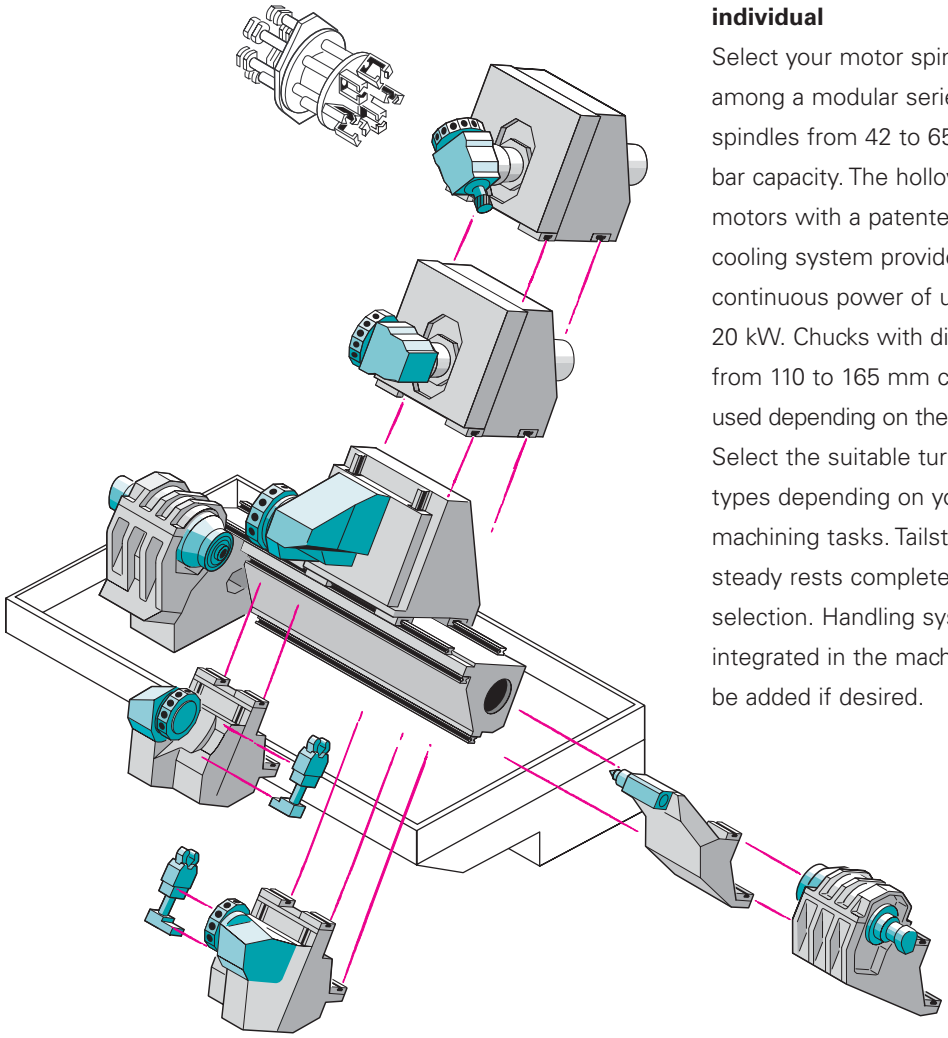
- Main and counter spindle based on identical components for complete machining
- Reduction of the cycle times achieved by working simultaneously on the main and counter spindle with up to 3 turrets
- Y axis for off-center drilling and milling work with large working range from 120 to 180 mm stroke
- B axis with 360° swiveling range for machining at any desired angle using simple standard tools on the main and counter spindle
- Auxiliary milling spindle for the B axis with 45 to 57 Nm torque and 6-fold tool storage with automatic tool change
- Glass scales for all X axes and the Z axis of the counter spindle for maximum precision
- Integrated workpiece handling for loading or discharge of shaft and chuck parts
- NC tailstock and steady rests for the complete machining of shafts





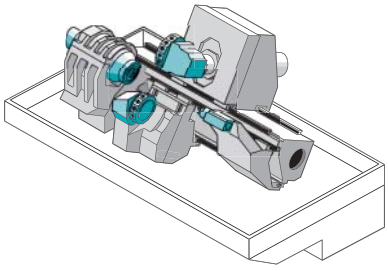
All your options are open!

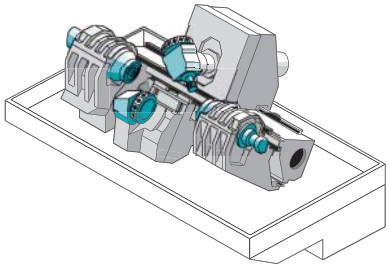
You decide on the configuration of the machine. The clearly structured building block system offers the distinct advantage of incorporating exactly those functions into the machine that are necessary for your applications - not more, not less.

