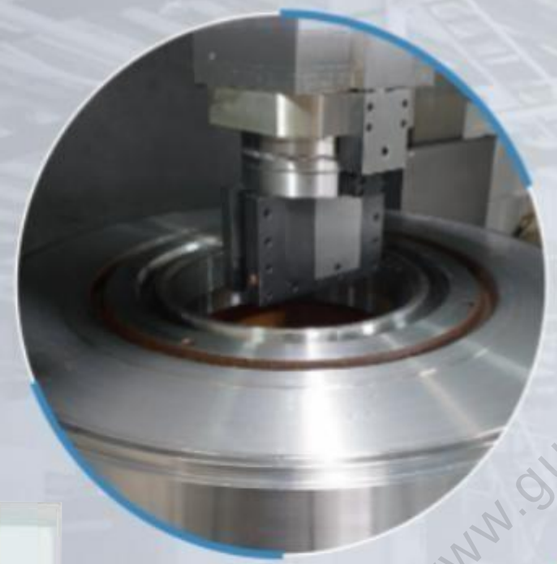
SUZHOU GUDWAY CNC EQUIPMENT CO.,LTD

Add：No. 21 Xiexin Road, New District, Suzhou City, Jiangsu Province, China.
Tel：+86-0512-65580060
Email：info@gudwaycnc.com
Web：http://www.gudwaycnc.com

-Vertical Type Turning Lathe

SUZHOU GUDWAY CNC EQUIPMENT CO.,LTD



Ram size

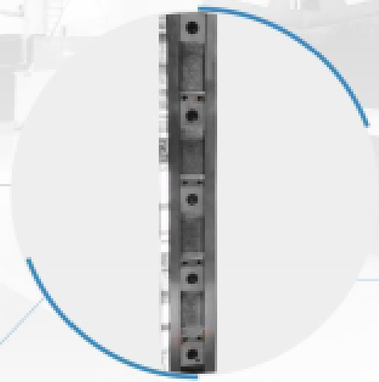
220x220	VL1000 / 1250 / 1600
250x250	VL2000 / 2500

Turning ability

Spindle motor	37/45 (a40i)	
Materials to be processed	A45C (Hardness treatment)	
Cutting type	Cutting type	Light cutting
Cutting amount	10mm on one side	0.1mm
Cutting height	50mm	1200mm
Spindle speed	60rpm	200rpm
Cutting feed	F0.8	F0.2
Spindle load	47%	
Roundness	0.004MM	0.004MM
Taper	0.002MM	0.005MM

GUDWAY

机械特性介绍



Beam fixing step

Base

High-grade reinforced cast iron integrated body of symmetrical, box type, extremely rigid structure reinforced mesh rib plate, which can withstand gravity compression and resist deformation.
It is subject to closely controlled annealing treatment to eliminate internal stress after casting.

Column

The high-grade reinforced cast iron box structure increases the length and width ratio, improves the section coefficient, and strengthens the mesh rib plate on the inner wall.

X-axis adopts reinforced roller rail, which has the rigidity of hard rail and the advantages of fast and high moving accuracy. It is the best choice to realize precision, durable cutting and high reliability.

The z-axis square hard rail is made of German special steel that is precisely ground, and the sliding table is pasted with wear-resistant plastic sheet (Turcite-B).

Introduction Of Mechanical Characteristics

Gearbox transmission mechanism ▸

The worktable is driven by multi-stage gearbox, which comes out of the main shaft motor through the reducer and drives the worktable through full gear transmission, so as to avoid the loss of main shaft torque and ensure the cutting rigidity as much as possible.

