BIESSE
WOOD DIVISION

Numerically controlled machining center ROVER B FT 2231

Code / Description	Quantity
9080202	1

Numerically controlled machining centers ROVER B FT

As guarantee of the quality of its products and services, BIESSE has been certified ISO 9001 since 1995 and works in accordance with the UNI EN ISO 9001:2000 norms.
Most of the technological components assembled on the machining centers is produced by companies of the Biesse Group or by world-wide known companies included in the Biesse "Register of Qualified Suppliers", which have strictly cooperated with Biesse through the years.
The running tests of each machining centre include the following stages:
·Intermediate control of operating units and pre-assembled components
·Non-stop running test as machining simulation for a minimum period of 10 hours
·Control of X and Y axes precision and positioning repeatability by means of an interferometric laser (VDI/3441 norm)
·Gauging of the X and Y axes through a software function: the values detected during the laser tests are elaborated by the N.C. and transmitted to the axes drives in order to improve the positioning precision
·Functional tests for routing and boring operations on panels positioned on all the machine origins

STRUCTURE
All the machine structural components have been designed with a CAD product for solid modelling which allows to determine the possible structural distortions caused by static and dynamic loads. The correct dimensions of the most critical components are elaborated by a software for finite elements structural calculation which, by simulating the working conditions, allows to determine the most stressed areas which need strengthening.
The accurate structural design grants to the BIESSE machining centers maximum rigidity, high precision in time and perfect machining finishing even during heavy-duty working cycles.

Machine frame
The machine frame is made of thick electrowelded steel sheets, properly strengthened in the most stressed areas.
The mechanical machining are performed in a single setup to ensure maximum accuracy.

Upright beam
The upright beam, mobile in the longitudinal direction (X axis) is made of electrowelded steel with gantry structure: thick steel sheets and reinforcing transversal elements grants an higher rigidity and allow to obtain the maximum precision.
The beam is stabilized before metal machining to release the tension accumulated during welding operations.
To achieve the highest precision the mechanical machining are performed in a single setup.

Transversal and vertical carriages
The transversal carriage (Y axis) and the vertical carriage (Z axis) are made of an aluminum light alloy casting which is stabilized and then machined in a single setup for maximum precision.

MOVEMENT OF CONTROLLED AXES

Axes drives and motor systems
Biesse uses Brushless motors, controlled by digital axes drives.
The interfacing between axes drives and numerical control is digital.
The digital system Mechatrolink allows the following:
·Higher machining speed, since a portion of the toolpath is controlled by the axis drive instead of the numerical control

·Higher working precision, thanks to a faster data processing
·Higher reliability, thanks to a reduced wiring system which eliminates electrical interferences that may occur on analogue systems
·Reduced machine stops and downtime, thanks to the errors diagnostic with explanatory messages displayed directly on the N.C.

X and Y axes transmission system

The operating unit moves along the longitudinal axis (X axis) and transversal axis (Y axis) by rack and pinion system (a solution that BIESSE is been using for twenty years) which grants higher acceleration and movement speed.
BIESSE uses a tempered and ground rack with helical teeth and a precision reducer with single pinion. The preloaded pinion system eliminates backlash and therefore grants smoother movement and maximum positioning precision.
Both rack and pinions are built in accuracy class 6 (DIN 3962 norm).
The mobile upright beam has two independent motors, one on each side of the machine frame.

Z axis transmission

As the operating unit moves in the vertical direction (Z axis) with a relatively short travel, BIESSE uses the ballscrew system with preloaded nut for backlash compensation and repeatability in positioning precision.
The movement is transmitted to the screw through a flexible joint.
The ball screws are built in accuracy class ISO 5.

GUIDES OF CONTROLLED AXES

Axes guides

All axes moves on tempered and rectified steel linear guides by preloaded recirculating balls bearings.
Each balls bearing is equipped with 4 sliding gaskets of which 2 internal and 2 external, to protect the bearing from chips and dust intrusion.
The size and the great pitch between the guides grant high precision and perfect machining finishing performed by the operating units.

