



Order Ref
ACOR000804 - Page 1 of 21

12th June 2014

Our ref: ACOR000804

Total Care Ref: **To be confirmed**

Dear

Thank you for your order for a **Rover B2231 G FT** Machine. We now have pleasure in enclosing two copies of our Order Acknowledgement no. ACOR000804.

The acknowledgement comprises a full technical description of the machine you have ordered. Please check the specification and let us know straight away if you need to make any changes. The machine delivery is to be confirmed and we will contact you to confirm the exact date.

I would draw your attention to our Conditions of Sale which are printed on the reverse of the Order Acknowledgement cover page. These Conditions of Sale are incorporated in the contract between us.

Would you please sign one copy of the order acknowledgement and return it to me for our records.

Yours sincerely,

Stephen Bulmer
Managing Director
Email: steve.bulmer@biesse.co.uk

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Date: 12th June 2014**ORDER ACKNOWLEDGEMENT**

Customer:
Machine: Rover B2231 G FT
Machine S/N: To be confirmed
Our order No: ACOR000804
Customer Order No:

Terms of Payment: Financed via HP / Lease Purchase
20% plus VAT deposit with order plus sight of signed finance document up
to 3 months in advance of anticipated despatch
80% plus VAT on delivery of machine
(Machine will not be installed until the delivery payment is received)

Note: Your attention is drawn to our Conditions of Sale on the reverse of this
document, in particular to clause 2(a) and clause 11.
If, due to your funding arrangements, legal ownership of the equipment will
belong to a third party finance house, our Conditions of Sale will still apply.

Voltage: 415V/ 50 HZ / 3PH

Warranty: **60 months or 10,000 hours** from date of commissioning on single shift
working (subject to the conditions set out in clause 11 overleaf).

Maintenance: Any maintenance not in accordance with the Service Manual could
invalidate the warranty. This machine will be serviced in accordance with
the total care 5 Year Warranty Plan.

Installation: Installation will be carried out by either a Biesse Group UK or an Italian
engineer. Any modifications made to the machine after delivery without
prior agreement from Biesse Group UK Limited will invalidate the warranty.

Delivery: Delivery time is estimated and is included on a normal tilt trailer and
subject to normal access. It is your responsibility to advise us if there are
any abnormal circumstances relating to delivery. You will be responsible
for any additional costs due to such circumstances.

It is your responsibility to ensure all services are available for connection
prior to the technicians visit.

When the machine is due to be delivered, Biesse Group UK reserves the
right, subject to prior fax notice, to invoice the machine even though the
end user may not be ready to accept delivery. In this event, the invoice will
become payable and Biesse Group UK will keep the machine on
consignment, pending delivery.

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Code / Description	Quantity
9080202	1
NUMERICALLY CONTROLLED MACHINING CENTRES SERIES ROVER B G 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 centres 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 centres 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 electro welded 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 electro welded 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 aluminium 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.

Code / Description	Quantity
<p>The interfacing between axes drives and numerical control is digital. The digital system Mechatrolink allows the following:</p> <ul style="list-style-type: none">• Higher machining speed, since a portion of the tool path 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 analog 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 ball screw 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 CENTRALIZED 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
- Ball screw nut of the Z axis transmission

WORK AREA

Code / Description **Quantity**

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 electro spindle 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

Code / Description	Quantity
<ul style="list-style-type: none"> • Automatic control of tool rotation deceleration • Brake resistor for power dissipation • N.C. programmable tool rotation speed 	

Prearrangement for Electro spindle

Inclusive of electrical wiring to the electrical cabinet and pneumatic connections for the electro spindle.

*Requires the selection of 1 electro spindle 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. electro valves, 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 electro spindle 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

Code / Description**Quantity****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 a 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.

