OPMT Metal Working Industry Processing Solutions

563V

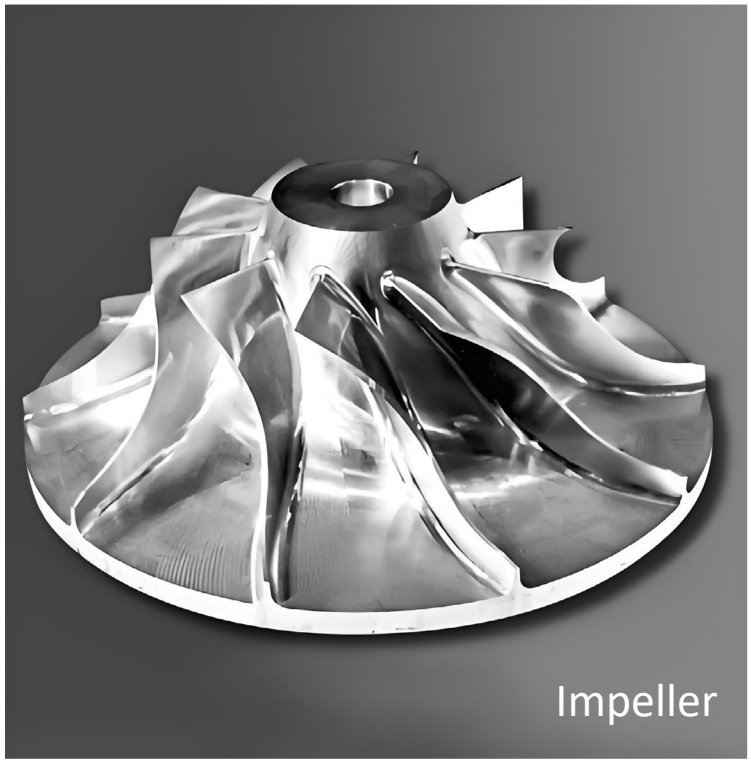
Vertical 5-Axis Machining Center

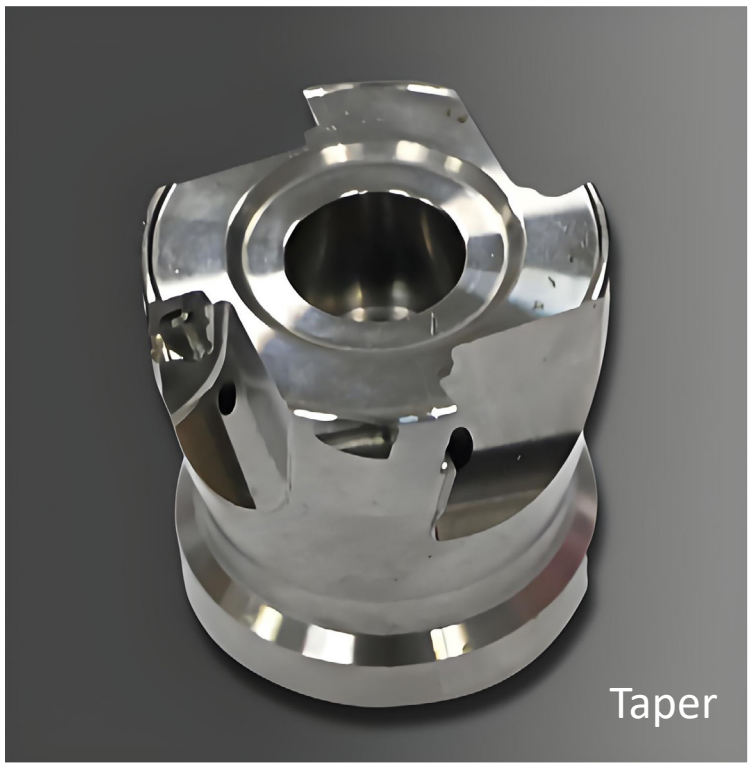
» High Speed
» High Precision
» High Stability
» Ideal for Machining Tool Steel and High-temperature Alloys

Core Innovations: How the machine tool drive precision and efficiency in metal working industry processing

- The machine tool is built with the gantry type moving beam structure for effective and rigid support of the beam throughout the travel along the Y-direction.
- It has a low center of gravity, good stability and low vibration.
- The machine body, beam, saddle, spindle box and other support parts are designed with a highly rigid closed structure.
- The upper moving parts on the X-axis, with their center of gravity within the support of beam slider, can effectively prevent the spindle side from leaning forward to improve dynamic stability.
- The Y-axis has four guide rails to enable stable and reliable movement of the beam.

Part Machining


Impeller

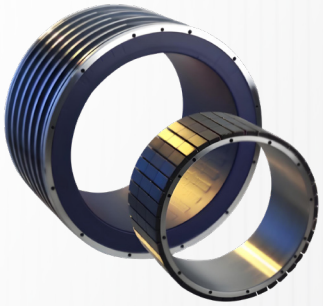

Taper

High-performance components, higher productivity

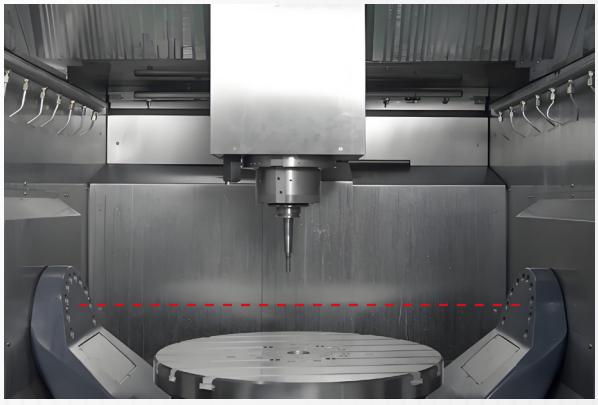
Deliver highly accurate and stable mold steel and high-temperature alloys processing solution combines outstanding quality and efficiency.

