

# CM 450 Junior

## OPERATING INSTRUCTIONS

Translation of the original instructions



**NORTON**  
SAINT-GOBAIN®

**clipper®**





The undersigned manufacturer:

**SAINT - GOBAIN ABRASIVES S.A.**  
**190, BD J.F. KENNEDY**  
**L- 4930 BASCHARAGE**

Declares that this product:

Masonry Saws: **CM 450 Junior 1-30-1 230V**

Code: **70184608625**

is in conformity with the following Directives:

- **"MACHINES" 2006/42/CE**
- **"LOW VOLTAGE" 2014/35/EU**
- **"ÉLECTROMAGNÉTIQUE COMPATIBILITÉ" 2014/30/EU**
- **"NOISE" 2000/14/CE**

and European standard:

**EN 12418 – Masonry and stone cutting-off machines – Safety**

Valid for machines as of serial number:

161255080

Storage site for the technical documents :

Saint-Gobain Abrasives 190, Bd. J. F. Kennedy 4930 BASCHARAGE, LUXEMBOURG

This declaration of conformity loses its validity when the product is converted or modified without agreement.

Bascharage, Luxembourg, 07.06.2018.

A handwritten signature in blue ink, appearing to read 'fchianese', is written over a light blue scribble.

François Chianese, executive officer



# CM 450 Junior

## OPERATING INSTRUCTIONS

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# 1 BASIC SAFETY INSTRUCTIONS

The CM 450 Junior is exclusively designed for the cutting of construction products mainly on construction sites.

Uses other than the manufacturer's instructions shall be considered as contravening the regulations. The manufacturer shall not be held responsible for any resulting damage. Any risk shall be borne entirely by the user. Observing the operating instructions and compliance with inspection and servicing requirements shall also be considered as included under use in accordance with the regulations.

## 1.1 Symbols

Important warnings and pieces of advice are indicated on the machine using symbols. The following symbols are used on the machine:



Read operator's instructions



Ear protection must be worn



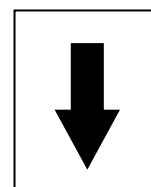
Hand protection must be worn



Eye protection shall be worn



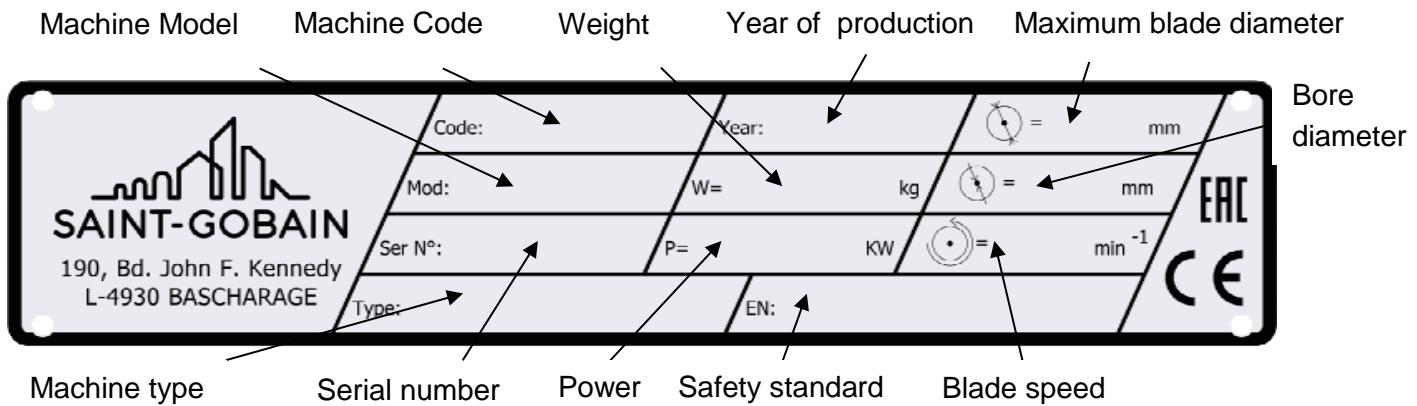
Danger: risk of cut



Rotation direction of the blade

## 1.2 Machine plate

Important data can be found on the following plate located on the machine:



## 1.3 Safety instructions for particular operating phases

### Before commencing work

- Before commencing work, make yourself familiar with the working environment at the place of use. The working environment includes: obstacles in the area of work and manoeuvre, the firmness of the floor, necessary protection at the site relating to public thoroughfares and the availability of help in the event of accidents.
- Site the machine on an even, firm and stable base!
- Check for correct mounting of the blade regularly.
- Immediately remove damaged or badly worn blades, as they endanger the operator whilst rotating.
- The material to be cut must be held securely in place on the conveyor cart to allow no movement during cutting operation.
- Always cut with the blade guard in position.
- Only fit NORTON diamond blades to the machine! The use of other tools can damage the machine!
- Read the blades' specifications carefully to choose the correct tool for your application.
- Attention is drawn to the use of BS2092 safety goggles in conformity with specified Processes No.8 of the Protection of Eyes Regulation 1974, Regulation 2(2) Part 1.

### Electrical powered machine

- Always turn off the machine and separate it from the main source of electricity before any work on the machine is done.
- Make all electrical connections securely to eliminate contact of live wires with spray water or dampness
- When the machine is used with water, it is IMPERATIVE that you earth the machine properly. Let a qualified electrician check in case of doubt.
- In case of emergency, you can stop the machine by pushing on the front cover of the switch.
- In the event of the machine breaking down or stopping for no apparent reason, switch off the main electricity supply. Only a qualified electrician is allowed to investigate the trouble and remedy the fault.

## 2 MACHINE DESCRIPTION

Any modification, which could lead to a change in the original characteristics of the machine, may be done only by Saint-Gobain Abrasives who shall confirm that the machine is still in conformity with the safety regulations.

### 2.1 Short description

The CM 450 Junior Masonry saw is designed for durability and high performance for onsite wet and dry cutting operations of a wide range of masonry, refractory and natural stone products.

As with all other NORTON products, the operator will immediately appreciate the attention given to detail and quality of materials used in construction. The machine and its component parts are assembled to high standards assuring long life and minimum maintenance.

### 2.2 Purpose of use

The machine is designed for wet and dry cutting of a large range of building and refractory materials, or tiles. It is not designed for cutting wood or metals.

### 2.3 Layout





**Frame and feet (1)**

The frame is made of a jig-welded reinforced steel construction to ensure perfect rigidity. 4 removable legs fit into housings welded on frame sides and locked into place with locking screws.

**Cutting head (2)**

Spring loaded jig-welded steel console. The motor fixing points and the pivot are machined for perfect fit. A locking system allows straight-through cutting without any other accessory.

**Blade guard (3)**

Jig-welded steel construction with 450mm-diameter blade capacity, which offers maximum operator protection and increased visibility of the work piece.

Incorporated in the blade guard is an outer metal cover, which can be easily opened to allow easy access to shaft for inspection and blade replacement when motor is switched off, while fully protecting the blade when in operation.

**Blade shaft (4)**

Precision-machined blade shaft, held in ballbearings and is driven by a heavy-duty V-section drive belt. The blade shaft assembly is completely enclosed in a cutting head console, accessible for inspection by way of a removable plate. The removable blade flange is tightened by means of a hexagonal nut.

**Conveyor cart (5)**

Steel welded construction with non-slip top. The machine guide system permits precise cuts to be made by virtue of four roller sheaves set at an inclination to compensate for wear.

The nylon-plastic sheaves and sealed-bearings permit easy operation. The variable angle guide-a-cut and the large surface area of the conveyor cart permits precise positioning of the material.

