CLAMPS

The clamp unit has a large dimension, is robust and compact and is able to guarantee the correct clamping of big dimension profiles. With a simple manual movement it's possible to rapidly adjust the moveable stop to the different types of profiles, making easy the changing of shape. On the basic version the clamps are hooked by the spindle and positioned along the X axis in the position indicated by the CNC. In the "I" version a specific numerical control axis moves the clamps in an automatic and independent mode that positions the clamps in masked time. The positions are always controlled by the CAD–CAM, this means that the movement time is reduced, the positioning is accurate with zero mistakes due to the manual intervention.

Rotating 10 Positions Tool Magazine

The tool magazine is located on rear end of the moveable carriage. It has a capacity of 10 tools in the standard version that can be extended up to 16 tools (as an option). Thanks to its position the tool change operation is carried out in few seconds, optimizing the time of entire working cycle. The tool magazine can store cutter disks of a maximum diameter of 180mm.

ZERO STOPS

The zero stops define the working area of the machine, they are activated by a pneumatic cylinder that turns up and down the reference plate of the zero piece. The combination of the left stop with the right stop allows the operations on oversized profiles.

CONTROL UNIT

The control unit is located on the front part of the machine, and consists of a metal frame with pivoting wheels for easy positioning. It houses a fan less industrial PC with Ethernet communication protocol, 19" monitor, standard keyboard and mouse. In the control unit there are all the Man-Machine dialogue commands, then Run, Start and Stop buttons, Reset alarms, axis speed potentiometer and USB port.

ELECTRIC PANEL

The electrical panel is located on the left side of the machine, it is made up of a metal frame and inside there are all the electrical components that make the machine work. Specifically, we find axis drive, inverter, electronic control and all the electromechanical components of operation. The main power circuit is powered at 400VAC, while the auxiliary circuit is powered at 24VDC. All components are CE compliant and comply with the strictest directives in terms of electromagnetic compatibility. On the door of the panel there is the door lock switch for switching the machine on and off and the fans that, combined with a thermostat located inside the panel, maintain the right temperature.

P-CAM

Designed to work on 3D basis the process programming software offers the following:

- DXF Import
- 3D Profile graphics 3D
- Standard macros (hole, circle, slot, rectangle)
- Automatic clamps positioning
- Parametrized tool chart
- Parametric variables of the macros
- D.180mm milling disk management
- Angle head management

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Machining center P307

GENERAL DESCRIPTION

CNC with 4 controlled axis, designed to execute the operations of milling, drilling, threading, cutting, end milling on bars or pieces of aluminum, PVC, light alloys and steel. The, 7mt version allows to work with two different working methods: one full working area or the pendular mode with two independent working areas. The electric spindle with 8, 5 kW power in S1 with HSK-F63 cone connection, enables to also perform difficult operations common in the industrial field. In all versions the electric spindle continuously rotates along the A axis from 0° to 180° allowing to work in every position included in this range.
The machining center has a 10 position rotating magazine on the spindle for standard cutters and end milling disks. The center 8 automatic clamps that automatically move to position along the X axis by the spindle or independently by a dedicated axis (as an option).

MAIN STRUCTURES

All main structures of the machine, basement, carriage, slide, are made in electro-welded steel and accurately processed by a tool machine in order to obtain good geometric and shape tolerances. All parts made of steel are then treated by a special polyurethane bicomponent at high thickness varnish treatment that guarantees a long life against corrosion.

MAIN COMPONENTS

In the machining center there are high quality components mainly summarized in 5 parts:
1. ELECTROSPINDLE
2. MOTORIZATION
3. AXIS TRANSMISSION
4. CABLES
5. PNEUMATIC

The 4 axis head integrates the electric spindle unit that dispose of an 8.5 kW at 24.000 rpm in S1 service, the cone connection is of HSK-F63 type. Thanks to a special winding, the electro spindle has a high torque even at low revolutions, which is useful for machining even on industrial and steel profiles. For particularly heavy-duty machining requirements there is the possibility to install a liquid-cooled electro spindle with a power of 10 kW in service S1 (optional). All versions are equipped with a double lubrication nozzle that guarantees an excellent supply of lubricants to the tool during the working phase.
The motorizations mounted on the machine are of brushless type with permanent magnets. This type of motors with frequency variation offer the best compromise to execute precision and repeatability machining operations. Thanks to the digital protocol of communication with its own driver and incremental encoder with high resolution the system results highly performing and highly precise.
The transmission of the axes on the machine is divided into two types. The X axis is driven by a rack and pinion system, both components are of the highest quality being machined and then ground on both the planes and the tooth. The system used for this transmission is a helical tooting system that allows you to always have a tooth in grip between the pinion and rack. This type of system also guarantees smoother positioning and quieter operation. The Y and Z axes are driven by a screw + ball nut system of the rolled type. This system is characterized by high dynamic load capacity and excellent quality and positioning accuracy. The diameter of the screw is 25mm with 4 internal recycles.
All the transmission cables present on the machine are of the high handling type, specifically designed to be placed inside catenaries. All connections are certified and isolated from interferences. The power cables are sized according to the type of motors and all cables are insulated with internal grounding cable. The pneumatics used on the machining center are of the highest quality. The cylinders used are of the double acting type and follow the ISO 15552 standard. The solenoid valves are type 5/2, low voltage at 24Vdc. At the inlet of the system there is a filter-regulating group that calibrates the right inlet pressure and filters the inlet air, eliminating impurities and water particles present in the system.

