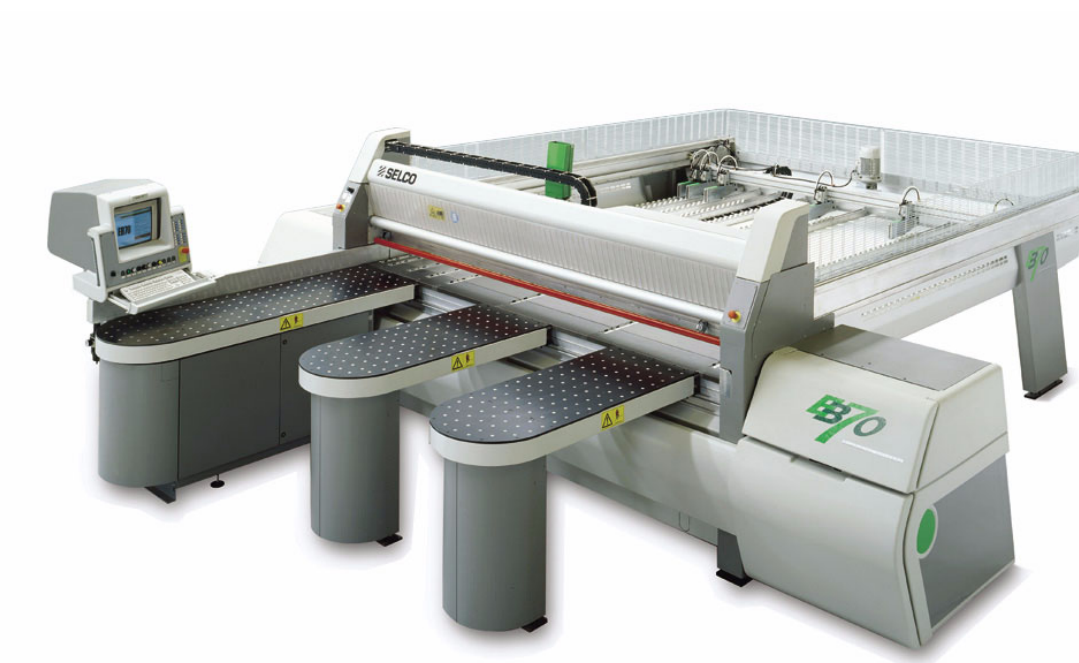


MACHINE USER'S MANUAL

NC Panel Sizing Centre **EB 70**



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Information on this publication

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Introduction

Field of Application and Limits of the Manual

This manual is aimed at users of the machine for which it provides basic information that the user must know before starting to use the machine. It also contains information on the maintenance of the machine necessary to ensure that it remains efficient and safe over time. In order to use the machine properly, the Software user's manual and Enclosures must also be consulted.

Documents Supplied with the Machine

Software User's Manual. Contains information on the typical operations and procedures to follow in order to produce the programs that can be carried out with the software connected to the machine.

Spare Parts Catalogue. This is used to order components that must be replaced, following the instructions given in the introduction to the manual.

Circuit diagrams. These describe the main plants of the machine (electric, pneumatic, etc.) and are provided for the technician responsible for solving problems. This technician must be expert and competent in his job.

Enclosures. These contain information on any special parts of the machine. In order not to miss any important information, each Enclosure must be consulted together with the document to which it refers.

Warning Signs

Paragraphs that should not be overlooked are highlighted and preceded by the symbols described and illustrated below:



Paragraphs marked with this symbol indicate an imminent danger, and the contents must therefore be taken into careful account in order to prevent a serious accident.



Paragraphs marked with this symbol indicate procedures to be used and actions to be taken to avoid any damage to goods and property.



INFORMATION

This symbol is used to indicate points of particular importance that must not be overlooked.

Warnings

The safety information provided in the appendix to this manual must be read before using the machine.

Part 1 - Description

Chapter 1. Main Parts and Foreseen Uses

In this chapter the main parts of the machine basic configuration are described and information is given on the foreseen uses of the machine. Information concerning the optionals is found in the following chapters.

1.1 General Description of the Machine

This machine is a NC panel sizing centre with a single cutting line. More information on possible machining, loading methods and piece characteristics is described in the paragraph 1.4 "Foreseen Use" on pages 1 - 6.

On the following paragraph a general plan view of the machine is shown and its main parts are identified and described.

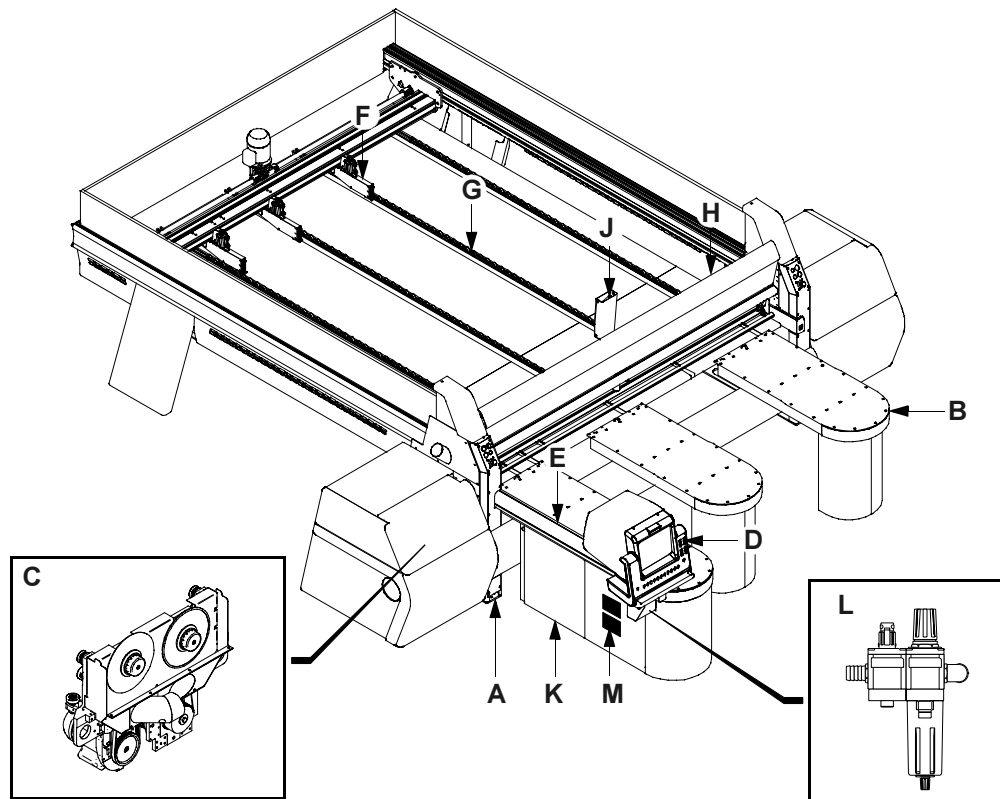
As a general rule, the machine is fitted for piece loading on its left-hand side (left-hand side machine). However, should there be particular requirements, the customer may request a machine fitted for piece loading on the right-hand side (right-hand side machine). For any further information, please see paragraph 2.6 "Right-hand Side Machine" on page 2 - 2.



INFORMATION

Please note that in this manual, as a general rule, the illustrated machine is the left-hand side machine.

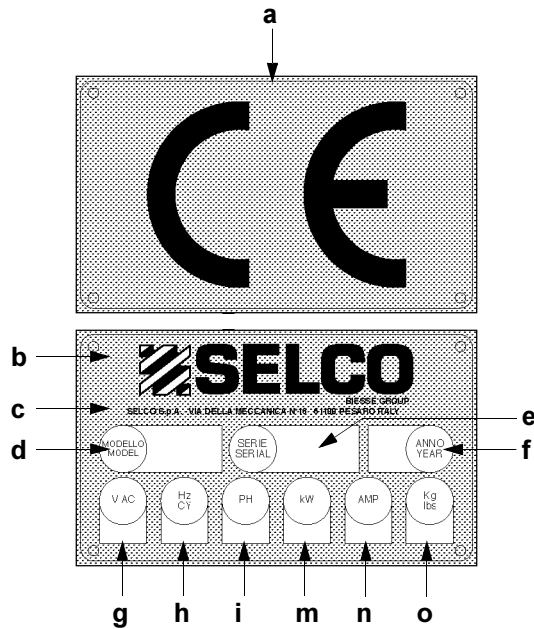
1.2 General View and Main Parts



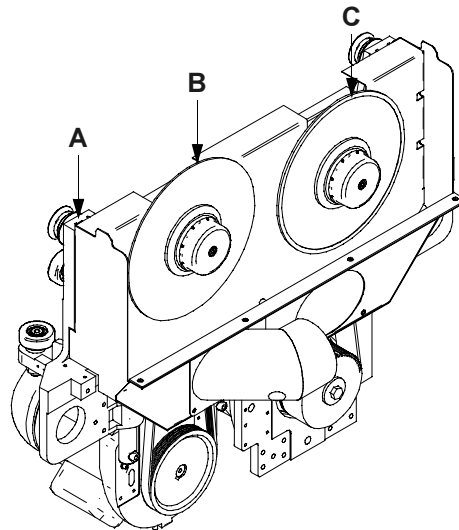
- A- Base;** this is the machine's bearing structure.
- B- Panel Support;** this is used to support the piece during the loading and unloading phases.
- C- Operating Section;** this is used to cut the piece. For further details, please go to the paragraph "Operating Section" on page 1 - 4.
- D- Control Panel;** this is used to control the machine's operation. For more information, see Chapter 3. "Controls and Signalling Devices".
- E- Side Stop;** this is the reference point for the right- or left-hand side of the piece, according to the position of the stop itself.
- F- Rear Collet Stop (or Pushing Device);** this is the reference point for the rear side of the piece. The stop is also equipped with a collet that locks the piece in order to prevent it from losing its point of reference during movement.
- G- Wheel Panel Support;** this supports the piece, allowing it to slide easily.
- H- Presser;** this presses down on the upper side of the piece.
- J- Side Pusher;** this pushes the piece to bring it up against the stops.

- K- Electrical Cabinet:** this contains the main electric and electronic equipment.
- L- FR Unit (filter, regulator);** this filters the compressed air used by the machine and it maintains the pressure at a constant level.
- M- Machine and Manufacturer's Identification Plates;** these contain the following information:

- a** - mark CE (only for the machines destined for the European market and for those Countries which apply the directive 89/392 EEC and subsequent modifications)
- b** - logo
- c** - address
- d** - model
- e** - serial number
- f** - year of construction
- g** - power supply voltage
- h** - frequency
- i** - number of power supply phases
- m** - installed power
- n** - electrical power input
- o** - weight of the machine



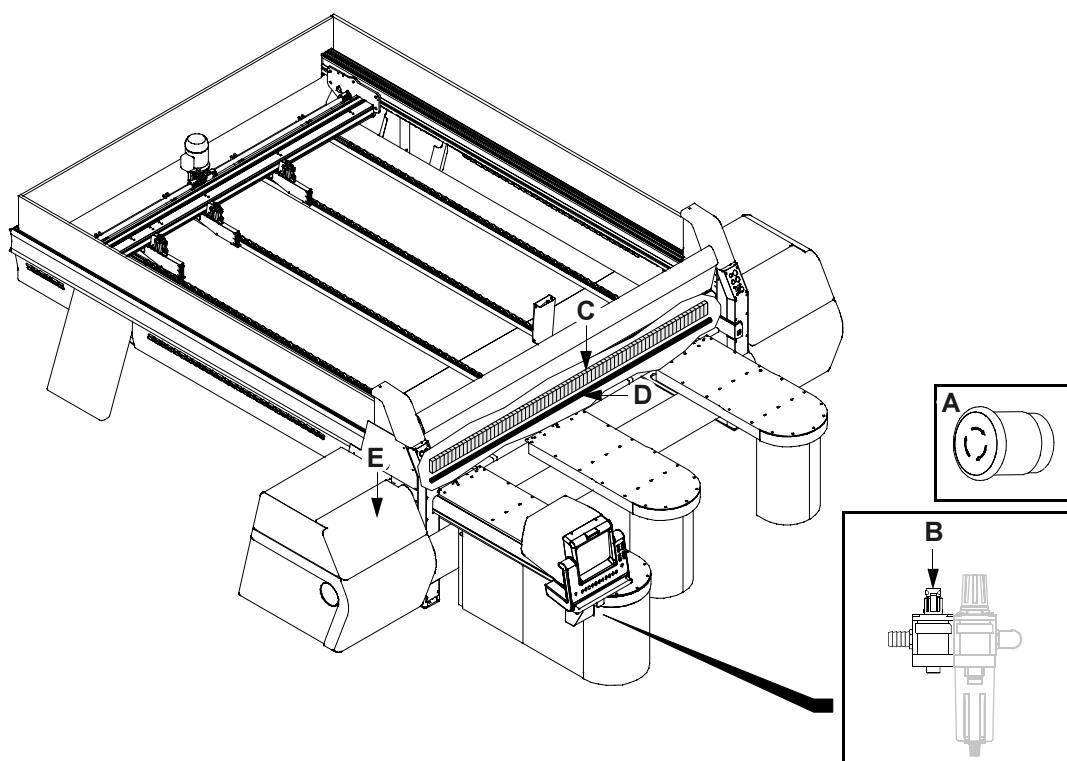
Operating Section



- A- Blade Carriage:** this supports and drives the scoring and cutting blades.
- B- Scoring Blade:** this scores the lower side of the piece in order to obtain cuts with a better finish.
- C- Cutting Blade:** this cuts the piece.