MANUAL CENTRALZED LUBRICATION SYSTEM

For an easier maintenance, the machine is equipped with a centralized lubrication system with 2 greasing points. At each time interval set in the numerical control, a message automatically appears on the screen, signalling the need for lubrication. The operator can use the pump supplied with the machine to manually convey the lubricant to 2 distributors, which sends the grease to:
·Recirculating balls bearings of the X, Y and Z axes
·Rack and pinions system of the X and Y transmissions
·Ballscrew nut of the Z axis transmission

WORK AREA

FT Worktable

The worktable is made of stratified phenolic, it includes a vacuum locking system for the pieces and it is machined with a 30mm pitch grid for the rapid placement of gasket or standard vacuum modules through an adaptor. The entire worktable is equipped with vacuum inlets (D=10mm) with 150mm centerdistance, and is supplied with patented plugs for a quick removal. The worktable can be configured based on need with M8 threaded inserts (pitch 30mm) for jig installation or other clamping equipment.

Working areas

The machine has 1 working area with 2 left origins, 1 front and 1 rear.

Pneumatic reference stops

The machine's origins are determined by a set of stops with pneumatic movement which grants maximum positioning precision.
The base machine includes:
·2 pin reference stops for rear LH area

·3 pin reference stops for front LH area
·2 side stops (LH side)

Vacuum system and locking zones
The vacuum system allow to convey vacuum in the working areas in order to lock the piece in place during machining operations.
A buffer chamber grants a constant and high level of vacuum ensuring a quick spread on the worktable during locking cycle and maximum vacuum force during machining operations.
The worktable is divided in 2 locking zones to optimize locking of panels with smaller dimension.
Vacuum locking is activated by the provided foot pedal.

Prearrangement for the connection of 250 m3/h or 300 m3/h vacuum pumps
Allow the electrical and pneumatic connection of the vacuum pumps.
Inclusive of:
·Electrical prearrangement for the connection of the vacuum pumps
·Hoses for vacuum connection
·Digital vacuum gauge and vacuum switch connected to the emergency line

Vacuum level control is real time and through digital vacuum gauge which allows the differentiation of the minimum vacuum safety levels during spoil board surfacing cycles or pieces machining cycles
 *Max 3 pumps on 1224, 1536, 1836, 2231, 2243
 *Max 4 pumps on 1564, 2264
 *Pumps not included

OPERATING UNIT

Inverter
Inverter for electrospindle and boring head with power output adequate to the selected configuration.
Static frequency converter.
Inclusive of:
·Display for frequency visualization
·Display for tool rotation speed visualization
·Display for diagnostic messages
·Automatic control of tool rotation deceleration
·Brake resistor for power dissipation
·N.C. programmable tool rotation speed

Prearrangement for Electrospindle
Inclusive of electrical wiring to the electrical cabinet and pneumatic connections for the electrospindle.
 *Requires the selection of 1 electrospindle among those present in the pricelist.

NON EC SAFETY PROTECTIONS
Inclusive of:
·Front vertical safety photocell
·Software position control for operator protection
·Safety fence H=2m on three sides of the machine
·Operating unit cover, made of structural and protective sheet metal
·Left safety flaps positioned on machine beam
·Safety flaps positioned on the machine cover
·Transparent panel in crushproof polycarbonate allowing operators to work in total safety since it grants maximum visibility
·Emergency push-button positioned on the front side of the machine frame
·Emergency push-button positioned on the N.C. electrical cabinet
·Emergency push button positioned on the hand-held control keyboard

ELECTRIC SYSTEM
The machine is equipped with controlling devices (i.e. electrovalves, input/output modules, etc) which are assembled next to the devices they control, and are provided with the electronic circuits necessary for their

interface with the fieldbus; this solution greatly simplifies the electric system, with obvious advantages for diagnostics and maintenance purposes.

Electric cabinet

The machine can be powered at 380/400/415V - 50/60Hz.
The electrical cabinet and the internal components comply with the CEI EN 60204-1 and CEI EN 60439-1 norms.
The auxiliary transformer supplies the connection voltage for the personal computer, the air conditioner and the electrospindle cooling fan, avoiding the use of the middle neutral wire, not always available.
The electronic equipment is powered by a stabilized 24V DC power supply.

Air conditioner for electrical cabinet

It allows:
- ·The perfect working of all the electronic components inside the electric cabinet, even at very high temperatures, up to 40°C (104°F);
- ·A dust-free environment, since there are no aeration fans.

CONTROL SYSTEM

Numerical Control

Control cabinet with Windows-based PC and control system card BH660.
Thanks to the new Biesse technology WRT (Windows Real Time) the machine is controlled directly by the PC and any other proprietary hardware component becomes unnecessary. This solution extends the performances of Windows XP by making it work in real time.
Since the software that controls the machine runs directly on a personal computer and not on a dedicated hardware device, the system architecture is greatly simplified, granting greater performance and reliability.

