

# **BS+2020T** **BS+2020F**

*OPERATING AND MAINTENANCE MANUAL*  
*BONE SAW*

**BERKEL**







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# 1 Delivery and warranty

## 1.1 - Introduction

These symbols are meant to draw the attention of the reader to machine parts and tasks that are dangerous to the operator's personal safety or that may potentially cause damage to the machine itself. Do not operate the machine if you are not sure you have fully understood the cautions the symbols refer to.

For safety reasons, certain illustrations in this manual show the machine or its parts with the panels or housing disassembled. Do not use the machine in said conditions, but only if all of its guards are assembled and are working.

The manufacturer forbids the reproduction, even if only partial, of this manual, and its contents cannot be used for purposes not approved of by the manufacturer. Every violation of this ban will be pursued by legal action.

## 1.2 - Storing and using the manual

The purpose of this manual is to instruct machine users by way of texts and pictures on the regulations and essential criteria to follow when transporting, handling, using and servicing the machine. Therefore, before you use the machine, carefully read this manual. Store it with care nearby the machine, in a place that is easy and quick to access, should there be need to consult the manual in the future.

If the manual is lost or ruined, request a copy from your local retailer or contact the manufacturer. If the machine is transferred to other owner, inform the manufacturer of the name and contact details of the new owner. The manual reflects the state of the art at the time the machine was sold on the market and cannot be considered obsolete if new progress in technology leads to its changing. In this regard, the manufacturer reserves the right to update its production and annexed manuals without being required to update its former production and manuals, except in rare circumstances. If in doubt, contact the customer service center nearest to you or the manufacturer. The manufacturer is committed to continuously improving its products. As such, the manufacturer welcomes and encourages any report or suggestion meant to enhance its machines and/or the manual.

The machine has been delivered to the user under warranty cover valid as of the date of purchase. For clarifications, contact your supplier.

## 1.3 - Warranty

For no reason whatsoever is the user authorized to tamper with the machine.

Where you encounter flaws or were the machine to malfunction, you are required to notify the manufacturer at once in all cases. Any and all attempts to disassemble, modify or, more in general, tamper with any machine component made by the user or by unauthorized staff will automatically cancel the warranty cover and will absolve the manufacturer of any liability for harm to individuals or property caused by such tampering.

The manufacturer likewise rejects any liability in the following cases:

- improper installation;
- improper use of the machine by untrained personnel;
- use of the machine that is in breach of the legislation and standards applicable in the country where the machine is installed;
- neglectful or poor maintenance;
- use of non-original and generic spare parts;
- failure to partly or wholly follow the instructions.

## 1.4 - Machine description

The bone saw you have purchased is a safe and reliable machine that is simple to use. The pulleys are in aluminum while its body and accessories are in stainless steel type AISI 304. The bone saw has guards installed that are both mechanical (housing, doors, etc.) and electrical (micro-switch, stop button, etc.), which are meant to reduce the operator's exposure to risks during its use to a bare minimum. The tilting angle of the pulley can be horizontally and vertically adjusted, so as to always ensure maximum blade adhesion. The engine is ventilated and well-protected against water and intermittent operation. The control panel is installed in an easily accessible position and features 24V control buttons. Special care has been given to facilitate cleaning tasks when designing the machine, thanks in particular to the following technical measures:

- simple removal of the blade and upper pulley without the need for tools,
- Once the pulley is removed, the machine's surface is smooth, making it easier to clean and allowing dirt on the blade to directly deposit in its tray.
- all its electrical parts have been manufactured to provide the minimum safety standard IP 56.

## 1.5 - Intended use

The bone saw has been designed and manufactured to cut bone and frozen fresh meat and fish. Use the bone saw only on top of a table or on the stand supplied by the manufacturer. Given its use to saw foodstuffs, the materials used to manufacture the blade and all other components that may make contact with the cut product have been carefully selected. The bone saw is an industrial appliance and only skilled professionals should use the machine, after having carefully read this manual. This equipment complies with the essential health and safety requirements of directive 2006/42/EC and the requirements of directives 2014/30/EU, 2014/35/EU, 2006/42/EC, RoHs 2011/65/EU and Regulation 1935/2004/EC. The machine was designed and built according to the requirements of EN 12268: 2014.

Since it is also suitable to cut frozen fish, the bone saw does not require special environmental conditions. We nonetheless advise you to store it away indoors, protected against bad weather and abrupt temperature changes.

## 1.6 - Improper use

The bone saw must only be used as instructed by the manufacturer; more specifically:

- Do not use the machine if has not been correctly installed with all guards intact and properly assembled, so as to avoid the risk of personal injury.
- Do not use the machine with a worn or unsharpened blade, as it may break.
- Do not climb with your feet onto the machine, even if it is off, as this could damage the machine, besides the risk for the operator of falling.
- Do not access the electrical components without having first cut off power to the machine: danger: risk of electrocution.
- Do not use the machine to cut anything other than meat, bone or fish.
- Do not stop the blade with your hands, but wait for it stop of its own, so as to avoid the risk of severe personal injury.
- Do not wear rings, wrist-watches, jewelry, loose or draping clothing, like shoes, neckties, torn apparel, unbuttoned jackets or blouses with an open zipper, which may get stuck in moving parts. Use approved safety clothing like non-slip boots, safety goggles, work gloves, ear muffs or plugs, safety mask. Consult the employer concerning the applicable safety regulations and the required personal protective equipment.
- Do not start the machine if it is in failure. Before using the machine, make sure



that any hazardous and potentially threatening condition has been thoroughly eliminated. If you notice any abnormal condition, stop the machine and immediately inform staff in charge of maintenance.

- Do not allow unauthorized personnel to perform tasks on the machine. The emergency procedure to follow, should the machine operator suffer an accident involving electrically conductive parts, is to first of all pull the operator away from the power source (since usually the operator loses consciousness in this type of accident). In this case, the operator is a live conductor: touching him would mean suffering electrocution. Proceed to disconnect the contacts from the power line valve or, if this is not possible, draw the victim away with the aid of insulating materials (wooden clubs or PVC, fabric, leather, etc.,). It is advisable to immediately request medical staff to intervene and have the patient hospitalized.
- Do not perform any task on the machine if not duly authorized beforehand.
- Follow the procedures established for maintenance and technical assistance.

### 1.7 - Machine details

The exact description of the "Model", "S erial number" and "Year of manufacture" of the machine will help our customer service staff provide prompt and efficient answers. Whenever you contact our customer service or request spare parts, always be sure to provide the above information. We recommend that you fill out the form in picture 1.7.1. below as a reminder, copying the data of your machine on another sheet of paper.

Bone saw model.....  
 Serial number.....  
 Year of manufacture.....  
 Type .....

**!! CAUTION !!** Do not for any reason whatsoever change the information displayed on the label.

A = machine model  
 B = power supply  
 C = motor power  
 D = motor frequency (Hz)  
 E = weight  
 F = Ampere  
 G = Year of manufacture  
 H = Serial number  
 I = Manufacturer  
 L = Bar code



MOD:   A    
 VOLT:   B   WATT:   C    
 HZ:   D   KG:   E    
 AMPS:   F   ANNO:   G    
 SERIAL NO:   H    
         I    
   L    


Fig. 1.7.1

### 1.8 Safety guards and devices

Before you proceed to use the machine, make sure its safety devices are in place and intact.

Check that they are installed and efficient at the beginning of every work shift. If they are not, inform the manager in charge of maintenance at once.

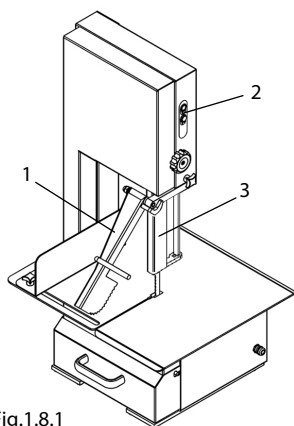
#### 1 - Mobile guard installed around blade area.

If there is no piece in the machine, the guard prevents the operator from accidentally touching the cutting blade. (Picture 1.8.1)

#### 2 - Micro-switch to check housing status (open/closed)

If the housing is open, the micro-switch cuts off electrical power from the machine, causing it to stop.

Closing the housing allows the machine to resume operation, but the operator must press the start button again.



Even if the machine accidentally stops, as for instance due to a power outage, if electrical power is supplied again to the machine, it will not cause the machine to restart, but the operator will instead have to press the start button (Picture 1.8.1).  
3 Sliding blade protection, it allows the adjustment of cutting height according to the product thickness

Fig.1.8.1

## 1.9 - Warning and danger signs

Never move your hands close to the blade, especially when it is moving. There is serious risk of severe personal injury. If the machine is hooked to the power grid, do not touch its electrical components. Risk of electrocution. Heed the warnings on the labels. Failure to follow their instructions may cause personal injuries, even lethal. Make sure that the labels are always in place and clearly legible. If not, re-apply or replace them.

