

TNL20

*Sliding / fixed headstock automatic lathe
for precise and economical machining*

TRAUB



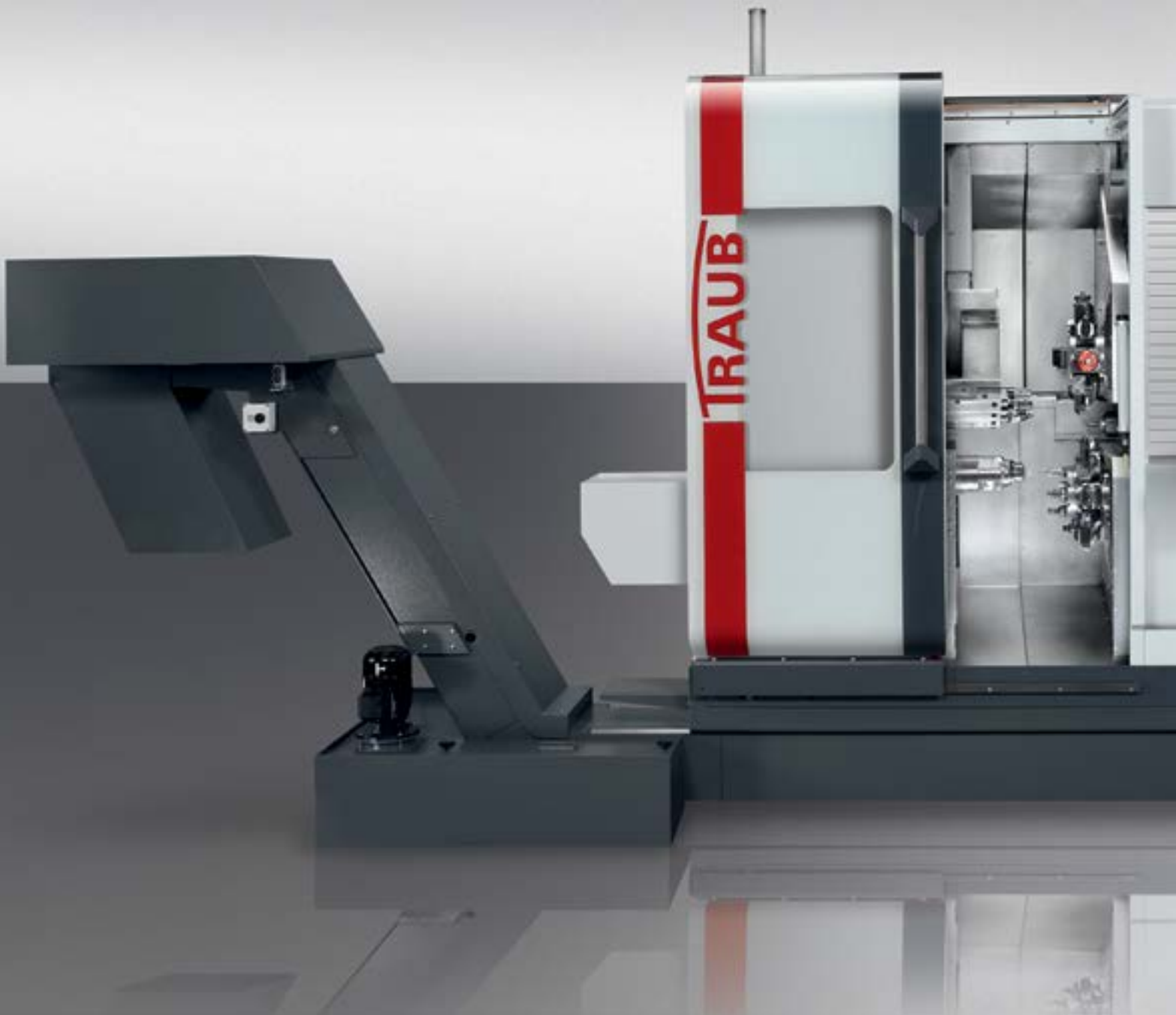
better.parts.faster.

The new TNL20 – productive sliding and fixed headstock turning of medium and high complexity workpieces from bar stock or with an integrated robot cell

The new TNL20 has two identical work spindles and two tool turrets, each with X-, Z-, and Y-axes. And in addition, it can be equipped with a front and back working attachment.

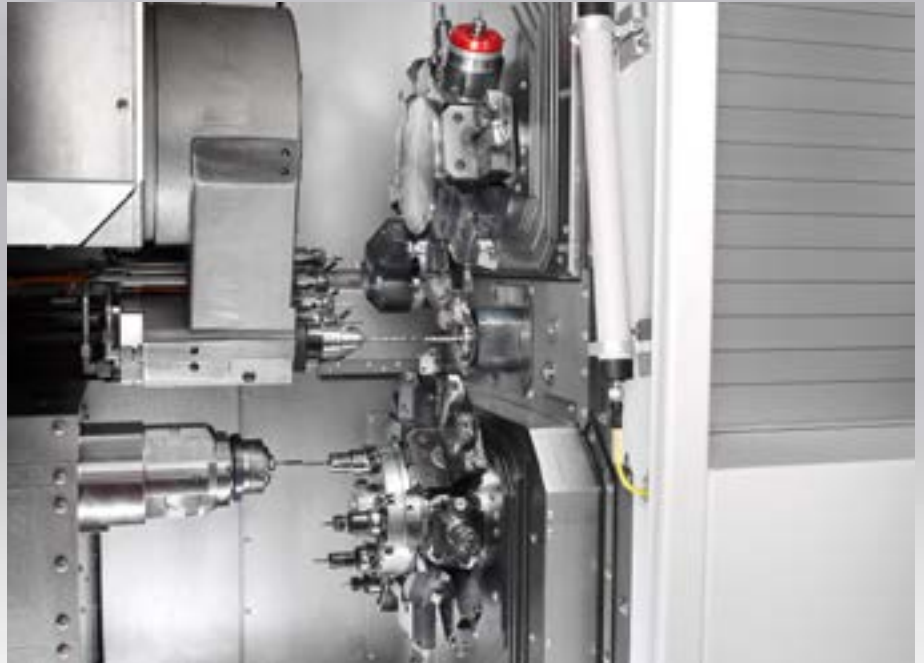
So this sliding and fixed headstock automatic lathe combines the productivity of a very high-performance automatic turning machine with the ability to produce even the most demanding workpieces accurately and economically.

The work area, unique in its class, of this automatic turning machine assures with its compact foot print a very high power density for economic production. In addition, the vertical work area concept provides optimum process reliability combined with minimal setup effort.



The work area concept

Simultaneous and productive machining with two tool turrets and a front and rear working attachment.



