

D-VL500/D-VL500M  
D-VL650/D-VL650M  
D-VL800/D-VL800M  
D-VL1250C/D-VL1250CM  
D-VL1600C/D-VL1600CM

## HIGH-PRECISION CNC VERTICAL TURNING (MILLING) MACHINE

High speed High precision High efficiency

**Taikan**

HIGH-END INTELLIGENT EQUIPMENT TURN-KEY SOLUTION SERVICE PROVIDER



Features & Technology

Structure & Configuration

Options & Highlights

Parameters & Sizes

CNC vertical turning (milling) machine

D-VL500/D-VL500M

D-VL650/D-VL650M

D-VL800/D-VL800M

High precision/High efficiency/High quality/High cost performance

- ★ This series of models adopts an integral box-shaped base, the rib layout is designed through finite element optimization, ensuring the machine tool has high rigidity, high strength and high vibration absorption.
- ★ The spindle bearing adopts imported high-precision double-row short cylindrical roller bearings, which meet the load-bearing requirements of axial and radial cutting forces. The X/Z-axis screws are all pre-stretched structures, which can reduce the temperature rise during machine tool operation effect on lead screw accuracy.
- ★ The vertical structure avoids the roundness error caused by the weight of the workpiece during horizontal clamping, ensuring the roundness accuracy of the part.
- ★ The weight of the workpiece ensures that the workpiece and the fixture fit closely, which ensures the workpiece obtains higher positioning accuracy and processing accuracy.
- ★ A variety of chucks are optional, non-standard fixtures can be customized according to customer needs.



High speed  
High precision  
High efficiency



Machine bearing

Diversified application fields

It is widely used in automobile parts such as hubs, brake discs, wheels, brake hubs, reducers, etc. It is suitable for the processing of complex discs, shells and short shaft parts in bearings, energy and other industries. Machine tools with high precision, efficiency and quality