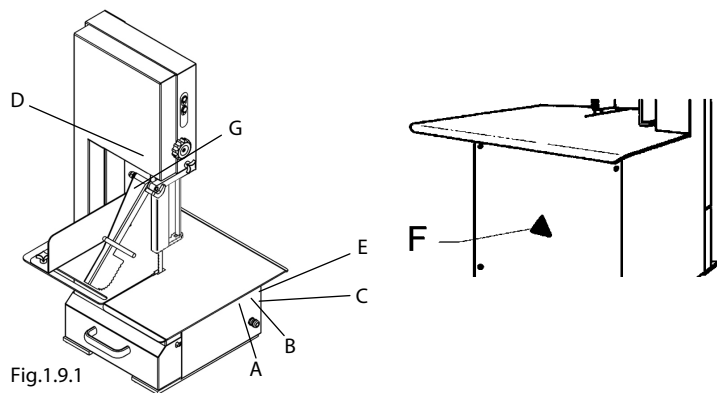


Fig.1.9.1

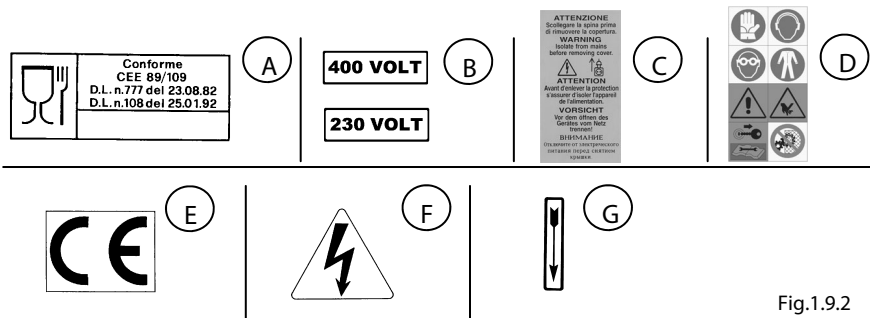


Fig.1.9.2

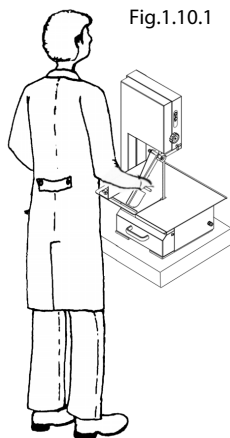


Fig.1.10.1

### 1.10 - Work station

The correct position the operator must assume to ideally control the bone saw is shown in Picture 1.10.1.

### 1.11 - Environmental conditions

The machine is designed to work in the following environmental conditions:

- minimum room temperature: -5 °C;
- maximum room temperature: +40 °C;
- relative humidity: 50% at 40 °C.

### 1.12 - Lighting system

The place where the bone saw is installed must have enough natural and artificial light, as required by the standards applicable in the Country of installation.

The lighting system must be compatible with the current norms of law and must not induce dangerous reflections. It must allow the operator to clearly read the control panel signals and identify the emergency buttons.

### 1.13 - Vibrations

The machine does not transmit significant vibration (such to advise particular caution) to the counter/table.

## 2 - Technical characteristics

### 2.1 - Main components

In order to help the operator understand the contents of this manual, Picture 2.1.1 below lists and depicts the main components of the machine.

- 1 - Pulleys protection casing in stainless steel AISI 304
- 2 - Control panel.
- 3 - Portioning device in stainless steel AISI 304
- 4 - Pusher in stainless steel AISI 304
- 5 - Work top in stainless steel AISI 304
- 6 - Electrical motor.
- 7 - Upper driven pulley in polished aluminium G-AlMg3
- 8 - Telescopic blade protection are made of stainless steel AISI 304
- 9 - Dirt and rest collection tray are made of stainless steel AISI 304
- 10 - Lower drive pulley polished aluminium G-AlMg3
- 11 - Electrical system.
- 12 - Body machine are made of stainless steel AISI 304
- 13 - Lever for the assembly blade.
- 14 - Alimentary plastic blade scraper
- 15 - Blade guide insert in hardened steel
- 16 - Band cutting blade in carbon steel C95

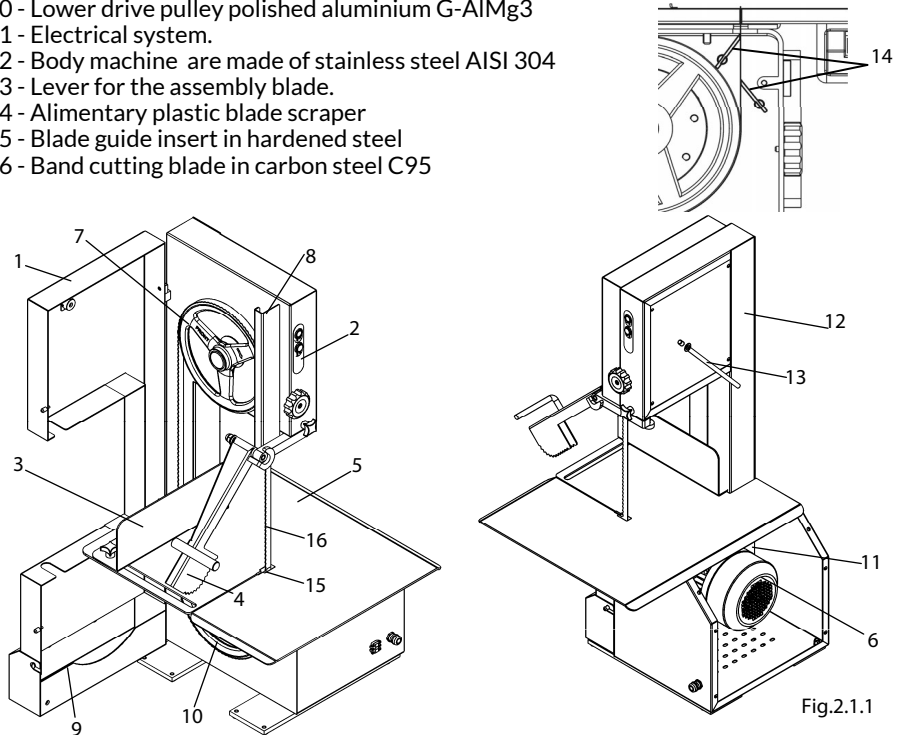
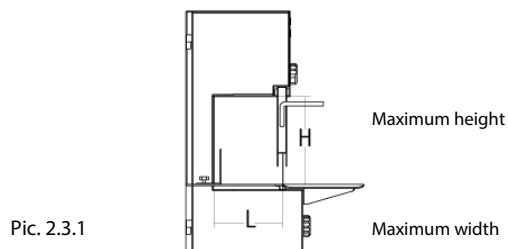


Fig.2.1.1

### 2.2 - Technical data

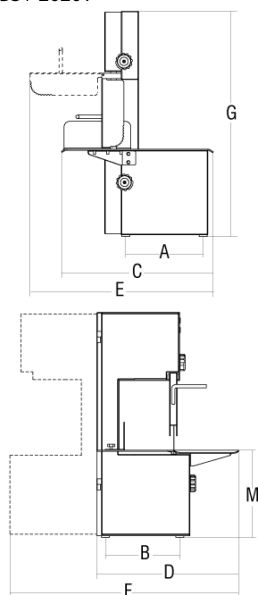
MOTOR PULLEY	BLADE	LENGTH	WORKBENCH
Hp / rpm	mm	mm	mm
1,5	250	2020	475 x 490

## 2.3 - Maximum dimensions of cut piece (Picture 2.3.1)



## 2.4 - Machine dimensions and weight

BS+ 2020T



BS+ 2020F

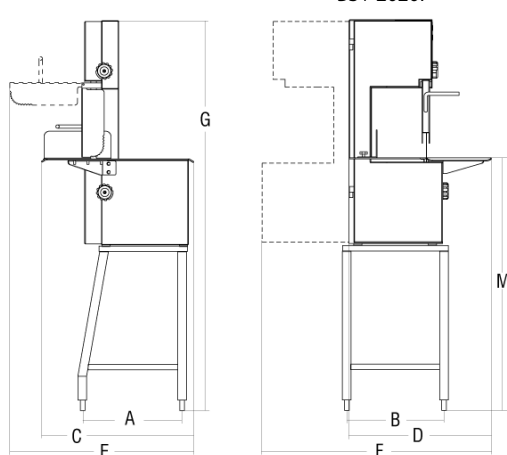


Fig. 2.4.1

	A	B	C	D	E	F	G	H	L	M	Net weight
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
BS+ 2020T	253	346	568	560	710	930	103	290	236	363	61
BS+ 2020F	467	411	568	603	710	930	165	290	236	980	70

## 2.5 - Noise level

The noise level of this machine results to be 73 dB.

We recommend that the operator utilises ear defenders when operating the bone saw.

