

## Fog Tube - FT30



# Instructions for use and routine maintenance



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## Warning



Read this instruction manual before operating the machine.

## 1 - Introduction

This manual contains basic information about the equipment described in this document. The purpose of this documentation is to provide operators with information on how to handle the equipment before, during and after operation.

Always read the “**Safety instructions**” chapter before operating the device or carrying out any repairs to ensure maximum safety for the operator and persons present within the working range of the device.

## 2 - Purpose - Use

The fog Fog Tube (hereinafter referred to as the “Fog Tube”) is a device that serves to effectively suppress the emerging dust and reduce the release of airborne dust from landfills of bulk materials, overflows of belt conveyors, and the like.

The Fog Tube creates an air stream with fine water nebula, which must be aimed at the source of the emerging dust. The area that the nebula will hit depends on the strength and direction of the wind. The Fog Tube is designed for use at temperatures above 0 °C.

It is necessary to place the Fog Tube in a suitable place that has been prepared in advance with regard to the safety of the staff, the public and the facility. Extreme environmental conditions in which the equipment will be operated must be taken into account.

## 3 - Safety provisions

Safety should always come first when operating, maintaining or relocating any part of the equipment.

Read this Manual carefully prior to the commissioning



All safety conditions must be met before putting the device into operation. The operator is obliged to comply with the applicable regulations and standards that apply to the delivered equipment during operation and maintenance of the equipment.



Electrical devices are operating devices with high-current industrial connection. The operator must be instructed (warning signs, labels) about the power supply to the device and about the possibility of switching off the entire device if faults occur that endanger safety.

These faults include:

- failure of safety devices (emergency stop relay)
- damage to important parts of the device
- damage to electrical connections and insulation leakage in water line.
- the device should be protected by the user with a 25/30mA circuit breaker.



Work on the device must only be performed when it is switched off.

During operation, no objects may be thrown into the device and foreign objects must not be sucked in.

## *3.1 - General safety rules*

Only staff with appropriate training and good knowledge of the device may operate the device.

Operating staff must have a thorough understanding of the safety and operating procedures. They must also be familiar with handling problems that may occur.

Never open the electrical cabinet during operation.

Always open and close hydrants or valves very slowly.

Always make sure that the cables and hoses are undamaged.

Never operate the machine without protective clothing/equipment. Care must be taken not to use loose clothing or equipment that could become entangled in the fan or other rotating parts.

Always be especially careful when operating the equipment in conditions specific for the given area, environmental and weather conditions.

## 4 - Transport

After the delivery, check the device for possible transport damage (including the supporting structure). Scratches, dents or cracks must be reported to the seller immediately, as they may cause internal damage resulting in insufficient operation or unsafe working conditions.

The machine is transported only in disassembled state - the tube and stand with el. switchboard separately. The lower base of the stand is attached with 2 10x100 screws with a plastic and metal washer, which prevents the destruction of the paint of the machine (Figure 1) to the pallet on which the Fog Tube is transported. After the delivery, check that the screws are tightened, and that there is no cracked pallet where the screws are (the Fog Tube is attached in two places crosswise, see the picture below).





The tube is placed on a pallet with a larger diameter at the bottom and is attached to the pallet with 4 screws.

