

ENDURA PRODUCTS INC

Proposal made for: **KEVIN MACDONALD**

HOMAG CENTATEQ T - 300

BMM410/64/15/2R Gantry CNC Processing Center



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HOMAG CENTATEQ T - 300 Twin 10X5 Gantry CNC Processing Center



Product image is for illustration purposes only. Delivered machine may not be the same color or have the same markings as shown in the picture above.

Features & Details:

HOMAG CENTATEQ T - 300 Twin 10X5

Machine Overview

The CENTATEQ T-300 series of high-performance processing centers was created from an innovative concept that offers new technology with optimized interaction between components, while ensuring maximum production.

This BMM 410 processing center features rigid gantry-frame construction over two (2) moving matrix grid type vacuum tables, and includes an innovative computer numeric control (CNC). This design offers efficient, cost effective, high-speed batch size production with the ability to process a variety of workpieces on the same machine with minimum down time. And with Intelligent Process Optimization (IPO), the two independent spindles are capable of processing two (2) different workpieces simultaneously, as well as two (2) of the same part in synchronous mode.

Vertical Router Spindles – 11/13.2 kW

VK #7439 (2 of)

- independent router spindles mounted on separate tooling plates
- tool holder: HSK63
- tool changing: automatic
- direction of rotation: right hand / left hand
- speed: stepless 1,500 - 24,000 rpm programmable
- drive: current-controlled 3-phase motor
- maximum capacity at the tool: up to **11/13.2 kW (14.75/17.7 HP)** in continuous and intermittent operation (S1/S6)
- full rated output: n = 12,000 to 18,000 rpm
- tool weight, including chuck: 6 kg maximum
- tool length from motor spindle lower edge: 200 mm maximum
- tool diameter: 180 mm maximum
- spindle lubrication: permanent grease lubrication
- cooling: air cooled
- dust suction hood can be adjusted in height by three (3) stages



C-Axis with Unit Interface for Main Router Spindle

VK #7443 (1 of)

- **right spindle only**
- for connection of optional processing units (aggregates)
- including pneumatic interface and swiveling drive C-axis at main spindle with 3-point support system, capable of high cutting force transmission
- drive for all units with swiveling axis
- 0° to 360° unlimited swiveling range, at a speed up to 50 rpm (18,000°/min.)
- features tubeless compressed-air supply, used by some processing units
- **Note: aggregates are not included, but are available as options**

Extension of C-Axis for Flex5 Processing Unit

VK #7569 (1 of)

- **right spindle only**
- coupling element to the C-axis unit interface
- for automatic changing and operation of the optional Flex5 processing unit
- not available with tracing system for main router spindle
- **Note: aggregates are not included, but are available as options**

Blowing-Off Nozzles for Suction Hood

VK #7496 (2 of)

- to improve effectiveness of dust collection system, such as for NBM
- four (4) manually-adjustable compressed-air nozzles, mounted under the dust collection hood, circularly arranged around the router spindle, individually selectable
- maximum volume per nozzle would be 300 NL/min. (10.6 CFM) in case of permanent operation; maximum of two (2) nozzle used at a time
- note: the compressed air consumption of the machine (and the entire plant) is increased when using the blowing-off nozzles



14 Position HSK-63F Plate-Type Tool Changers D=130 Below

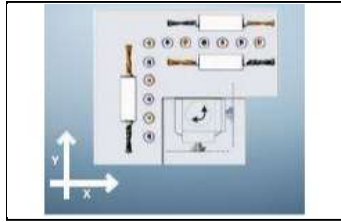
VK #7455 (2 of)

