G-VU1530B Double Column Machining Center

1.Equipment technical description

G-VU1530 double column machining center (3+2 five-axis non-linkage) is mainly used for processing complex parts, processing aluminum and its alloys, and processing difficult-to-machine materials. It can process complex spatial surfaces with high precision and efficiency.

- **The whole machine structure:** the machine adopts the double column frame fixed, the worktable moving structure. The foundation large parts are made of high quality resin sand molding and high strength cast iron material, so that the machine can get high rigidity and stable accuracy. The main castings have been analyzed by finite element analysis, and the grid layout is reasonable, which fully meets the needs of high torque cutting of the machine tool.
- **Spindle:** The spindle unit adopts mepro T70.5 five-axis linkage A/C double swing milling head, which can realize five-axis machining of complex curved surfaces. Through high-precision encoders and hydraulic tensioning systems, the A and C axes can be clamped at any angle within the operating range (C axis ±360°, A axis ±110°). The standard 18000rpm electric spindle can perform high-precision, fast and continuous cutting (see the below picture).

- **Guideways:** The bed guideways (X-axis), beam guideways (Y-axis) and ram guideways (Z-axis) all adopt imported heavy-duty roller guideways, which have low

friction, strong load-bearing capacity, low high-speed vibration, and no crawling at low speeds. High positioning accuracy. The crossbeam guide rail adopts a stepped arrangement to increase the guide rail span and improve the load-bearing capacity. It has good load-bearing performance and ensures stable cutting during processing.

- **Drive:** The three feed axes of X, Y and Z are all driven by feed motors, which have good stability and reliable operation. The X-axis and Y-axis use large-lead ball screw drive structures; the Z-axis uses a motor directly connected to the ball screw, and the Z-axis uses a nitrogen balance cylinder to balance the weight of the ram.
- **System:** Equipped with a high-performance SIEMENS 828D CNC system to ensure the stability of machine tool control and the CNC processing functions and auxiliary functions required by users.
- **Working conditions:**

（1） Power supply: three-phase AC 380V±10%; 50Hz±1Hz; the machine tool should have reliable grounding: the grounding wire is a copper wire ≥25mm^2; the grounding resistance is <4Ω.

（2） In order to keep the static accuracy of the machine tool within the guaranteed value range, the machine tool should be installed in an area not affected by air flow. It is necessary to keep the surrounding temperature between 17℃~25℃, the humidity between 40% and 75%, and The ambient temperature change within 24 hours should be within ±2°C, and the ambient temperature change from the ground to about 5 meters high should be maintained within 2°C.

（3） If the requirements for the parts being processed are not high, the ambient temperature range can be relaxed to 10°C ~ 40°C.

（4） Keep away from light sources, vibration sources and heat sources, and away from high-frequency generators, discharge motors, welding machines, etc. to avoid electrical interference that may cause the machine tool NC system to malfunction.

（5） If the voltage in the area where it is used is unstable, the machine tool should be equipped with a regulated power supply to ensure the normal operation of the machine tool.

（6） In order to ensure the normal operation of the equipment, if the compressed air source does not meet the cleanliness requirements, an air source purification device (dehumidification, oil removal, filtration) should be added before the air intake of the machine tool.

（7） In order to maintain the accuracy and stability of the machine tool, the foundation must be made in strict accordance with the requirements of the foundation map provided by the company. When the user chooses to sink the machine tool, the user-made protective covers and support parts for the foundation anti-seismic ditch and sinking pit; our company provides the necessary technology support.