The machine design

- Bar capacity up to \varnothing 20 mm
- Up to three tool carriers and one back working attachment, each with Y-axis
- Simultaneous machining with two, three or four tools
- High tool pool for set-up-friendly production
- Short tool changing times by means of CNC indexing axis in the tool turrets and in the front working attachment
- Very fast and energy-efficient dog clamping on the main spindle and counter spindle
- Generous and process-reliable work area
- Hydraulic-free machine: No heat input caused by a hydraulic system – energy saving inclusive

TNL20-9 / TNL20-9B – simultaneous and precise manufacturing with up to three tools

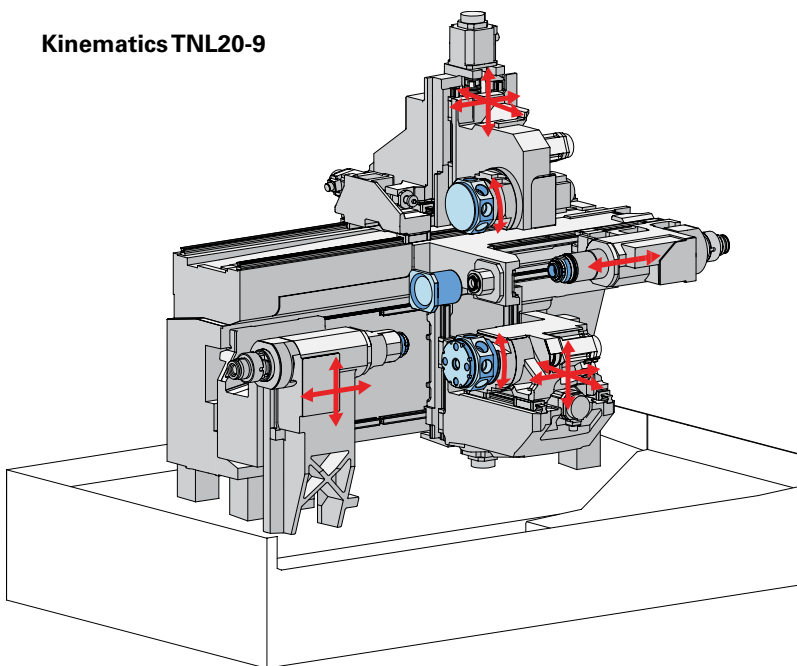
The machine concept of the TNL20 has been systematically matched to the daily requirements of the user.

So the kinematics of the machine allows effective and simultaneous machining with two or three tools.

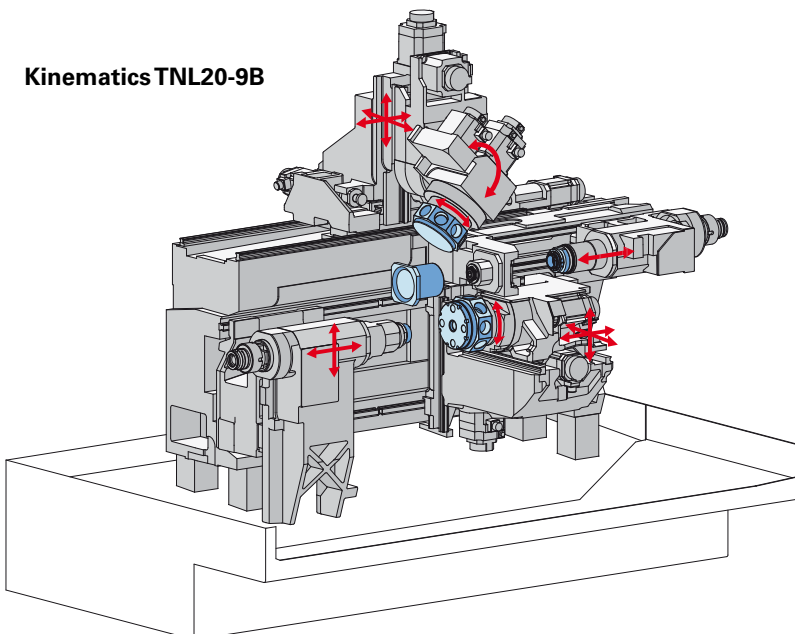
The generous and vertically arranged work area provides for the necessary degrees of freedom, as well as for very high process reliability.

The machine's crucial productivity advantage is the result of its extraordinarily high dynamics. The newly developed machine bed from gray cast iron forms the basis for utmost vibration dampening properties. And the high rigidity and thermal stability ensure optimum workpiece quality.