1.3 Safety Devices

As well as various casings, covers, and other equipment fitted for the safety of the operator, which are situated in different points, the machine is provided with safety devices as follows:



- A- Emergency Button;** this is located in the main control panel as well as in other locations close to the control panel and it is used to shut down the machine immediately. For further information, please see Chapter 3. “Controls and Signalling Devices”.
- B- Cut-out Valve;** this is used to perform maintenance or repairs on the machine in safety conditions and it may be locked in order to avoid any possible tampering from unauthorized personnel. This valve is operated by turning anticlockwise the orange-coloured knob, thus allowing for the discharge of the pneumatic system and for the shutdown of the air flow from the general supply system. To reset the machine and put it into operation, press and turn clockwise the same knob.
- C- Safety Curtain;** this prevents hands from entering the cutting areas during machining.
- D- Safety Bar;** this protects the operator from the risk of being crushed by the presser and is equipped with interlock microswitches.
- E- Operating Section Access Door;** this is a mobile guard equipped with interlock microswitches with lock to allow risk-free access to the operating section.

1.4 Foreseen Use

The machine is a numerical control panel sizing centre with one cutting line for pieces with the characteristics and dimensions as indicated in the paragraph “Piece Characteristics and Dimensions”. This machine may be operated by one person only. The operator may be assisted by another person for the stages of piece loading and unloading.

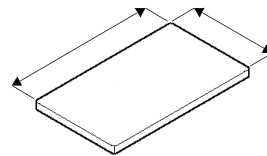
Piece Characteristics and Dimensions

It is possible to machine solid wood, fibre boards, chip boards, plywoods, and MDF (medium density fibre boards) with the following dimensions:

Length and Width

The machine is equipped, according to the requirements of the customer, to machine one of the maximum dimensions given here below:

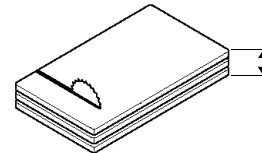
- 3200 x 3100 mm
- 4400 x 4250 mm



Machinable Height of the Pile of Pieces

In order to obtain a “rough cut” of an acceptable quality, the maximum height of the pile of pieces being machined must be such as that the teeth may come out of the pieces. It is therefore recommended to use the following value:

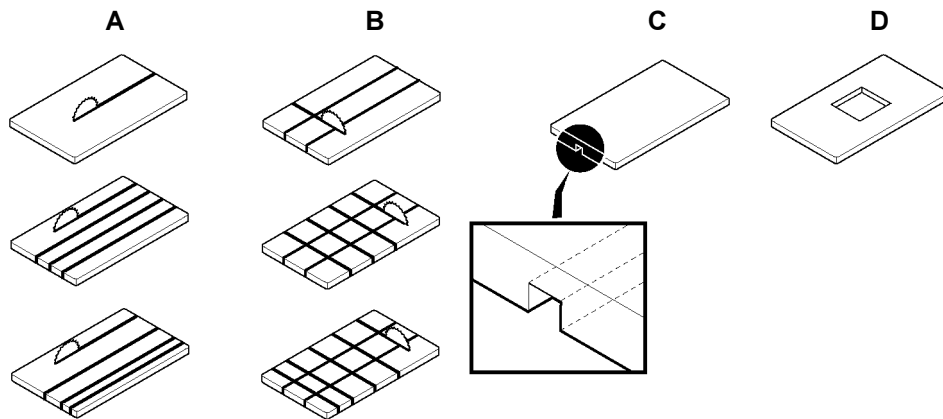
- EB 70 = 80 mm



Nevertheless, should a “finished cut” be required, it is not possible to define exactly the maximum height of the pile of pieces being machined, since this measurement depends upon the surface type of the pieces, on their calibration, on the quality and composition of the material, the type of tool used, and on tool wear and tear.

Possible Machining

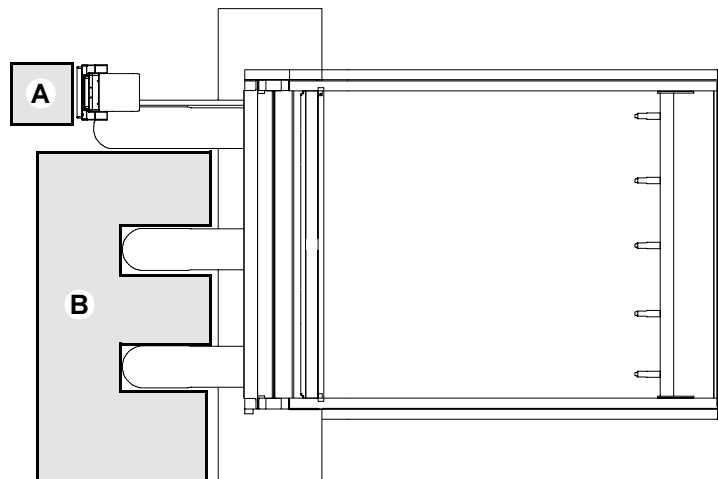
The following is an illustrated description of the types of machining that are possible with the machine:



- A** - Single or multiple rip cuts with the same or different measurements.
- B** - Single or multiple cross cuts with the same or different measurements.
- C** - Grooving (optional).
- D** - Square-shaped Openings (optional).

1.5 Work Area

The areas in which the operator must remain for the normal operation of the machine are as follows:



A - In front of the control panel to enable the controls and to use the numerical control.

B - In the proximity of the air jet panel supports in order to load or unload pieces.

The work area/s to be occupied during the different interventions on the machine (preparation, maintenance, adjustment, ...) are specified throughout the manual.

1.6 Danger Areas

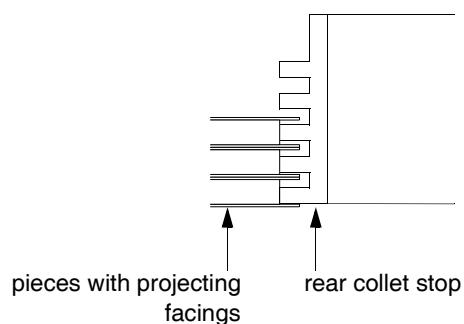
All of the danger areas of the machine, while it is in operation, are protected by suitable safety devices and are therefore inaccessible.

Chapter 2. Optionals

This chapter gives a brief description of all the optionals foreseen for the machine.

2.1 **Rear Collet Stop for Pieces With Projecting Facings**

This type of stop is fitted in place of the stop fitted on the basic version of the machine. It allows the exact reference point of pieces with projecting facings to be obtained.



2.2 **Scoring Blade for Postformed Pieces**

This is a scoring blade with a larger diameter than that of the scoring blade fitted to the basic version of the machine. This blade obtains a better cut when machining postformed pieces.

2.3 **Cutting Area Laser**

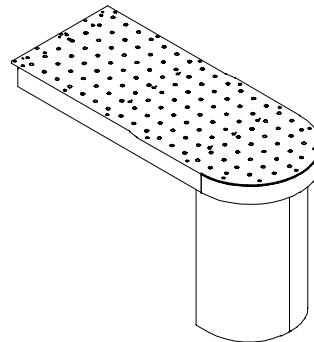
This is a device that projects a laser ray along the cutting line in order to check the exact point in which the piece will be cut. This device is usually used to make oblique cuts without using the stops.

2.4 Grooving Device

This device allows the vertical cutting blade stroke to be set in such a way that grooves can be made. This device can be equipped to be manually or automatically adjusted.

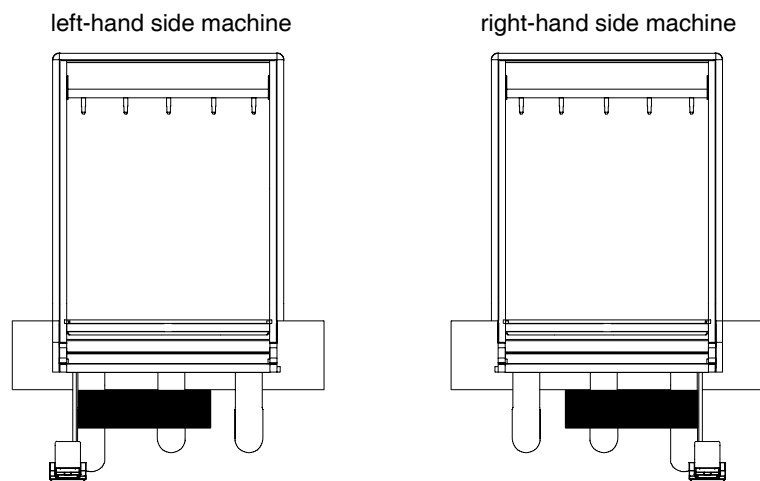
2.5 Air Jet Panel Supports

These are installed in place of the piece supports planned for the basic version. Besides supporting the pieces, they permit - through an air flow coming from a special ventilating fan - to handle the pieces in an easier way.



2.6 Right-hand Side Machine

In general, the machine is fitted for piece loading on its left-hand side (left-hand side machine). However, for particular requirements, the customer may request a machine fitted for piece loading on the right-hand side (right-hand side machine). The different types of machines differ one from the other only for the layout of some parts (stops, piece supports, control panel and electrical cabinet).



2.7 Stop for Cuts of Variable Angular Direction (analog)

This device allows the piece to be placed in different angular positions with regard to the cutting direction. In order to read the angular direction degree, this device is equipped with a vernier and a vernier scale.

2.8 Stop for Cuts of Variable Angular Direction (digital)

This device allows the piece to be placed in different angular positions with regard to the cutting direction. In order to read the angular direction degree, this device is equipped with a digital instrument.

2.9 Regulator of the Side Pusher Stroke

This is a device which permits - through an automatic control - to position the side pusher according to the piece width, in order to decrease the working cycle times.

2.10 Side Pusher with Front Roller

This system allows the side pusher to operate also during the execution of rear double edge trim cuts, in order to assure that the piece is perfectly aligned with the square fence.

2.11 Electronic Regulator for Scoring Blade

This device is used to adjust the scoring blade using the numerical control software. For further information see the paragraph 8.3 "Scoring Blade Adjustment" on page 8 - 8.

2.12 Pneumatic Unlocking Device for Blades

The blade spindle may be equipped with a pneumatic device permitting a faster unlocking of the blades.

2.13 Regulator of the Presser and Cutting Blade Stroke

This device permits - through an automatic control - to position the cutting blade and the presser in a vertical direction depending on the height of the pieces; and this in order to decrease the working cycle times.

2.14 Regulator of the Operating Section Stroke

This device permits, in case of immediate complete cuts, to position the blades depending on the piece width; and this in order to decrease the working cycle times.

Chapter 3. Controls and Signalling Devices

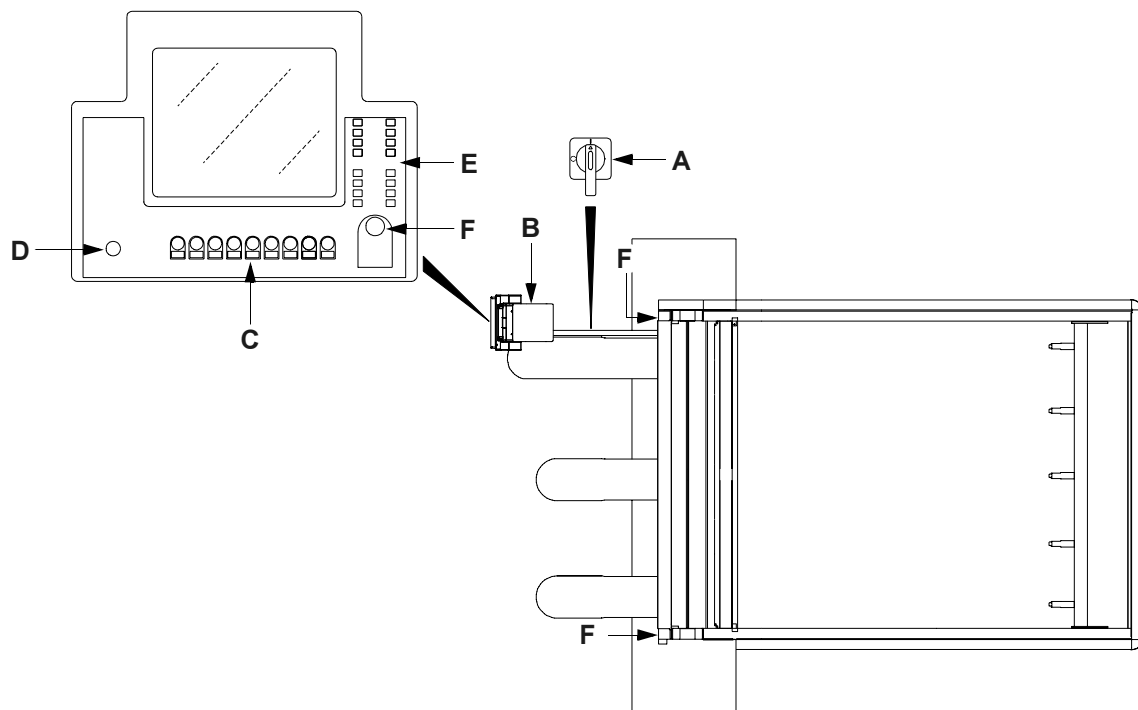
This chapter contains descriptions of the controls and signalling devices of the machine. The controls are grouped together in different areas of the machine. The first paragraph identifies these areas as well as allowing the groups of controls concerned to be located. Each description is usually preceded by a symbol to allow the identification of the control required.



INFORMATION

No distinction is made between the standard machine commands and commands associated with optional devices or functions. It is therefore possible that some commands may not be present on your machine.