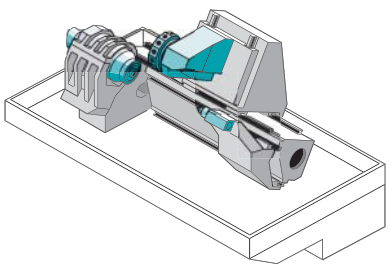


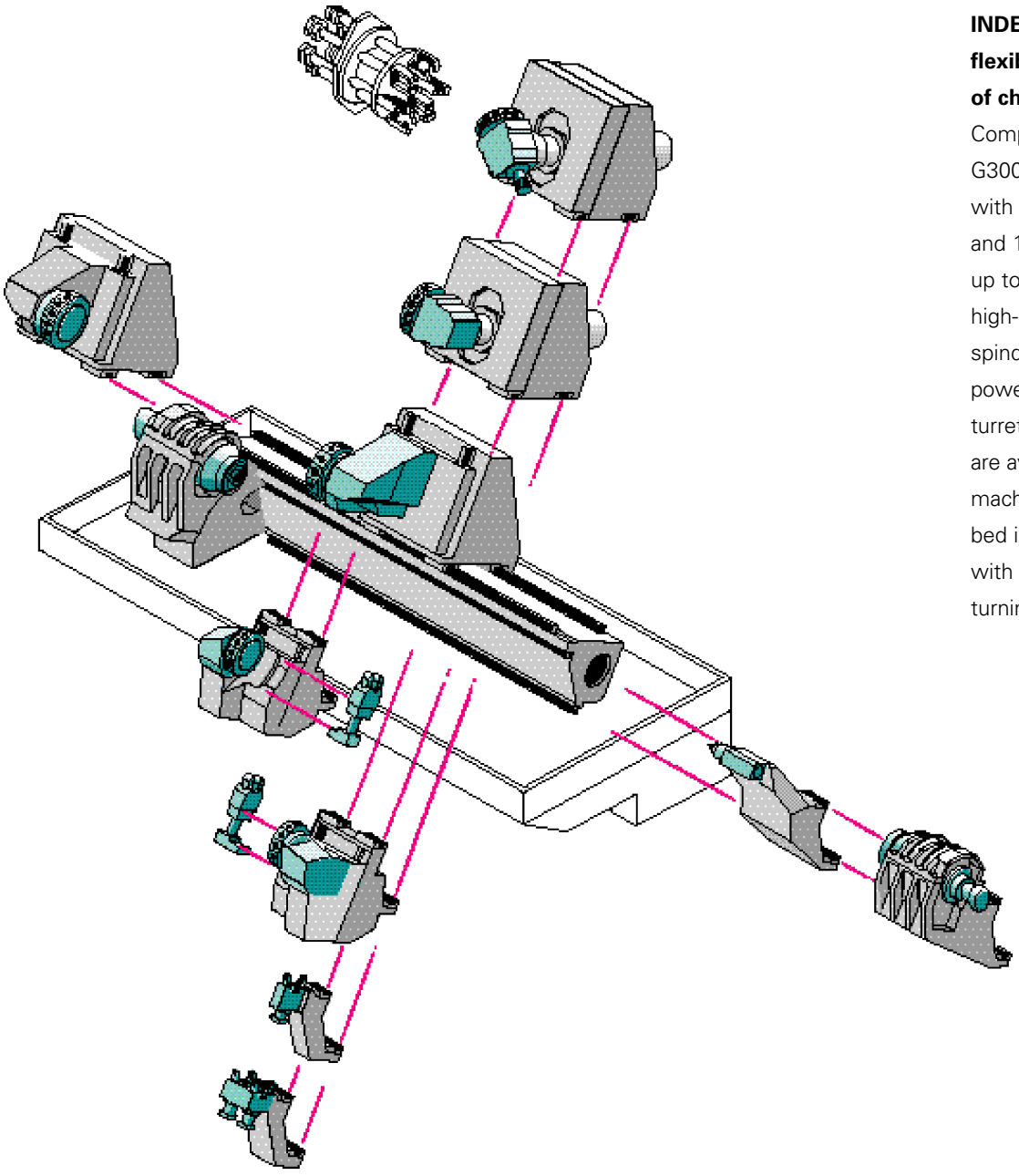
INDEX G200 – universal and individual

Select your motor spindle among a modular series of spindles from 42 to 65 mm bar capacity. The hollow shaft motors with a patented air cooling system provide a continuous power of up to 20 kW. Chucks with diameters from 110 to 165 mm can be used depending on the spindle. Select the suitable turret types depending on your machining tasks. Tailstock and steady rests complete the selection. Handling systems integrated in the machine can be added if desired.