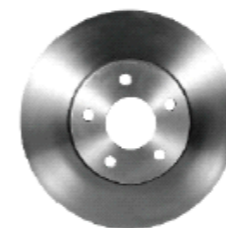
Elevator traction wheel



Machine bearing



Machine bearing



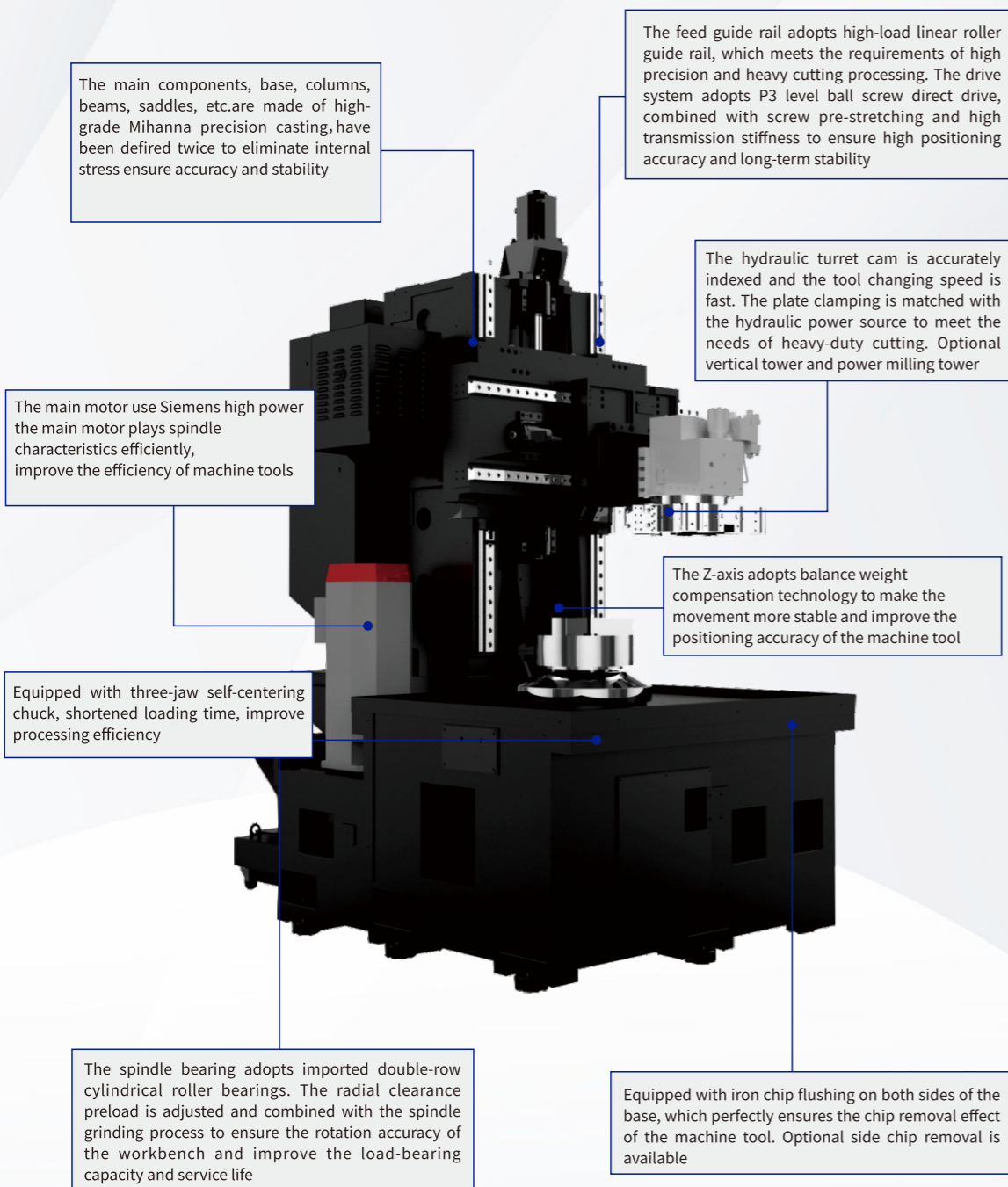
Automobile brake disc



Automobile brake disc

## CNC vertical turning (milling) machine

### Equipment structure technical description

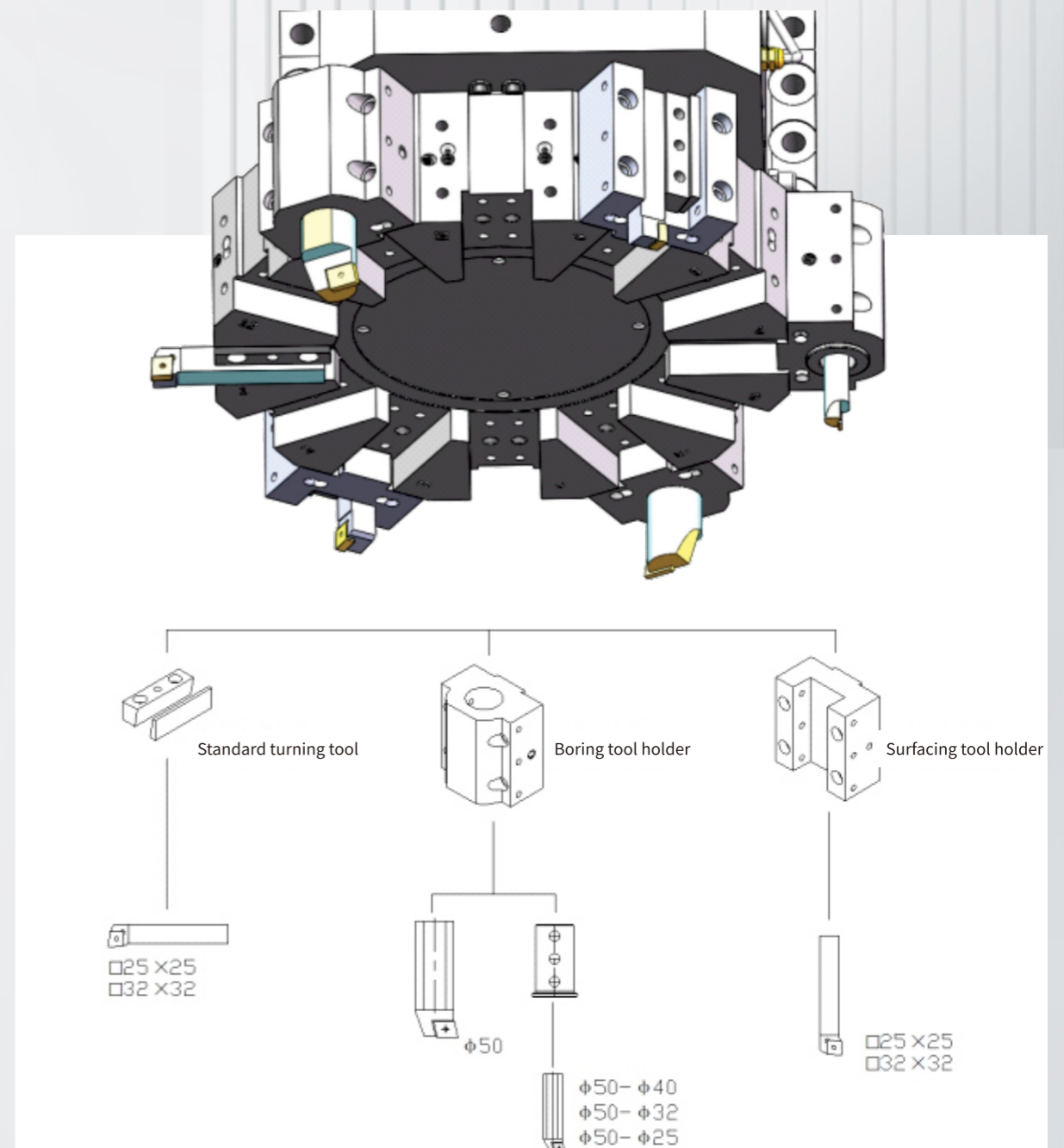


## CNC vertical turning (milling) machine

### Equipment structure technical description

#### Tool System-Horizontal Turret

- ★ Suitable for processing parts with mainly outer circles and end faces, and the tool change speed is fast

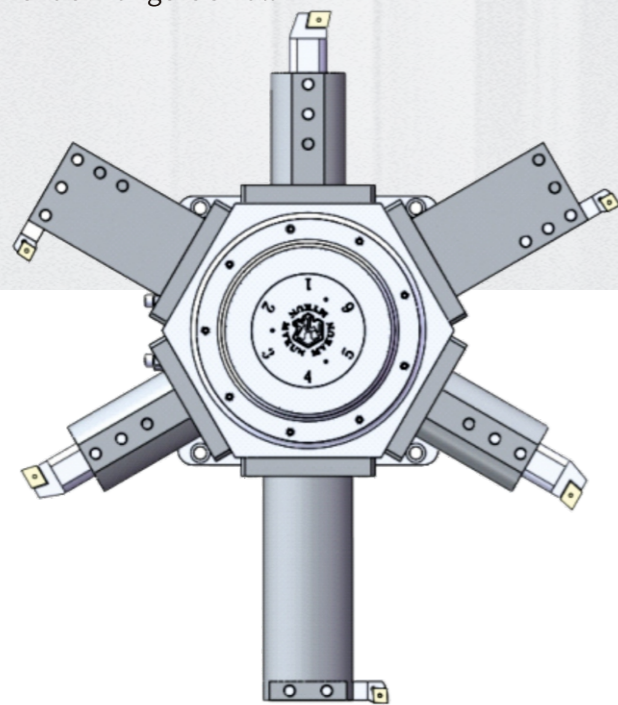


## CNC vertical turning (milling) machine

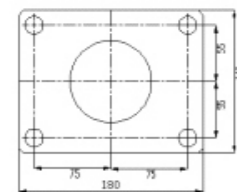
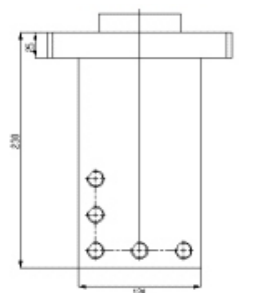
### Equipment structure technical description

#### Tool System-Horizontal Turret

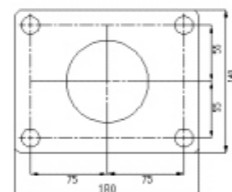
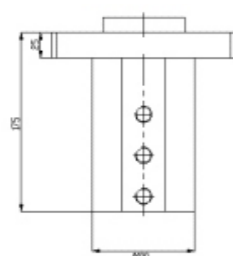
- ★ Suitable for processing workpieces mainly with inner holes, and the tool intervention range is small



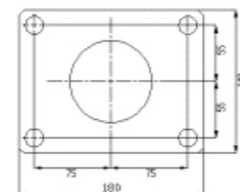
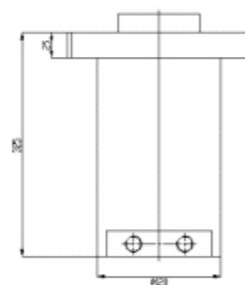
Standard tool holder



Inner hole tool holder



Inner hole tool bar

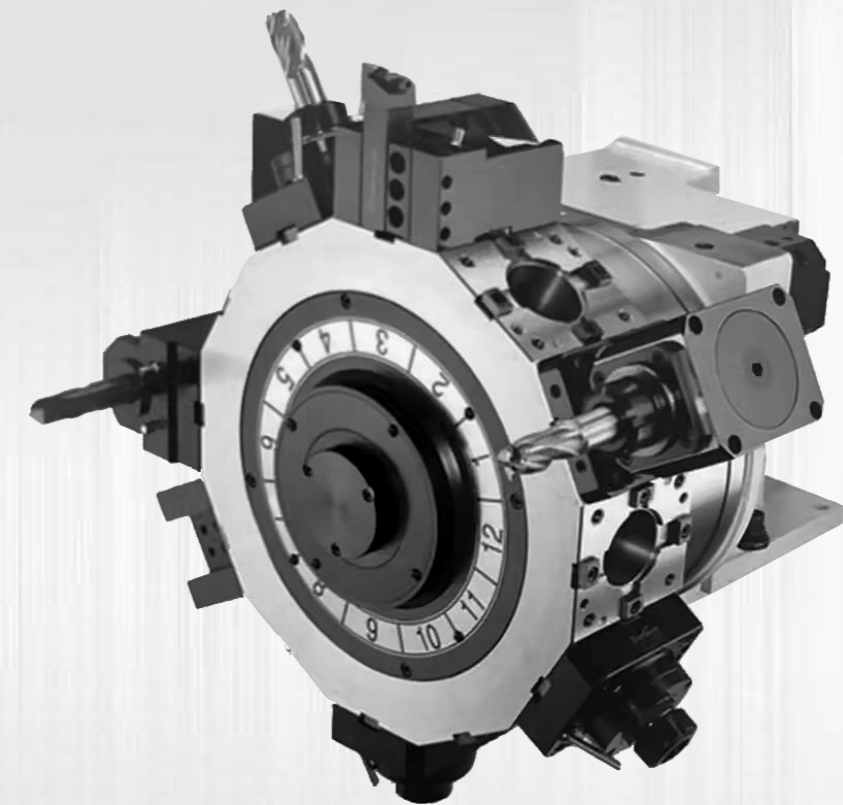


## CNC vertical turning (milling) machine

### Equipment structure technical description

#### Power Tool Turret

- ★ The cutterhead rotation is driven by a servo motor and has an internal deceleration mechanism, making the movement precise and reliable.
- ★ The rotation of the power head is driven by a special motor for turning and milling, and the bevel gear inside adopts elastic fit to eliminate the noise generated at high.
- ★ The tool turret can rotate in both directions, and the response speed of tool change is fast and smooth.
- ★ Adopt carburized grinding cam and dividing mechanism. High accuracy and low failure rate.
- ★ Three-piece end gear plate, no lifting required for tool change, good protection effect.
- ★ The power transmission uses titanium steel, which has high strength and high transmission efficiency.
- ★ Hydraulic clamping, large clamping force, stable and reliable, suitable for heavy cutting.