2.6 - Wiring diagrams  
2.6.1 - 3-phase wiring diagram (400V)

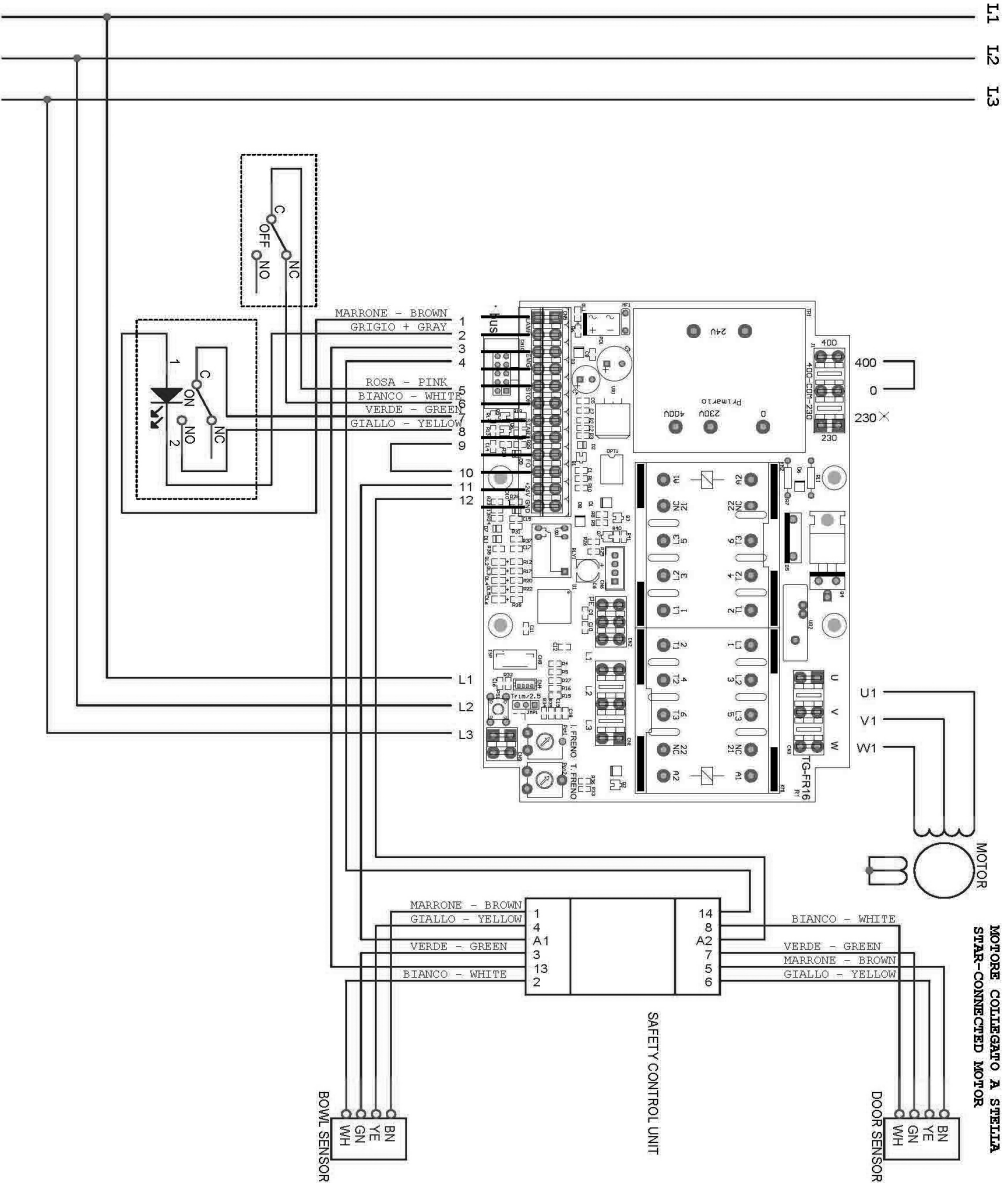


Fig.2.6.1

## 2.6.2 - Single-phase wiring diagram (230 V)

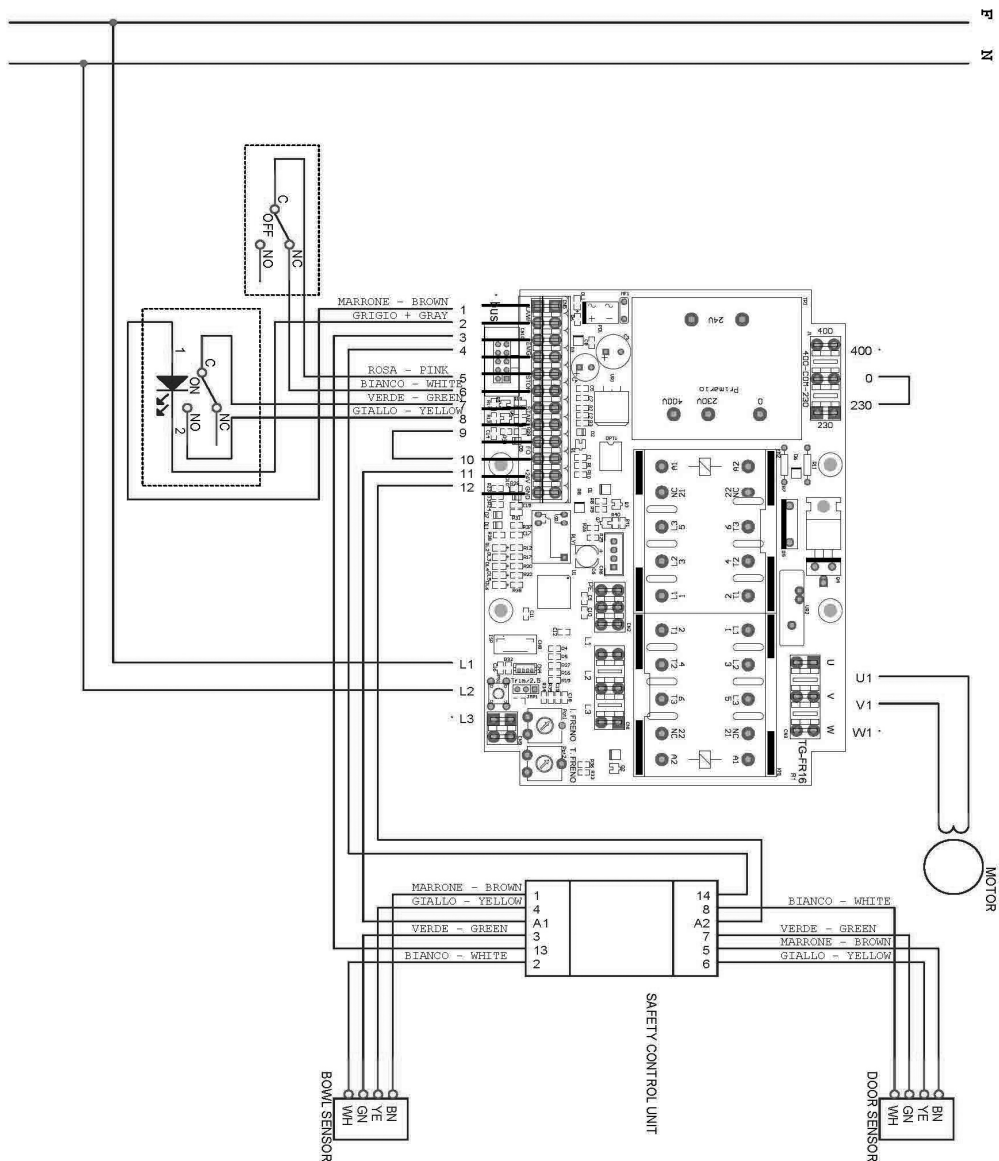


Fig. 2.6.2

## 2.6.3 -3-phase wiring diagram (400V) with mushroom push-button

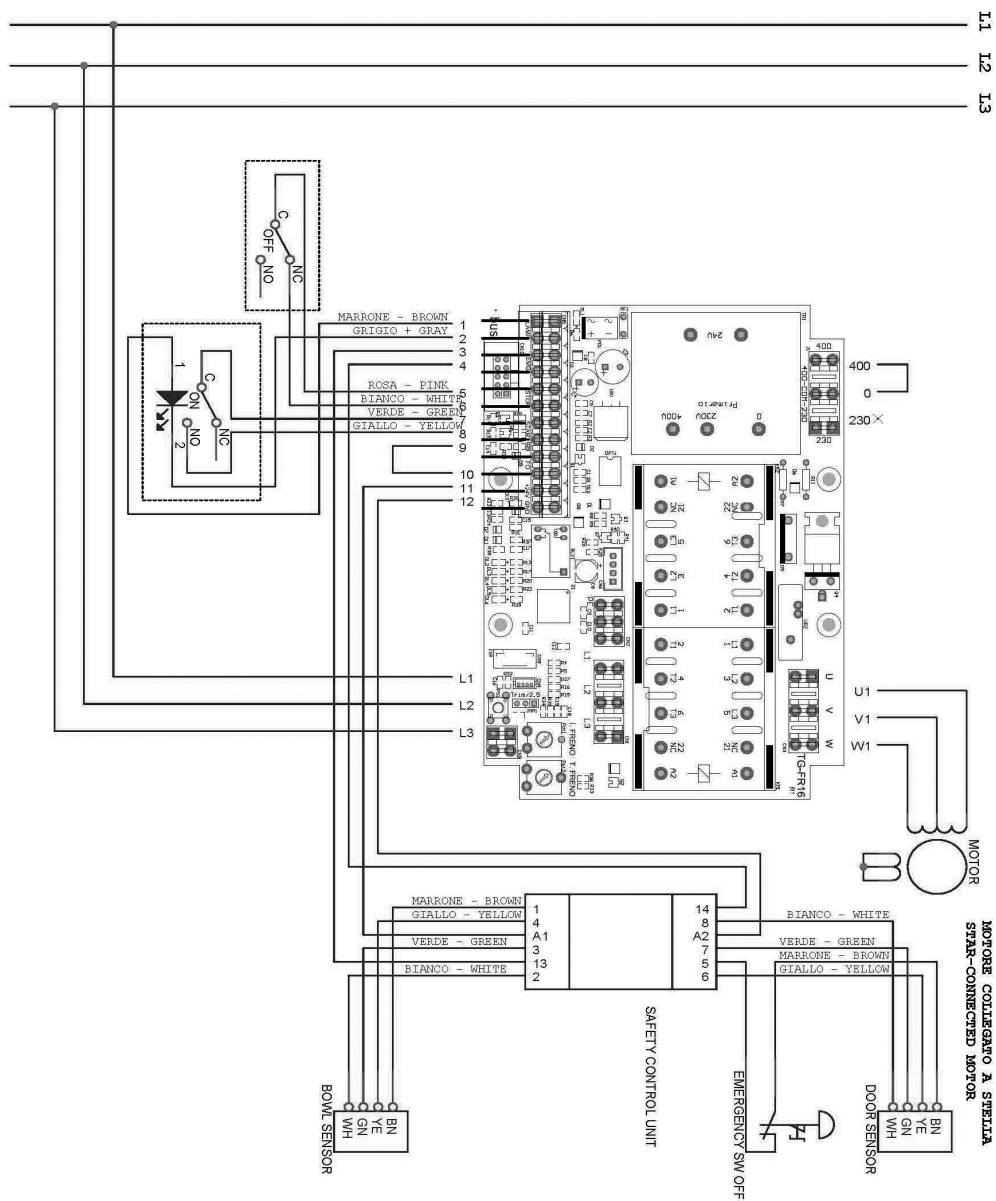


Fig. 2.6.3



## 2.6.4 - single-phase wiring diagram (230V) with mushroom push-button

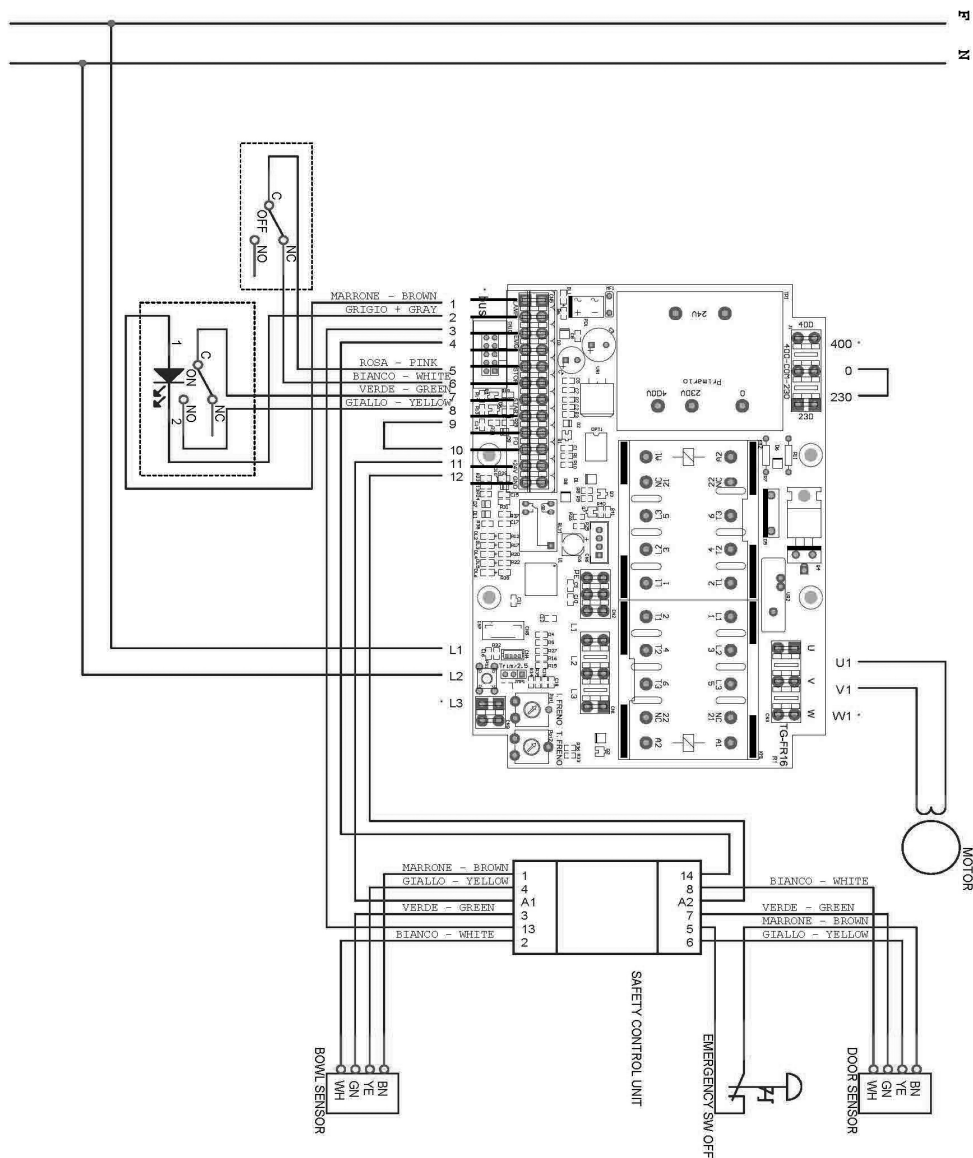


Fig. 2.6.4

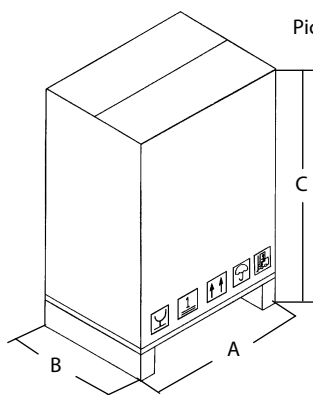
## 3 Testing, transportation, delivery and installation

### 3.1 - Testing

The machine you have purchased has been tested at our facilities to ensure that it works properly and is properly adjusted. Trial sawing drills have also been performed as part of the tests, on the same type of material for which the machine is normally used to cut.

### 3.2 - Machine delivery and handling

All the shipped materials have been accurately checked before they were handed over to the courier.



Pic. 3.2.1

	A	B	C	Gross weight
	mm	mm	mm	kg
BS+ 2020T	253	346	568	61
BS+ 2020F	467	411	568	70

Unless otherwise agreed with the customer or in the event of especially costly transportation, the machine is packaged on a wooden pallet protected by strapped cardboard. The dimensions of the packing are shown in Picture 3.2.1.