**Water cooling system (6)**

The coolant system comprises:

- A powerful, submersible electric water pump.
- Plastic suction pipe delivering the water from the water pan to the cutting head.
- A large capacity water pan supplied with drain plug.
- A water-tap, fitted to the blade guard, permitting controlled water flow.
- Two water nozzles located inside the blade guard ensure adequate flow of water to both sides of the cutting blade.
- A water curtain, fixed to head axle restricts water spray and minimises water loss.

**Electrical Motor (7)**

The electric motor has an overload protection. Thermal overload tripping can occur for two reasons: tripping under light load if connection is incorrect, and tripping under heavy load if motor has been overloaded.

The ON-OFF switch also serves as emergency stop. The pump switch is located on the right side of the main switch. Low voltage trigger (NVR) built in the switch prevents the motor to restart for example after a power cut.

**2.4 Technical Data**

Electric motor	2,2 kW 230V with thermal overload protection
Electric motor protection	IP54
Max. blade diameter	450 mm
Bore	25,4 mm
Rotation speed of the blade	2100 min <sup>-1</sup>
Flange diameter	95 mm
Cutting depth mm	170 mm (without reversing the material)
Sound pressure level	78 dB (A) (ISO EN 11201)
Sound energy level	89 dB (A) (ISO EN 3744)
Max. cutting length mm	600 mm
Table dimension (LxW)	460x400 mm
Machine dimensions without feet (LxWxH)	1390x530x800 mm
Machine dimensions with feet (LxWxH)	1390x750x1480 mm
Weights	
Machine cpl.	97 kg
Ready for use (with water)	130 kg

## 2.5 Statement regarding the vibration emission

Declared value of vibration emission following **EN 12096**.

Machine Model / code	Measured value of vibration emission at m/s <sup>2</sup>	Uncertainty K m/s <sup>2</sup>	Tool used Model / code
<b>CM 450 Junior 230V 70184608625</b>	<2.5	0.5	Clipper ALFA

- The vibration value is lower and does not exceed 2.5 m / s.
- Values determined using the procedure described in the standard **EN 12418**.
- The measurements are made with new machines. Actual values may vary with site conditions, in terms of:
  - Materials worked
  - Wear Machine
  - Lack of maintenance
  - Inappropriate tool for application
  - Tool in poor condition
  - Unskilled operator
  - Etc...
- The exposure time to vibration is based on the performance of work (related to the adequacy Machine / Tool / worked material / operator)

When evaluating risks due to hand-arm vibration, you need to take into account effective usage at rated power of machine during a full day of work; quite often you will realise that effective utilisation time represents around 50% of overall duration of work. You have to consider, of course, breaks, water feeding, preparation of work, time to move the machine, disk mounting...

## 2.6 Statement regarding noise emission

Declared value of noise emission following **EN ISO 11201** and **NF EN ISO 3744**.

<b>Machine Model / code</b>	<b>Sound Pressure level <math>L_{Peq}</math> EN ISO 11201</b>	<b>Uncertainty K (Sound Pressure level <math>L_{Peq}</math> EN ISO 11201)</b>	<b>Sound power level <math>L_{Weq}</math> NF EN ISO 3744</b>	<b>Uncertainty K (Sound power level <math>L_{Weq}</math> NF EN ISO 3744)</b>
<b>CM 450 Junior 230V 70184608625</b>	78 dB(A)	2.5 dB(A)	89 dB(A)	4 dB(A)

- Values determined using the procedure described in the standard **EN 12418**.
- The measurements are made with new machines. Actual values may vary with site conditions, in terms of:
  - Wear Machine
  - Lack of maintenance
  - Inappropriate tool for application
  - Tool in poor condition
  - Unskilled operator
  - Etc...
- Measured values relate to an operator in normal use, as described in the manual position.

### **3 ASSEMBLY AND COMMISSIONING**

The machine is delivered fully equipped (although without diamond blade). It is ready for operation assembly the diamond blade, the feet and the conveyor cart and after connection to the appropriate power supply.