## CNC vertical turning (milling) machine

### Equipment structure technical description

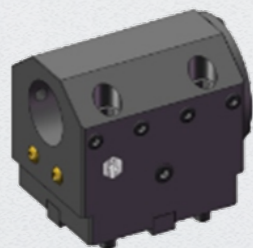
#### Tool holder type



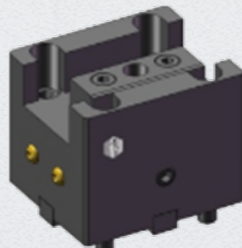
0° powered tool holder



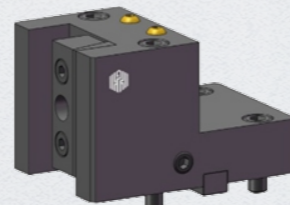
90° powered tool holder



Boring tool holder

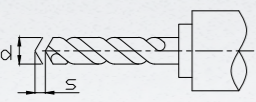
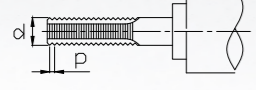
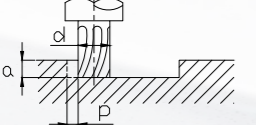


Surfacing tool holder



Cylindrical tool holder

#### Turret cutting capabilities

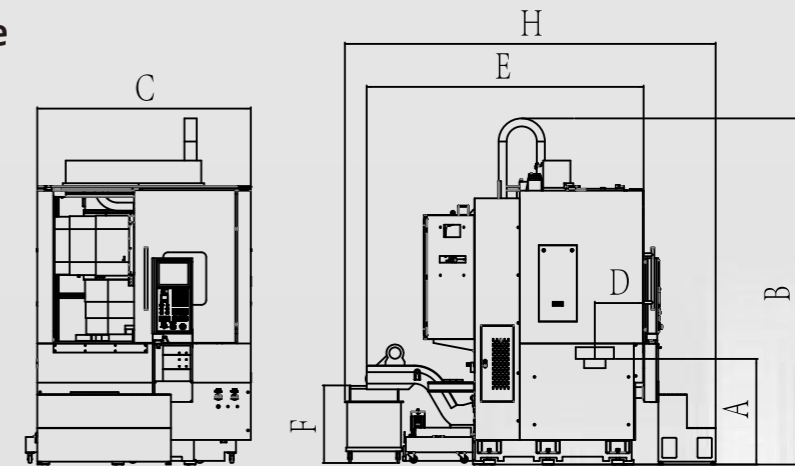
Powered tool turret specifications		BMT65	BMT75
 Drilling $d \times s$ (mm) × (mm/rev)		20x0.2	25x0.25
 Tapping $d \times p$ (mm) × (mm/u)		M16x2 M27x1.5	M18x2.5 M27x2.0
 Milling $d \times p \times a$ (mm) × (mm/u) × (mm/min)		25x15x40	30x20x40

The specific processing parameters depend on the processing material and the power of motor.

## CNC vertical turning (milling) machine

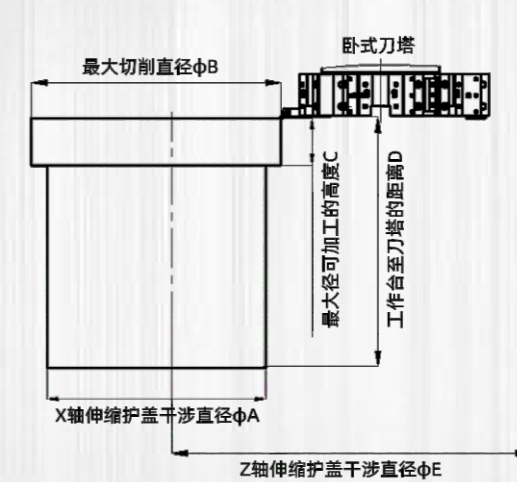
### Equipment structure technical description

#### Overall size



Model	Size	A	B	C	D	E	F	H
D-VL500/D-VL500M		880	2650	1700	340	2890	710	3120
D-VL650/D-VL650M		1100	3370	2240	530	2990	750	3205
D-VL800/D-VL800M		1115	3735	2775	625	3170	750	3890

#### Processing range



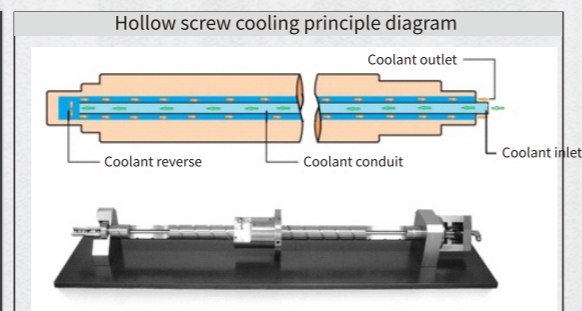
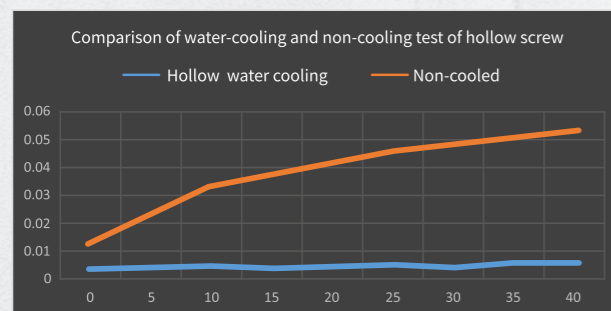
Model	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)
D-VL500/D-VL500M	500	600	150	500	950
D-VL650/D-VL650M	650	800	150	600	1050
D-VL800/D-VL800M	800	900	200	800	1200

## CNC vertical turning (milling) machine

### Equipment structure technical description

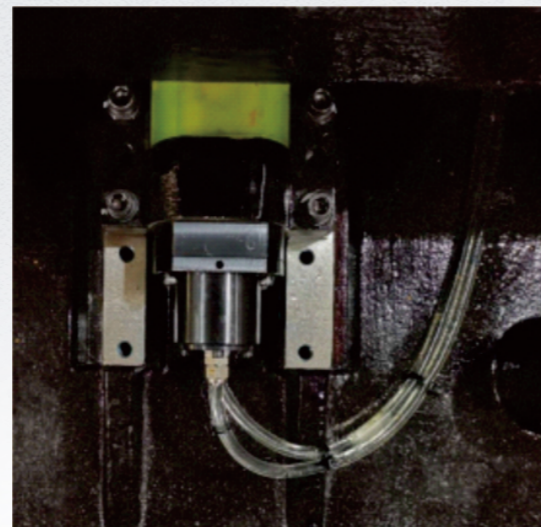
#### Hollow cooling screw (optional for high-precision equipment)

- ★ Water cooling and without cooling have obvious effects on the thermal deformation of the screw rod.
- ★ Under water cooling, the thermal deformation of the screw is smaller and the accuracy of the screw is more stable.



Note: The above are test data and are not used as machine tool accuracy standards.

Water cooling of hollow screw can make the lathe obtain higher and more stable machining accuracy



## CNC vertical turning (milling) machine

### Equipment structure technical description

#### 15" Colourful & Integrated Operation Panel

- ★ Adopting the Taikan system maximizes user productivity.
- ★ The newly designed operation panel adopts universal design buttons and layout, which enhances operation convenience and makes operation quick and convenient.

