CNC TOOL GRINDER

TG-5 / TA-5

CNC 5-axis tool grinder is target at grinding medium-sized and large-sized HSS and carbide material, especially at aerospace applications.

TG-5 CNC Tool Grinder

The TG-5 CNC tool grinder is flexible, precise, and economical. Its cost-effectiveness with the world famous NUM Flexium+ 68 controller and NUMROTOplus® software features versatile functions, for instance, excellent tool designs, 3D simulation, and collision monitoring.

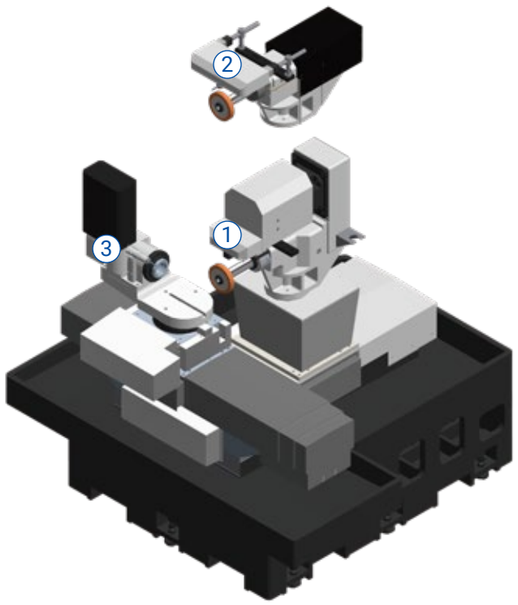
5-axis simultaneous motion design achieves 0.1 μm precision, and efficiently handles various types of grinding technical problems while in operation. It is the best solution to meet your needs and realise an intelligent production system in the era of industry 4.0.

TA-5 CNC Tool Grinder

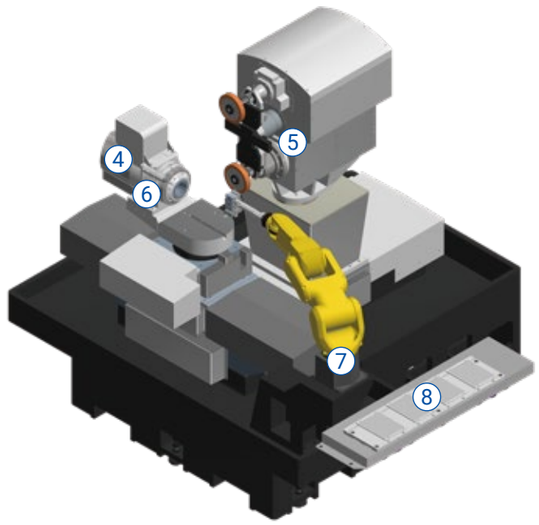
The TA-5 CNC tool grinder features highly rigid structural design and is aimed at grinding medium-sized and large-sized HSS and carbide material, especially at applications of aerospace and automobile.

It is widely used for standard tools, special tools, re-grinding, batch grinding, and mixed batch grinding, etc. high power output spindle and unmanned operation, while it remains stability and precision during the grinding process.

TG-5 Structure



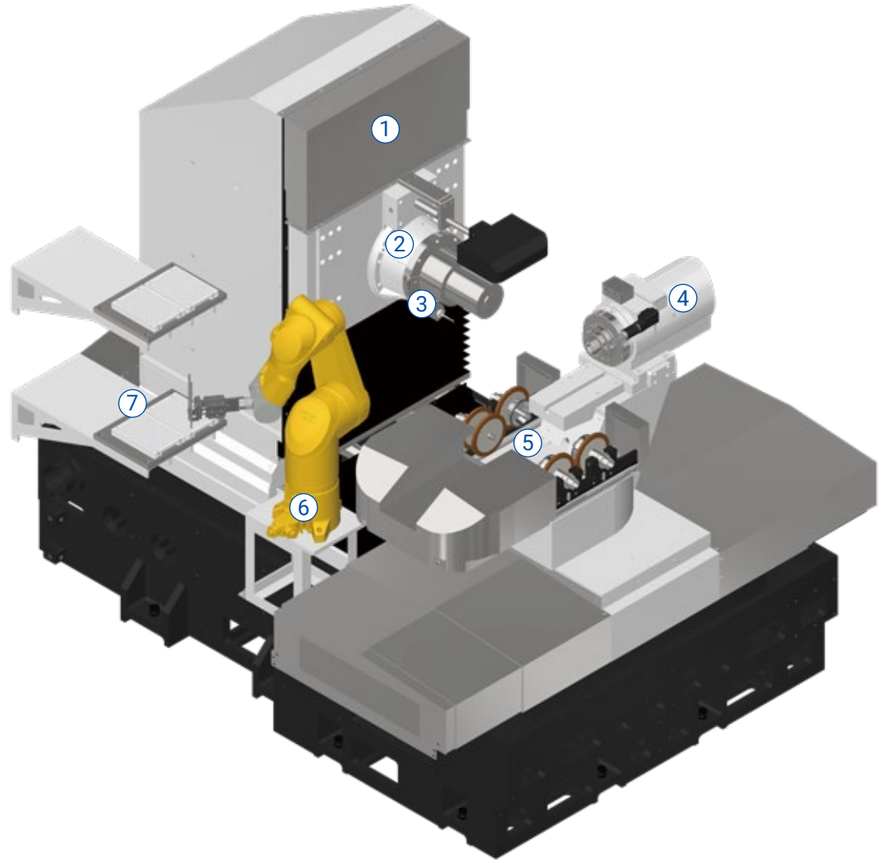
Single Grinding Wheel (Manual Wheel Change)



