

# Instruction Manual Use and Maintenance

**Duplex**  
*International*



**MACHINES FOR  
CLEANING ESCALATORS  
AND MOVING WALKWAYS**

**DUPLEX ESCALATOR  
BASE 350 / 550**

*Translation of the original instructions*

## WARNINGS



**READ THE INSTRUCTIONS OF THIS BOOKLET  
CAREFULLY BEFORE USING THE MACHINE.**

See Directive ISO 7000-0434-1691-0790

**WARNING: This appliance cannot be used to collect hazardous dusts**

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## 1.1 CONGRATULATIONS ON HAVING CHOSEN DUPLEX MACHINES

These are the main characteristics of DUPLEX machines:

- Cleaning of any type of flooring thanks to a patented centrifugal system which allows dirt to be recovered automatically and in real time;
- Great ease of handling thanks to the possibility of orientating the handle to change the cleaning direction;
- Easy access to 'critical' points (wall edges, corners, grooves and joints);
- Quite operation.

The experience and know-how gained over our years of production (tens of thousands of machines in various models), the testing and application in different environments combined with the expertise of our Engineers have allowed us to improve our product constantly. We were able to achieve perfect cleaning results even in the deep grooves in the steps of escalators and reach the side edges, which is still extremely difficult for other escalator cleaning machines.

**While cleaning moving escalators, DUPLEX escalator cleaning machines remain still and stable in their position thanks to the especially patented self-guiding system.**

Professional models equipped with a full set of accessories and special trolleys have been created from two simpler and cheaper machine models. Apart from facilitating the transport of the appliance within the workplace, these also allow for easy positioning of the machines themselves on the steps of escalators in motion, resulting in minimal cleaning times.

**Today, these machines come in six models to suit every requirement and stair size from a minimum of 480mm for the 350 model and 680mm for the 550 model.**



Figure 1.1

## 1.2 GENERAL WARNINGS

### POWER CORD WITH PLUG

- Check the power cord regularly to see if there is any sign of damage: cracking, peeling, ageing.
- If the power cord is damaged, replace it before using the machine.
- Use a cable of the same type used by the Manufacturer, certified according to “ENEC” European standards
- Cable replacement must be performed by qualified personnel.
- Avoid any contact of the power cord with the brushes.



#### **IMPORTANT:**

**Should the power cord get caught under the machine brushes, do not attempt to get it out while the machine is working. Stop operation immediately, remove the plug from the power socket, check the cord. If damaged, do not try to repair it simply putting a tape around it, but replace it.**

### OTHER WARNINGS

- Ensure the machine does not sit on the brushes when in rest position. The machine should be supported and raised by the appropriate transport trolley (provided). If this not the case, the machine weight could warp the brushes.
- Be careful not to let the water used for cleaning enter into the plastic casing (gear cover). Never use pressure washers to clean the Duplex Escalator.
- Unplug the power cord plug from the power socket or battery before any maintenance intervention.
- Store the machine in a closed and dry place after use.
- The machine is designed and constructed exclusively to clean escalators or moving walkways. Any other use is considered improper.



#### **WARNING**

**CLEANING AND MAINTENANCE OPERATIONS MUST BE PERFORMED WITH THE MACHINE DISCONNECTED FROM THE MAINS OR BATTERY.**

### 1.3 GENERAL FEATURES AND FUNCTIONS

The DUPLEX brand name is synonymous with double efficiency and distinguishes a machine that actually has a dual function thereby providing numerous advantages for the best possible floor cleaning and hygiene.

- Upgraded electric motor.
- Special grease-resistant rubber conveyor belts.
- Self-guiding support with grooved wheels (patented system)
- Special brushes with equidistant bristle pitch (to be ordered according to the specifications supplied by the escalator manufacturer)
- Front spray-proof fairings.
- Cover with opening that can be adapted to any vacuum cleaner
- Three-wheeled transport trolley.
- Samples of special Duplex “Detex” detergent for escalators.