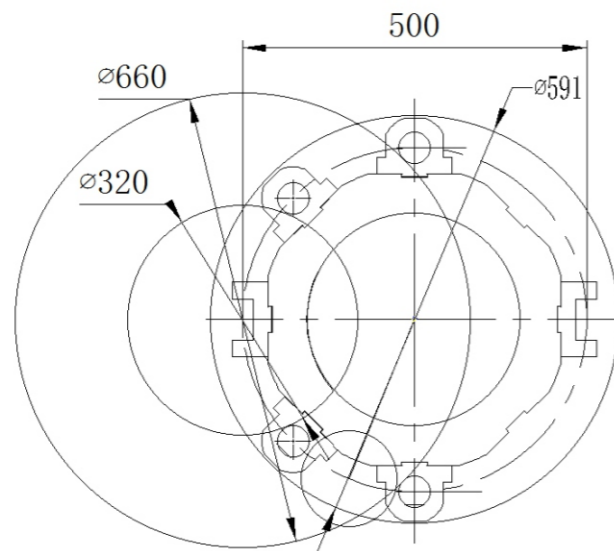


15" display

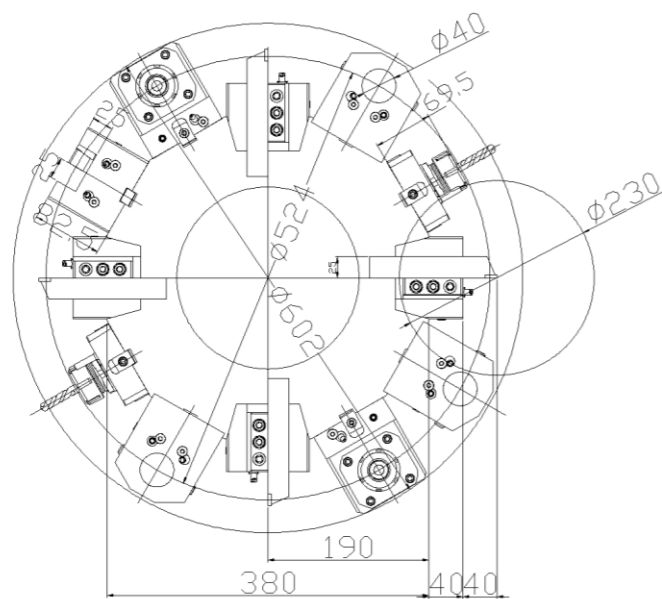
- Optional easy-to-enter pushbutton switch available
- New ergonomic design