#### **3.1 Tool assembly**

Only NORTON blades with a maximum diameter of 450 mm can be used with the CM 450 Junior. All tools used must be selected with regard to their maximum permitted cutting speed for the machine's maximum permitted rotation speed.

Before mounting a new blade into the machine, switch off the machine and isolate it from the main source of electricity.

To mount a new blade, follow these steps:

- Open the shaft vent cover on the blade guard.
- Loosen the hexagonal nut on the blade shaft, which holds the removable outer flange.
- Remove the outer flange.
- Clean the flanges and blade shaft and inspect for wear.
- Mount the blade on arbor ensuring that direction of rotation is correct. Wrong direction of rotation blunts the blade quickly.
- Replace outer blade flange.
- Tighten hexagonal nut with spanner supplied for this purpose.
- Shut the vent cover.

The blade bore must correspond exactly to the diameter of the blade shaft. Cracked or damaged bore is dangerous for the operator and for the machine.

#### **3.2 Feet and conveyor cart assembly**

Feet and conveyor cart are located in the water pan. Place the four feet in the four openings on each corner of the frame. Tighten the four locking screws.

Place the conveyor cart on the guiding rails with the material stop facing the operator.

### **3.3 *Electrical connections***

Check that,

- the voltage/phase supply corresponds to the information indicated on the motor plate.
- Available power supply must have ground connection in conformity with safety regulations.
- The connecting cables should have at least a 2.5mm<sup>2</sup>-section per phase.

### **3.4 *Starting the machine***

Open the cover on the switch and press the green button to start the machine. Either press on the red button or directly on the switch cover to stop the machine.

### **3.5 *Water cooling system***

Fill the water pan with clean water to approximately 2cm from top (ensure that bottom of pump is fully immersed in water).

Open the water-tap on blade guard (note that handle on water-tap should be in line with water-flow). Ensure that water is flowing freely in the circuit and is delivered adequately to both sides of the blade, as insufficient water supply may result in premature failure of the diamond blade.

The water pump must never run without water. Always make sure that there is enough water in the pan and refill if necessary.

In case of frost, empty the water cooling system from its water.

## **4 TRANSPORT AND STORING**

### ***4.1 Securing for transport***

Before transporting the machine, always remove the blade and empty the water pan. Also remove the conveyor cart, as it can be dangerous while you move the machine.

### ***4.2 Transport procedure***

Two people are necessary to move the machine. The machine can be moved with or without its feet. Always remove feet while transporting the machine in a van and a truck. The machine does not have lifting hooks. You can roll the machine on the floor using the wheels at the back of the machine.

### ***4.3 Long period of inactivity***

If the machine is not going to be used for a long period, please take the following measures:

- Completely clean the machine
- Loosen the drive belts
- Empty the water system
- Take the water pump out of the slurry and clean it thoroughly.

The storage site must be clean, dry and at a constant temperature.

## 5 OPERATING THE MACHINE

### 5.1 Site of work

#### 5.1.1 Siting the machine

- Remove from the site anything, which might hinder the working procedure!
- Make sure the site is sufficiently well lit!
- Observe manufacturer's conditions for connecting to power supplies!
- Place electric cables in such a way that damage by the device is excluded!
- Make sure you have a continual adequate view of the working area so you can intervene in the working process at any time!
- Keep other staff out of the area, so you can work securely.

#### 5.1.2 Space required for operation and maintenance

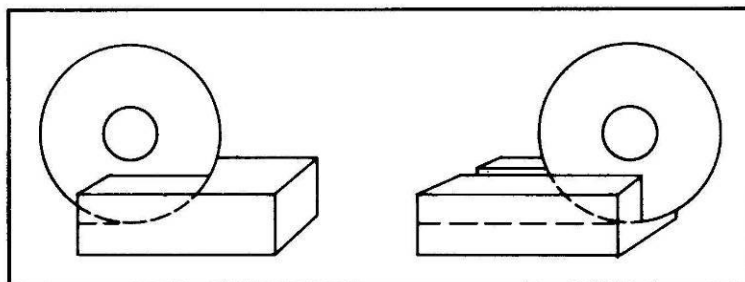
Leave 2 m in front of the machine and 1,5 m around it for usage and maintenance of the CM450.