Check that the packing is intact when you first receive the machine.

If the packing happens to be torn or in any way damaged, sign the delivery note includ-

ing the wording: "accepted with reservations" and the reason for the note.

Once you have opened the package, if certain machine components display evident damage, notify the courier thereof within three days from the date on the delivery note.

#### 3.2.1 - List of supplied materials

A User and Service Manual is included with the machine in the package (this document and its enclosures).

### 3.3 - Installation

#### CAUTION

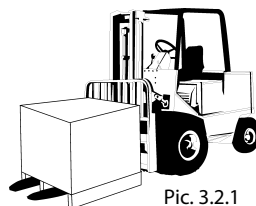
The place where the machine is installed must be horizontal, solid and must be laid on a surface that can safely support its weight.

Moreover, be sure to leave a wide space around the machine when laying it onto the surface, considering the dimensions indicated in Picture 2.4.1. The space will help operators to perform maneuvers more easily and will facilitate access to the machine for service tasks.

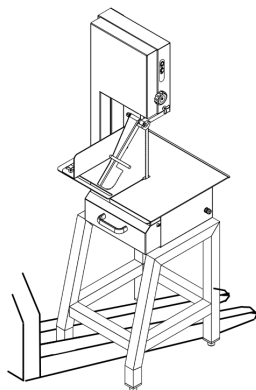
Provide suitable lighting around the machine for operators who use the bone saw to have clear sight of the machine and its surrounding space.

