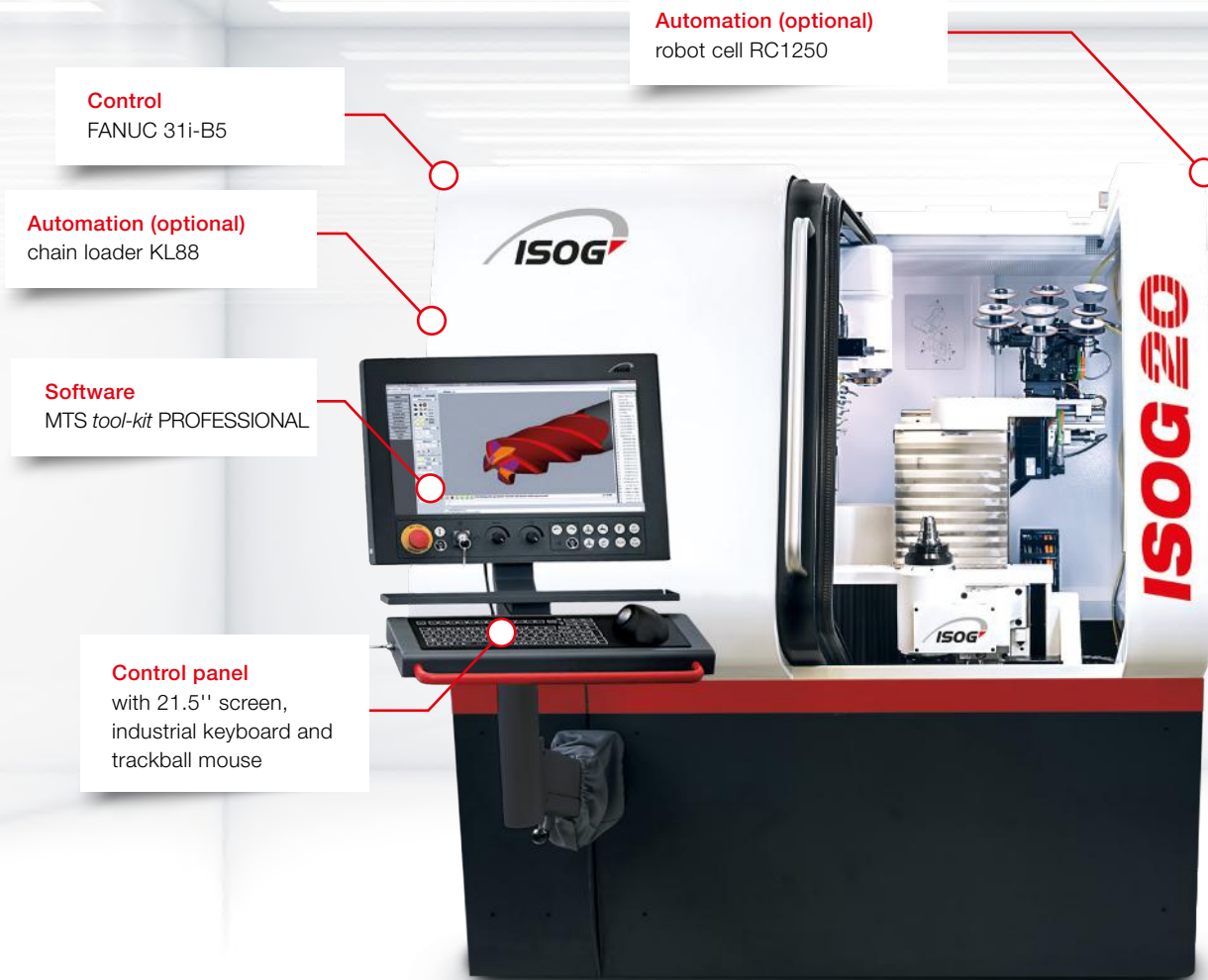


ISO G 20



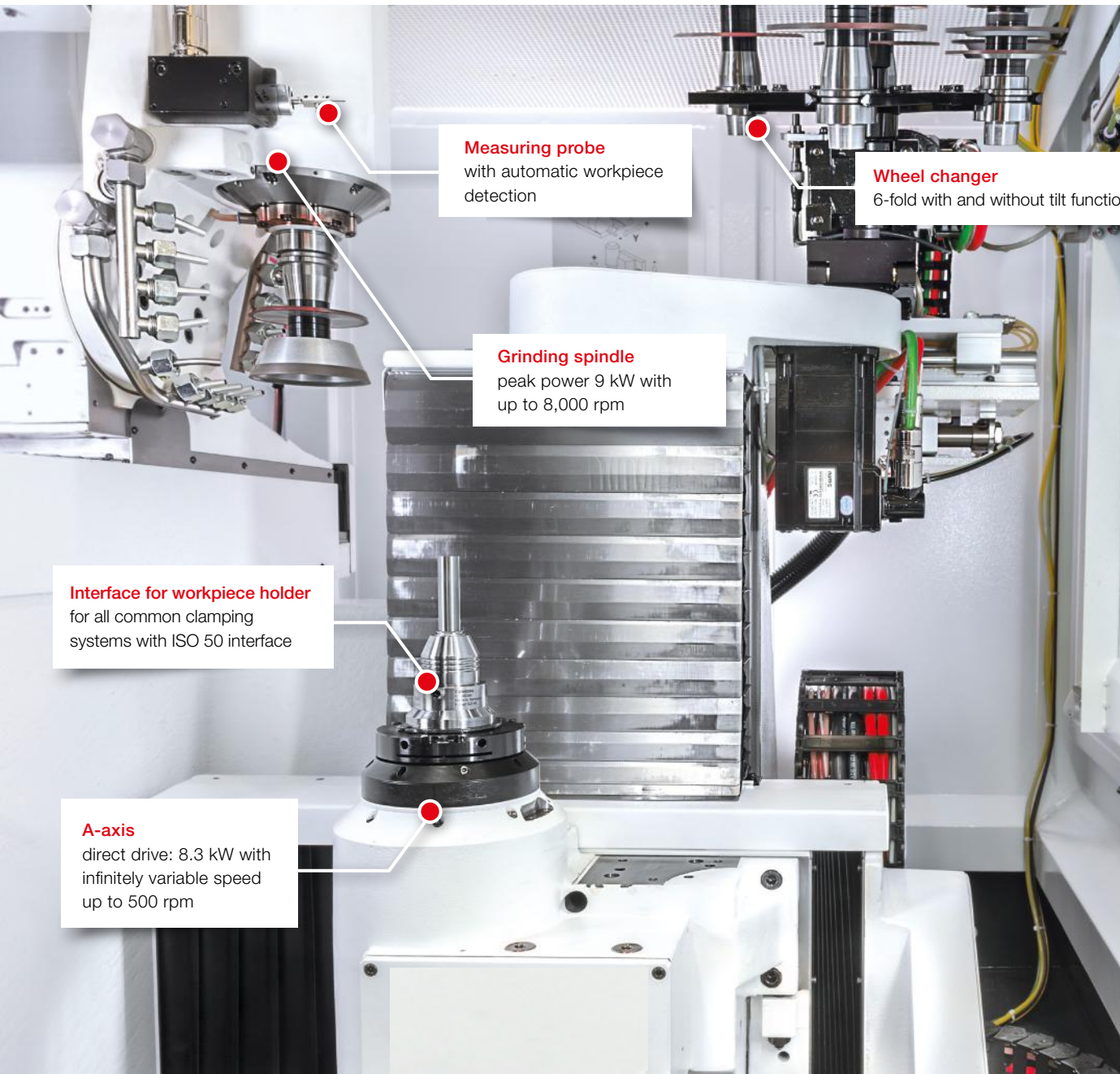


The ISOG 20 is a timeless high-quality machine – and has been for years. Its further development focused on three main points: flexibility, precision and productivity. The basic version is convincing with its well thought-out basic equipment.