Desktop Personal Computer

Main technical specifications:
- ·CPU Intel(R) Core i
- ·8 GB RAM memory
- ·500 GB (SSHD) hard disk or superior
- ·Dedicated graphic card
- ·19" LCD
- ·Keyboard
- ·Mouse
- ·DVD reader
- ·USB ports
- ·Ethernet card for network connection to an office PC

The technical specifications above may be subject to updates without prior notification.
Since the personal computer controls the machine processes BIESSE does not allow the installation of additional non-authorized software, under penalty of losing warranty.

Standard Hand-held control keyboard

Inclusive of:
- ·Override for manual control of the programmed axes speed
- ·Emergency push button

Prearrangement for controls on remote keyboard

Inclusive of all the wirings inside the electrical cabinet.

SOFTWARE

Statistic report

Machine statistics is an software environment capable of collecting general information on machine events in order to monitor productivity and reliability over time.

Customers can choose directly which events to be recorded, in example the machine set-up, production, authorized pauses, lubrication cycles, etc.

Emergency recovery procedure
This function allows operators to restart an interrupted working due to a machine emergency stop. The program restarts exactly from where it was interrupted, by following a specific procedure. The working can be restarted when the emergency stop happened during:
- A routing cycle with the electrospindle
- A drilling cycle with the boring head
- A cutting cycle with a blade
- An automatic tool changing cycle
- Any ISO instruction programmed movement

The introduction of this functionality avoids to discard half-finished components, which sometimes are made of valuable materials (rare woods, etc.). It also allows operators to save time in case of long programs execution.

Tool life calculation function
The NC memorizes the distance covered by each routing tool and compares it to a value set by the operator.
When this set value is reached, a persistent warning message is displayed on the screen.
This message will be displayed each time a given tool has reached the value set by the operator.
An hardware output (alternate or continuous, chosen by the customer) allows the connection of an external device (for instance a flashing light or a siren) which will be activated when the message appears on the screen.

SERVICE

Teleservice
It allows an immediate and direct access to the machine numerical control via network. In this way it is possible to check machine data, user programs, input/output signals and system variables, and to install software updates, therefore granting:
- Real-time service intervention
- Quicker problem solving
- Consistent reduction of machine downtime
- Real-time software updates

The Teleservice support is free of charge for the whole warranty period.

User documentation
- Installation instructions
- Machine user manual
- Software user manual instructions
- Pneumatic and electrical diagrams
- InDocs CD containing the spare parts catalogue
- Factory assembling and testing declaration

Maintenance equipment
- Device for locking and unlocking tools from tool-holders
- Set of wrenches
- Greasing pump
- Grease for linear guides, rack and pinion lubrication
- Grease for boring head and aggregates lubrication

TECHNICAL SPECIFICATIONS

	Single Z axis and	Double Z axis controlled	5 axes version

	double Z axis with pneumatic stroke version	by an independent axis version	
Maximum axes speed X - Y - Z	85 - 85 - 20m/min	85 - 85 - 20m/min	85 - 85 - 35m/min
Z axis stroke	384mm	405mm	515mm
Z axis piece passage	180mm	200mm	200mm
Z axis piece passage with sweeper arm	120mm		

* The technical data shall be verified on detailed layout according to the operating units chosen on the machine
* If the pump is not selected, the machine will have no prearrangement

9080910	1

Numerically controlled machining center ROVER B FT 2231
FT worktable dimension: X=3100mm; Y=2205mm

7510105	1

Uninterruptible Power Supply unit (UPS) for the machine PC
In case of a power outage the unit allow to operate the PC for 5 to 10 minutes based on working conditions in order to save data.

7000059	1

Controls on remote keyboard
Keyboard controlling the main functions available for work area set-up, operating unit tooling and tool changers tooling.
The remote keyboard has an ergonomic shape, an easy-to-read display and is equipped with a magnetic device for its positioning on the panel support handles or the control cabinet.
It includes:
    ·Emergency push-button
    ·2 potentiometers
    ·Membrane keys to access the menus available on the display
3 programmable keys allow the immediate access to the most used functions

