KNUTH MACHINE TOOLS

Vertical Machining Centers
VECTOR 1200 M SI

SKU : 181423

The Vector 1200 series was developed for machining large and heavy workpieces. The heavy machine frame made of Meehanite cast, the robust construction with four guideways on the Y-axis and high-quality components guarantee consistently high cutting performance. You can rely on high precision even in multi-shift operations. A wide range of accessories allows the machines to be expanded into tailor-made complete solutions for specific applications. The series offers automation solutions that enable you to further increase productivity.

- Spindle on multiple bearings ensures minimal vibrations
- 30-bar CTS to ensure optimum machining quality
- Designed for multi-shift operation
- Many customization and automation possibilities
- 2-year standard warranty

TECHNICAL SPECS

WORKING AREA

Table dimensions	1300 mm x 600 mm
Table load capacity	1200 kg
Tool weight max.	7 kg
Spindle nose-to-table surface distance	150 mm - 750 mm
Spindle center-to-stand distance	600 mm
Number of T-slots	5 positions
T-slot (width x spacing)	18 mm x 100 mm

TRAVELS

Travel X-axis	1220 mm
Travel Y-axis	600 mm
Travel Z-axis	600 mm

HEADSTOCK

Spindle speed	10000 1/min
Spindle mount	SK 40 ISO 7388-1 (DIN 69871)

RAPID FEED

Rapid feed	36 m/min

FEED

Work feed	10000 mm/min

TOOLING

Number of tool stations	24 positions
Tool size Ø x L (max.)	80 mm x 300 mm
Tool-changing time chip/chip	3.9 sec
Tool-change time tool/tool	1.8 sec

ACCURACIES

Positioning accuracies	± 0,005/ 0.0002" mm
Repeatabilities	± 0,003 / ± 0.00012" mm

DRIVE CAPACITY

Main drive, continuous load	12 kW
Motor rating X-axis	3.3 kW
Motor rating Y-axis	3.3 kW
Motor rating Z-axis	5.5 kW
Total power consumption	13 kVA

CONTROL

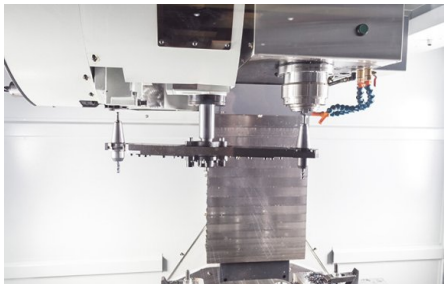
Control	Siemens

MEASURES AND WEIGHTS

Overall dimensions (length x width x height)	3 m x 2.4 m x 2.93 m
Weight	6500 kg

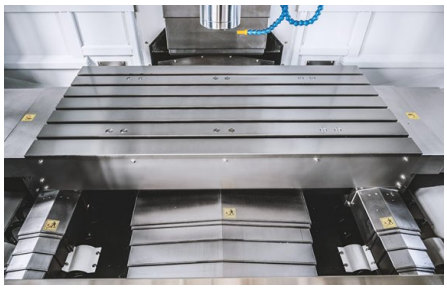
Linear-roller guides for super quiet operation

Siemens Sinumerik 828D with ShopMill



Tool changer with double-arm and BT40 spindle

Wide opening front doors



Additional guides for even more load capacity and increased stability

PRODUCT DETAILS

Machine Design

- The innovative machine base design features a low center of gravity for excellent rigidity, allowing high-precision machining of workpieces with weights up to 1200 kg
- With extensive experience and modern FEM analysis tools for the simulation of countless load conditions, it was possible to guarantee superior stability of the machine frame in real-world applications
- One development goal was to achieve a space-saving, compact design
- Linear roller guides on all axes provide high load capacities, maximum rigidity and smooth motion ensuring the high dynamics needed to optimally handle high loads
- Powerful servo-drives connect directly to large preloaded ball screws providing zero-loss high torque transmission

Main spindle

- Main spindle runs on multiple bearings to ensure excellent absorption and dissipation of forces during machining
- The advanced design of our spindles ensure low heat accumulation under load
- Large pre-loaded bearings ensure radial stability during heavy-duty machining operations
- High-temperature lubricants ensure optimum lubrication at any operating temperature and a long tool life
- Clamping the tool between contact surfaces at the taper and workpiece flange ensures maximum hold of the tool in the spindle

Tool Changer

- The VECTOR is equipped with the best tool changer to allow full utilization of the machining center’s capacity
- With only 1.8 seconds tool changing time, the dual-arm gripper also is one of the fastest tool changers on the market

Handling

- The totally enclosed workspace features a large door and side doors for easy access, safety and cleanliness
- Electrical equipment is divided into separate control cabinets for high and low voltage systems, which results in a significant reduction of heat accumulation and noise
- An electronic hand-wheel simplifies machine set-up
- The automatic central lubrication system ensures proper lubrication of all lube points