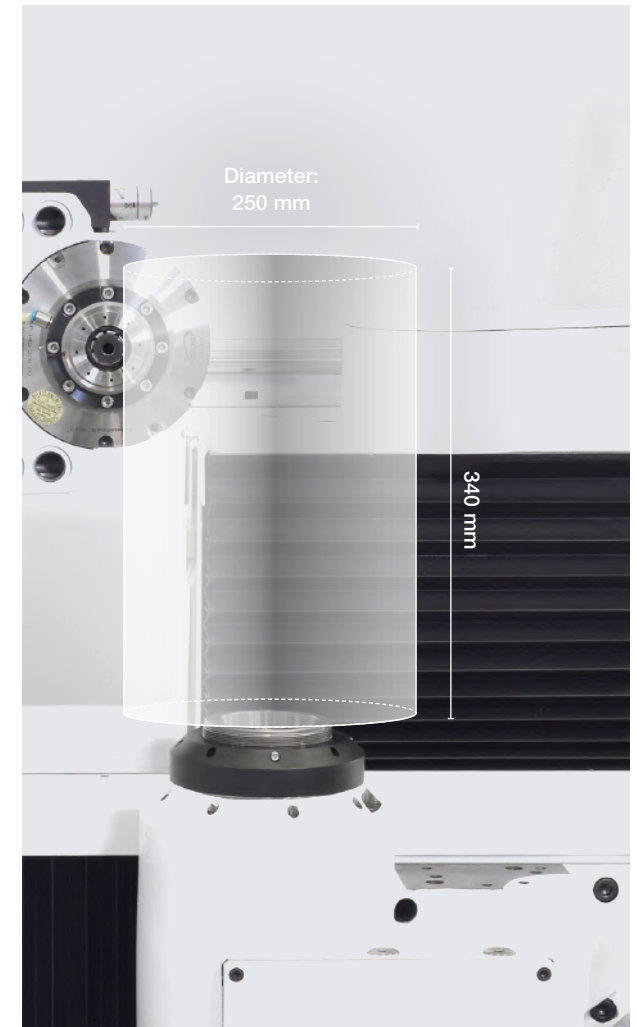
ISOG 20 BASIC

- grinding spindle ISOG 20 F31: peak power 9 kW
- infinitely variable speed control 1,000 to 8,000 rpm
- coolant nozzle ring on the grinding head
- wheel changer (SKW) 6-fold
- indirect measuring system
- cabinet cooling (active cooling unit)
- direct drive in all rotary axes
- central lubrication
- MTS mill package
- MTS drill package
- MTS extension multi-spiral tools
- electronic measuring probe
- electronic handwheel
- rated break point (spare part)
- feeler insert diameter 1 mm
- probe tip 12 mm
- connection for external systems (coolant system / oil mist separator)

Inside overview



Maximum working sizes



Automation (optional)

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Chain loader KL88

The KL88 is an integrated chain loader system. With its 88 places the automation solution can be well adapted to different needs: it offers enough space to manufacture or resharpen a variety of tools with different diameters and geometries.