Double Grinding Wheel (Automatic Wheel Change)

1. Belt-driven spindle type is BBT30 or optional HSK50C to enhance the accuracy and rigidity of grinding wheel flange.
2. Built-in spindle type is HSK50C with high accuracy and minimum vibration (optional).
3. A-axis Workhead spindle internal cone BT50 is driven by worm gears.
4. A-axis workhead direct drive motor with internal cone BT50 (optional).
5. Optional built-in spindle HSK50E and grinding wheel automatic exchange system with 2 sets of grinding wheels for exchange; each group of 3 wheels with maximum wheel diameter of Ø150 mm and the longest wheel position of 200 mm.
6. 3D tool probe/grinding wheel probe automatically detects changes and makes corrections to improve machining accuracy.
7. Optional FANUC LR Mate 200iD robot loader to meet the needs of automated production.
8. The optional storage bin in a separate space can accommodate 4 sets of workpieces with a diameter of Ø3 – 20 mm.

TA-5 Structure



1. Horizontal structure with high rigidity.
2. Built-in spindle HSK50E.
3. 3D tool probe/grinding wheel probe, automatically detects changes to improve machining accuracy.
4. Workhead A axis spindle taper is BT50, driven by direct drive motor.
5. Built-in spindle HSK50E and grinding wheel automatic exchange system with 4 sets of grinding wheels for exchange; each group of 3 wheels with maximum wheel diameter of Ø150 mm and the longest wheel position of 200 mm.
6. Optional Swiss STAUBLI TX2-60 robot loader with high degree of freedom and flexibility.
7. The internal storage bin of the optional machine accommodates 4 workpieces with a diameter of Ø3 – 20 mm.

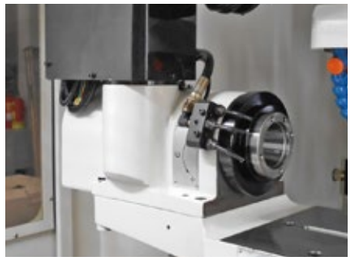
Grinding Wheel Spindle

Belt-driven Spindle (TG-5)
· Spindle Type is BBT30
· Economical Type
· Low maintenance Cost

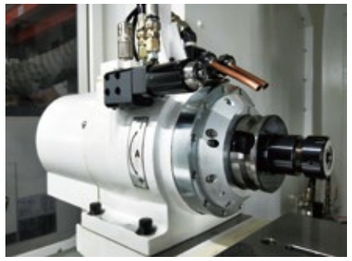
Built-in Spindle (TG-5 opt.)
· Spindle Type is HSK50C
· High Rigidity
· High Precision
· High Power and High Torque
· Low Vibration

Built-in Spindle (TA-5)
· Spindle Type is HSK50E
· High Rigidity
· High Precision
· High Power and High Torque
· Low Vibration

A-axis Workhead



Worm Drive (TG-5)
· Workhead Taper is BT50.
· Consisting of Worm and Worm Gear
· Large Transmission Ratio
and Compact Structure.



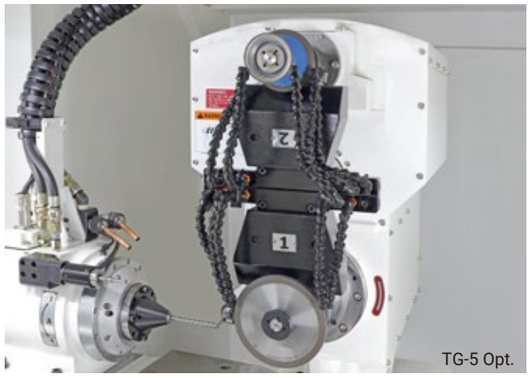
Direct Drive Motor (TA-5)
· Workhead Taper is BT50.
· The Workpiece is Quickly Clamped
by the Force of Air Pressure.
· The Concentricity is Within 2 um.

