

**NORTON**



# ISM

## OPERATING INSTRUCTIONS

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*clipper*<sup>®</sup>



## Declaration of conformity

The undersigned manufacturer:

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

Declares that this product:

Masonry Saws: **ISM 3.75.3 400V**

Code: **70184613985**

is in conformity with the following Directives:

- **European Machinery Directive 2006/42/EC**
- **"LOW VOLTAGE" 2006/95/EC**
- **Electromagnetic Compatibility Directive 2004/108/EC**

and European standard:

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



Pierre Mersch  
Business Manager Machines Europe



# ISM

## OPERATING INSTRUCTIONS AND SPARE PARTS LIST

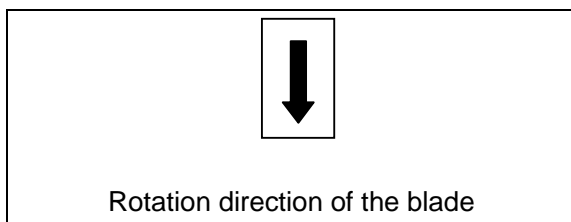
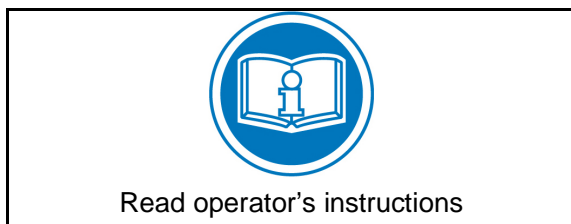
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# 1 Basic Safety Instructions

The ISM 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.

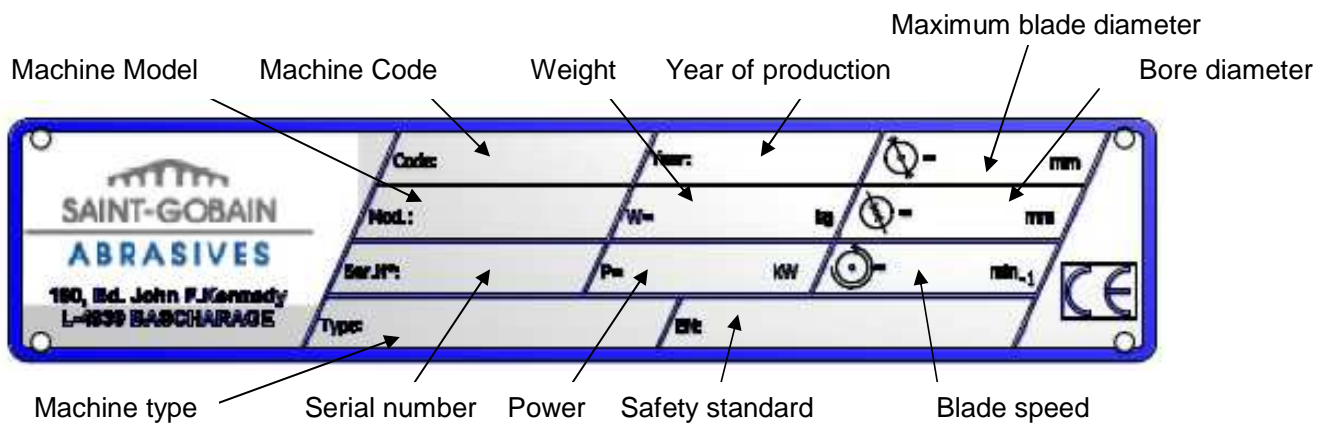
## 1.1 Symbols

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



## 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.
- You can lock the ON-OFF-switch using a padlock.



- 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.
- 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

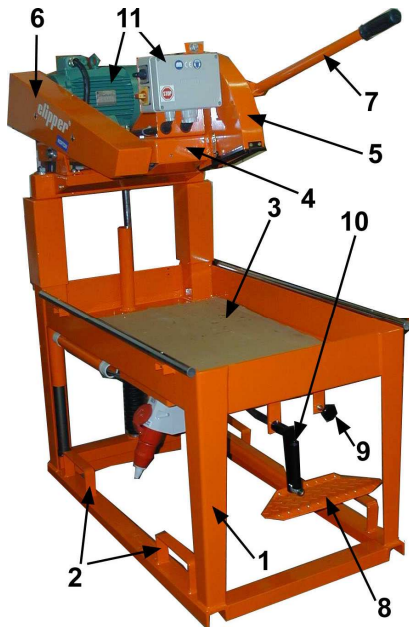
The ISM block saw is designed for durability and high performance for onsite wet and dry cutting operations of a wide range of masonry, refractory and natural stone products.