Axis Travel and Working Speed

P307		
CORSE DI LAVORO	**AXES TRAVEL**	
ASSE X (longitudinale)	X AXIS (longitudinal)	8.180 mm — 322.05 in
ASSE Y (trasversale)	Y AXIS (transversal)	1.170 mm — 46.063 in
ASSE Z (verticale)	Z AXIS (vertical)	610 mm — 24.016 in
ASSE A (rotativo)	A AXIS (rotation)	0° ÷ 180°
VELOCITÀ POSIZIONAMENTO ASSI	**AXES POSITIONING SPEED**	
ASSE X	X AXIS	85 m/min
ASSE Y	Y AXIS	60 m/min
ASSE Z	Z AXIS	30 m/min
ASSE A	A AXIS	9000 °/min

CORSE DI LAVORO	AXES TRAVEL	P304	P307	P309
ASSE X (longitudinale)	X AXIS (longitudinal)	4.960 mm	7.960 mm	9.960 mm
ASSE Y (trasversale)	Y AXIS (transversal)	1.170 mm	1.170 mm	1.170 mm
ASSE Z (verticale)	Z AXIS (vertical)	610 mm	610 mm	610 mm
ASSE A (rotativo)	A AXIS (rotation)	0° ÷ 180°	0° ÷ 180°	0° ÷ 180°
VELOCITÀ POSIZIONAMENTO	POSITIONING SPEED			
ASSE X	X AXIS	80 m/min	80 m/min	80 m/min
ASSE Y	Y AXIS	50 m/min	50 m/min	50 m/min
ASSE Z	Z AXIS	30 m/min	30 m/min	30 m/min
ASSE A	A AXIS	9.000 °/min	9.000 °/min	9.000 °/min
ELETTROMANDRINO	ELECTROSPINDLE			
Potenza massima S1	S1 Maximum power	8.5 kW	8.5 kW	8.5 kW
Velocità massima (rpm)	Maximum speed (rpm)	24.000	24.000	24.000
Coppia massima	Maximum torque	13.5 Nm	13.5 Nm	13.5 Nm
Attacco cono utensile	Cone tool holder	HSK-F63	HSK-F63	HSK-F63
Encoder su elettromandrino per maschiatura rigida	Encoder on electrospindle for rigid tapping	O	O	O
Raffreddamento ad aria con elettroventola	Air cooling with electric fan	S	S	S
Raffreddamento a liquido	Liquid cooling	O	O	O
MAGAZZINO UTENSILI	TOOL MAGAZINE			
Cambio utensili	Tool change	Automatic	Automatic	Automatic
Numero massimo	Maximum number of tools	10	10	10
Diametro massimo fresa a disco	Maximum diameter of milling blade	180 mm	180 mm	180 mm
Capacità maschiatura *	Maximum diameter of tapping tool *	M8	M8	M8
Lunghezza max utesile caricabile sul magazzino	Maximum lenght of the tool that can be loaded into the magazine	180 mm	180 mm	180 mm
BLOCCAGGIO PEZZO	WORKPIECE CLAMPING			
Numero standard morse	Number of standard clamps	4	8	8
Numero massimo morse	Maximum number of pneumatic clamps	6	12	12
Posizionamento morse automatico tramite ASSE X	Automatic clamp positioning through spindle X AXIS	S	S	S
Posizionamento morse indipendenti	Indipendent clamp positioning	O	O	O
Battute riferimento pezzo fisse automatiche	Fixed automatic workpiece reference end stops	2	1+1	1+1
Battute riferimento pezzo centrali	Central workpiece reference stops	/	O	O
Funzionamento pendolare	Tandem operation	/	S	S
ALTRE OPZIONI	OTHER OPTIONS			
Nastro evacuazione trucioli in gomma	Rubber swarf evacuation belt	O	O	O
Tastatore lunghezza utensile	Tool detection system	O	O	O
SICUREZZE E PROTEZIONI	SAFETY DEVICES AND GUARDS			
Rete di protezione perimetrale + porta	Perimeter protection net	S	S	S
DATI GENERALI	GENERAL DATA			
Dimensioni (LxPxH) mm / in	Overall dimensions (LxPxH) mm / in	8.260x3.129x2.680 mm 326x124x106 in	11.260x3.129x2.680 mm 444x124x106 in	13.260x3.129x2.680 mm 522x124x106 in
Peso macchina complessivo Kg - lb	Overall machine weight Kg - lb	4.000 Kg 8.800 lb	5.200 Kg 11.440 lb	5.800 Kg 12.760 lb
Pressione d'esercizio	Operating pressure	7 bar	7 bar	7 bar
Consumo aria	Air consumption	165 Nl/min	165 Nl/min	165 Nl/min
Potenza installata	Installed power	15 kW	15 kW	15 kW