### Tool Interference Diagram

D-VL500

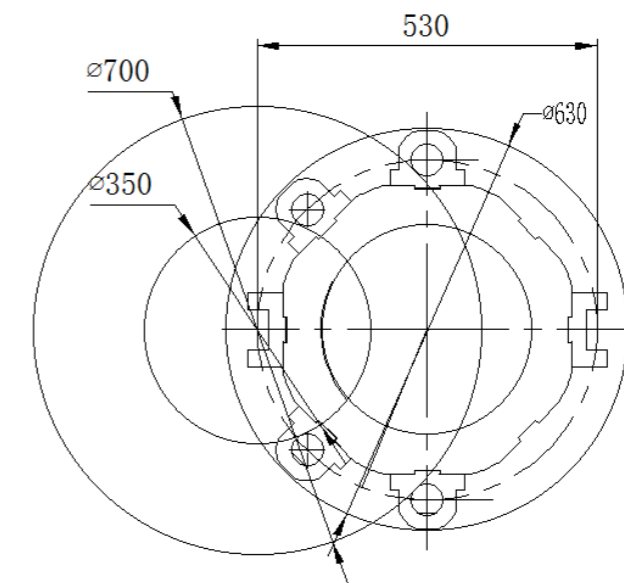


D-VL500M

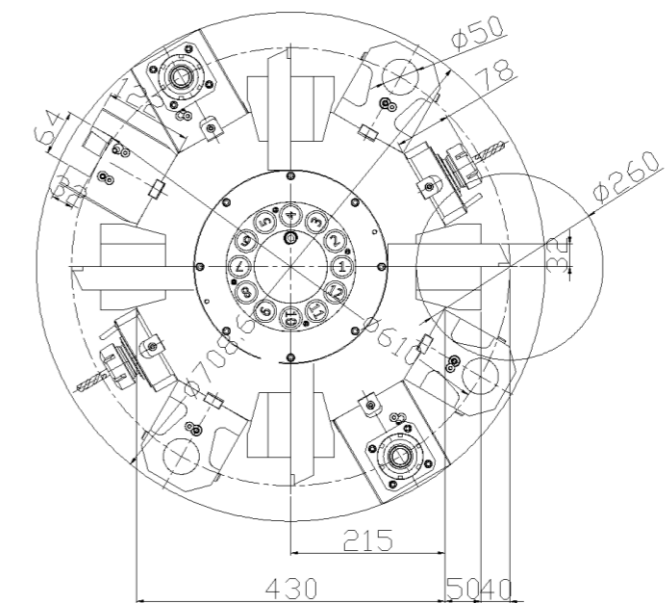


### Tool Interference Diagram

D-VL650

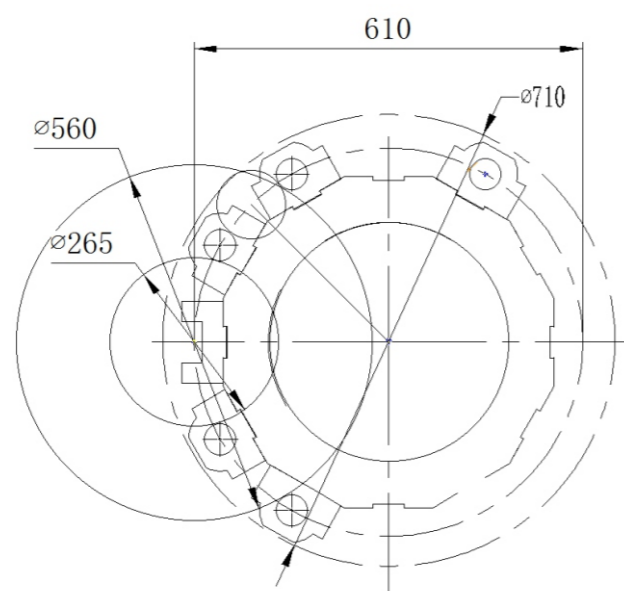


D-VL650M

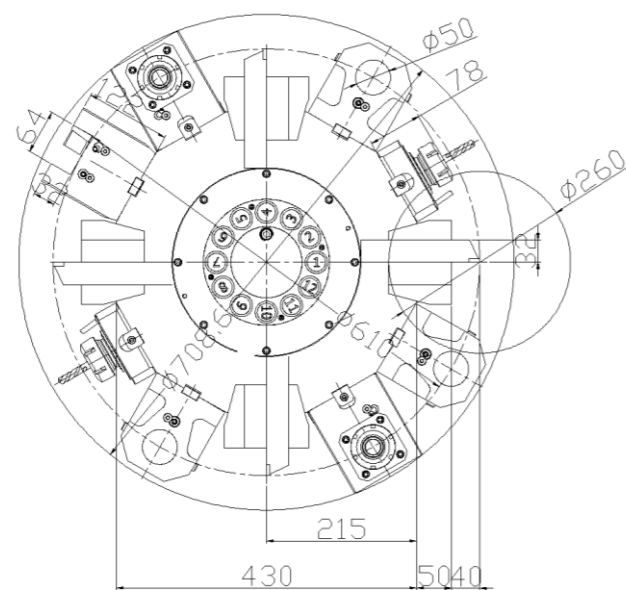


## Tool Interference Diagram

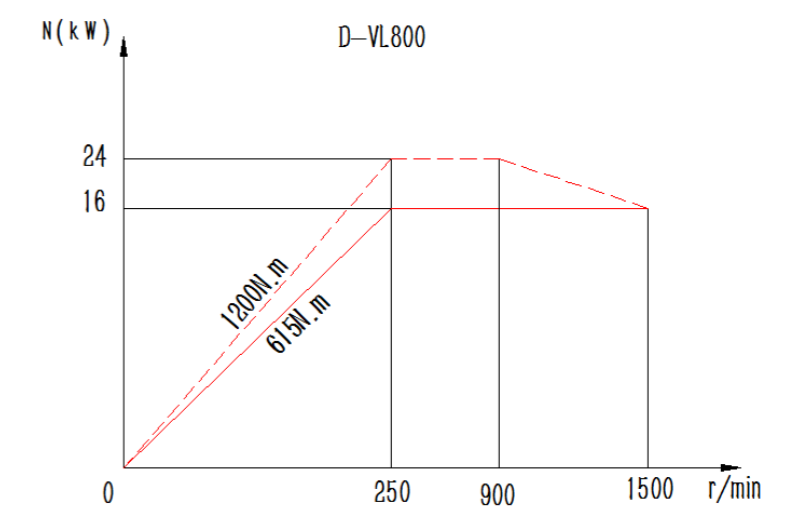
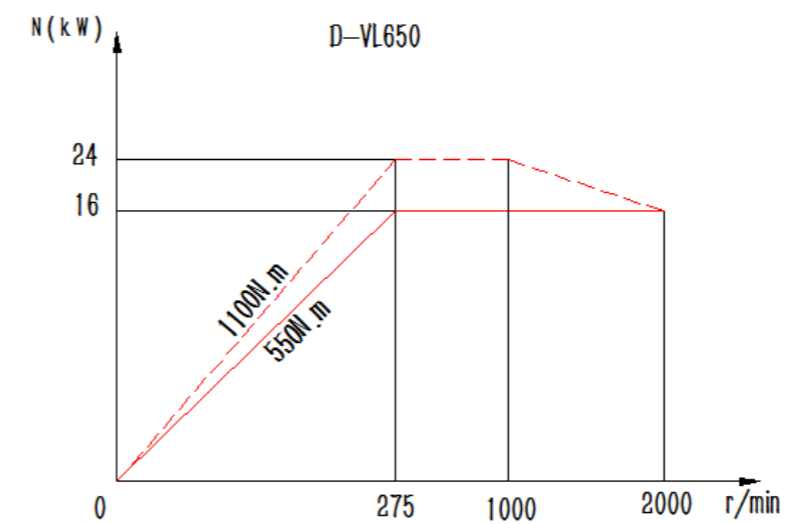
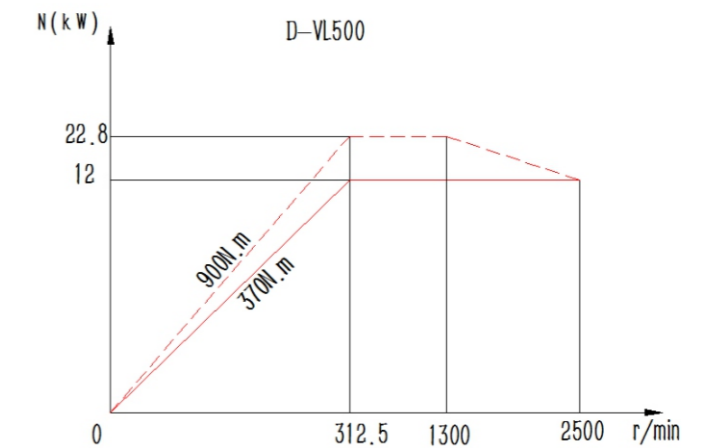
### D-VL800



### D-VL800M



## Power Torque Diagram

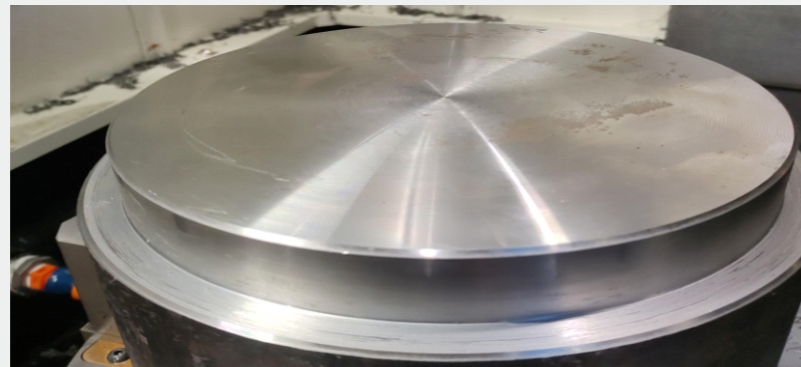




## Processing test comparison (all are on-site proofing data)

Item 1: Torque rough machining test						
Heavy cutting test, the processing material is No. 45 steel, the outer diameter is 208						
Tool angle/arc	Spindle speed	Feed (G95)	Cutting amount per side	Processing size	Spindle load	Processing conclusion
80 degree external circular cutter/R0.8	S220	F0.25	5MM	Ø198X25	88%	There is no abnormal noise during processing, the blades are not worn, the machine does not vibrate, and the load is normal.
			6MM	Ø186X25	93%	

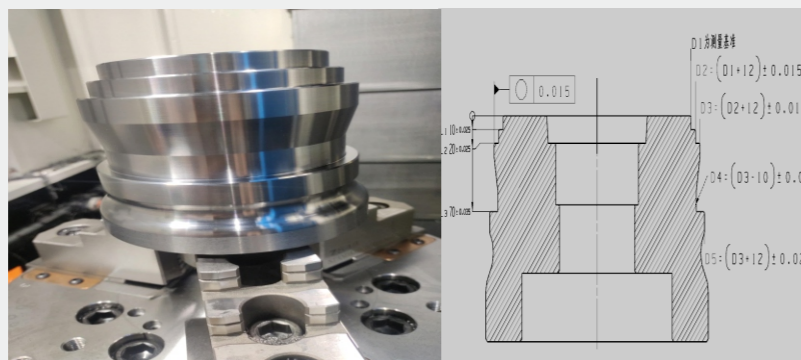
The drawing of rough turning machining test piece is as follows



Item 2: Contour machining test			
Material machined: 45# steel, outer diameter: D136, S400, F0.05, 35° rough turning cylindrical tool			
Test items		Tolerance race	Test results
Roundness	D1	0.015	0.0022
	D2	±0.02	0.0019
Diam	D4		0.0037
Length	L1=10	±0.025	9.9937
	L2=20		19.9933

After the machine tool is processed, a three-dimensional data measurement is performed. The detection accuracy is within the allowable tolerance range. The end face and outer circular tool lines are clear and delicate, and the arc connection has no contact marks.

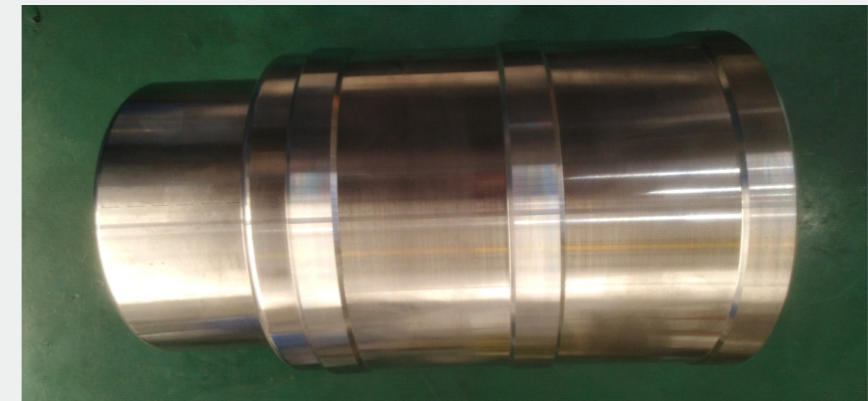
The drawing of contour machining test piece is as follows



Item 3: Machining test of roundness and cylindricity			
Material machined: C45 steel, outer diameter: D136, S250, F0.05, 60° cylindrical tool			
Test items	Inspection tools	International value	Measured value
Upper circle	Three coordinates	0.007	0.0022
Middle circle	Three coordinates	0.007	0.0017
Lower circle	Three coordinates	0.012	0.0012
Medium and upper cylindricity	Three coordinates	0.012	0.0026
Medium and lower cylindricity	Three coordinates	0.012	0.0024

Through the outer circle processing test, there are no vibration marks, the knife marks are fine and smooth, and the roundness and cylindricity are OK.