Kinematics TNL20-9



Kinematics TNL20-9B



Spindle / shaft

Dimensions, mm	Ø14 x 100
Material	1.4305
Cycle time	93 s



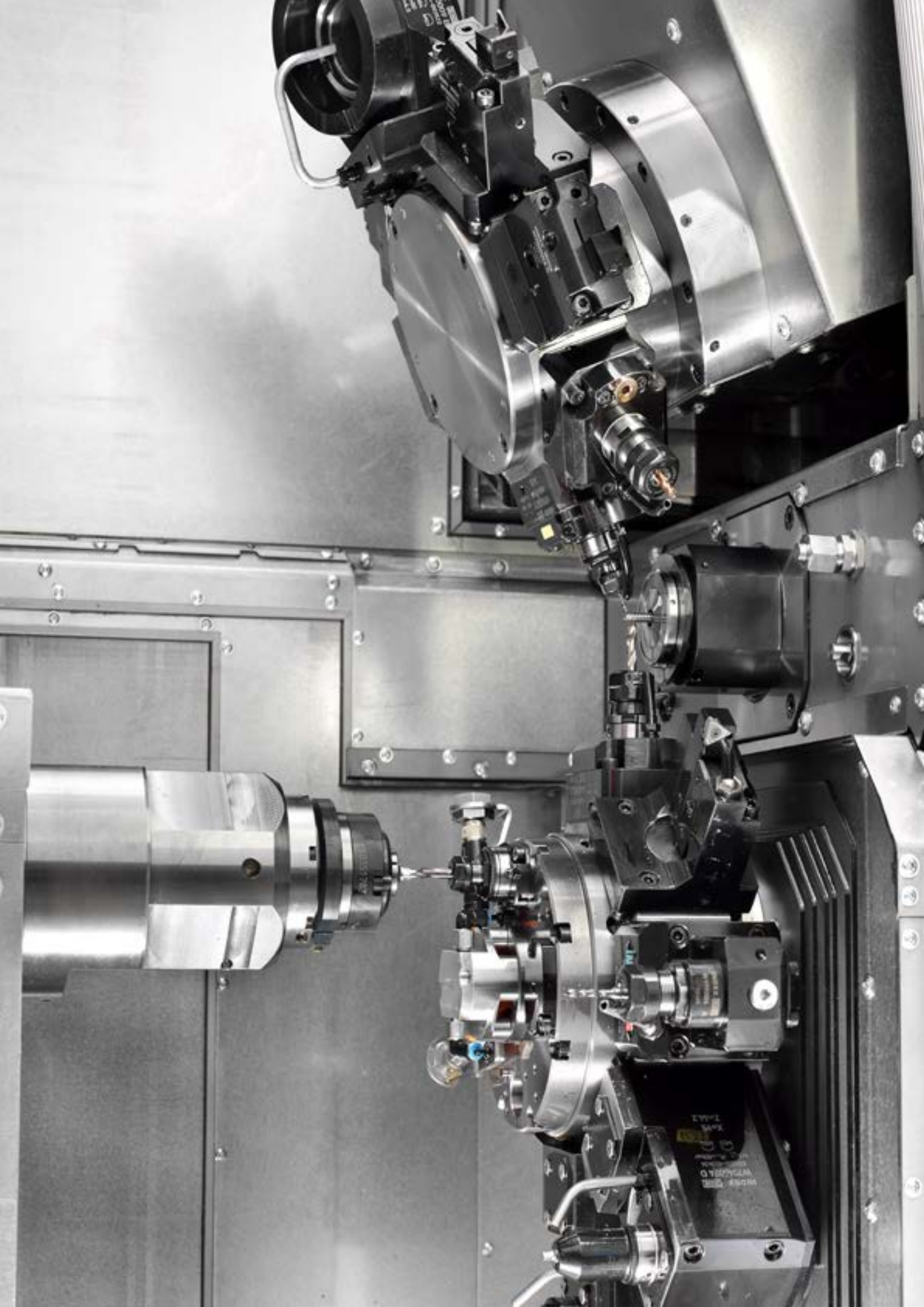
Implantat

Dimensions, mm	Ø4 x 15
Material	Titan
Cycle time	241 s

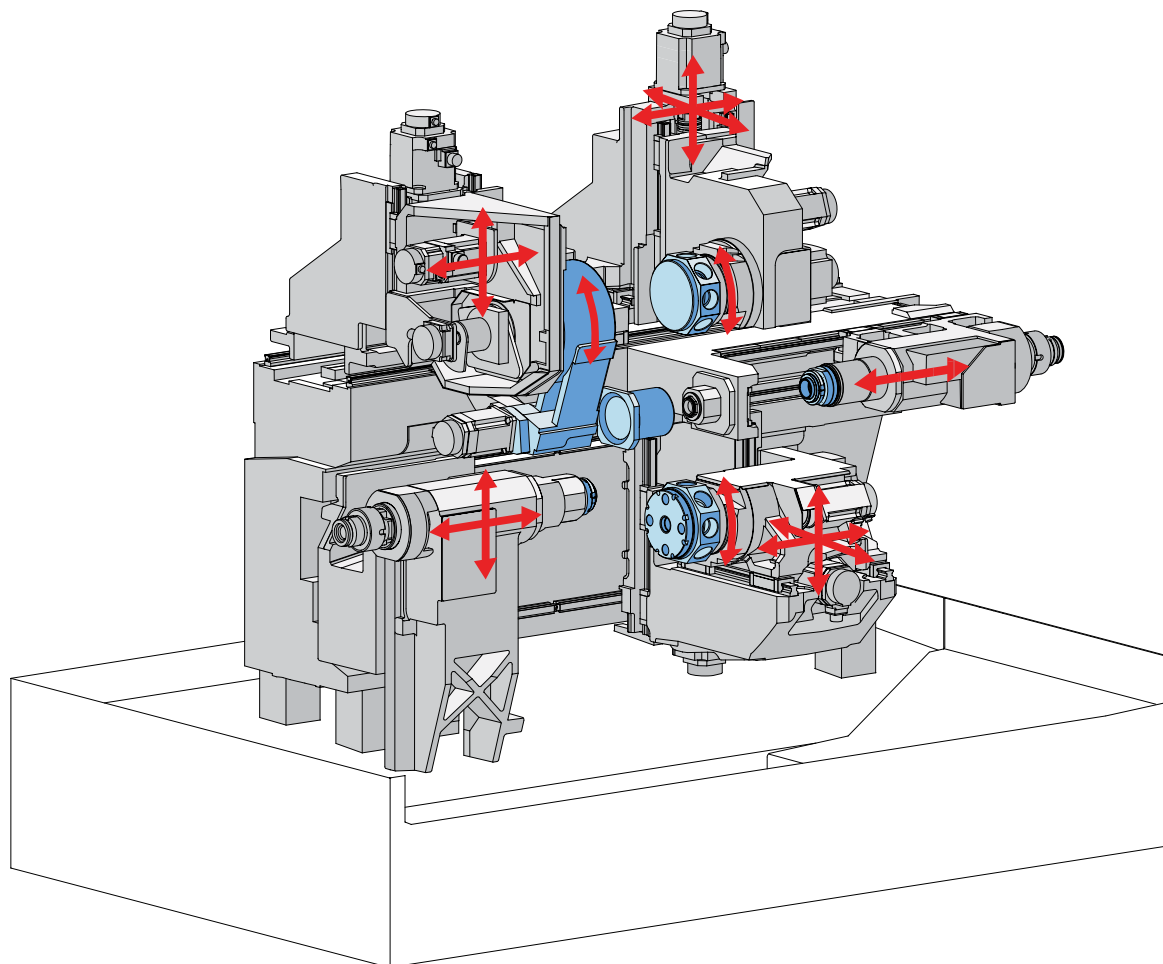


Anchoring sleeve

Dimensions, mm	Ø16 x 30
Material	1.4305
Cycle time	230 s



TNL20-11 with additional front working attachment – precise and even more efficient production with four tools simultaneously



Control slide valve

Dimensions, mm	Ø18 x 120
Material	1.4305
Cycle time	163 s



Drive shaft

Dimensions, mm	Ø14 x 100
Material	1.4305
Cycle time	196 s

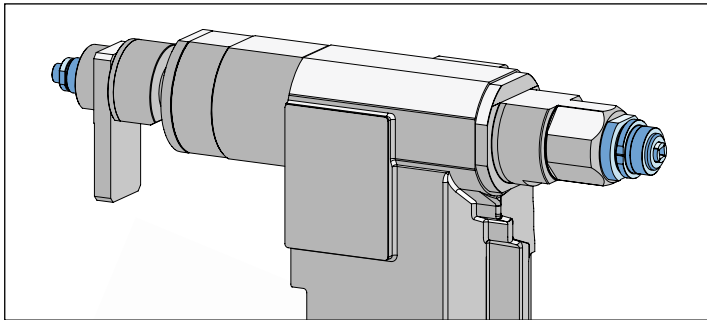


Aluminum housing

Dimensions, mm	Ø18 x 26
Material	Al
Cycle time	227 s

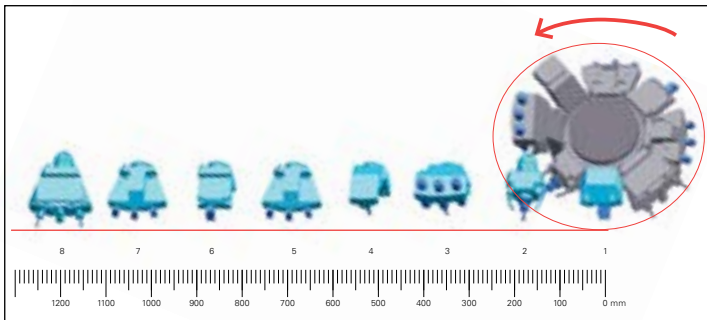


The components



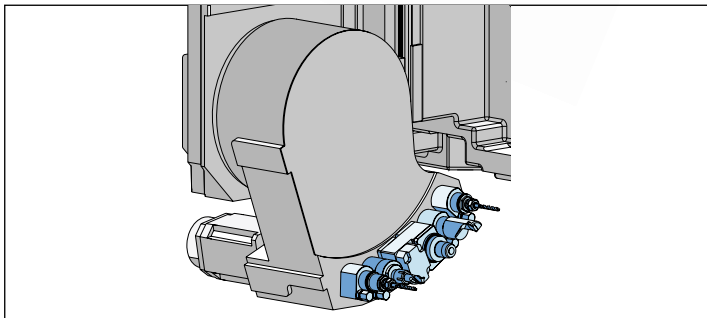
Main and counter spindles (motorized spindles)

- Bar capacity \varnothing 20 mm
- Spindle speed 10,000 rpm
- Drive power (100% / 40%) 3.0 / 5.5 kW
- Torque (100% / 40%) 5.73 / 10.5 / max. 17.2 Nm
- Fast material clamping, approx. 0.2 s for dog clamping
- Optional: Pneumatic clamping device with 6 mm clamping stroke and clamping force programming on the operating panel



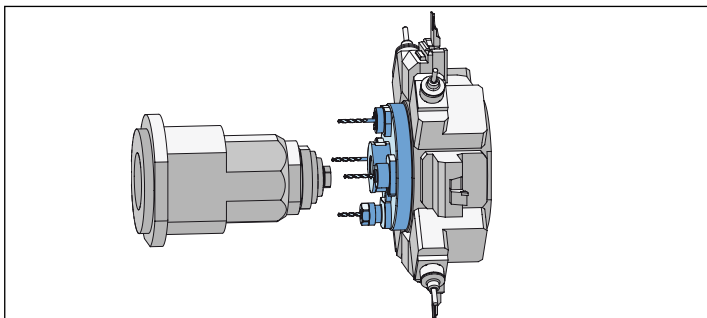
Two tool turrets

- Indexing axis designed as interpolated H-axis
- 8 stations, up to 24 tools per turret can be used
- Compact shank mounting \varnothing 45 mm
- 20 / 20 / 40 m/min
- 1.0 / 2.0 kW
- Coolant pressure up to 80 bar, up to 120 bar at stations 1 and 7
- Additional B axis at TNL20-9B