It allows the operator to:
    ·Reset the axes
    ·Move the axes in manual mode
    ·Adjust the axes speed by means of a potentiometer
    ·Control the vertical movement of the spindles of the boring unit for tooling purposes
    ·Control the vertical movement of the dust extraction hood during the work phases , for the visual control of all the operations being performed on the test panel
    ·Display all information relating to the work area set-up : panel supports positioning dimensions along the X axis, sliding bases positioning dimensions along the Y axis, type of vacuum module positioned on each sliding base with the respective orientation
    ·Check the state of input and output signals
    ·Activate the belt for the removal of chips, if present
    ·Perform tool change operations.
 * If present, the selectors for the selection of the locking areas are not enabled

7000205	1

Automatic lubrication system
At each set time interval, adjustable in the numerical control, the pump automatically sends the lubricant to the machine moving parts (linear guides and bearings, recirculating ball screws), with no machine downtime and no operator's intervention.
When the quantity of lubricant in the tank reaches the minimum, a warning message appears on the NC screen.

7800280	1

Configuration 1
Front Loading
Flow from Left to Right
Determines the workflow of the machine and the disposition of the selected automatic loading and unloading systems.
* Requires the reference stops and origins for RH area or the division of the vacuum system into 2 work areas and 2 locking areas in X
* For size 1564 allows the configuration with Sweeping arm for panel unloading and spoilboard cleaning

7200270	1

Automatic Loading and Unloading System (Sweeping Arm + Loading Vacuum cups)
Inclusive of:
· Sweeping arm for panel unloading and spoilboard cleaning
· Loading Vacuum cups system
· Linear reference stops for piece containment during unloading cycle
· Sensors for the detection of lowered stops
· Pneumatic vertical movement of the safety strips
· Dust collection for panel's bottom side positioned at the end of the worktable
· Prearrangement for Scissor Lift, Loading tables and Lifting table
· Prearrangement for Loading stations type A and B
· Prearrangement for Unloading belt

The loading vacuum cups system is capable to pick a pre-aligned panel from the Scissor Lift, Loading tables or Lifting table, and position it automatically on a machine origin for a correct processing.
The unit is made vacuum cups along the Y axis with automatic activation based on panel's dimension.
It is possible to automatically load up to 3 panels with three consecutive single loading cycles.
The Sweeping Arm can automatically unload the processed panel on the Unloading belt positioned beside the machine.
Simultaneously to the unloading operation, the Sweeping Arm is capable to clean the spoilboard, allowing the loading of the next panel without performing any manual cleaning operation.
The linear reference stops act as a guide for the worked pieces and avoid any part to fall from the table during unloading operations
At the end of the worktable, an automatically activated dust collection port, positioned at panel's bottom side, grants a better cleaning of the finished components.
If the unloading belt is NOT purchased together with the machine, an additional button pad with 2-hands control to ensure the safety of the operator during the unloading cycle is provided.
The system is not designed to load/unload gloss and/or delicate material without any possible scratching, to reduce the possibility to damage those kind of panels we suggest to use the blowing unit for air flotation table which anyway doesn't grant to completely avoid the problem.
Technical specifications:
· Thickness of single panel unloading: from 9 to 50mm
· Maximum thickness of multiple panels loading: 20mm
· Maximum thickness of multiple panels unloading: 60mm
· Spoilboard thickness: from 8 to 25mm
· Maximum unloading weight: 200Kg

·Minimum loadable Y axis dimension of the panel: 800mm

* It is possible to load only non-transpiring panels
* The unloading of thin pieces or panels with thickness between 9 and 3 mm requires the upgrade for NC positioned Sweeping Arm
* Requires Conf.1, 2, 3 or 4 to determine the workflow

7200271	1

Loading station type A - 2 Reference bollards
Inclusive of:
• 2 Reference bollards for forklift loading correct stack positioning
• 2 Movable vacuum cups for panels alignment along Y with related electrical and pneumatic system
• Photocells for panel presence detection
• Machine Connection frame with MDF table
• Additional safety fences and photocells kit (based on configuration)

The system aligns the top panel of the stack loaded on the Scissor Lift and grants a precise positioning along Y axis for a correct machine loading.
The stack loading operation is performed in complete safety since the loading area is protected by a photocell barrier positioned in front of the Scissor Lift.
 *It's not possible to load the stack with the forklift while the machine is working
 *Not compatible with configurations 2 and 4
 *Not compatible with thin panels below 9mm and/or transpiring panels
 *Scissor Lift NOT included
 *Requires the Automatic Loading and Unloading System

