

All-electric Servo CNC Turret Punching Technical Solution





CATALOG

01

Company profile

02

Main performance features

03

Drive Mechanism

04

Feeding Mechanism

05

Workbench Top

06

Control System

07

Programming Software

盛通科技



Enterprise Introduction



Enterprise Introduction



Location: Qingdao Shengtong Mechanical Technology Co., Ltd., located in the beautiful New National Economic Zone (Qingdao West Coast New Economic Zone), is adjacent to the Qingdao West Railway Station to the west and Qingdao International Airport at the back. The traffic is very convenient.

Product: The company, established in 2006, is a high-tech enterprise with over ten years of experience in the R&D and production of CNC punch. The company specializes in the production of CNC turret punch (customizable), CNC bending machines and CNC feeders. The company has built up strong technical strength and has a complete range of processing equipment based on the persistence. It has had a perfect technical R&D system and the remarkable innovation capability.

Honor: With rich industrial manufacturing heritage, mature manufacturing process, strict management system and mutual development concept, the company has maintained a strong development momentum for more than ten years. It is a domestic CNC machinery enterprise and a qualified management enterprise. It is the first one to pass the ISO 9001:2000 international quality system certification and has a number of patented technologies.

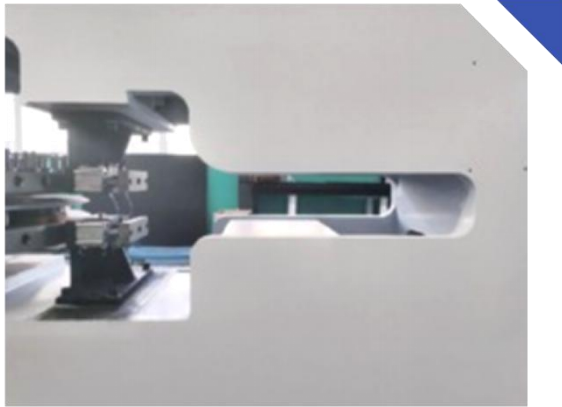


01

Main Performance Features



Main Performance Features



The frame adopts an “0” shaped (closed) structure and is welded with steel plates. The steel plates have undergone strict material analysis to ensure the quality. It is designed according to the scientific movement mechanics. The main board and internal stiffeners are reasonably designed to ensure the overall stability of the frame.



The whole frame is tempered at high temperature in an electric furnace to completely eliminate the internal stress generated by welding, enhance the frame stability and avoid deformation. The end of the frame throat is uniquely designed to reduce the throat height and increase the frame strength to effectively ensure the frame stability and the press tonnage.



The mounting surfaces and mounting holes of the guide rail, lead screw, cutter head, positioning cylinder and drive mechanism are clamped by a large CNC floor type boring machine to ensure the flatness, parallelism and verticality of each machined surface and the assembly accuracy of each part to improve the processing accuracy.

02

Punching Assembly



Punching Assembly



The power head is welded with steel plates tempered at high temperature. The crankshaft, connecting rod and punch head are made of 45# round steel. The whole assembly is equipped with tin bronze bushings and unique oil grooves. The high-pressure oil pump is used to circulate and filter the oil to ensure sufficient lubrication. So it is with high strength and wear resistance.



High-power hollow shaft servo motor is used to output power and the crankshaft is connected to the servo motor as a whole to avoid misalignment and delay. The direct-drive punching operation is highly stable and fast adopted with swing method. The angle can be selected automatically. The servo drive controller is specially programmed based on the drive control technology of British BT company. The core components are all imported from abroad with high precision and stability.



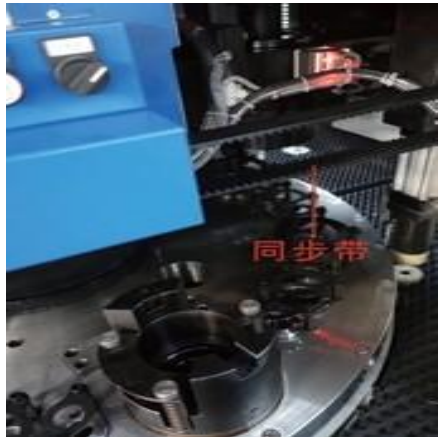
The servo motor is oil-cooled by using the oil cooler, which has the advantages of low temperature rise and high overload capacity. It solves the problem of frequent replacement of coolant in cold areas in winter.