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 cutting a large range of building and refractory materials. It is not designed for cutting wood or metals.

### 2.3 Layout



#### Frame (1)

Jig-welded, reinforced and all-steel construction ensures perfect rigidity. The frame includes a large capacity water tray (3) with drain plug. Frame has four built-in lift brackets (2) for easy transportation.

#### Cutting head (4)

Jig-welded steel console equipped with pivot bar fixed to frame upright and housed in heavy-duty bearings. Console supports the electric motor (11), the belt drive with its guard (6) and the blade shaft assembly with the blade guard (5). Precision-machined blade shaft, held in ballbearings and is driven by four heavy-duty V-section drive belts. 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.

#### Blade guard (5)



Jig-welded steel construction with 500mm-diameter blade capacity, which offers maximum operator protection and increased visibility of the work piece.

Incorporated in the blade guard is an outer metal vent, which permits easy access to shaft for inspection and blade replacement when motor is switched off, while fully protecting the blade when in operation.

**Down feed and cutting depth adjustment**

The spring-loaded cutting head, activated by hand with the grip (7) on the blade guard or with the foot pedal (8), ensures smooth lowering of the cutting head for shock-free penetration of the work piece and improved control of the cutting pressure.

A crank assembly (10) in conjunction with a depth locking device on the cutting head pivoting bar enables the operator to set the cutting head to desired maximum cutting depth. The knob (9) enables to lock the cutting head at the right cutting depth.

**Electrical Motor and switch (11)**

Motor with 5,5kW. Low voltage trigger (NVR) prevents the motor to restart for example after a power cut.

The electric motor has overload protection. Thermal overload tripping can occur for two reasons:

- a. tripping under light load
  - If connection is incorrect
  - If a phase is not under load

Check the connections and the phase voltage before restarting the machine.

- b. tripping under heavy load
  - If motor has been overloaded

The ON-OFF switch also serves as emergency stop.

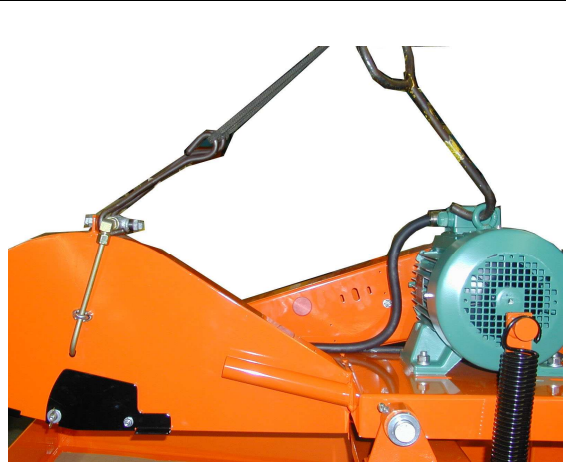
**2.4 Technical Data**

Electric motor	5,5 kW, 400V, 3-Phase 50Hz 1490 min <sup>-1</sup>
Electric motor protection	IP54
Switch	Star-triangle switch with thermal overload protection, no volt release and emergency stop
Max. blade diameter	500 mm
Bore	25,4 mm
Cutting length mm	500 mm
Cutting depth mm	190 mm
Flange diameter	115 mm
Blade shaft speed	2062 min <sup>-1</sup>
Machine dimensions	1400x760x1750 mm
Weight	248 kg
Max. operating weight	280 kg
Sound pressure level	85 dB (A) (following ISO EN 11201)
Sound energy level	99 dB (A) (following ISO EN 3744)