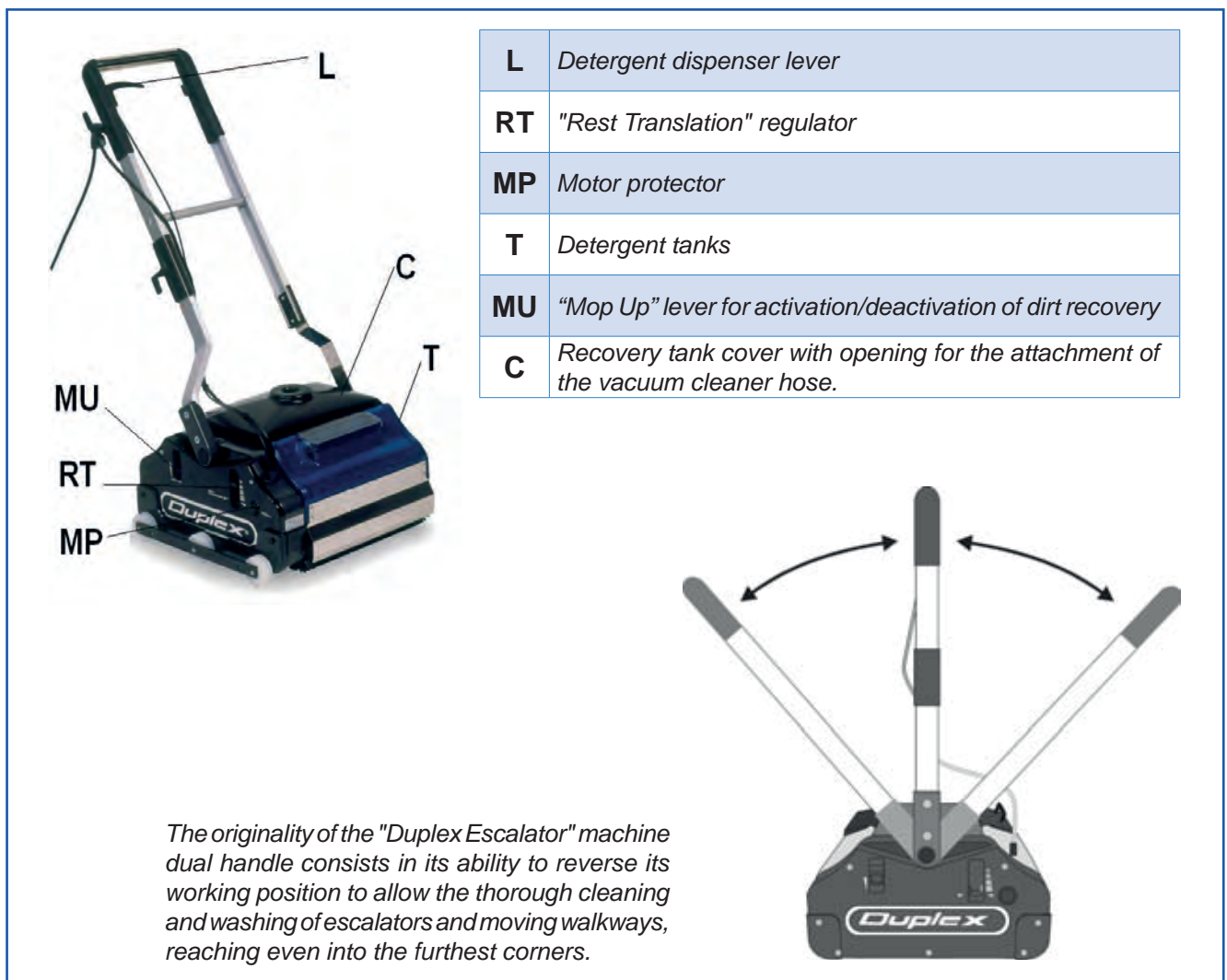


Figure 1.2

## 1.4 ASSEMBLY

The machine is shipped packed in wooden and/or cardboard boxes.

On receipt of the package and prior to use, the user must carry out the assembly of parts which due to their overall dimensions are disassembled before being shipped.

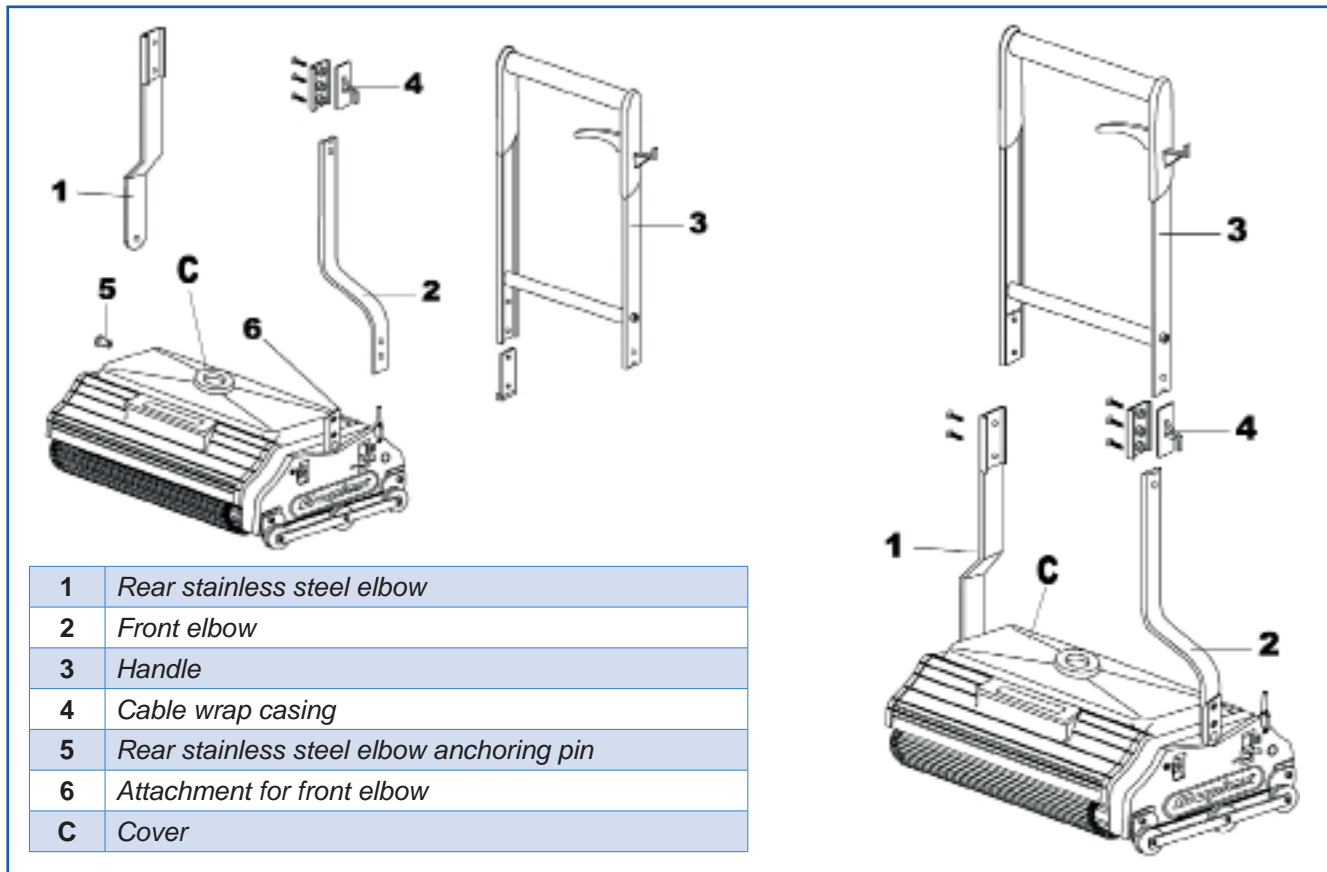


Figure 1.3

### MACHINE ASSEMBLY

1. Remove the central recovery tank located under the cover with a central opening (C);
2. Unscrew the nut blocking the pin (5) onto the rear panel and remove it;
3. Fit the rear elbow (1) using the pin (5) and the nut unscrewed previously;
4. Position the recovery tank back in its place.
5. Insert the front elbow (2) into attachment (6) and fasten it using the screws provided;
6. Fit the handle (3) to the elbow (2) using the cable wrap and casing (4), making sure that the screws are facing inwards and the cable holder faces downwards.
7. Secure the other arm of the handle to the rear stainless steel elbow (1) with the two screws provided.
8. Tighten all screws firmly.