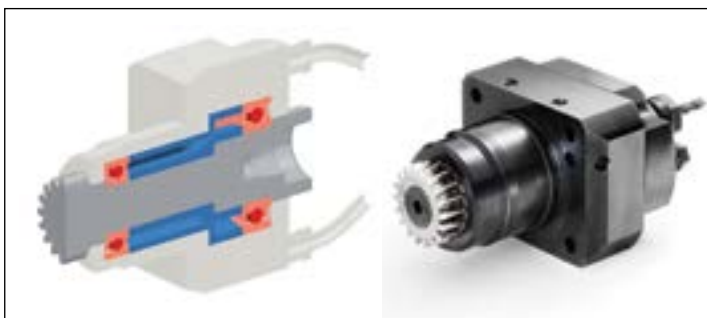
Front working attachment

- Autonomous compound slide with X- and Z-axes
- Y-axis function by X- and H-axis interpolation
- 3 x live tool mountings
- 3 x stationary tool mountings
- up to two HF spindles can be used
- Coolant pressure up to 80 bar, up to 120 bar at stations 1 and 4



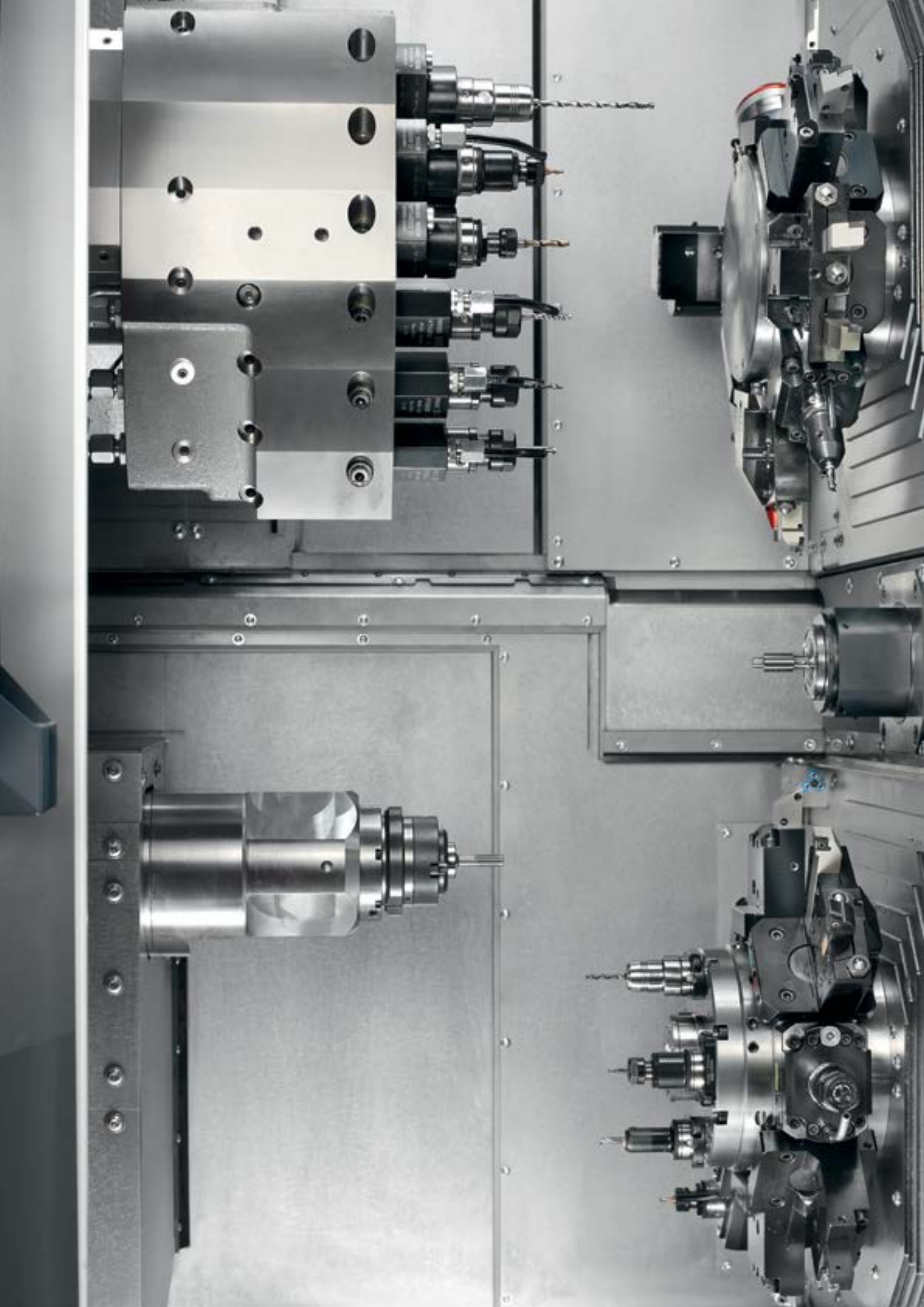
Back working attachment

- 4 x tool mountings for ID and OD machining (stationary)
- Coolant pressure up to 80 bar, at two stations up to 120 bar

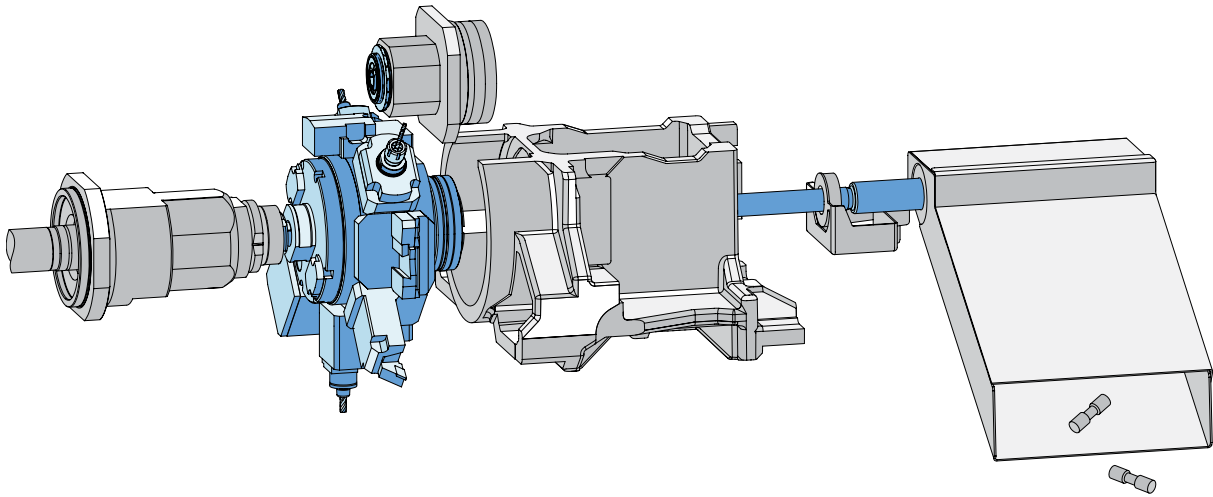


Tool holders

The compact shank system with its large, robust bearings and drive elements ensures full transfer of the tool drive on the workpiece