7200216	1

Upgrade for Steel connection frame with wheels for Loading station type A
The frame, made of steel, is equipped with freewheels which reduces panel's friction during the loading cycle.
The wheels of the same row have a pitch of 102mm.
Replaces the Machine connection frame with MDF table.
 *Requires the Loading station type A

7200308	1

System for thin and/or porous panels loading for Loading station type A
Inclusive of:
 ·Automatic pressure regulation system for thin material alignment
 ·Replacement of the Movable vacuum cups for panel alignment with a double circuit version for transpiring panels detachment

A 2 pressure levels system with automatic activation based on panel's thickness allows to align thin and thick panels without any manual setup.
The Movable vacuum cups for panels alignment are replaced with a double circuit version which grants transpiring panels detachment and avoids any accidental loading of multiple panels.
* Minimum loadable panel thickness 3mm
* The unloading of thin pieces or panels with thickness between 9 and 3 mm requires the upgrade for NC positioned Sweeping Arm
* Requires the Loading station type A

7200325	1

Scissor Lift - Size 2231
Single scissor version
The Scissor Lift consists of a top frame for panels stack positioning that can be accessed by a forklift and a lifting system moved by a piston and hydraulic pump system.
Combined with the type A or B Loading stations, the Scissor Lift is capable to lift the stack to the correct quote for alignment and machine loading operations.
The Scissor Lift is equipped with a plate with levelling feet for correct installation and alignment with the machine.
 *Panel's dimension along X must be equal or greater of the dimension along Y
 *Requires the Loading station type A or B

7200283	1

Upgrade for NC positioned Sweeping Arm
Modification to the Sweeping arm unloading and cleaning system to automate the Z quote positioning through a NC axis.
The positioning of the Sweeping arm is automatically calculated based on the spoilboard thickness avoiding any operator's manual intervention.
The NC positioned Sweeping Arm can also be programmed to execute cleaning cycles on the top face of the worked panel making it essential if the machine is integrated with external automatic loading and unloading system cells.
Technical specifications:
- Minimum unloadable panel thickness: 3mm

* Requires the Automatic unloading system (Sweeping Arm) or the Automatic Loading and Unloading System (Sweeping Arm + Loading Vacuum cups)
* Mandatory for the unloading of thin pieces or panels with thickness between 9 and 3 mm

7200183	1

Auxiliary working station for nesting pattern visualization and adhesive labels printing
Manual labels application.
Inclusive of:
• Label printer
• 19" Touch-screen monitor
• Mouse and Keyboard

The auxiliary working station is positioned beside the Unloading Belt Conveyor and automatically shows the unloaded nesting pattern.
The operator by selecting the desired piece on the touch screen, can print the corresponding label; at the same time, in order to avoid re-printing of the same label, the color of the piece on the screen changes.
Technical specifications:
• Minimum label dimension = 50x50mm
• Maximum label dimension = 100x100mm
• Printer resolution = 200dpi

 *The auxiliary working station is remotely connected to the machine's PC
 *Not compatible with the automatic adhesive label printing and application system with 0-90° rotation for Loading station type B

7200288	1

Outfeed Belt Conveyor - Size 2231
Outfeed belt conveyor length 3600mm
Inclusive of:
• Supporting frame in electrowelded metal structural work

- Motorized unloading belt controlled by the machine's N.C.
- Safety devices

The Outfeed Belt Conveyor can receive the nested components from the machine and move them outside the working area, dramatically reducing the idle time between the execution of a program and the following one and therefore increasing machine's productivity.

During the unloading cycle the belt is moved to reduce friction and prevent panel's drag. At the end of the conveyor belt, a photocell stops the movement when the panels reaches the end.

The Outfeed Belt Conveyor is accessible from 3 sides for an easy and ergonomic unloading operation, furthermore it is possible to manually activate the belt's movement through a pedal until the remaining panels reaches the photocell allowing to perform the unloading operation completely from the far end of the belt conveyor.

Combined with the Automatic Loading and Unloading system, the Outfeed Belt Conveyor allows the machine to perform the loading and unloading operations simultaneously, increasing cell's productivity.

 *Maximum unloadable panel 3100mm
 *NOT compatible with the Rollers Hold-Down Unit
 *Requires the Automatic unloading system (Sweeping Arm) or the Automatic Loading and Unloading System (Sweeping Arm + Loading Vacuum cups)

7350920	1

Reference stops and origins for RIGHT area
Allows to execute programs with panel's reference side on the right.
Inclusive of:
·2 rear stops for RIGHT area
·3 front stops for RIGHT area
·2 RIGHT side stops
·Supporting column for RIGHT origin program start
·Foot pedal for RIGHT origins vacuum locking activation

The additional stops, with pneumatic lowering, creates 2 additional origins for the correct reference of panels. The stops are automatically raised based on origin selection.