Code / Description	Quantity
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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 electro spindle
- 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. A 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

Code / Description	Quantity
Maintenance equipment	
<ul style="list-style-type: none"> • 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 with pneumatic stroke version	Double Z axis controlled by an independent axis version	5 axes 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

9080910	1
Numerically controlled machining center Rover B 2231 G FT	
FT worktable dimension: X=3100mm; Y=2205mm	

7000059	1
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:	
<ul style="list-style-type: none"> • 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

Code / Description	Quantity
<ul style="list-style-type: none"> • Check the state of input and output signals • Activate the belt for the removal of chips, if present • Perform tool change operations. <p>*If present, the selectors for the selection of the locking areas are not enabled</p>	
7000205	1
<p>Automatic lubrication system</p> <p>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.</p> <p>When the quantity of lubricant in the tank reaches the minimum, a warning message appears on the NC screen.</p>	
7022068	1
<p>Upgrade to EC compliant safety systems for Rover B 2231 G FT</p> <p>For stand-alone machine</p> <p>Upgrade to the safety systems required by the EC norms.</p> <p>Inclusive of:</p> <ul style="list-style-type: none"> • Repositioning of the safety fence and photocells barrier to a greater distance from any moving part • Additional hardware control unit for safety systems • Safety fence access control with automatic gates locking and anti-panic system • Dynamic control of tool's rotation and unlocking • EC declaration of conformity 	
7350920	1
<p>Reference stops and origins for RIGHT area</p> <p>Allows to execute programs with panel's reference side on the right</p> <p>Inclusive of:</p> <ul style="list-style-type: none"> • 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 <p>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.</p> <p>The pieces to be executed on the right origins are locked by pressing the pedal placed near the area to be activated.</p> <p>*Requires the increment of 7 sensors for the detection of lowered stops, if selected</p>	
7350863	1
<p>16 zones Multizone vacuum system</p> <p>The FT working table is divided into zones, each of which is activated independently by the NC, granting the best vacuum optimization.</p> <p>It allows the locking of panels with different dimensions minimizing vacuum dispersion, without any operator intervention.</p> <p>*Requires the reference stops and origins for RH area</p>	

Code / Description	Quantity
7350923	1
Pendulum machining functionality for 2231 machine	
The functionality allows to load the panel on an origin while the machine is working on the opposite origin.	
The bumpers, positioned on the machine cover, grants the immediate stop of the machine in case of a collision with the operator.	
An access request button limits the axes speed within the safety regulations and allows the operator to enter the working area in safety.	
Inclusive of the modification of the safety devices.	
Enables the beam parking position in the centre.	
*Requires the reference stops and origins for RH area	
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:	
<ul style="list-style-type: none"> • 300 m3/h at 50Hz • 360 m3/h at 60Hz 	
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	
7200269	1
Automatic unloading system (Sweeping Arm)	
System for automatic panels unloading and spoil board cleaning.	
Inclusive of:	
<ul style="list-style-type: none"> • Sweeping arm for panel unloading and spoil board cleaning • 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 Unloading belt 	
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 spoil board, 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.	

Code / Description	Quantity
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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 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.

Main technical specifications:

- Thickness of single panel unloading: from 9mm to 50mm
- Maximum thickness of multiple panels unloading: 60mm
- Spoilboard thickness: from 8mm to 25mm
- Maximum unloading weight: 200Kg

* Requires Conf. 1,2,3 or 4 to determine the workflow

7200288	1
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Outfeed Belt Conveyor - Size 2231

Outfeed belt conveyor length 3600mm

Inclusive of:

- Supporting frame in electro welded 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)

7200283	1
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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 spoil board thickness avoiding any operator's manual intervention.

Code / Description	Quantity
<p>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.</p> <p>Technical specifications:</p> <ul style="list-style-type: none"> • Minimum unloadable panel thickness: 3mm <p>*Requires the Automatic unloading system (Sweeping Arm) or the Automatic Loading and Unloading System (Sweeping Arm + Loading Vacuum cups)</p>	
7200183	1
<p>Auxiliary working station for nesting pattern visualization and adhesive labels printing Manual labels application. Inclusive of:</p> <ul style="list-style-type: none"> • Label printer • 19" Touch-screen monitor • Mouse and Keyboard <p>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.</p> <p>Technical specifications:</p> <ul style="list-style-type: none"> • Minimum label dimension = 50x50mm • Maximum label dimension = 100x100mm • Printer resolution = 200dpi <p>* 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</p>	