### 5.2 Cutting methods

To use the machine correctly, you must face it with one hand on the handle of the cutting head, and the other on the conveyor cart. Always keep your hands away from the moving blade. Open the switch cover and press the green button to start the machine. To stop either use the red button or press directly on the switch front cover.

#### 5.2.1 Full depth or fixed cutting

In full depth or fixed cutting, the cutting head is locked in a fixed position and the material is pushed into it as shown.



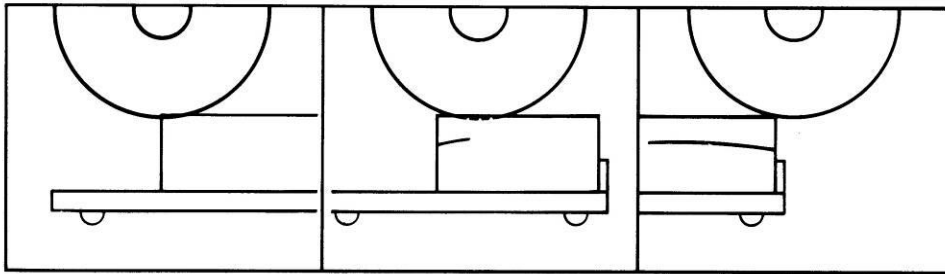
- Lower the cutting head to the desired cutting depth (in “through cutting”, lower cutting head until blade periphery reaches max. 3mm under the surface of the conveyor cart) by means of the handle on the blade guard
- Fix position by tightening the clamping device
- Put material on conveyor cart
- Push the conveyor cart slowly and without undue pressure towards the rotating blade and cut the material as shown on the picture.



NOTE: While recommended, it is not absolutely necessary to lock the cutting head into a given depth position when jam cutting. The desired cutting depth can be maintained by holding firmly the depth feed handle on the blade guard. If the full depth of cut requires excessive pressure (on very dense material e.g.) make 2 or 3 shallow cuts.

### 5.2.2 Multiple step cutting

Multiple step cutting consists of moving the conveyor cart with the material to be cut back and forward under the rotating blade,



- Place the material to be cut on the conveyor cart firmly against the guide-a-cut and the backstop, keeping the hands well away from the blade.
- Move conveyor cart forward near the blade and pull down the cutting head until blade is lowered to a point where it will lightly contact the surface of the material.
- Then pass the material beneath with rapid full length strokes, taking a shallow cut (approximately 3 mm deep as shown on the picture) on the forward. On the backward stroke, lift the blade just clear over the cutting line.
- Complete each rapid stroke backward and forward by passing the material beyond the centre of the blade before starting the reverse movement of the conveyor cart.

NOTE: the harder the material, the more rapid should be the forward and backward strokes.

Step cutting lessens the area of the blade circumference in contact with the material, keeping the blade cool, running free and cutting at peak efficiency.

### 5.2.3 General advice for the cutting

- Material weight under 15 kg and having dimensions smaller than 500x500x150mm can be cut with the machine.
- Before commencing work make sure tools are firmly seated!
- Select the right tools as recommended by the manufacturer depending on the material to be worked, the working procedure (dry or wet cut) to be carried out and the required efficiency.
- Apply cooling water continuously whilst cutting and in good time! Make sure the water pan contains enough water.
- When dry cutting, ensure sufficient dust extraction and wear a dusk protection mask!
- When cutting work is finished, close the water-tap so you can remove the cut pieces from the conveyor cart without getting wet.
- If the thermal protection trips, reactivate the motor by pushing on the black button located on the motor and wait until the motor has cooled down before starting the machine again.