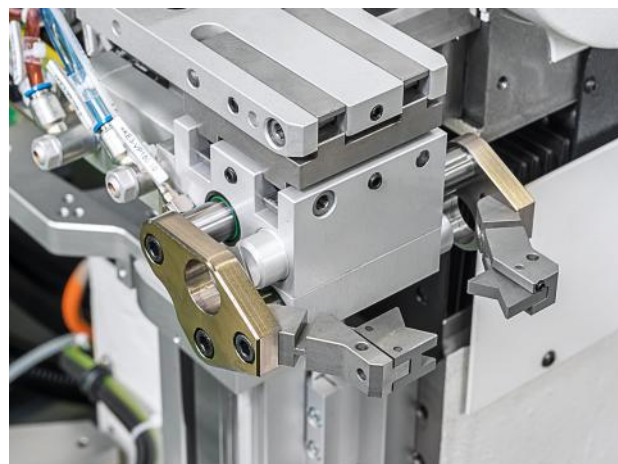
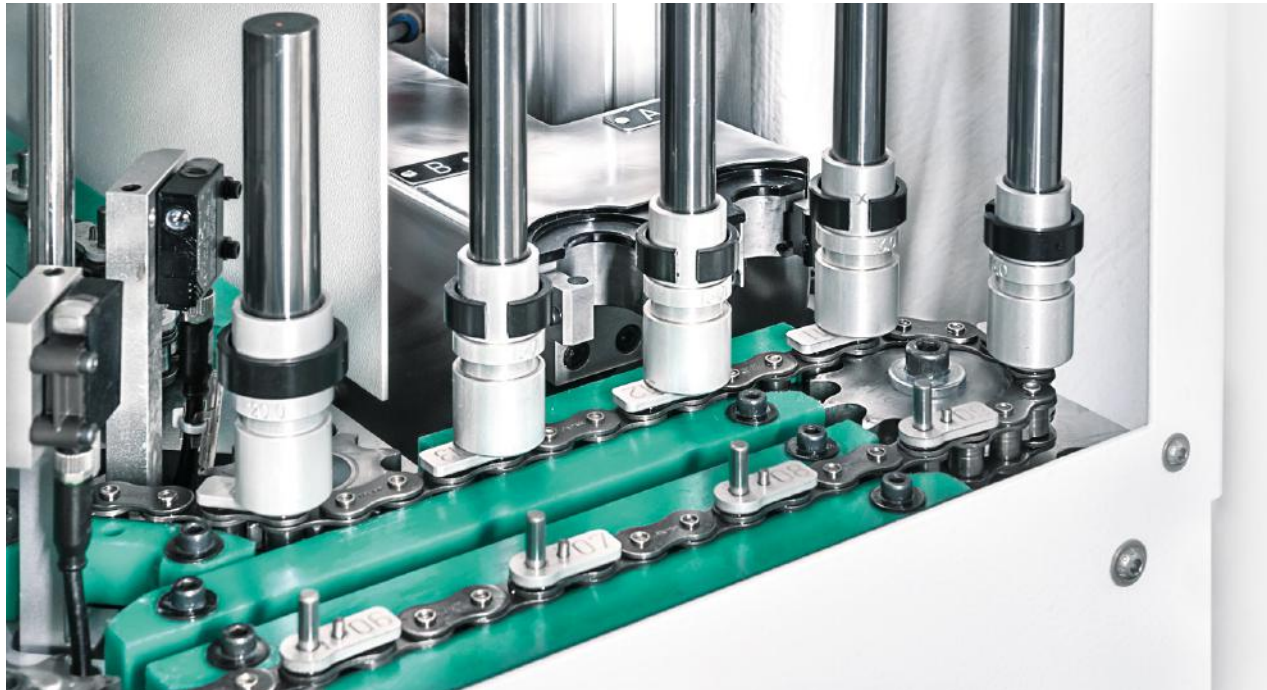
Anti-twist protection

The chain loader sleeves are equipped with a clamping mechanism, specially secured against twisting. In this way, even tools with special features such as a Weldon surface can be reliably automated.

Tool gripper with automatic bushing change

Working becomes particularly economical and flexible with the ISOG tool gripper that automates the bushing change. This proven technology is now also available for the ISOG 20. The automatic bushing change allows chaotic loading into a hydraulic expansion chuck.

- ⊕ installed in the machine in a space-saving way
- ⊕ easily accessible for fast loading and unloading
- ⊕ diameter range from 3 to 32 mm
- ⊕ tool length up to 180 mm
- ⊕ different intermediate sleeves will be loaded automatically



Automation (optional)

