

smart machine smart grinding

grindsmart® nano6

english



smart grinding unlimited grinding solutions

The high precision 6-axis grinding center GrindSmart®Nano6 has been designed for the production of high performance micro-tools made of carbide or HSS with a diameter range between \varnothing 0.03 – 2.0 mm (.001" – .080"). Thanks to its innovative hydrostatic technology, this extremely compact machine offers superior performance for manufacturing of high precision micro-tools.

A self adjusting shank guide system and floating workhead bearing assembly enable concentricity tolerances below 0.001 mm while offering a fast and easy setup. The GrindSmart®Nano6 is designed for production, and as such, comes standard with an integrated robot loader which can accommodate up to 1000 tools. Rollomatic's industry proven pick & place loader is accurate, reliable and fast, loading/unloading tools in just 8 seconds.

The GrindSmart®Nano6 is operated by a Fanuc CNC control with integrated PC, 15" touch screen and new ergonomic control panel. In addition, Rollomatic offers its powerful, intuitive and user-friendly programming software VirtualGrind®Pro as standard equipment, giving you powerful software and world-wide support.

Environmental issues continue to be of great concern and Rollomatic has been working continuously at reducing CO₂ emissions and at optimizing energy efficiency. Through its commitments, our company follows the global initiative agreed upon by Switzerland with the United Nations in regard to the objectives of the Kyoto Protocol. In this respect, the GrindSmart®Nano6 is manufactured using mainly recyclable materials and has been designed with specific dimensions of the mechanical and electrical components enabling an optimal reduction of energy usage.



with the GrindSmart®Nano6 grinding machine for micro cutting tools



The production of high quality tools has always driven Rollomatic in its design choices of machines and this has also been the principle for the GrindSmart®Nano6. In order to guarantee optimal precision and superior machining quality, this machine has been designed in an innovative and advanced way, with the following distinctive advantages:

Compact design, with the shortest possible travel distances

- Cycle times reduced by 20 %
- Minimal thermal expansion, increase of production stability by 30 %

Machine hood physically disconnected from the machine base

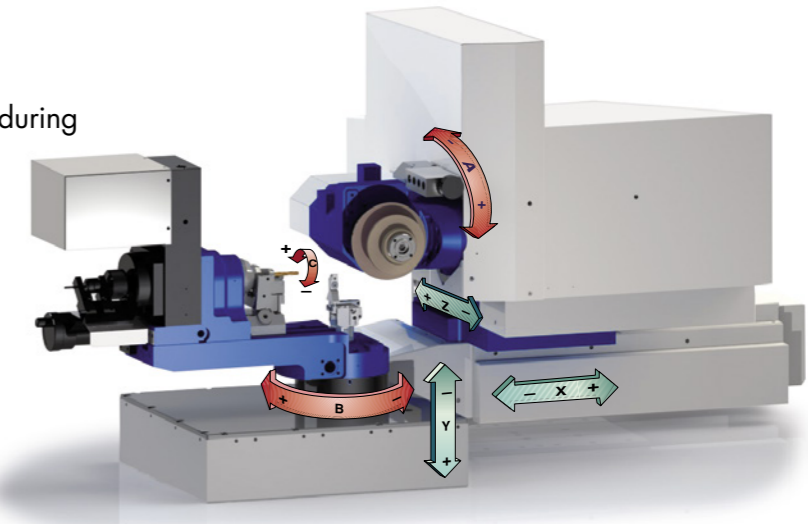
- Reduces problems linked to external disturbances and improves machining quality