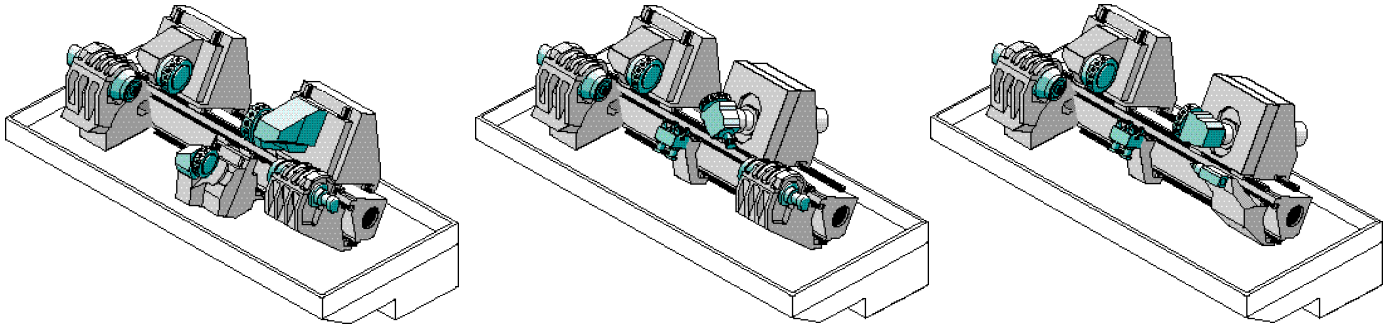




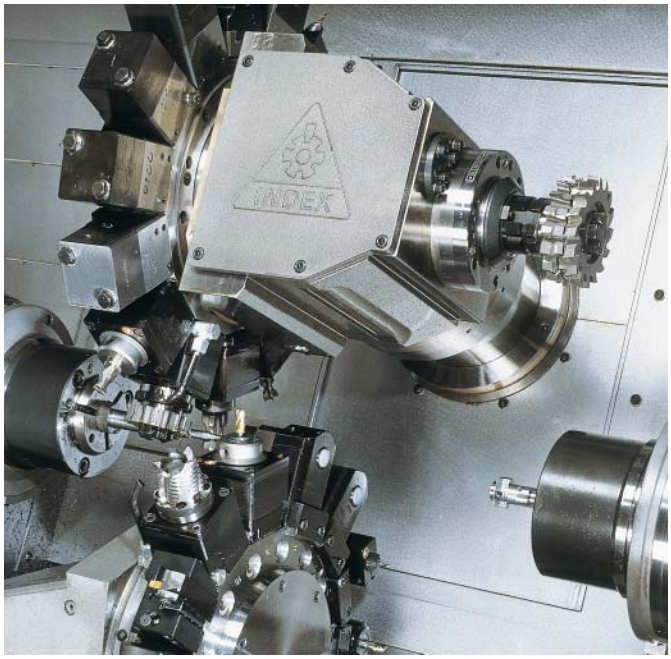


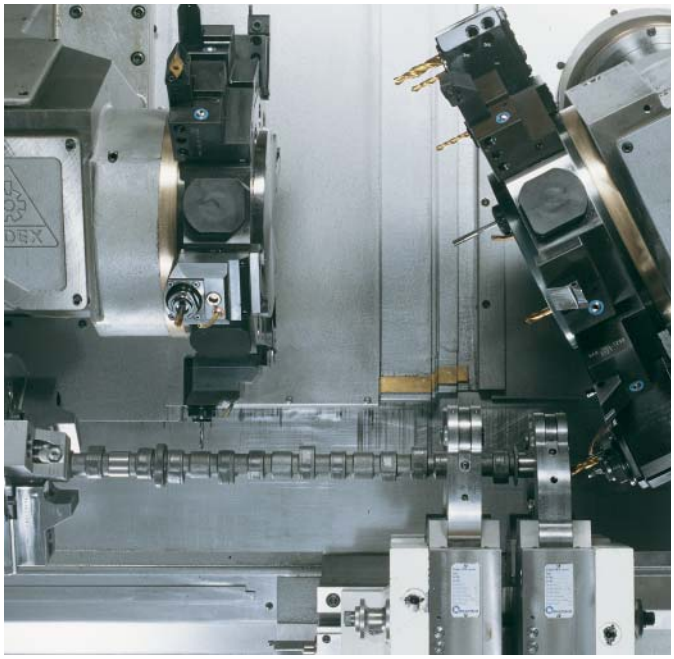
INDEX G300 – highly flexible for the machining of chuck and shaft parts

Compared to the G200, the G300 offers larger spindles with bar capacities of 65, 90 and 102 mm and chucks with up to 315 mm diameter. The high-performance motor spindles provide a continuous power of 19 to 43 kW. Three turrets in different versions are available for more complex machining tasks. The machine bed is available in two sizes with 710 and 1250 mm turning length.



The solution in detail





If you want to increase the productivity, reduce costs and find new machining potentials, our wide experience will help you to find intelligent solutions:

14-station turret
The turret of the G200 is equipped with 14 stations. With 2 turrets, 28 tools can be used. This offers distinct benefits for the production of more complex parts and leads to a reduction of the setup times in case of small lot sizes.