CONTROLS & SOFTWARE

Siemens 828D control with Shopmill

SINUMERIK 828 D – The workhorse in the compact class of CNCs

Highlights

- Compact, robust, maintenance-free control panel-based CNC
- Comfortable program and parameter input via QWERTY keyboard
- Maximum machining precision
- Intelligent kinematic transformations for machining of cylindrical parts, and for angled workpiece levels
- SINUMERIK MDynamics with the new Advanced Surface feature: for perfect part surfaces and shortest machining times in mold making applications
- ShopMill: shortest programming time for single parts and small batch productions
- ProgramGUIDE: fastest machining time and maximum flexibility for large series productions
- Unique spectrum of technology cycles - from milling contours with residual material recognition to process measurements
- Animated Elements: unique operation and programming assistance with animated sequences
- Modern data transfer options via USB stick, CF card and network (Ethernet)
- Easy Message: maximum machine availability due to process monitoring per texting (SMS)

CNC hardware

- Control-panel based high-performance CNC Control
- Robust front control panel made of magnesium die-casting
- Integreated full-size QWERTY keyboard
- Maintenance-free design (no buffer battery required)

CNC performance data and functions

- SINUMERIK MDynamics package with Advanced Surface for mold making applications
- Dynamic feed-forward control
- 4-axis simultaneous interpolation (X, Y, Z and rotary axis)
- Linear, circular and helical interpolation
- Tapping without compensating chuck, plus thread cutting
- Oriented spindle holder
- Toggle between inch and metric units
- FRAME concept for individual coordinate transformations, rotations, scaling and mirroring
- 100 adjustable zero offsets
- Synchronous actions and quick help function output

CNC technology cycles

- Technology cycles for programGUIDE and ShopMill work step programming are available
- Large selection of drilling cycles
- Large selection of milling cycles for standard geometry
- Large selection of position patterns for drilling and milling operations
- High-speed settings for mold making applications
- Geometry calculator for free contour input
- Machining cycle for contour pockets / contour spigots with isolated contours

Graphic features

- Animated Elements: input help for machining parameters with animated sequences
- Graphical online help system, similar to PC system
- Graphical CNC simulation with level display

CNC tool management

- Display of tool and magazine data on one screen
- Tool management with plain-text tool names
- Loading/unloading feature for easy magazine assignment
- Tool management with tool life monitoring
- 10.4“ TFT color monitor
- Jerk-limited acceleration

STANDARD EQUIPMENT

Siemens 828D control with Shopmill
Coolant through spindle 30 bar with double filter

24-station tool changer with dual-arm
ST 40 mount
Spindle oil cooler
Chain-type conveyor with chip container
Electronic hand-wheel
Oil skimmer
Automatic central lubrication
Coolant system flush gun
Chip wash system
Heat Exchanger for electric control cabinet
Telescoping axis cover
Preparation for Renishaw TS 27 R
USB port
CF card reader
Totally enclosed work space
Work lamp
3-color signal lamp
Coolant system
Adjustable machine feet
Operating tools
Operator instructions

OPTIONAL EQUIPMENT

- Renishaw OMP 40 Workpiece Measuring, SKU : 252820
- Arm Type BT40 upg. from 24 to 30 tools, SKU : 252967
- Connection for 4th axis (wiring only and axis chart), SKU : 253019
- Siemens Function: P25: 3D Simulation, SKU : 253378
- Siemens Function: P13: Residual Material Detection, SKU : 253379
- Siemens Function: P22: Simultaneous Recording, SKU : 253380
- Renishaw Tool Setter TS27R, SKU : 253386
- Measuring Cycles, SKU : 253438
- Renishaw OTS wireless tool setter (OTS), SKU : 253598
- Ø170mm 4th axis (4th axis, servo motor, driver, air brakes)(Si), SKU : 253605
- Ø210mm 4th axis (4th axis, servo motor, driver, air brakes)(Si), SKU : 253606
- Ø250mm 4th axis (4th axis, servo motor, driver, air brakes)(Si), SKU : 253607
- preparation for Renishaw OMP40, SKU : 253613
- manual tailstock ST-170T for rotary table for X.mill, SKU : 253618
- manual tailstock ST-210T for rotary table for X.mill, SKU : 253619
- manual tailstock ST-255T for rotary table for X.mill, SKU : 253620
- manual 6'' chuck for rotary table for X.mill, SKU : 253622
- manual 8'' chuck for rotary table for X.mill, SKU : 253623
- manual 9'' chuck for rotary table for X.mill, SKU : 253624
- Z axis travel upgrade from 550 to 800 mm for X.mill, SKU : 253625
- Upgrade from 10.4” to 15” touch screen (for PPU260 or higher), SKU : 253674
- Renishaw OMP 60 workpiece measuring system (BT40), SKU : 253681
- 200 mm diam. 4th & 5th axis for Vector 650/850/1000 (Si), SKU : 253682
- Spindle speed upgrade to 12000 rpm, belt-type, SKU : 253781
- Upgrade from 828D PPU260 to 840DSL IPC447E 10.4" for Vector, SKU : 253835
- Top cover for Vector 1200, SKU : 253838
- 12,000 rpm, direct drive CTS for Vector 650-1200(Si), SKU : 253956

KNUTH on YouTube
Information to the point

On our YouTube channel you can find videos for nearly all machines from our program. We show the machines from current deliveries and you get an impression of the handling, the processing quality and the machining performance.

Are you interested in a machine for which you cannot find a current video?
Please feel free to contact us!