7212840	1
<p>13.2 kW (17.7HP) electro spindle with HSK F63 coupling, air cooled Technical Specifications:</p> <ul style="list-style-type: none"> • 11 kW (14.7 HP) from 12,000 to 15,000 rpm in S1 duty • 13.2 kW (17.7 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 <p>N.C. programmable 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 electro spindle is not working.</p>	

Code / Description	Quantity
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 tool holder for the device setting	
7212017	1
Blowing unit with 4 nozzles for electro spindle	
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 electro spindles the slot has to be specified. *Requires ISO or HSK electro spindle *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.	

Code / Description	Quantity
<p>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</p>	
7001133	1
<p>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:</p> <ul style="list-style-type: none"> • 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) <p>*Requires the BH10 Boring Head</p>	
7291170	1
<p>8 positions Revolver Tool changer, 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 electro spindle, in example drilling cycles, reducing the overall cycle time and therefore increasing productivity. Technical specifications:</p> <ul style="list-style-type: none"> • Wheelbase between grippers: 113mm • Maximum loadable tools: 8 with 110mm maximum diameter • Loadable aggregates: Refer to the tool changer layout • Maximum tool diameter: Refer to the tool changer layout • Maximum tool length: Refer to the tool changer layout • Maximum weight of a tool or aggregate inclusive of the tool: 7.5Kg • Maximum total weight: 32Kg <p>*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</p>	
7270063	2
<p>HSK F63 tool holder for ERC40 collet - RH rotation For tools with cylindrical shank with diameter from 6 to 25mm Inclusive of:</p> <ul style="list-style-type: none"> • Ring nut with bearing to grant higher locking forces on the elastic collet without distortion. • This solution delivers a better precision and balance of the tool. • Burnished coating for longer protection from oxidation <p>*Maximum rotation speed 24,000 rpm *NOT inclusive of the ERC40 collet for tool locking</p>	

Code / Description	Quantity
3407071	1

ERC40 elastic collet for tool locking – diameter 11-12mm

Once equipped on the tool holder, on the manual tool change electro spindle or on the aggregate, the elastic deformation of the collet allows a perfect tool locking.
The diameter of the lockable tool is within the specified range.

3407082	1
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ERC40 elastic collet for tool locking – diameter 15-16mm

Once equipped on the tool holder, on the manual tool change electro spindle or on the aggregate, the elastic deformation of the collet allows a perfect tool locking.
The diameter of the lockable tool is within the specified range.

7001200	1
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Complete set of tools for Rover machines running test

Inclusive of:

Drill bits	Router bits	Collets
8 x diameter 5mm	1 x diameter 6mm	2 x ERC 32 diameter 10mm and 20mm
8 x diameter 8mm	1 x diameter 18mm	2 x ERC 40 diameter 10mm and 20 mm
4 x diameter 10mm 2 x diameter 5mm V-bits 1 x diameter 35mm	2 x spare inserts	

7530144	1
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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

Code / Description	Quantity
<ul style="list-style-type: none"> • Graphic configuration of machine data • Tool database with search filters to help tools selection. <p>It is possible to associate a custom shaped DXF profile to every tool and automatically generate its 3D representation</p> <ul style="list-style-type: none"> • Drag and drop operating unit and tool changer 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 	1

7530079

1

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)

Code / Description	Quantity
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The nesting project 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

7530074	1
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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 tool changer 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)

Code / Description

Quantity

-
- 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

 - 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



Order Ref
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HEALTH AND SAFETY AT WORK ACT:

All machines will be protected in accordance with the C.E. Regulations for the type of machinery being sold.

We trust that the above is satisfactory and assure you of our best attention at all times.

Yours sincerely,
BIESSE GROUP UK LTD.,

Signed: _____

Date: _____

Signed: _____

On Behalf of: _____

Date: _____

BIESSE
BIESSEEDGE
BIESSESAND
BIESSEARTECH
COMIL
RBO
SELCO
Bre.Ma.

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