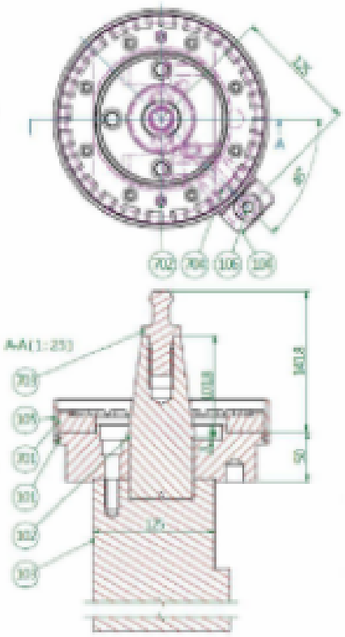
◂ The worktable adopts PSL precision cross roller bearing of a European brand

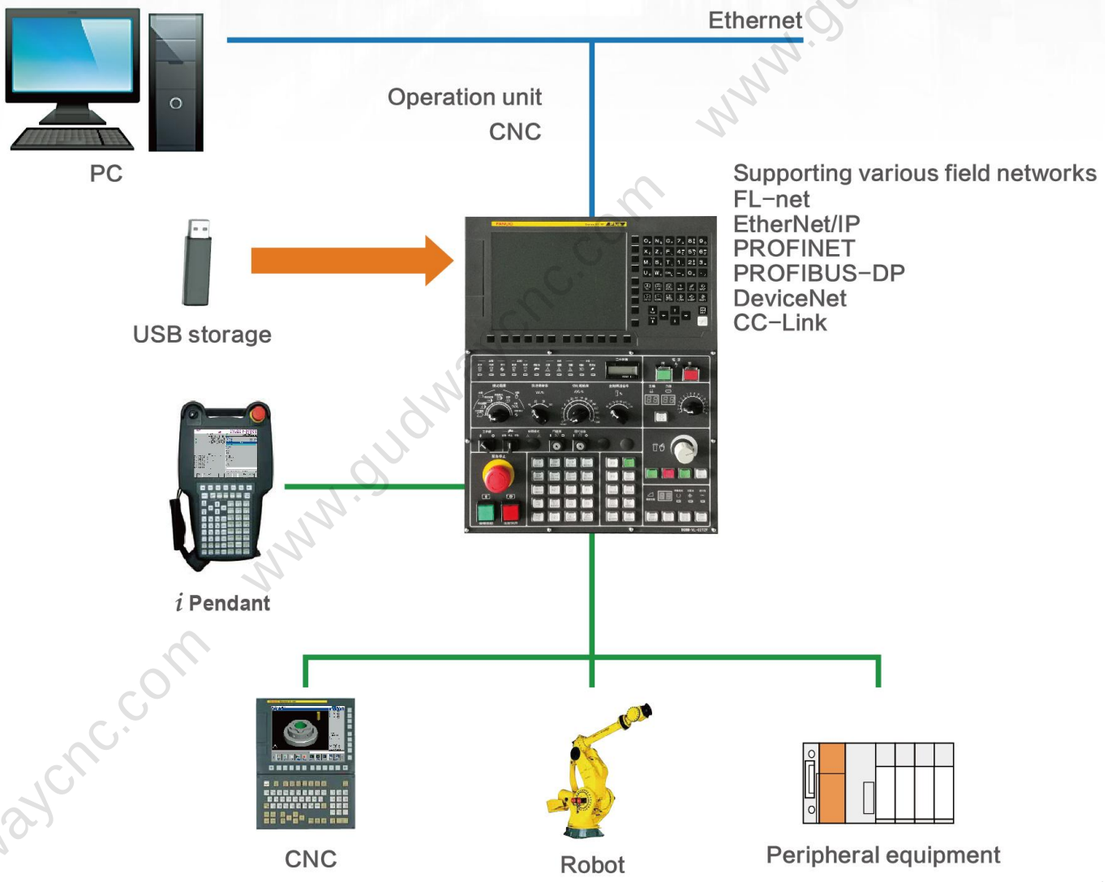
1. High-precision tapered cross roller bearing is specially designed for high-precision applications bearing shaft radial composite load. It has the characteristics of high precision, high rigidity and high speed. The bearing consists of an outer ring, a separated inner ring and a cross tapered roller, which is separated by a plastic spacer.
2. The design of cross arrangement of tapered rollers in the raceway can make the bearing to bear axial and radial loads and overturning torque at the same time.
3. Although the cross section of this bearing is relatively small (thin bearing), its rigidity is very high. Therefore, one bearing can completely replace the traditional arrangement of two or three bearings.
4. Tapered roller can effectively reduce the linear speed difference between the inner and outer rings of the raceway when the bearing rotates at high speed, prevent the relative sliding of the contact surface between the roller and the raceway, so as to reduce the friction and heat generation between the roller and the raceway, and finally increase the service life of the bearing.