03

Drive Mechanism



Workstation



- ❑ The cutter head is made of 45# carbon steel. The special fixture is used to process the positioning holes in pairs. The built-in cutter head structure is adopted, which ensure the guide stability of the mold. The company is equipped with a large imported (Hexagon, Sweden) three-coordinate measuring instrument and the cutter head is assembled after passing the test.
- ❑ The turbine worm reducer and double-chain drive are used to drive the cutter head. The reducer is installed inside the fram. The cutter head is designed with an enlarged cylinder seat and two cylinders, which has can run synchronously and position stably.
- ❑ The rotary station (rotation by itself) is driven by a synchronous belt, which has the advantages of fast transmission speed, high precision and low noise.

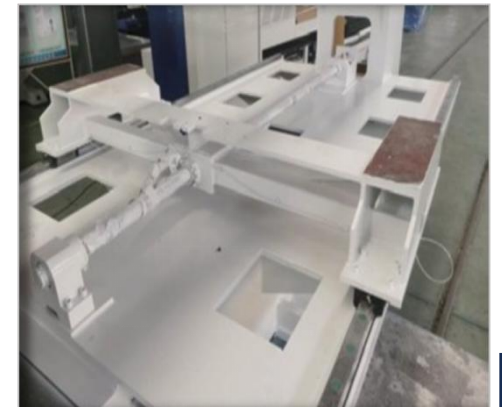
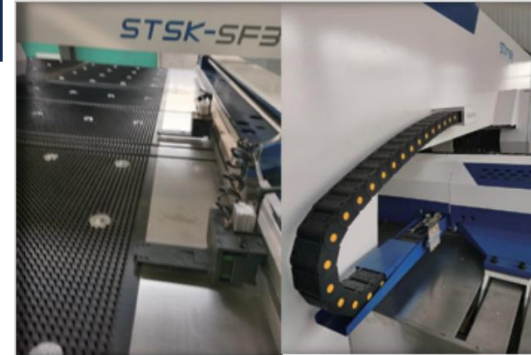
04

Feeding Mechanism



Feeding Mechanism

- ❑ The Y-axis is designed with a one-piece connecting plate and the X-axis square tube beam is designed with two guide rails. After tempering treatment, the self-weight is reduced, the operation is more stable and the positioning is more accurate. The guide rails and lead screws are imported from Taiwan. The company is also equipped with advanced laser collimator and laser interferometer.
- ❑ Floating pneumatic clamp is used with large clamping force and stable feeding capacity. The integrated dovetail carriage has good performance.
- ❑ The multi-point automatic lubrication system is adopted to ensure complete lubrication of each moving part and prevent seizing.
- ❑ All welded parts and castings are tempered to eliminate internal stress. Machined accessories are all processed in the company and assembled after passing the test, which effectively controls the machining tolerance of each component.



05

Workbench Top



Workbench Top



- ❑ The universal ball, brush and pneumatic workbench top are used to reduce the noise and vibration when the punch works, protect the surface of machined plate.
- ❑ The unique dust-proof design of the workbench top can prevent collision caused by the excessive gap, and at the same time protect the guide rails and lead screws against dust to prolong service life.
- ❑ The workbench and its top (brushless part) are protected with stainless steel, which is beautiful and durable, and at the same time prevent the plate from scratching the top.
- ❑ The data cable is protected by using the drag chain on the side of the frame, which reduces the gap of the workbenches and prevents scrapers and collision.

06

Control System



Control System

01

Network Cable Transmission

The host computer is equipped with imported motherboard and motion control card, coupled with Panasonic RTEX bus servo unit, for full closed-loop signal transmission. It avoids the signal loss, transmission delay or no signal feedback.