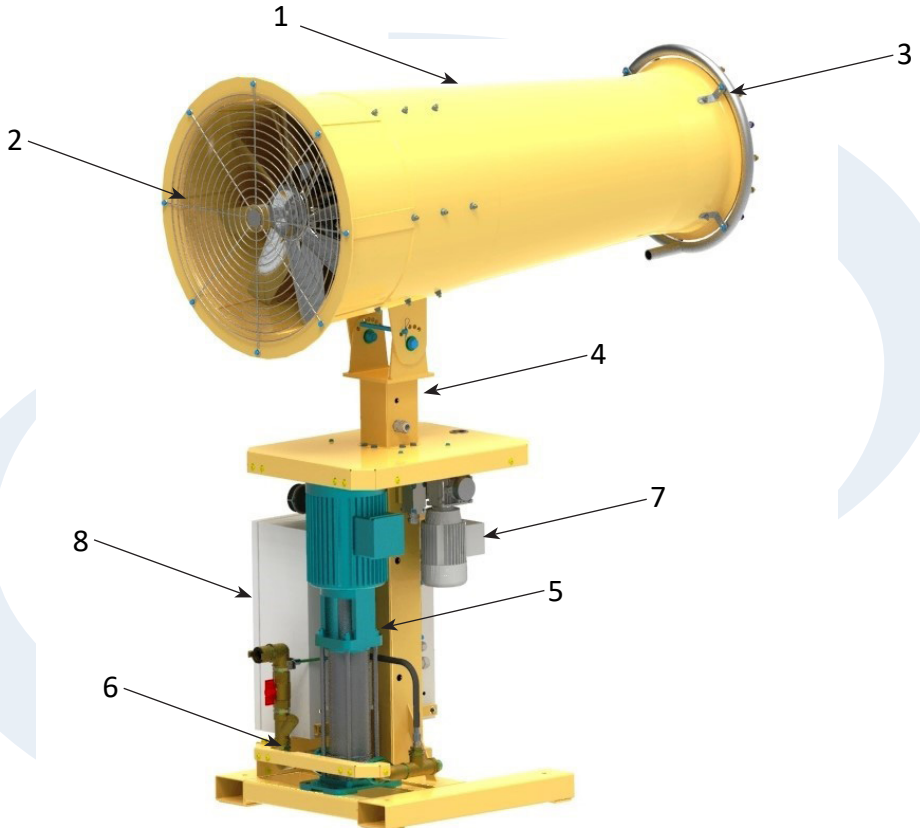


Hoses and wiring must be protected against abrasion, pinching, or other damage. Small components that are included in the delivery are located inside the cabinet.



## 5 Installation of the equipment

### 5.1 - Main parts of the Fog Tube



1. Tube, including axial fan and electric motor
2. Protective grille
3. Fog ring with nozzles
4. Swivel stand
5. Pump
6. Filter
7. Gearbox and rotating device
8. Switchboard

## 5.2 - Technical parameters

Machine type:	Fog Tube FT30
Electric motor:	4 kW, 400 V
Pump:	1,5 kW, 400 V
Gearbox for rotation:	0,09 kW, 400 V
Fogging range:	30 m (without wind)
Fogging range:	±175°
Water consumption:	800l/h
Dimension:	636 x 1399 x 1781mm
Weight:	250 kg
Noise level:	98 dB, 3 m from the machine

## 5.3 - Assembly of the fog Fog Tube

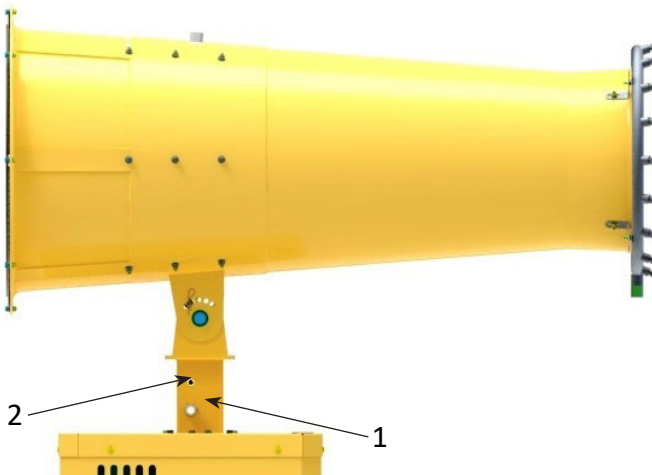
### 5.3.1 - Anchoring the base

On the pallet - the main part of the Fog Tube is placed on a pallet on which the manufacturer tested the assembled machine. Thus, this position can be used again as a working one after assembling the Fog Tube - it is stable on a flat surface.



## 5.3.2 - Attaching the tube to the base

The tube is moved after loosening the anchor bolts from the pallet by means of a harness, suspended on a lifting device (on a crane or fork-lift rail). It is secured with 2 M20x40 screws (position no. 1) against the movement in vertical plane. The tilt of the tube can be adjusted by moving 2 M10x30 screws (position no. 2).



As an optional accessory, the fog Tube can be equipped with automatic tilting. The tilting of the Fog Tube is then ensured by an actuator, see the picture below (position no. 3).



## 5.3.3 - Inspection of moving parts and fan before start-up

Before the installation, the fan itself must be visually inspected for damage to any part during storage or transport. The impeller must rotate freely after turning by hand.