Introduction Of Mechanical Characteristics

ATC magazine (servo drive)

ATC magazine is 16 indexed, with BT50 for the combination mode of ram and tool,The tool holder and rest form a solid body to ensure the positioning accuracy and repetition accuracy.The tool can be arranged according to the processing needs, and the rotary oil pressure clamping is driven by the servo motor,Re-cutting is allowed. The closest tool selection mode is realized.
The cutting fluid flows out through the tool holder to ensure the cutting cooling effect.





Compact thin CNC

Integrating the small printed circuit board with CNC function and LCD, the CNC control unit is thinner than before, the depth is only 60mm (*1), so that the operation panel can be designed more compact.
The display product series on CNC are 8.4/10.4 inches, and it is also equipped with 15-in. color LCD for the first time.
(*1: 8.4/10.4 inch LCD without expansion slot)

Basic performance enhancement

It further improves the basic performance of CNC, servo and PMC, supports powerful CNC functions such as workpiece loading and unloading control, smooth tolerance control, and increases the number of controllable axes.

Fewer wiring

Higher speed FSSB and Fanuc I/O link* can save wiring and reduce wiring cost compared with the past.

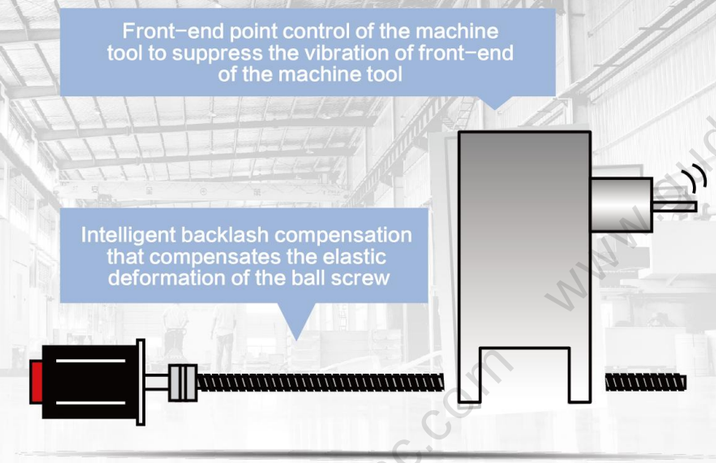
High-speed FSSB

Optical cable FSSB is used between CNC and amplifier (FANUC serial servo bus) for connection. In addition to the high-speed and anti-noise features based on optical communication, the special communication mode of FANUC is combined with ECC technology to make the communication faster and more stable, realize a high degree of controllability, and save wiring. In addition, it can also be connected with the spindle amplifier through FSSB, which saves wiring compared with the past.

FANUC I/O Link *

Fanuc I/O link* is an I/O network that connects various I/O through serial communication. In addition to general I/O, it can also be connected to the machine tool operation panel to control the operation of peripheral equipment β* servo amplifier, handheld panel for machine tool, etc. Sufficient fault detection functions such as short circuit detection of each bit on DO line and disconnection detection of serial communication are convenient to quickly determine the fault location and quickly resume operation.

In addition, the double check safety function required two serial communication cables in the past. With FANUC I/O link*, only one cable is enough.



Servo HRV control

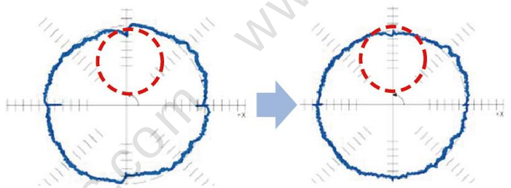
High speed and high precision servo control

By integrating the hardware such as smooth rotation servo motor, high-precision current detection, fast-response and high-resolution pulse encoder with the new servo HRV+, nano high-speed and high-precision machining can be realized. In addition, the mechanical resonance of frequency variation can be avoided by resonance-following HRV filter.