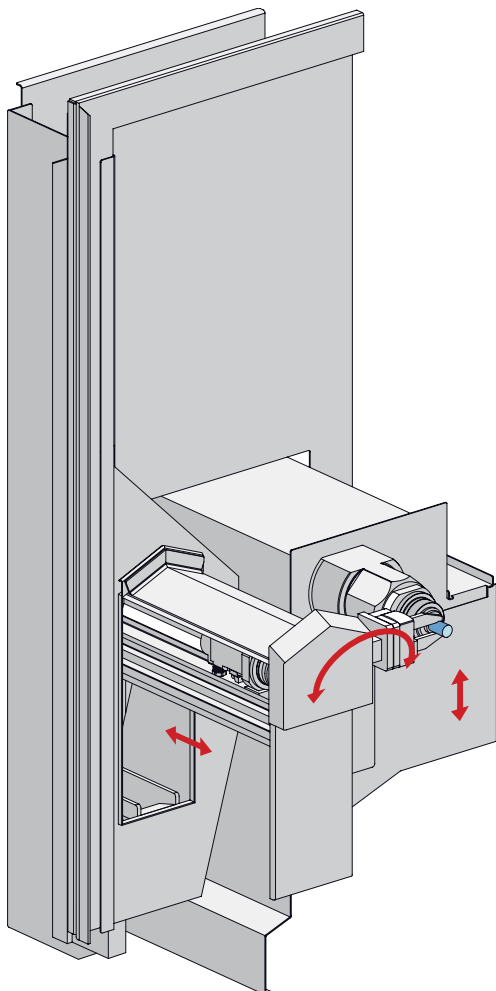


The workpiece discharge unit – fast, safe and gentle



Flushing unit for workpieces

Small workpieces weighing up to approx. 150 g and up to 20 mm in diameter can be flushed out easily, quickly and gently from the counter spindle through the indexing shaft of the lower tool turret by means of an optional flushing unit. A ring sensor monitors and confirms the safe discharge of the workpieces to the right into a workpiece container or onto an optional part conveyor belt.



Workpiece removal unit

The workpiece removal unit (servo linear axis in Z-direction and servo swivel axis) removes the finished workpieces with a workpiece gripper (two jaws, 20 mm stroke per jaw) and places them on a part removal conveyor.

The part removal conveyor then discharges the workpieces to the left out of the machine's work area.

Max. workpiece dimensions:

D= 20 mm L= 205 mm



Integrated robot cell *Xcenter*

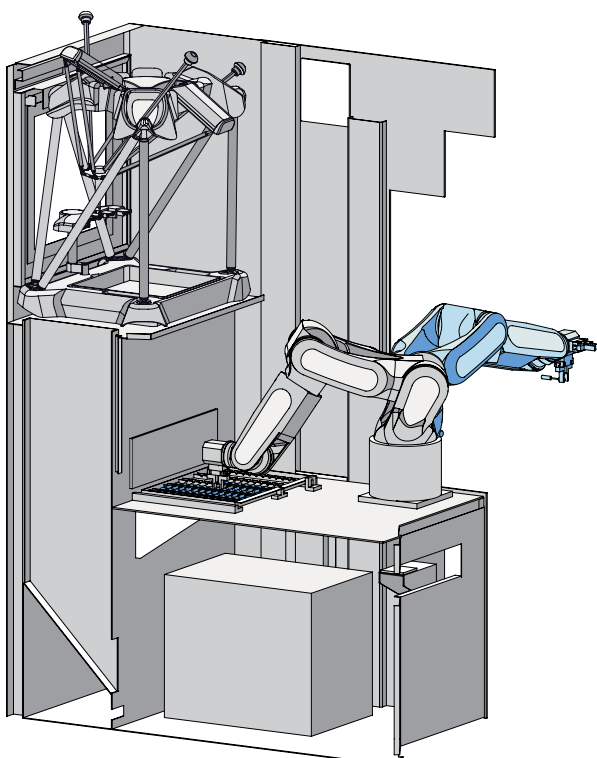
Intelligent automation – even more flexibility and efficiency

With the optional robotic cell, blanks and/or finished parts can be supplied and discharged quickly, safely and flexibly. The robot cell is integrated ergonomically into the machine. It can be moved easily to the left during the setup process, allowing unobstructed access to the work area of the machine. During production, the robot cell is fixed in front of the machine's work area. The robot then accesses the work area via the sliding guard of the machine, which opens automatically behind the robot cell.



Simply good handling of blanks and finished parts

- Space-saving vertical storage with up to 14 pallets stacked up
- Pallet size 400x300 mm
- Minimal pallet height 25.4 mm
- Pallets with blanks are loaded at the top, pallets with finished parts are removed at the bottom – at any time without interrupting production
- The pallet is pulled in and out by the robot
- Easy macro-programming



Using more potentials

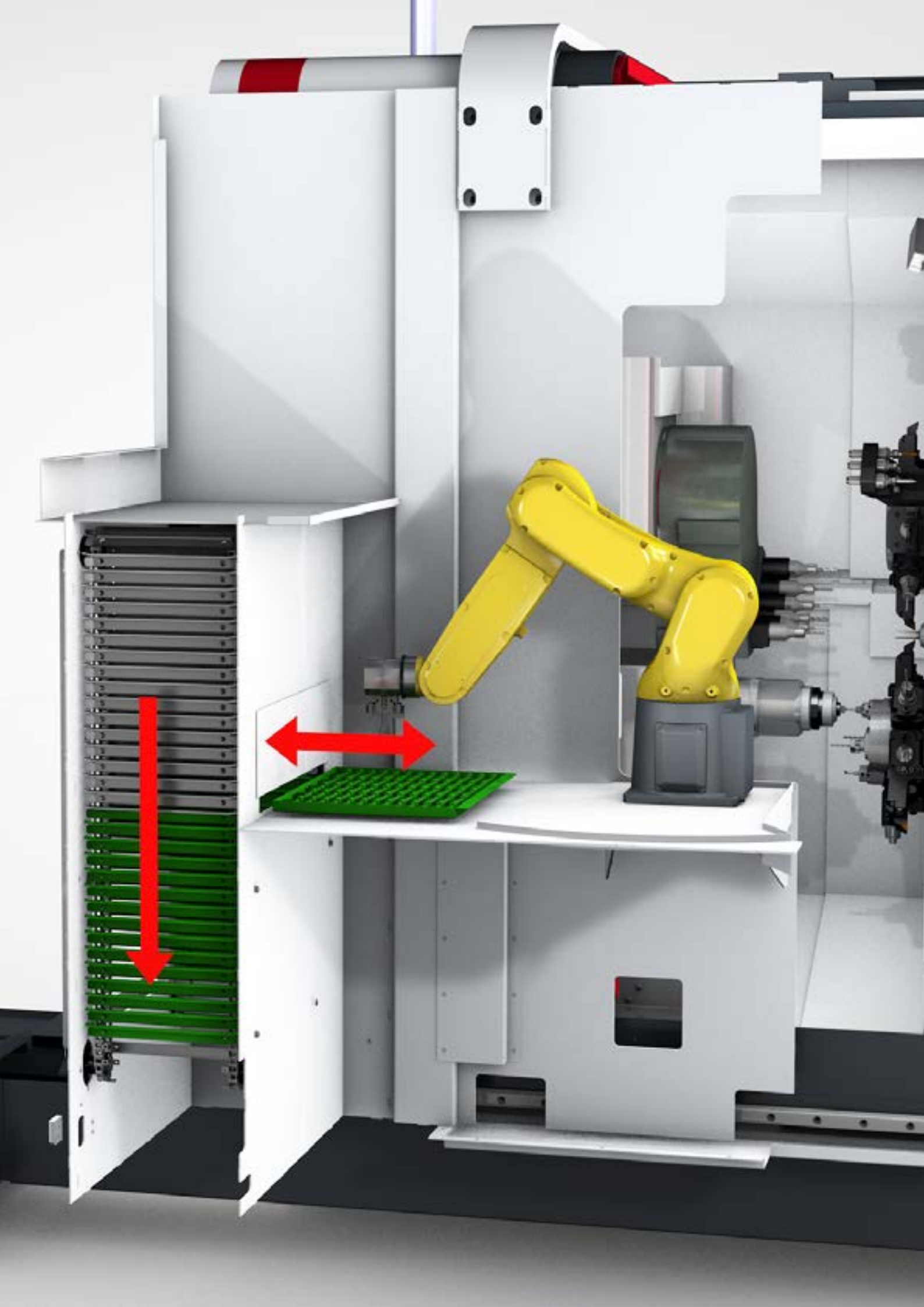
The space above the vertical storage can be used easily for subsequent processes such as cleaning, measuring, deburring, etc.