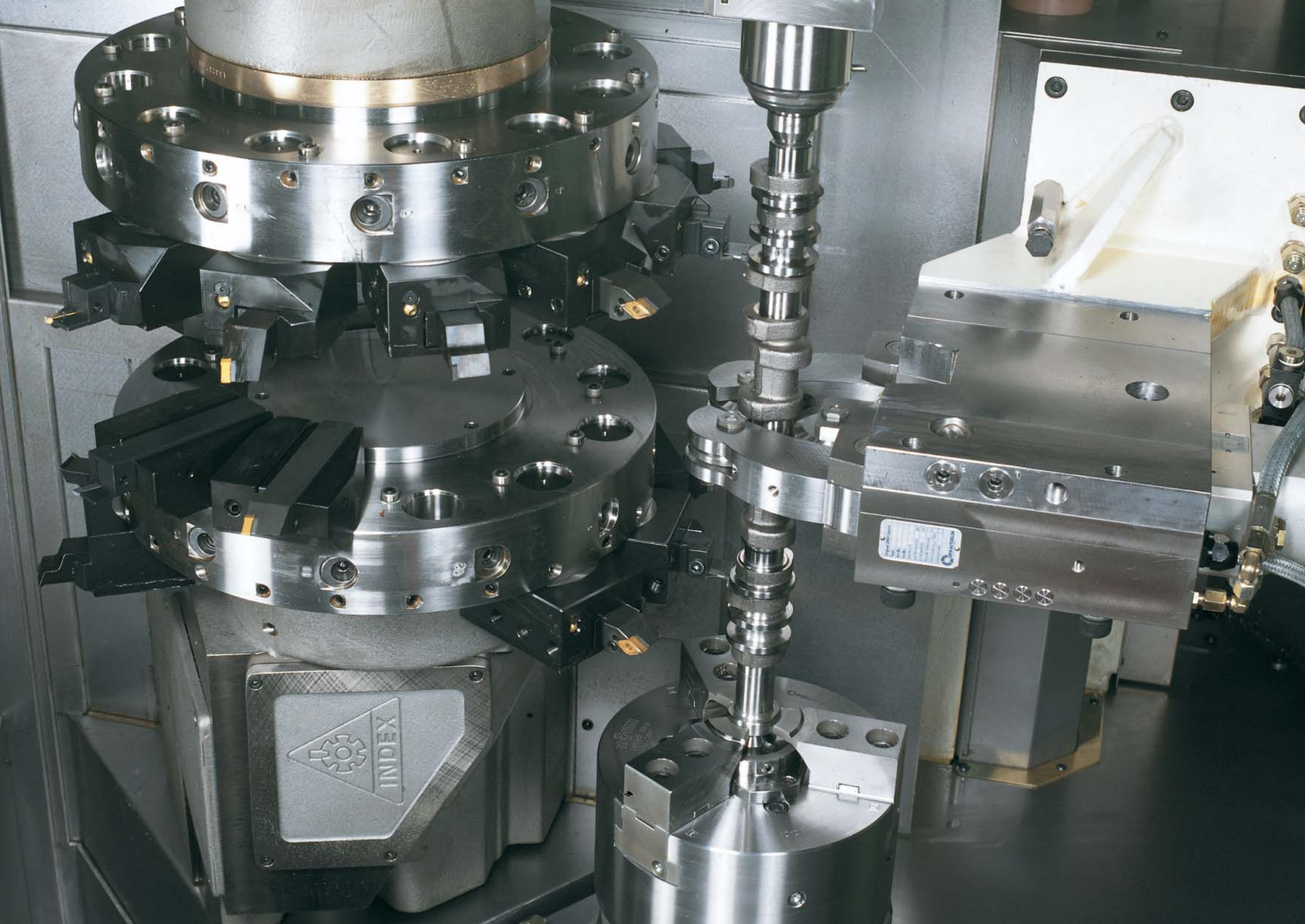
10/12-station turret
2 turret types are available for the G300: turrets with 10 or 12 stations. We offer fixtures for different tool systems for adaptation to your special requirements.

Powerful tool drives
You always use full machining capacity since only the tool actually used is driven. The strong milling spindle in connection with the B axis stands for heavy machining with a three times higher torque. A magazine increases the number of tools by further 6 tools.

Y / B axis - maximum precision in any position
The Y axis runs in a hydrostatic circular guide. This stiff and precise guide is the basis for the 360° B axis swiveling range for machining at any desired angle. Therefore, the turret can be used without any restrictions on the main and counter spindle, even if it is equipped with long tools.

Steady rests
The use of single or double steady rests depends on the task to be executed. They are self-centering and are attached to the steady rest carrier or to the lower turret and can be positioned directly in the parts program.

Tailstock
The manually positioned tailstock is suitable for many applications. The approach movement of the quill is hydraulically controlled via the program.
The programmable tailstock which can be positioned electrically makes it possible to cover the most different support lengths. The setting force is predefined in the parts program and controlled via the motor current.
Practical: The tailstock can be moved away for machining the workpiece end face.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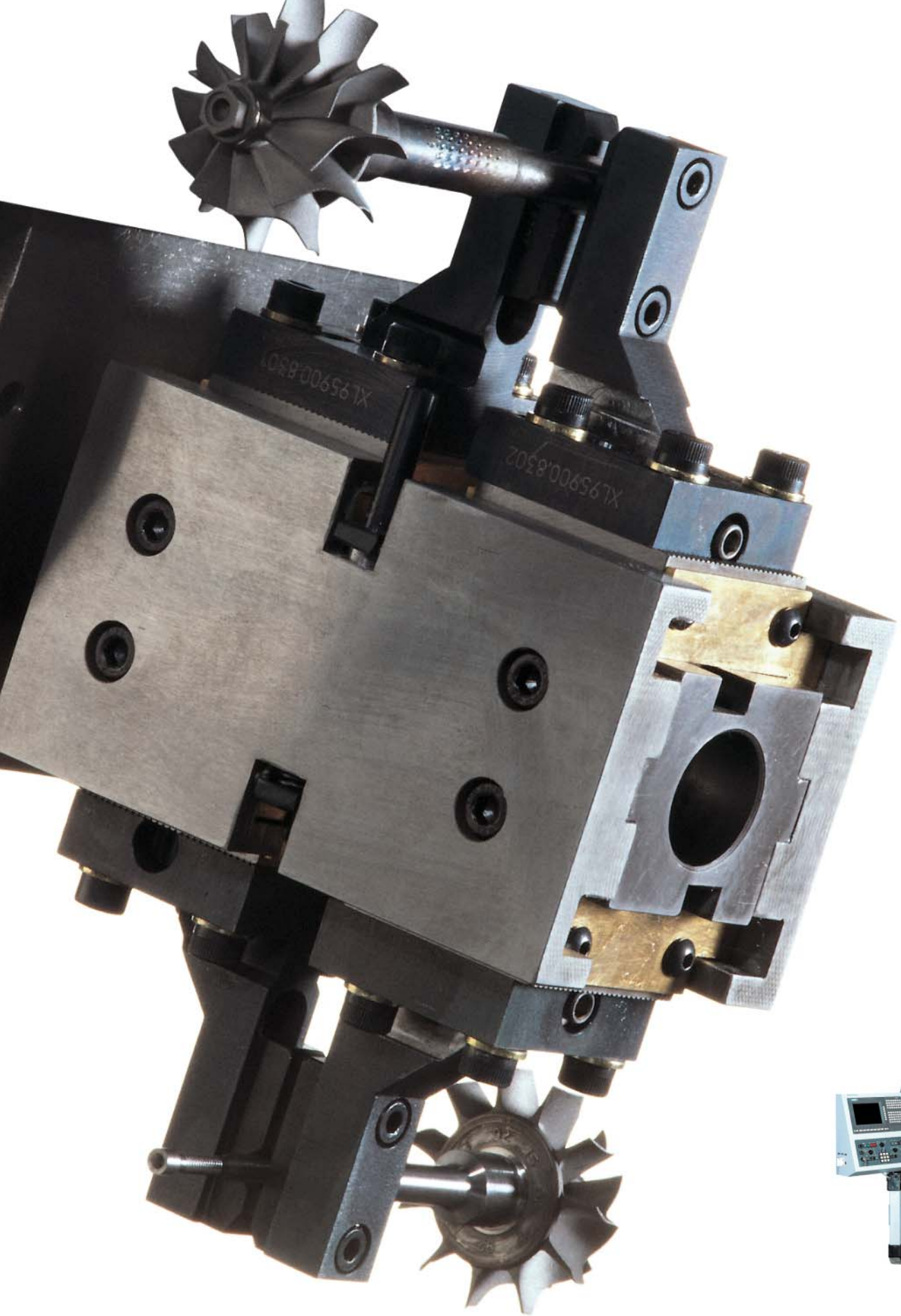
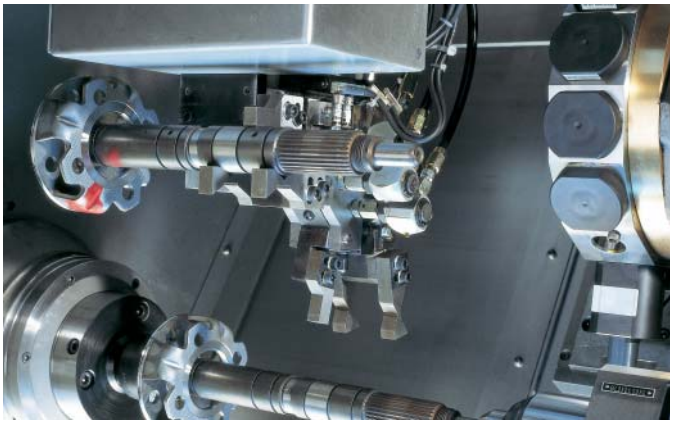