The packing must be handled with the aid of a forklift or other similar machinery, since the machine is supplied on a pallet protected with cardboard (Pic. 3.2.1).

- Remove the 2 straps that hold the cardboard fastened to the pallet.
- Remove the two straps that hold the bone saw fastened to the pallet.
- Remove the cellophane wrapped around the machine and all other packaging material.



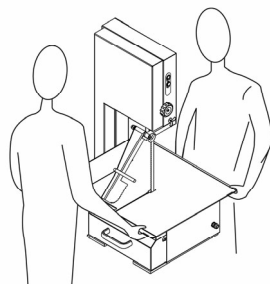
Pic. 3.2.1



- BS+ 2020T - Two people are at least necessary to move the machine and they have to catch it from working surface (Fig. 3.3.2)

- BS+ 2020F - Handle the machine with the aid of forklift or other mechanical machinery normally used for handling, as the machine weighs 100 kg.

Never manually hand the machine.



### 3.3.1 - Packing disposal

The components inside the packing, such as cardboard, nylon and wood can be likened to solid urban waste; as such, they can be freely disposed of.

If the machine is delivered to Countries that have special

laws, dispose of the packing as prescribed by said norms.

### 3.3.2 - Machine handling

Use a forklift that can carry the machine's weight to lift the machine.

Check that the load is stably positioned on the forks, especially when traveling on bumpy, slippery or slanted road. When handling the machine, keep the load as low as possible, so as to ensure greater stability and a clear view.

Space the forks apart to stabilize load grip as best as possible.

### 3.4 - Electrical system hook-up

- Connect the 16 ampere plug supplied by the manufacturer to the power cable. Make sure that its voltage matches the value displayed on the machine's rating plate

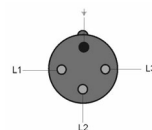
All work on the electrical system of the machine must be carried out by specialized staff duly authorized for its performance by the manager in charge.

Hook the machine to a power grid that has an efficient earthing connection.

### 3.4.1- 3-phase machine (400 Volt-50Hz) and 3-phase machine (220 Volt-50 Hz)

These machine versions include a power cable with a diameter of 4 x 1 mm.

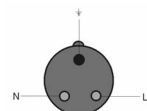
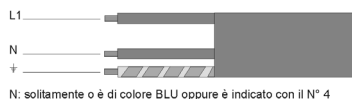
The power cable is plugged into a quadripolar 3-phase socket. Hook the cable to the 3-phase power grid, interposing a 16 ampere differential circuit breaker.



### 3.4.2 - Single-phase machine (230 Volt-50 Hz)

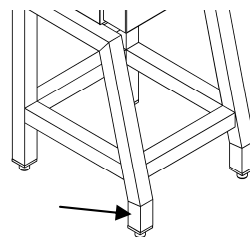
This machine version includes a power cable with a diameter of 3 x 1.5 mm. This power cable is plugged into a tripolar single-phase socket. Hook the cable to a single-phase 230 Volt-50 Hz power grid, interposing a 16 ampere differential circuit breaker.

For machine versions configured with a different voltage, contact the manufacturer for instructions. If there is need to extend the power cable, use a cable with the same diameter as the one installed by the manufacturer. To check that the machine has been properly hooked to the electrical system, see par. 5.1. If you must move the machine elsewhere, be sure to always disconnect it from the electrical panel, so as to avoid damaging the power cable.



### 3.5 - Adjusting machine stability

The machine footpegs can be adjusted in order to stabilize the machine, by either tightening or loosening them.

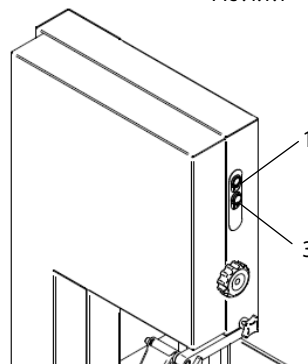
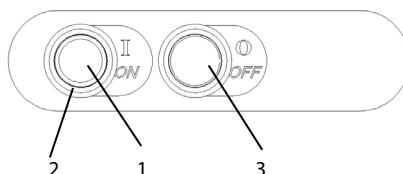


Pic 4.1.1

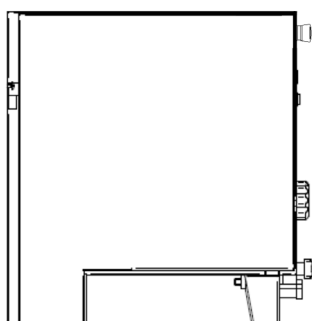
## 4 Controls and indicator lights

### 4.1 - List of controls and indicators

- 1 - Start button  
- Press this button to start the blades running.
- 2 - Machine running indicator light  
- The light goes on to signal that the machine is running; it goes on when the operator presses the start button.
- 3 - Stop button  
- Press this button to stop the motor that controls motion of the cutting blade.



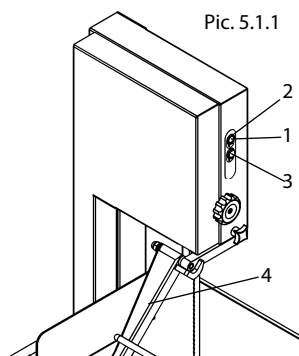
## 4.2 Emergency mushroom push-button (optional)



- Press this button to stop the motor that controls motion of the cutting blade. To restart the machine, turn the button head counter-clockwise until you hear a clicking sound. Engaging the button does not of itself allow the operator to restart the machine; the start button must be pressed (ref. 2 in previous paragraph).

## 5 Start-up and stop

### 5.1 Checking the electrical connection



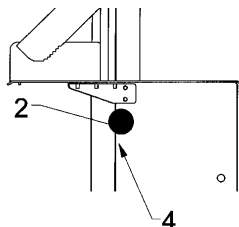
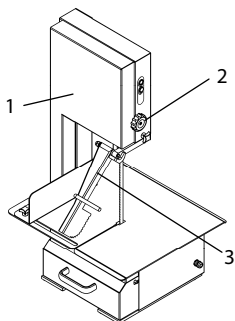
Pic. 5.1.1

- Turn the differential circuit breaker installed upstream of the machine to position "I".
  - The indicator light "2" must be on.
  - Press start button "1" and stop button "3" right after it in sequence, checking the direction of blade rotation. The blade must rotate in the direction pointed to by arrow "4" in Picture 5.1.1, i.e. toward the workbench.
- If the blade is rotating in opposite direction, switch the circuit breaker off by turning it to "0". This will cut off power supply to the machine.
- Invert a power wire in the plug and repeat the above procedure to check the electrical connection (par. 5.1).

Note:

In machines hooked to a single-phase line and accordingly configured, the direction of blade rotation is directly established by the manufacturer.

### 5.2 Checking the safety guards and devices are installed and efficient



Pic. 5.2.1

#### A - Checking efficiency of micro-switch "4" (Pic. 5.2.1)

With the machine hooked to the power grid with the blade running, work on the spring-return closure "2", thereby unlocking housing "1". This operation is meant to stop the machine, in order to prevent objects or hands from making contact, even accidentally, with the moving pulleys and blades. Close back housing "1" and lock it in place with lock "2". The machine must not resume running simply by closing the housing, but only if the start button is also pressed again.

If you experience any kind of abnormal condition, turn the machine off and contact customer service for technical assistance.

#### B - Mobile guard on blade "3" (Pic. 5.2.1)

Make sure that pusher "3", which protects the operator from making contact with the blade, is installed, intact and properly positioned.

Check that the mobile guard always returns to its upright position if allowed to drop.

### 5.3 - Machine start-up (Pic. 5.3.1)

Turn the differential circuit breaker of the machine from "0" to "1". The indicator light "2" that signals the machine is under live voltage must go on.

Press start button "1", thereby activating blade rotation.

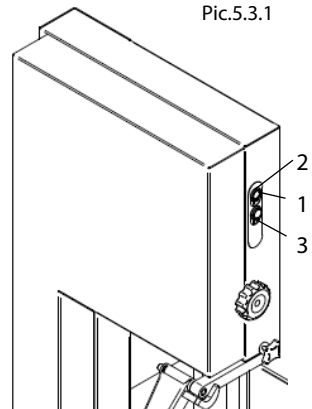
### 5.4 - Machine stop (Pic 5.3.1)

To stop the machine, press button "3" (the electric motor will stop).

Indicator light "2" is still on to indicate that the electrical panel is still powered. Therefore, turn the differential circuit breaker upstream of the machine to "0", thereby cutting off its power supply.

#### Note:

Whenever you end a work shift and plan to leave to leave the machine in standby, the differential circuit breaker must be left in position "0".



## 6 Using the bone saw

### 6.1 - Regulations

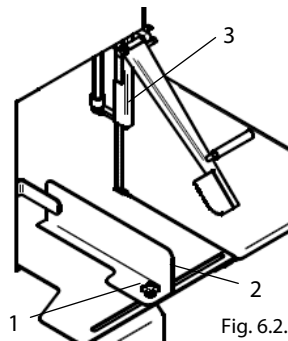
**CAUTION** Only authorized staff can operate the machine.