## 1.5 TRANSPORT TROLLEY ASSEMBLY

The machine is shipped packed in wooden and/or cardboard boxes.

On receipt of the package and prior to use, the user must carry out the assembly of parts which due to their overall dimensions are disassembled before being shipped.

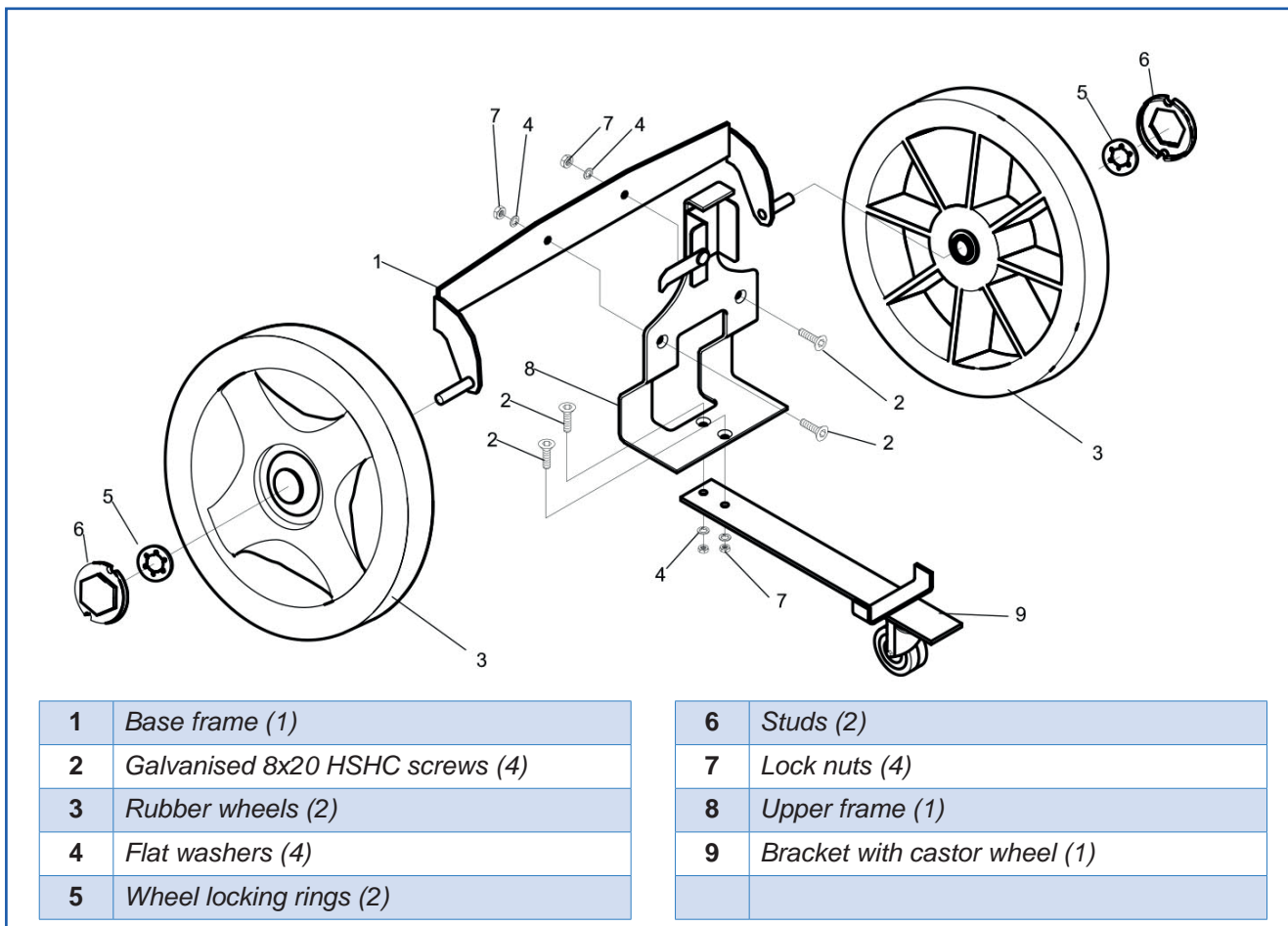


Figure 1.4

### TROLLEY ASSEMBLY

Assemble the components following the sequence below:

1. Fit the base frame (1) to the upper frame (8) using the screws (2), flat washers (4) and lock nuts (7).
2. Insert the rubber wheels (3) onto the base frame pins (1) and secure them using the wheel locking ring (5).
3. Fit the studs (6).
4. Fit the bracket with castor wheel (9) to the upper frame (8) and secure it with the screws (2), flat washers (4) and lock nuts (7).

## 1.6 TECHNICAL FEATURES

ESCALATOR BASE		MOD. 350	MOD. 550
Length	mm	475	475
Working width	mm	465	665
Unloaded weight	Kg	28	39
Detergent tank capacity	l	5.4	9.5
Recovery tank capacity	l	2.3	3.6
Brush diameter	mm	120	120
Brush width	mm	350	550
Electric motor		Induction	
Tropicalized winding		Single-phase	
Insulation class			
Voltage	Volt	115-220 / 240	115-220 / 240
Frequency	Hertz	60 / 50	60 / 50
Maximum brush motor power	Watt	1000 / 1250	1480 / 1600

### THE MACHINE IS REGISTERED

Trademark:	DUPLEX INT.
Country:	Italy
Universal identification	Mod. DUPLEX ESCALATOR BASE
Power	Watt.
Power supply:	Volt. xxx
Frequency:	Hz. 50 or 60
Serial number	Serial no. xxxx
Month and year of manufacture:	Current month and year
Self-certification marking:	CE
Weight	Kg.