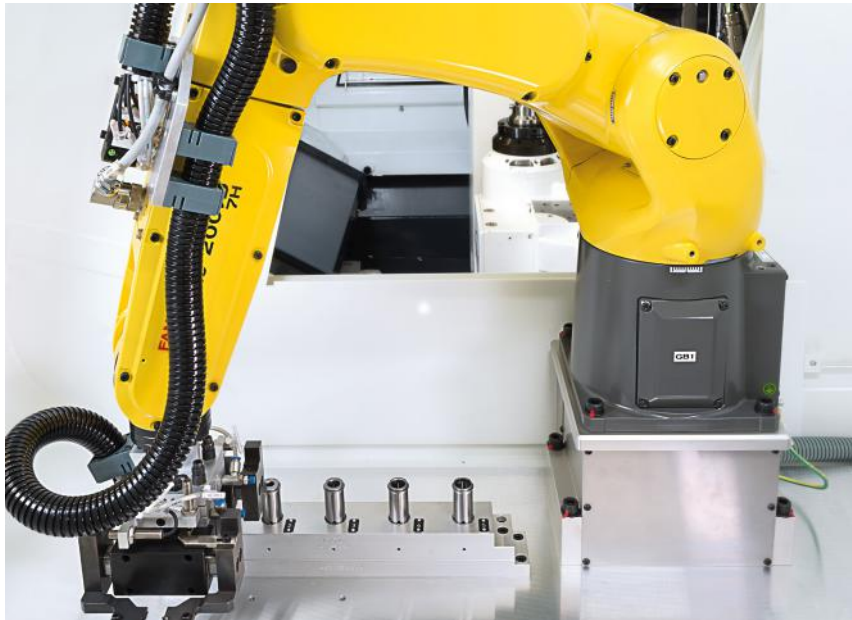
Robot cell RC1250

Simple automation

The robotic loading cell RC1250 works with a 6-axis robot from FANUC. It is ideally suited for the automated operation of larger lots. The number of available places depends on two factors: the pallets used and the diameter of the tools. For example, up to 600 tools can be placed when using ISOG pallets and when the diameter is 4 mm.

The ISOG 20 does not only provide the largest quantities with the robot, it can also be adjusted to very high flexibility – with minimal tool changing time, thanks to a double gripper. This can be combined with the proven ISOG technology for automatic bushing change. Special solutions for special workpieces are also possible with the ISOG 20. Please just contact us for your wishes.

- ⊕ all common tool paletts usable
- ⊕ automation can be designed either for large numbers or high flexibility
- ⊕ with a runout optimator the ISOG 20 is also designed for very small tools with the highest productivity
- ⊕ highest repeatability for tools thanks to exact spindle stop
- ⊕ depending on the model, direct (ISOG 20 F31) or indirect (ISOG 20 Basic) path measuring system in the linear axes



Wheel changer

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Sixfold and fast as standard

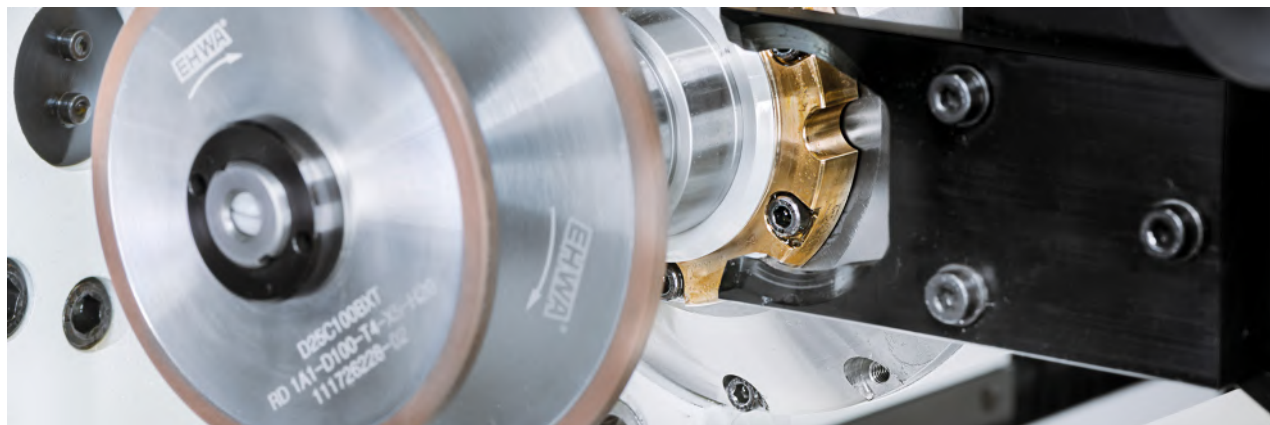
Speed, performance, flexibility: This is ensured by the ISOG 20 which also features the standard 6-fold grinding wheel changer with its quick-change system. Ideal conditions, if you want to work on tools of different geometries and materials.