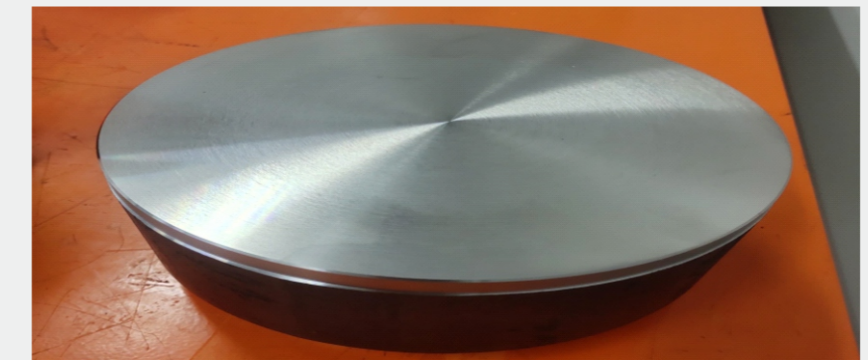
The drawing of cylindrical machining test piece is as follows

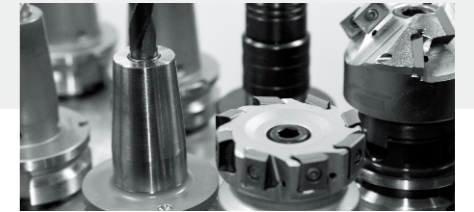


Item 4: Flatness machining test	
Materials machined: C45; Outer diameter: D200, S300, F0.08	
National reference value	Measured value
□00.012fovea	□0.0061fovea

Through the end-face processing test, there is no vibration mark, the knife pattern is clear and delicate, and the flatness and concave center are OK.

The drawing of flatness machining test piece is as follows





## Technical Parameters

		D-VL500/D-VL500M		D-VL650/D-VL650M		D-VL800/D-VL800M	
<b>Processing Range</b>	Max rotation diameter	mm	650	800	950		
	Max turning diameter of over-slip saddle	mm	500	650	800		
	Max workpiece height	mm	500	600	800		
	Max workpiece weight	Kg	800	1200	1500		
<b>Spindle</b>	Chuck diameter	inch	12" (Hydraulic chuck)	15" (Hydraulic chuck)	18" (Hydraulic chuck)		
	Range of rotation	r/min	50~2500	50~2000	50~1500		
	Max torque	Nm	900	1100	1200		
	End type	/	A2-8	A2-11	A2-11		
	Centering bearing diameter	mm	130	160	200		
	Main motor power	KW	S1=12,S2=22	S1=16,S2=24	S1=16,S2=24		
<b>Tool post</b>	Tool turret type	/	Horizontal (Vertical)	Horizontal	Horizontal (Vertical)	Horizontal	Horizontal
	Capacity	/	8 (6)	12	8 (6)	12	12 (6)
	Drive mode	/	Hydraulic	Servo	Hydraulic	Servo	Hydraulic
	Spec. of tool handle	mm	32×32	32×32	32×32	32×32	32×32
	Internal hole tool holder diameter	mm	φ50	φ50	φ50	φ50	φ50
<b>Feed</b>	X, Z axis feed guide rail pair	/	Linear Guides	Linear Guides	Linear Guides		
	X, Z axis feed guide rail range	mm/min	0.1~1000	0.1~1000	0.1~1000		
	X/Z axis tool speed	m/min	20/16	20/16	20/16		
	X-axis horizontal travel	mm	-20~315	-20~390	-20~465		
	Z axis vertical travel	mm	520	620	820		
	X,Z axis motor torque	Nm	12/22	22/30	22/30		
<b>Processing capability</b>	Power head motor	KW	/	5.5	/	5.5	/
	Max drilling capacity	mm	/	Φ20×0.2	/	Φ25×0.25	/
	Max tapping capacity	mm	/	M16×2/M27×1.5	/	M18×2.5/M27×2	/
	Max slotting capacity	mm	/	Φ25×15×40	/	Φ30×20×40	/
<b>Other</b>	CNC system	/	Taikan	Siemens	Taikan	Siemens	Taikan
	Total capacity of power supply	kVA	45	50	50	55	50
	Cooling water tank capacity	L	300	360	360	360	
	Area occupied (length x width)	mm	1750×3050	2250×3150	2600×3450		
	Machine height	mm	2600	3550	350		
	Machine weight (approx.)	T	6.5	7	8.5	9	10.5

## Technical Configuration

	D-VL500/D-VL500M	D-VL650/D-VL650M	D-VL800/D-VL800M
Solid chuck 12 inches-A2-8	●	△	△
Solid chuck 15 inches-A2-8/A2-11	○ (A2-8)	● (A2-11)	△
Solid chuck 18 inches-A2-11	△	○	●
Solid chuck 21 inches-A2-11	△	○	○
Solid chuck 24 inches-A2-11	△	△	○
FANUC-0I-TF (5)	○	○	○
FANUC-0I-TF (1)	○	○	○
Taikan	●	●	●
Siemens	○	○	○
Electric cabinet air conditioner	●	●	●
Water gun	○	○	○
Gas gun	○	○	○
Renishaw tool setter	○	○	○
Renishaw probe (OMP40)	○	○	○
Safety door lock	●	●	●
Automatic door	○	○	○
Oil mist collector	○	○	○
Oil-water separator	○	○	○
Foot switch	●	●	●
Chuck hard jaw	○	○	○
Vertical tool turret	○	○	○
Iron filings cart	●	●	●
Cooling chip conveyoor	●	●	●
Fully enclosed protection	●	●	●
Working lamp	●	●	●
Tricolor warning light	●	●	●
Hollow screw	○	○	○

● Standard configuration ○ Option ▲ Need consultation △ Not support

All pictures and parameter configurations in this album are for reference only. The products delivered shall prevail. Our products are being constantly upgraded, and the above information is subject to change without prior notice.

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CNC vertical turning (milling) machine

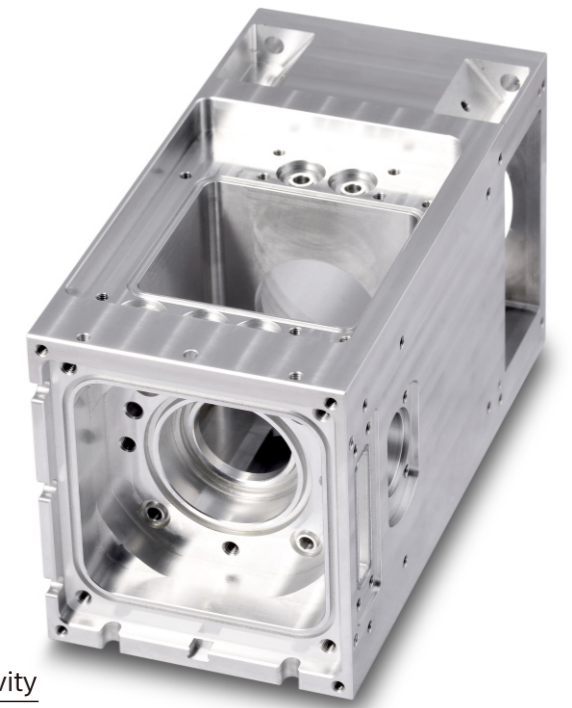
**D-VL1250C/D-VL1250CM**

**D-VL1600C/D-VL1600CM**

- ★ It is widely used in high-precision turning of rotary parts in automobiles, bearings, wind power, ships and other mechanical processing industries.
- ★ Targeted at processing ferrous and non-ferrous metal parts, it can meet the processing needs of different industries. Its good performance-price ratio is the perfect choice for domestic and foreign customers.



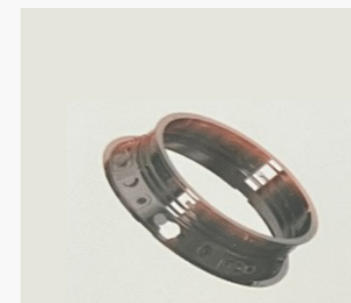
High speed  
High precision  
High efficiency



Collimation cavity

Diversified application areas

Impellers, Precision moulds, Medical device, Automated parts, Aerospace parts, Die casting



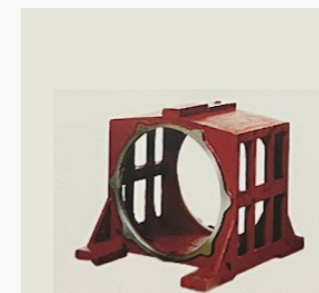
Impeller



Combination pattern inserts



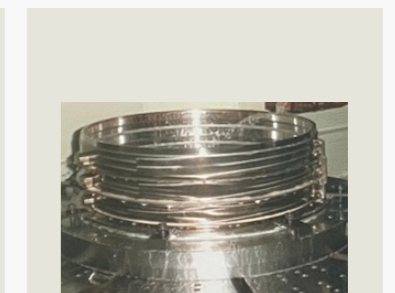
Locating ring



Car light pattern inserts



Medical parts



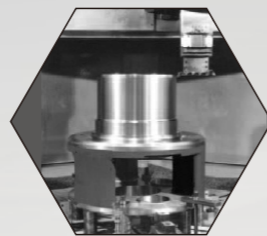
Hydraulic valve body

## CNC vertical turning (milling) machine

### Equipment structure technical description

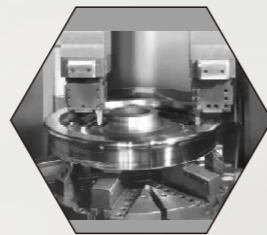
#### ★ Machine structure

The overall layout of the machine tool is a seated, thermally symmetrical structure. The basic large parts are all cast from high-strength cast iron materials. After proper annealing treatment, internal stress is eliminated, so that the machine tool can obtain high rigidity and stable accuracy. The main castings have undergone finite element analysis, and the rib layout is reasonable to fully meet the needs of high-torque cutting of machine tools.



