

CS 451 E

OPERATING INSTRUCTIONS

Translation of the original instructions



NORTON
SAINT-GOBAIN®

clipper®



Declaration of conformity

The undersigned manufacturer:

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

Declares that this product:

« Floor saw »: **CS 451 E 400V – 5,5 kW**

Code : **70184601973**

is in conformity with the following Directives :

- **"MACHINES" 2006/42/CE**
- **"ELECTROMAGNETIC COMPATIBILITY" 2014/30/UE**
- **" LOW VOLTAGE " 2014/35 / EU**

And the European standard:

- **EN 13862 – Floor cutting-off machines – Safety**

Valid for machines as of serial number: 1609xxxxx

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, 01/09/2016.

A handwritten signature in black ink, appearing to read "Olivier Plenert", written over a light grey horizontal line.

Olivier Plenert, executive officer.

CS 451 E

OPERATING INSTRUCTIONS

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1 BASIC SAFETY INSTRUCTIONS

The CS 451E is exclusively designed for the cutting of floors made of asphalt, green and cured concrete (reinforced or not) as well as of industrial cement.

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



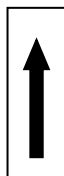
Ear protection must be worn



Hand protection must be worn



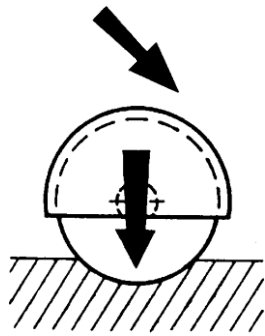
Eye protection shall be worn



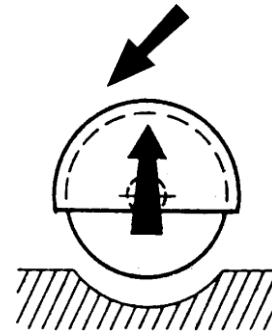
Cutting depth indicator



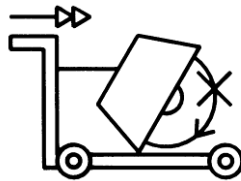
Danger: risk of cut



Rotation of the wheel in the indicated direction lowers the blade



Rotation of the wheel in the indicated direction raises the blade



Never move the machine with the blade running idle.



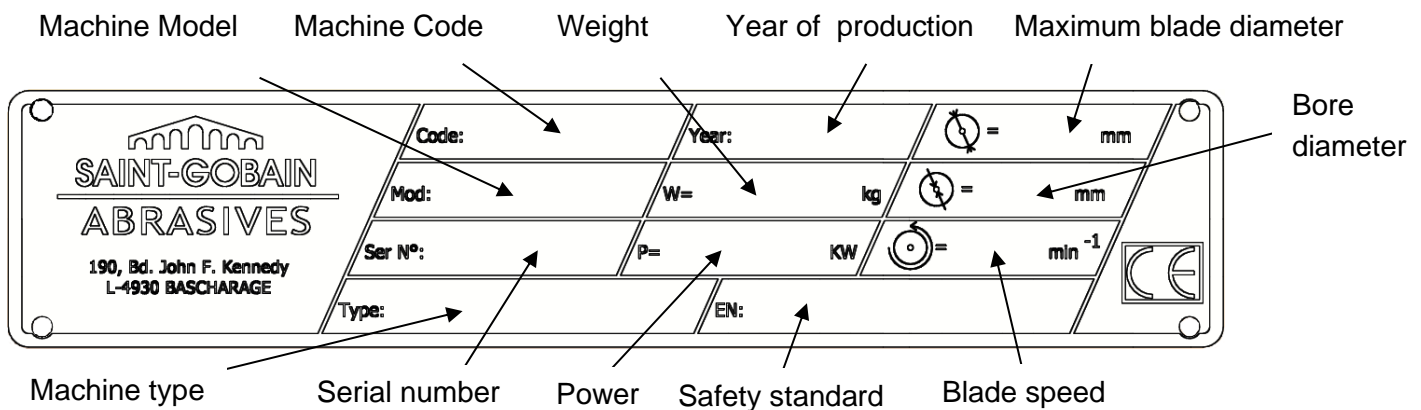
Rotation direction of the blade



Emergency Stop

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.
- Check for correct mounting of the blade regularly.

- Immediately remove damaged or badly worn blades, as they endanger the operator whilst rotating.
- 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. Also use the other safety equipment as mentioned in the symbols plus a dust mask when dry cutting is applied.
- For security reasons, never leave the machine unattended, untied or unlocked.

While the engine is running

- Do not move the machine whilst the blade is running idle.
- Do not run the machine without the security guards in place.
- Apply cooling water continuously whilst cutting and in good time!