Before using the bone saw, the operator must check that all its guards are in place and that the safety devices are installed and efficient. If they are not, turn the machine off and contact staff in charge of maintenance. Have maneuvers with the machine empty only performed with the aid of specialized personnel, in order to familiarize with the machine enough to use it safely.

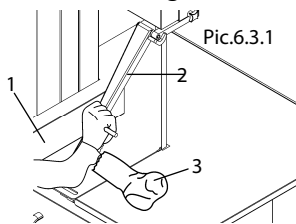
### 6.2 - Preliminary adjustments (Pic. 6.2.1)

Scoop "2" must be adjusted based on the size of the cut product.

- To adjust scoop "2", loosen knob "1", then move the scoop to the desired distance from the cutting blade, which will define the cutting width.
- Tighten knob "1".
- adjust the sliding blade protection (3) according to the height of the piece to be cut, so as to leave uncovered only the part of the blade involved in the cutting.



### 6.3 - Using the bone saw



Perform the adjustments as described in par. 6.2.

The machine is now ready for use.

- Lay the piece you intend to cut "3" on the workbench, up against scoop "1"
- Start the machine
- Using one hand, grab the pusher knob "2" and with the other hand, guide the product while pushing it toward the blade to cut it. When you have reached the last slice, push the product toward the blade, using only pusher "2", without guiding the product with your hands.

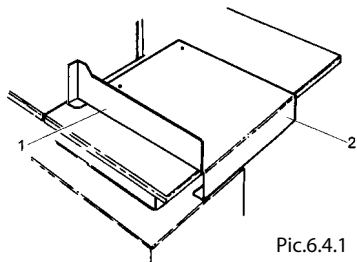
**IT IS FORBIDDEN TO SAW PRODUCTS THAT ARE SMALLER THAN 50 mm**

### 6.4 Using the sliding surface of the meat grinder (optional)

The manufacturer can on request supply a stainless steel AISI 304 sliding surface "2" to install on the fixed surface, which is very useful to cut meat.

By laying the piece of meat on the sliding surface and pushing toward the blade with the aid of side board "1" (Picture 6.4. 1), you will considerably reduce the pressure exerted by the meat on the workbench.

This will facilitate meat cutting tasks and ensures the operator's safety. If you wish to use the sliding surface, simply turn it over.



## TYPE OF FOOD SAWING

## SAFETY INSTRUCTIONS CUT PRODUCT

Cutting the  
ossobuco in  
slices

Adjust the blade guard, leaving only the segment that you need to cut the veal shank exposed. Turn the machine on and saw the knee, keeping your hands far from the blade. Proceed then to cut the "big leg" into slices, using the thickness regulator and the bone pusher or the bone pusher alone, being careful to keep the blade at safe distance from the hand you are holding the piece with. When this is not possible, scrap the last piece.



**OSSOBUCO  
(SLICED VEAL SHANK)**

Central division  
of chops and  
slicing them into  
smaller pieces

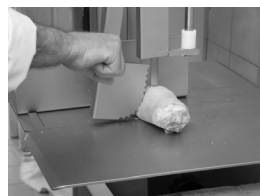
Adjust the blade guard, leaving only the segment that you need to cut the veal shank exposed. Turn the machine on and push the piece against the blade, keeping your hands away from the tool. Take up the cut pieces and overlap them, then resume cutting the overlapped pieces, being careful to keep your hands at a safe distance from the blade.



**ROSTICCIANA (PORK  
RIB CHOPS)**

Cutting hoofs  
into pieces

To cut this piece, you must use the bone pusher device. Turn on the machine and first clean the ends, then proceed to cut the hoofs, holding the piece with the free hand that you are not using to hold the pusher. When this is not possible, scrap the last piece. Always keep your hand at a safe distance from the blade.



**HOOF**

Cutting the  
boiled in large  
pieces

Adjust the blade guard, leaving only the segment that you need to cut the piece exposed. Turn the machine on and push the boiled meat against the blade, keeping your hands at a safe distance from the blade.



**BOILED MEAT WITH  
BONE**

Cutting the thigh  
-bone into  
pieces

To cut this piece, you must use the bone pusher device. Turn the machine on and first cut the heads of the thigh-bone and then the bone down its length. Cut the piece holding it still with the free hand, while the other hand is busy holding the bone pusher. When this is not possible, scrap the piece. Always keep your hands at a safe distance from the blade.



**STEER BONE (THIGH)**



Chopping off  
sirloin steak tips

Adjust the blade guard, leaving only the segment that you need to cut the piece exposed. Turn the machine on and push the sirloin steak against the blade, keeping your hands at a safe distance from the blade.



SIRLOIN STEAK

Cutting the front  
or back in two

Adjust the blade guard, leaving only the segment that you need to cut the piece exposed. Turn the machine on and push the piece against the blade, keeping your hands at a safe distance from the blade.



LAMB

## 7 Maintenance

### 7.1 - Guidelines

All service and cleaning tasks on the bone saw must only be performed with the machine stopped and disconnected from the power grid.

The area in which maintenance is performed on the machine must always be kept clean and dry.

#### **CAUTION!!**

Do not allow unauthorized staff to perform tasks on the machine.

Do not stick your body, limbs or fingers in articulate and sharp openings without wearing suitable protective apparel (gloves, goggles, etc.).

Do not use gasoline, solvents or other flammable liquids as detergents; use authorized commercial solvents instead that are non-toxic and non-flammable.

Do not use compressed air to clean the machine.

In case you absolutely must use compressed air, use goggles to protect your eyes that have side covers and limit its pressure to a maximum of 2 atm (1.9 bar).

Do not use loose flames for lighting when inspecting and servicing the machine.

Do not lubricate the machine when it is moving.

### 7.2 - Introduction

Efficient maintenance and proper machine use are indispensable requisites to ensure the bone saw's performance and safety.

For the machine to continue to regularly work and avoid cancellation of the warranty, all components must be exclusively replaced with original spare parts.

### **7.3 - Check-up performed at our manufacturing facilities**

The machine you have purchased has been tested by the manufacturer to ensure its proper commissioning and the due adjustments.

More specifically, the checks performed by the manufacturer include:

Prior to commissioning:

- Check that the operating voltage of the machine is in line with the customer's requirements.
- Check that all the warning and danger labels and the rating plate with the technical specifications and serial number are installed.
- Check that all nuts and bolts are firmly tightened.
- Check of cutting blade tension.
- Check that the machine is compliant with the applicable standards and that it corresponds to the contents of this manual.

With the machine running

- Check of efficiency of safety guards and devices: if the door is opened by a minimum of 8 mm, the machine must stop.
- Check of correct alignment of blade towing pulleys.
- General check of machine operation.
- Repeated cutting tests with the aim of checking the machine's proper manufacture, based on the type of sawing work it is designed to perform.
- Check that the tool of the machine has a brake halt of max. 4 seconds. If the machine does not slow down at the speed indicated in the manual or rating plate, contact customer service.

### **7.4 - Inspections and checks to be performed when installing the machine**

To make sure that the machine has not been damaged during its transportation or installation, diligently perform the checks listed below:

Prior to commissioning:

- Check that the power voltage matches the value displayed on the machine's rating plate.
- Check that the warning and danger labels are in place and intact.
- Check that the blade is properly tensioned.

Checks with the machine running:

- Check the efficiency of the safety guards and devices, as transportation may have damaged or maladjusted them.
- Check that the cutting blade is properly aligned.
- Perform a series of cutting tests with pieces of the same dimensions of the food-stuff you will then saw with the machine.

### **7.5 - Routine checks**

In order to maintain the machine's features and reliability consistent over time, you must perform routine checks with the frequency listed below, in addition to those described hitherto:

Before starting every work shift:

- Check that the safety devices are working properly.
- Check blade condition. If it is blunt or broken, replace it.
- Check that the blades brake and halt after 4 seconds.
- Check blade tensioning.
- Check that the blades are aligned with the pulleys.

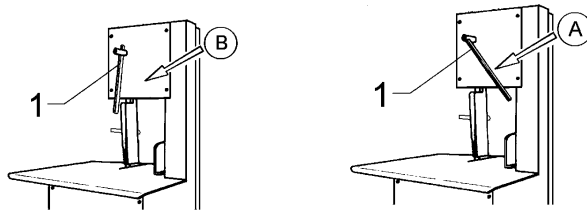
**CAUTION!** If the braking time exceeds 4 seconds or in the case of a fault, contact customer service for assistance.

At the end of every work shift:

- Thoroughly clean the machine, getting rid of any bone chip or food residues.
- Slip off, clean and reassemble the blade guides.

