# Weeke CNC Machining Center, Model BHP 200 Optimat

Weeke's BHP 200 Optimat is a truly industrial machine designed primarily for routing and boring of flat components that have been nested into full sheets of material.

Weeke is uncompromising with high quality standards. They are an ISO 9001 certified machine tool builder. Weeke uses world class suppliers for critical items not made in house. In fact, most of the externally sourced components are sold and serviced on a worldwide basis and, of course, here in the U.S. Insistence on quality and highly industrialized components results in a very stable process--one that requires a minimum of inspection, preventive maintenance, or repair.

The BHP 200 Optimat is constructed on a steel frame, with heavy steel ribs (gusset plates) welded to the frame inside the base to insure stability. The design and substantial mass provide a solid, vibration-free platform for the machining head. The head rides on THK linear motion guides. In fact, the X-, Y-, and Z-axes are all supported on THK machine tool guides. THK guides were designed to produce straight line tracking at high travel rates, and they have outstanding stability--both in the radial and side 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 utilized to move the axes. Fiber-optic cables are used for communication between the drive system and the machine control.

The BHP 200 Optimat features a Windows based control with intuitive programming software. In addition to the software in the machine control, a program is included (on CD-ROM) for installation on other PC's. With a PC in the office, the machine can be programmed off-line using the same intuitive icon driven software the operator has in the machine's computer control.

## Machining Head Configuration

## Vertical Routing With Automatic Tool Changer (ATC)

A 9.0 kW (12 HP) forced-air cooled vertical router motor is located on the right side of the spindle carriage. The spindle motor uses the HSK63 standard for the taper in the spindle and the accompanying tool holders. The HSK63 design is the latest technology in tool holding systems and has been proven to be stiffer (less deflection) and much more accurate than conventional tapered shank designs, especially at high rpms. Additionally, the exceptional mass and rigidity of the machine's frame helps the router achieve a good surface finish with high feed rates and long tool life.

**Vertical Routing With Automatic Tool Changer (ATC)** (continued)

The router motor utilizes an automatic tool changer to perform tooling changes during program execution. This function can be a great advantage when different tool diameters and/or profiles are required to complete a given workpiece. A magazine for eight (8) tools is located on the back of the gantry for fast tool change processing. The magazine accepts HSK63 tool holders with tapered shanks. HSK63 is available in left or right rotation (CW or CCW), with a complete selection of collet sizes in inch or metric increments. Two (2) HSK63 tool holders are included with the machine (with two (2) collets and a set of wrenches). Additional tool holders and collets are available and are quoted under optional equipment.

**Frequency Inverter**

A solid state frequency inverter manufactured by KEB is utilized to power the router. The inverter output is programmable through the control with usable rpm range from 1,250 to 24,000 rpm. The design of the motor and frequency inverter provides constant power output between 9,000 to 24,000 rpm. Spindle rotation, RH or LH, is programmable.

**Vertical Boring with 10 High-Speed Spindles**

The vertical-boring head is located on the right side of the spindle carriage and has ten (10) spindles. Five (5) spindles are aligned in the X-axis, while five (5) spindles are aligned in the Y-axis. These spindles are on 32-mm center distances. They utilize standard boring bits, 70 mm long, up to 20 mm in diameter, with 10-mm diameter smooth shanks. A 2.7 kW (3.6 HP) motor drives the vertical-boring gearbox. Spindle rpm is programmable between 1,500 to 7,500 rpm.

The vertical spindles are designed with a mechanical locking feature, which adds rigidity and stability (accuracy) to the drilling process. The drill spindles utilize standard boring bits, 70 mm long, up to 20 mm in diameter, with 10-mm diameter smooth shanks.

**Vacuum Table** *(recommended for full sheet nesting of melamine / laminate backed materials. If raw MDF and / or small parts (350 mm x 150 mm) are to be machined, optional vacuum systems may be required.*

A high-flow vacuum plenum is integrated into the machine bed, and incorporates a fiberboard universal vacuum fixture for optimal hold-down. *Note: secondary fixture board material (also referred to as "consumable bleeder board") is not supplied with the machine. It is to be supplied by the customer and is required at the time of installation.*

## Part Positioning Stops

There are eight pneumatic pop-up positioning stops on the machine for positioning full sheets or smaller cut-to-size blanks (four front stops, two side stops and two back stops).

## Vacuum Pump

One powerful vacuum pump with **500 $M^3$/hr** capacity, has enough vacuum capacity for typical nested base manufacturing part hold down.

## Dust Extraction Efficiency

Dust extraction efficiency is maximized by a central dust collection manifold, 250 mm in diameter, with individually controlled connections to the router, vertical boring block, and optional grooving saw. As each machining unit is activated, dust ports to other devices are automatically closed.