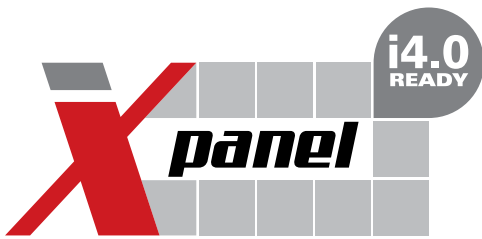
The preparation for incorporating a fully automatic 3D measuring cell is already provided as standard

- Closed-loop process control is possible
- SPC parts output and NOK parts output is provided

Ready to Go

- 6-axis robot for 6 kg payload with integrated gripper control
- Double gripper included in the standard
- 14 pallets (without workpiece-specific inlays) are included in the standard
- No separate installation and setup required
- Easy in-house relocation





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

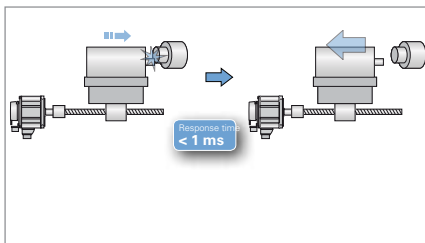


Focus on production and control – Industry 4.0 included.

The iXpanel operating concept provides access to networked production. With iXpanel your staff always has all relevant information for efficient production right at the machine. iXpanel is already included in the standard and can be individually extended. You can use iXpanel as you want it for your business organization – that’s Industry 4.0 tailored to your needs.

Future-proof.

TRAUB TX8i-s V8 optimally integrates the iXpanel functionalities. Use iXpanel intuitively via an 19” touchscreen monitor.



Intelligent

Overload and collision monitoring with electronic quick retraction

- Active on all TRAUB machines
- Minimizes damage to the machine
- Active counter control in case of malfunction
- Response time in the millisecond range by intelligent servo amplifier



Productive

Ergonomic interactive user interface for programming, editing, setup and operation

- Online retrieval of manufacturing and setup information; remote access via VNC
- Graphics-supported interactive guidance also during setup
- Comfortable process synchronization and optimization of the program sequences of parallel machining processes
- Visual control to avoid collision situations through graphical process simulation
- Highly sensitive tool breakage monitoring



Virtual & open

with the TRAUB WinFlexIPS ^{Plus} option

- Step-by-step parallel programming and simulation
- Extremely easy synchronization of machining sequences including up to 4 subsystems
- Cycle-time optimization already during programming
- Planning and optimization of a setup in manual/automatic mode just as on the machine
- 3D simulation and 3D collision detection provide for additional safety
- Optionally on an external PC and/or integrated in the control
- Third-party software can be installed via an optional gateway computer