Manual Tailstock

Manual Holder

Tailstock and Holder
The device sufficiently supports the cutting force during processing, effectively reducing grinding vibration to improve accuracy.

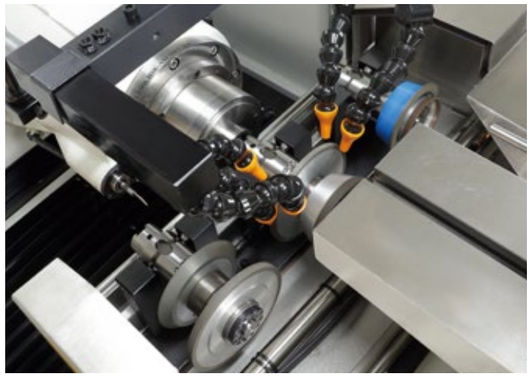
Automatic Grinding Wheel Changer



TG-5 Opt.

TG-5 is equipped with double wheel sets, with up to 3 wheels per axis, Spindle type is HSK50E.

For changing the roughing, finishing and polishing wheels, Choose appropriate cutting oil and filter equipment for grinding of different materials, such as tungsten steel, HSS, and stainless steel.

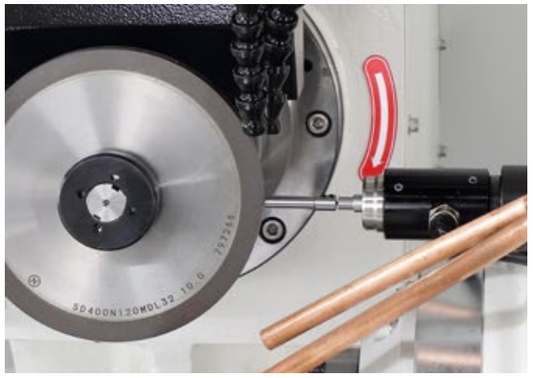


TA-5 is equipped with 4 sets of grinding wheels, with up to 3 wheels/set, Spindle type is HSK50E.

For changing the roughing, finishing and polishing wheels, Choose appropriate cutting oil and filter equipment for grinding of different materials, such as tungsten steel, HSS, and stainless steel.

Automatic Probe System

Probe for Workpiece
Automatically measure important tool parameters, and perfectly position tool in the shortest time.



Probe for Grinding Wheel
Provide accurate, repeatable geometric data, and measure front position, back position and grinding wheel contour radius.

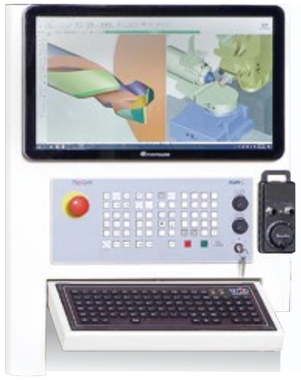
Robot Loader

· Intelligent six-axis design with high flexibility achieving complex motion.
· High-speed double grippers.
· High-precision clamping and positioning.
· High rigidity and low vibration to ensure production quality.
· Trays with different diameters have different loading capacities; rods of Ø 3 to 6 mm can be loaded 900 pcs/3 trays.

FANUC LR Mate 200iD Robot Loader (TG-5)
Faster tool changeover time by using a double gripper, maximum payload is up to 7 kg, tool diameter is from Ø3 to Ø20 mm, length is from Ø35 to Ø150 mm.

Stäubli TX2-60 Robot Loader (TA-5)
Faster tool changeover time by using a double gripper, maximum payload is up to 7 kg, tool diameter is from Ø3 to Ø20 mm, length is from 35 to 150 mm.