Anyone who uses the robotic loading cell RC1250 will receive the 6-fold grinding wheel changer with an additional tilt function.

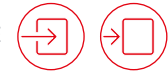
HSK wheel mounts

The system includes high-precision HSK-F50 wheel mounts: The selected grinding wheel package is exactly coupled to the grinding spindle. The exact spindle stop ensures precision and highest repeatability.

-
- ⊕ space-saving and fast
 - ⊕ changeover time less than 15 seconds
 - ⊕ maximum 6 grinding wheel packages with up to 18 grinding wheels
 - ⊕ highest clamping precision and spindle accuracy through HSK
 - ⊕ exchangeable changer plates available
 - ⊕ assembly of changer plates is possible outside the machine



A-axis & clamping systems



Power meets flexibility

The A-axis

As standard, the ISOG 20 has a direct drive by means of a torque motor on the index head (A-axis) – these are ideal conditions for cylindrical grinding work.

The clamping systems

different clamping options with only one clamping unit:

- schaublin collets for clamping uniform diameters from 3 to 20 mm
- hydraulic expansion chuck for optimum concentricity
- pneumatic precision five-jaw chuck, can be used also with chaotic loading for most different shank diameters from 5 to 20 mm

-
- ⊕ direct drive with infinitely variable rotation speed of 500 rpm
 - ⊕ maximum power of 8.3 kW with a maximum torque of 40 NM
 - ⊕ infinitely variable rpm control allowing easy cylindrical grinding
 - ⊕ higher precision due to direct drive and direct measuring system < 0.001°



Measuring probe

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Electronic measuring probe

Automatic workpiece detection

The electronic measuring probe of the ISOG 20 calibrates itself and automatically detects the geometry of the tool clamped in the index head. The software calculates the radial and axial position for the workpiece as well as all essential data.

Automatic measurement of

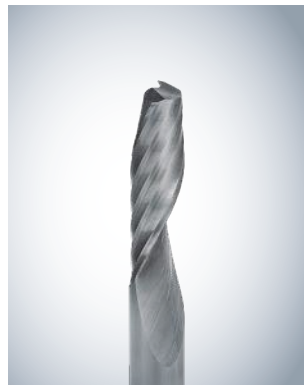
- workpiece clamping length
- tooth position
- flute depth and flute length
- flute form
- profile
- diameter
- concentricity
- helix
- unequal division
- cooling channel position
- position of the center cutting edge

Infrared measuring probe

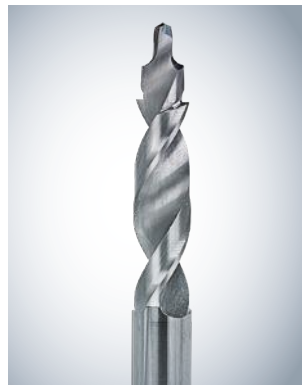
- for tactile measurement of grinding wheels
- fully automatic correction
- usable for several machines
- automatic loading
- easy to retrofit