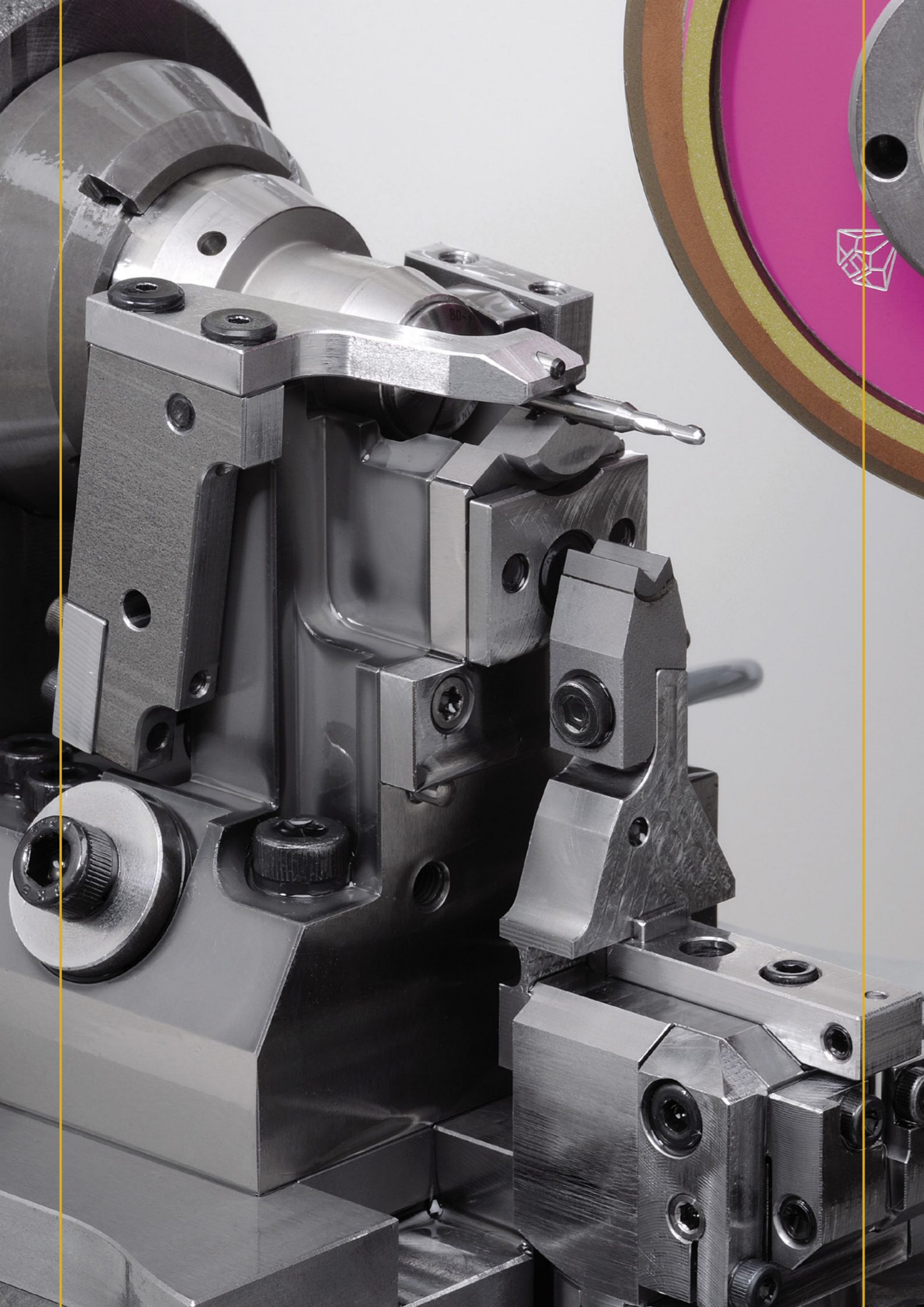
Direct drive 1.5 kW spindle motor and PerfectArbor™ flange system

- Increases surface finish quality
- Precise and repetitive grinding wheel mounting within 0.002 mm

Advantage of the 6th axis

- Easier accessibility of the wheels
- Enables use of a constant grinding point during relief grinding of ball nose endmills, which increases the geometric accuracy of the sphere by 20 %





Rollomatic knowledge

In today's manufacturing environment, micro-tools are subject to increasingly stringent requirements including: higher surface quality, sharper cutting edges, increased geometric precision, perfect concentricity and tighter tolerances.

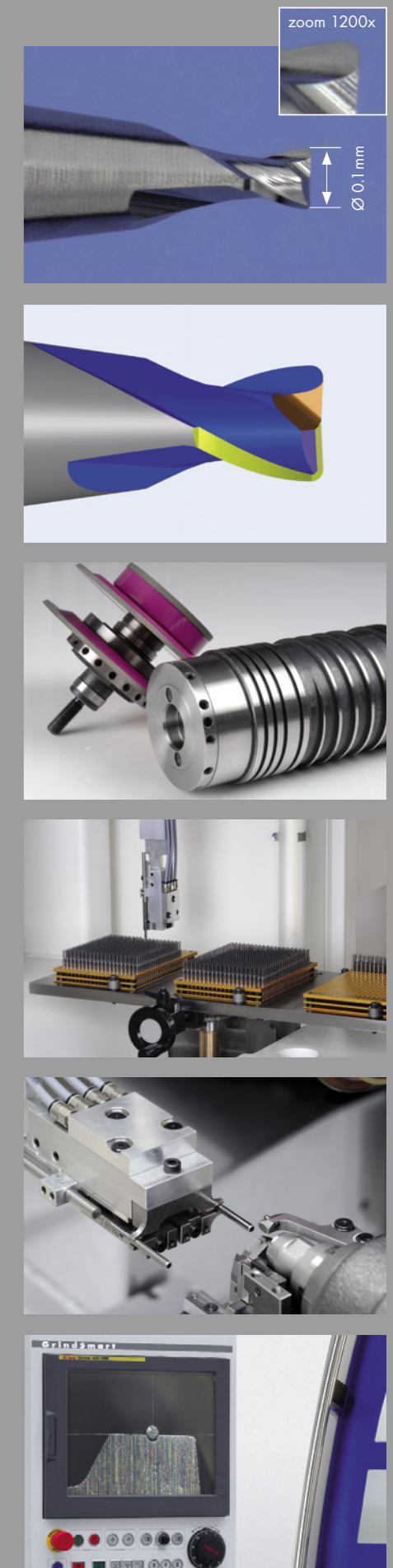
In order to meet these industry requirements, Rollomatic SA has developed a specific machine for this market: the GrindSmart®Nano6. With over 50 years of experience, Rollomatic SA has perfected the entire process required to produce micro-tools.