Controller and Software

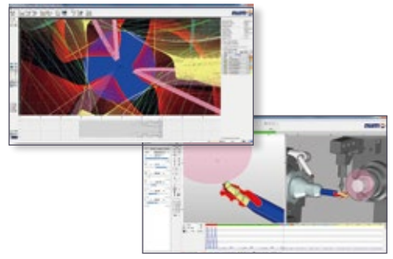


flexium+ 68

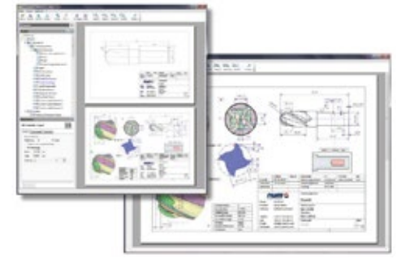
Flexium+ has new and enhanced features, new panels, a new HMI, an enhanced servo bus, enhanced drives and simplified connectivity.

numroto

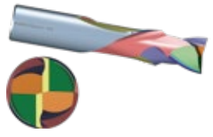
With NUMROTOplus®, a wide range of tools can be manufactured and resharpened, Each tool detail can be adjusted to suit individual needs, an exceptional variety of programs with a built-in database for tools, technology and grinding wheel packages, Auxiliary pictures for all parameter settings, displaying true to scale tool dimensions.



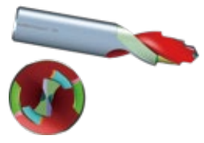
The 2D simulation is an integral part of NUMROTOplus®, all grinding operations can be simulated on the PC using the 2D simulation, With the integration in the NUMROTO software of 3D tool simulation with grinding process animation and collision monitoring with 3D machine simulation.



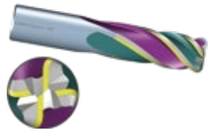
NUMROTO Draw (opt.)
After entering all geometry parameters a dimensioned projection drawing can be created automatically, which are taken as true-to-scale color graphic image or DXF drawing from the 3D simulation.



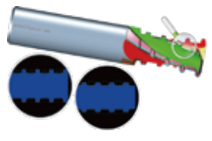
Up/Down-End Mill



Step Drill with DXF-form Step

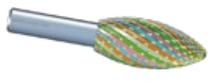


End Mill with Multi Helix



Double form Cutter

Step Drill with DXF-form Step



Convex Body

Accessories

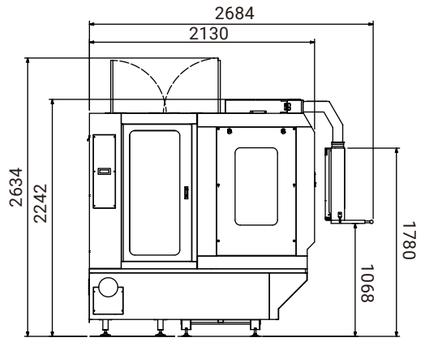
TG-5

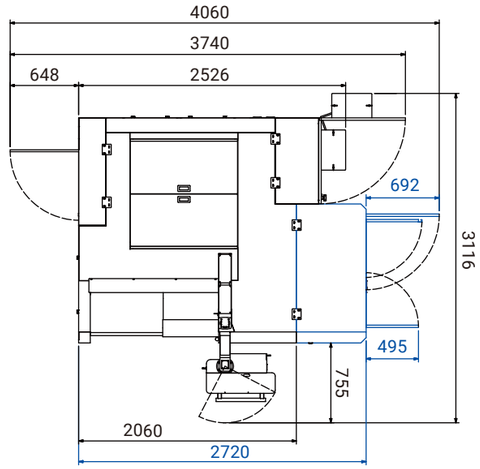
TA-5

A&C-axis Rotating Shaft Motor	A&C-axis Worm Drives A-axis Upgrade Direct Drive Motor - opt. C-axis Upgrade Direct Drive Motor - opt.	A&C-axis Direct Drive Motor
Collet Holder	SPC8 (for Collet Ø3 – Ø8 mm) SPC16 (for Collet Ø9 – Ø16 mm) - opt. SPC25 (for Collet Ø20/Ø25 mm) - opt.	SPC8 (for Collet Ø3 – Ø8 mm) SPC16 (for Collet Ø9 – Ø16 mm) - opt. SPC25 (for Collet Ø20/Ø25 mm) - opt.
Collet	Ø6 mm Ø3/Ø4/Ø8/Ø10/Ø12/Ø16/Ø20 mm - opt.	Ø6 mm Ø3/Ø4/Ø8/Ø10/Ø12/Ø16/Ø20/Ø25 mm - opt.
Grinding Wheel Spindle Specifications	Belt-Drive Spindle BBT30 7.5 kW Built-in Spindle HSK-50C/E 5.5 kW - opt. ※HSK50E Include Automatic Wheel Change System	Built-in Spindle HSK-50E 24 kW
Automatic Wheel Change System	2 Set - opt.	4 Set
Automatic Loading & Unloading System (Robot System)	FANUC LR Mate 200iD - opt.	FANUC LR Mate 200iD - opt. Stäubli TX2-60 - opt.
Jaw	Ø3 – Ø20 mm - opt.	Ø3 – Ø20 mm - opt.
Loading Tray	Ø3/Ø4/Ø6/Ø8/Ø10/Ø12/Ø16 mm - opt.	Ø3/Ø4/Ø6/Ø8/Ø10/Ø12/Ø16 mm - opt.
X/Y/Z-axis Linear Scale	-	●
3D Touch Probe for Workpiece & Grinding Wheel	●	●
Grinding Wheel Flange	●	●
Automatic Lubrication System	●	●
Cooling System	opt.	opt.
Magnetic Separator for Filtering HSS	opt.	opt.
Transformer	opt.	opt.
Voltage Stabilizing Transformer	opt.	opt.
Spare Belt for Belt-Type Spindle	opt.	-
Block Gauge	opt.	opt.
Testing Bar	opt.	opt.
Measuring Jig for Grinding Wheels	opt.	opt.
Full Encolsure Splash Guard	●	●
Leveling Bolts & Blocks	●	●
Halogen Lamp	●	●
Tool Box & Adjusting Tool	●	●