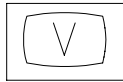
3.1 Layout of the Controls and Signalling Devices



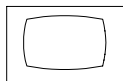
- A- Main Switch:** this is used to supply and cut off electric power. The main switch may be padlocked to prevent any tampering by unauthorised persons.
0 = voltage cut off.
1 = voltage supplied.
- B- Control Panel;** this contains the main controls and allows the use, through the fitted monitor and keyboard, of the NC300 numerical control software. For information on the software, see the Software User's Manual or the documents enclosed with the PC.
- C- Main Button Pad;** see page 3 - 3 for a description of the controls.
- D- Override;** this is used to make percentage variations in the programmed movement speed of the operating section.
- E- PLC Keyboard;** see page 3 - 4 for a description of the controls.
- F- Emergency Stop Button (red mushroom-head button):** this is used to bring the machine to an immediate stop. To disengage the button, turn it in the direction of the arrows.

3.2 Main Button Pad

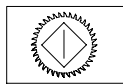
The main button pad is equipped with a series of controls for the main machine operations.



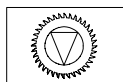
B1- Start Button (green): this is used to enable the supply of electric power to the moving machine organs.
Lit= function enabled.



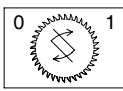
B2- Stop Button (black): this is present when the machine is part of a line of machines. Differently from the red mushroom button, which when pressed will stop the entire line of machines, this button is used to stop this machine only.



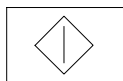
B3- Blade Start Button (white): this is used to start the blades.
Lit= function enabled.



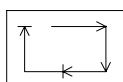
B4- Blade Stop Button (black): this is used to stop the blades. In addition, the same button is also used to stop the working cycle.



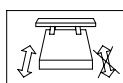
B5- Blade Change Selector (key): this is used to check and/or replace blades.
Right = function enabled.



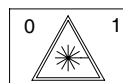
B6- Working Cycle Start Button (white): this is used to start the working cycle.
Lit= function enabled.



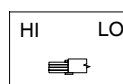
B7- Working Cycle Suspension Button (black): this is used to suspend working cycles.



B8- Pushing Device Selector (yellow): this is used to suspend pushing device forward and back strokes.
Right = function enabled.
Lit = indicates that the pushing device has suspended its movements and that the blade access hatch is released.



B9- Cutting Area Laser Selector (black): this is used to switch on the laser device situated in the cutting area.
Right = function enabled.



B10- Collet Pressure Selector (black): this is used to set the working pressure of the collets on the rear stops.
Left = high pressure.
Right = low pressure.

3.3 PLC Keyboard

This keyboard may be used to enable different functions. Each key controls a machine action only, however, after the cycle start button has been pressed.



E1- RESET Key: when held down for at least 3 seconds, this key serves to place all mobile machine organs on standby. It has no effect if pressed while machining is in progress.



E2- Key for Pieces with Projecting Facings: this is used when machining pieces with projecting facings and using the special stops.
Lit = function enabled.



E3- Automatic Blade Projection Key: this is used to optimise the blade projection according to the thickness of the pieces to be machined. This function may be enabled at any time, although if it is enabled while a cut is in progress, it will not be activated until the next cut.
Lit = function enabled.



E4- Key for Scoring with the Ø200 mm Blade: this is used for machining with the scoring blade with a diameter of 200 mm.
Lit = function enabled.



E5- Key for Scoring Postformed Pieces: this is used to cut postformed pieces using the scoring blade with a diameter of 300 mm. When this function is enabled this also automatically enables the function described here below.
Lit = function enabled.



E6- Key for Scoring with the Ø300 mm Blade: this is used for machining with the scoring blade with a diameter of 300 mm.
Lit = function enabled.



E7- Key for Piece Side Pushing: this is used for pushing pieces sideways using the relevant device. This function may be enabled at any time, although if it is enabled while a cut is in progress, it will not be activated until the next cut.
Lit = function enabled.



E8- Immediate Complete Cut Key: this is used to make an immediate cut of the same length as that set in the relevant parameter of the numerical control software (see the Software User's Manual).
Lit = function enabled.



E9- Ventilating Fan Start Key: this is used to start the ventilating fans on the air jet panel supports.
Lit = function enabled.



E10- Immediate Long Cut Key: this is used to make an immediate cut of the same length as that set in the relevant parameter of the numerical control software (see the Software User's Manual).
Lit = function enabled.



E11- Rear Collet Stop Key: this is used to drive the collets on the rear stop. To avoid the risk of crushing, the safety curtain will lower when collet clamping is enabled.



E12- Immediate Short Cut Key: this is used to make an immediate cut of the same length as that set in the relevant parameter of the numerical control software (see the Software User's Manual).
Lit = function enabled.



E13- JOG- Key: this is used to move an axis, selected using the numerical control software, in a negative direction.



E14- JOG+ Key: this is used to move an axis, selected using the numerical control software, in a positive direction.

Chapter 3.
Controls and Signalling Devices

Chapter 4. **Basic Concepts**

This chapter contains different subjects that will assist in the initial learning process for machine operation.

4.1 Axes and Origins

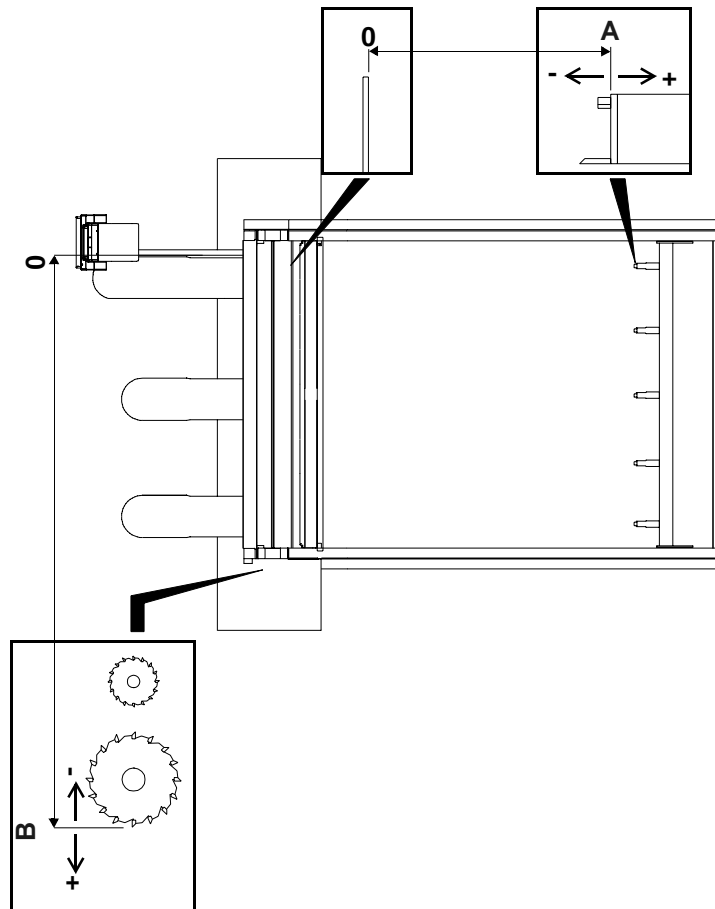
Any mobile element of the machine that requires its position to be controlled at all times is known as an “axis”.

Usually axis movements are controlled by a device known as an encoder, which is positioned on the motor that drives the axis. The encoder detects the revolutions of the motor and transmits this information to the numerical control, where it is processed and displayed in the form of millimetres or sexagesimal degrees. It is also possible that the movement of an axis does not occur using a motor but instead, for example, through the action of pneumatic actuators. In this case, switches to detect the axis limit switch position only will be present in place of the encoders.

To calculate the position of an axis, if it is equipped with a motor and encoder, it is necessary to establish two points of reference: one fixed point, known as the “origin” (or zero point **0**), and another, mobile point on the axis itself.

Chapter 4. Basic Concepts

The following section contains a description of all of the axes present on the machine. The codes used by the numerical control software to indicate each axis are also given. In addition, this section also contains the different reference points and the positive (+) or negative (-) directions for those axes equipped with motor and encoder.



- A - PUSHING DEVICE:** horizontal movement of the pushing device carriage and the rear collet stops. The reference points are as follows: the inner part of the cutting blade (0) and the rear stop.
- B- CARRIAGE:** horizontal movement of the blade carriage. The reference points are as follows: the side stop (0) and the part of the cutting blade farthest from the side stop.

4.2 Manual Axes Movement

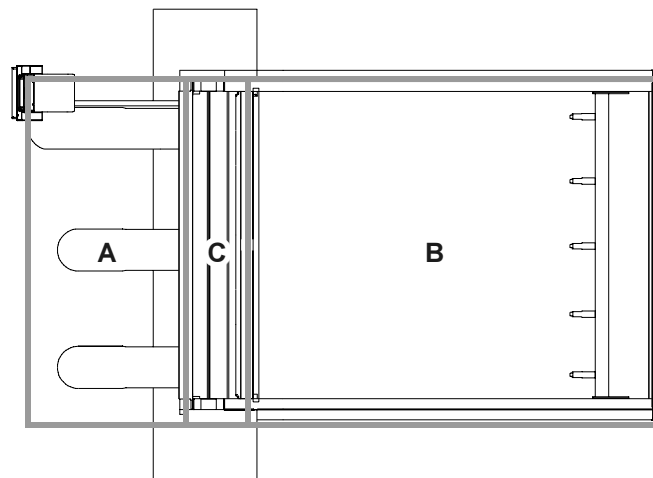
During tooling or use of the machine, it may be useful or, in some cases, indispensable, to move an axis. This operation can be carried out after switching on the machine, by using the JOG keys on the PLC keyboard or the special page (JOG AXES) of the numerical control software. To open and use the page for manual axes movement, see the Software User's Manual.

4.3 Axes Movement Speed Variation

Axis movement speed variation, which may only be used for the CARRIAGE axis, is usually carried out when testing a program. This is done to establish the most suitable speed for the material to be machined, or to be able to observe axis movements better during particularly critical points of the program. Speed is varied by manually turning the override control. The percentage speed variation is displayed in a special field by the numerical control software.

4.4 Identification of Main Operating Areas

This section identifies the areas in which the main machining stages are carried out and is aimed at simplifying the location of the machine parts or devices that are mentioned in this manual..

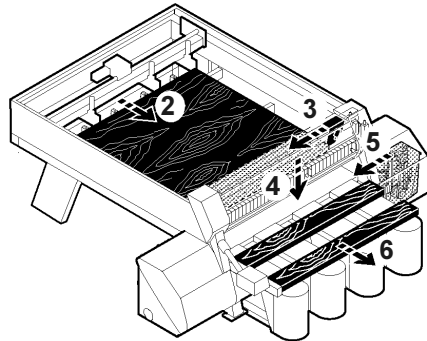
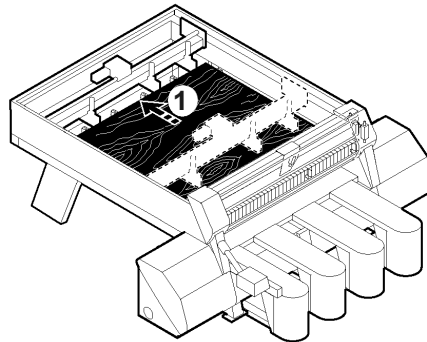


- A - Loading and Unloading Area** : the area in which the material for machining is loaded and unloaded.
- B - Movement Area**: the area in which the pieces are positioned for cutting.
- C - Cutting Area**: the area in which the cutting operations are executed.

4.5 Machine Operation

The following section illustrates and describes the main operations that the machine normally executes after machining has been started. .

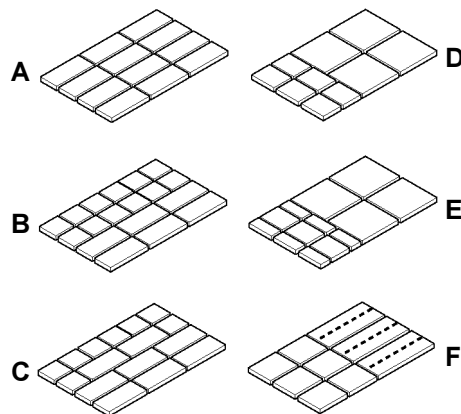
- 1 - Clamping and moving back of the pieces.
- 2 - Pieces forward feed to the cutting area.
- 3 - Side alignment.
- 4 - Presser downstroke.
- 5 - Execution of cuts.
- 6 - Outfeed of the sized pieces.



4.6 Cutting Patterns

A cutting pattern consists of a series of rip and cross cuts that are defined using the PATTERN EDITOR page of the numerical control software (to open this page press F4 from the main menu). The following are a few examples of cutting patterns that can be used with the machine:

- A - Logic Cutting Pattern
- B - 2-Type Differentiated Cutting Pattern
- C - 3-Type Differentiated Cutting Pattern
- D - Cutting Pattern with Logic Head Cut
- E - Cutting Pattern with Differentiated Head Cut
- F - Logic Cutting Pattern with Third-phase Cut (Z Cut).



For more information about how to program cutting patterns, see the Software User's Manual.

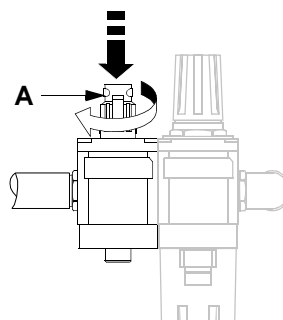
Part 2 - Uses

Chapter 5. Basic Uses

In this chapter, the procedures relative to the main basic uses of the machine are described in order to operate the machine correctly. In other words, the following operations are illustrated: machine start-up, stop and restart.

5.1 Start-up

1. Turn the main switch to position 1 (ON) (ref. A, page 3 - 2).
2. Start the company main pressure pneumatic system and open the cut-out valve (ref. B, page 1 - 5) press and turn clockwise the knob **A**.



3. Start the system for chips suction, to which the machine is connected, and check that the sectioning guillotine in the connection pipe is open.
4. Press the start button (green) on the main button pad (ref. B1, page 3 - 3).