## 6 MAINTENANCE AND SERVICING

To ensure a long-term quality from the cutting with the CM450, please follow the maintenance plan below:

		Begin of the day	During the changing of tool	End of the day or more often if required	Every week	After a fault	After a damage
Whole machine	Visual control (general aspect, watertightness)						
	Clean						
Flange and blade fixing devices	Clean						
Belts tension	Check and adjust						
Motor cooling fans	Clean						
Water pump	Clean						
Water pan	Clean						
Water hoses and nozzles	Clean						
Water pump filter	Clean						
Cart guiding bars	Clean						
Motor housing	Clean						
Reachable nuts and screws	Tighten up						

### Maintenance of the machine

Always perform the maintenance of the machine with the machine isolated from the electrical supply.

### Lubrication

The CM450 uses life-lubricated bearings. Therefore, you don't need to lubricate the machine at all.

### Cleaning of the machine

Your machine will last longer if you clean it thoroughly after each day of work, especially water pump, water pan (which can be removed for easy cleaning), motor and blade flange.

### Adjustment and replacement of the belts

To adjust the belts, firstly remove the belt guard by unscrewing the 4 nuts. Loose the 4 motor bolts and shift the motor by using the two screws on the side.

To replace the belts, move the motor forward on the cutting head. Adjust the belts and retighten them by shifting the motor to the rear of the machine.

Always use a matched set of belts. Do not replace single belts.

