Weeke Vantech 512 x 7_12 CON1 BHP 008 CNC Machining Center

The Weeke Vantech 512 is an industrial machine designed primarily for nested based applications including routing and boring of panel stock. Materials can include woods, plastics, non-ferrous metals and composites.

Weeke's reputation for quality remains unsurpassed, as noted by their ISO 9001 manufacturing certification and exceptional volume of machines in operation today. As such, Weeke utilizes world class suppliers for procurement of critical machine components. In addition to superior components, the WoodWop programming software built into the machine is extremely strong and has proven itself on more than 15,000 installations. Weeke's insistence on high quality industrial components paired with an established software interface deliver our customer's a machine that is stable, reliable and user friendly.

The Vantech 512 is constructed on a tubular steel foundation engineered utilizing Finite Element Analysis and heavy steel gussets welded within to ensure stability. Unlike many in this machine class, the robust design and substantial mass provide a solid, vibration-free platform for the machining head.

The X, Y, and Z axes are all supported on THK style linear motion guides. THK style guides are engineered to produce straight line tracking at high travel speeds while providing outstanding stability in both the radial and lateral directions. The X axis is driven by two (2) zero-backlash, pre-loaded helically ground rack and pinion gear systems. The Y and Z axes are driven by high precision ball screw. Indramat solid state drives and digital AC servo motors are employed to power the axes.

Basic Machine

- Solid machine foundation provides the rigidity required for high speed gantry movements and machining operations.
- Gantry movable in X direction
- Cross support movable in Y and Z direction
- Paint Grey RDS 240 80 05
- Direct chip extraction at the processing unit and separate connection for the extraction device (on site)
- Safety fence at the machine rear, right and left hand side
- Light barriers for safety at the machine front
- Machine is pre-wired to accept remote operating pendant
- Machine frame is pre-configured to accept a gantry mounted push off device and additional material handling elements

Guide System and Drive Technique

- High quality THK style linear guiding system
- Toothed rack assembly (synchronous drive) in the X-direction and ball bearing screw for movement in Y and Z direction
- Digital drive technique in X, Y and Z direction featuring:
    - Maintenance free motors with high resolution optical encoders ensuring precision accuracy
    - Digital drive control units guarantee high reliability

MATRIX Table 5′ x 12′

A grooved phenolic MATRIX vacuum system for holding down workpieces comes standard. The grooves provide for efficient distribution of vacuum, as well as isolating table areas by inlaying a rubber sealing and/or accepting vacuum pods for fixturing small parts.

The MATRIX system offers:

- Vacuum system for clamping of the work pieces on the surface of the vacuum table
- The working table is divided into 5 vacuum quadrants
- Can be equipped with the optional Quick Pod System for elevating parts (see page # 14 for further details)
- Working table length: 3700 mm (12' / 145 Inches)
- Working table width: 1550 mm (5' / 61 Inches)
- Workpiece thickness: maximum 100 mm (3.94 Inches)
    - Includes 65 feet of rubber gasket material

Vacuum System:

- The machine design includes (4) four vacuum pumps with a total vacuum capacity of 432 m3/h, 60 Hz (4 x 108 m3/h, 60 Hz). They are directly connected with the vacuum table via a distribution device and one of the three vacuum generators serves as master.
- The vacuum system is one of the largest electrical consumers of any manufacturer’s machine. For this reason, the Vantech system utilizes an Eco-Friendly design to conserve energy and on electrical costs. The pumps operate from a “staggered start” to reduce the maximum draw of the machine upon start up and single pumps can be switched off to save energy when not required.
- Vacuum pumps are activated via soft key at the control panel, outperforming common manual vacuum valve systems.

MATRIX Table 5′ x 12′ (continued)

- The vacuum pumps are mounted within the machine foundation, positioned neatly below the machine table saving floor space and promoting safety. By dividing the vacuum responsibilities of the machine into four individual pumps, they generate very little heat and noise compared to traditional single large, high volume vacuum pumps

Note: fixture board material (also referred to as "bleeder board" or "spoil board") is not supplied with the machine, but required at time of installation.

Vertical Router Spindle

- HSK63 9.0 kW (12HP) spindle motor that includes an automatic tool change feature in combination with the tool change magazine.
- Direction of rotation: right hand / left hand
- Speed: 1,250 - 24,000 rpm stepless programmable
- Drive: frequency controlled AC-motor
- Maximum capacity at the tool: up to 7.5/9 kW (10/12 HP) in continuous and intermittent operation (S1/S6 - 50%)
- Spindle lubrication: permanent grease lubrication
- Bearing: hybrid bearing (ceramic), little friction, higher stiffness and maximum operating life
- Fan cooled
- Central dust extraction

Multi-Zone Processing

The table and control interface on the Vantech machine is configured to allow the operator to simultaneously load multiple programs at up to four (4) zero points of the machine (number of zero points determined during machine specification). The machine can then optimize drilling and routing routines and run the multiple programs as a single file. This is an important feature for those who may use the Vantech machine as a "point to point" machining center or provide back-up to that style machine already in operation on their shop floor. Customers who run 5' x 5' raw materials (Birch Plywood for example) also like the feature because they can run two sheets of raw material side by side in a single machine cycle.