Before switching on the fan for the first time, make sure that:

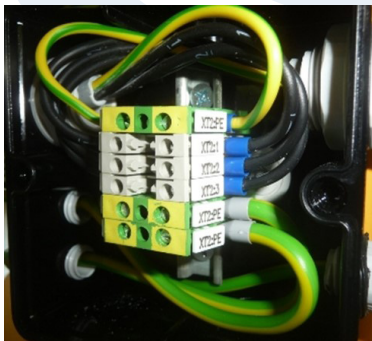
- the protective grille is fastened correctly (if it has been removed before),
- the hoses including seals are connected correctly,
- the electrical installation has been checked,
- packaging residues or cables cannot come into contact with the impeller during operation,
- the correctness of the direction of rotation of the fan impeller is checked (the fan draws in air through the wider end of the diffuser with a grille).

When starting for the first time, check the functions of the fan - smooth run, vibrations, power supply, balance and controllability.

## 5.3.4 - Electrical installation

It is necessary to connect the motor cable in the terminal box according to the diagram enclosed in the switchboard.

The electrical installation may only be carried out by a worker authorized in accordance with the applicable regulation.



Connect the cable marked 1 to the terminal block XT2:1

Connect the cable marked 2 to the terminal block XT2:2

Connect the cable marked 3 to the terminal block XT2:3

Connect the yellow-green cable to the terminal block XT2:PE.

It is also necessary to connect the switchboard to the protected distribution 16A.

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## 5.3.5 - Connecting to water

Before putting the Fog Tube in operation, it is necessary:

- Connect the water inlet to the distribution of chemically non-aggressive water; uncontaminated with biologically and coarse mechanical impurities; the connection is DN 25 (1"), ideal supply pressure 3-6 bar. The cleaning capacity of the filter screen is 350 microns.

**CAUTION: If the fog Fog Tube is switched off after a short time after putting in operation, the following must be checked:**

- **sufficient amount of water**
- **sufficient water pressure**
- **cleanliness of the water filter.**

If the temperature drops below 0°C, the Fog Tube must be stopped, and water drained from the hoses, pump and filter. The procedure is described in chapter 8.2 - "Procedure for terminating the operation of the fog Fog Tube".

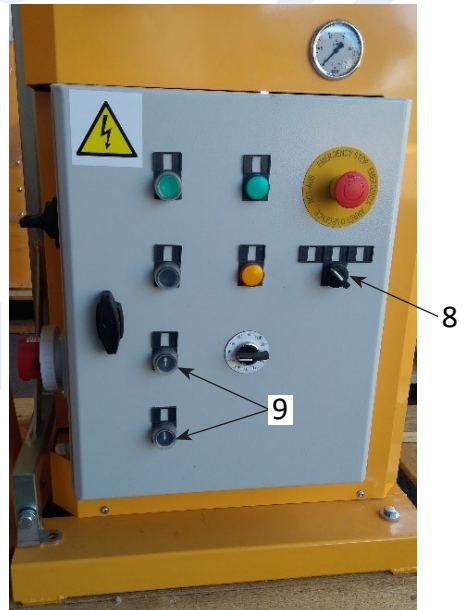
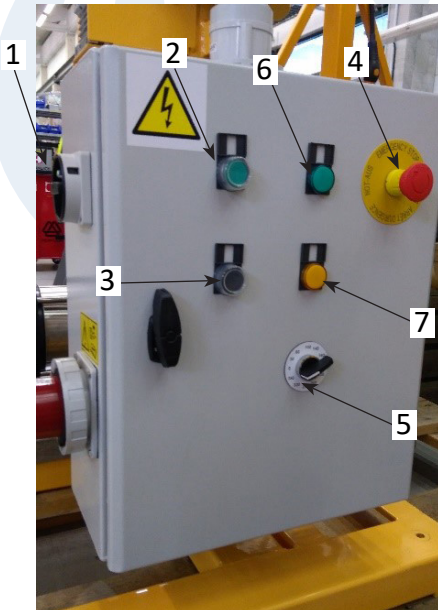
## 6 - Controlling the machine

There is a switchboard, located on a stand, that is intended for controlling the machine. It is fully equipped (to control the fan, pump and rotation) with the following controls on the front panel (picture on the left):

- main switch (position 1)
- ON button (position 2)
- OFF button (position 3)
- EMERGENCY STOP button (position 4)
- 12-position angle switch ROTATION (position 5)
- READY indicator light (position 6)
- WATER PRESSURE indicator light (position 7)