NETWORK
SERVER
APPLICATION



CUSTOMER

19" TOUCHSCREEN



STANDARD included as standard

OPTION

Industry 4.0 features



Order documents



Customer data



Browser



Drawings



Setup sheet



Notes



Information center



Remote access



User management



Technology computer



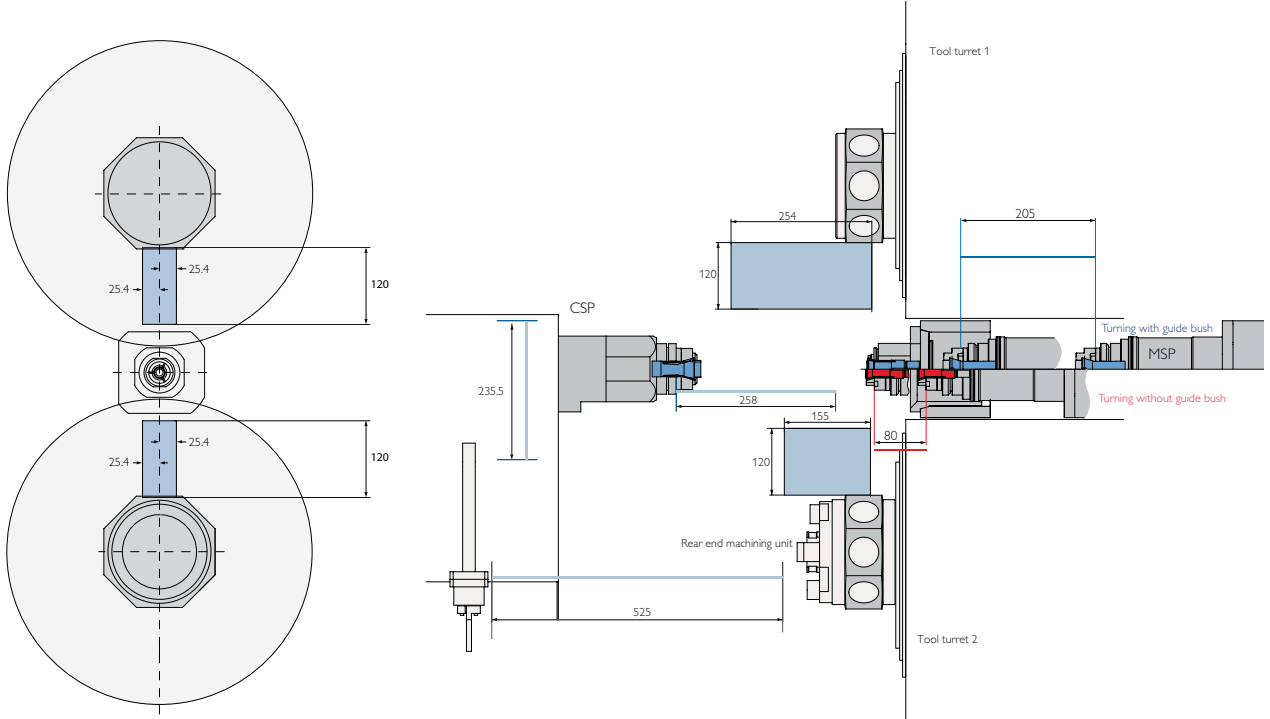
Programming help

- WinFlexIPS
- WinFlexIPS Plus
- Custom applications

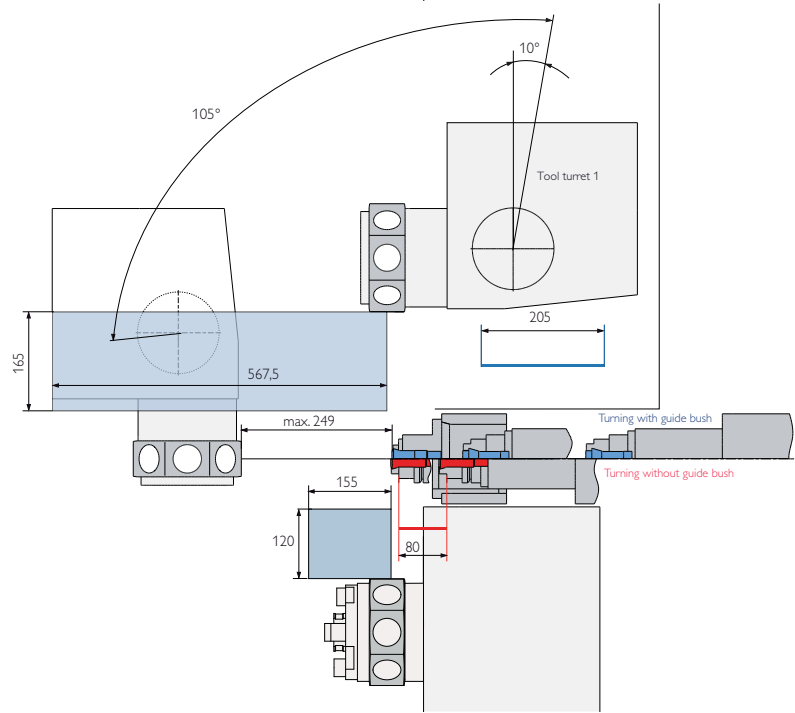
+ many more standard features

Sliding/fixed headstock automatic lathe TNL20

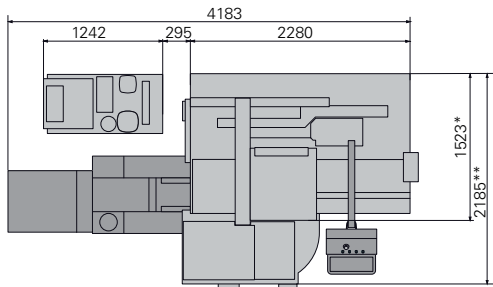
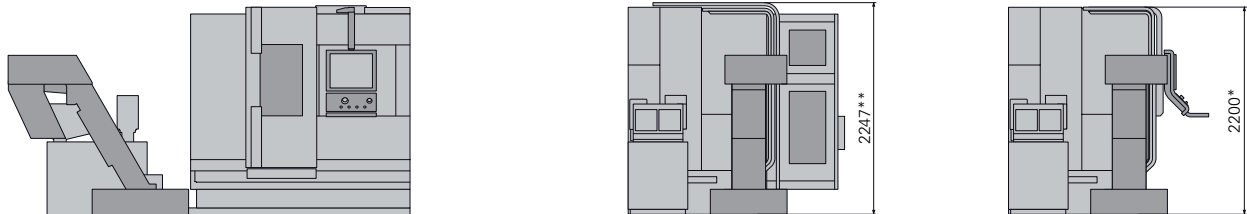
Work area TNL20-9



Work area TNL20-9B



Installation Chart



* Dimension without robot cell
 ** Dimension with robot cell

Technical data

TNL20-9

TNL20-9B

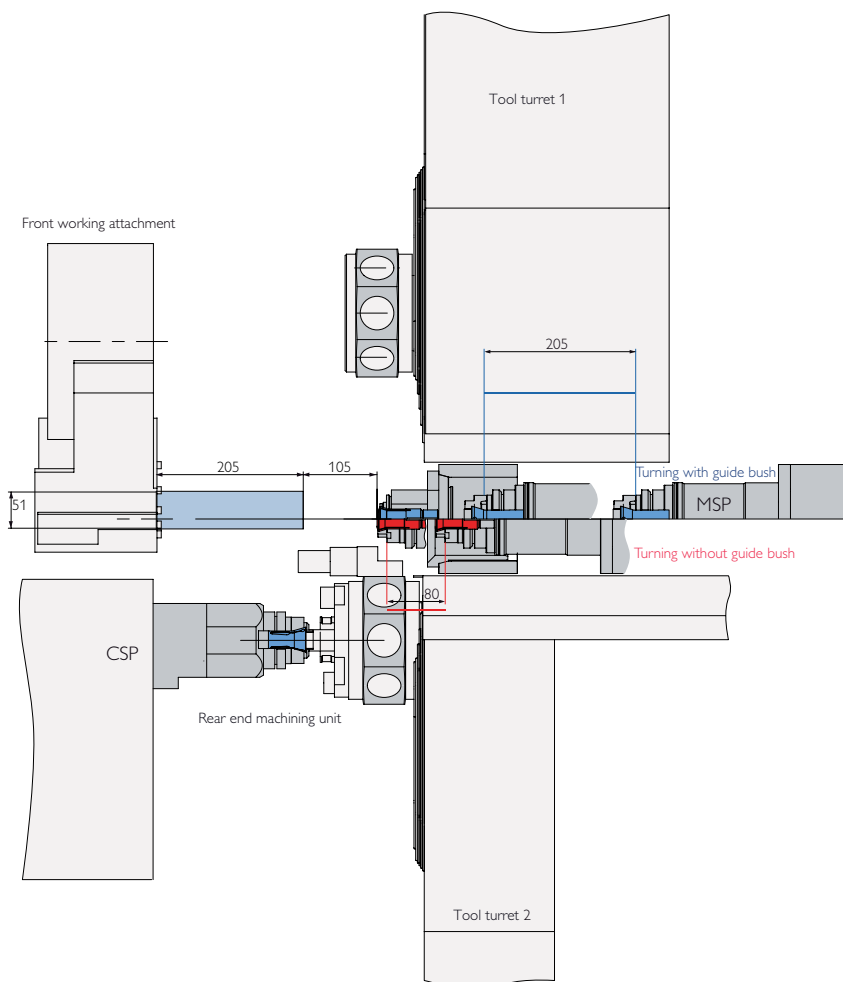
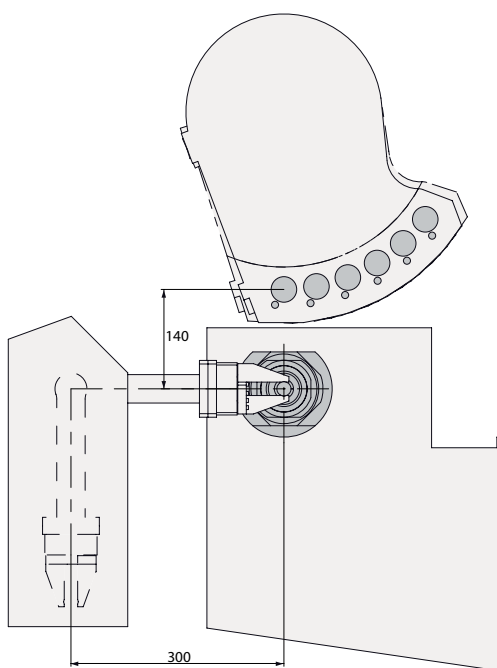
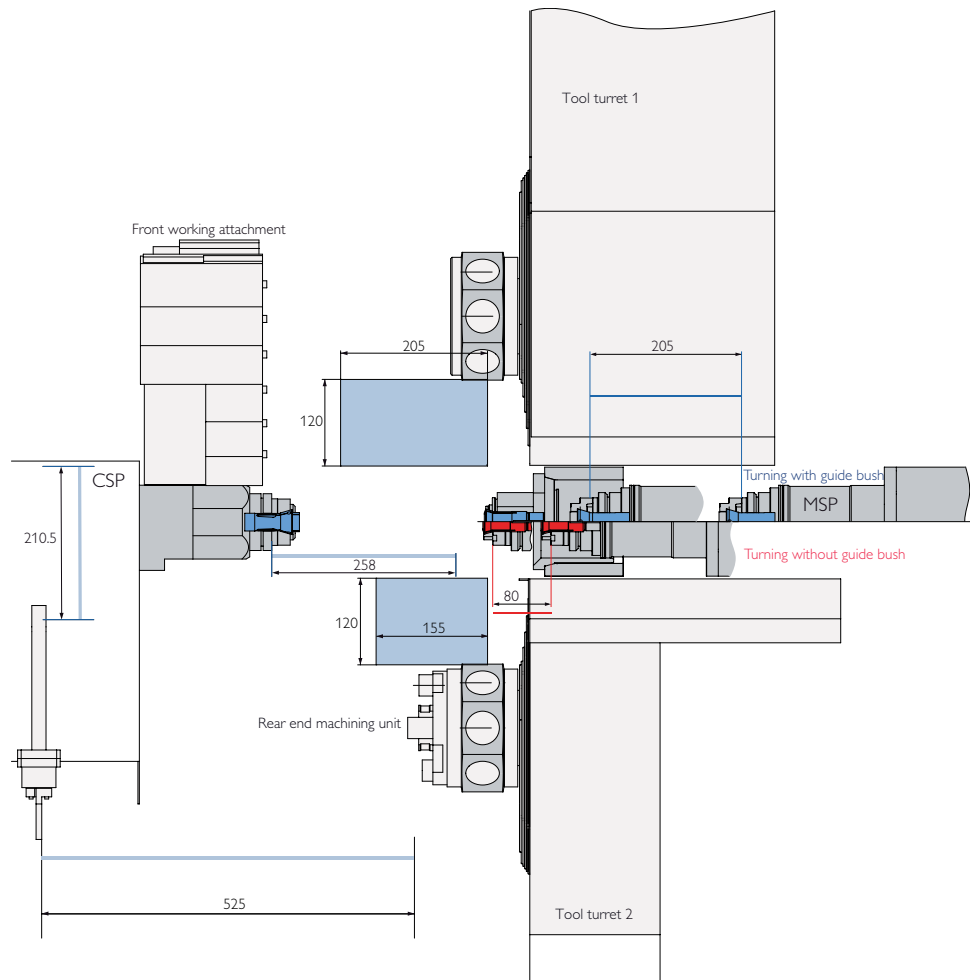
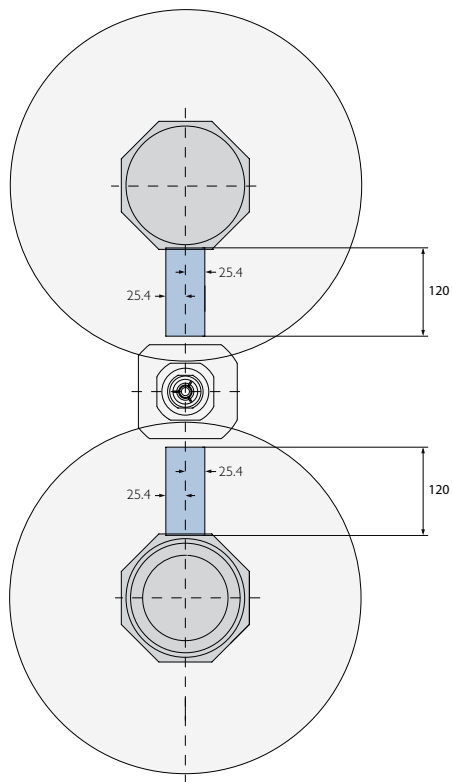
Headstock		
Max. bar capacity	mm	20
Max. Z-travel Sliding headstock machine/fixed headstock machine	mm	¹⁾ 205 / 80
Max. speed	rpm	10,000
Power at 100%/40%	kW	3.0 / 5.5
Torque at 100%/40%	Nm	5.73 / 10.5 / max. 17.2
C-axis resolution	Deg.	0.001
Max. rapid traverse rate Z	m/min	20
Upper tool turret		
Tool mountings	Number	8
Live tools	Number	8
Max. speed	rpm	12,000 8,000
Mounting ø	mm	45
Power at 100%/40%	kW	1.0 / 2.0
Turning tool cross-section	mm	16x16 / 20x20
Slide travel X	mm	120 165
Slide travel Y	mm	±25.4
Slide travel Z	mm	254 567.5
Rapid traverse rate X / Y / Z	m/min	20 / 20 / 40
Swivel angle B axis	Deg.	105
Lower tool turret		
Tool mountings	Number	8
Live tools	Number	8
Max. speed	rpm	12,000
Mounting ø	mm	45
Power at 100%/40%	kW	1.0 / 2.0
Turning tool cross-section	mm	16x16 / 20x20
Slide travel X	mm	120
Slide travel Y	mm	±25.4
Slide travel Z	mm	155
Rapid traverse rate X / Y / Z	m/min	20 / 20 / 40
Back working attachment		
Tool mountings	Number	4
Slide travel X / Y / Z	mm	120 / ±25.4 / 155
Mounting ø	mm	25
Counter spindle		
Max. spindle capacity	mm	20
Max. speed	rpm	10,000
Power at 100%/40%	kW	3.0 / 5.5
Torque at 100%/40%	Nm	5.73 / 10.5 / max. 17.2
Slide travel X	mm	235.5
Slide travel Z	mm	258
C-axis resolution	Deg.	0.001
Rapid traverse rate X / Z	m/min	20 / 40
Cooling lubricant unit (basic unit)		
Pump pressure	bar	3 / 8
Tank capacity	l	250
Pump capacity 3 / 8 bar	l/min	80 / 120
Filter fineness	µm	200
Machine dimensions		
Length x width x height	mm	see installation chart *
Weight	kg	5,000 *
Connected power	kW	40 (47 kVA)