Every time the machine is started-up, it is necessary to check the correct operation of the main safety devices, and to proceed as follows:

- Press the emergency push-button (ref. F, page 3 - 2) and check that the start button (green), located on the main button pad (ref. B1, page 3 - 3), is switched off. Carry out this operation on all emergency push-buttons.
- Turn clockwise the orange-coloured knob **A** of the cut-out valve (ref. B, page 1 - 5) and then check that the FR unit pressure gauge (ref. L, page 1 - 3) indicates 0 bar.
- Lift slightly the safety bar (ref. D, page 1 - 5) and check that the start button (green) located on the main button pad (ref. B1, page 3 - 3) is switched off.

Should one of these devices not operate correctly, please inform the maintenance personnel or the BIESSE Client Service Department.



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It is strictly prohibited to operate the machine with safety devices disengaged.

5.2 Stop

It is possible to carry out different types of machine stops:

Regular stop; this is used when it is necessary to suspend any work cycle in progress or to stop the blade motors. To carry out these type of stop, press the blade stop button (black) located on the main button pad. (ref. B4, page 3 - 3).

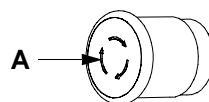
Emergency stop; this is used when it is necessary to stop immediately the machine operation. To carry out this stop, press the nearest emergency push-button (ref. F, page 3 - 2); the program started with the NC software will immediately stop and, consequently, the machine will stop.

Program stop; this is used when it is necessary to suspend any work cycle in progress without stopping completely machine operation. To carry out this type of stop, press the working cycle suspension button (black) located on the main button pad (ref. B7, page 3 - 3), or use the special function in the NC software (see the Software User's Manual).

5.3 Restart

In case of a sudden stop of the machine - whether this occurs intentionally or casually - to reset the correct operation and restart the working cycle, proceed as follows:

- Should an emergency stop be requested using the special push-button (ref. F, page 3 - 2), turn the latter in the direction indicated by the arrows **A** located above the push-button itself.
- Should the operating section access door be open, close it.
- Press the start button (green) on the main button pad (ref. B1, page 3 - 3).
- Should the stop be caused by an interruption in the mains supply, it is necessary to carry out the axis reset (or calibration) (see the Software User's Manual). Moreover, in this case, it is not possible to restart the working cycle from the point where the machine working cycle has been interrupted.
- To restart the working cycle:
 - Should the blade motors be off, press the blade start button (white) located on the main button pad (ref. B3, page 3 - 3).
 - Restart the program by means of the special command on the NC software.
 - Press the working cycle start button (white) located on the above mentioned button pad (ref. B6, page 3 - 3).



5.4 Switching Off

1. Wait until the end of the machine working.
2. Set the control software for switching off.
3. Carry out a regular stop of the machine as described in the paragraph 5.2 "Stop" on page 5 - 2.
4. Turn the main machine switch to 0 (ref. A, page 3 - 2), and lock it, if any, and then do the same with that of the factory's general system.
5. Close the pneumatic circuit in the point in which it is connected to the factory's general system.
6. Discharge and lock the pneumatic system by using the cut-out valve (ref. B, page 1 - 5) and then lock the valve, if any.

Chapter 6. Machining

This chapter describes the methods and procedures to follow when carrying out machining operations.

6.1 Machining Modes

The following paragraph contains all of the possible methods for carrying out machining operations. Indications are given with regard to how to enable functions, specific uses, and the respective possible loading methods for each machining mode. Procedures for machining mode execution are also given. For further information about machining enabling, see the Software User's Manual.

Making an Immediate Cut

This machining mode is used by pressing one of the specific keys on the PLC keyboard (ref. E, page 3 - 2) and is usually used to make one or more cuts without having to program them into the numerical control software.

To carry out this type of machining proceed as follows:

1. Make sure that the start button (green) on the button pad (ref. B1, page 3 - 3), is lit.
2. If a piece with specific dimensions is required, place the PUSHING DEVICE axis at the desired position.
3. Load the piece.
4. Press one of the immediate cut keys on the PLC keyboard to choose and enable (ref. E8, E10, E12, page 3 - 4) the type of cut required (short, long, complete).
5. Press the blade start button (white) on the main button pad (ref. B3, page 3 - 3).
6. Press the cycle start button (white) on the same button pad (ref. B6, page 3 - 3). Machining will start and will stop when the presser rises again.

Making an Immediate Cut Using Fast Programming

This machining mode can be used through the MANUAL CUTS page of the numerical control (to open this page, press F2 from the main menu), and is usually used to rapidly program and make one or more cuts.

To carry out this type of machining proceed as follows:

1. Make sure that the start button (green) on the button pad (ref. B1, page 3 - 3), is lit.
2. Press F5 from the MANUAL CUTS page to enable the ejection and new cycle control.
3. Press the cycle start button (white) on the main button pad (ref. B6, page 3 - 3). The carriage that drives the pushing devices and the rear collet stops will move into the proximity of the cutting area. For this reason, if there are any pieces on the wheel supports, these will be unloaded.
4. Load the piece.
5. Press the cycle start button (white) on the main button pad (ref. B6, page 3 - 3). The collets on the rear stops will lock the piece into place.
6. Press the blade start button (white) on the same button pad (ref. B3v 3 - 3).
7. Press one of the immediate cut keys on the PLC keyboard to choose and enable (ref. E8, E10, E12, page 3 - 4), the type of immediate cut required (short, long, complete).
8. From this point onwards the machine will immediately carry out any command enabled from the MANUAL CUTS page. The first command usually enabled is a panel measure and trim cut. In this way the machine automatically effects all of the movements required to calculate the dimensions of the piece and to make the trim cut. Subsequently the length and quantity of cuts must be selected and lastly, the ejection and new cycle control should be enabled. For more detailed information about how to use the controls on this page, see the Software User's Manual.

Making Cuts in Sequence Using Fast Programming

This machining mode is used from the SEQUENCE MODE page of the numerical control (to open this page press F3 from the main menu), and it is usually used to rapidly program and make a sequence of cuts for a given quantity of pieces.

To carry out this type of machining proceed as follows:

1. Make sure that the start button (green) on the main button pad (ref. B1, page 3 - 3), is lit.
2. Press F1 from the SEQUENCE MODE page to enable the required program.
3. Press the blade start button (white) on the main button pad (ref. B3, page 3 - 3).
4. Press the cycle start button (white) on the same button pad (ref. B6, page 3 - 3).

5. Load the piece.
6. Press the cycle start button (white) again (ref. B6, page 3 - 3).

Using a Cutting Pattern

This machining mode is used from the PATTERNS page of the numerical control (to open this page press F4 from the main menu), and it is usually used to carry out a cutting pattern on a specified quantity of pieces.

To carry out this type of machining proceed as follows:

1. Make sure that the start button (green) on the main button pad (ref. B1, page 3 - 3), is lit.
2. Press F1 from the PATTERNS page to enable the required program.
3. Press the blade start button (white) on the main button pad (ref. B3, page 3 - 3).
4. Press the blade start button (white) on the main button pad (ref. B6, page 3 - 3).
5. Load the piece.
6. Press the cycle start button (white) again (ref. B6, page 3 - 3).

Using a Series of Cutting Patterns

This machining mode is used from the WORKLIST page (to open this page press F5 from the main menu), and it is usually used to carry out two or more cutting patterns in succession on a specified number of pieces.

To carry out this type of machining proceed as follows:

1. Make sure that the start button (green) on the main button pad (ref. B1, page 3 - 3), is lit.
2. Press F1 from the WORKLIST page to enable the list of programs.
3. Press the blade start button (white) on the main button pad (ref. B3, page 3 - 3).
4. Press the cycle start button (white) on the same button pad (ref. B6, page 3 - 3).
5. Load the piece.
6. Press the cycle start button (white) again (ref. B6, page 3 - 3).

Making Cuts for Square-shaped Openings (optional)

This machining mode is used from the BORING EDITOR page (to open this page press ← or F11 and F4 from the main menu), and it is usually used to program and make openings in pieces that will be used for kitchen work tops where sink units or cook tops will be fitted.

To carry out this type of machining proceed as follows:

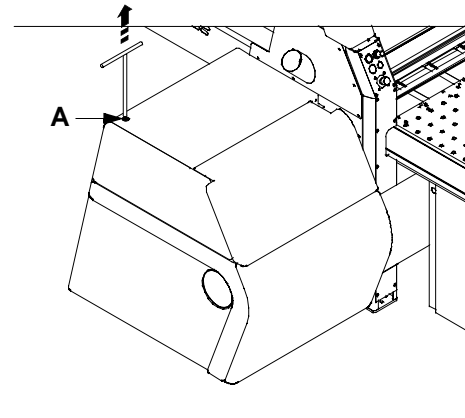
1. Make sure that the start button (green) on the main button pad (ref. B1, page 3 - 3), is lit.
2. Press F1 from the BORING EDITOR page to enable the list of programs.
3. Press the blade start button (white) on the main button pad (ref. B3, page 3 - 3).
4. Press the cycle start button (white) on the same button pad (ref. B6, page 3 - 3).
5. Load the piece.
6. Press the cycle start button (white) again (ref. B6, page 3 - 3).

Groove Execution

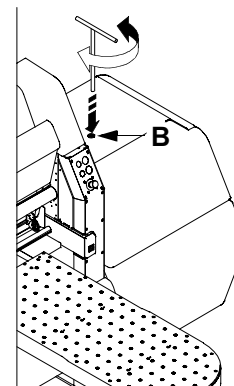
To carry out this type of machining, proceed as described in the paragraph “Making an Immediate Cut” on page 6 - 1, or in “Making an Immediate Cut Using Fast Programming” on page 6 - 2.

Before proceeding, it is necessary to set the grooving depth as described in the Software User’s Manual. In case of manual setting, proceed as follows:

1. Move the blade carriage to the side opposite to that where blade replacements are made.
2. Take the t-wrench which is housed in **A** on the left-hand side of the machine. In this way and for safety measures, all movements of the blade carriage are locked.



3. Insert the t-wrench in the hole **B** on the right-hand side of the machine.
4. Turn clockwise to reduce depth and anticlockwise to increase it. A full turn of the t-wrench corresponds to a shift of **1 mm**. Make trial grooves to make sure that the adjustment has been made correctly.
5. When adjustments have been completed, replace the t-wrench in its housing **A**.



6.2 Machining Hold

For a brief pause during a cycle with automatic loading, proceed as follows:

1. Turn the pushing device selector (yellow) on the main button pad to the right (ref. B8, page 3 - 3).
2. Wait for any cuts in progress to be completed.
3. Press F2 to stop the program that is being executed.
4. Press an emergency button (red mushroom-head button) (ref. F, page 3 - 2).

To restart the machining cycle proceed as follows:

1. Disengage the previously enabled emergency button.

2. Press the start button (green) on the main button pad (ref. B8, page 3 - 3).
3. Press F3 to restart the suspended program.
4. Turn the pushing device selector on the main button pad to the left (ref. B8, page 3 - 3).
5. Press the cycle start button (white) on the main button pad (ref. B6, page 3 - 3).
6. Press the blade start button (white) on the same button pad (ref. B3, page 3 - 3).

6.3 Piece Loading

To load the machine it is necessary to position the piece/s against both the side stop and the rear collet stops, which, after the desired machining program has been enabled, will have moved into the proximity of the cutting area.

Part 3 - Operations

Chapter 7. Maintenance

This chapter contains the information that is required to keep the machine in perfect working order.

DANGER

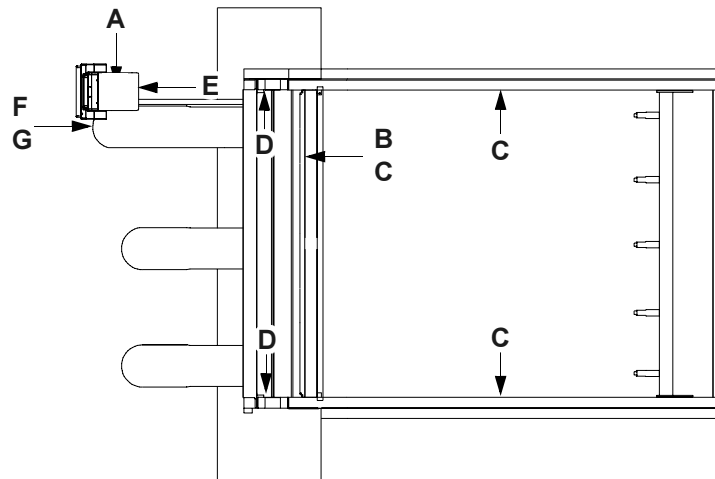
Before carrying out any maintenance interventions or repairs to the machine, unless otherwise specified, switch off the machine and bleed the air from the pneumatic system by adjusting the cut-out valve (ref. B page 1 - 5). Use the padlocks supplied to lock the main switch (ref. A page 3 - 2) and the cut-out valve to prevent anyone from re-starting the machine. Also make sure that all machine mechanical organs are in the stand-by position.

7.1 Maintenance Intervention Summary and Frequency

The following table contains a summary of all foreseen maintenance interventions as well as the frequency with which they should be effected. Take into account that frequency has been evaluated according to a 5-day working week of 8 hours per day and to normal operating conditions. The letter in the **Ref.** column is used to locate the points of the machine as illustrated on page 7 - 2, which require maintenance. The **Page** column shows, for those interventions that require it, the number of the page where the intervention procedure is explained.