A/C Cradle Turntable

I. It has a double direct drive structure for the A-axis and a direct drive structure for the C-axis (as shown in the figure), providing the benefits of zero back clearance, high speed, compact structure, high rotation accuracy, etc.



II. The A-axis has a center of rotation above the turntable
This design can reduce the distance of the movement path when the tool fits with the workbench rotation, decrease the machining time and raise the accuracy of contour machining.



III. Fixed workbench
The load-bearing workbench is separated from the three linear axes, which are inertially fixed and not affected by changes to load dimensions. The machining performance with high stability can be achieved by optimum servo adjustment. There is a fixed workbench on the A/C-axis, which, as compared to the mobile workbench, can prevent the A-axis from swing due to rapid feed and improve its positioning accuracy.

Automatic Tool Changer (ATC)

The ATC has an umbrella-shaped tool magazine that can run stably and reliably. It can prevent the tool from contamination as it is integrated within the machine body, outside the machining area.

Main Specifications

Travel

X/Y/Z-axis 700/780/550mm
A/C-axis (-120°~+30°)/360°

Rapid Feed

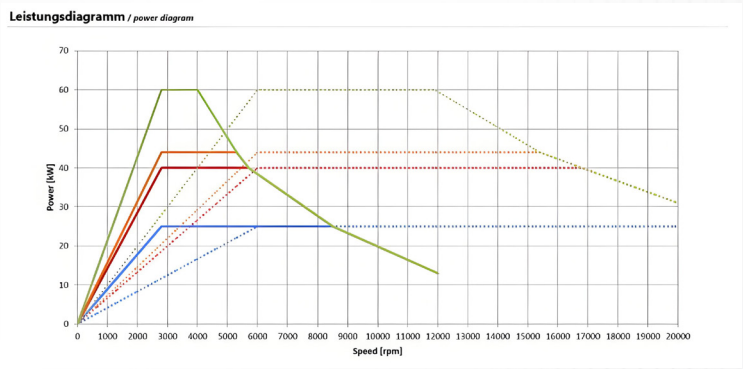
X/Y/Z-axis 48/48/48m/min

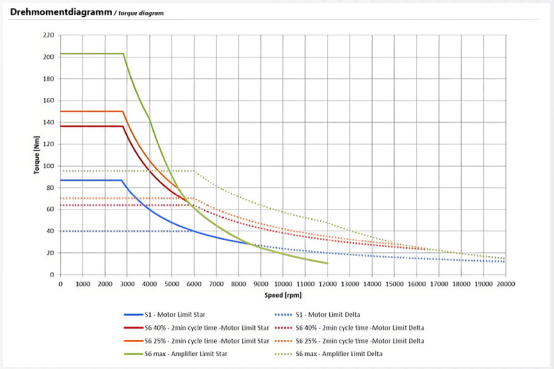
Motor Spindle

The motor spindle from German Franz Kessler can ensure high machining precision and rigidity, with the following specifications:

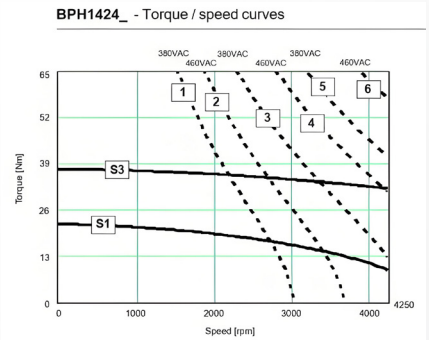
Motor Spindle	Unit	Parameter
Max. rotary speed	rpm	20000
Mounting diameter (ϕ)	mm	202
Tool interface	mm	HSK-A63

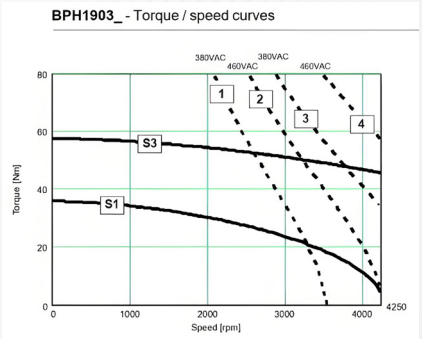
The spindle power and torque are illustrated in the charts below:

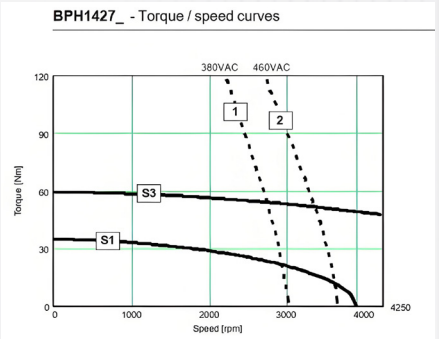




Servo Motor







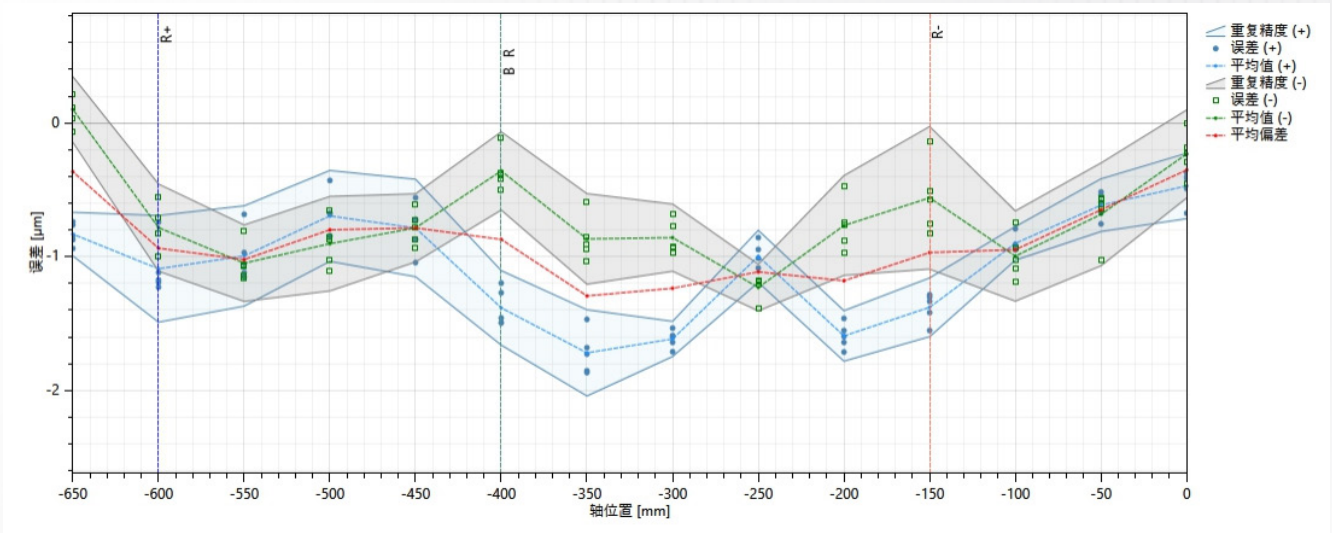
Tool Dimensions	Unit	Parameter
Number of tools	pcs	30
Max. tool weight	kg	6
Max. tool diameter	mm	ϕ80
Max. tool length	mm	300
Max. Workpiece	**Unit**	**Parameter**
Max. load of workbench	kg	800
Workbench size	mm	ϕ630
Max. speed of workbench (A-axis)	mm	50
Max. speed of workbench (C-axis)	mm	80

Accuracy measurement and machining verification operability

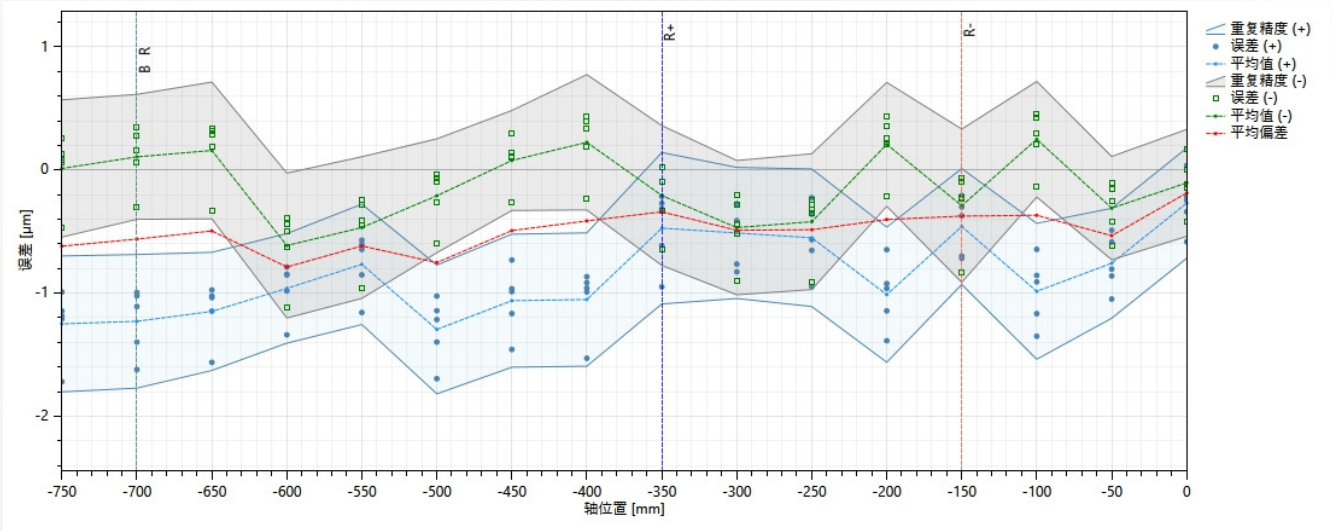
Laser accuracy (GB/T 17421.2 Analysis 16:CTC)

The laser accuracies of X/Y/Z linear axes and A/C rotary axes are illustrated as follows:

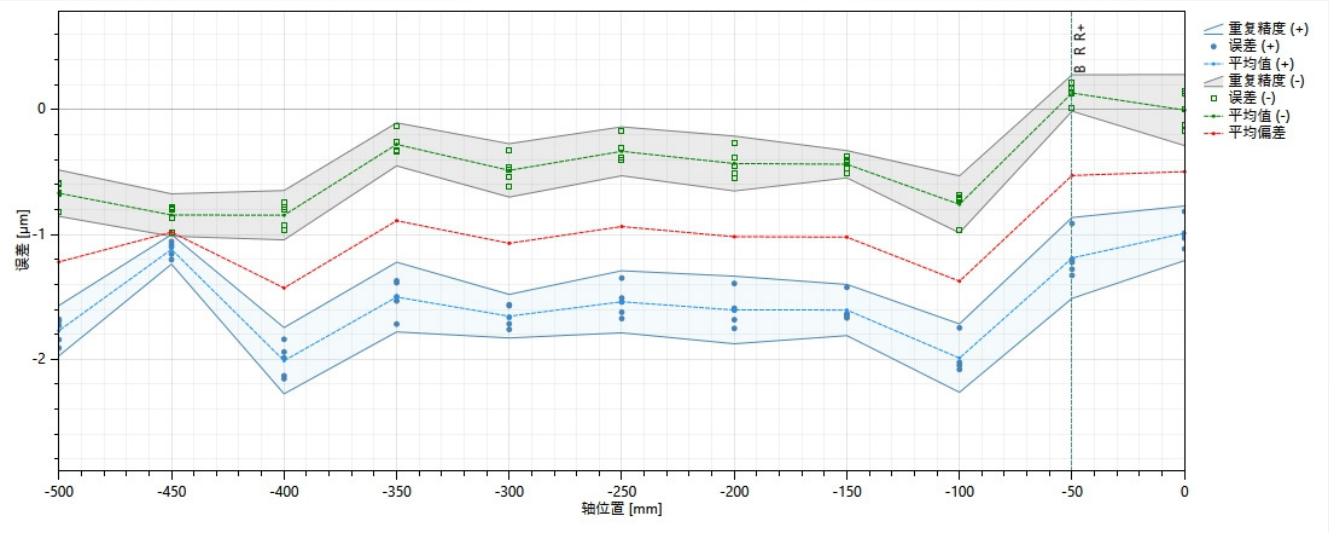
X-axis



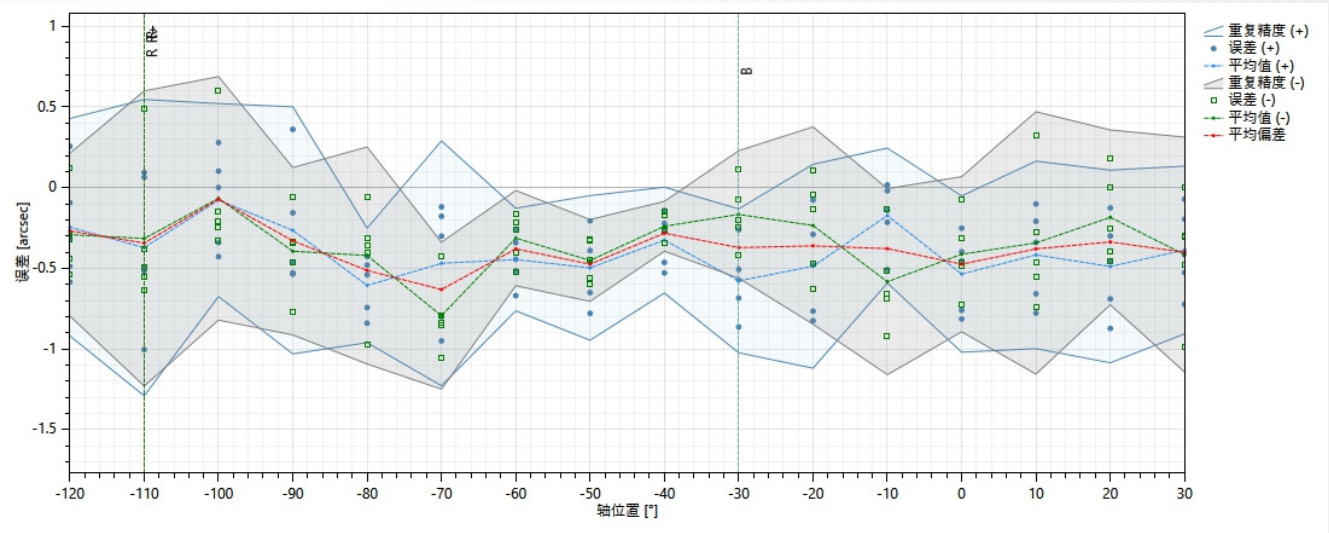
Y-axis



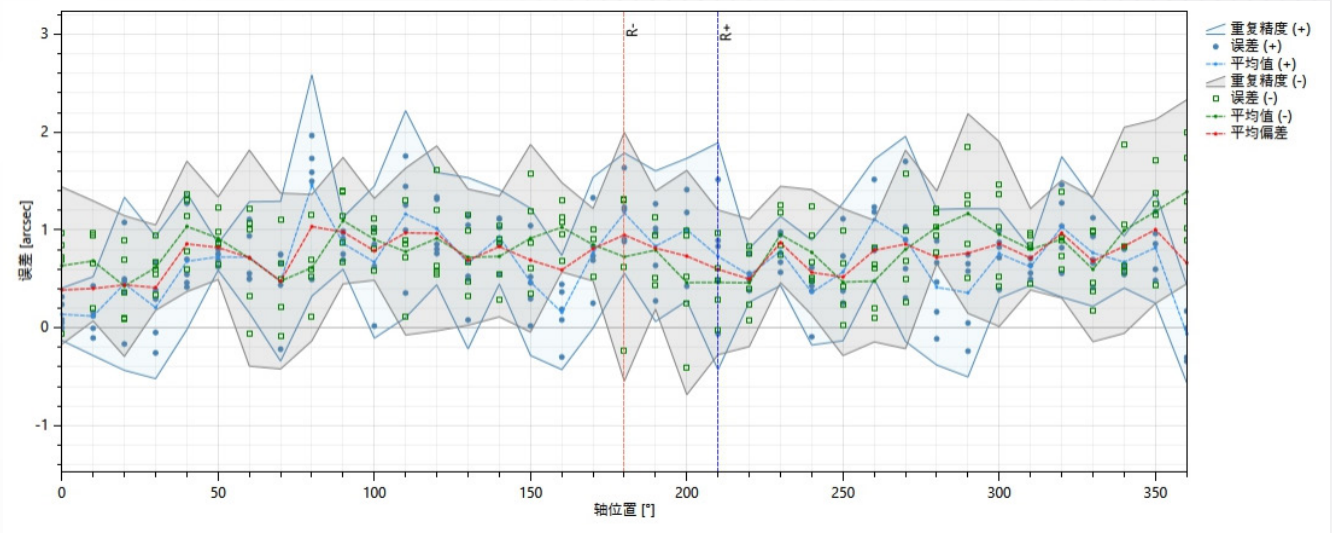
Z-axis


重复精度 (+)
误差 (+)
平均值 (+)
重复精度 (-)
误差 (-)
平均值 (-)
平均偏差
B R R+
误差 [µm]
0
-1
-2
-500
-450
-400
-350
-300
-250
-200
-150
-100
-50
0
轴位置 [mm]

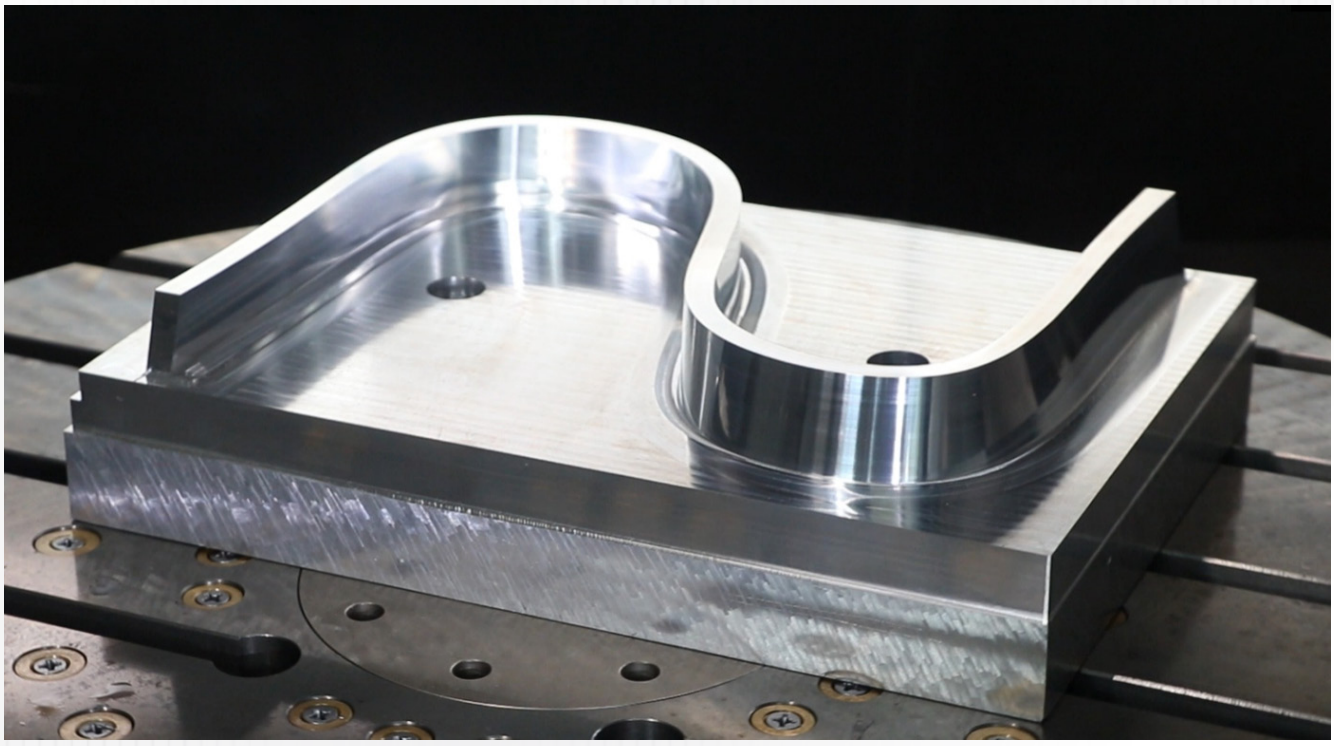
A-axis


重复精度 (+)
误差 (+)
平均值 (+)
重复精度 (-)
误差 (-)
平均值 (-)
平均偏差
R R+
B
误差 [arcsec]
1
0.5
0
-0.5
-1
-1.5
-120
-110
-100
-90
-80
-70
-60
-50
-40
-30
-20
-10
0
10
20
30
轴位置 [°]

C-axis



Machining Verification



Harnessing advanced peripherals to maximize the capabilities of high-precision machining tools

Grating Scale (Standard)

As a standard configuration, the linear grating scale from HEIDENHAIN is used in the X/Y/Z axis to offset the ball screw's positioning error resulting from temperature rise and repeatability accuracy error, as well as the movement characteristics error caused by the ball screw pitch error. Its positioning accuracy is ±5μm.
The HEIDENHAIN encoder is also a standard configuration for the A/C axis to improve the positioning accuracy of the rotary axis.