Handling systems integrated in the machine

WHU
The universal workpiece handling for chuck parts and short shaft parts

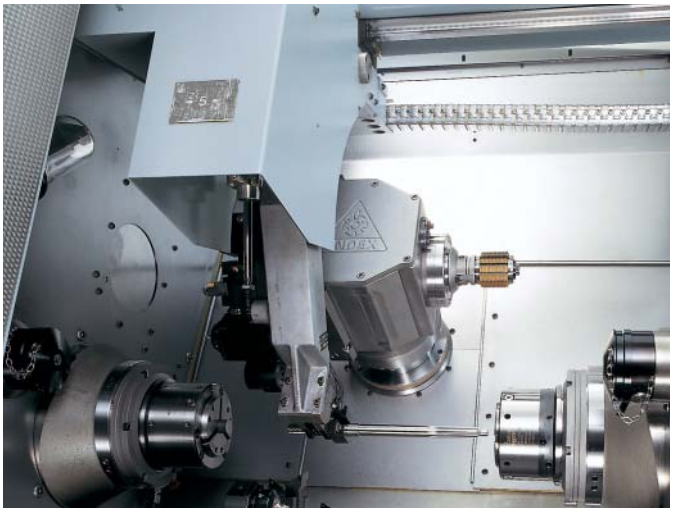


WHW
The workpiece handling for longer shaft parts

Your machine can be expanded to a fully automatic manufacturing cell by means of WHU/WHW. The workpieces are fed to the machine externally on pallets or a conveyor and are deposited there again with correct position orientation (adapted to the requirements of the production processes). The double gripper puts the blank part in the stand-by position in the working area while the machine is running. It picks up the finished part and, at the same time, loads the blank part. A fully automatic measuring station can be integrated in the process, if desired.

The integrated INDEX handling systems are characterized by the small amount of space required, short travels and fast cycle times. The WHU/WHW control is also completely integrated in the machine control. This enables convenient programming, fast and safe setup which leads to a reduction of the set-up efforts.

Workpiece receiving unit
Precision parts from bar stock are picked up directly from the spindle by means of a gripper and deposited on a discharge conveyor. The risk of damage to sensitive parts is thus excluded. The pick-up movements and positions can be programmed which thereby leads to a reduction of the setup times.



Increased efficiency through intelligent control solutions

Comfortable control cycles
Extremely comfortable control cycles support your programmer in recurring tasks, such as:

- Rigid tapping
- Thread chasing
- Deep hole drilling with cyclic chip removal
- Cutting cycles
- Workpiece transfer to the counter spindle with automatic length correction
- Workpiece handling

Special cycles make it possible to easily program more complex machining tasks with difficult geometries, such as the use of the C, Y or B axis.

The fields of programming and set-up offer big potential for cost reduction. With the INDEX C200-4D, based on the Siemens 840D powerline, INDEX offers the ideal control concept you need. The result: most modern and up-to-date technology combined with practice-oriented and user-friendly application.