Properly compensate the displacement of the front end of the machine tool and improve the grade of the machined surface

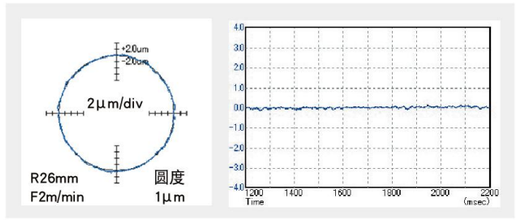
The action of machining points and the quality of machining surface are improved by "intelligent reverse clearance compensation" to properly compensate the loss motion during reverse rotation and "machine tool front end point control" to suppress the vibration of the front end of the machine tool.

[Examples of intelligent reverse clearance compensation]



Previous compensation

Intelligent reverse clearance compensation

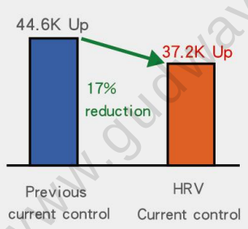


Examples of Servo HRV+

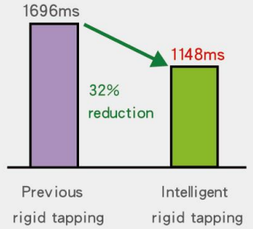
Spindle HRV control

Spindle HRV control can realize high-response and high-precision spindle control with the following characteristics:

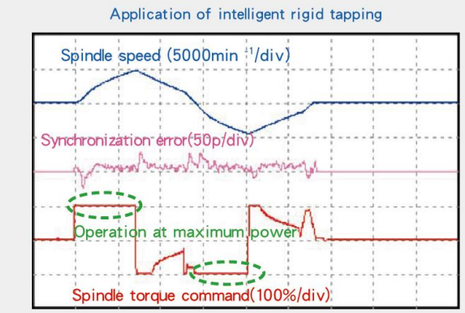
- With high-speed current control, the gain and reduce the heating are improved when the motor rotates at high speed
- It is equipped with the best orientation function to decelerate with excellent acceleration when the inertia of workpiece and tool changes
- Nano interpolation is used in position control to realize the same nano control as the feed shaft on the spindle
- It is equipped with intelligent rigid tapping function, which utilizes the maximum power of spindle motor for acceleration and deceleration, and can realize rapid tapping action without adjustment



Temperature rise of motor winding during continuous acceleration and deceleration (example)



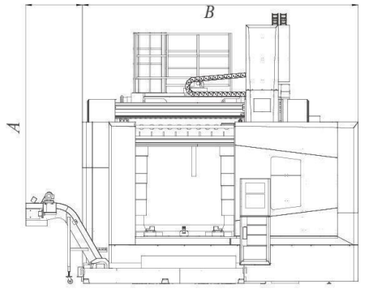
Rigid tapping cycle time shortened (example) pitch 1mm, 25 thread S5000



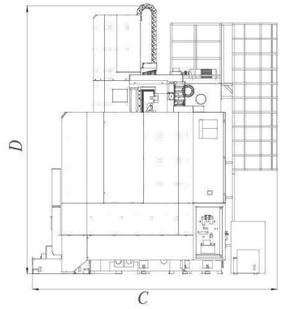
Achieve high synchronization accuracy while accelerating and decelerating at maximum output