The pieces to be executed on the right origins are locked by pressing the pedal placed near the area to be activated.

* For single machine requires the increment of 7 sensors for the detection of lowered stops, if selected
* For machine with automatic loading and unloading system (Sweeping Arm) requires the increment of 6 or 8 sensors for the detection of lowered stops, if selected

7300999	3

300 m3/h rotary claws vacuum pump
Oil-Free operation through non-contacting claws which grants high efficiency without the need of lubrication.

Rotary claws pumps maintain a constant efficiency over-time and it doesn't require expensive maintenance services.

Flow rate:
- 300 m3/h at 50Hz
- 360 m3/h at 60Hz

7350996	12

Vacuum module - Size 132x54 - H29mm, with high friction surface, integrated sealing gasket of the vacuum and prearrangement for needles.
The surface of the module, with a high coefficient of friction, ensures a secure locking thanks to the high area on which acts the vacuum.

The vacuum module is prearranged to fit 2 plates equipped with needle inserts to improve piece locking.

The gasket, easily replaceable, is positioned on the outer perimeter of the module to increase the vacuum surface and is pressed in a suitable seat, to prevent detachment during the handling of the panel.
Each module can easily be removed and rotated through 360°, with a step of 15°.
The total height, carriage included, is 70mm.

7350494	12

Vacuum module adaptor for FT work table - H16mm
The square base, with dimension 132x132mm, allows an easy and quick application of the adaptor on the FT work table channels with 30mm pitch.
The supporting surface on the FT table, made of high friction material, grants a secure locking of the piece to be worked.
The top surface of the adaptor reproduces exactly the surface of the pod and rail machine table carriage, with all its advantages.
For vacuum modules H29mm, H48mm and H74mm.
The thickness of the adaptor is 16mm from the FT worktable surface.

7212841	1

19.2kW (25.7HP) Air Spin electrospindle with HSK F63 coupling, liquid cooled
With integrated air blowing function through the tool-holder.
Technical Specifications:
- 16 kW (21.5 HP) from 12,000 to 15,000 rpm in S1 duty
- 19.2 kW (25.7 HP) from 12,000 to 15,000 rpm in S6 duty
- Ceramic bearings
- Rh and Lh rotation
- Rotation speed from 1,000 to 24,000 rpm N.C. programmable

The Air Spin electrospindle is equipped with an internal air vein that can blow compressed air through prearranged tool-holders.
It is included a dust extraction hood with 6 different positions in Z controlled by the N.C.; the position is automatically set based on tool's length or manually programmed by the operator.
The dust extraction gate is automatically closed when the electrospindle is not working.
 *Requires the liquid chilling unit for liquid cooled systems
 *Requires at least one automatic tool changer magazine or Pick-Up, where available

7550008	1

Presetter for the measurement of the tool length with diameter up to 130mm
Digital device for tool length measurement by contact plate.
The device checks the tool length and updates the values in the tool schedule of Numerical Control.
The diameter of the contact plate is 130mm.
We recommend the use of the blowing device for the cleaning of the reading surface.
The measurable lengths (min/max) must be verified on the specific layout.
 *Includes a special toolholder for the device setting

7570016	1

Liquid chilling unit for liquid cooled systems
The liquid chilling unit is equipped with a visual indicator for liquid level and is capable to chill two electrospindles or one electrospindle and one liquid cooled boring head.
The liquid chilling unit grants a longer life to the units even during the most severe operation by keeping the temperature within the normal levels.
The system has an internal flow control which can pop-up warning message on the N.C. screen if the flow

is not sufficient.
Power consumption: 1600W

7212017	1

Blowing unit with 4 nozzles for electrospindle
The unit is made of 4 manually adjustable nozzles, positioned every 90°, capable of blowing compressed air during machining operations and increase dust collection efficiency.
The nozzles are installed on the dust collection hood and therefore close to the processed panel for maximum effectiveness.
The unit is strongly suggested for nesting applications.
In machines with multiple electrospindles the slot has to be specified.
 *Requires ISO or HSK electrospindle
 *Incompatible with Operating Unit with 5 Interpolating Axis