Open control
The control based on the Windows NT operating system offers optimum conditions for the integration in modern communication networks. The optional ISDN interface allows the control to be integrated in the INDEX teleservice. Extensive diagnosis displays for the control and machine states inform the service engineers on-site or the teleservice in the INDEX service center. The information is displayed in clear text on the screen. Comprehensive operating and error messages make it possible to eliminate faults quickly.

Optional process monitoring
The control can also be used for a variety of other tasks. We optionally offer:

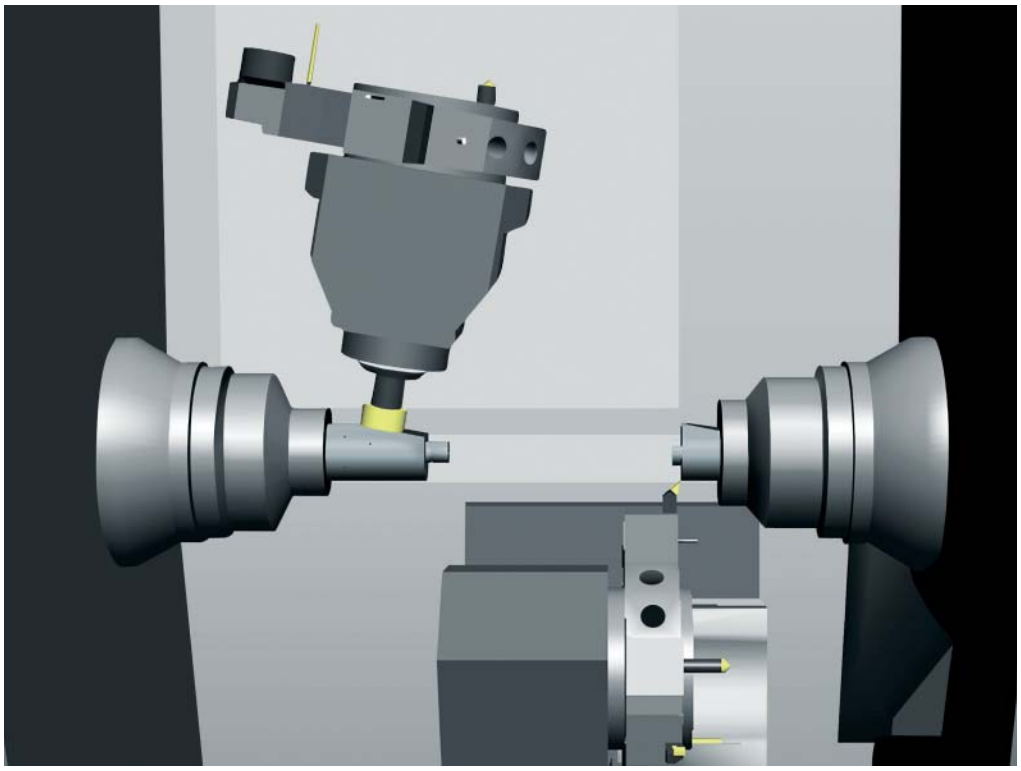
- Tool breakage and wear monitoring
- In-process measurement with measuring probes
- Post-process measurement with external gauges
- Tool measurement

Programming lot size 1 with TurboH200

The TurboH200 option enables fast and comfortable programming of turning, grooving, drilling and milling work starting with lot size 1 directly at the machine. The contour of the blank and the finished part is defined based on predefined geometrical elements, such as cylinders, tapers or by means of a contour description. The operator is guided automatically and in a functional sequence through the programming process.

- Raw part definition
- Definition of the external and internal geometry of the finished part
- Definition of clamping position and clamping means
- Generation of the machining steps
- Simulation with collision control

The workplan with the selection of the tools and cutting values is created automatically. Thus, the NC program is very close even in case of extremely complex workpieces.



Offline programming with the INDEX System200

If you prefer programming one or several machines on an external PC in the workshop or in the planning department, we offer TurboH200 also for external PCs. TurboH200 is part of the INDEX System200 which is a universal, machine- and control-independent NC programming system with geometrically and technologically powerful functions including graphic simulation. It supports the machining processes Turning, Milling, Drilling, Punching, Wire-EDM and Profile grinding. The software has a modular structure and ranges from universal CAD/NC coupling to DNC operation for fast data transfer. Several clearly arranged and user-friendly programming interfaces which you can switch efficiently and quickly are available for the creation of programs. The networkable software is equipped with interfaces to common software. System200 can also be delivered as a turnkey system and configured and implemented according to the customer requirements. It is of course possible to update the System200. All functions which require machines equipped with the latest technology can be realized thanks to the continuous enhancement of the System200 - a NC programming system from the user for the user!

Technical data G200

Working range					
Turning length	mm	400			
Swing diameter	mm	420			

Main spindle, counter spindle		**D42**	**D60**	**D65**	
Bar capacity (max. bar diameter)	mm	42	60	65	
Spindle O.D. front bearing	mm	85	100	100	
Spindle nose ISO 702/1	Size	5	140 mm (1)	140 mm (2)	
Chuck diameter	mm	140 / 160	140 / 160	165	
Speed	rpm	7000	6000	6000	
Power (at 100%	kW	20 (13)	20 (13)	20 (13)	(counter spindle)
Torque (at 100%)	Nm	95 (61)	95 (61)	95 (61)	(counter spindle)
Indexing and loading attachment	degrees	2,5	2,5	2,5	
C axis resolution	degrees	0,001	0,001	0,001	
Z axis rapid traverse (counter spindle)	m/min	30	30	30	