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



2 GENERAL DESCRIPTION OF THE CS 451 E

Any modification, which could lead to a change in the original characteristics of the machine, may be done only by Saint-Gobain Abrasives S.A. who shall confirm that the machine is still in conformity with the safety regulations. Saint-Gobain Abrasives S.A. keeps the right of making technical or design modification without prior notification.

2.1 Short description

The **Floor Saw CS451E** you have chosen, is used for small repair works in concrete and asphalt, for cutting induction loops and installing cables as well as for cutting expansion joints. It can be used for either wet or dry cutting operations.

Being of small construction, it can be transported in a car or van, the handle can be removed, reversed or retracted.

All component parts on the **CS451E** are assembled to a high quality standard, ensuring long life, reliability and a minimum of maintenance.

Special types of blades are available for asphalt, green concrete, cured concrete (reinforced or not) as well as for industrial cement flooring.

2.2 Layout



Made of jig welded open profile steel, the **CS451E** is stable but at the same time, easily transportable.

The one-piece blade guard (1) fully protects the operator and his working environment. It is firmly fixed to the main frame but can be opened by rotation to change blades. The blade guard must be connected to the water network in order to use the machine with water.

A manually operated hand wheel mechanism (2) enables graduated depth setting. Turning the hand

wheel clockwise or anti-clockwise will lower or raise the cutting blade. A depth gauge allows the operator to control precisely the depth of cut.

The handle (3) is detachable or can be reversed for easy transportation. The height is adjustable.

The pivoting frame (4), hinged on the rear axle, is supporting the engine, the blade shaft assembly, and the protecting guards. One belt drive the blade.

The precisely manufactured blade shaft is fitted into two heavy-duty self-aligning pillow block bearings, including grease nipples. A one-belt pulley is fitted on one end. The shaft is reduced to 25,4mm at the other end, allowing an inner flange complete with dowel pinholes to be fixed.

The steel belt guard (5) is a sealed two piece unit. The backing plate is bolted to the mainframe of the machine and locking nuts are welded to it. The outer guard, covering the four drive belts and taper lock pulleys, is held in place by four locking bolts.

The electric motor (6) with 5,5kW is connected to a delta-star switch (7). An emergency shut down switch is located on the left side of the machine near the levers. This allows an immediate stop of the machine in case of danger.

The water cooling system (8) is composed of a 25 litre water tank, a water tank tap and two water nozzles located on the blade guard ensuring adequate flow of water to both sides of the cutting blade. This system can be connected directly to tap water too.

The pointer (9) allows the operator to make precise cut easily.

2.3 Technical data

Motor	3-phases electric motor with 5,5kW, 400V and No Volt Release switch
Motor protection	IP54
Max. blade diameter	450 mm
Bore	25,4 mm
Max. cutting depth mm	170 mm
Flange diameter	108 mm
Blade shaft speed	2850 min ⁻¹
Driving belts	1
Machine dimensions (length x width x height)	1180 x 538 x 1040 mm in cutting configuration
Weight	117 kg
Sound pressure level	80 dB (A) (ISO EN 11201)
Sound energy level	94 dB (A) (ISO EN 3744)
Vibration emission	2.8m/s ² (EN 12096)

2.4 Statement regarding the vibration emission

Declared vibration emission value in accordance with **EN 12096**

Machine Model / code	Measured vibration emission value a m/s ²	Uncertainty K m/s ²	Tool used Model / code
CS 451 E 70184601973	2.8	0.5	Duo Extreme Ø450x25.4

- Values determined according to procedure described in annex F of **EN 13862**
- Measurements are made with new machines. Real values in the field could vary the simple one with the double according to operating conditions, depending on:
 - Material
 - Cutting depth
 - Machine wear
 - Lack of maintenance
 - Tool not adapted to application
 - Tool in bad shape
 - Non-specialised operator
- Vibrations exposure time depends on cutting performance too (adaptation machine / tool / 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...

2.5 Statement regarding noise emission

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

Machine Model / code	Sound Pressure level L_{Peq} EN ISO 11201	Uncertainty K (Sound Pressure level L_{Peq} EN ISO 11201)	Sound power level L_{Weq} NF EN ISO 3744	Uncertainty K (Sound power level L_{Weq} NF EN ISO 3744)
CS 451 E 70184601973	88 dB(A)	2.5 dB(A)	105 dB(A)	4 dB(A)

- Values determined using the procedure described in the standard **EN 13862**.
- 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

Before beginning the work with the CS 451 E, you have to assemble some parts.

3.1 *Operator's handle assembly*

Secure the operator's handle in a comfortable user position by using the locking screws.