- Blank preparation is an essential component to obtain a perfect tool
- Optimal wheel dressing is also necessary to obtain an optimal and precise wheel radius. After dressing, the PerfectArbor™ flange system guarantees that the grinding wheel flange can be mounted with concentricity below 0.002 mm
- The combination of the floating type workhead and the self-adjusting tool shank guide system insures a setting of the radial runout below 0.001 mm, with setup in only a few minutes
- The production of micro-drills requires the use of a precisely set steady rest support. A horizontal setting microscope or camera enables fine adjustment of the support position down to the last micron
- Hydrostatic technology, a direct drive spindle and the addition of a torque motor on the B axis are essential components for obtaining a superior surface finish quality and the sharpest cutting edge possible
- Using the same oil for both the hydrostatic circuit and grinding fluid ensures that the machine base remains the same temperature as the grinding oil, which guarantees optimal thermal stability and enables long production runs while maintaining tolerances lower than 0.003 mm

VirtualGrind®Pro, unlimited programming solutions

The GrindSmart®Nano6 is available with Rollomatic's latest generation of programming software, VirtualGrind®Pro. This powerful and flexible software offers total freedom of design while its user-friendly interface enables programming of standard or specific tools in only a few clicks using the programming wizard. In addition, you can choose to program directly on the machine or on a networked PC, and all software updates from Rollomatic are free of charge.

A powerful, stable and extremely fast simulator enables generation of 3D images from the programmed tool. With this off-line software, you can visualize the movements of the machine before grinding in order to reduce setup time and enable verification and avoidance of possible collisions while increasing production time.



ROBOTS SPECIFICATIONS

GRINDING RANGE

Grinding Ø range	0.03 – 2.0 mm (.001" – .080")
Shank range	1.0 – 6.35 mm (.040" – .250")
Cutting length	30 mm (1.180")
Overall blank length	100 mm (4")

GRINDING SPINDLE

Power	1.5 kW direct drive
Rotation speed	2000 – 12000 rpm
Grinding wheels	4 grinding wheels with max. Ø 125 mm (5")

CONTROL

FANUC 30iMB

X-axis	Type	hydrostatic
	Stroke	146 mm (5.8")
	Fast travel	15 m/min (590"/min)
	Encoder	Absolute linear scale, resolution 0.00005 mm
Y-axis	Type	hydrostatic
	Stroke	99 mm (3.9")
	Fast travel	15 m/min (590"/min)
	Encoder	Absolute linear scale, resolution 0.00005 mm
Z-axis	Type	hydrostatic
	Stroke	146 mm (5.8")
	Fast travel	15 m/min (590"/min)
	Encoder	Absolute linear scale, resolution 0.00005 mm
A-axis	Stroke	119°
	Fast rotation	8000°/min
	Encoder	Rotary glass scale, resolution 0.00005°
B-axis	Type	Direct-drive (torque motor)
	Stroke	200°
	Fast rotation	10800°/min
	Encoder	Incremental 23 bits, resolution 0.00005°
C-axis	Stroke	continuous
	Fast rotation	1000 rpm
	Encoder	AC-motor, resolution 0.0001°

CLAMPING

Collet type	W10
Clamping	with spring
Collet release	Pneumatic

ROBOT LOAD & UNLOAD

Number of tools	up to 1000 (3 cassettes)
Shank diameter	1.0 – 6.35 mm (.040" – .250")
Overall length	101.6 mm (4")
Speed	60 m/min (2300"/min)
Clamping	Pneumatic

TOOL SUPPORT

Shank guide	High precision halfmoon holder
Cutting portion support	Steady rest "V" or halfmoon shape

MACHINE

L x W x H	1970 x 1460 x 2060 mm (78" x 57" x 81")
Weight	2900 kg (6400 lbs)
Total power	10 kW
Energy consumption in production	1.4 kWh

* Specifications are subject to change without notice

