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Other files available for additional information regarding this machine

Spindle Hsk32 Measuring Probe Software sonda by HEXAGON Metrology Control Desk Z32 NC Software Peace

Fields of Application

There are many fields of application in which this machine can be employed and in particular:

- Construction of molds in general and in particular for footwear. In the latter case has been studied a specific system of locking of such molds from the bottom of the pallet to have no overall dimensions due to the clamping brackets. The five faces then can be processed without any limitation.
- Machining of mechanical components for small / medium size where the piece to work on the five faces in a single assembly constitutes a fundamental advantage.
- The presence of the robot loads parts and tool change with a very important number of tools allows to work 24 hours a day even without staff. In our software Peace were added special functions to ensure that on the single pallet has been assigned a machining program compatible with the work piece mounted on that pallet.

Fields of Application

View of the machine with with chip conveyor and all safety guards fitted



Structure

Grazie alla struttura particolare di questa macchina, è risultato agevole realizzarne una versioThe particular structure of this machine has allowed us to achieve in a simple way a version characterized by the fact of having 5-axis and a robot for loading workpieces and tools. The main elements that distinguish the following machine model are:

- Z-axis stroke increased to 400 mm to allow mounting of components with an increased thickness.
- Installation of an automatically-locking pallet on the table. Great care was taken to ensure that the clamping surfaces of the pallet on the work table remain extremely clean. A safety device locks in each case further processing if a chip were to be present on the floor of locking. The clamping force on the vertical plane of this device is 50 KN.
- Automatic Device replacement with 24, 12 or 20 pallet positions. In relation to the actual size of the workpiece to be handled, other solutions can be studied.
- External tool to the machine, and then in a "clean" position in relation to the work area, having 62 positions.

Ball bearing screw characteristics and translation axes guides

- XYZ axes diameter: 32 mm
- Screw pitch XYZ: 20 mm per revolution
- Material: hardened and ground steel with ceramic material nut balls
- Dimensions ball block size XZ: 25 mm
- Dimensions ball block size Y axis: 35 mm

Position transducer axes

Standard: absolute optical scales

MACHINING CENTER EC43 5 Axes with Pallet Loader

Structure

Polymeric Granite Base

This type of construction allows the maximum rigidity and absorption of vibrations caused by the machining tool



MACHINING CENTER EC43 **5** Axes with Pallet Loader

Structure

Moving Crosshead Filled with Polymeric Material Having a low Density Allows to dampen the vibration generated by the milling up to 1/10 compared to a structure wi-

thout filling



MACHINING CENTER EC43 5 Axes with Pallet Loader

Structure

Swivel Rotary Table Note the great ease of evacuation of chips combined with a compactness considerable



MACHINING CENTER EC43 5 Axes with Pallet Loader

Structure

Swivel Rotary Table Note that the table is not suspended in the back but resting on its fulcrum point



MACHINING CENTER EC43 5 Axes with Pallet Loader

Structure

X-Axis Motor

It is directly coupled to the rotating screw to obtain a better level of finish



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MACHINING CENTER EC43 5 Axes with Pallet Loader

Structure

Y-Axis Motor

To note the fact that the screw is stopped as it is the nut that is made to rotate



MACHINING CENTER EC43 **5** Axes with Pallet Loader

Structure

Swivel Rotary Table - Movements Made only with Torque Motors To reduce the current consumption and the heat generated, the tilting axis is balanced by a me-

chanical device



MACHINING CENTER EC43 5 Axes with Pallet Loader

Structure

Heat Exchangers They are used to cool the torque motors and the electrospindle



Structure

View Top of the Control Cabinet



Structure

View Bottom of the Control Cabinet



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Tool/Pallet Changer

Detail of the Tool Change The rotation of the wheel takes place with a torque motor and this for the benefit of the highest reliability



Tool/Pallet Changer

Overview Tool Changer/Pallet Changer The photo is of the version with 24 pallets cut Ø 300 to 250 mm



Tool/Pallet Changer

Overview Tool Changer/Pallet Changer The photo is of the pallet changer Ø 200 with 24 positions



Tool/Pallet Changer

Preset Tool Length in "Open Position" Note the presence of the sphere used for the qualification of the probe



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Tool/Pallet Changer

Tool Change View The exchanger arm of the tool change is common to the pallet feed arm



Tool/Pallet Changer

Pallet Change View (Pallets Ø 300 mm Cut to 250 mm)



Tool/Pallet Changer Pallet Change View (Pallet Ø 200 mm)



Specifications

Total weight	4,500 kg
Preset tool length standard accessory	
Rigid tapping standard	
Maximum workpiece thickness under the bridge	300 mm
Max torque spindle	9.3 Nm
Spindle power continuous duty (S1)	12 Kw
Maximum RPM	32,000
Tool holder Hsk40/E	DIN 69893
Net working travels	X=400, Y=400, Z=400 mm
Overall dimensions	1,080×3,000×2,130 mm
Polymeric Granite Base	

FIELD OF WORK*

Max radius hemisphere	200 mm
Maximum Cylindrical Size	Ø 380 x 155 mm
Maximum Cylindrical Size	Ø 300 x 190 mm

MAXIMUM DIMENSION OF THE PIECE IN WORK

Max radius hemisphere	255 mm

AXES

Working speed	from 0 to 30,000 mm per min
Rapid traverse rate	30 meters per min
Maximum thrust on each axis	500 N
Positioning precision (VDI 3441)	±0.008 mm
Repeatability accuracy (VDI 3441)	±0:001 mm

TOOL CHANGER

Number of tools available	62
Maximum tool Ø	34 mm
Max tool locked with standard collect Ø	16 mm
Tool change time chip to chip average	9 sec
Time to swap tools	3 sec

*Very difficult to easily define the working range of a five-axis machine. We have therefore shown a hemispherical surface and two cylindrical surfaces. The work piece to be executable by this machine must be contained by at least one of the three surfaces indicated. We are at your disposal for further information.

Specifications

ROBOT TO LOAD THE PIECES version 1

ROBOT TO LOAD THE PIECES version 2		
Number of positions	24	
Threaded holes clamping pieces	M8x16	
Dimensions	Ø 300 mm but cut sideways to 250 mm	

Dimensions	Ø 400 mm
Threaded holes clamping pieces	M8x16
Number of positions	12

ROBOT TO LOAD THE PIECES version 2

Dimensions	Ø 200 mm
Threaded holes clamping pieces	M8x16
Number of positions	24

MAIN OPTIONS

- Chip conveyor complete with rotating filter
- Probe of work piece

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EC43 5 Axes with Pallet Loader

Plan view





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