- for tools and processing units (aggregates) with HSK-63F interface
- static plate-type tool changers for up to 14 tool/unit places (each)
- maximum rotating tool weight of 6 kg (13.23 lbs.) including tool holder
- maximum processing unit weight of 10 kg (22 lbs.)
- maximum total weight of all equipment is 70 kg (154 lbs.) distributed evenly
- following tool combinations are possible:
 - 14 x maximum diameter of 130 mm (5-1/8") or
 - 7 x maximum diameter of 180 mm (7-3/32") and
 - 7 x maximum diameter of 70 mm (2-3/4")
- maximum tool diameter for sanding tools is 200 mm (7-7/8")
- supplied without tool holders or tools

Tool Length Control

VK #7427 (2 of)

- measuring system for length control of router shaft tools in the machine (i.e., no combi- / step- / profile tools or units)
- for maximum tool diameter of 80 mm
- for tool length minimum of 100 mm including tool chuck
- after interchanging of the tool from the tool changer, a length measuring routine will be effected and compared with the tool database
- by a woodWOP program, single tools can be selected for measuring
- the lead distances depend on the collision measuring
- alternate (pendulum) operation is limited



18-Spindle Boring Head: 12 Vert., 6 Horiz., 0°/90° Saw

VK #7477 (2 of)

- one (1) frequency-controlled 2.3 kW motor
- programmable from 1,500 to 7,500 rpm max. for quick processing or for boring small diameter holes
- with 12 High-Speed Vertical Boring Spindles
 - twelve (12) spindles with up to a maximum of 35 mm (1-3/8") hole diameter (for some positions)
 - individual spindle selection
 - vertical spindles with "quick change" system for reduction of set-up time
 - boring spindles are locked in the retraction stroke in order to reach the programmed drill depth reliably
 - for vertical drilling with a stroke of 60 mm (2-11/32")
 - arrangement of the spindles in L-Shaped Arrangement:
 - seven (7) spindles in the X-direction
 - six (6) spindles in the Y-direction
 - distance between spindles: 32 mm (1-1/4") pitch
 - drill length: 70 mm (2-3/4")
 - shank diameter: 10 mm
 - drill depth: 38 mm maximum
 - drill depth with special drill and restrictions of saw processing and horizontal drilling: 55 mm maximum
 - with clamping surface and adjusting screw
 - rotation direction: right/left-hand rotation, alternately
- with 6 Horizontal Boring Spindles
 - 4 (2 x 2) spindles: pitch 64 mm; 2 in each X-direction (+X/-X)
 - 2 (1 x 2) spindles: 1 in each Y-direction (+Y/-Y)
 - drill diameter: maximum 20 mm
 - shaft diameter: 10 mm
 - total length of drill: 70 mm
 - drilling depth: maximum 38 mm
 - drilling height Z-direction: 38 mm from upper workpiece edge
 - with clamping surface and adjusting screw for Weldon chuck
 - direction of rotation: right hand / left hand (alternating)

18-Spindle Boring Head: 12 Vert., 6 Horiz., 0°/90° Saw (continued)

- with Grooving Saw - 0°/90° Indexing
 - saw blade diameter: 125 mm diameter
 - saw blade width: 5 mm maximum
 - cutting depth: 30 mm maximum
 - cross section of groove: maximum 70 mm²
 - the saw mounting arbor is 30 mm diameter with four (4) M5 countersunk head screws on a 48 mm (LL) bolt circle
 - direction of rotation: right-hand rotation
- includes separate Z-axis module and separate dust hood
- supplied without tools



Twin Cross-Grooved Matrix Grid Vacuum Tables "R"

- cross-grooved, high-pressure laminate (HPL) vacuum tables prepared for inserting a rubber sealing gasket or a flexible vacuum riser pod for putting on fixtures and panels
- the grid is machined on a 30 mm pitch, with the width and depth of the cross grooves of 7 mm
- distance between vacuum ports in the table surface is 120 mm
- integrated single-circuit vacuum system, divided into left table and right table, supplied via one (1) 4" vacuum port
- double occupation and pendulum operation to increase productivity
- 2-stage vacuum monitor for processing mode and spoil-board calibration
- four (4) plug-type connections per table with single circuit (1-way) compressed air system, for connecting pneumatic clamping devices
- two (2) plug-type connections per table for vacuum, for connecting to fixtures
- includes 50 Meters of 8 mm (5/16") diameter gasket
- workpieces with extreme dimensions must be clamped using fixtures or mechanical clamping devices
- when using processing units, a certain maximum clamping height is to be considered
- working zone and position of optional stop pins according to the technical data sheet
- the machine's zero point is placed at the front, left side
- workpieces are fed into the machine manually from the front side
- supplied without fixtures and clamping devices