Air Jet

Four flexible air jets are integrated into the extraction hood providing a cool, clean and efficient machining area. Air jets are activated via soft key at the control panel.

Automatic Tool Change

To increase flexibility and decrease cycle time, an automatic, rotary tool changer is arranged near the rear right of the machine framework.

Features:

- Tool holder: HSK63
- Magazine places: 13 tool places
- Tool weight: maximum 6 kg (13.22 lbs) including HSK cone
- Tool diameter: 130 mm max when equipped with tools
- Tool change time: approximately 10 - 18 seconds

Automatic Tool Loading Position

The Vantech provides a single point of interaction for loading and unloading the tool changer. Operator efficiency is increased by allowing the machine to take some of the responsibility for managing tooling. Tools are manually inserted into the loading device, positioned close to the left front of the machine for easy access. The machine retrieves the tool and selects the first available position in the tool magazine, deposits the tool, and updates the tool database.

The system has proven an effective method for minimizing tool and machine damage caused by errant manual loading of tools into the machine and/or incorrect entering of data into the machine control. The process is reversed for removing tools from the machine; the machine deposits tools in the loading position and automatically removes the tool from the active tool database. The loading position also utilizes a sensor to prevent the machine from depositing a tool in the position while another tool is present.

Tool Length Control

A heavy duty tool length control system is a standard feature of the machine. To maintain accuracy, tooling is touched off after a change via the tool pick-up station and its length is verified against the tool data stored within the machine control.

12-Spindle Vertical Drill Block

- A vertical drilling block with twelve (12) spindles is included.
- Special feature: Spindle clamping to achieve the drilling depth safely.
- Stroke Z-direction: 60 mm
- Drilling depth: maximum 35 mm
- Direction of rotation: right hand/left hand
- Speed: 3,450 rpm
- Power: 1.5 kW
- Shaft diameter: d = 10 mm
- Total length of drill: 70 mm
- Drilling diameter: maximum 35 mm
- Distance between spindles: 32 mm
- Type of spindle: individually selectable
- Spindle Arrangement: X-9 spindles, Y-3 spindles

Concept #1 Material Handling Package

When a client's production requirements are greater than that of a standard manually off-loaded nesting machine, a few proven pieces of material handling automation can be utilized to increase the output of the basic machine by as much as 40%. This can be achieved without adding labor, running a second shift, or purchasing another machine. The Concept #1 material handling system detailed below is engineered to meet the higher output requirements of this portion of the nesting market while continuing to require only one operator. Machine with Concept #1 requires a minimum of 8,300 M^3/hour or 4,885 CFM of dust collection.

Automated Push-Off of Finished Nests

The system utilizes a gantry mounted push-off device to automatically eject finished parts from the machine table without manual operator intervention. Once the nest is complete, the machine returns to the loading side of the machine, drops its push-off device and cycles from left to right, collecting finished parts and waste along the way. The unit also contains a table cleaning sweep integrated into the push-off to clean dust and debris from the spoilboard in preparation for the next raw board.

Concept #1 Material Handling Package (continued)

Pneumatic Side Reference Fences and Locating Pins
Full length solid fences serve as the means for locating materials to the working zones of the machine. Paired with four (4) pneumatic reference pins located at the corners of the machine, the system offers four "zero" points for accurately locating raw materials. When the machine is loaded, the fences are actuated to guide raw materials to the zero corner. When utilizing automatic loading, the default "zero" is the front right corner of the machine. Fences retract during machining. When the finished nest is ejected, the fences are raised again to help guide parts from the machine table to the transfer conveyor at the end of the machine. Both the fences and the pins are under down stroke surveillance to prevent the machine from routing a fence or pin in the event of an incomplete cycle.

Dust Extraction from Below
A bottom dust collection channel with blast gate is integrated into the machine frame to collect dust from the nest as the parts are ejected from the machine. As the vacuum from the table competes with the dust collection for the waste, some dust will remain in the cut. The dust collection channel from below collects this dust as the parts are pushed from the machine and onto the transfer conveyor. This feature ultimately leaves less mess to manually clean at the end of a shift.

Transfer Conveyor
A conveyor belt receives the finished parts and automatically advances them to the operator for sorting at the end of the table via communication with photo-electric sensors. This allows the machine to process parts while the operator is unloading the previous nest and prevents parts from being pushed off onto the floor if the operator is not present to receive them.