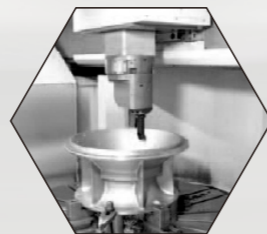
#### ★ Worktable

The worktable adopts high-precision rolling guide rails and high-precision double-row short cylindrical roller bearings for centering in the radial direction. The radial clearance is adjusted to ensure high-precision rotation of the workbench. Thrust ball bearings are used as rolling guides in the axial direction and are preloaded to ensure the rotation accuracy of the workbench and improve the load-bearing capacity and service life.



#### ★ Ram

The ram is the square steel ram with a large cross-section (220 x 220mm), which is provided with a turning broach spindle, thus realizing the automatic broaching and loosening. The sliding column is made of high-quality alloy forged steel material. After grinding and heat treatment, it ensures heavy cutting of the lathe and shows high rigidity and high precision of the lathe.



#### ★ Feed guide rail

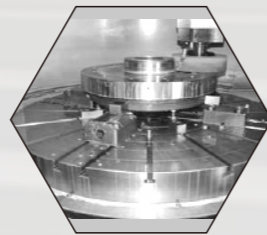
The crossbeam guide rail (X-axis) adopts inlet heavy-duty roller linear guide rail, which has low friction, strong load-bearing capacity, small high-speed vibration, no crawling at low speed, and high positioning accuracy; the ram guide rail (Z-axis) adopts four-sided surround type alloy steel-plastic-coated guide rail has good vibration absorption, ensuring stable cutting during processing, especially suitable for strong cutting with spindle extension.

#### ★ Feed drive

Both the X and Z feed axes are driven by Siemens feed motors, which have good stability and reliable operation. The X-axis and Z-axis adopt precision ball screw direct drive structure.

#### ★ Floor-standing tool magazine

The machine tool is equipped with a turning tool magazine, and the ram is equipped with a BT type broach spindle, which automatically replaces the turning tool holder, improving the reliability of the machine tool and the accuracy of tool change.



#### ★ Cooling and chip conveyor

The machine tool is equipped with a semi-enclosed protective cover, cooling water tank and chip conveyor.

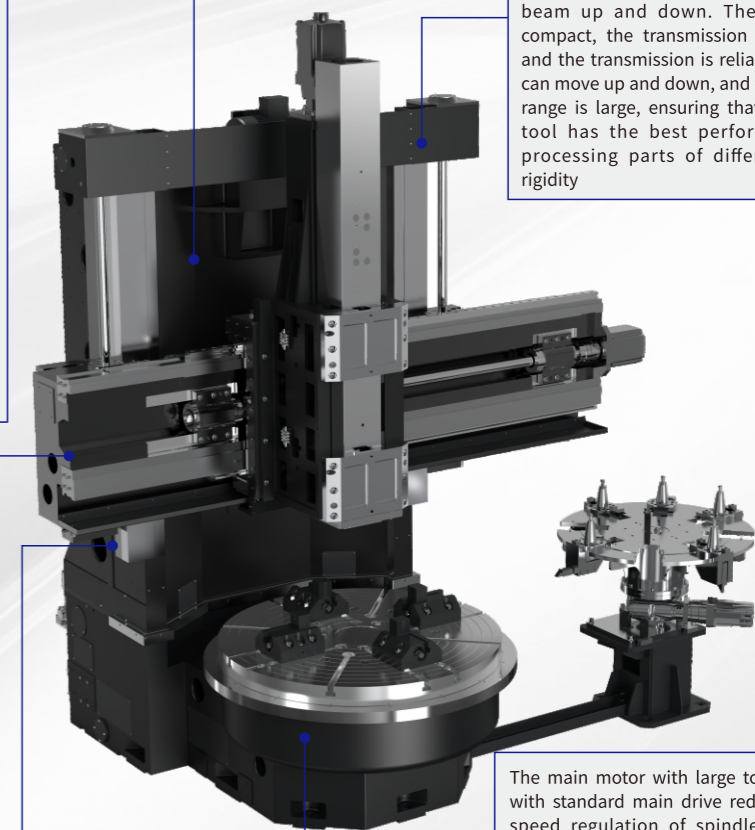
## CNC vertical turning (milling) machine

### Equipment structure technical description

The body castings are made of high-grade cast iron, and upon aging treatment, the accuracy and stability of the lathe are ensured. The column and cross beam shall be the structure of closed box, which improves the overall stability of the lathe and provides guarantee for heavy cutting.

The cross-beam adopts a large-size cross-section design, which is combined with the pre-deformation process during the processing to enhance the bending and torsional stiffness of the cross-beam and ensure the stability of cutting. An independent sliding composite guide rail design, the guide rail surface is a straight line, has low friction and reduces the relative pressure; the load-bearing direction is the sliding guide, which has good anti-vibration performance and large load-bearing capacity; it can achieve long-term stable accuracy and good vibration reduction effect.

The beam lifting structure uses a worm gear drive to drive the screw to move the beam up and down. The structure is compact, the transmission ratio is large, and the transmission is reliable. The beam can move up and down, and the processing range is large, ensuring that the machine tool has the best performance when processing parts of different heights. rigidity



The moving of the cross beam shall be subject to grading positioning, which ensures the machining within the shortest extending length of the ram and improves the machining accuracy.

The main motor with large torque, and provided with standard main drive reducer, which realizes speed regulation of spindle width and heavy cutting. Worktable with large torque, high-precision thrust ball bearing is used as rolling guide rail in axial direction and double-row cylindrical roller bearing is used for centering in radial direction, which improves the service life and precision. The worktable lubrication of the driving gear and bearing is supplied to each part through the cooling device, which reduces the temperature and thermal deformation.

## Processing test comparison (all are on-site proofing data)

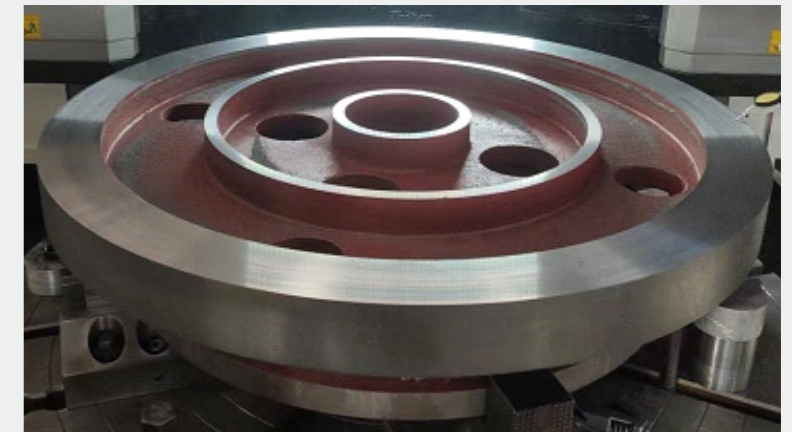
Item 1: Torque rough machining test						
For heavy cutting test, the processing material is cast iron HT200, with an outer diameter of 1400.						
Tool angle/arc	Spindle speed	Feed (G95)	Cutting amount per side	Processing size	Spindle load	Processing conclusion
80 degree external circular cutter/R0.8	S30	F0.2	4MM high grade	Ø1410X100L	30%	There is no abnormal noise during processing, the blades are not worn, the machine does not vibrate, and the load is normal.
			5MM high grade	Ø1410X100L	15%	