Frequency	Ref	Part	Operation	Page
Every Day		Whole machine	Cleaning	7 - 2
	A	FR Unit	Check condensation in tray; drain if necessary	7 - 3
Every Week	B	Blade carriage	Clean the guides	7 - 2
	C	Blade carriage and pushing device carriage	Clean the racks	7 - 2
	D	Presser	Clean the racks with compressed air	
	E	Control panel	Clean the filters	7 - 3
	F	Electrical cabinet	Clean the filters	7 - 4
	G	Electrical cabinet	Clean the air conditioner	7 - 4

Location of Points That Require Maintenance



7.2 General Cleaning of the Machine

If the machine and the surrounding area are kept clean and tidy this will make the working area safer and more healthy, and will enable commands and indications to be made easily and without errors.

To remove any possible chips, use a vacuum cleaner; to remove any trace of small powders use a compressor, always taking care to maintain a safety distance. The chips fallen on the ground must be removed with a vacuum cleaner or with a broom, since the ground might be slippery.

To clean the guides or the racks, it is recommended to use a clean and dry cloth. In case of incrustations, it is recommended to use a scrubbing brush with bronze bristles. Subsequently use a long handled brush to lay a thin layer of MOBILUX EP0 lubricant.

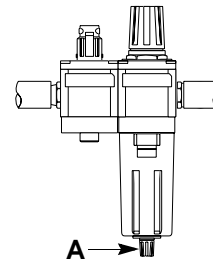
7.3 Draining Condensate from the FR Unit

1. Place a container under the bleeder valve **A**.
2. Press the bleeder valve **A** upwards, until all the condensate has drained out.



CAUTION

The condensate stagnation in the FR unit reduces the life of pneumatic componentry of the machine.



7.4 Cleaning the Filters of the Control Panel

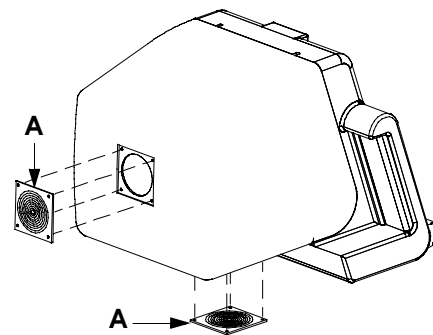
To clean the filters, proceed as follows:

1. Remove each filter **A** by unscrewing it.
2. Clean the filter by blowing compressed air from the inside outwards.



CAUTION

Never blow the compressed air in the opposite direction, as this will damage the filter.



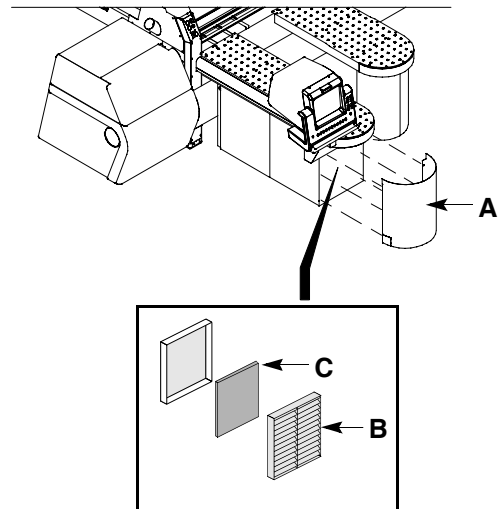
7.5 Cleaning the Electrical Cabinet Filter

The filter is fitted on the electrical cabinet only if the latter is not equipped with the air conditioner (optional). To clean the filter, proceed as follows:

1. Remove the cover **A**, by loosening the relative screws located inside the electrical cabinet.
2. Prise off cover **B**, using a screwdriver.
3. Remove the filter **C** and clean it by blowing a jet of compressed air from the inside outwards.

 **CAUTION**

Never blow the compressed air in the opposite direction, as this will damage the filter.



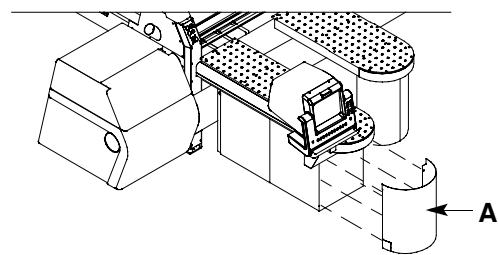
7.6 Cleaning the Air Conditioner on the Electrical Cabinet

To clean easily the air conditioner, remove the cover **A**, by loosening the relative screws located in the electrical cabinet.

Air conditioner cleaning is carried out by cleaning the filter, the capacitor battery and the fan. The capacitor battery is made of copper tubes and aluminium fins and is located near the fan. The dirt leaves a deposit on the external side of the blades, making them heavier and causing a louder sound, a greater electrical input and the motor overheating. Cleaning is carried out by blowing compressed air while making sure not to damage or bend the aluminium fins. If required, substitute the filters with original spare parts or with other parts having the same functions.

 **CAUTION**

Unsuitable filters could limit excessively the air flow, thus causing irreparable damages to the compressor.



7.7 Lubricants

The following table lists all of the lubricants used by BIESSE in the different parts of the machine. Equivalent lubricants, listed in the table, should only be used in the event that it is not possible to obtain those used by BIESSE. If an equivalent lubricant is to be used, thoroughly clean the part of the machine concerned, taking care to remove all residues of the previous product in order to avoid the possibility of chemical reactions that may damage the machine.

Lubricants	Equivalent Lubricants	Use
MOBILUX EP 0	ESSO BEACON EP 0 KLÜBER TRIBOSTAR 0 EP ^(*) KLÜBER CENTOPLEX 0 EP ^(**)	■ Racks ■ Guides

(*). For the Italian market only.

(**). For the international market.

**Chapter 7.
Maintenance**

Chapter 8. Replacements and Adjustments

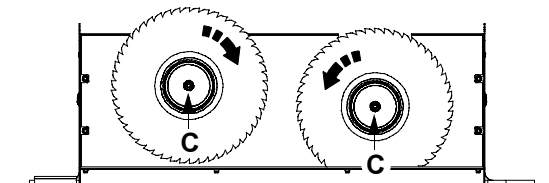
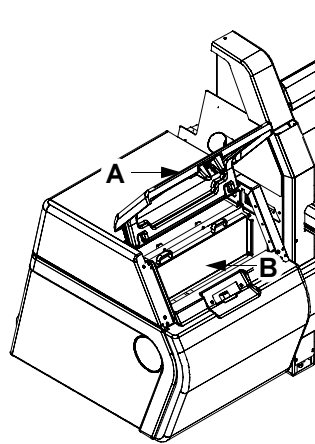
This chapter describes how to replace those parts of the machine that, if worn, could cause machine malfunctioning. Moreover, a few indications are given on how to adjust those parts which, for different reasons, could be subject to a modification of their initial calibration.

8.1 Blades Replacement



Wear gloves when carrying out this intervention.

1. Turn the blade change selector (key) on the main button pad to the right (ref. B5, page 3 - 3), and remove the key. The motors switch off, the carriage moves to a pre-set position and a system which, after a lapse of time, automatically releases the blade **A** access hatch, is enabled.
2. Open the blade **A** access hatch once the lamp on the pushing device selector (yellow) is lit; this selector is located on the main button pad (ref. B8, page 3 - 3).
3. Open also the **B** hatch.
4. Remove the flange **C** as described in the paragraph "Disassembling the Blade Locking Flange" on page 8 - 2.
5. Replace the blade, making sure to install the new blade in the correct direction (see the relative figure). Use only appropriate tools for this operation; the technical specifications are described in the relative Appendix.
6. Mount the flange **C** as described in the paragraph "Assembling the Blade Locking Flange" on page 8 - 3.
7. Close the **B** and **A** hatches.



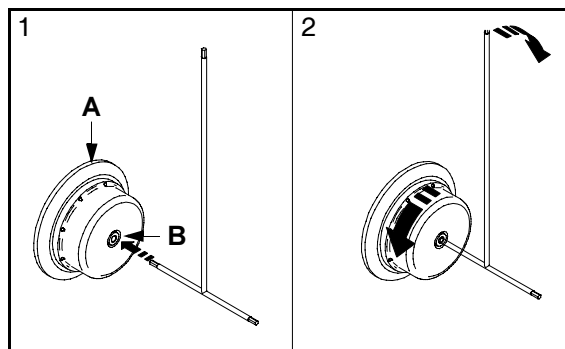
Chapter 8. Replacements and Adjustments

Disassembling the Blade Locking Flange

According to the blade locking system of the machine, to disassemble the flange it is necessary to carry out one of the following operating procedures:

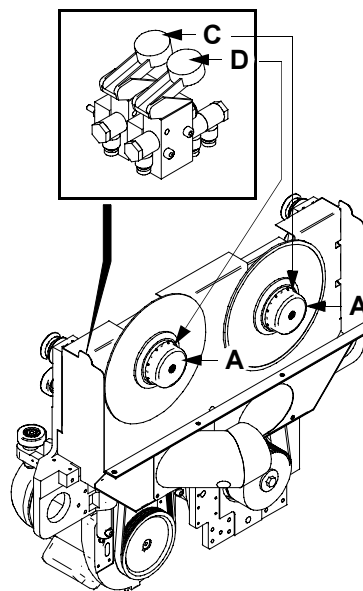
Standard System

1. Hold the flange **A** and insert the t-wrench in the housing **B**.
2. Turn simultaneously the t-wrench clockwise and the flange anticlockwise .
At the completion of the turns, remove the flange **A**.



Pneumatic System

1. Hold the flange **A**.
2. With the other hand, apply pressure on the lever **C** to disengage the cutting blade flange, or on the lever **D** to disengage the scoring blade flange.
3. Remove the flange **A**.

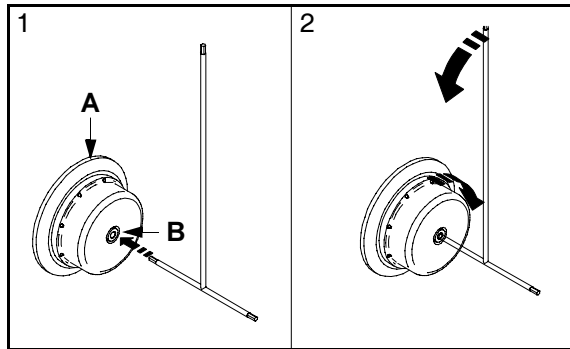


Assembling the Blade Locking Flange

According to the blade locking system of the machine, to assemble the flange it is necessary to carry out one of the following operating procedures:

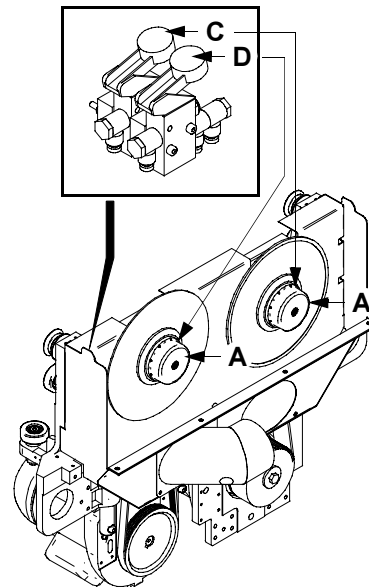
Standard System

1. Hold the flange **A** and insert the t-wrench in the housing **B**.
2. Turn simultaneously the key anticlockwise and the flange clockwise until both can turn freely without any effort; at this point the blade has been locked. To avoid any damages to the locking system, it is recommended not to tighten deeply.



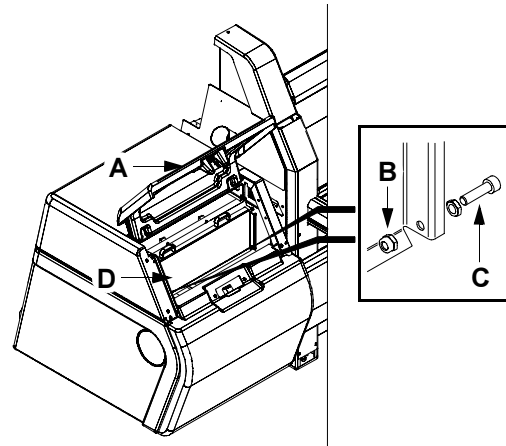
Pneumatic System

1. Apply pressure on the lever **C** for the cutting blade flange, or on the lever **D** for the scoring blade flange.
2. With the other hand, replace the flange **A** in its housing.
3. Release the lever; the flange is locked.

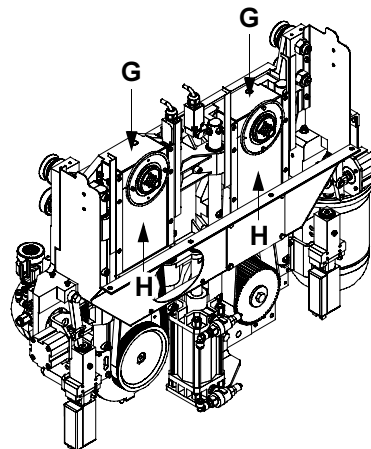
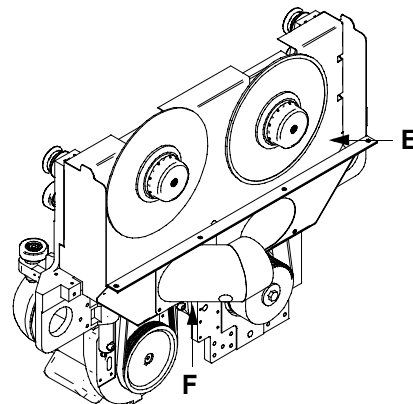


8.2 Blade Belt Replacement

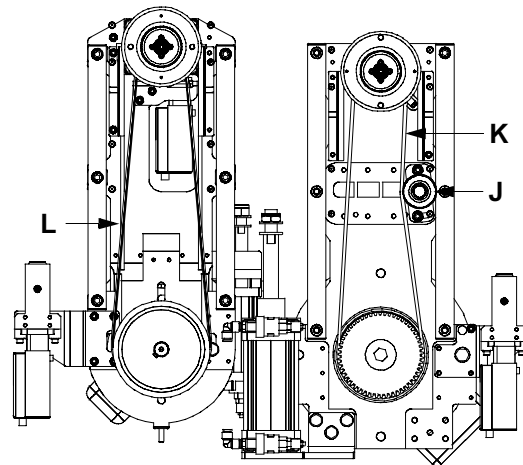
1. Turn the blade change selector (key) on the main button pad to the right (ref. B5, page 3 - 3), and then remove the key. The motors switch off, the carriage moves to a pre-set position and a system which, after a lapse of time, automatically releases the blade A access hatch, is enabled.
2. Open the blade **A** access hatch once the lamp on the pushing device selector (yellow) is lit; this selector is located on the main button pad (ref. B8, page 3 - 3).
3. Switch off the machine.
4. Loosen the **B** nuts **and one of the C screws** (it is unimportant whether the chosen screw is on the left-hand side or on the right-hand side), then remove the cover **D**.
5. Remove the blades as described in the paragraph 8.1 "Blades Replacement" on page 8 - 1.
6. Remove the casing **E**.
7. Remove the suction pipe **F**.