02

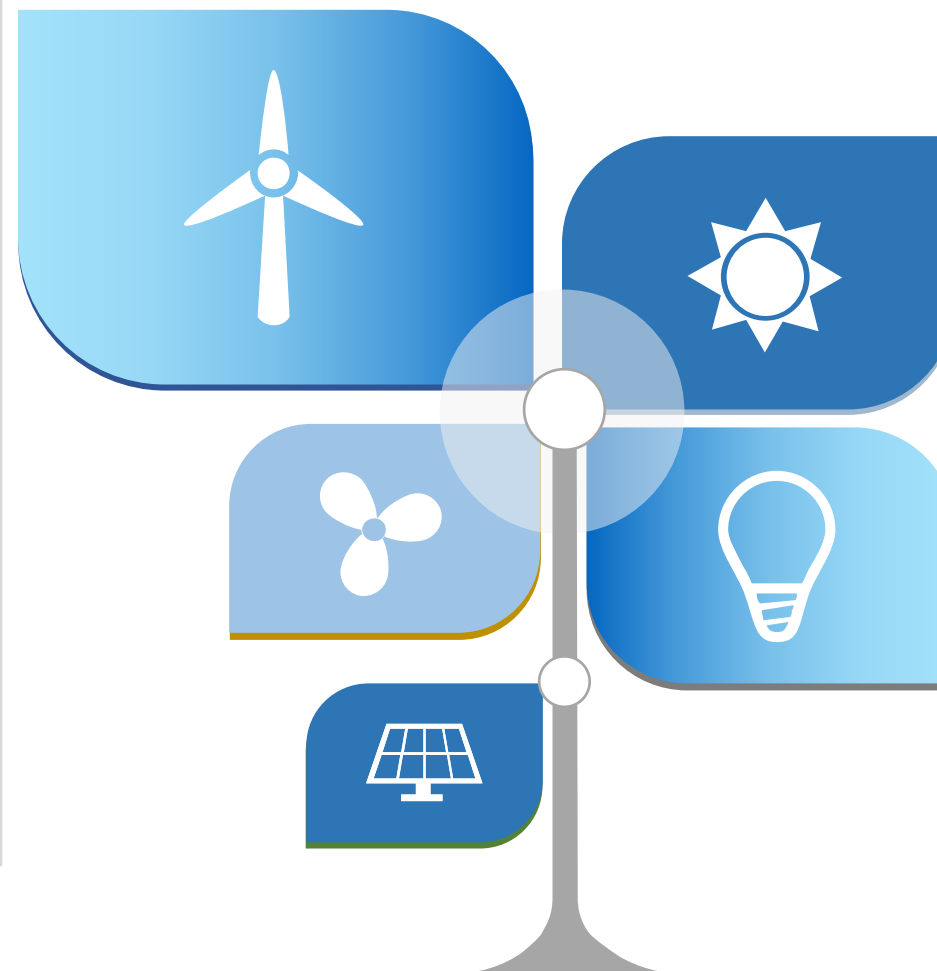
The Bus Control Mode

The bus control mode has fast communication speed and short cycle, which greatly improves the accuracy. The control signal is sent in the form of instruction packets, which have stronger anti-interference ability.

03

Network Cable Transmission

All control functions are realized through network cable transmission. The host computer control system can access or write the required information via the RTEX bus in time. The information obtained can also be exchanged with or stored in the factory management system. The host computer and the servo motor driver are connected by the bus to allow each servo motor to work optimally.



07

Programming Software



Programming Software



Automatic Parameter Matching Function

The host computer control system can automatically adjust the motor parameters according to input value, so that the equipment can work under optimal conditions.

Rolling, Conveying and Marking Functions

The punch head can be kept in a static state and the rolling, conveying and marking functions can be realized through movement.

Clamp Scanning and Protection Functions

The clamp position can be automatically detected during processing to avoid the danger of punching the clamps.

Multi-axis Linkage Function

The linkage of X/Y/T-axis and X/Y/C-axis greatly improves the processing efficiency and flexibility.

X and Y Axis Motion Locking Function

When the lifting platform goes, the X and Y axis motion locking function will be automatically enabled to prevent personal injury due to misoperation.

Parameter Backup and Recovery Functions

After the equipment is commissioned, the parameters are backed up. When the equipment has fault, you can restore it with only one key.

Custom Alarm Function

Additional protection can be added according to customer requirements, which can increase the expansibility of the equipment.