GVT1000-2500 SERIES

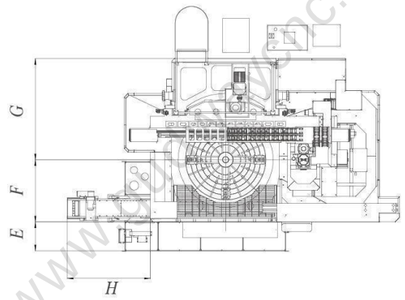
Dimensions



▲ Front dimension diagram



▲ Side dimension diagram



▲ Top view dimension diagram

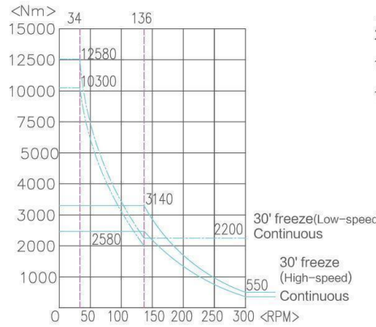
List of specifications and dimensions

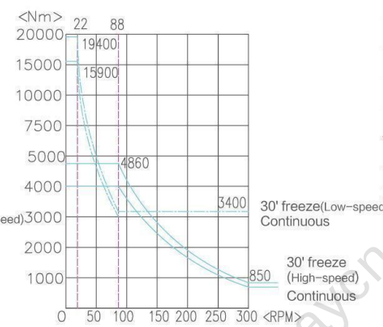
Unit: mm

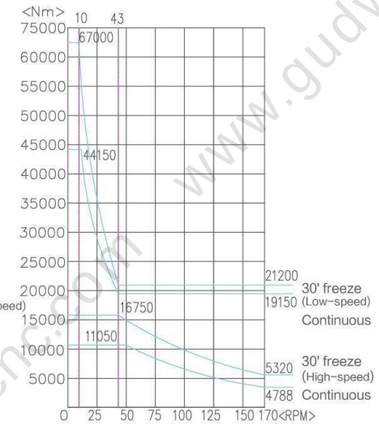
机型	A	B	C	D	E	F	G	H
GVT1000ATC	3040	3840	4000	4200	470	800	1500	1440
GVT-1000ATC+C	3040	3840	4000	4200	470	800	1500	1440
GVT-1250ATC	3800	4800	4550	5250	590	1000	1880	1800
GVT-1250ATC+C	3860	4800	4500	5350	580	1000	1880	2000
GVT-1600ATC	3980	5510	4900	5260	580	1250	2650	1660
GVT-1600ATC+C	3980	5510	4900	5260	580	1250	2650	1660
GVT-2000ATC	3880	3480	5650	5370	460	1410	1920	2280
GVT-2000ATC+C	3880	3480	5650	5370	460	1410	1920	2280
GVT-2500ATC	4850	6950	5760	6710	580	1760	2390	2850
GVT-2500ATC+C	4850	6950	5760	6710	580	1760	2390	2850

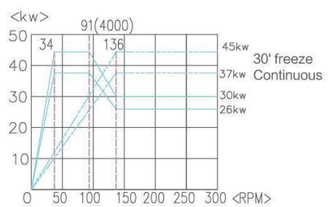
Spindle

GVT1000-2500 SERIES

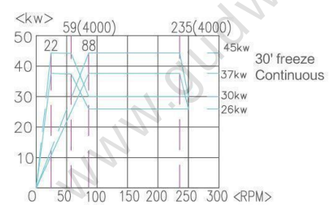




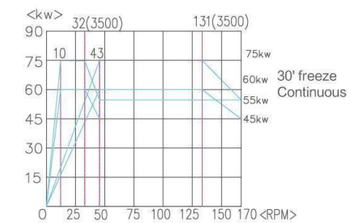




GVT-1250



GVT-1600



GVT-2000-2500

GVT-1250Spindle torque diagram

	Motor speed	Spindle speed	speed ratio
High gear	1500~3290	1~300	10.98
Low gear	1500~6000	1~136	43.92

GVT-1600Spindle torque diagram

	Motor speed	Spindle speed	speed ratio
High gear	500~4255	1~250	17.02
Low gear	500~6000	1~88	68.08

GVT-2000~2500Spindle torque diagram

	Motor speed	Spindle speed	speed ratio
High gear	1150~4500	1~169	26.6
Low gear	1150~4500	1~42	106.4