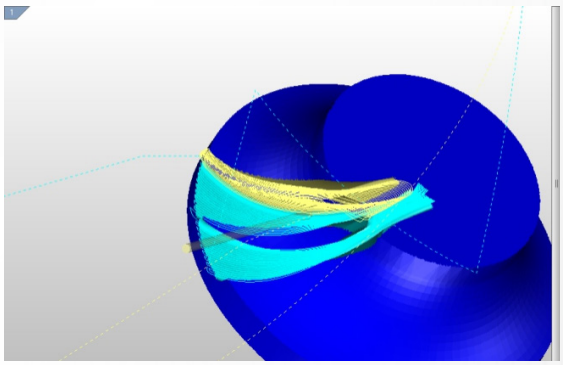
Chip Removers (Standard)

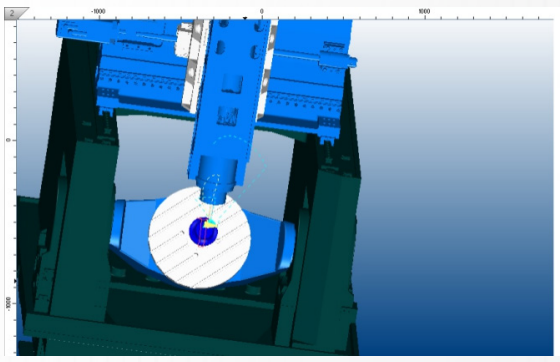
Chip removers are provided on the side and the top of the tool magazine for preventing chip accumulation.

Main Functions of Spindle (Optional)

There is an internal temperature sensor to measure the spindle bearing temperature, as an over-temperature protection mechanism.
The temperature data monitored in the most proximity to the bearing is used as the basis for temperature rise and thermal deformation offset.

Collision Avoidance of 3D Interference





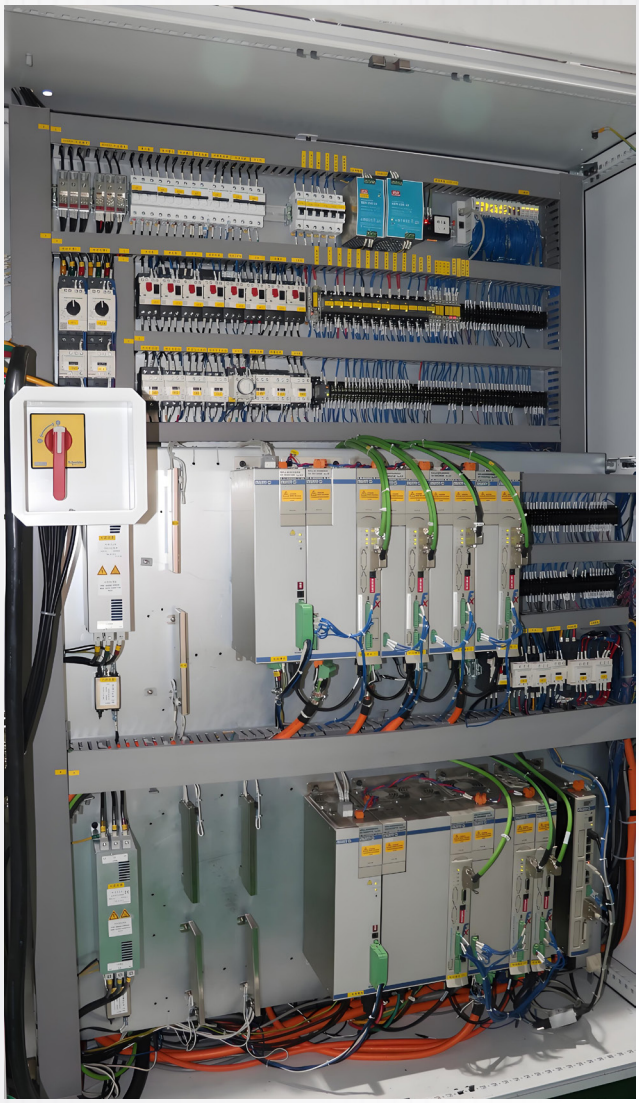
RTCP Settings of 5-Axis Machining Center

Easy Routine Maintenance

The pneumatic system and the lubricating oil pump are placed under centralized management for the ease of routine maintenance.

Electric Cabinet

The electric cabinet is of an integrated design and compact structure for easy maintenance.



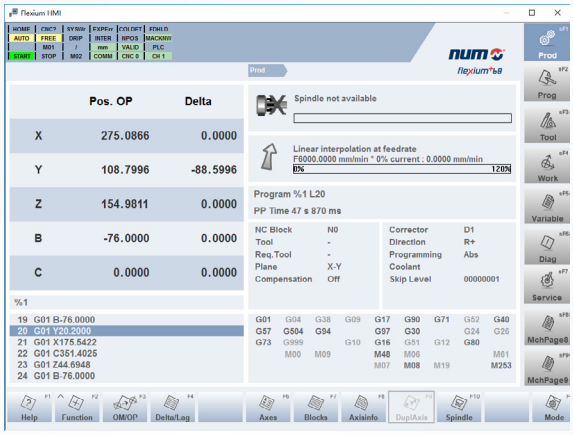
Smooth Chip Removal

Chip removal cooling: The chain-plate chip remover is used for smooth chip removal. The machining area of the machine tool is clad with stainless steel for less chip adsorption. A large chip removal hole at the center allows for direct discharge of chips through the chip discharging groove, thus alleviating the effects of chip heat on cast parts and maintaining good machining precision.