7212179	1

Additional Z axis carriage for front operating units, controlled by an independent axis
This carriage can fit the boring unit, multifunction unit or both.
The N.C. controls the descent of the carriage, which is performed by means of a Brushless motor and a ball screw.
The boring unit or the multifunction unit are fixed directly to the front Z carriage, which vertical movement is controlled by an independent Z axis, resulting in increased productivity.
The presence of the additional Z carriage allows the future installation of front operating units.
 *Retrofit NOT possible
 *In presence of the Operating unit with 5 interpolating axes is NOT compatible with the multifunction units

7200087	1

BH10 Boring Head
Working unit which can be equipped with 10 independent tools for single and multiple borings on the top face of the panel.
The spindles have a RH/LH alternated rotation and are driven by precision helical ground teeth gears which grants minimum noise emission and maximum machining accuracy.
The boring head is equipped with a manual lubrication system to be performed at a set time through the greasing pump, and it's reminded by a warning message on the N.C. screen.
The head is air cooled.
The unit is composed of 10 vertical independent spindle with a pitch of 32mm (5 spindles along X axis and 5 spindles along Y axis)
The spindles are driven by 1 inverter controlled motor (motor power 1.7 kW at 2800 rpm - 3 kW at 6000 rpm): the spindles rotation speed is programmable up to 6000 rpm to perform fast drilling cycles and reduce machining time.
Furthermore it is possible to program the correct rotation speed based on the tool and material to be processed.
The boring head is equipped with a dedicated dust collection hood which is automatically activated when the unit is in operation.
*Requires the additional Z carriage with pneumatic stroke or controlled by an independent axis
 *In presence of the Operating unit with 5 interpolating axes is compatible only with the Vertical routing unit

7001133	1

Horizontal spindles and blade kit for BH10 Boring Head
The kit allows to perform drilling on the 4 vertical sides of the panel and blade grooves along X axis on the panel's top face.
Inclusive of:
• 3 double outlet horizontal spindles with a pitch of 32mm of which 2 oriented along the X axis and 1

oriented along the Y axis
- 1 circular blade with diameter 120mm for grooves along the X axis (maximum groove depth 25mm)

   *Requires the BH10 Boring Head

7291170	1

8 positions Revolver Toolchanger, positioned on the Y axis carriage
Onboard of the Y axis carriage, allows to store up to 8 tools always available on each position of the machine and to perform a tool change while the machine is executing other operations which not involve the electrospindle, in example drilling cycles, reducing the overall cycle time and therefore increasing productivity.
Technical specifications:
- Wheelbase between grippers: 113mm
- Maximum loadable tools: 8 with 110mm maximum diameter
- Loadable aggregates: Refer to the toolchanger layout
- Maximum tool diameter: Refer to the toolchanger layout
- Maximum tool length: Refer to the toolchanger layout
- Maximum weight of a tool or aggregate inclusive of the tool: 7.5Kg
- Maximum total weight: 32Kg

   *NOT compatible with the operating unit with 5 interpolating axes
   *NOT compatible with the Additional Z axis carriage for front operating units, with pneumatic stroke

7530144	1

BiesseWorks Advanced - Machine version
It requires the numerical control BH660.
The graphic interface, fully compatible with the Windows standard, grants the following functions:
- Assisted graphic editor for the programming of boring, cutting and routing operations.
- The Editor handles multiple documents, so it is easy to copy a machining operation from one document to another through the Windows copy/paste functions
- Interactive graphic views with zoom function.
- It is possible to select machining operations graphically and modify their technological parameters
- Automatic optimization of borings, tool changes and tool routes
- Possibility of defining the work sequence with the mouse by rearranging the machining from the tree list
- Parametric programming with the possibility of specifying the values of the parameters when the program is executed in the machine
- Management of sub-programs: insertion of different BiesseWorks (.bbp) programs into a single program with optimization of sequential processes
- CAD and other external software systems files import through DXF, CID3 and CIX format.
DXF files can be purely geometric or can contain all the technological parameters necessary for machining
- Batch conversion of groups of DXF, CID3 and CIX files with no need of importing them one by one (batch-run module)
- Possibility of executing DXF, CID3 and CIX files directly on the machine
- Graphic configuration of machine data
- Tool database with search filters to help tools selection.
It is possible to associate a custom shaped DXF profile to every tool and automatically generate its 3D representation
- Drag and drop operating unit and toolchanger setup
- Graphic set-up of panel supports: immediate detection of tool collisions with piece locking devices, automatic generation of the set-up on symmetric or translated origins and possibility of defining the rotation of the vacuum modules (pod and rail machines)