## 7.6 - How to perform the required checks

### 7.6.1 - Adjusting blade tensioning (Pic. 7.6.1)



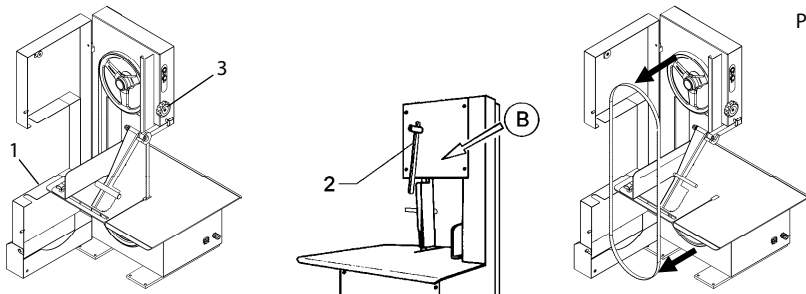
Pic 7.6.1

The blades are mechanically tensioned inside the bone saw by working gear "1", With the gear in position "1" (Pic. 7.6.1), the blade is tensioned.

To disengage the blade, pull the gear down to position "B".

**CAUTION!** Given how delicate and dangerous this operation is, it must only be performed by qualified staff that has been explicitly authorized for its performance.

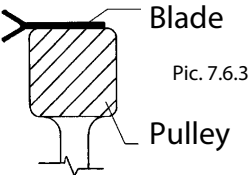
### 7.6.2 - Replacing the blade (Pic. 7.6.2)



Pic. 7.6.2

- Turn the differential circuit breaker installed upstream of the machine to position "0" and disconnect the plug.
- Open housing "1" by turning closure "3".
- Pull gear "2" downward, as shown in Picture 7.6.2 by arrows "B".
- Next, slip off the blades from the pulleys.
- Before you assemble the new blade, clean the pulleys and blade cleaner plug first. Whenever you need to replace the blade, we recommend that you also disassemble the upper pulley and thoroughly clean the machine.
- With the pulleys disassembled, check the condition of the air-tight bearings. If they emit noise, replace them.

- Assemble the new blade.
- Tension the blade by turning the gear to position “A” (Picture 7.6.1).
- Check the position of the blade on the two pulleys:  
the blade must lay on the two pulleys, except for the sharpened segment, which must stick out from the pulleys (Picture 7.6.3).
- Turn the two pulleys manually and check that the blade is properly positioned.
- Close the housing “1” and lock it in place with closure “3”
- Connect the electrical plug back into its socket.
- Turn the differential circuit breaker back to “1”.
- Start and stop the machine and check whether the blade stays in its proper position compared to the pulleys.



Pic. 7.6.3

### 7.6.3 Type of blades

There are several types of blades available on the market that differ in terms of tooth spacing, blade thickness, height and type of steel.

We recommend that you use blades in tempered steel, 16 mm high and with teeth spaced apart by 7 mm on our bone saws.


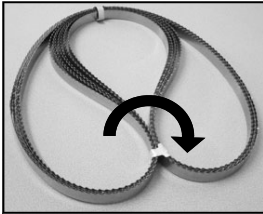
For special applications, such as poultry or frozen meat, there are specific blades with different tooth spacing that offer a perfect cut without chips and without altering the product.

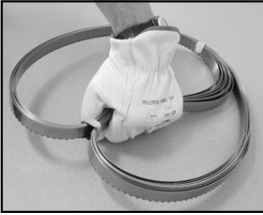


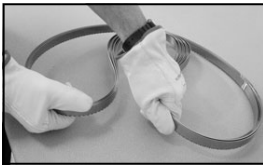
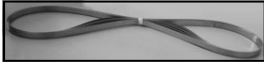

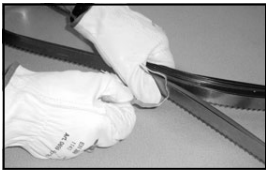
Blade unfolding	mm 2020
Blade width	mm 16
Material	AISI 420



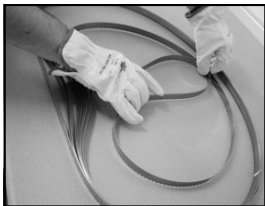

### 7.6.4 - Blade handling

HOW TO OPEN A BLADE OF THE BONE SAW WITHOUT CUTTING YOURSELF

Perform the following procedure in the order indicated by the numbers

1	Wear a pair of gloves that are suitable to handle sharp objects.		
2	Pul out the blade packet from the the box they are packaged in and lay it on a surface with the blade teethfacing down.		

3	Grab the blade packet with one hand protected by the glove, as shown in the picture to the right...		
4	... and with the other hand, also protected by a glove, loosen the clamp that fastens the blades, until it comes off.		
5	Grab the blade packet with both hands and open it apart until the blades are fully stretched..		
6	Grab the blade again with one hand....		
7	...and with the other hand, loosen and slip the other clamp off too.		

8	With both hands, grab the blade packet again and stretch them out on the table.		
9	Now that the blades are fully loosened, grab one in the middle and fold it upwards, making it slide on the table. Immediately after this, grab the two ends and move them close to the center; you can now lift the blade.		
10	After having lifted the blade, spread your hands apart and then open the blade. You can now assemble the blade on the bone saw.		Fasten and protect the remaining blades, repeating the procedure in the reverse order, starting from point 8. Do not take off the gloves until you have completed the procedure.

## 7.7 - Cleaning the machine

### 7.7.1 - Overview

The machine must be cleaned at least once a day or, if necessary, even more often.

All the parts of the bone saw must that come into direct or indirect contact with the cut foodstuff must be thoroughly cleaned.

Do not use water cleaners or water jets to clean the bone saw, but use neutral detergents instead (pH 7).

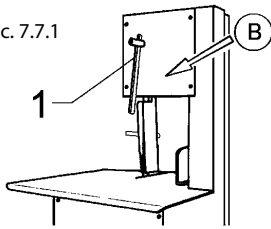
Use of any other detergent is forbidden. Do not use tools, brushes and anything else that can damage the machine's surface.

Before performing any cleaning task, you must disconnect the machine plug from the power grid to fully insulate the machine from the rest of the system.

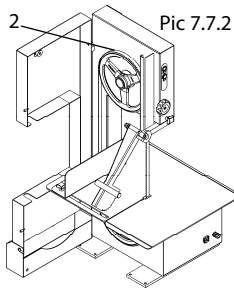
**CAUTION:** Be careful not to touch sharp and/or pointed parts.

## 7.7.2 - Cleaning the machine

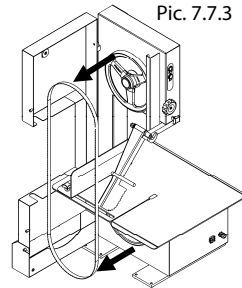
Pic. 7.7.1



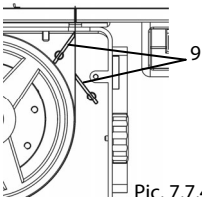
- Wear a pair of gloves that are suitable to handle sharp objects
- Loosen the blade's tensioning by lowering gear "1".
- Grab blade "2" and slip it off the pulley as shown in Pic. 7.7.2 and Pic. 7.7.3



Pic 7.7.2



Pic. 7.7.3



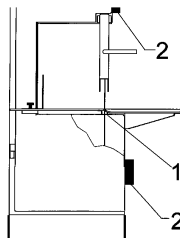
Pic. 7.7.4

- Remove all scrapers "9" and wash them with detergent pH 7.
- After having taken off all the dismountable parts, you will to clean, using a sponge soaked in detergent pH 7.
- Rinse all the components so as to get rid of any left-over detergent and proceed to reassemble them, repeating the procedure in its reverse order.

### 7.8. Cleaning the blade-guide plug (Pic. 7.6.6)

At the end of the work shift, clean the blade-guide plug "1".

- With the machine off, turn the differential circuit breaker to "0" and slip off the power plug.
- With the machine disconnected from the power grid, open the housing and thoroughly clean the blade guide "1", getting rid of any bone chip or food residue.
- Close back the housing and lock it in place with its closures "2".



Pic.7.6.3

## 7.9 - WEEE Waste Electrical and Electronic Equipment

### TO ALL USERS

Pursuant to art.13 of Leg. Decree of July 25, 2005, no. 151 "Implementation of Directives 2002/95/CE, 2002/96/CE and 2003/108/CE concerning the reduction of hazardous substances in electrical and electronic equipment, including waste disposal"



The barred trash-bin symbol displayed on the equipment or on the package indicates that the product must be assigned to separate waste collection at the end of its life span.

Collection of this equipment as separate waste once it reaches the end of its life span is organized and managed by the manufacturer. The user who wishes to scrap this equipment must therefore contact the manufacturer and follow the system applied by the manufacturer to separately collect the equipment at the end of its life span.

Collection of the equipment as separate waste to then recycle the decommissioned equipment and dispose of it without harming the environment contributes to avoid negative effects on personal health and favors the reuse and/or recycling of the materials of which the equipment is made of.

Delinquent disposal of the product by its owner/user will entail the application of administrative fines as established by current legislation.

### 7.10 Spare parts replacement

In case the machine needs to have spare parts installed on it, contact the manufacturer, which will send the spare parts catalogue. Do not use non-original spare parts. Please be reminded that all spare parts must be assembled by specialized staff.