3.2 *Tool assembly*

Only NORTON blades with a maximum diameter of 450 mm can be fitted on the CS 451 E. A blade with a maximum diameter of 450 mm can be fitted. 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, switch the machine off.

To mount a new blade, follow these steps:

- Turn the hand wheel until the pivoting frame is in the raised position.
- Loosen the screws maintaining the guard and turn the blade guard open.
- Loosen the hexagonal nut (**attention:** left hand thread).on the blade shaft, which holds the removable outer flange. Remove the nut and the outer flange Remove the nut and the outer flange.
- Clean the flanges and blade shaft and inspect for wear.
- Mount the blade on the shaft ensuring that direction of rotation (arrow on blade steel centre) is correct. Wrong direction of rotation blunts the blade quickly.
- Put in place outer blade flange.
- Tighten hexagonal nut with spanner supplied for this purpose (left hand thread).
- Close the blade guard and tighten the screws.

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

3.3 *Water cooling system*

Open water-tap at 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 delivered adequately to both sides of the blade, as insufficient water supply may result in premature failure of the diamond blade. In case of frost, empty the water cooling system.

3.4 *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 2.5mm²-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 Δ .

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.

4 TRANSPORT AND STORING

Take the following measures in order to transport and store the CS 451 E securely.

4.1 *Securing for transport*

Before transporting the machine:

- Remove the blade.
- Empty the water tank.
- Lower the handle in its fixing tube and secure it using the locking screws.
- Raise the guide-a-cut in its upright position.
- Raise the cutting head to its highest position using the hand wheel, in order to activate the parking brake.

4.2 *Transport and lifting procedure*

The machine can be moved on a flat surface using its wheels. Use the metal hook located over the switch to move the machine with a crane.

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 belt.
- Grease the threaded shaft.
- Activate the parking brake by raising the cutting head.
- Empty the water system.

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

5 OPERATING THE CS 451 E

5.1 Site of work

Before you start working, please check the following points:

- Remove from the site anything, which might hinder the working procedure.
- Make sure the site is sufficiently well lit.
- Place, when used, the water hose so that it can't be damaged
- 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.

5.2 Cutting method

In this section, you can find instructions on how to make a straight cut at the desired depth.

5.2.1 Preparing your cut

Before starting the machine,

- Draw a line on the floor over the cutting length.
- Make sure you have mounted the correct blade 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 efficiency required.
- Make sure that the flanges securely hold the diamond blade.
- Make sure that the blade is not touching the floor before starting; you can turn the hand wheel up to the mechanical stop.
- Adjust the handle to a comfortable position.
- Roll the machine until the blade is over the line.
- Lower the guide-a-cut so it touches the line.

5.2.2 Cutting the floor

You can now start the engine.

To make your cut,

- Turn the depth hand wheel until the blade slightly touches the floor.
- Open water valve to control the amount of water required for the type of blade, using 15 to 25l/min for wet and 1-2l/min for dry cutting, dust control. Check for minimum water level regularly.
- To lower blade into the cut, turn hand wheel clockwise. Each turn of the hand wheel will raise or lower the blade by 10mm.
- Once the required depth of cut is reached, push the machine forward with steady and gentle pressure and follow the line with the cutting guides. The feed speed must be adjusted depending on the material being cut, and depth of cut.
- At the end of the cut, raise the blade out of the cut by turning the hand wheel anti-clockwise, shut-off the water and switch off the engine.

6 MAINTENANCE AND SERVICE

To perform maintenance of the machine, always switch it off. Always wear a mask and safety goggles while performing the maintenance of machine.

6.1 Maintenance of the machine

To ensure a long-term quality from the cutting with the CS 451 E, please follow the maintenance plan below:

		Regular service period Perform at every indicated period →						
		After one hour of work	Beginning of the day	During tool change	End of the day	Once a week	After a failure	After a damage
Whole machine	Visual control (general aspect, sealing)							
	Clean							
Flange and blade fixing devices	Clean							
Belt tension	Control							
Water hoses and nozzles	Clean							
Depth screw	Grease							
Engine housing	Clean							
Reachable nuts and screws	Tighten up							

Adjustment and replacement of the belt

After one hour of work, the belt heats up and stretches. Therefore, you have to re-tighten it.

To adjust the belt, firstly remove the belt guard by unscrewing the 4 nuts. Loose the 4 engine bolts and shift the engine by using the two screws on the front. Then tighten the 4 bolts.

To replace the belt, move the engine completely to the front. Adjust the belt and retighten it by shifting the motor to the rear. Then tighten the 4 bolts.