### 3 Assembly and commissioning

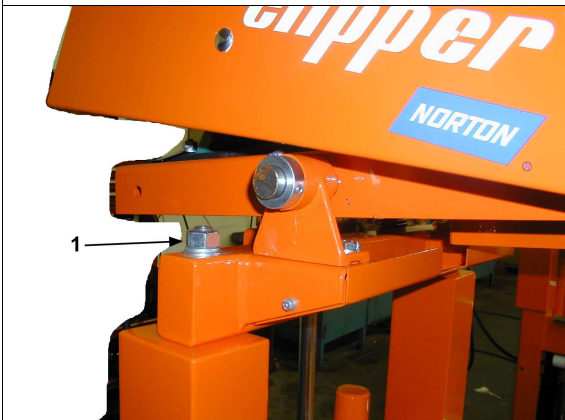
The machine is delivered fully equipped (although without diamond blade) but with the cutting head in the water tray to avoid damage during the transportation. Before using the machine for the first time, please follow these instructions to assemble your machine.

#### 3.1 Cutting head assembly

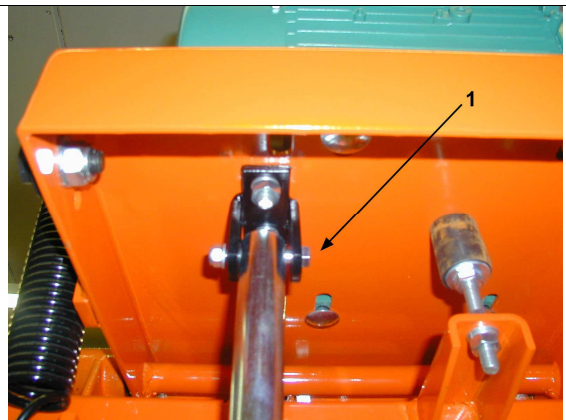


The head is supplied in the water tray. To assemble it, you need a support bridge allowing the lifting of 100kg.

Tie up the head to the lifting device. The two lifting points are the water nozzles fixing plate on the blade guard, and the hook on the electric motor. The two lifting strands must be 1 metre long for the one on the blade guard and 80cm for the one on the motor.



Place the head on the two posts of the frame, so that the threaded rods pass through the holes designed for this purpose in the head. Tighten the M20 (1) nuts to fix the head.



Then tighten the adjustment bar on the back of the head (1) with the M8 screw supplied for this purpose.

### **3.2 Tool assembly**

Only NORTON blades with a maximum diameter of 500 mm can be used with the ISM.

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 screw on the blade shaft, which holds the removable outer flange, with the 22mm spanner.
- Remove the outer flange and the screw.
- 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 the 22mm spanner.
- Shut the shaft vent cover on the blade guard.

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.

### **3.3 Electrical connections**

#### **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.

#### **Switch on the machine**

Put the ON-OFF-Switch on ON. Then put the Star-Triangle-Switch on Y. Wait until the blade reaches its maximum rotational speed, then turn the Star-Triangle-switch on  $\Delta$ .

#### **Direction of rotation**

The direction of rotation is indicated on the blade guard. If the direction of rotation does not correspond to the direction shown by the arrow, then reverse the motor polarity by turning the phase inverter inside the male plug with a screwdriver.

#### **Emergency Stop**

To restart the machine after an emergency stop, turn the Star-Triangle-Switch on "0". Then turn the ON-OFF-Switch on ON.

### **3.4 *Water cooling system and conveyor cart***

Your machine is supplied without conveyor cart. In order to use your machine, you must order either a flat table (code 00310004704), or a tilting cart (code 00310004702).

As many refractory materials are sensitive to water, your machine is also supplied without water pump. You can order a complete water supply system (00310004732).

## **4 Transport and storing**

Take the following measures in order to transport the ISM securely.

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

Before transporting or lifting the machine, always remove the blade and the conveyor cart and empty the water pan.

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

Only use the lift brackets to lift the machine or to transport it using a fork-lift truck, as other parts of the machine are not designed for this purpose.

If you lift the machine, use 4 strands having the same length (at least 2 metres).