Vacuum Guiding System – 2000 M³/H for R-Table

VK #0976 (1 of)

- extension of the standard vacuum system to:
 - 1 x 2000 m³/h for single occupation (total table surface)
- enables the use of high-volume vacuum pumps, e.g., for NBM
- increases vacuum connection cross-section size to 2 x 4" diameter
- larger vacuum pump(s) must be sized according to the desired processes



Reference Stops for Matrix Table

VK #7302 (16 of)

- four (4) front stop pins per table
- four (4) edge-mounted (R & L) stop pins per table
- stop pins selectable in groups
- electro-pneumatic control; and control of final position
- stroke of 60 mm (2-11/32")
- position of stop(s) per the Technical Data sheet



Vacuum System: with a Total Capacity of 1035 M³/hr @ 60 Hz

VK #7094 (1 of)

- includes three (3) low-wear and energy-efficient Busch rotary claw type vacuum pumps with a nominal capacity of 345 M³/hr @ 60 Hz each
- if more than one (1) vacuum pump is connected, each pump can be individually activated by a softkey, which enables an energy efficient vacuum output

Moveable User Terminal with 10 Meter-Long Cable

VK #6499 (1 of)

- this feature moves the operator panel from the fixed switch cabinet to a moveable operator terminal

powerControl PC87 powerTouch – Hardware

- operating panel with 24" full HD multi-touch display in widescreen format
- PLC control according to International Standard IEC 61131
- modern industrial PC with Windows® 10 operating system
- English PC keyboard
- back-up manager and storage medium for comfortable data back-up
- USB connection
- manual operation tethered for run-in mode:
 - specified according to IP65, and includes and integrated magnet for flexible mounting
 - the following functions can be selected:
 - run-in mode
 - feed start / stop
 - emergency switch with protection
 - digital drive technology
 - decentralized, digital field bus system
 - network connection Ethernet via additional network card & software. Within the machine or machine line, HOMAG uses the data networks with the identification 192.2.x.x or 192.168.1.x. If the customer's network also uses this identification, then the customer has to provide a router to avoid network conflicts
 - intelliServiceNet - the new innovative TeleService connection:
 - remote diagnosis via internet for a quick, low-cost and reliable remote service
 - invoicing according to separate teleservice contract
 - access to the internet is to be provided by the customer (Port 443 HTTPS)
 - access to one machine PC is possible (powerTouch with Windows 7 or 10)
 - registration of the machine, as well as activation of the function "intelliServiceNet", is required under www.tapio.one
 - in order to obtain the full function range, the machine has to be "tapio connected"
- uninterruptible power supply (UPS) protects the computer from damage in case of mains interruption, overloads, and short circuit

tapio Ready

- machine is prepared to communicate with tapio, which is a functionality which gives the customer an opportunity to use tapio's innovative digital products (optional) and to be ready for the future
- the offers and services of the tapio platform can only be used after the customer registers for this and activates the corresponding functionalities (available at www.tapio.one)