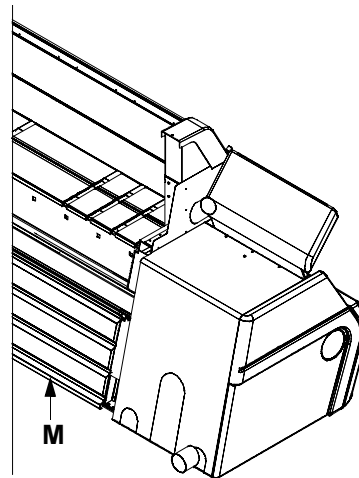
8. Remove the casings **G** and **H**.



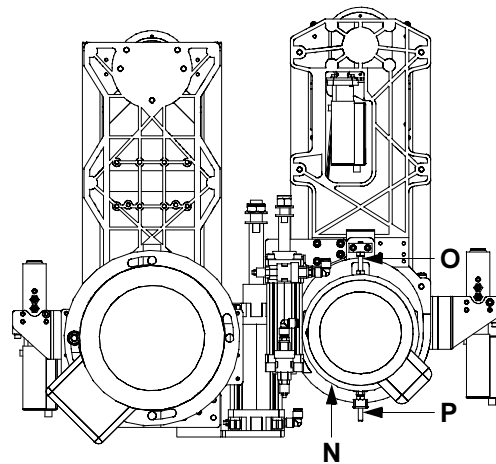
9. Loosen slightly the screws which hold in place the belt tightener **J**.
10. Replace the cutting blade belt **K** with a new one.
11. Vary the position of the belt tightener **J** **in order to tension the cutting blade belt K**. To obtain the precise belt tension, it is recommended to adopt the methods described in the paragraph "Measuring the Blade Belts Tension" on page 8 - 6.



12. In order to remove the scoring blade belt **L**, disassemble the cover **M** located on the back of the base and access the rear part of the operating section (after having moved it manually).



13. Loosen slightly the screws which lock the motor **N**.
14. Adjust screws **O** and **P** to lift the motor **N** at such a height as to be able to remove the belt **L**.
15. Move to the front part of the operating section and replace the belt **L** with a new one.
16. Adjust screws **O** and **P** to tension the scoring blade belt **L**. In order to obtain the precise belt tension, it is recommended to adopt the methods described in the paragraph "Measuring the Blade Belts Tension" on page 8 - 6.
17. When tensioning has been completed, tighten the motor locking screws and reassemble all hardware.



Chapter 8. Replacements and Adjustments

Measuring the Blade Belts Tension

A **spring-loaded cylindrical dynamometer** or an electronic device to measure tension is required for making precise checks of the tensioning of the blade belts **A**. **This paragraph describes** the indispensable requirements of these instruments as well as how to use them.

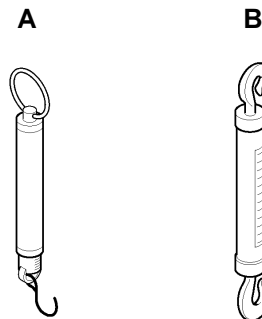
Dynamometer

It is possible to use two types of dynamometer (**A** and **B**), with the characteristics listed in the table here below. For each type of dynamometer, two are indicated, each with different characteristics.

Requirements	A			B		
For loads of	kg	0-5	0-10	N	0-3000	0-5000
Scale	g	50	200	N	100	200
Length (unloaded)	mm	245	255	mm	525	525
Length (loaded)	mm	355	316	mm	585	585
Net Weight	kg	0.150	0.150	kg	5.000	5.000

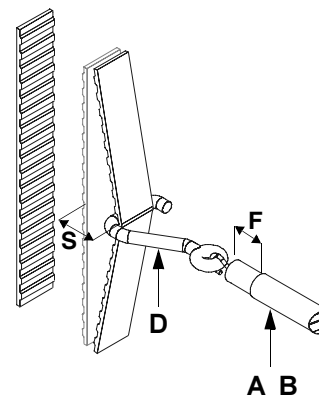
A - Dynamometer with hook and ring in nickel-plated steel.

B - Dynamometer with two hooks in forged steel.



To check the tensioning of the belts, proceed as follows:

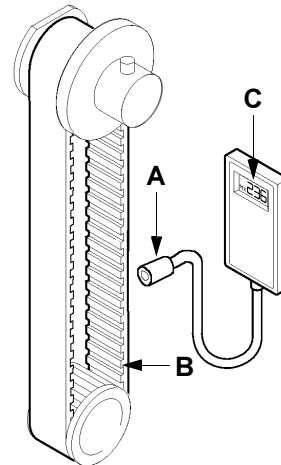
- Hook the dynamometer **A** or **B** onto the central area of the belt and apply a load **F** shown in the table on page 8 - 7. This procedure requires the use of a tool **D** similar to the one shown in the figure opposite.
- Use a gauge to measure the belt displacement. Tensioning is correct if the displacement is **S** as shown always in the table on page 8 - 7.



Electronic Tension Measuring Device

BIESSE recommends the use of an electronic measuring device made by the company “Gates”. The following is a description of the use and the correct theoretical values for belt tensioning with this instrument.

1. Insert the connecting cable into the instrument socket.
2. Switch on the instrument.
3. Position the head **A** next to the belt **B**, as shown in the figure opposite.



***i* INFORMATION**

Do not bring the head into contact with the belt.

4. Use a finger to pluck the belt **B** (as if it were a guitar string).
5. Read the frequency on the display **C** and compare it with the theoretical values shown in the following table. If the read frequency is higher than the theoretical frequency, it means that the belt is too tight; on the contrary, if the read frequency is lower than the theoretical frequency, it means that the belt is not sufficiently tight.

Table of Tensioning Values

Blade Type	S (mm)	F (N)	Theoretical Frequency (Hz)
Scoring Blade	9.6	26.6	67.4
Cutting Blade (Ø 300 mm - 50 Hz)	9.2	13.2	29.5
Cutting Blade (Ø 300 mm - 60 Hz)	9.3	11.7	27.4

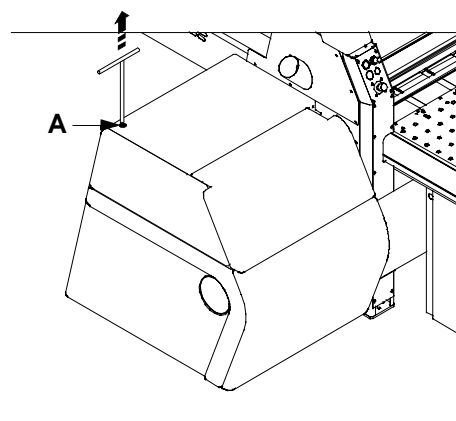
8.3 Scoring Blade Adjustment

This adjustment is made to restore perfect scoring and is usually carried out after one or both of the blades has been replaced. Make several trial cuts to make sure that the adjustment has been made correctly.

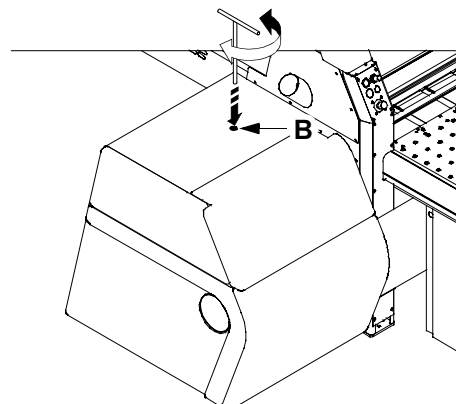
The machine can be set for a manual or an automatic adjustment. The following procedures concern manual adjustment. For automatic adjustment, please see the Software User's Manual.

1. Move the blade carriage to the opposite side to that where the blade change is carried out.

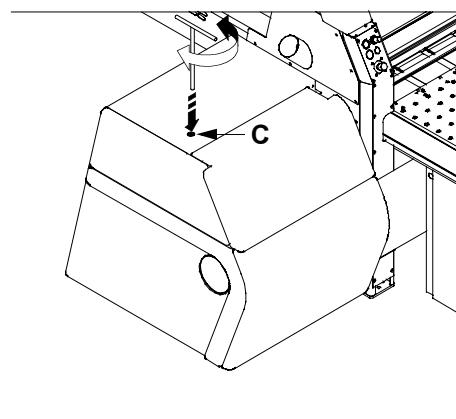
2. Remove the t-wrench from its housing **A** on the left-hand side of the machine. In this way and for safety reasons, all movements of the blade carriage are stopped.



3. To adjust the alignment of the scoring blade with that of the cutting blade, insert the t-wrench in the hole **B** and turn it. If the direction of the turn is clockwise, the blade moves towards the front part of the machine. If the direction of the turn is anticlockwise, the blade moves in the opposite direction. One turn of the t-wrench corresponds to a shift of **0.004 mm**.



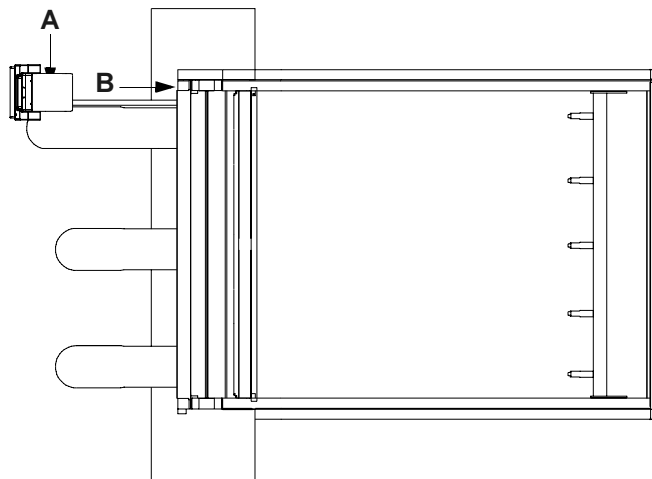
4. To adjust the scoring blade depth, insert the t-wrench in the hole **C** and turn it. If the direction of the turn is clockwise, the scoring depth decreases. If the direction of the turn is anticlockwise, the scoring depth increases. One turn of the t-wrench corresponds to a shift of **1 mm**.



5. Once adjustments have been completed, replace the t-wrench in its housing **A**.

8.4 Pneumatic System Pressure Regulators

If the values for pressure, supply and for the various devices of the pneumatic system should vary from those set at the time of installation, machine operation anomalies may occur. The figure here below shows the positions of the pressure regulators, while the table contains the minimum (**Min.**) and maximum (**Max.**) pressure values as well as the values set when the machine was tested (**Set**). Should there be any anomalies, check that the value given in the table corresponds to that on the machine and if necessary, adjust the pressure (see page 8 - 9).

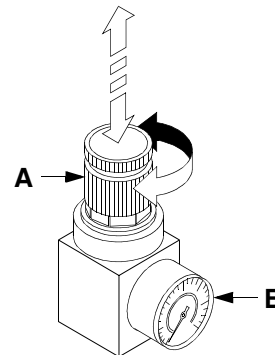


Ref.	Pressure Regulator for:	Value (bar)		
		Min.	Max.	Set
A	Supply	6.5	7	7
B	Side Pusher	2	3	3

Pressure Adjustment

To adjust pressure proceed as follows.

1. Grip the knob **A** and pull it upwards until it releases.
2. Tighten the knob to increase pressure and loosen it to reduce pressure. Pressure is displayed on the pressure gauge **B**.



Chapter 8.
Replacements and Adjustments

Appendices

Appendix A. Safety information

The machine will operate in safety if it is used by qualified personnel in compliance with the recommendations and instructions provided in this manual or supplied by BIESSE's technical engineers at the time of installation. BIESSE declines all responsibility for any damage to persons or goods resulting from use of the machine by unqualified operators or from failure to observe the following recommendations.

Never remove or tamper with guards and protections in order to carry out unforeseen operations, as this will result in serious risks for the operator. BIESSE declines all responsibility for damage to persons or goods resulting from incorrect use or deliberate misuse of the machine.

A.1 Transport and moving

1. When lifting and moving the machine, either as a whole or in part, operations must always be carried out by suitably qualified and experienced personnel, using lifting devices with an adequate capacity.
2. Never stand within range of the crane when the machine is being lifted.
3. Only lift the machine as described in this manual.

A.2 Installation

1. Installation operations must always be carried out by qualified personnel who have been authorised to do so by BIESSE.
2. Before starting work, check that the various parts of the machine are free from any physical damage caused by bumping, tearing or abrasion. Damage to electrical cables or sheathing will compromise the safety of the machine's electrical system.

A.3 Tools

When choosing tools to be installed in the machine, the operator is advised to follow the recommendations given below.