## Weeke MCC Control

The machine is equipped with the Weeke MCC Control system featuring a Beckhoff PLC. MCC is a continuous path control system with intuitive programming software. The Weeke control features a graphic operator interface with icons to simplify operation. Programming with Windows based WoodWOP software is with simple coordinates or by the entry of formulas to define the relationship between panel size and machining locations (parametric programming). Some of the features of the Weeke MCC Control include the following:

- Personal Computer for operator interface
- PC is a Windows based Pentium compatible machine
- 40.0 GB hard drive
- 512 MB of RAM
- floppy disk drive 3.5"
- CD ROM drive
- the PC is connected to a Beckhoff programmable logic control for high speed, accurate, and reliable control of all machine functions
- USB connection
- high resolution color graphics with 15" TFT color monitor
- full function industrial keyboard
- simultaneous three-axis linear control
- EtherNET interface for local area network (connection to office PCs)
- fully compatible and integrated with Holzma Cut-Rite Plus software

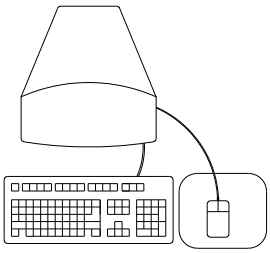
## Weeke MCC Control (continued)

- report generation software included
- post processor for DXF file conversion is included
- RS-232 serial interface for simple PC connection

## Remote Diagnostics and Technical Support

The IPC control is equipped with the hardware and software required for remote diagnostics and technical support. This system includes an on-board PC modem and remote service manager software. With this configuration, Stiles technical support can connect to the IPC control from a remote location to assist with troubleshooting and machine problem or error diagnosis. This service is provided with the machine free of charge for a period of two years from date of installation of the machine. *Note: A dedicated phone line must be provided to the machine in order to use this feature. This is the customer's responsibility.*

## Off-Line Programming



In addition to the WoodWOP programming software in the machine control, this same software is included (on CD ROM) for installation on other PC's. Using a PC in the office, the machine can be programmed off-line with the same intuitive icon driven WoodWOP software that the operator has within the machine control. The PC software has no copy protection. If you have a network, you may install the software on as many PCs as you like without buying additional copies of the software.

## Off-Line Programming Training

Two seats in the Stiles Education course MC050 for training in the WoodWOP software are included with the machine. This course is designed to provide Weeke CNC Machining Center owners with the introductory information necessary to utilize WoodWOP software. Participants must have basic computer skills including use of Windows "operating systems".

Stiles Education classes are conducted at Stiles Machinery locations. The customer is responsible for all travel and living expenses incurred during training. Training scholarships will expire one (1) year from machine delivery. To enroll your employees, please contact Stiles Education at (616) 698-7500.

## Technical Specifications

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|---|---|
| **Number of vertical drilling spindles** | **10** |
| **Vertical drilling spindle power** | **2.7 kW** |
| **Vertical drilling spindle speed** | **1,500 to 7,500 rpm** |
| **ATC router spindle power (power constant from 9000 rpm to 18000 rpm)** | **9.0 kW; 12.0 HP** |
| **ATC router spindle speed** | **1,200 to 24,000 rpm** |
| **Tool magazine capacity** | **8 tools** |
| **HSK63 tool holders supplied** | **2** |
| **Collets for HSK63 tool holders** | **2** |
| **Vacuum pump capacity** | **500 $M^3$/hr** |
| **Working length** | **3700 mm/145.67”** |
| **Working width** | **1550 mm/61.02”** |
| **Max. drilling depth for through holes** | **55 mm/2.166”** |
| **Machine weight** | **6800 kg/14,991 lbs.** |
| **Axis stroke/positioning speed** | |
| **X-axis** | **4690 mm/50 M/min** |
| **Y-axis** | **2165 mm/40 M/min** |
| **Z 1 / Z 2-axis** | **325/185 mm//20 M/min** |
| **Vector positioning speed** | **67 m/min** |

## Utility Requirements

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|---|---|---|
| **Electrical** | | |
| **Operating Voltage** | **230/460 Volts / 3 Phase / 60 Hz** | |
| **Amperage Service** | **125/63 Amps @ 230/460 Volts** | |
| **Control Voltage** | **24 Volt** | |
| **Total Connected Load** | **29.5 kW** | |
| **Dust Extraction** | | |
| **Connection Size(s)** | **200 mm** | |
| **Air Velocity (minimum)** | **28 m/sec** | **92 ft/sec** |
| **Static Pressure** | **Minimum 2200 Pascal** | |
| **Air Volume** | **3170 $m^3$/h** | **1900 cfm** |
| **Compressed Air** | | |
| **Connection Size(s)** | **½ in** | |
| **Pressure Required** | **100 psi** | **7 bar** |
| **Consumption / Volume** | **100/200 l/min** | **10-15 cfm** |

| | | |
|---|---|---|
| **Ambient Temperature** | | |
| **Operating Range** | **35° C (max)** | **95° F (max)** |
| **Foundation Requirement** | | |
| **Concrete Thickness** | **200 mm (min.)** | **8 in (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.***