Tool carrier 1 (upper)		**X**	**Z**	**Y**	**B**
Slide travel (XZ)	mm	120	400		
Slide travel (XYZ)	mm	155	400	120	
Slide travel (XYZB)	mm	155	590	120	360 (degrees)
Rapid traverse	m/min	22,5	45	7,5	180 (degrees/sec)

Tool carrier 2 (lower)		**X**	**Z**
Slide travel	mm	105	400
Rapid traverse	m/min	22,5	45

Turret 1 and 2		
Number of stations		14
Tool system DIN 69880	mm	25 x 48
Tool drive speed	rpm	6000
Tool drive power (at 25%)	kW	5,5
Tool drive torque (at 25%)	Nm	15

Milling spindle		
Speed	rpm	2000
Power (at 25%)	kW	5,5
Torque (at 25%)	Nm	45
Tool holding fixture		HSK-B50
Tool magazine, number of stations		6

Tailstock		**hydraulic**	**NC**
Center distance	mm	400	400
Stroke	mm	55	445
Setting force	N	5000	5500
Taper DIN 2079		SK30	SK30

Weights and connecting power (max. configuration)		
Weight	approx. kg	5500
Connecting power		42 kW, 53 kVA, 80 A, 400 V, 50 / 60 Hz

Control

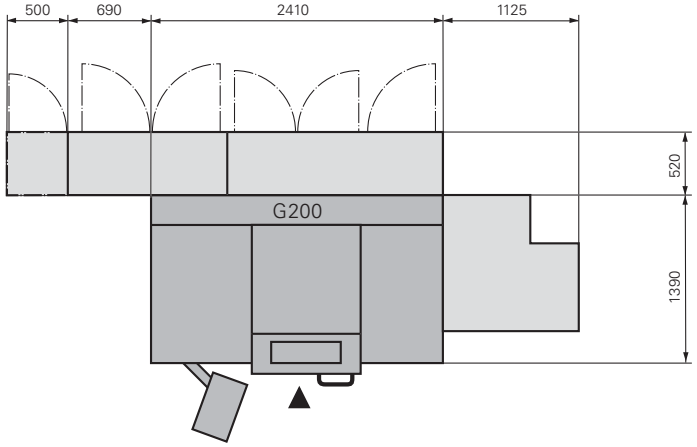
INDEX C200-4D (basis Siemens 840D powerline) (3)

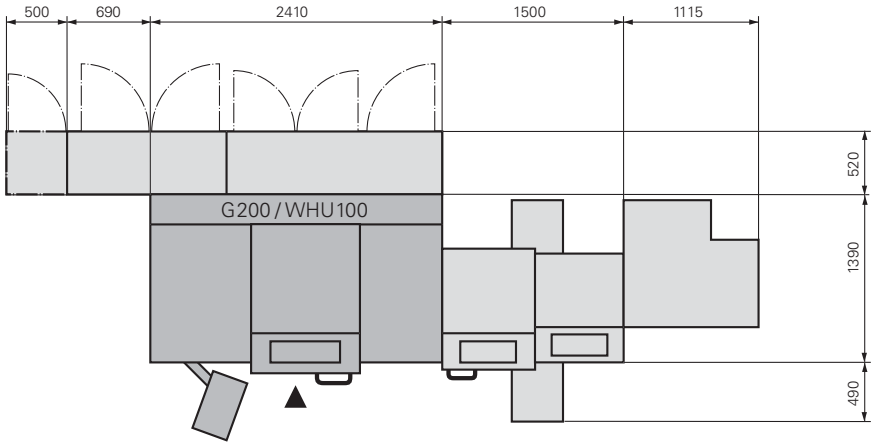
(1) taper D85 internal or D140 external and optionally short taper

(2) taper D140 external, tensile stress only admissible with gripper and chuck clamping

(3) optionally INDEX C200-4C (based on Siemens 840C)

RatioLine G200





Technical data G300

Working range					
Turning length	mm	710 / 1250			
Swing diameter	mm	590			

Main spindle, counter spindle		**D65**	**D90**	**D102**	
Bar capacity (max. bar diameter)	mm	65	90	102	
Spindle O.D. front bearing	mm	110	140	140	
Spindle nose ISO 702/1	size	6	8	8	
Chuck diameter	mm	200 / 250	250 / 315	250 / 315	
Speed	rpm	5000	3500	3150	
Power (at 100%)	kW	43 (28)	43 (28)	25 (19)	(counter spindle)
Torque (at 100%)	Nm	275 (178)	275 (178)	240 (181)	(counter spindle)
Indexing and loading attachment	degrees	2,5	2,5	2,5	
C axis resolution	degrees	0,001	0,001	0,001	
Z axis rapid traverse (counter spindle)	m/min	22,5	22,5	22,5	

Tool carrier 1 (upper right)		**X**	**Z**	**Y**	**B**
Slide travel (XZ)	mm	140	710 / 1250		
Slide travel (XZ) version W	mm	140	645 / 1150		
Slide travel (XYZ)	mm	215	710 / 1250	180	
Slide travel (XYZB)	mm	215	950 / 1490	180	360 (degrees)
Rapid traverse	m/min	20	20	7,5	90 (degrees/sec)

Tool carrier 2 (lower)		**X**	**Z**
Slide travel	mm	140	705 / 1245
Rapid traverse	m/min	20	20

Tool carrier 3 (top left)		**X**	**Z**
Slide travel (XZ) version W	mm	140	645 / 1150
Rapid traverse	m/min	20	20