With optional accessories (picture on the right):

- LOCAL / REMOTE control switch (pos. 8)
- automatic tilting ACTUATOR (pos. 9)





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## 7 - Procedure for putting the Fog Tube in operation

### 7.1 - Normal operation

- Switch on the main switch, the READY light comes on.
- Open the water supply.
- Press the ON button, the integrated green light comes on, and if the water inlet pressure exceeds 1.5 bar, the WATER PRESSURE light comes on. If the Fog Tube was in the 0° starting point position, the fan will turn on and then the pump will start automatically. The Fog Tube begins to rotate to one side and then to the other at an angle corresponding to the set position of the ROTATE switch. The switch positions are graduated in steps of 30°, adjacent positions change the angle of rotation by 15° to one side and the other side (i.e. if the angle is set to 30°, the Fog Tube will rotate 15° to the right and 15° to the left from point 0°). If the switch is in the 0° position, no rotation will trigger. The angle of rotation can be changed during operation, but the value of the new entry will not be accepted until the Fog Tube passes over the position sensor 0°.

### 7.2 - Commissioning when the tube is not in the home position

If the tube was not in the home position 0° when switched on, the green **ON** light will flash. The operator must manually bring the tube to the 0° starting point:

- If the tube is on the left from the 0° point, set the **ROTATE** switch to 60° and press and hold the **ON** button, the tube will rotate to the right. After approaching the 0° position sensor, the movement stops automatically, the **ON** light goes out.
- If the Fog Tube is on the right from the 0° point, set the **ROTATE** switch to 30° and press and hold the **ON** button, the Fog Tube will rotate to the left. After approaching the 0° position sensor, the movement stops automatically, the **ON** light goes out.

After pressing the **ON** button, the Fog Tube will automatically rotate to one side and then to the other at an angle corresponding to the set position of the **ROTATE** switch.



The operator can set any angle of rotation. The Fog Tube is equipped with two position sensors. One of them is designed for 0° position sensing, the other for 180° position sensing. The starting point of the Fog Tube is in the 0° position - see the picture below.



12-position "ROTATE" angle switch

**CAUTION! The rotation of the Fog Tube is not mechanically limited.** To prevent mechanical damage to the rotating device, a limit switch is provided, which limits the rotation by more than  $\pm 175^\circ$ . If the Fog Tube moves to a position exceeding  $175^\circ$ , the rotation stops. The **ON** light starts blinking. The operator must manually bring the tube to the 0° starting point as described above.

As additional protection against rotation exceeding  $\pm 175^\circ$ , the control system includes a programmable timer (so-called WATCH DOG), which limits rotation in one direction to a maximum of 75 seconds. When this time has elapsed, the **ON** and **WATER PRESSURE** indicator lights will flash simultaneously. The operator must determine the cause of the fault, remove it, and then manually bring the tube to the 0° starting point as described above.

If the water pressure is lost during operation for more than 10 seconds, the **WATER PRESSURE** light goes out and the pump switches off automat-

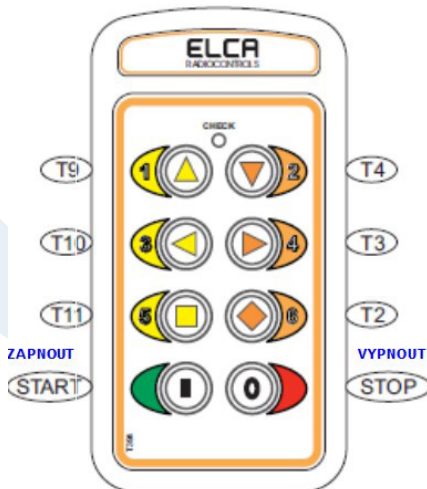
ically. The fan will run for another 5 seconds to blow out residual water from the diffuser. The Fog Tube automatically returns to the 0° starting point and stops.

**CAUTION!** All drives are connected in such a way that the correct direction of rotation of the electric motors is observed. When putting the Fog Tube in operation for the first time, it is sufficient to check the direction of rotation of the fan (the air flow must be in the direction from the protective grille at the fan to the nozzles).