### ELECTRIC MOTOR EQUIPPED WITH:

Original nameplate applied by the manufacturer

*Built in compliance with EN 30335-2-07-1998-2006/42/EC  
Duplex machines have been approved by the following Quality Institutes: EC - ENEC*

### MACHINES MADE EXCLUSIVELY IN ITALY



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## 1.7 PRODUCT FOR INDUSTRIAL USE “DUPLEX DETEX”

**Special detergent to wash and degrease escalators with Duplex Escalator machines.**

The product eliminates mineral oils and all types of petrol derivatives, organic residues of animal and vegetable origin. **It does not damage aluminium alloys or components of the machine.**

### INSTRUCTIONS FOR USE

Dilute from 1% to 5% according to your requirements, directly into the tank and use as per machine instructions.

### DISPOSING OF THE CONTAINER:

Dispose of the container properly and do not burn it. Rinse the tank out three times and recycle, or make holes in it and have it collected by a regularly authorised facility.

### STORING:

Store in a cool, well ventilated place, protected from direct sunlight.

### PRECAUTIONS:

Wear suitable clothes and gloves. Protect your eyes and face. Irritant in its pure state. In case of contact with your eyes or face, wash immediately with plenty of water and consult a physician.

### BIODEGRADABILITY:

90% (Art. 2 and 4 L.26/04/1983 no. 136) -

Dir. EEC 73/405 and 82/242.

### CHEMICAL COMPOSITION:

(Art. 8 L.86 - Rec. EEC 89/542)

### COMPONENTS:

Phosphates

Glycols

Non-ionic ampholytic

surface-acting agents.

### PHYSICAL AND CHEMICAL DATA:

**Status:** Liquid

**Ph:** 9 to 1 %

**Foam:** Low

**Colour:** Blue

**Odour:** Pleasant



### WARNING:

**The product can pollute seas, lakes and rivers. Do not use in excessive amounts and dispose of the container properly after use.**

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*Distributed by: Duplex International s.r.l. - Signa - Florence*

## 1.8 HOW TO USE



### WARNING

Before inserting the cable plug into a power point which must be earthed, ensure that the handle is in the rest (upright) position.

**IT IS RECOMMENDED THAT YOU LUBRICATE THE CONVEYOR BELTS WITH COMMERCIAL SILICONE SPRAY BEFORE STARTING UP THE MACHINE.**

## HOW TO CLEAN AND WASH ESCALATORS AND MOVING WALKWAYS

Use a Duplex ESCALATOR BASE 350 or 550 with an external wet and dry vacuum cleaner (not supplied with the Base model)

Fit the special brushes provided, with their equidistant bristles to reach right down into the tracks forming the stair tread of the escalator steps.

The pitch of these tracks or channels may vary from manufacturer to manufacturer. Optional OTIS/KONE – THYSSEN – SCHINDLER/MITSUBISHI brushes are available upon request.

The brushes of the **DUPLEX ESCALATOR BASE** machines are made from a combination of special plastic materials with no abrasive power, ensuring that no damage is caused to the metal steps of escalators or moving walkways.



Figure 1.5



### WARNING:

Good cleaning results and a longer lifespan of the brushes can only be achieved if the bristles can enter into the stair tracks or channels precisely. The use of inappropriate brushes cannot only compromise the cleaning quality but also damage the brushes.

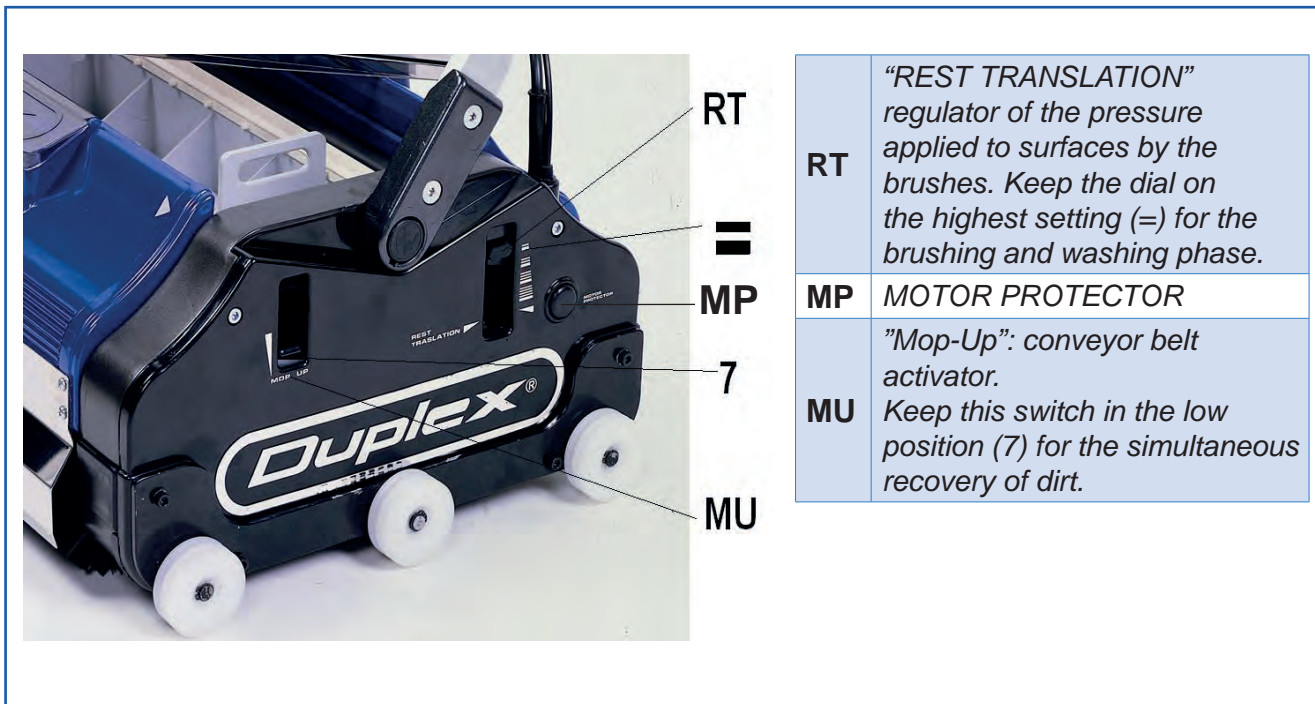


Figure 1.6



**IMPORTANT:**

Unplug the power cord plug from the power socket before removing the brushes or inserting new brushes.