powerControl PC87 powerTouch – Software

- standardized HOMAG Group operating surface – powerTouch
- ergonomic touch operation with gestures, e.g., zooming, scrolling, and swiping
- simple navigation for standardized and intuitive operation of the machine
- Windows® 10 and virus protection
- intelligent display of readiness of production by light function
- 3D display of the machine bed, consoles, clamping elements, and workpieces' inclusive processing
- workpiece assignment via Drag & Drop, with inclusively automatic suggestion for vacuum clamping elements depending on the space
- turning of the workpiece within the assignment in 90° steps in the X/Y level
- path control in all axes and parallel processes by multi-channel technology
- look-ahead function, to achieve optimum feed speed on the transitions
- dynamic look-ahead control for accurate contours
- graphic tool database: a software kit for assistance of the HOMAG units delivered with the machine; consisting of woodWOP processing macros, NC sub programs, and administration of unit data
- possibility to import tool data from tool measuring stations
- integrated production list for the processing of program lists
- woodWOP 7.x for graphic and interactive creation of CNC programs; great program library with example programs for contours, carcass furniture, worktops, doors, etc. – available for free download from www.homag.com
- woodWOP DXF Import Basic
- inclusive CAD Plug-In for creating CAD contours and for the import of existing CAD drawings in DXF format
- CNC operation
- the control of the machine is not suitable to process personal data within the meaning of EU-DSGVO

Operating Manuals and Documentation: English

VK #8322 (1 of)

- operating manuals and maintenance manuals on DIN A4 paper and data media
- spare parts designations on data media
- wiring diagram on data media in German and English
- help texts are integrated into the machine control
- operating system dialogues in English
- available for delivery at the same time as machine's delivery

Capture and Evaluate Machine Data – MMR Basic

VK #0780 (1 of)

- integrated counters and predefined maintenance intervals always inform the machine operator about necessary maintenance works in due time
- through the need-based maintenance, the availability of the machine increases and the downtimes of the machine is significantly reduced
- besides the maintenance data, the amount of produced workpieces and the total run time of the machine is gathered
- therefore, information about the productivity is constantly available

Error Diagnosis

VK #0779 (1 of)

- display of the error description on the machine control
- error message is displayed in plain language

Convenience Package Operation - SaveScan

VK #0706 (1 of)

- allows the comfortable and efficient operation directly at the machine
- two (2) push buttons at the machine bed allow the program start
- two (2) laser scanners realize the person(s) in the safety area of the machine; the tables move slower if an operator stays in the safety area
- two (2) light barriers at the table level avoid the climbing over
- operation of the tool changer from the front over door

woodWOP Office Basic Software (Single-Seat License)

VK #0968 (1 of)

- CNC programs for the PC86/87 control on an Office PC can be created and graphically simulated with this software kit; contains the following functions:

woodWOP 7.x:

- user-friendly, completely menu-guided operating interface
- 3D view of the panel, processes, consoles, and clamping devices
- contour creation by integrated contour programming
- predefined processing macros for routing, sawing, and drilling at any angle (feasibility depends on the machine's equipment)
- dimensions are input as absolute values or as variables
- interactive setting of drillings and contour lines with the mouse
- inclusive CAD Plug-In to create the CAD contours
- includes automatic suction pod suggestion with 3D view
- includes engraving of single line fonts and double line fonts
- includes residual surface cutting for automatic recognition of residual surfaces between a workpiece and the raw panel and generation of the routing paths

Post Processor and Tool Data Base Editor:

- includes one (1) post processor for generation of programs in DIN 66025 for one (1) machine at one (1) production location
- administration of tools and tool data
- simple generation of own profile tools, including a 3D tool generator

DXF Import Basic:

- includes woodWOP DXF Import Basic Interface to take over drawing data from CAD systems in DXF format
- by the use of several fixed layer denominations, processes can be automatically generated from the DXF drawing

Software System Requirements and Notes

VK #6799 (1 of)

System Requirements for the Customer-Provided PC:

- operating system: Windows® 7, 8, or 10, 64-Bit system required (for PC87)
- processor: at least Dual Core (Quad Core recommended)
- main storage: at least 2 GB RAM
- graphic card: with at least 1 GB memory and OpenGL 3.3 support
- when using Intel Onboard graphic cards, at least GMA X4500; better is Intel HD graphic card

Notes Regarding Software Licenses:

- the HOMAG Group software is license protected
- on a machine computer, only single-seat licenses are running
- on an Office PC, all software products are protected by single-seat licenses or floating (network) licenses
- single-seat licenses are bound to a single PC
- with a floating license, the software can be used at several workplaces; multiple users can use the software simultaneously as long as enough single-seat licenses are available; all workplaces must be integrated into the customer's network
- the installation of single-seat licenses and floating licenses of different products is possible as long as the PC itself is not configured as a server for floating licenses

Notes for the Installation:

- the installation of the respective software on an Office PC and the integration of the machine into the customer's network will be the responsibility of the customer; this can be optionally supported by Stiles'/HOMAG's software support at an additional expense to the customer
- when using floating licenses, the license administration (license server) is installed on a PC or server in the customer's network; the license server can also be installed on a terminal server
- the installation of the software on a terminal server is not supported
- if the license server is installed on a virtual server, or if the software shall work in a virtual environment, floating licenses are required
- the product must be activated by contacting Stiles Technical Support by phone at 616-698-6615 following the installation

Electric Equipment

- 480 Volt transformer provided
- switch cabinet executed according to U.L. specifications
- switch cabinet integrated in machine frame
- installed according to European Standard EN 60204-1
- permissible environmental temperature is 41°F to 104°F; if temperature will exceed 95°F on a regular basis, an optional air conditioner for the switch cabinet will be required
- if air humidity will exceed 65%, an optional air conditioner for the switch cabinet will be required
- includes a potential-free contact for controlling a dust collection gate provided by the customer
- the machine is not suitable for connection to a Residual-Current Device (RCD) due to operational leakage currents
- instead, the recommendation is to route the supply in such a way as to prevent ground faults or short circuits (e.g., in accordance with DIN VDE 0100-520/521.11)

Air Conditioning Unit for Switch Cabinet

VK #6171 (1 of)

- this unit will be necessary if the environmental temperature at the machine exceeds 40° C (104° F)

Basic Equipment

- CNC-controlled processing center in fixed gantry, moving table design, for the machining of panels made of wood or similar material
- machine bed in stable steel frame construction in gantry design with a high-precision linear guide system with dust protection
- precision rack and pinion drives for X and Y-axes
- re-circulating ball screws and digital AC servo motors for positioning of the Z-axes
- drive technology with digital control methods for a high dynamic, and for exact contours
- two (2) unit beams (tool plates) mounted on one (1) side at the front of the gantry
- each unit beam is prepared for two (2) separate Z-axes (Z1, Z2), which allow the rapid alternating use of the main router spindle and the drilling unit
- central dust collection connection for each unit beam for the router spindle and the drilling unit
- manual lubrication for all drives and linear guides
- connecting loads for suction (dust collection), compressed air, and electricity are to be taken from the separate installation plan drawing
- compressed air supply of 7 bar minimum is required
- customer's floor conditions must correspond to the foundation plan

Safety Features

- safety surveillance for the operating zone for an effective protection of the operating staff without any restriction of the traveling speeds
- if the customer explicitly desires that the machine is delivered and installed without safety barriers, the customer is obliged to guarantee the safety at the corresponding machine sides by proper safety measures; this also applies for later modifications, especially in the case of later modifications at the site of installation, in the case of installation of the machine at another site, or in the case of the resale of the machine
- the customer waives guarantee and damage compensation rights concerning the fact if the machine was delivered and installed without full safety barriers; the customer is obliged to indemnify the deliverer against any claims of third parties which might be raised due to this circumstance
- EC conformity (CE) according to the currently valid Machinery Directive for individual machines in operation
- wood dust protection maximum 2 mg/m^3 subject to the required extraction capacity to be provided by the customer according to the suction plan
- condition for our warranty/product liability is the unrestricted observance of the original production instructions delivered along with the machine, including the safety instructions

Safety Barrier - Back Wall B../30-42

VK #7013 (1 of)