Machine Layout

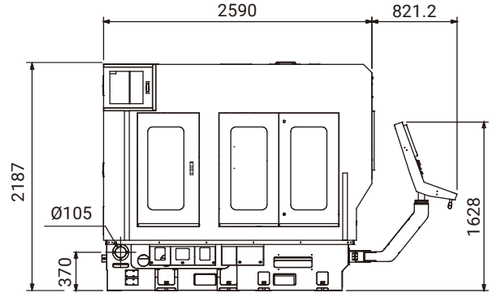
TG-5 CNC TOOL GRINDER — Unit : mm

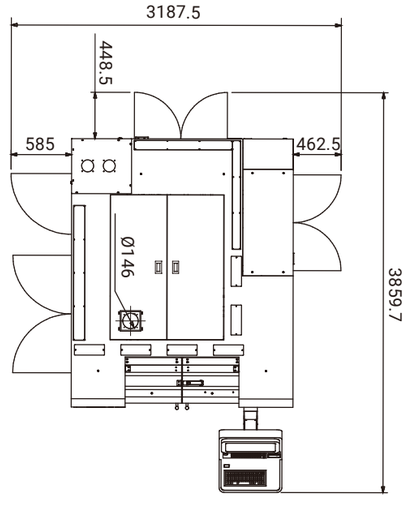




※ Blue Line Including Automatic Loading & Unloading System

TA-5 CNC TOOL GRINDER — Unit : mm





Specifications

	TG-5	TA-5
Stroke		
X-axis Stroke	370 mm	450 mm
Y-axis Stroke	240 mm	410 mm
Z-axis Stroke	190 mm	350 mm
Swivel Angle A-axis Stroke	360°	360°
Swivel Angle C-axis Stroke	-16° – 196°	-10° – 190°
Rapid Traverse		
X/Y/Z-axis Rapid Traverse	6 m/min	15 m/min
A-axis Rapid Traverse	100 rpm	1000 rpm
C-axis Rapid Traverse	15 rpm	30 rpm
Resolution		
Linear Resolution	0.001 mm	0.0001 mm
Radial Resolution	0.001°	0.0001°
Grinding Range		
Workpiece Diameter	3 – 20 mm	3 – 32 mm
Max. Turning Diameter	90 mm	90 mm
Max. Workpiece Length	150 mm	180 mm
Max. Flute Length	100 mm	150 mm
Spindle		
Wheel Spindle	Belt-Drive Spindle BBT30 Built-in Spindle HSK50C/E - opt. ※HSK50E Include Automatic Wheel Change System	Built-in Spindle HSK50E
Spindle Power	7.5 kW (Belt-Drive Spindle) 5.5 kW (Built-in Spindle) - opt.	24 kW
Max. Rotation Speed	9000 rpm	10000 rpm
Wheel Packs	Max. 2xØ150 mm (6") - opt.	Max. 4xØ150 mm (6")
Controller		
Controller	NUM Flexium+ 68	NUM Flexium+ 68
Machine Dimensions		
Electrical Power	Max. 25 kVA	Max. 40 kVA
Weight	4600 kg 5200 kg (Incl. Robot System)	7370 kg 7500 kg (Incl. Robot System)
Dimensions (W x D x H)	2526 x 2684 x 2242 mm 2720 x 2684 x 2242 mm (Incl. Robot System)	2140 x 3422 x 2184 mm
Air Pressure	Min. 5 kgf/cm²	Min. 5 kgf/cm²
Rated Flow	Min. 150 L/min	Min. 150 L/min

※ All specifications are subject to alternations without prior notice.

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