GUDWAY

SERIES

GVT1000-2500 SERIES

List of specifications for CNC vertical lathe

Mechanical specifications		Unit	GVT1000ATC	GVT1000ATC+C	GVT1250ATC	GVT1250ATC+C	GVT1600ATC	GVT-1600ATC+C	GVT-2000ATC	GVT2000ATC+C	GVT2500ATC	GVT2500ATC+C
Mechanical capacity												
Maximum swing diameter		mm	Φ1350	Φ1350	Φ1600	Φ1600	Φ2000	Φ2000	Φ2500	Φ2500	Φ3000	Φ3000
Machining diameter		mm	Φ1100	Φ1100	Φ1600	Φ1600	Φ2000	Φ2000	Φ2500	Φ2500	Φ2800	Φ2800
Maximum machining height		mm	800	800	1200	1200	1200	1200	1800	1800	1800	1800
Maximum workpiece weight		kg	5000	5000	5000	5000	8000	8000	12000	12000	15000	15000
Height of ram nose to table			1000	1000	1350	1350	1400	1400	2000	2000	2000	2000
Stroke												
X-axis stroke		mm	+700.-350	+700.-550	+950.-500	+950.-800	+1150.-500	+1150.-1000	+1350.-1000	+1350.-1000	+1600.-1000	+1600.-1000
Z-axis stroke		mm	900	900	900	900	900	900	1200	1200	1200	1200
X-axis travel speed		m/min	12	12	12	12	12	12	10	10	10	10
Beam stroke		mm	500	500	800 (200*4step)	800	800	800	1200 (200*6step)	1200	1200	1200
Z-axis travel speed		m/min	10	10	10	10	10	10	10	10	10	10
Spindle												
Spindle bearing diameter		mm	Φ457	Φ457	Φ580	Φ580	Φ685.8	Φ685.8	Φ1028.7	Φ1028.7	Φ1028.7	Φ1028.7
Spindle speed	Low gear	min^{-1}	1-160	1-160	1-136	1-136	1-88	1-88	1-42	1-42	1-42	1-42
	High gear		1-600	1-600	1-300	1-300	1-250	1-250	1-150	1-150	1-150	1-150
Maximum torque of spindle	Low gear	N.m(kgf-m)	11400	11400	12580	12580	19400	19400	67000	67000	67000	67000
	High gear	N.m(kgf-m)	2980	2980	3140	3140	4860	4860	16750	16750	16750	16750
Turret												
Turret type			ATC	ATC+C	ATC	ATC+C	ATC	ATC+C	ATC	ATC+C	ATC	ATC+C
Number of tools		pcs	12	16	12	16	12	16	12	16	12	16
Tool size		mm	□32Φ50	□32Φ50	□32Φ50	□32Φ50	□32Φ50	□32Φ50	□32Φ50	□32Φ50	□32Φ50	□32Φ50
Motor												
Spindle motor		kw	37/45	37/45	37/45	37/45	37/45	37/45	60/75	60/75	60/75	60/75
X-axis servo motor		kw	6	6	6	6	6	6	6	6	6	6
Z-axis servo motor		kw	9	9	9	9	9	9	9	9	9	9
Hydraulic motor		kw	3.75KW	3.75KW	3.75KW	3.75KW	3.75KW	3.75KW	3.75KW	3.75KW	3.75KW	3.75KW
Motor for coolant pump		kw	4.6/1.5	4.6/1.5	4.6/1.5	4.6/1.5	4.6/1.5	4.6/1.5	4.6/1.5	4.6/1.5	4.6/1.5	4.6/1.5
Electromechanical series												
Controller			Oi-T	Oi-T	Oi-T	Oi-T	Oi-T	Oi-T	Oi-T	Oi-T	Oi-T	Oi-T
Power contromer		kvA	60	60	75	75	75	75	100	100	100	100
Capacity												
Hydraulic tank		L	80	80	80	80	80	80	80	80	80	80
Coolant tank		L	450	450								
Lubrication tank		L	4	4	4	4	4	4	4	4	4	4
Machine dimensions												
Floor area (L*W)		mm	4000*4800	4000*4800	4550*6250	4550*6250	4900*6650	4900*6650	5650*8600	5650*8600	5760*8850	5760*8850
Machine height		mm	4850	4850	5400	5400	5500	5500	6770	6770	6770	6770
Machine weight		kg	23000	24500	32000	33000	35000	36000	55000	56000	57000	58000