### **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 and take the water pump out of the slurry and clean it thoroughly (if you assemble this item)

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

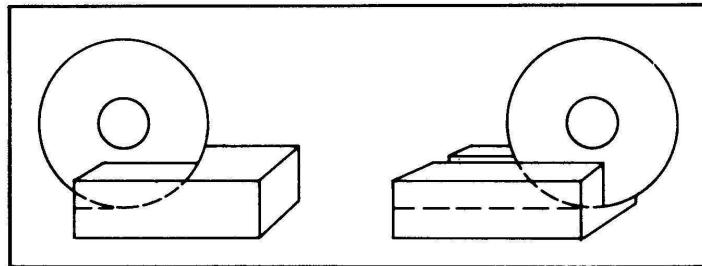
Leave 2 m in front of the machine and 1,5 m around it for usage and maintenance of the ISM.

### 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 handle of the conveyor cart. You can possibly press on the pedal with one foot. Always keep your hands away from the moving blade.

#### 5.2.1 Jam or fixed cutting

In jam 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. 3-5mm under the surface of the conveyor cart) by means of the crank on the pedal. You can also fix the position of the head by pulling the knob under the water tray, setting the head at the desired position, and release the knob to reset the pin in the adjusting tube.
- Put material on conveyor cart and place it securely against the material stop (and possibly the guide-a-cut).
- Push the conveyor cart slowly and without undue pressure towards the rotating blade and cut the material.

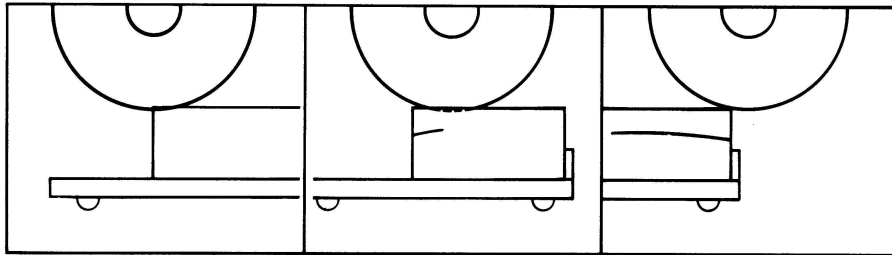
NOTE: While recommended, it is not absolutely necessary to lock the cutting head into a given depth position when jam cutting. The desired cutting depth can be maintained by holding firmly the

depth feed handle on the blade guard or the foot pedal.

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 cm deep) 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 weighing under 30 kg and having dimensions smaller than 500x500x190mm can be cut with the ISM.
- 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.
- When dry cutting, ensure sufficient dust extraction! You can order a dust extraction hood (code 00310004552)
- If the thermal protection trips, wait a few minutes to allow the motor to cool down before restarting the machine.

## 6 Maintenance and servicing

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

		Begin of the day	During the changing of the tool	End of the day	Every week	After a fault	After a damage
Whole machine	Visual control (general aspect, watertightness)						
	Clean						
Flange and blade fixing devices	Clean						
Motor cooling fans	Clean						
Belts tension	Check tension and adjust						
Water pan	Clean						
Water pump	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 motor

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

### Adjustment and replacement of the belts

To adjust the belts, firstly remove the belt guard. Loosen the 4 motor bolts and shift the motor by using the two screws on the side. To replace the belts, move the motor completely to the left. Adjust the belts and retighten them by shifting the motor to the left.

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

### Lubrication

The ISM 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, motor and blade flange.