2. Equipment parameters

Name		Unit	Parameters	Remark
Processing range	X axis	mm	3200	
	Y axis	mm	2700	
	Z axis	mm	1000	
	Distance from spindle end face to worktable	mm	100～1100	
	Spindle swing arm length	mm	329.2	
	Effective door width	mm	2450	
Worktable	Size	mm	1500*3000	
	Max load	Kg	10000	
	T-shaped slot	mm	28	
Spindle	Spindle motor power	KW	30	
	Spindle speed	rpm	18000	
	Output torque	Nm	72Nm-S1, 85Nm-S6	
	Taper	mm	HSK-A63	
	A-axis swing angle		±110°	
	C-axis swing angle		±360°	
	Max.A/C axis rotation	rpm	60	
Speed	Cutting feed speed range	mm/min	10000/10000/10000	
	X, Y, Z axis rapid movement speed	mm/min	15000/15000/15000	
Precision	Positioning accuracy（X/Y/Z）	No grating	0.027/0.024/0.016	
		With grating	0.023/0.021/0.014	
	Repeat positioning accuracy（X/Y/Z）	No grating	0.017/0.014/0.012	
		With grating	0.015/0.013/0.011	
	Positioning accuracy（A/C）		8″（VD13441）/8″（VD13441）	

	Repeat positioning accuracy（A/C）			4″（VD13441）/4″（VD13441）	
Other	Z-axis counterweight			Oil pressure + nitrogen balance	
	CNC system			SIEMENS 828D	
	Air	Flow	L/min	500	
		Air pressure	MPa	0.6~0.8	
	Cooling box volume		L	750	
	Machine tool appearance dimensions		mm	7800*6100*6000	
	Machine tool sheet metal protection		Set	Fully protective sheet metal	No cap

3、Equipment standard configuration

No.	Item	No.	Item
1	CNC System： SIEMENS 828D	13	Hydraulic station
2	15-inch monitor	14	Five-axis double swing milling head (electric spindle)
3	Handheld operating unit	15	Crossbeam guide rail protective cover
4	Hanging operation panel	16	Bed guide rail protective cover
5	Pneumatic system	17	Three-color signal light
6	Clean airgun	18	lighting device
7	Automatic lubrication system	19	Electric cabinet air conditioner
8	Spindle cooling system	20	Ram Nitrogen Balance System
9	Workpiece cooling system	21	Basic installation kit
10	Chain plate chip conveyor + chip collecting car	22	Technical documents
11	Spiral chip conveyor		
12	Gearbox cooling system (oil cooling)		

4、Customer chooses configuration

4.1 CNC System

No.	Item	Whether to choose	Remark
1	FANUC 0I-MF PLUS (1) System	□	High-end mold processing
2	(A02B-0304-R522; A02B-0304-J998 inclined surface processing and 3D hand wheel return function)	□	If you select this option, you must also select the FANUC 0I-MF PLUS(1) system

2. Brands of main parts of equipment

No.	Item	Brand	Remark
1	Controller system	SIEMENS	GERMAN
2	Spindle unit	mepro	Domestic
3	Ball screw	PMI/HIWIN	Taiwan
4	Screw bearing	NSK	Japan
5	Guideways	PMI/HIWIN /INA	Taiwan/Germany
6	Lubrication system	BAOTENG	Domestic
7	Main pneumatic components	SMC	Japan
8	Spindle water cooler machine	Saiyang	Domestic
9	Electrical cabinet air conditioner	Tongfe	Domestic
10	Main electrical components	Schneider	France

Note: The manufacturer reserves the right to replace the product with the same brand

3. Equipment recommended oil and grease table

Use widgets	Name	Capacity	Recommended oil		Remark
hydraulic station	Anti-wear hydraulic oil	5.5L	Shell: TELLUS S2 M32	Winter	Replace it after 3 months of initial use; replace it every 6 months thereafter
			Great Wall: L-HM 32; Shell: TELLUS S2 M32	Summer	
spindle cooler	Anti-wear hydraulic oil	40L	Shell: TELLUS S2 M32	Winter	Replace it after 3 months of initial use; replace it every 6 months thereafter
			Great Wall: L-HM 32; Shell: TELLUS S2 M32	Summer	

A/C axis water cooler	Antifreeze coolant	40L	BASF (BASF): Gulishun G48; Mobil: -45℃ antifreeze coolant		Replace it after 6 months of initial use; replace it every 12 months thereafter
Lubrication pump	Extreme pressure lithium grease	2L	Great Wall: 00#; Shell: Gadus S2 V220 00#	Winter	Refill when the oil level is below the minimum level line
			Great Wall: 00#; Shell: Gadus S2 V220 00#	Summer	