**BEFORE AND AFTER PICTURES**

Comparison of washing and cleaning results between a dirty step and one washed with the Duplex Escalator.

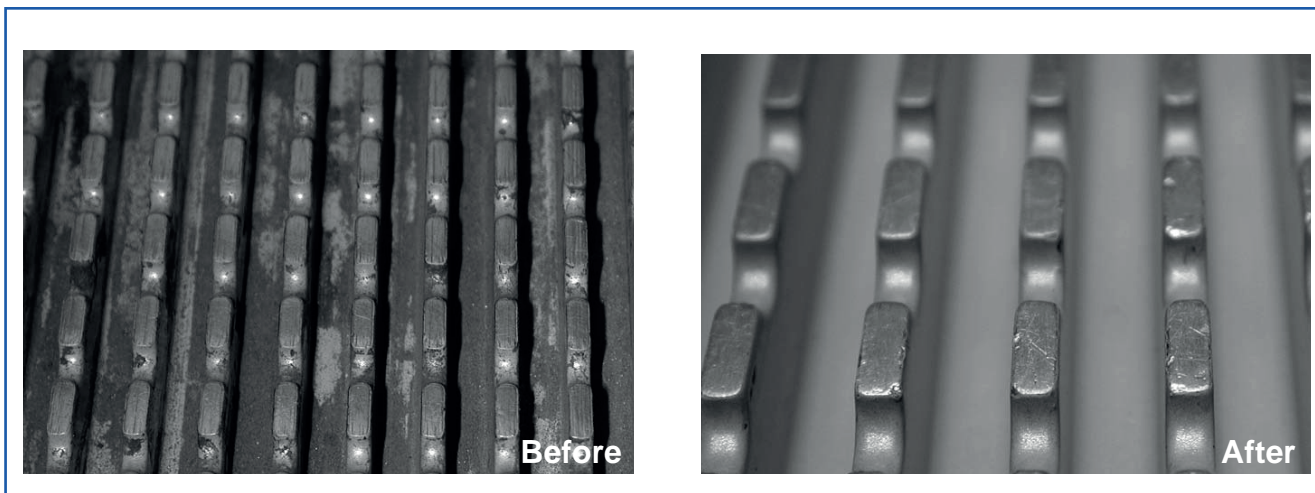


Figure 1.7

## AUTOMATIC MOTOR PROTECTION "MOTOR PROTECTOR" MP

The "Motor Protector" is a safety device which stops the machine in case conditions occur that overload the electric motor (e.g. foreign bodies caught in the brushes which can prevent their rotation, poor supply of power, overheating, etc.).



**WARNING:**

**Disconnect the machine from the power socket before removing any foreign bodies caught in the brushes.**

After checking and possibly eliminating the cause which led to motor overload, press the "Motor protector" button (after about 60 seconds) to restore machine operation.

## 1.9 HOW TO WASH ESCALATORS AND MOVING WALKWAYS

### 1<sup>st</sup> PHASE - DRY BRUSHING



#### IMPORTANT:

All dry dust will be sucked up using this procedure, which is essential to prevent dust from turning into mud when the washing phase is carried out. We recommend to pour the water into the central recovery tank during the suction phase.

**For better cleaning results it is recommended to have the escalators or moving walkways move towards the operator.**

1. Position the machine at the foot of the escalator (preferably on the bottom floor);
2. Position the machine on the first step making sure that the narrow side is lined up against the edge of the step, and that the stabilising wheels are in the channels, regardless of the position of the machine, which can either be on the right or the left hand side;
3. Use a wet vacuum cleaner.
4. Insert the suction hose into the appropriate opening in the cover **(16)** supplied;
5. Start up the external wet vacuum cleaner and the machine at the same time by lowering the handle.