TORX insert made of tungsten carbide



single lip cutter



step drill



end mill with double radius

Common accessories

Manual lunette

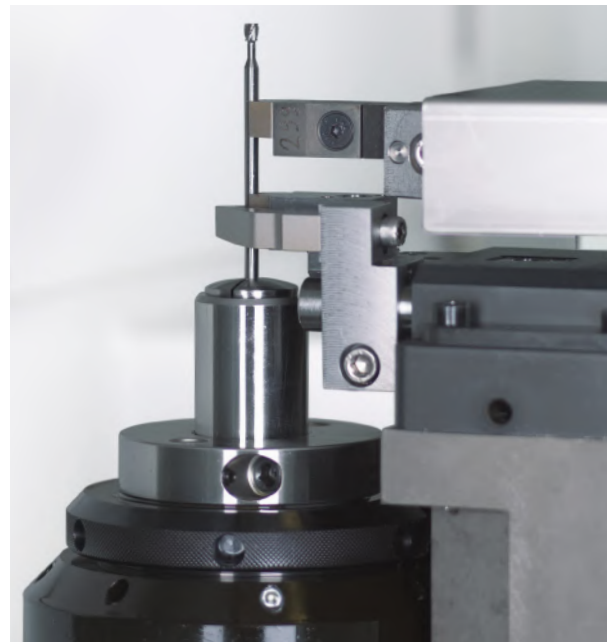
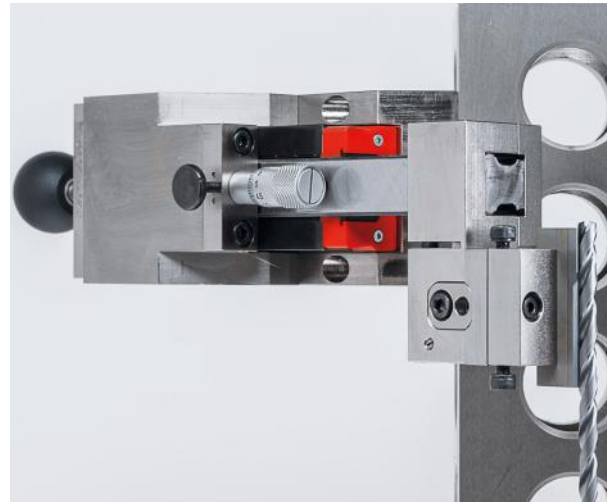
- for precise grinding of long, thin tools
- rapid installation and removal
- automatic grinding wheel change is possible also while using the lunette for grinding wheels up to diameter 100 mm

-
- ⊕ for precise grinding of long, thin tools
 - ⊕ rapid installation and removal

Runout optimizer

The ISOG 20 also offers options for high-precision grinding of small tools with a minimum diameter of 0.3 mm – the runout optimizer permits it.

-
- ⊕ short clamping length possible (triple diameter)
 - ⊕ concentricity error minimised by V prism and clamping fingers
 - ⊕ programmable additional prism for supporting longer tools





FANUC

FANUC 31i-B5

The tried-and-tested FANUC 31i-B5 control offers decisive advantages for the ISOG 20: Accuracy, speed, reliability and a very user-friendly operation.

The controller supports the complex and exceptionally fast processes during manufacture and re-sharpening. With its features like "Nano Interpolation" or "Nano Smoothing" the machine achieves a higher accuracy and better surfaces.

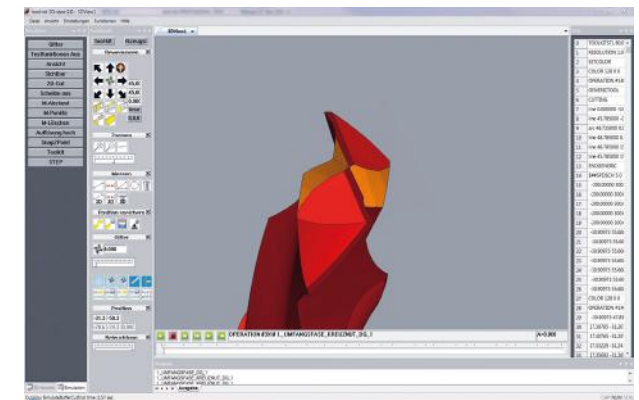
Safety engineering is an integral part of the FANUC 31i-B5; no additional software modules are required for this.

- Quick-Start
- short adjustment times
- convincing reliability
- improved surface quality
- shorter machining cycles
- improved performance
- easier maintenance
- short shelf control cycles
- high resolution of the control system
- integrated technology from the CNC to the robot
- worldwide service



MTS tool-kit PROFESSIONAL

- for production and re-sharpening of almost all tools
- modular design for individual geometry machining
- simple input and programming
- fast program generation by default function
- clear tool and grinding wheel management
- integrated 2D simulation
- 3D simulation for easy construction of complex tools (option)
- link with collision monitoring as standard





Commissioning

During commissioning, we examine all functions in great detail and, if necessary, make integration tests for options and accessories. We train and instruct your operating personnel individually and in detail. If required, we grind a workpiece you have defined.



Training

We offer individually designed customer training that we can carry out at your production site and on your machine. Our course categories range from general grinding to operation and programming through to special courses.



Updates

At our production site, we maintain our own overhaul department with experienced employees. We will gladly advise you on site about overhauling your machine and carry out an inventory.