Dust Collection from Above
The transfer table is also integrated with a dust collection hood from above to clean residual dust from the top of the work pieces and the conveyor belt. This small feature proves very valuable for those applying barcode labels or other methods of identifying parts coming from the router, as the parts are free from much of the dust and debris of the machining process.

Power Control PC85T

The Vantech 512 features a Microsoft Windows based control complete with intuitive software. The included WoodWop programming system is the heart of the machine and is unmatched by any programming software available today. The powerful drawing functions offered by WoodWop simplify programming for operators without CNC experience and provide the premium features required to satisfy advanced users. In addition to the software within the machine control, a copy of the program is included for installation on an office PC for off-line programming.

Hardware:

- 17" flat screen monitor, keyboard and an industrial PC
- Operating system Windows XP (US) embedded
- PLC control according to international standard IEC 61131
- USB connection at the operating panel
- EtherNet connection 10/100 MBIT RJ45 (without switch)

Machine Software Bundle: (software pre-loaded on the machine PC)

PC85T software package with graphical operating programs:

- **WoodWOP** for powerful, yet simple generation of CNC-programs
  - Graphical tool selection from your database
  - Production list administration
  - Graphical presentation of work zones
  - Clear text error messaging
- Schuler MDE Basic for machine data recording
- 3D CNC-Simulation and Time Calculation: One (1) license

PC85T CNC-Core Includes:

- Path control in all axis and parallel sequences by multi-channel technology
- Look-ahead-function for optimal speed at the transitions

Software for External PC - Single Seat Licenses for the Following Programs:
Requires computer operating Windows NT4, 2000, XP, Vista or 7

- **WoodWOP** for powerful, yet simple generation of CNC-programs
- DXF-postprocessor Basic for the data exchange from 2D-CAD-programs to WoodWOP
    - Import of 2D-DXF-files via pre-determined layering rules
    - Display of geometry, layer and drawing elements
    - Generation of WoodWOP program files
- WoodNest Basic
    - Software for the Nesting of WoodWOP program files
    - Manual positioning and turning of work pieces by drag and drop
    - Visualization of spacing between work pieces
- WoodWOP MOSAIC
    - Software to view thumbnails of WoodWop files
    - Allows WoodWOP data files and complete directories to be managed from a graphical point of view
    - Programs can be administered by drag and drop
- WoodType
    - Software to generate routing contours for characters and texts in all available Windows True Type fonts

Manuals and Control Texts

- Standard Manuals, CD, as well as .PDF versions stored on the machine containing operating and maintenance instructions
- Display texts for machine operators of the POWER CONTROL
- Spare parts descriptions consisting of CAD-drawings and wiring diagrams

Technical Specifications

HSK 63 Router Spindle Power (constant from 9000 rpm to 18000 rpm)	**9.0 kW/12.0 HP**
Router Spindle Speed	**1,250 – 24,000 rpm**
Tool Magazine Capacity	**7**
Pneumatic Reference Pins	**4**
Vacuum Pump Capacity	**4 Pumps w/ total capacity 432 m^3/h**
Working Length	**3700 mm/145”**
Working Width	**1550 mm/61”**
Maximum Workpiece Thickness	**100 mm**
Axis Stroke/Positioning Speeds	
X-Axis	**4890 mm/192.5″/72 m/min**
Y-Axis	**1952 mm/76.75″/62 m/min**
Z-Axis	**245 mm/9.6″/25 m/min**
X/Y Vector Speed	**96 m/min**
Installed Machine Weight	**7,936 lbs.**

Utility Requirements

Electrical	
Operating Voltage	**480 Volts / 3 Phase / 60 Hz**
Amperage Service	**50 Amps @ 480 Volts**
Control Voltage	**24 Volt**
Total Connected Load	**27.5 kW**
Dust Extraction	
Connection Size(s)	**(2) 200 mm, (1) 160 mm, (2) 140 mm**
Air Velocity (minimum)	**28 m/sec - 92 ft/sec**
Static Pressure	**Minimum 2200 Pascal**
Air Volume	**8300 m^3/h – 4885 cfm**
Compressed Air	
Connection Size(s)	**R ½ inch**
Pressure Required	**100 psi – 7 bar**
Consumption Volume	**600/700 NL/min**
Ambient Temperature	
Operating Range	**35° C (max) - 95° F (max)**
Foundation Requirement	
Concrete Thickness	**200 mm (min.) – 8 inch (min.)**

Voltage supplied must not fluctuate in excess of +/- 5% of its stated value. Voltage must be balanced phase-to-phase and phase-to-ground.

Note: The stated values are only applicable to the machine as specified. Adding or deleting optional equipment may change service connection requirements.