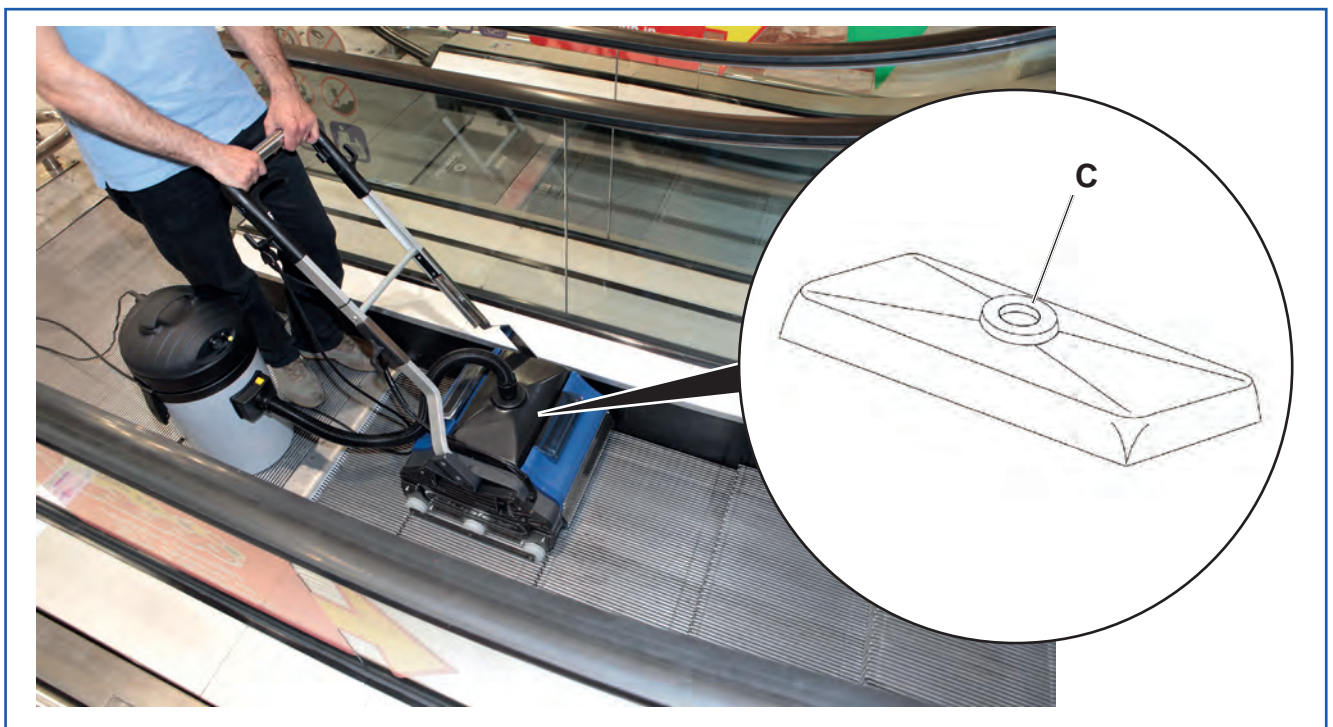


Figure 1.8

6. Activate the escalator or moving walkway (preferably moving towards the operator);
7. Grab the machine firmly and make the escalator (or walkway) complete at least three full rotations;
8. Raise the handle to stop machine operation;
9. Move the machine to the other side of the step and carry out the same procedure, following the same sequence as above.
10. When the work is completed remove lid (C - figure "1.8" on page 15), adapted for the attachment of a vacuum cleaner.
11. Empty the recovery tank and clean the machine in all its parts.

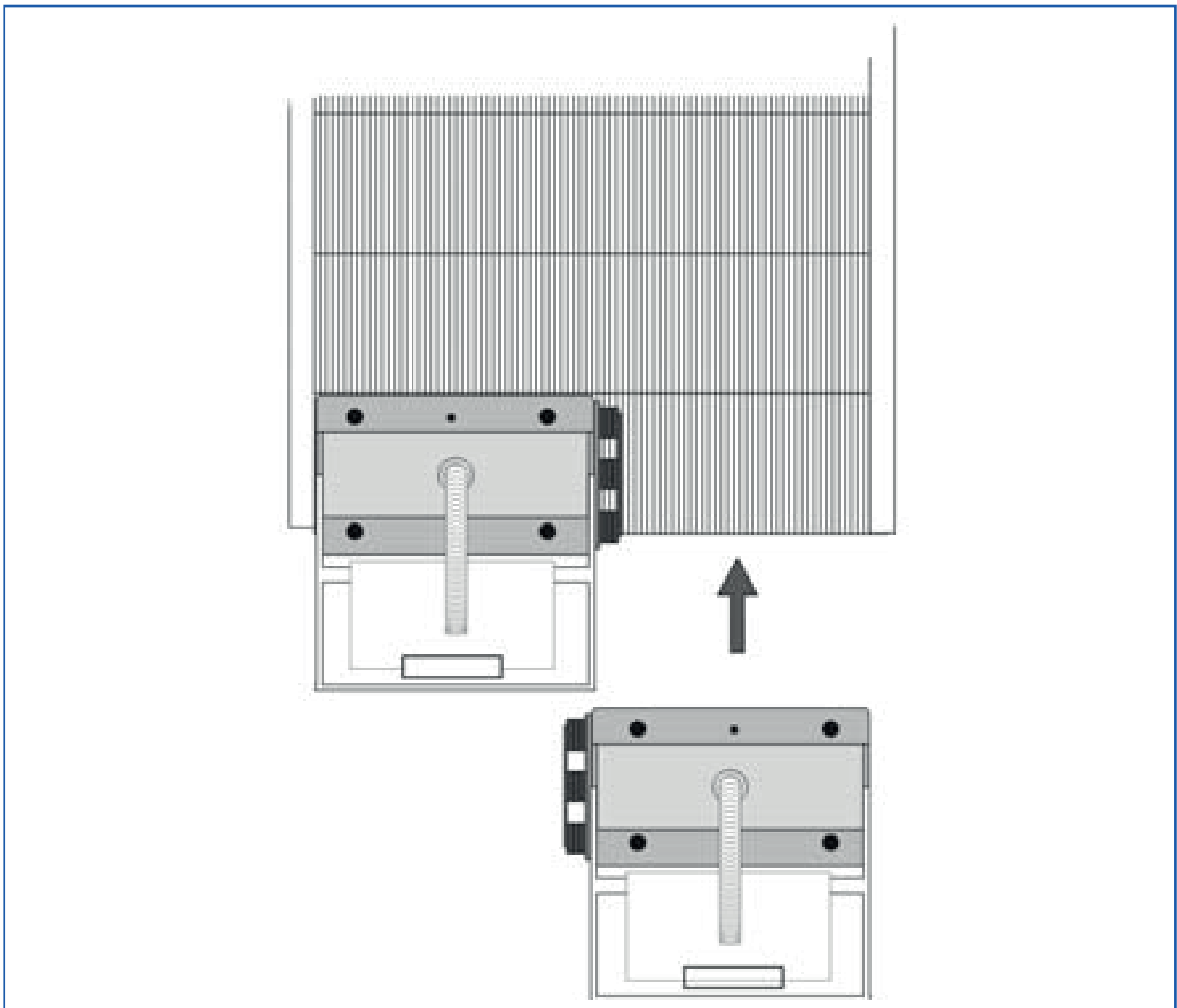


Figure 1.9



## 2<sup>nd</sup> PHASE - WASHING

For better cleaning results it is recommended to have the escalators or moving walkways move towards the operator.