Standard/Optional Table				
Name	**Quantity**	**Standard •**	**Optional ○**	**Brand**
Machine tool	1 set	●		OPMT
Motor spindle	1 pc	●		Kessler
Turntable	1 set	●		Top Chinese supplier
Umbrella-shaped tool magazine (30 tools)	1 set	●		Top Chinese supplier
Precision ball screw	3 pcs	●		HIWIN
Precision roller guide rail	6 pcs	●		SCHNEEBERGER
Precision ball guide rail	2 pcs	●		SCHNEEBERGER
Ball screw bearings	1 set	●		NSK
Couplings	3 pcs	●		MIKIPULLEY
CNC system	1 set	●		NUM
			○	SIEMENS
Grating scale	1 set	●		HEIDENHAIN
Laser tool setter	1 pc	●		BLUM
Probe	1 pc	●		HEIDENHAIN TS460
Receiver	1 pc	●		HEIDENHAIN SE540
Flow detection sensor	1 set	●		IFM
A/C-axis pressure detection sensor	1 set	●		IFM
Tool magazine door detection switch	1 pc	●		SCHNEIDER
Cable carrier	1 set	●		IGUS
Oil mist treater	1 pc	●		FILTERMIST
Chain-plate chip remover	1 set	●		Top Chinese supplier
Outer water cooling tank	1 set	●		Top Chinese supplier
High-precision control water cooler	1 set	●		Tongfei
Hydraulic unit	1 set	●		HAWE
Pneumatic system	1 set	●		SMC
Spindle oil-air lubrication system	1 set	●		Top Chinese supplier
Lubrication system	1 set	●		BIJUR
Armor-type protective cover	1 set	●		Top Chinese supplier
Top bellows cover	1 set	●		Top Chinese supplier
Sheet metal part	1 set	●		OPMT
Adjustment shim	6 sets	●		OPMT
Central water outlet (cooling pressure up to 7Mpa)	1 set		○	Top Chinese supplier
Drum filter	1 pc		○	Top Chinese supplier
Tape filter	1 set		○	Top Chinese supplier
Rotating window	1 set		○	HEMA

Powerful and user-friendly NUM CNC control system

Ensures maximum ease of operation and process reliability, combine high-tech performance with genuine customer benefits and ensure application-orientated, simple programming and operation



•The open universal CNC system can meet various machine tool applications such as turning, milling, planing, grinding, laser, water jet, etc.

•The core of the CNC system is NCK, each NUM® system composed of 8 NCKs, each NCK provides up to 32 axes/spindles, and provides up to more than 200 axes/spindles, and is compatible with RTCP.

Perfect machining tool steel and high-temperature alloys processing

1

2

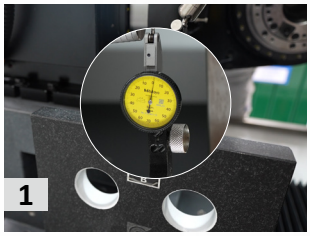
3

1 ZOLLER-Setting for tool presetting

2 ZOLLER-Presetting and Measuring Machine

3 Laser microscope

Undergoes rigorous testing and calibration to maintain high precision and reliability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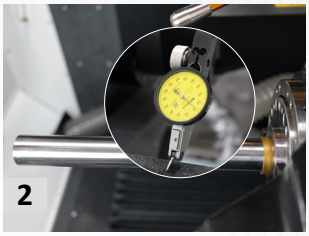
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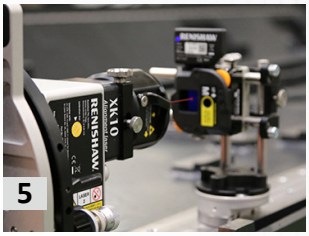
4



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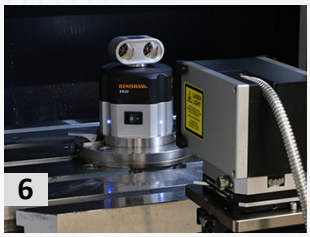
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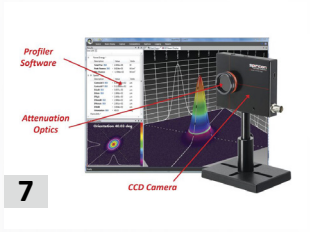

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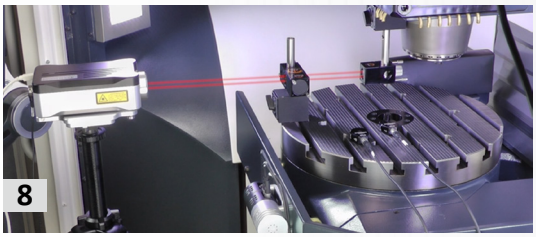
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1 X/Y/Z-axis parallelism accuracy detection