Turret 1, 2 and 3		**DIN 69880**	**DIN 69880 (1)**	**HSK-B50 (2)**	**Capto C4**
Tool system	mm	30 x 50	40 x 63		
Number of stations		12	10	12	12
Number of stations driven		12	10	6	6
Tool drive speed	rpm	6000			
Tool drive power (at 25%)	kW	9,4			
Tool drive torque (at 25%)	Nm	19			

Milling spindle		
Speed	rpm	2000
Power (at 25%)	kW	9,4
Torque (at 25%)	Nm	57
Tool holding fixture		HSK-B50, Capto C4
Tool magazine, number of stations		6

Tailstock		**hydraulic**	**NC**
Center distance	mm	680 / 1220	740 / 1280
Stroke	mm	60	770 / 1310
Setting force	N	7500	10000
Taper DIN 2079		SK30	SK30

Weights and connecting power (max. configuration)		
Weight	approx. kg	7700 / 11000
Connecting power		72 kW, 90 kVA, 160 A, 400 V, 50 / 60 Hz

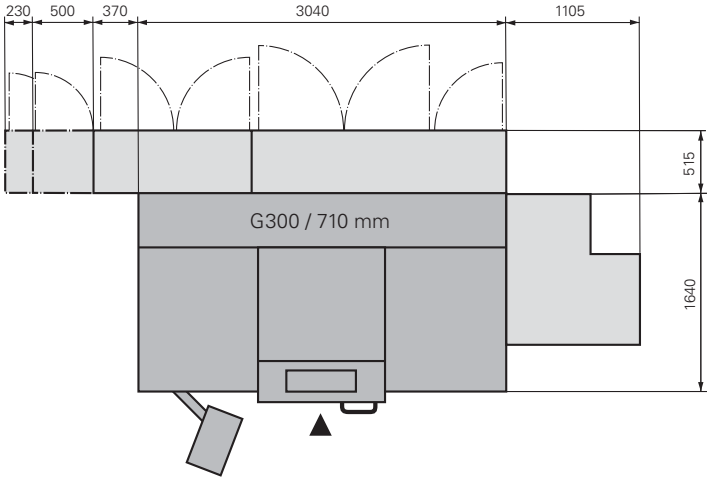
Control

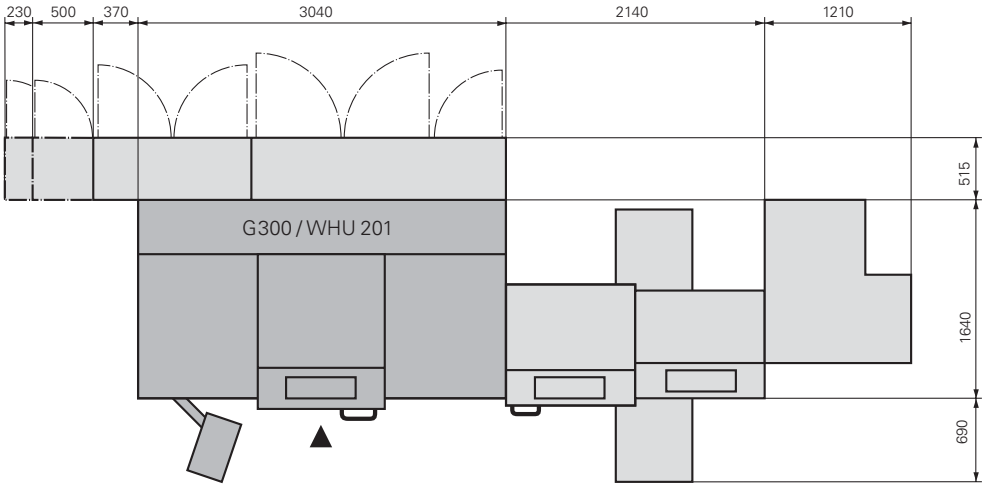
INDEX C200-4D (basis Siemens 840D powerline) (3)

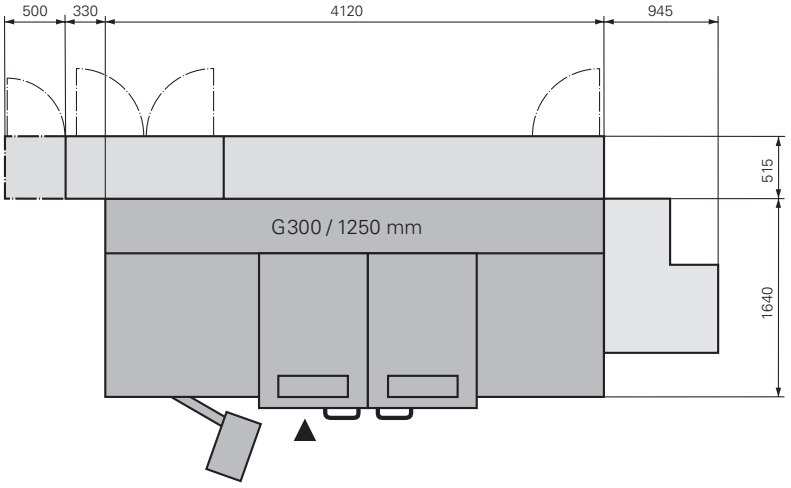
(1) only for XZ tool carrier, max. nom. turning diameter approx. 230 mm

(2) manual

(3) optionally INDEX C200-4C (based on Siemens 840C)


230
500
370
3040
1105
515
G300 / 710 mm
1640


230
500
370
3040
2140
1210
515
G300 / WHU 201
1640
690


500
330
4120
945
515
G300 / 1250 mm
1640

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