- includes solid barrier panels on supports for securing to the floor
- includes two (2) U-PVC windows

Safety Barrier - Lateral Wall Left-Hand with Door

VK #0730 (1 of)

- includes solid barrier panels on supports for securing to the floor
- includes one (1) interlocked safety door

Safety Barrier - Lateral Wall Right-Hand with Door

VK #0789 (1 of)

- includes solid barrier panels on supports for securing to the floor
- includes one (1) interlocked safety door

Note: *It is not allowed to run this machine without full safety barriers.*

Paint

- lacquering of the machine and safety fence posts in RAL 9003 signal white
- design stripes, safety fence fields, safety doors, and the icon's corner pillar in RAL 7021 dark grey

HOMAG Quality Pack

- includes energy guiding chains (cable trail) in X and Y direction in closed execution in order to prevent cable damage by residual pieces, chips, etc.
- linear guide-ways in X and Y directions are covered with a steel band in order to avoid dirt intrusion
- TÜV certificate according to DIN EN ISO 9001:2015
- energy efficient drives according to the EU no. 640/2009
- energy efficient dust hood(s)
- the machine is run-in and delivered with the HOMAG standard program
- energy saving functions:
 - ecoPlus button for start of the stand-by mode, which can be activated during the last operation; after program end the button starts the following:
 - the drives stop running
 - the standard HOMAG vacuum pumps are switched off
 - when machine is not producing parts, the control voltage is disconnected by means of a preset time
 - when no panel is clamped, the vacuum pumps are disconnected by means of a preset time
 - gate control for reduction of the necessary dust collection energy by automatic switching between router spindle and boring head

Workforce Development

A well-trained workforce is essential to realizing the full capabilities of HOMAG equipment, safe and efficient machine operation, increased component and tooling life, and reduced maintenance costs. At the time of installation, basic machine programming, operation, and troubleshooting training is administered onsite by a Stiles Field Service Representative (FSR).

Additional training is available through Stiles University, the industry's only nationally accredited training program. With over twenty regularly-scheduled courses, Stiles University provides comprehensive, hands-on technical and application training as well as best practices designed to equip manufacturers with the skills and knowledge they need to thrive.

Included with your machine purchase is **one (1)** scholarship for a Stiles University course.

For this model, the following course is recommended:

CNC230: woodWOP Programming and Nested-Based CNC Operation

Designed to meet customer needs, sessions are offered at any of Stiles University's dedicated training centers nationwide, online, or onsite at the customer's facility (if a more specific, customized training is desired).

Explore upcoming course offerings and/or register online at www.stilesuniversity.com or contact classes@stilesmachinery.com for more details.

Machine Control & Software:

HOMAG CENTATEQ T - 300

ServiceBoard | annual use in App Plus package

Communication with service partners for fast fault detection by means of creating and sending service cases and video diagnosis - exchange of 3D models and construction plans is thus enabled.

- Keep track of all service cases in an uncomplicated way
- Avoid unplanned interruptions through predictive maintenance (where applicable)
- Access online spare parts store in app
- Review open service tickets previously submitted via the app
- Review solved service cases with documented solutions previously submitted via the app
- Colors indicate the urgency of maintenance activities, such as cleaning a vacuum pump
- Older machines without an internet connection can be used with ServiceBoard
- Integrated video diagnostics

Technical requirements

Details on the technical requirements at tapio.one/en/ServiceBoard

Available in all tapio regions. One license is required per machine to be used with ServiceBoard.

For "ServiceBoard", a service of tapio, the terms of use (available at terms.tapio.one/serviceboard/en.html) apply. As "ServiceBoard" is provided on tapio, registration on tapio is required. The Platform Terms of Use (available at tapio.one/en/tou) apply to membership in tapio.

After expiration of the license period, your license will be automatically renewed at the applicable terms and conditions in the tapio store (store.tapio.one). You will be reminded by email before renewal.