*Mechanical design is subject to change without notice

SERIES

GVT1000-2500 SERIES

Standard / optional configuration

Mechanical specifications	GVT1000ATC	GVT1000ATC+C	GVT1250ATC	GVT1250ATC+C	GVT1600ATC	GVT-1600ATC+C	GVT-2000ATC	GVT2000ATC+C	GVT2500ATC	GVT2500ATC+C
Standard configuration										
Full cover sheet	●	●	●	●	●	●	●	●	●	●
Chip conveyor	●	●	●	●	●	●	●	●	●	●
Coolant tank	●	●	●	●	●	●	●	●	●	●
Coolant through holders	●	●	●	●	●	●	●	●	●	●
Automatic system for whole machine	●	●	●	●	●	●	●	●	●	●
Forced lubrication system for gearbox	●	●	●	●	●	●	●	●	●	●
Electric box with air conditioner	●	●	●	●	●	●	●	●	●	●
Hydraulic system (air-cooled fan) unit	●	●	●	●	●	●	●	●	●	●
Work light	●	●	●	●	●	●	●	●	●	●
Signal tower (R/Y/G)	●	●	●	●	●	●	●	●	●	●
Door safety protection	●	●	●	●	●	●	●	●	●	●
Standard tools and toolbox	●	●	●	●	●	●	●	●	●	●
Foundation kits	●	●	●	●	●	●	●	●	●	●
CNC controller: FANUC 0i-t (10.4" LCD), standard function	●	●	●	●	●	●	●	●	●	●
Spindle motor	●	●	●	●	●	●	●	●	●	●
X/Z-axis absolute position detection	●	●	●	●	●	●	●	●	●	●
X-axis Roller guide	●	●	●	●	●	●	X	X	X	X
X-axis hard rail	○	○	○	○	○	○	●	●	●	●
Maintenance manual (Fanuc)	●	●	●	●	●	●	●	●	●	●
Accuracy checklist	●	●	●	●	●	●	●	●	●	●
Operating instructions (Chinese version)	●	●	●	●	●	●	●	●	●	●
Hydraulical and electrical circuit diagram (Chinese version)	●	●	●	●	●	●	●	●	●	●
Transformer power	●	●	●	●	●	●	●	●	●	●
ZF two-stage gearbox	●	●	●	●	●	●	●	●	●	●
Oil-water separator (disc)	●	●	●	●	●	●	●	●	●	●
Optional configurations										
Siemens controller SINUMERIK 828D	○	○	○	○	○	○	○	○	○	○
Automatic door	○	○	○	○	○	○	○	○	○	○
Oil-mist collector	○	○	○	○	○	○	○	○	○	○
Tool measurement	○	○	○	○	○	○	○	○	○	○
Automatic measurement of workpiece	○	○	○	○	○	○	○	○	○	○
High-pressure coolant	○	○	○	○	○	○	○	○	○	○
Automatic power-off device	○	○	○	○	○	○	○	○	○	○
Workpiece trial machining	○	○	○	○	○	○	○	○	○	○
X-axis scale feedback	○	○	○	○	○	○	○	○	○	○
Z-axis scale feedback	○	○	○	○	○	○	○	○	○	○
Grinding device (including grinding wheel dresser)	X	○	X	○	X	○	X	○	X	○
Cleaning water gun	○	○	○	○	○	○	○	○	○	○
Air gun	○	○	○	○	○	○	○	○	○	○
Upgrade full shield sheet meta	○	○	○	○	○	○	○	○	○	○
Upgrade ATC capacity to 24 pcs	○	○	○	○	○	○	○	○	○	○