2 B/C-axis parallelism accuracy detection

3 Precision line parallelism accuracy detection

4 Ballbar

5 Alignment laser

6 Rotary axis calibrator

7 Laser beam profiler

8 Laser interferometer

Travel range	Unit	563V
X-axis	mm	700
Y-axis	mm	800
Z-axis	mm	550
A-axis	°	-120~+30
C-axis	°	360
Y-axis distribution of workbench center	mm	Y+420/Y-360
Max. distance from spindle nose to workbench	mm	630
Min. distance from spindle nose to workbench	mm	80
Turntable		
Workbench size	mm	ϕ630
Rated torque of A/C axis	N.m	2 x 1200/1260
Max. torque of A/C axis	N.m	2 x 2100/2330
Clamping torque of A/C axis	N.m	2 x 3200/3200
Form of T-slot		Parallel, 14H8 (base slot), spacing 80mm
Max. load of workbench	kg	800
Positioning accuracy of A/C axis	″	10
Repeatability accuracy of A/C axis	″	8
Spindle		
Spindle rotary speed	rpm	20000
Spindle power	kw	S1:25/S6-40%:40
Spindle torque	N.m	S1:87/S6:135
Tool magazine		
Number of tools		30
Tool reduction ratio		1/110
Tool holder form		HSK-A63
Max. tool weight	kg	6
Max. tool diameter	mm	ϕ80
Max. tool length	mm	300
Moving parts		
X/Y/Z-axis ball screw specification(diameter/lead)		X: 40/16 Y: 50/16 Z: 40/16
X/Y/Z-axis linear guide rail specification		X: 45 roller Y: 45 roller + 35 ball Z: 45 roller
X/Y/Z-axis positioning accuracy	mm	0.008
X/Y/Z-axis repeat positioning accuracy	mm	0.005
CNC system		
Brand		NUM

Machine dimensions	Unit	563V
Floor space (L x W x H)	mm	4716 x 5419 x 3574
Weight	t	≈ 14

Intuitive Operability: Simplifying operation and maintenance

Comfortable utilization

Doors open for easy loading and optimal workpiece access.
Doors closed: the large window provides an excellent view inside the machine for process monitoring.

Closable Telescopic Cover

The telescopic cover can be closed for the convenience of lifting actions.

Opening Width

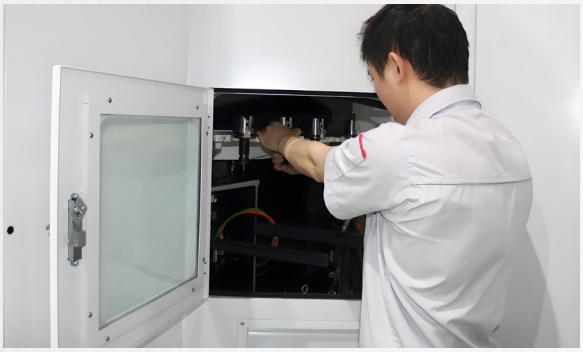
The ample opening width (800mm) makes it easy to operate and repair.

Rotary Operation Panel

The rotary operation panel makes operation and inspection easy.

Tool Change Distance

The good proximity allows for manual tool change with the easiest hand action.



Obtained RoHs certification, ISO14001 and ISO45001 management system certification

1,000 sets/year
Full production capacity

113 R&D Employees

54% total employees
7 PH.Ds
7 Masters,
65 Undergraduates, covering talents in various fields such as Laser application, Mechanics, Electrics and Software

300+ Patents

302 patents for inventions, utility models, etc.
62 invention patents,
147 utility model patents,
17 exterior design and
9 software

5 R&D Centers & Labs

Provincial Manufacturing Innovation Center,
Engineering Technology Research Center,
Ultrafast Laser Processing Joint Laboratory,
Foshan Postdoctoral Workstation,
Graduate Student Joint Training Demonstration Site

EASY MAINTENANCE
Use high-end international universal accessories

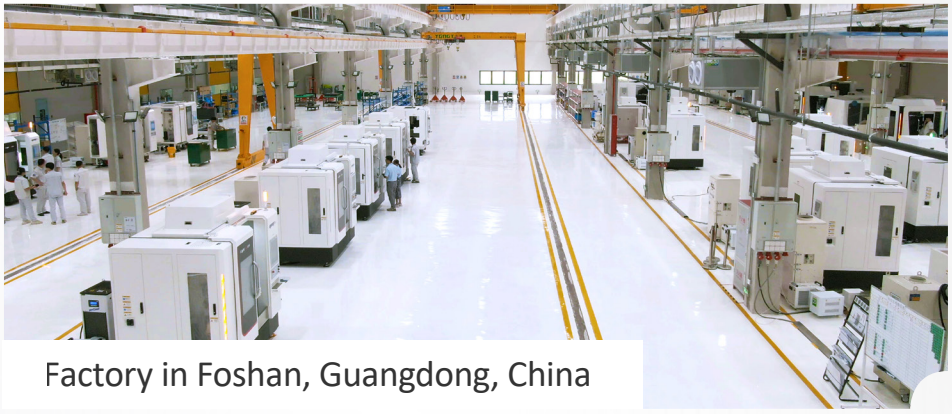
FLEXIBLE CUSTOMIZATION
Customized base on customer needs

TRAINING PROGRAM
Provide operation training

Turnkey provider with impressive technology expertise

Cover 30, 000 m², 210 employees, multi-axis CNC laser machine manufacturer, and provide smart factory manufacturing solution.

Factory in Foshan, Guangdong, China



Factory in Foshan, Guangdong, China

R&D Centers & Labs

Guangdong Original Point Intelligent Technology Co., Ltd.

To make manufacturing smarter and intelligent manufacturing easier

Adress: No.3 Lizhong Road, Danzao Town, Nanhai District, Foshan, Guangdong, China

From origin to infinity

2025 edition