To change the belt :

- Relax the tension screw .
- Move the engine.
- Remove the old belt .
- PUT place in the news.
- Check That the pulleys are properly aligned belts
- Tighten the tension screws , bolts Then fixation.

Lubrication

The CS 451 E uses life-lubricated bearings. Therefore, you don't need to lubricate them at all. Grease the depth screw once a week.

Cleaning of the machine

Your machine will last longer if you clean it thoroughly after each working day.

7 BREAKDOWNS: CAUSES AND CURES

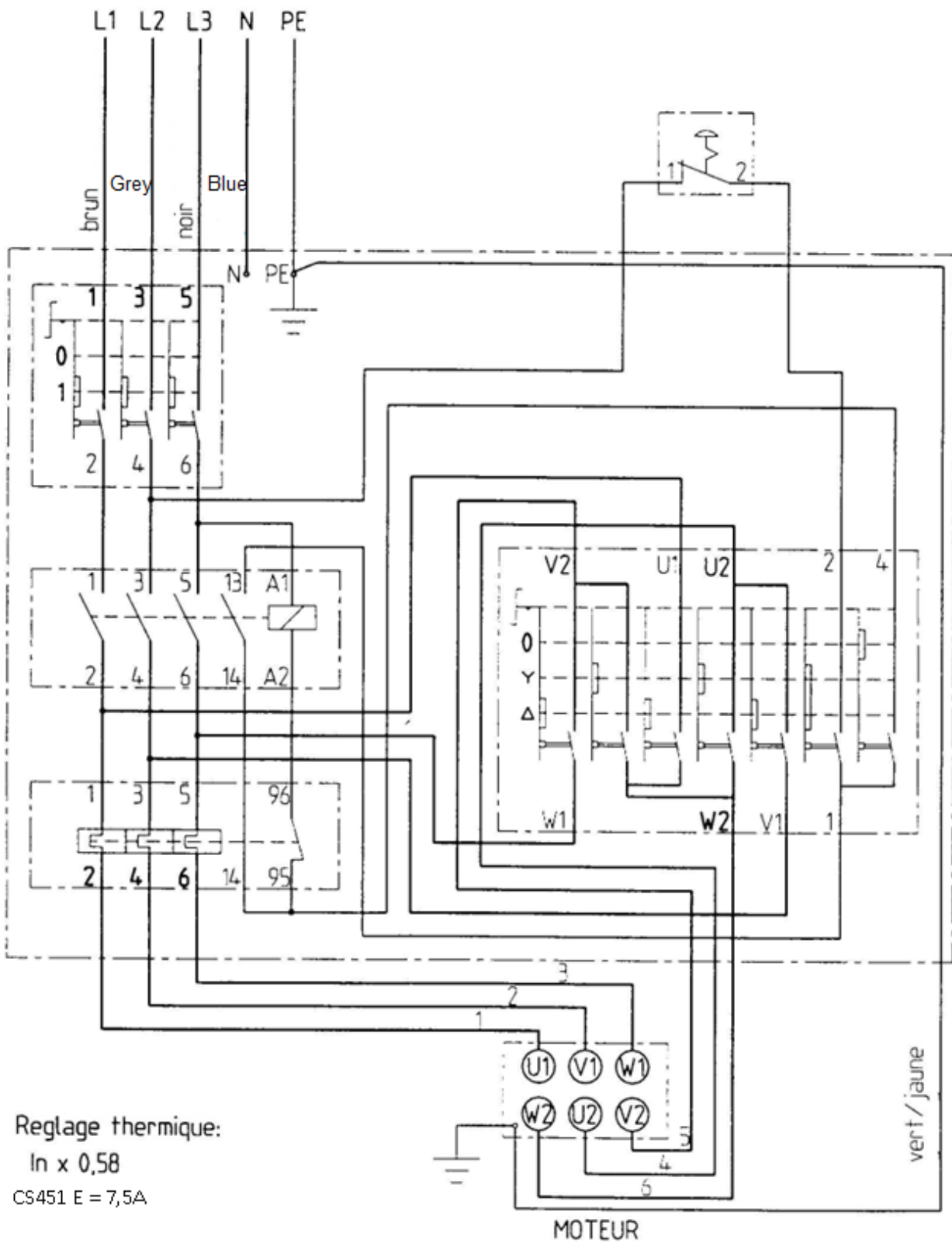
7.1 Breakdown-finding procedures

Should any breakdown occur during the use of the machine, turn it off. Let only qualified staff make any intervention other than the ones described in the previous section.

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 or the position from the exploded view or spare parts list.
- 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 and 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 engine can be ordered with the manufacturer of the engine 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:

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