1. Never use deformed or cracked rotating tools.

Appendix A.

Safety information

2. Check for perfect balance of rotating tools and make sure they are perfectly sharp and suitable for the work to be performed.
3. Never use tools beyond their speed limit, which is impressed on the surface of the tool or indicated in some way by the manufacturer.
4. Before installing any tool in its seating make sure that the guide and centring surfaces have no dents and are perfectly clean.
5. In each tool apply only the prescribed torque to screws, bolts, nuts and rings.
6. Always make sure that the direction of rotation of the tool is the same as that of the spindle in which it is mounted.
7. Never exceed the limits indicated in this manual or otherwise prescribed by BIESSE.

A.4 Preparation and machining

1. Wear protective clothing of the approved type (glasses, gloves, helmet and footwear) in compliance with the standards and regulations in force on the essential health and safety requirements in the workplace.
2. Never attempt to modify the programs managing safety devices. BIESSE declines all responsibility for any damage to persons or goods resulting from unauthorised modifications of this kind.
3. The machine must be set up by one person only. Ensure that nobody else approaches the machine during setting up operations.
4. When entering the area inside the safety fence, remove the key from the limit switch on the door, to prevent anybody from restarting the machine.
5. Never leave tools on the machine when setting up has been completed.
6. Before starting work, check that there is nobody within the danger area.
7. Make sure that nothing is likely to impede normal movement of the machine along the axes, and that all casings, doors and protective covers are properly in place and safely fastened.
8. Before starting work, check to make sure that the tools installed in the machine have not been tampered with in any way.
9. Never operate the machine while under the influence of any medicine, drugs or drink that may reduce levels of vigilance and reflexes.
10. Always keep the working area clean and tidy.
11. Never place hands inside blade passage openings.
12. Never mount the machine.

13. Never leave the machine unattended when it is operating.

A.5 Maintenance

1. Before carrying out any maintenance interventions, first make sure that the machine has been isolated from all sources of electric or pneumatic energy by using the main electric switch and the pneumatic switch on the machine. These should be padlocked in the safety position, using a suitable chain and lock (not supplied by BIESSE) from which the key should then be removed. As far as regards the pneumatic system, make sure also that all mechanical organs controlled by pneumatic actuators are in the lowest gravitational position and therefore, not dangerous (null potential energy).
2. At the end of all maintenance interventions, take care to replace all guards, fixing them into place with the relevant mechanical locking devices.
3. Always wear protection goggles to protect from flying dust and chips when using compressed air. Use a suction device in place of compressed air wherever possible.
4. Wait at least 5 minutes before approaching electronic equipment. This is to allow the condensers to discharge residual energy.
5. Do not allow unauthorised persons to carry out maintenance or repairs.
6. Read the relevant chapter in the manual before carrying out any maintenance to the machine or systems.
7. Do not lubricate, repair or adjust the machine when it is operating, unless expressly indicated in this manual. This is to avoid becoming entangled in moving parts.
8. When carrying out maintenance interventions or repairs in areas that are not easily accessible from the ground, use a ladder or platform that complies with the safety regulations in force, to reach the area concerned.
9. Do not smoke, eat or drink when handling lubricants. Always comply with current regulations regarding handling and use of mineral oils and greases.
10. To prevent irritation or allergy, always wear protective goggles or mask, oil-proof gloves and oil-proof overalls when handling lubricants.
11. Store lubricants in a room with natural ventilation, well away from heat sources (electrical panels, open flames, etc.).
12. It is recommended that lubricants should not come into contact with pure oxygen and acids.
13. All used lubricants must be entrusted to the Authorities responsible for disposal of used oils for treatment.

Appendix A.

Safety information

14. In case of lubricant overflowing, clean the place by sprinkling sand on the surfaces. Then remove the sand with a spatula and dispose of it for incineration at duly authorized Special Waste Disposal Centers.
Wash surfaces with solvents (chlorinated or aliphatic) taking care that the fumes are not allowed to accumulate in the working area.
15. Those who are particularly sensitive to lubricants may be subject to an allergic reaction or oil-related acne, particularly if their skin has previously been subjected to damage by abrasive substances (cleaning paste or injuries) or chemicals (solvents, extremely alkaline detergents, etc.). Irritations may result from contact with the eyes.
16. Incorrect handling of lubricants may result in overexposure, for example slight irritation of the eyes or skin; if this occurs, move away from the site of exposure and call a doctor.
17. Should lubricants come into contact with the skin, wash well with soap and water.
18. Should lubricants come into contact with the eyes, rinse well with water only.
19. If a lubricant in the "oils" category is swallowed, do not induce vomiting and call a doctor immediately.
20. If a small amount of lubricant in the "greases" category is swallowed, call a doctor immediately. If the amount swallowed is larger, administer 1 or 2 glasses of water and call a doctor immediately. Do not induce vomiting or administer anything orally if the person in question has fainted.

A.6 Demolition

1. All operations must be carried out by qualified personnel only.
2. Turn the machine off, disconnect it from the power supply and discharge all the air from the pneumatic system.
3. Remove any tools that may still be installed and put them away.
4. Fix all parts capable of moving by inertia or by gravity.

Appendix B. Technical Characteristics

B.1 General Information

Operating Section

- Cutting blade projection (mm): 70
- Blade carriage movement speed (m/min.): 50

Pushing Devices

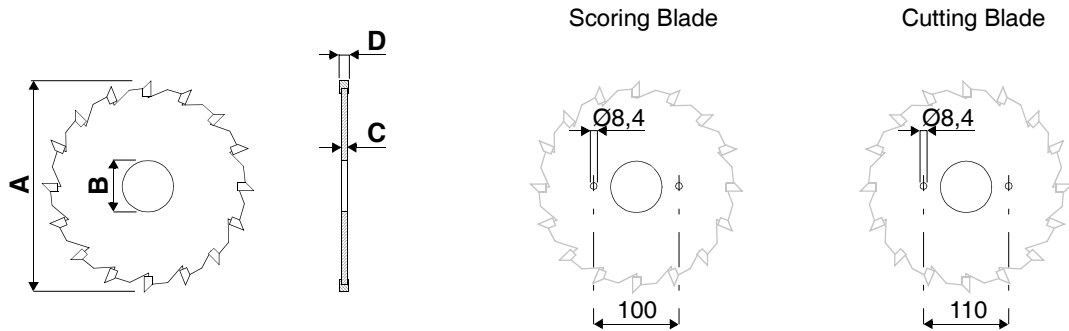
- Forward feed speed (m/min.): 25
- Return speed (m/min.): 40

Side Pusher

- Forward feed speed (m/min.): 12
- Return speed (m/min.): 12





Appendix B.
Technical Characteristics

B.2 Blades



		A	B	C	D
Scoring Blade	(mm)	200	65	3,5	4,4
Scoring Blade (postformed, conical tooth)	(mm)	300	65	3,5	4,4
Scoring Blade (postformed, flat tooth)	(mm)	300	65	3,5	4,6
Cutting Blade	(mm)	300	65	3,0	4,4

The following section shows some types of blade tooth together with the respective uses on various materials.

Type	Machinable Materials
 Crossed Tooth	Unfaced plywood, layer-wood, and rough chipboard
 Flat/Trapezoidal Tooth	Faced (laminated, melamine) chipboard and MDF
 Trapezoidal Tooth	Postformed material
 Conical Tooth	Chipboard and faced panel scoring

B.3 Noise Level

Sound pressure data are as follows:

Equivalent sound pressure level in position in the work area during machining (L_{pA})	dB(A)	79.1
Environmental correction factor (K)	dB(A)	1.4
Sound power level during machining (L_{wA}) (wA)	dB(A) mW	98.6 7.2
Weighted peak instantaneous sound pressure in the work area during machining	dB(C)	104<130

Tests were carried out in accordance with ISO 3746 and ISO 11202 Regulations.

The noise levels given here are emission levels and do not necessarily represent safe working levels. In spite of the existence of a relationship between emission levels and exposure levels, this cannot be used reliably to establish whether or not other precautions are necessary. The factors that determine the levels to which the workforce is exposed include: the length of the exposure, the characteristics of the workplace environment, other sources of dust, noise, etc.; that is, the number of machines and other processes in adjacent areas. In any case, this information allows the machine user to be able to carry out a better evaluation of risks or danger.

B.4 Dust Emission

The machine has passed the test for dust emission from woodworking machinery. This test is carried out in accordance with the standard DIN 33893. The amount of dust issued into the environment was less than 2 mg/m³. The certificate was issued by the FPH body on 10-09-2001 (reference FPH-AZ 010/2001).

Appendix B.
Technical Characteristics

Appendix C. Transport and Installation



Read carefully the following instructions, before carrying out any operation whatsoever:

The machine may be shipped using different means of transport (road, rail, air, and sea), and this is usually established with the customer at the time of purchase. The machine is split into different parts in order to facilitate transport and in this appendix there is a list of the parts that are transported (see page C - 2) together with their weights.

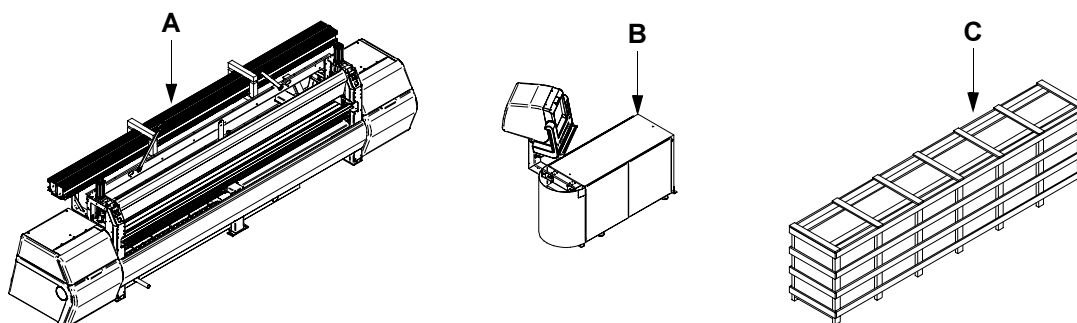
The lifting operations that are necessary for unloading the machine must be carried out by suitably qualified personnel who shall follow the indications given in this appendix on page C - 2.

The machine installation area must be aired and lit, and appropriately dimensioned as well as equipped with suitable points to connect the different systems (electric, pneumatic, etc..). With regard to this, please see the paragraph "Machine Configuration, Connection Points, and Overall Dimensions" on page C - 5. The machine connection systems and the relative installation area shall meet the requirements described in page C - 6.

The machine assembly, levelling and connection operations are the responsibility of BIESSE assistance service personnel. Therefore, it is strictly prohibited to remove the packaging, to open any boxes containing any equipment and, above all, to start the machine without the prior approval of the above mentioned qualified expert personnel.

C.1 Machine Parts To Be Transported

Given the variety of optional fittings and possible machine configurations, the following list is indicative. It refers to a machine model that is equipped to machine 3200 x 3100 mm pieces and with 6 rear collet stops, 3 air jet panel supports and 9 wheel panel supports.



Ref	Description	Weight (kg)
A	Base - Guides - Pushing device supporting beam	2600
B	Electrical cabinet - Control equipment	330
C	Wheel supports - Air jet supports - Columns - Guards	420

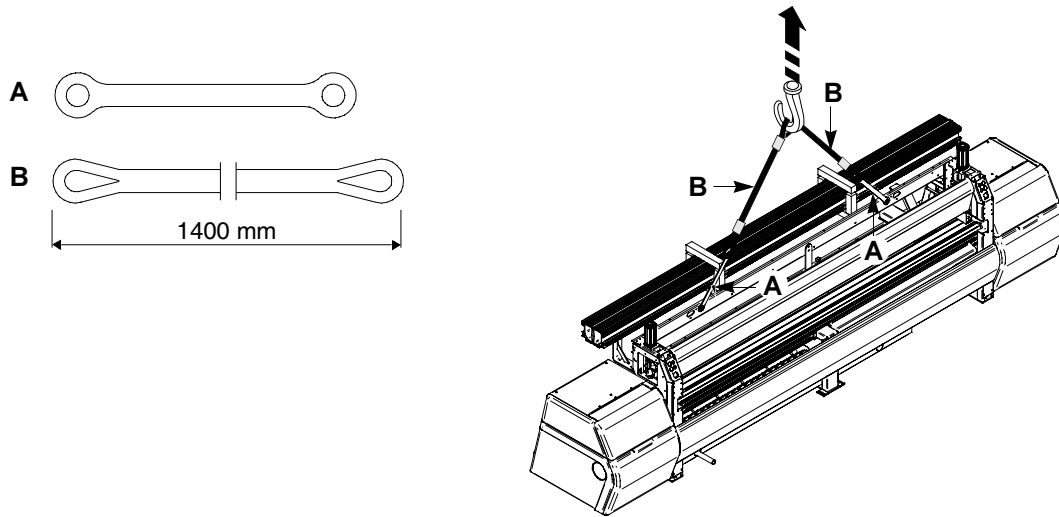
C.2 Unloading the Machine

To unload the machine, read the following lifting instructions. It is recommended to unload firstly the lighter parts and then the heavier parts. Before lifting any component, discard all fixing equipment such as rivets, ropes, etc... found on the carrier and which were used to fasten the machine parts for transportation.