   BiesseWorks Advanced also includes:
- Guided creation of customized parametric macros, with the possibility of recalling them through icons which can be included in the software interface

- 3D simulation of the tool path, to allow the operator to check on the PC the real situation on-board the machine, thus detecting of any errors in advance
- Approximate calculation of machining time
- Parametric programming of the work area: by changing the parameters the programs automatically adjust both the workings and the positioning of the elements on the work area
- Automatic pocketing of any shape with the possibility of leaving islands in relief at different depths
- Text engraving using Windows True Type Fonts
- Possibility of defining rotated or circular faces in addition to the six standard faces available in the editor.
  Programming for these faces is entirely similar to programming the standard faces
- Programming of the chip deflector aggregate

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BiesseWorks Advanced - Office version
2 Hardware protection keys included
Compatible with the numerical controls BH660, XP 600, NC1000, Xnc, Xnc Compact rel. 2.0.0.0 and updated.
The graphic interface, fully compatible with the Windows standard, grants the following functions:
- Assisted graphic editor for the programming of boring, cutting and routing operations.
  The Editor handles multiple documents, so it is easy to copy a machining operation from one document to another through the Windows copy/paste functions
- Interactive graphic views with zoom function.
  It is possible to select machining operations graphically and modify their technological parameters
- Automatic optimization of borings, tool changes and tool routes
- Possibility of defining the work sequence with the mouse by rearranging the machining from the tree list
- Parametric programming with the possibility of specifying the values of the parameters when the program is executed in the machine
- Management of sub-programs: insertion of different BiesseWorks (.bbp) programs into a single program with optimization of sequential processes
- CAD and other external software systems files import through DXF, CID3 and CIX format.
  DXF files can be purely geometric or can contain all the technological parameters necessary for machining
- Batch conversion of groups of DXF, CID3 and CIX files with no need of importing them one by one (batch-run module)
- Possibility of executing DXF, CID3 and CIX files directly on the machine
- Graphic configuration of machine data
- Tool database with search filters to help tools selection.
  It is possible to associate a custom shaped DXF profile to every tool and automatically generate its 3D representation
- Drag and drop operating unit and toolchanger setup
- Graphic set-up of panel supports: immediate detection of tool collisions with piece locking devices, automatic generation of the set-up on symmetric or translated origins and possibility of defining the rotation of the vacuum modules (pod and rail machines)

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  Programming for these faces is entirely similar to programming the standard faces
- Programming of the chip deflector aggregate

Minimum PC requirements:
- Pentium processor 2 Ghz or equivalent
- 512 MB RAM (1 GB suggested)
- 1 GB of free Hard Disk space

 *Requires the operating system Windows XP or Windows 7
 *For NC BH660, XP600 and NC1000 requires BiesseWorks Advanced - Machine version

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BiesseNest
Entry-level software module for nested-based manufacturing.
BiesseNest, starting from a nesting project of single programs to be produced, automatically places them on a sheet of rough material in order to minimize waste and optimize machining and tool changing operations.
The result is a series of BiesseWorks programs (.bpp) which can be manually edited if needed.
A BiesseNest project allows to import:
    ·BiesseWorks (BPP) programs, even parametric, with the possibility of modifying the values of the parameters directly in the BiesseNest environment
    ·CID3 or CIX files
    ·DXF drawings

BiesseNest has a "true shape" nesting capability.
The machining are arranged in order to minimize tool changing operations and machine movement, and to perform through cuts at the end of the program.
BiesseNest includes a labelling functionality and for each nesting program it is possible to:
    ·Print a label for each produced piece following the machining order, sheet by sheet
    ·Print a drawing of the cutting pattern for each rough material sheet with identification marks to aid the operator in sticking the labels on the right pieces
    ·Optimize the automatic labels placement in order to avoid labels being damaged (only for automatic labelling system)

The nesting project, composed of the pieces to be optimized and the plates to be used, can be created manually in BiesseNest or automatically imported through an external file with one of the following formats:
    ·Formatted text file .txt (i.e. a comma separated values file CSV) which can be created by an external software or from an Excel spreadsheet
    ·XML file

A more detailed description of the software functions can be found in the document "Technical description of the operating features of the software module BiesseNest".
* Requires the software BiesseWorks