1. Prepare a detergent solution consisting 95% of water and 5% of Detex (specific product to clean escalators - see technical sheet).
2. Fill up the two tanks (T) with the special detergent solution.



### IMPORTANT:

**DETEX** is a product expressly designed and developed for the cleaning of escalators or moving walkways.

It does **NOT** damage surfaces, metal parts or components and rubber or plastic components and the machine paintwork.

The use of products other than those specified will invalidate any warranty and relieve the manufacturer from any liability deriving from damage caused by the use of unsuitable products.

3. Position the machine on the first step;
4. Start up the machine lowering the handle;
5. Activate the escalator or moving walkway (preferably moving towards the operator).
6. Spread the detergent pressing the appropriate lever (**L** figure ["1.2" on page 7](#)) located under the handle.
7. Make the escalator rotate several times until all dirt has been fully removed. Empty the recovery tank (**R**) from time to time to prevent it from overflowing.

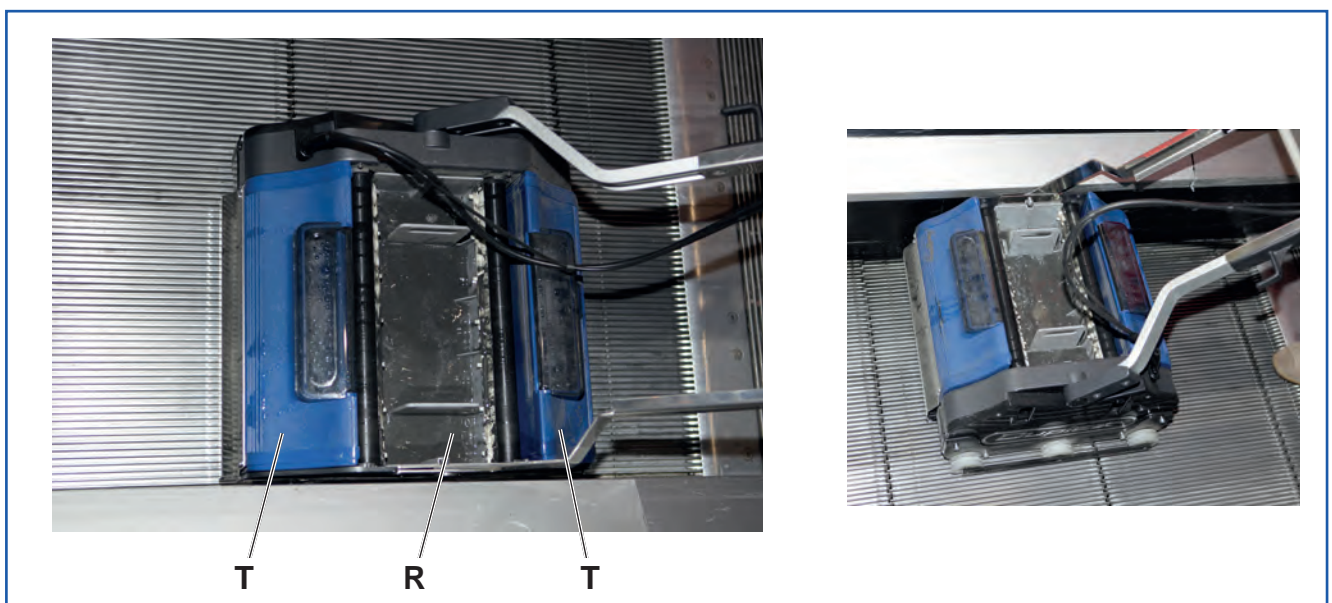


Figure 1.10



**IMPORTANT:**

It is important for all three stabilising guide wheels to be inserted into the same channel or track, otherwise the machine could move crossways and work in an irregular manner.

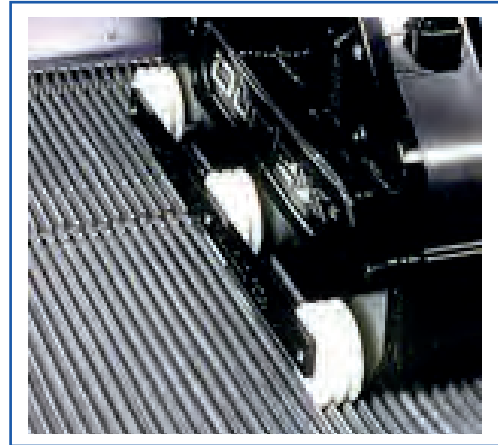


Figure 1.11

Should the escalator or moving walkway be covered in layers of dirt and muck due to wear, more frequent and long washing may be required. Once the escalators' and moving walkways' optimal condition has been restored, routine maintenance gets easier, quicker and cheaper.

**The positioning of the Duplex Escalator Base on escalator steps or moving walkway requires a certain dexterity and ability that the operator can acquire only after carrying out various washing operations.**



**TIP:**

To check whether the escalator/moving walkway has completed a full rotation, and consequently a full washing session, apply a sticker to the rubber handrail in the same direction of rotation. As the sticker re-appears it means that the rotation has completed.

**3<sup>rd</sup> PHASE - SOAKING** *(optional)*

Very often, older escalators or walkways present greasy black deposits in the corners of the steps which have built up over the years following the use of lubricants for the escalator mechanisms that became impregnated with dust and dirt.

In this case the washing operation may be preceded by a **preventive soaking phase**. We recommend that you use a standard pressure spray pump. Fill it with the same DETEX product, either diluted or undiluted, and spray the product over the entire surface to be treated evenly while the walkway is running.

## 1.10 GENERAL MAINTENANCE



**WARNING:**

During cleaning and maintenance operations the machine must always be disconnected from the mains.



**WARNING:**

Never use a pressure washer for cleaning operations.