### 7.3 - Controlling the device with the remote control

Elca remote control:

To control the device with the wireless remote control, switch the **LOCAL / REMOTE** switch to **REMOTE** and press the **ON** button on the remote control. To stop the Fog Tube, press the **OFF** button on the remote control



START button - ON  
STOP button - OFF  
T9 button (1) – UP  
T4 button (2) - DOWN

## 8 - Procedure for terminating the operation of the Fog Tube

### 8.1 - Normal operation

To end the operation, it is necessary to press the **OFF** button. The pump and then the fan switch off and the **ON** light goes out. The Fog Tube automatically returns to the 0° starting point and stops. Then it is necessary to turn off the main switch.

### 8.2 - Long-term termination of operation

After ending the operation of the Fog Tube for a long time (e.g. wintering) or for a time when it is possible to expect a drop in temperature below 0 °C, it is necessary to drain the water from the hoses, pump and filter. The operator of the Fog Tube must take the following steps:

1. Close the water in the water line.
2. Disconnect the power by turning off the main switch.
3. Disconnect the inlet hose.
4. Loosen the filter nut with a wrench so that water starts to flow out (see the picture below).
5. Clean the filter insert.
6. Loosen the nut at the bottom of the pump so that water starts to flow out (see the picture below). It is necessary to leave the nuts loose throughout the shutdown of the Fog Tube.

Before using the Fog Tube again, tighten the filter nut (point 4) with your fingers, tighten the nut on the pump (point 6) with a force of 10 Nm.



Loosening the filter nut



Loosening the pump nut

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## 9 - Most common possible faults

### 9.1 - Switchboard

The device cannot be started. **The “READY” light is off.**

- Check the power cable - make sure that electricity is supplied to the device and the main switch S1 is switched on.
- Check that the STOP safety button (red) is not depressed - turn it to unlock.
- Check tubular fuses.
- Check that the protective elements in the switchboard are active (motor starters “QF1-QF4” according to the type of Fog Tube, and a circuit breaker if integrated in the device).
- Check that the relay K1 (READY) is lit.

The device does not start. **The “READY” light is on.**

- Insufficient water pressure.
  - Check water pressure (at least 1.5 bar).
- Clogged water filter.
  - Clean the solids water filter.
- Check the diameter of the supply hose (min. DN25). Check that the hose is not tangled.

The device does not start. **The green “READY” light flashes.**

- The tube is not in the zero (default) position.
  - Manually bring the tube to the starting point 0°. Use the “ROTATE” switch to set 30 degrees or 60 degrees. By holding down the “ON” button, the tube will rotate to the right or left according to the degree set on the “ROTATE” switch. In the zero position, the tube stops automatically. The direction of the zero position is indicated by a sticker on the device, see chapter 7.2.

### 9.2 - Fan

The device does not start. The fan does not rotate.

- Check the connection in the U2 junction box of terminal XT2.

The device can be started. The fan rotates in reverse.

- The cable in the U2 junction box must have the wires (which are marked) connected in the order 1, 2, 3, PE.
- If necessary, check the phase sequence on the supply cable to the switchboard. The device is connected by the manufacturer and set to the right.

## 9.3 - Water supply

The device keeps switching off

- Insufficient water pressure.
  - Check water pressure (at least 1.5 bar).
- Clogged water filter.
  - Clean the solids water filter.

Insufficient water flow

- Clean the solids water filter.
- Clean the nozzles.

## 10 - Maintenance

For trouble-free operation of the device, it is necessary to perform regular visual inspections of the device before the start of each shift. It is necessary to check the following components:

- cleanliness of the nozzles
- the operation of the fan (vibrations, etc.)
- integrity of the protective grille at the fan inlet
- integrity of the supply cable and water distribution
- cleanliness of the filter
- water must not leak at joints
- water must not be inside the cabinet