## 7 FAULTS: CAUSES AND CURES

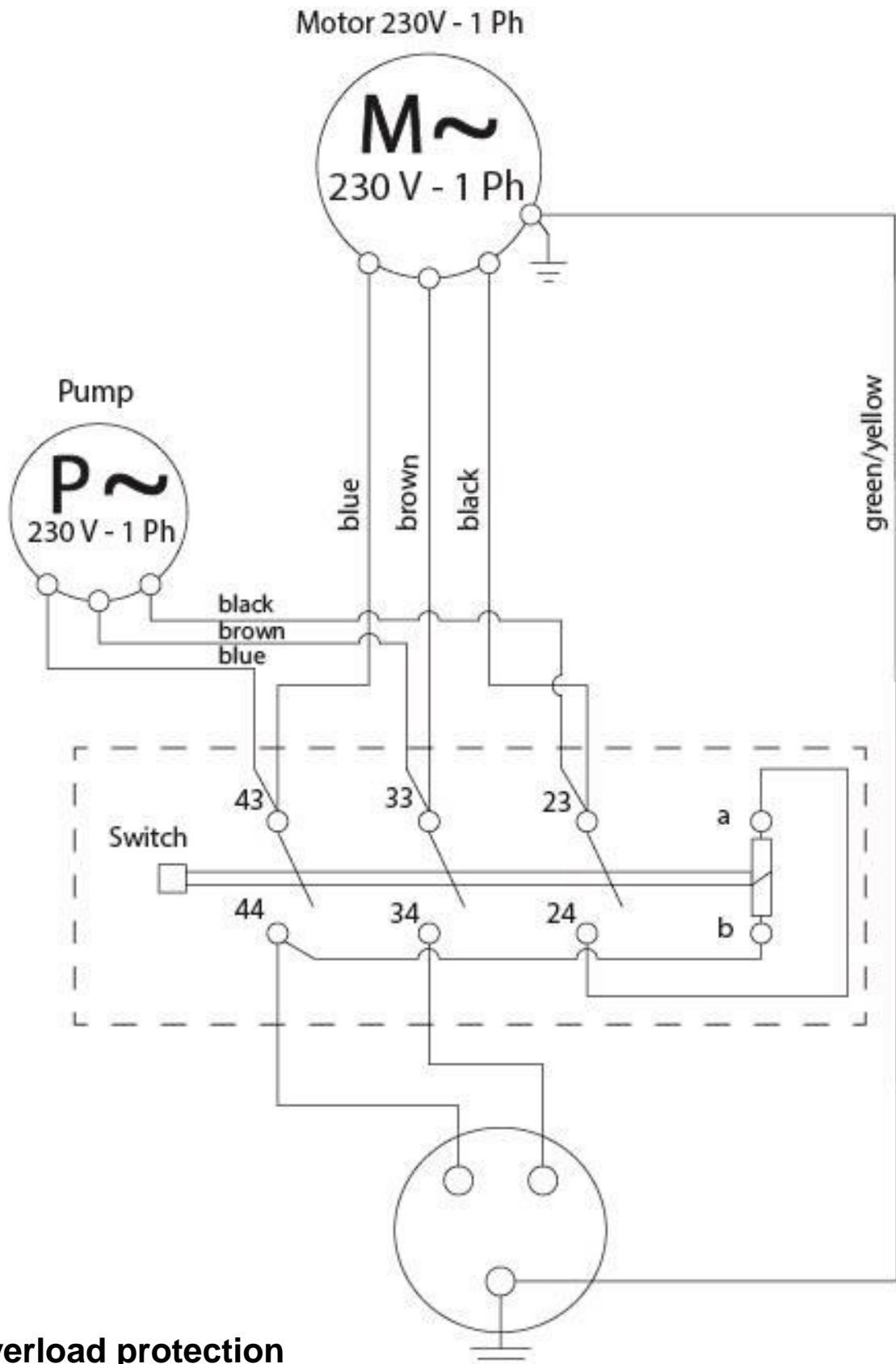
### 7.1 *Fault-finding procedures*

Should any fault occur during the use of the machine, turn it off, and isolate it from the electrical supply. Any works dealing with the electrical system or supply of the machine can only be carried out by a qualified electrician.

### 7.2 *Trouble-shooting guide*

Trouble	Possible source	Resolution
Motor is not running	No electricity	Check the electrical supply (fuse for example)
	Connection cable section too small	Change connection cable
	Defective connection cable	Change connection cable
	Defective switch	CAUTION : can only be solved by qualified electrician
	Defective motor	Change motor or contact motor manufacturer
Blade is not turning	Belts not tightened or defective	Check the belts tension and change them if needed
Motor stops during the cutting, but can be restarted after a short period (overload protection)	Cutting advance too quick	Cut slowly
	Blade is blunt or glazed	Sharpen the blade in calcareous stone
	Defective blade	Change blade
	Wrong blade specification for the application	Change blade
No water on the blade	Not enough water in the pan	Refill the water pan
	Water tap is closed	Open tap on blade guard
	Water supply system is blocked up	Clean water supply system
	Water pump is not working	<ul style="list-style-type: none"> <li>• Check if pump is connected to the motor</li> <li>• Change the pump</li> </ul>

### 7.3 Circuit diagram



**Prot. : overload protection**

## **7.4 Customer service**

When ordering spare parts, please mention:

- The serial number (seven digits).
- The code of the part.
- The exact denomination.
- The number of parts required.
- The delivery address.
- Please indicate clearly the means of transportation required such as "express" or "by air". Without specific instructions, we will forward the parts through the means which seem appropriate to us --- but which is not always the quickest way.

Clear instructions will avoid problems and faulty deliveries.

If not sure, please send us the defective part.

In the case of a warranty claim, the part must always be returned for evaluation.

Spare parts for the motor can be ordered with the manufacturer of the motor or with their dealer, which is often quicker and cheaper.

This machine has been manufactured by Saint-Gobain Abrasives S.A.

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## 7.5 Spare parts

In order to consult the spare parts lists, we invite you to visit the after-sales website of Norton Clipper by using the following address:

<https://spareparts.nortonabrasives.com>

For a quick access, you can also use the QR Code shown below using your mobile phone:



This electronic catalogue provides exploded views and spare parts lists for different machines designed by Norton Clipper so you can find references you need.



Guarantee can be claimed and technical support obtained from your local distributor where machines, spare parts and consumables can be ordered as well:

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