On-site Service

Our qualified service technicians are stationed worldwide and, if required, quickly with you. They identify faults, repair, measure, assess and restore, if necessary, the machine geometry and take stock.



Online Service

A team of six works in our online service center. The experts are happy to assist you by phone. We also offer help at the touch of a button. For this we connect your equipment to the Internet and establish an online connection between your machine and our service center. That's secure, because we use the protected online connection solution VPN. The access allows us to quickly analyse the situation and diagnose malfunctions. Together, we find solutions. To ensure that the connection works immediately, we check the signal quality during regular connection checks if necessary. You benefit from our on-line machine documentation and also from our diagnostic and reporting tools.



Maintenance

We carry out maintenance systematically by means of a detailed checklist with machine-specific work steps and inspection points. You choose between recurring maintenance (possible interval: 12 months) and a one-time maintenance.



Technical data

Control	
type	Fanuc 31iB5
operating system	Windows 7 Ultimate

Clamping and grinding range	
max. workpiece diameter ¹⁾	250 mm
max. workpiece length ²⁾	500 mm
max. workpiece length for face grinding ³⁾	340 mm
max. workpiece weight ⁴⁾	50 kg

Wheel changer	
pneumatically supported	6-times

Grinding spindle	
drive motor	direct drive asynchronous
rated power	5.1 kW at 100% ED
peak power ⁵⁾	9 kW
cooling medium	oil
direction of rotation	right and left
rotation speed	1,000 to 8,000 rpm infinitely variable

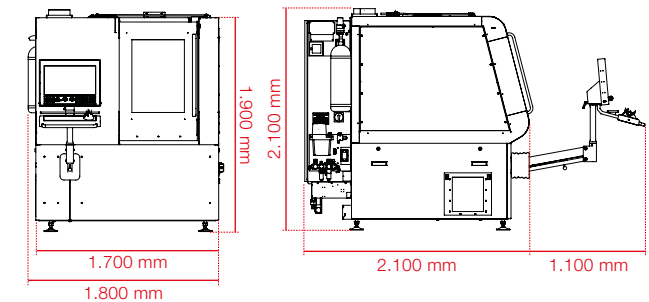
Dimensions	
weight	3,300 kg
dimensions	2,100 x 1,800 x 2,100 mm

Automation (optional)

Chain loader	
dimensions	integrated
drive	digital controller with AC motor
feed rate	20 m/min
max. workpiece dimension	ø 32 x 180 mm
max. workpiece weight	1 kg
magazine places (chain)	88
weight	220 kg

Movement range / measuring system		
X axis	traversing range	340 mm
	feed rate	10 m/min
	drive	digital controller with AC motor
	measuring system	direct
Y-axis	traversing range	240 mm
	feed rate	10 m/min
	drive	digital controller with AC motor
	measuring system	direct
Z-axis	traversing range	240 mm
	feed rate	10 m/min
	drive	digital controller with AC motor
	measuring system	direct
A-axis	rotation range	continuous
	feed rate	500 min ⁻¹
	drive	digital controller with torque motor
	measuring system	direct
C-axis	rotation range	0.000045°
	feed rate	30 min ⁻¹
	drive	digital controller with torque motor
	measuring system	direct
C-axis	rotation range	197°
	feed rate	30 min ⁻¹
	drive	digital controller with torque motor
	measuring system	direct
C-axis	rotation range	0.000045°
	feed rate	30 min ⁻¹
	drive	digital controller with torque motor
	measuring system	direct

Robot cell	
dimensions	940 x 1,370 x 2,100 mm
robot	FANUC Robot LR Mate 200iD
feed rate	380°/sec
max. workpiece dimension	ø 20 x 180 mm
max. workpiece weight	1 kg
magazine places	depending on the pallet
weight	610 kg



Explanations:

- 1) depending on the tool type
- 2) max. clamping length from upper edge of tapered sleeve
- 3) depending on workpiece position, wheel mount and grinding task
- 4) depending on the moment of inertia
- 5) up to 30 seconds

Subject to changes in the interest of technical progress and error. Illustrations and descriptions in this document contain partially paid options.