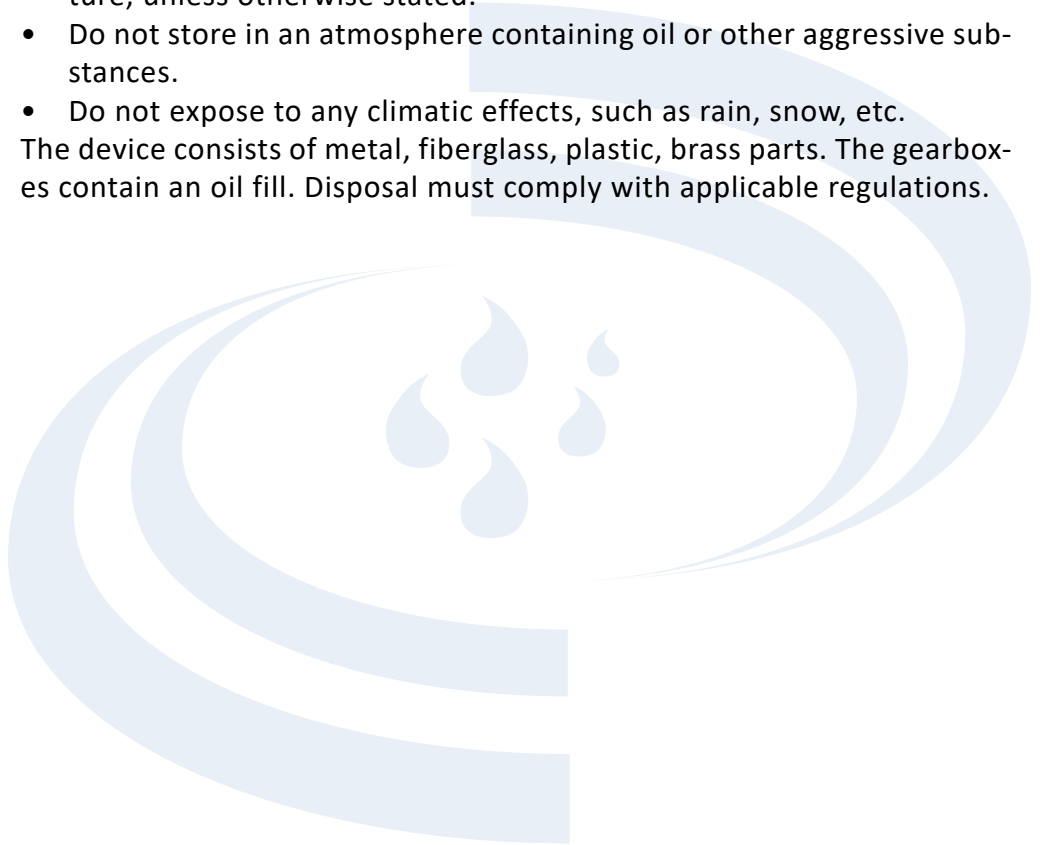
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## 11 - Storage and disposal method

The following storage conditions need to be observed when storing the device:

- Storage temperatures within the limits of normal outdoor temperature, unless otherwise stated.
- Do not store in an atmosphere containing oil or other aggressive substances.
- Do not expose to any climatic effects, such as rain, snow, etc.

The device consists of metal, fiberglass, plastic, brass parts. The gearboxes contain an oil fill. Disposal must comply with applicable regulations.



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## 12 - Warranty terms and conditions

### 12.1 - Validity

This product is covered by a twenty-four (24) months warranty, starting from the purchase and/or test date. This warranty protects the user against manufacturing or material defects. In case the machine is used for professional applications, this warranty covers a period of twelve (12) months (ex C.L. no°422 art.1 par. B).

### 12.2 - Warranty Conditions

1. The in-warranty repair is accepted only if the product is accompanied by the purchase receipt and the test report issued by the supplier.
2. Manufacturing company duty is limited to the repair and, at its own discretion, the replacement of the whole product or of single faulty components.
3. The suppliers and the technicians allowed to carry out in-warranty repairs are only those expressly authorized by the manufacturer
4. This product or its materials are not considered as faulty in case the customer needs to adapt the machine to technical or national safety regulations other than those in force in the country originally foreseen for the product. No refund shall be granted for damages arising from the above-mentioned modifications, or other changes not connected to the original design of the product, carried out by the customer/user or by unauthorized people.
5. The warranty does not apply to:
  - a. Periodical checks, maintenance operations, replacement of components subject to wear;
  - b. Transport, transfer or installation of the product;
  - c. Damages caused by fire, water, natural events, war and riots, incorrect power supply, insufficient ventilation of the installation place, and any other cause not connected the manufacturer;
  - d. Incorrect use, operating errors and wrong or unwary installation;
  - e. Damages to the product due to non original manufacturer spare parts use;

- f. Damages to the product or insufficient performance due to incorrect installation after purchase;
  - g. Every damage to the product due to negligence.
6. This Warranty is valid for every person formally having the propriety of the product during the above-mentioned period.
7. This Warranty does not affect the rights of the customer as prescribed by the law in force in the country, nor the rights of the customer towards the retailer arising from the contract of sale.