Lifting

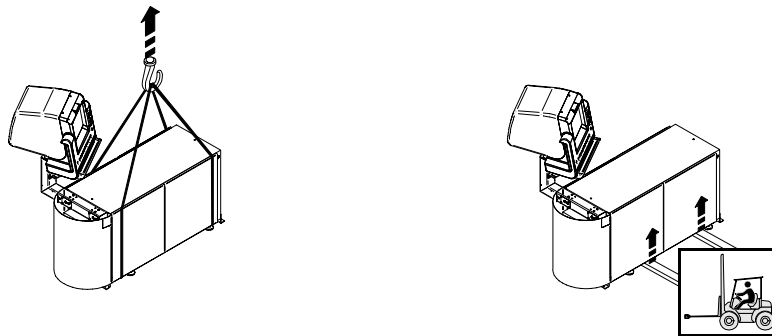
The illustration below shows how to carry out lifting operations for each part of the machine. Use suitable means and equipment (rods, ropes, etc...) to carry out these operations.

Base - Guides - Pushing Device Supporting Beam

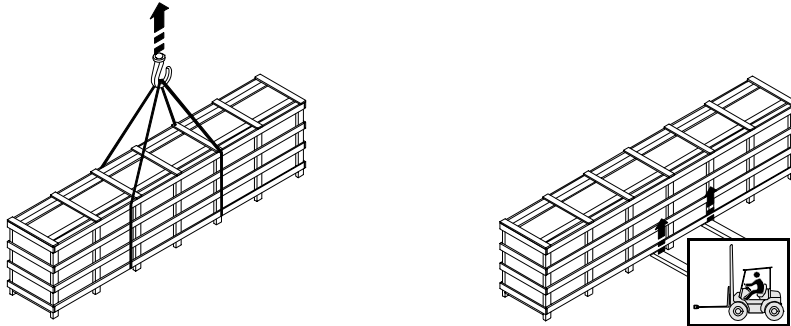


Material	A	B
Quantity	2	2
Already fitted	yes	no

Electrical cabinet - Control Equipment



Electrical cabinet - Control Equipment

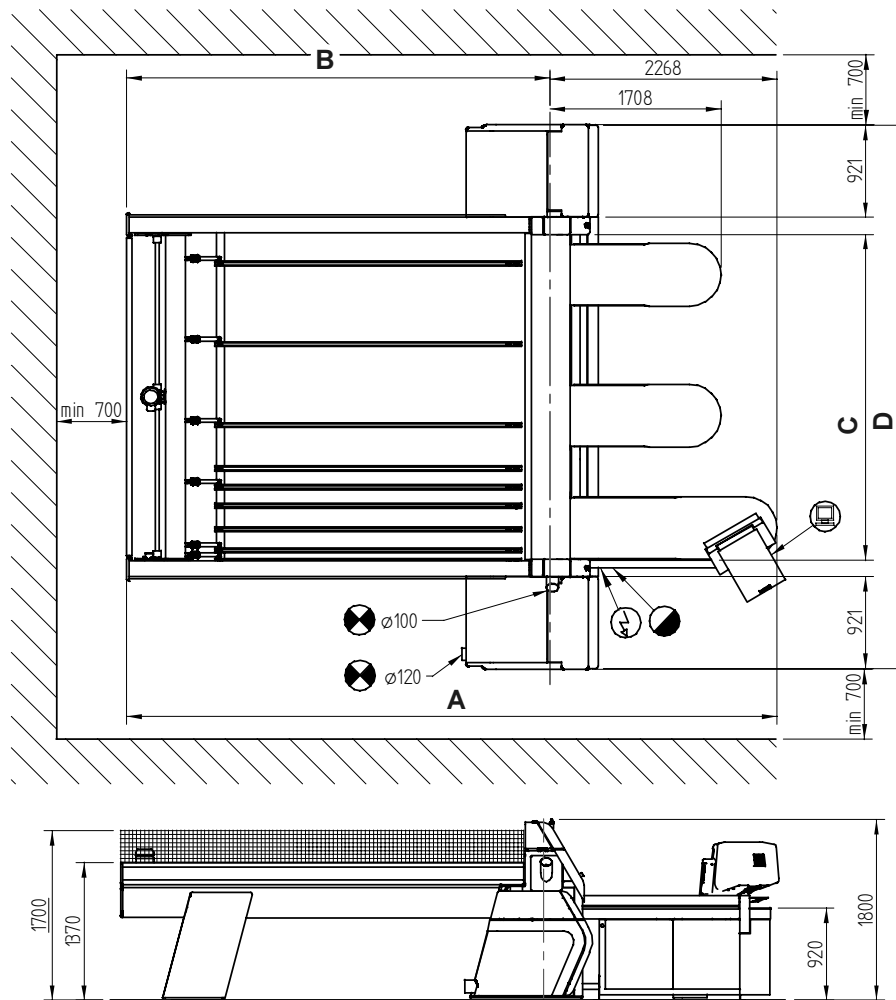






C.3 Shifting

Base shifting is a complex operation and requires the intervention of qualified expert service engineers from BIESSE's assistance service, as well as the use of a lift truck and relevant equipment. On the other hand, shifting of the other machine parts may be carried out using a lift truck and following the lifting methods explained above.

C.4 Machine Configuration, Connection Points, and Overall Dimensions

The following section contains the configuration of the machine, the mains power connection points, and data relevant to the overall dimensions.



-  connection point for the electric system
-  connection point for the pneumatic system (Ø 12 mm)
-  connection point for the suction system
-  control panel

Appendix C. Transport and Installation

The table below contains data relevant to the overall dimensions (see also the previous figure). These data vary according to the maximum measurements of the pieces to be machined (length and width) and for which the machine has been equipped. The values are given in millimetres.

Max. Piece Measurements	A	B	C	D
3200 x 3100	4220	6488	3247	5422
4400 x 4250	5420	7688	4347	6522

C.5 Installation Area Requirements

The basic requirements to install the machine are described hereunder: These requirements apply to the different connection systems as well as to the installation area of the machine.

Electric System Requirements

The quality of the electric system must guarantee the essential requirements as stated in the CEI 60204-1 and IEC 204-1 standards, unless otherwise agreed with the customer.

- Supply Voltage: (see rating plate) with a tolerance of $\pm 10\%$
- Supply Voltage Frequency: (see rating plate) with a tolerance of $\pm 2\%$
- Max. Electrical Input: (see rating plate)
- Harmonic Distortion: from the second to the fifth $< 10\%$ + from the sixth to the thirtieth $< 2\%$
- Three-phase Supply Voltage Imbalance: $< 2\%$
- Voltage Impulses: duration less than 1.5 ms and $< 200\%$ of supply voltage
- Voltage Interruption: duration < 3 ms; period > 1 second
- Voltage Drops: value $< 20\%$ of peak supply voltage; period > 1 second
- System compliance with standards: CEI 64-8, IEC 364

Machine protection against indirect contacts has been designed for mains supplies of the rated voltage type. Therefore, no differential guard has been fitted. In the event that the machine is to be connected to a different supply mains (TT, IT) or if foreseen by local laws or regulations, it is necessary to fit differential guards according to the characteristics of the system and taking into account the following conditions:

1. Measures to contain electromagnetic interference may cause high levels of high-frequency dispersion current along the earth wire. For this reason it is necessary to choose a differential switch that is not affected by high frequencies.

2. Machine failures towards earth may occur even when using DC power (IEC 755).
3. The differential switch must be highly resistant to impulse overvoltage caused by atmospheric electricity or manoeuvres (EN 61008-1) and to the 8/20 μs >1000A (VDE 0432 T2) wave test.

We recommend the use of the SIEMENS 5SZ3466-0KG00 or 5SZ6466-0KG00 differential switches that should be fitted according to the instructions given by SIEMENS, or of other devices with the characteristics listed here above.

For connection voltages of up to 400 V, the electrical cabinet of the machine is fitted with the general disconnecting switch that is released automatically for short circuit currents of up to 10 KA R.M.S. or 17 KA peak.

For connection voltages of more than 415 V, the disconnecting switch is able to withstand short circuit currents of up to 5 KA.

If the presumed short circuit current at the supply point is higher, it must be limited.

Connecting Cable

The cable connecting the machine to the supply mains shall be screened or shall pass in a metal pipe in order to reduce the electromagnetic interferences. The screened cable or the metal pipe shall be earth connected. The minimum section for the connecting cable shall be equal to 25 mm² (220 V - 230 V), or 16 mm² (400 V).

Electrical Installed Power

The machine is equipped with many electrical components. In order to know the electrical installed power, see the machine identification plate.

Pneumatic System Requirements

The pneumatic system shall assure a supply pressure of 6.5 to 7 bars.

The compressed air consumption of the machine is equal to 100 NI/min. It is crucial to know this value in order to adapt the system.

Suction System Requirements

The suction system shall be connected permanently to the machine and shall always operate with the machine. Moreover, it shall constantly supply a min. flow speed of 30 m/sec.



Poor performances of the system may be injurious to the health.

Appendix C. Transport and Installation

A sectioning guillotine device shall be installed on the pipe connecting the suction system to the machine in order to disconnect the machine from the general supply system. This device shall be located in a highly visible position so that the operator shall have prompt access to it.

The air consumption for suction is equal to 2,500 m³/h. It is crucial to know this value in order to adapt the system.

Appendix D. Decommissioning - Demolition

During the life cycle of the machine it may become necessary to dismantle it for transfer to another site. If this is the case, proceed as indicated below.

1. Turn the machine off and disconnect it from all power sources.
2. Remove and put away all the tools that are in the machine.
3. Clean the machine and protect parts that are subject to corrosion using suitable products.
4. For transport and installation of the machine at the new site, use the methods and procedures described in this manual.

The machine uses lubricating oil and grease. To neutralize the lubricant fluids which remain attached to parts of the machine and cannot be re-used, use degradable solvents of an approved type. For evacuation of recoverable lubricant fluids empty the tanks and deliver the fluids to the local authority in charge of disposal. Any batteries, accumulators, buffer batteries for electronic cards and conditioners that may be found in the machine must also be disposed of in a suitable manner.

When the machine reaches the end of its technical working life it must be totally decommissioned so that it can no longer be used for the purposes for which it was designed and built. This procedure allows for re-use of the parts and raw materials contained in the machine. If any parts are used again it must be for purposes other than those for which the machine was originally constructed.

BIESSE declines all liability for damage to persons or things that may derive from any secondary use of single parts of the machine for functions or assemblies other than those originally contemplated. BIESSE recognizes no implicit or explicit suitability for specific purposes of any parts of the machine which are used again after final decommissioning in view of demolition.

Appendix D.
Decommissioning - Demolition

Appendix E. Guarantee and client servicing

E.1 Conditions of the guarantee

BIESSE S.p.a. guarantees that the machine was tested at its own premises and that a positive result was obtained.

The guarantee shall remain valid for a period of 12 months starting from the date of delivery unless there is an agreement between BIESSE S.p.a. and the purchaser to define the commissioning of the machine at the latter's premises. When, however, it is agreed between both parties that commissioning shall be performed at the purchaser's premises, the guarantee shall be valid for a period of 12 months starting from the date of commissioning of the machine at the purchaser's premises and, in any case, for a period of no longer than 9 months following the date of delivery. Working hours over 48 hrs./week shall result in corresponding reductions in the period of validity of this guarantee.

BIESSE S.p.a. shall be also considered liable for defects in electric and electronic parts of the machine. The guarantee shall not cover defects caused by normal wear and consumption of those parts which, by their very nature, are subject to rapid and continuous consumption e.g. gaskets, belts, brushes, fuses etc. The guarantee for replaced or repaired components shall expire on the same as expiry of the guarantee of the machine itself.

Furthermore BIESSE S.p.a. shall not be liable for any lack of conformity of the machine deriving from a failure to observe regulations indicated in the instructions manuals and in any case due to inappropriate use or treatment of the machine. The purchaser may thus demand that any parts found to be faulty be replaced provided that such faults are not attributed to mis-handling and, in the case of modification, provided that BIESSE S.p.a. has issued prior written consent.

The purchaser shall lose any right to this guarantee if he or she does not provide BIESSE S.p.a. with a detailed written account of the nature of any defects of conformity found in the machine within 15 days following discovery of the fact. Moreover, the purchaser shall lose his or her right to this guarantee if he or she does not allow the vendor to perform all checks required or if, the vendor having requested the return of a faulty component at its own expense, the purchaser fails to return the component as soon as possible after such a request.

The technical documents which accompany the machine are prepared with close reference to the content of the corresponding Directives and current safety regulations. It is therefore of the utmost importance that the user read completely all volumes of the same in order to obtain from the machine the best possible performance and to ensure the maximum lifetime to its component parts.

The configuration of some parts or devices described or illustrated in the documents may differ from the configuration actually present in the machine in a specific version designed and prepared for particular requirements or safety standards. In this case, certain descriptions, references or advised procedure may be of a generic nature although their effectiveness shall remain valid. The supply of tools or special equipment with the machine is conditioned by the specific characteristics

Appendix E.

Guarantee and client servicing

and safety regulations in force in each country. The drawings and photographs are supplied with the sole aim of providing examples as a point of reference for a more complete understanding of the text.

BIESSE products are constantly developed and updated and therefore the firm reserves the right to modify functional or aesthetic characteristics of its machinery, to make variations in drawings of any functional part or accessory or suspend production and supply without giving prior notice to anyone and without incurring any obligation. BIESSE S.p.a. furthermore reserves the right to make any structural or functional modification besides modifying the supply of spare parts and accessories without any obligation on its part to inform anyone for any reason whatsoever of such changes.

E.2 Client servicing

BIESSE S.p.A. provides a service department for clients, based in Pesaro, ITALY, which also has service workshops all over the world (BIESSE Authorised Service Centres).

The whole structure forms a highly efficient integrated network, which the client can contact for any problem, information, advice or news.

The service department employs technicians with a high level of knowledge and experience on the models manufactured, obtained through special training in our factory, who are able to service machines on site.

The BIESSE Authorised Service Centres are listed in the introduction the machine's Spare parts catalogue.

For further information, please send a fax message to the BIESSE Service Department, at the following number: (+39) - 0721 - 439761.

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