The drawing of rough turning machining test piece is as follows



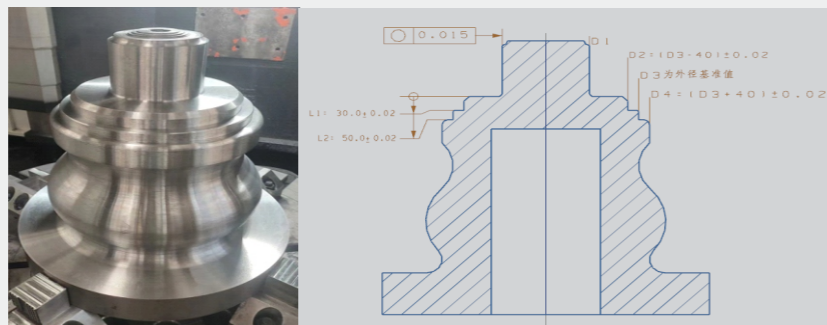
Item 4: Flatness machining test	
The material machined is cast iron HT200, with an outer diameter of φ1070, S80, F0.05	
National reference value	Measured value
□0.03	□0.021
Through the end-face processing test, there are no vibration lines, the lines are clear and delicate, and the flatness and concave center are OK	

The drawing of cylindrical machining test piece is as follows



Item 2: Contour machining test			
The material machined is cast iron HT200, with an outer diameter of 380, S160, F0.05			
	Test items	Allowable difference	Test results
Roundness	D1	0.015	0.005
	D2	±0.02	-0.018
Diameter	D4		0.006
	Length	L1=30	±0.02
L2=50		50.001	
After the machine tool processing is completed, three-dimensional data measurement is carried out. The detection accuracy is within the allowable tolerance range. The end face and outer circle knife lines are clear and delicate, and the arc connection has no knife marks.			

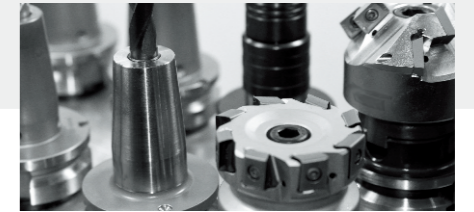
The drawing of contour machining test piece is as follows



Item 3: Machining test of roundness and cylindricity			
The material machined is cast iron HT200, with a machining outer diameter of 220X600, S90,			
Test items	Inspection tools	International value	Measured value
Upper circle	Three coordinates	0.01	0.003
Middle circle	Three coordinates	0.01	0.002
Lower circle	Three coordinates	0.01	0.001
Medium and upper cylindricity	Three coordinates	0.02	0.005
Medium and lower cylindricity	Three coordinates	0.02	0.008
Through the outer circle processing test, there are no vibration lines, the lines are fine and smooth, and the roundness and cylindricity are OK.			

The drawing of flatness machining test piece is as follows





## Technical Parameters

		D-VL1250C/D-VL1250CM		D-VL1600C/D-VL1600CM		
Processing Range	Max turning diameter	mm	1250		1600	
	Max workpiece height	mm	1000		1000	
	Max workpiece weight	Kg	5000		8000	
	Worktable diameter	mm	1100		1400	
	Range of rotation	r/min	3.15~400		2.15~315	
Spindle	Feed and indexing ranger/m	r/min	0.004~2		0.004~2	
	Max torque of worktable	kN·m	8	20	10	20
	Main motor power	Kw	S1=31,S2=37	S1=31,S2=37 (2 set)	S1=31,S2=37	S1=31,S2=37 (2 set)
Tool post	Tool holder type	/	Turning center	Turning center	Turning center	Turning center
	Ram cross section	mm×mm	220×220	280×280	220×220	280×280
	Capacity	/	8 or 12	8 or 12	8 or 12	8 or 12
	Spec. of tool handle	mm×mm	32×32	40×40	32×32	40×40
	Interface type	/	BT50	BT50	BT50	BT50
		X axis feed guide rail pair	/	Hard rail/linear guide rail	Hydrostatic guide	Hard rail/linear guide rail
	Z axis feed guide rail pair	/	Hard rail	Hydrostatic guide	Hard rail	Hydrostatic guide
Feed	X/Z axis cutting feed range	mm/min	1000		1000	
	X/Z axis tool speed	m/min	12/10		12/10	
	X axis horizontal stroke	mm	-50~850		-50~850	
	Z axis horizontal stroke	mm	1000		1000	
	X/Z axis motor torque	Nm	37/25		37/25	
Cross beam	Stroke	mm	600		600	
	Positioning Pitch	mm	200		200	
	Graded Positioning Number	/	4		4	
Milling spindle	Motor Power	Kw	/	S1=31,S2=37	/	S1=31,S2=37
	Speed	r/min	/	10~2000	/	10~2000
	Taper Hole	/	/	Bt50	/	Bt50
	Max.torgue	N·m	/	1200	/	1200
Other	CNC system	/	Taikan	Siemens	Taikan	Siemens
	Total power capacity	kVA	75	85	75	85
	Cooling water tank capacity	L	600		600	
	Area occupied (length x width)	mm	5550×3550		5550×3550	
	Machine tool height	mm	4650	6450	4650	6450
	Machine weight (approx.)	T	21	25	24	28

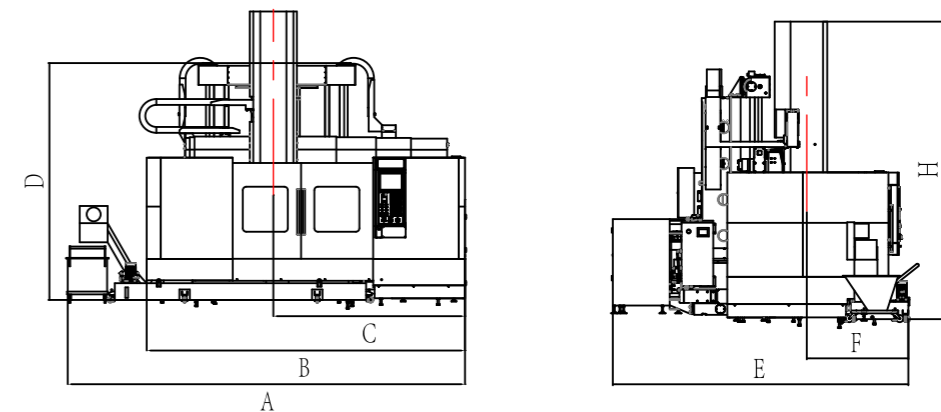
All pictures and parameter configurations in this album are for reference only. The products delivered shall prevail. Our products are being constantly upgraded, and the above information is subject to change without prior notice.

## Technical Configuration

Taikan CNC system	●
Feeding system semi-closed loop	●
Semi-enclosed protective cover for the whole machine	●
Turning cooling	●
Chip conveyor and chip cart	●
8-station tool magazine (turning center)	●
Automatic lubrication system	●
Tricolor warning light	●
Lighting lamp	●
FANUC OI CNC system/Siemens CNC system	○
Fully closed loop grating ruler	○
12-station tool magazine	○
Motorized spindle grinding head accessories	○
Tool measuring device	○
Workpiece measuring device	○
Oil-water separator	○
Capto turning tool chuck	○
Electromagnetic chuck	○
Hydraulic chuck	○

● Standard configuration ○ Option ▲ Need consultation △ Not support

## Overall Size



Model	Size	A	B	C	D	E	F	H
D-V L1250C		5500	4350	2550	3400	4000	1250	4750
D-V L1250CM		5500	4350	2550	3500	4200	1350	6550
D-V L1600C		5700	4560	2700	3400	4100	1250	4750
D-V L1600CM		5700	4560	2700	3500	4300	1450	6550