Other Detailed Drawings



Heat
Exchanger



Drive Bus
Transmission



Secondary
Positioning



Panasonic
Motor



Mold Storage
Cabinet

Technical parameter

Item	Name	parameter	unit	Remark
1	Punching force	300 (30)	KN (T)	1500Nm
2	Frame structure	“O” type closed frame		
3	Primary positioning Max machining plate size	X axis 2500	mm	X aixe secondary positioning machinable 5000mm(customizable)
		Y axis 1250/1500/2000	mm	
4	Max .machined plate thickness	6	mm	Note : The first postioning
5	Max. diameter of one punch	Φ88.9	mm	customizable
6	Max. punching frequency	1800	hpm	
7	Max.number of punches	800	hpm	
8	Number of controlled axes	5 (X、 Y、 Z、 T、 C)	pcs	
9	Mold type	Long guide 85 series international standard mold		

Technical Parameter

Item	Name	Parameter	unit	Remark
10	Turret stations distribution	16A、11B、3C、2D (Including rotary station 1B、1C)	Standard	customizable
11	Repositioning cylinder	2	set	
12	Numbles of clamps	3	pcs	
13	Max. feeding speed	X axis 80	m/min	
		Y axis 80	m/min	
14	workbench structure	Brush /universal steel ball bench top		stainless steel wrap
15	Max. turret speed	40	rpm	
16	processing accuracy	±0.1	mm	
17	Max.load bearing	150	Kg	
18	Total power	5	KW	

Technical Parameter



Item	Name	Parameter	Unit	Remark
19	Air source Pressure	0.55	MPa	
20	Power supply	380±5%	V	
21	Dimension	L×W×H: 5000/5500/6500×5200×2100	mm	

Main accessories of servo system

Item	Name	Specification	Supplier/Brand
1	Servo punch motor	55KW*350rpm (1500Nm)	Synmot,Ningbo/ FANUC
2	Drive controller	90KW	Synmot,Ningbo/FANUC
3	Filter	DL-180EBT	Synmot,Ningbo
4	Cooling tank	Volume 96L, cooling capacity 1200ml/min	Synmot,Ningbo
5	Encoder	Multiple rotary,1024 lines	Tamagawa,Janpan
6	Encoder cable	RVVP shielded twisted pair	Imported form Taiwan
7	Magnetic	Grade H	Ningbo yunsheng
8	Temperature sensor	PL3FC-312-S2-1	Janpan NTC
9	DSP	TI 28324	Rockwell ,USA
10	Mold	400A	Fuji, Janpan

Main accessories of servo system

Item	Name	Specification	Supplier/brand
11	CPLD		Alter,USA
12	PCB	SYNMOT-90KW	Taiwan,Delta
13	IPM	PM800HXS120	Mitsubishi
14	HALL		Germany.Honewell
15	Driver fan		Taiwan,Delta
16	Hall sensor	MRSS31U	Janpan.NEC
17	Input isolation reactor	180A	Shanghai,EAGTOP
18	DCL	250A	Shanghai,EAGTOP

List of Main accessories



Itme	Name	Model Number	Supplier/Brand
1	Control system (host computer)	RACK-310 workstation	Taiwan IEI/FANUC
2	Feeding , drive servo	MDMF/MDDLN	Panasonic, Japan
3	Main servo motor	SM360-30T	Synmot,Ningbo/FANUC
4	Linear guide rail	TRH30VL/45VL	Taiwan,TBI
5	Ball screw	5050	Taiwan,TBI
6	lead screw support bearing	7207C	Japan,NSK/NACHI
		6207	Japan,NSK/NACHI
7	Turntable support bearing	HR30220J	
8	Coupling	P80-114 22/35	Taiwan,Jiangxiang
9	Reducer	PBMD140	Sigriner,Germany

Item	Name	Model	Supplier/Brand
10	solenoid valve	4V220-08	AirTAC,Taiwan
		4V210-08	
11	Pneumatic element	CDQ2B 50X35	Delixi
12	Proximity switch	04-NPN	Delixi
13	Electrical parts	contactor	Schneider
		circuit breaker	Schneider