## 8 Troubleshooting

### 8.1 Problem, cause and solution

#### Problem

- 1 - The machine does not start.
- 2 - The blade does not cut in a straight line.
- 3 - The blade drops off from its support pulleys.
- 4 - The blade overheats.

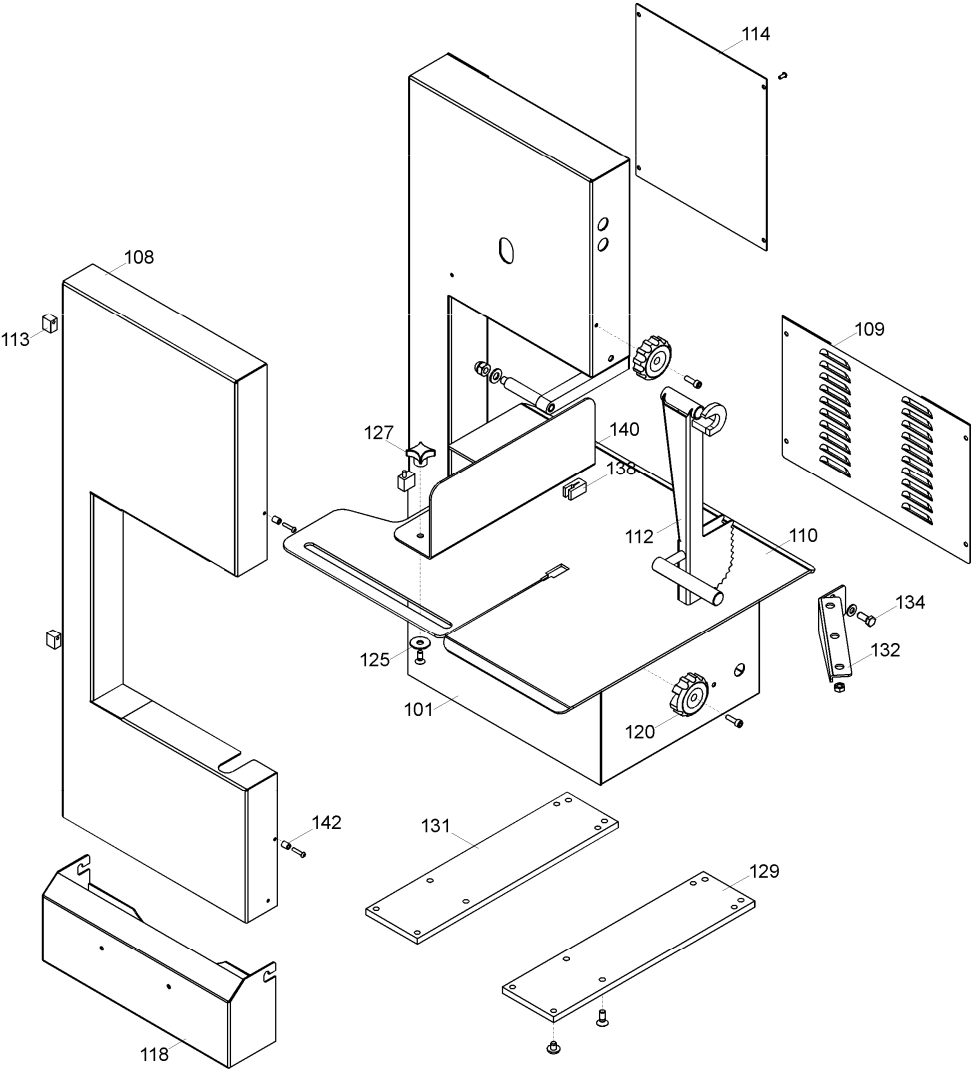
#### Cause

- 1 - The differential circuit breaker is in position "0".
  - 1.1 - The housing that covers the pulleys or the tray to collect bone chips is not properly closed.
  - 1.2 - The micro-switch installed on the housing that covers the pulleys is not working.
  - 1.3 - The electric motor or the electronic board are in fault.
- 2 - The blade is worn and no longer cuts.
- 3 - The upper pulley is misaligned..
  - 3.1 - The blade is not properly fastened.
  - 3.2 - The blade is maladjusted.
- 4 - Bone chips and food residues stuck near the blade guide.
  - 4.1 - Upper pulley bearings are stuck.
  - 4.2 - The blade is worn and no longer cuts..

#### Solution

- 1 - Turn the switch to position "1".
  - 1.1 - Properly close the housing and/or the tray that protects the pulleys.
  - 1.2 - Contact customer service for assistance.
  - 1.3 - Contact customer service for assistance.
- 2 - Replace the blade (par. 7.6.2).
- 3 - The operation must be performed by specialized and authorized staff.
  - 3.1 - Replace the blade, even if it is new..
  - 3.2 - Contact customer service for assistance.
- 4 - Get rid of any bone chips or food residue stuck near the blade guide (par. 7.6.4).
  - 4.1 - Replace the bearings.
  - 4.2 - Replace the blade. (par. 7.6.2).

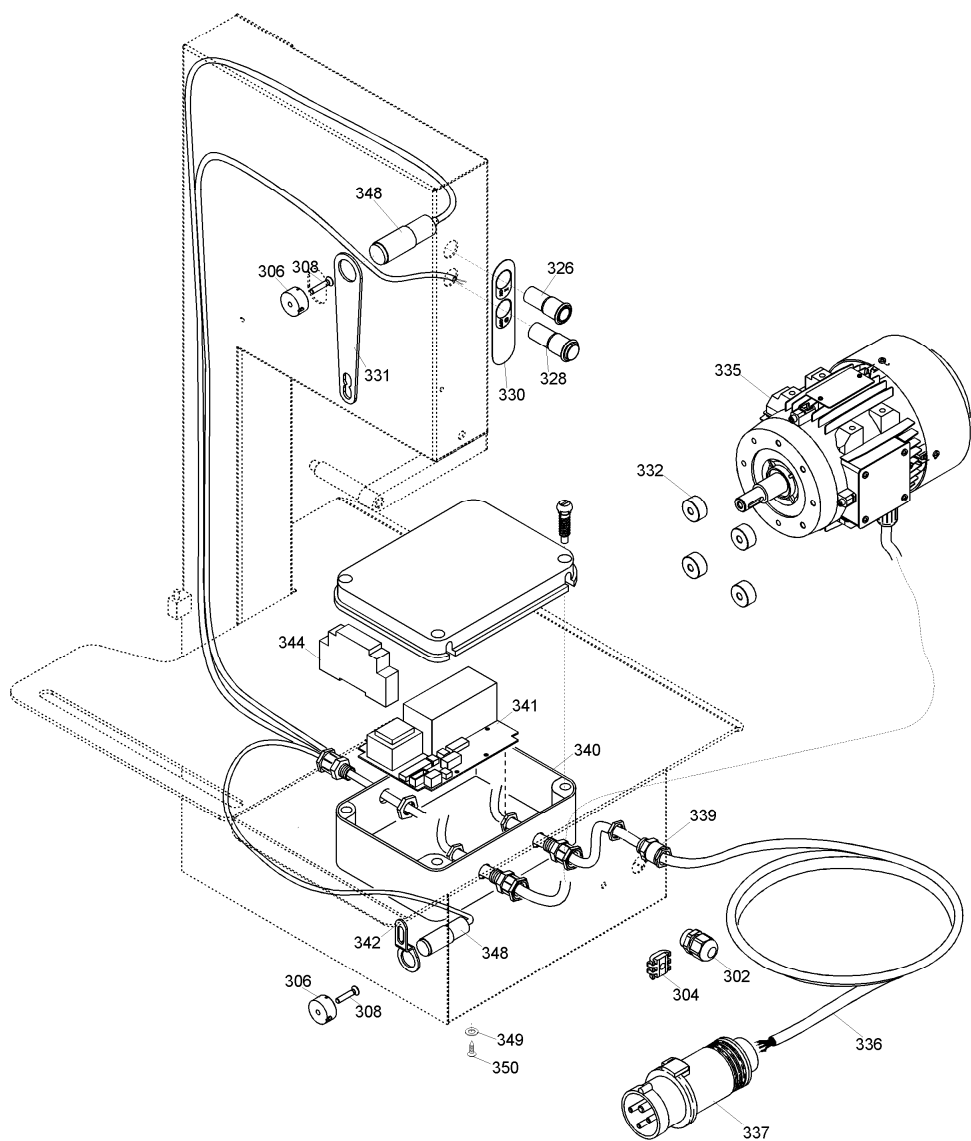
9 Exploded views



BS+ 2020T  
tav. 1







BS+ 2020T - 2020F  
tav. 3







Van Berkel International S.r.l.  
via Ugo Foscolo, 22  
21040 Oggiona S. Stefano (VA) - ITALY  
T +39 0331 214311  
[info@berkelinternational.com](mailto:info@berkelinternational.com)  
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