*depending on equipment

1) The headstock stroke depends on the clamping device being used

Sliding/fixed headstock automatic lathe TNL20

Work area TNL20-11



Technical data

TNL20-11

Headstock		
Max. bar capacity	mm	20
Max. Z-travel Sliding headstock machine/fixed headstock machine	mm	¹⁾ 205 / 80
Max. speed	rpm	10,000
Power at 100%/40%	kW	3.0 / 5.5
Torque at 100%/40%	Nm	5.73 / 10.5 / max. 17.2
C-axis resolution	Deg.	0.001
Max. rapid traverse rate	m/min	20
Upper tool turret		
Tool mountings	Number	8
Live tools	Number	8
Max. speed	rpm	12,000
Power at 100%/40%	kW	1.0 / 2.0
Mounting ø	mm	45
Turning tool cross-section	mm	16x16 / 20x20
Slide travel X/Y / Z	mm	120 / ±25.4 / 205
Rapid traverse rate X / Y / Z	m/min	20 / 20 / 40
Lower tool turret		
Tool mountings	Number	8
Live tools	Number	8
Max. speed	rpm	12,000
Power at 100%/40%	kW	1.0 / 2.0
Mounting ø	mm	45
Turning tool cross-section	mm	16x16 / 20x20
Slide travel X/Y / Z	mm	120 / ±25.4 / 155
Rapid traverse rate X / Y / Z	m/min	20 / 20 / 40
Front working attachment		
Tool mountings	Number	6
Live tools	Number	3
Mounting ø	mm	36
Max. speed	rpm	12,500
Power at 100%/25%	kW	1.0 / 2.0
Slide travel X / Y / Z	mm	51 / ±13 (interpolated) / 205
Rapid traverse rate X / Z	m/min	20 / 40
Back working attachment		
Tool mountings	Number	4
Slide travel X / Y / Z	mm	120 / ±25.4 / 155
Mounting ø	mm	25
Counter spindle		
Max. spindle capacity	mm	20
Max. speed	rpm	10,000
Power at 100%/40%	kW	3.0 / 5.5
Torque at 100%/40%	Nm	5.73 / 10.5 / max. 17.2
Slide travel X / Z	mm	210 / 258
C-axis resolution	Deg.	0.001
Rapid traverse rate X / Z	m/min	20 / 40
Cooling lubricant unit (basic unit)		
Pump pressure	bar	3 / 8
Tank capacity	l	250
Pump capacity 3 / 8 bar	l/min	80 / 120
Filter fineness	µm	200
Machine dimensions		
Length x width x height	mm	see installation chart *
Weight	kg	5,400 *
Connected power	kW	40 (47 kVA)

*depending on equipment

1) The headstock stroke depends on the clamping device being used

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