## 7 Faults: causes and cures

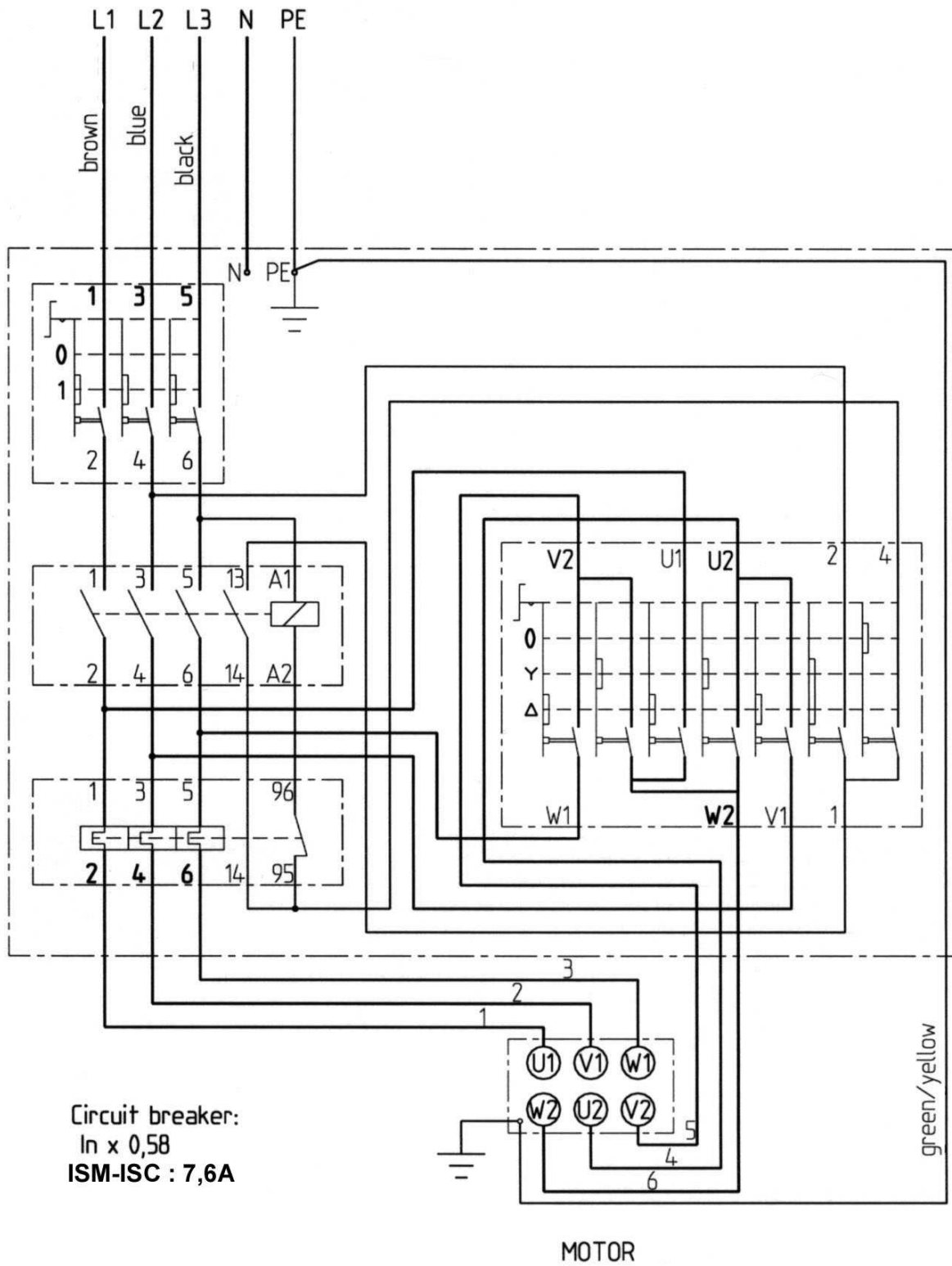
### 7.1 Fault-finding procedures

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
Wrong direction of rotation	Wrong motor polarity	Invert polarity on male plug
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
Motor stops during the cutting, but can be restarted after a short period	Cutting advance too quick	Cut slowly
	Blade is blunt or glazed	Sharpen the blade in calcareous stone
	Defective blade	Change blade
	Wrong blade corresponding to the application	Change blade

### 7.3 Circuit diagram



#### **7.4 Customer service**

When ordering spare parts, please mention:

- The serial number (7 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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Guarantee can be claimed and technical support obtained from your local distributor where machines, spare parts and consumables can be ordered as well:

**Benelux and France:**

From Saint-Gobain Abrasives S.A.

Free telephone numbers:

Belgium : 0 800 18951

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