**The procedures described below must be carried out after each use of the machine.**

### CLEANING OF THE TANKS AND CONVEYOR BELTS

- Extract the three tanks and wash them under running water.
- Make sure that no foreign bodies are caught in the rubber valves located in the water tanks, to prevent the dirt from obstructing the seal of the valves and causing the liquids to leak.
- Clean the drip channel with a needle.
- Keep the recovery tank scraper clean at all times.
- Thoroughly clean the rubber conveyor belts and every part of the machine with a damp cloth.
- Use a brush to remove every residue of dirt from the corners, then wipe the machine dry with a dry cloth.
- Lubricate the rubber conveyor belts with silicone spray.

### CLEANING AND MAINTENANCE OF THE BRUSHES

DUPLEX brushes require little routine maintenance.

The high rotation speed during cleaning manages to centrifugate dirt and keep them efficient at all times.

However, check their status and clean them, if necessary.



**WARNING:**

Remove the plug from the power socket before cleaning the brushes.

## **ROUTINE MAINTENANCE**

In addition to cleaning, it is necessary to perform the following operations periodically:

- 1.** Remove the brushes from the machine (see following section);
  - 2.** Dip them in a container with cold or lukewarm water and let them soak for a few hours;
  - 3.** Stir and rinse the brushes well;
  - 4.** Re-fit the brushes in reversed position in relation to the one they had before (ref. point **1**).
- This is necessary as the bristles tend to bend when the brushes always rotate in the same direction.

The mechanical parts of the **DUPLEX ESCALATOR** do not require any particular maintenance.

## **HOW TO REMOVE THE BRUSHES**

- Unscrew the two screws anchoring the stainless steel casing using the supplied wrench.
- Extract the brushes.

## **STORING THE MACHINE**

- After use, store the machine in a covered and dry place, protected from atmospheric agents.

## 1.11 TROUBLESHOOTING TIPS

### **The brushes fail to turn on:**

- Power supply cord disconnected or interrupted.
- Faulty plug.
- Motor protector deactivated.
- Excessive friction of the brushes on the steps (raise the head slightly).

### **The brushes stop during operation:**

- Voltage too low.
- Excessive friction of the brushes on the steps (raise the head slightly).

### **Dirt is not collected:**

- Conveyor belts fail to rotate due to the MOP-UP lever being disconnected
- Brushes worn out (replace them).
- Recovery tank scrapers dirty or worn out (replace them)

### **The detergent is not dispensed:**

- Lack of detergent: fill up the two lateral tanks to hold water and detergent.

**The manufacturer declines all responsibility for any damage deriving from incorrect use of the machine**

## 1.12 “INTERNATIONAL PATENT“ SELF-GUIDING SUPPORT

**The DUPLEX ESCALATOR machines are protected by INTERNATIONAL PATENTS.**

The self-guiding supports fitted with stabilising wheels are marked with the DUPLEX brand and a serial number.

**The following cases are considered infringement of the patent:**

- Construction of guide supports.
- Use of a higher or lower number of wheels.
- Construction of wheels of different sizes or with a different number of guide channels.
- Use of stabilising wheels on other machines even if installed in front of or at the back of the brushes.

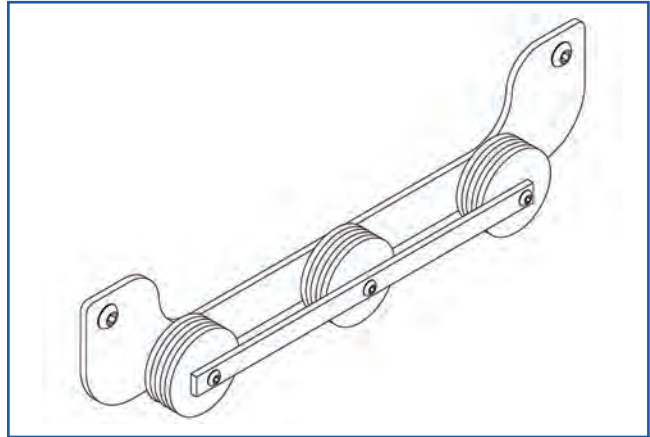


Figure 1.12

The international DUPLEX ESCALATOR patents anticipate numerous claims, including the illicit use or application of the same invention concept to other machines, entitling DUPLEX INTERNATIONAL S.r.l to full protection for industrial inventions by the National and International rights.



**WARNING:**

**International patent infringement will be prosecuted!**

## 1.13 DISMANTLING OF THE MACHINE

When the machine is no longer able to operate after years of work, it must be dismantled and rendered unusable.

At the time of demolishing/disposing of the machine, disconnect the electrical connections and entrust the dismantling operations to qualified and authorised personnel.

### DIFFERENTIATED SUBDIVISION OF THE MATERIALS

#### **Electrical components:**

Material that can be disposed of with the urban waste collection, in compliance with the legal provisions in force in the country of use.

#### **Mechanical components:**

The machine is built with aluminium, steel and plastic materials.

Steel and aluminium will not damage the environment if recycled by qualified and authorised companies.

The plastic materials may cause environmental damage, therefore they should be handed over to specialised companies authorised for disposal.

The disposal of the packaging must be carried out in accordance with the regulations in force.

## 1.14 WARRANTY

The machine is guaranteed by the manufacturer for a 12-month period from the date of shipping. Warranty acknowledgement can be achieved showing a photocopy of the receipt (or invoice) along with the machine serial number.



**IMPORTANT:**

**Without these documents the warranty will not be recognised.**

**The warranty does not cover normal wear components such as:**

- Brushes;
- Scrapers;
- Conveyor belts;
- Hoses;
- Power cords;
- ON switches;
- Wheels of the transport trolley.

**The following are excluded from the warranty:**

- Suction motor;
- Pump;
- Plastic or metal parts broken due to negligent use.

**The warranty will be invalid in the following cases:**

- The machine is used for purposes not complying with those for which it has been designed and constructed;
- Failure to observe the instructions for use described in this booklet;
- Failure to observe the maintenance and cleaning instructions;
- The machine is damaged due to the use of detergents that are different from the one indicated (Duplex Detex).





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# NOTES

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# NOTES

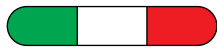
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European Mark of conformity



**Made in Italy**



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