By accepting this offer, the customer allows HOMAG to share all order-related data with tapio. ServiceBoard works in service requests and video diagnosis without machine connection or tapio-readiness. To receive specific services from your service partner, you may need a separate service contract with the responsible service partner, e.g. Homag.

Note: Delivered machine may not include the package mentioned above. Confirmation of package availability to be determined at time of install.

Technical Specifications

Dimensions All equipment offered is made to metric standards. Dimensions shown in English measure are approximate and for comparison purposes only.

PANEL SPECIFICATIONS	
maximum workpiece length (single operation – right spindle), for all router processing units	6400 mm (251-31/32")
maximum workpiece length (single operation – left spindle), for all router processing units	5650 mm (222-7/16")
maximum workpiece length (alternating/pendulum operation for left spindle/left table & right spindle/right table) for all router processing units	3150 mm (124")
maximum workpiece width for all router processing units	1550 mm (61")
maximum workpiece thickness including any clamping fixtures (provided by the customer)	260 mm (10-7/32")
maximum workpiece thickness with clamping templates (provided by the customer), without restriction for units & suction	60 mm (2-11/32")
minimum workpiece size	depends on clamping devices, workpiece surface and contour
working height to upper table edge	820 mm (32-9/32")

Note: the machine operator is responsible for the use of suitable materials (panels, glues, cleaning means, lacquers, etc.)

Technical Specifications (continued)

MACHINE TECHNICAL SPECIFICATIONS	
controlled axes	nine (9) X1, X2, Y1, Y2, Z1, Z2, Z3, Z4, C1
axis rapid traverse rate	X-axes - 100 M/min (3937 in./min.)
axis rapid traverse rate	Y-axes - 100 M/min (3937 in./min.)
axis rapid traverse rate	Z-axes - 19 M/min (748 in./min.)
table size	(2) 3150 mm x 1550 mm (124" x 61")
tooling shank size (router)	25 mm (1") maximum
tooling length (from spindle nose)	200 mm (7-7/8")
cutter diameter	max. 180 mm (7-3/32") for routing tools
tool holder* - HSK-63F	two (2) right-hand
collet* - RDO-35	two (2) 3/4"
main spindle power	11 kW (14.75 hp) – S1 rated
main spindle power	13.2 kW (17.7 hp) – S6 rated
spindle speed (variable)	1,500 to 24,000 rpm
spindle speed control	two (2) solid-state frequency inverters (current-controlled)
boring unit adapter (size/type)	10 mm (Weldon)
boring unit drill length	70 mm (2-3/4")
boring unit power	2.3 kW (3 hp)
boring unit speed	7,500 rpm maximum

* Combination of tool holder and collet balanced to G2.5 at 24,000 rpm.

Technical Specifications (continued)

FACILITY REQUIREMENTS OF PROCESSING CENTER

FLOOR

10"to 12" min. concrete with rebar reinforcements

(Note: A single, level pad is required for maintaining machine levelness over time.)

COMPRESSED AIR

(1) R 3/4" connection	103 psi and 43 cfm (not including blow-off nozzles);
	86 cfm max. with maximum number of blow-off nozzles on

DUST EXTRACTION FOR WORKING SPINDLES

volume (approximate)	5830 cfm total (2915 cfm x 2)
air velocity	92 ft/sec
negative air pressure in	7.87 in/WS
outlet diameter	250 mm (9-27/32") x 2

(Note: Please contact your dust extraction supplier to determine exact requirements for your facility.)

** Note: Customer voltage supplied must not fluctuate in excess of $\pm 5\%$ of its stated value, otherwise a voltage stabilizer will need to be installed at the customer's expense.*

MACHINE POWER*

voltage	480 volt; 3-phase, 4-wire grounded, 60 cycle
amps required (nominal)	91

** Note: Customer voltage supplied must not fluctuate in excess of $\pm 5\%$ of its stated value, otherwise a voltage stabilizer will need to be installed at the customer's expense.*